COYOTE NORTH
USA INC.
Combustion Experts

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Summary:
Coyote North, Inc. contracted Air Hygiene Inc. to conduct performance testing on Combustion Device on model COMB 48. The unit was tested on September 27th through 30th, 2016 at the Elk City Facility in Elk City, Oklahoma. The flare unit was re-tested to satisfy the specifications as described in United States Code of Federal Regulations Title 40, Part 60, Subpart OOOO (40 CFR 60, Subpart OOOO).

Testing Methods:
The production flare model was tested according to EPA source emissions test method

- Method 1 – Sample and Velocity Traverse for Stationary Sources
- Method 2 – Determination of Stack Gas Velocity and Volumetric Flow Rate
- Method 2A – Direct Measurement of Gas Volume Through Pipes and Small Ducts
- Method 3C – Determination of Carbon Dioxide, Methane, Nitrogen and Oxygen from stationary Sources
- Method 4 – Determination of Moisture Content in Stack Gas
- Method 10 – Determination of Carbon Monoxide Emission from Stationary Sources
- Method 22 – Visual Determination of Fugitive Emissions from Material Sources and Smoke Emission from Flares
- Method 25A – Determination of Total Gaseous Organic Concentration Using Flame Ionization Analyzer
- ASTM D1945-03 – Standard Test Method for Analysis of Natural Gas by Gas Chromatography
- ASTM D3588-98 – Standard Practice for Calculating Heat Value, Compressibility Factor, and Relative Density of Gaseous Fuels

Requirement Specification:
In accordance to 40 CFR 60 Subpart OOOO, §60.5413(d)(12)(i) through (vi), this report contains the following information.

- A full schematic and dimensions of the flare unit are presented in page 3
- The maximum net Heat Input Rating of the COMB 48 is 15.63MMBtu/hr
- The inlet gas fuel range for 0% (min. rate) and 100% (max. rate) are 17.42MSCFD, and 152.50MSCFD, respectively
- Air/Stream injection/assist is not applicable for COMB 48
- The test parameter ranges below, as applicable to this unit
    - Fuel gas delivery pressure and temperature – See Air Hygiene report Appendix B
    - Fuel gas moisture range – >2ppm
    - Purge gas usage range – Not applicable
    - Condensate liquid fuel separation range – No liquid in the gas
    - Combustion temperature range – See Air Hygiene report Appendix B
    - Excess combustion air range – See Table 2.1 - 2.4
    - Flame arrestor – See blue print of the production flare unit on page 3
    - Burner manifold pressure – 0.1psi min and 10psi max
    - Pilot flame indicator – See blue print of the production flare unit on page 3

- Pilot flame fuel usage – Not used during test
- Tip velocity range – 7.5ft/s – 20ft/s
- Momentum flux ratio – Not Applicable
- Exit temperature range – See Air Hygiene report Appendix B
- Weather condition - See Air Hygiene report Appendix B

Specified Testing Conclusion for Model COMB 48:

- The device was tested with no visible emission
- The device was tested with less than 10 ppmvw average as propane corrected to 3 percent carbon dioxide
- The device was tested with less than 10 ppmvd average as carbon monoxide corrected to 3 percent carbon dioxide
- The device was tested with higher than 150 percent excess air
- The device was tested with higher than 95 percent destruction efficiency for VOC

STACK EMISSIONS STUDY
EPA 40 CFR PART 60 SUBPART OOOO
FOR THE
COMBUSTION DEVICE COMB 48 MODEL
PREPARED FOR
COYOTE NORTH USA, INC.
AT THE
ENID FACILITY
ENID, OKLAHOMA
SEPTEMBER 27-30, 2016

Corporate Headquarters
1600 W Tacoma Street
Broken Arrow, Oklahoma 74012

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Prepared and Reviewed by:

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Sr. Regional Manager- Shreveport, LA

Eric Poythress, QSTI
Test Manager

I, _____
Min Sum Lee, QSTI
Project Manager
certify that this testing was conducted and this report was created in conformance with the requirements of ASTM D7036

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Stack Emissions Study
Combustion Device COMB 48 Model
Coyote North USA, INC.
Enid Facility
Enid, Oklahoma
September 27-30, 2016

1.0 INTRODUCTION

Air Hygiene International, Inc. (Air Hygiene) has completed the Stack Emissions Study for carbon monoxide (CO), total hydrocarbons (THC), flow, visible emission (VE), moisture (H_2O), carbon dioxide (CO_2), and oxygen (O_2) from the exhaust of the Combustion Device COMB 48 Model for Coyote North USA, INC. at the Enid Facility near Enid, Oklahoma. This report details the background, results, process description, and the sampling/analysis methodology of the stack sampling survey conducted on September 27-30, 2016.

1.1 TEST PURPOSE AND OBJECTIVES

The purpose of the test was to conduct compliance emission test to document levels of selected pollutants at four ramp-up ramp-down test loads (0-30-0%, 30-70-30%, 70-100-70%, and 90-100%). The information will be used to confirm compliance with United States Code of Federal Regulations (CFR), Title 40 (40 CFR), Part 60 (40 CFR 60), Subpart OOOO. The specific objective was to determine the emission concentration of CO, THC, flow, VE, H_2O, CO_2, and O_2 from the exhaust of Coyote North USA, INC.'s Combustion Device COMB 48 Model.

1.2 SUMMARY OF TEST PROGRAM

The following list details pertinent information related to this specific project:

1.2.1 Participating Organizations
- Environment Protection Agency (EPA)
- Coyote North USA, INC.
- Air Hygiene

1.2.2 Industry
- Natural Gas Transport and Processing

1.2.3 Federal Requirements
- 40 CFR 60, Subpart OOOO

1.2.4 Plant Location
- Enid Facility near Enid, Oklahoma
  - 1411 West Chestnut Avenue, Enid Oklahoma 73702

1.2.5 Equipment Tested
- Combustion Device COMB 48 Model

1.2.6 Emission Points
- For all gases, three sample points in the exhaust duct from the Combustion Device COMB 48 Model, determined according 40 CFR 60 Subpart OOOO
- For all moisture, flow and fixed gas testing, 24 sampling points in the exhaust duct from the Combustion Device COMB 48 Model
- For visual emission, one sample visual observation point from the exit of the exhaust duct to the atmosphere from the Combustion Device COMB 48 Model

1.2.7 Emission Parameters Measured

- CO
- THC
- Flow
- VE
- H_2O
- CO_2
- O_2

1.2.8 Dates of Emission Test

- September 27-30, 2016

1.2.9 Federal and State Certifications

- Stack Testing Accreditation Council AETB Certificate No. 3796.02
- International Standard ISO/IEC 17025:2005 Certificate No. 3796.01

1.3 KEY PERSONNEL

Coyote North USA, INC.:	Brent Willey (brent.willey@coyotenorth.ca)	780-357-8913
Alturex, LLC	Jason Wells	405-328-0585
Air Hygiene:	Min Sum Lee (mlee@airhyiene.com)	918-307-8865
Air Hygiene:	Raj Kumar	918-307-8865
Air Hygiene:	Taylor Williams	918-307-8865

2.0 SUMMARY OF TEST RESULTS

Results from the sampling conducted on Coyote North USA, INC.'s Combustion Device COMB 48 Model located at the Enid Facility on September 27-30, 2016 are summarized in the following tables and relate only to the items tested.

TABLE 2.1
COMB 48 0-30-0 LOAD DATA SUMMARY

Parameter	0-30-0 Load, Run - COMB 48 R1	0-30-0 Load, Run - COMB 48 R2	0-30-0 Load, Run - COMB 48 R3	Average
Date (mm/dd/yy)	09/27/16	09/27/16	09/27/16	--
Start Time (hh:mm:ss)	11:16:20	13:14:20	14:36:20	--
End Time (hh:mm:ss)	12:26:20	14:24:20	15:46:20	--
Run Duration (min / run)	71	70	70	70
Bar. Pressure (in. Hg)	28.78	28.71	28.87	28.79
Amb. Temp. (°F)	73	87	90	83
Rel. Humidity (%)	50	31	26	36
Spec. Humidity (lb water / lb air)	0.009030	0.008816	0.008074	0.008640
Wind Speed (mph)	5.0	7.0	8.0	6.7
Wind Direction (--)	NW	SW	SE	--
Inlet Gas Canister Pressure Start (inHg)	-28.96	-18.53	-10.42	--
Inlet Gas Canister Pressure Stop (inHg)	-18.53	-10.42	0.46	--
Gross Fuel Heating Value (Btu/ft3)	2,554	2,554	2,554	2,554
Stack Flow (M2) (dscfh)	92,504	92,742	91,640	92,295
Stack Moisture (Method 4)	4.6	4.2	4.7	4.5
Gross Fuel Heating Value (Btu/ft^3)	2,553.7	2,553.7	2,553.7	2,553.70
Average Inlet Fuel Flowrate (SCFH)	1,496.2	1,468.9	1,490.2	1,485.11
Average Inlet Mass Fuel Flowrate (lb/hr)	173.8	170.6	173.1	172.49
% Excess Air	341.5	361.5	268.0	323.67
CO_2 (%) - Modified method 3C	3.88	3.71	4.45	4.01
O_2 (%) - Modified Method 3C	16.30	16.50	15.40	16.07
N_2 (%) - Modified Method 3C	79.82	79.79	80.10	79.90
Visual Emission (mm:ss)	0:00	0:00	0:00	0.00
CO (ppmvd)	1.77	1.37	1.14	1.43
CO (ppm@3%CO_2)	1.37	1.10	0.77	1.08
THC (ppmvw)	0.16	0.63	0.69	0.49
THC (ppm@3%CO_2)	0.12	0.51	0.47	0.37
THC (lb/hr)	0.00	0.01	0.01	0.01
VOC Destruction Efficiency (%)	99.999	99.996	99.992	99.996

TABLE 2.2
COMB 48 30-70-30 LOAD DATA SUMMARY

Parameter	30-70-30 Load, Run - COMB 48 R4	30-70-30 Load, Run - COMB 48 R5	30-70-30 Load, Run - COMB 48 R6	Average
Date (mm/dd/yy)	09/27/16	09/28/16	09/28/16	--
Start Time (hh:mm:ss)	16:10:20	8:55:20	10:38:20	--
End Time (hh:mm:ss)	17:20:20	10:05:20	11:48:20	--
Run Duration (min / run)	71	70	71	71
Bar. Pressure (in. Hg)	28.64	28.69	28.70	28.68
Amb. Temp. (°F)	86	68	78	77
Rel. Humidity (%)	29	54	43	42
Spec. Humidity (lb water / lb air)	0.007998	0.008192	0.009147	0.008446
Wind Speed (mph)	7.0	2.0	8.0	5.7
Wind Direction (--)	SW	NW	N	--
Inlet Gas Canister Pressure Start (inHg)	-28.90	-19.00	-11.33	-19.74
Inlet Gas Canister Pressure Stop (inHg)	-19.00	-11.33	-0.41	-10.25
Gross Fuel Heating Value (Btu/ft3)	2,549	2,549	2,549	2,549
Stack Flow (M2) (dscfh)	164,561	307,532	312,267	261,453
Stack Moisture (Method 4)	5.3	5.5	5.4	5.4
Gross Fuel Heating Value (Btu/ft^3)	2,548.9	2,548.9	2,548.9	2,548.90
Average Inlet Fuel Flowrate (SCFH)	3,362.8	3,504.3	3,459.8	3,442.31
Average Inlet Mass Fuel Flowrate (lb/hr)	390.6	407.0	401.8	399.80
% Excess Air	341.5	278.3	244.6	288.17
CO_2 (%) - Modified method 3C	3.88	4.08	4.32	4.09
O_2 (%) - Modified Method 3C	16.30	15.60	15.10	15.67
N_2 (%) - Modified Method 3C	79.82	80.32	80.58	80.24
Visual Emission (mm:ss)	0:00	0:00	0:00	0:00
CO (ppmvd)	2.27	2.38	3.67	2.77
CO (ppm@3%CO_2)	1.76	1.75	2.55	2.02
THC (ppmvw)	1.08	0.14	0.32	0.52
THC (ppm@3%CO_2)	0.84	0.10	0.22	0.39
THC (lb/hr)	0.02	0.01	0.01	0.01
VOC Destruction Efficiency (%)	99.995	99.999	99.997	99.997

TABLE 2.3
COMB 48 70-100-70 LOAD DATA SUMMARY

Parameter	70-100-70 Load, Run - COMB 48 R7	70-100-70 Load, Run - COMB 48 R8	70-100-70 Load, Run - COMB 48 R9	Average
Date (mm/dd/yy)	09/29/16	09/29/16	09/29/16	--
Start Time (hh:mm:ss)	7:37:22	14:50:22	16:15:22	--
End Time (hh:mm:ss)	8:47:22	16:00:22	17:25:33	--
Run Duration (min / run)	71	70	71	71
Bar. Pressure (in. Hg)	29.05	28.98	28.95	28.99
Amb. Temp. (°F)	53	73	71	66
Rel. Humidity (%)	56	40	40	45
Spec. Humidity (lb water / lb air)	0.004896	0.007110	0.006647	0.006218
Wind Speed (mph)	5.0	8.0	7.0	6.7
Wind Direction (--)	NW	NW	NW	--
Inlet Gas Canister Pressure Start (inHg)	-28.68	-17.81	-9.77	--
Inlet Gas Canister Pressure Stop (inHg)	-17.81	-9.77	0.44	--
Gross Fuel Heating Value (Btu/ft3)	2,465	2,465	2,465	2,465
Stack Flow (M2) (dscfh)	198,047	218,657	256,050	224,251
Stack Moisture (Method 4)	4.8	5.5	5.0	5.1
Gross Fuel Heating Value (Btu/ft^3)	2,465.3	2,465.3	2,465.3	2,465.30
Average Inlet Fuel Flowrate (SCFH)	132,204.3	5,478.1	5,387.7	47,690.00
Average Inlet Mass Fuel Flowrate (lb/hr)	15,283.7	636.2	572.5	5,497.51
% Excess Air	239.1	304.3	288.7	277.36
CO_2 (%) - Modified method 3C	4.42	4.08	4.23	4.24
O_2 (%) - Modified Method 3C	15.00	15.90	15.70	15.53
N_2 (%) - Modified Method 3C	80.58	80.02	80.07	80.22
Visual Emission (mm:ss)	0:00	0:00	0:00	0:00
CO (ppmvd)	2.58	2.61	1.84	2.34
CO (ppm@3%CO_2)	1.75	1.92	1.30	1.66
THC (ppmvw)	0.23	1.03	0.08	0.45
THC (ppm@3%CO_2)	0.15	0.76	0.06	0.32
THC (lb/hr)	0.01	0.03	0.00	0.01
VOC Destruction Efficiency (%)	99.999	99.996	99.999	99.998

TABLE 2.4
COMB 48 90-100 LOAD DATA SUMMARY

Parameter	90-100 Load, Run - COMB 48 R10	90-100 Load, Run - COMB 48 R11	90-100 Load, Run - COMB 48 R12	Average
Date (mm/dd/yy)	09/30/16	09/30/16	09/30/16	--
Start Time (hh:mm:ss)	7:42:13	9:13:13	12:50:13	--
End Time (hh:mm:ss)	8:52:13	10:23:13	14:00:13	--
Run Duration (min / run)	71	70	71	71
Bar. Pressure (in. Hg)	28.93	28.94	28.88	28.92
Amb. Temp. (°F)	61	66	80	69
Rel. Humidity (%)	66	53	39	53
Spec. Humidity (lb water / lb air)	0.007738	0.007522	0.008714	0.007991
Wind Speed (mph)	1.5	1.0	3.0	1.8
Wind Direction (--)	NW	NE	NE	--
Inlet Gas Canister Pressure Start (inHg)	-29.13	-17.94	-9.54	--
Inlet Gas Canister Pressure Stop (inHg)	-17.94	-9.54	-0.55	--
Gross Fuel Heating Value (Btu/ft3)	2,549	2,549	2,549	2,549
Stack Flow (M2) (dscfh)	211,927	211,829	211,195	211,650
Stack Moisture (Method 4)	5.4	4.9	4.7	5.0
Gross Fuel Heating Value (Btu/ft^3)	2,548.6	2,548.6	2,548.6	2,548.60
Average Inlet Fuel Flowrate (SCFH)	5,894.9	5,904.1	5,928.9	5,909.29
Average Inlet Mass Fuel Flowrate (lb/hr)	684.7	681.8	688.6	685.01
% Excess Air	313.0	359.6	383.6	352.05
CO_2 (%) - Modified method 3C	4.03	3.62	3.55	3.73
O_2 (%) - Modified Method 3C	16.00	16.50	16.70	16.40
N_2 (%) - Modified Method 3C	79.97	79.88	79.75	79.87
Visual Emission (mm:ss)	0:00	0:00	0:00	0:00
CO (ppmvd)	2.58	2.01	2.41	2.33
CO (ppm@3%CO_2)	1.92	1.67	2.03	1.87
THC (ppmvw)	0.18	0.25	0.19	0.21
THC (ppm@3%CO_2)	0.13	0.21	0.16	0.17
THC (lb/hr)	0.00	0.01	0.00	0.01
VOC Destruction Efficiency (%)	99.999	99.999	99.999	99.999

The results of all measured pollutant emissions were below the required limits. All testing was performed without any real or apparent errors. All testing was conducted according to the requirement of 40 CFR 60.5413 and 40 CFR 60.5412 without any alterations.

3.0 SOURCE OPERATION

3.1 PROCESS DESCRIPTION

Coyote North USA Inc. (Coyote) owns and operates the Enid Facility located at in Enid, Oklahoma. Coyote designs and manufactures a wide range of well head production equipment, emission control devices, miscellaneous pressure vessels, and provides field services and technical support for these and other oil field requirements. The interest of this test report is Combustion Device COMB 48 Model.

3.2 SAMPLING LOCATION

The sample ports were located approximately 16.7 feet above grade level on the exhaust system. The stack had a 47 inches inner diameter and was equipped with four, 3 inch ports oriented at 90 degrees. The ports were 4.24 duct diameters downstream from the flare tip and 1.02 duct diameters upstream from the stack exit to the atmosphere. THC and CO samples for gaseous emissions were continuously drawn from the exhaust system at one sample port with three sampling points located at 16.7 percent, 50 percent, and 83.3 percent of the stack diameter. All visual emission observation was made by viewing the point where the exhaust system exited to the atmosphere at the top of the exhaust stack. All fuel sampling was continuously drawn from the fuel supply system with silonite-coated stainless steel evacuated canister from a tap located at 8 pipe diameter, 24 inches upstream of the fuel monitoring system. All flow, fixed gases and moisture sampling was continuously drawn from the exhaust system at two ports with 24 points across the stack according to Method 1.

4.0 SAMPLING AND ANALYTICAL PROCEDURES

4.1 TEST METHODS

The emission test on the Combustion Device COMB 48 Model at the Enid Facility was performed following United States Environmental Protection Agency (EPA) methods described by the Code of Federal Regulations (CFR). Table 4.1 outlines the specific methods performed on September 27-30, 2016.

TABLE 4.1
SUMMARY OF SAMPLING METHODS

Pollutant or Parameter	Sampling Method	Analysis Method
Sample Point Location	EPA Method 1	Equal Area Method
Stack Flow Rate	EPA Method 2	S-Type Pitot Tube
Fuel Flow Rate	EPA Method 2A	Volume Displacement
CO_2, O_2, Methane	EPA Method 3C	Gas Chromatograph-TCD
Stack Moisture Content	EPA Method 4	Gravimetric Analysis
Carbon Monoxide	EPA Method 10	Nondispersive Infrared Analyzer
Visual Emission	EPA Method 22	Visual Observation

Pollutant or Parameter	Sampling Method	Analysis Method
Total Hydrocarbons	EPA Method 25a	Flame Ionization Detector
Fuel Content Analysis	ASTM D 1945-03, ASTM D 3588-98	Gas Chromatograph

4.2 INSTRUMENT CONFIGURATION AND OPERATIONS FOR GAS ANALYSIS

The sampling and analysis procedures used during these tests conform with the methods outlined in the Code of Federal Regulations (CFR), Title 40, Part 60, Appendix A, Methods 1, 2, 2A, 3C 4, 10, 22, 25A, ASTM D1945-03, and ASTM D3588-98 .

Figure 4.1 depicts the sample system used for the real-time gas analyzer tests. The gas sample was continuously pulled through the probe and transported, via heat-traced Teflon® tubing, to a stainless steel minimum-contact condenser designed to dry the sample. Transportation of the sample, through Teflon® tubing, continued into the sample manifold within the mobile laboratory via a stainless steel/Teflon® diaphragm pump. From the manifold, the sample was partitioned to the real-time analyzers through rotameters that controlled the flow rate of the sample. Exhaust samples were routed to the wet based analyzer prior to gas conditioning.

Figure 4.1 shows that the sample system was also equipped with a separate path through which a calibration gas could be delivered to the probe and back through the entire sampling system. This allowed for convenient performance of system bias checks as required by the testing methods.

All instruments were housed in an air-conditioned, trailer-mounted mobile laboratory. Gaseous calibration standards were provided in aluminum cylinders with the concentrations certified by the vendor. EPA Protocol No. 1 was used to determine the cylinder concentrations where applicable (i.e. NOx calibration gases).

Table 4.2 provides a description of the analyzers used for the instrument portion of the tests. All data from the continuous monitoring instruments were recorded on a Logic Beach Portable Data Logging System which retrieves calibrated electronic data from each instrument every one second and reports an average of the collected data every 30 seconds. Data records can be found in Appendix A and B of this report.

Figure 4.2 represents the sample system used for moisture and flow testing. An inconel probe with an inconel 3/8 inches tubing, pitots tube and thermocouple were inserted into the sample ports of the stack to extract gas measurements from the emission stream through a glass impinger train. Flow rates were monitored with oil filled manometers and total sample volumes were measured with a dry gas meter. Tedlar bags were collected at the exit of this train.

Three test runs for each of the firing rate at 0-30-0 percent, 30-70-30 percent, 70-100-70 percent, and 90-100 percent (ramp up, ramp down) of approximately 65 minutes each were conducted on the Combustion Device COMB 48 Model for CO, THC, CO_2, and O_2.

Figure 4.3 represents the inlet sampling system in accordance with Method 2A, 40 CFR part 60 to measure inlet gas flow rate, pressure and temperature. Fuel sample was collected at 24 inches upstream from gas flow meter.

The stack gas analysis for O_2 and CO_2 concentrations was performed in accordance with procedures set forth in EPA Method 3C. The sample were collected in a tedlar bag and analyzed by GC-TCD at an offsite laboratory.

CO emission concentrations were quantified in accordance with procedures set forth in EPA Method 10. A continuous nondispersive infrared (NDIR) analyzer was used for this purpose.

THC emission concentrations were quantified in accordance with procedures set forth in EPA Method 25a. A continuous flame ionization (FID) analyzer was used for this purpose.

TABLE 4.2
ANALYTICAL INSTRUMENTATION

Parameter	Manufacturer and Model	Range	Sensitivity	Detection Principle
CO	THERMO 48C	User may select up to 10,000 ppm	0.1 ppm	Infrared absorption, gas filter correlation detector, microprocessor based linearization.
THC	THERMO 51	User may select up to 10,000 ppm	0.1 ppm	Flame Ionization Detector

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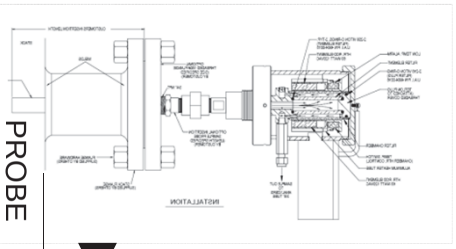


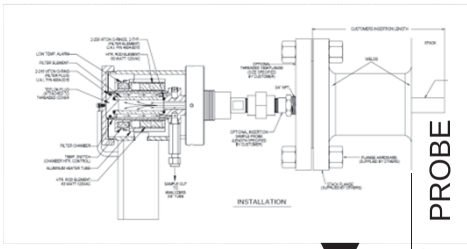
PROBE

HEATED PROBE FILTER

LEGEND

- Heated Teflon Tubing (pre-conditioned sample)
- Unheated Teflon Tubing (conditioned sample)
- Diluted Calibration Gas
- Calibration Gas
- Electronic Input/Output

HEATED PROBE FILTER



PROBE

PROCESS INLET OR 2ND STACK

dual line heated sample umbilical

TEST TRAILER EXTERIOR

TEST TRAILER INTERIOR

DATA RECORDER

COMPUTER

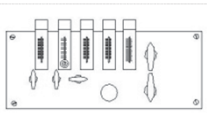
GAS CONDITIONER

STACK EXHAUST

dual line heated sample umbilical

MOBILE SECONDARY ANALYZERS

MANIFOLD



GAS DILUTER

THC, VOC

HOT/WET ANALYZERS

COLD/DRY ANALYZERS

O_2, CO_2, NOx, CO, SO_2

COLD/DRY ANALYZERS HOT/WET

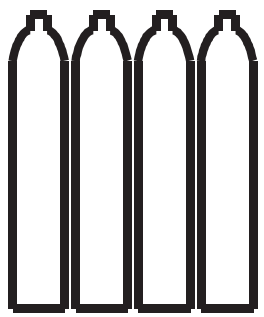
O_2, CO_2, NOx, CO, SO_2

THC, VOC

CONDITIONER

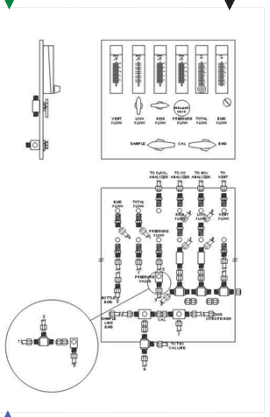
VENT

CALIBRATION/ BIAS GAS BOTTLES



VENT

FIXED PRIMARY ANALYZERS



FLOW CONTROL MANIFOLD

FTIR

Shown fully equipped. Some labs may not contain these features and others may contain additional features specific to certain scopes.

AIR HYGIENE

Figure 4.1
EMISSIONS TESTING LAB

1600 W Tacoma Street
Broken Arrow, Oklahoma 74012
www.airhygiene.com
(888) 461-8778

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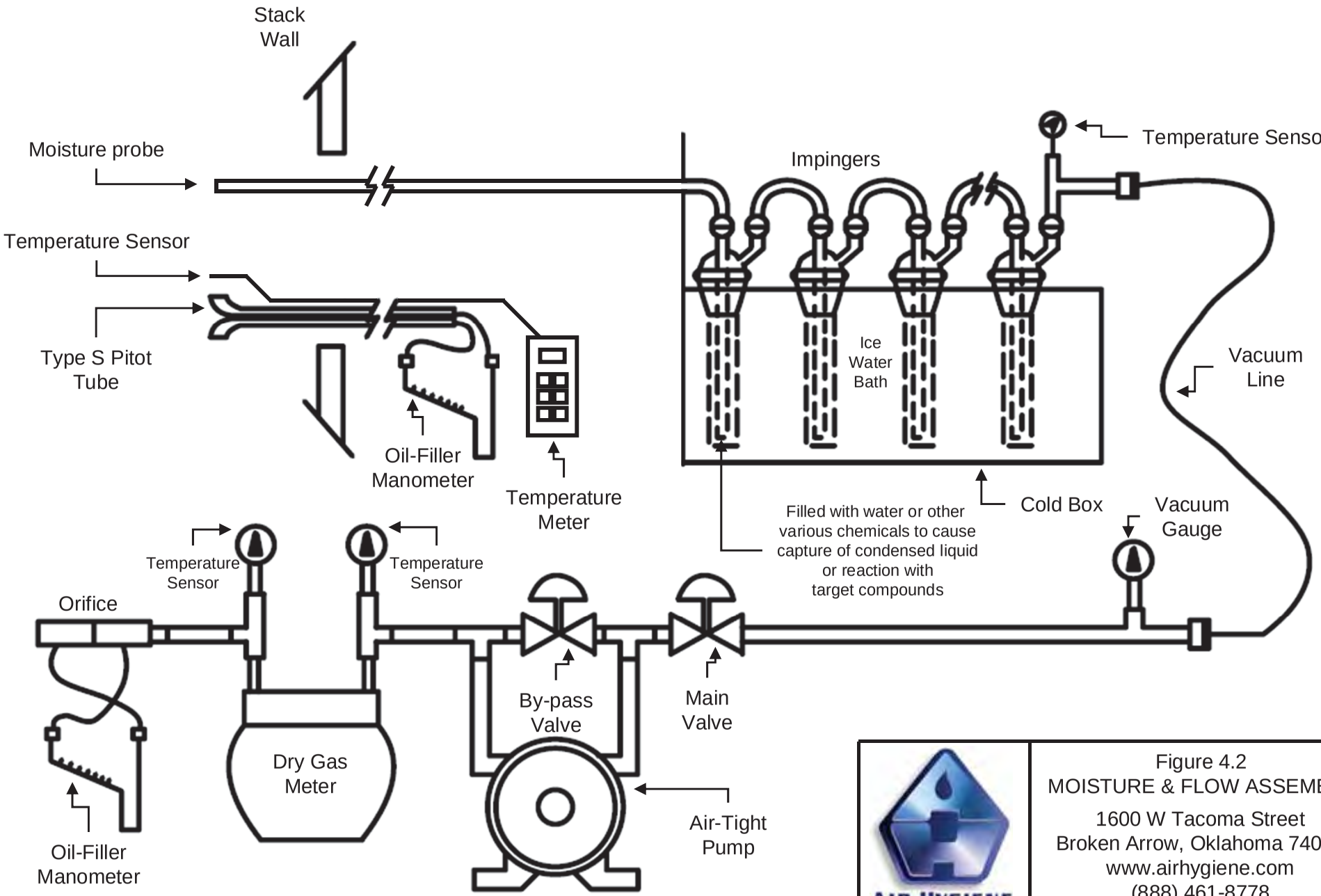

Figure 4.2
MOISTURE & FLOW ASSEMBLY

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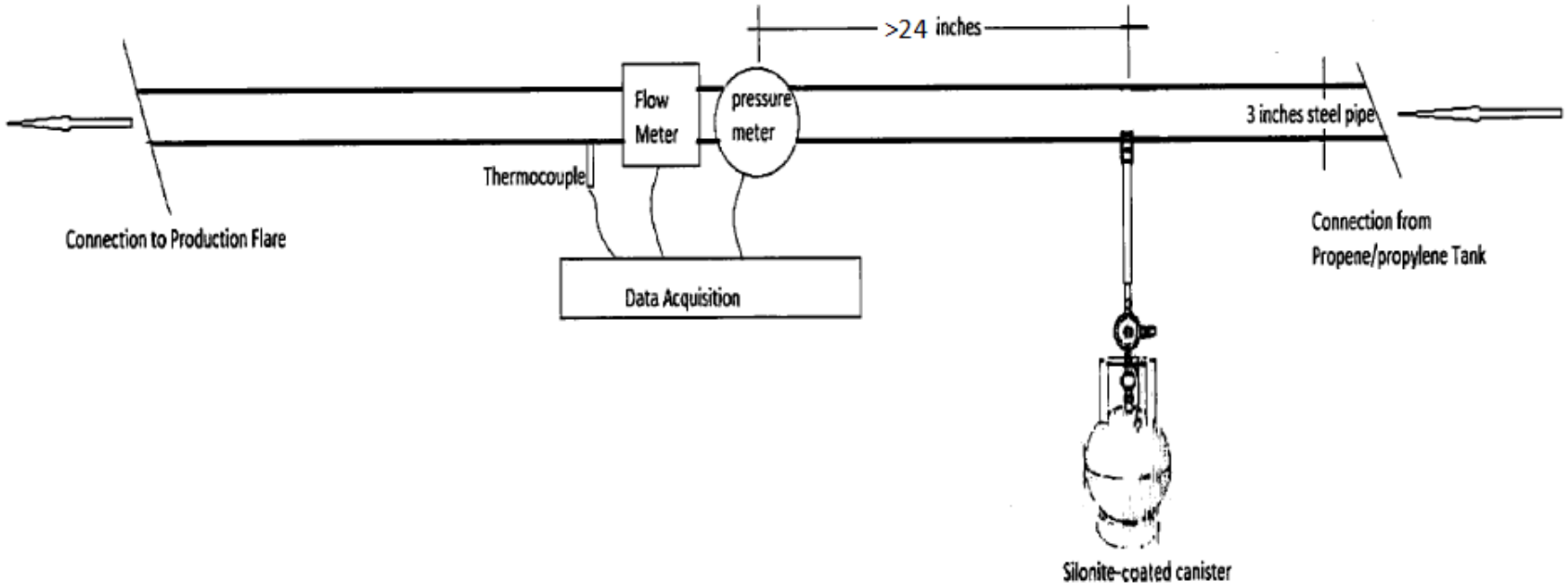
(888) 461-8778



AIR HYGIENE

Figure 4.3

FUEL SAMPLING SETUP

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APPENDIX A

TEST RESULTS AND CALCULATIONS

TABLE A.1:
EMISSIONS TESTING SCHEDULE

Unit	Load	Test Type	Run	Date	Start	Stop	Time Sync
COMB 48	0-30-0	CO,THC & Fuel Sampling	COMB 48 R1	09/27/16	11:16:20	12:26:20	CDT
COMB 48	0-30-0	CO,THC & Fuel Sampling	COMB 48 R2	09/27/16	13:14:20	14:24:20	CDT
COMB 48	0-30-0	CO,THC & Fuel Sampling	COMB 48 R3	09/27/16	14:36:20	15:46:20	CDT
COMB 48	30-70-30	CO,THC & Fuel Sampling	COMB 48 R4	09/27/16	16:10:20	17:20:20	CDT
COMB 48	30-70-30	CO,THC & Fuel Sampling	COMB 48 R5	09/28/16	8:55:20	10:05:20	CDT
COMB 48	30-70-30	CO,THC & Fuel Sampling	COMB 48 R6	09/28/16	10:38:20	11:48:20	CDT
COMB 48	70-100-70	CO,THC & Fuel Sampling	COMB 48 R7	09/29/16	7:37:22	8:47:22	CDT
COMB 48	70-100-70	CO,THC & Fuel Sampling	COMB 48 R8	09/29/16	14:50:22	16:00:22	CDT
COMB 48	70-100-70	CO,THC & Fuel Sampling	COMB 48 R9	09/29/16	16:15:22	17:25:33	CDT
COMB 48	90-100	CO,THC & Fuel Sampling	COMB 48 R10	09/30/16	7:42:13	8:52:13	CDT
COMB 48	90-100	CO,THC & Fuel Sampling	COMB 48 R11	09/30/16	9:13:13	10:23:13	CDT
COMB 48	90-100	CO,THC & Fuel Sampling	COMB 48 R12	09/30/16	12:50:13	14:00:13	CDT
COMB 48	0-30-0%	Fixed Gas & Moisture	0-30-0%-1	09/27/16	11:16	12:30	CDT
COMB 48	0-30-0%	Fixed Gas & Moisture	0-30-0%-2	09/27/16	13:14	14:25	CDT
COMB 48	0-30-0%	Fixed Gas & Moisture	0-30-0%-3	09/27/16	14:36	15:46	CDT
COMB 48	30-70-30%	Fixed Gas & Moisture	30-70-30%-1	09/27/16	16:10	17:22	CDT
COMB 48	30-70-30%	Fixed Gas & Moisture	30-70-30%-2	09/28/16	8:55	10:03	CDT
COMB 48	30-70-30%	Fixed Gas & Moisture	30-70-30%-3	09/28/16	10:38	11:50	CDT
COMB 48	70-100-70%	Fixed Gas & Moisture	70-100-70%-1	09/29/16	7:37	8:51	CDT
COMB 48	70-100-70%	Fixed Gas & Moisture	70-100-70%-2	09/29/16	14:50	16:02	CDT
COMB 48	70-100-70%	Fixed Gas & Moisture	70-100-70%-3	09/29/16	16:15	17:26	CDT
COMB 48	90-100%	Fixed Gas & Moisture	90-100%-1	09/30/16	7:42	8:52	CDT
COMB 48	90-100%	Fixed Gas & Moisture	90-100%-2	09/30/16	9:13	10:23	CDT
EC48-2S	90-100%	Fixed Gas & Moisture	90-100%-3	09/30/16	12:50	14:00	CDT

EXAMPLE CALCULATIONS (INFORMATION)

Specific Humidity (RH_{sp})

Note: RHsp (gr/lb) calculated using temperature, relative humidity, and barometric pressure with psychrometric chart, psychrometric calculator, or built in psychrometric algorithm.

$$RH_{sp}(lb/lb) = \left[\left(\frac{gr}{lb}\right) \times \frac{lb}{7000\,gr}\right]$$

RH_{sp}= 63.21 gr / lb x 1 lb / 7000 gr = 0.009030 lb H_2O / lb Air

EXAMPLE CALCULATIONS (CALIBRATION)

Calibration Error and Estimated Point, RM 25A, THC Analyzer

RM 25A, (12-17-09), 8.4 Calibration Error Test. Immediately prior to the test series (within 2 hours of the start of the test), introduce zero gas and high-level calibration gas at the calibration valve assembly. Adjust the analyzer output to the appropriate levels, if necessary. Calculate the predicted response for the low-level and mid-level gases based on a linear response line between the zero and high-level response. Then introduce low-level and mid-level calibration gases successively to the measurement system. ... These differences must be less than 5 percent of the respective calibration gas value. (calc for THC analyzer mid gas, if applicable)

$$E_P = \frac{C_{Dir(H)} - C_{Dir(Z)}}{C_{V(H)} - C_{V(Z)}} \times C_{Dir(M)} + C_{Dir(Z)}$$

Eq. of a line y=mx+b

E_p = (8.42 ppm - -0.06 ppm) / (8.43 ppm - 0.00 ppm) x 5.01 ppm + -0.06 = 4.98 ppm

$$ACE = \left(\frac{C_{Dir} - C_V}{CS}\right) \times 100$$

Eq. 7E-1

ACE_{THC} = (4.95 ppm - 4.98 ppm) / 5.01 ppm x 100 = -0.62 %

EXAMPLE CALCULATIONS (BIAS, DRIFT, AND CORRECTED RAW AVERAGE)

System Bias

RM 7E, (12-17-09), 12.3 System Bias. For non-dilution systems, use Equation 7E-2 to calculate the system bias separately for the low-level and upscale calibration gases. (calc for THC analyzer upscale gas, Run 1 initial bias, if applicable)

$$SB = \left(\frac{C_S - C_{Dir}}{CS}\right) \times 100$$

Eq. 7E-2

SB = (2.89 ppm - 2.93 ppm) / 10.00 ppm x 100 = -0.40 %

Drift Assessment

RM 7E, (12-17-09), 12.5 Drift Assessment. Use Equation 7E-4 to separately calculate the low-level and upscale drift over each test run. (calc for THC analyzer upscale drift, Run 1, if applicable)

$$D = \left|SB_{final} - SB_i\right|$$

Eq. 7E-4

D = | 0.10 % - -0.40 % | = 0.50 %

Alternative Drift and Bias

RM 7E, (12-17-09), 13.2 / 13.3 System Bias and Drift. Alternatively, the results are acceptable if |Cs – Cdir| is ≤ 0.5 ppmv or if |Cs – Cv| is ≤ 0.5 ppmv (as applicable). (calc for THC analyzer initial upscale, Run 1, if applicable)

$$SB/D_{Alt} = \left|C_S - C_{Dir}\right|$$

Eq. Section 13.2 and 13.3

SB / D_{Alt} = | 2.89 ppm - 2.93 ppm | = 0.04 ppm

Bias Adjusted Average

RM 7E, (12-17-09), 12.6 Effluent Gas Concentration. For each test run, calculate Cavg, the arithmetic average of all valid THC concentration values (e.g., 1-minute averages). Then adjust the value of Cavg for bias, using Equation 7E-5b. (calc for THC analyzer, Run 1, if applicable)

$$C_{Gas} = \left(C_{Avg} - C_O\right) \times \left(\frac{C_{MA}}{C_M - C_O}\right)$$

Eq. 7E-5b

C_{Gas} = (0.10 ppm - -0.06 ppm) x (3.00 ppm / 2.92 ppm - -0.06 ppm) = 0.16 ppm

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

EXAMPLE CALCULATIONS (RUNS)

Diluent-Corrected Pollutant Concentration, CO_2 Based

Calculate the CO_2 corrected pollutant concentration, as follows: (calc for THC gas, Run 1, if applicable)

Uinsg Method 3C fixed gas analysis

$$C_{adj} = 0.16 \text{ ppm} \times \left(\frac{3.00\ \%}{3.81\ \%} \right) = 0.13 \text{ ppm@3\%CO}_2$$

EXAMPLE CALCULATIONS (RUNS)

Emissions Rate (lb/hr)

Calculation for pound per hour emission rate. Calculate, as follows: (calc for THC gas Run 1, if applicable)

$$E_{lb/hr} = \frac{C_{Gas}}{10^6} \times \frac{Q_S \times MW}{G}$$

$$E_{lb/hr} = \frac{0.16 \text{ ppm}}{10^6 \text{ ppm/part}} \times \frac{92{,}742 \text{ SCFH} \times 44.00 \text{ lb/lb-mol}}{385.23 \text{ SCF/lb-mol}} = \frac{0.002 \text{ lb}}{\text{hr}}$$

VOC Destruction Efficiency

Calculation for VOC destructtion Efficiency. Calculate, as follows: (calc for run 1, if applicable)

$$DE\% = \frac{173.776 - 0.002 \text{ lb/hr}}{173.776 \text{ lb/hr}} \times 100 = 99.999\ \%$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

RM 7E, (08-15-06), 12.1 Nomenclature. The terms used in the equations are defined as follows:

ACE = Analyzer calibration error, percent of calibration span.
B_{WS} = Moisture content of sample gas as measured by Method 4 or other approved method, percent/100.
C_{Avg} = Average unadjusted gas concentration indicated by data recorder for the test run.
C_D = Pollutant concentration adjusted to dry conditions.
C_{Dir} = Measured concentration of a calibration gas (low, mid, or high) when introduced in direct calibration mode.
C_{Gas} = Average effluent gas concentration adjusted for bias.
C_M = Average of initial and final system calibration bias (or 2-point system calibration error) check responses for the upscale calibration gas.
C_{MA} = Actual concentration of the upscale calibration gas, ppmv.
C_O = Average of the initial and final system calibration bias (or 2-point system calibration error) check responses from the low-level (or zero) calibration gas.
C_S = Measured concentration of a calibration gas (low, mid, or high) when introduced in system calibration mode.
C_{SS} = Concentration of NOx measured in the spiked sample.
C_{Spike} = Concentration of NOx in the undiluted spike gas.
C_{Calc} = Calculated concentration of NOx in the spike gas diluted in the sample.
C_V = Manufacturer certified concentration of a calibration gas (low, mid, or high).
C_W = Pollutant concentration measured under moist sample conditions, wet basis.
CS = Calibration span.
D = Drift assessment, percent of calibration span.
E_p = The predicted response for the low-level and mid-level gases based on a linear response line between the zero and high-level response.
Eff_{NO2} = NO_2 to NO converter efficiency, percent.
H = High calibration gas, designator.
L = Low calibration gas, designator.
M = Mid calibration gas, designator.
NOFinal = The average NO concentration observed with the analyzer in the NO mode during the converter efficiency test in Section 16.2.2.
NOxCorr = The NOx concentration corrected for the converter efficiency.
NOxFinal = The final NOx concentration observed during the converter efficiency test in Section 16.2.2.
NOxPeak = The highest NOx concentration observed during the converter efficiency test in Section 16.2.2.
Q_{Spike} = Flow rate of spike gas introduced in system calibration mode, L/min.
Q_{Total} = Total sample flow rate during the spike test, L/min.
R = Spike recovery, percent.
SB = System bias, percent of calibration span.
SB_i = Pre-run system bias, percent of calibration span.
SB_f = Post-run system bias, percent of calibration span.
SB / D_{Alt} = Alternative absolute difference criteria to pass bias and/or drift checks.
SCE = System calibration error, percent of calibration span.
SCE_i = Pre-run system calibration error, percent of calibration span.
SCE_{final} = Post-run system calibration error, percent of calibration span.
Z = Zero calibration gas, designator.

40CFR60.355(b)(1), (09-20-06), Nomenclature. The terms used in the equations are defined as follows:

P_r = reference combustor inlet absolute pressure at 101.3 kilopascals ambient pressure, mm Hg
P_o = observed combustor inlet absolute pressure at test, mm Hg
H_o = observed humidity of ambient air, g H_2O/g air
e = transcendental constant, 2.718
T_a = ambient temperature, K

RM 19, (07-29-06), 12.1 Nomenclature. The terms used in the equations are defined as follows:

AdjFactor = Percent oxygen or carbon dioxide adjustment applied to a target pollutant
B_{wa} = Moisture fraction of ambient air, percent.
Btu = British thermal unit
$\%_C$ = Concentration of carbon from an ultimate analysis of fuel, weight percent.
$\%_{CO2d}$,$\%_{CO2w}$ = Concentration of carbon dioxide on a dry and wet basis, respectively, percent.
CIP / CDP = Combustor inlet pressure / compressor discharge pressure (mm Hg); note, some manufactures reference as PCD.
E = Pollutant emission rate, ng/J (lb/million Btu).
E_a = Average pollutant rate for the specified performance test period, ng/J (lb/million Btu).
E_{ao}, E_{ai} = Average pollutant rate of the control device, outlet and inlet, respectively, for the performance test period, ng/J (lb/million Btu).
E_{bi} = Pollutant rate from the steam generating unit, ng/J (lb/million Btu).
E_{bo} = Pollutant emission rate from the steam generating unit, ng/J (lb/million Btu).
E_{ci} = Pollutant rate in combined effluent, ng/J (lb/million Btu).
E_{co} = Pollutant emission rate in combined effluent, ng/J (lb/million Btu).
E_d = Average pollutant rate for each sampling period (e.g.,24-hr Method 6B sample or 24-hr fuel sample) or for each fuel lot (e.g., amount of fuel bunkered), ng/J (lb/million Btu).
E_{di} = Average inlet SO_2 rate for each sampling period d, ng/J (lb/million Btu).
E_g = Pollutant rate from gas turbine, ng/J (lb/million Btu).
E_{ga} = Daily geometric average pollutant rate, ng/J (lbs/million Btu) or ppm corrected to 7 percent O_2.
E_{jo},E_{ji} = Matched pair hourly arithmetic average pollutant rate, outlet and inlet, respectively, ng/J (lb/million Btu) or ppm corrected to 7 percent O_2.
E_h = Hourly average pollutant, ng/J (lb/million Btu).
E_{hj} = Hourly arithmetic average pollutant rate for hour "j," ng/J (lb/million Btu) or ppm corrected to 7 percent O_2.
EXP = Natural logarithmic base (2.718) raised to the value enclosed by brackets.
Fc = Ratio of the volume of carbon dioxide produced to the gross calorific value of the fuel from Method 19
F_d, F_w, F_c = Volumes of combustion components per unit of heat content, scm/J (scf/million Btu).
ft^3 = cubic feet
G = ideal gas conversion factor
(385.23 SCF/lb-mol at 68 deg F & 14.696 psia)
GCM = gross Btu per SCF (constant, compound based)
GCV = Gross calorific value of the fuel consistent with the ultimate analysis, kJ/kg (Btu/lb).
GCV_p, GCV_r = Gross calorific value for the product and raw fuel lots, respectively, dry basis, kJ/kg (Btu/lb).
$\%_H$ = Concentration of hydrogen from an ultimate analysis of fuel, weight percent.
H_b = Heat input rate to the steam generating unit from fuels fired in the steam generating unit, J/hr (million Btu/hr).
H_g = Heat input rate to gas turbine from all fuels fired in the gas turbine, J/hr (million Btu/hr).
$\%_{H2O}$ = Concentration of water from an ultimate analysis of fuel, weight percent.
H_r = Total numbers of hours in the performance test period (e.g., 720 hours for 30-day performance test period).
K = volume of combustion component per pound of component (constant)
K = Conversion factor, 10^{-5} (kJ/J)/(%) [10^6 Btu/million Btu].
K_c = (9.57 scm/kg)/% [(1.53 scf/lb)/%].
K_{cc} = (2.0 scm/kg)/% [(0.321 scf/lb)/%].
K_{hd} = (22.7 scm/kg)/% [(3.64 scf/lb)/%].
K_{hw} = (34.74 scm/kg)/% [(5.57 scf/lb)/%].
K_n = (0.86 scm/kg)/% [(0.14 scf/lb)/%].
K_o = (2.85 scm/kg)/% [(0.46 scf/lb)/%].
K_s = (3.54 scm/kg)/% [(0.57 scf/lb)/%].
K_{sulfur} = $2x10^4$ Btu/wt%-MMBtu
K_w = (1.30 scm/kg)/% [(0.21 scf/lb)/%].
lb = pound
ln = Natural log of indicated value.
L_p,L_r = Weight of the product and raw fuel lots, respectively, metric ton (ton).
$\%_N$ = Concentration of nitrogen from an ultimate analysis of fuel, weight percent.
$M_{\%}$ = mole percent
mol = mole
MW = molecular weight (lb/lb-mol)
MW_{AIR} = molecular weight of air (28.9625 lb/lb-mole)[1]
NCM = net Btu per SCF (constant based on compound)
$\%_O$ = Concentration of oxygen from an ultimate analysis of fuel, weight percent.
$\%_{O2d}$, $\%_{O2w}$ = Concentration of oxygen on a dry and wet basis, respectively, percent.
P_B = barometirc pressure, in Hg
P_s = Potential SO2 emissions, percent.
$\%_S$ = Sulfur content of as-fired fuel lot, dry basis, weight percent.
S_e = Standard deviation of the hourly average pollutant rates for each performance test period, ng/J (lb/million Btu).
$\%_{Sf}$ = Concentration of sulfur from an ultimate analysis of fuel, weight percent.
S(wt%) = weight percent of sulfur, per lab analysis by appropriate ASTM standard
S_i = Standard deviation of the hourly average inlet pollutant rates for each performance test period, ng/J (lb/million Btu).
S_o = Standard deviation of the hourly average emission rates for each performance test period, ng/J (lb/million Btu).
$\%S_p$, $\%S_r$ = Sulfur content of the product and raw fuel lots respectively, dry basis, weight percent.
SCF = standard cubic feet
SH = specific humidity, pounds of water per pound of air
$t_{0.95}$ = Values shown in Table 19-3 for the indicated number of data points n.
T_{amb} = ambient temperature, ^oF
W/D Factor = 1.0236 = conv. at 14.696 psia and
68 deg F (ref. Civil Eng. Ref. Manual, 7th Ed.)
X_{CO2}=CO_2 Correction factor, percent.
X_k = Fraction of total heat input from each type of fuel k.

Calculations, Formulas, and Constants

The following information supports the spreadsheets for this testing project.

Given Data:

Ideal Gas Conversion Factor = 385.23 SCF/lb-mol at 68 deg F & 14.696 psia

Fuel Heating Value is based upon Air Hygiene's fuel gas calculation sheet. All calculations are based upon a correction to 68 deg F & 14.696 psia

High Heating Values (HHV) are used for the Fuel Heating Value, F-Factor, and Fuel Flow Data per EPA requirements.

ASTM D 3588

Molecular Weight of NOx (lb/lb-mole) =	46.01
Molecular Weight of CO (lb/lb-mole) =	28.00
Molecular Weight of SO_2 (lb/lb-mole) =	64.00
Molecular Weight of THC (propane) (lb/lb-mole) =	44.00
Molecular Weight of VOC (methane) (lb/lb-mole) =	16.00
Molecular Weight of NH_3 (lb/lb-mole) =	17.03
Molecular Weight of HCHO (lb/lb-mole) =	30.03

40CFR60, App. A., RM 19, Table 19-1

Conversion Constant for NOx =	0.0000001194351
Conversion Constant for CO =	0.0000000726839
Conversion Constant for SO_2 =	0.0000001661345
Conversion Constant for THC =	0.0000001142175
Conversion Constant for VOC (methane) =	0.0000000415336
Conversion Constant for NH_3 =	0.0000000442074
Conversion Constant for HCHO =	0.0000000779534

NOTE: units are lb/ppm*ft^3

Formulas:

1. Corrected Raw Average (C_{Gas}), 40CFR60, App. A, RM 7E, Eq. 7E-5 (08/15/06)

$$C_{Gas} = (C_{Avg} - C_O) \times \left(\frac{C_{MA}}{C_M - C_O} \right)$$

2. Correction to % O_2, 40CFR60, App. A, RM 20, Eq. 20-5 (11/26/02)

$$C_{adj} = C_{Gas(Target)} \times \left(\frac{20.9\% - AdjFactor}{20.9\% - C_{Gas(O2)}} \right)$$

3. Correction to % O_2 and ISO Conditions

$$C_{ISO} = C_{Adj} \times \sqrt{\frac{P_r}{P_o}} \times e^{(19 \times (H_O - 0.00633))} \times \left(\frac{288}{T_a} \right)^{1.53}$$

4. Method 19 stack exhaust flow (scfh)

$$Q_S = \left(\frac{FFactor \times Q_f \times HHV}{1{,}000{,}000} \right) \times \left(\frac{20.9\%}{20.9\% - C_{Gas(O2)}} \right)$$

5. Emission Rate in lb/hr

$$E_{lb/hr} = \frac{C_{Gas}}{10^6} \times \frac{Q_S \times MW}{G}$$

6. Emission Rate in tons per year

$$E_{ton/yr} = \frac{E_{lb/hr} \times hr_{year}}{2000}$$

7. Emission Concentration in lb/MMBtu (O_2 based)

$$E_{lb/MMBtu} = \frac{C_{Gas} \times F_d Factor \times Conv_C \times 20.9\%}{20.9\% - C_{Gas(O2)}}$$

8. Emission Concentration in g/hp*hr

$$E_{g/hp \cdot hr} = \frac{E_{lb/hr} \times 453.6}{mw \times 1314.022} \text{ or } \frac{E_{lb/hr} \times 453.6}{hp}$$

EXAMPLE CALCULATIONS (Reference Method 1 - Circular Stack)

Diameter of Stack (in.)

$$D(in.) = L_{fw} - L_{nw}$$

D (in.) = 54.72 in. - 7.50 in. = 47.22 in.

Stack Diameters Downstream

$$B_D(dia.) = \frac{B}{D}$$

B_D (dia.) = $\frac{200.00 \text{ in.}}{47.22 \text{ in.}}$ = 4.24 diameters

Area of Stack (ft^2)

$$A_s(ft^2) = \pi \times \left(\frac{D}{2 \times 12}\right)^2$$

A_s (ft^2) = 3.14 x ($\frac{47.22 \text{ in.}}{2 \times 12 \text{in./ft}}$)^2 = 12.16 ft^2

Stack Diameters Upstream

$$A_D(dia.) = \frac{A}{D}$$

A_D (dia.) = $\frac{48.00 \text{ in.}}{47.22 \text{ in.}}$ = 1.02 diameters

EXAMPLE CALCULATIONS (Reference Method 3C) [Values from Run 1 test]

Carbon Monoxide Concentration (%)

$$\%CO = \frac{ppmCO}{10{,}000}$$

%CO (%) = $\frac{0.00 \text{ ppm}}{10{,}000 \text{ ppm/\%}}$ = 0.0000 %

Nitrogen Concentration (%)

$$\%N_2 = 100 - \%CO_2 - \%O_2 - \%CO$$

$\%N_2$ (%) = 100 - 3.88 % - 16.30 % - 0.00 / 10,000 % = 79.82 %

Stack Dry Molecular Weight (lb/lb-mole)

$$M_d(lb/lb-mol) = \sum\left(\frac{MW_{comp}}{100} \times \%component\right)$$

M_d (lb/lb-mol) = ($\frac{44 \text{ lb/lb-mol}}{100}$ x 3.88 %) +

($\frac{32 \text{ lb/lb-mol}}{100}$ x 16.30 %) + ($\frac{28 \text{ lb/lb-mol}}{100}$ x [$\frac{0.00}{10{,}000}$ + 79.82]) = $\frac{29.27 \text{ lb}}{\text{lb-mol}}$

Stack Wet Molecular Weight (lb/lb-mole)

$$M_S(lb/lb-mol) = \left[M_d \times \left(1 - \frac{B_{WS}}{100}\right)\right] + \left[MW_{H_2O} \times \frac{B_{WS}}{100}\right]$$

M_S (lb/lb-mol) = { $\frac{29.27 \text{ lb}}{\text{lb-mol}}$ x (1 - $\frac{4.64 \text{ \%}}{100}$) } + { $\frac{18 \text{ lb}}{\text{lb-mol}}$ x $\frac{4.64 \text{ \%}}{100}$ } = $\frac{28.75 \text{ lb}}{\text{lb-mol}}$

Average Excess Air (%)

$$\%EA_{avg}(\%) = \frac{100 \times \left|(\%O_2)_{avg} - (0.5 \times (\%CO)_{avg})\right|}{(0.264 \times (N_2)_{avg}) - \left|(\%O_2)_{avg} - (0.5 \times (\%CO)_{avg})\right|}$$

$(\%EA)_{AVG}$ = $\frac{100 \text{ x } \{ \quad 16.30 \text{ \% - (0.5 x } 0.000 \text{ \%) } \}}{(\ 0.264 \text{ x } \ 79.82 \text{ \%}) - \{ \ 16.30 \text{ \% - (0.5 x } 0.000 \text{ \%)}\}}$ = 341.54 %

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

EXAMPLE CALCULATIONS (Reference Method 2) [Values from Run 1 test]

Absolute Stack Pressure (in. Hg)

$$P_S(in.Hg) = P_b + \frac{P_{static}}{13.6}$$

P_s (in. Hg) = 28.78 in. Hg + $\frac{0.00 \text{ in. } H_2O}{13.6 \text{ in. } H_2O/\text{in. Hg}}$ = 28.78 in. Hg

Average Stack Gas Velocity (ft/sec)

$$v_s(ft/\sec) = K_p \times C_p \times \left(\sqrt{\Delta p}\right)_{avg} \times \sqrt{\frac{(t_s)_{avg} + T_u}{P_s \times M_s}}$$

v_{sl} (ft/sec) =

$$\left(\frac{85.49 \text{ ft (lb/lb-mol)(in. Hg)}}{\sec \quad (^oR)(\text{in. } H_2O)}\right)^{1/2} \times 0.84 \times 0.07 \text{ in.} H_2O^{1/2} \times \sqrt{\frac{1173.96 + 460\ ^oR}{28.78 \text{ in. Hg} \times 28.75 \text{ lb/lb-mol}}} = \frac{7.1 \text{ ft}}{\sec}$$

Average Stack Dry Standard Flow Rate (dscfh)

$$Q_{sd}(dscfh) = \frac{60 \times 60 \times \left(1 - \frac{B_{ws}}{100}\right) \times v_s \times A_s \times T_{std} \times P_s}{(t_s + T_u) \times P_{std}}$$

Q_{sd} (dscf/hr) = $\frac{3600 \text{ sec}}{\text{hr}}$ x (1 - $\frac{4.64 \%}{100}$) x $\frac{7.13 \text{ ft}}{\sec}$ x 12.16 ft^2 x $\frac{68.00 + 460\ ^oR}{1{,}173.96 + 460\ ^oR}$ x $\frac{28.78 \text{ in. Hg}}{29.92 \text{ in. Hg}}$ = $\frac{92{,}504.24 \text{ dscf}}{\text{hr}}$

Average Stack Wet Flow Rate (acfm)

$$Q_{aw}(acfm) = 60 \times v_s \times A_s$$

Q_{aw} (acf/min) = $\frac{60 \text{ sec}}{\text{min}}$ x $\frac{7.13 \text{ ft}}{\sec}$ x 12.16 ft^2 = $\frac{5{,}201.24 \text{ acf}}{\text{min}}$

Average Stack Wet Standard Flow Rate (ascfh)

$$Q_{sw}(ascfh) = \frac{60 \times Q_{aw} \times T_{std} \times P_s}{(t_s + T_u) \times P_{std}}$$

Q_{sw} (ascf/hr) = $\frac{60 \text{ min}}{\text{hr}}$ x $\frac{5{,}201.24 \text{ acf}}{\text{min}}$ x $\frac{68.00 + 460\ ^oR}{1{,}173.96 + 460\ ^oR}$ x $\frac{28.78 \text{ in. Hg}}{29.92 \text{ in. Hg}}$ = $\frac{97{,}002.00 \text{ ascf}}{\text{hr}}$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

EXAMPLE CALCULATIONS (Reference Method 4) [Values from Run 1 test]

Water Volume Weighed (scf)

$$V_{wsg(std)}(scf) = W_t \times K_5$$

$V_{wsg(std)}$ = 46.00 g x 0.04715 ft^3/g = 2.170 scf

Standard Meter Volume (dscf)

$$V_{m(std)}(dscf) = \frac{K_1 \times Y \times V_m \times \left(P_b + \frac{\Delta H_{avg}}{13.6}\right)}{(t_m)_{avg} + T_u}$$

$$V_{m(std)} = \frac{17.65\ {}^{o}R / \text{in. Hg} \times 0.99 \times 48.13\ \text{dcf} \times (28.78\ \text{in. Hg} + 1.50\ \text{in. } H_2O / 13.6\ \text{in. } H_2O / \text{in. Hg})}{84.04\ {}^{o}F + 460\ {}^{o}R} = 44.61\ \text{dscf}$$

Calculated Moisture Content (%)

$$B_{ws(calc)}(\%) = 100 \times \frac{V_{wsg(std)}}{V_{wsg(std)} + V_{m(std)}}$$

$$B_{ws(calc)} = 100 \times \frac{2.17\ \text{dscf}}{2.17\ \text{dscf} + 44.61\ \text{dscf}} = 4.64\ \%$$

Saturated Moisture Content (%)

$$B_{ws(svp)}(\%) = 100 \times \frac{10^{\left(6.691 - \frac{3144}{t_{s(avg)} + 390.86}\right)}}{P_b + \frac{P_{static}}{13.6}} \leq 100$$

$$B_{ws(svp)} = 100 \times \frac{10^{\left(6.691 - \frac{3144}{1173.96\ {}^{o}F + 390.86}\right)}}{28.78\ \text{in. Hg} + \frac{0.00\ \text{in. } H_2O}{13.6\ \text{in. } H_2O / \text{in. Hg}}} \leq 100 = 100.00\ \%$$

Note: Lack of significant figures may cause rounding errors between actual calculations and example calculations.

Nomenclature

- %CO = carbon monoxide concentration (%)
- $\%CO_2$ = carbon dioxide concentration (%)
- $\%N_2$ = nitrogen concentration (%)
- $\%O_2$ = oxygen concentration (%)
- $\%O_{2,wet}$ = Oxygen content of gas stream, % by volume of wet gas. (Note: The oxygen percentage used in Method 201A, Equation 3 is on a wet gas basis. That means that since oxygen is typically measured on a dry gas basis, the measured percent O2 must be multiplied by the quantity (1 - B_{ws}) to convert to the actual volume fraction. Therefore, $\%O_{2,wet} = (1 - B_{ws}) * \%O_{2,\ dry}$)
- $(\%EA)_{avg}$ = average excess air (%)
- $(F_o)_{avg}$ = average calculated fuel factor
- $[(\Delta p)^{0.5}]_{avg}$ = Average of square roots of the velocity pressures measured during the preliminary traverse, inches W.C.
- μ = Gas viscosity, micropoise
- 12.0 = Constant calculated as 60 percent of 20.5 square inch cross-sectional area of combined cyclone head, square inches
- 17.03 = mg/milliequivalents for ammonium ion
- 22.4 = liters of ideal gas per mol of substance at 0^oC and 1 atm (ref. Civil Engineering Reference Manual, 7th ed. - Michael R. Lindeburg)
- 5.02×10^4 = constant derived from the molecular weight and correcting standard temperature and pressure (ref. Bay Area Air Quality Management District, Source Test Procedure ST-1B, Ammonia Integrated Sampling, Adopted January 20, 1982, Regulation 7-303)
- A = distance upstream (in.)
- A_D = stack diameters upstream (dia.)
- An = Area of nozzle, square feet
- A_s = area of stack (ft^2)
- B = distance downstream (in.)
- B_D = stack diameters downstream (dia.)
- b_f = Average blockage factor calculated in Equation 26, dimensionless
- B_{wm} = meter moisture content (%)
- B_{ws} = stack moisture content (%)
- C = Cunningham correction factor for particle diameter, Dp, and calculated using the actual stack gas temperature, dimensionless
- C_1 = -150.3162 (micropoise)
- C_2 = 18.0614 (micropoise/$K^{0.5}$) = 13.4622 (micropoise/$R^{0.5}$)
- $C_3 = 1.19183 \times 10^6$ (micropoise/K^2) = 3.86153×10^6 (micropoise/R^2)
- C_4 = 0.591123 (micropoise)
- C_5 = 91.9723 (micropoise)
- $C_6 = 4.91705 \times 10^{-5}$ (micropoise/K^2) = 1.51761×10^{-5} (micropoise/R^2)
- C_a = Acetone blank concentration, mg/mg
- C_b = Concentration of NH3 ion in the back half of train (breakthrough)
- C_f = Concentration of NH3 ion in the front half of train (main catch)
- C_{fPM10} = Conc. of filterable PM_{10}, gr/dscf
- $C_{fPM2.5}$ = Conc. of filterable $PM_{2.5}$, gr/dscf
- C_k = K Factor Constant, 849.8

Nomenclature

- C_n = nozzle diameter constant, 0.03575
- C_p' = Coefficient for the pitot used in the preliminary traverse, dimensionless
- C_p = Pitot coefficient for the combined cyclone pitot, dimensionless
- C_{cpm} = Concentration of the condensable PM in the stack gas, dry basis, corrected to standard conditions, milligrams/dry standard cubic foot.
- C_r = Re-estimated Cunningham correction factor for particle diameter equivalent to the actual cut size diameter and calculated using the actual stack gas temperature, dimensionless
- D_{50} = Particle cut diameter, micrometers
- $D_{50(N+1)}$ = D_{50} value for cyclone IV calculated during the N+1 iterative step, micrometers
- D_{50-1} = Re-calculated particle cut diameters based on re-estimated C_r, micrometers
- D_{50LL} = Cut diameter for cyclone I corresponding to the 2.25 micrometer cut diameter for cyclone IV, micrometer
- D_{50N} = D_{50} value for cyclone IV calculated during the Nth iterative step, micrometers
- D_{50T} = Cyclone I cut diameter corresponding to the middle of the overlap zone shown in Method 201A, Figure 10 of Section 17, micrometers
- D_e = equivalent stack diameter (in.)
- ΔH@ = ΔH @ 0.75 scfm (in. H2O)
- ΔH_{avg} = average orifice pressure (in. H_2O)
- D_n = Inner diameter of sampling nozzle mounted on Cyclone I, inches
- D_{na} = actual nozzle diameter (in.)
- D_p = Physical particle size, micrometers
- Δp = velocity head (in. H_2O)
- Δp_1 = velocity head at first current traverse point (in. H_2O)
- $\Delta p'_1$ = velocity head at first preliminary traverse point (in. H_2O)
- Δp_{avg} = average pitot tube differential pressure (in. H_2O)
- Δp_n = velocity head at subsequent current traverse point (in. H_2O)
- Δp_{RM2} = method 2 velocity head (in. H_2O)
- D_s = diameter of stack (in.)
- F_d = fuel f-factor (dscf/MMBtu)
- f_{O2} = stack gas fraction of O_2, by volume, dry basis
- I = Percent isokinetic sampling, dimensionless
- K_1 = standard volume correction, 17.65^oR/in. Hg
- K_4 = isokinetic conversion constant, 0.0945min•in.Hg/sec•^oR
- K_5 = water mass to std water vapor, 0.04715 ft^3/g
- K_p = 85.49, ((ft/sec)/(pounds/mole -^oR))
- L = length of stack (in.)
- L_{fw} = distance to far wall of stack (in.)
- L_{nw} = distance to near wall of stack (in.) [reference]
- $m_{\#x}$ = weight measurements (g)
- M_1 = Milligrams of PM collected on the filter, less than or equal to 2.5 micrometers
- M_2 = Milligrams of PM recovered from Container #2 (acetone blank corrected), greater than 10 micrometers
- M_3 = Milligrams of PM recovered from Container #3 (acetone blank corrected), less than or equal to 10 and greater than 2.5 micrometers

Nomenclature

- M_4 = Milligrams of PM recovered from Container #4 (acetone blank corrected), less than or equal to 2.5 micrometers
- m_a = Mass of residue of acetone after evaporation, mg
- m_c = Mass of the NH4+ added to sample to form ammonium sulfate, mg
- m_{cpm} = Mass of the total condensable PM, mg
- M_d = Molecular weight of dry gas, pounds/pound mole
- m_{fb} = Mass of total CPM in field train recovery blank, mg
- m_{fx} = final weight, avg of last two measurements (g)
- mg = Milligram
- mg/L = Milligram per liter
- m_i = Mass of inorganic CPM, mg
- m_{ib} = Mass of inorganic CPM in field train recovery blank, mg
- M_n = total particulates (mg)
- m_o = Mass of organic CPM, mg
- m_{ob} = Mass of organic CPM in field train blank, mg
- m_r = Mass of dried sample from inorganic fraction, mg
- m_{tx} = tare weight (g)
- MW = molecular weight (lb/lb-mole)
- M_w = Molecular weight of wet gas, pounds/pound mole
- N = Normality of ammonium hydroxide titrant
- N_a = null angle (deg.)
- N_{re} = Reynolds number, dimensionless
- N_{tp} = Number of iterative steps or total traverse points
- P_b = P_{bar} = barometric pressure (in. Hg)
- P_{bar} = barometric pressure (in. Hg)
- ppmCO = carbon monoxide concentration (ppm)
- ppmv = Parts per million by volume
- ppmw = Parts per million by weight
- P_s = absolute stack pressure (in. Hg)
- P_{static} = static pressure (in. H_2O)
- P_{std} = standard pressure, 29.92 in. Hg
- Θ = total sampling time (min)
- Q_{aw} = average stack wet flow rate (ascf/min)
- Q_I = Sampling rate for cyclone I to achieve specified D_{50}
- Q_m = estimated orifice flow rate, 0.750 acfm, else Vm/Q from previous run
- Q_s = Sampling rate for cyclone I to achieve specified D_{50}
- $Q_{s(std)}$ = total cyclone flow rate at standard conditions (dscf/min)
- Q_{sd} = dry standard stack flow rate (dscfm)
- Q_{sST} = Dry gas sampling rate through the sampling assembly, dscfm
- Q_{sw} = wet standard stack flow rate (ascfm)
- R_{max} = Nozzle/stack velocity ratio parameter, dimensionless
- R_{min} = Nozzle/stack velocity ratio parameter, dimensionless
- t_1 = Sampling time at point 1, min
- t_m = average gas meter temperature (^oF)

Nomenclature

- t_m = average meter temperature (^oF)
- T_m = Meter box and orifice gas temperature, ^oR
- t_n = Sampling time at point n, min
- t_r = Total projected run time, min
- T_s = Absolute stack gas temperature, ^oR
- T_{std} = standard temperature, 68^oF, 528^oR
- T_u = absolute temperature offset, 460^oR
- V_a = Volume of acetone blank, ml
- V_{aw} = Volume of acetone used in sample recovery wash, ml
- V_b = Volume of aliquot taken for IC analysis, ml
- V_c = Quantity of water captured in impingers and silica gel, ml
- V_f = final impinger volume (ml)
- V_i = initial impinger volume (ml)
- V_{ic} = Volume of impinger contents sample, ml
- V_m = Dry gas meter volume sampled, acf
- $V_{m(std)}$ = standard meter volume (dscf)
- v_{max} = Maximum gas velocity calculated from Equations 18 or 19, ft/sec
- v_{max} = maximum nozzle velocity (ft/sec)
- V_{mf} = final dry gas meter reading (dcf)
- V_{mi} = initial dry gas meter reading (dcf)
- v_{min} = Minimum gas velocity calculated from Method 201A, Equations 16 or 17, ft/sec
- V_{ms} = Dry gas meter volume sampled, corrected to standard conditions, dscf
- v_n = Sample gas velocity in the nozzle, ft/sec
- v_{org} = organics wash volume (ml)
- V_p = Volume of water added during train purge
- v_s = average stack gas velocity (ft/sec)
- v_{sl} = local velocity (ft/sec)
- V_t = total impinger volume (ml) = ;(V_f-V_i)
- V_t = Volume of NH4OH titrant, ml
- $V_{w(std)}$ = volume of water vapor in gas sample at standard conditions (scf)
- v_x = blank volume (ml)
- W = width of stack (in.)
- $W_{2,3,4}$ = Weight of PM recovered from Containers #2, #3, and #4, mg
- W_a = Weight of blank residue in acetone used to recover samples, mg
- W_f = final impinger weight (g)
- W_i = initial impinger weight (g)
- W_t = total impinger weight (g) = ;(W_f-W_i)
- w_x = blank weight of solids (g)
- Y = meter calibration factor (a.k.a gamma)
- Z = Ratio between estimated cyclone IV D_{50} values, dimensionless
- γ = Dry gas meter gamma value, dimensionless
- ΔH = Meter box orifice pressure drop, inches W.C.
- ΔH@ = Pressure drop across orifice at flow rate of 0.75 scfm at standard conditions, inches W.C. (Note: Specific to each orifice and meter box.)

Nomenclature

- Δp_1 = Velocity pressure measured at point 1, inches W.C.
- Δp_{avg} = Average velocity pressure, inches W.C.
- Δp_m = Observed velocity pressure using S-type pitot tube in preliminary traverse, inches W.C.
- Δp_{max} = Maximum velocity pressure, inches W.C.
- Δp_{min} = Minimum velocity pressure, inches W.C.
- Δp_n = Velocity pressure measured at point n during the test run, inches W.C.
- Δp_s = Velocity pressure calculated in Method 201a, Equation 25, inches W.C.
- Δp_{s1} = Velocity pressure adjusted for combined cyclone pitot tube, inches W.C.
- Δp_{s2} = Velocity pressure corrected for blockage, inches W.C.
- θ = Total run time, min
- ρ_a = Density of acetone, mg/ml (see label on bottle)
- Σ_n = total number of sampling points

APPENDIX B

EMISSION DATA RECORDS

Coyote North USA INC.

Air Permit # :	40 CFR 60 Sub Part OOOO
Plant Name or Location:	Enid Facility
Date:	September 27, 2016
Project Number:	coyote-16-enid.ok-comp#1
Manufacturer & Equipment:	COMB 48
Test Load:	Multiple
Tester(s) / Test Unit(s):	TW/MSL/RA/RK/210

		RUN											
	UNITS	**COMB 48 R1**	**COMB 48 R2**	**COMB 48 R3**	**COMB 48 R4**	**COMB 48 R5**	**COMB 48 R6**	**COMB 48 R7**	**COMB 48 R8**	**COMB 48 R9**	**COMB 48 R10**	**COMB 48 R11**	**COMB 48 R12**
Start Time	hh:mm:ss	11:16:20	13:14:20	14:36:20	16:10:20	08:55:20	10:38:20	07:37:22	14:50:22	16:15:22	07:42:13	09:13:13	12:50:13
End Time	hh:mm:ss	12:26:20	14:24:20	15:46:20	17:20:20	10:05:20	11:48:20	08:47:22	16:00:22	17:25:33	08:52:13	10:23:13	14:00:13
Bar. Pressure	in. Hg	28.78	28.71	28.87	28.64	28.69	28.70	29.05	28.98	28.95	28.93	28.94	28.88
Amb. Temp.	°F	73	87	90	86	68	78	53	73	71	61	66	80
Rel. Humidity	%	50	31	26	29	54	43	56	40	40	66	53	39
Spec. Humidity	lb water / lb air	0.009030	0.008816	0.008074	0.007998	0.008192	0.009147	0.004896	0.007110	0.006647	0.007738	0.007522	0.008714
Date	mm/dd/yy	09/27/16	09/27/16	09/27/16	09/27/16	09/28/16	09/28/16	09/29/16	09/29/16	09/29/16	09/30/16	09/30/16	09/30/16
Unit Number		COMB 48	COMB 48	COMB 48	COMB 48	COMB 48	COMB 48	COMB 48	COMB 48	COMB 48	COMB 48	COMB 48	COMB 48
Load Designator	%	0-30-0	0-30-0	0-30-0	30-70-30	30-70-30	30-70-30	70-100-70	70-100-70	70-100-70	90-100	90-100	90-100
Gross Fuel Heating Value	Btu/ft3	2,554	2,554	2,554	2,549	2,549	2,549	2,465	2,465	2,465	2,549	2,549	2,549
Stack Flow (M2)	dscfh	92,504	92,742	91,640	164,561	307,532	312,267	198,047	218,657	256,050	211,927	211,829	211,195
Stack Moisture	Method 4	4.64	4.21	4.71	5.29	5.50	5.37	4.83	5.45	4.95	5.35	4.92	4.73
Wind Speed	mph	5	7	8	7	2	8	5	8	7	2	1	3
Wind Direction	--	NW	SW	SE	SW	NW	N	NW	NW	NW	NW	NE	NE
CO_2 - Method 3C	%	3.88	3.71	4.45	3.88	4.08	4.32	4.42	4.08	4.23	4.03	3.62	3.55
O_2 - Method 3C	%	16.30	16.50	15.40	16.30	15.60	15.10	15.00	15.90	15.70	16.00	16.50	16.70
N_2 -Method 3C	%	79.82	79.79	80.10	79.82	80.32	80.58	80.58	80.02	80.07	79.97	79.88	79.75
Excess Air	%	341.54	361.48	267.99	341.54	278.35	244.61	239.12	304.29	288.68	312.98	359.61	383.56

METHOD 1 - ISOKINETIC TRAVERSE FOR A CIRCULAR SOURCE

Company	Leed Fabrication	**Date**	09/27/16
Plant Name	Enid Facility	**Project #**	coyote-16-enid.ok-comp#1
Equipment	COMB 48	**# of Ports Available**	2
Location	Ports	**# of Ports Used**	2

Circular Stack or Duct Diameter			
Distance to Far Wall of Stack	(L_{fw})	54.72	in.
Distance to Near Wall of Stack	(L_{nw})	7.50	in.
Diameter of Stack	(D)	47.22	in.
Area of Stack	(A_s)	12.16	ft^2

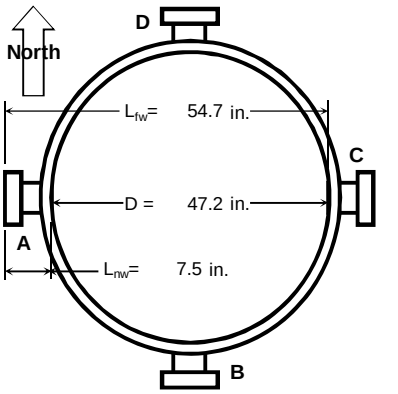
Distance from Disturbances to Port			
Distance Upstream	(A)	48.00	in.
Diameters Upstream	(A_D)	1.02	diameters
Distance Downstream	(B)	200.00	in.
Diameters Downstream	(B_D)	4.24	diameters

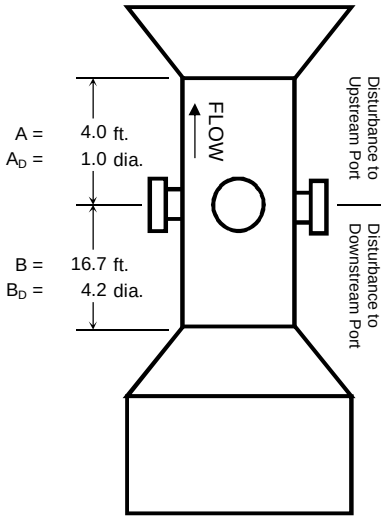
Number of Traverse Points Required					
Diameters to		**Minimum Number of**[1]		Minimum Number of	
Flow Disturbance		**Traverse Points**		Traverse Points	
Down (B_D)	**Up (A_D)**	**Particulate**	Velocity	Comp Stratification	
Stream	**Stream**	**Points**	Points	Criteria	Points
2.00-4.99	0.50-1.24	24	16	○ RM 7E 8.1.2	12 RM1 pts
5.00-5.99	1.25-1.49	20	16	◉ OOOO Req.	3 points
6.00-6.99	1.50-1.74	16	12		
7.00-7.99	1.75-1.99	12	12		
>= 8.00	>=2.00	8 or 12[2]	8 or 12[2]	Minimum Number of	
Upstream Spec		24	16	Traverse Points	
Downstream Spec		24	16	RATA Stratification	
Traverse Pts Required		24	16	Criteria	Points
				○ Part75/60	12 RM1 pts
				○ 75 abrv (a)	3 points
				○ 75 abrv (b)	6 points

[1] Check Minimum Number of Points for the Upstream and Downstream conditions, then use the largest.

[2] 8 for Circular Stacks 12 to 24 inches
12 for Circular Stacks over 24 inches

Number of Traverse Points Used				
2	**Ports by**	3	**Pts / port**	**Gas Sampling**
1	**Pts Used**	3	**Required**	





Traverse Point Locations			
Traverse Point Number	**Percent of Stack Diameter**	**Distance from Inside Wall**	**Distance Including Reference Length**
	%	in.	in.
1	16.7%	7 7/8	15 3/8
2	50.0%	23 5/8	31 1/8
3	83.3%	39 3/8	46 7/8
4			
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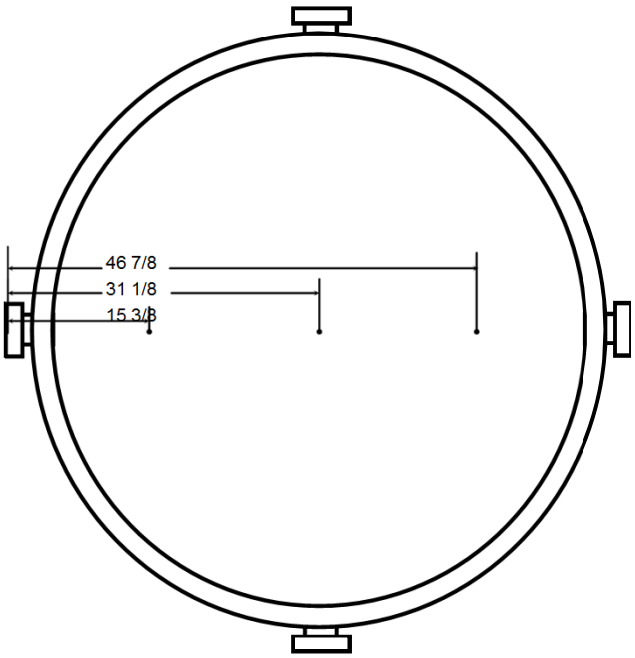
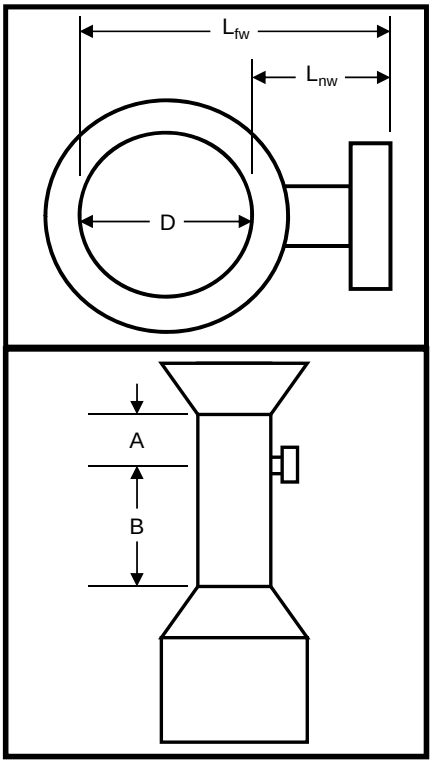


METHOD 1 - SAMPLE AND VELOCITY TRAVERSES FOR CIRCULAR SOURCES

Plant Name	Enid Facility	**Date**	09/27/16
Sampling Location	COMB 48	**Stack Type**	Circular
Operator	TW/RA	**Ports Available**	2
Project #	coyote-16-enid.ok-comp#1	**Ports Used**	2
Stack Size	Large (>24 inch diameter)	**Port ID (inches)**	3.00

Circular Stack or Duct Diameter			
Distance to Far Wall of Stack	(L_{fw})	54.72	in
Distance to Near Wall of Stack	(L_{nw})	7.50	in
Diameter of Stack	(D)	47.22	in
Area of Stack	(A_s)	12.16	ft^2

Distance from Port to Disturbances			
Distance Upstream	(A)	48.00	in
Diameters Upstream	(A_D)	1.02	diameters
Distance Downstream	(B)	200.00	in
Diameters Downstream	(B_D)	4.24	diameters



Number of Traverse Points Required			
Diameters to Flow Disturbance		**Minimum Number of[1] Traverse Points**	
Down Stream	**Up Stream**	**Particulate Points**	**Velocity Points**
2.00-4.99	0.50-1.24	24	16
5.00-5.99	1.25-1.49	20	16
6.00-6.99	1.50-1.74	16	12
7.00-7.99	1.75-1.99	12	12
>= 8.00	>=2.00	8 or 12[2]	8 or 12[2]
Upstream Spec		24	16
Downstream Spec		24	16
Traverse Pts Required		24	16

[1] Check Minimum Number of Points for the Upstream and Downstream conditions, then use the largest.

[2] 8 for Circular Stacks 12 to 24 inches
12 for Circular Stacks over 24 inches

◉ Method 1 Trav

○ 12 Point PM Trav (M201a ONLY)

○ Velocity

Number of Traverse Points Used			
2	**Ports by**	12	**Across**
24	**Pts Used**	24	**Required**

Location of Traverse Points in Circular Stacks									
Traverse	(Fraction of Stack Dimension from Inside Wall to Traverse Point)								
Point	Number of Traverse Points Across the Stack								
Number	2	4	6	8	10	12	14	16	18
1	.146	.067	.044	.032	.026	.021	.018	.016	.014
2	.854	.250	.146	.105	.082	.067	.057	.049	.044
3		.750	.296	.194	.146	.118	.099	.085	.075
4		.933	.704	.323	.226	.177	.146	.125	.109
5			.854	.677	.342	.250	.201	.169	.146
6			.956	.806	.658	.356	.269	.220	.188
7				.895	.774	.644	.366	.283	.236
8				.968	.854	.750	.634	.375	.296
9					.918	.823	.731	.625	.382
10					.974	.882	.799	.717	.618
11						.933	.854	.780	.704
12						.979	.901	.831	.764

Traverse Point Number	**Fraction of Stack Diameter**	**Distance from Inside Wall**	**Distance Including Reference Length**
		in	in
1	0.021	1	8 4/8
2	0.067	3 1/8	10 5/8
3	0.118	5 5/8	13 1/8
4	0.177	8 3/8	15 7/8
5	0.250	11 6/8	19 2/8
6	0.356	16 6/8	24 2/8
7	0.644	30 3/8	37 7/8
8	0.750	35 3/8	42 7/8
9	0.823	38 7/8	46 3/8
10	0.882	41 5/8	49 1/8
11	0.933	44	51 4/8
12	0.979	46 2/8	53 6/8

EMISSION DATA RECORDS

0-30-0% RAMP-UP, RAMP-DOWN UNIT OPERATION DATA

METHOD 4 (MOISTURE) [MULTI POINT, NO VARIATION] SOURCE SAMPLING TITLE PAGE

Source Information	
Plant Name	Enid Facility
Sampling Location	COMB 48
Fuel Type	Gas, Propene

Test Information			
Project #		coyote-16-enid.ok-comp#1	
Operator		TW/RA	
Date for Preliminary Run	(mm/dd/yy)	09/27/16	
Standard Temperature		68	°F
Standard Pressure		29.92	in Hg
Required Sample Vol.	RM4, 8.1.1.2	21	scf
Run Duration	≤0.75 cfm	65	minutes
Unit Number		1	
Base Run Number		0-30-0%	
Number of Ports Available		2	
Number of Ports Used		2	
Port Inside Diameter		3.00	in
Stack Shape		Circular	

Test Equipment Information					
Run		**1**	**2**	**3**	
Test Date	(mm/dd/yy)	09/27/16	09/27/16	09/27/16	
Load	% or w/DB	0-30-0	0-30-0	0-30-0	
Meter Box Number	from ACS	SAMP-CP-0011	SAMP-CP-0011	SAMP-CP-0011	
Meter Calibration Factor	(Y)	0.989	0.989	0.989	
Orifice Meter Coefficient	($\Delta H_@$)	1.585	1.585	1.585	in H_2O
Pitot Identification	from ACS	9-7-16-1	9-7-16-1	9-7-16-1	
Pitot Tube Coefficient	(C_p)	0.840	0.840	0.840	
Probe Number	from ACS	SAMP-PF-0001	SAMP-PF-0001	SAMP-PF-0001	
Probe Length		60.0	60.0	60.0	in
(SS, Glass ….) Liner Material	from list	inconel	inconel	inconel	
Impinger Case Number	from ACS	SAMP-BC-0002	SAMP-BC-0002	SAMP-BC-0002	

Testing Company Information	
Company Name	Air Hygiene International, Inc. (Tulsa, Oklahoma)
Address	1600 W Tacoma Street
City, State Zip	Broken Arrow, Oklahoma 74012
Project Manager	Min Sum Lee
Phone Number	(918) 307-8865
Fax Number	(918) 307-9131

METHOD 4 (MOISTURE) [MULTI POINT, NO VARIATION] - RESULTS

Plant Name	Enid Facility
Sampling Location	COMB 48
Project #	coyote-16-enid.ok-comp#1

Historical Data	**0-30-0%-1**	**0-30-0%-2**	**0-30-0%-3**	**Average**	**Units**
Run Start Time	11:16	13:14	14:36		hh:mm
Run Stop Time	12:30	14:25	15:46		hh:mm
Test Date	09/27/16	09/27/16	09/27/16		mm/dd/yy
Meter Calibration Factor	0.989	0.989	0.989		
Pitot Tube Coefficient	0.840	0.840	0.840		
Initial Meter Volume	579.070	627.340	675.900		ft^3
Final Meter Volume	627.200	675.820	724.460		ft^3
Total Meter Volume	48.130	48.480	48.560	48.390	ft^3
Total Sampling Time	65.00	65.00	65.00	65.00	min
Average Meter Temperature	84.04	85.10	90.81	86.65	°F
Average Stack Temperature	1173.96	1174.04	1193.33	1180.44	°F
Barometric Pressure	28.78	28.71	28.67	28.72	in Hg
Stack Static Pressure	0.00	0.00	0.00	0.00	in H_2O
Absolute Stack Pressure	28.78	28.71	28.67	28.72	in Hg
Average Orifice Pressure Drop	1.50	1.50	1.50	1.50	in H_2O
Absolute Meter Pressure	28.90	28.83	28.79	28.84	in Hg
Avg Square Root Pitot Pressure	0.07	0.07	0.07	0.07	$\sqrt{(in\ H_2O)}$
Moisture Content Data	**0-30-0%-1**	**0-30-0%-2**	**0-30-0%-3**	**Average**	**Units**
Impinger Water Weight Gain	36.30	32.50	36.80	35.20	g
Silica Gel Weight Gain	9.70	9.20	9.60	9.50	g
Total Water Volume Collected	46.08	41.78	46.48	44.78	ml
Standard Water Vapor Volume	2.17	1.97	2.19	2.11	scf
Standard Meter Volume	44.6	44.7	44.3	44.5	dscf
Calculated Stack Moisture	4.64	4.21	4.71	4.52	%
Saturated Stack Moisture	100.00	100.00	100.00	100.00	%
Reported Stack Moisture Content	4.64	4.21	4.71	4.52	%
Method 3C Gas Analysis Data	**0-30-0%-1**	**0-30-0%-2**	**0-30-0%-3**	**Average**	**Units**
Carbon Dioxide Content	3.9	3.7	4.5	4.0	%
Oxygen Content	16.3	16.5	15.4	16.1	%
Nitrogen Content	79.8	79.8	80.1	79.9	%
Stack Dry Molecular Weight	29.27	29.25	29.31	29.28	lb/lb-mole
Stack Wet Molecular Weight	28.75	28.78	28.78	28.77	lb/lb-mole
Percent Excess Air	341.5	361.5	268.0	323.7	%
Volumetric Flow Rate Data	**0-30-0%-1**	**0-30-0%-2**	**0-30-0%-3**	**Average**	**Units**
Average Stack Gas Velocity	7.13	7.13	7.18	7.15	ft/sec
Stack Cross-Sectional Area	12.16	12.16	12.16	12.16	ft^2
Actual Stack Flow Rate	5,201	5,204	5,238	5,214	acfm
Wet Standard Stack Flow Rate	97	97	96	97	wkscfh
Dry Standard Stack Flow Rate	92,504	92,742	91,640	92,295	dscfh

METHOD 3C - DETERMINATION OF DRY MOLECULAR WEIGHT BY ANALYZER

Plant Name	Enid Facility	**Preliminary Date**	09/27/16		
Sampling Location	COMB 48	**Operator**	TW/RA		
Project #	coyote-16-enid.ok-comp#1	**# of Ports Used**	2		
Fuel Type	Gas, Propene	**Min. Fuel Factor**	N/A	**Max. Fuel Factor**	N/A

Gas Analysis Data									
Run Number	0-30-0%-1		**Date**	09/27/16	**Run Start Time**	11:16		**Run Stop Time**	12:30
Sample Analysis Time	**CO_2 Conc.**	**O_2 Conc.**	**Methane Conc.**	**N_2 Conc.**	**Dry Molecular Weight**	**Calculated Fuel Factor**		**Excess Air**	**Fuel Factor in Range**
	($\%CO_2$)	($\%O_2$)	(ppmCO)	($\%N_2$)	(M_d)	$(F_o)_{avg}$		$(\%EA)_{avg}$	
hh:mm	%	%	ppm	%	lb/lb-mole			%	
01:14	3.9	16.3	0.0	79.8	29.27	1.186		341.5	N/A

Gas Analysis Data									
Run Number	0-30-0%-2		**Date**	09/27/16	**Run Start Time**	13:14		**Run Stop Time**	14:25
Sample Analysis Time	**CO_2 Conc.**	**O_2 Conc.**	**Methane Conc.**	**N_2 Conc.**	**Dry Molecular Weight**	**Calculated Fuel Factor**		**Excess Air**	**Fuel Factor in Range**
	($\%CO_2$)	($\%O_2$)	(ppmCO)	($\%N_2$)	(M_d)	$(F_o)_{avg}$		$(\%EA)_{avg}$	
hh:mm	%	%	ppm	%	lb/lb-mole			%	
01:11	3.7	16.5	0.0	79.8	29.25	1.186		361.5	N/A

Gas Analysis Data									
Run Number	0-30-0%-3		**Date**	09/27/16	**Run Start Time**	14:36		**Run Stop Time**	15:46
Sample Analysis Time	**CO_2 Conc.**	**O_2 Conc.**	**Methane Conc.**	**N_2 Conc.**	**Dry Molecular Weight**	**Calculated Fuel Factor**		**Excess Air**	**Fuel Factor in Range**
	($\%CO_2$)	($\%O_2$)	(ppmCO)	($\%N_2$)	(M_d)	$(F_o)_{avg}$		$(\%EA)_{avg}$	
hh:mm	%	%	ppm	%	lb/lb-mole			%	
01:10	4.5	15.4	0.0	80.1	29.31	1.236		268.0	N/A

METHOD 4 - DETERMINATION OF MOISTURE CONTENT IN STACK GASES

Plant Name	Enid Facility	**Preliminary Date**	09/27/16
Sampling Location	COMB 48	**Operator**	TW/RA
Project #	coyote-16-enid.ok-comp#1	**Ports Used**	2

Moisture Content Data									
Run Number	0-30-0%-1		**Date**	09/27/16	**Start Time**	11:16	**Stop Time**	12:30	
Meter Box Number	SAMP-CP-0011				**Meter Cal Factor**	(Y)	0.989		
Total Meter Volume	(V_m)	48.130	dcf		**Barometric Pressure**	(P_b)	28.78	in Hg	
Average Stack Temp	$(t_s)_{avg}$	1174	°F		**Stack Static Pressure**	(P_{static})	0.00	in H_2O	
Average Meter Temp	$(t_m)_{avg}$	84	°F		**Avg Orifice Pressure**	$(\Delta H)_{avg}$	1.50	in H_2O	
	Impinger 1	**Impinger 2**	**Impinger 3**	**Impinger 4**	**Impinger 5**	**Impinger 6**	**Impinger 7**	**Impinger 8**	
	(g)	(g)	(g)	(g)					
Contents	H_2O	H_2O	-	Sil Gel					
Final Value (V_f),(W_f)	789.00	734.10	610.60	875.80					
Initial Value (V_i),(W_i)	759.90	729.30	608.20	866.10					
Net Value (V_n),(W_n)	29.1	4.8	2.4	9.7					
Results									
Total Weight	(W_t)	46.00	g		**Water Vol Weighed**	($V_{wsg(std)}$)	2.169	scf	
Std Meter Volume	($V_{m(std)}$)	44.607	dscf		**Sat. Moisture Content**	($B_{ws(svp)}$)	100.00	%	
Calc Moisture Content	($B_{ws(calc)}$)	4.64	%		**Final Moisture Content**	(B_{ws})	4.64	%	

Moisture Content Data									
Run Number	0-30-0%-2		**Date**	09/27/16	**Start Time**	13:14	**Stop Time**	14:25	
Meter Box Number	SAMP-CP-0011				**Meter Cal Factor**	(Y)	0.989		
Total Meter Volume	(V_m)	48.480	dcf		**Barometric Pressure**	(P_b)	28.71	in Hg	
Average Stack Temp	$(t_s)_{avg}$	1174	°F		**Stack Static Pressure**	(P_{static})	0.00	in H_2O	
Average Meter Temp	$(t_m)_{avg}$	85	°F		**Avg Orifice Pressure**	$(\Delta H)_{avg}$	1.50	in H_2O	
	Impinger 1	**Impinger 2**	**Impinger 3**	**Impinger 4**	**Impinger 5**	**Impinger 6**	**Impinger 7**	**Impinger 8**	
	(g)	(g)	(g)	(g)					
Contents	H_2O	H_2O	-	Sil Gel					
Final Value (V_f),(W_f)	814.20	740.00	612.00	885.00					
Initial Value (V_i),(W_i)	789.00	734.10	610.60	875.80					
Net Value (V_n),(W_n)	25.2	5.9	1.4	9.2					
Results									
Total Weight	(W_t)	41.70	g		**Water Vol Weighed**	($V_{wsg(std)}$)	1.966	scf	
Std Meter Volume	($V_{m(std)}$)	44.735	dscf		**Sat. Moisture Content**	($B_{ws(svp)}$)	100.00	%	
Calc Moisture Content	($B_{ws(calc)}$)	4.21	%		**Final Moisture Content**	(B_{ws})	4.21	%	

Moisture Content Data									
Run Number	0-30-0%-3		**Date**	09/27/16	**Start Time**	14:36	**Stop Time**	15:46	
Meter Box Number	SAMP-CP-0011				**Meter Cal Factor**	(Y)	0.989		
Total Meter Volume	(V_m)	48.560	dcf		**Barometric Pressure**	(P_b)	28.67	in Hg	
Average Stack Temp	$(t_s)_{avg}$	1193	°F		**Stack Static Pressure**	(P_{static})	0.00	in H_2O	
Average Meter Temp	$(t_m)_{avg}$	91	°F		**Avg Orifice Pressure**	$(\Delta H)_{avg}$	1.50	in H_2O	
	Impinger 1	**Impinger 2**	**Impinger 3**	**Impinger 4**	**Impinger 5**	**Impinger 6**	**Impinger 7**	**Impinger 8**	
	(g)	(g)	(g)	(g)					
Contents	H_2O	H_2O	-	Sil Gel					
Final Value (V_f),(W_f)	842.00	746.70	614.30	894.60					
Initial Value (V_i),(W_i)	814.20	740.00	612.00	885.00					
Net Value (V_n),(W_n)	27.8	6.7	2.3	9.6					
Results									
Total Weight	(W_t)	46.40	g		**Water Vol Weighed**	($V_{wsg(std)}$)	2.188	scf	
Std Meter Volume	($V_{m(std)}$)	44.283	dscf		**Sat. Moisture Content**	($B_{ws(svp)}$)	100.00	%	
Calc Moisture Content	($B_{ws(calc)}$)	4.71	%		**Final Moisture Content**	(B_{ws})	4.71	%	

METHOD 4 (MOISTURE) [MULTI POINT, NO VARIATION] SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

Plant Name	Enid Facility
Sampling Location	COMB 48
Project #	coyote-16-enid.ok-comp#1

Date	09/27/16
Operator	TW/RA
Run Number	0-30-0%-1

Ideal Nozzle Diameter and IsoKinetic Factor Setup			
Pitot Coefficient	(C_p)	0.840	
Average Stack Temp	(t_s)	1174.0	°F
Average Meter Temp	(t_m)	84.0	
Orifice Meter Coefficient	($\Delta H@$)	1.585	in H_2O
Square Root ΔP	($\Delta p^{1/2}_{avg}$)	0.07	in H_2O
Stack Moisture Content	(B_{ws})	4.64	%
Stack Dry Molecular Weight	(M_d)	29.27	lb/lb-mole
Estimated Orifice Flow Rate	(Q_m)	0.75	acfm
ΔP to ΔH Isokinetic Factor	(K)		

Leak Checks					
Train	**Pre**	0.000	ft³/min@	15.0	in Hg
PASS	**Post**	0.000	ft³/min@	15.0	in Hg
Pitot	**Pre (+)**	0.3	in H_2O for	15.0	sec
< 3.0	**Pre (-)**	0.2	in H_2O for	15.0	sec
	Post (+)	0.3	in H_2O for	15.0	sec
	Post (-)	0.2	in H_2O for	15.0	sec

Sampling Equipment			
Meter Box Number	SAMP-CP-0011		
Meter Cal Factor	(Y)	0.989	
Low Flow Meter	SAMP-MN-0001		
Average Nozzle Diameter	(D_{na})		in
Suggested Nozzle Diameter	(D_{ni})	0.5075	in
Probe Number	SAMP-PF-0001		in
Probe Length	60		in
Liner Material	inconel		
Sample Case / Oven Number			
Impinger Case Number	SAMP-BC-0002		

Pressures			
Barometric Pressure	(P_b)	28.78	in Hg
Stack Static Pressure	(P_{static})	0.00	in H_2O
Absolute Stack Pressure	(P_s)	28.78	in Hg
Absolute Meter Pressure	(P_m)	28.90	in Hg

Nozzle Measurements				
Pre				**PASS**
Post				**PASS**

Run Time			
Start	11:16	**End**	12:30

Weights	**Imp 1**	**Imp 2**	**Imp 3**	**Imp 4**	**Imp 5**	**Imp 6**	**Imp 7**	**Imp 8**
Pre	759.9	729.3	608.2	866.1				
Post	789.0	734.1	610.6	875.8				

Wash Volumes					ml
					ml

Traverse Point #	**Sampling Time (Θ)**	**Timer Time**	**Dry Gas Meter Reading (V_m)**	**Velocity Head (Δp)**	**Desired Orifice ΔH (ΔH_d)**	**Actual Orifice ΔH (ΔH_a)**	**Stack Temp (t_s)**	**Snorkel Temp (248±25°F)**	**Filter Temp (248±25°F)**	**Impinger Exit Temp (≤68°F)**	**Cond. Temp (≤---°F)**	**CPM Filter Temp (--±--°F)**	**Meter Inlet Temp (t_{mi})**	**Meter Outlet Temp (t_{mo})**	**Pump Vacuum**	**Square Root ΔP ($\Delta p^{1/2}$)**	**Local Stack Velocity (v_s)$_l$**	**Cumul. Meter Volume (V_m)$_{std}$**	**Cumul. Percent IsoKinetic (I)**	**Est-Run Meter Volume (V_m)$_{std}$**
	min	hh:mm:ss	ft³	in H_2O	in H_2O	in H_2O	°F	°F	°F	°F	°F	°F	°F	°F	in Hg	√(in H_2O)	ft/sec	dscf	%	dscf
A-1	0.0	00:00:00	579.070	0.005	1.585	1.50	944	253		57			81	79	10.0	0.07	6.61	1.914		45.940
A-2	2.7	00:02:43	581.120	0.005	1.585	1.50	932	257		51			85	79	10.0	0.07	6.59	3.738		44.851
A-3	5.4	00:05:25	583.080	0.005	1.585	1.50	1254	255		51			85	79	10.0	0.07	7.31	5.580		44.636
A-4	8.1	00:08:07	585.060	0.005	1.585	1.50	1296	253		51			85	79	10.5	0.07	7.40	7.384		44.306
A-5	10.8	00:10:50	587.000	0.005	1.585	1.50	1298	252		51			85	79	10.5	0.07	7.40	9.291		44.599
A-6	13.5	00:13:33	589.050	0.005	1.585	1.50	1290	251		52			86	79	10.5	0.07	7.38	11.141		44.564
A-7	16.3	00:16:15	591.040	0.005	1.585	1.50	1241	251		52			86	80	10.5	0.07	7.28	13.035		44.693
A-8	19.0	00:18:58	593.080	0.005	1.585	1.50	930	252		51			86	80	10.5	0.07	6.58	14.892		44.677
A-9	21.7	00:21:40	595.080	0.005	1.585	1.50	1044	252		52			87	80	10.5	0.07	6.85	16.739		44.636
A-10	24.4	00:24:22	597.070	0.005	1.585	1.50	1248	252		52			87	81	10.5	0.07	7.30	18.592		44.622
A-11	27.1	00:27:05	599.070	0.005	1.585	1.50	1273	252		53			87	82	10.5	0.07	7.35	20.449		44.616
A-12	29.8	00:29:47	601.075	0.005	1.585	1.50	1289	252		53			88	82	10.5	0.07	7.38	22.295		44.590
B-1	32.5	00:32:30	603.070	0.005	1.585	1.50	1270	251		52			83	82	10.5	0.07	7.34	24.172		44.626
B-2	35.2	00:35:12	605.090	0.005	1.585	1.50	1295	255		53			85	82	10.5	0.07	7.40	26.009		44.587
B-3	37.9	00:37:55	607.070	0.005	1.585	1.50	1298	255		52			87	82	10.5	0.07	7.40	27.954		44.726
B-4	40.6	00:40:37	609.170	0.005	1.585	1.50	1309	253		53			87	82	10.5	0.07	7.42	29.695		44.542
B-5	43.3	00:43:20	611.050	0.005	1.585	1.50	1015	252		54			89	82	10.5	0.07	6.78	31.590		44.597
B-6	46.0	00:46:03	613.100	0.005	1.585	1.50	1075	252		54			89	83	10.5	0.07	6.92	33.418		44.558
B-7	48.8	00:48:45	615.080	0.005	1.585	1.50	1248	252		55			90	82	10.5	0.07	7.30	35.284		44.569
B-8	51.5	00:51:28	617.100	0.005	1.585	1.50	1280	251		55			90	83	10.5	0.07	7.36	37.147		44.577
B-9	54.2	00:54:10	619.120	0.005	1.585	1.50	1298	251		55			90	83	10.5	0.07	7.40	38.956		44.521
B-10	56.9	00:56:53	621.080	0.005	1.585	1.50	1195	252		56			90	83	10.5	0.07	7.18	40.819		44.530
B-11	59.6	00:59:35	623.100	0.005	1.585	1.50	950	252		55			89	83	10.5	0.07	6.63	42.713		44.570
B-12	62.3	01:02:18	625.150	0.005	1.585	1.50	903	252		55			89	82	10.5	0.07	6.52	44.607		44.607
Last Pt	65.0	01:05:00	627.200																	
Final Val	65.0	01:05:00	627.200											**Max Vac**	10.5	**Final Values**		44.607		
Average Values				0.01		1.50	1174	253		53			87	81		0.07	7.13			
													84							

METHOD 4 (MOISTURE) [MULTI POINT, NO VARIATION] SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

Plant Name	Enid Facility
Sampling Location	COMB 48
Project #	coyote-16-enid.ok-comp#1

Date	09/27/16
Operator	TW/RA
Run Number	0-30-0%-2

Ideal Nozzle Diameter and IsoKinetic Factor Setup			
Pitot Coefficient	(C_p)	0.840	
Average Stack Temp	(t_s)	1174.0	°F
Average Meter Temp	(t_m)	85.1	
Orifice Meter Coefficient	($\Delta H@$)	1.585	in H_2O
Square Root ΔP	($\Delta p^{1/2}_{avg}$)	0.07	in H_2O
Stack Moisture Content	(B_{ws})	4.21	%
Stack Dry Molecular Weight	(M_d)	29.25	lb/lb-mole
Estimated Orifice Flow Rate	(Q_m)	0.69	acfm
ΔP to ΔH Isokinetic Factor	(K)		

Leak Checks					
Train	**Pre**	0.000	ft³/min@	15.0	in Hg
PASS	**Post**	0.000	ft³/min@	15.0	in Hg
Pitot	**Pre (+)**	0.3	in H_2O for	15.0	sec
< 3.0	**Pre (-)**	0.2	in H_2O for	15.0	sec
	Post (+)	0.2	in H_2O for	15.0	sec
	Post (-)	0.2	in H_2O for	15.0	sec

Sampling Equipment			
Meter Box Number	SAMP-CP-0011		
Meter Cal Factor	(Y)	0.989	
Low Flow Meter	SAMP-MN-0001		
Average Nozzle Diameter	(D_{na})		in
Suggested Nozzle Diameter	(D_{ni})	0.4849	in
Probe Number	SAMP-PF-0001		in
Probe Length	60		in
Liner Material	inconel		
Sample Case / Oven Number			
Impinger Case Number	SAMP-BC-0002		

Pressures			
Barometric Pressure	(P_b)	28.71	in Hg
Stack Static Pressure	(P_{static})	0.00	in H_2O
Absolute Stack Pressure	(P_s)	28.71	in Hg
Absolute Meter Pressure	(P_m)	28.83	in Hg

Nozzle Measurements				
Pre				**PASS**
Post				**PASS**

Run Time			
Start	13:14	**End**	14:25

Weights	**Imp 1**	**Imp 2**	**Imp 3**	**Imp 4**	**Imp 5**	**Imp 6**	**Imp 7**	**Imp 8**
Pre	789.0	734.1	610.6	875.8				
Post	814.2	740.0	612.0	885.0				

Wash Volumes					ml
					ml

Traverse Point #	**Sampling Time (Θ)**	**Timer Time**	**Dry Gas Meter Reading (V_m)**	**Velocity Head (Δp)**	**Desired Orifice ΔH (ΔH_d)**	**Actual Orifice ΔH (ΔH_a)**	**Stack Temp (t_s)**	**Snorkel Temp (248±25°F)**	**Filter Temp (248±25°F)**	**Impinger Exit Temp (≤68°F)**	**Cond. Temp (≤---°F)**	**CPM Filter Temp (--±--°F)**	**Meter Inlet Temp (t_{mi})**	**Meter Outlet Temp (t_{mo})**	**Pump Vacuum**	**Square Root ΔP ($\Delta p^{1/2}$)**	**Local Stack Velocity (v_s)$_l$**	**Cumul. Meter Volume (V_m)$_{std}$**	**Cumul. Percent IsoKinetic (I)**	**Est-Run Meter Volume (V_m)$_{std}$**
	min	hh:mm:ss	ft³	in H_2O	in H_2O	in H_2O	°F	°F	°F	°F	°F	°F	°F	°F	in Hg	√(in H_2O)	ft/sec	dscf	%	dscf
A-1	0.0	00:00:00	627.340	0.005	1.585	1.50	1113	252		61			77	79	10.5	0.07	7.01	1.776		42.633
A-2	2.7	00:02:43	629.240	0.005	1.585	1.50	875	258		55			78	78	10.5	0.07	6.45	3.628		43.531
A-3	5.4	00:05:25	631.220	0.005	1.585	1.50	1179	252		53			80	79	10.5	0.07	7.15	5.483		43.864
A-4	8.1	00:08:07	633.210	0.005	1.585	1.50	1279	252		53			83	79	10.5	0.07	7.37	7.259		43.553
A-5	10.8	00:10:50	635.120	0.005	1.585	1.50	1279	252		54			84	79	10.5	0.07	7.37	9.163		43.982
A-6	13.5	00:13:33	637.170	0.005	1.585	1.50	1309	251		55			85	78	10.5	0.07	7.43	11.058		44.232
A-7	16.3	00:16:15	639.210	0.005	1.585	1.50	1243	251		54			86	79	10.5	0.07	7.29	12.903		44.239
A-8	19.0	00:18:58	641.200	0.005	1.585	1.50	911	251		56			87	80	10.5	0.07	6.54	14.763		44.290
A-9	21.7	00:21:40	643.210	0.005	1.585	1.50	819	251		55			88	80	10.5	0.07	6.32	16.668		44.448
A-10	24.4	00:24:22	645.270	0.005	1.585	1.50	1145	251		56			88	81	10.5	0.07	7.08	18.553		44.526
A-11	27.1	00:27:05	647.310	0.005	1.585	1.50	1210	252		56			88	82	10.5	0.07	7.22	20.454		44.626
A-12	29.8	00:29:47	649.370	0.005	1.585	1.50	1216	251		55			90	82	10.5	0.07	7.23	22.352		44.703
B-1	32.5	00:32:30	651.430	0.005	1.585	1.50	1162	250		62			86	83	10.5	0.07	7.11	24.273		44.812
B-2	35.2	00:35:12	653.510	0.005	1.585	1.50	1174	255		56			88	84	10.5	0.07	7.14	26.106		44.754
B-3	37.9	00:37:55	655.500	0.005	1.585	1.50	1299	255		56			89	84	10.5	0.07	7.41	28.232		45.172
B-4	40.6	00:40:37	657.810	0.005	1.585	1.50	1321	253		56			91	84	10.5	0.07	7.46	29.638		44.457
B-5	43.3	00:43:20	659.340	0.005	1.585	1.50	1319	252		56			91	84	10.5	0.07	7.45	31.659		44.695
B-6	46.0	00:46:03	661.540	0.005	1.585	1.50	1331	251		57			91	85	10.5	0.07	7.48	33.513		44.684
B-7	48.8	00:48:45	663.560	0.005	1.585	1.50	1008	251		56			92	85	10.5	0.07	6.77	35.393		44.707
B-8	51.5	00:51:28	665.610	0.005	1.585	1.50	931	251		56			93	85	10.5	0.07	6.59	37.253		44.704
B-9	54.2	00:54:10	667.640	0.005	1.585	1.50	1294	252		56			93	86	10.5	0.07	7.40	39.111		44.699
B-10	56.9	00:56:53	669.670	0.005	1.585	1.50	1336	252		57			93	86	10.5	0.07	7.49	40.970		44.694
B-11	59.6	00:59:35	671.700	0.005	1.585	1.50	1337	252		57			94	87	10.5	0.07	7.49	42.898		44.763
B-12	62.3	01:02:18	673.810	0.005	1.585	1.50	1087	252		57			94	87	10.5	0.07	6.95	44.734		44.734
Last Pt	65.0	01:05:00	675.820																	
Final Val	65.0	01:05:00	675.820											**Max Vac**	10.5	**Final Values**		44.734		
Average Values				0.01		1.50	1174	252		56			88	82		0.07	7.13			
													85							

METHOD 4 (MOISTURE) [MULTI POINT, NO VARIATION] SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

Plant Name	Enid Facility
Sampling Location	COMB 48
Project #	coyote-16-enid.ok-comp#1

Date	09/27/16
Operator	TW/RA
Run Number	0-30-0%-3

Ideal Nozzle Diameter and IsoKinetic Factor Setup			
Pitot Coefficient	(C_p)	0.840	
Average Stack Temp	(t_s)	1193.3	°F
Average Meter Temp	(t_m)	90.8	
Orifice Meter Coefficient	($\Delta H@$)	1.585	in H_2O
Square Root ΔP	($\Delta p^{1/2}_{avg}$)	0.07	in H_2O
Stack Moisture Content	(B_{ws})	4.71	%
Stack Dry Molecular Weight	(M_d)	29.31	lb/lb-mole
Estimated Orifice Flow Rate	(Q_m)	0.69	acfm
ΔP to ΔH Isokinetic Factor	(K)		

Leak Checks					
Train	**Pre**	0.000	ft³/min@	15.0	in Hg
PASS	**Post**	0.000	ft³/min@	15.0	in Hg
Pitot	**Pre (+)**	0.2	in H_2O for	15.0	sec
< 3.0	**Pre (-)**	0.2	in H_2O for	15.0	sec
	Post (+)	0.2	in H_2O for	15.0	sec
	Post (-)	0.2	in H_2O for	15.0	sec

Sampling Equipment			
Meter Box Number	SAMP-CP-0011		
Meter Cal Factor	(Y)	0.989	
Low Flow Meter	SAMP-MN-0001		
Average Nozzle Diameter	(D_{na})		in
Suggested Nozzle Diameter	(D_{ni})	0.4843	in
Probe Number	SAMP-PF-0001		in
Probe Length	60		in
Liner Material	inconel		
Sample Case / Oven Number			
Impinger Case Number	SAMP-BC-0002		

Pressures			
Barometric Pressure	(P_b)	28.67	in Hg
Stack Static Pressure	(P_{static})	0.00	in H_2O
Absolute Stack Pressure	(P_s)	28.67	in Hg
Absolute Meter Pressure	(P_m)	28.79	in Hg

Nozzle Measurements				
Pre				**PASS**
Post				**PASS**

Run Time			
Start	14:36	**End**	15:46

Weights	**Imp 1**	**Imp 2**	**Imp 3**	**Imp 4**	**Imp 5**	**Imp 6**	**Imp 7**	**Imp 8**
Pre	814.2	740.0	612.0	885.0				
Post	842.0	746.7	614.3	894.6				

Wash Volumes					ml
					ml

Traverse Point #	**Sampling Time (Θ)**	**Timer Time**	**Dry Gas Meter Reading (V_m)**	**Velocity Head (Δp)**	**Desired Orifice ΔH (ΔH_d)**	**Actual Orifice ΔH (ΔH_a)**	**Stack Temp (t_s)**	**Snorkel Temp (248±25°F)**	**Filter Temp (248±25°F)**	**Impinger Exit Temp (≤68°F)**	**Cond. Temp (≤---°F)**	**CPM Filter Temp (--±--°F)**	**Meter Inlet Temp (t_{mi})**	**Meter Outlet Temp (t_{mo})**	**Pump Vacuum**	**Square Root ΔP ($\Delta p^{1/2}$)**	**Local Stack Velocity (v_s)$_l$**	**Cumul. Meter Volume (V_m)$_{std}$**	**Cumul. Percent IsoKinetic (I)**	**Est-Run Meter Volume (V_m)$_{std}$**
	min	hh:mm:ss	ft³	in H_2O	in H_2O	in H_2O	°F	°F	°F	°F	°F	°F	°F	°F	in Hg	√(in H_2O)	ft/sec	dscf	%	dscf
A-1	0.0	00:00:00	675.900	0.005	1.585	1.50	859	252		64			87	87	10.0	0.07	6.42	1.589		38.127
A-2	2.7	00:02:43	677.630	0.005	1.585	1.50	864	252		57			91	87	10.0	0.07	6.43	3.464		41.571
A-3	5.4	00:05:25	679.680	0.005	1.585	1.50	1177	252		56			91	87	10.0	0.07	7.15	5.285		42.280
A-4	8.1	00:08:07	681.670	0.005	1.585	1.50	1304	253		56			91	86	10.0	0.07	7.42	7.181		43.084
A-5	10.8	00:10:50	683.740	0.005	1.585	1.50	1315	251		56			92	87	10.0	0.07	7.45	9.283		44.559
A-6	13.5	00:13:33	686.040	0.005	1.585	1.50	1330	251		56			92	87	10.0	0.07	7.48	10.892		43.568
A-7	16.3	00:16:15	687.800	0.005	1.585	1.50	1320	251		56			92	87	10.0	0.07	7.46	12.729		43.643
A-8	19.0	00:18:58	689.810	0.005	1.585	1.50	1037	252		56			93	87	10.0	0.07	6.84	13.999		41.996
A-9	21.7	00:21:40	691.200	0.005	1.585	1.50	911	252		56			93	87	10.0	0.07	6.55	16.465		43.905
A-10	24.4	00:24:22	693.900	0.005	1.585	1.50	1252	252		56			94	88	10.0	0.07	7.31	18.379		44.109
A-11	27.1	00:27:05	696.000	0.005	1.585	1.50	1320	252		56			95	89	10.0	0.07	7.46	20.153		43.971
A-12	29.8	00:29:47	697.950	0.005	1.585	1.50	1335	252		57			95	89	10.0	0.07	7.49	22.019		44.038
B-1	32.5	00:32:30	700.000	0.005	1.585	1.50	945	250		63			90	89	10.0	0.07	6.63	24.222		44.717
B-2	35.2	00:35:12	702.410	0.005	1.585	1.50	1178	251		58			92	89	10.0	0.07	7.15	25.764		44.167
B-3	37.9	00:37:55	704.100	0.005	1.585	1.50	1284	252		57			94	89	10.5	0.07	7.38	27.585		44.137
B-4	40.6	00:40:37	706.100	0.005	1.585	1.50	1313	253		57			95	89	10.5	0.07	7.44	29.433		44.149
B-5	43.3	00:43:20	708.130	0.005	1.585	1.50	1332	252		58			94	88	10.5	0.07	7.48	31.320		44.216
B-6	46.0	00:46:03	710.200	0.005	1.585	1.50	1347	251		57			95	89	10.5	0.07	7.51	33.140		44.186
B-7	48.8	00:48:45	712.200	0.005	1.585	1.50	1164	252		57			95	89	10.5	0.07	7.12	35.005		44.217
B-8	51.5	00:51:28	714.250	0.005	1.585	1.50	933	251		58			96	89	10.5	0.07	6.60	36.960		44.352
B-9	54.2	00:54:10	716.400	0.005	1.585	1.50	1169	252		58			96	89	10.5	0.07	7.13	38.969		44.536
B-10	56.9	00:56:53	718.610	0.005	1.585	1.50	1309	252		58			96	90	10.5	0.07	7.43	40.895		44.612
B-11	59.6	00:59:35	720.730	0.005	1.585	1.50	1314	252		58			96	90	10.5	0.07	7.45	42.502		44.350
B-12	62.3	01:02:18	722.500	0.005	1.585	1.50	1328	252		58			96	90	10.5	0.07	7.47	44.283		44.283
Last Pt	65.0	01:05:00	724.460																	
Final Val	65.0	01:05:00	724.460											**Max Vac**	10.5	**Final Values**		44.283		
Average Values				0.01		1.50	1193	252		57			93	88		0.07	7.18			
													91							

Coyote North USA INC.
September 27, 2016
COMB 48
Enid Facility

Unit Data

Meas. Stack Moisture	4.6	%
Stack Exhaust Flow (M2)	92,742	SCFH

Weather Data

Barometric Pressure	28.78	in. Hg
Relative Humidity	50	%
Ambient Temperature	73	°F
Specific Humidity	0.009030	lb H_2O / lb air

0-30-0 Load, Run - COMB 48 R1

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. °F	Fuel Flow SCFH
A1	09/27/16 11:16:20	10860	17.63	3.20	0.48	2.46	55.57	87.75	888.00
	09/27/16 11:16:50	10890	17.67	4.20	0.50	2.39	55.57	87.75	888.00
	09/27/16 11:17:20	10920	17.61	4.34	0.72	2.46	55.66	87.79	888.00
	09/27/16 11:17:50	10950	17.64	5.39	0.85	2.42	55.66	87.79	888.00
	09/27/16 11:18:20	10980	17.66	6.79	0.72	2.41	55.65	87.85	870.00
	09/27/16 11:18:50	11010	17.65	5.92	0.58	2.43	55.65	87.85	870.00
	09/27/16 11:19:20	11040	17.69	4.34	0.47	2.38	55.28	87.91	1,278.00
	09/27/16 11:19:50	11070	17.71	3.50	0.57	2.38	55.28	87.91	1,278.00
	09/27/16 11:20:20	11100	15.50	3.29	-0.01	3.67	54.83	88.14	1,818.00
	09/27/16 11:20:50	11130	14.52	2.36	-0.09	4.51	54.83	88.14	1,818.00
	09/27/16 11:21:20	11160	14.49	1.23	-0.09	4.56	54.84	88.55	1,800.00
	09/27/16 11:21:50	11190	14.52	0.70	-0.08	4.52	54.84	88.55	1,800.00
	09/27/16 11:22:20	11220	14.45	0.45	-0.08	4.57	54.85	88.97	1,818.00
	09/27/16 11:22:50	11250	14.62	0.39	-0.08	4.47	54.85	88.97	1,818.00
	09/27/16 11:23:20	11280	14.63	0.49	-0.07	4.43	54.89	89.39	1,818.00
	09/27/16 11:23:50	11310	14.36	0.55	-0.07	4.60	54.89	89.39	1,818.00
	09/27/16 11:24:20	11340	14.41	0.44	-0.06	4.59	54.95	89.77	1,818.00
	09/27/16 11:24:50	11370	14.60	0.33	-0.06	4.48	54.95	89.77	1,818.00
	09/27/16 11:25:20	11400	14.52	0.49	-0.05	4.51	54.94	90.10	1,806.00
	09/27/16 11:25:50	11430	14.51	0.38	-0.09	4.53	54.94	90.10	1,806.00
	09/27/16 11:26:20	11460	14.42	0.26	-0.08	4.57	54.92	90.40	1,806.00
	09/27/16 11:26:50	11490	14.28	0.23	-0.06	4.67	54.92	90.40	1,806.00
	09/27/16 11:27:20	11520	14.52	0.33	-0.06	4.53	54.89	90.65	1,806.00
	09/27/16 11:27:50	11550	14.62	0.42	-0.07	4.45	54.89	90.65	1,806.00
	09/27/16 11:28:20	11580	14.60	0.59	-0.07	4.45	54.85	90.92	1,800.00
	09/27/16 11:28:50	11610	14.70	0.47	-0.07	4.40	54.85	90.92	1,800.00
	09/27/16 11:29:20	11640	14.60	0.39	-0.06	4.46	54.84	91.21	1,800.00
	09/27/16 11:29:50	11670	14.48	0.44	-0.05	4.55	54.84	91.21	1,800.00
	09/27/16 11:30:20	11700	14.77	0.61	-0.06	4.34	54.83	91.51	1,800.00
	09/27/16 11:30:50	11730	14.73	0.87	-0.07	4.37	54.83	91.51	1,800.00
	09/27/16 11:31:20	11760	14.64	0.60	-0.07	4.43	54.87	91.83	1,776.00
	09/27/16 11:31:50	11790	14.68	0.49	-0.05	4.41	54.87	91.83	1,776.00
	09/27/16 11:32:20	11820	14.68	0.70	-0.05	4.41	55.01	92.13	1,692.00
	09/27/16 11:32:50	11850	14.69	0.87	-0.08	4.40	55.01	92.13	1,692.00
	09/27/16 11:33:20	11880	15.20	0.76	-0.08	4.14	55.59	92.32	972.00
	09/27/16 11:33:50	11910	17.05	1.84	0.20	2.91	55.59	92.32	972.00
	09/27/16 11:34:20	11940	17.77	6.03	0.35	2.34	55.63	92.34	876.00
	09/27/16 11:34:50	11970	17.78	5.97	0.40	2.32	55.63	92.34	876.00
	09/27/16 11:35:20	12000	17.81	4.83	0.72	2.31	55.56	92.34	870.00
	09/27/16 11:35:50	12030	17.77	6.42	0.86	2.33	55.56	92.34	870.00
	09/27/16 11:36:20	12060	17.82	7.37	0.75	2.29	55.52	92.35	870.00
A2	09/27/16 11:36:50	12090	17.74	6.18	0.37	2.34	55.52	92.35	870.00
	09/27/16 11:37:20	12120	17.71	3.59	0.36	2.36	55.51	92.37	912.00
	09/27/16 11:37:50	12150	17.70	2.87	0.50	2.38	55.51	92.37	912.00
	09/27/16 11:38:20	12180	17.67	3.59	0.50	2.37	54.89	92.43	1,710.00
	09/27/16 11:38:50	12210	15.57	4.15	-0.05	3.68	54.89	92.43	1,710.00
	09/27/16 11:39:20	12240	14.69	3.02	-0.05	4.36	54.85	92.72	1,806.00
	09/27/16 11:39:50	12270	14.64	1.61	-0.06	4.43	54.85	92.72	1,806.00
	09/27/16 11:40:20	12300	14.64	0.83	-0.07	4.44	54.93	93.03	1,776.00
	09/27/16 11:40:50	12330	14.66	0.59	-0.05	4.43	54.93	93.03	1,776.00
	09/27/16 11:41:20	12360	14.78	0.82	-0.05	4.33	54.94	93.32	1,800.00
	09/27/16 11:41:50	12390	14.83	1.72	-0.09	4.30	54.94	93.32	1,800.00
	09/27/16 11:42:20	12420	14.70	1.53	-0.08	4.36	54.89	93.60	1,806.00
	09/27/16 11:42:50	12450	14.64	0.78	-0.06	4.44	54.89	93.60	1,806.00
	09/27/16 11:43:20	12480	14.79	0.46	-0.05	4.33	54.86	93.86	1,800.00
	09/27/16 11:43:50	12510	14.74	0.46	-0.06	4.35	54.86	93.86	1,800.00
	09/27/16 11:44:20	12540	14.83	0.51	-0.05	4.31	54.83	94.09	1,800.00
	09/27/16 11:44:50	12570	14.79	0.51	-0.05	4.30	54.83	94.09	1,800.00
	09/27/16 11:45:20	12600	14.64	0.48	-0.05	4.41	54.81	94.27	1,800.00
	09/27/16 11:45:50	12630	14.46	0.34	-0.07	4.53	54.81	94.27	1,800.00

Coyote North USA INC.
September 27, 2016
COMB 48
Enid Facility

Unit Data

Meas. Stack Moisture	4.6	%
Stack Exhaust Flow (M2)	92,742	SCFH

Weather Data

Barometric Pressure	28.78	in. Hg
Relative Humidity	50	%
Ambient Temperature	73	°F
Specific Humidity	0.009030	lb H_2O / lb air

0-30-0 Load, Run - COMB 48 R1

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. °F	Fuel Flow SCFH
	09/27/16 11:46:20	12660	14.56	0.17	-0.06	4.47	54.80	94.43	1,800.00
	09/27/16 11:46:50	12690	14.69	0.22	-0.06	4.38	54.80	94.43	1,800.00
	09/27/16 11:47:20	12720	14.82	0.66	-0.07	4.29	54.81	94.61	1,788.00
	09/27/16 11:47:50	12750	14.64	0.99	-0.07	4.40	54.81	94.61	1,788.00
	09/27/16 11:48:20	12780	14.52	0.56	-0.06	4.50	54.83	94.78	1,794.00
	09/27/16 11:48:50	12810	14.74	0.23	-0.05	4.36	54.83	94.78	1,794.00
	09/27/16 11:49:20	12840	14.81	0.36	-0.05	4.29	55.00	94.97	1,626.00
	09/27/16 11:49:50	12870	14.63	0.45	-0.08	4.43	55.00	94.97	1,626.00
	09/27/16 11:50:20	12900	15.51	0.54	-0.08	3.94	55.61	95.06	984.00
	09/27/16 11:50:50	12930	16.82	1.43	0.07	3.03	55.61	95.06	984.00
	09/27/16 11:51:20	12960	17.68	3.29	0.33	2.40	55.68	94.99	852.00
	09/27/16 11:51:50	12990	17.81	4.31	0.49	2.29	55.68	94.99	852.00
	09/27/16 11:52:20	13020	17.78	5.48	0.60	2.32	55.61	94.88	852.00
	09/27/16 11:52:50	13050	17.79	6.74	0.39	2.30	55.61	94.88	852.00
	09/27/16 11:53:20	13080	17.80	4.28	0.40	2.30	55.56	94.80	852.00
	09/27/16 11:53:50	13110	17.82	3.38	0.79	2.29	55.56	94.80	852.00
	09/27/16 11:54:20	13140	17.80	4.58	0.38	2.30	55.60	94.78	852.00
	09/27/16 11:54:50	13170	17.74	3.91	0.47	2.34	55.60	94.78	852.00
	09/27/16 11:55:20	13200	17.81	3.59	0.48	2.30	55.37	94.75	1,140.00
	09/27/16 11:55:50	13230	17.72	3.71	0.44	2.32	55.37	94.75	1,140.00
	09/27/16 11:56:20	13260	16.34	3.55	-0.03	3.22	54.97	94.83	1,686.00
A3	09/27/16 11:56:50	13290	15.40	3.41	-0.07	3.85	54.97	94.83	1,686.00
	09/27/16 11:57:20	13320	14.81	2.30	-0.06	4.29	54.98	95.02	1,800.00
	09/27/16 11:57:50	13350	14.67	1.07	-0.07	4.39	54.98	95.02	1,800.00
	09/27/16 11:58:20	13380	14.63	0.64	-0.06	4.41	54.97	95.21	1,800.00
	09/27/16 11:58:50	13410	14.42	0.54	-0.06	4.55	54.97	95.21	1,800.00
	09/27/16 11:59:20	13440	14.39	0.30	-0.06	4.58	54.94	95.39	1,800.00
	09/27/16 11:59:50	13470	14.53	0.19	-0.07	4.50	54.94	95.39	1,800.00
	09/27/16 12:00:20	13500	14.69	0.22	-0.07	4.41	54.92	95.54	1,794.00
	09/27/16 12:00:50	13530	14.70	0.22	-0.09	4.35	54.92	95.54	1,794.00
	09/27/16 12:01:20	13560	14.71	0.24	-0.09	4.38	54.90	95.70	1,788.00
	09/27/16 12:01:50	13590	14.74	0.47	-0.05	4.34	54.90	95.70	1,788.00
	09/27/16 12:02:20	13620	14.55	0.46	-0.05	4.48	54.88	95.90	1,764.00
	09/27/16 12:02:50	13650	14.37	0.17	-0.05	4.59	54.88	95.90	1,764.00
	09/27/16 12:03:20	13680	14.56	0.06	-0.06	4.49	54.90	96.03	1,794.00
	09/27/16 12:03:50	13710	14.58	0.21	-0.06	4.45	54.90	96.03	1,794.00
	09/27/16 12:04:20	13740	14.76	0.30	-0.06	4.35	54.91	96.16	1,788.00
	09/27/16 12:04:50	13770	14.90	0.40	-0.06	4.23	54.91	96.16	1,788.00
	09/27/16 12:05:20	13800	14.71	0.51	-0.06	4.36	54.93	96.35	1,788.00
	09/27/16 12:05:50	13830	14.72	0.36	-0.08	4.34	54.93	96.35	1,788.00
	09/27/16 12:06:20	13860	14.66	0.18	-0.07	4.40	54.95	96.51	1,788.00
	09/27/16 12:06:50	13890	14.68	0.15	-0.09	4.40	54.95	96.51	1,788.00
	09/27/16 12:07:20	13920	14.84	0.33	-0.08	4.27	55.04	96.62	1,788.00
	09/27/16 12:07:50	13950	14.71	0.47	-0.06	4.37	55.04	96.62	1,788.00
	09/27/16 12:08:20	13980	14.67	0.27	-0.06	4.37	55.46	96.67	1,224.00
	09/27/16 12:08:50	14010	15.11	0.31	-0.06	4.19	55.46	96.67	1,224.00
	09/27/16 12:09:20	14040	17.10	0.92	0.10	2.87	55.65	96.50	852.00
	09/27/16 12:09:50	14070	17.78	2.01	0.30	2.33	55.65	96.50	852.00
	09/27/16 12:10:20	14100	17.78	2.50	0.34	2.30	55.65	96.25	852.00
	09/27/16 12:10:50	14130	17.71	3.44	0.47	2.36	55.65	96.25	852.00
	09/27/16 12:11:20	14160	17.73	4.56	0.36	2.34	55.70	96.03	852.00
	09/27/16 12:11:50	14190	17.77	3.82	0.72	2.32	55.70	96.03	852.00
	09/27/16 12:12:20	14220	17.80	5.06	0.42	2.29	55.36	95.87	1,218.00
	09/27/16 12:12:50	14250	17.71	4.74	0.62	2.35	55.36	95.87	1,218.00
	09/27/16 12:13:20	14280	15.68	4.55	-0.01	3.56	54.88	95.85	1,806.00
	09/27/16 12:13:50	14310	14.77	2.89	-0.06	4.33	54.88	95.85	1,806.00
	09/27/16 12:14:20	14340	14.73	1.77	-0.06	4.34	54.85	95.98	1,800.00
	09/27/16 12:14:50	14370	14.38	0.98	-0.06	4.57	54.85	95.98	1,800.00
	09/27/16 12:15:20	14400	14.52	0.39	-0.06	4.50	54.84	96.12	1,812.00
	09/27/16 12:15:50	14430	14.72	0.19	-0.09	4.35	54.84	96.12	1,812.00

Coyote North USA INC.
September 27, 2016
COMB 48
Enid Facility

Unit Data

Meas. Stack Moisture	4.6	%
Stack Exhaust Flow (M2)	92,742	SCFH

Weather Data

Barometric Pressure	28.78	in. Hg
Relative Humidity	50	%
Ambient Temperature	73	^{o}F
Specific Humidity	0.009030	lb H_2O / lb air

0-30-0 Load, Run - COMB 48 R1

Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
09/27/16 12:16:20	14460	14.52	0.20	-0.10	4.52	54.85	96.26	1,812.00
09/27/16 12:16:50	14490	14.77	0.19	-0.05	4.33	54.85	96.26	1,812.00
09/27/16 12:17:20	14520	14.60	0.27	-0.05	4.44	54.88	96.40	1,812.00
09/27/16 12:17:50	14550	14.57	0.26	-0.06	4.46	54.88	96.40	1,812.00
09/27/16 12:18:20	14580	14.47	0.13	-0.06	4.50	54.90	96.48	1,812.00
09/27/16 12:18:50	14610	14.69	0.17	-0.05	4.41	54.90	96.48	1,812.00
09/27/16 12:19:20	14640	14.70	0.30	-0.05	4.40	55.00	96.61	1,812.00
09/27/16 12:19:50	14670	14.63	0.30	-0.07	4.39	55.00	96.61	1,812.00
09/27/16 12:20:20	14700	14.34	0.21	-0.08	4.62	54.96	96.65	1,806.00
09/27/16 12:20:50	14730	14.51	0.10	-0.07	4.51	54.96	96.65	1,806.00
09/27/16 12:21:20	14760	14.33	0.15	-0.07	4.61	54.93	96.70	1,806.00
09/27/16 12:21:50	14790	14.49	0.12	-0.06	4.52	54.93	96.70	1,806.00
09/27/16 12:22:20	14820	14.71	0.12	-0.06	4.37	55.37	96.74	1,194.00
09/27/16 12:22:50	14850	14.66	0.22	-0.07	4.39	55.37	96.74	1,194.00
09/27/16 12:23:20	14880	14.61	0.21	-0.07	4.42	55.60	96.59	846.00
09/27/16 12:23:50	14910	15.06	0.25	-0.06	4.26	55.60	96.59	846.00
09/27/16 12:24:20	14940	17.58	1.07	0.17	2.50	55.59	96.39	864.00
09/27/16 12:24:50	14970	17.79	2.73	0.33	2.32	55.59	96.39	864.00
09/27/16 12:25:20	15000	17.75	3.01	0.43	2.34	55.60	96.28	870.00
09/27/16 12:25:50	15030	17.70	3.77	0.47	2.35	55.60	96.28	870.00
09/27/16 12:26:20	15060	17.68	4.52	0.43	2.36	55.60	96.28	870.00
RAW AVERAGE		**15.59**	**1.74**	**0.10**	**3.79**	**55.13**	**93.81**	**1,496.21**

		O_2	CO	THC	CO_2	Press. Trans	Temp. Trans.	F-Flow Trans.
	Serial Number:	INSTO2-0011	INST-CO-0022	INST-TH-0002	INST-C2-0013	2104497-025	2104497-025	2104497-025
		(%)	(ppmvd)	(ppmvw)	(%)	(in. H_2O)	(^{o}F)	(SCFH)
Bias	Initial Zero	0.06	-0.03	-0.07	0.02			
	Final Zero	-0.01	-0.03	-0.05	0.02			
	Avg. Zero	0.03	-0.03	-0.06	0.02			
	Initial UpScale	12.03	9.41	2.89	8.87			
	Final UpScale	11.96	9.40	2.94	8.89			
	Avg. UpScale	12.00	9.41	2.92	8.88			
Upscale Cal Gas		11.90	9.44	3.00	8.95			

EMISSIONS DATA	O_2	CO	THC	CO_2
Corrected Raw Average (ppm/% dry basis)	15.47	1.77	0.16	3.81
Corrected Raw Average (ppm/% wet basis)	14.75	1.69	0.16	3.63
Emission Rate (lb/hr)	N/A	0.01	0.00	N/A

Coyote North USA INC.
September 27, 2016
COMB 48
Enid Facility

Unit Data

Meas. Stack Moisture	4.2	%
Stack Exhaust Flow (M2)	91,640	SCFH

Weather Data

Barometric Pressure	28.71	in. Hg
Relative Humidity	31	%
Ambient Temperature	87	°F
Specific Humidity	0.008816	lb H_2O / lb air

0-30-0 Load, Run - COMB 48 R2

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. °F	Fuel Flow SCFH
A1	09/27/16 13:14:20	17940	17.59	4.38	0.96	2.42	55.79	93.40	828.00
	09/27/16 13:14:50	17970	17.52	4.05	0.91	2.48	55.79	93.40	828.00
	09/27/16 13:15:20	18000	17.61	3.75	0.96	2.41	55.77	93.44	858.00
	09/27/16 13:15:50	18030	17.58	3.45	0.98	2.43	55.77	93.44	858.00
	09/27/16 13:16:20	18060	17.47	3.67	0.92	2.50	55.77	93.48	858.00
	09/27/16 13:16:50	18090	17.48	3.83	1.01	2.49	55.77	93.48	858.00
	09/27/16 13:17:20	18120	17.60	4.08	1.18	2.40	55.60	93.51	1,086.00
	09/27/16 13:17:50	18150	17.55	4.47	1.06	2.42	55.60	93.51	1,086.00
	09/27/16 13:18:20	18180	16.62	4.38	0.70	2.89	55.09	93.64	1,794.00
	09/27/16 13:18:50	18210	14.53	3.20	0.42	4.43	55.09	93.64	1,794.00
	09/27/16 13:19:20	18240	14.48	1.49	0.38	4.53	55.07	93.86	1,812.00
	09/27/16 13:19:50	18270	14.67	1.24	0.37	4.37	55.07	93.86	1,812.00
	09/27/16 13:20:20	18300	14.50	1.50	0.35	4.48	55.19	94.26	1,806.00
	09/27/16 13:20:50	18330	14.78	1.05	0.33	4.29	55.19	94.26	1,806.00
	09/27/16 13:21:20	18360	14.71	0.94	0.37	4.34	55.32	94.69	1,800.00
	09/27/16 13:21:50	18390	14.55	0.91	0.33	4.45	55.32	94.69	1,800.00
	09/27/16 13:22:20	18420	14.39	0.56	0.33	4.54	55.22	95.02	1,794.00
	09/27/16 13:22:50	18450	14.33	0.18	0.33	4.65	55.22	95.02	1,794.00
	09/27/16 13:23:20	18480	14.49	0.12	0.33	4.47	55.12	95.27	1,788.00
	09/27/16 13:23:50	18510	14.57	0.10	0.32	4.48	55.12	95.27	1,788.00
	09/27/16 13:24:20	18540	14.78	0.17	0.33	4.30	55.11	95.49	1,752.00
	09/27/16 13:24:50	18570	14.49	0.39	0.32	4.51	55.11	95.49	1,752.00
	09/27/16 13:25:20	18600	14.73	0.32	0.34	4.34	55.11	95.73	1,782.00
	09/27/16 13:25:50	18630	14.91	0.34	0.43	4.22	55.11	95.73	1,782.00
	09/27/16 13:26:20	18660	14.81	0.37	0.42	4.30	55.16	96.03	1,782.00
	09/27/16 13:26:50	18690	14.66	0.27	0.37	4.36	55.16	96.03	1,782.00
	09/27/16 13:27:20	18720	14.54	0.15	0.39	4.48	55.20	96.31	1,776.00
	09/27/16 13:27:50	18750	14.51	0.22	0.40	4.45	55.20	96.31	1,776.00
	09/27/16 13:28:20	18780	14.42	0.15	0.36	4.57	55.18	96.51	1,776.00
	09/27/16 13:28:50	18810	14.49	0.11	0.35	4.49	55.18	96.51	1,776.00
	09/27/16 13:29:20	18840	14.69	0.18	0.40	4.36	55.14	96.71	1,776.00
	09/27/16 13:29:50	18870	14.69	0.32	0.36	4.36	55.14	96.71	1,776.00
	09/27/16 13:30:20	18900	14.56	0.27	0.29	4.44	55.38	96.89	1,398.00
	09/27/16 13:30:50	18930	14.57	0.13	0.40	4.47	55.38	96.89	1,398.00
	09/27/16 13:31:20	18960	16.69	0.53	0.71	3.20	55.83	96.89	786.00
	09/27/16 13:31:50	18990	17.92	2.85	0.89	2.24	55.83	96.89	786.00
	09/27/16 13:32:20	19020	17.99	4.30	1.19	2.15	55.84	96.78	786.00
	09/27/16 13:32:50	19050	17.89	5.69	0.92	2.23	55.84	96.78	786.00
	09/27/16 13:33:20	19080	17.89	3.99	1.17	2.23	55.83	96.73	786.00
	09/27/16 13:33:50	19110	17.97	3.99	1.09	2.17	55.83	96.73	786.00
	09/27/16 13:34:20	19140	17.74	3.45	0.88	2.32	55.83	96.68	786.00
A2	09/27/16 13:34:50	19170	17.78	2.69	0.96	2.30	55.83	96.68	786.00
	09/27/16 13:35:20	19200	17.92	2.59	0.95	2.21	55.76	96.60	876.00
	09/27/16 13:35:50	19230	17.91	2.42	1.01	2.21	55.76	96.60	876.00
	09/27/16 13:36:20	19260	17.68	2.47	0.87	2.27	55.16	96.62	1,650.00
	09/27/16 13:36:50	19290	15.54	2.28	0.52	3.76	55.16	96.62	1,650.00
	09/27/16 13:37:20	19320	14.86	1.52	0.44	4.21	55.07	96.87	1,836.00
	09/27/16 13:37:50	19350	14.41	0.88	0.43	4.53	55.07	96.87	1,836.00
	09/27/16 13:38:20	19380	14.44	0.36	0.43	4.55	55.11	97.13	1,776.00
	09/27/16 13:38:50	19410	14.33	0.10	0.42	4.60	55.11	97.13	1,776.00
	09/27/16 13:39:20	19440	14.56	0.01	0.41	4.46	55.12	97.28	1,758.00
	09/27/16 13:39:50	19470	14.62	0.08	0.35	4.44	55.12	97.28	1,758.00
	09/27/16 13:40:20	19500	14.79	0.29	0.40	4.29	55.18	97.42	1,770.00
	09/27/16 13:40:50	19530	14.87	0.44	0.40	4.24	55.18	97.42	1,770.00
	09/27/16 13:41:20	19560	14.71	0.67	0.40	4.34	55.28	97.61	1,782.00
	09/27/16 13:41:50	19590	14.59	0.57	0.39	4.43	55.28	97.61	1,782.00
	09/27/16 13:42:20	19620	14.84	0.27	0.39	4.25	55.27	97.83	1,782.00
	09/27/16 13:42:50	19650	14.72	0.19	0.41	4.35	55.27	97.83	1,782.00
	09/27/16 13:43:20	19680	14.70	0.28	0.41	4.34	55.22	98.05	1,758.00
	09/27/16 13:43:50	19710	14.66	0.26	0.41	4.38	55.22	98.05	1,758.00

Coyote North USA INC.
September 27, 2016
COMB 48
Enid Facility

Unit Data

Meas. Stack Moisture	4.2	%
Stack Exhaust Flow (M2)	91,640	SCFH

Weather Data

Barometric Pressure	28.71	in. Hg
Relative Humidity	31	%
Ambient Temperature	87	°F
Specific Humidity	0.008816	lb H_2O / lb air

0-30-0 Load, Run - COMB 48 R2

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. °F	Fuel Flow SCFH
	09/27/16 13:44:20	19740	14.85	0.28	0.44	4.22	55.18	98.27	1,746.00
	09/27/16 13:44:50	19770	14.84	0.31	0.39	4.26	55.18	98.27	1,746.00
	09/27/16 13:45:20	19800	14.92	0.37	0.40	4.20	55.15	98.55	1,770.00
	09/27/16 13:45:50	19830	14.77	0.68	0.43	4.28	55.15	98.55	1,770.00
	09/27/16 13:46:20	19860	14.79	0.57	0.44	4.31	55.12	98.87	1,776.00
	09/27/16 13:46:50	19890	14.81	0.44	0.42	4.27	55.12	98.87	1,776.00
	09/27/16 13:47:20	19920	14.79	0.32	0.42	4.29	55.19	99.19	1,662.00
	09/27/16 13:47:50	19950	14.76	0.41	0.41	4.31	55.19	99.19	1,662.00
	09/27/16 13:48:20	19980	15.40	0.45	0.49	3.99	55.79	99.39	864.00
	09/27/16 13:48:50	20010	17.35	0.77	0.75	2.64	55.79	99.39	864.00
	09/27/16 13:49:20	20040	17.91	1.81	0.88	2.21	55.81	99.40	810.00
	09/27/16 13:49:50	20070	17.84	2.36	0.95	2.25	55.81	99.40	810.00
	09/27/16 13:50:20	20100	17.76	2.65	0.96	2.30	55.82	99.34	798.00
	09/27/16 13:50:50	20130	17.78	2.82	0.92	2.29	55.82	99.34	798.00
	09/27/16 13:51:20	20160	17.77	2.48	0.95	2.30	55.88	99.26	726.00
	09/27/16 13:51:50	20190	18.01	2.14	1.02	2.14	55.88	99.26	726.00
	09/27/16 13:52:20	20220	18.05	2.23	1.20	2.11	55.89	99.15	726.00
	09/27/16 13:52:50	20250	18.12	2.97	1.14	2.05	55.89	99.15	726.00
	09/27/16 13:53:20	20280	18.03	2.99	1.31	2.10	55.56	99.04	1,164.00
	09/27/16 13:53:50	20310	17.95	3.74	1.27	2.16	55.56	99.04	1,164.00
	09/27/16 13:54:20	20340	15.77	4.04	0.57	3.49	55.10	99.07	1,794.00
A3	09/27/16 13:54:50	20370	14.75	2.12	0.42	4.30	55.10	99.07	1,794.00
	09/27/16 13:55:20	20400	14.53	0.76	0.41	4.47	55.11	99.26	1,800.00
	09/27/16 13:55:50	20430	14.62	0.49	0.40	4.39	55.11	99.26	1,800.00
	09/27/16 13:56:20	20460	14.67	0.49	0.40	4.36	55.16	99.42	1,800.00
	09/27/16 13:56:50	20490	14.58	0.43	0.42	4.42	55.16	99.42	1,800.00
	09/27/16 13:57:20	20520	14.39	0.21	0.42	4.54	55.21	99.54	1,794.00
	09/27/16 13:57:50	20550	14.22	0.00	0.41	4.68	55.21	99.54	1,794.00
	09/27/16 13:58:20	20580	14.52	-0.07	0.42	4.47	55.23	99.61	1,794.00
	09/27/16 13:58:50	20610	14.61	0.08	0.41	4.42	55.23	99.61	1,794.00
	09/27/16 13:59:20	20640	14.50	0.13	0.41	4.47	55.18	99.69	1,794.00
	09/27/16 13:59:50	20670	14.53	0.00	0.41	4.48	55.18	99.69	1,794.00
	09/27/16 14:00:20	20700	14.58	-0.01	0.42	4.44	55.10	99.77	1,788.00
	09/27/16 14:00:50	20730	14.37	0.05	0.43	4.55	55.10	99.77	1,788.00
	09/27/16 14:01:20	20760	14.60	-0.04	0.42	4.43	55.15	99.82	1,788.00
	09/27/16 14:01:50	20790	14.59	0.03	0.42	4.40	55.15	99.82	1,788.00
	09/27/16 14:02:20	20820	14.76	0.08	0.41	4.31	55.32	99.85	1,788.00
	09/27/16 14:02:50	20850	14.70	0.19	0.43	4.34	55.32	99.85	1,788.00
	09/27/16 14:03:20	20880	14.66	0.36	0.43	4.34	55.23	99.92	1,776.00
	09/27/16 14:03:50	20910	14.61	0.36	0.43	4.41	55.23	99.92	1,776.00
	09/27/16 14:04:20	20940	14.76	0.17	0.42	4.31	55.12	100.02	1,782.00
	09/27/16 14:04:50	20970	14.57	0.15	0.42	4.41	55.12	100.02	1,782.00
	09/27/16 14:05:20	21000	14.62	0.13	0.41	4.39	55.10	100.14	1,764.00
	09/27/16 14:05:50	21030	14.26	0.05	0.37	4.63	55.10	100.14	1,764.00
	09/27/16 14:06:20	21060	14.63	-0.08	0.44	4.40	55.74	100.16	924.00
	09/27/16 14:06:50	21090	16.57	0.14	0.65	3.29	55.74	100.16	924.00
	09/27/16 14:07:20	21120	17.79	1.36	0.87	2.30	55.83	100.02	828.00
	09/27/16 14:07:50	21150	17.78	2.50	0.93	2.29	55.83	100.02	828.00
	09/27/16 14:08:20	21180	17.68	2.71	0.94	2.33	55.85	99.81	816.00
	09/27/16 14:08:50	21210	17.73	3.11	0.99	2.31	55.85	99.81	816.00
	09/27/16 14:09:20	21240	17.75	3.17	1.09	2.30	55.85	99.55	810.00
	09/27/16 14:09:50	21270	17.62	3.59	0.99	2.39	55.85	99.55	810.00
	09/27/16 14:10:20	21300	17.66	3.41	0.95	2.37	55.77	99.26	930.00
	09/27/16 14:10:50	21330	17.81	2.83	1.03	2.27	55.77	99.26	930.00
	09/27/16 14:11:20	21360	17.42	2.41	0.84	2.42	55.10	99.06	1,776.00
	09/27/16 14:11:50	21390	14.65	1.92	0.45	4.31	55.10	99.06	1,776.00
	09/27/16 14:12:20	21420	14.46	0.66	0.43	4.50	55.08	99.00	1,812.00
	09/27/16 14:12:50	21450	14.12	0.13	0.46	4.75	55.08	99.00	1,812.00
	09/27/16 14:13:20	21480	14.46	0.01	0.43	4.50	55.16	99.01	1,818.00
	09/27/16 14:13:50	21510	14.34	0.05	0.44	4.58	55.16	99.01	1,818.00

Coyote North USA INC.
September 27, 2016
COMB 48
Enid Facility

Unit Data

Meas. Stack Moisture	4.2	%
Stack Exhaust Flow (M2)	91,640	SCFH

Weather Data

Barometric Pressure	28.71	in. Hg
Relative Humidity	31	%
Ambient Temperature	87	°F
Specific Humidity	0.008816	lb H_2O / lb air

0-30-0 Load, Run - COMB 48 R2

Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. °F	Fuel Flow SCFH
09/27/16 14:14:20	21540	14.40	-0.01	0.44	4.56	55.21	99.05	1,818.00
09/27/16 14:14:50	21570	14.12	-0.04	0.45	4.70	55.21	99.05	1,818.00
09/27/16 14:15:20	21600	14.06	-0.08	0.43	4.77	55.19	98.99	1,818.00
09/27/16 14:15:50	21630	14.09	-0.15	0.43	4.77	55.19	98.99	1,818.00
09/27/16 14:16:20	21660	14.26	-0.06	0.44	4.62	55.15	98.95	1,812.00
09/27/16 14:16:50	21690	14.30	0.09	0.44	4.61	55.15	98.95	1,812.00
09/27/16 14:17:20	21720	14.04	-0.02	0.43	4.78	55.13	98.94	1,812.00
09/27/16 14:17:50	21750	14.11	-0.17	0.38	4.76	55.13	98.94	1,812.00
09/27/16 14:18:20	21780	14.35	-0.22	0.39	4.57	55.11	98.90	1,806.00
09/27/16 14:18:50	21810	14.20	-0.15	0.43	4.67	55.11	98.90	1,806.00
09/27/16 14:19:20	21840	14.49	-0.19	0.44	4.51	55.10	98.90	1,806.00
09/27/16 14:19:50	21870	14.59	-0.06	0.43	4.40	55.10	98.90	1,806.00
09/27/16 14:20:20	21900	14.71	0.08	0.42	4.33	55.11	98.99	1,806.00
09/27/16 14:20:50	21930	14.49	0.12	0.45	4.50	55.11	98.99	1,806.00
09/27/16 14:21:20	21960	14.37	0.09	0.45	4.55	55.73	99.10	1,014.00
09/27/16 14:21:50	21990	15.89	0.11	0.63	3.73	55.73	99.10	1,014.00
09/27/16 14:22:20	22020	17.65	1.26	0.87	2.39	56.00	99.05	822.00
09/27/16 14:22:50	22050	17.85	3.60	1.04	2.24	56.00	99.05	822.00
09/27/16 14:23:20	22080	17.85	4.77	1.39	2.23	55.99	98.97	816.00
09/27/16 14:23:50	22110	17.74	8.48	1.10	2.31	55.99	98.97	816.00
09/27/16 14:24:20	22140	17.75	7.69	1.23	2.29	55.93	98.93	822.00
RAW AVERAGE		**15.61**	**1.33**	**0.60**	**3.74**	**55.38**	**97.85**	**1,468.89**

		O_2	CO	THC	CO_2	Press. Trans	Temp. Trans.	F-Flow Trans.
	Serial Number:	INSTO2-0011	INST-CO-0022	INST-TH-0002	INST-C2-0013	2104497-025	2104497-025	2104497-025
						(in. H_2O)	**(°F)**	**(SCFH)**
Bias	**Initial Zero**	-0.01	-0.03	-0.05	0.02			
	Final Zero	0.02	-0.02	-0.06	0.03			
	Avg. Zero	0.01	-0.03	-0.06	0.03			
	Initial UpScale	11.96	9.40	2.94	8.89			
	Final UpScale	11.94	9.32	2.97	8.86			
	Avg. UpScale	11.95	9.36	2.96	8.88			
Upscale Cal Gas		11.90	9.44	3.00	8.95			

EMISSIONS DATA	O_2	CO	THC	CO_2
Corrected Raw Average (ppm/% dry basis)	15.55	1.37	0.65	3.76
Corrected Raw Average (ppm/% wet basis)	14.89	1.31	0.63	3.60
Emission Rate (lb/hr)	N/A	0.01	0.01	N/A

Coyote North USA INC.
September 27, 2016
COMB 48
Enid Facility

Unit Data

Meas. Stack Moisture	4.7	%
Stack Exhaust Flow (M2)	164,561	SCFH

Weather Data

Barometric Pressure	28.87	in. Hg
Relative Humidity	26	%
Ambient Temperature	90	°F
Specific Humidity	0.008074	lb H_2O / lb air

0-30-0 Load, Run - COMB 48 R3

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. °F	Fuel Flow SCFH
A1	09/27/16 14:36:20	22860	17.71	4.26	1.30	2.33	55.98	97.98	828.00
	09/27/16 14:36:50	22890	17.71	4.52	1.05	2.32	55.98	97.98	828.00
	09/27/16 14:37:20	22920	17.67	3.58	1.07	2.34	55.96	97.98	822.00
	09/27/16 14:37:50	22950	17.56	3.75	1.17	2.43	55.96	97.98	822.00
	09/27/16 14:38:20	22980	17.54	4.45	1.02	2.42	55.93	97.92	822.00
	09/27/16 14:38:50	23010	17.74	4.01	1.08	2.43	55.93	97.92	822.00
	09/27/16 14:39:20	23040	18.81	5.41	1.19	2.52	55.86	97.81	882.00
	09/27/16 14:39:50	23070	18.80	5.92	0.91	2.56	55.86	97.81	882.00
	09/27/16 14:40:20	23100	18.79	3.68	0.92	2.54	55.22	97.74	1,752.00
	09/27/16 14:40:50	23130	15.97	2.95	0.53	4.35	55.22	97.74	1,752.00
	09/27/16 14:41:20	23160	15.34	1.09	0.46	4.82	55.17	97.87	1,818.00
	09/27/16 14:41:50	23190	15.38	0.41	0.45	4.81	55.17	97.87	1,818.00
	09/27/16 14:42:20	23220	15.38	0.30	0.45	4.79	55.18	98.05	1,812.00
	09/27/16 14:42:50	23250	15.24	0.45	0.44	4.88	55.18	98.05	1,812.00
	09/27/16 14:43:20	23280	15.21	0.22	0.41	4.90	55.19	98.17	1,806.00
	09/27/16 14:43:50	23310	15.30	-0.05	0.46	4.86	55.19	98.17	1,806.00
	09/27/16 14:44:20	23340	15.24	-0.05	0.47	4.81	55.20	98.23	1,800.00
	09/27/16 14:44:50	23370	14.31	-0.04	0.55	4.58	55.20	98.23	1,800.00
	09/27/16 14:45:20	23400	14.56	0.12	0.43	4.42	55.22	98.32	1,800.00
	09/27/16 14:45:50	23430	14.55	0.28	0.44	4.38	55.22	98.32	1,800.00
	09/27/16 14:46:20	23460	14.40	0.35	0.39	4.52	55.27	98.47	1,794.00
	09/27/16 14:46:50	23490	14.33	0.25	0.43	4.56	55.27	98.47	1,794.00
	09/27/16 14:47:20	23520	14.47	0.09	0.48	4.46	55.29	98.63	1,794.00
	09/27/16 14:47:50	23550	14.36	0.12	0.47	4.53	55.29	98.63	1,794.00
	09/27/16 14:48:20	23580	14.41	0.08	0.42	4.48	55.28	98.78	1,782.00
	09/27/16 14:48:50	23610	14.32	-0.03	0.44	4.56	55.28	98.78	1,782.00
	09/27/16 14:49:20	23640	14.32	-0.03	0.47	4.53	55.36	98.87	1,788.00
	09/27/16 14:49:50	23670	14.30	0.02	0.43	4.57	55.36	98.87	1,788.00
	09/27/16 14:50:20	23700	14.66	-0.05	0.51	4.36	55.46	98.94	1,770.00
	09/27/16 14:50:50	23730	14.54	-0.01	0.48	4.40	55.46	98.94	1,770.00
	09/27/16 14:51:20	23760	14.58	-0.01	0.46	4.36	55.38	99.05	1,782.00
	09/27/16 14:51:50	23790	14.63	0.08	0.45	4.35	55.38	99.05	1,782.00
	09/27/16 14:52:20	23820	14.49	0.08	0.47	4.43	55.34	99.18	1,722.00
	09/27/16 14:52:50	23850	14.45	0.01	0.48	4.48	55.34	99.18	1,722.00
	09/27/16 14:53:20	23880	14.50	-0.09	0.49	4.52	55.94	99.21	840.00
	09/27/16 14:53:50	23910	17.26	0.18	0.78	2.75	55.94	99.21	840.00
	09/27/16 14:54:20	23940	17.84	1.32	0.90	2.22	56.00	99.07	792.00
	09/27/16 14:54:50	23970	17.72	1.95	0.89	2.28	56.00	99.07	792.00
	09/27/16 14:55:20	24000	17.76	1.92	0.92	2.28	56.00	98.91	792.00
	09/27/16 14:55:50	24030	17.85	1.96	0.99	2.22	56.00	98.91	792.00
	09/27/16 14:56:20	24060	17.84	2.08	1.19	2.22	56.00	98.78	798.00
A2	09/27/16 14:56:50	24090	17.72	3.16	1.05	2.29	56.00	98.78	798.00
	09/27/16 14:57:20	24120	17.79	3.31	1.02	2.25	55.98	98.65	804.00
	09/27/16 14:57:50	24150	17.75	2.75	1.00	2.28	55.98	98.65	804.00
	09/27/16 14:58:20	24180	17.77	2.60	0.99	2.26	55.27	98.55	1,722.00
	09/27/16 14:58:50	24210	15.34	2.29	0.58	3.71	55.27	98.55	1,722.00
	09/27/16 14:59:20	24240	14.46	1.15	0.48	4.49	55.24	98.64	1,800.00
	09/27/16 14:59:50	24270	14.34	0.41	0.51	4.54	55.24	98.64	1,800.00
	09/27/16 15:00:20	24300	14.41	0.19	0.48	4.52	55.25	98.73	1,800.00
	09/27/16 15:00:50	24330	14.34	0.25	0.50	4.53	55.25	98.73	1,800.00
	09/27/16 15:01:20	24360	14.13	0.10	0.48	4.70	55.26	98.79	1,800.00
	09/27/16 15:01:50	24390	14.20	-0.16	0.48	4.68	55.26	98.79	1,800.00
	09/27/16 15:02:20	24420	14.33	-0.08	0.51	4.56	55.30	98.84	1,800.00
	09/27/16 15:02:50	24450	14.36	0.01	0.50	4.53	55.30	98.84	1,800.00
	09/27/16 15:03:20	24480	14.35	-0.09	0.50	4.58	55.35	98.88	1,800.00
	09/27/16 15:03:50	24510	14.53	-0.09	0.48	4.44	55.35	98.88	1,800.00
	09/27/16 15:04:20	24540	14.34	-0.09	0.48	4.54	55.35	98.91	1,794.00
	09/27/16 15:04:50	24570	14.43	-0.12	0.51	4.50	55.35	98.91	1,794.00
	09/27/16 15:05:20	24600	14.30	-0.08	0.51	4.56	55.33	98.96	1,794.00
	09/27/16 15:05:50	24630	14.31	-0.05	0.47	4.59	55.33	98.96	1,794.00

Coyote North USA INC.
September 27, 2016
COMB 48
Enid Facility

Unit Data

Meas. Stack Moisture	4.7	%
Stack Exhaust Flow (M2)	164,561	SCFH

Weather Data

Barometric Pressure	28.87	in. Hg
Relative Humidity	26	%
Ambient Temperature	90	°F
Specific Humidity	0.008074	lb H_2O / lb air

0-30-0 Load, Run - COMB 48 R3

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. °F	Fuel Flow SCFH
	09/27/16 15:06:20	24660	14.20	-0.14	0.48	4.63	55.30	98.99	1,788.00
	09/27/16 15:06:50	24690	14.33	-0.20	0.51	4.58	55.30	98.99	1,788.00
	09/27/16 15:07:20	24720	14.20	-0.21	0.49	4.63	55.28	98.99	1,782.00
	09/27/16 15:07:50	24750	14.22	-0.20	0.50	4.67	55.28	98.99	1,782.00
	09/27/16 15:08:20	24780	14.42	-0.20	0.51	4.51	55.27	98.99	1,764.00
	09/27/16 15:08:50	24810	14.50	-0.01	0.51	4.47	55.27	98.99	1,764.00
	09/27/16 15:09:20	24840	14.60	0.09	0.51	4.38	55.50	99.05	1,500.00
	09/27/16 15:09:50	24870	14.74	0.09	0.50	4.30	55.50	99.05	1,500.00
	09/27/16 15:10:20	24900	15.95	0.27	0.68	3.63	55.97	99.02	786.00
	09/27/16 15:10:50	24930	17.78	1.12	0.89	2.28	55.97	99.02	786.00
	09/27/16 15:11:20	24960	17.83	2.13	1.01	2.24	55.94	98.76	780.00
	09/27/16 15:11:50	24990	17.80	3.13	0.96	2.24	55.94	98.76	780.00
	09/27/16 15:12:20	25020	17.76	2.85	1.09	2.27	55.96	98.52	786.00
	09/27/16 15:12:50	25050	17.79	3.43	1.14	2.27	55.96	98.52	786.00
	09/27/16 15:13:20	25080	17.88	4.21	1.10	2.20	55.96	98.37	786.00
	09/27/16 15:13:50	25110	17.87	3.40	1.18	2.20	55.96	98.37	786.00
	09/27/16 15:14:20	25140	17.92	3.44	1.26	2.18	55.93	98.24	840.00
	09/27/16 15:14:50	25170	17.90	3.59	1.17	2.18	55.93	98.24	840.00
	09/27/16 15:15:20	25200	17.85	3.18	1.16	2.18	55.20	98.17	1,776.00
	09/27/16 15:15:50	25230	14.95	3.04	0.64	4.02	55.20	98.17	1,776.00
	09/27/16 15:16:20	25260	14.42	1.42	0.52	4.49	55.19	98.29	1,806.00
A3	09/27/16 15:16:50	25290	14.62	0.31	0.51	4.38	55.19	98.29	1,806.00
	09/27/16 15:17:20	25320	14.54	0.21	0.50	4.41	55.24	98.48	1,806.00
	09/27/16 15:17:50	25350	14.48	0.12	0.52	4.48	55.24	98.48	1,806.00
	09/27/16 15:18:20	25380	14.57	0.17	0.51	4.40	55.31	98.70	1,806.00
	09/27/16 15:18:50	25410	14.56	0.32	0.50	4.42	55.31	98.70	1,806.00
	09/27/16 15:19:20	25440	14.55	0.25	0.50	4.43	55.29	98.91	1,806.00
	09/27/16 15:19:50	25470	14.53	0.15	0.54	4.43	55.29	98.91	1,806.00
	09/27/16 15:20:20	25500	14.51	0.05	0.52	4.45	55.28	99.11	1,800.00
	09/27/16 15:20:50	25530	14.62	0.19	0.51	4.38	55.28	99.11	1,800.00
	09/27/16 15:21:20	25560	14.51	0.72	0.57	4.45	55.43	99.34	1,800.00
	09/27/16 15:21:50	25590	14.42	0.48	0.51	4.51	55.43	99.34	1,800.00
	09/27/16 15:22:20	25620	14.37	0.11	0.53	4.54	55.59	99.52	1,800.00
	09/27/16 15:22:50	25650	14.26	-0.06	0.53	4.62	55.59	99.52	1,800.00
	09/27/16 15:23:20	25680	14.60	-0.11	0.53	4.40	55.47	99.65	1,794.00
	09/27/16 15:23:50	25710	14.55	0.14	0.53	4.43	55.47	99.65	1,794.00
	09/27/16 15:24:20	25740	14.47	0.23	0.58	4.46	55.32	99.74	1,794.00
	09/27/16 15:24:50	25770	14.22	0.18	0.56	4.63	55.32	99.74	1,794.00
	09/27/16 15:25:20	25800	14.53	0.02	0.57	4.45	55.27	99.78	1,788.00
	09/27/16 15:25:50	25830	14.67	0.02	0.59	4.32	55.27	99.78	1,788.00
	09/27/16 15:26:20	25860	14.25	0.03	0.59	4.61	55.26	99.84	1,788.00
	09/27/16 15:26:50	25890	14.34	-0.09	0.55	4.57	55.26	99.84	1,788.00
	09/27/16 15:27:20	25920	14.62	-0.14	0.54	4.36	55.30	99.88	1,758.00
	09/27/16 15:27:50	25950	14.66	-0.08	0.51	4.37	55.30	99.88	1,758.00
	09/27/16 15:28:20	25980	14.59	0.06	0.60	4.39	55.89	99.91	972.00
	09/27/16 15:28:50	26010	16.49	0.33	0.78	3.27	55.89	99.91	972.00
	09/27/16 15:29:20	26040	17.66	2.30	1.05	2.38	56.05	99.83	768.00
	09/27/16 15:29:50	26070	17.96	4.69	1.24	2.15	56.05	99.83	768.00
	09/27/16 15:30:20	26100	17.88	5.24	1.20	2.19	56.06	99.73	768.00
	09/27/16 15:30:50	26130	17.93	4.09	1.18	2.17	56.06	99.73	768.00
	09/27/16 15:31:20	26160	17.90	2.81	1.16	2.17	56.06	99.62	768.00
	09/27/16 15:31:50	26190	17.86	2.69	1.17	2.20	56.06	99.62	768.00
	09/27/16 15:32:20	26220	17.85	2.93	1.22	2.22	56.00	99.44	858.00
	09/27/16 15:32:50	26250	17.93	3.04	1.38	2.16	56.00	99.44	858.00
	09/27/16 15:33:20	26280	17.64	3.64	1.16	2.27	55.32	99.32	1,704.00
	09/27/16 15:33:50	26310	15.37	3.41	0.71	3.79	55.32	99.32	1,704.00
	09/27/16 15:34:20	26340	14.42	1.70	0.58	4.49	55.27	99.37	1,806.00
	09/27/16 15:34:50	26370	14.55	0.47	0.56	4.38	55.27	99.37	1,806.00
	09/27/16 15:35:20	26400	14.23	0.13	0.57	4.66	55.35	99.44	1,806.00
	09/27/16 15:35:50	26430	14.29	0.02	0.59	4.55	55.35	99.44	1,806.00

Coyote North USA INC.
September 27, 2016
COMB 48
Enid Facility

Unit Data

Meas. Stack Moisture	4.7	%
Stack Exhaust Flow (M2)	164,561	SCFH

Weather Data

Barometric Pressure	28.87	in. Hg
Relative Humidity	26	%
Ambient Temperature	90	°F
Specific Humidity	0.008074	lb H_2O / lb air

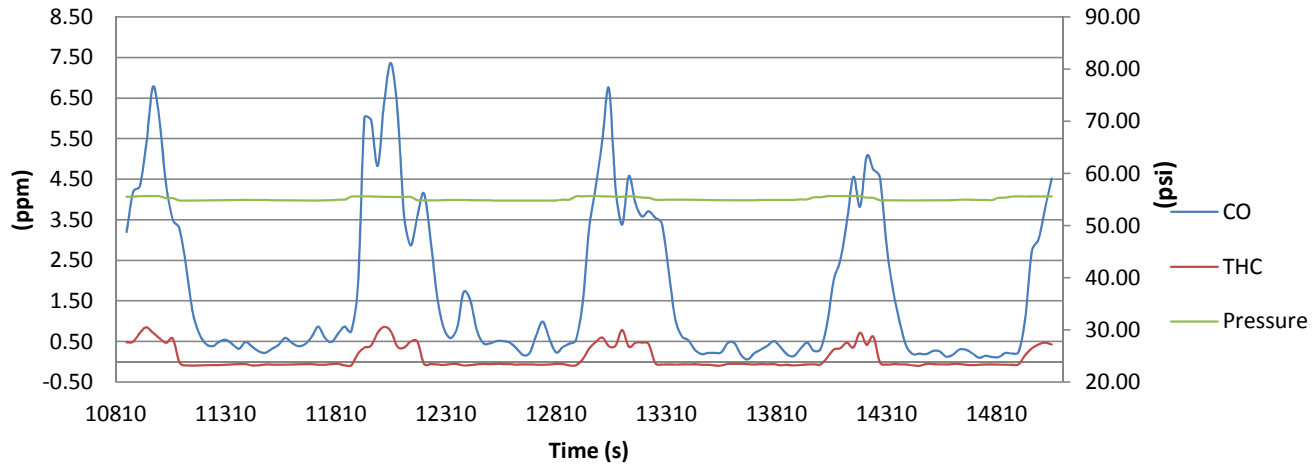
0-30-0 Load, Run - COMB 48 R3

Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. °F	Fuel Flow SCFH
09/27/16 15:36:20	26460	14.39	0.01	0.58	4.55	55.37	99.46	1,794.00
09/27/16 15:36:50	26490	14.22	0.12	0.59	4.61	55.37	99.46	1,794.00
09/27/16 15:37:20	26520	14.15	-0.05	0.58	4.68	55.34	99.47	1,794.00
09/27/16 15:37:50	26550	14.33	-0.11	0.60	4.56	55.34	99.47	1,794.00
09/27/16 15:38:20	26580	14.63	0.05	0.60	4.41	55.31	99.51	1,800.00
09/27/16 15:38:50	26610	14.42	0.23	0.61	4.49	55.31	99.51	1,800.00
09/27/16 15:39:20	26640	14.17	0.18	0.58	4.64	55.28	99.55	1,800.00
09/27/16 15:39:50	26670	14.50	-0.05	0.58	4.46	55.28	99.55	1,800.00
09/27/16 15:40:20	26700	14.63	0.02	0.58	4.36	55.27	99.60	1,794.00
09/27/16 15:40:50	26730	14.62	0.19	0.61	4.37	55.27	99.60	1,794.00
09/27/16 15:41:20	26760	14.41	0.11	0.61	4.48	55.27	99.66	1,794.00
09/27/16 15:41:50	26790	14.61	-0.06	0.58	4.39	55.27	99.66	1,794.00
09/27/16 15:42:20	26820	14.55	0.02	0.60	4.39	55.26	99.73	1,794.00
09/27/16 15:42:50	26850	14.52	0.02	0.60	4.43	55.26	99.73	1,794.00
09/27/16 15:43:20	26880	14.41	0.17	0.61	4.48	55.28	99.79	1,788.00
09/27/16 15:43:50	26910	14.33	0.09	0.53	4.58	55.28	99.79	1,788.00
09/27/16 15:44:20	26940	14.57	-0.11	0.59	4.38	55.87	99.76	1,002.00
09/27/16 15:44:50	26970	15.96	0.04	0.71	3.65	55.87	99.76	1,002.00
09/27/16 15:45:20	27000	17.55	0.74	0.94	2.43	56.04	99.55	804.00
09/27/16 15:45:50	27030	17.83	1.53	1.08	2.23	56.04	99.55	804.00
09/27/16 15:46:20	27060	17.87	2.15	1.29	2.20	56.06	99.34	804.00
RAW AVERAGE		**15.54**	**1.07**	**0.69**	**3.83**	**55.51**	**98.97**	**1,490.21**

		O_2	CO	THC	CO_2	Press. Trans	Temp. Trans.	F-Flow Trans.
	Serial Number:	INSTO2-0011	INST-CO-0022	INST-TH-0002	INST-C2-0013	2104497-025	2104497-025	2104497-025
		(%)	(ppmvd)	(ppmvw)	(%)	(in. H_2O)	(°F)	(SCFH)
Bias	Initial Zero	0.02	-0.02	-0.06	0.03			
	Final Zero	0.01	-0.09	-0.04	0.01			
	Avg. Zero	0.02	-0.06	-0.05	0.02			
	Initial UpScale	11.94	9.32	2.97	8.86			
	Final UpScale	11.93	9.32	3.04	8.83			
	Avg. UpScale	11.94	9.32	3.01	8.85			
Upscale Cal Gas		11.90	9.44	3.00	8.95			

EMISSIONS DATA	O_2	CO	THC	CO_2
Corrected Raw Average (ppm/% dry basis)	15.50	1.14	0.73	3.87
Corrected Raw Average (ppm/% wet basis)	14.77	1.09	0.69	3.68
Emission Rate (lb/hr)	N/A	0.01	0.01	N/A

COMB 48 R1



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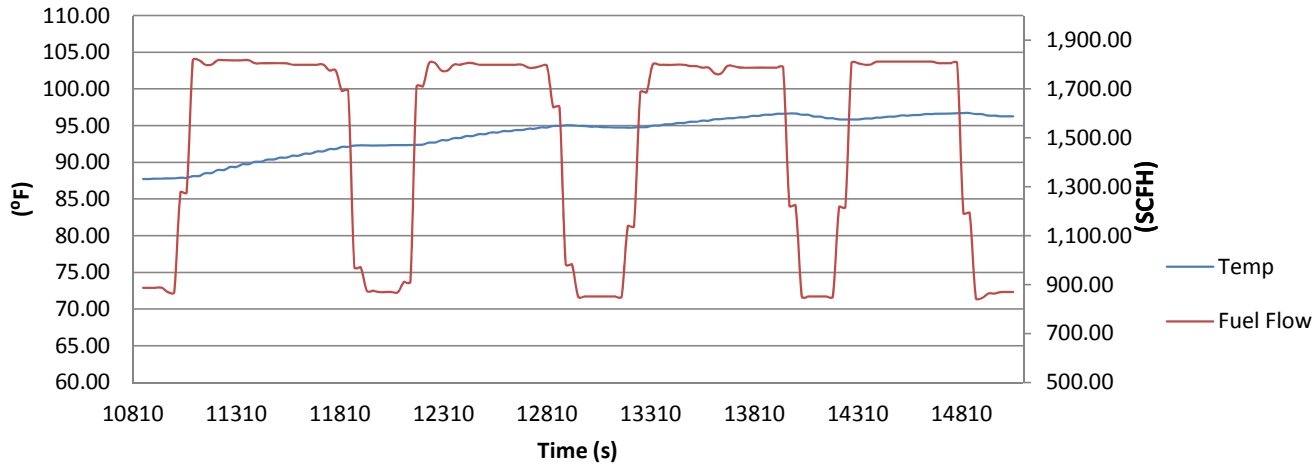

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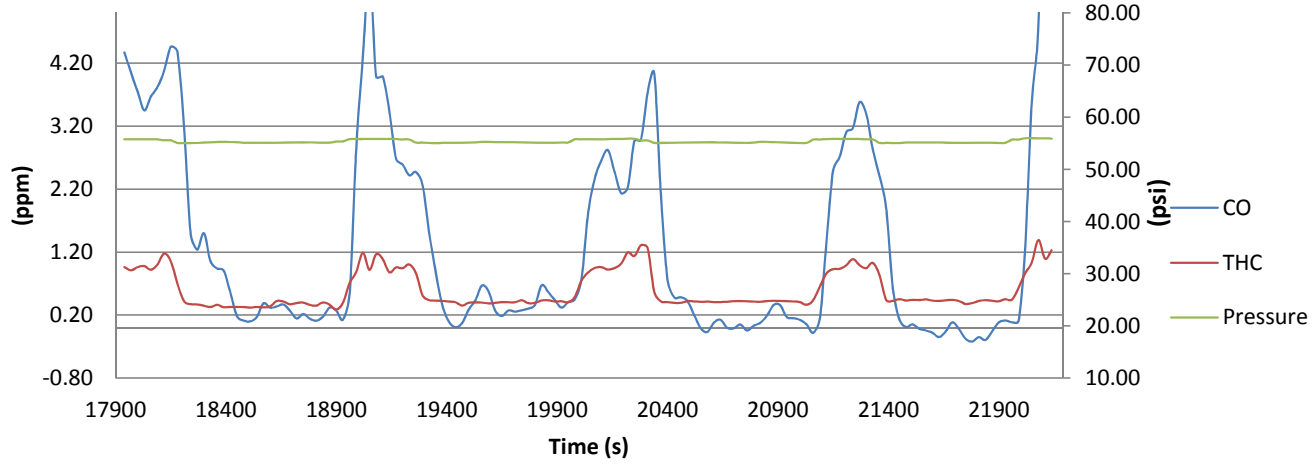

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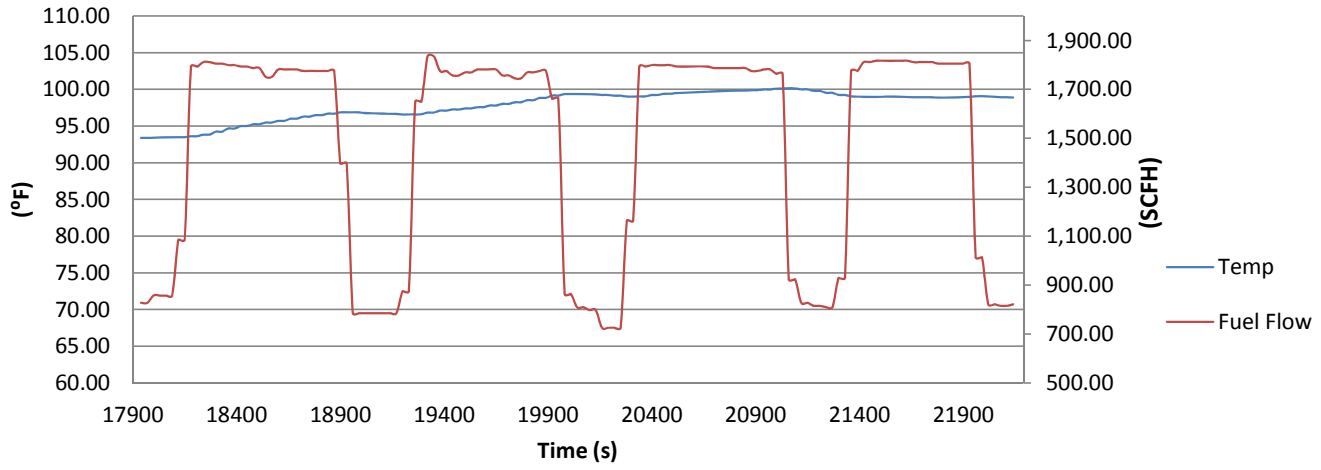

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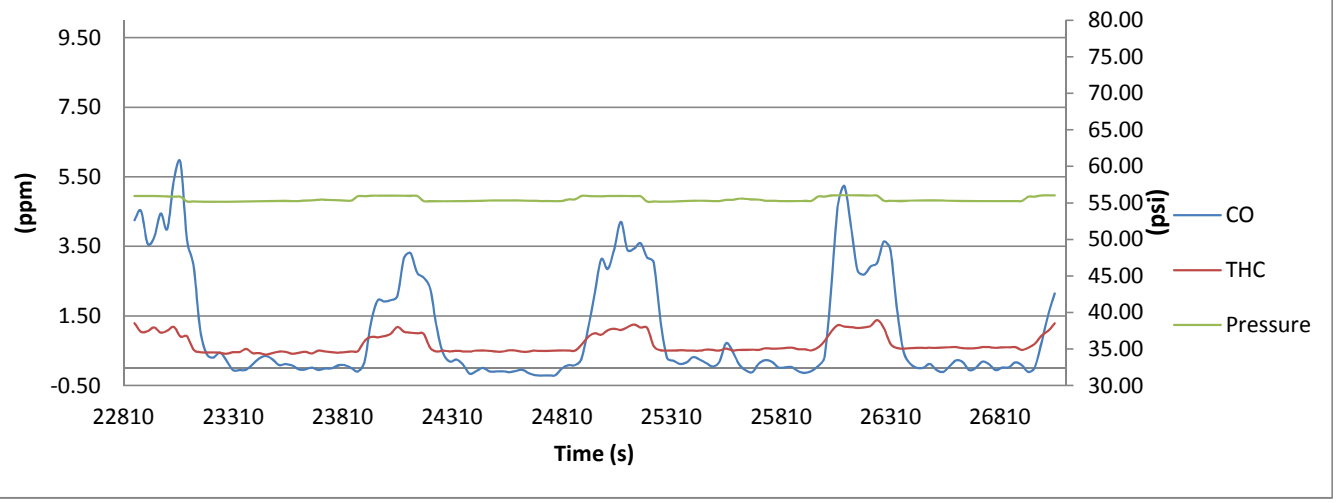

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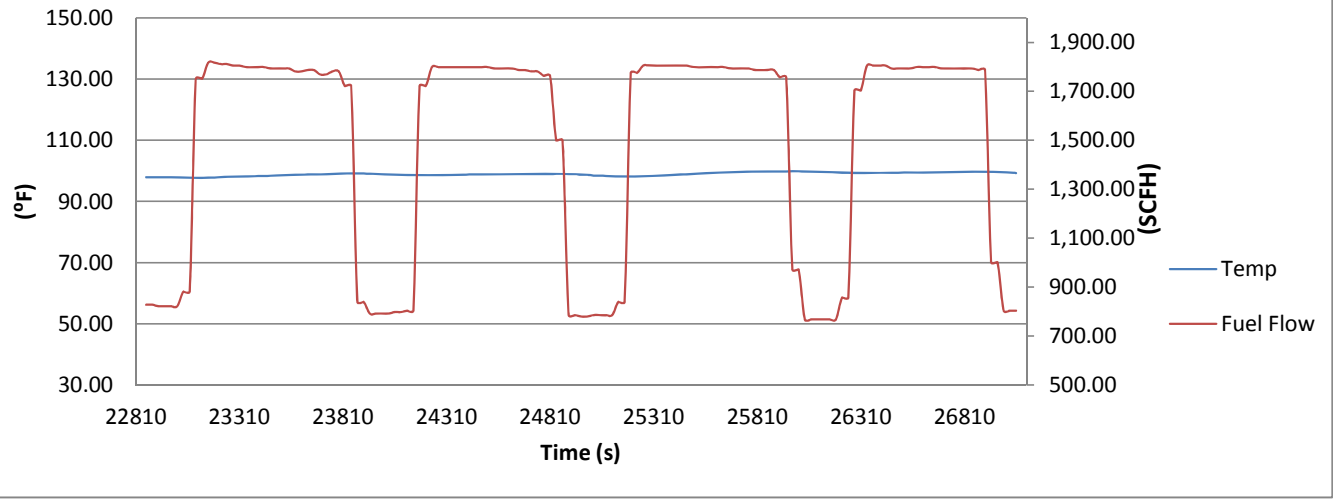
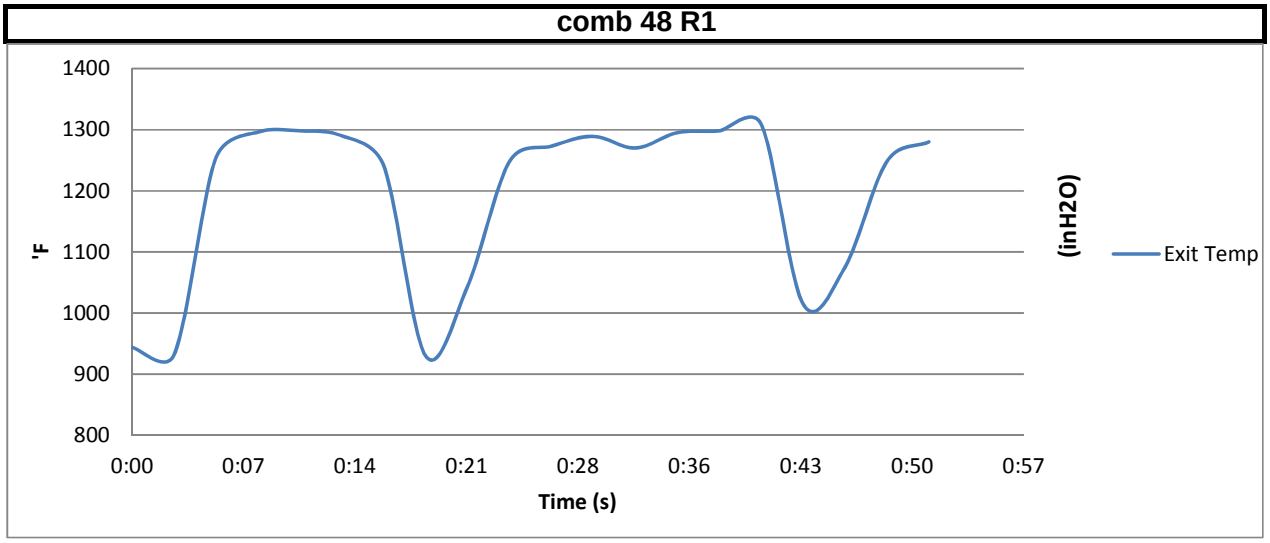
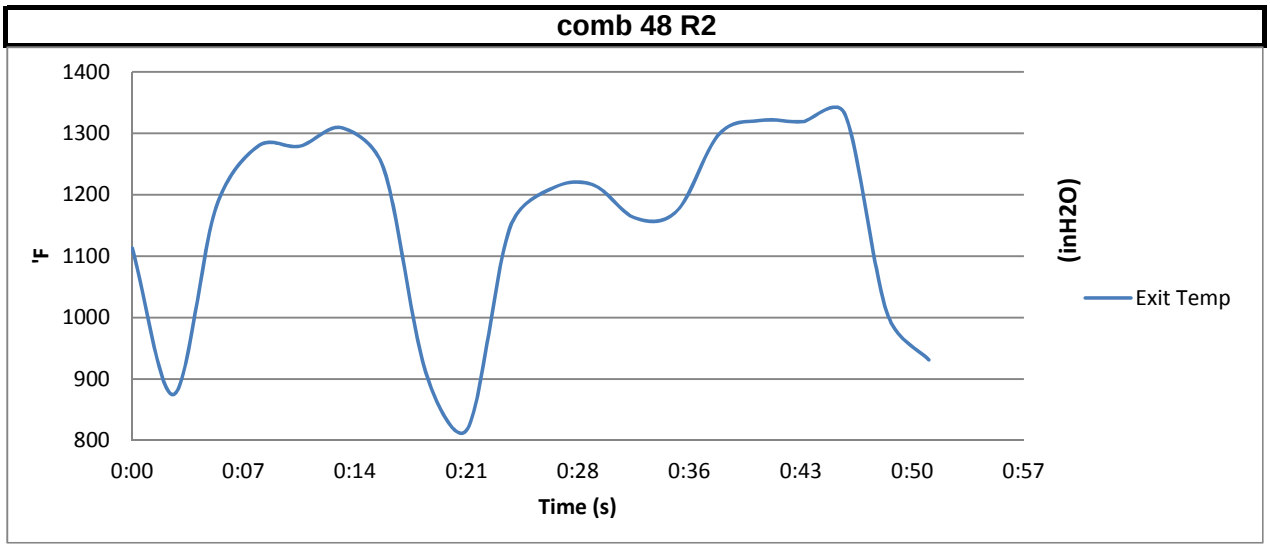



comb 48 R1
1400
1300
1200
1100
1000
900
800
'F
0:00
0:07
0:14
0:21
0:28
0:36
0:43
0:50
0:57
Time (s)
(inH2O)
Exit Temp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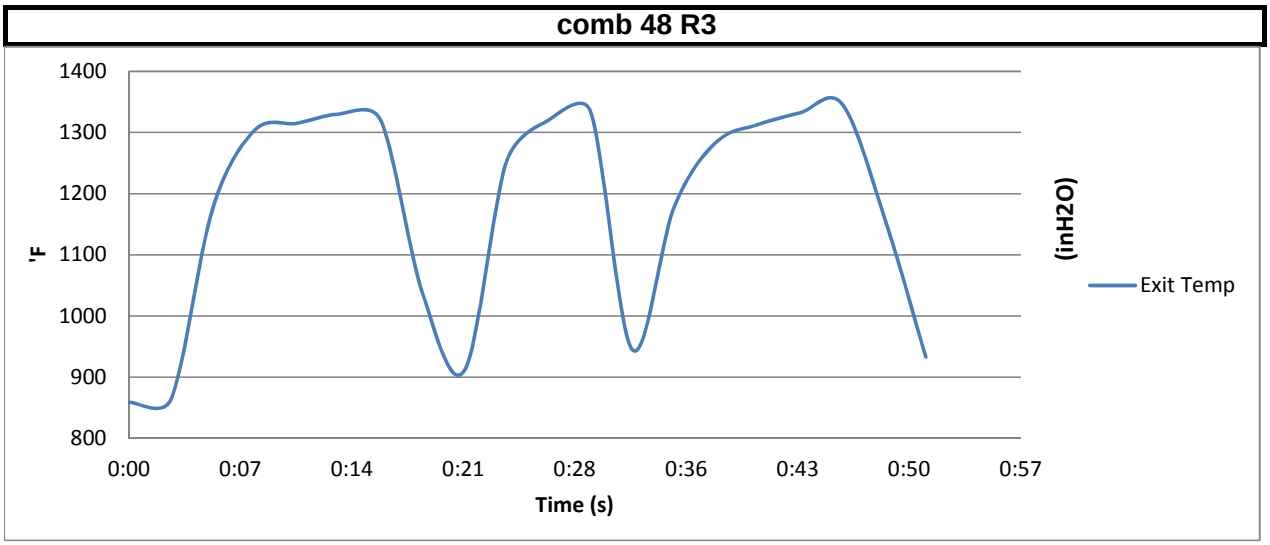
1400
1300
1200
1100
1000
900
800
'F
0:00
0:07
0:14
0:21
0:28
0:36
0:43
0:50
0:57
Time (s)
(inH2O)
Exit Temp


comb 48 R3
1400
1300
1200
1100
1000
900
800
'F
0:00
0:07
0:14
0:21
0:28
0:36
0:43
0:50
0:57
Time (s)
(inH2O)
Exit Temp

EMISSION DATA RECORDS

30-70-30% RAMP-UP, RAMP-DOWN UNIT OPERATION DATA

METHOD 4 (MOISTURE) [MULTI POINT, NO VARIATION] SOURCE SAMPLING TITLE PAGE

Source Information	
Plant Name	Enid Facility
Sampling Location	COMB 48
Fuel Type	Gas, Propene

Test Information			
Project #		coyote-16-enid.ok-comp#1	
Operator		TW/RA	
Date for Preliminary Run	(mm/dd/yy)	9/27-28/2016	
Standard Temperature		68	°F
Standard Pressure		29.92	in Hg
Required Sample Vol.	RM4, 8.1.1.2	21	scf
Run Duration	≤0.75 cfm	65	minutes
Unit Number		1	
Base Run Number		30-70-30%	
Number of Ports Available		2	
Number of Ports Used		2	
Port Inside Diameter		3.00	in
Stack Shape		Circular	

Test Equipment Information					
Run		**4**	**5**	**6**	
Test Date	(mm/dd/yy)	09/27/16	09/28/16	09/28/16	
Load	% or w/DB	30-70-30	30-70-30	30-70-30	
Meter Box Number	from ACS	SAMP-CP-0011	SAMP-CP-0011	SAMP-CP-0011	
Meter Calibration Factor	(Y)	0.989	0.989	0.989	
Orifice Meter Coefficient	($\Delta H_@$)	1.585	1.585	1.585	in H_2O
Pitot Identification	from ACS	9-7-16-1	9-7-16-1	9-7-16-1	
Pitot Tube Coefficient	(C_p)	0.840	0.840	0.840	
Probe Number	from ACS	SAMP-PF-0001	SAMP-PF-0001	SAMP-PF-0001	
Probe Length		60.0	60.0	60.0	in
(SS, Glass ….) Liner Material	from list	inconel	inconel	inconel	
Impinger Case Number	from ACS	SAMP-BC-0002	SAMP-BC-0002	SAMP-BC-0002	

Testing Company Information	
Company Name	Air Hygiene International, Inc. (Tulsa, Oklahoma)
Address	1600 W Tacoma Street
City, State Zip	Broken Arrow, Oklahoma 74012
Project Manager	Min Sum Lee
Phone Number	(918) 307-8865
Fax Number	(918) 307-9131

METHOD 4 (MOISTURE) [MULTI POINT, NO VARIATION] - RESULTS

Plant Name	Enid Facility
Sampling Location	COMB 48
Project #	coyote-16-enid.ok-comp#1

Historical Data	**30-70-30%-4**	**30-70-30%-5**	**30-70-30%-6**	**Average**	**Units**
Run Start Time	16:10	08:55	10:38		hh:mm
Run Stop Time	17:22	10:03	11:50		hh:mm
Test Date	09/27/16	09/28/16	09/28/16		mm/dd/yy
Meter Calibration Factor	0.989	0.989	0.989		
Pitot Tube Coefficient	0.840	0.840	0.840		
Initial Meter Volume	724.600	771.800	819.000		ft^3
Final Meter Volume	771.300	818.800	868.100		ft^3
Total Meter Volume	46.700	47.000	49.100	47.600	ft^3
Total Sampling Time	65.00	65.00	65.00	65.00	min
Average Meter Temperature	91.54	75.15	79.85	82.18	°F
Average Stack Temperature	1426.92	1413.75	1447.79	1429.49	°F
Barometric Pressure	28.64	28.69	28.73	28.69	in Hg
Stack Static Pressure	0.00	0.00	0.00	0.00	in H_2O
Absolute Stack Pressure	28.64	28.69	28.73	28.69	in Hg
Average Orifice Pressure Drop	1.50	1.50	1.50	1.50	in H_2O
Absolute Meter Pressure	28.76	28.81	28.85	28.80	in Hg
Avg Square Root Pitot Pressure	0.14	0.25	0.26	0.22	$\sqrt{(in\ H_2O)}$
Moisture Content Data	**30-70-30%-4**	**30-70-30%-5**	**30-70-30%-6**	**Average**	**Units**
Impinger Water Weight Gain	39.30	43.90	45.10	42.77	g
Silica Gel Weight Gain	11.00	10.60	10.00	10.53	g
Total Water Volume Collected	50.39	54.60	55.20	53.40	ml
Standard Water Vapor Volume	2.37	2.57	2.60	2.51	scf
Standard Meter Volume	42.5	44.1	45.8	44.1	dscf
Calculated Stack Moisture	5.29	5.50	5.37	5.39	%
Saturated Stack Moisture	100.00	100.00	100.00	100.00	%
Reported Stack Moisture Content	5.29	5.50	5.37	5.39	%
Method 3C Gas Analysis Data	**30-70-30%-4**	**30-70-30%-5**	**30-70-30%-6**	**Average**	**Units**
Carbon Dioxide Content	3.9	4.1	4.3	4.1	%
Oxygen Content	16.3	15.6	15.1	15.7	%
Nitrogen Content	79.8	80.3	80.6	80.2	%
Stack Dry Molecular Weight	29.27	29.28	29.30	29.28	lb/lb-mole
Stack Wet Molecular Weight	28.68	28.66	28.69	28.67	lb/lb-mole
Percent Excess Air	341.5	278.3	244.6	288.2	%
Volumetric Flow Rate Data	**30-70-30%-4**	**30-70-30%-5**	**30-70-30%-6**	**Average**	**Units**
Average Stack Gas Velocity	14.82	27.51	28.36	23.56	ft/sec
Stack Cross-Sectional Area	12.16	12.16	12.16	12.16	ft^2
Actual Stack Flow Rate	10,811	20,073	20,695	17,193	acfm
Wet Standard Stack Flow Rate	174	325	330	276	wkscfh
Dry Standard Stack Flow Rate	164,561	307,532	312,267	261,453	dscfh

METHOD 3C - DETERMINATION OF DRY MOLECULAR WEIGHT BY ANALYZER

Plant Name	Enid Facility	**Preliminary Date**	9/27-28/2016		
Sampling Location	COMB 48	**Operator**	TW/RA		
Project #	coyote-16-enid.ok-comp#1	**# of Ports Used**	2		
Fuel Type	Gas, Propene	**Min. Fuel Factor**	N/A	**Max. Fuel Factor**	N/A

Gas Analysis Data									
Run Number	30-70-30%-4		**Date**	09/27/16	**Run Start Time**	16:10		**Run Stop Time**	17:22
Sample Analysis Time	**CO_2 Conc.**	**O_2 Conc.**	**Methane Conc.**	**N_2 Conc.**	**Dry Molecular Weight**	**Calculated Fuel Factor**		**Excess Air**	**Fuel Factor in Range**
	($\%CO_2$)	($\%O_2$)	(ppmCO)	($\%N_2$)	(M_d)	$(F_o)_{avg}$		$(\%EA)_{avg}$	
hh:mm	%	%	ppm	%	lb/lb-mole			%	
01:12	3.9	16.3	0.0	79.8	29.27	1.186		341.5	N/A

Gas Analysis Data									
Run Number	30-70-30%-5		**Date**	09/28/16	**Run Start Time**	08:55		**Run Stop Time**	10:03
Sample Analysis Time	**CO_2 Conc.**	**O_2 Conc.**	**Methane Conc.**	**N_2 Conc.**	**Dry Molecular Weight**	**Calculated Fuel Factor**		**Excess Air**	**Fuel Factor in Range**
	($\%CO_2$)	($\%O_2$)	(ppmCO)	($\%N_2$)	(M_d)	$(F_o)_{avg}$		$(\%EA)_{avg}$	
hh:mm	%	%	ppm	%	lb/lb-mole			%	
01:08	4.1	15.6	0.0	80.3	29.28	1.299		278.3	N/A

Gas Analysis Data									
Run Number	30-70-30%-6		**Date**	09/28/16	**Run Start Time**	10:38		**Run Stop Time**	11:50
Sample Analysis Time	**CO_2 Conc.**	**O_2 Conc.**	**Methane Conc.**	**N_2 Conc.**	**Dry Molecular Weight**	**Calculated Fuel Factor**		**Excess Air**	**Fuel Factor in Range**
	($\%CO_2$)	($\%O_2$)	(ppmCO)	($\%N_2$)	(M_d)	$(F_o)_{avg}$		$(\%EA)_{avg}$	
hh:mm	%	%	ppm	%	lb/lb-mole			%	
01:12	4.3	15.1	0.0	80.6	29.30	1.343		244.6	N/A

METHOD 4 - DETERMINATION OF MOISTURE CONTENT IN STACK GASES

Plant Name	Enid Facility	**Preliminary Date**	9/27-28/2016
Sampling Location	COMB 48	**Operator**	TW/RA
Project #	coyote-16-enid.ok-comp#1	**Ports Used**	2

Moisture Content Data									
Run Number		30-70-30%-4		**Date**	09/27/16	**Start Time**	16:10	**Stop Time**	17:22
Meter Box Number		SAMP-CP-0011				**Meter Cal Factor**	(Y)	0.989	
Total Meter Volume		(V_m)	46.700	dcf		**Barometric Pressure**	(P_b)	28.64	in Hg
Average Stack Temp		$(t_s)_{avg}$	1427	°F		**Stack Static Pressure**	(P_{static})	0.00	in H_2O
Average Meter Temp		$(t_m)_{avg}$	92	°F		**Avg Orifice Pressure**	$(\Delta H)_{avg}$	1.50	in H_2O
		Impinger 1	**Impinger 2**	**Impinger 3**	**Impinger 4**	**Impinger 5**	**Impinger 6**	**Impinger 7**	**Impinger 8**
		(g)	(g)	(g)	(g)				
Contents		H_2O	H_2O	-	Sil Gel				
Final Value	(V_f),(W_f)	874.80	752.00	615.50	846.40				
Initial Value	(V_i),(W_i)	842.00	746.70	614.30	835.40				
Net Value	(V_n),(W_n)	32.8	5.3	1.2	11.0				
Results									
Total Weight		(W_t)	50.30	g		**Water Vol Weighed**	($V_{wsg(std)}$)	2.372	scf
Std Meter Volume		($V_{m(std)}$)	42.486	dscf		**Sat. Moisture Content**	($B_{ws(svp)}$)	100.00	%
Calc Moisture Content		($B_{ws(calc)}$)	5.29	%		**Final Moisture Content**	(B_{ws})	5.29	%

Moisture Content Data									
Run Number		30-70-30%-5		**Date**	09/28/16	**Start Time**	08:55	**Stop Time**	10:03
Meter Box Number		SAMP-CP-0011				**Meter Cal Factor**	(Y)	0.989	
Total Meter Volume		(V_m)	47.000	dcf		**Barometric Pressure**	(P_b)	28.69	in Hg
Average Stack Temp		$(t_s)_{avg}$	1414	°F		**Stack Static Pressure**	(P_{static})	0.00	in H_2O
Average Meter Temp		$(t_m)_{avg}$	75	°F		**Avg Orifice Pressure**	$(\Delta H)_{avg}$	1.50	in H_2O
		Impinger 1	**Impinger 2**	**Impinger 3**	**Impinger 4**	**Impinger 5**	**Impinger 6**	**Impinger 7**	**Impinger 8**
		(g)	(g)	(g)	(g)				
Contents		H_2O	H_2O	-	Sil Gel				
Final Value	(V_f),(W_f)	910.30	758.10	617.80	857.00				
Initial Value	(V_i),(W_i)	874.80	752.00	615.50	846.40				
Net Value	(V_n),(W_n)	35.5	6.1	2.3	10.6				
Results									
Total Weight		(W_t)	54.50	g		**Water Vol Weighed**	($V_{wsg(std)}$)	2.570	scf
Std Meter Volume		($V_{m(std)}$)	44.146	dscf		**Sat. Moisture Content**	($B_{ws(svp)}$)	100.00	%
Calc Moisture Content		($B_{ws(calc)}$)	5.50	%		**Final Moisture Content**	(B_{ws})	5.50	%

Moisture Content Data									
Run Number		30-70-30%-6		**Date**	09/28/16	**Start Time**	10:38	**Stop Time**	11:50
Meter Box Number		SAMP-CP-0011				**Meter Cal Factor**	(Y)	0.989	
Total Meter Volume		(V_m)	49.100	dcf		**Barometric Pressure**	(P_b)	28.73	in Hg
Average Stack Temp		$(t_s)_{avg}$	1448	°F		**Stack Static Pressure**	(P_{static})	0.00	in H_2O
Average Meter Temp		$(t_m)_{avg}$	80	°F		**Avg Orifice Pressure**	$(\Delta H)_{avg}$	1.50	in H_2O
		Impinger 1	**Impinger 2**	**Impinger 3**	**Impinger 4**	**Impinger 5**	**Impinger 6**	**Impinger 7**	**Impinger 8**
		(g)	(g)	(g)	(g)				
Contents		H_2O	H_2O	-	Sil Gel				
Final Value	(V_f),(W_f)	764.40	767.10	619.80	867.00				
Initial Value	(V_i),(W_i)	730.30	758.10	617.80	857.00				
Net Value	(V_n),(W_n)	34.1	9.0	2.0	10.0				
Results									
Total Weight		(W_t)	55.10	g		**Water Vol Weighed**	($V_{wsg(std)}$)	2.598	scf
Std Meter Volume		($V_{m(std)}$)	45.780	dscf		**Sat. Moisture Content**	($B_{ws(svp)}$)	100.00	%
Calc Moisture Content		($B_{ws(calc)}$)	5.37	%		**Final Moisture Content**	(B_{ws})	5.37	%

METHOD 4 (MOISTURE) [MULTI POINT, NO VARIATION] SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

Plant Name	Enid Facility
Sampling Location	COMB 48
Project #	coyote-16-enid.ok-comp#1

Date	09/27/16
Operator	TW/RA
Run Number	30-70-30%-4

Ideal Nozzle Diameter and IsoKinetic Factor Setup			
Pitot Coefficient	(C_p)	0.840	
Average Stack Temp	(t_s)	1426.9	°F
Average Meter Temp	(t_m)	91.5	
Orifice Meter Coefficient	($\Delta H@$)	1.585	in H_2O
Square Root ΔP	($\Delta p^{1/2}_{avg}$)	0.14	in H_2O
Stack Moisture Content	(B_{ws})	5.29	%
Stack Dry Molecular Weight	(M_d)	29.27	lb/lb-mole
Estimated Orifice Flow Rate	(Q_m)	0.75	acfm
ΔP to ΔH Isokinetic Factor	(K)		

Leak Checks					
Train	**Pre**	0.000	ft³/min@	15.0	in Hg
PASS	**Post**	0.000	ft³/min@	15.0	in Hg
Pitot	**Pre (+)**	0.2	in H_2O for	15.0	sec
< 3.0	**Pre (-)**	0.2	in H_2O for	15.0	sec
	Post (+)	0.2	in H_2O for	15.0	sec
	Post (-)	0.3	in H_2O for	15.0	sec

Sampling Equipment			
Meter Box Number	SAMP-CP-0011		
Meter Cal Factor	(Y)	0.989	
Low Flow Meter	SAMP-MN-0001		
Average Nozzle Diameter	(D_{na})		in
Suggested Nozzle Diameter	(D_{ni})	0.4431	in
Probe Number	SAMP-PF-0001		in
Probe Length	60		in
Liner Material	inconel		
Sample Case / Oven Number			
Impinger Case Number	SAMP-BC-0002		

Pressures			
Barometric Pressure	(P_b)	28.64	in Hg
Stack Static Pressure	(P_{static})	0.00	in H_2O
Absolute Stack Pressure	(P_s)	28.64	in Hg
Absolute Meter Pressure	(P_m)	28.76	in Hg

Nozzle Measurements				
Pre				**PASS**
Post				**PASS**

Run Time			
Start	16:10	**End**	17:22

Weights	**Imp 1**	**Imp 2**	**Imp 3**	**Imp 4**	**Imp 5**	**Imp 6**	**Imp 7**	**Imp 8**
Pre	842.0	746.7	614.3	835.4				
Post	874.8	752.0	615.5	846.4				

Wash Volumes					ml
					ml

Traverse Point #	**Sampling Time (Θ)**	**Timer Time**	**Dry Gas Meter Reading (V_m)**	**Velocity Head (Δp)**	**Desired Orifice ΔH (ΔH_d)**	**Actual Orifice ΔH (ΔH_a)**	**Stack Temp (t_s)**	**Snorkel Temp (248±25°F)**	**Filter Temp (248±25°F)**	**Impinger Exit Temp (≤68°F)**	**Cond. Temp (≤---°F)**	**CPM Filter Temp (--±--°F)**	**Meter Inlet Temp (t_{mi})**	**Meter Outlet Temp (t_{mo})**	**Pump Vacuum**	**Square Root ΔP ($\Delta p^{1/2}$)**	**Local Stack Velocity (v_s)$_l$**	**Cumul. Meter Volume (V_m)$_{std}$**	**Cumul. Percent IsoKinetic (I)**	**Est-Run Meter Volume (V_m)$_{std}$**
	min	hh:mm:ss	ft³	in H_2O	in H_2O	in H_2O	°F	°F	°F	°F	°F	°F	°F	°F	in Hg	√(in H_2O)	ft/sec	dscf	%	dscf
A-1	0.0	00:00:00	724.600	0.005	1.585	1.50	1097	252		63			87	87	10.0	0.07	6.99	1.559		37.427
A-2	2.7	00:02:43	726.300	0.005	1.585	1.50	1067	252		59			90	78	10.0	0.07	6.92	3.423		41.072
A-3	5.4	00:05:25	728.320	0.005	1.585	1.50	1563	252		58			91	87	10.0	0.07	7.97	5.241		41.932
A-4	8.1	00:08:07	730.310	0.005	1.585	1.50	1598	252		58			91	86	10.0	0.07	8.04	7.099		42.591
A-5	10.8	00:10:50	732.340	0.010	1.585	1.50	1598	251		58			92	86	10.0	0.10	11.37	9.027		43.330
A-6	13.5	00:13:33	734.450	0.010	1.585	1.50	1625	252		58			93	86	10.0	0.10	11.44	10.762		43.048
A-7	16.3	00:16:15	736.350	0.015	1.585	1.50	1454	252		59			93	87	10.0	0.12	13.43	12.696		43.530
A-8	19.0	00:18:58	738.470	0.005	1.585	1.50	1052	252		59			94	88	10.0	0.07	6.89	14.417		43.252
A-9	21.7	00:21:40	740.360	0.060	1.585	1.50	1259	252		63			94	88	10.0	0.24	25.45	16.403		43.740
A-10	24.4	00:24:22	742.540	0.065	1.585	1.50	1544	252		60			95	88	10.0	0.25	28.60	18.068		43.362
A-11	27.1	00:27:05	744.370	0.015	1.585	1.50	1617	252		58			96	88	10.0	0.12	13.99	19.840		43.288
A-12	29.8	00:29:47	746.320	0.015	1.585	1.50	1614	252		56			96	89	10.0	0.12	13.98	21.657		43.313
B-1	32.5	00:32:30	748.320	0.010	1.585	1.50	1267	252		63			91	90	10.0	0.10	10.41	23.434		43.263
B-2	35.2	00:35:12	750.270	0.075	1.585	1.50	1538	252		56			94	90	10.0	0.27	30.67	25.197		43.196
B-3	37.9	00:37:55	752.210	0.020	1.585	1.50	1627	252		55			95	90	10.0	0.14	16.19	26.869		42.990
B-4	40.6	00:40:37	754.050	0.025	1.585	1.50	1589	252		56			96	91	10.0	0.16	17.93	28.636		42.955
B-5	43.3	00:43:20	756.000	0.020	1.585	1.50	1567	251		56			97	91	10.0	0.14	15.95	30.312		42.793
B-6	46.0	00:46:03	757.850	0.020	1.585	1.50	1184	252		56			97	92	10.0	0.14	14.37	32.077		42.769
B-7	48.8	00:48:45	759.800	0.020	1.585	1.50	1039	252		56			98	91	10.0	0.14	13.72	33.832		42.735
B-8	51.5	00:51:28	761.740	0.020	1.585	1.50	1541	252		57			98	91	10.0	0.14	15.85	35.705		42.846
B-9	54.2	00:54:10	763.810	0.020	1.585	1.50	1563	252		57			97	91	10.0	0.14	15.94	37.209		42.524
B-10	56.9	00:56:53	765.470	0.020	1.585	1.50	1562	251		57			97	91	10.0	0.14	15.93	38.912		42.449
B-11	59.6	00:59:35	767.350	0.025	1.585	1.50	1566	252		57			97	91	10.0	0.16	17.83	40.687		42.456
B-12	62.3	01:02:18	769.310	0.025	1.585	1.50	1115	252		57			97	91	10.0	0.16	15.72	42.489		42.489
Last Pt	65.0	01:05:00	771.300																	
Final Val	65.0	01:05:00	771.300											**Max Vac**	10.0	**Final Values**		42.489		
Average Values				0.02		1.50	1427	252		58			94	89		0.14	14.82			
													92							

METHOD 4 (MOISTURE) [MULTI POINT, NO VARIATION] SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

Plant Name	Enid Facility
Sampling Location	COMB 48
Project #	coyote-16-enid.ok-comp#1

Date	09/28/16
Operator	TW/RA
Run Number	30-70-30%-5

Ideal Nozzle Diameter and IsoKinetic Factor Setup			
Pitot Coefficient	(C_p)	0.840	
Average Stack Temp	(t_s)	1413.8	°F
Average Meter Temp	(t_m)	75.1	
Orifice Meter Coefficient	($\Delta H@$)	1.585	in H_2O
Square Root ΔP	($\Delta p^{1/2}_{avg}$)	0.25	in H_2O
Stack Moisture Content	(B_{ws})	5.50	%
Stack Dry Molecular Weight	(M_d)	29.28	lb/lb-mole
Estimated Orifice Flow Rate	(Q_m)	0.65	acfm
ΔP to ΔH Isokinetic Factor	(K)		

Leak Checks					
Train	**Pre**	0.000	ft³/min@	15.0	in Hg
PASS	**Post**	0.000	ft³/min@	15.0	in Hg
Pitot	**Pre (+)**	0.2	in H_2O for	15.0	sec
< 3.0	**Pre (-)**	0.2	in H_2O for	15.0	sec
	Post (+)	0.2	in H_2O for	15.0	sec
	Post (-)	0.2	in H_2O for	15.0	sec

Sampling Equipment			
Meter Box Number	SAMP-CP-0011		
Meter Cal Factor	(Y)	0.989	
Low Flow Meter	SAMP-MN-0001		
Average Nozzle Diameter	(D_{na})		in
Suggested Nozzle Diameter	(D_{ni})	0.3588	in
Probe Number	SAMP-PF-0001		in
Probe Length	60		in
Liner Material	inconel		
Sample Case / Oven Number			
Impinger Case Number	SAMP-BC-0002		

Pressures			
Barometric Pressure	(P_b)	28.69	in Hg
Stack Static Pressure	(P_{static})	0.00	in H_2O
Absolute Stack Pressure	(P_s)	28.69	in Hg
Absolute Meter Pressure	(P_m)	28.81	in Hg

Nozzle Measurements				
Pre				**PASS**
Post				**PASS**

Run Time			
Start	08:55	**End**	10:03

Weights	**Imp 1**	**Imp 2**	**Imp 3**	**Imp 4**	**Imp 5**	**Imp 6**	**Imp 7**	**Imp 8**
Pre	874.8	752.0	615.5	846.4				
Post	910.3	758.1	617.8	857.0				

Wash Volumes					
					ml
					ml

Traverse Point #	**Sampling Time (Θ)**	**Timer Time**	**Dry Gas Meter Reading (V_m)**	**Velocity Head (Δp)**	**Desired Orifice ΔH (ΔH_d)**	**Actual Orifice ΔH (ΔH_a)**	**Stack Temp (t_s)**	**Snorkel Temp (248±25°F)**	**Filter Temp (248±25°F)**	**Impinger Exit Temp (≤68°F)**	**Cond. Temp (≤---°F)**	**CPM Filter Temp (--±--°F)**	**Meter Inlet Temp (t_{mi})**	**Meter Outlet Temp (t_{mo})**	**Pump Vacuum**	**Square Root ΔP ($\Delta p^{1/2}$)**	**Local Stack Velocity (v_s)$_l$**	**Cumul. Meter Volume (V_m)$_{std}$**	**Cumul. Percent IsoKinetic (I)**	**Est-Run Meter Volume (V_m)$_{std}$**
	min	hh:mm:ss	ft³	in H_2O	in H_2O	in H_2O	°F	°F	°F	°F	°F	°F	°F	°F	in Hg	√(in H_2O)	ft/sec	dscf	%	dscf
A-1	0.0	00:00:00	771.800	0.030	1.585	1.50	896	252		62			71	70	10.5	0.17	15.97	1.450		34.792
A-2	2.7	00:02:43	773.330	0.035	1.585	1.50	904	252		58			72	70	10.5	0.19	17.30	3.324		39.888
A-3	5.4	00:05:25	775.310	0.055	1.585	1.50	1485	252		57			73	70	10.5	0.23	25.90	5.395		43.161
A-4	8.1	00:08:07	777.500	0.055	1.585	1.50	1602	252		52			73	71	10.5	0.23	26.67	6.860		41.157
A-5	10.8	00:10:50	779.050	0.070	1.585	1.50	1602	252		50			73	71	10.5	0.26	30.09	8.645		41.497
A-6	13.5	00:13:33	780.940	0.075	1.585	1.50	1630	251		50			76	72	10.5	0.27	31.36	10.584		42.337
A-7	16.3	00:16:15	783.000	0.070	1.585	1.50	1650	252		50			76	72	10.5	0.26	30.44	12.505		42.873
A-8	19.0	00:18:58	785.040	0.065	1.585	1.50	1107	252		50			77	72	10.5	0.25	25.28	14.414		43.241
A-9	21.7	00:21:40	787.070	0.075	1.585	1.50	1281	252		50			78	72	10.5	0.27	28.62	16.265		43.372
A-10	24.4	00:24:22	789.040	0.080	1.585	1.50	1601	252		51			78	72	10.5	0.28	32.16	18.003		43.206
A-11	27.1	00:27:05	790.890	0.080	1.585	1.50	1625	252		51			78	73	10.5	0.28	32.35	19.795		43.190
A-12	29.8	00:29:47	792.800	0.075	1.585	1.50	1630	252		51			78	73	10.5	0.27	31.36	21.645		43.289
B-1	32.5	00:32:30	794.770	0.065	1.585	1.50	1034	252		51			77	74	10.5	0.25	24.68	23.588		43.546
B-2	35.2	00:35:12	796.840	0.050	1.585	1.50	1076	252		51			77	74	10.5	0.22	21.95	25.474		43.670
B-3	37.9	00:37:55	798.850	0.065	1.585	1.50	1519	252		51			77	74	10.5	0.25	28.41	27.492		43.988
B-4	40.6	00:40:37	801.000	0.070	1.585	1.50	1567	252		51			78	75	10.5	0.26	29.83	29.198		43.796
B-5	43.3	00:43:20	802.820	0.070	1.585	1.50	1565	252		51			78	75	10.5	0.26	29.82	31.006		43.773
B-6	46.0	00:46:03	804.750	0.075	1.585	1.50	1597	254		52			78	76	10.5	0.27	31.11	32.897		43.862
B-7	48.8	00:48:45	806.770	0.065	1.585	1.50	1605	252		53			79	76	10.5	0.25	29.02	34.795		43.952
B-8	51.5	00:51:28	808.800	0.070	1.585	1.50	1111	252		53			79	75	10.5	0.26	26.26	36.686		44.023
B-9	54.2	00:54:10	810.820	0.065	1.585	1.50	1158	252		53			80	76	10.5	0.25	25.68	38.573		44.084
B-10	56.9	00:56:53	812.840	0.075	1.585	1.50	1542	252		53			80	76	10.5	0.27	30.69	40.404		44.077
B-11	59.6	00:59:35	814.800	0.060	1.585	1.50	1570	252		53			80	76	10.5	0.24	27.64	42.338		44.179
B-12	62.3	01:02:18	816.870	0.060	1.585	1.50	1573	252		53			80	76	10.5	0.24	27.66	44.141		44.141
Last Pt	65.0	01:05:00	818.800																	
Final Val	65.0	01:05:00	818.800											**Max Vac**	10.5	**Final Values**		44.141		
Average Values				0.06		1.50	1414	252		52			77	73		0.25	27.51			
													75							

METHOD 4 (MOISTURE) [MULTI POINT, NO VARIATION] SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

Plant Name	Enid Facility
Sampling Location	COMB 48
Project #	coyote-16-enid.ok-comp#1

Date	09/28/16
Operator	TW/RA
Run Number	30-70-30%-6

Ideal Nozzle Diameter and IsoKinetic Factor Setup			
Pitot Coefficient	(C_p)	0.840	
Average Stack Temp	(t_s)	1447.8	°F
Average Meter Temp	(t_m)	79.9	
Orifice Meter Coefficient	($\Delta H@$)	1.585	in H_2O
Square Root ΔP	($\Delta p^{1/2}_{avg}$)	0.26	in H_2O
Stack Moisture Content	(B_{ws})	5.37	%
Stack Dry Molecular Weight	(M_d)	29.30	lb/lb-mole
Estimated Orifice Flow Rate	(Q_m)	0.68	acfm
ΔP to ΔH Isokinetic Factor	(K)		

Leak Checks					
Train	**Pre**	0.000	ft³/min@	15.0	in Hg
PASS	**Post**	0.000	ft³/min@	15.0	in Hg
Pitot	**Pre (+)**	0.2	in H_2O for	15.0	sec
< 3.0	**Pre (-)**	0.2	in H_2O for	15.0	sec
	Post (+)	0.2	in H_2O for	15.0	sec
	Post (-)	0.2	in H_2O for	15.0	sec

Sampling Equipment			
Meter Box Number	SAMP-CP-0011		
Meter Cal Factor	(Y)	0.989	
Low Flow Meter	SAMP-MN-0001		
Average Nozzle Diameter	(D_{na})		in
Suggested Nozzle Diameter	(D_{ni})	0.3637	in
Probe Number	SAMP-PF-0001		in
Probe Length	60		in
Liner Material	inconel		
Sample Case / Oven Number			
Impinger Case Number	SAMP-BC-0002		

Pressures			
Barometric Pressure	(P_b)	28.73	in Hg
Stack Static Pressure	(P_{static})	0.00	in H_2O
Absolute Stack Pressure	(P_s)	28.73	in Hg
Absolute Meter Pressure	(P_m)	28.85	in Hg

Nozzle Measurements				
Pre				**PASS**
Post				**PASS**

Run Time			
Start	10:38	**End**	11:50

Weights	**Imp 1**	**Imp 2**	**Imp 3**	**Imp 4**	**Imp 5**	**Imp 6**	**Imp 7**	**Imp 8**
Pre	730.3	758.1	617.8	857.0				
Post	764.4	767.1	619.8	867.0				

Wash Volumes					
					ml
					ml

Traverse Point #	**Sampling Time (Θ)**	**Timer Time**	**Dry Gas Meter Reading (V_m)**	**Velocity Head (Δp)**	**Desired Orifice ΔH (ΔH_d)**	**Actual Orifice ΔH (ΔH_a)**	**Stack Temp (t_s)**	**Snorkel Temp (248±25°F)**	**Filter Temp (248±25°F)**	**Impinger Exit Temp (≤68°F)**	**Cond. Temp (≤---°F)**	**CPM Filter Temp (--±--°F)**	**Meter Inlet Temp (t_{mi})**	**Meter Outlet Temp (t_{mo})**	**Pump Vacuum**	**Square Root ΔP ($\Delta p^{1/2}$)**	**Local Stack Velocity (v_s)$_l$**	**Cumul. Meter Volume (V_m)$_{std}$**	**Cumul. Percent IsoKinetic (I)**	**Est-Run Meter Volume (V_m)$_{std}$**
	min	hh:mm:ss	ft³	in H_2O	in H_2O	in H_2O	°F	°F	°F	°F	°F	°F	°F	°F	in Hg	√(in H_2O)	ft/sec	dscf	%	dscf
A-1	0.0	00:00:00	819.000	0.055	1.585	1.50	1066	252		56			75	76	11.0	0.23	22.92	1.974		47.374
A-2	2.7	00:02:43	821.100	0.055	1.585	1.50	1033	252		52			76	75	11.0	0.23	22.67	3.967		47.600
A-3	5.4	00:05:25	823.220	0.055	1.585	1.50	1515	253		52			78	76	11.0	0.23	26.07	5.776		46.205
A-4	8.1	00:08:07	825.150	0.055	1.585	1.50	1571	253		52			79	75	11.0	0.23	26.44	7.707		46.240
A-5	10.8	00:10:50	827.210	0.060	1.585	1.50	1603	253		52			80	76	11.0	0.24	27.83	9.615		46.153
A-6	13.5	00:13:33	829.250	0.065	1.585	1.50	1552	252		52			81	76	11.0	0.25	28.61	11.541		46.163
A-7	16.3	00:16:15	831.310	0.075	1.585	1.50	1456	252		52			81	76	11.0	0.27	29.98	13.466		46.170
A-8	19.0	00:18:58	833.370	0.065	1.585	1.50	1064	252		52			82	77	11.0	0.25	24.90	15.314		45.941
A-9	21.7	00:21:40	835.350	0.065	1.585	1.50	1322	252		52			82	77	11.0	0.25	26.92	17.319		46.185
A-10	24.4	00:24:22	837.500	0.070	1.585	1.50	1528	251		53			82	77	11.0	0.26	29.51	19.195		46.068
A-11	27.1	00:27:05	839.510	0.070	1.585	1.50	1553	252		54			82	78	11.0	0.26	29.69	21.292		46.455
A-12	29.8	00:29:47	841.760	0.075	1.585	1.50	1555	252		55			83	79	11.0	0.27	30.75	23.097		46.194
B-1	32.5	00:32:30	843.700	0.075	1.585	1.50	1509	252		59			80	80	11.0	0.27	30.40	24.961		46.082
B-2	35.2	00:35:12	845.700	0.075	1.585	1.50	1640	252		56			82	80	11.0	0.27	31.39	26.869		46.061
B-3	37.9	00:37:55	847.750	0.075	1.585	1.50	1646	252		56			82	80	11.0	0.27	31.44	28.776		46.042
B-4	40.6	00:40:37	849.800	0.085	1.585	1.50	1653	252		56			83	80	11.0	0.29	33.52	30.672		46.008
B-5	43.3	00:43:20	851.840	0.080	1.585	1.50	1644	252		57			83	80	11.0	0.28	32.45	32.494		45.874
B-6	46.0	00:46:03	853.800	0.070	1.585	1.50	1215	252		58			84	80	11.0	0.26	27.08	34.398		45.864
B-7	48.8	00:48:45	855.850	0.075	1.585	1.50	1085	252		58			84	80	11.0	0.27	26.93	36.311		45.867
B-8	51.5	00:51:28	857.910	0.070	1.585	1.50	1554	252		58			84	80	11.0	0.26	29.70	38.178		45.813
B-9	54.2	00:54:10	859.920	0.060	1.585	1.50	1618	252		58			84	80	11.0	0.24	27.93	40.082		45.807
B-10	56.9	00:56:53	861.970	0.075	1.585	1.50	1608	251		58			83	80	11.0	0.27	31.15	41.271		45.023
B-11	59.6	00:59:35	863.250	0.060	1.585	1.50	1620	252		58			83	80	11.0	0.24	27.94	43.893		45.801
B-12	62.3	01:02:18	866.070	0.060	1.585	1.50	1137	252		58			83	79	11.0	0.24	24.48	45.781		45.781
Last Pt	65.0	01:05:00	868.100																	
Final Val	65.0	01:05:00	868.100											**Max Vac**	11.0	**Final Values**		45.781		
Average Values				0.07		1.50	1448	252		55			82	78		0.26	28.36			
													80							

Coyote North USA INC.
September 27, 2016
COMB 48
Enid Facility

Unit Data

Meas. Stack Moisture	5.3	%
Stack Exhaust Flow (M2)	164,561	SCFH

Weather Data

Barometric Pressure	28.64	in. Hg
Relative Humidity	29	%
Ambient Temperature	86	°F
Specific Humidity	0.007998	lb H_2O / lb air

30-70-30 Load, Run - COMB 48 R4

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. °F	Fuel Flow SCFH
A1	09/27/16 16:10:20	28500	17.59	6.60	1.74	2.36	55.57	101.41	1,878.00
	09/27/16 16:10:50	28530	17.56	7.01	1.76	2.37	55.57	101.41	1,878.00
	09/27/16 16:11:20	28560	17.49	6.47	1.80	2.41	55.50	101.21	1,854.00
	09/27/16 16:11:50	28590	17.53	9.26	2.15	2.39	55.50	101.21	1,854.00
	09/27/16 16:12:20	28620	17.62	14.27	2.22	2.35	55.42	101.00	1,860.00
	09/27/16 16:12:50	28650	17.58	11.87	2.24	2.37	55.42	101.00	1,860.00
	09/27/16 16:13:20	28680	17.47	9.46	2.12	2.46	55.35	100.77	1,932.00
	09/27/16 16:13:50	28710	17.65	9.47	2.16	2.39	55.35	100.77	1,932.00
	09/27/16 16:14:20	28740	17.58	13.48	4.05	2.42	54.73	100.60	3,186.00
	09/27/16 16:14:50	28770	16.74	26.14	1.10	2.87	54.73	100.60	3,186.00
	09/27/16 16:15:20	28800	14.33	13.93	0.80	4.54	54.38	100.61	4,290.00
	09/27/16 16:15:50	28830	13.66	3.41	0.66	4.97	54.38	100.61	4,290.00
	09/27/16 16:16:20	28860	13.30	1.94	0.54	5.26	54.56	100.69	4,260.00
	09/27/16 16:16:50	28890	13.28	1.67	0.62	5.26	54.56	100.69	4,260.00
	09/27/16 16:17:20	28920	13.88	1.22	0.68	4.85	54.67	100.77	4,176.00
	09/27/16 16:17:50	28950	13.74	0.81	0.66	4.93	54.67	100.77	4,176.00
	09/27/16 16:18:20	28980	14.01	0.45	0.69	4.74	54.74	100.90	4,158.00
	09/27/16 16:18:50	29010	13.89	0.31	0.68	4.81	54.74	100.90	4,158.00
	09/27/16 16:19:20	29040	13.80	0.31	0.70	4.85	54.60	101.06	4,134.00
	09/27/16 16:19:50	29070	13.99	0.26	0.70	4.76	54.60	101.06	4,134.00
	09/27/16 16:20:20	29100	13.82	0.17	0.68	4.86	54.49	101.20	4,128.00
	09/27/16 16:20:50	29130	13.89	0.10	0.73	4.80	54.49	101.20	4,128.00
	09/27/16 16:21:20	29160	13.76	0.05	0.74	4.89	54.45	101.28	4,092.00
	09/27/16 16:21:50	29190	13.82	0.02	0.75	4.85	54.45	101.28	4,092.00
	09/27/16 16:22:20	29220	13.92	0.05	0.73	4.83	54.45	101.35	4,134.00
	09/27/16 16:22:50	29250	13.76	0.02	0.77	4.87	54.45	101.35	4,134.00
	09/27/16 16:23:20	29280	13.89	-0.01	0.78	4.82	54.51	101.43	4,104.00
	09/27/16 16:23:50	29310	13.97	0.06	0.78	4.77	54.51	101.43	4,104.00
	09/27/16 16:24:20	29340	13.82	0.08	0.77	4.86	54.64	101.48	4,122.00
	09/27/16 16:24:50	29370	13.73	-0.02	0.78	4.93	54.64	101.48	4,122.00
	09/27/16 16:25:20	29400	13.81	0.00	0.76	4.85	54.70	101.52	4,086.00
	09/27/16 16:25:50	29430	13.40	0.08	0.74	5.14	54.70	101.52	4,086.00
	09/27/16 16:26:20	29460	13.78	0.02	0.76	4.92	54.74	101.46	3,780.00
	09/27/16 16:26:50	29490	13.58	0.06	0.80	5.01	54.74	101.46	3,780.00
	09/27/16 16:27:20	29520	14.31	0.04	0.81	4.61	55.63	101.32	2,046.00
	09/27/16 16:27:50	29550	16.35	0.64	0.87	3.33	55.63	101.32	2,046.00
	09/27/16 16:28:20	29580	17.57	3.94	1.10	2.41	55.66	101.13	1,776.00
	09/27/16 16:28:50	29610	17.81	5.22	1.29	2.22	55.66	101.13	1,776.00
	09/27/16 16:29:20	29640	17.66	4.36	1.36	2.31	55.54	100.98	1,800.00
	09/27/16 16:29:50	29670	17.63	5.08	1.46	2.35	55.54	100.98	1,800.00
	09/27/16 16:30:20	29700	17.50	5.74	1.53	2.42	55.48	100.87	1,824.00
A2	09/27/16 16:30:50	29730	17.51	5.82	1.36	2.41	55.48	100.87	1,824.00
	09/27/16 16:31:20	29760	17.44	4.90	1.39	2.45	55.36	100.73	1,962.00
	09/27/16 16:31:50	29790	17.58	4.58	1.44	2.38	55.36	100.73	1,962.00
	09/27/16 16:32:20	29820	17.08	4.03	1.32	2.66	54.36	100.64	4,122.00
	09/27/16 16:32:50	29850	14.04	4.04	0.88	4.56	54.36	100.64	4,122.00
	09/27/16 16:33:20	29880	13.36	3.09	0.75	5.15	54.52	100.80	4,188.00
	09/27/16 16:33:50	29910	13.11	1.93	0.75	5.39	54.52	100.80	4,188.00
	09/27/16 16:34:20	29940	13.33	2.58	0.76	5.20	54.62	101.05	4,188.00
	09/27/16 16:34:50	29970	13.21	3.09	0.78	5.27	54.62	101.05	4,188.00
	09/27/16 16:35:20	30000	13.23	2.19	0.77	5.29	54.74	101.32	4,194.00
	09/27/16 16:35:50	30030	13.35	1.08	0.82	5.21	54.74	101.32	4,194.00
	09/27/16 16:36:20	30060	13.31	0.45	0.82	5.18	54.67	101.57	4,182.00
	09/27/16 16:36:50	30090	13.48	0.11	0.77	5.11	54.67	101.57	4,182.00
	09/27/16 16:37:20	30120	13.23	0.07	0.78	5.27	54.52	101.76	4,134.00
	09/27/16 16:37:50	30150	13.02	0.08	0.83	5.41	54.52	101.76	4,134.00
	09/27/16 16:38:20	30180	12.97	0.00	0.81	5.48	54.48	101.84	4,092.00
	09/27/16 16:38:50	30210	13.29	-0.11	0.81	5.22	54.48	101.84	4,092.00
	09/27/16 16:39:20	30240	13.42	-0.08	0.81	5.11	54.52	101.90	4,128.00
	09/27/16 16:39:50	30270	13.15	-0.09	0.85	5.34	54.52	101.90	4,128.00

Coyote North USA INC.
September 27, 2016
COMB 48
Enid Facility

Unit Data

Meas. Stack Moisture	5.3	%
Stack Exhaust Flow (M2)	164,561	SCFH

Weather Data

Barometric Pressure	28.64	in. Hg
Relative Humidity	29	%
Ambient Temperature	86	°F
Specific Humidity	0.007998	lb H_2O / lb air

30-70-30 Load, Run - COMB 48 R4

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. °F	Fuel Flow SCFH
	09/27/16 16:40:20	30300	13.26	-0.17	0.84	5.26	54.55	101.97	4,134.00
	09/27/16 16:40:50	30330	13.48	-0.17	0.84	5.08	54.55	101.97	4,134.00
	09/27/16 16:41:20	30360	13.23	-0.09	0.87	5.26	54.59	102.05	4,110.00
	09/27/16 16:41:50	30390	13.20	-0.08	0.87	5.30	54.59	102.05	4,110.00
	09/27/16 16:42:20	30420	13.20	-0.09	0.90	5.27	54.68	102.10	4,128.00
	09/27/16 16:42:50	30450	13.24	-0.19	0.85	5.26	54.68	102.10	4,128.00
	09/27/16 16:43:20	30480	13.48	-0.10	0.83	5.11	54.59	102.10	4,008.00
	09/27/16 16:43:50	30510	13.48	-0.09	0.84	5.10	54.59	102.10	4,008.00
	09/27/16 16:44:20	30540	13.81	0.02	0.87	4.94	55.27	102.09	2,622.00
	09/27/16 16:44:50	30570	15.33	0.58	0.92	3.94	55.27	102.09	2,622.00
	09/27/16 16:45:20	30600	16.55	2.37	1.03	3.11	55.57	101.96	1,710.00
	09/27/16 16:45:50	30630	17.45	5.51	1.27	2.57	55.57	101.96	1,710.00
	09/27/16 16:46:20	30660	17.87	6.29	1.55	2.13	55.36	101.73	1,836.00
	09/27/16 16:46:50	30690	17.34	4.87	1.46	2.51	55.36	101.73	1,836.00
	09/27/16 16:47:20	30720	17.47	4.25	1.51	2.45	55.41	101.50	1,860.00
	09/27/16 16:47:50	30750	17.41	4.76	1.48	2.47	55.41	101.50	1,860.00
	09/27/16 16:48:20	30780	17.16	4.82	1.43	2.62	55.42	101.20	1,878.00
	09/27/16 16:48:50	30810	17.24	4.53	1.42	2.60	55.42	101.20	1,878.00
	09/27/16 16:49:20	30840	17.27	4.13	1.30	2.57	55.32	100.86	1,956.00
	09/27/16 16:49:50	30870	17.29	3.64	1.58	2.55	55.32	100.86	1,956.00
	09/27/16 16:50:20	30900	17.18	4.47	1.69	2.62	54.76	100.59	3,174.00
A3	09/27/16 16:50:50	30930	15.78	5.89	1.17	3.48	54.76	100.59	3,174.00
	09/27/16 16:51:20	30960	14.23	5.28	0.90	4.50	54.30	100.53	4,134.00
	09/27/16 16:51:50	30990	13.17	2.98	0.89	5.30	54.30	100.53	4,134.00
	09/27/16 16:52:20	31020	13.11	0.99	0.87	5.35	54.40	100.62	4,164.00
	09/27/16 16:52:50	31050	13.18	0.46	0.89	5.37	54.40	100.62	4,164.00
	09/27/16 16:53:20	31080	13.05	0.26	0.85	5.37	54.60	100.74	4,164.00
	09/27/16 16:53:50	31110	12.95	0.08	0.82	5.51	54.60	100.74	4,164.00
	09/27/16 16:54:20	31140	12.85	-0.09	0.82	5.57	54.60	100.84	4,194.00
	09/27/16 16:54:50	31170	13.11	-0.21	0.86	5.42	54.60	100.84	4,194.00
	09/27/16 16:55:20	31200	12.71	-0.14	0.87	5.66	54.47	100.91	4,122.00
	09/27/16 16:55:50	31230	12.56	0.00	0.88	5.79	54.47	100.91	4,122.00
	09/27/16 16:56:20	31260	13.11	-0.09	0.88	5.41	54.40	101.00	4,182.00
	09/27/16 16:56:50	31290	13.37	0.02	0.89	5.15	54.40	101.00	4,182.00
	09/27/16 16:57:20	31320	13.37	0.11	0.90	5.18	54.46	101.12	4,170.00
	09/27/16 16:57:50	31350	13.33	0.10	0.89	5.25	54.46	101.12	4,170.00
	09/27/16 16:58:20	31380	13.62	0.11	0.90	5.02	54.51	101.20	4,176.00
	09/27/16 16:58:50	31410	13.62	0.22	0.89	5.00	54.51	101.20	4,176.00
	09/27/16 16:59:20	31440	13.61	0.22	0.87	4.98	54.56	101.22	4,182.00
	09/27/16 16:59:50	31470	13.47	0.18	0.94	5.12	54.56	101.22	4,182.00
	09/27/16 17:00:20	31500	13.66	0.10	0.90	5.01	54.62	101.18	4,182.00
	09/27/16 17:00:50	31530	13.82	0.21	0.93	4.88	54.62	101.18	4,182.00
	09/27/16 17:01:20	31560	13.83	0.30	0.92	4.88	54.90	101.23	3,702.00
	09/27/16 17:01:50	31590	13.61	0.33	0.90	5.00	54.90	101.23	3,702.00
	09/27/16 17:02:20	31620	14.82	0.44	1.02	4.41	55.72	101.20	1,878.00
	09/27/16 17:02:50	31650	17.41	1.82	1.23	2.51	55.72	101.20	1,878.00
	09/27/16 17:03:20	31680	17.81	3.00	1.40	2.24	55.59	101.02	1,830.00
	09/27/16 17:03:50	31710	17.72	3.25	1.57	2.29	55.59	101.02	1,830.00
	09/27/16 17:04:20	31740	17.63	3.05	1.51	2.34	55.52	100.81	1,842.00
	09/27/16 17:04:50	31770	17.71	2.83	1.60	2.28	55.52	100.81	1,842.00
	09/27/16 17:05:20	31800	17.58	2.91	1.63	2.35	55.48	100.56	1,866.00
	09/27/16 17:05:50	31830	17.59	3.17	1.64	2.37	55.48	100.56	1,866.00
	09/27/16 17:06:20	31860	17.60	3.07	1.66	2.35	55.46	100.28	1,884.00
	09/27/16 17:06:50	31890	17.66	3.20	1.75	2.32	55.46	100.28	1,884.00
	09/27/16 17:07:20	31920	17.64	3.51	1.75	2.32	54.94	100.06	3,264.00
	09/27/16 17:07:50	31950	17.12	3.68	1.76	2.53	54.94	100.06	3,264.00
	09/27/16 17:08:20	31980	14.03	4.06	0.98	4.70	54.48	100.02	4,194.00
	09/27/16 17:08:50	32010	13.58	2.56	0.92	5.02	54.48	100.02	4,194.00
	09/27/16 17:09:20	32040	13.62	1.42	0.92	5.00	54.58	100.06	4,212.00
	09/27/16 17:09:50	32070	13.22	1.08	0.89	5.27	54.58	100.06	4,212.00

Coyote North USA INC.
September 27, 2016
COMB 48
Enid Facility

Unit Data

Meas. Stack Moisture	5.3	%
Stack Exhaust Flow (M2)	164,561	SCFH

Weather Data

Barometric Pressure	28.64	in. Hg
Relative Humidity	29	%
Ambient Temperature	86	°F
Specific Humidity	0.007998	lb H_2O / lb air

30-70-30 Load, Run - COMB 48 R4

Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. °F	Fuel Flow SCFH
09/27/16 17:10:20	32100	13.19	0.86	0.86	5.29	54.63	100.04	4,146.00
09/27/16 17:10:50	32130	13.29	0.69	0.90	5.26	54.63	100.04	4,146.00
09/27/16 17:11:20	32160	13.32	0.44	0.90	5.18	54.80	99.98	4,164.00
09/27/16 17:11:50	32190	13.35	0.36	0.90	5.22	54.80	99.98	4,164.00
09/27/16 17:12:20	32220	13.35	0.39	0.90	5.19	54.70	99.96	4,146.00
09/27/16 17:12:50	32250	13.56	0.48	0.95	5.03	54.70	99.96	4,146.00
09/27/16 17:13:20	32280	13.21	0.54	0.91	5.27	54.53	99.96	4,098.00
09/27/16 17:13:50	32310	13.78	0.33	0.93	4.92	54.53	99.96	4,098.00
09/27/16 17:14:20	32340	13.54	0.32	0.95	5.07	54.46	99.94	4,098.00
09/27/16 17:14:50	32370	13.73	0.23	1.00	4.94	54.46	99.94	4,098.00
09/27/16 17:15:20	32400	13.64	0.30	0.94	4.95	54.55	99.90	4,128.00
09/27/16 17:15:50	32430	13.35	0.26	0.92	5.20	54.55	99.90	4,128.00
09/27/16 17:16:20	32460	13.73	0.13	1.00	4.95	54.65	99.85	4,122.00
09/27/16 17:16:50	32490	13.54	0.23	0.94	5.06	54.65	99.85	4,122.00
09/27/16 17:17:20	32520	13.51	0.25	0.94	5.09	55.29	99.80	3,006.00
09/27/16 17:17:50	32550	13.67	0.24	0.85	4.95	55.29	99.80	3,006.00
09/27/16 17:18:20	32580	16.78	0.71	1.21	3.14	55.81	99.55	1,818.00
09/27/16 17:18:50	32610	17.72	1.99	1.36	2.28	55.81	99.55	1,818.00
09/27/16 17:19:20	32640	17.63	2.73	1.52	2.34	55.75	99.10	1,848.00
09/27/16 17:19:50	32670	17.56	3.04	1.64	2.38	55.75	99.10	1,848.00
09/27/16 17:20:20	32700	17.63	3.45	1.69	2.32	55.67	98.58	1,866.00
RAW AVERAGE		**14.85**	**2.34**	**1.09**	**4.19**	**54.89**	**100.92**	**3,362.77**

		O_2	CO	THC	CO_2	Press. Trans	Temp. Trans.	F-Flow Trans.
	Serial Number:	INSTO2-0011	INST-CO-0022	INST-TH-0002	INST-C2-0013	2104497-025	2104497-025	
						(in. H_2O)	(°F)	(SCFH)
	Initial Zero	0.01	-0.09	-0.04	0.01	2104497-025	2104497-025	2104497-025
	Final Zero	-0.01	-0.02	-0.07	0.01			
Bias	**Avg. Zero**	0.00	-0.06	-0.06	0.01			
	Initial UpScale	11.93	9.32	3.04	8.83			
	Final UpScale	11.92	9.48	2.96	8.83			
	Avg. UpScale	11.93	9.40	3.00	8.83			
Upscale Cal Gas		12.00	8.98	3.04	9.42			

EMISSIONS DATA	O_2	CO	THC	CO_2
Corrected Raw Average (ppm/% dry basis)	14.95	2.27	1.14	4.46
Corrected Raw Average (ppm/% wet basis)	14.16	2.15	1.08	4.23
Emission Rate (lb/hr)	N/A	0.03	0.02	N/A

Coyote North USA INC.
September 28, 2016
COMB 48
Enid Facility

Unit Data

Meas. Stack Moisture	5.5	%
Stack Exhaust Flow (M2)	307,532	SCFH

Weather Data

Barometric Pressure	28.69	in. Hg
Relative Humidity	54	%
Ambient Temperature	68	°F
Specific Humidity	0.008192	lb H_2O / lb air

30-70-30 Load, Run - COMB 48 R5

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. °F	Fuel Flow SCFH
A1	09/28/16 08:55:20	6840	17.52	10.23	1.06	2.47	55.30	75.85	1,824.00
	09/28/16 08:55:50	6870	17.29	6.83	0.93	2.64	55.30	75.85	1,824.00
	09/28/16 08:56:20	6900	17.47	5.17	1.06	2.53	55.18	75.89	1,806.00
	09/28/16 08:56:50	6930	17.48	5.02	1.09	2.52	55.18	75.89	1,806.00
	09/28/16 08:57:20	6960	17.56	4.84	1.07	2.46	55.07	75.94	1,842.00
	09/28/16 08:57:50	6990	17.39	4.78	0.91	2.56	55.07	75.94	1,842.00
	09/28/16 08:58:20	7020	17.40	4.71	0.94	2.55	54.90	75.98	2,436.00
	09/28/16 08:58:50	7050	17.38	4.45	0.85	2.55	54.90	75.98	2,436.00
	09/28/16 08:59:20	7080	15.77	4.40	0.41	3.44	54.01	76.17	4,164.00
	09/28/16 08:59:50	7110	13.89	3.70	-0.02	4.86	54.01	76.17	4,164.00
	09/28/16 09:00:20	7140	13.47	2.07	-0.06	5.18	54.09	76.67	4,260.00
	09/28/16 09:00:50	7170	13.30	1.20	-0.07	5.26	54.09	76.67	4,260.00
	09/28/16 09:01:20	7200	13.43	0.88	-0.08	5.19	54.33	77.26	4,278.00
	09/28/16 09:01:50	7230	13.52	0.83	-0.04	5.13	54.33	77.26	4,278.00
	09/28/16 09:02:20	7260	13.39	0.95	-0.05	5.20	54.22	77.87	4,248.00
	09/28/16 09:02:50	7290	13.67	1.21	-0.09	5.00	54.22	77.87	4,248.00
	09/28/16 09:03:20	7320	13.65	1.39	-0.09	5.04	54.16	78.51	4,200.00
	09/28/16 09:03:50	7350	13.64	1.42	-0.07	5.03	54.16	78.51	4,200.00
	09/28/16 09:04:20	7380	13.58	1.51	-0.06	5.06	54.20	79.16	4,158.00
	09/28/16 09:04:50	7410	13.77	1.53	-0.08	4.96	54.20	79.16	4,158.00
	09/28/16 09:05:20	7440	13.62	1.68	-0.09	5.05	54.19	79.83	4,182.00
	09/28/16 09:05:50	7470	13.70	1.83	-0.05	4.99	54.19	79.83	4,182.00
	09/28/16 09:06:20	7500	13.62	2.01	-0.04	5.05	54.35	80.46	4,188.00
	09/28/16 09:06:50	7530	13.66	2.16	-0.06	5.00	54.35	80.46	4,188.00
	09/28/16 09:07:20	7560	13.65	2.34	-0.06	5.03	54.13	81.07	4,176.00
	09/28/16 09:07:50	7590	13.51	2.49	-0.05	5.10	54.13	81.07	4,176.00
	09/28/16 09:08:20	7620	13.44	2.61	-0.05	5.13	53.99	81.66	4,200.00
	09/28/16 09:08:50	7650	13.36	2.74	-0.06	5.20	53.99	81.66	4,200.00
	09/28/16 09:09:20	7680	13.43	2.87	-0.07	5.14	53.90	82.24	4,188.00
	09/28/16 09:09:50	7710	13.61	2.92	-0.08	5.05	53.90	82.24	4,188.00
	09/28/16 09:10:20	7740	13.31	2.96	-0.06	5.19	53.97	82.82	4,170.00
	09/28/16 09:10:50	7770	13.35	2.98	-0.07	5.21	53.97	82.82	4,170.00
	09/28/16 09:11:20	7800	13.38	3.07	-0.07	5.15	54.10	83.42	4,266.00
	09/28/16 09:11:50	7830	13.12	3.09	-0.05	5.35	54.10	83.42	4,266.00
	09/28/16 09:12:20	7860	13.20	3.19	-0.05	5.28	55.30	83.92	1,950.00
	09/28/16 09:12:50	7890	16.03	3.27	0.02	3.68	55.30	83.92	1,950.00
	09/28/16 09:13:20	7920	17.83	2.94	0.05	2.24	55.25	83.93	1,728.00
	09/28/16 09:13:50	7950	17.75	2.67	0.08	2.33	55.25	83.93	1,728.00
	09/28/16 09:14:20	7980	17.72	3.01	0.27	2.34	55.12	83.89	1,764.00
	09/28/16 09:14:50	8010	17.74	3.28	0.44	2.34	55.12	83.89	1,764.00
	09/28/16 09:15:20	8040	17.62	3.29	0.40	2.40	54.99	83.84	1,866.00
A2	09/28/16 09:15:50	8070	17.43	3.36	0.38	2.52	54.99	83.84	1,866.00
	09/28/16 09:16:20	8100	17.47	3.57	0.47	2.52	54.50	83.82	2,856.00
	09/28/16 09:16:50	8130	17.46	3.78	0.46	2.52	54.50	83.82	2,856.00
	09/28/16 09:17:20	8160	14.87	3.78	-0.01	4.04	53.88	84.09	4,296.00
	09/28/16 09:17:50	8190	13.61	2.90	-0.07	5.08	53.88	84.09	4,296.00
	09/28/16 09:18:20	8220	13.74	1.74	-0.06	5.02	53.92	84.66	4,296.00
	09/28/16 09:18:50	8250	13.71	1.35	-0.06	5.01	53.92	84.66	4,296.00
	09/28/16 09:19:20	8280	13.44	1.10	-0.07	5.16	54.15	85.26	4,350.00
	09/28/16 09:19:50	8310	13.40	0.98	-0.06	5.19	54.15	85.26	4,350.00
	09/28/16 09:20:20	8340	13.48	1.10	-0.06	5.13	54.08	85.84	4,296.00
	09/28/16 09:20:50	8370	13.54	1.37	-0.07	5.12	54.08	85.84	4,296.00
	09/28/16 09:21:20	8400	13.53	1.58	-0.06	5.08	53.97	86.31	4,302.00
	09/28/16 09:21:50	8430	13.44	1.74	-0.08	5.15	53.97	86.31	4,302.00
	09/28/16 09:22:20	8460	13.42	1.88	-0.08	5.19	54.13	86.71	4,218.00
	09/28/16 09:22:50	8490	13.52	2.01	-0.07	5.09	54.13	86.71	4,218.00
	09/28/16 09:23:20	8520	13.56	2.09	-0.07	5.06	54.09	87.12	4,290.00
	09/28/16 09:23:50	8550	13.59	2.11	-0.06	5.06	54.09	87.12	4,290.00
	09/28/16 09:24:20	8580	13.44	2.13	-0.07	5.13	54.03	87.46	4,284.00
	09/28/16 09:24:50	8610	13.62	2.22	-0.06	5.05	54.03	87.46	4,284.00

Coyote North USA INC.
September 28, 2016
COMB 48
Enid Facility

Unit Data

Meas. Stack Moisture	5.5	%
Stack Exhaust Flow (M2)	307,532	SCFH

Weather Data

Barometric Pressure	28.69	in. Hg
Relative Humidity	54	%
Ambient Temperature	68	^{o}F
Specific Humidity	0.008192	lb H_2O / lb air

30-70-30 Load, Run - COMB 48 R5

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
	09/28/16 09:25:20	8640	13.45	2.27	-0.07	5.14	53.98	87.76	4,266.00
	09/28/16 09:25:50	8670	13.48	2.34	-0.08	5.12	53.98	87.76	4,266.00
	09/28/16 09:26:20	8700	13.36	2.47	-0.08	5.19	54.03	88.04	4,260.00
	09/28/16 09:26:50	8730	13.37	2.56	-0.06	5.21	54.03	88.04	4,260.00
	09/28/16 09:27:20	8760	13.49	2.61	-0.06	5.11	54.12	88.31	4,242.00
	09/28/16 09:27:50	8790	13.59	2.70	-0.07	5.05	54.12	88.31	4,242.00
	09/28/16 09:28:20	8820	13.37	2.72	-0.07	5.17	54.74	88.63	3,072.00
	09/28/16 09:28:50	8850	13.35	2.74	-0.05	5.21	54.74	88.63	3,072.00
	09/28/16 09:29:20	8880	16.79	2.80	-0.06	3.19	55.28	88.65	1,776.00
	09/28/16 09:29:50	8910	17.70	2.94	-0.04	2.34	55.28	88.65	1,776.00
	09/28/16 09:30:20	8940	17.68	3.03	0.07	2.37	55.19	88.48	1,830.00
	09/28/16 09:30:50	8970	17.48	3.06	0.19	2.50	55.19	88.48	1,830.00
	09/28/16 09:31:20	9000	17.51	2.84	0.25	2.49	55.23	88.26	1,848.00
	09/28/16 09:31:50	9030	17.62	2.70	0.29	2.42	55.23	88.26	1,848.00
	09/28/16 09:32:20	9060	17.46	2.78	0.29	2.54	55.43	87.99	1,866.00
	09/28/16 09:32:50	9090	17.48	3.02	0.42	2.50	55.43	87.99	1,866.00
	09/28/16 09:33:20	9120	17.46	3.63	0.45	2.52	54.73	87.69	2,892.00
	09/28/16 09:33:50	9150	17.52	4.05	0.38	2.47	54.73	87.69	2,892.00
	09/28/16 09:34:20	9180	14.89	4.15	-0.03	4.03	53.88	87.60	4,350.00
	09/28/16 09:34:50	9210	13.53	3.41	-0.05	5.13	53.88	87.60	4,350.00
	09/28/16 09:35:20	9240	13.50	1.92	-0.05	5.17	53.92	87.71	4,308.00
A3	09/28/16 09:35:50	9270	13.70	1.16	-0.09	5.04	53.92	87.71	4,308.00
	09/28/16 09:36:20	9300	13.79	1.01	-0.09	4.98	54.02	87.81	4,290.00
	09/28/16 09:36:50	9330	13.79	0.98	-0.06	4.94	54.02	87.81	4,290.00
	09/28/16 09:37:20	9360	13.63	1.01	-0.06	5.08	54.11	87.93	4,272.00
	09/28/16 09:37:50	9390	13.67	0.98	-0.07	5.04	54.11	87.93	4,272.00
	09/28/16 09:38:20	9420	13.59	1.04	-0.06	5.08	54.16	88.11	4,230.00
	09/28/16 09:38:50	9450	13.81	1.11	-0.07	4.96	54.16	88.11	4,230.00
	09/28/16 09:39:20	9480	13.78	1.30	-0.06	4.97	54.21	88.34	4,218.00
	09/28/16 09:39:50	9510	13.78	1.38	-0.06	4.94	54.21	88.34	4,218.00
	09/28/16 09:40:20	9540	13.47	1.38	-0.06	5.16	54.30	88.56	4,218.00
	09/28/16 09:40:50	9570	13.58	1.41	-0.08	5.09	54.30	88.56	4,218.00
	09/28/16 09:41:20	9600	13.64	1.41	-0.09	5.05	54.15	88.79	4,176.00
	09/28/16 09:41:50	9630	13.47	1.39	-0.06	5.18	54.15	88.79	4,176.00
	09/28/16 09:42:20	9660	13.35	1.38	-0.07	5.22	53.94	88.94	4,326.00
	09/28/16 09:42:50	9690	13.32	1.40	-0.07	5.28	53.94	88.94	4,326.00
	09/28/16 09:43:20	9720	13.31	1.41	-0.05	5.25	53.85	88.97	4,356.00
	09/28/16 09:43:50	9750	13.13	1.38	-0.09	5.38	53.85	88.97	4,356.00
	09/28/16 09:44:20	9780	13.03	1.39	-0.09	5.53	53.84	88.98	4,362.00
	09/28/16 09:44:50	9810	13.03	1.41	-0.08	5.47	53.84	88.98	4,362.00
	09/28/16 09:45:20	9840	13.26	1.50	-0.07	5.32	54.01	89.02	4,356.00
	09/28/16 09:45:50	9870	12.91	1.52	-0.08	5.58	54.01	89.02	4,356.00
	09/28/16 09:46:20	9900	12.80	1.52	-0.08	5.67	54.69	89.08	3,180.00
	09/28/16 09:46:50	9930	12.71	1.54	-0.06	5.73	54.69	89.08	3,180.00
	09/28/16 09:47:20	9960	16.44	1.75	-0.05	3.50	55.44	88.91	1,740.00
	09/28/16 09:47:50	9990	17.82	2.35	0.01	2.30	55.44	88.91	1,740.00
	09/28/16 09:48:20	10020	17.69	2.89	0.16	2.38	55.30	88.55	1,842.00
	09/28/16 09:48:50	10050	17.52	3.23	0.20	2.47	55.30	88.55	1,842.00
	09/28/16 09:49:20	10080	17.48	3.39	0.35	2.54	55.28	88.20	1,860.00
	09/28/16 09:49:50	10110	17.49	3.56	0.30	2.52	55.28	88.20	1,860.00
	09/28/16 09:50:20	10140	17.59	3.35	0.39	2.45	55.22	87.82	1,884.00
	09/28/16 09:50:50	10170	17.48	3.29	0.33	2.51	55.22	87.82	1,884.00
	09/28/16 09:51:20	10200	17.45	3.30	0.34	2.55	54.68	87.49	2,868.00
	09/28/16 09:51:50	10230	17.40	3.41	0.30	2.56	54.68	87.49	2,868.00
	09/28/16 09:52:20	10260	14.70	3.74	-0.02	4.17	54.16	87.46	4,398.00
	09/28/16 09:52:50	10290	13.23	3.43	-0.06	5.37	54.16	87.46	4,398.00
	09/28/16 09:53:20	10320	13.09	2.03	-0.06	5.49	54.19	87.71	4,386.00
	09/28/16 09:53:50	10350	13.24	1.20	-0.06	5.37	54.19	87.71	4,386.00
	09/28/16 09:54:20	10380	13.34	0.92	-0.06	5.26	54.03	87.96	4,356.00
	09/28/16 09:54:50	10410	13.20	0.85	-0.08	5.38	54.03	87.96	4,356.00

Coyote North USA INC.
September 28, 2016
COMB 48
Enid Facility

Unit Data

Meas. Stack Moisture	5.5	%
Stack Exhaust Flow (M2)	307,532	SCFH

Weather Data

Barometric Pressure	28.69	in. Hg
Relative Humidity	54	%
Ambient Temperature	68	°F
Specific Humidity	0.008192	lb H_2O / lb air

30-70-30 Load, Run - COMB 48 R5

Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. °F	Fuel Flow SCFH
09/28/16 09:55:20	10440	13.17	0.75	-0.08	5.37	53.96	88.23	4,332.00
09/28/16 09:55:50	10470	13.40	0.69	-0.05	5.26	53.96	88.23	4,332.00
09/28/16 09:56:20	10500	13.01	0.78	-0.04	5.54	53.99	88.47	4,254.00
09/28/16 09:56:50	10530	13.16	0.78	-0.08	5.41	53.99	88.47	4,254.00
09/28/16 09:57:20	10560	13.10	0.87	-0.09	5.44	54.11	88.69	4,284.00
09/28/16 09:57:50	10590	13.36	0.98	-0.06	5.26	54.11	88.69	4,284.00
09/28/16 09:58:20	10620	13.18	1.08	-0.05	5.40	54.21	88.96	4,296.00
09/28/16 09:58:50	10650	13.18	1.17	-0.06	5.36	54.21	88.96	4,296.00
09/28/16 09:59:20	10680	13.31	1.21	-0.06	5.27	54.29	89.23	4,266.00
09/28/16 09:59:50	10710	13.28	1.27	-0.06	5.32	54.29	89.23	4,266.00
09/28/16 10:00:20	10740	13.29	1.28	-0.06	5.29	54.44	89.49	4,278.00
09/28/16 10:00:50	10770	13.06	1.30	-0.07	5.46	54.44	89.49	4,278.00
09/28/16 10:01:20	10800	13.16	1.31	-0.07	5.39	54.55	89.76	3,858.00
09/28/16 10:01:50	10830	13.14	1.31	-0.06	5.42	54.55	89.76	3,858.00
09/28/16 10:02:20	10860	14.21	1.36	-0.06	4.91	55.56	89.86	1,752.00
09/28/16 10:02:50	10890	17.75	1.96	0.00	2.37	55.56	89.86	1,752.00
09/28/16 10:03:20	10920	17.76	2.70	0.12	2.34	55.28	89.65	1,854.00
09/28/16 10:03:50	10950	17.63	2.88	0.20	2.44	55.28	89.65	1,854.00
09/28/16 10:04:20	10980	17.51	2.90	0.25	2.52	55.17	89.37	1,842.00
09/28/16 10:04:50	11010	17.60	2.80	0.31	2.47	55.17	89.37	1,842.00
09/28/16 10:05:20	11040	17.59	3.03	0.30	2.45	55.14	89.00	1,860.00
RAW AVERAGE		**14.71**	**2.35**	**0.07**	**4.34**	**54.45**	**85.55**	**3,504.34**

		O_2	CO	THC	CO_2	Press. Trans	Temp. Trans.	F-Flow Trans.
	Serial Number:	INSTO2-0011	INST-CO-0022	INST-TH-0002	INST-C2-0013	2104497-025	2104497-025	2104497-025
		(%)	(ppmvd)	(ppmvw)	(%)	(in. H_2O)	(°F)	(SCFH)
Bias	Initial Zero	0.03	-0.01	-0.08	0.03			
	Final Zero	0.01	-0.02	-0.06	0.03			
	Avg. Zero	0.02	-0.02	-0.07	0.03			
	Initial UpScale	12.08	9.31	3.05	8.92			
	Final UpScale	11.98	9.39	2.96	8.91			
	Avg. UpScale	12.03	9.35	3.01	8.92			
Upscale Cal Gas		11.90	9.44	3.00	8.95			

EMISSIONS DATA	O_2	CO	THC	CO_2
Corrected Raw Average (ppm/% dry basis)	14.56	2.38	0.14	4.34
Corrected Raw Average (ppm/% wet basis)	13.75	2.25	0.14	4.10
Emission Rate (lb/hr)	N/A	0.05	0.01	N/A

Coyote North USA INC.
September 28, 2016
COMB 48
Enid Facility

Unit Data

Meas. Stack Moisture	5.4	%
Stack Exhaust Flow (M2)	312,267	SCFH

Weather Data

Barometric Pressure	28.70	in. Hg
Relative Humidity	43	%
Ambient Temperature	78	°F
Specific Humidity	0.009147	lb H_2O / lb air

30-70-30 Load, Run - COMB 48 R6

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. °F	Fuel Flow SCFH
A1	09/28/16 10:38:20	13020	17.42	9.01	2.34	2.56	55.24	86.02	1,872.00
	09/28/16 10:38:50	13050	17.34	9.72	2.38	2.62	55.24	86.02	1,872.00
	09/28/16 10:39:20	13080	17.44	10.18	2.44	2.55	55.23	86.11	1,896.00
	09/28/16 10:39:50	13110	17.28	10.99	2.12	2.64	55.23	86.11	1,896.00
	09/28/16 10:40:20	13140	17.24	11.54	2.40	2.71	55.46	86.14	1,902.00
	09/28/16 10:40:50	13170	17.29	11.96	2.35	2.62	55.46	86.14	1,902.00
	09/28/16 10:41:20	13200	17.32	12.04	2.19	2.60	54.84	86.16	2,730.00
	09/28/16 10:41:50	13230	17.13	12.13	2.13	2.73	54.84	86.16	2,730.00
	09/28/16 10:42:20	13260	14.95	12.66	0.82	4.03	54.30	86.38	4,212.00
	09/28/16 10:42:50	13290	13.47	9.09	0.28	5.17	54.30	86.38	4,212.00
	09/28/16 10:43:20	13320	13.53	4.27	0.22	5.16	54.15	86.82	4,170.00
	09/28/16 10:43:50	13350	13.40	2.43	0.23	5.20	54.15	86.82	4,170.00
	09/28/16 10:44:20	13380	13.40	1.61	0.22	5.23	54.33	87.32	4,296.00
	09/28/16 10:44:50	13410	13.27	1.06	0.20	5.35	54.33	87.32	4,296.00
	09/28/16 10:45:20	13440	13.45	0.84	0.12	5.16	54.38	87.89	4,272.00
	09/28/16 10:45:50	13470	13.40	0.75	0.11	5.26	54.38	87.89	4,272.00
	09/28/16 10:46:20	13500	13.64	0.72	0.12	5.11	54.19	88.38	4,248.00
	09/28/16 10:46:50	13530	13.71	0.71	0.08	5.01	54.19	88.38	4,248.00
	09/28/16 10:47:20	13560	13.40	0.69	0.05	5.22	54.39	88.87	4,290.00
	09/28/16 10:47:50	13590	13.45	0.56	0.07	5.22	54.39	88.87	4,290.00
	09/28/16 10:48:20	13620	13.59	0.55	0.06	5.08	54.46	89.39	4,272.00
	09/28/16 10:48:50	13650	13.53	0.62	0.03	5.14	54.46	89.39	4,272.00
	09/28/16 10:49:20	13680	13.27	0.62	0.01	5.30	54.18	89.89	4,260.00
	09/28/16 10:49:50	13710	13.46	0.48	0.00	5.23	54.18	89.89	4,260.00
	09/28/16 10:50:20	13740	13.49	0.54	0.00	5.16	54.10	90.36	4,248.00
	09/28/16 10:50:50	13770	13.61	0.61	0.02	5.09	54.10	90.36	4,248.00
	09/28/16 10:51:20	13800	13.46	0.72	0.03	5.17	54.20	90.84	4,242.00
	09/28/16 10:51:50	13830	13.42	0.64	-0.04	5.24	54.20	90.84	4,242.00
	09/28/16 10:52:20	13860	13.52	0.72	-0.09	5.15	54.12	91.25	4,236.00
	09/28/16 10:52:50	13890	13.33	0.72	-0.06	5.26	54.12	91.25	4,236.00
	09/28/16 10:53:20	13920	13.31	0.72	-0.05	5.31	54.35	91.60	4,176.00
	09/28/16 10:53:50	13950	13.02	0.76	-0.06	5.49	54.35	91.60	4,176.00
	09/28/16 10:54:20	13980	12.88	0.62	-0.05	5.65	55.04	91.88	3,144.00
	09/28/16 10:54:50	14010	13.03	0.62	-0.06	5.51	55.04	91.88	3,144.00
	09/28/16 10:55:20	14040	16.16	0.98	0.18	3.67	55.64	91.86	1,806.00
	09/28/16 10:55:50	14070	17.50	3.08	0.27	2.53	55.64	91.86	1,806.00
	09/28/16 10:56:20	14100	17.43	5.48	0.42	2.56	55.32	91.64	1,848.00
	09/28/16 10:56:50	14130	17.30	6.50	0.60	2.64	55.32	91.64	1,848.00
	09/28/16 10:57:20	14160	17.43	6.77	0.82	2.57	55.18	91.48	1,878.00
	09/28/16 10:57:50	14190	17.31	7.01	0.85	2.66	55.18	91.48	1,878.00
	09/28/16 10:58:20	14220	17.25	7.28	0.83	2.67	55.15	91.35	1,896.00
A2	09/28/16 10:58:50	14250	17.29	7.93	1.11	2.67	55.15	91.35	1,896.00
	09/28/16 10:59:20	14280	17.37	8.67	1.20	2.60	54.99	91.23	2,454.00
	09/28/16 10:59:50	14310	17.34	9.12	1.22	2.63	54.99	91.23	2,454.00
	09/28/16 11:00:20	14340	15.95	9.31	0.62	3.34	54.36	91.29	4,206.00
	09/28/16 11:00:50	14370	13.41	7.97	-0.06	5.27	54.36	91.29	4,206.00
	09/28/16 11:01:20	14400	13.53	4.41	-0.06	5.16	54.56	91.57	4,194.00
	09/28/16 11:01:50	14430	13.23	2.86	-0.06	5.39	54.56	91.57	4,194.00
	09/28/16 11:02:20	14460	12.99	2.01	-0.06	5.54	54.30	91.84	4,152.00
	09/28/16 11:02:50	14490	13.09	1.44	-0.07	5.53	54.30	91.84	4,152.00
	09/28/16 11:03:20	14520	13.22	1.18	-0.07	5.39	54.20	92.12	4,176.00
	09/28/16 11:03:50	14550	13.40	1.13	-0.06	5.22	54.20	92.12	4,176.00
	09/28/16 11:04:20	14580	13.42	1.19	-0.06	5.23	54.07	92.42	4,152.00
	09/28/16 11:04:50	14610	13.19	1.22	-0.05	5.41	54.07	92.42	4,152.00
	09/28/16 11:05:20	14640	13.13	1.08	-0.05	5.43	54.40	92.69	4,158.00
	09/28/16 11:05:50	14670	13.29	1.12	-0.08	5.32	54.40	92.69	4,158.00
	09/28/16 11:06:20	14700	13.38	1.25	-0.07	5.24	54.20	92.89	4,146.00
	09/28/16 11:06:50	14730	13.19	1.19	-0.09	5.38	54.20	92.89	4,146.00
	09/28/16 11:07:20	14760	13.28	1.08	-0.08	5.36	54.02	93.09	4,164.00
	09/28/16 11:07:50	14790	13.50	1.19	-0.08	5.17	54.02	93.09	4,164.00

Coyote North USA INC.
September 28, 2016
COMB 48
Enid Facility

Unit Data

Meas. Stack Moisture	5.4	%
Stack Exhaust Flow (M2)	312,267	SCFH

Weather Data

Barometric Pressure	28.70	in. Hg
Relative Humidity	43	%
Ambient Temperature	78	^{o}F
Specific Humidity	0.009147	lb H_2O / lb air

30-70-30 Load, Run - COMB 48 R6

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
	09/28/16 11:08:20	14820	13.40	1.35	-0.08	5.23	54.09	93.37	4,206.00
	09/28/16 11:08:50	14850	13.25	1.35	-0.07	5.35	54.09	93.37	4,206.00
	09/28/16 11:09:20	14880	13.43	1.34	-0.06	5.18	54.31	93.68	4,188.00
	09/28/16 11:09:50	14910	13.26	1.45	-0.07	5.35	54.31	93.68	4,188.00
	09/28/16 11:10:20	14940	13.33	1.41	-0.05	5.28	54.37	93.92	4,182.00
	09/28/16 11:10:50	14970	13.25	1.51	-0.05	5.35	54.37	93.92	4,182.00
	09/28/16 11:11:20	15000	13.40	1.55	-0.06	5.22	55.07	94.15	2,964.00
	09/28/16 11:11:50	15030	13.33	1.56	-0.08	5.30	55.07	94.15	2,964.00
	09/28/16 11:12:20	15060	17.10	2.06	0.02	3.02	55.58	94.12	1,758.00
	09/28/16 11:12:50	15090	17.55	4.28	0.11	2.48	55.58	94.12	1,758.00
	09/28/16 11:13:20	15120	17.60	6.56	0.32	2.45	55.29	93.96	1,818.00
	09/28/16 11:13:50	15150	17.52	7.49	0.61	2.51	55.29	93.96	1,818.00
	09/28/16 11:14:20	15180	17.54	7.82	0.82	2.48	55.18	93.81	1,860.00
	09/28/16 11:14:50	15210	17.53	8.02	0.93	2.51	55.18	93.81	1,860.00
	09/28/16 11:15:20	15240	17.33	7.98	0.95	2.61	55.11	93.67	1,890.00
	09/28/16 11:15:50	15270	17.46	8.85	1.24	2.55	55.11	93.67	1,890.00
	09/28/16 11:16:20	15300	17.35	9.58	1.08	2.61	54.90	93.48	2,334.00
	09/28/16 11:16:50	15330	17.28	9.92	1.23	2.66	54.90	93.48	2,334.00
	09/28/16 11:17:20	15360	16.65	10.35	0.75	2.90	54.22	93.42	4,296.00
	09/28/16 11:17:50	15390	13.28	9.14	-0.05	5.33	54.22	93.42	4,296.00
	09/28/16 11:18:20	15420	13.45	4.74	-0.06	5.22	54.40	93.68	4,338.00
A3	09/28/16 11:18:50	15450	13.14	2.25	-0.07	5.44	54.40	93.68	4,338.00
	09/28/16 11:19:20	15480	13.24	1.34	-0.06	5.36	54.43	94.04	4,290.00
	09/28/16 11:19:50	15510	13.06	1.02	-0.06	5.51	54.43	94.04	4,290.00
	09/28/16 11:20:20	15540	13.23	0.85	-0.07	5.34	54.48	94.43	4,266.00
	09/28/16 11:20:50	15570	13.13	0.88	-0.06	5.45	54.48	94.43	4,266.00
	09/28/16 11:21:20	15600	13.27	0.91	-0.07	5.30	54.54	94.90	4,242.00
	09/28/16 11:21:50	15630	13.55	0.96	-0.06	5.12	54.54	94.90	4,242.00
	09/28/16 11:22:20	15660	13.17	1.05	-0.06	5.37	54.59	95.34	4,248.00
	09/28/16 11:22:50	15690	13.15	1.08	-0.07	5.46	54.59	95.34	4,248.00
	09/28/16 11:23:20	15720	13.30	1.12	-0.08	5.29	54.68	95.78	4,236.00
	09/28/16 11:23:50	15750	12.95	1.18	-0.06	5.57	54.68	95.78	4,236.00
	09/28/16 11:24:20	15780	13.18	1.19	-0.06	5.38	54.48	96.21	4,224.00
	09/28/16 11:24:50	15810	13.42	1.29	-0.06	5.21	54.48	96.21	4,224.00
	09/28/16 11:25:20	15840	13.36	1.35	-0.06	5.27	54.27	96.56	4,218.00
	09/28/16 11:25:50	15870	13.51	1.38	-0.08	5.15	54.27	96.56	4,218.00
	09/28/16 11:26:20	15900	13.32	1.37	-0.09	5.27	54.17	96.83	4,188.00
	09/28/16 11:26:50	15930	13.39	1.42	-0.09	5.23	54.17	96.83	4,188.00
	09/28/16 11:27:20	15960	13.36	1.40	-0.08	5.26	54.39	97.08	4,170.00
	09/28/16 11:27:50	15990	13.51	1.41	-0.06	5.13	54.39	97.08	4,170.00
	09/28/16 11:28:20	16020	13.47	1.47	-0.06	5.18	54.33	97.28	4,194.00
	09/28/16 11:28:50	16050	13.38	1.62	-0.09	5.21	54.33	97.28	4,194.00
	09/28/16 11:29:20	16080	13.30	1.81	-0.09	5.30	54.98	97.40	2,826.00
	09/28/16 11:29:50	16110	13.08	1.99	-0.08	5.50	54.98	97.40	2,826.00
	09/28/16 11:30:20	16140	17.15	2.60	-0.03	2.97	55.32	97.24	1,818.00
	09/28/16 11:30:50	16170	17.37	4.25	0.03	2.58	55.32	97.24	1,818.00
	09/28/16 11:31:20	16200	17.38	5.59	0.18	2.57	55.40	96.94	1,866.00
	09/28/16 11:31:50	16230	17.24	6.66	0.33	2.68	55.40	96.94	1,866.00
	09/28/16 11:32:20	16260	17.36	7.02	0.56	2.59	55.47	96.65	1,860.00
	09/28/16 11:32:50	16290	17.29	7.21	0.67	2.65	55.47	96.65	1,860.00
	09/28/16 11:33:20	16320	17.26	7.62	0.81	2.65	55.53	96.38	1,884.00
	09/28/16 11:33:50	16350	17.15	8.41	0.78	2.72	55.53	96.38	1,884.00
	09/28/16 11:34:20	16380	17.21	8.92	0.89	2.70	55.01	96.13	2,850.00
	09/28/16 11:34:50	16410	17.21	8.81	0.89	2.69	55.01	96.13	2,850.00
	09/28/16 11:35:20	16440	14.62	8.73	0.10	4.22	54.36	96.19	4,332.00
	09/28/16 11:35:50	16470	13.36	6.68	-0.06	5.25	54.36	96.19	4,332.00
	09/28/16 11:36:20	16500	13.38	3.47	-0.06	5.30	54.41	96.51	4,278.00
	09/28/16 11:36:50	16530	13.47	2.54	-0.09	5.20	54.41	96.51	4,278.00
	09/28/16 11:37:20	16560	13.50	2.06	-0.08	5.18	54.54	96.89	4,260.00
	09/28/16 11:37:50	16590	13.51	1.30	-0.07	5.16	54.54	96.89	4,260.00

Coyote North USA INC.
September 28, 2016
COMB 48
Enid Facility

Unit Data

Meas. Stack Moisture	5.4	%
Stack Exhaust Flow (M2)	312,267	SCFH

Weather Data

Barometric Pressure	28.70	in. Hg
Relative Humidity	43	%
Ambient Temperature	78	°F
Specific Humidity	0.009147	lb H_2O / lb air

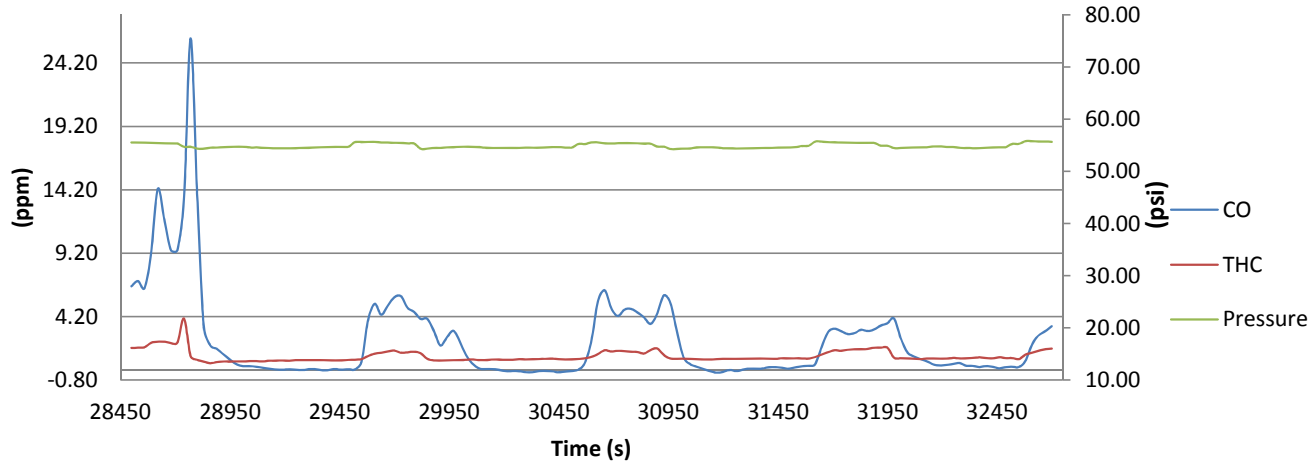
30-70-30 Load, Run - COMB 48 R6

Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. °F	Fuel Flow SCFH
09/28/16 11:38:20	16620	13.35	0.92	-0.09	5.26	54.32	97.22	4,236.00
09/28/16 11:38:50	16650	13.49	0.82	-0.05	5.18	54.32	97.22	4,236.00
09/28/16 11:39:20	16680	13.14	0.91	-0.04	5.41	54.25	97.48	4,224.00
09/28/16 11:39:50	16710	13.58	0.89	-0.05	5.11	54.25	97.48	4,224.00
09/28/16 11:40:20	16740	13.69	0.93	-0.06	5.05	54.22	97.68	4,248.00
09/28/16 11:40:50	16770	13.61	1.02	-0.06	5.07	54.22	97.68	4,248.00
09/28/16 11:41:20	16800	13.90	1.12	-0.06	4.94	54.13	97.86	4,236.00
09/28/16 11:41:50	16830	13.75	1.21	-0.04	4.98	54.13	97.86	4,236.00
09/28/16 11:42:20	16860	13.70	1.21	-0.05	5.01	54.12	98.01	4,230.00
09/28/16 11:42:50	16890	13.44	1.17	-0.06	5.21	54.12	98.01	4,230.00
09/28/16 11:43:20	16920	13.62	1.11	-0.06	5.09	54.39	98.14	4,224.00
09/28/16 11:43:50	16950	13.53	1.16	-0.06	5.15	54.39	98.14	4,224.00
09/28/16 11:44:20	16980	13.57	1.22	-0.06	5.10	54.43	98.25	4,182.00
09/28/16 11:44:50	17010	13.41	1.18	-0.08	5.23	54.43	98.25	4,182.00
09/28/16 11:45:20	17040	13.41	1.18	-0.08	5.20	55.58	98.31	1,992.00
09/28/16 11:45:50	17070	15.91	1.46	-0.04	3.81	55.58	98.31	1,992.00
09/28/16 11:46:20	17100	17.65	3.16	0.03	2.41	55.45	98.05	1,782.00
09/28/16 11:46:50	17130	17.50	5.19	0.15	2.50	55.45	98.05	1,782.00
09/28/16 11:47:20	17160	17.56	6.65	0.38	2.46	55.41	97.77	1,854.00
09/28/16 11:47:50	17190	17.33	7.58	0.51	2.62	55.41	97.77	1,854.00
09/28/16 11:48:20	17220	17.46	7.81	0.79	2.54	55.30	97.51	1,860.00
RAW AVERAGE		**14.66**	**3.64**	**0.28**	**4.40**	**54.66**	**93.45**	**3,459.83**

		O_2	CO	THC	CO_2	Press. Trans	Temp. Trans.	F-Flow Trans.
	Serial Number:	INSTO2-0011	INST-CO-0022	INST-TH-0002	INST-C2-0013	2104497-025	2104497-025	2104497-025
		(%)	(ppmvd)	(ppmvw)	(%)	(in. H_2O)	(°F)	(SCFH)
Bias	Initial Zero	0.01	-0.02	-0.06	0.03			
	Final Zero	-0.01	-0.02	-0.06	0.02			
	Avg. Zero	0.00	-0.02	-0.06	0.03			
	Initial UpScale	11.98	9.39	2.96	8.91			
	Final UpScale	11.98	9.38	2.95	8.92			
	Avg. UpScale	11.98	9.39	2.96	8.92			
Upscale Cal Gas		11.90	9.44	3.00	8.95			

EMISSIONS DATA	O_2	CO	THC	CO_2
Corrected Raw Average (ppm/% dry basis)	14.56	3.67	0.34	4.41
Corrected Raw Average (ppm/% wet basis)	13.78	3.47	0.32	4.17
Emission Rate (lb/hr)	N/A	0.08	0.01	N/A

COMB 48 R4



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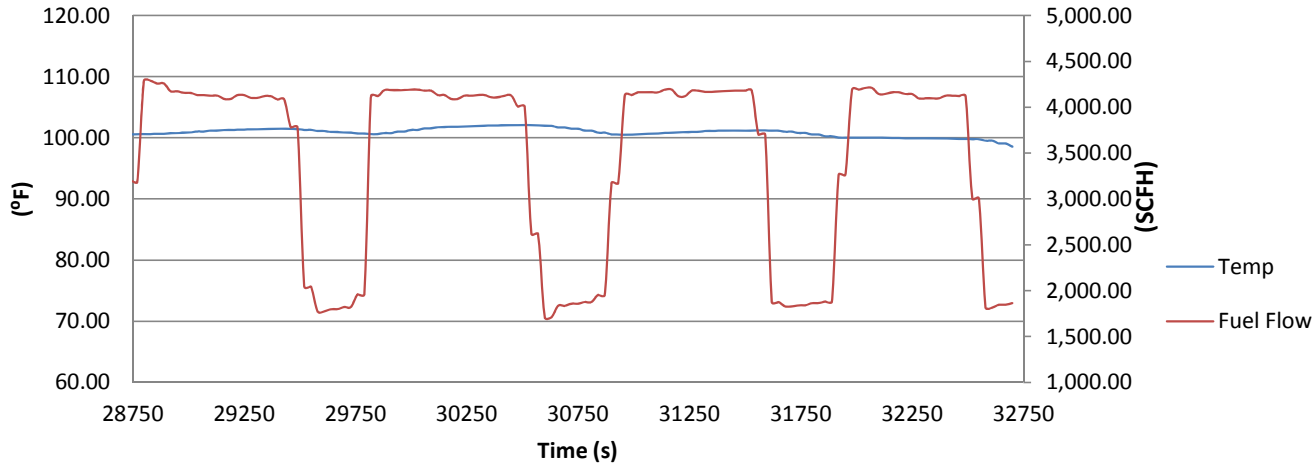

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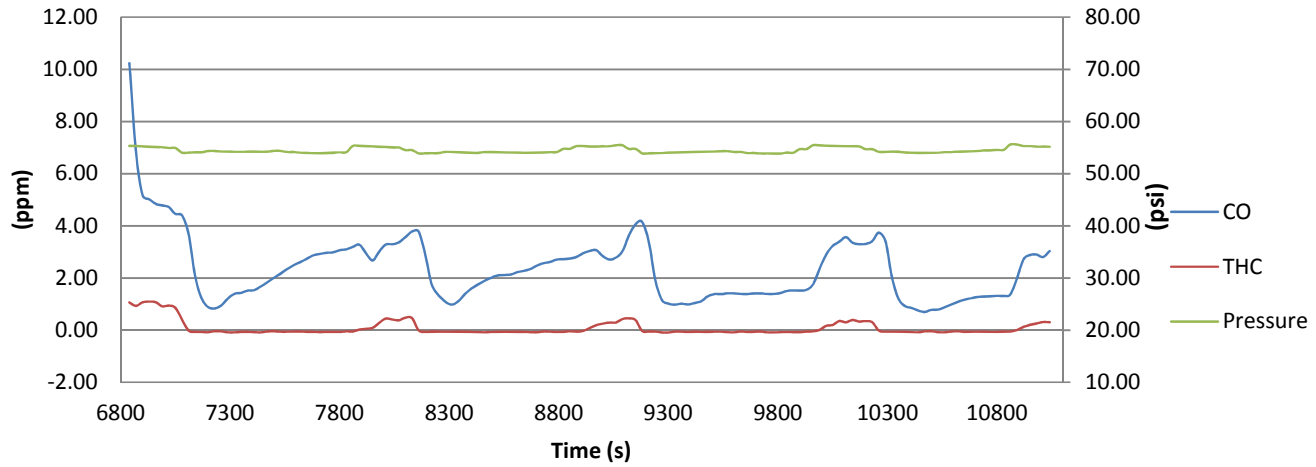

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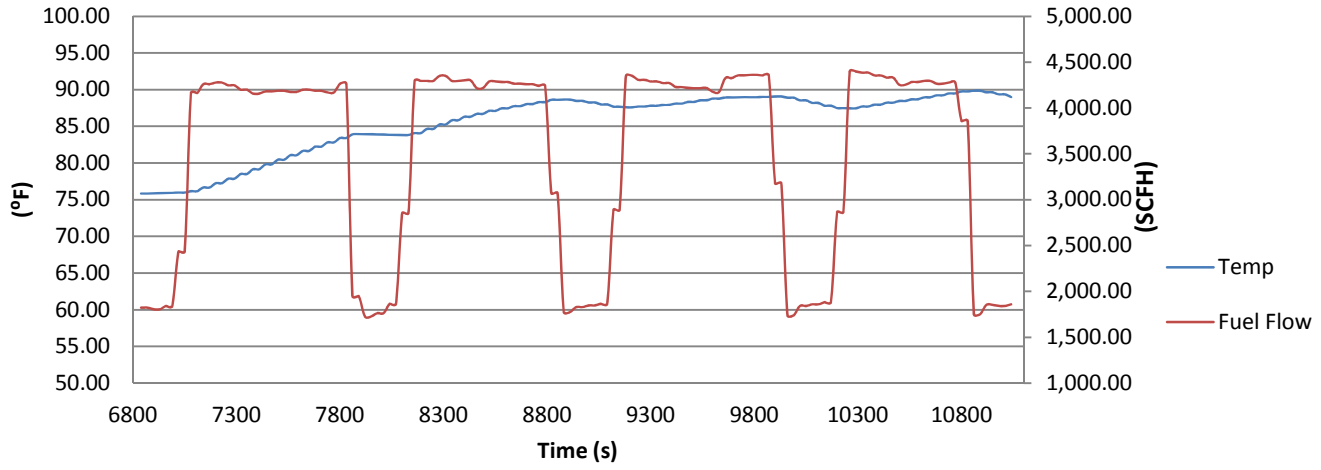

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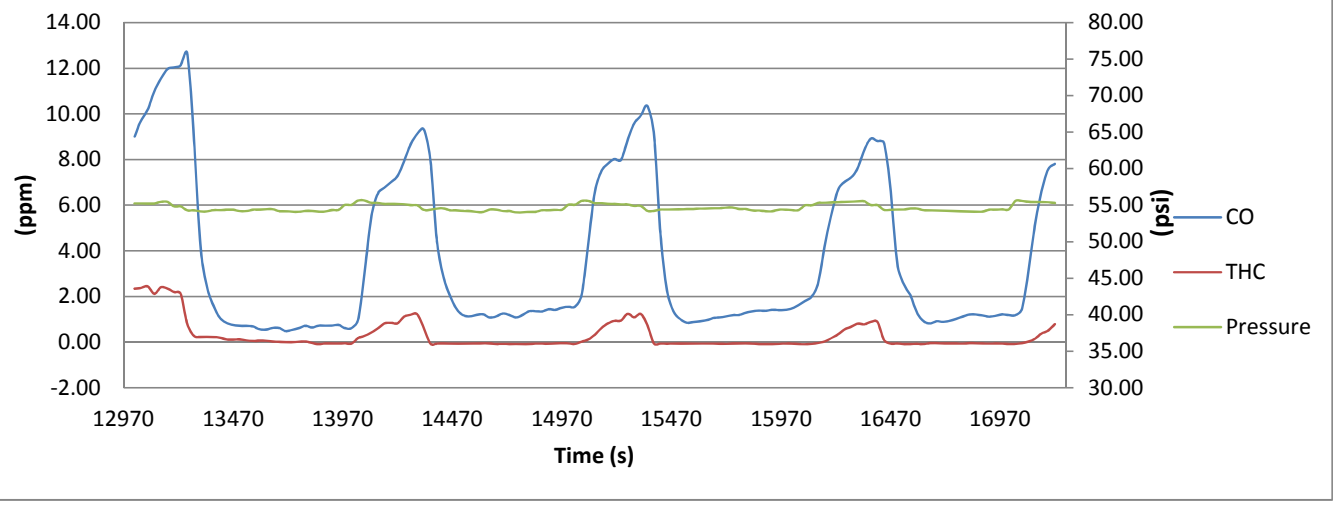

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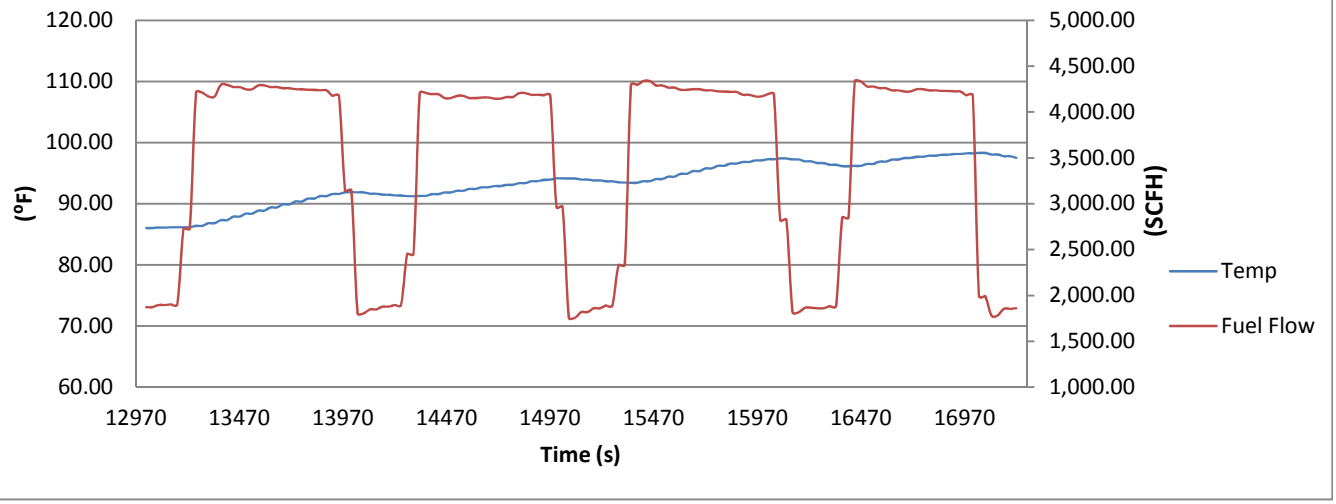

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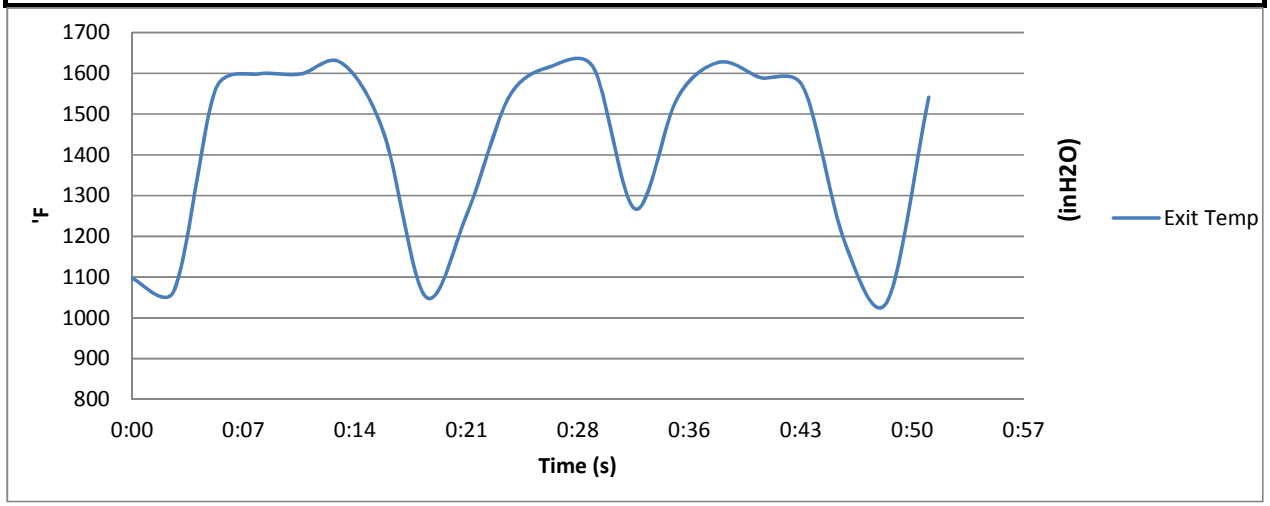

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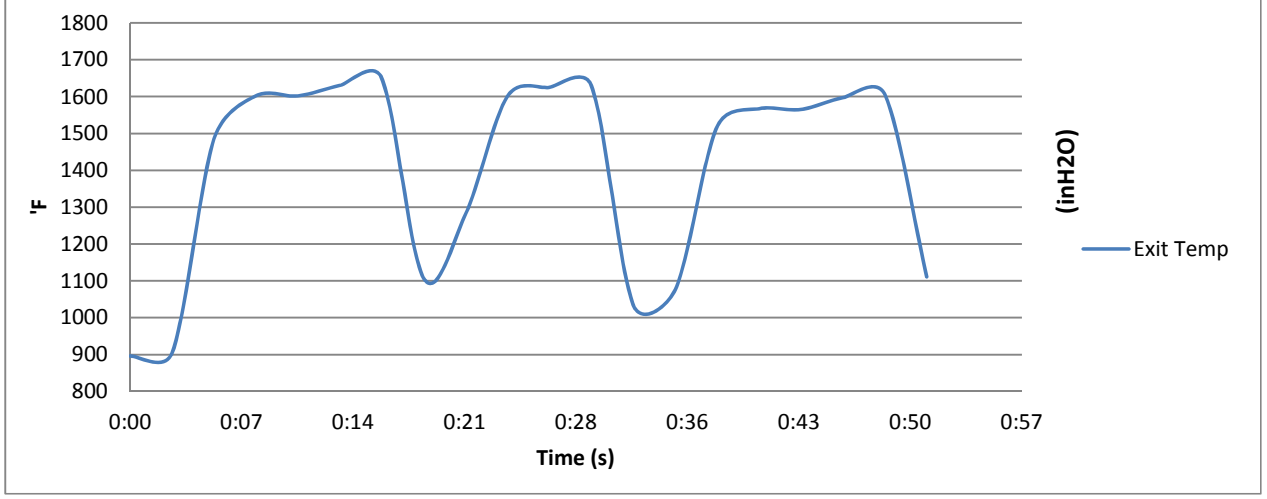

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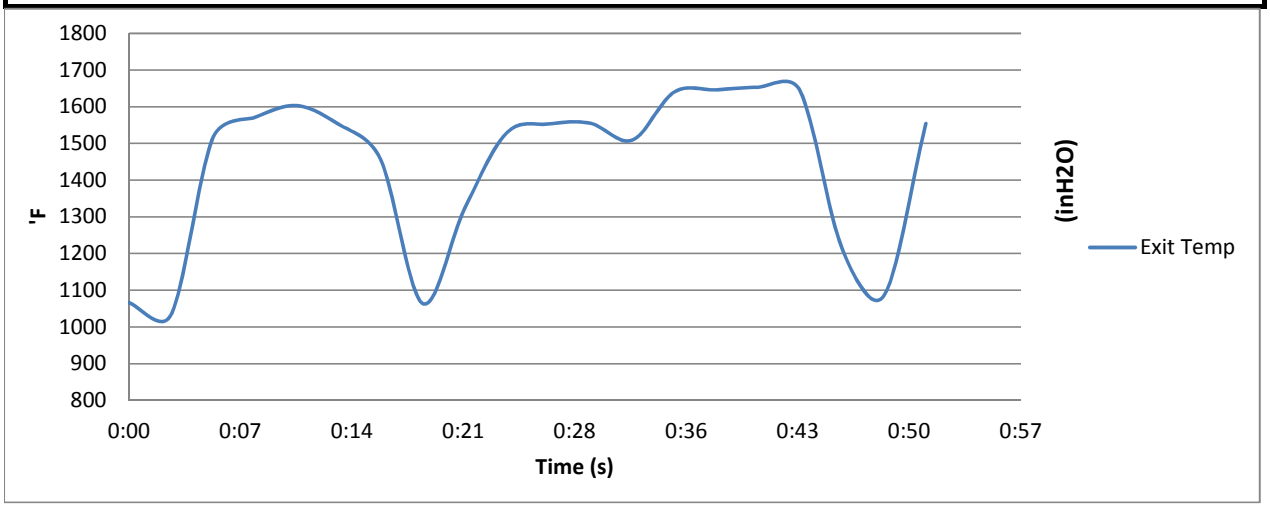


EMISSION DATA RECORDS

70-100-70% RAMP-UP, RAMP-DOWN UNIT OPERATION DATA

METHOD 4 (MOISTURE) [MULTI POINT, NO VARIATION] SOURCE SAMPLING TITLE PAGE

Source Information	
Plant Name	Enid Facility
Sampling Location	COMB 48
Fuel Type	Gas, Propene

Test Information			
Project #		coyote-16-enid.ok-comp#1	
Operator		TW/RA	
Date for Preliminary Run	(mm/dd/yy)	09/29/16	
Standard Temperature		68	°F
Standard Pressure		29.92	in Hg
Required Sample Vol.	RM4, 8.1.1.2	21	scf
Run Duration	≤0.75 cfm	65	minutes
Unit Number		1	
Base Run Number		70-100-70%	
Number of Ports Available		2	
Number of Ports Used		2	
Port Inside Diameter		3.00	in
Stack Shape		Circular	

Test Equipment Information					
Run		**7**	**8**	**9**	
Test Date	(mm/dd/yy)	09/29/16	09/29/16	09/29/16	
Load	% or w/DB	70-100-70	70-100-70	70-100-70	
Meter Box Number	from ACS	SAMP-CP-0011	SAMP-CP-0011	SAMP-CP-0011	
Meter Calibration Factor	(Y)	0.989	0.989	0.989	
Orifice Meter Coefficient	($\Delta H_@$)	1.585	1.585	1.585	in H_2O
Pitot Identification	from ACS	9-7-16-1	9-7-16-1	9-7-16-1	
Pitot Tube Coefficient	(C_p)	0.840	0.840	0.840	
Probe Number	from ACS	SAMP-PF-0001	SAMP-PF-0001	SAMP-PF-0001	
Probe Length		60.0	60.0	60.0	in
(SS, Glass ….) Liner Material	from list	inconel	inconel	inconel	
Impinger Case Number	from ACS	SAMP-BC-0002	SAMP-BC-0002	SAMP-BC-0002	

Testing Company Information	
Company Name	Air Hygiene International, Inc. (Tulsa, Oklahoma)
Address	1600 W Tacoma Street
City, State Zip	Broken Arrow, Oklahoma 74012
Project Manager	Min Sum Lee
Phone Number	(918) 307-8865
Fax Number	(918) 307-9131

METHOD 4 (MOISTURE) [MULTI POINT, NO VARIATION] - RESULTS

Plant Name	Enid Facility
Sampling Location	COMB 48
Project #	coyote-16-enid.ok-comp#1

Historical Data	70-100-70%-7	70-100-70%-8	70-100-70%-9	**Average**	**Units**
Run Start Time	07:37	14:50	16:15		hh:mm
Run Stop Time	08:51	16:02	17:26		hh:mm
Test Date	09/29/16	09/29/16	09/29/16		mm/dd/yy
Meter Calibration Factor	0.989	0.989	0.989		
Pitot Tube Coefficient	0.840	0.840	0.840		
Initial Meter Volume	868.115	914.100	961.200		ft^3
Final Meter Volume	913.850	961.040	1008.330		ft^3
Total Meter Volume	45.735	46.940	47.130	46.602	ft^3
Total Sampling Time	65.00	65.00	65.00	65.00	min
Average Meter Temperature	72.13	79.58	80.10	77.27	°F
Average Stack Temperature	1594.71	1647.79	1584.17	1608.89	°F
Barometric Pressure	29.05	28.98	28.95	28.99	in Hg
Stack Static Pressure	0.00	0.00	0.00	0.00	in H_2O
Absolute Stack Pressure	29.05	28.98	28.95	28.99	in Hg
Average Orifice Pressure Drop	1.50	1.50	1.50	1.50	in H_2O
Absolute Meter Pressure	29.17	29.10	29.07	29.11	in Hg
Avg Square Root Pitot Pressure	0.17	0.19	0.22	0.19	$\sqrt{(in\ H_2O)}$
Moisture Content Data	70-100-70%-7	70-100-70%-8	70-100-70%-9	**Average**	**Units**
Impinger Water Weight Gain	37.90	47.10	36.00	40.33	g
Silica Gel Weight Gain	9.20	6.90	12.90	9.67	g
Total Water Volume Collected	47.18	54.10	48.99	50.09	ml
Standard Water Vapor Volume	2.22	2.55	2.31	2.36	scf
Standard Meter Volume	43.7	44.2	44.3	44.1	dscf
Calculated Stack Moisture	4.83	5.45	4.95	5.08	%
Saturated Stack Moisture	100.00	100.00	100.00	100.00	%
Reported Stack Moisture Content	4.83	5.45	4.95	5.08	%
Method 3C Gas Analysis Data	70-100-70%-7	70-100-70%-8	70-100-70%-9	**Average**	**Units**
Carbon Dioxide Content	4.4	4.1	4.2	4.2	%
Oxygen Content	15.0	15.9	15.7	15.5	%
Nitrogen Content	80.6	80.0	80.1	80.2	%
Stack Dry Molecular Weight	29.31	29.29	29.30	29.30	lb/lb-mole
Stack Wet Molecular Weight	28.76	28.67	28.75	28.73	lb/lb-mole
Percent Excess Air	239.1	304.3	288.7	277.4	%
Volumetric Flow Rate Data	70-100-70%-7	70-100-70%-8	70-100-70%-9	**Average**	**Units**
Average Stack Gas Velocity	19.05	21.77	24.62	21.81	ft/sec
Stack Cross-Sectional Area	12.16	12.16	12.16	12.16	ft^2
Actual Stack Flow Rate	13,901	15,886	17,965	15,917	acfm
Wet Standard Stack Flow Rate	208	231	269	236	wkscfh
Dry Standard Stack Flow Rate	198,047	218,657	256,050	224,251	dscfh

METHOD 3C - DETERMINATION OF DRY MOLECULAR WEIGHT BY ANALYZER

Plant Name	Enid Facility	**Preliminary Date**	09/29/16		
Sampling Location	COMB 48	**Operator**	TW/RA		
Project #	coyote-16-enid.ok-comp#1	**# of Ports Used**	2		
Fuel Type	Gas, Propene	**Min. Fuel Factor**	N/A	**Max. Fuel Factor**	N/A

Gas Analysis Data									
Run Number	70-100-70%-7		**Date**	09/29/16	**Run Start Time**	07:37		**Run Stop Time**	08:51
Sample Analysis Time	**CO_2 Conc.**	**O_2 Conc.**	**Methane Conc.**	**N_2 Conc.**	**Dry Molecular Weight**	**Calculated Fuel Factor**		**Excess Air**	**Fuel Factor in Range**
	($\%CO_2$)	($\%O_2$)	(ppmCO)	($\%N_2$)	(M_d)	$(F_o)_{avg}$		$(\%EA)_{avg}$	
hh:mm	%	%	ppm	%	lb/lb-mole			%	
01:14	4.4	15.0	0.0	80.6	29.31	1.335		239.1	N/A

Gas Analysis Data									
Run Number	70-100-70%-8		**Date**	09/29/16	**Run Start Time**	14:50		**Run Stop Time**	16:02
Sample Analysis Time	**CO_2 Conc.**	**O_2 Conc.**	**Methane Conc.**	**N_2 Conc.**	**Dry Molecular Weight**	**Calculated Fuel Factor**		**Excess Air**	**Fuel Factor in Range**
	($\%CO_2$)	($\%O_2$)	(ppmCO)	($\%N_2$)	(M_d)	$(F_o)_{avg}$		$(\%EA)_{avg}$	
hh:mm	%	%	ppm	%	lb/lb-mole			%	
01:12	4.1	15.9	0.0	80.0	29.29	1.225		304.3	N/A

Gas Analysis Data									
Run Number	70-100-70%-9		**Date**	09/29/16	**Run Start Time**	16:15		**Run Stop Time**	17:26
Sample Analysis Time	**CO_2 Conc.**	**O_2 Conc.**	**Methane Conc.**	**N_2 Conc.**	**Dry Molecular Weight**	**Calculated Fuel Factor**		**Excess Air**	**Fuel Factor in Range**
	($\%CO_2$)	($\%O_2$)	(ppmCO)	($\%N_2$)	(M_d)	$(F_o)_{avg}$		$(\%EA)_{avg}$	
hh:mm	%	%	ppm	%	lb/lb-mole			%	
01:11	4.2	15.7	0.0	80.1	29.30	1.229		288.7	N/A

METHOD 4 - DETERMINATION OF MOISTURE CONTENT IN STACK GASES

Plant Name	Enid Facility	**Preliminary Date**	09/29/16
Sampling Location	COMB 48	**Operator**	TW/RA
Project #	coyote-16-enid.ok-comp#1	**Ports Used**	2

Moisture Content Data									
Run Number		70-100-70%-7		**Date**	09/29/16	**Start Time**	07:37	**Stop Time**	08:51
Meter Box Number		SAMP-CP-0011				**Meter Cal Factor**	(Y)	0.989	
Total Meter Volume		(V_m)	45.735	dcf		**Barometric Pressure**	(P_b)	29.05	in Hg
Average Stack Temp		$(t_s)_{avg}$	1595	°F		**Stack Static Pressure**	(P_{static})	0.00	in H_2O
Average Meter Temp		$(t_m)_{avg}$	72	°F		**Avg Orifice Pressure**	$(\Delta H)_{avg}$	1.50	in H_2O
		Impinger 1	**Impinger 2**	**Impinger 3**	**Impinger 4**	**Impinger 5**	**Impinger 6**	**Impinger 7**	**Impinger 8**
		(g)	(g)	(g)	(g)				
Contents		H_2O	H_2O	-	Sil Gel				
Final Value	(V_f),(W_f)	796.40	772.40	620.40	876.20				
Initial Value	(V_i),(W_i)	764.40	767.10	619.80	867.00				
Net Value	(V_n),(W_n)	32.0	5.3	0.6	9.2				
Results									
Total Weight		(W_t)	47.10	g		**Water Vol Weighed**	($V_{wsg(std)}$)	2.221	scf
Std Meter Volume		($V_{m(std)}$)	43.742	dscf		**Sat. Moisture Content**	($B_{ws(svp)}$)	100.00	%
Calc Moisture Content		($B_{ws(calc)}$)	4.83	%		**Final Moisture Content**	(B_{ws})	4.83	%

Moisture Content Data									
Run Number		70-100-70%-8		**Date**	09/29/16	**Start Time**	14:50	**Stop Time**	16:02
Meter Box Number		SAMP-CP-0011				**Meter Cal Factor**	(Y)	0.989	
Total Meter Volume		(V_m)	46.940	dcf		**Barometric Pressure**	(P_b)	28.98	in Hg
Average Stack Temp		$(t_s)_{avg}$	1648	°F		**Stack Static Pressure**	(P_{static})	0.00	in H_2O
Average Meter Temp		$(t_m)_{avg}$	80	°F		**Avg Orifice Pressure**	$(\Delta H)_{avg}$	1.50	in H_2O
		Impinger 1	**Impinger 2**	**Impinger 3**	**Impinger 4**	**Impinger 5**	**Impinger 6**	**Impinger 7**	**Impinger 8**
		(g)	(g)	(g)	(g)				
Contents		H_2O	H_2O	-	Sil Gel				
Final Value	(V_f),(W_f)	835.50	778.80	622.00	883.10				
Initial Value	(V_i),(W_i)	796.40	772.40	620.40	876.20				
Net Value	(V_n),(W_n)	39.1	6.4	1.6	6.9				
Results									
Total Weight		(W_t)	54.00	g		**Water Vol Weighed**	($V_{wsg(std)}$)	2.546	scf
Std Meter Volume		($V_{m(std)}$)	44.167	dscf		**Sat. Moisture Content**	($B_{ws(svp)}$)	100.00	%
Calc Moisture Content		($B_{ws(calc)}$)	5.45	%		**Final Moisture Content**	(B_{ws})	5.45	%

Moisture Content Data									
Run Number		70-100-70%-9		**Date**	09/29/16	**Start Time**	16:15	**Stop Time**	17:26
Meter Box Number		SAMP-CP-0011				**Meter Cal Factor**	(Y)	0.989	
Total Meter Volume		(V_m)	47.130	dcf		**Barometric Pressure**	(P_b)	28.95	in Hg
Average Stack Temp		$(t_s)_{avg}$	1584	°F		**Stack Static Pressure**	(P_{static})	0.00	in H_2O
Average Meter Temp		$(t_m)_{avg}$	80	°F		**Avg Orifice Pressure**	$(\Delta H)_{avg}$	1.50	in H_2O
		Impinger 1	**Impinger 2**	**Impinger 3**	**Impinger 4**	**Impinger 5**	**Impinger 6**	**Impinger 7**	**Impinger 8**
		(g)	(g)	(g)	(g)				
Contents		H_2O	H_2O	-	Sil Gel				
Final Value	(V_f),(W_f)	863.80	784.30	624.20	852.30				
Initial Value	(V_i),(W_i)	835.50	778.80	622.00	839.40				
Net Value	(V_n),(W_n)	28.3	5.5	2.2	12.9				
Results									
Total Weight		(W_t)	48.90	g		**Water Vol Weighed**	($V_{wsg(std)}$)	2.306	scf
Std Meter Volume		($V_{m(std)}$)	44.258	dscf		**Sat. Moisture Content**	($B_{ws(svp)}$)	100.00	%
Calc Moisture Content		($B_{ws(calc)}$)	4.95	%		**Final Moisture Content**	(B_{ws})	4.95	%

METHOD 4 (MOISTURE) [MULTI POINT, NO VARIATION] SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

Plant Name	Enid Facility
Sampling Location	COMB 48
Project #	coyote-16-enid.ok-comp#1

Date	09/29/16
Operator	TW/RA
Run Number	70-100-70%-7

Ideal Nozzle Diameter and IsoKinetic Factor Setup			
Pitot Coefficient	(C_p)	0.840	
Average Stack Temp	(t_s)	1594.7	°F
Average Meter Temp	(t_m)	72.1	
Orifice Meter Coefficient	($\Delta H@$)	1.585	in H_2O
Square Root ΔP	($\Delta p^{1/2}_{avg}$)	0.17	in H_2O
Stack Moisture Content	(B_{ws})	4.83	%
Stack Dry Molecular Weight	(M_d)	29.31	lb/lb-mole
Estimated Orifice Flow Rate	(Q_m)	0.75	acfm
ΔP to ΔH Isokinetic Factor	(K)		

Leak Checks					
Train	**Pre**	0.000	ft³/min@	15.0	in Hg
PASS	**Post**	0.000	ft³/min@	15.0	in Hg
Pitot	**Pre (+)**	0.2	in H_2O for	15.0	sec
< 3.0	**Pre (-)**	0.2	in H_2O for	15.0	sec
	Post (+)	0.2	in H_2O for	15.0	sec
	Post (-)	0.2	in H_2O for	15.0	sec

Sampling Equipment			
Meter Box Number	SAMP-CP-0011		
Meter Cal Factor	(Y)	0.989	
Low Flow Meter	SAMP-MN-0001		
Average Nozzle Diameter	(D_{na})		in
Suggested Nozzle Diameter	(D_{ni})	0.4380	in
Probe Number	SAMP-PF-0001		in
Probe Length	60		in
Liner Material	inconel		
Sample Case / Oven Number			
Impinger Case Number	SAMP-BC-0002		

Pressures			
Barometric Pressure	(P_b)	29.05	in Hg
Stack Static Pressure	(P_{static})	0.00	in H_2O
Absolute Stack Pressure	(P_s)	29.05	in Hg
Absolute Meter Pressure	(P_m)	29.17	in Hg

Nozzle Measurements				
Pre				**PASS**
Post				**PASS**

Run Time			
Start	07:37	**End**	08:51

Weights	**Imp 1**	**Imp 2**	**Imp 3**	**Imp 4**	**Imp 5**	**Imp 6**	**Imp 7**	**Imp 8**
Pre	764.4	767.1	619.8	867.0				
Post	796.4	772.4	620.4	876.2				

Wash Volumes					ml
					ml

Traverse Point #	**Sampling Time (Θ)**	**Timer Time**	**Dry Gas Meter Reading (V_m)**	**Velocity Head (Δp)**	**Desired Orifice ΔH (ΔH_d)**	**Actual Orifice ΔH (ΔH_a)**	**Stack Temp (t_s)**	**Snorkel Temp (248±25°F)**	**Filter Temp (248±25°F)**	**Impinger Exit Temp (≤68°F)**	**Cond. Temp (≤---°F)**	**CPM Filter Temp (--±--°F)**	**Meter Inlet Temp (t_{mi})**	**Meter Outlet Temp (t_{mo})**	**Pump Vacuum**	**Square Root ΔP ($\Delta p^{1/2}$)**	**Local Stack Velocity (v_s)$_l$**	**Cumul. Meter Volume (V_m)$_{std}$**	**Cumul. Percent IsoKinetic (I)**	**Est-Run Meter Volume (V_m)$_{std}$**
	min	hh:mm:ss	ft³	in H_2O	in H_2O	in H_2O	°F	°F	°F	°F	°F	°F	°F	°F	in Hg	√(in H_2O)	ft/sec	dscf	%	dscf
A-1	0.0	00:00:00	868.115	0.035	1.585	1.50	1360	252		62			65	64	10.0	0.19	19.83	1.829		43.897
A-2	2.7	00:02:43	870.000	0.025	1.585	1.50	1614	253		65			68	65	10.0	0.16	17.89	3.666		43.988
A-3	5.4	00:05:25	871.900	0.035	1.585	1.50	1638	252		66			69	65	10.0	0.19	21.29	5.501		44.004
A-4	8.1	00:08:07	873.800	0.025	1.585	1.50	1657	253		61			70	65	10.0	0.16	18.07	7.334		44.002
A-5	10.8	00:10:50	875.700	0.030	1.585	1.50	1668	252		57			71	66	10.0	0.17	19.85	9.202		44.169
A-6	13.5	00:13:33	877.640	0.030	1.585	1.50	1663	252		54			72	66	10.0	0.17	19.83	11.155		44.619
A-7	16.3	00:16:15	879.670	0.030	1.585	1.50	1599	252		53			72	67	10.0	0.17	19.53	12.837		44.012
A-8	19.0	00:18:58	881.420	0.025	1.585	1.50	1384	253		51			74	68	10.0	0.16	16.87	14.715		44.146
A-9	21.7	00:21:40	883.380	0.030	1.585	1.50	1653	252		51			74	70	10.0	0.17	19.78	16.514		44.037
A-10	24.4	00:24:22	885.260	0.025	1.585	1.50	1656	252		51			74	70	10.0	0.16	18.07	18.322		43.973
A-11	27.1	00:27:05	887.150	0.035	1.585	1.50	1658	252		51			74	70	10.0	0.19	21.39	20.092		43.836
A-12	29.8	00:29:47	889.000	0.030	1.585	1.50	1655	253		50			75	70	10.0	0.17	19.79	22.003		44.006
B-1	32.5	00:32:30	891.000	0.025	1.585	1.50	1503	251		53			74	72	10.0	0.16	17.40	23.770		43.882
B-2	35.2	00:35:12	892.850	0.020	1.585	1.50	1488	252		50			74	73	10.0	0.14	15.51	25.630		43.937
B-3	37.9	00:37:55	894.800	0.030	1.585	1.50	1672	255		50			75	73	10.0	0.17	19.87	27.393		43.829
B-4	40.6	00:40:37	896.650	0.025	1.585	1.50	1725	252		50			76	73	10.0	0.16	18.36	29.183		43.775
B-5	43.3	00:43:20	898.530	0.030	1.585	1.50	1749	253		50			76	73	10.0	0.17	20.22	31.011		43.781
B-6	46.0	00:46:03	900.450	0.025	1.585	1.50	1490	252		50			76	74	10.0	0.16	17.35	32.895		43.860
B-7	48.8	00:48:45	902.430	0.030	1.585	1.50	1420	253		51			77	74	10.0	0.17	18.66	34.672		43.796
B-8	51.5	00:51:28	904.300	0.035	1.585	1.50	1691	252		51			77	75	10.0	0.19	21.56	36.448		43.737
B-9	54.2	00:54:10	906.170	0.030	1.585	1.50	1718	252		50			76	75	10.0	0.17	20.08	38.282		43.751
B-10	56.9	00:56:53	908.100	0.03	1.585	1.50	1730	252		50			77	75	10.0	0.17	20.14	40.086		43.730
B-11	59.6	00:59:35	910.000	0.03	1.585	1.50	1482	252		50			77	75	10.0	0.17	18.96	41.918		43.741
B-12	62.3	01:02:18	911.930	0.03	1.585	1.50	1400	251		50			76	75	10.0	0.16	16.94	43.743		43.743
Last Pt	65.0	01:05:00	913.850																	
Final Val	65.0	01:05:00	913.850											**Max Vac**	10.0	**Final Values**		43.743		
Average Values				0.03		1.50	1595	252		53			74	71		0.17	19.05			
													72							

METHOD 4 (MOISTURE) [MULTI POINT, NO VARIATION] SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

Plant Name	Enid Facility
Sampling Location	COMB 48
Project #	coyote-16-enid.ok-comp#1

Date	09/29/16
Operator	TW/RA
Run Number	70-100-70%-8

Ideal Nozzle Diameter and IsoKinetic Factor Setup			
Pitot Coefficient	(C_p)	0.840	
Average Stack Temp	(t_s)	1647.8	°F
Average Meter Temp	(t_m)	79.6	
Orifice Meter Coefficient	($\Delta H@$)	1.585	in H_2O
Square Root ΔP	($\Delta p^{1/2}_{avg}$)	0.19	in H_2O
Stack Moisture Content	(B_{ws})	5.45	%
Stack Dry Molecular Weight	(M_d)	29.29	lb/lb-mole
Estimated Orifice Flow Rate	(Q_m)	0.67	acfm
ΔP to ΔH Isokinetic Factor	(K)		

Leak Checks					
Train	**Pre**	0.000	ft³/min@	15.0	in Hg
PASS	**Post**	0.000	ft³/min@	15.0	in Hg
Pitot	**Pre (+)**	0.2	in H_2O for	15.0	sec
< 3.0	**Pre (-)**	0.2	in H_2O for	15.0	sec
	Post (+)	0.2	in H_2O for	15.0	sec
	Post (-)	0.2	in H_2O for	15.0	sec

Sampling Equipment			
Meter Box Number	SAMP-CP-0011		
Meter Cal Factor	(Y)	0.989	
Low Flow Meter	SAMP-MN-0001		
Average Nozzle Diameter	(D_{na})		in
Suggested Nozzle Diameter	(D_{ni})	0.4021	in
Probe Number	SAMP-PF-0001		in
Probe Length	60		in
Liner Material	inconel		
Sample Case / Oven Number			
Impinger Case Number	SAMP-BC-0002		

Pressures			
Barometric Pressure	(P_b)	28.98	in Hg
Stack Static Pressure	(P_{static})	0.00	in H_2O
Absolute Stack Pressure	(P_s)	28.98	in Hg
Absolute Meter Pressure	(P_m)	29.10	in Hg

Nozzle Measurements				
Pre				**PASS**
Post				**PASS**

Run Time			
Start	14:50	**End**	16:02

Weights	**Imp 1**	**Imp 2**	**Imp 3**	**Imp 4**	**Imp 5**	**Imp 6**	**Imp 7**	**Imp 8**
Pre	796.4	772.4	620.4	876.2				
Post	835.5	778.8	622.0	883.1				

Wash Volumes					ml
					ml

Traverse Point #	**Sampling Time (Θ)**	**Timer Time**	**Dry Gas Meter Reading (V_m)**	**Velocity Head (Δp)**	**Desired Orifice ΔH (ΔH_d)**	**Actual Orifice ΔH (ΔH_a)**	**Stack Temp (t_s)**	**Snorkel Temp (248±25°F)**	**Filter Temp (248±25°F)**	**Impinger Exit Temp (≤68°F)**	**Cond. Temp (≤---°F)**	**CPM Filter Temp (--±--°F)**	**Meter Inlet Temp (t_{mi})**	**Meter Outlet Temp (t_{mo})**	**Pump Vacuum**	**Square Root ΔP ($\Delta p^{1/2}$)**	**Local Stack Velocity (v_s)$_l$**	**Cumul. Meter Volume (V_m)$_{std}$**	**Cumul. Percent IsoKinetic (I)**	**Est-Run Meter Volume (V_m)$_{std}$**
	min	hh:mm:ss	ft³	in H_2O	in H_2O	in H_2O	°F	°F	°F	°F	°F	°F	°F	°F	in Hg	√(in H_2O)	ft/sec	dscf	%	dscf
A-1	0.0	00:00:00	914.100	0.035	1.585	1.50	1559	252		63			71	71	10.0	0.19	20.94	1.740		41.764
A-2	2.7	00:02:43	915.920	0.035	1.585	1.50	1544	257		52			73	72	10.0	0.19	20.86	3.595		43.136
A-3	5.4	00:05:25	917.865	0.025	1.585	1.50	1725	255		52			74	71	10.0	0.16	18.41	5.440		43.516
A-4	8.1	00:08:07	919.800	0.030	1.585	1.50	1709	252		52			76	71	10.0	0.17	20.10	7.295		43.772
A-5	10.8	00:10:50	921.750	0.035	1.585	1.50	1693	252		52			77	72	10.0	0.19	21.63	9.148		43.908
A-6	13.5	00:13:33	923.700	0.035	1.585	1.50	1700	251		52			79	72	10.0	0.19	21.66	10.987		43.948
A-7	16.3	00:16:15	925.640	0.040	1.585	1.50	1728	251		52			80	72	10.0	0.20	23.31	12.843		44.035
A-8	19.0	00:18:58	927.600	0.035	1.585	1.50	1469	252		52			81	72	10.0	0.19	20.47	14.594		43.783
A-9	21.7	00:21:40	929.450	0.030	1.585	1.50	1441	252		52			82	75	10.0	0.17	18.81	16.574		44.198
A-10	24.4	00:24:22	931.550	0.040	1.585	1.50	1684	252		52			83	75	10.0	0.20	23.07	18.364		44.073
A-11	27.1	00:27:05	933.450	0.040	1.585	1.50	1694	252		52			83	76	10.0	0.20	23.12	20.199		44.070
A-12	29.8	00:29:47	935.400	0.035	1.585	1.50	1731	252		52			83	76	10.0	0.19	21.82	22.034		44.068
B-1	32.5	00:32:30	937.350	0.030	1.585	1.50	1410	250		66			79	78	10.0	0.17	18.66	23.948		44.212
B-2	35.2	00:35:12	939.380	0.030	1.585	1.50	1718	254		52			85	79	10.0	0.17	20.14	25.606		43.896
B-3	37.9	00:37:55	941.150	0.040	1.585	1.50	1729	254		52			85	80	10.0	0.20	23.31	27.337		43.740
B-4	40.6	00:40:37	943.000	0.045	1.585	1.50	1727	252		54			87	81	10.0	0.21	24.71	29.307		43.960
B-5	43.3	00:43:20	945.110	0.050	1.585	1.50	1765	252		54			87	81	10.0	0.22	26.28	31.071		43.864
B-6	46.0	00:46:03	947.000	0.045	1.585	1.50	1716	251		54			88	81	10.0	0.21	24.65	32.959		43.945
B-7	48.8	00:48:45	949.025	0.030	1.585	1.50	1426	252		55			88	82	10.0	0.17	18.74	34.845		44.015
B-8	51.5	00:51:28	951.050	0.045	1.585	1.50	1675	252		55			89	81	10.0	0.21	24.42	36.708		44.050
B-9	54.2	00:54:10	953.050	0.045	1.585	1.50	1721	251		55			88	81	10.0	0.21	24.68	38.629		44.148
B-10	56.9	00:56:53	955.110	0.04	1.585	1.50	1747	252		55			86	82	10.0	0.20	23.41	40.393		44.065
B-11	59.6	00:59:35	957.000	0.03	1.585	1.50	1747	253		56			86	82	10.0	0.17	20.27	42.260		44.097
B-12	62.3	01:02:18	959.000	0.03	1.585	1.50	1489	252		56			85	82	10.0	0.17	19.05	44.165		44.165
Last Pt	65.0	01:05:00	961.040																	
Final Val	65.0	01:05:00	961.040											**Max Vac**	10.0	**Final Values**		44.165		
Average Values				0.04		1.50	1648	252		54			82	77		0.19	21.77			
													80							

METHOD 4 (MOISTURE) [MULTI POINT, NO VARIATION] SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

Plant Name	Enid Facility
Sampling Location	COMB 48
Project #	coyote-16-enid.ok-comp#1

Date	09/29/16
Operator	TW/RA
Run Number	70-100-70%-9

Ideal Nozzle Diameter and IsoKinetic Factor Setup			
Pitot Coefficient	(C_p)	0.840	
Average Stack Temp	(t_s)	1584.2	°F
Average Meter Temp	(t_m)	80.1	
Orifice Meter Coefficient	($\Delta H@$)	1.585	in H_2O
Square Root ΔP	($\Delta p^{1/2}_{avg}$)	0.22	in H_2O
Stack Moisture Content	(B_{ws})	4.95	%
Stack Dry Molecular Weight	(M_d)	29.30	lb/lb-mole
Estimated Orifice Flow Rate	(Q_m)	0.68	acfm
ΔP to ΔH Isokinetic Factor	(K)		

Leak Checks					
Train	**Pre**	0.000	ft³/min@	15.0	in Hg
PASS	**Post**	0.000	ft³/min@	15.0	in Hg
Pitot	**Pre (+)**	0.2	in H_2O for	15.0	sec
< 3.0	**Pre (-)**	0.2	in H_2O for	15.0	sec
	Post (+)	0.2	in H_2O for	15.0	sec
	Post (-)	0.2	in H_2O for	15.0	sec

Sampling Equipment			
Meter Box Number	SAMP-CP-0011		
Meter Cal Factor	(Y)	0.989	
Low Flow Meter	SAMP-MN-0001		
Average Nozzle Diameter	(D_{na})		in
Suggested Nozzle Diameter	(D_{ni})	0.3874	in
Probe Number	SAMP-PF-0001		in
Probe Length	60		in
Liner Material	inconel		
Sample Case / Oven Number			
Impinger Case Number	SAMP-BC-0002		

Pressures			
Barometric Pressure	(P_b)	28.95	in Hg
Stack Static Pressure	(P_{static})	0.00	in H_2O
Absolute Stack Pressure	(P_s)	28.95	in Hg
Absolute Meter Pressure	(P_m)	29.07	in Hg

Nozzle Measurements				
Pre				**PASS**
Post				**PASS**

Run Time			
Start	16:15	**End**	17:26

Weights	**Imp 1**	**Imp 2**	**Imp 3**	**Imp 4**	**Imp 5**	**Imp 6**	**Imp 7**	**Imp 8**
Pre	835.5	778.8	622.0	839.4				
Post	863.8	784.3	624.2	852.3				

Wash Volumes					ml
					ml

Traverse Point #	**Sampling Time (Θ)**	**Timer Time**	**Dry Gas Meter Reading (V_m)**	**Velocity Head (Δp)**	**Desired Orifice ΔH (ΔH_d)**	**Actual Orifice ΔH (ΔH_a)**	**Stack Temp (t_s)**	**Snorkel Temp (248±25°F)**	**Filter Temp (248±25°F)**	**Impinger Exit Temp (≤68°F)**	**Cond. Temp (≤---°F)**	**CPM Filter Temp (--±--°F)**	**Meter Inlet Temp (t_{mi})**	**Meter Outlet Temp (t_{mo})**	**Pump Vacuum**	**Square Root ΔP ($\Delta p^{1/2}$)**	**Local Stack Velocity (v_s)$_l$**	**Cumul. Meter Volume (V_m)$_{std}$**	**Cumul. Percent IsoKinetic (I)**	**Est-Run Meter Volume (V_m)$_{std}$**
	min	hh:mm:ss	ft³	in H_2O	in H_2O	in H_2O	°F	°F	°F	°F	°F	°F	°F	°F	in Hg	√(in H_2O)	ft/sec	dscf	%	dscf
A-1	0.0	00:00:00	961.200	0.030	1.585	1.50	1311	256		57			77	79	10.0	0.17	18.15	1.923		46.156
A-2	2.7	00:02:43	963.240	0.030	1.585	1.50	1325	256		55			77	79	10.0	0.17	18.22	3.677		44.120
A-3	5.4	00:05:25	965.100	0.045	1.585	1.50	1667	255		55			79	79	10.0	0.21	24.35	5.540		44.318
A-4	8.1	00:08:07	967.080	0.045	1.585	1.50	1704	252		55			80	78	10.0	0.21	24.57	7.346		44.079
A-5	10.8	00:10:50	969.000	0.045	1.585	1.50	1707	251		56			81	77	10.0	0.21	24.58	9.134		43.845
A-6	13.5	00:13:33	970.900	0.045	1.585	1.50	1705	251		57			82	77	10.0	0.21	24.57	11.250		44.998
A-7	16.3	00:16:15	973.150	0.040	1.585	1.50	1490	252		57			82	78	10.0	0.20	21.99	13.175		45.171
A-8	19.0	00:18:58	975.200	0.035	1.585	1.50	1406	252		56			83	78	10.0	0.19	20.12	15.019		45.057
A-9	21.7	00:21:40	977.165	0.055	1.585	1.50	1671	252		57			83	78	10.0	0.23	26.95	16.938		45.168
A-10	24.4	00:24:22	979.210	0.050	1.585	1.50	1710	252		58			84	79	10.0	0.22	25.93	18.333		44.000
A-11	27.1	00:27:05	980.700	0.060	1.585	1.50	1716	252		58			84	79	10.0	0.24	28.44	19.982		43.597
A-12	29.8	00:29:47	982.460	0.060	1.585	1.50	1707	252		58			85	79	10.0	0.24	28.39	21.797		43.595
B-1	32.5	00:32:30	984.400	0.065	1.585	1.50	1530	252		59			81	80	10.0	0.25	28.31	23.674		43.706
B-2	35.2	00:35:12	986.400	0.060	1.585	1.50	1741	253		59			82	80	10.0	0.24	28.61	25.549		43.798
B-3	37.9	00:37:55	988.400	0.060	1.585	1.50	1787	252		59			83	80	10.0	0.24	28.90	27.422		43.876
B-4	40.6	00:40:37	990.400	0.055	1.585	1.50	1780	251		60			83	79	10.0	0.23	27.63	29.269		43.904
B-5	43.3	00:43:20	992.370	0.050	1.585	1.50	1484	252		60			83	79	10.0	0.22	24.54	31.172		44.008
B-6	46.0	00:46:03	994.400	0.045	1.585	1.50	1479	251		61			83	78	10.0	0.21	23.25	32.993		43.990
B-7	48.8	00:48:45	996.340	0.040	1.585	1.50	1379	252		61			83	79	10.0	0.20	21.35	34.858		44.032
B-8	51.5	00:51:28	998.330	0.040	1.585	1.50	1361	252		61			83	78	10.0	0.20	21.25	36.754		44.105
B-9	54.2	00:54:10	1000.350	0.050	1.585	1.50	1596	252		61			82	78	10.0	0.22	25.24	38.473		43.969
B-10	56.9	00:56:53	1002.180	0.06	1.585	1.50	1660	252		61			81	78	10.0	0.23	26.88	40.419		44.093
B-11	59.6	00:59:35	1004.250	0.05	1.585	1.50	1682	252		61			80	78	10.0	0.22	25.76	42.357		44.199
B-12	62.3	01:02:18	1006.310	0.05	1.585	1.50	1422	252		62			80	77	10.0	0.21	22.91	44.260		44.260
Last Pt	65.0	01:05:00	1008.330																	
Final Val	65.0	01:05:00	1008.330											**Max Vac**	10.0	**Final Values**		44.260		
Average Values				0.05		1.50	1584	252		59			82	79		0.22	24.62			
													80							

Coyote North USA INC.
September 29, 2016
COMB 48
Enid Facility

Unit Data

Meas. Stack Moisture	4.8	%
Stack Exhaust Flow (M2)	198,047	SCFH

Weather Data

Barometric Pressure	29.05	in. Hg
Relative Humidity	56	%
Ambient Temperature	53	^{o}F
Specific Humidity	0.004896	lb H_2O / lb air

70-100-70 Load, Run - COMB 48 R7

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
A1	09/29/16 07:37:22	2700	15.94	3.52	0.31	3.59	50.91	70.89	102,384.00
	09/29/16 07:37:52	2730	15.98	3.90	0.31	3.57	50.91	70.89	102,384.00
	09/29/16 07:38:22	2760	16.01	4.20	0.33	3.55	50.78	71.61	102,240.00
	09/29/16 07:38:52	2790	15.98	4.38	0.41	3.59	50.78	71.61	102,240.00
	09/29/16 07:39:22	2820	15.89	4.31	0.39	3.60	50.68	72.27	102,384.00
	09/29/16 07:39:52	2850	15.92	4.29	0.39	3.60	50.68	72.27	102,384.00
	09/29/16 07:40:22	2880	15.96	4.38	0.33	3.56	50.46	72.90	114,768.00
	09/29/16 07:40:52	2910	15.98	4.48	0.38	3.56	50.46	72.90	114,768.00
	09/29/16 07:41:22	2940	15.22	4.53	0.24	3.97	50.10	73.70	139,536.00
	09/29/16 07:41:52	2970	14.70	5.07	0.21	4.34	50.10	73.70	139,536.00
	09/29/16 07:42:22	3000	14.17	3.79	0.19	4.69	50.18	74.81	146,160.00
	09/29/16 07:42:52	3030	13.98	2.35	0.20	4.81	50.18	74.81	146,160.00
	09/29/16 07:43:22	3060	13.89	1.81	0.20	4.86	50.24	75.98	147,168.00
	09/29/16 07:43:52	3090	13.92	1.59	0.23	4.83	50.24	75.98	147,168.00
	09/29/16 07:44:22	3120	13.98	1.37	0.23	4.78	50.43	77.08	146,016.00
	09/29/16 07:44:52	3150	13.97	1.15	0.23	4.79	50.43	77.08	146,016.00
	09/29/16 07:45:22	3180	14.02	1.08	0.23	4.77	50.30	78.14	144,432.00
	09/29/16 07:45:52	3210	14.04	1.09	0.24	4.75	50.30	78.14	144,432.00
	09/29/16 07:46:22	3240	13.98	1.16	0.23	4.80	50.16	79.09	146,016.00
	09/29/16 07:46:52	3270	14.07	1.28	0.23	4.73	50.16	79.09	146,016.00
	09/29/16 07:47:22	3300	14.03	1.45	0.23	4.75	50.04	79.95	145,728.00
	09/29/16 07:47:52	3330	13.97	1.72	0.23	4.80	50.04	79.95	145,728.00
	09/29/16 07:48:22	3360	13.93	2.02	0.22	4.80	50.13	80.82	145,584.00
	09/29/16 07:48:52	3390	13.83	2.20	0.23	4.88	50.13	80.82	145,584.00
	09/29/16 07:49:22	3420	13.83	2.57	0.23	4.88	50.25	81.71	145,584.00
	09/29/16 07:49:52	3450	13.91	2.90	0.21	4.83	50.25	81.71	145,584.00
	09/29/16 07:50:22	3480	13.81	3.05	0.20	4.88	50.44	82.56	144,432.00
	09/29/16 07:50:52	3510	13.86	3.22	0.22	4.83	50.44	82.56	144,432.00
	09/29/16 07:51:22	3540	13.92	3.37	0.23	4.78	50.45	83.39	143,136.00
	09/29/16 07:51:52	3570	13.92	3.49	0.21	4.80	50.45	83.39	143,136.00
	09/29/16 07:52:22	3600	13.93	3.57	0.20	4.78	50.34	84.17	144,432.00
	09/29/16 07:52:52	3630	13.81	3.70	0.22	4.86	50.34	84.17	144,432.00
	09/29/16 07:53:22	3660	13.82	3.71	0.22	4.86	50.24	84.90	144,576.00
	09/29/16 07:53:52	3690	13.98	3.69	0.19	4.75	50.24	84.90	144,576.00
	09/29/16 07:54:22	3720	14.00	3.69	0.20	4.74	50.87	85.46	109,296.00
	09/29/16 07:54:52	3750	15.14	3.72	0.26	4.09	50.87	85.46	109,296.00
	09/29/16 07:55:22	3780	15.73	3.72	0.33	3.69	50.94	85.50	103,104.00
	09/29/16 07:55:52	3810	15.91	3.87	0.31	3.60	50.94	85.50	103,104.00
	09/29/16 07:56:22	3840	16.07	3.98	0.31	3.49	50.95	85.34	101,088.00
	09/29/16 07:56:52	3870	16.04	4.04	0.30	3.52	50.95	85.34	101,088.00
	09/29/16 07:57:22	3900	16.17	4.21	0.31	3.45	50.96	85.18	101,952.00
A2	09/29/16 07:57:52	3930	16.21	4.35	0.30	3.42	50.96	85.18	101,952.00
	09/29/16 07:58:22	3960	16.26	4.50	0.30	3.39	50.99	84.98	101,952.00
	09/29/16 07:58:52	3990	16.30	4.67	0.35	3.36	50.99	84.98	101,952.00
	09/29/16 07:59:22	4020	16.22	4.78	0.28	3.42	50.42	84.75	134,208.00
	09/29/16 07:59:52	4050	15.25	4.74	0.25	3.94	50.42	84.75	134,208.00
	09/29/16 08:00:22	4080	14.20	3.96	0.23	4.69	50.20	84.75	142,560.00
	09/29/16 08:00:52	4110	14.06	2.39	0.20	4.79	50.20	84.75	142,560.00
	09/29/16 08:01:22	4140	14.14	1.83	0.21	4.73	50.14	84.88	142,992.00
	09/29/16 08:01:52	4170	14.08	2.01	0.20	4.75	50.14	84.88	142,992.00
	09/29/16 08:02:22	4200	14.01	2.45	0.20	4.76	50.11	85.05	144,144.00
	09/29/16 08:02:52	4230	14.10	2.66	0.23	4.72	50.11	85.05	144,144.00
	09/29/16 08:03:22	4260	14.00	2.69	0.23	4.78	50.09	85.27	144,432.00
	09/29/16 08:03:52	4290	14.00	2.68	0.17	4.78	50.09	85.27	144,432.00
	09/29/16 08:04:22	4320	13.99	2.54	0.19	4.78	50.19	85.56	141,984.00
	09/29/16 08:04:52	4350	14.04	2.45	0.22	4.76	50.19	85.56	141,984.00
	09/29/16 08:05:22	4380	14.65	2.54	0.24	4.88	50.24	85.87	143,712.00
	09/29/16 08:05:52	4410	15.17	2.50	0.22	4.89	50.24	85.87	143,712.00
	09/29/16 08:06:22	4440	14.10	2.26	0.24	4.82	50.39	86.15	143,856.00
	09/29/16 08:06:52	4470	13.97	2.09	0.20	4.81	50.39	86.15	143,856.00

Coyote North USA INC.
September 29, 2016
COMB 48
Enid Facility

Unit Data

Meas. Stack Moisture	4.8	%
Stack Exhaust Flow (M2)	198,047	SCFH

Weather Data

Barometric Pressure	29.05	in. Hg
Relative Humidity	56	%
Ambient Temperature	53	^{o}F
Specific Humidity	0.004896	lb H_2O / lb air

70-100-70 Load, Run - COMB 48 R7

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
	09/29/16 08:07:22	4500	14.15	2.09	0.20	4.69	50.37	86.41	143,280.00
	09/29/16 08:07:52	4530	14.05	2.09	0.20	4.75	50.37	86.41	143,280.00
	09/29/16 08:08:22	4560	14.12	2.15	0.21	4.71	50.23	86.52	143,856.00
	09/29/16 08:08:52	4590	14.01	2.13	0.20	4.78	50.23	86.52	143,856.00
	09/29/16 08:09:22	4620	14.00	2.19	0.20	4.78	50.15	86.54	143,712.00
	09/29/16 08:09:52	4650	14.05	2.27	0.19	4.77	50.15	86.54	143,712.00
	09/29/16 08:10:22	4680	14.16	2.33	0.17	4.69	50.16	86.52	142,128.00
	09/29/16 08:10:52	4710	14.15	2.39	0.23	4.69	50.16	86.52	142,128.00
	09/29/16 08:11:22	4740	13.94	2.47	0.23	4.81	50.30	86.52	143,712.00
	09/29/16 08:11:52	4770	13.88	2.61	0.20	4.86	50.30	86.52	143,712.00
	09/29/16 08:12:22	4800	13.98	2.61	0.18	4.78	50.34	86.55	142,560.00
	09/29/16 08:12:52	4830	13.92	2.61	0.21	4.82	50.34	86.55	142,560.00
	09/29/16 08:13:22	4860	13.83	2.68	0.21	4.87	50.45	86.59	143,568.00
	09/29/16 08:13:52	4890	13.77	2.69	0.20	4.92	50.45	86.59	143,568.00
	09/29/16 08:14:22	4920	13.75	2.71	0.20	4.93	50.53	86.62	143,280.00
	09/29/16 08:14:52	4950	13.83	2.72	0.22	4.89	50.53	86.62	143,280.00
	09/29/16 08:15:22	4980	13.88	2.80	0.23	4.85	50.36	86.58	143,280.00
	09/29/16 08:15:52	5010	13.77	2.82	0.23	4.91	50.36	86.58	143,280.00
	09/29/16 08:16:22	5040	13.76	2.88	0.23	4.92	50.23	86.50	143,568.00
	09/29/16 08:16:52	5070	13.81	2.88	0.20	4.90	50.23	86.50	143,568.00
	09/29/16 08:17:22	5100	13.77	2.82	0.20	4.92	50.18	86.37	143,568.00
A3	09/29/16 08:17:52	5130	14.01	2.74	0.22	4.77	50.18	86.37	143,568.00
	09/29/16 08:18:22	5160	14.07	2.64	0.22	4.74	50.30	86.20	143,568.00
	09/29/16 08:18:52	5190	14.09	2.59	0.20	4.71	50.30	86.20	143,568.00
	09/29/16 08:19:22	5220	14.04	2.59	0.21	4.75	50.98	86.01	105,696.00
	09/29/16 08:19:52	5250	15.35	2.63	0.22	4.01	50.98	86.01	105,696.00
	09/29/16 08:20:22	5280	15.81	2.84	0.23	3.64	51.09	85.66	100,512.00
	09/29/16 08:20:52	5310	15.99	3.29	0.27	3.57	51.09	85.66	100,512.00
	09/29/16 08:21:22	5340	16.06	3.59	0.24	3.51	51.07	85.34	102,096.00
	09/29/16 08:21:52	5370	16.06	3.47	0.22	3.51	51.07	85.34	102,096.00
	09/29/16 08:22:22	5400	16.19	3.37	0.22	3.43	50.67	85.00	122,688.00
	09/29/16 08:22:52	5430	16.18	3.39	0.25	3.40	50.67	85.00	122,688.00
	09/29/16 08:23:22	5460	14.48	3.09	0.23	4.46	50.37	84.79	144,432.00
	09/29/16 08:23:52	5490	14.17	1.96	0.22	4.73	50.37	84.79	144,432.00
	09/29/16 08:24:22	5520	14.06	1.12	0.22	4.77	50.25	84.64	142,848.00
	09/29/16 08:24:52	5550	14.24	0.96	0.23	4.67	50.25	84.64	142,848.00
	09/29/16 08:25:22	5580	14.27	1.22	0.24	4.63	50.16	84.46	143,424.00
	09/29/16 08:25:52	5610	14.24	1.54	0.23	4.64	50.16	84.46	143,424.00
	09/29/16 08:26:22	5640	14.30	1.76	0.23	4.60	50.11	84.40	143,280.00
	09/29/16 08:26:52	5670	14.42	1.87	0.24	4.53	50.11	84.40	143,280.00
	09/29/16 08:27:22	5700	14.24	1.92	0.23	4.61	50.24	84.41	142,272.00
	09/29/16 08:27:52	5730	14.23	1.99	0.19	4.64	50.24	84.41	142,272.00
	09/29/16 08:28:22	5760	14.23	1.89	0.20	4.65	50.36	84.48	143,136.00
	09/29/16 08:28:52	5790	14.39	1.88	0.22	4.53	50.36	84.48	143,136.00
	09/29/16 08:29:22	5820	14.26	1.85	0.22	4.61	50.39	84.57	142,272.00
	09/29/16 08:29:52	5850	14.60	1.82	0.23	4.41	50.39	84.57	142,272.00
	09/29/16 08:30:22	5880	14.71	1.82	0.23	4.33	50.70	84.65	134,208.00
	09/29/16 08:30:52	5910	14.66	1.80	0.21	4.36	50.70	84.65	134,208.00
	09/29/16 08:31:22	5940	15.22	1.72	0.23	4.10	51.11	84.54	100,800.00
	09/29/16 08:31:52	5970	16.60	1.90	0.23	3.12	51.11	84.54	100,800.00
	09/29/16 08:32:22	6000	16.51	2.48	0.21	3.23	50.93	84.18	100,080.00
	09/29/16 08:32:52	6030	16.39	2.90	0.25	3.30	50.93	84.18	100,080.00
	09/29/16 08:33:22	6060	16.57	3.06	0.26	3.17	50.79	83.75	100,656.00
	09/29/16 08:33:52	6090	16.46	3.15	0.19	3.26	50.79	83.75	100,656.00
	09/29/16 08:34:22	6120	16.36	3.12	0.20	3.30	50.54	83.29	110,880.00
	09/29/16 08:34:52	6150	16.39	3.18	0.23	3.32	50.54	83.29	110,880.00
	09/29/16 08:35:22	6180	15.83	3.23	0.24	3.56	50.07	83.01	142,848.00
	09/29/16 08:35:52	6210	14.73	2.83	0.21	4.38	50.07	83.01	142,848.00
	09/29/16 08:36:22	6240	14.84	1.51	0.22	4.27	50.21	83.08	144,144.00
	09/29/16 08:36:52	6270	14.82	0.85	0.20	4.29	50.21	83.08	144,144.00

Coyote North USA INC.
September 29, 2016
COMB 48
Enid Facility

Unit Data

Meas. Stack Moisture	4.8	%
Stack Exhaust Flow (M2)	198,047	SCFH

Weather Data

Barometric Pressure	29.05	in. Hg
Relative Humidity	56	%
Ambient Temperature	53	°F
Specific Humidity	0.004896	lb H_2O / lb air

70-100-70 Load, Run - COMB 48 R7

Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. °F	Fuel Flow SCFH
09/29/16 08:37:22	6300	14.72	0.68	0.20	4.33	50.40	83.21	144,288.00
09/29/16 08:37:52	6330	14.51	0.79	0.20	4.47	50.40	83.21	144,288.00
09/29/16 08:38:22	6360	14.63	0.94	0.20	4.40	50.49	83.40	144,288.00
09/29/16 08:38:52	6390	14.50	1.10	0.23	4.47	50.49	83.40	144,288.00
09/29/16 08:39:22	6420	14.54	1.23	0.21	4.43	50.33	83.55	141,840.00
09/29/16 08:39:52	6450	14.70	1.35	0.23	4.36	50.33	83.55	141,840.00
09/29/16 08:40:22	6480	14.48	1.38	0.22	4.47	50.18	83.64	145,584.00
09/29/16 08:40:52	6510	14.51	1.39	0.23	4.46	50.18	83.64	145,584.00
09/29/16 08:41:22	6540	14.57	1.39	0.23	4.43	50.09	83.81	145,728.00
09/29/16 08:41:52	6570	14.55	1.40	0.23	4.42	50.09	83.81	145,728.00
09/29/16 08:42:22	6600	14.60	1.38	0.24	4.40	50.16	84.07	145,152.00
09/29/16 08:42:52	6630	14.64	1.45	0.18	4.36	50.16	84.07	145,152.00
09/29/16 08:43:22	6660	14.51	1.38	0.14	4.47	50.26	84.32	145,152.00
09/29/16 08:43:52	6690	14.58	1.41	0.10	4.40	50.26	84.32	145,152.00
09/29/16 08:44:22	6720	14.54	1.41	0.10	4.44	51.10	84.39	107,856.00
09/29/16 08:44:52	6750	15.72	1.41	0.15	3.77	51.10	84.39	107,856.00
09/29/16 08:45:22	6780	16.35	1.74	0.15	3.30	51.05	84.18	100,800.00
09/29/16 08:45:52	6810	16.52	2.37	0.18	3.22	51.05	84.18	100,800.00
09/29/16 08:46:22	6840	16.56	2.85	0.15	3.20	50.89	83.88	102,240.00
09/29/16 08:46:52	6870	16.56	2.99	0.15	3.17	50.89	83.88	102,240.00
09/29/16 08:47:22	6900	16.47	3.08	0.17	3.26	50.83	83.58	102,528.00
RAW AVERAGE		**14.73**	**2.58**	**0.23**	**4.33**	**50.45**	**83.28**	**132,204.26**

		O_2	CO	THC	CO_2	Press. Trans	Temp. Trans.	F-Flow Trans.
	Serial Number:	INSTO2-0011	INST-CO-0022	INST-TH-0002	INST-C2-0013	2104497-025	2104497-025	2104497-025
		(%)	(ppmvd)	(ppmvw)	(%)	(in. H_2O)	(°F)	(SCFH)
Bias	Initial Zero	0.02	-0.01	-0.07	0.05			
	Final Zero	0.01	0.02	0.04	0.08			
	Avg. Zero	0.02	0.01	-0.02	0.07			
	Initial UpScale	12.08	9.40	3.06	9.05			
	Final UpScale	12.02	9.43	3.04	8.84			
	Avg. UpScale	12.05	9.42	3.05	8.95			
Upscale Cal Gas		11.90	9.44	3.00	8.95			

EMISSIONS DATA	O_2	CO	THC	CO_2
Corrected Raw Average (ppm/% dry basis)	14.55	2.58	0.24	4.30
Corrected Raw Average (ppm/% wet basis)	13.85	2.46	0.23	4.09
Emission Rate (lb/hr)	N/A	0.04	0.01	N/A

Coyote North USA INC.
COMB 48
Enid Facility

Unit Data

Meas. Stack Moisture	5.5	%
Stack Exhaust Flow (M2)	218,657	SCFH

Weather Data

Barometric Pressure	28.98	in. Hg
Relative Humidity	40	%
Ambient Temperature	73	^{o}F
Specific Humidity	0.007110	lb H_2O / lb air

70-100-70 Load, Run - COMB 48 R8

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
A1	09/29/16 14:50:52	28710	17.04	5.79	1.15	2.85	51.29	93.33	4,374.00
	09/29/16 14:51:22	28740	17.00	5.62	1.18	2.84	51.29	93.33	4,374.00
	09/29/16 14:51:52	28770	16.96	5.40	1.08	2.90	51.33	93.80	4,350.00
	09/29/16 14:52:22	28800	16.80	5.14	1.02	3.01	51.33	93.80	4,350.00
	09/29/16 14:52:52	28830	17.16	4.82	1.13	2.75	51.39	94.25	4,284.00
	09/29/16 14:53:22	28860	17.38	5.15	1.19	2.58	51.39	94.25	4,284.00
	09/29/16 14:53:52	28890	17.20	5.67	1.13	2.69	51.21	94.62	4,872.00
	09/29/16 14:54:22	28920	15.53	5.66	0.92	3.62	51.21	94.62	4,872.00
	09/29/16 14:54:52	28950	14.16	4.40	0.82	4.68	50.94	95.14	6,036.00
	09/29/16 14:55:22	28980	14.29	2.75	0.83	4.63	50.94	95.14	6,036.00
	09/29/16 14:55:52	29010	14.35	2.16	0.82	4.55	51.02	95.95	6,012.00
	09/29/16 14:56:22	29040	13.93	2.21	0.81	4.77	51.02	95.95	6,012.00
	09/29/16 14:56:52	29070	14.18	2.19	0.83	4.65	51.17	96.68	5,970.00
	09/29/16 14:57:22	29100	13.80	2.15	0.85	4.85	51.17	96.68	5,970.00
	09/29/16 14:57:52	29130	14.03	2.11	0.84	4.70	51.13	97.37	5,952.00
	09/29/16 14:58:22	29160	13.88	2.11	0.84	4.85	51.13	97.37	5,952.00
	09/29/16 14:58:52	29190	13.74	2.25	0.84	4.92	51.06	98.11	5,982.00
	09/29/16 14:59:22	29220	13.74	2.39	0.87	4.94	51.06	98.11	5,982.00
	09/29/16 14:59:52	29250	14.06	2.48	0.88	4.74	51.03	98.89	5,958.00
	09/29/16 15:00:22	29280	13.98	2.55	0.85	4.73	51.03	98.89	5,958.00
	09/29/16 15:00:52	29310	13.99	2.65	0.88	4.77	51.02	99.69	5,898.00
	09/29/16 15:01:22	29340	14.01	2.72	0.89	4.76	51.02	99.69	5,898.00
	09/29/16 15:01:52	29370	13.72	2.82	0.86	4.87	51.00	100.44	5,964.00
	09/29/16 15:02:22	29400	13.93	2.88	0.89	4.83	51.00	100.44	5,964.00
	09/29/16 15:02:52	29430	13.80	2.91	0.90	4.84	51.05	101.12	5,946.00
	09/29/16 15:03:22	29460	13.82	2.98	0.90	4.82	51.05	101.12	5,946.00
	09/29/16 15:03:52	29490	14.01	3.17	0.87	4.74	51.09	101.64	5,988.00
	09/29/16 15:04:22	29520	13.77	3.37	0.87	4.87	51.09	101.64	5,988.00
	09/29/16 15:04:52	29550	13.76	3.54	0.87	4.90	51.16	101.93	5,976.00
	09/29/16 15:05:22	29580	13.67	3.61	0.89	4.96	51.16	101.93	5,976.00
	09/29/16 15:05:52	29610	13.84	3.41	0.90	4.83	51.06	102.08	5,988.00
	09/29/16 15:06:22	29640	13.92	3.16	0.90	4.78	51.06	102.08	5,988.00
	09/29/16 15:06:52	29670	13.94	3.11	0.89	4.76	51.01	102.28	5,892.00
	09/29/16 15:07:22	29700	14.39	2.98	0.97	4.61	51.01	102.28	5,892.00
	09/29/16 15:07:52	29730	17.13	2.79	1.19	2.71	51.49	102.46	4,362.00
	09/29/16 15:08:22	29760	17.23	2.90	1.19	2.66	51.49	102.46	4,362.00
	09/29/16 15:08:52	29790	17.19	3.34	1.14	2.71	51.49	102.50	4,356.00
	09/29/16 15:09:22	29820	17.46	3.70	1.21	2.53	51.49	102.50	4,356.00
	09/29/16 15:09:52	29850	17.35	3.98	1.17	2.59	51.44	102.48	4,332.00
	09/29/16 15:10:22	29880	17.24	4.22	1.17	2.68	51.44	102.48	4,332.00
	09/29/16 15:10:52	29910	17.35	4.50	1.19	2.61	51.39	102.43	4,308.00
A2	09/29/16 15:11:22	29940	17.25	4.78	1.25	2.67	51.39	102.43	4,308.00
	09/29/16 15:11:52	29970	17.17	4.79	1.20	2.73	51.35	102.42	4,362.00
	09/29/16 15:12:22	30000	17.38	4.88	1.04	2.60	51.35	102.42	4,362.00
	09/29/16 15:12:52	30030	15.78	5.05	1.05	3.50	50.95	102.40	5,568.00
	09/29/16 15:13:22	30060	14.19	4.07	0.97	4.69	50.95	102.40	5,568.00
	09/29/16 15:13:52	30090	14.32	2.40	0.90	4.60	51.04	102.45	6,012.00
	09/29/16 15:14:22	30120	14.07	1.68	0.93	4.76	51.04	102.45	6,012.00
	09/29/16 15:14:52	30150	14.07	1.58	0.92	4.72	51.08	102.48	6,000.00
	09/29/16 15:15:22	30180	14.22	1.92	1.01	4.66	51.08	102.48	6,000.00
	09/29/16 15:15:52	30210	14.33	2.08	0.96	4.56	51.04	102.63	5,994.00
	09/29/16 15:16:22	30240	14.21	2.15	0.96	4.61	51.04	102.63	5,994.00
	09/29/16 15:16:52	30270	14.19	2.12	1.01	4.66	51.04	102.79	5,892.00
	09/29/16 15:17:22	30300	14.35	2.12	1.00	4.54	51.04	102.79	5,892.00
	09/29/16 15:17:52	30330	14.28	2.06	0.97	4.59	51.07	102.90	5,916.00
	09/29/16 15:18:22	30360	14.49	2.03	0.93	4.47	51.07	102.90	5,916.00
	09/29/16 15:18:52	30390	14.33	2.01	1.00	4.53	51.07	102.85	5,994.00
	09/29/16 15:19:22	30420	14.13	2.01	0.95	4.69	51.07	102.85	5,994.00
	09/29/16 15:19:52	30450	14.30	1.96	0.98	4.58	51.13	102.76	5,928.00
	09/29/16 15:20:22	30480	14.24	1.98	1.01	4.62	51.13	102.76	5,928.00
	09/29/16 15:20:52	30510	14.23	1.92	0.98	4.62	51.22	102.79	5,964.00

Coyote North USA INC.
COMB 48
Enid Facility

Unit Data

Meas. Stack Moisture	5.5	%
Stack Exhaust Flow (M2)	218,657	SCFH

Weather Data

Barometric Pressure	28.98	in. Hg
Relative Humidity	40	%
Ambient Temperature	73	^{o}F
Specific Humidity	0.007110	lb H_2O / lb air

70-100-70 Load, Run - COMB 48 R8

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
	09/29/16 15:21:22	30540	13.91	1.95	0.94	4.78	51.22	102.79	5,964.00
	09/29/16 15:21:52	30570	13.79	1.98	0.94	4.93	51.22	102.97	5,964.00
	09/29/16 15:22:22	30600	14.13	1.91	1.01	4.70	51.22	102.97	5,964.00
	09/29/16 15:22:52	30630	14.17	1.96	0.96	4.63	51.13	103.22	5,964.00
	09/29/16 15:23:22	30660	13.88	1.99	0.88	4.84	51.13	103.22	5,964.00
	09/29/16 15:23:52	30690	14.12	1.98	1.00	4.68	51.09	103.41	5,898.00
	09/29/16 15:24:22	30720	13.89	1.91	1.04	4.89	51.09	103.41	5,898.00
	09/29/16 15:24:52	30750	16.92	1.85	1.22	2.93	51.56	103.46	4,356.00
	09/29/16 15:25:22	30780	17.11	2.25	1.25	2.75	51.56	103.46	4,356.00
	09/29/16 15:25:52	30810	17.20	3.05	1.21	2.68	51.44	103.14	4,392.00
	09/29/16 15:26:22	30840	16.81	3.73	1.21	2.96	51.44	103.14	4,392.00
	09/29/16 15:26:52	30870	16.97	4.08	1.32	2.88	51.42	102.90	4,320.00
	09/29/16 15:27:22	30900	16.89	4.29	1.23	2.93	51.42	102.90	4,320.00
	09/29/16 15:27:52	30930	17.07	4.58	1.29	2.79	51.35	102.75	4,356.00
	09/29/16 15:28:22	30960	17.02	4.68	1.38	2.81	51.35	102.75	4,356.00
	09/29/16 15:28:52	30990	17.10	4.56	1.21	2.81	51.18	102.76	4,830.00
	09/29/16 15:29:22	31020	15.81	4.59	1.19	3.48	51.18	102.76	4,830.00
	09/29/16 15:29:52	31050	13.95	3.85	1.01	4.84	50.98	102.98	5,904.00
	09/29/16 15:30:22	31080	13.84	2.15	1.05	4.90	50.98	102.98	5,904.00
	09/29/16 15:30:52	31110	13.86	1.25	1.11	4.87	51.03	103.40	5,988.00
A3	09/29/16 15:31:22	31140	13.68	1.01	1.02	5.01	51.03	103.40	5,988.00
	09/29/16 15:31:52	31170	13.75	1.15	1.04	4.96	51.03	103.77	5,976.00
	09/29/16 15:32:22	31200	13.80	1.35	1.11	4.86	51.03	103.77	5,976.00
	09/29/16 15:32:52	31230	13.54	1.48	1.10	5.07	51.02	103.90	5,976.00
	09/29/16 15:33:22	31260	13.57	1.54	1.05	5.01	51.02	103.90	5,976.00
	09/29/16 15:33:52	31290	13.43	1.59	1.01	5.17	50.97	103.93	6,018.00
	09/29/16 15:34:22	31320	13.54	1.58	1.06	5.05	50.97	103.93	6,018.00
	09/29/16 15:34:52	31350	13.61	1.61	1.06	5.01	51.02	104.05	5,970.00
	09/29/16 15:35:22	31380	13.79	1.61	1.07	4.91	51.02	104.05	5,970.00
	09/29/16 15:35:52	31410	13.55	1.59	1.02	5.03	51.07	104.12	5,982.00
	09/29/16 15:36:22	31440	13.65	1.60	1.09	5.03	51.07	104.12	5,982.00
	09/29/16 15:36:52	31470	13.61	1.62	1.04	5.00	51.12	104.10	5,898.00
	09/29/16 15:37:22	31500	13.63	1.57	1.08	5.01	51.12	104.10	5,898.00
	09/29/16 15:37:52	31530	13.67	1.59	1.13	4.98	51.22	103.94	5,814.00
	09/29/16 15:38:22	31560	13.74	1.62	1.15	4.93	51.22	103.94	5,814.00
	09/29/16 15:38:52	31590	13.49	1.62	1.11	5.07	51.16	103.79	5,946.00
	09/29/16 15:39:22	31620	13.68	1.79	1.08	4.96	51.16	103.79	5,946.00
	09/29/16 15:39:52	31650	13.58	1.80	1.14	5.05	51.08	103.64	5,838.00
	09/29/16 15:40:22	31680	13.63	1.78	1.19	4.98	51.08	103.64	5,838.00
	09/29/16 15:40:52	31710	13.58	1.68	1.17	5.03	51.05	103.63	5,922.00
	09/29/16 15:41:22	31740	13.61	1.69	1.20	5.01	51.05	103.63	5,922.00
	09/29/16 15:41:52	31770	13.56	1.73	1.18	5.02	51.01	103.71	6,006.00
	09/29/16 15:42:22	31800	13.40	1.72	1.17	5.18	51.01	103.71	6,006.00
	09/29/16 15:42:52	31830	15.26	1.61	1.40	4.11	51.45	103.92	4,620.00
	09/29/16 15:43:22	31860	16.92	1.76	1.50	2.87	51.45	103.92	4,620.00
	09/29/16 15:43:52	31890	17.15	2.51	1.64	2.73	51.46	104.03	4,302.00
	09/29/16 15:44:22	31920	17.01	3.48	1.67	2.83	51.46	104.03	4,302.00
	09/29/16 15:44:52	31950	16.85	3.98	1.56	2.97	51.41	104.01	4,332.00
	09/29/16 15:45:22	31980	17.09	4.12	1.51	2.78	51.41	104.01	4,332.00
	09/29/16 15:45:52	32010	16.63	4.46	1.66	3.08	51.39	104.04	4,368.00
	09/29/16 15:46:22	32040	16.79	4.22	1.64	3.03	51.39	104.04	4,368.00
	09/29/16 15:46:52	32070	17.03	4.35	1.61	2.83	51.32	104.00	4,920.00
	09/29/16 15:47:22	32100	15.24	4.68	1.36	3.85	51.32	104.00	4,920.00
	09/29/16 15:47:52	32130	14.17	3.61	1.35	4.72	50.93	104.08	5,874.00
	09/29/16 15:48:22	32160	14.26	1.98	1.36	4.64	50.93	104.08	5,874.00
	09/29/16 15:48:52	32190	13.91	1.19	1.25	4.85	50.83	104.41	5,964.00
	09/29/16 15:49:22	32220	13.92	0.84	1.20	4.84	50.83	104.41	5,964.00
	09/29/16 15:49:52	32250	13.80	0.82	1.23	4.91	50.86	104.77	6,108.00
	09/29/16 15:50:22	32280	13.73	0.88	1.20	4.97	50.86	104.77	6,108.00
	09/29/16 15:50:52	32310	13.94	0.89	1.14	4.81	50.95	104.99	6,084.00
	09/29/16 15:51:22	32340	14.02	1.06	1.10	4.78	50.95	104.99	6,084.00

Coyote North USA INC.
COMB 48
Enid Facility

Unit Data

Meas. Stack Moisture	5.5	%
Stack Exhaust Flow (M2)	218,657	SCFH

Weather Data

Barometric Pressure	28.98	in. Hg
Relative Humidity	40	%
Ambient Temperature	73	^{o}F
Specific Humidity	0.007110	lb H_2O / lb air

70-100-70 Load, Run - COMB 48 R8

Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
09/29/16 15:51:52	32370	13.78	1.19	1.21	4.89	51.03	105.08	5,964.00
09/29/16 15:52:22	32400	13.71	1.26	1.11	4.97	51.03	105.08	5,964.00
09/29/16 15:52:52	32430	13.56	1.32	1.03	5.04	51.09	105.10	6,072.00
09/29/16 15:53:22	32460	13.55	1.28	1.08	5.06	51.09	105.10	6,072.00
09/29/16 15:53:52	32490	13.52	1.21	1.10	5.09	51.21	105.03	6,138.00
09/29/16 15:54:22	32520	13.60	1.11	1.08	5.03	51.21	105.03	6,138.00
09/29/16 15:54:52	32550	13.53	1.09	1.12	5.09	51.14	104.93	6,000.00
09/29/16 15:55:22	32580	13.68	1.09	1.11	4.97	51.14	104.93	6,000.00
09/29/16 15:55:52	32610	13.67	1.21	1.08	4.98	51.04	104.91	6,000.00
09/29/16 15:56:22	32640	13.53	1.21	1.01	5.09	51.04	104.91	6,000.00
09/29/16 15:56:52	32670	13.67	1.15	1.01	4.98	51.02	104.92	5,994.00
09/29/16 15:57:22	32700	13.78	1.12	1.09	4.94	51.02	104.92	5,994.00
09/29/16 15:57:52	32730	14.71	1.10	1.19	4.47	51.40	104.93	4,890.00
09/29/16 15:58:22	32760	16.87	1.30	1.29	2.91	51.40	104.93	4,890.00
09/29/16 15:58:52	32790	16.93	2.07	1.30	2.87	51.57	104.82	4,338.00
09/29/16 15:59:22	32820	17.04	3.04	1.39	2.82	51.57	104.82	4,338.00
09/29/16 15:59:52	32850	17.13	3.63	1.37	2.76	51.50	104.62	4,302.00
09/29/16 16:00:22	32880	16.86	4.09	1.33	2.95	51.50	104.62	4,302.00
RAW AVERAGE		**14.85**	**2.63**	**1.10**	**4.22**	**51.17**	**102.30**	**5,478.09**

		O_2	CO	THC	CO_2	Press. Trans	Temp. Trans.	F-Flow Trans.
	Serial Number:	INSTO2-0011	INST-CO-0022	INST-TH-0002	INST-C2-0013	2104497-025	2104497-025	2104497-025
		(%)	(ppmvd)	(ppmvw)	(%)	(in. H_2O)	(^{o}F)	(SCFH)
Bias	Initial Zero	0.01	0.02	0.04	0.08			
	Final Zero	-0.02	0.08	-0.07	0.06			
	Avg. Zero	-0.01	0.05	-0.02	0.07			
	Initial UpScale	12.02	9.43	3.04	8.84			
	Final UpScale	11.99	9.29	3.05	8.81			
	Avg. UpScale	12.01	9.36	3.05	8.83			
Upscale Cal Gas		11.90	9.44	3.00	8.95			

EMISSIONS DATA	O_2	CO	THC	CO_2
Corrected Raw Average (ppm/% dry basis)	14.72	2.61	1.09	4.24
Corrected Raw Average (ppm/% wet basis)	13.92	2.47	1.03	4.01
Emission Rate (lb/hr)	N/A	0.04	0.03	N/A

Coyote North USA INC.
September 29, 2016
COMB 48
Enid Facility

Unit Data

Meas. Stack Moisture	5.0	%
Stack Exhaust Flow (M2)	256,050	SCFH

Weather Data

Barometric Pressure	28.95	in. Hg
Relative Humidity	40	%
Ambient Temperature	71	°F
Specific Humidity	0.006647	lb H_2O / lb air

70-100-70 Load, Run - COMB 48 R9

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. °F	Fuel Flow SCFH
A1	09/29/16 16:15:22	33780	16.96	5.50	0.33	2.88	51.25	97.80	4,212.00
	09/29/16 16:15:52	33810	17.03	5.22	0.28	2.86	51.25	97.80	4,212.00
	09/29/16 16:16:22	33840	17.32	5.11	0.23	2.61	51.35	97.76	4,170.00
	09/29/16 16:16:52	33870	17.31	5.18	0.21	2.64	51.35	97.76	4,170.00
	09/29/16 16:17:22	33900	17.37	5.09	0.19	2.60	51.42	97.73	4,182.00
	09/29/16 16:17:52	33930	17.28	5.06	0.22	2.65	51.42	97.73	4,182.00
	09/29/16 16:18:22	33960	17.56	5.19	0.19	2.74	51.21	97.76	4,974.00
	09/29/16 16:18:52	33990	17.37	5.06	0.14	2.65	51.21	97.76	4,974.00
	09/29/16 16:19:22	34020	14.83	4.74	-0.07	4.06	50.93	98.03	6,018.00
	09/29/16 16:19:52	34050	14.21	3.75	-0.06	4.67	50.93	98.03	6,018.00
	09/29/16 16:20:22	34080	14.11	2.36	-0.06	4.70	50.89	98.51	5,988.00
	09/29/16 16:20:52	34110	14.12	1.33	-0.08	4.71	50.89	98.51	5,988.00
	09/29/16 16:21:22	34140	14.10	0.80	-0.09	4.72	50.82	99.01	5,988.00
	09/29/16 16:21:52	34170	14.06	0.55	-0.06	4.71	50.82	99.01	5,988.00
	09/29/16 16:22:22	34200	14.16	0.47	-0.06	4.69	50.80	99.48	5,988.00
	09/29/16 16:22:52	34230	13.97	0.49	-0.08	4.75	50.80	99.48	5,988.00
	09/29/16 16:23:22	34260	14.12	0.59	-0.08	4.68	50.87	100.00	6,012.00
	09/29/16 16:23:52	34290	14.12	0.69	-0.09	4.69	50.87	100.00	6,012.00
	09/29/16 16:24:22	34320	13.98	0.72	-0.08	4.78	50.92	100.62	5,922.00
	09/29/16 16:24:52	34350	14.01	0.61	-0.06	4.77	50.92	100.62	5,922.00
	09/29/16 16:25:22	34380	13.98	0.59	-0.06	4.76	51.02	101.18	6,006.00
	09/29/16 16:25:52	34410	14.06	0.68	-0.09	4.73	51.02	101.18	6,006.00
	09/29/16 16:26:22	34440	14.20	0.68	-0.08	4.64	51.07	101.70	5,892.00
	09/29/16 16:26:52	34470	14.13	0.67	-0.06	4.68	51.07	101.70	5,892.00
	09/29/16 16:27:22	34500	14.21	0.59	-0.06	4.62	50.96	102.09	5,898.00
	09/29/16 16:27:52	34530	14.08	0.64	-0.08	4.71	50.96	102.09	5,898.00
	09/29/16 16:28:22	34560	14.26	0.58	-0.08	4.63	50.89	102.45	5,982.00
	09/29/16 16:28:52	34590	14.29	0.62	-0.09	4.58	50.89	102.45	5,982.00
	09/29/16 16:29:22	34620	14.19	0.62	-0.08	4.65	50.86	102.68	5,952.00
	09/29/16 16:29:52	34650	14.25	0.59	-0.06	4.60	50.86	102.68	5,952.00
	09/29/16 16:30:22	34680	14.23	0.60	-0.06	4.63	50.88	102.98	5,976.00
	09/29/16 16:30:52	34710	14.21	0.51	-0.08	4.62	50.88	102.98	5,976.00
	09/29/16 16:31:22	34740	14.13	0.48	-0.08	4.70	51.35	103.21	4,632.00
	09/29/16 16:31:52	34770	15.34	0.51	0.01	4.04	51.35	103.21	4,632.00
	09/29/16 16:32:22	34800	16.81	0.76	0.10	2.90	51.36	103.11	4,254.00
	09/29/16 16:32:52	34830	16.88	1.69	0.09	2.94	51.36	103.11	4,254.00
	09/29/16 16:33:22	34860	16.71	2.64	0.06	3.01	51.46	102.92	4,290.00
	09/29/16 16:33:52	34890	16.85	3.31	0.14	2.93	51.46	102.92	4,290.00
	09/29/16 16:34:22	34920	17.01	3.58	0.12	2.87	51.48	102.62	4,302.00
	09/29/16 16:34:52	34950	17.00	3.79	0.07	2.81	51.48	102.62	4,302.00
	09/29/16 16:35:22	34980	16.81	4.13	0.07	2.96	51.31	102.20	4,290.00
A2	09/29/16 16:35:52	35010	16.96	4.15	0.13	2.87	51.31	102.20	4,290.00
	09/29/16 16:36:22	35040	16.72	4.22	0.09	3.00	50.94	101.81	5,142.00
	09/29/16 16:36:52	35070	16.65	4.18	0.07	3.03	50.94	101.81	5,142.00
	09/29/16 16:37:22	35100	14.58	3.89	-0.06	4.31	50.81	101.77	5,988.00
	09/29/16 16:37:52	35130	14.26	2.76	-0.06	4.63	50.81	101.77	5,988.00
	09/29/16 16:38:22	35160	14.25	1.44	-0.07	4.63	50.96	101.94	6,030.00
	09/29/16 16:38:52	35190	14.39	0.71	-0.06	4.52	50.96	101.94	6,030.00
	09/29/16 16:39:22	35220	14.27	0.43	-0.07	4.61	51.01	102.11	6,012.00
	09/29/16 16:39:52	35250	14.36	0.25	-0.06	4.54	51.01	102.11	6,012.00
	09/29/16 16:40:22	35280	14.39	0.29	-0.06	4.51	51.07	102.30	6,012.00
	09/29/16 16:40:52	35310	14.44	0.31	-0.05	4.48	51.07	102.30	6,012.00
	09/29/16 16:41:22	35340	14.27	0.32	-0.07	4.58	51.16	102.50	5,976.00
	09/29/16 16:41:52	35370	14.30	0.32	-0.05	4.56	51.16	102.50	5,976.00
	09/29/16 16:42:22	35400	14.28	0.33	-0.06	4.59	51.09	102.72	5,994.00
	09/29/16 16:42:52	35430	14.51	0.34	-0.05	4.45	51.09	102.72	5,994.00
	09/29/16 16:43:22	35460	14.45	0.40	-0.05	4.44	50.95	102.82	5,982.00
	09/29/16 16:43:52	35490	14.35	0.44	-0.07	4.57	50.95	102.82	5,982.00
	09/29/16 16:44:22	35520	14.37	0.49	-0.06	4.52	50.90	102.80	6,000.00
	09/29/16 16:44:52	35550	14.43	0.50	-0.09	4.51	50.90	102.80	6,000.00

Coyote North USA INC.
September 29, 2016
COMB 48
Enid Facility

Unit Data

Meas. Stack Moisture	5.0	%
Stack Exhaust Flow (M2)	256,050	SCFH

Weather Data

Barometric Pressure	28.95	in. Hg
Relative Humidity	40	%
Ambient Temperature	71	°F
Specific Humidity	0.006647	lb H_2O / lb air

70-100-70 Load, Run - COMB 48 R9

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. °F	Fuel Flow SCFH
	09/29/16 16:45:22	35580	14.58	0.50	-0.09	4.37	50.98	102.70	6,000.00
	09/29/16 16:45:52	35610	14.46	0.49	-0.06	4.47	50.98	102.70	6,000.00
	09/29/16 16:46:22	35640	14.52	0.49	-0.06	4.43	51.06	102.63	5,982.00
	09/29/16 16:46:52	35670	14.35	0.51	-0.08	4.54	51.06	102.63	5,982.00
	09/29/16 16:47:22	35700	14.48	0.51	-0.08	4.45	51.07	102.65	5,940.00
	09/29/16 16:47:52	35730	14.51	0.45	-0.08	4.43	51.07	102.65	5,940.00
	09/29/16 16:48:22	35760	14.38	0.45	-0.09	4.51	51.18	102.74	5,934.00
	09/29/16 16:48:52	35790	14.55	0.41	-0.06	4.42	51.18	102.74	5,934.00
	09/29/16 16:49:22	35820	14.66	0.42	-0.05	4.37	51.60	102.73	4,260.00
	09/29/16 16:49:52	35850	17.00	0.58	0.10	2.89	51.60	102.73	4,260.00
	09/29/16 16:50:22	35880	17.21	1.32	0.12	2.66	51.41	102.39	4,248.00
	09/29/16 16:50:52	35910	17.16	2.50	0.09	2.69	51.41	102.39	4,248.00
	09/29/16 16:51:22	35940	17.05	3.34	0.10	2.79	51.27	101.93	4,224.00
	09/29/16 16:51:52	35970	17.04	3.74	0.08	2.81	51.27	101.93	4,224.00
	09/29/16 16:52:22	36000	17.22	3.99	0.14	2.67	51.21	101.49	4,248.00
	09/29/16 16:52:52	36030	17.11	4.31	0.09	2.74	51.21	101.49	4,248.00
	09/29/16 16:53:22	36060	17.08	4.45	0.12	2.79	51.16	101.13	4,338.00
	09/29/16 16:53:52	36090	17.00	4.42	0.13	2.82	51.16	101.13	4,338.00
	09/29/16 16:54:22	36120	16.98	4.41	0.12	2.80	50.76	100.84	5,874.00
	09/29/16 16:54:52	36150	14.86	4.29	-0.05	4.13	50.76	100.84	5,874.00
	09/29/16 16:55:22	36180	14.49	3.25	-0.04	4.49	50.90	100.64	6,030.00
A3	09/29/16 16:55:52	36210	14.46	1.94	-0.06	4.49	50.90	100.64	6,030.00
	09/29/16 16:56:22	36240	14.54	1.09	-0.07	4.44	51.02	100.58	6,060.00
	09/29/16 16:56:52	36270	14.27	0.62	-0.06	4.60	51.02	100.58	6,060.00
	09/29/16 16:57:22	36300	14.45	0.40	-0.07	4.48	51.12	100.50	5,970.00
	09/29/16 16:57:52	36330	14.12	0.39	-0.08	4.68	51.12	100.50	5,970.00
	09/29/16 16:58:22	36360	14.21	0.39	-0.09	4.66	50.99	100.35	5,988.00
	09/29/16 16:58:52	36390	14.09	0.33	-0.07	4.69	50.99	100.35	5,988.00
	09/29/16 16:59:22	36420	13.92	0.28	-0.07	4.83	50.85	100.32	6,036.00
	09/29/16 16:59:52	36450	14.01	0.30	-0.08	4.76	50.85	100.32	6,036.00
	09/29/16 17:00:22	36480	14.22	0.34	-0.08	4.64	50.84	100.37	5,988.00
	09/29/16 17:00:52	36510	14.17	0.42	-0.07	4.66	50.84	100.37	5,988.00
	09/29/16 17:01:22	36540	14.34	0.51	-0.06	4.54	50.95	100.51	6,012.00
	09/29/16 17:01:52	36570	14.45	0.48	-0.09	4.48	50.95	100.51	6,012.00
	09/29/16 17:02:22	36600	14.41	0.54	-0.09	4.48	51.04	100.75	6,006.00
	09/29/16 17:02:52	36630	14.52	0.55	-0.07	4.45	51.04	100.75	6,006.00
	09/29/16 17:03:22	36660	14.63	0.59	-0.07	4.37	51.15	100.85	5,898.00
	09/29/16 17:03:52	36690	14.79	0.61	-0.06	4.24	51.15	100.85	5,898.00
	09/29/16 17:04:22	36720	14.82	0.62	-0.07	4.22	51.08	100.76	6,012.00
	09/29/16 17:04:52	36750	14.55	0.67	-0.06	4.37	51.08	100.76	6,012.00
	09/29/16 17:05:22	36780	14.65	0.57	-0.07	4.39	50.93	100.70	6,072.00
	09/29/16 17:05:52	36810	14.62	0.52	-0.06	4.34	50.93	100.70	6,072.00
	09/29/16 17:06:22	36840	14.66	0.52	-0.07	4.33	51.14	100.76	5,286.00
	09/29/16 17:06:52	36870	14.79	0.51	-0.07	4.23	51.14	100.76	5,286.00
	09/29/16 17:07:22	36900	16.53	0.57	0.19	3.25	51.36	100.67	4,266.00
	09/29/16 17:07:52	36930	16.98	1.11	0.17	2.81	51.36	100.67	4,266.00
	09/29/16 17:08:22	36960	16.83	2.26	0.13	2.95	51.34	100.38	4,266.00
	09/29/16 17:08:52	36990	16.97	3.06	0.13	2.86	51.34	100.38	4,266.00
	09/29/16 17:09:22	37020	16.92	3.67	0.20	2.88	51.34	99.96	4,188.00
	09/29/16 17:09:52	37050	16.92	3.96	0.19	2.89	51.34	99.96	4,188.00
	09/29/16 17:10:22	37080	16.91	4.27	0.14	2.88	51.31	99.54	4,272.00
	09/29/16 17:10:52	37110	16.81	4.44	0.16	3.00	51.31	99.54	4,272.00
	09/29/16 17:11:22	37140	17.00	4.45	0.20	2.83	51.44	99.11	4,338.00
	09/29/16 17:11:52	37170	17.06	5.03	0.18	2.78	51.44	99.11	4,338.00
	09/29/16 17:12:22	37200	16.90	5.15	0.13	2.89	51.38	98.66	4,338.00
	09/29/16 17:12:52	37230	16.84	4.84	0.19	2.96	51.38	98.66	4,338.00
	09/29/16 17:13:22	37260	16.91	4.54	0.22	2.89	51.19	98.16	4,638.00
	09/29/16 17:13:52	37290	16.92	4.41	0.21	2.90	51.19	98.16	4,638.00
	09/29/16 17:14:22	37320	16.35	4.41	0.13	3.14	50.78	97.84	6,024.00
	09/29/16 17:14:52	37350	14.94	4.28	0.02	4.17	50.78	97.84	6,024.00

Coyote North USA INC.
September 29, 2016
COMB 48
Enid Facility

Unit Data

Meas. Stack Moisture	5.0	%
Stack Exhaust Flow (M2)	256,050	SCFH

Weather Data

Barometric Pressure	28.95	in. Hg
Relative Humidity	40	%
Ambient Temperature	71	°F
Specific Humidity	0.006647	lb H_2O / lb air

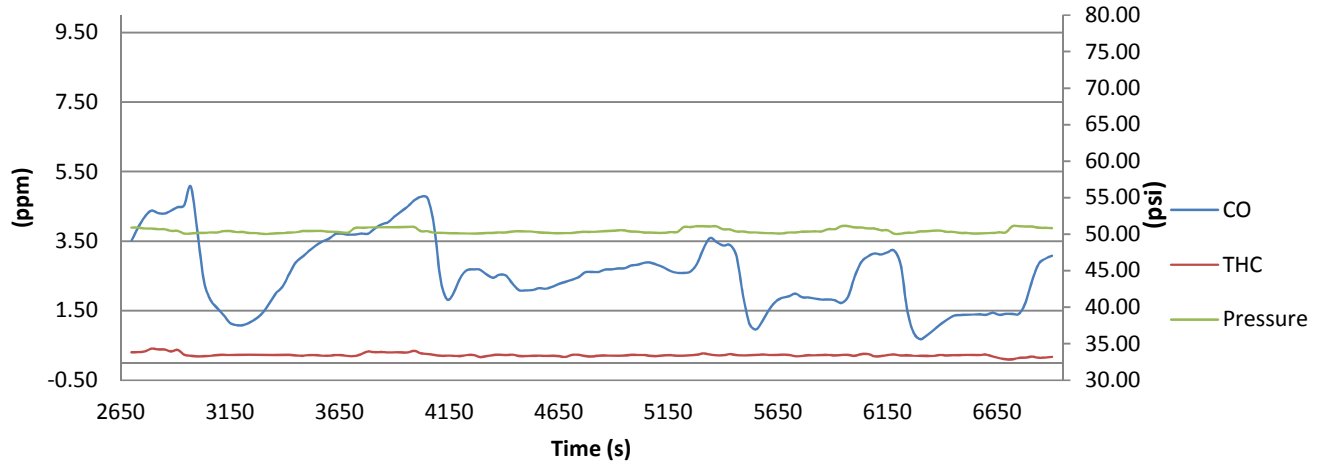
70-100-70 Load, Run - COMB 48 R9

Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. °F	Fuel Flow SCFH
09/29/16 17:15:22	37380	14.73	3.24	-0.03	4.29	50.85	97.69	5,958.00
09/29/16 17:15:52	37410	14.53	1.81	-0.06	4.46	50.85	97.69	5,958.00
09/29/16 17:16:22	37440	14.45	0.98	-0.06	4.46	50.93	97.64	6,000.00
09/29/16 17:16:52	37470	14.15	0.62	-0.06	4.70	50.93	97.64	6,000.00
09/29/16 17:17:22	37500	14.22	0.43	-0.05	4.65	51.00	97.70	6,000.00
09/29/16 17:17:52	37530	14.38	0.40	-0.07	4.52	51.00	97.70	6,000.00
09/29/16 17:18:22	37560	14.20	0.40	-0.08	4.64	51.07	97.83	5,988.00
09/29/16 17:18:52	37590	14.05	0.39	-0.02	4.74	51.07	97.83	5,988.00
09/29/16 17:19:22	37620	14.06	0.47	-0.05	4.71	51.09	98.00	5,976.00
09/29/16 17:19:52	37650	14.20	0.47	-0.03	4.69	51.09	98.00	5,976.00
09/29/16 17:20:22	37680	14.35	0.45	-0.04	4.55	50.98	98.13	5,970.00
09/29/16 17:20:52	37710	14.34	0.39	-0.02	4.57	50.98	98.13	5,970.00
09/29/16 17:21:22	37740	14.47	0.38	0.03	4.46	50.90	98.27	5,898.00
09/29/16 17:21:52	37770	14.38	0.43	-0.06	4.54	50.90	98.27	5,898.00
09/29/16 17:22:22	37800	14.59	0.48	-0.07	4.34	51.46	98.29	4,584.00
09/29/16 17:22:52	37830	15.85	0.60	0.12	3.72	51.46	98.29	4,584.00
09/29/16 17:23:22	37860	16.88	1.03	0.22	2.90	51.49	98.08	4,266.00
09/29/16 17:23:52	37890	17.00	2.09	0.20	2.82	51.49	98.08	4,266.00
09/29/16 17:24:22	37920	16.90	3.21	0.21	2.90	51.43	97.76	4,248.00
09/29/16 17:24:52	37950	17.02	3.88	0.22	2.80	51.43	97.76	4,248.00
09/29/16 17:25:22	37980	17.07	4.29	0.23	2.79	51.38	97.34	4,284.00
RAW AVERAGE		**15.26**	**1.83**	**0.01**	**3.96**	**51.10**	**100.50**	**5,387.66**

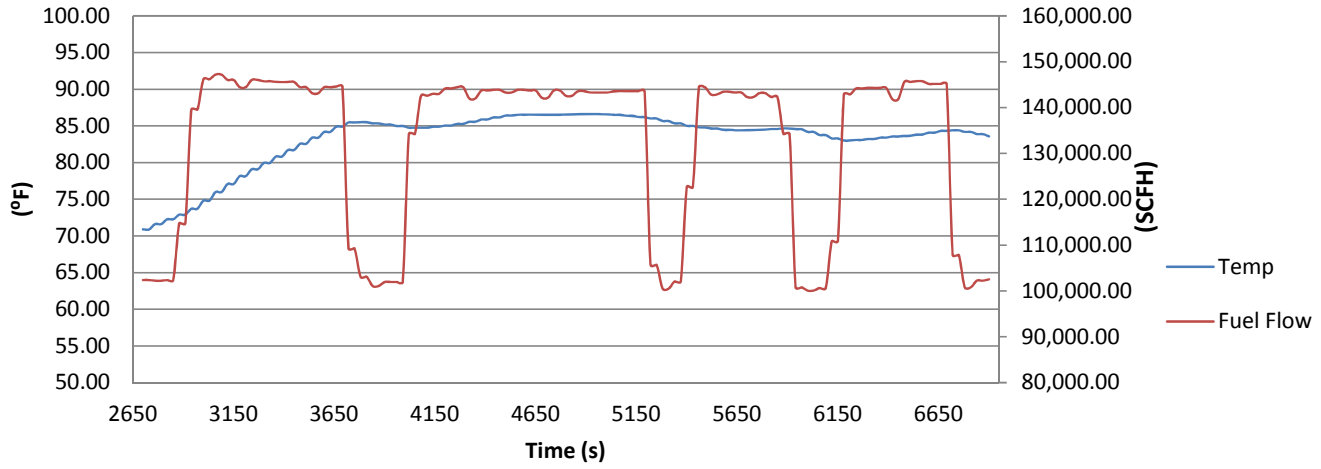
		O_2	CO	THC	CO_2	Press. Trans	Temp. Trans.	F-Flow Trans.
	Serial Number:	INSTO2-0011	INST-CO-0022	INST-TH-0002	INST-C2-0013	2104497-025	2104497-025	2104497-025
		(%)	(ppmvd)	(ppmvw)	(%)	(in. H_2O)	(°F)	(SCFH)
Bias	Initial Zero	-0.02	0.08	-0.07	0.06			
	Final Zero	0.01	-0.08	-0.08	0.07			
	Avg. Zero	-0.01	0.00	-0.08	0.07			
	Initial UpScale	12.02	9.43	3.04	8.84			
	Final UpScale	11.98	9.33	3.00	8.80			
	Avg. UpScale	12.00	9.38	3.02	8.82			
Upscale Cal Gas		11.90	9.44	3.00	8.95			

EMISSIONS DATA	O_2	CO	THC	CO_2
Corrected Raw Average (ppm/% dry basis)	15.13	1.84	0.08	3.98
Corrected Raw Average (ppm/% wet basis)	14.38	1.75	0.08	3.78
Emission Rate (lb/hr)	N/A	0.03	0.00	N/A

COMB 48 R7



COMB 48 R7



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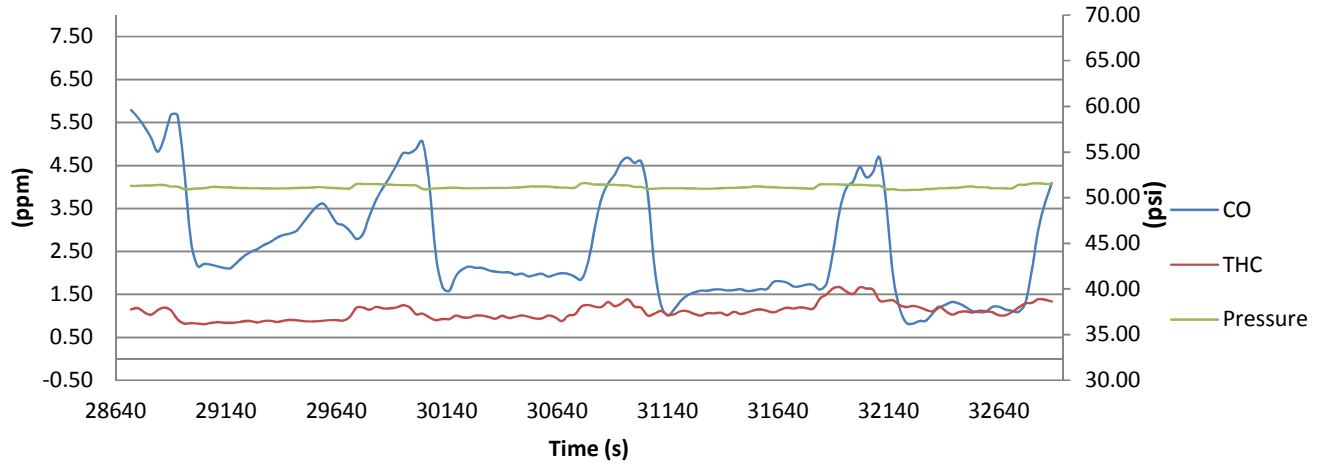

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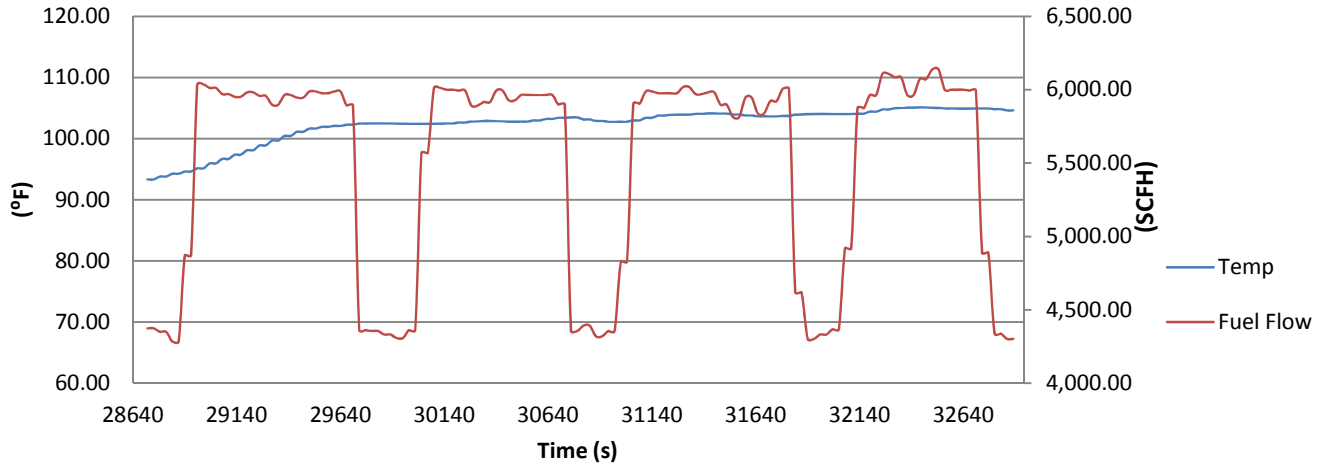

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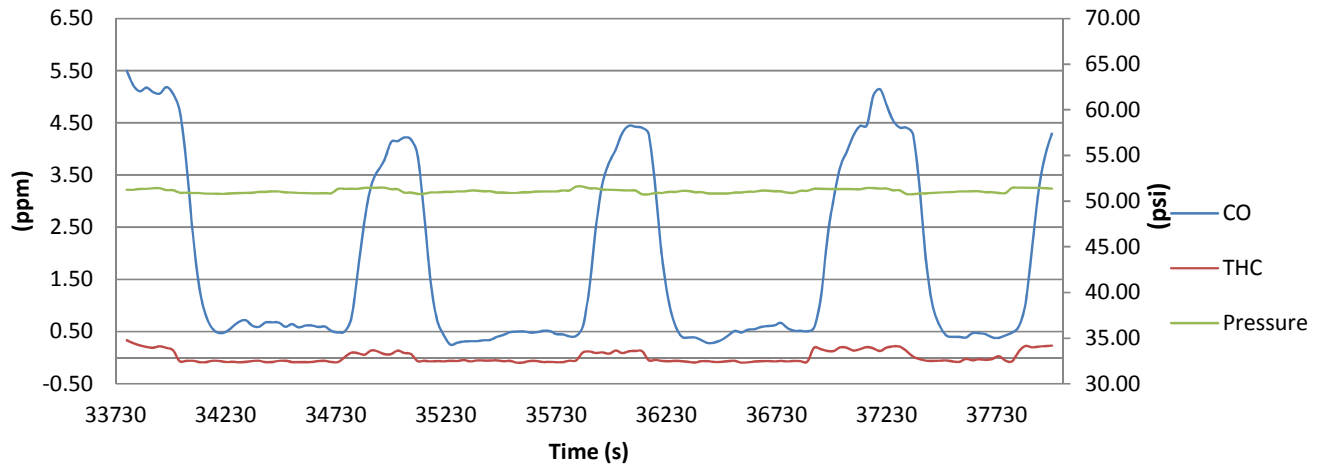

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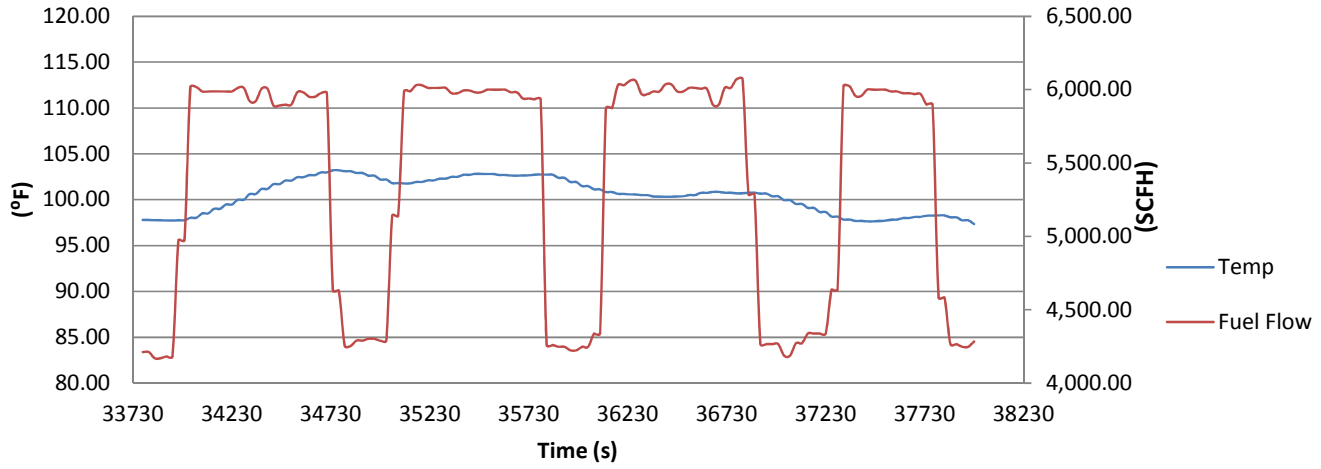

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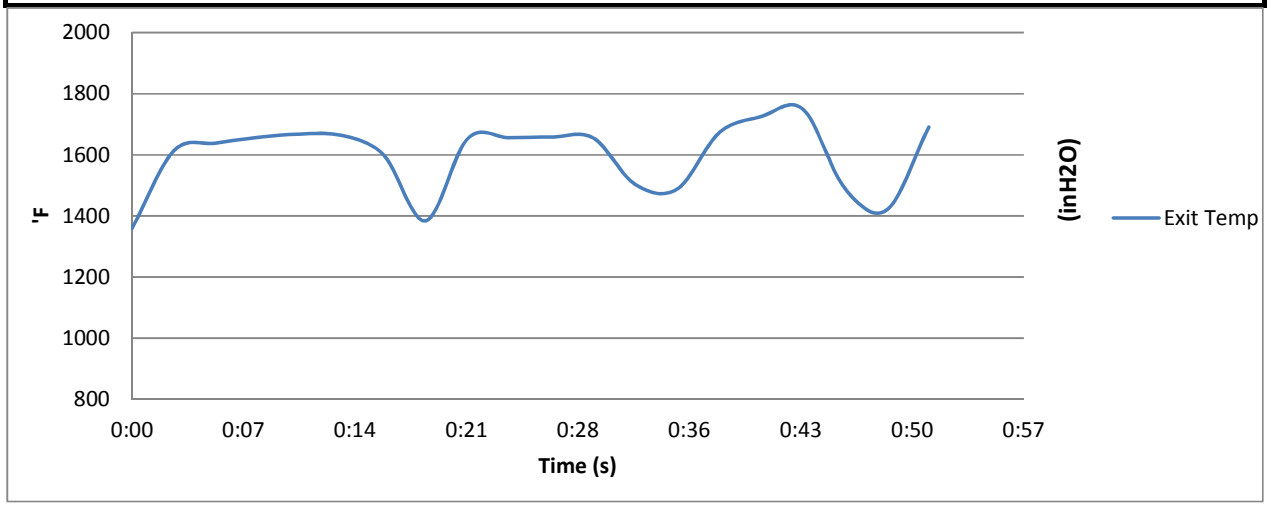

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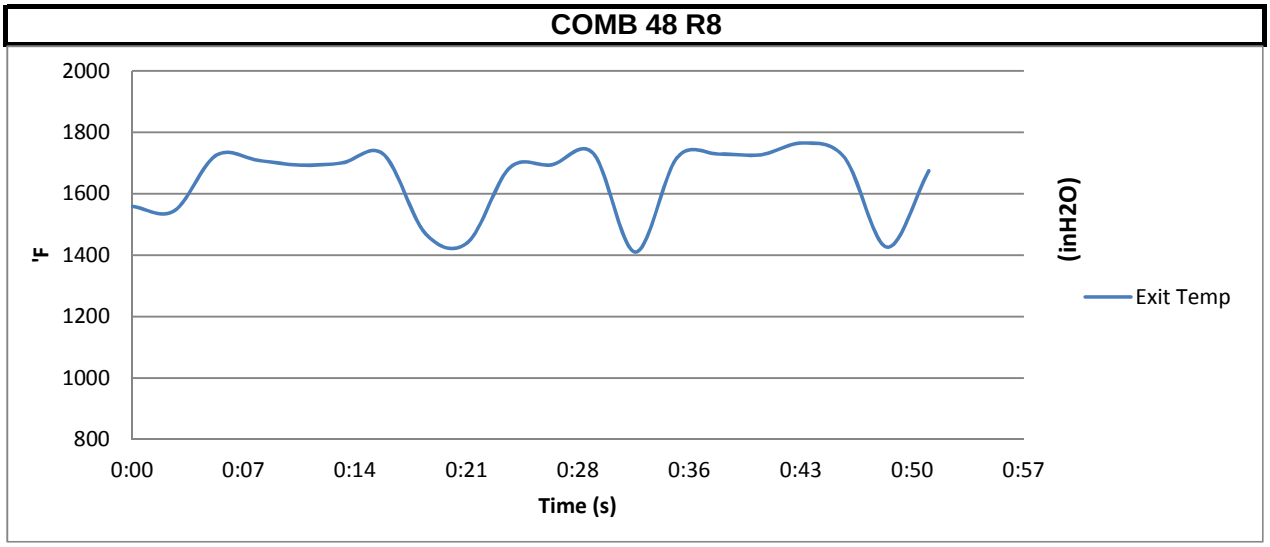

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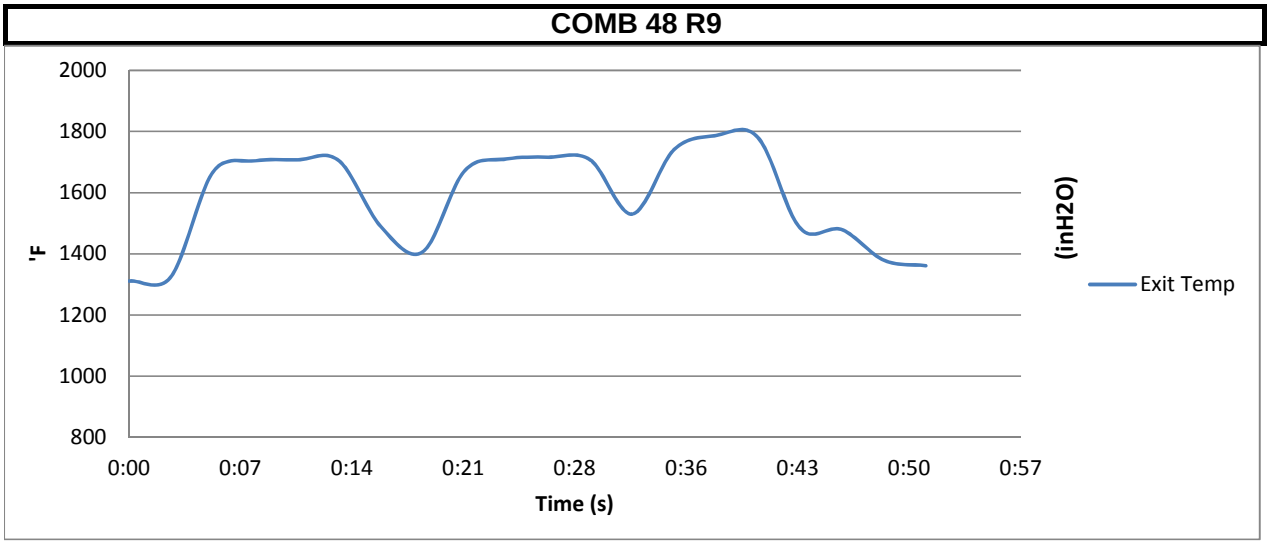


EMISSION DATA RECORDS

90-100% FIXED RATE UNIT OPERATION DATA

METHOD 4 (MOISTURE) [MULTI POINT, NO VARIATION] SOURCE SAMPLING TITLE PAGE

Source Information	
Plant Name	Enid Facility
Sampling Location	COMB 48
Fuel Type	Gas, Propene

Test Information			
Project #		coyote-16-enid.ok-comp#1	
Operator		TW/RA/BB	
Date for Preliminary Run	(mm/dd/yy)	09/27/16	
Standard Temperature		68	°F
Standard Pressure		29.92	in Hg
Required Sample Vol.	RM4, 8.1.1.2	21	scf
Run Duration	≤0.75 cfm	65	minutes
Unit Number		1	
Base Run Number		90-100%	
Number of Ports Available		2	
Number of Ports Used		2	
Port Inside Diameter		3.00	in
Stack Shape		Circular	

Test Equipment Information					
Run		**7**	**8**	**9**	
Test Date	(mm/dd/yy)	09/30/16	09/30/16	09/30/16	
Load	% or w/DB	90-100	90-100	90-100	
Meter Box Number	from ACS	SAMP-CP-0011	SAMP-CP-0011	SAMP-CP-0011	
Meter Calibration Factor	(Y)	0.989	0.989	0.989	
Orifice Meter Coefficient	($\Delta H_@$)	1.585	1.585	1.585	in H_2O
Pitot Identification	from ACS	9-7-16-1	9-7-16-1	9-7-16-1	
Pitot Tube Coefficient	(C_p)	0.840	0.840	0.840	
Probe Number	from ACS	SAMP-PF-0001	SAMP-PF-0001	SAMP-PF-0001	
Probe Length		60.0	60.0	60.0	in
(SS, Glass ….) Liner Material	from list	inconel	inconel	inconel	
Impinger Case Number	from ACS	SAMP-BC-0002	SAMP-BC-0002	SAMP-BC-0002	

Testing Company Information	
Company Name	Air Hygiene International, Inc. (Tulsa, Oklahoma)
Address	1600 W Tacoma Street
City, State Zip	Broken Arrow, Oklahoma 74012
Project Manager	Min Sum Lee
Phone Number	(918) 307-8865
Fax Number	(918) 307-9131

METHOD 4 (MOISTURE) [MULTI POINT, NO VARIATION] - RESULTS

Plant Name	Enid Facility
Sampling Location	COMB 48
Project #	coyote-16-enid.ok-comp#1

Historical Data	**90-100%-7**	**90-100%-8**	**90-100%-9**	**Average**	**Units**
Run Start Time	07:42	09:13	12:50		hh:mm
Run Stop Time	08:52	10:23	14:00		hh:mm
Test Date	09/30/16	09/30/16	09/30/16		mm/dd/yy
Meter Calibration Factor	0.989	0.989	0.989		
Pitot Tube Coefficient	0.840	0.840	0.840		
Initial Meter Volume	8.490	57.240	105.750		ft^3
Final Meter Volume	56.760	105.140	157.630		ft^3
Total Meter Volume	48.270	47.900	51.880	49.350	ft^3
Total Sampling Time	65.00	65.00	65.00	65.00	min
Average Meter Temperature	76.44	81.42	80.83	79.56	°F
Average Stack Temperature	1649.38	1662.96	1770.67	1694.33	°F
Barometric Pressure	28.93	28.94	28.88	28.92	in Hg
Stack Static Pressure	0.00	0.00	0.00	0.00	in H_2O
Absolute Stack Pressure	28.93	28.94	28.88	28.92	in Hg
Average Orifice Pressure Drop	1.50	1.50	1.50	1.50	in H_2O
Absolute Meter Pressure	29.05	29.06	29.00	29.03	in Hg
Avg Square Root Pitot Pressure	0.18	0.18	0.19	0.19	$\sqrt{(in\ H_2O)}$
Moisture Content Data	**90-100%-7**	**90-100%-8**	**90-100%-9**	**Average**	**Units**
Impinger Water Weight Gain	43.60	39.20	40.90	41.23	g
Silica Gel Weight Gain	11.10	10.00	10.20	10.43	g
Total Water Volume Collected	54.80	49.29	51.19	51.76	ml
Standard Water Vapor Volume	2.58	2.32	2.41	2.44	scf
Standard Meter Volume	45.6	44.9	48.5	46.3	dscf
Calculated Stack Moisture	5.35	4.92	4.73	5.00	%
Saturated Stack Moisture	100.00	100.00	100.00	100.00	%
Reported Stack Moisture Content	5.35	4.92	4.73	5.00	%
Method 3C Gas Analysis Data	**90-100%-7**	**90-100%-8**	**90-100%-9**	**Average**	**Units**
Carbon Dioxide Content	4.0	3.6	3.6	3.7	%
Oxygen Content	16.0	16.5	16.7	16.4	%
Nitrogen Content	80.0	79.9	79.8	79.9	%
Stack Dry Molecular Weight	29.28	29.24	29.24	29.25	lb/lb-mole
Stack Wet Molecular Weight	28.68	28.69	28.70	28.69	lb/lb-mole
Percent Excess Air	313.0	359.6	383.6	352.0	%
Volumetric Flow Rate Data	**90-100%-7**	**90-100%-8**	**90-100%-9**	**Average**	**Units**
Average Stack Gas Velocity	21.13	21.15	22.16	21.48	ft/sec
Stack Cross-Sectional Area	12.16	12.16	12.16	12.16	ft^2
Actual Stack Flow Rate	15,419	15,435	16,171	15,675	acfm
Wet Standard Stack Flow Rate	224	223	222	223	wkscfh
Dry Standard Stack Flow Rate	211,927	211,829	211,195	211,650	dscfh

METHOD 3C - DETERMINATION OF DRY MOLECULAR WEIGHT BY ANALYZER

Plant Name	Enid Facility	**Preliminary Date**	09/27/16		
Sampling Location	COMB 48	**Operator**	TW/RA/BB		
Project #	coyote-16-enid.ok-comp#1	**# of Ports Used**	2		
Fuel Type	Gas, Propene	**Min. Fuel Factor**	N/A	**Max. Fuel Factor**	N/A

Gas Analysis Data

Run Number	90-100%-7		**Date**	09/30/16	**Run Start Time**	07:42	**Run Stop Time**	08:52
Sample Analysis Time	**CO_2 Conc.**	**O_2 Conc.**	**Methane Conc.**	**N_2 Conc.**	**Dry Molecular Weight**	**Calculated Fuel Factor**	**Excess Air**	**Fuel Factor in Range**
	($\%CO_2$)	($\%O_2$)	(ppmCO)	($\%N_2$)	(M_d)	$(F_o)_{avg}$	$(\%EA)_{avg}$	
hh:mm	%	%	ppm	%	lb/lb-mole		%	
01:10	4.0	16.0	0.0	80.0	29.28	1.216	313.0	N/A

Gas Analysis Data

Run Number	90-100%-8		**Date**	09/30/16	**Run Start Time**	09:13	**Run Stop Time**	10:23
Sample Analysis Time	**CO_2 Conc.**	**O_2 Conc.**	**Methane Conc.**	**N_2 Conc.**	**Dry Molecular Weight**	**Calculated Fuel Factor**	**Excess Air**	**Fuel Factor in Range**
	($\%CO_2$)	($\%O_2$)	(ppmCO)	($\%N_2$)	(M_d)	$(F_o)_{avg}$	$(\%EA)_{avg}$	
hh:mm	%	%	ppm	%	lb/lb-mole		%	
01:10	3.6	16.5	0.0	79.9	29.24	1.215	359.6	N/A

Gas Analysis Data

Run Number	90-100%-9		**Date**	09/30/16	**Run Start Time**	12:50	**Run Stop Time**	14:00
Sample Analysis Time	**CO_2 Conc.**	**O_2 Conc.**	**Methane Conc.**	**N_2 Conc.**	**Dry Molecular Weight**	**Calculated Fuel Factor**	**Excess Air**	**Fuel Factor in Range**
	($\%CO_2$)	($\%O_2$)	(ppmCO)	($\%N_2$)	(M_d)	$(F_o)_{avg}$	$(\%EA)_{avg}$	
hh:mm	%	%	ppm	%	lb/lb-mole		%	
01:10	3.6	16.7	0.0	79.8	29.24	1.183	383.6	N/A

METHOD 4 - DETERMINATION OF MOISTURE CONTENT IN STACK GASES

Plant Name	Enid Facility	**Preliminary Date**	09/27/16
Sampling Location	COMB 48	**Operator**	TW/RA/BB
Project #	coyote-16-enid.ok-comp#1	**Ports Used**	2

Moisture Content Data									
Run Number		90-100%-7		**Date**	09/30/16	**Start Time**	07:42	**Stop Time**	08:52
Meter Box Number		SAMP-CP-0011				**Meter Cal Factor**	(Y)	0.989	
Total Meter Volume		(V_m)	48.270	dcf		**Barometric Pressure**	(P_b)	28.93	in Hg
Average Stack Temp		$(t_s)_{avg}$	1649	°F		**Stack Static Pressure**	(P_{static})	0.00	in H_2O
Average Meter Temp		$(t_m)_{avg}$	76	°F		**Avg Orifice Pressure**	$(\Delta H)_{avg}$	1.50	in H_2O
		Impinger 1	**Impinger 2**	**Impinger 3**	**Impinger 4**	**Impinger 5**	**Impinger 6**	**Impinger 7**	**Impinger 8**
		(g)	(g)	(g)	(g)				
Contents		H_2O	H_2O	-	Sil Gel				
Final Value	(V_f),(W_f)	777.40	691.20	625.50	862.90				
Initial Value	(V_i),(W_i)	744.20	683.10	623.20	851.80				
Net Value	(V_n),(W_n)	33.2	8.1	2.3	11.1				
Results									
Total Weight		(W_t)	54.70	g		**Water Vol Weighed**	($V_{wsg(std)}$)	2.579	scf
Std Meter Volume		($V_{m(std)}$)	45.607	dscf		**Sat. Moisture Content**	($B_{ws(svp)}$)	100.00	%
Calc Moisture Content		($B_{ws(calc)}$)	5.35	%		**Final Moisture Content**	(B_{ws})	5.35	%

Moisture Content Data									
Run Number		90-100%-8		**Date**	09/30/16	**Start Time**	09:13	**Stop Time**	10:23
Meter Box Number		SAMP-CP-0011				**Meter Cal Factor**	(Y)	0.989	
Total Meter Volume		(V_m)	47.900	dcf		**Barometric Pressure**	(P_b)	28.94	in Hg
Average Stack Temp		$(t_s)_{avg}$	1663	°F		**Stack Static Pressure**	(P_{static})	0.00	in H_2O
Average Meter Temp		$(t_m)_{avg}$	81	°F		**Avg Orifice Pressure**	$(\Delta H)_{avg}$	1.50	in H_2O
		Impinger 1	**Impinger 2**	**Impinger 3**	**Impinger 4**	**Impinger 5**	**Impinger 6**	**Impinger 7**	**Impinger 8**
		(g)	(g)	(g)	(g)				
Contents		H_2O	H_2O	-	Sil Gel				
Final Value	(V_f),(W_f)	885.20	619.20	628.90	872.90				
Initial Value	(V_i),(W_i)	777.40	691.20	625.50	862.90				
Net Value	(V_n),(W_n)	107.8	-72.0	3.4	10.0				
Results									
Total Weight		(W_t)	49.20	g		**Water Vol Weighed**	($V_{wsg(std)}$)	2.320	scf
Std Meter Volume		($V_{m(std)}$)	44.856	dscf		**Sat. Moisture Content**	($B_{ws(svp)}$)	100.00	%
Calc Moisture Content		($B_{ws(calc)}$)	4.92	%		**Final Moisture Content**	(B_{ws})	4.92	%

Moisture Content Data									
Run Number		90-100%-9		**Date**	09/30/16	**Start Time**	12:50	**Stop Time**	14:00
Meter Box Number		SAMP-CP-0011				**Meter Cal Factor**	(Y)	0.989	
Total Meter Volume		(V_m)	51.880	dcf		**Barometric Pressure**	(P_b)	28.88	in Hg
Average Stack Temp		$(t_s)_{avg}$	1771	°F		**Stack Static Pressure**	(P_{static})	0.00	in H_2O
Average Meter Temp		$(t_m)_{avg}$	81	°F		**Avg Orifice Pressure**	$(\Delta H)_{avg}$	1.50	in H_2O
		Impinger 1	**Impinger 2**	**Impinger 3**	**Impinger 4**	**Impinger 5**	**Impinger 6**	**Impinger 7**	**Impinger 8**
		(g)	(g)	(g)	(g)				
Contents		H_2O	H_2O	-	Sil Gel				
Final Value	(V_f),(W_f)	700.90	723.40	630.60	883.10				
Initial Value	(V_i),(W_i)	687.00	698.10	628.90	872.90				
Net Value	(V_n),(W_n)	13.9	25.3	1.7	10.2				
Results									
Total Weight		(W_t)	51.10	g		**Water Vol Weighed**	($V_{wsg(std)}$)	2.409	scf
Std Meter Volume		($V_{m(std)}$)	48.535	dscf		**Sat. Moisture Content**	($B_{ws(svp)}$)	100.00	%
Calc Moisture Content		($B_{ws(calc)}$)	4.73	%		**Final Moisture Content**	(B_{ws})	4.73	%

METHOD 4 (MOISTURE) [MULTI POINT, NO VARIATION] SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

Plant Name	Enid Facility
Sampling Location	COMB 48
Project #	coyote-16-enid.ok-comp#1

Date	09/30/16
Operator	TW/RA/BB
Run Number	90-100%-7

Ideal Nozzle Diameter and IsoKinetic Factor Setup			
Pitot Coefficient	(C_p)	0.840	
Average Stack Temp	(t_s)	1649.4	°F
Average Meter Temp	(t_m)	76.4	
Orifice Meter Coefficient	($\Delta H@$)	1.585	in H_2O
Square Root ΔP	($\Delta p^{1/2}_{avg}$)	0.18	in H_2O
Stack Moisture Content	(B_{ws})	5.35	%
Stack Dry Molecular Weight	(M_d)	29.28	lb/lb-mole
Estimated Orifice Flow Rate	(Q_m)	0.75	acfm
ΔP to ΔH Isokinetic Factor	(K)		

Leak Checks					
Train	**Pre**	0.000	ft³/min@	15.0	in Hg
PASS	**Post**	0.000	ft³/min@	15.0	in Hg
Pitot	**Pre (+)**	0.2	in H_2O for	15.0	sec
< 3.0	**Pre (-)**	0.2	in H_2O for	15.0	sec
	Post (+)	0.2	in H_2O for	15.0	sec
	Post (-)	0.2	in H_2O for	15.0	sec

Sampling Equipment			
Meter Box Number	SAMP-CP-0011		
Meter Cal Factor	(Y)	0.989	
Low Flow Meter	SAMP-MN-0001		
Average Nozzle Diameter	(D_{na})		in
Suggested Nozzle Diameter	(D_{ni})	0.4290	in
Probe Number	SAMP-PF-0001		in
Probe Length	60		in
Liner Material	inconel		
Sample Case / Oven Number			
Impinger Case Number	SAMP-BC-0002		

Pressures			
Barometric Pressure	(P_b)	28.93	in Hg
Stack Static Pressure	(P_{static})	0.00	in H_2O
Absolute Stack Pressure	(P_s)	28.93	in Hg
Absolute Meter Pressure	(P_m)	29.05	in Hg

Nozzle Measurements				
Pre				**PASS**
Post				**PASS**

Run Time			
Start	07:42	**End**	08:52

Weights	**Imp 1**	**Imp 2**	**Imp 3**	**Imp 4**	**Imp 5**	**Imp 6**	**Imp 7**	**Imp 8**
Pre	744.2	683.1	623.2	851.8				
Post	777.4	691.2	625.5	862.9				

Wash Volumes					ml
					ml

Traverse Point #	**Sampling Time (Θ)**	**Timer Time**	**Dry Gas Meter Reading (V_m)**	**Velocity Head (Δp)**	**Desired Orifice ΔH (ΔH_d)**	**Actual Orifice ΔH (ΔH_a)**	**Stack Temp (t_s)**	**Snorkel Temp (248±25°F)**	**Filter Temp (--±--°F)**	**Impinger Exit Temp (≤68°F)**	**Cond. Temp (≤--°F)**	**CPM Filter Temp (--±--°F)**	**Meter Inlet Temp (t_{mi})**	**Meter Outlet Temp (t_{mo})**	**Pump Vacuum**	**Square Root ΔP ($\Delta p^{1/2}$)**	**Local Stack Velocity (v_s)$_l$**	**Cumul. Meter Volume (V_m)$_{std}$**	**Cumul. Percent IsoKinetic (I)**	**Est-Run Meter Volume (V_m)$_{std}$**
	min	hh:mm:ss	ft³	in H_2O	in H_2O	in H_2O	°F	°F	°F	°F	°F	°F	°F	°F	in Hg	√(in H_2O)	ft/sec	dscf	%	dscf
A-1	0.0	00:00:00	8.490	0.025	1.585	1.50	1591	255		55			68	67	11.0	0.16	17.85	1.883		45.198
A-2	2.7	00:02:43	10.450	0.025	1.585	1.50	1628	257		53			70	67	11.0	0.16	18.01	3.772		45.270
A-3	5.4	00:05:25	12.420	0.025	1.585	1.50	1624	255		53			71	67	11.0	0.16	17.99	5.641		45.126
A-4	8.1	00:08:07	14.370	0.030	1.585	1.50	1578	253		53			73	67	11.0	0.17	19.49	7.496		44.976
A-5	10.8	00:10:50	16.310	0.025	1.585	1.50	1634	251		54			74	67	11.0	0.16	18.04	9.474		45.474
A-6	13.5	00:13:33	18.380	0.025	1.585	1.50	1615	250		54			75	68	11.0	0.16	17.96	11.371		45.485
A-7	16.3	00:16:15	20.370	0.025	1.585	1.50	1620	250		54			76	68	11.0	0.16	17.98	13.267		45.488
A-8	19.0	00:18:58	22.360	0.030	1.585	1.50	1658	251		53			77	69	11.0	0.17	19.87	15.217		45.650
A-9	21.7	00:21:40	24.410	0.035	1.585	1.50	1671	252		53			78	69	11.0	0.19	21.53	16.927		45.138
A-10	24.4	00:24:22	26.210	0.035	1.585	1.50	1680	252		53			79	71	11.0	0.19	21.58	18.869		45.285
A-11	27.1	00:27:05	28.260	0.035	1.585	1.50	1682	252		54			80	72	11.5	0.19	21.59	20.741		45.253
A-12	29.8	00:29:47	30.240	0.040	1.585	1.50	1690	252		54			81	73	11.5	0.20	23.12	22.733		45.465
B-1	32.5	00:32:30	32.350	0.045	1.585	1.50	1683	251		55			80	74	11.5	0.21	24.48	24.639		45.487
B-2	35.2	00:35:12	34.370	0.045	1.585	1.50	1712	252		53			82	75	11.0	0.21	24.65	26.512		45.449
B-3	37.9	00:37:55	36.360	0.050	1.585	1.50	1713	253		54			82	75	11.0	0.22	25.99	28.385		45.416
B-4	40.6	00:40:37	38.350	0.040	1.585	1.50	1665	253		54			83	76	11.0	0.20	22.98	30.330		45.495
B-5	43.3	00:43:20	40.420	0.040	1.585	1.50	1643	252		54			85	77	11.0	0.20	22.87	32.166		45.411
B-6	46.0	00:46:03	42.380	0.040	1.585	1.50	1651	252		54			85	77	11.0	0.20	22.91	34.124		45.499
B-7	48.8	00:48:45	44.470	0.035	1.585	1.50	1652	252		54			85	78	11.0	0.19	21.43	36.043		45.528
B-8	51.5	00:51:28	46.520	0.035	1.585	1.50	1638	252		54			85	78	11.0	0.19	21.36	37.952		45.543
B-9	54.2	00:54:10	48.560	0.035	1.585	1.50	1633	252		54			86	79	11.0	0.19	21.34	39.933		45.638
B-10	56.9	00:56:53	50.680	0.04	1.585	1.50	1642	252		54			86	80	11.0	0.19	21.38	41.725		45.518
B-11	59.6	00:59:35	52.600	0.04	1.585	1.50	1642	252		55			86	81	11.0	0.19	21.38	43.655		45.553
B-12	62.3	01:02:18	54.670	0.04	1.585	1.50	1640	252		55			86	81	11.0	0.19	21.37	45.604		45.604
Last Pt	65.0	01:05:00	56.760																	
Final Val	65.0	01:05:00	56.760											**Max Vac**	11.5	**Final Values**		45.604		
Average Values				0.03		1.50	1649	252		54			80	73		0.18	21.13			
													76							

METHOD 4 (MOISTURE) [MULTI POINT, NO VARIATION] SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

Plant Name	Enid Facility
Sampling Location	COMB 48
Project #	coyote-16-enid.ok-comp#1

Date	09/30/16
Operator	TW/RA/BB
Run Number	90-100%-8

Ideal Nozzle Diameter and IsoKinetic Factor Setup			
Pitot Coefficient	(C_p)	0.840	
Average Stack Temp	(t_s)	1663.0	°F
Average Meter Temp	(t_m)	81.4	
Orifice Meter Coefficient	($\Delta H@$)	1.585	in H_2O
Square Root ΔP	($\Delta p^{1/2}_{avg}$)	0.18	in H_2O
Stack Moisture Content	(B_{ws})	4.92	%
Stack Dry Molecular Weight	(M_d)	29.24	lb/lb-mole
Estimated Orifice Flow Rate	(Q_m)	0.70	acfm
ΔP to ΔH Isokinetic Factor	(K)		

Leak Checks					
Train	**Pre**	0.000	ft³/min@	15.0	in Hg
PASS	**Post**	0.000	ft³/min@	15.0	in Hg
Pitot	**Pre (+)**	0.2	in H_2O for	15.0	sec
< 3.0	**Pre (-)**	0.2	in H_2O for	15.0	sec
	Post (+)	0.2	in H_2O for	15.0	sec
	Post (-)	0.2	in H_2O for	15.0	sec

Sampling Equipment			
Meter Box Number	SAMP-CP-0011		
Meter Cal Factor	(Y)	0.989	
Low Flow Meter	SAMP-MN-0001		
Average Nozzle Diameter	(D_{na})		in
Suggested Nozzle Diameter	(D_{ni})	0.4139	in
Probe Number	SAMP-PF-0001		in
Probe Length	60		in
Liner Material	inconel		
Sample Case / Oven Number			
Impinger Case Number	SAMP-BC-0002		

Pressures			
Barometric Pressure	(P_b)	28.94	in Hg
Stack Static Pressure	(P_{static})	0.00	in H_2O
Absolute Stack Pressure	(P_s)	28.94	in Hg
Absolute Meter Pressure	(P_m)	29.06	in Hg

Nozzle Measurements				
Pre				**PASS**
Post				**PASS**

Run Time			
Start	09:13	**End**	10:23

Weights	**Imp 1**	**Imp 2**	**Imp 3**	**Imp 4**	**Imp 5**	**Imp 6**	**Imp 7**	**Imp 8**
Pre	777.4	691.2	625.5	862.9				
Post	885.2	619.2	628.9	872.9				

Wash Volumes					ml
					ml

Traverse Point #	**Sampling Time (Θ)**	**Timer Time**	**Dry Gas Meter Reading (V_m)**	**Velocity Head (Δp)**	**Desired Orifice ΔH (ΔH_d)**	**Actual Orifice ΔH (ΔH_a)**	**Stack Temp (t_s)**	**Snorkel Temp (248±25°F)**	**Filter Temp**	**Impinger Exit Temp (≤68°F)**	**Cond. Temp (≤---°F)**	**CPM Filter Temp (--±--°F)**	**Meter Inlet Temp (t_{mi})**	**Meter Outlet Temp (t_{mo})**	**Pump Vacuum**	**Square Root ΔP ($\Delta p^{1/2}$)**	**Local Stack Velocity (v_s)$_l$**	**Cumul. Meter Volume (V_m)$_{std}$**	**Cumul. Percent IsoKinetic (I)**	**Est-Run Meter Volume (V_m)$_{std}$**
	min	hh:mm:ss	ft³	in H_2O	in H_2O	in H_2O	°F	°F	°F	°F	°F	°F	°F	°F	in Hg	√(in H_2O)	ft/sec	dscf	%	dscf
A-1	0.0	00:00:00	57.240	0.030	1.585	1.50	1496	252		55			76	80	11.0	0.17	19.09	1.979		47.497
A-2	2.7	00:02:43	59.340	0.030	1.585	1.50	1542	257		53			77	80	11.0	0.17	19.32	3.834		46.006
A-3	5.4	00:05:25	61.310	0.030	1.585	1.50	1573	256		53			78	80	11.0	0.17	19.46	5.640		45.119
A-4	8.1	00:08:07	63.230	0.035	1.585	1.50	1596	252		53			79	79	11.0	0.19	21.14	7.559		45.353
A-5	10.8	00:10:50	65.270	0.035	1.585	1.50	1648	251		53			81	78	11.0	0.19	21.41	9.410		45.169
A-6	13.5	00:13:33	67.240	0.035	1.585	1.50	1655	251		53			82	78	11.0	0.19	21.44	11.269		45.077
A-7	16.3	00:16:15	69.220	0.035	1.585	1.50	1658	251		54			82	78	11.0	0.19	21.46	13.119		44.979
A-8	19.0	00:18:58	71.190	0.035	1.585	1.50	1664	251		54			83	78	11.0	0.19	21.49	14.976		44.929
A-9	21.7	00:21:40	73.170	0.035	1.585	1.50	1672	252		54			84	78	11.0	0.19	21.53	16.813		44.835
A-10	24.4	00:24:22	75.130	0.035	1.585	1.50	1675	252		54			84	78	11.0	0.19	21.54	18.678		44.827
A-11	27.1	00:27:05	77.120	0.035	1.585	1.50	1676	252		54			84	79	11.0	0.19	21.55	20.523		44.777
A-12	29.8	00:29:47	79.090	0.035	1.585	1.50	1679	252		54			85	79	11.0	0.19	21.56	22.365		44.731
B-1	32.5	00:32:30	81.060	0.030	1.585	1.50	1750	252		55			82	79	11.0	0.17	20.29	24.298		44.858
B-2	35.2	00:35:12	83.120	0.030	1.585	1.50	1748	252		55			85	79	11.0	0.17	20.28	26.178		44.877
B-3	37.9	00:37:55	85.130	0.035	1.585	1.50	1749	252		55			85	79	11.0	0.19	21.91	28.021		44.833
B-4	40.6	00:40:37	87.100	0.035	1.585	1.50	1726	252		55			85	80	11.0	0.19	21.80	29.899		44.849
B-5	43.3	00:43:20	89.110	0.035	1.585	1.50	1671	252		56			85	80	11.0	0.19	21.52	31.778		44.863
B-6	46.0	00:46:03	91.120	0.035	1.585	1.50	1658	252		56			86	80	11.0	0.19	21.46	33.655		44.873
B-7	48.8	00:48:45	93.130	0.035	1.585	1.50	1665	252		56			86	81	11.0	0.19	21.49	35.511		44.856
B-8	51.5	00:51:28	95.120	0.035	1.585	1.50	1679	252		56			86	81	11.0	0.19	21.56	37.368		44.841
B-9	54.2	00:54:10	97.110	0.035	1.585	1.50	1677	252		56			86	81	11.0	0.19	21.55	39.252		44.859
B-10	56.9	00:56:53	99.130	0.035	1.585	1.50	1691	252		56			86	82	11.0	0.19	21.63	41.097		44.833
B-11	59.6	00:59:35	101.110	0.035	1.585	1.50	1681	252		56			86	81	11.0	0.19	21.57	43.000		44.870
B-12	62.3	01:02:18	103.150	0.035	1.585	1.50	1682	252		56			86	81	11.0	0.19	21.58	44.857		44.857
Last Pt	65.0	01:05:00	105.140																	
Final Val	65.0	01:05:00	105.140											**Max Vac**	11.0	**Final Values**		44.857		
Average Values				0.03		1.50	1663	252		55			83	80		0.18	21.15			
													81							

METHOD 4 (MOISTURE) [MULTI POINT, NO VARIATION] SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

Plant Name	Enid Facility
Sampling Location	COMB 48
Project #	coyote-16-enid.ok-comp#1

Date	09/30/16
Operator	TW/RA/BB
Run Number	90-100%-9

Ideal Nozzle Diameter and IsoKinetic Factor Setup			
Pitot Coefficient	(C_p)	0.840	
Average Stack Temp	(t_s)	1770.7	°F
Average Meter Temp	(t_m)	80.8	
Orifice Meter Coefficient	($\Delta H@$)	1.585	in H_2O
Square Root ΔP	($\Delta p^{1/2}_{avg}$)	0.19	in H_2O
Stack Moisture Content	(B_{ws})	4.73	%
Stack Dry Molecular Weight	(M_d)	29.24	lb/lb-mole
Estimated Orifice Flow Rate	(Q_m)	0.69	acfm
ΔP to ΔH Isokinetic Factor	(K)		

Leak Checks					
Train	**Pre**	0.000	ft³/min@	15.0	in Hg
PASS	**Post**	0.000	ft³/min@	15.0	in Hg
Pitot	**Pre (+)**	0.2	in H_2O for	15.0	sec
< 3.0	**Pre (-)**	0.2	in H_2O for	15.0	sec
	Post (+)	0.2	in H_2O for	15.0	sec
	Post (-)	0.2	in H_2O for	15.0	sec

Sampling Equipment			
Meter Box Number	SAMP-CP-0011		
Meter Cal Factor	(Y)	0.989	
Low Flow Meter	SAMP-MN-0001		
Average Nozzle Diameter	(D_{na})		in
Suggested Nozzle Diameter	(D_{ni})	0.4134	in
Probe Number	SAMP-PF-0001		in
Probe Length	60		in
Liner Material	inconel		
Sample Case / Oven Number			
Impinger Case Number	SAMP-BC-0002		

Pressures			
Barometric Pressure	(P_b)	28.88	in Hg
Stack Static Pressure	(P_{static})	0.00	in H_2O
Absolute Stack Pressure	(P_s)	28.88	in Hg
Absolute Meter Pressure	(P_m)	29.00	in Hg

Nozzle Measurements				
Pre				**PASS**
Post				**PASS**

Run Time			
Start	12:50	**End**	14:00

Weights	**Imp 1**	**Imp 2**	**Imp 3**	**Imp 4**	**Imp 5**	**Imp 6**	**Imp 7**	**Imp 8**
Pre	687.0	698.1	628.9	872.9				
Post	700.9	723.4	630.6	883.1				

Wash Volumes					
					ml
					ml

Traverse Point #	**Sampling Time (Θ)**	**Timer Time**	**Dry Gas Meter Reading (V_m)**	**Velocity Head (Δp)**	**Desired Orifice ΔH (ΔH_d)**	**Actual Orifice ΔH (ΔH_a)**	**Stack Temp (t_s)**	**Snorkel Temp (248±25°F)**	**Filter Temp**	**Impinger Exit Temp (≤68°F)**	**Cond. Temp (≤---°F)**	**CPM Filter Temp (--±--°F)**	**Meter Inlet Temp (t_{mi})**	**Meter Outlet Temp (t_{mo})**	**Pump Vacuum**	**Square Root ΔP ($\Delta p^{1/2}$)**	**Local Stack Velocity (v_s)$_l$**	**Cumul. Meter Volume (V_m)$_{std}$**	**Cumul. Percent IsoKinetic (I)**	**Est-Run Meter Volume (V_m)$_{std}$**
	min	hh:mm:ss	ft³	in H_2O	in H_2O	in H_2O	°F	°F	°F	°F	°F	°F	°F	°F	in Hg	√(in H_2O)	ft/sec	dscf	%	dscf
A-1	0.0	00:00:00	105.750	0.035	1.585	1.50	1612	252		71			70	70	11.0	0.19	21.24	0.792		19.017
A-2	2.7	00:02:43	106.580	0.035	1.585	1.50	1606	256		63			73	70	11.0	0.19	21.21	2.630		31.556
A-3	5.4	00:05:25	108.510	0.035	1.585	1.50	1615	257		61			76	70	11.0	0.19	21.26	4.357		34.859
A-4	8.1	00:08:07	110.330	0.035	1.585	1.50	1591	255		61			78	71	11.0	0.19	21.13	6.260		37.560
A-5	10.8	00:10:50	112.340	0.035	1.585	1.50	1648	252		62			80	71	11.0	0.19	21.42	8.112		38.937
A-6	13.5	00:13:33	114.300	0.035	1.585	1.50	1705	251		63			81	72	11.0	0.19	21.71	9.951		39.804
A-7	16.3	00:16:15	116.250	0.035	1.585	1.50	1735	251		64			83	73	11.0	0.19	21.86	11.860		40.663
A-8	19.0	00:18:58	118.280	0.035	1.585	1.50	1756	251		64			83	74	11.0	0.19	21.97	13.655		40.964
A-9	21.7	00:21:40	120.190	0.035	1.585	1.50	1762	252		64			84	75	11.0	0.19	22.00	15.455		41.214
A-10	24.4	00:24:22	122.110	0.035	1.585	1.50	1767	252		65			84	76	11.0	0.19	22.02	17.320		41.568
A-11	27.1	00:27:05	124.100	0.035	1.585	1.50	1768	252		65			85	77	11.0	0.19	22.02	19.106		41.686
A-12	29.8	00:29:47	126.010	0.035	1.585	1.50	1789	252		65			86	77	11.0	0.19	22.13	20.919		41.838
B-1	32.5	00:32:30	127.950	0.035	1.585	1.50	1789	252		66			84	78	11.0	0.19	22.13	22.284		41.140
B-2	35.2	00:35:12	129.410	0.035	1.585	1.50	1866	252		66			85	79	11.0	0.19	22.50	24.133		41.370
B-3	37.9	00:37:55	131.390	0.035	1.585	1.50	1884	253		66			86	80	11.0	0.19	22.59	25.996		41.594
B-4	40.6	00:40:37	133.390	0.035	1.585	1.50	1855	253		66			86	80	11.0	0.19	22.45	27.897		41.846
B-5	43.3	00:43:20	135.430	0.035	1.585	1.50	1858	253		65			88	81	11.0	0.19	22.47	29.765		42.021
B-6	46.0	00:46:03	137.440	0.035	1.585	1.50	1853	253		63			88	82	11.0	0.19	22.44	31.640		42.187
B-7	48.8	00:48:45	139.460	0.035	1.585	1.50	1830	253		62			90	82	11.0	0.19	22.33	33.521		42.343
B-8	51.5	00:51:28	141.490	0.035	1.585	1.50	1835	253		61			90	83	11.0	0.19	22.35	35.392		42.470
B-9	54.2	00:54:10	143.510	0.035	1.585	1.50	1850	252		61			91	83	11.0	0.19	22.43	37.260		42.583
B-10	56.9	00:56:53	145.530	0.035	1.585	1.50	1841	252		61			91	84	11.0	0.19	22.38	39.136		42.694
B-11	59.6	00:59:35	147.560	0.040	1.585	1.50	1846	252		61			91	84	11.0	0.20	23.95	41.003		42.786
B-12	62.3	01:02:18	149.580	0.04	1.585	1.50	1835	252		61			91	84	11.0	0.20	23.90	48.442		48.442
Last Pt	65.0	01:05:00	157.630																	
Final Val	65.0	01:05:00	157.630											**Max Vac**	11.0	**Final Values**		48.442		
Average Values				0.04		1.50	1771	253		64			84	77		0.19	22.16			
													81							

Coyote North USA INC.
COMB 48
Enid Facility

Unit Data

Meas. Stack Moisture	5.4	%
Stack Exhaust Flow (M2)	211,927	SCFH

Weather Data

Barometric Pressure	28.93	in. Hg
Relative Humidity	66	%
Ambient Temperature	61	^{o}F
Specific Humidity	0.007738	lb H_2O / lb air

90-100 Load, Run - COMB 48 R10

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
A1	09/30/16 07:42:13	2730	15.98	4.59	0.20	3.55	50.04	68.28	5,394.00
	09/30/16 07:42:43	2760	15.95	4.10	0.19	3.57	50.04	68.28	5,394.00
	09/30/16 07:43:13	2790	16.06	3.94	0.19	3.50	50.10	70.36	5,328.00
	09/30/16 07:43:43	2820	16.16	3.91	0.20	3.43	50.10	70.36	5,328.00
	09/30/16 07:44:13	2850	16.11	4.44	0.24	3.46	50.21	72.47	5,274.00
	09/30/16 07:44:43	2880	16.24	5.23	0.24	3.39	50.21	72.47	5,274.00
	09/30/16 07:45:13	2910	16.14	3.81	0.21	3.45	50.19	74.53	5,496.00
	09/30/16 07:45:43	2940	16.16	3.08	0.20	3.44	50.19	74.53	5,496.00
	09/30/16 07:46:13	2970	16.16	3.09	0.23	3.43	50.40	76.50	5,400.00
	09/30/16 07:46:43	3000	16.20	2.99	0.23	3.41	50.40	76.50	5,400.00
	09/30/16 07:47:13	3030	16.26	2.94	0.20	3.37	50.42	78.34	5,388.00
	09/30/16 07:47:43	3060	16.24	2.91	0.20	3.39	50.42	78.34	5,388.00
	09/30/16 07:48:13	3090	16.08	2.85	0.18	3.48	50.31	80.03	5,352.00
	09/30/16 07:48:43	3120	16.22	2.93	0.22	3.41	50.31	80.03	5,352.00
	09/30/16 07:49:13	3150	16.21	3.06	0.22	3.40	50.27	81.57	5,352.00
	09/30/16 07:49:43	3180	16.27	3.26	0.23	3.37	50.27	81.57	5,352.00
	09/30/16 07:50:13	3210	16.18	3.45	0.21	3.43	50.21	83.01	5,322.00
	09/30/16 07:50:43	3240	16.10	3.58	0.23	3.47	50.21	83.01	5,322.00
	09/30/16 07:51:13	3270	16.35	3.60	0.20	3.58	50.09	84.41	5,556.00
	09/30/16 07:51:43	3300	16.97	3.82	0.20	3.63	50.09	84.41	5,556.00
	09/30/16 07:52:13	3330	16.61	3.73	0.22	3.66	49.88	85.80	6,018.00
	09/30/16 07:52:43	3360	15.19	3.33	0.22	4.05	49.88	85.80	6,018.00
	09/30/16 07:53:13	3390	15.04	2.88	0.16	4.18	49.91	87.19	5,976.00
	09/30/16 07:53:43	3420	14.95	2.59	0.17	4.24	49.91	87.19	5,976.00
	09/30/16 07:54:13	3450	15.07	2.44	0.20	4.15	50.04	88.48	6,012.00
	09/30/16 07:54:43	3480	15.09	2.39	0.20	4.11	50.04	88.48	6,012.00
	09/30/16 07:55:13	3510	15.03	2.38	0.20	4.18	50.08	89.60	5,898.00
	09/30/16 07:55:43	3540	15.08	2.40	0.22	4.13	50.08	89.60	5,898.00
	09/30/16 07:56:13	3570	15.06	2.42	0.22	4.17	49.96	90.55	5,964.00
	09/30/16 07:56:43	3600	15.27	2.41	0.21	3.97	49.96	90.55	5,964.00
	09/30/16 07:57:13	3630	15.40	2.42	0.23	3.91	49.85	91.42	5,988.00
	09/30/16 07:57:43	3660	15.36	2.42	0.23	3.91	49.85	91.42	5,988.00
	09/30/16 07:58:13	3690	15.31	2.41	0.21	3.95	49.87	92.21	5,934.00
	09/30/16 07:58:43	3720	15.31	2.43	0.21	3.95	49.87	92.21	5,934.00
	09/30/16 07:59:13	3750	15.43	2.40	0.20	3.88	49.88	92.88	6,012.00
	09/30/16 07:59:43	3780	15.45	2.42	0.22	3.88	49.88	92.88	6,012.00
	09/30/16 08:00:13	3810	15.45	2.51	0.22	3.87	49.97	93.53	6,006.00
	09/30/16 08:00:43	3840	15.55	2.51	0.22	3.81	49.97	93.53	6,006.00
	09/30/16 08:01:13	3870	15.54	2.51	0.21	3.82	50.01	94.14	5,982.00
	09/30/16 08:01:43	3900	15.53	2.51	0.22	3.83	50.01	94.14	5,982.00
	09/30/16 08:02:13	3930	15.46	2.48	0.21	3.85	50.12	94.75	5,952.00
	09/30/16 08:02:43	3960	15.52	2.49	0.21	3.83	50.12	94.75	5,952.00
A2	09/30/16 08:03:13	3990	15.43	2.59	0.23	3.88	50.06	95.31	5,904.00
	09/30/16 08:03:43	4020	15.47	2.59	0.22	3.87	50.06	95.31	5,904.00
	09/30/16 08:04:13	4050	15.54	2.59	0.24	3.81	49.90	95.82	5,982.00
	09/30/16 08:04:43	4080	15.40	2.59	0.23	3.91	49.90	95.82	5,982.00
	09/30/16 08:05:13	4110	15.54	2.60	0.23	3.82	49.81	96.25	5,898.00
	09/30/16 08:05:43	4140	15.52	2.59	0.23	3.82	49.81	96.25	5,898.00
	09/30/16 08:06:13	4170	15.53	2.58	0.22	3.81	49.86	96.65	5,928.00
	09/30/16 08:06:43	4200	15.47	2.58	0.20	3.85	49.86	96.65	5,928.00
	09/30/16 08:07:13	4230	15.50	2.66	0.23	3.83	49.93	97.01	5,964.00
	09/30/16 08:07:43	4260	15.42	2.68	0.21	3.89	49.93	97.01	5,964.00
	09/30/16 08:08:13	4290	15.39	2.69	0.20	3.92	49.98	97.39	6,006.00
	09/30/16 08:08:43	4320	15.29	2.69	0.19	3.96	49.98	97.39	6,006.00
	09/30/16 08:09:13	4350	15.45	2.69	0.21	3.88	50.08	97.77	6,012.00
	09/30/16 08:09:43	4380	15.43	2.65	0.21	3.88	50.08	97.77	6,012.00
	09/30/16 08:10:13	4410	15.49	2.66	0.23	3.85	50.14	98.08	5,976.00
	09/30/16 08:10:43	4440	15.44	2.68	0.23	3.86	50.14	98.08	5,976.00
	09/30/16 08:11:13	4470	15.37	2.64	0.20	3.92	50.01	98.28	5,958.00
	09/30/16 08:11:43	4500	15.32	2.70	0.21	3.95	50.01	98.28	5,958.00
	09/30/16 08:12:13	4530	15.25	2.69	0.22	4.00	49.86	98.38	5,958.00

Coyote North USA INC.
COMB 48
Enid Facility

Unit Data

Meas. Stack Moisture	5.4	%
Stack Exhaust Flow (M2)	211,927	SCFH

Weather Data

Barometric Pressure	28.93	in. Hg
Relative Humidity	66	%
Ambient Temperature	61	^{o}F
Specific Humidity	0.007738	lb H_2O / lb air

90-100 Load, Run - COMB 48 R10

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
	09/30/16 08:12:43	4560	15.35	2.69	0.19	3.91	49.86	98.38	5,958.00
	09/30/16 08:13:13	4590	15.17	2.69	0.16	4.03	49.78	98.46	6,018.00
	09/30/16 08:13:43	4620	15.20	2.76	0.20	4.03	49.78	98.46	6,018.00
	09/30/16 08:14:13	4650	15.17	2.78	0.19	4.03	49.88	98.48	6,018.00
	09/30/16 08:14:43	4680	15.15	2.73	0.14	4.04	49.88	98.48	6,018.00
	09/30/16 08:15:13	4710	15.20	2.78	0.14	4.02	50.01	98.51	6,018.00
	09/30/16 08:15:43	4740	15.17	2.73	0.18	4.03	50.01	98.51	6,018.00
	09/30/16 08:16:13	4770	15.17	2.79	0.10	4.04	50.03	98.54	6,006.00
	09/30/16 08:16:43	4800	15.04	2.75	0.10	4.12	50.03	98.54	6,006.00
	09/30/16 08:17:13	4830	15.17	2.75	0.20	4.05	50.14	98.60	6,012.00
	09/30/16 08:17:43	4860	15.24	2.69	0.23	3.99	50.14	98.60	6,012.00
	09/30/16 08:18:13	4890	15.23	2.67	0.23	4.02	50.13	98.67	5,958.00
	09/30/16 08:18:43	4920	15.26	2.65	0.20	3.99	50.13	98.67	5,958.00
	09/30/16 08:19:13	4950	15.08	2.59	0.15	4.08	49.96	98.68	5,988.00
	09/30/16 08:19:43	4980	14.98	2.59	0.17	4.15	49.96	98.68	5,988.00
	09/30/16 08:20:13	5010	14.85	2.62	0.16	4.23	49.83	98.73	5,946.00
	09/30/16 08:20:43	5040	15.04	2.62	0.22	4.13	49.83	98.73	5,946.00
	09/30/16 08:21:13	5070	14.94	2.55	0.21	4.17	49.79	98.89	5,952.00
	09/30/16 08:21:43	5100	14.85	2.51	0.19	4.23	49.79	98.89	5,952.00
	09/30/16 08:22:13	5130	14.85	2.50	0.16	4.23	49.91	99.08	6,006.00
	09/30/16 08:22:43	5160	14.77	2.56	0.15	4.29	49.91	99.08	6,006.00
A3	09/30/16 08:23:13	5190	14.76	2.58	0.11	4.30	50.02	99.25	6,024.00
	09/30/16 08:23:43	5220	14.91	2.59	0.14	4.20	50.02	99.25	6,024.00
	09/30/16 08:24:13	5250	14.94	2.59	0.14	4.17	50.16	99.32	5,976.00
	09/30/16 08:24:43	5280	14.81	2.59	0.13	4.25	50.16	99.32	5,976.00
	09/30/16 08:25:13	5310	14.89	2.59	0.11	4.22	50.17	99.30	5,964.00
	09/30/16 08:25:43	5340	15.10	2.59	0.14	4.09	50.17	99.30	5,964.00
	09/30/16 08:26:13	5370	15.19	2.55	0.17	4.02	50.00	99.20	5,964.00
	09/30/16 08:26:43	5400	15.14	2.52	0.15	4.06	50.00	99.20	5,964.00
	09/30/16 08:27:13	5430	15.12	2.49	0.19	4.06	49.88	98.99	5,952.00
	09/30/16 08:27:43	5460	15.10	2.49	0.17	4.08	49.88	98.99	5,952.00
	09/30/16 08:28:13	5490	15.28	2.49	0.14	3.99	49.86	98.84	5,952.00
	09/30/16 08:28:43	5520	15.12	2.50	0.16	4.06	49.86	98.84	5,952.00
	09/30/16 08:29:13	5550	15.18	2.49	0.14	4.03	49.92	98.67	5,958.00
	09/30/16 08:29:43	5580	15.11	2.49	0.15	4.07	49.92	98.67	5,958.00
	09/30/16 08:30:13	5610	15.02	2.41	0.10	4.13	50.05	98.52	6,000.00
	09/30/16 08:30:43	5640	15.07	2.39	0.11	4.11	50.05	98.52	6,000.00
	09/30/16 08:31:13	5670	15.17	2.31	0.14	4.04	50.16	98.34	6,024.00
	09/30/16 08:31:43	5700	15.11	2.29	0.18	4.07	50.16	98.34	6,024.00
	09/30/16 08:32:13	5730	15.21	2.29	0.18	4.03	50.09	98.19	6,012.00
	09/30/16 08:32:43	5760	15.17	2.28	0.16	4.03	50.09	98.19	6,012.00
	09/30/16 08:33:13	5790	15.13	2.25	0.16	4.06	49.97	98.09	6,024.00
	09/30/16 08:33:43	5820	15.04	2.20	0.17	4.11	49.97	98.09	6,024.00
	09/30/16 08:34:13	5850	15.32	2.16	0.23	3.97	49.88	98.04	6,000.00
	09/30/16 08:34:43	5880	15.41	2.08	0.21	3.90	49.88	98.04	6,000.00
	09/30/16 08:35:13	5910	15.59	1.99	0.20	3.79	49.87	98.10	5,994.00
	09/30/16 08:35:43	5940	15.66	1.98	0.21	3.74	49.87	98.10	5,994.00
	09/30/16 08:36:13	5970	15.58	1.90	0.22	3.78	49.92	98.30	5,952.00
	09/30/16 08:36:43	6000	15.65	1.95	0.14	3.73	49.92	98.30	5,952.00
	09/30/16 08:37:13	6030	15.48	1.98	0.15	3.84	49.96	98.50	5,988.00
	09/30/16 08:37:43	6060	15.65	1.89	0.18	3.76	49.96	98.50	5,988.00
	09/30/16 08:38:13	6090	15.64	1.89	0.14	3.74	50.12	98.69	5,988.00
	09/30/16 08:38:43	6120	15.67	1.89	0.19	3.74	50.12	98.69	5,988.00
	09/30/16 08:39:13	6150	15.67	1.88	0.20	3.72	50.10	98.84	5,976.00
	09/30/16 08:39:43	6180	15.56	1.88	0.22	3.79	50.10	98.84	5,976.00
	09/30/16 08:40:13	6210	15.56	1.90	0.20	3.81	49.96	98.94	5,994.00
	09/30/16 08:40:43	6240	15.57	1.88	0.23	3.80	49.96	98.94	5,994.00
	09/30/16 08:41:13	6270	15.48	1.82	0.22	3.84	49.91	99.09	5,988.00
	09/30/16 08:41:43	6300	15.36	1.81	0.19	3.91	49.91	99.09	5,988.00
	09/30/16 08:42:13	6330	15.27	1.80	0.15	3.97	49.87	99.33	6,018.00
	09/30/16 08:42:43	6360	15.17	1.80	0.12	4.05	49.87	99.33	6,018.00

Coyote North USA INC.
COMB 48
Enid Facility

Unit Data

Meas. Stack Moisture	5.4	%
Stack Exhaust Flow (M2)	211,927	SCFH

Weather Data

Barometric Pressure	28.93	in. Hg
Relative Humidity	66	%
Ambient Temperature	61	^{o}F
Specific Humidity	0.007738	lb H_2O / lb air

90-100 Load, Run - COMB 48 R10

Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
09/30/16 08:43:13	6390	15.11	1.80	0.13	4.06	49.92	99.74	5,964.00
09/30/16 08:43:43	6420	15.11	1.80	0.18	4.09	49.92	99.74	5,964.00
09/30/16 08:44:13	6450	15.26	1.81	0.19	3.99	49.98	100.10	6,006.00
09/30/16 08:44:43	6480	15.27	1.72	0.17	3.96	49.98	100.10	6,006.00
09/30/16 08:45:13	6510	15.08	1.69	0.12	4.11	50.04	100.47	5,940.00
09/30/16 08:45:43	6540	15.16	1.76	0.18	4.05	50.04	100.47	5,940.00
09/30/16 08:46:13	6570	15.24	1.71	0.17	3.99	50.12	100.78	5,988.00
09/30/16 08:46:43	6600	15.06	1.79	0.15	4.09	50.12	100.78	5,988.00
09/30/16 08:47:13	6630	15.07	1.72	0.13	4.12	50.01	101.04	5,988.00
09/30/16 08:47:43	6660	15.14	1.71	0.20	4.06	50.01	101.04	5,988.00
09/30/16 08:48:13	6690	15.09	1.70	0.16	4.08	49.90	101.12	5,982.00
09/30/16 08:48:43	6720	14.94	1.70	0.12	4.17	49.90	101.12	5,982.00
09/30/16 08:49:13	6750	15.02	1.70	0.17	4.15	49.84	101.18	5,910.00
09/30/16 08:49:43	6780	14.91	1.70	0.13	4.20	49.84	101.18	5,910.00
09/30/16 08:50:13	6810	15.01	1.72	0.14	4.17	49.93	101.26	5,940.00
09/30/16 08:50:43	6840	15.03	1.72	0.14	4.13	49.93	101.26	5,940.00
09/30/16 08:51:13	6870	15.03	1.67	0.12	4.13	49.96	101.34	6,006.00
09/30/16 08:51:43	6900	14.96	1.66	0.13	4.17	49.96	101.34	6,006.00
09/30/16 08:52:13	6930	14.82	1.64	0.13	4.28	50.47	101.42	6,006.00
RAW AVERAGE		**15.38**	**2.52**	**0.19**	**3.92**	**50.01**	**94.47**	**5,894.85**

		O_2	CO	THC	CO_2	Press. Trans	Temp. Trans.	F-Flow Trans.
	Serial Number:	INSTO2-0011	INST-CO-0022	INST-TH-0002	INST-C2-0013	2104497-025	2104497-025	2104497-025
		(%)	(ppmvd)	(ppmvw)	(%)	(in. H_2O)	(^{o}F)	(SCFH)
Bias	Initial Zero	0.09	-0.01	0.03	0.06			
	Final Zero	0.08	-0.06	-0.05	0.07			
	Avg. Zero	0.09	-0.04	-0.01	0.07			
	Initial UpScale	12.10	9.31	3.05	8.83			
	Final UpScale	12.04	9.30	3.09	8.86			
	Avg. UpScale	12.07	9.31	3.07	8.85			
Upscale Cal Gas		11.90	9.44	3.00	8.95			

EMISSIONS DATA	O_2	CO	THC	CO_2
Corrected Raw Average (ppm/% dry basis)	15.19	2.58	0.19	3.93
Corrected Raw Average (ppm/% wet basis)	14.37	2.45	0.18	3.72
Emission Rate (lb/hr)	N/A	0.04	0.00	N/A

Coyote North USA INC.
COMB 48
Enid Facility

Unit Data

Meas. Stack Moisture	4.9	%
Stack Exhaust Flow (M2)	211,829	SCFH

Weather Data

Barometric Pressure	28.94	in. Hg
Relative Humidity	53	%
Ambient Temperature	66	^{o}F
Specific Humidity	0.007522	lb H_2O / lb air

90-100 Load, Run - COMB 48 R11

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
A1	09/30/16 09:13:13	8190	16.27	6.79	0.22	3.35	50.57	88.06	5,352.00
	09/30/16 09:13:43	8220	16.33	5.64	0.23	3.31	50.57	88.06	5,352.00
	09/30/16 09:14:13	8250	16.22	5.30	0.23	3.39	50.46	88.61	5,382.00
	09/30/16 09:14:43	8280	16.28	4.96	0.24	3.36	50.46	88.61	5,382.00
	09/30/16 09:15:13	8310	16.36	4.56	0.19	3.29	50.35	89.22	5,340.00
	09/30/16 09:15:43	8340	16.29	4.28	0.20	3.36	50.35	89.22	5,340.00
	09/30/16 09:16:13	8370	16.40	3.78	0.23	3.29	50.26	89.90	5,376.00
	09/30/16 09:16:43	8400	16.35	3.68	0.22	3.32	50.26	89.90	5,376.00
	09/30/16 09:17:13	8430	16.34	3.52	0.24	3.30	50.23	90.71	5,298.00
	09/30/16 09:17:43	8460	16.38	3.34	0.22	3.30	50.23	90.71	5,298.00
	09/30/16 09:18:13	8490	16.43	3.22	0.23	3.27	50.25	91.49	5,376.00
	09/30/16 09:18:43	8520	16.50	3.24	0.23	3.21	50.25	91.49	5,376.00
	09/30/16 09:19:13	8550	16.39	2.84	0.22	3.29	50.27	92.28	5,340.00
	09/30/16 09:19:43	8580	16.46	2.20	0.23	3.24	50.27	92.28	5,340.00
	09/30/16 09:20:13	8610	16.41	2.24	0.20	3.27	50.35	93.01	5,298.00
	09/30/16 09:20:43	8640	16.37	2.23	0.20	3.31	50.35	93.01	5,298.00
	09/30/16 09:21:13	8670	16.22	1.93	0.23	3.41	50.37	93.84	5,382.00
	09/30/16 09:21:43	8700	16.22	1.85	0.24	3.39	50.37	93.84	5,382.00
	09/30/16 09:22:13	8730	16.30	1.74	0.22	3.34	49.88	94.80	6,060.00
	09/30/16 09:22:43	8760	15.50	1.55	0.23	3.81	49.88	94.80	6,060.00
	09/30/16 09:23:13	8790	15.52	1.34	0.20	3.82	49.84	95.98	6,054.00
	09/30/16 09:23:43	8820	15.52	1.08	0.21	3.81	49.84	95.98	6,054.00
	09/30/16 09:24:13	8850	15.36	0.93	0.22	3.90	49.83	97.06	6,060.00
	09/30/16 09:24:43	8880	15.47	0.88	0.22	3.85	49.83	97.06	6,060.00
	09/30/16 09:25:13	8910	15.56	0.89	0.20	3.79	49.84	98.06	6,048.00
	09/30/16 09:25:43	8940	15.44	0.88	0.20	3.84	49.84	98.06	6,048.00
	09/30/16 09:26:13	8970	15.40	0.88	0.17	3.90	49.93	99.07	6,030.00
	09/30/16 09:26:43	9000	15.50	0.89	0.18	3.82	49.93	99.07	6,030.00
	09/30/16 09:27:13	9030	15.45	0.88	0.20	3.89	49.97	100.06	5,988.00
	09/30/16 09:27:43	9060	15.51	0.88	0.20	3.83	49.97	100.06	5,988.00
	09/30/16 09:28:13	9090	15.44	0.90	0.19	3.88	50.11	100.90	6,000.00
	09/30/16 09:28:43	9120	15.35	1.00	0.20	3.94	50.11	100.90	6,000.00
	09/30/16 09:29:13	9150	15.58	1.10	0.20	3.78	50.05	101.64	5,970.00
	09/30/16 09:29:43	9180	15.49	1.18	0.20	3.83	50.05	101.64	5,970.00
	09/30/16 09:30:13	9210	15.40	1.19	0.23	3.90	49.88	102.42	5,970.00
	09/30/16 09:30:43	9240	15.20	1.28	0.23	4.03	49.88	102.42	5,970.00
	09/30/16 09:31:13	9270	15.25	1.32	0.22	3.98	49.79	103.15	6,030.00
	09/30/16 09:31:43	9300	15.30	1.41	0.22	3.94	49.79	103.15	6,030.00
	09/30/16 09:32:13	9330	15.27	1.48	0.20	3.98	49.87	103.89	5,958.00
	09/30/16 09:32:43	9360	15.34	1.57	0.20	3.92	49.87	103.89	5,958.00
	09/30/16 09:33:13	9390	15.16	1.64	0.23	4.03	49.90	104.78	6,024.00
	09/30/16 09:33:43	9420	15.18	1.71	0.22	4.03	49.90	104.78	6,024.00
A2	09/30/16 09:34:13	9450	15.18	1.78	0.22	4.03	49.99	105.57	5,934.00
	09/30/16 09:34:43	9480	15.12	1.86	0.19	4.05	49.99	105.57	5,934.00
	09/30/16 09:35:13	9510	15.18	1.91	0.20	4.01	50.07	106.34	5,952.00
	09/30/16 09:35:43	9540	15.18	1.93	0.21	4.02	50.07	106.34	5,952.00
	09/30/16 09:36:13	9570	15.15	1.98	0.22	4.03	50.13	106.98	5,976.00
	09/30/16 09:36:43	9600	15.15	2.07	0.22	4.04	50.13	106.98	5,976.00
	09/30/16 09:37:13	9630	15.20	2.17	0.15	4.00	50.02	107.52	5,934.00
	09/30/16 09:37:43	9660	15.17	2.21	0.20	4.02	50.02	107.52	5,934.00
	09/30/16 09:38:13	9690	15.16	2.24	0.23	4.05	49.88	107.86	5,958.00
	09/30/16 09:38:43	9720	15.28	2.32	0.23	3.96	49.88	107.86	5,958.00
	09/30/16 09:39:13	9750	15.27	2.30	0.21	3.97	49.82	108.24	5,994.00
	09/30/16 09:39:43	9780	15.23	2.29	0.19	3.98	49.82	108.24	5,994.00
	09/30/16 09:40:13	9810	15.18	2.29	0.22	4.01	49.93	108.66	6,006.00
	09/30/16 09:40:43	9840	15.35	2.31	0.23	3.93	49.93	108.66	6,006.00
	09/30/16 09:41:13	9870	15.34	2.33	0.20	3.91	49.97	108.90	6,000.00
	09/30/16 09:41:43	9900	15.39	2.29	0.17	3.89	49.97	108.90	6,000.00
	09/30/16 09:42:13	9930	15.40	2.41	0.22	3.88	50.04	109.13	5,970.00
	09/30/16 09:42:43	9960	15.30	2.33	0.23	3.95	50.04	109.13	5,970.00
	09/30/16 09:43:13	9990	15.54	2.28	0.22	3.81	50.12	109.48	5,988.00

Coyote North USA INC.
COMB 48
Enid Facility

Unit Data

Meas. Stack Moisture	4.9	%
Stack Exhaust Flow (M2)	211,829	SCFH

Weather Data

Barometric Pressure	28.94	in. Hg
Relative Humidity	53	%
Ambient Temperature	66	^{o}F
Specific Humidity	0.007522	lb H_2O / lb air

90-100 Load, Run - COMB 48 R11

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
	09/30/16 09:43:43	10020	15.37	2.29	0.22	3.87	50.12	109.48	5,988.00
	09/30/16 09:44:13	10050	15.14	2.28	0.22	4.03	50.14	109.94	6,000.00
	09/30/16 09:44:43	10080	15.20	2.28	0.21	4.01	50.14	109.94	6,000.00
	09/30/16 09:45:13	10110	15.27	2.32	0.20	3.96	50.00	110.44	5,988.00
	09/30/16 09:45:43	10140	15.23	2.27	0.20	3.98	50.00	110.44	5,988.00
	09/30/16 09:46:13	10170	15.25	2.19	0.21	3.95	49.87	110.89	5,994.00
	09/30/16 09:46:43	10200	15.05	2.19	0.21	4.11	49.87	110.89	5,994.00
	09/30/16 09:47:13	10230	15.24	2.25	0.20	3.99	49.84	111.15	6,012.00
	09/30/16 09:47:43	10260	15.15	2.21	0.20	4.05	49.84	111.15	6,012.00
	09/30/16 09:48:13	10290	15.19	2.19	0.20	4.02	49.95	111.26	6,012.00
	09/30/16 09:48:43	10320	15.16	2.19	0.20	4.03	49.95	111.26	6,012.00
	09/30/16 09:49:13	10350	15.20	2.20	0.20	4.03	50.02	111.32	5,946.00
	09/30/16 09:49:43	10380	14.99	2.19	0.21	4.13	50.02	111.32	5,946.00
	09/30/16 09:50:13	10410	14.75	2.19	0.23	4.28	50.05	111.56	6,018.00
	09/30/16 09:50:43	10440	14.88	2.17	0.18	4.22	50.05	111.56	6,018.00
	09/30/16 09:51:13	10470	14.84	2.15	0.21	4.24	50.17	111.78	6,024.00
	09/30/16 09:51:43	10500	14.84	2.11	0.23	4.24	50.17	111.78	6,024.00
	09/30/16 09:52:13	10530	14.81	2.13	0.24	4.28	50.17	111.88	6,006.00
	09/30/16 09:52:43	10560	14.87	2.09	0.23	4.21	50.17	111.88	6,006.00
	09/30/16 09:53:13	10590	14.84	2.09	0.24	4.24	50.00	111.90	6,000.00
	09/30/16 09:53:43	10620	14.90	2.07	0.24	4.19	50.00	111.90	6,000.00
A3	09/30/16 09:54:13	10650	14.93	1.99	0.21	4.19	49.88	112.02	6,012.00
	09/30/16 09:54:43	10680	14.99	2.00	0.20	4.13	49.88	112.02	6,012.00
	09/30/16 09:55:13	10710	14.82	1.99	0.23	4.26	49.86	112.13	5,910.00
	09/30/16 09:55:43	10740	14.88	1.99	0.22	4.21	49.86	112.13	5,910.00
	09/30/16 09:56:13	10770	14.87	1.92	0.23	4.23	49.98	112.16	5,946.00
	09/30/16 09:56:43	10800	14.78	1.95	0.22	4.29	49.98	112.16	5,946.00
	09/30/16 09:57:13	10830	14.81	1.93	0.23	4.27	50.08	112.22	5,988.00
	09/30/16 09:57:43	10860	14.69	1.97	0.23	4.36	50.08	112.22	5,988.00
	09/30/16 09:58:13	10890	14.79	1.96	0.23	4.29	50.10	112.42	5,988.00
	09/30/16 09:58:43	10920	14.81	1.91	0.22	4.28	50.10	112.42	5,988.00
	09/30/16 09:59:13	10950	14.91	1.93	0.23	4.20	50.22	112.64	5,928.00
	09/30/16 09:59:43	10980	14.88	1.89	0.23	4.23	50.22	112.64	5,928.00
	09/30/16 10:00:13	11010	14.66	1.83	0.23	4.37	50.19	112.82	5,958.00
	09/30/16 10:00:43	11040	14.68	1.80	0.24	4.37	50.19	112.82	5,958.00
	09/30/16 10:01:13	11070	14.59	1.81	0.23	4.42	50.03	112.85	5,952.00
	09/30/16 10:01:43	11100	14.69	1.89	0.23	4.36	50.03	112.85	5,952.00
	09/30/16 10:02:13	11130	14.72	1.90	0.20	4.34	49.91	112.74	5,916.00
	09/30/16 10:02:43	11160	14.47	1.89	0.16	4.48	49.91	112.74	5,916.00
	09/30/16 10:03:13	11190	14.36	1.82	0.21	4.61	49.91	112.53	5,988.00
	09/30/16 10:03:43	11220	14.51	1.82	0.21	4.46	49.91	112.53	5,988.00
	09/30/16 10:04:13	11250	14.59	1.77	0.21	4.45	50.03	112.17	5,982.00
	09/30/16 10:04:43	11280	14.46	1.72	0.21	4.50	50.03	112.17	5,982.00
	09/30/16 10:05:13	11310	14.60	1.70	0.21	4.43	50.13	111.91	5,970.00
	09/30/16 10:05:43	11340	14.62	1.69	0.18	4.41	50.13	111.91	5,970.00
	09/30/16 10:06:13	11370	14.62	1.69	0.20	4.41	50.14	111.86	5,982.00
	09/30/16 10:06:43	11400	14.42	1.69	0.22	4.52	50.14	111.86	5,982.00
	09/30/16 10:07:13	11430	14.48	1.69	0.23	4.53	50.25	111.82	5,940.00
	09/30/16 10:07:43	11460	14.62	1.63	0.23	4.40	50.25	111.82	5,940.00
	09/30/16 10:08:13	11490	14.56	1.58	0.19	4.44	50.19	111.81	6,012.00
	09/30/16 10:08:43	11520	14.63	1.56	0.20	4.41	50.19	111.81	6,012.00
	09/30/16 10:09:13	11550	14.62	1.51	0.19	4.40	50.01	111.90	6,006.00
	09/30/16 10:09:43	11580	14.69	1.50	0.20	4.35	50.01	111.90	6,006.00
	09/30/16 10:10:13	11610	14.77	1.49	0.23	4.31	49.90	112.06	5,952.00
	09/30/16 10:10:43	11640	14.72	1.41	0.23	4.35	49.90	112.06	5,952.00
	09/30/16 10:11:13	11670	14.98	1.39	0.20	4.16	49.94	111.97	6,000.00
	09/30/16 10:11:43	11700	14.90	1.39	0.20	4.22	49.94	111.97	6,000.00
	09/30/16 10:12:13	11730	14.89	1.39	0.23	4.22	50.06	111.85	5,940.00
	09/30/16 10:12:43	11760	14.94	1.38	0.24	4.19	50.06	111.85	5,940.00
	09/30/16 10:13:13	11790	14.80	1.39	0.23	4.28	50.08	111.71	6,054.00
	09/30/16 10:13:43	11820	14.82	1.38	0.23	4.31	50.08	111.71	6,054.00

Coyote North USA INC.
COMB 48
Enid Facility

Unit Data

Meas. Stack Moisture	4.9	%
Stack Exhaust Flow (M2)	211,829	SCFH

Weather Data

Barometric Pressure	28.94	in. Hg
Relative Humidity	53	%
Ambient Temperature	66	^{o}F
Specific Humidity	0.007522	lb H_2O / lb air

90-100 Load, Run - COMB 48 R11

Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
09/30/16 10:14:13	11850	14.78	1.38	0.22	4.27	50.18	111.63	5,958.00
09/30/16 10:14:43	11880	14.73	1.38	0.23	4.35	50.18	111.63	5,958.00
09/30/16 10:15:13	11910	14.92	1.38	0.21	4.21	50.28	111.43	6,000.00
09/30/16 10:15:43	11940	14.99	1.37	0.20	4.17	50.28	111.43	6,000.00
09/30/16 10:16:13	11970	14.78	1.29	0.21	4.28	50.14	111.22	5,982.00
09/30/16 10:16:43	12000	15.05	1.29	0.22	4.16	50.14	111.22	5,982.00
09/30/16 10:17:13	12030	14.92	1.29	0.21	4.19	49.99	111.17	5,988.00
09/30/16 10:17:43	12060	14.93	1.29	0.21	4.20	49.99	111.17	5,988.00
09/30/16 10:18:13	12090	14.75	1.32	0.21	4.31	49.93	111.28	5,946.00
09/30/16 10:18:43	12120	14.63	1.28	0.21	4.43	49.93	111.28	5,946.00
09/30/16 10:19:13	12150	14.69	1.32	0.23	4.34	50.04	111.27	5,988.00
09/30/16 10:19:43	12180	14.74	1.29	0.20	4.34	50.04	111.27	5,988.00
09/30/16 10:20:13	12210	14.75	1.21	0.23	4.31	50.14	111.09	5,988.00
09/30/16 10:20:43	12240	14.70	1.28	0.22	4.35	50.14	111.09	5,988.00
09/30/16 10:21:13	12270	14.84	1.31	0.20	4.28	50.28	111.08	5,964.00
09/30/16 10:21:43	12300	14.70	1.26	0.20	4.36	50.28	111.08	5,964.00
09/30/16 10:22:13	12330	14.70	1.20	0.23	4.35	50.28	111.16	5,970.00
09/30/16 10:22:43	12360	14.59	1.19	0.23	4.43	50.28	111.16	5,970.00
09/30/16 10:23:13	12390	14.44	1.21	0.22	4.52	50.28	111.25	5,970.00
RAW AVERAGE		**15.18**	**1.95**	**0.21**	**4.04**	**50.06**	**106.53**	**5,904.13**

		O_2	CO	THC	CO_2	Press. Trans	Temp. Trans.	F-Flow Trans.
	Serial Number:	INSTO2-0011	INST-CO-0022	INST-TH-0002	INST-C2-0013	2104497-025	2104497-025	2104497-025
		(%)	(ppmvd)	(ppmvw)	(%)	(in. H_2O)	(^{o}F)	(SCFH)
Bias	Initial Zero	0.08	-0.06	-0.05	0.07			
	Final Zero	0.06	-0.03	-0.06	0.08			
	Avg. Zero	0.07	-0.05	-0.06	0.08			
	Initial UpScale	12.04	9.30	3.09	8.86			
	Final UpScale	12.02	9.35	3.00	8.86			
	Avg. UpScale	12.03	9.33	3.05	8.86			
Upscale Cal Gas		11.90	9.44	3.00	8.95			

EMISSIONS DATA	O_2	CO	THC	CO_2
Corrected Raw Average (ppm/% dry basis)	15.03	2.01	0.26	4.04
Corrected Raw Average (ppm/% wet basis)	14.29	1.92	0.25	3.84
Emission Rate (lb/hr)	N/A	0.03	0.01	N/A

Coyote North USA INC.
September 30, 2016
COMB 48
Enid Facility

Unit Data

Meas. Stack Moisture	4.7	%
Stack Exhaust Flow (M2)	211,195	SCFH

Weather Data

Barometric Pressure	28.88	in. Hg
Relative Humidity	39	%
Ambient Temperature	80	°F
Specific Humidity	0.008714	lb H_2O / lb air

90-100 Load, Run - COMB 48 R12

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. °F	Fuel Flow SCFH
A1	09/30/16 12:50:13	21210	16.46	3.52	0.22	3.21	50.99	97.78	5,310.00
	09/30/16 12:50:43	21240	16.58	3.43	0.20	3.13	50.99	97.78	5,310.00
	09/30/16 12:51:13	21270	16.39	3.42	0.20	3.26	50.86	98.67	5,352.00
	09/30/16 12:51:43	21300	16.40	3.42	0.17	3.24	50.86	98.67	5,352.00
	09/30/16 12:52:13	21330	16.31	3.40	0.23	3.31	50.80	99.62	5,424.00
	09/30/16 12:52:43	21360	16.25	3.46	0.23	3.34	50.80	99.62	5,424.00
	09/30/16 12:53:13	21390	16.35	3.39	0.22	3.28	50.86	100.42	5,232.00
	09/30/16 12:53:43	21420	16.44	3.47	0.22	3.23	50.86	100.42	5,232.00
	09/30/16 12:54:13	21450	16.66	3.55	0.23	3.09	50.71	101.12	5,382.00
	09/30/16 12:54:43	21480	16.51	3.60	0.23	3.12	50.71	101.12	5,382.00
	09/30/16 12:55:13	21510	16.21	3.39	0.22	3.41	50.71	101.99	5,406.00
	09/30/16 12:55:43	21540	16.56	3.38	0.22	3.13	50.71	101.99	5,406.00
	09/30/16 12:56:13	21570	16.34	3.57	0.24	3.28	50.75	102.95	5,388.00
	09/30/16 12:56:43	21600	16.35	3.27	0.24	3.31	50.75	102.95	5,388.00
	09/30/16 12:57:13	21630	16.40	3.04	0.23	3.24	50.74	103.98	5,448.00
	09/30/16 12:57:43	21660	16.37	3.03	0.22	3.26	50.74	103.98	5,448.00
	09/30/16 12:58:13	21690	16.41	3.09	0.20	3.26	50.77	104.93	5,568.00
	09/30/16 12:58:43	21720	16.48	3.17	0.20	3.18	50.77	104.93	5,568.00
	09/30/16 12:59:13	21750	16.44	3.18	0.23	3.20	50.64	105.78	5,808.00
	09/30/16 12:59:43	21780	15.97	3.13	0.23	3.50	50.64	105.78	5,808.00
	09/30/16 13:00:13	21810	15.76	3.06	0.21	3.57	50.59	106.57	5,946.00
	09/30/16 13:00:43	21840	15.57	2.62	0.21	3.78	50.59	106.57	5,946.00
	09/30/16 13:01:13	21870	15.90	2.09	0.19	3.52	50.47	107.41	6,096.00
	09/30/16 13:01:43	21900	15.47	1.95	0.18	3.79	50.47	107.41	6,096.00
	09/30/16 13:02:13	21930	15.46	1.91	0.14	3.80	50.56	108.26	5,880.00
	09/30/16 13:02:43	21960	15.56	1.84	0.20	3.70	50.56	108.26	5,880.00
	09/30/16 13:03:13	21990	15.61	1.83	0.18	3.70	50.60	109.06	6,012.00
	09/30/16 13:03:43	22020	15.70	1.92	0.21	3.67	50.60	109.06	6,012.00
	09/30/16 13:04:13	22050	15.58	2.03	0.18	3.72	50.63	109.80	6,078.00
	09/30/16 13:04:43	22080	15.31	2.13	0.19	3.91	50.63	109.80	6,078.00
	09/30/16 13:05:13	22110	15.35	2.18	0.17	3.88	50.73	110.21	6,000.00
	09/30/16 13:05:43	22140	15.53	2.22	0.22	3.77	50.73	110.21	6,000.00
	09/30/16 13:06:13	22170	15.64	2.30	0.21	3.69	50.72	110.57	5,994.00
	09/30/16 13:06:43	22200	15.53	2.40	0.21	3.75	50.72	110.57	5,994.00
	09/30/16 13:07:13	22230	15.76	2.42	0.21	3.64	50.59	111.11	6,030.00
	09/30/16 13:07:43	22260	15.50	2.46	0.19	3.77	50.59	111.11	6,030.00
	09/30/16 13:08:13	22290	15.42	2.51	0.22	3.83	50.50	111.58	6,060.00
	09/30/16 13:08:43	22320	15.63	2.51	0.22	3.70	50.50	111.58	6,060.00
	09/30/16 13:09:13	22350	15.21	2.48	0.16	3.92	50.56	112.07	6,036.00
	09/30/16 13:09:43	22380	15.32	2.57	0.15	3.92	50.56	112.07	6,036.00
	09/30/16 13:10:13	22410	15.32	2.61	0.19	3.88	50.57	112.59	6,030.00
A2	09/30/16 13:10:43	22440	15.43	2.66	0.23	3.80	50.57	112.59	6,030.00
	09/30/16 13:11:13	22470	15.01	2.72	0.16	4.05	50.62	113.10	6,012.00
	09/30/16 13:11:43	22500	14.94	2.71	0.16	4.15	50.62	113.10	6,012.00
	09/30/16 13:12:13	22530	15.06	2.61	0.12	4.01	50.68	113.43	6,006.00
	09/30/16 13:12:43	22560	15.26	2.60	0.21	3.89	50.68	113.43	6,006.00
	09/30/16 13:13:13	22590	15.39	2.73	0.19	3.83	50.75	113.69	6,042.00
	09/30/16 13:13:43	22620	15.33	2.82	0.16	3.85	50.75	113.69	6,042.00
	09/30/16 13:14:13	22650	15.07	2.93	0.18	4.02	50.70	113.76	6,096.00
	09/30/16 13:14:43	22680	15.03	2.93	0.15	4.04	50.70	113.76	6,096.00
	09/30/16 13:15:13	22710	15.33	2.90	0.20	3.89	50.57	113.79	6,084.00
	09/30/16 13:15:43	22740	15.40	2.92	0.16	3.81	50.57	113.79	6,084.00
	09/30/16 13:16:13	22770	15.15	3.06	0.15	3.98	50.52	113.91	6,060.00
	09/30/16 13:16:43	22800	15.08	3.12	0.18	4.03	50.52	113.91	6,060.00
	09/30/16 13:17:13	22830	15.35	3.00	0.18	3.86	50.56	113.99	6,090.00
	09/30/16 13:17:43	22860	15.28	2.98	0.11	3.90	50.56	113.99	6,090.00
	09/30/16 13:18:13	22890	15.30	2.99	0.15	3.87	50.57	113.98	6,168.00
	09/30/16 13:18:43	22920	15.34	3.02	0.14	3.87	50.57	113.98	6,168.00
	09/30/16 13:19:13	22950	14.98	3.04	0.13	4.08	50.61	114.07	6,060.00
	09/30/16 13:19:43	22980	15.04	3.08	0.13	4.05	50.61	114.07	6,060.00

Coyote North USA INC.
September 30, 2016
COMB 48
Enid Facility

Unit Data

Meas. Stack Moisture	4.7	%
Stack Exhaust Flow (M2)	211,195	SCFH

Weather Data

Barometric Pressure	28.88	in. Hg
Relative Humidity	39	%
Ambient Temperature	80	°F
Specific Humidity	0.008714	lb H_2O / lb air

90-100 Load, Run - COMB 48 R12

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. °F	Fuel Flow SCFH
	09/30/16 13:20:13	23010	14.85	3.06	0.10	4.18	50.67	114.39	5,940.00
	09/30/16 13:20:43	23040	15.03	3.01	0.10	4.05	50.67	114.39	5,940.00
	09/30/16 13:21:13	23070	14.86	3.09	0.13	4.15	50.71	114.56	6,186.00
	09/30/16 13:21:43	23100	14.60	3.16	0.13	4.35	50.71	114.56	6,186.00
	09/30/16 13:22:13	23130	15.02	3.19	0.13	4.06	50.62	114.63	6,006.00
	09/30/16 13:22:43	23160	14.90	3.13	0.13	4.12	50.62	114.63	6,006.00
	09/30/16 13:23:13	23190	14.87	3.00	0.11	4.17	50.51	114.81	6,042.00
	09/30/16 13:23:43	23220	14.97	2.98	0.11	4.10	50.51	114.81	6,042.00
	09/30/16 13:24:13	23250	14.74	3.01	0.14	4.18	50.48	115.15	6,030.00
	09/30/16 13:24:43	23280	14.28	3.09	0.12	4.60	50.48	115.15	6,030.00
	09/30/16 13:25:13	23310	14.76	3.18	0.11	4.29	50.54	115.66	6,228.00
	09/30/16 13:25:43	23340	14.68	3.19	0.10	4.30	50.54	115.66	6,228.00
	09/30/16 13:26:13	23370	14.69	3.09	0.13	4.30	50.56	116.28	5,946.00
	09/30/16 13:26:43	23400	14.75	2.86	0.13	4.27	50.56	116.28	5,946.00
	09/30/16 13:27:13	23430	14.64	2.71	0.12	4.29	50.61	116.81	6,012.00
	09/30/16 13:27:43	23460	14.82	2.56	0.12	4.21	50.61	116.81	6,012.00
	09/30/16 13:28:13	23490	14.85	2.51	0.11	4.18	50.71	117.35	6,030.00
	09/30/16 13:28:43	23520	14.85	2.46	0.12	4.17	50.71	117.35	6,030.00
	09/30/16 13:29:13	23550	14.90	2.41	0.13	4.14	50.71	117.75	5,850.00
	09/30/16 13:29:43	23580	15.01	2.33	0.12	4.06	50.71	117.75	5,850.00
	09/30/16 13:30:13	23610	14.97	2.40	0.13	4.12	50.58	117.94	6,042.00
A3	09/30/16 13:30:43	23640	15.06	2.34	0.13	4.05	50.58	117.94	6,042.00
	09/30/16 13:31:13	23670	15.21	2.27	0.15	3.97	50.49	118.06	6,132.00
	09/30/16 13:31:43	23700	15.16	2.18	0.15	3.97	50.49	118.06	6,132.00
	09/30/16 13:32:13	23730	15.02	2.10	0.09	4.09	50.47	118.22	6,066.00
	09/30/16 13:32:43	23760	15.08	2.09	0.15	4.03	50.47	118.22	6,066.00
	09/30/16 13:33:13	23790	15.07	2.06	0.15	4.03	50.53	118.44	6,354.00
	09/30/16 13:33:43	23820	15.02	2.02	0.16	4.07	50.53	118.44	6,354.00
	09/30/16 13:34:13	23850	15.09	2.03	0.17	4.03	50.57	118.85	6,048.00
	09/30/16 13:34:43	23880	15.15	2.02	0.16	3.99	50.57	118.85	6,048.00
	09/30/16 13:35:13	23910	15.19	1.94	0.14	3.98	50.61	119.18	6,126.00
	09/30/16 13:35:43	23940	15.20	1.88	0.13	3.97	50.61	119.18	6,126.00
	09/30/16 13:36:13	23970	15.20	1.92	0.16	3.97	50.72	119.47	6,024.00
	09/30/16 13:36:43	24000	15.29	1.92	0.15	3.91	50.72	119.47	6,024.00
	09/30/16 13:37:13	24030	15.23	1.89	0.14	3.94	50.72	119.52	6,048.00
	09/30/16 13:37:43	24060	15.10	1.97	0.14	4.02	50.72	119.52	6,048.00
	09/30/16 13:38:13	24090	15.20	1.99	0.13	3.98	50.59	119.36	6,108.00
	09/30/16 13:38:43	24120	15.27	2.00	0.13	3.93	50.59	119.36	6,108.00
	09/30/16 13:39:13	24150	15.30	1.99	0.21	3.92	50.51	119.10	6,036.00
	09/30/16 13:39:43	24180	15.19	1.99	0.14	3.98	50.51	119.10	6,036.00
	09/30/16 13:40:13	24210	15.23	1.94	0.14	3.96	50.53	118.87	5,994.00
	09/30/16 13:40:43	24240	15.18	1.95	0.14	3.97	50.53	118.87	5,994.00
	09/30/16 13:41:13	24270	15.21	1.92	0.15	3.97	50.63	118.68	6,042.00
	09/30/16 13:41:43	24300	15.07	1.93	0.19	4.06	50.63	118.68	6,042.00
	09/30/16 13:42:13	24330	15.15	1.93	0.16	4.01	50.66	118.67	6,018.00
	09/30/16 13:42:43	24360	15.16	1.92	0.13	4.00	50.66	118.67	6,018.00
	09/30/16 13:43:13	24390	14.99	1.97	0.10	4.11	50.70	118.88	6,060.00
	09/30/16 13:43:43	24420	15.06	1.91	0.16	4.06	50.70	118.88	6,060.00
	09/30/16 13:44:13	24450	15.09	1.88	0.20	4.04	50.77	119.04	6,018.00
	09/30/16 13:44:43	24480	15.05	1.92	0.19	4.06	50.77	119.04	6,018.00
	09/30/16 13:45:13	24510	15.05	1.90	0.11	4.08	50.73	119.23	6,024.00
	09/30/16 13:45:43	24540	15.13	1.85	0.14	4.02	50.73	119.23	6,024.00
	09/30/16 13:46:13	24570	15.07	1.82	0.16	4.05	50.67	119.26	5,772.00
	09/30/16 13:46:43	24600	15.15	1.88	0.20	4.04	50.67	119.26	5,772.00
	09/30/16 13:47:13	24630	15.35	1.91	0.16	3.91	50.59	118.87	5,862.00
	09/30/16 13:47:43	24660	15.35	1.96	0.15	3.90	50.59	118.87	5,862.00
	09/30/16 13:48:13	24690	15.13	2.02	0.13	4.01	50.56	118.49	6,030.00
	09/30/16 13:48:43	24720	15.11	2.00	0.14	4.06	50.56	118.49	6,030.00
	09/30/16 13:49:13	24750	14.88	1.84	0.16	4.20	50.72	118.52	5,874.00
	09/30/16 13:49:43	24780	15.18	1.79	0.17	4.01	50.72	118.52	5,874.00

Coyote North USA INC.
September 30, 2016
COMB 48
Enid Facility

Unit Data

Meas. Stack Moisture	4.7	%
Stack Exhaust Flow (M2)	211,195	SCFH

Weather Data

Barometric Pressure	28.88	in. Hg
Relative Humidity	39	%
Ambient Temperature	80	°F
Specific Humidity	0.008714	lb H_2O / lb air

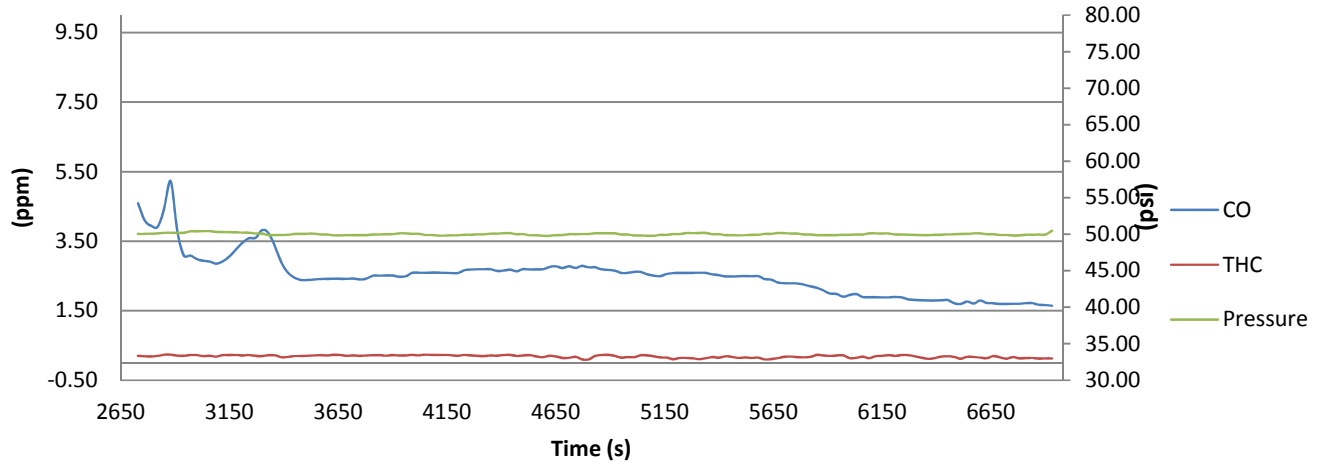
90-100 Load, Run - COMB 48 R12

Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. °F	Fuel Flow SCFH
09/30/16 13:50:13	24810	15.33	1.82	0.16	3.93	50.71	118.74	5,928.00
09/30/16 13:50:43	24840	15.25	1.84	0.11	3.95	50.71	118.74	5,928.00
09/30/16 13:51:13	24870	15.09	2.00	0.16	4.06	50.75	118.71	5,904.00
09/30/16 13:51:43	24900	14.99	1.98	0.15	4.11	50.75	118.71	5,904.00
09/30/16 13:52:13	24930	15.13	1.77	0.18	4.05	50.78	118.60	5,862.00
09/30/16 13:52:43	24960	15.08	1.66	0.11	4.04	50.78	118.60	5,862.00
09/30/16 13:53:13	24990	15.00	1.62	0.12	4.12	50.69	118.70	5,802.00
09/30/16 13:53:43	25020	15.13	1.65	0.11	4.04	50.69	118.70	5,802.00
09/30/16 13:54:13	25050	15.11	1.59	0.10	4.04	50.61	118.69	5,880.00
09/30/16 13:54:43	25080	15.05	1.59	0.10	4.08	50.61	118.69	5,880.00
09/30/16 13:55:13	25110	15.21	1.62	0.12	3.96	50.54	118.43	5,958.00
09/30/16 13:55:43	25140	14.76	1.62	0.11	4.25	50.54	118.43	5,958.00
09/30/16 13:56:13	25170	14.94	1.53	0.12	4.18	50.63	118.17	5,838.00
09/30/16 13:56:43	25200	14.89	1.48	0.13	4.14	50.63	118.17	5,838.00
09/30/16 13:57:13	25230	14.90	1.48	0.13	4.19	50.72	118.01	5,874.00
09/30/16 13:57:43	25260	14.84	1.54	0.12	4.22	50.72	118.01	5,874.00
09/30/16 13:58:13	25290	14.84	1.56	0.10	4.21	50.62	118.07	6,072.00
09/30/16 13:58:43	25320	14.99	1.51	0.12	4.11	50.62	118.07	6,072.00
09/30/16 13:59:13	25350	14.59	1.58	0.11	4.39	50.78	118.26	5,904.00
09/30/16 13:59:43	25380	14.79	1.57	0.11	4.27	50.78	118.26	5,904.00
09/30/16 14:00:13	25410	14.58	1.48	0.12	4.36	50.85	118.32	5,838.00
RAW AVERAGE		**15.31**	**2.42**	**0.16**	**3.90**	**50.65**	**113.87**	**5,928.89**

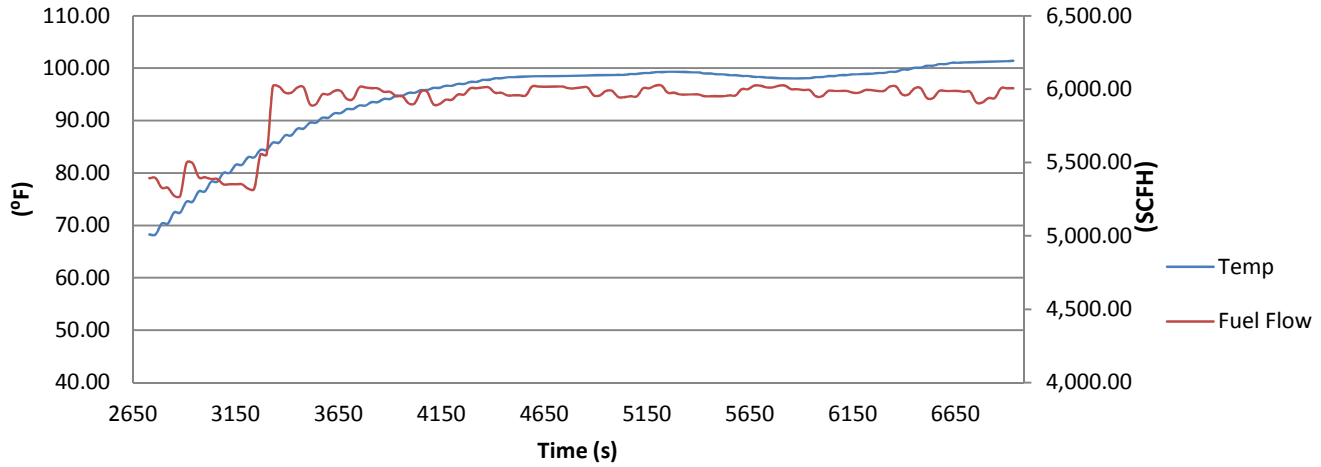
		O_2	CO	THC	CO_2	Press. Trans	Temp. Trans.	F-Flow Trans.
	Serial Number:	INSTO2-0011	INST-CO-0022	INST-TH-0002	INST-C2-0013	2104497-025	2104497-025	2104497-025
		(%)	(ppmvd)	(ppmvw)	(%)	(in. H_2O)	(°F)	(SCFH)
Bias	Initial Zero	0.06	-0.03	-0.06	0.08			
	Final Zero	0.06	0.12	-0.03	0.06			
	Avg. Zero	0.06	0.05	-0.05	0.07			
	Initial UpScale	12.02	9.35	3.00	8.86			
	Final UpScale	11.97	9.40	3.02	8.80			
	Avg. UpScale	12.00	9.38	3.01	8.83			
Upscale Cal Gas		11.90	9.44	3.00	8.95			

EMISSIONS DATA	O_2	CO	THC	CO_2
Corrected Raw Average (ppm/% dry basis)	15.21	2.41	0.20	3.92
Corrected Raw Average (ppm/% wet basis)	14.49	2.29	0.19	3.73
Emission Rate (lb/hr)	N/A	0.04	0.00	N/A

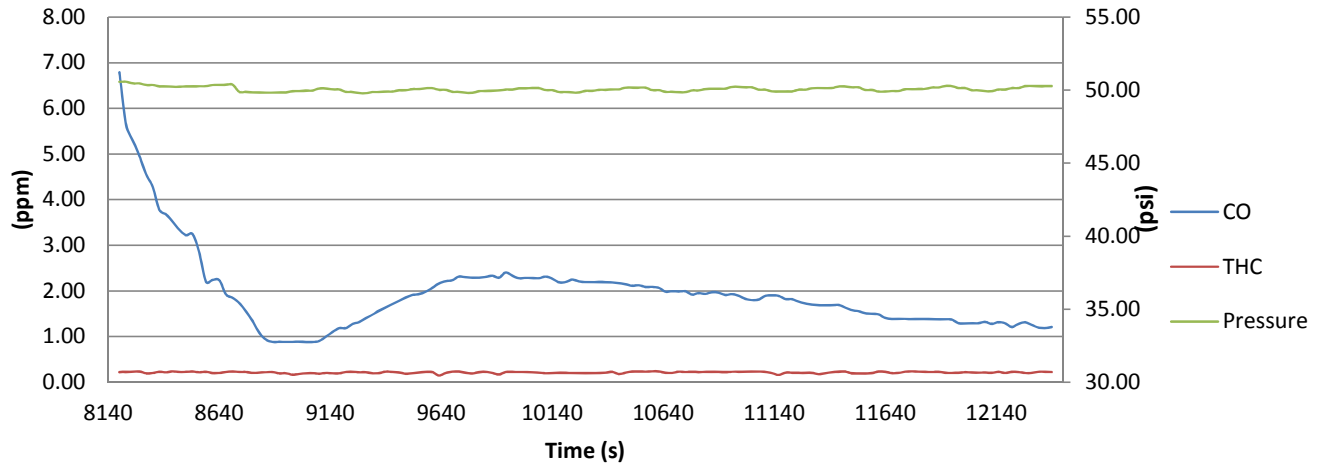
COMB 48 R10



COMB 48 R10



COMB 48 R11



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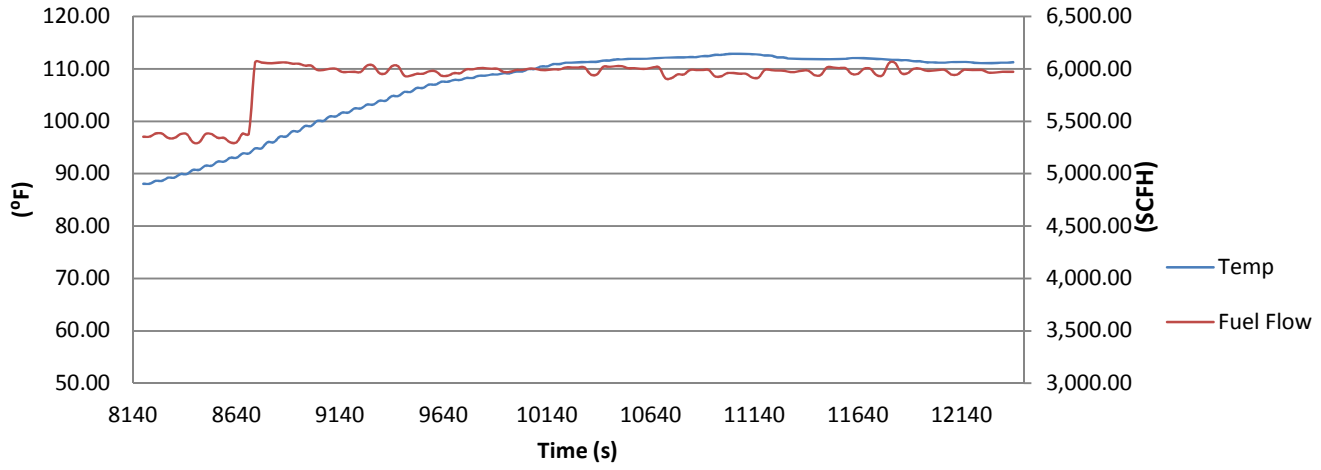
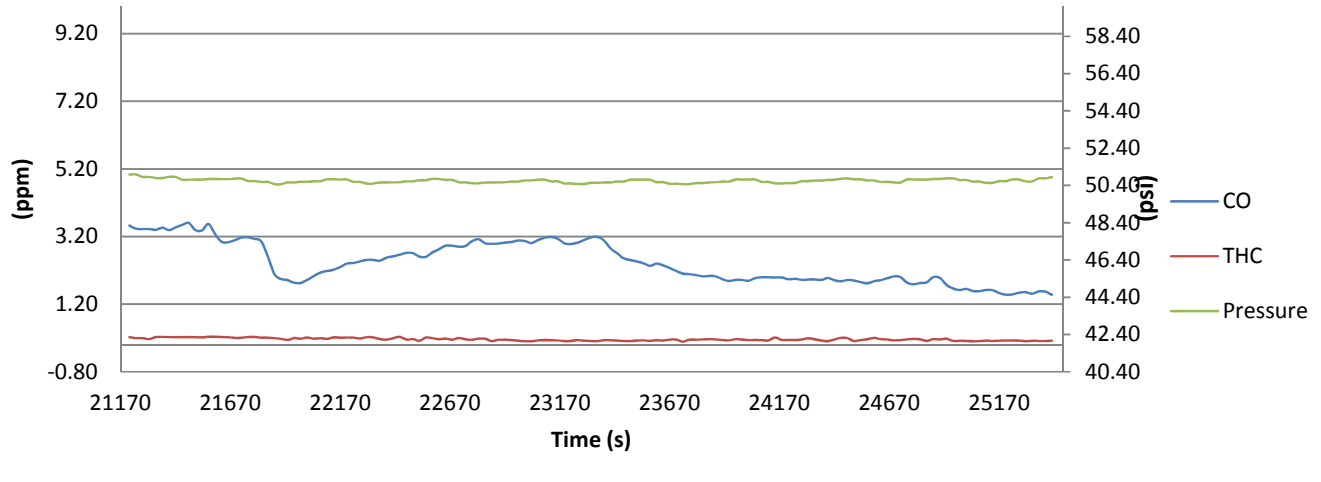


COMB 48 R12



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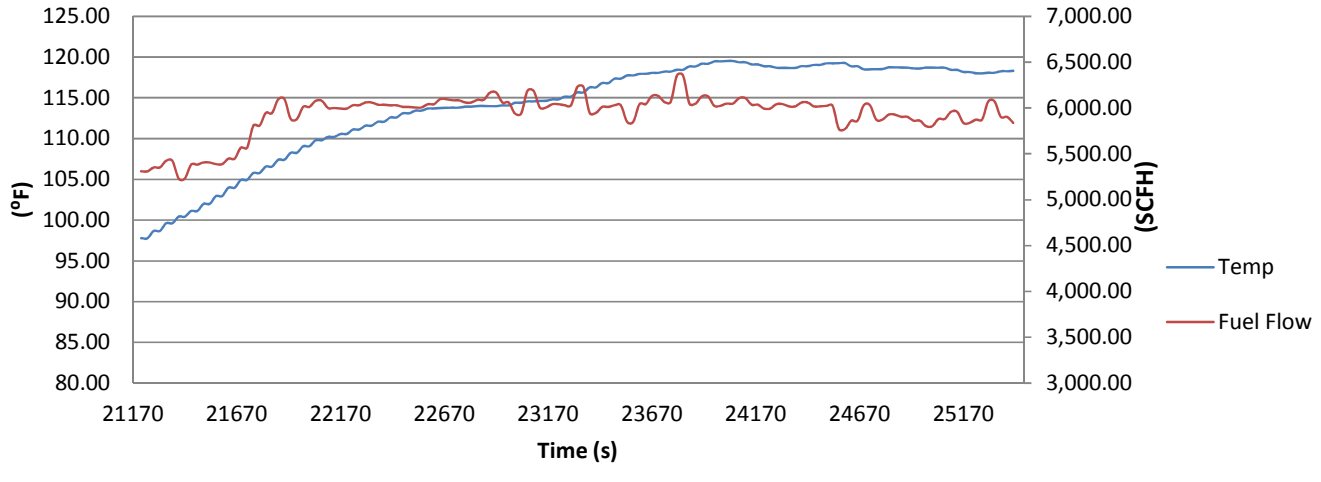
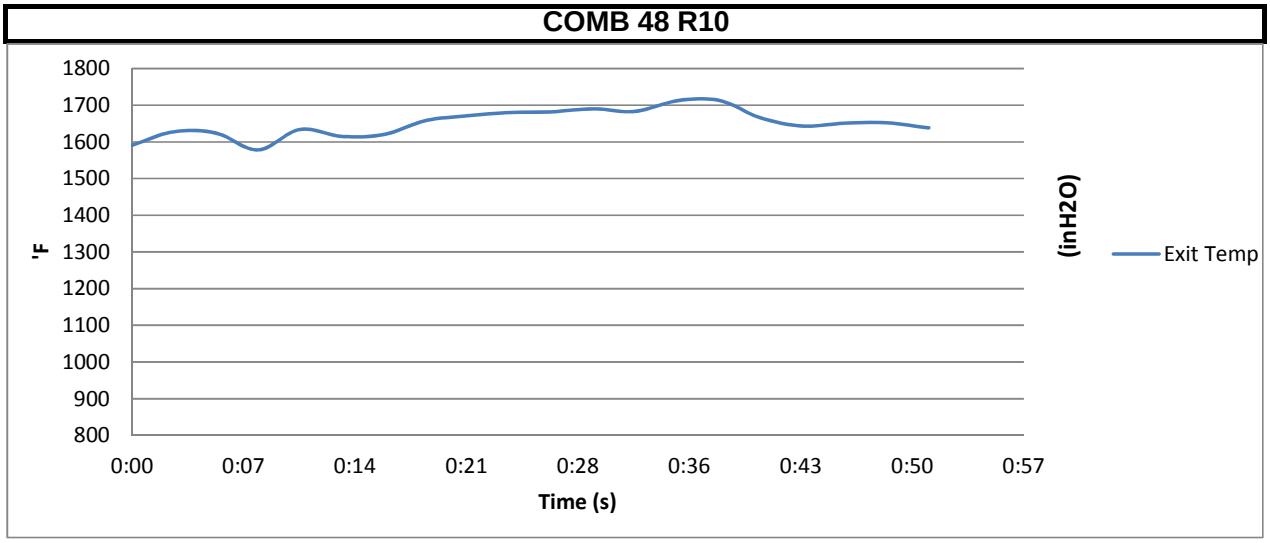
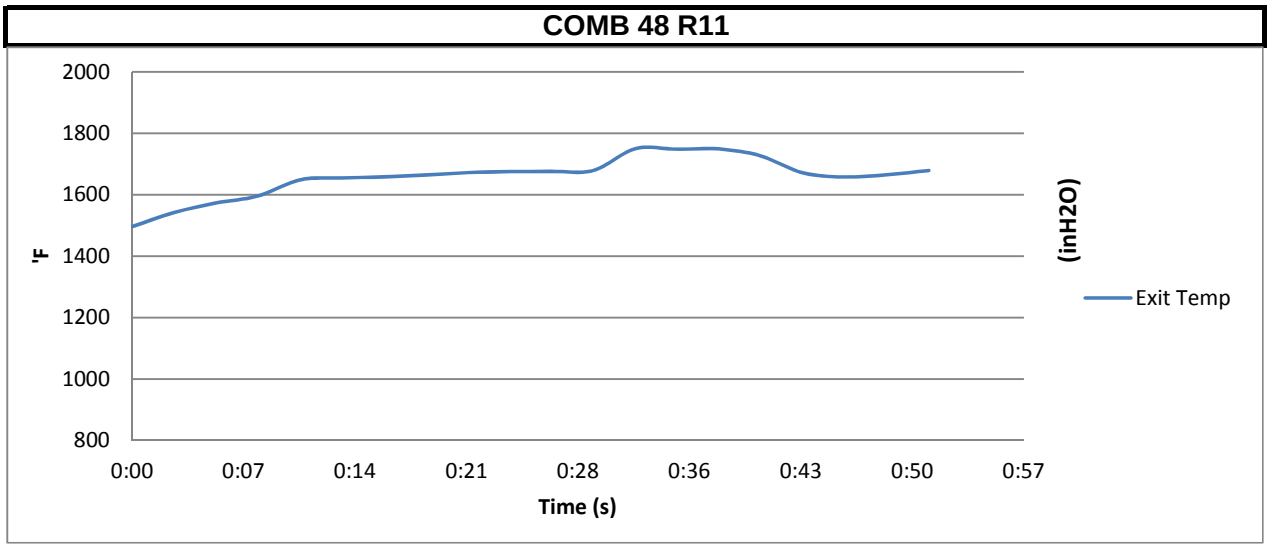



COMB 48 R10
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
'F
0:00
0:07
0:14
0:21
0:28
0:36
0:43
0:50
0:57
Time (s)
(inH2O)
Exit Temp


COMB 48 R11
2000
1800
1600
1400
1200
1000
800
'F
0:00
0:07
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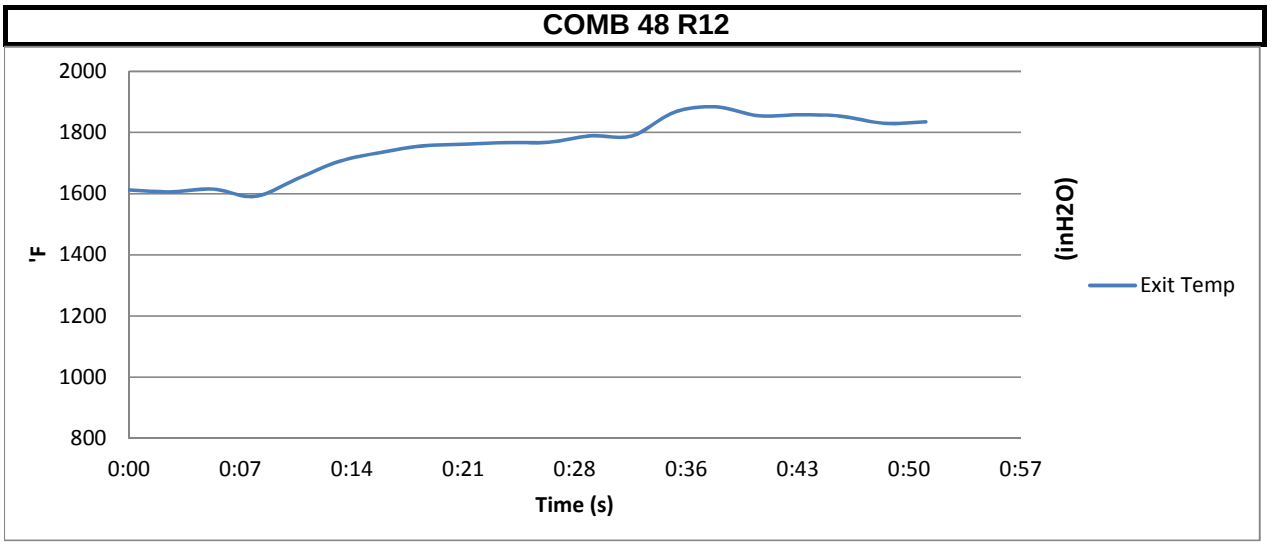
0:21
0:28
0:36
0:43
0:50
0:57
Time (s)
(inH2O)
Exit Temp


COMB 48 R12
2000
1800
1600
1400
1200
1000
800
'F
0:00
0:07
0:14
0:21
0:28
0:36
0:43
0:50
0:57
Time (s)
(inH2O)
Exit Temp

EMISSION DATA RECORDS

VISUAL EMISSION RECORD

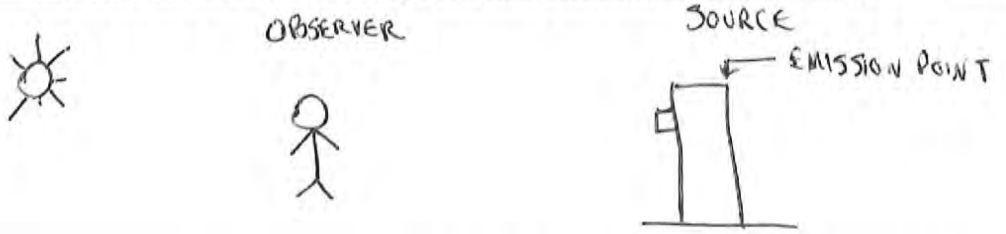
METHOD 22
FUGITIVE OR SMOKE EMISSION
INSPECTION FORM

R1

AIR HYGIENE

COMPANY: Coyote North Ltd **LOCATION:** Enid Facility **COMPANY REP:** Brent Willey	**OBSERVER:** Raj Kumar **AFFILIATION:** Air Hygiene **DATE:** 9/27/2016
SKY CONDITIONS: CLEAR **PRECIPITATION:** NONE	**WIND DIRECTION:** NW **WIND SPEED:** 5 mph
INDUSTRY: Manufacturing	**PROCESS UNIT:** COMB 48

SKETCH PROCESS UNIT: INDICATE OBSERVER POSITION RELATIVE TO SOURCE; INDICATE POTENTIAL EMISSION POINTS AND/OR ACTUAL EMISSION POINTS.



OBSERVATIONS

CLOCK TIME	OBSERVATION PERIOD DURACTION (MIN:SEC)	ACCUMULATION EMISSION TIME (MIN:SEC)	OBSERVATION LOCATION
11:16	20:00	00:00	NE
11:36	5:00	Break	
11:41	20:00	00:00	
12:01	5:00	Break	
12:06	20:00	00:00	
12:26			

M. B. Bharatthwaj Kumar
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9.27.2016 11:52

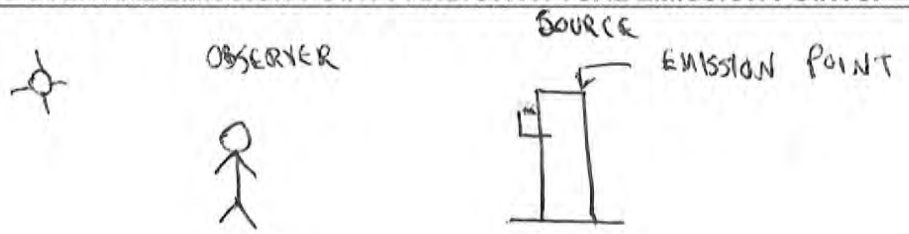
METHOD 22
FUGITIVE OR SMOKE EMISSION
INSPECTION FORM

R2

AIR HYGIENE

COMPANY: Coyote North Ltd **LOCATION:** Enid Facility **COMPANY REP:** Brent Willey	**OBSERVER:** Raj Kumar **AFFILIATION:** Air Hygiene **DATE:** 9/27/2016
SKY CONDITIONS: CLEAR **PRECIPITATION:** NONE	**WIND DIRECTION:** SW **WIND SPEED:** 7 mph
INDUSTRY: Manufacturing	**PROCESS UNIT:** COMB 48

SKETCH PROCESS UNIT: INDICATE OBSERVER POSITION RELATIVE TO SOURCE; INDICATE POTENTIAL EMISSION POINTS AND/OR ACTUAL EMISSION POINTS.



OBSERVATIONS

CLOCK TIME	OBSERVATION PERIOD DURACTION (MIN:SEC)	ACCUMULATION EMISSION TIME (MIN:SEC)	OBSERVATION LOCATION
13:14	20:00	00:00	NE
13:34	5:00	Break	
13:39	20:00	00:00	
13:59	5:00	Break	
14:04	20:00	00:00	
14:24			

M. B. Bhavathiraghavan
SIGNATURE

27 . 2016 13 : 50

METHOD 22
FUGITIVE OR SMOKE EMISSION
INSPECTION FORM

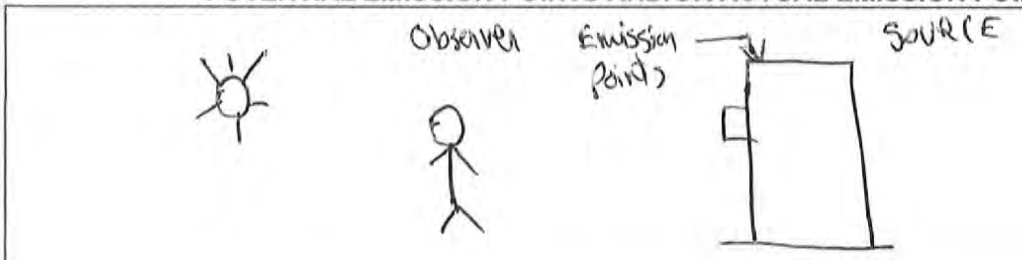
R3

0-30-0 %

AIR HYGIENE

COMPANY: Coyote North Ltd **LOCATION:** Enid Facility **COMPANY REP:** Brent Willey	**OBSERVER:** Raj Kumar **AFFILIATION:** Air Hygiene **DATE:** 9/27/2016
SKY CONDITIONS: CLEAR **PRECIPITATION:** NONE	**WIND DIRECTION:** SW **WIND SPEED:** 8 mph
INDUSTRY: Manufacturing	**PROCESS UNIT:** COMB 48

SKETCH PROCESS UNIT: INDICATE OBSERVER POSITION RELATIVE TO SOURCE; INDICATE POTENTIAL EMISSION POINTS AND/OR ACTUAL EMISSION POINTS.



OBSERVATIONS

CLOCK TIME	OBSERVATION PERIOD DURACTION (MIN:SEC)	ACCUMULATION EMISSION TIME (MIN:SEC)	OBSERVATION LOCATION
14:36	20:00	00:00	NE
14:56	5:00	Break	
15:01	20:00	00:00	
15:21	5:00	Break	
15:26	20:00	00:00	
15:46			

M. B. Bharathiyaraman

SIGNATURE

9.27.2016 15:08

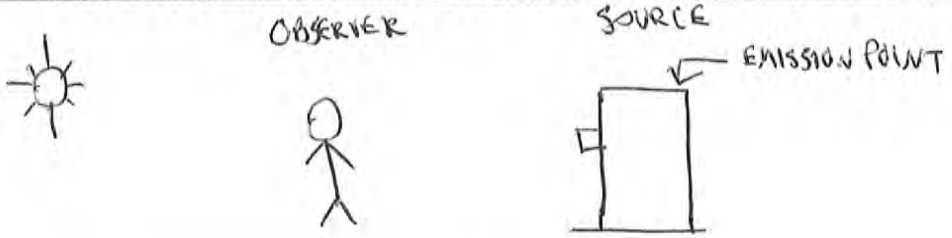
R4

AIR HYGIENE

METHOD 22
FUGITIVE OR SMOKE EMISSION
INSPECTION FORM

COMPANY: Coyote North Ltd **LOCATION:** Enid Facility **COMPANY REP:** Brent Willey	**OBSERVER:** Raj Kumar **AFFILIATION:** Air Hygiene **DATE:** 9/27/2016
SKY CONDITIONS: CLEAR **PRECIPITATION:** NONE	**WIND DIRECTION:** SW **WIND SPEED:** 7 mph
INDUSTRY: Manufacturing	**PROCESS UNIT:** COMB 48

SKETCH PROCESS UNIT: INDICATE OBSERVER POSITION RELATIVE TO SOURCE; INDICATE POTENTIAL EMISSION POINTS AND/OR ACTUAL EMISSION POINTS.



OBSERVATIONS

CLOCK TIME	OBSERVATION PERIOD DURACTION (MIN:SEC)	ACCUMULATION EMISSION TIME (MIN:SEC)	OBSERVATION LOCATION
16:10	20:00	00:00	SW
16:30	5:00	Break	
16:35	20:00	00:00	
16:55	5:00	Break	
17:00	20:00	00:00	
17:20			

M.B. Bharathwajkumar

SIGNATURE

9.27.2016 16:47

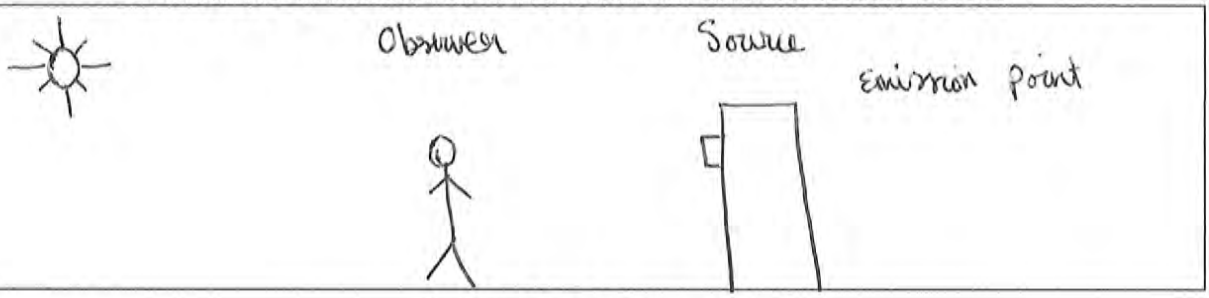
R5

AIR HYGIENE

METHOD 22
FUGITIVE OR SMOKE EMISSION
INSPECTION FORM

COMPANY: Coyote North Ltd **LOCATION:** Enid Facility **COMPANY REP:** Brent Willey	**OBSERVER:** Raj Kumar **AFFILIATION:** Air Hygiene **DATE:** 9/28/2016
SKY CONDITIONS: CLEAR **PRECIPITATION:** NONE	**WIND DIRECTION:** NW **WIND SPEED:** 2mph
INDUSTRY: Manufacturing	**PROCESS UNIT:** COMB 48

SKETCH PROCESS UNIT: INDICATE OBSERVER POSITION RELATIVE TO SOURCE; INDICATE POTENTIAL EMISSION POINTS AND/OR ACTUAL EMISSION POINTS.



OBSERVATIONS

CLOCK TIME	OBSERVATION PERIOD DURACTION (MIN:SEC)	ACCUMULATION EMISSION TIME (MIN:SEC)	OBSERVATION LOCATION
8:55	20:00	00:00	NE
9:15	5:00	Break	↓
9:20	20:00	00:00	
9:40	5:00	Break	
9:45	20:00	00:00	
10:05			

M. B. Bharathkumar

SIGNATURE

9.28.2016 09:27

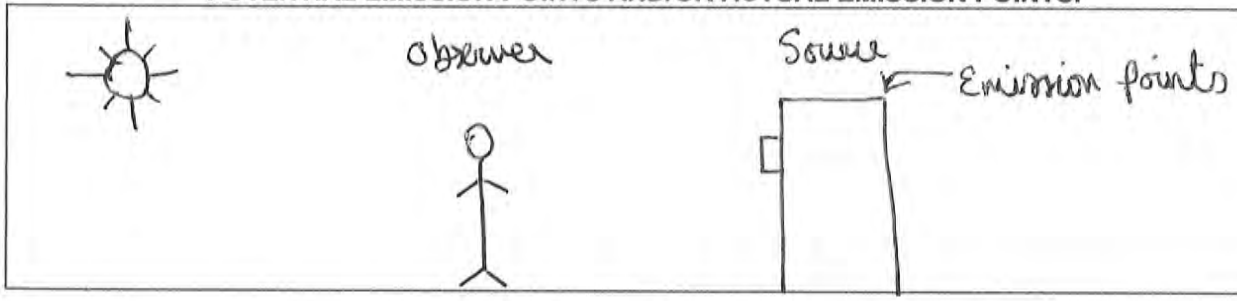
R6

AIR HYGIENE

METHOD 22
FUGITIVE OR SMOKE EMISSION
INSPECTION FORM

COMPANY: Coyote North Ltd **LOCATION:** Enid Facility **COMPANY REP:** Brent Willey	**OBSERVER:** Raj Kumar **AFFILIATION:** Air Hygiene **DATE:** 09/28/2016
SKY CONDITIONS: CLEAR **PRECIPITATION:** NONE	**WIND DIRECTION:** N **WIND SPEED:** 8 mph
INDUSTRY: Manufacturing	**PROCESS UNIT:** COMB 48

SKETCH PROCESS UNIT: INDICATE OBSERVER POSITION RELATIVE TO SOURCE; INDICATE POTENTIAL EMISSION POINTS AND/OR ACTUAL EMISSION POINTS.



OBSERVATIONS

CLOCK TIME	OBSERVATION PERIOD DURACTION (MIN:SEC)	ACCUMULATION EMISSION TIME (MIN:SEC)	OBSERVATION LOCATION
10:38	20:00	00:00	NE
10:58	5:00	Break	↓
11:03	20:00	00:00	
11:23	5:00	Break	
11:28	20:00	00:00	
11:48			

M.B. Bharathiraj Kumar

SIGNATURE

9.28.2016 11:14

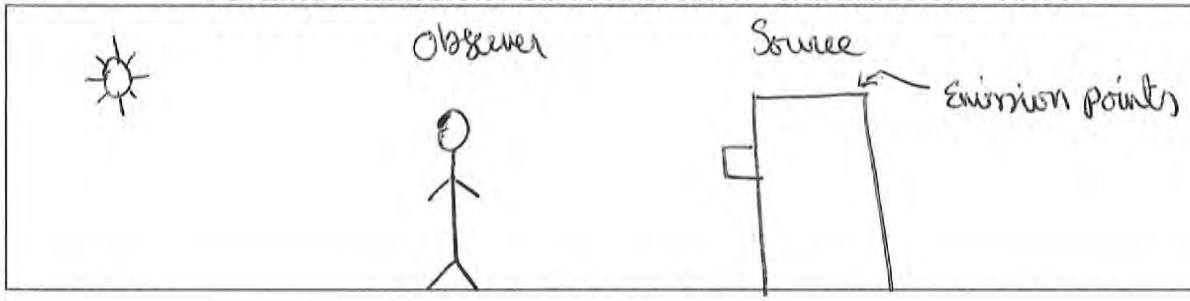
R7

AIR HYGIENE

METHOD 22
FUGITIVE OR SMOKE EMISSION
INSPECTION FORM

COMPANY: Coyote North Ltd **LOCATION:** Enid Facility **COMPANY REP:** Brent Willey	**OBSERVER:** Raj Kumar **AFFILIATION:** Air Hygiene **DATE:** 9/29/2016
SKY CONDITIONS: CLEAR **PRECIPITATION:** NONE	**WIND DIRECTION:** NW **WIND SPEED:** 5mph
INDUSTRY: Manufacturing	**PROCESS UNIT:** COMB 48

SKETCH PROCESS UNIT: INDICATE OBSERVER POSITION RELATIVE TO SOURCE; INDICATE POTENTIAL EMISSION POINTS AND/OR ACTUAL EMISSION POINTS.



OBSERVATIONS

CLOCK TIME	OBSERVATION PERIOD DURACTION (MIN:SEC)	ACCUMULATION EMISSION TIME (MIN:SEC)	OBSERVATION LOCATION
7:37	20:00	00:00	NE
7:57	5:00	Break	↓
8:02	20:00	00:00	
8:22	5:00	Break	
8:27	20:00	00:00	
8:47			

M. B. Bharatwaj Kumar

SIGNATURE

9.29.2016 08:15

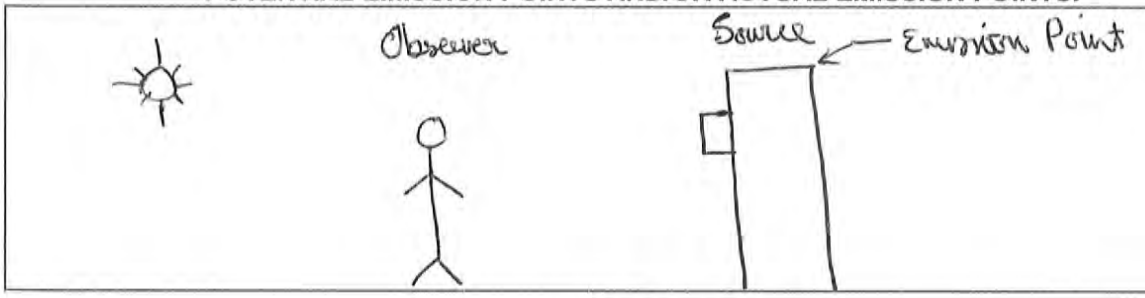
R8

METHOD 22
FUGITIVE OR SMOKE EMISSION
INSPECTION FORM

AIR HYGIENE

COMPANY: Coyote North Ltd **LOCATION:** Enid Facility **COMPANY REP:** Brent Willey	**OBSERVER:** Raj Kumar **AFFILIATION:** Air Hygiene **DATE:** 9/29/2016
SKY CONDITIONS: CLEAR **PRECIPITATION:** NONE	**WIND DIRECTION:** NW **WIND SPEED:** 8mph
INDUSTRY: Manufacturing	**PROCESS UNIT:** COMB 48

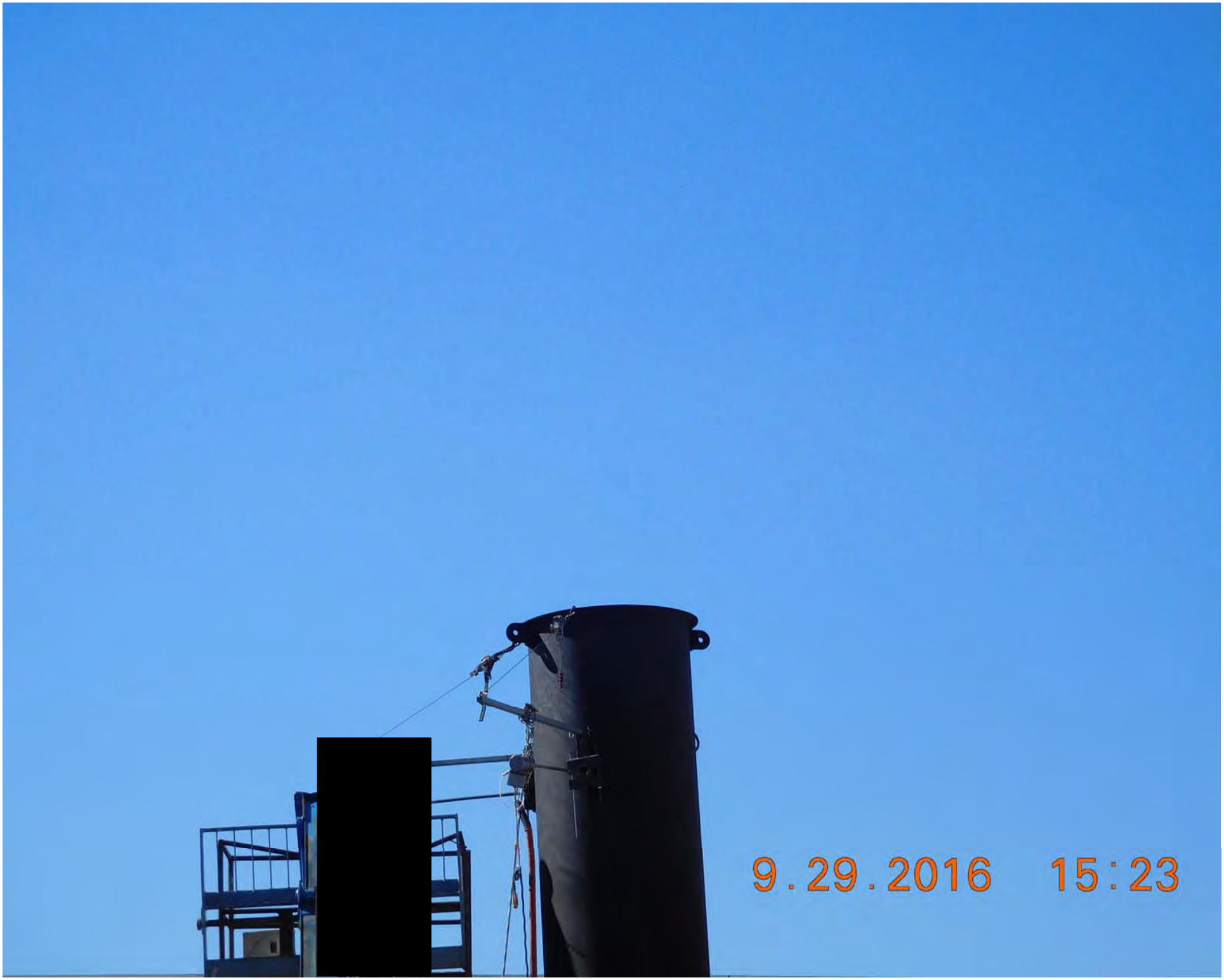
SKETCH PROCESS UNIT: INDICATE OBSERVER POSITION RELATIVE TO SOURCE; INDICATE POTENTIAL EMISSION POINTS AND/OR ACTUAL EMISSION POINTS.



OBSERVATIONS

CLOCK TIME	OBSERVATION PERIOD DURACTION (MIN:SEC)	ACCUMULATION EMISSION TIME (MIN:SEC)	OBSERVATION LOCATION
14:50	20:00	00:00	SW
15:10	5:00	Break	
15:15	20:00	00:00	
15:35	5:00	Break	
15:40	20:00	00:00	
16:00			

M. B. Bharathkumar
SIGNATURE


9.29.2016 15:23

METHOD 22
FUGITIVE OR SMOKE EMISSION
INSPECTION FORM

R9

AIR HYGIENE

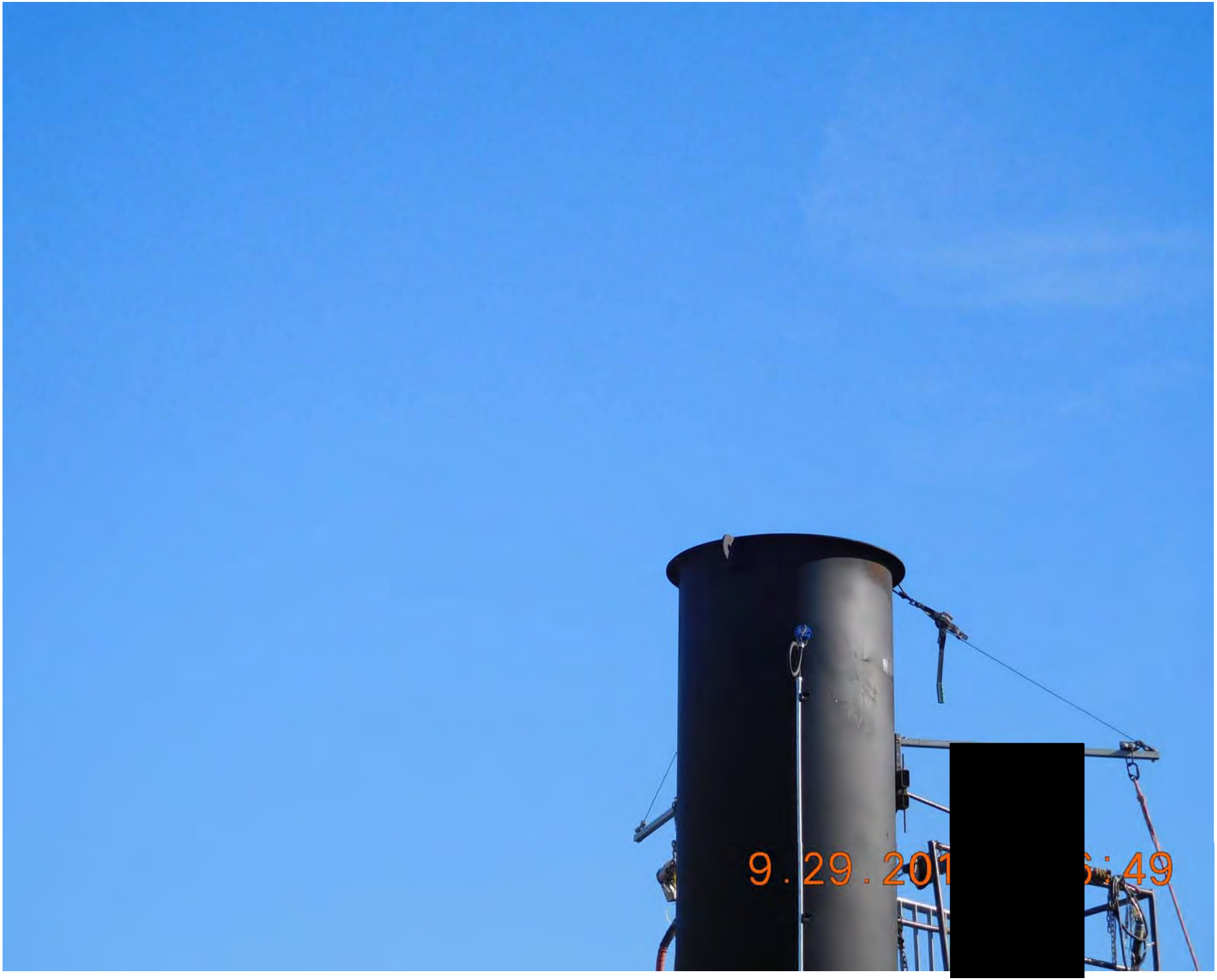
COMPANY: Coyote North Ltd **LOCATION:** Enid Facility **COMPANY REP:** Brent Willey	**OBSERVER:** Raj Kumar **AFFILIATION:** Air Hygiene **DATE:** 9/29/2016
SKY CONDITIONS: CLEAR / PARTIAL CLOUDY **PRECIPITATION:** NONE	**WIND DIRECTION:** NW **WIND SPEED:** 7 mph
INDUSTRY: Manufacturing	**PROCESS UNIT:** COMB 48

SKETCH PROCESS UNIT: INDICATE OBSERVER POSITION RELATIVE TO SOURCE; INDICATE POTENTIAL EMISSION POINTS AND/OR ACTUAL EMISSION POINTS.

OBSERVATIONS

CLOCK TIME	OBSERVATION PERIOD DURACTION (MIN:SEC)	ACCUMULATION EMISSION TIME (MIN:SEC)	OBSERVATION LOCATION
16:15	20:00	00:00	SW
16:35	5:00	Break	↓
16:40	20:00	00:00	
17:00	5:00	Break	
17:05	20:00	00:00	
17:25			

M.B. Bharathirajkumar
SIGNATURE


9.29.201
6:49

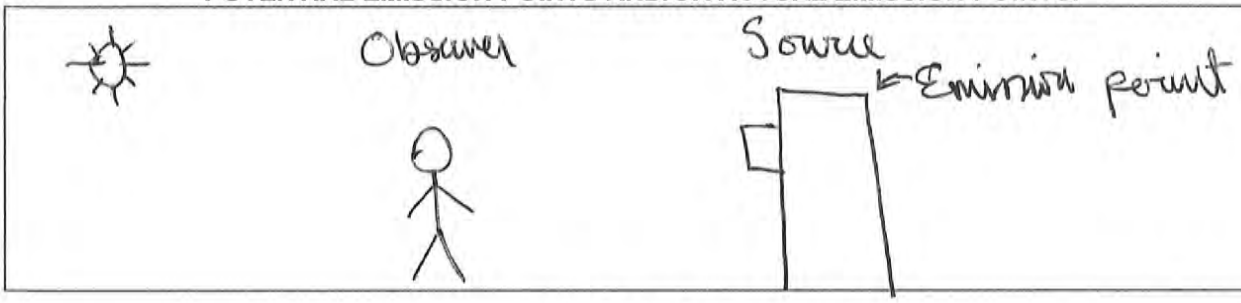
METHOD 22
FUGITIVE OR SMOKE EMISSION
INSPECTION FORM

R10

AIR HYGIENE

COMPANY: Coyote North Ltd **LOCATION:** Enid Facility **COMPANY REP:** Brent Willey	**OBSERVER:** Raj Kumar **AFFILIATION:** Air Hygiene **DATE:** 9/30/2016
SKY CONDITIONS: CLEAR **PRECIPITATION:** NONE	**WIND DIRECTION:** NW **WIND SPEED:** 1.5 mph
INDUSTRY: Manufacturing	**PROCESS UNIT:** COMB 48

SKETCH PROCESS UNIT: INDICATE OBSERVER POSITION RELATIVE TO SOURCE; INDICATE POTENTIAL EMISSION POINTS AND/OR ACTUAL EMISSION POINTS.



OBSERVATIONS

CLOCK TIME	OBSERVATION PERIOD DURACTION (MIN:SEC)	ACCUMULATION EMISSION TIME (MIN:SEC)	OBSERVATION LOCATION
7:42	20:00	00:00	NE
8:02	5:00	Break	
8:07	20:00	00:00	
8:27	5:00	Break	
8:32	20:00	00:00	
8:52			

M.B. Bharathiraj Kumar
SIGNATURE

9.30.2016 08:14

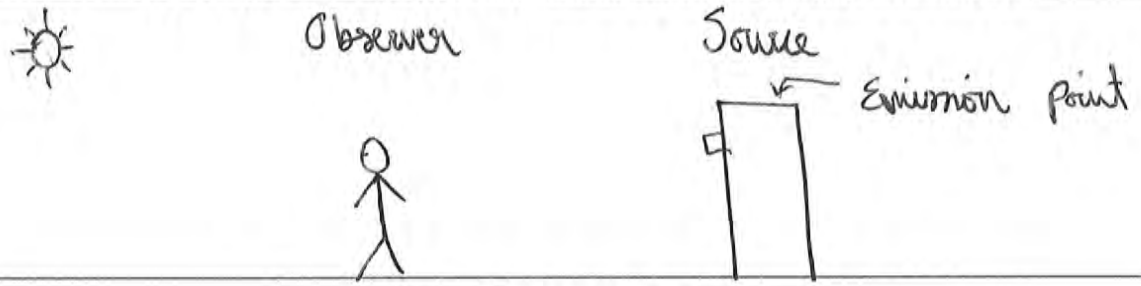
METHOD 22
FUGITIVE OR SMOKE EMISSION
INSPECTION FORM

R11

AIR HYGIENE

COMPANY: Coyote North Ltd **LOCATION:** Enid Facility **COMPANY REP:** Brent Willey	**OBSERVER:** Raj Kumar **AFFILIATION:** Air Hygiene **DATE:** 9/30/2016
SKY CONDITIONS: CLEAR **PRECIPITATION:** NONE	**WIND DIRECTION:** NE **WIND SPEED:** 1.0 mph
INDUSTRY: Manufacturing	**PROCESS UNIT:** COMB 48

SKETCH PROCESS UNIT: INDICATE OBSERVER POSITION RELATIVE TO SOURCE; INDICATE POTENTIAL EMISSION POINTS AND/OR ACTUAL EMISSION POINTS.



OBSERVATIONS

CLOCK TIME	OBSERVATION PERIOD DURACTION (MIN:SEC)	ACCUMULATION EMISSION TIME (MIN:SEC)	OBSERVATION LOCATION
9:13	20:00	00:00	NE
9:33	5:00	Break	
9:38	20:00	00:00	
9:58	5:00	Break	
10:03	20:00	00:00	
10:23			

M. B. Bharathiraja Kumar
SIGNATURE

9.30.2016 09:45

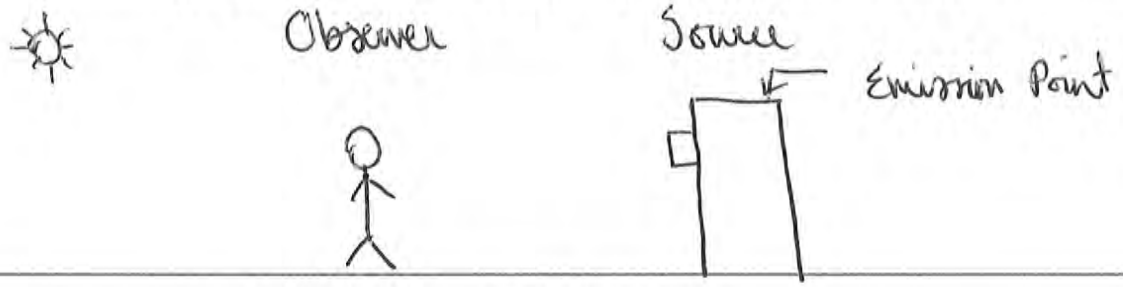
METHOD 22
FUGITIVE OR SMOKE EMISSION
INSPECTION FORM

R12

AIR HYGIENE

COMPANY: Coyote North Ltd **LOCATION:** Enid Facility **COMPANY REP:** Brent Willey	**OBSERVER:** Raj Kumar **AFFILIATION:** Air Hygiene **DATE:** 9/30/2016
SKY CONDITIONS: CLOUDY **PRECIPITATION:** NONE	**WIND DIRECTION:** NE **WIND SPEED:** 3mph
INDUSTRY: Manufacturing	**PROCESS UNIT:** COMB 48

SKETCH PROCESS UNIT: INDICATE OBSERVER POSITION RELATIVE TO SOURCE; INDICATE POTENTIAL EMISSION POINTS AND/OR ACTUAL EMISSION POINTS.



OBSERVATIONS

CLOCK TIME	OBSERVATION PERIOD DURACTION (MIN:SEC)	ACCUMULATION EMISSION TIME (MIN:SEC)	OBSERVATION LOCATION
12:50	20:00	00:00	SW
13:10	5:00	Break	↓
13:15	20:00	00:00	
13:35	5:00	Break	
13:40	20:00	00:00	
14:00			

M.B. Bharathwaj Iyengar
SIGNATURE

2016 13:22

APPENDIX C

CALIBRATION GAS CERTIFICATIONS

Airgas
an Air Liquide company

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number:	E02AI99E15A1937	Reference Number:	54-124515187-2
Cylinder Number:	CC156074	Cylinder Volume:	146.2 CF
Laboratory:	ASG - Chicago - IL	Cylinder Pressure:	2015 PSIG
PGVP Number:	B12015	Valve Outlet:	590
Gas Code:	PPN,BALA	Certification Date:	Sep 25, 2015

Expiration Date: Sep 25, 2023

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
PROPANE	8.500 PPM	8.428 PPM	G1	+/- 1.2% NIST Traceable	09/25/2015
AIR	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	10061408	CC314698	9.93 PPM PROPANE/AIR	+/- 0.6%	Jul 20, 2016

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet 6700 AHR0801332	FTIR	Aug 27, 2015

Triad Data Available Upon Request

Signature on file

Approved for Release

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: A22014
AIR LIQUIDE AMERICA SPECIALTY GASES LLC
1290 COMBERMERE STREET
TROY, MI 48083

P.O. No.: MAX
Document # : 54740879-001

Customer
AIR HYGIENE
MAX CORBIN
1600 W TACOMA
BROKEN ARROW OK 74012
US

ANALYTICAL INFORMATION Gas Type : PPN,BALA

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: ALM010279
Cylinder Pressure: 1950 PSIG
Certification Date: 21Apr2014
Exp. Date: 22Apr2022
Batch No: TRO0107817

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ACCURACY (ABSOLUTE / RELATIVE)
PROPANE	5.01 PPM	0.03 PPM / 0.7 %
AIR	BALANCE	

TRACEABILITY

REFERENCE STANDARD

COMPONENT	CONCENTRATION	UNCERTAINTY	CYLINDER	TYPE/SRM SAMPLE	EXP. DATE
PROPANE	9.6000 PPM	0.0600 PPM	K012629	9 PPM C3H	24Feb2016

ANALYTICAL METHOD

1st Analysis: 21Apr2014

COMPONENT	INSTRUMENT	ANALYTICAL/PRINCIPLE	CALIBRATED	CONCENTRATION
PROPANE	HORIBA/FIA-220/G05000JAS	FLAME IONIZATION	17Apr2014	5.010 PPM

APPROVED BY: ROBERT LESNIAK

AIR LIQUIDE | Air Liquide America Specialty Gases LLC

Intertek

RATA CLASS

Guaranteed +/- 1% Accuracy

8832 DICE ROAD, Santa Fe Springs, CA 90670 Phone: 562-945-1383 Fax: 562-464-5262

CERTIFICATE OF ACCURACY: EPA Protocol Gas

Customer
AIR HYGIENE
AIR HYGIENE-1
1600 W TACOMA ST
BROKEN ARROW, OK 74012-1483
US

Assay Laboratory - PGVP Vendor ID: A52015
AIR LIQUIDE AMERICA SPECIALTY GASES LLC
8832 DICE ROAD
SANTA FE SPRINGS, CA 90670-2516

Lot No. : 401-42611
P.O. No: Verbal
Folio #: 3ppm Propane/Air
Sales Order #: 133582

ANALYTICAL INFORMATION

Gas Type: PPN,BALA

This certification was performed according to EPA Traceabilty Protocol for Assay & Certification of Gaseous Calibration Standards; Procedure G1. EPA/600/R-12/531; May 2012. Do not use this standard if pressure is less than 100 psig.

Cylinder Number: ALM066568
Cylinder Pressure: 2000 PSIG

Certification Date: 10-Aug-2015

Exp. Date: 11-Aug-2023

Component Name	Concentration (Mole)	Accuracy (Absolute / Relative)
PROPANE	3.00 PPM	0.03 PPM , 1.0 %
AIR	BALANCE	

TRACEABILITY

Analytical Traceability

Reference Standard

Component	Concentration	Uncertainty	Cylinder	NIST Type Sample	EXP. DATE
PROPANE	2.95 PPM	0.03 PPM	ALM023477	NTRM 1665	3-Aug-2017

ANALYTICAL METHOD

1st Analysis: 10-Aug-2015

COMPONENT	INSTRUMENT	ANALYTICAL PRINCIPLE	CALIBRATED	CONCENTRATION
PROPANE	MKS FTIR 2031 SN 10387278	FTIR	08/10/15	3.003 PPM

APPROVED BY:

Assay Laboratory: Red Ball TGS
555 Craig Kennedy Way
Shreveport, LA 71107
800-551-8150

EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

Cylinder Number:	EB0085244	**Certification Date**:	07/29/2016
Product ID Number:	125780	**Expiration Date:**	07/29/2019
Cylinder Pressure:	1900 PSIG	**MFG Facility:**	RBTGS-Shreveport-LA
COA #	EB0085244.20160711-0	**Lot Number:**	EB0085244.20160711
Customer PO. NO.:		**Tracking Number:**	083080470
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
Carbon Monoxide	**18.3 PPM**	±0.13 PPM	FTIR	07/19/2016
Nitric Oxide	**18.30 PPM**	±0.09 PPM	Chemiluminescence	07/15/2016, 07/22/2016, 07/29/2016
Total Oxides of Nitrogen	18.40 PPM			
Nitrogen	Balance			

Analytical Measurement Data Available Online.

Reference Standard(s)

Serial Number	Lot	Expiration	Type	Balance	Component	Concentration	Uncertainty(%)	NIST Reference
CC133318	021003	11/05/2017	NTRM	N2	CO	988 PPM	0.9109	021003
EB0042058	EB0042058.20150710g	10/21/2023	GMIS	N2	NO	63.48 PPM	1.053	121001
EB0053156	EB0053156.20150713g	11/28/2023	GMIS	N2	NO	32.74 PPM	1.059	121001

Analytical Instrumentation

Component	Analytical Principle	Make	Model	Serial	MPC Date
NO	Chemiluminescence	Thermo	T42C	42C-68400-360	06/29/2016
CO	FTIR	MKS	MKS 2031DJG2EKVS13T	017146467	07/18/2016

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

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

Assay Laboratory: Red Ball TGS
555 Craig Kennedy Way
Shreveport, LA 71107
800-551-8150

EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

Cylinder Number:	EB0078754	**Certification Date**:	03/31/2016
Product ID Number:	124737	**Expiration Date:**	03/31/2019
Cylinder Pressure:	1900 PSIG	**MFG Facility:**	RBTGS-Shreveport-LA
COA #	EB0078754.20160311-0	**Lot Number:**	EB0078754.20160311
Customer PO. NO.:		**Tracking Number:**	084270557
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
Carbon Monoxide	**9.44 PPM**	±0.03 PPM	FTIR	03/15/2016
Nitric Oxide	**9.09 PPM**	±0.02 PPM	Chemiluminescence	03/23/2016, 03/31/2016
Total Oxides of Nitrogen	9.25 PPM			
Nitrogen	Balance			

Analytical Measurement Data Available Online.

Reference Standard(s)

Serial Number	Lot	Expiration	Type	Balance	Component	Concentration	Uncertainty(%)	NIST Reference
CAL016513	49-H-67	09/08/2017	SRM	N2	NO	10.01 PPM	0.999	2628a
EB0006931	EB0006931.20150713g	10/22/2018	GMIS	N2	NO	14.95 PPM	1.095	121001
EB0046586	EB0046586.20150713g	11/29/2019	GMIS	N2	NO	9.96 PPM	1.158	121001
EB0059463	EB0059463.20150710g	10/21/2023	GMIS	N2	NO	63.52 PPM	1.053	121001
EB0013666	GC1102091256	07/27/2019	GMIS	N2	CO	11.8 PPM	1.038	091002

Analytical Instrumentation

Component	Analytical Principle	Make	Model	Serial	MPC Date
CO	FTIR	MKS	MKS 2031DJG2EKVS13T	017146467	03/14/2016
NO	Chemiluminescence	Thermo	T42C	42C-68400-360	02/25/2016
NO	Chemiluminescence	Thermo	T42C	42C-68400-360	03/17/2016

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

Accreditation #62754

LaMeka Dennis
Assistant Operations Manager

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: A22014
AIR LIQUIDE AMERICA SPECIALTY GASES LLC
1290 COMBERMERE STREET
TROY, MI 48083

P.O. No.:
Document # : 5469[illegible]590-005
Folio #:AH095

Customer
AIR HYGIENE
MIKE SCOTT
1600 WEST TACOMA ST
BROKEN ARROW OK 74012
US

ANALYTICAL INFORMATION Gas Type : CO2,O2,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: CC67536
Cylinder Pressure: 2000 PSIG
Certification Date: 17Apr2014
Exp. Date: 18Apr2022
Batch No: TRO0107482

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ACCURACY (ABSOLUTE / RELATIVE)
OXYGEN	21.1 %	0.08 % / 0.4 %
CARBON DIOXIDE	18.4 %	0.1 % / 0.8 %
NITROGEN	BALANCE	

TRACEABILITY

REFERENCE STANDARD

COMPONENT	CONCENTRATION	UNCERTAINTY	CYLINDER	TYPE/SRM SAMPLE	EXP. DATE
OXYGEN	23.2000 %	0.0900 %	K024582	NTRM 2350	04Jan2018
CARBON DIOXIDE	23.0400 %	0.1200 %	K026052	NTRM 2300	17Aug2016

ANALYTICAL METHOD

1st Analysis: 17Apr2014

COMPONENT	INSTRUMENT	ANALYTICAL/PRINCIPLE	CALIBRATED	CONCENTRATION
OXYGEN	CAI/110P/V03018	PARAMAGNETIC	14Apr2014	21.10 %
CARBON DIOXIDE	PIR/2000/609015	NDIR	21Mar2014	18.40 %

Special Notes: AH095 LIST ITEM AH095 ON CERTS AND TAGS

APPROVED BY: _____
JEFF CROTEAU

Assay Laboratory: Red Ball TGS
555 Craig Kennedy Way
Shreveport, LA 71107
800-551-8150

EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

Cylinder Number:	EB0060530	**Certification Date**:	09/01/2016
Product ID Number:	124606	**Expiration Date:**	08/30/2024
Cylinder Pressure:	1900 PSIG	**MFG Facility:**	RBTGS-Shreveport-LA
COA #	EB0060530.20160824-0	**Lot Number:**	EB0060530.20160824
Customer PO. NO.:		**Tracking Number:**	082996545
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
Carbon Dioxide	**8.95 %**	±0.03 %	FTIR	09/01/2016
Oxygen	**11.9 %**	±0.1 %	MPA	08/30/2016
Nitrogen	Balance			

Analytical Measurement Data Available Online.

Reference Standard(s)

Serial Number	Lot	Expiration	Type	Balance	Component	Concentration	Uncertainty(%)	NIST Reference
EB0055387	EB0055387.20140228G	10/07/2022	GMIS	N2	O2	23.79 %	0.505	071001
EB0060686	EB0060686.20141114	01/21/2023	GMIS	N2	CO2	9.48 %	0.741	101001
EB0032246	LD131022.115903.1G	10/07/2022	GMIS	N2	O2	11.97 %	0.527	071001

Analytical Instrumentation

Component	Analytical Principle	Make	Model	Serial	MPC Date
O2	MPA	Horiba	VA-3013	H0000P11	08/25/2016
CO2	FTIR	MKS	MKS 2031DJG2EKVS13T	017146467	08/24/2016

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

Brandon Theus
Analytical Chemist

This is to certify the gases referenced have been calibrated/tested, and verified to meet the defined specifications. This calibration/test was performed using Gases or Scales that are traceable through National Institute of Standards and Technology (NIST) to the International System of Units (SI). The basis of compliance stated is a comparison of the measurement parameters to the specified or required calibration/testing process. The expanded uncertainties use a coverage factor of k=2 to approximate the 95% confidence level of the measurement, unless otherwise noted. This calibration certificate applies only to the item described and shall not be reproduced other than in full, without written approval from Red Ball Technical Gas Services. If not included, the uncertainty of calibrations are available upon request and were taken into account when determining pass or fail.

APPENDIX D

QUALITY ASSURANCE AND QUALITY CONTROL DATA

QA/QC PROGRAM

AIR HYGIENE ensures the quality and validity of its emission measurement and reporting procedures through a rigorous quality assurance (QA) program. The program is developed and administered by an internal QA team and encompasses six major areas:

1. Field Qualifications
2. QA reviews of reports, laboratory work, and field testing;
3. Equipment calibration and maintenance;
4. Chain-of-custody;
5. Training; and
6. Knowledge of current test methods

Field Qualifications

Air Hygiene personnel are required to gain and maintain competence with testing methods and techniques according to their job titles and the roles they play during field testing events. Qualifications for each job description include:

Staff Technician - An entry level position with responsibility to test on the stack by performing duties that include: keep trucks and trailers stocked and clean, travel to and from job site, be the "hands of the test" on the stack; stay on a stack during the sample test, set up and tear down equipment on-site, perform maintenance on equipment in the shop and on-site.

Test Technician or Specialist - Acts as the "hands of the test" on the stack by performing duties that include: stay on a stack during the sample test, migrate to the testing trailer and learn the different analyzers and testing methods used on site, set up and tear down testing equipment on site, learn the system for testing from Testing Managers and Project Managers, travel to and from job site; including driving responsibilities under DOT requirements, follow directions of Testing Managers and Project Managers, learn the proper way to conduct on-site test of stationary stacks

Test Manager or Engineer - Directs and coordinates all aspects of a successful test by performing the following duties personally or through subordinate supervisors including: operating analyzers and consoles during testing along with QA/QC procedures, supervise set up and tear down of equipment on site, writing, reviewing, and revising final test reports, working with the client or state personnel while on the job site, managing pre-test checklists and onsite testing procedures, diagnose and repair any problems that may arise with the equipment, safely operate a man life and drive a truck with or without a trailer, act as crew leader in the field, write protocols and reports, maintain project log of services performed on the job, verify all equipment needed for a job was loaded on the trailer. Test Managers must hold as least one QSTI certificate.

Project Manager - Directs and coordinates all aspects of a successful test by performing the following duties personally or through subordinate supervisors including: operating analyzers and consoles during testing along with QA/QC procedures, supervise set up and tear down of equipment on site, writing, reviewing, and revising final test reports, working with the client or state personnel while on the job site, managing pre-test checklists and onsite testing procedures, diagnose and repair any problems that may arise with the equipment, safely operate a man life and drive a truck with or without a trailer, act as crew leader in the field, write protocols and reports, maintain project log of services performed on the job, verify all equipment needed for a job was loaded on the trailer. Project Managers typically hold QSTI certificates in Groups 1 through 4.

QA Reviews

Air Hygiene's review procedure includes review of each source test report, along with laboratory and fieldwork, by the QA Team. The most important review is the one that takes place before a test program begins. The QA Team works closely with technical division personnel to prepare and review test protocols. Test protocol review includes selection of appropriate test procedures, evaluation of interferences or other restrictions that might preclude use of standard test procedures, and evaluation and/or development of alternate procedures.

Equipment Calibration and Maintenance

The equipment used to conduct the emission measurements is maintained according to the manufacturer's instructions to ensure proper operation. In addition to the maintenance program, calibrations are carried out on each measurement device according to the schedule outlined by the Environmental Protection Agency. Quality control checks are also conducted in the field for each test program. In conformance with ASTM D7036 Section 15.3.15, all metering and monitoring equipment meets or exceeds the uncertainty criteria contained in the method language that pertains to that equipment.

Chain-of-Custody

Air Hygiene maintains full chain-of-custody documentation on all samples and data sheets. In addition to normal documentation of changes between field sample custodians, laboratory personnel, and field test personnel, Air Hygiene documents every individual who handles any test component in the field (e.g., probe wash, impinger loading and recovery, filter loading and recovery, etc.). Samples are stored in a locked area to which only Air Hygiene personnel have access. Field data sheets are secured at Air Hygiene's offices upon return from the field.

Training

Personnel's training is essential to ensure quality testing. Air Hygiene has formal and informal training programs, which include:

1. Attendance at EPA-sponsored training courses
2. Enrollment in EPA correspondence courses
3 A requirement for all technicians to read and understand Air Hygiene's QA manual
4. In-house training and QA meetings on a regular basis
5. Maintenance of training records

Knowledge of Current Test Methods

With the constant updating of standard test methods and the wide variety of emerging test procedures, it is essential that any qualified source tester keep abreast of new developments. Air Hygiene subscribes to services, which provide updates on EPA reference methods, rules, and regulations. Additionally, source test personnel regularly attend and present papers at testing and emission-related seminars and conferences. Air Hygiene personnel maintain membership in the Air and Waste Management Association and the American Industrial Hygiene Association.

Reproduction and Distribution Policy

Reproducing portions of this test report may omit critical or substantial documentation or be taken out of context and due care must be exercised in this regard. Furthermore, this test report and its associated data shall not be reproduced in full or in part without the written consent of the customer.

COMBUSTION TESTING QUALITY ASSURANCE ACTIVITIES

In conformance with ASTM D7036 Section 15.3.11 and 13, all testing was performed without any real or apparent errors, with the exception of those that would be listed in Section 2.0 of this report. In addition, all testing was conducted according to the approved testing protocol, test methods, Air Hygiene Quality Manual, or ASTM D7036, with the exception of specifics noted in Section 2.0 of this report. A number of quality assurance activities were undertaken before, during, and after this testing project. This section of the report combined with the documentation in Appendix C describes each of those activities.

Each instrument's response was checked and adjusted in the field prior to the collection of data via multi-point calibration. The instrument's linearity was checked by adjusting its zero and span responses to zero nitrogen and an upscale calibration gas in the range of the expected concentrations. The instrument response was then challenged with other calibration gases of known concentration and accepted as being linear if the response of the other calibration gases agreed within plus or minus two percent of the range of predicted values. NO_2 to NO conversion was checked via direct connect with an EPA Protocol certified concentration of NO_2 in a balance of air or nitrogen. Conversion was verified to be between 90 and 110 percent.

After each test run, the analyzers were checked for zero and span drift. This allowed each test run to be bracketed by calibrations and documents the precision of the data just collected. The criterion for acceptable data is that the instrument drift is no more than three percent of the full-scale response. The quality assurance worksheets in the following pages summarize all multipoint calibration checks and zero to span checks performed during the tests. These worksheets (as prepared from the data records of Appendix A) show that no drifts in excess of three percent occurred in the zero to span checks following each test run.

The sampling systems were leak checked by demonstrating that a vacuum greater than 10 in Hg could be held for at least one minute with a decline of less than one inch of Hg. A leak test was conducted after the sample system was set up and before the system was dismantled. This test was conducted to ensure that ambient air had not diluted the sample. Any leakage detected prior to the tests would be repaired and another leak check conducted before testing commenced. No leaks were found during the pre or post-test leak checks.

The absence of leaks in the sampling system was also verified by a sampling system bias check. The sampling system's integrity was tested by comparing the responses of the analyzers to the calibration gases introduced via two paths. The first path was directly into the analyzer and the second path via the sample system at the sample probe. Any difference in the instrument responses by these two methods was attributed to sampling system bias or leakage. The criterion for acceptance is agreement within five percent of the span of the analyzer.

The control gases used to calibrate the instruments were analyzed and certified by the compressed gas vendors to plus or minus one percent accuracy for all gases. EPA Protocol No. 1 was used, where applicable to assign the concentration values traceable to the National Institute of Standards and Technology (NIST), Standard Reference Materials (SRM's). The gas calibration sheets as prepared by the vendor are contained in Appendix C.

Air Hygiene collected and reported the enclosed test data in accordance with the procedures and quality assurance activities described in this test report. Air Hygiene makes no warranty as to the suitability of the test methods. Air Hygiene also assumes no liability relating to the interpretation and use of the test data.

INSTRUMENTAL ANALYSIS
QUALITY ASSURANCE DATA

Date: September 27-30, 2016
Company: Coyote North USA, INC.
Location: Enid, Oklahoma
Techs: BB/DA

Sample System Leak Check

Date	Sample System	Leak Rate (l/min)
September 27-30, 2016	1	0

Accredited Laboratory

A2LA has accredited

AIR HYGIENE INTERNATIONAL, INC.

Broken Arrow, OK

for technical competence in the field of

Environmental Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *General requirements for the competence of testing and calibration laboratories*. This laboratory also meets the requirements of any additional program requirements in the Environmental field. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009*).

Presented this 20th day of July 2015

President & CEO
For the Accreditation Council
Certificate Number 3796.01
Valid to August 31, 2017

For the tests to which this accreditation applies, please refer to the laboratory's Environmental Scope of Accreditation.

STAC
STACK TESTING ACCREDITATION COUNCIL

A2LA
American Association for Laboratory Accreditation

Accredited Air Emission Testing Body

A2LA has accredited

AIR HYGIENE INTERNATIONAL, INC.

Broken Arrow, OK

In recognition of the successful completion of the joint A2LA and Stack Testing Accreditation Council (STAC) evaluation process, this laboratory is accredited to perform testing activities in compliance with ASTM D7036 - Standard Practice for Competence of Air Emission Testing Bodies.

Presented this 20th day of July 2015.

President & CEO

Certificate Number 3796.02
Valid to August 31, 2017

This accreditation program is not included under the A2LA ILAC Recognition Arrangement.

SOURCE EVALUATION SOCIETY

Qualified Source Testing Individual

LET IT BE KNOWN THAT

MIN S. LEE

HAS SUCCESSFULLY PASSED A COMPREHENSIVE EXAMINATION AND SATISFIED EXPERIENCE REQUIREMENTS IN ACCORDANCE WITH THE GUIDELINES ISSUED BY THE SES QUALIFIED SOURCE TEST INDIVIDUAL REVIEW BOARD FOR

GASEOUS POLLUTANTS INSTRUMENTAL SAMPLING METHODS

ISSUED THIS 31st DAY OF JULY 2012 AND EFFECTIVE UNTIL JULY 30TH, 2017

Peter R. Westlin, QSTI/QSTO Review Board

Peter S. Pakalnis, QSTI/QSTO Review Board

LeRoy Owens, QSTI/QSTO Review Board

C. David Bagwell, QSTI/QSTO Review Board

Karen D. Kajiya-Mills , QSTI/QSTO Review Board

Glenn C. England, QSTI/QSTO Review Board

APPLICATION NO. 2012-717

TYPE S PITOT TUBE INSPECTION DATA

Date: September 7, 2016 Pitot Number: 9-7-16-1

Pitot tube assembly level? yes x no

Pitot tube opening damage? yes no x
If yes explain below.

$\alpha 1$ 0 (<10 °) $\alpha 2$ 1 (<10°)

$\beta 1$ = 1 (< 5°) $\beta 2$ 0 (< 5°)

γ = 0 ° θ = 0 ° A = 0.747 cm (in)

Z = A SINE γ = 0.000 cm (in) Where Z is <0.32 cm (<1/8 in)

W = A SINE θ = 0.000 cm (in) Where W is <0.08 cm (<1/32 in)

Pa = 0.374 cm, in Pb = 0.374 cm, in

P = Pa + Pb / 2 = 0.374 cm, in

Dt = 0.250 cm , in P/Dt = 1.494 Where P / Dþ $\geq$ 1.05 and $\leq$ 1.50

Comments: Client: Air Hygiene

Type of Probe and Effective length: 6' C-276 High Temp Flare Probe

Cp = 0.84

JMS SOUTHEAST, INCORPORATED
Temperature Measurement www.JMS-SE.com

CERTIFICATE OF CALIBRATION

Customer: ALTUREX LLC
Purchase Order: VISA93016JW
Work Order: 167892
Sensor Type: Thin film RTD Pt100 (α=0.00385)
Probe Condition: New

Report Date: 10/7/2016
Calibration #: 15030
Part #: DWG16275D REV 06
Tag/Serial #: 167892-1-1

Calibration is referenced to ITS-90 standards. RTD excitation currents less than .1mA.

It is hereby certified, that all items in the quantities as called for on the above order, are in conformance with all applicable requirements and specifications as outlined in that order and any negotiated changes related thereto.

Accuracy has been established by comparison with standards traceable to the National Institute of Standards and Technology in Gaithersburg, MD. in compliance with ANSI/NCSL Z540-1-1994 as well as AMS 2750D and AMS 2750E.

Note: Standards used are at least 4 times more accurate than the unit under test. As found data equals as left data.

Note: Test methods are described fully in Quality Control Work Instructions - Section 2.1 (available for audit).

Reference Meters Used

#1: Altek, Model 211, RTD calibrator, Serial # 158783; General accuracy: +/- 0.025%; Calibrated 04/08/16, next calibration due 04/08/17.

Reference Probes Used

#2: GE Infrastructure Sensing, Model M2806/IRTD-500, Digital Platnium Resistance Reference Thermometer, Serial # 71006; Accuracy over range: +/- 0.010 Deg C (0.018 Deg F); Calibrated 09/29/16, next calibration due 09/29/17.

Reference Mediums Used

#3: Fluke, Model 7380, Ultra low temp bath, Serial # 9A002; Uniformity: +/- 0.012 Deg C (0.022 Deg F); Stability: +/- 0.010 Deg C (0.018 Deg F). No calibration required

#4: Fluke, Model 9172, Metrology well, Serial # A57014; Uniformity: +/- 0.20 Deg C (0.36 Deg F); Stability: +/- 0.010 Deg C (0.018 Deg F). No calibration required

Lab Equipment Used (Lab Conditions: Temp=70 Deg F; Humidity=35% RH; Pressure=1 Atm)

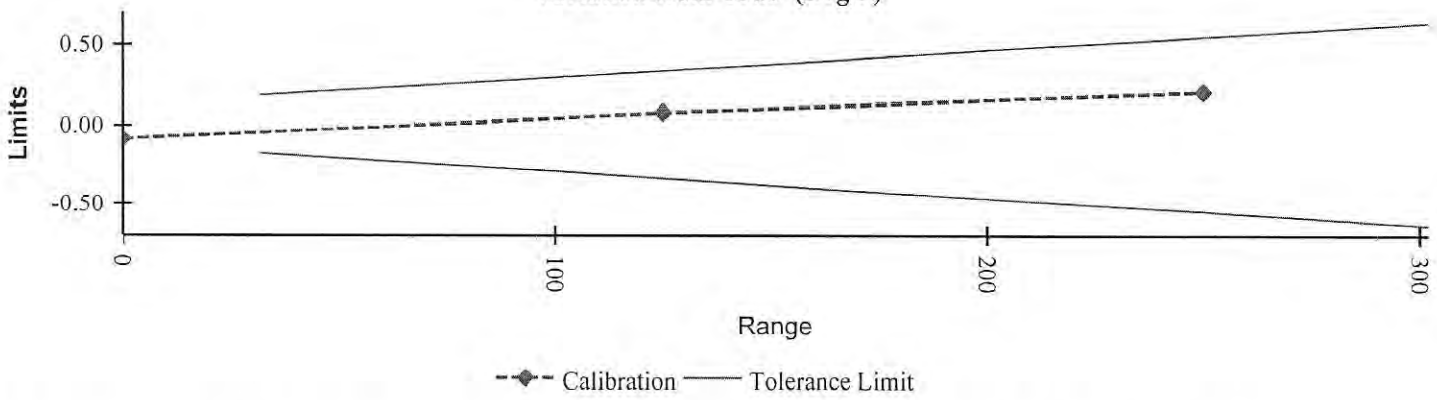
#5: Dickson, Model THV97, Temperature & Humidity Recorder, Serial # 8129063; NIST Test#: 811/253662, 246764, 256091, 222173/242309/2477770. General accuracy: +/- 1.0 Deg C (1.8 Deg F); Calibrated 03/24/16, next calibration due 03/24/17.

Calibration Data:	Temp (Deg F)	Output (Deg F)	Deviation (Deg F)	Unc. (Deg F)	Equipment Used
	-0.01	-0.10	-0.09	0.02	#1, #2, #3
	125.02	125.10	0.08	0.01	#1, #2, #4
	249.90	250.10	0.20	0.12	#1, #2, #4

Customer: ALTUREX LLC
Purchase Order: VISA93016JW
Work Order: 167892
Sensor Type: Thin film RTD Pt100 (α=0.00385)
Probe Condition: New

Report Date: 10/7/2016
Calibration #: 15030
Part #: DWG16275D REV 06
Tag/Serial #: 167892-1-1

Variation from True (Deg F)



Tolerance Info: This item meets IEC Tolerance Class AA, ASTM E1137 Grade A for sensor: RTD Pt100 (α=0.00385)

Comments

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Quality Control: Felicia Brown

Felicia Brown

Premium RTD Calibration

Curve Matching Deviation Report w/Uncertainties

10 degree increments rounded to the nearest .01 degree. ITS-90 Degrees F

Customer: ALTUREX LLC
Purchase Order: VISA93016JW
Work Order: 167892
Sensor Type: Thin film RTD Pt100 (α=0.00385)
Probe Condition: New

Report Date: 10/7/2016
Calibration #: 15030
Part #: DWG16275D REV 06
Tag/Serial #: 167892-1-1

Calibration Data:	Temp (Deg F)	Output (Deg F)	Deviation (Deg F)	Unc. (Deg F)
	-0.01	-0.10	-0.09	0.02
	125.02	125.10	0.08	0.01
	249.90	250.10	0.20	0.12

Table Key: T = Temperature (F) O = Output (F) D = Deviation (F) U = Measurement Uncertainty (F)

T	O	D	U	T	O	D	U	T	O	D	U
-0.01	-0.10	-0.09	0.02	169.00	169.12	0.12	0.05				
9.00	8.92	-0.08	0.01	179.00	179.13	0.13	0.06				
19.00	18.94	-0.06	0.01	189.00	189.14	0.14	0.07				
29.00	28.95	-0.05	0.01	199.00	199.15	0.15	0.08				
32.00	31.95	-0.05	0.01	209.00	209.16	0.16	0.08				
39.00	38.96	-0.04	0.01	212.00	212.16	0.16	0.09				
49.00	48.98	-0.02	0.01	219.00	219.17	0.17	0.09				
59.00	58.99	-0.01	0.01	229.00	229.18	0.18	0.10				
69.00	69.00	0.00	0.01	239.00	239.19	0.19	0.11				
79.00	79.02	0.02	0.01	249.00	249.20	0.20	0.12				
89.00	89.03	0.03	0.01	249.90	250.10	0.20	0.12				
99.00	99.04	0.04	0.01								
109.00	109.06	0.06	0.01								
119.00	119.07	0.07	0.01								
125.02	125.10	0.08	0.01								
129.00	129.08	0.08	0.01								
139.00	139.09	0.09	0.02								
149.00	149.10	0.10	0.03								
159.00	159.11	0.11	0.04								

Printed date: 09/27/2016

Station ID:
Device ID : COYOTE NOR Location: Enid, OK

Collection Time: 09/27/2016 12:54:03
Firmware Revision:
SYSTEM: STATE:
LEASE: PRODUCER:
OPERATOR: BUYER:

Firmware part number: 2104497-025
Tap location: UPSTREAM Tap type : Flange Taps
Orifice size: 0.7500 Inches Pipe size: 3.0700 Inches
Integral Multiplier: 9.2500 Temperature bias: 0.0000 Deg F

Calibration	Date/Time	Low	MidLow	Mid	MidHigh	High
Differential	09/27/2016 08:21:52	0.0000	62.5000	125.0000	187.5000	250.0000
Static	09/27/2016 07:59:30	14.4000	n/a	64.4000	n/a	114.4000

Check Date: 09/27/2016 08:26:29

DP as Found (In H2O)		DP as Left		SP as Found (PSIA)		SP as Left	
Enter	Read	Enter	Read	Enter	Read	Enter	Read
0.000	-0.074	0.000	-0.015	14.400	14.449	114.400	114.412
0.000	0.098	250.000	249.989			64.400	64.410
0.000	0.655	187.500	187.475			14.400	14.366
		125.000	124.978				
		62.500	62.496				
		0.000	-0.016				

Orifice plate inspected? Yes___ No____ Condition_____

H2S analysis done? Yes___ No____ Condition_____

H2O analysis done? Yes___ No____ Condition_____

Analysis/Btu updated? Yes___ No____ Condition_____

Aiu download status AN alarm? Yes___ No____

Temperature: Recorded_____ Tested_____

Remarks:_____

_____

_____

Tested by _____ Witness_____

Effective date:_____

WEATHER STATION CALIBRATION SHEET
Temperature, Barometric Pressure, and Relative Humidity Periodic Calibration
Air Hygiene Asset ID: samp-we-0025

Filename: Z:\Shared\QAQC\Calibrations\Weather Stations\2016\[Weather Station Calibration_samp-we-0025.xlsm]112013
Make: Kestrel
Model #: 4000
Serial #: 688693
NIST ID 4698
NIST S/N A026334
Cal Due 9/24/2016

ASTM Temp (deg F)	Thermo. (deg F)	± deg F	ASTM Barometer (in. Hg)	Barometric (in. Hg)	± in. Hg
79.70	81.00	1.30	29.33	29.34	0.01

Sean Barnes _____ 01/06/16
(signature) *(date)*

ASTM Temp (deg F)	Thermo. (deg F)	± deg F	ASTM Barometer (in. Hg)	Barometric (in. Hg)	± in. Hg
79.60	80.80	1.20	29.33	29.33	0.00

Sean Barnes _____ 01/06/16
(signature) *(date)*

ASTM Temp (deg F)	Thermo. (deg F)	± deg F	ASTM Barometer (in. Hg)	Barometric (in. Hg)	± in. Hg
79.70	81.00	1.30	29.33	29.34	0.01

Sean Barnes _____ 01/06/16
(signature) *(date)*

ASTM Temp (deg F)	Thermo. (deg F)	± deg F	ASTM Barometer (in. Hg)	Barometric (in. Hg)	± in. Hg
79.70	81.10	1.40	29.33	29.35	0.02

Sean Barnes _____ 01/06/16
(signature) *(date)*

Note: Calibrated against NIST Traceable Barometer and Thermometer (SAMP-WE-0028).

Standard for Calibration of Individual Thermocouples

EMC, ALT-011: After each test run series, check the accuracy (and, hence, the calibration) of each thermocouple system at ambient temperature, or any other temperature, within the range specified by the manufacturer, using a reference thermometer (either ASTM reference thermometer or a thermometer that has been calibrated against an ASTM reference thermometer). The temperatures of the thermocouple and reference thermometers shall **agree to within ±2F**.

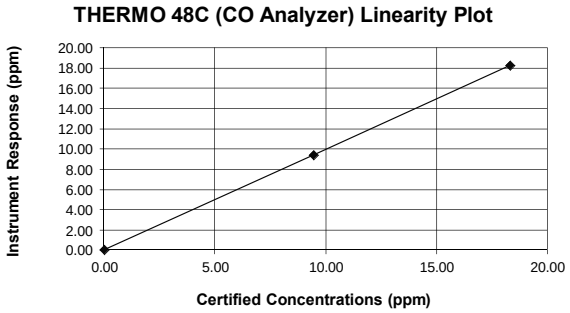
Standard of Calibration for Barometers

40 CFR Part 60, Appendix A, Method 5, Section:
6.0____Equipment and Supplies, 6.1____Sample Collection., 6.1.2____Barometer. Mercury, aneroid, or other barometer capable of measuring atmospheric pressure to within 2.5 mm Hg (0.1 in.).
10.0____Calibration and Standardization, 10.6____Barometer. Calibrate against a mercury barometer.

Calibration Date: September 27, 2016
Client: Coyote North USA INC.

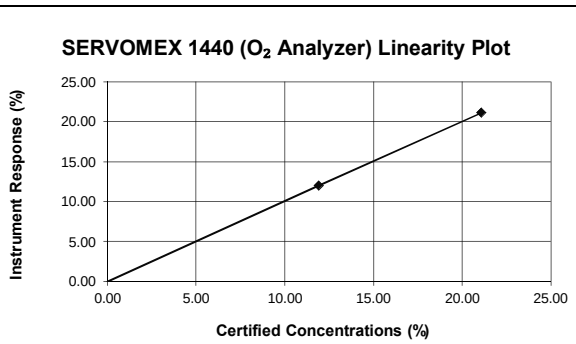
CO Span (ppm) = 18.30

THERMO 48C (CO Analyzer)				
Certified Concentration (ppm)	Instrument Response (ppm)	Calibration Error (%)	Absolute Conc. (ppm)	Pass or Fail (±2%, ≤0.5ppm)
0.00	0.05	0.27	0.05	YES (%)
9.44	9.40	-0.22	0.04	YES (%)
18.30	18.29	-0.05	0.01	YES (%)
Linearity = 1.003				



O_2 Span (%) = 21.10

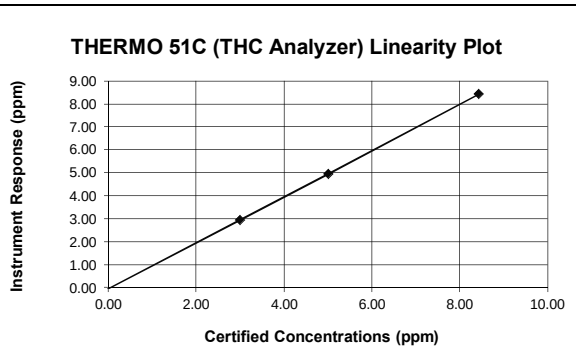
SERVOMEX 1440 (O_2 Analyzer)				
Certified Concentration (%)	Instrument Response (%)	Calibration Error (%)	Absolute Conc. (%)	Pass or Fail (±2%, ≤0.5%)
0.00	-0.01	-0.05	0.01	YES (%)
11.90	12.01	0.52	0.11	YES (%)
21.10	21.09	-0.05	0.01	YES (%)
Linearity = 0.999				



THC Range (ppm) = 10

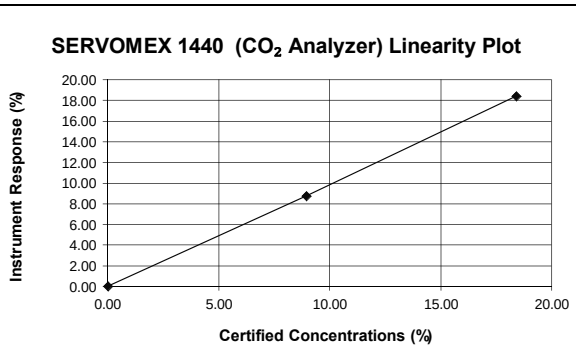
THERMO 51C (THC Analyzer)				
Certified Concentration (ppm)	Instrument Response (ppm)	Calibration Error (%)	Estimated Point (ppm)	Pass or Fail (±2,5%)[1]
0.00	-0.06	-0.60	N/A	YES
3.00	2.93	-0.95	2.96	YES
5.01	4.95	-0.62	4.98	YES
8.43	8.42	-0.08	N/A	YES
Linearity = 0.988				

[1]-zero/high based on 2% of span,low/mid based on 5% of concentration



CO_2 Span (%) = 18.40

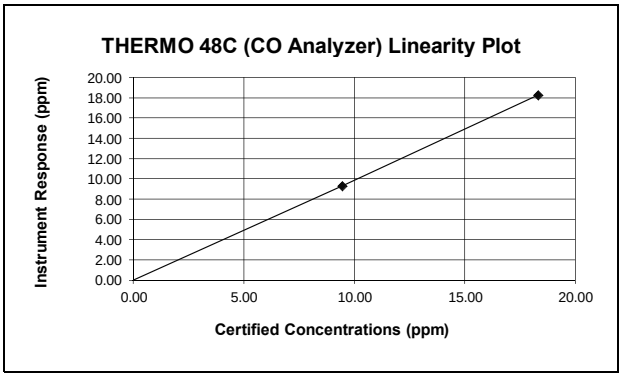
SERVOMEX 1440 (CO_2 Analyzer)				
Certified Concentration (%)	Instrument Response (%)	Calibration Error (%)	Absolute Conc. (%)	Pass or Fail (±2%, ≤0.5%)
0.00	0.04	0.22	0.04	YES (%)
8.95	8.78	-0.92	0.17	YES (%)
18.40	18.44	0.22	0.04	YES (%)
Linearity = 1.000				



Calibration Date: September 28, 2016
Client: Coyote North USA INC.

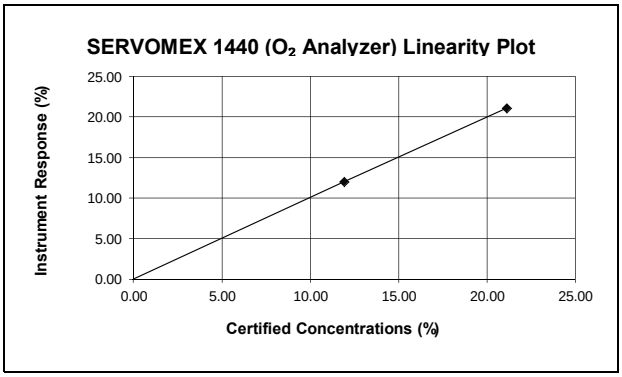
CO Span (ppm) = 18.30

THERMO 48C (CO Analyzer)				
Certified Concentration (ppm)	Instrument Response (ppm)	Calibration Error (%)	Absolute Conc. (ppm)	Pass or Fail (±2%, ≤0.5ppm)
0.00	-0.02	-0.11	0.02	YES (%)
9.44	9.30	-0.77	0.14	YES (%)
18.30	18.29	-0.05	0.01	YES (%)
Linearity = 1.000				



O2 Span (%) = 21.10

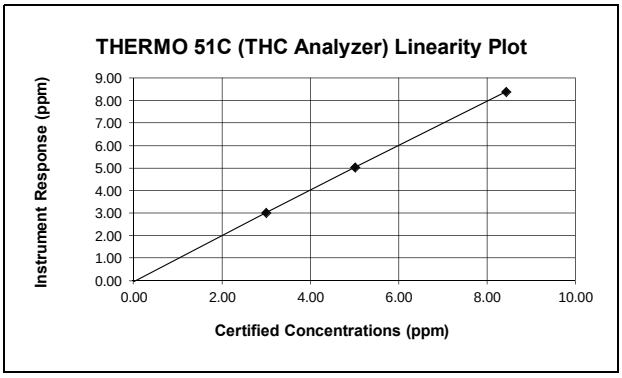
SERVOMEX 1440 (O_2 Analyzer)				
Certified Concentration (%)	Instrument Response (%)	Calibration Error (%)	Absolute Conc. (%)	Pass or Fail (±2%, ≤0.5%)
0.00	-0.01	-0.05	0.01	YES (%)
11.90	12.02	0.57	0.12	YES (%)
21.10	21.11	0.05	0.01	YES (%)
Linearity = 0.999				



THC Range (ppm) = 10

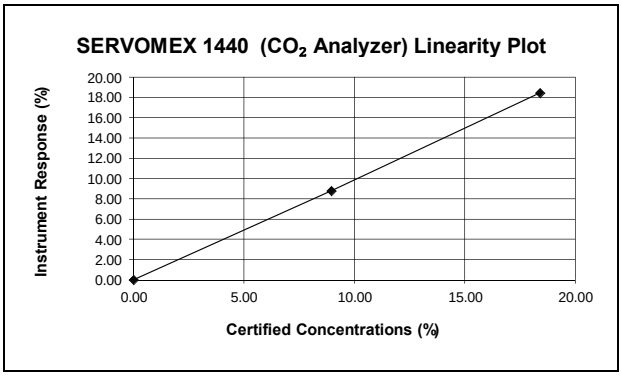
THERMO 51C (THC Analyzer)				
Certified Concentration (ppm)	Instrument Response (ppm)	Calibration Error (%)	Estimated Point (ppm)	Pass or Fail (±2,5%)[1]
0.00	-0.05	-0.50	N/A	YES
3.00	3.01	1.98	2.95	YES
5.01	5.04	1.57	4.96	YES
8.43	8.38	-0.48	N/A	YES
Linearity = 1.012				

[1]-zero/high based on 2% of span,low/mid based on 5% of concentration



CO2 Span (%) = 18.40

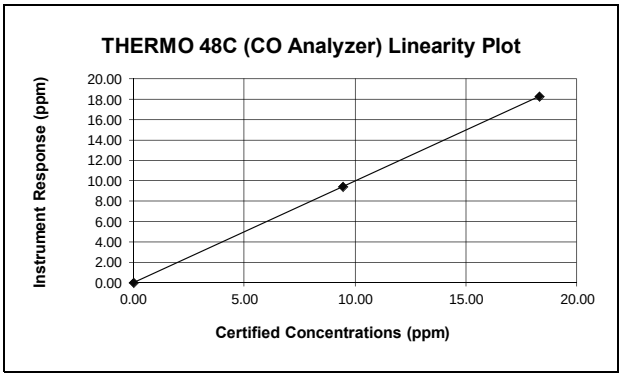
SERVOMEX 1440 (CO_2 Analyzer)				
Certified Concentration (%)	Instrument Response (%)	Calibration Error (%)	Absolute Conc. (%)	Pass or Fail (±2%, ≤0.5%)
0.00	0.02	0.11	0.02	YES (%)
8.95	8.78	-0.92	0.17	YES (%)
18.40	18.43	0.16	0.03	YES (%)
Linearity = 0.999				



Calibration Date: September 29, 2016
Client: Coyote North USA INC.

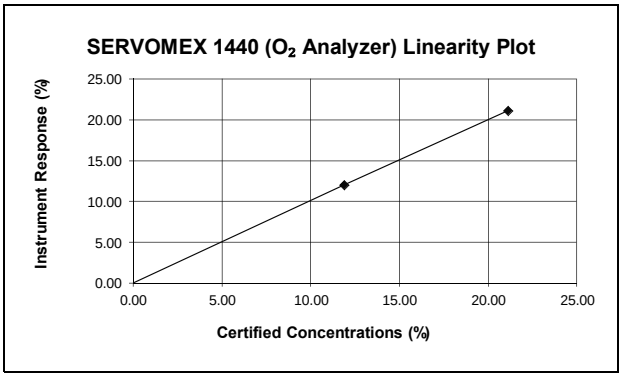
CO Span (ppm) = 18.30

THERMO 48C (CO Analyzer)				
Certified Concentration (ppm)	Instrument Response (ppm)	Calibration Error (%)	Absolute Conc. (ppm)	Pass or Fail (±2%, ≤0.5ppm)
0.00	0.01	0.05	0.01	YES (%)
9.44	9.40	-0.22	0.04	YES (%)
18.30	18.29	-0.05	0.01	YES (%)
Linearity = 1.001				



O2 Span (%) = 21.10

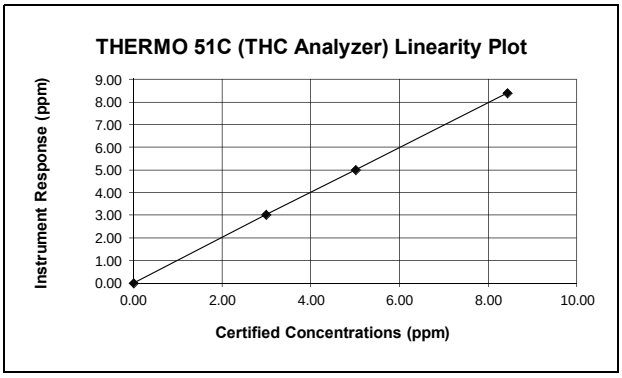
SERVOMEX 1440 (O_2 Analyzer)				
Certified Concentration (%)	Instrument Response (%)	Calibration Error (%)	Absolute Conc. (%)	Pass or Fail (±2%, ≤0.5%)
0.00	-0.02	-0.09	0.02	YES (%)
11.90	12.01	0.52	0.11	YES (%)
21.10	21.14	0.19	0.04	YES (%)
Linearity = 0.997				



THC Range (ppm) = 10

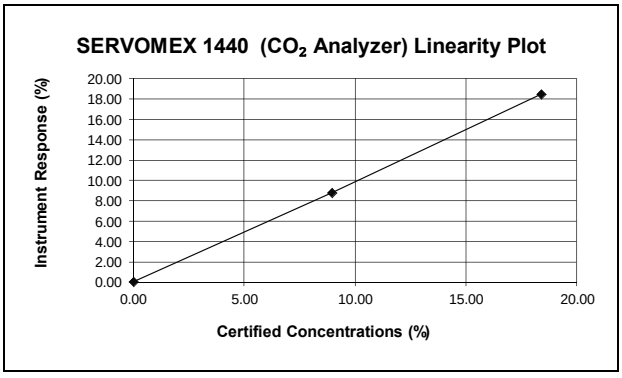
THERMO 51C (THC Analyzer)				
Certified Concentration (ppm)	Instrument Response (ppm)	Calibration Error (%)	Estimated Point (ppm)	Pass or Fail (±2,5%)[1]
0.00	0.01	0.10	N/A	YES
3.00	3.04	1.36	3.00	YES
5.01	5.01	0.16	5.00	YES
8.43	8.41	-0.20	N/A	YES
Linearity = 1.011				

[1]-zero/high based on 2% of span,low/mid based on 5% of concentration



CO2 Span (%) = 18.40

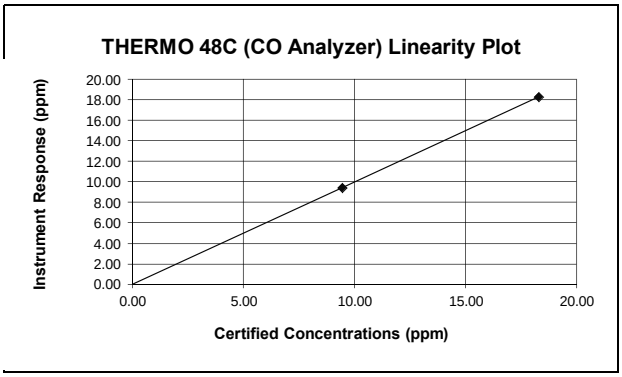
SERVOMEX 1440 (CO_2 Analyzer)				
Certified Concentration (%)	Instrument Response (%)	Calibration Error (%)	Absolute Conc. (%)	Pass or Fail (±2%, ≤0.5%)
0.00	0.04	0.22	0.04	YES (%)
8.95	8.82	-0.71	0.13	YES (%)
18.40	18.44	0.22	0.04	YES (%)
Linearity = 1.000				



Calibration Date: September 30, 2016
Client: Coyote North USA INC.

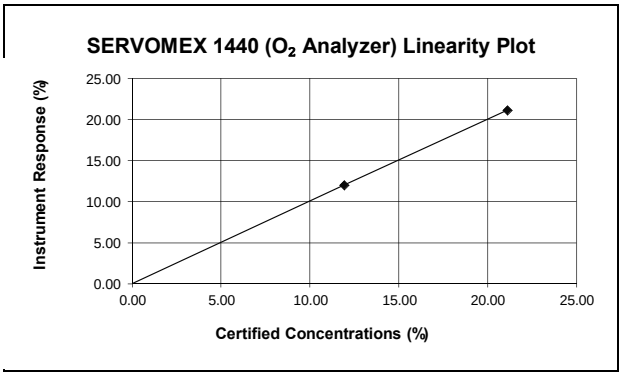
CO Span (ppm) = 18.30

THERMO 48C (CO Analyzer)				
Certified Concentration (ppm)	Instrument Response (ppm)	Calibration Error (%)	Absolute Conc. (ppm)	Pass or Fail (±2%, ≤0.5ppm)
0.00	-0.01	-0.05	0.01	YES (%)
9.44	9.41	-0.16	0.03	YES (%)
18.30	18.29	-0.05	0.01	YES (%)
Linearity = 1.000				



O2 Span (%) = 21.10

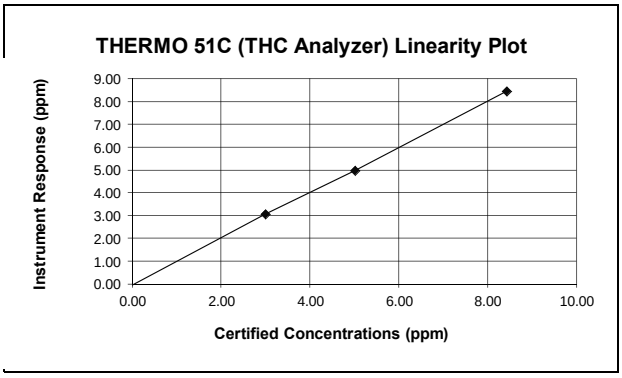
SERVOMEX 1440 (O_2 Analyzer)				
Certified Concentration (%)	Instrument Response (%)	Calibration Error (%)	Absolute Conc. (%)	Pass or Fail (±2%, ≤0.5%)
0.00	-0.01	-0.05	0.01	YES (%)
11.90	12.06	0.76	0.16	YES (%)
21.10	21.14	0.19	0.04	YES (%)
Linearity = 0.997				



THC Range (ppm) = 10

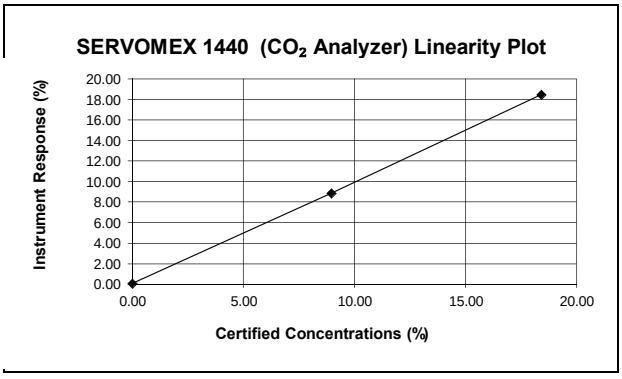
THERMO 51C (THC Analyzer)				
Certified Concentration (ppm)	Instrument Response (ppm)	Calibration Error (%)	Estimated Point (ppm)	Pass or Fail (±2,5%)[1]
0.00	-0.06	-0.60	N/A	YES
3.00	3.06	2.93	2.97	YES
5.01	4.97	-0.67	5.00	YES
8.43	8.46	0.30	N/A	YES
Linearity = 1.002				

[1]-zero/high based on 2% of span,low/mid based on 5% of concentration



CO2 Span (%) = 18.40

SERVOMEX 1440 (CO_2 Analyzer)				
Certified Concentration (%)	Instrument Response (%)	Calibration Error (%)	Absolute Conc. (%)	Pass or Fail (±2%, ≤0.5%)
0.00	0.06	0.33	0.06	YES (%)
8.95	8.89	-0.33	0.06	YES (%)
18.40	18.45	0.27	0.05	YES (%)
Linearity = 1.000				



DRIFT AND BIAS CHECK				
0-30-0 Load, Run - COMB 48 R1	O_2	CO	THC	CO_2
Raw Average	15.59	1.74	0.10	3.79
Corrected Average	15.47	1.77	0.16	3.81
Initial Zero	0.06	-0.03	-0.07	0.02
Final Zero	-0.01	-0.03	-0.05	0.02
Avg. Zero	0.03	-0.03	-0.06	0.02
Initial UpScale	12.03	9.41	2.89	8.87
Final UpScale	11.96	9.40	2.94	8.89
Avg. UpScale	12.00	9.41	2.92	8.88
Sys Resp (Zero)	-0.01	0.05	-0.06	0.04
Sys Resp (Upscale)	12.01	9.40	2.93	8.78
Upscale Cal Gas	11.90	9.44	3.00	8.95
Initial Zero Bias	0.33%	-0.44%	-0.10%	-0.11%
Final Zero Bias	0.00%	-0.44%	0.10%	-0.11%
Zero Drift	0.33%	0.00%	0.20%	0.00%
Initial Upscale Bias	0.09%	0.05%	-0.40%	0.49%
Final Upscale Bias	-0.24%	0.00%	0.10%	0.60%
Upscale Drift	0.33%	0.05%	0.50%	0.11%
Alternative Specification Abs Diff **Initial Zero**	0.07	0.08	--	0.02
Alternative Specification Abs Diff **Final Zero**	0.00	0.08	--	0.02
Alternative Specification Abs Diff **Initial Upscale**	0.02	0.01	--	0.09
Alternative Specification Abs Diff **Final Upscale**	0.05	0.00	--	0.11
Calibration Span	21.10	18.30	10.00	18.40
3% of Cal. Span (drift)	0.63	0.55	0.30	0.55
5% of Cal. Span (bias)	1.06	0.92	0.50	0.92

DRIFT AND BIAS CHECK				
0-30-0 Load, Run - COMB 48 R2	O_2	CO	THC	CO_2
Raw Average	15.61	1.33	0.60	3.74
Corrected Average	15.55	1.37	0.65	3.76
Initial Zero	-0.01	-0.03	-0.05	0.02
Final Zero	0.02	-0.02	-0.06	0.03
Avg. Zero	0.01	-0.03	-0.06	0.03
Initial UpScale	11.96	9.40	2.94	8.89
Final UpScale	11.94	9.32	2.97	8.86
Avg. UpScale	11.95	9.36	2.96	8.88
Sys Resp (Zero)	-0.01	0.05	-0.06	0.04
Sys Resp (Upscale)	12.01	9.40	2.93	8.78
Upscale Cal Gas	11.90	9.44	3.00	8.95
Initial Zero Bias	0.00%	-0.44%	0.10%	-0.11%
Final Zero Bias	0.14%	-0.38%	0.00%	-0.05%
Zero Drift	0.14%	0.05%	0.10%	0.05%
Initial Upscale Bias	-0.24%	0.00%	0.10%	0.60%
Final Upscale Bias	-0.33%	-0.44%	0.40%	0.43%
Upscale Drift	0.09%	0.44%	0.30%	0.16%
Alternative Specification Abs Diff **Initial Zero**	0.00	0.08	--	0.02
Alternative Specification Abs Diff **Final Zero**	0.03	0.07	--	0.01
Alternative Specification Abs Diff **Initial Upscale**	0.05	0.00	--	0.11
Alternative Specification Abs Diff **Final Upscale**	0.07	0.08	--	0.08
Calibration Span	21.10	18.30	10.00	18.40
3% of Cal. Span (drift)	0.63	0.55	0.30	0.55
5% of Cal. Span (bias)	1.06	0.92	0.50	0.92

DRIFT AND BIAS CHECK				
0-30-0 Load, Run - COMB 48 R3	O_2	CO	THC	CO_2
Raw Average	15.54	1.07	0.69	3.83
Corrected Average	15.50	1.14	0.73	3.87
Initial Zero	0.02	-0.02	-0.06	0.03
Final Zero	0.01	-0.09	-0.04	0.01
Avg. Zero	0.02	-0.06	-0.05	0.02
Initial UpScale	11.94	9.32	2.97	8.86
Final UpScale	11.93	9.32	3.04	8.83
Avg. UpScale	11.94	9.32	3.01	8.85
Sys Resp (Zero)	-0.01	0.05	-0.06	0.04
Sys Resp (Upscale)	12.01	9.40	2.93	8.78
Upscale Cal Gas	11.90	9.44	3.00	8.95
Initial Zero Bias	0.14%	-0.38%	0.00%	-0.05%
Final Zero Bias	0.09%	-0.77%	0.20%	-0.16%
Zero Drift	0.05%	0.38%	0.20%	0.11%
Initial Upscale Bias	-0.33%	-0.44%	0.40%	0.43%
Final Upscale Bias	-0.38%	-0.44%	1.10%	0.27%
Upscale Drift	0.05%	0.00%	0.70%	0.16%
Alternative Specification Abs Diff **Initial Zero**	0.03	0.07	--	0.01
Alternative Specification Abs Diff **Final Zero**	0.02	0.14	--	0.03
Alternative Specification Abs Diff **Initial Upscale**	0.07	0.08	--	0.08
Alternative Specification Abs Diff **Final Upscale**	0.08	0.08	--	0.05
Calibration Span	21.10	18.30	10.00	18.40
3% of Cal. Span (drift)	0.63	0.55	0.30	0.55
5% of Cal. Span (bias)	1.06	0.92	0.50	0.92

DRIFT AND BIAS CHECK				
30-70-30 Load, Run - COMB 48 R4	O_2	CO	THC	CO_2
Raw Average	14.85	2.34	1.09	4.19
Corrected Average	14.95	2.27	1.14	4.46
Initial Zero	0.01	-0.09	-0.04	0.01
Final Zero	-0.01	-0.02	-0.07	0.01
Avg. Zero	0.00	-0.06	-0.06	0.01
Initial UpScale	11.93	9.32	3.04	8.83
Final UpScale	11.92	9.48	2.96	8.83
Avg. UpScale	11.93	9.40	3.00	8.83
Sys Resp (Zero)	-0.01	0.05	-0.06	0.04
Sys Resp (Upscale)	12.01	9.40	2.93	8.78
Upscale Cal Gas	11.90	9.44	3.00	8.95
Initial Zero Bias	0.09%	-0.77%	0.20%	-0.16%
Final Zero Bias	0.00%	-0.38%	-0.10%	-0.16%
Zero Drift	0.09%	0.38%	0.30%	0.00%
Initial Upscale Bias	-0.38%	-0.44%	1.10%	0.27%
Final Upscale Bias	-0.43%	0.44%	0.30%	0.27%
Upscale Drift	0.05%	0.87%	0.80%	0.00%
Alternative Specification Abs Diff **Initial Zero**	0.02	0.14	--	0.03
Alternative Specification Abs Diff **Final Zero**	0.00	0.07	--	0.03
Alternative Specification Abs Diff **Initial Upscale**	0.08	0.08	--	0.05
Alternative Specification Abs Diff **Final Upscale**	0.09	0.08	--	0.05
Calibration Span	21.10	18.30	10.00	18.40
3% of Cal. Span (drift)	0.63	0.55	0.30	0.55
5% of Cal. Span (bias)	1.06	0.92	0.50	0.92

DRIFT AND BIAS CHECK				
30-70-30 Load, Run - COMB 48 R5	O_2	CO	THC	CO_2
Raw Average	14.71	2.35	0.07	4.34
Corrected Average	14.56	2.38	0.14	4.34
Initial Zero	0.03	-0.01	-0.08	0.03
Final Zero	0.01	-0.02	-0.06	0.03
Avg. Zero	0.02	-0.02	-0.07	0.03
Initial UpScale	12.08	9.31	3.05	8.92
Final UpScale	11.98	9.39	2.96	8.91
Avg. UpScale	12.03	9.35	3.01	8.92
Sys Resp (Zero)	-0.01	-0.02	-0.05	0.02
Sys Resp (Upscale)	12.02	9.30	3.01	8.78
Upscale Cal Gas	11.90	9.44	3.00	8.95
Initial Zero Bias	0.19%	0.05%	-0.30%	0.05%
Final Zero Bias	0.09%	0.00%	-0.10%	0.05%
Zero Drift	0.09%	0.05%	0.20%	0.00%
Initial Upscale Bias	0.28%	0.05%	0.40%	0.76%
Final Upscale Bias	-0.19%	0.49%	-0.50%	0.71%
Upscale Drift	0.47%	0.44%	0.90%	0.05%
Alternative Specification Abs Diff **Initial Zero**	0.04	0.01	--	0.01
Alternative Specification Abs Diff **Final Zero**	0.02	0.00	--	0.01
Alternative Specification Abs Diff **Initial Upscale**	0.06	0.01	--	0.14
Alternative Specification Abs Diff **Final Upscale**	0.04	0.09	--	0.13
Calibration Span	21.10	18.30	10.00	18.40
3% of Cal. Span (drift)	0.63	0.55	0.30	0.55
5% of Cal. Span (bias)	1.06	0.92	0.50	0.92

DRIFT AND BIAS CHECK				
30-70-30 Load, Run - COMB 48 R6	O_2	CO	THC	CO_2
Raw Average	14.66	3.64	0.28	4.40
Corrected Average	14.56	3.67	0.34	4.41
Initial Zero	0.01	-0.02	-0.06	0.03
Final Zero	-0.01	-0.02	-0.06	0.02
Avg. Zero	0.00	-0.02	-0.06	0.03
Initial UpScale	11.98	9.39	2.96	8.91
Final UpScale	11.98	9.38	2.95	8.92
Avg. UpScale	11.98	9.39	2.96	8.92
Sys Resp (Zero)	-0.01	-0.02	-0.05	0.02
Sys Resp (Upscale)	12.02	9.30	3.01	8.78
Upscale Cal Gas	11.90	9.44	3.00	8.95
Initial Zero Bias	0.09%	0.00%	-0.10%	0.05%
Final Zero Bias	0.00%	0.00%	-0.10%	0.00%
Zero Drift	0.09%	0.00%	0.00%	0.05%
Initial Upscale Bias	-0.19%	0.49%	-0.50%	0.71%
Final Upscale Bias	-0.19%	0.44%	-0.60%	0.76%
Upscale Drift	0.00%	0.05%	0.10%	0.05%
Alternative Specification Abs Diff **Initial Zero**	0.02	0.00	--	0.01
Alternative Specification Abs Diff **Final Zero**	0.00	0.00	--	0.00
Alternative Specification Abs Diff **Initial Upscale**	0.04	0.09	--	0.13
Alternative Specification Abs Diff **Final Upscale**	0.04	0.08	--	0.14
Calibration Span	21.10	18.30	10.00	18.40
3% of Cal. Span (drift)	0.63	0.55	0.30	0.55
5% of Cal. Span (bias)	1.06	0.92	0.50	0.92

DRIFT AND BIAS CHECK				
70-100-70 Load, Run - COMB 48 R7	O_2	CO	THC	CO_2
Raw Average	14.73	2.58	0.23	4.33
Corrected Average	14.55	2.58	0.24	4.30
Initial Zero	0.02	-0.01	-0.07	0.05
Final Zero	0.01	0.02	0.04	0.08
Avg. Zero	0.02	0.01	-0.02	0.07
Initial UpScale	12.08	9.40	3.06	9.05
Final UpScale	12.02	9.43	3.04	8.84
Avg. UpScale	12.05	9.42	3.05	8.95
Sys Resp (Zero)	-0.02	0.01	0.01	0.04
Sys Resp (Upscale)	12.01	9.40	3.04	8.82
Upscale Cal Gas	11.90	9.44	3.00	8.95
Initial Zero Bias	0.19%	-0.11%	-0.80%	0.05%
Final Zero Bias	0.14%	0.05%	0.30%	0.22%
Zero Drift	0.05%	0.16%	1.10%	0.16%
Initial Upscale Bias	0.33%	0.00%	0.20%	1.25%
Final Upscale Bias	0.05%	0.16%	0.00%	0.11%
Upscale Drift	0.28%	0.16%	0.20%	1.14%
Alternative Specification Abs Diff **Initial Zero**	0.04	0.02	--	0.01
Alternative Specification Abs Diff **Final Zero**	0.03	0.01	--	0.04
Alternative Specification Abs Diff **Initial Upscale**	0.07	0.00	--	0.23
Alternative Specification Abs Diff **Final Upscale**	0.01	0.03	--	0.02
Calibration Span	21.10	18.30	10.00	18.40
3% of Cal. Span (drift)	0.63	0.55	0.30	0.55
5% of Cal. Span (bias)	1.06	0.92	0.50	0.92

DRIFT AND BIAS CHECK				
70-100-70 Load, Run - COMB 48 R8	O_2	CO	THC	CO_2
Raw Average	14.85	2.63	1.10	4.22
Corrected Average	14.72	2.61	1.09	4.24
Initial Zero	0.01	0.02	0.04	0.08
Final Zero	-0.02	0.08	-0.07	0.06
Avg. Zero	-0.01	0.05	-0.02	0.07
Initial UpScale	12.02	9.43	3.04	8.84
Final UpScale	11.99	9.29	3.05	8.81
Avg. UpScale	12.01	9.36	3.05	8.83
Sys Resp (Zero)	-0.02	0.01	0.01	0.04
Sys Resp (Upscale)	12.01	9.40	3.04	8.82
Upscale Cal Gas	11.90	9.44	3.00	8.95
Initial Zero Bias	0.14%	0.05%	0.30%	0.22%
Final Zero Bias	0.00%	0.38%	-0.80%	0.11%
Zero Drift	0.14%	0.33%	1.10%	0.11%
Initial Upscale Bias	0.05%	0.16%	0.00%	0.11%
Final Upscale Bias	-0.09%	-0.60%	0.10%	-0.05%
Upscale Drift	0.14%	0.77%	0.10%	0.16%
Alternative Specification Abs Diff **Initial Zero**	0.03	0.01	--	0.04
Alternative Specification Abs Diff **Final Zero**	0.00	0.07	--	0.02
Alternative Specification Abs Diff **Initial Upscale**	0.01	0.03	--	0.02
Alternative Specification Abs Diff **Final Upscale**	0.02	0.11	--	0.01
Calibration Span	21.10	18.30	10.00	18.40
3% of Cal. Span (drift)	0.63	0.55	0.30	0.55
5% of Cal. Span (bias)	1.06	0.92	0.50	0.92

DRIFT AND BIAS CHECK				
70-100-70 Load, Run - COMB 48 R9	O_2	CO	THC	CO_2
Raw Average	15.26	1.83	0.01	3.96
Corrected Average	15.13	1.84	0.08	3.98
Initial Zero	-0.02	0.08	-0.07	0.06
Final Zero	0.01	-0.08	-0.08	0.07
Avg. Zero	-0.01	0.00	-0.08	0.07
Initial UpScale	12.02	9.43	3.04	8.84
Final UpScale	11.98	9.33	3.00	8.80
Avg. UpScale	12.00	9.38	3.02	8.82
Sys Resp (Zero)	-0.02	0.01	0.01	0.04
Sys Resp (Upscale)	12.01	9.40	3.04	8.82
Upscale Cal Gas	11.90	9.44	3.00	8.95
Initial Zero Bias	0.00%	0.38%	-0.80%	0.11%
Final Zero Bias	0.14%	-0.49%	-0.90%	0.16%
Zero Drift	0.14%	0.87%	0.10%	0.05%
Initial Upscale Bias	0.05%	0.16%	0.00%	0.11%
Final Upscale Bias	-0.14%	-0.38%	-0.40%	-0.11%
Upscale Drift	0.19%	0.55%	0.40%	0.22%
Alternative Specification Abs Diff **Initial Zero**	0.00	0.07	--	0.02
Alternative Specification Abs Diff **Final Zero**	0.03	0.09	--	0.03
Alternative Specification Abs Diff **Initial Upscale**	0.01	0.03	--	0.02
Alternative Specification Abs Diff **Final Upscale**	0.03	0.07	--	0.02
Calibration Span	21.10	18.30	10.00	18.40
3% of Cal. Span (drift)	0.63	0.55	0.30	0.55
5% of Cal. Span (bias)	1.06	0.92	0.50	0.92

DRIFT AND BIAS CHECK				
90-100 Load, Run - COMB 48 R10	O_2	CO	THC	CO_2
Raw Average	15.38	2.52	0.19	3.92
Corrected Average	15.19	2.58	0.19	3.93
Initial Zero	0.09	-0.01	0.03	0.06
Final Zero	0.08	-0.06	-0.05	0.07
Avg. Zero	0.09	-0.04	-0.01	0.07
Initial UpScale	12.10	9.31	3.05	8.83
Final UpScale	12.04	9.30	3.09	8.86
Avg. UpScale	12.07	9.31	3.07	8.85
Sys Resp (Zero)	-0.01	-0.01	-0.06	0.06
Sys Resp (Upscale)	12.06	9.41	3.06	8.89
Upscale Cal Gas	11.90	9.44	3.00	8.95
Initial Zero Bias	0.47%	0.00%	0.90%	0.00%
Final Zero Bias	0.43%	-0.27%	0.10%	0.05%
Zero Drift	0.05%	0.27%	0.80%	0.05%
Initial Upscale Bias	0.19%	-0.55%	-0.10%	-0.33%
Final Upscale Bias	-0.09%	-0.60%	0.30%	-0.16%
Upscale Drift	0.28%	0.05%	0.40%	0.16%
Alternative Specification Abs Diff **Initial Zero**	0.10	0.00	--	0.00
Alternative Specification Abs Diff **Final Zero**	0.09	0.05	--	0.01
Alternative Specification Abs Diff **Initial Upscale**	0.04	0.10	--	0.06
Alternative Specification Abs Diff **Final Upscale**	0.02	0.11	--	0.03
Calibration Span	21.10	18.30	10.00	18.40
3% of Cal. Span (drift)	0.63	0.55	0.30	0.55
5% of Cal. Span (bias)	1.06	0.92	0.50	0.92

DRIFT AND BIAS CHECK				
90-100 Load, Run - COMB 48 R11	O_2	CO	THC	CO_2
Raw Average	15.18	1.95	0.21	4.04
Corrected Average	15.03	2.01	0.26	4.04
Initial Zero	0.08	-0.06	-0.05	0.07
Final Zero	0.06	-0.03	-0.06	0.08
Avg. Zero	0.07	-0.05	-0.06	0.08
Initial UpScale	12.04	9.30	3.09	8.86
Final UpScale	12.02	9.35	3.00	8.86
Avg. UpScale	12.03	9.33	3.05	8.86
Sys Resp (Zero)	-0.01	-0.01	-0.06	0.06
Sys Resp (Upscale)	12.06	9.41	3.06	8.89
Upscale Cal Gas	11.90	9.44	3.00	8.95
Initial Zero Bias	0.43%	-0.27%	0.10%	0.05%
Final Zero Bias	0.33%	-0.11%	0.00%	0.11%
Zero Drift	0.09%	0.16%	0.10%	0.05%
Initial Upscale Bias	-0.09%	-0.60%	0.30%	-0.16%
Final Upscale Bias	-0.19%	-0.33%	-0.60%	-0.16%
Upscale Drift	0.09%	0.27%	0.90%	0.00%
Alternative Specification Abs Diff **Initial Zero**	0.09	0.05	--	0.01
Alternative Specification Abs Diff **Final Zero**	0.07	0.02	--	0.02
Alternative Specification Abs Diff **Initial Upscale**	0.02	0.11	--	0.03
Alternative Specification Abs Diff **Final Upscale**	0.04	0.06	--	0.03
Calibration Span	21.10	18.30	10.00	18.40
3% of Cal. Span (drift)	0.63	0.55	0.30	0.55
5% of Cal. Span (bias)	1.06	0.92	0.50	0.92

DRIFT AND BIAS CHECK				
90-100 Load, Run - COMB 48 R12	O_2	CO	THC	CO_2
Raw Average	15.31	2.42	0.16	3.90
Corrected Average	15.21	2.41	0.20	3.92
Initial Zero	0.06	-0.03	-0.06	0.08
Final Zero	0.06	0.12	-0.03	0.06
Avg. Zero	0.06	0.05	-0.05	0.07
Initial UpScale	12.02	9.35	3.00	8.86
Final UpScale	11.97	9.40	3.02	8.80
Avg. UpScale	12.00	9.38	3.01	8.83
Sys Resp (Zero)	-0.01	-0.01	-0.06	0.06
Sys Resp (Upscale)	12.06	9.41	3.06	8.89
Upscale Cal Gas	11.90	9.44	3.00	8.95
Initial Zero Bias	0.33%	-0.11%	0.00%	0.11%
Final Zero Bias	0.33%	0.71%	0.30%	0.00%
Zero Drift	0.00%	0.82%	0.30%	0.11%
Initial Upscale Bias	-0.19%	-0.33%	-0.60%	-0.16%
Final Upscale Bias	-0.43%	-0.05%	-0.40%	-0.49%
Upscale Drift	0.24%	0.27%	0.20%	0.33%
Alternative Specification Abs Diff **Initial Zero**	0.07	0.02	--	0.02
Alternative Specification Abs Diff **Final Zero**	0.07	0.13	--	0.00
Alternative Specification Abs Diff **Initial Upscale**	0.04	0.06	--	0.03
Alternative Specification Abs Diff **Final Upscale**	0.09	0.01	--	0.09
Calibration Span	21.10	18.30	10.00	18.40
3% of Cal. Span (drift)	0.63	0.55	0.30	0.55
5% of Cal. Span (bias)	1.06	0.92	0.50	0.92

METERING SYSTEM DRY GAS METER CALIBRATION SHEET
EPA Reference Method
Metering System Pre-Test Calibration
Air Hygiene Assett ID: samp-cp-0011

Filename: Z:\Shared\QAQC\Calibrations\PM-Equipment\M-5 Consoles\Calibration Sheet v4.1\Current\[SAMP-CP-0011 Calibration 4-7-16.xls]Original (5 point)
Make: Thermo Environmental
Model #: MST-C1
Serial #: 90695

Date: 04/07/16
Barometric Pressure: 29.40 (in. Hg)
Theoretical Critical Vacuum: 13.87 (in. Hg)

DRY GAS METER READINGS

ΔH	Time	Volume			Initial Temperature	
		Initial	Final	Total	Inlet	Outlet
(in. H2O)	(min)	(ft^3)	(ft^3)	(ft^3)	(°F)	(°F)
0.25	17.00	311.230	316.550	5.320	73.0	69.0
0.52	12.00	316.550	321.930	5.380	73.0	70.0
0.99	10.00	321.930	327.850	5.920	75.0	71.0
1.70	10.00	327.850	335.860	8.010	76.0	71.0
3.10	10.00	335.860	346.370	10.510	78.0	72.0

Final Temperature		Orifice	K' Orifice	Actual	Ambient Temperature		
Inlet	Outlet	Serial#	Coefficient	Vacuum	Initial	Final	Average
(°F)	(°F)	(number)	(see above)	(in. Hg)	(°F)	(°F)	(°F)
74.0	70.0	40	0.2354	16.0	71.4	71.6	71.5
76.0	70.0	48	0.3359	16.0	71.6	71.7	71.7
78.0	71.0	55	0.4542	16.0	71.9	72.3	72.1
78.0	72.0	63	0.5991	16.0	72.1	72.1	72.1
80.0	72.0	73	0.8065	15.0	72.3	72.1	72.2

RESULTS

DRY GAS METER		ORIFICE		
VOLUME CORRECTED Vm(std) (ft^3)	VOLUME CORRECTED Vm(std) (liters)	VOLUME CORRECTED Vcr(std) (ft^3)	VOLUME CORRECTED Vcr(std) (liters)	VOLUME NOMINAL Vcr (ft^3)
5.194	147.10	5.103	144.5	5.230
5.249	148.65	5.140	145.6	5.269
5.766	163.30	5.789	163.9	5.939
7.809	221.14	7.636	216.2	7.834
10.258	290.49	10.278	291.1	10.547

DRY GAS METER CALIBRATION FACTOR Y		ORIFICE CALIBRATION FACTOR ΔH@		
Variation (number)	Value (number)	Value (in. H2O)	Value (mm H2O)	Variation (in. H2O)
-0.007	0.982	1.529	38.84	-0.056
-0.010	0.979	1.561	39.65	-0.024
0.015	1.004	1.624	41.24	0.039
-0.011	0.978	1.601	40.66	0.016
0.013	1.002	1.610	40.89	0.025
AVERAGE:	**0.989**	**1.585**	40.25	**PASSED**

Notes:

For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter,acceptable tolerance of individual values from the average is +/- 0.02. For Orifice Calibration Factor dH@, the orifice differential pressure in inches of H_20 that equates to 0.75 cfm of air at 68 °F and 29.92 inches of Hg, acceptable tolerance of individual values from the average is +/- 0.2. For valid test results, the Actual Vacuum should be 1 to 2 in. Hg greater than the Theoretical Critical Vacuum shown above. The Critical Orifice Coefficient, K', must be entered in English units, (ft)^3*(deg R)^0.5/((in.Hg)*(min)).

SIGNATURE: Craig McCarty

DATE: 04/07/16 04/07/16

METERING SYSTEM THERMOCOUPLE CALIBRATION SHEET
EPA Reference Method
Metering System Pre-Test Calibration
Air Hygiene Assett ID: samp-cp-0011

Filename: Z:\Shared\QAQC\Calibrations\PM-Equipment\M-5 Consoles\Calibration Sheet v4.1\Current\[SAMP-CP-0011 Calibration 4-7-16.xls]Original (5 point)

Make: Thermo Environmental
Model #: MST-C1
Serial #: 90695

Date: 04/07/16
Barometric Pressure: 29.40 (in. Hg)
Temperature (ASTM cal): 71.00 (°F)

Thermocouple	100 (°F)		600 (°F)		1200 (°F)	
	Reading	% Error	Reading	% Error	Reading	% Error
Stack	100.00	0.00	601.00	0.17	1203.00	0.25
Probe	100.00	0.00	601.00	0.17	1203.00	0.25
Filter	100.00	0.00	601.00	0.17	1203.00	0.25
Dryer	100.00	0.00	601.00	0.17	1203.00	0.25
Aux.	100.00	0.00	601.00	0.17	1203.00	0.25

Note: Calibrated against an ALTEK Thermocouple Source Series 22, direct temperature output calibrated to ASTM and IPTS standards as outlined in ALTEK Data Sheet 22.

Thermocouple	71.00 (°F)	
	Reading	(±°F)
DGM In	72.0	1.00
DGM Out	70.0	1.00

Note: Calibrated against ASTM Reference Thermometer.

SIGNATURE: Craig McCarty DATE: 04/07/16 04/07/16

Standard for Calibration of Console Thermocouple Systems

40 CFR, Part 60
Appendix A, Method 5
10.3.2 The temperature data recorded in the field shall be considered valid. If, during calibration, the absolute temperature measured with the sensor being calibrated and the reference sensor **agree within 1.5 percent**, the temperature data taken in the field shall be considered valid.

Standard for Calibration of Individual Thermocouples

EMC, ALT-011: After each test run series, check the accuracy (and, hence, the calibration) of each thermocouple system at ambient temperature, or any other temperature, within the range specified by the manufacturer, using a reference thermometer (either ASTM reference thermometer or a thermometer that has been calibrated against an ASTM reference thermometer). The temperatures of the thermocouple and reference thermometers shall **agree to within ±2°F**.

PROBE (STACK), HOTBOX (FILTER), AND GOOSENECK (EXIT) THERMOCOUPLE CALIBRATION SHEET
EPA Reference Method
Metering System Pre-Test Calibration

Air Hygiene Assett ID(s): **Probe:** samp-hp-0039 **Hotbox:** samp-bh-0012 **Gooseneck:** samp-ad-0028

Filename: Z:\Shared\QAQC\Calibrations\PM-Equipment\M-5 Consoles\Calibration Sheet v4.1\Current\[SAMP-CP-0011 Calibration 4-7-16.xls]Original (5 point)

Barometric Pressure: 29.40

Thermo-couples		Temps (°F)	Signature		Date	
Stack	Ref	71.20	Craig McCarty		04/07/16	04/07/16
	Read	72.00				
	±°F	0.80				
Filter	Ref	71.20	Craig McCarty		04/07/16	04/07/16
	Read	71.00				
	±°F	0.20				
Exit	Ref	71.20	Craig McCarty		04/07/16	04/07/16
	Read	72.00				
	±°F	0.80				

Note: Calibrated against ASTM Reference Thermometer.

Standard for Calibration of Individual Thermocouples

EMC, ALT-011: After each test run series, check the accuracy (and, hence, the calibration) of each thermocouple system at ambient temperature, or any other temperature, within the range specified by the manufacturer, using a reference thermometer (either ASTM reference thermometer or a thermometer that has been calibrated against an ASTM reference thermometer). The temperatures of the thermocouple and reference thermometers shall **agree to within ±2°F**.

METERING SYSTEM DRY GAS METER CALIBRATION SHEET
EPA Reference Method
Metering System Post-Test Calibration
Air Hygiene Assett ID: samp-cp-0011

Filename: Z:\Shared\QAQC\Calibrations\PM-Equipment\M-5 Consoles\Calibration Sheet v4.1\Current\[SAMP-CP-0011 Calibration 4-7-16.xls]10-17-16 (3 point)
Make: Thermo Environmental
Model #: MST-C1
Serial #: 90695

Date: 10/17/16
Barometric Pressure: 28.82 (in. Hg)
Theoretical Critical Vacuum: 13.59 (in. Hg)

DRY GAS METER READINGS

ΔH (in. H2O)	Time (min)	Volume Initial (ft³)	Volume Final (ft³)	Volume Total (ft³)	Initial Temperature Inlet (°F)	Initial Temperature Outlet (°F)
1.70	10.00	781.450	789.460	8.010	82.0	76.0
1.70	10.00	789.460	797.460	8.000	81.0	75.0
1.70	10.00	797.460	805.480	8.020	81.0	76.0

Final Temperature Inlet (°F)	Final Temperature Outlet (°F)	Orifice Serial# (number)	K' Orifice Coefficient (see above)	Actual Vacuum (in. Hg)	Ambient Temperature Initial (°F)	Ambient Temperature Final (°F)	Ambient Temperature Average (°F)
81.0	75.0	63	0.5991	16.0	72.3	72.2	72.3
81.0	76.0	63	0.5991	16.0	72.2	72.2	72.2
82.0	76.0	63	0.5991	16.0	72.2	72.2	72.2

RESULTS

DRY GAS METER VOLUME CORRECTED Vm(std) (ft³)	DRY GAS METER VOLUME CORRECTED Vm(std) (liters)	ORIFICE VOLUME CORRECTED Vcr(std) (ft³)	ORIFICE VOLUME CORRECTED Vcr(std) (liters)	ORIFICE VOLUME NOMINAL Vcr (ft³)
7.595	215.09	7.484	211.9	7.835
7.589	214.92	7.484	212.0	7.835
7.601	215.25	7.484	212.0	7.835

DRY GAS METER CALIBRATION FACTOR Y Variation (number)	DRY GAS METER CALIBRATION FACTOR Y Value (number)	ORIFICE CALIBRATION FACTOR ΔH@ Value (in. H2O)	ORIFICE CALIBRATION FACTOR ΔH@ Value (mm H2O)	ORIFICE CALIBRATION FACTOR ΔH@ Variation (in. H2O)
0.000	0.985	1.621	41.18	0.001
0.001	0.986	1.621	41.18	0.000
-0.001	0.985	1.620	41.14	-0.001
AVERAGE:	**0.985**	**1.621**	41.17	**PASSED**
LAST 5-PT:	**0.989**	**1.585**	**PASSED**	5-PT Date:
% DIFF:	**0.4%**	**2.3%**		04/07/16

40 CFR - CHAPTER I - PART 60
Appendix A, Method 5
10.3.2 Calibration After Use
After each field use, the calibration of the metering system shall be checked by performing three calibration runs at a single, intermediate orifice setting (based on the previous field test)....Calculate the average value of the DGM calibration factor. If the value has changed by more than 5 percent, recalibrate the meter over the full range of orifice settings, as detailed in Section 10.3.1.

10.3.3 Acceptable Variation in Calibration
If the DGM coefficient values obtained before and after a test series differ by more than 5 percent, the test series shall either be voided, or calculations for the test series shall be performed using whichever meter coefficient value (i.e., before or after) gives the lower value of total sample volume.

Notes: For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter,acceptable tolerance of individual values from the average is +/- 0.02. For Orifice Calibration Factor dH@, the orifice differential pressure in inches of H_20 that equates to 0.75 cfm of air at 68 °F and 29.92 inches of Hg, acceptable tolerance of individual values from the average is +/- 0.2. For valid test results, the Actual Vacuum should be 1 to 2 in. Hg greater than the Theoretical Critical Vacuum shown above. The Critical Orifice Coefficient, K', must be entered in English units, (ft)^3*(deg R)^0.5/((in.Hg)*(min)).

SIGNATURE: Craig McCarty DATE: 10/17/16 10/17/16

METERING SYSTEM THERMOCOUPLE CALIBRATION SHEET
EPA Reference Method
Metering System Post-Test Calibration
Air Hygiene Assett ID: samp-cp-0011

Filename: Z:\Shared\QAQC\Calibrations\PM-Equipment\M-5 Consoles\Calibration Sheet v4.1\Current\[SAMP-CP-0011 Calibration 4-7-16.xls]10-17-16 (3 point)
Make: Thermo Environmental
Model #: MST-C1
Serial #: 90695

Date: 10/17/16
Barometric Pressure: 28.82 (in. Hg)
Temperature (ASTM cal): 72.30 (°F)

Thermocouple	100 (°F)		600 (°F)		1200 (°F)	
	Reading	% Error	Reading	% Error	Reading	% Error
Stack	99.00	0.50	600.00	0.00	1202.00	0.17
Probe	99.00	0.50	600.00	0.00	1202.00	0.17
Filter	99.00	0.50	600.00	0.00	1201.00	0.08
Dryer	99.00	0.50	600.00	0.00	1202.00	0.17
Aux.	99.00	0.50	600.00	0.00	1202.00	0.17

Note: Calibrated against an ALTEK Thermocouple Source Series 22, direct temperature output calibrated to ASTM and IPTS standards as outlined in ALTEK Data Sheet 22.

Thermocouple	72.30 (°F)	
	Reading	(±°F)
DGM In	74.0	1.70
DGM Out	72.0	0.30

Note: Calibrated against ASTM Reference Thermometer.

SIGNATURE: Craig McCarty DATE: 10/17/16 10/17/16

Standard for Calibration of Console Thermocouple Systems

40 CFR, Part 60
Appendix A, Method 5
10.3.2 The temperature data recorded in the field shall be considered valid. If, during calibration, the absolute temperature measured with the sensor being calibrated and the reference sensor **agree within 1.5 percent**, the temperature data taken in the field shall be considered valid.

Standard for Calibration of Individual Thermocouples

EMC, ALT-011: After each test run series, check the accuracy (and, hence, the calibration) of each thermocouple system at ambient temperature, or any other temperature, within the range specified by the manufacturer, using a reference thermometer (either ASTM reference thermometer or a thermometer that has been calibrated against an ASTM reference thermometer). The temperatures of the thermocouple and reference thermometers shall **agree to within ±2°F**.

PROBE (STACK), HOTBOX (FILTER), AND GOOSENECK (EXIT) THERMOCOUPLE CALIBRATION SHEET
EPA Reference Method
Metering System Post-Test Calibration

Air Hygiene Assett ID(s): **Probe:** samp-hp-0039 **Hotbox:** samp-bh-0012 **Gooseneck:** samp-ad-0028

Filename: Z:\Shared\QAQC\Calibrations\PM-Equipment\M-5 Consoles\Calibration Sheet v4.1\Current\[SAMP-CP-0011 Calibration 4-7-16.xls]10-17-16 (3 point)

Barometric Pressure: 28.82

Thermo-couples		Temps (°F)	Signature		Date	
Stack	Ref	72.20	Craig McCarty		10/17/16	10/17/16
	Read	73.00				
	±°F	0.80				
Filter	Ref	72.20	Craig McCarty		10/17/16	10/17/16
	Read	73.00				
	±°F	0.80				
Exit	Ref	72.20	Craig McCarty		10/17/16	10/17/16
	Read	73.00				
	±°F	0.80				

Note: Calibrated against ASTM Reference Thermometer.

Standard for Calibration of Individual Thermocouples

EMC, ALT-011: After each test run series, check the accuracy (and, hence, the calibration) of each thermocouple system at ambient temperature, or any other temperature, within the range specified by the manufacturer, using a reference thermometer (either ASTM reference thermometer or a thermometer that has been calibrated against an ASTM reference thermometer). The temperatures of the thermocouple and reference thermometers shall **agree to within ±2°F**.

APPENDIX E

FUEL ANALYSIS RECORDS

Sample Date 8/16/2016 **Truck/Trailer No.:**

Property	Result	Specification
Methane, PPM Wgt.	BDL	Note (1)
Ethane, PPM Wgt.	19	Note (1)
Ethylene, PPM Wgt.	BDL	100 max.
Propane, Wgt. %	0.44	0.5 max.
Propylene, Wgt. %	99.55	99.5 min.
Total Saturated C4's, PPM Mole	BDL	Note (1)
Propadiene, PPM Wgt.	BDL	5 max.
Methyl Acetylene, PPM Wgt.	BDL	7 max.
Acetylene, PPM Wgt.	BDL	3 max.
Total Butadienes, PPM Wgt.	BDL	10 max.
Total Butenes, PPM Wgt.	BDL	100 max.
1-Butyne, PPM Wgt.	BDL	7 max.
2-Butyne, PPM Wgt.	BDL	7 max.
Cyclopropane, PPM Wgt.	BDL	1 max.
3-Methyl 1-Butene, PPM Wgt.	BDL	1 max.
Total > C5, PPM Wgt.	BDL	20 max.
Carbon Monoxide, PPM Wgt.	BDL	0.033 max.
Carbon Dioxide, PPM Wgt.	0.3	2 max.
Carbonyl Sulfide, PPM Wgt.	BDL	0.043 max.
Hydrogen Sulfide, PPM Wgt.	BDL	1 max.
Total Sulfur, PPM Wgt.	BDL	1 max.
Arsine, PPM Wgt.	BDL	0.056 max.
Phosphine, PPM Wgt.	BDL	0.1 max.
Methanol, PPM Wgt.	0.01	4 max.
2-Propanol, PPM Wgt.	BDL	7 max.
Water, PPM Wgt.	0.05	2 max.
Hydrogen, PPM Wgt.	BDL	1 max.
Oxygen, PPM Wgt.*	BDL	2 max.
Nitrogen, PPM Wgt.	BDL	Note (1)
Ammonia, PPM Wgt.	BDL	0.2 max.

JED

REF ID# CY35029 by/for Robert D. Freeman
SOURCE Tank 5 Laboratory Manager

Note (1) Total Non-Propane Inerts = 1000 Wt. ppm max

revised 09/09/13

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LABORATORY REPORT

October 25, 2016

Sean Barnes
Air Hygiene, Incorporated
1600 West Tacoma Street
Broken Arrow, OK 74012

RE: Coyote 2nd mo. / Coyote-16-enid.ok-comp#1

Dear Sean:

Enclosed are the results of the samples submitted to our laboratory on October 7, 2016. For your reference, these analyses have been assigned our service request number P1604745.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Kelly Horiuchi at 5:30 pm, Oct 25, 2016

Kelly Horiuchi
Laboratory Director

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Client: Air Hygiene, Incorporated Service Request No: P1604745
Project: Coyote 2nd mo. / Coyote-16-enid.ok-comp#1

CASE NARRATIVE

The samples were received intact under chain of custody on October 7, 2016 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Benzene Analysis

The samples were analyzed for Benzene per ASTM D1945-03 using a gas chromatograph equipped with a flame ionization detector (FID). This procedure is described in laboratory SOP VOA-TO3C1C6. This method is included on the laboratory's DoD-ELAP scope of accreditation, however it is not part of the NELAP or AIHA-LAP, LLC accreditation.

BTU and CHONS Analysis

The results for BTU and CHONS were generated according to ASTM D 3588-98. The following analyses were performed and used to calculate the BTU and CHONS results. This method is not included on the laboratory's NELAP, DoD-ELAP, or AIHA-LAP, LLC scope of accreditation.

C2 through C6 Hydrocarbon Analysis

The samples were analyzed according to ASTM D1945-03 for C2 through >C6 hydrocarbons using a gas chromatograph equipped with a flame ionization detector (FID). This method is included on the laboratory's DoD-ELAP scope of accreditation, however it is not part of the NELAP or AIHA-LAP, LLC accreditation.

Fixed Gases Analysis

The samples were also analyzed for fixed gases (hydrogen, oxygen/argon, nitrogen, carbon monoxide, methane and carbon dioxide) according to ASTM D1945-03 (single injection) using a gas chromatograph equipped with a thermal conductivity detector (TCD). This method is included on the laboratory's DoD-ELAP scope of accreditation, however it is not part of the NELAP or AIHA-LAP, LLC accreditation.

Hydrogen Sulfide Analysis

The samples were also analyzed for hydrogen sulfide per ASTM D 5504-12 using a gas chromatograph equipped with a sulfur chemiluminescence detector (SCD). Method ASTM D 5504-12 is included on the laboratory's NELAP scope of accreditation, however it is not part of the DoD-ELAP or AIHA-LAP, LLC accreditation.

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Client: Air Hygiene, Incorporated Service Request No: P1604745
Project: Coyote 2nd mo. / Coyote-16-enid.ok-comp#1

The samples were received either past the recommended 7-day hold time for samples collected in Silonite Canisters or with insufficient time remaining to complete the sulfur analysis within the hold time. The analysis was performed as soon as possible after receipt by the laboratory.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

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ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
AIHA-LAP, LLC	http://www.aihaaccreditedlabs.org	101661
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0694
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Florida DOH (NELAP)	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E871020
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/labcert.htm	2014025
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	977273
New Jersey DEP (NELAP)	http://www.nj.gov/dep/oqa/	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-003
Pennsylvania DEP	http://www.depweb.state.pa.us/labs	68-03307 (Registration)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704413-16-7
Utah DOH (NELAP)	http://www.health.utah.gov/lab/labimp/certification/index.html	CA016272016-6
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: Air Hygiene, Incorporated
Service Request: P1604745
Project ID: Coyote 2nd mo. / Coyote-16-enid.ok-comp#1

Date Received: 10/7/2016
Time Received: 10:00

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	Container ID	Pi1 (psig)	Pf1 (psig)	TO-3 Modified - C1C6+ Can	3C Modified - Fxd Gases Can	ASTM D5504-01 - H2S Can
Coy-0-30-0%-comb48-can	P1604745-001	Air	9/27/2016	16:10	SSC00114	-0.53	5.07	X	X	X
Coy-30-70-30%-comb48-can	P1604745-002	Air	9/28/2016	12:00	SSC00294	-0.85	5.15	X	X	X
Coy-70-100-70%-comb48-can	P1604745-003	Air	9/29/2016	18:00	SSC00386	0.06	5.46	X	X	X
Coy-90-100%-comb48-can	P1604745-004	Air	9/30/2016	14:15	SSC00235	-0.34	5.37	X	X	X

Air - Chain of Custody Record & Analytical Service Request

Page 1 of 1

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Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10-Day-Standard

ALS Project No: P1607745

Company Name & Address (Reporting Information)	Coyote North Ltd
Project Manager	Min Sun Lee
Phone	918 3078805
Fax	
Email Address for Result Reporting	mlee@airhygiene.com ; lab@airhygiene.com
Project Name	coyote 2nd mob
Project Number	coyote-16-enid.ok-comp # 1
P.O. # / Billing Information	
Sampler (Print & Sign)	Min Sun Lee
ALS Contact:	

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Canister ID (Bar code # - AC, SC, etc.)	Flow Controller ID (Bar code # - FC #)	Canister Start Pressure "Hg	Canister End Pressure "Hg/psig	Sample Volume	Analysis Method: ASTM 3588-98	Analysis Method: TO-15 LL	Comments e.g. Actual Preservative or specific instructions
COY-0-30-0%-comb48-can	1	9/27/16	16:10	SSC00114	OA00493	-28.96	0.46		X	X	
COY-30-70-30%-comb48-can	2	9/28/16	12:00	SSC00294	OA00575	-28.90	-0.41		X	X	
COY-70-100-70%-comb48-can	3	9/29/16	18:00	SSC00386	OA01342	-28.68	0.44		X	X	
COY-90-100%-comb 48-can	4	9/30/16	14:15	SSC00235	OA01673	-29.13	0.55		X	X	

Report Tier Levels - please select
Tier I - Results (Default if not specified) ____ Tier III (Results + QC & Calibration Summaries) ____
Tier II (Results + QC Summaries ____ Tier IV (Data Validation Package) 10% Surcharge ____

EDD required YES / No
Type: _____ Units: _____

Chain of Custody Seal: (Circle)
INTACT BROKEN ABSENT

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)		Date: 9/30/16	Time: 14:20	Received by: (Signature)		Date:	Time:
Relinquished by: (Signature)	FED EX	Date:	Time:	Received by: (Signature)		Date: 10/7/16	Time: 1000

Cooler / Blank Temperature ____ °C

ALS Environmental
Sample Acceptance Check Form

Client: Air Hygiene, Incorporated Work order: P1604745

Project: Coyote 2nd mo. / Coyote-16-enid.ok-comp#1

Sample(s) received on: 10/7/16 Date opened: 10/7/16 by: ADAVID

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☐	☐	☒
8	Were **custody seals** on outside of cooler/Box/Container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
9	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☐	☐	☒
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
11	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1604745-001.01	6.0 L Silonite Can					
P1604745-002.01	6.0 L Silonite Can					
P1604745-003.01	6.0 L Silonite Can					
P1604745-004.01	6.0 L Silonite Can					

Explain any discrepancies: (include lab sample ID numbers): _____

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Project ID: **Coyote 2nd mo. / Coyote-16-enid.ok-comp#1** ALS Project ID: P1604745

Benzene

Test Code: ASTM D1945-03
Instrument ID: HP5890 II/GC8/FID Date(s) Collected: 9/27 - 9/30/16
Analyst: Adam McAfee Date Received: 10/7/16
Sampling Media: 6.0 L Silonite Canister(s) Date Analyzed: 10/11/16
Test Notes:

Client Sample ID	ALS Sample ID	Canister Dilution Factor	Injection Volume ml(s)	**Result ppmV**	MRL ppmV	Data Qualifier
Coy-0-30-0%-comb48-can	P1604745-001	1.40	0.050	ND	17	
Coy-30-70-30%-comb48-can	P1604745-002	1.43	0.050	ND	17	
Coy-70-100-70%-comb48-can	P1604745-003	1.37	0.050	ND	16	
Coy-90-100%-comb48-can	P1604745-004	1.40	0.050	ND	17	
Method Blank	P161011-MB	1.00	1.0	ND	0.60	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE SUMMARY

Client: **Air Hygiene, Incorporated**
Client Sample ID: **Lab Control Sample** ALS Project ID: P1604745
Client Project ID: **Coyote 2nd mo. / Coyote-16-enid.ok-comp#1** ALS Sample ID: P161011-LCS

Test Code: ASTM D1945-03 Date Collected: NA
Instrument ID: HP5890 II/GC8/FID Date Received: NA
Analyst: Adam McAfee Date Analyzed: 10/11/16
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: NA ml(s)
Test Notes:

Compound	Spike Amount ppmV	**Result ppmV**	**% Recovery**	ALS Acceptance Limits	Data Qualifier
Benzene	1,100	**1,070**	**97**	50-150	

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **Coy-0-30-0%-comb48-can** ALS Project ID: P1604745
Client Project ID: **Coyote 2nd mo. / Coyote-16-enid.ok-comp#1** ALS Sample ID: P1604745-001

Test Code: ASTM D3588-98
Analyst: Mike Conejo/Adam McAfee Date Collected: 9/27/16
Sample Type: 6.0 L Silonite Canister Date Received: 10/7/16
Test Notes:
Container ID: SSC00114

Initial Pressure (psig): -0.53 Final Pressure (psig): 5.07

Canister Dilution Factor: 1.40

Components	Result Volume %	Result Weight %	Data Qualifier
Hydrogen	< 0.01	< 0.01	
Oxygen	**0.05**	**0.04**	
Nitrogen	**0.20**	**0.13**	
Carbon Monoxide	< 0.01	< 0.01	
Methane	< 0.01	< 0.01	
Carbon Dioxide	< 0.01	< 0.01	
Hydrogen Sulfide	< 0.01	< 0.01	
C2 as Ethane	< 0.01	< 0.01	
C3 as Propane	**99.72**	**99.81**	
C4 as n-Butane	< 0.01	**0.01**	
C5 as n-Pentane	< 0.01	< 0.01	
C6 as n-Hexane	< 0.01	< 0.01	
> C6 as n-Hexane	< 0.01	< 0.01	
TOTALS	**99.99**	**99.99**	

Components	Mole %	Weight %
Carbon	**27.26**	**81.58**
Hydrogen	**72.69**	**18.25**
Oxygen	< 0.10	< 0.10
Nitrogen	< 0.10	**0.13**
Sulfur	< 0.10	< 0.10

Specific Gravity (Air = 1)		**1.5211**
Specific Volume	ft3/lb	**8.61**
Gross Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/ft3	**2,553.7**
Net Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/ft3	**2,349.5**
Gross Heating Value (Water Saturated at 0.25636 psia)	BTU/ft3	**2,465.7**
Net Heating Value (Water Saturated at 0.25636 psia)	BTU/ft3	**2,268.5**
Gross Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/lb	**21,996.6**
Net Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/lb	**20,237.7**
Compressibility Factor "Z" (60 F, 14.696 psia)		**0.9827**

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **Coy-30-70-30%-comb48-can** ALS Project ID: P1604745
Client Project ID: **Coyote 2nd mo. / Coyote-16-enid.ok-comp#1** ALS Sample ID: P1604745-002

Test Code: ASTM D3588-98
Analyst: Mike Conejo/Adam McAfee Date Collected: 9/28/16
Sample Type: 6.0 L Silonite Canister Date Received: 10/7/16
Test Notes:
Container ID: SSC00294

Initial Pressure (psig): -0.85 Final Pressure (psig): 5.15

Canister Dilution Factor: 1.43

Components	Result Volume %	Result Weight %	Data Qualifier
Hydrogen	< 0.01	< 0.01	
Oxygen	**0.09**	**0.07**	
Nitrogen	**0.35**	**0.22**	
Carbon Monoxide	< 0.01	< 0.01	
Methane	< 0.01	< 0.01	
Carbon Dioxide	< 0.01	< 0.01	
Hydrogen Sulfide	< 0.01	< 0.01	
C2 as Ethane	< 0.01	< 0.01	
C3 as Propane	**99.54**	**99.69**	
C4 as n-Butane	< 0.01	**0.01**	
C5 as n-Pentane	< 0.01	< 0.01	
C6 as n-Hexane	< 0.01	< 0.01	
> C6 as n-Hexane	< 0.01	< 0.01	
TOTALS	**99.99**	**99.99**	

Components	Mole %	Weight %
Carbon	**27.25**	**81.48**
Hydrogen	**72.67**	**18.23**
Oxygen	< 0.10	< 0.10
Nitrogen	< 0.10	**0.22**
Sulfur	< 0.10	< 0.10

Specific Gravity (Air = 1)		**1.5202**
Specific Volume	ft3/lb	**8.62**
Gross Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/ft3	**2,548.9**
Net Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/ft3	**2,345.1**
Gross Heating Value (Water Saturated at 0.25636 psia)	BTU/ft3	**2,461.2**
Net Heating Value (Water Saturated at 0.25636 psia)	BTU/ft3	**2,264.4**
Gross Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/lb	**21,969.1**
Net Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/lb	**20,212.4**
Compressibility Factor "Z" (60 F, 14.696 psia)		**0.9827**

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **Coy-70-100-70%-comb48-can** ALS Project ID: P1604745
Client Project ID: **Coyote 2nd mo. / Coyote-16-enid.ok-comp#1** ALS Sample ID: P1604745-003

Test Code: ASTM D3588-98
Analyst: Mike Conejo/Adam McAfee Date Collected: 9/29/16
Sample Type: 6.0 L Silonite Canister Date Received: 10/7/16
Test Notes:
Container ID: SSC00386

Initial Pressure (psig): 0.06 Final Pressure (psig): 5.46

Canister Dilution Factor: 1.37

Components	Result Volume %	Result Weight %	Data Qualifier
Hydrogen	< 0.01	< 0.01	
Oxygen	**0.78**	**0.58**	
Nitrogen	**2.83**	**1.82**	
Carbon Monoxide	< 0.01	< 0.01	
Methane	< 0.01	< 0.01	
Carbon Dioxide	< 0.01	< 0.01	
Hydrogen Sulfide	< 0.01	< 0.01	
C2 as Ethane	< 0.01	< 0.01	
C3 as Propane	**96.37**	**97.58**	
C4 as n-Butane	< 0.01	**0.01**	
C5 as n-Pentane	< 0.01	< 0.01	
C6 as n-Hexane	< 0.01	< 0.01	
> C6 as n-Hexane	< 0.01	< 0.01	
TOTALS	**99.99**	**99.99**	

Components	Mole %	Weight %
Carbon	**27.09**	**79.76**
Hydrogen	**72.23**	**17.85**
Oxygen	**0.15**	**0.58**
Nitrogen	**0.53**	**1.82**
Sulfur	< 0.10	< 0.10

Specific Gravity (Air = 1)		**1.5035**
Specific Volume	ft3/lb	**8.71**
Gross Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/ft3	**2,465.3**
Net Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/ft3	**2,268.1**
Gross Heating Value (Water Saturated at 0.25636 psia)	BTU/ft3	**2,382.8**
Net Heating Value (Water Saturated at 0.25636 psia)	BTU/ft3	**2,192.2**
Gross Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/lb	**21,484.0**
Net Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/lb	**19,766.1**
Compressibility Factor "Z" (60 F, 14.696 psia)		**0.9837**

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **Coy-90-100%-comb48-can** ALS Project ID: P1604745
Client Project ID: **Coyote 2nd mo. / Coyote-16-enid.ok-comp#1** ALS Sample ID: P1604745-004

Test Code: ASTM D3588-98
Analyst: Mike Conejo/Adam McAfee Date Collected: 9/30/16
Sample Type: 6.0 L Silonite Canister Date Received: 10/7/16
Test Notes:
Container ID: SSC00235

Initial Pressure (psig): -0.34 Final Pressure (psig): 5.37

Canister Dilution Factor: 1.40

Components	Result Volume %	Result Weight %	Data Qualifier
Hydrogen	< 0.01	< 0.01	
Oxygen	**0.08**	**0.06**	
Nitrogen	**0.37**	**0.23**	
Carbon Monoxide	< 0.01	< 0.01	
Methane	< 0.01	< 0.01	
Carbon Dioxide	< 0.01	< 0.01	
Hydrogen Sulfide	< 0.01	< 0.01	
C2 as Ethane	< 0.01	< 0.01	
C3 as Propane	**99.53**	**99.68**	
C4 as n-Butane	< 0.01	**0.01**	
C5 as n-Pentane	< 0.01	< 0.01	
C6 as n-Hexane	< 0.01	< 0.01	
> C6 as n-Hexane	< 0.01	< 0.01	
TOTALS	**99.99**	**99.99**	

Components	Mole %	Weight %
Carbon	**27.25**	**81.48**
Hydrogen	**72.67**	**18.23**
Oxygen	< 0.10	< 0.10
Nitrogen	< 0.10	**0.23**
Sulfur	< 0.10	< 0.10

Specific Gravity (Air = 1)		**1.5201**
Specific Volume	ft3/lb	**8.62**
Gross Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/ft3	**2,548.6**
Net Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/ft3	**2,344.8**
Gross Heating Value (Water Saturated at 0.25636 psia)	BTU/ft3	**2,461.0**
Net Heating Value (Water Saturated at 0.25636 psia)	BTU/ft3	**2,264.2**
Gross Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/lb	**21,967.6**
Net Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/lb	**20,210.9**
Compressibility Factor "Z" (60 F, 14.696 psia)		**0.9827**

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **Coy-0-30-0%-comb48-can** ALS Project ID: P1604745
Client Project ID: **Coyote 2nd mo. / Coyote-16-enid.ok-comp#1** ALS Sample ID: P1604745-001

Test Code: ASTM D1945-03 Date Collected: 9/27/16
Instrument ID: HP5890 II/GC8/FID Date Received: 10/7/16
Analyst: Adam McAfee Date Analyzed: 10/11/16
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.050 ml(s)
Test Notes:
Container ID: SSC00114

Initial Pressure (psig): -0.53 Final Pressure (psig): 5.07

Canister Dilution Factor: 1.40

Compound	Result ppmV	MRL ppmV	Data Qualifier
Methane	ND	14	
C_2 as Ethane	ND	14	
C_3 as Propane	**1,000,000**	14	
C_4 as n-Butane	**91**	14	
C_5 as n-Pentane	ND	14	
C_6 as n-Hexane	ND	14	
C_6+ as n-Hexane	ND	28	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **Coy-30-70-30%-comb48-can**
Client Project ID: **Coyote 2nd mo. / Coyote-16-enid.ok-comp#1**

ALS Project ID: P1604745
ALS Sample ID: P1604745-002

Test Code: ASTM D1945-03
Instrument ID: HP5890 II/GC8/FID
Analyst: Adam McAfee
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: SSC00294

Date Collected: 9/28/16
Date Received: 10/7/16
Date Analyzed: 10/11/16
Volume(s) Analyzed: 0.050 ml(s)

Initial Pressure (psig): -0.85 Final Pressure (psig): 5.15

Canister Dilution Factor: 1.43

Compound	Result ppmV	MRL ppmV	Data Qualifier
Methane	ND	14	
C_2 as Ethane	**16**	14	
C_3 as Propane	**1,000,000**	14	
C_4 as n-Butane	**83**	14	
C_5 as n-Pentane	ND	14	
C_6 as n-Hexane	ND	14	
C_6+ as n-Hexane	ND	29	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **Coy-70-100-70%-comb48-can**
Client Project ID: **Coyote 2nd mo. / Coyote-16-enid.ok-comp#1**

ALS Project ID: P1604745
ALS Sample ID: P1604745-003

Test Code: ASTM D1945-03
Instrument ID: HP5890 II/GC8/FID
Analyst: Adam McAfee
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: SSC00386

Date Collected: 9/29/16
Date Received: 10/7/16
Date Analyzed: 10/11/16
Volume(s) Analyzed: 0.050 ml(s)

Initial Pressure (psig): 0.06 Final Pressure (psig): 5.46

Canister Dilution Factor: 1.37

Compound	Result ppmV	MRL ppmV	Data Qualifier
Methane	ND	14	
C_2 as Ethane	**14**	14	
C_3 as Propane	**960,000**	14	
C_4 as n-Butane	**79**	14	
C_5 as n-Pentane	ND	14	
C_6 as n-Hexane	ND	14	
C_6+ as n-Hexane	ND	27	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **Coy-90-100%-comb48-can** ALS Project ID: P1604745
Client Project ID: **Coyote 2nd mo. / Coyote-16-enid.ok-comp#1** ALS Sample ID: P1604745-004

Test Code: ASTM D1945-03 Date Collected: 9/30/16
Instrument ID: HP5890 II/GC8/FID Date Received: 10/7/16
Analyst: Adam McAfee Date Analyzed: 10/11/16
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.050 ml(s)
Test Notes:
Container ID: SSC00235

Initial Pressure (psig): -0.34 Final Pressure (psig): 5.37

Canister Dilution Factor: 1.40

Compound	Result ppmV	MRL ppmV	Data Qualifier
Methane	ND	14	
C_2 as Ethane	**18**	14	
C_3 as Propane	**1,000,000**	14	
C_4 as n-Butane	**78**	14	
C_5 as n-Pentane	ND	14	
C_6 as n-Hexane	ND	14	
C_6+ as n-Hexane	ND	28	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **Method Blank** ALS Project ID: P1604745
Client Project ID: **Coyote 2nd mo. / Coyote-16-enid.ok-comp#1** ALS Sample ID: P161011-MB

Test Code: ASTM D1945-03 Date Collected: NA
Instrument ID: HP5890 II/GC8/FID Date Received: NA
Analyst: Adam McAfee Date Analyzed: 10/11/16
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 1.0 ml(s)
Test Notes:

Compound	Result ppmV	MRL ppmV	Data Qualifier
Methane	ND	0.50	
C_2 as Ethane	ND	0.50	
C_3 as Propane	ND	0.50	
C_4 as n-Butane	ND	0.50	
C_5 as n-Pentane	ND	0.50	
C_6 as n-Hexane	ND	0.50	
C_6+ as n-Hexane	ND	1.0	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE SUMMARY

Client: **Air Hygiene, Incorporated**
Client Sample ID: **Lab Control Sample** ALS Project ID: P1604745
Client Project ID: **Coyote 2nd mo. / Coyote-16-enid.ok-comp#1** ALS Sample ID: P161011-LCS

Test Code: ASTM D1945-03 Date Collected: NA
Instrument ID: HP5890 II/GC8/FID Date Received: NA
Analyst: Adam McAfee Date Analyzed: 10/11/16
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: NA ml(s)
Test Notes:

Compound	Spike Amount ppmV	Result ppmV	% Recovery	ALS Acceptance Limits	Data Qualifier
Methane	1,010	**995**	**99**	79-107	
Ethane	1,020	**1,020**	**100**	85-117	
Propane	1,040	**1,090**	**105**	85-116	
n-Butane	1,010	**1,050**	**104**	84-114	
n-Pentane	1,000	**1,000**	**100**	85-124	
n-Hexane	1,010	**1,080**	**107**	84-132	

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **Coy-0-30-0%-comb48-can** ALS Project ID: P1604745
Client Project ID: **Coyote 2nd mo. / Coyote-16-enid.ok-comp#1** ALS Sample ID: P1604745-001

Test Code: ASTM D1945-03 Date Collected: 9/27/16
Instrument ID: HP5890 II/GC1/TCD Date Received: 10/7/16
Analyst: Adam McAfee Date Analyzed: 10/13/16
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.10 ml(s)
Test Notes:
Container ID: SSC00114

Initial Pressure (psig): -0.53 Final Pressure (psig): 5.07

Canister Dilution Factor: 1.40

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
1333-74-0	Hydrogen	ND	0.14	
7782-44-7	Oxygen*	ND	0.14	
7727-37-9	**Nitrogen**	**0.201**	0.14	
630-08-0	Carbon Monoxide	ND	0.14	
124-38-9	Carbon Dioxide	ND	0.14	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
* = The oxygen result may include argon due to coelution. Ambient air includes 0.93% argon.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **Coy-30-70-30%-comb48-can**
Client Project ID: **Coyote 2nd mo. / Coyote-16-enid.ok-comp#1**

ALS Project ID: P1604745
ALS Sample ID: P1604745-002

Test Code: ASTM D1945-03
Instrument ID: HP5890 II/GC1/TCD
Analyst: Adam McAfee
Sample Type: 6.0 L Silonite Canister
Test Notes:
Container ID: SSC00294

Date Collected: 9/28/16
Date Received: 10/7/16
Date Analyzed: 10/13/16
Volume(s) Analyzed: 0.10 ml(s)

Initial Pressure (psig): -0.85 Final Pressure (psig): 5.15

Canister Dilution Factor: 1.43

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
1333-74-0	Hydrogen	ND	0.14	
7782-44-7	Oxygen*	ND	0.14	
7727-37-9	**Nitrogen**	**0.346**	0.14	
630-08-0	Carbon Monoxide	ND	0.14	
124-38-9	Carbon Dioxide	ND	0.14	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
* = The oxygen result may include argon due to coelution. Ambient air includes 0.93% argon.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **Coy-70-100-70%-comb48-can**
Client Project ID: **Coyote 2nd mo. / Coyote-16-enid.ok-comp#1**

ALS Project ID: P1604745
ALS Sample ID: P1604745-003

Test Code: ASTM D1945-03
Instrument ID: HP5890 II/GC1/TCD
Analyst: Adam McAfee
Sample Type: 6.0 L Silonite Canister
Test Notes:
Container ID: SSC00386

Date Collected: 9/29/16
Date Received: 10/7/16
Date Analyzed: 10/13/16
Volume(s) Analyzed: 0.10 ml(s)

Initial Pressure (psig): 0.06 Final Pressure (psig): 5.46

Canister Dilution Factor: 1.37

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
1333-74-0	Hydrogen	ND	0.14	
7782-44-7	**Oxygen***	**0.783**	0.14	
7727-37-9	**Nitrogen**	**2.83**	0.14	
630-08-0	Carbon Monoxide	ND	0.14	
124-38-9	Carbon Dioxide	ND	0.14	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
* = The oxygen result may include argon due to coelution. Ambient air includes 0.93% argon.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **Coy-90-100%-comb48-can** ALS Project ID: P1604745
Client Project ID: **Coyote 2nd mo. / Coyote-16-enid.ok-comp#1** ALS Sample ID: P1604745-004

Test Code: ASTM D1945-03 Date Collected: 9/30/16
Instrument ID: HP5890 II/GC1/TCD Date Received: 10/7/16
Analyst: Adam McAfee Date Analyzed: 10/13/16
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.10 ml(s)
Test Notes:
Container ID: SSC00235

Initial Pressure (psig): -0.34 Final Pressure (psig): 5.37

Canister Dilution Factor: 1.40

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
1333-74-0	Hydrogen	ND	0.14	
7782-44-7	Oxygen*	ND	0.14	
7727-37-9	**Nitrogen**	**0.366**	0.14	
630-08-0	Carbon Monoxide	ND	0.14	
124-38-9	Carbon Dioxide	ND	0.14	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
* = The oxygen result may include argon due to coelution. Ambient air includes 0.93% argon.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **Method Blank** ALS Project ID: P1604745
Client Project ID: **Coyote 2nd mo. / Coyote-16-enid.ok-comp#1** ALS Sample ID: P161013-MB

Test Code: ASTM D1945-03 Date Collected: NA
Instrument ID: HP5890 II/GC1/TCD Date Received: NA
Analyst: Adam McAfee Date Analyzed: 10/13/16
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.10 ml(s)
Test Notes:

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
1333-74-0	Hydrogen	ND	0.10	
7782-44-7	Oxygen*	ND	0.10	
7727-37-9	Nitrogen	ND	0.10	
630-08-0	Carbon Monoxide	ND	0.10	
124-38-9	Carbon Dioxide	ND	0.10	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
* = The oxygen result may include argon due to coelution. Ambient air includes 0.93% argon.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE SUMMARY

Client: **Air Hygiene, Incorporated**
Client Sample ID: **Lab Control Sample** ALS Project ID: P1604745
Client Project ID: **Coyote 2nd mo. / Coyote-16-enid.ok-comp#1** ALS Sample ID: P161013-LCS

Test Code: ASTM D1945-03 Date Collected: NA
Instrument ID: HP5890 II/GC1/TCD Date Received: NA
Analyst: Adam McAfee Date Analyzed: 10/13/16
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: NA ml(s)
Test Notes:

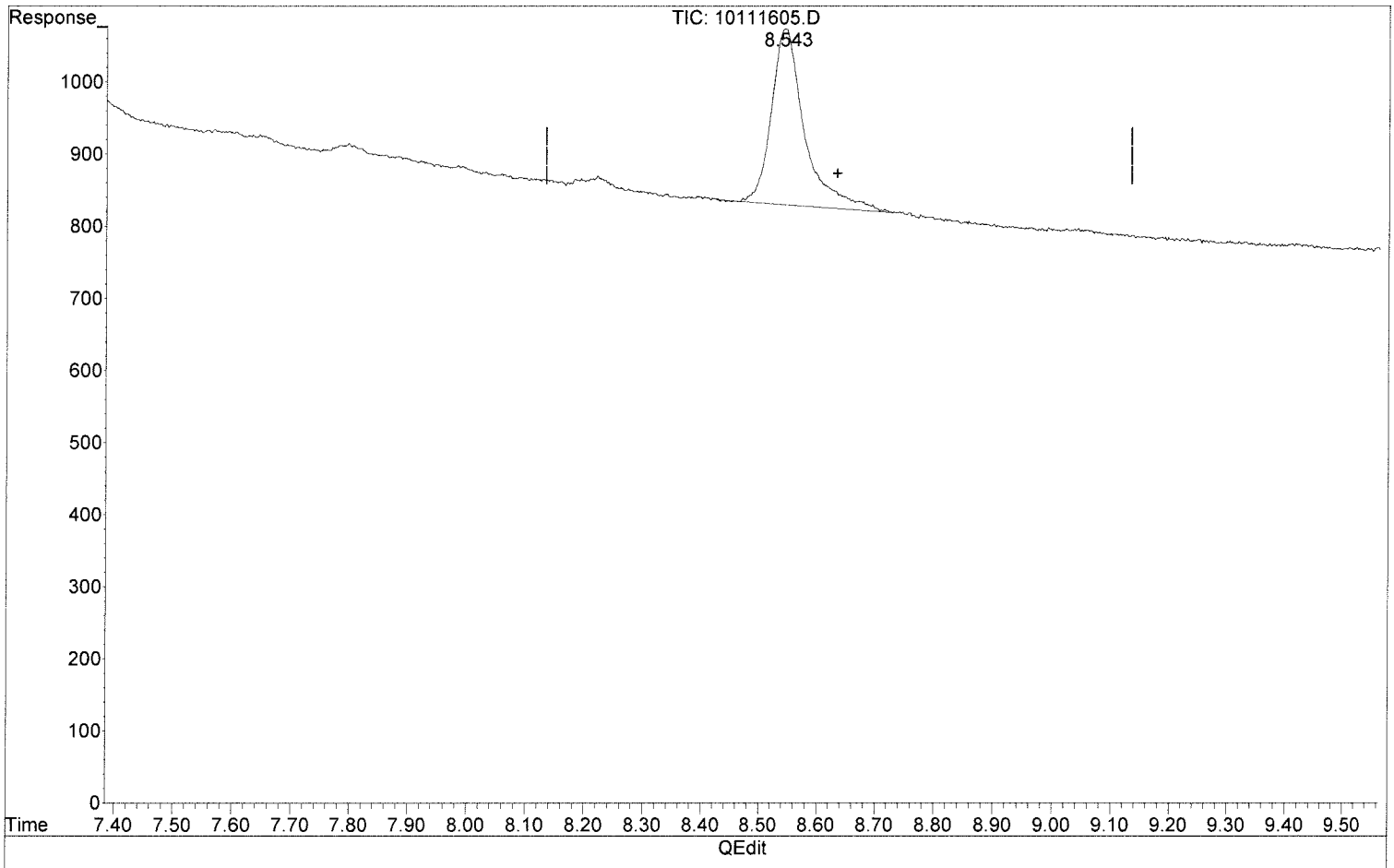
CAS #	Compound	Spike Amount ppmV	**Result ppmV**	**% Recovery**	ALS Acceptance Limits	Data Qualifier
1333-74-0	Hydrogen	50,000	**49,900**	**100**	94-105	
7782-44-7	Oxygen*	50,000	**52,000**	**104**	97-108	
7727-37-9	Nitrogen	50,000	**52,500**	**105**	89-113	
630-08-0	Carbon Monoxide	50,000	**51,200**	**102**	98-108	
124-38-9	Carbon Dioxide	50,000	**49,200**	**98**	94-104	

* = The oxygen result may include argon due to coelution. Ambient air includes 0.93% argon.

Data Path : I:\GC08\DATA\TO_3M\2016_10\11B\
Data File : 10111605.D
Signal(s) : FID2B.CH
Acq On : 11-Oct-2016, 16:08:57
Operator : amf
Sample : 4745-001 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 11 16:18:40 2016
Quant Method : I:\GC08\METHODS\BE100316.M
Quant Title : Benzene by GC/FID#8
QLast Update : Mon Oct 03 13:23:14 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



(1) Benzene (T)

8.544min 0.090 ppm

response 9701

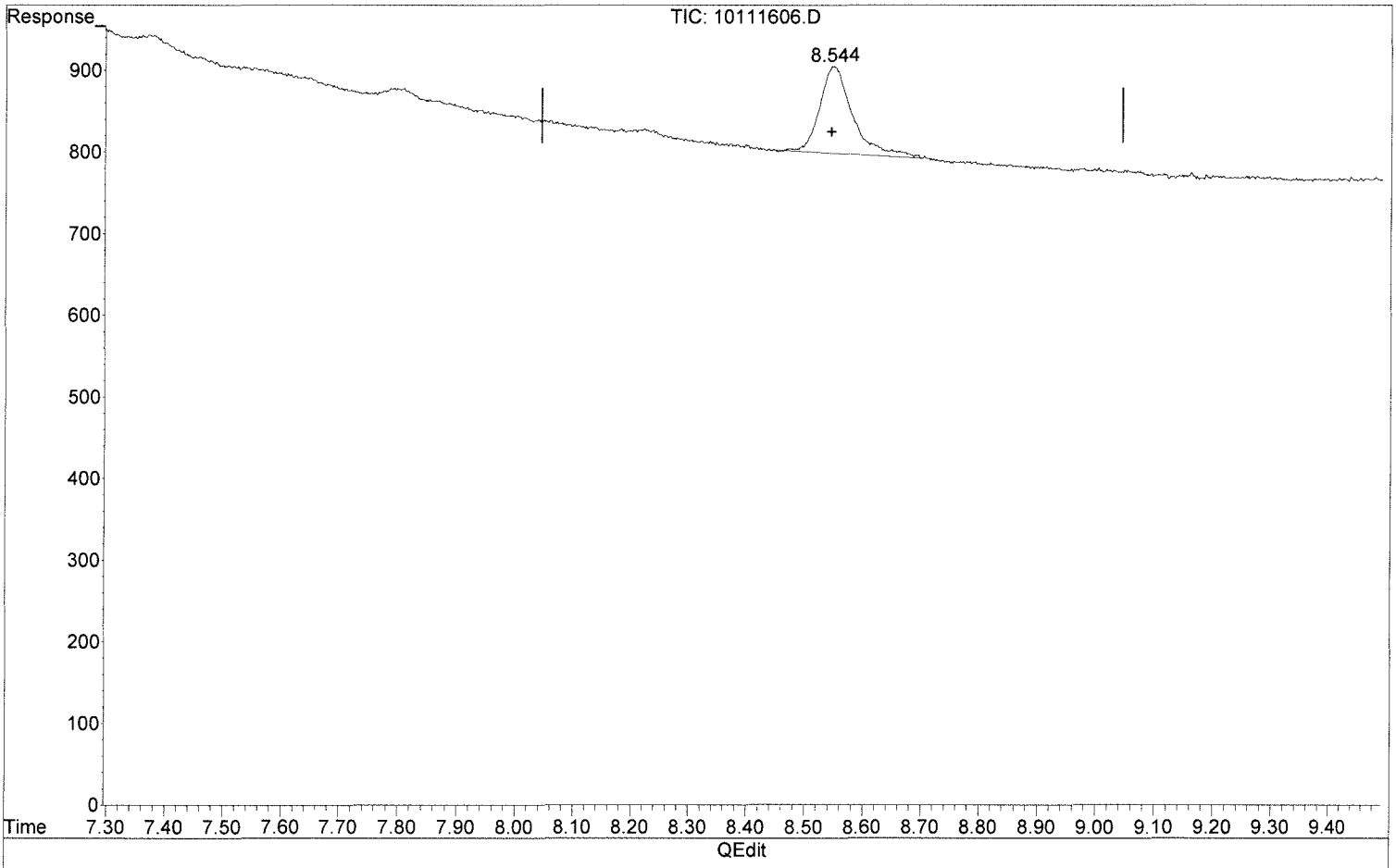
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : I:\GC08\DATA\TO_3M\2016_10\11B\
Data File : 10111606.D
Signal(s) : FID2B.CH
Acq On : 11-Oct-2016, 16:21:20
Operator : amf
Sample : 4745-002 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 12 09:55:54 2016
Quant Method : I:\GC08\METHODS\BE100316.M
Quant Title : Benzene by GC/FID#8
QLast Update : Mon Oct 03 13:23:14 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



(1) Benzene (T)

8.547min 0.039 ppm

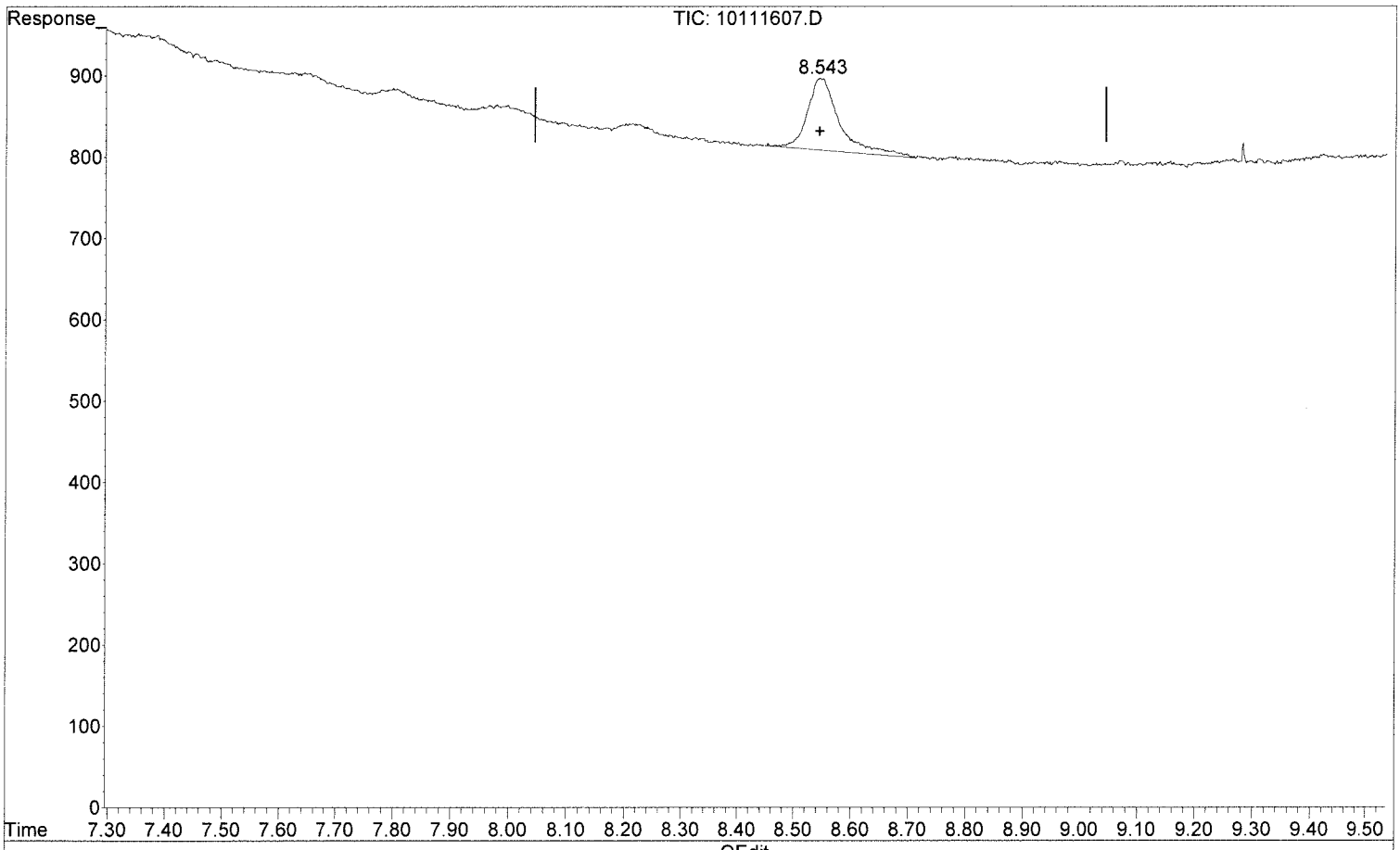
response 4186

(+) = Expected Retention Time

Data Path : I:\GC08\DATA\TO_3M\2016_10\11B\
Data File : 10111607.D
Signal(s) : FID2B.CH
Acq On : 11-Oct-2016, 16:33:35
Operator : amf
Sample : 4745-003 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 12 09:56:04 2016
Quant Method : I:\GC08\METHODS\BE100316.M
Quant Title : Benzene by GC/FID#8
QLast Update : Mon Oct 03 13:23:14 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



(1) Benzene (T)

8.545min 0.032 ppm

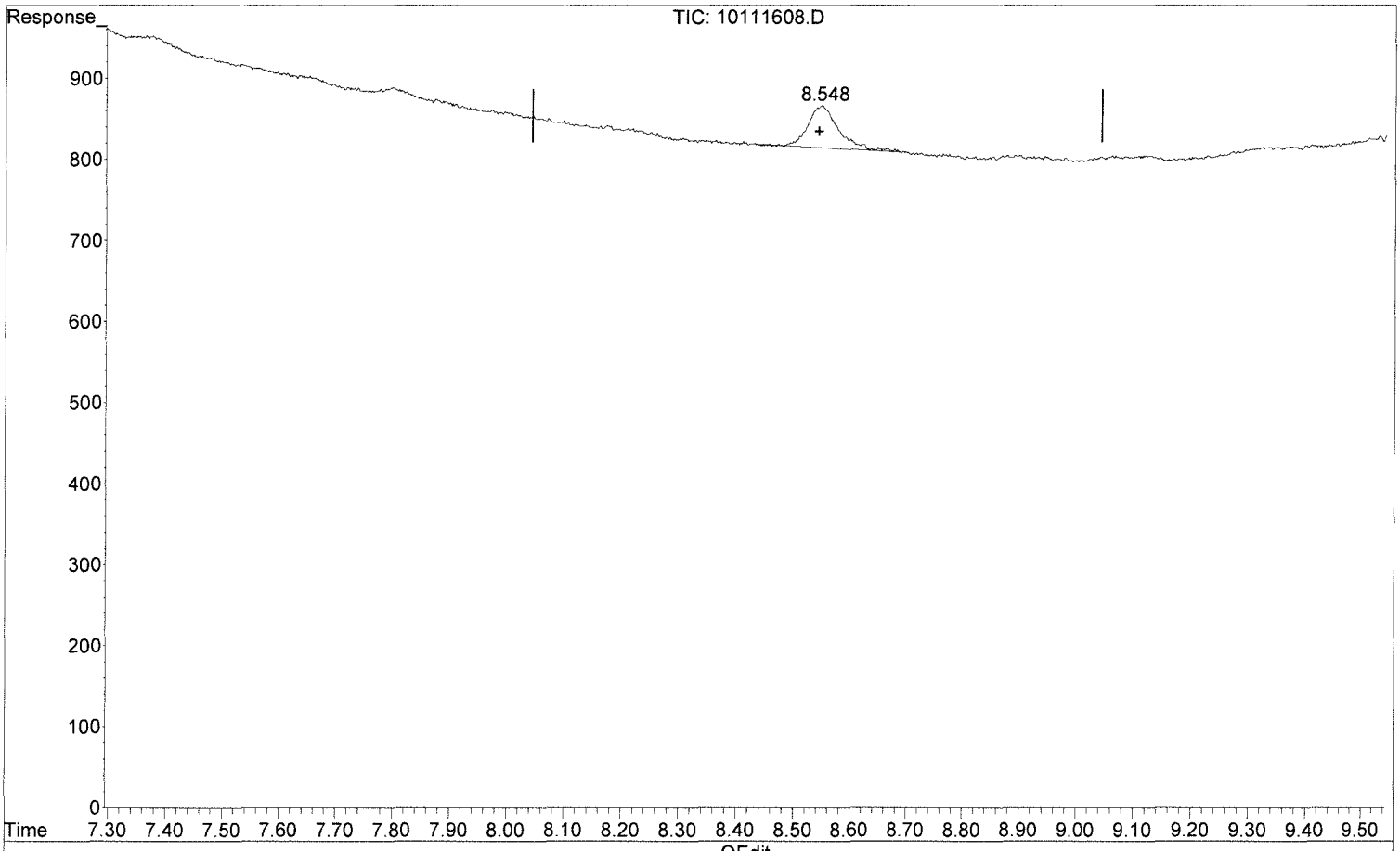
response 3462

(+) = Expected Retention Time

Data Path : I:\GC08\DATA\TO_3M\2016_10\11B\
Data File : 10111608.D
Signal(s) : FID2B.CH
Acq On : 11-Oct-2016, 16:45:47
Operator : amf
Sample : 4745-004 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 12 09:56:33 2016
Quant Method : I:\GC08\METHODS\BE100316.M
Quant Title : Benzene by GC/FID#8
QLast Update : Mon Oct 03 13:23:14 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



(1) Benzene (T)

8.548min 0.019 ppm

response 1996

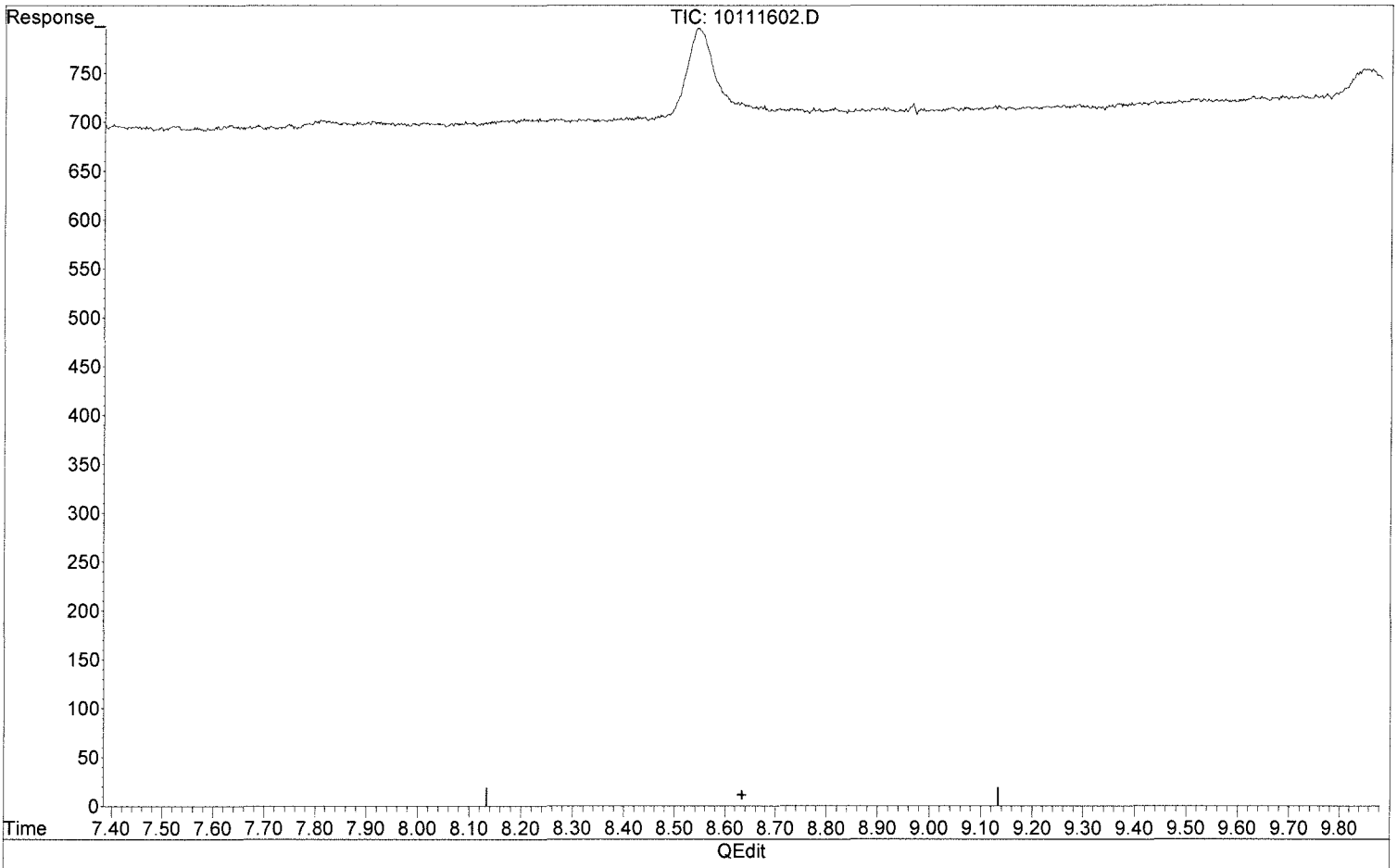
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : I:\GC08\DATA\TO_3M\2016_10\11B\
Data File : 10111602.D
Signal(s) : FID2B.CH
Acq On : 11-Oct-2016, 15:22:08
Operator : amf
Sample : mb 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 11 15:33:35 2016
Quant Method : I:\GC08\METHODS\BE100316.M
Quant Title : Benzene by GC/FID#8
QLast Update : Mon Oct 03 13:23:14 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



(1) Benzene (T)

8.634min 0.000 ppm

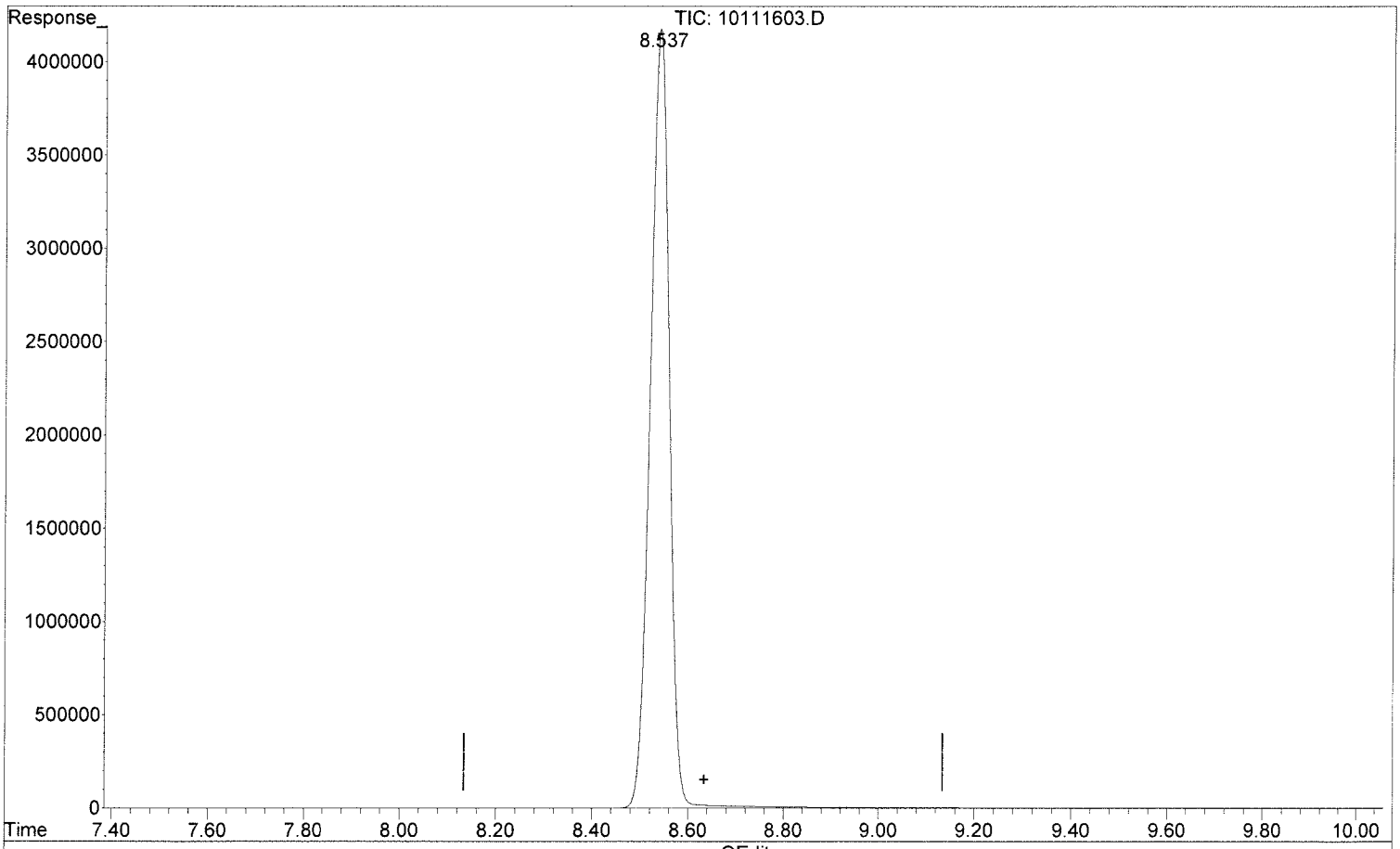
response 0

(+) = Expected Retention Time

Data Path : I:\GC08\DATA\TO_3M\2016_10\11B\
Data File : 10111603.D
Signal(s) : FID2B.CH
Acq On : 11-Oct-2016, 15:35:55
Operator : amf
Sample : lcs s30-10111602
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 11 15:46:05 2016
Quant Method : I:\GC08\METHODS\BE100316.M
Quant Title : Benzene by GC/FID#8
QLast Update : Mon Oct 03 13:23:14 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



(1) Benzene (T)

8.538min 1070.200 ppm

response 115426735

(+) = Expected Retention Time

Response Factor Report HP5890

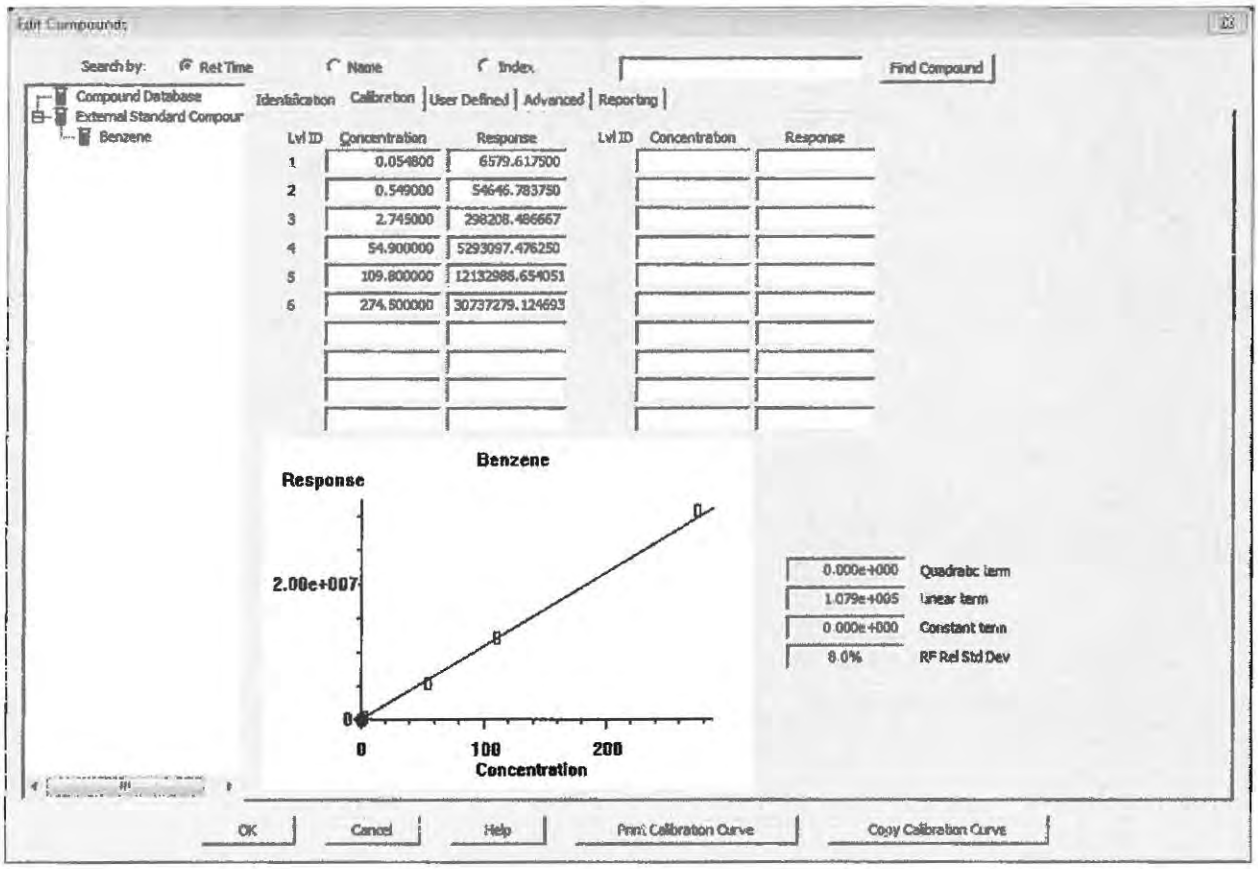
Method Path : I:\GC08\METHODS\
Method File : BE100316.M
Title : Benzene by GC/FID#8
Last Update : Mon Oct 03 13:23:14 2016
Response Via : Initial Calibration

Calibration Files
1 =10031602.D 2 =04011505.D 3 =10031604.D
4 =10031605.D 5 =10031606.D 6 =10031607.D

	Compound	1	2	3	4	5	6	Avg		%RSD
1) T	Benzene	1.201	0.995	1.086	0.964	1.105	1.120	1.079	E5	8.02

(#) = Out of Range

BE100316.M Mon Oct 03 16:53:25 2016


Edit Compounds
Search by:
Ret Time
Name
Index
Find Compound
Compound Database
External Standard Compour
Benzene
Identification
Calibration
User Defined
Advanced
Reporting
Lvl ID
Concentration
Response
1
0.054800
6579.617500
2
0.549000
54646.783750
3
2.745000
298208.486667
4
54.900000
5293097.476250
5
109.800000
12132988.654051
6
274.500000
30737279.124693
Benzene
Response
2.00e+007
0
0
100
200
Concentration
0.000e+000
Quadratic term
1.079e+005
Linear term
0.000e+000
Constant term
0.0%
RF Rel Std Dev
OK
Cancel
Help
Print Calibration Curve
Copy Calibration Curve

Calibration Status Report HP5890

Method Path : I:\GC08\METHODS\
Method File : BE100316.M
Title : Benzene by GC/FID#8
Last Update : Mon Oct 03 13:23:14 2016
Response Via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	1	0	0	I:\GC08\DATA\TO_3M\2016_10\03B\10031602.D
2	2	1	0	I:\GC08\DATA\TO_3M\2016_10\03B\10031603.D
3	3	3	0	I:\GC08\DATA\TO_3M\2016_10\03B\10031604.D
4	4	55	0	I:\GC08\DATA\TO_3M\2016_10\03B\10031605.D
5	5	110	0	I:\GC08\DATA\TO_3M\2016_10\03B\10031606.D
6	6	275	0	I:\GC08\DATA\TO_3M\2016_10\03B\10031607.D

#	ID	Update Time	Quant Time	Acquisition Time
1	1	Oct 03 10:21 2016	Oct 03 10:20 2016	03-Oct-2016, 10:09:08
2	2	Oct 03 12:00 2016	Oct 03 11:59 2016	03-Oct-2016, 11:50:23
3	3	Oct 03 12:27 2016	Oct 03 12:26 2016	03-Oct-2016, 12:15:59
4	4	Oct 03 12:40 2016	Oct 03 12:39 2016	03-Oct-2016, 12:29:07
5	5	Oct 03 12:54 2016	Oct 03 12:54 2016	03-Oct-2016, 12:41:31
6	6	Oct 03 13:23 2016	Oct 03 13:23 2016	03-Oct-2016, 13:11:34

BE100316.M Mon Oct 03 16:53:15 2016

Quantitation Report (QT Reviewed)

Data Path : I:\GC08\DATA\TO_3M\2016_10\03B\
Data File : 10031602.D
Signal(s) : FID2B.CH
Acq On : 03-Oct-2016, 10:09:08
Operator : amf
Sample : s30-10031603 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 03 13:24:42 2016
Quant Method : I:\GC08\METHODS\BE100316.M
Quant Title : Benzene by GC/FID#8
QLast Update : Mon Oct 03 13:23:14 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

Compound	R.T.	Response	Conc Units
Target Compounds			
1) T Benzene	8.540	6580	0.061 ppm

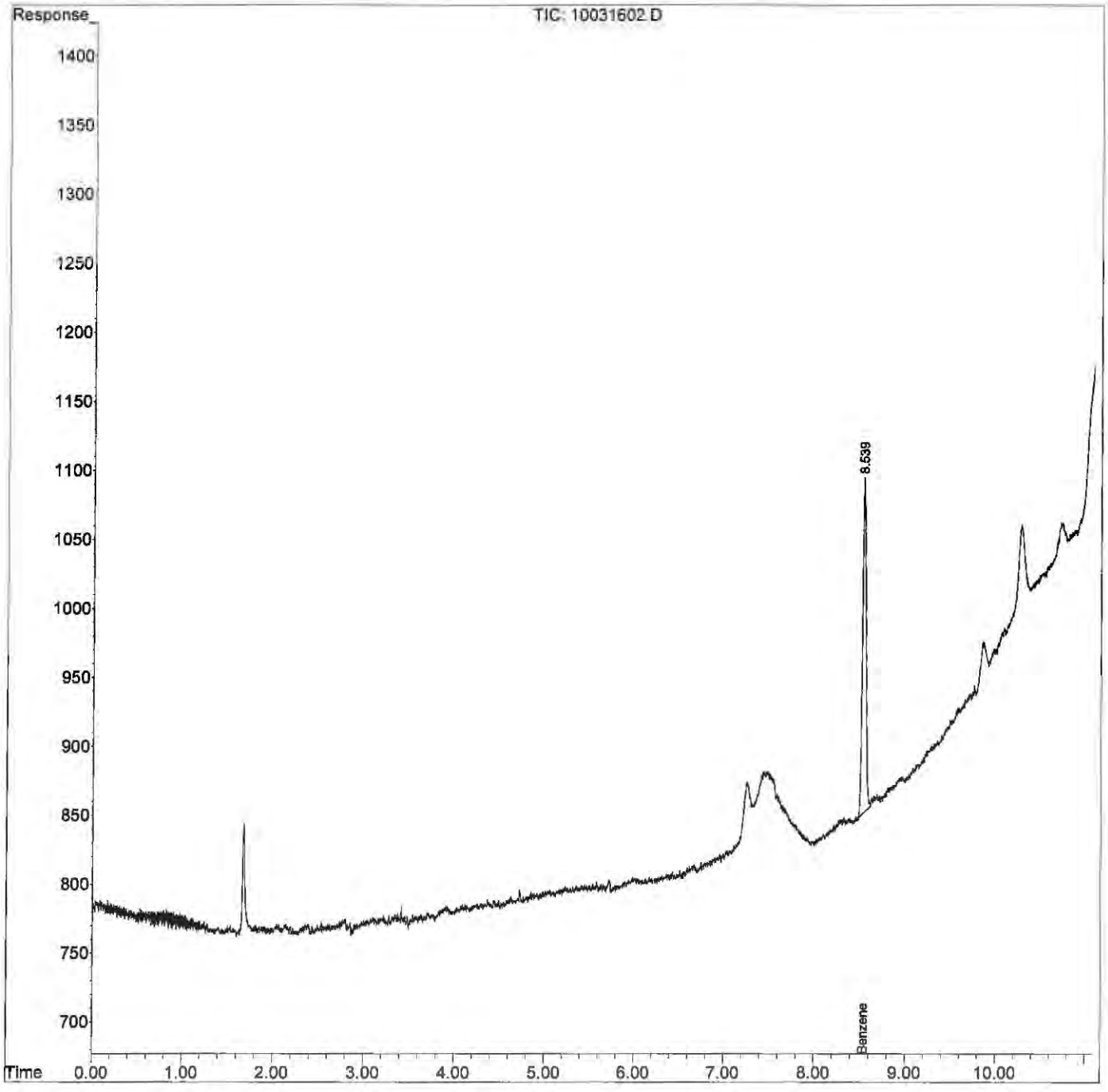
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC08\DATA\TO_3M\2016_10\03B\
Data File : 10031602.D
Signal(s) : FID2B.CH
Acq On : 03-Oct-2016, 10:09:08
Operator : amf
Sample : s30-10031603 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 03 13:24:42 2016
Quant Method : I:\GC08\METHODS\BE100316.M
Quant Title : Benzene by GC/FID#8
QLast Update : Mon Oct 03 13:23:14 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC08\DATA\TO_3M\2016_10\03B\
Data File : 10031603.D
Signal(s) : FID2B.CH
Acq On : 03-Oct-2016, 11:50:23
Operator : amf
Sample : s30-10031602 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 03 13:24:49 2016
Quant Method : I:\GC08\METHODS\BE100316.M
Quant Title : Benzene by GC/FID#8
QLast Update : Mon Oct 03 13:23:14 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

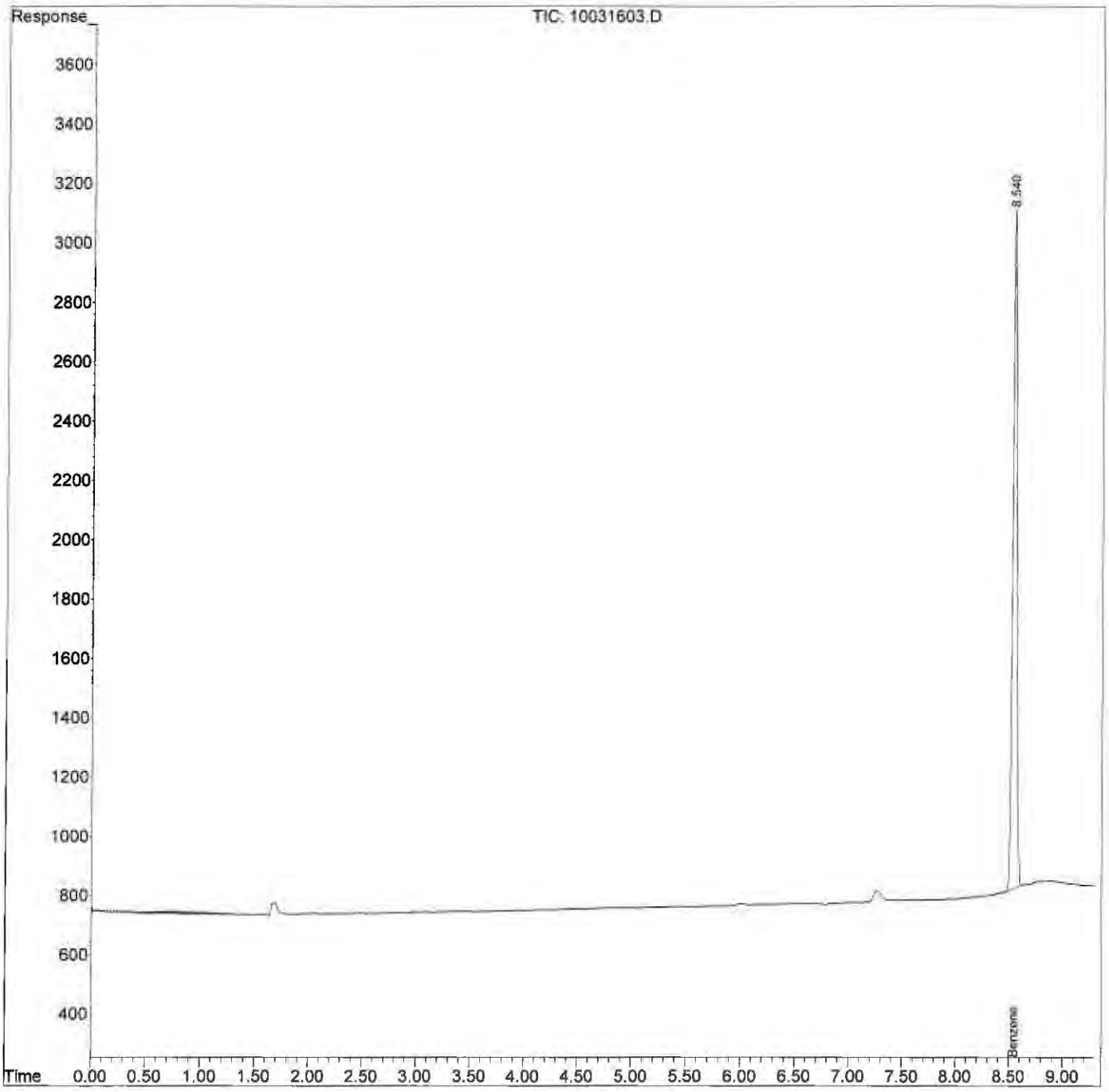
Compound	R.T.	Response	Conc Units
Target Compounds			
1) T Benzene	8.541	61946	0.574 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC08\DATA\TO_3M\2016_10\03B\
Data File : 10031603.D
Signal(s) : FID2B.CH
Acq On : 03-Oct-2016, 11:50:23
Operator : amf
Sample : s30-10031602 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 03 13:24:49 2016
Quant Method : I:\GC08\METHODS\BE100316.M
Quant Title : Benzene by GC/FID#8
QLast Update : Mon Oct 03 13:23:14 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC08\DATA\TO_3M\2016_10\03B\
Data File : 10031604.D
Signal(s) : FID2B.CH
Acq On : 03-Oct-2016, 12:15:59
Operator : amf
Sample : s30-10031602 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 03 13:24:56 2016
Quant Method : I:\GC08\METHODS\BE100316.M
Quant Title : Benzene by GC/FID#8
QLast Update : Mon Oct 03 13:23:14 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

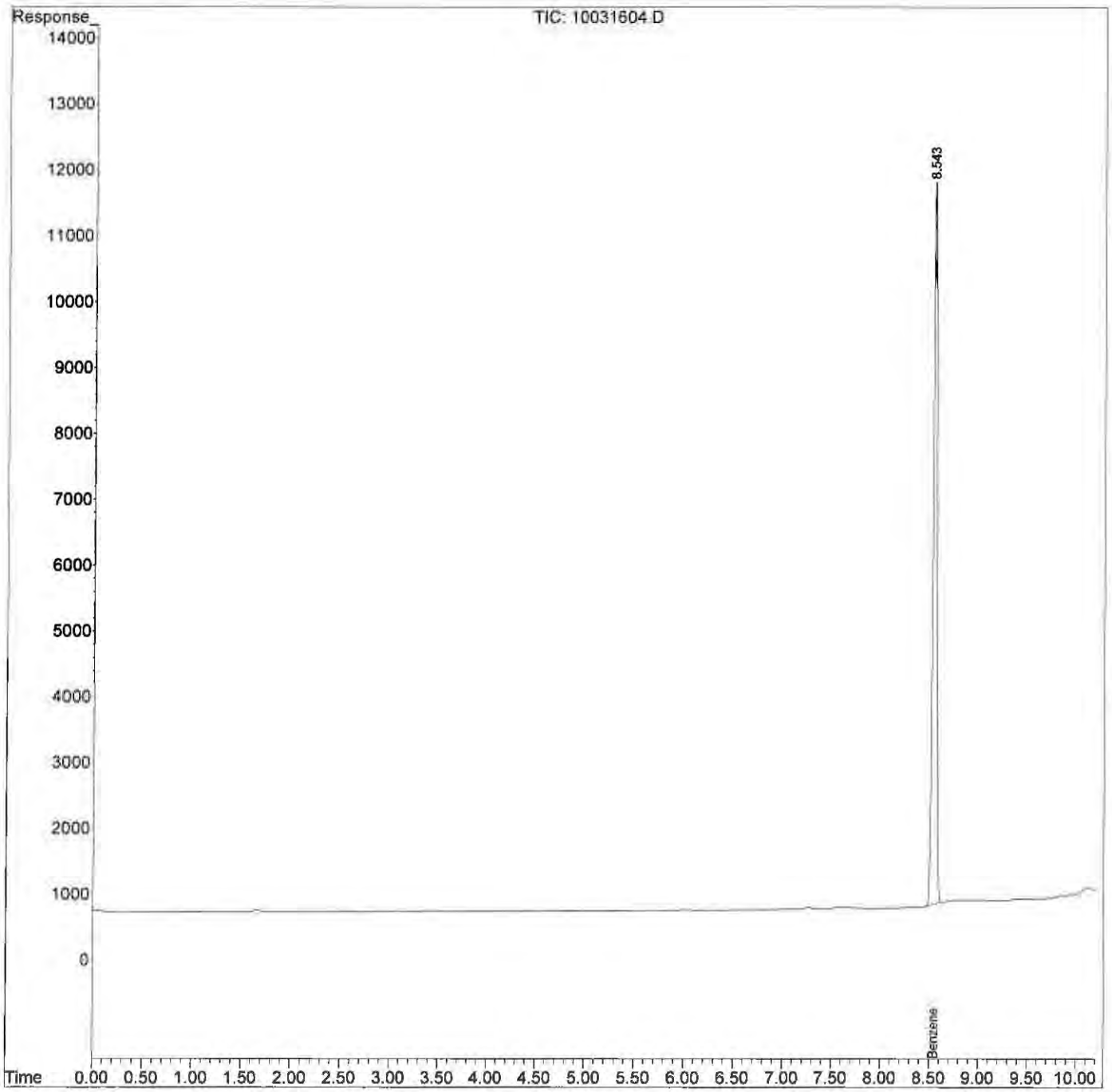
Compound	R.T.	Response	Conc Units
Target Compounds			
1) T Benzene	8.543	298208	2.765 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC08\DATA\TO_3M\2016_10\03B\
Data File : 10031604.D
Signal(s) : FID2B.CH
Acq On : 03-Oct-2016, 12:15:59
Operator : amf
Sample : s30-10031602 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 03 13:24:56 2016
Quant Method : I:\GC08\METHODS\BE100316.M
Quant Title : Benzene by GC/FID#8
QLast Update : Mon Oct 03 13:23:14 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC08\DATA\TO_3M\2016_10\03B\
Data File : 10031605.D
Signal(s) : FID2B.CH
Acq On : 03-Oct-2016, 12:29:07
Operator : amf
Sample : s30-10031601 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 03 13:25:04 2016
Quant Method : I:\GC08\METHODS\BE100316.M
Quant Title : Benzene by GC/FID#8
QLast Update : Mon Oct 03 13:23:14 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

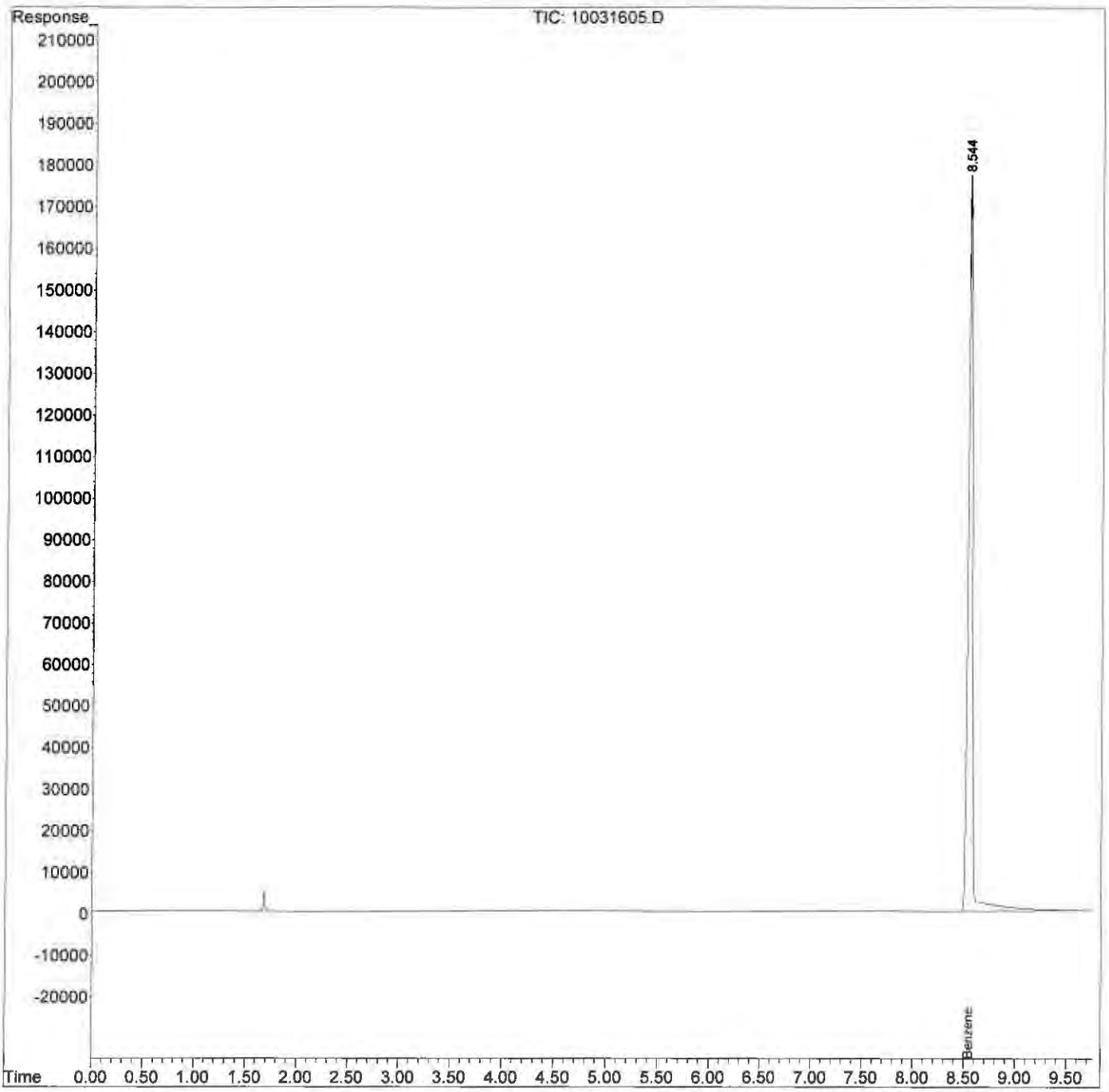
Compound	R.T.	Response	Conc Units
Target Compounds			
1) T Benzene	8.544	5293097	49.076 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC08\DATA\TO_3M\2016_10\03B\
Data File : 10031605.D
Signal(s) : FID2B.CH
Acq On : 03-Oct-2016, 12:29:07
Operator : amf
Sample : s30-10031601 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 03 13:25:04 2016
Quant Method : I:\GC08\METHODS\BE100316.M
Quant Title : Benzene by GC/FID#8
QLast Update : Mon Oct 03 13:23:14 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC08\DATA\TO_3M\2016_10\03B\
Data File : 10031606.D
Signal(s) : FID2B.CH
Acq On : 03-Oct-2016, 12:41:31
Operator : amf
Sample : s30-10031601 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 03 13:25:15 2016
Quant Method : I:\GC08\METHODS\BE100316.M
Quant Title : Benzene by GC/FID#8
QLast Update : Mon Oct 03 13:23:14 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

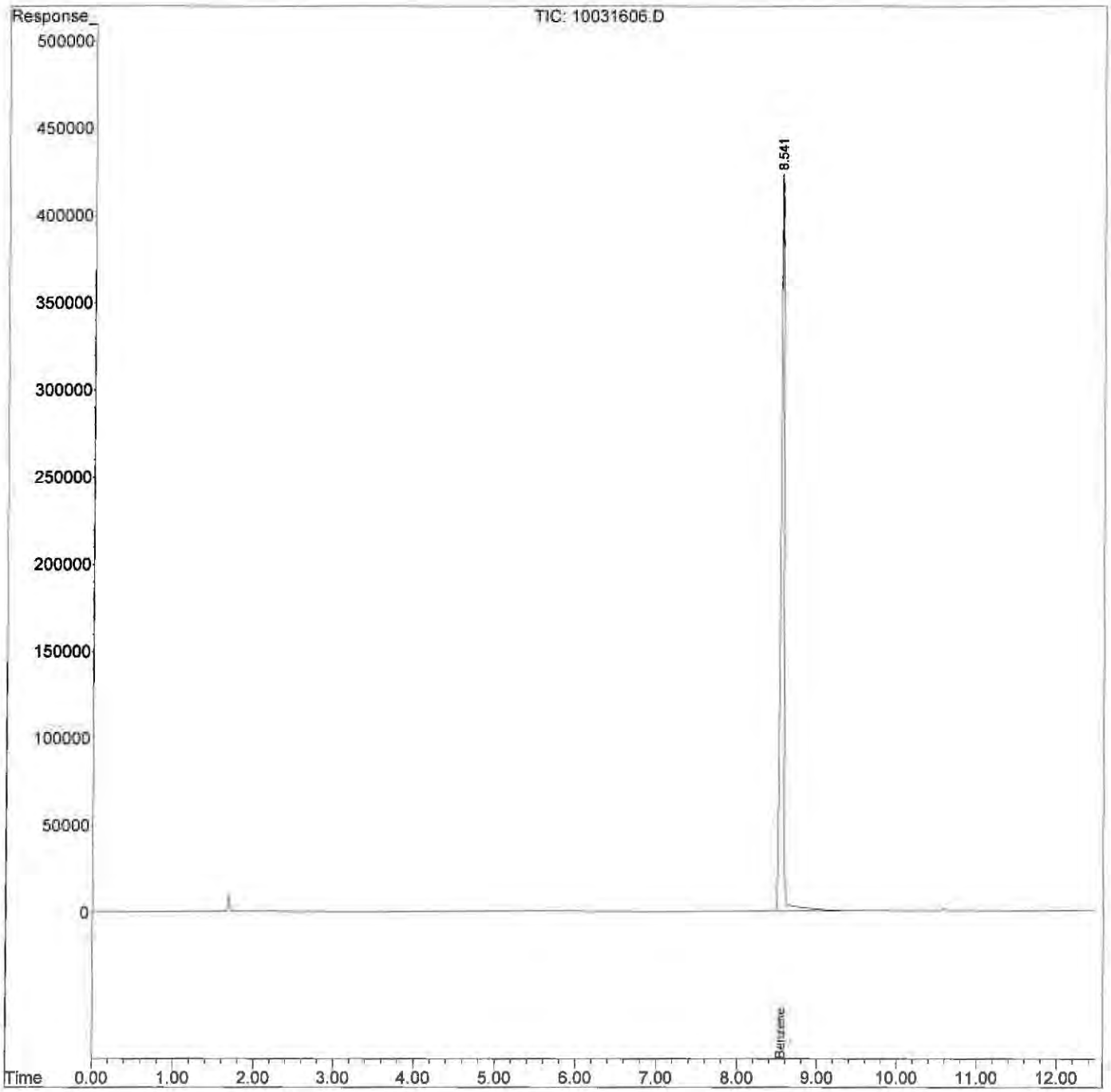
Compound	R.T.	Response	Conc Units
Target Compounds			
1) T Benzene	8.542	12132989	112.493 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC08\DATA\TO_3M\2016_10\03B\
Data File : 10031606.D
Signal(s) : FID2B.CH
Acq On : 03-Oct-2016, 12:41:31
Operator : amf
Sample : s30-10031601 0.1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 03 13:25:15 2016
Quant Method : I:\GC08\METHODS\BE100316.M
Quant Title : Benzene by GC/FID#8
QLast Update : Mon Oct 03 13:23:14 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC08\DATA\TO_3M\2016_10\03B\
Data File : 10031607.D
Signal(s) : FID2B.CH
Acq On : 03-Oct-2016, 13:11:34
Operator : amf
Sample : s30-10031601 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 03 13:25:24 2016
Quant Method : I:\GC08\METHODS\BE100316.M
Quant Title : Benzene by GC/FID#8
QLast Update : Mon Oct 03 13:23:14 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

Compound	R.T.	Response	Conc Units
Target Compounds			
1) T Benzene	8.543	30737279	284.986 ppm

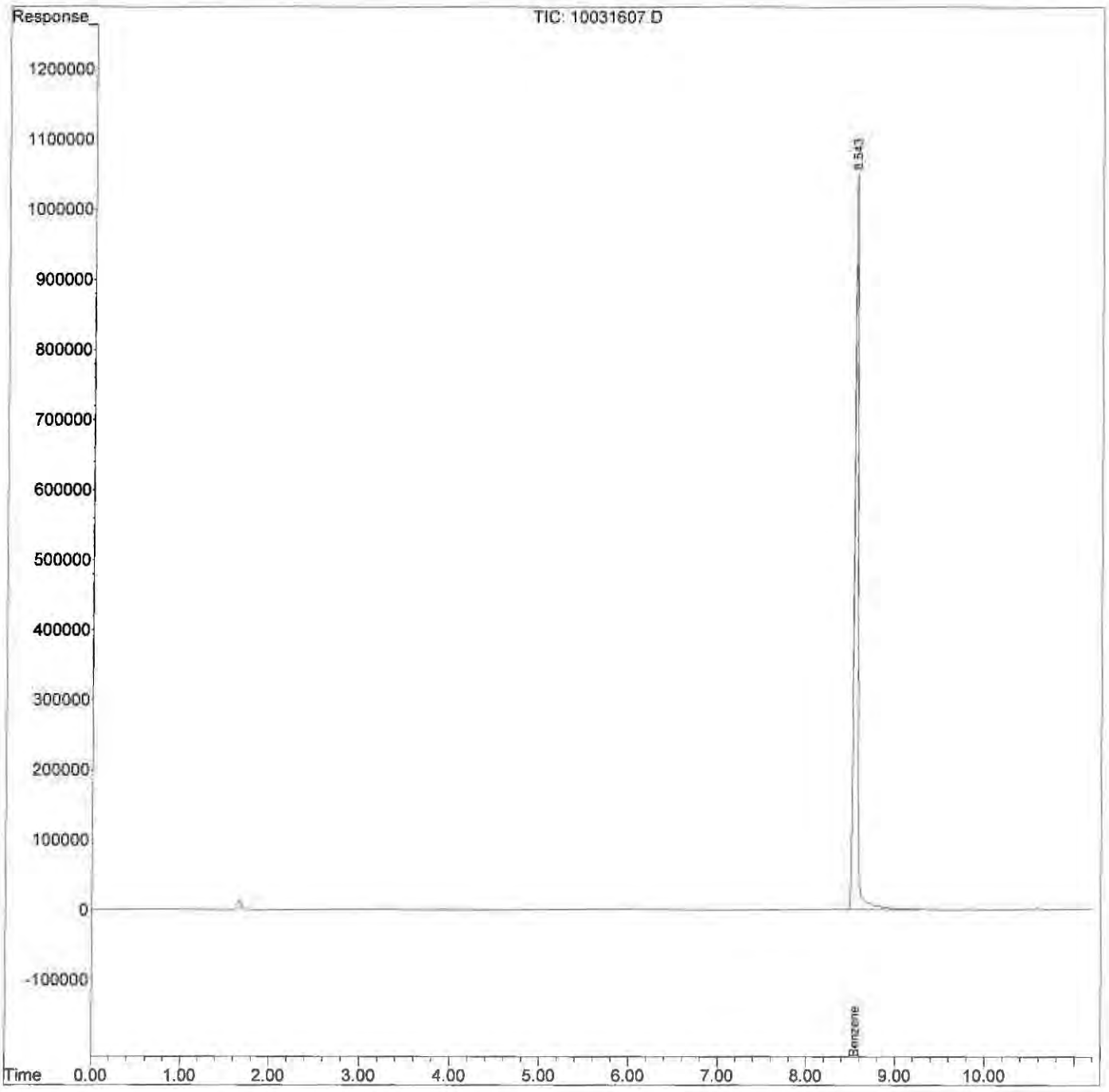
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC08\DATA\TO_3M\2016_10\03B\
Data File : 10031607.D
Signal(s) : FID2B.CH
Acq On : 03-Oct-2016, 13:11:34
Operator : amf
Sample : s30-10031601 0.25ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 03 13:25:24 2016
Quant Method : I:\GC08\METHODS\BE100316.M
Quant Title : Benzene by GC/FID#8
QLast Update : Mon Oct 03 13:23:14 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC08\DATA\TO_3M\2016_10\03B\
Data File : 10031608.D
Signal(s) : FID2B.CH
Acq On : 03-Oct-2016, 14:56:18
Operator : amf
Sample : ~~CCV~~ s30-10031604
Misc : ICV
ALS Vial : 1 Sample Multiplier: 1
AM 10/12/16

Integration File: autoint1.e
Quant Time: Oct 03 15:08:28 2016
Quant Method : I:\GC08\METHODS\BE100316.M
Quant Title : Benzene by GC/FID#8
QLast Update : Mon Oct 03 13:23:14 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

Compound	R.T.	Response	Conc Units
Target Compounds			
1) T Benzene	8.534	108105893	1002.324 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

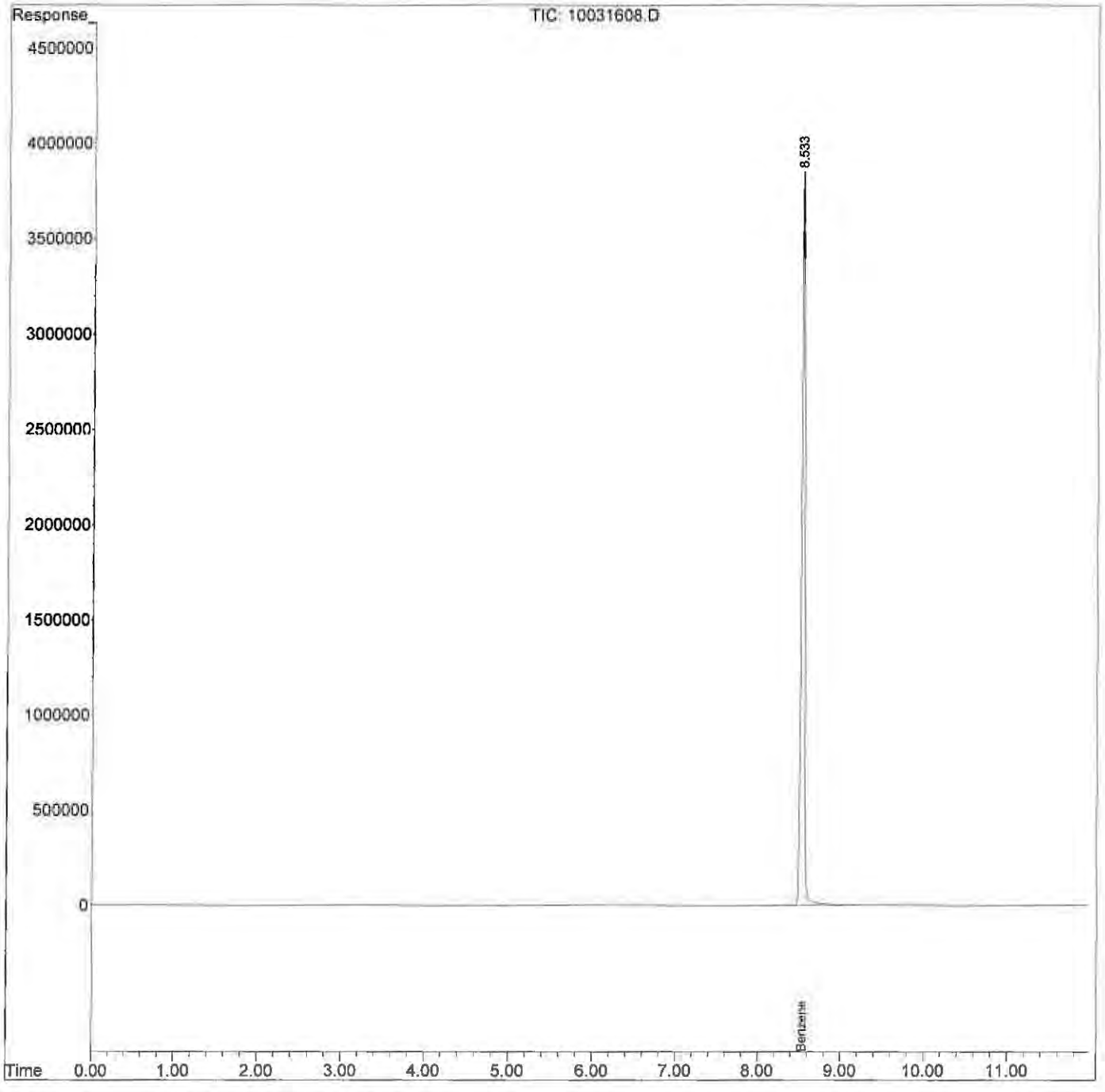
Quantitation Report (QT Reviewed)

Data Path : I:\GC08\DATA\TO_3M\2016_10\03B\
Data File : 10031608.D
Signal(s) : FID2B.CH
Acq On : 03-Oct-2016, 14:56:18
Operator : amf
Sample : ~~CCV~~ s30-10031604
Misc : ~~ICV~~
ALS Vial : 1 Sample Multiplier: 1

10/12/16

Integration File: autoint1.e
Quant Time: Oct 03 15:08:28 2016
Quant Method : I:\GC08\METHODS\BE100316.M
Quant Title : Benzene by GC/FID#8
QLast Update : Mon Oct 03 13:23:14 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



ALS Environmental

REPORT SUMMARY

Method : VOA-TO3C1C6
Client : Air Hygiene, Incorporated
Analyst : amf

ALS Service Request P1604745
Instrument : Instrument 8 / FID #8
Date Acquired : 10/11/2016

SAMPLE RESULT SUMMARIES (ppm)

Sample ID	Inject. Vol(ml)	Dilution DF	Benzene
std s30-10111601	1.0	1.0	1075.7
ACTUAL			1098.0
%Difference			2.0%
lcs s30-10111602	1.0	1.0	1070.20
ACTUAL			1098.0
%Recovery			97.5%
lcsds30-10111602	1.0	1.0	1088.69
ACTUAL			1098.0
%Recovery			99.2%
%RPD			1.7%
mb 1ml	1.0	1.0	0.05
4745-001 0.05m	0.1	1.0	0.09
4745-002 0.05m	0.1	1.0	0.04
4745-003 0.05m	0.1	1.0	0.03
4745-004 0.05m	0.1	1.0	0.02
std s30-10111601	1.0	1.0	1080.0
ACTUAL			1098.0
%Difference			1.6%

FINAL SAMPLE RESULT SUMMARIES (ppm)

Sample ID	Pi	Pf	Benzene
MRL			0.60
mb 1ml	0.00	0.00	ND
4745-001 0.05m	-0.53	5.07	ND
4745-002 0.05m	-0.85	5.15	ND
4745-003 0.05m	0.06	5.46	ND
4745-004 0.05m	-0.34	5.37	ND

TGNMO-HC RESULT SUMMARIES (as ppm Methane)

Sample ID	PiPf DF	NMOHC as Methane	NMOHC as Hexane	Total HC	Fixed Gases %
MRL(ppm Methane)	1.0	1.00	0.17	%	
mb 1ml	1.00	0.000	0.000	0.00	100.00
4745-001 0.05m	1.40	0.00	0.00	0.00	100.00
4745-002 0.05m	1.43	0.00	0.00	0.00	100.00
4745-003 0.05m	1.37	0.00	0.00	0.00	100.00
4745-004 0.05m	1.40	0.00	0.00	0.00	100.00

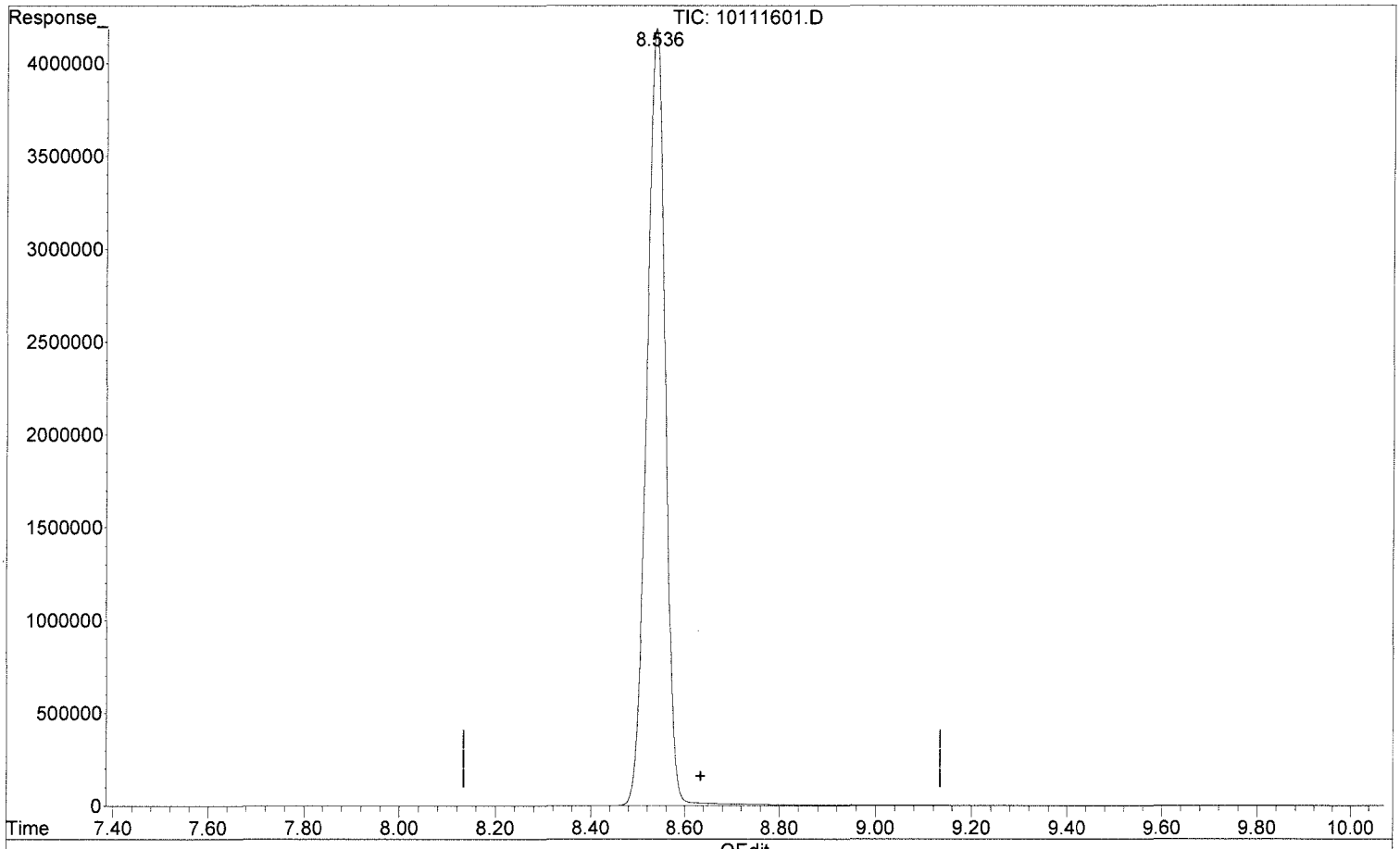
10/19/16

Quantitation Report (Qedit)

Data Path : I:\GC08\DATA\TO_3M\2016_10\11B\
Data File : 10111601.D
Signal(s) : FID2B.CH
Acq On : 11-Oct-2016, 14:45:12
Operator : amf
Sample : std s30-10111601
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 11 14:55:21 2016
Quant Method : I:\GC08\METHODS\BE100316.M
Quant Title : Benzene by GC/FID#8
QLast Update : Mon Oct 03 13:23:14 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



(1) Benzene (T)

8.536min 1075.743 ppm

response 116024585

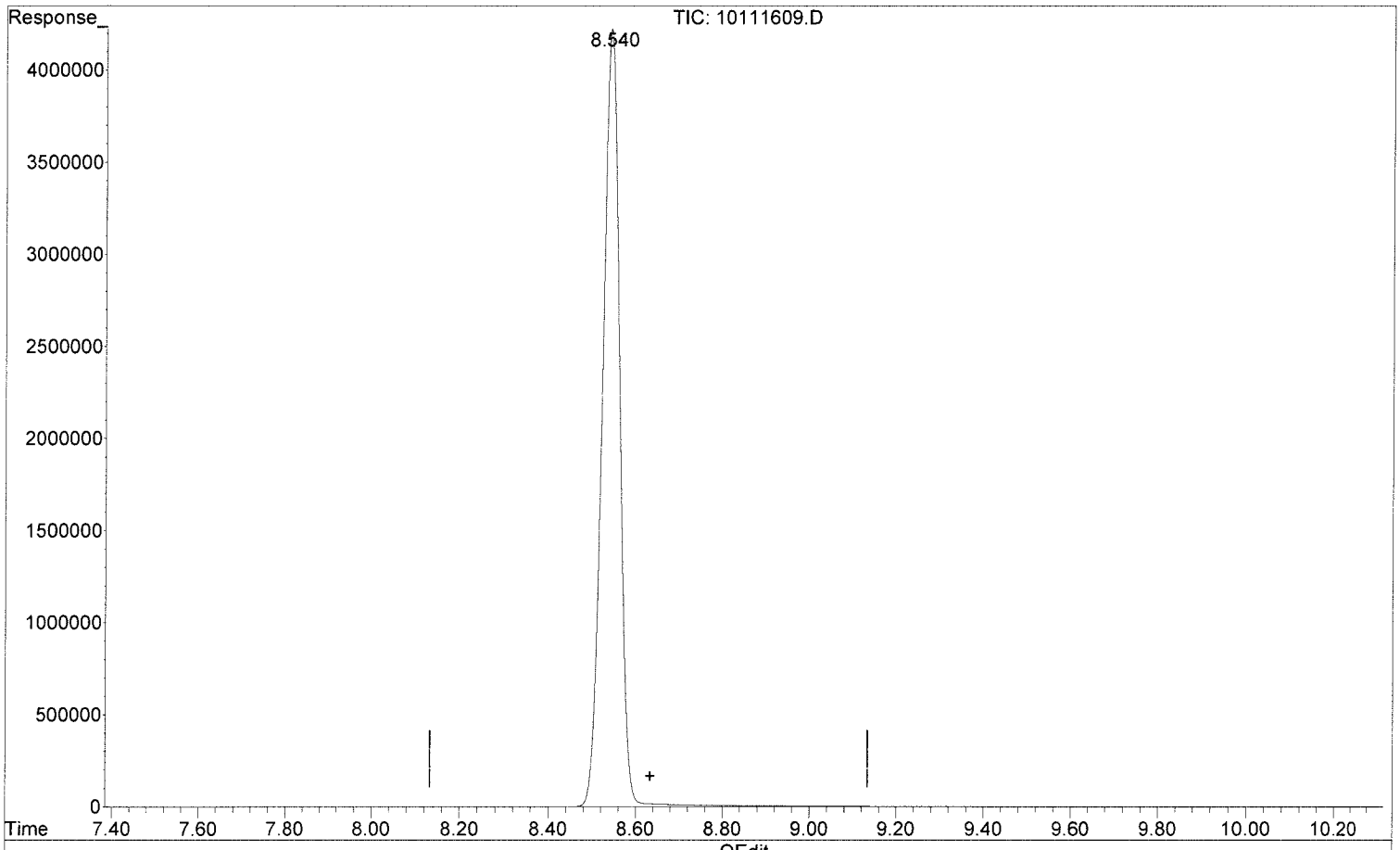
10/12/16

(+) = Expected Retention Time

Data Path : I:\GC08\DATA\TO_3M\2016_10\11B\
Data File : 10111609.D
Signal(s) : FID2B.CH
Acq On : 11-Oct-2016, 16:58:03
Operator : amf
Sample : std s30-10111601
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 11 17:08:32 2016
Quant Method : I:\GC08\METHODS\BE100316.M
Quant Title : Benzene by GC/FID#8
QLast Update : Mon Oct 03 13:23:14 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



(1) Benzene (T)

8.541min 1079.997 ppm

response 116483369

(+) = Expected Retention Time

Injection Log

Directory: I:\GC08\DATA\TO_3M\2016_10\03B\

	Sample ID	Date/Time	Acquisition Method	File Name	Misc Info	Operator	Comments
	s30-10031603 0.5ml	03-Oct-16, 09:42:34	TO3.M	10031601.D		amf	
	s30-10031603 0.5ml	03-Oct-16, 10:09:08	TO3.M	10031602.D		amf	
	s30-10031602 0.05ml	03-Oct-16, 11:50:23	TO3.M	10031603.D		amf	
	s30-10031602 0.25ml	03-Oct-16, 12:15:59	TO3.M	10031604.D		amf	
	s30-10031601 0.05ml	03-Oct-16, 12:29:07	TO3.M	10031605.D		amf	
	s30-10031601 0.1ml	03-Oct-16, 12:41:31	TO3.M	10031606.D		amf	
	s30-10031601 0.25ml	03-Oct-16, 13:11:34	TO3.M	10031607.D		amf	
	~~CCV~~ s30-10031604	03-Oct-16, 14:56:18	TO3.M	10031608.D		amf	
	CCV 10/2/16						

Injection Log

Directory: I:\GC08\DATA\TO_3M\2016_10\11B\

	Sample ID	Date/Time	Acquisition Method	File Name	Misc Info	Operator	Comments
	std s30-10111601	11-Oct-16, 14:45:12	TO3.M	10111601.D		amf	
	mb 1ml	11-Oct-16, 15:22:08	TO3.M	10111602.D		amf	
	lcs s30-10111602	11-Oct-16, 15:35:55	TO3.M	10111603.D		amf	
	lcsds30-10111602	11-Oct-16, 15:48:59	TO3.M	10111604.D		amf	
	4745-001 0.05ml	11-Oct-16, 16:08:57	TO3.M	10111605.D		amf	
	4745-002 0.05ml	11-Oct-16, 16:21:20	TO3.M	10111606.D		amf	
	4745-003 0.05ml	11-Oct-16, 16:33:35	TO3.M	10111607.D		amf	
	4745-004 0.05ml	11-Oct-16, 16:45:47	TO3.M	10111608.D		amf	
	std s30-10111601	11-Oct-16, 16:58:03	TO3.M	10111609.D		amf	

Data Path : I:\GC08\DATA\TO_3M\2016_10\11\
Data File : 10111606.D
Signal(s) : FID2B.CH
Acq On : 11-Oct-2016, 10:47:06
Operator : amf
Sample : 4745-001 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 12 09:04:44 2016
Quant Method : I:\GC08\METHODS\TF042116.M
Quant Title : VOA-TO3C1C6
QLast Update : Fri Apr 22 09:01:46 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

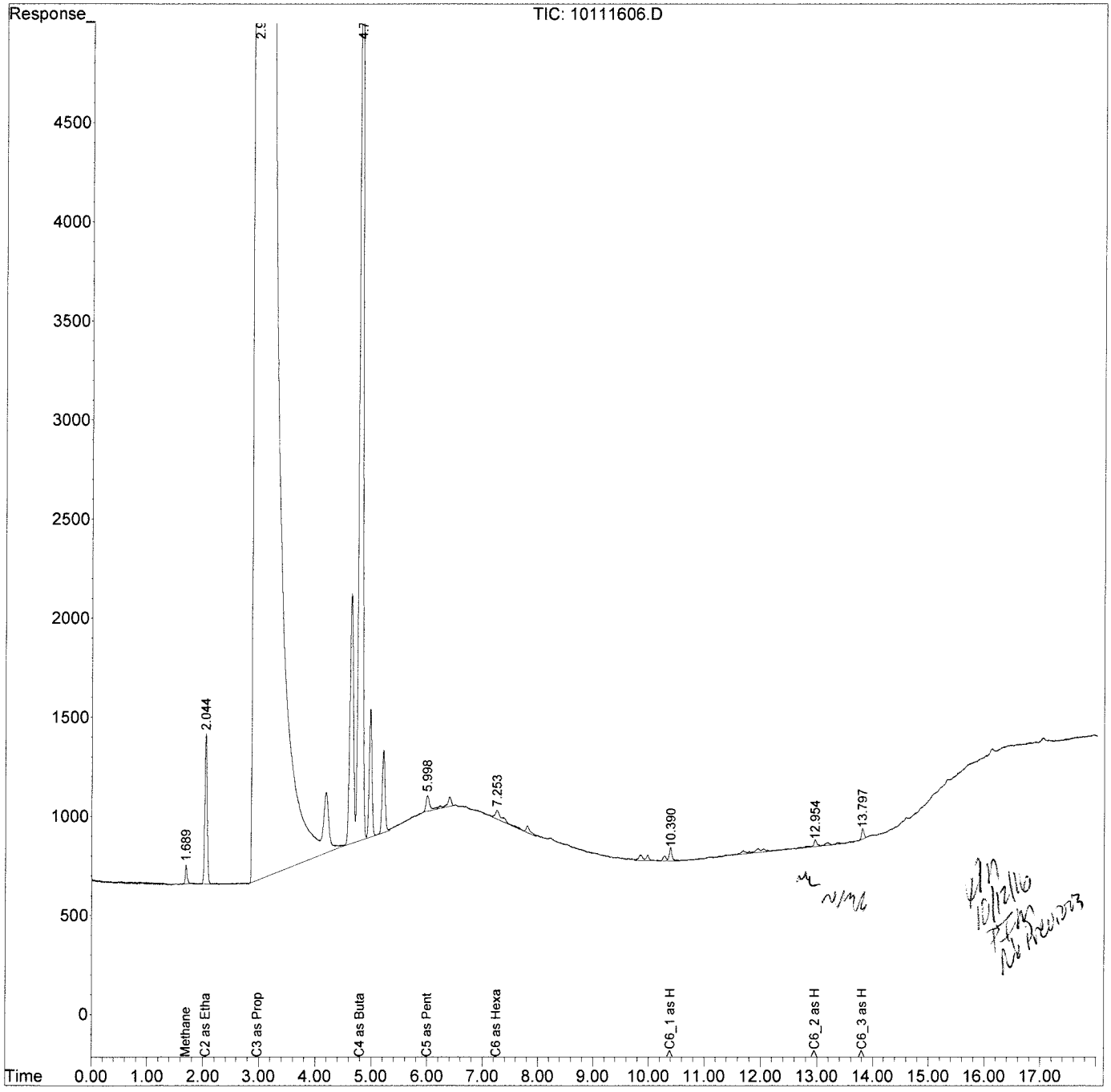
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Methane	1.691	2107	0.096	ppm	
2)	C2 as Ethane	2.045	21757	0.550	ppm	
3)	C3 as Propane	2.970	2671076055	47139.152	ppm	m
4)	C4 as Butane	4.792	323714	4.308	ppm	m
5)	C5 as Pentane	5.997f	6312	0.066	ppm	m
6)	C6 as Hexane	7.253f	5683	0.055	ppm	m
7)	>C6_1 as Hexane	10.390f	5915	0.057	ppm	m
8)	>C6_2 as Hexane	12.954f	6559	0.063	ppm	m
9)	>C6_3 as Hexane	13.797f	1647	0.016	ppm	m

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC08\DATA\TO_3M\2016_10\11\
Data File : 10111606.D
Signal(s) : FID2B.CH
Acq On : 11-Oct-2016, 10:47:06
Operator : amf
Sample : 4745-001 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 12 09:04:44 2016
Quant Method : I:\GC08\METHODS\TF042116.M
Quant Title : VOA-TO3C1C6
QLast Update : Fri Apr 22 09:01:46 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC08\DATA\TO_3M\2016_10\11\
Data File : 10111607.D
Signal(s) : FID2B.CH
Acq On : 11-Oct-2016, 11:11:17
Operator : amf
Sample : 4745-002 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 12 09:08:48 2016
Quant Method : I:\GC08\METHODS\TF042116.M
Quant Title : VOA-TO3C1C6
QLast Update : Fri Apr 22 09:01:46 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

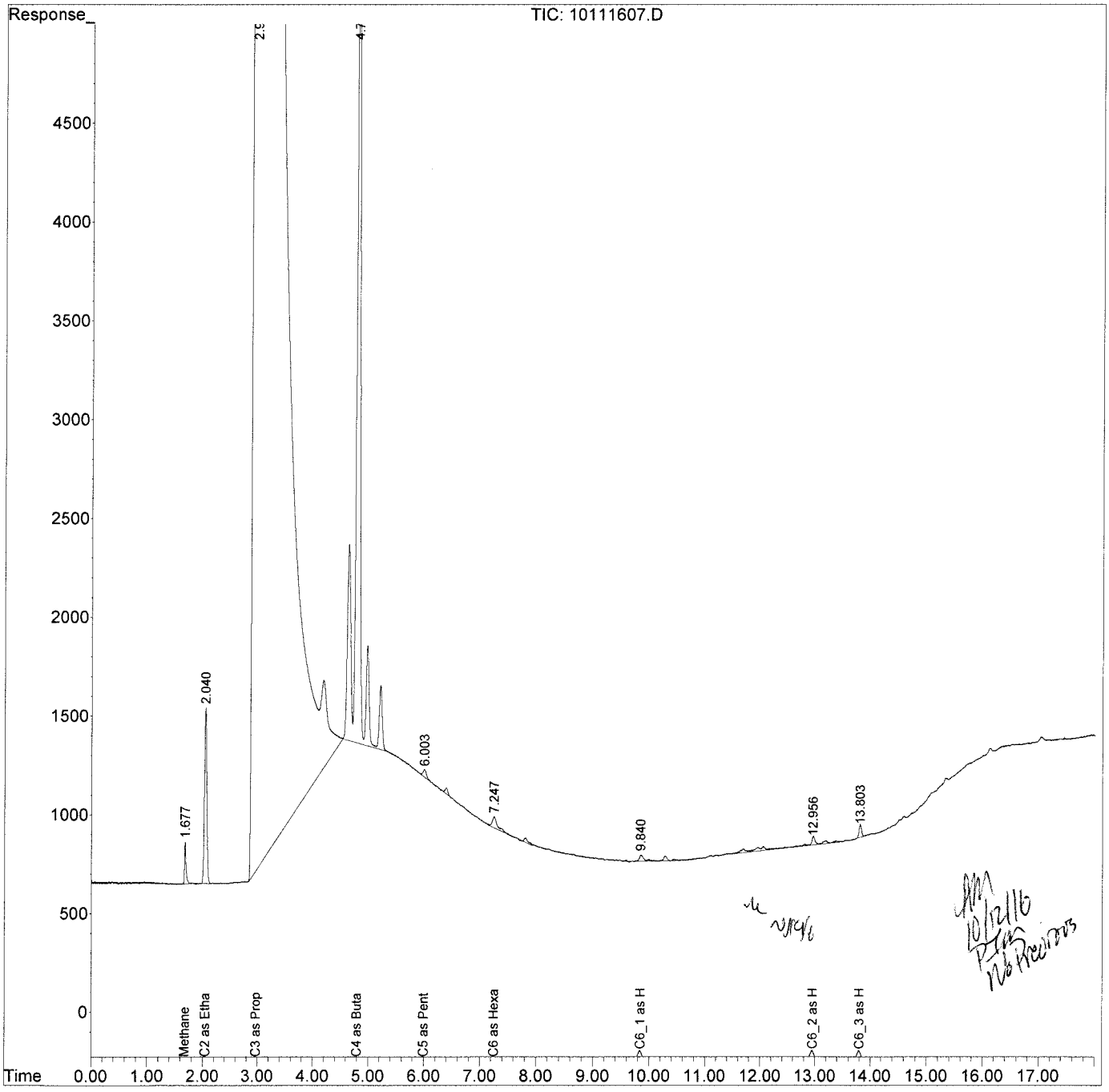
	Compound	R.T.	Response	Conc Units	
Target Compounds					
1)	Methane	1.678	3841	0.175 ppm	
2)	C2 as Ethane	2.041	25711	0.650 ppm	
3)	C3 as Propane	2.967	2332379984	41161.844 ppm	m
4)	C4 as Butane	4.792	258646	3.442 ppm	m
5)	C5 as Pentane	6.003f	2727	0.029 ppm	m
6)	C6 as Hexane	7.247f	4776	0.046 ppm	m
7)	>C6_1 as Hexane	9.840f	3405	0.033 ppm	m
8)	>C6_2 as Hexane	12.956f	8152	0.078 ppm	m
9)	>C6_3 as Hexane	13.803f	2054	0.020 ppm	m

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC08\DATA\TO_3M\2016_10\11\
Data File : 10111607.D
Signal(s) : FID2B.CH
Acq On : 11-Oct-2016, 11:11:17
Operator : amf
Sample : 4745-002 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 12 09:08:48 2016
Quant Method : I:\GC08\METHODS\TF042116.M
Quant Title : VOA-TO3C1C6
QLast Update : Fri Apr 22 09:01:46 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC08\DATA\TO_3M\2016_10\11\
Data File : 10111608.D
Signal(s) : FID2B.CH
Acq On : 11-Oct-2016, 11:34:11
Operator : amf
Sample : 4745-003 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 12 09:16:59 2016
Quant Method : I:\GC08\METHODS\TF042116.M
Quant Title : VOA-TO3C1C6
QLast Update : Fri Apr 22 09:01:46 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

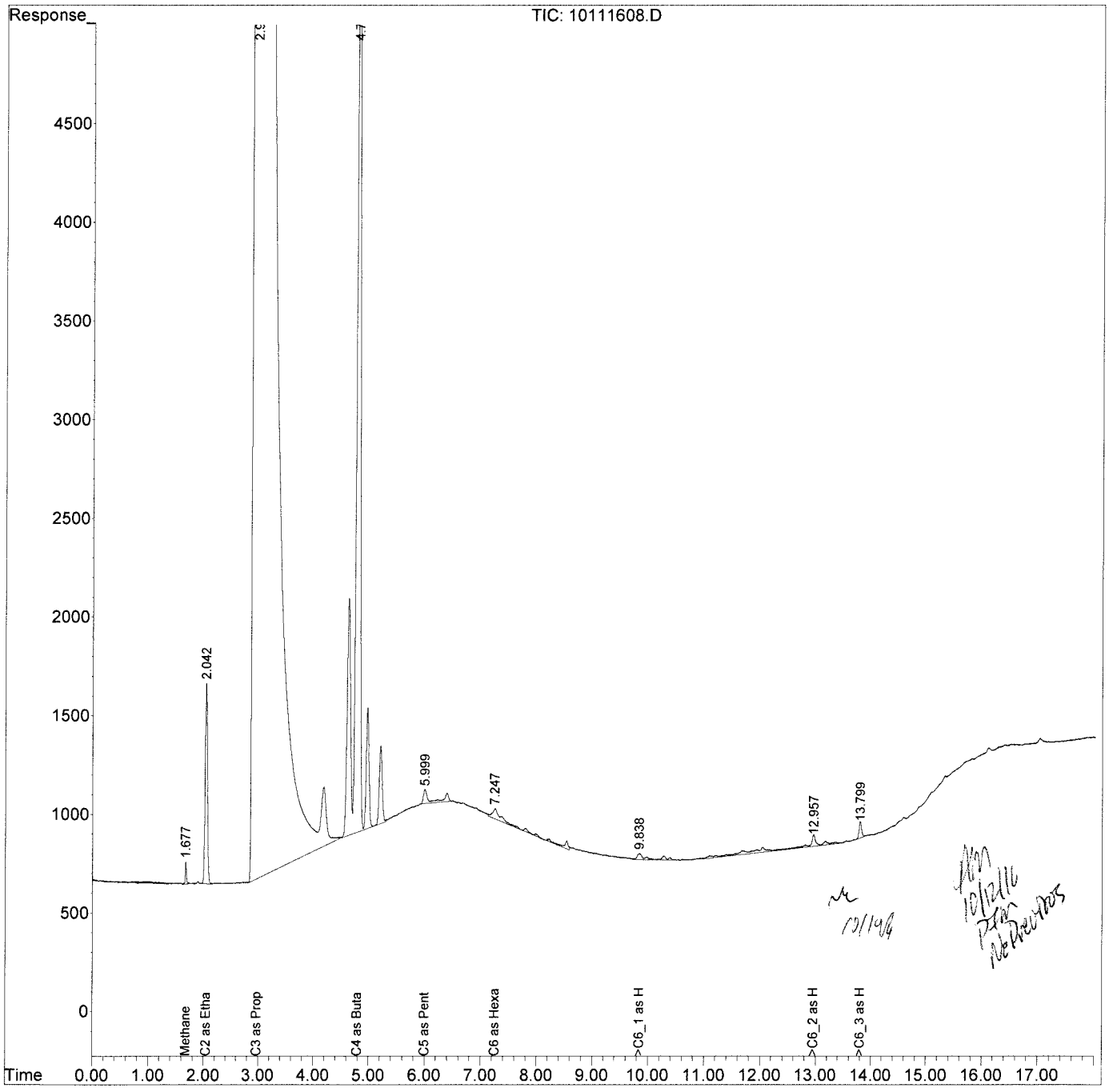
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Methane	1.677	1604	0.073	ppm	
2)	C2 as Ethane	2.042	29188	0.738	ppm	
3)	C3 as Propane	2.965f	2840641301	50131.640	ppm	m
4)	C4 as Butane	4.790	307112	4.087	ppm	m
5)	C5 as Pentane	5.999f	6160	0.065	ppm	m
6)	C6 as Hexane	7.247f	9260	0.089	ppm	m
7)	>C6_1 as Hexane	9.838f	3968	0.038	ppm	m
8)	>C6_2 as Hexane	12.957f	13047	0.125	ppm	m
9)	>C6_3 as Hexane	13.799f	2669	0.026	ppm	m

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC08\DATA\TO_3M\2016_10\11\
Data File : 10111608.D
Signal(s) : FID2B.CH
Acq On : 11-Oct-2016, 11:34:11
Operator : amf
Sample : 4745-003 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 12 09:16:59 2016
Quant Method : I:\GC08\METHODS\TF042116.M
Quant Title : VOA-TO3C1C6
QLast Update : Fri Apr 22 09:01:46 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC08\DATA\TO_3M\2016_10\11\
Data File : 10111609.D
Signal(s) : FID2B.CH
Acq On : 11-Oct-2016, 13:04:29
Operator : amf
Sample : 4745-004 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 12 09:20:27 2016
Quant Method : I:\GC08\METHODS\TF042116.M
Quant Title : VOA-TO3C1C6
QLast Update : Fri Apr 22 09:01:46 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

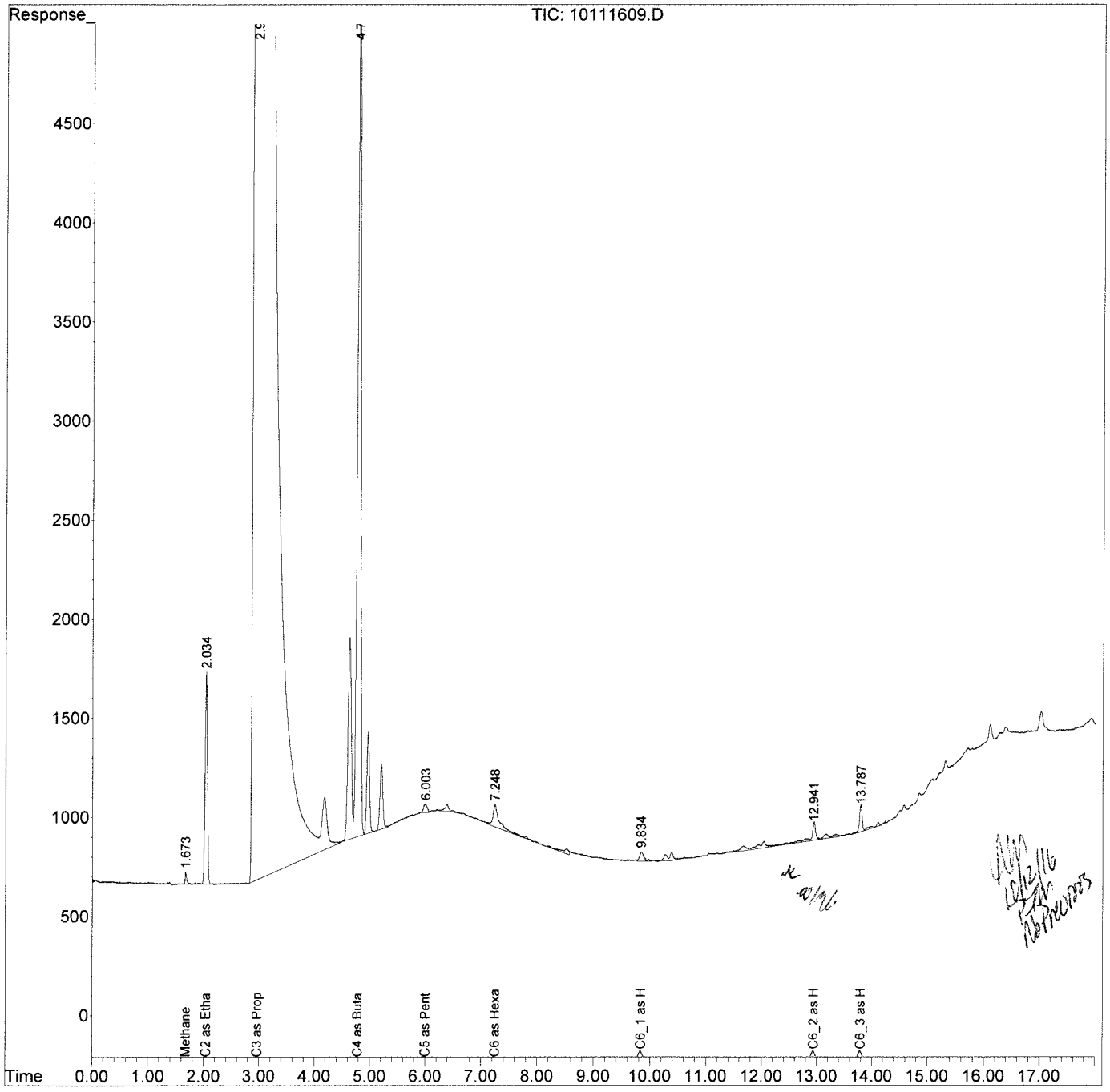
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Methane	1.675	1226	0.056	ppm	
2)	C2 as Ethane	2.035	30642	0.775	ppm	
3)	C3 as Propane	2.960f	2493951232	44013.253	ppm	m
4)	C4 as Butane	4.781	259435	3.453	ppm	m
5)	C5 as Pentane	6.003f	4673	0.049	ppm	m
6)	C6 as Hexane	7.248f	11349	0.109	ppm	m
7)	>C6_1 as Hexane	9.834f	5881	0.057	ppm	m
8)	>C6_2 as Hexane	12.941f	12969	0.125	ppm	m
9)	>C6_3 as Hexane	13.787f	5936	0.057	ppm	m

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC08\DATA\TO_3M\2016_10\11\
Data File : 10111609.D
Signal(s) : FID2B.CH
Acq On : 11-Oct-2016, 13:04:29
Operator : amf
Sample : 4745-004 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 12 09:20:27 2016
Quant Method : I:\GC08\METHODS\TF042116.M
Quant Title : VOA-TO3C1C6
QLast Update : Fri Apr 22 09:01:46 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Data Path : I:\GC08\DATA\TO_3M\2016_10\11\
Data File : 10111602.D
Signal(s) : FID2B.CH
Acq On : 11-Oct-2016, 09:22:27
Operator : amf
Sample : mb 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 11 09:42:00 2016
Quant Method : I:\GC08\METHODS\TF042116.M
Quant Title : VOA-TO3C1C6
QLast Update : Fri Apr 22 09:01:46 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

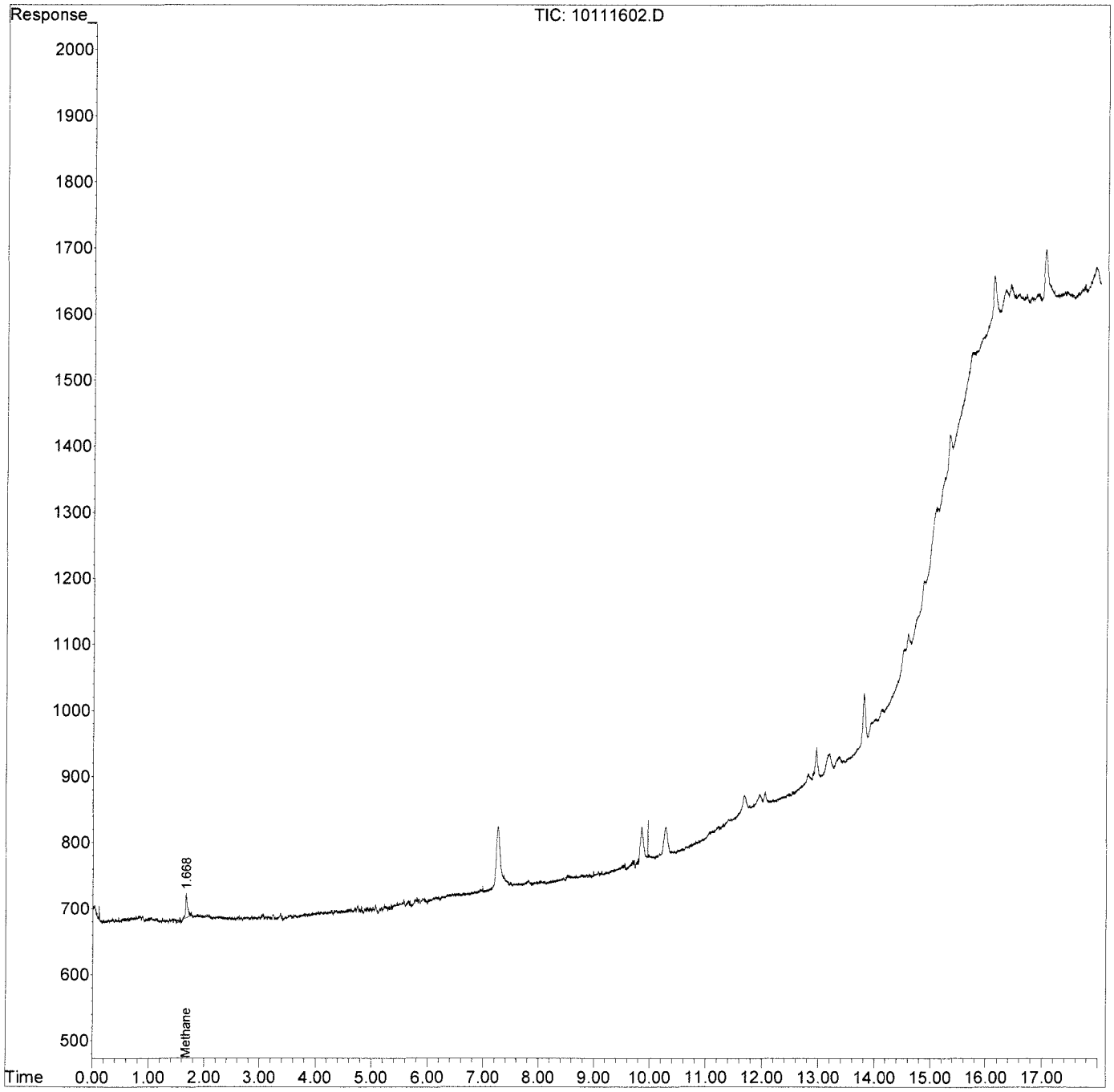
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Methane	1.670	1015	0.046	ppm	
2)	C2 as Ethane	0.000	0	N.D.	ppm	
3)	C3 as Propane	0.000	0	N.D.	ppm	
4)	C4 as Butane	0.000	0	N.D.	ppm	
5)	C5 as Pentane	0.000	0	N.D.	ppm	
6)	C6 as Hexane	0.000	0	N.D.	ppm	
7)	>C6_1 as Hexane	0.000	0	N.D.	ppm	
8)	>C6_2 as Hexane	0.000	0	N.D.	ppm	
9)	>C6_3 as Hexane	0.000	0	N.D.	ppm	d

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC08\DATA\TO_3M\2016_10\11\
Data File : 10111602.D
Signal(s) : FID2B.CH
Acq On : 11-Oct-2016, 09:22:27
Operator : amf
Sample : mb 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 11 09:42:00 2016
Quant Method : I:\GC08\METHODS\TF042116.M
Quant Title : VOA-TO3C1C6
QLast Update : Fri Apr 22 09:01:46 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Data Path : I:\GC08\DATA\TO_3M\2016_10\11\
Data File : 10111603.D
Signal(s) : FID2B.CH
Acq On : 11-Oct-2016, 09:46:09
Operator : amf
Sample : lcs s30-08011601
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 11 10:03:58 2016
Quant Method : I:\GC08\METHODS\TF042116.M
Quant Title : VOA-TO3C1C6
QLast Update : Fri Apr 22 09:01:46 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

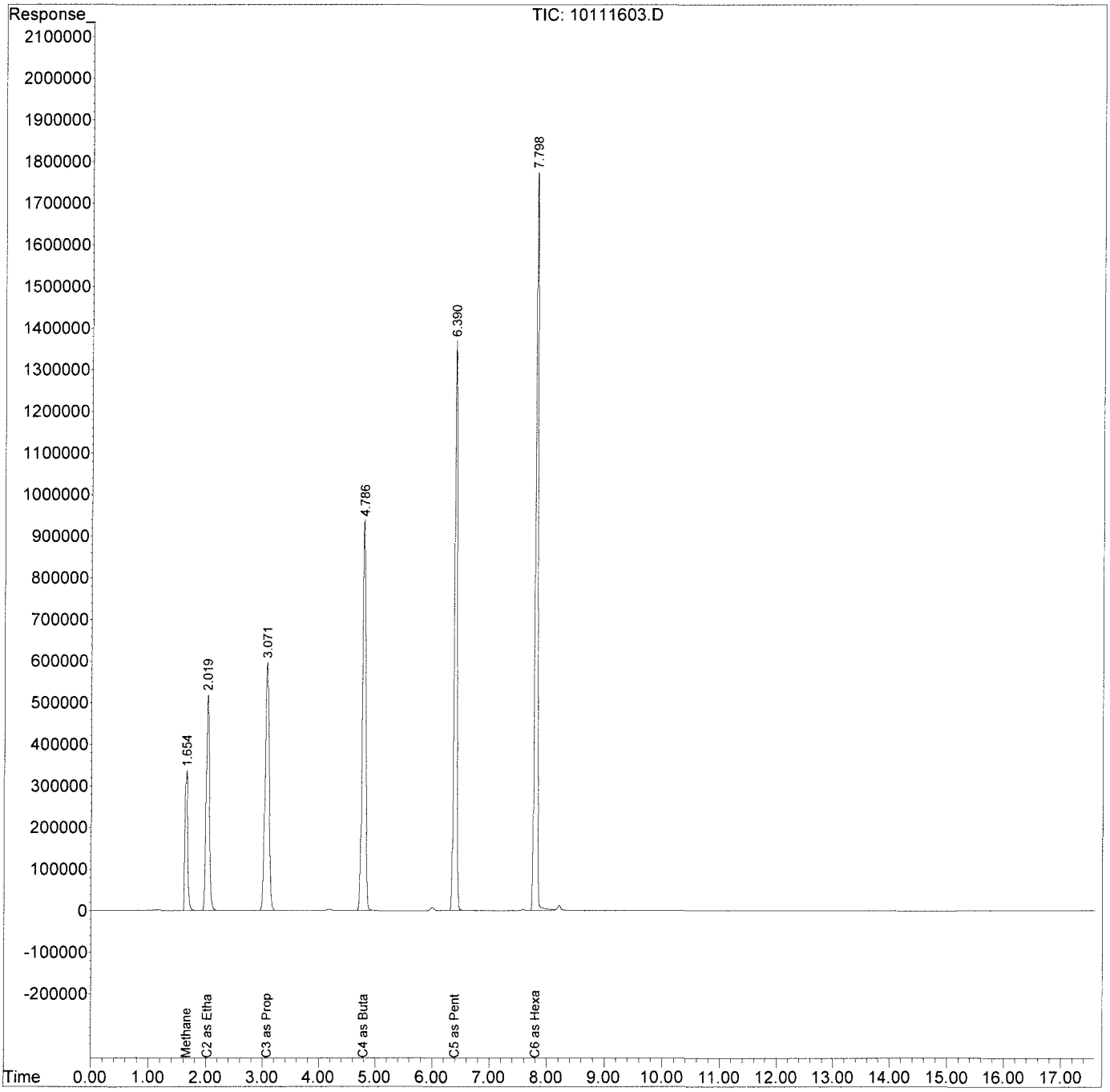
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Methane	1.654	10911675	497.500	ppm	
2)	C2 as Ethane	2.020	20147403	509.574	ppm	
3)	C3 as Propane	3.072	30832160	544.126	ppm	
4)	C4 as Butane	4.786	39595880	526.966	ppm	
5)	C5 as Pentane	6.391	47564939	500.753	ppm	
6)	C6 as Hexane	7.799	55940331	537.685	ppm	
7)	>C6_1 as Hexane	0.000	0	N.D.	ppm	
8)	>C6_2 as Hexane	0.000	0	N.D.	ppm	
9)	>C6_3 as Hexane	0.000	0	N.D.	ppm	d

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC08\DATA\TO_3M\2016_10\11\
Data File : 10111603.D
Signal(s) : FID2B.CH
Acq On : 11-Oct-2016, 09:46:09
Operator : amf
Sample : lcs s30-08011601
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 11 10:03:58 2016
Quant Method : I:\GC08\METHODS\TF042116.M
Quant Title : VOA-TO3C1C6
QLast Update : Fri Apr 22 09:01:46 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Response Factor Report HP5890

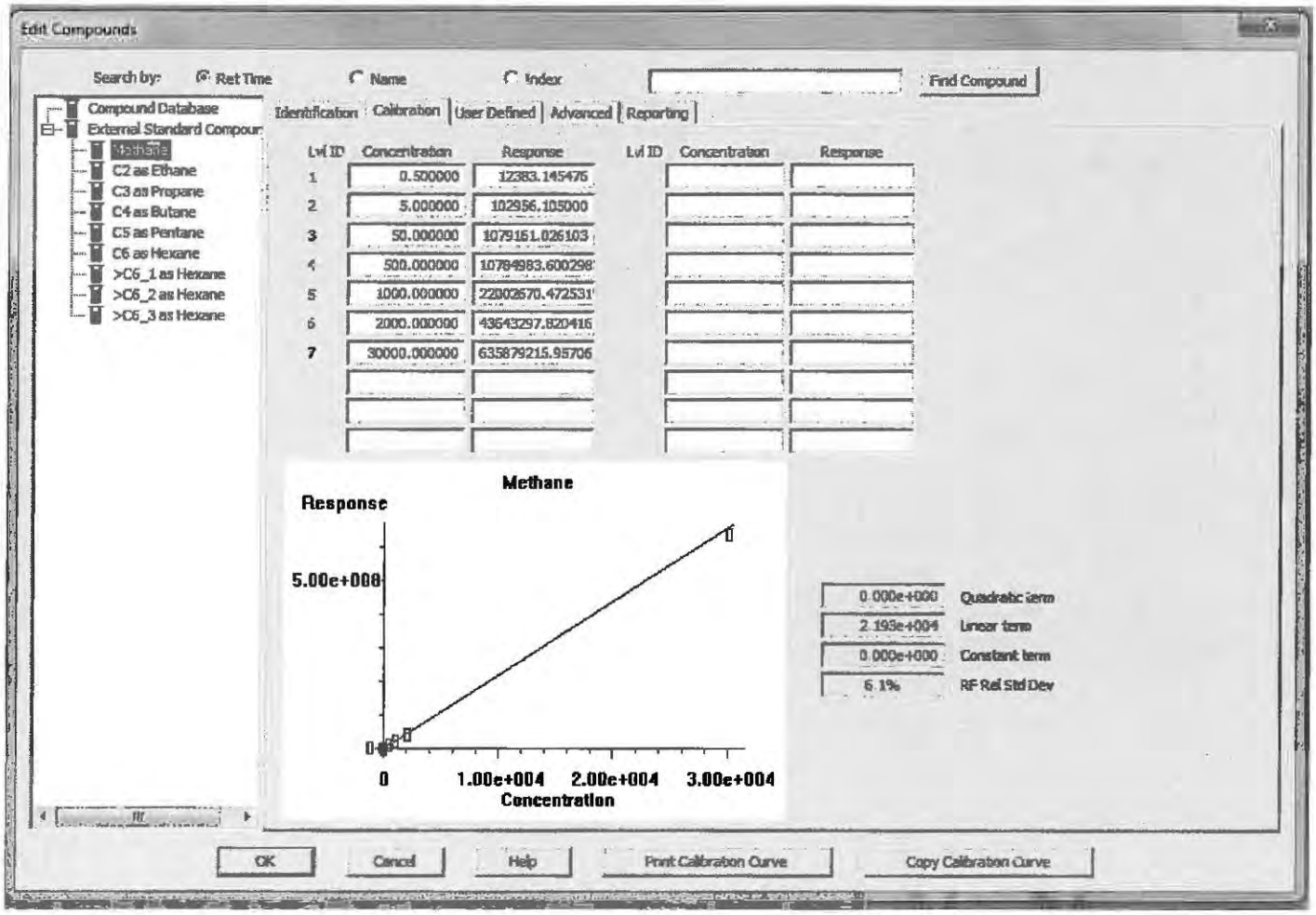
Method Path : I:\GC08\METHODS\
Method File : TF042116.M
Title : VOA-TO3C1C6
Last Update : Fri Apr 22 09:01:46 2016
Response Via : Initial Calibration

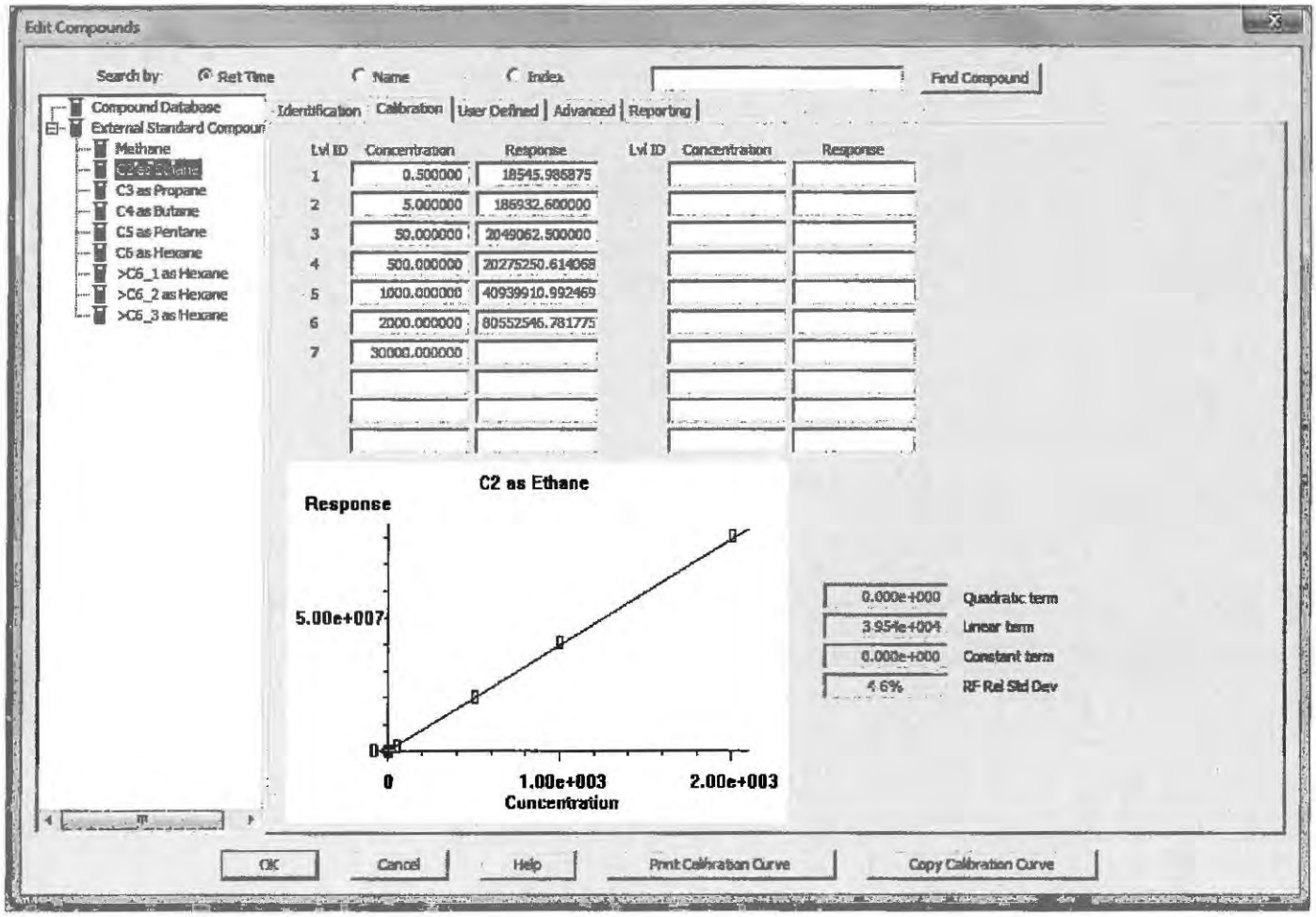
Calibration Files
1 =04211630.D 2 =04211631.D 3 =04211633.D
4 =04211634.D 5 =04211635.D 6 =04211636.D

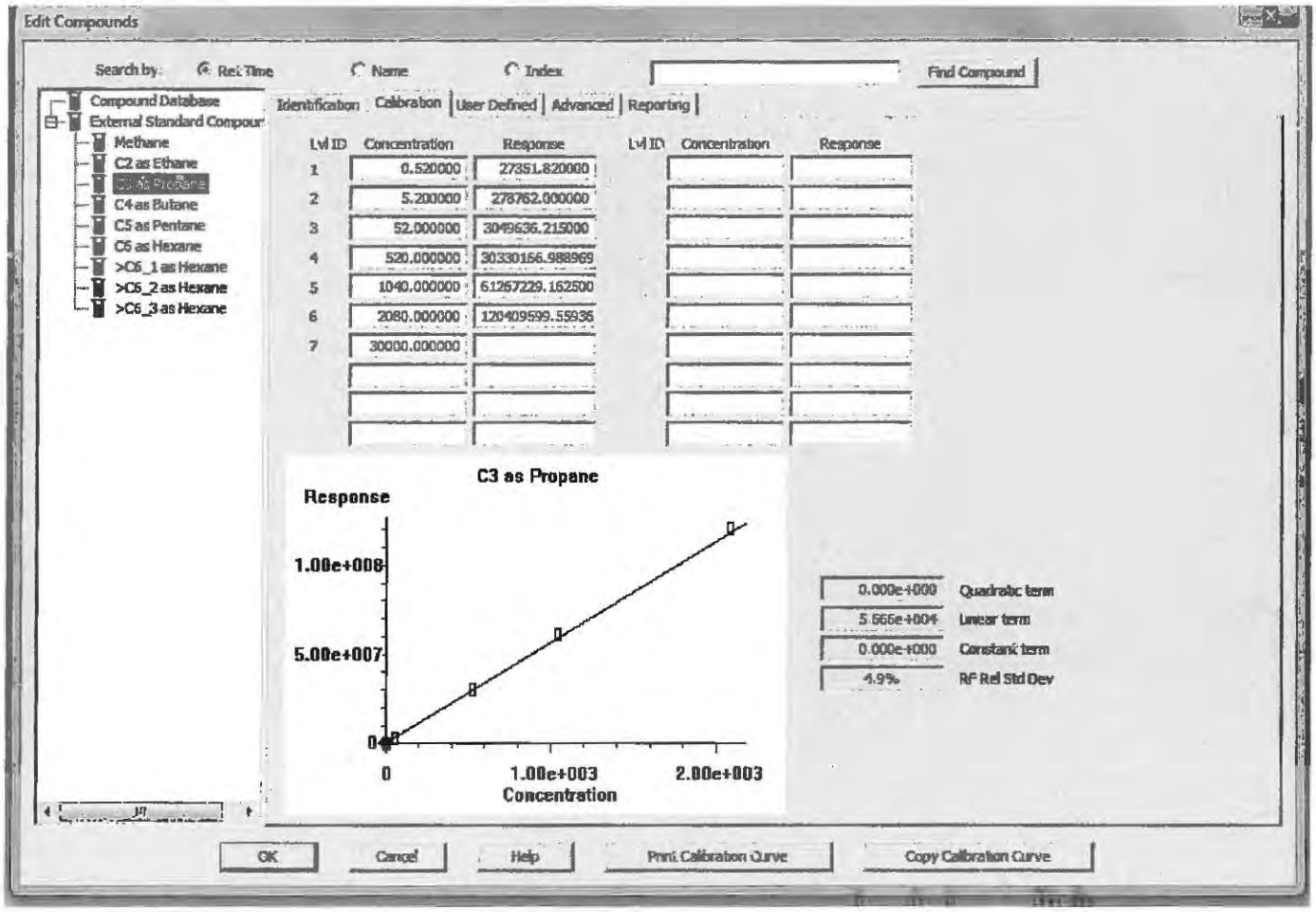
		Compound	1	2	3	4	5	6	Avg		%RSD
1)	T	Methane	2.477	2.059	2.158	2.157	2.200	2.182	2.193	E4	6.07
2)	T	C2 as Ethane	3.709	3.739	4.098	4.055	4.094	4.028	3.954	E4	4.56
3)	T	C3 as Propane	5.260	5.361	5.865	5.833	5.891	5.789	5.666	E4	4.94
4)	T	C4 as Butane	6.902	7.139	7.688	7.767	7.857	7.731	7.514	E4	5.23
5)	T	C5 as Pentane	0.857	0.911	0.941	0.989	1.005	0.996	0.950	E5	6.14
6)	T	C6 as Hexane	0.871	1.020	0.962	1.108	1.134	1.146	1.040	E5	10.53
7)	T	>C6_1 as Hexane	0.871	1.020	0.962	1.108	1.134	1.146	1.040	E5	10.53
8)	T	>C6_2 as Hexane	0.871	1.020	0.962	1.108	1.134	1.146	1.040	E5	10.53
9)	T	>C6_3 as Hexane	0.871	1.020	0.962	1.108	1.134	1.146	1.040	E5	10.53

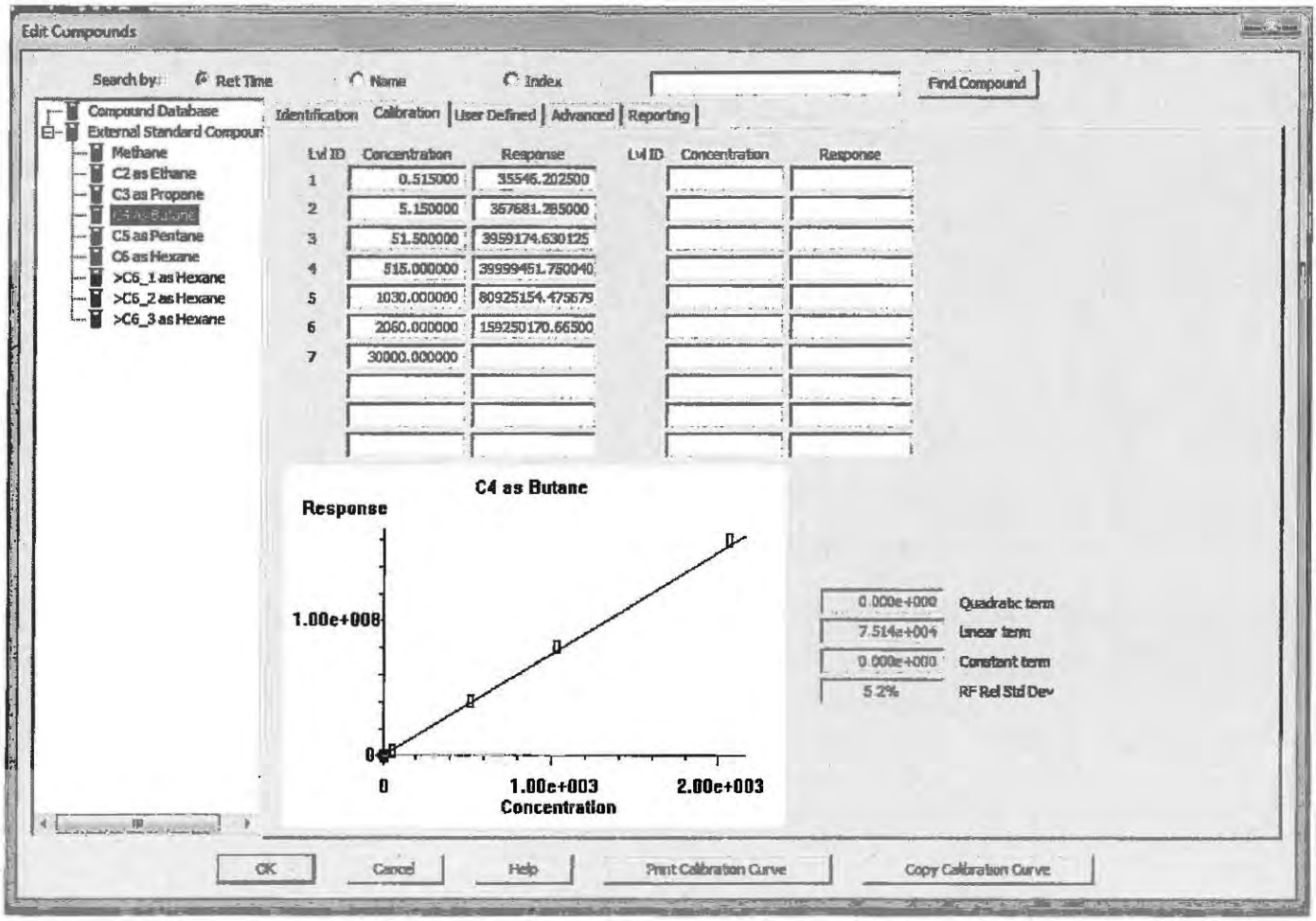
(#) = Out of Range ### Number of calibration levels exceeded format ###

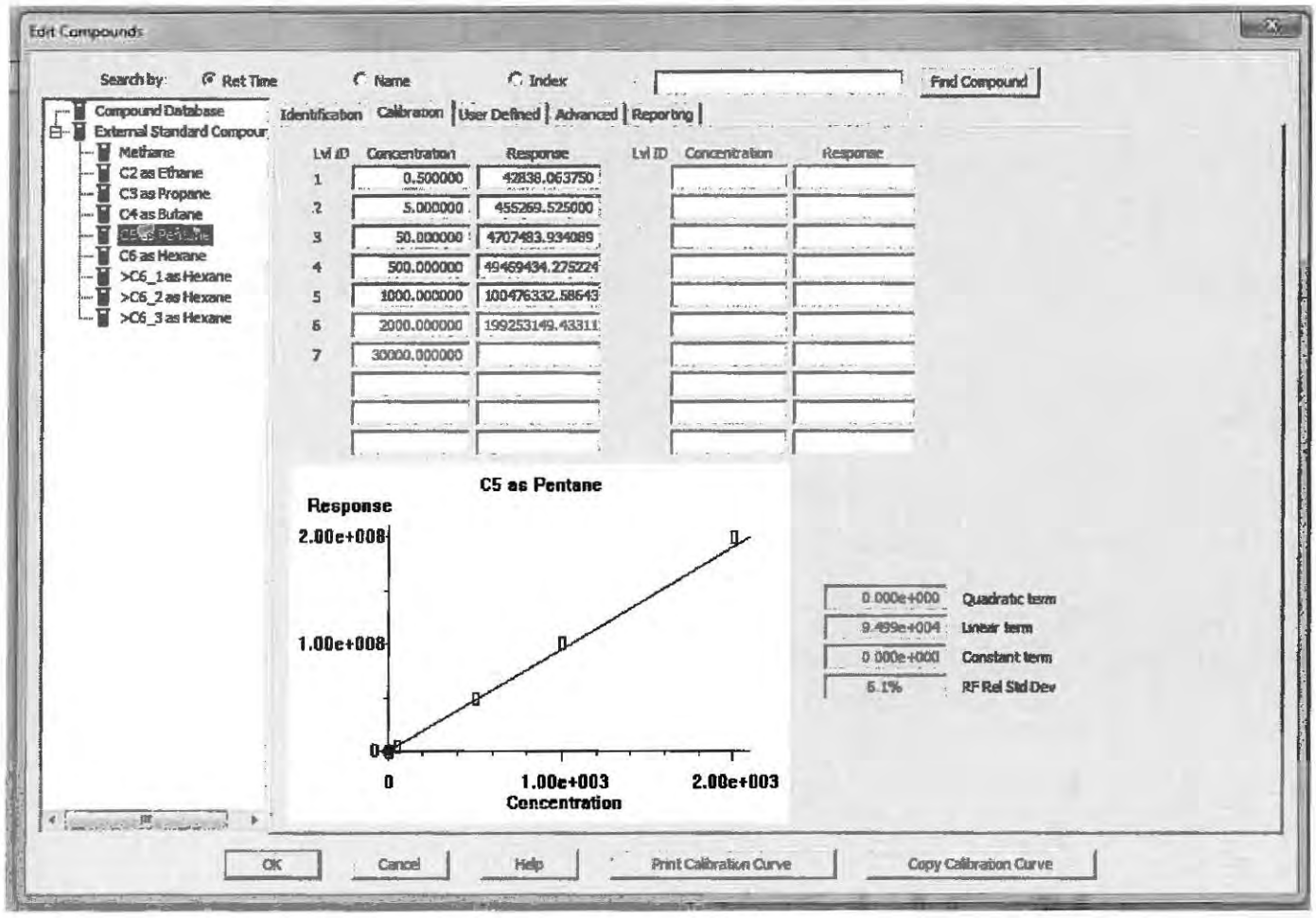
TF042116.M Fri Apr 22 09:01:57 2016

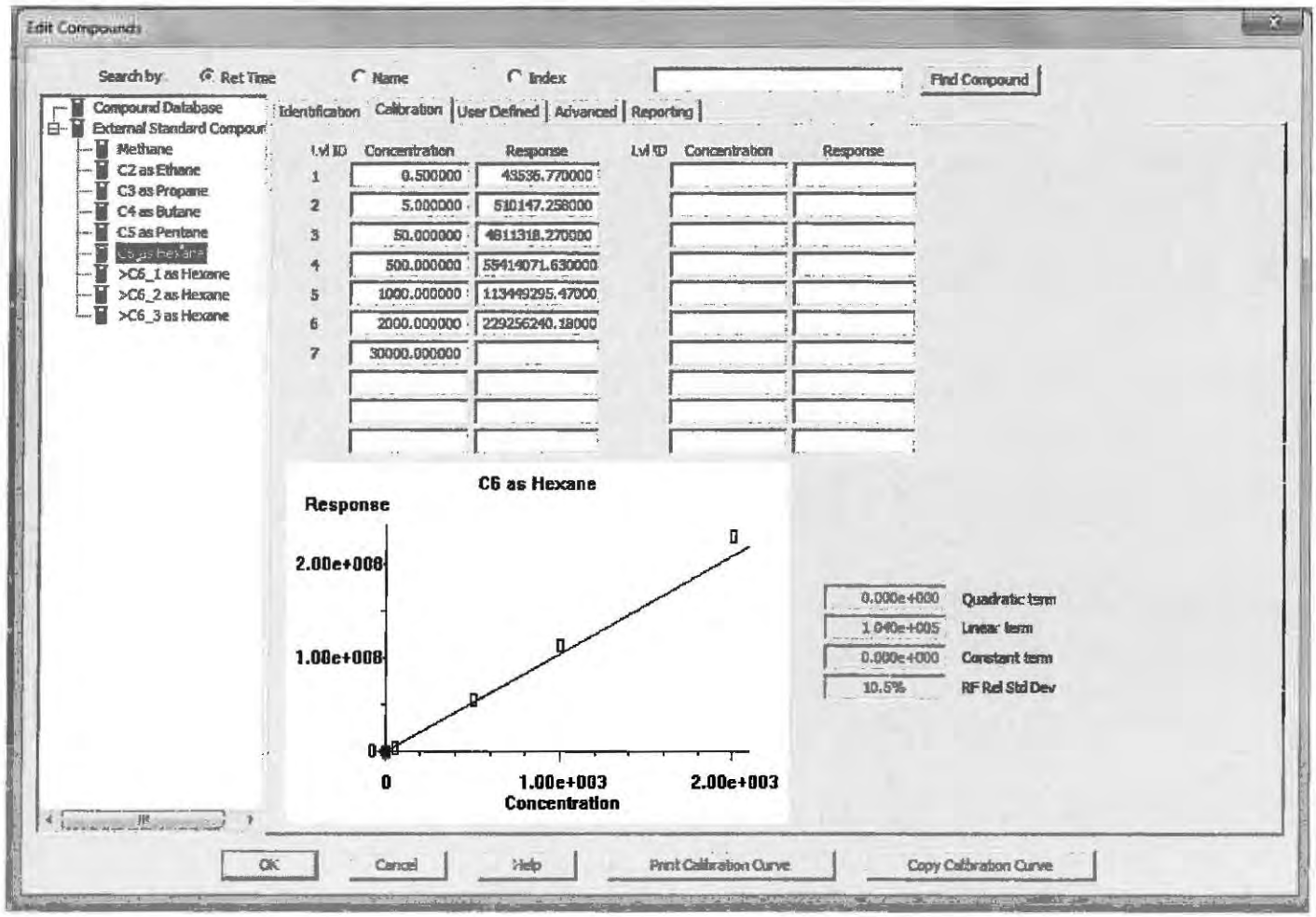

Edit Compounds
Search by:
Ret Time
Name
Index
Find Compound
Compound Database
External Standard Compour
Methane
C2 as Ethane
C3 as Propane
C4 as Butane
C5 as Pentane
C6 as Hexane
>C6_1 as Hexane
>C6_2 as Hexane
>C6_3 as Hexane
Identification
Calibration
User Defined
Advanced
Reporting
Lvl ID
Concentration
Response
1 0.500000 12383.145475
2 5.000000 102956.105000
3 50.000000 1079161.026103
4 500.000000 10784983.600298
5 1000.000000 22302670.472531
6 2000.000000 43643297.820416
7 30000.000000 635879215.95706
Methane
Response
5.00e+008
0
0
1.00e+004
2.00e+004
3.00e+004
Concentration
0.000e+000 Quadratic term
2.193e+004 Linear term
0.000e+000 Constant term
6.1% RF Rel Std Dev
OK
Cancel
Help
Print Calibration Curve
Copy Calibration Curve


Edit Compounds
Search by:
Ret Time
Name
Index
Find Compound
Compound Database
External Standard Compoun
Methane
C3 as Propane
C4 as Butane
C5 as Pentane
C6 as Hexane
>C6_1 as Hexane
>C6_2 as Hexane
>C6_3 as Hexane
Identification
Calibration
User Defined
Advanced
Reporting
Lvl ID
Concentration
Response
1 0.500000 18545.986875
2 5.000000 186932.600000
3 50.000000 2049062.500000
4 500.000000 20275250.614068
5 1000.000000 40939910.992469
6 2000.000000 80552546.781775
7 30000.000000
C2 as Ethane
Response
5.00e+007
0
0
1.00e+003
2.00e+003
Concentration
0.000e+000 Quadratic term
3.954e+004 Linear term
0.000e+000 Constant term
4.6% RF Rel Std Dev
OK
Cancel
Help
Print Calibration Curve
Copy Calibration Curve


Edit Compounds
Search by:
Rel. Time
Name
Index
Find Compound
Compound Database
External Standard Compour
Methane
C2 as Ethane
C3 as Propane
C4 as Butane
C5 as Pentane
C6 as Hexane
>C6_1 as Hexane
>C6_2 as Hexane
>C6_3 as Hexane
Identification
Calibration
User Defined
Advanced
Reporting
Lvl ID
Concentration
Response
1 0.520000 27351.820000
2 5.200000 278762.000000
3 52.000000 3049636.215000
4 520.000000 30330166.988969
5 1040.000000 61257229.162500
6 2080.000000 120409599.55936
7 30000.000000
C3 as Propane
Response
1.00e+008
5.00e+007
0
0
1.00e+003
2.00e+003
Concentration
0.000e+000 Quadratic term
5.666e+004 Linear term
0.000e+000 Constant term
4.9% RF Rel Std Dev
OK
Cancel
Help
Print Calibration Curve
Copy Calibration Curve


Edit Compounds
Search by:
Ret Time
Name
Index
Find Compound
Compound Database
External Standard Compoun
Methane
C2 as Ethane
C3 as Propane
C4 as Butane
C5 as Pentane
C6 as Hexane
>C6_1 as Hexane
>C6_2 as Hexane
>C6_3 as Hexane
Identification
Calibration
User Defined
Advanced
Reporting
Lvl ID
Concentration
Response
1 0.515000 35546.202500
2 5.150000 357681.285000
3 51.500000 3959174.630125
4 515.000000 39999451.750040
5 1030.000000 80925154.475679
6 2060.000000 159250170.66500
7 30000.000000
C4 as Butane
Response
1.00e+008
0
0
1.00e+003
2.00e+003
Concentration
0.000e+000 Quadratic term
7.514e+004 Linear term
0.000e+000 Constant term
5.2% RF Rel Std Dev
OK
Cancel
Help
Print Calibration Curve
Copy Calibration Curve


Edit Compounds
Search by:
Ret Time
Name
Index
Find Compound
Compound Database
External Standard Compour
Methane
C2 as Ethane
C3 as Propane
C4 as Butane
C5 as Pentane
C6 as Hexane
>C6_1 as Hexane
>C6_2 as Hexane
>C6_3 as Hexane
Identification
Calibration
User Defined
Advanced
Reporting
Lvl ID
Concentration
Response
1 0.500000 42838.063750
2 5.000000 455269.525000
3 50.000000 4707483.934089
4 500.000000 49469434.275224
5 1000.000000 100476332.58643
6 2000.000000 199253149.43311
7 30000.000000
C5 as Pentane
Response
2.00e+008
1.00e+008
0
0
1.00e+003
2.00e+003
Concentration
0.000e+000 Quadratic term
9.499e+004 Linear term
0.000e+000 Constant term
6.1% RF Rel Std Dev
OK
Cancel
Help
Print Calibration Curve
Copy Calibration Curve


Edit Compounds
Search by:
Ret Time
Name
Index
Find Compound
Compound Database
External Standard Compour
Methane
C2 as Ethane
C3 as Propane
C4 as Butane
C5 as Pentane
C6 as Hexane
>C6_1 as Hexane
>C6_2 as Hexane
>C6_3 as Hexane
Identification
Calibration
User Defined
Advanced
Reporting
Lvl ID
Concentration
Response
1 0.500000 43536.770000
2 5.000000 510147.258000
3 50.000000 4811318.270000
4 500.000000 55414071.630000
5 1000.000000 113449295.47000
6 2000.000000 229256240.18000
7 30000.000000
C6 as Hexane
Response
2.00e+008
1.00e+008
0
0
1.00e+003
2.00e+003
Concentration
0.000e+000 Quadratic term
1.040e+005 Linear term
0.000e+000 Constant term
10.5% RF Rel Std Dev
OK
Cancel
Help
Print Calibration Curve
Copy Calibration Curve

Calibration Status Report HP5890

Method Path : I:\GC08\METHODS\
Method File : TF042116.M
Title : VOA-TO3C1C6
Last Update : Fri Apr 22 08:50:30 2016
Response Via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	1	1	0	J:\GC08\DATA\TO_3M\2016_04\21\04211630.D
2	2	5	0	J:\GC08\DATA\TO_3M\2016_04\21\04211631.D
3	3	50	0	J:\GC08\DATA\TO_3M\2016_04\21\04211633.D
4	4	500	0	J:\GC08\DATA\TO_3M\2016_04\21\04211634.D
5	5	1000	0	J:\GC08\DATA\TO_3M\2016_04\21\04211635.D
6	6	2000	0	J:\GC08\DATA\TO_3M\2016_04\21\04211636.D
7	7	30000	0	J:\GC08\DATA\TO_3M\2016_04\21\04211637.D

#	ID	Update Time	Quant Time	Acquisition Time
1	1	Apr 22 08:41 2016	Apr 22 08:40 2016	21-Apr-2016, 16:45:35
2	2	Apr 22 08:43 2016	Apr 22 08:43 2016	21-Apr-2016, 16:57:19
3	3	Apr 22 08:46 2016	Apr 22 08:46 2016	21-Apr-2016, 17:44:30
4	4	Apr 22 08:47 2016	Apr 22 08:46 2016	21-Apr-2016, 17:57:49
5	5	Apr 22 08:48 2016	Apr 22 08:47 2016	21-Apr-2016, 18:22:30
6	6	Apr 22 08:48 2016	Apr 22 08:48 2016	21-Apr-2016, 18:46:21
7	7	Apr 22 08:50 2016	Apr 22 08:49 2016	21-Apr-2016, 18:58:10

TF042116.M Fri Apr 22 08:59:21 2016

Quantitation Report (QT Reviewed)

Data Path : J:\GC08\DATA\TO_3M\2016_04\21\
Data File : 04211637.D
Signal(s) : FID2B.CH
Acq On : 21-Apr-2016, 18:58:10
Operator : amf
Sample : 3C std s30-04081603 0.75ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Apr 22 08:49:31 2016
Quant Method : I:\GC08\METHODS\TF042116.M
Quant Title : VOA-TO3C1C6
QLast Update : Fri Apr 22 08:48:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

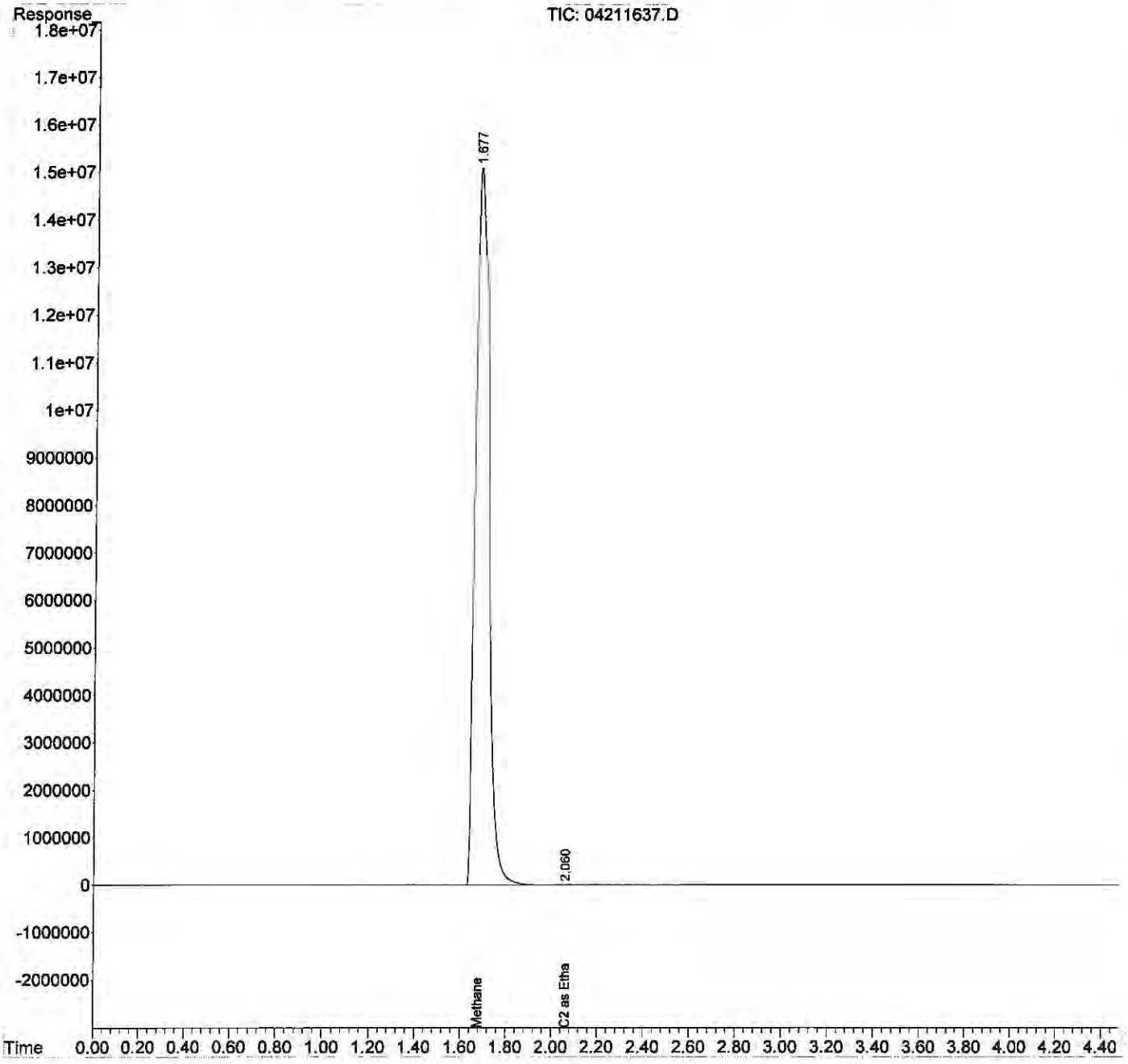
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1) T	Methane	1.679	635879216	29164.446	ppm
2) T	C2 as Ethane	2.060	31606	0.799	ppm
3) T	C3 as Propane	0.000	0	N.D.	ppm
4) T	C4 as Butane	0.000	0	N.D.	ppm
5) T	C5 as Pentane	0.000	0	N.D.	ppm
6) T	C6 as Hexane	0.000	0	N.D.	ppm
7) T	>C6_1 as Hexane	0.000	0	N.D.	ppm
8) T	>C6_2 as Hexane	0.000	0	N.D.	ppm
9) T	>C6_3 as Hexane	0.000	0	N.D.	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC08\DATA\TO_3M\2016_04\21\
Data File : 04211637.D
Signal(s) : FID2B.CH
Acq On : 21-Apr-2016, 18:58:10
Operator : amf
Sample : 3C std s30-04081603 0.75ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Apr 22 08:49:31 2016
Quant Method : I:\GC08\METHODS\TF042116.M
Quant Title : VOA-TO3C1C6
QLast Update : Fri Apr 22 08:48:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC08\DATA\TO_3M\2016_04\21\
Data File : 04211630.D
Signal(s) : FID2B.CH
Acq On : 21-Apr-2016, 16:45:35
Operator : amf
Sample : std s30-04211601 0.05ml(x100)
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Apr 22 08:40:36 2016
Quant Method : I:\GC08\METHODS\TF042116.M
Quant Title : VOA-TO3C1C6
QLast Update : Fri Apr 22 08:25:17 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc Units
Target Compounds				
1) T	Methane	1.725	12383	0.645 ppm
2) T	C2 as Ethane	2.099	18546	0.553 ppm
3) T	C3 as Propane	3.154	27352	0.564 ppm
4) T	C4 as Butane	4.872	35546	0.546 ppm
5) T	C5 as Pentane	6.482	42838	0.517 ppm
6) T	C6 as Hexane	7.893	43537	0.518 ppm
7) T	>C6_1 as Hexane	0.000	0	N.D. ppm
8) T	>C6_2 as Hexane	0.000	0	N.D. ppm
9) T	>C6_3 as Hexane	0.000	0	N.D. ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

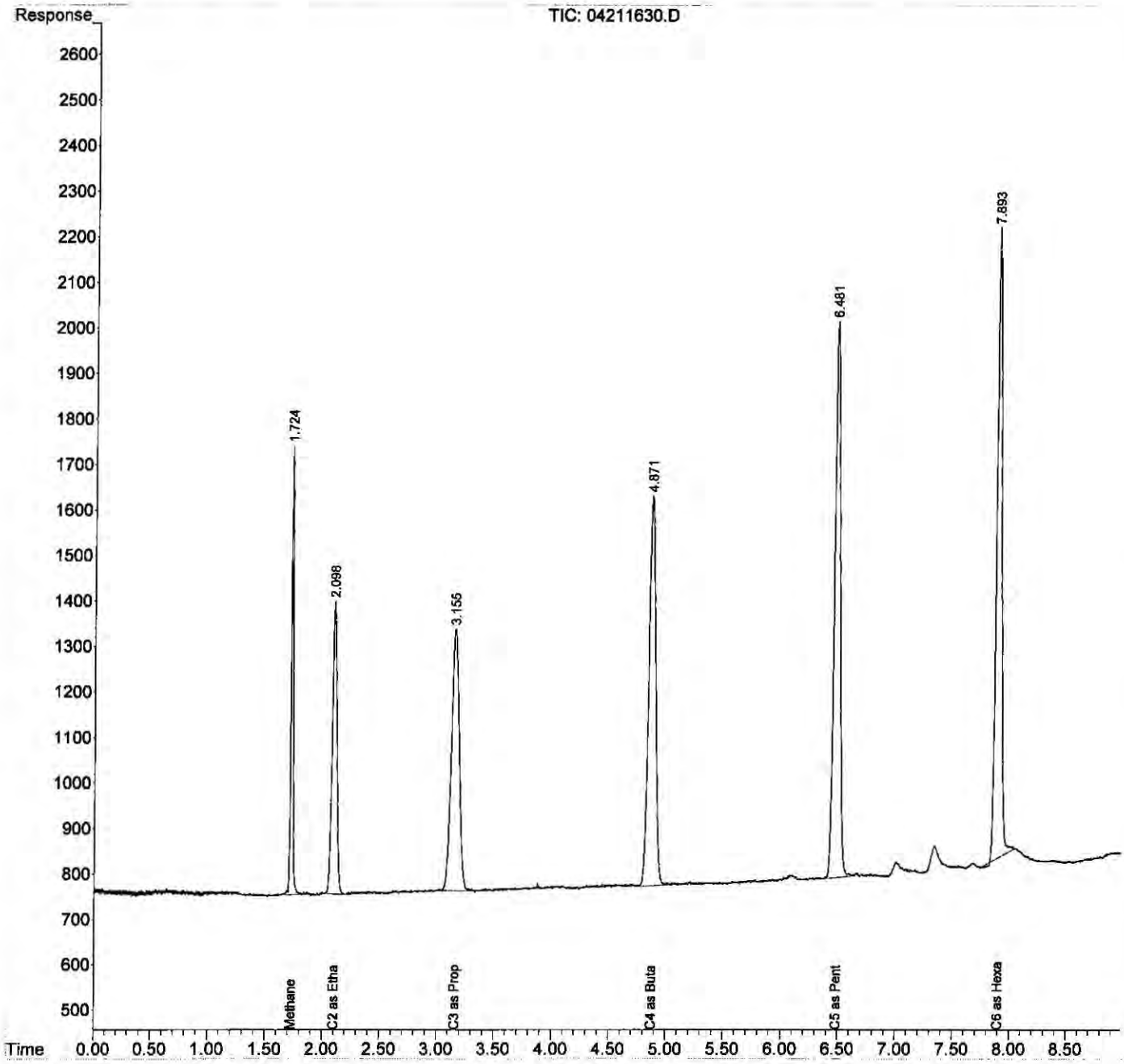
4/22/16

Quantitation Report (QT Reviewed)

Data Path : J:\GC08\DATA\TO_3M\2016_04\21\
Data File : 04211630.D
Signal(s) : FID2B.CH
Acq On : 21-Apr-2016, 16:45:35
Operator : amf
Sample : std s30-04211601 0.05ml(x100)
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Apr 22 08:40:36 2016
Quant Method : I:\GC08\METHODS\TF042116.M
Quant Title : VOA-TO3C1C6
QLast Update : Fri Apr 22 08:25:17 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC08\DATA\TO_3M\2016_04\21\
Data File : 04211631.D
Signal(s) : FID2B.CH
Acq On : 21-Apr-2016, 16:57:19
Operator : amf
Sample : std s30-04211601 0.5ml(x100)
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Apr 22 08:43:02 2016
Quant Method : I:\GC08\METHODS\TF042116.M
Quant Title : VOA-TO3C1C6
QLast Update : Fri Apr 22 08:41:09 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1) T	Methane	1.690	102956	5.363	ppm	
2) T	C2 as Ethane	2.077	186933	5.501	ppm	
3) T	C3 as Propane	3.143	278762	5.725	ppm	m
4) T	C4 as Butane	4.868	367681	5.628	ppm	
5) T	C5 as Pentane	6.480	455270	5.496	ppm	
6) T	C6 as Hexane	7.892	510147	5.979	ppm	
7) T	>C6_1 as Hexane	0.000	0	N.D.	ppm	
8) T	>C6_2 as Hexane	0.000	0	N.D.	ppm	
9) T	>C6_3 as Hexane	0.000	0	N.D.	ppm	

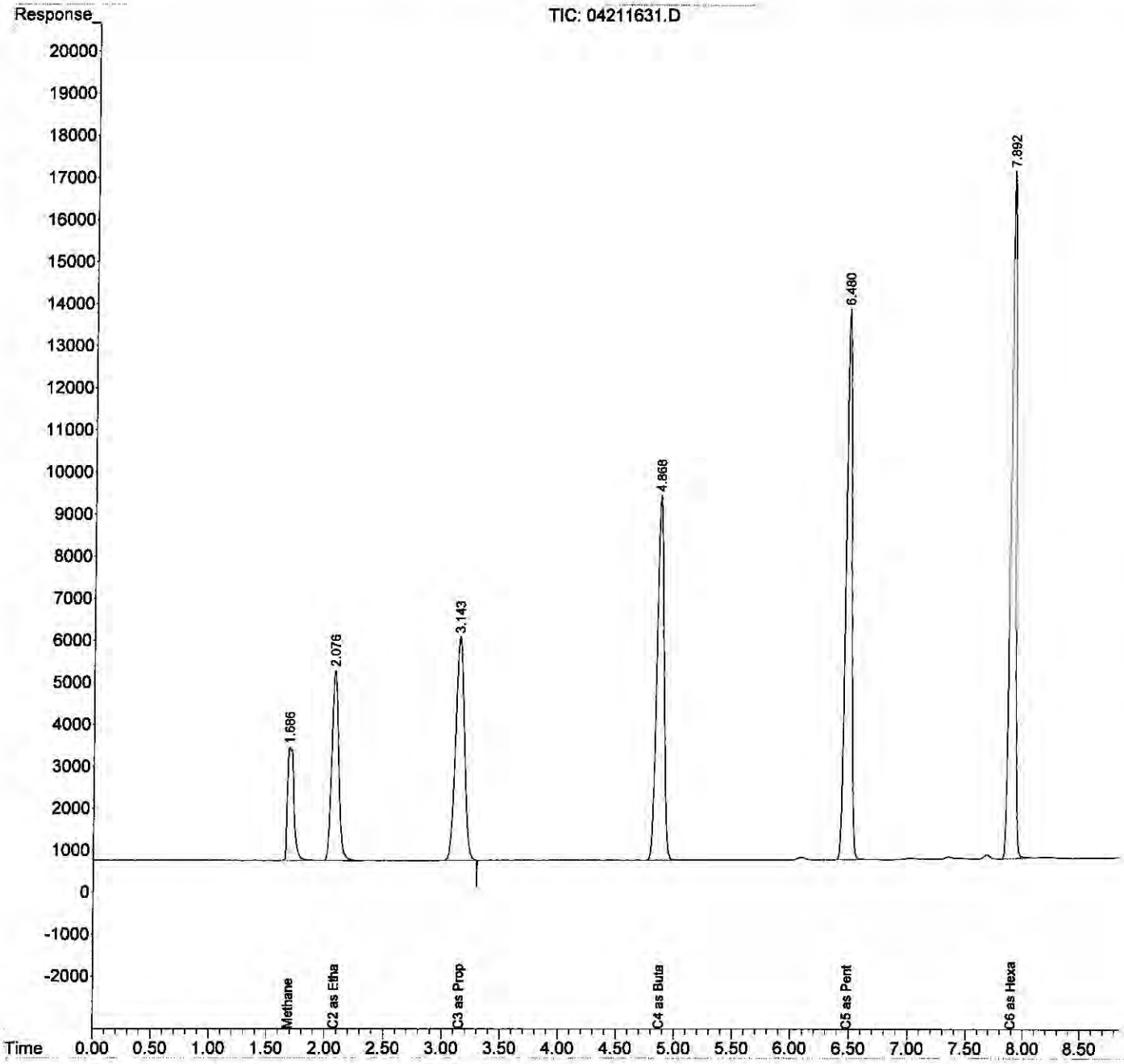
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC08\DATA\TO_3M\2016_04\21\
Data File : 04211631.D
Signal(s) : FID2B.CH
Acq On : 21-Apr-2016, 16:57:19
Operator : amf
Sample : std s30-04211601 0.5ml(x100)
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Apr 22 08:43:02 2016
Quant Method : I:\GC08\METHODS\TF042116.M
Quant Title : VOA-TO3C1C6
QLast Update : Fri Apr 22 08:41:09 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

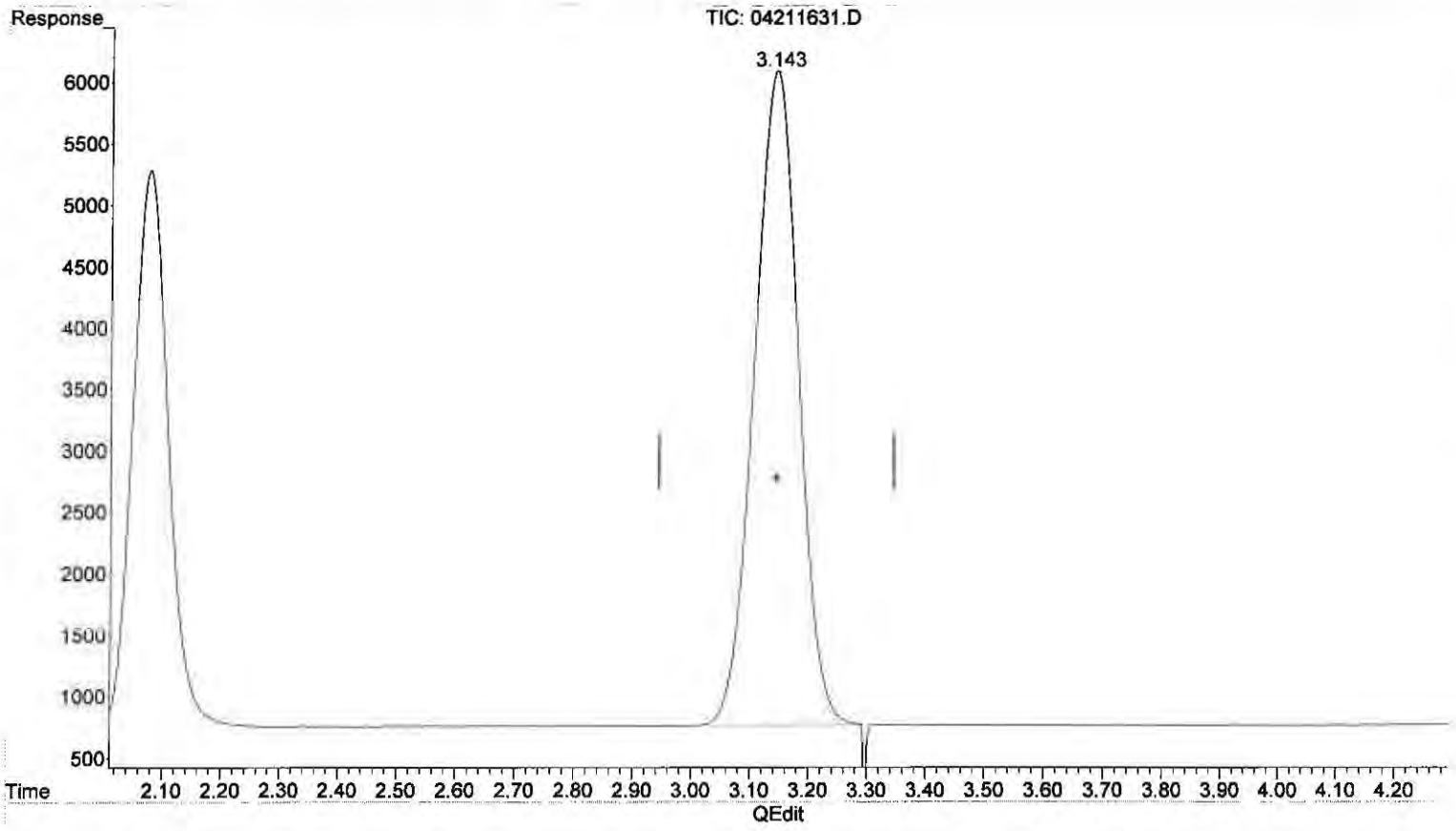


Quantitation Report (Qedit)

Data Path : J:\GC08\DATA\TO_3M\2016_04\21\
Data File : 04211631.D
Signal(s) : FID2B.CH
Acq On : 21-Apr-2016, 16:57:19
Operator : amf
Sample : std s30-04211601 0.5ml(x100)
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Apr 22 08:43:02 2016
Quant Method : I:\GC08\METHODS\TF042116.M
Quant Title : VOA-TO3C1C6
QLast Update : Fri Apr 22 08:41:09 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



(3) C3 as Propane (T)
3.143min 5.725 ppm m
response 278762

MC 4/22/16
No previous
BL
WW 4/22/16

(+) = Expected Retention Time
TF042116.M Fri Apr 22 08:53:03 2016

Quantitation Report (QT Reviewed)

Data Path : J:\GC08\DATA\TO_3M\2016_04\21\
Data File : 04211633.D
Signal(s) : FID2B.CH
Acq On : 21-Apr-2016, 17:44:30
Operator : amf
Sample : std s30-10041501 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Apr 22 08:46:14 2016
Quant Method : I:\GC08\METHODS\TF042116.M
Quant Title : VOA-TO3C1C6
QLast Update : Fri Apr 22 08:43:29 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1) T	Methane	1.728	1079161	51.087	ppm
2) T	C2 as Ethane	2.101	2049062	53.728	ppm
3) T	C3 as Propane	3.156	3049636	55.984	ppm
4) T	C4 as Butane	4.873	3959175	54.285	ppm
5) T	C5 as Pentane	6.482	4707484	50.825	ppm
6) T	C6 as Hexane	7.894	4811318	49.469	ppm
7) T	>C6_1 as Hexane	0.000	0	N.D.	ppm
8) T	>C6_2 as Hexane	0.000	0	N.D.	ppm
9) T	>C6_3 as Hexane	0.000	0	N.D.	ppm

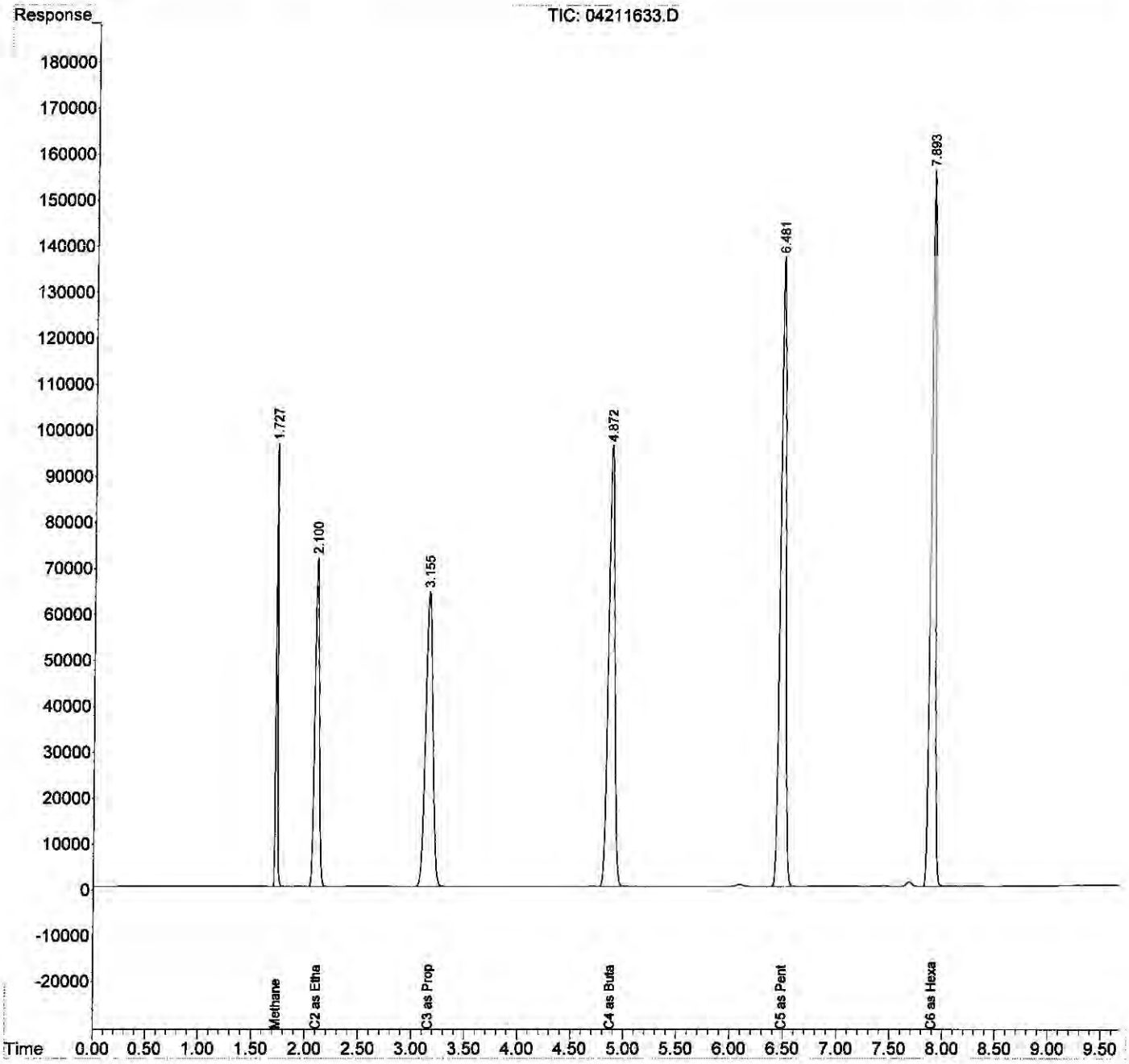
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC08\DATA\TO_3M\2016_04\21\
Data File : 04211633.D
Signal(s) : FID2B.CH
Acq On : 21-Apr-2016, 17:44:30
Operator : amf
Sample : std s30-10041501 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Apr 22 08:46:14 2016
Quant Method : I:\GC08\METHODS\TF042116.M
Quant Title : VOA-TO3C1C6
QLast Update : Fri Apr 22 08:43:29 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC08\DATA\TO_3M\2016_04\21\
Data File : 04211634.D
Signal(s) : FID2B.CH
Acq On : 21-Apr-2016, 17:57:49
Operator : amf
Sample : std s30-10041501 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Apr 22 08:46:55 2016
Quant Method : I:\GC08\METHODS\TF042116.M
Quant Title : VOA-TO3C1C6
QLast Update : Fri Apr 22 08:46:34 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1) T	Methane	1.705	10784984	502.697	ppm
2) T	C2 as Ethane	2.077	20275251	518.598	ppm
3) T	C3 as Propane	3.144	30330167	542.143	ppm
4) T	C4 as Butane	4.869	39999452	534.106	ppm
5) T	C5 as Pentane	6.482	49469434	523.449	ppm
6) T	C6 as Hexane	7.894	55414072	562.603	ppm
7) T	>C6_1 as Hexane	0.000	0	N.D.	ppm
8) T	>C6_2 as Hexane	0.000	0	N.D.	ppm
9) T	>C6_3 as Hexane	0.000	0	N.D.	ppm

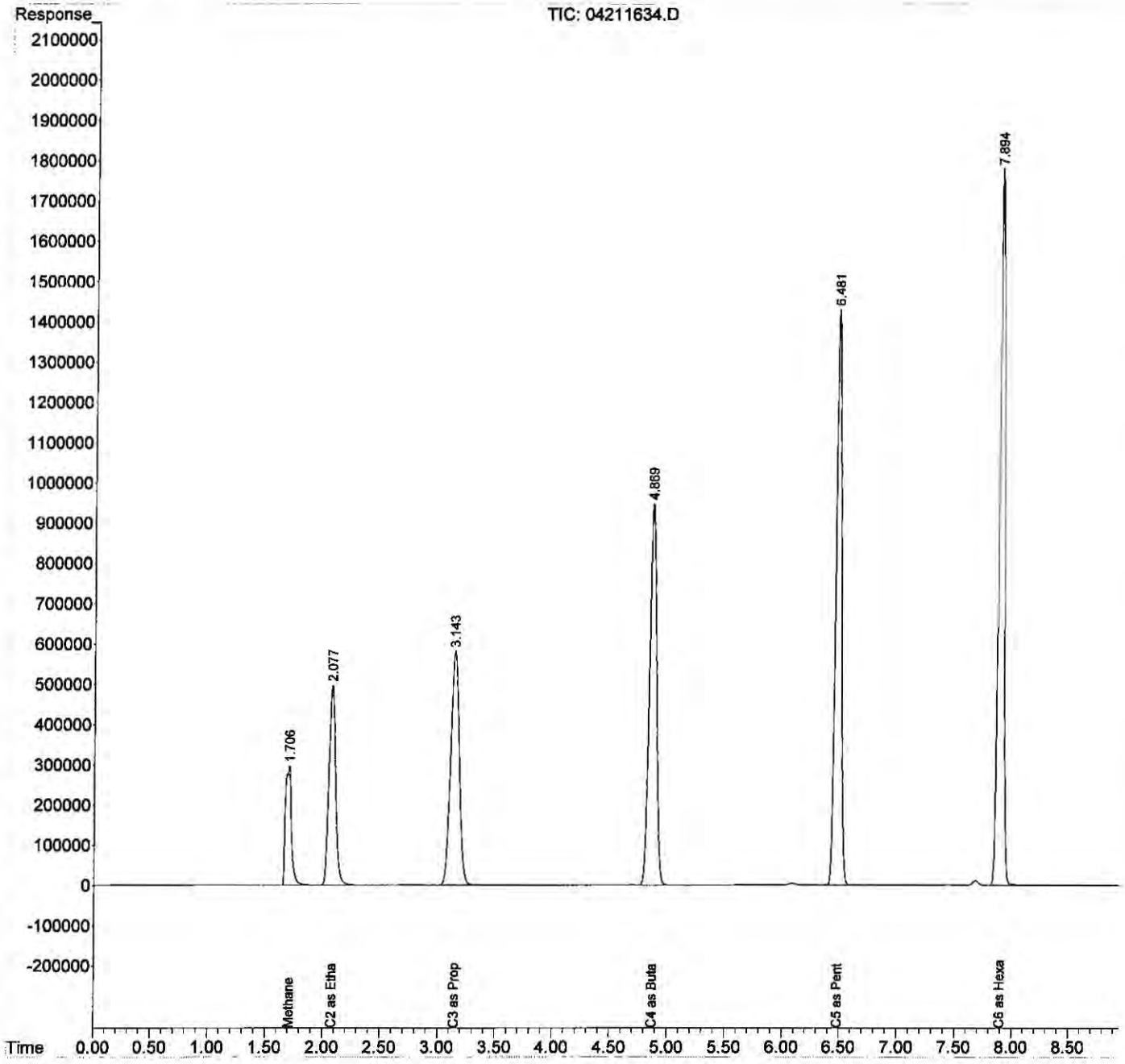
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC08\DATA\TO_3M\2016_04\21\
Data File : 04211634.D
Signal(s) : FID2B.CH
Acq On : 21-Apr-2016, 17:57:49
Operator : amf
Sample : std s30-10041501 0.5ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Apr 22 08:46:55 2016
Quant Method : I:\GC08\METHODS\TF042116.M
Quant Title : VOA-TO3C1C6
QLast Update : Fri Apr 22 08:46:34 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC08\DATA\TO_3M\2016_04\21\
Data File : 04211635.D
Signal(s) : FID2B.CH
Acq On : 21-Apr-2016, 18:22:30
Operator : amf
Sample : std s30-10041501 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Apr 22 08:47:58 2016
Quant Method : I:\GC08\METHODS\TF042116.M
Quant Title : VOA-TO3C1C6
QLast Update : Fri Apr 22 08:47:52 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1) T	Methane	1.659	22002670	1021.692	ppm
2) T	C2 as Ethane	2.055	40939911	1041.857	ppm
3) T	C3 as Propane	3.134	61267229	1089.893	ppm
4) T	C4 as Butane	4.867	80925154	1078.700	ppm
5) T	C5 as Pentane	6.481	100476333	1060.635	ppm
6) T	C6 as Hexane	7.895	113449295	1130.523	ppm
7) T	>C6_1 as Hexane	0.000	0	N.D.	ppm
8) T	>C6_2 as Hexane	0.000	0	N.D.	ppm
9) T	>C6_3 as Hexane	0.000	0	N.D.	ppm

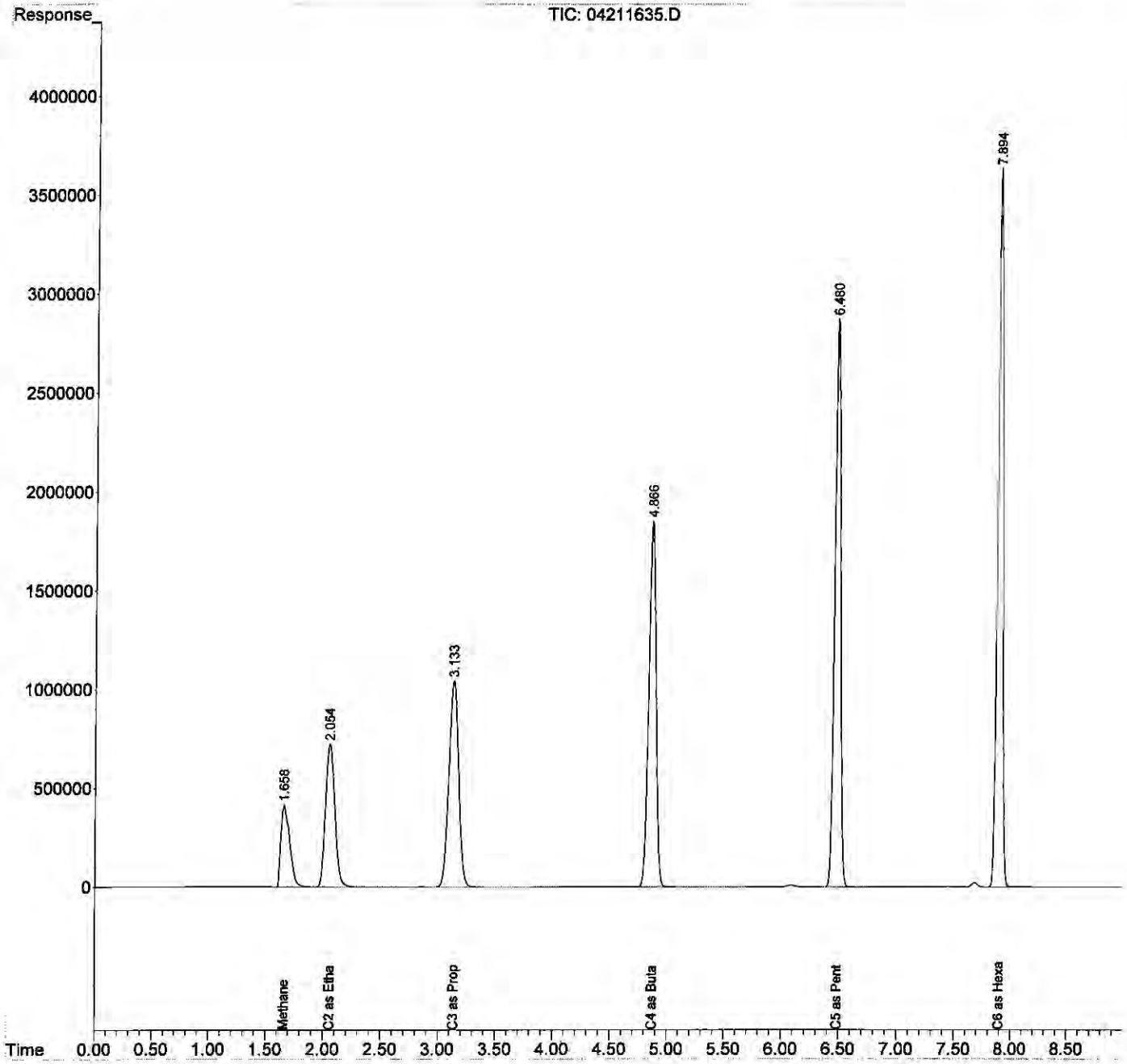
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC08\DATA\TO_3M\2016_04\21\
Data File : 04211635.D
Signal(s) : FID2B.CH
Acq On : 21-Apr-2016, 18:22:30
Operator : amf
Sample : std s30-10041501 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Apr 22 08:47:58 2016
Quant Method : I:\GC08\METHODS\TF042116.M
Quant Title : VOA-TO3C1C6
QLast Update : Fri Apr 22 08:47:52 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC08\DATA\TO_3M\2016_04\21\
Data File : 04211636.D
Signal(s) : FID2B.CH
Acq On : 21-Apr-2016, 18:46:21
Operator : amf
Sample : std s30-10041501 2ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Apr 22 08:48:35 2016
Quant Method : I:\GC08\METHODS\TF042116.M
Quant Title : VOA-TO3C1C6
QLast Update : Fri Apr 22 08:48:16 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

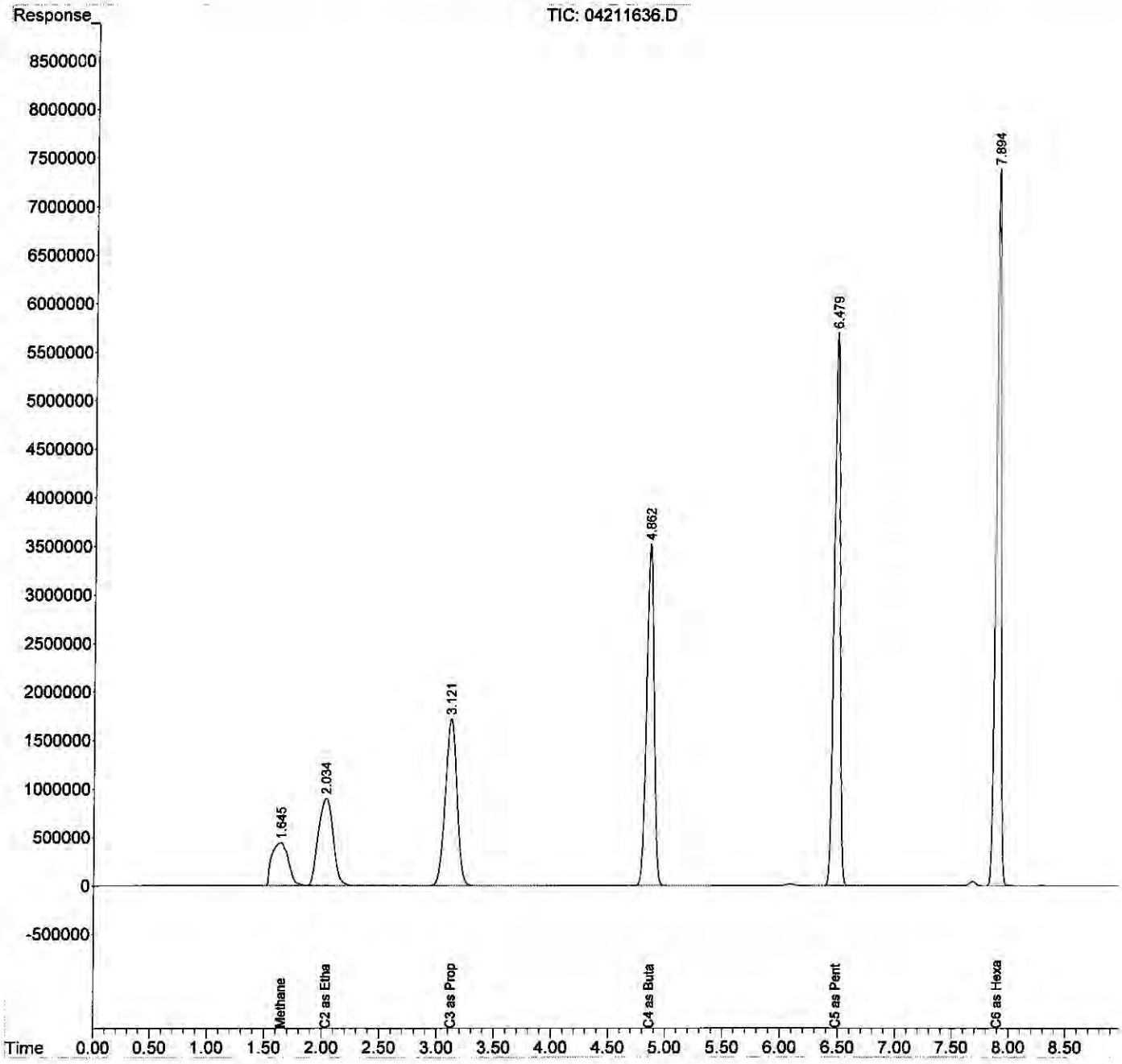
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1) T	Methane	1.644	43643298	2011.697	ppm
2) T	C2 as Ethane	2.034	80552547	2035.967	ppm
3) T	C3 as Propane	3.121	120409600	2126.901	ppm
4) T	C4 as Butane	4.863	159250171	2114.540	ppm
5) T	C5 as Pentane	6.480	199253149	2096.400	ppm
6) T	C6 as Hexane	7.895	229256240	2244.813	ppm
7) T	>C6_1 as Hexane	0.000	0	N.D.	ppm
8) T	>C6_2 as Hexane	0.000	0	N.D.	ppm
9) T	>C6_3 as Hexane	0.000	0	N.D.	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC08\DATA\TO_3M\2016_04\21\
Data File : 04211636.D
Signal(s) : FID2B.CH
Acq On : 21-Apr-2016, 18:46:21
Operator : amf
Sample : std s30-10041501 2ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Apr 22 08:48:35 2016
Quant Method : I:\GC08\METHODS\TF042116.M
Quant Title : VOA-TO3C1C6
QLast Update : Fri Apr 22 08:48:16 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC08\DATA\TO_3M\2016_04\22\
Data File : 04221604.D
Signal(s) : FID2B.CH
Acq On : 22-Apr-2016, 10:18:19
Operator : amf
Sample : ICV s30-12281501
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Apr 22 10:30:21 2016
Quant Method : I:\GC08\METHODS\TF042116.M
Quant Title : VOA-TO3C1C6
QLast Update : Fri Apr 22 09:01:46 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

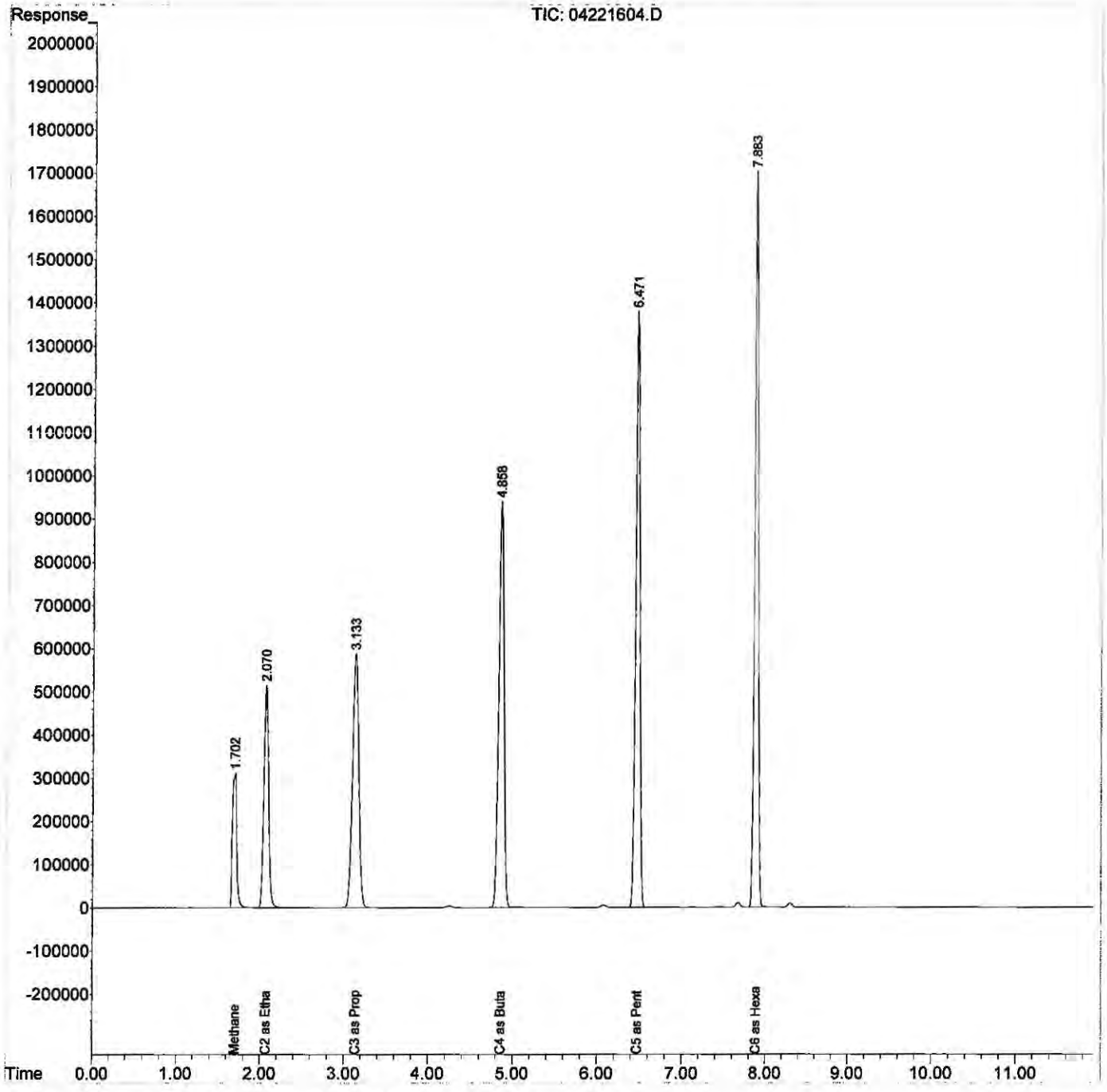
	Compound	R.T.	Response	Conc	Units	
Target Compounds						O/O Recovery
1) T	Methane	1.699	10911181	497.478	ppm	99,50
2) T	C2 as Ethane	2.071	20172372	510.206	ppm	102.04
3) T	C3 as Propane	3.134	30219396	533.312	ppm	106.66
4) T	C4 as Butane	4.859	39436863	524.850	ppm	104.97
5) T	C5 as Pentane	6.471	47617725	501.308	ppm	100.26
6) T	C6 as Hexane	7.884	52732688	506.854	ppm	101.37
7) T	>C6_1 as Hexane	0.000	0	N.D.	ppm	
8) T	>C6_2 as Hexane	0.000	0	N.D.	ppm	
9) T	>C6_3 as Hexane	0.000	0	N.D.	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC08\DATA\TO_3M\2016_04\22\
Data File : 04221604.D
Signal(s) : FID2B.CH
Acq On : 22-Apr-2016, 10:18:19
Operator : amf
Sample : ICV s30-12281501
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Apr 22 10:30:21 2016
Quant Method : I:\GC08\METHODS\TF042116.M
Quant Title : VOA-TO3C1C6
QLast Update : Fri Apr 22 09:01:46 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



ALS Environmental

REPORT SUMMARY

Method : VOA-TO3C1C6
Client : Air Hygiene, Incorporated
Analyst : amf

ALS Service Request P1604745
Instrument : Instrument 8 / FID #8
Date Acquired : 10/11/2016

SAMPLE RESULT SUMMARIES (ppm)

Sample ID	Inject. Vol(ml)	Dilution DF	Methane	C2 as Ethane	C3 as Propane	C4 as n-Butane	C5 as n-Pentane	C6 as n-Hexane	>C6#1 as n-Hexane	>C6#2 as n-Hexane	>C6#3 as n-Hexane
std s30-05021602	0.5	1.0	1003.4	1027.7	1066.6	1045.2	991.9	969.1	0.0	0.0	0.0
ACTUAL			1000.0	1000.0	1000.0	1000.0	1000.0	1000.0			
%Difference			0.3%	2.8%	6.7%	4.5%	0.8%	3.1%			
lcs s30-08011601	0.5	1.0	995.00	1019.14	1088.26	1053.94	1001.50	1075.38			
ACTUAL			1010.0	1020.0	1040.0	1010.0	1000.0	1010.0			
%Recovery			98.5%	99.9%	104.6%	104.4%	100.2%	106.5%			
lcsds30-08011601	0.5	1.0	1009.06	1038.32	1115.98	1094.00	1057.24	1168.50			
ACTUAL			1010.0	1020.0	1040.0	1010.0	1000.0	1010.0			
%Recovery			99.9%	101.8%	107.3%	108.3%	105.7%	115.7%			
%RPD			1.4%	1.9%	2.5%	3.7%	5.4%	8.3%			
mb 1ml	1.0	1.0	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4745-001 0.05ml	0.1	1.0	0.10	0.55	47139.15	4.31	0.07	0.05	0.06	0.06	0.02
4745-002 0.05ml	0.1	1.0	0.18	0.65	41161.84	3.44	0.03	0.05	0.03	0.08	0.02
4745-003 0.05ml	0.1	1.0	0.07	0.74	50131.64	4.09	0.06	0.09	0.04	0.13	0.03
4745-004 0.05ml	0.1	1.0	0.06	0.78	44013.25	3.45	0.05	0.11	0.06	0.12	0.06
std s30-05021602	0.5	1.0	982.7	1017.0	1064.0	1054.7	1013.8	993.2			
ACTUAL			1000.0	1000.0	1040.0	1030.0	1000.0	1000.0			
%Difference			1.7%	1.7%	2.3%	2.4%	1.4%	0.7%			

Data Path : I:\GC08\DATA\TO_3M\2016_10\11\
Data File : 10111601.D
Signal(s) : FID2B.CH
Acq On : 11-Oct-2016, 08:28:11
Operator : amf
Sample : std s30-05021602
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 11 08:48:15 2016
Quant Method : I:\GC08\METHODS\TF042116.M
Quant Title : VOA-TO3C1C6
QLast Update : Fri Apr 22 09:01:46 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Methane	1.650	11004139	501.716	ppm	
2)	C2 as Ethane	2.015	20316895	513.861	ppm	
3)	C3 as Propane	3.066	30217312	533.275	ppm	
4)	C4 as Butane	4.779	39266820	522.587	ppm	
5)	C5 as Pentane	6.384	47107352	495.935	ppm	
6)	C6 as Hexane	7.792	50410555	484.534	ppm	
7)	>C6_1 as Hexane	0.000	0	N.D.	ppm	
8)	>C6_2 as Hexane	0.000	0	N.D.	ppm	
9)	>C6_3 as Hexane	0.000	0	N.D.	ppm	d

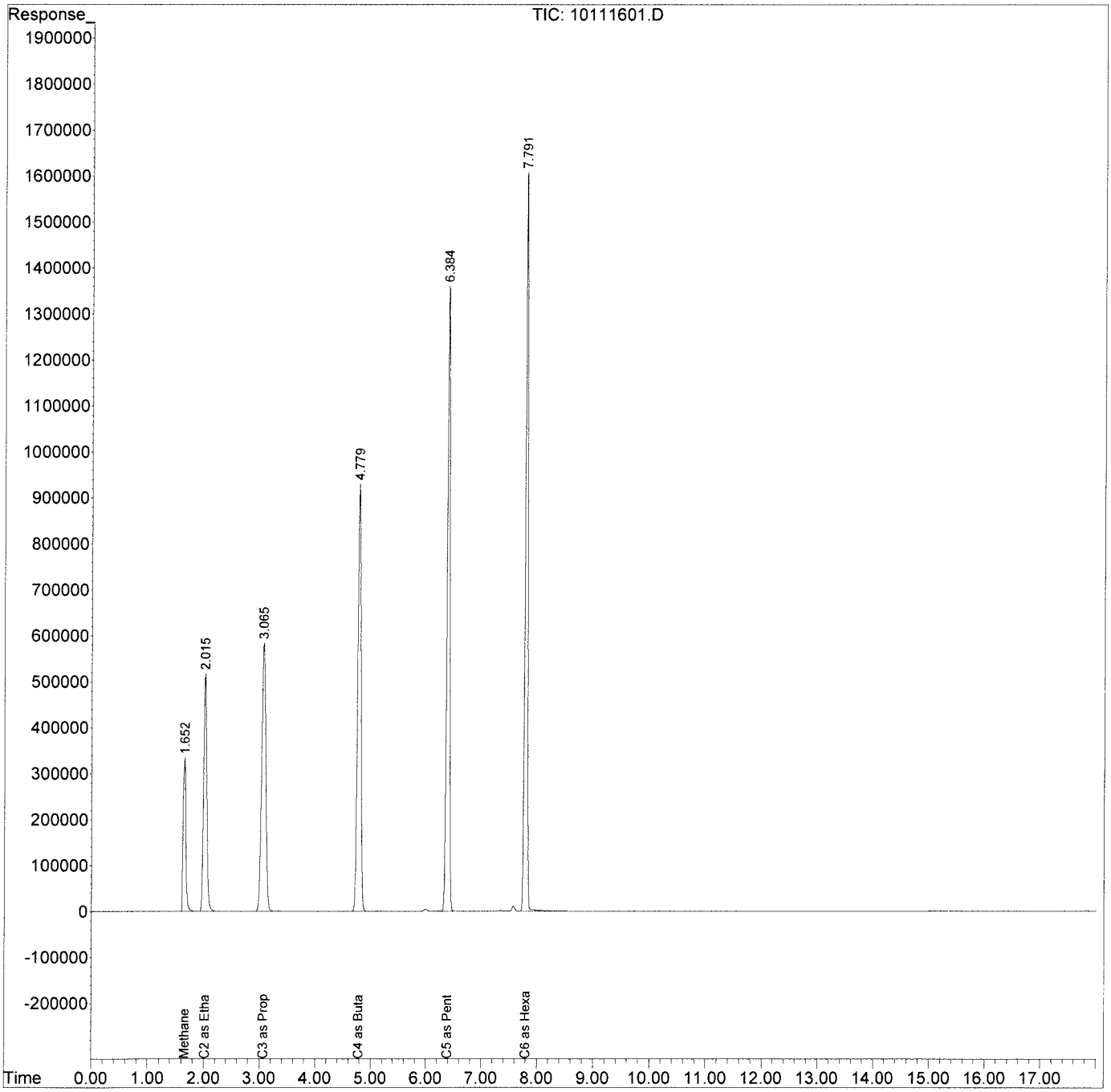
(f)=RT Delta > 1/2 Window (m)=manual int.

10/12/16

Data Path : I:\GC08\DATA\TO_3M\2016_10\11\
Data File : 10111601.D
Signal(s) : FID2B.CH
Acq On : 11-Oct-2016, 08:28:11
Operator : amf
Sample : std s30-05021602
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 11 08:48:15 2016
Quant Method : I:\GC08\METHODS\TF042116.M
Quant Title : VOA-TO3C1C6
QLast Update : Fri Apr 22 09:01:46 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC08\DATA\TO_3M\2016_10\11\
Data File : 10111612.D
Signal(s) : FID2B.CH
Acq On : 11-Oct-2016, 14:15:28
Operator : amf
Sample : std s30-05021602
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 11 14:27:58 2016
Quant Method : I:\GC08\METHODS\TF042116.M
Quant Title : VOA-TO3C1C6
QLast Update : Fri Apr 22 09:01:46 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

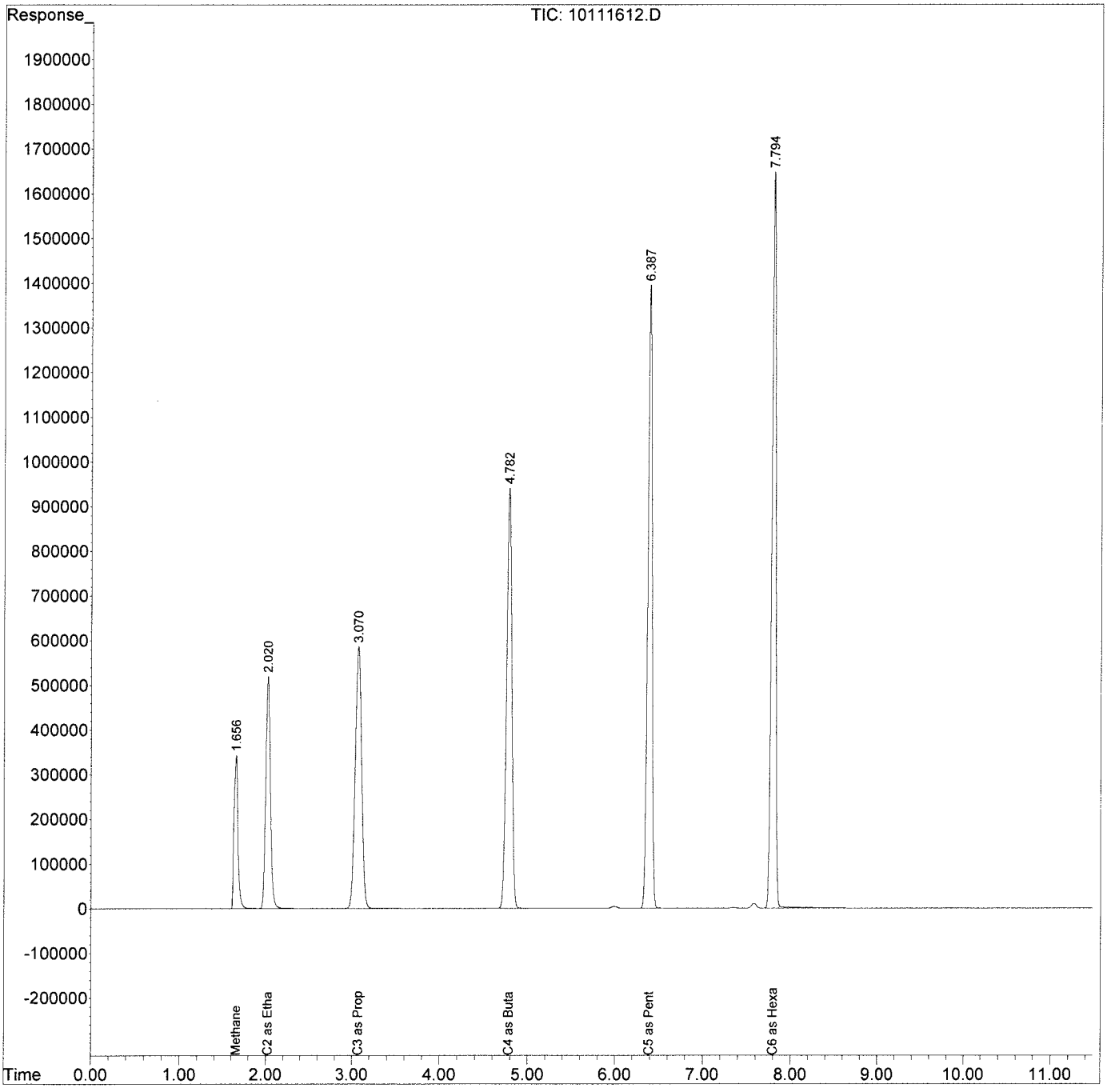
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Methane	1.656	10776605	491.342	ppm
2)	C2 as Ethane	2.021	20104828	508.497	ppm
3)	C3 as Propane	3.071	30144477	531.990	ppm
4)	C4 as Butane	4.783	39626012	527.367	ppm
5)	C5 as Pentane	6.387	48151047	506.923	ppm
6)	C6 as Hexane	7.795	51664972	496.592	ppm
7)	>C6_1 as Hexane	0.000	0	N.D.	ppm
8)	>C6_2 as Hexane	0.000	0	N.D.	ppm
9)	>C6_3 as Hexane	0.000	0	N.D.	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC08\DATA\TO_3M\2016_10\11\
Data File : 10111612.D
Signal(s) : FID2B.CH
Acq On : 11-Oct-2016, 14:15:28
Operator : amf
Sample : std s30-05021602
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 11 14:27:58 2016
Quant Method : I:\GC08\METHODS\TF042116.M
Quant Title : VOA-TO3C1C6
QLast Update : Fri Apr 22 09:01:46 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Injection Log

Directory: I:\GC08\DATA\TO_3M\2016_04\21

Line	Vial	FileName	Multiplier	SampleName	Misc Info
1	1	04211601.d	1.	std s30-10041501	
2	1	04211602.d	1.	mb 1ml	
3	1	04211603.d	1.	lcs s30-12281501	
4	1	04211604.d	1.	lcsds30-12281501	
5	1	04211605.d	1.	lcs s30-06171501	
6	1	04211606.d	1.	lcsds30-06171501	
7	1	04211607.d	1.	2076-001 1ml	
8	1	04211608.d	1.	2076-002 1ml	
9	1	04211609.d	1.	2076-003 1ml	
10	1	04211610.d	1.	2076-004 1ml	
11	1	04211611.d	1.	2076-005 1ml	
12	1	04211612.d	1.	2076-006 1ml	
13	1	04211613.d	1.	2076-007 1ml	
14	1	04211614.d	1.	2076-008 1ml	
15	1	04211615.d	1.	2076-009 1ml	
16	1	04211616.d	1.	2076-010 1ml	
17	1	04211617.d	1.	std s30-10041501	
18	1	04211618.d	1.	2076-011 1ml	
19	1	04211619.d	1.	2076-012 1ml	
20	1	04211620.d	1.	2076-013 1ml	
21	1	04211621.d	1.	2076-014 1ml	
22	1	04211622.d	1.	2069-001 0.1ml	
23	1	04211623.d	1.	2069-002 0.1ml	
24	1	04211624.d	1.	2072-001 0.1ml	
25	1	04211625.d	1.	2072-003 0.1ml	
26	1	04211626.d	1.	2073-004 0.1ml	
27	1	04211627.d	1.	std s30-10041501	
28	1	04211628.d	1.	std x100	
29	1	04211629.d	1.	std x100 0.05ml	
30	1	04211630.d	1.	std s30-04211601 0.05ml(x100)	
31	1	04211631.d	1.	std s30-04211601 0.5ml(x100)	
32	1	04211632.d	1.	xstd 0.05ml	
33	1	04211633.d	1.	std s30-10041501 0.05ml	
34	1	04211634.d	1.	std s30-10041501 0.5ml	
35	1	04211635.d	1.	std s30-10041501 1ml	
36	1	04211636.d	1.	std s30-10041501 2ml	
37	1	04211637.d	1.	3C std s30-04081603 0.75ml	

Injection Log

Directory: I:\GC08\DATA\TO_3M\2016_04\22

Line	Vial	FileName	Multiplier	SampleName	Misc Info
1	1	04221601.d	1.	std s30-10041501	
2	1	04221602.d	1.	std s30-10041501	
3	1	04221603.d	1.	mb 1ml	
4	1	04221604.d	1.	lcs s30-12281501	
5	1	04221605.d	1.	lcsds30-12281501	
6	1	04221606.d	1.	lcs s30-06171501	
7	1	04221607.d	1.	lcsds30-06171501	
8	1	04221608.d	1.	2090-001 1ml	
9	1	04221609.d	1.	2090-002 1ml	
10	1	04221610.d	1.	2090-003 1ml	
11	1	04221611.d	1.	2090-004 1ml	
12	1	04221612.d	1.	2090-005 1ml	
13	1	04221613.d	1.	2090-006 1ml	
14	1	04221614.d	1.	2090-007 1ml	
15	1	04221615.d	1.	2090-008 1ml	
16	1	04221616.d	1.	2090-009 1ml	
17	1	04221617.d	1.	2090-010 1ml	
18	1	04221618.d	1.	std s30-10041501	
19	1	04221619.d	1.	2090-011 1ml	
20	1	04221620.d	1.	2090-012 1ml	
21	1	04221621.d	1.	2090-013 1ml	
22	1	04221622.d	1.	2092-001 0.1ml	
23	1	04221623.d	1.	2092-002 0.1ml	
24	1	04221624.d	1.	2092-003 0.1ml	
25	1	04221625.d	1.	2092-004 0.1ml	
26	1	04221626.d	1.	std s30-10041501	
27	1	04221627.d	1.	mb 1ml	
28	1	04221628.d	1.	lcs s30-12281501	
29	1	04221629.d	1.	lcsds30-12281501	
30	1	04221630.d	1.	2094-001 1ml	
31	1	04221631.d	1.	2094-002 1ml	
32	1	04221632.d	1.	2094-003 1ml	
33	1	04221633.d	1.	std s30-10041501	

Injection Log

Directory: I:\GC08\DATA\TO_3M\2016_10\11\

	Sample ID	Date/Time	Acquisition Method	File Name	Misc Info	Operator	Comments
	std s30-05021602	11-Oct-16, 08:28:11	TO3.M	10111601.D		amf	
	mb 1ml	11-Oct-16, 09:22:27	TO3.M	10111602.D		amf	
	lcs s30-08011601	11-Oct-16, 09:46:09	TO3.M	10111603.D		amf	
	lcsds30-08011601	11-Oct-16, 10:08:49	TO3.M	10111604.D		amf	
	4745-001 0.1ml	11-Oct-16, 10:24:15	TO3.M	10111605.D		amf	
	4745-001 0.05ml	11-Oct-16, 10:47:06	TO3.M	10111606.D		amf	
	4745-002 0.05ml	11-Oct-16, 11:11:17	TO3.M	10111607.D		amf	
	4745-003 0.05ml	11-Oct-16, 11:34:11	TO3.M	10111608.D		amf	
	4745-004 0.05ml	11-Oct-16, 13:04:29	TO3.M	10111609.D		amf	
	4787-001 0.1ml	11-Oct-16, 13:27:51	TO3.M	10111610.D		amf	
	4787-002 0.1ml	11-Oct-16, 13:52:23	TO3.M	10111611.D		amf	
	std s30-05021602	11-Oct-16, 14:15:28	TO3.M	10111612.D		amf	

Data Path : I:\GC01\DATA\FXG\2016_10\13\
Data File : 10131615.D
Signal(s) : TCD1A.CH
Acq On : 13 Oct 2016 1:03 pm
Operator : amf
Sample : 4745-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 09:13:16 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

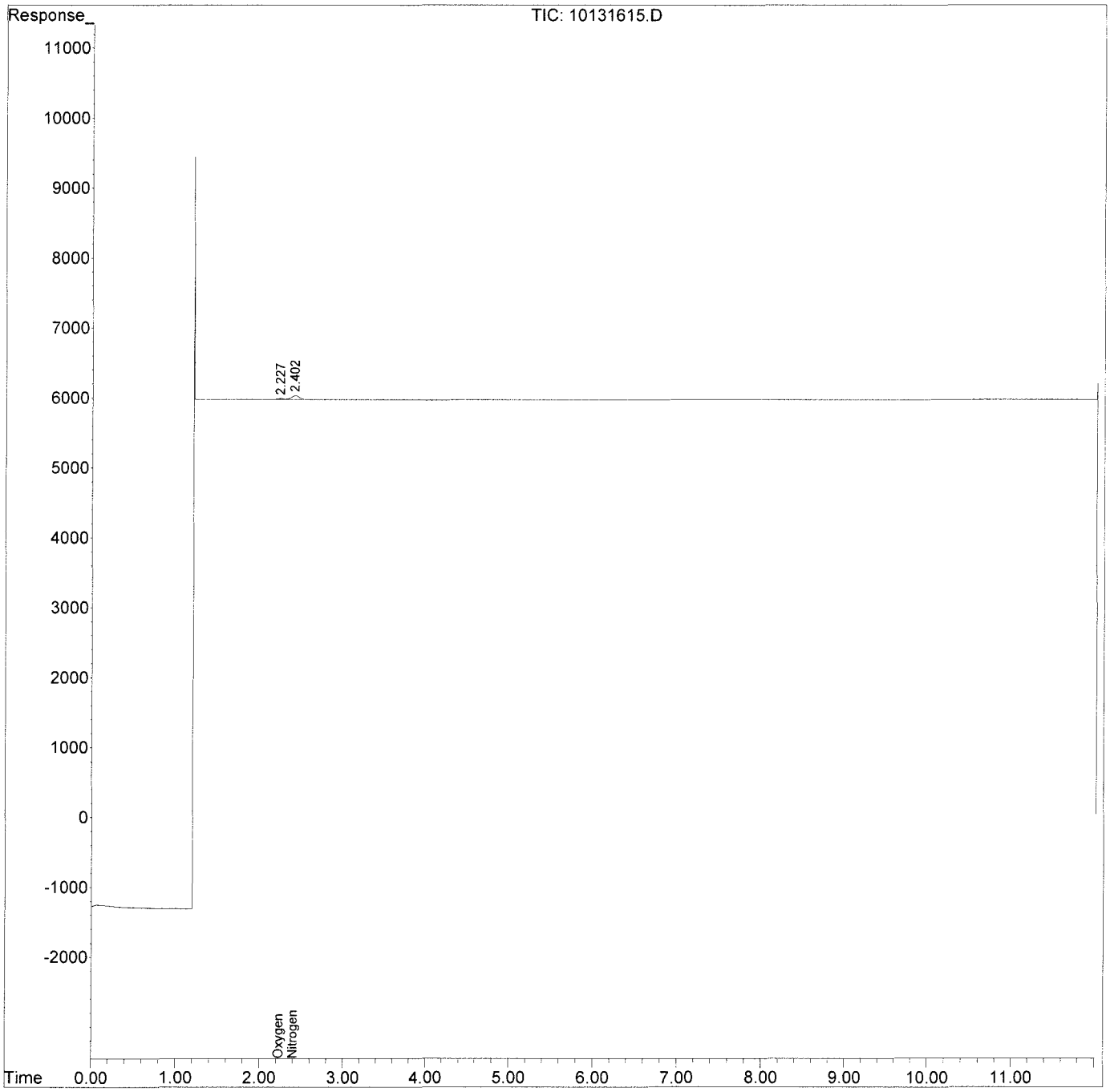
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.000	0	N.D.	ppm	
2)	Oxygen	2.227	776	512.611	ppm	m
3)	Nitrogen	2.402	3333	1901.100	ppm	m
4)	Carbon Monoxide	0.000	0	N.D.	ppm	
5)	Methane	0.000	0	N.D.	ppm	
6)	Carbon Dioxide	0.000	0	N.D.	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\13\
Data File : 10131615.D
Signal(s) : TCD1A.CH
Acq On : 13 Oct 2016 1:03 pm
Operator : amf
Sample : 4745-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 09:13:16 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

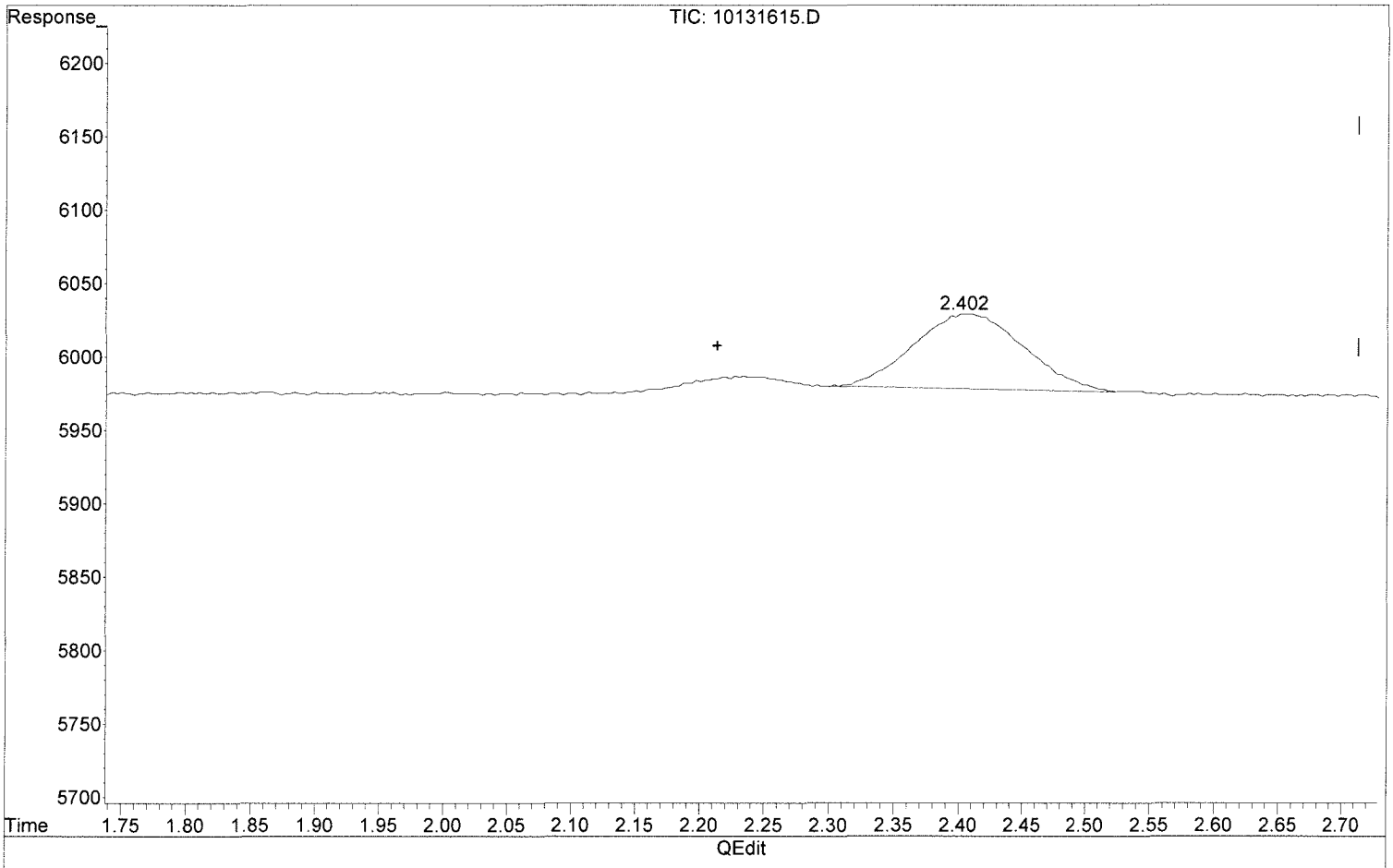
Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Data Path : I:\GC01\DATA\FXG\2016_10\13\
Data File : 10131615.D
Signal(s) : TCD1A.CH
Acq On : 13 Oct 2016 1:03 pm
Operator : amf
Sample : 4745-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 09:12:48 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(2) Oxygen

2.412min 2011.164 ppm

response 3043

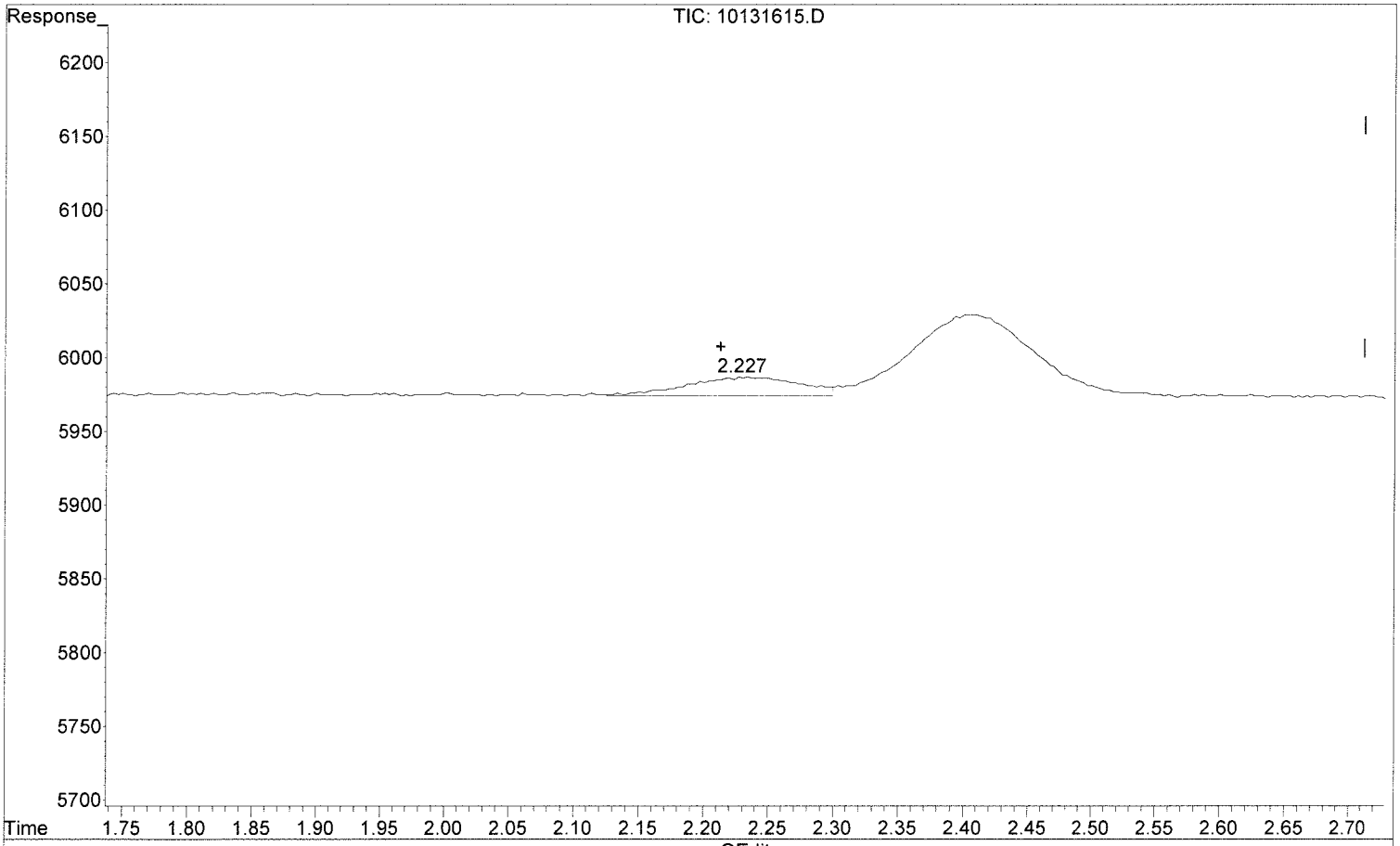
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : I:\GC01\DATA\FXG\2016_10\13\
Data File : 10131615.D
Signal(s) : TCD1A.CH
Acq On : 13 Oct 2016 1:03 pm
Operator : amf
Sample : 4745-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 09:12:48 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(2) Oxygen

2.227min 512.611 ppm m

response 776

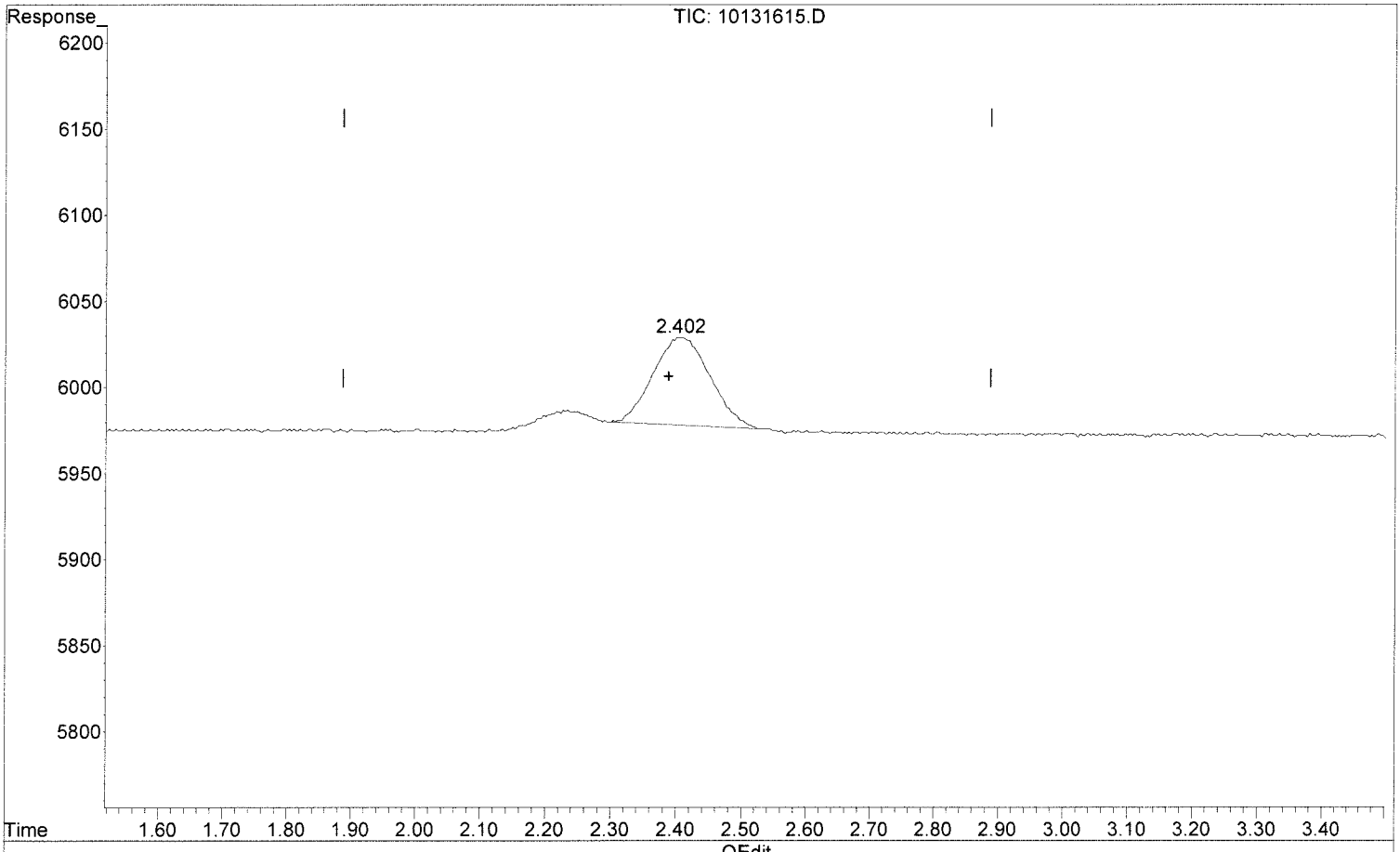
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : I:\GC01\DATA\FXG\2016_10\13\
Data File : 10131615.D
Signal(s) : TCD1A.CH
Acq On : 13 Oct 2016 1:03 pm
Operator : amf
Sample : 4745-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 09:12:48 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(3) Nitrogen

2.412min 1735.909 ppm

response 3043

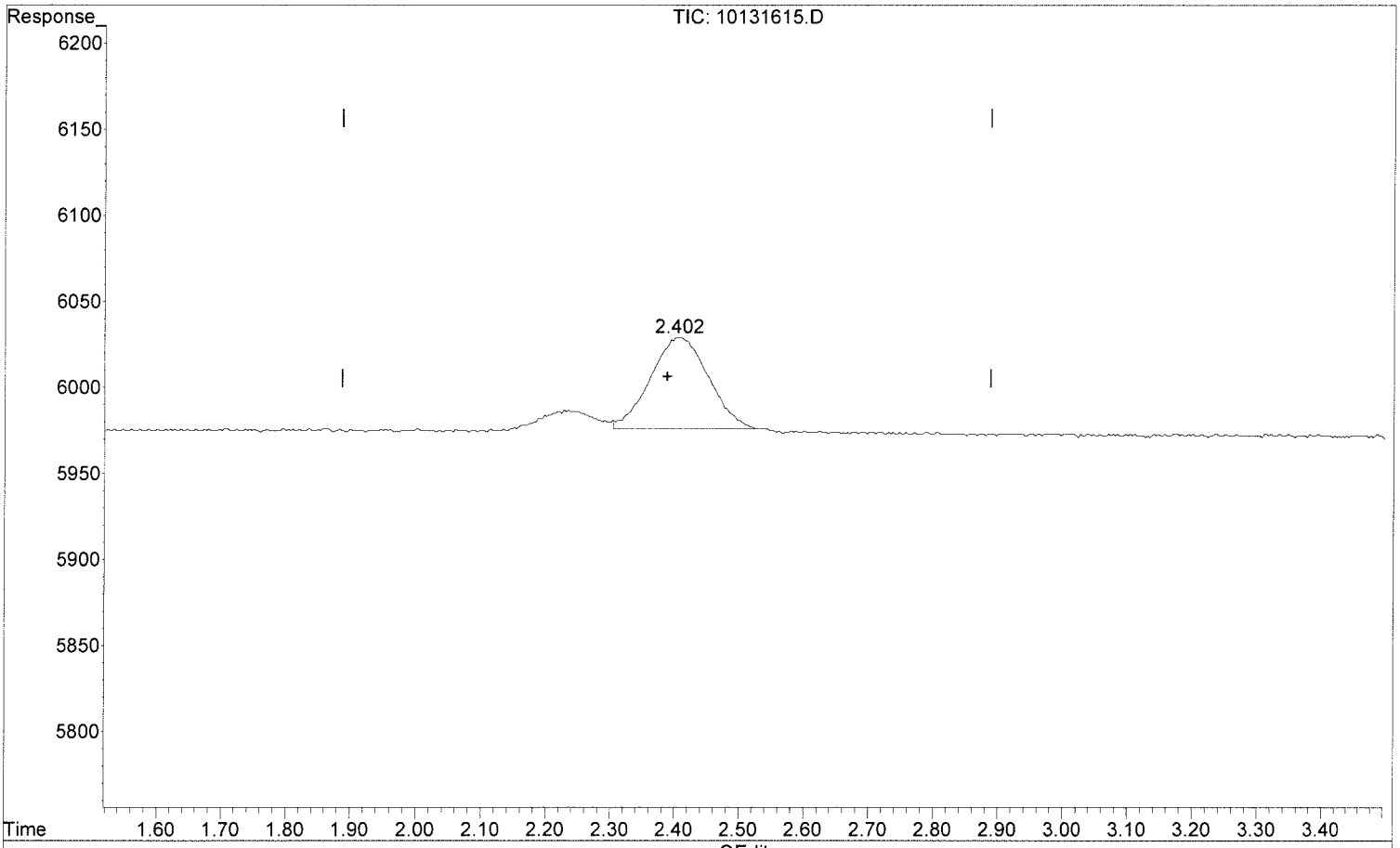
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : I:\GC01\DATA\FXG\2016_10\13\
Data File : 10131615.D
Signal(s) : TCD1A.CH
Acq On : 13 Oct 2016 1:03 pm
Operator : amf
Sample : 4745-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 09:12:48 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(3) Nitrogen

2.402min 1901.100 ppm m

response 3333

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_10\13\
Data File : 10131616.D
Signal(s) : TCD1A.CH
Acq On : 13 Oct 2016 1:42 pm
Operator : amf
Sample : 4745-002
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 09:26:09 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

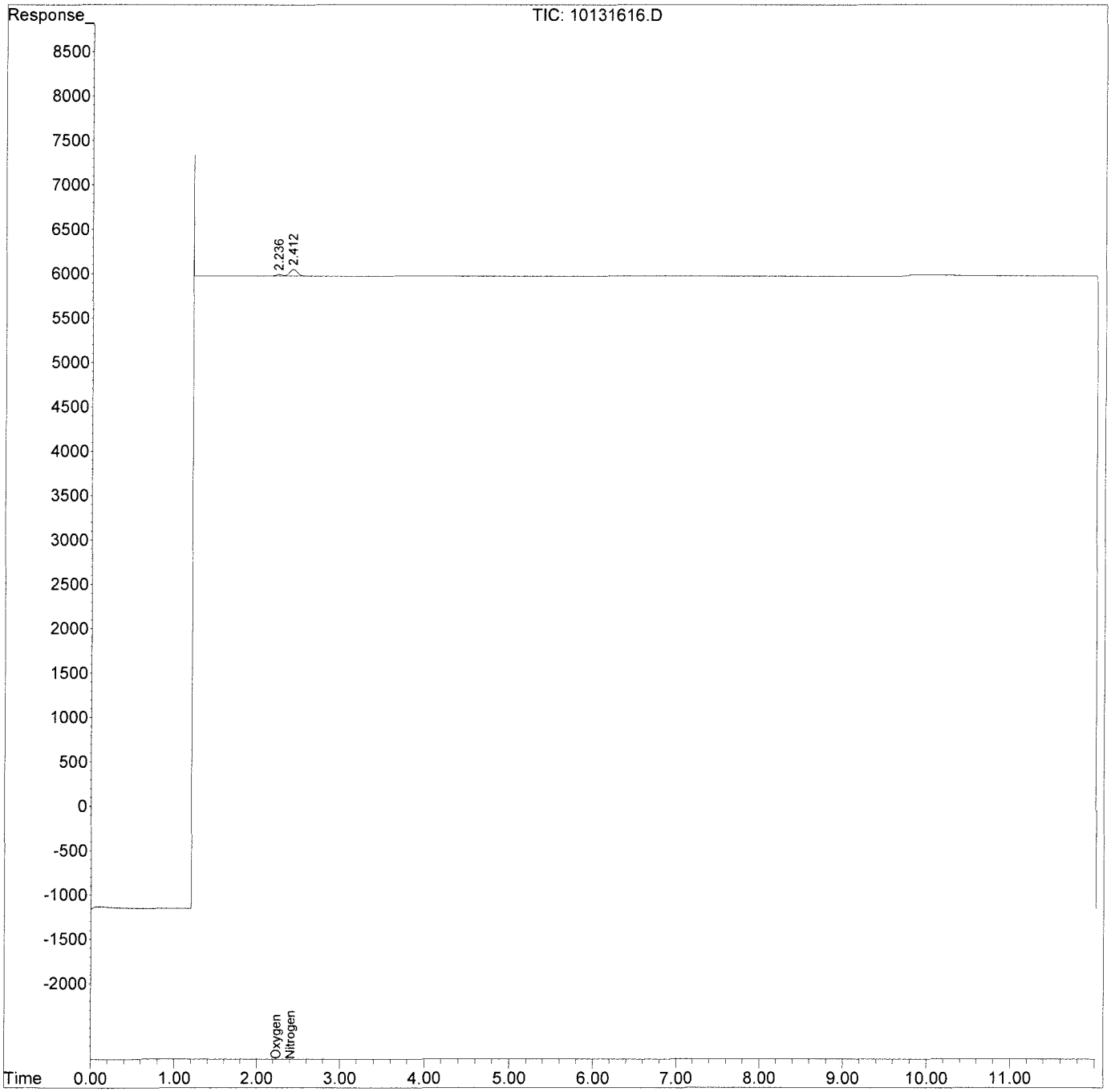
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.000	0	N.D.	ppm	
2)	Oxygen	2.236	1142	754.472	ppm	m
3)	Nitrogen	2.412	5016	2861.149	ppm	m
4)	Carbon Monoxide	0.000	0	N.D.	ppm	
5)	Methane	0.000	0	N.D.	ppm	
6)	Carbon Dioxide	0.000	0	N.D.	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\13\
Data File : 10131616.D
Signal(s) : TCD1A.CH
Acq On : 13 Oct 2016 1:42 pm
Operator : amf
Sample : 4745-002
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 09:26:09 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

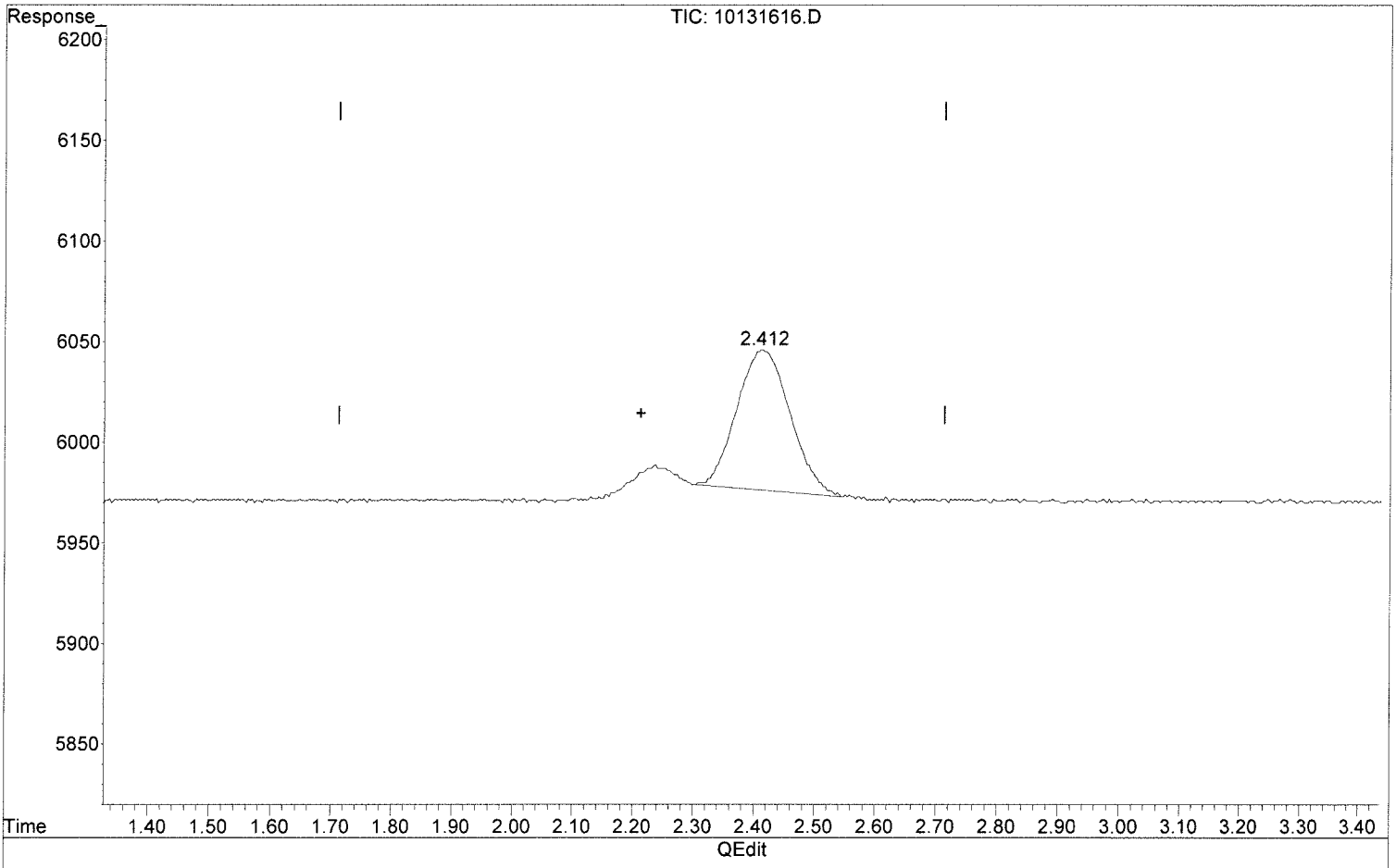


Quantitation Report (Qedit)

Data Path : I:\GC01\DATA\FXG\2016_10\13\
Data File : 10131616.D
Signal(s) : TCD1A.CH
Acq On : 13 Oct 2016 1:42 pm
Operator : amf
Sample : 4745-002
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 09:13:38 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(2) Oxygen

2.415min 2779.708 ppm

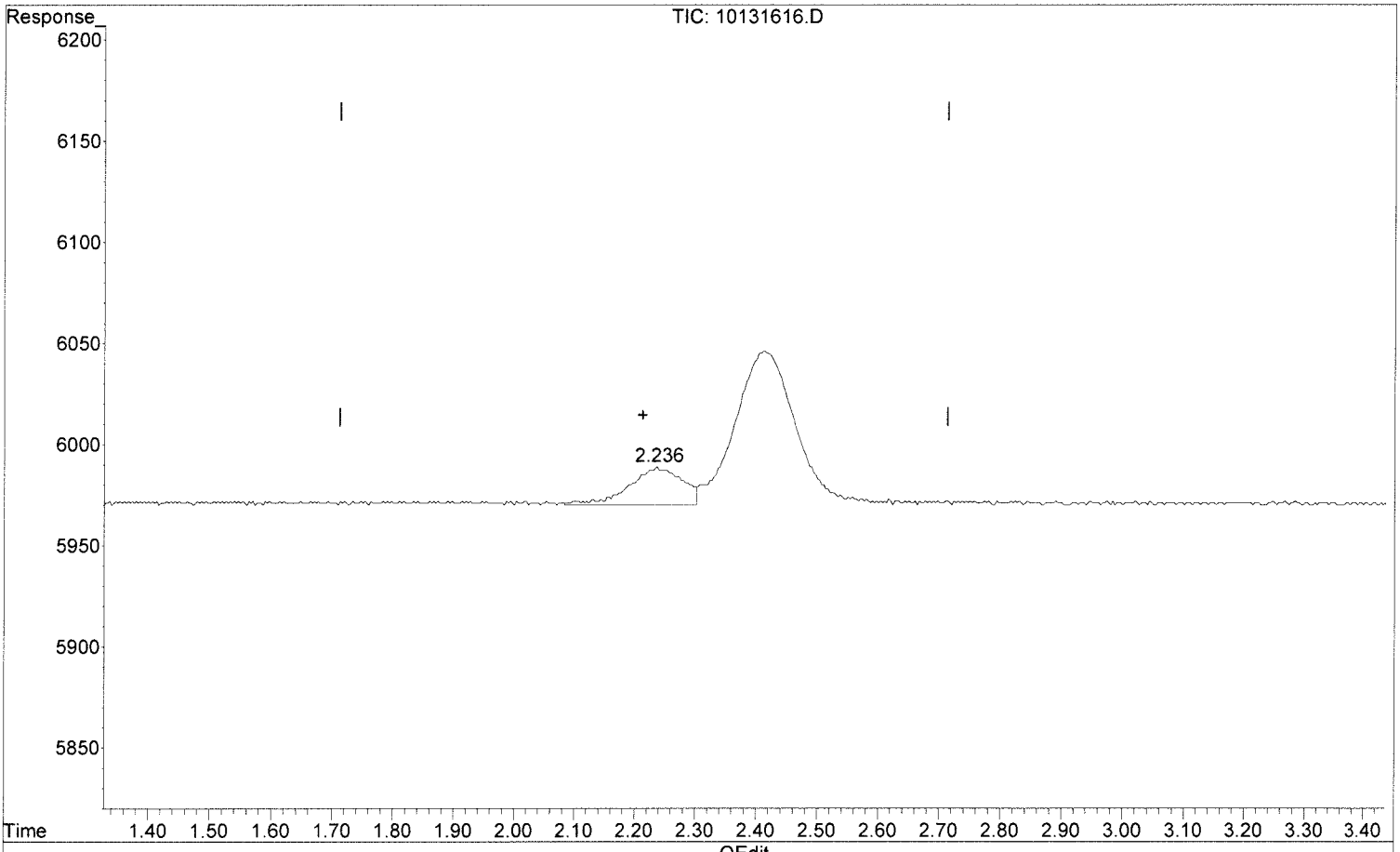
response 4206

(+) = Expected Retention Time

Data Path : I:\GC01\DATA\FXG\2016_10\13\
Data File : 10131616.D
Signal(s) : TCD1A.CH
Acq On : 13 Oct 2016 1:42 pm
Operator : amf
Sample : 4745-002
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 09:13:38 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(2) Oxygen

2.236min 754.472 ppm m

response 1142

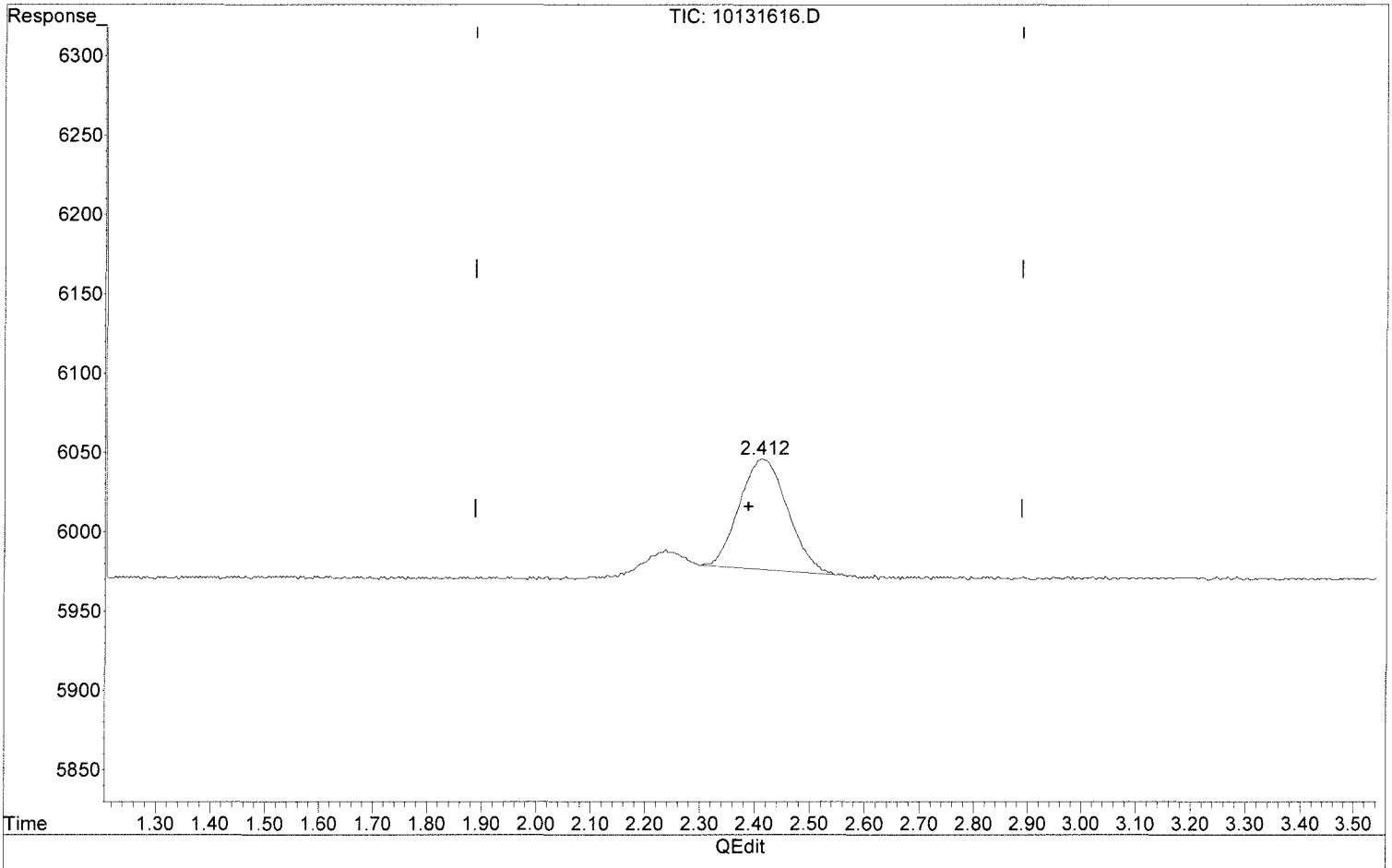
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : I:\GC01\DATA\FXG\2016_10\13\
Data File : 10131616.D
Signal(s) : TCD1A.CH
Acq On : 13 Oct 2016 1:42 pm
Operator : amf
Sample : 4745-002
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 09:13:38 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(3) Nitrogen

2.415min 2399.268 ppm

response 4206

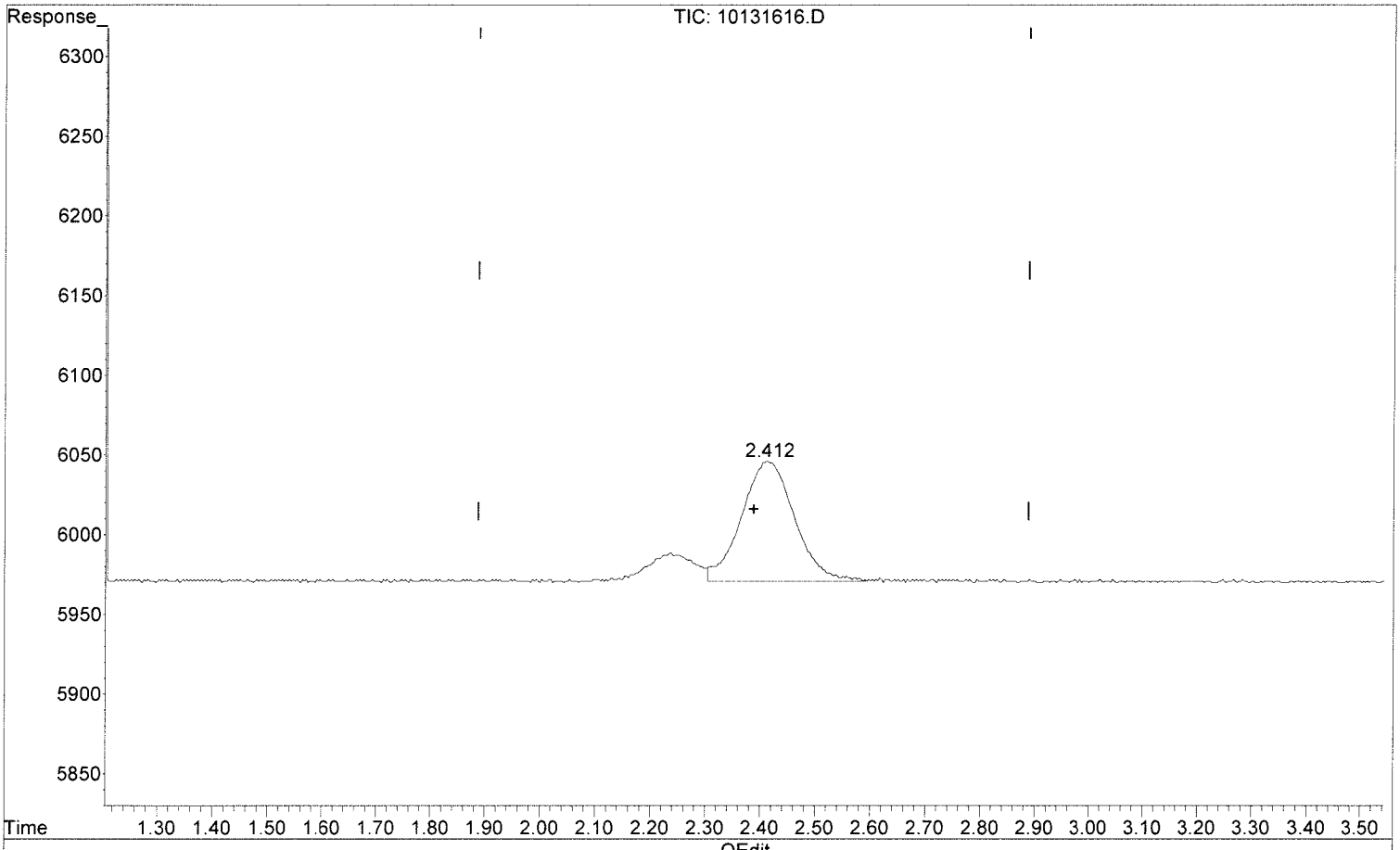
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : I:\GC01\DATA\FXG\2016_10\13\
Data File : 10131616.D
Signal(s) : TCD1A.CH
Acq On : 13 Oct 2016 1:42 pm
Operator : amf
Sample : 4745-002
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 09:13:38 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(3) Nitrogen

2.412min 2861.149 ppm m

response 5016

(+) = Expected Retention Time

Data Path : I:\GC01\DATA\FXG\2016_10\13\
Data File : 10131617.D
Signal(s) : TCD1A.CH
Acq On : 13 Oct 2016 1:58 pm
Operator : amf
Sample : 4745-003
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 09:26:30 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

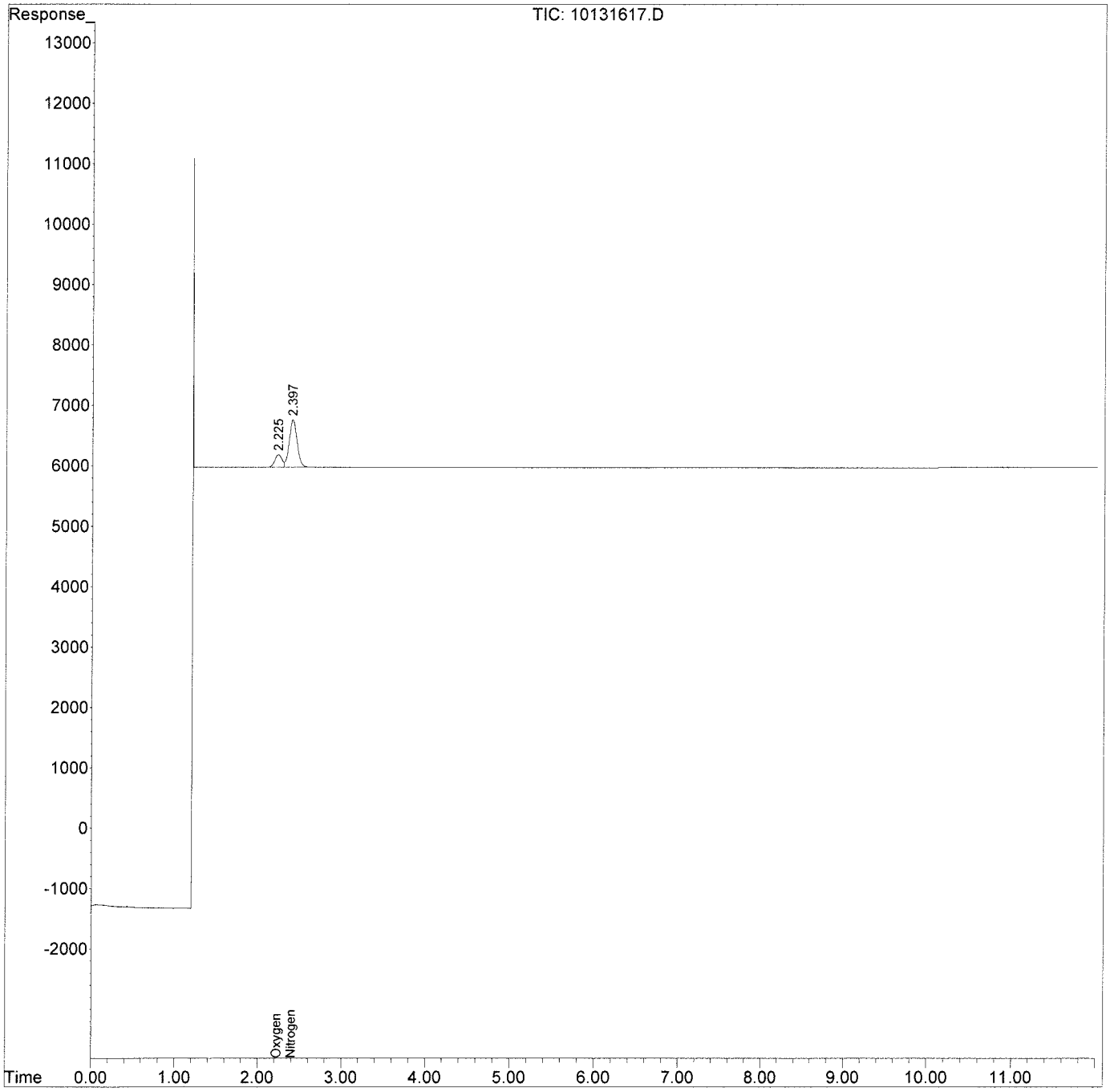
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.227	12327	8145.773	ppm
3)	Nitrogen	2.399	51634	29451.033	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\13\
Data File : 10131617.D
Signal(s) : TCD1A.CH
Acq On : 13 Oct 2016 1:58 pm
Operator : amf
Sample : 4745-003
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 09:26:30 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Data Path : I:\GC01\DATA\FXG\2016_10\13\
Data File : 10131618.D
Signal(s) : TCD1A.CH
Acq On : 13 Oct 2016 2:19 pm
Operator : amf
Sample : 4745-004
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 09:29:11 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

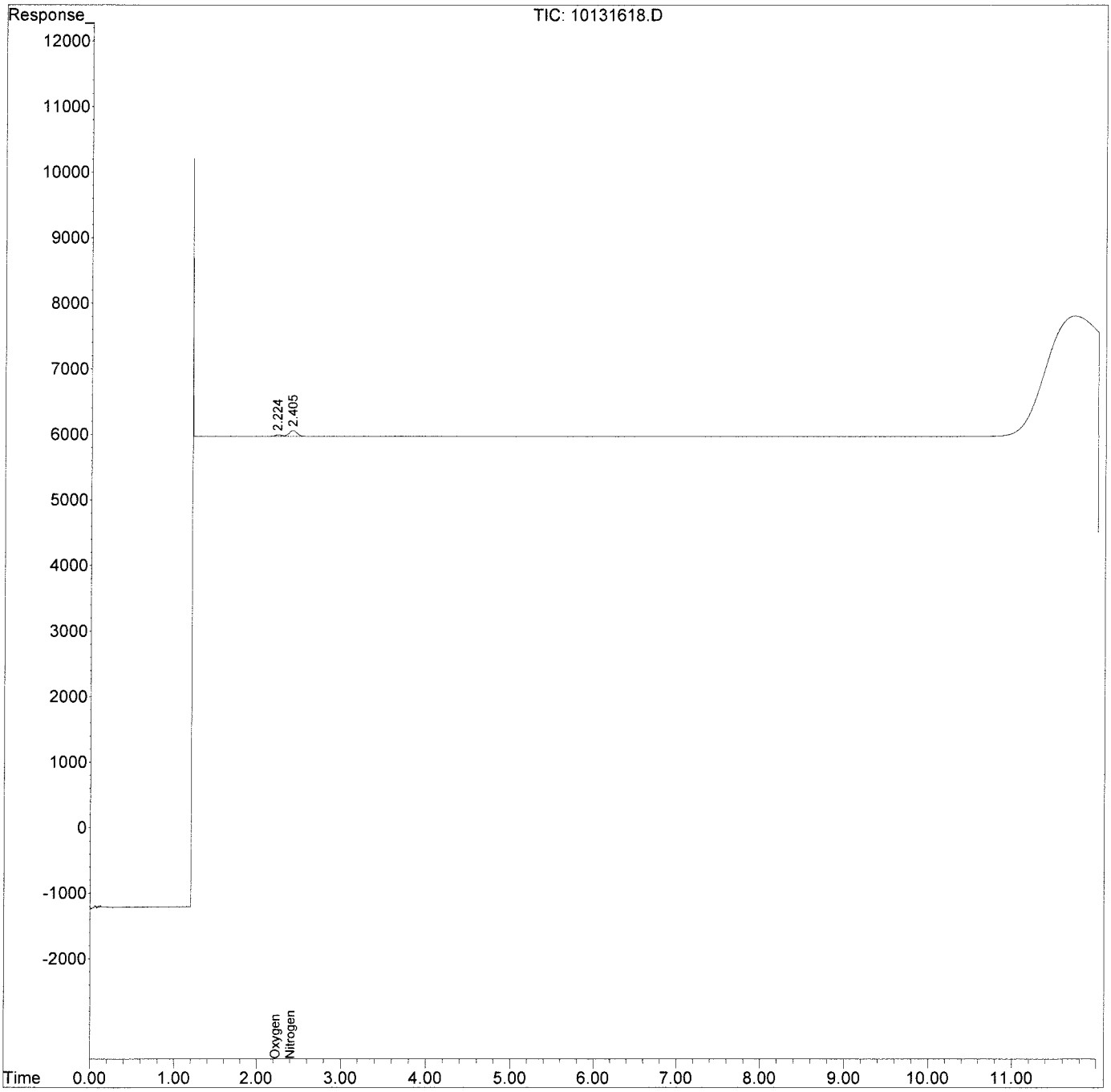
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.000	0	N.D.	ppm	
2)	Oxygen	2.224	1112	735.070	ppm	m
3)	Nitrogen	2.405	5672	3235.298	ppm	m
4)	Carbon Monoxide	0.000	0	N.D.	ppm	
5)	Methane	0.000	0	N.D.	ppm	
6)	Carbon Dioxide	0.000	0	N.D.	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\13\
Data File : 10131618.D
Signal(s) : TCD1A.CH
Acq On : 13 Oct 2016 2:19 pm
Operator : amf
Sample : 4745-004
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 09:29:11 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

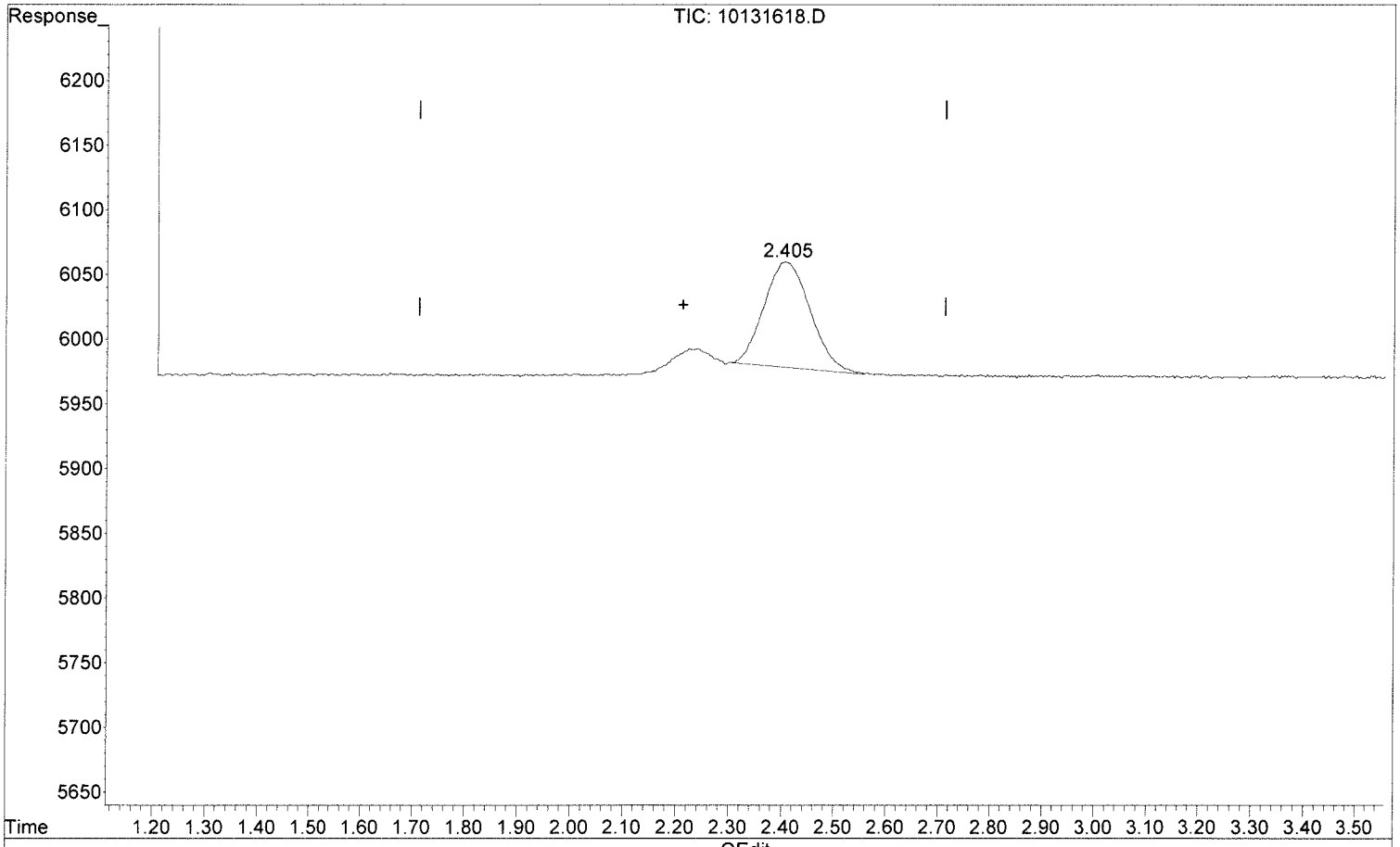
Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Data Path : I:\GC01\DATA\FXG\2016_10\13\
Data File : 10131618.D
Signal(s) : TCD1A.CH
Acq On : 13 Oct 2016 2:19 pm
Operator : amf
Sample : 4745-004
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 09:28:26 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(2) Oxygen

2.407min 3294.845 ppm

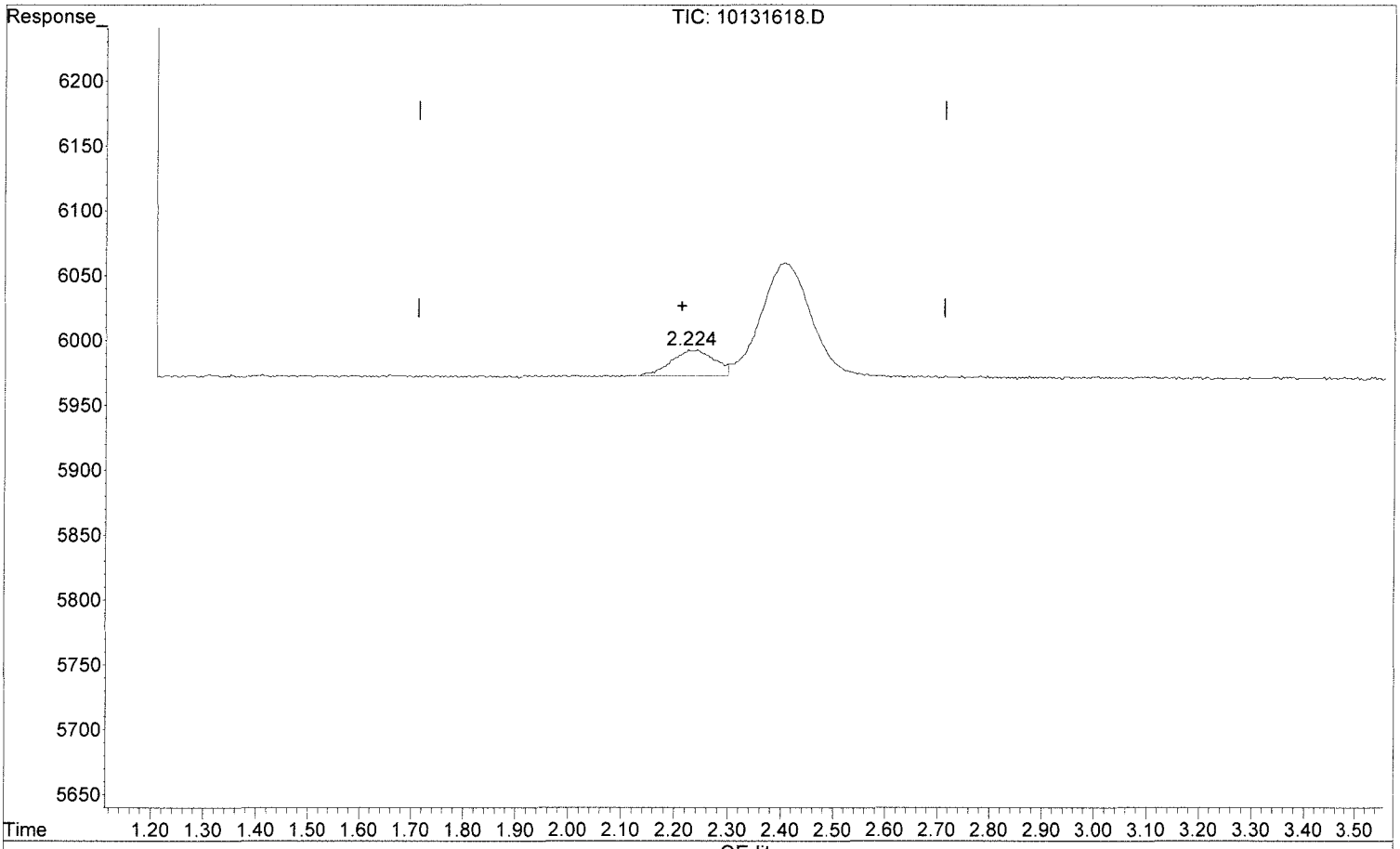
response 4986

(+) = Expected Retention Time

Data Path : I:\GC01\DATA\FXG\2016_10\13\
Data File : 10131618.D
Signal(s) : TCD1A.CH
Acq On : 13 Oct 2016 2:19 pm
Operator : amf
Sample : 4745-004
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 09:28:26 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(2) Oxygen

2.224min 735.070 ppm m

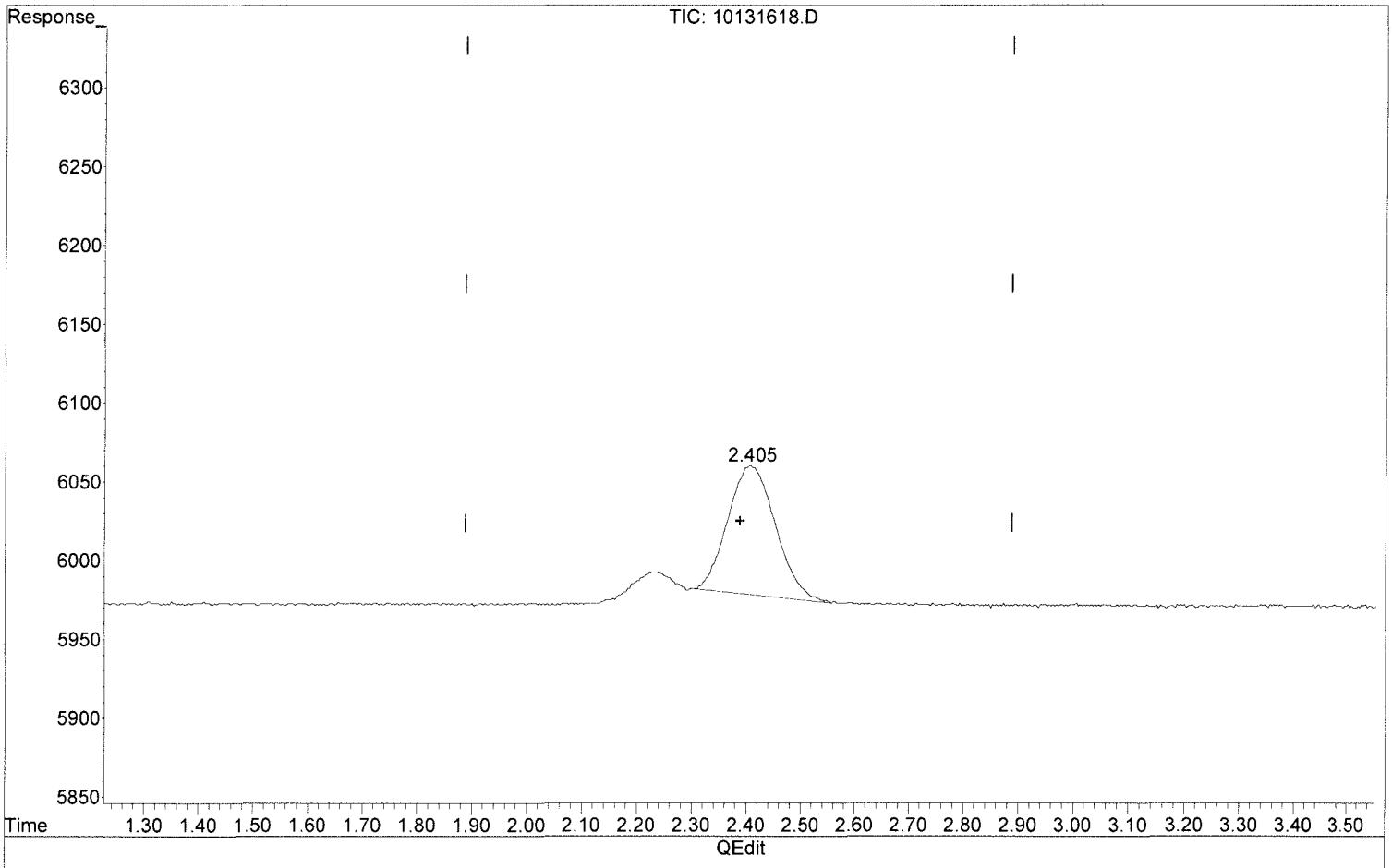
response 1112

(+) = Expected Retention Time

Data Path : I:\GC01\DATA\FXG\2016_10\13\
Data File : 10131618.D
Signal(s) : TCD1A.CH
Acq On : 13 Oct 2016 2:19 pm
Operator : amf
Sample : 4745-004
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 09:28:26 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(3) Nitrogen

2.407min 2843.901 ppm

response 4986

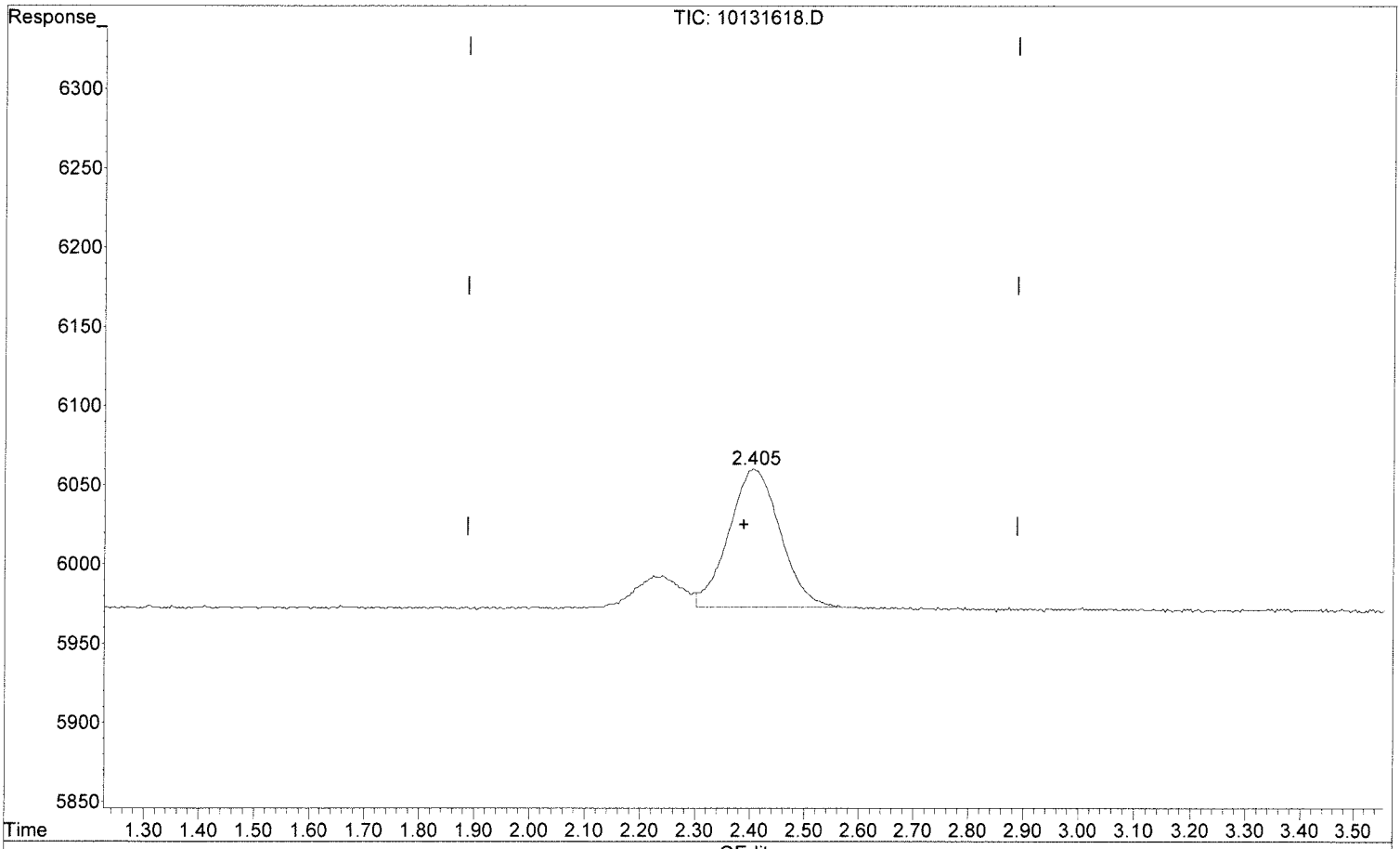
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : I:\GC01\DATA\FXG\2016_10\13\
Data File : 10131618.D
Signal(s) : TCD1A.CH
Acq On : 13 Oct 2016 2:19 pm
Operator : amf
Sample : 4745-004
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 09:28:26 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(3) Nitrogen

2.405min 3235.298 ppm m

response 5672

(+) = Expected Retention Time

Data Path : I:\GC01\DATA\FXG\2016_10\13\
Data File : 10131609.D
Signal(s) : TCD1A.CH
Acq On : 13 Oct 2016 11:24 am
Operator : amf
Sample : mb
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 13 12:00:03 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

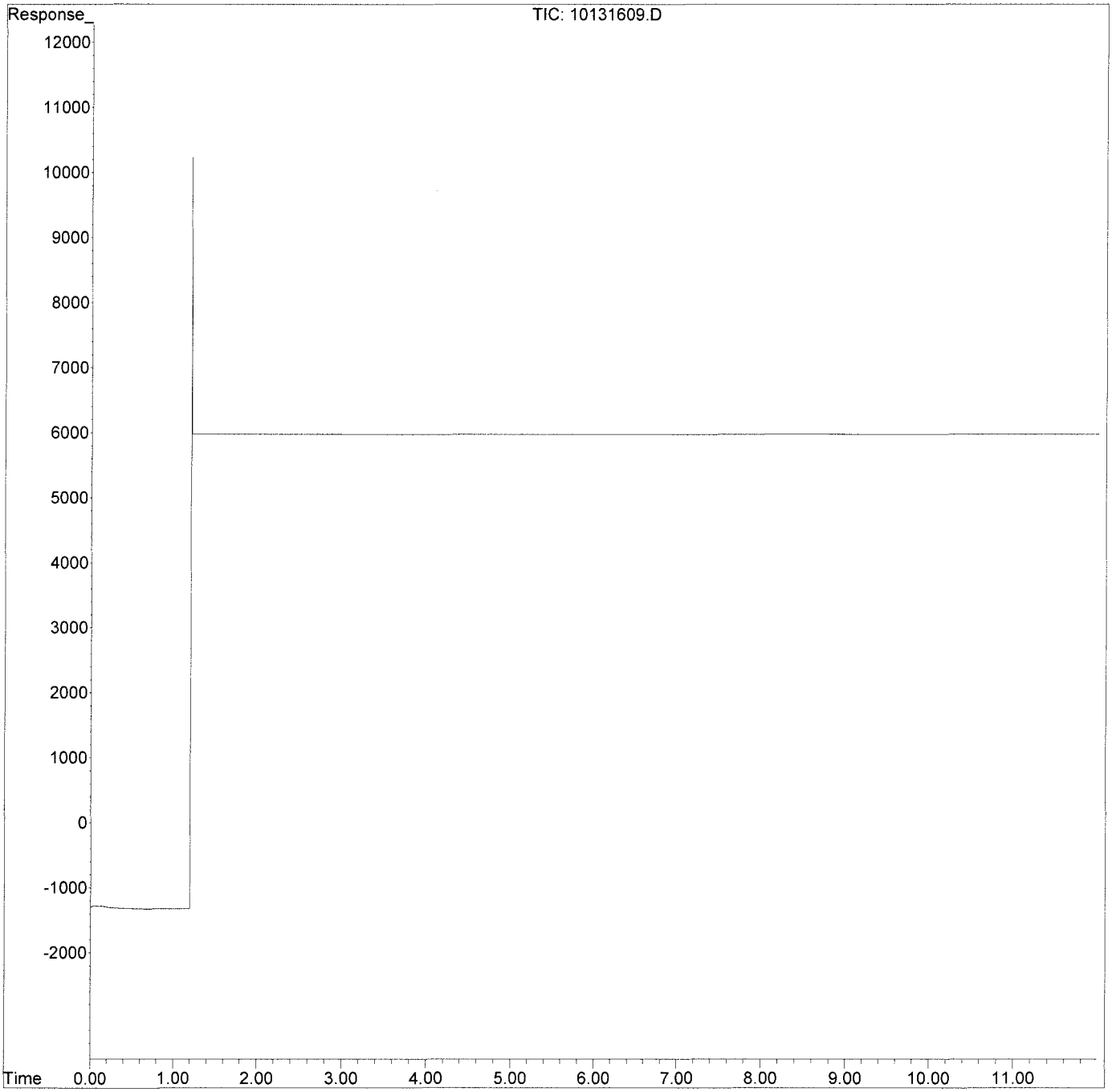
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\13\
Data File : 10131609.D
Signal(s) : TCD1A.CH
Acq On : 13 Oct 2016 11:24 am
Operator : amf
Sample : mb
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 13 12:00:03 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Data Path : I:\GC01\DATA\FXG\2016_10\13\
Data File : 10131611.D
Signal(s) : TCD1A.CH
Acq On : 13 Oct 2016 11:58 am
Operator : amf
Sample : lcs s11-07281601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 13 12:14:31 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

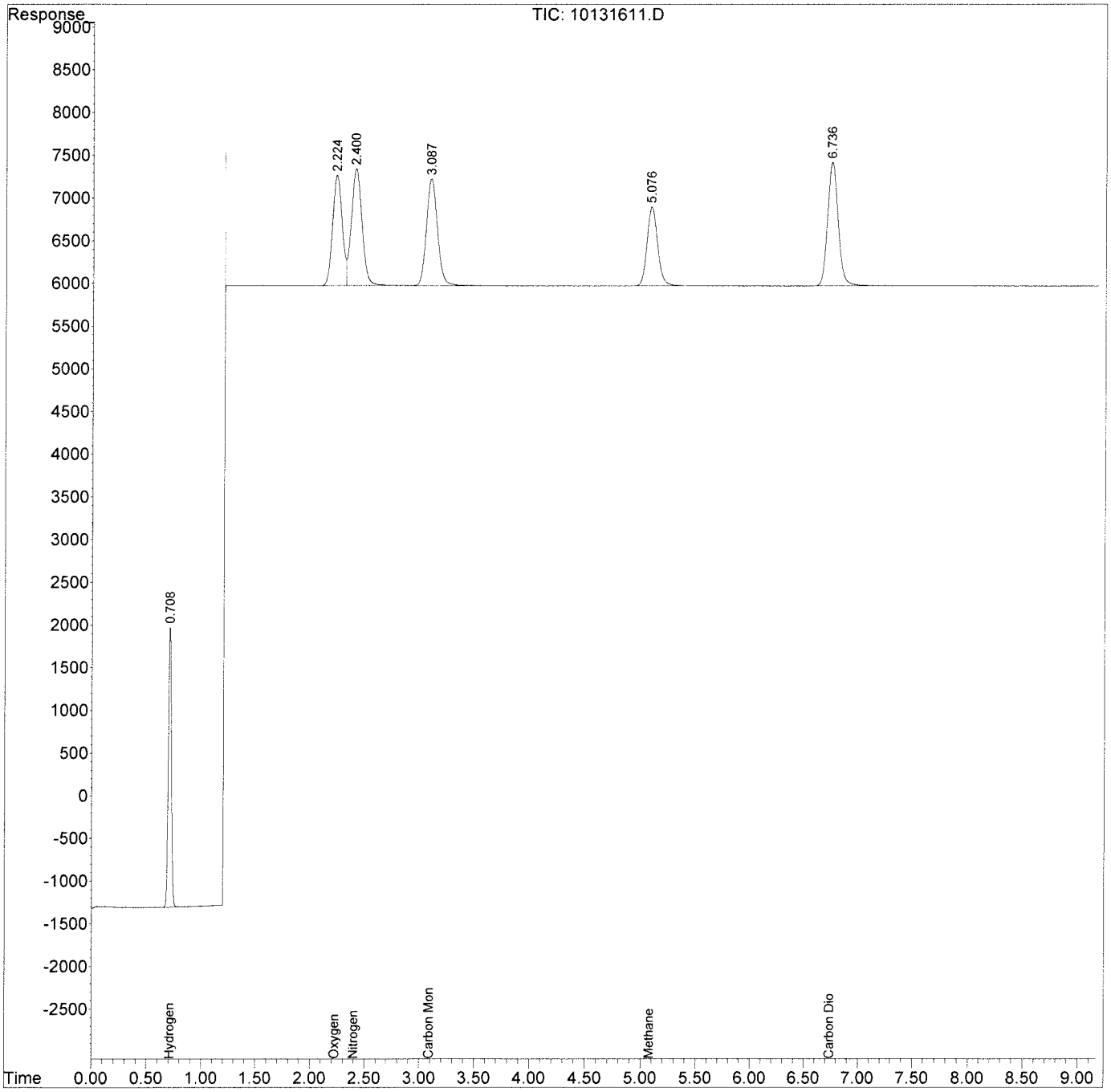
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.710	65709	49877.774	ppm
2)	Oxygen	2.225	78749	52039.248	ppm
3)	Nitrogen	2.402	92083	52522.365	ppm
4)	Carbon Monoxide	3.088	86894	51194.098	ppm
5)	Methane	5.077	61787	49082.119	ppm
6)	Carbon Dioxide	6.738	99851	49204.731	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\13\
Data File : 10131611.D
Signal(s) : TCD1A.CH
Acq On : 13 Oct 2016 11:58 am
Operator : amf
Sample : lcs s11-07281601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 13 12:14:31 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Response Factor Report GC01_FXG

Method Path : I:\GC01\METHODS\
Method File : 3C012416.M
Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
Last Update : Sun Jan 24 22:12:55 2016
Response Via : Initial Calibration

Calibration Files
0.1 =01241627.D 0.5 =01241628.D 1 =01241629.D
4 =01241631.D 16 =01241632.D CO2 =01241633.D

	Compound	0.1	0.5	1	4	16	CO2	Avg	%RSD
1)	Hydrogen	1.295	1.311	1.271	1.247	1.260		1.317 E1	7.72
2)	Oxygen	1.471	1.599	1.556	1.522	1.454		1.513 E1	3.72
3)	Nitrogen	1.968	1.935	1.742	1.703	1.632		1.753 E1	9.60
4)	Carbon Monoxide	1.656	1.801	1.725	1.689	1.616		1.697 E1	4.15
5)	Methane	1.200	1.368	1.293	1.263	1.198		1.259 E1	5.14
6)	Carbon Dioxide	2.060	2.178	2.092	2.038	1.929	1.879	2.029 E1	5.38

(#) = Out of Range ### Number of calibration levels exceeded format ###

Calibration Status Report GC01_FXG

Method Path : I:\GC01\METHODS\
Method File : 3C012416.M
Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
Last Update : Sun Jan 24 22:12:55 2016
Response Via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	0.1	100	0	J:\GC01\DATA\FXG\2016_01\24\01241627.D
2	0.5	500	0	J:\GC01\DATA\FXG\2016_01\24\01241628.D
3	1	1000	0	J:\GC01\DATA\FXG\2016_01\24\01241629.D
4	4	4000	0	J:\GC01\DATA\FXG\2016_01\24\01241631.D
5	16	16667	0	J:\GC01\DATA\FXG\2016_01\24\01241632.D
6	CO2	99800	0	J:\GC01\DATA\FXG\2016_01\24\01241633.D
7	CH4	99000	0	J:\GC01\DATA\FXG\2016_01\24\01241634.D
8	H2	42020	0	J:\GC01\DATA\FXG\2016_01\24\01241635.D
9	n2	100000	0	J:\GC01\DATA\FXG\2016_01\24\01241637.D
10	o2	100000	0	J:\GC01\DATA\FXG\2016_01\24\01241639.D

#	ID	Update Time	Quant Time	Acquisition Time
1	0.1	Jan 24 19:51 2016	Jan 24 19:50 2016	24 Jan 2016 16:38
2	0.5	Jan 24 19:52 2016	Jan 24 19:51 2016	24 Jan 2016 17:24
3	1	Jan 24 19:53 2016	Jan 24 19:52 2016	24 Jan 2016 17:40
4	4	Jan 24 21:18 2016	Jan 24 19:55 2016	24 Jan 2016 18:16
5	16	Jan 24 19:57 2016	Jan 24 19:57 2016	24 Jan 2016 18:33
6	CO2	Jan 24 20:00 2016	Jan 24 19:58 2016	24 Jan 2016 19:02
7	CH4	Jan 24 20:36 2016	Jan 24 20:36 2016	24 Jan 2016 20:04
8	H2	Jan 24 20:56 2016	Jan 24 20:56 2016	24 Jan 2016 20:39
9	n2	Jan 24 21:35 2016	Jan 24 21:35 2016	24 Jan 2016 21:19
10	o2	Jan 24 22:12 2016	Jan 24 22:12 2016	24 Jan 2016 21:56

3C012416.M Sun Feb 07 17:55:16 2016

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241627.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 16:38
Operator : WH
Sample : std 0.1% S11-12041504
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 19:50:44 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 19:47:27 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.712	1295	1008.184	ppm	
2)	Oxygen	2.227	1471	938.454	ppm	m
3)	Nitrogen	2.403	1968	997.840	ppm	m
4)	Carbon Monoxide	3.111	1656	1000.000	ppm	
5)	Methane	5.087	1200	1000.000	ppm	
6)	Carbon Dioxide	6.744	2060	1000.000	ppm	

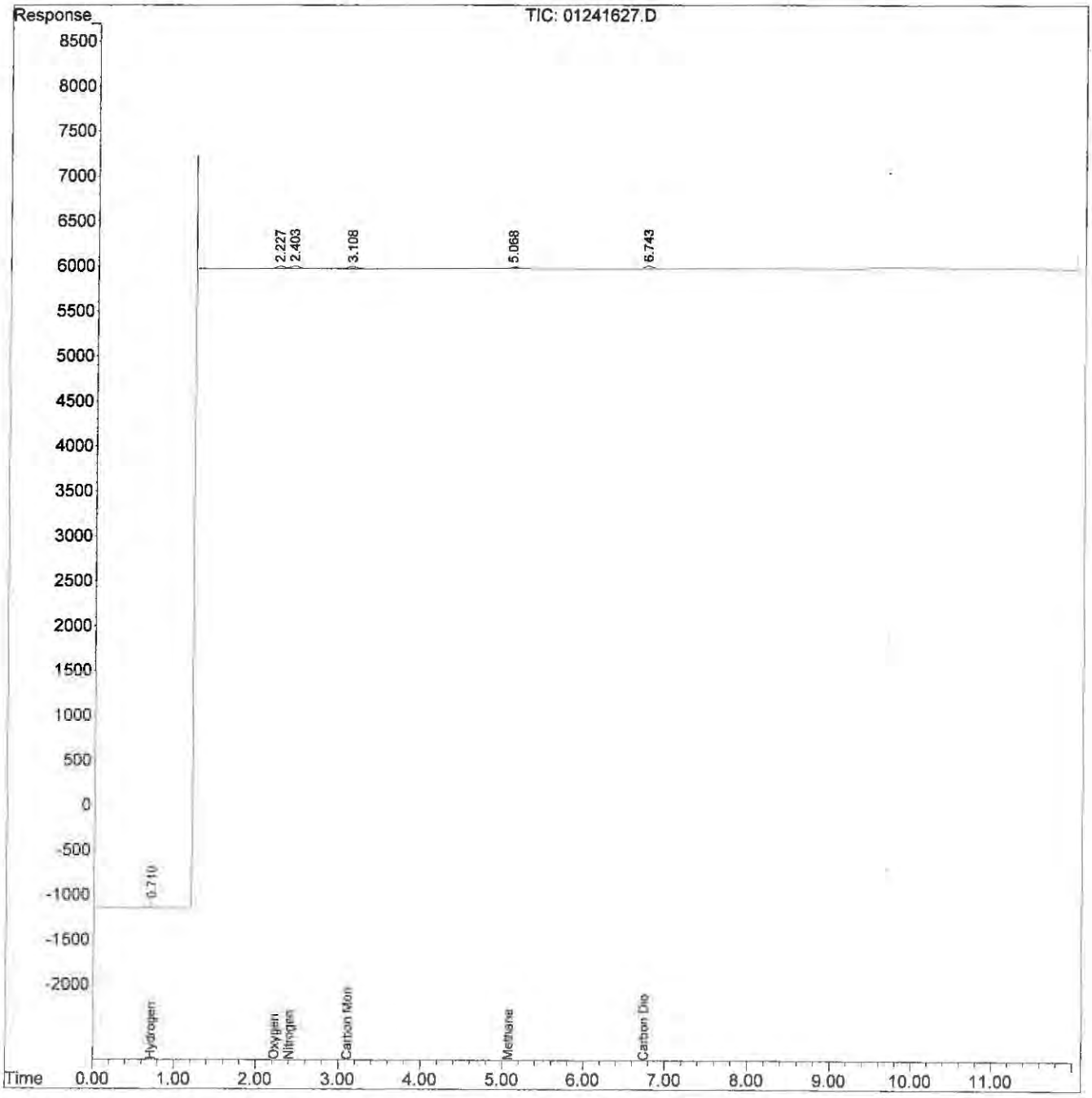
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241627.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 16:38
Operator : WH
Sample : std 0.1% S11-12041504
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 19:50:44 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 19:47:27 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

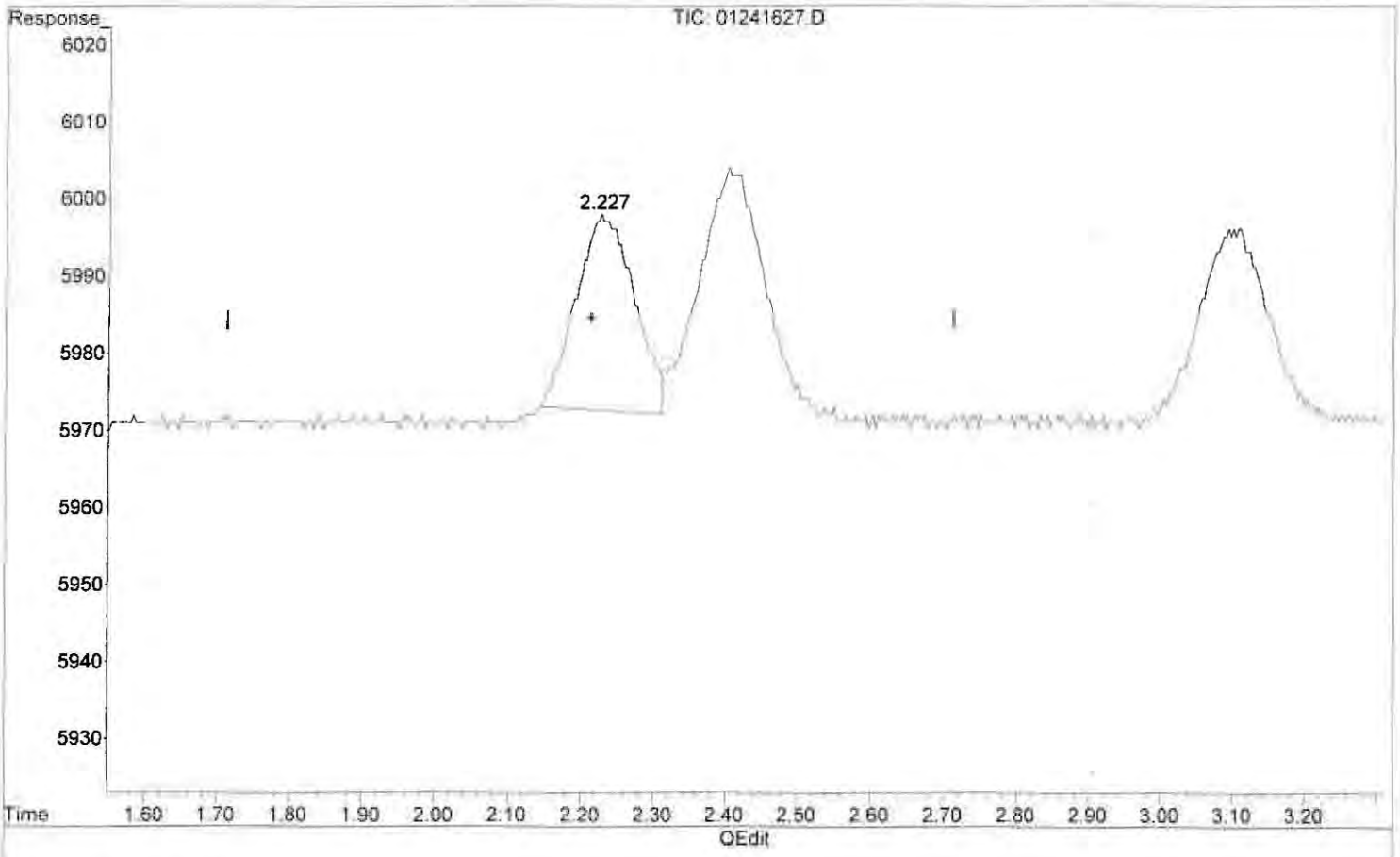


Quantitation Report (Qedit)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241627.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 16:38
Operator : WH
Sample : std 0.1% S11-12041504
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 19:49:57 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 19:47:27 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(2) Oxygen

2.229min 876.764 ppm

response 1374

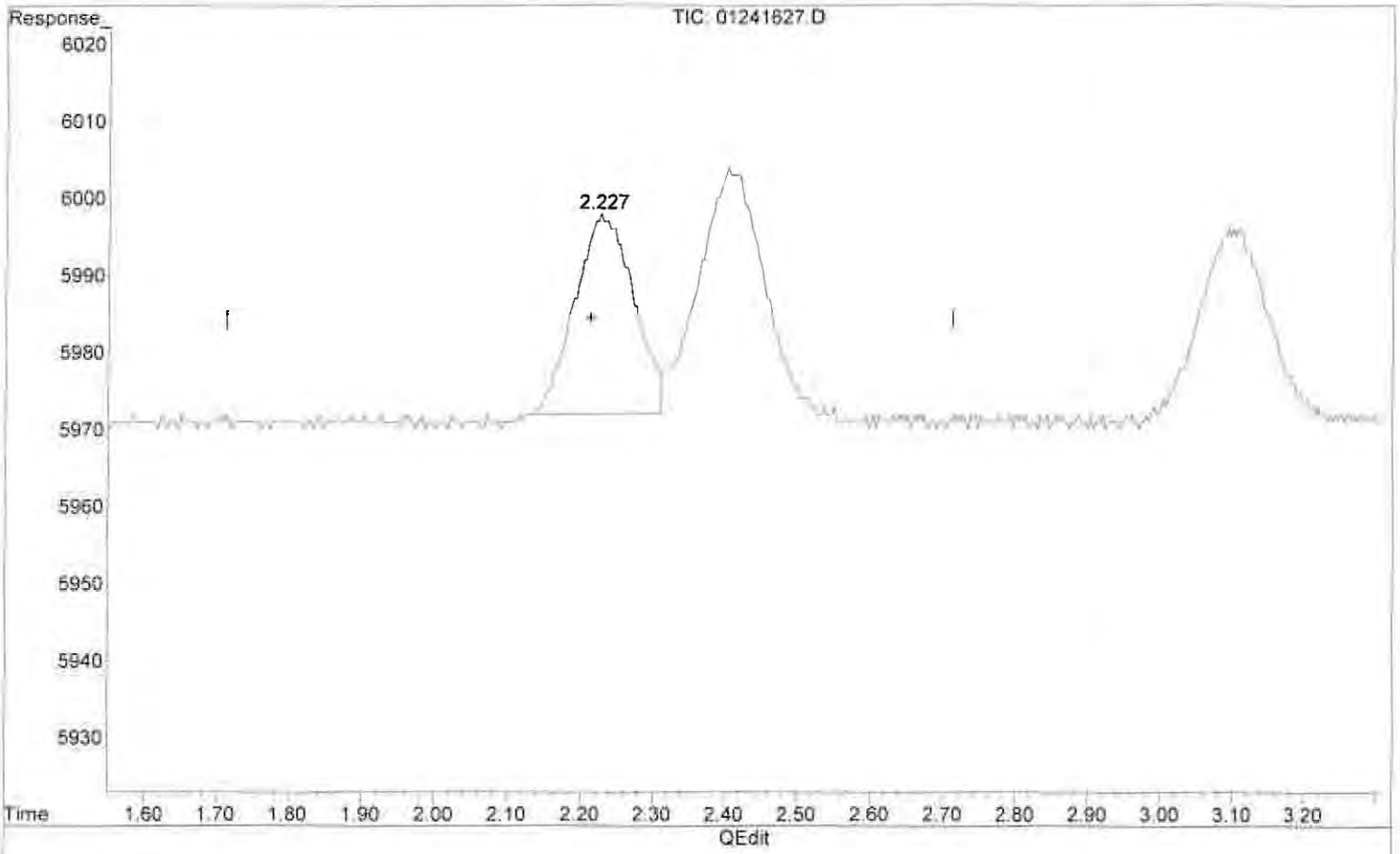
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241627.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 16:38
Operator : WH
Sample : std 0.1% S11-12041504
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 19:49:57 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 19:47:27 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(2) Oxygen

2.227min 938.454 ppm m

response 1471

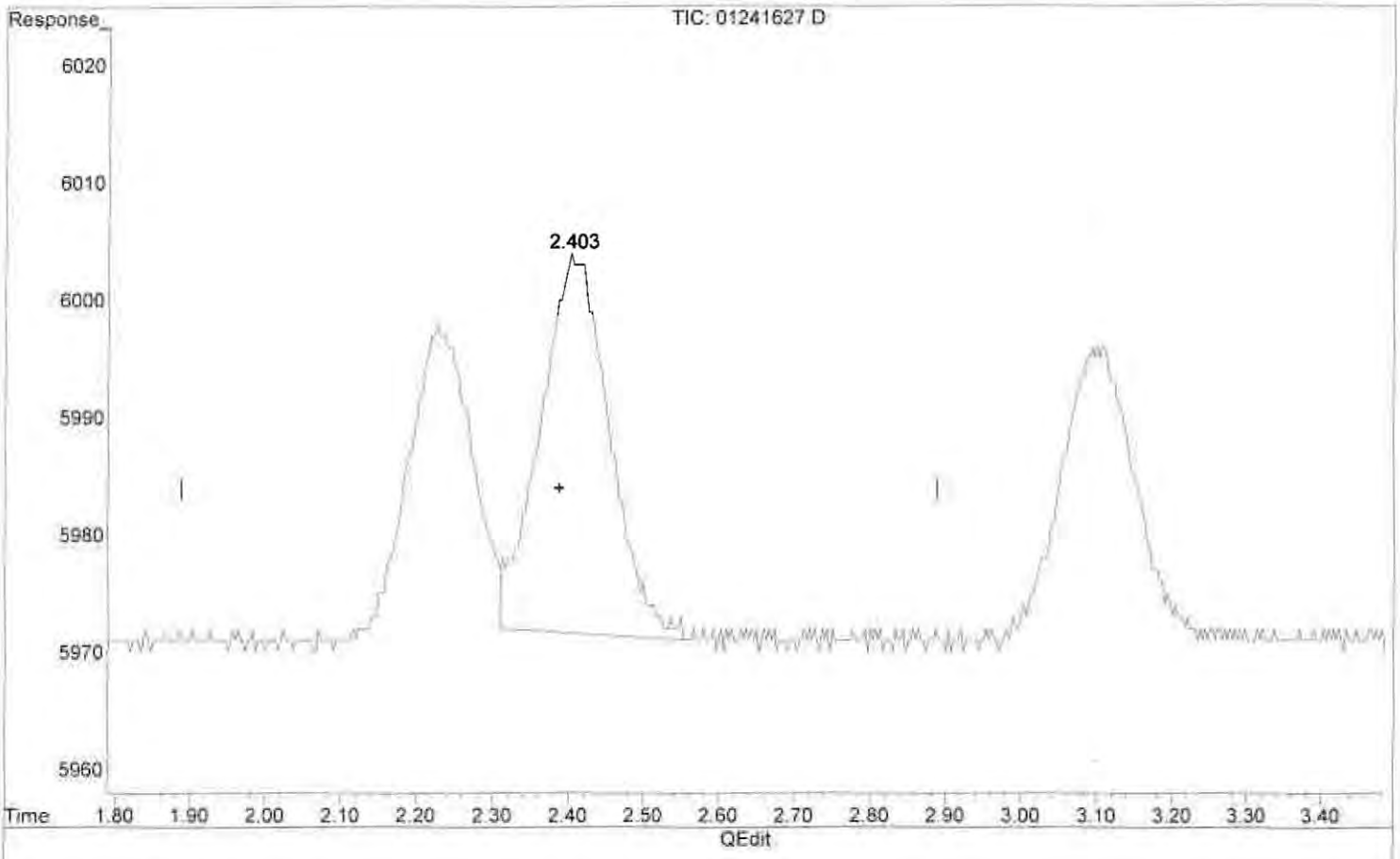
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241627.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 16:38
Operator : WH
Sample : std 0.1% S11-12041504
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 19:49:57 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 19:47:27 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(3) Nitrogen

2.417min 1033.747 ppm

response 2039

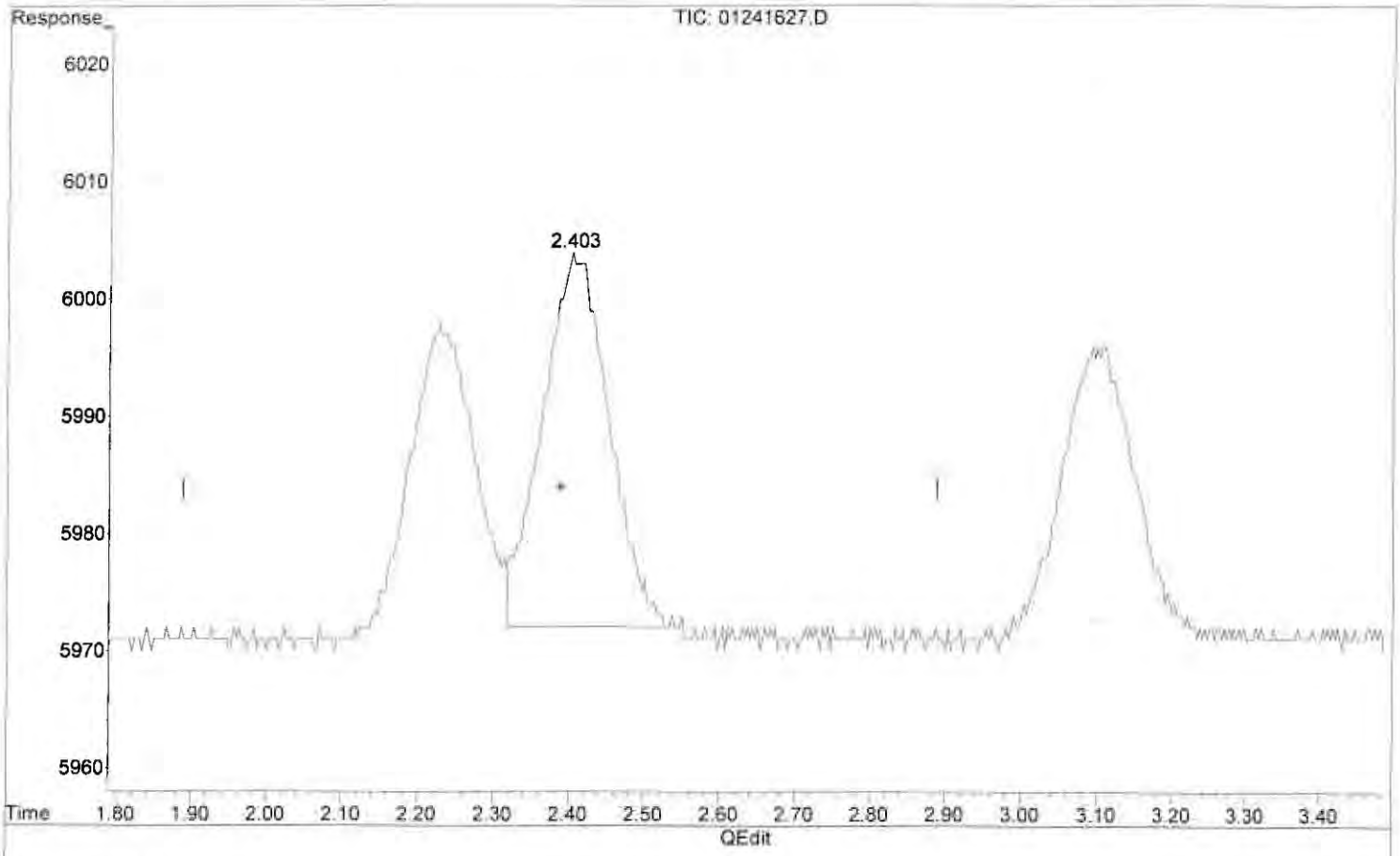
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241627.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 16:38
Operator : WH
Sample : std 0.1% S11-12041504
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 19:49:57 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 19:47:27 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(3) Nitrogen

2.403min 997.840 ppm m

response 1968

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241628.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 17:24
Operator : WH
Sample : std 0.5% S11-12041503
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 19:51:53 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 19:51:09 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.702	6556	5060.912	ppm
2)	Oxygen	2.216	7996	5436.317	ppm
3)	Nitrogen	2.394	9673	4915.911	ppm
4)	Carbon Monoxide	3.085	9006	5437.603	ppm
5)	Methane	5.072	6838	5699.991	ppm
6)	Carbon Dioxide	6.739	10890	5286.885	ppm

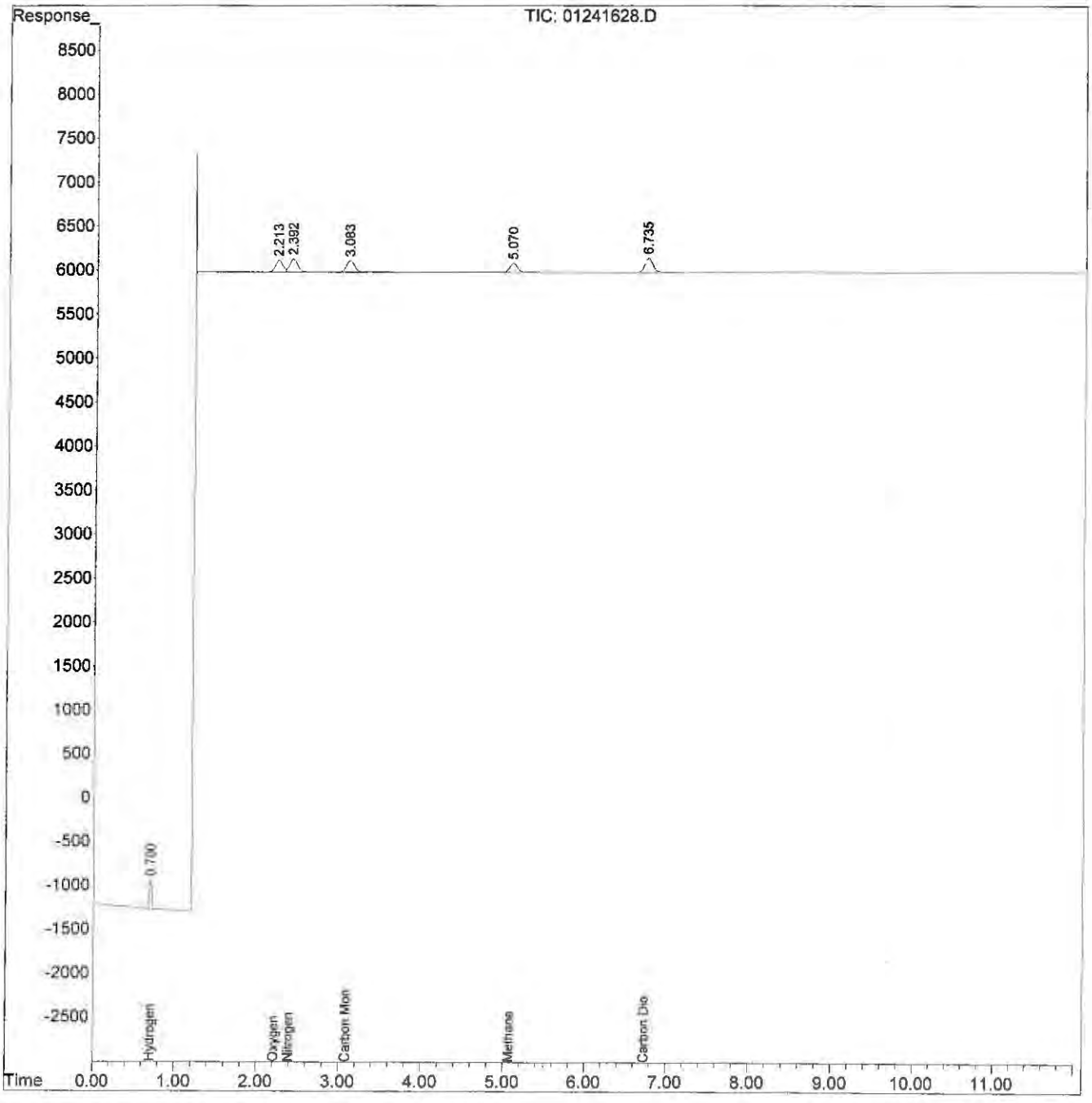
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241628.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 17:24
Operator : WH
Sample : std 0.5% S11-12041503
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 19:51:53 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 19:51:09 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241629.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 17:40
Operator : WH
Sample : std 1% S11-12041502
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 19:52:57 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 19:52:26 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc Units
Target Compounds				
1)	Hydrogen	0.702	12714	9754.784 ppm
2)	Oxygen	2.205	15559	10136.011 ppm
3)	Nitrogen	2.380	17417	8926.254 ppm
4)	Carbon Monoxide	3.070	17245	9976.228 ppm
5)	Methane	5.066	12928	10072.291 ppm
6)	Carbon Dioxide	6.734	20915	9870.566 ppm

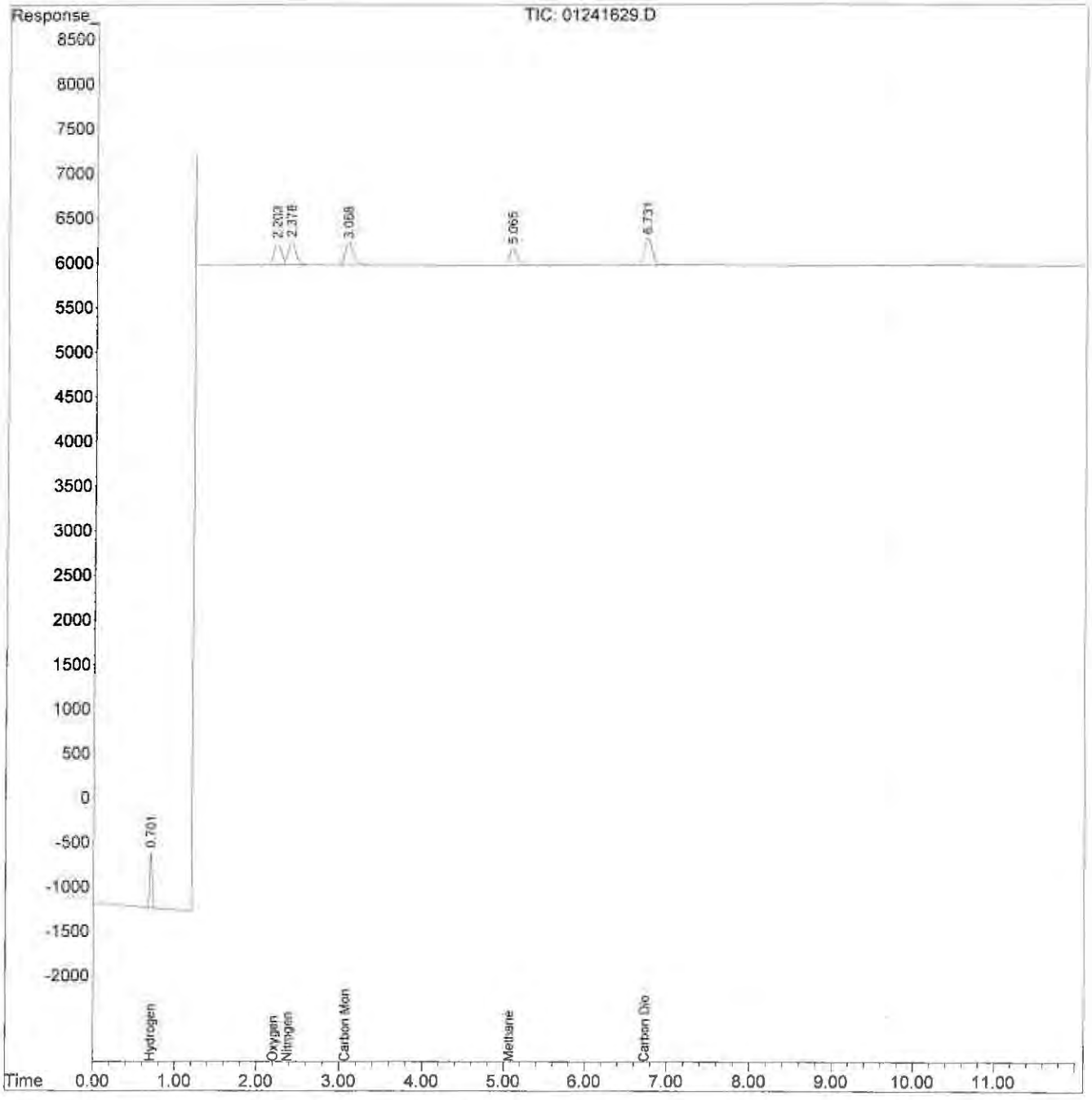
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241629.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 17:40
Operator : WH
Sample : std 1% S11-12041502
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 19:52:57 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 19:52:26 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241631.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 18:16
Operator : WH
Sample : std 4% S11-12041501
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 19:55:30 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 19:54:31 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.710	49891	38867.951	ppm
2)	Oxygen	2.225	60887	39358.143	ppm
3)	Nitrogen	2.402	68113	36714.941	ppm
4)	Carbon Monoxide	3.089	67550	39160.311	ppm
5)	Methane	5.075	50534	39329.825	ppm
6)	Carbon Dioxide	6.737	81525	38955.184	ppm

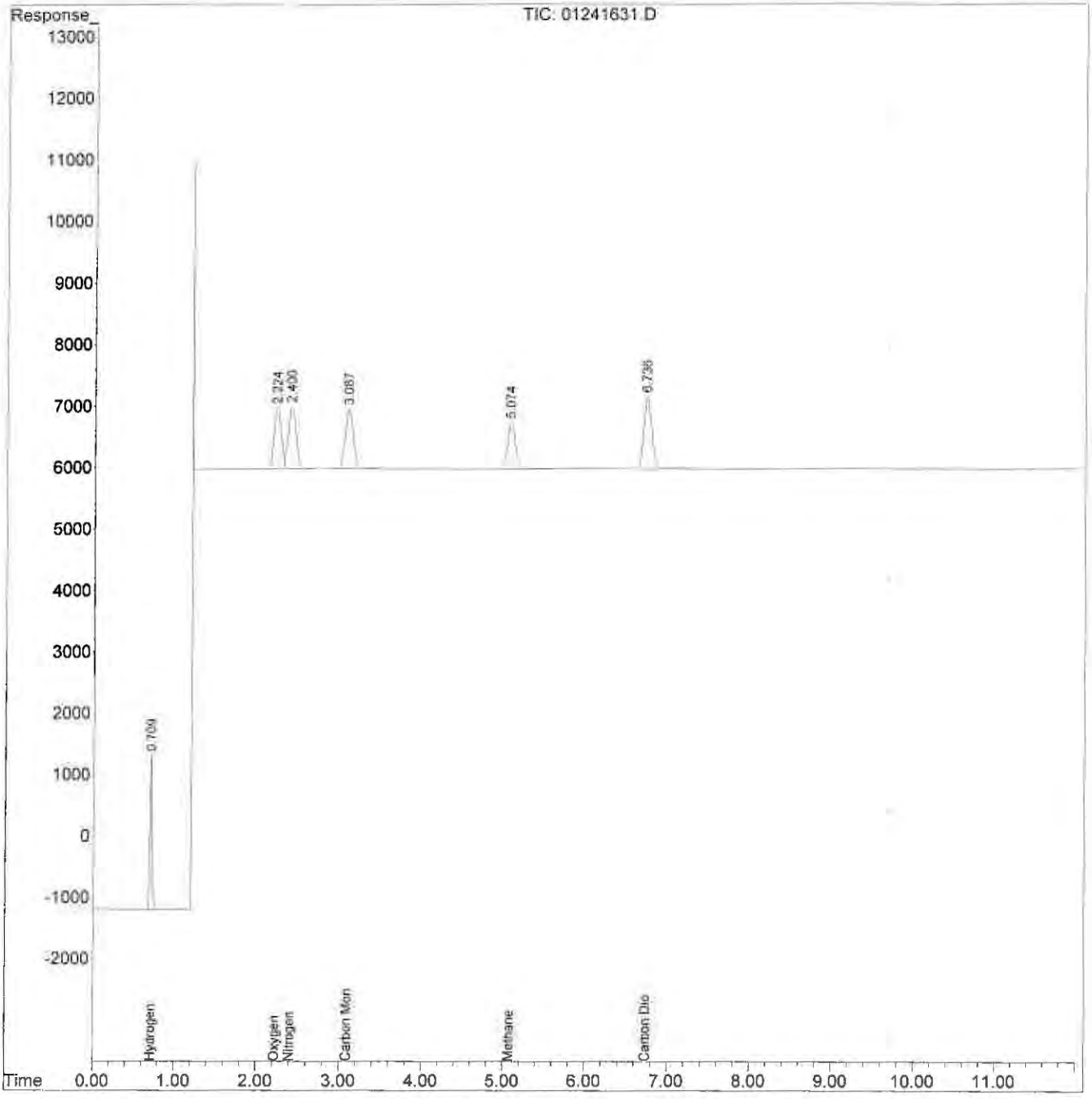
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241631.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 18:16
Operator : WH
Sample : std 4% S11-12041501
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 19:55:30 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 19:54:31 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (Not Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241632.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 18:33
Operator : WH
Sample : std 16.66% S11-12031501
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 19:57:29 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 19:54:31 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.704	209940	163554.818	ppm
2)	Oxygen	2.201	242272	156607.855	ppm
3)	Nitrogen	2.379	271989	146611.136	ppm
4)	Carbon Monoxide	3.067	269360	156155.237	ppm
5)	Methane	5.058	199750	155461.848	ppm
6)	Carbon Dioxide	6.719	321532	153637.732	ppm

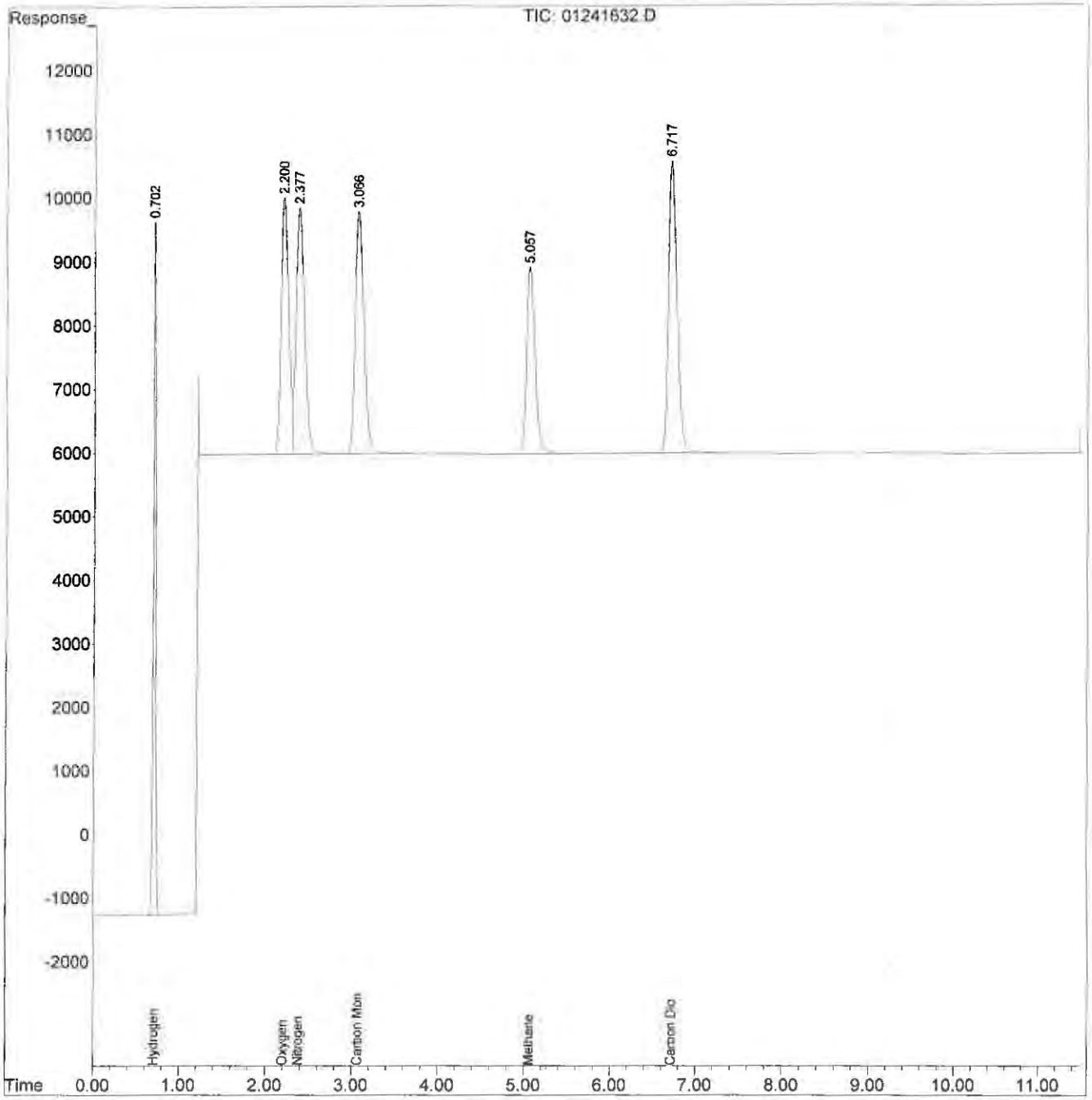
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (Not Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241632.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 18:33
Operator : WH
Sample : std 16.66% S11-12031501
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 19:57:29 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 19:54:31 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241633.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 19:02
Operator : WH
Sample : std co2
Misc : S17-02131201
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 19:58:39 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 19:57:50 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.000	0	N.D.	ppm	
2)	Oxygen	0.000	0	N.D.	ppm	d
3)	Nitrogen	0.000	0	N.D.	ppm	d
4)	Carbon Monoxide	0.000	0	N.D.	ppm	
5)	Methane	0.000	0	N.D.	ppm	
6)	Carbon Dioxide	6.651	1875387	910352.314	ppm	

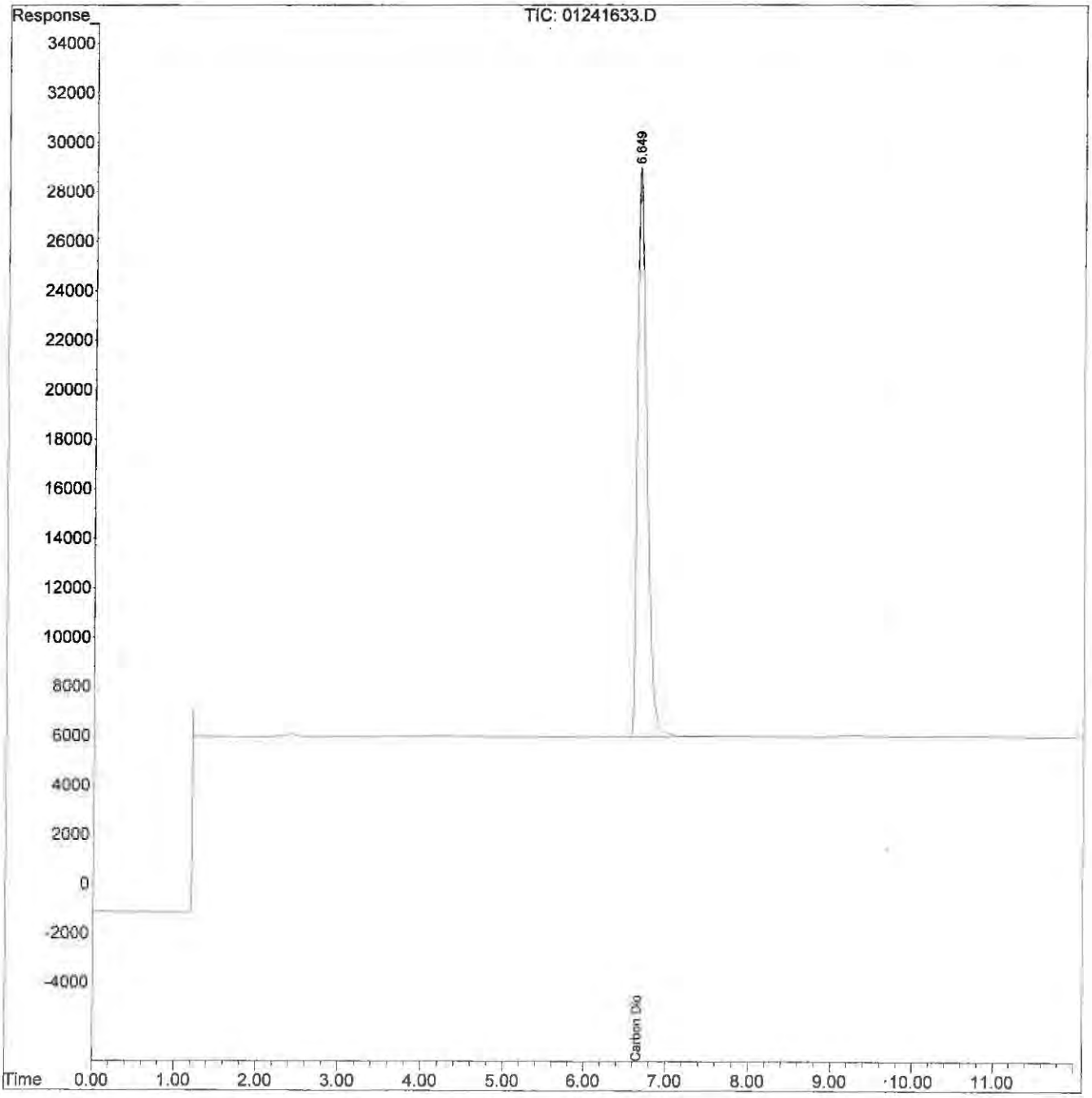
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241633.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 19:02
Operator : WH
Sample : std co2
Misc : S17-02131201
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 19:58:39 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 19:57:50 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241634.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 20:04
Operator : WH
Sample : std ch4
Misc : S30-11301401
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 20:36:02 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 20:00:56 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc Units
Target Compounds				
1)	Hydrogen	0.000	0	N.D. ppm
2)	Oxygen	0.000	0	N.D. ppm
3)	Nitrogen	0.000	0	N.D. ppm
4)	Carbon Monoxide	0.000	0	N.D. ppm
5)	Methane	4.976	1219046	961698.203 ppm
6)	Carbon Dioxide	0.000	0	N.D. ppm d

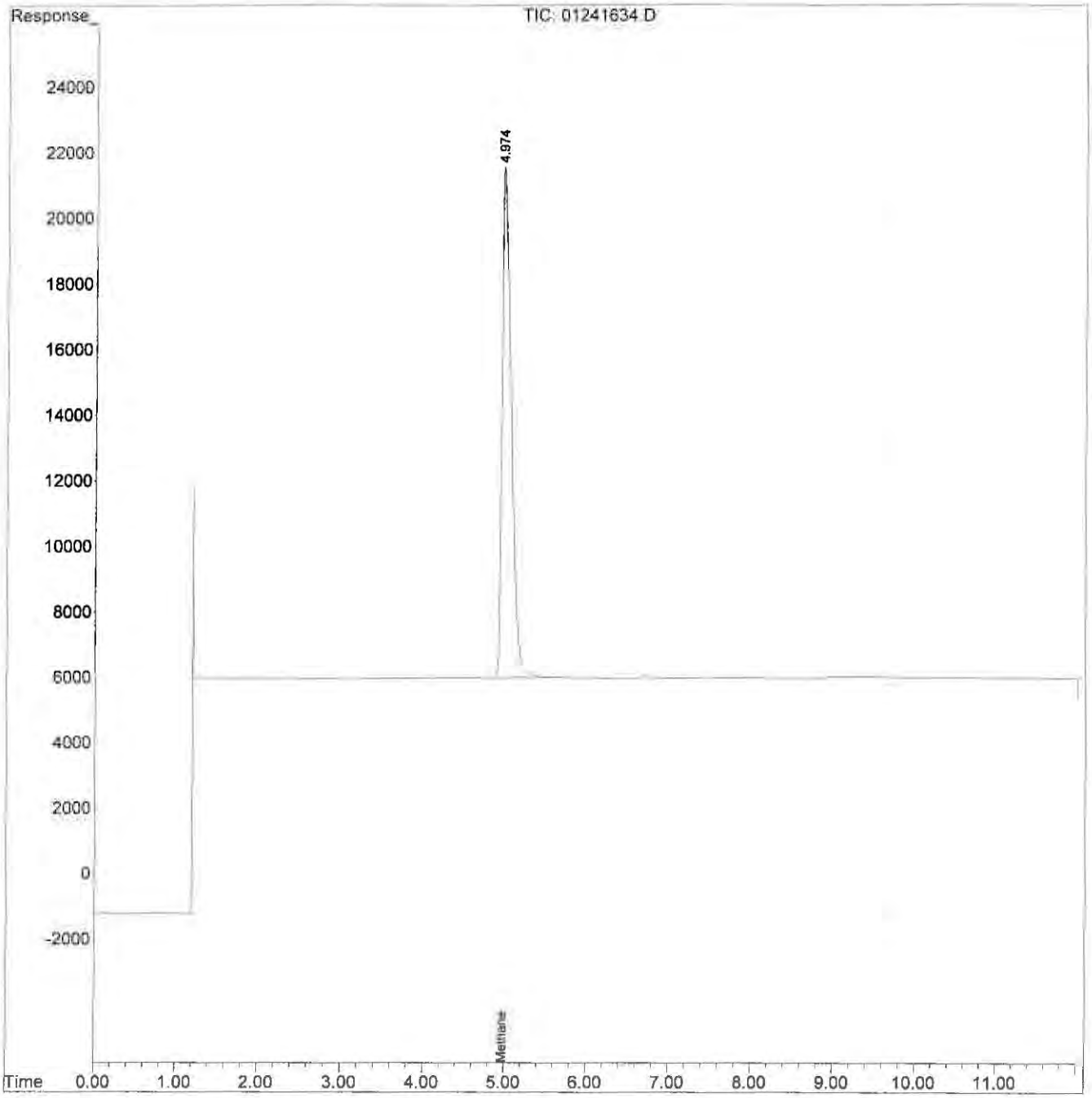
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241634.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 20:04
Operator : WH
Sample : std ch4
Misc : S30-11301401
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 20:36:02 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 20:00:56 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241635.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 20:39
Operator : WH
Sample : std h2
Misc : small loop of S11-12021501
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 20:56:25 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 20:37:18 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.686	638516	499304.194	ppm	
2)	Oxygen	0.000	0	N.D.	ppm	
3)	Nitrogen	0.000	0	N.D.	ppm	
4)	Carbon Monoxide	0.000	0	N.D.	ppm	
5)	Methane	0.000	0	N.D.	ppm	d
6)	Carbon Dioxide	0.000	0	N.D.	ppm	

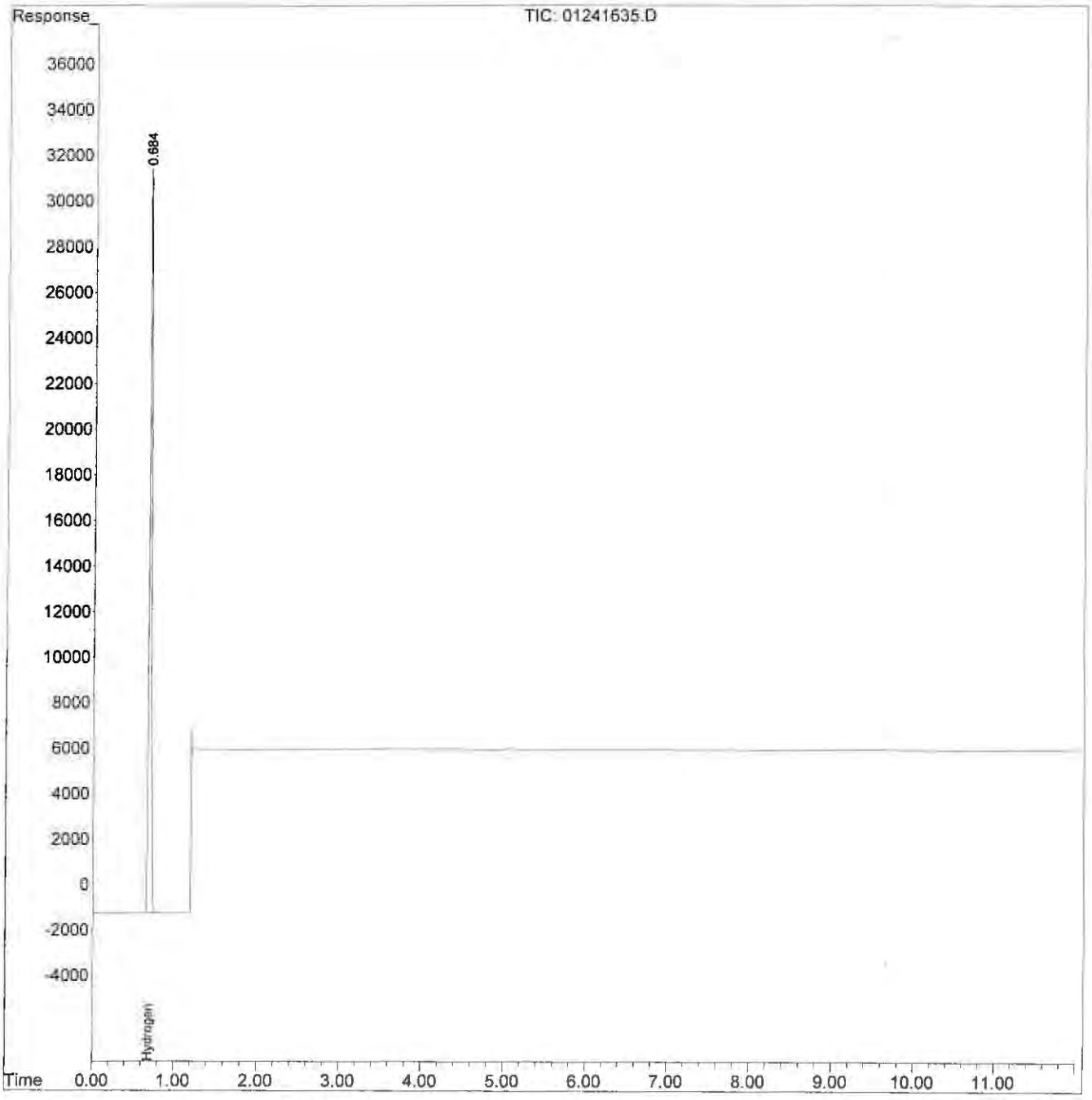
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241635.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 20:39
Operator : WH
Sample : std h2
Misc : small loop of S11-12021501
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 20:56:25 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 20:37:18 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241637.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 21:19
Operator : WH
Sample : STD N2
Misc : S11-12021502
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 21:35:15 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 21:18:19 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.000	0	N.D.	ppm	d
2)	Oxygen	0.000	0	N.D.	ppm	d
3)	Nitrogen	2.293	1540603	857917.729	ppm	
4)	Carbon Monoxide	0.000	0	N.D.	ppm	
5)	Methane	0.000	0	N.D.	ppm	d
6)	Carbon Dioxide	0.000	0	N.D.	ppm	

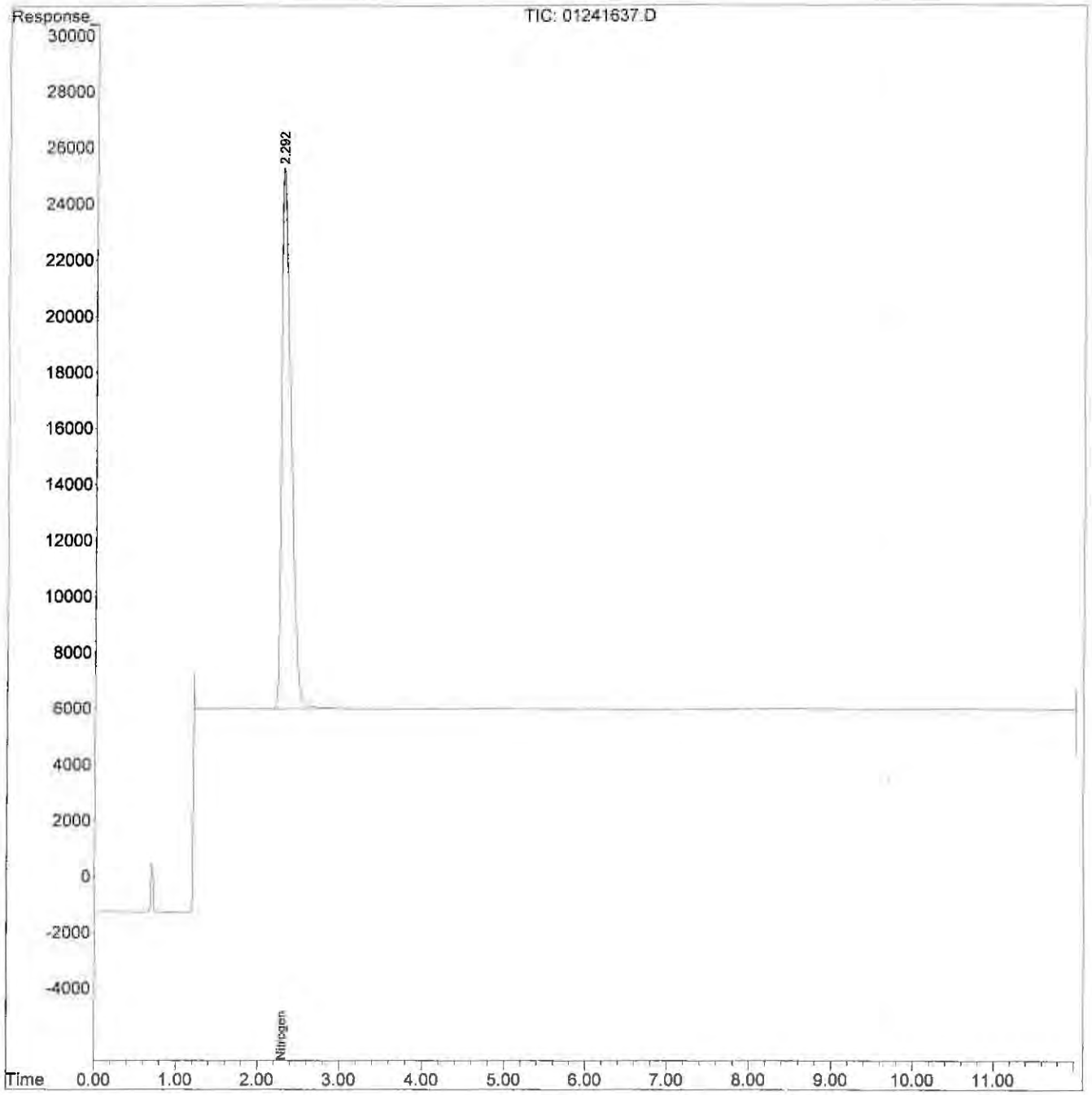
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241637.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 21:19
Operator : WH
Sample : STD N2
Misc : S11-12021502
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 21:35:15 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 21:18:19 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241639.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 21:56
Operator : WH
Sample : STD O2
Misc : s11-12021503
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 22:12:05 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 21:54:52 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc Units
Target Compounds				
1)	Hydrogen	0.000	0	N.D. ppm
2)	Oxygen	2.117	1478054	974822.367 ppm
3)	Nitrogen	0.000	0	N.D. ppm
4)	Carbon Monoxide	0.000	0	N.D. ppm
5)	Methane	0.000	0	N.D. ppm
6)	Carbon Dioxide	0.000	0	N.D. ppm

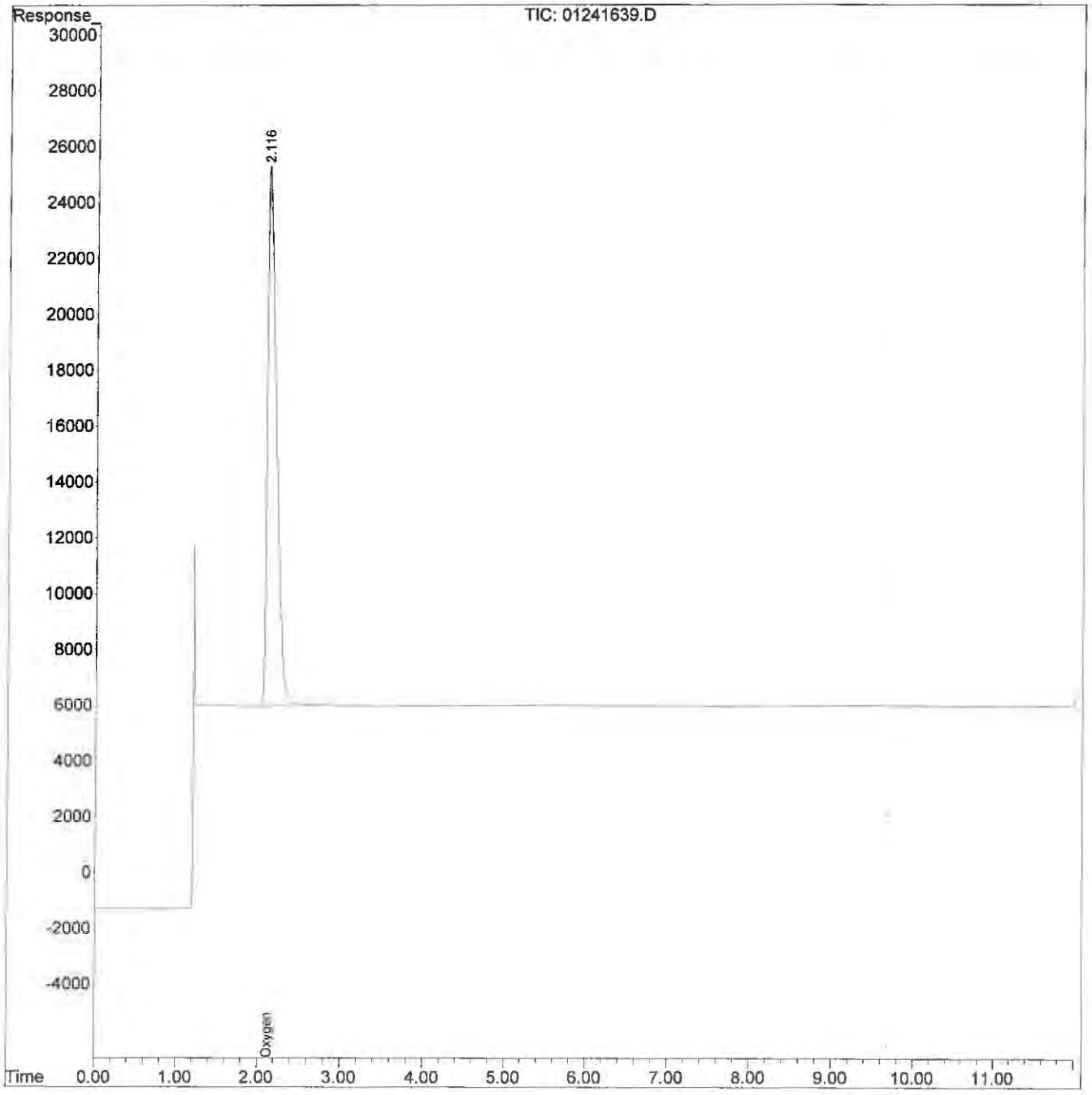
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241639.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 21:56
Operator : WH
Sample : STD O2
Misc : s11-12021503
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 22:12:05 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 21:54:52 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241640.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 22:13
Operator : WH
Sample : icv math
Misc : S30-01211601
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 22:32:48 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.702	49998	37951.830	ppm
2)	Oxygen	2.212	59532	39339.676	ppm
3)	Nitrogen	2.387	85443	48734.916	ppm
4)	Carbon Monoxide	3.074	82976	48885.688	ppm
5)	Methane	5.066	50003	39721.416	ppm
6)	Carbon Dioxide	6.728	95530	47075.322	ppm

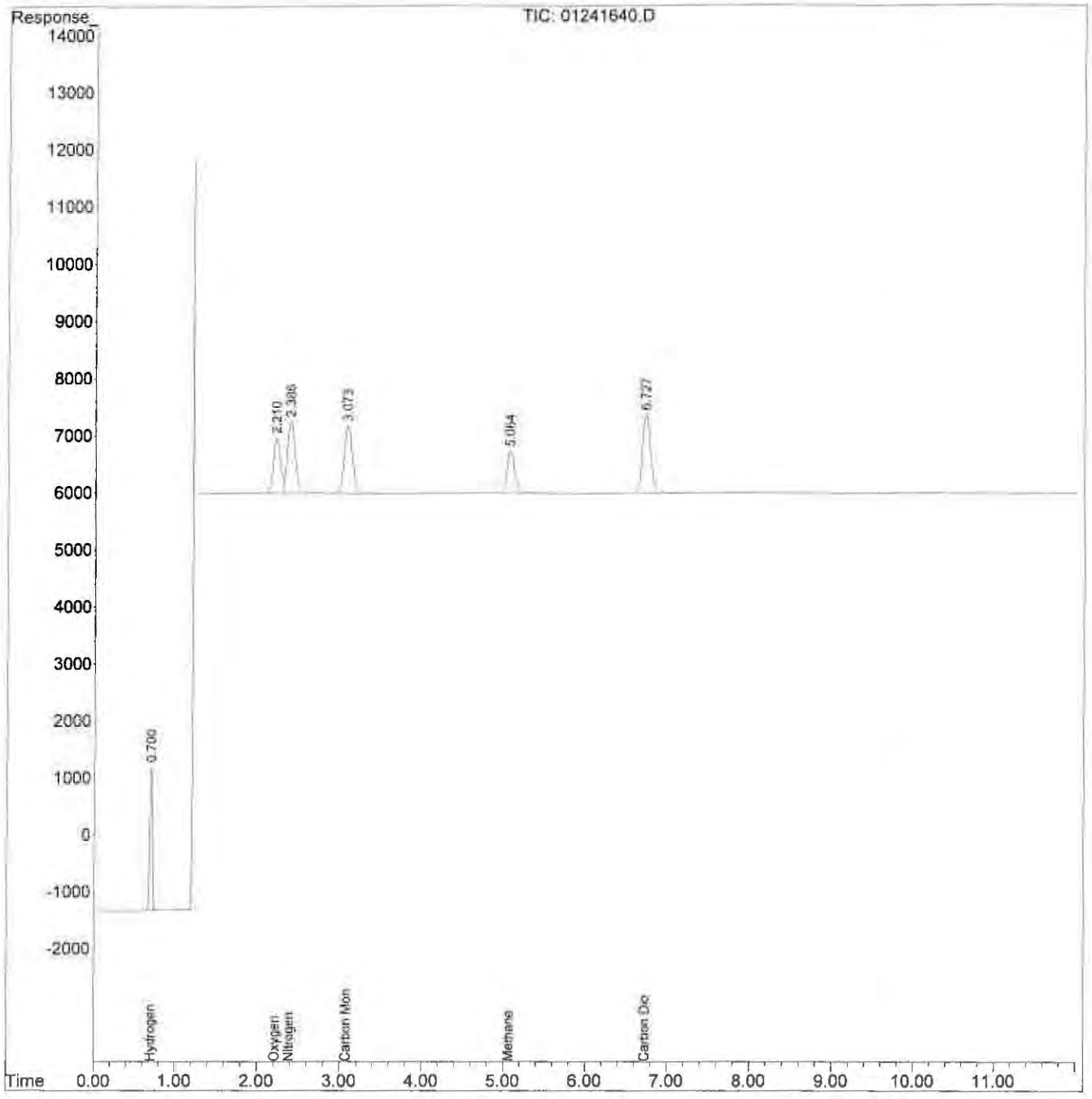
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241640.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 22:13
Operator : WH
Sample : icv math
Misc : S30-01211601
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 22:32:48 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241641.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 22:32
Operator : WH
Sample : icv scott
Misc : S30-12281502
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 22:48:42 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.706	49672	37704.490	ppm
2)	Oxygen	2.219	37333	24670.381	ppm
3)	Nitrogen	2.393	84889	48418.601	ppm
4)	Carbon Monoxide	3.079	83785	49362.383	ppm
5)	Methane	5.068	50643	40229.211	ppm
6)	Carbon Dioxide	6.729	97009	47803.956	ppm

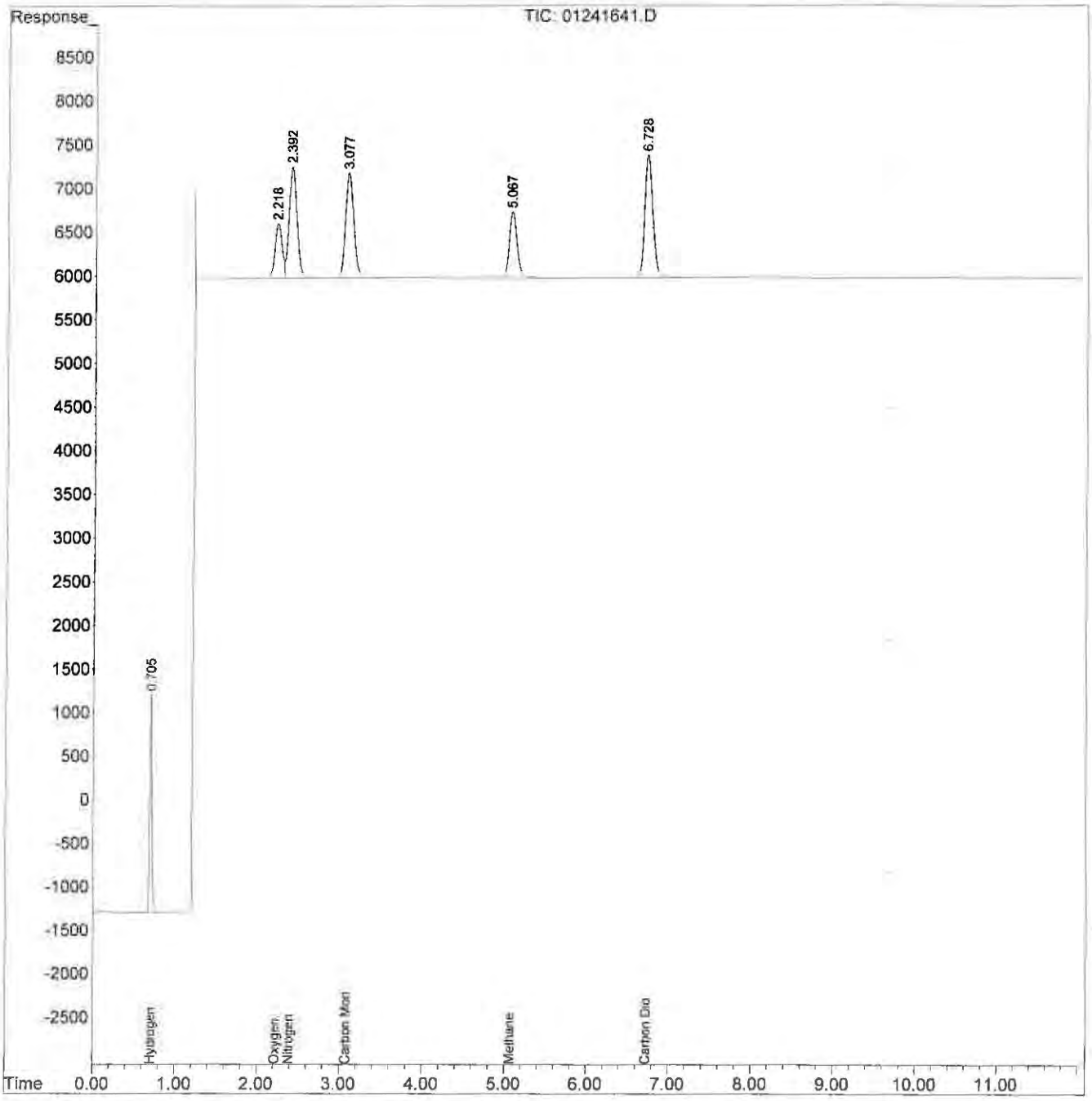
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241641.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 22:32
Operator : WH
Sample : icv scott
Misc : S30-12281502
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 22:48:42 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Modified EPA Method 3C Daily QC Summary

Client : Air Hygiene, Incorporated
Analyst : amf
Method Name : EPA 3C, ASTM D 1946-90, VOA-EPA3C

Instrument :
Date Analyzed : 10/13/2016

RT Summaries and QC Check (minutes)

Sample ID	Hydrogen	Oxygen	Nitrogen	Carbon Monoxide	Methane	Carbon Dioxide	File ID	Time
ICAL Mean RT	**0.708**	**2.188**	**2.368**	**3.076**	**5.045**	**6.707**		
RT Windows (+/- min)	**0.072**	**0.133**	**0.146**	**0.034**	**0.130**	**0.145**		
std s30-10051601	0.710	2.228	2.403	3.089	5.077	6.736	10131608.D	11:12
+/- 0.33min of ICAL Mean RT	Pass	Pass	Pass	Pass	Pass	Pass		
mb							10131609.D	11:24
lab air		2.167 Pass	2.303 Pass			6.742 Pass	10131610.D	11:40
lcs s11-07281601	0.710 Pass	2.225 Pass	2.402 Pass	3.088 Pass	5.077 Pass	6.738 Pass	10131611.D	11:58
lcsd s11-07281601	0.711 Pass	2.229 Pass	2.405 Pass	3.091 Pass	5.080 Pass	6.740 Pass	10131612.D	12:12
4745-001		2.227 Pass	2.402 Pass				10131615.D	13:03
4745-002		2.236 Pass	2.412 Pass				10131616.D	13:42
4745-003		2.227 Pass	2.399 Pass				10131617.D	13:58
4745-004		2.224 Pass	2.405 Pass				10131618.D	14:19
std s30-10051601	0.708 Pass	2.219 Pass	2.395 Pass	3.081 Pass	5.072 Pass	6.733 Pass	10131622.D	16:12

Continuing Calibration Standards Summary (ppm)

Sample ID	Hydrogen	Oxygen	Nitrogen	Carbon Monoxide	Methane	Carbon Dioxide	File ID	Time
ACTUAL	40000.0	40000.0	50000.0	50000.0	40000.0	50000.0		
CCV Criteria (+/- %D)	**15.0%**	**10.0%**	**10.0%**	**10.0%**	**10.0%**	**10.0%**		
std s30-10051601	40408.7 1.0%	40853.5 2.1%	50314.2 0.6%	51405.4 2.8%	41810.4 4.5%	49623.1 0.8%	10131608.D	11:12
std s30-10051601	41014.4 2.5%	41271.0 3.2%	50893.3 1.8%	51994.8 4.0%	42124.5 5.3%	50110.5 0.2%	10131622.D	16:12
	#####	#####	#####	#####	#####	#####		
	#####	#####	#####	#####	#####	#####		

Lab Dup Summary (ppm, without DF correction and nomalization)

Sample ID	Hydrogen	Oxygen	Nitrogen	Carbon Monoxide	Methane	Carbon Dioxide	File ID	Time

LCS / LCS Dup Summary (ppm, without DF correction)

Sample ID	Hydrogen	Oxygen	Nitrogen	Carbon Monoxide	Methane	Carbon Dioxide	File ID	Time
LCS Actual Conc. (ppm)	50000.0	50000.0	50000.0	50000.0	50000.0	50000.0		
LCS Criteria (% Range)	**94%-105%**	**97%-108%**	**89%-113%**	**98%-108%**	**94%-111%**	**94%-104%**		
lcs s11-07281601	49877.8	52039.3	52522.4	51194.1	49082.1	49204.7	10131611.D	11:58
LCS % Recovery	100% Pass	104% Pass	105% Pass	102% Pass	98% Pass	98% Pass		
lcsd s11-07281601	49883.2	51857.7	52275.0	50990.8	49142.0	49125.1	10131612.D	12:12
LCS % Recovery	100% Pass	104% Pass	105% Pass	102% Pass	98% Pass	98% Pass		
Duplicate % RPD	0.0%	0.3%	0.5%	0.4%	0.1%	0.2%		
Duplicate Criteria % RPD	**3%** Pass	**3%** Pass	**7%** Pass	**3%** Pass	**3%** Pass	**3%** Pass		

Lab Air QC Summary

Sample ID	Hydrogen	Oxygen	Nitrogen	Carbon Monoxid	Methane	Carbon Dioxide	Lab Air Criteria Total (90%-110%)
lab air		223101.2	798255.5			472.4	102.2% Pass
Lab Air Normalized (%)		21.83%	78.11%			0.05%	100.0%

Data Path : I:\GC01\DATA\FXG\2016_10\13\
Data File : 10131608.D
Signal(s) : TCD1A.CH
Acq On : 13 Oct 2016 11:12 am
Operator : amf
Sample : std s30-10051601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 13 11:28:29 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc Units
Target Compounds				
1)	Hydrogen	0.710	53235	40408.672 ppm
2)	Oxygen	2.228	61822	40853.486 ppm
3)	Nitrogen	2.403	88212	50314.222 ppm
4)	Carbon Monoxide	3.089	87253	51405.388 ppm
5)	Methane	5.077	52633	41810.431 ppm
6)	Carbon Dioxide	6.736	100700	49623.123 ppm

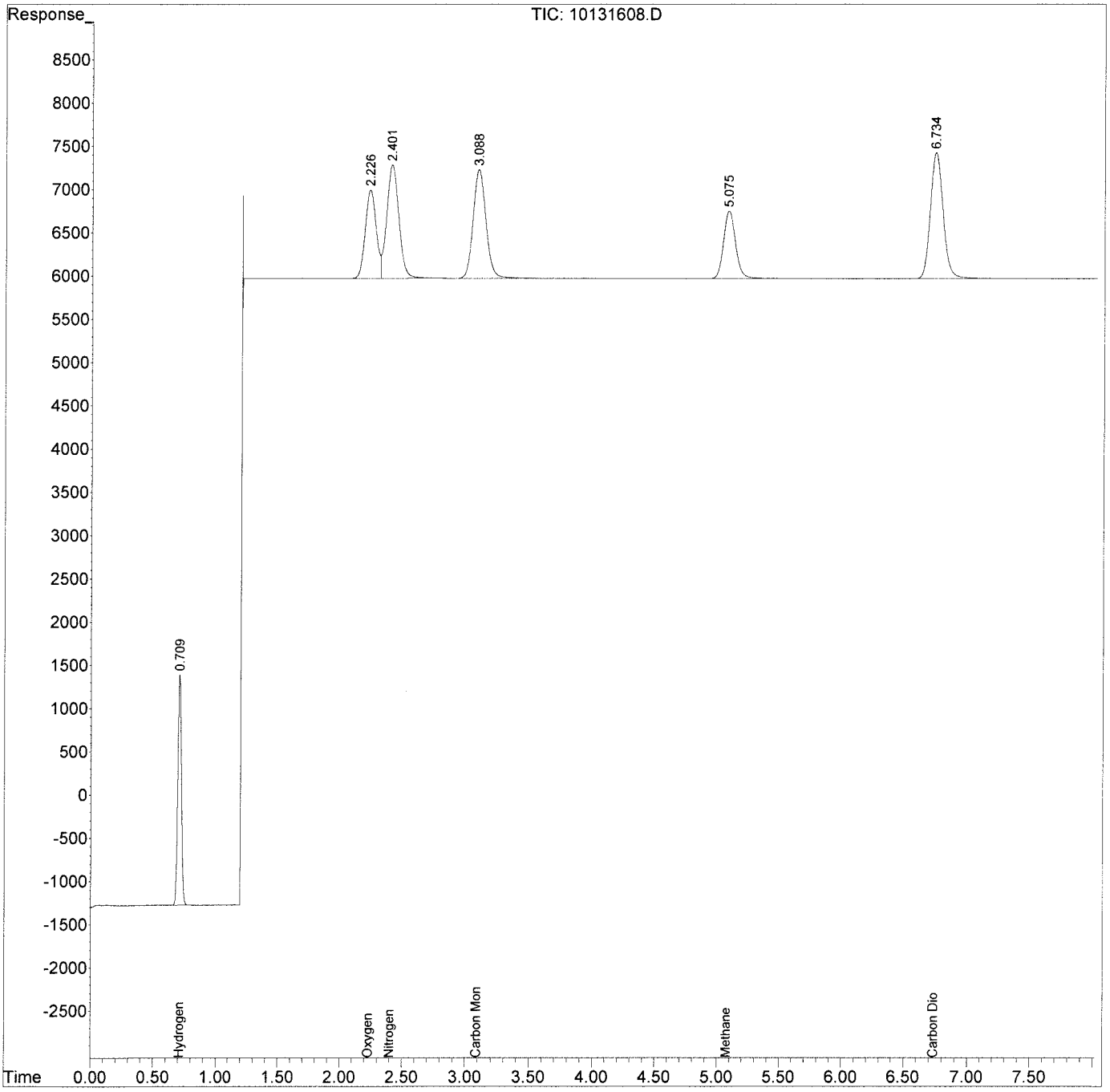
(f)=RT Delta > 1/2 Window (m)=manual int.

10/14/16

Data Path : I:\GC01\DATA\FXG\2016_10\13\
Data File : 10131608.D
Signal(s) : TCD1A.CH
Acq On : 13 Oct 2016 11:12 am
Operator : amf
Sample : std s30-10051601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 13 11:28:29 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_10\13\
Data File : 10131622.D
Signal(s) : TCD1A.CH
Acq On : 13 Oct 2016 4:12 pm
Operator : amf
Sample : std s30-10051601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 09:29:32 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

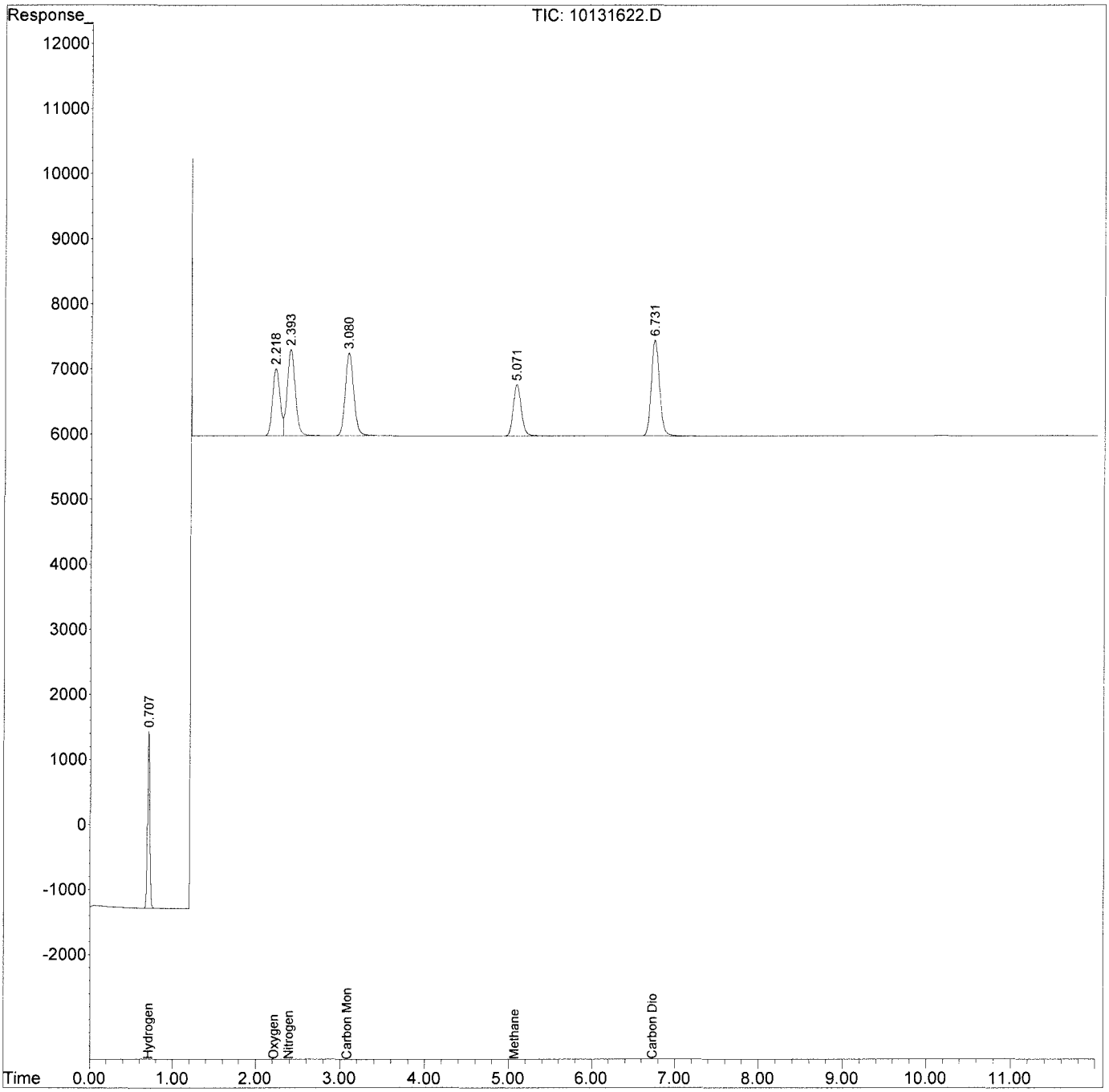
	Compound	R.T.	Response	Conc Units
Target Compounds				
1)	Hydrogen	0.708	54033	41014.445 ppm
2)	Oxygen	2.219	62454	41270.981 ppm
3)	Nitrogen	2.395	89227	50893.302 ppm
4)	Carbon Monoxide	3.081	88253	51994.779 ppm
5)	Methane	5.072	53029	42124.528 ppm
6)	Carbon Dioxide	6.733	101689	50110.449 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\13\
Data File : 10131622.D
Signal(s) : TCD1A.CH
Acq On : 13 Oct 2016 4:12 pm
Operator : amf
Sample : std s30-10051601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 09:29:32 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Injection Log

Directory: J:\GC01\DATA\FXG\2016_01\24

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	1	01241601.d	10.	std		24 Jan 2016 08:26
2	1	01241602.d	10.	mb		24 Jan 2016 08:41
3	1	01241603.d	10.	lab air		24 Jan 2016 08:57
4	1	01241604.d	10.	lcs		24 Jan 2016 09:14
5	1	01241605.d	10.	lcsd		24 Jan 2016 09:30
6	1	01241606.d	10.	0205-001		24 Jan 2016 09:46
7	1	01241607.d	10.	0205-002		24 Jan 2016 10:00
8	1	01241608.d	10.	0205-003		24 Jan 2016 10:16
9	1	01241609.d	10.	0205-004		24 Jan 2016 10:30
10	1	01241610.d	10.	0205-005		24 Jan 2016 10:45
11	1	01241611.d	10.	0205-006		24 Jan 2016 11:00
12	1	01241612.d	10.	0205-007		24 Jan 2016 11:22
13	1	01241613.d	10.	0205-008		24 Jan 2016 11:39
14	1	01241614.d	10.	0205-009		24 Jan 2016 11:55
15	1	01241615.d	10.	0205-010		24 Jan 2016 12:15
16	1	01241616.d	10.	std		24 Jan 2016 12:30
17	1	01241617.d	10.	0205-011		24 Jan 2016 12:46
18	1	01241618.d	10.	0205-012		24 Jan 2016 13:01
19	1	01241619.d	10.	0205-013		24 Jan 2016 13:16
20	1	01241620.d	10.	0205-014		24 Jan 2016 13:38
21	1	01241621.d	10.	std		24 Jan 2016 13:58
22	1	01241622.d	10.	wait		24 Jan 2016 14:32
23	1	01241623.d	10.	test		24 Jan 2016 15:15
24	1	01241624.d	10.	test		24 Jan 2016 15:35
25	1	01241625.d	10.	loq		24 Jan 2016 15:53
26	1	01241626.d	10.	loq		24 Jan 2016 16:08
27	1	01241627.d	10.	std 0.1% S11-12041504		24 Jan 2016 16:38
28	1	01241628.d	10.	std 0.5% S11-12041503		24 Jan 2016 17:24
29	1	01241629.d	10.	std 1% S11-12041502		24 Jan 2016 17:40
30	1	01241630.d	10.	std 4% S11-12041501		24 Jan 2016 17:57
31	1	01241631.d	10.	std 4% S11-12041501		24 Jan 2016 18:16
32	1	01241632.d	10.	std 16.66% S11-12031501		24 Jan 2016 18:33
33	1	01241633.d	10.	std co2	S17-02131201	24 Jan 2016 19:02
34	1	01241634.d	10.	std ch4	S30-11301401	24 Jan 2016 20:04
35	1	01241635.d	10.	std h2	small loop of S11...	24 Jan 2016 20:39
36	1	01241636.d	10.	lab air		24 Jan 2016 20:58
37	1	01241637.d	10.	STD N2	S11-12021502	24 Jan 2016 21:19
38	1	01241638.d	10.	o2		24 Jan 2016 21:38
39	1	01241639.d	10.	STD O2	s11-12021503	24 Jan 2016 21:56
40	1	01241640.d	10.	icv math	S30-01211601	24 Jan 2016 22:13
41	1	01241641.d	10.	icv scott	S30-12281502	24 Jan 2016 22:32
42	1	01241642.d	10.	mb		24 Jan 2016 22:48

Injection Log

Directory: I:\GC01\DATA\FXG\2016_10\13\

	Sample ID	Date/Time	Acquisition Method	File Name	Misc Info	Operator	Comments
	std s30-10051601	13 Oct 116 8:24 am	MFXGS25C.M	10131601.D		amf	
	mb	13 Oct 116 8:40 am	MFXGS25C.M	10131602.D		amf	
	lab air	13 Oct 116 9:12 am	MFXGS25C.M	10131603.D		amf	
	4820-001	13 Oct 116 10:04 am	MFXGS25C.M	10131604.D		amf	
	4820-001	13 Oct 116 10:20 am	MFXGS25C.M	10131605.D		amf	
	4820-001	13 Oct 116 10:36 am	MFXGS25C.M	10131606.D		amf	
	std s30-10051601	13 Oct 116 10:53 am	MFXGS25C.M	10131607.D		amf	
	std s30-10051601	13 Oct 116 11:12 am	MFXGS25C.M	10131608.D		amf	
	mb	13 Oct 116 11:24 am	MFXGS25C.M	10131609.D		amf	
	lab air	13 Oct 116 11:40 am	MFXGS25C.M	10131610.D		amf	
	lcs s11-07281601	13 Oct 116 11:58 am	MFXGS25C.M	10131611.D		amf	
	lcsd s11-07281601	13 Oct 116 12:12 pm	MFXGS25C.M	10131612.D		amf	
	4827-001	13 Oct 116 12:30 pm	MFXGS25C.M	10131613.D		amf	
	4827-002	13 Oct 116 12:46 pm	MFXGS25C.M	10131614.D		amf	
	4745-001	13 Oct 116 1:03 pm	MFXGS25C.M	10131615.D		amf	
	4745-002	13 Oct 116 1:42 pm	MFXGS25C.M	10131616.D		amf	
	4745-003	13 Oct 116 1:58 pm	MFXGS25C.M	10131617.D		amf	
	4745-004	13 Oct 116 2:19 pm	MFXGS25C.M	10131618.D		amf	
	4751-001	13 Oct 116 3:23 pm	MFXGS25C.M	10131619.D		amf	
	4817-001	13 Oct 116 3:40 pm	MFXGS25C.M	10131620.D		amf	
	4817-002	13 Oct 116 3:56 pm	MFXGS25C.M	10131621.D		amf	
	std s30-10051601	13 Oct 116 4:12 pm	MFXGS25C.M	10131622.D		amf	

Quantitation Report (QT Reviewed)

Data Path : J:\GC13\DATA\SCD\2016_10\11\
Data File : 10111606.D
Signal(s) : AIB1B.CH
Acq On : 11 Oct 2016 8:26 am
Operator : MC
Sample : 4745-001 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 11 16:46:31 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : ASTM D5504, VOA-S307M_SCD, VOA SH2O_SCD
QLast Update : Tue May 03 15:14:01 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :

		Compound	R.T.	Response	Conc	Units	
Target Compounds							
1)	Z	Hydrogen_Sulfide	0.000	0	N.D.	ppb	d
2)	W	Carbonyl_Sulfide	0.000	0	N.D.	ppb	
3)	T	Methyl_Mercaptan	0.000	0	N.D.	ppb	
4)	T	Ethyl_Mercaptan	0.000	0	N.D.	ppb	
5)	T	Dimethyl_Sulfide	2.671	521886	7.781	ppb	
6)	T	Carbon_Disulfide	2.880	206009	1.536	ppb	
7)	T	2-Propyl_Mercaptan	0.000	0	N.D.	ppb	
8)	T	t-Butyl_Mercaptan	0.000	0	N.D.	ppb	
9)	T	Propyl_Mercaptan	0.000	0	N.D.	ppb	
10)	T	Ethyl_Methyl_Sulfide	0.000	0	N.D.	ppb	
11)	T	Thiophene	0.000	0	N.D.	ppb	
12)	T	i-Butyl_Mercaptan	0.000	0	N.D.	ppb	
13)	T	Diethyl_Sulfide	0.000	0	N.D.	ppb	
14)	t	n-Butyl_Mercaptan	0.000	0	N.D.	ppb	
15)	t	Dimethyl_Disulfide	0.000	0	N.D.	ppb	
16)	T	2-Methyl_Thiophene	0.000	0	N.D.	ppb	
17)	t	3-Methyl_Thiophene	0.000	0	N.D.	ppb	
18)	T	Tetrahydrothiophene	0.000	0	N.D.	ppb	
19)	t	2,5-Dimethyl_Thiophene	0.000	0	N.D.	ppb	
20)	T	2-Ethyl_Thiophene	0.000	0	N.D.	ppb	
21)	T	Diethyl_Disulfide	9.110	273984	2.043	ppb	
22)	T	Methyltrisulfide	0.000	0	N.D.	ppb	

(f)=RT Delta > 1/2 Window (m)=manual int.

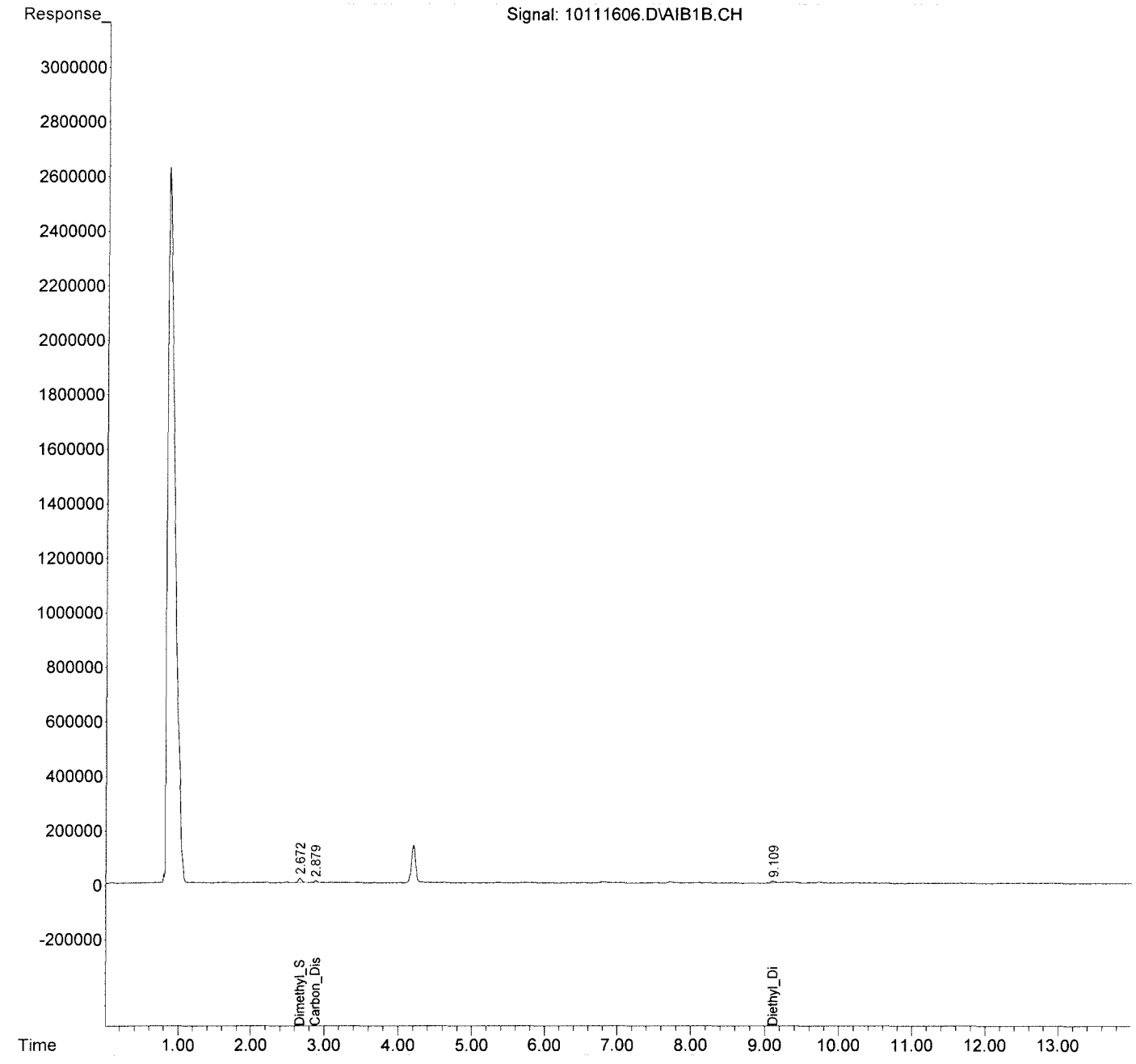
10/11/16

10/19/16

Data Path : J:\GC13\DATA\SCD\2016_10\11\
Data File : 10111606.D
Signal(s) : AIB1B.CH
Acq On : 11 Oct 2016 8:26 am
Operator : MC
Sample : 4745-001 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 11 16:46:31 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : ASTM D5504, VOA-S307M_SCD, VOA SH2O_SCD
QLast Update : Tue May 03 15:14:01 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :



Data Path : J:\GC13\DATA\SCD\2016_10\11\
Data File : 10111607.D
Signal(s) : AIB1B.CH
Acq On : 11 Oct 2016 8:44 am
Operator : MC
Sample : 4745-002 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 11 16:46:40 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : ASTM D5504, VOA-S307M_SCD, VOA SH2O_SCD
QLast Update : Tue May 03 15:14:01 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :

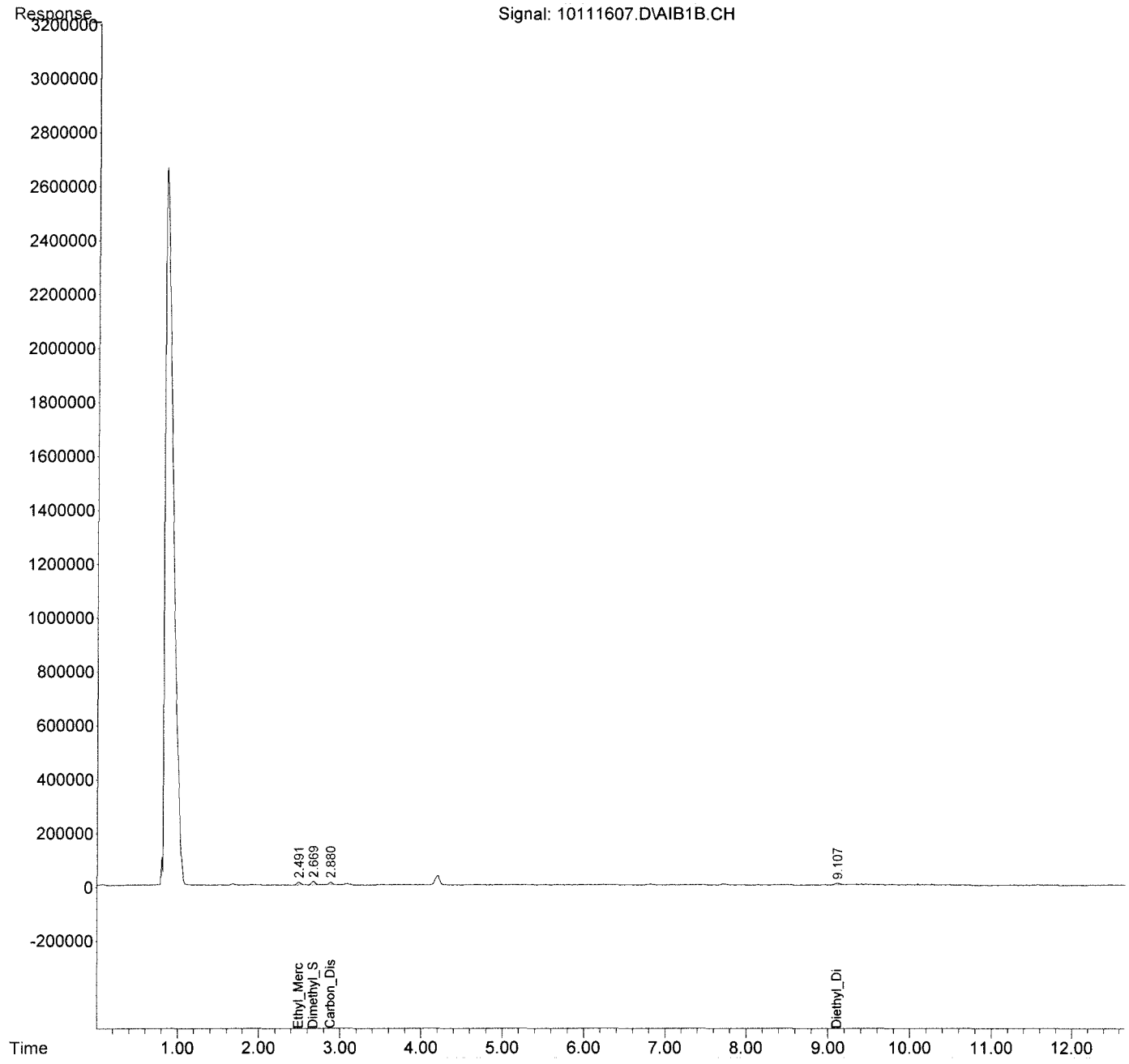
		Compound	R.T.	Response	Conc	Units	
Target Compounds							
1)	Z	Hydrogen_Sulfide	0.000	0	N.D.	ppb	d
2)	W	Carbonyl_Sulfide	0.000	0	N.D.	ppb	
3)	T	Methyl_Mercaptan	0.000	0	N.D.	ppb	
4)	T	Ethyl_Mercaptan	2.492	356873	5.321	ppb	
5)	T	Dimethyl_Sulfide	2.670	416717	6.213	ppb	
6)	T	Carbon_Disulfide	2.881	272043	2.028	ppb	
7)	T	2-Propyl_Mercaptan	0.000	0	N.D.	ppb	
8)	T	t-Butyl_Mercaptan	0.000	0	N.D.	ppb	
9)	T	Propyl_Mercaptan	0.000	0	N.D.	ppb	
10)	T	Ethyl_Methyl_Sulfide	0.000	0	N.D.	ppb	
11)	T	Thiophene	0.000	0	N.D.	ppb	
12)	T	i-Butyl_Mercaptan	0.000	0	N.D.	ppb	
13)	T	Diethyl_Sulfide	0.000	0	N.D.	ppb	
14)	t	n-Butyl_Mercaptan	0.000	0	N.D.	ppb	
15)	t	Dimethyl_Disulfide	0.000	0	N.D.	ppb	
16)	T	2-Methyl_Thiophene	0.000	0	N.D.	ppb	
17)	t	3-Methyl_Thiophene	0.000	0	N.D.	ppb	
18)	T	Tetrahydrothiophene	0.000	0	N.D.	ppb	
19)	t	2,5-Dimethyl_Thiophene	0.000	0	N.D.	ppb	
20)	T	2-Ethyl_Thiophene	0.000	0	N.D.	ppb	
21)	T	Diethyl_Disulfide	9.107	316418	2.359	ppb	
22)	T	Methyltrisulfide	0.000	0	N.D.	ppb	

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC13\DATA\SCD\2016_10\11\
Data File : 10111607.D
Signal(s) : AIB1B.CH
Acq On : 11 Oct 2016 8:44 am
Operator : MC
Sample : 4745-002 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 11 16:46:40 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : ASTM D5504, VOA-S307M_SCD, VOA SH2O_SCD
QLast Update : Tue May 03 15:14:01 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :



Data Path : J:\GC13\DATA\SCD\2016_10\11\
Data File : 10111608.D
Signal(s) : AIB1B.CH
Acq On : 11 Oct 2016 9:01 am
Operator : MC
Sample : 4745-003 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 11 16:46:49 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : ASTM D5504, VOA-S307M_SCD, VOA SH2O_SCD
QLast Update : Tue May 03 15:14:01 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :

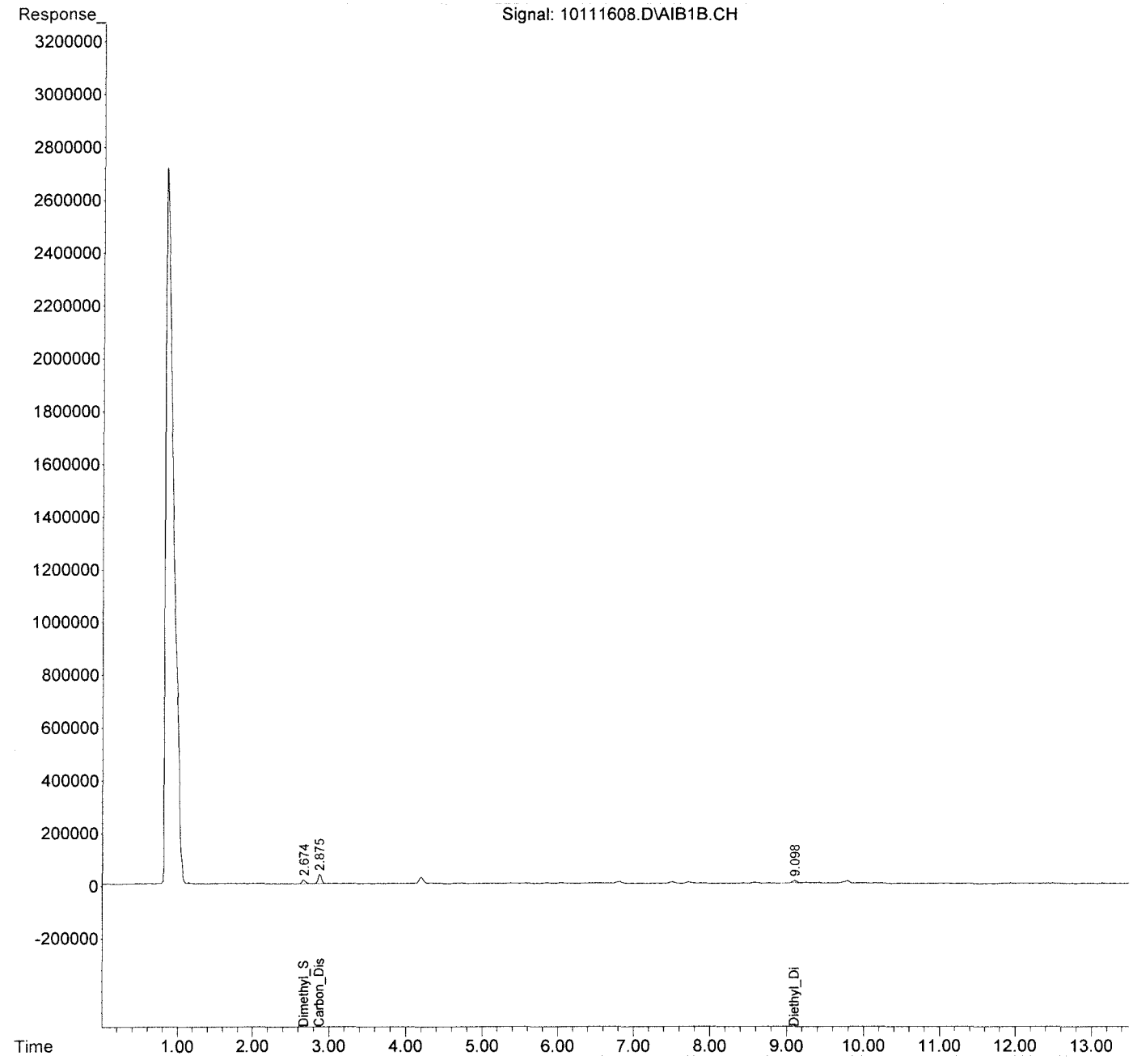
		Compound	R.T.	Response	Conc	Units	
Target Compounds							
1)	Z	Hydrogen_Sulfide	0.000	0	N.D.	ppb	d
2)	W	Carbonyl_Sulfide	0.000	0	N.D.	ppb	
3)	T	Methyl_Mercaptan	0.000	0	N.D.	ppb	
4)	T	Ethyl_Mercaptan	0.000	0	N.D.	ppb	
5)	T	Dimethyl_Sulfide	2.674	532161	7.935	ppb	
6)	T	Carbon_Disulfide	2.876	1142459	8.517	ppb	
7)	T	2-Propyl_Mercaptan	0.000	0	N.D.	ppb	
8)	T	t-Butyl_Mercaptan	0.000	0	N.D.	ppb	
9)	T	Propyl_Mercaptan	0.000	0	N.D.	ppb	
10)	T	Ethyl_Methyl_Sulfide	0.000	0	N.D.	ppb	
11)	T	Thiophene	0.000	0	N.D.	ppb	
12)	T	i-Butyl_Mercaptan	0.000	0	N.D.	ppb	
13)	T	Diethyl_Sulfide	0.000	0	N.D.	ppb	
14)	t	n-Butyl_Mercaptan	0.000	0	N.D.	ppb	
15)	t	Dimethyl_Disulfide	0.000	0	N.D.	ppb	
16)	T	2-Methyl_Thiophene	0.000	0	N.D.	ppb	
17)	t	3-Methyl_Thiophene	0.000	0	N.D.	ppb	
18)	T	Tetrahydrothiophene	0.000	0	N.D.	ppb	
19)	t	2,5-Dimethyl_Thiophene	0.000	0	N.D.	ppb	
20)	T	2-Ethyl_Thiophene	0.000	0	N.D.	ppb	
21)	T	Diethyl_Disulfide	9.100	399500	2.978	ppb	
22)	T	Methyltrisulfide	0.000	0	N.D.	ppb	

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC13\DATA\SCD\2016_10\11\
Data File : 10111608.D
Signal(s) : AIB1B.CH
Acq On : 11 Oct 2016 9:01 am
Operator : MC
Sample : 4745-003 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 11 16:46:49 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : ASTM D5504, VOA-S307M_SCD, VOA SH2O_SCD
QLast Update : Tue May 03 15:14:01 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC13\DATA\SCD\2016_10\11\
Data File : 10111609.D
Signal(s) : AIB1B.CH
Acq On : 11 Oct 2016 9:18 am
Operator : MC
Sample : 4745-004 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 11 16:46:59 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : ASTM D5504, VOA-S307M_SCD, VOA SH2O_SCD
QLast Update : Tue May 03 15:14:01 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :

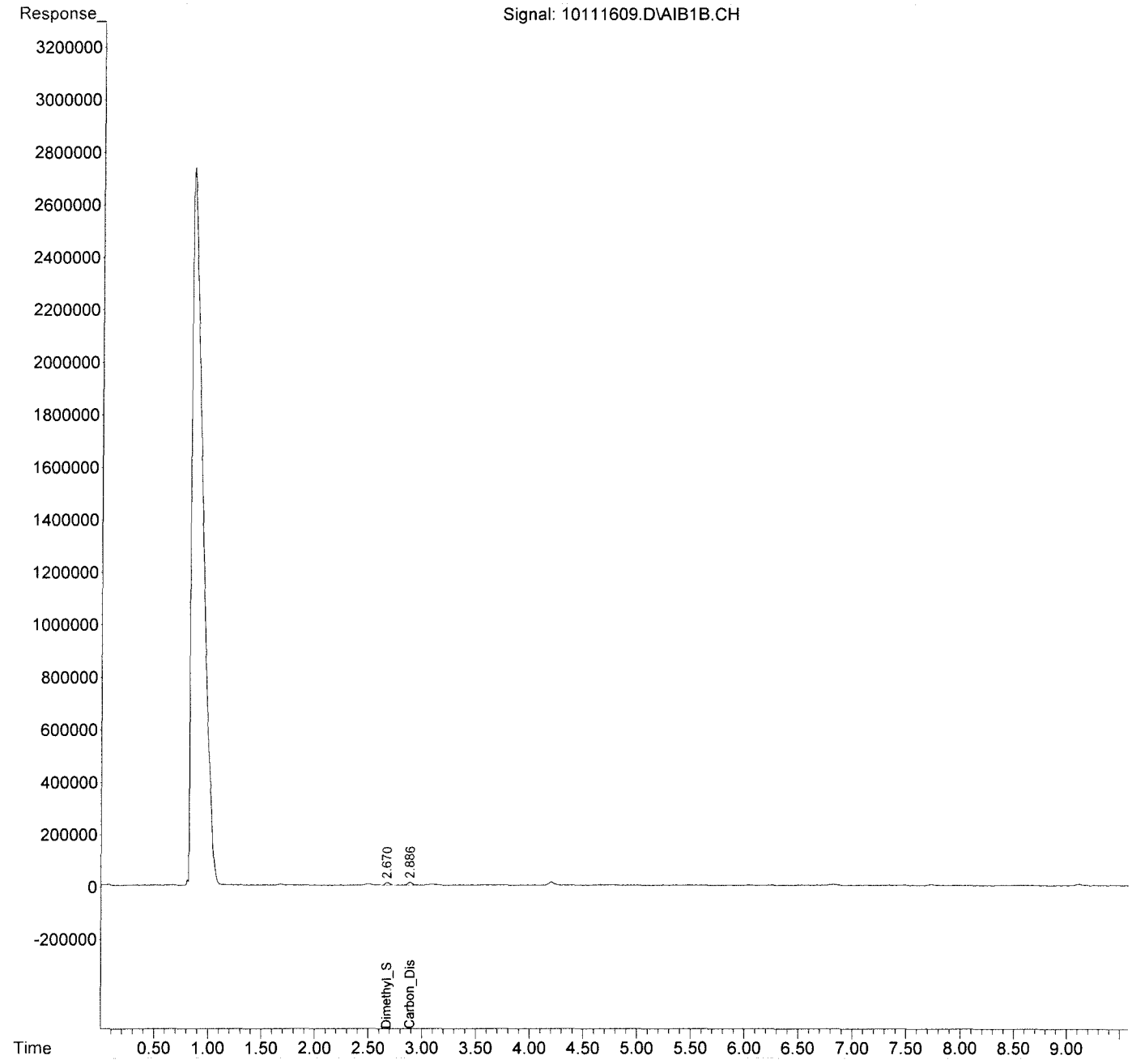
		Compound	R.T.	Response	Conc	Units	
Target Compounds							
1)	Z	Hydrogen_Sulfide	0.000	0	N.D.	ppb	d
2)	W	Carbonyl_Sulfide	0.000	0	N.D.	ppb	
3)	T	Methyl_Mercaptan	0.000	0	N.D.	ppb	
4)	T	Ethyl_Mercaptan	0.000	0	N.D.	ppb	
5)	T	Dimethyl_Sulfide	2.671	323995	4.831	ppb	
6)	T	Carbon_Disulfide	2.887	364822	2.720	ppb	
7)	T	2-Propyl_Mercaptan	0.000	0	N.D.	ppb	
8)	T	t-Butyl_Mercaptan	0.000	0	N.D.	ppb	
9)	T	Propyl_Mercaptan	0.000	0	N.D.	ppb	
10)	T	Ethyl_Methyl_Sulfide	0.000	0	N.D.	ppb	
11)	T	Thiophene	0.000	0	N.D.	ppb	
12)	T	i-Butyl_Mercaptan	0.000	0	N.D.	ppb	
13)	T	Diethyl_Sulfide	0.000	0	N.D.	ppb	
14)	t	n-Butyl_Mercaptan	0.000	0	N.D.	ppb	
15)	t	Dimethyl_Disulfide	0.000	0	N.D.	ppb	
16)	T	2-Methyl_Thiophene	0.000	0	N.D.	ppb	
17)	t	3-Methyl_Thiophene	0.000	0	N.D.	ppb	
18)	T	Tetrahydrothiophene	0.000	0	N.D.	ppb	
19)	t	2,5-Dimethyl_Thiophene	0.000	0	N.D.	ppb	
20)	T	2-Ethyl_Thiophene	0.000	0	N.D.	ppb	
21)	T	Diethyl_Disulfide	0.000	0	N.D.	ppb	
22)	T	Methyltrisulfide	0.000	0	N.D.	ppb	

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC13\DATA\SCD\2016_10\11\
Data File : 10111609.D
Signal(s) : AIB1B.CH
Acq On : 11 Oct 2016 9:18 am
Operator : MC
Sample : 4745-004 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 11 16:46:59 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : ASTM D5504, VOA-S307M_SCD, VOA SH2O_SCD
QLast Update : Tue May 03 15:14:01 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC13\DATA\SCD\2016_10\11\
Data File : 10111605.D
Signal(s) : AIB1B.CH
Acq On : 11 Oct 2016 8:08 am
Operator : MC
Sample : mb 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 11 16:10:47 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : ASTM D5504, VOA-S307M_SCD, VOA SH2O_SCD
QLast Update : Tue May 03 15:14:01 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :

		Compound	R.T.	Response	Conc	Units
Target Compounds						
1)	Z	Hydrogen_Sulfide	0.000	0	N.D.	ppb
2)	W	Carbonyl_Sulfide	0.000	0	N.D.	ppb
3)	T	Methyl_Mercaptan	0.000	0	N.D.	ppb
4)	T	Ethyl_Mercaptan	0.000	0	N.D.	ppb
5)	T	Dimethyl_Sulfide	0.000	0	N.D.	ppb
6)	T	Carbon_Disulfide	0.000	0	N.D.	ppb
7)	T	2-Propyl_Mercaptan	0.000	0	N.D.	ppb
8)	T	t-Butyl_Mercaptan	0.000	0	N.D.	ppb
9)	T	Propyl_Mercaptan	0.000	0	N.D.	ppb
10)	T	Ethyl_Methyl_Sulfide	0.000	0	N.D.	ppb
11)	T	Thiophene	0.000	0	N.D.	ppb
12)	T	i-Butyl_Mercaptan	0.000	0	N.D.	ppb
13)	T	Diethyl_Sulfide	0.000	0	N.D.	ppb
14)	t	n-Butyl_Mercaptan	0.000	0	N.D.	ppb
15)	t	Dimethyl_Disulfide	0.000	0	N.D.	ppb
16)	T	2-Methyl_Thiophene	0.000	0	N.D.	ppb
17)	t	3-Methyl_Thiophene	0.000	0	N.D.	ppb
18)	T	Tetrahydrothiophene	0.000	0	N.D.	ppb
19)	t	2,5-Dimethyl_Thiophene	0.000	0	N.D.	ppb
20)	T	2-Ethyl_Thiophene	0.000	0	N.D.	ppb
21)	T	Diethyl_Disulfide	0.000	0	N.D.	ppb
22)	T	Methyltrisulfide	0.000	0	N.D.	ppb

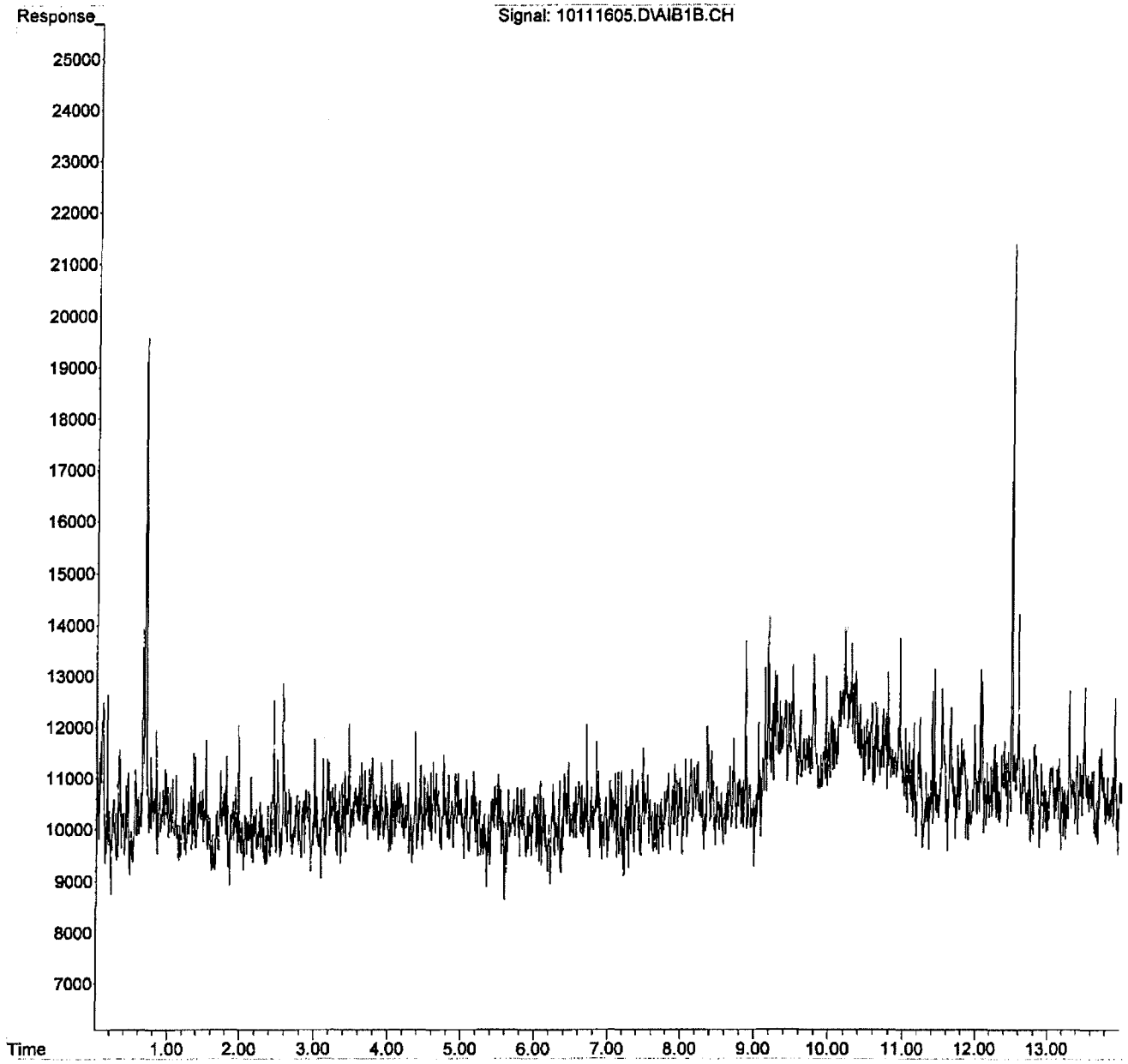
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC13\DATA\SCD\2016_10\11\
Data File : 10111605.D
Signal(s) : AIB1B.CH
Acq On : 11 Oct 2016 8:08 am
Operator : MC
Sample : mb 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 11 16:10:47 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : ASTM D5504, VOA-S307M_SCD, VOA SH2O_SCD
QLast Update : Tue May 03 15:14:01 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC13\DATA\SCD\2016_10\11\
Data File : 10111602.D
Signal(s) : AIB1B.CH
Acq On : 11 Oct 2016 7:43 am
Operator : MC
Sample : lcs s30-08221602
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 11 16:10:41 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : ASTM D5504, VOA-S307M_SCD, VOA SH2O_SCD
QLast Update : Tue May 03 15:14:01 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :

		Compound	R.T.	Response	Conc	Units
Target Compounds						
1)	Z	Hydrogen_Sulfide	0.840	61797149	989.276	ppb
2)	W	Carbonyl_Sulfide	0.974	74586045	1064.872	ppb
3)	T	Methyl_Mercaptan	1.684	67433623	1005.438	ppb
4)	T	Ethyl_Mercaptan	0.000	0	N.D.	ppb
5)	T	Dimethyl_Sulfide	0.000	0	N.D.	ppb
6)	T	Carbon_Disulfide	0.000	0	N.D.	ppb
7)	T	2-Propyl_Mercaptan	0.000	0	N.D.	ppb
8)	T	t-Butyl_Mercaptan	0.000	0	N.D.	ppb
9)	T	Propyl_Mercaptan	0.000	0	N.D.	ppb
10)	T	Ethyl_Methyl_Sulfide	0.000	0	N.D.	ppb
11)	T	Thiophene	0.000	0	N.D.	ppb
12)	T	i-Butyl_Mercaptan	0.000	0	N.D.	ppb
13)	T	Diethyl_Sulfide	0.000	0	N.D.	ppb
14)	t	n-Butyl_Mercaptan	0.000	0	N.D.	ppb
15)	t	Dimethyl_Disulfide	0.000	0	N.D.	ppb
16)	T	2-Methyl_Thiophene	0.000	0	N.D.	ppb
17)	t	3-Methyl_Thiophene	0.000	0	N.D.	ppb
18)	T	Tetrahydrothiophene	0.000	0	N.D.	ppb
19)	t	2,5-Dimethyl_Thiophene	0.000	0	N.D.	ppb
20)	T	2-Ethyl_Thiophene	0.000	0	N.D.	ppb
21)	T	Diethyl_Disulfide	0.000	0	N.D.	ppb
22)	T	Methyltrisulfide	0.000	0	N.D.	ppb

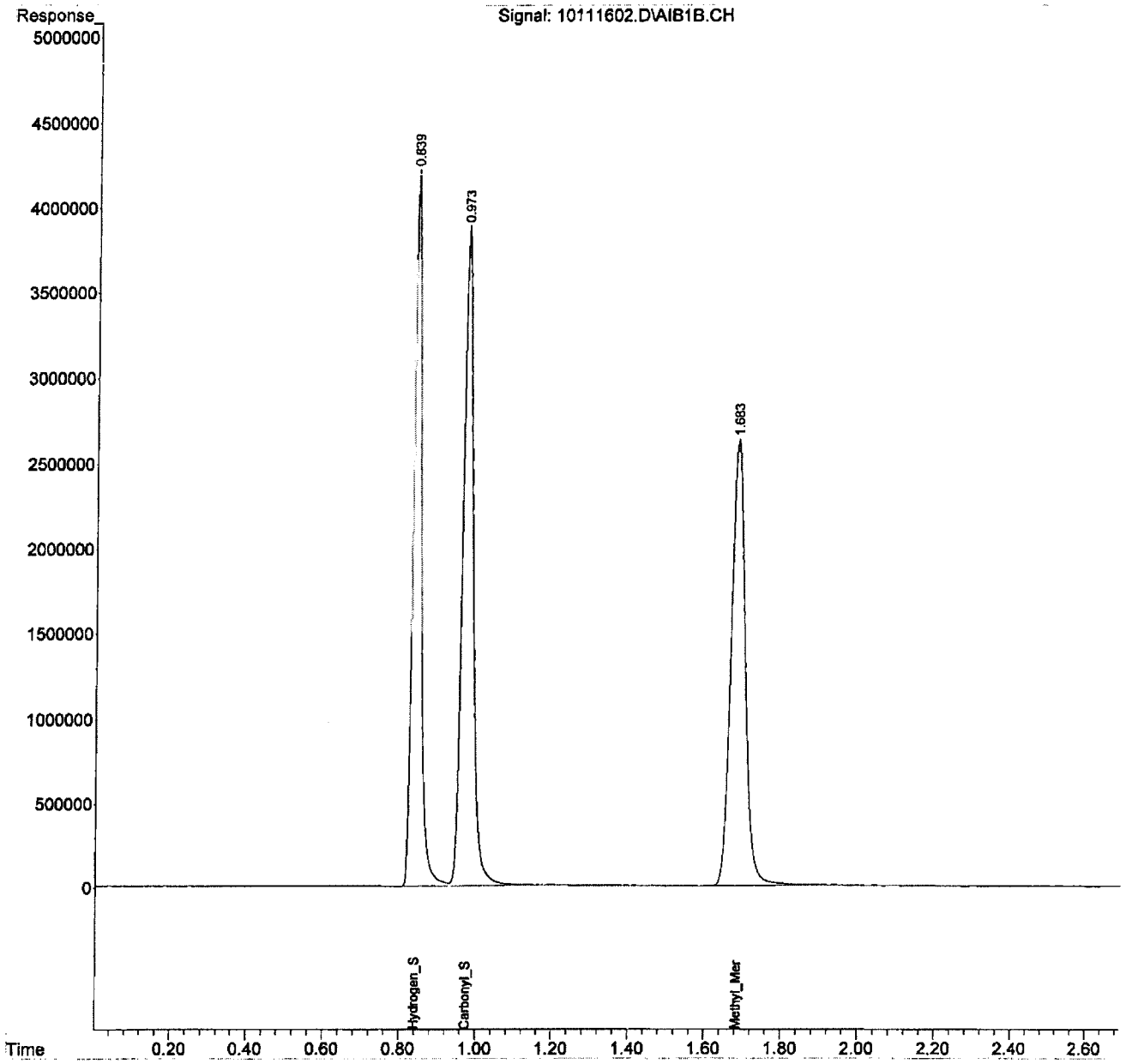
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC13\DATA\SCD\2016_10\11\
Data File : 10111602.D
Signal(s) : AIB1B.CH
Acq On : 11 Oct 2016 7:43 am
Operator : MC
Sample : lcs s30-08221602
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 11 16:10:41 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : ASTM D5504, VOA-S307M_SCD, VOA SH2O_SCD
QLast Update : Tue May 03 15:14:01 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :



Response Factor Report HP G1530A

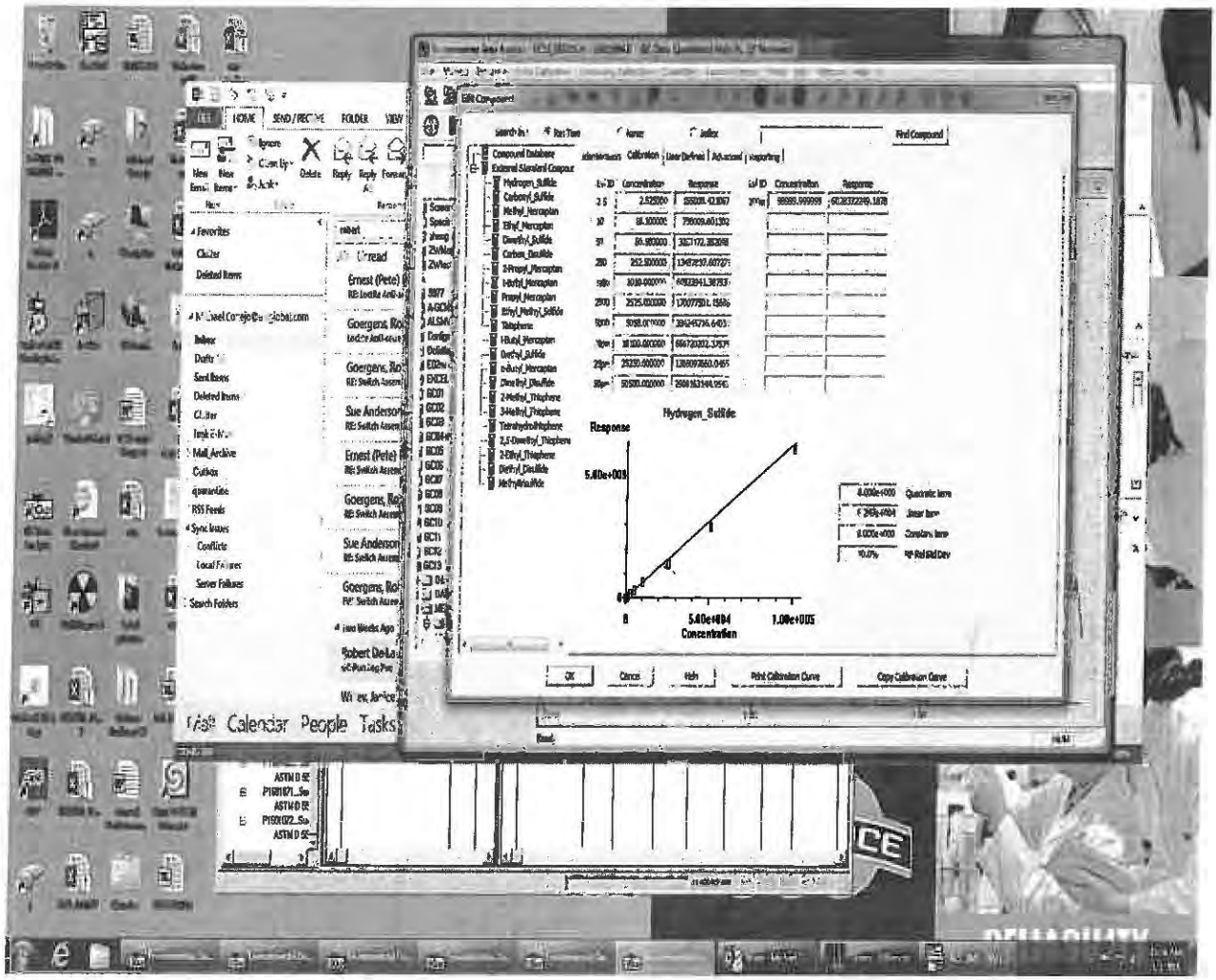
Method Path : J:\GC13\METHODS\
Method File : GC13_030216.M
Title : ASTM D5504, VOA-S307M_SCD, VOA SH2O_SCD
Last Update : Tue May 03 15:14:01 2016
Response Via : Initial Calibration

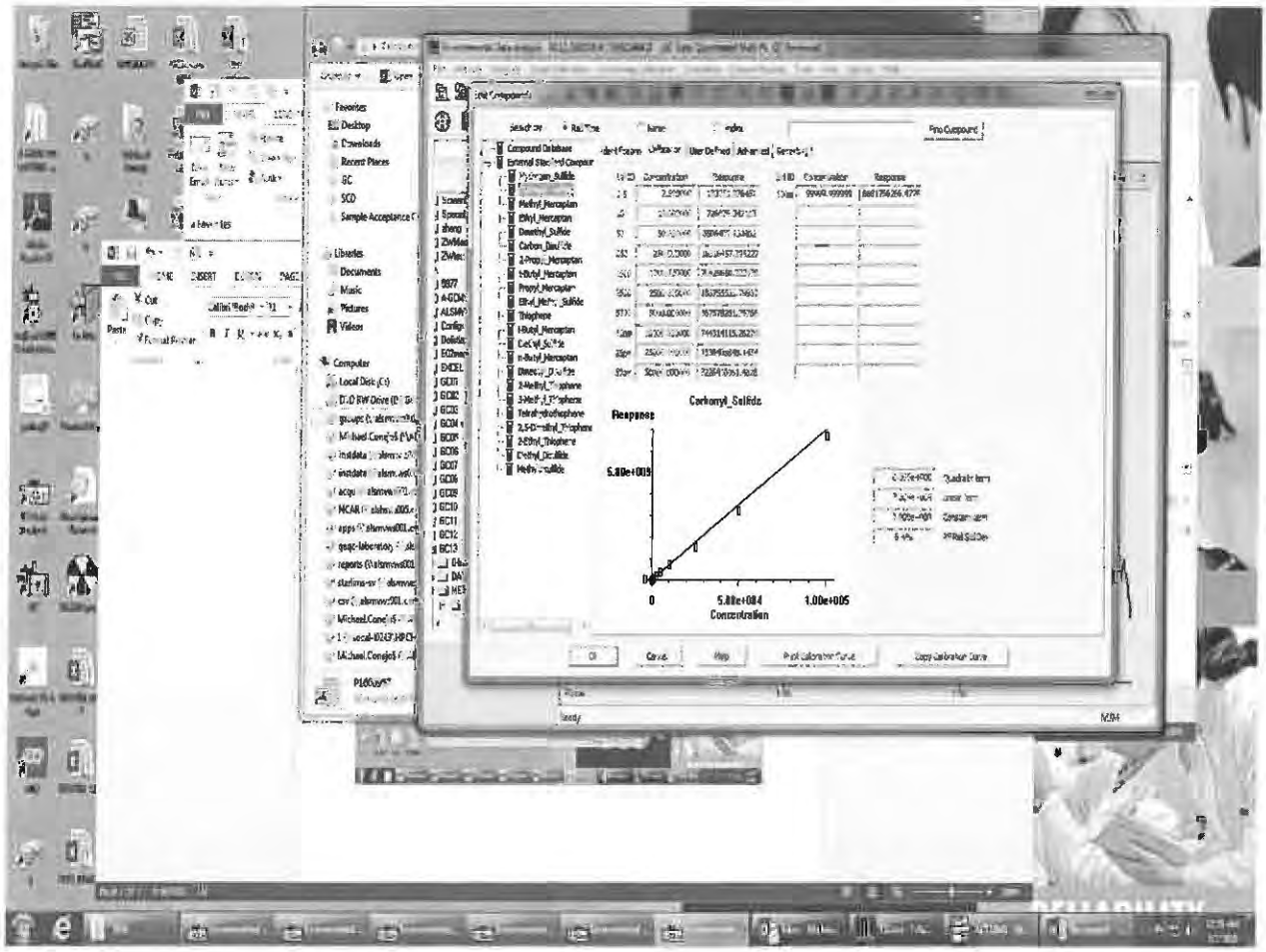
Calibration Files
2.5 =03021604.D 10 =03021605.D 50 =03021606.D
250 =03021607.D 1000 =03021608.D 2500 =03021609.D

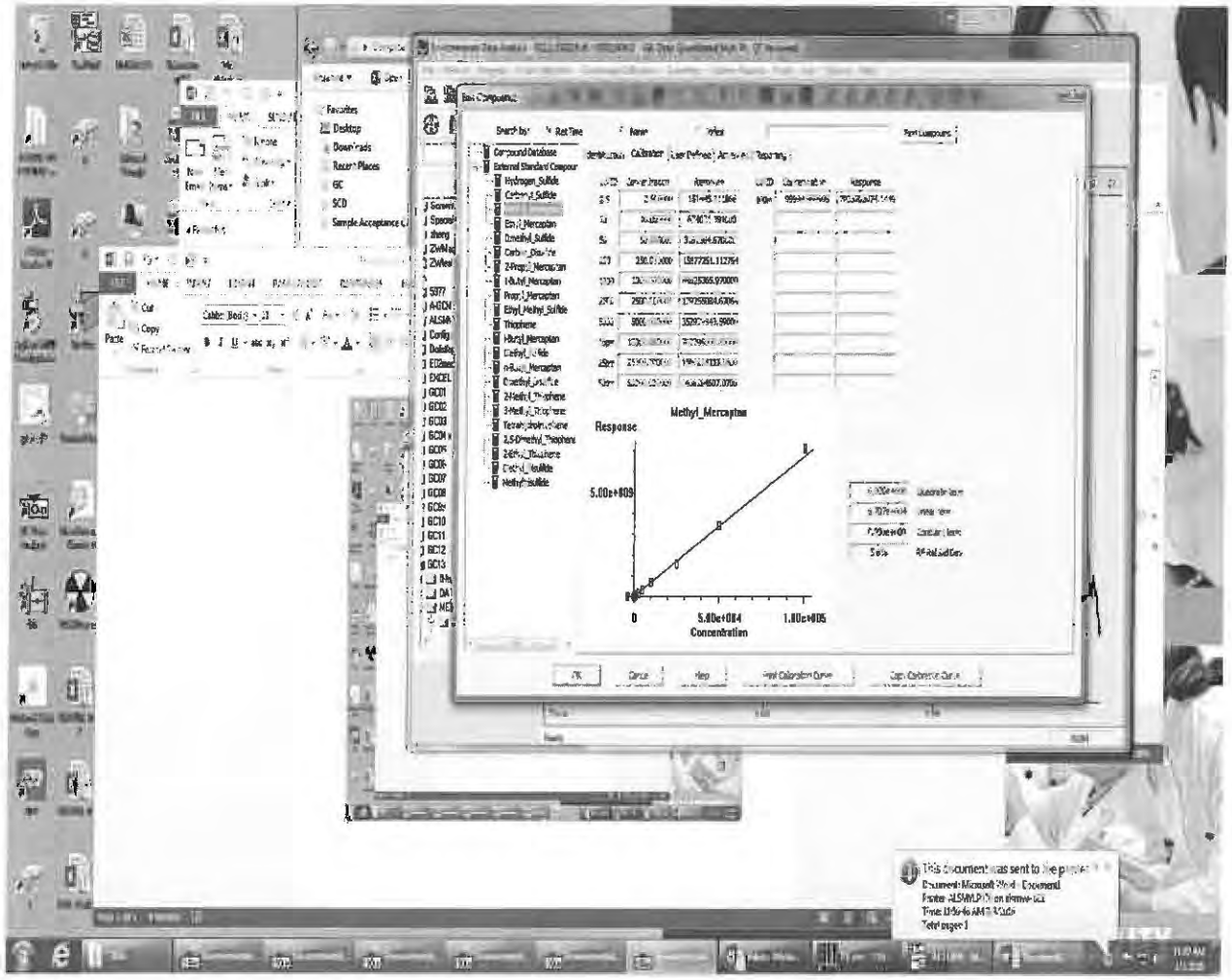
		Compound	2.5	10	50	250	1000	2500	Avg		%RSD
1)	Z	Hydrogen_Sulfide	6.139	7.485	6.511	5.330	6.032	6.736	6.247	E4	9.97
2)	W	Carbonyl_Sulfide	7.330	7.261	7.013	6.727	7.083	7.550	7.004	E4	6.38
3)	T	Methyl_Mercaptan	6.058	6.748	6.363	6.351	6.863	7.170	6.707	E4	5.78
4)	T	Ethyl_Mercaptan	6.058	6.748	6.363	6.351	6.863	7.170	6.707	E4	5.78
5)	T	Dimethyl_Sulfide	6.058	6.748	6.363	6.351	6.863	7.170	6.707	E4	5.78
6)	T	Carbon_Disulfide	1.212	1.350	1.273	1.270	1.373	1.434	1.341	E5	5.78
7)	T	2-Propyl_Merc...	6.058	6.748	6.363	6.351	6.863	7.170	6.707	E4	5.78
8)	T	t-Butyl_Merca...	6.058	6.748	6.363	6.351	6.863	7.170	6.707	E4	5.78
9)	T	Propyl_Mercaptan	6.058	6.748	6.363	6.351	6.863	7.170	6.707	E4	5.78
10)	T	Ethyl_Methyl_...	6.058	6.748	6.363	6.351	6.863	7.170	6.707	E4	5.78
11)	T	Thiophene	6.058	6.748	6.363	6.351	6.863	7.170	6.707	E4	5.78
12)	T	i-Butyl_Merca...	6.058	6.748	6.363	6.351	6.863	7.170	6.707	E4	5.78
13)	T	Diethyl_Sulfide	6.058	6.748	6.363	6.351	6.863	7.170	6.707	E4	5.78
14)	t	n-Butyl_Merca...	6.058	6.748	6.363	6.351	6.863	7.170	6.707	E4	5.78
15)	t	Dimethyl_Disu...	1.212	1.350	1.273	1.270	1.373	1.434	1.341	E5	5.78
16)	T	2-Methyl_Thio...	6.058	6.748	6.363	6.351	6.863	7.170	6.707	E4	5.78
17)	t	3-Methyl_Thio...	6.058	6.748	6.363	6.351	6.863	7.170	6.707	E4	5.78
18)	T	Tetrahydrothi...	6.058	6.748	6.363	6.351	6.863	7.170	6.707	E4	5.78
19)	t	2,5-Dimethyl_...	6.058	6.748	6.363	6.351	6.863	7.170	6.707	E4	5.78
20)	T	2-Ethyl_Thiop...	6.058	6.748	6.363	6.351	6.863	7.170	6.707	E4	5.78
21)	T	Diethyl_Disul...	1.212	1.350	1.273	1.270	1.373	1.434	1.341	E5	5.78
22)	T	Methyltrisulfide	1.212	1.350	1.273	1.270	1.373	1.434	1.341	E5	5.78

(#) = Out of Range ### Number of calibration levels exceeded format ###

GC13_030216.M Tue May 03 15:29:12 2016


Hydrogen_Sulfide
Response
Concentration
OK
Close
Help
Print Calibration Curve
Copy Calibration Curve
Mail Calendar People Tasks


Carbonyl_Sulfide
Response
5.00e+005
0
5.00e+004
1.00e+005
Concentration


Methyl_Mercaptan
Response
5.00e+009
0
5.00e+004
1.00e+005
Concentration

Calibration Status Report HP G1530A

Method Path : J:\GC13\METHODS\
Method File : GC13_030216.M
Title : 20 Sulfurs
Last Update : Wed Mar 02 12:32:01 2016
Response Via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	2.5	3	0	J:\GC13\DATA\SCD\2016_03\02\03021604.D
2	10	10	0	J:\GC13\DATA\SCD\2016_03\02\03021605.D
3	50	50	0	J:\GC13\DATA\SCD\2016_03\02\03021606.D
4	250	250	0	J:\GC13\DATA\SCD\2016_03\02\03021607.D
5	1000	1000	0	J:\GC13\DATA\SCD\2016_03\02\03021608.D
6	2500	2500	0	J:\GC13\DATA\SCD\2016_03\02\03021609.D
7	5000	5000	0	J:\GC13\DATA\SCD\2016_03\02\03021610.D
8	10pm	10000	0	J:\GC13\DATA\SCD\2016_03\02\03021611.D
9	25pm	25000	0	J:\GC13\DATA\SCD\2016_03\02\03021612.D
10	50pm	50000	0	J:\GC13\DATA\SCD\2016_03\02\03021613.D
11	100m	100000	0	J:\GC13\DATA\SCD\2016_03\02\03021614.D

#	ID	Update Time	Quant Time	Acquisition Time
1	2.5	Mar 02 11:50 2016	Mar 02 11:47 2016	02 Mar 2016 11:27
2	10	Mar 02 11:51 2016	Mar 02 11:48 2016	02 Mar 2016 11:36
3	50	Mar 02 11:52 2016	Mar 02 11:52 2016	02 Mar 2016 11:41
4	250	Mar 02 11:54 2016	Mar 02 11:52 2016	02 Mar 2016 11:45
5	1000	Mar 02 11:55 2016	Mar 02 11:54 2016	02 Mar 2016 11:49
6	2500	Mar 02 11:58 2016	Mar 02 11:57 2016	02 Mar 2016 11:53
7	5000	Mar 02 12:01 2016	Mar 02 12:01 2016	02 Mar 2016 11:57
8	10pm	Mar 02 12:05 2016	Mar 02 12:05 2016	02 Mar 2016 12:00
9	25pm	Mar 02 12:09 2016	Mar 02 12:09 2016	02 Mar 2016 12:04
10	50pm	Mar 02 12:14 2016	Mar 02 12:14 2016	02 Mar 2016 12:08
11	100m	Mar 02 12:20 2016	Mar 02 12:20 2016	02 Mar 2016 12:13

GC13_030216.M Thu Mar 03 11:45:28 2016

Quantitation Report (QT Reviewed)

Data Path : I:\GC13\DATA\SCD\2016_03\02\
Data File : 03021604.D
Signal(s) : AIB1B.CH
Acq On : 02 Mar 2016 11:27 am
Operator : MC
Sample : 2.5ppb S11-0302160225ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 02 11:47:52 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : 20 Sulfurs
QLast Update : Wed Feb 17 15:56:38 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :

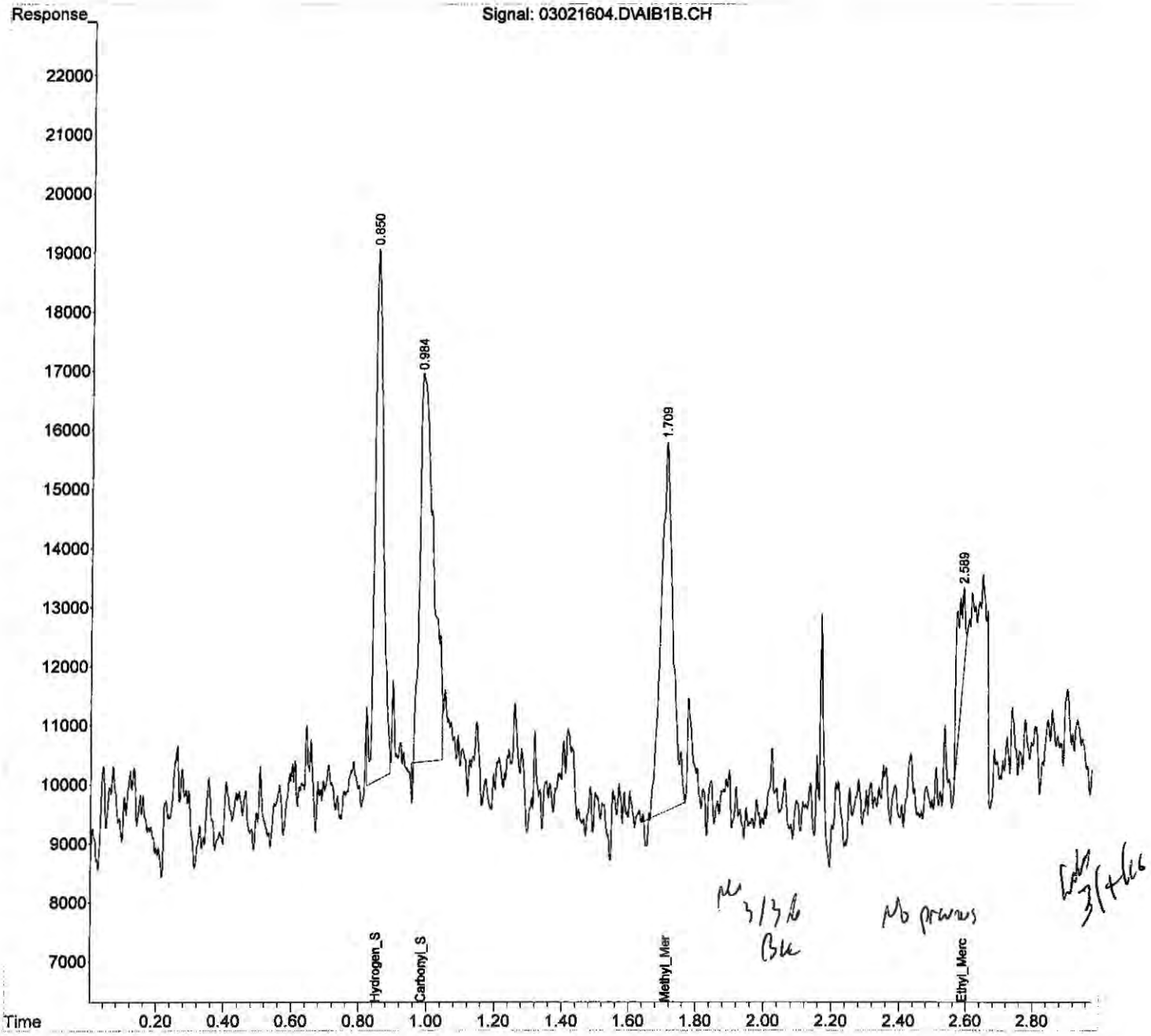
		Compound	R.T.	Response	Conc	Units	
Target Compounds							
1)	Z	Hydrogen_Sulfide	0.850	155008	1.495	ppb	m
2)	W	Carbonyl_Sulfide	0.984	183251	1.573	ppb	m
3)	T	Methyl_Mercaptan	1.710	151445	1.414	ppb	
4)	T	Ethyl_Mercaptan	2.590f	29959	0.280	ppb	
5)	T	Dimethyl_Sulfide	0.000	0	N.D.	ppb	
6)	T	Carbon_Disulfide	0.000	0	N.D.	ppb	
7)	T	2-Propyl_Mercaptan	0.000	0	N.D.	ppb	
8)	T	t-Butyl_Mercaptan	0.000	0	N.D.	ppb	
9)	T	Propyl_Mercaptan	0.000	0	N.D.	ppb	
10)	T	Ethyl_Methyl_Sulfide	0.000	0	N.D.	ppb	
11)	T	Thiophene	0.000	0	N.D.	ppb	
12)	T	i-Butyl_Mercaptan	0.000	0	N.D.	ppb	
13)	T	Diethyl_Sulfide	0.000	0	N.D.	ppb	
14)	t	n-Butyl_Mercaptan	0.000	0	N.D.	ppb	
15)	t	Dimethyl_Disulfide	0.000	0	N.D.	ppb	
16)	T	2-Methyl_Thiophene	0.000	0	N.D.	ppb	
17)	t	3-Methyl_Thiophene	0.000	0	N.D.	ppb	
18)	T	Tetrahydrothiophene	0.000	0	N.D.	ppb	
19)	t	2,5-Dimethyl_Thiophene	0.000	0	N.D.	ppb	
20)	T	2-Ethyl_Thiophene	0.000	0	N.D.	ppb	
21)	T	Diethyl_Disulfide	0.000	0	N.D.	ppb	
22)	T	Methyltrisulfide	0.000	0	N.D.	ppb	

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC13\DATA\SCD\2016_03\02\
Data File : 03021604.D
Signal(s) : AIB1B.CH
Acq On : 02 Mar 2016 11:27 am
Operator : MC
Sample : 2.5ppb S11-0302160225ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 02 11:47:52 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : 20 Sulfurs
QLast Update : Wed Feb 17 15:56:38 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC13\DATA\SCD\2016_03\02\
Data File : 03021605.D
Signal(s) : AIB1B.CH
Acq On : 02 Mar 2016 11:36 am
Operator : MC
Sample : 10ppb S11-03021602 100ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 02 11:48:48 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : 20 Sulfurs
QLast Update : Wed Feb 17 15:56:38 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :

		Compound	R.T.	Response	Conc	Units	
Target Compounds							
1)	Z	Hydrogen_Sulfide	0.851	756010	7.289	ppb	m
2)	W	Carbonyl_Sulfide	0.986	726076	6.234	ppb	m
3)	T	Methyl_Mercaptan	1.706	674831	6.301	ppb	m
4)	T	Ethyl_Mercaptan	0.000	0	N.D.	ppb	
5)	T	Dimethyl_Sulfide	2.788f	43131	0.403	ppb	
6)	T	Carbon_Disulfide	0.000	0	N.D.	ppb	
7)	T	2-Propyl_Mercaptan	0.000	0	N.D.	ppb	
8)	T	t-Butyl_Mercaptan	0.000	0	N.D.	ppb	
9)	T	Propyl_Mercaptan	0.000	0	N.D.	ppb	
10)	T	Ethyl_Methyl_Sulfide	0.000	0	N.D.	ppb	
11)	T	Thiophene	0.000	0	N.D.	ppb	
12)	T	i-Butyl_Mercaptan	0.000	0	N.D.	ppb	
13)	T	Diethyl_Sulfide	0.000	0	N.D.	ppb	
14)	t	n-Butyl_Mercaptan	0.000	0	N.D.	ppb	
15)	t	Dimethyl_Disulfide	0.000	0	N.D.	ppb	
16)	T	2-Methyl_Thiophene	0.000	0	N.D.	ppb	
17)	t	3-Methyl_Thiophene	0.000	0	N.D.	ppb	
18)	T	Tetrahydrothiophene	0.000	0	N.D.	ppb	
19)	t	2,5-Dimethyl_Thiophene	0.000	0	N.D.	ppb	
20)	T	2-Ethyl_Thiophene	0.000	0	N.D.	ppb	
21)	T	Diethyl_Disulfide	0.000	0	N.D.	ppb	
22)	T	Methyltrisulfide	0.000	0	N.D.	ppb	

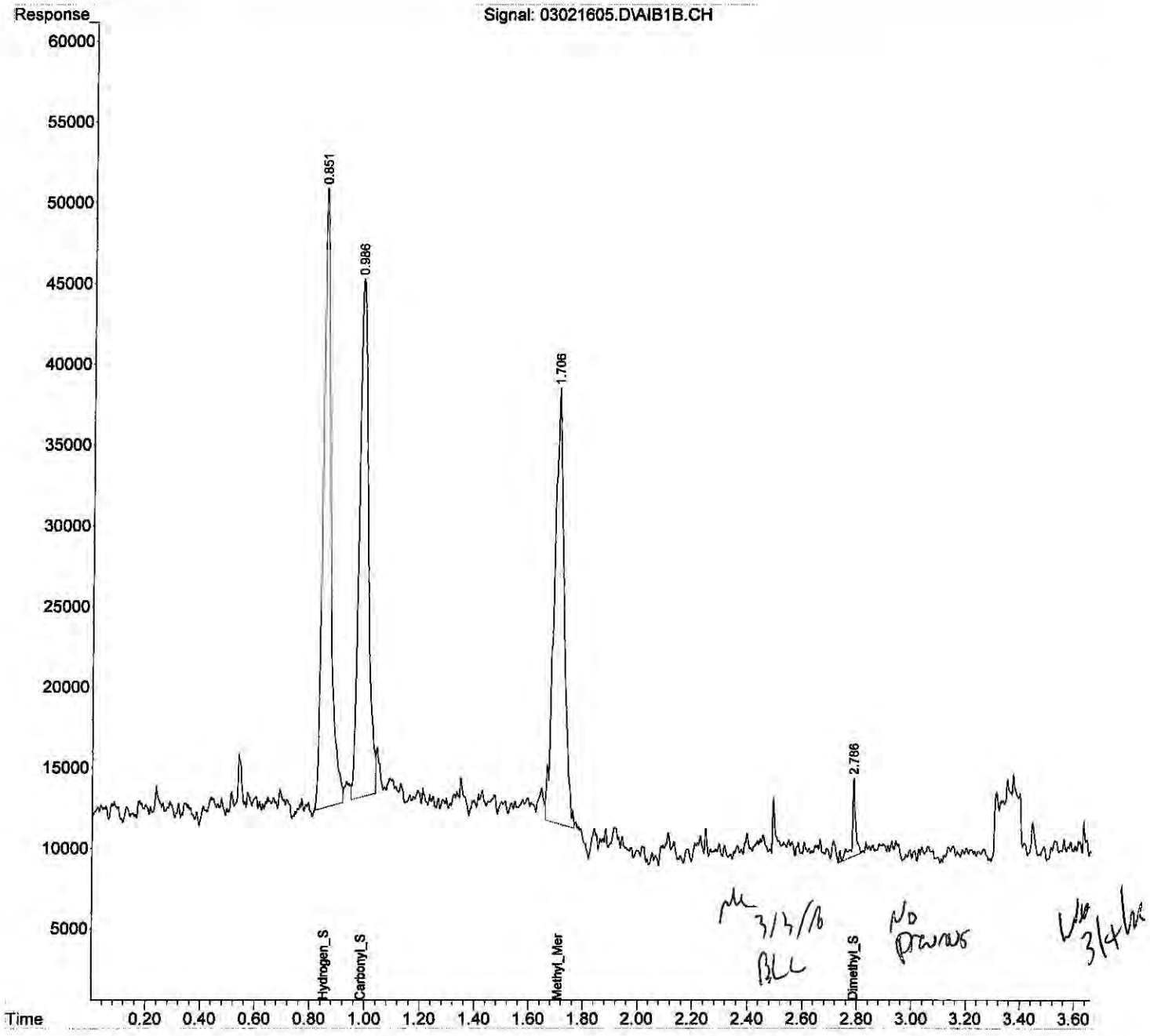
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC13\DATA\SCD\2016_03\02\
Data File : 03021605.D
Signal(s) : AIB1B.CH
Acq On : 02 Mar 2016 11:36 am
Operator : MC
Sample : 10ppb S11-03021602 100ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 02 11:48:48 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : 20 Sulfurs
QLast Update : Wed Feb 17 15:56:38 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC13\DATA\SCD\2016_03\02\
Data File : 03021606.D
Signal(s) : AIB1B.CH
Acq On : 02 Mar 2016 11:41 am
Operator : MC
Sample : 50ppb S11-03021602 500ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 02 11:52:08 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : 20 Sulfurs
QLast Update : Wed Mar 02 11:51:20 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :

		Compound	R.T.	Response	Conc	Units	
Target Compounds							
1)	Z	Hydrogen_Sulfide	0.848	3288172	47.792	ppb	
2)	W	Carbonyl_Sulfide	0.982	3506410	48.063	ppb	
3)	T	Methyl_Mercaptan	1.701	3181365	49.685	ppb	m
4)	T	Ethyl_Mercaptan	0.000	0	N.D.	ppb	
5)	T	Dimethyl_Sulfide	2.692	186087	43.145	ppb	
6)	T	Carbon_Disulfide	0.000	0	N.D.	ppb	
7)	T	2-Propyl_Mercaptan	0.000	0	N.D.	ppb	
8)	T	t-Butyl_Mercaptan	0.000	0	N.D.	ppb	
9)	T	Propyl_Mercaptan	0.000	0	N.D.	ppb	
10)	T	Ethyl_Methyl_Sulfide	0.000	0	N.D.	ppb	
11)	T	Thiophene	0.000	0	N.D.	ppb	
12)	T	i-Butyl_Mercaptan	0.000	0	N.D.	ppb	
13)	T	Diethyl_Sulfide	0.000	0	N.D.	ppb	
14)	t	n-Butyl_Mercaptan	0.000	0	N.D.	ppb	
15)	t	Dimethyl_Disulfide	0.000	0	N.D.	ppb	
16)	T	2-Methyl_Thiophene	0.000	0	N.D.	ppb	
17)	t	3-Methyl_Thiophene	0.000	0	N.D.	ppb	
18)	T	Tetrahydrothiophene	0.000	0	N.D.	ppb	
19)	t	2,5-Dimethyl_Thiophene	0.000	0	N.D.	ppb	
20)	T	2-Ethyl_Thiophene	0.000	0	N.D.	ppb	
21)	T	Diethyl_Disulfide	0.000	0	N.D.	ppb	
22)	T	Methyltrisulfide	0.000	0	N.D.	ppb	

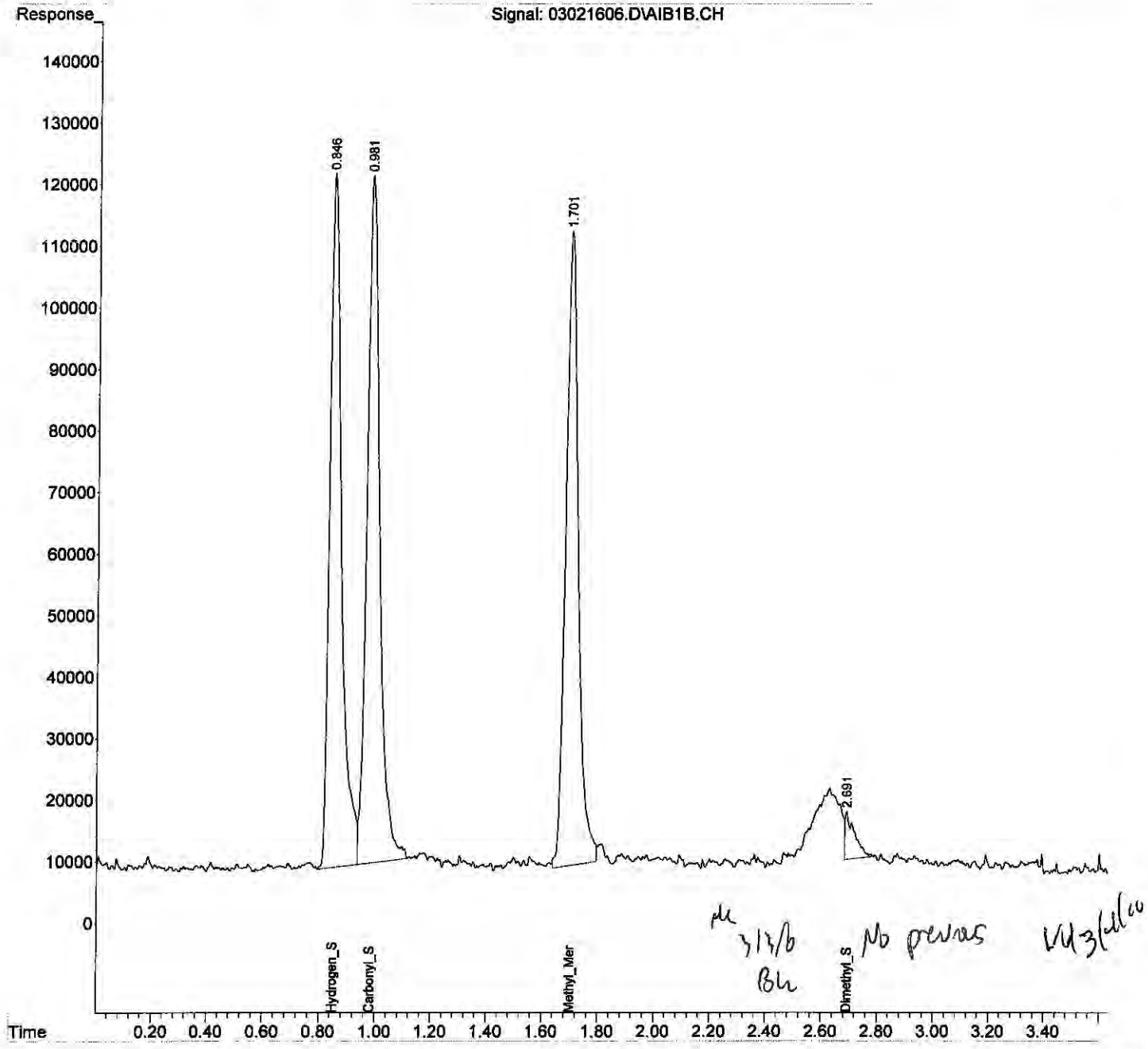
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC13\DATA\SCD\2016_03\02\
Data File : 03021606.D
Signal(s) : AIB1B.CH
Acq On : 02 Mar 2016 11:41 am
Operator : MC
Sample : 50ppb S11-03021602 500ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 02 11:52:08 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : 20 Sulfurs
QLast Update : Wed Mar 02 11:51:20 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :



GC13_030216.M Thu Mar 03 11:37:38 2016 Page: 2

Quantitation Report (QT Reviewed)

Data Path : I:\GC13\DATA\SCD\2016_03\02\
Data File : 03021607.D
Signal(s) : AIB1B.CH
Acq On : 02 Mar 2016 11:45 am
Operator : MC
Sample : 250ppbS11- 03021601 25ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 02 11:52:33 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : 20 Sulfurs
QLast Update : Wed Mar 02 11:52:22 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :

		Compound	R.T.	Response	Conc	Units
Target Compounds						
1)	Z	Hydrogen_Sulfide	0.851	13457888	198.525	ppb
2)	W	Carbonyl_Sulfide	0.986	16816957	233.530	ppb
3)	T	Methyl_Mercaptan	1.704	15877251	248.485	ppb
4)	T	Ethyl_Mercaptan	0.000	0	N.D.	ppb
5)	T	Dimethyl_Sulfide	0.000	0	N.D.	ppb
6)	T	Carbon_Disulfide	0.000	0	N.D.	ppb
7)	T	2-Propyl_Mercaptan	0.000	0	N.D.	ppb
8)	T	t-Butyl_Mercaptan	0.000	0	N.D.	ppb
9)	T	Propyl_Mercaptan	0.000	0	N.D.	ppb
10)	T	Ethyl_Methyl_Sulfide	0.000	0	N.D.	ppb
11)	T	Thiophene	0.000	0	N.D.	ppb
12)	T	i-Butyl_Mercaptan	0.000	0	N.D.	ppb
13)	T	Diethyl_Sulfide	0.000	0	N.D.	ppb
14)	t	n-Butyl_Mercaptan	0.000	0	N.D.	ppb
15)	t	Dimethyl_Disulfide	0.000	0	N.D.	ppb
16)	T	2-Methyl_Thiophene	0.000	0	N.D.	ppb
17)	t	3-Methyl_Thiophene	0.000	0	N.D.	ppb
18)	T	Tetrahydrothiophene	0.000	0	N.D.	ppb
19)	t	2,5-Dimethyl_Thiophene	0.000	0	N.D.	ppb
20)	T	2-Ethyl_Thiophene	0.000	0	N.D.	ppb
21)	T	Diethyl_Disulfide	0.000	0	N.D.	ppb
22)	T	Methyltrisulfide	0.000	0	N.D.	ppb

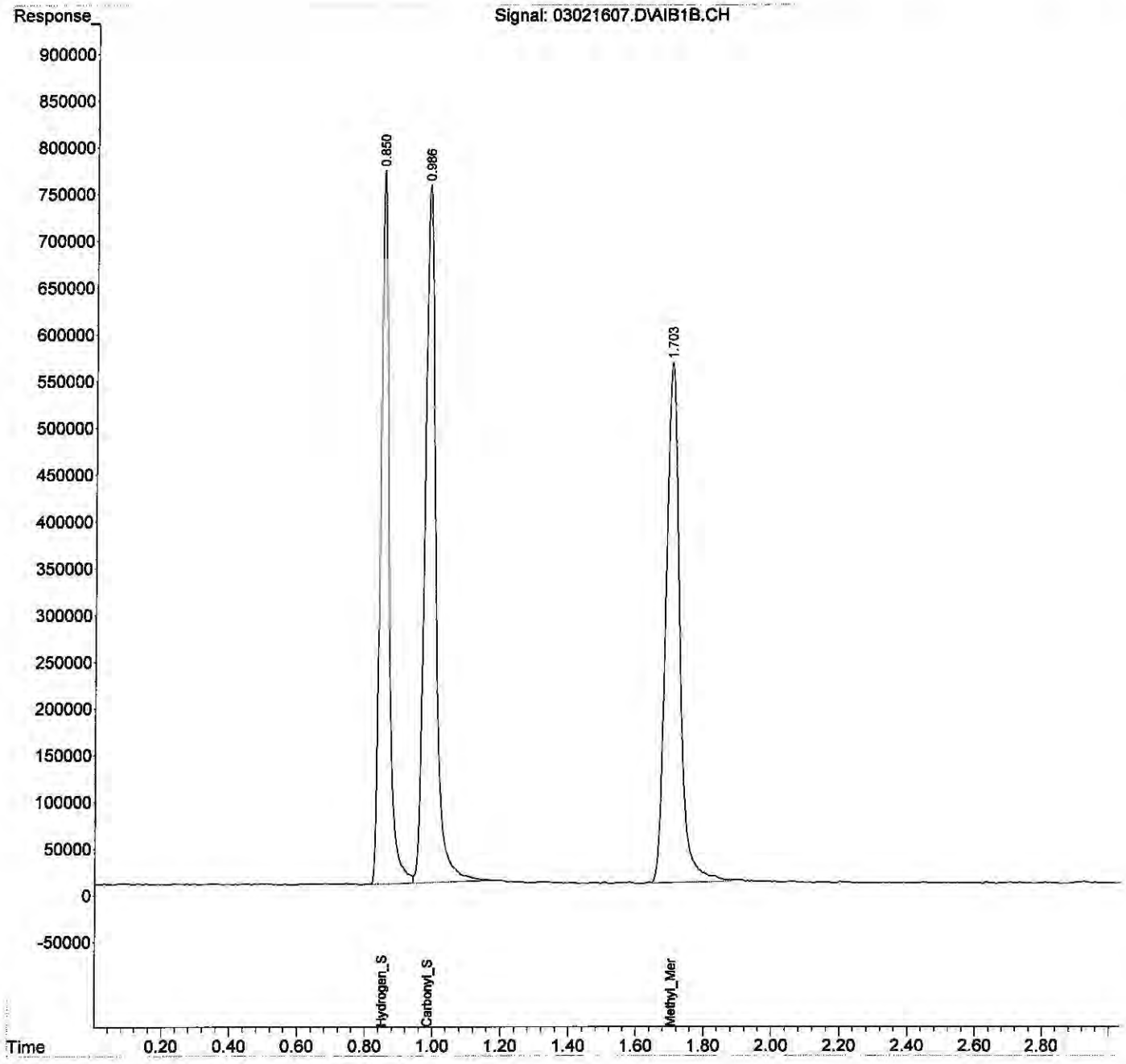
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC13\DATA\SCD\2016_03\02\
Data File : 03021607.D
Signal(s) : AIB1B.CH
Acq On : 02 Mar 2016 11:45 am
Operator : MC
Sample : 250ppbS11- 03021601 25ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 02 11:52:33 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : 20 Sulfurs
QLast Update : Wed Mar 02 11:52:22 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC13\DATA\SCD\2016_03\02\
Data File : 03021608.D
Signal(s) : AIB1B.CH
Acq On : 02 Mar 2016 11:49 am
Operator : MC
Sample : 1000ppb S11-03021601 100ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 02 13:51:20 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : 20 Sulfurs
QLast Update : Wed Mar 02 12:32:01 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :

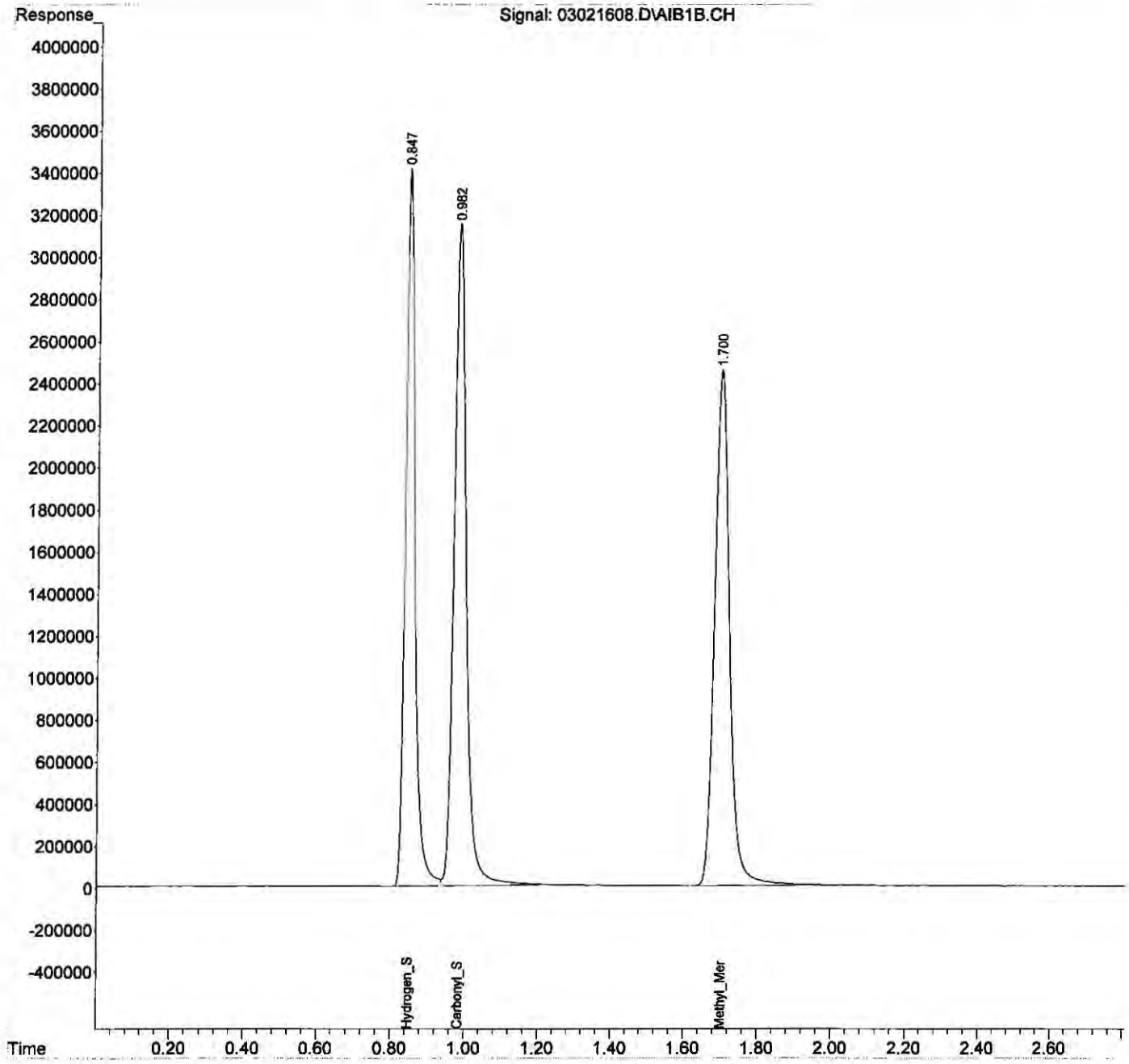
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1) Z	Hydrogen_Sulfide	0.848	60923941	966.480	ppb
2) W	Carbonyl_Sulfide	0.983	70829650	1011.241	ppb
3) T	Methyl_Mercaptan	1.701	68625366	1023.207	ppb
4) T	Ethyl_Mercaptan	0.000	0	N.D.	ppb
5) T	Dimethyl_Sulfide	0.000	0	N.D.	ppb
6) T	Carbon_Disulfide	0.000	0	N.D.	ppb
7) T	2-Propyl_Mercaptan	0.000	0	N.D.	ppb
8) T	t-Butyl_Mercaptan	0.000	0	N.D.	ppb
9) T	Propyl_Mercaptan	0.000	0	N.D.	ppb
10) T	Ethyl_Methyl_Sulfide	0.000	0	N.D.	ppb
11) T	Thiophene	0.000	0	N.D.	ppb
12) T	i-Butyl_Mercaptan	0.000	0	N.D.	ppb
13) T	Diethyl_Sulfide	0.000	0	N.D.	ppb
14) t	n-Butyl_Mercaptan	0.000	0	N.D.	ppb
15) t	Dimethyl_Disulfide	0.000	0	N.D.	ppb
16) T	2-Methyl_Thiophene	0.000	0	N.D.	ppb
17) t	3-Methyl_Thiophene	0.000	0	N.D.	ppb
18) T	Tetrahydrothiophene	0.000	0	N.D.	ppb
19) t	2,5-Dimethyl_Thiophene	0.000	0	N.D.	ppb
20) T	2-Ethyl_Thiophene	0.000	0	N.D.	ppb
21) T	Diethyl_Disulfide	0.000	0	N.D.	ppb
22) T	Methyltrisulfide	0.000	0	N.D.	ppb

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC13\DATA\SCD\2016_03\02\
Data File : 03021608.D
Signal(s) : AIB1B.CH
Acq On : 02 Mar 2016 11:49 am
Operator : MC
Sample : 1000ppb S11-03021601 100ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 02 13:51:20 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : 20 Sulfurs
QLast Update : Wed Mar 02 12:32:01 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC13\DATA\SCD\2016_03\02\
Data File : 03021609.D
Signal(s) : AIB1B.CH
Acq On : 02 Mar 2016 11:53 am
Operator : MC
Sample : 2500ppb S11-03021601 250ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 02 13:52:48 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : 20 Sulfurs
QLast Update : Wed Mar 02 12:32:01 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :

		Compound	R.T.	Response	Conc	Units
Target Compounds						
1)	Z	Hydrogen_Sulfide	0.845	170077501	2698.061	ppb
2)	W	Carbonyl_Sulfide	0.981	188755506	2694.879	ppb
3)	T	Methyl_Mercaptan	1.700	179255085	2672.701	ppb
4)	T	Ethyl_Mercaptan	0.000	0	N.D.	ppb
5)	T	Dimethyl_Sulfide	0.000	0	N.D.	ppb
6)	T	Carbon_Disulfide	2.908	542676	8.091	ppb
7)	T	2-Propyl_Mercaptan	0.000	0	N.D.	ppb
8)	T	t-Butyl_Mercaptan	0.000	0	N.D.	ppb
9)	T	Propyl_Mercaptan	0.000	0	N.D.	ppb
10)	T	Ethyl_Methyl_Sulfide	0.000	0	N.D.	ppb
11)	T	Thiophene	0.000	0	N.D.	ppb
12)	T	i-Butyl_Mercaptan	0.000	0	N.D.	ppb
13)	T	Diethyl_Sulfide	0.000	0	N.D.	ppb
14)	t	n-Butyl_Mercaptan	0.000	0	N.D.	ppb
15)	t	Dimethyl_Disulfide	0.000	0	N.D.	ppb
16)	T	2-Methyl_Thiophene	0.000	0	N.D.	ppb
17)	t	3-Methyl_Thiophene	0.000	0	N.D.	ppb
18)	T	Tetrahydrothiophene	0.000	0	N.D.	ppb
19)	t	2,5-Dimethyl_Thiophene	0.000	0	N.D.	ppb
20)	T	2-Ethyl_Thiophene	0.000	0	N.D.	ppb
21)	T	Diethyl_Disulfide	0.000	0	N.D.	ppb
22)	T	Methyltrisulfide	0.000	0	N.D.	ppb

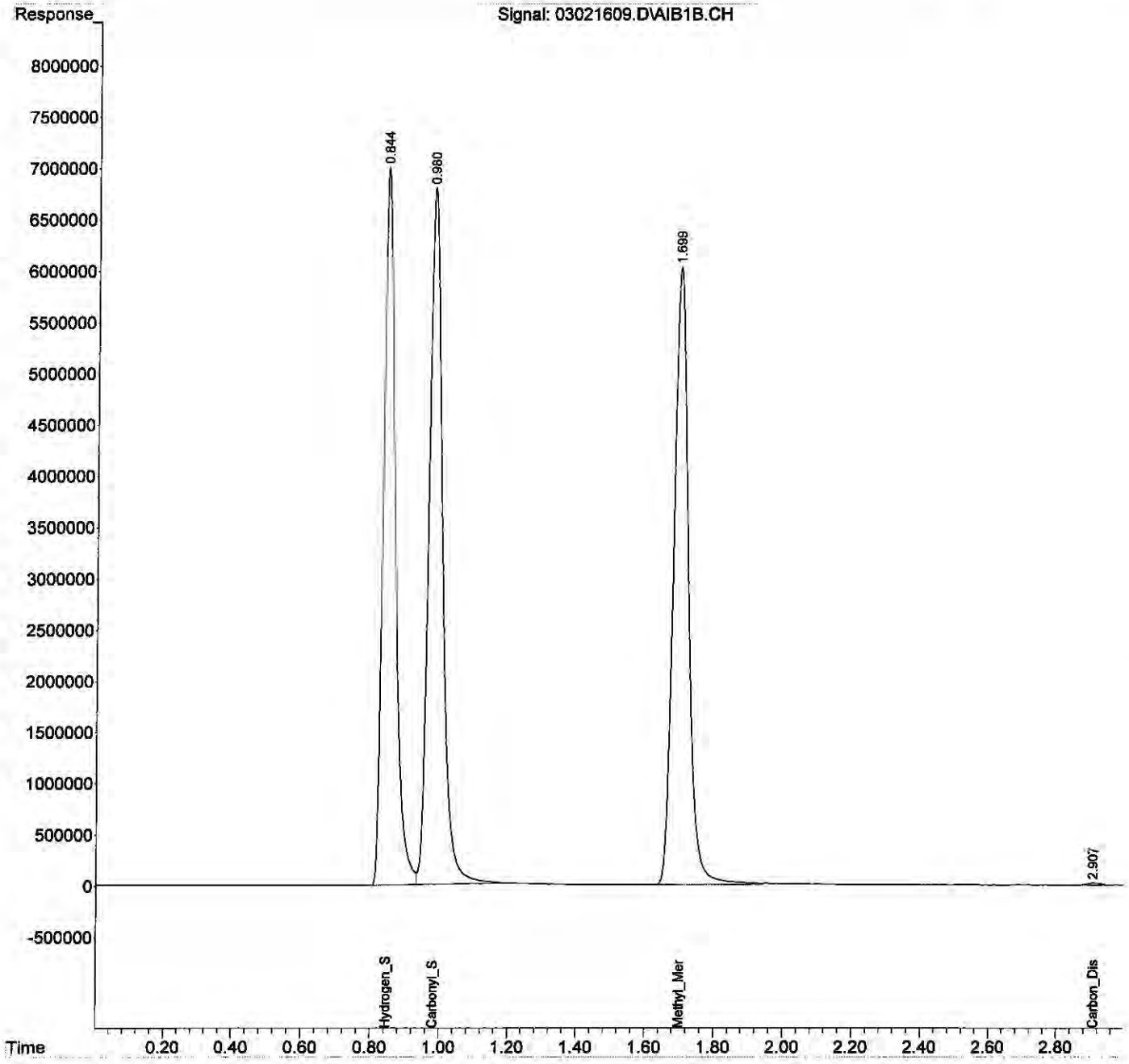
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC13\DATA\SCD\2016_03\02\
Data File : 03021609.D
Signal(s) : AIB1B.CH
Acq On : 02 Mar 2016 11:53 am
Operator : MC
Sample : 2500ppb S11-03021601 250ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 02 13:52:48 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : 20 Sulfurs
QLast Update : Wed Mar 02 12:32:01 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC13\DATA\SCD\2016_03\02\
Data File : 03021610.D
Signal(s) : AIB1B.CH
Acq On : 02 Mar 2016 11:57 am
Operator : MC
Sample : 5000ppb S11-03021601 500ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 02 12:01:12 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : 20 Sulfurs
QLast Update : Wed Mar 02 11:58:08 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :

		Compound	R.T.	Response	Conc	Units
Target Compounds						
1)	Z	Hydrogen_Sulfide	0.833	334245717	5193.454	ppb
2)	W	Carbonyl_Sulfide	0.970	367578252	5133.345	ppb
3)	T	Methyl_Mercaptan	1.692	352979844	5354.603	ppb
4)	T	Ethyl_Mercaptan	0.000	0	N.D.	ppb
5)	T	Dimethyl_Sulfide	2.692	216055	53.780	ppb
6)	T	Carbon_Disulfide	2.907	1134685	5227.264	ppb
7)	T	2-Propyl_Mercaptan	0.000	0	N.D.	ppb
8)	T	t-Butyl_Mercaptan	0.000	0	N.D.	ppb
9)	T	Propyl_Mercaptan	0.000	0	N.D.	ppb
10)	T	Ethyl_Methyl_Sulfide	0.000	0	N.D.	ppb
11)	T	Thiophene	0.000	0	N.D.	ppb
12)	T	i-Butyl_Mercaptan	0.000	0	N.D.	ppb
13)	T	Diethyl_Sulfide	0.000	0	N.D.	ppb
14)	t	n-Butyl_Mercaptan	0.000	0	N.D.	ppb
15)	t	Dimethyl_Disulfide	0.000	0	N.D.	ppb
16)	T	2-Methyl_Thiophene	0.000	0	N.D.	ppb
17)	t	3-Methyl_Thiophene	0.000	0	N.D.	ppb
18)	T	Tetrahydrothiophene	0.000	0	N.D.	ppb
19)	t	2,5-Dimethyl_Thiophene	0.000	0	N.D.	ppb
20)	T	2-Ethyl_Thiophene	0.000	0	N.D.	ppb
21)	T	Diethyl_Disulfide	0.000	0	N.D.	ppb
22)	T	Methyltrisulfide	0.000	0	N.D.	ppb

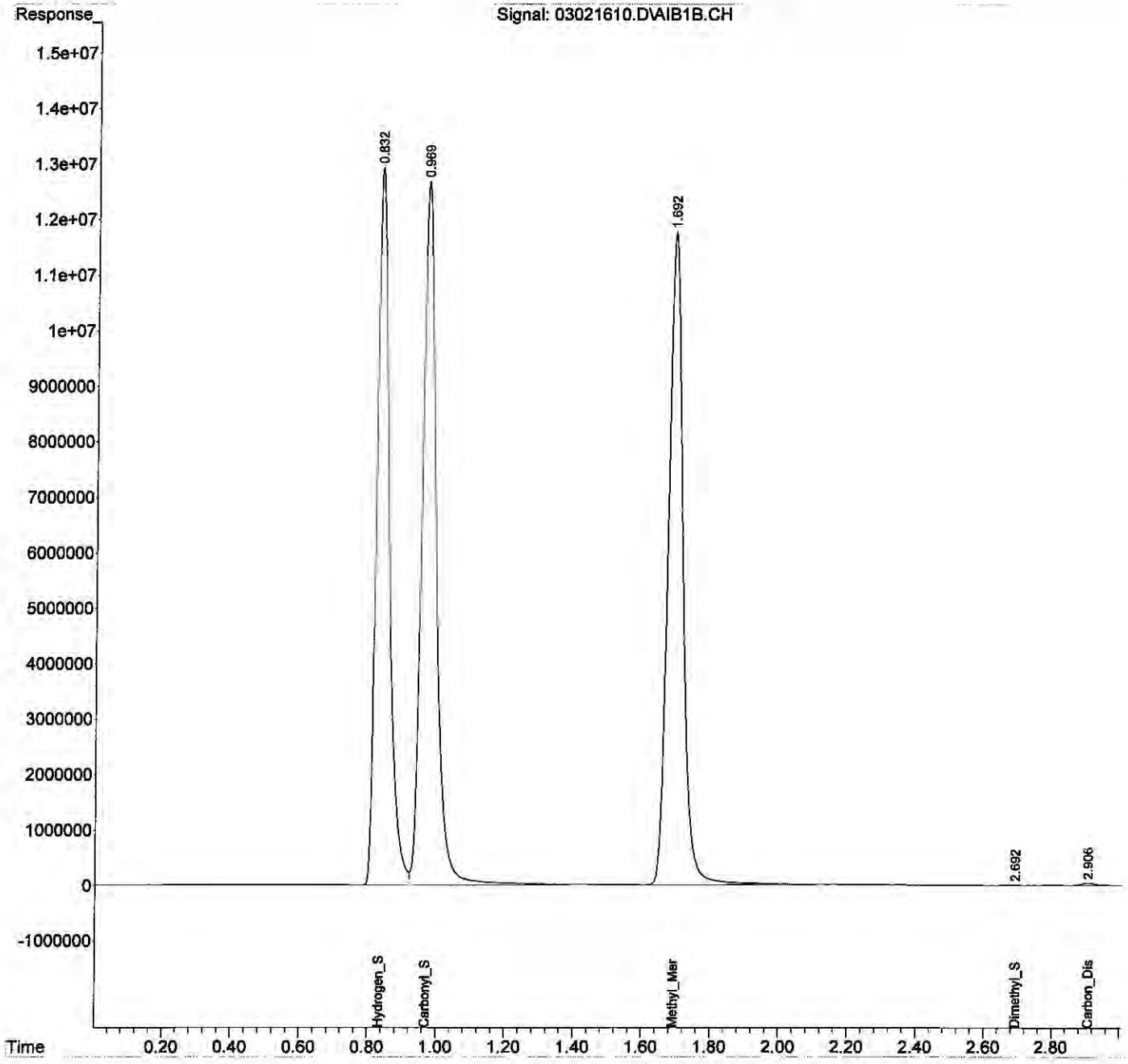
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC13\DATA\SCD\2016_03\02\
Data File : 03021610.D
Signal(s) : AIB1B.CH
Acq On : 02 Mar 2016 11:57 am
Operator : MC
Sample : 5000ppb S11-03021601 500ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 02 12:01:12 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : 20 Sulfurs
QLast Update : Wed Mar 02 11:58:08 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC13\DATA\SCD\2016_03\02\
Data File : 03021611.D
Signal(s) : AIB1B.CH
Acq On : 02 Mar 2016 12:00 pm
Operator : MC
Sample : 10ppm S11-03021601 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 02 12:05:10 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : 20 Sulfurs
QLast Update : Wed Mar 02 12:01:28 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :

		Compound	R.T.	Response	Conc	Units
Target Compounds						
1)	Z	Hydrogen_Sulfide	0.848	666720202	10302.442	ppb
2)	W	Carbonyl_Sulfide	0.984	744314115	10355.127	ppb
3)	T	Methyl_Mercaptan	1.704	702296001	10546.774	ppb
4)	T	Ethyl_Mercaptan	0.000	0	N.D.	ppb
5)	T	Dimethyl_Sulfide	2.693	226440	84.095	ppb
6)	T	Carbon_Disulfide	2.913	2223163	10014.082	ppb
7)	T	2-Propyl_Mercaptan	0.000	0	N.D.	ppb
8)	T	t-Butyl_Mercaptan	0.000	0	N.D.	ppb
9)	T	Propyl_Mercaptan	0.000	0	N.D.	ppb
10)	T	Ethyl_Methyl_Sulfide	0.000	0	N.D.	ppb
11)	T	Thiophene	0.000	0	N.D.	ppb
12)	T	i-Butyl_Mercaptan	0.000	0	N.D.	ppb
13)	T	Diethyl_Sulfide	0.000	0	N.D.	ppb
14)	t	n-Butyl_Mercaptan	0.000	0	N.D.	ppb
15)	t	Dimethyl_Disulfide	0.000	0	N.D.	ppb
16)	T	2-Methyl_Thiophene	0.000	0	N.D.	ppb
17)	t	3-Methyl_Thiophene	0.000	0	N.D.	ppb
18)	T	Tetrahydrothiophene	0.000	0	N.D.	ppb
19)	t	2,5-Dimethyl_Thiophene	0.000	0	N.D.	ppb
20)	T	2-Ethyl_Thiophene	0.000	0	N.D.	ppb
21)	T	Diethyl_Disulfide	0.000	0	N.D.	ppb
22)	T	Methyltrisulfide	0.000	0	N.D.	ppb

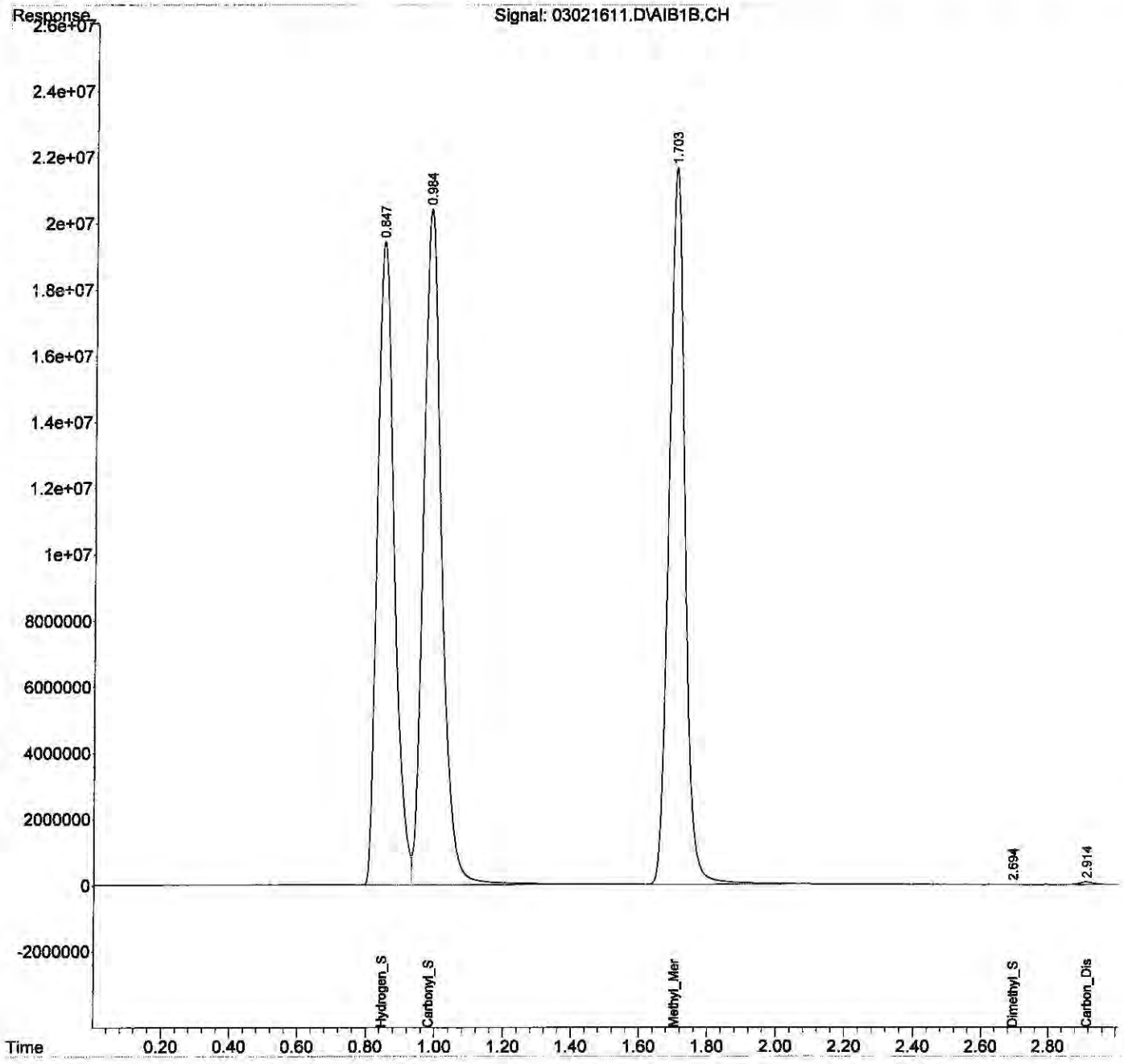
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC13\DATA\SCD\2016_03\02\
Data File : 03021611.D
Signal(s) : AIB1B.CH
Acq On : 02 Mar 2016 12:00 pm
Operator : MC
Sample : 10ppm S11-03021601 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 02 12:05:10 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : 20 Sulfurs
QLast Update : Wed Mar 02 12:01:28 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC13\DATA\SCD\2016_03\02\
Data File : 03021612.D
Signal(s) : AIB1B.CH
Acq On : 02 Mar 2016 12:04 pm
Operator : MC
Sample : 25ppm S30-11031401 25ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 02 13:09:09 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : 20 Sulfurs
QLast Update : Wed Mar 02 12:07:47 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :

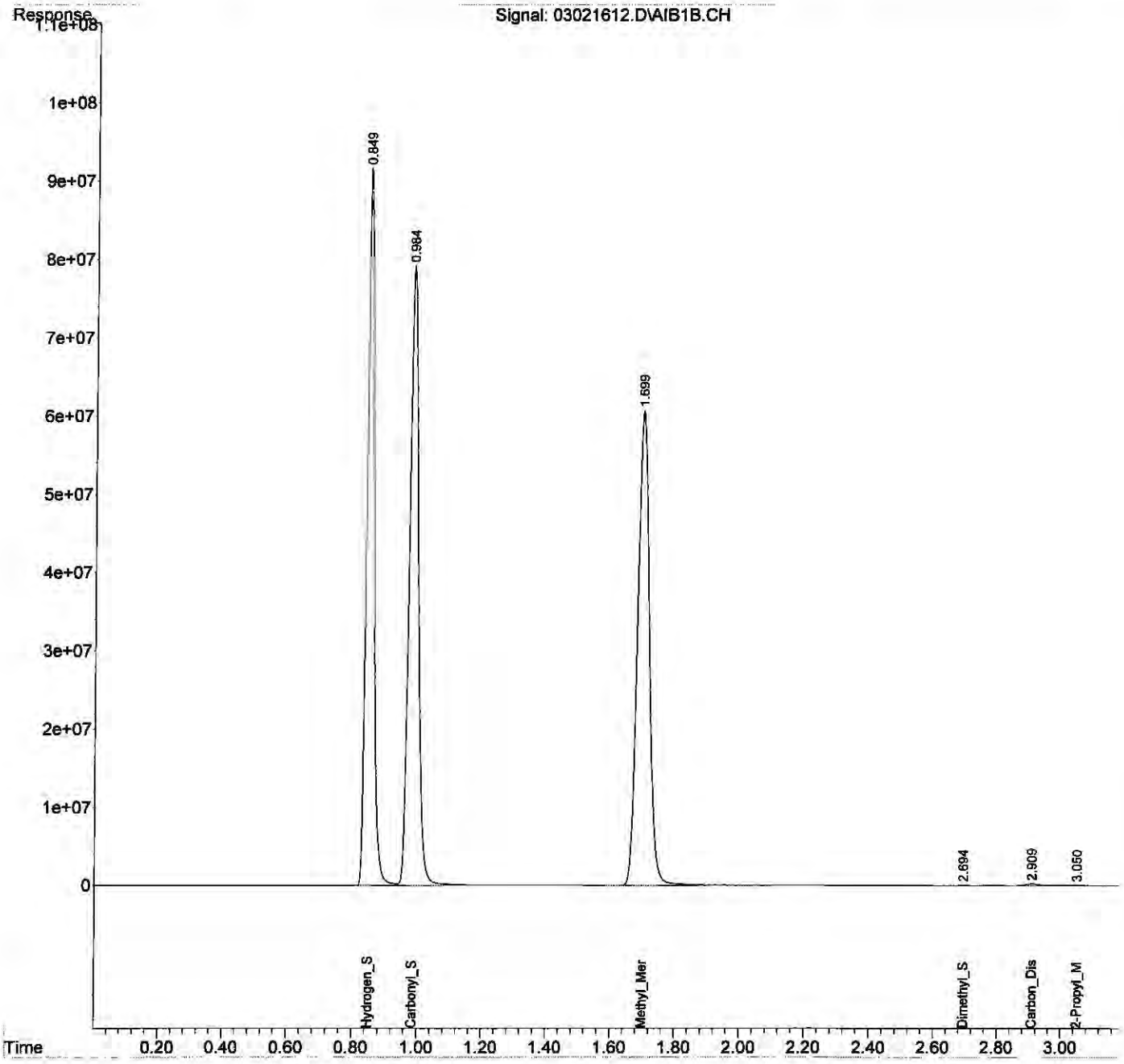
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1) Z	Hydrogen_Sulfide	0.850	1386097660	21337.898	ppb
2) W	Carbonyl_Sulfide	0.985	1538408848	21308.229	ppb
3) T	Methyl_Mercaptan	1.700	1560233333	23271.845	ppb
4) T	Ethyl_Mercaptan	0.000	0	N.D.	ppb
5) T	Dimethyl_Sulfide	2.694	419001	6.917	ppb
6) T	Carbon_Disulfide	2.909	5845671	96.498	ppb
7) T	2-Propyl_Mercaptan	3.051f	797865	13.171	ppb
8) T	t-Butyl_Mercaptan	0.000	0	N.D.	ppb
9) T	Propyl_Mercaptan	0.000	0	N.D.	ppb
10) T	Ethyl_Methyl_Sulfide	0.000	0	N.D.	ppb
11) T	Thiophene	0.000	0	N.D.	ppb
12) T	i-Butyl_Mercaptan	0.000	0	N.D.	ppb
13) T	Diethyl_Sulfide	0.000	0	N.D.	ppb
14) t	n-Butyl_Mercaptan	0.000	0	N.D.	ppb
15) t	Dimethyl_Disulfide	0.000	0	N.D.	ppb
16) T	2-Methyl_Thiophene	0.000	0	N.D.	ppb
17) t	3-Methyl_Thiophene	0.000	0	N.D.	ppb
18) T	Tetrahydrothiophene	0.000	0	N.D.	ppb
19) t	2,5-Dimethyl_Thiophene	0.000	0	N.D.	ppb
20) T	2-Ethyl_Thiophene	0.000	0	N.D.	ppb
21) T	Diethyl_Disulfide	0.000	0	N.D.	ppb
22) T	Methyltrisulfide	0.000	0	N.D.	ppb

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC13\DATA\SCD\2016_03\02\
Data File : 03021612.D
Signal(s) : AIB1B.CH
Acq On : 02 Mar 2016 12:04 pm
Operator : MC
Sample : 25ppm S30-11031401 25ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 02 13:09:09 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : 20 Sulfurs
QLast Update : Wed Mar 02 12:07:47 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC13\DATA\SCD\2016_03\02\
Data File : 03021613.D
Signal(s) : AIB1B.CH
Acq On : 02 Mar 2016 12:08 pm
Operator : MC
Sample : 50ppm S30-11031401 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 02 13:14:19 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : 20 Sulfurs
QLast Update : Wed Mar 02 12:12:30 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :

		Compound	R.T.	Response	Conc	Units	
Target Compounds							
1)	Z	Hydrogen_Sulfide	0.849	2900163145	45384.439	ppb	
2)	W	Carbonyl_Sulfide	0.984	3226410061	45433.908	ppb	
3)	T	Methyl_Mercaptan	1.700	3408294607	51230.307	ppb	
4)	T	Ethyl_Mercaptan	0.000	0	N.D.	ppb	
5)	T	Dimethyl_Sulfide	0.000	0	N.D.	ppb	d
6)	T	Carbon_Disulfide	0.000	0	N.D.	ppb	d
7)	T	2-Propyl_Mercaptan	0.000	0	N.D.	ppb	
8)	T	t-Butyl_Mercaptan	0.000	0	N.D.	ppb	
9)	T	Propyl_Mercaptan	0.000	0	N.D.	ppb	
10)	T	Ethyl_Methyl_Sulfide	0.000	0	N.D.	ppb	
11)	T	Thiophene	0.000	0	N.D.	ppb	
12)	T	i-Butyl_Mercaptan	0.000	0	N.D.	ppb	
13)	T	Diethyl_Sulfide	0.000	0	N.D.	ppb	
14)	t	n-Butyl_Mercaptan	0.000	0	N.D.	ppb	
15)	t	Dimethyl_Disulfide	0.000	0	N.D.	ppb	
16)	T	2-Methyl_Thiophene	0.000	0	N.D.	ppb	
17)	t	3-Methyl_Thiophene	0.000	0	N.D.	ppb	
18)	T	Tetrahydrothiophene	0.000	0	N.D.	ppb	
19)	t	2,5-Dimethyl_Thiophene	0.000	0	N.D.	ppb	
20)	T	2-Ethyl_Thiophene	0.000	0	N.D.	ppb	
21)	T	Diethyl_Disulfide	0.000	0	N.D.	ppb	
22)	T	Methyltrisulfide	0.000	0	N.D.	ppb	

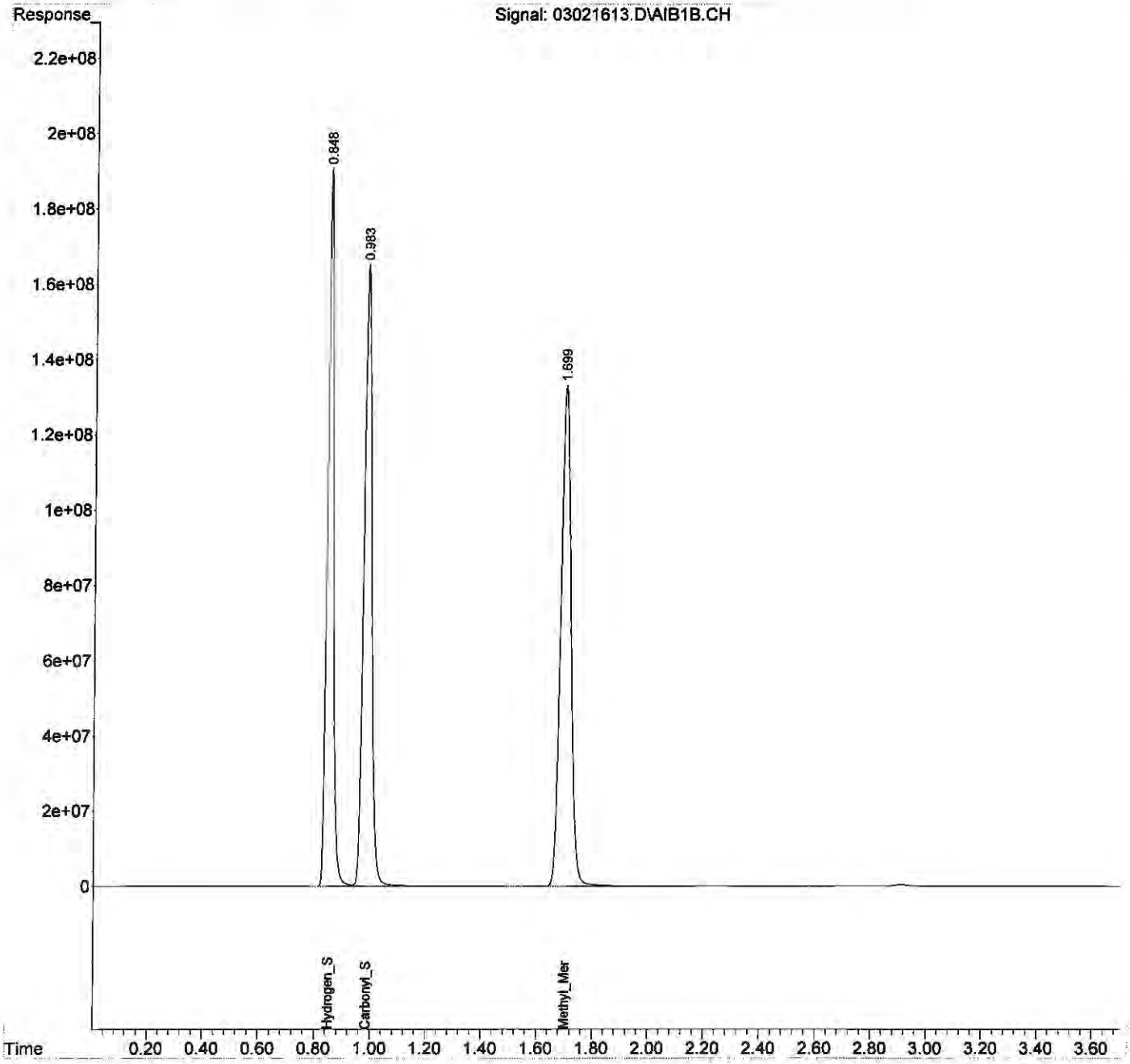
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC13\DATA\SCD\2016_03\02\
Data File : 03021613.D
Signal(s) : AIB1B.CH
Acq On : 02 Mar 2016 12:08 pm
Operator : MC
Sample : 50ppm S30-11031401 50ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 02 13:14:19 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : 20 Sulfurs
QLast Update : Wed Mar 02 12:12:30 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC13\DATA\SCD\2016_03\02\
Data File : 03021614.D
Signal(s) : AIB1B.CH
Acq On : 02 Mar 2016 12:13 pm
Operator : MC
Sample : 100ppm S30-11031401 100ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 02 13:20:21 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : 20 Sulfurs
QLast Update : Wed Mar 02 12:17:56 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :

		Compound	R.T.	Response	Conc	Units	
Target Compounds							
1)	Z	Hydrogen_Sulfide	0.846	6028372249	95216.507	ppb	
2)	W	Carbonyl_Sulfide	0.981	6681756266	94958.849	ppb	
3)	T	Methyl_Mercaptan	1.698	7083203074	106206.771	ppb	
4)	T	Ethyl_Mercaptan	0.000	0	N.D.	ppb	d
5)	T	Dimethyl_Sulfide	0.000	0	N.D.	ppb	d
6)	T	Carbon_Disulfide	0.000	0	N.D.	ppb	d
7)	T	2-Propyl_Mercaptan	0.000	0	N.D.	ppb	d
8)	T	t-Butyl_Mercaptan	0.000	0	N.D.	ppb	d
9)	T	Propyl_Mercaptan	0.000	0	N.D.	ppb	d
10)	T	Ethyl_Methyl_Sulfide	0.000	0	N.D.	ppb	d
11)	T	Thiophene	0.000	0	N.D.	ppb	
12)	T	i-Butyl_Mercaptan	0.000	0	N.D.	ppb	
13)	T	Diethyl_Sulfide	0.000	0	N.D.	ppb	
14)	t	n-Butyl_Mercaptan	0.000	0	N.D.	ppb	
15)	t	Dimethyl_Disulfide	0.000	0	N.D.	ppb	
16)	T	2-Methyl_Thiophene	0.000	0	N.D.	ppb	
17)	t	3-Methyl_Thiophene	0.000	0	N.D.	ppb	
18)	T	Tetrahydrothiophene	0.000	0	N.D.	ppb	
19)	t	2,5-Dimethyl_Thiophene	0.000	0	N.D.	ppb	
20)	T	2-Ethyl_Thiophene	0.000	0	N.D.	ppb	
21)	T	Diethyl_Disulfide	0.000	0	N.D.	ppb	
22)	T	Methyltrisulfide	0.000	0	N.D.	ppb	

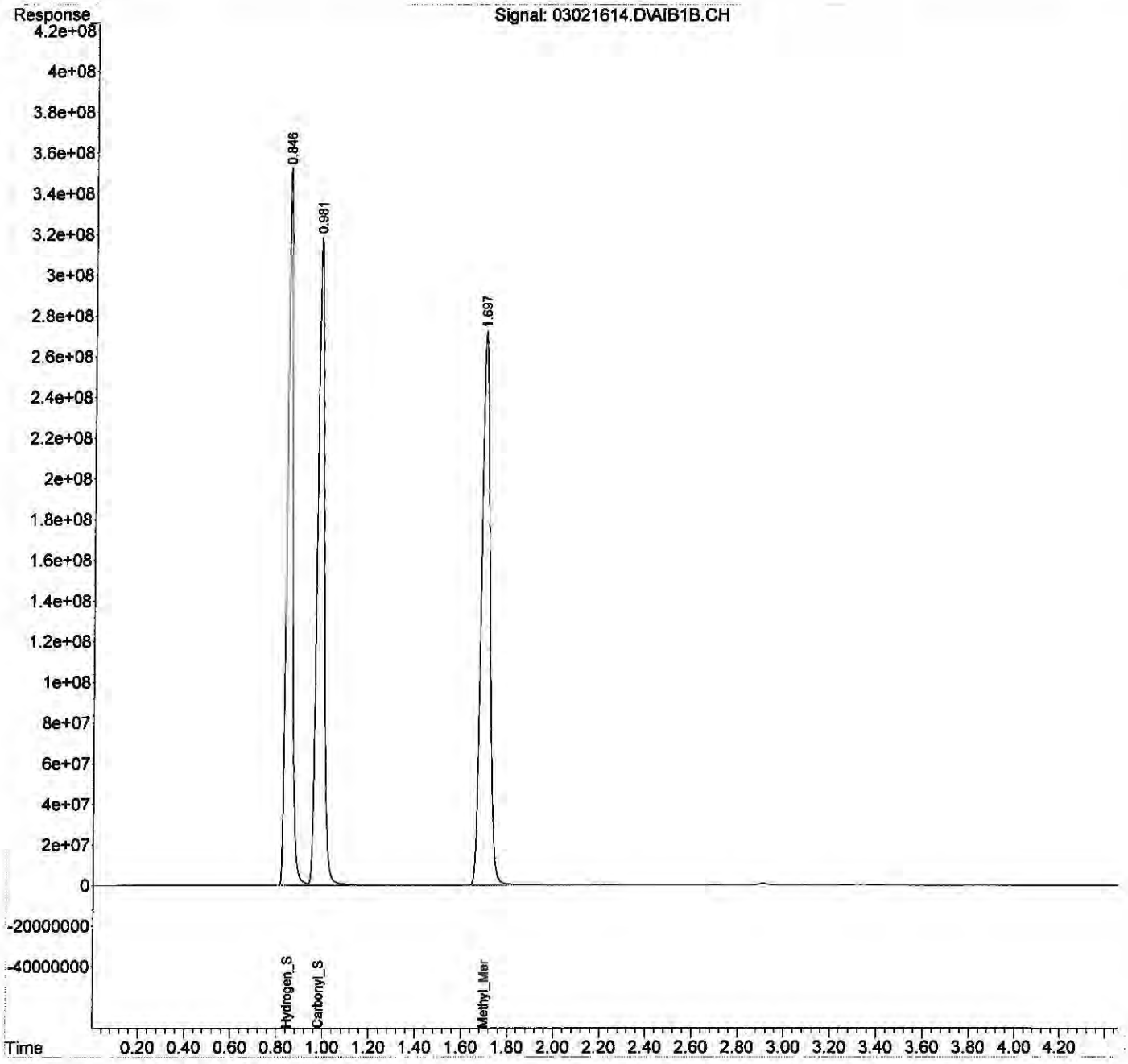
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC13\DATA\SCD\2016_03\02\
Data File : 03021614.D
Signal(s) : AIB1B.CH
Acq On : 02 Mar 2016 12:13 pm
Operator : MC
Sample : 100ppm S30-11031401 100ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 02 13:20:21 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : 20 Sulfurs
QLast Update : Wed Mar 02 12:17:56 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC13\DATA\SCD\2016_03\02\
Data File : 03021615.D
Signal(s) : AIB1B.CH
Acq On : 02 Mar 2016 12:19 pm
Operator : MC
Sample : RT
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 02 12:36:15 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : 20 Sulfurs
QLast Update : Wed Mar 02 12:32:01 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :

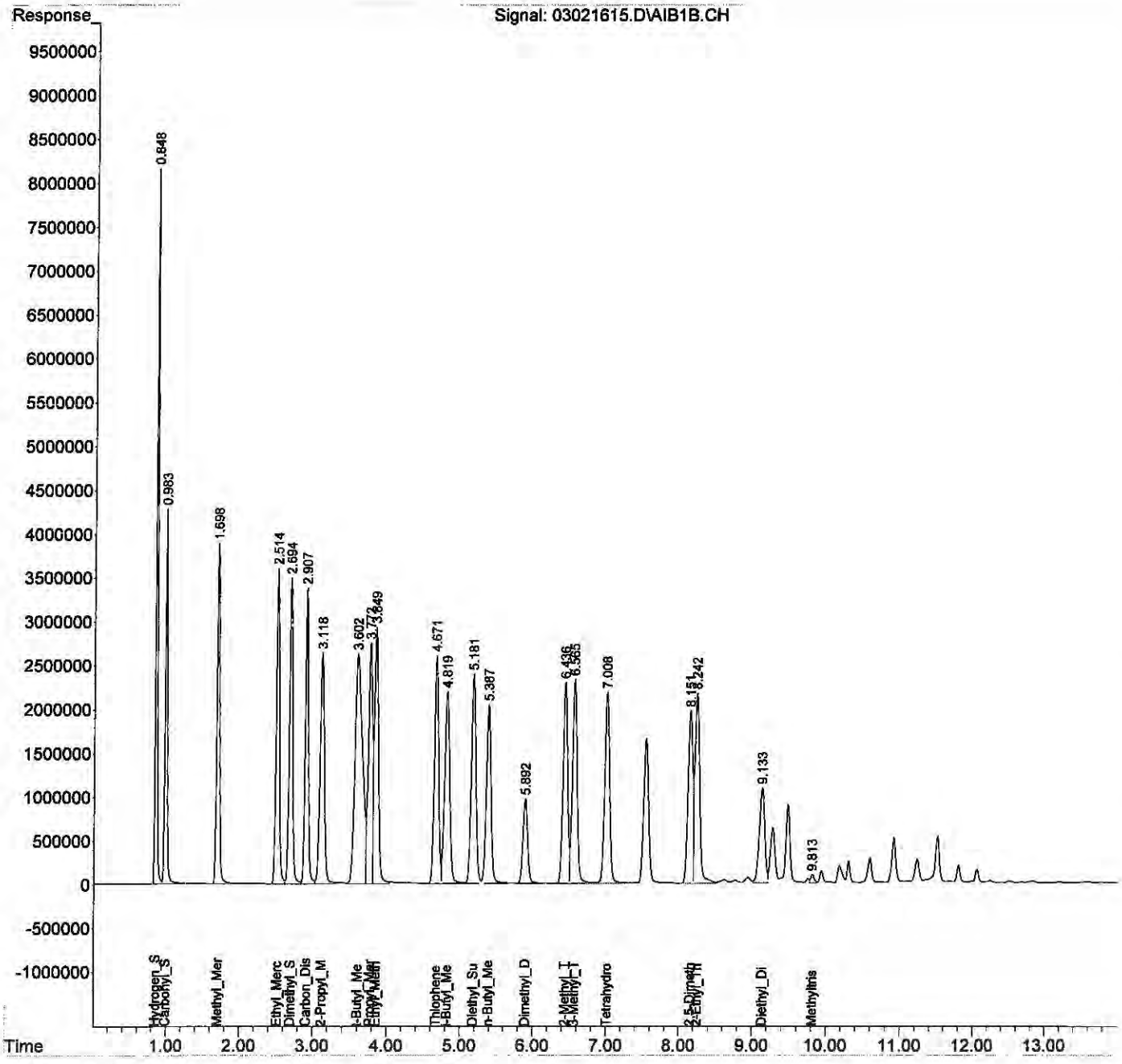
		Compound	R.T.	Response	Conc	Units
Target Compounds						
1)	Z	Hydrogen_Sulfide	0.848	126924093	2013.488	ppb
2)	W	Carbonyl_Sulfide	0.984	87210398	1245.111	ppb
3)	T	Methyl_Mercaptan	1.699	102751642	1532.031	ppb
4)	T	Ethyl_Mercaptan	2.515	108203445	1613.318	ppb
5)	T	Dimethyl_Sulfide	2.694	109139117	1627.269	ppb
6)	T	Carbon_Disulfide	2.907	98408921	1467.281	ppb
7)	T	2-Propyl_Mercaptan	3.118	106586789	1589.214	ppb
8)	T	t-Butyl_Mercaptan	3.603	184963068	2757.807	ppb
9)	T	Propyl_Mercaptan	3.773	105570874	1574.066	ppb
10)	T	Ethyl_Methyl_Sulfide	3.850	115614352	1723.815	ppb
11)	T	Thiophene	4.672	103435859	1542.233	ppb
12)	T	i-Butyl_Mercaptan	4.819	105396675	1571.469	ppb
13)	T	Diethyl_Sulfide	5.181	104879434	1563.757	ppb
14)	t	n-Butyl_Mercaptan	5.388	90781991	1353.563	ppb
15)	t	Dimethyl_Disulfide	5.893	43091567	642.497	ppb
16)	T	2-Methyl_Thiophene	6.437	99140705	1478.192	ppb
17)	t	3-Methyl_Thiophene	6.565	104393401	1556.510	ppb
18)	T	Tetrahydrothiophene	7.008	102172387	1523.395	ppb
19)	t	2,5-Dimethyl_Thiophene	8.152	86643711	1291.861	ppb
20)	T	2-Ethyl_Thiophene	8.242	101961782	1520.255	ppb
21)	T	Diethyl_Disulfide	9.133	55832635	832.467	ppb
22)	T	Methyltrisulfide	9.816	3148495	46.944	ppb

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC13\DATA\SCD\2016_03\02\
Data File : 03021615.D
Signal(s) : AIB1B.CH
Acq On : 02 Mar 2016 12:19 pm
Operator : MC
Sample : RT
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 02 12:36:15 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : 20 Sulfurs
QLast Update : Wed Mar 02 12:32:01 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC13\DATA\SCD\2016_03\02\
Data File : 03021616.D
Signal(s) : AIB1B.CH
Acq On : 02 Mar 2016 12:38 pm
Operator : MC
Sample : ICV S30-02241602
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 02 12:43:52 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : 20 Sulfurs
QLast Update : Wed Mar 02 12:32:01 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :

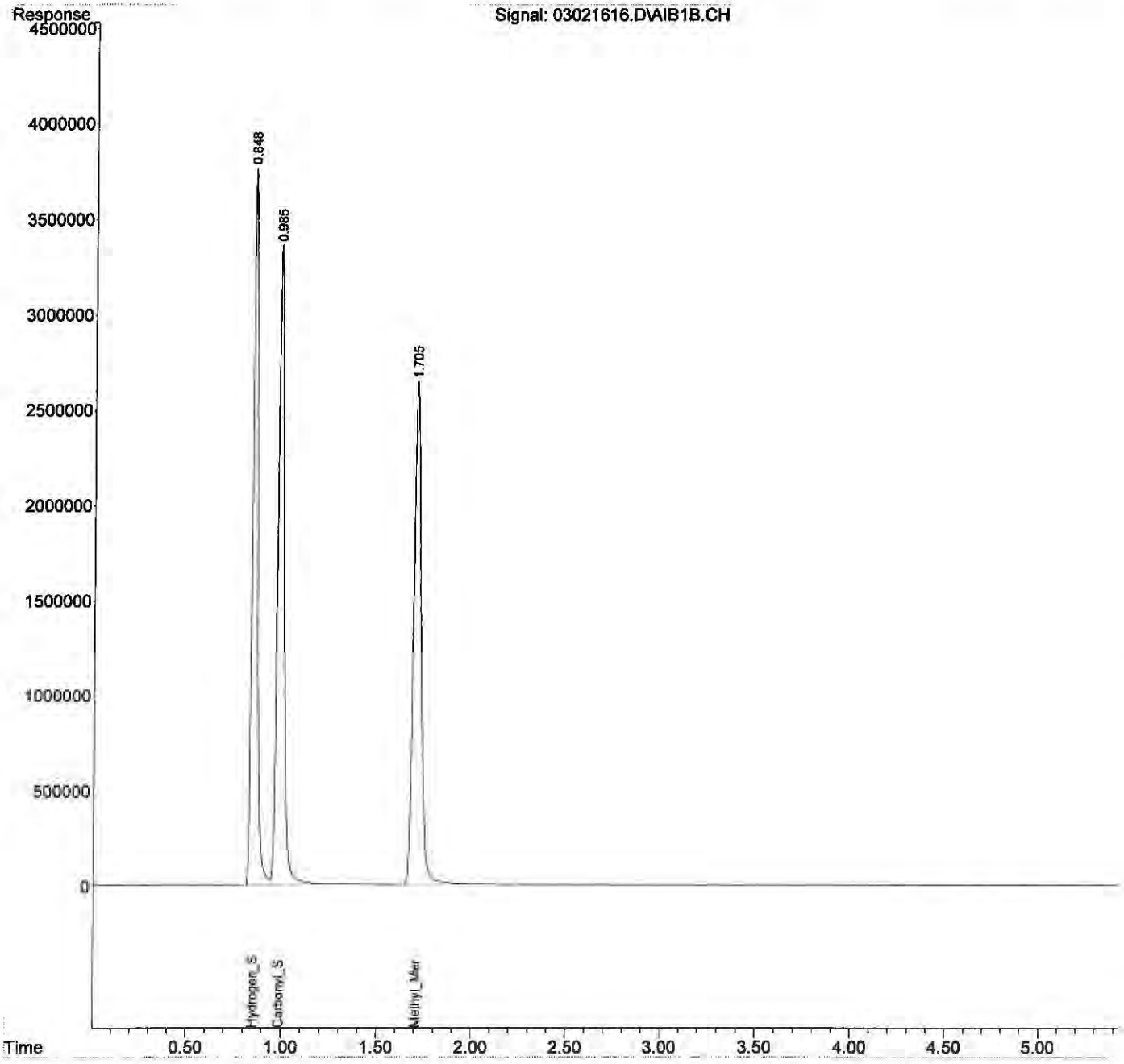
		Compound	R.T.	Response	Conc	Units	%R
Target Compounds							
1)	Z	Hydrogen_Sulfide	0.849	69423216	1101.310	ppb	110.14%
2)	W	Carbonyl_Sulfide	0.985	75695693	1080.714	ppb	108.08%
3)	T	Methyl_Mercaptan	1.706	73290985	1092.772	ppb	109.27%
4)	T	Ethyl_Mercaptan	0.000	0	N.D.	ppb	
5)	T	Dimethyl_Sulfide	0.000	0	N.D.	ppb	
6)	T	Carbon_Disulfide	0.000	0	N.D.	ppb	
7)	T	2-Propyl_Mercaptan	0.000	0	N.D.	ppb	
8)	T	t-Butyl_Mercaptan	0.000	0	N.D.	ppb	
9)	T	Propyl_Mercaptan	0.000	0	N.D.	ppb	
10)	T	Ethyl_Methyl_Sulfide	0.000	0	N.D.	ppb	
11)	T	Thiophene	0.000	0	N.D.	ppb	
12)	T	i-Butyl_Mercaptan	0.000	0	N.D.	ppb	
13)	T	Diethyl_Sulfide	0.000	0	N.D.	ppb	
14)	t	n-Butyl_Mercaptan	0.000	0	N.D.	ppb	
15)	t	Dimethyl_Disulfide	0.000	0	N.D.	ppb	
16)	T	2-Methyl_Thiophene	0.000	0	N.D.	ppb	
17)	t	3-Methyl_Thiophene	0.000	0	N.D.	ppb	
18)	T	Tetrahydrothiophene	0.000	0	N.D.	ppb	
19)	t	2,5-Dimethyl_Thiophene	0.000	0	N.D.	ppb	
20)	T	2-Ethyl_Thiophene	0.000	0	N.D.	ppb	
21)	T	Diethyl_Disulfide	0.000	0	N.D.	ppb	
22)	T	Methyltrisulfide	0.000	0	N.D.	ppb	

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC13\DATA\SCD\2016_03\02\
Data File : 03021616.D
Signal(s) : AIB1B.CH
Acq On : 02 Mar 2016 12:38 pm
Operator : MC
Sample : ICV S30-02241602
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 02 12:43:52 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : 20 Sulfurs
QLast Update : Wed Mar 02 12:32:01 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :



ALS Environmental

REPORT SUMMARY

Method : ASTM D5504, VOA-S307M_SCD, VOA SH2O_SCD
Client : Air Hygiene, Incorporated
Analyst : MC

Service Request : P1604745
Instrument : GC13
Date Acquired : 10/11/16

Compounds	MDL	RL	MB QC		Dry Wall QC		Lab Dup			Continuing Calibration Standards Summary (ppbv)											
			MB					dup	%RSD	ppbv	% Diff	ppbv	% Diff	ppbv	% Diff	ppbv	% Diff	ppbv	% Diff	ppbv	% Diff
Sample Information :	ppb	ppb	mb 1ml				0	0		std s30-08221601		std s30-08221601		std s30-08221601							
Inj. Vol. (ml)	1.0	1.0	1.00		1.0	1.0	1.0	1.0		0.10		0.10		0.10		0.10		0.10		0.10	
Dilution	1.0	1.0	1.00		1.0	1.0	1.0	1.0													
Pi:	1.0	1.0	1.0		1.0	1.0	1.0	1.0													
Pi:	1.0	1.0	1.0		1.0	1.0	1.0	1.0													
PiPf DF:	1.0	1.0	1.0		1.0	1.0	1.0	1.0													
Hydrogen_Sulfide	1.900	5.000	ND	P						1030.56	2.0%	889.053	12.0%	1141.846	13.1%						
Carbonyl_Sulfide	1.700	5.000	ND	P						1029.28	2.9%	918.642	8.1%	1205.678	20.6%						
Methyl_Mercaptan	1.200	5.000	ND	P						997.63	0.2%	882.875	11.7%	1203.372	20.3%						
Ethyl_Mercaptan	1.200	5.000	ND	P																	
Dimethyl_Sulfide	1.200	5.000	ND	P						7:40 AM		10:58 AM		2:29 PM							
Carbon_Disulfide	0.600	2.500	ND	P						10111601.D		10111616.D		10111628.D							
2-Propyl_Mercaptan	1.200	5.000	ND	P																	
t-Butyl_Mercaptan	1.200	5.000	ND	P																	
Propyl_Mercaptan	1.200	5.000	ND	P																	
Ethyl_Methyl_Sulfide	1.200	5.000	ND	P																	
Thiophene	1.200	5.000	ND	P																	
i-Butyl_Mercaptan	1.200	5.000	ND	P																	
Diethyl_Sulfide	1.200	5.000	ND	P																	
n-Butyl_Mercaptan	1.200	5.000	ND	P																	
Dimethyl_Disulfide	0.600	2.500	ND	P																	
2-Methylthiophene	1.200	5.000	ND	P																	
3-Methylthiophene	1.200	5.000	ND	P																	
Tetrahydrothiophene	1.200	5.000	ND	P																	
2,5-Dimethylthiophene	1.200	5.000	ND	P																	
2-Ethylthiophene	1.200	5.000	ND	P																	
Diethyl_Disulfide	0.600	2.500	ND	P																	
Methyltrisulfide	0.600	2.500	ND	P																	
Acqisition Time			8:08 AM																		
DataFile			10111605.D																		

LCS / LCS Dup Summary (ppbv)

	ppbv	%R		ppbv	% R	%RPD	Actual
Hydrogen_Sulfide	989.28	98.9%		1097.56	109.8%	10.38%	1000.00
Carbonyl_Sulfide	1064.87	106.5%		1156.77	115.7%	8.27%	1000.00
Methyl_Mercaptan	1005.44	100.5%		1084.44	108.4%	7.56%	1000.00
Acqisition Time	7:43 AM			7:46 AM			
DataFile	10111602.D			10111603.D			

Quantitation Report (QT Reviewed)

Data Path : J:\GC13\DATA\SCD\2016_10\11\
Data File : 10111601.D
Signal(s) : AIB1B.CH
Acq On : 11 Oct 2016 7:40 am
Operator : MC
Sample : std s30-08221601
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 11 16:10:38 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : ASTM D5504, VOA-S307M_SCD, VOA SH2O_SCD
QLast Update : Tue May 03 15:14:01 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :

		Compound	R.T.	Response	Conc	Units
Target Compounds						
1)	Z	Hydrogen_Sulfide	0.840	64376026	1030.559	ppb
2)	W	Carbonyl_Sulfide	0.975	72093336	1029.283	ppb
3)	T	Methyl_Mercaptan	1.688	66909587	997.625	ppb
4)	T	Ethyl_Mercaptan	0.000	0	N.D.	ppb
5)	T	Dimethyl_Sulfide	0.000	0	N.D.	ppb
6)	T	Carbon_Disulfide	0.000	0	N.D.	ppb
7)	T	2-Propyl_Mercaptan	0.000	0	N.D.	ppb
8)	T	t-Butyl_Mercaptan	0.000	0	N.D.	ppb
9)	T	Propyl_Mercaptan	0.000	0	N.D.	ppb
10)	T	Ethyl_Methyl_Sulfide	0.000	0	N.D.	ppb
11)	T	Thiophene	0.000	0	N.D.	ppb
12)	T	i-Butyl_Mercaptan	0.000	0	N.D.	ppb
13)	T	Diethyl_Sulfide	0.000	0	N.D.	ppb
14)	t	n-Butyl_Mercaptan	0.000	0	N.D.	ppb
15)	t	Dimethyl_Disulfide	0.000	0	N.D.	ppb
16)	T	2-Methyl_Thiophene	0.000	0	N.D.	ppb
17)	t	3-Methyl_Thiophene	0.000	0	N.D.	ppb
18)	T	Tetrahydrothiophene	0.000	0	N.D.	ppb
19)	t	2,5-Dimethyl_Thiophene	0.000	0	N.D.	ppb
20)	T	2-Ethyl_Thiophene	0.000	0	N.D.	ppb
21)	T	Diethyl_Disulfide	0.000	0	N.D.	ppb
22)	T	Methyltrisulfide	0.000	0	N.D.	ppb

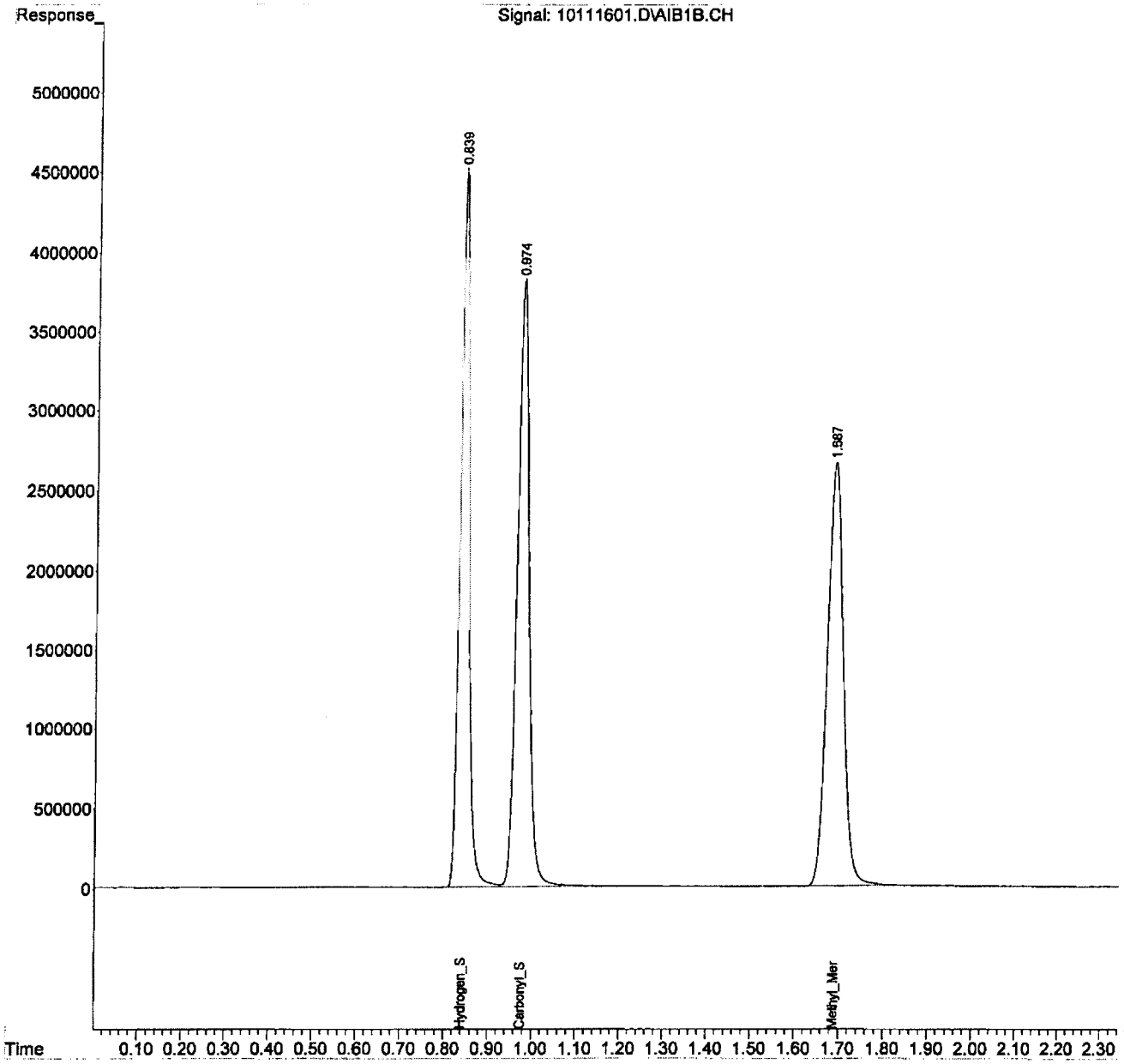
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC13\DATA\SCD\2016_10\11\
Data File : 10111601.D
Signal(s) : AIB1B.CH
Acq On : 11 Oct 2016 7:40 am
Operator : MC
Sample : std s30-08221601
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 11 16:10:38 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : ASTM D5504, VOA-S307M_SCD, VOA SH2O_SCD
QLast Update : Tue May 03 15:14:01 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC13\DATA\SCD\2016_10\11\
Data File : 10111616.D
Signal(s) : AIB1B.CH
Acq On : 11 Oct 2016 10:58 am
Operator : MC
Sample : std s30-08221601
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 11 16:11:10 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : ASTM D5504, VOA-S307M_SCD, VOA SH2O_SCD
QLast Update : Tue May 03 15:14:01 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :

		Compound	R.T.	Response	Conc	Units
Target Compounds						
1)	Z	Hydrogen_Sulfide	0.840	55536562	889.053	ppb
2)	W	Carbonyl_Sulfide	0.973	64343756	918.642	ppb
3)	T	Methyl_Mercaptan	1.681	59213454	882.875	ppb
4)	T	Ethyl_Mercaptan	0.000	0	N.D.	ppb
5)	T	Dimethyl_Sulfide	0.000	0	N.D.	ppb
6)	T	Carbon_Disulfide	0.000	0	N.D.	ppb
7)	T	2-Propyl_Mercaptan	0.000	0	N.D.	ppb
8)	T	t-Butyl_Mercaptan	0.000	0	N.D.	ppb
9)	T	Propyl_Mercaptan	0.000	0	N.D.	ppb
10)	T	Ethyl_Methyl_Sulfide	0.000	0	N.D.	ppb
11)	T	Thiophene	0.000	0	N.D.	ppb
12)	T	i-Butyl_Mercaptan	0.000	0	N.D.	ppb
13)	T	Diethyl_Sulfide	0.000	0	N.D.	ppb
14)	t	n-Butyl_Mercaptan	0.000	0	N.D.	ppb
15)	t	Dimethyl_Disulfide	0.000	0	N.D.	ppb
16)	T	2-Methyl_Thiophene	0.000	0	N.D.	ppb
17)	t	3-Methyl_Thiophene	0.000	0	N.D.	ppb
18)	T	Tetrahydrothiophene	0.000	0	N.D.	ppb
19)	t	2,5-Dimethyl_Thiophene	0.000	0	N.D.	ppb
20)	T	2-Ethyl_Thiophene	0.000	0	N.D.	ppb
21)	T	Diethyl_Disulfide	0.000	0	N.D.	ppb
22)	T	Methyltrisulfide	0.000	0	N.D.	ppb

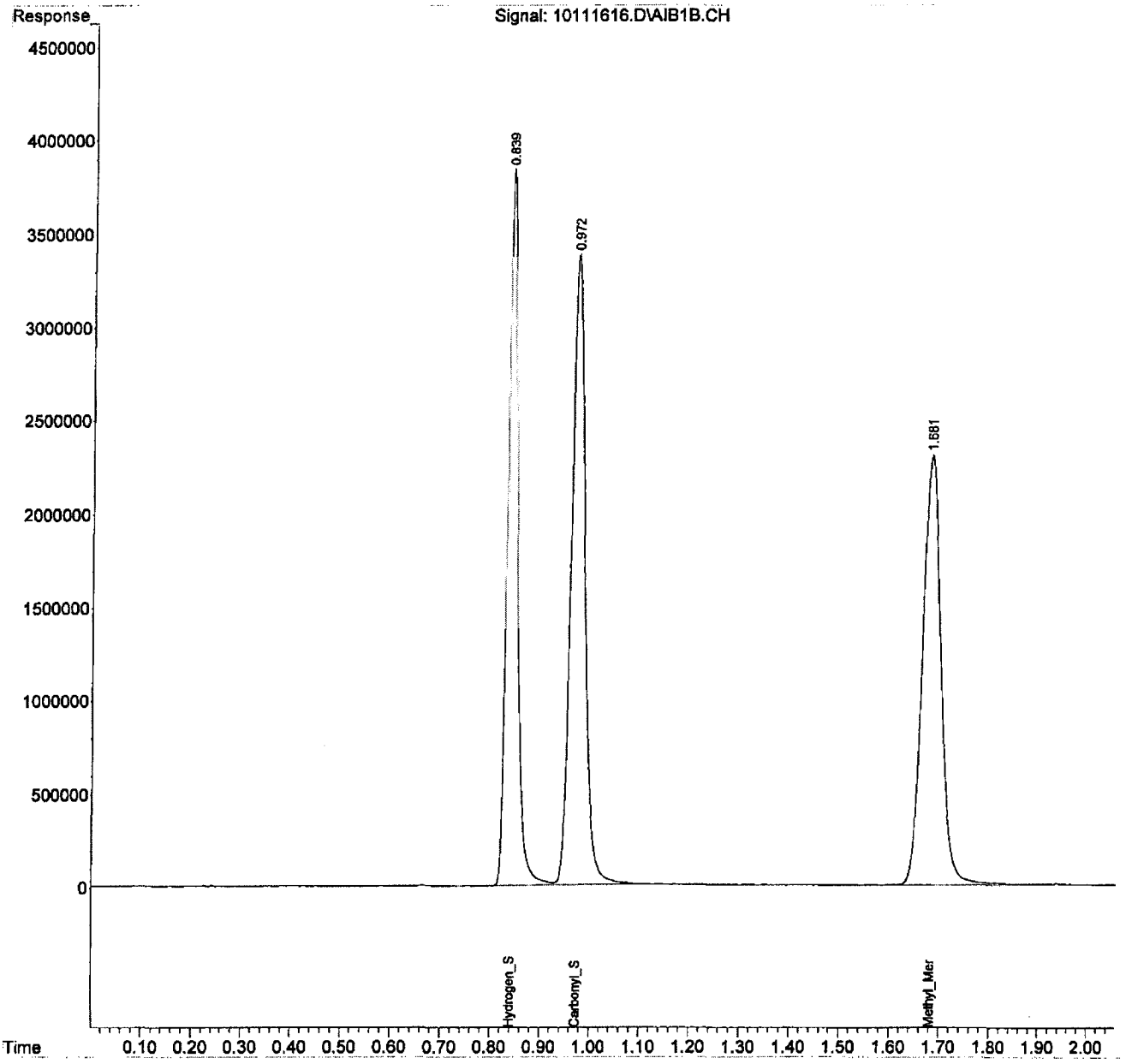
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC13\DATA\SCD\2016_10\11\
Data File : 10111616.D
Signal(s) : AIB1B.CH
Acq On : 11 Oct 2016 10:58 am
Operator : MC
Sample : std s30-08221601
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 11 16:11:10 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : ASTM D5504, VOA-S307M_SCD, VOA SH2O_SCD
QLast Update : Tue May 03 15:14:01 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC13\DATA\SCD\2016_10\11\
Data File : 10111628.D
Signal(s) : AIB1B.CH
Acq On : 11 Oct 2016 2:29 pm
Operator : MC
Sample : std s30-08221601
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 11 16:11:34 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : ASTM D5504, VOA-S307M_SCD, VOA SH2O_SCD
QLast Update : Tue May 03 15:14:01 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :

		Compound	R.T.	Response	Conc	Units
Target Compounds						
1)	Z	Hydrogen_Sulfide	0.839	71327751	1141.846	ppb
2)	W	Carbonyl_Sulfide	0.973	84448418	1205.678	ppb
3)	T	Methyl_Mercaptan	1.684	80708826	1203.372	ppb
4)	T	Ethyl_Mercaptan	0.000	0	N.D.	ppb
5)	T	Dimethyl_Sulfide	0.000	0	N.D.	ppb
6)	T	Carbon_Disulfide	0.000	0	N.D.	ppb
7)	T	2-Propyl_Mercaptan	0.000	0	N.D.	ppb
8)	T	t-Butyl_Mercaptan	0.000	0	N.D.	ppb
9)	T	Propyl_Mercaptan	0.000	0	N.D.	ppb
10)	T	Ethyl_Methyl_Sulfide	0.000	0	N.D.	ppb
11)	T	Thiophene	0.000	0	N.D.	ppb
12)	T	i-Butyl_Mercaptan	0.000	0	N.D.	ppb
13)	T	Diethyl_Sulfide	0.000	0	N.D.	ppb
14)	t	n-Butyl_Mercaptan	0.000	0	N.D.	ppb
15)	t	Dimethyl_Disulfide	0.000	0	N.D.	ppb
16)	T	2-Methyl_Thiophene	0.000	0	N.D.	ppb
17)	t	3-Methyl_Thiophene	0.000	0	N.D.	ppb
18)	T	Tetrahydrothiophene	0.000	0	N.D.	ppb
19)	t	2,5-Dimethyl_Thiophene	0.000	0	N.D.	ppb
20)	T	2-Ethyl_Thiophene	0.000	0	N.D.	ppb
21)	T	Diethyl_Disulfide	0.000	0	N.D.	ppb
22)	T	Methyltrisulfide	0.000	0	N.D.	ppb

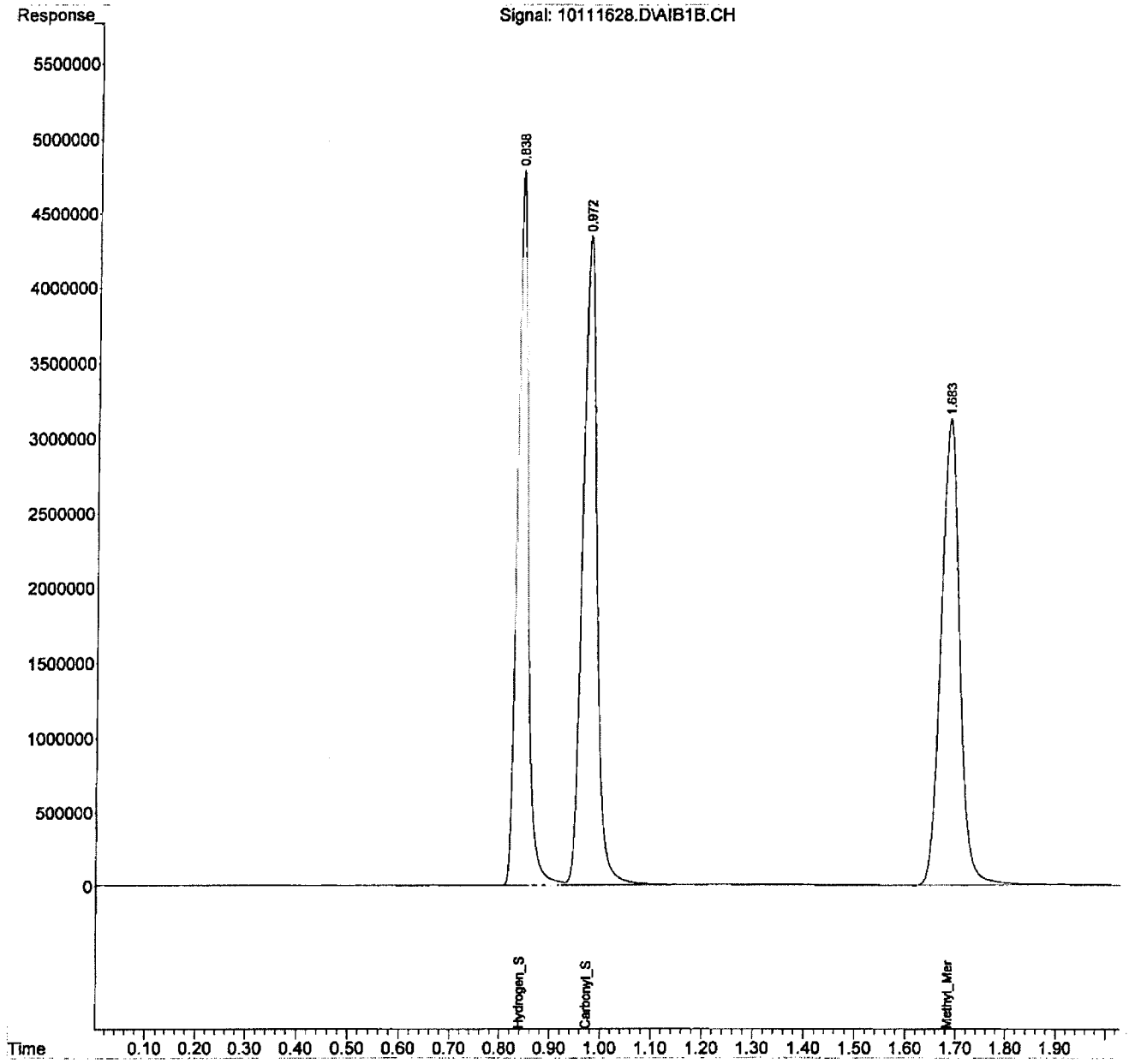
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC13\DATA\SCD\2016_10\11\
Data File : 10111628.D
Signal(s) : AIB1B.CH
Acq On : 11 Oct 2016 2:29 pm
Operator : MC
Sample : std s30-08221601
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 11 16:11:34 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : ASTM D5504, VOA-S307M_SCD, VOA SH2O_SCD
QLast Update : Tue May 03 15:14:01 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :



Injection Log

Directory: I:\GC13\DATA\SCD\2016_03\02\

	Sample ID	Date/Time	Acquisition Method	File Name	Misc Info	Operator	Comments
	Rt	3/2/16 10:29	GC13_SCD.M	03021601.D		MC	
	Rt	3/2/16 10:52	GC13_SCD.M	03021602.D		MC	
	Blank	3/2/16 11:22	GC13_SCD.M	03021603.D		MC	
	2.5ppb S11-0302160225ul	3/2/16 11:27	GC13_SCD.M	03021604.D		MC	
	10ppb S11-03021602 100ul	3/2/16 11:36	GC13_SCD.M	03021605.D		MC	
	50ppb S11-03021602 500ul	3/2/16 11:41	GC13_SCD.M	03021606.D		MC	
	250ppbS11-03021601 25ul	3/2/16 11:45	GC13_SCD.M	03021607.D		MC	
	1000ppb S11-03021601 100ul	3/2/16 11:49	GC13_SCD.M	03021608.D		MC	
	2500ppb S11-03021601 250ul	3/2/16 11:53	GC13_SCD.M	03021609.D		MC	
	5000ppb S11-03021601 500ul	3/2/16 11:57	GC13_SCD.M	03021610.D		MC	
	10ppm S11-03021601 1ml	3/2/16 12:00	GC13_SCD.M	03021611.D		MC	
	25ppm S30-11031401 25ul	3/2/16 12:04	GC13_SCD.M	03021612.D		MC	
	50ppm S30-11031401 50ul	3/2/16 12:08	GC13_SCD.M	03021613.D		MC	
	100ppm S30-11031401 100ul	3/2/16 12:13	GC13_SCD.M	03021614.D		MC	
	RT	3/2/16 12:19	GC13_SCD.M	03021615.D		MC	
	ICV S30-02241602	3/2/16 12:38	GC13_SCD.M	03021616.D		MC	
	MB 1ml N2	3/2/16 12:49	GC13_SCD.M	03021617.D		MC	
	2.5ppb MDL-1	3/2/16 13:07	GC13_SCD.M	03021618.D		MC	
	2.5ppb MDL-2	3/2/16 13:10	GC13_SCD.M	03021619.D		MC	
	2.5ppb MDL-3	3/2/16 13:14	GC13_SCD.M	03021620.D		MC	
	2.5ppb MDL-4	3/2/16 13:17	GC13_SCD.M	03021621.D		MC	
	2.5ppb MDL-5	3/2/16 13:20	GC13_SCD.M	03021622.D		MC	
	2.5ppb MDL-6	3/2/16 13:24	GC13_SCD.M	03021623.D		MC	
	baseline drop	3/2/16 13:27	GC13_SCD.M	03021624.D		MC	
	2.5ppb MDL-7	3/2/16 13:30	GC13_SCD.M	03021625.D		MC	
	2.5ppb MDL-9	3/2/16 13:34	GC13_SCD.M	03021626.D		MC	
	2.0ppb LOD	3/2/16 13:37	GC13_SCD.M	03021627.D		MC	
	1.5ppb LOD	3/2/16 13:41	GC13_SCD.M	03021628.D		MC	
	CCV S30-02241601	3/2/16 13:45	GC13_SCD.M	03021629.D		MC	
	S11-02171603	3/2/16 13:49	GC13_SCD.M	03021630.D		MC	
	S11-02171604	3/2/16 13:52	GC13_SCD.M	03021631.D		MC	

Injection Log

Directory: I:\GC13\DATA\SCD\2016_10\11\

	Sample ID	Date/Time	Acquisition Method	File Name	Misc Info	Operator	Comments
1	std s30-08221601	10/11/16 7:40	GC13_SCD.M	10111601.D		MC	Pass
	lcs s30-08221602	10/11/16 7:43	GC13_SCD.M	10111602.D		MC	
	lcsd s30-08221602	10/11/16 7:46	GC13_SCD.M	10111603.D		MC	
	rt	10/11/16 7:50	GC13_SCD.M	10111604.D		MC	
	mb 1ml	10/11/16 8:08	GC13_SCD.M	10111605.D		MC	
	4745-001 1ml	10/11/16 8:26	GC13_SCD.M	10111606.D		MC	
	4745-002 1ml	10/11/16 8:44	GC13_SCD.M	10111607.D		MC	
	4745-003 1ml	10/11/16 9:01	GC13_SCD.M	10111608.D		MC	
	4745-004 1ml	10/11/16 9:18	GC13_SCD.M	10111609.D		MC	
	4765-001 1ml	10/11/16 9:31	GC13_SCD.M	10111610.D		MC	
	4777-001 1ml	10/11/16 9:48	GC13_SCD.M	10111611.D		MC	
	4777-002 1ml	10/11/16 10:05	GC13_SCD.M	10111612.D		MC	
	4777-003 1ml	10/11/16 10:21	GC13_SCD.M	10111613.D		MC	
	4780-001 1ml	10/11/16 10:33	GC13_SCD.M	10111614.D		MC	
	4780-004 1ml	10/11/16 10:45	GC13_SCD.M	10111615.D		MC	
#VALUE!	std s30-08221601	10/11/16 10:58	GC13_SCD.M	10111616.D		MC	Pass
	4780-002 1ml	10/11/16 11:10	GC13_SCD.M	10111617.D		MC	
	4780-007 1ml	10/11/16 11:22	GC13_SCD.M	10111618.D		MC	
	4782-001 1ml	10/11/16 11:34	GC13_SCD.M	10111619.D		MC	
	4782-002 1ml	10/11/16 11:45	GC13_SCD.M	10111620.D		MC	
	4782-003 1ml	10/11/16 12:54	GC13_SCD.M	10111621.D		MC	
	4782-004 1ml	10/11/16 13:11	GC13_SCD.M	10111622.D		MC	
	4787-001 1ml	10/11/16 13:26	GC13_SCD.M	10111623.D		MC	
	4787-001 0.5ml	10/11/16 13:39	GC13_SCD.M	10111624.D		MC	
	4787-002 0.5ml	10/11/16 13:50	GC13_SCD.M	10111625.D		MC	
	4787-002 1ml	10/11/16 14:08	GC13_SCD.M	10111626.D		MC	
#VALUE!	std s30-08221601	10/11/16 14:27	GC13_SCD.M	10111627.D		MC	Fail
#VALUE!	std s30-08221601	10/11/16 14:29	GC13_SCD.M	10111628.D		MC	Pass
	4598-002 1ml	10/11/16 16:04	GC13_SCD.M	10111629.D		MC	
	4598-005 1ml	10/11/16 16:18	GC13_SCD.M	10111630.D		MC	
	4598-008 1ml	10/11/16 16:31	GC13_SCD.M	10111631.D		MC	
	4598-011 1ml	10/11/16 16:46	GC13_SCD.M	10111632.D		MC	
#VALUE!	std s30-08221601	10/11/16 16:58	GC13_SCD.M	10111633.D		MC	Fail
#VALUE!	std s30-08221601	10/11/16 17:01	GC13_SCD.M	10111634.D		MC	Pass

APPENDIX F

METHOD 3C RESULTS

APPENDIX F

METHOD 3C RESULTS

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Simi Valley, CA 93065
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F: +1 805 526 7270
www.alsglobal.com

LABORATORY REPORT

October 19, 2016

Sean Barnes
Air Hygiene, Incorporated
1600 West Tacoma Street
Broken Arrow, OK 74012

RE: Coyote-16-Enid.ok-comp#1

Dear Sean:

Enclosed are the results of the samples submitted to our laboratory on September 30, 2016. For your reference, these analyses have been assigned our service request number P1604639.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Kelly Horiuchi at 11:57 am, Oct 19, 2016

Kelly Horiuchi
Laboratory Director

2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
F: +1 805 526 7270
www.alsglobal.com

Client: Air Hygiene, Incorporated
Project: Coyote-16-Enid.ok-comp#1

Service Request No: P1604639

CASE NARRATIVE

The samples were received intact under chain of custody on September 30, 2016 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Fixed Gases Analysis

The samples were analyzed for fixed gases (oxygen, nitrogen, methane and carbon dioxide) according to modified EPA Method 3C (triplicate injection) using a gas chromatograph equipped with a thermal conductivity detector (TCD). This procedure is described in laboratory SOP VOA-EPA3C. This method is included on the laboratory's DoD-ELAP scope of accreditation, however it is not part of the NELAP or AIHA-LAP, LLC accreditation.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

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ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
AIHA-LAP, LLC	http://www.aihaaccreditedlabs.org	101661
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0694
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Florida DOH (NELAP)	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E871020
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/labcert.htm	2014025
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	977273
New Jersey DEP (NELAP)	http://www.nj.gov/dep/oqa/	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-003
Pennsylvania DEP	http://www.depweb.state.pa.us/labs	68-03307 (Registration)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704413-16-7
Utah DOH (NELAP)	http://www.health.utah.gov/lab/labimp/certification/index.html	CA016272016-6
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: Air Hygiene, Incorporated
Project ID: Coyote-16-Enid.ok-comp#1
Service Request: P1604639

Date Received: 9/30/2016
Time Received: 10:00

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	3C Modified - Fxd Gases Bag 2X
R1-0-30-0%-COMB 48	P1604639-001	Air	9/27/2016	12:35	X
R2-0-30-0%-COMB 48	P1604639-003	Air	9/27/2016	14:26	X
R3-0-30-0%-COMB 48	P1604639-005	Air	9/27/2016	15:50	X
R4-30-70-30%-COMB 48	P1604639-007	Air	9/27/2016	17:25	X

P604639

SAMPLE DESCRIPTION AND CHAIN OF CUSTODY RECORD

Air Hygiene International, Inc.
1600 W Tacoma Street
Broken Arrow, Oklahoma 74012
(888) 461-8778
www.airhygiene.com

Project Number:	Coyote-16-enid.ok-comp#1	Laboratory Analysis Requested:	
Person Taking Samples:	TW/MSL/RA		

	Sample Number	Location	Date	Time	Volume	Analysis Method			
						O_2	CO_2	Methane	
(1)	R1-0-30-0%-COMB 48	Enid Facility	9/27/2016	12:35	10	x	x	x	
(2)	R1-0-30-0%-COMB- 48-Backup	Enid Facility	9/27/2016	12:35	5	x	x	x	
(3)	R2-0-30-0%-COMB 48	Enid Facility	9/27/2016	14:26	10	x	x	x	
(4)	R2-0-30-0%-COMB- 48-Backup	Enid Facility	9/27/2016	14:26	5	x	x	x	
(5)	R3-0-30-0%-COMB 48	Enid Facility	9/27/2016	15:50	10	x	x	x	
(6)	R3-0-30-0%-COMB- 48-Backup	Enid Facility	9/27/2016	15:50	5	x	x	x	
(7)	R4-30-70-30%-COMB 48	Enid Facility	9/27/2016	17:25	10	x	x	x	
(8)	R3-30-70-30%-COMB- 48-Backup	Enid Facility	9/27/2016	17:25	5	x	x	x	

Sun Lee	9/28/16	7:00 am		
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date: / Time:
			9/30/16	1000
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date: / Time:

ALS Environmental
Sample Acceptance Check Form

Client: Air Hygiene, Incorporated Work order: P1604639

Project: Coyote-16-Enid.ok-comp#1

Sample(s) received on: 9/30/16 Date opened: 9/30/16 by: ADAVID

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☐	☐	☒
8	Were **custody seals** on outside of cooler/Box/Container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
9	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☐	☐	☒
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
11	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1604639-001.01	10 L Tedlar Bag					
P1604639-002.01	5.0 L Tedlar Bag					
P1604639-003.01	10 L Tedlar Bag					
P1604639-004.01	5.0 L Tedlar Bag					
P1604639-005.01	10 L Tedlar Bag					
P1604639-006.01	5.0 L Tedlar Bag					
P1604639-007.01	10 L Tedlar Bag					
P1604639-008.01	5.0 L Tedlar Bag					

Explain any discrepancies: (include lab sample ID numbers): _____

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **R1-0-30-0%-COMB 48**
Client Project ID: **Coyote-16-Enid.ok-comp#1**

ALS Project ID: P1604639
ALS Sample ID: P1604639-001

Test Code: EPA Method 3C Modified
Instrument ID: HP5890 II/GC1/FID/TCD
Analyst: Adam McAfee
Sample Type: 10 L Tedlar Bag
Test Notes:

Date Collected: 9/27/16
Date Received: 9/30/16
Date Analyzed: 9/30/16
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
7782-44-7	**Oxygen***	**16.2**	0.10	
7727-37-9	**Nitrogen**	**79.8**	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	**Carbon Dioxide**	**3.95**	0.10	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
* = The oxygen result may include argon due to coelution. Ambient air includes 0.93% argon.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **R2-0-30-0%-COMB 48**
Client Project ID: **Coyote-16-Enid.ok-comp#1**

ALS Project ID: P1604639
ALS Sample ID: P1604639-003

Test Code: EPA Method 3C Modified
Instrument ID: HP5890 II/GC1/FID/TCD
Analyst: Adam McAfee
Sample Type: 10 L Tedlar Bag
Test Notes:

Date Collected: 9/27/16
Date Received: 9/30/16
Date Analyzed: 9/30/16
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
7782-44-7	**Oxygen***	**16.5**	0.10	
7727-37-9	**Nitrogen**	**79.8**	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	**Carbon Dioxide**	**3.71**	0.10	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
* = The oxygen result may include argon due to coelution. Ambient air includes 0.93% argon.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **R3-0-30-0%-COMB 48**
Client Project ID: **Coyote-16-Enid.ok-comp#1**

ALS Project ID: P1604639
ALS Sample ID: P1604639-005

Test Code: EPA Method 3C Modified
Instrument ID: HP5890 II/GC1/FID/TCD
Analyst: Adam McAfee
Sample Type: 10 L Tedlar Bag
Test Notes:

Date Collected: 9/27/16
Date Received: 9/30/16
Date Analyzed: 9/30/16
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
7782-44-7	**Oxygen***	**15.4**	0.10	
7727-37-9	**Nitrogen**	**80.1**	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	**Carbon Dioxide**	**4.45**	0.10	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
* = The oxygen result may include argon due to coelution. Ambient air includes 0.93% argon.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **R4-30-70-30%-COMB 48**
Client Project ID: **Coyote-16-Enid.ok-comp#1**

ALS Project ID: P1604639
ALS Sample ID: P1604639-007

Test Code: EPA Method 3C Modified
Instrument ID: HP5890 II/GC1/FID/TCD
Analyst: Adam McAfee
Sample Type: 10 L Tedlar Bag
Test Notes:

Date Collected: 9/27/16
Date Received: 9/30/16
Date Analyzed: 9/30/16
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
7782-44-7	**Oxygen***	**16.3**	0.10	
7727-37-9	**Nitrogen**	**79.8**	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	**Carbon Dioxide**	**3.88**	0.10	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
* = The oxygen result may include argon due to coelution. Ambient air includes 0.93% argon.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **Method Blank** ALS Project ID: P1604639
Client Project ID: **Coyote-16-Enid.ok-comp#1** ALS Sample ID: P160930-MB

Test Code: EPA Method 3C Modified Date Collected: NA
Instrument ID: HP5890 II/GC1/FID/TCD Date Received: NA
Analyst: Adam McAfee Date Analyzed: 9/30/16
Sample Type: 10 L Tedlar Bag Volume(s) Analyzed: 0.10 ml(s)
Test Notes:

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
7782-44-7	Oxygen*	ND	0.10	
7727-37-9	Nitrogen	ND	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	Carbon Dioxide	ND	0.10	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
* = The oxygen result may include argon due to coelution. Ambient air includes 0.93% argon.

Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\30\
Data File : 09301604.D
Signal(s) : TCD1A.CH
Acq On : 30 Sep 2016 10:10 am
Operator : amf
Sample : 4639-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 10:50:35 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

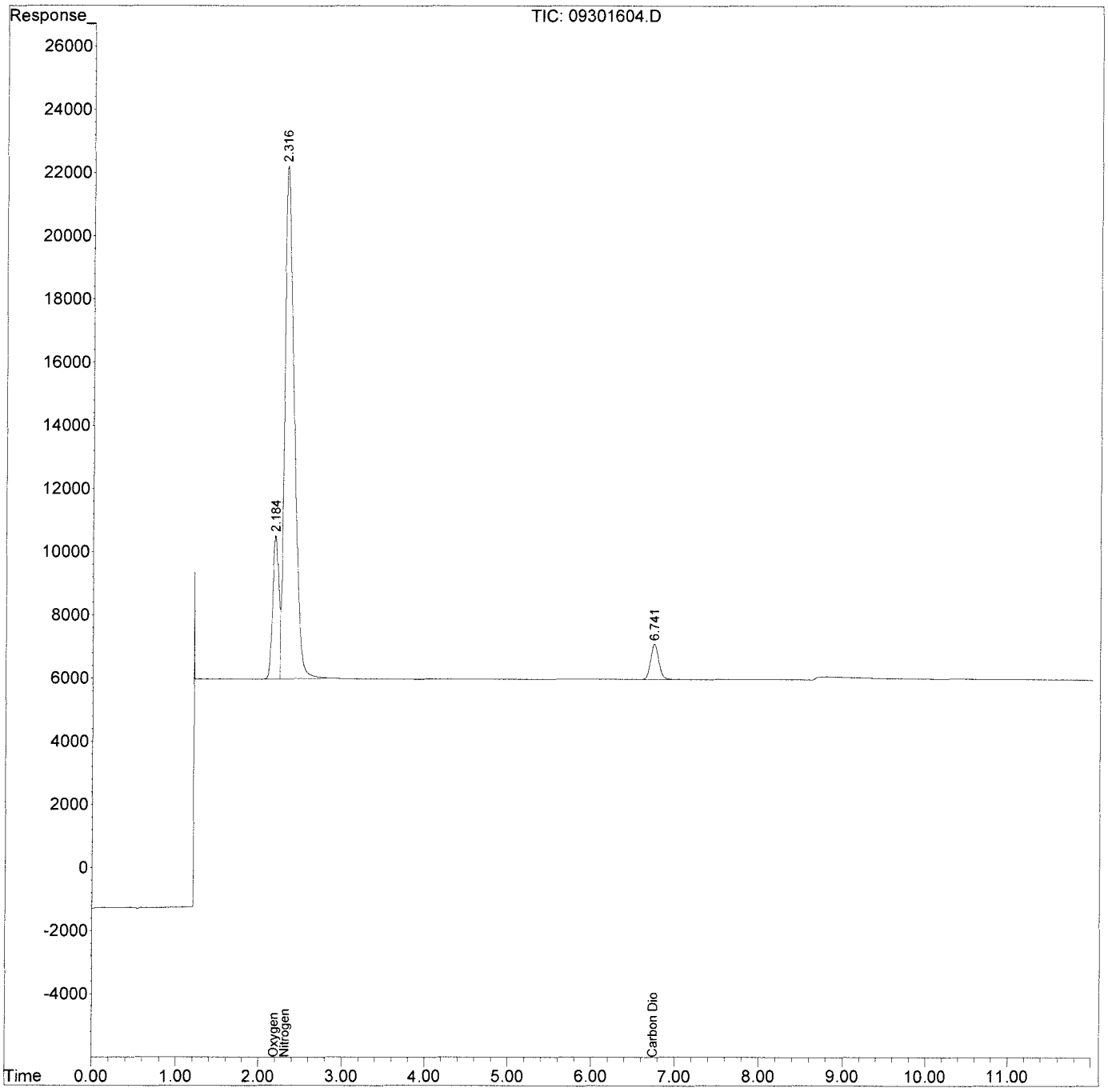
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.186	231724	149882.142	ppm
3)	Nitrogen	2.317	1301891	736697.880	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.743	76532	36488.698	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_09\30\
Data File : 09301604.D
Signal(s) : TCD1A.CH
Acq On : 30 Sep 2016 10:10 am
Operator : amf
Sample : 4639-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 10:50:35 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\30\
Data File : 09301605.D
Signal(s) : TCD1A.CH
Acq On : 30 Sep 2016 10:26 am
Operator : amf
Sample : 4639-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 10:50:52 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

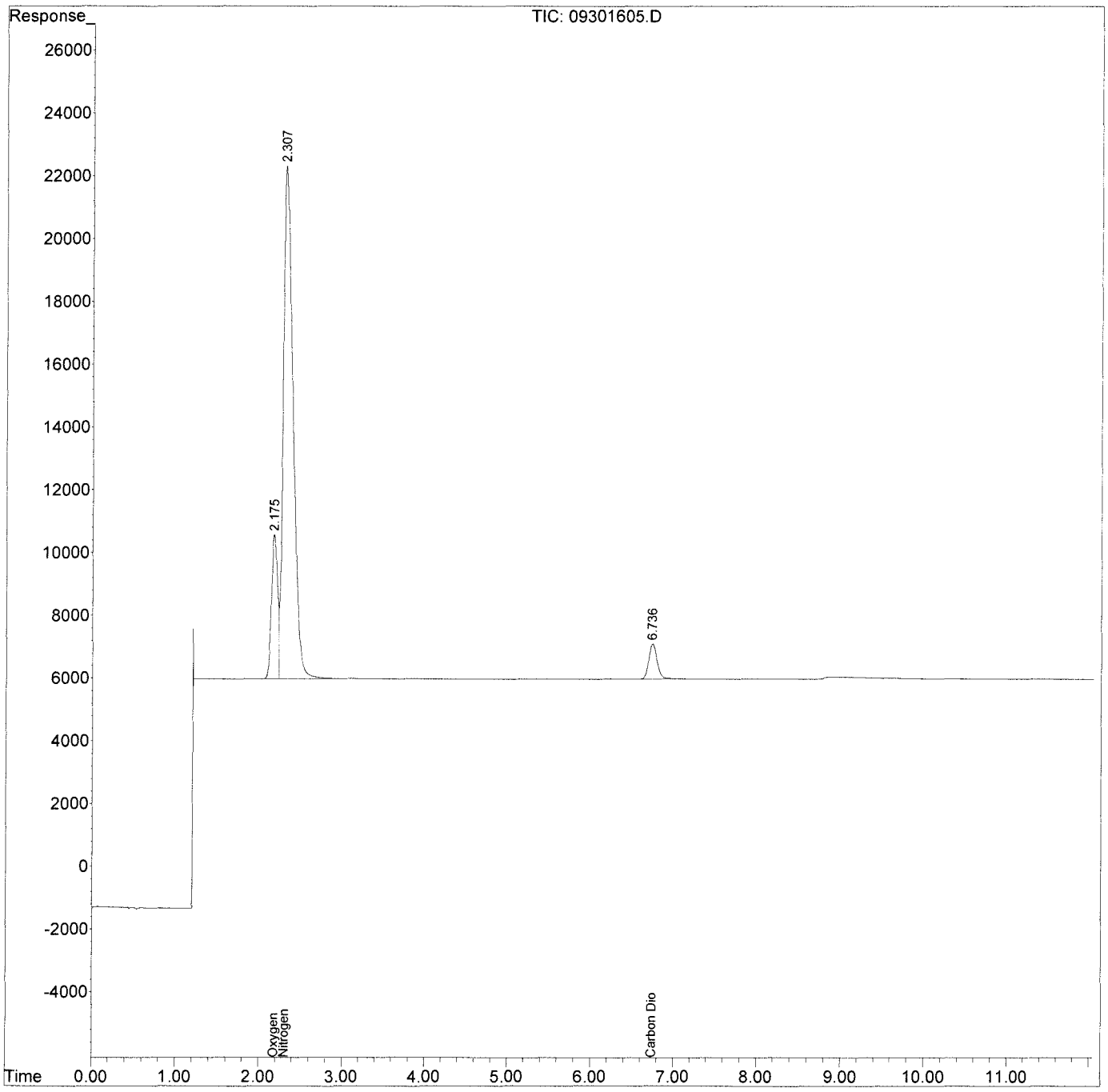
	Compound	R.T.	Response	Conc Units
Target Compounds				
1)	Hydrogen	0.000	0	N.D. ppm
2)	Oxygen	2.177	233486	151021.847 ppm
3)	Nitrogen	2.308	1316847	745160.597 ppm
4)	Carbon Monoxide	0.000	0	N.D. ppm
5)	Methane	0.000	0	N.D. ppm
6)	Carbon Dioxide	6.738	76798	36615.363 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_09\30\
Data File : 09301605.D
Signal(s) : TCD1A.CH
Acq On : 30 Sep 2016 10:26 am
Operator : amf
Sample : 4639-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 10:50:52 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\30\
Data File : 09301606.D
Signal(s) : TCD1A.CH
Acq On : 30 Sep 2016 10:42 am
Operator : amf
Sample : 4639-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 11:01:14 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

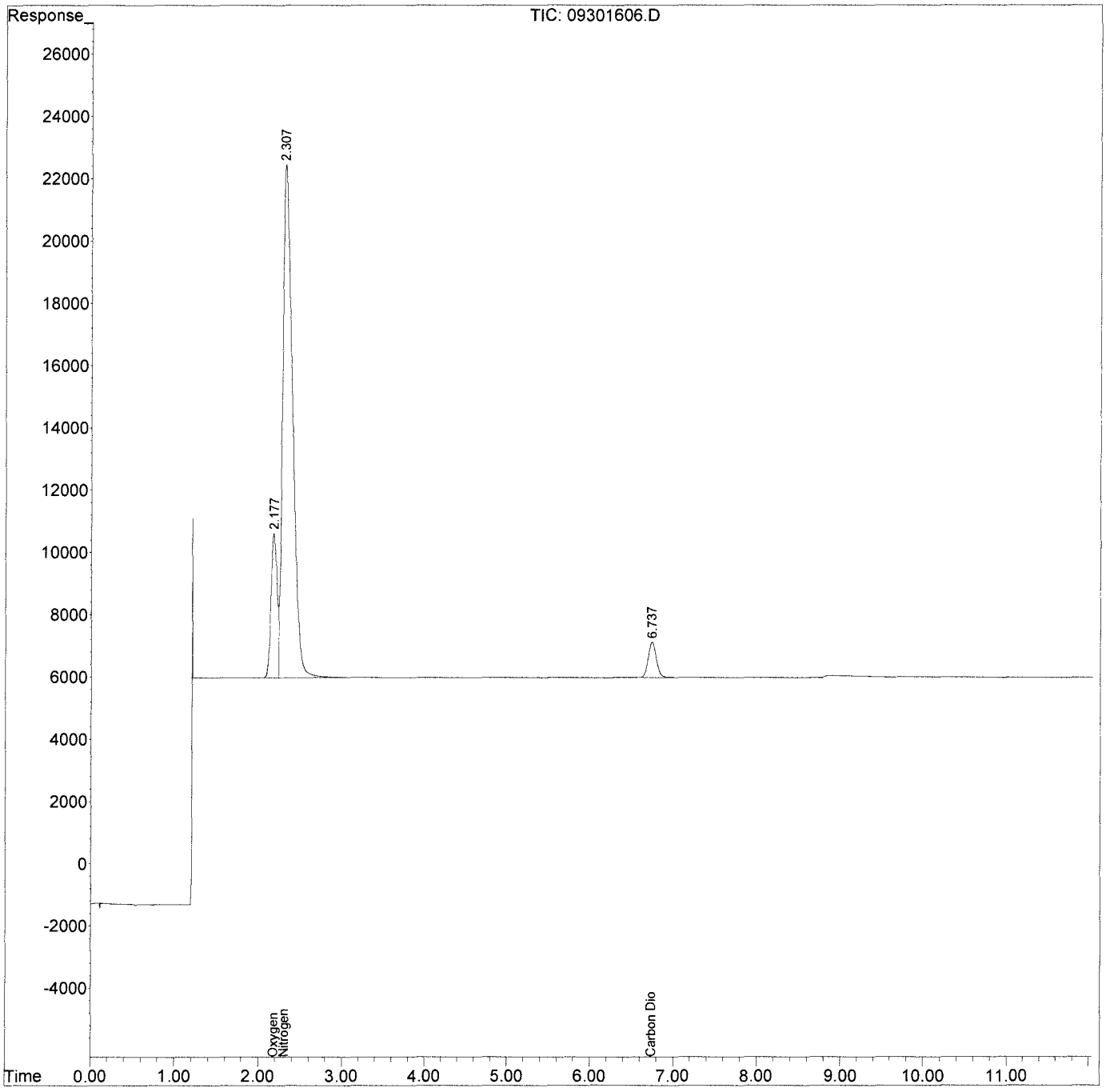
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.178	236019	152660.673	ppm
3)	Nitrogen	2.309	1330195	752713.880	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.738	78365	37362.412	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_09\30\
Data File : 09301606.D
Signal(s) : TCD1A.CH
Acq On : 30 Sep 2016 10:42 am
Operator : amf
Sample : 4639-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 11:01:14 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\30\
Data File : 09301607.D
Signal(s) : TCD1A.CH
Acq On : 30 Sep 2016 10:59 am
Operator : amf
Sample : 4639-003
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 11:28:39 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

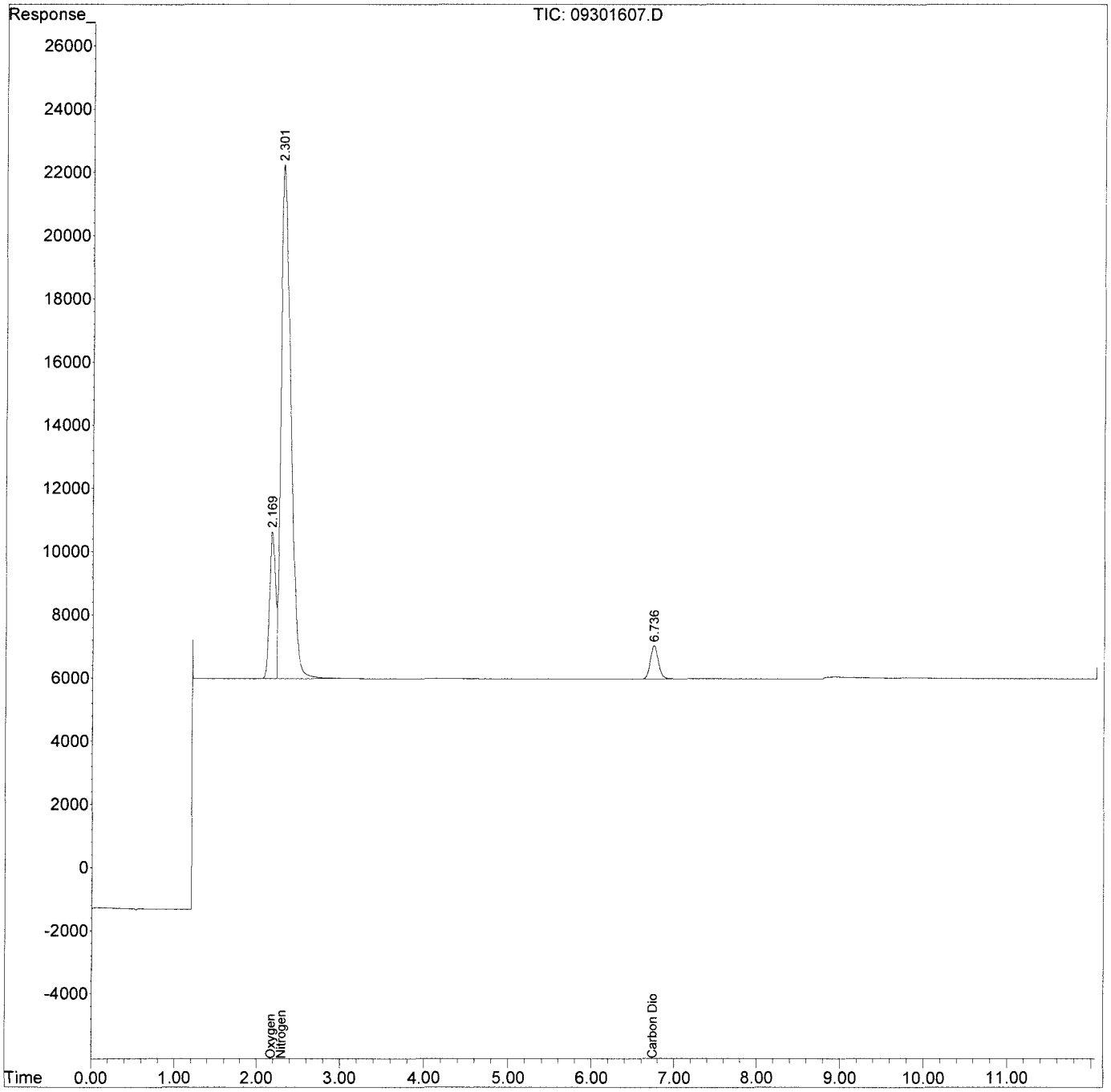
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.170	237559	153656.385	ppm
3)	Nitrogen	2.302	1314707	743949.834	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.738	72350	34494.643	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_09\30\
Data File : 09301607.D
Signal(s) : TCD1A.CH
Acq On : 30 Sep 2016 10:59 am
Operator : amf
Sample : 4639-003
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 11:28:39 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\30\
Data File : 09301608.D
Signal(s) : TCD1A.CH
Acq On : 30 Sep 2016 11:15 am
Operator : amf
Sample : 4639-003
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 11:42:26 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

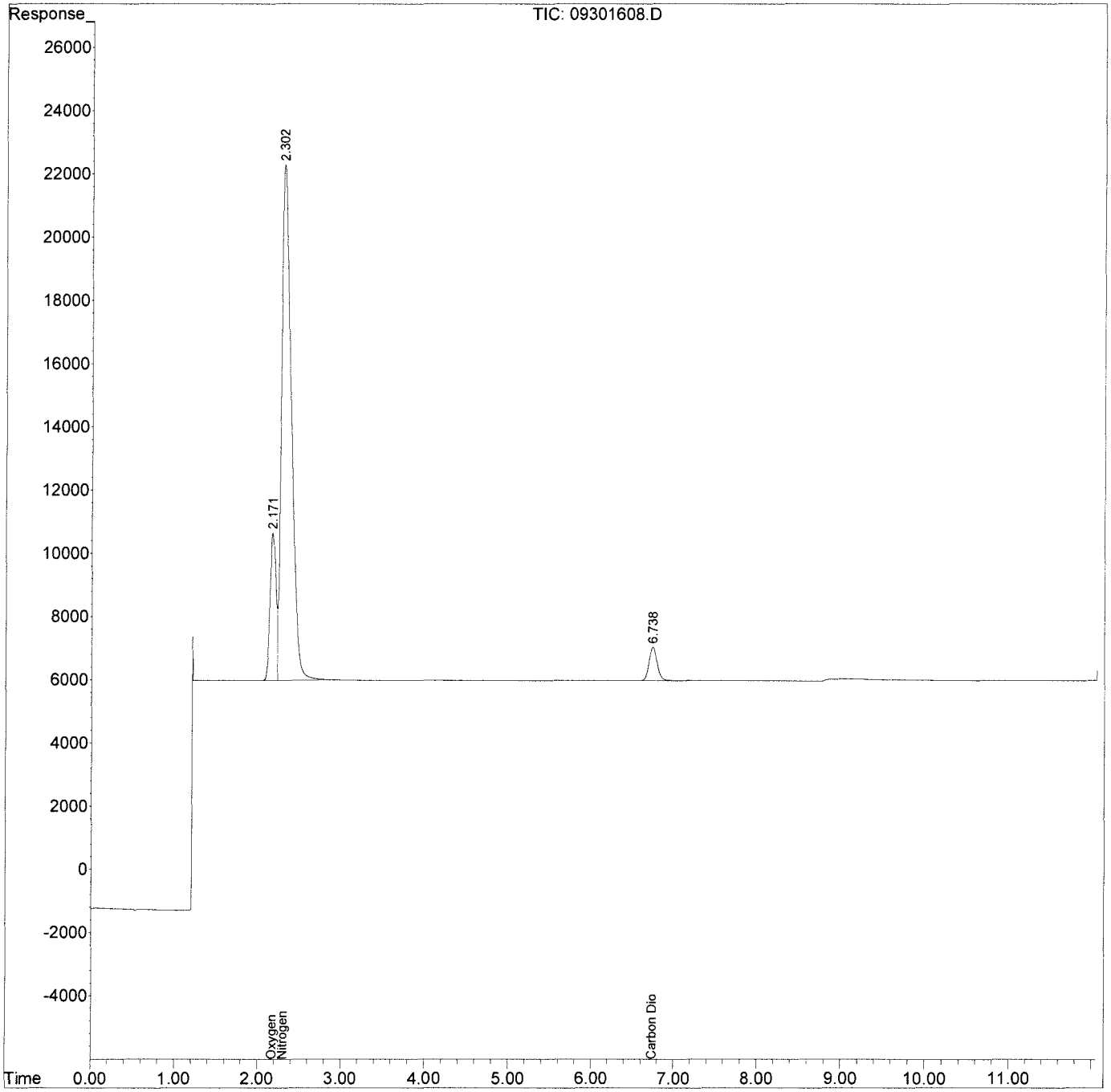
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.172	238297	154133.772	ppm
3)	Nitrogen	2.304	1315287	744277.992	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.739	72723	34672.398	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_09\30\
Data File : 09301608.D
Signal(s) : TCD1A.CH
Acq On : 30 Sep 2016 11:15 am
Operator : amf
Sample : 4639-003
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 11:42:26 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Data Path : I:\GC01\DATA\FXG\2016_09\30\
Data File : 09301609.D
Signal(s) : TCD1A.CH
Acq On : 30 Sep 2016 11:31 am
Operator : amf
Sample : 4639-003
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 11:50:45 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

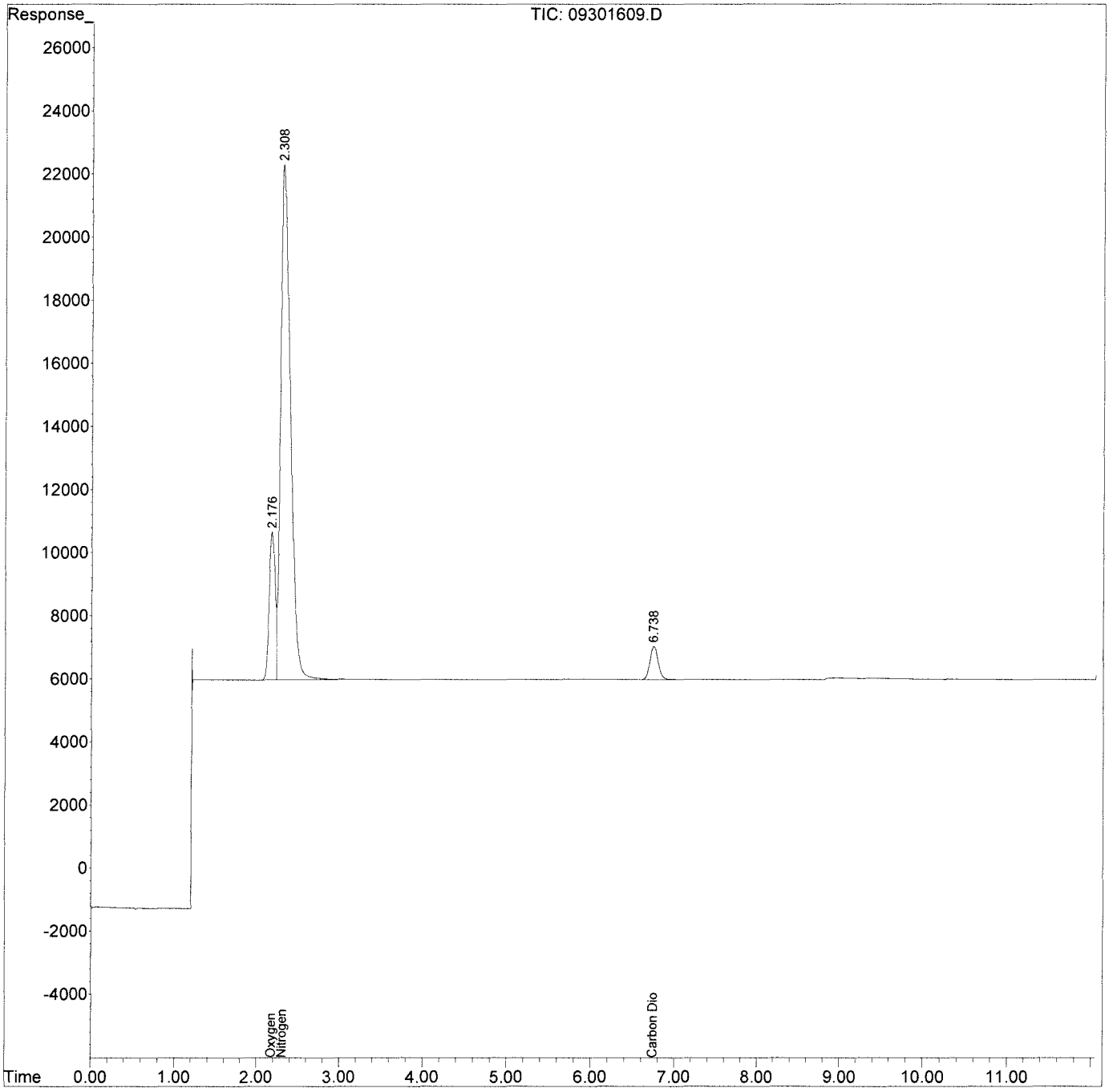
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.178	238160	154045.207	ppm
3)	Nitrogen	2.309	1317741	745666.541	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.740	72641	34633.682	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_09\30\
Data File : 09301609.D
Signal(s) : TCD1A.CH
Acq On : 30 Sep 2016 11:31 am
Operator : amf
Sample : 4639-003
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 11:50:45 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Data Path : I:\GC01\DATA\FXG\2016_09\30\
Data File : 09301610.D
Signal(s) : TCD1A.CH
Acq On : 30 Sep 2016 11:48 am
Operator : amf
Sample : 4639-005
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 12:29:08 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

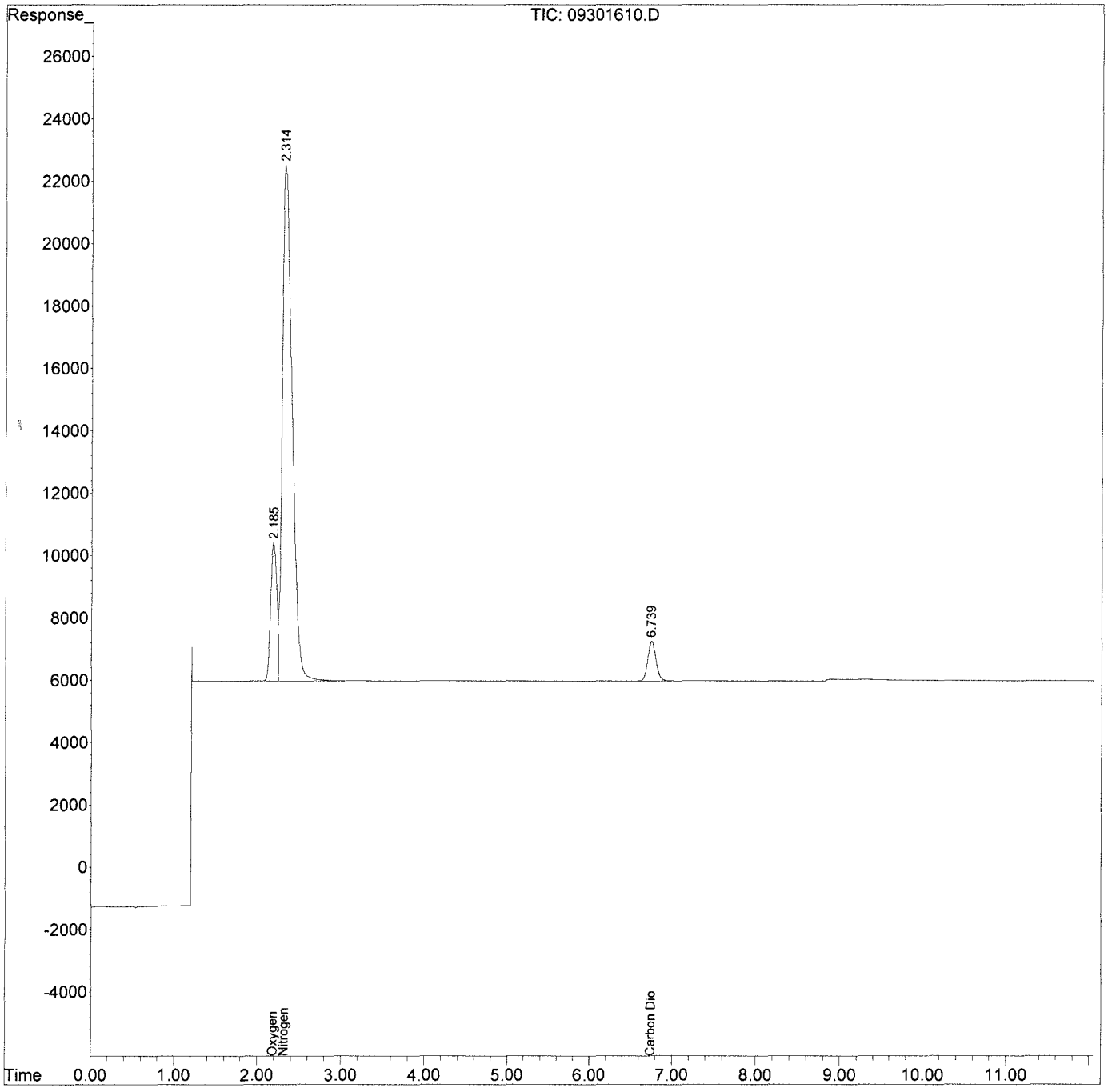
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.186	224476	145194.466	ppm
3)	Nitrogen	2.316	1333367	754509.147	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.741	87719	41822.413	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_09\30\
Data File : 09301610.D
Signal(s) : TCD1A.CH
Acq On : 30 Sep 2016 11:48 am
Operator : amf
Sample : 4639-005
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 12:29:08 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\30\
Data File : 09301611.D
Signal(s) : TCD1A.CH
Acq On : 30 Sep 2016 12:05 pm
Operator : amf
Sample : 4639-005
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 12:29:22 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

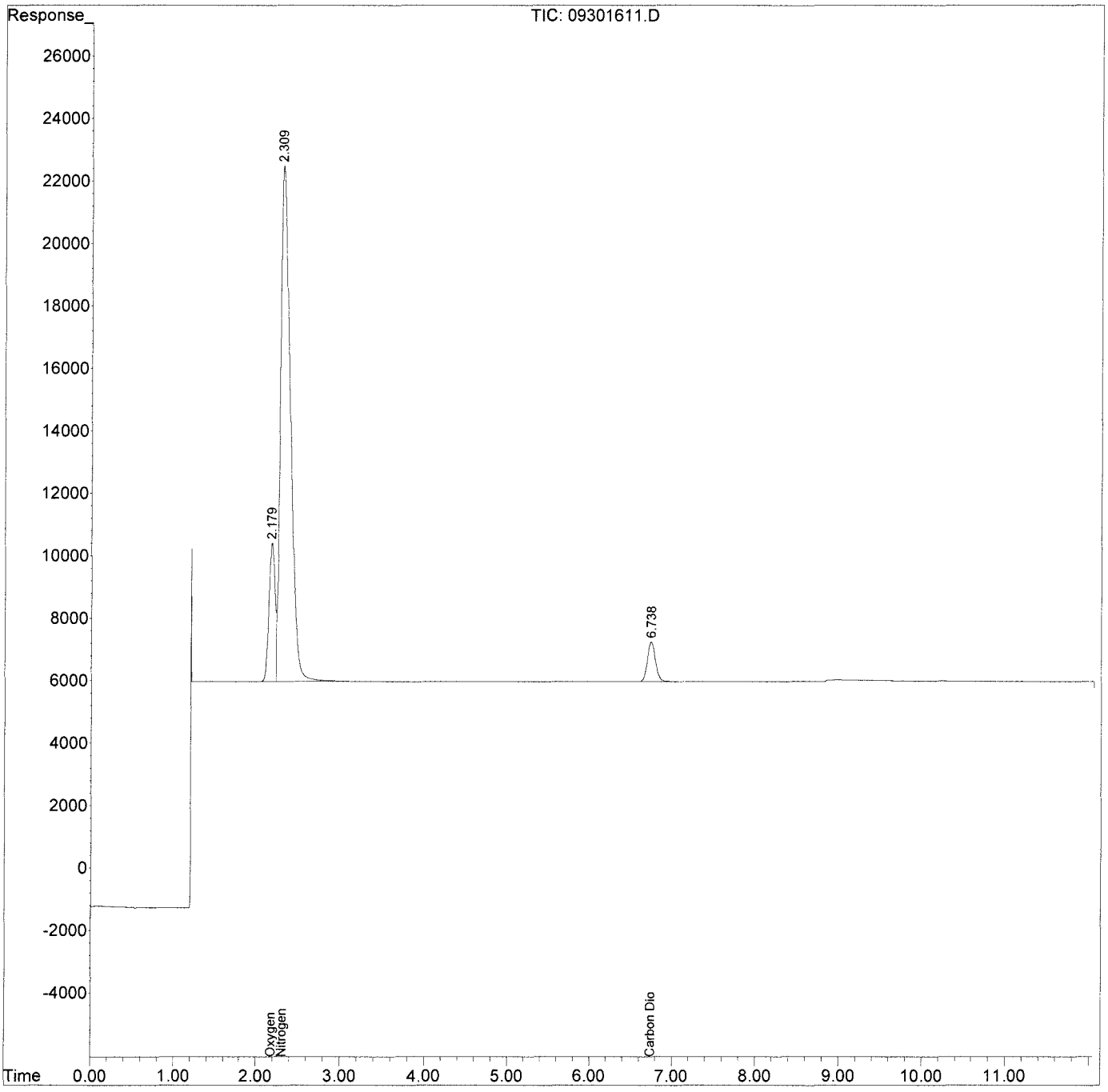
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.180	224711	145345.994	ppm
3)	Nitrogen	2.310	1335013	755440.374	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.740	87939	41927.282	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_09\30\
Data File : 09301611.D
Signal(s) : TCD1A.CH
Acq On : 30 Sep 2016 12:05 pm
Operator : amf
Sample : 4639-005
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 12:29:22 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\30\
Data File : 09301612.D
Signal(s) : TCD1A.CH
Acq On : 30 Sep 2016 12:21 pm
Operator : amf
Sample : 4639-005
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 12:41:29 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

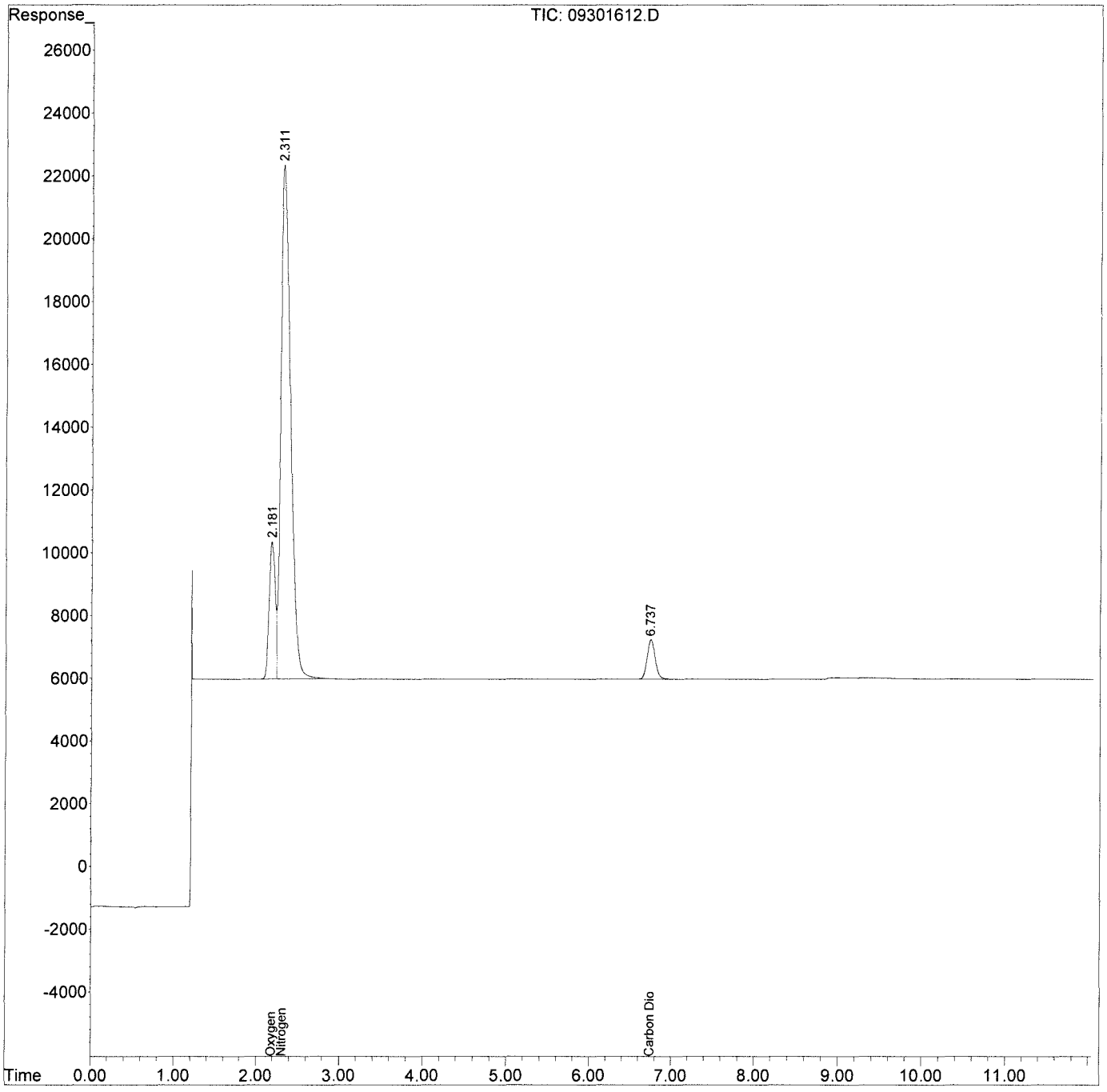
	Compound	R.T.	Response	Conc Units
Target Compounds				
1)	Hydrogen	0.000	0	N.D. ppm
2)	Oxygen	2.182	221763	143439.133 ppm
3)	Nitrogen	2.312	1313746	743406.315 ppm
4)	Carbon Monoxide	0.000	0	N.D. ppm
5)	Methane	0.000	0	N.D. ppm
6)	Carbon Dioxide	6.739	86766	41368.040 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_09\30\
Data File : 09301612.D
Signal(s) : TCD1A.CH
Acq On : 30 Sep 2016 12:21 pm
Operator : amf
Sample : 4639-005
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 12:41:29 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\30\
Data File : 09301613.D
Signal(s) : TCD1A.CH
Acq On : 30 Sep 2016 12:38 pm
Operator : amf
Sample : 4639-007
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 13:37:32 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

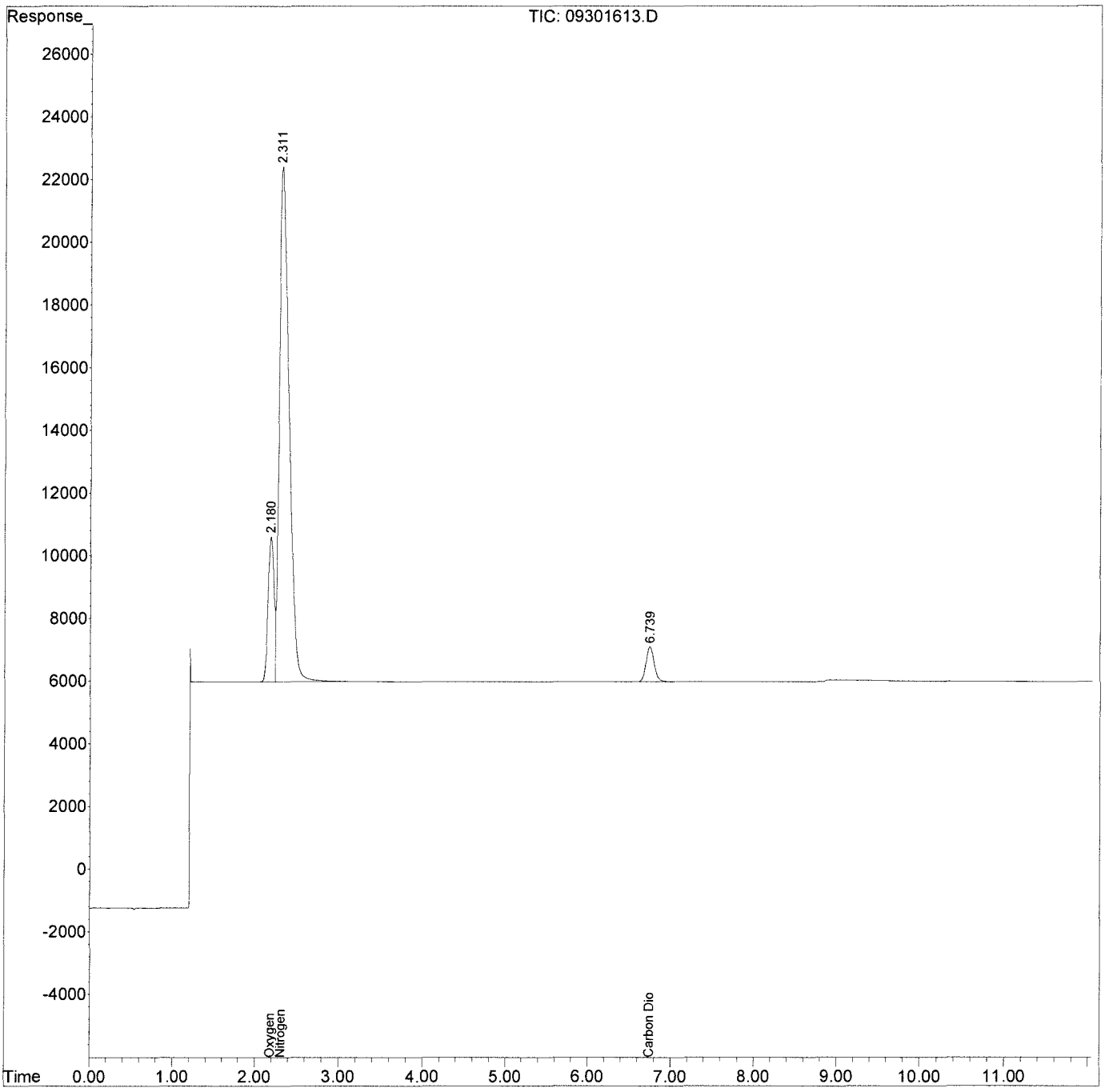
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.182	235724	152469.325	ppm
3)	Nitrogen	2.313	1328031	751489.299	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.741	76842	36636.264	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_09\30\
Data File : 09301613.D
Signal(s) : TCD1A.CH
Acq On : 30 Sep 2016 12:38 pm
Operator : amf
Sample : 4639-007
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 13:37:32 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\30\
Data File : 09301614.D
Signal(s) : TCD1A.CH
Acq On : 30 Sep 2016 12:56 pm
Operator : amf
Sample : 4639-007
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 13:37:44 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

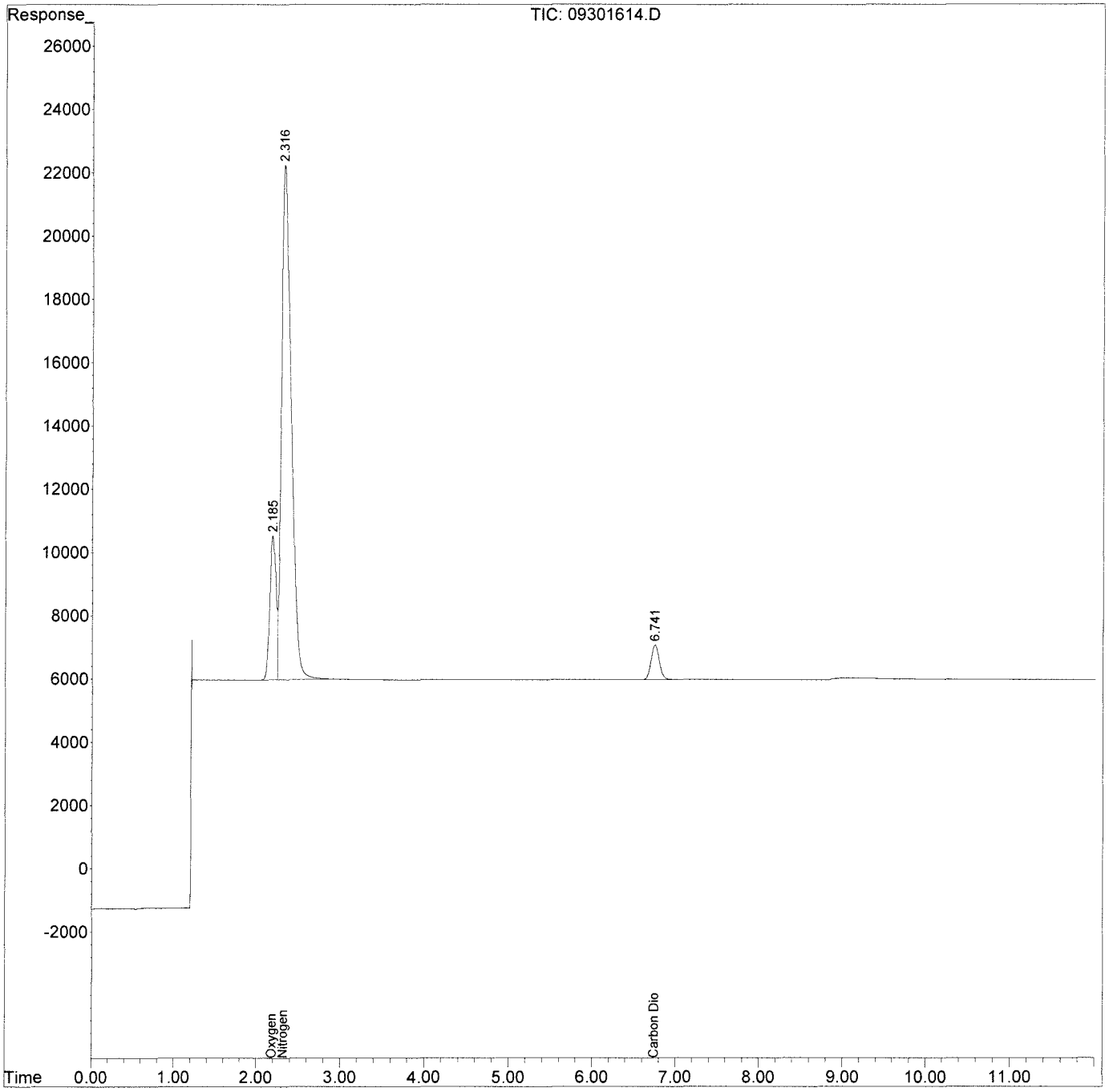
	Compound	R.T.	Response	Conc Units
Target Compounds				
1)	Hydrogen	0.000	0	N.D. ppm
2)	Oxygen	2.186	232296	150252.464 ppm
3)	Nitrogen	2.318	1305186	738562.362 ppm
4)	Carbon Monoxide	0.000	0	N.D. ppm
5)	Methane	0.000	0	N.D. ppm
6)	Carbon Dioxide	6.743	75595	36041.846 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_09\30\
Data File : 09301614.D
Signal(s) : TCD1A.CH
Acq On : 30 Sep 2016 12:56 pm
Operator : amf
Sample : 4639-007
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 13:37:44 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\30\
Data File : 09301615.D
Signal(s) : TCD1A.CH
Acq On : 30 Sep 2016 1:31 pm
Operator : amf
Sample : 4639-007
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 13:50:07 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

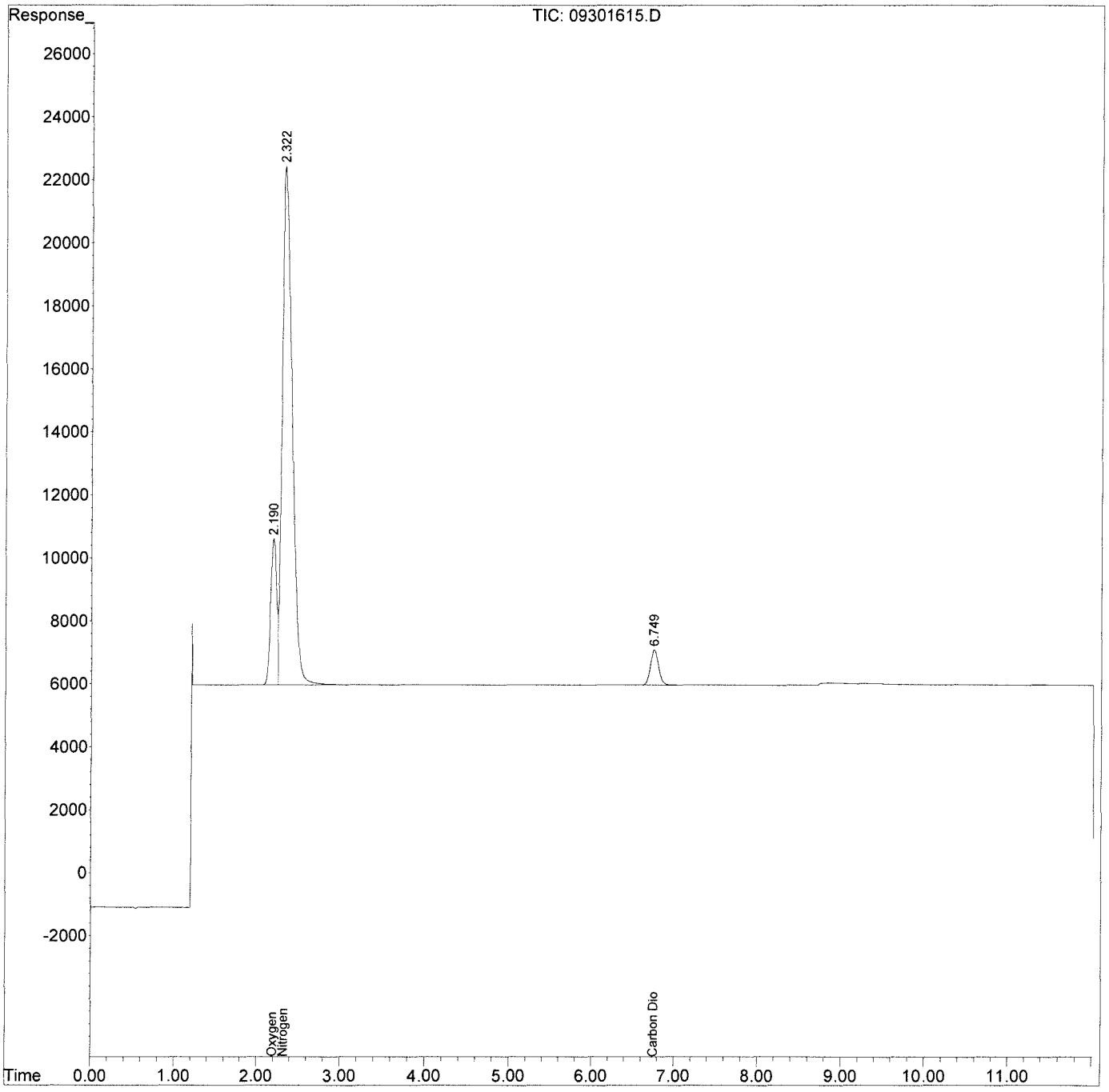
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.192	236497	152969.593	ppm
3)	Nitrogen	2.323	1330558	752919.309	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.750	76500	36473.239	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_09\30\
Data File : 09301615.D
Signal(s) : TCD1A.CH
Acq On : 30 Sep 2016 1:31 pm
Operator : amf
Sample : 4639-007
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 13:50:07 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\30\
Data File : 09301602.D
Signal(s) : TCD1A.CH
Acq On : 30 Sep 2016 8:56 am
Operator : amf
Sample : mb
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 09:49:54 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

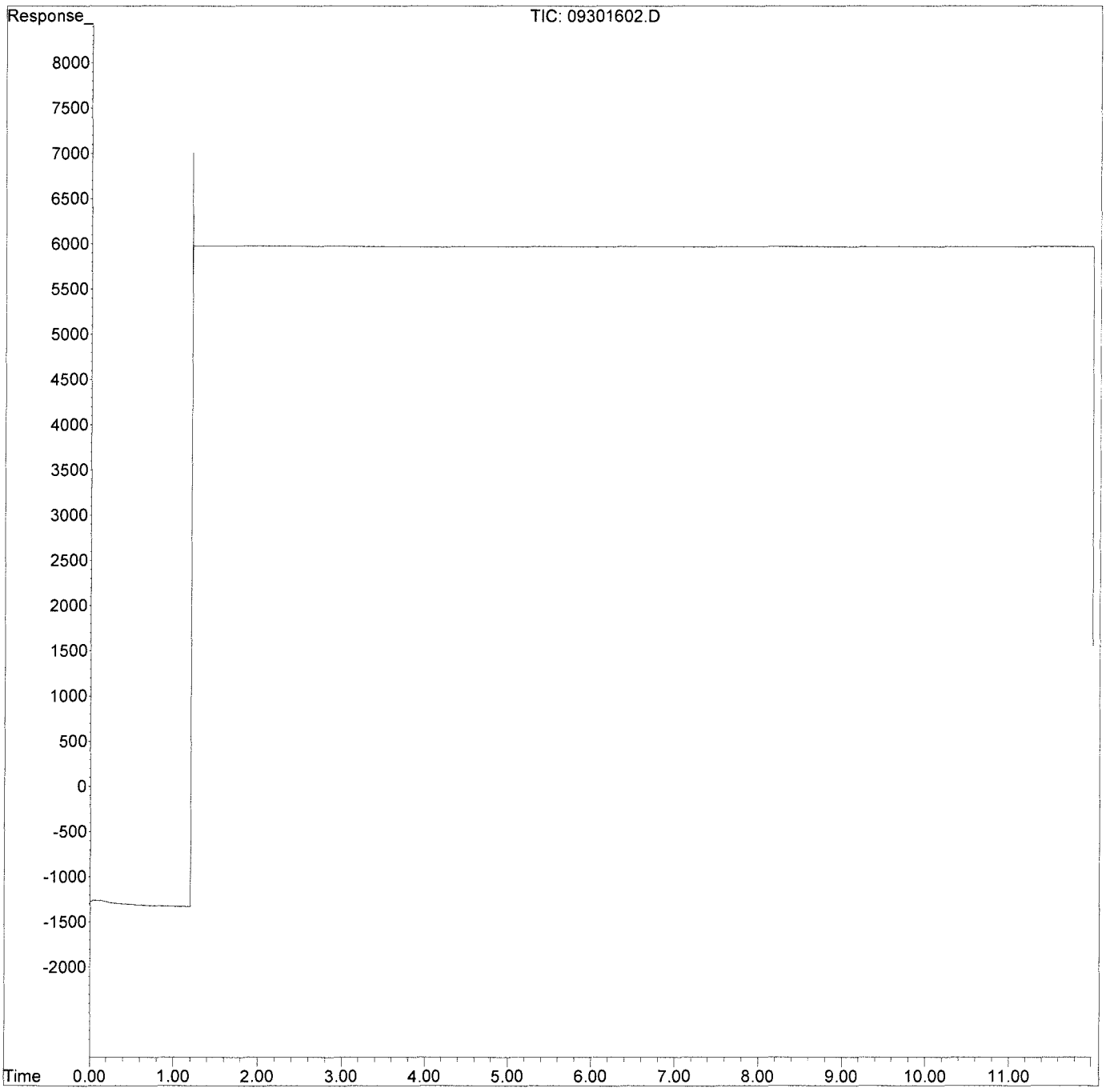
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_09\30\
Data File : 09301602.D
Signal(s) : TCD1A.CH
Acq On : 30 Sep 2016 8:56 am
Operator : amf
Sample : mb
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 09:49:54 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Response Factor Report GC01_FXG

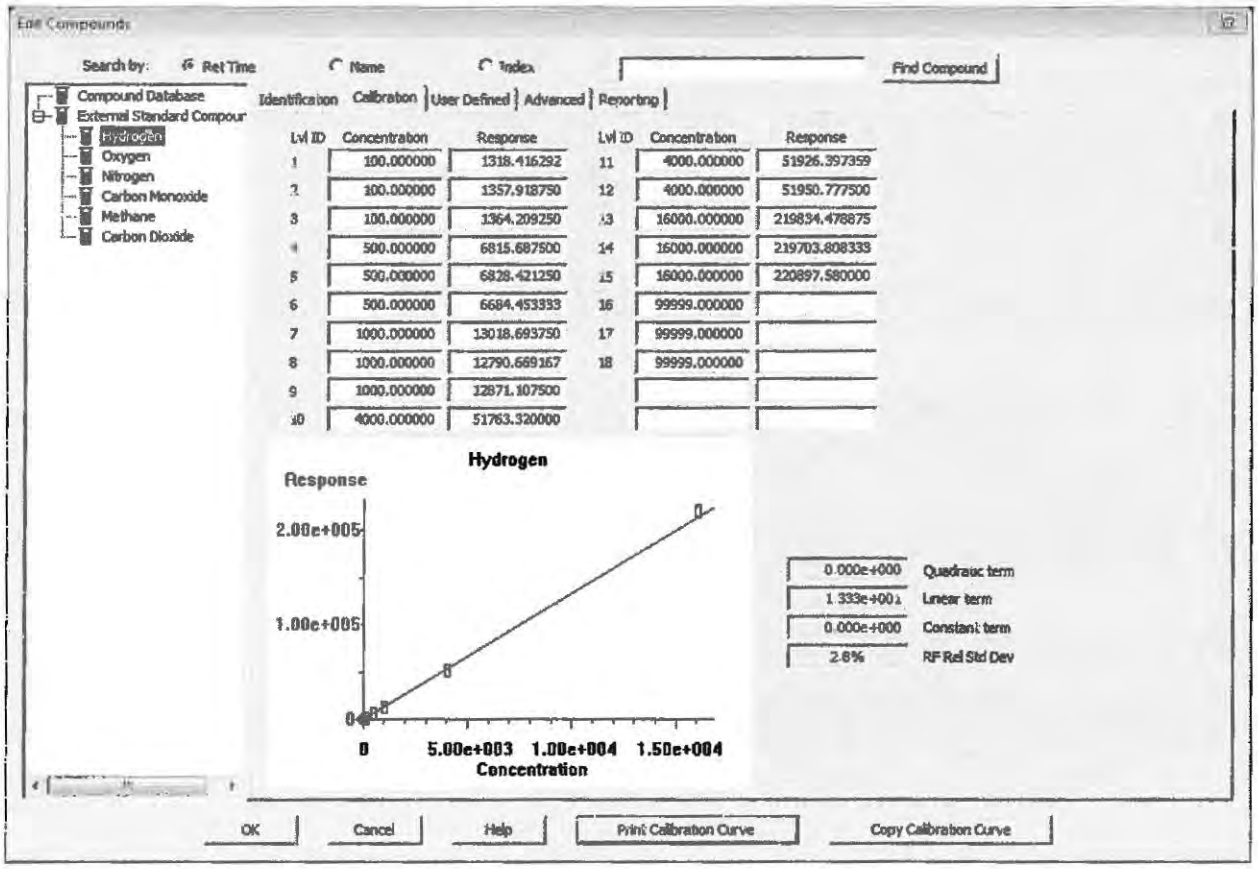
Method Path : I:\GC01\METHODS\
Method File : GC1_trip082216.M
Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
Last Update : Tue Aug 23 11:02:57 2016
Response Via : Initial Calibration

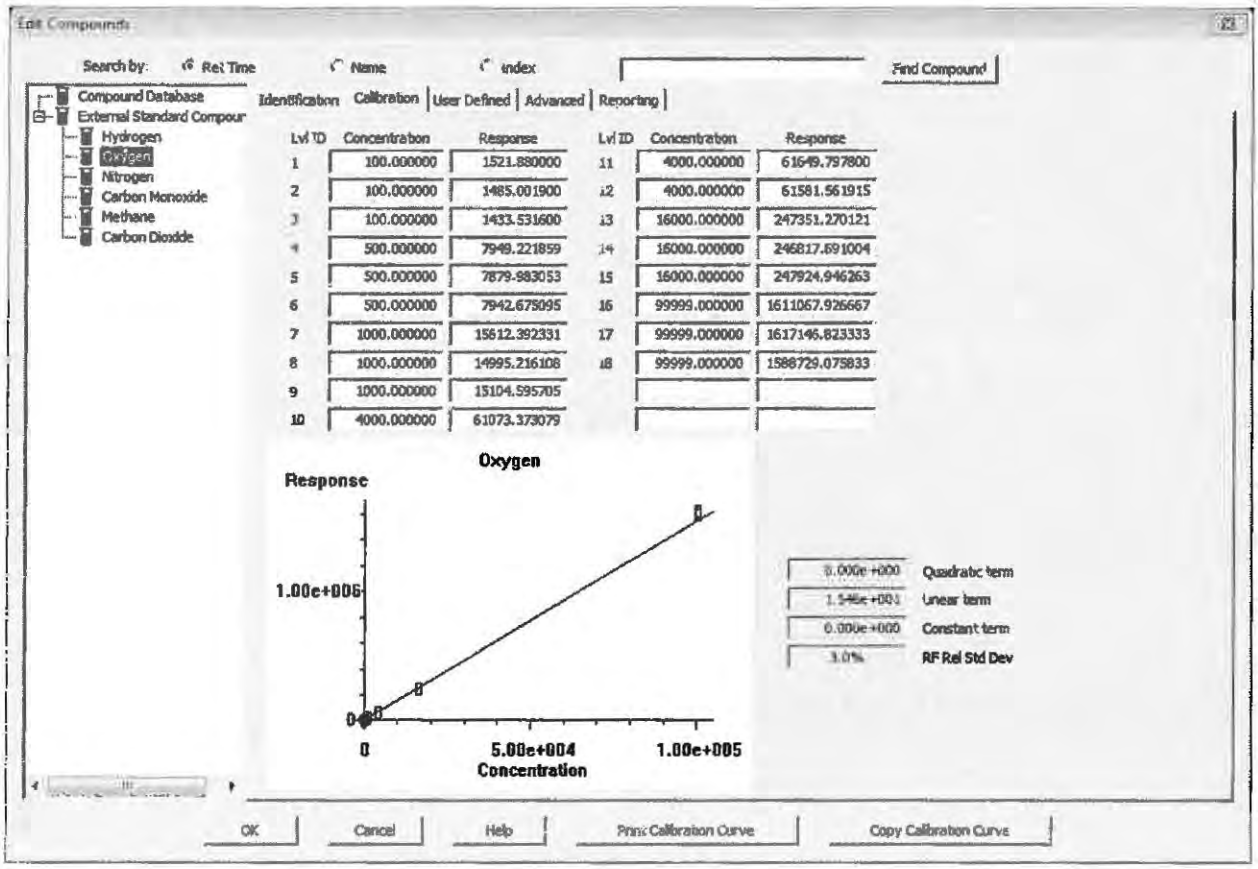
Calibration Files
1 =08221601.D 2 =08221602.D 3 =08221603.D
4 =08221604.D 5 =08221605.D 6 =08221606.D

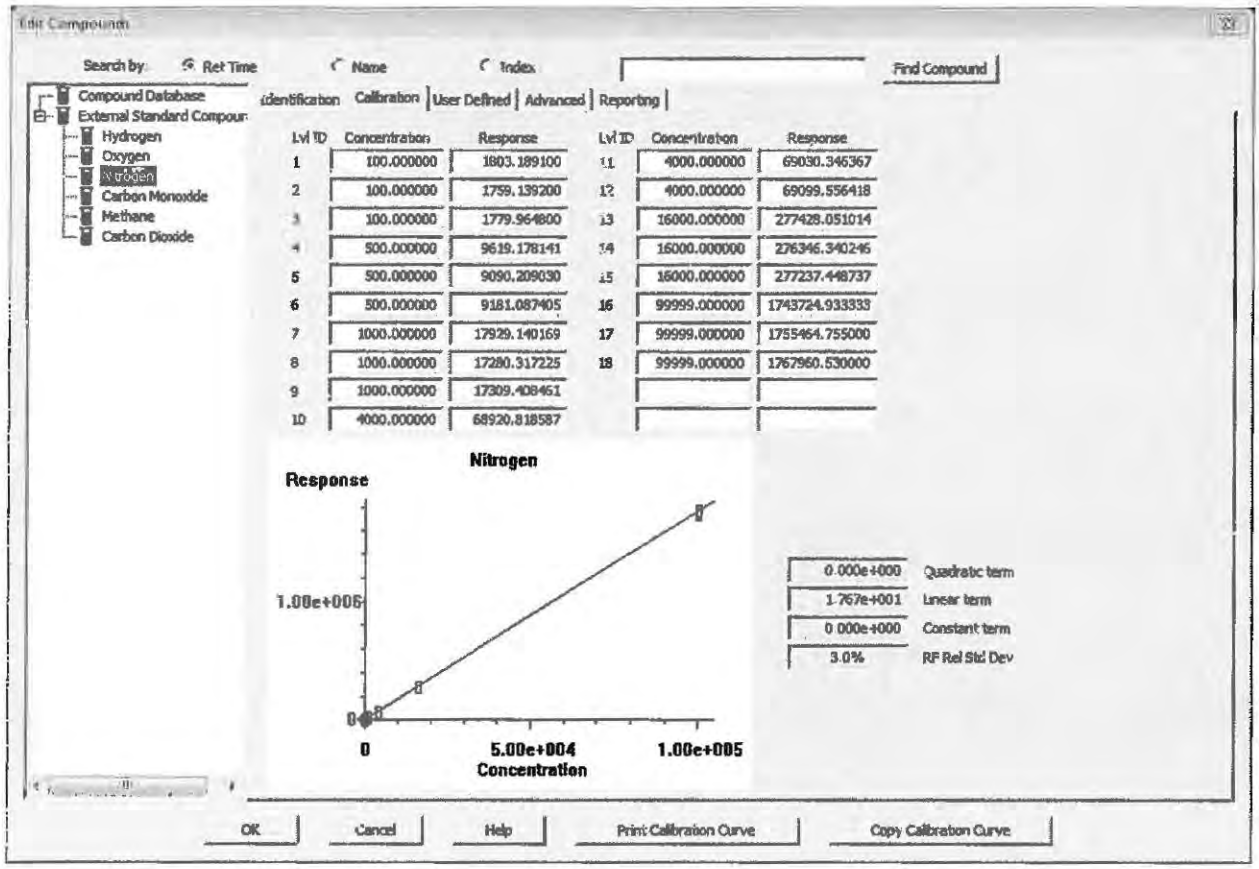
	Compound	1	2	3	4	5	6	Avg		%RSD
1)	Hydrogen	1.318	1.358	1.364	1.363	1.366	1.337	1.333	E1	2.78
2)	Oxygen	1.522	1.485	1.434	1.590	1.576	1.589	1.546	E1	3.01
3)	Nitrogen	1.803	1.759	1.780	1.924	1.818	1.836	1.767	E1	2.97
4)	Carbon Monoxide	1.653	1.676	1.610	1.844	1.851	1.826	1.735	E1	3.80
5)	Methane	1.240	1.288	1.372	1.359	1.347	1.373	1.307	E1	2.74
6)	Carbon Dioxide	1.988	2.145	2.152	2.236	2.239	2.197	2.097	E1	3.52

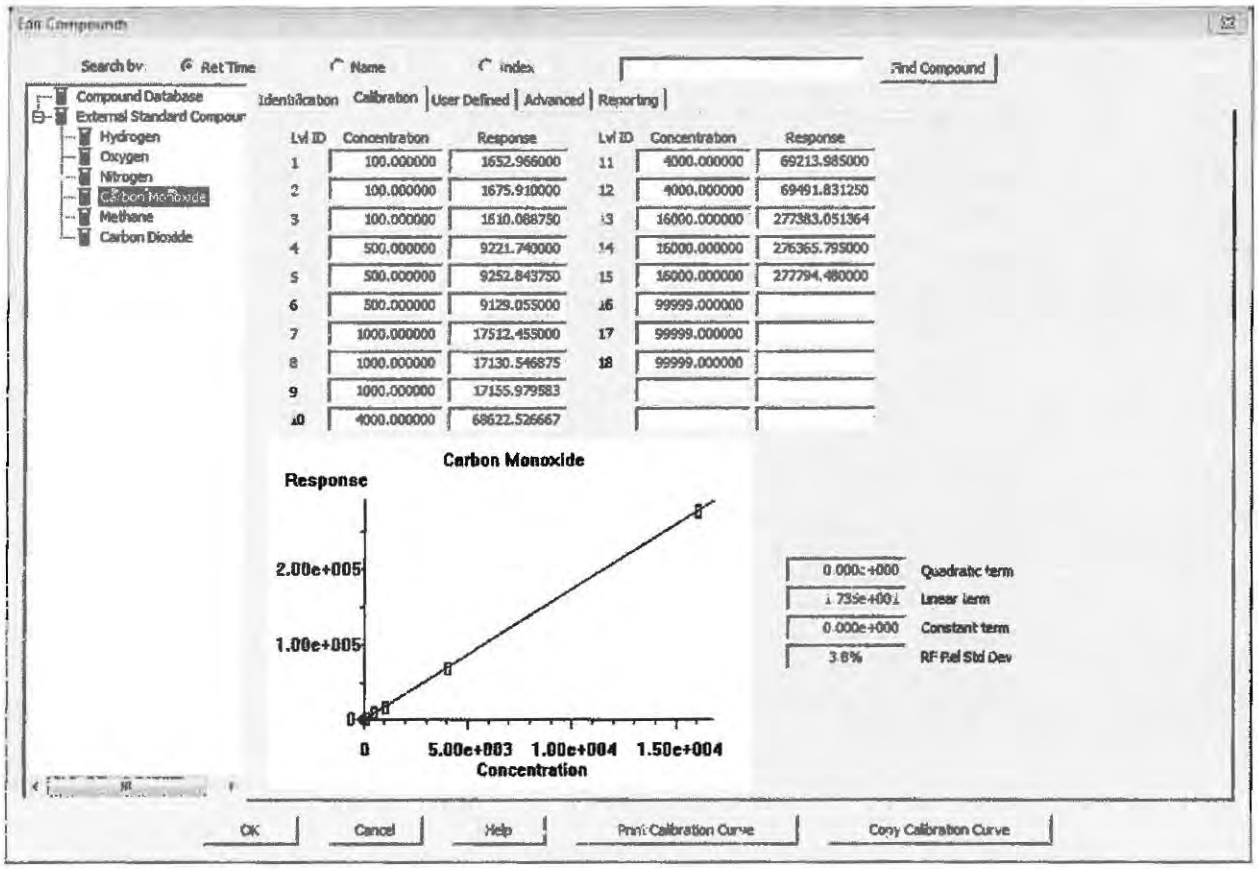
(#) = Out of Range ### Number of calibration levels exceeded format ###

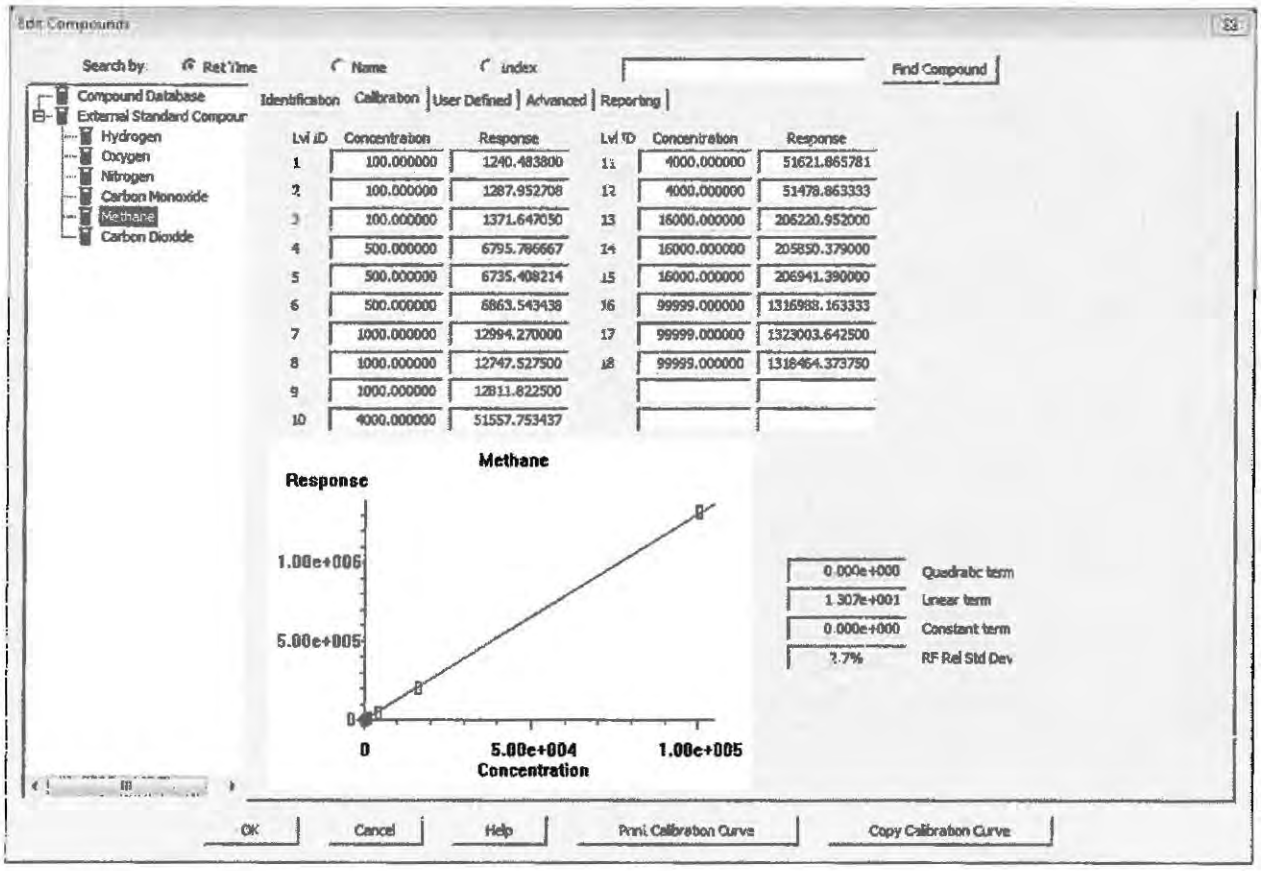
GC1_trip082216.M Tue Aug 23 12:46:23 2016

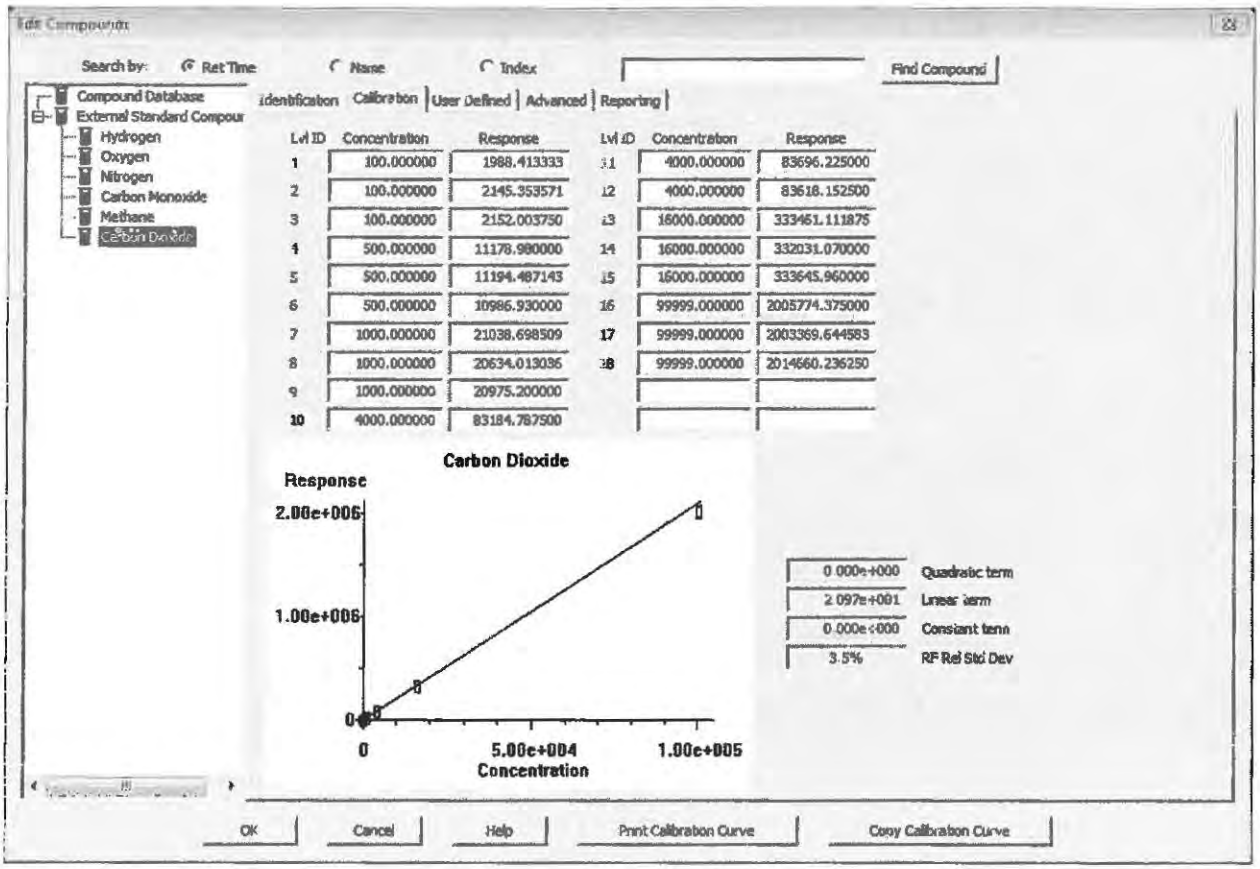

Edit Compounds
Search by:
Ret Time
Name
Index
Find Compound
Compound Database
External Standard Compour
Hydrogen
Oxygen
Nitrogen
Carbon Monoxide
Methane
Carbon Dioxide
Identification
Calibration
User Defined
Advanced
Reporting
Lvl ID
Concentration
Response
1 100.000000 1318.416292
2 100.000000 1357.918750
3 100.000000 1364.209250
4 500.000000 6815.687500
5 500.000000 6828.421250
6 500.000000 6684.453333
7 1000.000000 13018.693750
8 1000.000000 12790.669167
9 1000.000000 12871.107500
10 4000.000000 51763.320000
11 4000.000000 51926.397359
12 4000.000000 51950.777500
13 16000.000000 219834.478875
14 16000.000000 219703.808333
15 16000.000000 220897.580000
16 99999.000000
17 99999.000000
18 99999.000000
Hydrogen
Response
2.00e+005
1.00e+005
0
0
5.00e+003
1.00e+004
1.50e+004
Concentration
0.000e+000 Quadratic term
1.333e+001 Linear term
0.000e+000 Constant term
2.8% RF Rel Std Dev
OK
Cancel
Help
Print Calibration Curve
Copy Calibration Curve


Edit Compounds
Search by: Rel Time Name Index
Find Compound
Compound Database
External Standard Compour
Hydrogen
Oxygen
Nitrogen
Carbon Monoxide
Methane
Carbon Dioxide
Identification Calibration User Defined Advanced Reporting
Lvl ID Concentration Response
1 100.000000 1521.880000
2 100.000000 1485.001900
3 100.000000 1433.531600
4 500.000000 7949.221859
5 500.000000 7879.983053
6 500.000000 7942.678095
7 1000.000000 15812.392331
8 1000.000000 14995.216108
9 1000.000000 15104.595705
10 4000.000000 61073.373079
11 4000.000000 61649.797800
12 4000.000000 61581.561915
13 16000.000000 247351.270121
14 16000.000000 246817.691004
15 16000.000000 247924.946263
16 99999.000000 1611067.926667
17 99999.000000 1617146.823333
18 99999.000000 1588729.075833
Oxygen
Response
1.00e+006
0
0
5.00e+004
1.00e+005
Concentration
0.000e+000 Quadratic term
1.546e+001 Linear term
0.000e+000 Constant term
3.0% RF Rel Std Dev
OK
Cancel
Help
Print Calibration Curve
Copy Calibration Curve


Edit Compound
Search by: Ret Time Name Index
Find Compound
Compound Database
External Standard Compour
Hydrogen
Oxygen
Nitrogen
Carbon Monoxide
Methane
Carbon Dioxide
Identification Calibration User Defined Advanced Reporting
Lvl ID Concentration Response
1 100.000000 1803.189100
2 100.000000 1759.139200
3 100.000000 1779.964800
4 500.000000 9619.178141
5 500.000000 9090.209030
6 500.000000 9181.087405
7 1000.000000 17929.140169
8 1000.000000 17280.317225
9 1000.000000 17309.408461
10 4000.000000 68920.818587
11 4000.000000 69030.346367
12 4000.000000 69099.556418
13 16000.000000 277428.051014
14 16000.000000 276346.340246
15 16000.000000 277237.448737
16 99999.000000 1743724.933333
17 99999.000000 1755464.755000
18 99999.000000 1767960.530000
Nitrogen
Response
1.00e+006
0
0
5.00e+004
1.00e+005
Concentration
0.000e+000 Quadratic term
1.767e+001 Linear term
0.000e+000 Constant term
3.0% RF Rel Std Dev
OK
Cancel
Help
Print Calibration Curve
Copy Calibration Curve


Edit Compounds
Search by: Ret Time Name Index
Find Compound
Compound Database
External Standard Compour
Hydrogen
Oxygen
Nitrogen
Carbon Monoxide
Methane
Carbon Dioxide
Identification Calibration User Defined Advanced Reporting
Lvl ID Concentration Response Lvl ID Concentration Response
1 100.000000 1652.966000 11 4000.000000 69213.985000
2 100.000000 1675.910000 12 4000.000000 69491.831250
3 100.000000 1610.088750 13 16000.000000 277383.051364
4 500.000000 9221.740000 14 16000.000000 276365.795000
5 500.000000 9252.843750 15 16000.000000 277794.480000
6 500.000000 9129.055000 16 99999.000000
7 1000.000000 17512.455000 17 99999.000000
8 1000.000000 17130.546875 18 99999.000000
9 1000.000000 17155.979583
10 4000.000000 68622.526667
Carbon Monoxide
Response
2.00e+005
1.00e+005
0
0 5.00e+003 1.00e+004 1.50e+004
Concentration
0.000e+000 Quadratic term
1.735e+001 Linear term
0.000e+000 Constant term
3.8% RF Rel Std Dev
OK
Cancel
Help
Print Calibration Curve
Copy Calibration Curve


Edit Compounds
Search by: Ret Time Name Index
Find Compound
Compound Database
External Standard Compour
Hydrogen
Oxygen
Nitrogen
Carbon Monoxide
Methane
Carbon Dioxide
Identification Calibration User Defined Advanced Reporting
Lvl ID Concentration Response
1 100.000000 1240.483800
2 100.000000 1287.952708
3 100.000000 1371.647050
4 500.000000 6795.766667
5 500.000000 6735.408214
6 500.000000 6863.543438
7 1000.000000 12994.270000
8 1000.000000 12747.527500
9 1000.000000 12811.822500
10 4000.000000 51557.753437
11 4000.000000 51621.865781
12 4000.000000 51478.863333
13 16000.000000 206220.952000
14 16000.000000 205850.379000
15 16000.000000 206941.390000
16 99999.000000 1316988.163333
17 99999.000000 1323003.642500
18 99999.000000 1318464.373750
Methane
Response
1.00e+006
5.00e+005
0
0
5.00e+004
1.00e+005
Concentration
0.000e+000 Quadratic term
1.307e+001 Linear term
0.000e+000 Constant term
?.?% RF Rel Std Dev
OK
Cancel
Help
Print Calibration Curve
Copy Calibration Curve


Edit Compound
Search by:
Ret Time
Name
Index
Find Compound
Compound Database
External Standard Compour
Hydrogen
Oxygen
Nitrogen
Carbon Monoxide
Methane
Identification
Calibration
User Defined
Advanced
Reporting
Lvl ID
Concentration
Response
1 100.000000 1988.413333
2 100.000000 2145.353571
3 100.000000 2152.003750
4 500.000000 11178.980000
5 500.000000 11194.487143
6 500.000000 10986.930000
7 1000.000000 21038.698509
8 1000.000000 20634.013036
9 1000.000000 20975.200000
10 4000.000000 83184.787500
11 4000.000000 83696.225000
12 4000.000000 83618.152500
13 16000.000000 333461.111875
14 16000.000000 332031.070000
15 16000.000000 333645.960000
16 99999.000000 2005774.375000
17 99999.000000 2003369.644583
18 99999.000000 2014660.236250
Carbon Dioxide
Response
2.00e+005
1.00e+005
0
0
5.00e+004
1.00e+005
Concentration
0.000e+000 Quadratic term
2.097e+001 Linear term
0.000e+000 Constant term
3.5% RF Rel Std Dev
OK
Cancel
Help
Print Calibration Curve
Copy Calibration Curve

Calibration Status Report GC01_FXG

Method Path : I:\GC01\METHODS\
Method File : GC1_trip082216.M
Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
Last Update : Tue Aug 23 11:02:57 2016
Response Via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	1	100	0	I:\GC01\DATA\FXG\2016_08\22\08221601.D
2	2	100	0	I:\GC01\DATA\FXG\2016_08\22\08221602.D
3	3	100	0	I:\GC01\DATA\FXG\2016_08\22\08221603.D
4	4	500	0	I:\GC01\DATA\FXG\2016_08\22\08221604.D
5	5	500	0	I:\GC01\DATA\FXG\2016_08\22\08221605.D
6	6	500	0	I:\GC01\DATA\FXG\2016_08\22\08221606.D
7	7	1000	0	I:\GC01\DATA\FXG\2016_08\22\08221607.D
8	8	1000	0	I:\GC01\DATA\FXG\2016_08\22\08221608.D
9	9	1000	0	I:\GC01\DATA\FXG\2016_08\22\08221609.D
10	10	4000	0	I:\GC01\DATA\FXG\2016_08\22\08221610.D
11	11	4000	0	I:\GC01\DATA\FXG\2016_08\22\08221611.D
12	12	4000	0	I:\GC01\DATA\FXG\2016_08\22\08221612.D
13	13	16000	0	I:\GC01\DATA\FXG\2016_08\22\08221613.D
14	14	16000	0	I:\GC01\DATA\FXG\2016_08\22\08221614.D
15	15	16000	0	I:\GC01\DATA\FXG\2016_08\22\08221615.D
16	16	99999	0	I:\GC01\DATA\FXG\2016_08\23\08231604.D
17	17	99999	0	I:\GC01\DATA\FXG\2016_08\23\08231605.D
18	18	99999	0	I:\GC01\DATA\FXG\2016_08\23\08231606.D

#	ID	Update Time	Quant Time	Acquisition Time
1	1	Aug 23 08:43 2016	Aug 22 10:43 2016	22 Aug 2016 8:59 am
2	2	Aug 23 08:43 2016	Aug 22 11:01 2016	22 Aug 2016 9:42 am
3	3	Aug 23 08:44 2016	Aug 22 11:06 2016	22 Aug 2016 10:06 am
4	4	Aug 23 08:44 2016	Aug 22 12:00 2016	22 Aug 2016 11:42 am
5	5	Aug 23 08:45 2016	Aug 22 12:18 2016	22 Aug 2016 11:54 am
6	6	Aug 23 08:45 2016	Aug 22 12:36 2016	22 Aug 2016 12:10 pm
7	7	Aug 23 08:46 2016	Aug 22 13:04 2016	22 Aug 2016 12:42 pm
8	8	Aug 23 08:46 2016	Aug 22 13:42 2016	22 Aug 2016 12:58 pm
9	9	Aug 23 08:46 2016	Aug 22 13:57 2016	22 Aug 2016 1:34 pm
10	10	Aug 23 08:47 2016	Aug 22 14:25 2016	22 Aug 2016 2:07 pm
11	11	Aug 23 08:47 2016	Aug 22 14:38 2016	22 Aug 2016 2:19 pm
12	12	Aug 23 08:48 2016	Aug 22 14:48 2016	22 Aug 2016 2:30 pm
13	13	Aug 23 08:48 2016	Aug 22 15:18 2016	22 Aug 2016 2:54 pm
14	14	Aug 23 08:48 2016	Aug 22 15:28 2016	22 Aug 2016 3:11 pm
15	15	Aug 23 08:49 2016	Aug 22 15:40 2016	22 Aug 2016 3:22 pm
16	16	Aug 23 10:21 2016	Aug 23 10:21 2016	23 Aug 2016 9:59 am
17	17	Aug 23 10:53 2016	Aug 23 10:52 2016	23 Aug 2016 10:25 am
18	18	Aug 23 11:02 2016	Aug 23 11:02 2016	23 Aug 2016 10:45 am

GC1_trip082216.M Tue Aug 23 12:47:00 2016

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221602.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 9:42 am
Operator : amf
Sample : std s11-07191601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 11:01:20 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

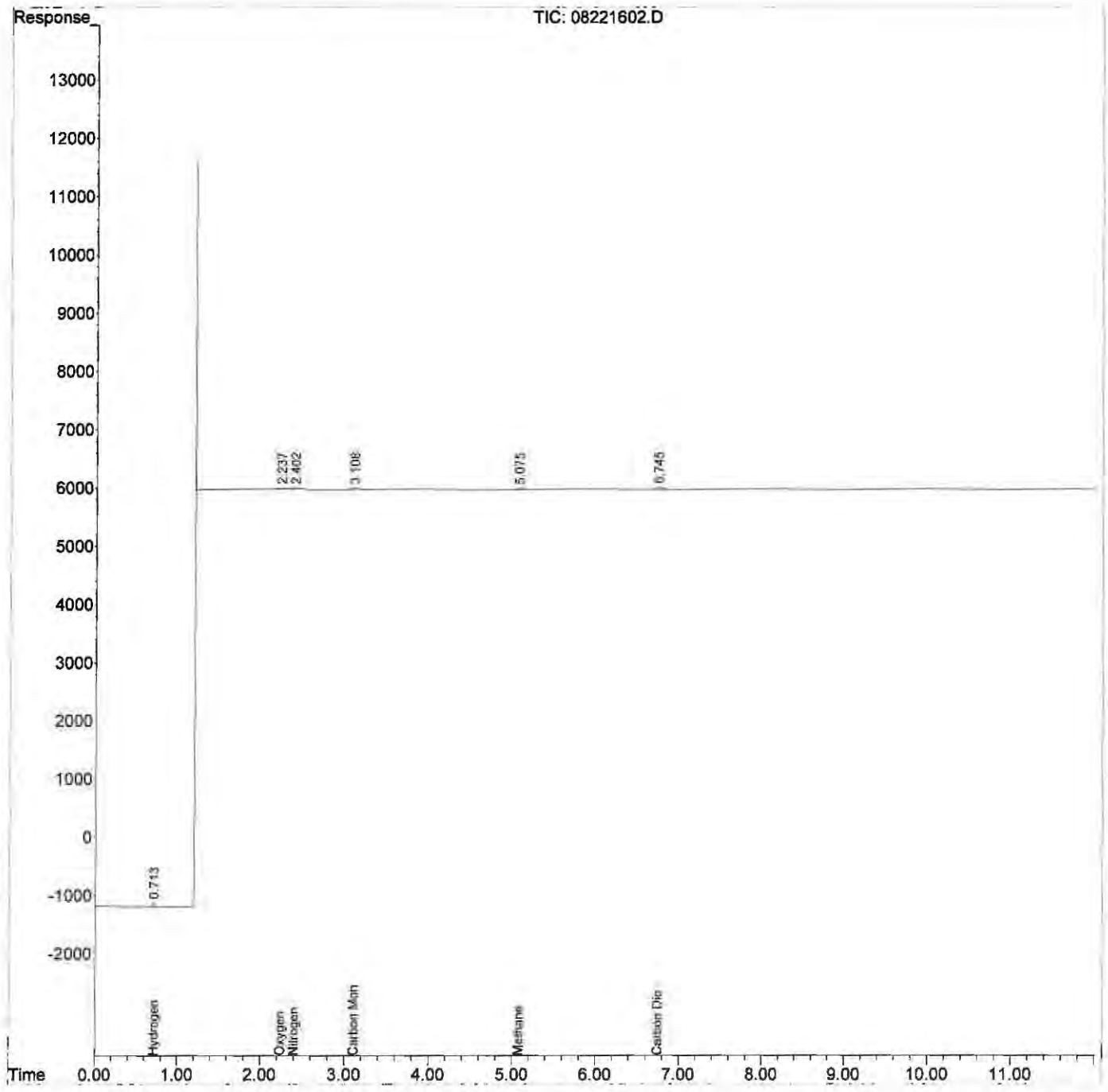
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.714	1358	1029.962	ppm	
2)	Oxygen	2.237	1485	975.768	ppm	m
3)	Nitrogen	2.402	1759	975.571	ppm	m
4)	Carbon Monoxide	3.108	1676	1013.881	ppm	m
5)	Methane	5.087	1288	1038.266	ppm	
6)	Carbon Dioxide	6.749	2145	1078.927	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221602.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 9:42 am
Operator : amf
Sample : std s11-07191601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 11:01:20 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

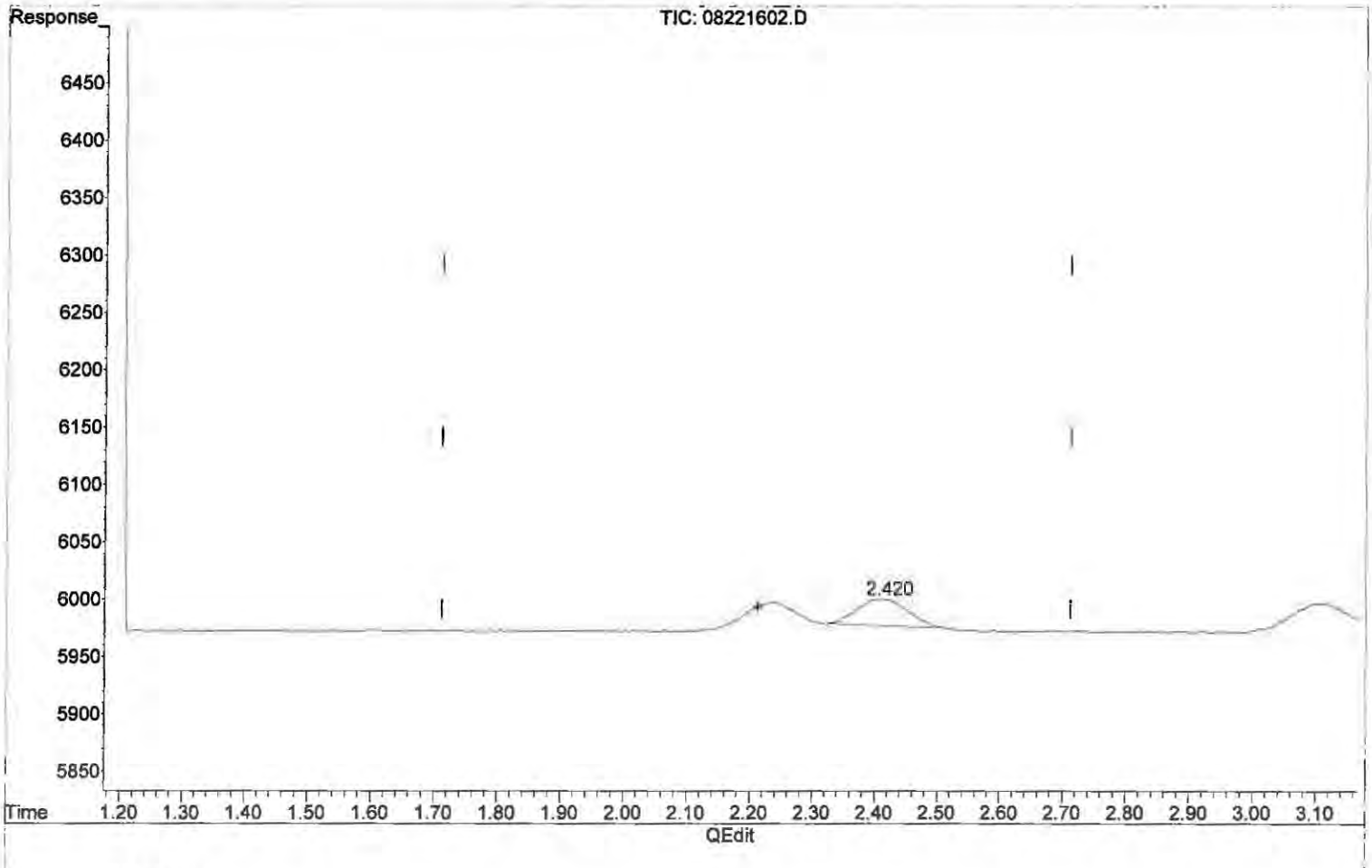


Quantitation Report (Qedit)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221602.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 9:42 am
Operator : amf
Sample : std s11-07191601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 10:59:02 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(2) Oxygen

2.420min 842.016 ppm

response 1281

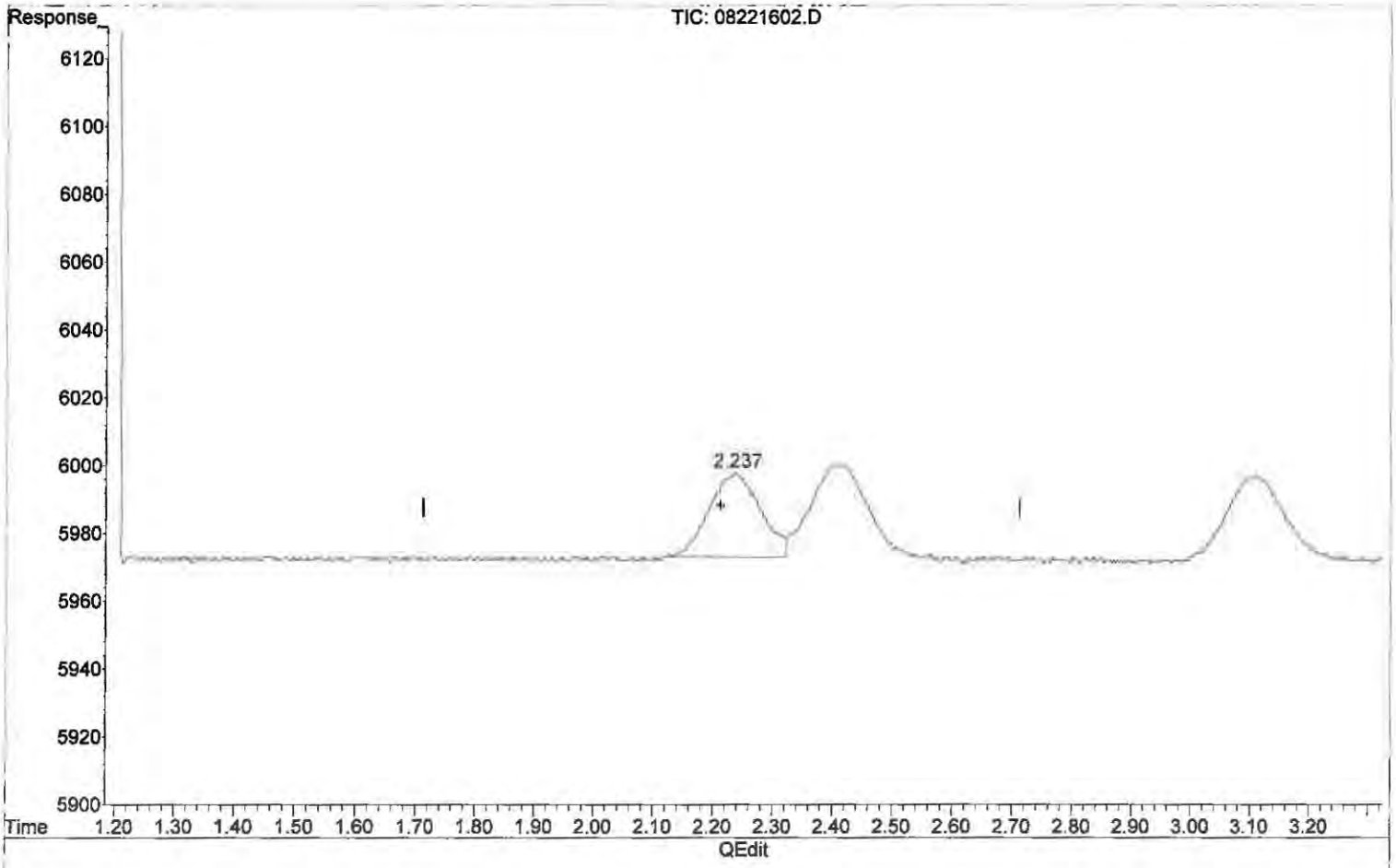
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : I:\GC01\DATA\FXG\2016_08\22\
Data File : 08221602.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 9:42 am
Operator : amf
Sample : std s11-07191601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 11:01:20 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(2) Oxygen

2.237min 975.768 ppm m

response 1485

8/29/16 BLC

8/26/16

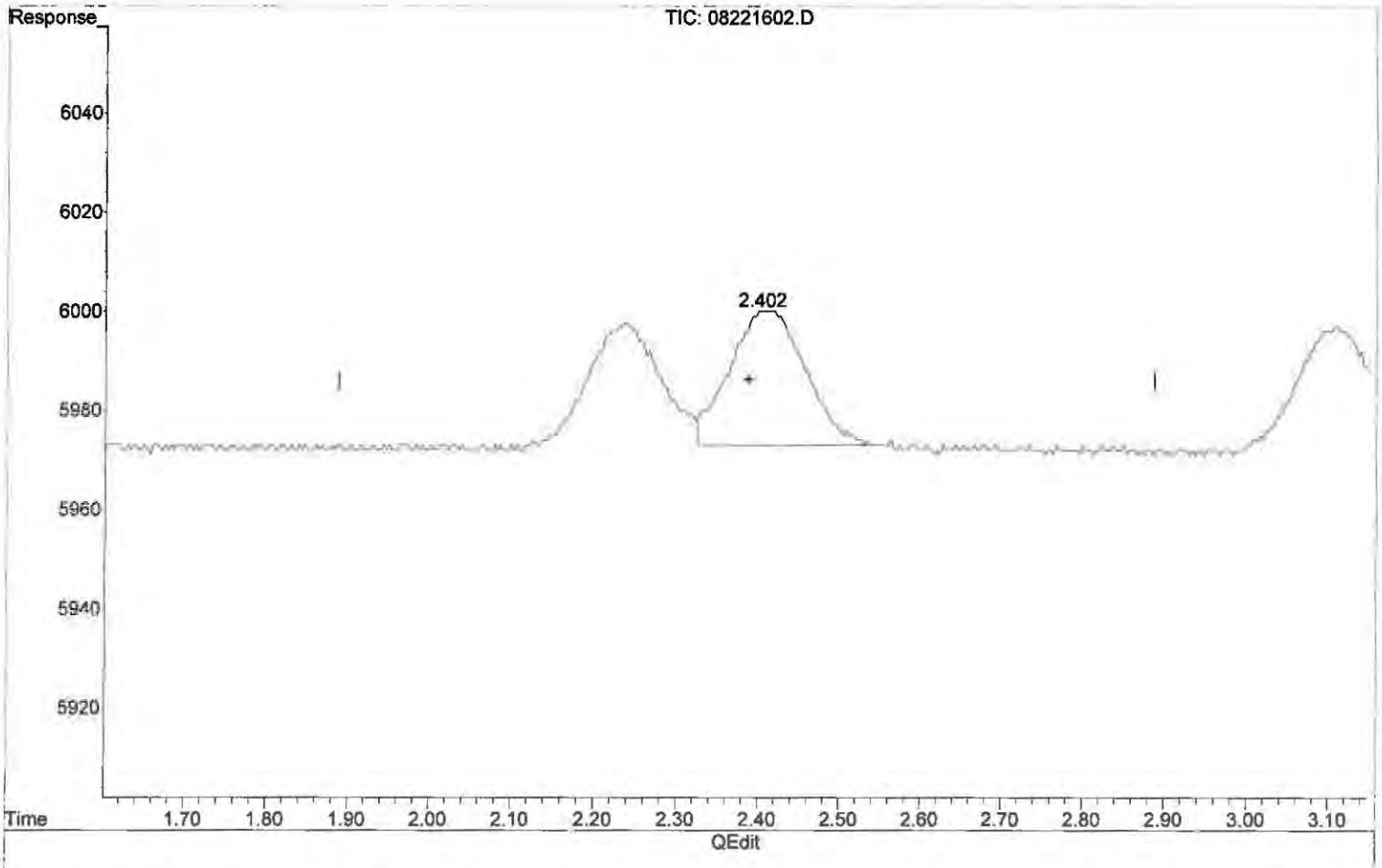
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221602.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 9:42 am
Operator : amf
Sample : std s11-07191601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 10:59:02 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(3) Nitrogen

2.402min 975.571 ppm m

response 1759

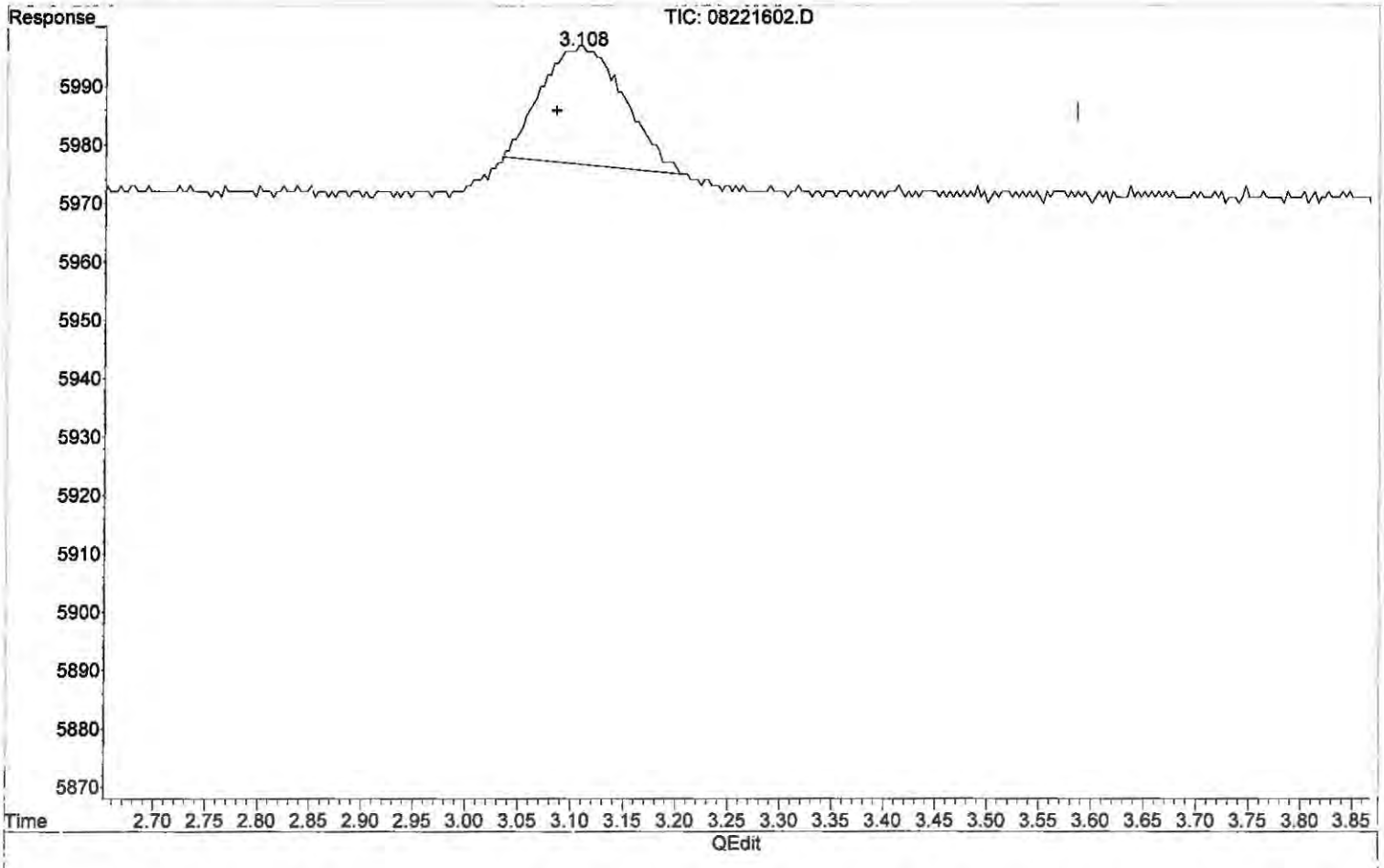
8/29/16
BLC
No Revisions

(+) = Expected Retention Time

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221602.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 9:42 am
Operator : amf
Sample : std s11-07191601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 10:59:02 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(4) Carbon Monoxide

3.111min 669.201 ppm

response 1106

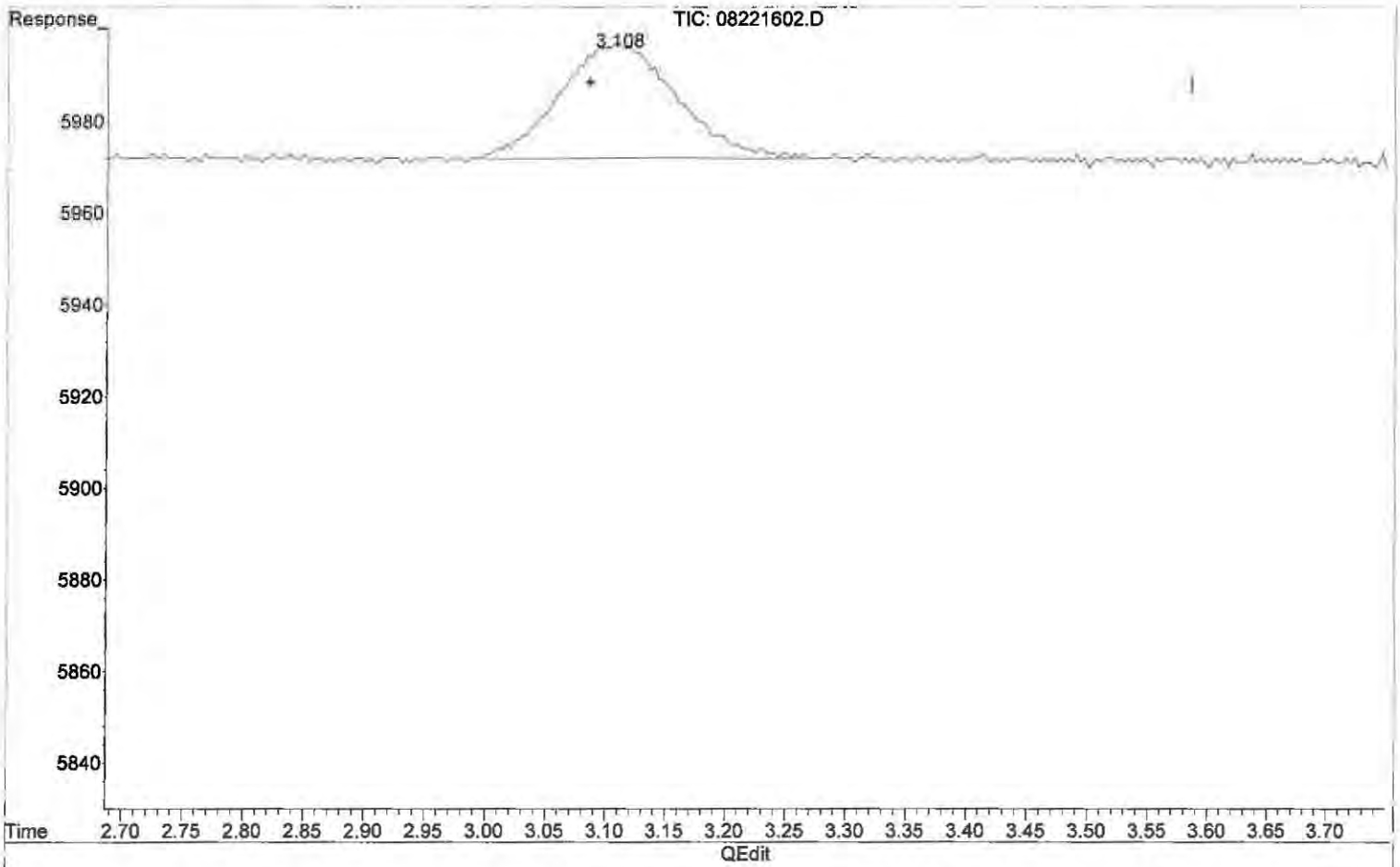
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : I:\GC01\DATA\FXG\2016_08\22\
Data File : 08221602.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 9:42 am
Operator : amf
Sample : std s11-07191601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 11:01:20 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(4) Carbon Monoxide

3.108min 1013.881 ppm m

response 1676

8/24/16 BLC

8/29/16

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221603.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 10:06 am
Operator : amf
Sample : std s11-07191601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 11:06:51 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

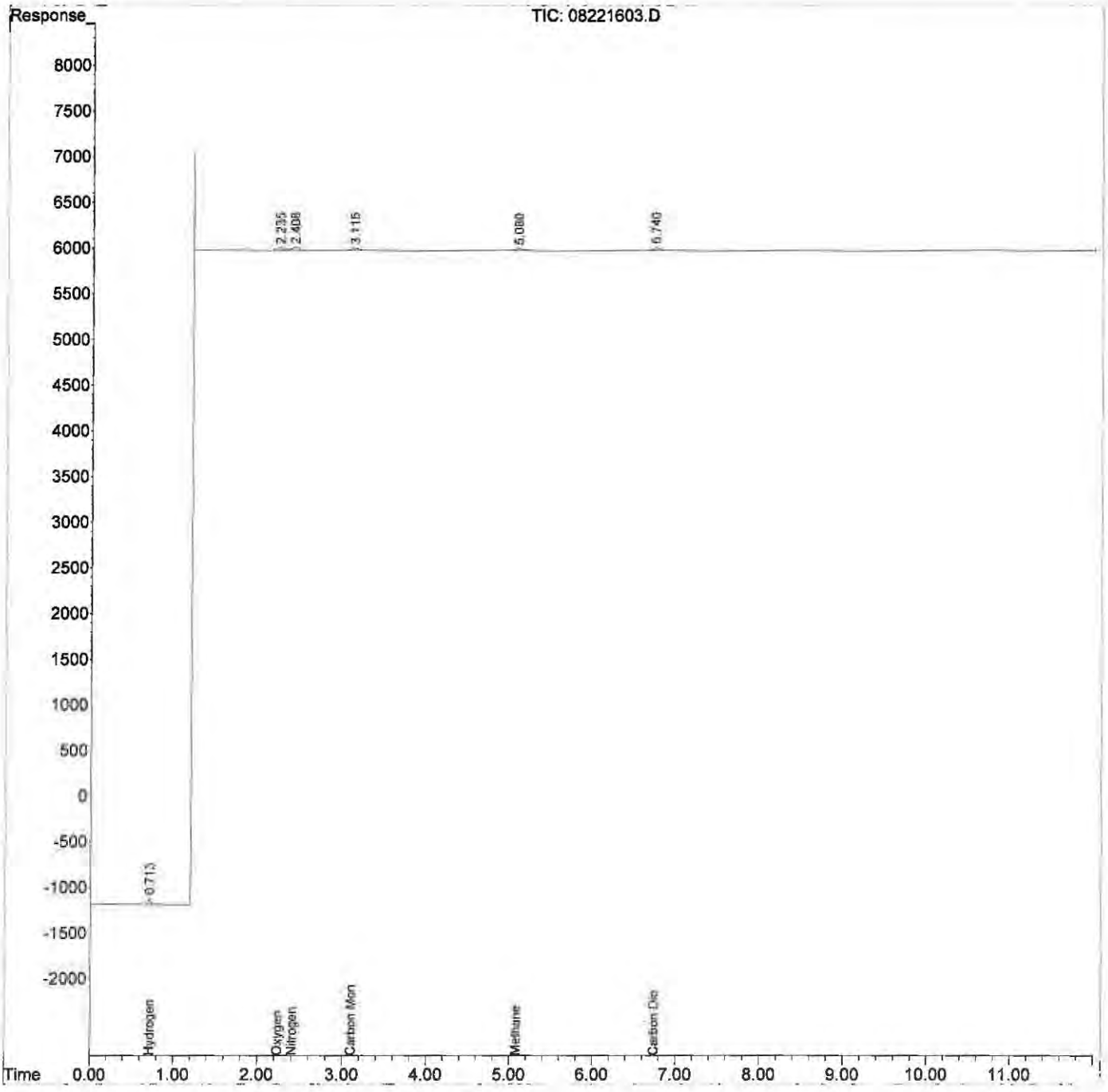
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.713	1364	1019.461	ppm	m
2)	Oxygen	2.235	1434	953.500	ppm	m
3)	Nitrogen	2.408	1780	999.327	ppm	m
4)	Carbon Monoxide	3.106	1610	967.347	ppm	
5)	Methane	5.080	1372	1084.976	ppm	m
6)	Carbon Dioxide	6.749	2152	1041.183	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221603.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 10:06 am
Operator : amf
Sample : std s11-07191601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 11:06:51 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

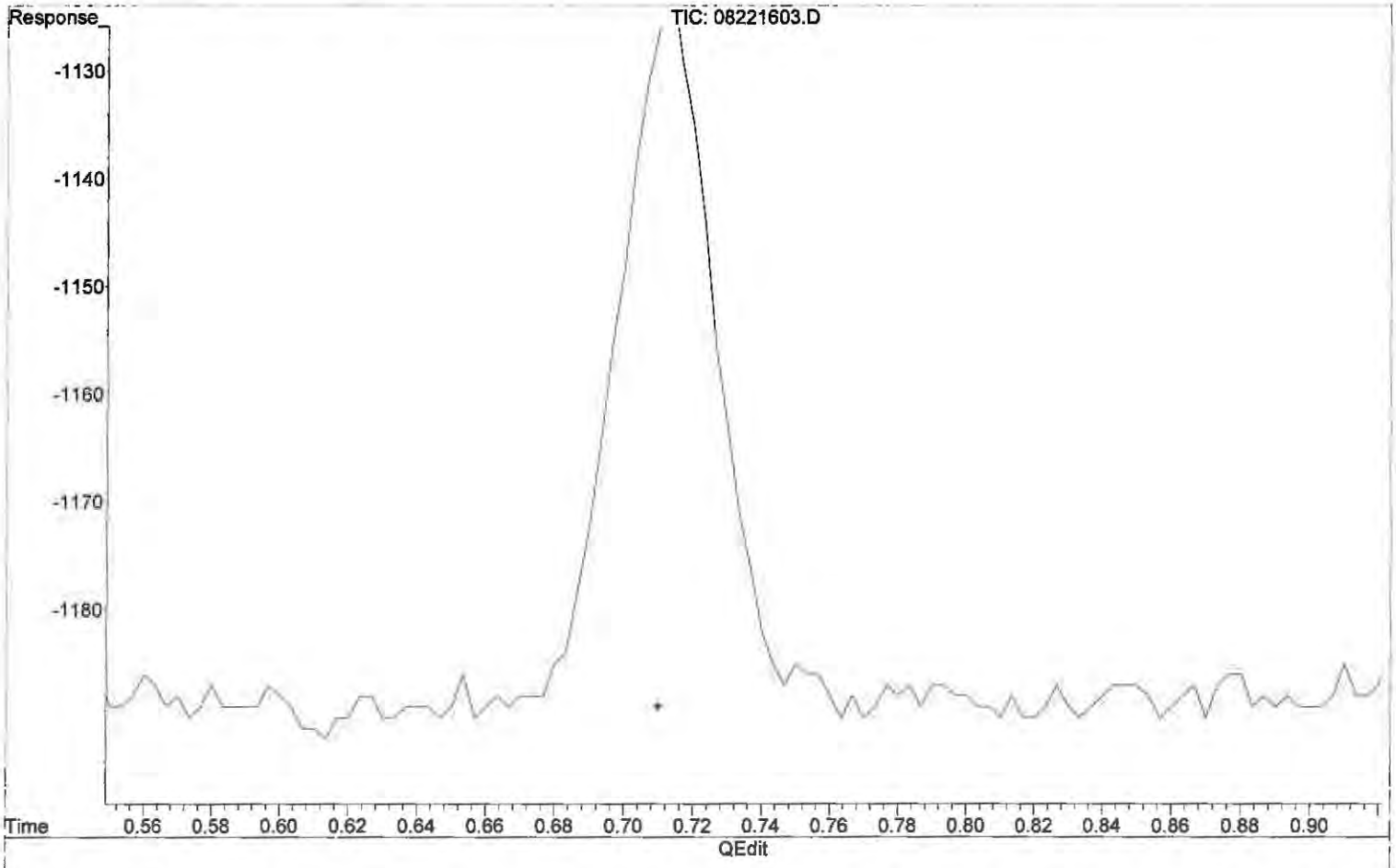


Quantitation Report (Qedit)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221603.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 10:06 am
Operator : amf
Sample : std s11-07191601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 11:02:47 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(1) Hydrogen

0.714min 987.772 ppm

response 1322

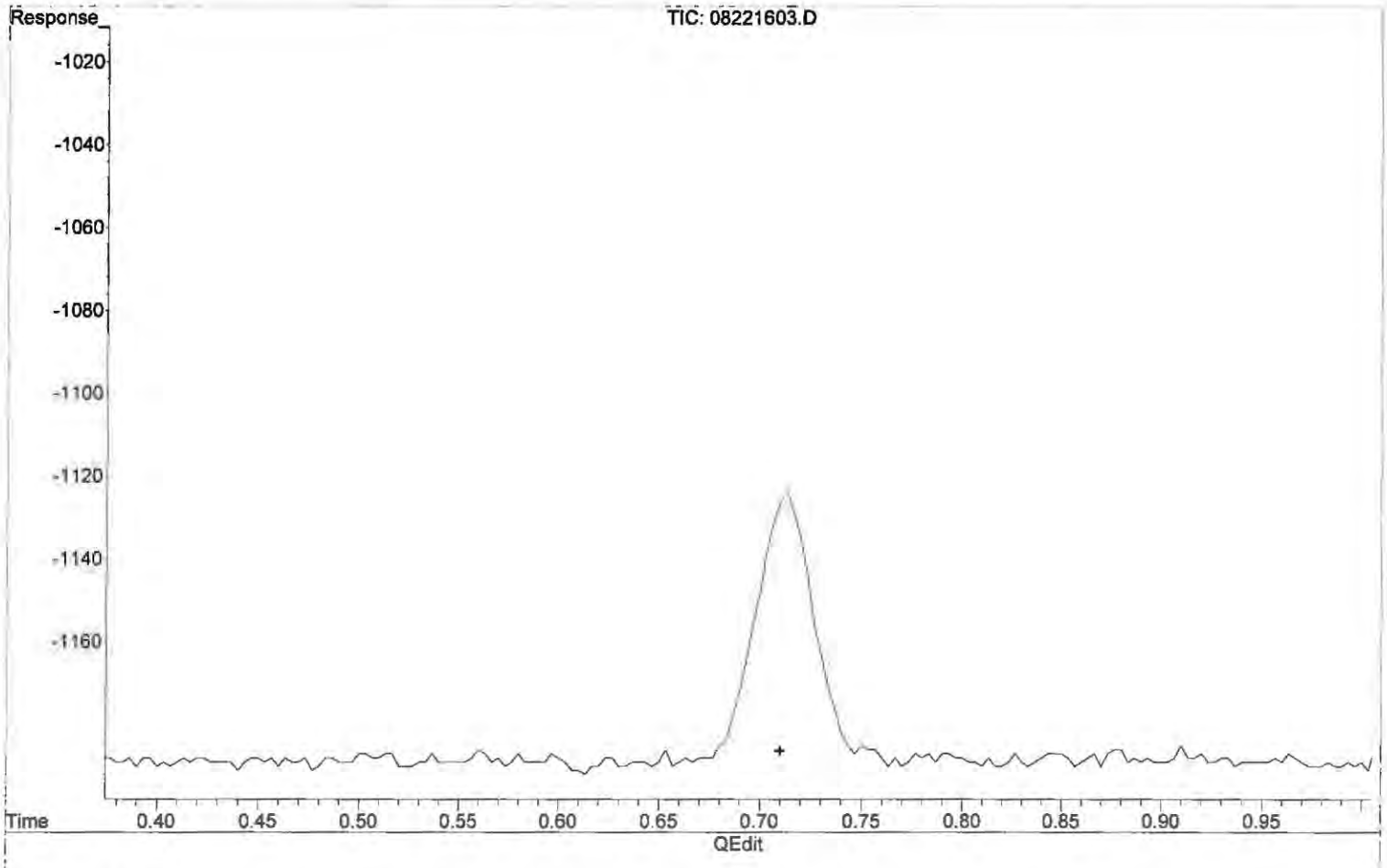
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221603.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 10:06 am
Operator : amf
Sample : std s11-07191601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 11:02:47 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(1) Hydrogen

0.713min 1019.461 ppm m

response 1364

8/22/16 BLC

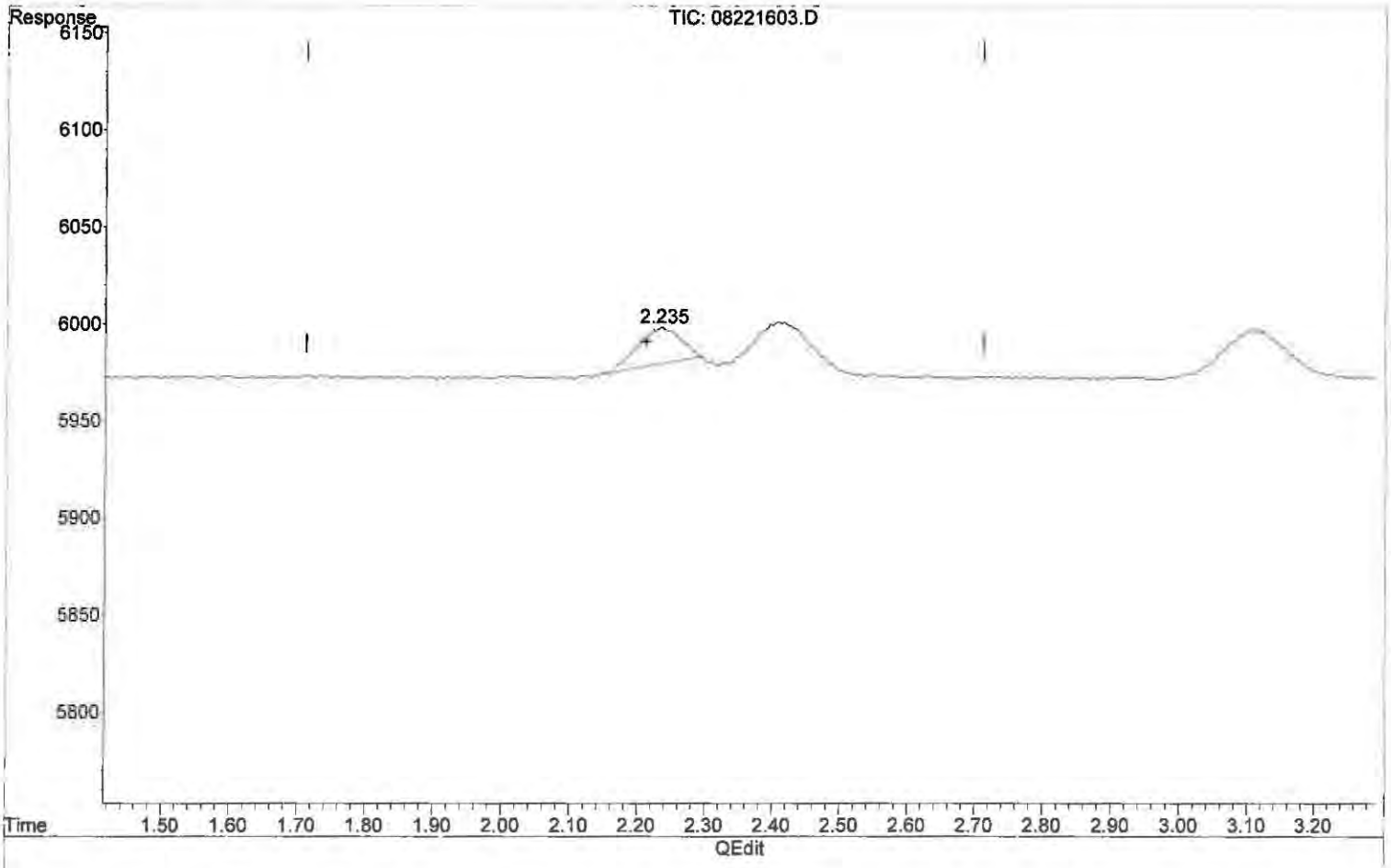
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221603.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 10:06 am
Operator : amf
Sample : std s11-07191601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 11:02:47 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(2) Oxygen

2.237min 537.065 ppm

response 807

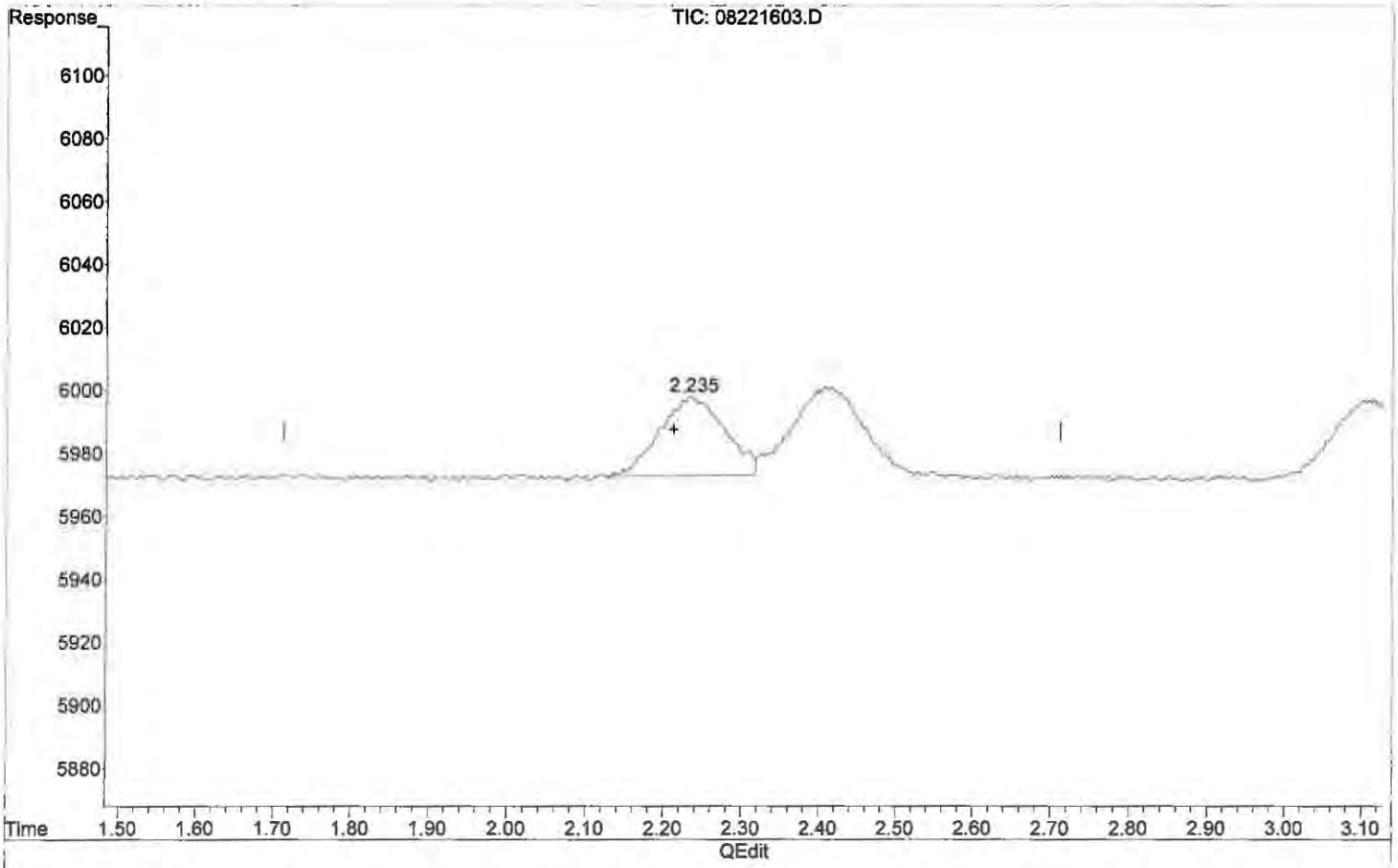
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221603.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 10:06 am
Operator : amf
Sample : std s11-07191601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 11:02:47 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(2) Oxygen

2.235min 953.500 ppm m

response 1434

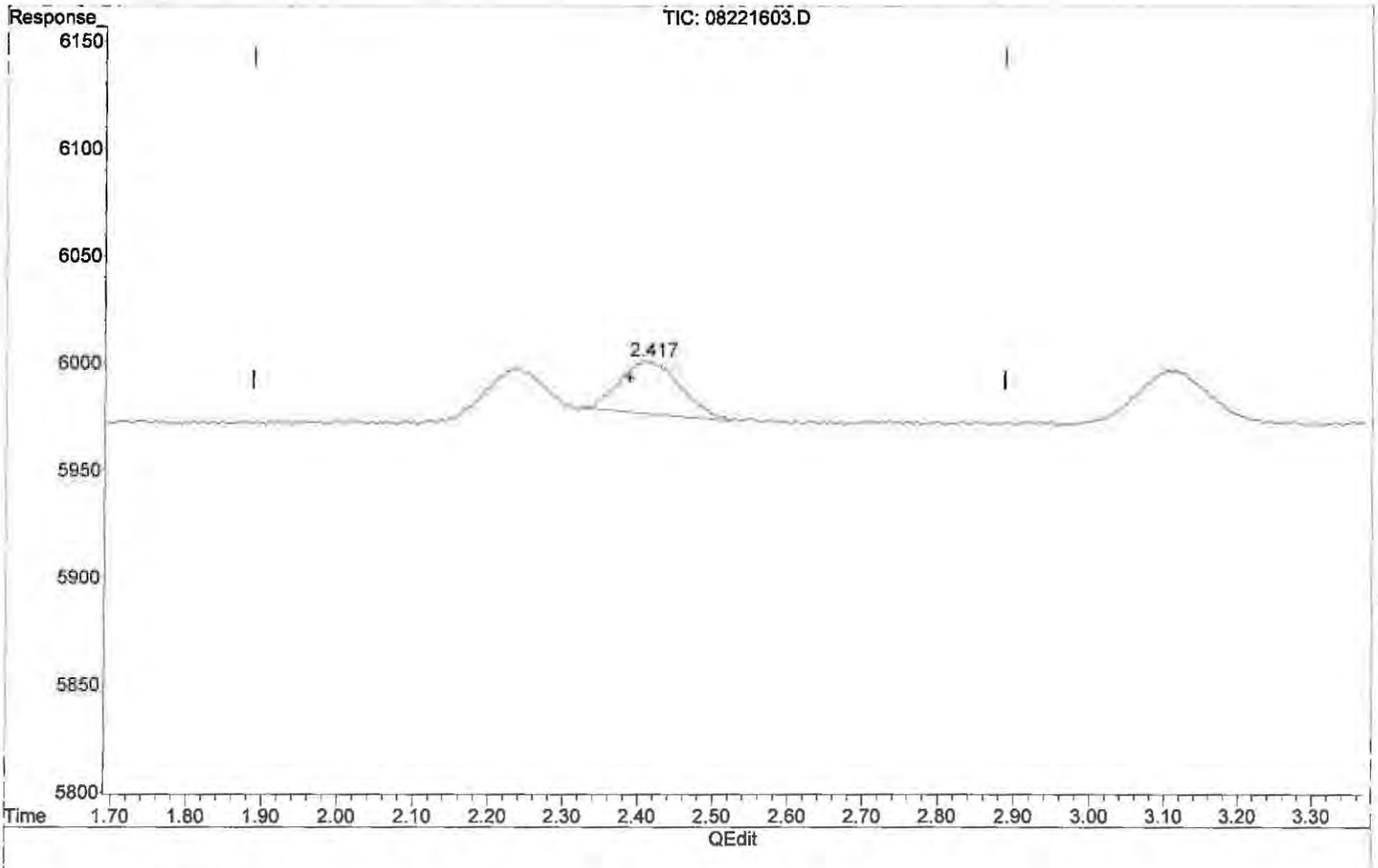
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221603.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 10:06 am
Operator : amf
Sample : std s11-07191601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 11:02:47 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(3) Nitrogen

2.412min 767.417 ppm

response 1367

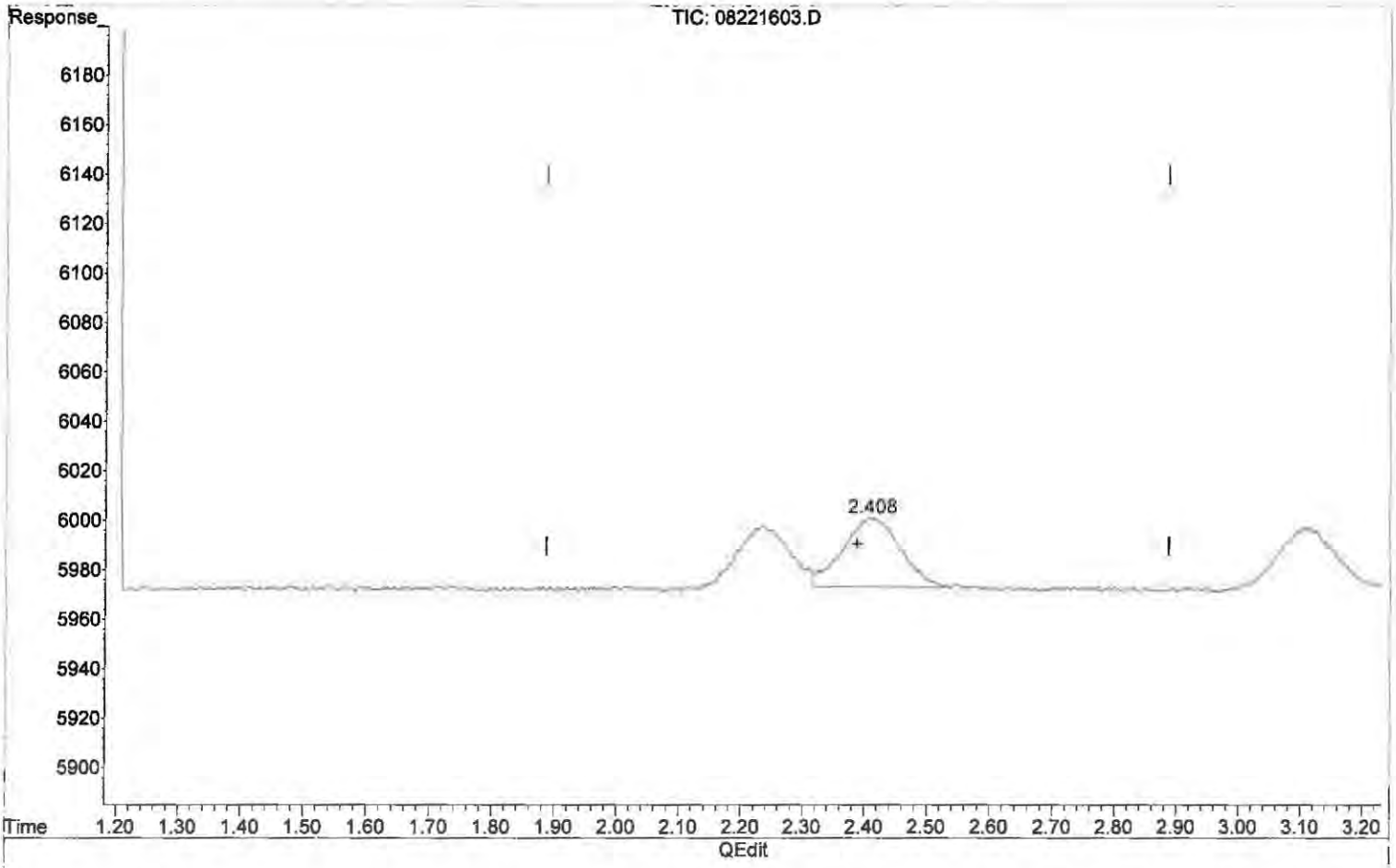
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221603.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 10:06 am
Operator : amf
Sample : std s11-07191601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 11:02:47 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(3) Nitrogen

2.408min 999.327 ppm m

response 1780

8/22/16 BLC

8/28/16

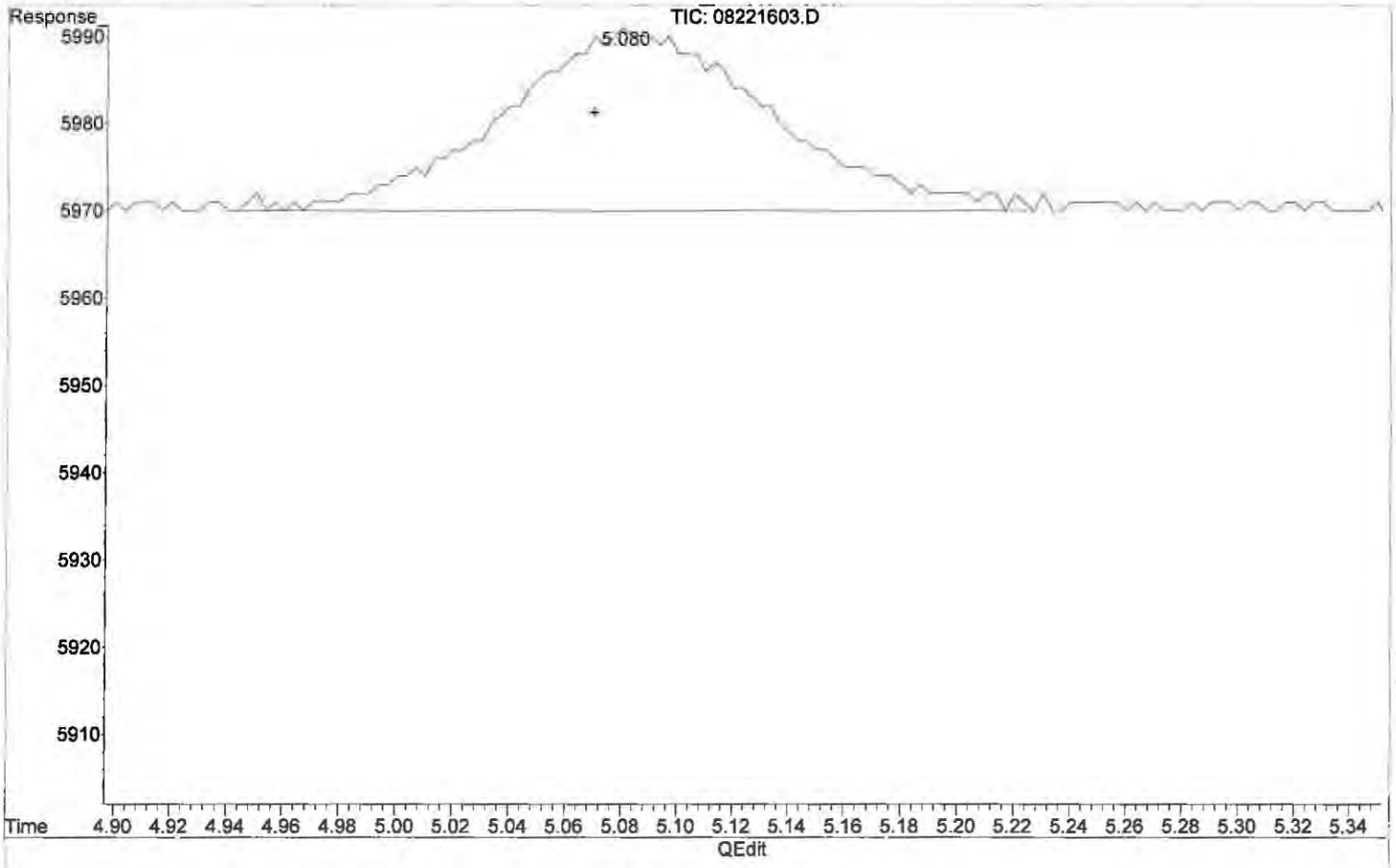
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221603.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 10:06 am
Operator : amf
Sample : std s11-07191601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 11:02:47 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(5) Methane

5.083min 1045.028 ppm

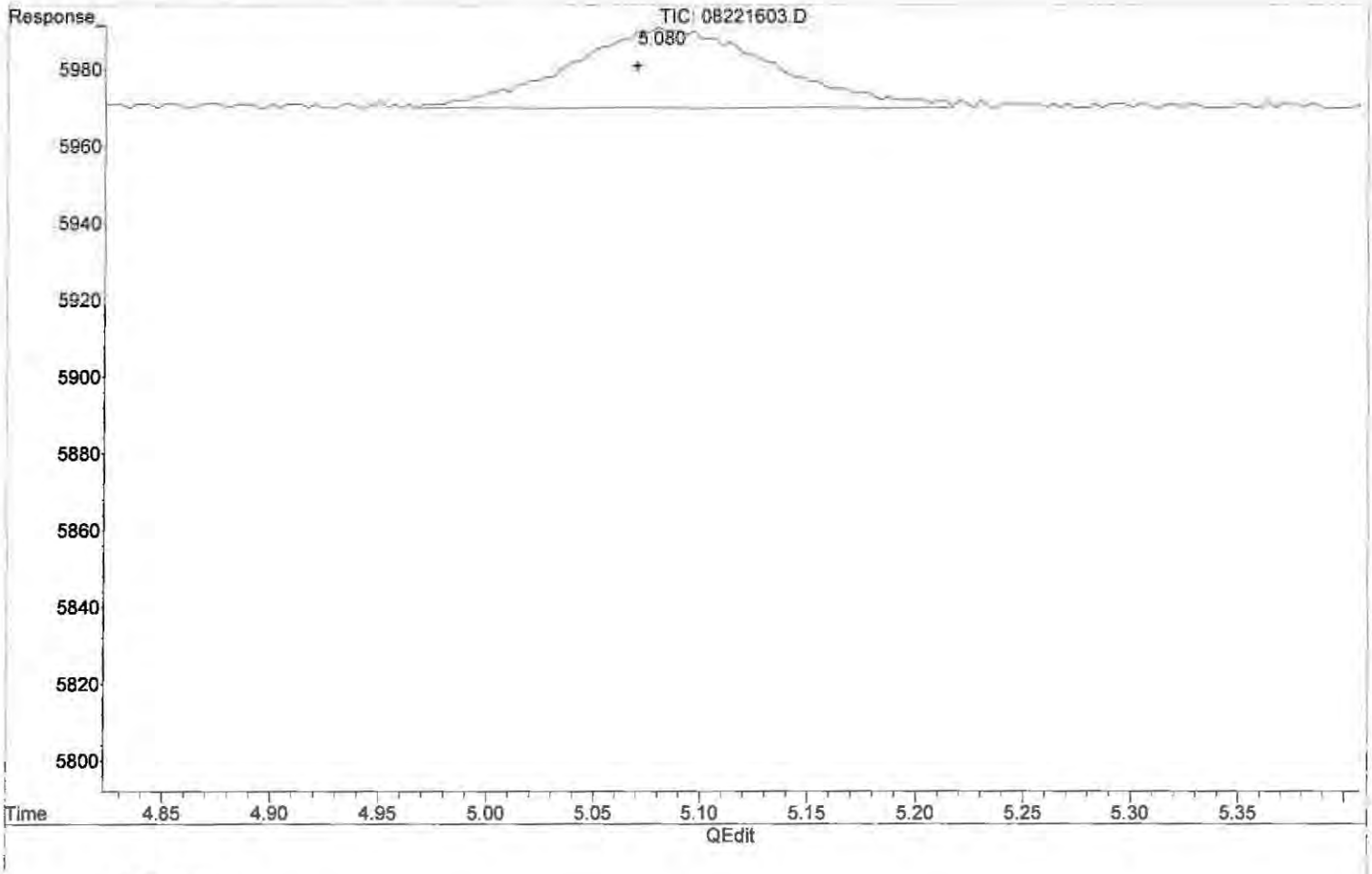
response 1321

(+) = Expected Retention Time

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221603.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 10:06 am
Operator : amf
Sample : std s11-07191601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 11:02:47 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(5) Methane

5.080min 1084.976 ppm m

response 1372

8/22/16 BLC

8/23/16

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221604.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 11:42 am
Operator : amf
Sample : std s11-12041503
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 12:00:16 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.710	6816	5069.580	ppm
2)	Oxygen	2.234	7949	5211.853	ppm
3)	Nitrogen	2.407	9619	5141.082	ppm
4)	Carbon Monoxide	3.101	9222	5438.969	ppm
5)	Methane	5.083	6796	5087.540	ppm
6)	Carbon Dioxide	6.745	11179	5222.308	ppm

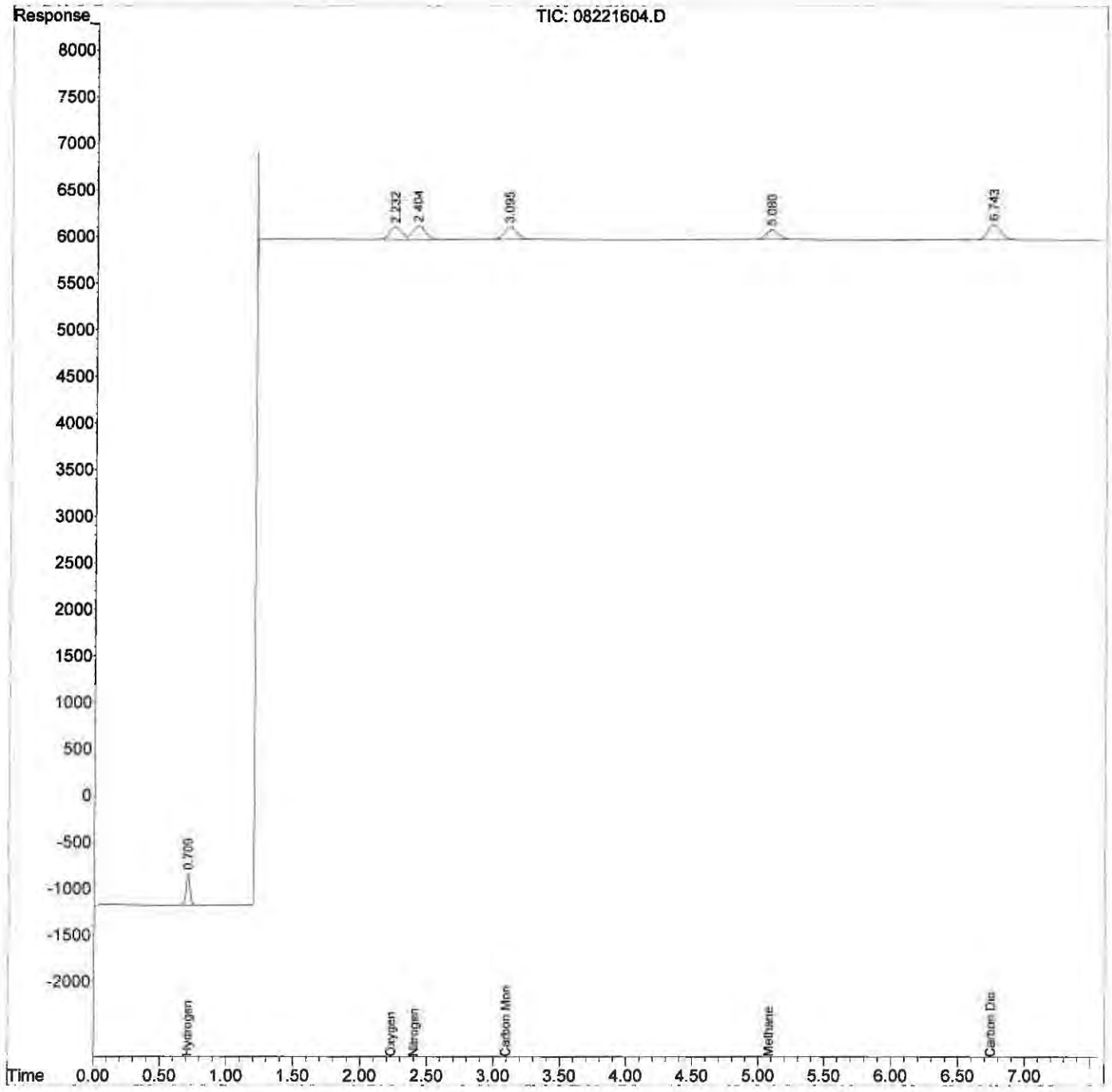
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221604.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 11:42 am
Operator : amf
Sample : std s11-12041503
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 12:00:16 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221605.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 11:54 am
Operator : amf
Sample : std s11-12041503
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 12:18:35 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

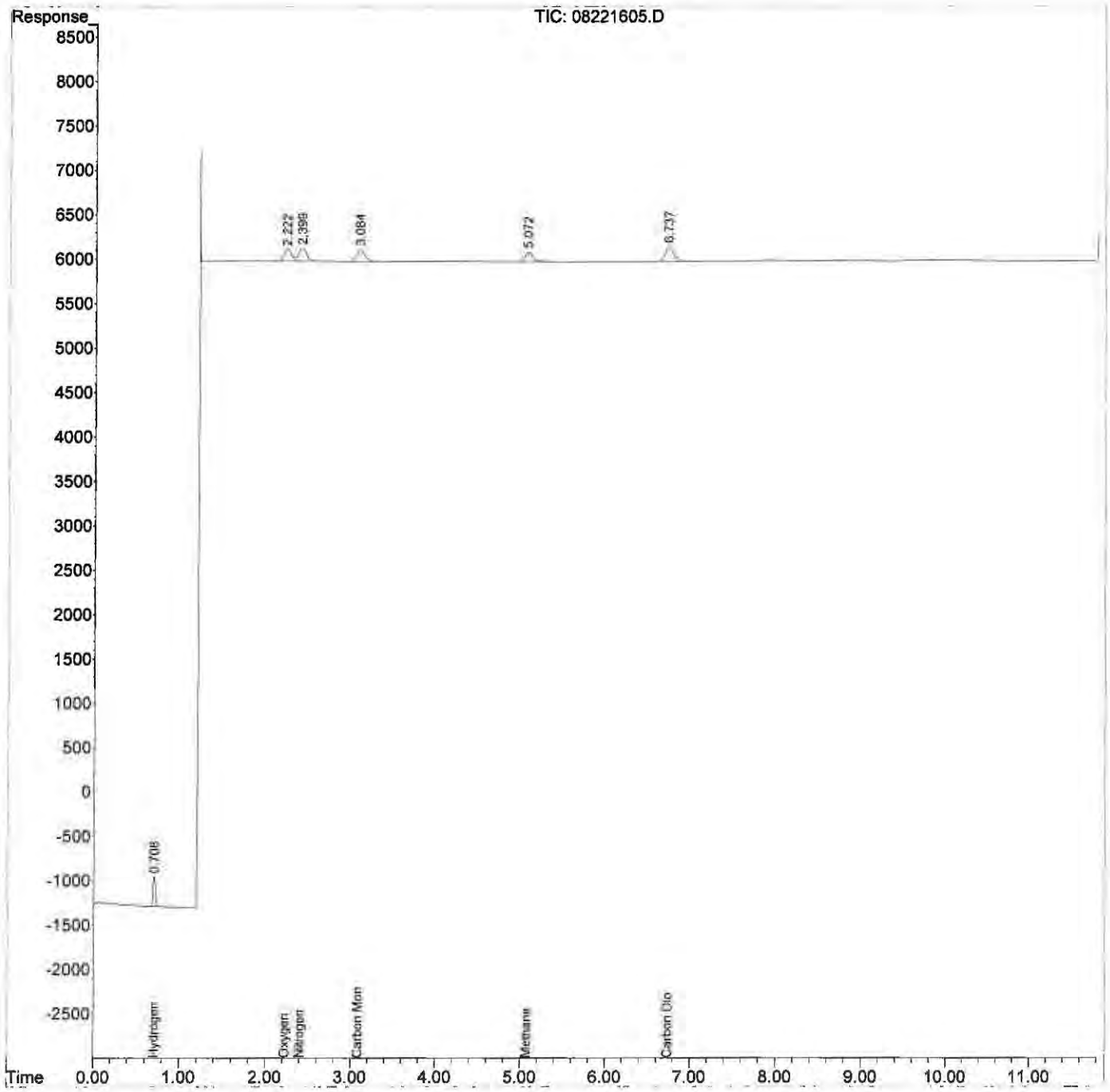
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.709	6828	5054.643	ppm
2)	Oxygen	2.224	7880	5226.963	ppm
3)	Nitrogen	2.401	9090	5004.155	ppm
4)	Carbon Monoxide	3.088	9253	5456.239	ppm
5)	Methane	5.075	6735	5122.723	ppm
6)	Carbon Dioxide	6.740	11194	5254.662	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221605.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 11:54 am
Operator : amf
Sample : std s11-12041503
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 12:18:35 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221606.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 12:10 pm
Operator : amf
Sample : std s11-12041503
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 12:36:24 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

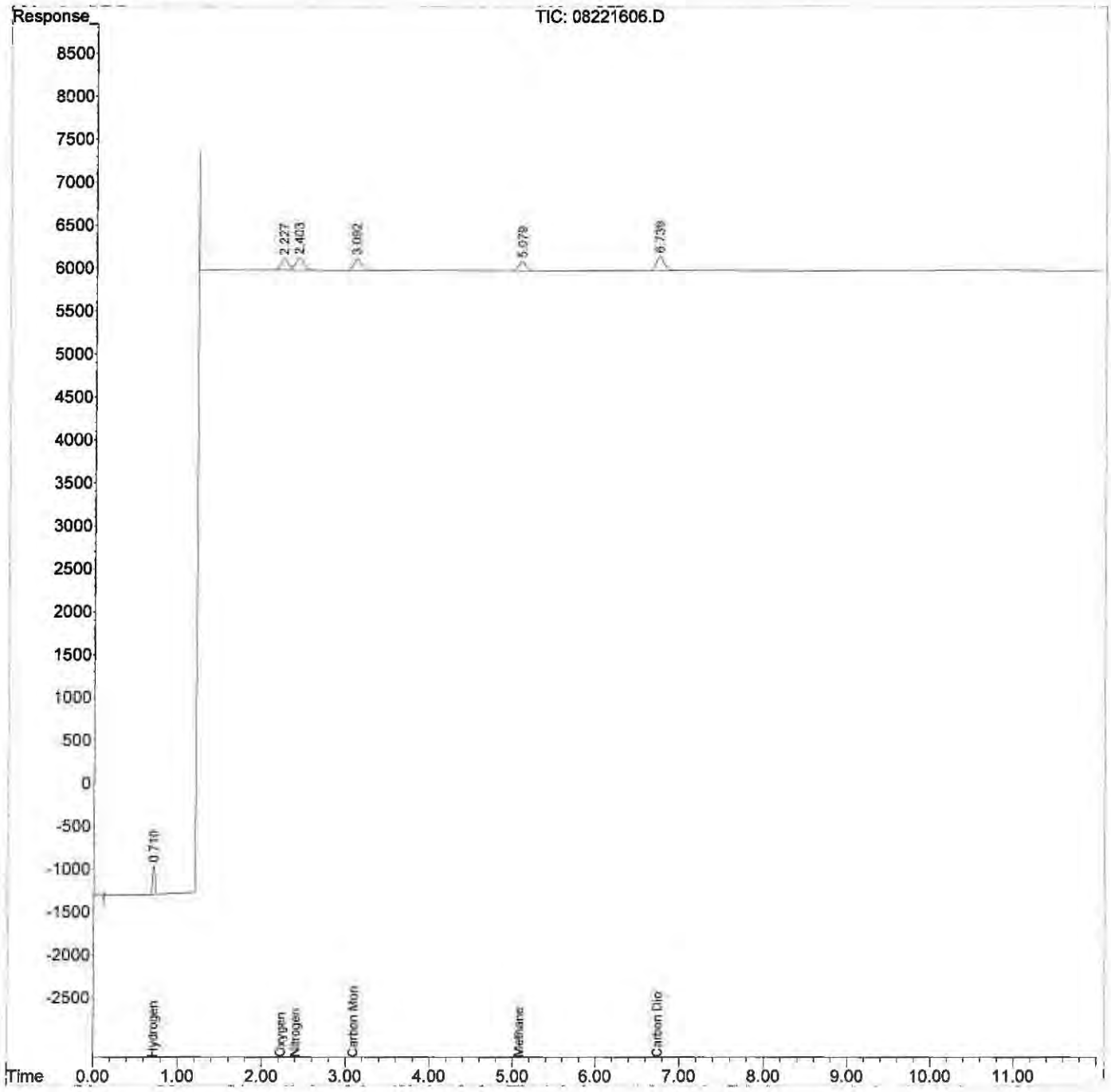
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.712	6684	4937.282	ppm
2)	Oxygen	2.229	7943	5221.147	ppm
3)	Nitrogen	2.405	9181	5053.344	ppm
4)	Carbon Monoxide	3.096	9129	5286.762	ppm
5)	Methane	5.079	6864	5194.678	ppm
6)	Carbon Dioxide	6.741	10987	5105.231	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221606.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 12:10 pm
Operator : amf
Sample : std s11-12041503
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 12:36:24 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221607.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 12:42 pm
Operator : amf
Sample : std s11-12041502
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 13:04:59 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

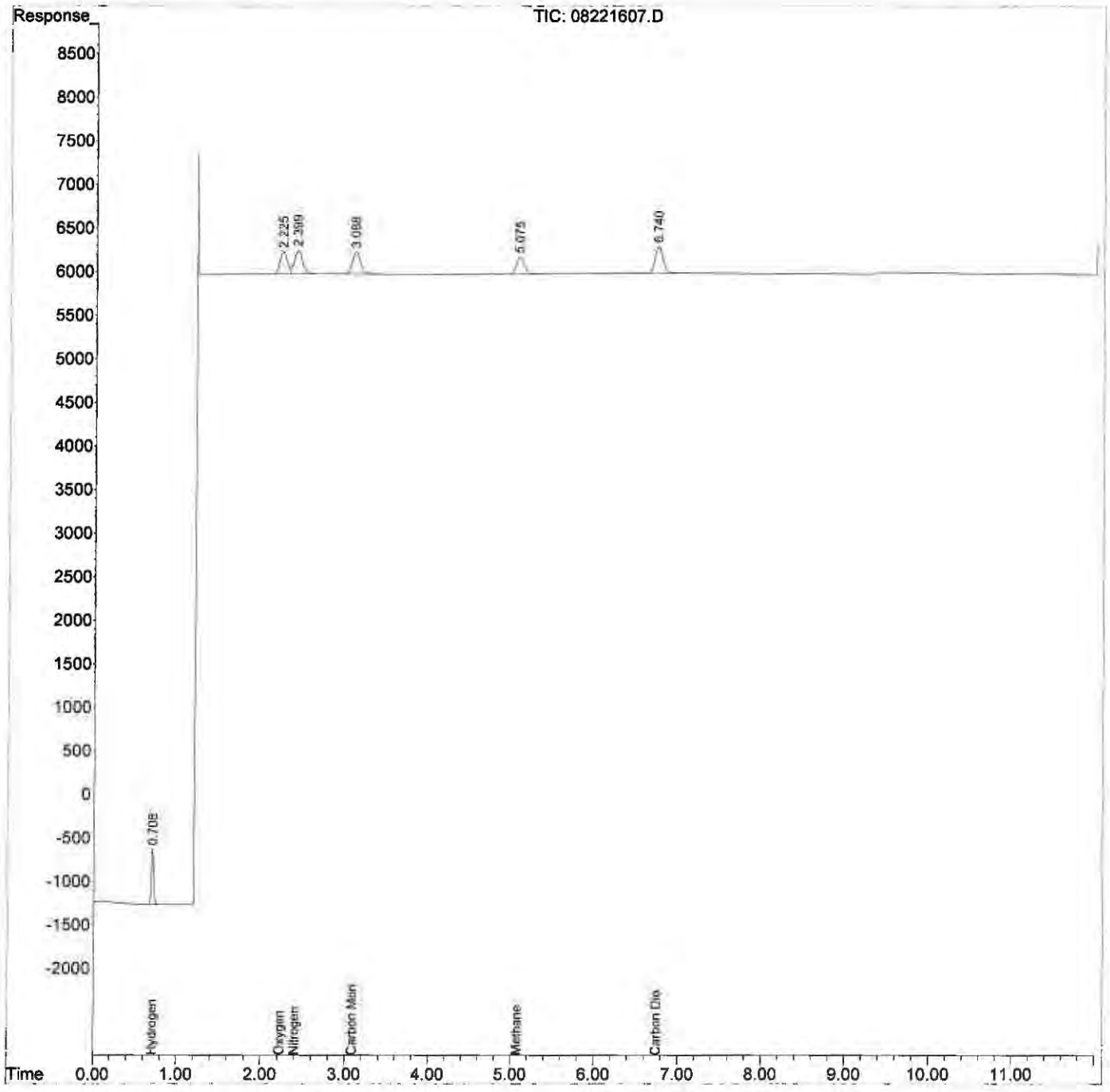
	Compound	R.T.	Response	Conc Units
Target Compounds				
1)	Hydrogen	0.710	13019	9636.034 ppm
2)	Oxygen	2.226	15612	10187.765 ppm
3)	Nitrogen	2.402	17929	9850.826 ppm
4)	Carbon Monoxide	3.090	17512	10045.681 ppm
5)	Methane	5.078	12994	9771.314 ppm
6)	Carbon Dioxide	6.741	21039	9741.754 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221607.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 12:42 pm
Operator : amf
Sample : std s11-12041502
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 13:04:59 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221608.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 12:58 pm
Operator : amf
Sample : std s11-12041502
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 13:42:55 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

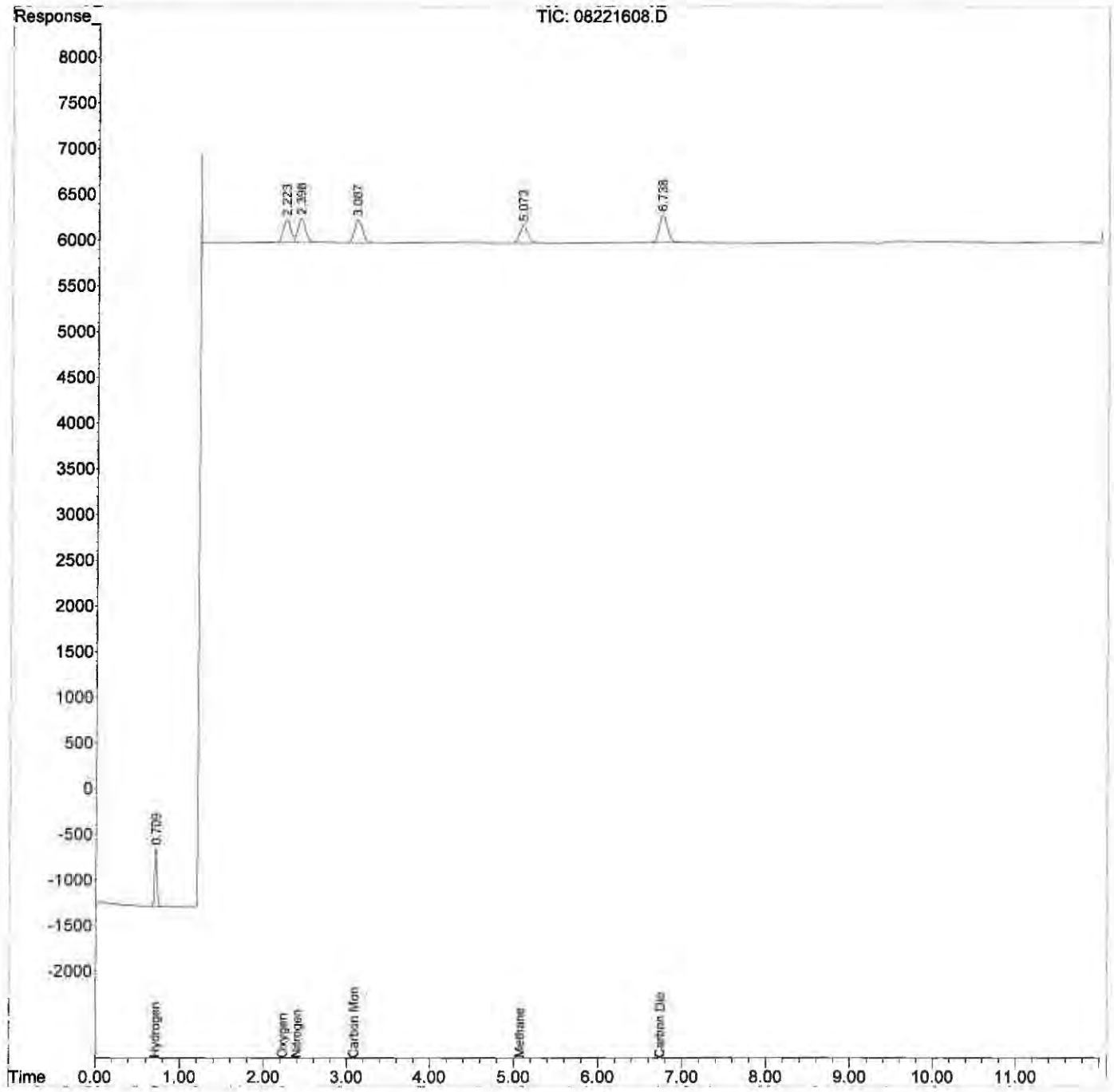
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.710	12791	9516.739	ppm
2)	Oxygen	2.225	14995	9758.854	ppm
3)	Nitrogen	2.401	17280	9514.619	ppm
4)	Carbon Monoxide	3.089	17131	9820.198	ppm
5)	Methane	5.075	12748	9617.190	ppm
6)	Carbon Dioxide	6.739	20634	9589.748	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221608.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 12:58 pm
Operator : amf
Sample : std s11-12041502
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 13:42:55 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221609.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 1:34 pm
Operator : amf
Sample : std s11-12041502
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 13:57:00 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.712	12871	9634.790	ppm
2)	Oxygen	2.235	15105	9859.758	ppm
3)	Nitrogen	2.412	17309	9588.814	ppm
4)	Carbon Monoxide	3.102	17156	9856.931	ppm
5)	Methane	5.086	12812	9712.170	ppm
6)	Carbon Dioxide	6.746	20975	9798.564	ppm

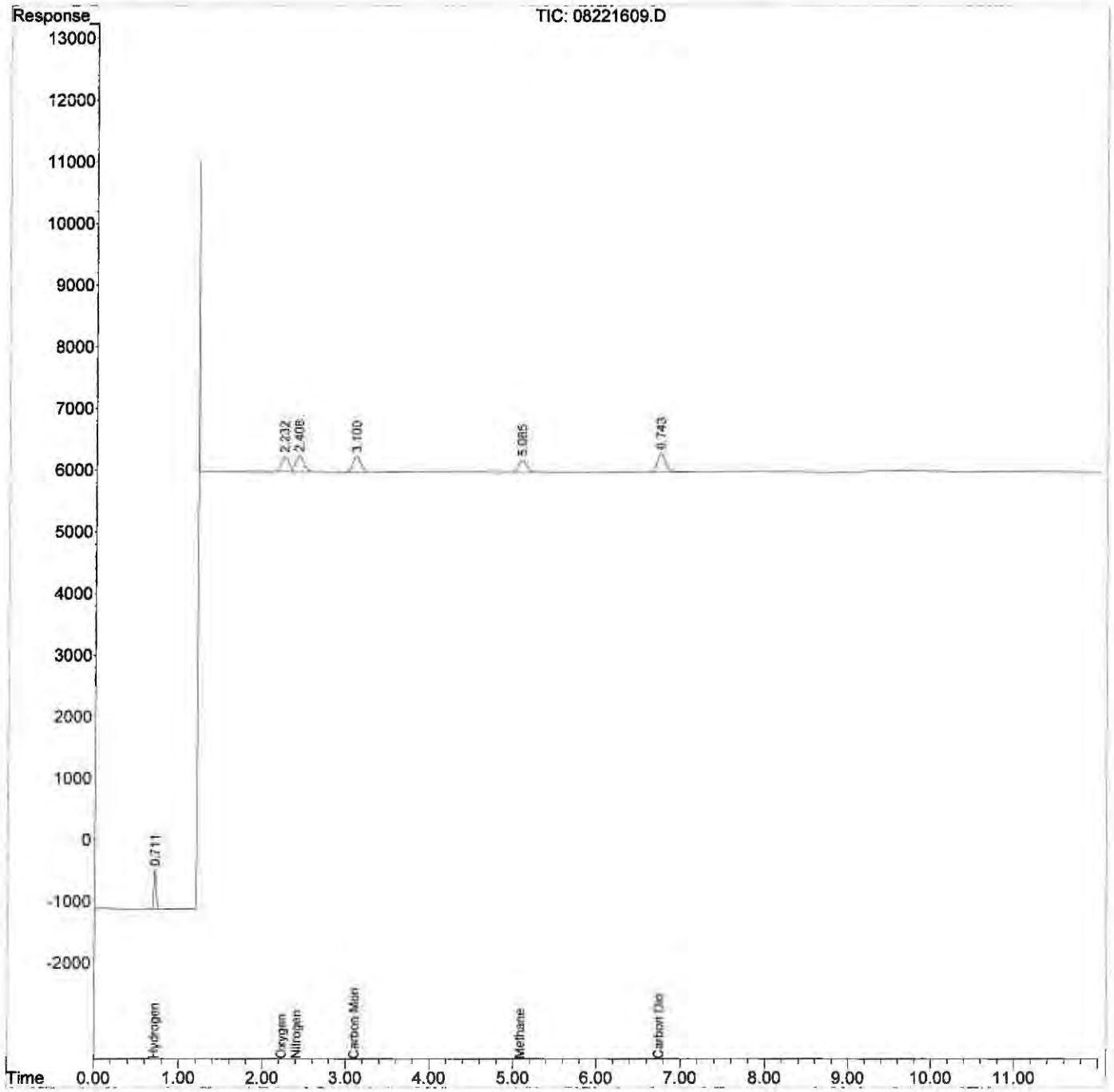
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221609.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 1:34 pm
Operator : amf
Sample : std s11-12041502
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 13:57:00 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221610.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 2:07 pm
Operator : amf
Sample : std s11-12041501
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 14:25:02 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

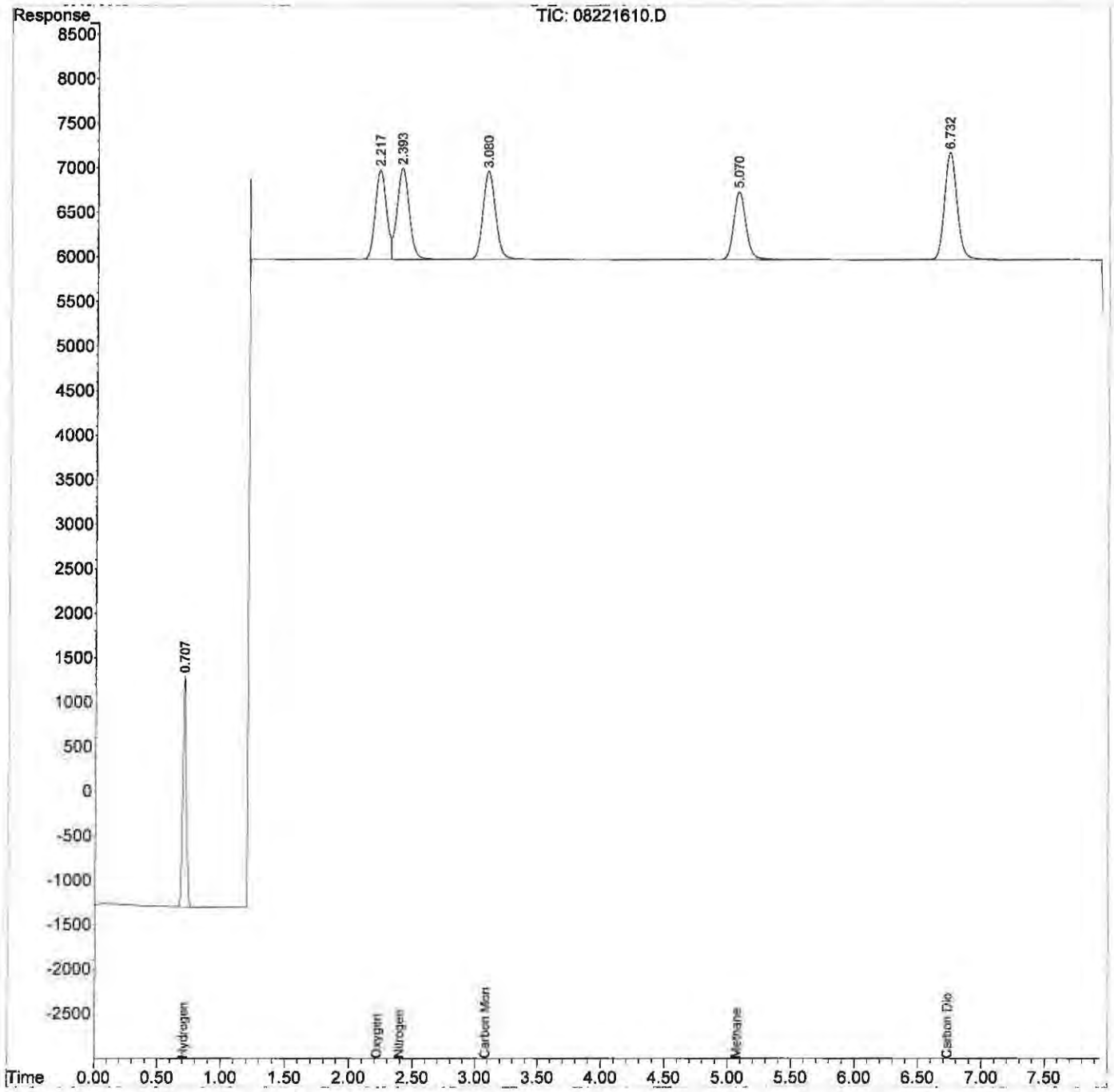
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.709	51763	38905.801	ppm
2)	Oxygen	2.219	61073	39928.807	ppm
3)	Nitrogen	2.395	68921	38354.986	ppm
4)	Carbon Monoxide	3.082	68623	39489.700	ppm
5)	Methane	5.072	51558	39209.427	ppm
6)	Carbon Dioxide	6.734	83185	38946.942	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221610.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 2:07 pm
Operator : amf
Sample : std s11-12041501
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 14:25:02 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221611.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 2:19 pm
Operator : amf
Sample : std s11-12041501
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 14:38:10 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.708	51926	39135.426	ppm
2)	Oxygen	2.219	61650	40312.840	ppm
3)	Nitrogen	2.395	69030	38574.578	ppm
4)	Carbon Monoxide	3.082	69214	39880.940	ppm
5)	Methane	5.072	51622	39335.929	ppm
6)	Carbon Dioxide	6.734	83696	39289.832	ppm

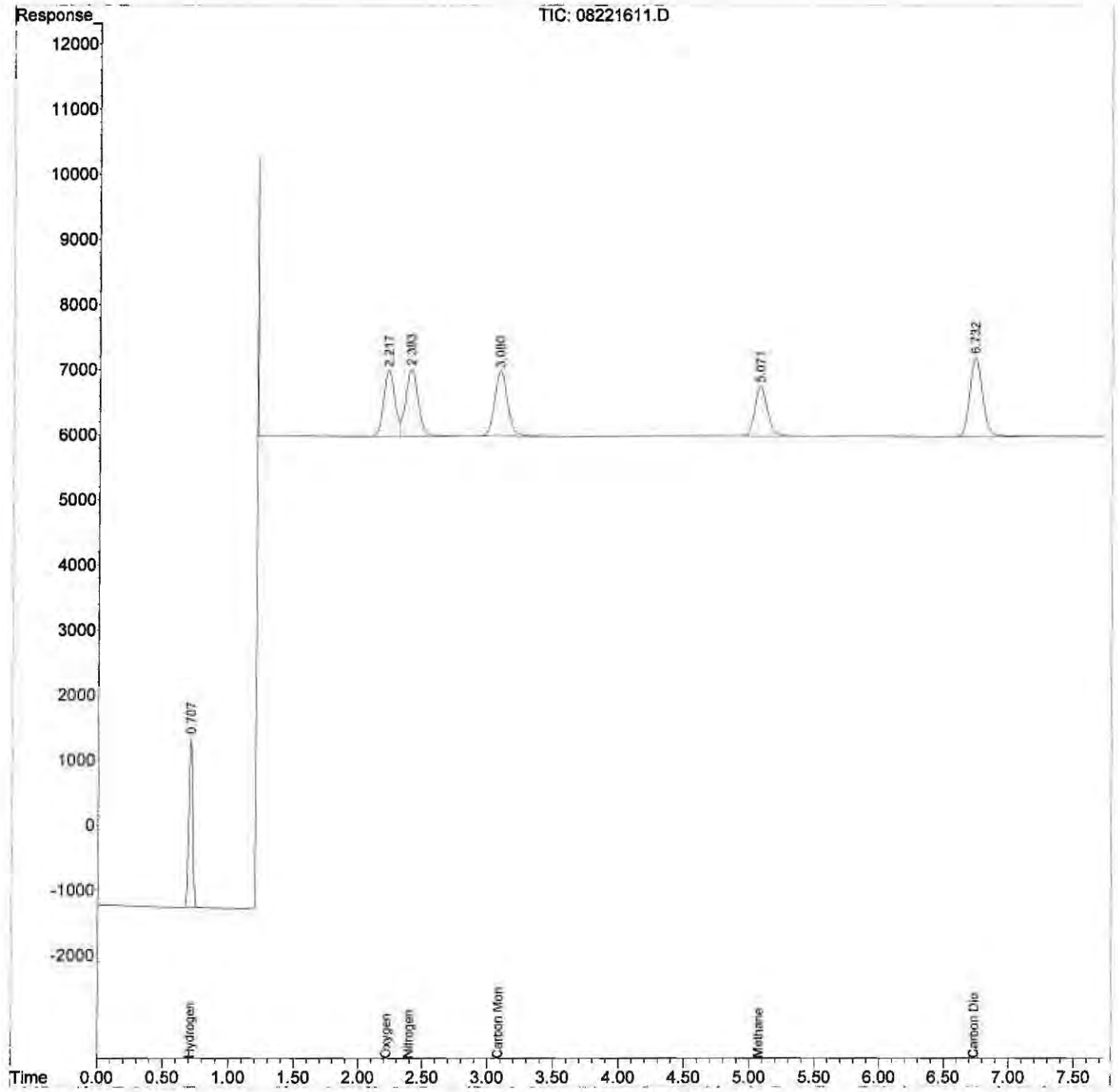
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221611.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 2:19 pm
Operator : amf
Sample : std s11-12041501
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 14:38:10 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221612.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 2:30 pm
Operator : amf
Sample : std s11-12041501
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 14:48:22 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.708	51951	39230.887	ppm
2)	Oxygen	2.218	61582	40239.610	ppm
3)	Nitrogen	2.394	69100	38738.751	ppm
4)	Carbon Monoxide	3.081	69492	40051.872	ppm
5)	Methane	5.071	51479	39286.254	ppm
6)	Carbon Dioxide	6.733	83618	39316.640	ppm

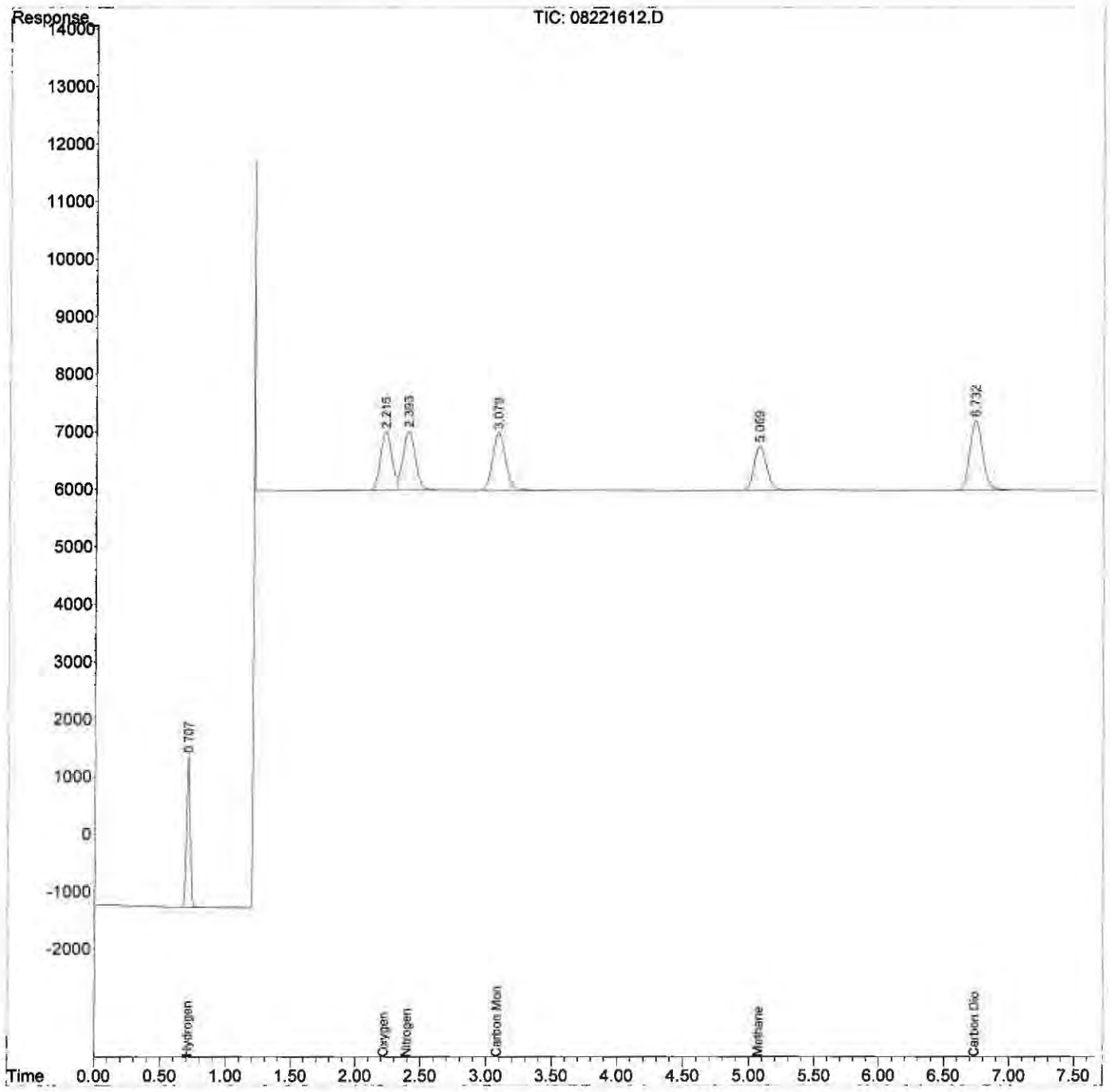
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221612.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 2:30 pm
Operator : amf
Sample : std s11-12041501
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 14:48:22 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221613.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 2:54 pm
Operator : amf
Sample : std s11-12031501
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 15:18:53 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

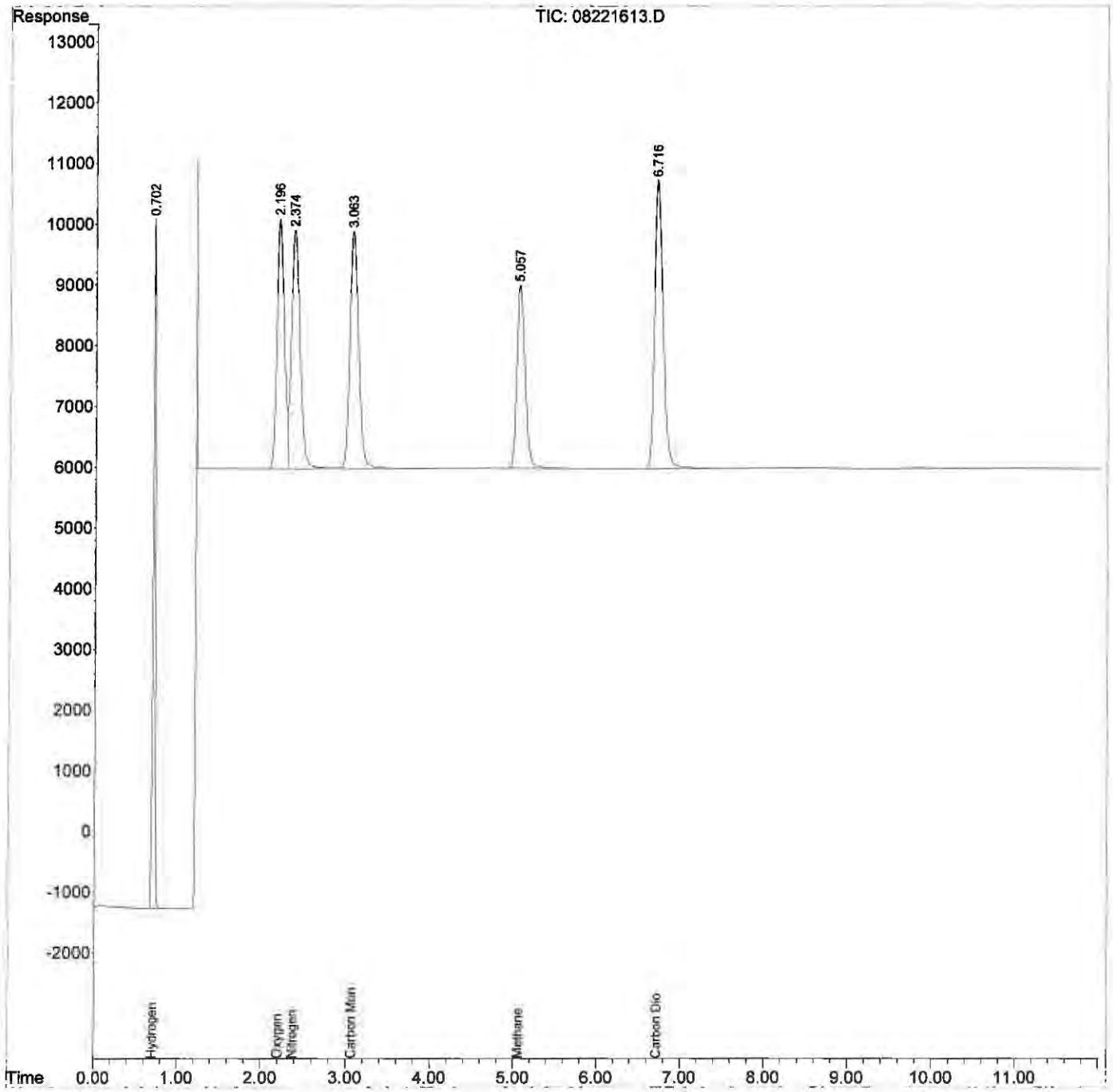
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.703	219834	166275.524	ppm
2)	Oxygen	2.198	247351	161547.583	ppm
3)	Nitrogen	2.375	277428	155942.102	ppm
4)	Carbon Monoxide	3.064	277383	159853.465	ppm
5)	Methane	5.059	206221	157612.524	ppm
6)	Carbon Dioxide	6.718	333461	157014.497	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221613.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 2:54 pm
Operator : amf
Sample : std s11-12031501
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 15:18:53 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221614.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 3:11 pm
Operator : amf
Sample : std s11-12031501
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 15:28:41 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.703	219704	165676.829	ppm
2)	Oxygen	2.200	246818	161079.250	ppm
3)	Nitrogen	2.378	276346	155637.709	ppm
4)	Carbon Monoxide	3.066	276366	159278.450	ppm
5)	Methane	5.060	205850	157510.093	ppm
6)	Carbon Dioxide	6.719	332031	156565.868	ppm

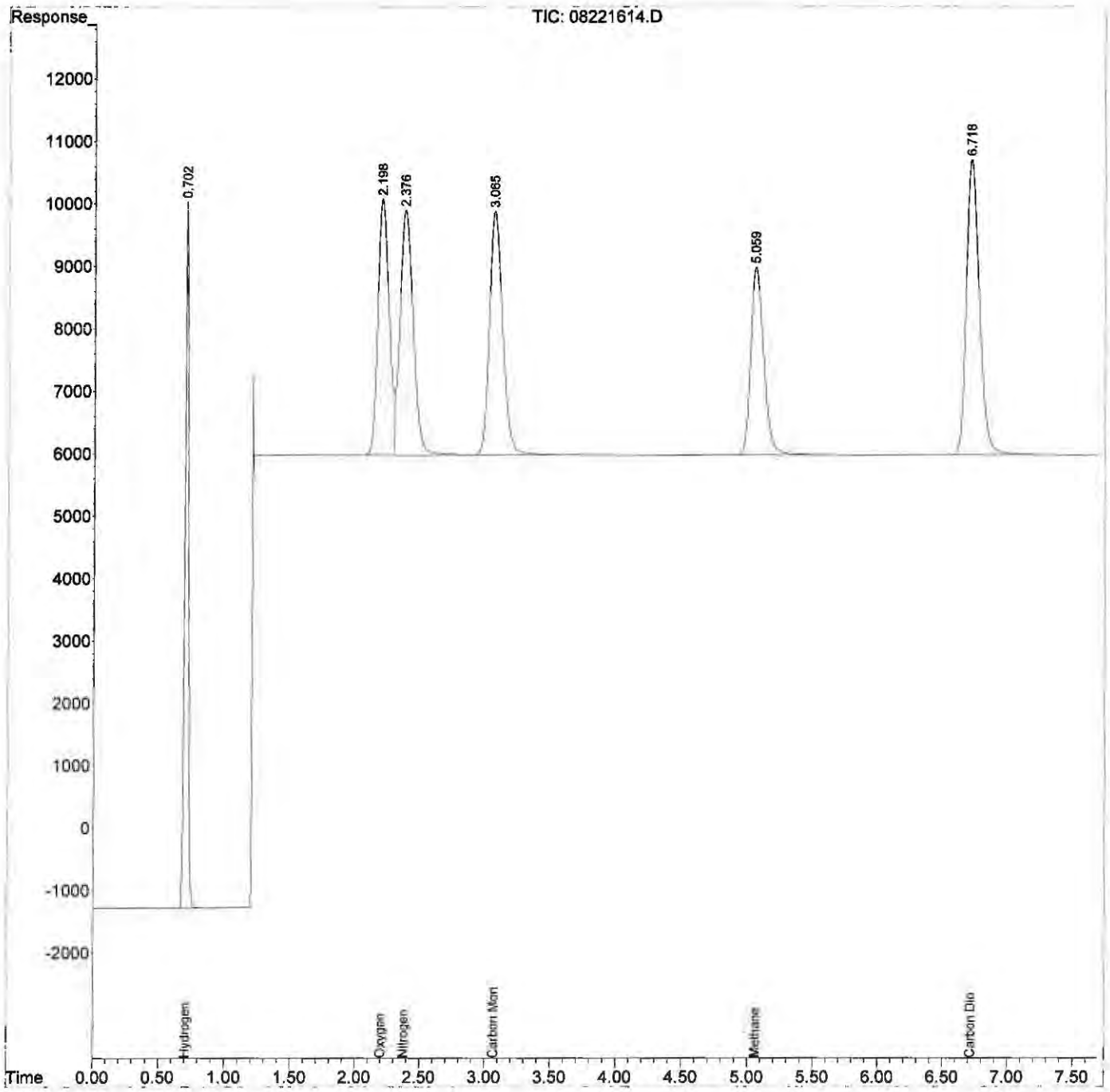
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221614.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 3:11 pm
Operator : amf
Sample : std s11-12031501
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 15:28:41 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221616.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 3:42 pm
Operator : amf
Sample : std s11-12021503
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 15:56:42 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.112	1611068	1050161.569	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

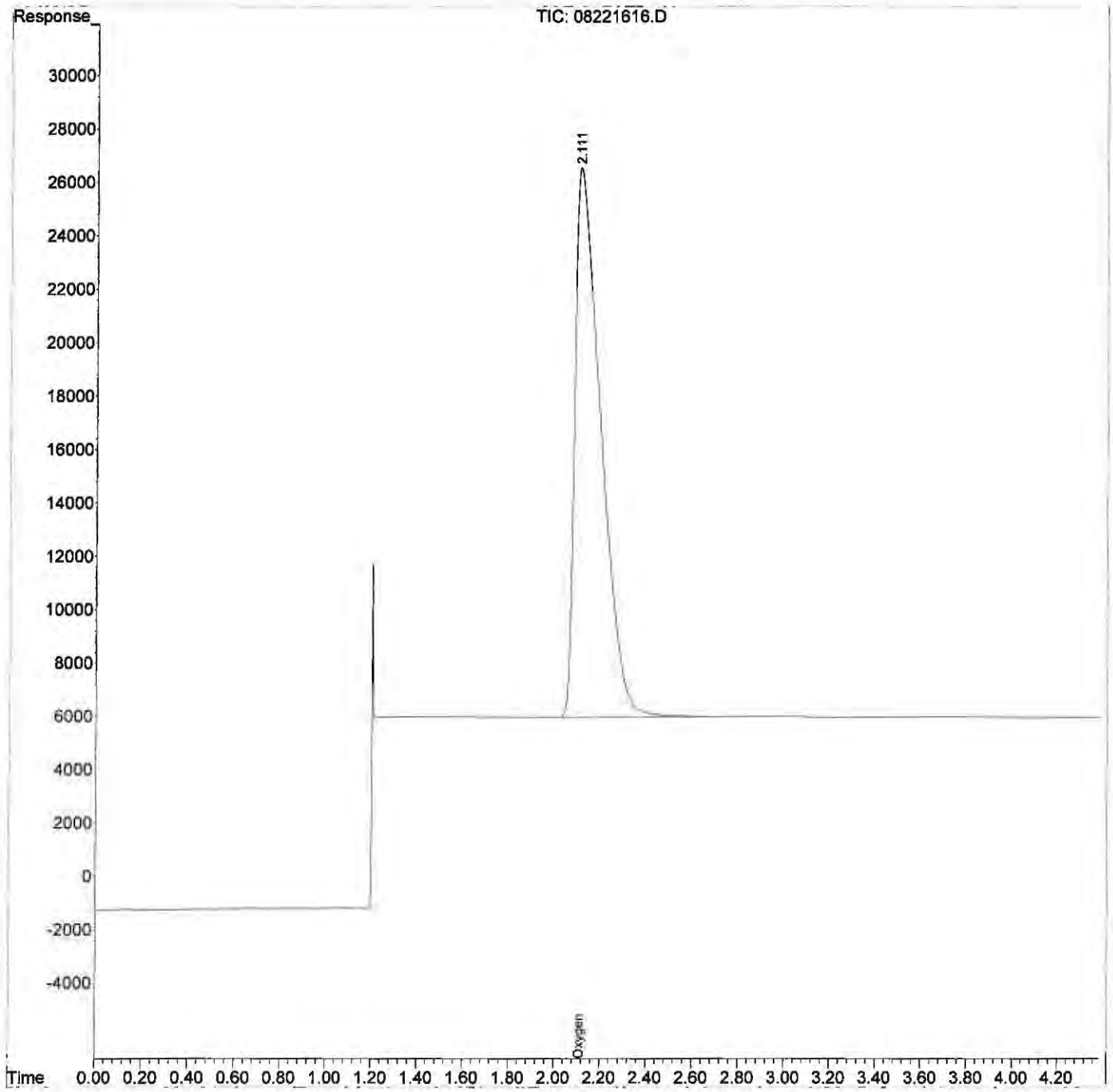
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221616.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 3:42 pm
Operator : amf
Sample : std s11-12021503
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 15:56:42 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221617.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 3:49 pm
Operator : amf
Sample : std s11-12021503
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 16:02:12 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.115	1617147	1050828.907	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

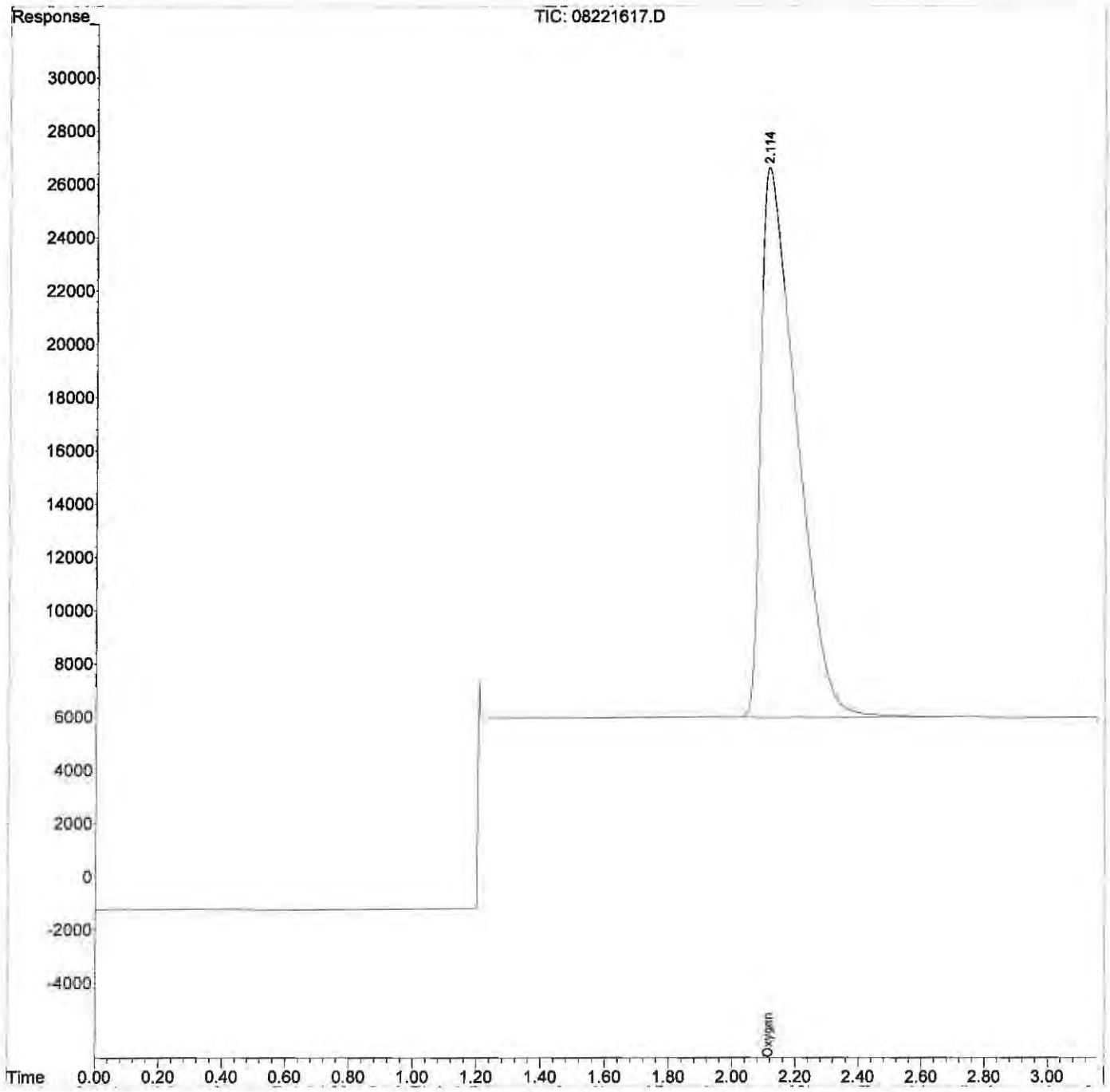
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221617.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 3:49 pm
Operator : amf
Sample : std s11-12021503
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 16:02:12 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221618.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 3:54 pm
Operator : amf
Sample : std s11-12021503
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 16:07:54 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.119	1588729	1029284.802	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

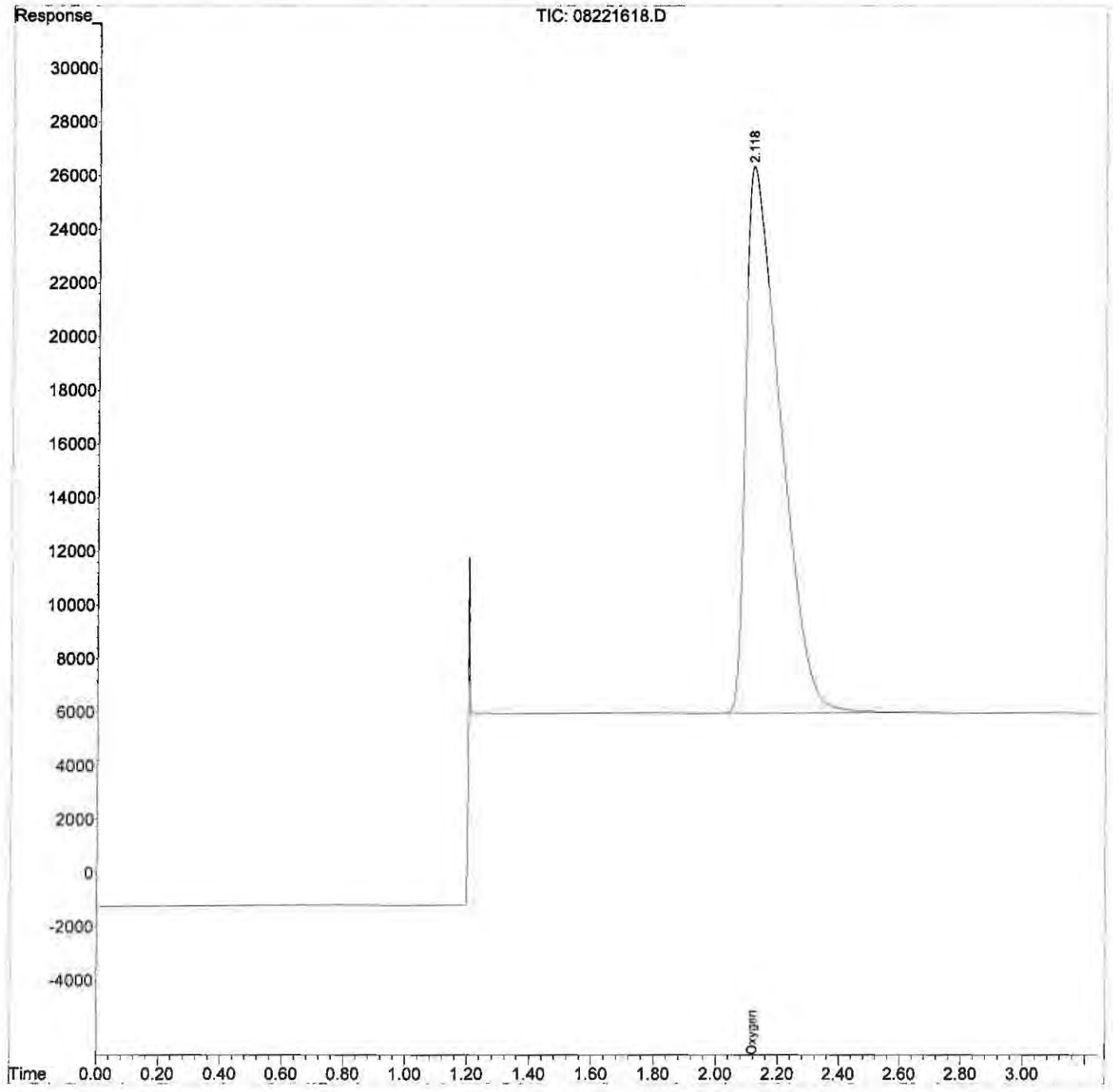
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221618.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 3:54 pm
Operator : amf
Sample : std s11-12021503
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 16:07:54 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221619.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 4:02 pm
Operator : amf
Sample : co2
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 16:20:27 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.634	2005774	948215.193	ppm

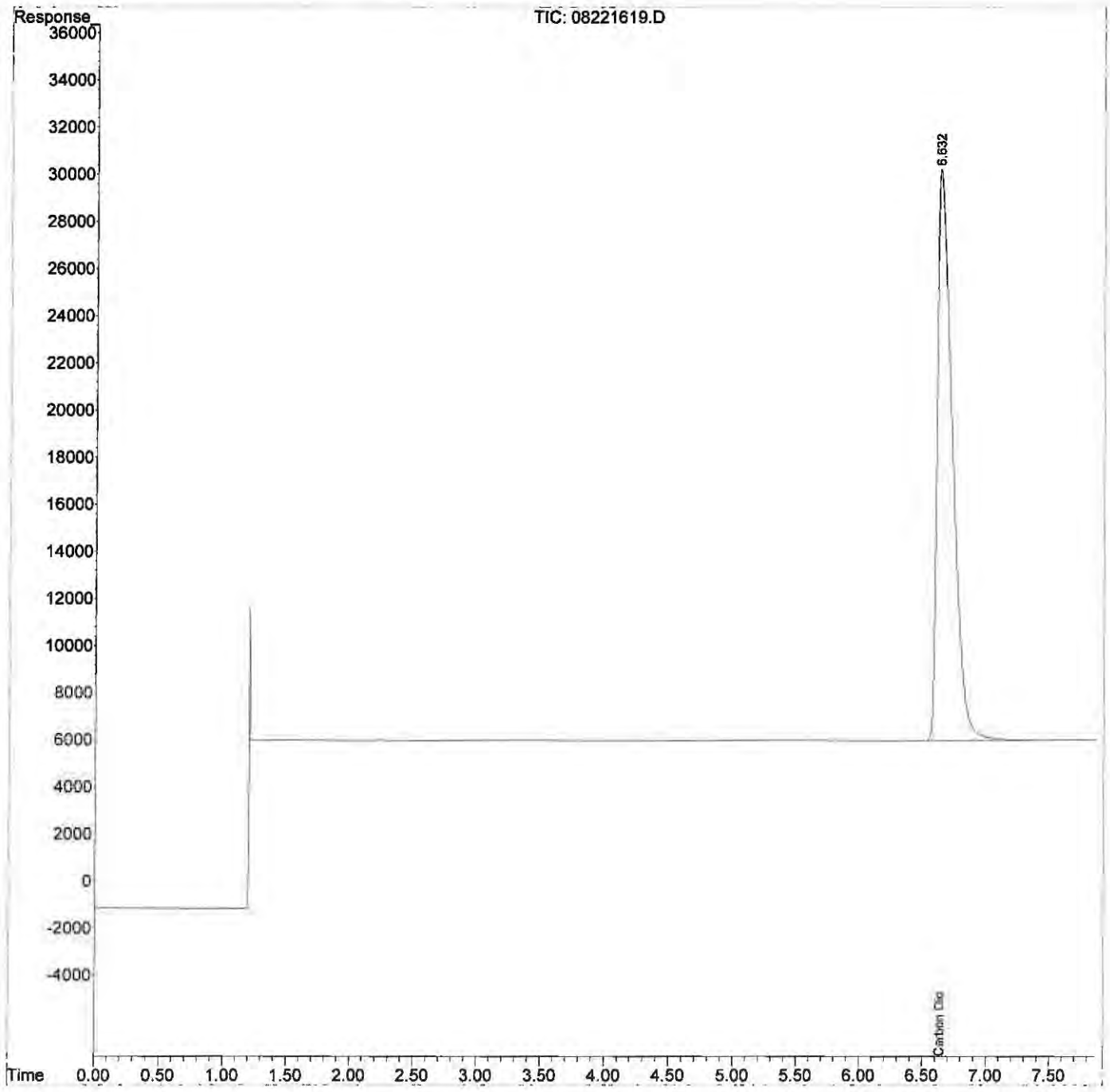
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221619.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 4:02 pm
Operator : amf
Sample : co2
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 16:20:27 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221620.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 4:14 pm
Operator : amf
Sample : co2
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 16:32:40 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.630	2003370	950153.030	ppm

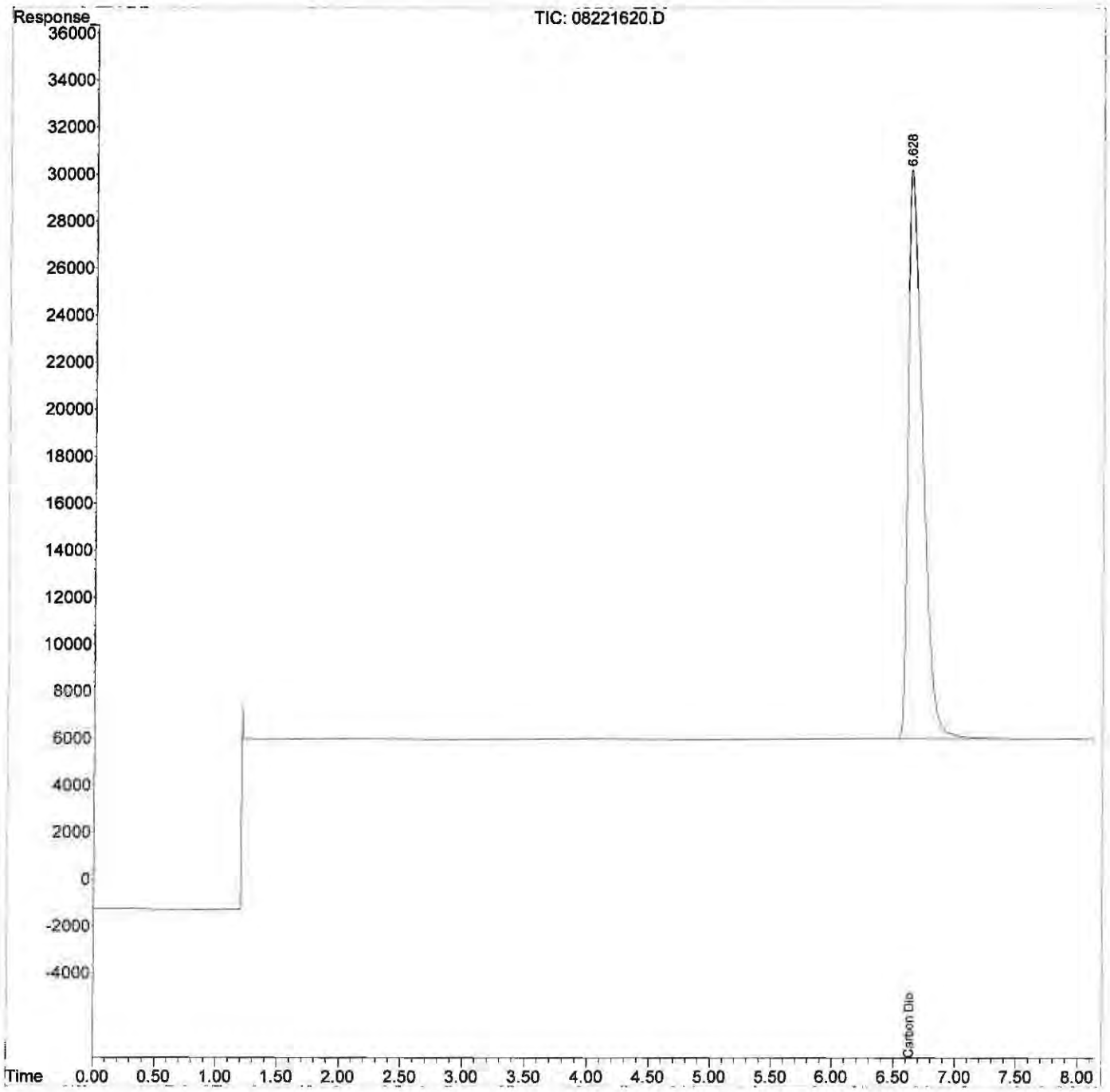
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221620.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 4:14 pm
Operator : amf
Sample : co2
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 16:32:40 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221621.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 4:26 pm
Operator : amf
Sample : co2
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 16:44:54 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.627	2014660	958317.321	ppm

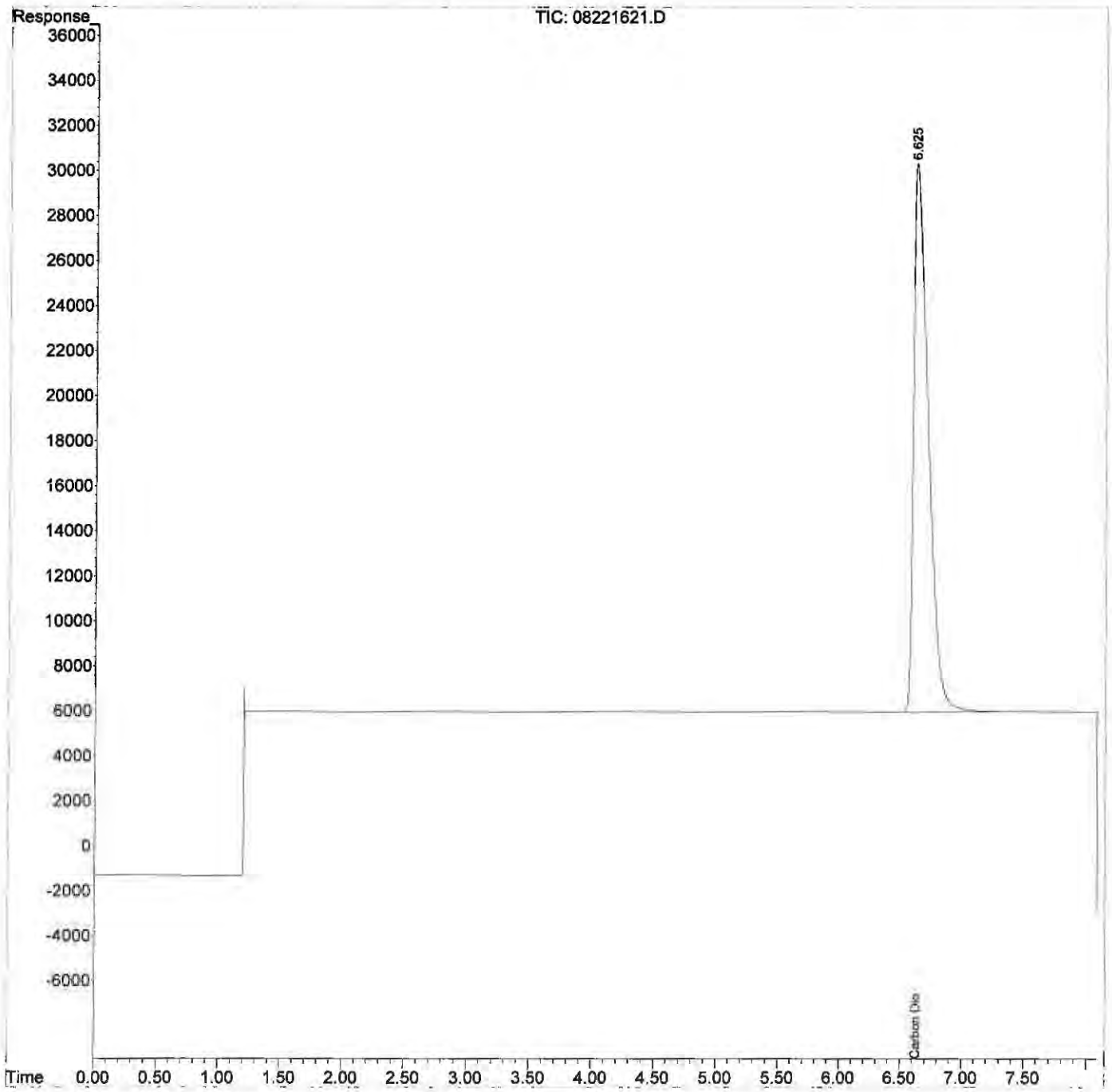
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221621.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 4:26 pm
Operator : amf
Sample : co2
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 16:44:54 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_08\23\
Data File : 08231601.D
Signal(s) : TCD1A.CH
Acq On : 23 Aug 2016 8:56 am
Operator : amf
Sample : s11-12021502
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 23 09:10:40 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 08:53:31 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm d
3)	Nitrogen	2.292	1743725	985438.652	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

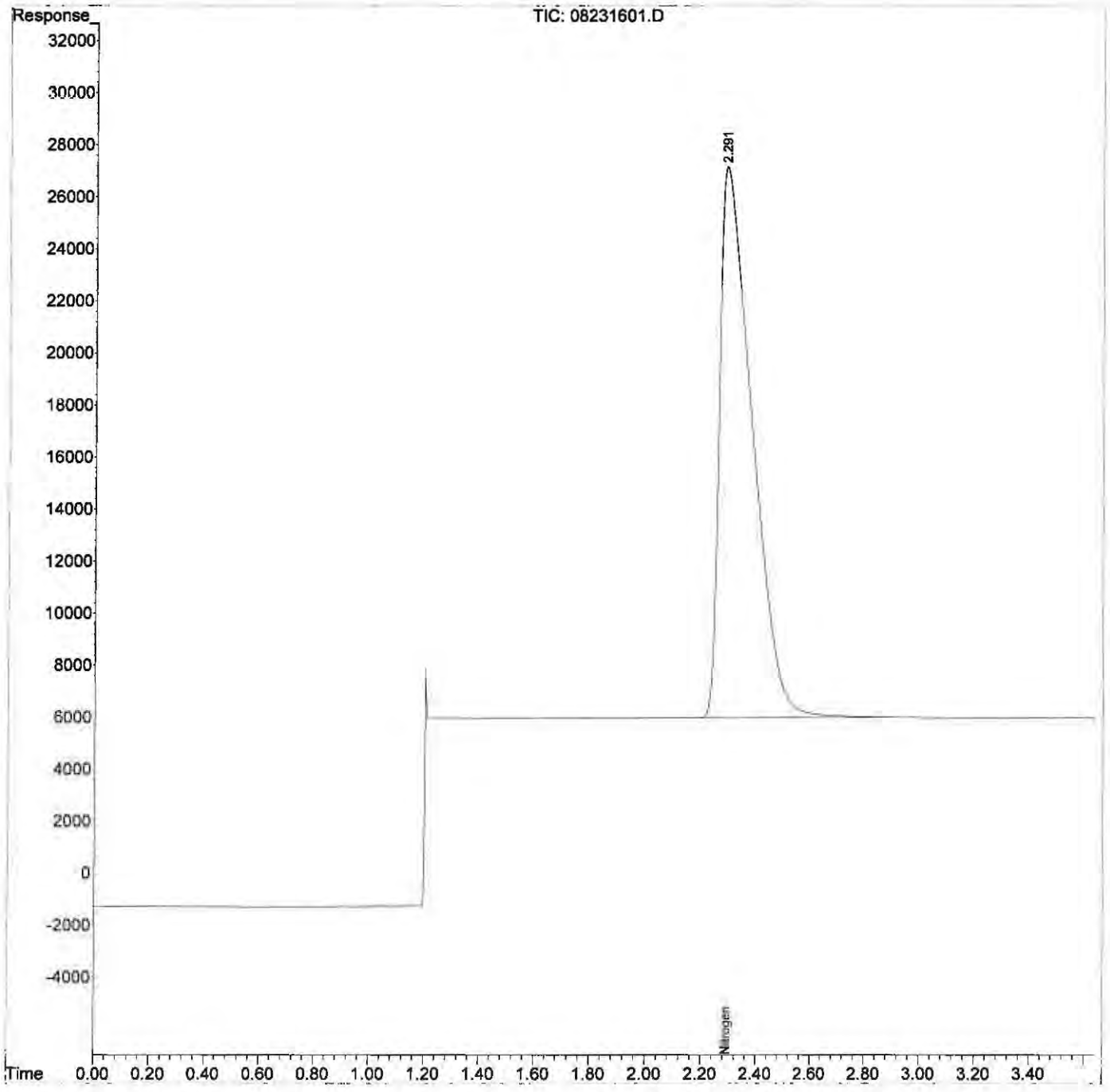
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_08\23\
Data File : 08231601.D
Signal(s) : TCD1A.CH
Acq On : 23 Aug 2016 8:56 am
Operator : amf
Sample : s11-12021502
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 23 09:10:40 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 08:53:31 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_08\23\
Data File : 08231602.D
Signal(s) : TCD1A.CH
Acq On : 23 Aug 2016 9:03 am
Operator : amf
Sample : s11-12021502
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 23 09:20:25 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 09:11:06 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm d
3)	Nitrogen	2.294	1755465	992976.308	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

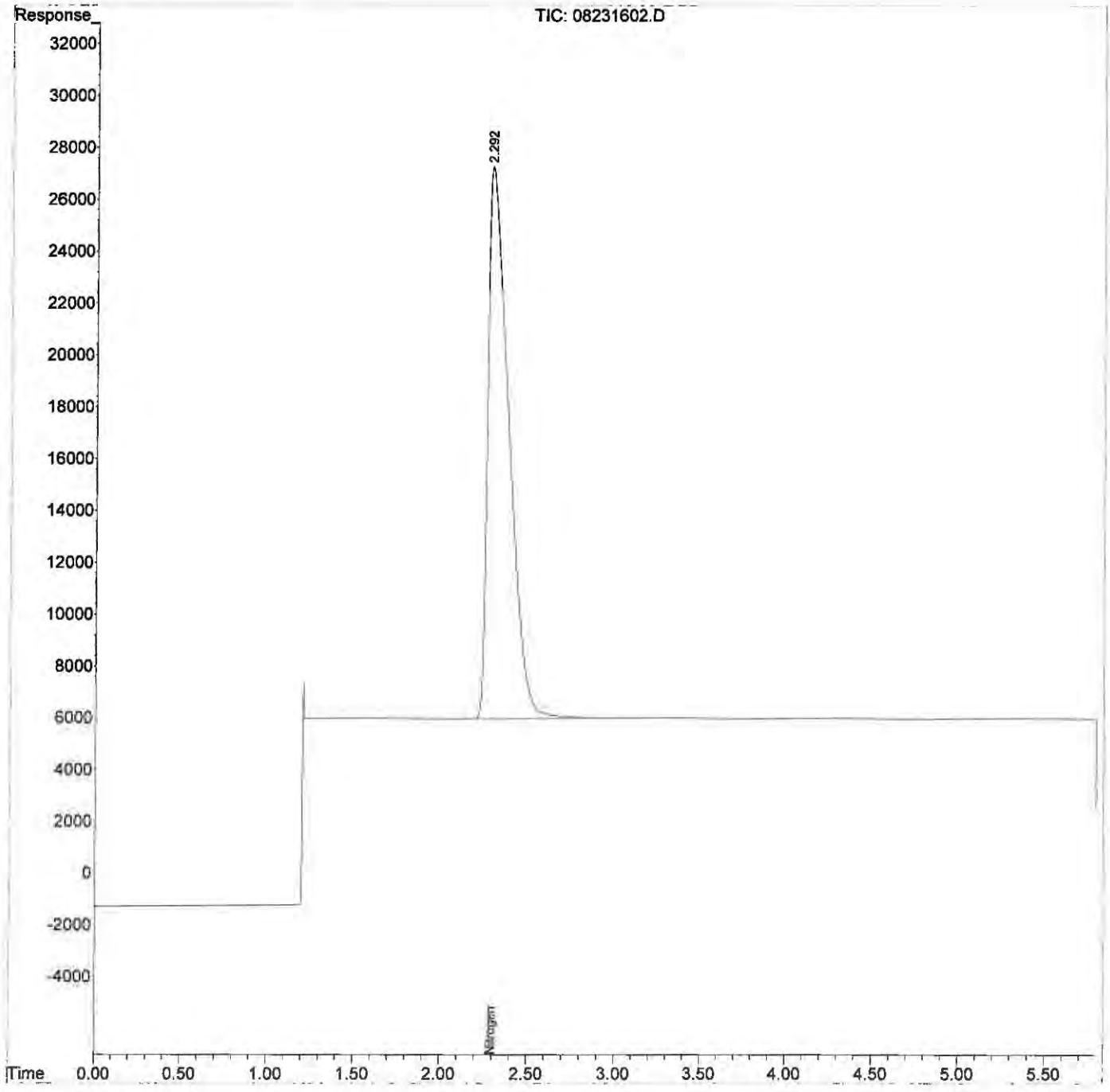
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_08\23\
Data File : 08231602.D
Signal(s) : TCD1A.CH
Acq On : 23 Aug 2016 9:03 am
Operator : amf
Sample : s11-12021502
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 23 09:20:25 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 09:11:06 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_08\23\
Data File : 08231603.D
Signal(s) : TCD1A.CH
Acq On : 23 Aug 2016 9:12 am
Operator : amf
Sample : s11-12021502
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 23 09:26:42 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 09:21:22 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

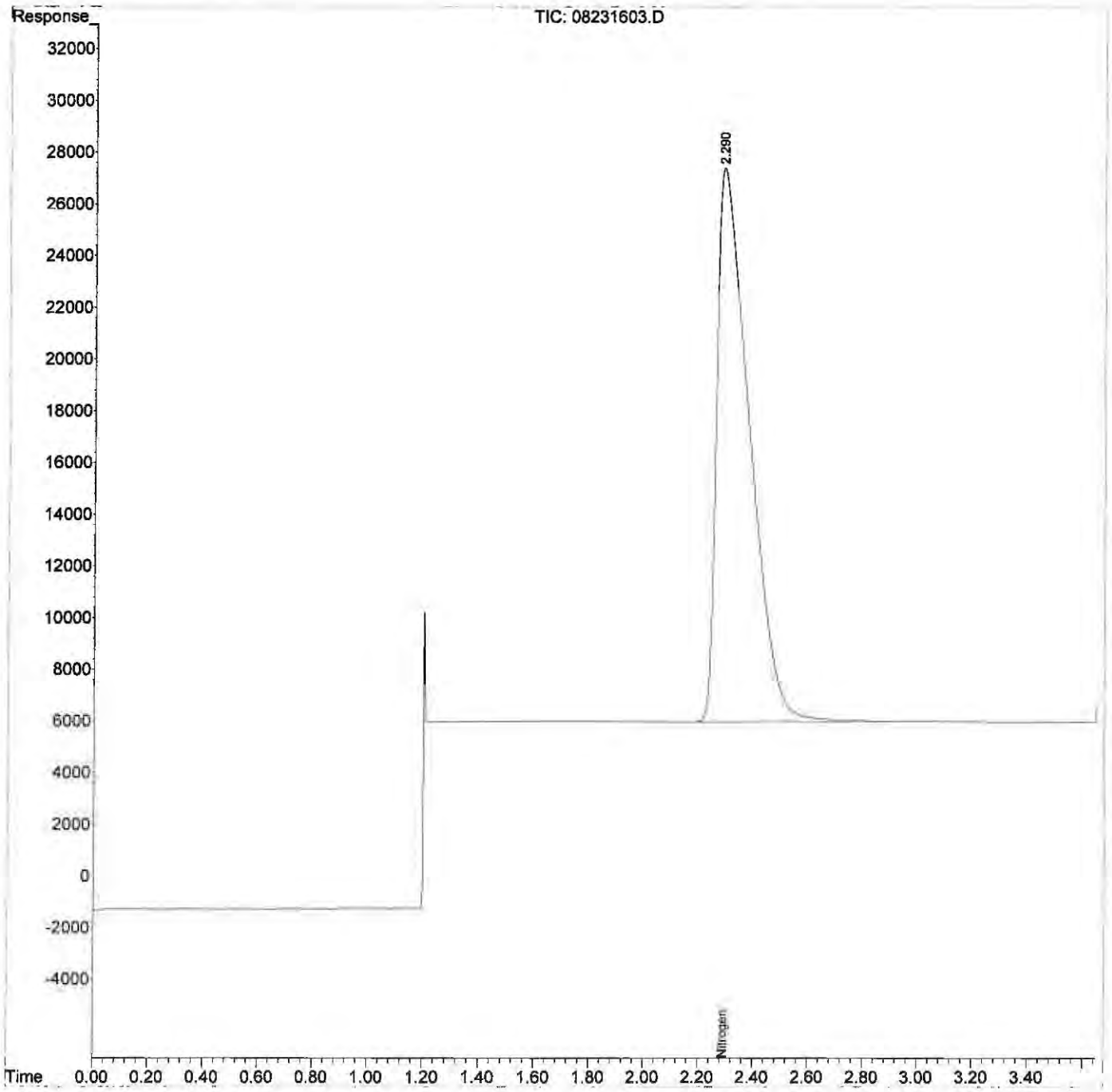
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm d
3)	Nitrogen	2.292	1767961	1000457.289	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_08\23\
Data File : 08231603.D
Signal(s) : TCD1A.CH
Acq On : 23 Aug 2016 9:12 am
Operator : amf
Sample : s11-12021502
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 23 09:26:42 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 09:21:22 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_08\23\
Data File : 08231604.D
Signal(s) : TCD1A.CH
Acq On : 23 Aug 2016 9:59 am
Operator : amf
Sample : ch4
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 23 10:21:06 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 09:26:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	4.972	1316988	1009460.431	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

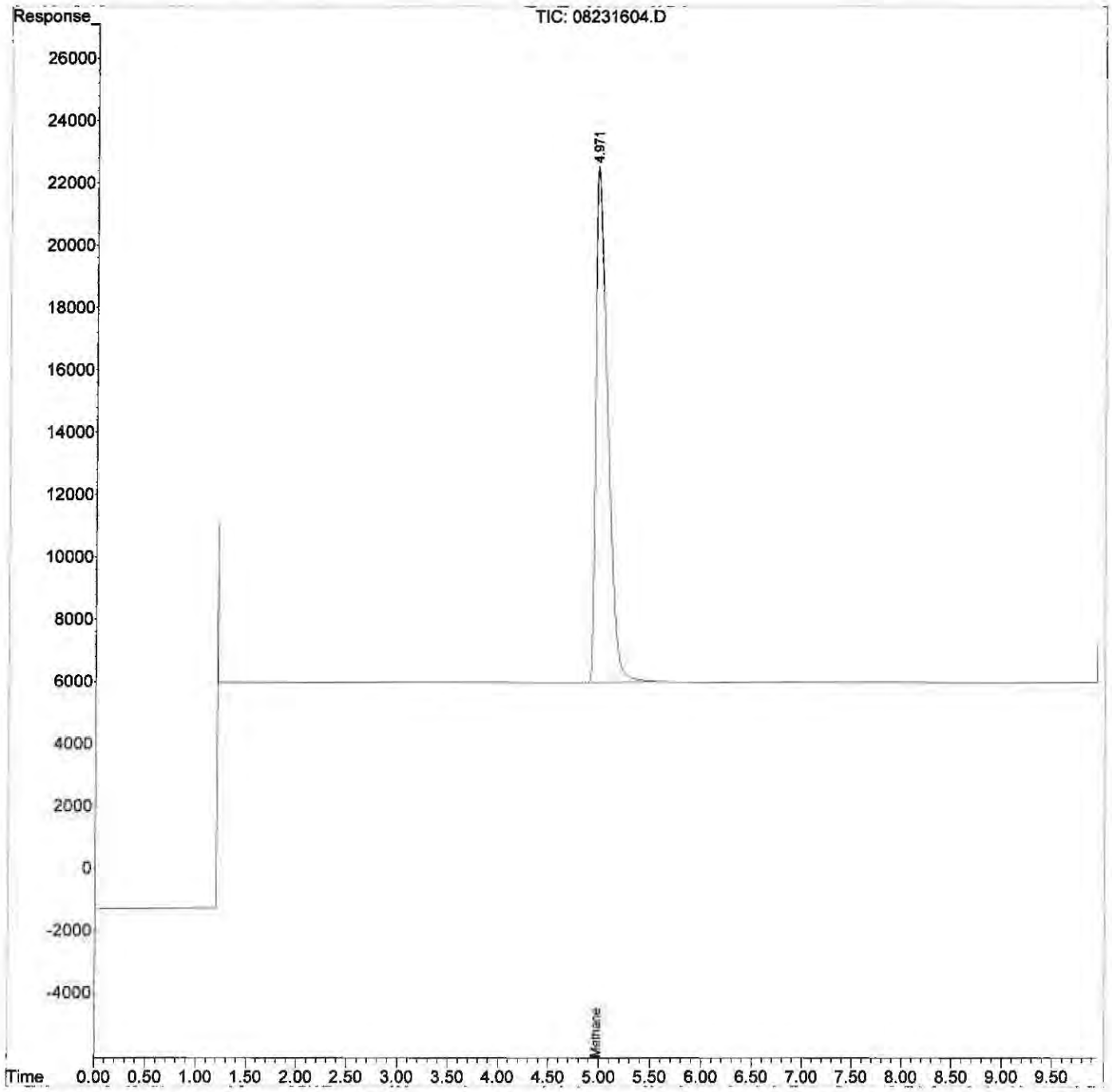
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_08\23\
Data File : 08231604.D
Signal(s) : TCD1A.CH
Acq On : 23 Aug 2016 9:59 am
Operator : amf
Sample : ch4
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 23 10:21:06 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 09:26:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_08\23\
Data File : 08231605.D
Signal(s) : TCD1A.CH
Acq On : 23 Aug 2016 10:25 am
Operator : amf
Sample : ch4
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 23 10:52:53 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 10:21:20 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	4.970	1323004	1013471.364	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

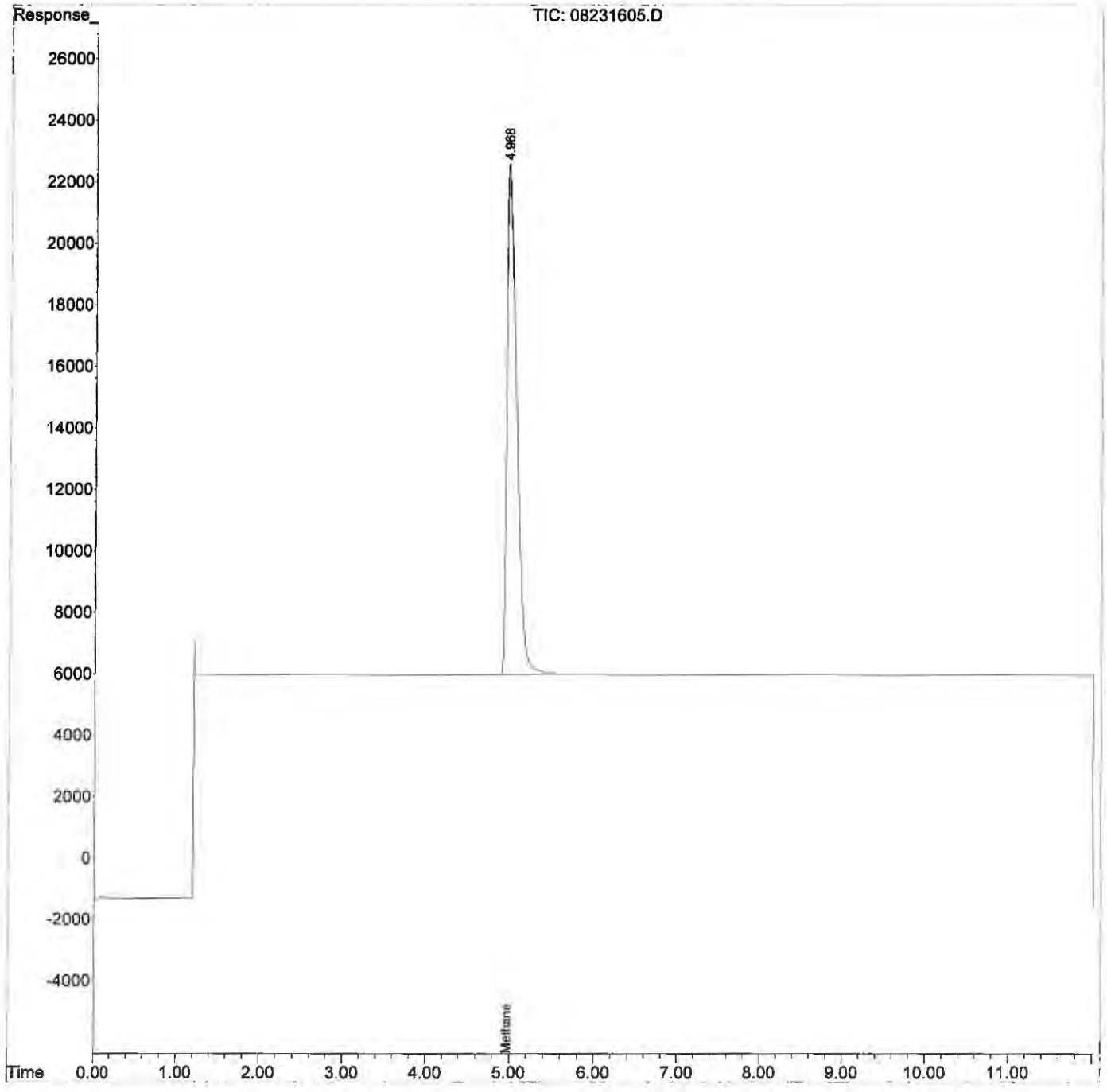
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_08\23\
Data File : 08231605.D
Signal(s) : TCD1A.CH
Acq On : 23 Aug 2016 10:25 am
Operator : amf
Sample : ch4
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 23 10:52:53 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 10:21:20 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_08\23\
Data File : 08231606.D
Signal(s) : TCD1A.CH
Acq On : 23 Aug 2016 10:45 am
Operator : amf
Sample : ch4
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 23 11:02:34 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 10:53:06 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

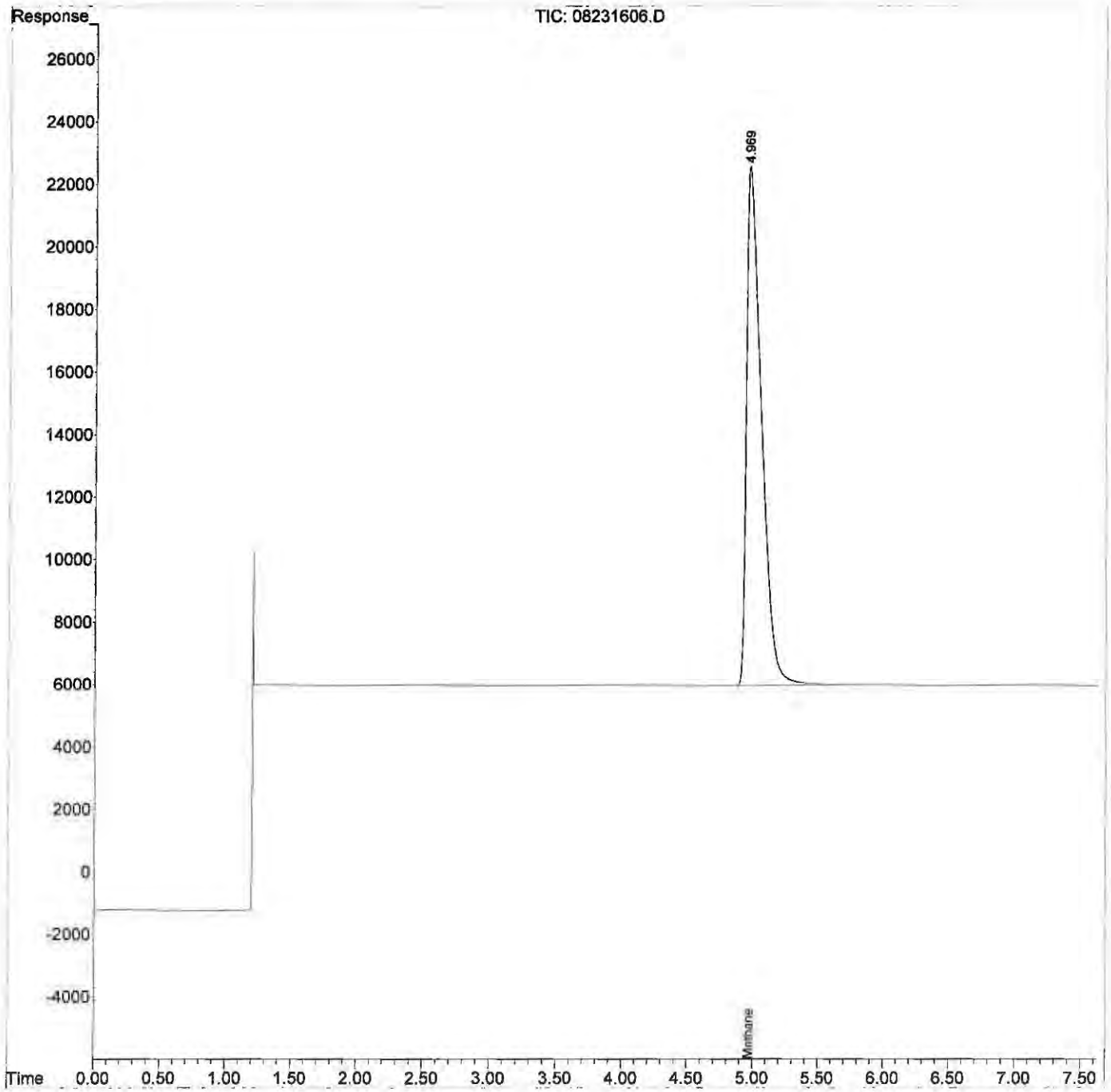
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	4.971	1318464	1009193.790	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_08\23\
Data File : 08231606.D
Signal(s) : TCD1A.CH
Acq On : 23 Aug 2016 10:45 am
Operator : amf
Sample : ch4
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 23 11:02:34 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 10:53:06 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_08\23\
Data File : 08231609.D
Signal(s) : TCD1A.CH
Acq On : 23 Aug 2016 2:00 pm
Operator : amf
Sample : ICV s30-07271601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 23 10:15:12 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

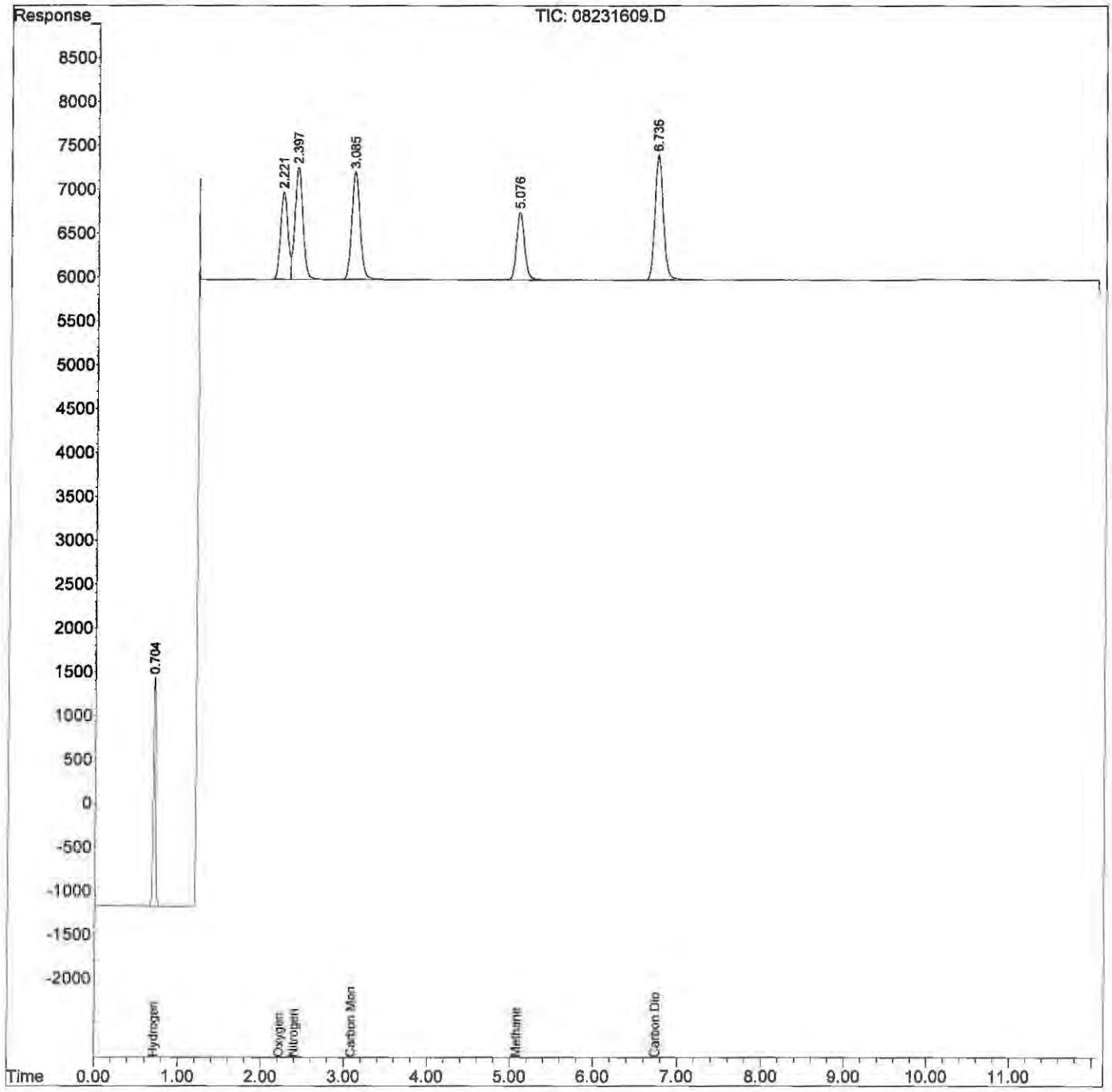
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.705	51930	38960.985	ppm	2,60 %
2)	Oxygen	2.222	60278	38988.977	ppm	2.53 %
3)	Nitrogen	2.398	86058	48697.524	ppm	2.06 %
4)	Carbon Monoxide	3.086	85978	49564.451	ppm	0,87 %
5)	Methane	5.077	52066	39832.238	ppm	0.42 %
6)	Carbon Dioxide	6.738	98746	47079.824	ppm	5,84 %

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_08\23\
Data File : 08231609.D
Signal(s) : TCD1A.CH
Acq On : 23 Aug 2016 2:00 pm
Operator : amf
Sample : ICV s30-07271601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 23 10:15:12 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



ALS

REPORT SUMMARYS FIXED GASES BY GC/TCD
CLIENT : Air Hygiene
Analyst : amf
PAI Job : P1604639

Printed : 9/30/2016
Instrument : GC #1 / TCD #1
Date analyzed : 9/30/2016
Sample amount : 100uL

Sample Result

Sample ID	Hydrogen	Oxygen	Nitrogen	Carbon Monoxide	Methane	Carbon Dioxide	Pi1	Pf1	Pi2	Pf2	BF
STANDARD	40133	40152	50545	50783	40561	48365					
ACTUAL	40000	40000	50000	50000	40000	50000					
% Difference	0.3%	0.4%	1.1%	1.6%	1.4%	3.3%					
Lab Air		216825	784667			459					
MB	ND	ND	ND	ND	ND	ND					
4639-001		149882	736698			36489					
4639-001		151022	745161			36615					
4639-001		152661	752714			37362					
% Difference of Average		0.9%	1.1%			1.3%					
4639-003		153656	743950			34495					
4639-003		154134	744278			34672					
4639-003		154045	745667			34634					
% Difference of Average		0.2%	0.1%			0.3%					
4639-005		145194	754509			41822					
4639-005		145346	755440			41927					
4639-005		143439	743406			41368					
% Difference of Average		0.7%	0.9%			0.7%					
4639-007		152469	751489			36636					
4639-007		152252	738562			36042					
4639-007		152970	752919			36473					
% Difference of Average		0.2%	1.1%			0.8%					
STANDARD	41061	41130	51113	51845	41535	49477					
ACTUAL	40000	40000	50000	50000	40000	50000					
% Difference	2.7%	2.8%	2.2%	3.7%	3.8%	1.0%					

9/30/16

Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\30\
Data File : 09301601.D
Signal(s) : TCD1A.CH
Acq On : 30 Sep 2016 8:26 am
Operator : amf
Sample : std s30-07271601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 08:43:50 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.712	53491	40132.532	ppm
2)	Oxygen	2.233	62077	40152.469	ppm
3)	Nitrogen	2.409	89322	50544.679	ppm
4)	Carbon Monoxide	3.096	88091	50782.917	ppm
5)	Methane	5.085	53018	40561.109	ppm
6)	Carbon Dioxide	6.743	101442	48364.949	ppm

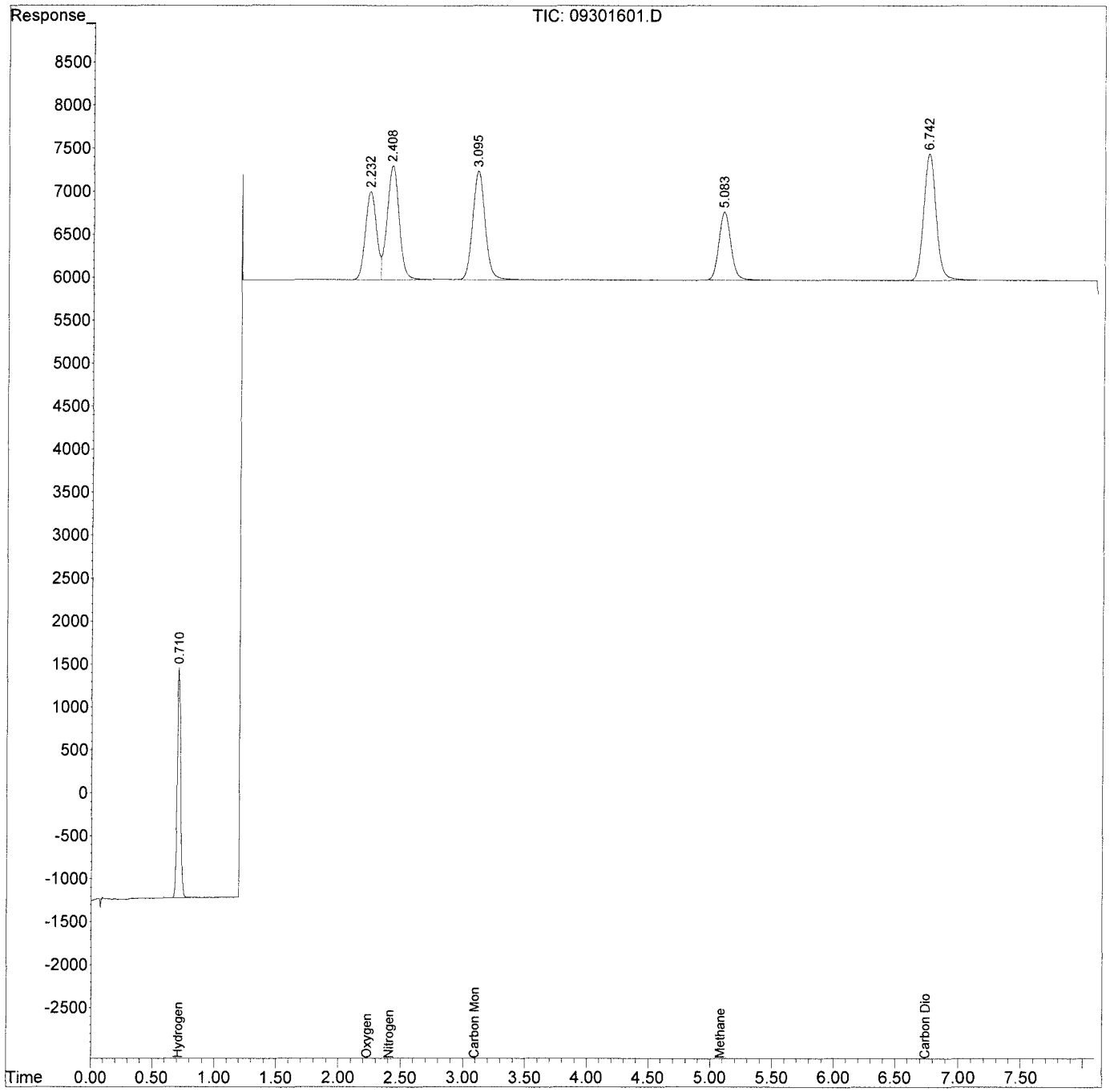
(f)=RT Delta > 1/2 Window (m)=manual int.

9/30/16

Data Path : I:\GC01\DATA\FXG\2016_09\30\
Data File : 09301601.D
Signal(s) : TCD1A.CH
Acq On : 30 Sep 2016 8:26 am
Operator : amf
Sample : std s30-07271601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 08:43:50 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\30\
Data File : 09301616.D
Signal(s) : TCD1A.CH
Acq On : 30 Sep 2016 1:47 pm
Operator : amf
Sample : std s30-07271601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 14:11:45 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

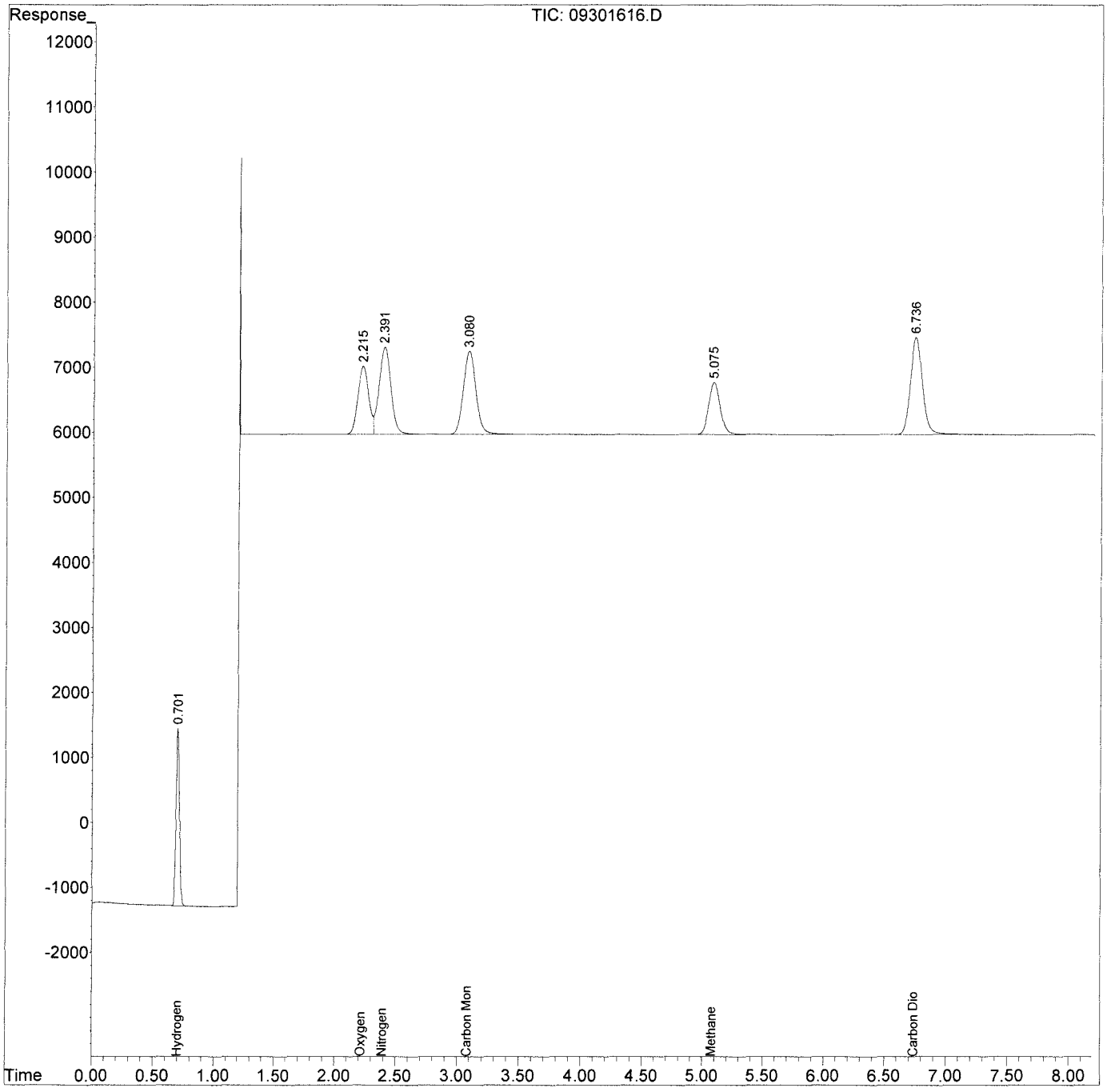
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.703	54728	41060.592	ppm
2)	Oxygen	2.217	63588	41129.931	ppm
3)	Nitrogen	2.392	90326	51112.513	ppm
4)	Carbon Monoxide	3.081	89934	51845.202	ppm
5)	Methane	5.076	54292	41535.324	ppm
6)	Carbon Dioxide	6.738	103774	49476.831	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_09\30\
Data File : 09301616.D
Signal(s) : TCD1A.CH
Acq On : 30 Sep 2016 1:47 pm
Operator : amf
Sample : std s30-07271601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 14:11:45 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Injection Log

Directory: I:\GC01\DATA\FXG\2016_08\22\

	Sample ID	Date/Time	Acquisition Method	File Name	Misc Info	Operator
	std s11-07191601	22 Aug 116 8:59 am	MFXGS25C.M	08221601.D		amf
	std s11-07191601	22 Aug 116 9:42 am	MFXGS25C.M	08221602.D		amf
	std s11-07191601	22 Aug 116 10:06 am	MFXGS25C.M	08221603.D		amf
	std s11-12041503	22 Aug 116 11:42 am	MFXGS25C.M	08221604.D		amf
	std s11-12041503	22 Aug 116 11:54 am	MFXGS25C.M	08221605.D		amf
	std s11-12041503	22 Aug 116 12:10 pm	MFXGS25C.M	08221606.D		amf
	std s11-12041502	22 Aug 116 12:42 pm	MFXGS25C.M	08221607.D		amf
	std s11-12041502	22 Aug 116 12:58 pm	MFXGS25C.M	08221608.D		amf
	std s11-12041502	22 Aug 116 1:34 pm	MFXGS25C.M	08221609.D		amf
	std s11-12041501	22 Aug 116 2:07 pm	MFXGS25C.M	08221610.D		amf
	std s11-12041501	22 Aug 116 2:19 pm	MFXGS25C.M	08221611.D		amf
	std s11-12041501	22 Aug 116 2:30 pm	MFXGS25C.M	08221612.D		amf
	std s11-12031501	22 Aug 116 2:54 pm	MFXGS25C.M	08221613.D		amf
	std s11-12031501	22 Aug 116 3:11 pm	MFXGS25C.M	08221614.D		amf
	std s11-12031501	22 Aug 116 3:22 pm	MFXGS25C.M	08221615.D		amf
	std s11-12021503	22 Aug 116 3:42 pm	MFXGS25C.M	08221616.D		amf
	std s11-12021503	22 Aug 116 3:49 pm	MFXGS25C.M	08221617.D		amf
	std s11-12021503	22 Aug 116 3:54 pm	MFXGS25C.M	08221618.D		amf
	co2	22 Aug 116 4:02 pm	MFXGS25C.M	08221619.D		amf
	co2	22 Aug 116 4:14 pm	MFXGS25C.M	08221620.D		amf
	co2	22 Aug 116 4:26 pm	MFXGS25C.M	08221621.D		amf

Injection Log

Directory: I:\GC01\DATA\FXG\2016_08\23\

	Sample ID	Date/Time	Acquisition Method	File Name	Misc Info	Operator
	s11-12021502	23 Aug 116 8:56 am	MFXGS25C.M	08231601.D		amf
	s11-12021502	23 Aug 116 9:03 am	MFXGS25C.M	08231602.D		amf
	s11-12021502	23 Aug 116 9:12 am	MFXGS25C.M	08231603.D		amf
	ch4	23 Aug 116 9:59 am	MFXGS25C.M	08231604.D		amf
	ch4	23 Aug 116 10:25 am	MFXGS25C.M	08231605.D		amf
	ch4	23 Aug 116 10:45 am	MFXGS25C.M	08231606.D		amf
	mb	23 Aug 116 10:57 am	MFXGS25C.M	08231607.D		amf
	lab air	23 Aug 116 11:14 am	MFXGS25C.M	08231608.D		amf
	ICV s30-07271601	23 Aug 116 2:00 pm	MF25VXXX.M	08231609.D		amf

Injection Log

Directory: I:\GC01\DATA\FXG\2016_09\30\

	Sample ID	Date/Time	Acquisition Method	File Name	Misc Info	Operator	Comments
	std s30-07271601	30 Sep 116 8:26 am	MFXGS25C.M	09301601.D		amf	
	mb	30 Sep 116 8:56 am	MFXGS25C.M	09301602.D		amf	
	lab air	30 Sep 116 9:31 am	MFXGS25C.M	09301603.D		amf	
	4639-001	30 Sep 116 10:10 am	MFXGS25C.M	09301604.D		amf	
	4639-001	30 Sep 116 10:26 am	MF25VXXX.M	09301605.D		amf	
	4639-001	30 Sep 116 10:42 am	MF25VXXX.M	09301606.D		amf	
	4639-003	30 Sep 116 10:59 am	MF25VXXX.M	09301607.D		amf	
	4639-003	30 Sep 116 11:15 am	MF25VXXX.M	09301608.D		amf	
	4639-003	30 Sep 116 11:31 am	MF25VXXX.M	09301609.D		amf	
	4639-005	30 Sep 116 11:48 am	MF25VXXX.M	09301610.D		amf	
	4639-005	30 Sep 116 12:05 pm	MF25VXXX.M	09301611.D		amf	
	4639-005	30 Sep 116 12:21 pm	MF25VXXX.M	09301612.D		amf	
	4639-007	30 Sep 116 12:38 pm	MF25VXXX.M	09301613.D		amf	
	4639-007	30 Sep 116 12:56 pm	MFXGS25C.M	09301614.D		amf	
	4639-007	30 Sep 116 1:31 pm	MFXGS25C.M	09301615.D		amf	
	std s30-07271601	30 Sep 116 1:47 pm	MFXGS25C.M	09301616.D		amf	
	std s30-07271601	30 Sep 116 2:11 pm	MF25VXXX.M	09301617.D		amf	
	mb	30 Sep 116 2:28 pm	MF25VXXX.M	09301618.D		amf	
	lab air	30 Sep 116 2:45 pm	MF25VXXX.M	09301619.D		amf	
	lcs s11-07281601	30 Sep 116 3:02 pm	MF25VXXX.M	09301620.D		amf	
	lcsd s11-07281601	30 Sep 116 3:20 pm	MF25VXXX.M	09301621.D		amf	
	4641-003	30 Sep 116 3:39 pm	MF25VXXX.M	09301622.D		amf	
	std s30-07271601	30 Sep 116 3:56 pm	MF25VXXX.M	09301623.D		amf	

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LABORATORY REPORT

October 20, 2016

Sean Barnes
Air Hygiene, Incorporated
1600 West Tacoma Street
Broken Arrow, OK 74012

RE: Coyote-16-Enid.ok-comp#1

Dear Sean:

Enclosed are the results of the samples submitted to our laboratory on September 30, 2016. For your reference, these analyses have been assigned our service request number P1604640.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Kelly Horiuchi at 6:56 pm, Oct 20, 2016

Kelly Horiuchi
Laboratory Director

2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
F: +1 805 526 7270
www.alsglobal.com

Client: Air Hygiene, Incorporated
Project: Coyote-16-Enid.ok-comp#1

Service Request No: P1604640

CASE NARRATIVE

The samples were received intact under chain of custody on September 30, 2016 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Fixed Gases Analysis

The samples were analyzed for fixed gases (oxygen, nitrogen, methane and carbon dioxide) according to modified EPA Method 3C (triplicate injection) using a gas chromatograph equipped with a thermal conductivity detector (TCD). This procedure is described in laboratory SOP VOA-EPA3C. This method is included on the laboratory's DoD-ELAP scope of accreditation, however it is not part of the NELAP or AIHA-LAP, LLC accreditation.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

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ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
AIHA-LAP, LLC	http://www.aihaaccreditedlabs.org	101661
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0694
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Florida DOH (NELAP)	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E871020
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/labcert.htm	2014025
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	977273
New Jersey DEP (NELAP)	http://www.nj.gov/dep/oqa/	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-003
Pennsylvania DEP	http://www.depweb.state.pa.us/labs	68-03307 (Registration)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704413-16-7
Utah DOH (NELAP)	http://www.health.utah.gov/lab/labimp/certification/index.html	CA016272016-6
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: Air Hygiene, Incorporated
Service Request: P1604640
Project ID: Coyote-16-Enid.ok-comp#1

Date Received: 9/30/2016
Time Received: 10:00

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	3C Modified - Fxd Gases Bag 2X
R5-30-70-30%-COMB 48	P1604640-001	Air	9/28/2016	10:10	X
R6-30-70-30%-COMB 48-BACKUP	P1604640-003	Air	9/28/2016	11:55	X
R7-70-100-70%-COMB 48	P1604640-004	Air	9/29/2016	08:55	X

SAMPLE DESCRIPTION AND CHAIN OF CUSTODY RECORD

P1604640

Air Hygiene International, Inc.
1600 W Tacoma Street
Broken Arrow, Oklahoma 74012
(888) 461-8778
www.airhygiene.com

Project Number:	Coyote-16-enid.ok-comp#1	Laboratory Analysis Requested:	
Person Taking Samples:	TW/MSL/RA		

Sample Number	Location	Date	Time	Volume	Analysis Method			
					O_2	CO_2	N_2	Methane
1 R5-30-70-30%-COMB 48	Enid Facility	9/28/2016	10:10	10	x	x	x	x
2 R5-30-70-30%-COMB- 48-Backup	Enid Facility	9/28/2016	10:10	5	x	x	x	x
3 R6-30-70-30%-COMB 48	Enid Facility	9/28/2016	11:55	10	x	x	x	x
4 R6-30-70-30%-COMB- 48-Backup	Enid Facility	9/28/2016	11:55	5	x	x	x	x
5 R7-70-100-70%-COMB 48	Enid Facility	9/29/2016	8:55	10	x	x	x	x
6 R7-70-100-70%-COMB 48-Backup	Enid Facility	9/29/2016	8:55	5	x	x	x	x

Relinquished by: (Signature)	9/29/16 Date:	12:10 Time:	Received by: (Signature)	9/30/16 Date:	1000 Time:
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

* MISSING BAG DAMAGED BOX

5 of 110

ote-coc

ALS Environmental
Sample Acceptance Check Form

Client: Air Hygiene, Incorporated Work order: P1604640

Project: Coyote-16-Enid.ok-comp#1

Sample(s) received on: 9/30/16 Date opened: 9/30/16 by: KKELPE

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Did **sample containers** arrive in good condition?	☐	☒	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☐	☐	☒
8	Were **custody seals** on outside of cooler/Box/Container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
9	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☐	☐	☒
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
11	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1604640-001.01	10 L Tedlar Bag					
P1604640-002.01	5.0 L Tedlar Bag					
P1604640-003.01	5.0 L Tedlar Bag					
P1604640-004.01	10 L Tedlar Bag					
P1604640-005.01	5.0 L Tedlar Bag					

Explain any discrepancies: (include lab sample ID numbers):

Box received DAMAGED from Fedex, one sample bag was missing "R6-30-70-30%COMB 48"

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **R5-30-70-30%-COMB 48**
Client Project ID: **Coyote-16-Enid.ok-comp#1**

ALS Project ID: P1604640
ALS Sample ID: P1604640-001

Test Code: EPA Method 3C Modified
Instrument ID: Agilent 7890A/GC20/FID
Analyst: Mike Conejo
Sample Type: 10 L Tedlar Bag
Test Notes:

Date Collected: 9/28/16
Date Received: 9/30/16
Date Analyzed: 9/30/16
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
7782-44-7	**Oxygen***	**15.6**	0.10	
7727-37-9	**Nitrogen**	**80.3**	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	**Carbon Dioxide**	**4.08**	0.10	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
* = The oxygen result may include argon due to coelution. Ambient air includes 0.93% argon.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **R6-30-70-30%-COMB 48-BACKUP**
Client Project ID: **Coyote-16-Enid.ok-comp#1**

ALS Project ID: P1604640
ALS Sample ID: P1604640-003

Test Code: EPA Method 3C Modified
Instrument ID: Agilent 7890A/GC20/FID
Analyst: Mike Conejo
Sample Type: 5.0 L Tedlar Bag
Test Notes:

Date Collected: 9/28/16
Date Received: 9/30/16
Date Analyzed: 9/30/16
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
7782-44-7	**Oxygen***	**15.1**	0.10	
7727-37-9	**Nitrogen**	**80.6**	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	**Carbon Dioxide**	**4.32**	0.10	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
* = The oxygen result may include argon due to coelution. Ambient air includes 0.93% argon.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **R7-70-100-70%-COMB 48**
Client Project ID: **Coyote-16-Enid.ok-comp#1**

ALS Project ID: P1604640
ALS Sample ID: P1604640-004

Test Code: EPA Method 3C Modified
Instrument ID: Agilent 7890A/GC20/FID
Analyst: Mike Conejo
Sample Type: 10 L Tedlar Bag
Test Notes:

Date Collected: 9/29/16
Date Received: 9/30/16
Date Analyzed: 9/30/16
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
7782-44-7	**Oxygen***	**15.0**	0.10	
7727-37-9	**Nitrogen**	**80.6**	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	**Carbon Dioxide**	**4.42**	0.10	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
* = The oxygen result may include argon due to coelution. Ambient air includes 0.93% argon.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **Method Blank** ALS Project ID: P1604640
Client Project ID: **Coyote-16-Enid.ok-comp#1** ALS Sample ID: P160930-MB

Test Code: EPA Method 3C Modified Date Collected: NA
Instrument ID: Agilent 7890A/GC20/FID Date Received: NA
Analyst: Mike Conejo Date Analyzed: 9/30/16
Sample Type: 10 L Tedlar Bag Volume(s) Analyzed: 0.10 ml(s)
Test Notes:

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
7782-44-7	Oxygen*	ND	0.10	
7727-37-9	Nitrogen	ND	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	Carbon Dioxide	ND	0.10	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
* = The oxygen result may include argon due to coelution. Ambient air includes 0.93% argon.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\30trip\
Data File : 09301607.d
Signal(s) : TCD1B.ch
Acq On : 30 Sep 2016 11:00 am
Operator : MC
Sample : 4640-001
Misc :
ALS Vial : 7 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 11:35:33 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	1.438	60650289	102310.585	ppm
3)	Nitrogen	1.505	348437623	526776.027	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	5.047	24161629	26766.340	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC20\DATA\3C\2016_09\30trip\
Data File : 09301607.d
Signal(s) : TCD1B.ch
Acq On : 30 Sep 2016 11:00 am
Operator : MC
Sample : 4640-001
Misc :
ALS Vial : 7 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 11:35:33 2016
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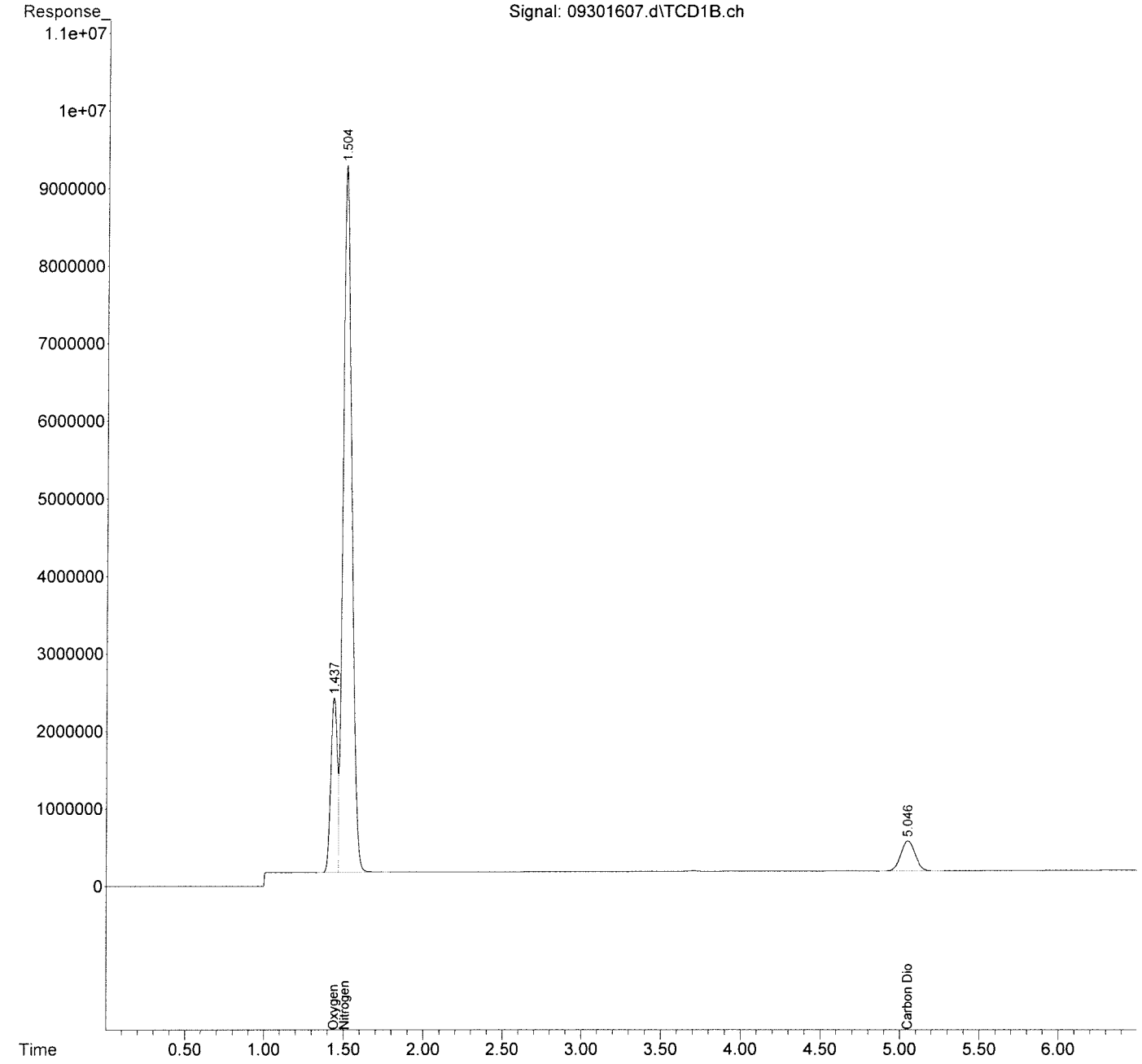
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Data Path : J:\GC20\DATA\3C\2016_09\30trip\
Data File : 09301608.d
Signal(s) : TCD1B.ch
Acq On : 30 Sep 2016 11:11 am
Operator : MC
Sample : 4640-001
Misc :
ALS Vial : 8 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 11:38:08 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

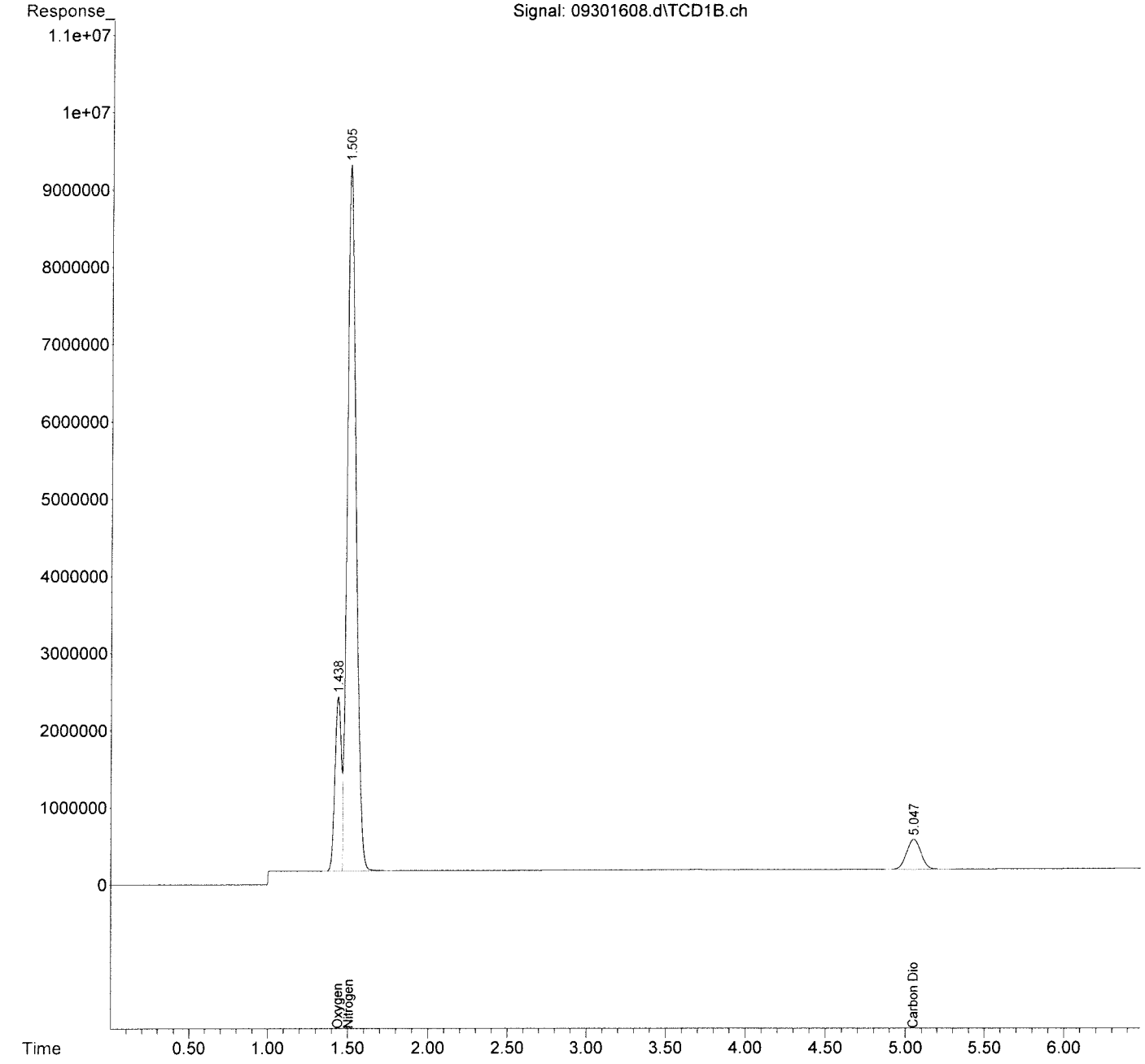
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.000	0	N.D.	ppm	d
2)	Oxygen	1.438	60865170	102673.067	ppm	
3)	Nitrogen	1.505	349537737	528439.205	ppm	
4)	Carbon Monoxide	0.000	0	N.D.	ppm	
5)	Methane	0.000	0	N.D.	ppm	
6)	Carbon Dioxide	5.048	24269820	26886.194	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC20\DATA\3C\2016_09\30trip\
Data File : 09301608.d
Signal(s) : TCD1B.ch
Acq On : 30 Sep 2016 11:11 am
Operator : MC
Sample : 4640-001
Misc :
ALS Vial : 8 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 11:38:08 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\30trip\
Data File : 09301609.d
Signal(s) : TCD1B.ch
Acq On : 30 Sep 2016 11:23 am
Operator : MC
Sample : 4640-001
Misc :
ALS Vial : 9 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 11:35:37 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

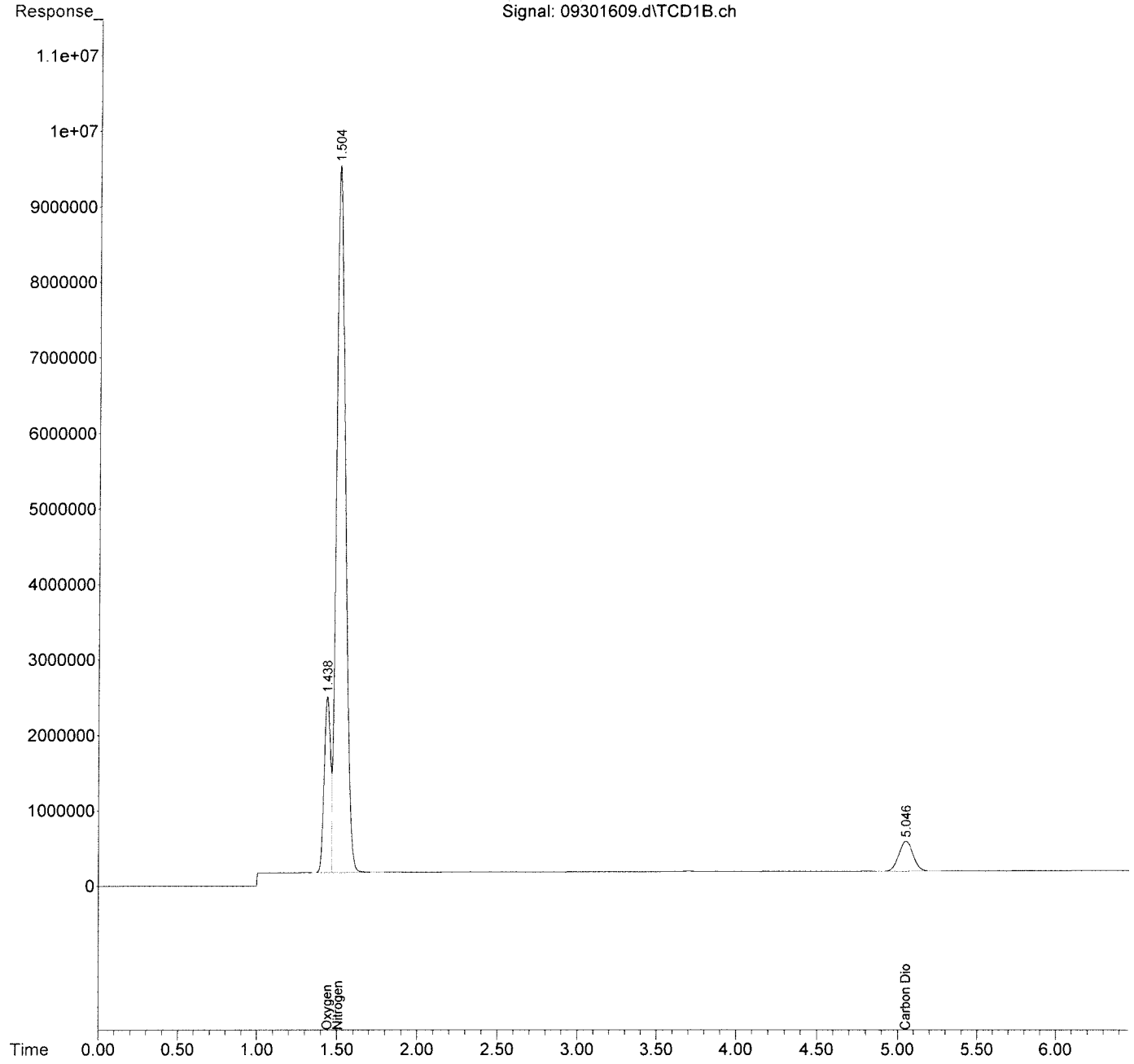
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	1.438	62691010	105753.065	ppm
3)	Nitrogen	1.505	360182250	544531.825	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	5.047	24991207	27685.349	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC20\DATA\3C\2016_09\30trip\
Data File : 09301609.d
Signal(s) : TCD1B.ch
Acq On : 30 Sep 2016 11:23 am
Operator : MC
Sample : 4640-001
Misc :
ALS Vial : 9 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 11:35:37 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\30trip\
Data File : 09301610.d
Signal(s) : TCD1B.ch
Acq On : 30 Sep 2016 11:41 am
Operator : MC
Sample : 4640-003
Misc :
ALS Vial : 10 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 12:13:15 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

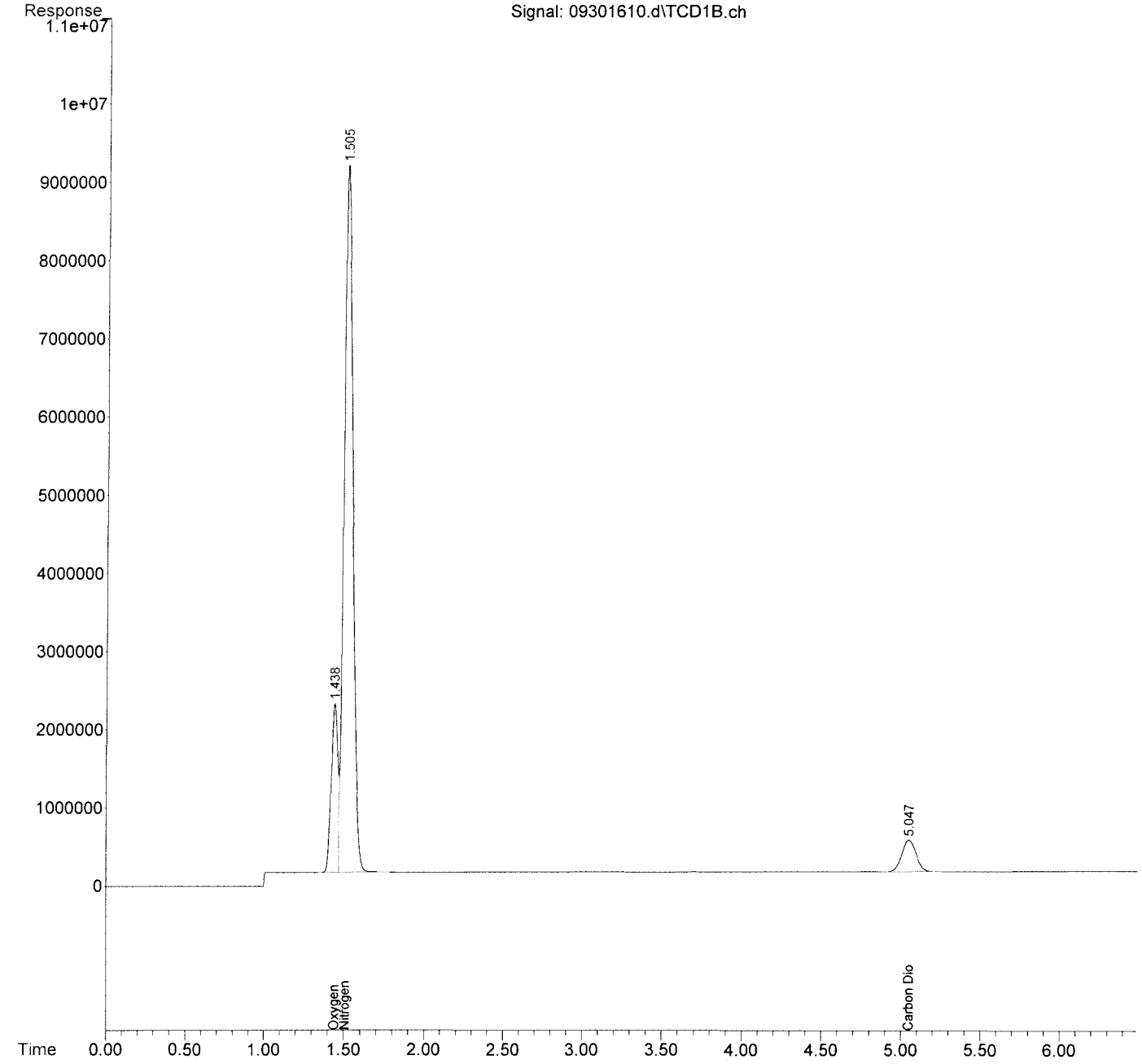
	Compound	R.T.	Response	Conc Units
Target Compounds				
1)	Hydrogen	0.000	0	N.D. ppm
2)	Oxygen	1.439	58104639	98016.345 ppm
3)	Nitrogen	1.506	345431452	522231.229 ppm
4)	Carbon Monoxide	0.000	0	N.D. ppm
5)	Methane	0.000	0	N.D. ppm
6)	Carbon Dioxide	5.047	25226093	27945.557 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC20\DATA\3C\2016_09\30trip\
Data File : 09301610.d
Signal(s) : TCD1B.ch
Acq On : 30 Sep 2016 11:41 am
Operator : MC
Sample : 4640-003
Misc :
ALS Vial : 10 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 12:13:15 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\30trip\
Data File : 09301611.d
Signal(s) : TCD1B.ch
Acq On : 30 Sep 2016 11:53 am
Operator : MC
Sample : 4640-003
Misc :
ALS Vial : 11 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 12:13:17 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

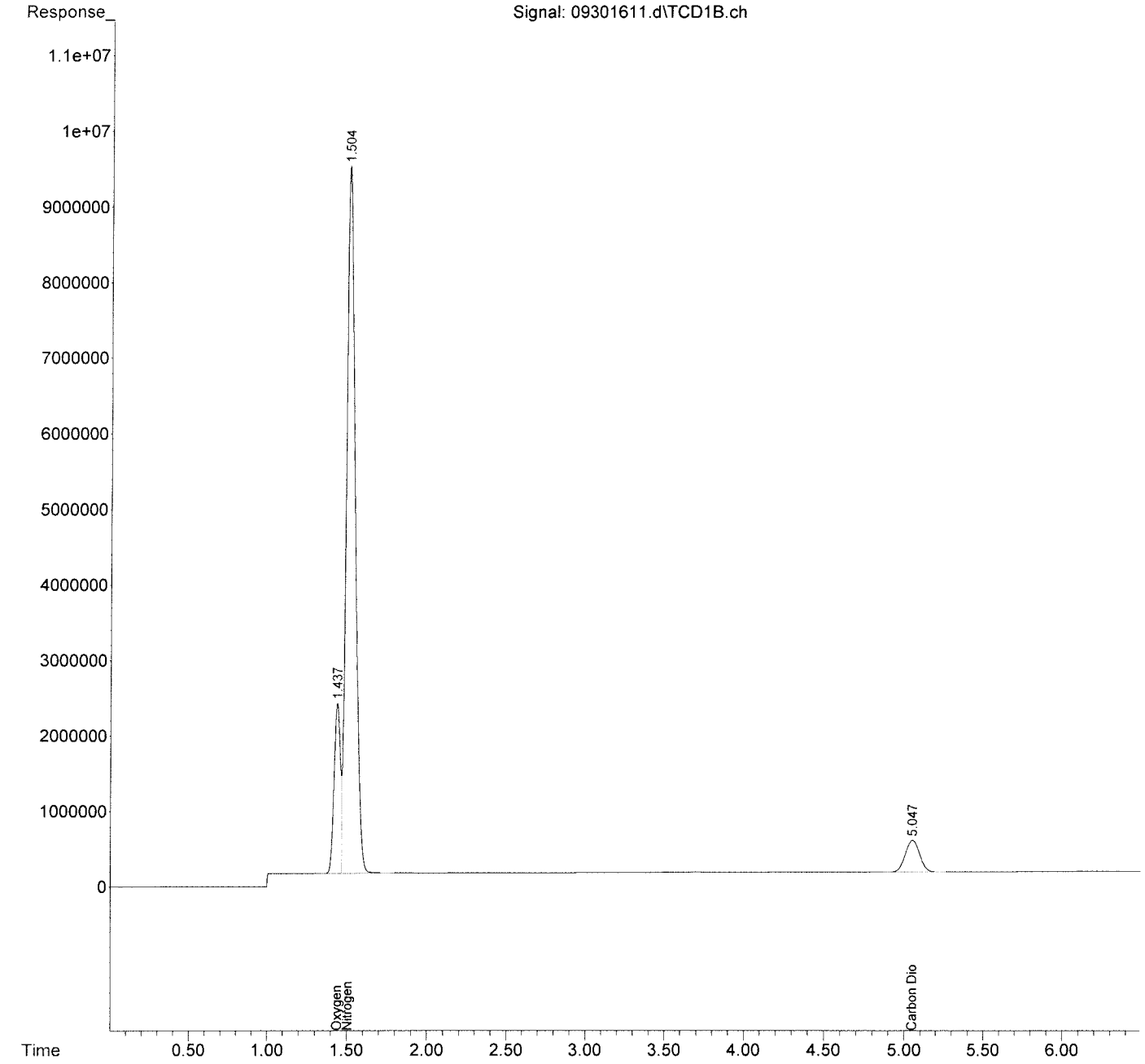
	Compound	R.T.	Response	Conc Units
Target Compounds				
1)	Hydrogen	0.000	0	N.D. ppm
2)	Oxygen	1.438	60360371	101821.525 ppm
3)	Nitrogen	1.505	359290629	543183.853 ppm
4)	Carbon Monoxide	0.000	0	N.D. ppm
5)	Methane	0.000	0	N.D. ppm
6)	Carbon Dioxide	5.047	26292038	29126.414 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC20\DATA\3C\2016_09\30trip\
Data File : 09301611.d
Signal(s) : TCD1B.ch
Acq On : 30 Sep 2016 11:53 am
Operator : MC
Sample : 4640-003
Misc :
ALS Vial : 11 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 12:13:17 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\30trip\
Data File : 09301612.d
Signal(s) : TCD1B.ch
Acq On : 30 Sep 2016 12:03 pm
Operator : MC
Sample : 4640-003
Misc :
ALS Vial : 12 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 12:13:19 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

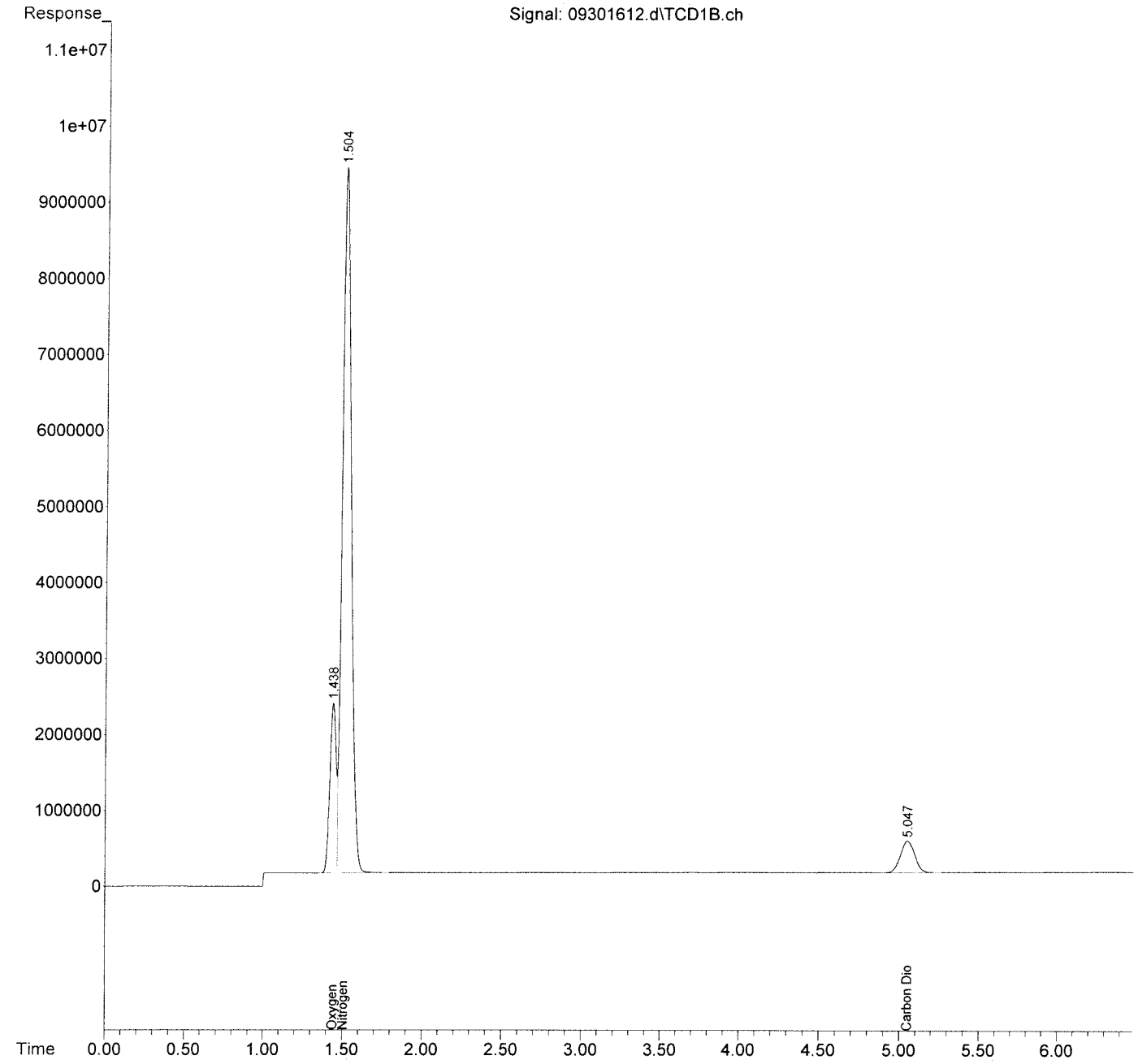
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	1.438	59875371	101003.381	ppm
3)	Nitrogen	1.505	356089336	538344.064	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	5.047	26066298	28876.338	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC20\DATA\3C\2016_09\30trip\
Data File : 09301612.d
Signal(s) : TCD1B.ch
Acq On : 30 Sep 2016 12:03 pm
Operator : MC
Sample : 4640-003
Misc :
ALS Vial : 12 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 12:13:19 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Data Path : J:\GC20\DATA\3C\2016_09\30trip\
Data File : 09301613.d
Signal(s) : TCD1B.ch
Acq On : 30 Sep 2016 12:16 pm
Operator : MC
Sample : 4640-004
Misc :
ALS Vial : 13 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 12:47:28 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

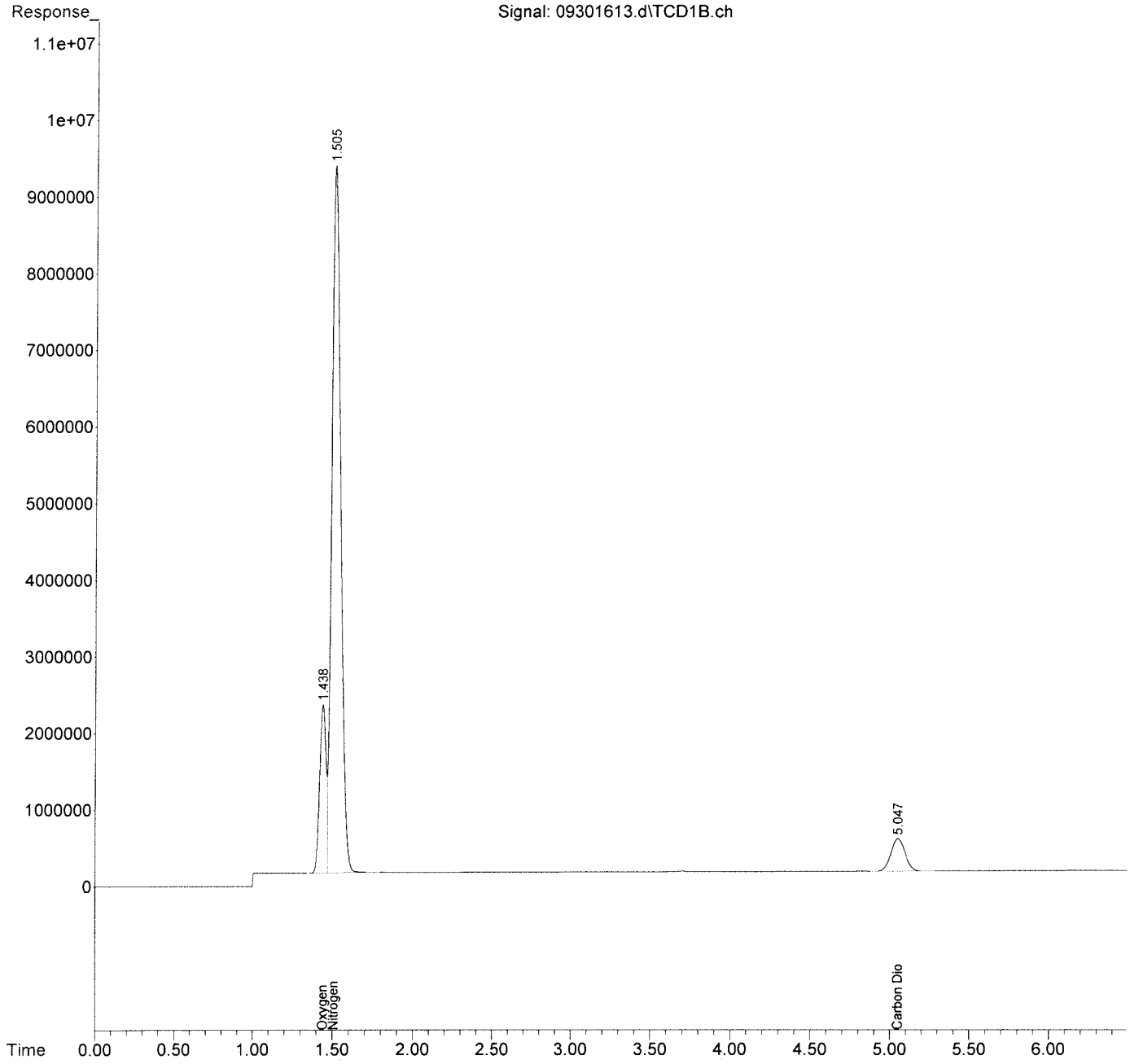
	Compound	R.T.	Response	Conc Units
Target Compounds				
1)	Hydrogen	0.000	0	N.D. ppm
2)	Oxygen	1.439	58937176	99420.746 ppm
3)	Nitrogen	1.505	353015663	533697.214 ppm
4)	Carbon Monoxide	0.000	0	N.D. ppm
5)	Methane	0.000	0	N.D. ppm
6)	Carbon Dioxide	5.047	26447066	29298.155 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC20\DATA\3C\2016_09\30trip\
Data File : 09301613.d
Signal(s) : TCD1B.ch
Acq On : 30 Sep 2016 12:16 pm
Operator : MC
Sample : 4640-004
Misc :
ALS Vial : 13 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 12:47:28 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\30trip\
Data File : 09301614.d
Signal(s) : TCD1B.ch
Acq On : 30 Sep 2016 12:26 pm
Operator : MC
Sample : 4640-004
Misc :
ALS Vial : 14 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 12:47:30 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

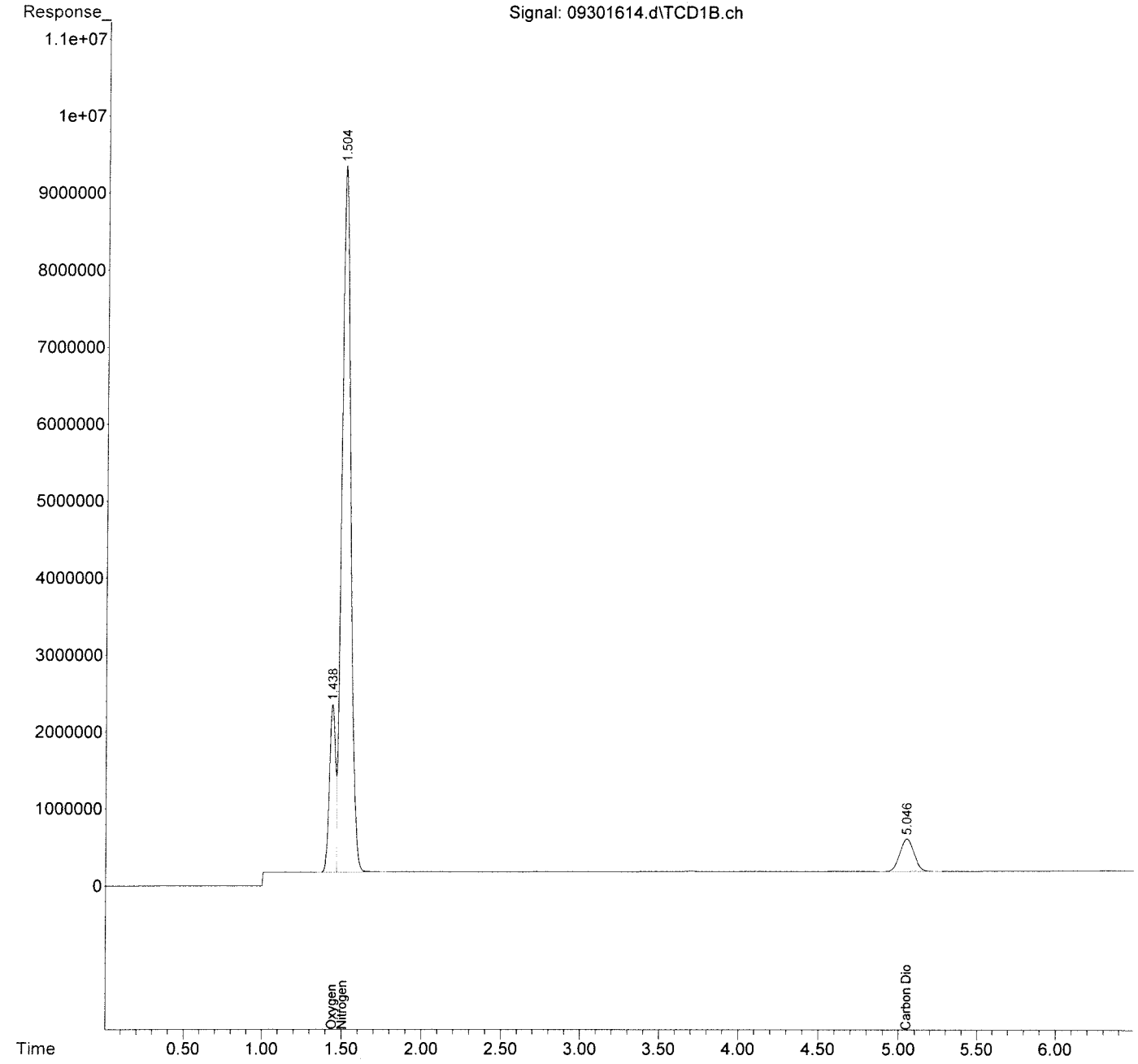
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	1.439	58634087	98909.468	ppm
3)	Nitrogen	1.506	350818143	530374.952	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	5.047	26285825	29119.531	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC20\DATA\3C\2016_09\30trip\
Data File : 09301614.d
Signal(s) : TCD1B.ch
Acq On : 30 Sep 2016 12:26 pm
Operator : MC
Sample : 4640-004
Misc :
ALS Vial : 14 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 12:47:30 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\30trip\
Data File : 09301615.d
Signal(s) : TCD1B.ch
Acq On : 30 Sep 2016 12:36 pm
Operator : MC
Sample : 4640-004
Misc :
ALS Vial : 15 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 12:47:32 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	1.439	58553481	98773.493	ppm
3)	Nitrogen	1.506	350429510	529787.408	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	5.047	26279606	29112.641	ppm

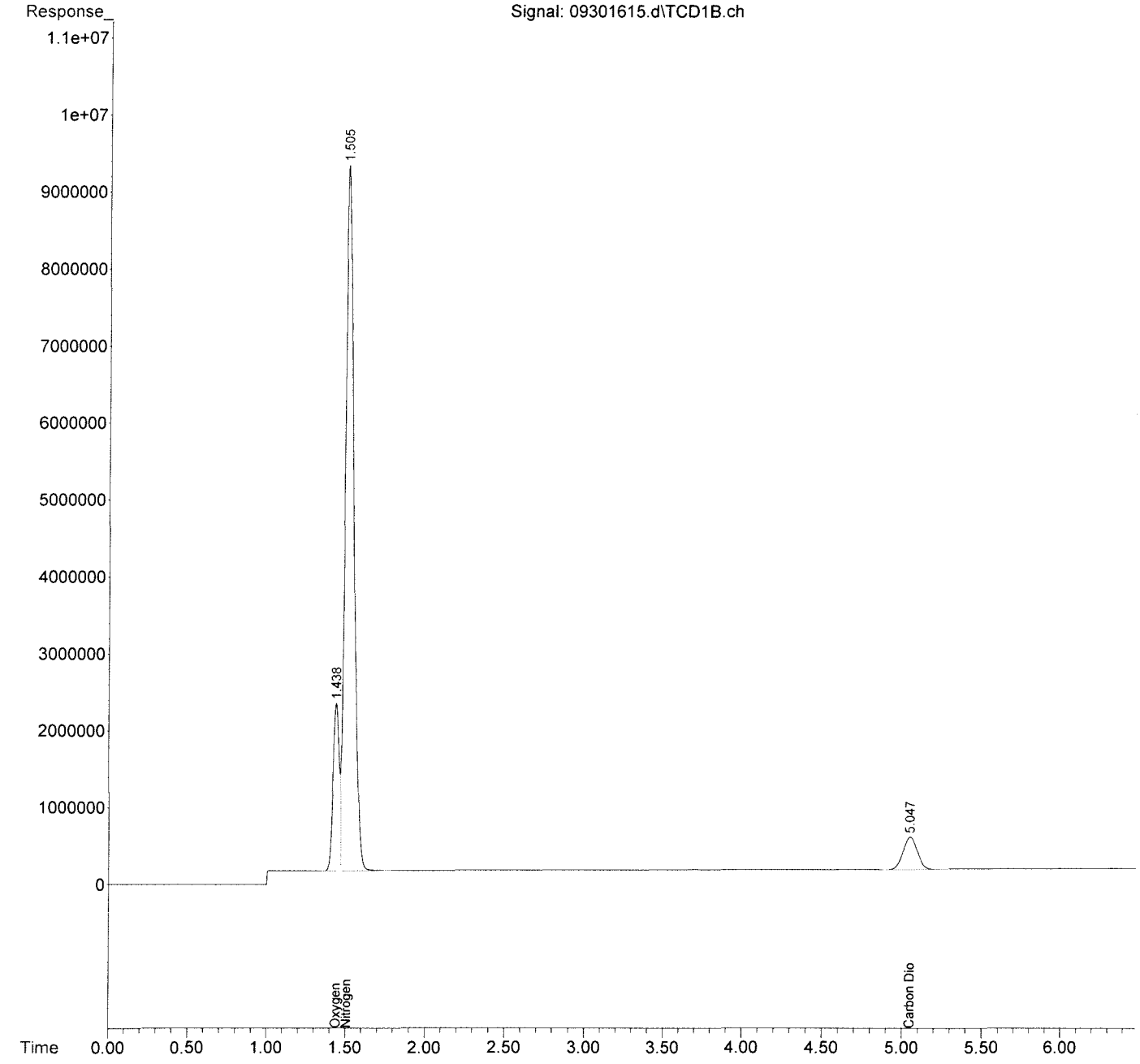
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\30trip\
Data File : 09301615.d
Signal(s) : TCD1B.ch
Acq On : 30 Sep 2016 12:36 pm
Operator : MC
Sample : 4640-004
Misc :
ALS Vial : 15 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 12:47:32 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Data Path : J:\GC20\DATA\3C\2016_09\30trip\
Data File : 09301602.d
Signal(s) : TCD1B.ch
Acq On : 30 Sep 2016 8:26 am
Operator : MC
Sample : mb
Misc :
ALS Vial : 2 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 05 11:11:24 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

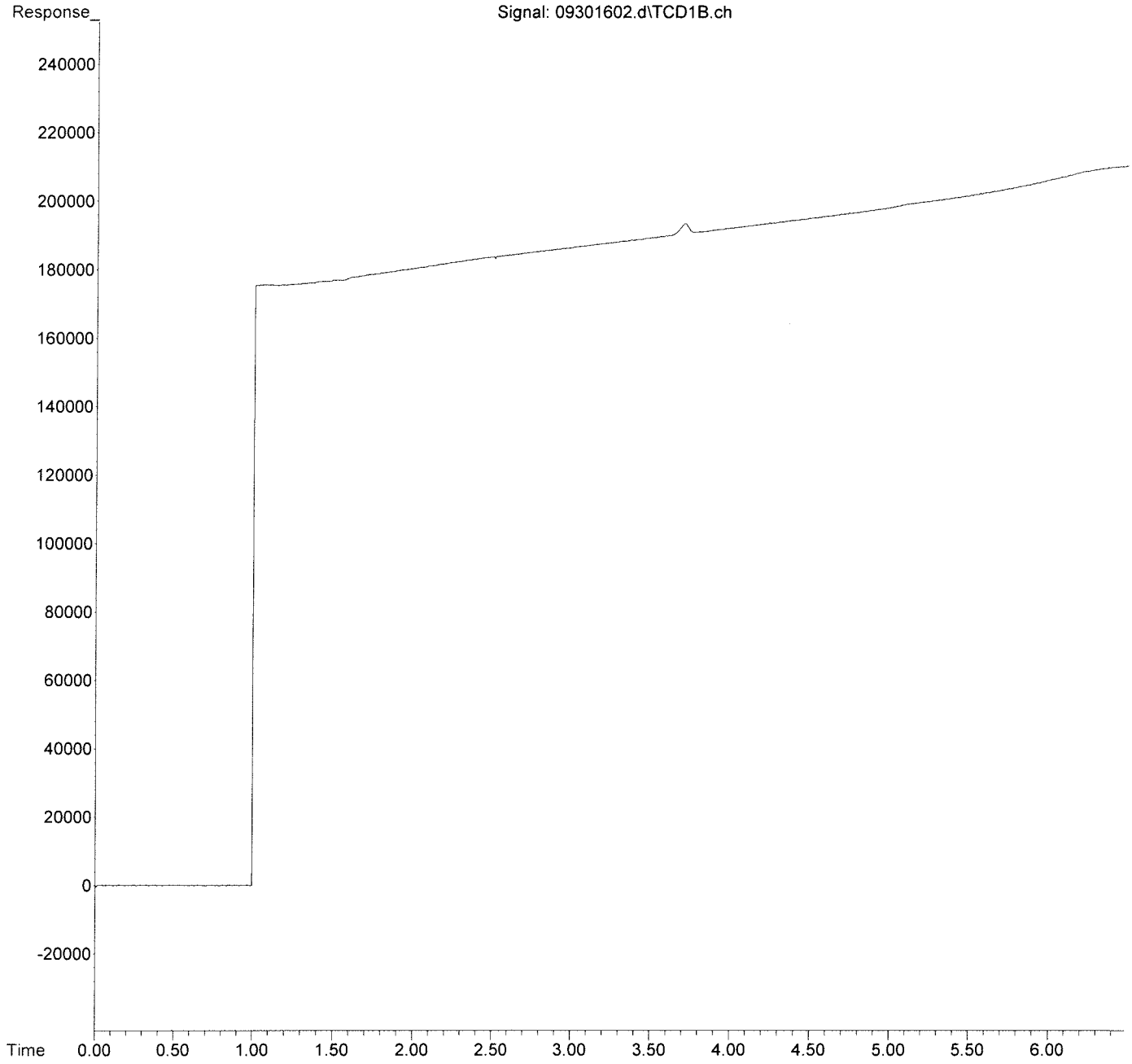
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC20\DATA\3C\2016_09\30trip\
Data File : 09301602.d
Signal(s) : TCD1B.ch
Acq On : 30 Sep 2016 8:26 am
Operator : MC
Sample : mb
Misc :
ALS Vial : 2 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 05 11:11:24 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Response Factor Report GC20

Method Path : J:\GC20\METHODS\
Method File : trip08172016.M
Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
Last Update : Wed Aug 17 16:09:17 2016
Response Via : Initial Calibration

Calibration Files
1 =08171603.d 2 =08171604.d 3 =08171605.d
4 =08171606.d 5 =08171607.d 6 =08171608.d

	Compound	1	2	3	4	5	6	Avg		%RSD
1)	Hydrogen	1.263	1.216	1.311	1.267	1.276	1.374	1.369	E2	6.11
2)	Oxygen	5.995	5.787	5.931	5.805	5.617	5.572	5.744	E3	3.05
3)	Nitrogen	7.068	6.958	7.066	6.558	6.254	6.223	6.615	E3	6.51
4)	Carbon Monoxide	6.543	6.215	6.435	6.191	6.176	6.154	6.389	E3	3.22
5)	Methane	4.972	4.788	4.972	4.791	4.772	4.736	5.090	E3	8.01
6)	Carbon Dioxide	0.892	0.856	0.870	0.846	0.845	0.841	0.903	E4	8.07

(#) = Out of Range ### Number of calibration levels exceeded format ###

trip08172016.M Thu Aug 18 08:36:14 2016

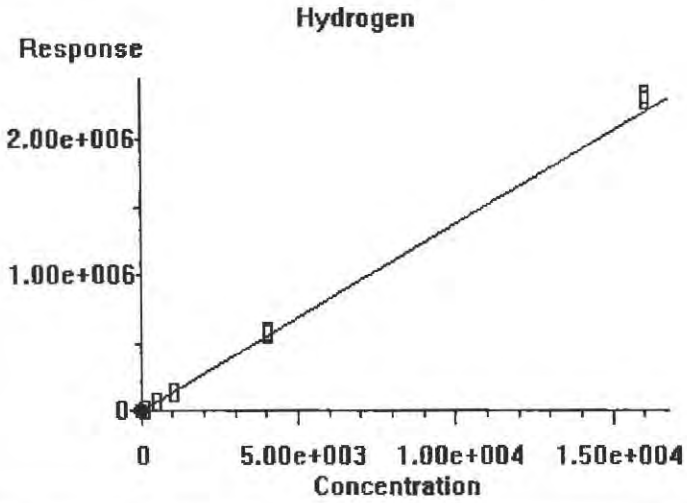
Edit Compounds

Search by: Ret Time Name Index Find Compound

- Compound Database
- External Standard Compour
  - Hydrogen
  - Oxygen
  - Nitrogen
  - Carbon Monoxide
  - Methane
  - Carbon Dioxide

Identification | Calibration | User Defined | Advanced | Reporting

Lvl ID	Concentration	Response	Lvl ID	Concentration	Response
1	100.000000	12632.882850	11	4000.000000	582047.701516
2	100.000000	12158.345400	12	4000.000000	584213.441000
3	100.000000	13114.025350	13	16000.000000	2298591.027391
4	500.000000	68333.202400	14	16000.000000	2289656.882538
5	500.000000	63821.192207	15	16000.000000	2323872.957738
6	500.000000	68721.641600	16	99999.000000	
7	1000.000000	139987.300362	17	99999.000000	
8	1000.000000	133581.640900	18	99999.000000	
9	1000.000000	140992.792779			
10	4000.000000	580729.821200			



0.000e+000	Quadratic term
1.359e-003	Linear term
0.000e+000	Constant term
6.1%	RF Rel Std Dev

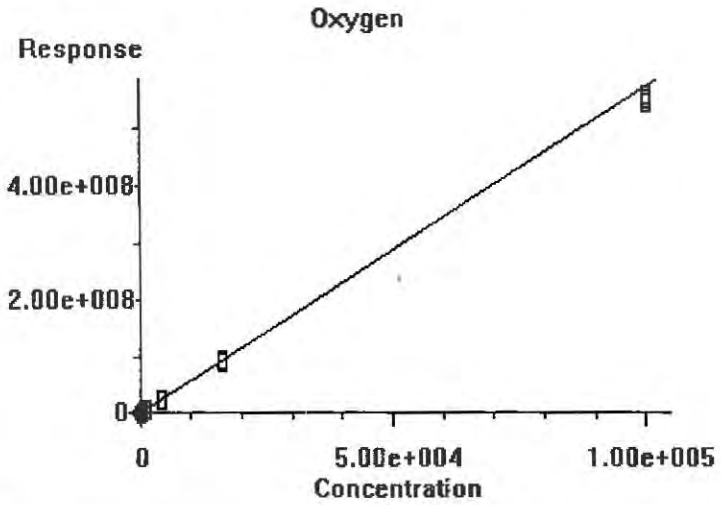
Edit Compounds

Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compour
  - Hydrogen
  - Oxygen
  - Nitrogen
  - Carbon Monoxide
  - Methane
  - Carbon Dioxide

Identification | Calibration | User Defined | Advanced | Reporting

Lvl ID	Concentration	Response	Lvl ID	Concentration	Response
1	100.000000	599487.494103	11	4000.000000	23826598.302138
2	100.000000	578670.977752	12	4000.000000	23862517.416454
3	100.000000	593092.952739	13	16000.000000	92172159.210664
4	500.000000	2902297.311542	14	16000.000000	92464939.459502
5	500.000000	2808317.269011	15	16000.000000	93438546.995218
6	500.000000	2736178.983668	16	99999.000000	559169599.50000
7	1000.000000	5641236.869851	17	99999.000000	547020814.73562
8	1000.000000	5511742.529597	18	99999.000000	554974689.16791
9	1000.000000	5643307.026994			
10	4000.000000	23935634.938654			



0.000e+000	Quadratic term
5.744e+003	Linear term
0.000e+000	Constant term
3.1%	RF Rel Std Dev

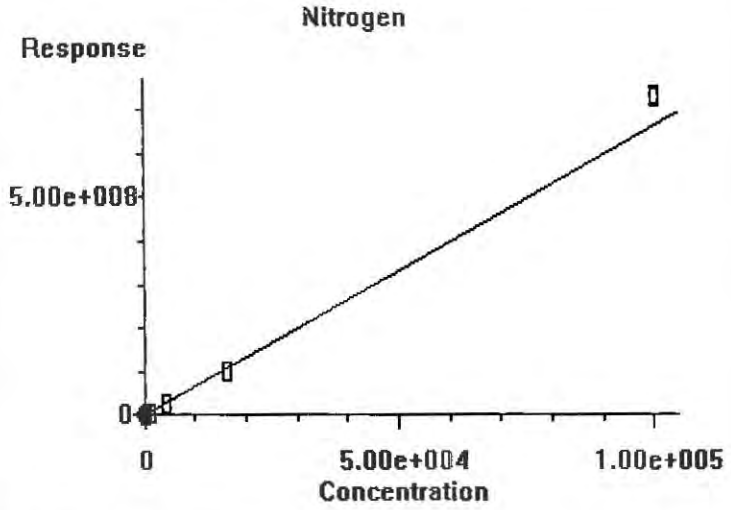
Edit Compounds

Search by: Ret Time Name Index Find Compound

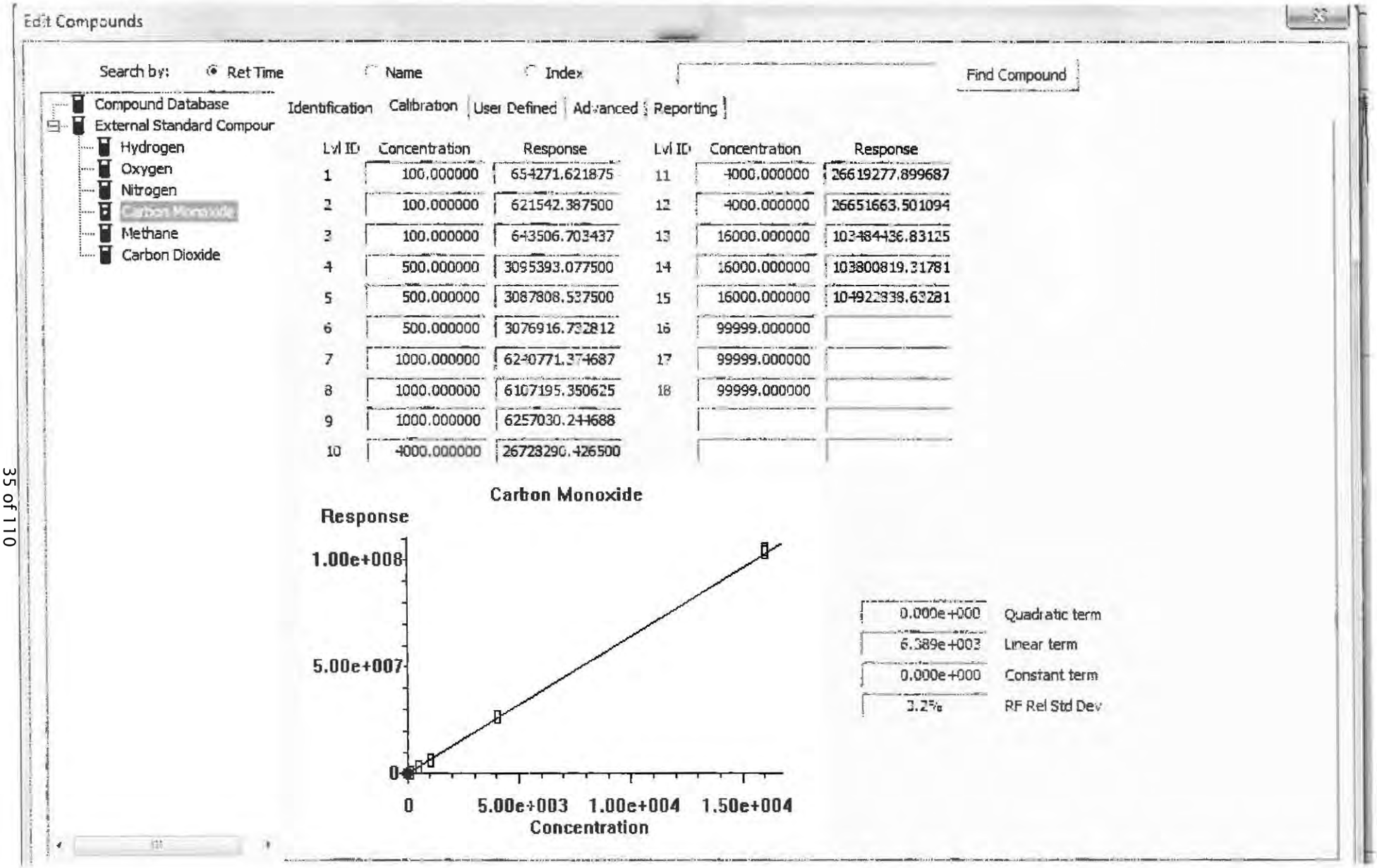
- Compound Database
- External Standard Compour
  - Hydrogen
  - Oxygen
  - Nitrogen
  - Carbon Monoxide
  - Methane
  - Carbon Dioxide

Identification | Calibration | User Defined | Advanced | Reporting

Lvl ID	Concentration	Response	Lvl ID	Concentration	Response
1	100.000000	706803.440897	11	4000.000000	25956732.584528
2	100.000000	695841.470581	12	4000.000000	25991567.873546
3	100.000000	706599.015386	13	16000.000000	100943912.98433
4	500.000000	3279194.883874	14	16000.000000	101263114.73341
5	500.000000	3126903.101822	15	16000.000000	102307767.29478
6	500.000000	3111525.750290	16	99999.000000	732108094.01000
7	1000.000000	6229559.976399	17	99999.000000	729497758.06541
8	1000.000000	6056059.185403	18	99999.000000	730183971.82500
9	1000.000000	6192495.418423			
10	4000.000000	26073539.517180			



0.000e+000	Quadratic term
6.615e+003	Linear term
0.000e+000	Constant term
6.5%	RF Rel Std Dev


Edit Compounds
Search by:
Ret Time
Name
Index
Find Compound
Compound Database
External Standard Compour
Hydrogen
Oxygen
Nitrogen
Carbon Monoxide
Methane
Carbon Dioxide
Identification
Calibration
User Defined
Advanced
Reporting
Lvl ID
Concentration
Response
1 100.000000 654271.621875
2 100.000000 621542.387500
3 100.000000 643506.703437
4 500.000000 3095393.077500
5 500.000000 3087808.537500
6 500.000000 3076916.732812
7 1000.000000 6240771.374687
8 1000.000000 6107195.350625
9 1000.000000 6257030.244688
10 4000.000000 26723290.426500
11 4000.000000 26619277.899687
12 4000.000000 26651663.501094
13 16000.000000 103484436.83125
14 16000.000000 103800819.31781
15 16000.000000 104922838.63281
16 99999.000000
17 99999.000000
18 99999.000000
Carbon Monoxide
Response
1.00e+008
5.00e+007
0
0
5.00e+003
1.00e+004
1.50e+004
Concentration
0.000e+000 Quadratic term
6.589e+003 Linear term
0.000e+000 Constant term
3.2% RF Rel Std Dev

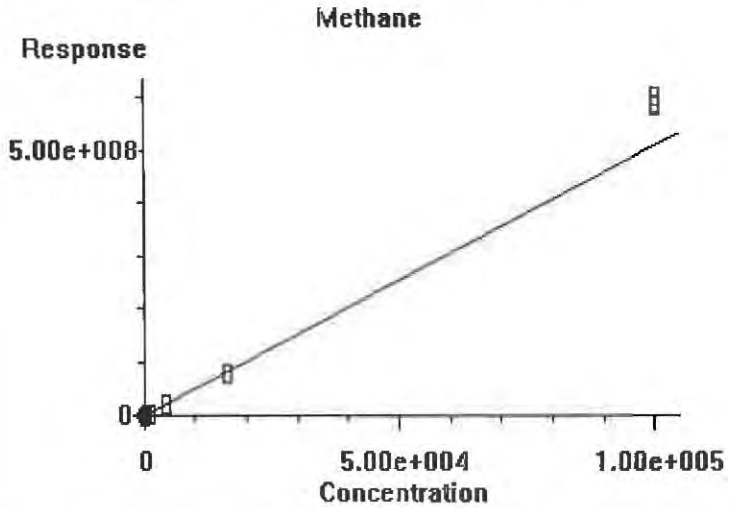
Edit Compounds

Search by: Ret Time Name Index Find Compound

Compound Database
External Standard Compour
Hydrogen
Oxygen
Nitrogen
Carbon Monoxide
Methane
Carbon Dioxide

Identification | Calibration | User Defined | Advanced | Reporting

Lvl ID	Concentration	Response	Lvl ID	Concentration	Response
1	100.000000	497237.645000	11	4000.000000	20516543.513750
2	100.000000	478795.408125	12	4000.000000	20570476.348889
3	100.000000	497158.898750	13	16000.000000	79878977.784792
4	500.000000	2395679.215000	14	16000.000000	80151028.112500
5	500.000000	2385753.487083	15	16000.000000	80982555.450833
6	500.000000	2367931.312083	16	99999.000000	586065212.67625
7	1000.000000	4808279.225000	17	99999.000000	587246388.09708
8	1000.000000	4716088.583125	18	99999.000000	602097414.76000
9	1000.000000	4820926.634306			
10	4000.000000	20612017.065000			



0.000e+000	Quadratic term
5.090e+002	Linear term
0.000e+000	Constant term
3.0%	RF Rel Std Dev

OK | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

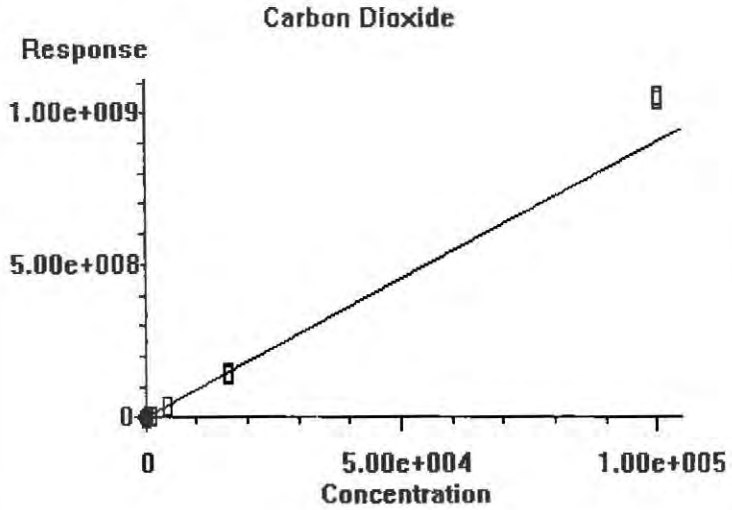
Edit Compounds

Search by: Ret Time Name Index Find Compound

- Compound Database
- External Standard Compour
  - Hydrogen
  - Oxygen
  - Nitrogen
  - Carbon Monoxide
  - Methane
  - Carbon Dioxide

Identification | Calibration | User Defined | Advanced | Reporting

Lvl ID	Concentration	Response	Lvl ID	Concentration	Response
1	100.000000	891863.635000	11	4000.000000	36414212.409286
2	100.000000	855704.788750	12	4000.000000	36463544.437500
3	100.000000	869983.886429	13	16000.000000	141358480.36375
4	500.000000	4229386.239286	14	16000.000000	142064571.20517
5	500.000000	4223314.759643	15	16000.000000	143593488.51964
6	500.000000	4206309.097143	16	99999.000000	1053756921.9100
7	1000.000000	8523011.010357	17	99999.000000	1054815939.6481
8	1000.000000	8358886.069286	18	99999.000000	1045180212.9950
9	1000.000000	8536304.023571			
10	4000.000000	36504154.463125			



0.000e+000	Quadratic term
9.027e+003	Linear term
0.000e+000	Constant term
8.13%	RF Rel Std Dev

Calibration Status Report GC20

Method Path : J:\GC20\METHODS\
Method File : trip08172016.M
Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
Last Update : Wed Aug 17 16:09:17 2016
Response Via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	1	100	0	J:\GC20\DATA\3C\2016_08\17\08171603.d
2	2	100	0	J:\GC20\DATA\3C\2016_08\17\08171604.d
3	3	100	0	J:\GC20\DATA\3C\2016_08\17\08171605.d
4	4	500	0	J:\GC20\DATA\3C\2016_08\17\08171606.d
5	5	500	0	J:\GC20\DATA\3C\2016_08\17\08171607.d
6	6	500	0	J:\GC20\DATA\3C\2016_08\17\08171608.d
7	7	1000	0	J:\GC20\DATA\3C\2016_08\17\08171610.d
8	8	1000	0	J:\GC20\DATA\3C\2016_08\17\08171611.d
9	9	1000	0	J:\GC20\DATA\3C\2016_08\17\08171612.d
10	10	4000	0	J:\GC20\DATA\3C\2016_08\17\08171613.d
11	11	4000	0	J:\GC20\DATA\3C\2016_08\17\08171614.d
12	12	4000	0	J:\GC20\DATA\3C\2016_08\17\08171615.d
13	13	16000	0	J:\GC20\DATA\3C\2016_08\17\08171616.d
14	14	16000	0	J:\GC20\DATA\3C\2016_08\17\08171617.d
15	15	16000	0	J:\GC20\DATA\3C\2016_08\17\08171618.d
16	16	99999	0	J:\GC20\DATA\3C\2016_08\17\08171635.d
17	17	99999	0	J:\GC20\DATA\3C\2016_08\17\08171636.d
18	18	99999	0	J:\GC20\DATA\3C\2016_08\17\08171637.d

#	ID	Update Time	Quant Time	Acquisition Time
1	1	Aug 17 08:43 2016	Aug 17 08:35 2016	17 Aug 2016 8:12 am
2	2	Aug 17 08:49 2016	Aug 17 08:37 2016	17 Aug 2016 8:22 am
3	3	Aug 17 08:49 2016	Aug 17 08:49 2016	17 Aug 2016 8:39 am
4	4	Aug 17 09:01 2016	Aug 17 09:01 2016	17 Aug 2016 8:52 am
5	5	Aug 17 09:13 2016	Aug 17 09:12 2016	17 Aug 2016 9:02 am
6	6	Aug 17 09:25 2016	Aug 17 09:25 2016	17 Aug 2016 9:14 am
7	7	Aug 17 10:09 2016	Aug 17 09:46 2016	17 Aug 2016 9:39 am
8	8	Aug 17 10:09 2016	Aug 17 10:00 2016	17 Aug 2016 9:52 am
9	9	Aug 17 10:10 2016	Aug 17 10:09 2016	17 Aug 2016 10:02 am
10	10	Aug 17 10:20 2016	Aug 17 10:19 2016	17 Aug 2016 10:12 am
11	11	Aug 17 10:30 2016	Aug 17 10:30 2016	17 Aug 2016 10:22 am
12	12	Aug 17 10:39 2016	Aug 17 10:39 2016	17 Aug 2016 10:31 am
13	13	Aug 17 10:52 2016	Aug 17 10:50 2016	17 Aug 2016 10:42 am
14	14	Aug 17 11:02 2016	Aug 17 11:02 2016	17 Aug 2016 10:55 am
15	15	Aug 17 12:23 2016	Aug 17 11:13 2016	17 Aug 2016 11:05 am
16	16	Aug 17 16:25 2016	Aug 17 16:25 2016	17 Aug 2016 4:14 pm
17	17	Aug 17 16:34 2016	Aug 17 16:34 2016	17 Aug 2016 4:27 pm
18	18	Aug 17 16:44 2016	Aug 17 16:44 2016	17 Aug 2016 4:37 pm

trip08172016.M Thu Aug 18 08:37:19 2016

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171603.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 8:12 am
Operator : MC
Sample : std s11-07191601 A
Misc :
ALS Vial : 3 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 08:35:54 2016
Quant Method : J:\GC20\METHODS\FG3C 05172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue May 17 15:46:05 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

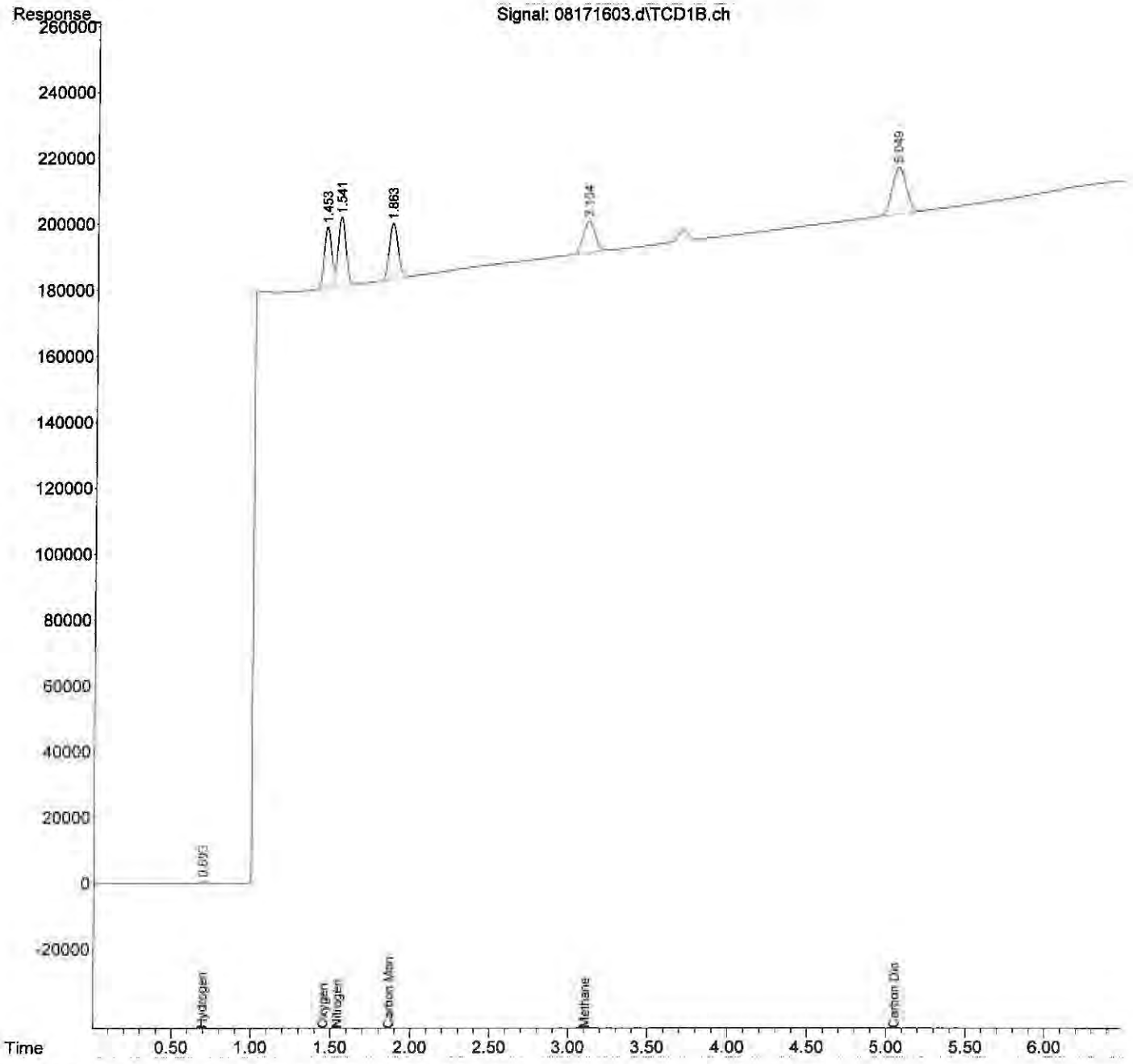
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.693	12633	938.136	ppm	m
2)	Oxygen	1.454	599487	1084.193	ppm	
3)	Nitrogen	1.542	706803	1134.442	ppm	
4)	Carbon Monoxide	1.864	654272	1066.798	ppm	
5)	Methane	3.104	497238	1036.821	ppm	
6)	Carbon Dioxide	5.052	891864	1060.641	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171603.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 8:12 am
Operator : MC
Sample : std s11-07191601 A
Misc :
ALS Vial : 3 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 08:35:54 2016
Quant Method : J:\GC20\METHODS\FG3C 05172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue May 17 15:46:05 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

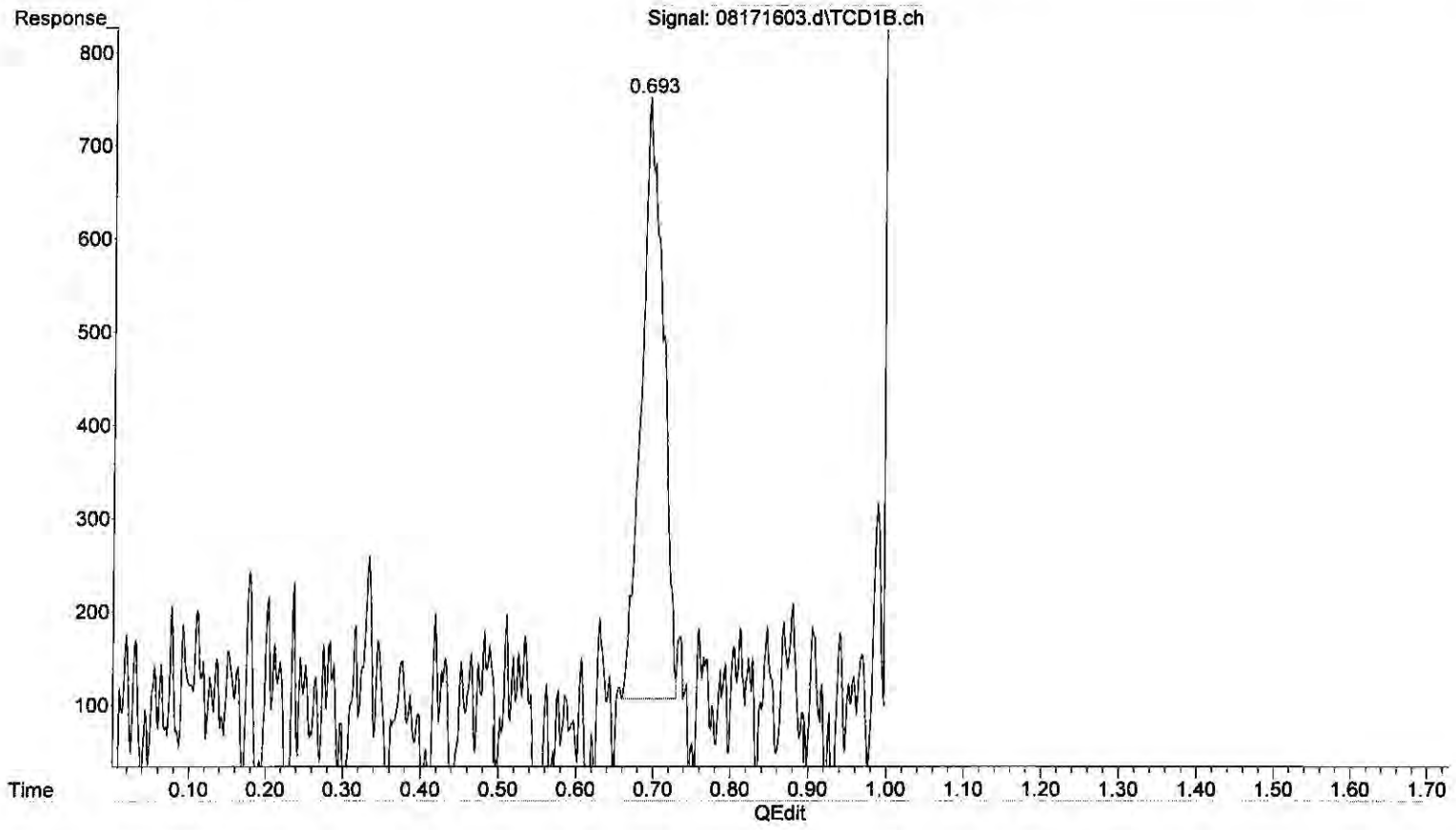


Quantitation Report (Qedit)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171603.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 8:12 am
Operator : MC
Sample : std s11-07191601 A
Misc :
ALS Vial : 3 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 08:35:54 2016
Quant Method : J:\GC20\METHODS\FG3C 05172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue May 17 15:46:05 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



(1) Hydrogen

0.693min 938.136 ppm m

response 12633

MC 8/18/16

No prints

BLL

8/24/16

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171604.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 8:22 am
Operator : MC
Sample : std s11-07191601 B
Misc :
ALS Vial : 4 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 08:37:59 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 08:37:01 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.698	12158	922.186	ppm	m
2)	Oxygen	1.454	578671	1038.914	ppm	
3)	Nitrogen	1.542	695841	1114.835	ppm	
4)	Carbon Monoxide	1.865	621542	1003.463	ppm	
5)	Methane	3.101	478795	984.236	ppm	
6)	Carbon Dioxide	5.053	855705	1005.943	ppm	

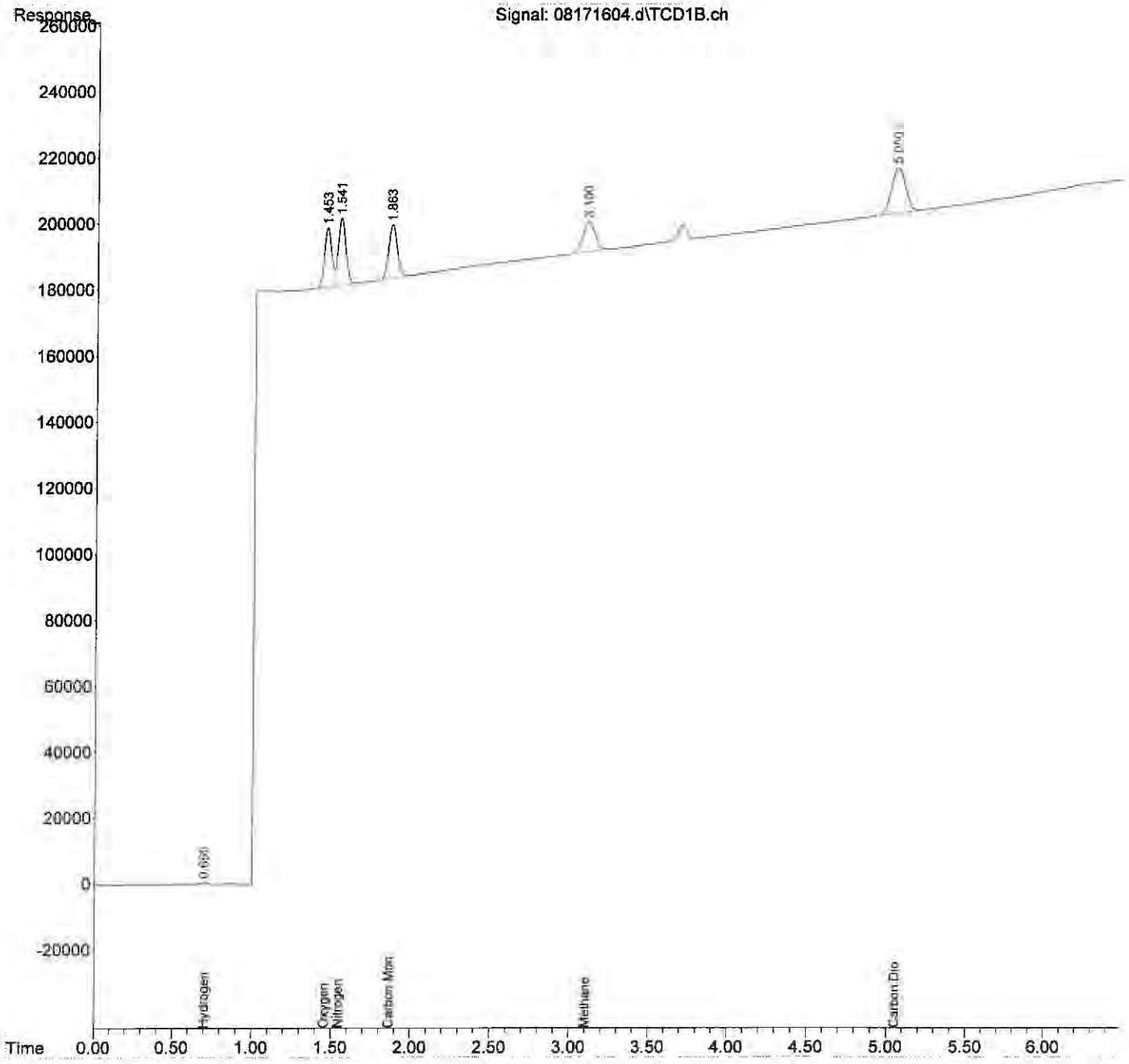
(f)=RT Delta > 1/2 Window (m)=manual int

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171604.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 8:22 am
Operator : MC
Sample : std s11-07191601 B
Misc :
ALS Vial : 4 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 08:37:59 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 08:37:01 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

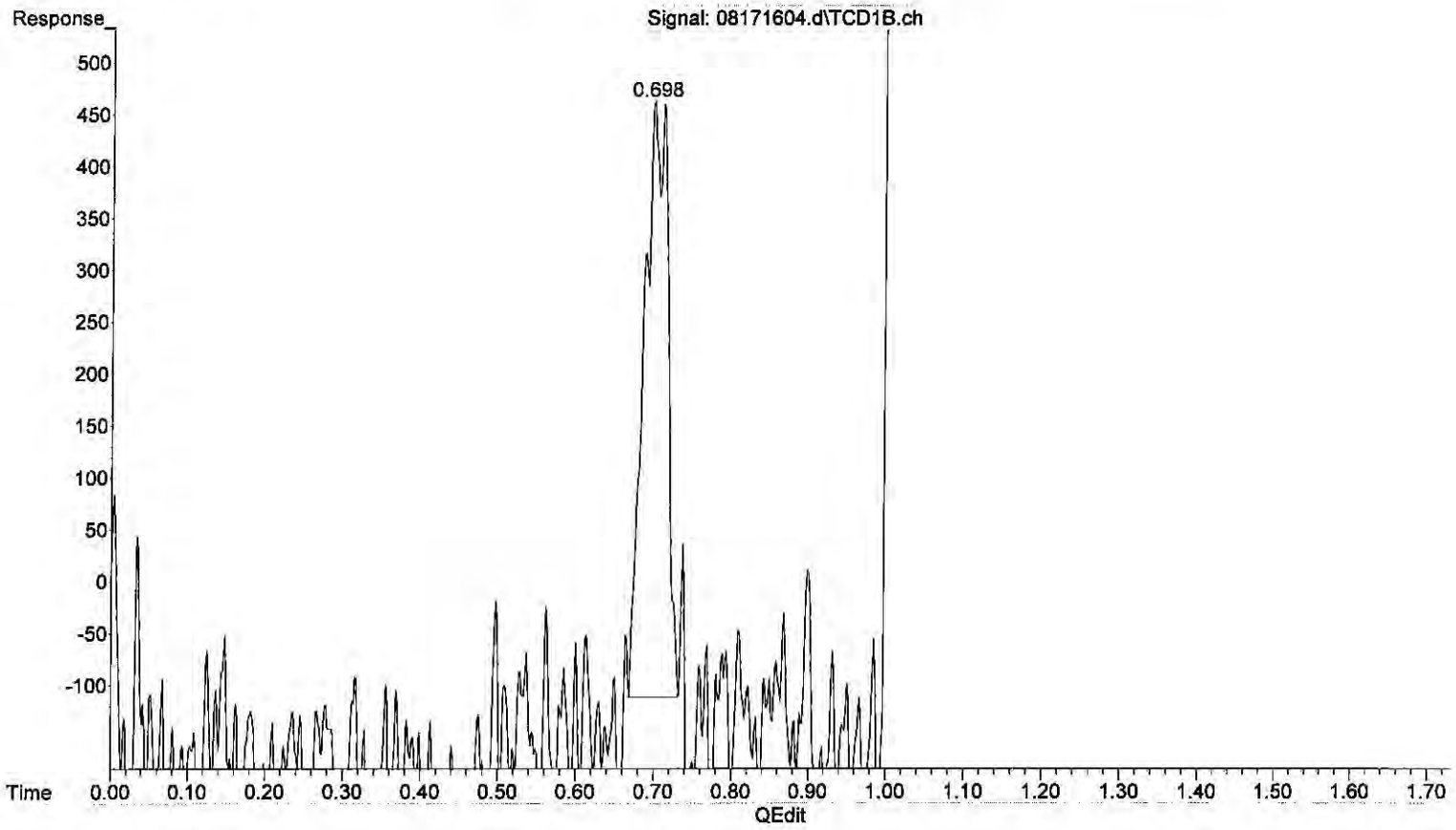


Quantitation Report (Qedit)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171604.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 8:22 am
Operator : MC
Sample : std s11-07191601 B
Misc :
ALS Vial : 4 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 08:37:59 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 08:37:01 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



(1) Hydrogen
0.698min 922.186 ppm m
response 12158

MC 8/18/16 ND Reviews WK 8/22/16

(+) = Expected Retention Time
trip08172016.M Wed Aug 17 17:13:10 2016

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171605.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 8:39 am
Operator : MC
Sample : std s11-07191601 C
Misc :
ALS Vial : 5 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 08:49:33 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 08:49:13 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.703	13114	1057.957	ppm	m
2)	Oxygen	1.454	593093	1006.814	ppm	
3)	Nitrogen	1.542	706599	1007.524	ppm	
4)	Carbon Monoxide	1.865	643507	1008.778	ppm	
5)	Methane	3.102	497159	1018.734	ppm	
6)	Carbon Dioxide	5.053	869984	995.651	ppm	

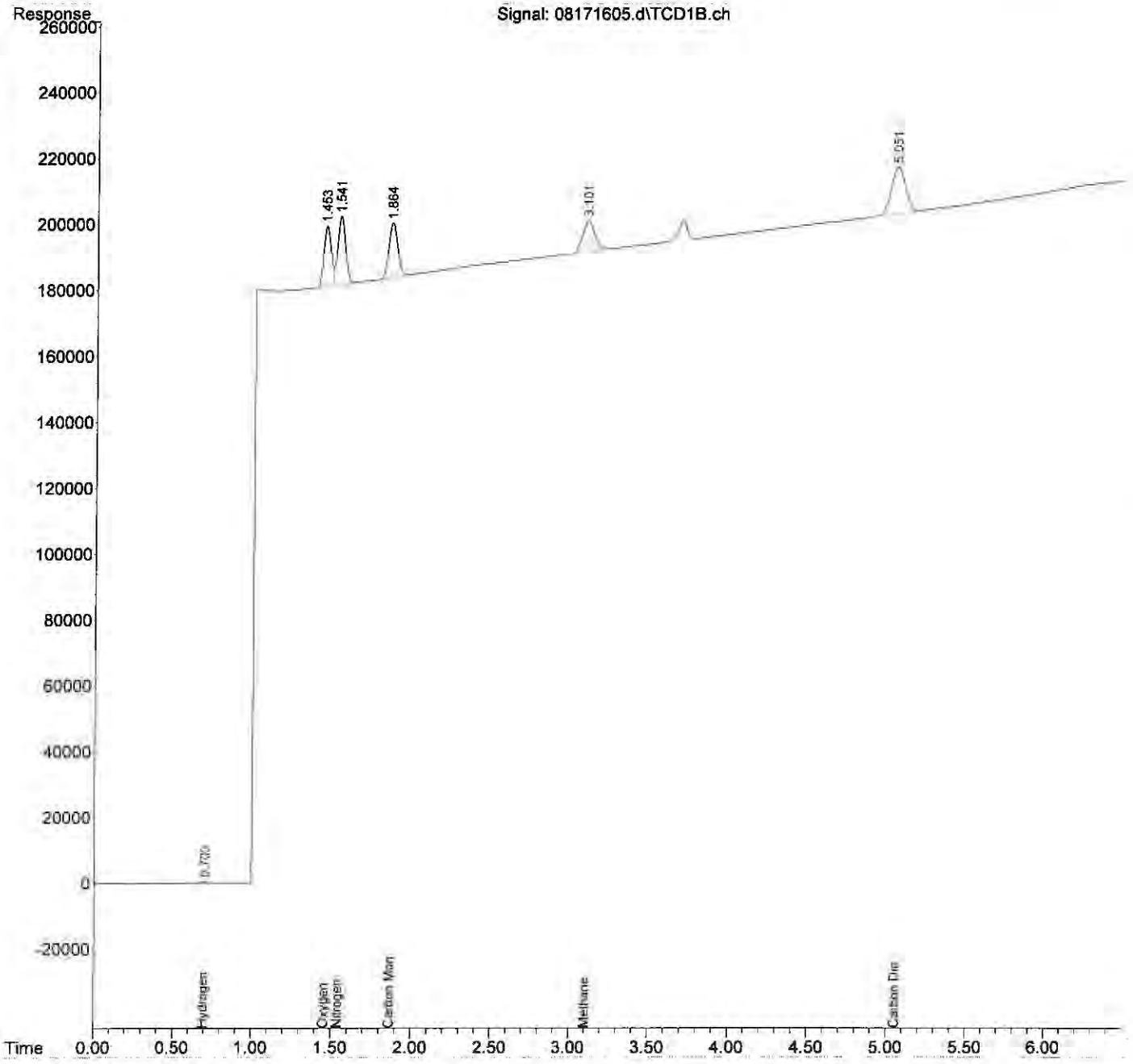
(f)=RT Delta > 1/2 Window (m)=manual int

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171605.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 8:39 am
Operator : MC
Sample : std s11-07191601 C
Misc :
ALS Vial : 5 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 08:49:33 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 08:49:13 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

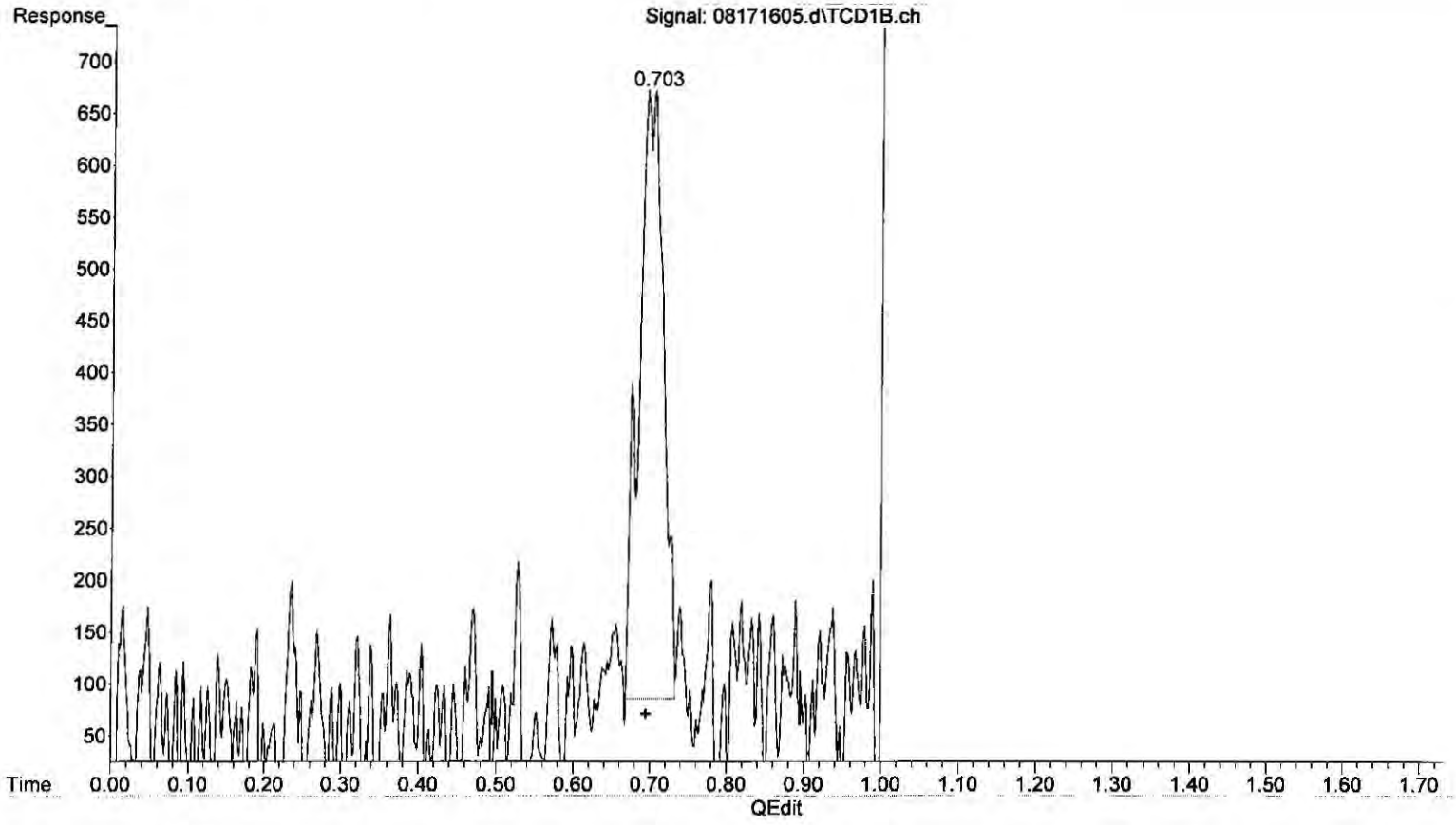


Quantitation Report (Qedit)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171605.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 8:39 am
Operator : MC
Sample : std s11-07191601 C
Misc :
ALS Vial : 5 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 08:49:33 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 08:49:13 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



(1) Hydrogen

0.703min 1057.957 ppm m

response 13114

MC 8/17/16 No previous

BL

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171606.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 8:52 am
Operator : MC
Sample : std s11-12041503 A
Misc :
ALS Vial : 6 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 09:01:05 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 08:49:48 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

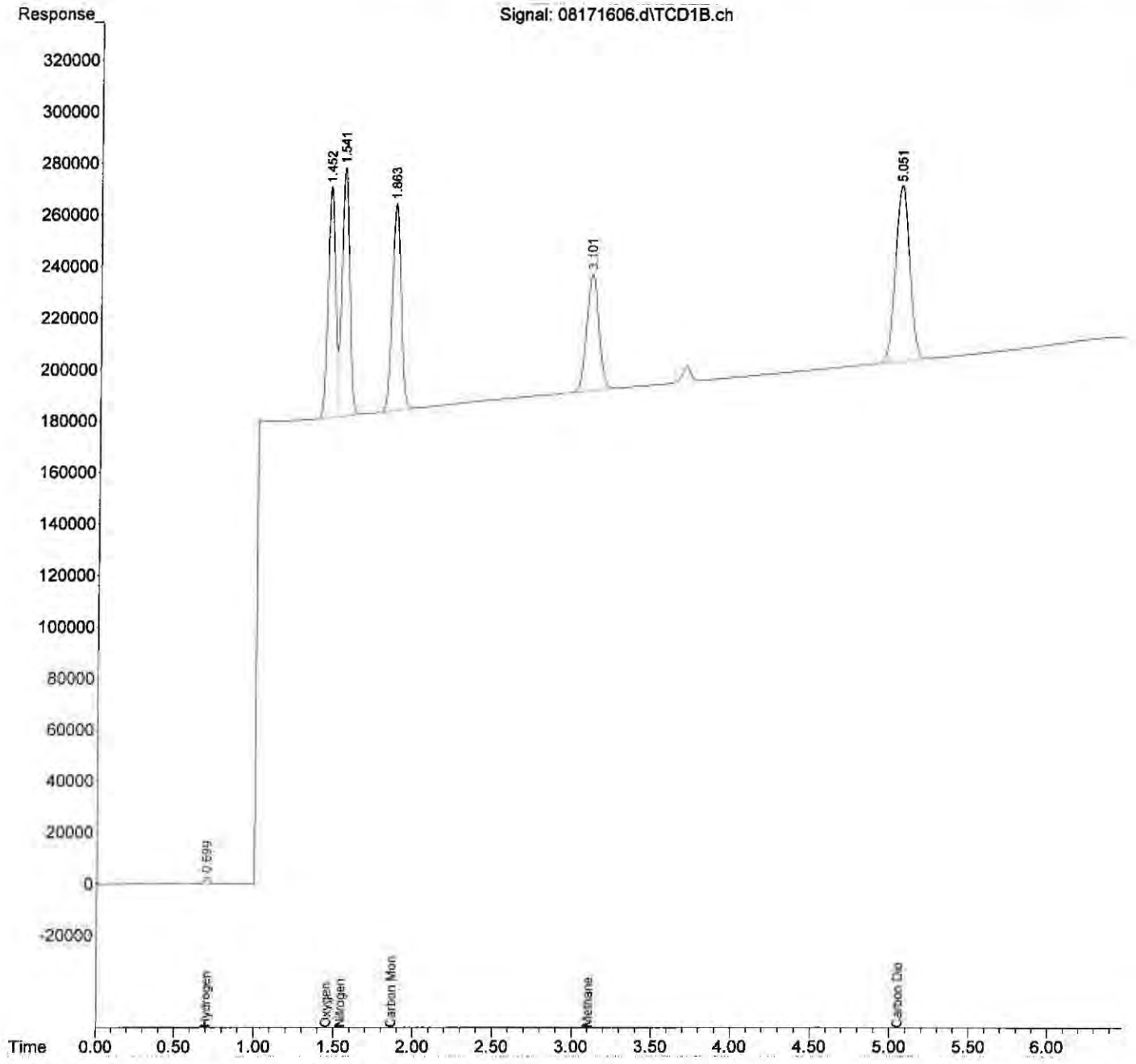
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.699	63333	5012.487	ppm	m
2)	Oxygen	1.453	2902297	4915.673	ppm	
3)	Nitrogen	1.542	3279195	4664.034	ppm	
4)	Carbon Monoxide	1.864	3095393	4838.263	ppm	
5)	Methane	3.101	2395679	4878.548	ppm	
6)	Carbon Dioxide	5.051	4229386	4847.337	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171606.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 8:52 am
Operator : MC
Sample : std s11-12041503 A
Misc :
ALS Vial : 6 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 09:01:05 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 08:49:48 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

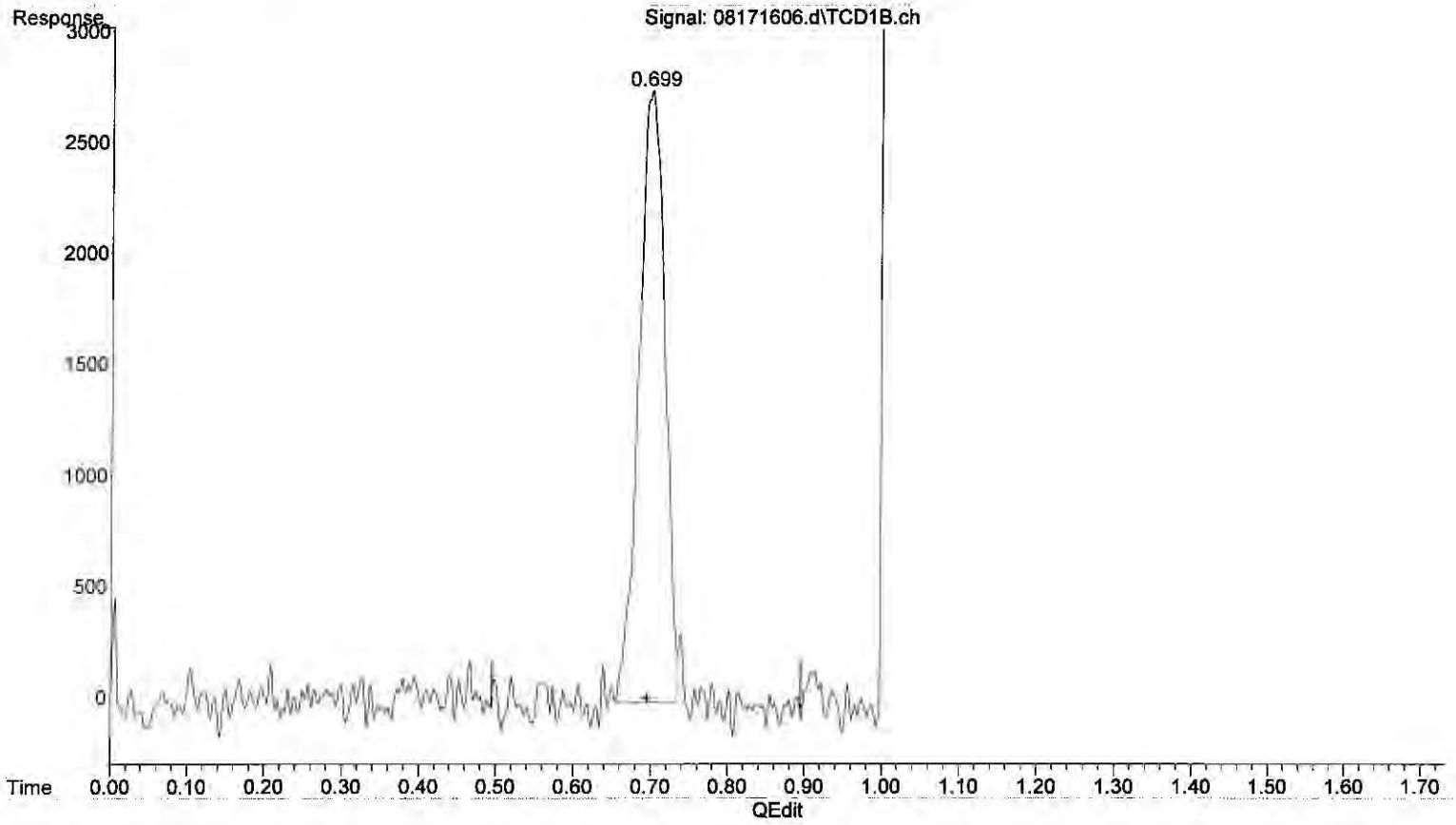


Quantitation Report (Qedit)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171606.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 8:52 am
Operator : MC
Sample : std s11-12041503 A
Misc :
ALS Vial : 6 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 09:01:05 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 08:49:48 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



(1) Hydrogen

0.699min 5012.487 ppm m

response 63333

MC 8/18/16
BLC
No peaks

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171607.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 9:02 am
Operator : MC
Sample : std s11-12041503 B
Misc :
ALS Vial : 7 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 09:12:52 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 09:01:20 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

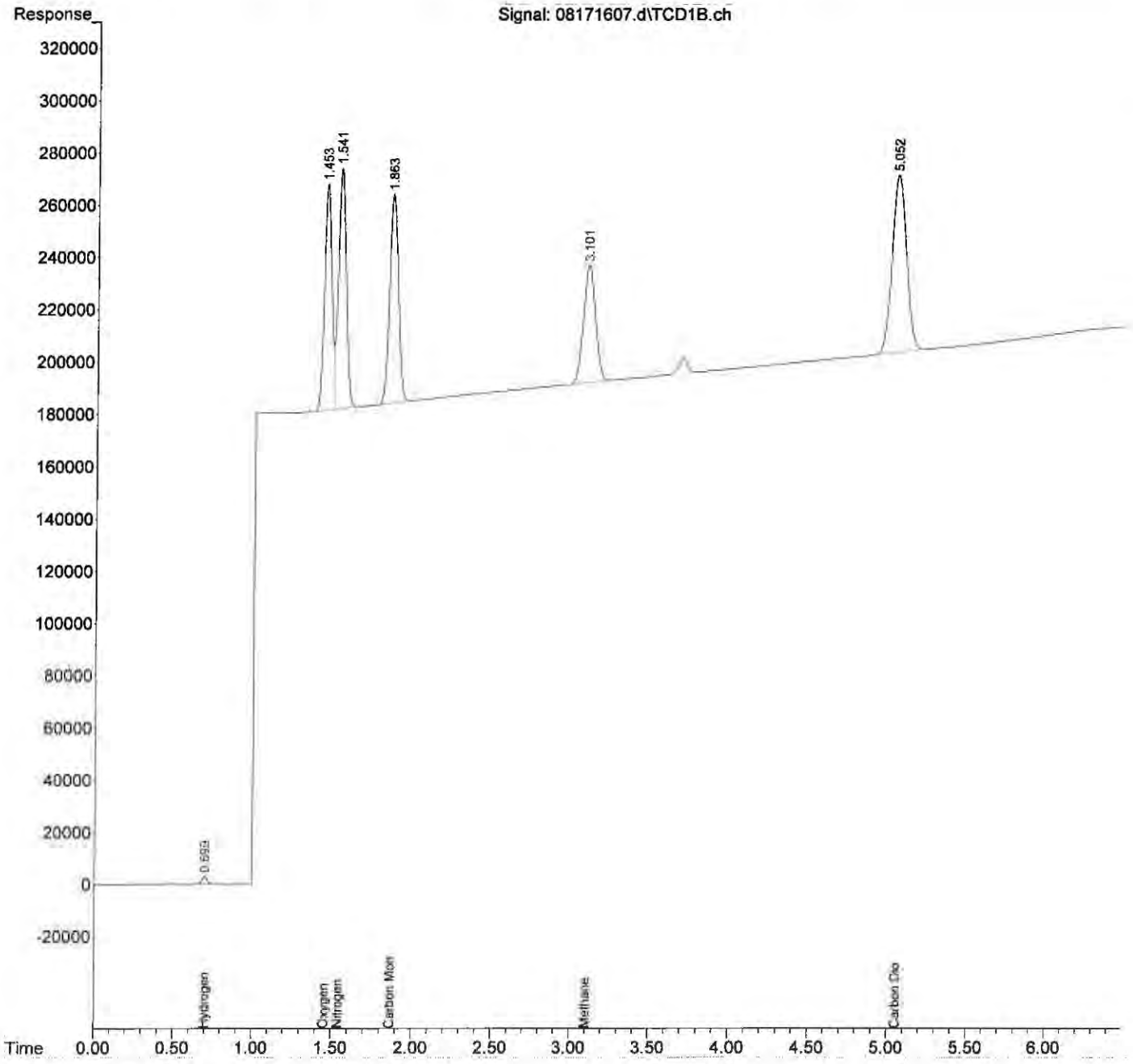
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.699	63821	5047.957	ppm	m
2)	Oxygen	1.454	2808317	4776.637	ppm	
3)	Nitrogen	1.542	3126903	4523.413	ppm	
4)	Carbon Monoxide	1.864	3087809	4865.757	ppm	
5)	Methane	3.102	2385753	4888.018	ppm	
6)	Carbon Dioxide	5.052	4223315	4877.610	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171607.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 9:02 am
Operator : MC
Sample : std s11-12041503 B
Misc :
ALS Vial : 7 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 09:12:52 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 09:01:20 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

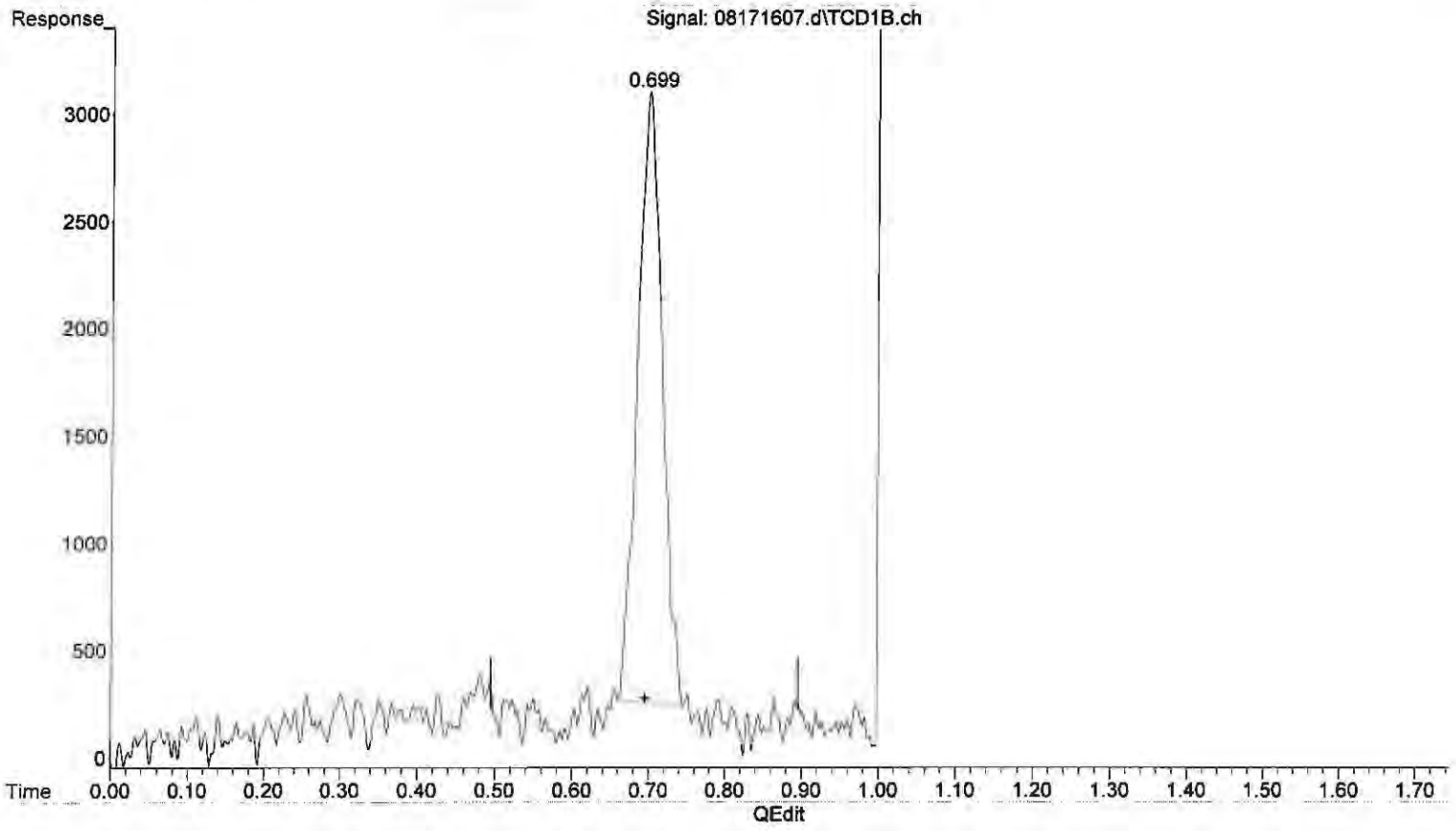


Quantitation Report (Qedit)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171607.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 9:02 am
Operator : MC
Sample : std s11-12041503 B
Misc :
ALS Vial : 7 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 09:12:52 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 09:01:20 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



(1) Hydrogen

0.699min 5047.957 ppm m

response 63821

MC 8/18/16
BLL
No peaks

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171608.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 9:14 am
Operator : MC
Sample : std s11-12041503 C
Misc :
ALS Vial : 8 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 09:25:26 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 09:13:09 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

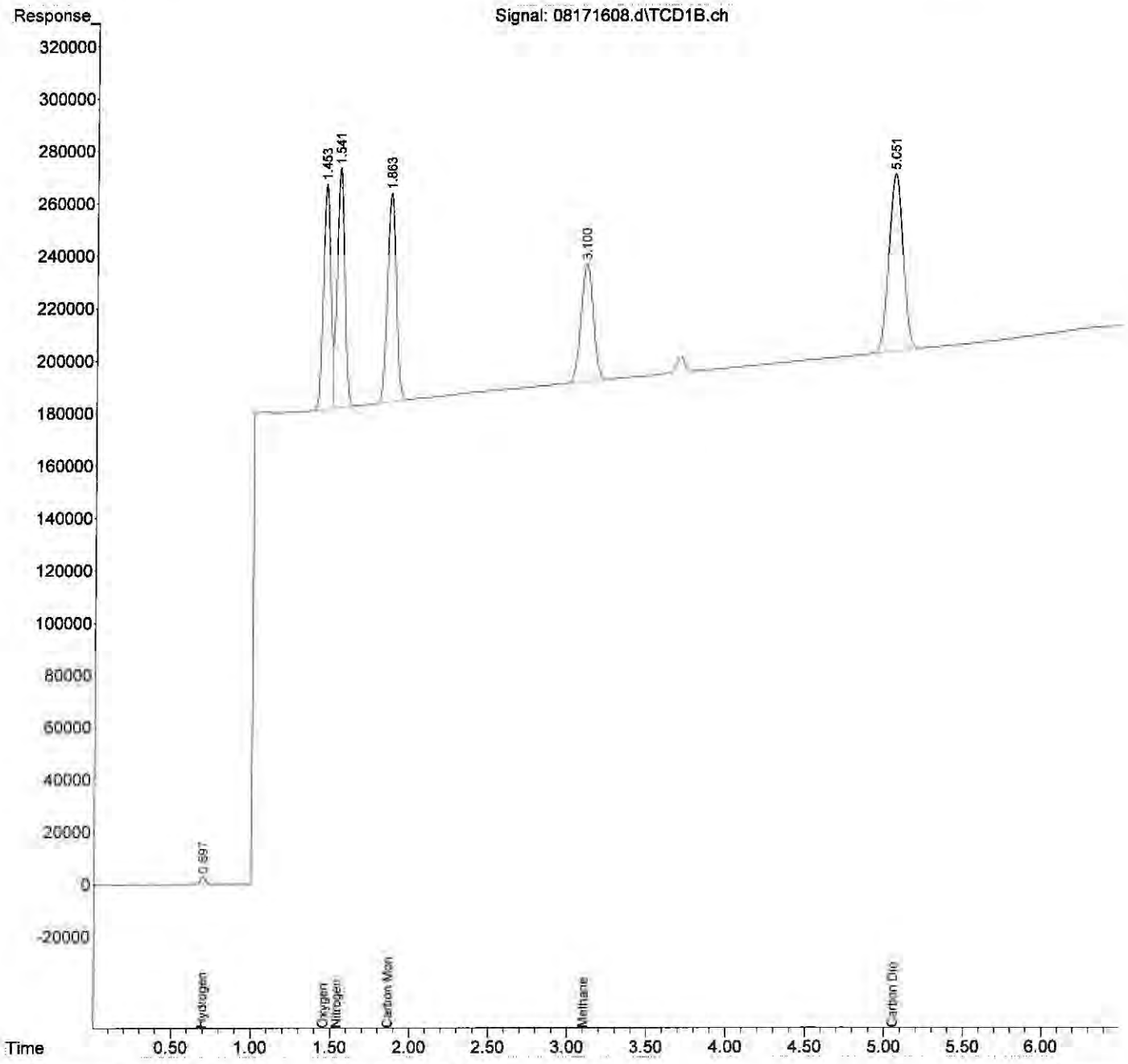
	Compound	R.T	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.697	68722	5425.153	ppm	m
2)	Oxygen	1.454	2786179	4781.704	ppm	
3)	Nitrogen	1.542	3111526	4588.644	ppm	
4)	Carbon Monoxide	1.864	3076917	4874.770	ppm	
5)	Methane	3.101	2367931	4873.333	ppm	
6)	Carbon Dioxide	5.052	4206309	4881.870	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171608.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 9:14 am
Operator : MC
Sample : std s11-12041503 C
Misc :
ALS Vial : 8 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 09:25:26 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 09:13:09 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

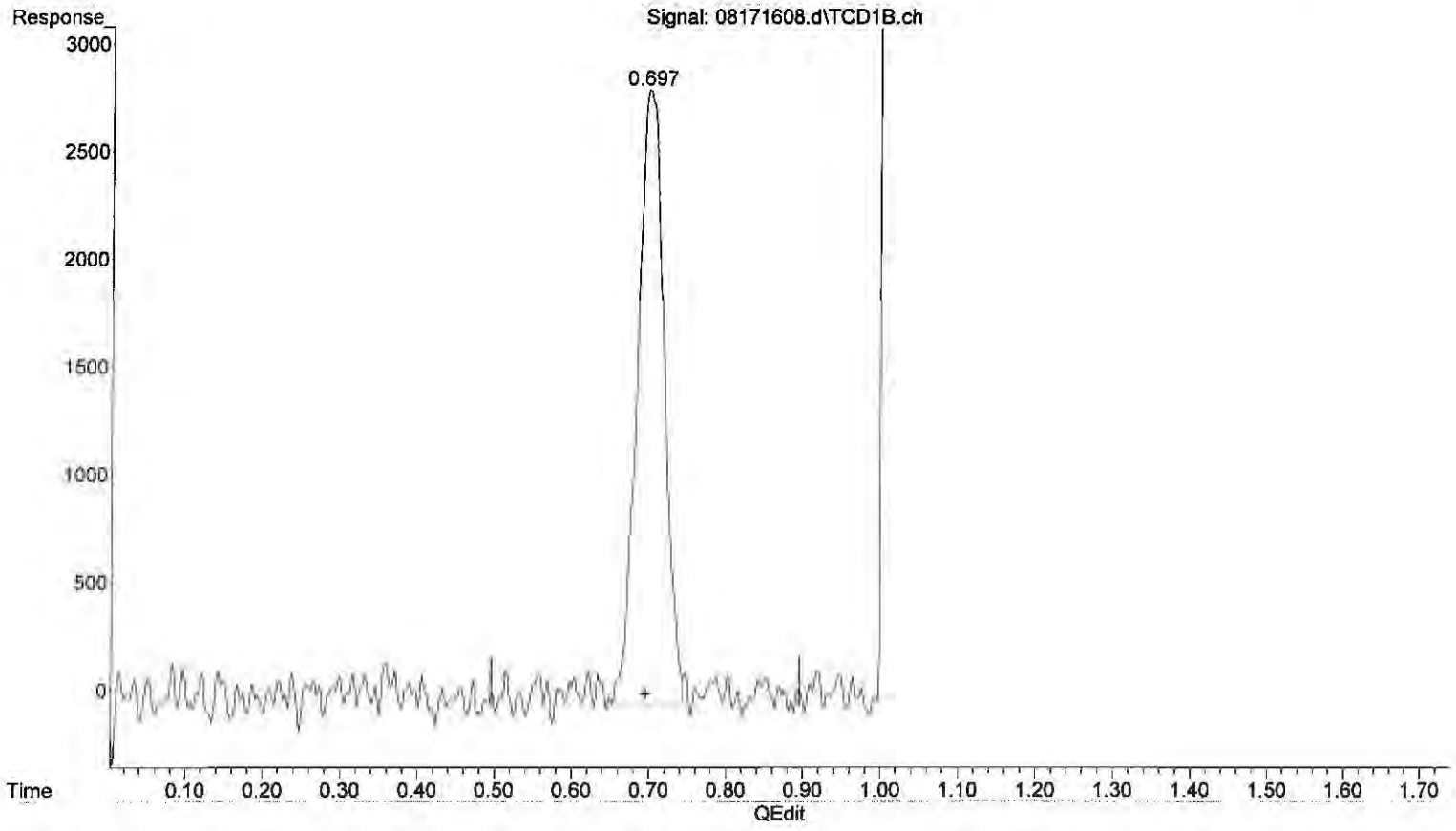


Quantitation Report (Qedit)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171608.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 9:14 am
Operator : MC
Sample : std s11-12041503 C
Misc :
ALS Vial : 8 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 09:25:26 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 09:13:09 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



(1) Hydrogen

0.697min 5425.153 ppm m

response 68722

Mc 8/18/17

BLL

No previous

Crystals

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171610.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 9:39 am
Operator : MC
Sample : std s11-12041502 A
Misc :
ALS Vial : 10 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 09:46:29 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 09:38:11 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.700	139987	10790.289	ppm
2)	Oxygen	1.453	5641237	9695.950	ppm
3)	Nitrogen	1.541	6229560	9165.921	ppm
4)	Carbon Monoxide	1.864	6240771	9941.480	ppm
5)	Methane	3.101	4808279	9949.447	ppm
6)	Carbon Dioxide	5.051	8523011	9956.802	ppm

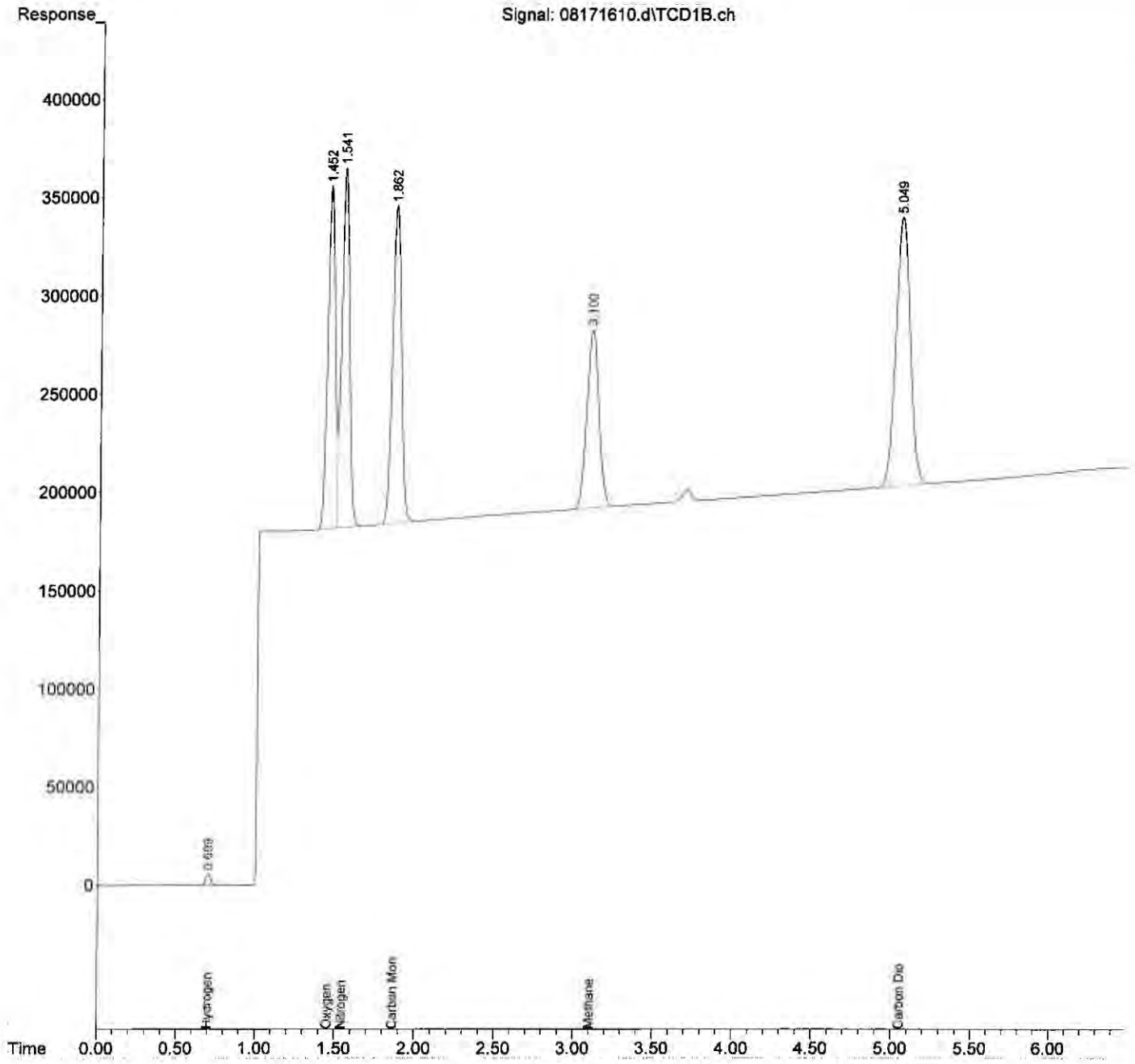
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171610.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 9:39 am
Operator : MC
Sample : std s11-12041502 A
Misc :
ALS Vial : 10 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 09:46:29 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 09:38:11 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171611.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 9:52 am
Operator : MC
Sample : std s11-12041502 B
Misc :
ALS Vial : 11 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 10:00:03 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 09:46:46 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.700	133582	10195.817	ppm	m
2)	Oxygen	1.453	5511743	9509.522	ppm	
3)	Nitrogen	1.542	6056059	9004.520	ppm	
4)	Carbon Monoxide	1.863	6107195	9735.817	ppm	
5)	Methane	3.101	4716089	9764.854	ppm	
6)	Carbon Dioxide	5.051	8358886	9770.343	ppm	

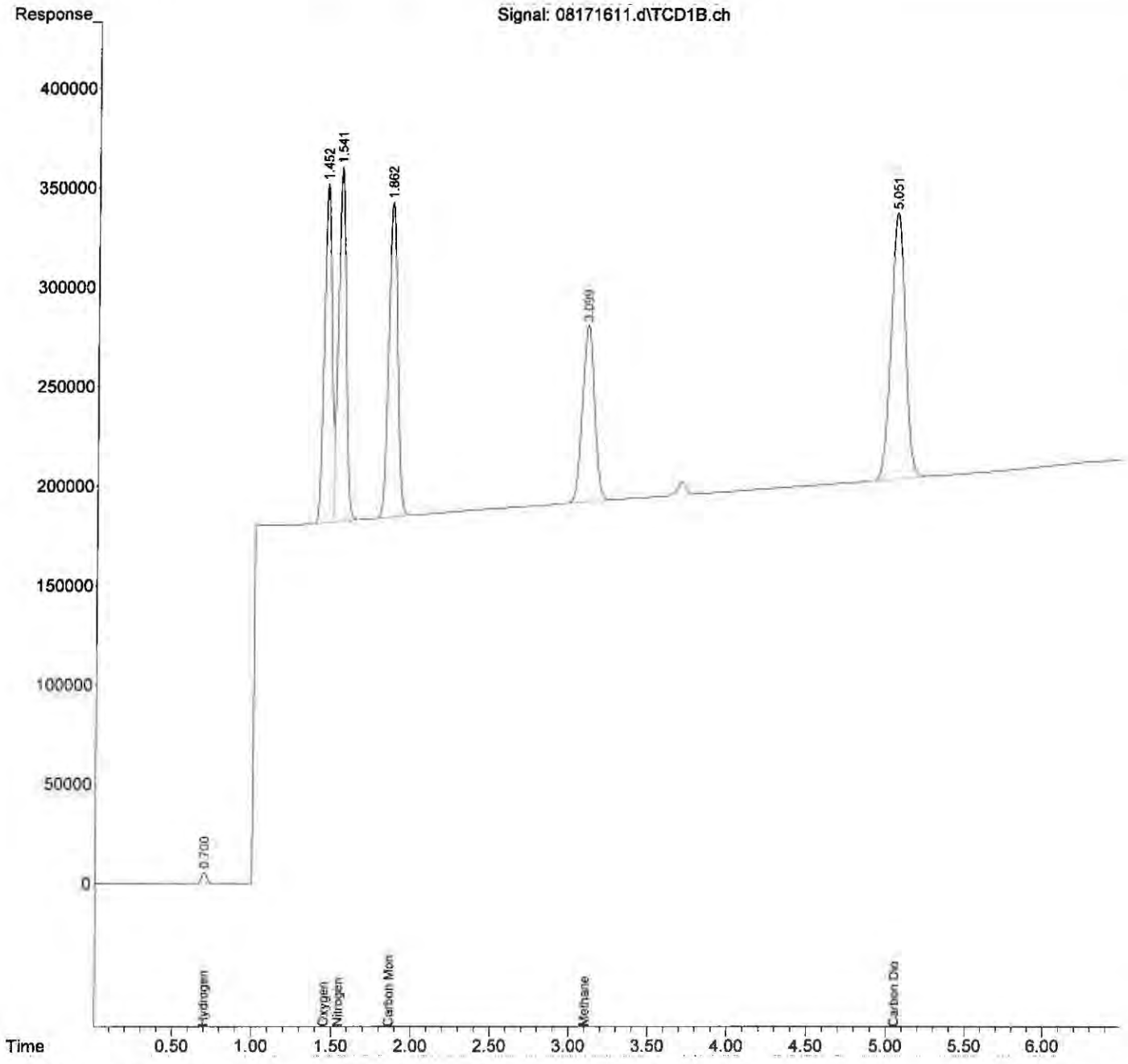
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171611.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 9:52 am
Operator : MC
Sample : std s11-12041502 B
Misc :
ALS Vial : 11 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 10:00:03 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 09:46:46 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

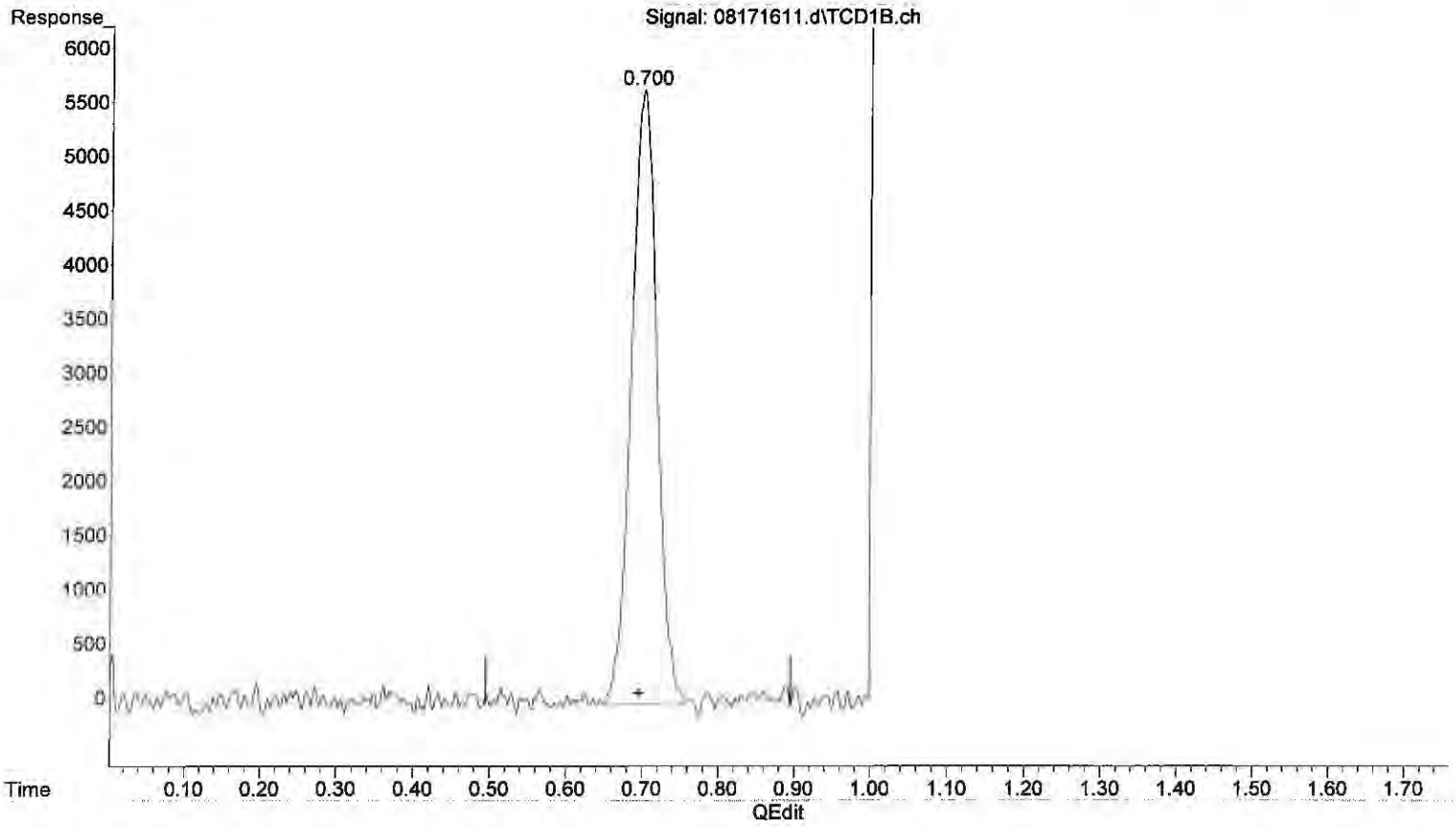


Quantitation Report (Qedit)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171611.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 9:52 am
Operator : MC
Sample : std s11-12041502 B
Misc :
ALS Vial : 11 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 10:00:03 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 09:46:46 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



(1) Hydrogen

0.700min 10195.817 ppm m

response 133582

NO Previous MC 8/18/16

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171612.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 10:02 am
Operator : MC
Sample : std s11-12041502 C
Misc :
ALS Vial : 12 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 10:09:48 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 10:09:30 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc Units
Target Compounds				
1)	Hydrogen	0.699	140993	10772.355 ppm
2)	Oxygen	1.453	5643307	9886.889 ppm
3)	Nitrogen	1.542	6192495	9531.908 ppm
4)	Carbon Monoxide	1.864	6257030	10025.756 ppm
5)	Methane	3.101	4820927	10027.093 ppm
6)	Carbon Dioxide	5.051	8536304	10012.043 ppm

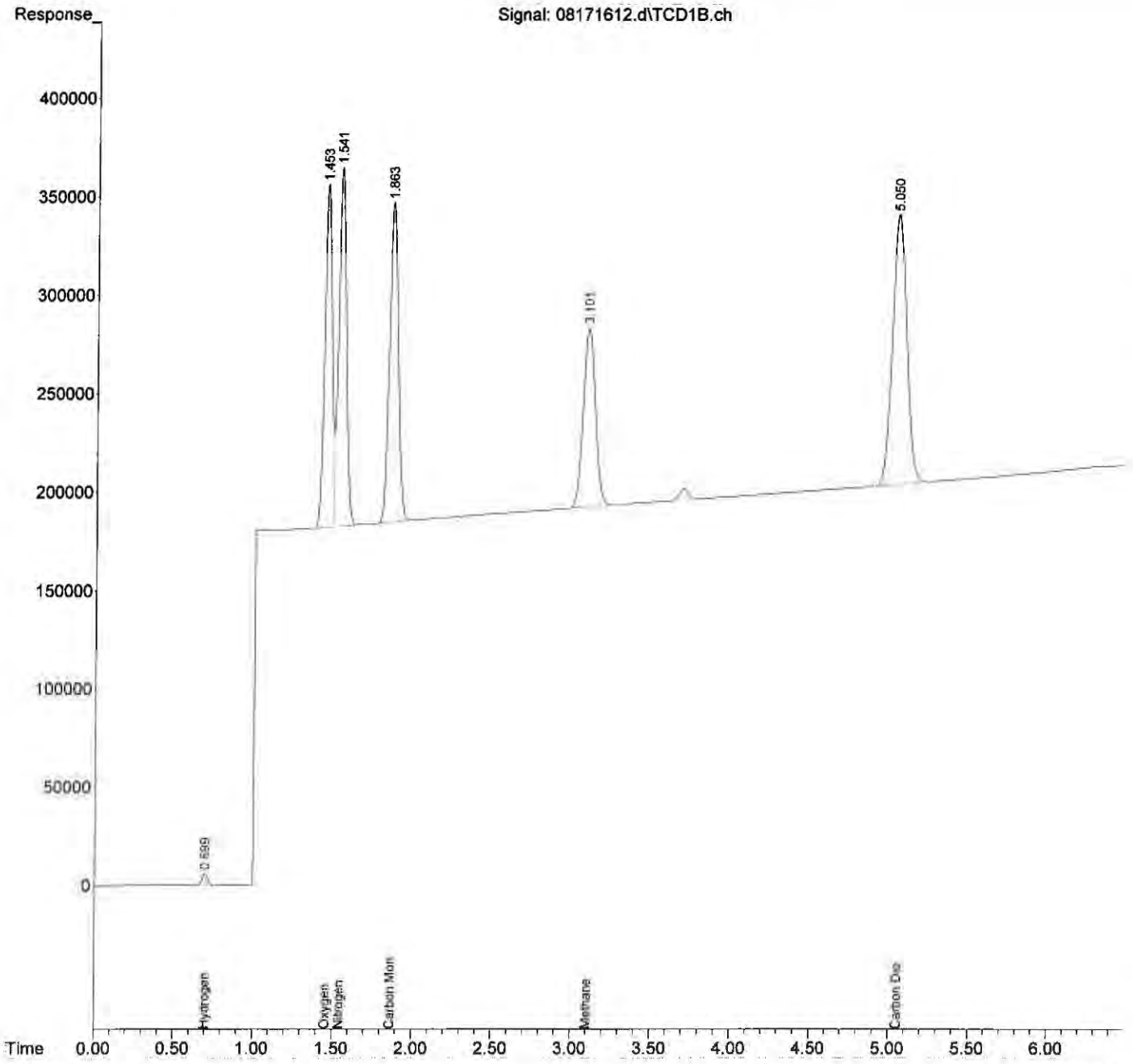
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171612.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 10:02 am
Operator : MC
Sample : std s11-12041502 C
Misc :
ALS Vial : 12 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 10:09:48 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 10:09:30 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171613.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 10:12 am
Operator : MC
Sample : std s11-12041501 A
Misc :
ALS Vial : 13 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 10:19:45 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 10:10:14 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.699	580730	44092.431	ppm	m
2)	Oxygen	1.451	23935635	41827.326	ppm	
3)	Nitrogen	1.539	26073540	40040.721	ppm	
4)	Carbon Monoxide	1.861	26728290	42713.294	ppm	
5)	Methane	3.098	20612017	42767.522	ppm	
6)	Carbon Dioxide	5.046	36504454	42716.505	ppm	

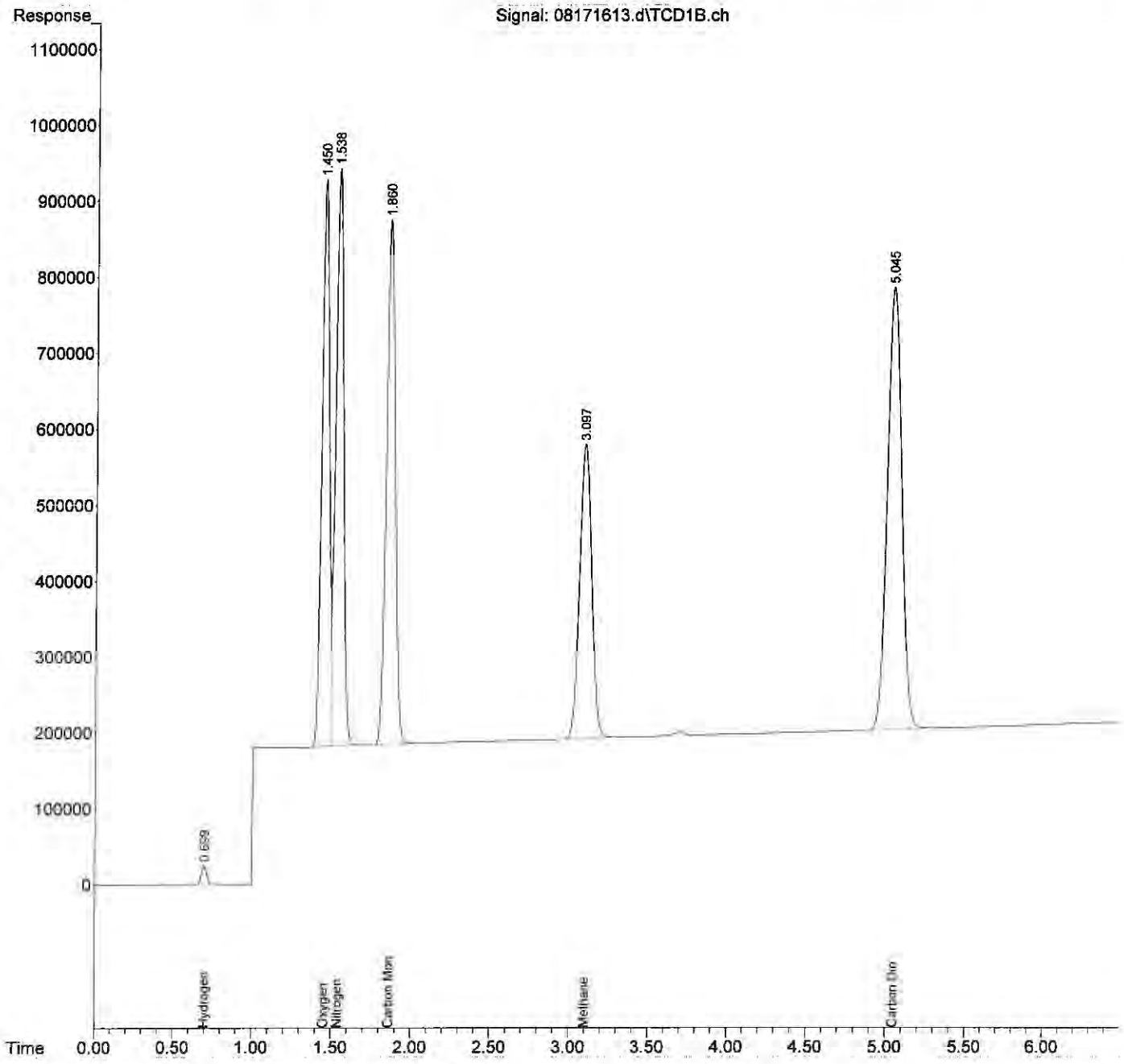
(f)=RT Delta > 1/2 Window (m)=manual int

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171613.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 10:12 am
Operator : MC
Sample : std s11-12041501 A
Misc :
ALS Vial : 13 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 10:19:45 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 10:10:14 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

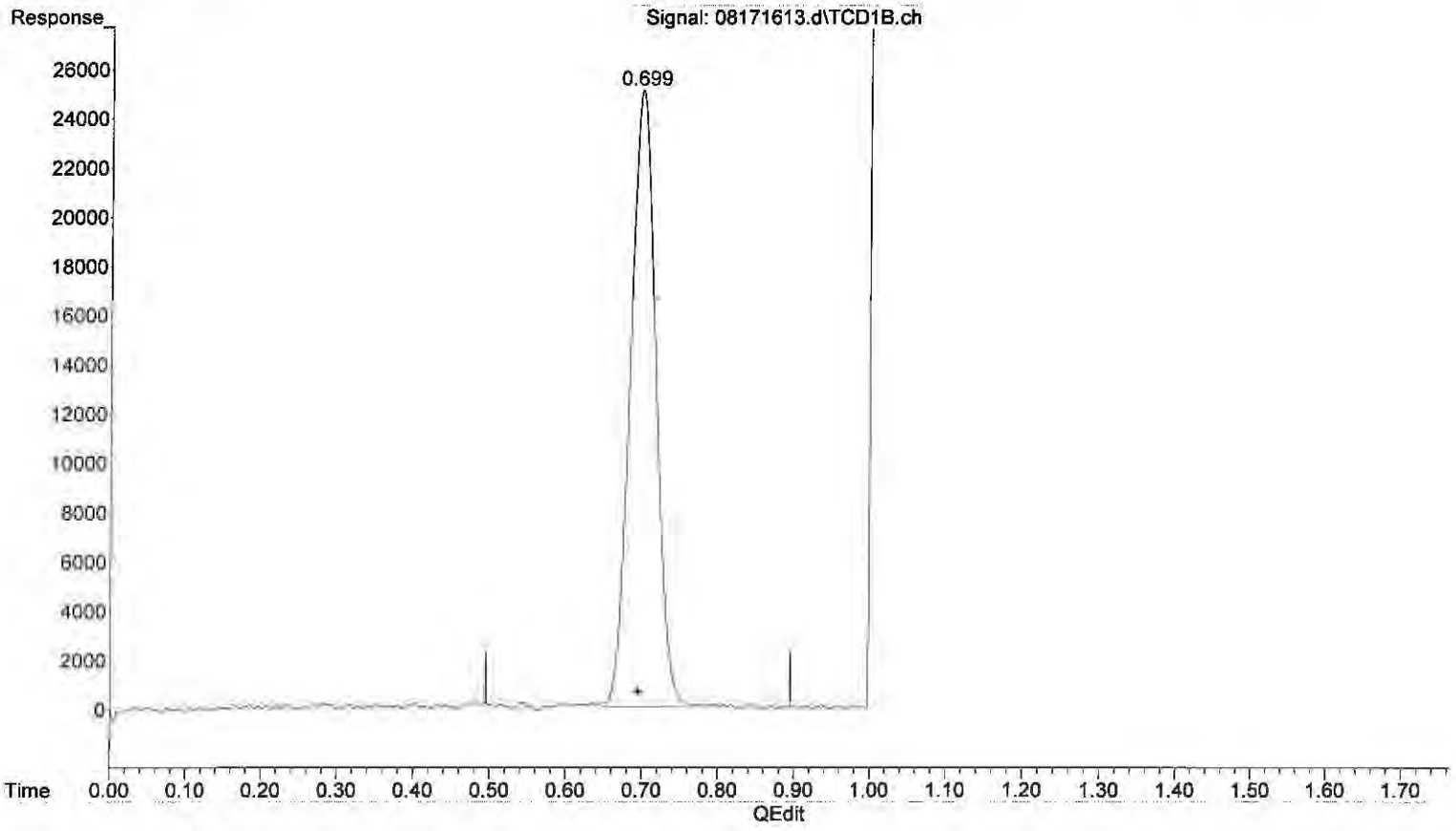


Quantitation Report (Qedit)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171613.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 10:12 am
Operator : MC
Sample : std s11-12041501 A
Misc :
ALS Vial : 13 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 10:19:45 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 10:10:14 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



(1) Hydrogen

0.699min 44092.431 ppm m

response 580730

MC 8/18/16

BLL

No peaks

Log date

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171614.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 10:22 am
Operator : MC
Sample : std s11-12041501 B
Misc :
ALS Vial : 14 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 10:30:18 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 10:20:03 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.699	582048	43744.935	ppm
2)	Oxygen	1.451	23826599	41447.441	ppm
3)	Nitrogen	1.539	25956733	39857.285	ppm
4)	Carbon Monoxide	1.861	26619278	42252.478	ppm
5)	Methane	3.098	20516544	42276.919	ppm
6)	Carbon Dioxide	5.046	36414212	42323.476	ppm

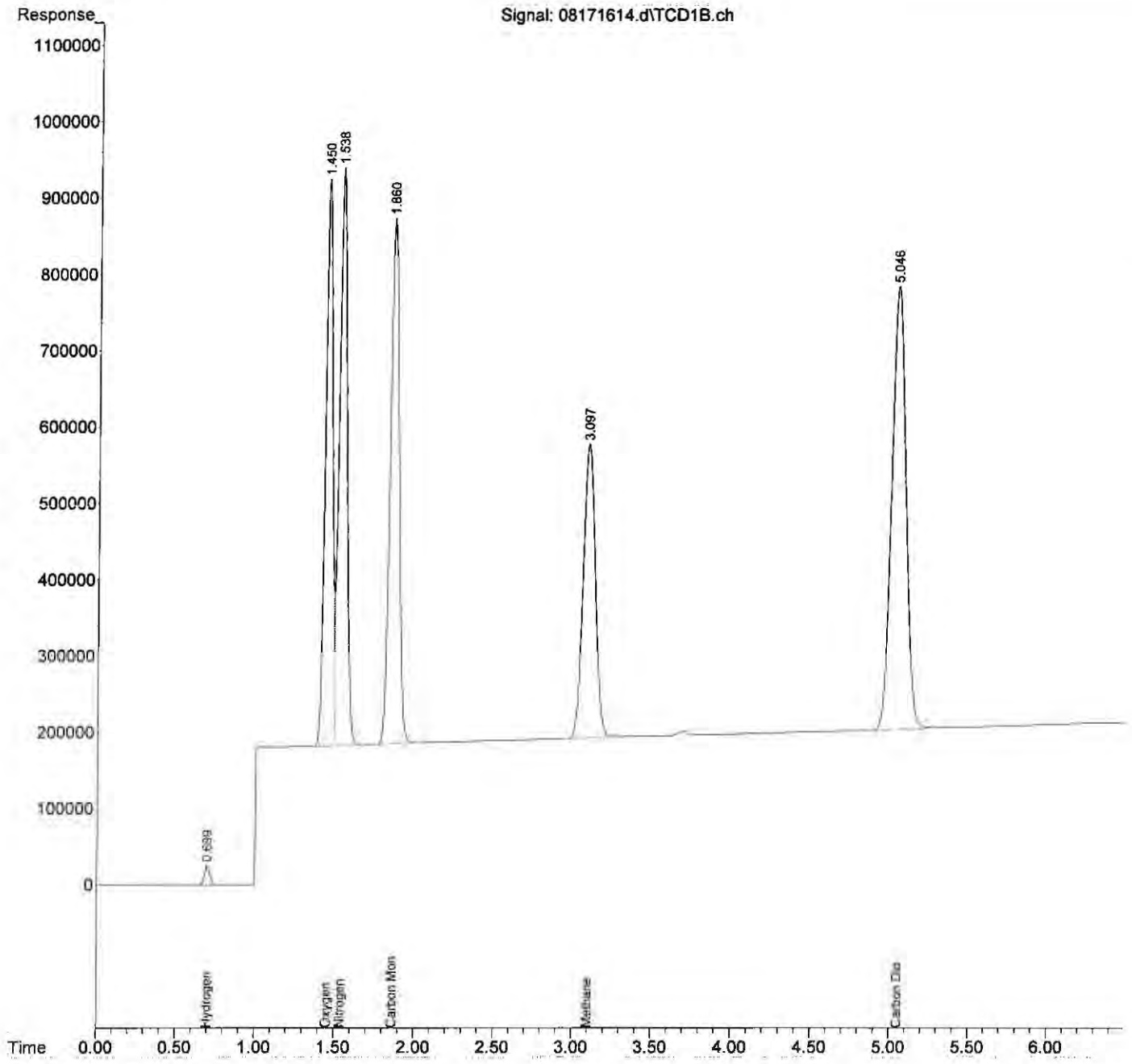
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171614.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 10:22 am
Operator : MC
Sample : std s11-12041501 B
Misc :
ALS Vial : 14 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 10:30:18 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 10:20:03 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171615.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 10:31 am
Operator : MC
Sample : std s11-12041501 C
Misc :
ALS Vial : 15 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 10:39:11 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 10:30:33 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.697	584213	43537.151	ppm	m
2)	Oxygen	1.450	23862517	41373.818	ppm	
3)	Nitrogen	1.538	25991568	39923.725	ppm	
4)	Carbon Monoxide	1.861	26651664	42088.421	ppm	
5)	Methane	3.098	20570476	42169.834	ppm	
6)	Carbon Dioxide	5.046	36463544	42158.192	ppm	

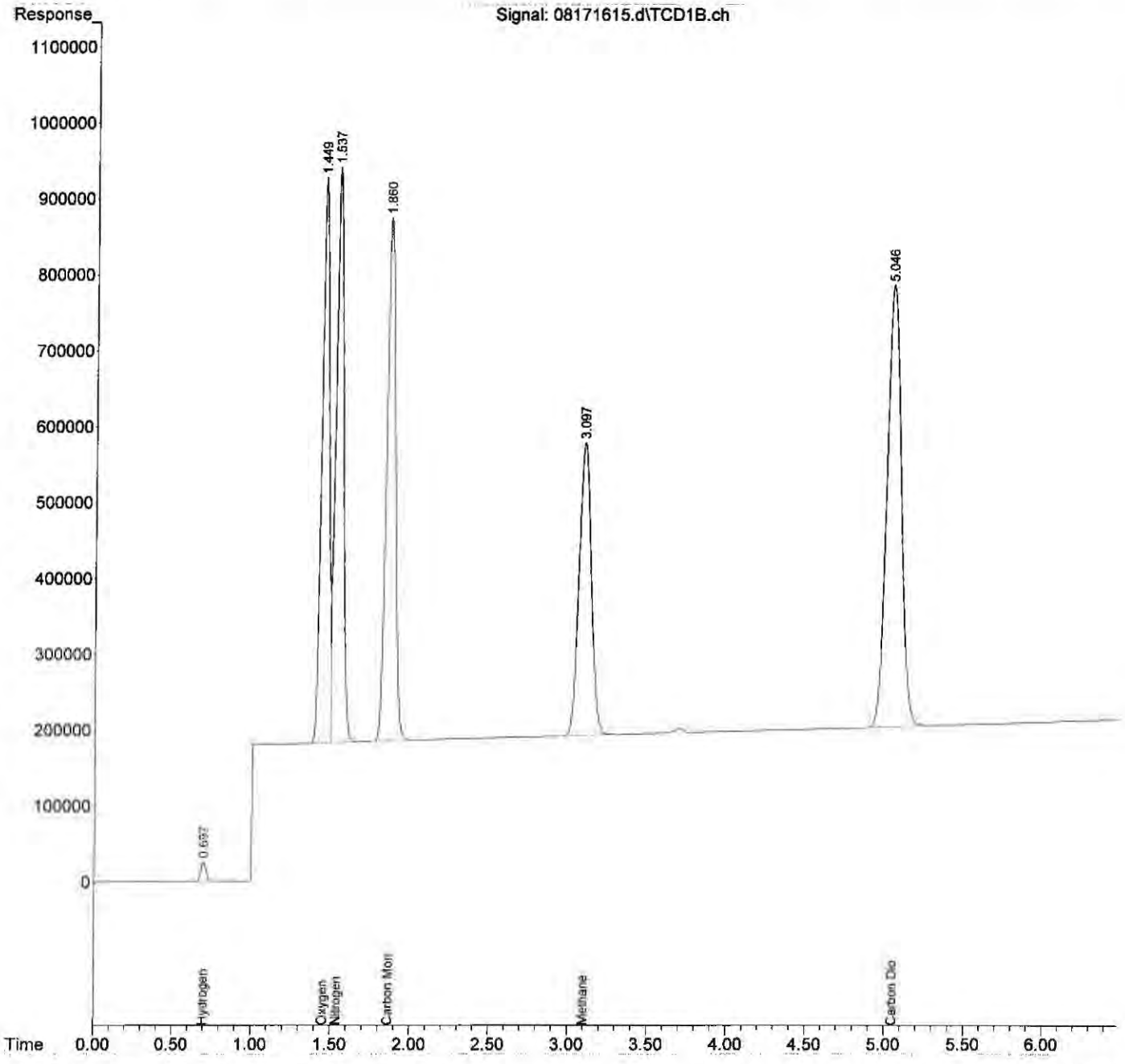
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171615.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 10:31 am
Operator : MC
Sample : std s11-12041501 C
Misc :
ALS Vial : 15 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 10:39:11 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 10:30:33 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

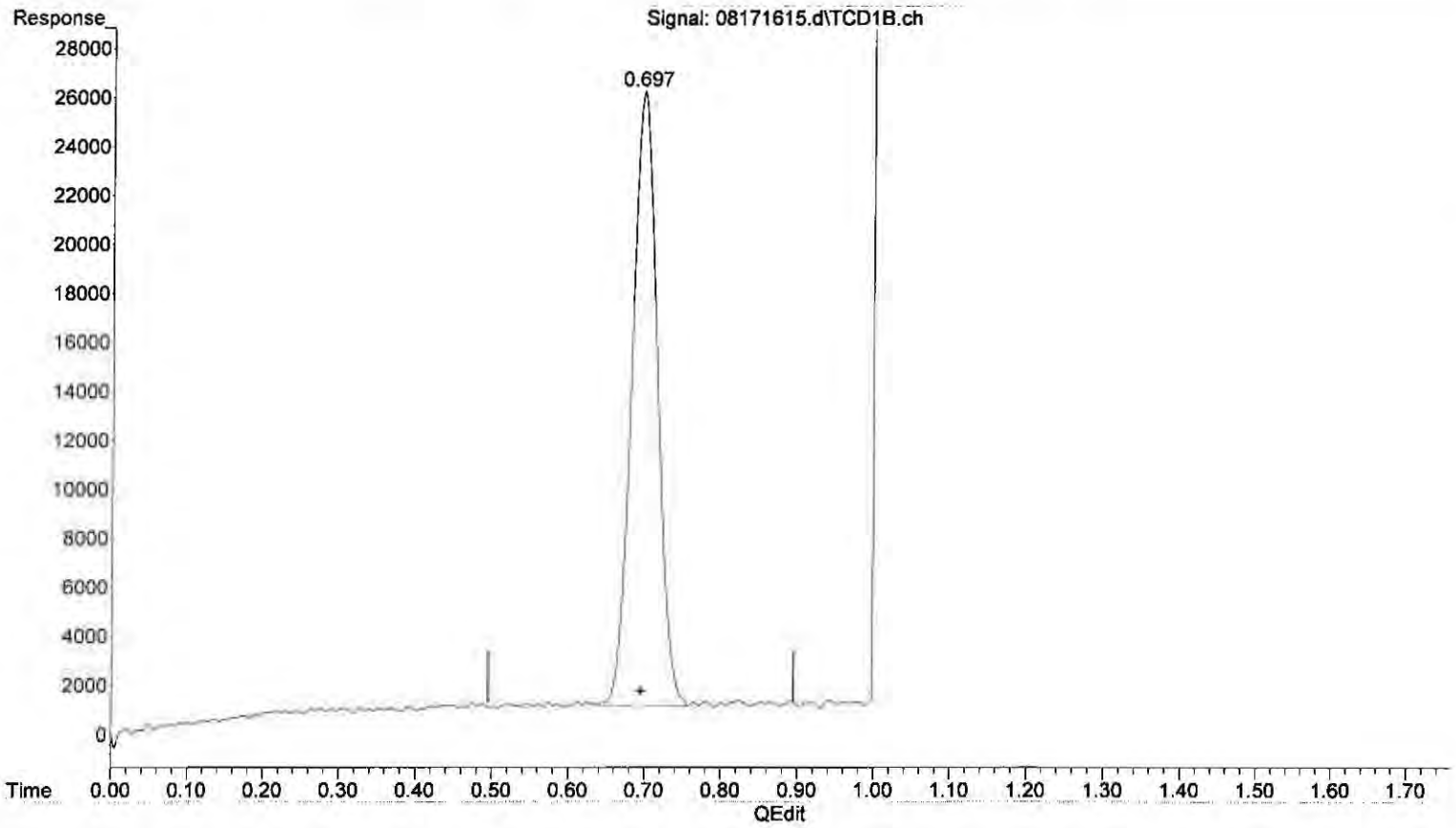


Quantitation Report (Qedit)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171615.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 10:31 am
Operator : MC
Sample : std s11-12041501 C
Misc :
ALS Vial : 15 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 10:39:11 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 10:30:33 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



(1) Hydrogen

0.697min 43537.151 ppm m

response 584213

MC 8/18/16

BL

No

Private

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171616.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 10:42 am
Operator : MC
Sample : std s11-12031501 A
Misc :
ALS Vial : 16 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 10:50:04 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 10:39:25 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.697	2288591	169304.321	ppm
2)	Oxygen	1.440	92172159	159355.800	ppm
3)	Nitrogen	1.528	100943913	155077.121	ppm
4)	Carbon Monoxide	1.851	103484437	162715.112	ppm
5)	Methane	3.086	79878978	163016.378	ppm
6)	Carbon Dioxide	5.030	141358480	162703.409	ppm

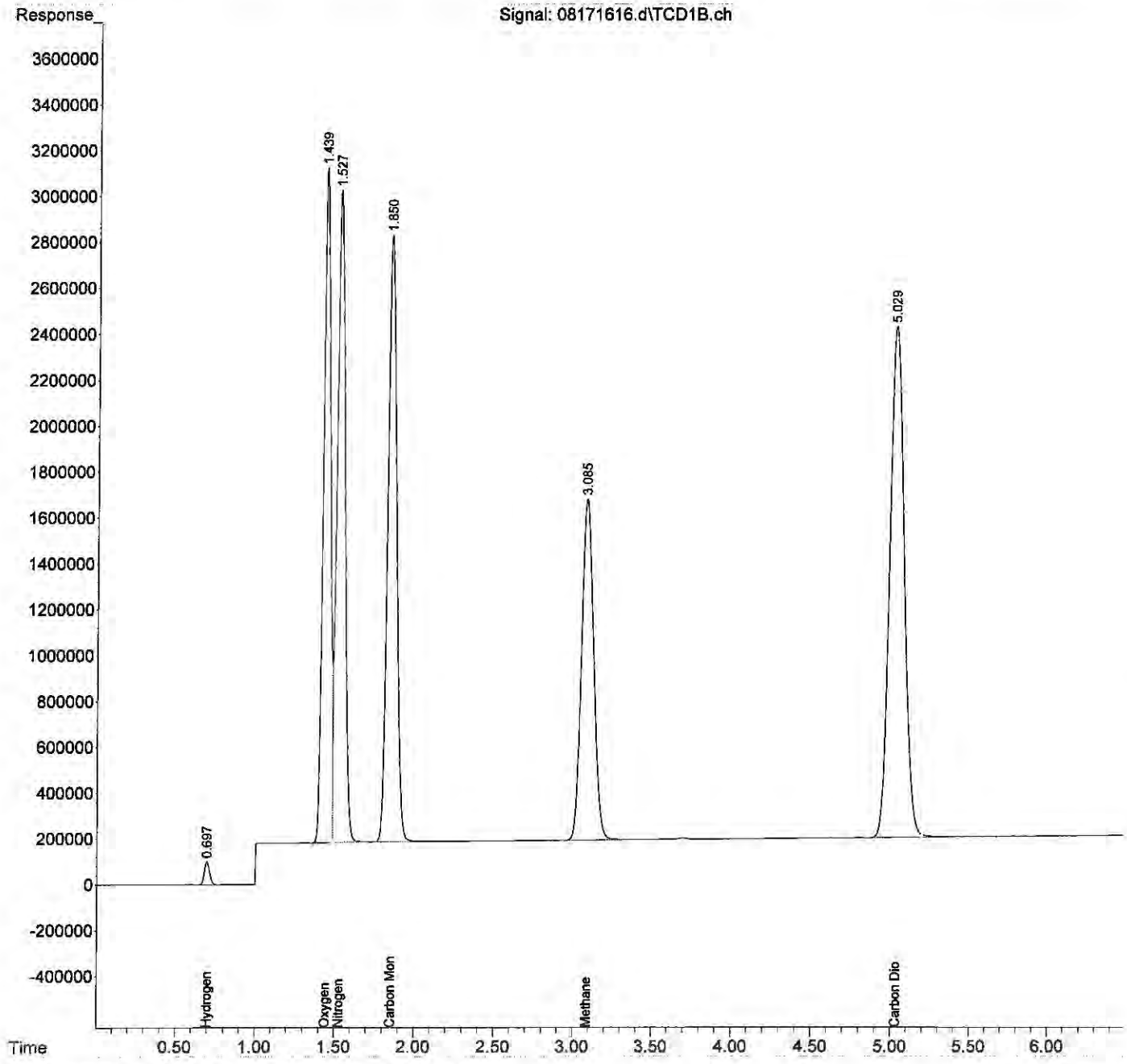
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171616.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 10:42 am
Operator : MC
Sample : std s11-12031501 A
Misc :
ALS Vial : 16 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 10:50:04 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 10:39:25 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171617.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 10:55 am
Operator : MC
Sample : std s11-12041501 B
Misc :
ALS Vial : 17 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 11:02:21 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 10:52:43 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.697	2289657	168628.854	ppm
2)	Oxygen	1.440	92464939	159911.512	ppm
3)	Nitrogen	1.528	101263115	155936.567	ppm
4)	Carbon Monoxide	1.850	103800819	162999.810	ppm
5)	Methane	3.085	80151028	163334.711	ppm
6)	Carbon Dioxide	5.030	142064571	163303.870	ppm

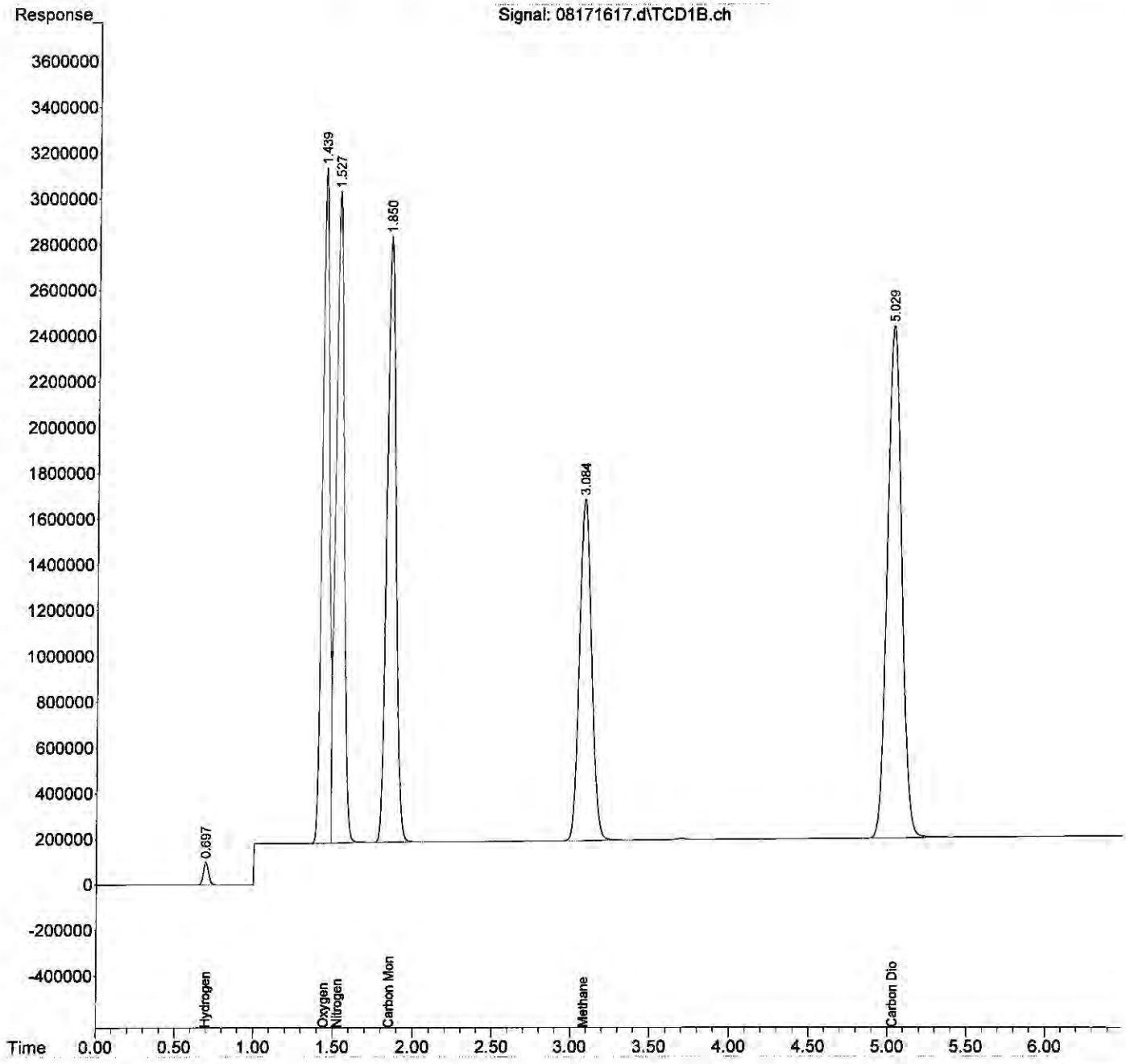
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171617.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 10:55 am
Operator : MC
Sample : std s11-12041501 B
Misc :
ALS Vial : 17 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 11:02:21 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 10:52:43 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171618.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 11:05 am
Operator : MC
Sample : std s11-12041501 C
Misc :
ALS Vial : 18 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 11:13:22 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 11:02:50 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.697	2323873	170492.039	ppm
2)	Oxygen	1.440	93438547	161601.681	ppm
3)	Nitrogen	1.528	102307767	157831.555	ppm
4)	Carbon Monoxide	1.850	104922839	164541.378	ppm
5)	Methane	3.085	80982555	164783.912	ppm
6)	Carbon Dioxide	5.030	143593489	164818.270	ppm

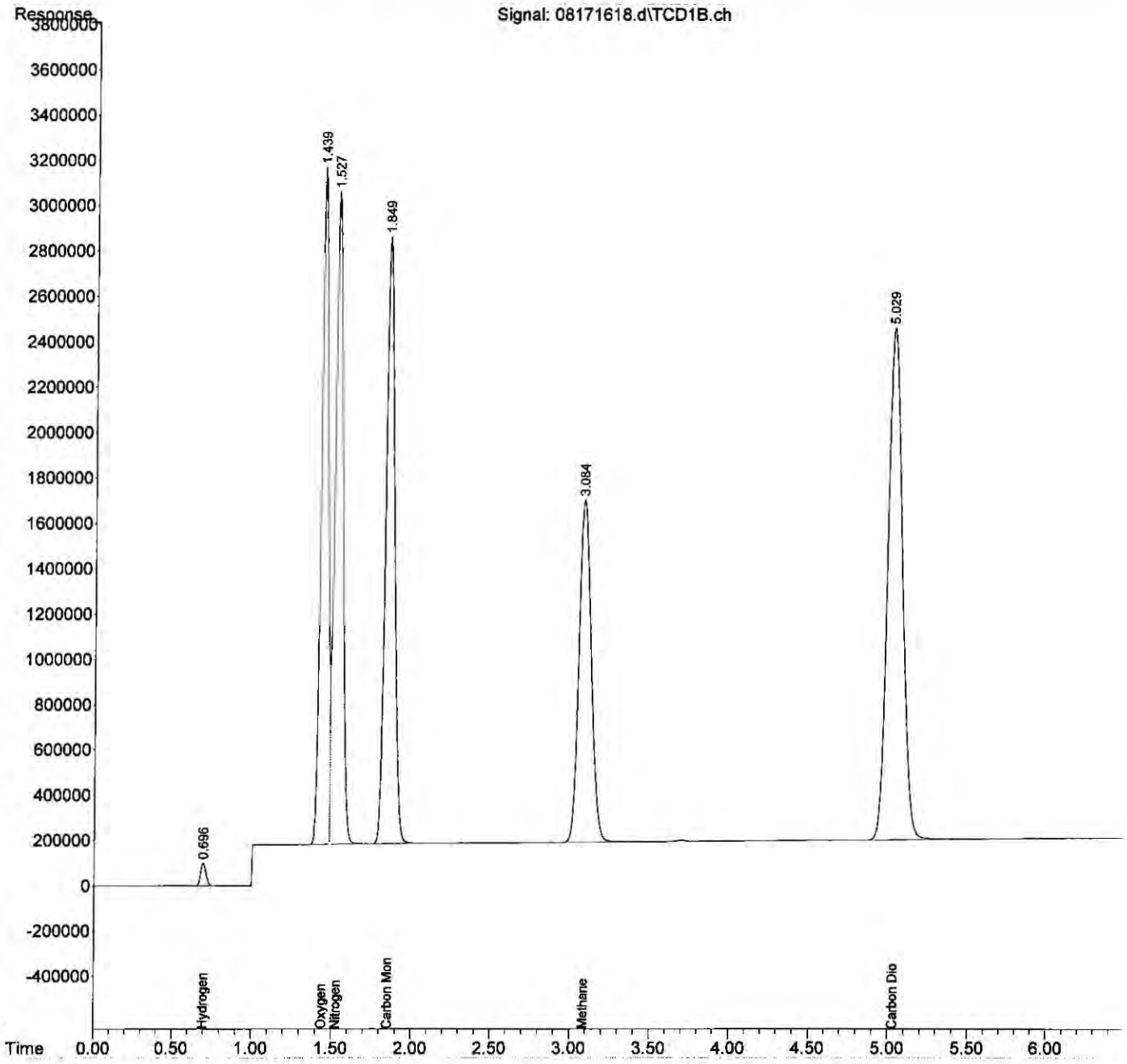
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171618.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 11:05 am
Operator : MC
Sample : std s11-12041501 C
Misc :
ALS Vial : 18 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 11:13:22 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 11:02:50 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171619.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 11:40 am
Operator : MC
Sample : std N2 a
Misc :
ALS Vial : 19 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 31 15:58:09 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 11:13:36 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm d
3)	Nitrogen	1.474	732108094	1130454.291	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

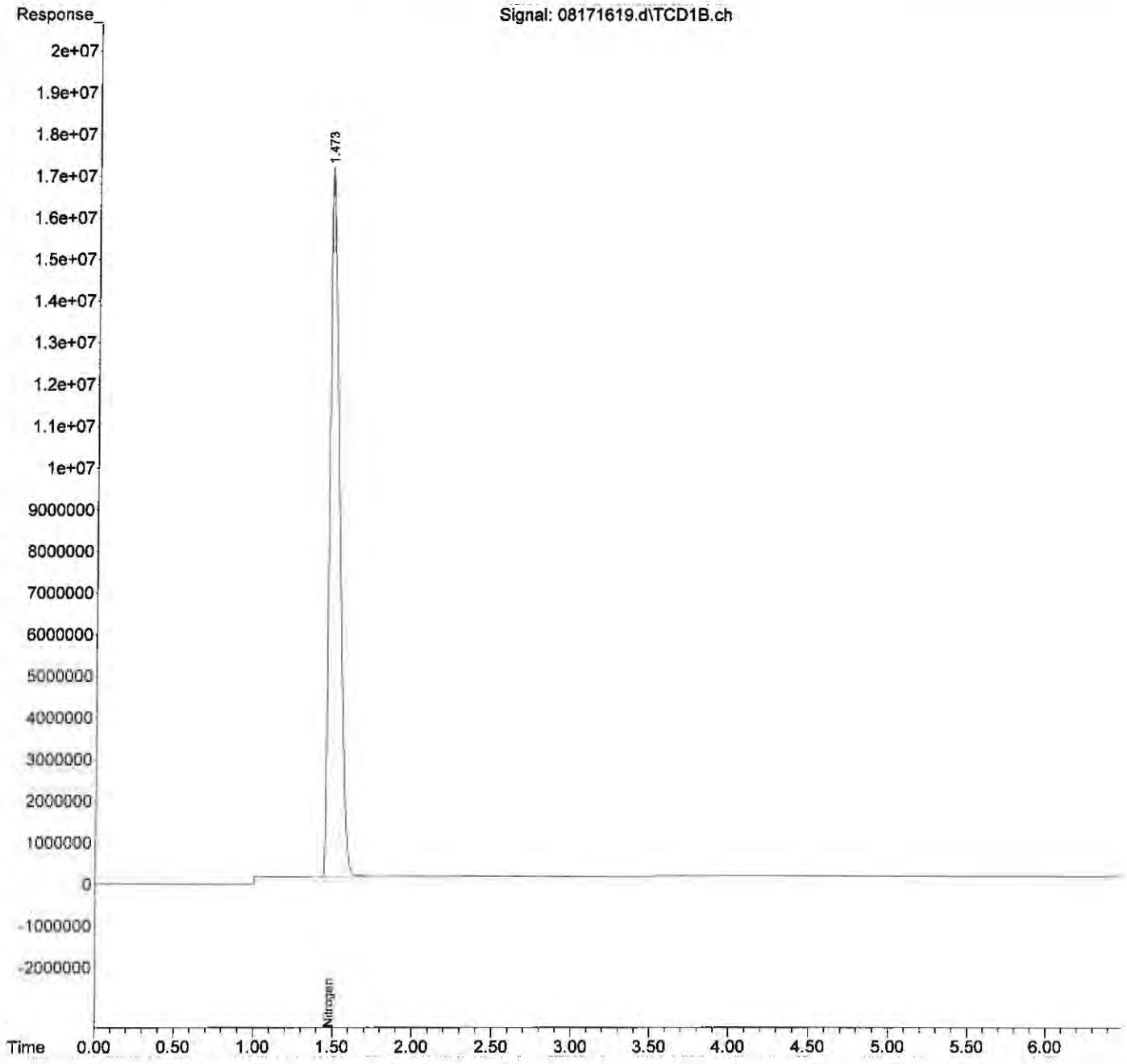
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171619.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 11:40 am
Operator : MC
Sample : std N2 a
Misc :
ALS Vial : 19 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 31 15:58:09 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 11:13:36 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171620.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 11:52 am
Operator : MC
Sample : std N2 b
Misc :
ALS Vial : 20 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 11:59:59 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 11:51:04 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm d
3)	Nitrogen	1.474	729497758	1117312.968	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

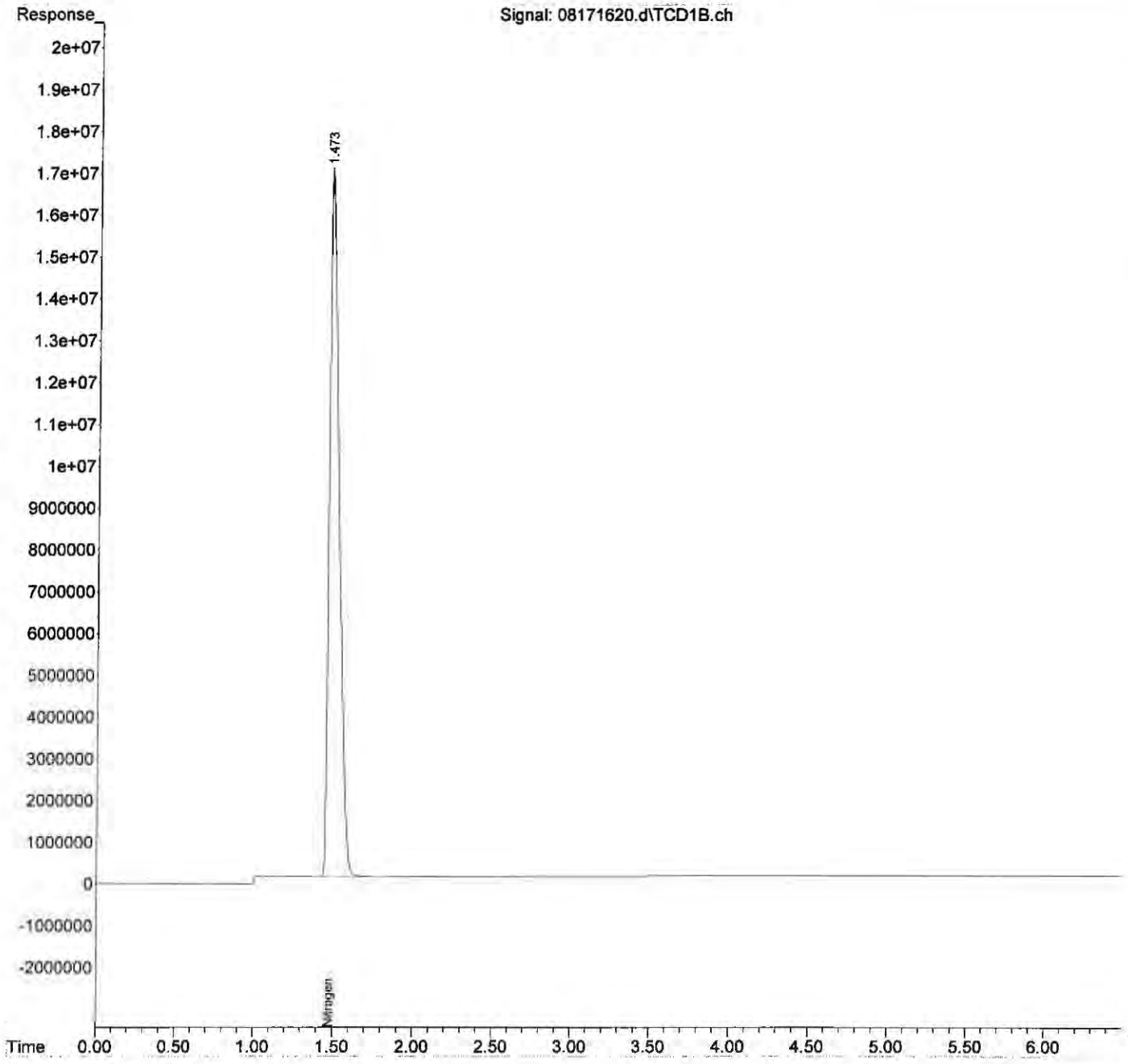
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171620.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 11:52 am
Operator : MC
Sample : std N2 b
Misc :
ALS Vial : 20 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 11:59:59 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 11:51:04 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171621.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 12:01 pm
Operator : MC
Sample : std N2 c
Misc :
ALS Vial : 21 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 12:09:09 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 11:51:04 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.000	0	N.D.	ppm	
2)	Oxygen	0.000	0	N.D.	ppm	d
3)	Nitrogen	1.474	730183972	1110698.589	ppm	
4)	Carbon Monoxide	0.000	0	N.D.	ppm	
5)	Methane	0.000	0	N.D.	ppm	
6)	Carbon Dioxide	0.000	0	N.D.	ppm	

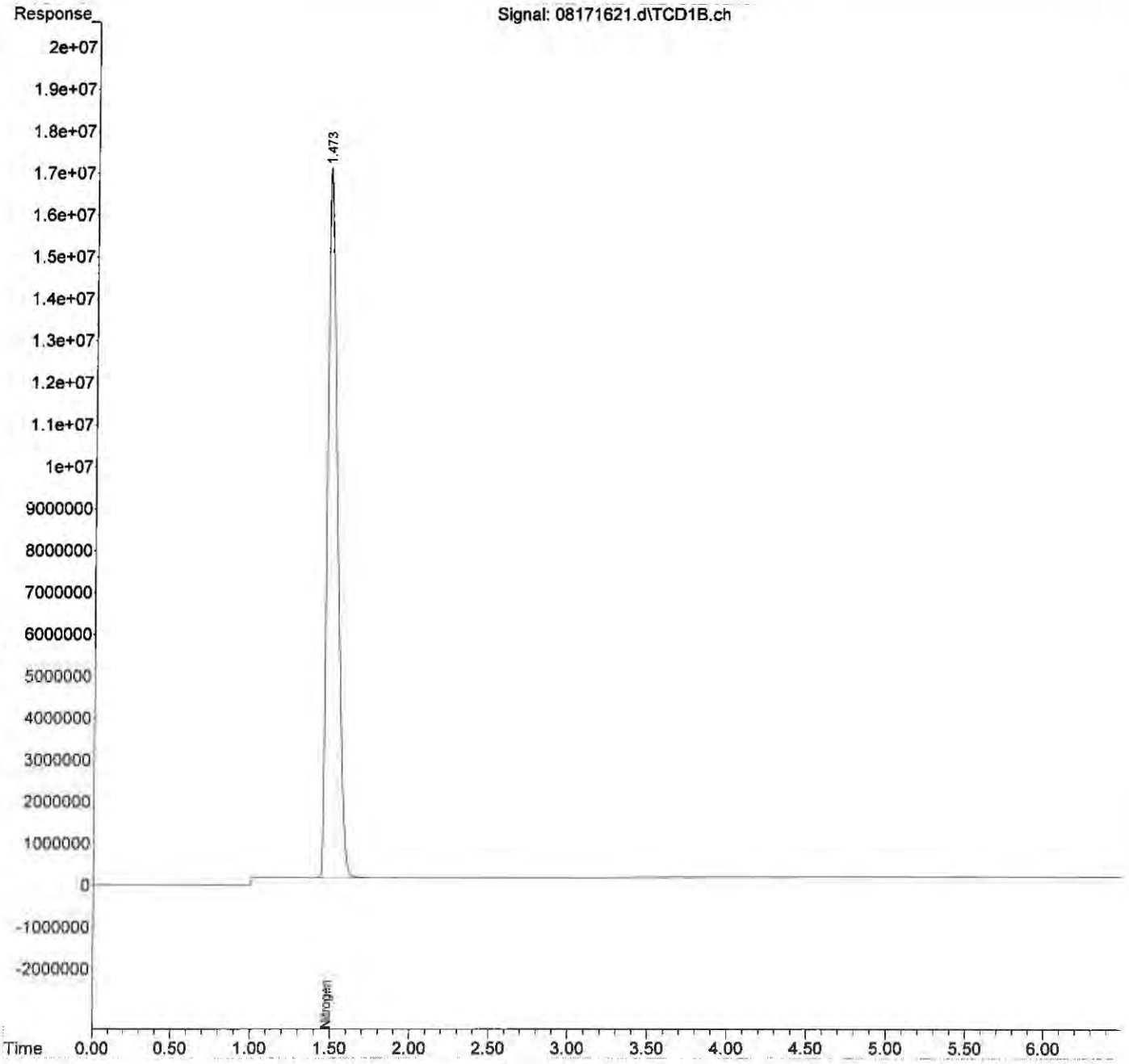
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171621.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 12:01 pm
Operator : MC
Sample : std N2 c
Misc :
ALS Vial : 21 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 12:09:09 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 11:51:04 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171625.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 12:50 pm
Operator : MC
Sample : std CO2 a
Misc :
ALS Vial : 25 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 12:57:45 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 11:51:04 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.000	0	N.D.	ppm	
2)	Oxygen	0.000	0	N.D.	ppm	d
3)	Nitrogen	0.000	0	N.D.	ppm	d
4)	Carbon Monoxide	0.000	0	N.D.	ppm	
5)	Methane	0.000	0	N.D.	ppm	
6)	Carbon Dioxide	4.926	1053756922	1207091.032	ppm	

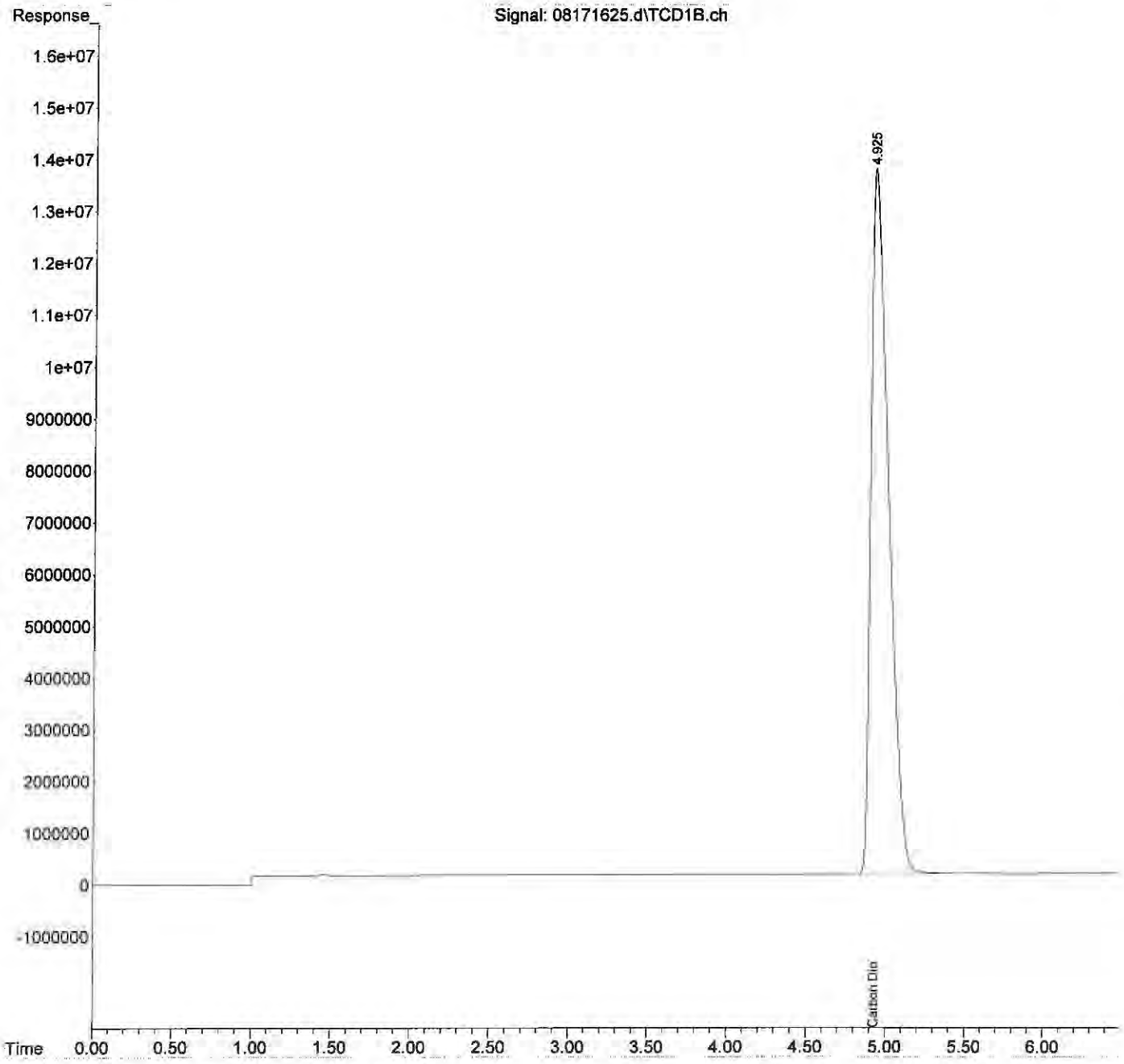
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171625.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 12:50 pm
Operator : MC
Sample : std CO2 a
Misc :
ALS Vial : 25 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 12:57:45 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 11:51:04 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171626.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 1:28 pm
Operator : MC
Sample : std CO2 b
Misc :
ALS Vial : 26 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 13:58:05 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 11:51:04 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

Compound	R.T.	Response	Conc	Units
Target Compounds				
1) Hydrogen	0.000	0	N.D.	ppm
2) Oxygen	0.000	0	N.D.	ppm
3) Nitrogen	0.000	0	N.D.	ppm
4) Carbon Monoxide	0.000	0	N.D.	ppm
5) Methane	0.000	0	N.D.	ppm
6) Carbon Dioxide	4.925	1054815940	1192863.788	ppm

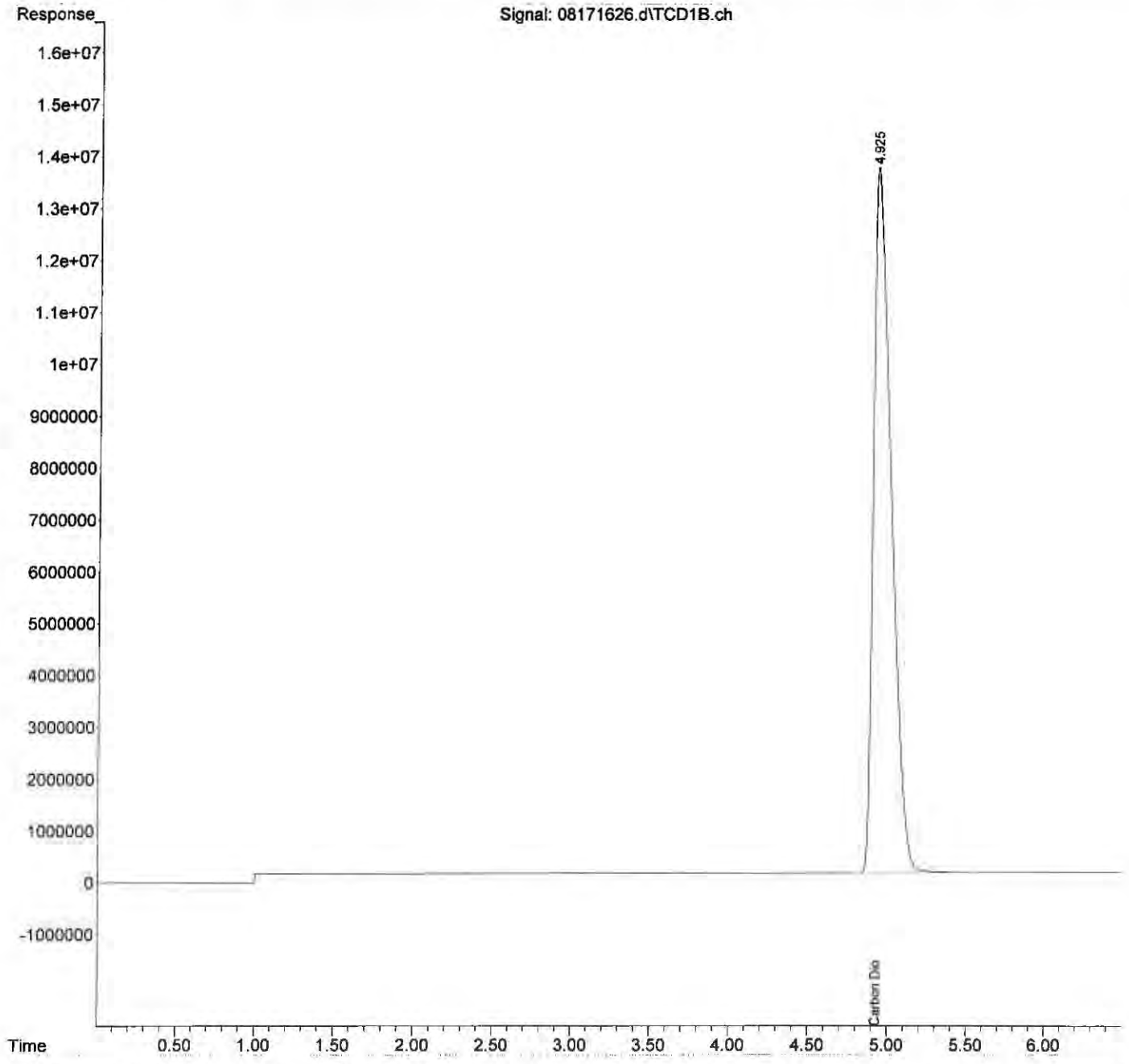
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171626.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 1:28 pm
Operator : MC
Sample : std CO2 b
Misc :
ALS Vial : 26 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 13:58:05 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 11:51:04 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171627.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 2:22 pm
Operator : MC
Sample : std CO2 c
Misc :
ALS Vial : 27 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 14:28:55 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 11:51:04 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	4.926	1045180213	1155845.185	ppm

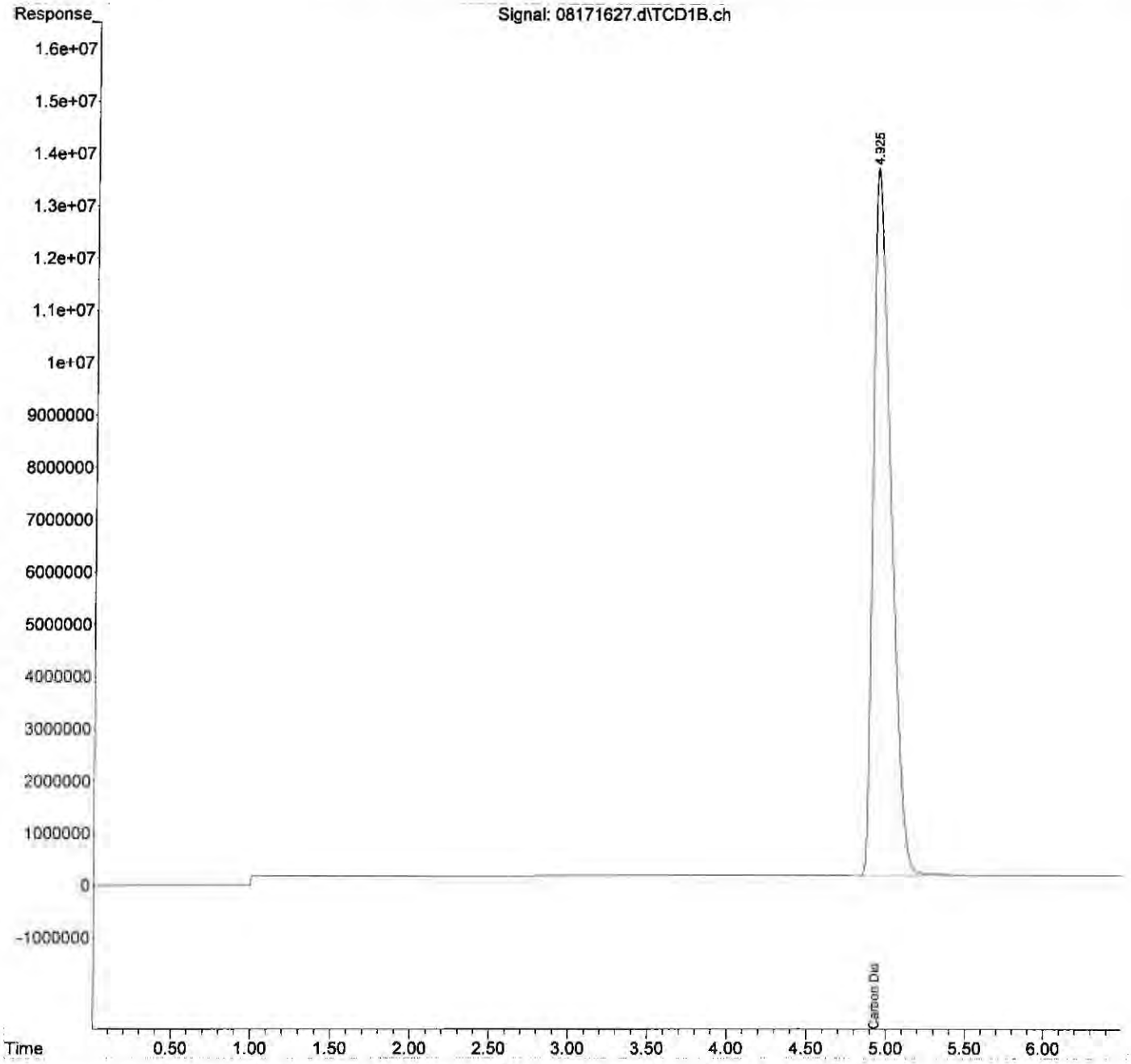
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171627.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 2:22 pm
Operator : MC
Sample : std CO2 c
Misc :
ALS Vial : 27 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 14:28:55 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 11:51:04 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171630.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 2:53 pm
Operator : MC
Sample : std CH4 A
Misc :
ALS Vial : 30 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 15:01:17 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 11:51:04 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

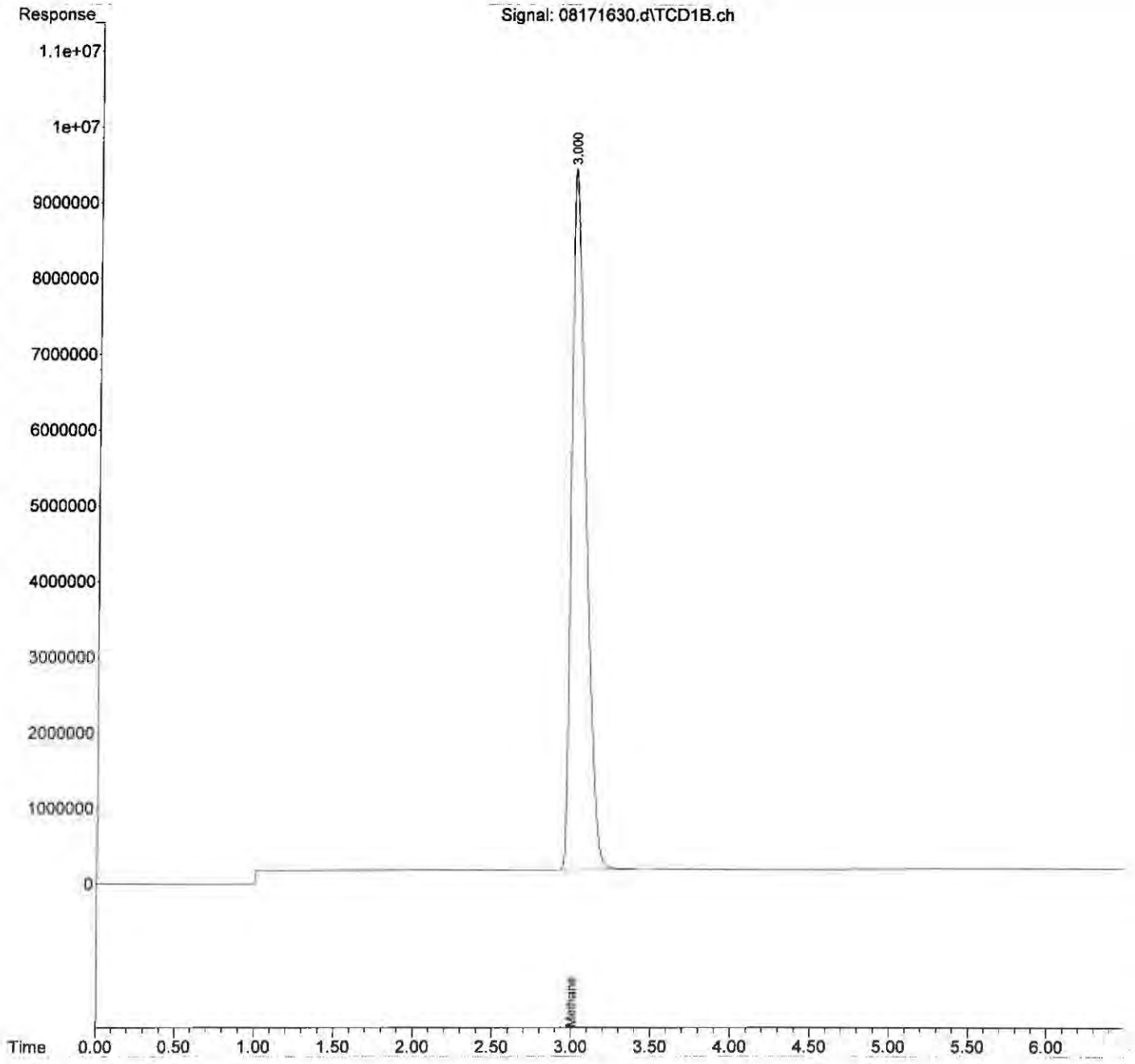
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	3.001	586065213	1145210.971	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171630.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 2:53 pm
Operator : MC
Sample : std CH4 A
Misc :
ALS Vial : 30 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 15:01:17 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 11:51:04 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171631.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 3:04 pm
Operator : MC
Sample : std CH4 B
Misc :
ALS Vial : 31 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 15:10:48 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 11:51:04 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

Compound	R.T.	Response	Conc	Units
Target Compounds				
1) Hydrogen	0.000	0	N.D.	ppm
2) Oxygen	0.000	0	N.D.	ppm
3) Nitrogen	0.000	0	N.D.	ppm
4) Carbon Monoxide	0.000	0	N.D.	ppm
5) Methane	3.001	587246388	1157608.150	ppm
6) Carbon Dioxide	0.000	0	N.D.	ppm

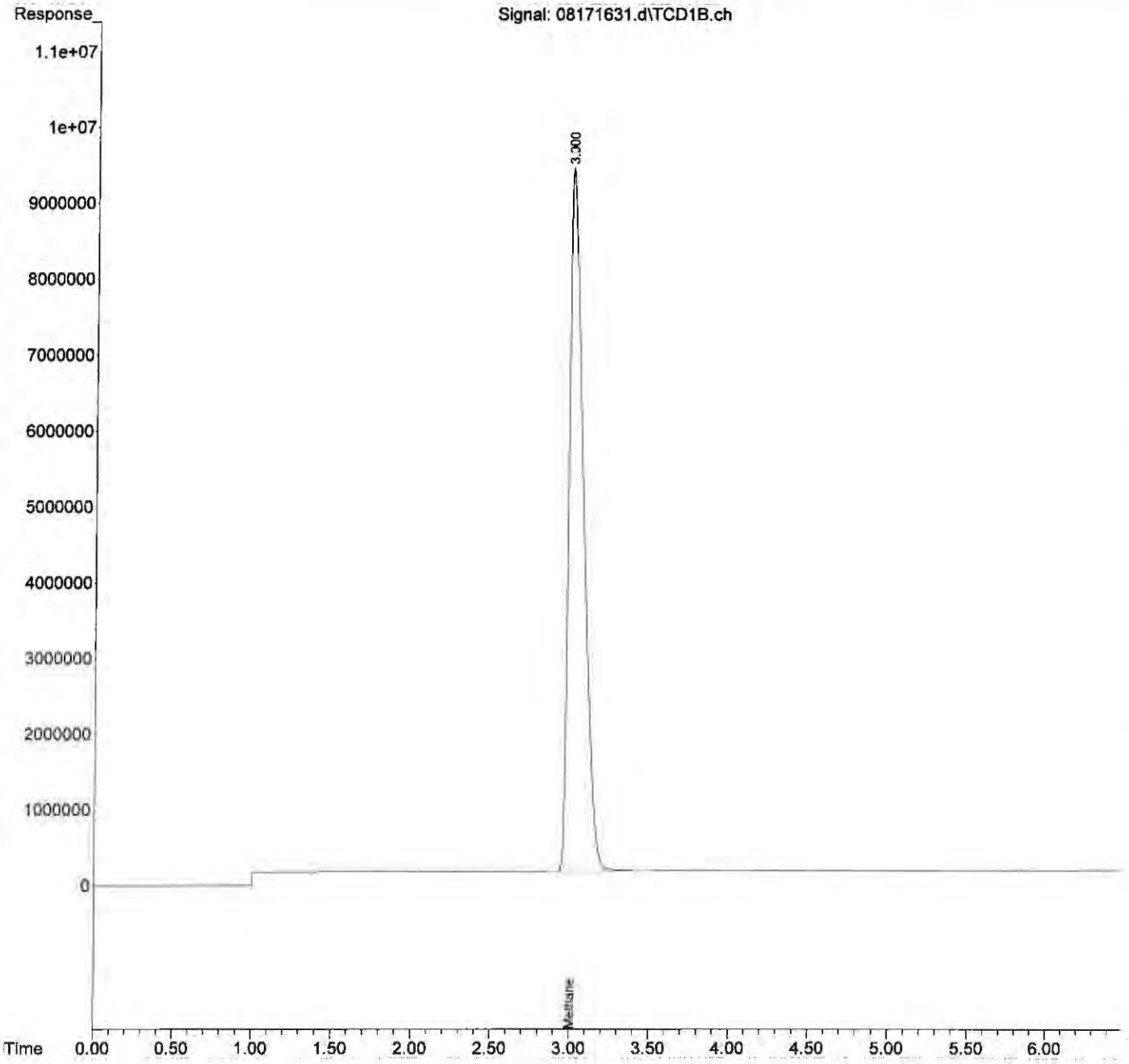
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171631.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 3:04 pm
Operator : MC
Sample : std CH4 B
Misc :
ALS Vial : 31 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 15:10:48 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 11:51:04 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171632.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 3:24 pm
Operator : MC
Sample : std CH4 C
Misc :
ALS Vial : 32 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 15:34:49 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 11:51:04 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	2.999	602097415	1195793.051	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

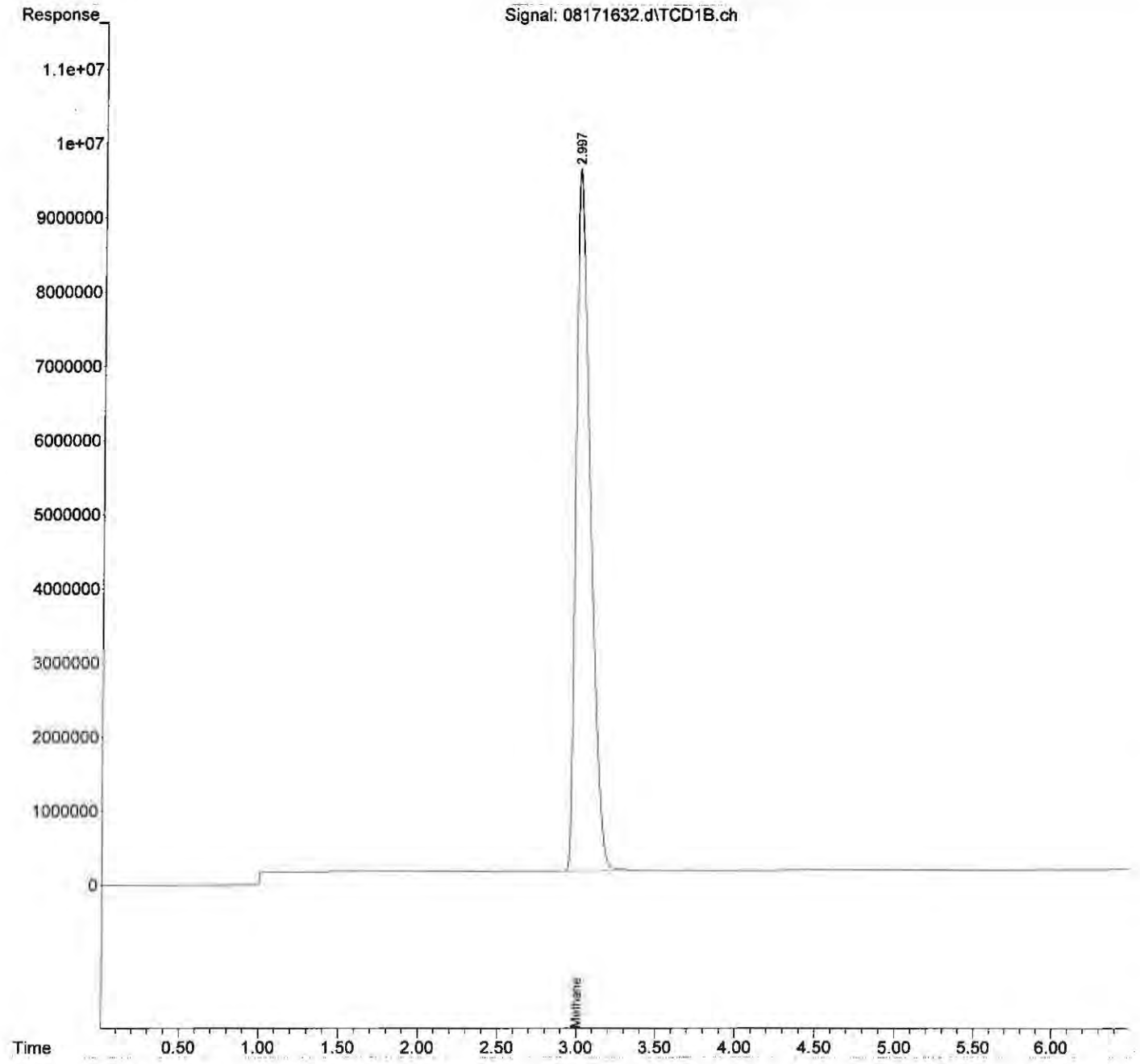
(f)=RT Delta > 1/2 Window (m)=manual int

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171632.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 3:24 pm
Operator : MC
Sample : std CH4 C
Misc :
ALS Vial : 32 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 15:34:49 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 11:51:04 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171635.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 4:14 pm
Operator : MC
Sample : std O2 A
Misc :
ALS Vial : 35 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 16:25:49 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:09:17 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	1.401	559169599	960511.352	ppm
3)	Nitrogen	0.000	0	N.D.	ppm d
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

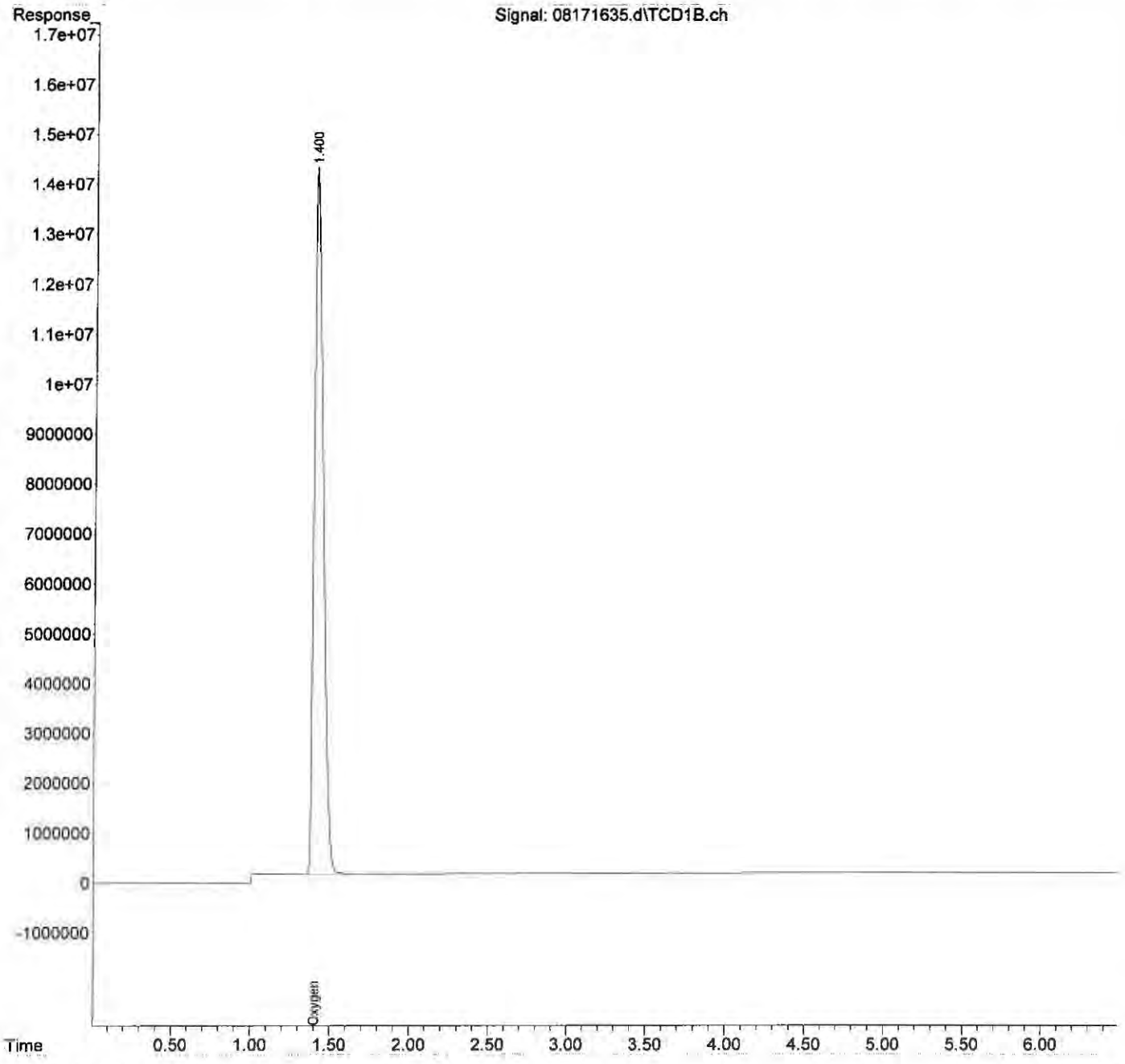
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171635.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 4:14 pm
Operator : MC
Sample : std O2 A
Misc :
ALS Vial : 35 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 16:25:49 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:09:17 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171636.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 4:27 pm
Operator : MC
Sample : std O2 B
Misc :
ALS Vial : 36 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 16:34:45 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:09:17 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	1.402	547020815	943318.464	ppm
3)	Nitrogen	0.000	0	N.D.	ppm d
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

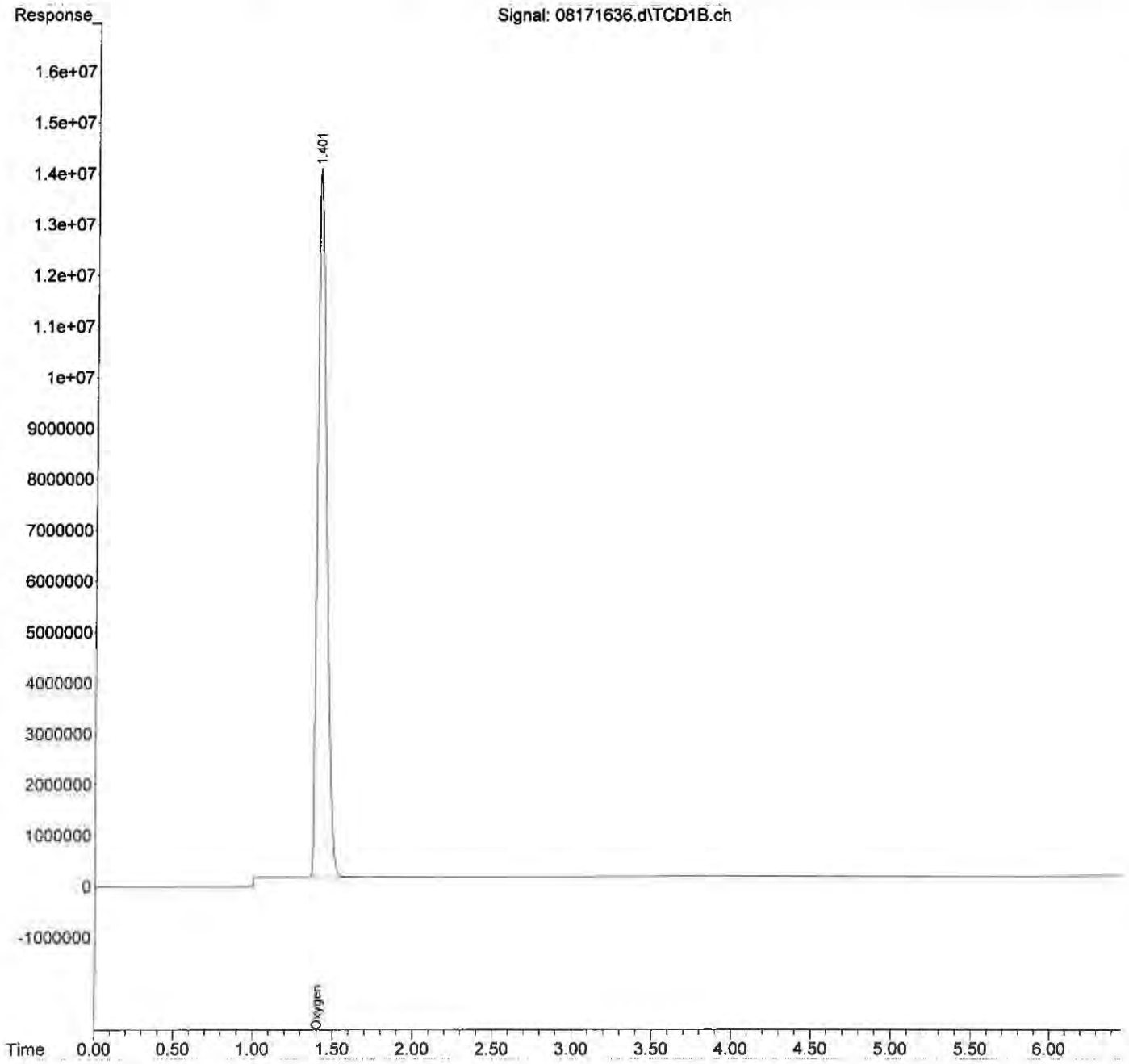
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171636.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 4:27 pm
Operator : MC
Sample : std O2 B
Misc :
ALS Vial : 36 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 16:34:45 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:09:17 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171637.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 4:37 pm
Operator : MC
Sample : std O2 C
Misc :
ALS Vial : 37 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 16:44:33 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:09:17 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.000	0	N.D.	ppm	
2)	Oxygen	1.401	554974689	961916.998	ppm	
3)	Nitrogen	0.000	0	N.D.	ppm	d
4)	Carbon Monoxide	0.000	0	N.D.	ppm	
5)	Methane	0.000	0	N.D.	ppm	
6)	Carbon Dioxide	0.000	0	N.D.	ppm	

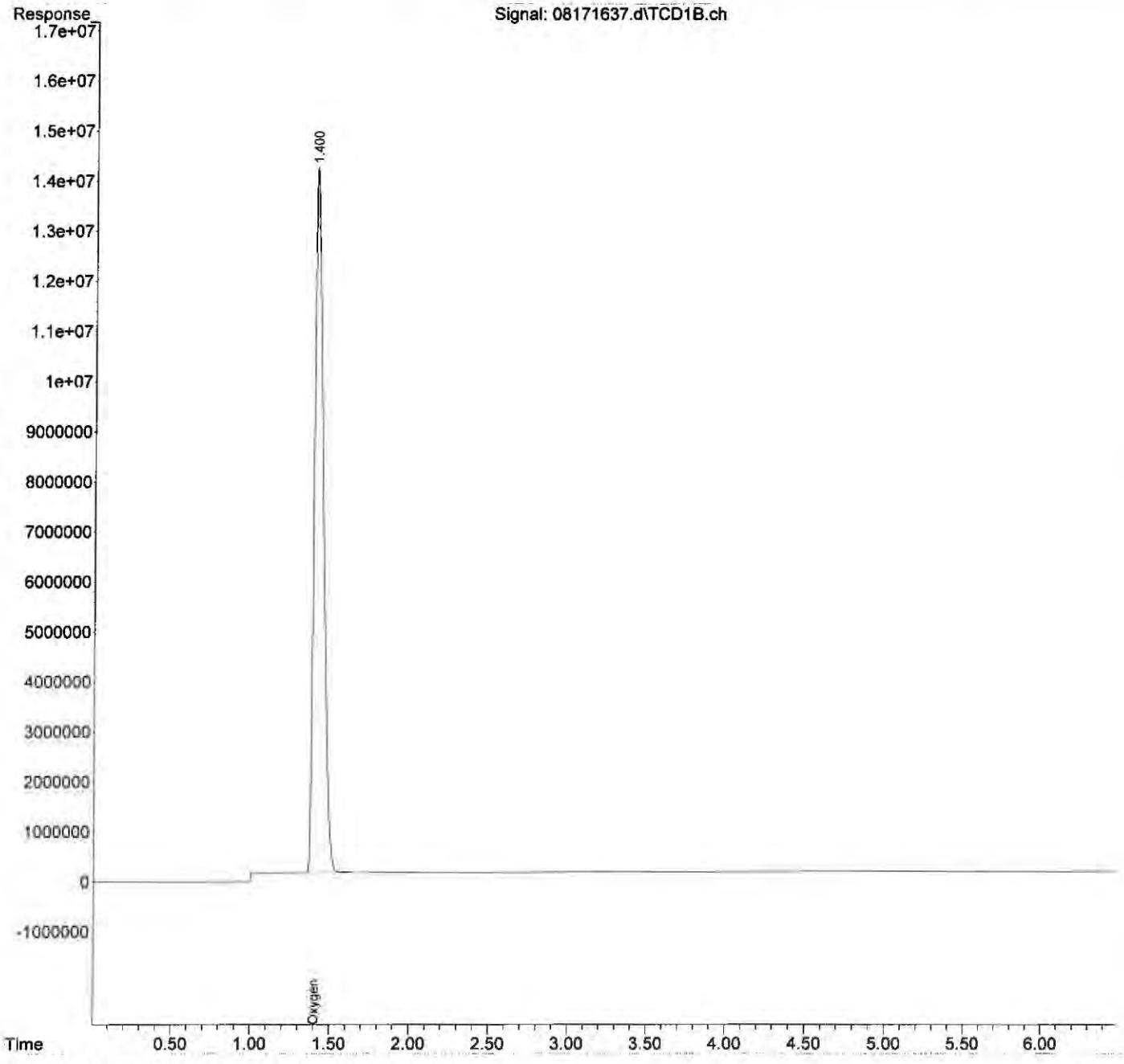
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171637.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 4:37 pm
Operator : MC
Sample : std O2 C
Misc :
ALS Vial : 37 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 16:44:33 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:09:17 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171638.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 4:55 pm
Operator : MC
Sample : ICV s30-07071601
Misc :
ALS Vial : 38 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 17:06:39 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:09:17 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units	Actual (ppm)	% Recovery
Target Compounds							
1)	Hydrogen	0.700	561161	40990.628	ppm	40000	102.5%
2)	Oxygen	1.452	14028775	24421.437	ppm	25000	97.7%
3)	Nitrogen	1.539	31651277	47851.129	ppm	50000	95.7%
4)	Carbon Monoxide	1.861	31576445	49425.073	ppm	50000	98.9%
5)	Methane	3.098	19787900	38876.773	ppm	40000	97.2%
6)	Carbon Dioxide	5.045	41558810	46038.999	ppm	50000	92.1%

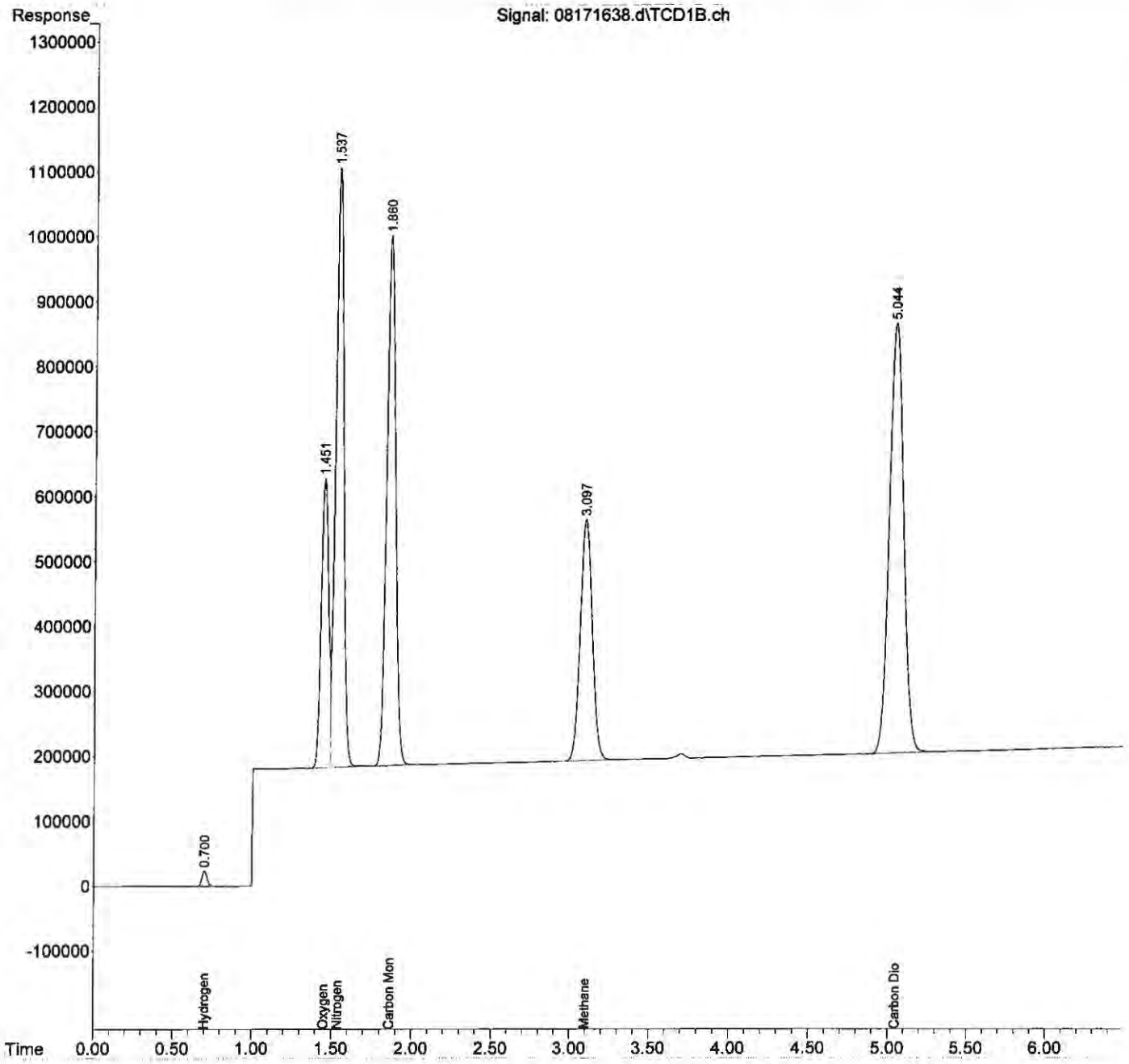
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171638.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 4:55 pm
Operator : MC
Sample : ICV s30-07071601
Misc :
ALS Vial : 38 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 17:06:39 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:09:17 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



ALS

REPORT SUMMARYS FIXED GASES BY GC/TCD
CLIENT : Air Hygiene
Analyst : MC
PAI Job : P1604640

Printed : 10/5/2016
Instrument : GC #20 / TCD #1
Date analyzed : 9/30/2016
Sample amount : 100uL

Sample Result

Sample ID	Hydrogen	Oxygen	Nitrogen	Carbon Monoxide	Methane	Carbon Dioxide	Pi1	Pf1	Pi2	Pf2	BF
STANDARD	39255	36990	36081	38308	37067	36969					
ACTUAL	40000	40000	40000	40000	40000	40000					
% Difference	1.9%	7.5%	9.8%	4.2%	7.3%	7.6%					
Lab Air		188151	705490			414					
MB	ND	ND	ND	ND	ND	ND					
4640-001		102311	526776			26766					
4640-001		102673	528439			26886					
4640-001		105753	544532			27685					
% Difference of Average		1.8%	1.8%		#DIV/0!	1.8%					
4640-003		98016	522231			27946					
4640-003		101822	543184			29126					
4640-003		101003	538344			28876					
% Difference of Average		2.0%	2.1%		#DIV/0!	2.2%					
4640-004		99421	533697			29298					
4640-004		98909	530375			29120					
4640-004		98773	529787			29113					
% Difference of Average		0.3%	0.4%		#DIV/0!	0.4%					
STANDARD	41438	39038	38125	40435	39139	39117					
ACTUAL	40000	40000	40000	40000	40000	40000					
% Difference	3.6%	2.4%	4.7%	1.1%	2.2%	2.2%					

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10/5/16

10/5/16

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\30trip\
Data File : 09301601.d
Signal(s) : TCD1B.ch
Acq On : 30 Sep 2016 8:15 am
Operator : MC
Sample : std s11-12041501
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 11:18:33 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc Units
Target Compounds				
1)	Hydrogen	0.698	537394	39254.526 ppm
2)	Oxygen	1.450	21928162	36990.476 ppm
3)	Nitrogen	1.538	23865899	36081.016 ppm
4)	Carbon Monoxide	1.861	24473924	38307.843 ppm
5)	Methane	3.098	18866688	37066.890 ppm
6)	Carbon Dioxide	5.047	33371407	36968.964 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

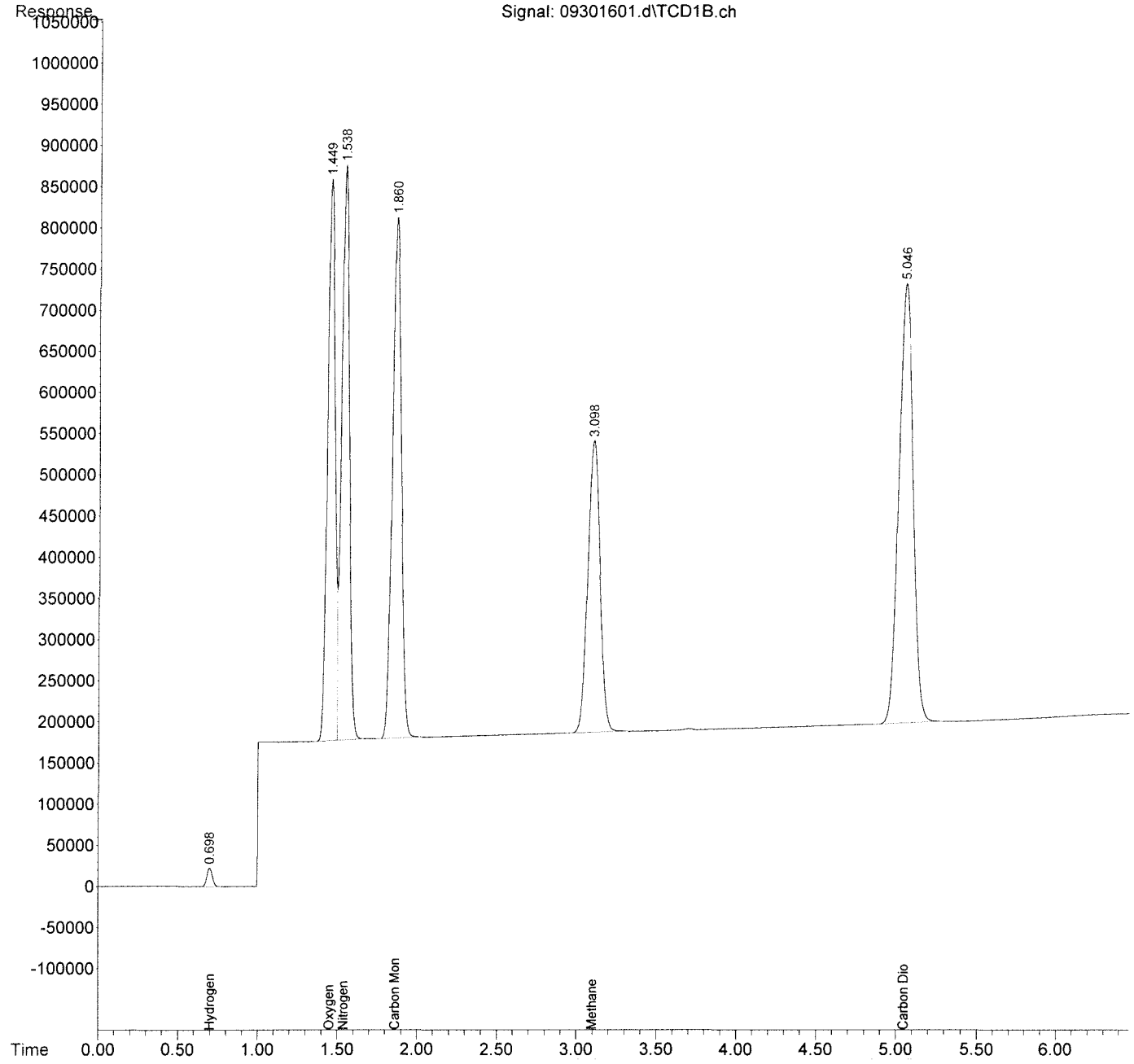
10/5/16

10/5/16

Data Path : J:\GC20\DATA\3C\2016_09\30trip\
Data File : 09301601.d
Signal(s) : TCD1B.ch
Acq On : 30 Sep 2016 8:15 am
Operator : MC
Sample : std s11-12041501
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 11:18:33 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\30trip\
Data File : 09301616.d
Signal(s) : TCD1B.ch
Acq On : 30 Sep 2016 12:54 pm
Operator : MC
Sample : std s11-12041501
Misc :
ALS Vial : 16 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 13:01:53 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

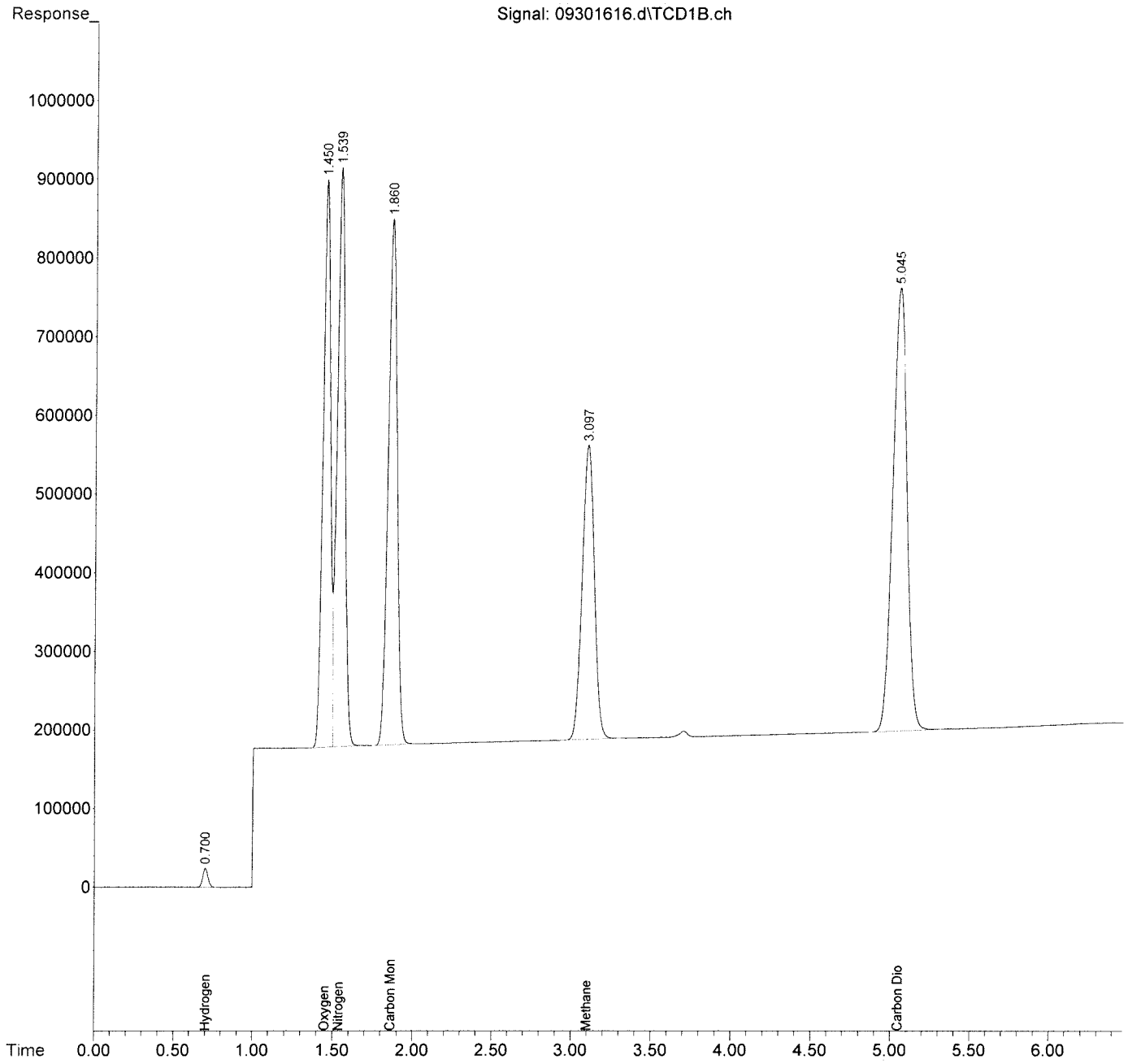
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.700	567289	41438.235	ppm
2)	Oxygen	1.451	23141743	39037.659	ppm
3)	Nitrogen	1.539	25218119	38125.333	ppm
4)	Carbon Monoxide	1.861	25832956	40435.070	ppm
5)	Methane	3.098	19921586	39139.422	ppm
6)	Carbon Dioxide	5.046	35310046	39116.596	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC20\DATA\3C\2016_09\30trip\
Data File : 09301616.d
Signal(s) : TCD1B.ch
Acq On : 30 Sep 2016 12:54 pm
Operator : MC
Sample : std s11-12041501
Misc :
ALS Vial : 16 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 13:01:53 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Injection Log

Directory: I:\GC20\DATA\3C\2016_08\17\

	Sample ID	Date/Time	Acquisition Method	File Name	Misc Info	Operator	Comments
	std s11-12041501	8/17/16 7:51	3C.M	08171601.D		MC	
	std 1	8/17/16 8:01	3C.M	08171602.D		MC	
	std s11-07191601 A	8/17/16 8:12	3C.M	08171603.D		MC	
	std s11-07191601 B	8/17/16 8:22	3C.M	08171604.D		MC	
	std s11-07191601 C	8/17/16 8:39	3C.M	08171605.D		MC	
	std s11-12041503 A	8/17/16 8:52	3C.M	08171606.D		MC	
	std s11-12041503 B	8/17/16 9:02	3C.M	08171607.D		MC	
	std s11-12041503 C	8/17/16 9:14	3C.M	08171608.D		MC	
	xstd a	8/17/16 9:27	3C.M	08171609.D		MC	
	std s11-12041502 A	8/17/16 9:39	3C.M	08171610.D		MC	
	std s11-12041502 B	8/17/16 9:52	3C.M	08171611.D		MC	
	std s11-12041502 C	8/17/16 10:02	3C.M	08171612.D		MC	
	std s11-12041501 A	8/17/16 10:12	3C.M	08171613.D		MC	
	std s11-12041501 B	8/17/16 10:22	3C.M	08171614.D		MC	
	std s11-12041501 C	8/17/16 10:31	3C.M	08171615.D		MC	
	std s11-12031501 A	8/17/16 10:42	3C.M	08171616.D		MC	
	std s11-12041501 B	8/17/16 10:55	3C.M	08171617.D		MC	
	std s11-12041501 C	8/17/16 11:05	3C.M	08171618.D		MC	
	std N2 a	8/17/16 11:40	3C.M	08171619.D		MC	
	std N2 b	8/17/16 11:52	3C.M	08171620.D		MC	
	std N2 c	8/17/16 12:01	3C.M	08171621.D		MC	
	O2 a	8/17/16 12:13	3C.M	08171622.D		MC	
	O2 b	8/17/16 12:25	3C.M	08171623.D		MC	
	O2 c	8/17/16 12:37	3C.M	08171624.D		MC	
	std CO2 a	8/17/16 12:50	3C.M	08171625.D		MC	
	std CO2 b	8/17/16 13:28	3C.M	08171626.D		MC	
	std CO2 c	8/17/16 14:22	3C.M	08171627.D		MC	
	xCH4 a	8/17/16 14:32	3C.M	08171628.D		MC	
	xCH4 b	8/17/16 14:42	3C.M	08171629.D		MC	
	std CH4 A	8/17/16 14:53	3C.M	08171630.D		MC	
	std CH4 B	8/17/16 15:04	3C.M	08171631.D		MC	
	std CH4 C	8/17/16 15:24	3C.M	08171632.D		MC	
	mb	8/17/16 15:40	3C.M	08171633.D		MC	
	lab air	8/17/16 15:50	3C.M	08171634.D		MC	
	std O2 A	8/17/16 16:14	3C.M	08171635.D		MC	
	std O2 B	8/17/16 16:27	3C.M	08171636.D		MC	
	std O2 C	8/17/16 16:37	3C.M	08171637.D		MC	
	ICV s30-07071601	8/17/16 16:55	3C.M	08171638.D		MC	

Injection Log

Directory: I:\GC20\DATA\3C\2016_09\30TRIP\

	Sample ID	Date/Time	Acquisition Method	File Name	Misc Info	Operator	Comments
1	std s11-12041501	9/30/16 8:15	C:\ 3C.M	09301601.D		MC	Pass
	mb	9/30/16 8:26	3C.M	09301602.D		MC	
#VALUE!	lab air	9/30/16 8:37	3C.M	09301603.D		MC	Not used
#VALUE!	lab air	9/30/16 8:51	3C.M	09301604.D		MC	Not used
	lab air	9/30/16 9:02	3C.M	09301605.D		MC	
	filter	9/30/16 9:14	3C.M	09301606.D		MC	
	4640-00	9/30/16 11:00	C:\ 3C.M	09301607.D		MC	
	4640-00	9/30/16 11:11	3C.M	09301608.D		MC	
	4640-00	9/30/16 11:23	C:\ 3C.M	09301609.D		MC	
	4640-00	9/30/16 11:41	C:\ 3C.M	09301610.D		MC	
	4640-00	9/30/16 11:53	3C.M	09301611.D		MC	
	4640-00	9/30/16 12:03	3C.M	09301612.D		MC	
	4640-004	9/30/16 12:16	C:\ 3C.M	09301613.D		MC	
	4640-004	9/30/16 12:26	3C.M	09301614.D		MC	
	4640-004	9/30/16 12:36	3C.M	09301615.D		MC	
#VALUE!	std s11-12041501	9/30/16 12:54	3C.M	09301616.D		MC	Pass

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F: +1 805 526 7270
www.alsglobal.com

LABORATORY REPORT

October 21, 2016

Sean Barnes
Air Hygiene, Incorporated
1600 West Tacoma Street
Broken Arrow, OK 74012

RE: Coyote-16-enid.ok-comp#1

Dear Sean:

Enclosed are the results of the samples submitted to our laboratory on October 1, 2016. For your reference, these analyses have been assigned our service request number P1604661.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Kelly Horiuchi at 5:46 pm, Oct 21, 2016

Kelly Horiuchi
Laboratory Director

2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
F: +1 805 526 7270
www.alsglobal.com

Client: Air Hygiene, Incorporated
Project: Coyote-16-enid.ok-comp#1

Service Request No: P1604661

CASE NARRATIVE

The samples were received intact under chain of custody on October 1, 2016 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Fixed Gases Analysis

The samples were analyzed for fixed gases (oxygen, nitrogen, methane and carbon dioxide) according to modified EPA Method 3C (triplicate injection) using a gas chromatograph equipped with a thermal conductivity detector (TCD). This procedure is described in laboratory SOP VOA-EPA3C. This method is included on the laboratory's DoD-ELAP scope of accreditation, however it is not part of the NELAP or AIHA-LAP, LLC accreditation.

All samples, with the exception of "R12-90-100%-COMB 48," were analyzed outside of the holding time. The results have been flagged accordingly.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

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ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
AIHA-LAP, LLC	http://www.aihaaccreditedlabs.org	101661
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0694
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Florida DOH (NELAP)	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E871020
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/labcert.htm	2014025
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	977273
New Jersey DEP (NELAP)	http://www.nj.gov/dep/oqa/	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-003
Pennsylvania DEP	http://www.depweb.state.pa.us/labs	68-03307 (Registration)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704413-16-7
Utah DOH (NELAP)	http://www.health.utah.gov/lab/labimp/certification/index.html	CA016272016-6
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: Air Hygiene, Incorporated
Project ID: Coyote-16-enid.ok-comp#1
Service Request: P1604661

Date Received: 10/1/2016
Time Received: 10:20

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	3C Modified - Fxd Gases Bag 2X
R8-70-100-70%-COMB 48	P1604661-001	Air	9/29/2016	16:10	X
R9-70-100-70%-COMB 48	P1604661-003	Air	9/29/2016	17:33	X
R10-90-100%-COMB 48	P1604661-005	Air	9/30/2016	09:01	X
R11-90-100%-COMB 48	P1604661-007	Air	9/30/2016	10:28	X
R12-90-100%-COMB 48	P1604661-009	Air	9/30/2016	14:08	X

P1604661

SAMPLE DESCRIPTION AND CHAIN OF CUSTODY RECORD

Air Hygiene International, Inc.
1600 W Tacoma Street
Broken Arrow, Oklahoma 74012
(888) 461-8778
www.airhygiene.com

Project Number:	Coyote-16-enid.ok-comp#1	Laboratory Analysis Requested:	
Person Taking Samples:	TW/MSL/RA		

	Sample Number	Location	Date	Time	Volume	Analysis Method			
						O_2	CO_2	N_2	Methane
1	R8-70-100-70%-COMB 48	Enid Facility	9/29/2016	16:10	10	x	x	x	x
2	R8-70-100-70%-COMB 48-Backup	Enid Facility	9/29/2016	17:31	5	x	x	x	x
3	R9-70-100-70%-COMB 48	Enid Facility	9/29/2016	17:33	10	x	x	x	x
4	R9-70-100-70%-COMB 48-Backup	Enid Facility	9/29/2016	17:33	5	x	x	x	x
5	R10-90-100%-COMB 48	Enid Facility	9/30/2016	9:01	10	x	x	x	x
6	R10-90-100%-COMB 48-Backup	Enid Facility	9/30/2016	9:01	5	x	x	x	x
7	R11-90-100%-COMB 48	Enid Facility	9/30/2016	10:28	10	x	x	x	x
8	R11-90-100%-COMB 48-Backup	Enid Facility	9/30/2016	10:28	5	x	x	x	x
9	R12-90-100%-COMB 48	Enid Facility	9/30/2016	14:08	10	x	x	x	x
10	R12-90-100%-COMB 48-Backup	Enid Facility	9/30/2016	14:08	5	x	x	x	x

Relinquished by: (Signature)	9/30/16 Date:	14:15 Time:	Received by: (Signature)	10/1/16 Date:	1020 am Time:
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

ote-coc

ALS Environmental
Sample Acceptance Check Form

Client: Air Hygiene, Incorporated Work order: P1604661

Project: Coyote-16-enid.ok-comp#1

Sample(s) received on: 10/1/16 Date opened: 10/1/16 by: KHORIUCHI

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☐	☐	☒
8	Were **custody seals** on outside of cooler/Box/Container?	☐	☒	☐
	Location of seal(s)? _____ Sealing Lid?	☐	☐	☒
	Were signature and date included?	☐	☐	☒
	Were seals intact?	☐	☐	☒
9	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☐	☐	☒
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
10	**Tubes:** Are the tubes capped and intact?	☐	☐	☒
11	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1604661-001.01	10 L Tedlar Bag					
P1604661-002.01	5.0 L Tedlar Bag					
P1604661-003.01	10 L Tedlar Bag					
P1604661-004.01	5.0 L Tedlar Bag					
P1604661-005.01	10 L Tedlar Bag					
P1604661-006.01	5.0 L Tedlar Bag					
P1604661-007.01	10 L Tedlar Bag					
P1604661-008.01	5.0 L Tedlar Bag					
P1604661-009.01	10 L Tedlar Bag					
P1604661-010.01	5.0 L Tedlar Bag					

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **R8-70-100-70%-COMB 48**
Client Project ID: **Coyote-16-enid.ok-comp#1**

ALS Project ID: P1604661
ALS Sample ID: P1604661-001

Test Code: EPA Method 3C Modified
Instrument ID: HP5890 II/GC1/FID/TCD
Analyst: Adam McAfee
Sample Type: 10 L Tedlar Bag
Test Notes: **H1**

Date Collected: 9/29/16
Date Received: 10/1/16
Date Analyzed: 10/3/16
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
7782-44-7	**Oxygen***	**15.9**	0.10	
7727-37-9	**Nitrogen**	**80.0**	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	**Carbon Dioxide**	**4.08**	0.10	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
* = The oxygen result may include argon due to coelution. Ambient air includes 0.93% argon.
H1 = Sample analysis performed past holding time. See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **R9-70-100-70%-COMB 48**
Client Project ID: **Coyote-16-enid.ok-comp#1**

ALS Project ID: P1604661
ALS Sample ID: P1604661-003

Test Code: EPA Method 3C Modified
Instrument ID: HP5890 II/GC1/FID/TCD
Analyst: Adam McAfee
Sample Type: 10 L Tedlar Bag
Test Notes: **H1**

Date Collected: 9/29/16
Date Received: 10/1/16
Date Analyzed: 10/3/16
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
7782-44-7	**Oxygen***	**15.7**	0.10	
7727-37-9	**Nitrogen**	**80.1**	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	**Carbon Dioxide**	**4.23**	0.10	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
* = The oxygen result may include argon due to coelution. Ambient air includes 0.93% argon.
H1 = Sample analysis performed past holding time. See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **R10-90-100%-COMB 48**
Client Project ID: **Coyote-16-enid.ok-comp#1**

ALS Project ID: P1604661
ALS Sample ID: P1604661-005

Test Code: EPA Method 3C Modified
Instrument ID: HP5890 II/GC1/FID/TCD
Analyst: Adam McAfee
Sample Type: 10 L Tedlar Bag
Test Notes: **H1**

Date Collected: 9/30/16
Date Received: 10/1/16
Date Analyzed: 10/3/16
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
7782-44-7	**Oxygen***	**16.0**	0.10	
7727-37-9	**Nitrogen**	**80.0**	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	**Carbon Dioxide**	**4.03**	0.10	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
* = The oxygen result may include argon due to coelution. Ambient air includes 0.93% argon.
H1 = Sample analysis performed past holding time. See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **R11-90-100%-COMB 48**
Client Project ID: **Coyote-16-enid.ok-comp#1**

ALS Project ID: P1604661
ALS Sample ID: P1604661-007

Test Code: EPA Method 3C Modified
Instrument ID: HP5890 II/GC1/FID/TCD
Analyst: Adam McAfee
Sample Type: 10 L Tedlar Bag
Test Notes: **H1**

Date Collected: 9/30/16
Date Received: 10/1/16
Date Analyzed: 10/3/16
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
7782-44-7	**Oxygen***	**16.5**	0.10	
7727-37-9	**Nitrogen**	**79.9**	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	**Carbon Dioxide**	**3.62**	0.10	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
* = The oxygen result may include argon due to coelution. Ambient air includes 0.93% argon.
H1 = Sample analysis performed past holding time. See case narrative.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **R12-90-100%-COMB 48**
Client Project ID: **Coyote-16-enid.ok-comp#1**

ALS Project ID: P1604661
ALS Sample ID: P1604661-009

Test Code: EPA Method 3C Modified
Instrument ID: HP5890 II/GC1/FID/TCD
Analyst: Adam McAfee
Sample Type: 10 L Tedlar Bag
Test Notes:

Date Collected: 9/30/16
Date Received: 10/1/16
Date Analyzed: 10/3/16
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
7782-44-7	**Oxygen***	**16.7**	0.10	
7727-37-9	**Nitrogen**	**79.8**	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	**Carbon Dioxide**	**3.55**	0.10	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
* = The oxygen result may include argon due to coelution. Ambient air includes 0.93% argon.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **Method Blank**
Client Project ID: **Coyote-16-enid.ok-comp#1**

ALS Project ID: P1604661
ALS Sample ID: P161003-MB

Test Code: EPA Method 3C Modified
Instrument ID: HP5890 II/GC1/FID/TCD
Analyst: Adam McAfee
Sample Type: 10 L Tedlar Bag
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 10/03/16
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
7782-44-7	Oxygen*	ND	0.10	
7727-37-9	Nitrogen	ND	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	Carbon Dioxide	ND	0.10	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
* = The oxygen result may include argon due to coelution. Ambient air includes 0.93% argon.

Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_10\03\
Data File : 10031604.D
Signal(s) : TCD1A.CH
Acq On : 3 Oct 2016 9:30 am
Operator : amf
Sample : 4661-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 03 09:58:15 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.184	230572	149136.987	ppm
3)	Nitrogen	2.315	1326982	750895.826	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.740	80301	38285.757	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\03\
Data File : 10031604.D
Signal(s) : TCD1A.CH
Acq On : 3 Oct 2016 9:30 am
Operator : amf
Sample : 4661-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 03 09:58:15 2016
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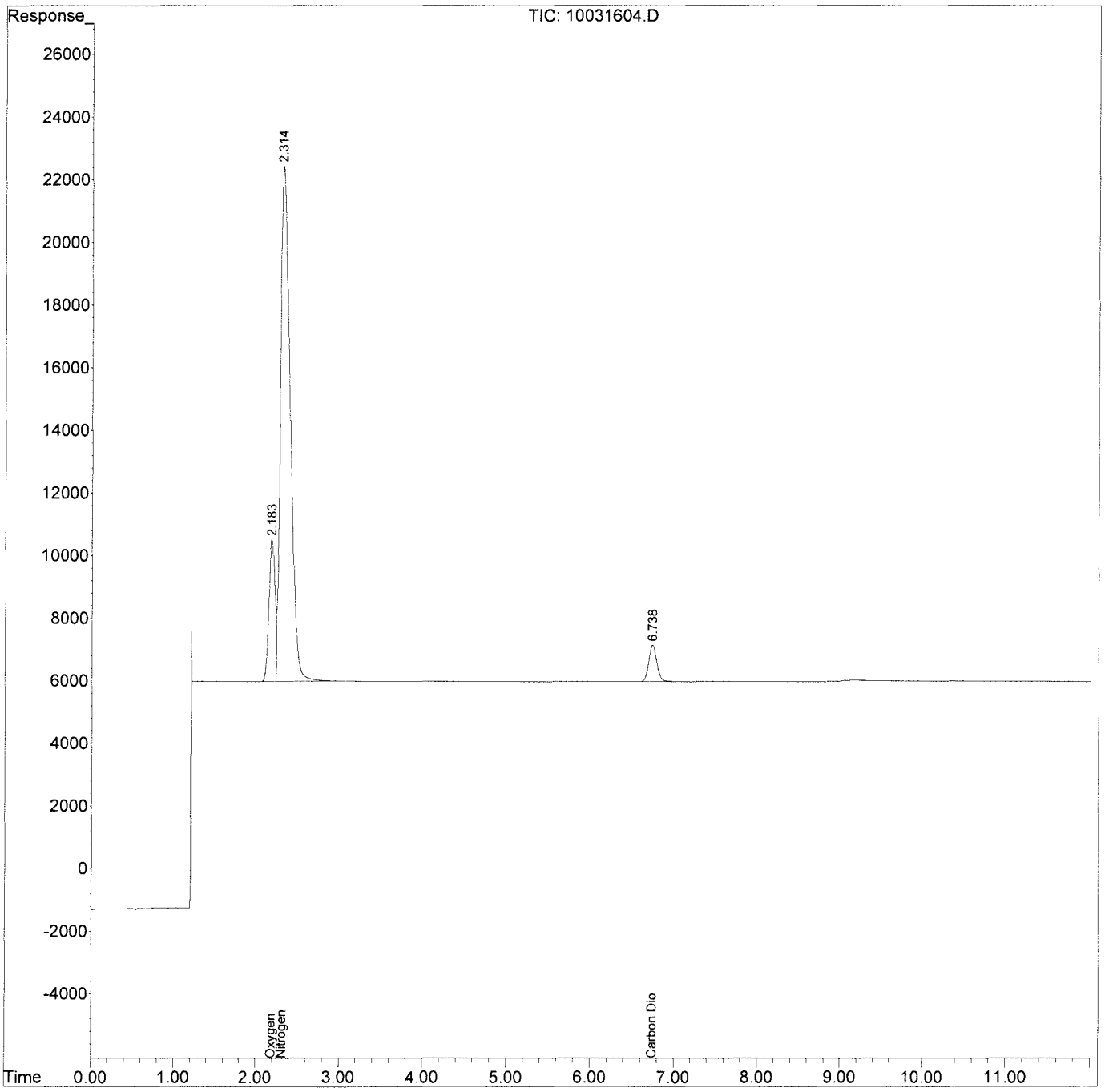
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_10\03\
Data File : 10031605.D
Signal(s) : TCD1A.CH
Acq On : 3 Oct 2016 9:46 am
Operator : amf
Sample : 4661-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 03 10:15:53 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

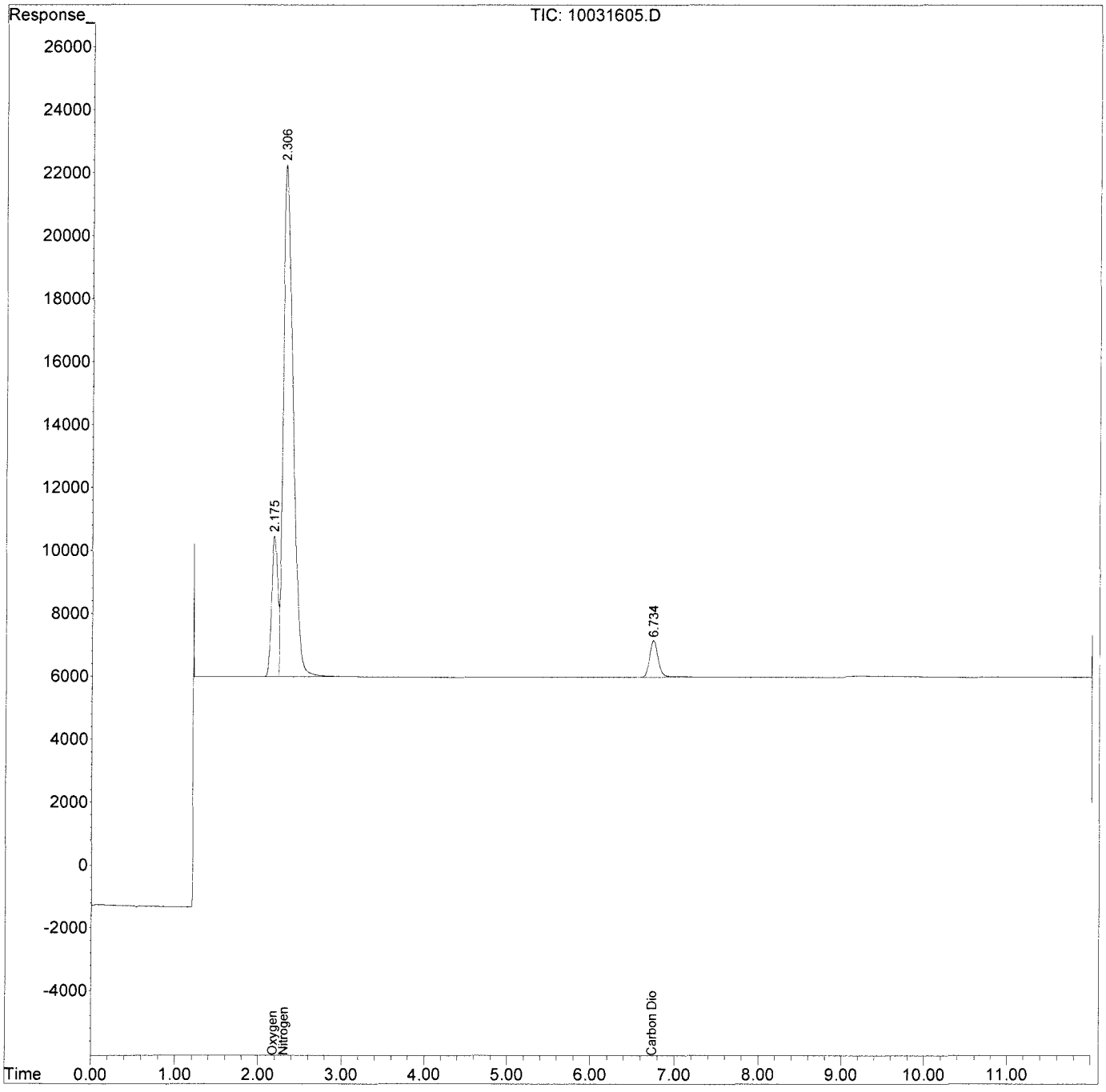
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.176	227777	147329.612	ppm
3)	Nitrogen	2.307	1310158	741375.721	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.735	79243	37781.222	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\03\
Data File : 10031605.D
Signal(s) : TCD1A.CH
Acq On : 3 Oct 2016 9:46 am
Operator : amf
Sample : 4661-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 03 10:15:53 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Data Path : I:\GC01\DATA\FXG\2016_10\03\
Data File : 10031606.D
Signal(s) : TCD1A.CH
Acq On : 3 Oct 2016 10:02 am
Operator : amf
Sample : 4661-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 03 10:24:23 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

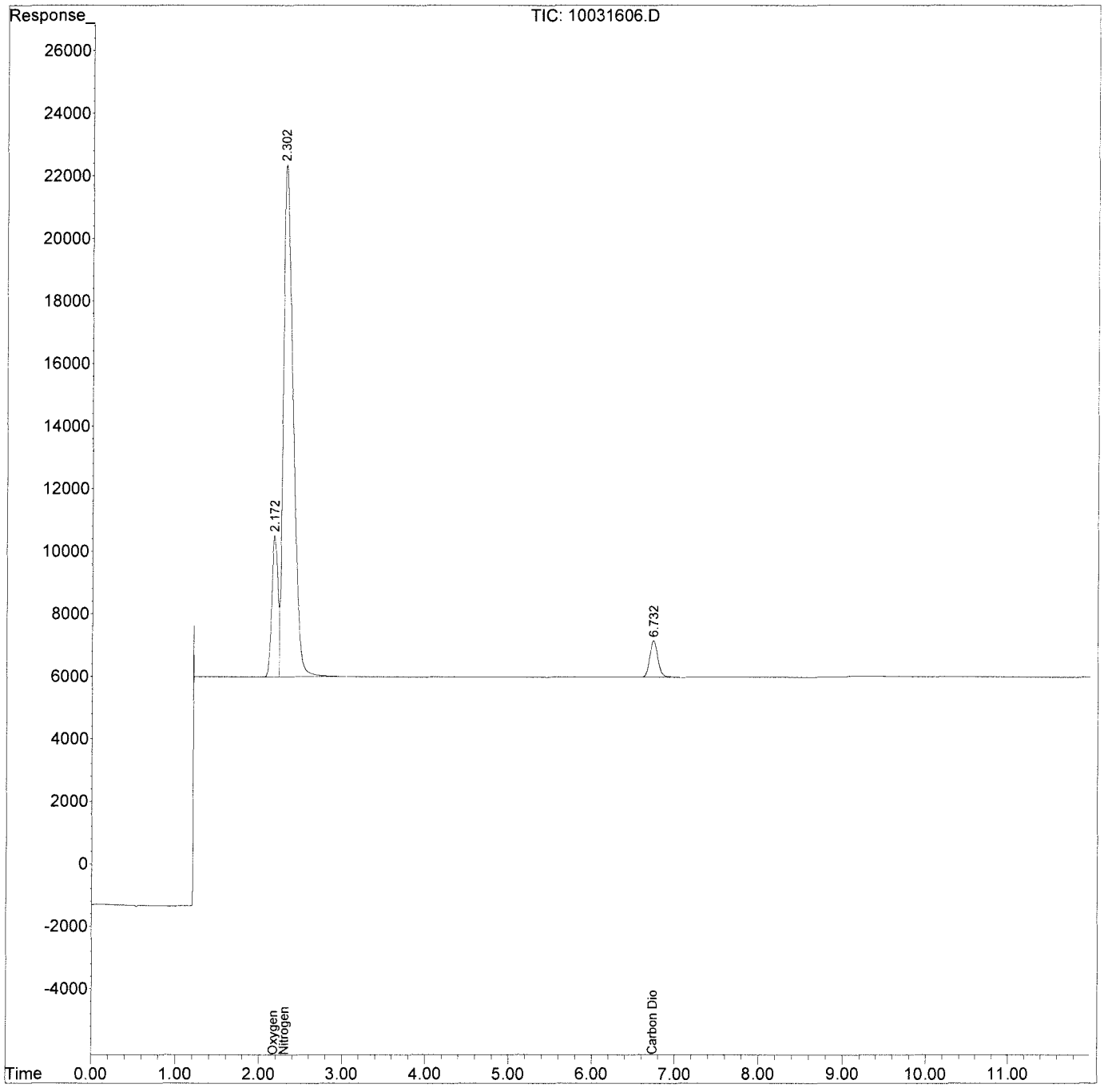
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.173	229790	148631.682	ppm
3)	Nitrogen	2.303	1321432	747755.167	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.734	80066	38173.457	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\03\
Data File : 10031606.D
Signal(s) : TCD1A.CH
Acq On : 3 Oct 2016 10:02 am
Operator : amf
Sample : 4661-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 03 10:24:23 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_10\03\
Data File : 10031607.D
Signal(s) : TCD1A.CH
Acq On : 3 Oct 2016 10:20 am
Operator : amf
Sample : 4661-003
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 03 11:18:15 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

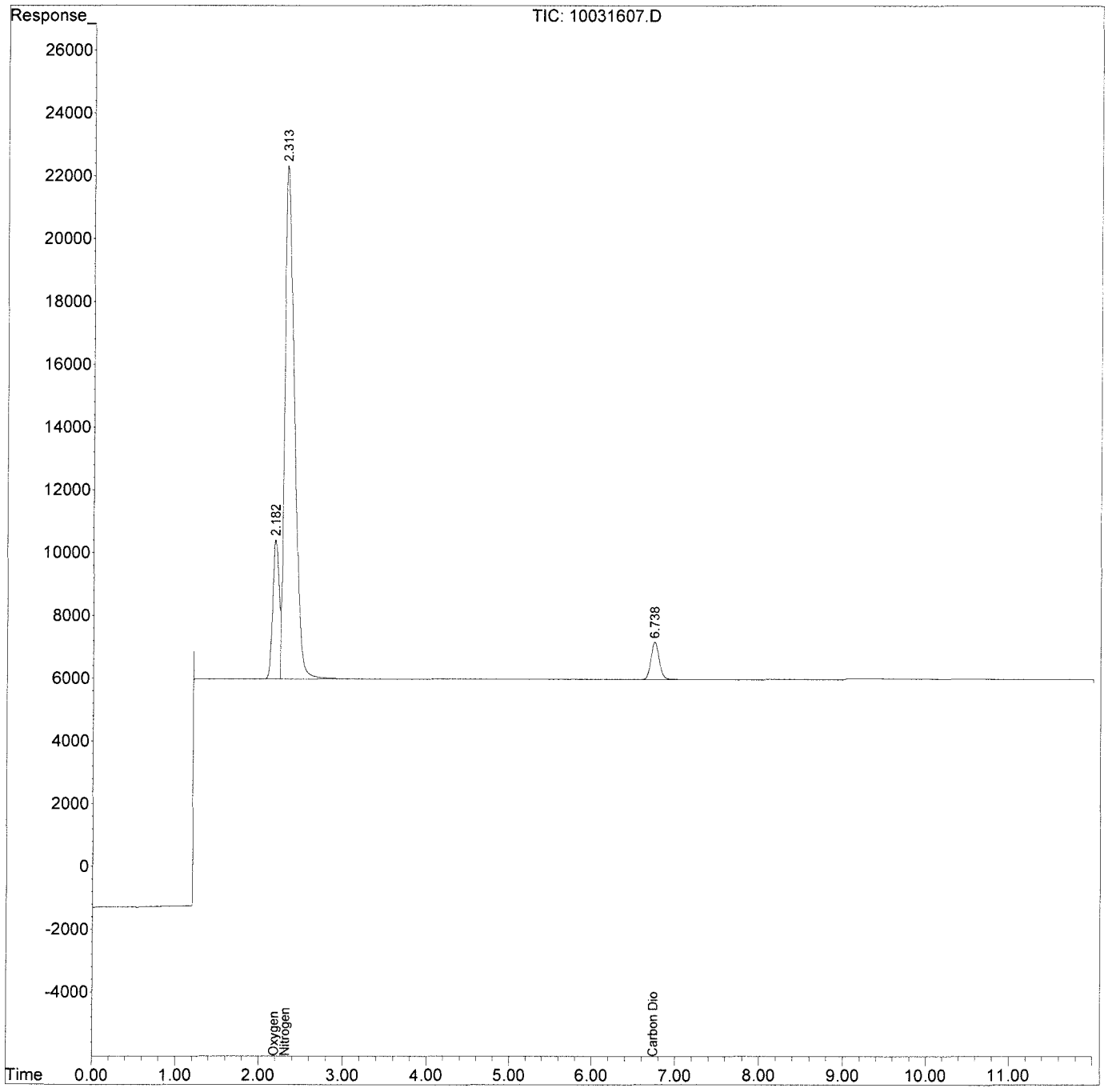
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.183	225146	145627.443	ppm
3)	Nitrogen	2.314	1314777	743989.732	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.739	82328	39252.230	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\03\
Data File : 10031607.D
Signal(s) : TCD1A.CH
Acq On : 3 Oct 2016 10:20 am
Operator : amf
Sample : 4661-003
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 03 11:18:15 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Data Path : I:\GC01\DATA\FXG\2016_10\03\
Data File : 10031608.D
Signal(s) : TCD1A.CH
Acq On : 3 Oct 2016 10:37 am
Operator : amf
Sample : 4661-003
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 03 11:18:29 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

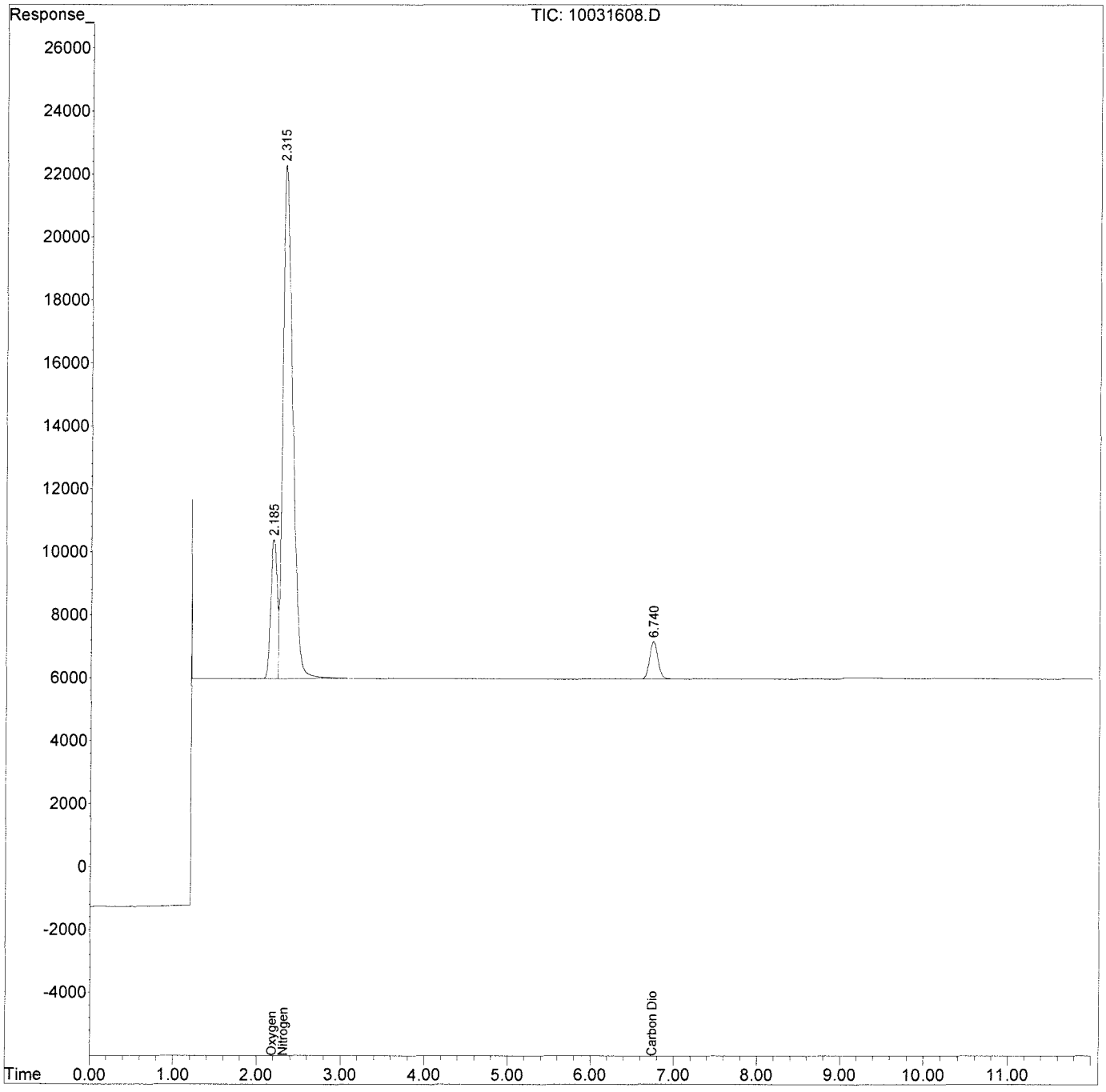
	Compound	R.T.	Response	Conc Units
Target Compounds				
1)	Hydrogen	0.000	0	N.D. ppm
2)	Oxygen	2.186	224928	145486.460 ppm
3)	Nitrogen	2.317	1312621	742769.422 ppm
4)	Carbon Monoxide	0.000	0	N.D. ppm
5)	Methane	0.000	0	N.D. ppm
6)	Carbon Dioxide	6.741	82004	39097.432 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\03\
Data File : 10031608.D
Signal(s) : TCD1A.CH
Acq On : 3 Oct 2016 10:37 am
Operator : amf
Sample : 4661-003
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 03 11:18:29 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_10\03\
Data File : 10031609.D
Signal(s) : TCD1A.CH
Acq On : 3 Oct 2016 10:57 am
Operator : amf
Sample : 4661-003
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 03 11:18:41 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

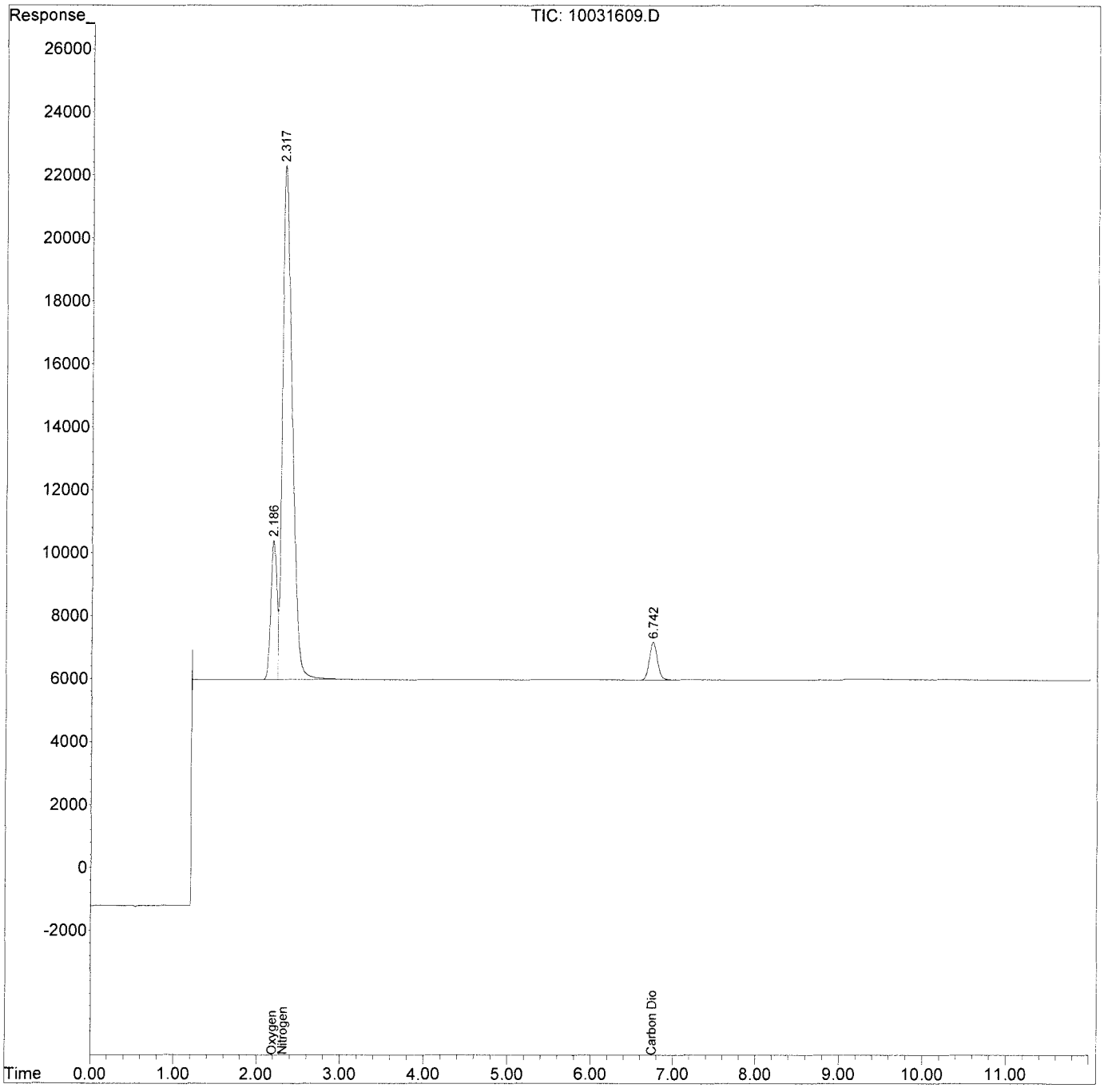
	Compound	R.T.	Response	Conc Units
Target Compounds				
1)	Hydrogen	0.000	0	N.D. ppm
2)	Oxygen	2.188	225024	145548.473 ppm
3)	Nitrogen	2.319	1312586	742749.839 ppm
4)	Carbon Monoxide	0.000	0	N.D. ppm
5)	Methane	0.000	0	N.D. ppm
6)	Carbon Dioxide	6.743	82600	39381.739 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\03\
Data File : 10031609.D
Signal(s) : TCD1A.CH
Acq On : 3 Oct 2016 10:57 am
Operator : amf
Sample : 4661-003
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 03 11:18:41 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_10\03\
Data File : 10031610.D
Signal(s) : TCD1A.CH
Acq On : 3 Oct 2016 11:17 am
Operator : amf
Sample : 4661-005
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 03 11:59:06 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

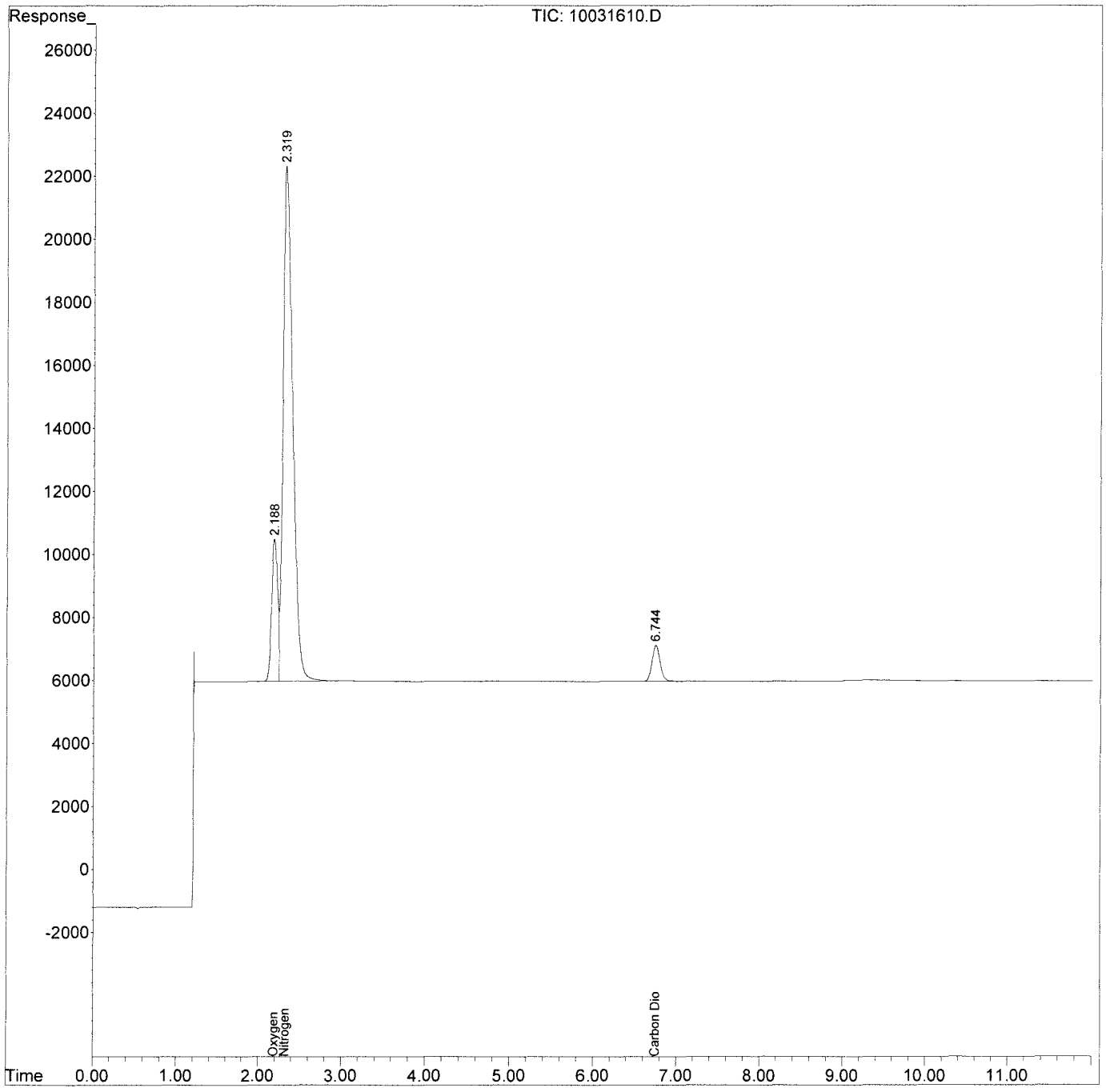
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.189	229362	148354.783	ppm
3)	Nitrogen	2.320	1311971	742401.485	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.745	78617	37482.641	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\03\
Data File : 10031610.D
Signal(s) : TCD1A.CH
Acq On : 3 Oct 2016 11:17 am
Operator : amf
Sample : 4661-005
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 03 11:59:06 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_10\03\
Data File : 10031611.D
Signal(s) : TCD1A.CH
Acq On : 3 Oct 2016 11:35 am
Operator : amf
Sample : 4661-005
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 03 11:59:17 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

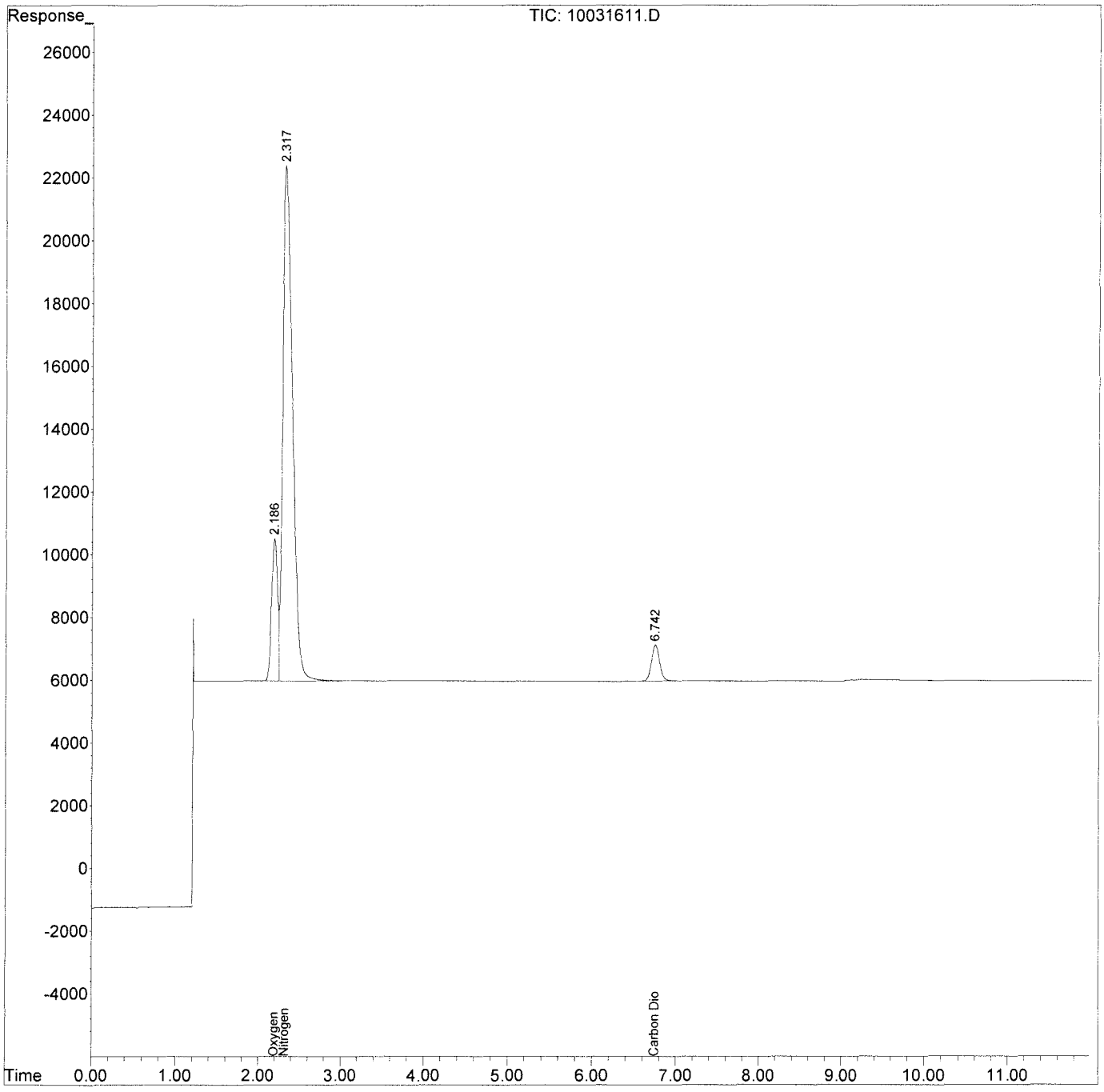
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.187	230602	149156.710	ppm
3)	Nitrogen	2.318	1323421	748880.843	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.743	78749	37545.807	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\03\
Data File : 10031611.D
Signal(s) : TCD1A.CH
Acq On : 3 Oct 2016 11:35 am
Operator : amf
Sample : 4661-005
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 03 11:59:17 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_10\03\
Data File : 10031612.D
Signal(s) : TCD1A.CH
Acq On : 3 Oct 2016 11:52 am
Operator : amf
Sample : 4661-005
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 03 12:11:36 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

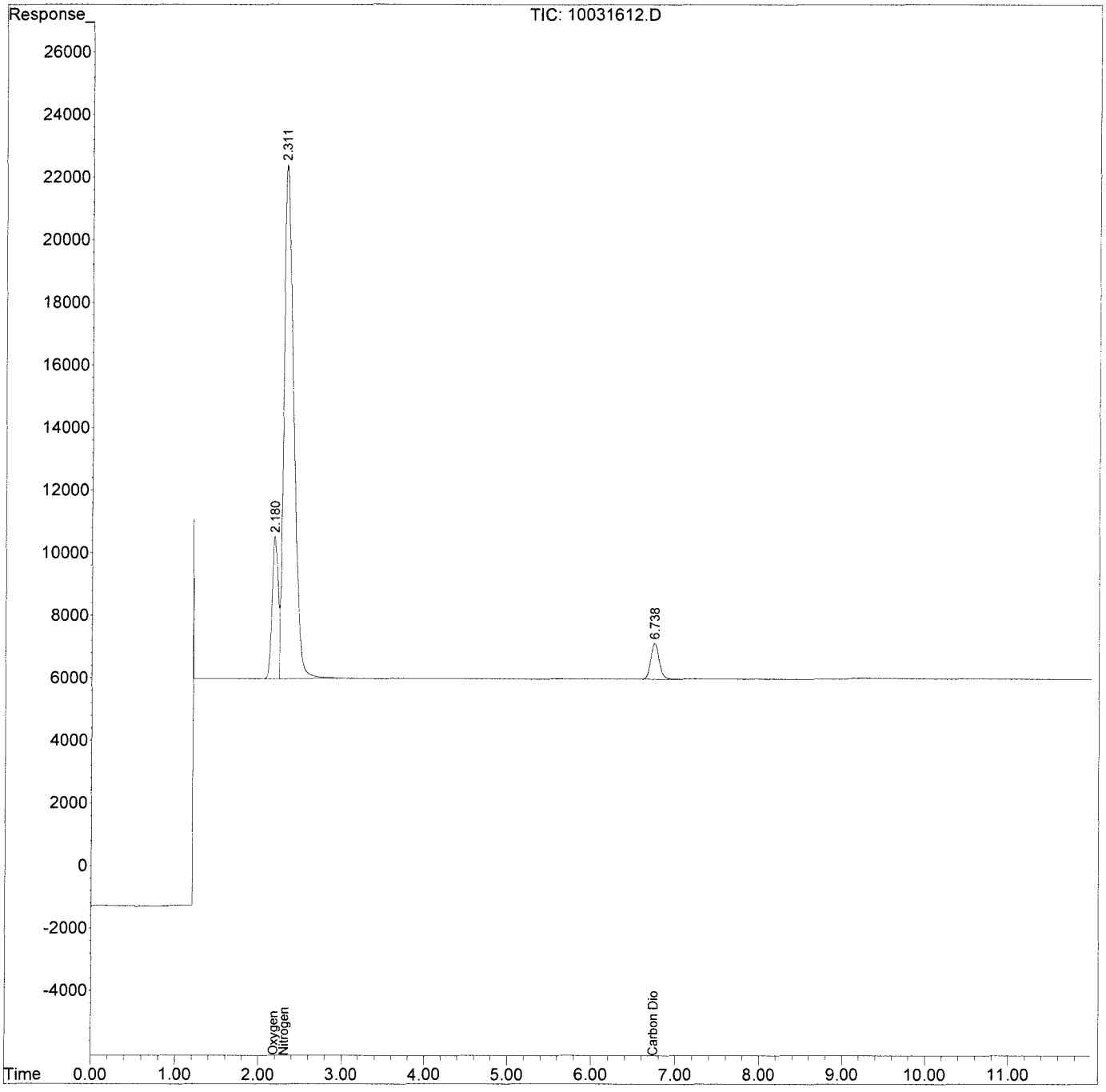
	Compound	R.T.	Response	Conc Units
Target Compounds				
1)	Hydrogen	0.000	0	N.D. ppm
2)	Oxygen	2.182	230879	149335.765 ppm
3)	Nitrogen	2.313	1324745	749629.978 ppm
4)	Carbon Monoxide	0.000	0	N.D. ppm
5)	Methane	0.000	0	N.D. ppm
6)	Carbon Dioxide	6.740	79668	37983.896 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\03\
Data File : 10031612.D
Signal(s) : TCD1A.CH
Acq On : 3 Oct 2016 11:52 am
Operator : amf
Sample : 4661-005
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 03 12:11:36 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_10\03\
Data File : 10031613.D
Signal(s) : TCD1A.CH
Acq On : 3 Oct 2016 12:09 pm
Operator : amf
Sample : 4661-007
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 03 13:01:00 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

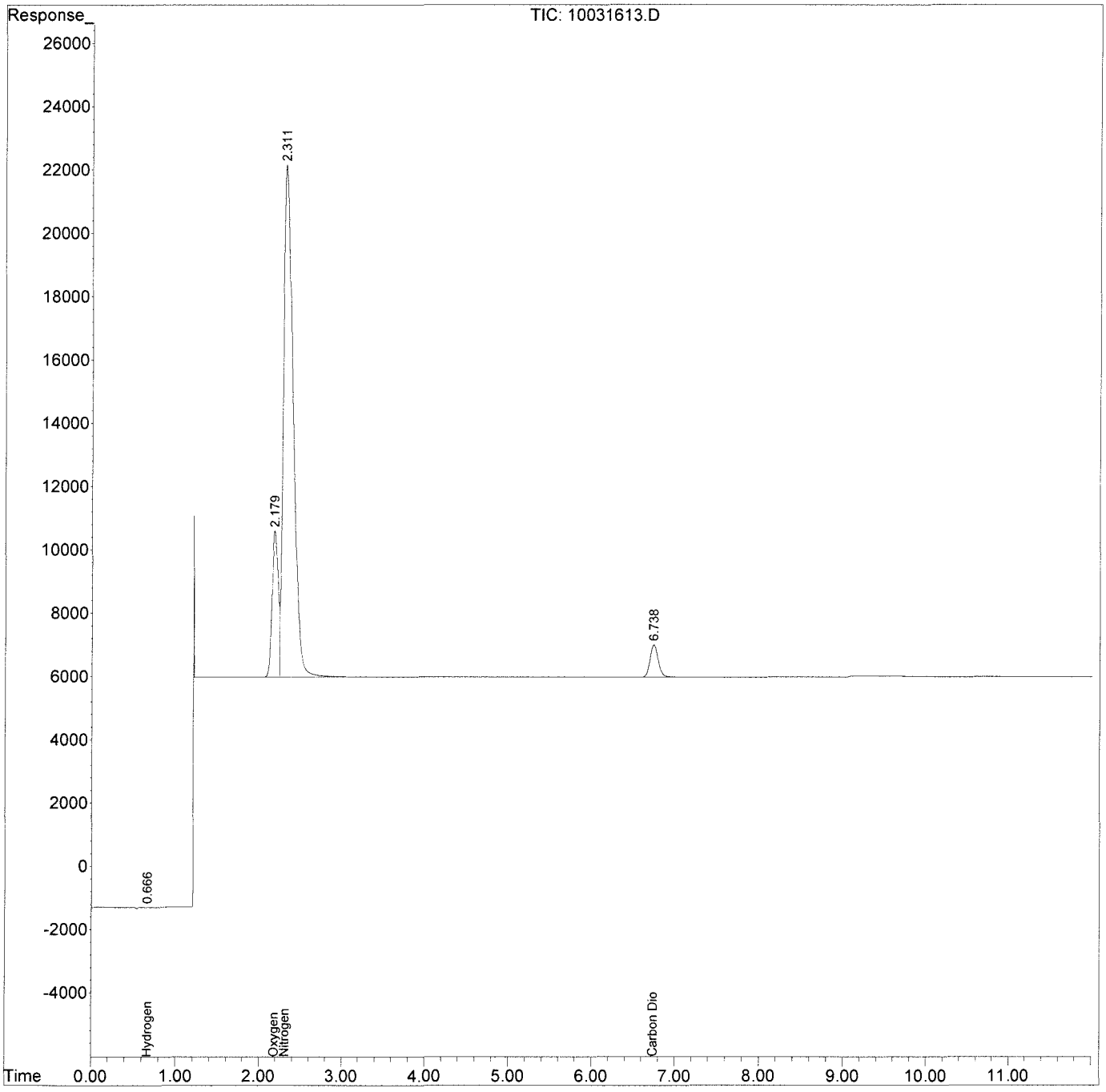
	Compound	R.T.	Response	Conc Units
Target Compounds				
1)	Hydrogen	0.668	26	19.421 ppm
2)	Oxygen	2.181	235632	152410.157 ppm
3)	Nitrogen	2.313	1301562	736511.764 ppm
4)	Carbon Monoxide	0.000	0	N.D. ppm
5)	Methane	0.000	0	N.D. ppm
6)	Carbon Dioxide	6.740	70367	33549.100 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\03\
Data File : 10031613.D
Signal(s) : TCD1A.CH
Acq On : 3 Oct 2016 12:09 pm
Operator : amf
Sample : 4661-007
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 03 13:01:00 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_10\03\
Data File : 10031614.D
Signal(s) : TCD1A.CH
Acq On : 3 Oct 2016 12:25 pm
Operator : amf
Sample : 4661-007
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 03 13:01:14 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

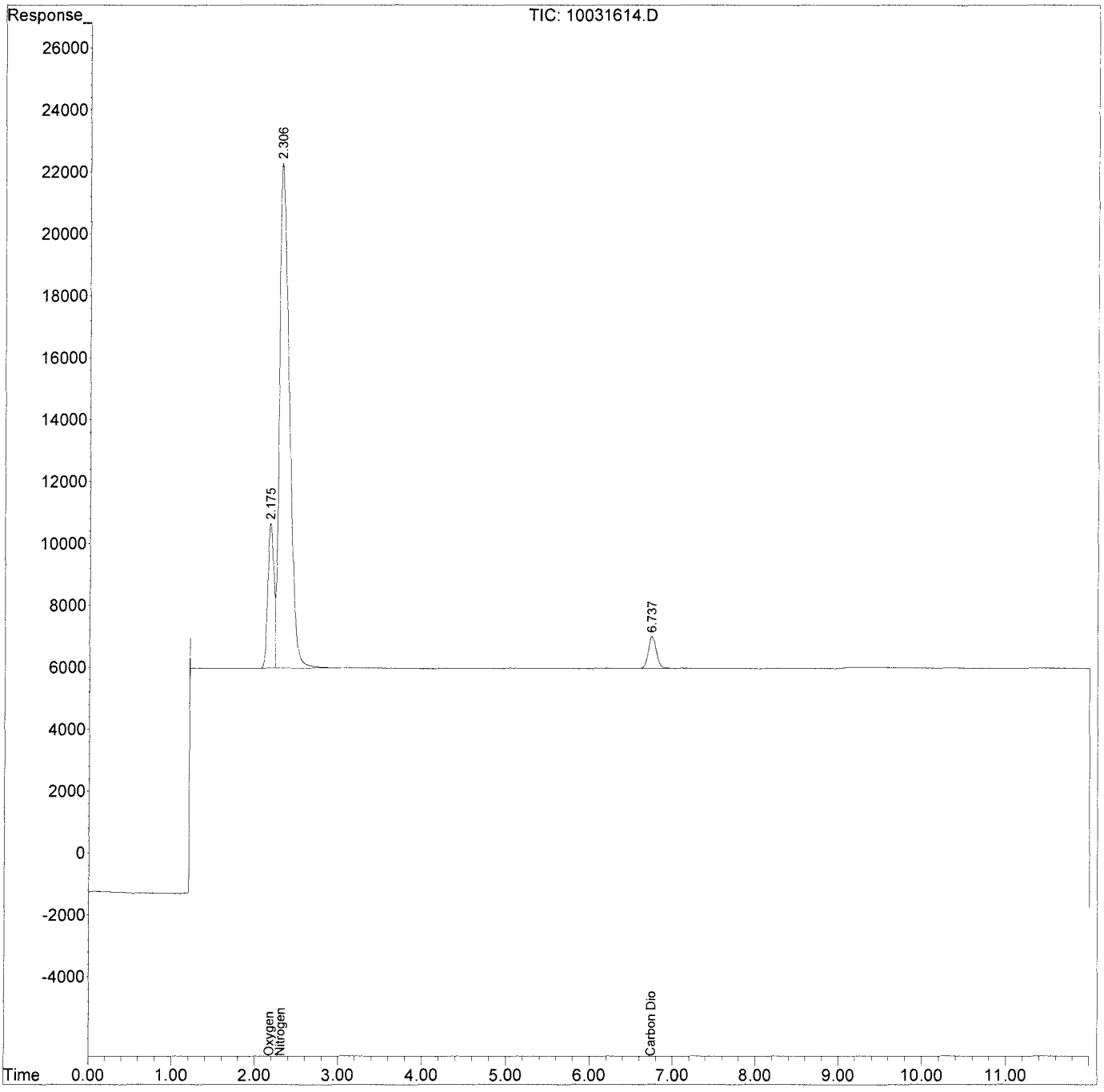
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.176	238284	154125.552	ppm
3)	Nitrogen	2.308	1317469	745512.579	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.739	70884	33795.566	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\03\
Data File : 10031614.D
Signal(s) : TCD1A.CH
Acq On : 3 Oct 2016 12:25 pm
Operator : amf
Sample : 4661-007
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 03 13:01:14 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_10\03\
Data File : 10031615.D
Signal(s) : TCD1A.CH
Acq On : 3 Oct 2016 12:41 pm
Operator : amf
Sample : 4661-007
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 03 13:01:29 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

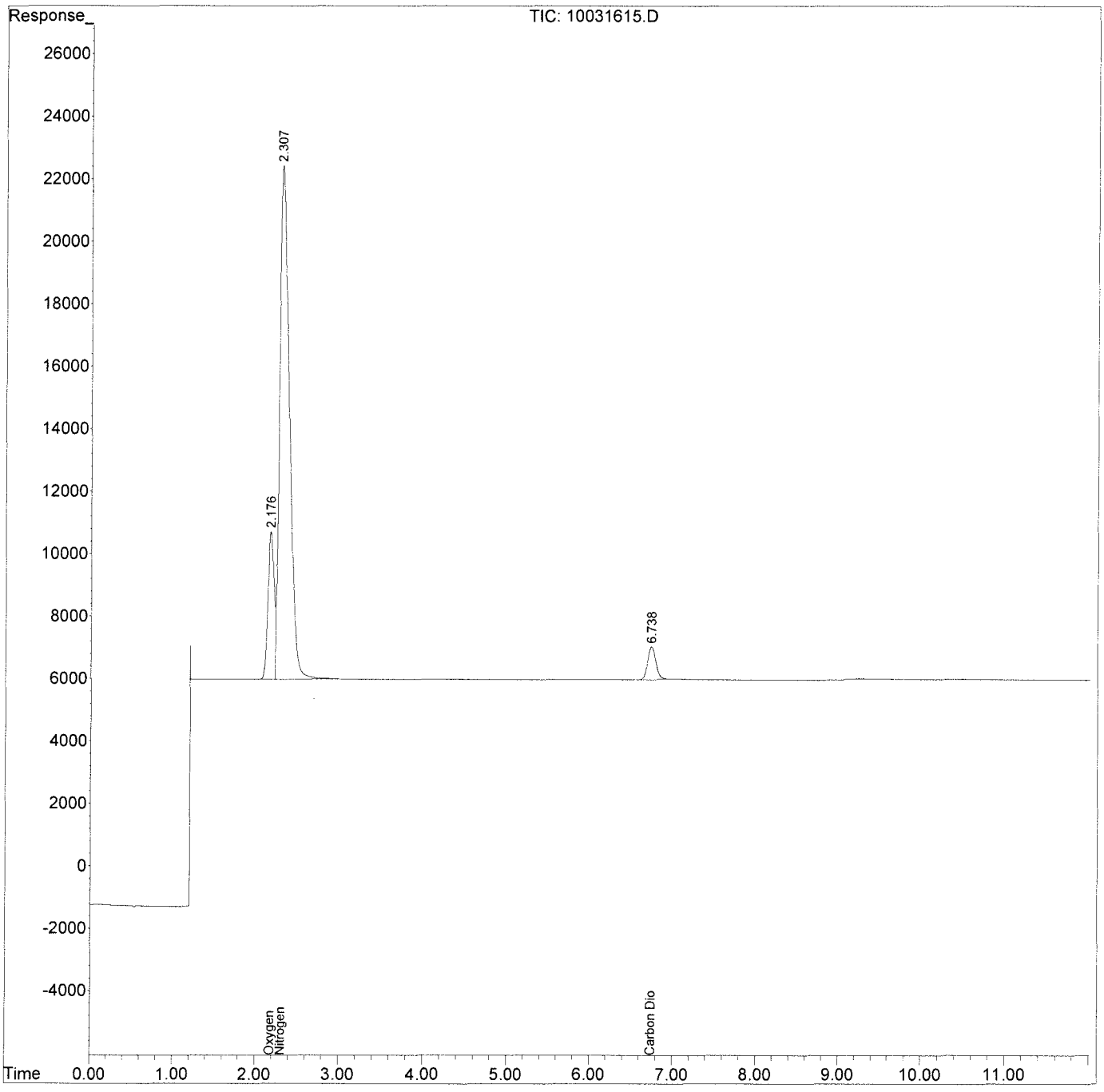
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.177	240441	155520.678	ppm
3)	Nitrogen	2.308	1329865	752527.279	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.739	71488	34083.514	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\03\
Data File : 10031615.D
Signal(s) : TCD1A.CH
Acq On : 3 Oct 2016 12:41 pm
Operator : amf
Sample : 4661-007
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 03 13:01:29 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_10\03\
Data File : 10031616.D
Signal(s) : TCD1A.CH
Acq On : 3 Oct 2016 1:01 pm
Operator : amf
Sample : 4661-009
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 03 14:27:39 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

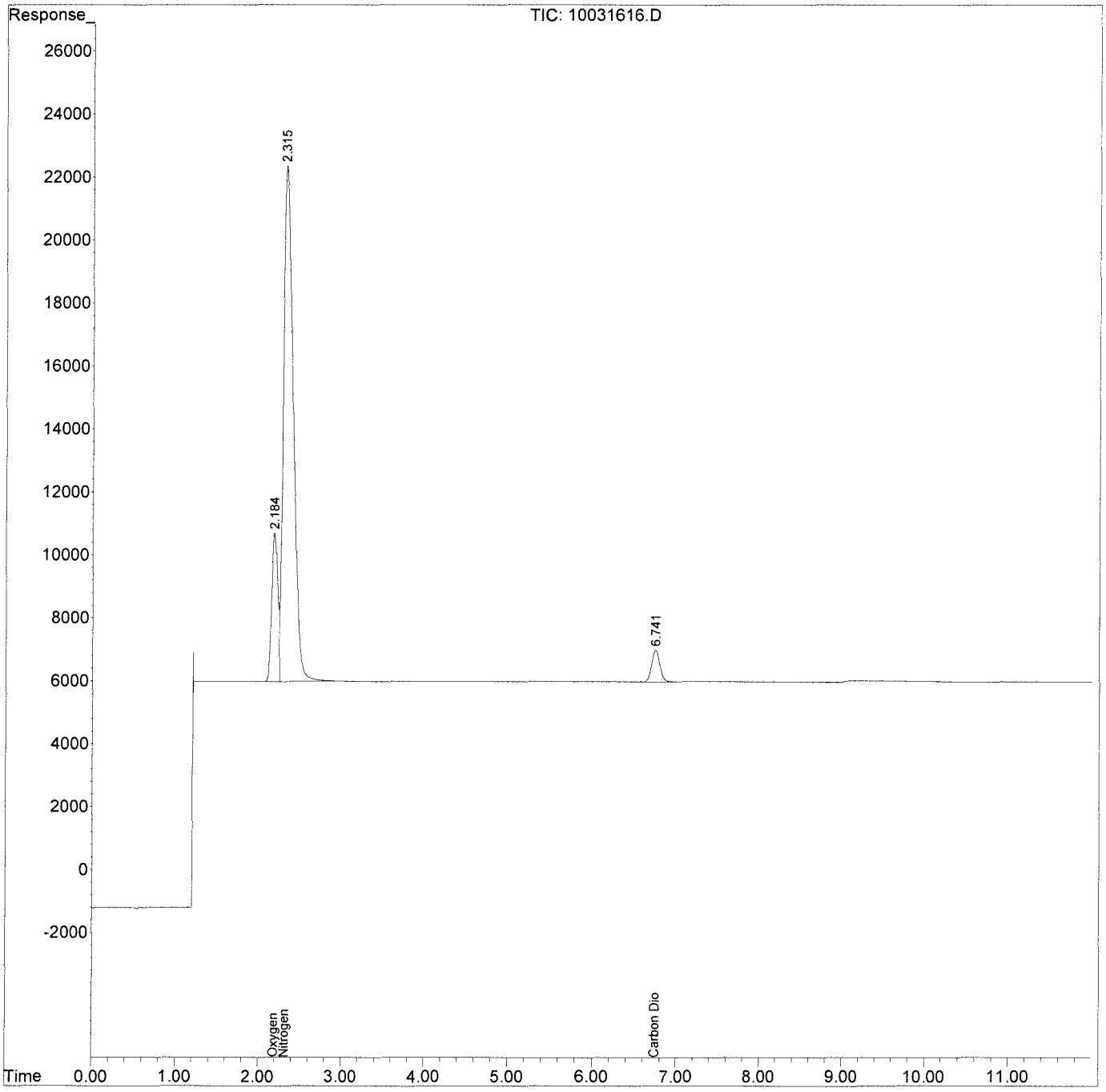
	Compound	R.T.	Response	Conc Units
Target Compounds				
1)	Hydrogen	0.000	0	N.D. ppm
2)	Oxygen	2.185	240966	155860.447 ppm
3)	Nitrogen	2.317	1319659	746752.346 ppm
4)	Carbon Monoxide	0.000	0	N.D. ppm
5)	Methane	0.000	0	N.D. ppm
6)	Carbon Dioxide	6.742	69866	33310.472 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\03\
Data File : 10031616.D
Signal(s) : TCD1A.CH
Acq On : 3 Oct 2016 1:01 pm
Operator : amf
Sample : 4661-009
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 03 14:27:39 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_10\03\
Data File : 10031617.D
Signal(s) : TCD1A.CH
Acq On : 3 Oct 2016 1:20 pm
Operator : amf
Sample : 4661-009
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 03 14:27:53 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

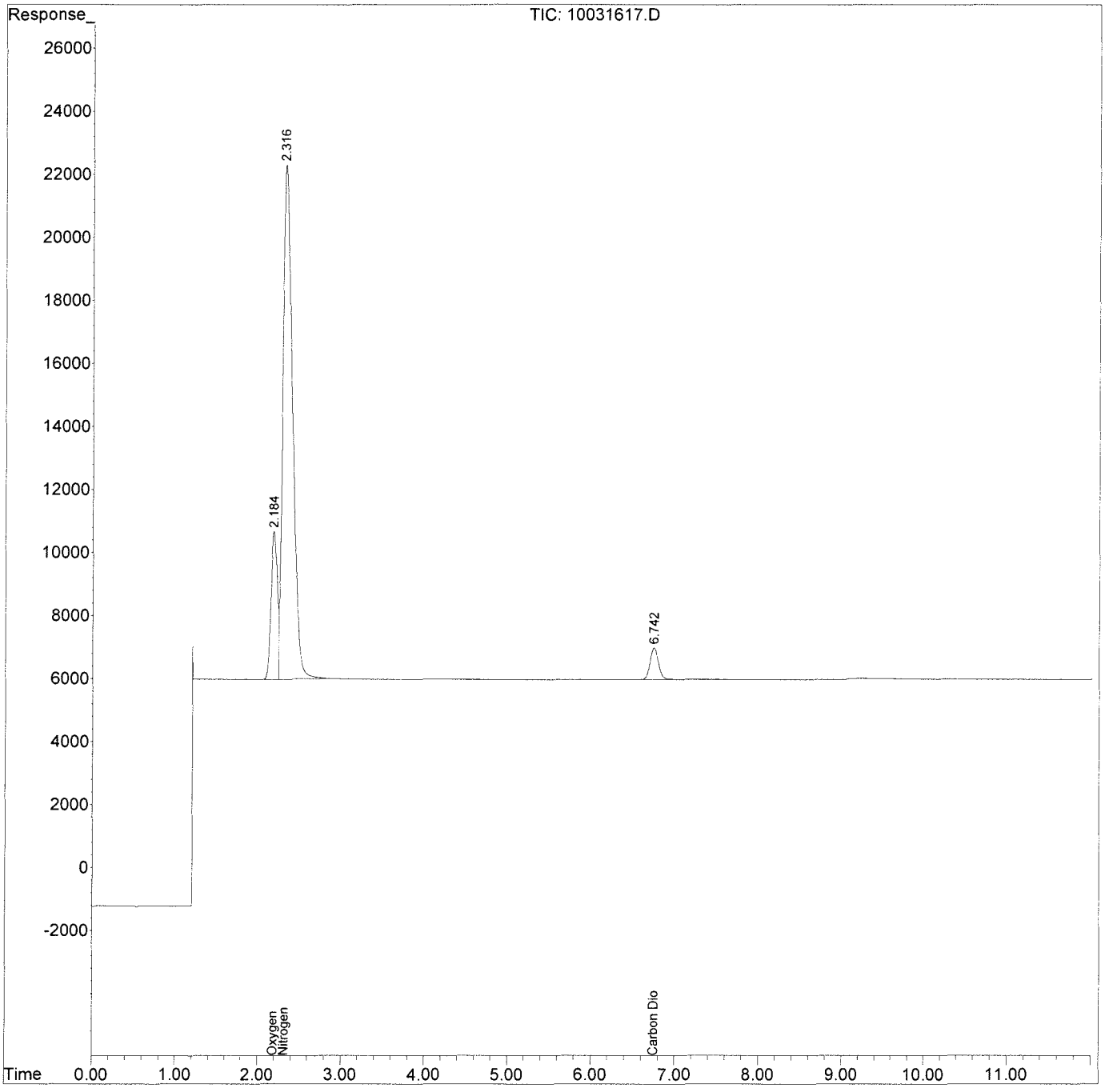
	Compound	R.T.	Response	Conc Units
Target Compounds				
1)	Hydrogen	0.000	0	N.D. ppm
2)	Oxygen	2.186	239832	155126.783 ppm
3)	Nitrogen	2.318	1312797	742868.910 ppm
4)	Carbon Monoxide	0.000	0	N.D. ppm
5)	Methane	0.000	0	N.D. ppm
6)	Carbon Dioxide	6.744	69363	33070.668 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\03\
Data File : 10031617.D
Signal(s) : TCD1A.CH
Acq On : 3 Oct 2016 1:20 pm
Operator : amf
Sample : 4661-009
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 03 14:27:53 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_10\03\
Data File : 10031618.D
Signal(s) : TCD1A.CH
Acq On : 3 Oct 2016 1:36 pm
Operator : amf
Sample : 4661-009
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 03 14:28:06 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

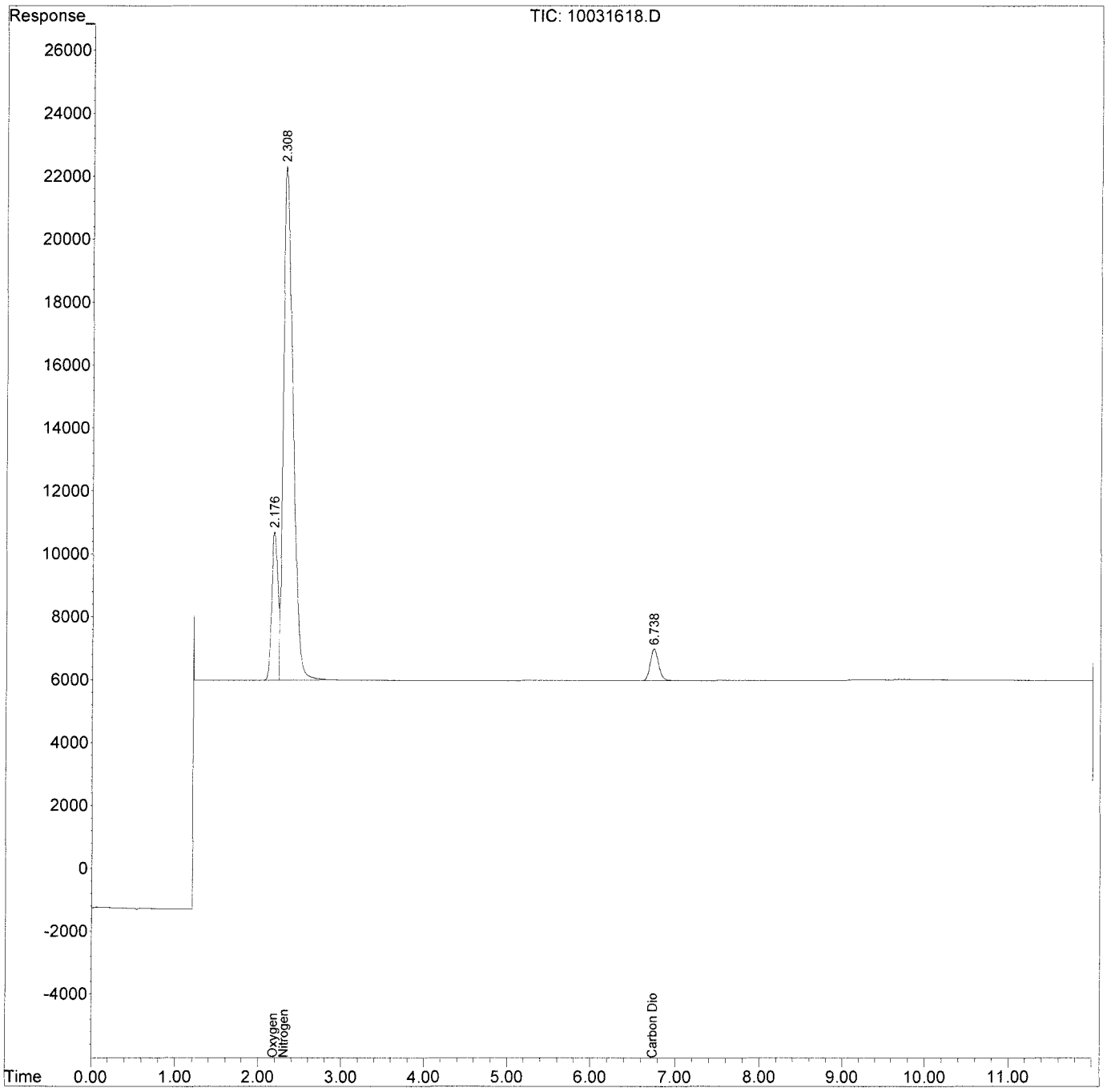
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.178	240574	155606.423	ppm
3)	Nitrogen	2.309	1316492	744960.000	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.739	69387	33082.157	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\03\
Data File : 10031618.D
Signal(s) : TCD1A.CH
Acq On : 3 Oct 2016 1:36 pm
Operator : amf
Sample : 4661-009
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 03 14:28:06 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_10\03\
Data File : 10031602.D
Signal(s) : TCD1A.CH
Acq On : 3 Oct 2016 8:39 am
Operator : amf
Sample : mb
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 03 08:58:21 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

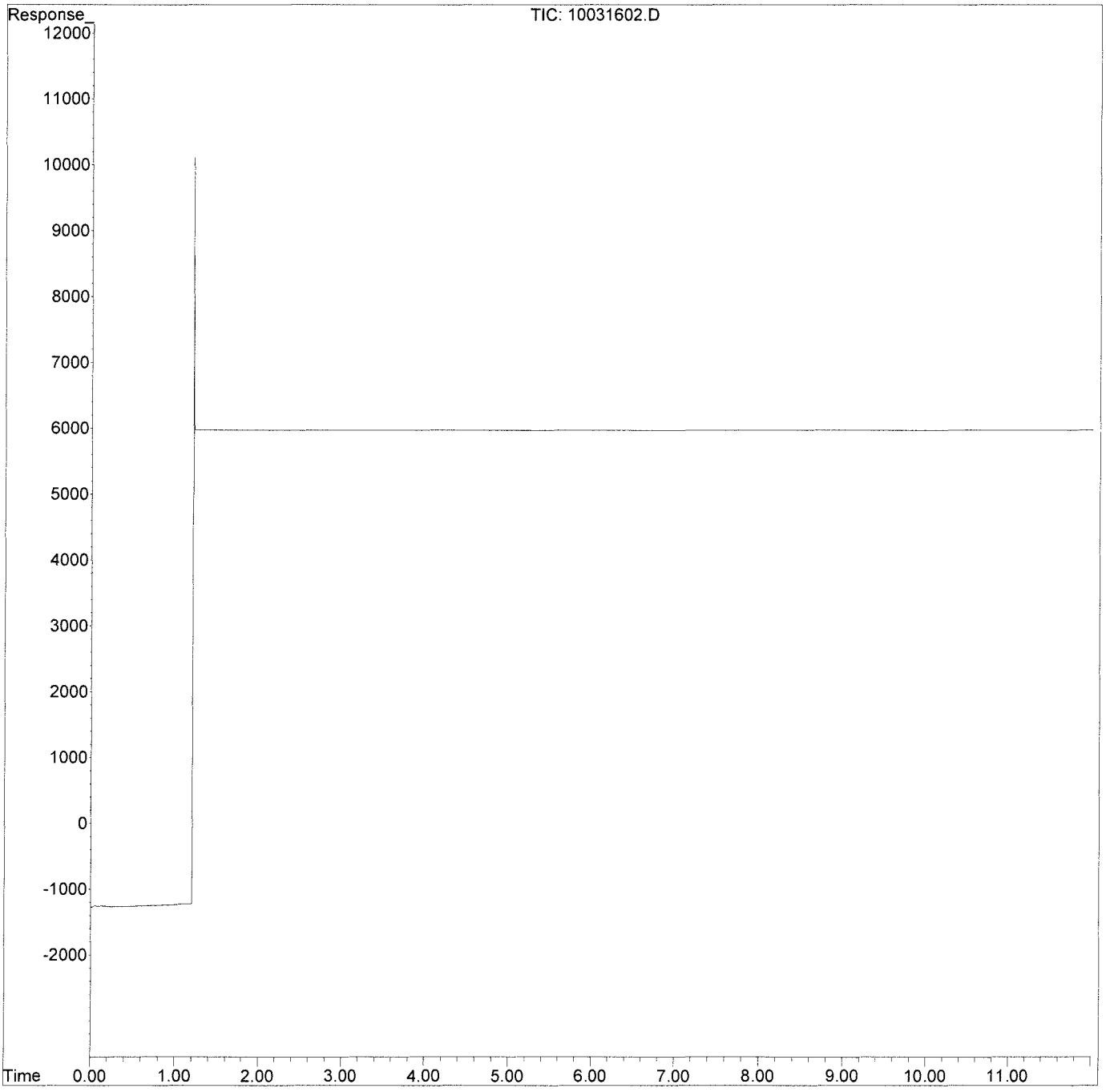
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\03\
Data File : 10031602.D
Signal(s) : TCD1A.CH
Acq On : 3 Oct 2016 8:39 am
Operator : amf
Sample : mb
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 03 08:58:21 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Response Factor Report GC01_FXG

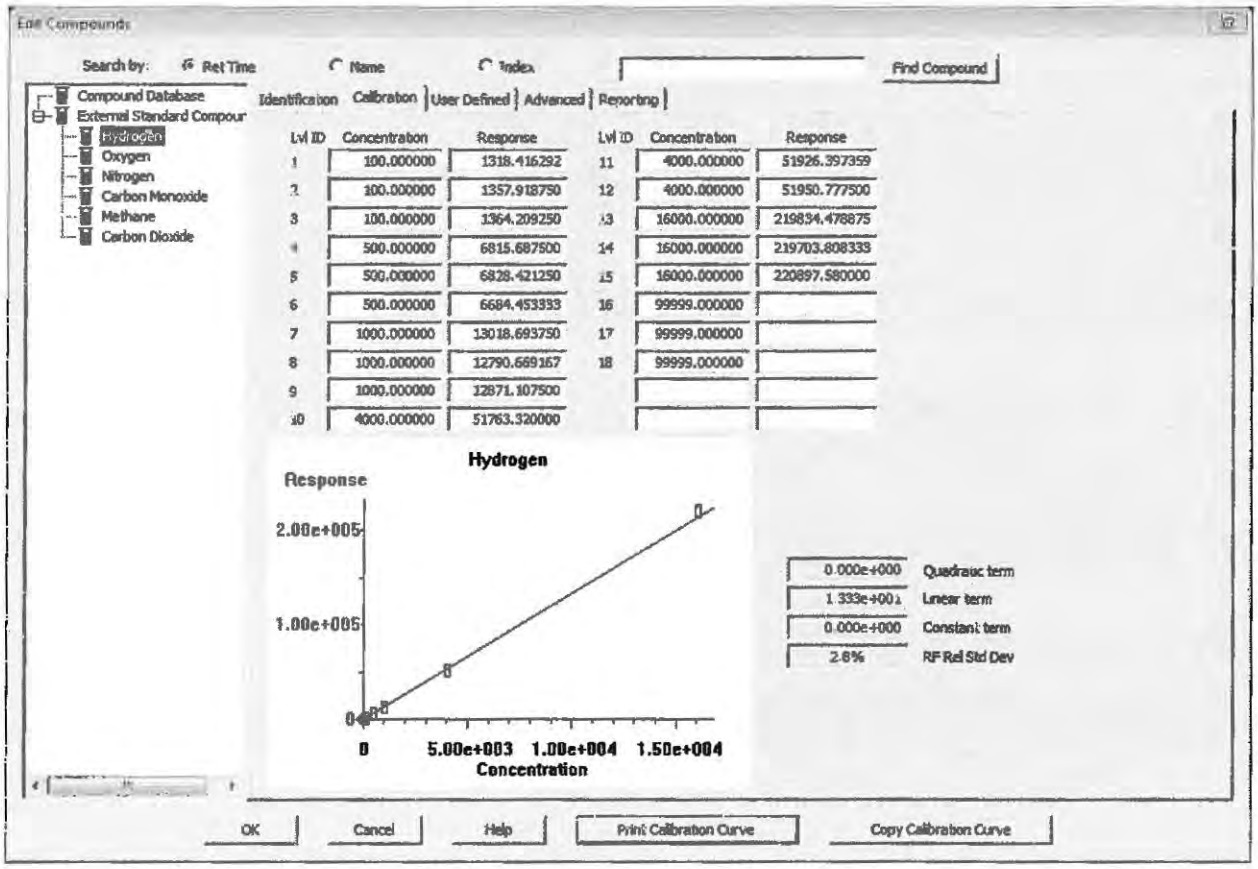
Method Path : I:\GC01\METHODS\
Method File : GC1_trip082216.M
Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
Last Update : Tue Aug 23 11:02:57 2016
Response Via : Initial Calibration

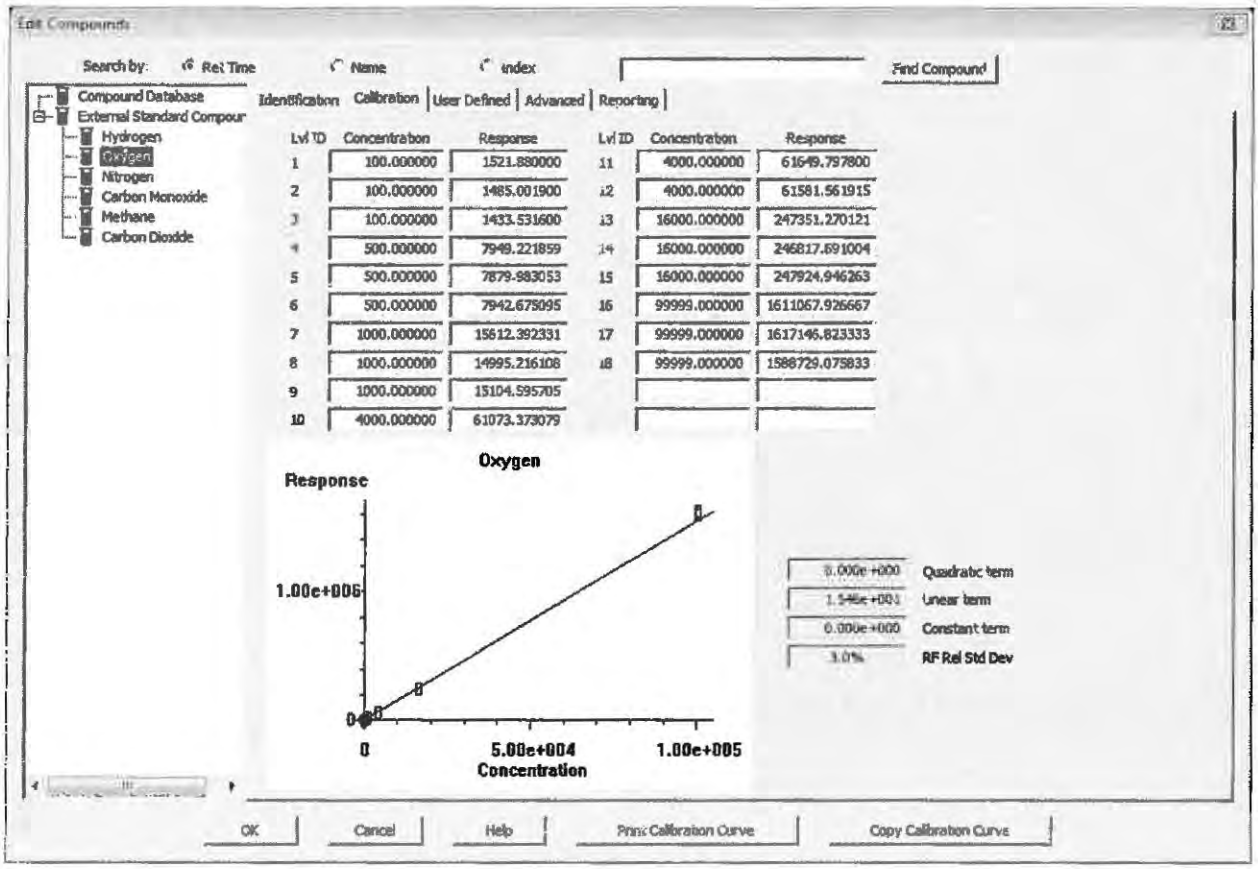
Calibration Files
1 =08221601.D 2 =08221602.D 3 =08221603.D
4 =08221604.D 5 =08221605.D 6 =08221606.D

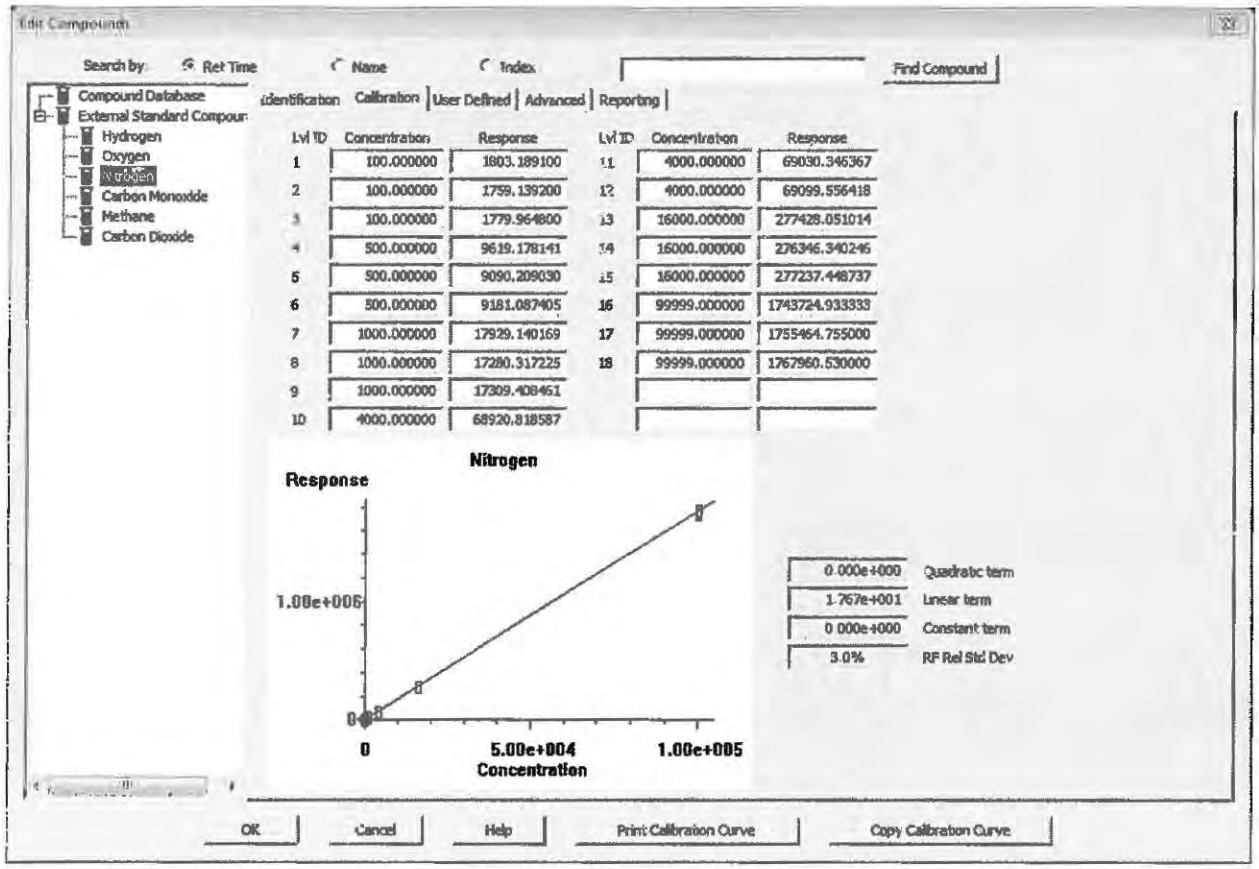
	Compound	1	2	3	4	5	6	Avg		%RSD
1)	Hydrogen	1.318	1.358	1.364	1.363	1.366	1.337	1.333	E1	2.78
2)	Oxygen	1.522	1.485	1.434	1.590	1.576	1.589	1.546	E1	3.01
3)	Nitrogen	1.803	1.759	1.780	1.924	1.818	1.836	1.767	E1	2.97
4)	Carbon Monoxide	1.653	1.676	1.610	1.844	1.851	1.826	1.735	E1	3.80
5)	Methane	1.240	1.288	1.372	1.359	1.347	1.373	1.307	E1	2.74
6)	Carbon Dioxide	1.988	2.145	2.152	2.236	2.239	2.197	2.097	E1	3.52

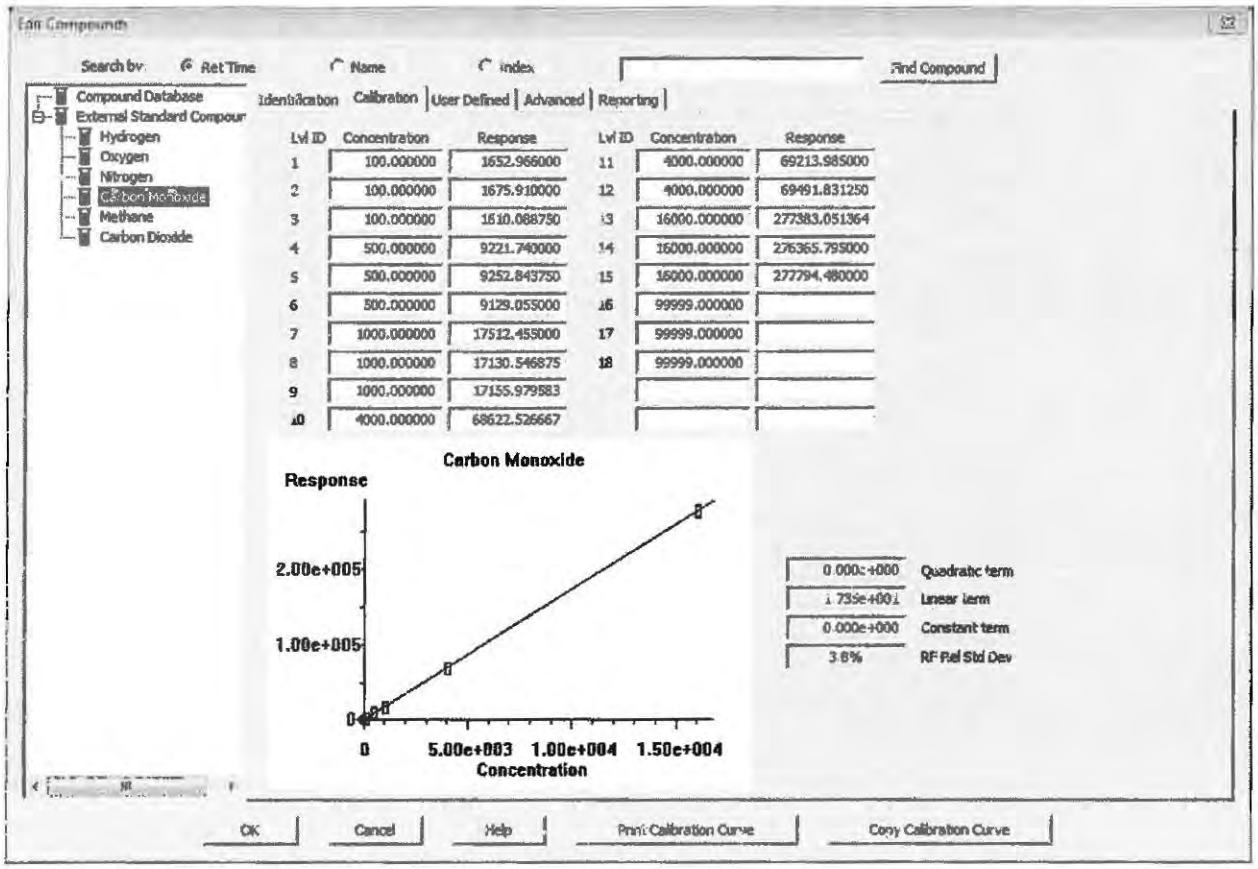
(#) = Out of Range ### Number of calibration levels exceeded format ###

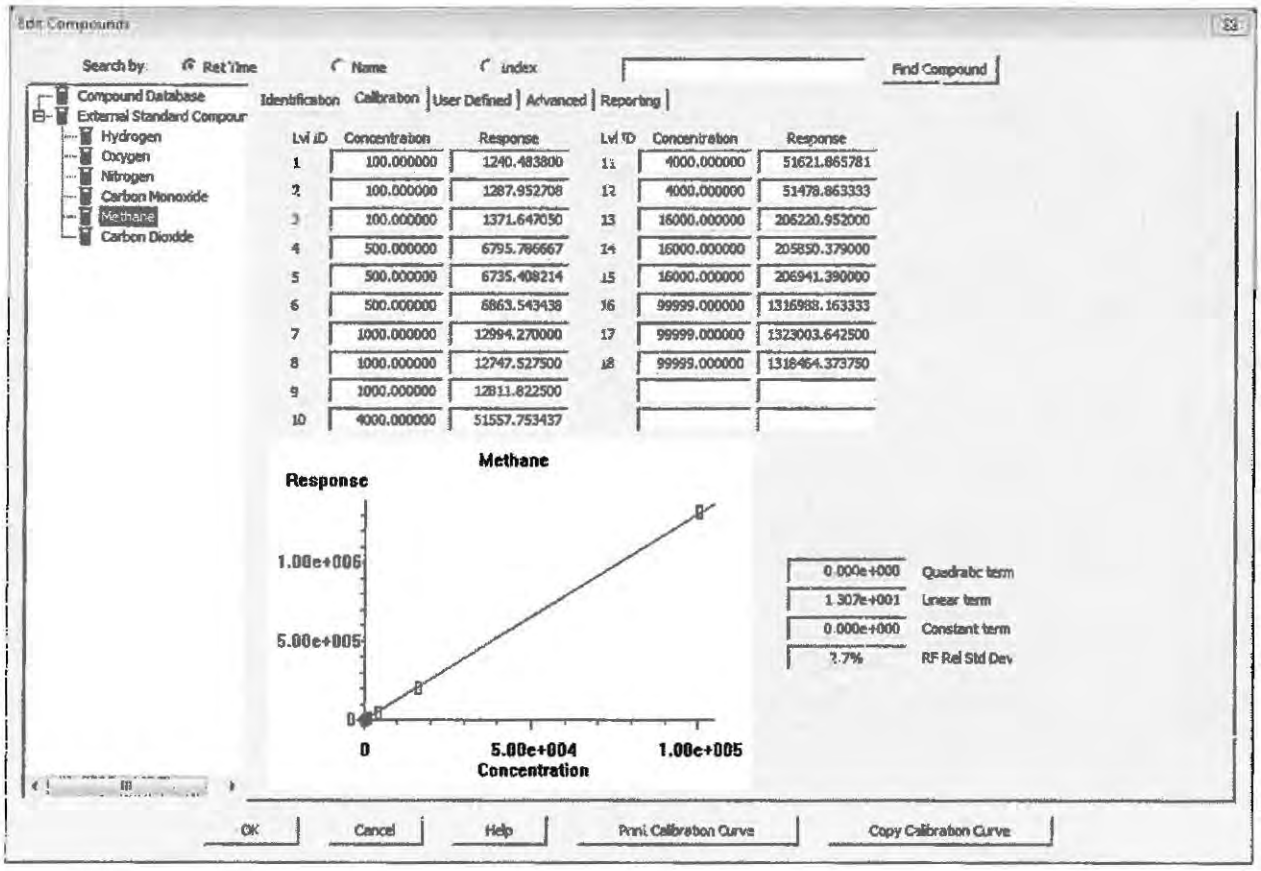
GC1_trip082216.M Tue Aug 23 12:46:23 2016

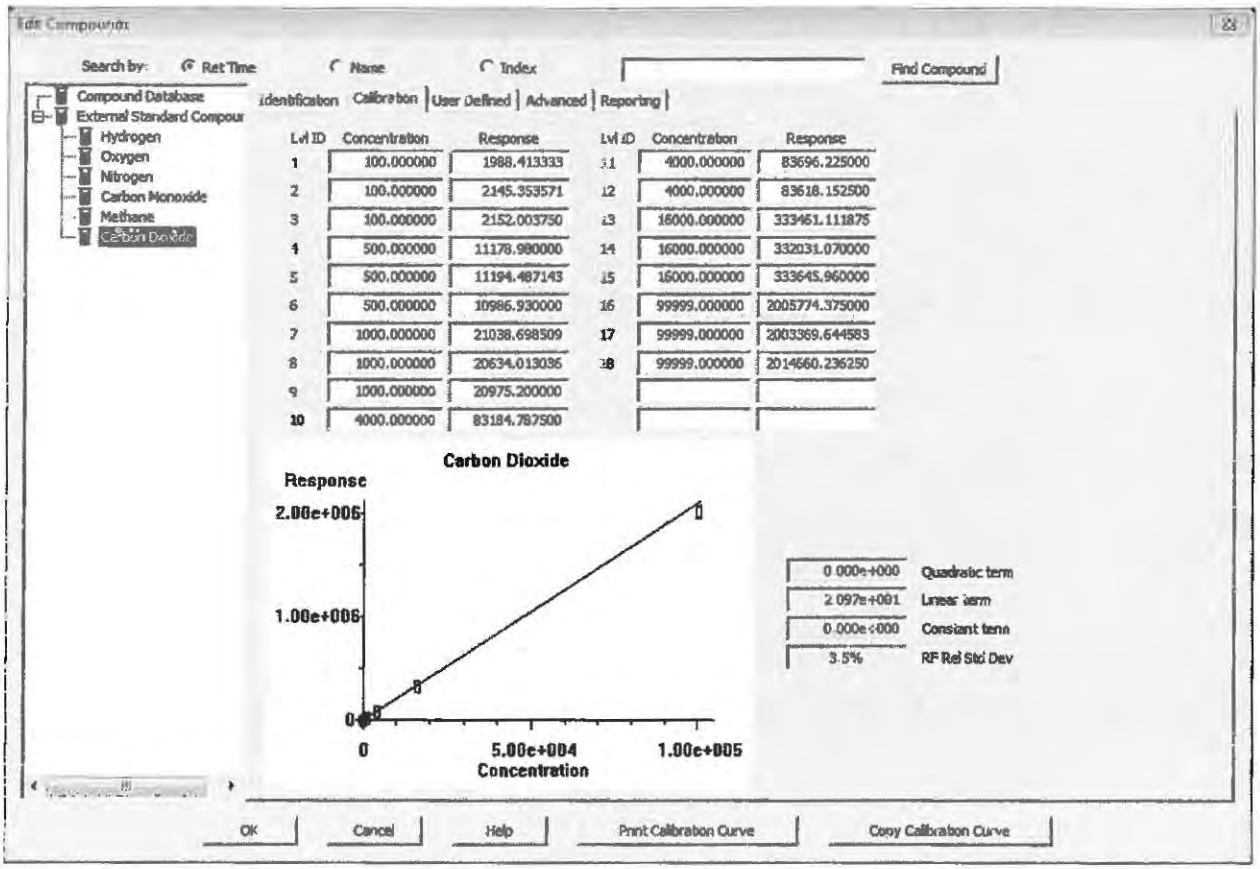

Edit Compounds
Search by:
Ret Time
Name
Index
Find Compound
Compound Database
External Standard Compour
Hydrogen
Oxygen
Nitrogen
Carbon Monoxide
Methane
Carbon Dioxide
Identification
Calibration
User Defined
Advanced
Reporting
Lvl ID
Concentration
Response
1 100.000000 1318.416292
2 100.000000 1357.918750
3 100.000000 1364.209250
4 500.000000 6815.687500
5 500.000000 6828.421250
6 500.000000 6684.453333
7 1000.000000 13018.693750
8 1000.000000 12790.669167
9 1000.000000 12871.107500
10 4000.000000 51763.320000
11 4000.000000 51926.397359
12 4000.000000 51950.777500
13 16000.000000 219834.478875
14 16000.000000 219703.808333
15 16000.000000 220897.580000
16 99999.000000
17 99999.000000
18 99999.000000
Hydrogen
Response
2.00e+005
1.00e+005
0
0
5.00e+003
1.00e+004
1.50e+004
Concentration
0.000e+000 Quadratic term
1.333e+001 Linear term
0.000e+000 Constant term
2.8% RF Rel Std Dev
OK
Cancel
Help
Print Calibration Curve
Copy Calibration Curve


Edit Compounds
Search by: Rel Time Name Index
Find Compound
Compound Database
External Standard Compour
Hydrogen
Oxygen
Nitrogen
Carbon Monoxide
Methane
Carbon Dioxide
Identification Calibration User Defined Advanced Reporting
Lvl ID Concentration Response
1 100.000000 1521.880000
2 100.000000 1485.001900
3 100.000000 1433.531600
4 500.000000 7949.221859
5 500.000000 7879.983053
6 500.000000 7942.678095
7 1000.000000 15812.392331
8 1000.000000 14995.216108
9 1000.000000 15104.595705
10 4000.000000 61073.373079
11 4000.000000 61649.797800
12 4000.000000 61581.561915
13 16000.000000 247351.270121
14 16000.000000 246817.691004
15 16000.000000 247924.946263
16 99999.000000 1611067.926667
17 99999.000000 1617146.823333
18 99999.000000 1588729.075833
Oxygen
Response
1.00e+006
0
0
5.00e+004
1.00e+005
Concentration
0.000e+000 Quadratic term
1.546e+001 Linear term
0.000e+000 Constant term
3.0% RF Rel Std Dev
OK
Cancel
Help
Print Calibration Curve
Copy Calibration Curve


Edit Compound
Search by: Ret Time Name Index
Find Compound
Compound Database
External Standard Compour
Hydrogen
Oxygen
Nitrogen
Carbon Monoxide
Methane
Carbon Dioxide
Identification Calibration User Defined Advanced Reporting
Lvl ID Concentration Response
1 100.000000 1803.189100
2 100.000000 1759.139200
3 100.000000 1779.964800
4 500.000000 9619.178141
5 500.000000 9090.209030
6 500.000000 9181.087405
7 1000.000000 17929.140169
8 1000.000000 17280.317225
9 1000.000000 17309.408461
10 4000.000000 68920.818587
11 4000.000000 69030.346367
12 4000.000000 69099.556418
13 16000.000000 277428.051014
14 16000.000000 276346.340246
15 16000.000000 277237.448737
16 99999.000000 1743724.933333
17 99999.000000 1755464.755000
18 99999.000000 1767960.530000
Nitrogen
Response
1.00e+006
0
0
5.00e+004
1.00e+005
Concentration
0.000e+000 Quadratic term
1.767e+001 Linear term
0.000e+000 Constant term
3.0% RF Rel Std Dev
OK
Cancel
Help
Print Calibration Curve
Copy Calibration Curve


Edit Compounds
Search by: Ret Time Name Index
Find Compound
Compound Database
External Standard Compour
Hydrogen
Oxygen
Nitrogen
Carbon Monoxide
Methane
Carbon Dioxide
Identification Calibration User Defined Advanced Reporting
Lvl ID Concentration Response
1 100.000000 1652.966000
2 100.000000 1675.910000
3 100.000000 1610.088750
4 500.000000 9221.740000
5 500.000000 9252.843750
6 500.000000 9129.055000
7 1000.000000 17512.455000
8 1000.000000 17130.546875
9 1000.000000 17155.979583
10 4000.000000 68622.526667
11 4000.000000 69213.985000
12 4000.000000 69491.831250
13 16000.000000 277383.051364
14 16000.000000 276365.795000
15 16000.000000 277794.480000
16 99999.000000
17 99999.000000
18 99999.000000
Carbon Monoxide
Response
2.00e+005
1.00e+005
0
0 5.00e+003 1.00e+004 1.50e+004
Concentration
0.000e+000 Quadratic term
1.735e+001 Linear term
0.000e+000 Constant term
3.8% RF Rel Std Dev
OK
Cancel
Help
Print Calibration Curve
Copy Calibration Curve


Edit Compounds
Search by: Ret Time Name Index
Find Compound
Compound Database
External Standard Compour
Hydrogen
Oxygen
Nitrogen
Carbon Monoxide
Methane
Carbon Dioxide
Identification Calibration User Defined Advanced Reporting
Lvl ID Concentration Response
1 100.000000 1240.483800
2 100.000000 1287.952708
3 100.000000 1371.647050
4 500.000000 6795.766667
5 500.000000 6735.408214
6 500.000000 6863.543438
7 1000.000000 12994.270000
8 1000.000000 12747.527500
9 1000.000000 12811.822500
10 4000.000000 51557.753437
11 4000.000000 51621.865781
12 4000.000000 51478.863333
13 16000.000000 206220.952000
14 16000.000000 205850.379000
15 16000.000000 206941.390000
16 99999.000000 1316988.163333
17 99999.000000 1323003.642500
18 99999.000000 1318464.373750
Methane
Response
1.00e+006
5.00e+005
0
0
5.00e+004
1.00e+005
Concentration
0.000e+000 Quadratic term
1.307e+001 Linear term
0.000e+000 Constant term
?.?% RF Rel Std Dev
OK
Cancel
Help
Print Calibration Curve
Copy Calibration Curve


Edit Compounds
Search by:
Ret Time
Name
Index
Find Compound
Compound Database
External Standard Compour
Hydrogen
Oxygen
Nitrogen
Carbon Monoxide
Methane
Carbon Dioxide
Identification
Calibration
User Defined
Advanced
Reporting
Lvl ID
Concentration
Response
1 100.000000 1988.413333
2 100.000000 2145.353571
3 100.000000 2152.003750
4 500.000000 11178.980000
5 500.000000 11194.487143
6 500.000000 10986.930000
7 1000.000000 21038.698509
8 1000.000000 20634.013036
9 1000.000000 20975.200000
10 4000.000000 83184.787500
11 4000.000000 83696.225000
12 4000.000000 83618.152500
13 16000.000000 333461.111875
14 16000.000000 332031.070000
15 16000.000000 333645.960000
16 99999.000000 2005774.375000
17 99999.000000 2003369.644583
18 99999.000000 2014660.236250
Carbon Dioxide
Response
2.00e+005
1.00e+005
0
0
5.00e+004
1.00e+005
Concentration
0.000e+000
Quadratic term
2.097e+001
Linear term
0.000e+000
Constant term
3.5%
RF Rel Std Dev
OK
Cancel
Help
Print Calibration Curve
Copy Calibration Curve

Calibration Status Report GC01_FXG

Method Path : I:\GC01\METHODS\
Method File : GC1_trip082216.M
Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
Last Update : Tue Aug 23 11:02:57 2016
Response Via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	1	100	0	I:\GC01\DATA\FXG\2016_08\22\08221601.D
2	2	100	0	I:\GC01\DATA\FXG\2016_08\22\08221602.D
3	3	100	0	I:\GC01\DATA\FXG\2016_08\22\08221603.D
4	4	500	0	I:\GC01\DATA\FXG\2016_08\22\08221604.D
5	5	500	0	I:\GC01\DATA\FXG\2016_08\22\08221605.D
6	6	500	0	I:\GC01\DATA\FXG\2016_08\22\08221606.D
7	7	1000	0	I:\GC01\DATA\FXG\2016_08\22\08221607.D
8	8	1000	0	I:\GC01\DATA\FXG\2016_08\22\08221608.D
9	9	1000	0	I:\GC01\DATA\FXG\2016_08\22\08221609.D
10	10	4000	0	I:\GC01\DATA\FXG\2016_08\22\08221610.D
11	11	4000	0	I:\GC01\DATA\FXG\2016_08\22\08221611.D
12	12	4000	0	I:\GC01\DATA\FXG\2016_08\22\08221612.D
13	13	16000	0	I:\GC01\DATA\FXG\2016_08\22\08221613.D
14	14	16000	0	I:\GC01\DATA\FXG\2016_08\22\08221614.D
15	15	16000	0	I:\GC01\DATA\FXG\2016_08\22\08221615.D
16	16	99999	0	I:\GC01\DATA\FXG\2016_08\23\08231604.D
17	17	99999	0	I:\GC01\DATA\FXG\2016_08\23\08231605.D
18	18	99999	0	I:\GC01\DATA\FXG\2016_08\23\08231606.D

#	ID	Update Time	Quant Time	Acquisition Time
1	1	Aug 23 08:43 2016	Aug 22 10:43 2016	22 Aug 2016 8:59 am
2	2	Aug 23 08:43 2016	Aug 22 11:01 2016	22 Aug 2016 9:42 am
3	3	Aug 23 08:44 2016	Aug 22 11:06 2016	22 Aug 2016 10:06 am
4	4	Aug 23 08:44 2016	Aug 22 12:00 2016	22 Aug 2016 11:42 am
5	5	Aug 23 08:45 2016	Aug 22 12:18 2016	22 Aug 2016 11:54 am
6	6	Aug 23 08:45 2016	Aug 22 12:36 2016	22 Aug 2016 12:10 pm
7	7	Aug 23 08:46 2016	Aug 22 13:04 2016	22 Aug 2016 12:42 pm
8	8	Aug 23 08:46 2016	Aug 22 13:42 2016	22 Aug 2016 12:58 pm
9	9	Aug 23 08:46 2016	Aug 22 13:57 2016	22 Aug 2016 1:34 pm
10	10	Aug 23 08:47 2016	Aug 22 14:25 2016	22 Aug 2016 2:07 pm
11	11	Aug 23 08:47 2016	Aug 22 14:38 2016	22 Aug 2016 2:19 pm
12	12	Aug 23 08:48 2016	Aug 22 14:48 2016	22 Aug 2016 2:30 pm
13	13	Aug 23 08:48 2016	Aug 22 15:18 2016	22 Aug 2016 2:54 pm
14	14	Aug 23 08:48 2016	Aug 22 15:28 2016	22 Aug 2016 3:11 pm
15	15	Aug 23 08:49 2016	Aug 22 15:40 2016	22 Aug 2016 3:22 pm
16	16	Aug 23 10:21 2016	Aug 23 10:21 2016	23 Aug 2016 9:59 am
17	17	Aug 23 10:53 2016	Aug 23 10:52 2016	23 Aug 2016 10:25 am
18	18	Aug 23 11:02 2016	Aug 23 11:02 2016	23 Aug 2016 10:45 am

GC1_trip082216.M Tue Aug 23 12:47:00 2016

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221602.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 9:42 am
Operator : amf
Sample : std s11-07191601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 11:01:20 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.714	1358	1029.962	ppm	
2)	Oxygen	2.237	1485	975.768	ppm	m
3)	Nitrogen	2.402	1759	975.571	ppm	m
4)	Carbon Monoxide	3.108	1676	1013.881	ppm	m
5)	Methane	5.087	1288	1038.266	ppm	
6)	Carbon Dioxide	6.749	2145	1078.927	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

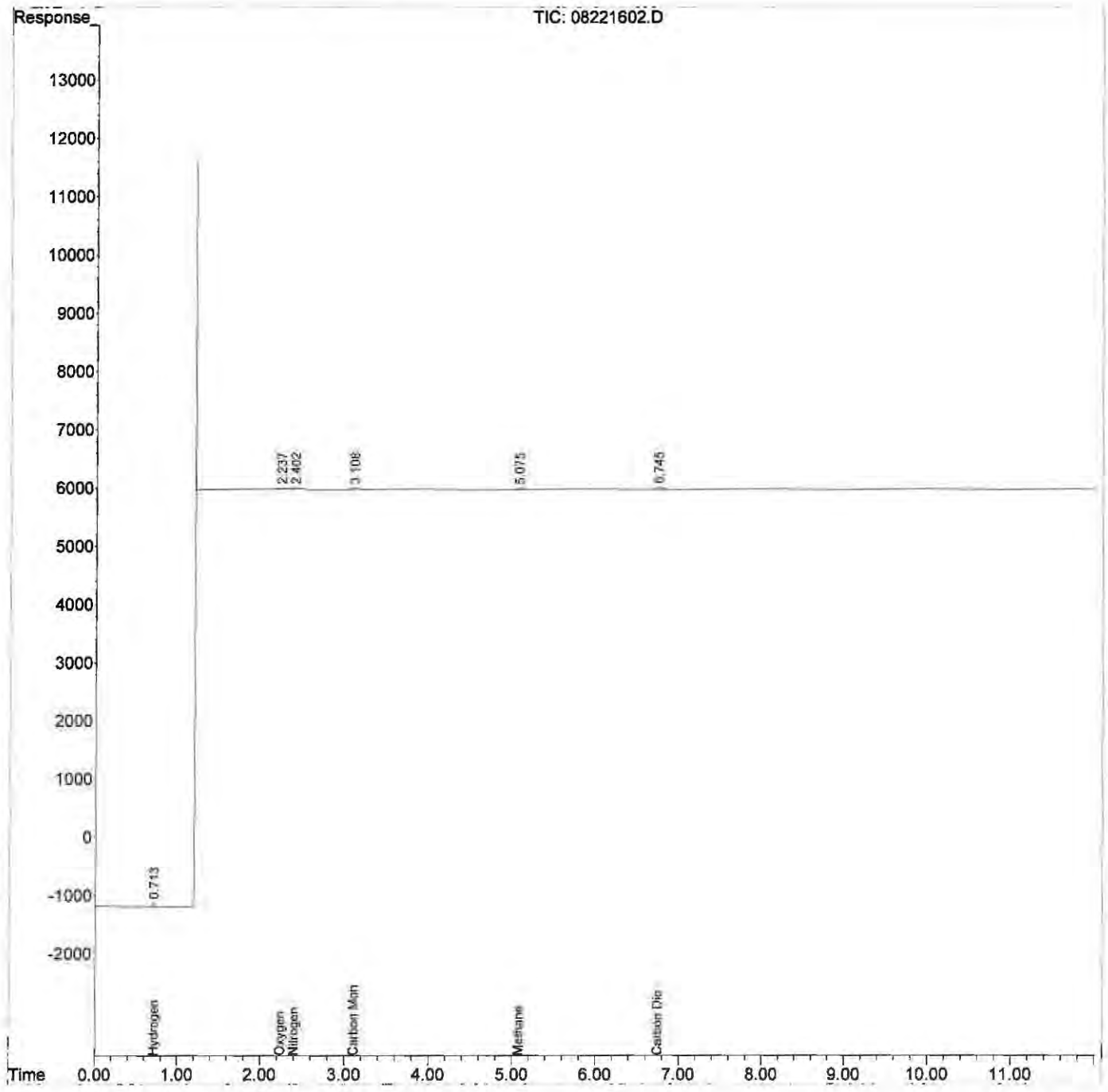
8/22/16

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221602.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 9:42 am
Operator : amf
Sample : std s11-07191601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 11:01:20 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

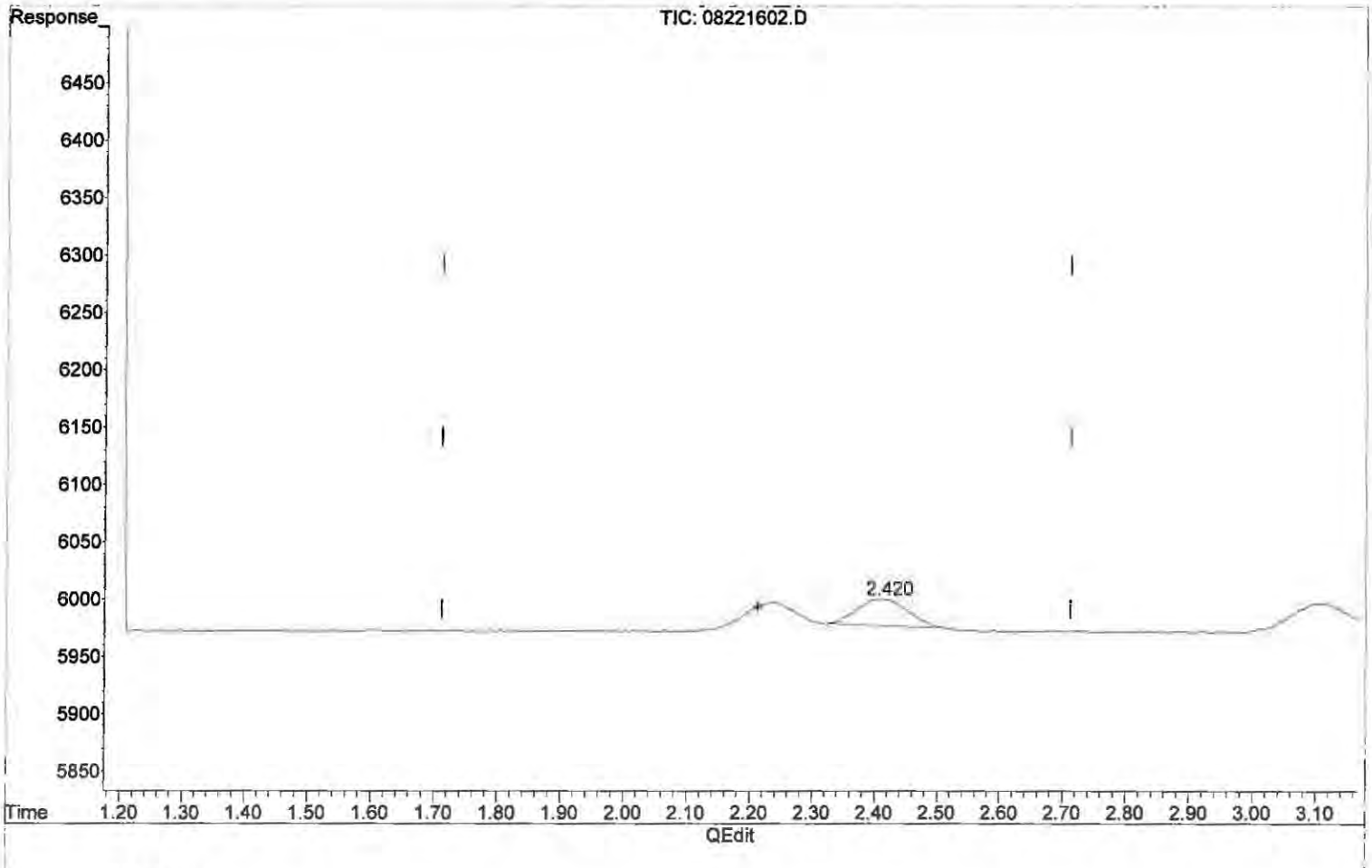
Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221602.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 9:42 am
Operator : amf
Sample : std s11-07191601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 10:59:02 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(2) Oxygen

2.420min 842.016 ppm

response 1281

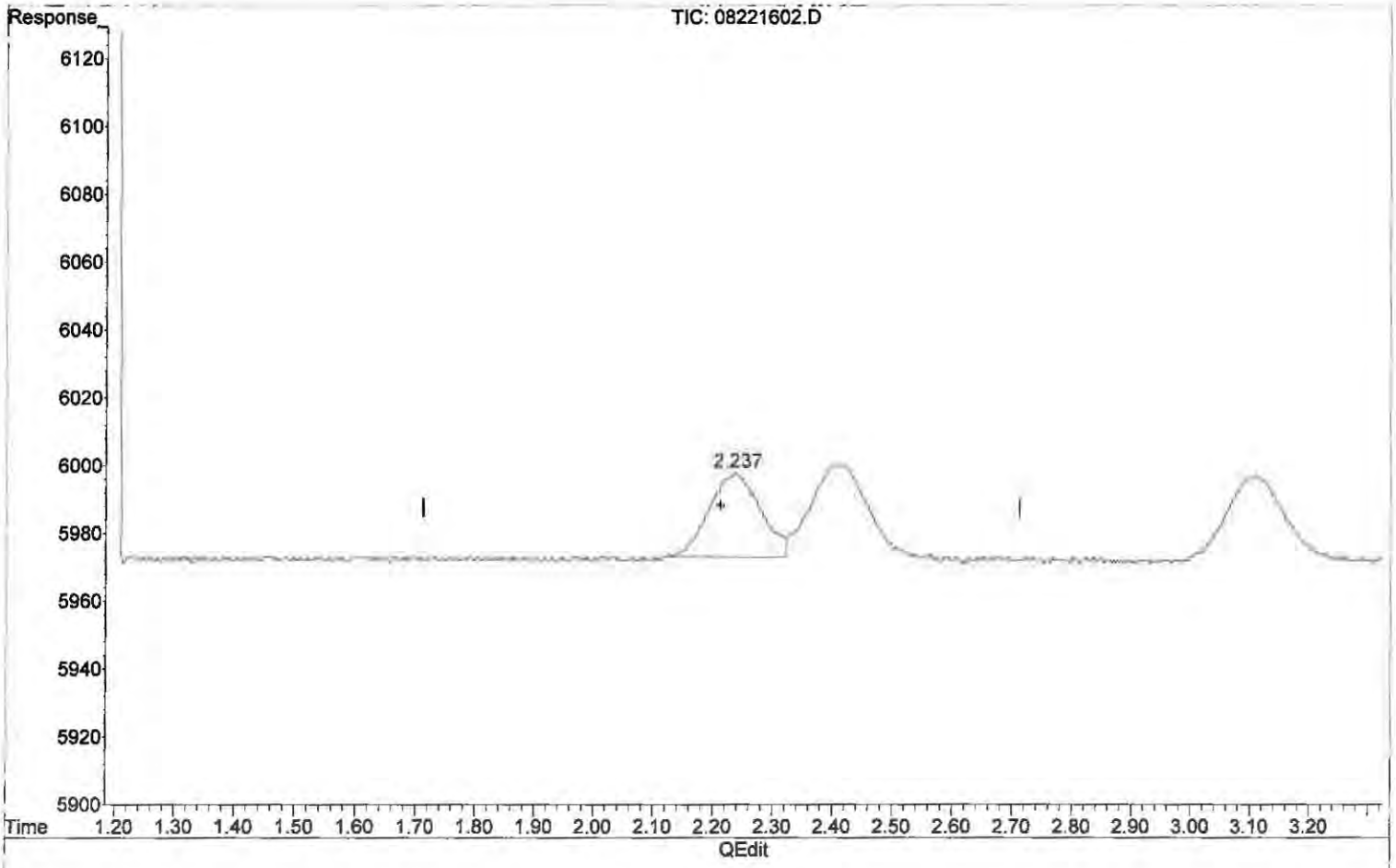
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : I:\GC01\DATA\FXG\2016_08\22\
Data File : 08221602.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 9:42 am
Operator : amf
Sample : std s11-07191601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 11:01:20 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(2) Oxygen

2.237min 975.768 ppm m

response 1485

8/29/16 BLC

8/26/16

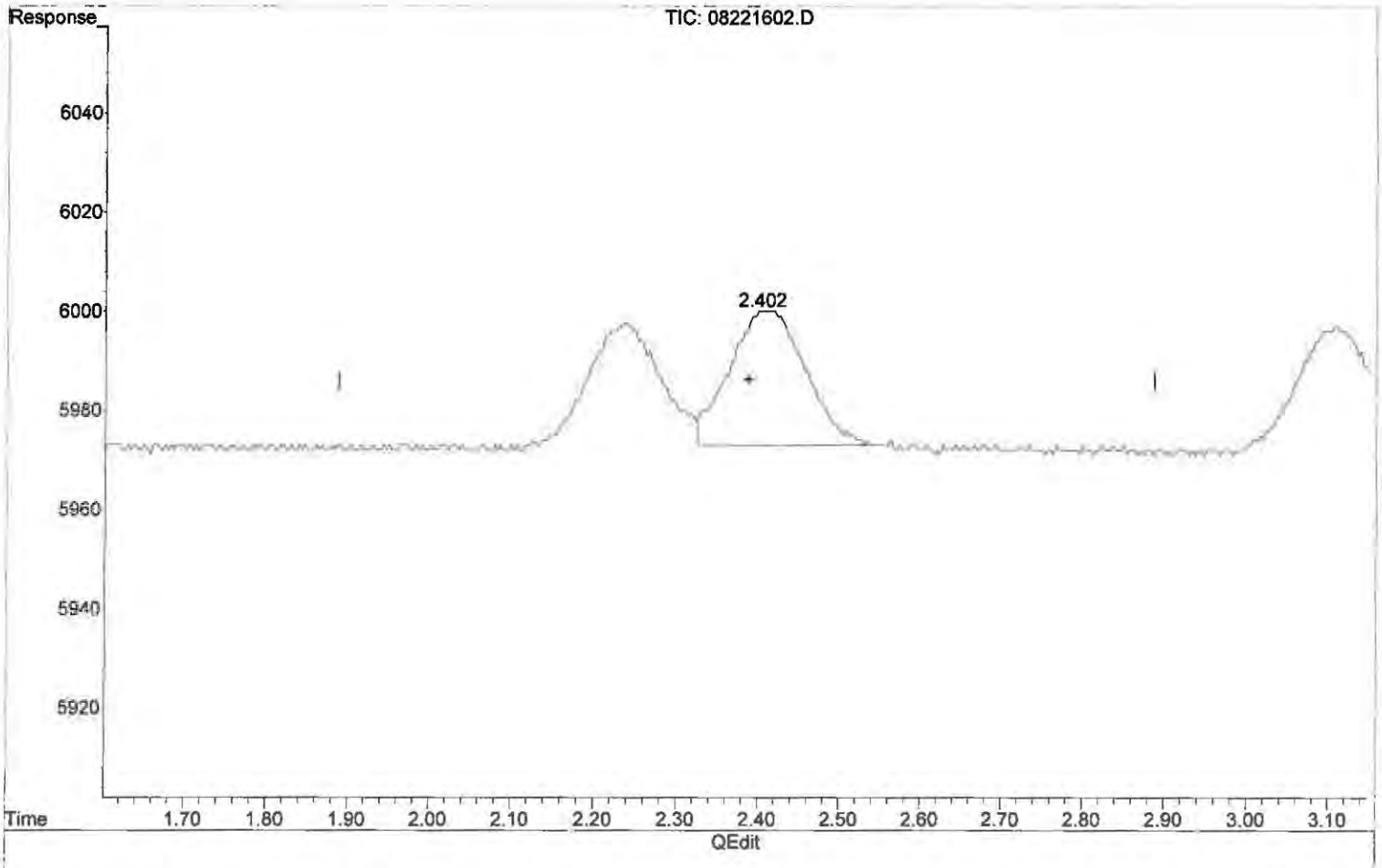
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221602.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 9:42 am
Operator : amf
Sample : std s11-07191601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 10:59:02 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(3) Nitrogen

2.402min 975.571 ppm m

response 1759

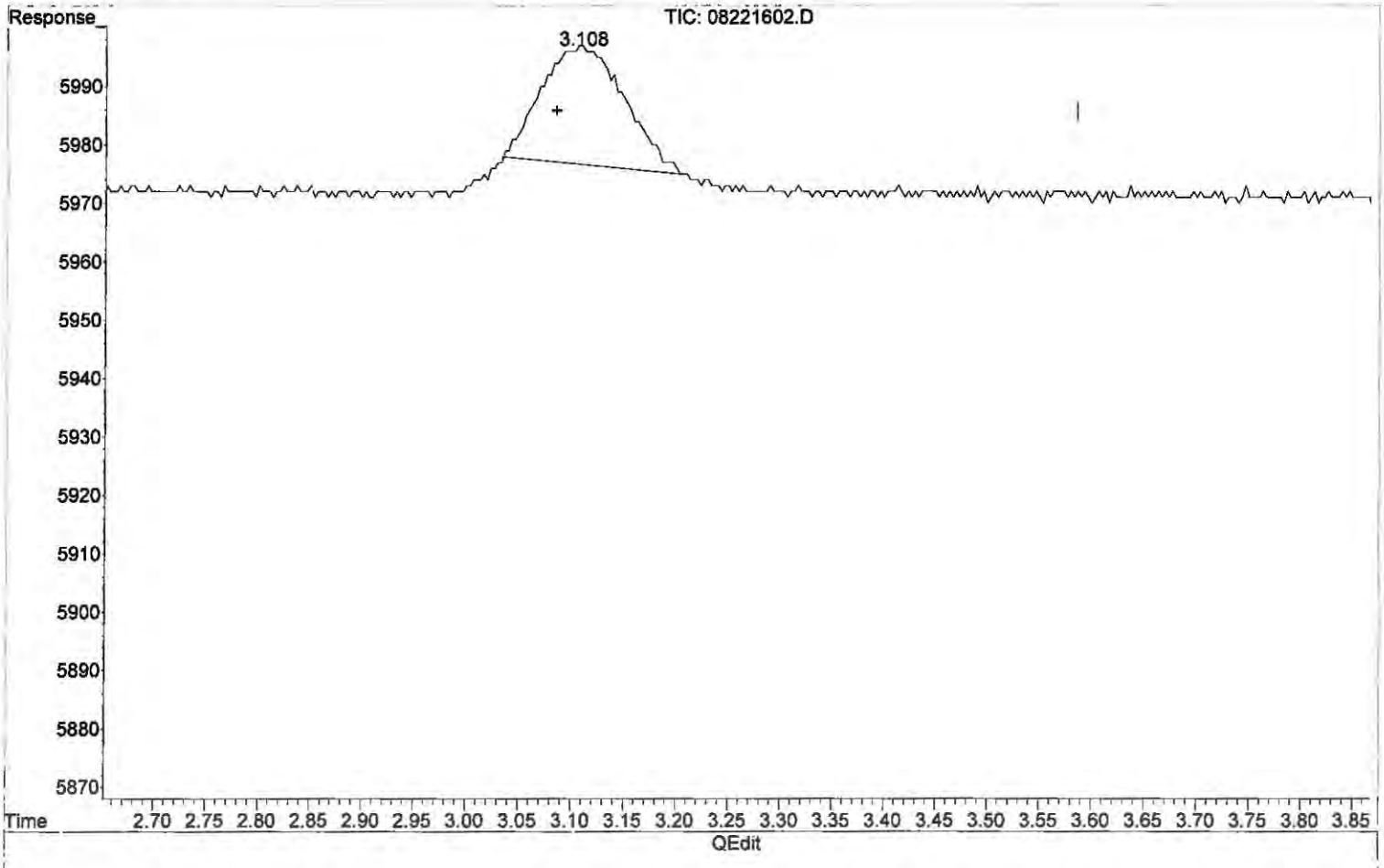
8/29/16
BLC
No Revisions

(+) = Expected Retention Time

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221602.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 9:42 am
Operator : amf
Sample : std s11-07191601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 10:59:02 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(4) Carbon Monoxide

3.111min 669.201 ppm

response 1106

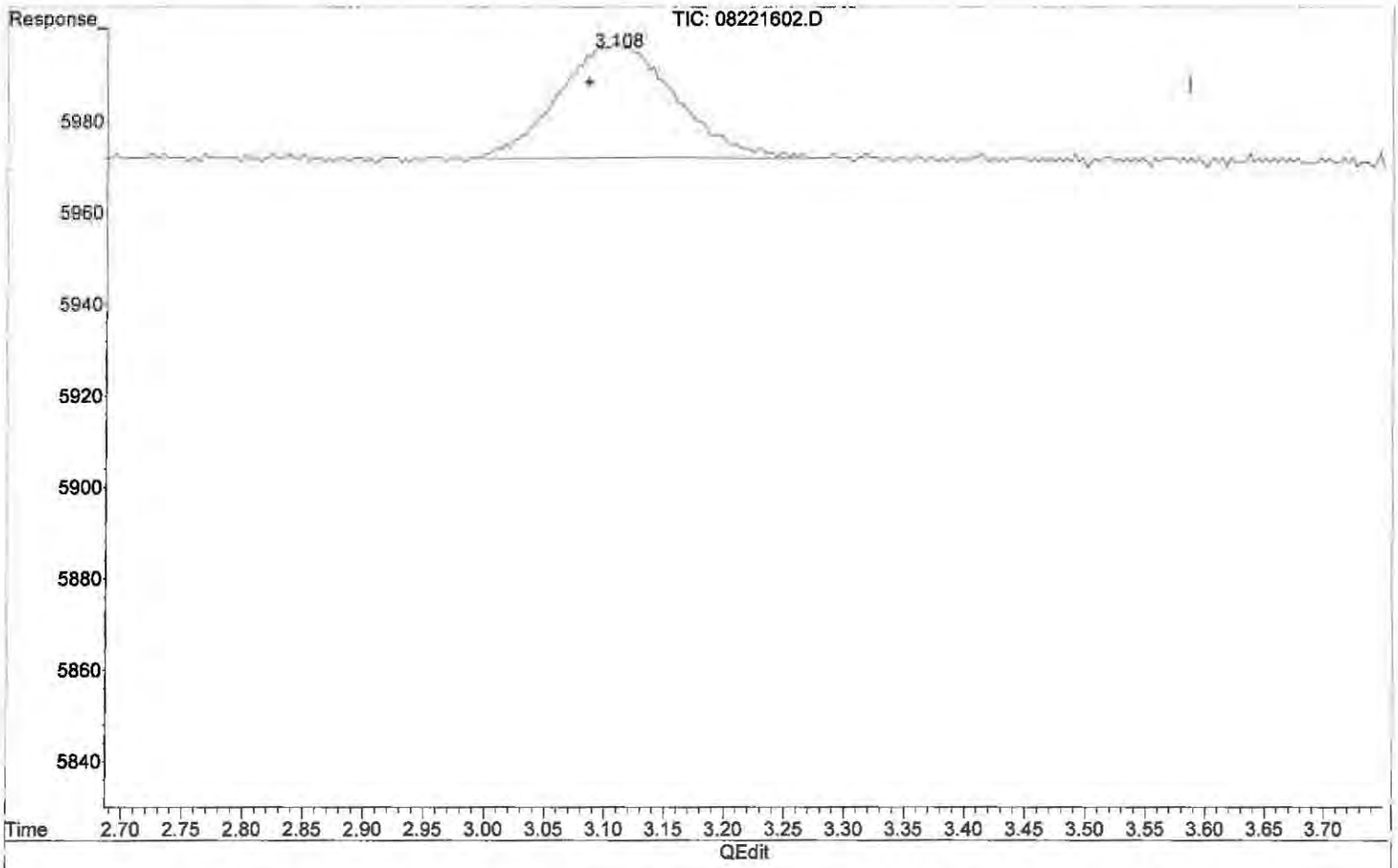
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : I:\GC01\DATA\FXG\2016_08\22\
Data File : 08221602.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 9:42 am
Operator : amf
Sample : std s11-07191601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 11:01:20 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(4) Carbon Monoxide

3.108min 1013.881 ppm m

response 1676

8/24/16 BLC

8/29/16

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221603.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 10:06 am
Operator : amf
Sample : std s11-07191601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 11:06:51 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

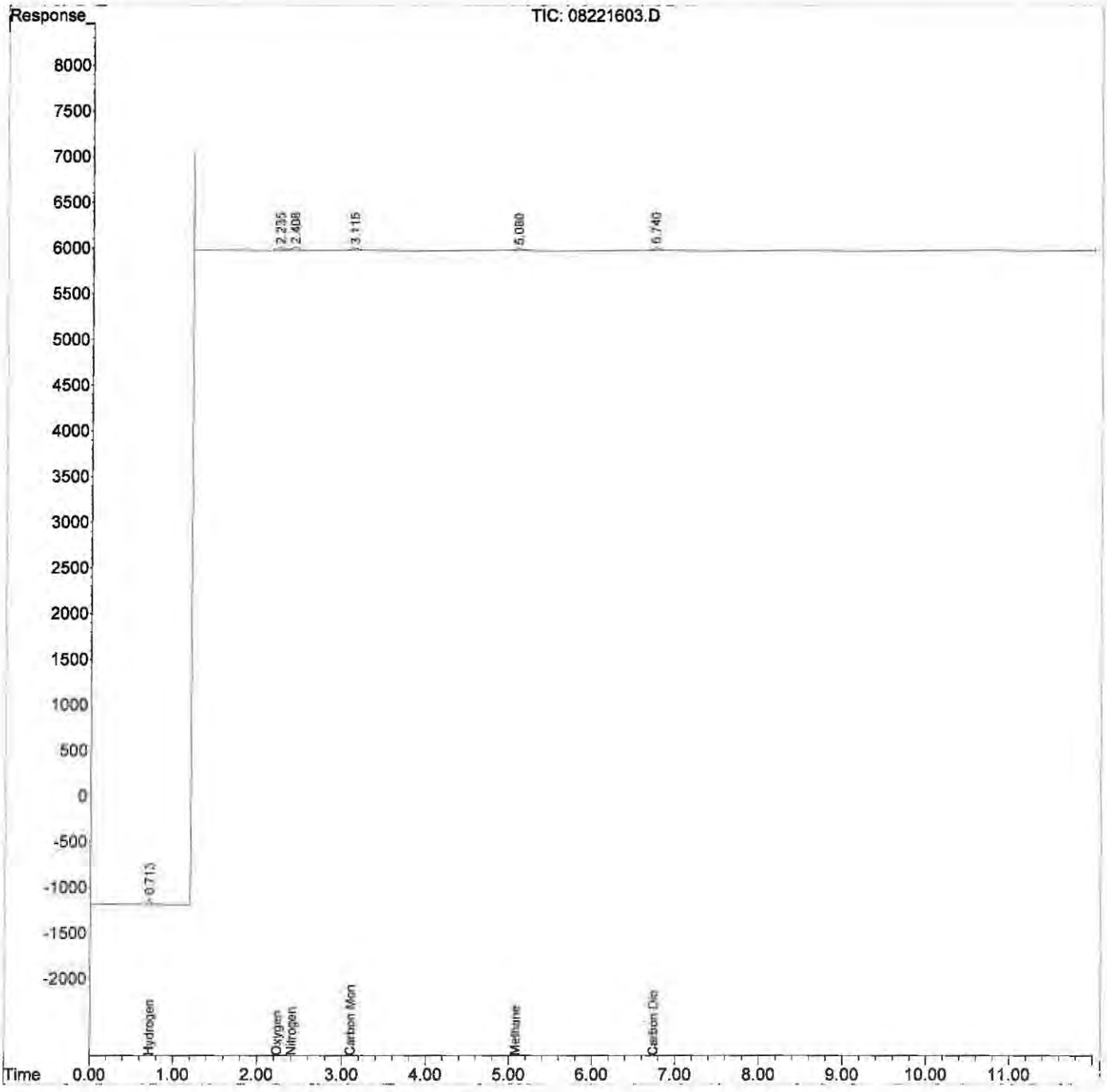
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.713	1364	1019.461	ppm	m
2)	Oxygen	2.235	1434	953.500	ppm	m
3)	Nitrogen	2.408	1780	999.327	ppm	m
4)	Carbon Monoxide	3.106	1610	967.347	ppm	
5)	Methane	5.080	1372	1084.976	ppm	m
6)	Carbon Dioxide	6.749	2152	1041.183	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221603.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 10:06 am
Operator : amf
Sample : std s11-07191601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 11:06:51 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

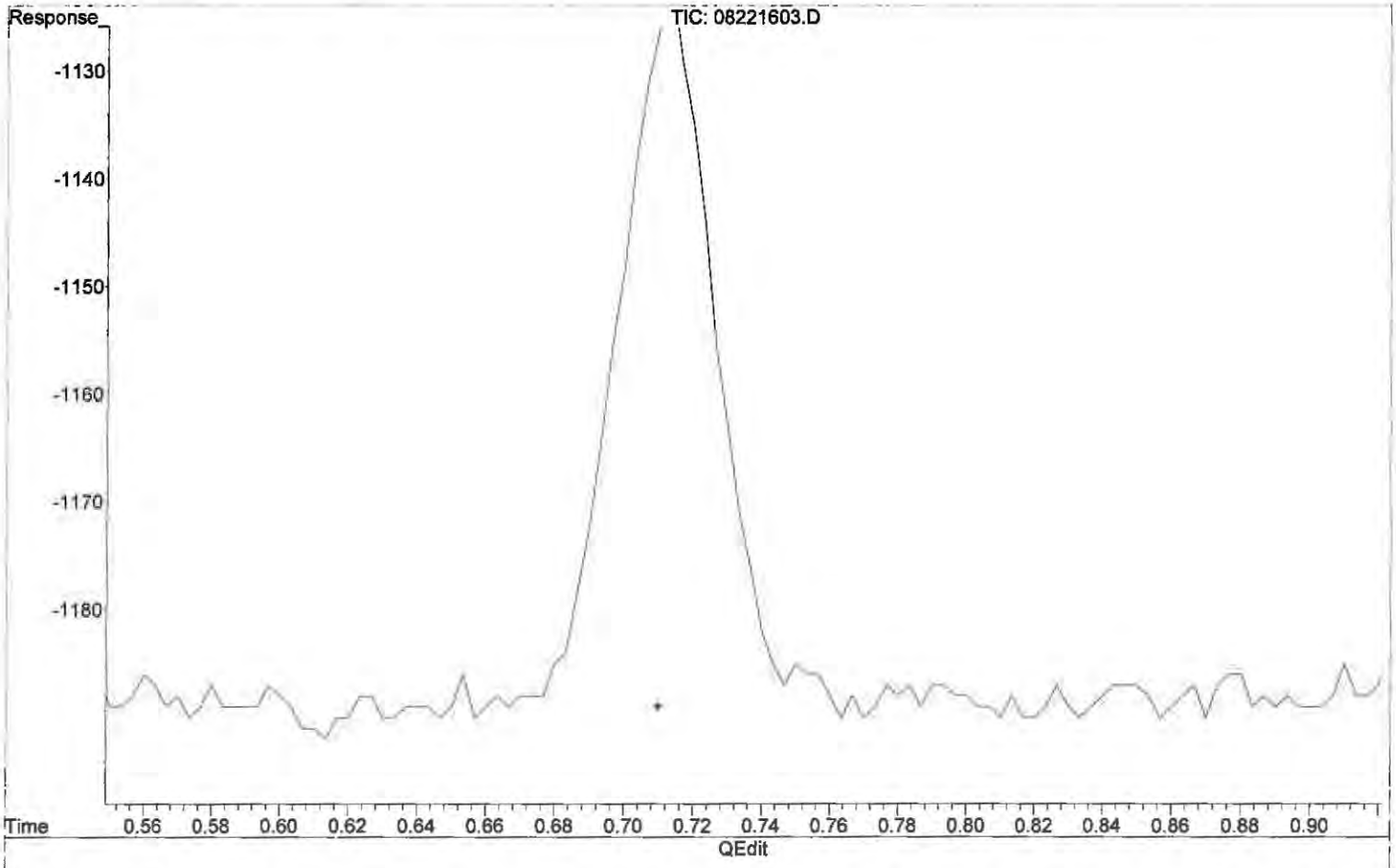


Quantitation Report (Qedit)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221603.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 10:06 am
Operator : amf
Sample : std s11-07191601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 11:02:47 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(1) Hydrogen

0.714min 987.772 ppm

response 1322

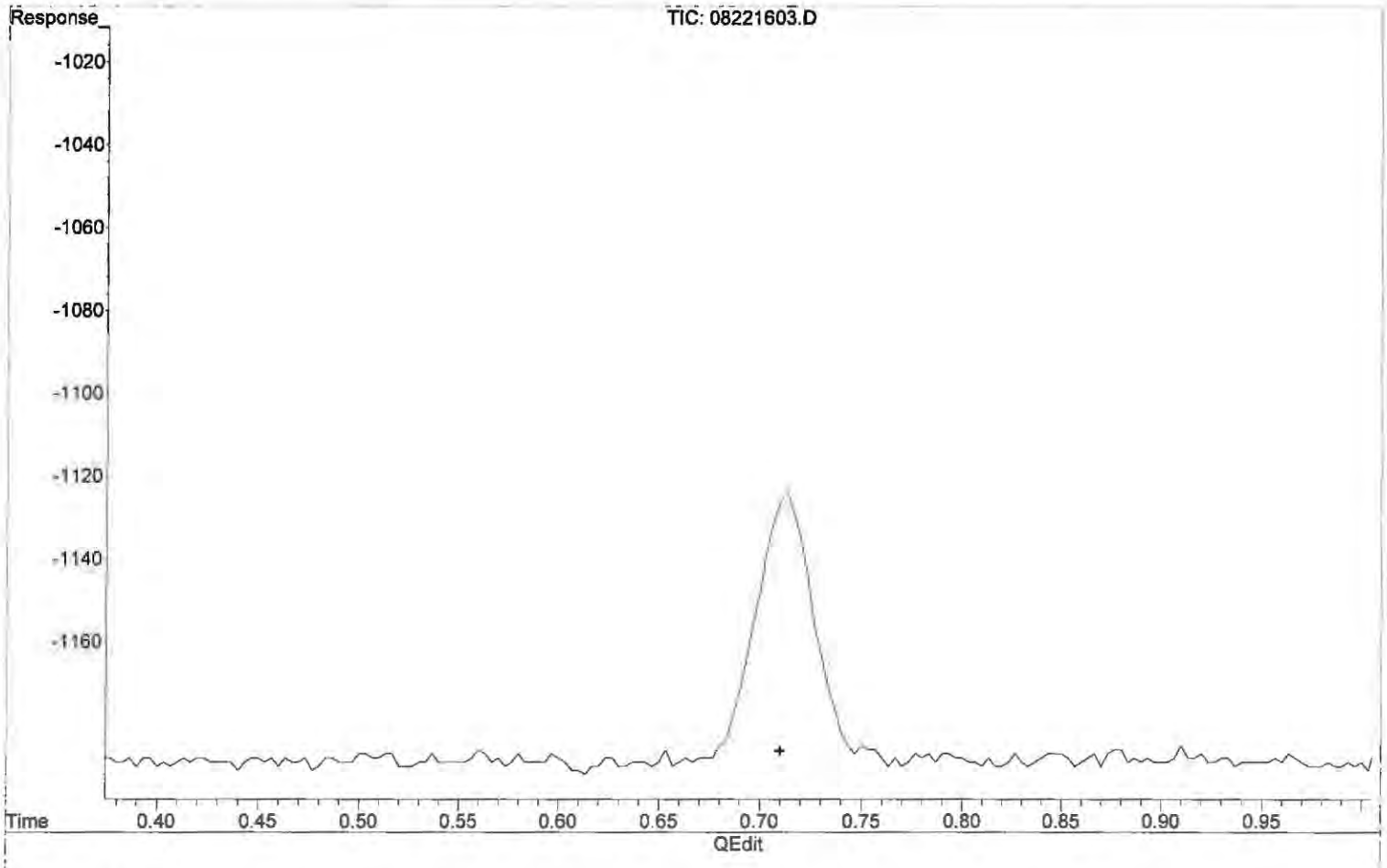
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221603.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 10:06 am
Operator : amf
Sample : std s11-07191601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 11:02:47 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(1) Hydrogen

0.713min 1019.461 ppm m

response 1364

8/22/16 BLC

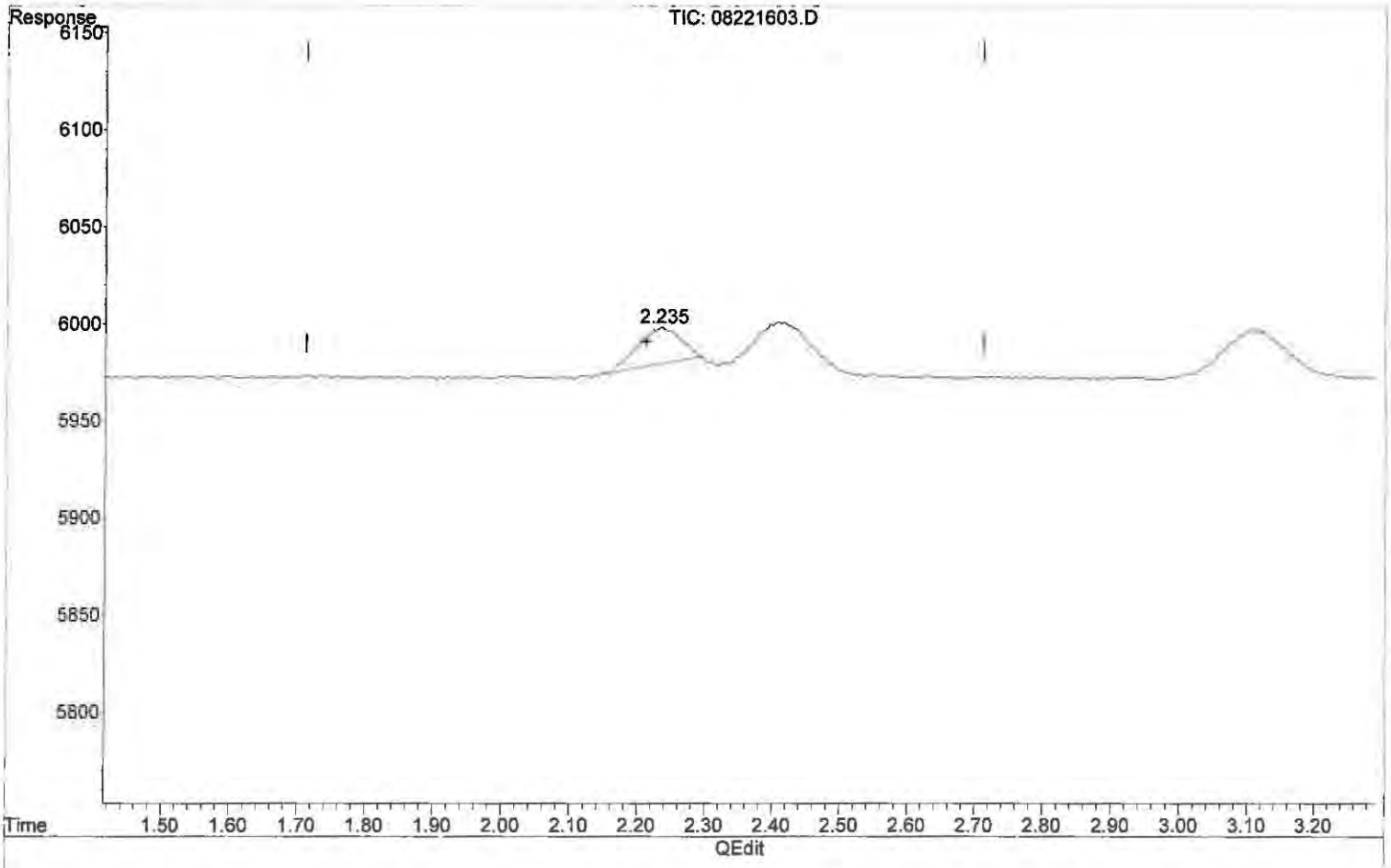
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221603.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 10:06 am
Operator : amf
Sample : std s11-07191601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 11:02:47 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(2) Oxygen

2.237min 537.065 ppm

response 807

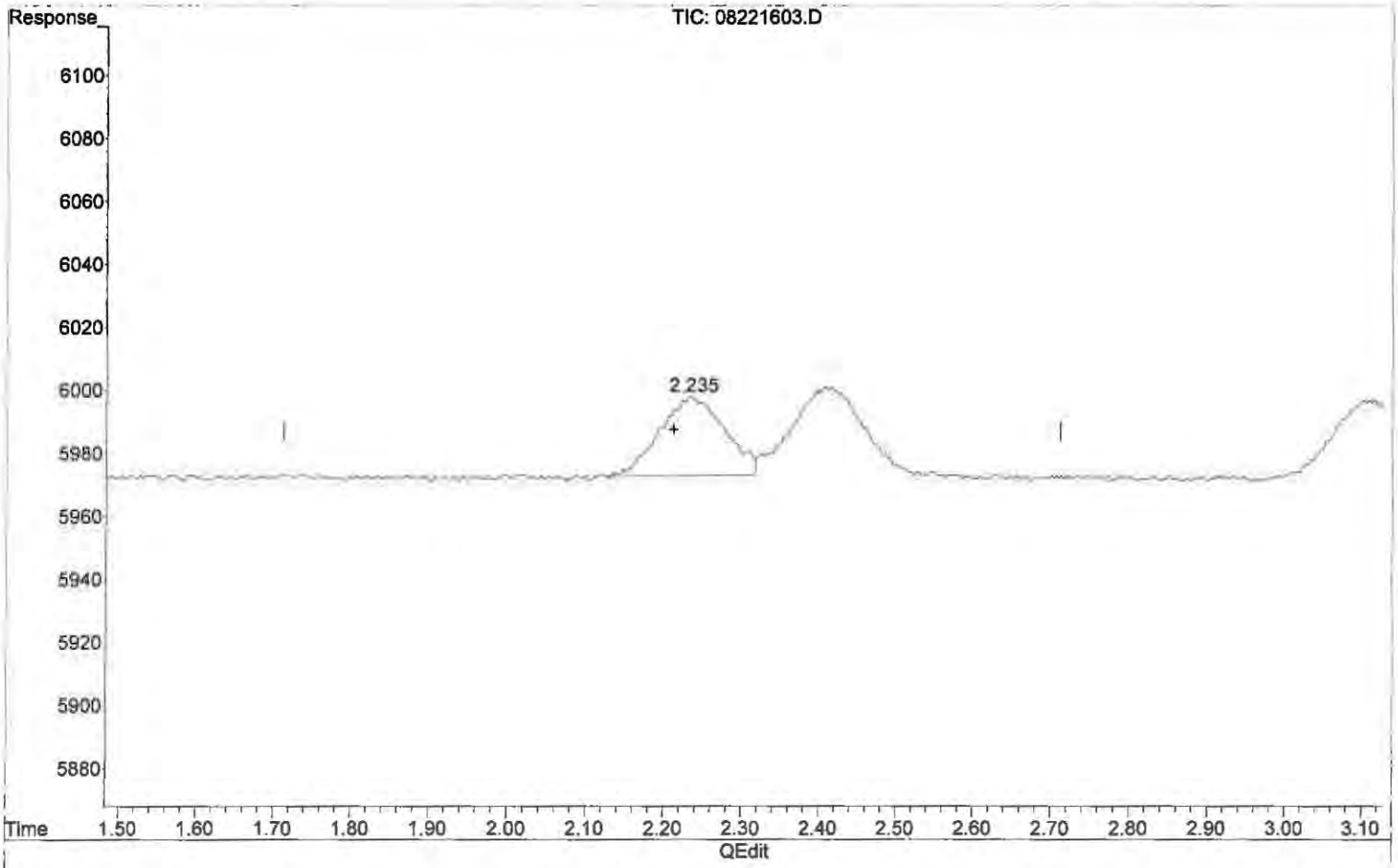
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221603.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 10:06 am
Operator : amf
Sample : std s11-07191601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 11:02:47 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(2) Oxygen

2.235min 953.500 ppm m

response 1434

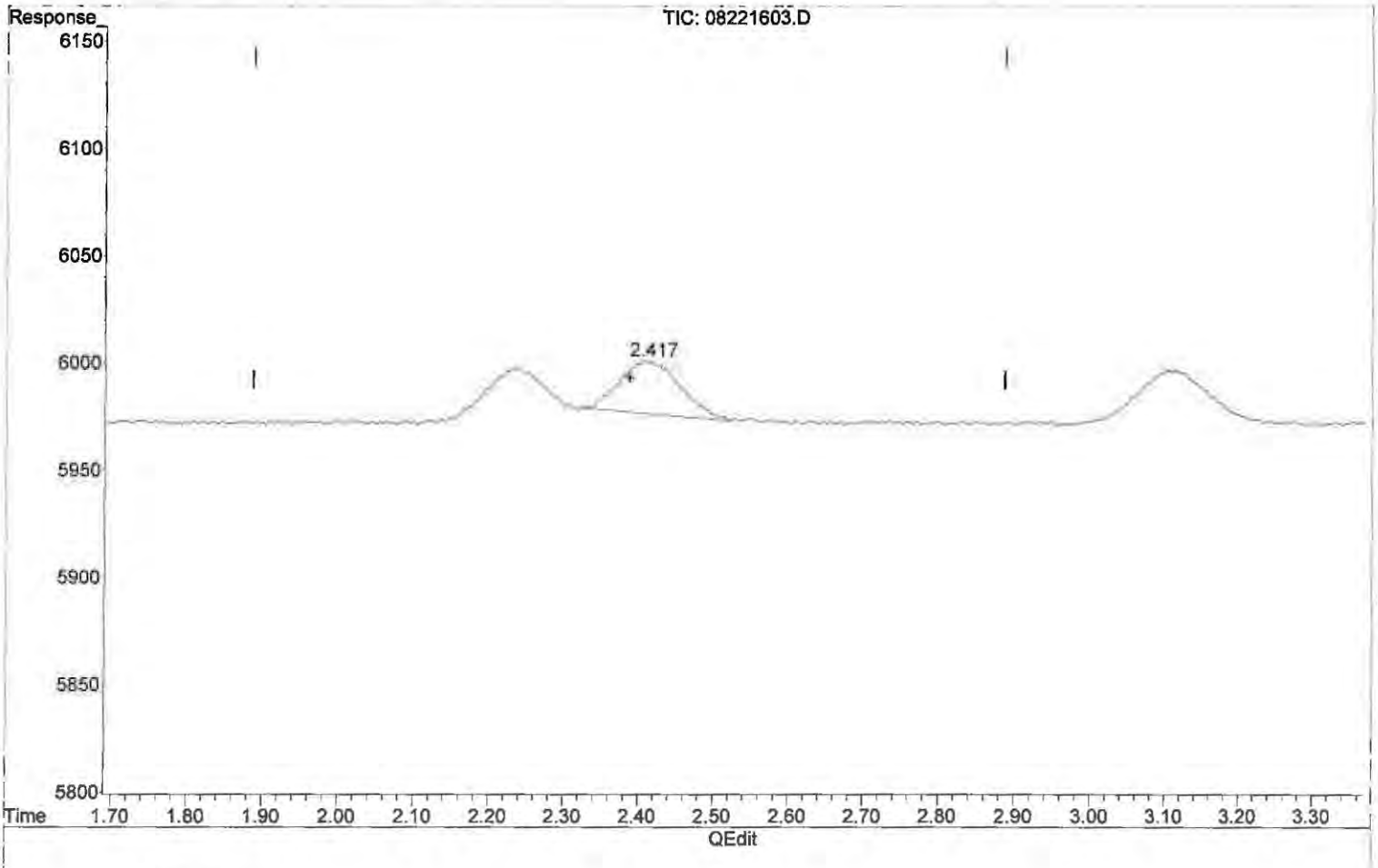
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221603.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 10:06 am
Operator : amf
Sample : std s11-07191601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 11:02:47 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(3) Nitrogen

2.412min 767.417 ppm

response 1367

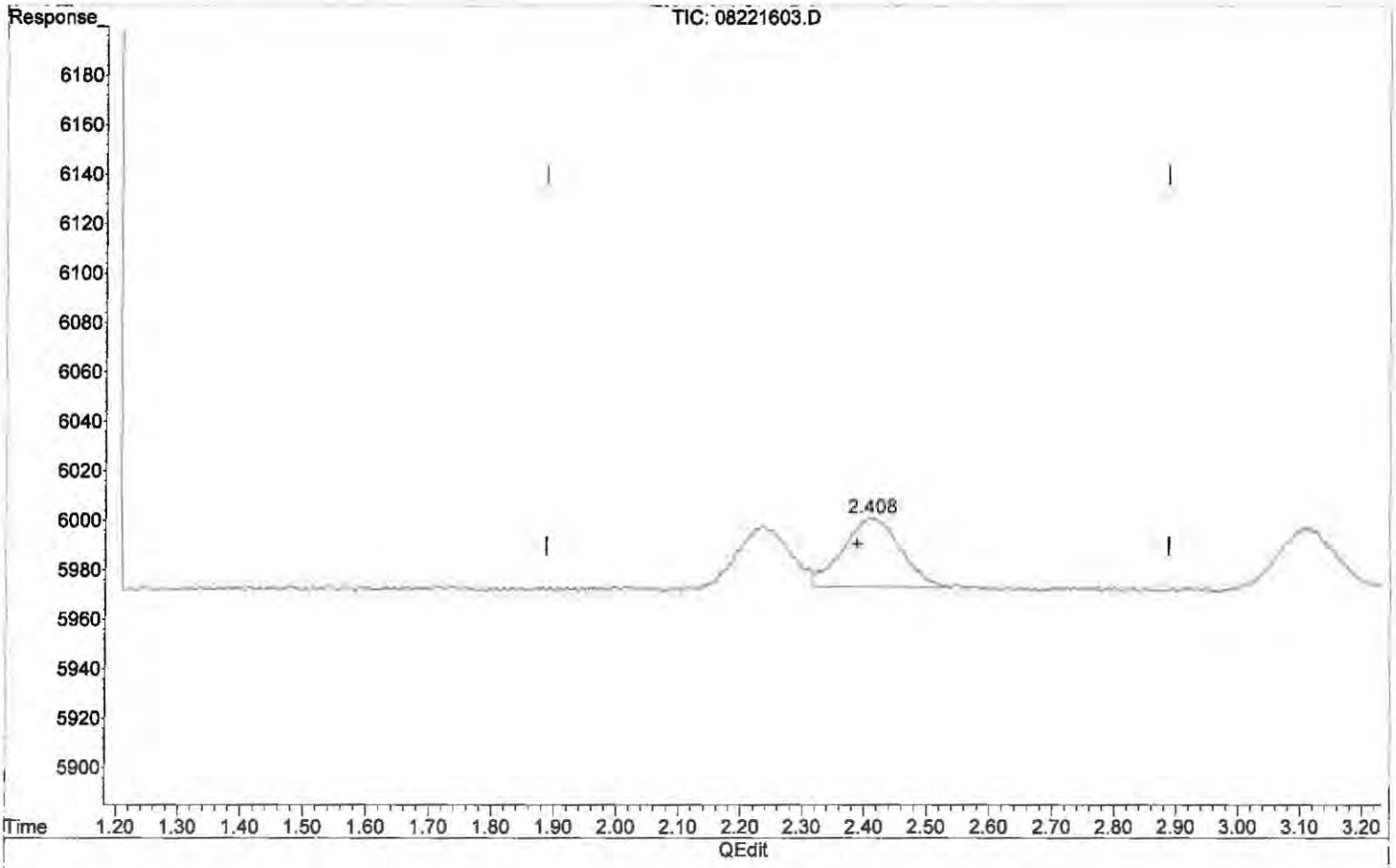
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221603.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 10:06 am
Operator : amf
Sample : std s11-07191601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 11:02:47 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(3) Nitrogen

2.408min 999.327 ppm m

response 1780

8/22/16 BLC

8/28/16

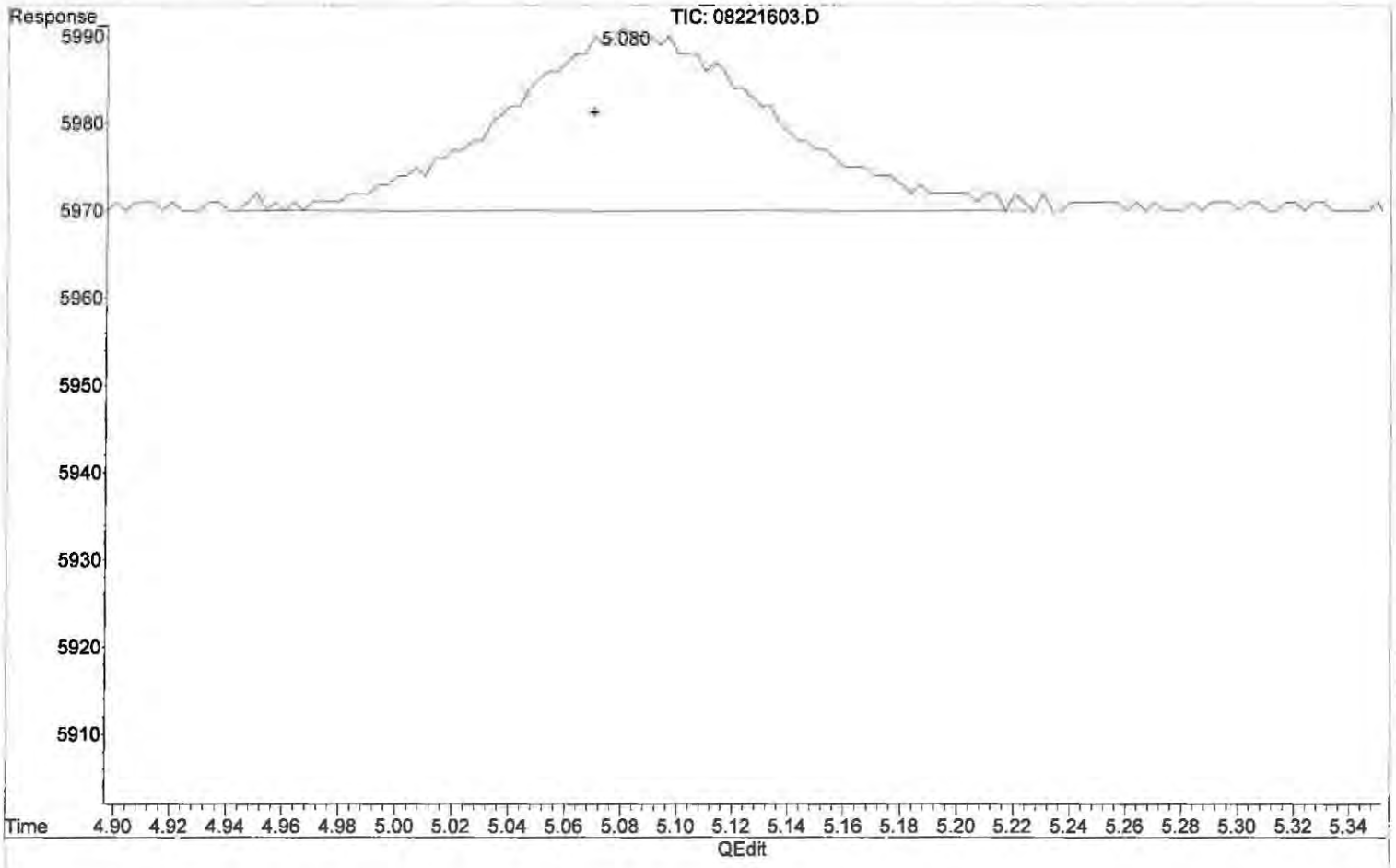
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221603.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 10:06 am
Operator : amf
Sample : std s11-07191601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 11:02:47 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(5) Methane

5.083min 1045.028 ppm

response 1321

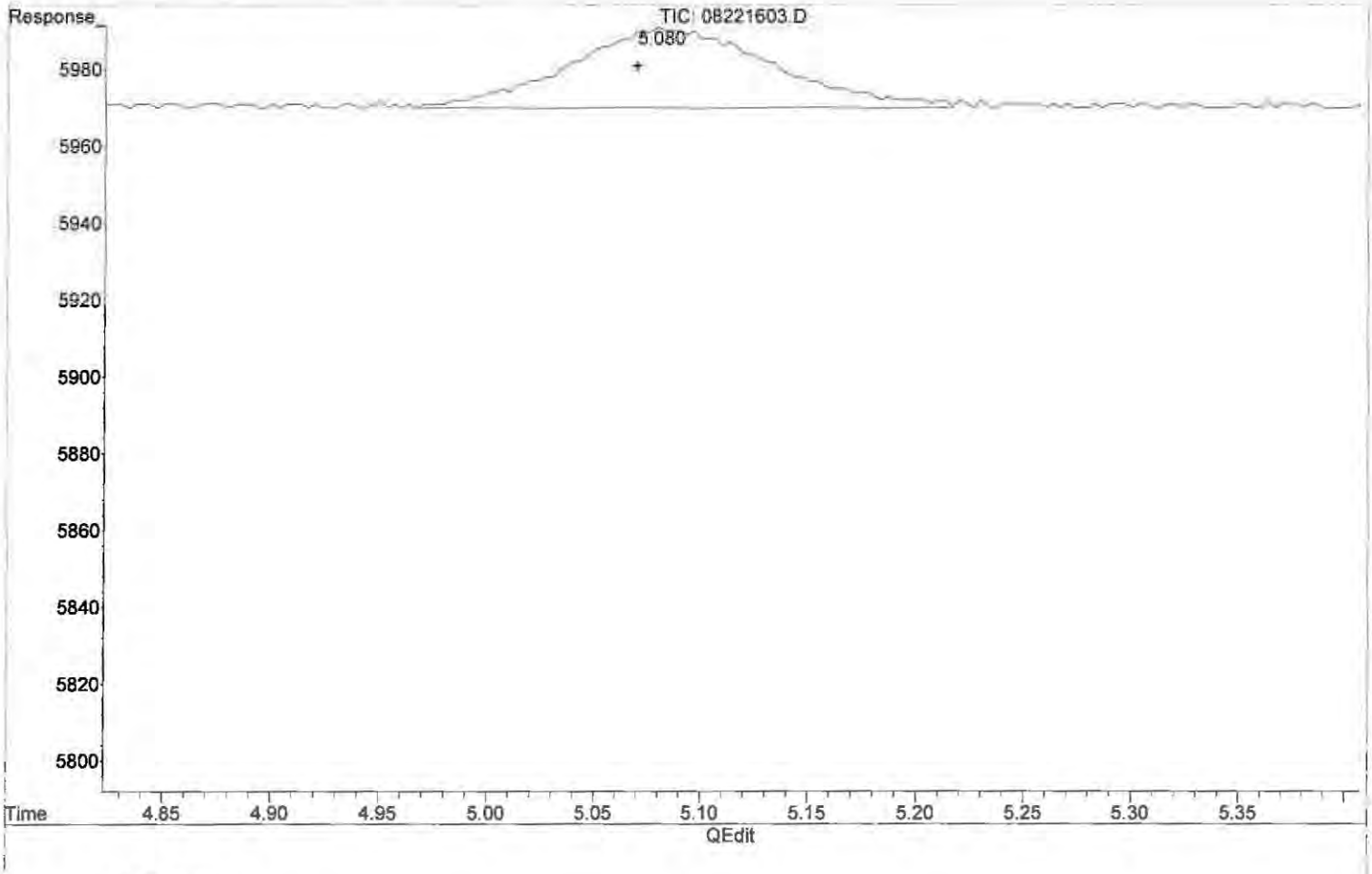
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221603.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 10:06 am
Operator : amf
Sample : std s11-07191601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 11:02:47 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



(5) Methane

5.080min 1084.976 ppm m

response 1372

8/22/16 BLC

8/23/16

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221604.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 11:42 am
Operator : amf
Sample : std s11-12041503
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 12:00:16 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.710	6816	5069.580	ppm
2)	Oxygen	2.234	7949	5211.853	ppm
3)	Nitrogen	2.407	9619	5141.082	ppm
4)	Carbon Monoxide	3.101	9222	5438.969	ppm
5)	Methane	5.083	6796	5087.540	ppm
6)	Carbon Dioxide	6.745	11179	5222.308	ppm

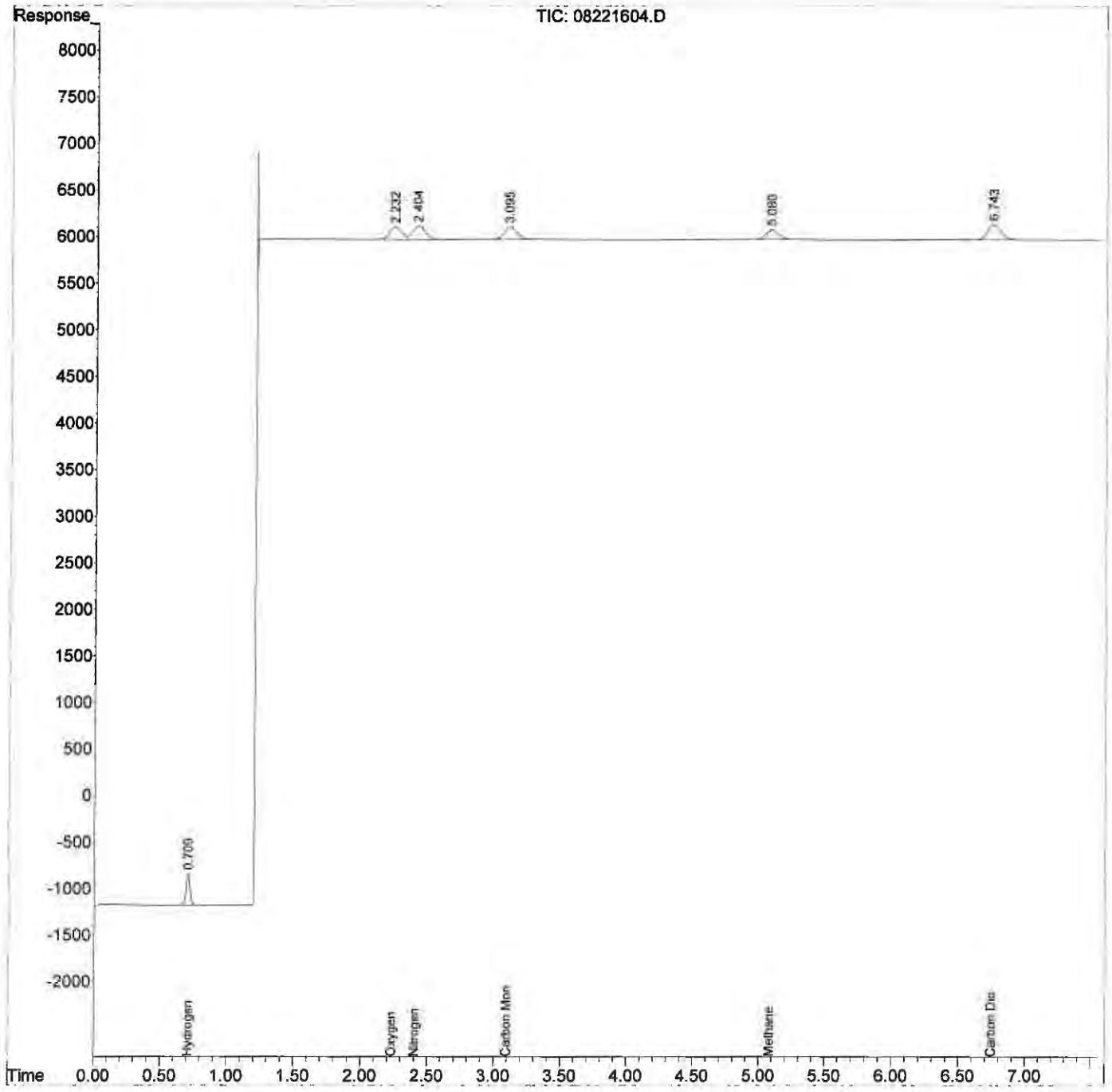
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221604.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 11:42 am
Operator : amf
Sample : std s11-12041503
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 12:00:16 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221605.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 11:54 am
Operator : amf
Sample : std s11-12041503
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 12:18:35 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

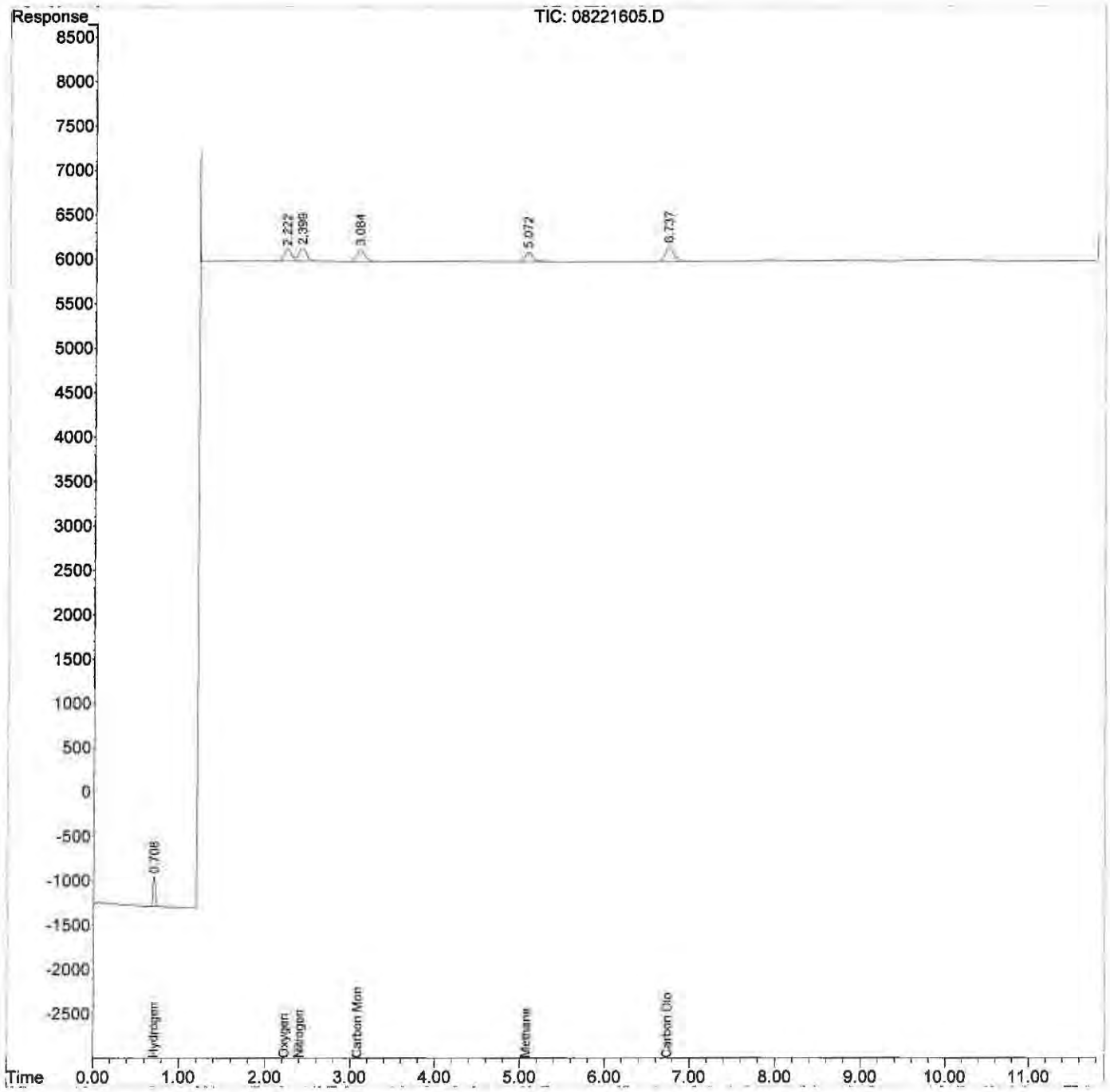
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.709	6828	5054.643	ppm
2)	Oxygen	2.224	7880	5226.963	ppm
3)	Nitrogen	2.401	9090	5004.155	ppm
4)	Carbon Monoxide	3.088	9253	5456.239	ppm
5)	Methane	5.075	6735	5122.723	ppm
6)	Carbon Dioxide	6.740	11194	5254.662	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221605.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 11:54 am
Operator : amf
Sample : std s11-12041503
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 12:18:35 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221606.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 12:10 pm
Operator : amf
Sample : std s11-12041503
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 12:36:24 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

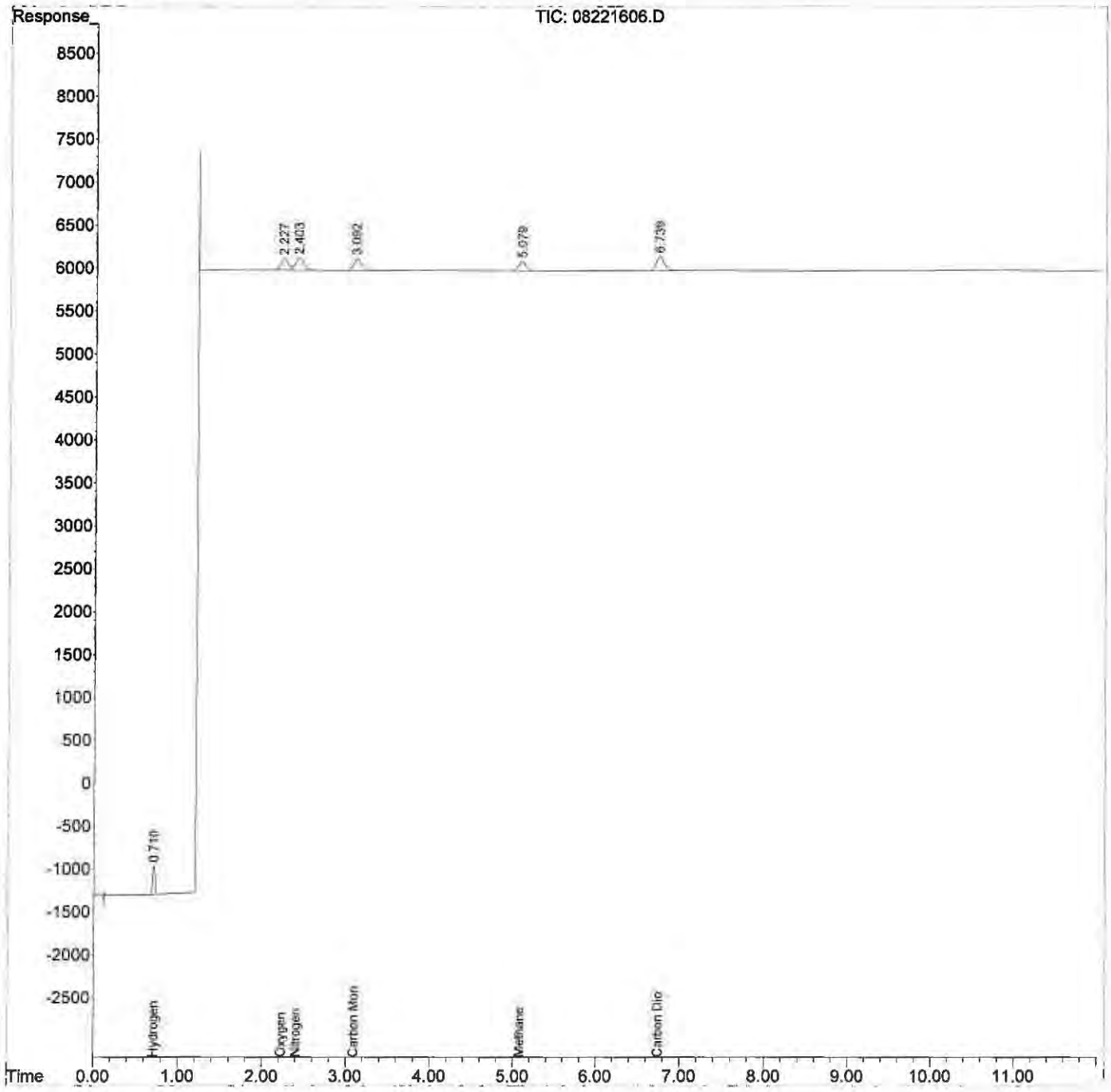
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.712	6684	4937.282	ppm
2)	Oxygen	2.229	7943	5221.147	ppm
3)	Nitrogen	2.405	9181	5053.344	ppm
4)	Carbon Monoxide	3.096	9129	5286.762	ppm
5)	Methane	5.079	6864	5194.678	ppm
6)	Carbon Dioxide	6.741	10987	5105.231	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221606.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 12:10 pm
Operator : amf
Sample : std s11-12041503
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 12:36:24 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221607.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 12:42 pm
Operator : amf
Sample : std s11-12041502
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 13:04:59 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

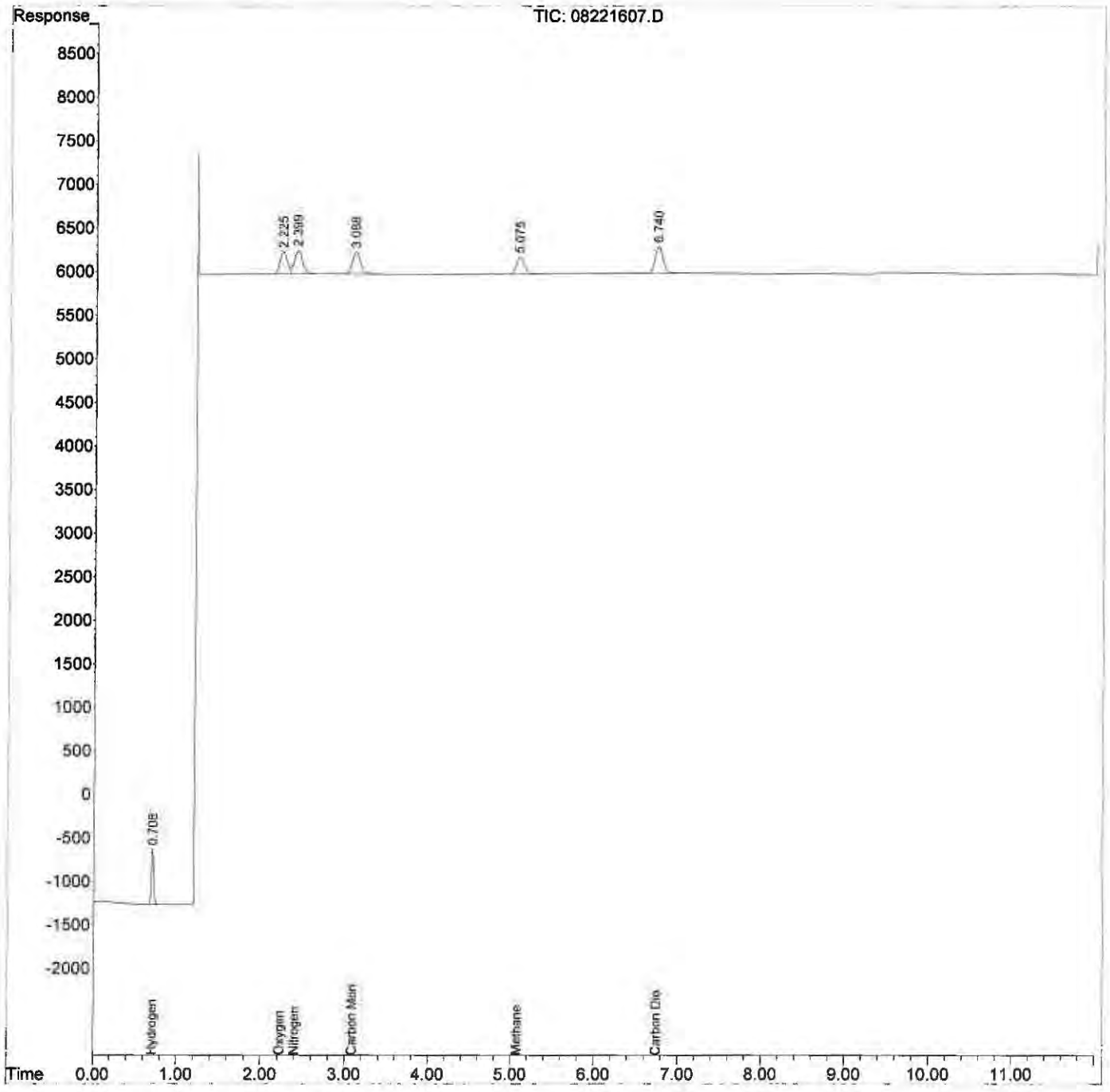
	Compound	R.T.	Response	Conc Units
Target Compounds				
1)	Hydrogen	0.710	13019	9636.034 ppm
2)	Oxygen	2.226	15612	10187.765 ppm
3)	Nitrogen	2.402	17929	9850.826 ppm
4)	Carbon Monoxide	3.090	17512	10045.681 ppm
5)	Methane	5.078	12994	9771.314 ppm
6)	Carbon Dioxide	6.741	21039	9741.754 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221607.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 12:42 pm
Operator : amf
Sample : std s11-12041502
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 13:04:59 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221608.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 12:58 pm
Operator : amf
Sample : std s11-12041502
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 13:42:55 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

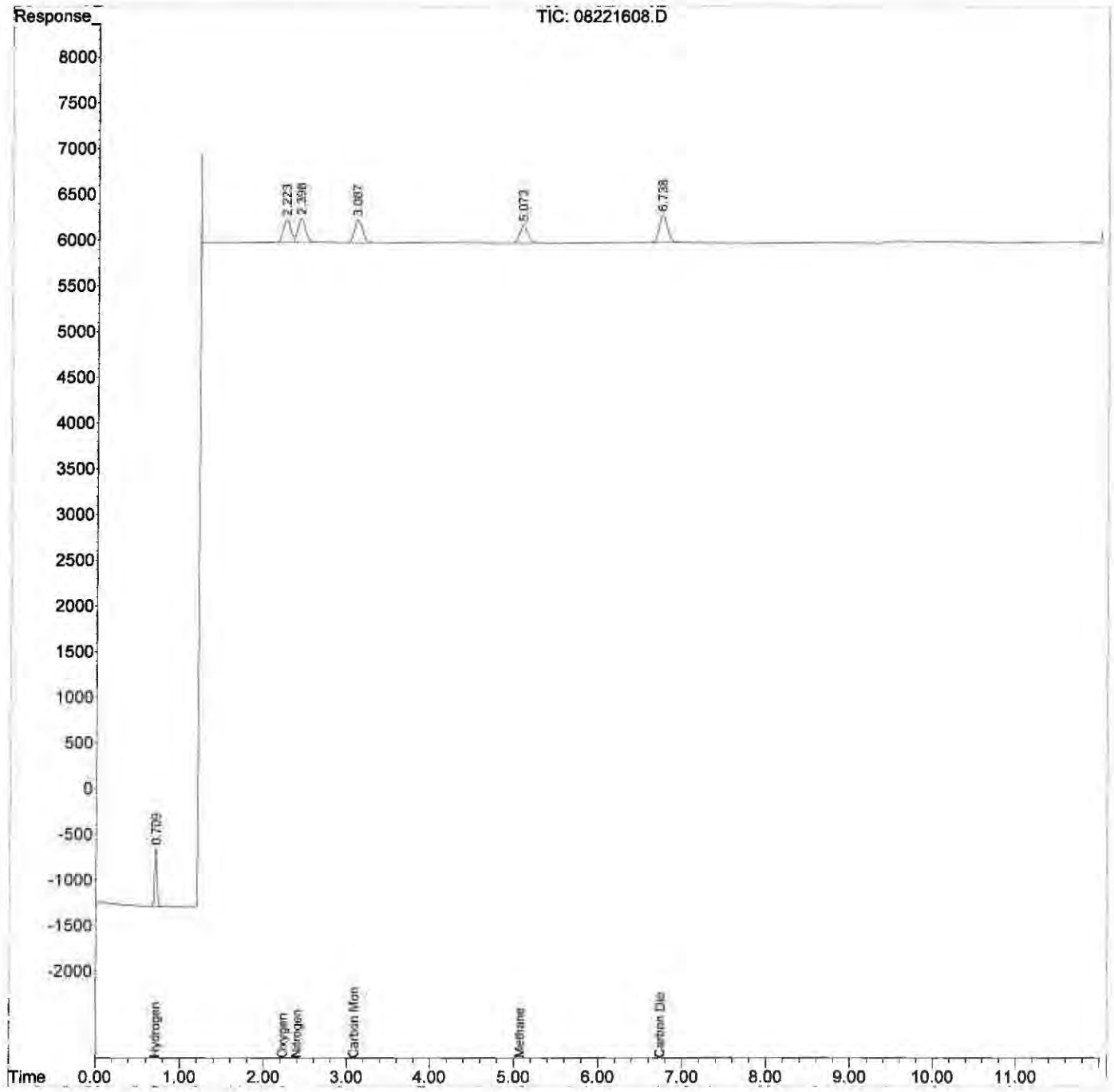
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.710	12791	9516.739	ppm
2)	Oxygen	2.225	14995	9758.854	ppm
3)	Nitrogen	2.401	17280	9514.619	ppm
4)	Carbon Monoxide	3.089	17131	9820.198	ppm
5)	Methane	5.075	12748	9617.190	ppm
6)	Carbon Dioxide	6.739	20634	9589.748	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221608.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 12:58 pm
Operator : amf
Sample : std s11-12041502
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 13:42:55 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221609.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 1:34 pm
Operator : amf
Sample : std s11-12041502
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 13:57:00 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.712	12871	9634.790	ppm
2)	Oxygen	2.235	15105	9859.758	ppm
3)	Nitrogen	2.412	17309	9588.814	ppm
4)	Carbon Monoxide	3.102	17156	9856.931	ppm
5)	Methane	5.086	12812	9712.170	ppm
6)	Carbon Dioxide	6.746	20975	9798.564	ppm

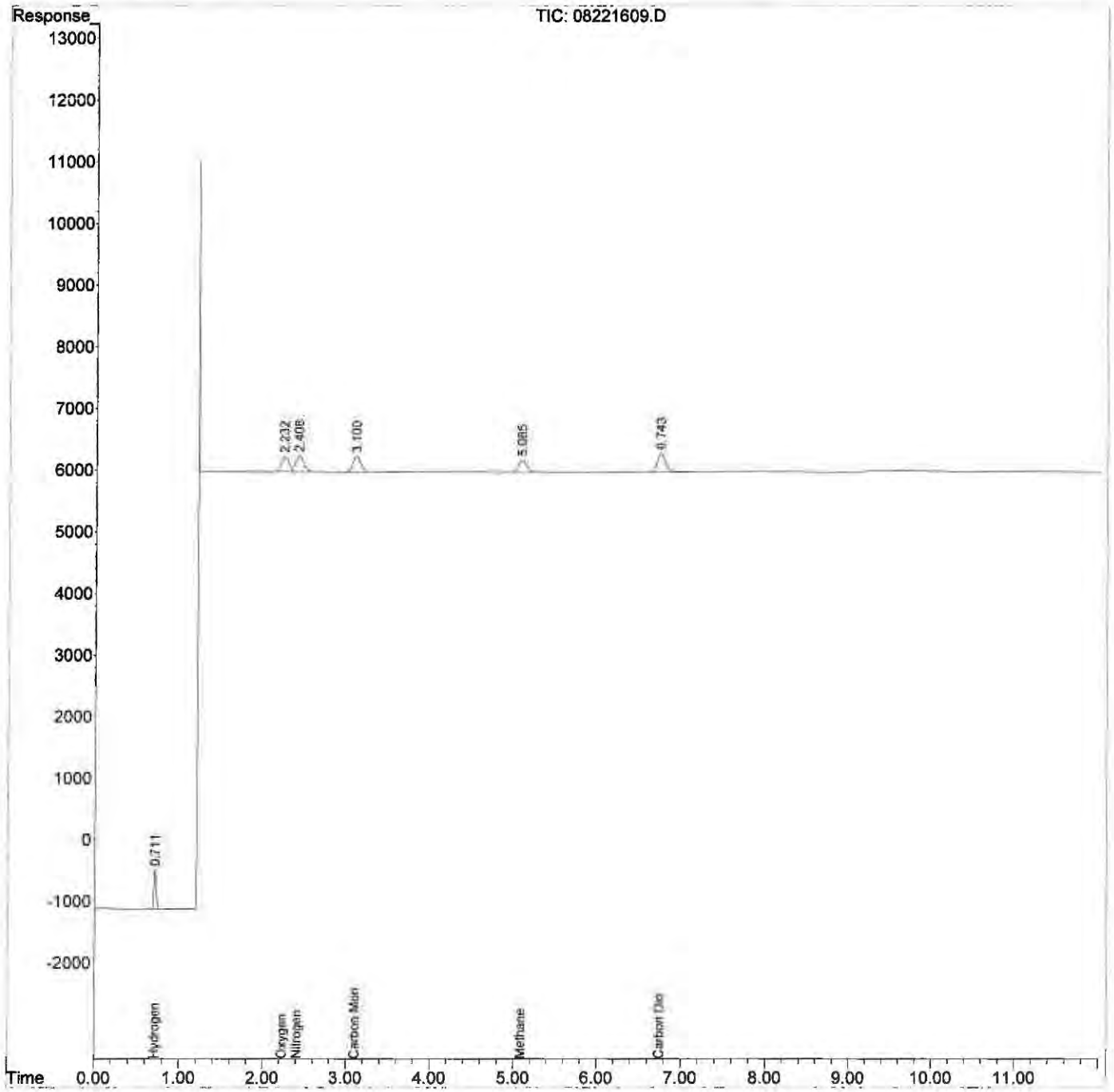
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221609.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 1:34 pm
Operator : amf
Sample : std s11-12041502
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 13:57:00 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221610.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 2:07 pm
Operator : amf
Sample : std s11-12041501
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 14:25:02 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

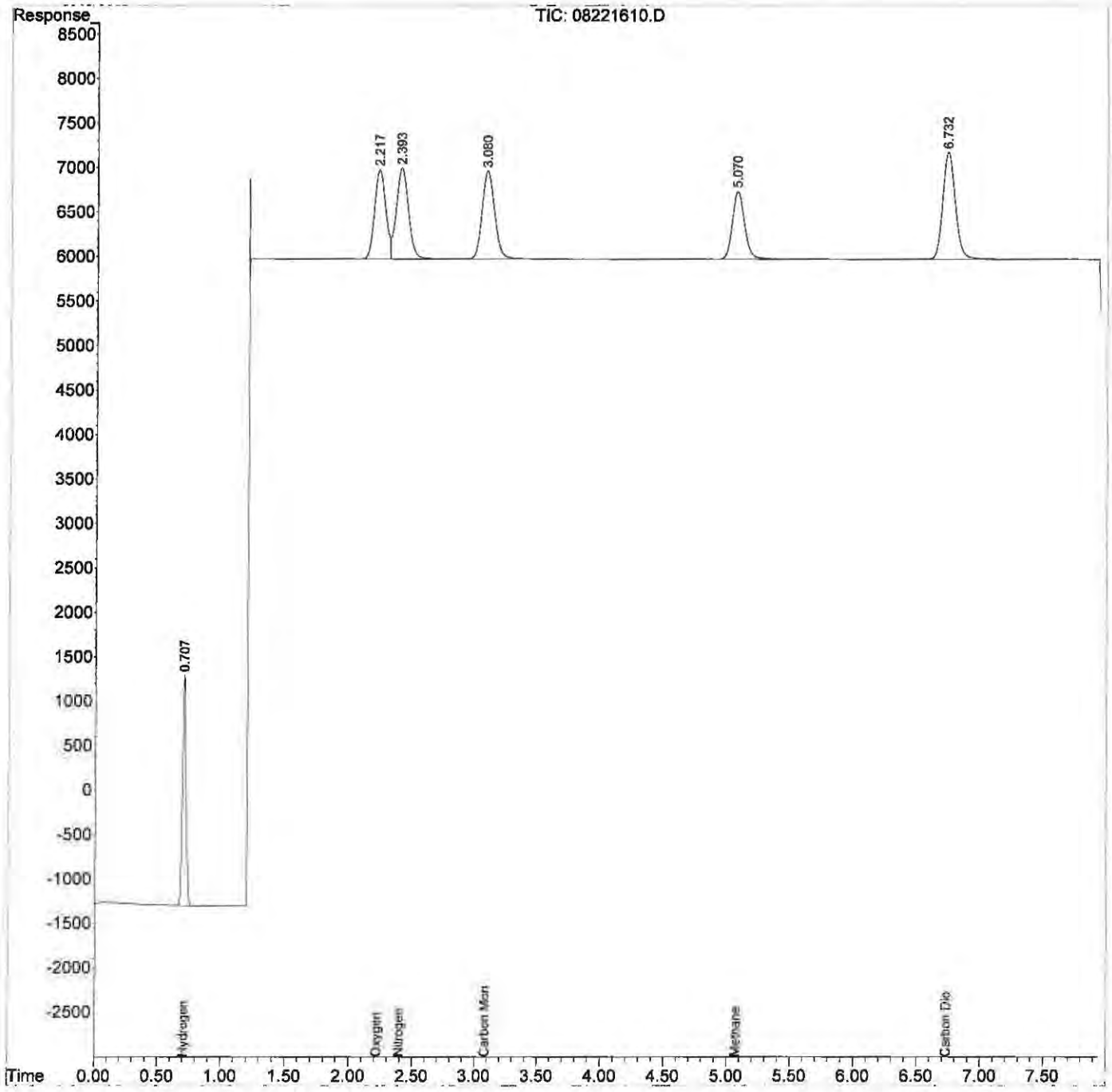
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.709	51763	38905.801	ppm
2)	Oxygen	2.219	61073	39928.807	ppm
3)	Nitrogen	2.395	68921	38354.986	ppm
4)	Carbon Monoxide	3.082	68623	39489.700	ppm
5)	Methane	5.072	51558	39209.427	ppm
6)	Carbon Dioxide	6.734	83185	38946.942	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221610.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 2:07 pm
Operator : amf
Sample : std s11-12041501
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 14:25:02 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221611.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 2:19 pm
Operator : amf
Sample : std s11-12041501
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 14:38:10 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.708	51926	39135.426	ppm
2)	Oxygen	2.219	61650	40312.840	ppm
3)	Nitrogen	2.395	69030	38574.578	ppm
4)	Carbon Monoxide	3.082	69214	39880.940	ppm
5)	Methane	5.072	51622	39335.929	ppm
6)	Carbon Dioxide	6.734	83696	39289.832	ppm

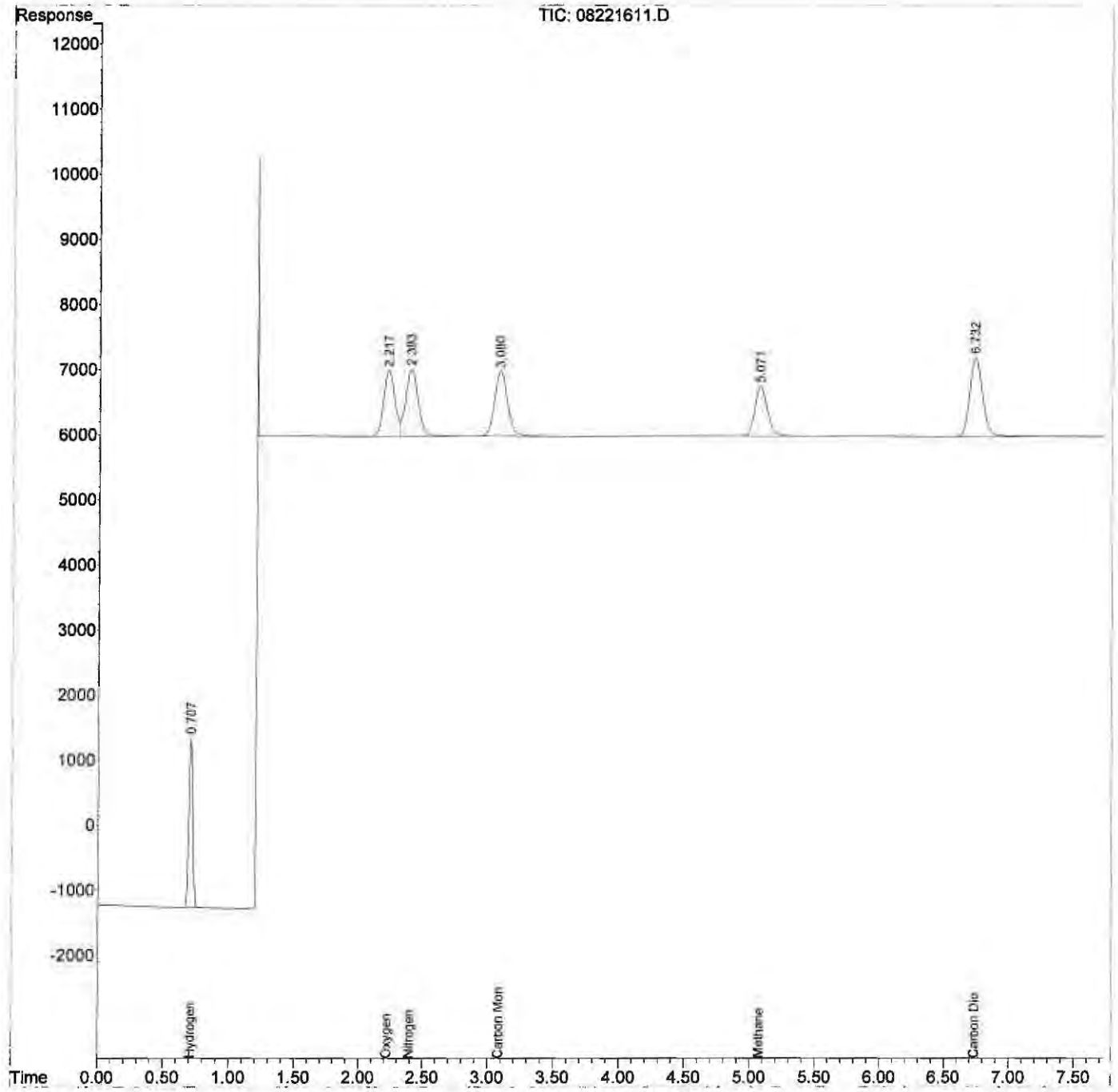
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221611.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 2:19 pm
Operator : amf
Sample : std s11-12041501
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 14:38:10 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221612.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 2:30 pm
Operator : amf
Sample : std s11-12041501
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 14:48:22 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.708	51951	39230.887	ppm
2)	Oxygen	2.218	61582	40239.610	ppm
3)	Nitrogen	2.394	69100	38738.751	ppm
4)	Carbon Monoxide	3.081	69492	40051.872	ppm
5)	Methane	5.071	51479	39286.254	ppm
6)	Carbon Dioxide	6.733	83618	39316.640	ppm

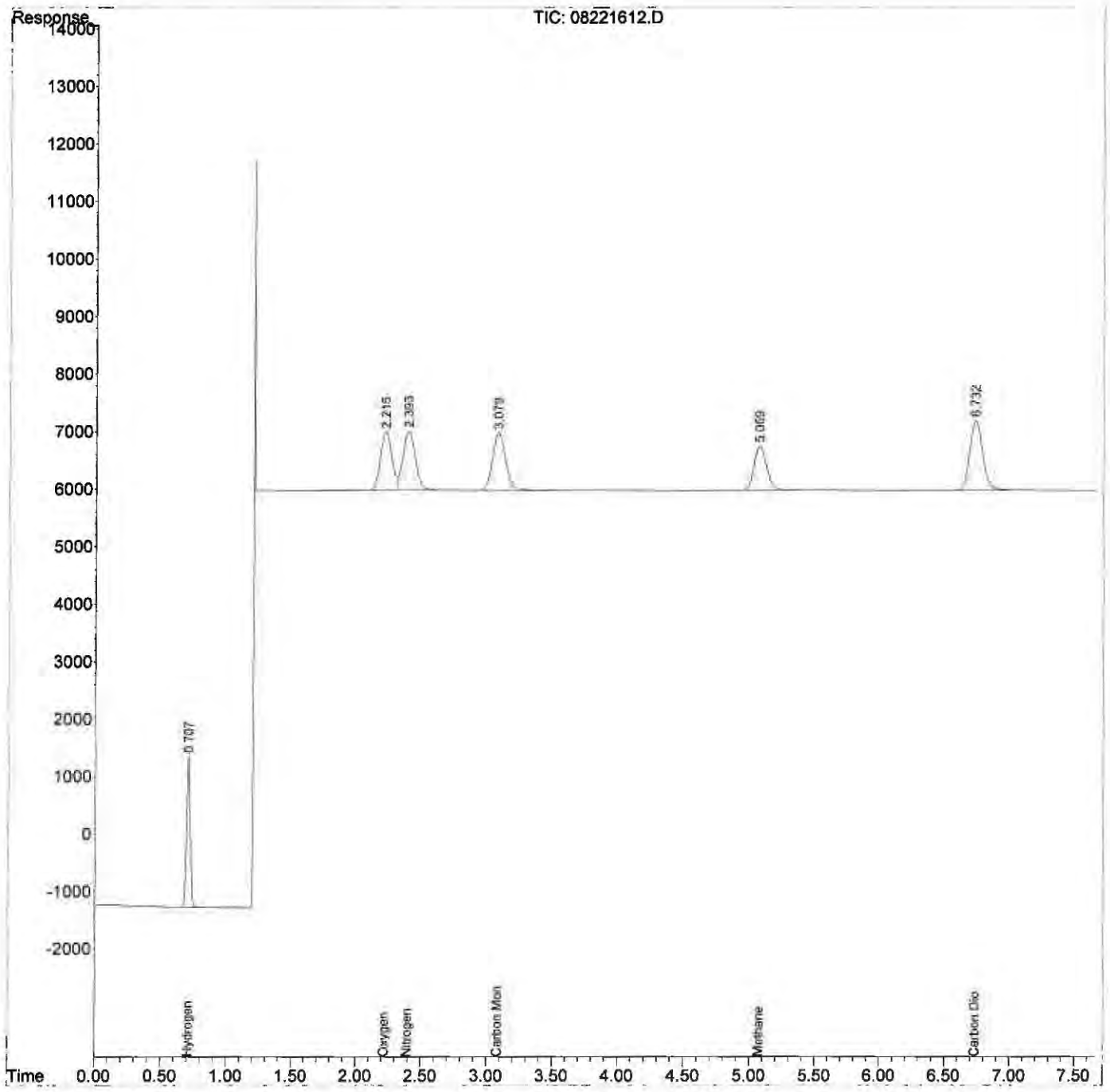
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221612.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 2:30 pm
Operator : amf
Sample : std s11-12041501
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 14:48:22 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221613.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 2:54 pm
Operator : amf
Sample : std s11-12031501
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 15:18:53 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.703	219834	166275.524	ppm
2)	Oxygen	2.198	247351	161547.583	ppm
3)	Nitrogen	2.375	277428	155942.102	ppm
4)	Carbon Monoxide	3.064	277383	159853.465	ppm
5)	Methane	5.059	206221	157612.524	ppm
6)	Carbon Dioxide	6.718	333461	157014.497	ppm

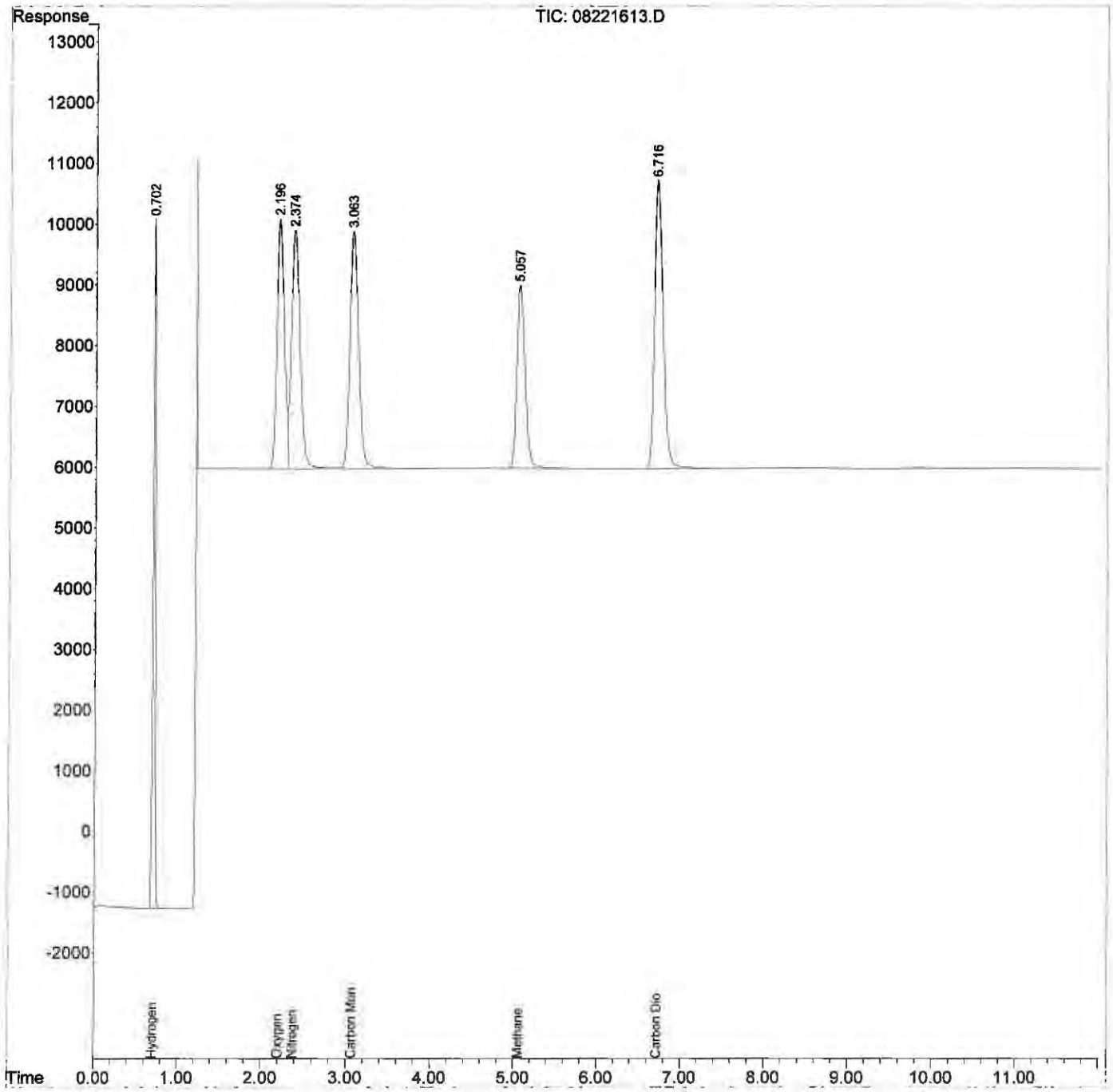
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221613.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 2:54 pm
Operator : amf
Sample : std s11-12031501
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 15:18:53 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221614.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 3:11 pm
Operator : amf
Sample : std s11-12031501
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 15:28:41 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.703	219704	165676.829	ppm
2)	Oxygen	2.200	246818	161079.250	ppm
3)	Nitrogen	2.378	276346	155637.709	ppm
4)	Carbon Monoxide	3.066	276366	159278.450	ppm
5)	Methane	5.060	205850	157510.093	ppm
6)	Carbon Dioxide	6.719	332031	156565.868	ppm

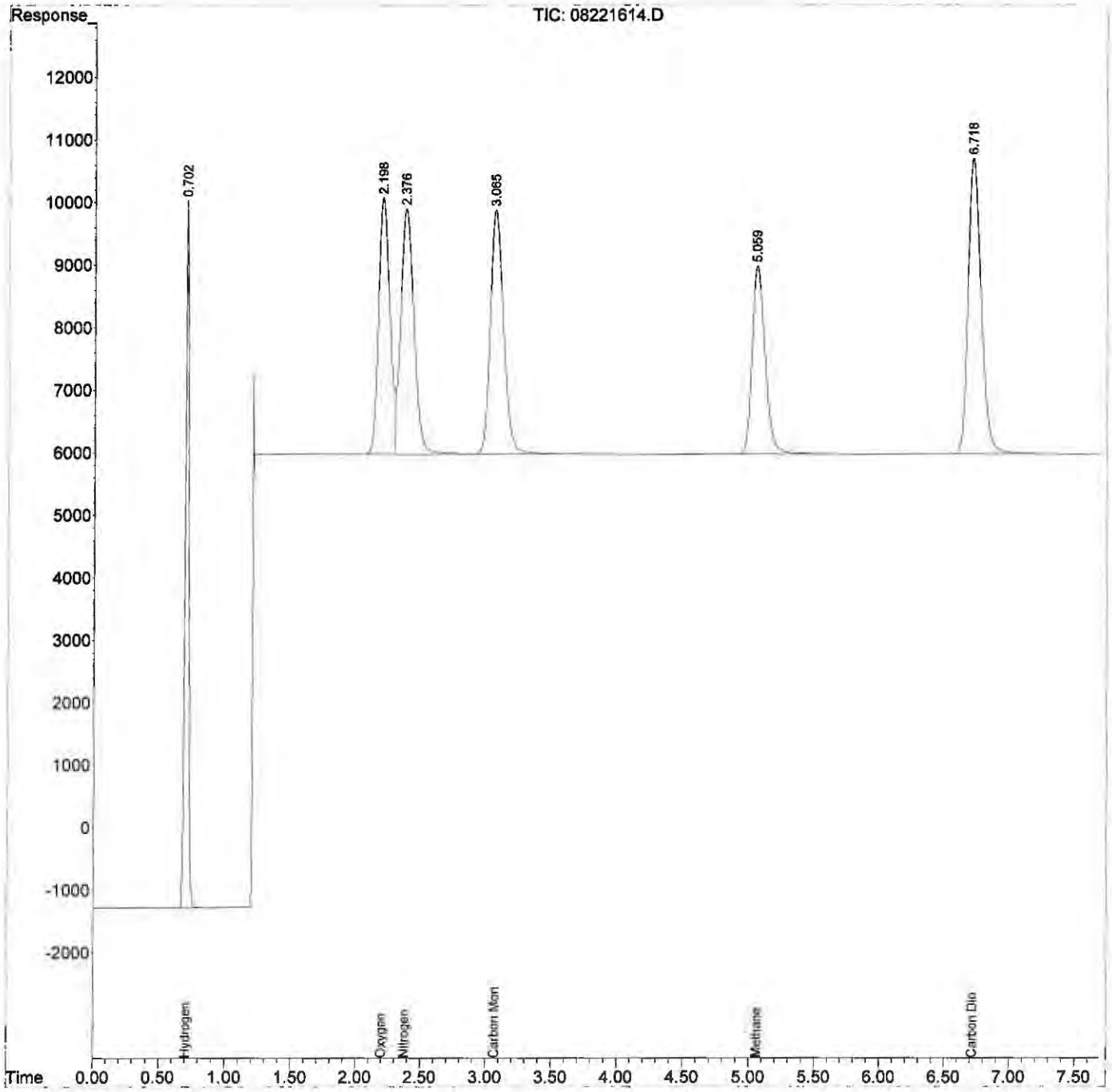
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221614.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 3:11 pm
Operator : amf
Sample : std s11-12031501
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 15:28:41 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221616.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 3:42 pm
Operator : amf
Sample : std s11-12021503
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 15:56:42 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.112	1611068	1050161.569	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

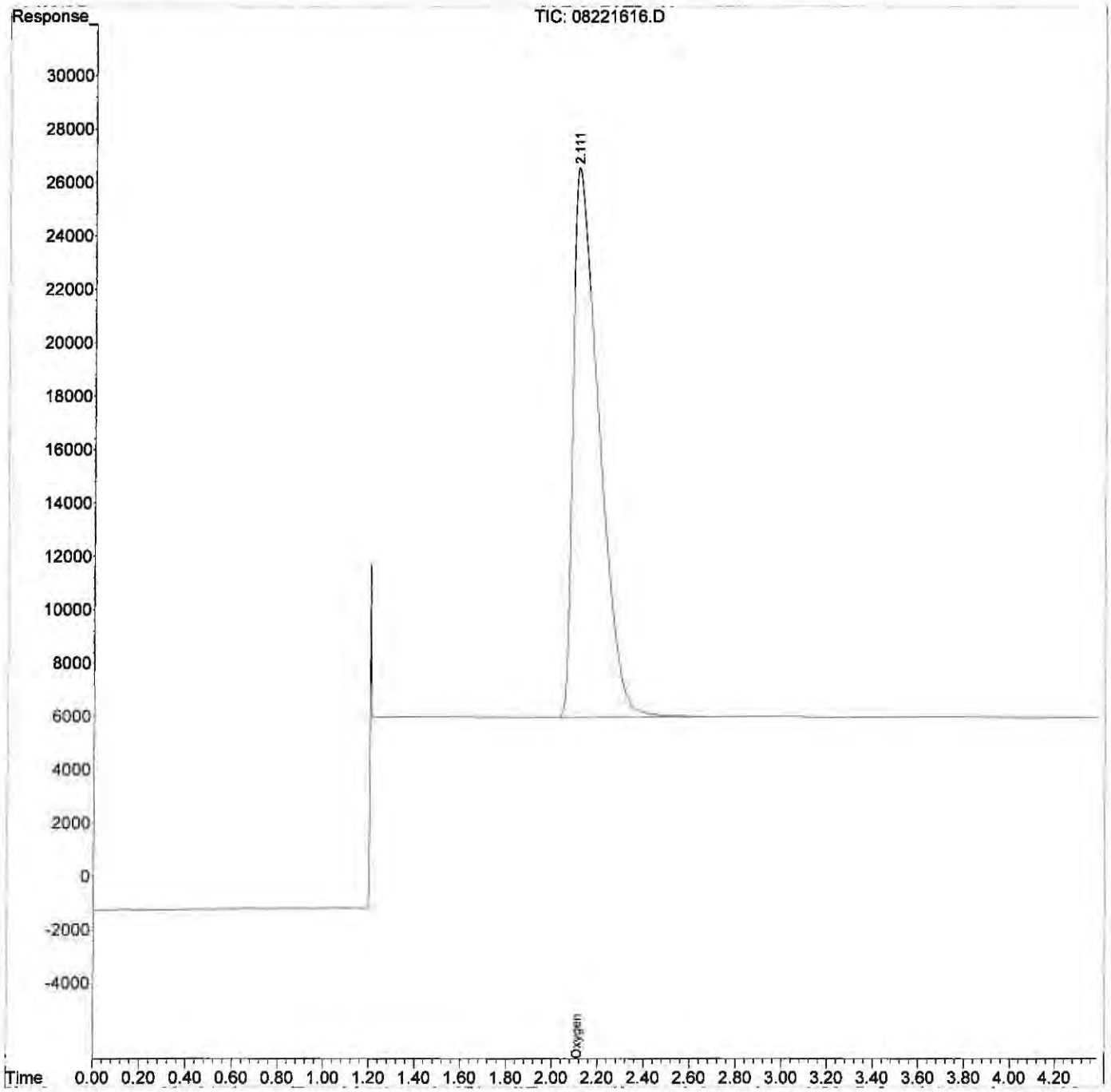
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221616.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 3:42 pm
Operator : amf
Sample : std s11-12021503
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 15:56:42 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221617.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 3:49 pm
Operator : amf
Sample : std s11-12021503
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 16:02:12 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.115	1617147	1050828.907	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

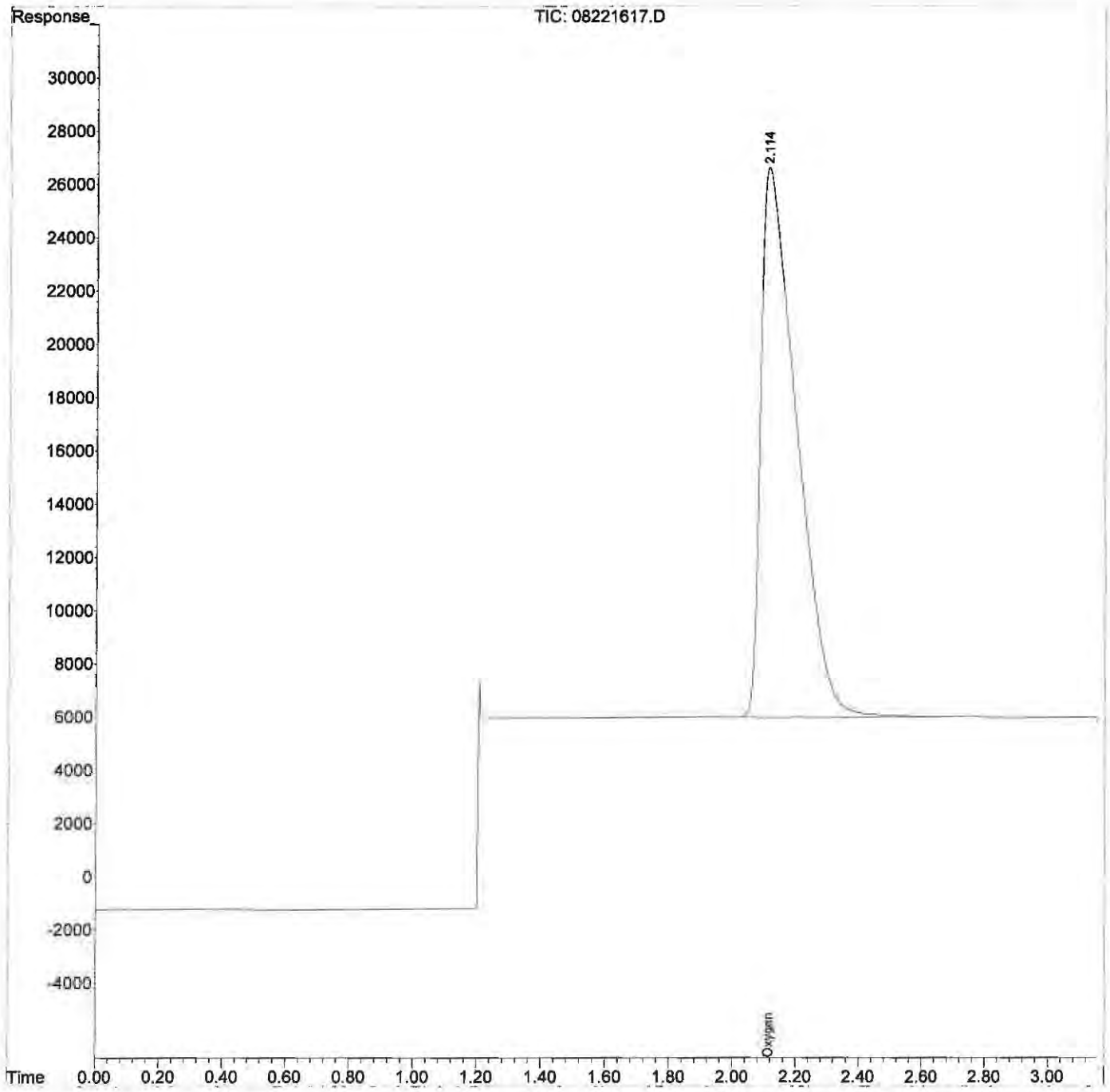
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221617.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 3:49 pm
Operator : amf
Sample : std s11-12021503
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 16:02:12 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221618.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 3:54 pm
Operator : amf
Sample : std s11-12021503
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 16:07:54 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.119	1588729	1029284.802	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

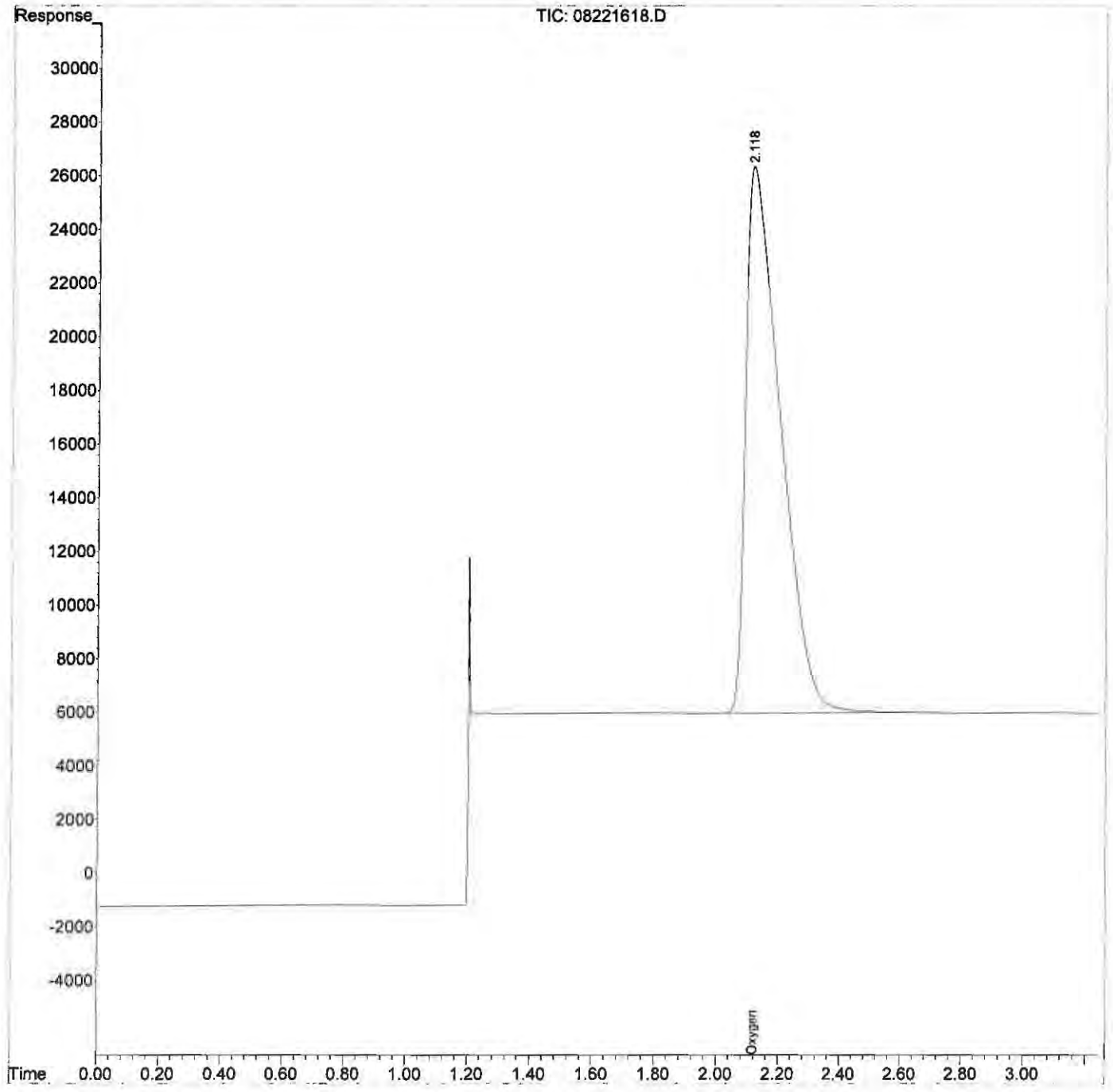
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221618.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 3:54 pm
Operator : amf
Sample : std s11-12021503
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 16:07:54 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221619.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 4:02 pm
Operator : amf
Sample : co2
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 16:20:27 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

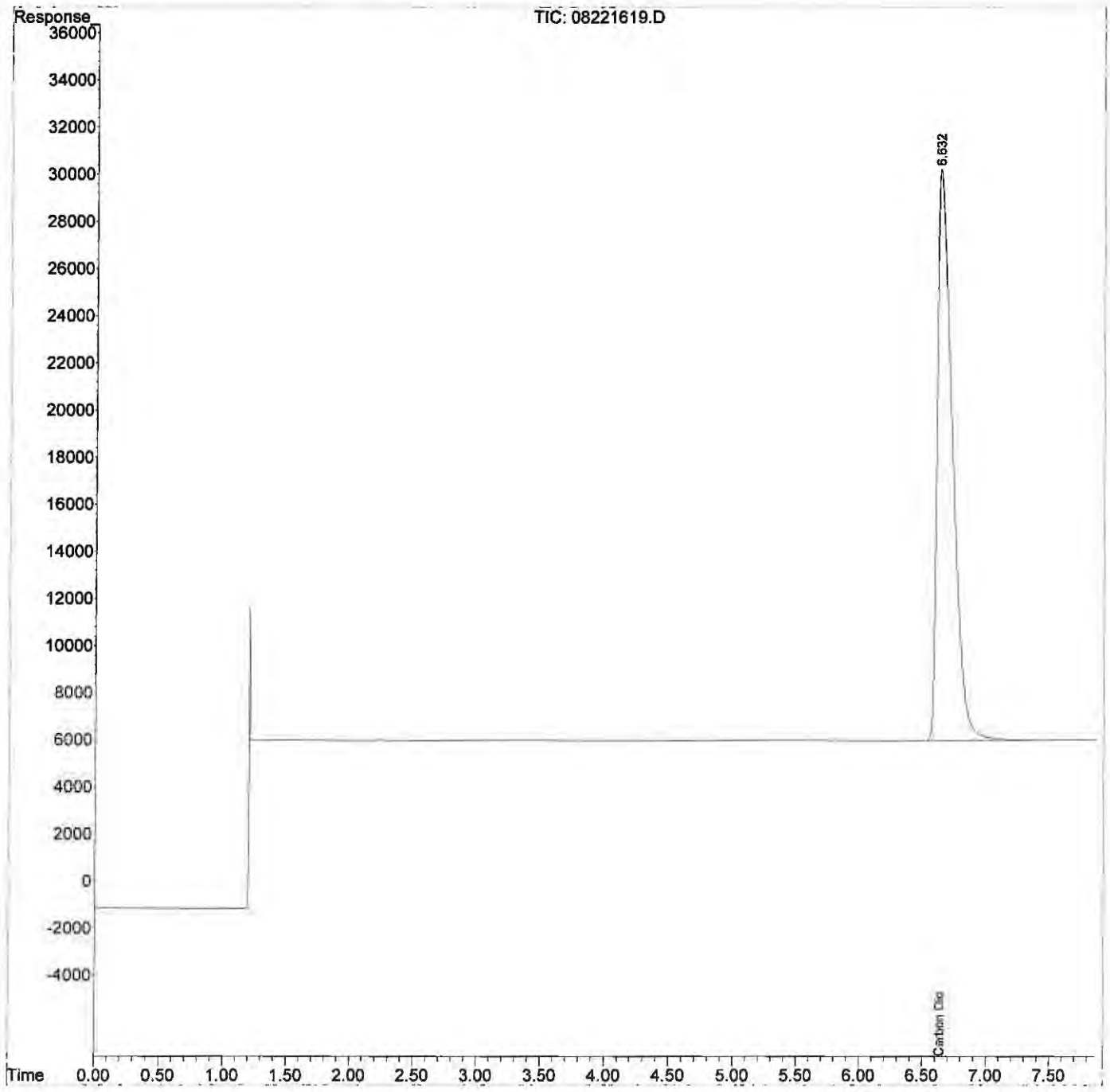
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.634	2005774	948215.193	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221619.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 4:02 pm
Operator : amf
Sample : co2
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 16:20:27 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221620.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 4:14 pm
Operator : amf
Sample : co2
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 16:32:40 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.630	2003370	950153.030	ppm

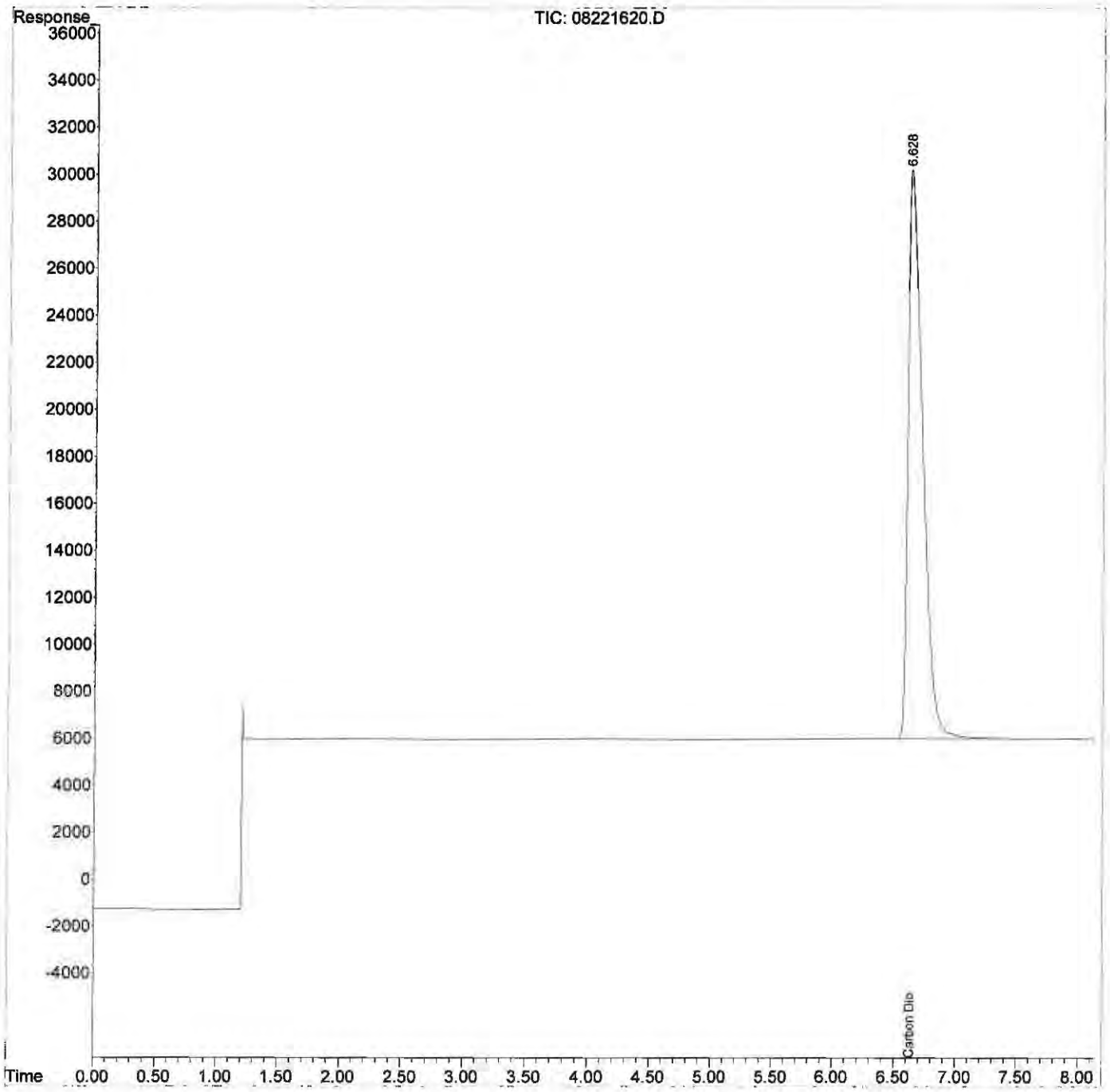
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221620.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 4:14 pm
Operator : amf
Sample : co2
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 16:32:40 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221621.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 4:26 pm
Operator : amf
Sample : co2
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 16:44:54 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.627	2014660	958317.321	ppm

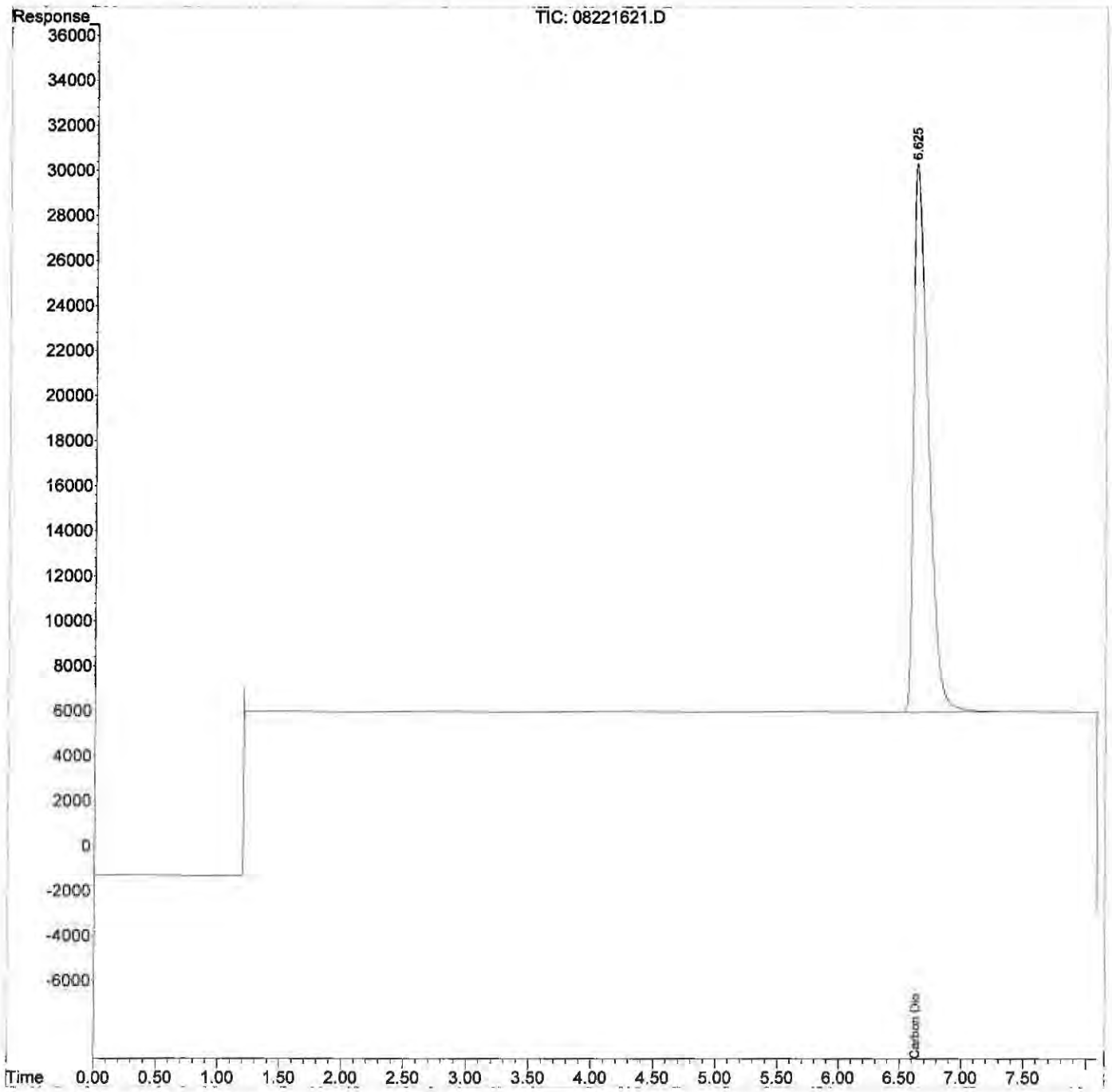
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221621.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 4:26 pm
Operator : amf
Sample : co2
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 16:44:54 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_08\23\
Data File : 08231601.D
Signal(s) : TCD1A.CH
Acq On : 23 Aug 2016 8:56 am
Operator : amf
Sample : s11-12021502
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 23 09:10:40 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 08:53:31 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm d
3)	Nitrogen	2.292	1743725	985438.652	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

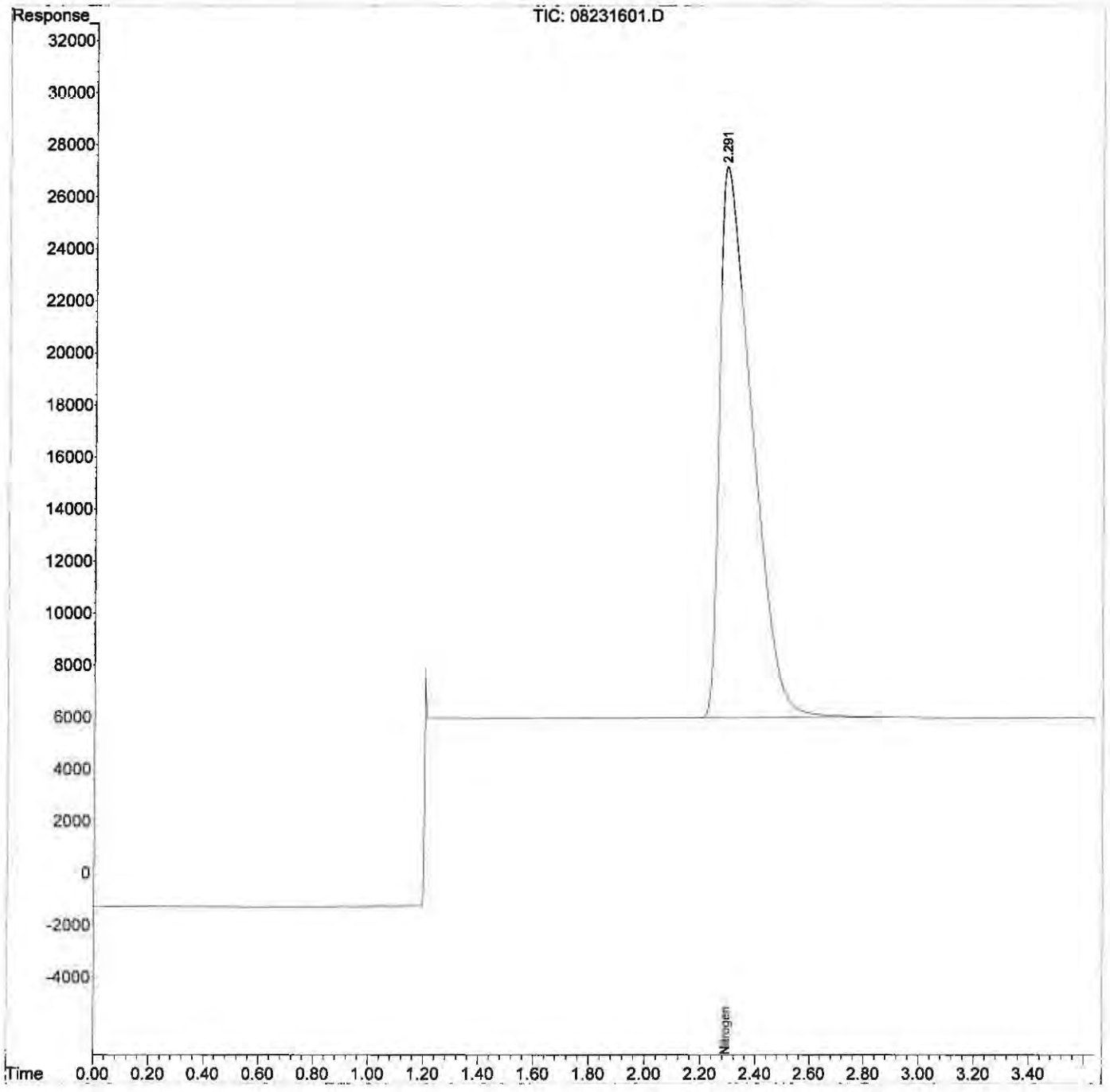
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_08\23\
Data File : 08231601.D
Signal(s) : TCD1A.CH
Acq On : 23 Aug 2016 8:56 am
Operator : amf
Sample : s11-12021502
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 23 09:10:40 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 08:53:31 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_08\23\
Data File : 08231602.D
Signal(s) : TCD1A.CH
Acq On : 23 Aug 2016 9:03 am
Operator : amf
Sample : s11-12021502
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 23 09:20:25 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 09:11:06 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.000	0	N.D.	ppm	
2)	Oxygen	0.000	0	N.D.	ppm	d
3)	Nitrogen	2.294	1755465	992976.308	ppm	
4)	Carbon Monoxide	0.000	0	N.D.	ppm	
5)	Methane	0.000	0	N.D.	ppm	
6)	Carbon Dioxide	0.000	0	N.D.	ppm	

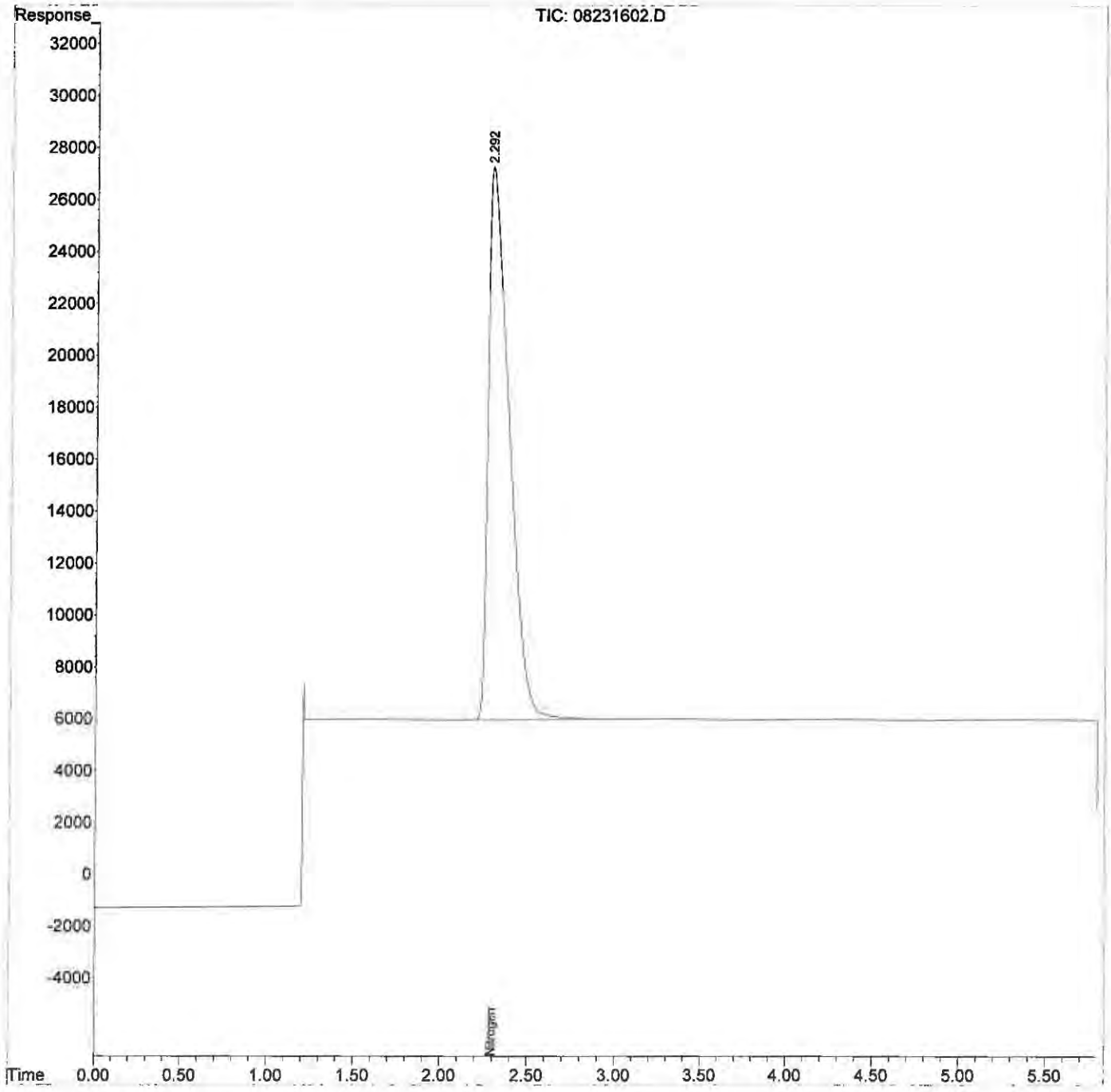
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_08\23\
Data File : 08231602.D
Signal(s) : TCD1A.CH
Acq On : 23 Aug 2016 9:03 am
Operator : amf
Sample : s11-12021502
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 23 09:20:25 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 09:11:06 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_08\23\
Data File : 08231603.D
Signal(s) : TCD1A.CH
Acq On : 23 Aug 2016 9:12 am
Operator : amf
Sample : s11-12021502
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 23 09:26:42 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 09:21:22 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

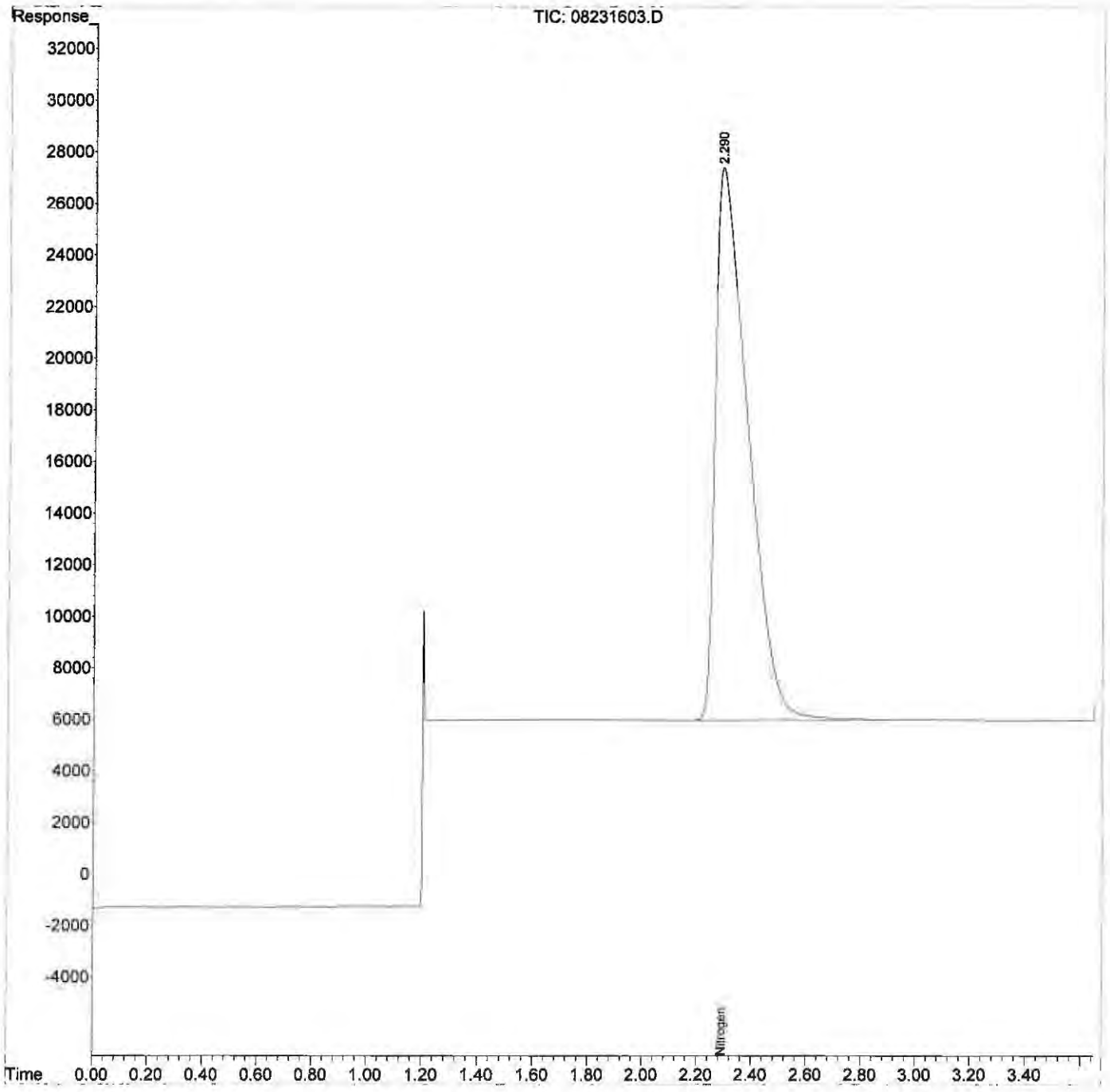
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm d
3)	Nitrogen	2.292	1767961	1000457.289	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_08\23\
Data File : 08231603.D
Signal(s) : TCD1A.CH
Acq On : 23 Aug 2016 9:12 am
Operator : amf
Sample : s11-12021502
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 23 09:26:42 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 09:21:22 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_08\23\
Data File : 08231604.D
Signal(s) : TCD1A.CH
Acq On : 23 Aug 2016 9:59 am
Operator : amf
Sample : ch4
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 23 10:21:06 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 09:26:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	4.972	1316988	1009460.431	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

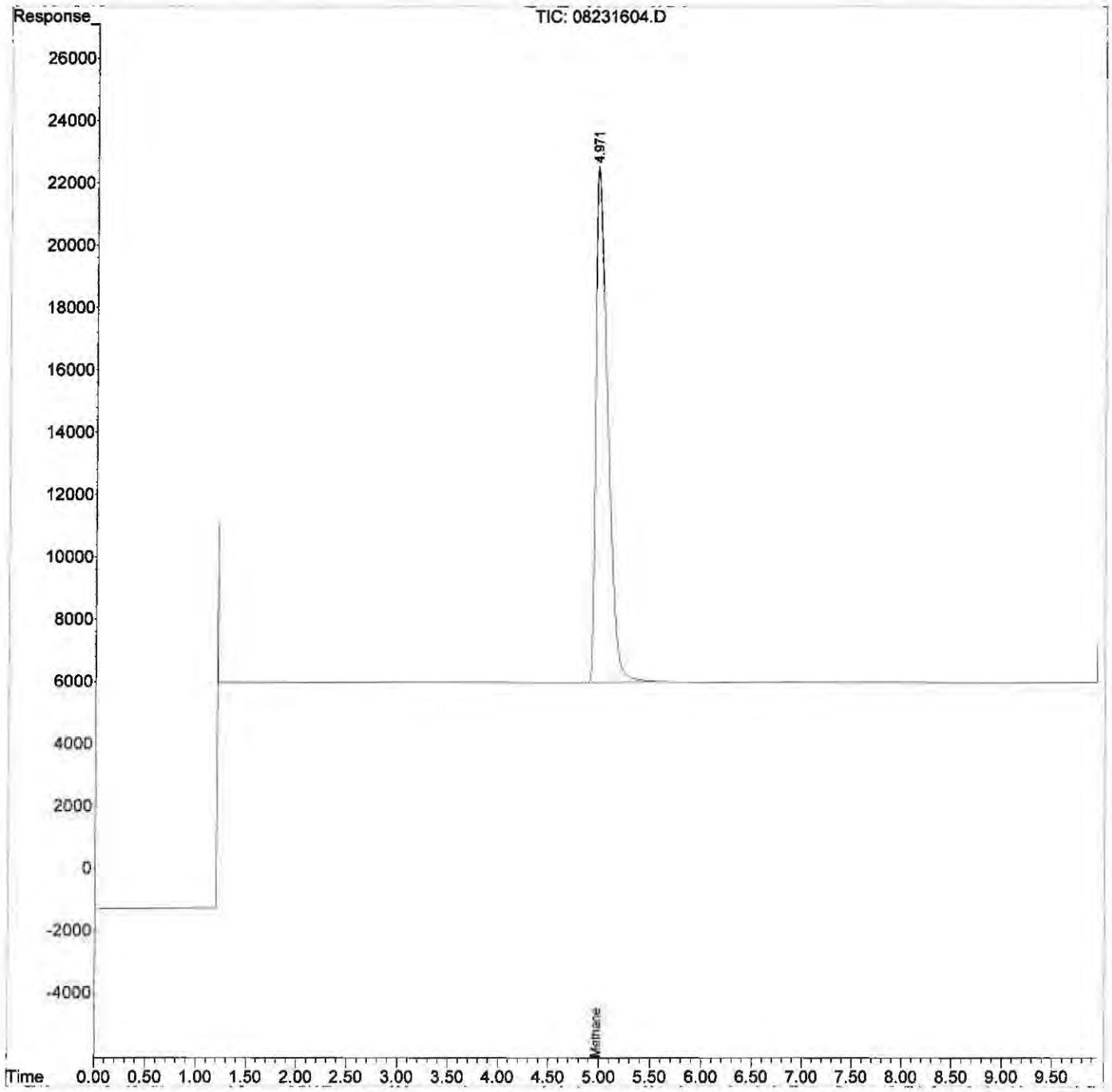
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_08\23\
Data File : 08231604.D
Signal(s) : TCD1A.CH
Acq On : 23 Aug 2016 9:59 am
Operator : amf
Sample : ch4
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 23 10:21:06 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 09:26:55 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_08\23\
Data File : 08231605.D
Signal(s) : TCD1A.CH
Acq On : 23 Aug 2016 10:25 am
Operator : amf
Sample : ch4
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 23 10:52:53 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 10:21:20 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	4.970	1323004	1013471.364	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

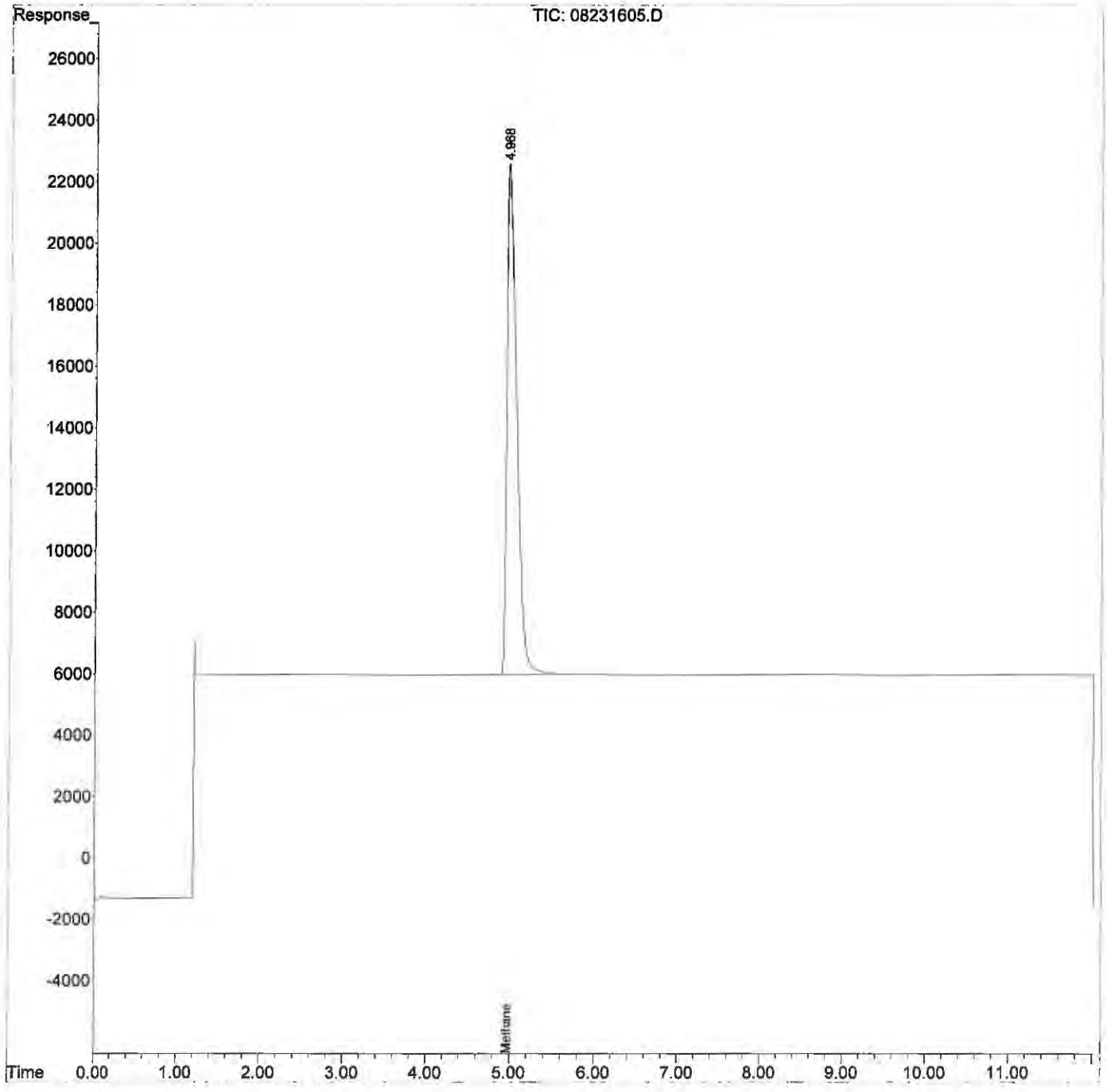
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_08\23\
Data File : 08231605.D
Signal(s) : TCD1A.CH
Acq On : 23 Aug 2016 10:25 am
Operator : amf
Sample : ch4
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 23 10:52:53 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 10:21:20 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_08\23\
Data File : 08231606.D
Signal(s) : TCD1A.CH
Acq On : 23 Aug 2016 10:45 am
Operator : amf
Sample : ch4
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 23 11:02:34 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 10:53:06 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

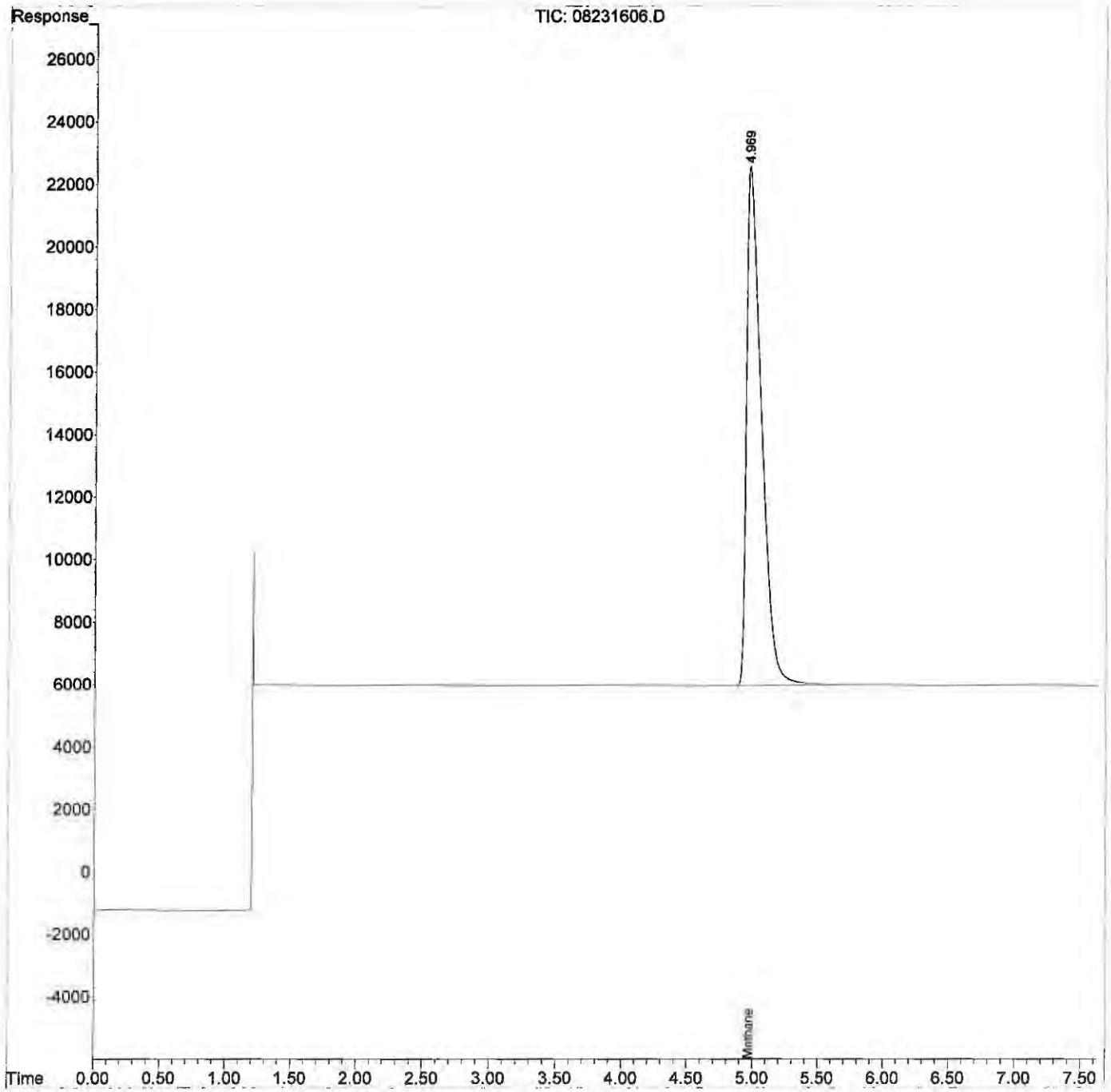
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	4.971	1318464	1009193.790	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_08\23\
Data File : 08231606.D
Signal(s) : TCD1A.CH
Acq On : 23 Aug 2016 10:45 am
Operator : amf
Sample : ch4
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 23 11:02:34 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 10:53:06 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_08\23\
Data File : 08231609.D
Signal(s) : TCD1A.CH
Acq On : 23 Aug 2016 2:00 pm
Operator : amf
Sample : ICV s30-07271601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 23 10:15:12 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

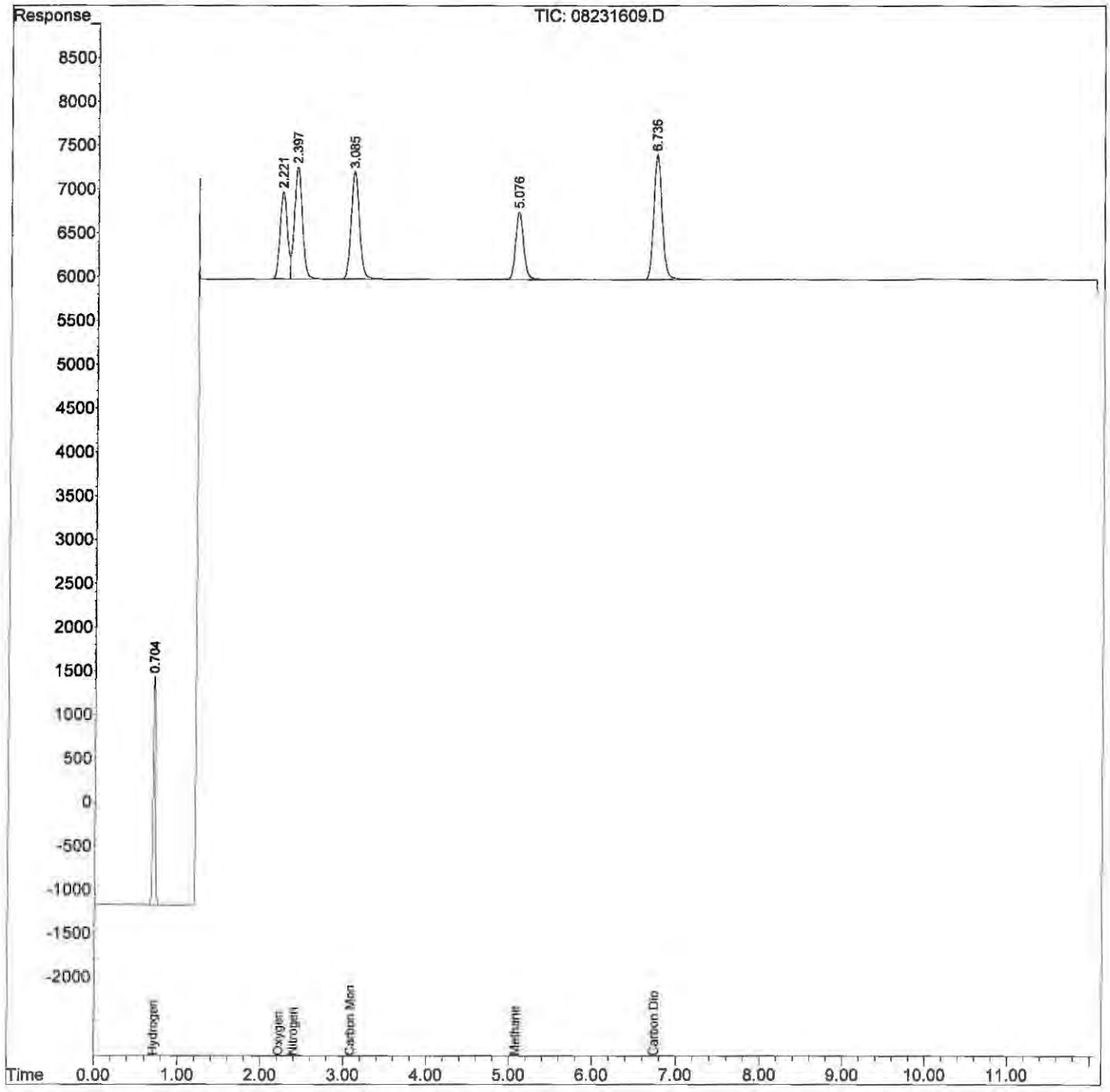
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.705	51930	38960.985	ppm	2,60 %
2)	Oxygen	2.222	60278	38988.977	ppm	2.53 %
3)	Nitrogen	2.398	86058	48697.524	ppm	2.06 %
4)	Carbon Monoxide	3.086	85978	49564.451	ppm	0,87 %
5)	Methane	5.077	52066	39832.238	ppm	0.42 %
6)	Carbon Dioxide	6.738	98746	47079.824	ppm	5,84 %

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_08\23\
Data File : 08231609.D
Signal(s) : TCD1A.CH
Acq On : 23 Aug 2016 2:00 pm
Operator : amf
Sample : ICV s30-07271601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 23 10:15:12 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



ALS

REPORT SUMMARYS FIXED GASES BY GC/TCD
CLIENT : Air Hygiene
Analyst : amf
PAI Job : P1604661

Printed : 10/3/2016
Instrument : GC #1 / TCD #1
Date analyzed : 10/3/2016
Sample amount : 100uL

Sample Result

Sample ID	Hydrogen	Oxygen	Nitrogen	Carbon Monoxide	Methane	Carbon Dioxide	Pi1	Pf1	Pi2	Pf2	BF
STANDARD	40254	40574	51485	50801	40488	48690					
ACTUAL	40000	40000	50000	50000	40000	50000					
% Difference	0.6%	1.4%	3.0%	1.6%	1.2%	2.6%					
Lab Air		216318	780757			425					
MB	ND	ND	ND	ND	ND	ND					
4661-001		149137	750896			38286					
4661-001		147330	741376			37781					
4661-001		148632	747755			38173					
% Difference of Average		0.6%	0.6%			0.7%					
4661-003		145627	743990			39252					
4661-003		145486	742769			39097					
4661-003		145548	742750			39382					
% Difference of Average		0.0%	0.1%			0.4%					
4661-005		148355	742401			37483					
4661-005		149157	748881			37546					
4661-005		149336	749630			37984					
% Difference of Average		0.4%	0.5%			0.7%					
4661-007		152410	736512			33549					
4661-007		154126	745513			33796					
4661-007		155521	752527			34084					
% Difference of Average		1.0%	1.1%			0.8%					
4661-009		155860	746752			33310					
4661-009		155127	742869			33071					
4661-009		155606	744960			33082					
% Difference of Average		0.2%	0.3%			0.4%					
STANDARD	40145	40646	50487	51126	40709	48858					
ACTUAL	40000	40000	50000	50000	40000	50000					
% Difference	0.4%	1.6%	1.0%	2.3%	1.8%	2.3%					

10/3/16

Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_10\03\
Data File : 10031601.D
Signal(s) : TCD1A.CH
Acq On : 3 Oct 2016 8:25 am
Operator : amf
Sample : std s30-07271601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 03 08:41:39 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

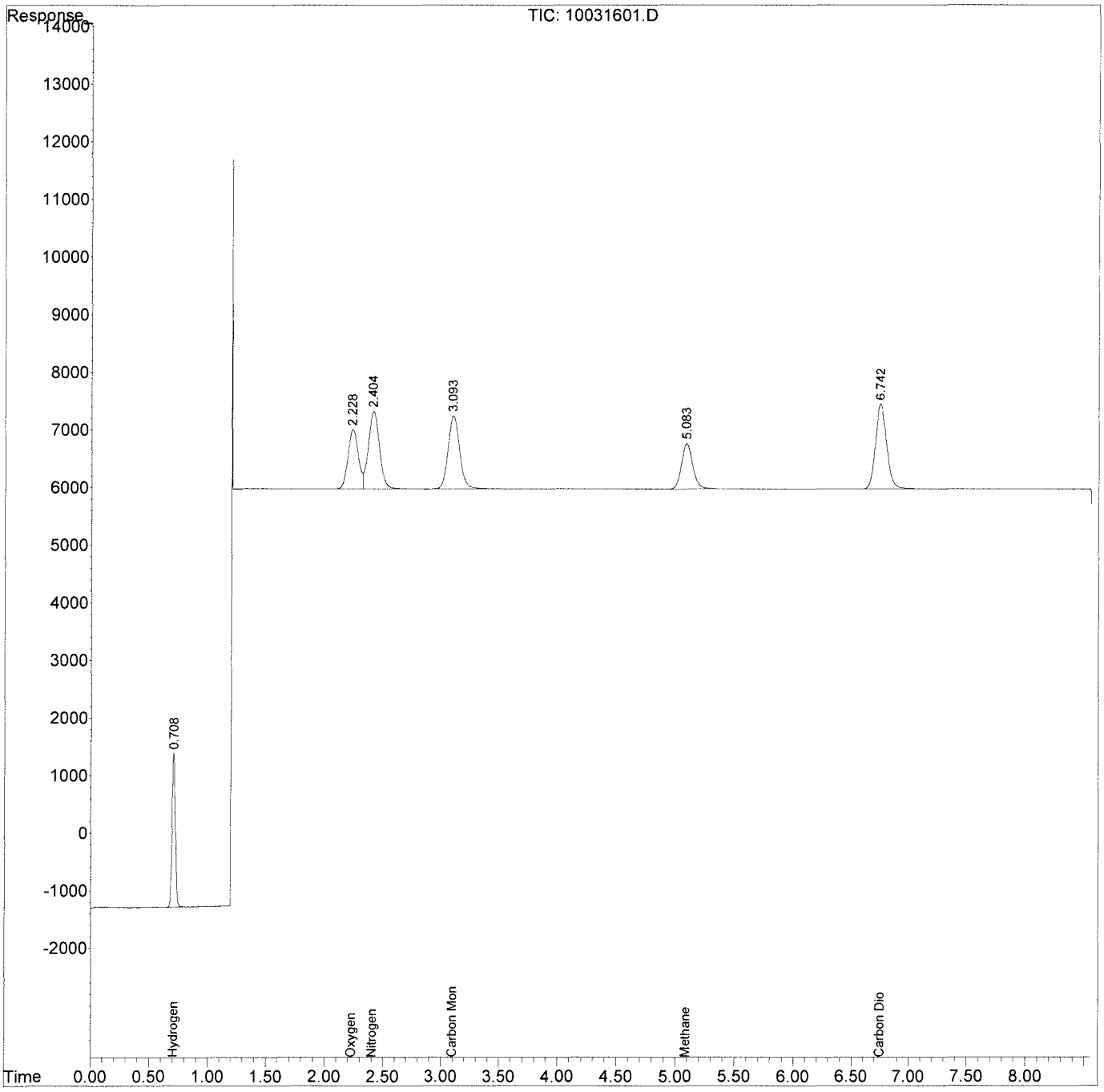
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.709	53654	40254.145	ppm
2)	Oxygen	2.229	62730	40574.352	ppm
3)	Nitrogen	2.405	90985	51485.203	ppm
4)	Carbon Monoxide	3.094	88122	50800.535	ppm
5)	Methane	5.084	52922	40487.572	ppm
6)	Carbon Dioxide	6.744	102124	48690.170	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\03\
Data File : 10031601.D
Signal(s) : TCD1A.CH
Acq On : 3 Oct 2016 8:25 am
Operator : amf
Sample : std s30-07271601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 03 08:41:39 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_10\03\
Data File : 10031619.D
Signal(s) : TCD1A.CH
Acq On : 3 Oct 2016 2:25 pm
Operator : amf
Sample : std s30-07271601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 03 14:44:54 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

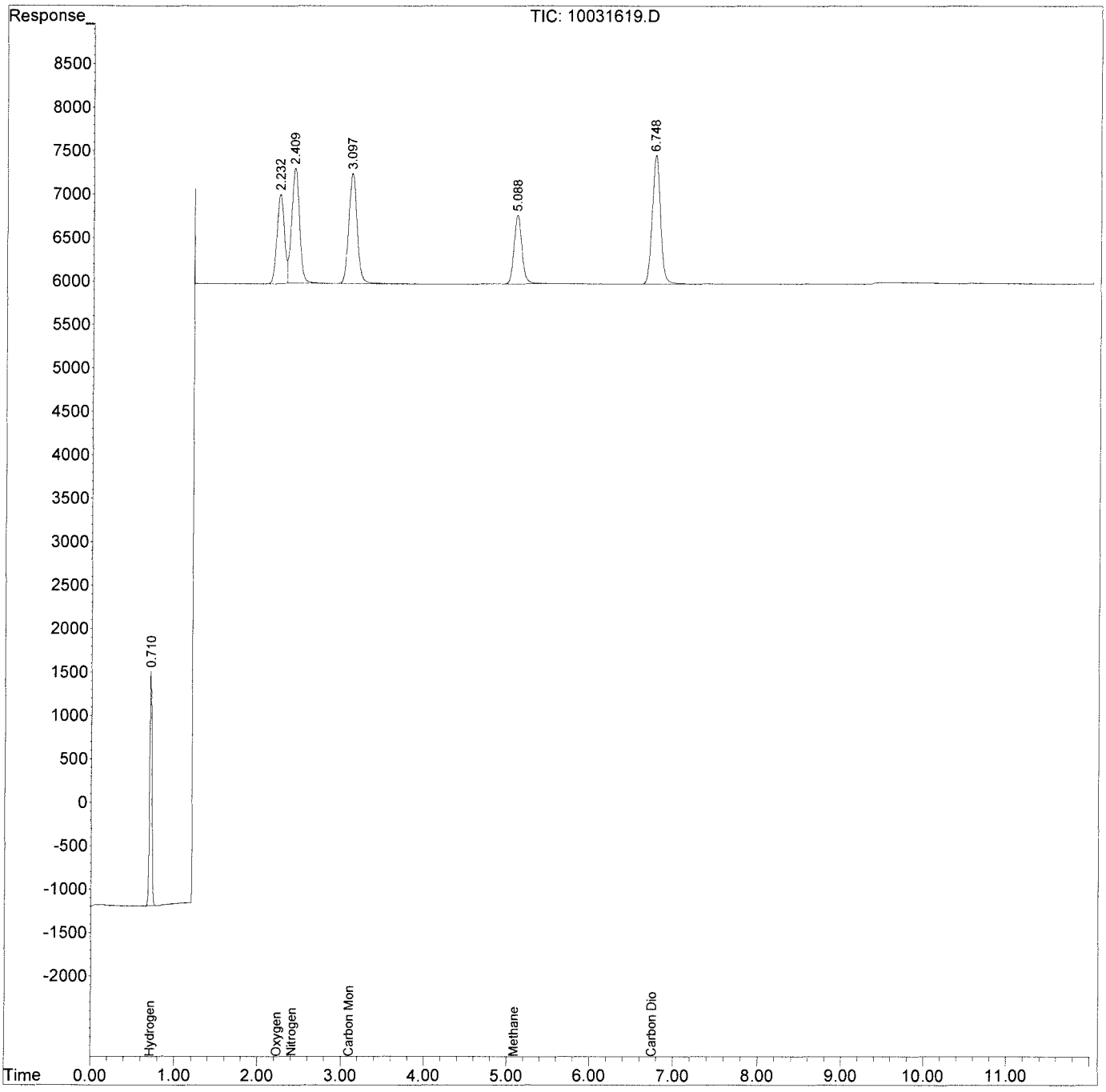
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.712	53508	40145.009	ppm
2)	Oxygen	2.233	62841	40646.191	ppm
3)	Nitrogen	2.410	89221	50487.397	ppm
4)	Carbon Monoxide	3.098	88686	51125.927	ppm
5)	Methane	5.090	53211	40708.500	ppm
6)	Carbon Dioxide	6.749	102476	48858.157	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\03\
Data File : 10031619.D
Signal(s) : TCD1A.CH
Acq On : 3 Oct 2016 2:25 pm
Operator : amf
Sample : std s30-07271601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 03 14:44:54 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Injection Log

Directory: I:\GC01\DATA\FXG\2016_08\22\

	Sample ID	Date/Time	Acquisition Method	File Name	Misc Info	Operator
	std s11-07191601	22 Aug 116 8:59 am	MFXGS25C.M	08221601.D		amf
	std s11-07191601	22 Aug 116 9:42 am	MFXGS25C.M	08221602.D		amf
	std s11-07191601	22 Aug 116 10:06 am	MFXGS25C.M	08221603.D		amf
	std s11-12041503	22 Aug 116 11:42 am	MFXGS25C.M	08221604.D		amf
	std s11-12041503	22 Aug 116 11:54 am	MFXGS25C.M	08221605.D		amf
	std s11-12041503	22 Aug 116 12:10 pm	MFXGS25C.M	08221606.D		amf
	std s11-12041502	22 Aug 116 12:42 pm	MFXGS25C.M	08221607.D		amf
	std s11-12041502	22 Aug 116 12:58 pm	MFXGS25C.M	08221608.D		amf
	std s11-12041502	22 Aug 116 1:34 pm	MFXGS25C.M	08221609.D		amf
	std s11-12041501	22 Aug 116 2:07 pm	MFXGS25C.M	08221610.D		amf
	std s11-12041501	22 Aug 116 2:19 pm	MFXGS25C.M	08221611.D		amf
	std s11-12041501	22 Aug 116 2:30 pm	MFXGS25C.M	08221612.D		amf
	std s11-12031501	22 Aug 116 2:54 pm	MFXGS25C.M	08221613.D		amf
	std s11-12031501	22 Aug 116 3:11 pm	MFXGS25C.M	08221614.D		amf
	std s11-12031501	22 Aug 116 3:22 pm	MFXGS25C.M	08221615.D		amf
	std s11-12021503	22 Aug 116 3:42 pm	MFXGS25C.M	08221616.D		amf
	std s11-12021503	22 Aug 116 3:49 pm	MFXGS25C.M	08221617.D		amf
	std s11-12021503	22 Aug 116 3:54 pm	MFXGS25C.M	08221618.D		amf
	co2	22 Aug 116 4:02 pm	MFXGS25C.M	08221619.D		amf
	co2	22 Aug 116 4:14 pm	MFXGS25C.M	08221620.D		amf
	co2	22 Aug 116 4:26 pm	MFXGS25C.M	08221621.D		amf

Injection Log

Directory: I:\GC01\DATA\FXG\2016_08\23\

	Sample ID	Date/Time	Acquisition Method	File Name	Misc Info	Operator
	s11-12021502	23 Aug 116 8:56 am	MFXGS25C.M	08231601.D		amf
	s11-12021502	23 Aug 116 9:03 am	MFXGS25C.M	08231602.D		amf
	s11-12021502	23 Aug 116 9:12 am	MFXGS25C.M	08231603.D		amf
	ch4	23 Aug 116 9:59 am	MFXGS25C.M	08231604.D		amf
	ch4	23 Aug 116 10:25 am	MFXGS25C.M	08231605.D		amf
	ch4	23 Aug 116 10:45 am	MFXGS25C.M	08231606.D		amf
	mb	23 Aug 116 10:57 am	MFXGS25C.M	08231607.D		amf
	lab air	23 Aug 116 11:14 am	MFXGS25C.M	08231608.D		amf
	ICV s30-07271601	23 Aug 116 2:00 pm	MF25VXXX.M	08231609.D		amf

Injection Log

Directory: I:\GC01\DATA\FXG\2016_10\03\

	Sample ID	Date/Time	Acquisition Method	File Name	Misc Info	Operator	Comments
	std s30-07271601	3 Oct 116 8:25 am	MFXGS25C.M	10031601.D		amf	
	mb	3 Oct 116 8:39 am	MFXGS25C.M	10031602.D		amf	
	lab air	3 Oct 116 9:13 am	MFXGS25C.M	10031603.D		amf	
	4661-001	3 Oct 116 9:30 am	MFXGS25C.M	10031604.D		amf	
	4661-001	3 Oct 116 9:46 am	MFXGS25C.M	10031605.D		amf	
	4661-001	3 Oct 116 10:02 am	MFXGS25C.M	10031606.D		amf	
	4661-003	3 Oct 116 10:20 am	MFXGS25C.M	10031607.D		amf	
	4661-003	3 Oct 116 10:37 am	MFXGS25C.M	10031608.D		amf	
	4661-003	3 Oct 116 10:57 am	MFXGS25C.M	10031609.D		amf	
	4661-005	3 Oct 116 11:17 am	MFXGS25C.M	10031610.D		amf	
	4661-005	3 Oct 116 11:35 am	MFXGS25C.M	10031611.D		amf	
	4661-005	3 Oct 116 11:52 am	MFXGS25C.M	10031612.D		amf	
	4661-007	3 Oct 116 12:09 pm	MFXGS25C.M	10031613.D		amf	
	4661-007	3 Oct 116 12:25 pm	MFXGS25C.M	10031614.D		amf	
	4661-007	3 Oct 116 12:41 pm	MFXGS25C.M	10031615.D		amf	
	4661-009	3 Oct 116 1:01 pm	MFXGS25C.M	10031616.D		amf	
	4661-009	3 Oct 116 1:20 pm	MFXGS25C.M	10031617.D		amf	
	4661-009	3 Oct 116 1:36 pm	MFXGS25C.M	10031618.D		amf	
	std s30-07271601	3 Oct 116 2:25 pm	MFXGS25C.M	10031619.D		amf	

APPENDIX G

FIELD DATA SHEET

MULTI LOAD TEST - FIELD DATA SHEET

AIR HYGIENE

Company:	Coyote North Ltd
Location:	Enid Faility
Date:	7/27/16
Unit Make and Model:	Comb 48
Unit Number:	
Serial Number:	
Data Recorded By:	
Tested With AHI Unit(s):	Truck(s): 156 Trailer(s): 210
LDEQ Warmup/Cal Req:	On (Day/Time): >24 Cal (Day/Time): 8:00

CYLINDER SERIAL NUMBERS		O_2	NOx	CO	THC	CO_2	SO_2
	Low				ALM066568		
	Mid	EB0060530		EB0078754	ALM010279	some	
	High	CC67536		EB0085244	CC156074	6% O2	

Stack Dia. = _____
Measured By: _____
Measured With: _____

RUN INFORMATION	Low Load			Mid Load			Mid-High Load			High Load		
	0-30-0 % #1	0-30-0 % #2	0-30-0 % #3	30-70-30 % #1	% #2	% #3	% #1	% #2	% #3	% #1	% #2	% #3
Time Start (hh:mm:ss) 11:16:20	~~11:59:20~~	13:14:20	14:36:20	16:10:20								
Time Stop (hh:mm:ss)	12:26:20	14:24:20	15:46:20	17:20:20								
Rated MegaWatts (MW or hp)												
Actual MegaWatts (MW or hp)												
Barometric Pressure (in. Hg)	28.78	28.71	28.67	28.64								
Ambient Temperature (°F)	~~93~~ 93	87	90	86								
Relative Humidity (%)	50.3	31	26	29								
Fuel Flow (lb/min)												
Fuel Flow (SCF/hr)=(lb/min)*21.7												
Specific Humidity (gr/lb)												
Specific Humidity (lb H_2O/lb air)=(gr/lb)/7000												
PCD (psi)												
PCD (mm Hg)=(psi÷14.24)*51.71493												
NOx Water Injection (gpm)												

CALIBRATION	O_2		NOx		CO		THC		CO_2		SO_2	
	Conc.	Actual	Conc.	Actual	Conc.	Actual	Conc.	Actual	Conc.	Actual	Conc.	Actual
Zero Gas	0	-0.01	0		0	0.05	0	-0.06	0	0.04		
Low Gas							3.00	2.93				
Mid Gas	11.9	12.01			9.44	9.40	5.01	4.95	8.95	8.78		
High Gas	21.1	21.09			18.30	18.29	8.428	8.42	18.4	18.44		

BIAS	O_2		NOx		CO		THC		CO_2		SO_2	
	Zero	Mid	Zero	Mid	Zero	Mid	Zero	Mid	Zero	Mid	Zero	Mid
Initial Low Load Run #1	0.06	12.03			-0.11	9.41	-0.07	2.89	~~0.02~~	8.87		
Load 1 Run #1 / Load 1 Run #2	-0.01	11.96			-0.03	9.40	-0.05	2.94	0.02	8.89		
Load 1 Run #2 / Load 1 Run #3	0.02	11.94			-0.02	9.32	-0.06	2.97	0.03	8.86		
Load 1 Run #3 / Load 2 Run #1	0.01	11.93			-0.09	9.32	-0.04	3.04	0.01	8.83		
Load 2 Run #1 / Load 2 Run #2	-0.01	11.92			-0.02	9.48	-0.07	2.96	0.01	8.83		
Load 2 Run #2 / Load 2 Run #3												
Load 2 Run #3 / Load 3 Run #1												
Load 3 Run #1 / Load 3 Run #2												
Load 3 Run #2 / Load 3 Run #3												
Load 3 Run #3 / Load 4 Run #1												
Load 4 Run #1 / Load 4 Run #2												
Load 4 Run #2 / Load 4 Run #3												
Load 4 Run #3 Final												
Bias Gas Actual Conc.												

AIR HYGIENE

MULTI LOAD TEST - FIELD DATA SHEET

Company:	Coyote North Ltd
Location:	Enid Faility
Date:	9/28/16
Unit Make and Model:	Comb 48
Unit Number:	
Serial Number:	/
Data Recorded By:	
Tested With AHI Unit(s):	Truck(s): 156 Trailer(s): 210
LDEQ Warmup/Cal Req:	On (Day/Time): >24 Cal (Day/Time): 07:00

CYLINDER SERIAL NUMBERS		O_2	NOx	CO	THC	CO_2	SO_2
	Low	—		—	ALM006558		
	Mid	EB0060530		EB0078554	ALM010279	Same as	
	High	CC67536		EB0085244	CC156074	O_2	

Stack Dia. = _____
Measured By: _____
Measured With: _____

RUN INFORMATION	Mid Load			Mid Load			Mid-High Load			High Load		
	30-70-30 % #1	% #2	% #3	% #1	30-70-30 % #2	30-70-30 % #3	70-100-70 % #1	% #2	% #3	% #1	% #2	% #3
Time Start (hh:mm:ss)	8:09:20				8:55:20	10:38:20						
Time Stop (hh:mm:ss)	9:19:20				10:05:20	11:48:20						
Rated MegaWatts (MW or hp)												
Actual MegaWatts (MW or hp)												
Barometric Pressure (in. Hg)	28.67				28.69	28.73						
Ambient Temperature (°F)	63.5				68	78						
Relative Humidity (%)	56				54	43						
Fuel Flow (lb/min)												
Fuel Flow (SCF/hr)=(lb/min)*21.7												
Specific Humidity (gr/lb)												
Specific Humidity (lb H_2O/lb air)=(gr/lb)/7000												
PCD (psi)												
PCD (mm Hg)=(psi+14.24)*51.71493												
NOx Water Injection (gpm)												

CALIBRATION	O_2		NOx		CO		THC		CO_2		SO_2	
	Conc.	Actual	Conc.	Actual	Conc.	Actual	Conc.	Actual	Conc.	Actual	Conc.	Actual
Zero Gas	0	-0.01			0	-0.02	0	-0.05	0	0.002		
Low Gas	—	—			—	—	3.00	3.01	—	—		
Mid Gas	11.9	12.02			9.44	9.30	5.01	5.04	8.95	8.91		
High Gas	21.1	21.11			18.30	18.29	8.428	8.38	18.4	18.43		

BIAS	O_2		NOx		CO		THC		CO_2		SO_2	
	Zero	Mid	Zero	Mid	Zero	Mid	Zero	Mid	Zero	Mid	Zero	Mid
Initial Low Load Run #1	0.03	12.03			-0.01	9.31	-0.08	3.05	0.03	8.92		
Load 1 Run #1 / Load 1 Run #2	0.01	11.98			-0.02	9.39	-0.06	2.96	0.03	8.91		
Load 1 Run #2 / Load 1 Run #3	-0.01	11.98			-0.02	9.38	-0.06	2.95	0.02	8.92		
Load 1 Run #3 / Load 2 Run #1												
Load 2 Run #1 / Load 2 Run #2												
Load 2 Run #2 / Load 2 Run #3												
Load 2 Run #3 / Load 3 Run #1												
Load 3 Run #1 / Load 3 Run #2												
Load 3 Run #2 / Load 3 Run #3												
Load 3 Run #3 / Load 4 Run #1												
Load 4 Run #1 / Load 4 Run #2												
Load 4 Run #2 / Load 4 Run #3												
Load 4 Run #3 Final												
Bias Gas Actual Conc.												

AIR HYGIENE

MULTI LOAD TEST - FIELD DATA SHEET

Company:	Coyote North Ltd			
Location:	Enid Faility			
Date:	9/29/16			
Unit Make and Model:	Comb 48			
Unit Number:	/			
Serial Number:				
Data Recorded By:				
Tested With AHI Unit(s):	Truck(s):	156	Trailer(s):	210
LDEQ Warmup/Cal Req:	On (Day/Time):	>24	Cal (Day/Time):	06:45

CYLINDER SERIAL NUMBERS		O_2	NOx	CO	THC	CO_2	SO_2
	Low	—	/	—	ALM066568		
	Mid	EB0060530	/	EB0078754	ALM0102779	Some	
	High	CC67531	/	EB0085244	CC156074	with O_2	

Stack Dia. = _____
Measured By: _____
Measured With: _____

RUN INFORMATION	Low Load			Mid Load			Mid-High Load			High Load		
	____% #1	____% #2	____% #3	____% #1	____% #2	____% #3	~~70-100-7~~ % #1	70-100-7 % #2	70-100-7 % #3	____% #1	____% #2	____% #3
Time Start (hh:mm:ss)							7:37:22	~~7:07:22~~	16:15:22			
Time Stop (hh:mm:ss)							8:47:22	~~10:14:22~~	17:25:22			
Rated MegaWatts (MW or hp)								14:50:22				
Actual MegaWatts (MW or hp)								15:00:22				
Barometric Pressure (in. Hg)												
Ambient Temperature (°F)							29.05	28.98	28.95			
Relative Humidity (%)							53	73	71			
Fuel Flow (lb/min)							56	40	40			
Fuel Flow (SCF/hr)=(lb/min)*21.7												
Specific Humidity (gr/lb)												
Specific Humidity (lb H_2O/lb air)=(gr/lb)/7000												
PCD (psi)												
PCD (mm Hg)=(psi+14.24)*51.71493												
NOx Water Injection (gpm)												

CALIBRATION	O_2		NOx		CO		THC		CO_2		SO_2	
	Conc.	Actual	Conc.	Actual	Conc.	Actual	Conc.	Actual	Conc.	Actual	Conc.	Actual
Zero Gas	0	-0.02			0	0.09	0	0.01	0	0.07		
Low Gas							3.00	3.04				
Mid Gas	11.9	12.01			9.44	9.40	5.01	5.01	8.95	8.82		
High Gas	21.1	21.14			18.30	18.29	8.428	8.41	18.4	18.44		

BIAS	O_2		NOx		CO		THC		CO_2		SO_2	
	Zero	Mid	Zero	Mid	Zero	Mid	Zero	Mid	Zero	Mid	Zero	Mid
Initial Low Load Run #1	0.02	12.08			-0.01	9.40	-0.07	3.06	0.05	8.83		
Load 1 Run #1 / Load 1 Run #2	0.01	12.02			0.07	9.43	0.04	3.04	0.08	8.84		
Load 1 Run #2 / Load 1 Run #3	-0.02	11.99			0.08	9.29	-0.07	3.05	0.06	8.81		
Load 1 Run #3 / Load 2 Run #1	0.01	11.98			-0.08	9.33	-0.08	3.07	0.07	8.80		
Load 2 Run #1 / Load 2 Run #2												
Load 2 Run #2 / Load 2 Run #3												
Load 2 Run #3 / Load 3 Run #1												
Load 3 Run #1 / Load 3 Run #2												
Load 3 Run #2 / Load 3 Run #3												
Load 3 Run #3 / Load 4 Run #1												
Load 4 Run #1 / Load 4 Run #2												
Load 4 Run #2 / Load 4 Run #3												
Load 4 Run #3 Final												
Bias Gas Actual Conc.												

MULTI LOAD TEST - FIELD DATA SHEET

AIR HYGIENE

Company:	Coyote North Ltd			
Location:	Enid Faility			
Date:	9/30/16			
Unit Make and Model:	Comb 48			
Unit Number:				
Serial Number:				
Data Recorded By:				
Tested With AHI Unit(s):	Truck(s):	156	Trailer(s):	210
LDEQ Warmup/Cal Req:	On (Day/Time):	>24	Cal (Day/Time):	6:50

CYLINDER SERIAL NUMBERS		O_2	NOx	CO	THC	CO_2	SO_2
	Low				ALM066562		
	Mid	EB0060530		EB0078754	ALM090279	Same	
	High	cc67536		EB0085244	cc156674	as CO_2	

Stack Dia. = _____
Measured By: _____
Measured With: _____

RUN INFORMATION	Low Load			Mid Load			Mid-High Load			High Load		
	____% #1	____% #2	____% #3	____% #1	____% #2	____% #3	____% #1	____% #2	____% #3	90-100% #1	90-100% #2	90-100% #3
Time Start (hh:mm:ss)										7:42:13	9:13:13	12:50:13
Time Stop (hh:mm:ss)										8:52:13	10:23:13	14:00:13
Rated MegaWatts (MW or hp)												
Actual MegaWatts (MW or hp)												
Barometric Pressure (in. Hg)										28.93	28.94	28.98
Ambient Temperature (°F)										60.8	66.8	80.1
Relative Humidity (%)										66.2	53.1	38.5
Fuel Flow (lb/min)												
Fuel Flow (SCF/hr)=(lb/min)*21.7												
Specific Humidity (gr/lb)												
Specific Humidity (lb H_2O/lb air)=(gr/lb)/7000												
PCD (psi)												
PCD (mm Hg)=(psi+14.24)*51.71493												
NOx Water Injection (gpm)												

CALIBRATION	O_2		NOx		CO		THC		CO_2		SO_2	
	Conc.	Actual	Conc.	Actual	Conc.	Actual	Conc.	Actual	Conc.	Actual	Conc.	Actual
Zero Gas	0	-0.01			0	-0.01	0	-0.06	0	0.06		
Low Gas							3.00	3.06				
Mid Gas	11.9	12.06			9.44	9.41	5.04	4.97	8.95	8.89		
High Gas	21.1	21.14			18.30	18.29	8.428	8.46	18.4	18.45		

BIAS	O_2		NOx		CO		THC		CO_2		SO_2	
	Zero	Mid	Zero	Mid	Zero	Mid	Zero	Mid	Zero	Mid	Zero	Mid
Initial Low Load Run #1	0.09	12.10			-0.01	9.31	0.03	3.03	0.06	8.83		
Load 1 Run #1 / Load 1 Run #2	0.08	12.04			-0.06	9.30	-0.05	3.04	0.07	8.86		
Load 1 Run #2 / Load 1 Run #3	0.06	12.07			-0.03	9.35	-0.06	3.00	0.08	8.86		
Load 1 Run #3 / Load 2 Run #1	0.06	11.97			0.12	9.40	-0.03	3.02	0.06	8.80		
Load 2 Run #1 / Load 2 Run #2												
Load 2 Run #2 / Load 2 Run #3												
Load 2 Run #3 / Load 3 Run #1												
Load 3 Run #1 / Load 3 Run #2												
Load 3 Run #2 / Load 3 Run #3												
Load 3 Run #3 / Load 4 Run #1												
Load 4 Run #1 / Load 4 Run #2												
Load 4 Run #2 / Load 4 Run #3												
Load 4 Run #3 Final												

Bias Gas Actual Conc. _____ _____ _____ _____ _____ _____

1
90-30-0

METHOD 4 (MOISTURE) [MULTI POINT, NO VARIATION] SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

Plant Name	Enid Facility
Sampling Location	comp 48
Project #	coyote-16-enid.ok-comp#1

Date	9-27-16
Operator	TW/RA
Run Number	1

Leak Checks					
Train	Pre	0	ft³/min@	15	in Hg
	Post	0	ft³/min@	15	in Hg
Pilot	Pre (+)	5.5	in H_2O for	15	sec
	Pre (-)	6.1	in H_2O for	15	sec
	Post (+)	5.8	in H_2O for	15	sec
	Post (-)	6.0	in H_2O for	15	sec

Sampling Equipment			
Meter Box Number	SAMP-CP-0011		
Orifice Meter Coefficient	1.585	in H_2O	

Pressures			
Barometric Pressure	(P_b)	28.78	in Hg

Run Time			
Start	11:16	End	12:30

Moisture Content Data					
		Impinger 1	Impinger 2	Impinger 3	Impinger 4
Initial Value	(Vi),(Wi)	759.9	729.3	608.2	866.1
Final Value	(Vi),(Wi)	789.6	734.1	610.6	875.8

Traverse Point #	Sampling Time (Θ)	Timer Time	Dry Gas Meter Reading (V_m)	Velocity Head (Δp)	Actual Orifice ΔH (ΔH_a)	Stack Temp (t_s)	Snorkel Temp (248±25°F)	Impinger Exit Temp (≤68°F)	Meter Inlet Temp (t_{mi})	Meter Outlet Temp (t_{mo})	Pump Vacuum
	min	hh:mm:ss	ft³	in H_2O	in H_2O	°F	°F	°F	°F	°F	in Hg
A-1	0.0	00:00:00	579.07	.005	1.5	944	257	57	87	79	
A-2	2.7	00:02:43	581.12	.005	1.5	932	257	51	85	79	
A-3	5.4	00:05:25	583.08	.005	1.5	1254	255	51	85	79	
A-4	8.1	00:08:07	585.06	.005	1.5	1296	253	51	85	79	
A-5	10.8	00:10:50	587.00	.005	1.5	1298	253	51	85	79	
A-6	13.5	00:13:33	589.05	.005	1.5	1290	251	52	86	79	
A-7	16.3	00:16:15	591.04	.005	1.5	1241	251	52	86	80	
A-8	19.0	00:18:58	593.08	.005	1.5	930	252	51	86	80	
A-9	21.7	00:21:40	595.08	.005	1.5	1044	252	52	87	80	
A-10	24.4	00:24:22	597.07	.005	1.5	1248	252	52	87	81	
A-11	27.1	00:27:05	599.07	.005	1.5	1273	252	53	87	82	
A-12	29.8	00:29:47	601.075	.005	1.5	1289	252	53	88	82	
B-1	32.6	00:32:30	603.07	.005	1.5	1270	251	52	88	82	
B-2	35.2	00:35:12	605.09	.005	1.5	1295	255	53	85	82	
B-3	37.9	00:37:55	607.07	.005	1.5	1298	255	52	87	82	
B-4	40.6	00:40:37	609.17	.005	1.5	1309	253	53	87	82	
B-5	43.3	00:43:20	611.05	.005	1.5	1015	252	54	89	82	
B-6	46.0	00:46:03	612.10	.005	1.5	1025	252	54	89	83	
B-7	48.8	00:48:45	615.08	.005	1.5	1248	252	55	8990	82	
B-8	51.6	00:51:28	617.10	.005	1.5	1280	251	55	90	83	
B-9	54.2	00:54:10	619.12	.005	1.5	1298	251	55	90	83	
B-10	56.9	00:56:53	621.08	.005	1.5	1195	252	56	90	83	
B-11	59.6	00:59:35	623.10	.005	1.5	950	252	55	89	83	
B-12	62.3	01:02:18	625.15	.005	1.5	903	252	55	89	82	
Last Pt	65.0	01:05:00	627.20								
Final Val	65.0	01:05:00								Max Vac	
Average Values											

2
90-30-0

METHOD 4 (MOISTURE) [MULTI POINT, NO VARIATION] SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

Plant Name	Enid Facility
Sampling Location	Comp 48
Project #	coyote-16-enid,ok-comp#1

Date	5-27-16
Operator	TW/RA
Run Number	2

Leak Checks					
Train	Pre	0	ft³/min@	15	in Hg
	Post	0	ft³/min@	15	in Hg
PHot	Pre (+)	0.2	in H_2O for	15	sec
	Pre (-)	0.2	in H_2O for	15	sec
	Post (+)	0.2	in H_2O for	15	sec
	Post (-)	0.2	in H_2O for	15	sec

Sampling Equipment			
Meter Box Number	SAMP-CP-0011		
Orifice Meter Coefficient	1.685	in H_2O	

Pressures			
Barometric Pressure	(P_b)	28.71	in Hg

Run Time			
Start	13:14	End	14:25

Moisture Content Data					
		Impinger 1	Impinger 2	Impinger 3	Impinger 4
Initial Value	(Vi),(Wi)	789.0	734.1	610.6	875.8
Final Value	(Vi),(Wi)	914.2	740.0	612.0	885.0

Traverse Point #	Sampling Time (Θ)	Timer Time	Dry Gas Meter Reading (V_m)	Velocity Head (Δp)	Actual Orifice ΔH (ΔH_a)	Stack Temp (t_s)	Snorkel Temp (248±25°F)	Impinger Exit Temp (≤68°F)	Meter Inlet Temp (t_{mi})	Meter Outlet Temp (t_{mo})	Pump Vacuum
	min	hh:mm:ss	ft³	in H_2O	in H_2O	°F	°F	°F	°F	°F	in Hg
A-1	0.0	00:00:00	627.34	.005	1.5	1113	252	61	77	79	10.5
A-2	2.7	00:02:43	629.24	.005		875	258	55	78	78	
A-3	5.4	00:05:25	631.22	.005		1179	252	53	80	79	
A-4	8.1	00:08:07	633.21	.005		1279	252	53	83	79	
A-5	10.8	00:10:50	635.12	.005		1279	252	54	84	79	
A-6	13.5	00:13:33	637.17	.005		1209	251	55	85	78	
A-7	16.3	00:16:15	639.21	.005		1243	251	54	86	79	
A-8	19.0	00:18:58	641.20	.005		911	251	56	87	80	
A-9	21.7	00:21:40	643.21	.005		919	251	55	88	80	
A-10	24.4	00:24:22	645.27	.005		1145	251	56	88	81	
A-11	27.1	00:27:05	647.31	.005		1210	252	56	38	82	
A-12	29.8	00:29:47	649.37	.005		1216	251	55	90	82	
B-1	32.5	00:32:30	651.43	.005		1162	250	62	86	83	
B-2	35.2	00:35:12	653.51	.005		1174	255	56	88	84	
B-3	37.9	00:37:55	655.50	.005		1299	255	56	89	84	
B-4	40.6	00:40:37	657.81	.005		1321	253	56	91	84	
B-5	43.3	00:43:20	659.34	.005		1319	252	56	91	84	
B-6	46.0	00:46:03	661.54	.005		1331	251	57	91	85	
B-7	48.8	00:48:46	663.56	.005		1008	251	56	92	85	
B-8	51.5	00:51:28	665.61	.005		931	251	56	93	85	
B-9	54.2	00:54:10	667.64	.005		1294	252	56	93	86	
B-10	56.9	00:56:53	669.67	.005		1336	252	57	93	86	
B-11	59.6	00:59:35	671.70	.005		1337	252	57	94	87	
B-12	62.3	01:02:18	677.81	.005		1087	252	57	94	87	
Last Pt	65.0	01:05:00	675.82	.005							
Final Val	65.0	01:05:00								Max Vac	
Average Values											

3
90-30-0

METHOD 4 (MOISTURE) [MULTI POINT, NO VARIATION] SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

Plant Name	Enid Facility
Sampling Location	Comp 48
Project #	coyote-16-enid.ok-comp#1

Date	9-27-16
Operator	TW/RA
Run Number	3

Leak Checks

Train	Pre	0	ft³/min@	15	in Hg
	Post	0	ft³/min@	15	in Hg
Pitot	Pre (+)	0.15	in H_2O for	15	sec
	Pre (-)	0.2	in H_2O for	15	sec
	Post (+)	0.2	in H_2O for	15	sec
	Post (-)	0.15	in H_2O for	15	sec

Sampling Equipment

Meter Box Number	SAMP-CP-0011	
Orifice Meter Coefficient	1.585	in H_2O

Pressures

Barometric Pressure	(P_b)	28.67	in Hg

Run Time

Start	14:16	End	15:46

Moisture Content Data

		Impinger 1	Impinger 2	Impinger 3	Impinger 4
Initial Value	(Vi),(Wi)	814.2	740.0	612.0	885.0
Final Value	(Vi),(Wi)	842.0	746.7	614.3	894.6

Traverse Point #	Sampling Time (Θ)	Timer Time	Dry Gas Meter Reading (V_m)	Velocity Head (Δp)	Actual Orifice ΔH (ΔH_a)	Stack Temp (t_s)	Snorkel Temp (248±25°F)	Impinger Exit Temp (≤68°F)	Meter Inlet Temp (t_{mi})	Meter Outlet Temp (t_{mo})	Pump Vacuum
	min	hh:mm:ss	ft³	in H_2O	in H_2O	°F	°F	°F	°F	°F	in Hg
A-1	0.0	00:00:00	675.90	.095	1.50	859	252	64	87	87	10
A-2	2.7	00:02:43	677.63			864	252	57	91	87	10
A-3	5.4	00:05:25	679.68			1177	252	56	91	87	10
A-4	8.1	00:08:07	681.67			1304	253	56	91	86	10
A-5	10.8	00:10:50	683.74			1315	251	56	92	87	10
A-6	13.5	00:13:33	686.04			1270	251	56	92	87	10
A-7	16.3	00:16:15	687.80			1220	251	56	93	87	10
A-8	19.0	00:18:58	689.81			1037	252	56	93	87	10
A-9	21.7	00:21:40	691.20			911	252	56	93	87	10
A-10	24.4	00:24:22	693.90			1252	252	56	94	88	10
A-11	27.1	00:27:05	696.00			1320	252	56	95	89	10
A-12	29.8	00:29:47	697.95			1355	252	57	95	89	10
B-1	32.5	00:32:30	700.00			945	250	63	90	89	10
B-2	35.2	00:35:12	702.91			1178	251	58	92	89	10
B-3	37.9	00:37:55	704.10			1284	252	57	94	89	10.5
B-4	40.6	00:40:37	706.10			1313	253	57	95	89	10.5
B-5	43.3	00:43:20	708.13			1342	252	58	94	88	10.5
B-6	46.0	00:46:03	710.20			1341	251	57	95	89	10.5
B-7	48.8	00:48:45	712.20			1164	252	57	95	89	10.5
B-8	51.5	00:51:28	714.25			933	251	58	96	89	10.5
B-9	54.2	00:54:10	716.40			1169	252	58	96	89	10.5
B-10	56.9	00:56:53	718.61			1309	252	58	96	90	10.5
B-11	59.6	00:59:35	720.73			1314	252	58	96	90	10.5
B-12	62.3	01:02:18	722.50			1328	252	58	96	90	10.5
Last Pt	65.0	01:05:00	724.46								
Final Val	65.0	01:05:00								Max Vac	
Average Values											

4
o/o 38-70-30

METHOD 4 (MOISTURE) [MULTI POINT, NO VARIATION] SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

Plant Name	Enid Facility
Sampling Location	Comp 4?
Project #	coyote-16-enid.ok-comp#1

Date	6-27-16
Operator	TW/RA
Run Number	4

Leak Checks

Train	Pre	0	ft³/min@	15	in Hg
	Post	0	ft³/min@	15	in Hg
Pitot	Pre (+)	0.15	in H_2O for	15	sec
	Pre (-)	0.2	in H_2O for	15	sec
	Post (+)	0.2	in H_2O for	15	sec
	Post (-)	0.3	in H_2O for	15	sec

Sampling Equipment

Meter Box Number	SAMP-CP-0011	
Orifice Meter Coefficient	1.585	in H_2O

Pressures

Barometric Pressure	(P_b)	28.64	in Hg

Run Time

Start	16:10	End	17:22

Moisture Content Data

		Impinger 1	Impinger 2	Impinger 3	Impinger 4
Initial Value	(Vi),(Wi)	842.0	746.7	614.3	535.4
Final Value	(Vi),(Wi)	874.8	752.6	615.5	546.4

Traverse Point #	Sampling Time (Θ)	Timer Time	Dry Gas Meter Reading (V_m)	Velocity Head (Δp)	Actual Orifice ΔH (ΔH_a)	Stack Temp (t_s)	Snorkel Temp (248±25°F)	Impinger Exit Temp (≤68°F)	Meter Inlet Temp (t_{mi})	Meter Outlet Temp (t_{mo})	Pump Vacuum
	min	hh:mm:ss	ft³	in H_2O	in H_2O	°F	°F	°F	°F	°F	in Hg
A-1	0.0	00:00:00	724.60	.005	1.5	1097	252	63	87	87	10
A-2	2.7	00:02:43	726.30	.005		1067	252	59	90	78	10
A-3	5.4	00:05:25	728.32	.005		1563	252	68	91	87	10
A-4	8.1	00:08:07	730.31	.005		1598	252	58	91	86	10
A-5	10.8	00:10:50	732.34	.010		1598	251	59	92	86	10
A-6	13.5	00:13:33	734.45	.010		1625	252	58	93	86	10
A-7	16.3	00:16:15	736.35	.015		1454	252	59	93	87	10
A-8	19.0	00:18:58	738.47	.005		1052	252	59	94	88	10
A-9	21.7	00:21:40	740.36	.010		1259	252	63	94	88	10
A-10	24.4	00:24:22	742.54	.015		1544	252	60	95	88	10
A-11	27.1	00:27:05	744.37	.015		1617	252	58	96	88	10
A-12	29.8	00:29:47	746.32	.015		1614	252	56	96	89	10
B-1	32.5	00:32:30	748.32	.010		1267	252	63	91	90	10
B-2	35.2	00:35:12	750.27	.015		1538	252	56	94	90	10
B-3	37.9	00:37:55	752.21	.020		1627	252	56	96	90	10
B-4	40.6	00:40:37	754.05	.025		1589	252	56	97	91	10
B-5	43.3	00:43:20	756.00	.020		1567	251	56	97	91	10
B-6	46.0	00:46:03	757.85	.020		1184	252	56	98	92	10
B-7	48.8	00:48:46	759.80	.020		1089	252	56	98	91	10
B-8	51.5	00:51:28	761.74	.020		1541	252	57	97	91	10
B-9	54.2	00:54:10	763.81	.020		1565	252	57	97	91	10
B-10	56.9	00:56:53	765.47	.020		1562	251	57	97	91	10
B-11	59.6	00:59:35	767.35	.025		1566	252	57	97	91	10
B-12	62.3	01:02:18	769.31	.025		1115	252	57	97	91	10
Last Pt	65.0	01:05:00	771.30								
Final Val	65.0	01:05:00								Max Vac	
Average Values											

5
9/30-70-30

METHOD 4 (MOISTURE) [MULTI POINT, NO VARIATION] SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

Plant Name	Enid Facility
Sampling Location	Comp#8
Project #	coyote-16-enid.ok-comp#1

Date	9-28-16
Operator	TW/RA
Run Number	5

Leak Checks					
Train	Pre	0	ft³/min@	15	in Hg
	Post	0	ft³/min@	15	in Hg
Pitot	Pre (+)	0.15	in H_2O for	15	sec
	Pre (-)	0.2	in H_2O for	15	sec
	Post (+)	0.2	in H_2O for	15	sec
	Post (-)	0.2	in H_2O for	15	sec

Sampling Equipment		
Meter Box Number	SAMP-CP-0011	
Orifice Meter Coefficient	28.69	in H_2O

Pressures			
Barometric Pressure	(P_b)	28.69	in Hg

Run Time			
Start	8:55	End	10:00

Moisture Content Data					
		Impinger 1	Impinger 2	Impinger 3	Impinger 4
Initial Value	(Vi),(Wi)	674.8	752.0	815.5	846.4
Final Value	(Vi),(Wi)	910.3	958.1	617.8	857.0

Traverse Point #	Sampling Time (Θ)	Timer Time	Dry Gas Meter Reading (V_m)	Velocity Head (Δp)	Actual Orifice ΔH (ΔH_a)	Stack Temp (t_s)	Snorkel Temp (248±25°F)	Impinger Exit Temp (≤68°F)	Meter Inlet Temp (t_{mi})	Meter Outlet Temp (t_{mo})	Pump Vacuum
	min	hh:mm:ss	ft³	in H_2O	in H_2O	°F	°F	°F	°F	°F	in Hg
A-1	0.0	00:00:00	771.80	.070	1.5	896	252	62	71	70	10.5
A-2	2.7	00:02:43	773.33	.075		904	252	58	72	70	10.5
A-3	5.4	00:05:25	775.31	.055		1485	252	57	73	70	10.5
A-4	8.1	00:08:07	777.50	.055		1602	252	52	73	71	10.5
A-5	10.8	00:10:50	779.05	.070		1602	252	50	73	71	10.5
A-6	13.5	00:13:33	780.94	.075		1630	251	50	76	72	10.5
A-7	16.3	00:16:15	783.00	.070		1650	252	50	76	73	10.5
A-8	19.0	00:18:58	785.04	.065		1107	252	50	77	72	10.5
A-9	21.7	00:21:40	787.07	.075		1281	252	50	78	72	10.5
A-10	24.4	00:24:22	789.04	.080		1601	252	51	78	72	10.5
A-11	27.1	00:27:05	790.89	.080		1625	252	51	78	73	10.5
A-12	29.8	00:29:47	792.80	.075		1630	252	51	78	73	10.5
B-1	32.5	00:32:30	794.77	.065		1624	252	51	77	74	10.5
B-2	35.2	00:35:12	796.84	.050		1076	252	51	77	74	10.5
B-3	37.9	00:37:55	798.85	.065		1519	252	51	77	74	10.5
B-4	40.6	00:40:37	801.00	.070		1567	252	51	78	75	10.5
B-5	43.3	00:43:20	802.82	.070		1565	252	51	78	75	10.5
B-6	46.0	00:46:03	804.75	.075		1597	254	52	78	76	10.5
B-7	48.8	00:48:45	806.77	.065		1605	252	53	79	76	10.5
B-8	51.5	00:51:28	808.80	.070		1111	252	53	79	76	10.5
B-9	54.2	00:54:10	810.82	.065		1158	252	53	80	76	10.5
B-10	56.9	00:56:53	812.84	.075		1542	252	53	80	76	10.5
B-11	59.6	00:59:35	814.80	.080		1570	252	53	80	76	10.5
B-12	62.3	01:02:18	816.87	.080		1573	252	53	80	76	10.5
Last Pt	65.0	01:05:00	818.80								
Final Val	65.0	01:05:00								Max Vac	
Average Values											

6
0630-70-30

METHOD 4 (MOISTURE) [MULTI POINT, NO VARIATION] SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

Plant Name	Enid Facility
Sampling Location	Comp 48
Project #	coyote-16-enid.ok-comp#1

Date	9-28-16
Operator	TW/RA
Run Number	6

Leak Checks					
Train	Pre	0	ft³/min@	15	in Hg
	Post	0	ft³/min@	15	in Hg
Pitot	Pre (+)	0.2	in H_2O for	15	sec
	Pre (-)	0.2	in H_2O for	15	sec
	Post (+)	0.2	in H_2O for	15	sec
	Post (-)	0.2	in H_2O for	15	sec

Sampling Equipment		
Meter Box Number	SAMP-CP-0011	
Orifice Meter Coefficient	1.585	in H_2O

Pressures			
Barometric Pressure	(P_b)	28.73	in Hg

Run Time			
Start	10:38	End	11:50

Moisture Content Data					
		Impinger 1	Impinger 2	Impinger 3	Impinger 4
Initial Value	(Vi),(Wi)	730.3	758.1	617.8	867.0
Final Value	(Vf),(Wf)	764.4	767.1	619.8	867.0

Traverse Point #	Sampling Time (Θ)	Timer Time	Dry Gas Meter Reading (V_m)	Velocity Head (Δp)	Actual Orifice ΔH (ΔH_a)	Stack Temp (t_s)	Snorkel Temp (248±25°F)	Impinger Exit Temp (≤68°F)	Meter Inlet Temp (t_{mi})	Meter Outlet Temp (t_{mo})	Pump Vacuum
	min	hh:mm:ss	ft³	in H_2O	in H_2O	°F	°F	°F	°F	°F	in Hg
A-1	0.0	00:00:00	819.00	.055	1.50	1066	257	56	75	76	11
A-2	2.7	00:02:43	821.10	.055		1083	252	52	76	75	11
A-3	5.4	00:05:25	823.22	.055		1515	253	52	78	76	11
A-4	8.1	00:08:07	825.15	.055		1571	252	52	79	75	11
A-5	10.8	00:10:50	827.21	.060		1607	253	52	80	76	11
A-6	13.5	00:13:33	829.25	.065		1552	252	52	81	76	11
A-7	16.3	00:16:15	831.31	.075		1456	252	52	81	76	11
A-8	19.0	00:18:58	833.37	.065		1064	252	52	82	77	11
A-9	21.7	00:21:40	835.35	.065		1323	252	52	82	77	11
A-10	24.4	00:24:22	837.50	.070		1525	251	53	82	77	11
A-11	27.1	00:27:05	839.51	.070		1553	252	54	82	78	11
A-12	29.8	00:29:47	841.76	.075		1555	252	55	83	79	11
B-1	32.5	00:32:30	843.70	.075		1509	252	54	80	80	11
B-2	35.2	00:35:12	845.70	.075		1640	252	56	82	80	11
B-3	37.9	00:37:55	847.75	.075		1696	252	56	82	80	11
B-4	40.6	00:40:37	849.80	.085		1653	252	56	83	80	11
B-5	43.3	00:43:20	851.84	.080		1644	252	57	83	80	11
B-6	46.0	00:46:03	853.80	.070		1215	252	58	84	80	11
B-7	48.8	00:48:45	855.85	.075		1085	252	58	84	80	11
B-8	51.5	00:51:28	857.91	.070		1554	252	58	84	80	11
B-9	54.2	00:54:10	859.92	.080		1618	252	58	84	80	11
B-10	56.9	00:56:53	861.97	.075		1608	251	59	83	80	11
B-11	59.6	00:59:35	863.25	.085		1620	252	58	83	80	11
B-12	62.3	01:02:18	866.07	.075		1137	252	58	83	79	11
Last Pt	65.0	01:05:00	868.10								
Final Val	65.0	01:05:00								Max Vac	
Average Values											

7

70-100-70

METHOD 4 (MOISTURE) [MULTI POINT, NO VARIATION] SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

Plant Name	Enid Facility
Sampling Location	Comp 48
Project #	coyote-16-enid.ok-comp#1

Date	9-29-16
Operator	TW/RA
Run Number	7

Leak Checks					
Train	Pre	0	ft³/min@	15	in Hg
	Post	0	ft³/min@	15	in Hg
Pitot	Pre (+)	0.15	in H_2O for	15	sec
	Pre (-)	0.2	in H_2O for	15	sec
	Post (+)	0.15	in H_2O for	15	sec
	Post (-)	0.2	in H_2O for	15	sec

Sampling Equipment		
Meter Box Number	SAMP-CP-0011	
Orifice Meter Coefficient	1.585	in H_2O

Pressures			
Barometric Pressure	(P_b)	29.05	in Hg

Run Time			
Start	7:37	End	8:51

Moisture Content Data					
		Impinger 1	Impinger 2	Impinger 3	Impinger 4
Initial Value	(Vi),(Wi)	764.4	767.1	619.8	867.0
Final Value	(Vi),(Wi)	796.4	772.4	620.4	876.2

Traverse Point #	Sampling Time (Θ)	Timer Time	Dry Gas Meter Reading (V_m)	Velocity Head (Δp)	Actual Orifice ΔH (ΔH_a)	Stack Temp (t_s)	Snorkel Temp (248±25°F)	Impinger Exit Temp (≤68°F)	Meter Inlet Temp (t_{mi})	Meter Outlet Temp (t_{mo})	Pump Vacuum
	min	hh:mm:ss	ft³	in H_2O	in H_2O	°F	°F	°F	°F	°F	in Hg
A-1	0.0	00:00:00	868.115	.035	1.5	252	1366	62	65	64	10
A-2	2.7	00:02:43	870.00	.025		253	1614	65	69	65	10
A-3	5.4	00:05:25	871.90	.035		252	1638	66	69	65	10
A-4	8.1	00:08:07	877.80	.025		253	1657	61	70	65	10
A-5	10.8	00:10:50	875.70	.020		252	1668	57	71	66	10
A-6	13.5	00:13:33	877.64	.030		252	1663	54	72	66	10
A-7	16.3	00:16:15	879.67	.030		252	1599	53	72	67	10
A-8	19.0	00:18:58	881.42	.025		253	1284	51	74	68	10
A-9	21.7	00:21:40	883.38	.030		252	1657	51	74	70	10
A-10	24.4	00:24:22	885.26	.025		252	1656	51	74	70	10
A-11	27.1	00:27:05	887.15	.035		252	1658	51	74	70	10
A-12	29.8	00:29:47	889.00	.030		253	1655	50	75	70	10
B-1	32.5	00:32:30	891.00	.025		251	1502	53	74	72	10
B-2	35.2	00:35:12	892.85	.020		252	1488	50	74	73	10
B-3	37.9	00:37:55	894.80	.030		255	1672	50	75	73	10
B-4	40.6	00:40:37	896.65	.025		252	1725	50	76	73	10
B-5	43.3	00:43:20	898.53	.030		253	1749	50	76	73	10
B-6	46.0	00:46:03	900.45	.025		252	1490	50	76	74	10
B-7	48.8	00:48:45	902.43	.030		253	1420	51	77	74	10
B-8	51.5	00:51:28	904.3	.025		252	1691	51	77	75	10
B-9	54.2	00:54:10	906.17	.030		252	1718	50	76	75	10
B-10	56.9	00:56:53	908.10	.030		252	1730	50	77	75	10
B-11	59.6	00:59:35	910.00	.030		252	1482	50	77	75	10
B-12	62.3	01:02:18	911.93	.025		251	1460	50	76	75	10
Last Pt	65.0	01:05:00	913.85								
Final Val	65.0	01:05:00								Max Vac	
Average Values											

8

90 70-100-70

METHOD 4 (MOISTURE) [MULTI POINT, NO VARIATION] SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

Plant Name	Enid Facility
Sampling Location	Comp 48
Project #	coyote-16-enid.ok-comp#1

Date	9-29-16
Operator	TW/RA
Run Number	8

Leak Checks					
Train	Pre	0	ft³/min@	15	in Hg
	Post	0	ft³/min@	15	in Hg
Pitot	Pre (+)	0.2	in H_2O for	15	sec
	Pre (-)	0.2	in H_2O for	15	sec
	Post (+)	0.2	in H_2O for	15	sec
	Post (-)	0.2	in H_2O for	15	sec

Sampling Equipment		
Meter Box Number	SAMP-CP-0011	
Orifice Meter Coefficient	1.168	in H_2O

Pressures			
Barometric Pressure	(P_b)	28.98	in Hg

Run Time			
Start	14:50	End	16:02

Moisture Content Data					
		Impinger 1	Impinger 2	Impinger 3	Impinger 4
Initial Value	(Vi),(Wi)	796.4	772.4	620.2	876.2
Final Value	(Vi),(Wi)	835.5	778.8	622.0	883.1

Traverse Point #	Sampling Time (Θ)	Timer Time	Dry Gas Meter Reading (V_m)	Velocity Head (Δp)	Actual Orifice ΔH (ΔH@)	Stack Temp (t_s)	Snorkel Temp (248±25°F)	Impinger Exit Temp (≤68°F)	Meter Inlet Temp (t_{mi})	Meter Outlet Temp (t_{mo})	Pump Vacuum
	min	hh:mm:ss	ft³	in H_2O	in H_2O	°F	°F	°F	°F	°F	in Hg
A-1	0.0	00:00:00	914.10	.035	1.5	1559	252	65	71	71	10
A-2	2.7	00:02:43	915.92	.035		1544	257	52	73	72	10
A-3	5.4	00:05:25	917.865	.025		1725	255	52	74	71	10
A-4	8.1	00:08:07	919.80	.030		1709	252	52	76	74	10
A-5	10.8	00:10:50	921.75	.035		1693	252	52	77	72	10
A-6	13.5	00:13:33	923.70	.025		1700	251	52	79	72	10
A-7	16.3	00:16:15	925.64	.040		1728	251	52	80	72	10
A-8	19.0	00:18:58	927.60	.035		1469	252	53	81	72	10
A-9	21.7	00:21:40	929.45	.030		1441	252	52	82	75	10
A-10	24.4	00:24:22	931.55	.040		1664	252	52	83	75	10
A-11	27.1	00:27:05	933.45	.040		1694	252	52	83	76	10
A-12	29.8	00:29:47	935.40	.035		1721	252	52	83	76	10
B-1	32.5	00:32:30	937.80	.030		1410	250	66	74	78	10
B-2	35.2	00:35:12	939.78	.030		1718	254	52	85	79	10
B-3	37.9	00:37:55	941.15	.040		1729	254	52	85	80	10
B-4	40.6	00:40:37	943.00	.045		1727	252	54	87	81	10
B-5	43.3	00:43:20	945.11	.050		1765	252	54	87	81	10
B-6	46.0	00:46:03	947.00	.045		1714	251	54	88	81	10
B-7	48.8	00:48:45	949.035	.030		1426	252	55	89	82	10
B-8	51.5	00:51:28	951.05	.045		1675	252	55	89	81	10
B-9	54.2	00:54:10	953.05	.045		1721	251	55	88	81	10
B-10	56.9	00:56:53	955.11	.040		1747	252	55	88	82	10
B-11	59.6	00:59:35	957.00	.030		1749	252	56	86	82	10
B-12	62.3	01:02:18	959.00	.030		1489	252	56	86	82	10
Last Pt	65.0	01:05:00	961.04								
Final Val	65.0	01:05:00								Max Vac	
Average Values											

9
40 70-100-70

METHOD 4 (MOISTURE) [MULTI POINT, NO VARIATION] SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

Plant Name	Enid Facility
Sampling Location	Comp 48
Project #	coyote-16-enid.ok-comp#1

Date	9-29-16
Operator	TW/RA
Run Number	9

Leak Checks					
Train	Pre	0	ft³/min@	15	in Hg
	Post	0	ft³/min@	15	in Hg
Pitot	Pre (+)	0.2	in H_2O for	15	sec
	Pre(-)	0.2	in H_2O for	15	sec
	Post (+)	0.2	in H_2O for	15	sec
	Post (-)	0.2	in H_2O for	15	sec

Sampling Equipment			
Meter Box Number	SAMP-CP-0011		
Orifice Meter Coefficient	1.585	in H_2O	

Pressures			
Barometric Pressure	(P_b)	28.95	in Hg

Run Time			
Start	16:15	End	17:26

Moisture Content Datn					
		Impinger 1	Impinger 2	Impinger 3	Impinger 4
Initial Value	(Vi),(Wi)	835.5	778.8	622.0	639.4
Final Value	(Vi),(Wi)	863.0	784.3	624.2	852.3

Traverse Point #	Sampling Time (Θ)	Timer Time	Dry Gas Meter Reading (V_m)	Velocity Head (Δp)	Actual Orifice ΔH (ΔH@)	Stack Temp (t_s)	Snorkel Temp (248±25°F)	Impinger Exit Temp (≤68°F)	Meter Inlet Temp (t_{mi})	Meter Outlet Temp (t_{mo})	Pump Vacuum
	min	hh:mm:ss	ft³	in H_2O	in H_2O	°F	°F	°F	°F	°F	in Hg
A-1	0.0	00:00:00	961.20	.030	1.5	1311	256	57	77	79	10
A-2	2.7	00:02:43	963.24	.030		1325	251	55	77	79	10
A-3	5.4	00:05:25	965.10	.045		1667	255	55	79	79	10
A-4	8.1	00:08:07	967.08	.045		1704	252	55	80	78	10
A-5	10.8	00:10:50	969.00	.045		1707	251	56	81	77	10
A-6	13.5	00:13:33	970.90	.045		1705	251	57	82	77	10
A-7	16.3	00:16:15	972.15	.040		1490	252	57	82	78	10
A-8	19.0	00:18:58	975.20	.035		1406	252	56	83	78	10
A-9	21.7	00:21:40	977.165	.055		1671	252	57	83	78	10
A-10	24.4	00:24:22	979.21	.050		1710	252	58	84	79	10
A-11	27.1	00:27:05	980.70	.060		1716	252	58	84	79	10
A-12	29.8	00:29:47	982.46	.060		1707	252	58	85	79	10
B-1	32.5	00:32:30	984.40	.065		1530	252	59	81	80	10
B-2	35.2	00:35:12	986.40	.060		1741	253	59	82	80	10
B-3	37.9	00:37:55	988.40	.060		1787	252	59	83	80	10
B-4	40.6	00:40:37	990.40	.055		1790	251	60	83	79	10
B-5	43.3	00:43:20	992.37	.050		1484	252	60	83	79	10
B-6	46.0	00:46:03	994.40	.045		1479	251	61	83	78	10
B-7	48.8	00:48:45	996.34	.040		1379	252	61	83	79	10
B-8	51.5	00:51:28	998.30	.040		1361	252	61	83	78	10
B-9	54.2	00:54:10	1000.35	.050		1596	252	61	82	78	10
B-10	56.9	00:56:53	1002.18	.055		1660	252	61	81	78	10
B-11	59.6	00:59:35	1004.25	.050		1682	252	61	80	78	10
B-12	62.3	01:02:18	1006.31	.045		1422	252	62	80	77	10
Last Pt	65.0	01:05:00	1008.37								
Final Val	65.0	01:05:00								Max Vac	
Average Values											

10
90-100
%

METHOD 4 (MOISTURE) [MULTI POINT, NO VARIATION] SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

Plant Name	Enid Facility
* Sampling Location	Comp 48
Project #	coyote-16-enid,ok-comp#1

Date	9-30-16
Operator	~~PWRA~~ BB
Run Number	10

Leak Checks

Train	Pre	0	ft³/min@	15	in Hg
	Post	0	ft³/min@	15	in Hg
Pitot	Pre (+)	0.7	in H_2O for	15	sec
	Pre (-)	0.4	in H_2O for	15	sec
	Post (+)	0.8	in H_2O for	15	sec
	Post (-)	0.8	in H_2O for	15	sec

Sampling Equipment

Meter Box Number	SAMP-CP-0011	
Orifice Meter Coefficient	1.585	in H_2O

Pressures

Barometric Pressure	(P_b)	28.93	in Hg

Run Time

Start	7:42	End	8:52

Moisture Content Data

		Impinger 1	Impinger 2	Impinger 3	Impinger 4
Initial Value	(Vi),(Wi)	744.2	683.1	627.2	851.8
Final Value	(Vi),(Wi)	777.4	716.2	625.5	862.9

Traverse Point #	Sampling Time (Θ)	Timer Time	Dry Gas Meter Reading (V_m)	Velocity Head (Δp)	Actual Orifice ΔH (ΔH_a)	1 Stack Temp (t_s)	Snorkel Temp (248±25°F)	4 Impinger Exit Temp (≤68°F)	6 Meter Inlet Temp (t_{mi})	7 Meter Outlet Temp (t_{mo})	Pump Vacuum
	min	hh:mm:ss	ft³	in H_2O	in H_2O	°F	°F	°F	°F	°F	in Hg
A-1	0.0	00:00:00	8.49	.025	1.5	1591	255	55	68	67	11
A-2	2.7	00:02:43	10.46	.025	1.5	1628	257	53	70	67	11
A-3	5.4	00:05:25	12.42	.025	1.5	1624	255	57	71	67	11
A-4	8.1	00:08:07	14.37	.025	1.5	1578	253	53	73	67	11
A-5	10.8	00:10:50	16.31	.030	1.5	1634	251	54	74	67	11
A-6	13.5	00:13:33	18.38	.025	1.5	1615	250	54	75	68	11
A-7	16.3	00:16:15	20.37	.025	1.5	1620	250	54	76	68	11
A-8	19.0	00:18:58	22.36	.025	1.5	1658	251	53	77	69	11
A-9	21.7	00:21:40	24.41	.030	1.5	1671	252	53	78	69	11
A-10	24.4	00:24:22	26.21	.035	1.5	1680	252	53	78	71	11
A-11	27.1	00:27:05	28.26	.035	1.5	1682	252	54	80	72	11.5
A-12	29.8	00:29:47	30.24	.036	1.5	1690	252	54	81	73	11.5
B-1	32.5	00:32:30	32.35	.040	1.5	1683	251	55	80	74	11.5
B-2	35.2	00:35:12	34.37	.045	1.5	1702	252	53	82	75	11
B-3	37.9	00:37:55	36.36	.045	1.5	1713	253	54	82	75	11
B-4	40.6	00:40:37	38.35	.050	1.5	1665	253	54	83	76	11
B-5	43.3	00:43:20	40.42	.040	1.5	1643	252	54	85	77	11
B-6	46.0	00:46:03	42.38	.040	1.5	1651	252	54	85	77	11
B-7	48.8	00:48:45	44.47	.040	1.5	1652	252	54	85	78	11
B-8	51.5	00:51:28	46.57	.035	1.5	1638	252	54	85	78	11
B-9	54.2	00:54:10	48.56	.035	1.5	1633	252	54	86	79	11
B-10	56.9	00:56:53	50.68	.035	1.5	1647	252	54	86	80	11
B-11	59.6	00:59:35	52.60	.035	1.5	1647	252	55	86	81	11
B-12	62.3	01:02:18	54.67	.035	1.5	1640	252	55	86	81	11
Last Pt	65.0	01:05:00	56.76	~~.035~~	1.5	1647	252	57	85	81	11
Final Val	65.0	01:05:00	46.78	.035	1.5	1647	252			Max Vac	
Average Values											

11
90-100%

METHOD 4 (MOISTURE) [MULTI POINT, NO VARIATION] SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

Plant Name	Enid Facility
Sampling Location	Comp 48
Project #	coyote-16-enid.ok-comp#1

Date	9-30-16
Operator	~~DWRA~~ BB
Run Number	11

Leak Checks					
Train	Pre	0	ft³/min@	15	in Hg
	Post	0	ft³/min@	15	in Hg
Pitot	Pre (+)	0.2	in H_2O for	15	sec
	Pre (-)	0.2	in H_2O for	15	sec
	Post (+)	0.2	in H_2O for	15	sec
	Post (-)	0.2	in H_2O for	15	sec

Sampling Equipment		
Meter Box Number	SAMP-CP-0011	
Orifice Meter Coefficient	1.585	in H_2O

Pressures			
Barometric Pressure	(P_b)	28.94	in Hg

Run Time			
Start	09:13	End	10:23

Moisture Content Data					
		Impinger 1	Impinger 2	Impinger 3	Impinger 4
Initial Value	(Vi),(Wi)	777.4	691.2	625.8	862.9
Final Value	(Vi),(Wi)	855.2	619.4	628.9	872.9

Traverse Point #	Sampling Time (Θ)	Timer Time	Dry Gas Meter Reading (V_m)	Velocity Head (Δp)	Actual Orifice ΔH (ΔH_a)	1 Stack Temp (t_s)	Snorkel Temp (248±26°F)	4 Impinger Exit Temp (≤68°F)	6 Meter Inlet Temp (t_{mi})	7 Meter Outlet Temp (t_{mo})	Pump Vacuum
	min	hh:mm:ss	ft³	in H_2O	in H_2O	°F	°F	°F	°F	°F	in Hg
A-1	0.0	00:00:00	57.24	.030	1.5	1491	257	55	76	80	11
A-2	2.7	00:02:43	59.34	.030	1.5	1542	257	53	77	80	11
A-3	5.4	00:05:25	61.31	.030	1.5	1573	256	53	78	80	11
A-4	8.1	00:08:07	63.23	.035	1.5	1596	252	52	79	79	11
A-5	10.8	00:10:50	65.27	.035	1.5	1618	251	53	81	78	11
A-6	13.5	00:13:33	67.24	.035	1.5	1655	251	53	82	78	11
A-7	16.3	00:16:15	69.22	.035	1.5	1658	251	54	82	78	11
A-8	19.0	00:18:58	71.19	.035	1.5	1664	251	54	83	78	11
A-9	21.7	00:21:40	73.17	.035	1.5	1672	252	54	84	78	11
A-10	24.4	00:24:22	75.13	.035	1.5	1675	252	54	84	78	11
A-11	27.1	00:27:05	77.12	.035	1.5	1676	258	54	84	79	11
A-12	29.8	00:29:47	79.09	.035	1.5	1679	252	54	85	79	11
B-1	32.5	00:32:30	81.06	.030	1.5	1750	252	55	85	79	11
B-2	35.2	00:35:12	83.12	.030	1.6	1748	253	55	82	79	11
B-3	37.9	00:37:55	85.13	.035	1.5	1749	253	55	83	79	11
B-4	40.6	00:40:37	87.10	.035	1.5	1736	252	55	85	79	11
B-5	43.3	00:43:20	89.11	.035	1.5	1671	252	56	85	80	11
B-6	46.0	00:46:03	91.12	.035	1.5	1658	251	56	85	80	11
B-7	48.8	00:48:45	93.13	.035	1.5	1665	251	56	86	80	11
B-8	51.5	00:51:28	95.12	.035	1.5	1679	251	56	86	81	11
B-9	54.2	00:54:10	97.11	.035	1.5	1677	252	56	86	81	11
B-10	56.9	00:56:53	99.13	.035	1.5	1691	252	57	86	81	11
B-11	59.6	00:59:35	101.11	.035	1.5	1681	252	57	86	82	11
B-12	62.3	01:02:18	103.15	.035	1.5	1682	252	57	86	81	11
Last Pt	65.0	01:05:00	105.14	.035	1.5	1672	252	58	86	81	11
Final Val	65.0	01:05:00	105.14							Max Vac	
Average Values											

2 min ~~HH~~ Change Δ+ −

12

METHOD 4 (MOISTURE) [MULTI POINT, NO VARIATION] SOURCE SAMPLING TITLE PAGE ISOKINETIC SAMPLING DATA

Plant Name	Enid Facility
Sampling Location	Comp. 48
Project #	coyote-16-enid,ok-comp#1

Date	9-30-16
Operator	~~TWINA~~ BB
Run Number	12

Leak Checks					
Train	Pre	3	ft³/min@	15	in Hg
	Post	0	ft³/min@	15	in Hg
Pitot	Pre (+)	0.0	in H_2O for	15	sec
	Pre (-)	0.0	in H_2O for	15	sec
	Post (+)	0.0	in H_2O for	15	sec
	Post (-)	0.0	in H_2O for	15	sec

Sampling Equipment		
Meter Box Number	SAMP-CP-0011	
Orifice Meter Coefficient	1.585	in H_2O

Pressures			
Barometric Pressure	(P_b)	28.66	in Hg

Run Time			
Start	12:50	End	14:00

Moisture Content Data					
		Impinger 1	Impinger 2	Impinger 3	Impinger 4
Initial Value	(Vi),(Wi)	670	678.1	629.9	872.9
Final Value	(Vi),(Wi)	708.3	722.4	630.6	883.1
		4	6	7	

Traverse Point #	Sampling Time (Θ)	Timer Time	Dry Gas Meter Reading (V_m)	Velocity Head (Δp)	Actual Orifice ΔH (ΔH_a)	Stack Temp (t_s)	Snorkel Temp (248±25°F)	Impinger Exit Temp (568°F)	Meter Inlet Temp (t_{mi})	Meter Outlet Temp (t_{mo})	Pump Vacuum
	min	hh:mm:ss	ft³	in H_2O	in H_2O	°F	°F	°F	°F	°F	in Hg
A-1	0.0	00:00:00	106.75	.035	1.5	1612	252	71	70	70	11
A-2	2.7	00:02:43	106.58	.035	1.5	1606	256	63	73	70	11
A-3	5.4	00:05:25	108.51	0.035	1.5	1615	257	61	76	70	11
A-4	8.1	00:08:07	110.33	0.035	1.5	1591	255	61	78	71	11
A-5	10.8	00:10:50	112.34	0.035	1.5	1649	252	62	80	71	11
A-6	13.5	00:13:33	114.30	0.035	1.5	1705	251	63	81	72	11
A-7	16.3	00:16:15	116.25	0.035	1.5	1735	251	64	83	73	11
A-8	19.0	00:18:58	118.28	0.035	1.5	1756	251	64	83	74	11
A-9	21.7	00:21:40	120.19	0.035	1.5	1762	252	64	84	75	11
A-10	24.4	00:24:22	122.11	0.035	1.5	1767	252	65	84	76	11
A-11	27.1	00:27:05	124.10	0.035	1.5	1768	252	65	85	77	11
A-12	29.8	00:29:47	126.01	0.035	1.5	1789	252	65	86	77	11
B-1	32.5	00:32:30	127.95	0.035	1.5	1789	252	66	84	78	11
B-2	35.2	00:35:12	129.41	0.035	1.5	1866	252	66	85	79	11
B-3	37.9	00:37:55	131.39	0.035	1.5	1884	253	66	86	80	11
B-4	40.6	00:40:37	133.37	0.035	1.5	1855	253	66	86	80	11
B-5	43.3	00:43:20	135.43	0.035	1.5	1858	253	65	88	81	11
B-6	46.0	00:46:03	137.44	0.035	1.5	1933	253	63	88	82	11
B-7	48.8	00:48:45	139.46	0.035	1.5	1883	253	62	88	82	11
B-8	51.5	00:51:28	141.49	0.035	1.5	1935	253	61	90	83	11
B-9	54.2	00:54:10	143.51	.040	1.5	1850	252	61	90	83	11
B-10	56.9	00:56:53	145.53	.040	1.5	1841	252	61	91	84	11
B-11	59.6	00:59:35	147.56	.035	1.5	1846	252	61	91	84	11
B-12	62.3	01:02:18	149.58	.040	1.5	1835	252	61	91	84	11
Last Pt	65.0	01:05:00	151.63	.040	1.5	1833	252	61	91	84	11
Final Vol	65.0	01:05:00	151.63							Max Vac	
Average Values											

2 min B4 change

coy-0-30-0%-comb 48-can

-28.96

-18.53

-10,42

+0.46 9/27/16

coy-30-70-30%-comb 48-can

-28.90

-19.00 9/27/16

-11.33

-0.41 9/28/16

coy-70-100-70%-comb 48-can

-28.68

-17.81

-9.87

+0.44 9/29/16

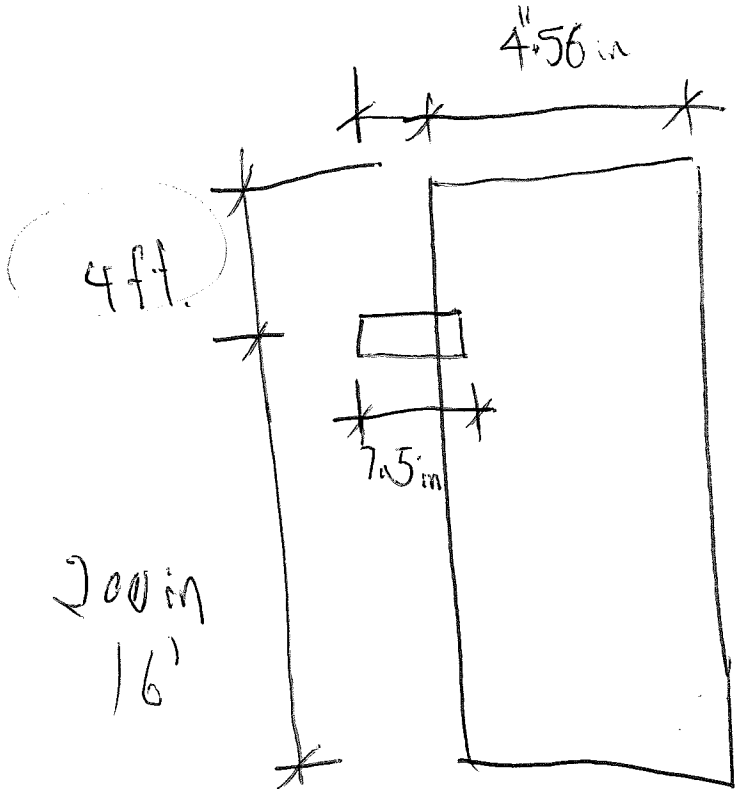
coy-90-100%-comb 48-can

-29.13

-17.94

-9.54

-0.55 9/30/16



flow	gas
8 4/8	15 3/8
10 5/8	31 1/8
13 1/8	46 7/8
15 7/8	
19 2/8	
24 2/8	
37 7/8	
42 7/8	
46 3/8	
49 1/8	
51 4/8	
53 4/8	

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end of report

COYOTE NORTH
USA INC.
Combustion Experts

P.O. Box 171
1411 W Chestnut Ave.
Enid, OK 73702
(580) 297-5300

Summary:
Coyote North, Inc. contracted Air Hygiene Inc. to conduct performance testing on Combustion Device on model COMB 48. The unit was tested on September 27th through 30th, 2016 at the Elk City Facility in Elk City, Oklahoma. The flare unit was re-tested to satisfy the specifications as described in United States Code of Federal Regulations Title 40, Part 60, Subpart OOOO (40 CFR 60, Subpart OOOO).

Testing Methods:
The production flare model was tested according to EPA source emissions test method

- Method 1 – Sample and Velocity Traverse for Stationary Sources
- Method 2 – Determination of Stack Gas Velocity and Volumetric Flow Rate
- Method 2A – Direct Measurement of Gas Volume Through Pipes and Small Ducts
- Method 3C – Determination of Carbon Dioxide, Methane, Nitrogen and Oxygen from stationary Sources
- Method 4 – Determination of Moisture Content in Stack Gas
- Method 10 – Determination of Carbon Monoxide Emission from Stationary Sources
- Method 22 – Visual Determination of Fugitive Emissions from Material Sources and Smoke Emission from Flares
- Method 25A – Determination of Total Gaseous Organic Concentration Using Flame Ionization Analyzer
- ASTM D1945-03 – Standard Test Method for Analysis of Natural Gas by Gas Chromatography
- ASTM D3588-98 – Standard Practice for Calculating Heat Value, Compressibility Factor, and Relative Density of Gaseous Fuels

Requirement Specification:
In accordance to 40 CFR 60 Subpart OOOO, §60.5413(d)(12)(i) through (vi), this report contains the following information.

- A full schematic and dimensions of the flare unit are presented in page 3
- The maximum net Heat Input Rating of the COMB 48 is 15.63MMBtu/hr
- The inlet gas fuel range for 0% (min. rate) and 100% (max. rate) are 17.42MSCFD, and 152.50MSCFD, respectively
- Air/Stream injection/assist is not applicable for COMB 48
- The test parameter ranges below, as applicable to this unit
    - Fuel gas delivery pressure and temperature – See Air Hygiene report Appendix B
    - Fuel gas moisture range – <2ppm
    - Purge gas usage range – Not applicable
    - Condensate liquid fuel separation range – No liquid in the gas
    - Combustion temperature range – See Air Hygiene report Appendix B
    - Excess combustion air range – See Table 2.1 - 2.4
    - Flame arrestor – See blue print of the production flare unit on page 3
    - Burner manifold pressure – 0.1psi min and 10psi max
    - Pilot flame indicator – See blue print of the production flare unit on page 3

- Pilot flame fuel usage – Not used during test
- Tip velocity range – 7.5ft/s – 20ft/s
- Momentum flux ratio – Not Applicable
- Exit temperature range – See Air Hygiene report Appendix B
- Weather condition - See Air Hygiene report Appendix B

Specified Testing Conclusion for Model COMB 48:

- The device was tested with no visible emission
- The device was tested with less than 10 ppmvw average as propane corrected to 3 percent carbon dioxide
- The device was tested with less than 10 ppmvd average as carbon monoxide corrected to 3 percent carbon dioxide
- The device was tested with higher than 150 percent excess air
- The device was tested with higher than 95 percent destruction efficiency for VOC

January 3, 2017

Brent Willey
Coyote North USA Inc.
P.O. Box 171
1411 W Chestnut Ave.
(580) 297-5300

Mr. Willey,

Please find the attached revisions in response to Ms. Marcia Mia's December 21st, 2016 email request.

Item #3.
Apparent Error in Table 2.3 for inlet fuel flow rate (60.5413(d)(4) and (d)(11)-(12)). Please explain or provide correction.

- The data entered for 70-100-70% load Run 7was in SCFD rather than SCFH. All data has been updated to SCFH.

Item #4
Exit flow rate results (60.5412(d)(6) and (d)(12)) – We note a a peak during 30-70-30 condition the a drop for higher load levels. The average flow goes from 92k in 0-30-0, to 261k for 30-70-30; 224k in 70-100-70, then 211k in 90-100. Please explain.

- All velocity data have been reviewed and no appearance errors were found. The manometer readings that were observed in the field were reported.

If you have any questions, comments, or concerns please feel free to contact me at (918) 307-8865 office, (918) 565-5379 cell, or mlee@airhygiene.com.

Sincerely,

Min Sum Lee, QSTI
Project Manager
Air Hygiene Inc.
mlee@airhygiene.com
Office: (918) 307-8865

TABLE 2.3
COMB 48 70-100-70 LOAD DATA SUMMARY

Parameter	70-100-70 Load, Run - COMB 48 R7	70-100-70 Load, Run - COMB 48 R8	70-100-70 Load, Run - COMB 48 R9	Average
Date (mm/dd/yy)	09/29/16	09/29/16	09/29/16	--
Start Time (hh:mm:ss)	7:37:22	14:50:22	16:15:22	--
End Time (hh:mm:ss)	8:47:22	16:00:22	17:25:33	--
Run Duration (min / run)	71	70	71	71
Bar. Pressure (in. Hg)	29.05	28.98	28.95	28.99
Amb. Temp. (°F)	53	73	71	66
Rel. Humidity (%)	56	40	40	45
Spec. Humidity (lb water / lb air)	0.004896	0.007110	0.006647	0.006218
Wind Speed (mph)	5.0	8.0	7.0	6.7
Wind Direction (--)	NW	NW	NW	--
Inlet Gas Canister Pressure Start (inHg)	-28.68	-17.81	-9.77	--
Inlet Gas Canister Pressure Stop (inHg)	-17.81	-9.77	0.44	--
Gross Fuel Heating Value (Btu/ft3)	2,465	2,465	2,465	2,465
Stack Flow (M2) (dscfh)	198,047	218,657	256,050	224,251
Stack Moisture (Method 4)	4.8	5.5	5.0	5.1
Gross Fuel Heating Value (Btu/ft^3)	2,465.3	2,465.3	2,465.3	2,465.30
Average Inlet Fuel Flowrate (SCFH)	5,508.5	5,478.1	5,387.7	5,458.09
Average Inlet Mass Fuel Flowrate (lb/hr)	636.8	636.2	572.5	615.21
% Excess Air	239.1	304.3	288.7	277.36
CO_2 (%) - Modified method 3C	4.42	4.08	4.23	4.24
O_2 (%) - Modified Method 3C	15.00	15.90	15.70	15.53
N_2 (%) - Modified Method 3C	80.58	80.02	80.07	80.22
Visual Emission (mm:ss)	0:00	0:00	0:00	0:00
CO (ppmvd)	2.58	2.61	1.84	2.34
CO (ppm@3%CO_2)	1.75	1.92	1.30	1.66
THC (ppmvw)	0.23	1.03	0.08	0.45
THC (ppm@3%CO_2)	0.15	0.76	0.06	0.32
THC (lb/hr)	0.01	0.03	0.00	0.01
VOC Destruction Efficiency (%)	99.999	99.996	99.999	99.998

Coyote North USA INC.
September 29, 2016
COMB 48
Enid Facility

Unit Data

Meas. Stack Moisture	4.8	%
Stack Exhaust Flow (M2)	198,047	SCFH

Weather Data

Barometric Pressure	29.05	in. Hg
Relative Humidity	56	%
Ambient Temperature	53	^{o}F
Specific Humidity	0.004896	lb H_2O / lb air

70-100-70 Load, Run - COMB 48 R7

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	NOx (ppmvd)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
A1	09/29/16 07:37:22	2700	15.94	49.94	3.52	0.31	3.59	50.91	70.89	4,266.00
	09/29/16 07:37:52	2730	15.98	49.05	3.90	0.31	3.57	50.91	70.89	4,266.00
	09/29/16 07:38:22	2760	16.01	48.50	4.20	0.33	3.55	50.78	71.61	4,260.00
	09/29/16 07:38:52	2790	15.98	48.58	4.38	0.41	3.59	50.78	71.61	4,260.00
	09/29/16 07:39:22	2820	15.89	48.67	4.31	0.39	3.60	50.68	72.27	4,266.00
	09/29/16 07:39:52	2850	15.92	48.55	4.29	0.39	3.60	50.68	72.27	4,266.00
	09/29/16 07:40:22	2880	15.96	48.24	4.38	0.33	3.56	50.46	72.90	4,782.00
	09/29/16 07:40:52	2910	15.98	48.57	4.48	0.38	3.56	50.46	72.90	4,782.00
	09/29/16 07:41:22	2940	15.22	49.27	4.53	0.24	3.97	50.10	73.70	5,814.00
	09/29/16 07:41:52	2970	14.70	56.46	5.07	0.21	4.34	50.10	73.70	5,814.00
	09/29/16 07:42:22	3000	14.17	63.52	3.79	0.19	4.69	50.18	74.81	6,090.00
	09/29/16 07:42:52	3030	13.98	70.46	2.35	0.20	4.81	50.18	74.81	6,090.00
	09/29/16 07:43:22	3060	13.89	72.63	1.81	0.20	4.86	50.24	75.98	6,132.00
	09/29/16 07:43:52	3090	13.92	73.32	1.59	0.23	4.83	50.24	75.98	6,132.00
	09/29/16 07:44:22	3120	13.98	74.45	1.37	0.23	4.78	50.43	77.08	6,084.00
	09/29/16 07:44:52	3150	13.97	74.58	1.15	0.23	4.79	50.43	77.08	6,084.00
	09/29/16 07:45:22	3180	14.02	75.80	1.08	0.23	4.77	50.30	78.14	6,018.00
	09/29/16 07:45:52	3210	14.04	75.73	1.09	0.24	4.75	50.30	78.14	6,018.00
	09/29/16 07:46:22	3240	13.98	77.03	1.16	0.23	4.80	50.16	79.09	6,084.00
	09/29/16 07:46:52	3270	14.07	77.33	1.28	0.23	4.73	50.16	79.09	6,084.00
	09/29/16 07:47:22	3300	14.03	76.83	1.45	0.23	4.75	50.04	79.95	6,072.00
	09/29/16 07:47:52	3330	13.97	77.50	1.72	0.23	4.80	50.04	79.95	6,072.00
	09/29/16 07:48:22	3360	13.93	78.65	2.02	0.22	4.80	50.13	80.82	6,066.00
	09/29/16 07:48:52	3390	13.83	78.73	2.20	0.23	4.88	50.13	80.82	6,066.00
	09/29/16 07:49:22	3420	13.83	79.01	2.57	0.23	4.88	50.25	81.71	6,066.00
	09/29/16 07:49:52	3450	13.91	79.11	2.90	0.21	4.83	50.25	81.71	6,066.00
	09/29/16 07:50:22	3480	13.81	76.98	3.05	0.20	4.88	50.44	82.56	6,018.00
	09/29/16 07:50:52	3510	13.86	78.86	3.22	0.22	4.83	50.44	82.56	6,018.00
	09/29/16 07:51:22	3540	13.92	77.28	3.37	0.23	4.78	50.45	83.39	5,964.00
	09/29/16 07:51:52	3570	13.92	77.91	3.49	0.21	4.80	50.45	83.39	5,964.00
	09/29/16 07:52:22	3600	13.93	78.29	3.57	0.20	4.78	50.34	84.17	6,018.00
	09/29/16 07:52:52	3630	13.81	77.83	3.70	0.22	4.86	50.34	84.17	6,018.00
	09/29/16 07:53:22	3660	13.82	80.33	3.71	0.22	4.86	50.24	84.90	6,024.00
	09/29/16 07:53:52	3690	13.98	80.17	3.69	0.19	4.75	50.24	84.90	6,024.00
	09/29/16 07:54:22	3720	14.00	78.63	3.69	0.20	4.74	50.87	85.46	4,554.00
	09/29/16 07:54:52	3750	15.14	77.98	3.72	0.26	4.09	50.87	85.46	4,554.00
	09/29/16 07:55:22	3780	15.73	61.70	3.72	0.33	3.69	50.94	85.50	4,296.00
	09/29/16 07:55:52	3810	15.91	54.29	3.87	0.31	3.60	50.94	85.50	4,296.00
	09/29/16 07:56:22	3840	16.07	51.40	3.98	0.31	3.49	50.95	85.34	4,212.00
	09/29/16 07:56:52	3870	16.04	49.58	4.04	0.30	3.52	50.95	85.34	4,212.00
	09/29/16 07:57:22	3900	16.17	48.72	4.21	0.31	3.45	50.96	85.18	4,248.00
A2	09/29/16 07:57:52	3930	16.21	47.53	4.35	0.30	3.42	50.96	85.18	4,248.00
	09/29/16 07:58:22	3960	16.26	47.47	4.50	0.30	3.39	50.99	84.98	4,248.00
	09/29/16 07:58:52	3990	16.30	46.73	4.67	0.35	3.36	50.99	84.98	4,248.00
	09/29/16 07:59:22	4020	16.22	46.39	4.78	0.28	3.42	50.42	84.75	5,592.00
	09/29/16 07:59:52	4050	15.25	47.03	4.74	0.25	3.94	50.42	84.75	5,592.00
	09/29/16 08:00:22	4080	14.20	60.76	3.96	0.23	4.69	50.20	84.75	5,940.00
	09/29/16 08:00:52	4110	14.06	73.39	2.39	0.20	4.79	50.20	84.75	5,940.00
	09/29/16 08:01:22	4140	14.14	75.97	1.83	0.21	4.73	50.14	84.88	5,958.00
	09/29/16 08:01:52	4170	14.08	75.00	2.01	0.20	4.75	50.14	84.88	5,958.00
	09/29/16 08:02:22	4200	14.01	75.52	2.45	0.20	4.76	50.11	85.05	6,006.00
	09/29/16 08:02:52	4230	14.10	76.48	2.66	0.23	4.72	50.11	85.05	6,006.00
	09/29/16 08:03:22	4260	14.00	75.82	2.69	0.23	4.78	50.09	85.27	6,018.00
	09/29/16 08:03:52	4290	14.00	77.14	2.68	0.17	4.78	50.09	85.27	6,018.00
	09/29/16 08:04:22	4320	13.99	76.99	2.54	0.19	4.78	50.19	85.56	5,916.00
	09/29/16 08:04:52	4350	14.04	76.86	2.45	0.22	4.76	50.19	85.56	5,916.00
	09/29/16 08:05:22	4380	14.65	77.43	2.54	0.24	4.88	50.24	85.87	5,988.00
	09/29/16 08:05:52	4410	15.17	77.08	2.50	0.22	4.89	50.24	85.87	5,988.00
	09/29/16 08:06:22	4440	14.10	76.82	2.26	0.24	4.82	50.39	86.15	5,994.00
	09/29/16 08:06:52	4470	13.97	78.42	2.09	0.20	4.81	50.39	86.15	5,994.00

Coyote North USA INC.
September 29, 2016
COMB 48
Enid Facility

Unit Data

Meas. Stack Moisture	4.8	%
Stack Exhaust Flow (M2)	198,047	SCFH

Weather Data

Barometric Pressure	29.05	in. Hg
Relative Humidity	56	%
Ambient Temperature	53	^{o}F
Specific Humidity	0.004896	lb H_2O / lb air

70-100-70 Load, Run - COMB 48 R7

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	NOx (ppmvd)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
	09/29/16 08:07:22	4500	14.15	78.69	2.09	0.20	4.69	50.37	86.41	5,970.00
	09/29/16 08:07:52	4530	14.05	78.16	2.09	0.20	4.75	50.37	86.41	5,970.00
	09/29/16 08:08:22	4560	14.12	78.51	2.15	0.21	4.71	50.23	86.52	5,994.00
	09/29/16 08:08:52	4590	14.01	77.73	2.13	0.20	4.78	50.23	86.52	5,994.00
	09/29/16 08:09:22	4620	14.00	79.54	2.19	0.20	4.78	50.15	86.54	5,988.00
	09/29/16 08:09:52	4650	14.05	79.29	2.27	0.19	4.77	50.15	86.54	5,988.00
	09/29/16 08:10:22	4680	14.16	78.90	2.33	0.17	4.69	50.16	86.52	5,922.00
	09/29/16 08:10:52	4710	14.15	78.02	2.39	0.23	4.69	50.16	86.52	5,922.00
	09/29/16 08:11:22	4740	13.94	78.76	2.47	0.23	4.81	50.30	86.52	5,988.00
	09/29/16 08:11:52	4770	13.88	80.16	2.61	0.20	4.86	50.30	86.52	5,988.00
	09/29/16 08:12:22	4800	13.98	80.03	2.61	0.18	4.78	50.34	86.55	5,940.00
	09/29/16 08:12:52	4830	13.92	79.84	2.61	0.21	4.82	50.34	86.55	5,940.00
	09/29/16 08:13:22	4860	13.83	80.16	2.68	0.21	4.87	50.45	86.59	5,982.00
	09/29/16 08:13:52	4890	13.77	80.15	2.69	0.20	4.92	50.45	86.59	5,982.00
	09/29/16 08:14:22	4920	13.75	81.39	2.71	0.20	4.93	50.53	86.62	5,970.00
	09/29/16 08:14:52	4950	13.83	81.04	2.72	0.22	4.89	50.53	86.62	5,970.00
	09/29/16 08:15:22	4980	13.88	81.08	2.80	0.23	4.85	50.36	86.58	5,970.00
	09/29/16 08:15:52	5010	13.77	81.26	2.82	0.23	4.91	50.36	86.58	5,970.00
	09/29/16 08:16:22	5040	13.76	81.81	2.88	0.23	4.92	50.23	86.50	5,982.00
	09/29/16 08:16:52	5070	13.81	81.91	2.88	0.20	4.90	50.23	86.50	5,982.00
	09/29/16 08:17:22	5100	13.77	81.96	2.82	0.20	4.92	50.18	86.37	5,982.00
A3	09/29/16 08:17:52	5130	14.01	82.06	2.74	0.22	4.77	50.18	86.37	5,982.00
	09/29/16 08:18:22	5160	14.07	78.25	2.64	0.22	4.74	50.30	86.20	5,982.00
	09/29/16 08:18:52	5190	14.09	76.72	2.59	0.20	4.71	50.30	86.20	5,982.00
	09/29/16 08:19:22	5220	14.04	76.20	2.59	0.21	4.75	50.98	86.01	4,404.00
	09/29/16 08:19:52	5250	15.35	75.10	2.63	0.22	4.01	50.98	86.01	4,404.00
	09/29/16 08:20:22	5280	15.81	57.23	2.84	0.23	3.64	51.09	85.66	4,188.00
	09/29/16 08:20:52	5310	15.99	51.21	3.29	0.27	3.57	51.09	85.66	4,188.00
	09/29/16 08:21:22	5340	16.06	49.14	3.59	0.24	3.51	51.07	85.34	4,254.00
	09/29/16 08:21:52	5370	16.06	46.60	3.47	0.22	3.51	51.07	85.34	4,254.00
	09/29/16 08:22:22	5400	16.19	46.84	3.37	0.22	3.43	50.67	85.00	5,112.00
	09/29/16 08:22:52	5430	16.18	45.08	3.39	0.25	3.40	50.67	85.00	5,112.00
	09/29/16 08:23:22	5460	14.48	49.54	3.09	0.23	4.46	50.37	84.79	6,018.00
	09/29/16 08:23:52	5490	14.17	66.66	1.96	0.22	4.73	50.37	84.79	6,018.00
	09/29/16 08:24:22	5520	14.06	73.08	1.12	0.22	4.77	50.25	84.64	5,952.00
	09/29/16 08:24:52	5550	14.24	74.51	0.96	0.23	4.67	50.25	84.64	5,952.00
	09/29/16 08:25:22	5580	14.27	73.40	1.22	0.24	4.63	50.16	84.46	5,976.00
	09/29/16 08:25:52	5610	14.24	71.64	1.54	0.23	4.64	50.16	84.46	5,976.00
	09/29/16 08:26:22	5640	14.30	70.68	1.76	0.23	4.60	50.11	84.40	5,970.00
	09/29/16 08:26:52	5670	14.42	70.97	1.87	0.24	4.53	50.11	84.40	5,970.00
	09/29/16 08:27:22	5700	14.24	71.34	1.92	0.23	4.61	50.24	84.41	5,928.00
	09/29/16 08:27:52	5730	14.23	72.01	1.99	0.19	4.64	50.24	84.41	5,928.00
	09/29/16 08:28:22	5760	14.23	71.69	1.89	0.20	4.65	50.36	84.48	5,964.00
	09/29/16 08:28:52	5790	14.39	70.62	1.88	0.22	4.53	50.36	84.48	5,964.00
	09/29/16 08:29:22	5820	14.26	69.37	1.85	0.22	4.61	50.39	84.57	5,928.00
	09/29/16 08:29:52	5850	14.60	70.77	1.82	0.23	4.41	50.39	84.57	5,928.00
	09/29/16 08:30:22	5880	14.71	68.51	1.82	0.23	4.33	50.70	84.65	5,592.00
	09/29/16 08:30:52	5910	14.66	67.89	1.80	0.21	4.36	50.70	84.65	5,592.00
	09/29/16 08:31:22	5940	15.22	67.80	1.72	0.23	4.10	51.11	84.54	4,200.00
	09/29/16 08:31:52	5970	16.60	56.70	1.90	0.23	3.12	51.11	84.54	4,200.00
	09/29/16 08:32:22	6000	16.51	43.42	2.48	0.21	3.23	50.93	84.18	4,170.00
	09/29/16 08:32:52	6030	16.39	43.35	2.90	0.25	3.30	50.93	84.18	4,170.00
	09/29/16 08:33:22	6060	16.57	43.25	3.06	0.26	3.17	50.79	83.75	4,194.00
	09/29/16 08:33:52	6090	16.46	42.13	3.15	0.19	3.26	50.79	83.75	4,194.00
	09/29/16 08:34:22	6120	16.36	42.26	3.12	0.20	3.30	50.54	83.29	4,620.00
	09/29/16 08:34:52	6150	16.39	42.41	3.18	0.23	3.32	50.54	83.29	4,620.00
	09/29/16 08:35:22	6180	15.83	41.16	3.23	0.24	3.56	50.07	83.01	5,952.00
	09/29/16 08:35:52	6210	14.73	51.09	2.83	0.21	4.38	50.07	83.01	5,952.00
	09/29/16 08:36:22	6240	14.84	61.64	1.51	0.22	4.27	50.21	83.08	6,006.00
	09/29/16 08:36:52	6270	14.82	62.68	0.85	0.20	4.29	50.21	83.08	6,006.00

Coyote North USA INC.
September 29, 2016
COMB 48
Enid Facility

Unit Data

Meas. Stack Moisture	4.8	%
Stack Exhaust Flow (M2)	198,047	SCFH

Weather Data

Barometric Pressure	29.05	in. Hg
Relative Humidity	56	%
Ambient Temperature	53	^{o}F
Specific Humidity	0.004896	lb H_2O / lb air

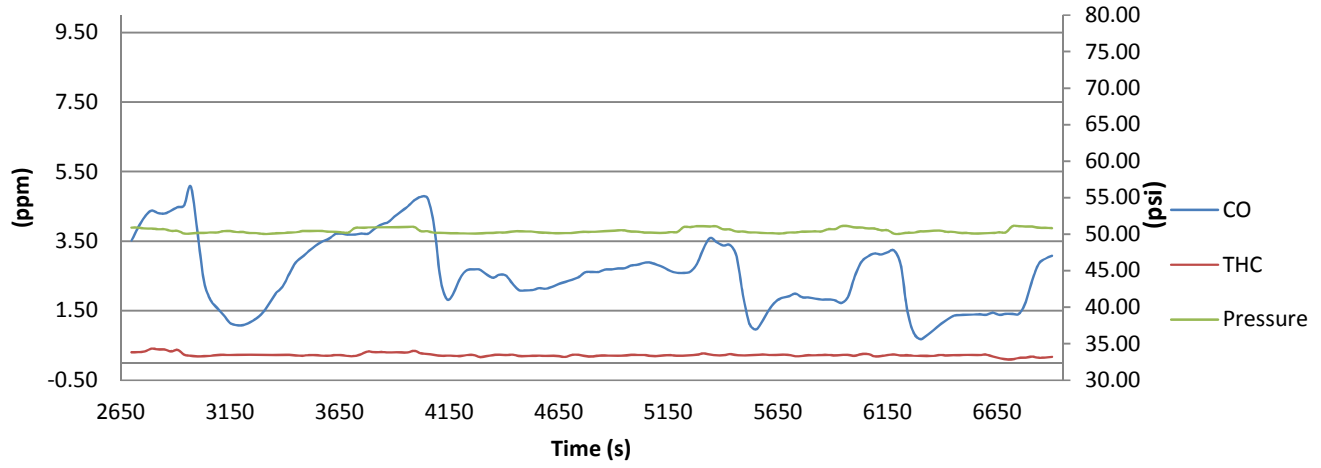
70-100-70 Load, Run - COMB 48 R7

Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	NOx (ppmvd)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
09/29/16 08:37:22	6300	14.72	64.75	0.68	0.20	4.33	50.40	83.21	6,012.00
09/29/16 08:37:52	6330	14.51	66.52	0.79	0.20	4.47	50.40	83.21	6,012.00
09/29/16 08:38:22	6360	14.63	68.25	0.94	0.20	4.40	50.49	83.40	6,012.00
09/29/16 08:38:52	6390	14.50	67.58	1.10	0.23	4.47	50.49	83.40	6,012.00
09/29/16 08:39:22	6420	14.54	69.31	1.23	0.21	4.43	50.33	83.55	5,910.00
09/29/16 08:39:52	6450	14.70	69.97	1.35	0.23	4.36	50.33	83.55	5,910.00
09/29/16 08:40:22	6480	14.48	69.84	1.38	0.22	4.47	50.18	83.64	6,066.00
09/29/16 08:40:52	6510	14.51	70.03	1.39	0.23	4.46	50.18	83.64	6,066.00
09/29/16 08:41:22	6540	14.57	70.95	1.39	0.23	4.43	50.09	83.81	6,072.00
09/29/16 08:41:52	6570	14.55	69.93	1.40	0.23	4.42	50.09	83.81	6,072.00
09/29/16 08:42:22	6600	14.60	69.98	1.38	0.24	4.40	50.16	84.07	6,048.00
09/29/16 08:42:52	6630	14.64	69.38	1.45	0.18	4.36	50.16	84.07	6,048.00
09/29/16 08:43:22	6660	14.51	68.70	1.38	0.14	4.47	50.26	84.32	6,048.00
09/29/16 08:43:52	6690	14.58	69.87	1.41	0.10	4.40	50.26	84.32	6,048.00
09/29/16 08:44:22	6720	14.54	70.15	1.41	0.10	4.44	51.10	84.39	4,494.00
09/29/16 08:44:52	6750	15.72	67.78	1.41	0.15	3.77	51.10	84.39	4,494.00
09/29/16 08:45:22	6780	16.35	54.85	1.74	0.15	3.30	51.05	84.18	4,200.00
09/29/16 08:45:52	6810	16.52	46.71	2.37	0.18	3.22	51.05	84.18	4,200.00
09/29/16 08:46:22	6840	16.56	44.50	2.85	0.15	3.20	50.89	83.88	4,260.00
09/29/16 08:46:52	6870	16.56	43.62	2.99	0.15	3.17	50.89	83.88	4,260.00
09/29/16 08:47:22	6900	16.47	44.48	3.08	0.17	3.26	50.83	83.58	4,272.00
RAW AVERAGE		**14.73**	**67.02**	**2.58**	**0.23**	**4.33**	**50.45**	**83.28**	**5,508.51**

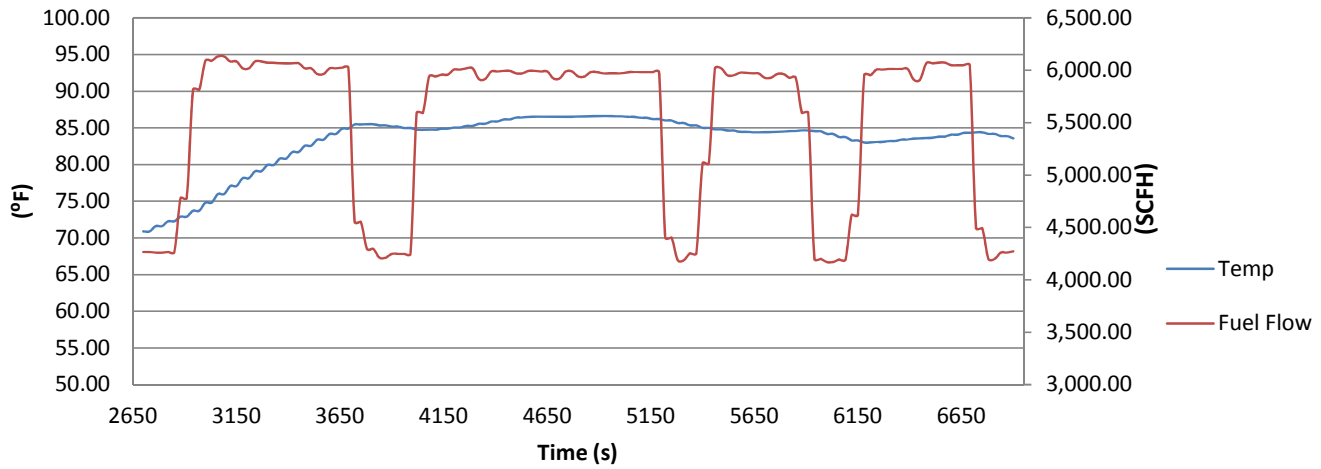
		O_2	NOx	CO	THC	CO_2	Press. Trans	Temp. Trans.	F-Flow Trans.
	Serial Number:	INSTO2-0011	INST-NX-0009	INST-CO-0022	INST-TH-0002	INST-C2-0013	2104497-025	2104497-025	2104497-025
		(%)	(ppmvd)	(ppmvd)	(ppmvw)	(%)	(in. H_2O)	(^{o}F)	(SCFH)
Bias	Initial Zero	0.02	0.00	-0.01	-0.07	0.05			
	Final Zero	0.01		0.02	0.04	0.08			
	Avg. Zero	0.02	0.00	0.01	-0.02	0.07			
	Initial UpScale	12.08	0.00	9.40	3.06	9.05			
	Final UpScale	12.02		9.43	3.04	8.84			
	Avg. UpScale	12.05	0.00	9.42	3.05	8.95			
Upscale Cal Gas		11.90		9.44	3.00	8.95			

EMISSIONS DATA	O_2	NOx	CO	THC	CO_2
Corrected Raw Average (ppm/% dry basis)	14.55	67.02	2.58	0.24	4.30
Corrected Raw Average (ppm/% wet basis)	13.85		2.46	0.23	4.09
Emission Rate (lb/hr)	N/A	1.59	0.04	0.01	N/A

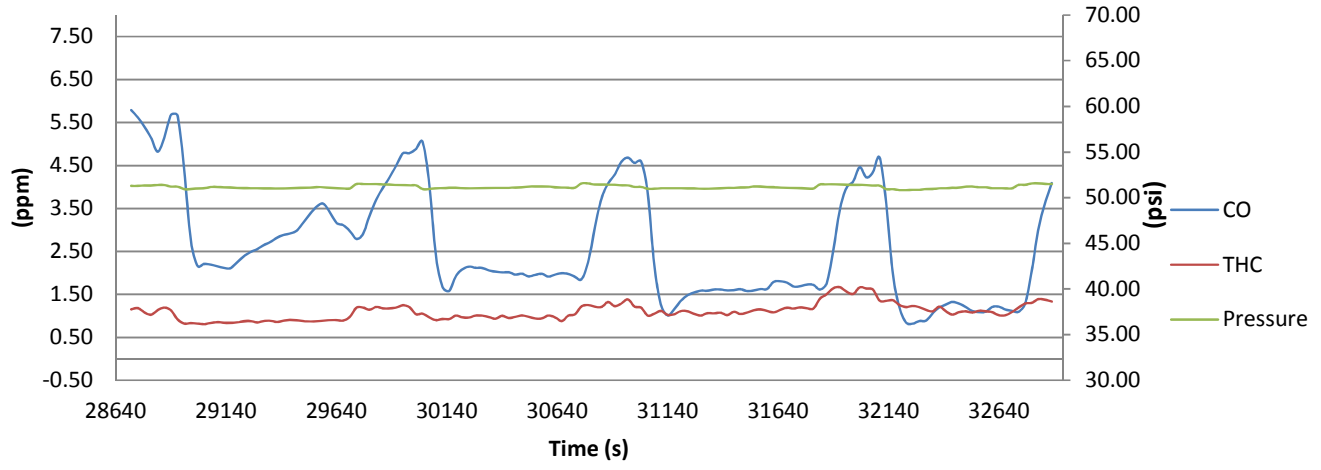
COMB 48 R7



COMB 48 R7



COMB 48 R8



PF1800 USER MANUAL REV 1.1

BURNER MANAGEMENT SYSTEM

WARNING

THIS EQUIPMENT IS SUITABLE FOR USE IN CLASS 1, DIVISION 2, GROUPS ABCD OR NON-HAZARDOUS LOCATIONS ONLY.

WARNING: EXPLOSION HAZARD
DO NOT DISCONNECT WHILE CIRCUIT IS LIVE UNLESS AREA IS KNOWN TO BE NON-HAZARDOUS OR EQUIVALENT

WARNING: EXPLOSION HAZARD
SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS 1, DIVISION 2.

MUST CONFORM TO THE DIRECTIONS IN THIS MANUAL

THE UNIT MUST BE PROPERLY CONNECTED TO EARTH-GROUND FOR EFFECTIVE IONIZATION OPERATION

ELECTRICAL DEVICES CONNECTED TO THE CONTROLLER MUST MEET ELECTRICAL STANDARDS AND BE WITHIN VOLTAGE LIMITS

DO NOT SERVICE UNLESS AREA IS KNOWN TO BE NON-HAZARDOUS

DO NOT OPEN WHEN ENERGIZED

SUBSTITUTION OF COMPONENTS MAY IMPAIR THE SUITABILITY FOR USE IN CLASS 1, DIVISION 2

REPLACEMENT FUSES MUST BE CERAMIC

FOR ANY QUESTIONS PLEASE CALL	1 855 PRO FIRE *(776-3473)*

APPROVALS (PENDING)

CSA 22.2 No. 199-2007
ANSI Z21.20-2007
UL1998-2004

Class 1, Division 2, Grp ABCD, T4A
CSA

CSA C22.2 No. 0-M91
CSA C22.2 No. 0.4-04
CSA C22.2 No. 94-91
CSA C22.2 No. 142-M1987
CSA C22.2 No. 213-M1987
CSA E60079-0:2007
CSA E60079-15:2005
UL 508, 17th Edition
ANSI-ISA-12.12.01-2007
UL 60079-0:2005
UL 60079-15:2002

GENERAL FEATURES

- Designed for the natural draft-fire, tube heater industry (<1MM Btuh)
- Meets or exceeds all relevant codes and standards
- Easy installation with clearly marked component I/O
- Easily accessible removable terminal connections
- Rapid 3 second shut-down on flame-out
- DC voltage spark ignition
- Low-power design to accommodate solar panel or TEG applications
- Auto-relight or manual operation
- Transient protected and fail-safe circuits

ENCLOSURE

Polyester
309 x 234 x 134 mm (12.15" x 9.23" x 5.28")
overall dimensions 2.3 kg (5 lb)
CSA and UL compliant for Class 1, Division 2 locations
Enclosure type 4, 4X, 12, 13

CIRCUT BOARDS

All solid state
CSA compliant for Class 1, Division 2 locations
Certified for use on B.149 compliant valve trains

IGNITION BASE AND COIL

For non-hazardous mounting area only
Ignition coil mounted in the PF1800 is optionally available.

TEMPERATURE RATING

-40°C to +55°C (Tested to -60°C)
-40˚F to +130°F (Tested to -76°F)

INPUTS & OUTPUTS

(4) Digital inputs for safety interlock device connections
(4) Digital outputs
(1) Flame-rod input
(2) Thermocouple inputs
See Section 1.3 for thermocouple inputs

FUSE

Only equivalent fuse should be used to replace a blown fuse.
Factory fuse: LittleFuse 0314005.HXP
(5A, 250V Ceramic, Fast Blow)

POWER REQUIREMENTS

10VDC to 28VDC (voltage must match solenoid rating) 5A MAX

POWER COMSUMPTION	*12V*	*24V*
Controller only, display ON	2.6 W	2.8 W
Controller only, display OFF	1.1 W	1.4 W

1.1 Mounting Locations

- The control panel can be mounted on the unit skid or on a building wall providing it does not infringe on a Class 1, Division 1 area.
- Use control panel mounting tabs to mount in a location that faces away from the burner housing so the operator is facing both the enclosure and the burner housing while operating. Other considerations may include panel access, traffic, wire-runs and visibility.
- The control panel should be mounted about 1.5m (5') above ground level.
- If an external ignition coil is used, it must be mounted in a Class 1, Division 2 enclosure or a non-hazardous location, ideally inside the burner housing.

1.2 P&ID and Wiring Diagram

Any design used, should be approved by a qualified inspector and approved by the gas authority having jurisdiction at the site where the system is to be installed.

Additional P&ID and wiring diagrams are provided in a separate application note.

1.3 Terminal Description

CONNECTION	DESCRIPTION	EXPECTED CONNECTIONS	RATINGS
12/24VDC	Input power 10VDC - 28VDC, 5A MAX	Input power from a DC source	10VDC - 28VDC Internally fused at 5A
Common	Common	Ground from DC source	Internally connected to EGND
EGND	Earth Ground	Earth or Chassis ground	Internally connected to Common
HighTemp_TC + (YELLOW)	Thermocouple input. High Temp shutdown thermocouple.	"*TYPE K*" thermocouple must be connected between the "+" and "-" terminals and must not be electrically connected to ground. An uninterrupted connection using "*TYPE K*" thermocouple wire is required for an accurate reading.	
HighTemp_TC - (RED)	Thermocouple Input. Negative terminal of High Temp Shutdown thermocouple.		
Process_TC + (YELLOW)	Thermocouple input. Process thermocouple.	"*TYPE K*" thermocouple must be connected between the "+" and "-" terminals and must not be electrically connected to ground. An uninterrupted connection using "*TYPE K*" thermocouple wire is required for an accurate reading.	
Process_TC - (RED)	Thermocouple Input. Negative terminal of Process thermocouple.		
Main +	Positive terminal of the Main valve	Solenoid valves must be connected between the "+" and "-" terminals. The negative terminal is not directly connected to ground so a common return wire for the Main and Pilot valves cannot be used.	Maximum continuous current is 2A. If "Low Power" mode is enabled, a peak load of 4A is permitted.
Main -	Negative terminal of the Main valve		
Pilot +	Positive terminal of the Pilot valve	Solenoid valves must be connected between the "+" and "-" terminals. The negative terminal is not directly connected to ground so a common return wire for the Main and Pilot valves cannot be used.	
Pilot -	Negative terminal of the Pilot valve		

1.3 Terminal Description Continued...

CONNECTION	DESCRIPTION	EXPECTED CONNECTIONS	RATINGS
Ion +	Flame Detection Input. Connected to a Flame-rod.	A Kanthal rod should be placed directly in the pilot flame and connected to this input. The pilot assembly must be grounded for the flame detection to function properly. Input is protected from high voltage and can be connected in series with the high voltage terminals of an external ignition coil, allowing a single flame-rod to be used for both ignition and flame detection.	A 65VAC signal is applied to the flame rod. The source impedance is very high so there is no danger of sparking.
Ion -	Ground	Ground return for flame detection. Must be connected to the burner housing.	
Coil +	Driver for the low voltage primary of the ignition coil.	The primary of the ignition coil should be connected to this terminal. The 12/24VDC input power will be applied for 1 ms and turned off for 50 ms while sparking.	This output is protected by a 250mA thermal fuse.
Coil -	Ground	Ground return for the ignition coil.	
Status +	The status "+" and "-" contacts will be closed when the system is running and opened when the system is shutdown.	Dry contact output to indicate system status to an external device. ie. PLC.	250VAC/DC, 200mA, 15Ω
Status -			
Start +	Remote start input from an external device. ie. PLC.	Dry contact switch is expected. The input is internally pulled up to 9VDC via a 3.75kΩ resistance. Jumper "+" and "-" if not used.	
Start -	Ground	Ground return for switch. All switches can use a single common ground return.	
ESD +	External Shutdown input.	Dry contact switch is expected. The input is internally pulled up to 9VDC via a 3.75kΩ resistance. Jumper "+" and "-" if not used.	
ESD -	Ground	Ground return for switch. All switches can use a single common ground return.	

1.3 Terminal Description Continued...

CONNECTION	DESCRIPTION	EXPECTED CONNECTIONS	RATINGS
Pressure +	Input from a mechanical pressure switch.	Dry contact switch is expected. The input is internally pulled up to 9VDC via a 3.75kΩ resistance. Jumper "+" and "-" if not used.	
Pressure -	Ground	Ground return for switch. All switches can use a single common ground return.	
Level +	Input from a float-switch mounted in the bath.	Dry contact switch is expected. The input is internally pulled up to 9VDC via a 3.75kΩ resistance. Jumper "+" and "-" if not used.	
Level -	Ground	Ground return for switch. All switches can use a single common ground return.	

1.4 Thermocouples

ALL THERMOCOUPLES MUST BE ISOLATED FROM THE GROUND

PROCESS THERMOCOUPLE
"TYPE K"

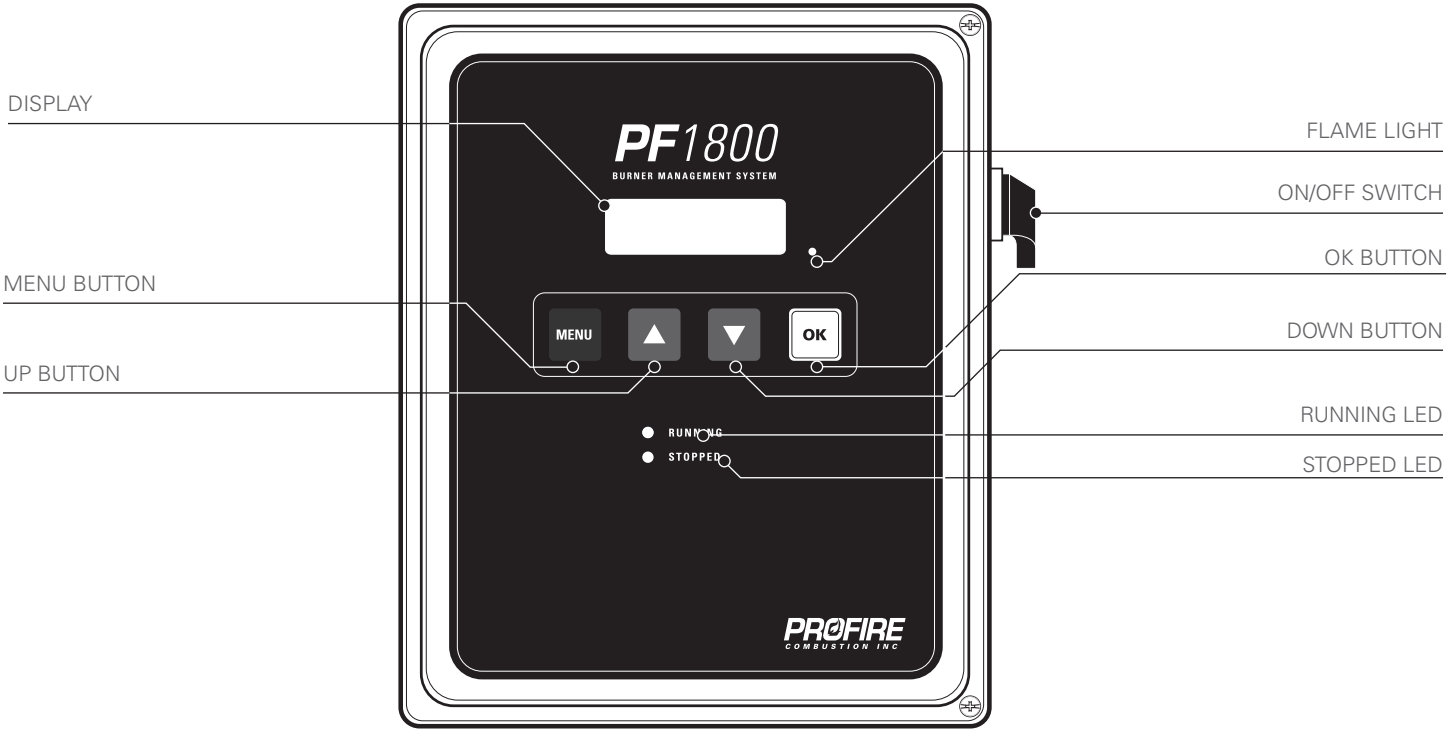
Primary temperature control device provides high-temp shut-down. 20 AWG or larger "*TYPE K*" extension wire must be used. System will shutdown if an open circuit or short circuit is detected. Should be placed in the same thermowell as *HIGH TEMPERATURE THERMOCOUPLE.*

HIGH TEMPERATURE THERMOCOUPLE
"TYPE K"

Provides high-temp shutdown. 20 AWG or larger "*TYPE K*" extension wire must be used. System will shutdown if an open circuit, short-circuit or short-to-ground is detected. Should be placed in the same thermowell as *PROCESS THERMOCOUPLE.*

* TE101 and TE102 may be different elements in the same head of a "*TYPE K*" thermocouple
* For all thermocouples, avoid locating extension wire near high-voltage lines. Shield if necessary.

2.1 Keypad Layout



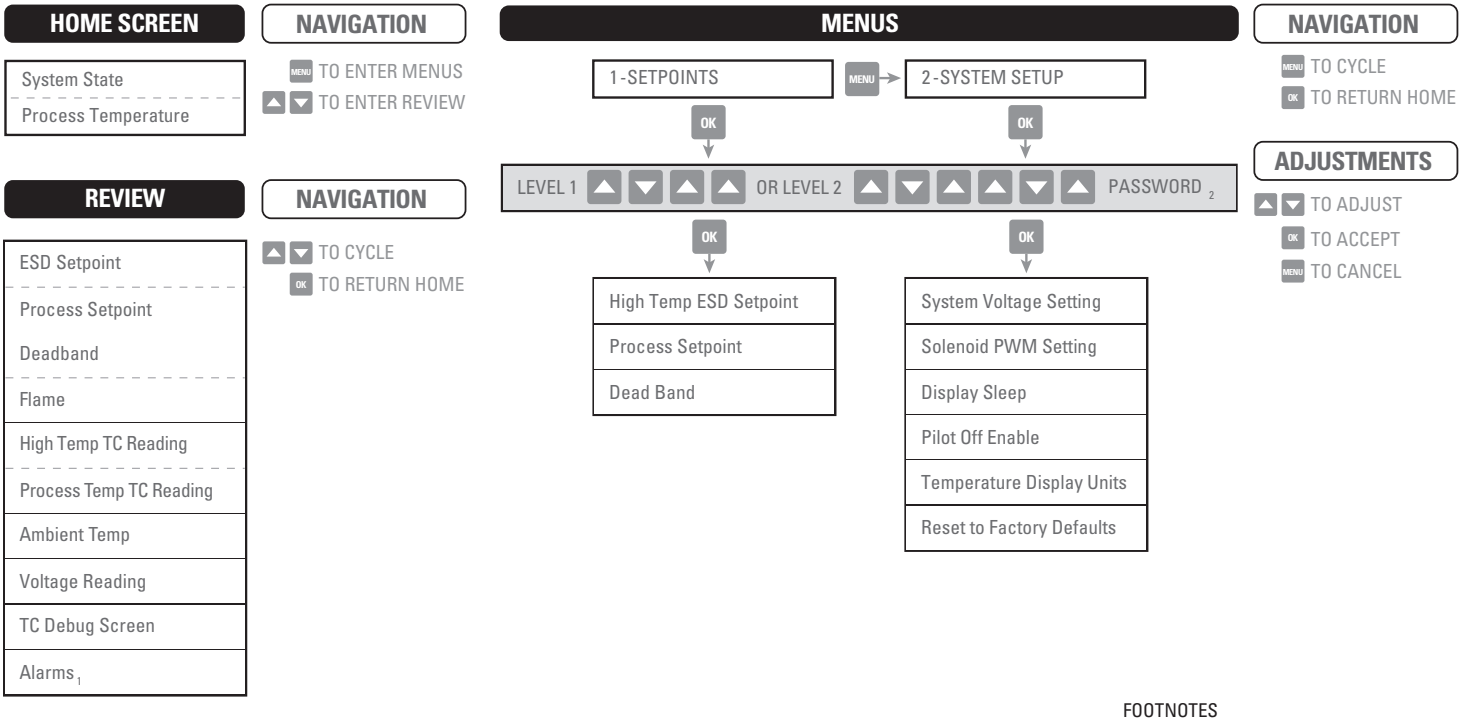
2.2 Menu Operation

The system must be in manual mode in order to access the menus. Press the "MENU" button to step through the menus. When the desired menu is displayed, press the "OK" button to enter that menu. Once in the menu, the "MENU" button will step through the parameters.

While viewing the desired parameter use the △ and ▽ buttons to adjust the setting and "OK" to accept the change. To exit back to the "Home" screen, press the "OK" button without making any changes. From the "Home" screen, use the △ and ▽ buttons to review the current system settings and status.

2.3 Menu Map

MANUAL MODE



FOOTNOTES

1 Hidden when No Alarms are present.

2 Required after password times out.

AUTO MODE (MENUS NOT ACCESSIBLE)

HOME SCREEN

Process Setpoint

Process Temperature

ADJUSTMENTS

▲▼ TO ADJUST PROCESS SETPOINT IN REAL TIME*

*Will also adjust Pilot Off and Low Fire Setpoints if enabled.

GLOBAL NAVIGATION

(CAN BE ENTERED AT ANY TIME)

▲+▼ CHECK FIRMWARE VERSIONS & ENTER DEBUG MODE

OK PRESS AND HOLD FOR 3s TO LOCK MENUS AND RETURN HOME

2.4.1 (MENU 1) Setpoints

This menu always is password protected. The password is △ ▽ △ △ ▽ △ OK Cannot be accessed while BMS is running.

ON SCREEN	DESCRIPTION	FUNCTION	RANGE	DEFAULT SETTING	USER SETTING
High Temp ESD Setpoint: x˚C	Adjusts the High Temperature shutdown setpoint	If process temperature reaches this setpoint, the system will shutdown and alarm.	0 to 1350˚C (32 to 2462˚F)	90˚C (149˚F)	
Proc Setpoint: x˚C (x˚F)	Main process temperature set-point. Adjusts the temperature at which the Main valve will turn off.	When the Process temperature rises above this setpoint, the main valve will close. The Main valve will re-open when the temperature drops below this setpoint minus the deadband.	0 to 1350˚C (32 to 2462˚F)	80˚C (122˚F)	
Dead Band: x˚C (x˚F)	Adjusts the Dead Band	The temperature buffer below the Proc setpoint	0 to 150˚C (0 to 13˚F)	2˚C (11˚F)	

2.4.2 (MENU 2) System Setup

This menu always is password protected. The password is △ ▽ △ △ ▽ △ OK Cannot be accessed while BMS is running.

ON SCREEN	DESCRIPTION	FUNCTION	RANGE	DEFAULT SETTING	USER SETTING
System Voltage: 12V	Configures the expected input voltage for the system	Used by the system to determine the over and under voltage lockout points. At 12V the valid input range is 9.5V to 17V. At 24V the valid input range is 19V to 34V.	12V or 24V	12V	
Solenoid Power: High	Enables the Low Power mode for the Solenoids	Indicates the power setting for the solenoid drive circuits.	High / Low	High	
Display Sleep, Never	Sleep Mode for the Display	Allows the Display to turn off after 10 min to save power.	Never / after 10 min	Never	
Pilot Off: ENABLED	Pilot Control	If enabled, the Pilot will turn off when the process temperature rises to the Proc Setpoint.	Disabled / Enabled	Enabled	
Temp Display: Celsius	Configures the temperature units used by the system	All display temperatures will be converted to the chosen unit.	Fahrenheit or Celsius	Celsius	
Restore Factory Defaults = NO	Restore all settings to the factory default	All parameters will be reset to the default settings.	YES or NO	NO	

3.1 Typical Startup

The operation sequence is as follows:

1. Ensure system is installed correctly and all components are functioning properly.
2. Open manual valves.
3. Turn ON / OFF switch to "ON"
4. The purge cycle begins. The 60s purge time is started when power is applied, or the main valve is off and no flame is detected.
5. The ignition cycle begins. The pilot solenoid is opened and ignition is turned on for a 10 second trial period. If the flame is seen, the flame indicator turns on and the main valve is opened. If the flame is not seen after this trial period, the pilot will turn off.
6. Check main valve indicator light to ensure valve is open.

3.2 Resets

- When the unit faults out, normally because an unsafe condition was detected, a reset is required.
- Before the unit can be reset, the condition causing the fault needs to be corrected. Some of the conditions that require a reset are:
    - o Power supplied to the solenoids from an external source
    - o Gas pressure out of range
    - o Thermocouple wiring loose
    - o Flame-out
- A local reset can be done by turning the ON / OFF switch to "OFF" and then back to "ON" again.

3.3 Changing Setpoints While Running

When in Auto Mode, the Process setpoint can be adjusted in real time using the UP & DOWN keys on the Home Screen. To adjust any other settings, the system must be stopped in manual mode.

3.4 Operational Description

On the PF1800 the pilot quality is monitored by a rectification circuit. When the pilot quality gets above the minimum acceptable (50%) the STATUS contact will close to indicate that the system is running.

TEMPERATURE CONTROL OPERATION

The PF1800 can be operated in various configurations. In all configurations, the pilot control output and spark ignition are used. However, control of the main valve and temperature control varies, depending on the installation and unit settings.

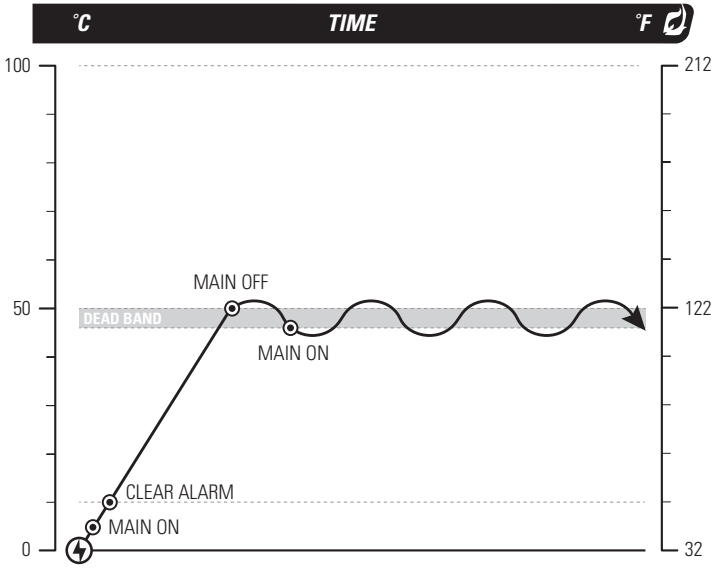
The PF1800 also has process high temperature monitoring. If the process temperature increases above the High Temp ESD setpoint, the unit will shut down by closing the main and pilot valves and then waiting for operator intervention. The Process High Shutdown is a dual system monitored by each microprocessor for redundant safety.

3.5.1 Pilot and Main

If the process temperature setpoint is exceeded, the main valve closes until the temperature falls below the setpoint minus the dead band setting.

In this configuration, the "Pilot Off" feature is disabled. This setup fires the main fully until the thermocouple reading exceeds "Process" setpoint.

EXAMPLE SETTINGS	°C	°F
High Temp ESD Setpoint	100	212
Process Setpoint	50	122
Low Alarm Setpoint	10	50
Dead Band	4	7

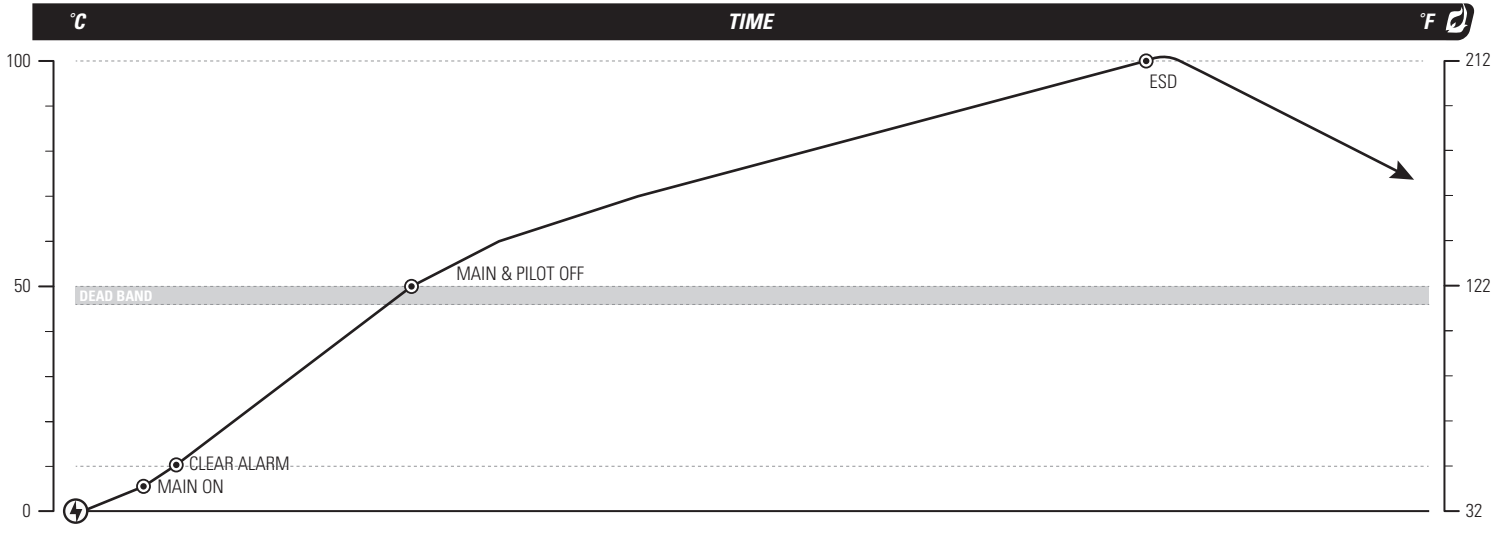


3.5.2 High Temperature Emergency Shutdown

This particular graph is a representation of the a "High Temperature Shutdown." As shown, the 'Pilot Off' feature is enabled. This means that there is no heat being applied to the firetube, yet the temperature continues to increase.

Once the High Temp ESD setpoint has been reached, the system will shut down and require user input to acknowledge the error.

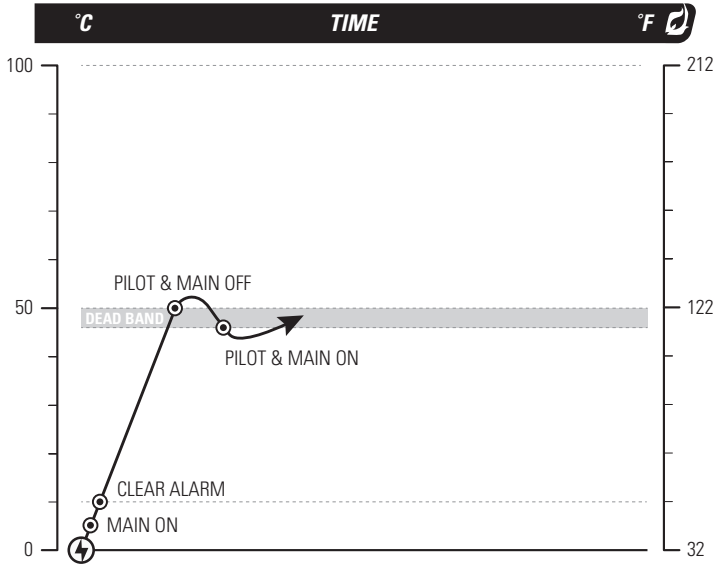
EXAMPLE SETTINGS	°C	°F
High Temp ESD Setpoint	100	212
Process Setpoint	50	122
Low Alarm Setpoint	10	50
Dead Band	4	7



3.5.3 Pilot Off Control

The operation is the same as the Pilot and Main control but the pilot will also turn off when the main does. The unit will not re-light until the temperature is below the "Process" setpoint minus the dead band.

EXAMPLE SETTINGS	°C	°F
High Temp ESD Setpoint	100	212
Process Setpoint	50	122
Low Alarm Setpoint	10	50
Dead Band	4	7



4.1 Normal Operation

SYSTEM STATUS	RESPONSE
System off and there is a flame	The system is in Power Save mode. Press any button to wake.
System off and there is no flame	The system is in Power Save mode. Press any button to wake. If still no response, check power.
Ready	Unit is in manual mode • Turn switch to ON position

4.2 Error Messages

When there is more than one alarm, the abbreviated on-screen display will be shown. When a shutdown occurs, the system will enter a "lock-out" state with all outputs off. Selecting the "OK" button, toggling the "Start" contacts, or a power cycle, will be required to clear any of the following errors once the problem has been corrected.

ON SCREEN	DESCRIPTION	CAUSE	CORRECTIVE ACTION
Proc Thermocouple Error Or Proc TC	Thermocouple error	Process thermocouple is open or value is out of range	• Check thermocouple wiring • Replace thermocouple
HH Thermocouple Error Or ProH TC	Thermocouple error	High Temp thermocouple is open or value is out of range	• Check thermocouple wiring • Replace thermocouple
ESD Input Or ESD Inp	Emergency Shut Down	ESD input open	• Check contact
Flame Fail Or Flame	Flame Fail	Pilot not detected, retry limit expired	• Check fuel, air & ignition • Return to auto mode and try again • Check flame detection during ignition trial

4.2 Error Messages Continued...

ON SCREEN	DESCRIPTION	CAUSE	CORRECTIVE ACTION
Start Input Open Or STRT INP	Remote Start input is open	Start contacts open	• Close START contacts • Check wiring
Pressure Or IVP	Low Pressure Switch open	Low Pressure switch input open	• Check pressure switch wiring • Check fuel pressure • Check wiring
Level Input Or Lvl Inp	Level switch open	Level switch has opened	• Check level switch wiring • Check bath level • Check wiring
High Temp Or Hi Temp	High Temperature Shutdown	Process or High Temp thermocouple has reached the High Temp ESD setpoint	• Verify setpoints • Allow bath to cool • Calibrate Process and High Temp
High Voltage Or Hi Volt	High Voltage	Voltage input to the board is too high	• Reduce the input voltage • If the system is running off of 2V, ensure that the system setting is correct in menu 4
Low Voltage Or Lo Volt	Low Voltage	Voltage input to the board is too low	• Increase the input voltage • If the system is running off of 24V, ensure that the system setting is correct in menu 4
Flame Detected Before Start	Flame detected before start	Flame detected when trying to ignite the burner	• Ensure valves are closed • If the distance from the pilot valve to the nozzle is long then try increasing the purge time • Check for other sources of flame
Solenoid Feedback Error	Solenoid power error	A solenoid output is detected as being on when it should be off, or off when it should be on	• Check for shorted outputs • Check solenoid wiring
Master Power not Detected	Master power error	Master power switch is not turning on, or is on when it should be off	• Check for shorted outputs

4.2 Error Messages Continued...

ON SCREEN	DESCRIPTION	CAUSE	CORRECTIVE ACTION
Error xx Or Sys Err	Internal system error	Internal error detected in the system	• Reset both boards or cycle power • Replace terminal card
EEPROM Error	Internal system error	The Door Card micro cannot communicate with the EEPROM or there was a CRC error in the EEPROM	• Reset the Door Card or cycle power • Replace the door card
Flame Test	Internal System Error	Fault in the flame detection circuit.	• Move the flame rod further into the flame • Check the grounding from the pilot nozzle to the PF2100 • Replace the ribbon cable • Replace terminal card
TCs Not Equal	Thermocouple error	The High Temp Thermocouple reading on the door and terminal cards is not the same, or "High Temp" and "Process" readings are greater than 10˚C (50˚F) apart. The three temperatures will be shown. DC High Temp, TC High Temp, Proc Temp	• Reset both, or cycle power • Check the thermocouple wiring • Verify that the "Process" and "High Temp" thermocouples are reading the same temperature
Ambient Temps Not Equal	Internal System Error	The ambient (cold injunction) temperature as read on the door card and terminal card are more than 10˚C (50˚F) apart	• Verify the thermocouple wiring • Calibrate the thermocouples
Control Error	Internal System Error	Error in the control system	• Reset or cycle power • Replace the door card
Key Stuck Error "Key name"	Keypad problem	Key shorted at startup	• Reset or cycle power • Inspect ribbon cable connection • Replace the keypad
OFF	Switch Off	Switch Off	• Turn switch On
Comparison "error"	Internal System Error		• Reset or cycle power • Reverse ribbon • Replace the ribbon cable • Replace terminal

4.2 Error Messages Continued...

ON SCREEN	DESCRIPTION	CAUSE	CORRECTIVE ACTION
Terminal Card Communications	Communication error	Communication error between the door card and terminal card	• Reset or cycle power • Check ribbon cable connection • Reverse ribbon • Replace ribbon • Replace the terminal card
Terminal Card Command Refused	Internal system error	The terminal card has rejected a command sent by the door card	• Check the solenoid wiring, if there are crossed wires or if a common wire is used for the negative return this error can result. • Reset or cycle power • Reverse ribbon • Replace the ribbon cable • Replace one or both cards
Terminal Card Output Feeback	Solenoid power error	A solenoid output is detected as being on when it should be off, or off when it should be on	• Reset or cycle power • Check for shorted outputs
Terminal Card Reciprocal Comp	Internal system error	The reciprocal comparison between the cards does not agree	• Reset or cycle power • Reverse ribbon • Replace the ribbon cable • Replace one or both cards
Terminal Card Shutdown Detect	External system error	Contact input detected open by the terminal card: ESD, High Pressure, Low Pressure, Level	• Reset or cycle power • Check wiring • Reverse ribbon • Replace the ribbon cable
Terminal Card Invalid Command	Internal system error	The terminal card has received an invalid command from the door card.	• Reset or cycle power • Reverse ribbon • Replace the ribbon cable • Replace the door card

4.2 Error Messages Continued...

ON SCREEN	DESCRIPTION	CAUSE	CORRECTIVE ACTION
Terminal Card High Temp Alarm	High Temperature Shutdown	Process or High Temp Thermocouple has reached the High Temp ESD setpoint. This is detected by the terminal card first.	• Reset or cycle power • Allow bath to cool
Terminal Card HH TC Grounded	Thermocouple error	High Temp Thermocouple is shorted to ground.	• Check for wiring faults with the thermocouples • Check for a short to ground on the high temp thermocouple.

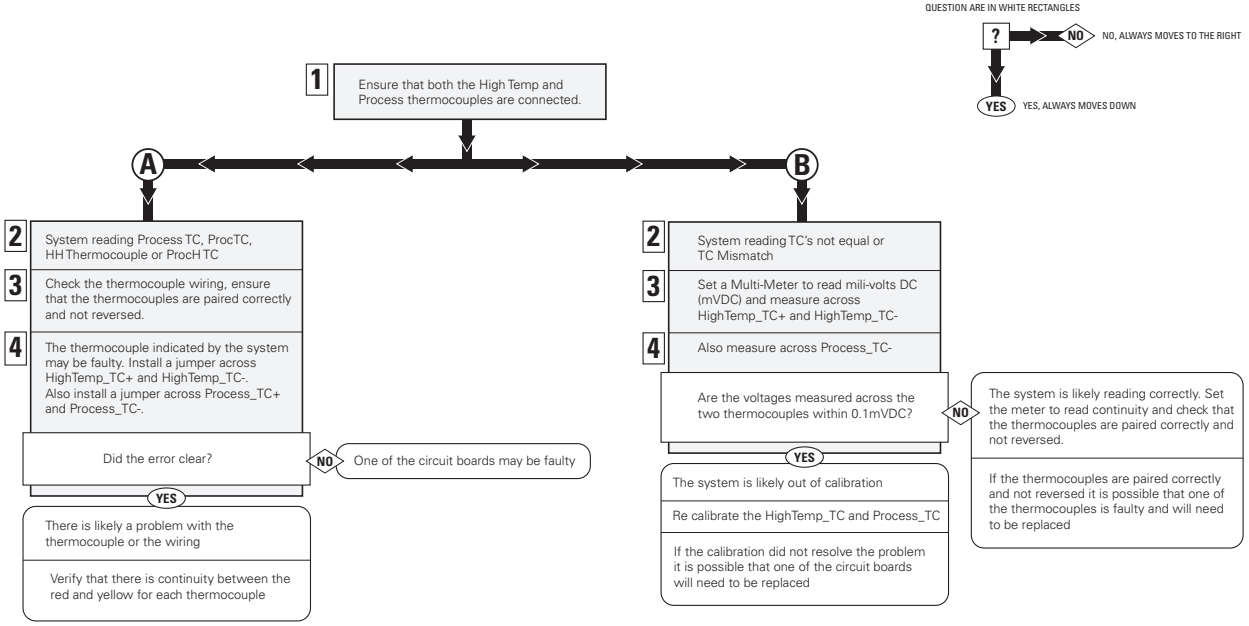
4.3 Calibration

Factory calibration has been performed.

ON SCREEN	DESCRIPTION	FUNCTION	RANGE	DEFAULT SETTING	USER SETTING
Cal: Proc TC Zero = No	Process thermocouple zero calibration	Short the Proc "+" and "-" contacts and select Yes	N/A	N/A	
Cal: High Temp TC Zero = No	High Temp thermocouple zero calibration	Short the ProH "+" and "-" contacts and select Yes	N/A	N/A	
Cal: Proc TC Span = xxC	Process thermocouple span calibration	Provide a calibrated 212˚F signal (from thermocouple in a block or meter) to the Process TC input and adjust the reading to match the applied temperature.	N/A	N/A	
Cal: High Temp TC Span = xxC	High Temperature thermocouple calibration	Provide a calibrated 212˚F signal (from thermocouple in a block or meter) to the High Temp TC input and adjust the reading to match the applied temperature.	N/A	N/A	

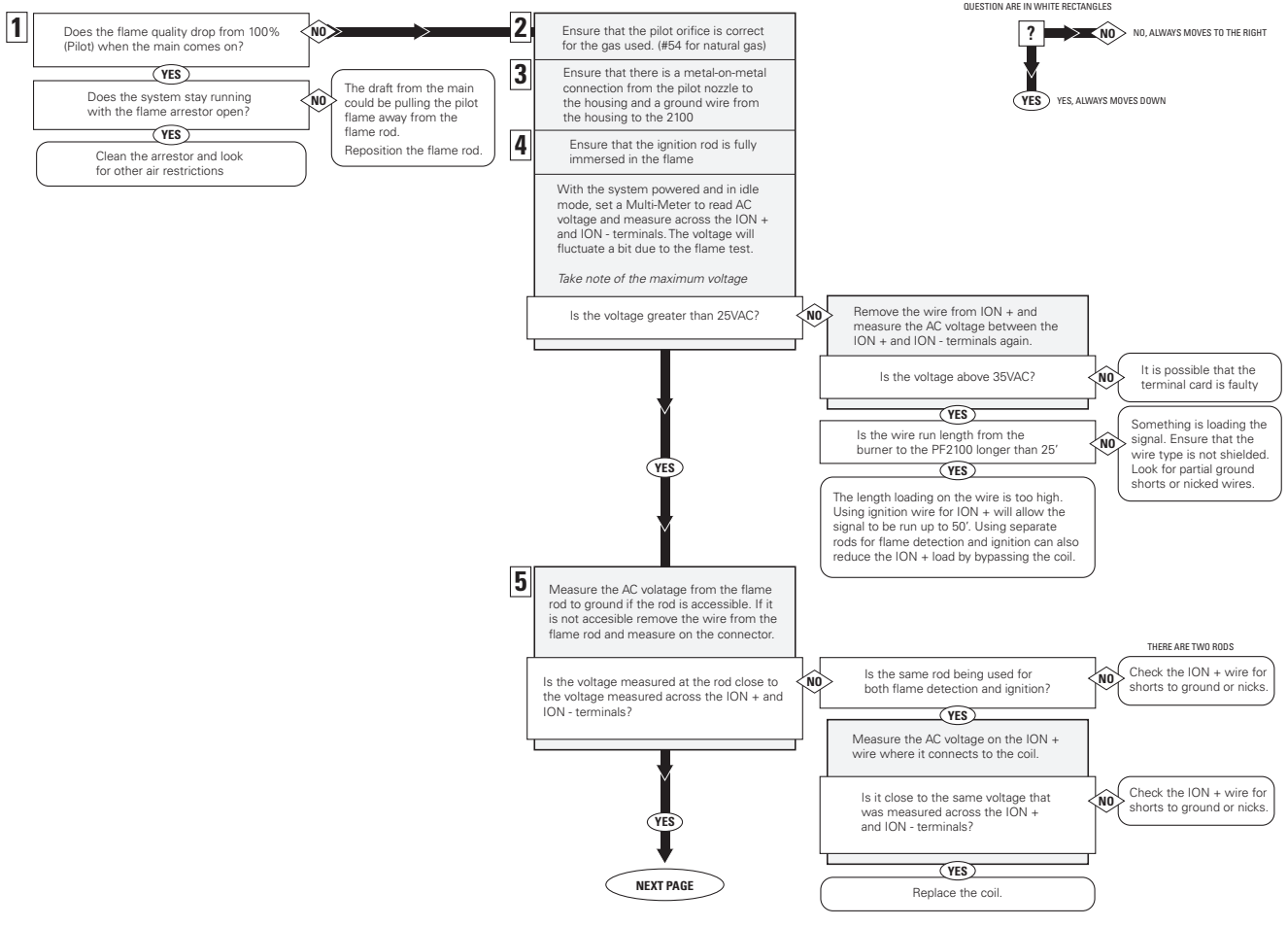
4.4 Thermocouple Troubleshooting

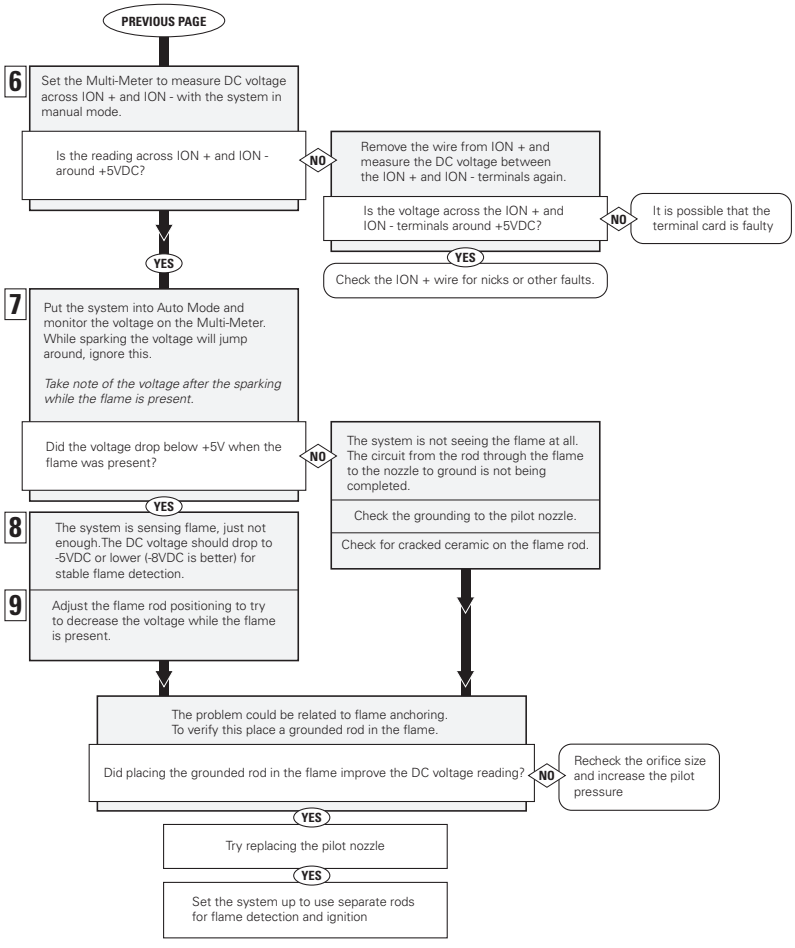
Problem with Thermocouples.



4.5 Flame Detection Troubleshooting

System is not detecting flame.




PREVIOUS PAGE
6
Set the Multi-Meter to measure DC voltage across ION + and ION - with the system in manual mode.
Is the reading across ION + and ION - around +5VDC?
NO
Remove the wire from ION + and measure the DC voltage between the ION + and ION - terminals again.
Is the voltage across the ION + and ION - terminals around +5VDC?
NO
It is possible that the terminal card is faulty
YES
Check the ION + wire for nicks or other faults.
YES
7
Put the system into Auto Mode and monitor the voltage on the Multi-Meter. While sparking the voltage will jump around, ignore this.
Take note of the voltage after the sparking while the flame is present.
Did the voltage drop below +5V when the flame was present?
NO
The system is not seeing the flame at all. The circuit from the rod through the flame to the nozzle to ground is not being completed.
Check the grounding to the pilot nozzle.
Check for cracked ceramic on the flame rod.
YES
8
The system is sensing flame, just not enough.The DC voltage should drop to -5VDC or lower (-8VDC is better) for stable flame detection.
9
Adjust the flame rod positioning to try to decrease the voltage while the flame is present.
The problem could be related to flame anchoring.
To verify this place a grounded rod in the flame.
Did placing the grounded rod in the flame improve the DC voltage reading?
NO
Recheck the orifice size and increase the pilot pressure
YES
Try replacing the pilot nozzle
YES
Set the system up to use separate rods for flame detection and ignition

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Printed date: 09/27/2016

Station ID:
Device ID : COYOTE NOR Location: Enid, OK

Collection Time: 09/27/2016 12:54:03
Firmware Revision:
SYSTEM: STATE:
LEASE: PRODUCER:
OPERATOR: BUYER:

Firmware part number: 2104497-025
Tap location: UPSTREAM Tap type : Flange Taps
Orifice size: 0.7500 Inches Pipe size: 3.0700 Inches
Integral Multiplier: 9.2500 Temperature bias: 0.0000 Deg F

Calibration	Date/Time	Low	MidLow	Mid	MidHigh	High
Differential	09/27/2016 08:21:52	0.0000	62.5000	125.0000	187.5000	250.0000
Static	09/27/2016 07:59:30	14.4000	n/a	64.4000	n/a	114.4000

Check Date: 09/27/2016 08:26:29

DP as Found (In H2O)		DP as Left		SP as Found (PSIA)		SP as Left	
Enter	Read	Enter	Read	Enter	Read	Enter	Read
0.000	-0.074	0.000	-0.015	14.400	14.449	114.400	114.412
0.000	0.098	250.000	249.989			64.400	64.410
0.000	0.655	187.500	187.475			14.400	14.366
		125.000	124.978				
		62.500	62.496				
		0.000	-0.016				

Orifice plate inspected? Yes_x__ No____ Condition__Orifce_Plate brand new.

H2S analysis done? Yes___ No__x__ Condition_____

H2O analysis done? Yes___ No___x_ Condition_____

Analysis/Btu updated? Yes___ No___x_ Condition_____Analysis entered before testing_

Aiu download status AN alarm? Yes___ No___x_

Temperature: Recorded_See RTD Calibration__Tested_See RTD Calibration_____

Remarks:_____

_____

_____

Tested by _____Jason Wells____ Witness_____Sum Lee_____

Effective date:_____9/30/16_____