SFI

SUPERIOR FABRICATION, INC.

Summary:
Superior Fabrication, Inc. contracted Air Hygiene Inc. to conduct performance testing on Combustion Device on model SCD-60. The unit was tested on October 7th through 12th, 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

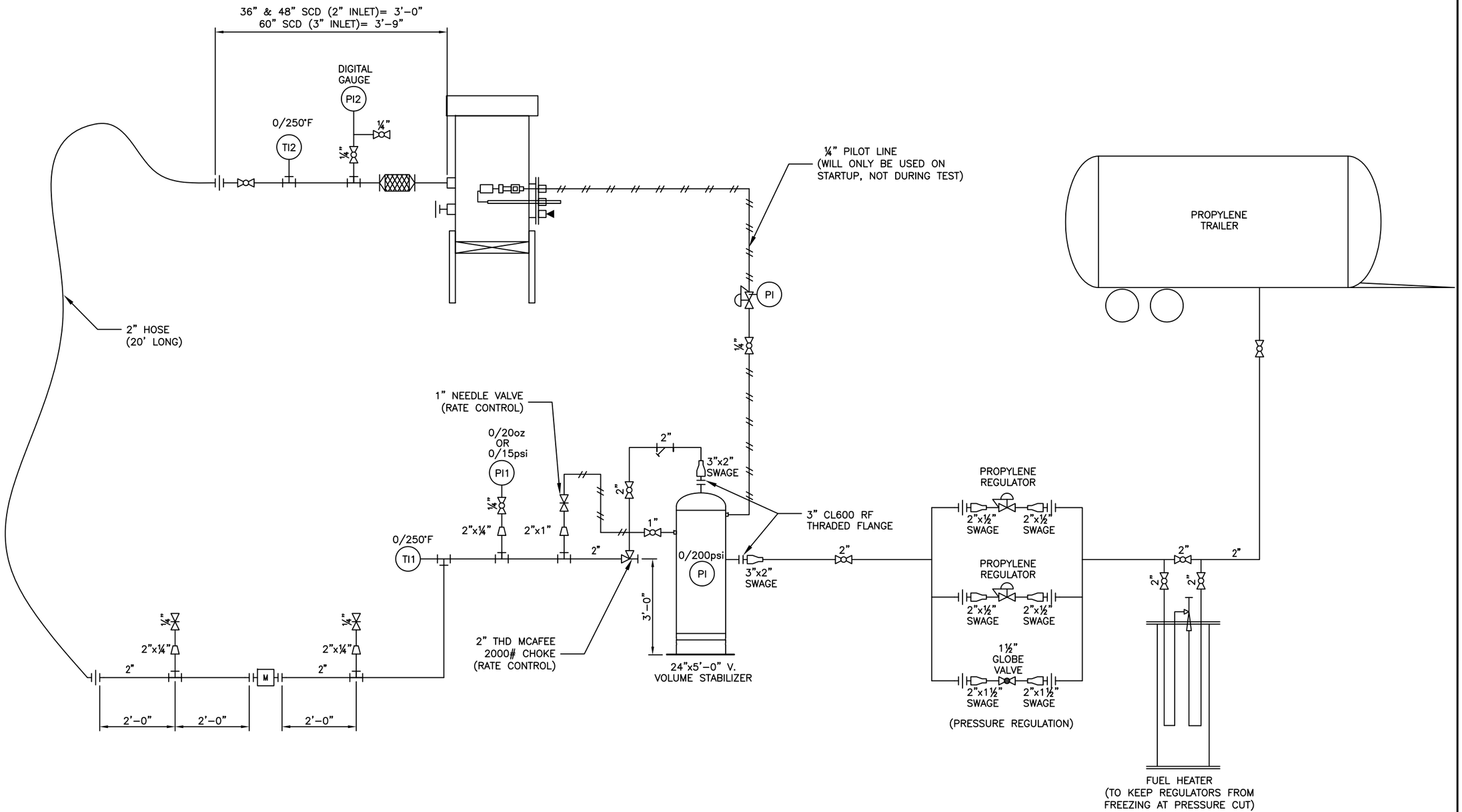
Requirement Specification:
In accordance to 40 CFR 60 Subpart OOOO, §60.5413(d)(12)(i) through (vi), this report contains the following information.

- A full schematic and dimensions of the flare unit are presented in page 3
- The maximum net Heat Input Rating of the SCD-60 is 9.59MMBtu/hr
- The inlet gas fuel range for 0% (min. rate) and 100% (max. rate) are 22.44MSCFD, and 90.82MSCFD, respectively
- Air/Stream injection/assist is not applicable for SCD-60
- 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 – 0.09psi min and 1.67psi max
- Pilot flame indicator – See blue print of the production flare unit on page 3
- Pilot flame fuel usage – Not Applicable
- Tip velocity range – 1.39ft/sec – 6.75ft/sec
- 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 SCD-60:

- 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



NO.	DATE	BY:	CKD	APD	DESCRIPTION

DRAWN: A. YOW	SFI SUPERIOR FABRICATION, INC. ELK CITY, OKLAHOMA, USA	DRAWING NO: SCD TEST
DATE: 2016-08-30		
CHKD: NONE	DWG. SCALE: NONE PLOT SCALE: 1:1 CUSTOMER: STANDARD	REVISION NO. 0
BOM YES ■ NO □	SCD TEST P&ID	AAY 2016-09-26-1356

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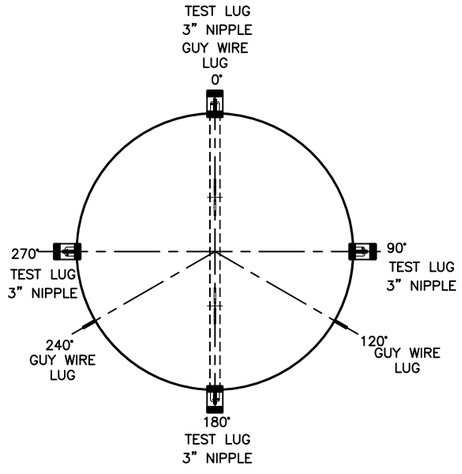

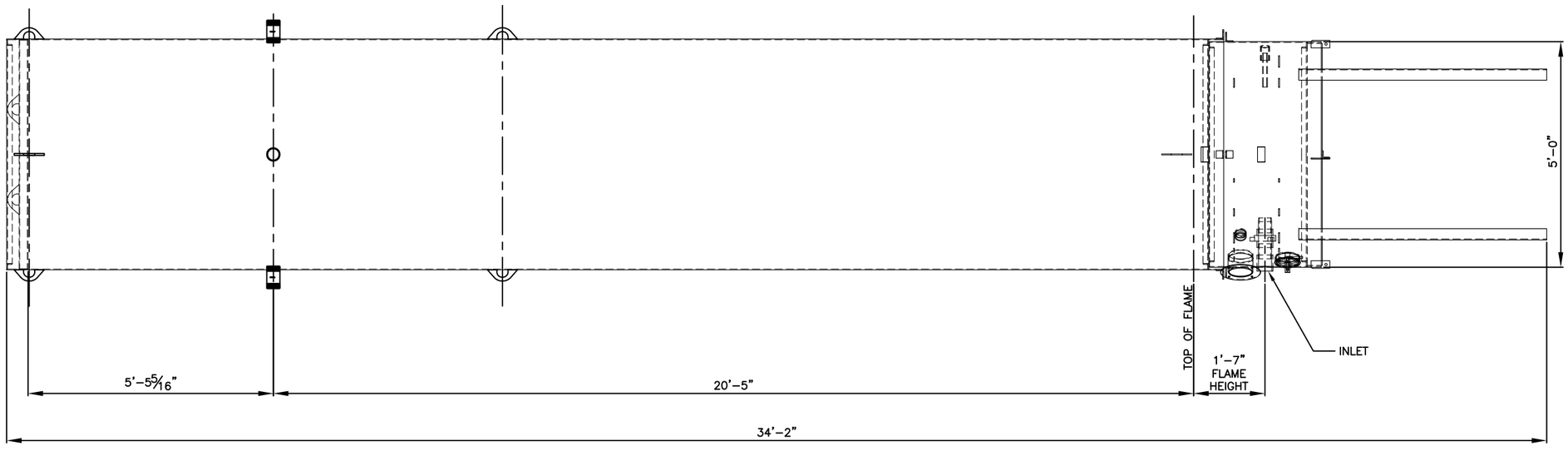

NO.	DATE	BY:	CKD	APD	DESCRIPTION

DRAWN: A. YOW
DATE: 2016-08-19
CHKD: NONE
BOM YES ■ NO □

SUPERIOR FABRICATION, INC.
ELK CITY, OKLAHOMA, USA
DWG. SCALE: SCALE 1:16 | PLOT SCALE / NUMBER: STANDARD
60" SCD FOR FLARE TEST

DRAWING NO: 60" TEST
REVISION NO.
AMY 2016-08-22-0852

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AIR HYGIENE, INC.

Testing Solutions for a Better World

STACK EMISSIONS STUDY
EPA 40 CFR PART 60 SUBPART OOOO
FOR THE
COMBUSTION DEVICE SCD-60 MODEL
PREPARED FOR
SUPERIOR FABRICATION, INC.
AT THE
ELK CITY FACILITY
ELK CITY, OKLAHOMA
OCTOBER 7-12, 2016

Corporate Headquarters
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Pittsburgh, PA 15205

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OCTOBER 7-12, 2016

Prepared and Reviewed by:

Michael Stockwell, QSTI
Sr. Project Manager

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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 SCD-60 Model
Superior Fabrication, INC.
Elk City Facility
Elk City, Oklahoma
October 7-12, 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 SCD-60 Model for Superior Fabrication, INC. at the Elk City Facility near Elk City, Oklahoma. This report details the background, results, process description, and the sampling/analysis methodology of the stack sampling survey conducted on October 7-12, 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, visual emission, H_2O, CO_2, and O_2 from the exhaust of Superior Fabrication, INC.'s Combustion Device SCD-60 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)
- Superior Fabrication, INC.
- Air Hygiene

1.2.2 Industry
- Natural Gas Transport and Processing

1.2.3 Air Permit and Federal Requirements
- 40 CFR 60, Subpart OOOO

1.2.4 Plant Location
- Elk City Facility near Elk City, Oklahoma
  - 801 S. Eastern , Elk City, OK 73644

1.2.5 Equipment Tested
- Combustion Device SCD-60 Model

1.2.6 Emission Points
- For all gases, three sample points in the exhaust duct from the Combustion Device SCD-60 Model, determined according 40 CFR 60 Subpart OOOO
- For all moisture, flow and fixed gas testing, 20 sampling points in the exhaust duct from the Combustion Device SCD-60 Model
- For visual emission, one sample visual observation point from the exit of the exhaust duct to the atmosphere from the Combustion Device SCD-60 Model

1.2.7 Emission Parameters Measured

- CO
- THC
- Flow
- Visual Emission
- H_2O
- CO_2
- O_2

1.2.8 Dates of Emission Test

- October 7-12, 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

Superior Fabrication, INC.:	Adam Yow	580-243-5693
Superior Fabrication, INC.	Mark Axtell	405-820-7060
Air Hygiene:	Min Sum Lee (mlee@airhyiene.com)	918-307-8865
Air Hygiene:	Dana Albert	918-307-8865
Air Hygiene:	Taylor Williams	918-307-8865

2.0 SUMMARY OF TEST RESULTS

Results from the sampling conducted on Superior Fabrication, INC.'s Combustion Device SCD-60 Model located at the Elk City Facility on October 7-12, 2016 are summarized in the following table and relate only to the items tested.

TABLE 2.1
SCD-60 0-30-0 LOAD DATA SUMMARY

Parameter	0-30-0 Load, Run - SCD-60 R1	0-30-0 Load, Run - SCD-60 R2	0-30-0 Load, Run - SCD-60 R3	Average
Date (mm/dd/yy)	10/12/16	10/12/16	10/12/16	--
Start Time (hh:mm:ss)	15:01:12	16:22:12	17:42:12	--
End Time (hh:mm:ss)	16:11:12	17:32:12	18:52:12	--
Run Duration (min / run)	71	70	71	71
Bar. Pressure (in. Hg)	28.14	28.14	28.14	28.14
Amb. Temp. (°F)	59	60	59	59
Rel. Humidity (%)	55	54	52	54
Spec. Humidity (lb water / lb air)	0.006183	0.006292	0.005843	0.006106
Wind Speed (mph)	13.0	12.0	14.0	13.0
Wind Direction (--)	N	N	N	--
Inlet Gas Canister Pressure Start (inHg)	-28.13	-17.90	-10.88	--
Inlet Gas Canister Pressure Stop (inHg)	-17.90	-10.88	-0.37	--
Gross Fuel Heating Value (Btu/ft3)	2,558	2,558	2,558	2,558
Stack Flow (M2) (dscfh)	208,452	209,862	182,803	200,372
Stack Moisture (Method 4)	5.3	5.4	5.1	5.3
Gross Fuel Heating Value (Btu/ft^3)	2,558.4	2,558.4	2,558.4	2,558.40
Average Inlet Fuel Flowrate (SCFH)	1,025.0	1,029.9	1,037.6	1,030.82
Average Inlet Mass Fuel Flowrate (lb/hr)	119.0	118.9	120.5	119.49
% Excess Air	216.0	255.3	255.3	242.19
CO_2 (%) - Modified method 3C	5.15	4.67	4.67	4.83
O_2 (%) - Modified Method 3C	14.50	15.20	15.20	14.97
N_2 (%) - Modified Method 3C	80.35	80.13	80.13	80.20
Visual Emission (mm:ss)	0:00	0:00	0:00	0:00
CO (ppmvd)	0.68	0.81	0.42	0.64
CO (ppm@3%CO_2)	0.39	0.52	0.27	0.40
THC (ppmvw)	0.23	0.06	0.04	0.11
THC (ppm@3%CO_2)	0.13	0.04	0.03	0.06
THC (lb/hr)	0.01	0.00	0.00	0.00
VOC Destruction Efficiency (%)	99.995	99.999	99.999	99.998

TABLE 2.2
SCD-60 30-70-30 LOAD DATA SUMMARY

Parameter	30-70-30 Load, Run - SCD-60 R4	30-70-30 Load, Run - SCD-60 R5	30-70-30 Load, Run - SCD-60 R6	Average
Date (mm/dd/yy)	10/10/16	10/10/16	10/11/16	--
Start Time (hh:mm:ss)	16:10:09	17:32:09	8:03:21	--
End Time (hh:mm:ss)	17:20:09	18:42:09	9:13:21	--
Run Duration (min / run)	71	71	71	71
Bar. Pressure (in. Hg)	28.01	28.01	27.99	28.00
Amb. Temp. (°F)	78	75	57	70
Rel. Humidity (%)	43	43	70	52
Spec. Humidity (lb water / lb air)	0.009376	0.008475	0.007377	0.008409
Wind Speed (mph)	12.0	12.0	3.0	9.0
Wind Direction (--)	SW	SW	S	--
Inlet Gas Canister Pressure Start (inHg)	-28.28	-17.79	-9.96	--
Inlet Gas Canister Pressure Stop (inHg)	-17.79	-9.96	-0.33	--
Gross Fuel Heating Value (Btu/ft3)	2,479	2,479	2,479	2,479
Stack Flow (M2) (dscfh)	390,394	259,378	224,237	291,336
Stack Moisture (Method 4)	6.0	5.7	5.9	5.9
Gross Fuel Heating Value (Btu/ft^3)	2,479.1	2,479.1	2,479.1	2,479.10
Average Inlet Fuel Flowrate (SCFH)	2,048.3	2,008.1	2,129.5	2,061.97
Average Inlet Mass Fuel Flowrate (lb/hr)	236.8	233.2	226.3	232.11
% Excess Air	196.9	255.1	267.5	239.83
CO_2 (%) - Modified method 3C	5.37	4.65	4.46	4.83
O_2 (%) - Modified Method 3C	14.10	15.20	15.40	14.90
N_2 (%) - Modified Method 3C	80.53	80.15	80.14	80.27
Visual Emission (mm:ss)	0:00	0:00	0:00	0:00
CO (ppmvd)	2.80	0.75	1.64	1.73
CO (ppm@3%CO_2)	1.56	0.48	1.10	1.05
THC (ppmvw)	0.08	0.04	0.07	0.06
THC (ppm@3%CO_2)	0.04	0.02	0.04	0.04
THC (lb/hr)	0.00	0.00	0.00	0.00
VOC Destruction Efficiency (%)	99.998	100.000	99.999	99.999

TABLE 2.3
SCD-60 70-100-70 LOAD DATA SUMMARY

Parameter	70-100-70 Load, Run - SCD-60 R7	70-100-70 Load, Run - SCD-60 R8	70-100-70 Load, Run - SCD-60 R9	Average
Date (mm/dd/yy)	10/10/16	10/10/16	10/10/16	--
Start Time (hh:mm:ss)	11:02:09	12:30:09	13:56:09	--
End Time (hh:mm:ss)	12:12:09	13:40:09	15:06:09	--
Run Duration (min / run)	71	71	71	71
Bar. Pressure (in. Hg)	28.14	28.09	28.04	28.09
Amb. Temp. (°F)	50	73	75	66
Rel. Humidity (%)	66	48	46	53
Spec. Humidity (lb water / lb air)	0.005335	0.008826	0.009065	0.007742
Wind Speed (mph)	8.0	12.0	10.0	10.0
Wind Direction (--)	SE	S	E	--
Inlet Gas Canister Pressure Start (inHg)	-28.38	-20.08	-11.33	-19.93
Inlet Gas Canister Pressure Stop (inHg)	-20.08	-11.33	-0.05	-10.49
Gross Fuel Heating Value (Btu/ft3)	2,553	2,553	2,553	2,553
Stack Flow (M2) (dscfh)	354,831	340,646	357,807	351,095
Stack Moisture (Method 4)	5.9	5.7	6.4	6.0
Gross Fuel Heating Value (Btu/ft^3)	2,553.0	2,553.0	2,553.0	2,553.00
Average Inlet Fuel Flowrate (SCFH)	3,213.8	3,247.7	3,210.0	3,223.83
Average Inlet Mass Fuel Flowrate (lb/hr)	373.3	377.2	372.8	374.43
% Excess Air	931.1	201.1	220.5	450.93
CO_2 (%) - Modified method 3C	2.34	5.27	5.02	4.21
O_2 (%) - Modified Method 3C	18.80	14.20	14.60	15.87
N_2 (%) - Modified Method 3C	78.86	80.53	80.38	79.92
Visual Emission (mm:ss)	0:00	0:00	0:00	0:00
CO (ppmvd)	2.20	3.24	2.99	2.81
CO (ppm@3%CO_2)	2.82	1.84	1.79	2.15
THC (ppmvw)	0.05	0.16	0.06	0.09
THC (ppm@3%CO_2)	0.06	0.09	0.03	0.06
THC (lb/hr)	0.00	0.01	0.00	0.00
VOC Destruction Efficiency (%)	99.999	99.998	99.999	99.999

TABLE 2.4
SCD-60 90-100 LOAD DATA SUMMARY

Parameter	90-100 Load, Run - SCD-60 R10	90-100 Load, Run - SCD-60 R11	90-100 Load, Run - SCD-60 R12	Average
Date (mm/dd/yy)	10/07/16	10/10/16	10/10/16	--
Start Time (hh:mm:ss)	13:01:07	8:04:09	9:29:09	--
End Time (hh:mm:ss)	14:11:07	9:14:09	10:39:09	--
Run Duration (min / run)	70	71	71	71
Bar. Pressure (in. Hg)	28.30	28.12	28.14	28.19
Amb. Temp. (°F)	60	58	60	59
Rel. Humidity (%)	48	64	58	57
Spec. Humidity (lb water / lb air)	0.005555	0.006955	0.006764	0.006425
Wind Speed (mph)	10.0	5.0	13.0	9.3
Wind Direction (--)	S	E	S	--
Inlet Gas Canister Pressure Start (inHg)	-27.06	-19.48	10.21	--
Inlet Gas Canister Pressure Stop (inHg)	-19.48	10.21	-0.52	--
Gross Fuel Heating Value (Btu/ft3)	2,535	2,535	2,535	2,535
Stack Flow (M2) (dscfh)	316,380	376,257	378,495	357,044
Stack Moisture (Method 4)	5.0	5.2	5.5	5.3
Gross Fuel Heating Value (Btu/ft^3)	2,535.3	2,535.3	2,535.3	2,535.30
Average Inlet Fuel Flowrate (SCFH)	3,587.7	3,654.1	3,649.5	3,630.46
Average Inlet Mass Fuel Flowrate (lb/hr)	416.7	424.4	423.9	421.66
% Excess Air	218.2	220.6	206.5	215.10
CO_2 (%) - Modified method 3C	4.75	5.03	5.25	5.01
O_2 (%) - Modified Method 3C	14.60	14.60	14.30	14.50
N_2 (%) - Modified Method 3C	80.65	80.37	80.40	80.47
Visual Emission (mm:ss)	0:00	0:00	0:00	0.00
CO (ppmvd)	4.79	3.20	2.70	3.56
CO (ppm@3%CO_2)	3.02	1.91	1.54	2.16
THC (ppmvw)	0.94	0.08	0.07	0.36
THC (ppm@3%CO_2)	0.59	0.05	0.04	0.23
THC (lb/hr)	0.04	0.00	0.00	0.02
VOC Destruction Efficiency (%)	99.990	99.999	99.999	99.996

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

Superior Fabrication, Inc. (SFI) owns and operates the Elk City Facility located at in Elk City, Oklahoma. SFI 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 interests of this test protocol are three Combustion Flares.

3.2 SAMPLING LOCATION

The sample ports were located approximately 28.1 feet above grade level on the exhaust system. The stack had a 63 inches inner diameter and was equipped with four, 3 inch ports oriented at 90 degrees. The ports were 4.6 duct diameters downstream from the flare tip and 1.1 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 SCD-60 Model at the Elk City 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 October 7-12, 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 SCD-60 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 48i	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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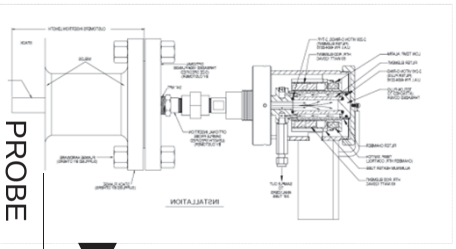


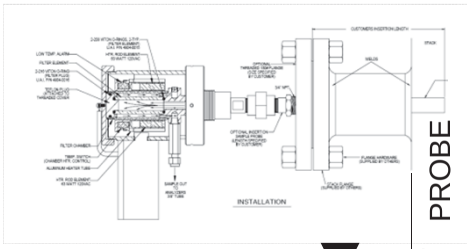
PROBE

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

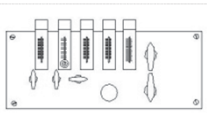
GAS CONDITIONER

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

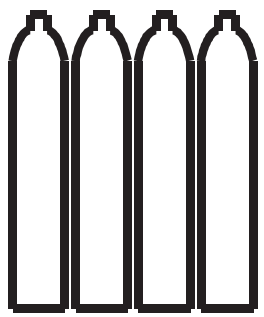
O_2, CO_2, NOx, CO, SO_2

THC, VOC

CONDITIONER

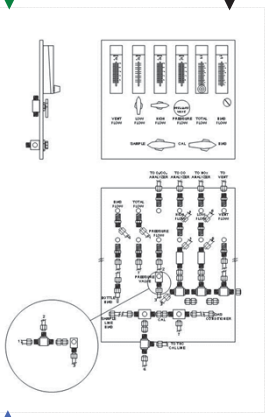
VENT

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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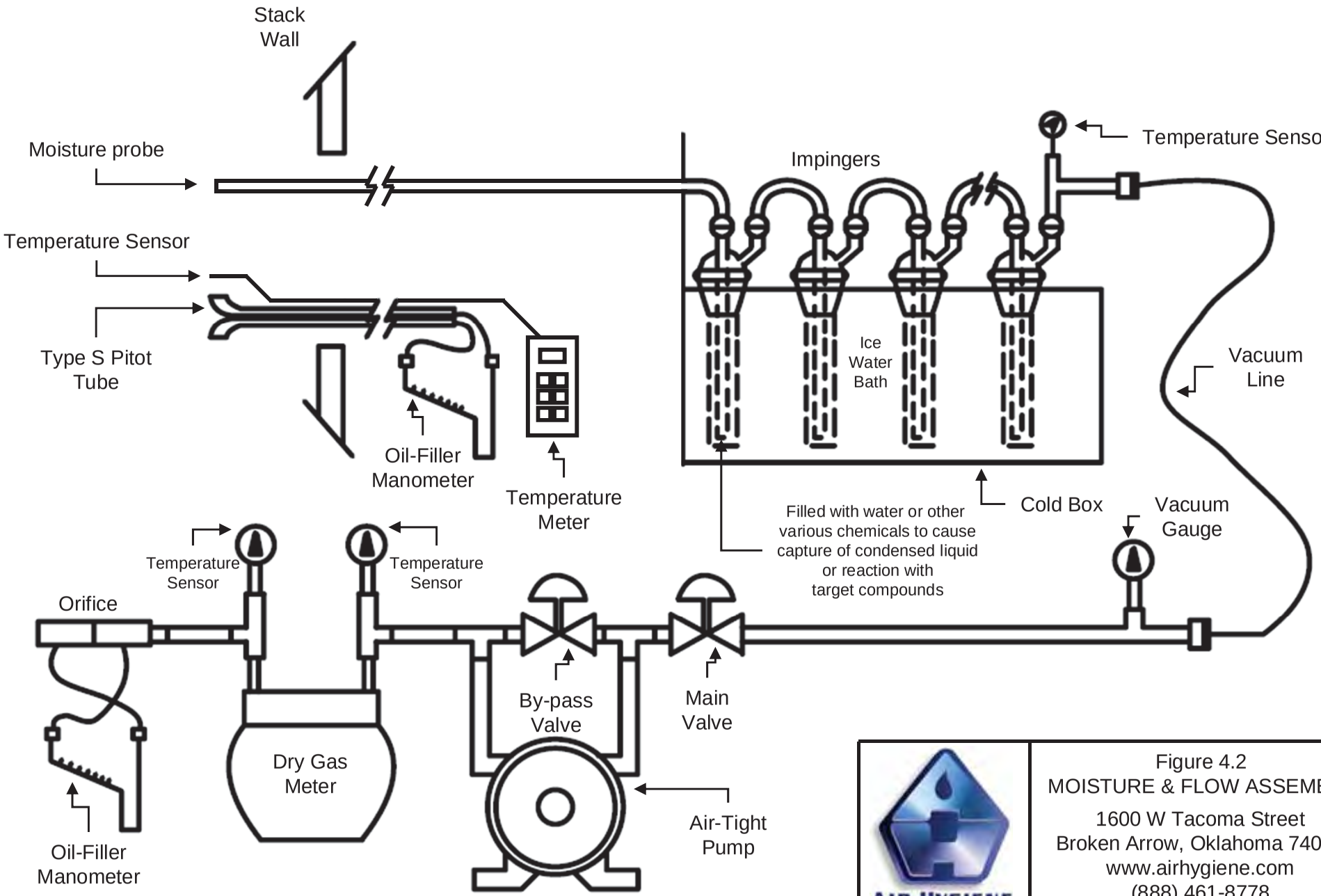
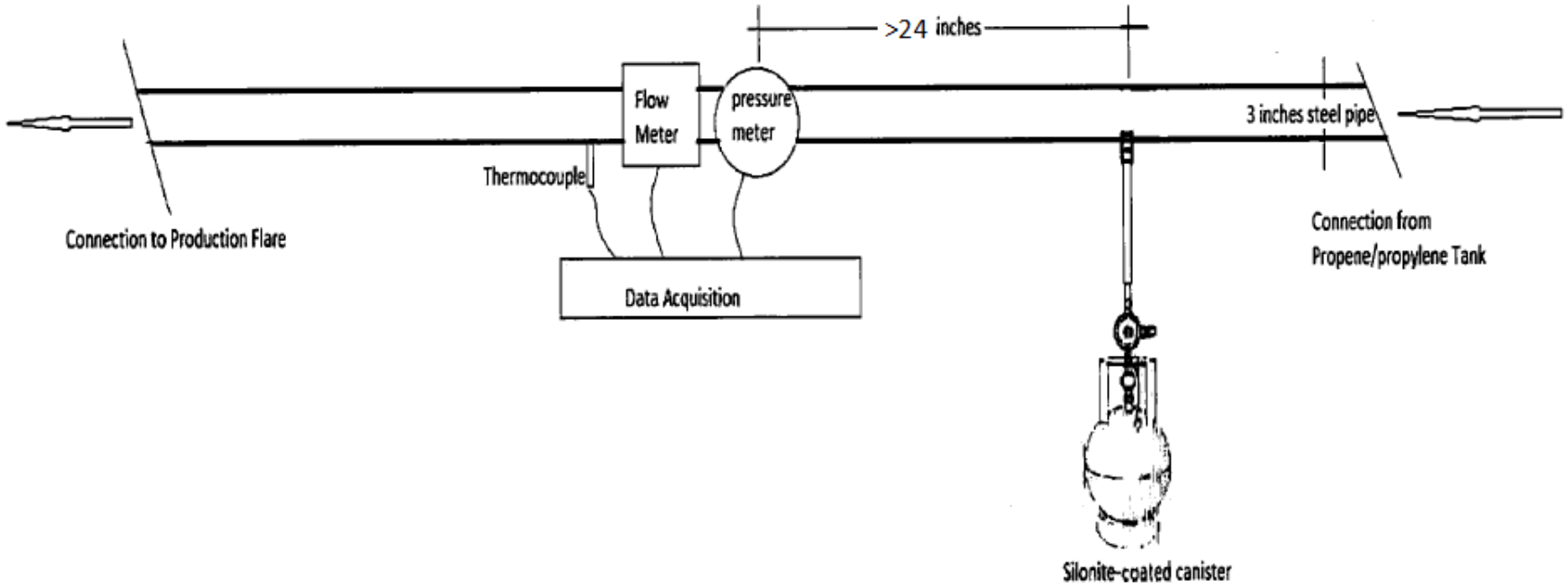


Figure 4.2
MOISTURE & FLOW ASSEMBLY

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



AIR HYGIENE

Figure 4.3

FUEL SAMPLING SETUP

1600 W Tacoma Street
Broken Arrow, Oklahoma 74012

www.airhygiene.com
(888) 461-8778

APPENDIX A

TEST RESULTS AND CALCULATIONS

TABLE A.1:
EMISSIONS TESTING SCHEDULE

Unit	Load	Test Type	Run	Date	Start	Stop	Time Sync
SCD-60	90-100	CO,THC & Fuel Sampling	SCD-60 R10	10/07/16	13:01:07	14:11:07	CST
SCD-60	90-100	CO,THC & Fuel Sampling	SCD-60 R11	10/10/16	8:04:09	9:14:09	CST
SCD-60	90-100	CO,THC & Fuel Sampling	SCD-60 R12	10/10/16	9:29:09	10:39:09	CST
SCD-60	70-100-70	CO,THC & Fuel Sampling	SCD-60 R7	10/10/16	11:02:09	12:12:09	CST
SCD-60	70-100-70	CO,THC & Fuel Sampling	SCD-60 R8	10/10/16	12:30:09	13:40:09	CST
SCD-60	70-100-70	CO,THC & Fuel Sampling	SCD-60 R9	10/10/16	13:56:09	15:06:09	CST
SCD-60	30-70-30	CO,THC & Fuel Sampling	SCD-60 R4	10/10/16	16:10:09	17:20:09	CST
SCD-60	30-70-30	CO,THC & Fuel Sampling	SCD-60 R5	10/10/16	17:32:09	18:42:09	CST
SCD-60	30-70-30	CO,THC & Fuel Sampling	SCD-60 R6	10/11/16	8:03:21	9:13:21	CST
SCD-60	0-30-0	CO,THC & Fuel Sampling	SCD-60 R1	10/12/16	15:01:12	16:11:12	CST
SCD-60	0-30-0	CO,THC & Fuel Sampling	SCD-60 R2	10/12/16	16:22:12	17:32:12	CST
SCD-60	0-30-0	CO,THC & Fuel Sampling	SCD-60 R3	10/12/16	17:42:12	18:52:12	CST
SCD-60	90-100	Fixed Gas & Moisture	90-100%-1	10/07/16	13:01	14:06	CST
SCD-60	90-100	Fixed Gas & Moisture	90-100%-2	10/10/16	8:04	9:12	CST
SCD-60	90-100	Fixed Gas & Moisture	90-100%-3	10/10/16	9:29	10:40	CST
SCD-60	70-100-70	Fixed Gas & Moisture	70-100-70%-1	10/10/16	11:02	12:11	CST
SCD-60	70-100-70	Fixed Gas & Moisture	70-100-70%-2	10/10/16	12:30	13:39	CST
SCD-60	70-100-70	Fixed Gas & Moisture	70-100-70%-3	10/10/16	13:56	15:05	CST
SCD-60	30-70-30	Fixed Gas & Moisture	30-70-30%-1	10/10/16	16:10	17:19	CST
SCD-60	30-70-30	Fixed Gas & Moisture	30-70-30%-2	10/10/16	17:32	18:41	CST
SCD-60	30-70-30	Fixed Gas & Moisture	30-70-30%-3	10/11/16	8:03	9:11	CST
SCD-60	0-30-0	Fixed Gas & Moisture	0-30-0%-1	10/12/16	15:01	16:09	CST
SCD-60	0-30-0	Fixed Gas & Moisture	0-30-0%-2	10/12/16	16:22	17:31	CST
EC48-2S	0-30-0	Fixed Gas & Moisture	0-30-0%-3	10/12/16	17:42	18:53	CST

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}= 38.89 gr / lb x 1 lb / 7000 gr = 0.005555 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 = (8.44 ppm - -0.02 ppm) / (8.43 ppm - 0.00 ppm) x 5.01 ppm + -0.02 = 5.01 ppm

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

Eq. 7E-1

ACE_{THC} = (4.96 ppm - 5.01 ppm) / 5.01 ppm x 100 = -0.98 %

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 = (3.01 ppm - 3.01 ppm) / 10.00 ppm x 100 = 0.00 %

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 = | -0.80 % - 0.00 % | = 0.80 %

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} = | 3.01 ppm - 3.01 ppm | = 0.00 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} = (0.92 ppm - -0.01 ppm) x (3.00 ppm / 2.97 ppm - -0.01 ppm) = 0.94 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

$$C_{adj} = 0.99 \text{ ppm} \times \left(\frac{3.00\ \%}{4.99\ \%} \right) = 0.59 \text{ ppm@3\%CO}_2$$

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)

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

$$E_{lb/hr} = \frac{0.99 \text{ ppm}}{10^6 \text{ ppm/part}} \times \frac{376{,}257 \text{ SCFH} \times 44.00 \text{ lb/lb-mol}}{385.23 \text{ SCF/lb-mol}} = \frac{0.042 \text{ lb}}{\text{hr}}$$

VOC Destruction Efficiency

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

$$DE\% = \frac{416.688 - 0.042 \text{ lb/hr}}{416.688 \text{ lb/hr}} \times 100 = 99.990\ \%$$

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, °F
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.) = 69.00 in. - 6.00 in. = 63.00 in.

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 ($\frac{63.00 \text{ in.}}{2 \text{ x } 12 \text{in./ft}}$)^2 = 21.65 ft^2

Stack Diameters Downstream

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

B_D (dia.) = $\frac{289.00 \text{ in.}}{63.00 \text{ in.}}$ = 4.59 diameters

Stack Diameters Upstream

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

A_D (dia.) = $\frac{71.00 \text{ in.}}{63.00 \text{ in.}}$ = 1.13 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 - 5.15 % - 14.50 % - 0.00 / 10,000 % = 80.35 %

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 5.15 %) +

($\frac{32 \text{ lb/lb-mol}}{100}$ x 14.50 %) + ($\frac{28 \text{ lb/lb-mol}}{100}$ x [$\frac{0.00}{10{,}000}$ + 80.35]) = $\frac{29.40 \text{ lb}}{\text{lb-mol}}$

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) = { $\frac{29.40 \text{ lb}}{\text{lb-mol}}$ x (1 - $\frac{5.34 \text{ \%}}{100}$) } + { $\frac{18 \text{ lb}}{\text{lb-mol}}$ x $\frac{5.34 \text{ \%}}{100}$ } = $\frac{28.80 \text{ lb}}{\text{lb-mol}}$

Average Excess Air (%)

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

$(\%EA)_{AVG}$ = $\frac{100 \text{ x } \{ \quad 14.50 \text{ \% - (0.5 x } 0.000 \text{ \%) } \}}{(\ 0.264 \text{ x } \ 80.35 \text{ \%) - } \{ \ 14.50 \text{ \% - (0.5 x } 0.000 \text{ \%)} \}}$ = 216.02 %

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) = 28.14 in. Hg + $\frac{0.00 \text{ in. } H_2O}{13.6 \text{ in. } H_2O/\text{in. Hg}}$ = 28.14 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) =

$$\left(\frac{85.49 \text{ ft (lb/lb-mol)(in. Hg)}}{\sec \quad (^oR)(\text{in. } H_2O)}\right)^{1/2} \times 0.84 \times 0.10 \text{ in.} H_2O^{1/2} \times \sqrt{\frac{1341.88 + 460\ ^oR}{28.14 \text{ in. Hg} \times 28.80 \text{ lb/lb-mol}}} = \frac{10.2 \text{ ft}}{\sec}$$

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) = $\frac{3600 \text{ sec}}{\text{hr}} \times \left(1 - \frac{5.34\ \%}{100}\right) \times \frac{10.25 \text{ ft}}{\sec} \times 21.65 \text{ ft}^2 \times \frac{68.00 + 460\ ^oR}{1{,}341.88 + 460\ ^oR} \times \frac{28.14 \text{ in. Hg}}{29.92 \text{ in. Hg}} = \frac{208{,}451.81 \text{ dscf}}{\text{hr}}$

Average Stack Wet Flow Rate (acfm)

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

Q_{aw} (acf/min) = $\frac{60 \text{ sec}}{\text{min}} \times \frac{10.25 \text{ ft}}{\sec} \times 21.65 \text{ ft}^2 = \frac{13{,}317.26 \text{ acf}}{\text{min}}$

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) = $\frac{60 \text{ min}}{\text{hr}} \times \frac{13{,}317.26 \text{ acf}}{\text{min}} \times \frac{68.00 + 460\ ^oR}{1{,}341.88 + 460\ ^oR} \times \frac{28.14 \text{ in. Hg}}{29.92 \text{ in. Hg}} = \frac{220{,}210.46 \text{ ascf}}{\text{hr}}$

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)

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

$V_{wsg(std)}$ = 55.50 g x 0.04715 ft^3/g = 2.620 scf

Standard Meter Volume (dscf)

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

$$V_{m(std)} = \frac{\frac{17.65\ ^\circ R}{in.\ Hg} \times 0.99 \times 49.88\ dcf \times \left(28.14\ in.\ Hg + \frac{1.50\ in.\ H_2O}{13.6\ in.\ H_2O / in.\ Hg}\right)}{70.15\ ^\circ F + 460\ ^\circ R} = 46.39\ dscf$$

Calculated Moisture Content (%)

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

$$B_{ws(calc)} = 100 \times \frac{2.62\ dscf}{2.62\ dscf + 46.39\ dscf} = 5.34\ \%$$

Saturated Moisture Content (%)

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

$$B_{ws(svp)} = 100 \times \frac{10^{\left(6.691 - \frac{3144}{1341.88\ ^\circ F + 390.86}\right)}}{28.14\ in.\ Hg + \frac{0.00\ in.\ H_2O}{13.6\ in.\ H_2O / in.\ Hg}} \leq 100 = 100.00\ \%$$

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^{o}R/in. Hg
- K_4 = isokinetic conversion constant, 0.0945min•in.Hg/sec•^{o}R
- K_5 = water mass to std water vapor, 0.04715 ft^3/g
- K_p = 85.49, ((ft/sec)/(pounds/mole -^{o}R))
- 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^{o}F, 528^{o}R
- T_u = absolute temperature offset, 460^{o}R
- 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

Superior Fabrication, INC

Air Permit # :	40 CFR 60 Sub Part OOOO
Plant Name or Location:	Elk City Plant
Date:	October 7, 2016
Project Number:	sfi-16-elkcity.ok-comp#1
Manufacturer & Equipment:	SCD-60
Test Load:	Multiple
Tester(s) / Test Unit(s):	MSL/BB/TW/MJ

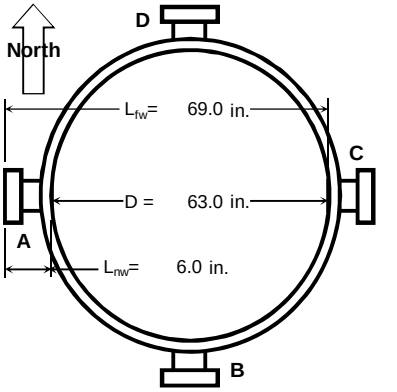
		RUN											
	UNITS	**SCD-60 R10**	**SCD-60 R11**	**SCD-60 R12**	**SCD-60 R7**	**SCD-60 R8**	**SCD-60 R9**	**SCD-60 R4**	**SCD-60 R5**	**SCD-60 R6**	**SCD-60 R1**	**SCD-60 R2**	**SCD-60 R3**
Start Time	hh:mm:ss	13:01:07	08:04:09	09:29:09	11:02:09	12:30:09	13:56:09	16:10:09	17:32:09	08:03:21	15:01:12	16:22:12	17:42:12
End Time	hh:mm:ss	14:11:07	09:14:09	10:39:09	12:12:09	13:40:09	15:06:09	17:20:09	18:42:09	09:13:21	16:11:12	17:32:12	18:52:12
Bar. Pressure	in. Hg	28.30	28.12	28.14	28.14	28.09	28.04	28.01	28.01	27.99	28.14	28.14	28.14
Amb. Temp.	°F	60	58	60	50	73	75	78	75	57	59	60	59
Rel. Humidity	%	48	64	58	66	48	46	43	43	70	55	54	52
Spec. Humidity	lb water / lb air	0.005555	0.006955	0.006764	0.005335	0.008826	0.009065	0.009376	0.008475	0.007377	0.006183	0.006292	0.005843
Date	mm/dd/yy	10/07/16	10/10/16	10/10/16	10/10/16	10/10/16	10/10/16	10/10/16	10/10/16	10/11/16	10/12/16	10/12/16	10/12/16
Unit Number		SCD-60	SCD-60	SCD-60	SCD-60	SCD-60	SCD-60	SCD-60	SCD-60	SCD-60	SCD-60	SCD-60	SCD-60
Load Designator	%	90-100	90-100	90-100	70-100-70	70-100-70	70-100-70	30-70-30	30-70-30	30-70-30	0-30-0	0-30-0	0-30-0
Gross Fuel Heating Value	Btu/ft3	2,535	2,535	2,535	2,553	2,553	2,553	2,479	2,479	2,479	2,558	2,558	2,558
Stack Flow (M2)	dscfh	316,380	376,257	378,495	354,831	340,646	357,807	390,394	259,378	224,237	208,452	209,862	182,803
Stack Moisture	Method 4	5.04	5.20	5.52	5.89	5.68	6.38	5.97	5.73	5.92	5.34	5.42	5.06
Wind Speed	mph	10	5	13	8	12	10	12	12	3	13	12	14
Wind Direction	--	S	E	S	SE	S	E	SW	SW	S	N	N	N
CO_2 - Method 3C	%	4.75	5.03	5.25	2.34	5.27	5.02	5.37	4.65	4.46	5.15	4.67	4.67
O_2 - Method 3C	%	14.60	14.60	14.30	18.80	14.20	14.60	14.10	15.20	15.40	14.50	15.20	15.20
N_2 -Method 3C	%	80.65	80.37	80.40	78.86	80.53	80.38	80.53	80.15	80.14	80.35	80.13	80.13
Excess Air	%	218.18	220.62	206.48	931.14	201.14	220.53	196.93	255.05	267.50	216.02	255.28	255.28

METHOD 1 - ISOKINETIC TRAVERSE FOR A CIRCULAR SOURCE

Company	Superior Fabrication Inc.	**Date**	10/12/16
Plant Name	Elk City Facilty	**Project #**	sfi-elkcity.ok-comp#1
Equipment	SCD-60	**# of Ports Available**	2
Location	Ports	**# of Ports Used**	2

Circular Stack or Duct Diameter			
Distance to Far Wall of Stack	(L_{fw})	69.00	in.
Distance to Near Wall of Stack	(L_{nw})	6.00	in.
Diameter of Stack	(D)	63.00	in.
Area of Stack	(A_s)	21.65	ft^2

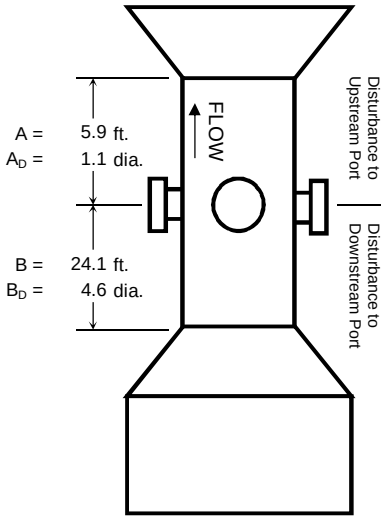
Distance from Disturbances to Port			
Distance Upstream	(A)	71.00	in.
Diameters Upstream	(A_D)	1.13	diameters
Distance Downstream	(B)	289.00	in.
Diameters Downstream	(B_D)	4.59	diameters



Number of Traverse Points Required					
Diameters to Flow Disturbance		**Minimum Number of[1] Traverse Points**		Minimum Number of 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%	10 4/8	16 4/8
2	50.0%	31 4/8	37 4/8
3	83.3%	52 4/8	58 4/8
4			
5			
6			
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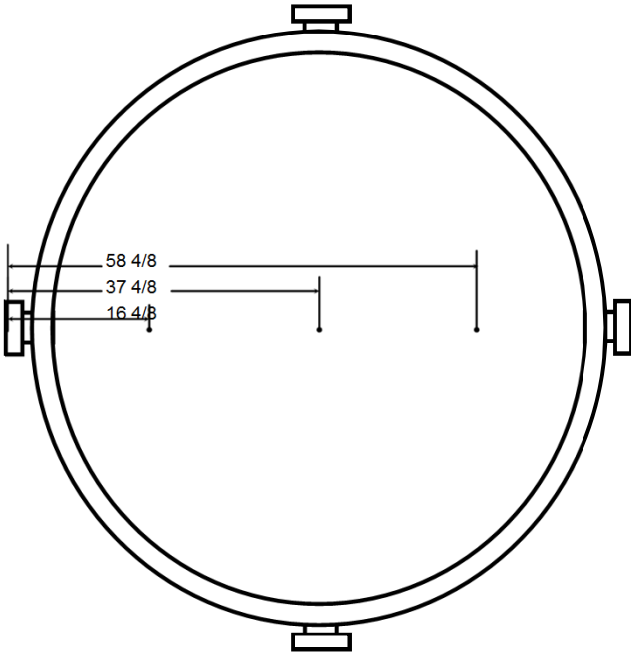
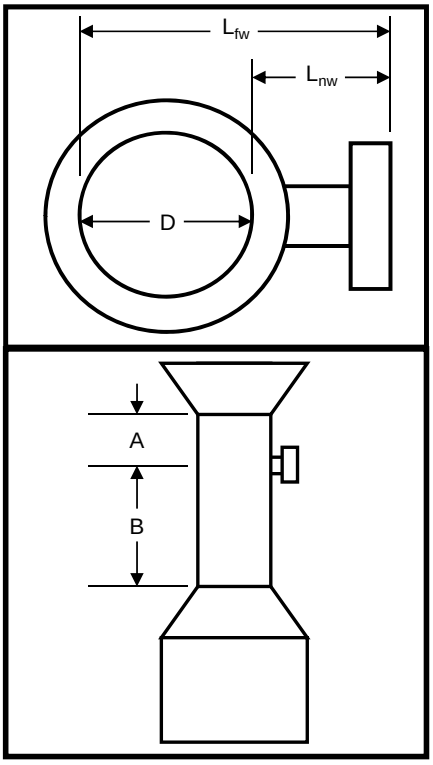


METHOD 1 - SAMPLE AND VELOCITY TRAVERSES FOR CIRCULAR SOURCES

Plant Name	Elk City Facilty	**Date**	10/12/16
Sampling Location	SCD-60	**Stack Type**	Circular
Operator	TW	**Ports Available**	2
Project #	sfi-elkcity.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})	69.00	in
Distance to Near Wall of Stack	(L_{nw})	6.00	in
Diameter of Stack	(D)	63.00	in
Area of Stack	(A_s)	21.65	ft²

Distance from Port to Disturbances			
Distance Upstream	(A)	71.00	in
Diameters Upstream	(A_D)	1.13	diameters
Distance Downstream	(B)	289.00	in
Diameters Downstream	(B_D)	4.59	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 3/8	7 3/8
2	0.067	4 2/8	10 2/8
3	0.118	7 3/8	13 3/8
4	0.177	11 1/8	17 1/8
5	0.250	15 6/8	21 6/8
6	0.356	22 3/8	28 3/8
7	0.644	40 5/8	46 5/8
8	0.750	47 2/8	53 2/8
9	0.823	51 7/8	57 7/8
10	0.882	55 5/8	61 5/8
11	0.933	58 6/8	64 6/8
12	0.979	61 5/8	67 5/8

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	Elk City Facilty
Sampling Location	SCD-60
Fuel Type	Gas, Propene

Test Information			
Project #		sfi-elkcity.ok-comp#1	
Operator		TW	
Date for Preliminary Run	(mm/dd/yy)	10/12/16	
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		SCD-60	
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)	10/12/16	10/12/16	10/12/16	
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-0003	SAMP-SP-0001	SAMP-SP-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-0032	SAMP-BC-0032	SAMP-BC-0032	

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	Elk City Facilty
Sampling Location	SCD-60
Project #	sfi-elkcity.ok-comp#1

Historical Data	**0-30-0%-1**	**0-30-0%-2**	**0-30-0%-3**	**Average**	**Units**
Run Start Time	15:01	16:22	17:42		hh:mm
Run Stop Time	16:09	17:31	18:53		hh:mm
Test Date	10/12/16	10/12/16	10/12/16		mm/dd/yy
Meter Calibration Factor	0.989	0.989	0.989		
Pitot Tube Coefficient	0.840	0.840	0.840		
Initial Meter Volume	468.070	517.100	566.200		ft^3
Final Meter Volume	517.950	566.060	615.280		ft^3
Total Meter Volume	49.880	48.960	49.080	49.307	ft^3
Total Sampling Time	65.00	65.00	65.00	65.00	min
Average Meter Temperature	70.15	72.75	73.83	72.24	°F
Average Stack Temperature	1341.88	1357.50	1360.83	1353.40	°F
Barometric Pressure	28.14	28.41	28.14	28.23	in Hg
Stack Static Pressure	0.00	0.00	0.00	0.00	in H_2O
Absolute Stack Pressure	28.14	28.41	28.14	28.23	in Hg
Average Orifice Pressure Drop	1.50	1.50	1.50	1.50	in H_2O
Absolute Meter Pressure	28.26	28.53	28.26	28.35	in Hg
Avg Square Root Pitot Pressure	0.10	0.10	0.08	0.09	$\sqrt{(in\ H_2O)}$
Moisture Content Data	**0-30-0%-1**	**0-30-0%-2**	**0-30-0%-3**	**Average**	**Units**
Impinger Water Weight Gain	39.90	41.70	40.60	40.73	g
Silica Gel Weight Gain	15.60	13.90	10.60	13.37	g
Total Water Volume Collected	55.60	55.70	51.29	54.20	ml
Standard Water Vapor Volume	2.62	2.62	2.41	2.55	scf
Standard Meter Volume	46.4	45.7	45.3	45.8	dscf
Calculated Stack Moisture	5.34	5.42	5.06	5.27	%
Saturated Stack Moisture	100.00	100.00	100.00	100.00	%
Reported Stack Moisture Content	5.34	5.42	5.06	5.27	%
Method 3C Gas Analysis Data	**0-30-0%-1**	**0-30-0%-2**	**0-30-0%-3**	**Average**	**Units**
Carbon Dioxide Content	5.2	4.7	4.7	4.8	%
Oxygen Content	14.5	15.2	15.2	15.0	%
Nitrogen Content	80.4	80.1	80.1	80.2	%
Stack Dry Molecular Weight	29.40	29.36	29.36	29.37	lb/lb-mole
Stack Wet Molecular Weight	28.80	28.74	28.78	28.77	lb/lb-mole
Percent Excess Air	216.0	255.3	255.3	242.2	%
Volumetric Flow Rate Data	**0-30-0%-1**	**0-30-0%-2**	**0-30-0%-3**	**Average**	**Units**
Average Stack Gas Velocity	10.25	10.32	9.06	9.88	ft/sec
Stack Cross-Sectional Area	21.65	21.65	21.65	21.65	ft^2
Actual Stack Flow Rate	13,317	13,406	11,766	12,830	acfm
Wet Standard Stack Flow Rate	220	222	193	212	wkscfh
Dry Standard Stack Flow Rate	208,452	209,862	182,803	200,372	dscfh

METHOD 3C - DETERMINATION OF DRY MOLECULAR WEIGHT BY ANALYZER

Plant Name	Elk City Facilty	**Preliminary Date**	10/12/16		
Sampling Location	SCD-60	**Operator**	TW		
Project #	sfi-elkcity.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**	10/12/16	**Run Start Time**	15:01		**Run Stop Time**	16:09
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	5.2	14.5	0.0	80.4	29.40	1.243		216.0	N/A

Gas Analysis Data									
Run Number	0-30-0%-2		**Date**	10/12/16	**Run Start Time**	16:22		**Run Stop Time**	17:31
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			%	
01:09	4.7	15.2	0.0	80.1	29.36	1.221		255.3	N/A

Gas Analysis Data									
Run Number	0-30-0%-3		**Date**	10/12/16	**Run Start Time**	17:42		**Run Stop Time**	18:53
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	4.7	15.2	0.0	80.1	29.36	1.221		255.3	N/A

METHOD 4 - DETERMINATION OF MOISTURE CONTENT IN STACK GASES

Plant Name	Elk City Facilty	**Preliminary Date**	10/12/16
Sampling Location	SCD-60	**Operator**	TW
Project #	sfi-elkcity.ok-comp#1	**Ports Used**	2

Scale Daily Calibration					
Scale Number	SAMP-SC-0027	**Standard**	**Result**	**Difference**	**Pass/Fail**
Date		(g)	(g)	(g)	(± 0.5 g)
Test Day 1	10/12/16	500	499.7	-0.5	Pass

Moisture Content Data									
Run Number		0-30-0%-1		**Date**	10/12/16	**Start Time**	15:01	**Stop Time**	16:09
Meter Box Number		SAMP-CP-0011				**Meter Cal Factor**	(Y)	0.989	
Total Meter Volume	(V_m)	49.880	dcf			**Barometric Pressure**	(P_b)	28.14	in Hg
Average Stack Temp	$(t_s)_{avg}$	1342	°F			**Stack Static Pressure**	(P_{static})	0.00	in H_2O
Average Meter Temp	$(t_m)_{avg}$	70	°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)	750.30	690.00	588.00	918.60				
Initial Value	(V_i),(W_i)	720.50	682.50	585.40	903.00				
Net Value	(V_n),(W_n)	29.8	7.5	2.6	15.6				
Results									
Total Weight	(W_t)	55.50	g			**Water Vol Weighed**	($V_{wsg(std)}$)	2.617	scf
Std Meter Volume	($V_{m(std)}$)	46.390	dscf			**Sat. Moisture Content**	($B_{ws(svp)}$)	100.00	%
Calc Moisture Content	($B_{ws(calc)}$)	5.34	%			**Final Moisture Content**	(B_{ws})	5.34	%

Moisture Content Data									
Run Number		0-30-0%-2		**Date**	10/12/16	**Start Time**	16:22	**Stop Time**	17:31
Meter Box Number		SAMP-CP-0011				**Meter Cal Factor**	(Y)	0.989	
Total Meter Volume	(V_m)	48.960	dcf			**Barometric Pressure**	(P_b)	28.41	in Hg
Average Stack Temp	$(t_s)_{avg}$	1358	°F			**Stack Static Pressure**	(P_{static})	0.00	in H_2O
Average Meter Temp	$(t_m)_{avg}$	73	°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)	782.80	696.70	590.50	932.50				
Initial Value	(V_i),(W_i)	750.30	690.00	588.00	918.60				
Net Value	(V_n),(W_n)	32.5	6.7	2.5	13.9				
Results									
Total Weight	(W_t)	55.60	g			**Water Vol Weighed**	($V_{wsg(std)}$)	2.622	scf
Std Meter Volume	($V_{m(std)}$)	45.745	dscf			**Sat. Moisture Content**	($B_{ws(svp)}$)	100.00	%
Calc Moisture Content	($B_{ws(calc)}$)	5.42	%			**Final Moisture Content**	(B_{ws})	5.42	%

Moisture Content Data									
Run Number		0-30-0%-3		**Date**	10/12/16	**Start Time**	17:42	**Stop Time**	18:53
Meter Box Number		SAMP-CP-0011				**Meter Cal Factor**	(Y)	0.989	
Total Meter Volume	(V_m)	49.080	dcf			**Barometric Pressure**	(P_b)	28.14	in Hg
Average Stack Temp	$(t_s)_{avg}$	1361	°F			**Stack Static Pressure**	(P_{static})	0.00	in H_2O
Average Meter Temp	$(t_m)_{avg}$	74	°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)	815.00	703.00	592.60	943.10				
Initial Value	(V_i),(W_i)	782.80	696.70	590.50	932.50				
Net Value	(V_n),(W_n)	32.2	6.3	2.1	10.6				
Results									
Total Weight	(W_t)	51.20	g			**Water Vol Weighed**	($V_{wsg(std)}$)	2.414	scf
Std Meter Volume	($V_{m(std)}$)	45.330	dscf			**Sat. Moisture Content**	($B_{ws(svp)}$)	100.00	%
Calc Moisture Content	($B_{ws(calc)}$)	5.06	%			**Final Moisture Content**	(B_{ws})	5.06	%

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

Plant Name	Elk City Facilty
Sampling Location	SCD-60
Project #	sfi-elkcity.ok-comp#1

Date	10/12/16
Operator	TW
Run Number	0-30-0%-1

Ideal Nozzle Diameter and IsoKinetic Factor Setup			
Pitot Coefficient	(C_p)	0.840	
Average Stack Temp	(t_s)	1341.9	°F
Average Meter Temp	(t_m)	70.1	
Orifice Meter Coefficient	($\Delta H@$)	1.585	in H_2O
Square Root ΔP	($\Delta p^{1/2}_{avg}$)	0.10	in H_2O
Stack Moisture Content	(B_{ws})	5.34	%
Stack Dry Molecular Weight	(M_d)	29.40	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 (+)**	0.1	in H_2O for	15.0	sec
< 3.0	**Pre (-)**	0.1	in H_2O for	15.0	sec
	Post (+)	0.1	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})	0.4859	in
Probe Number	SAMP-PF-0003		in
Probe Length	60		in
Liner Material	inconel		
Sample Case / Oven Number			
Impinger Case Number	SAMP-BC-0032		

Pressures			
Barometric Pressure	(P_b)	28.14	in Hg
Stack Static Pressure	(P_{static})	0.00	in H_2O
Absolute Stack Pressure	(P_s)	28.14	in Hg
Absolute Meter Pressure	(P_m)	28.26	in Hg

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

Run Time			
Start	15:01	**End**	16:09

Weights	**Imp 1**	**Imp 2**	**Imp 3**	**Imp 4**	**Imp 5**	**Imp 6**	**Imp 7**	**Imp 8**
Pre	720.5	682.5	585.4	903.0				
Post	750.3	690.0	588.0	918.6				

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	468.070	0.005	1.585	1.50	1160	255		60			66	66	10.0	0.07	7.18	2.278		54.667
A-2	2.7	00:02:43	470.500	0.015	1.585	1.50	1270	256		56			67	66	10.0	0.12	12.85	3.729		44.752
A-3	5.4	00:05:25	472.050	0.010	1.585	1.50	1301	256		55			68	66	10.0	0.10	10.59	5.610		44.879
A-4	8.1	00:08:07	474.060	0.010	1.585	1.50	1337	253		55			68	66	10.0	0.10	10.69	7.518		45.110
A-5	10.8	00:10:50	476.100	0.010	1.585	1.50	1351	252		56			69	66	10.0	0.10	10.74	9.406		45.151
A-6	13.5	00:13:33	478.120	0.010	1.585	1.50	1364	250		57			71	66	10.0	0.10	10.77	11.300		45.201
A-7	16.3	00:16:15	480.150	0.010	1.585	1.50	1364	250		58			71	67	10.0	0.10	10.77	13.267		45.487
A-8	19.0	00:18:58	482.260	0.015	1.585	1.50	1328	251		59			72	68	10.0	0.12	13.06	15.062		45.187
A-9	21.7	00:21:40	484.190	0.010	1.585	1.50	1343	252		60			72	69	10.0	0.10	10.71	16.996		45.321
A-10	24.4	00:24:22	486.270	0.010	1.585	1.50	1368	252		60			73	69	10.0	0.10	10.79	18.880		45.313
A-11	27.1	00:27:05	488.300	0.005	1.585	1.50	1375	252		61			73	69	10.0	0.07	7.64	20.765		45.306
A-12	29.8	00:29:47	490.330	0.010	1.585	1.50	1379	252		61			73	70	10.0	0.10	10.82	22.667		45.334
B-1	32.5	00:32:30	492.380	0.005	1.585	1.50	1376	249		64			70	70	10.0	0.07	7.64	24.593		45.402
B-2	35.2	00:35:12	494.450	0.010	1.585	1.50	1317	253		62			72	70	10.0	0.10	10.63	26.403		45.263
B-3	37.9	00:37:55	496.400	0.010	1.585	1.50	1381	252		61			73	70	10.0	0.10	10.82	28.342		45.348
B-4	40.6	00:40:37	498.490	0.005	1.585	1.50	1383	252		62			73	70	10.0	0.07	7.66	30.309		45.463
B-5	43.3	00:43:20	500.610	0.010	1.585	1.50	1398	252		63			73	70	10.0	0.10	10.87	32.146		45.382
B-6	46.0	00:46:03	502.590	0.005	1.585	1.50	1400	252		64			73	70	10.0	0.07	7.69	34.020		45.359
B-7	48.8	00:48:45	504.610	0.010	1.585	1.50	1386	252		63			73	70	10.0	0.10	10.84	35.773		45.187
B-8	51.5	00:51:28	506.500	0.010	1.585	1.50	1326	252		64			73	70	10.0	0.10	10.66	37.517		45.020
B-9	54.2	00:54:10	508.380	0.010	1.585	1.50	1320	252		65			74	70	10.0	0.10	10.64	39.407		45.037
B-10	56.9	00:56:53	510.420	0.01	1.585	1.50	1350	252		64			74	71	10.0	0.10	10.73	41.759		45.556
B-11	59.6	00:59:35	512.960	0.01	1.585	1.50	1309	252		64			73	70	10.0	0.10	10.61	43.559		45.453
B-12	62.3	01:02:18	514.900	0.01	1.585	1.50	1319	252		65			74	70	10.0	0.10	10.64	46.386		46.386
Last Pt	65.0	01:05:00	517.950																	
Final Val	65.0	01:05:00	517.950											**Max Vac**	10.0	**Final Values**		46.386		
Average Values				0.01		1.50	1342	252		61			72	69		0.10	10.25			
													70							

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

Plant Name	Elk City Facilty
Sampling Location	SCD-60
Project #	sfi-elkcity.ok-comp#1

Date	10/12/16
Operator	TW
Run Number	0-30-0%-2

Ideal Nozzle Diameter and IsoKinetic Factor Setup			
Pitot Coefficient	(C_p)	0.840	
Average Stack Temp	(t_s)	1357.5	°F
Average Meter Temp	(t_m)	72.8	
Orifice Meter Coefficient	($\Delta H@$)	1.585	in H_2O
Square Root ΔP	($\Delta p^{1/2}_{avg}$)	0.10	in H_2O
Stack Moisture Content	(B_{ws})	5.42	%
Stack Dry Molecular Weight	(M_d)	29.36	lb/lb-mole
Estimated Orifice Flow Rate	(Q_m)	0.71	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 (+)**	0.1	in H_2O for	15.0	sec
< 3.0	**Pre (-)**	0.1	in H_2O for	15.0	sec
	Post (+)	0.1	in H_2O for	15.0	sec
	Post (-)	0.1	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})	0.4740	in
Probe Number	SAMP-SP-0001		in
Probe Length	60		in
Liner Material	inconel		
Sample Case / Oven Number			
Impinger Case Number	SAMP-BC-0032		

Pressures			
Barometric Pressure	(P_b)	28.41	in Hg
Stack Static Pressure	(P_{static})	0.00	in H_2O
Absolute Stack Pressure	(P_s)	28.41	in Hg
Absolute Meter Pressure	(P_m)	28.53	in Hg

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

Run Time			
Start	16:22	**End**	17:31

Weights	**Imp 1**	**Imp 2**	**Imp 3**	**Imp 4**	**Imp 5**	**Imp 6**	**Imp 7**	**Imp 8**
Pre	750.3	690.0	588.0	918.6				
Post	782.8	696.7	590.5	932.5				

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	517.100	0.010	1.585	1.50	1258	255		62			70	70	10.0	0.10	10.42	2.066		49.588
A-2	2.7	00:02:43	519.300	0.005	1.585	1.50	1265	257		59			71	70	10.0	0.07	7.38	3.877		46.525
A-3	5.4	00:05:25	521.230	0.010	1.585	1.50	1317	256		59			71	70	10.0	0.10	10.59	5.819		46.555
A-4	8.1	00:08:07	523.300	0.010	1.585	1.50	1349	253		59			72	70	10.0	0.10	10.69	7.704		46.221
A-5	10.8	00:10:50	525.310	0.010	1.585	1.50	1369	252		61			73	70	10.0	0.10	10.75	9.623		46.192
A-6	13.5	00:13:33	527.360	0.010	1.585	1.50	1383	251		63			74	70	10.0	0.10	10.79	11.504		46.016
A-7	16.3	00:16:15	529.370	0.010	1.585	1.50	1380	251		63			74	71	10.0	0.10	10.78	13.448		46.109
A-8	19.0	00:18:58	531.450	0.010	1.585	1.50	1328	252		64			75	71	10.0	0.10	10.63	15.363		46.089
A-9	21.7	00:21:40	533.500	0.010	1.585	1.50	1330	252		61			74	71	10.0	0.10	10.63	17.279		46.078
A-10	24.4	00:24:22	535.550	0.010	1.585	1.50	1363	252		59			75	72	10.0	0.10	10.73	19.229		46.150
A-11	27.1	00:27:05	537.640	0.010	1.585	1.50	1362	252		58			75	72	10.0	0.10	10.73	21.151		46.148
A-12	29.8	00:29:47	539.700	0.005	1.585	1.50	1380	246		59			75	72	10.0	0.07	7.62	22.943		45.885
B-1	32.5	00:32:30	541.620	0.010	1.585	1.50	1336	250		61			72	72	10.0	0.10	10.65	24.889		45.948
B-2	35.2	00:35:12	543.700	0.010	1.585	1.50	1332	253		56			74	72	10.0	0.10	10.64	26.803		45.948
B-3	37.9	00:37:55	545.750	0.010	1.585	1.50	1380	254		56			75	72	10.0	0.10	10.78	28.660		45.856
B-4	40.6	00:40:37	547.740	0.010	1.585	1.50	1396	253		57			76	72	10.0	0.10	10.83	30.552		45.828
B-5	43.3	00:43:20	549.770	0.010	1.585	1.50	1415	252		58			75	72	10.0	0.10	10.88	32.539		45.938
B-6	46.0	00:46:03	551.900	0.005	1.585	1.50	1413	252		58			75	72	10.0	0.07	7.69	34.321		45.762
B-7	48.8	00:48:45	553.810	0.010	1.585	1.50	1412	252		58			75	72	10.0	0.10	10.87	36.206		45.734
B-8	51.5	00:51:28	555.830	0.010	1.585	1.50	1363	252		58			75	72	10.0	0.10	10.73	38.156		45.787
B-9	54.2	00:54:10	557.920	0.010	1.585	1.50	1351	252		59			75	72	10.0	0.10	10.69	39.826		45.516
B-10	56.9	00:56:53	559.710	0.01	1.585	1.50	1353	252		58			76	72	10.0	0.10	10.70	42.007		45.826
B-11	59.6	00:59:35	562.050	0.01	1.585	1.50	1368	252		58			76	72	10.0	0.10	10.74	43.862		45.769
B-12	62.3	01:02:18	564.040	0.01	1.585	1.50	1377	252		58			76	72	10.0	0.10	10.77	45.745		45.745
Last Pt	65.0	01:05:00	566.060																	
Final Val	65.0	01:05:00	566.060											**Max Vac**	10.0	**Final Values**		45.745		
Average Values				0.01		1.50	1358	252		59			74	71		0.10	10.32			
													73							

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

Plant Name	Elk City Facilty
Sampling Location	SCD-60
Project #	sfi-elkcity.ok-comp#1

Date	10/12/16
Operator	TW
Run Number	0-30-0%-3

Ideal Nozzle Diameter and IsoKinetic Factor Setup			
Pitot Coefficient	(C_p)	0.840	
Average Stack Temp	(t_s)	1360.8	°F
Average Meter Temp	(t_m)	73.8	
Orifice Meter Coefficient	($\Delta H@$)	1.585	in H_2O
Square Root ΔP	($\Delta p^{1/2}_{avg}$)	0.08	in H_2O
Stack Moisture Content	(B_{ws})	5.06	%
Stack Dry Molecular Weight	(M_d)	29.36	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 (+)**	0.1	in H_2O for	15.0	sec
< 3.0	**Pre (-)**	0.1	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})	0.4857	in
Probe Number	SAMP-SP-0001		in
Probe Length	60		in
Liner Material	inconel		
Sample Case / Oven Number			
Impinger Case Number	SAMP-BC-0032		

Pressures			
Barometric Pressure	(P_b)	28.14	in Hg
Stack Static Pressure	(P_{static})	0.00	in H_2O
Absolute Stack Pressure	(P_s)	28.14	in Hg
Absolute Meter Pressure	(P_m)	28.26	in Hg

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

Run Time			
Start	17:42	**End**	18:53

Weights	**Imp 1**	**Imp 2**	**Imp 3**	**Imp 4**	**Imp 5**	**Imp 6**	**Imp 7**	**Imp 8**
Pre	782.8	696.7	590.5	932.5				
Post	815.0	703.0	592.6	943.1				

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	566.200	0.005	1.585	1.50	1336	253		57			73	72	10.0	0.07	7.56	1.880		45.111
A-2	2.7	00:02:43	568.230	0.005	1.585	1.50	1334	256		55			74	71	10.0	0.07	7.56	3.796		45.555
A-3	5.4	00:05:25	570.300	0.010	1.585	1.50	1385	255		54			74	71	10.0	0.10	10.84	5.648		45.185
A-4	8.1	00:08:07	572.300	0.010	1.585	1.50	1389	254		55			76	72	10.0	0.10	10.85	7.504		45.024
A-5	10.8	00:10:50	574.310	0.010	1.585	1.50	1389	252		56			76	72	10.0	0.10	10.85	9.434		45.282
A-6	13.5	00:13:33	576.400	0.010	1.585	1.50	1398	251		58			76	72	10.0	0.10	10.88	11.308		45.232
A-7	16.3	00:16:15	578.430	0.005	1.585	1.50	1374	251		58			76	73	10.0	0.07	7.64	13.171		45.159
A-8	19.0	00:18:58	580.450	0.010	1.585	1.50	1340	253		59			76	73	10.0	0.10	10.71	15.007		45.021
A-9	21.7	00:21:40	582.440	0.010	1.585	1.50	1349	252		59			76	72	10.0	0.10	10.73	16.955		45.214
A-10	24.4	00:24:22	584.550	0.010	1.585	1.50	1348	252		60			76	72	10.0	0.10	10.73	18.867		45.280
A-11	27.1	00:27:05	586.620	0.010	1.585	1.50	1362	252		60			76	72	10.0	0.10	10.77	20.759		45.293
A-12	29.8	00:29:47	588.670	0.010	1.585	1.50	1358	252		60			76	72	10.0	0.10	10.76	22.671		45.341
B-1	32.5	00:32:30	590.740	0.010	1.585	1.50	1316	252		63			72	72	10.0	0.10	10.63	24.580		45.378
B-2	35.2	00:35:12	592.800	0.005	1.585	1.50	1372	254		59			75	72	10.0	0.07	7.64	26.484		45.400
B-3	37.9	00:37:55	594.860	0.005	1.585	1.50	1381	254		59			76	72	10.0	0.07	7.66	28.367		45.387
B-4	40.6	00:40:37	596.900	0.005	1.585	1.50	1386	252		60			76	72	10.0	0.07	7.67	30.306		45.459
B-5	43.3	00:43:20	599.000	0.005	1.585	1.50	1387	253		60			76	72	10.0	0.07	7.67	32.162		45.405
B-6	46.0	00:46:03	601.010	0.005	1.585	1.50	1381	253		60			77	73	10.0	0.07	7.66	34.097		45.463
B-7	48.8	00:48:45	603.110	0.005	1.585	1.50	1317	252		60			77	72	10.0	0.07	7.52	36.025		45.506
B-8	51.5	00:51:28	605.200	0.005	1.585	1.50	1347	252		60			77	72	10.0	0.07	7.58	37.796		45.356
B-9	54.2	00:54:10	607.120	0.005	1.585	1.50	1370	252		60			76	72	10.0	0.07	7.63	39.689		45.359
B-10	56.9	00:56:53	609.170	0.005	1.585	1.50	1346	252		60			76	72	10.0	0.07	7.58	41.563		45.342
B-11	59.6	00:59:35	611.200	0.01	1.585	1.50	1334	252		60			76	72	10.0	0.10	10.69	43.502		45.394
B-12	62.3	01:02:18	613.300	0.005	1.585	1.50	1361	252		60			76	72	10.0	0.07	7.61	45.331		45.331
Last Pt	65.0	01:05:00	615.280																	
Final Val	65.0	01:05:00	615.280											**Max Vac**	10.0	**Final Values**		45.331		
Average Values				0.01		1.50	1361	253		59			76	72		0.08	9.06			
													74							

Superior Fabrication, INC
SCD-60
Elk City Plant

Unit Data

Meas. Stack Moisture	5.3	%
Stack Exhaust Flow (M2)	208,452	SCFH

Weather Data

Barometric Pressure	28.14	in. Hg
Relative Humidity	55	%
Ambient Temperature	59	^{o}F
Specific Humidity	0.006183	lb H_2O / lb air

0-30-0 Load, Run - SCD-60 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
A1	10/12/16 15:01:12	27060	14.63	5.08	0.39	4.56	0.20	55.30	961.00
	10/12/16 15:01:42	27090	13.98	5.22	0.27	4.86	0.20	55.30	961.00
	10/12/16 15:02:12	27120	13.87	4.63	0.27	5.01	0.21	55.80	961.00
	10/12/16 15:02:42	27150	13.83	4.10	0.25	5.03	0.21	55.80	961.00
	10/12/16 15:03:12	27180	13.78	3.32	0.27	5.04	0.25	56.40	1,057.00
	10/12/16 15:03:42	27210	13.51	2.42	0.25	5.25	0.25	56.40	1,057.00
	10/12/16 15:04:12	27240	13.84	1.61	0.28	5.02	0.26	56.90	1,062.00
	10/12/16 15:04:42	27270	13.07	1.05	0.26	5.50	0.26	56.90	1,062.00
	10/12/16 15:05:12	27300	13.04	0.76	0.25	5.54	0.26	57.50	1,058.00
	10/12/16 15:05:42	27330	13.37	0.68	0.26	5.33	0.26	57.50	1,058.00
	10/12/16 15:06:12	27360	13.61	0.61	0.27	5.18	0.26	57.80	1,057.00
	10/12/16 15:06:42	27390	13.03	0.62	0.25	5.54	0.26	57.80	1,057.00
	10/12/16 15:07:12	27420	13.42	0.75	0.26	5.32	0.26	58.40	1,062.00
	10/12/16 15:07:42	27450	13.61	0.95	0.27	5.14	0.26	58.40	1,062.00
	10/12/16 15:08:12	27480	13.57	0.76	0.26	5.21	0.27	58.80	1,059.00
	10/12/16 15:08:42	27510	13.44	0.49	0.26	5.26	0.27	58.80	1,059.00
	10/12/16 15:09:12	27540	13.30	0.52	0.25	5.35	0.26	59.30	1,057.00
	10/12/16 15:09:42	27570	13.70	0.62	0.29	5.19	0.26	59.30	1,057.00
	10/12/16 15:10:12	27600	13.72	0.79	0.26	5.02	0.26	59.80	1,059.00
	10/12/16 15:10:42	27630	13.23	1.29	0.39	5.38	0.26	59.80	1,059.00
	10/12/16 15:11:12	27660	13.11	2.18	0.43	5.48	0.27	60.40	1,058.00
	10/12/16 15:11:42	27690	13.38	3.62	0.40	5.29	0.27	60.40	1,058.00
	10/12/16 15:12:12	27720	13.56	4.42	0.40	5.22	0.27	61.10	1,057.00
	10/12/16 15:12:42	27750	13.31	3.81	0.34	5.30	0.27	61.10	1,057.00
	10/12/16 15:13:12	27780	13.28	2.74	0.34	5.37	0.28	61.80	1,059.00
	10/12/16 15:13:42	27810	13.30	1.65	0.29	5.35	0.28	61.80	1,059.00
	10/12/16 15:14:12	27840	13.45	0.95	0.27	5.23	0.28	62.40	1,055.00
	10/12/16 15:14:42	27870	13.40	0.51	0.28	5.29	0.28	62.40	1,055.00
	10/12/16 15:15:12	27900	13.51	0.35	0.28	5.20	0.28	62.80	1,054.00
	10/12/16 15:15:42	27930	13.49	0.11	0.29	5.18	0.28	62.80	1,054.00
	10/12/16 15:16:12	27960	13.36	-0.05	0.28	5.30	0.27	63.10	1,053.00
	10/12/16 15:16:42	27990	13.47	-0.08	0.29	5.20	0.27	63.10	1,053.00
	10/12/16 15:17:12	28020	13.25	-0.08	0.27	5.35	0.27	63.40	1,026.00
	10/12/16 15:17:42	28050	13.45	-0.09	0.27	5.23	0.27	63.40	1,026.00
	10/12/16 15:18:12	28080	13.25	-0.11	0.26	5.34	0.25	63.80	962.00
	10/12/16 15:18:42	28110	13.48	-0.19	0.30	5.23	0.25	63.80	962.00
	10/12/16 15:19:12	28140	13.95	-0.19	0.29	4.91	0.24	64.20	958.00
	10/12/16 15:19:42	28170	14.09	-0.18	0.29	4.79	0.24	64.20	958.00
	10/12/16 15:20:12	28200	14.10	-0.18	0.28	4.82	0.24	64.50	953.00
	10/12/16 15:20:42	28230	14.19	-0.22	0.30	4.77	0.24	64.50	953.00
	10/12/16 15:21:12	28260	14.06	-0.22	0.30	4.85	0.26	64.80	985.00
	10/12/16 15:21:42	28290	14.12	-0.20	0.27	4.81	0.26	64.80	985.00
A2	10/12/16 15:22:12	28320	14.33	-0.20	0.28	4.68	0.28	65.20	1,044.00
	10/12/16 15:22:42	28350	14.31	-0.22	0.30	4.65	0.28	65.20	1,044.00
	10/12/16 15:23:12	28380	13.69	-0.21	0.30	5.03	0.28	65.40	1,038.00
	10/12/16 15:23:42	28410	13.48	-0.20	0.25	5.24	0.28	65.40	1,038.00
	10/12/16 15:24:12	28440	13.51	-0.21	0.24	5.22	0.29	65.60	1,041.00
	10/12/16 15:24:42	28470	13.72	-0.20	0.25	5.08	0.29	65.60	1,041.00
	10/12/16 15:25:12	28500	13.57	-0.21	0.25	5.16	0.29	65.80	1,041.00
	10/12/16 15:25:42	28530	13.74	-0.18	0.26	5.07	0.29	65.80	1,041.00
	10/12/16 15:26:12	28560	13.72	-0.18	0.26	5.05	0.30	66.00	1,041.00
	10/12/16 15:26:42	28590	13.72	-0.21	0.25	5.07	0.30	66.00	1,041.00
	10/12/16 15:27:12	28620	13.62	-0.21	0.26	5.14	0.29	66.10	1,043.00
	10/12/16 15:27:42	28650	13.58	-0.18	0.26	5.14	0.29	66.10	1,043.00
	10/12/16 15:28:12	28680	13.69	-0.18	0.25	5.10	0.30	66.40	1,043.00
	10/12/16 15:28:42	28710	13.78	-0.18	0.26	5.02	0.30	66.40	1,043.00
	10/12/16 15:29:12	28740	13.73	-0.18	0.26	5.05	0.30	66.70	1,042.00
	10/12/16 15:29:42	28770	13.66	-0.19	0.25	5.12	0.30	66.70	1,042.00
	10/12/16 15:30:12	28800	13.61	-0.19	0.26	5.13	0.30	67.10	1,039.00
	10/12/16 15:30:42	28830	13.74	-0.22	0.25	5.06	0.30	67.10	1,039.00
	10/12/16 15:31:12	28860	13.74	-0.22	0.25	5.06	0.31	67.30	1,036.00

Superior Fabrication, INC
SCD-60
Elk City Plant

Unit Data

Meas. Stack Moisture	5.3	%
Stack Exhaust Flow (M2)	208,452	SCFH

Weather Data

Barometric Pressure	28.14	in. Hg
Relative Humidity	55	%
Ambient Temperature	59	^{o}F
Specific Humidity	0.006183	lb H_2O / lb air

0-30-0 Load, Run - SCD-60 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
	10/12/16 15:31:42	28890	13.71	-0.18	0.25	5.07	0.31	67.30	1,036.00
	10/12/16 15:32:12	28920	13.96	-0.19	0.25	4.91	0.31	67.50	1,036.00
	10/12/16 15:32:42	28950	13.83	-0.20	0.25	4.99	0.31	67.50	1,036.00
	10/12/16 15:33:12	28980	13.75	-0.21	0.25	5.04	0.31	67.70	1,033.00
	10/12/16 15:33:42	29010	13.49	-0.18	0.24	5.20	0.31	67.70	1,033.00
	10/12/16 15:34:12	29040	13.69	-0.18	0.23	5.08	0.31	67.60	1,020.00
	10/12/16 15:34:42	29070	13.93	-0.20	0.24	4.93	0.31	67.60	1,020.00
	10/12/16 15:35:12	29100	13.92	-0.16	0.24	4.91	0.29	67.40	966.00
	10/12/16 15:35:42	29130	13.70	-0.01	0.25	5.07	0.29	67.40	966.00
	10/12/16 15:36:12	29160	14.13	-0.01	0.25	4.81	0.27	67.50	944.00
	10/12/16 15:36:42	29190	14.26	0.09	0.24	4.71	0.27	67.50	944.00
	10/12/16 15:37:12	29220	14.34	0.12	0.24	4.64	0.27	67.50	946.00
	10/12/16 15:37:42	29250	14.44	0.12	0.25	4.56	0.27	67.50	946.00
	10/12/16 15:38:12	29280	14.36	0.12	0.26	4.63	0.27	67.50	941.00
	10/12/16 15:38:42	29310	14.24	0.14	0.26	4.72	0.27	67.50	941.00
	10/12/16 15:39:12	29340	14.31	0.11	0.26	4.67	0.31	67.40	1,015.00
	10/12/16 15:39:42	29370	14.42	0.09	0.24	4.59	0.31	67.40	1,015.00
	10/12/16 15:40:12	29400	14.48	0.13	0.25	4.54	0.33	67.20	1,041.00
	10/12/16 15:40:42	29430	13.98	0.21	0.26	4.86	0.33	67.20	1,041.00
	10/12/16 15:41:12	29460	13.75	0.13	0.26	5.03	0.34	67.20	1,047.00
	10/12/16 15:41:42	29490	13.57	0.09	0.24	5.16	0.34	67.20	1,047.00
A3	10/12/16 15:42:12	29520	13.77	0.09	0.24	5.05	0.35	67.10	1,045.00
	10/12/16 15:42:42	29550	13.87	0.10	0.25	4.93	0.35	67.10	1,045.00
	10/12/16 15:43:12	29580	13.61	0.06	0.24	5.15	0.35	66.90	1,048.00
	10/12/16 15:43:42	29610	13.65	0.02	0.25	5.11	0.35	66.90	1,048.00
	10/12/16 15:44:12	29640	13.67	0.03	0.24	5.12	0.36	66.70	1,047.00
	10/12/16 15:44:42	29670	13.86	-0.01	0.24	4.97	0.36	66.70	1,047.00
	10/12/16 15:45:12	29700	13.59	-0.01	0.24	5.17	0.36	66.60	1,050.00
	10/12/16 15:45:42	29730	13.71	0.02	0.26	5.07	0.36	66.60	1,050.00
	10/12/16 15:46:12	29760	13.71	0.02	0.25	5.07	0.35	66.60	1,049.00
	10/12/16 15:46:42	29790	14.05	0.03	0.24	4.84	0.35	66.60	1,049.00
	10/12/16 15:47:12	29820	13.77	0.09	0.25	5.04	0.35	66.70	1,049.00
	10/12/16 15:47:42	29850	13.86	-0.02	0.25	4.95	0.35	66.70	1,049.00
	10/12/16 15:48:12	29880	13.67	0.02	0.23	5.09	0.36	66.80	1,052.00
	10/12/16 15:48:42	29910	13.70	-0.01	0.21	5.10	0.36	66.80	1,052.00
	10/12/16 15:49:12	29940	13.89	-0.01	0.24	4.93	0.37	66.90	1,050.00
	10/12/16 15:49:42	29970	13.82	0.02	0.25	5.02	0.37	66.90	1,050.00
	10/12/16 15:50:12	30000	13.94	0.01	0.25	4.91	0.36	66.90	1,049.00
	10/12/16 15:50:42	30030	13.58	0.03	0.25	5.13	0.36	66.90	1,049.00
	10/12/16 15:51:12	30060	13.59	-0.01	0.22	5.15	0.36	66.90	1,052.00
	10/12/16 15:51:42	30090	13.64	-0.01	0.22	5.12	0.36	66.90	1,052.00
	10/12/16 15:52:12	30120	13.76	-0.01	0.24	5.05	0.34	66.90	1,000.00
	10/12/16 15:52:42	30150	13.77	0.00	0.23	5.03	0.34	66.90	1,000.00
	10/12/16 15:53:12	30180	13.76	-0.01	0.21	5.03	0.31	67.00	955.00
	10/12/16 15:53:42	30210	14.07	0.02	0.22	4.87	0.31	67.00	955.00
	10/12/16 15:54:12	30240	14.32	0.06	0.24	4.65	0.32	67.10	956.00
	10/12/16 15:54:42	30270	14.28	0.09	0.24	4.70	0.32	67.10	956.00
	10/12/16 15:55:12	30300	14.46	0.10	0.24	4.57	0.32	67.20	958.00
	10/12/16 15:55:42	30330	14.47	0.24	0.25	4.56	0.32	67.20	958.00
	10/12/16 15:56:12	30360	14.47	0.30	0.26	4.57	0.37	67.20	1,044.00
	10/12/16 15:56:42	30390	14.50	0.32	0.25	4.53	0.37	67.20	1,044.00
	10/12/16 15:57:12	30420	14.28	0.32	0.25	4.67	0.37	67.10	1,047.00
	10/12/16 15:57:42	30450	14.02	0.27	0.25	4.88	0.37	67.10	1,047.00
	10/12/16 15:58:12	30480	14.17	0.21	0.25	4.79	0.37	67.00	1,047.00
	10/12/16 15:58:42	30510	14.37	0.17	0.27	4.63	0.37	67.00	1,047.00
	10/12/16 15:59:12	30540	14.36	0.27	0.28	4.64	0.36	66.90	1,049.00
	10/12/16 15:59:42	30570	14.42	0.32	0.31	4.61	0.36	66.90	1,049.00
	10/12/16 16:00:12	30600	14.34	0.38	0.30	4.65	0.37	66.80	1,050.00
	10/12/16 16:00:42	30630	14.18	0.38	0.30	4.77	0.37	66.80	1,050.00
	10/12/16 16:01:12	30660	14.29	0.36	0.29	4.68	0.36	66.70	1,047.00
	10/12/16 16:01:42	30690	14.04	0.35	0.28	4.86	0.36	66.70	1,047.00

Superior Fabrication, INC
SCD-60
Elk City Plant

Unit Data

Meas. Stack Moisture	5.3	%
Stack Exhaust Flow (M2)	208,452	SCFH

Weather Data

Barometric Pressure	28.14	in. Hg
Relative Humidity	55	%
Ambient Temperature	59	^{o}F
Specific Humidity	0.006183	lb H_2O / lb air

0-30-0 Load, Run - SCD-60 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
10/12/16 16:02:12	30720	14.26	0.28	0.29	4.70	0.36	66.60	1,047.00
10/12/16 16:02:42	30750	13.97	0.29	0.29	4.90	0.36	66.60	1,047.00
10/12/16 16:03:12	30780	14.40	0.29	0.26	4.64	0.37	66.50	1,051.00
10/12/16 16:03:42	30810	14.35	0.40	0.26	4.65	0.37	66.50	1,051.00
10/12/16 16:04:12	30840	14.16	0.48	0.28	4.76	0.35	66.40	1,047.00
10/12/16 16:04:42	30870	14.36	0.47	0.30	4.67	0.35	66.40	1,047.00
10/12/16 16:05:12	30900	14.44	0.49	0.30	4.60	0.35	66.60	1,047.00
10/12/16 16:05:42	30930	14.41	0.64	0.30	4.62	0.35	66.60	1,047.00
10/12/16 16:06:12	30960	14.40	1.28	0.26	4.61	0.35	66.70	1,044.00
10/12/16 16:06:42	30990	14.42	2.08	0.25	4.62	0.35	66.70	1,044.00
10/12/16 16:07:12	31020	14.42	2.37	0.24	4.59	0.35	66.80	1,016.00
10/12/16 16:07:42	31050	14.29	2.29	0.25	4.69	0.35	66.80	1,016.00
10/12/16 16:08:12	31080	14.34	2.06	0.24	4.66	0.31	67.00	960.00
10/12/16 16:08:42	31110	14.44	2.37	0.25	4.61	0.31	67.00	960.00
10/12/16 16:09:12	31140	14.75	2.88	0.25	4.40	0.30	67.00	960.00
10/12/16 16:09:42	31170	14.86	3.44	0.25	4.32	0.30	67.00	960.00
10/12/16 16:10:12	31200	14.80	4.00	0.25	4.35	0.31	66.90	958.00
10/12/16 16:10:42	31230	14.97	4.60	0.26	4.25	0.31	66.90	958.00
10/12/16 16:11:12	31260	14.63	5.43	0.25	4.46	0.31	66.90	955.00
RAW AVERAGE		**13.90**	**0.65**	**0.27**	**4.95**	**0.31**	**64.91**	**1,024.99**

		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	1434717	1434717	1434717
		(%)	(ppmvd)	(ppmvw)	(%)	(in. H_2O)	(^{o}F)	(SCFH)
Bias	Initial Zero	0.04	-0.08	-0.04	0.04			
	Final Zero	0.03	0.02	0.09	0.08			
	Avg. Zero	0.04	-0.03	0.03	0.06			
	Initial UpScale	11.93	9.22	5.01	8.92			
	Final UpScale	11.96	9.22	4.99	8.97			
	Avg. UpScale	11.95	9.22	5.00	8.95			
Upscale Cal Gas		11.90	9.21	5.01	8.95			

EMISSIONS DATA	O_2	CO	THC	CO_2
Corrected Raw Average (ppm/% dry basis)	13.85	0.68	0.24	4.93
Corrected Raw Average (ppm/% wet basis)	13.11	0.64	0.23	4.66
Emission Rate (lb/hr)	N/A	0.01	0.01	N/A

Superior Fabrication, INC
SCD-60
Elk City Plant

Unit Data

Meas. Stack Moisture	5.4	%
Stack Exhaust Flow (M2)	209,862	SCFH

Weather Data

Barometric Pressure	28.14	in. Hg
Relative Humidity	54	%
Ambient Temperature	60	^{o}F
Specific Humidity	0.006292	lb H_2O / lb air

0-30-0 Load, Run - SCD-60 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. ^{o}F	Fuel Flow SCFH
A1	10/12/16 16:22:12	31920	15.07	8.56	0.17	4.20	0.29	67.00	935.00
	10/12/16 16:22:42	31950	14.91	9.28	0.20	4.28	0.29	67.00	935.00
	10/12/16 16:23:12	31980	14.94	8.85	0.20	4.25	0.30	67.10	957.00
	10/12/16 16:23:42	32010	15.02	8.59	0.18	4.21	0.30	67.10	957.00
	10/12/16 16:24:12	32040	15.05	9.64	0.20	4.19	0.34	67.00	1,037.00
	10/12/16 16:24:42	32070	14.97	9.96	0.17	4.24	0.34	67.00	1,037.00
	10/12/16 16:25:12	32100	14.58	8.78	0.14	4.45	0.35	67.00	1,045.00
	10/12/16 16:25:42	32130	14.29	6.93	0.15	4.71	0.35	67.00	1,045.00
	10/12/16 16:26:12	32160	14.21	5.55	0.14	4.75	0.36	66.80	1,028.00
	10/12/16 16:26:42	32190	14.06	5.07	0.18	4.85	0.36	66.80	1,028.00
	10/12/16 16:27:12	32220	13.85	4.12	0.16	5.00	0.35	66.80	1,024.00
	10/12/16 16:27:42	32250	13.62	2.72	0.14	5.15	0.35	66.80	1,024.00
	10/12/16 16:28:12	32280	13.79	1.67	0.21	5.07	0.36	66.70	1,036.00
	10/12/16 16:28:42	32310	13.90	1.02	0.18	4.96	0.36	66.70	1,036.00
	10/12/16 16:29:12	32340	13.91	0.79	0.18	4.95	0.36	66.60	1,041.00
	10/12/16 16:29:42	32370	13.89	0.82	0.13	4.99	0.36	66.60	1,041.00
	10/12/16 16:30:12	32400	13.92	0.74	0.18	4.98	0.37	66.40	1,037.00
	10/12/16 16:30:42	32430	13.79	0.68	0.13	5.05	0.37	66.40	1,037.00
	10/12/16 16:31:12	32460	13.78	0.47	0.17	5.06	0.36	66.10	1,051.00
	10/12/16 16:31:42	32490	13.80	0.40	0.17	5.05	0.36	66.10	1,051.00
	10/12/16 16:32:12	32520	13.68	0.38	0.14	5.13	0.37	65.90	1,049.00
	10/12/16 16:32:42	32550	13.64	0.29	0.16	5.14	0.37	65.90	1,049.00
	10/12/16 16:33:12	32580	13.69	0.22	0.20	5.14	0.37	65.60	1,050.00
	10/12/16 16:33:42	32610	13.79	0.23	0.20	5.06	0.37	65.60	1,050.00
	10/12/16 16:34:12	32640	13.71	0.23	0.17	5.11	0.37	65.70	1,050.00
	10/12/16 16:34:42	32670	13.78	0.23	0.18	5.07	0.37	65.70	1,050.00
	10/12/16 16:35:12	32700	13.74	0.23	0.17	5.07	0.37	65.70	1,044.00
	10/12/16 16:35:42	32730	13.67	0.23	0.19	5.13	0.37	65.70	1,044.00
	10/12/16 16:36:12	32760	13.70	0.23	0.20	5.11	0.37	65.70	1,042.00
	10/12/16 16:36:42	32790	13.72	0.19	0.19	5.09	0.37	65.70	1,042.00
	10/12/16 16:37:12	32820	13.64	0.20	0.20	5.13	0.37	65.80	1,039.00
	10/12/16 16:37:42	32850	13.81	0.20	0.21	5.04	0.37	65.80	1,039.00
	10/12/16 16:38:12	32880	13.91	0.20	0.20	4.98	0.34	66.00	997.00
	10/12/16 16:38:42	32910	13.76	0.20	0.16	5.07	0.34	66.00	997.00
	10/12/16 16:39:12	32940	13.75	0.20	0.19	5.08	0.32	66.00	963.00
	10/12/16 16:39:42	32970	13.84	0.24	0.21	5.04	0.32	66.00	963.00
	10/12/16 16:40:12	33000	14.28	0.23	0.21	4.75	0.32	66.00	961.00
	10/12/16 16:40:42	33030	14.43	0.30	0.20	4.63	0.32	66.00	961.00
	10/12/16 16:41:12	33060	14.36	0.38	0.19	4.66	0.32	66.00	961.00
	10/12/16 16:41:42	33090	14.43	0.32	0.20	4.64	0.32	66.00	961.00
	10/12/16 16:42:12	33120	14.41	0.36	0.18	4.64	0.36	65.90	1,030.00
	10/12/16 16:42:42	33150	14.47	0.42	0.19	4.59	0.36	65.90	1,030.00
A2	10/12/16 16:43:12	33180	14.30	0.42	0.19	4.69	0.37	65.70	1,044.00
	10/12/16 16:43:42	33210	14.06	0.41	0.20	4.86	0.37	65.70	1,044.00
	10/12/16 16:44:12	33240	13.88	0.27	0.21	5.01	0.38	65.60	1,053.00
	10/12/16 16:44:42	33270	13.86	0.20	0.19	5.00	0.38	65.60	1,053.00
	10/12/16 16:45:12	33300	13.88	0.20	0.20	5.01	0.38	65.40	1,051.00
	10/12/16 16:45:42	33330	13.74	0.20	0.21	5.09	0.38	65.40	1,051.00
	10/12/16 16:46:12	33360	13.72	0.18	0.21	5.10	0.38	65.30	1,051.00
	10/12/16 16:46:42	33390	13.80	0.10	0.20	5.05	0.38	65.30	1,051.00
	10/12/16 16:47:12	33420	13.72	0.10	0.20	5.10	0.38	65.30	1,051.00
	10/12/16 16:47:42	33450	13.79	0.13	0.21	5.07	0.38	65.30	1,051.00
	10/12/16 16:48:12	33480	13.79	0.13	0.20	5.05	0.38	65.20	1,049.00
	10/12/16 16:48:42	33510	13.70	0.09	0.21	5.11	0.38	65.20	1,049.00
	10/12/16 16:49:12	33540	13.73	0.10	0.21	5.10	0.37	65.20	1,048.00
	10/12/16 16:49:42	33570	13.80	0.13	0.18	5.04	0.37	65.20	1,048.00
	10/12/16 16:50:12	33600	13.81	0.21	0.17	5.05	0.37	65.20	1,043.00
	10/12/16 16:50:42	33630	13.86	0.10	0.17	5.02	0.37	65.20	1,043.00
	10/12/16 16:51:12	33660	13.94	0.10	0.16	4.96	0.38	65.20	1,046.00
	10/12/16 16:51:42	33690	13.84	0.09	0.17	4.99	0.38	65.20	1,046.00
	10/12/16 16:52:12	33720	13.76	0.09	0.14	5.10	0.38	65.20	1,043.00

Superior Fabrication, INC
SCD-60
Elk City Plant

Unit Data

Meas. Stack Moisture	5.4	%
Stack Exhaust Flow (M2)	209,862	SCFH

Weather Data

Barometric Pressure	28.14	in. Hg
Relative Humidity	54	%
Ambient Temperature	60	^{o}F
Specific Humidity	0.006292	lb H_2O / lb air

0-30-0 Load, Run - SCD-60 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. ^{o}F	Fuel Flow SCFH
	10/12/16 16:52:42	33750	13.86	0.13	0.11	4.99	0.38	65.20	1,043.00
	10/12/16 16:53:12	33780	13.79	0.12	0.10	5.05	0.38	65.20	1,040.00
	10/12/16 16:53:42	33810	13.74	0.12	0.11	5.10	0.38	65.20	1,040.00
	10/12/16 16:54:12	33840	13.78	0.12	0.12	5.04	0.38	65.20	1,040.00
	10/12/16 16:54:42	33870	13.80	0.10	0.12	5.06	0.38	65.20	1,040.00
	10/12/16 16:55:12	33900	13.85	0.11	0.11	5.01	0.35	65.30	1,004.00
	10/12/16 16:55:42	33930	13.85	0.20	0.14	5.01	0.35	65.30	1,004.00
	10/12/16 16:56:12	33960	13.90	0.20	0.14	4.98	0.33	65.40	968.00
	10/12/16 16:56:42	33990	14.12	0.23	0.16	4.84	0.33	65.40	968.00
	10/12/16 16:57:12	34020	14.33	0.21	0.19	4.67	0.33	65.40	965.00
	10/12/16 16:57:42	34050	14.17	0.23	0.21	4.78	0.33	65.40	965.00
	10/12/16 16:58:12	34080	14.13	0.22	0.19	4.80	0.34	65.40	965.00
	10/12/16 16:58:42	34110	14.19	0.21	0.21	4.77	0.34	65.40	965.00
	10/12/16 16:59:12	34140	14.26	0.26	0.19	4.72	0.34	65.40	963.00
	10/12/16 16:59:42	34170	14.24	0.29	0.13	4.74	0.34	65.40	963.00
	10/12/16 17:00:12	34200	14.23	0.29	0.12	4.74	0.34	65.30	987.00
	10/12/16 17:00:42	34230	14.65	0.31	0.16	4.48	0.34	65.30	987.00
	10/12/16 17:01:12	34260	14.27	0.32	0.11	4.68	0.38	65.30	1,049.00
	10/12/16 17:01:42	34290	14.05	0.30	0.11	4.85	0.38	65.30	1,049.00
	10/12/16 17:02:12	34320	13.89	0.26	0.14	4.97	0.38	65.20	1,051.00
	10/12/16 17:02:42	34350	13.92	0.20	0.16	4.96	0.38	65.20	1,051.00
A3	10/12/16 17:03:12	34380	13.85	0.20	0.20	4.99	0.39	65.10	1,052.00
	10/12/16 17:03:42	34410	13.71	0.14	0.14	5.12	0.39	65.10	1,052.00
	10/12/16 17:04:12	34440	13.71	0.12	0.15	5.11	0.38	65.10	1,055.00
	10/12/16 17:04:42	34470	13.72	0.12	0.13	5.09	0.38	65.10	1,055.00
	10/12/16 17:05:12	34500	13.73	0.12	0.20	5.10	0.39	65.10	1,058.00
	10/12/16 17:05:42	34530	13.76	0.10	0.15	5.06	0.39	65.10	1,058.00
	10/12/16 17:06:12	34560	13.62	0.10	0.10	5.16	0.39	65.10	1,058.00
	10/12/16 17:06:42	34590	13.60	0.13	0.12	5.18	0.39	65.10	1,058.00
	10/12/16 17:07:12	34620	13.62	0.13	0.13	5.16	0.40	65.00	1,077.00
	10/12/16 17:07:42	34650	13.77	0.10	0.15	5.07	0.40	65.00	1,077.00
	10/12/16 17:08:12	34680	13.76	0.10	0.13	5.06	0.39	65.10	1,066.00
	10/12/16 17:08:42	34710	13.80	0.15	0.12	5.05	0.39	65.10	1,066.00
	10/12/16 17:09:12	34740	13.68	0.11	0.18	5.10	0.38	65.30	1,056.00
	10/12/16 17:09:42	34770	13.58	0.12	0.16	5.18	0.38	65.30	1,056.00
	10/12/16 17:10:12	34800	13.60	0.11	0.13	5.16	0.39	65.40	1,062.00
	10/12/16 17:10:42	34830	13.42	0.04	0.11	5.29	0.39	65.40	1,062.00
	10/12/16 17:11:12	34860	13.68	0.06	0.13	5.13	0.39	65.40	1,060.00
	10/12/16 17:11:42	34890	13.53	0.04	0.11	5.21	0.39	65.40	1,060.00
	10/12/16 17:12:12	34920	13.56	0.00	0.11	5.20	0.38	65.40	1,053.00
	10/12/16 17:12:42	34950	13.55	-0.01	0.15	5.21	0.38	65.40	1,053.00
	10/12/16 17:13:12	34980	13.40	-0.01	0.13	5.29	0.39	65.40	1,054.00
	10/12/16 17:13:42	35010	13.69	0.02	0.11	5.12	0.39	65.40	1,054.00
	10/12/16 17:14:12	35040	13.77	0.07	0.11	5.02	0.35	65.40	993.00
	10/12/16 17:14:42	35070	13.60	0.12	0.11	5.16	0.35	65.40	993.00
	10/12/16 17:15:12	35100	13.76	0.08	0.12	5.08	0.34	65.40	963.00
	10/12/16 17:15:42	35130	13.89	0.06	0.12	4.99	0.34	65.40	963.00
	10/12/16 17:16:12	35160	14.34	0.15	0.13	4.69	0.33	65.50	959.00
	10/12/16 17:16:42	35190	14.27	0.23	0.10	4.72	0.33	65.50	959.00
	10/12/16 17:17:12	35220	14.34	0.23	0.10	4.67	0.37	65.50	1,034.00
	10/12/16 17:17:42	35250	14.38	0.25	0.10	4.63	0.37	65.50	1,034.00
	10/12/16 17:18:12	35280	14.39	0.30	0.12	4.62	0.38	65.50	1,048.00
	10/12/16 17:18:42	35310	14.16	0.30	0.12	4.79	0.38	65.50	1,048.00
	10/12/16 17:19:12	35340	13.73	0.20	0.14	5.05	0.38	65.40	1,049.00
	10/12/16 17:19:42	35370	13.93	0.09	0.16	4.95	0.38	65.40	1,049.00
	10/12/16 17:20:12	35400	13.66	0.09	0.20	5.14	0.38	65.30	1,049.00
	10/12/16 17:20:42	35430	13.64	0.13	0.21	5.14	0.38	65.30	1,049.00
	10/12/16 17:21:12	35460	13.74	0.13	0.20	5.08	0.38	65.20	1,052.00
	10/12/16 17:21:42	35490	13.78	0.12	0.19	5.06	0.38	65.20	1,052.00
	10/12/16 17:22:12	35520	13.88	0.12	0.20	4.98	0.38	65.20	1,049.00
	10/12/16 17:22:42	35550	13.99	0.10	0.20	4.92	0.38	65.20	1,049.00

Superior Fabrication, INC
SCD-60
Elk City Plant

Unit Data

Meas. Stack Moisture	5.4	%
Stack Exhaust Flow (M2)	209,862	SCFH

Weather Data

Barometric Pressure	28.14	in. Hg
Relative Humidity	54	%
Ambient Temperature	60	^{o}F
Specific Humidity	0.006292	lb H_2O / lb air

0-30-0 Load, Run - SCD-60 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. ^{o}F	Fuel Flow SCFH
10/12/16 17:23:12	35580	14.01	0.10	0.20	4.92	0.38	65.10	1,049.00
10/12/16 17:23:42	35610	13.84	0.09	0.18	4.98	0.38	65.10	1,049.00
10/12/16 17:24:12	35640	13.73	0.09	0.19	5.09	0.40	65.10	1,058.00
10/12/16 17:24:42	35670	13.73	0.10	0.16	5.08	0.40	65.10	1,058.00
10/12/16 17:25:12	35700	13.74	0.06	0.15	5.08	0.39	65.10	1,052.00
10/12/16 17:25:42	35730	13.69	0.13	0.14	5.12	0.39	65.10	1,052.00
10/12/16 17:26:12	35760	13.73	0.13	0.14	5.08	0.40	65.10	1,058.00
10/12/16 17:26:42	35790	13.60	0.07	0.16	5.17	0.40	65.10	1,058.00
10/12/16 17:27:12	35820	13.75	0.00	0.16	5.08	0.39	65.10	1,058.00
10/12/16 17:27:42	35850	13.61	0.10	0.12	5.15	0.39	65.10	1,058.00
10/12/16 17:28:12	35880	13.69	0.06	0.12	5.12	0.40	65.10	1,056.00
10/12/16 17:28:42	35910	13.62	0.09	0.10	5.14	0.40	65.10	1,056.00
10/12/16 17:29:12	35940	13.70	0.02	0.17	5.14	0.38	65.10	1,052.00
10/12/16 17:29:42	35970	13.67	-0.01	0.20	5.11	0.38	65.10	1,052.00
10/12/16 17:30:12	36000	13.79	0.04	0.20	5.05	0.39	65.10	1,052.00
10/12/16 17:30:42	36030	13.85	0.06	0.21	5.01	0.39	65.10	1,052.00
10/12/16 17:31:12	36060	13.66	0.08	0.21	5.11	0.33	65.10	952.00
10/12/16 17:31:42	36090	13.73	0.10	0.18	5.09	0.33	65.10	952.00
10/12/16 17:32:12	36120	13.86	0.09	0.16	5.02	0.34	65.10	966.00
RAW AVERAGE		**13.92**	**0.81**	**0.16**	**4.96**	**0.37**	**65.57**	**1,029.86**

		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	1434717	1434717	1434717
		(%)	(ppmvd)	(ppmvw)	(%)	(in. H_2O)	(^{o}F)	(SCFH)
Bias	Initial Zero	0.03	0.02	0.09	0.08			
	Final Zero	-0.02	-0.02	0.11	0.07			
	Avg. Zero	0.01	0.00	0.10	0.08			
	Initial UpScale	11.96	9.22	4.99	8.97			
	Final UpScale	11.98	9.17	4.96	8.99			
	Avg. UpScale	11.97	9.20	4.98	8.98			
Upscale Cal Gas		11.90	9.21	5.01	8.95			

EMISSIONS DATA	O_2	CO	THC	CO_2
Corrected Raw Average (ppm/% dry basis)	13.83	0.81	0.07	4.91
Corrected Raw Average (ppm/% wet basis)	13.08	0.77	0.06	4.64
Emission Rate (lb/hr)	N/A	0.01	0.00	N/A

Superior Fabrication, INC
October 12, 2016
SCD-60
Elk City Plant

Unit Data

Meas. Stack Moisture	5.1	%
Stack Exhaust Flow (M2)	182,803	SCFH

Weather Data

Barometric Pressure	28.14	in. Hg
Relative Humidity	52	%
Ambient Temperature	59	^{o}F
Specific Humidity	0.005843	lb H_2O / lb air

0-30-0 Load, Run - SCD-60 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. ^{o}F	Fuel Flow SCFH
A1	10/12/16 17:42:12	36720	14.50	1.23	0.19	4.57	0.33	65.10	966.00
	10/12/16 17:42:42	36750	14.31	1.39	0.17	4.70	0.33	65.10	966.00
	10/12/16 17:43:12	36780	14.34	1.40	0.14	4.67	0.33	65.00	963.00
	10/12/16 17:43:42	36810	14.37	1.50	0.11	4.65	0.33	65.00	963.00
	10/12/16 17:44:12	36840	14.31	1.69	0.13	4.70	0.36	64.90	1,024.00
	10/12/16 17:44:42	36870	15.49	1.81	0.20	4.76	0.36	64.90	1,024.00
	10/12/16 17:45:12	36900	15.03	1.69	0.18	5.15	0.38	64.90	1,055.00
	10/12/16 17:45:42	36930	14.33	1.05	0.19	5.06	0.38	64.90	1,055.00
	10/12/16 17:46:12	36960	13.91	0.75	0.21	4.93	0.39	64.80	1,050.00
	10/12/16 17:46:42	36990	13.79	0.75	0.13	5.04	0.39	64.80	1,050.00
	10/12/16 17:47:12	37020	13.77	0.66	0.15	5.03	0.39	64.80	1,053.00
	10/12/16 17:47:42	37050	13.86	0.59	0.15	5.00	0.39	64.80	1,053.00
	10/12/16 17:48:12	37080	13.91	0.55	0.16	4.94	0.38	64.80	1,055.00
	10/12/16 17:48:42	37110	13.91	0.59	0.17	4.95	0.38	64.80	1,055.00
	10/12/16 17:49:12	37140	13.81	0.52	0.13	5.00	0.39	64.70	1,056.00
	10/12/16 17:49:42	37170	13.82	0.49	0.17	5.00	0.39	64.70	1,056.00
	10/12/16 17:50:12	37200	13.71	0.44	0.21	5.07	0.39	64.70	1,053.00
	10/12/16 17:50:42	37230	13.83	0.39	0.20	5.00	0.39	64.70	1,053.00
	10/12/16 17:51:12	37260	13.86	0.42	0.17	4.97	0.38	64.70	1,052.00
	10/12/16 17:51:42	37290	13.91	0.41	0.13	4.95	0.38	64.70	1,052.00
	10/12/16 17:52:12	37320	13.78	0.39	0.11	5.02	0.39	64.70	1,053.00
	10/12/16 17:52:42	37350	13.89	0.38	0.15	4.97	0.39	64.70	1,053.00
	10/12/16 17:53:12	37380	13.82	0.39	0.14	4.97	0.39	64.70	1,058.00
	10/12/16 17:53:42	37410	13.77	0.31	0.11	5.03	0.39	64.70	1,058.00
	10/12/16 17:54:12	37440	13.80	0.30	0.15	5.03	0.39	64.60	1,058.00
	10/12/16 17:54:42	37470	13.82	0.38	0.13	4.99	0.39	64.60	1,058.00
	10/12/16 17:55:12	37500	13.67	0.29	0.19	5.09	0.40	64.50	1,059.00
	10/12/16 17:55:42	37530	13.64	0.23	0.17	5.11	0.40	64.50	1,059.00
	10/12/16 17:56:12	37560	13.80	0.22	0.16	5.03	0.39	64.50	1,059.00
	10/12/16 17:56:42	37590	13.97	0.17	0.20	4.90	0.39	64.50	1,059.00
	10/12/16 17:57:12	37620	13.83	0.20	0.16	4.99	0.40	64.40	1,063.00
	10/12/16 17:57:42	37650	13.91	0.20	0.14	4.93	0.40	64.40	1,063.00
	10/12/16 17:58:12	37680	13.72	0.12	0.12	5.09	0.40	64.40	1,065.00
	10/12/16 17:58:42	37710	13.75	0.12	0.16	5.05	0.40	64.40	1,065.00
	10/12/16 17:59:12	37740	13.80	0.13	0.18	5.01	0.40	64.40	1,060.00
	10/12/16 17:59:42	37770	13.70	0.12	0.16	5.09	0.40	64.40	1,060.00
	10/12/16 18:00:12	37800	13.87	0.12	0.15	4.98	0.36	64.40	1,001.00
	10/12/16 18:00:42	37830	14.19	0.11	0.12	4.78	0.36	64.40	1,001.00
	10/12/16 18:01:12	37860	14.43	0.24	0.11	4.61	0.34	64.50	967.00
	10/12/16 18:01:42	37890	14.39	0.35	0.11	4.59	0.34	64.50	967.00
	10/12/16 18:02:12	37920	14.38	0.30	0.10	4.62	0.34	64.60	969.00
A2	10/12/16 18:02:42	37950	14.38	0.30	0.11	4.63	0.34	64.60	969.00
	10/12/16 18:03:12	37980	14.46	0.35	0.13	4.57	0.34	64.70	967.00
	10/12/16 18:03:42	38010	14.50	0.41	0.15	4.54	0.34	64.70	967.00
	10/12/16 18:04:12	38040	14.08	0.39	0.14	4.77	0.38	64.70	1,050.00
	10/12/16 18:04:42	38070	13.66	0.24	0.16	5.10	0.38	64.70	1,050.00
	10/12/16 18:05:12	38100	13.95	0.12	0.17	4.90	0.37	64.60	1,036.00
	10/12/16 18:05:42	38130	13.86	0.18	0.19	4.95	0.37	64.60	1,036.00
	10/12/16 18:06:12	38160	14.00	0.19	0.19	4.88	0.38	64.50	1,047.00
	10/12/16 18:06:42	38190	13.86	0.19	0.12	4.94	0.38	64.50	1,047.00
	10/12/16 18:07:12	38220	13.75	0.13	0.12	5.03	0.40	64.50	1,057.00
	10/12/16 18:07:42	38250	13.73	0.10	0.17	5.05	0.40	64.50	1,057.00
	10/12/16 18:08:12	38280	13.82	0.10	0.12	5.00	0.38	64.40	1,053.00
	10/12/16 18:08:42	38310	13.92	0.11	0.11	4.93	0.38	64.40	1,053.00
	10/12/16 18:09:12	38340	14.13	0.16	0.11	4.79	0.39	64.30	1,051.00
	10/12/16 18:09:42	38370	14.00	0.23	0.16	4.86	0.39	64.30	1,051.00
	10/12/16 18:10:12	38400	13.81	0.20	0.20	5.00	0.39	64.30	1,059.00
	10/12/16 18:10:42	38430	13.82	0.09	0.15	5.01	0.39	64.30	1,059.00
	10/12/16 18:11:12	38460	13.84	0.15	0.13	4.97	0.39	64.20	1,057.00
	10/12/16 18:11:42	38490	13.77	0.17	0.11	5.03	0.39	64.20	1,057.00

Superior Fabrication, INC
October 12, 2016
SCD-60
Elk City Plant

Unit Data

Meas. Stack Moisture	5.1	%
Stack Exhaust Flow (M2)	182,803	SCFH

Weather Data

Barometric Pressure	28.14	in. Hg
Relative Humidity	52	%
Ambient Temperature	59	^{o}F
Specific Humidity	0.005843	lb H_2O / lb air

0-30-0 Load, Run - SCD-60 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. ^{o}F	Fuel Flow SCFH
	10/12/16 18:12:12	38520	13.75	0.12	0.13	5.05	0.39	64.10	1,054.00
	10/12/16 18:12:42	38550	13.77	0.14	0.13	5.04	0.39	64.10	1,054.00
	10/12/16 18:13:12	38580	13.78	0.09	0.11	5.03	0.39	64.10	1,060.00
	10/12/16 18:13:42	38610	13.85	0.12	0.15	4.98	0.39	64.10	1,060.00
	10/12/16 18:14:12	38640	13.89	0.12	0.16	4.96	0.40	64.10	1,055.00
	10/12/16 18:14:42	38670	13.84	0.12	0.16	4.98	0.40	64.10	1,055.00
	10/12/16 18:15:12	38700	13.79	0.18	0.16	5.03	0.39	64.10	1,057.00
	10/12/16 18:15:42	38730	13.86	0.16	0.13	4.97	0.39	64.10	1,057.00
	10/12/16 18:16:12	38760	13.80	0.21	0.11	5.01	0.37	64.10	1,037.00
	10/12/16 18:16:42	38790	13.76	0.16	0.11	5.06	0.37	64.10	1,037.00
	10/12/16 18:17:12	38820	14.09	0.15	0.12	4.85	0.33	64.10	962.00
	10/12/16 18:17:42	38850	14.28	0.24	0.11	4.67	0.33	64.10	962.00
	10/12/16 18:18:12	38880	14.40	0.34	0.13	4.63	0.34	64.10	970.00
	10/12/16 18:18:42	38910	14.47	0.42	0.12	4.53	0.34	64.10	970.00
	10/12/16 18:19:12	38940	14.40	0.50	0.12	4.62	0.34	64.10	971.00
	10/12/16 18:19:42	38970	14.48	0.52	0.11	4.56	0.34	64.10	971.00
	10/12/16 18:20:12	39000	14.34	0.58	0.12	4.59	0.40	64.20	1,063.00
	10/12/16 18:20:42	39030	14.05	0.48	0.13	4.85	0.40	64.20	1,063.00
	10/12/16 18:21:12	39060	14.11	0.31	0.12	4.80	0.39	64.10	1,057.00
	10/12/16 18:21:42	39090	14.04	0.33	0.11	4.83	0.39	64.10	1,057.00
	10/12/16 18:22:12	39120	13.93	0.27	0.12	4.95	0.39	64.00	1,055.00
A3	10/12/16 18:22:42	39150	14.10	0.25	0.14	4.79	0.39	64.00	1,055.00
	10/12/16 18:23:12	39180	13.82	0.26	0.12	5.00	0.39	64.00	1,057.00
	10/12/16 18:23:42	39210	13.95	0.23	0.15	4.95	0.39	64.00	1,057.00
	10/12/16 18:24:12	39240	14.17	0.22	0.12	4.76	0.39	63.90	1,063.00
	10/12/16 18:24:42	39270	14.13	0.29	0.13	4.77	0.39	63.90	1,063.00
	10/12/16 18:25:12	39300	14.08	0.29	0.13	4.84	0.39	63.80	1,055.00
	10/12/16 18:25:42	39330	14.02	0.29	0.12	4.87	0.39	63.80	1,055.00
	10/12/16 18:26:12	39360	14.04	0.32	0.11	4.84	0.39	63.80	1,055.00
	10/12/16 18:26:42	39390	13.97	0.21	0.12	4.92	0.39	63.80	1,055.00
	10/12/16 18:27:12	39420	14.08	0.20	0.12	4.79	0.39	63.80	1,058.00
	10/12/16 18:27:42	39450	14.04	0.25	0.11	4.87	0.39	63.80	1,058.00
	10/12/16 18:28:12	39480	14.05	0.30	0.12	4.85	0.39	63.80	1,058.00
	10/12/16 18:28:42	39510	14.50	0.29	0.17	4.51	0.39	63.80	1,058.00
	10/12/16 18:29:12	39540	14.22	0.29	0.12	4.72	0.39	63.70	1,055.00
	10/12/16 18:29:42	39570	14.09	0.27	0.11	4.82	0.39	63.70	1,055.00
	10/12/16 18:30:12	39600	14.14	0.30	0.12	4.78	0.39	63.80	1,058.00
	10/12/16 18:30:42	39630	13.94	0.29	0.13	4.93	0.39	63.80	1,058.00
	10/12/16 18:31:12	39660	14.03	0.30	0.12	4.85	0.39	63.80	1,058.00
	10/12/16 18:31:42	39690	14.05	0.30	0.11	4.79	0.39	63.80	1,058.00
	10/12/16 18:32:12	39720	13.98	0.30	0.12	4.85	0.39	63.80	1,061.00
	10/12/16 18:32:42	39750	13.89	0.31	0.12	4.93	0.39	63.80	1,061.00
	10/12/16 18:33:12	39780	14.14	0.35	0.13	4.76	0.40	63.80	1,058.00
	10/12/16 18:33:42	39810	14.13	0.39	0.15	4.79	0.40	63.80	1,058.00
	10/12/16 18:34:12	39840	14.04	0.42	0.15	4.79	0.39	63.80	1,055.00
	10/12/16 18:34:42	39870	13.95	0.42	0.11	4.89	0.39	63.80	1,055.00
	10/12/16 18:35:12	39900	14.05	0.42	0.13	4.83	0.36	63.80	1,002.00
	10/12/16 18:35:42	39930	14.50	0.48	0.16	4.55	0.36	63.80	1,002.00
	10/12/16 18:36:12	39960	14.38	0.57	0.10	4.56	0.34	63.90	968.00
	10/12/16 18:36:42	39990	14.46	0.65	0.12	4.55	0.34	63.90	968.00
	10/12/16 18:37:12	40020	14.72	0.78	0.14	4.36	0.34	64.00	968.00
	10/12/16 18:37:42	40050	14.64	0.91	0.12	4.40	0.34	64.00	968.00
	10/12/16 18:38:12	40080	14.57	1.02	0.10	4.47	0.36	64.00	996.00
	10/12/16 18:38:42	40110	14.47	0.99	0.11	4.49	0.36	64.00	996.00
	10/12/16 18:39:12	40140	14.23	0.93	0.14	4.71	0.40	64.00	1,058.00
	10/12/16 18:39:42	40170	13.98	0.67	0.12	4.84	0.40	64.00	1,058.00
	10/12/16 18:40:12	40200	13.91	0.53	0.12	4.92	0.39	64.00	1,060.00
	10/12/16 18:40:42	40230	14.27	0.42	0.14	4.66	0.39	64.00	1,060.00
	10/12/16 18:41:12	40260	13.98	0.41	0.15	4.87	0.39	63.90	1,052.00
	10/12/16 18:41:42	40290	14.01	0.34	0.14	4.81	0.39	63.90	1,052.00

Superior Fabrication, INC
October 12, 2016
SCD-60
Elk City Plant

Unit Data

Meas. Stack Moisture	5.1	%
Stack Exhaust Flow (M2)	182,803	SCFH

Weather Data

Barometric Pressure	28.14	in. Hg
Relative Humidity	52	%
Ambient Temperature	59	°F
Specific Humidity	0.005843	lb H_2O / lb air

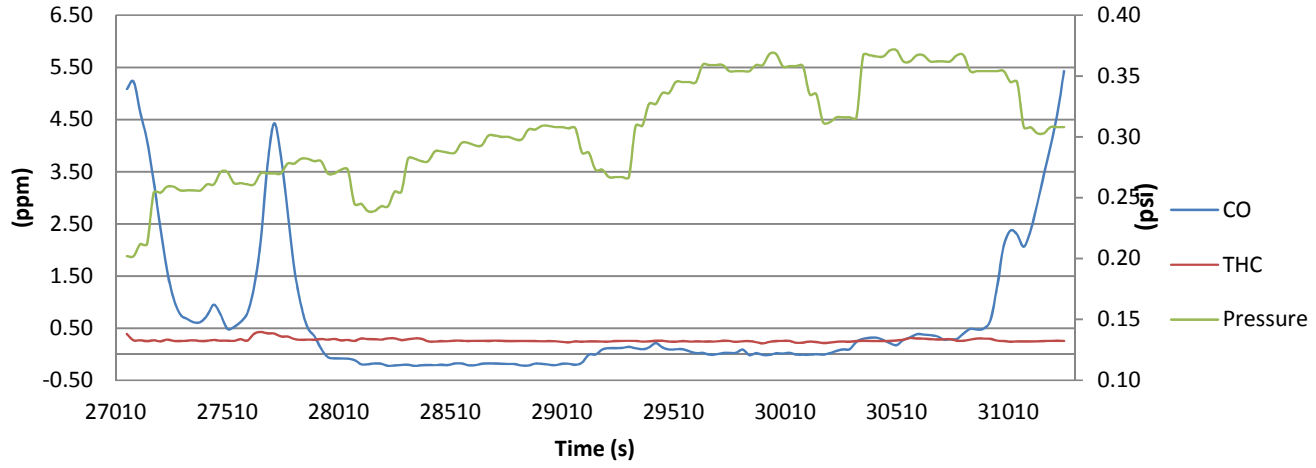
0-30-0 Load, Run - SCD-60 R3

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
10/12/16 18:42:12	40320	13.92	0.41	0.11	4.91	0.39	63.80	1,052.00
10/12/16 18:42:42	40350	14.23	0.42	0.12	4.72	0.39	63.80	1,052.00
10/12/16 18:43:12	40380	14.02	0.42	0.10	4.81	0.40	63.80	1,072.00
10/12/16 18:43:42	40410	13.79	0.40	0.10	4.99	0.40	63.80	1,072.00
10/12/16 18:44:12	40440	13.99	0.33	0.11	4.88	0.40	63.70	1,064.00
10/12/16 18:44:42	40470	14.36	0.29	0.13	4.62	0.40	63.70	1,064.00
10/12/16 18:45:12	40500	14.09	0.39	0.11	4.78	0.40	63.70	1,061.00
10/12/16 18:45:42	40530	14.11	0.33	0.10	4.78	0.40	63.70	1,061.00
10/12/16 18:46:12	40560	14.14	0.37	0.10	4.76	0.39	63.60	1,061.00
10/12/16 18:46:42	40590	14.07	0.40	0.12	4.82	0.39	63.60	1,061.00
10/12/16 18:47:12	40620	14.07	0.34	0.12	4.79	0.40	63.60	1,062.00
10/12/16 18:47:42	40650	14.38	0.33	0.15	4.66	0.40	63.60	1,062.00
10/12/16 18:48:12	40680	14.14	0.33	0.12	4.70	0.40	63.60	1,062.00
10/12/16 18:48:42	40710	14.17	0.29	0.10	4.75	0.40	63.60	1,062.00
10/12/16 18:49:12	40740	14.28	0.37	0.10	4.66	0.38	63.60	1,033.00
10/12/16 18:49:42	40770	13.98	0.39	0.12	4.87	0.38	63.60	1,033.00
10/12/16 18:50:12	40800	14.60	0.36	0.14	4.47	0.35	63.60	983.00
10/12/16 18:50:42	40830	14.70	0.51	0.12	4.39	0.35	63.60	983.00
10/12/16 18:51:12	40860	14.89	0.69	0.14	4.28	0.34	63.80	966.00
10/12/16 18:51:42	40890	14.94	0.88	0.12	4.22	0.34	63.80	966.00
10/12/16 18:52:12	40920	14.93	1.15	0.13	4.25	0.33	63.90	968.00
RAW AVERAGE		**14.09**	**0.42**	**0.14**	**4.83**	**0.38**	**64.19**	**1,037.62**

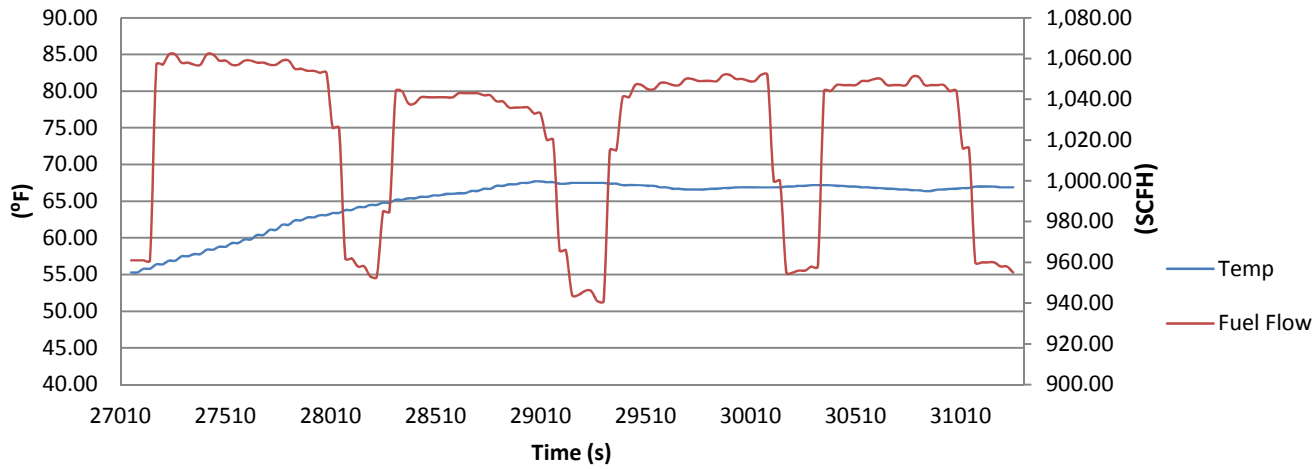
		O_2	CO	THC	CO_2	Press. Trans	Temp. Trans.	F-Flow Trans.
	Serial Number:	INSTO2-0011	INST-CO-0022	INST-TH-0002	INST-C2-0013	1434717	1434717	1434717
		(%)	(ppmvd)	(ppmvw)	(%)	(in. H_2O)	(°F)	(SCFH)
Bias	Initial Zero	-0.02	-0.02	0.11	0.07			
	Final Zero	-0.04	0.01	0.07	0.11			
	Avg. Zero	-0.03	-0.01	0.09	0.09			
	Initial UpScale	11.98	9.17	4.96	8.99			
	Final UpScale	11.96	9.12	4.96	8.88			
	Avg. UpScale	11.97	9.15	4.96	8.94			
Upscale Cal Gas		11.90	9.21	5.01	8.95			

EMISSIONS DATA	O_2	CO	THC	CO_2
Corrected Raw Average (ppm/% dry basis)	14.00	0.42	0.05	4.79
Corrected Raw Average (ppm/% wet basis)	13.29	0.40	0.04	4.55
Emission Rate (lb/hr)	N/A	0.01	0.00	N/A

SCD-60 R1



SCD-60 R1



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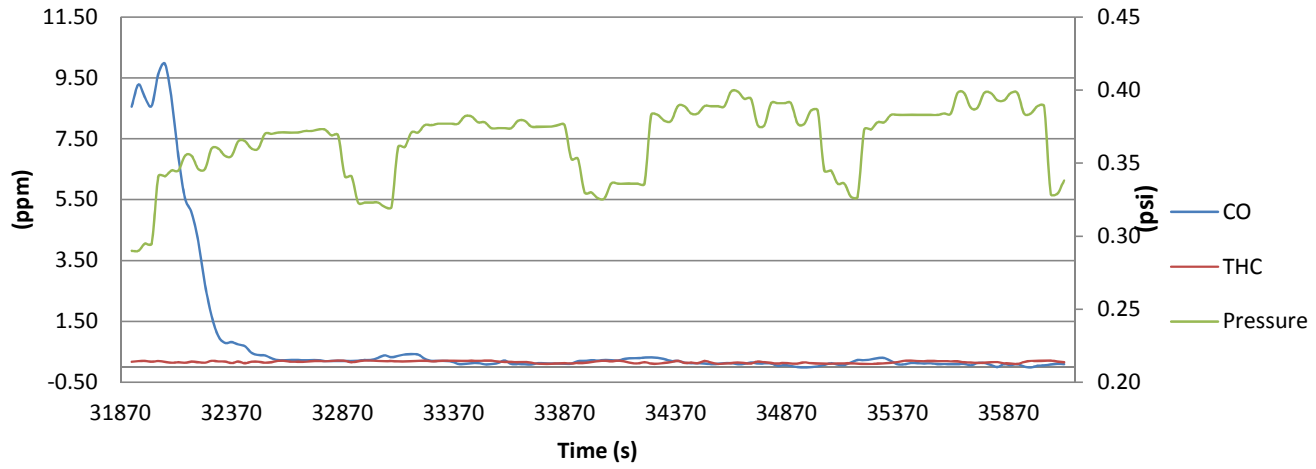

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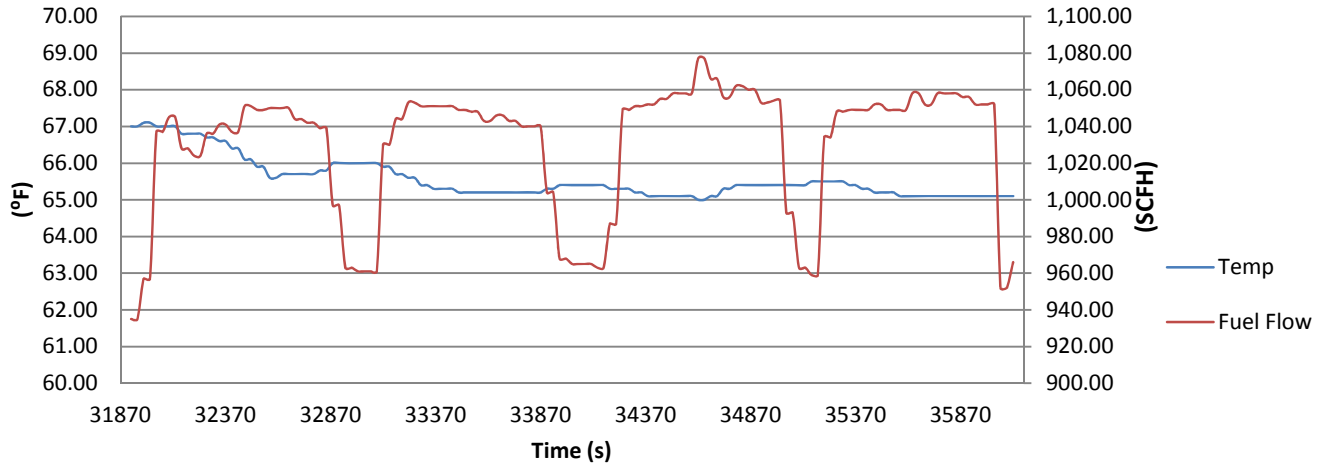

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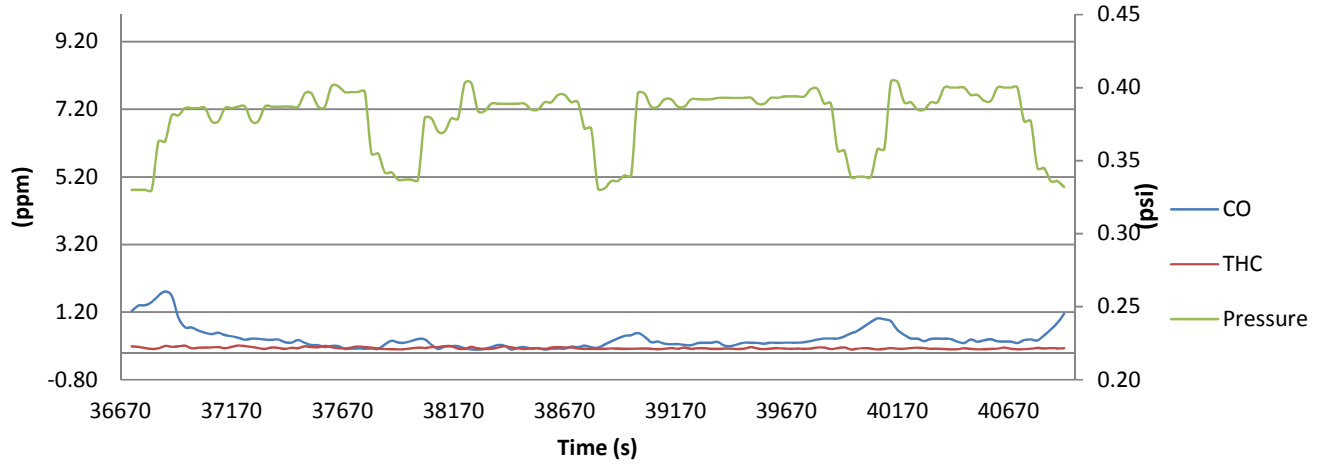

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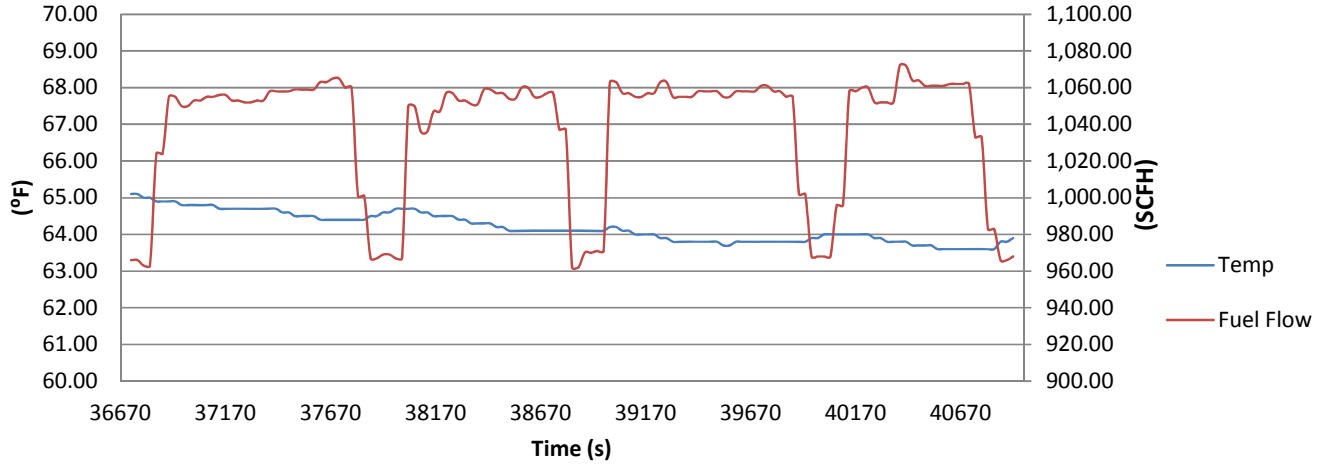

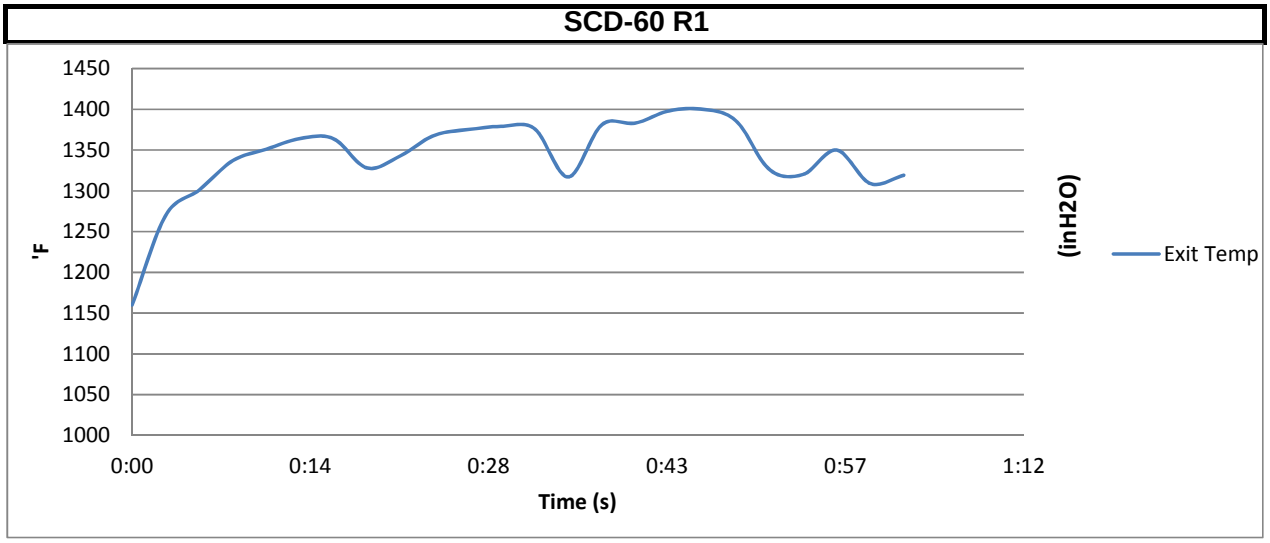
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1300
1250
1200
1150
1100
1050
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0:00
0:14
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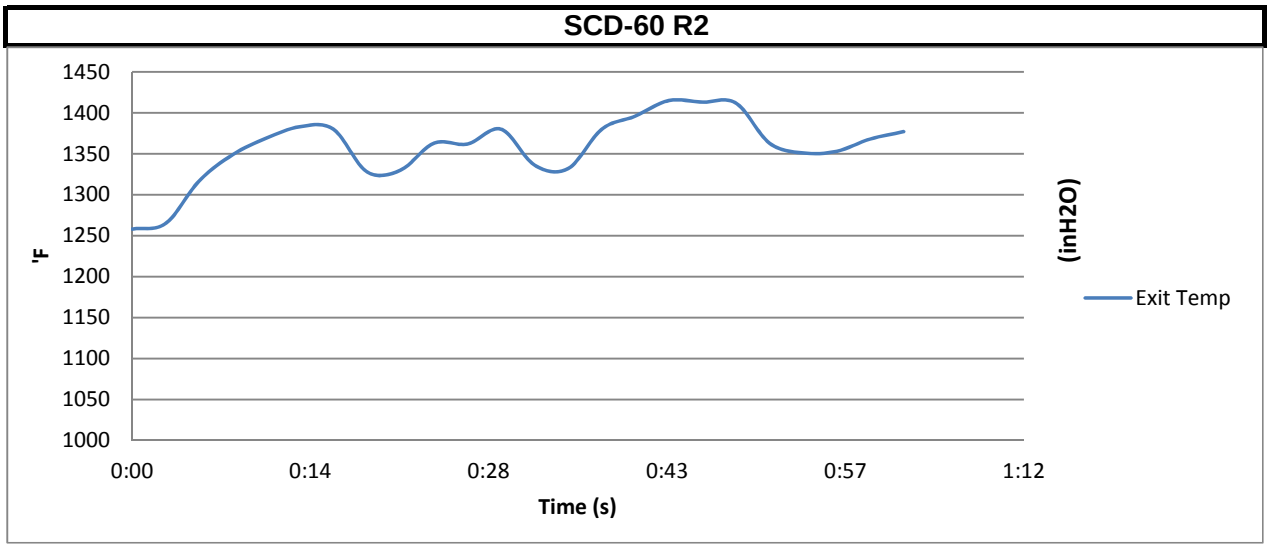
0:43
0:57
1:12
Time (s)
(inH2O)
Exit Temp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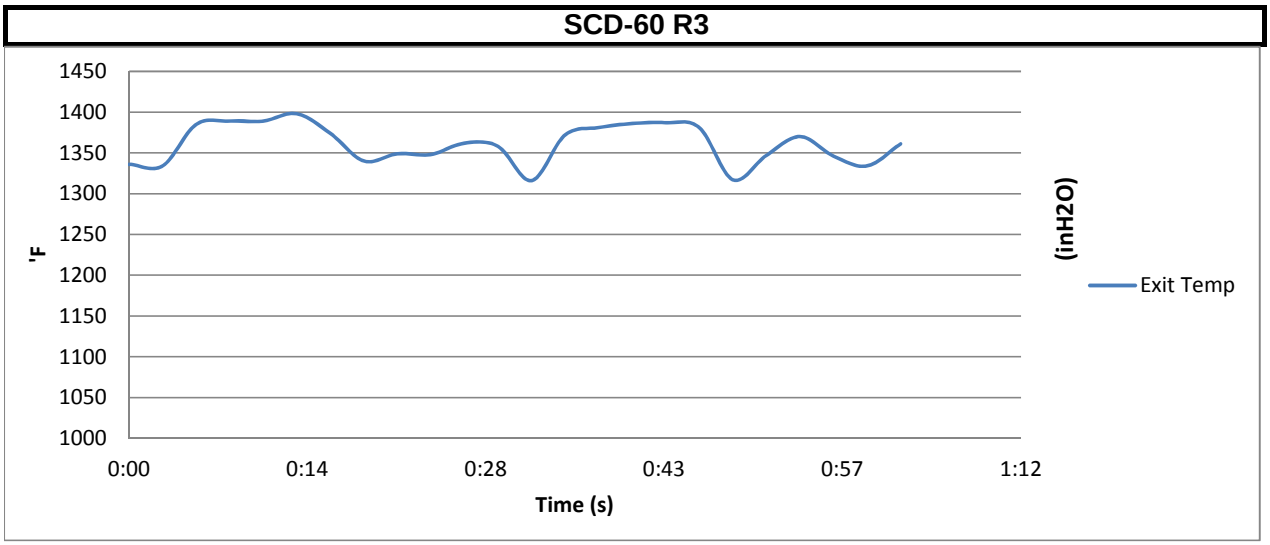
Time (s)
(inH2O)
Exit Temp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1250
1200
1150
1100
1050
1000
'F
0:00
0:14
0:28
0:43
0:57
1:12
Time (s)
(inH2O)
Exit Temp

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	Elk City Facilty
Sampling Location	SCD-60
Fuel Type	Gas, Propene

Test Information			
Project #		sfi-elkcity.ok-comp#1	
Operator		TW	
Date for Preliminary Run	(mm/dd/yy)	10/10-11/16	
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		SCD-48	
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)	10/10/16	10/10/16	10/11/16	
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-0003	SAMP-SP-0001	SAMP-SP-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-0032	SAMP-BC-0032	SAMP-BC-0032	

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	Elk City Facilty
Sampling Location	SCD-60
Project #	sfi-elkcity.ok-comp#1

Historical Data	**30-70-30%-4**	**30-70-30%-5**	**30-70-30%-6**	**Average**	**Units**
Run Start Time	16:10	17:32	08:03		hh:mm
Run Stop Time	17:19	18:41	09:11		hh:mm
Test Date	10/10/16	10/10/16	10/11/16		mm/dd/yy
Meter Calibration Factor	0.989	0.989	0.989		
Pitot Tube Coefficient	0.840	0.840	0.840		
Initial Meter Volume	231.300	280.800	330.600		ft^3
Final Meter Volume	280.130	330.180	379.130		ft^3
Total Meter Volume	48.830	49.380	48.530	48.913	ft^3
Total Sampling Time	65.00	65.00	65.00	65.00	min
Average Meter Temperature	71.21	76.44	68.44	72.03	°F
Average Stack Temperature	1507.29	1477.88	1388.88	1458.01	°F
Barometric Pressure	28.10	28.01	27.99	28.03	in Hg
Stack Static Pressure	0.00	0.00	0.00	0.00	in H_2O
Absolute Stack Pressure	28.10	28.01	27.99	28.03	in Hg
Average Orifice Pressure Drop	1.50	1.50	1.50	1.50	in H_2O
Absolute Meter Pressure	28.22	28.13	28.11	28.15	in Hg
Avg Square Root Pitot Pressure	0.19	0.12	0.11	0.14	$\sqrt{(in\ H_2O)}$
Moisture Content Data	**30-70-30%-4**	**30-70-30%-5**	**30-70-30%-6**	**Average**	**Units**
Impinger Water Weight Gain	47.20	45.50	46.10	46.27	g
Silica Gel Weight Gain	13.70	12.70	14.00	13.47	g
Total Water Volume Collected	61.01	58.30	60.21	59.84	ml
Standard Water Vapor Volume	2.87	2.74	2.83	2.82	scf
Standard Meter Volume	45.3	45.2	45.0	45.2	dscf
Calculated Stack Moisture	5.97	5.73	5.92	5.87	%
Saturated Stack Moisture	100.00	100.00	100.00	100.00	%
Reported Stack Moisture Content	5.97	5.73	5.92	5.87	%
Method 3C Gas Analysis Data	**30-70-30%-4**	**30-70-30%-5**	**30-70-30%-6**	**Average**	**Units**
Carbon Dioxide Content	5.4	4.7	4.5	4.8	%
Oxygen Content	14.1	15.2	15.4	14.9	%
Nitrogen Content	80.5	80.2	80.1	80.3	%
Stack Dry Molecular Weight	29.42	29.35	29.33	29.37	lb/lb-mole
Stack Wet Molecular Weight	28.74	28.70	28.66	28.70	lb/lb-mole
Percent Excess Air	196.9	255.1	267.5	239.8	%
Volumetric Flow Rate Data	**30-70-30%-4**	**30-70-30%-5**	**30-70-30%-6**	**Average**	**Units**
Average Stack Gas Velocity	21.13	13.84	11.45	15.47	ft/sec
Stack Cross-Sectional Area	21.65	21.65	21.65	21.65	ft^2
Actual Stack Flow Rate	27,451	17,978	14,869	20,099	acfm
Wet Standard Stack Flow Rate	415	275	238	310	wkscfh
Dry Standard Stack Flow Rate	390,394	259,378	224,237	291,336	dscfh

METHOD 3C - DETERMINATION OF DRY MOLECULAR WEIGHT BY ANALYZER

Plant Name	Elk City Facilty	**Preliminary Date**	10/10-11/16		
Sampling Location	SCD-60	**Operator**	TW		
Project #	sfi-elkcity.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**	10/10/16	**Run Start Time**	16:10	**Run Stop Time**	17:19
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		%	
01:09	5.4	14.1	0.0	80.5	29.42	1.266	196.9	N/A

Gas Analysis Data								
Run Number	30-70-30%-5		**Date**	10/10/16	**Run Start Time**	17:32	**Run Stop Time**	18:41
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		%	
01:09	4.7	15.2	0.0	80.2	29.35	1.226	255.1	N/A

Gas Analysis Data								
Run Number	30-70-30%-6		**Date**	10/11/16	**Run Start Time**	08:03	**Run Stop Time**	09:11
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	4.5	15.4	0.0	80.1	29.33	1.233	267.5	N/A

METHOD 4 - DETERMINATION OF MOISTURE CONTENT IN STACK GASES

Plant Name	Elk City Facilty	**Preliminary Date**	10/10-11/16
Sampling Location	SCD-60	**Operator**	TW
Project #	sfi-elkcity.ok-comp#1	**Ports Used**	2

Scale Daily Calibration					
Scale Number	SAMP-SC-0027	**Standard**	**Result**	**Difference**	**Pass/Fail**
Date		(g)	(g)	(g)	(± 0.5 g)
Test Day 1	10/10/16	500	500.1	-0.5	Pass
Test Day 2	10/11/16	500	499.8	-0.5	Pass

Moisture Content Data									
Run Number		30-70-30%-4		**Date**	10/10/16	**Start Time**	16:10	**Stop Time**	17:19
Meter Box Number		SAMP-CP-0011				**Meter Cal Factor**	(Y)	0.989	
Total Meter Volume		(V_m)	48.830	dcf		**Barometric Pressure**	(P_b)	28.10	in Hg
Average Stack Temp		$(t_s)_{avg}$	1507	°F		**Stack Static Pressure**	(P_{static})	0.00	in H_2O
Average Meter Temp		$(t_m)_{avg}$	71	°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)	749.00	714.50	596.20	918.70				
Initial Value	(V_i),(W_i)	712.10	706.70	593.70	905.00				
Net Value	(V_n),(W_n)	36.9	7.8	2.5	13.7				
Results									
Total Weight		(W_t)	60.90	g		**Water Vol Weighed**	($V_{wsg(std)}$)	2.871	scf
Std Meter Volume		($V_{m(std)}$)	45.258	dscf		**Sat. Moisture Content**	($B_{ws(svp)}$)	100.00	%
Calc Moisture Content		($B_{ws(calc)}$)	5.97	%		**Final Moisture Content**	(B_{ws})	5.97	%

Moisture Content Data									
Run Number		30-70-30%-5		**Date**	10/10/16	**Start Time**	17:32	**Stop Time**	18:41
Meter Box Number		SAMP-CP-0011				**Meter Cal Factor**	(Y)	0.989	
Total Meter Volume		(V_m)	49.380	dcf		**Barometric Pressure**	(P_b)	28.01	in Hg
Average Stack Temp		$(t_s)_{avg}$	1478	°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)	785.60	721.10	598.50	931.40				
Initial Value	(V_i),(W_i)	749.00	714.50	596.20	918.70				
Net Value	(V_n),(W_n)	36.6	6.6	2.3	12.7				
Results									
Total Weight		(W_t)	58.20	g		**Water Vol Weighed**	($V_{wsg(std)}$)	2.744	scf
Std Meter Volume		($V_{m(std)}$)	45.177	dscf		**Sat. Moisture Content**	($B_{ws(svp)}$)	100.00	%
Calc Moisture Content		($B_{ws(calc)}$)	5.73	%		**Final Moisture Content**	(B_{ws})	5.73	%

Moisture Content Data									
Run Number		30-70-30%-6		**Date**	10/11/16	**Start Time**	08:03	**Stop Time**	09:11
Meter Box Number		SAMP-CP-0011				**Meter Cal Factor**	(Y)	0.989	
Total Meter Volume		(V_m)	48.530	dcf		**Barometric Pressure**	(P_b)	27.99	in Hg
Average Stack Temp		$(t_s)_{avg}$	1389	°F		**Stack Static Pressure**	(P_{static})	0.00	in H_2O
Average Meter Temp		$(t_m)_{avg}$	68	°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)	763.60	729.10	583.20	908.70				
Initial Value	(V_i),(W_i)	727.80	720.70	581.30	894.70				
Net Value	(V_n),(W_n)	35.8	8.4	1.9	14.0				
Results									
Total Weight		(W_t)	60.10	g		**Water Vol Weighed**	($V_{wsg(std)}$)	2.834	scf
Std Meter Volume		($V_{m(std)}$)	45.040	dscf		**Sat. Moisture Content**	($B_{ws(svp)}$)	100.00	%
Calc Moisture Content		($B_{ws(calc)}$)	5.92	%		**Final Moisture Content**	(B_{ws})	5.92	%

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

Plant Name	Elk City Facilty
Sampling Location	SCD-60
Project #	sfi-elkcity.ok-comp#1

Date	10/10/16
Operator	TW
Run Number	30-70-30%-4

Ideal Nozzle Diameter and IsoKinetic Factor Setup			
Pitot Coefficient	(C_p)	0.840	
Average Stack Temp	(t_s)	1507.3	°F
Average Meter Temp	(t_m)	71.2	
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})	5.97	%
Stack Dry Molecular Weight	(M_d)	29.42	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 (+)**	0.1	in H_2O for	15.0	sec
< 3.0	**Pre (-)**	0.1	in H_2O for	15.0	sec
	Post (+)	0.1	in H_2O for	15.0	sec
	Post (-)	0.1	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})	0.4193	in
Probe Number	SAMP-PF-0003		in
Probe Length	60		in
Liner Material	inconel		
Sample Case / Oven Number			
Impinger Case Number	SAMP-BC-0032		

Pressures			
Barometric Pressure	(P_b)	28.10	in Hg
Stack Static Pressure	(P_{static})	0.00	in H_2O
Absolute Stack Pressure	(P_s)	28.10	in Hg
Absolute Meter Pressure	(P_m)	28.22	in Hg

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

Run Time			
Start	16:10	**End**	17:19

Weights	**Imp 1**	**Imp 2**	**Imp 3**	**Imp 4**	**Imp 5**	**Imp 6**	**Imp 7**	**Imp 8**
Pre	712.1	706.7	593.7	905.0				
Post	749.0	714.5	596.2	918.7				

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	231.300	0.010	1.585	1.50	1252	252		51			69	69	10.0	0.10	10.46	1.871		44.898
A-2	2.7	00:02:43	233.310	0.010	1.585	1.50	1304	258		49			67	70	10.0	0.10	10.61	3.678		44.137
A-3	5.4	00:05:25	235.250	0.015	1.585	1.50	1652	256		48			69	69	10.0	0.12	14.22	5.540		44.316
A-4	8.1	00:08:07	237.250	2.000	1.585	1.50	1604	254		48			70	68	10.0	1.41	162.35	7.392		44.350
A-5	10.8	00:10:50	239.240	0.020	1.585	1.50	1594	251		49			71	69	10.0	0.14	16.20	9.268		44.487
A-6	13.5	00:13:33	241.260	0.020	1.585	1.50	1569	250		50			71	68	10.0	0.14	16.10	11.230		44.921
A-7	16.3	00:16:15	243.370	0.020	1.585	1.50	1577	251		50			71	68	10.0	0.14	16.13	13.025		44.656
A-8	19.0	00:18:58	245.300	0.020	1.585	1.50	1668	251		50			72	68	10.0	0.14	16.48	14.985		44.955
A-9	21.7	00:21:40	247.410	0.015	1.585	1.50	1297	252		50			72	68	10.0	0.12	12.97	16.861		44.964
A-10	24.4	00:24:22	249.430	0.020	1.585	1.50	1552	252		52			72	68	10.0	0.14	16.03	18.803		45.127
A-11	27.1	00:27:05	251.520	0.020	1.585	1.50	1565	252		52			72	69	10.0	0.14	16.08	20.705		45.176
A-12	29.8	00:29:47	253.570	0.020	1.585	1.50	1566	252		52			72	68	10.0	0.14	16.08	22.545		45.090
B-1	32.5	00:32:30	255.550	0.015	1.585	1.50	1256	251		53			68	68	10.0	0.12	12.82	24.466		45.168
B-2	35.2	00:35:12	257.610	0.020	1.585	1.50	1354	253		50			73	69	10.0	0.14	15.22	26.357		45.184
B-3	37.9	00:37:55	259.650	0.015	1.585	1.50	1557	253		51			75	68	10.0	0.12	13.90	28.256		45.210
B-4	40.6	00:40:37	261.700	0.020	1.585	1.50	1581	252		52			76	69	10.0	0.14	16.14	30.106		45.158
B-5	43.3	00:43:20	263.700	0.020	1.585	1.50	1581	252		53			76	69	10.0	0.14	16.14	31.992		45.165
B-6	46.0	00:46:03	265.740	0.020	1.585	1.50	1569	251		54			76	70	10.0	0.14	16.10	33.848		45.131
B-7	48.8	00:48:45	267.750	0.020	1.585	1.50	1627	251		54			77	71	10.0	0.14	16.33	35.739		45.143
B-8	51.5	00:51:28	269.800	0.015	1.585	1.50	1272	252		56			77	70	10.0	0.12	12.88	37.704		45.245
B-9	54.2	00:54:10	271.930	0.020	1.585	1.50	1439	252		56			78	71	10.0	0.14	15.57	39.519		45.164
B-10	56.9	00:56:53	273.900	0.020	1.585	1.50	1574	252		56			78	71	10.0	0.14	16.12	41.407		45.172
B-11	59.6	00:59:35	275.950	0.020	1.585	1.50	1612	252		56			78	71	10.0	0.14	16.27	43.296		45.178
B-12	62.3	01:02:18	278.000	0.020	1.585	1.50	1553	252		58			78	71	10.0	0.14	16.03	45.258		45.258
Last Pt	65.0	01:05:00	280.130																	
Final Val	65.0	01:05:00	280.130											**Max Vac**	10.0	**Final Values**		45.258		
Average Values				0.10		1.50	1507	252		52			73	69		0.19	21.13			
													71							

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

Plant Name	Elk City Facilty
Sampling Location	SCD-60
Project #	sfi-elkcity.ok-comp#1

Date	10/10/16
Operator	TW
Run Number	30-70-30%-5

Ideal Nozzle Diameter and IsoKinetic Factor Setup			
Pitot Coefficient	(C_p)	0.840	
Average Stack Temp	(t_s)	1477.9	°F
Average Meter Temp	(t_m)	76.4	
Orifice Meter Coefficient	($\Delta H@$)	1.585	in H_2O
Square Root ΔP	($\Delta p^{1/2}_{avg}$)	0.12	in H_2O
Stack Moisture Content	(B_{ws})	5.73	%
Stack Dry Molecular Weight	(M_d)	29.35	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 (+)**	0.1	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})	0.4433	in
Probe Number	SAMP-SP-0001		in
Probe Length	60		in
Liner Material	inconel		
Sample Case / Oven Number			
Impinger Case Number	SAMP-BC-0032		

Pressures			
Barometric Pressure	(P_b)	28.01	in Hg
Stack Static Pressure	(P_{static})	0.00	in H_2O
Absolute Stack Pressure	(P_s)	28.01	in Hg
Absolute Meter Pressure	(P_m)	28.13	in Hg

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

Run Time			
Start	17:32	**End**	18:41

Weights	**Imp 1**	**Imp 2**	**Imp 3**	**Imp 4**	**Imp 5**	**Imp 6**	**Imp 7**	**Imp 8**
Pre	749.0	714.5	596.2	918.7				
Post	785.6	721.1	598.5	931.4				

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	280.800	0.015	1.585	1.50	1258	252		62			72	72	10.0	0.12	12.86	1.919		46.052
A-2	2.7	00:02:43	282.880	0.020	1.585	1.50	1258	256		55			74	72	10.0	0.14	14.85	3.806		45.678
A-3	5.4	00:05:25	284.930	0.020	1.585	1.50	1512	255		55			76	71	10.0	0.14	15.91	5.766		46.127
A-4	8.1	00:08:07	287.060	0.025	1.585	1.50	1532	253		57			77	72	10.0	0.16	17.87	7.593		45.559
A-5	10.8	00:10:50	289.050	0.020	1.585	1.50	1548	251		58			78	72	10.0	0.14	16.05	9.474		45.474
A-6	13.5	00:13:33	291.100	0.025	1.585	1.50	1511	251		59			79	72	10.0	0.16	17.78	11.362		45.447
A-7	16.3	00:16:15	293.160	0.020	1.585	1.50	1537	251		60			79	73	10.0	0.14	16.01	13.230		45.359
A-8	19.0	00:18:58	295.200	0.015	1.585	1.50	1402	251		60			80	73	10.0	0.12	13.38	15.114		45.342
A-9	21.7	00:21:40	297.260	0.020	1.585	1.50	1458	252		60			80	74	10.0	0.14	15.69	16.997		45.325
A-10	24.4	00:24:22	299.320	0.020	1.585	1.50	1615	252		61			80	74	10.0	0.14	16.32	18.898		45.355
A-11	27.1	00:27:05	301.400	0.015	1.585	1.50	1631	252		61			80	75	10.0	0.12	14.18	20.770		45.315
A-12	29.8	00:29:47	303.450	0.020	1.585	1.50	1612	252		62			80	75	10.0	0.14	16.30	22.915		45.831
B-1	32.5	00:32:30	305.800	0.015	1.585	1.50	1232	251		63			76	75	10.0	0.12	12.76	24.565		45.351
B-2	35.2	00:35:12	307.600	0.005	1.585	1.50	1532	253		61			79	75	10.0	0.07	7.99	26.457		45.355
B-3	37.9	00:37:55	309.670	0.010	1.585	1.50	1536	254		61			80	75	10.0	0.10	11.32	28.310		45.297
B-4	40.6	00:40:37	311.700	0.010	1.585	1.50	1538	253		63			80	75	10.0	0.10	11.32	30.237		45.355
B-5	43.3	00:43:20	313.810	0.015	1.585	1.50	1542	252		62			80	75	10.0	0.12	13.88	32.100		45.317
B-6	46.0	00:46:03	315.850	0.015	1.585	1.50	1537	252		64			80	75	10.0	0.12	13.86	34.099		45.466
B-7	48.8	00:48:45	318.040	0.010	1.585	1.50	1323	252		64			81	75	10.0	0.10	10.69	35.805		45.228
B-8	51.5	00:51:28	319.910	0.010	1.585	1.50	1346	252		64			80	75	10.0	0.10	10.76	37.668		45.201
B-9	54.2	00:54:10	321.950	0.015	1.585	1.50	1389	252		65			81	75	10.0	0.12	13.34	39.547		45.197
B-10	56.9	00:56:53	324.010	0.02	1.585	1.50	1517	252		65			81	74	10.0	0.12	13.79	41.465		45.234
B-11	59.6	00:59:35	326.110	0.01	1.585	1.50	1539	252		65			81	75	10.0	0.10	11.32	43.326		45.209
B-12	62.3	01:02:18	328.150	0.02	1.585	1.50	1564	252		66			81	75	10.0	0.12	13.96	45.177		45.177
Last Pt	65.0	01:05:00	330.180																	
Final Val	65.0	01:05:00	330.180											**Max Vac**	10.0	**Final Values**		45.177		
Average Values				0.02		1.50	1478	252		61			79	74		0.12	13.84			
													76							

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

Plant Name	Elk City Facilty
Sampling Location	SCD-60
Project #	sfi-elkcity.ok-comp#1

Date	10/11/16
Operator	TW
Run Number	30-70-30%-6

Ideal Nozzle Diameter and IsoKinetic Factor Setup			
Pitot Coefficient	(C_p)	0.840	
Average Stack Temp	(t_s)	1388.9	°F
Average Meter Temp	(t_m)	68.4	
Orifice Meter Coefficient	($\Delta H@$)	1.585	in H_2O
Square Root ΔP	($\Delta p^{1/2}_{avg}$)	0.11	in H_2O
Stack Moisture Content	(B_{ws})	5.92	%
Stack Dry Molecular Weight	(M_d)	29.33	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 (+)**	0.1	in H_2O for	15.0	sec
< 3.0	**Pre (-)**	0.1	in H_2O for	15.0	sec
	Post (+)	0.2	in H_2O for	15.0	sec
	Post (-)	0.1	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})	0.4596	in
Probe Number	SAMP-SP-0001		in
Probe Length	60		in
Liner Material	inconel		
Sample Case / Oven Number			
Impinger Case Number	SAMP-BC-0032		

Pressures			
Barometric Pressure	(P_b)	27.99	in Hg
Stack Static Pressure	(P_{static})	0.00	in H_2O
Absolute Stack Pressure	(P_s)	27.99	in Hg
Absolute Meter Pressure	(P_m)	28.11	in Hg

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

Run Time			
Start	08:03	**End**	09:11

Weights	**Imp 1**	**Imp 2**	**Imp 3**	**Imp 4**	**Imp 5**	**Imp 6**	**Imp 7**	**Imp 8**
Pre	727.8	720.7	581.3	894.7				
Post	763.6	729.1	583.2	908.7				

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	330.600	0.010	1.585	1.50	1196	255		53			62	63	10.0	0.10	10.32	1.568		37.620
A-2	2.7	00:02:43	332.270	0.010	1.585	1.50	1191	258		50			63	63	10.0	0.10	10.30	3.424		41.091
A-3	5.4	00:05:25	334.250	0.015	1.585	1.50	1409	256		48			64	62	10.0	0.12	13.42	5.347		42.772
A-4	8.1	00:08:07	336.300	0.015	1.585	1.50	1422	253		48			66	63	10.0	0.12	13.47	7.217		43.300
A-5	10.8	00:10:50	338.300	0.010	1.585	1.50	1417	251		48			68	63	10.0	0.10	10.98	9.046		43.420
A-6	13.5	00:13:33	340.260	0.015	1.585	1.50	1411	250		49			70	64	10.0	0.12	13.43	11.037		44.149
A-7	16.3	00:16:15	342.400	0.010	1.585	1.50	1409	250		49			70	65	10.0	0.10	10.96	12.925		44.313
A-8	19.0	00:18:58	344.430	0.010	1.585	1.50	1419	251		50			72	64	10.0	0.10	10.99	14.940		44.821
A-9	21.7	00:21:40	346.600	0.010	1.585	1.50	1288	252		50			73	65	10.0	0.10	10.60	16.507		44.019
A-10	24.4	00:24:22	348.290	0.005	1.585	1.50	1420	252		51			74	66	10.0	0.07	7.77	18.617		44.681
A-11	27.1	00:27:05	350.570	0.015	1.585	1.50	1414	252		52			74	67	10.0	0.12	13.44	20.512		44.754
A-12	29.8	00:29:47	352.620	0.010	1.585	1.50	1410	252		53			74	67	10.0	0.10	10.96	22.509		45.018
B-1	32.5	00:32:30	354.780	0.010	1.585	1.50	1361	252		55			69	68	10.0	0.10	10.82	24.337		44.930
B-2	35.2	00:35:12	356.750	0.015	1.585	1.50	1314	253		53			73	69	10.0	0.12	13.08	26.230		44.966
B-3	37.9	00:37:55	358.800	0.005	1.585	1.50	1460	253		53			72	68	10.0	0.07	7.86	28.053		44.885
B-4	40.6	00:40:37	360.770	0.010	1.585	1.50	1432	253		54			72	69	10.0	0.10	11.03	30.022		45.034
B-5	43.3	00:43:20	362.900	0.015	1.585	1.50	1435	252		54			73	68	10.0	0.12	13.52	31.871		44.995
B-6	46.0	00:46:03	364.900	0.010	1.585	1.50	1429	252		53			72	68	10.0	0.10	11.02	33.815		45.086
B-7	48.8	00:48:45	367.000	0.010	1.585	1.50	1460	252		52			73	68	10.0	0.10	11.11	35.617		44.990
B-8	51.5	00:51:28	368.950	0.010	1.585	1.50	1382	252		52			72	68	10.0	0.10	10.88	37.514		45.017
B-9	54.2	00:54:10	371.000	0.015	1.585	1.50	1290	252		52			72	67	10.0	0.12	12.99	39.385		45.012
B-10	56.9	00:56:53	373.020	0.01	1.585	1.50	1464	252		52			73	68	10.0	0.10	11.12	41.216		44.963
B-11	59.6	00:59:35	375.000	0.02	1.585	1.50	1457	252		52			73	67	10.0	0.12	13.60	43.122		44.997
B-12	62.3	01:02:18	377.060	0.01	1.585	1.50	1443	252		53			73	68	10.0	0.10	11.06	45.036		45.036
Last Pt	65.0	01:05:00	379.130																	
Final Val	65.0	01:05:00	379.130											**Max Vac**	10.0	**Final Values**		45.036		
Average Values				0.01		1.50	1389	252		52			71	66		0.11	11.45			
													68							

Superior Fabrication, INC
October 10, 2016
SCD-60
Elk City Plant

Unit Data

Meas. Stack Moisture	6.0	%
Stack Exhaust Flow (M2)	390,394	SCFH

Weather Data

Barometric Pressure	28.01	in. Hg
Relative Humidity	43	%
Ambient Temperature	78	^{o}F
Specific Humidity	0.009376	lb H_2O / lb air

30-70-30 Load, Run - SCD-60 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. ^{o}F	Fuel Flow SCFH
A1	10/10/16 16:10:09	31980	13.74	0.50	0.00	4.95	0.17	84.40	1,009.00
	10/10/16 16:10:39	32010	13.61	0.28	-0.02	5.05	0.17	84.40	1,009.00
	10/10/16 16:11:09	32040	14.00	0.20	0.01	4.78	0.17	84.10	1,004.00
	10/10/16 16:11:39	32070	13.95	0.19	0.01	4.83	0.17	84.10	1,004.00
	10/10/16 16:12:09	32100	13.96	0.19	0.01	4.79	0.22	83.90	1,162.00
	10/10/16 16:12:39	32130	13.77	0.15	-0.05	4.91	0.22	83.90	1,162.00
	10/10/16 16:13:09	32160	13.93	0.09	-0.04	4.79	0.70	83.30	2,240.00
	10/10/16 16:13:39	32190	13.78	0.05	-0.04	4.82	0.70	83.30	2,240.00
	10/10/16 16:14:09	32220	9.49	-0.05	0.00	7.76	0.77	82.40	2,431.00
	10/10/16 16:14:39	32250	9.16	-0.15	0.11	8.47	0.77	82.40	2,431.00
	10/10/16 16:15:09	32280	11.68	-0.14	0.09	6.45	0.75	82.20	2,454.00
	10/10/16 16:15:39	32310	11.77	-0.03	0.09	6.35	0.75	82.20	2,454.00
	10/10/16 16:16:09	32340	11.86	0.07	0.10	6.34	0.73	82.30	2,444.00
	10/10/16 16:16:39	32370	11.93	0.14	0.10	6.22	0.73	82.30	2,444.00
	10/10/16 16:17:09	32400	13.11	0.20	0.06	5.39	0.72	82.50	2,445.00
	10/10/16 16:17:39	32430	13.47	0.20	0.05	5.07	0.72	82.50	2,445.00
	10/10/16 16:18:09	32460	13.36	0.20	0.05	5.16	0.70	82.70	2,414.00
	10/10/16 16:18:39	32490	13.30	0.13	0.05	5.18	0.70	82.70	2,414.00
	10/10/16 16:19:09	32520	13.01	0.10	0.07	5.42	0.69	83.00	2,403.00
	10/10/16 16:19:39	32550	13.17	0.09	0.06	5.31	0.69	83.00	2,403.00
	10/10/16 16:20:09	32580	13.37	0.09	0.06	5.16	0.68	83.30	2,400.00
	10/10/16 16:20:39	32610	13.14	0.12	0.05	5.29	0.68	83.30	2,400.00
	10/10/16 16:21:09	32640	13.50	0.12	0.06	5.11	0.67	83.70	2,401.00
	10/10/16 16:21:39	32670	13.65	0.08	0.06	4.97	0.67	83.70	2,401.00
	10/10/16 16:22:09	32700	13.68	0.09	0.05	4.95	0.67	84.00	2,411.00
	10/10/16 16:22:39	32730	13.86	0.20	0.07	4.87	0.67	84.00	2,411.00
	10/10/16 16:23:09	32760	13.56	0.17	0.07	4.99	0.67	84.20	2,412.00
	10/10/16 16:23:39	32790	13.23	0.20	0.06	5.27	0.67	84.20	2,412.00
	10/10/16 16:24:09	32820	13.42	0.20	0.05	5.15	0.67	84.30	2,414.00
	10/10/16 16:24:39	32850	13.28	0.22	0.06	5.22	0.67	84.30	2,414.00
	10/10/16 16:25:09	32880	12.98	0.23	0.06	5.41	0.67	84.40	2,417.00
	10/10/16 16:25:39	32910	12.89	0.22	0.05	5.47	0.67	84.40	2,417.00
	10/10/16 16:26:09	32940	13.23	0.22	0.05	5.31	0.60	84.50	2,250.00
	10/10/16 16:26:39	32970	13.33	0.25	0.05	5.13	0.60	84.50	2,250.00
	10/10/16 16:27:09	33000	12.45	0.28	0.09	5.74	0.46	84.50	1,902.00
	10/10/16 16:27:39	33030	9.41	0.33	0.13	8.00	0.46	84.50	1,902.00
	10/10/16 16:28:09	33060	10.22	0.31	0.07	7.54	0.22	84.50	1,237.00
	10/10/16 16:28:39	33090	10.46	0.32	0.06	7.38	0.22	84.50	1,237.00
	10/10/16 16:29:09	33120	12.15	0.24	0.06	6.15	0.15	84.50	997.00
	10/10/16 16:29:39	33150	14.40	0.34	0.02	4.58	0.15	84.50	997.00
	10/10/16 16:30:09	33180	15.33	1.03	0.04	3.91	0.17	84.40	1,004.00
A2	10/10/16 16:30:39	33210	15.39	3.41	0.04	3.85	0.17	84.40	1,004.00
	10/10/16 16:31:09	33240	15.33	6.63	0.01	3.89	0.51	84.10	1,812.00
	10/10/16 16:31:39	33270	15.37	8.65	0.03	3.88	0.51	84.10	1,812.00
	10/10/16 16:32:09	33300	15.87	14.26	0.04	3.48	0.70	83.30	2,390.00
	10/10/16 16:32:39	33330	12.53	13.33	0.06	5.68	0.70	83.30	2,390.00
	10/10/16 16:33:09	33360	13.15	4.50	0.06	5.30	0.71	83.00	2,443.00
	10/10/16 16:33:39	33390	12.98	1.50	0.06	5.41	0.71	83.00	2,443.00
	10/10/16 16:34:09	33420	12.91	1.07	0.06	5.52	0.70	83.00	2,433.00
	10/10/16 16:34:39	33450	13.37	0.85	0.05	5.17	0.70	83.00	2,433.00
	10/10/16 16:35:09	33480	12.81	0.78	0.05	5.50	0.69	83.00	2,431.00
	10/10/16 16:35:39	33510	13.02	0.70	0.06	5.46	0.69	83.00	2,431.00
	10/10/16 16:36:09	33540	13.04	0.70	0.07	5.35	0.68	83.00	2,430.00
	10/10/16 16:36:39	33570	12.86	0.68	0.06	5.46	0.68	83.00	2,430.00
	10/10/16 16:37:09	33600	13.09	0.65	0.07	5.43	0.66	82.90	2,428.00
	10/10/16 16:37:39	33630	13.30	0.62	0.06	5.19	0.66	82.90	2,428.00
	10/10/16 16:38:09	33660	13.39	0.69	0.07	5.17	0.68	83.00	2,440.00
	10/10/16 16:38:39	33690	13.50	0.72	0.06	5.06	0.68	83.00	2,440.00
	10/10/16 16:39:09	33720	12.97	0.71	0.06	5.39	0.67	83.10	2,430.00
	10/10/16 16:39:39	33750	13.03	0.69	0.06	5.38	0.67	83.10	2,430.00

Superior Fabrication, INC
October 10, 2016
SCD-60
Elk City Plant

Unit Data

Meas. Stack Moisture	6.0	%
Stack Exhaust Flow (M2)	390,394	SCFH

Weather Data

Barometric Pressure	28.01	in. Hg
Relative Humidity	43	%
Ambient Temperature	78	^{o}F
Specific Humidity	0.009376	lb H_2O / lb air

30-70-30 Load, Run - SCD-60 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. ^{o}F	Fuel Flow SCFH
	10/10/16 16:40:09	33780	13.25	0.69	0.06	5.27	0.67	83.30	2,433.00
	10/10/16 16:40:39	33810	13.34	0.72	0.05	5.18	0.67	83.30	2,433.00
	10/10/16 16:41:09	33840	13.35	0.72	0.05	5.16	0.67	83.40	2,429.00
	10/10/16 16:41:39	33870	13.31	0.69	0.06	5.25	0.67	83.40	2,429.00
	10/10/16 16:42:09	33900	12.95	0.68	0.07	5.42	0.66	83.50	2,425.00
	10/10/16 16:42:39	33930	13.15	0.69	0.07	5.27	0.66	83.50	2,425.00
	10/10/16 16:43:09	33960	13.19	0.69	0.06	5.30	0.35	83.60	1,694.00
	10/10/16 16:43:39	33990	13.23	0.71	0.06	5.28	0.35	83.60	1,694.00
	10/10/16 16:44:09	34020	12.60	0.72	0.12	5.68	0.16	83.80	1,002.00
	10/10/16 16:44:39	34050	11.66	0.72	0.09	6.54	0.16	83.80	1,002.00
	10/10/16 16:45:09	34080	15.20	0.92	0.06	4.05	0.15	83.80	999.00
	10/10/16 16:45:39	34110	15.51	3.41	0.04	3.80	0.15	83.80	999.00
	10/10/16 16:46:09	34140	15.43	9.44	0.06	3.83	0.16	83.70	1,004.00
	10/10/16 16:46:39	34170	15.61	17.49	0.07	3.71	0.16	83.70	1,004.00
	10/10/16 16:47:09	34200	15.53	31.30	0.07	3.76	0.34	83.30	1,480.00
	10/10/16 16:47:39	34230	15.43	40.33	0.06	3.82	0.34	83.30	1,480.00
	10/10/16 16:48:09	34260	15.31	40.94	0.06	3.88	0.66	82.50	2,327.00
	10/10/16 16:48:39	34290	13.88	30.86	0.09	4.81	0.66	82.50	2,327.00
	10/10/16 16:49:09	34320	14.13	11.25	0.15	4.62	0.68	82.30	2,409.00
	10/10/16 16:49:39	34350	13.47	1.99	0.14	5.04	0.68	82.30	2,409.00
	10/10/16 16:50:09	34380	13.02	0.86	0.16	5.45	0.68	82.40	2,432.00
A3	10/10/16 16:50:39	34410	13.50	0.71	0.16	5.07	0.68	82.40	2,432.00
	10/10/16 16:51:09	34440	13.30	0.59	0.15	5.25	0.67	82.40	2,407.00
	10/10/16 16:51:39	34470	13.15	0.53	0.12	5.34	0.67	82.40	2,407.00
	10/10/16 16:52:09	34500	13.43	0.52	0.15	5.08	0.67	82.50	2,434.00
	10/10/16 16:52:39	34530	13.43	0.47	0.16	5.18	0.67	82.50	2,434.00
	10/10/16 16:53:09	34560	13.43	0.45	0.16	5.12	0.67	82.60	2,441.00
	10/10/16 16:53:39	34590	13.37	0.39	0.14	5.20	0.67	82.60	2,441.00
	10/10/16 16:54:09	34620	13.03	0.38	0.14	5.39	0.68	82.60	2,441.00
	10/10/16 16:54:39	34650	13.18	0.39	0.16	5.30	0.68	82.60	2,441.00
	10/10/16 16:55:09	34680	13.11	0.40	0.17	5.30	0.68	82.70	2,442.00
	10/10/16 16:55:39	34710	13.26	0.45	0.17	5.29	0.68	82.70	2,442.00
	10/10/16 16:56:09	34740	13.45	0.44	0.17	5.11	0.68	82.80	2,441.00
	10/10/16 16:56:39	34770	13.24	0.40	0.15	5.23	0.68	82.80	2,441.00
	10/10/16 16:57:09	34800	13.45	0.32	0.15	5.16	0.67	83.10	2,439.00
	10/10/16 16:57:39	34830	13.34	0.28	0.16	5.13	0.67	83.10	2,439.00
	10/10/16 16:58:09	34860	13.59	0.25	0.16	5.08	0.67	83.20	2,441.00
	10/10/16 16:58:39	34890	13.66	0.20	0.16	4.94	0.67	83.20	2,441.00
	10/10/16 16:59:09	34920	13.42	0.20	0.15	5.13	0.66	83.40	2,439.00
	10/10/16 16:59:39	34950	13.27	0.22	0.15	5.26	0.66	83.40	2,439.00
	10/10/16 17:00:09	34980	13.42	0.22	0.17	5.12	0.67	83.50	2,440.00
	10/10/16 17:00:39	35010	13.25	0.23	0.17	5.22	0.67	83.50	2,440.00
	10/10/16 17:01:09	35040	13.36	0.22	0.17	5.25	0.44	83.50	1,861.00
	10/10/16 17:01:39	35070	13.42	0.20	0.19	5.12	0.44	83.50	1,861.00
	10/10/16 17:02:09	35100	11.45	0.19	0.20	6.37	0.17	83.60	1,084.00
	10/10/16 17:02:39	35130	10.92	0.23	0.16	7.14	0.17	83.60	1,084.00
	10/10/16 17:03:09	35160	13.27	0.19	0.13	5.40	0.16	83.70	999.00
	10/10/16 17:03:39	35190	15.11	0.41	0.16	4.09	0.16	83.70	999.00
	10/10/16 17:04:09	35220	15.52	2.96	0.16	3.77	0.16	83.40	1,005.00
	10/10/16 17:04:39	35250	15.49	9.58	0.14	3.79	0.16	83.40	1,005.00
	10/10/16 17:05:09	35280	15.47	15.92	0.10	3.81	0.16	83.10	1,008.00
	10/10/16 17:05:39	35310	15.38	21.91	0.06	3.85	0.16	83.10	1,008.00
	10/10/16 17:06:09	35340	15.37	22.34	0.09	3.88	0.54	82.70	2,026.00
	10/10/16 17:06:39	35370	15.08	20.68	0.06	3.99	0.54	82.70	2,026.00
	10/10/16 17:07:09	35400	13.15	12.88	0.08	5.32	0.70	82.00	2,395.00
	10/10/16 17:07:39	35430	13.70	3.27	0.15	4.97	0.70	82.00	2,395.00
	10/10/16 17:08:09	35460	13.29	0.67	0.16	5.20	0.70	81.60	2,443.00
	10/10/16 17:08:39	35490	12.96	0.41	0.16	5.45	0.70	81.60	2,443.00
	10/10/16 17:09:09	35520	13.21	0.27	0.16	5.30	0.69	81.60	2,441.00
	10/10/16 17:09:39	35550	13.24	0.19	0.16	5.28	0.69	81.60	2,441.00

Superior Fabrication, INC
October 10, 2016
SCD-60
Elk City Plant

Unit Data

Meas. Stack Moisture	6.0	%
Stack Exhaust Flow (M2)	390,394	SCFH

Weather Data

Barometric Pressure	28.01	in. Hg
Relative Humidity	43	%
Ambient Temperature	78	^{o}F
Specific Humidity	0.009376	lb H_2O / lb air

30-70-30 Load, Run - SCD-60 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. ^{o}F	Fuel Flow SCFH
10/10/16 17:10:09	35580	13.01	0.12	0.16	5.42	0.69	81.80	2,439.00
10/10/16 17:10:39	35610	13.30	0.12	0.16	5.22	0.69	81.80	2,439.00
10/10/16 17:11:09	35640	13.78	0.03	0.16	4.90	0.68	82.00	2,429.00
10/10/16 17:11:39	35670	12.85	-0.02	0.16	5.46	0.68	82.00	2,429.00
10/10/16 17:12:09	35700	12.89	-0.01	0.16	5.54	0.69	82.20	2,430.00
10/10/16 17:12:39	35730	12.80	0.02	0.16	5.59	0.69	82.20	2,430.00
10/10/16 17:13:09	35760	13.03	0.03	0.16	5.39	0.69	82.30	2,430.00
10/10/16 17:13:39	35790	12.86	0.03	0.14	5.54	0.69	82.30	2,430.00
10/10/16 17:14:09	35820	13.53	0.02	0.14	5.05	0.69	82.40	2,428.00
10/10/16 17:14:39	35850	13.26	-0.01	0.29	5.24	0.69	82.40	2,428.00
10/10/16 17:15:09	35880	13.70	0.00	0.21	4.99	0.67	82.50	2,431.00
10/10/16 17:15:39	35910	13.67	0.09	0.21	4.96	0.67	82.50	2,431.00
10/10/16 17:16:09	35940	14.00	0.09	0.21	4.75	0.67	82.60	2,422.00
10/10/16 17:16:39	35970	13.67	0.12	0.21	4.96	0.67	82.60	2,422.00
10/10/16 17:17:09	36000	13.27	0.15	0.17	5.25	0.30	82.80	1,503.00
10/10/16 17:17:39	36030	13.67	0.10	0.15	4.92	0.30	82.80	1,503.00
10/10/16 17:18:09	36060	11.30	0.11	0.14	6.62	0.15	82.90	1,031.00
10/10/16 17:18:39	36090	13.62	0.12	0.08	5.24	0.15	82.90	1,031.00
10/10/16 17:19:09	36120	15.29	0.68	0.13	3.91	0.16	82.70	1,009.00
10/10/16 17:19:39	36150	15.27	2.72	0.10	3.95	0.16	82.70	1,009.00
10/10/16 17:20:09	36180	14.94	6.11	0.07	4.09	0.16	82.30	1,012.00
RAW AVERAGE		**13.41**	**2.81**	**0.10**	**5.16**	**0.54**	**83.13**	**2,048.33**

		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	1434717	1434717	1434717
		(%)	**(ppmvd)**	**(ppmvw)**	**(%)**	**(in. H_2O)**	**(^{o}F)**	**(SCFH)**
Bias	**Initial Zero**	-0.03	0.01	0.01	0.05			
	Final Zero	0.01	-0.04	0.02	0.07			
	Avg. Zero	-0.01	-0.02	0.02	0.06			
	Initial UpScale	11.94	9.44	2.96	9.05			
	Final UpScale	11.87	9.12	2.96	8.84			
	Avg. UpScale	11.91	9.28	2.96	8.95			
Upscale Cal Gas		11.90	9.21	3.00	8.95			

EMISSIONS DATA	O_2	CO	THC	CO_2
Corrected Raw Average (ppm/% dry basis)	13.41	2.80	0.08	5.14
Corrected Raw Average (ppm/% wet basis)	12.61	2.63	0.08	4.83
Emission Rate (lb/hr)	N/A	0.08	0.00	N/A

Superior Fabrication, INC
SCD-60
Elk City Plant

Unit Data

Meas. Stack Moisture	5.7	%
Stack Exhaust Flow (M2)	259,378	SCFH

Weather Data

Barometric Pressure	28.01	in. Hg
Relative Humidity	43	%
Ambient Temperature	75	^{o}F
Specific Humidity	0.008475	lb H_2O / lb air

30-70-30 Load, Run - SCD-60 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
A1	10/10/16 17:32:09	36900	15.08	6.28	0.05	4.05	0.17	78.30	1,013.00
	10/10/16 17:32:39	36930	14.85	6.33	0.05	4.21	0.17	78.30	1,013.00
	10/10/16 17:33:09	36960	14.97	6.49	0.06	4.10	0.17	78.00	1,013.00
	10/10/16 17:33:39	36990	15.08	5.69	0.03	4.24	0.17	78.00	1,013.00
	10/10/16 17:34:09	37020	15.52	5.20	0.05	4.16	0.36	77.70	1,508.00
	10/10/16 17:34:39	37050	15.02	6.69	0.02	4.31	0.36	77.70	1,508.00
	10/10/16 17:35:09	37080	15.30	7.19	0.03	3.98	0.69	76.70	2,334.00
	10/10/16 17:35:39	37110	14.39	12.12	0.05	4.49	0.69	76.70	2,334.00
	10/10/16 17:36:09	37140	13.99	6.65	0.08	4.81	0.74	76.30	2,495.00
	10/10/16 17:36:39	37170	13.76	0.94	0.06	4.95	0.74	76.30	2,495.00
	10/10/16 17:37:09	37200	13.78	0.11	0.05	4.97	0.71	76.30	2,466.00
	10/10/16 17:37:39	37230	13.76	0.11	0.04	4.98	0.71	76.30	2,466.00
	10/10/16 17:38:09	37260	13.60	0.12	0.07	5.08	0.70	76.60	2,468.00
	10/10/16 17:38:39	37290	13.38	0.06	0.05	5.22	0.70	76.60	2,468.00
	10/10/16 17:39:09	37320	13.69	0.10	0.05	5.04	0.69	76.90	2,470.00
	10/10/16 17:39:39	37350	13.61	0.12	0.06	5.05	0.69	76.90	2,470.00
	10/10/16 17:40:09	37380	13.62	0.12	0.06	5.05	0.68	77.20	2,464.00
	10/10/16 17:40:39	37410	13.71	0.12	0.06	4.99	0.68	77.20	2,464.00
	10/10/16 17:41:09	37440	14.39	0.20	0.06	4.53	0.68	77.60	2,465.00
	10/10/16 17:41:39	37470	13.83	0.50	0.06	4.90	0.68	77.60	2,465.00
	10/10/16 17:42:09	37500	13.66	0.52	0.06	5.00	0.69	77.90	2,465.00
	10/10/16 17:42:39	37530	13.94	0.47	0.06	4.81	0.69	77.90	2,465.00
	10/10/16 17:43:09	37560	13.53	0.32	0.06	5.09	0.67	78.30	2,455.00
	10/10/16 17:43:39	37590	13.25	0.14	0.05	5.30	0.67	78.30	2,455.00
	10/10/16 17:44:09	37620	14.19	0.09	0.05	4.70	0.68	78.80	2,449.00
	10/10/16 17:44:39	37650	13.98	0.08	0.04	4.80	0.68	78.80	2,449.00
	10/10/16 17:45:09	37680	13.84	0.08	0.05	4.88	0.67	79.20	2,435.00
	10/10/16 17:45:39	37710	13.80	0.10	0.05	4.92	0.67	79.20	2,435.00
	10/10/16 17:46:09	37740	14.14	0.06	0.05	4.69	0.66	79.50	2,423.00
	10/10/16 17:46:39	37770	13.95	-0.01	0.03	4.84	0.66	79.50	2,423.00
	10/10/16 17:47:09	37800	13.91	0.02	0.04	4.83	0.67	79.70	2,427.00
	10/10/16 17:47:39	37830	13.43	0.02	0.04	5.16	0.67	79.70	2,427.00
	10/10/16 17:48:09	37860	13.12	0.02	0.06	5.32	0.41	79.90	1,810.00
	10/10/16 17:48:39	37890	13.60	-0.09	0.04	5.10	0.41	79.90	1,810.00
	10/10/16 17:49:09	37920	13.44	-0.10	0.05	5.09	0.17	80.10	1,084.00
	10/10/16 17:49:39	37950	12.13	-0.07	0.01	6.19	0.17	80.10	1,084.00
	10/10/16 17:50:09	37980	14.04	-0.06	0.01	4.76	0.17	80.00	1,022.00
	10/10/16 17:50:39	38010	14.14	0.03	0.02	4.71	0.17	80.00	1,022.00
	10/10/16 17:51:09	38040	14.05	0.14	0.01	4.77	0.16	79.90	1,006.00
	10/10/16 17:51:39	38070	13.58	0.22	0.00	5.05	0.16	79.90	1,006.00
	10/10/16 17:52:09	38100	14.05	0.23	-0.01	4.78	0.17	79.60	1,010.00
A2	10/10/16 17:52:39	38130	13.97	0.33	-0.02	4.81	0.17	79.60	1,010.00
	10/10/16 17:53:09	38160	13.91	0.43	-0.03	4.86	0.61	79.00	2,142.00
	10/10/16 17:53:39	38190	13.97	0.43	0.01	4.81	0.61	79.00	2,142.00
	10/10/16 17:54:09	38220	12.28	0.49	0.02	5.95	0.73	78.30	2,454.00
	10/10/16 17:54:39	38250	12.90	0.26	0.06	5.52	0.73	78.30	2,454.00
	10/10/16 17:55:09	38280	12.29	0.10	0.06	6.01	0.72	78.00	2,457.00
	10/10/16 17:55:39	38310	12.43	-0.06	0.05	5.87	0.72	78.00	2,457.00
	10/10/16 17:56:09	38340	12.63	-0.10	0.05	5.70	0.71	78.10	2,447.00
	10/10/16 17:56:39	38370	12.76	-0.17	0.06	5.69	0.71	78.10	2,447.00
	10/10/16 17:57:09	38400	12.49	-0.18	0.06	5.78	0.71	78.30	2,448.00
	10/10/16 17:57:39	38430	12.96	-0.17	0.07	5.48	0.71	78.30	2,448.00
	10/10/16 17:58:09	38460	12.71	-0.13	0.06	5.67	0.70	78.40	2,456.00
	10/10/16 17:58:39	38490	12.61	-0.18	0.06	5.68	0.70	78.40	2,456.00
	10/10/16 17:59:09	38520	12.84	-0.12	0.06	5.59	0.70	78.60	2,456.00
	10/10/16 17:59:39	38550	12.60	-0.09	0.06	5.76	0.70	78.60	2,456.00
	10/10/16 18:00:09	38580	12.45	-0.09	0.06	5.81	0.69	78.70	2,457.00
	10/10/16 18:00:39	38610	12.46	-0.09	0.05	5.85	0.69	78.70	2,457.00
	10/10/16 18:01:09	38640	12.44	-0.08	0.06	5.89	0.70	78.90	2,458.00
	10/10/16 18:01:39	38670	12.90	-0.08	0.04	5.54	0.70	78.90	2,458.00
	10/10/16 18:02:09	38700	12.76	0.00	0.05	5.54	0.70	79.00	2,457.00

Superior Fabrication, INC
SCD-60
Elk City Plant

Unit Data

Meas. Stack Moisture	5.7	%
Stack Exhaust Flow (M2)	259,378	SCFH

Weather Data

Barometric Pressure	28.01	in. Hg
Relative Humidity	43	%
Ambient Temperature	75	^{o}F
Specific Humidity	0.008475	lb H_2O / lb air

30-70-30 Load, Run - SCD-60 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
	10/10/16 18:02:39	38730	12.34	0.01	0.06	6.02	0.70	79.00	2,457.00
	10/10/16 18:03:09	38760	13.32	0.08	0.06	5.28	0.69	79.10	2,458.00
	10/10/16 18:03:39	38790	13.45	0.12	0.02	5.14	0.69	79.10	2,458.00
	10/10/16 18:04:09	38820	13.43	0.14	0.04	5.12	0.68	79.20	2,453.00
	10/10/16 18:04:39	38850	13.69	0.20	0.05	5.05	0.68	79.20	2,453.00
	10/10/16 18:05:09	38880	13.49	0.20	0.05	5.11	0.23	79.30	1,263.00
	10/10/16 18:05:39	38910	12.89	0.23	0.05	5.40	0.23	79.30	1,263.00
	10/10/16 18:06:09	38940	11.04	0.21	0.01	7.02	0.16	79.30	1,016.00
	10/10/16 18:06:39	38970	13.57	0.23	0.02	5.22	0.16	79.30	1,016.00
	10/10/16 18:07:09	39000	14.61	0.37	0.01	4.35	0.17	79.20	1,032.00
	10/10/16 18:07:39	39030	14.32	0.71	0.02	4.55	0.17	79.20	1,032.00
	10/10/16 18:08:09	39060	14.13	1.03	0.02	4.72	0.17	78.90	1,037.00
	10/10/16 18:08:39	39090	14.31	1.23	-0.01	4.57	0.17	78.90	1,037.00
	10/10/16 18:09:09	39120	14.36	1.33	0.02	4.55	0.26	78.60	1,281.00
	10/10/16 18:09:39	39150	14.19	1.39	-0.03	4.63	0.26	78.60	1,281.00
	10/10/16 18:10:09	39180	14.09	1.23	-0.04	4.72	0.61	77.80	2,123.00
	10/10/16 18:10:39	39210	13.51	1.19	-0.01	4.98	0.61	77.80	2,123.00
	10/10/16 18:11:09	39240	13.24	1.17	0.02	5.55	0.74	77.00	2,459.00
	10/10/16 18:11:39	39270	13.37	0.99	0.03	5.10	0.74	77.00	2,459.00
	10/10/16 18:12:09	39300	13.28	0.74	0.04	5.27	0.72	76.80	2,466.00
A3	10/10/16 18:12:39	39330	13.21	0.57	0.03	5.33	0.72	76.80	2,466.00
	10/10/16 18:13:09	39360	13.26	0.45	0.03	5.24	0.71	76.80	2,454.00
	10/10/16 18:13:39	39390	12.97	0.35	0.05	5.45	0.71	76.80	2,454.00
	10/10/16 18:14:09	39420	13.60	0.32	0.01	5.06	0.69	76.90	2,443.00
	10/10/16 18:14:39	39450	13.37	0.33	0.02	5.18	0.69	76.90	2,443.00
	10/10/16 18:15:09	39480	13.82	0.34	0.02	4.94	0.69	77.10	2,445.00
	10/10/16 18:15:39	39510	13.52	0.33	0.02	5.05	0.69	77.10	2,445.00
	10/10/16 18:16:09	39540	13.43	0.31	0.03	5.20	0.68	77.30	2,442.00
	10/10/16 18:16:39	39570	13.89	0.38	0.02	4.81	0.68	77.30	2,442.00
	10/10/16 18:17:09	39600	13.74	0.42	0.02	4.97	0.68	77.50	2,442.00
	10/10/16 18:17:39	39630	13.69	0.43	0.02	4.99	0.68	77.50	2,442.00
	10/10/16 18:18:09	39660	13.40	0.43	0.02	5.16	0.67	77.60	2,440.00
	10/10/16 18:18:39	39690	13.58	0.43	0.01	5.08	0.67	77.60	2,440.00
	10/10/16 18:19:09	39720	13.35	0.43	-0.01	5.19	0.67	77.80	2,439.00
	10/10/16 18:19:39	39750	13.35	0.34	-0.01	5.22	0.67	77.80	2,439.00
	10/10/16 18:20:09	39780	13.54	0.30	-0.04	5.12	0.67	78.00	2,440.00
	10/10/16 18:20:39	39810	14.03	0.31	-0.02	4.78	0.67	78.00	2,440.00
	10/10/16 18:21:09	39840	14.15	0.32	0.01	4.64	0.66	78.30	2,443.00
	10/10/16 18:21:39	39870	13.61	0.40	0.01	5.08	0.66	78.30	2,443.00
	10/10/16 18:22:09	39900	13.65	0.38	0.01	4.98	0.67	78.50	2,453.00
	10/10/16 18:22:39	39930	14.06	0.37	0.01	4.77	0.67	78.50	2,453.00
	10/10/16 18:23:09	39960	14.27	0.40	0.00	4.59	0.40	78.70	1,809.00
	10/10/16 18:23:39	39990	13.72	0.40	0.01	4.96	0.40	78.70	1,809.00
	10/10/16 18:24:09	40020	12.95	0.40	0.02	5.42	0.17	78.80	1,014.00
	10/10/16 18:24:39	40050	11.40	0.41	-0.02	6.66	0.17	78.80	1,014.00
	10/10/16 18:25:09	40080	12.94	0.34	-0.04	5.68	0.16	78.80	1,008.00
	10/10/16 18:25:39	40110	14.12	0.47	-0.03	4.70	0.16	78.80	1,008.00
	10/10/16 18:26:09	40140	14.18	0.78	-0.03	4.66	0.17	78.70	1,009.00
	10/10/16 18:26:39	40170	13.91	1.05	-0.02	4.84	0.17	78.70	1,009.00
	10/10/16 18:27:09	40200	13.98	1.15	-0.02	4.78	0.17	78.50	1,012.00
	10/10/16 18:27:39	40230	13.94	1.18	-0.03	4.82	0.17	78.50	1,012.00
	10/10/16 18:28:09	40260	13.97	1.20	-0.03	4.81	0.17	78.20	1,013.00
	10/10/16 18:28:39	40290	14.05	1.22	-0.03	4.75	0.17	78.20	1,013.00
	10/10/16 18:29:09	40320	13.72	1.13	-0.03	4.94	0.32	77.80	1,440.00
	10/10/16 18:29:39	40350	13.94	0.99	-0.03	4.84	0.32	77.80	1,440.00
	10/10/16 18:30:09	40380	13.92	0.90	-0.04	4.85	0.76	76.80	2,469.00
	10/10/16 18:30:39	40410	12.74	0.90	0.01	5.64	0.76	76.80	2,469.00
	10/10/16 18:31:09	40440	13.80	0.73	0.03	4.95	0.73	76.20	2,454.00
	10/10/16 18:31:39	40470	13.64	0.51	0.02	5.02	0.73	76.20	2,454.00
	10/10/16 18:32:09	40500	13.62	0.31	0.01	5.03	0.71	76.10	2,469.00
	10/10/16 18:32:39	40530	13.82	0.17	0.03	4.93	0.71	76.10	2,469.00

Superior Fabrication, INC
SCD-60
Elk City Plant

Unit Data

Meas. Stack Moisture	5.7	%
Stack Exhaust Flow (M2)	259,378	SCFH

Weather Data

Barometric Pressure	28.01	in. Hg
Relative Humidity	43	%
Ambient Temperature	75	^{o}F
Specific Humidity	0.008475	lb H_2O / lb air

30-70-30 Load, Run - SCD-60 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
10/10/16 18:33:09	40560	14.10	0.10	0.02	4.69	0.69	76.20	2,458.00
10/10/16 18:33:39	40590	13.84	0.12	0.00	4.89	0.69	76.20	2,458.00
10/10/16 18:34:09	40620	13.68	0.12	0.00	5.00	0.68	76.40	2,450.00
10/10/16 18:34:39	40650	13.71	0.13	0.02	4.98	0.68	76.40	2,450.00
10/10/16 18:35:09	40680	14.05	0.12	0.02	4.76	0.68	76.60	2,446.00
10/10/16 18:35:39	40710	13.65	0.10	0.01	5.00	0.68	76.60	2,446.00
10/10/16 18:36:09	40740	13.41	0.10	0.01	5.22	0.67	76.90	2,445.00
10/10/16 18:36:39	40770	14.32	0.13	0.01	4.57	0.67	76.90	2,445.00
10/10/16 18:37:09	40800	13.69	0.13	0.00	4.94	0.67	77.10	2,441.00
10/10/16 18:37:39	40830	13.42	0.09	0.02	5.16	0.67	77.10	2,441.00
10/10/16 18:38:09	40860	14.02	0.06	0.02	4.80	0.61	77.30	2,327.00
10/10/16 18:38:39	40890	14.09	0.10	0.02	4.72	0.61	77.30	2,327.00
10/10/16 18:39:09	40920	14.21	0.09	0.02	4.63	0.21	77.50	1,247.00
10/10/16 18:39:39	40950	13.69	0.10	0.01	4.97	0.21	77.50	1,247.00
10/10/16 18:40:09	40980	13.46	0.04	-0.01	5.11	0.16	77.60	1,008.00
10/10/16 18:40:39	41010	13.30	0.03	-0.03	5.27	0.16	77.60	1,008.00
10/10/16 18:41:09	41040	14.22	0.17	-0.02	4.65	0.16	77.60	1,003.00
10/10/16 18:41:39	41070	14.33	0.63	-0.02	4.57	0.16	77.60	1,003.00
RAW AVERAGE		**13.63**	**0.76**	**0.02**	**5.05**	**0.53**	**78.03**	**2,008.06**

		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	1434717	1434717	1434717
		(%)	(ppmvd)	(ppmvw)	(%)	(in. H_2O)	(^{o}F)	(SCFH)
Bias	Initial Zero	0.01	-0.04	0.02	0.07			
	Final Zero	-0.04	0.07	-0.05	0.05			
	Avg. Zero	-0.02	0.02	-0.02	0.06			
	Initial UpScale	11.87	9.12	2.96	8.84			
	Final UpScale	11.90	9.22	2.95	8.85			
	Avg. UpScale	11.89	9.17	2.96	8.85			
Upscale Cal Gas		11.90	9.21	3.00	8.95			

EMISSIONS DATA	O_2	CO	THC	CO_2
Corrected Raw Average (ppm/% dry basis)	13.64	0.75	0.04	5.08
Corrected Raw Average (ppm/% wet basis)	12.86	0.70	0.04	4.79
Emission Rate (lb/hr)	N/A	0.01	0.00	N/A

Superior Fabrication, INC
October 11, 2016
SCD-60
Elk City Plant

Unit Data

Meas. Stack Moisture	5.9	%
Stack Exhaust Flow (M2)	224,237	SCFH

Weather Data

Barometric Pressure	27.99	in. Hg
Relative Humidity	70	%
Ambient Temperature	57	^{o}F
Specific Humidity	0.007377	lb H_2O / lb air

30-70-30 Load, Run - SCD-60 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
A1	10/11/16 08:03:21	2880	15.15	15.97	0.11	4.01	0.19	48.60	1,076.00
	10/11/16 08:03:51	2910	15.17	16.92	0.11	4.00	0.19	48.60	1,076.00
	10/11/16 08:04:21	2940	15.16	18.56	0.12	4.00	0.19	48.80	1,076.00
	10/11/16 08:04:51	2970	15.14	18.84	0.11	4.02	0.19	48.80	1,076.00
	10/11/16 08:05:21	3000	15.10	18.53	0.12	4.04	0.40	49.00	1,616.00
	10/11/16 08:05:51	3030	15.09	16.99	0.11	4.05	0.40	49.00	1,616.00
	10/11/16 08:06:21	3060	15.98	16.99	0.10	4.19	0.79	48.30	2,563.00
	10/11/16 08:06:51	3090	14.39	16.70	0.12	5.41	0.79	48.30	2,563.00
	10/11/16 08:07:21	3120	15.35	5.14	0.21	4.76	0.79	48.30	2,623.00
	10/11/16 08:07:51	3150	14.98	0.47	0.15	4.89	0.79	48.30	2,623.00
	10/11/16 08:08:21	3180	14.21	0.27	0.12	4.61	0.76	49.20	2,604.00
	10/11/16 08:08:51	3210	14.24	0.41	0.12	4.59	0.76	49.20	2,604.00
	10/11/16 08:09:21	3240	14.32	0.56	0.11	4.53	0.74	50.40	2,591.00
	10/11/16 08:09:51	3270	14.29	0.62	0.12	4.56	0.74	50.40	2,591.00
	10/11/16 08:10:21	3300	14.35	0.62	0.11	4.52	0.72	51.60	2,582.00
	10/11/16 08:10:51	3330	14.37	0.64	0.10	4.49	0.72	51.60	2,582.00
	10/11/16 08:11:21	3360	14.34	0.70	0.10	4.53	0.71	52.90	2,574.00
	10/11/16 08:11:51	3390	14.40	0.72	0.10	4.48	0.71	52.90	2,574.00
	10/11/16 08:12:21	3420	14.37	0.72	0.09	4.51	0.70	54.10	2,568.00
	10/11/16 08:12:51	3450	14.50	0.80	0.10	4.41	0.70	54.10	2,568.00
	10/11/16 08:13:21	3480	14.51	1.04	0.10	4.41	0.70	55.30	2,561.00
	10/11/16 08:13:51	3510	14.40	1.04	0.10	4.49	0.70	55.30	2,561.00
	10/11/16 08:14:21	3540	14.52	0.90	0.10	4.42	0.69	56.40	2,559.00
	10/11/16 08:14:51	3570	14.35	0.96	0.10	4.52	0.69	56.40	2,559.00
	10/11/16 08:15:21	3600	14.49	0.81	0.11	4.44	0.69	57.40	2,553.00
	10/11/16 08:15:51	3630	14.55	0.87	0.11	4.39	0.69	57.40	2,553.00
	10/11/16 08:16:21	3660	14.44	1.09	0.11	4.45	0.68	58.30	2,549.00
	10/11/16 08:16:51	3690	14.44	0.99	0.10	4.47	0.68	58.30	2,549.00
	10/11/16 08:17:21	3720	14.59	0.96	0.10	4.37	0.69	59.20	2,549.00
	10/11/16 08:17:51	3750	14.54	1.34	0.10	4.40	0.69	59.20	2,549.00
	10/11/16 08:18:21	3780	14.49	1.36	0.10	4.43	0.69	60.00	2,550.00
	10/11/16 08:18:51	3810	14.54	1.09	0.11	4.40	0.69	60.00	2,550.00
	10/11/16 08:19:21	3840	14.42	1.09	0.11	4.47	0.40	60.80	1,848.00
	10/11/16 08:19:51	3870	14.02	0.95	0.12	4.67	0.40	60.80	1,848.00
	10/11/16 08:20:21	3900	12.20	0.45	0.08	5.94	0.18	61.20	1,124.00
	10/11/16 08:20:51	3930	11.83	-0.01	0.05	6.43	0.18	61.20	1,124.00
	10/11/16 08:21:21	3960	13.72	-0.06	0.06	5.04	0.17	61.30	1,049.00
	10/11/16 08:21:51	3990	14.63	0.21	0.05	4.38	0.17	61.30	1,049.00
	10/11/16 08:22:21	4020	14.88	1.36	0.05	4.18	0.17	61.30	1,049.00
	10/11/16 08:22:51	4050	14.54	2.45	0.05	4.38	0.17	61.30	1,049.00
	10/11/16 08:23:21	4080	14.53	1.78	0.06	4.41	0.25	61.20	1,226.00
A2	10/11/16 08:23:51	4110	14.49	1.35	0.05	4.44	0.25	61.20	1,226.00
	10/11/16 08:24:21	4140	14.52	1.30	0.05	4.42	0.73	60.60	2,500.00
	10/11/16 08:24:51	4170	13.41	1.36	0.08	5.02	0.73	60.60	2,500.00
	10/11/16 08:25:21	4200	13.61	0.86	0.11	5.18	0.73	60.20	2,546.00
	10/11/16 08:25:51	4230	14.25	0.25	0.11	4.63	0.73	60.20	2,546.00
	10/11/16 08:26:21	4260	14.50	0.20	0.10	4.45	0.72	60.40	2,537.00
	10/11/16 08:26:51	4290	14.46	0.45	0.10	4.44	0.72	60.40	2,537.00
	10/11/16 08:27:21	4320	14.37	0.53	0.10	4.53	0.70	61.00	2,529.00
	10/11/16 08:27:51	4350	14.39	0.42	0.13	4.51	0.70	61.00	2,529.00
	10/11/16 08:28:21	4380	14.43	0.50	0.13	4.45	0.69	61.70	2,531.00
	10/11/16 08:28:51	4410	14.39	0.62	0.10	4.49	0.69	61.70	2,531.00
	10/11/16 08:29:21	4440	14.44	0.71	0.10	4.47	0.68	62.20	2,530.00
	10/11/16 08:29:51	4470	14.32	0.71	0.12	4.53	0.68	62.20	2,530.00
	10/11/16 08:30:21	4500	14.35	0.59	0.08	4.54	0.68	62.80	2,530.00
	10/11/16 08:30:51	4530	14.42	0.63	0.07	4.47	0.68	62.80	2,530.00
	10/11/16 08:31:21	4560	14.44	0.71	0.06	4.48	0.69	63.40	2,528.00
	10/11/16 08:31:51	4590	14.45	0.83	0.06	4.45	0.69	63.40	2,528.00
	10/11/16 08:32:21	4620	14.40	0.89	0.06	4.46	0.67	63.90	2,526.00
	10/11/16 08:32:51	4650	14.36	0.83	0.05	4.54	0.67	63.90	2,526.00

Superior Fabrication, INC
October 11, 2016
SCD-60
Elk City Plant

Unit Data

Meas. Stack Moisture	5.9	%
Stack Exhaust Flow (M2)	224,237	SCFH

Weather Data

Barometric Pressure	27.99	in. Hg
Relative Humidity	70	%
Ambient Temperature	57	^{o}F
Specific Humidity	0.007377	lb H_2O / lb air

30-70-30 Load, Run - SCD-60 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
	10/11/16 08:33:21	4680	14.55	0.82	0.06	4.39	0.68	64.40	2,528.00
	10/11/16 08:33:51	4710	14.51	0.94	0.05	4.42	0.68	64.40	2,528.00
	10/11/16 08:34:21	4740	14.37	0.90	0.05	4.50	0.67	64.80	2,527.00
	10/11/16 08:34:51	4770	14.43	0.79	0.05	4.48	0.67	64.80	2,527.00
	10/11/16 08:35:21	4800	14.39	0.86	0.06	4.48	0.68	65.20	2,529.00
	10/11/16 08:35:51	4830	14.27	0.79	0.06	4.60	0.68	65.20	2,529.00
	10/11/16 08:36:21	4860	14.43	0.55	0.06	4.49	0.67	65.60	2,526.00
	10/11/16 08:36:51	4890	14.39	0.66	0.07	4.51	0.67	65.60	2,526.00
	10/11/16 08:37:21	4920	14.55	0.73	0.07	4.39	0.47	65.90	2,043.00
	10/11/16 08:37:51	4950	14.18	0.80	0.05	4.63	0.47	65.90	2,043.00
	10/11/16 08:38:21	4980	13.77	0.53	0.05	4.82	0.18	66.10	1,087.00
	10/11/16 08:38:51	5010	12.55	0.26	0.06	5.75	0.18	66.10	1,087.00
	10/11/16 08:39:21	5040	13.23	0.01	0.06	5.38	0.16	66.00	1,028.00
	10/11/16 08:39:51	5070	14.34	0.14	0.06	4.56	0.16	66.00	1,028.00
	10/11/16 08:40:21	5100	14.52	0.75	0.06	4.42	0.17	65.80	1,034.00
	10/11/16 08:40:51	5130	14.52	1.29	0.05	4.41	0.17	65.80	1,034.00
	10/11/16 08:41:21	5160	14.42	1.46	0.06	4.48	0.34	65.40	1,470.00
	10/11/16 08:41:51	5190	14.48	1.49	0.05	4.43	0.34	65.40	1,470.00
	10/11/16 08:42:21	5220	14.45	1.40	0.03	4.46	0.72	64.30	2,467.00
	10/11/16 08:42:51	5250	12.71	1.23	0.06	5.59	0.72	64.30	2,467.00
	10/11/16 08:43:21	5280	13.91	0.60	0.11	4.94	0.71	63.70	2,509.00
A3	10/11/16 08:43:51	5310	14.19	0.16	0.09	4.64	0.71	63.70	2,509.00
	10/11/16 08:44:21	5340	14.15	0.05	0.09	4.67	0.68	63.70	2,488.00
	10/11/16 08:44:51	5370	14.18	0.02	0.09	4.65	0.68	63.70	2,488.00
	10/11/16 08:45:21	5400	14.42	0.16	0.08	4.50	0.67	64.00	2,479.00
	10/11/16 08:45:51	5430	14.37	0.41	0.07	4.49	0.67	64.00	2,479.00
	10/11/16 08:46:21	5460	14.50	0.52	0.07	4.44	0.70	64.40	2,522.00
	10/11/16 08:46:51	5490	14.52	0.66	0.10	4.41	0.70	64.40	2,522.00
	10/11/16 08:47:21	5520	14.33	0.81	0.07	4.52	0.68	64.80	2,520.00
	10/11/16 08:47:51	5550	14.31	0.68	0.09	4.56	0.68	64.80	2,520.00
	10/11/16 08:48:21	5580	14.44	0.52	0.09	4.47	0.67	65.20	2,517.00
	10/11/16 08:48:51	5610	14.43	0.64	0.11	4.47	0.67	65.20	2,517.00
	10/11/16 08:49:21	5640	14.34	0.67	0.10	4.53	0.67	65.80	2,514.00
	10/11/16 08:49:51	5670	14.41	0.60	0.10	4.49	0.67	65.80	2,514.00
	10/11/16 08:50:21	5700	14.41	0.61	0.10	4.49	0.67	66.20	2,512.00
	10/11/16 08:50:51	5730	14.41	0.71	0.11	4.48	0.67	66.20	2,512.00
	10/11/16 08:51:21	5760	14.35	0.71	0.11	4.50	0.68	66.70	2,511.00
	10/11/16 08:51:51	5790	14.41	0.61	0.11	4.50	0.68	66.70	2,511.00
	10/11/16 08:52:21	5820	14.46	0.64	0.09	4.46	0.67	67.10	2,515.00
	10/11/16 08:52:51	5850	14.18	0.71	0.08	4.63	0.67	67.10	2,515.00
	10/11/16 08:53:21	5880	14.41	0.56	0.06	4.48	0.67	67.50	2,513.00
	10/11/16 08:53:51	5910	14.27	0.58	0.07	4.58	0.67	67.50	2,513.00
	10/11/16 08:54:21	5940	14.30	0.53	0.06	4.55	0.53	67.90	2,205.00
	10/11/16 08:54:51	5970	14.21	0.48	0.06	4.63	0.53	67.90	2,205.00
	10/11/16 08:55:21	6000	13.62	0.40	0.09	4.94	0.21	68.10	1,240.00
	10/11/16 08:55:51	6030	11.07	0.28	0.08	6.75	0.21	68.10	1,240.00
	10/11/16 08:56:21	6060	11.65	0.19	0.08	6.64	0.16	68.10	1,029.00
	10/11/16 08:56:51	6090	14.08	0.26	0.06	4.76	0.16	68.10	1,029.00
	10/11/16 08:57:21	6120	14.30	0.67	0.07	4.56	0.17	67.90	1,035.00
	10/11/16 08:57:51	6150	14.49	1.07	0.05	4.43	0.17	67.90	1,035.00
	10/11/16 08:58:21	6180	14.45	1.30	0.05	4.46	0.17	67.70	1,036.00
	10/11/16 08:58:51	6210	14.55	1.32	0.06	4.40	0.17	67.70	1,036.00
	10/11/16 08:59:21	6240	14.55	1.34	0.06	4.39	0.47	67.20	1,840.00
	10/11/16 08:59:51	6270	14.60	1.41	0.06	4.36	0.47	67.20	1,840.00
	10/11/16 09:00:21	6300	13.02	1.34	0.08	5.28	0.75	66.20	2,524.00
	10/11/16 09:00:51	6330	13.51	0.83	0.11	5.31	0.75	66.20	2,524.00
	10/11/16 09:01:21	6360	14.10	0.30	0.11	4.67	0.72	65.70	2,515.00
	10/11/16 09:01:51	6390	13.91	0.14	0.11	4.82	0.72	65.70	2,515.00
	10/11/16 09:02:21	6420	14.10	0.01	0.10	4.74	0.69	65.80	2,490.00
	10/11/16 09:02:51	6450	14.07	0.07	0.08	4.68	0.69	65.80	2,490.00

Superior Fabrication, INC
October 11, 2016
SCD-60
Elk City Plant

Unit Data

Meas. Stack Moisture	5.9	%
Stack Exhaust Flow (M2)	224,237	SCFH

Weather Data

Barometric Pressure	27.99	in. Hg
Relative Humidity	70	%
Ambient Temperature	57	°F
Specific Humidity	0.007377	lb H_2O / lb air

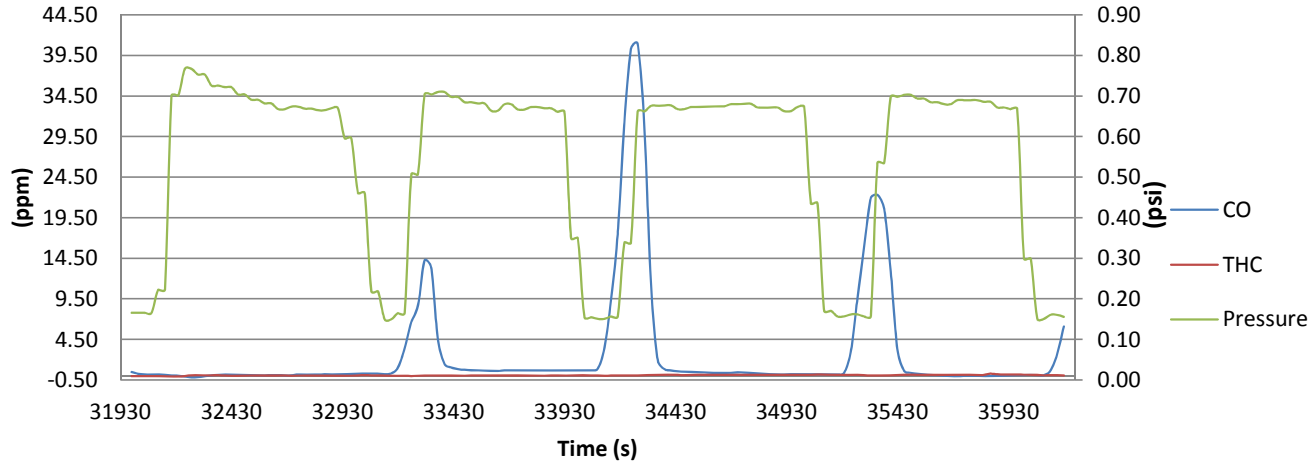
30-70-30 Load, Run - SCD-60 R6

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
10/11/16 09:03:21	6480	14.21	0.10	0.10	4.63	0.68	66.10	2,481.00
10/11/16 09:03:51	6510	14.24	0.17	0.10	4.62	0.68	66.10	2,481.00
10/11/16 09:04:21	6540	14.19	0.29	0.10	4.64	0.68	66.40	2,482.00
10/11/16 09:04:51	6570	14.04	0.21	0.06	4.73	0.68	66.40	2,482.00
10/11/16 09:05:21	6600	14.05	0.20	0.06	4.75	0.67	66.80	2,479.00
10/11/16 09:05:51	6630	14.32	0.22	0.09	4.56	0.67	66.80	2,479.00
10/11/16 09:06:21	6660	14.35	0.34	0.08	4.53	0.67	67.20	2,480.00
10/11/16 09:06:51	6690	14.19	0.39	0.08	4.63	0.67	67.20	2,480.00
10/11/16 09:07:21	6720	14.19	0.31	0.09	4.66	0.66	67.60	2,471.00
10/11/16 09:07:51	6750	14.29	0.37	0.11	4.55	0.66	67.60	2,471.00
10/11/16 09:08:21	6780	14.12	0.42	0.07	4.69	0.65	68.00	2,467.00
10/11/16 09:08:51	6810	14.46	0.43	0.09	4.46	0.65	68.00	2,467.00
10/11/16 09:09:21	6840	14.18	0.59	0.11	4.63	0.63	68.40	2,395.00
10/11/16 09:09:51	6870	14.24	0.43	0.07	4.60	0.63	68.40	2,395.00
10/11/16 09:10:21	6900	14.09	0.42	0.07	4.66	0.22	68.70	1,293.00
10/11/16 09:10:51	6930	11.51	0.29	0.05	6.27	0.22	68.70	1,293.00
10/11/16 09:11:21	6960	10.39	0.21	0.05	7.63	0.16	68.90	1,025.00
10/11/16 09:11:51	6990	13.87	0.35	0.04	4.91	0.16	68.90	1,025.00
10/11/16 09:12:21	7020	14.38	0.59	0.05	4.52	0.17	68.80	1,036.00
10/11/16 09:12:51	7050	14.46	0.93	0.05	4.43	0.17	68.80	1,036.00
10/11/16 09:13:21	7080	14.39	1.17	0.06	4.49	0.17	68.50	1,045.00
RAW AVERAGE		**14.22**	**1.66**	**0.08**	**4.65**	**0.55**	**62.39**	**2,129.52**

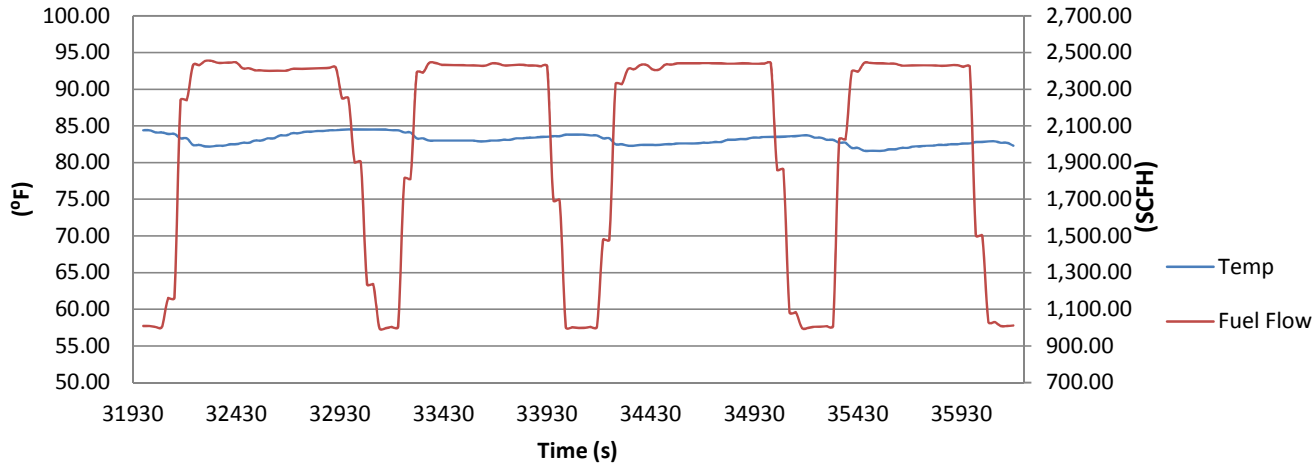
		O_2	CO	THC	CO_2	Press. Trans	Temp. Trans.	F-Flow Trans.
	Serial Number:	INSTO2-0011	INST-CO-0022	INST-TH-0002	INST-C2-0013	1434717	1434717	1434717
		(%)	(ppmvd)	(ppmvw)	(%)	(in. H_2O)	(°F)	(SCFH)
Bias	Initial Zero	-0.02	-0.02	0.01	0.03			
	Final Zero	0.01	0.07	0.02	0.04			
	Avg. Zero	-0.01	0.03	0.02	0.04			
	Initial UpScale	11.96	9.23	5.02	8.84			
	Final UpScale	11.88	9.20	4.87	8.84			
	Avg. UpScale	11.92	9.22	4.95	8.84			
Upscale Cal Gas		11.90	9.21	5.01	8.95			

EMISSIONS DATA	O_2	CO	THC	CO_2
Corrected Raw Average (ppm/% dry basis)	14.19	1.64	0.07	4.69
Corrected Raw Average (ppm/% wet basis)	13.35	1.54	0.07	4.41
Emission Rate (lb/hr)	N/A	0.03	0.00	N/A

SCD-60 R4



SCD-60 R4



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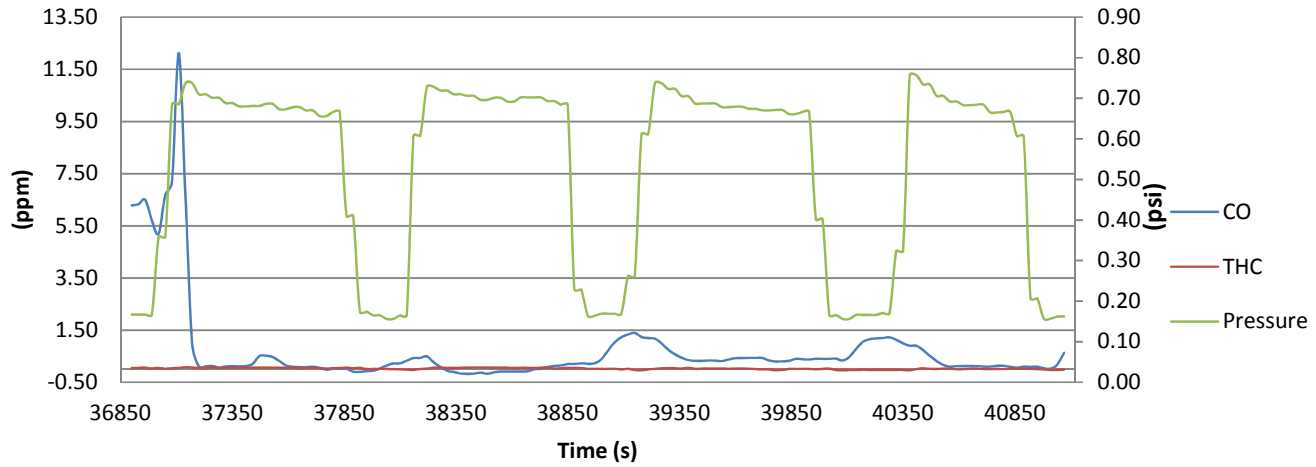

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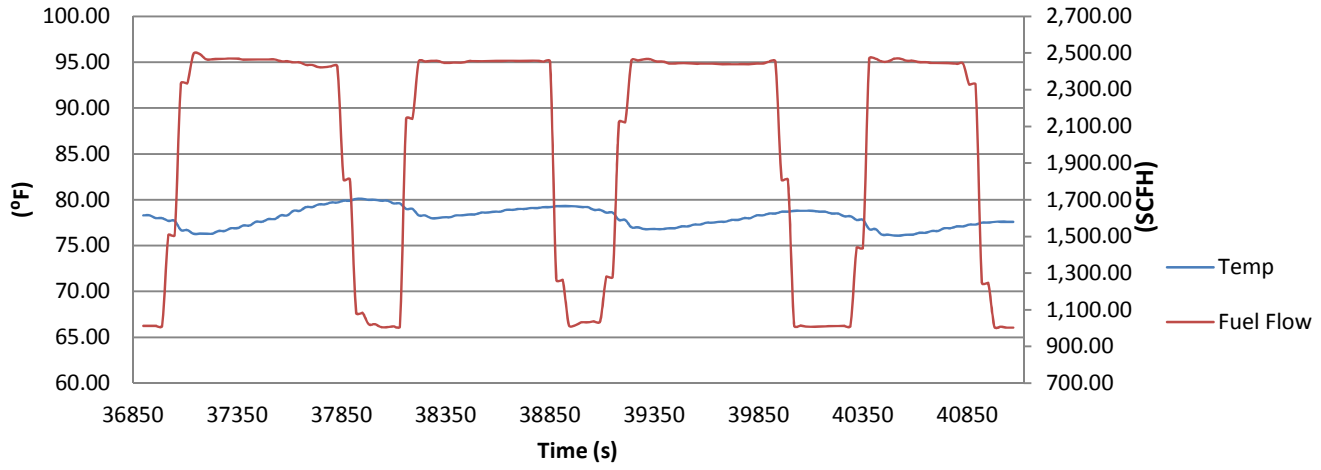

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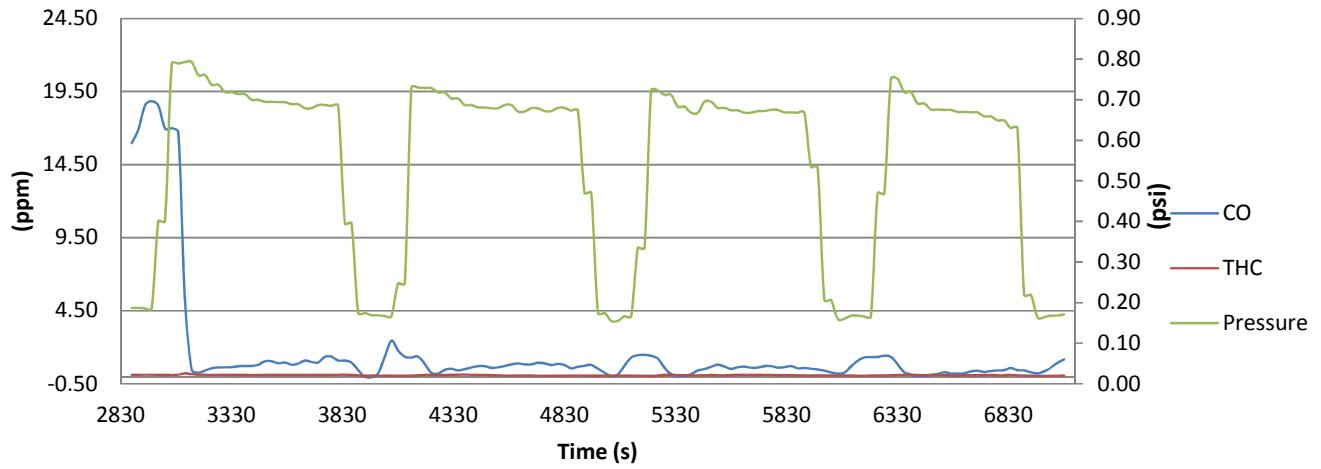

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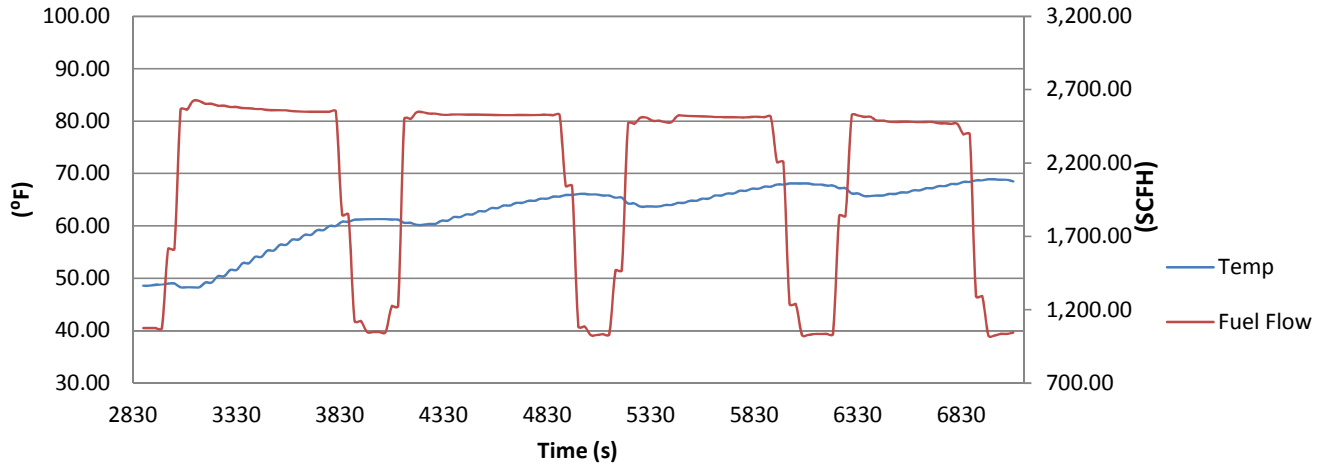

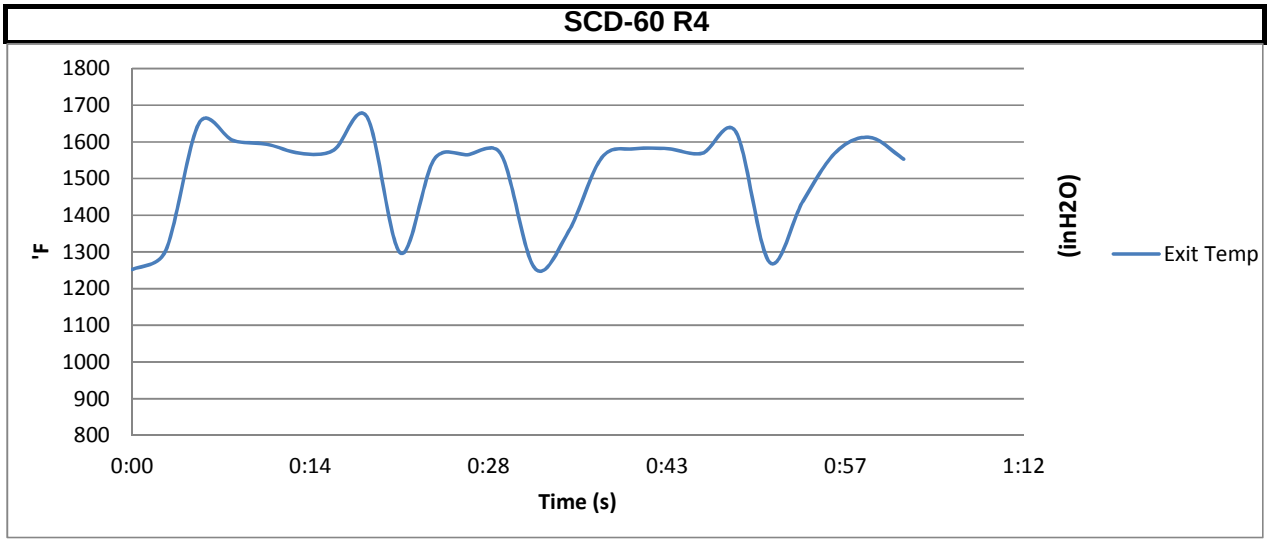
SCD-60 R4
1800
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1600
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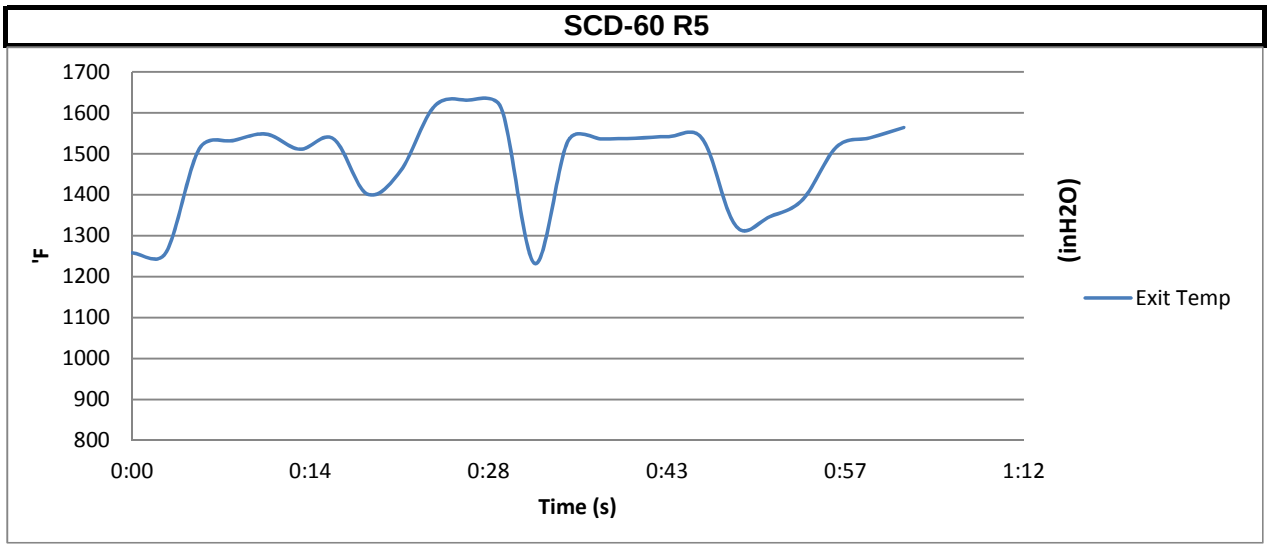
0:57
1:12
Time (s)
(inH2O)
Exit Temp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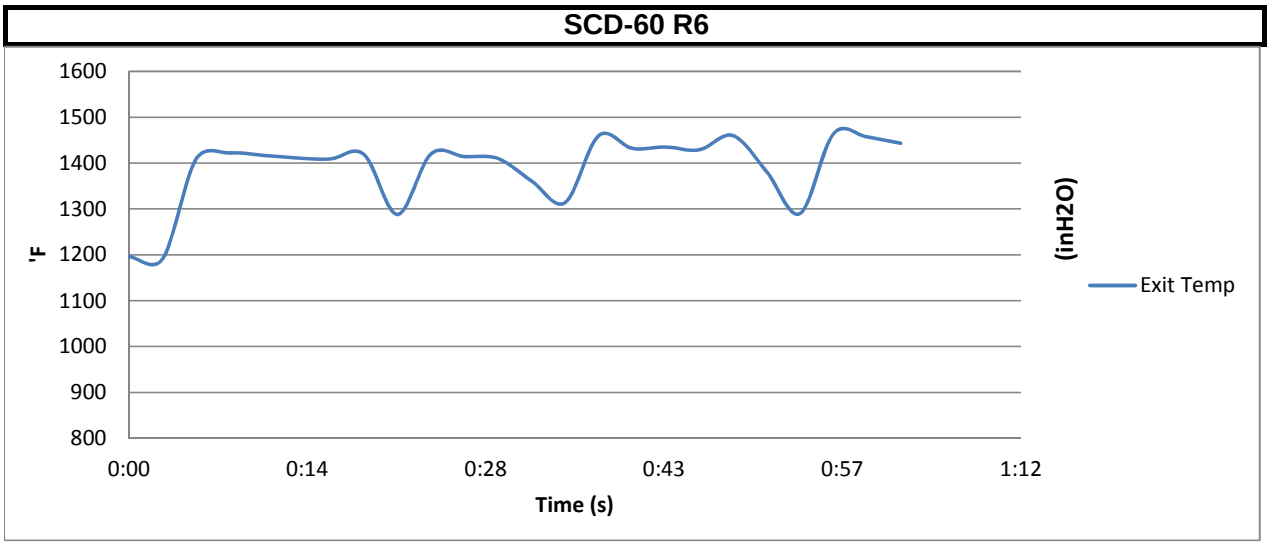
0:57
1:12
Time (s)
(inH2O)
Exit Temp


SCD-60 R6
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0:57
1:12
Time (s)
(inH2O)
Exit Temp

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	Elk City Facilty
Sampling Location	SCD-60
Fuel Type	Gas, Propene

Test Information			
Project #		sfi-elkcity.ok-comp#1	
Operator		TW	
Date for Preliminary Run	(mm/dd/yy)	10/10/16	
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		SCD-48	
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)	10/10/16	10/10/16	10/10/16	
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-0003	SAMP-SP-0001	SAMP-SP-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-0032	SAMP-BC-0032	SAMP-BC-0032	

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	Elk City Facilty
Sampling Location	SCD-60
Project #	sfi-elkcity.ok-comp#1

Historical Data	70-100-70%-7	70-100-70%-8	70-100-70%-9	**Average**	**Units**
Run Start Time	11:02	12:30	13:56		hh:mm
Run Stop Time	12:11	13:39	15:05		hh:mm
Test Date	10/10/16	10/10/16	10/10/16		mm/dd/yy
Meter Calibration Factor	0.989	0.989	0.989		
Pitot Tube Coefficient	0.840	0.840	0.840		
Initial Meter Volume	86.650	134.730	183.700		ft^3
Final Meter Volume	134.600	183.350	231.160		ft^3
Total Meter Volume	47.950	48.620	47.460	48.010	ft^3
Total Sampling Time	64.99	65.00	65.39	65.13	min
Average Meter Temperature	73.75	70.31	76.69	73.58	°F
Average Stack Temperature	1535.96	1584.25	1612.79	1577.67	°F
Barometric Pressure	28.14	28.09	28.04	28.09	in Hg
Stack Static Pressure	0.00	0.00	0.00	0.00	in H_2O
Absolute Stack Pressure	28.14	28.09	28.04	28.09	in Hg
Average Orifice Pressure Drop	1.50	1.50	1.50	1.50	in H_2O
Absolute Meter Pressure	28.26	28.21	28.16	28.21	in Hg
Avg Square Root Pitot Pressure	0.17	0.17	0.18	0.17	$\sqrt{(in\ H_2O)}$
Moisture Content Data	70-100-70%-7	70-100-70%-8	70-100-70%-9	**Average**	**Units**
Impinger Water Weight Gain	42.90	43.50	46.60	44.33	g
Silica Gel Weight Gain	15.90	14.10	16.20	15.40	g
Total Water Volume Collected	58.91	57.70	62.91	59.84	ml
Standard Water Vapor Volume	2.77	2.72	2.96	2.82	scf
Standard Meter Volume	44.3	45.1	43.4	44.3	dscf
Calculated Stack Moisture	5.89	5.68	6.38	5.98	%
Saturated Stack Moisture	100.00	100.00	100.00	100.00	%
Reported Stack Moisture Content	5.89	5.68	6.38	5.98	%
Method 3C Gas Analysis Data	70-100-70%-7	70-100-70%-8	70-100-70%-9	**Average**	**Units**
Carbon Dioxide Content	2.3	5.3	5.0	4.2	%
Oxygen Content	18.8	14.2	14.6	15.9	%
Nitrogen Content	78.9	80.5	80.4	79.9	%
Stack Dry Molecular Weight	29.13	29.41	29.39	29.31	lb/lb-mole
Stack Wet Molecular Weight	28.47	28.76	28.66	28.63	lb/lb-mole
Percent Excess Air	931.1	201.1	220.5	450.9	%
Volumetric Flow Rate Data	70-100-70%-7	70-100-70%-8	70-100-70%-9	**Average**	**Units**
Average Stack Gas Velocity	19.45	19.11	20.54	19.70	ft/sec
Stack Cross-Sectional Area	21.65	21.65	21.65	21.65	ft^2
Actual Stack Flow Rate	25,258	24,822	26,683	25,588	acfm
Wet Standard Stack Flow Rate	377	361	382	373	wkscfh
Dry Standard Stack Flow Rate	354,831	340,646	357,807	351,095	dscfh

METHOD 3C - DETERMINATION OF DRY MOLECULAR WEIGHT BY ANALYZER

Plant Name	Elk City Facilty	**Preliminary Date**	10/10/16		
Sampling Location	SCD-60	**Operator**	TW		
Project #	sfi-elkcity.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**	10/10/16	**Run Start Time**	11:02	**Run Stop Time**	12:11
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		%	
01:09	2.3	18.8	0.0	78.9	29.13	0.897	931.1	N/A

Gas Analysis Data

Run Number	70-100-70%-8		**Date**	10/10/16	**Run Start Time**	12:30	**Run Stop Time**	13:39
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		%	
01:09	5.3	14.2	0.0	80.5	29.41	1.271	201.1	N/A

Gas Analysis Data

Run Number	70-100-70%-9		**Date**	10/10/16	**Run Start Time**	13:56	**Run Stop Time**	15:05
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		%	
01:09	5.0	14.6	0.0	80.4	29.39	1.255	220.5	N/A

METHOD 4 - DETERMINATION OF MOISTURE CONTENT IN STACK GASES

Plant Name	Elk City Facilty	**Preliminary Date**	10/10/16
Sampling Location	SCD-60	**Operator**	TW
Project #	sfi-elkcity.ok-comp#1	**Ports Used**	2

Scale Daily Calibration					
Scale Number	SAMP-SC-0027	**Standard**	**Result**	**Difference**	**Pass/Fail**
Date		(g)	(g)	(g)	(± 0.5 g)
Test Day 1	10/10/16	500	500.1	-0.5	Pass

Moisture Content Data									
Run Number		70-100-70%-7		**Date**	10/10/16	**Start Time**	11:02	**Stop Time**	12:11
Meter Box Number		SAMP-CP-0011				**Meter Cal Factor**	(Y)	0.989	
Total Meter Volume	(V_m)	47.950	dcf			**Barometric Pressure**	(P_b)	28.14	in Hg
Average Stack Temp	$(t_s)_{avg}$	1536	°F			**Stack Static Pressure**	(P_{static})	0.00	in H_2O
Average Meter Temp	$(t_m)_{avg}$	74	°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)	803.70	694.70	588.30	900.90				
Initial Value	(V_i),(W_i)	770.10	688.30	585.40	885.00				
Net Value	(V_n),(W_n)	33.6	6.4	2.9	15.9				
Results									
Total Weight	(W_t)	58.80	g			**Water Vol Weighed**	($V_{wsg(std)}$)	2.772	scf
Std Meter Volume	($V_{m(std)}$)	44.294	dscf			**Sat. Moisture Content**	($B_{ws(svp)}$)	100.00	%
Calc Moisture Content	($B_{ws(calc)}$)	5.89	%			**Final Moisture Content**	(B_{ws})	5.89	%

Moisture Content Data									
Run Number		70-100-70%-8		**Date**	10/10/16	**Start Time**	12:30	**Stop Time**	13:39
Meter Box Number		SAMP-CP-0011				**Meter Cal Factor**	(Y)	0.989	
Total Meter Volume	(V_m)	48.620	dcf			**Barometric Pressure**	(P_b)	28.09	in Hg
Average Stack Temp	$(t_s)_{avg}$	1584	°F			**Stack Static Pressure**	(P_{static})	0.00	in H_2O
Average Meter Temp	$(t_m)_{avg}$	70	°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)	838.70	700.70	590.80	915.00				
Initial Value	(V_i),(W_i)	803.70	694.70	588.30	900.90				
Net Value	(V_n),(W_n)	35.0	6.0	2.5	14.1				
Results									
Total Weight	(W_t)	57.60	g			**Water Vol Weighed**	($V_{wsg(std)}$)	2.716	scf
Std Meter Volume	($V_{m(std)}$)	45.124	dscf			**Sat. Moisture Content**	($B_{ws(svp)}$)	100.00	%
Calc Moisture Content	($B_{ws(calc)}$)	5.68	%			**Final Moisture Content**	(B_{ws})	5.68	%

Moisture Content Data									
Run Number		70-100-70%-9		**Date**	10/10/16	**Start Time**	13:56	**Stop Time**	15:05
Meter Box Number		SAMP-CP-0011				**Meter Cal Factor**	(Y)	0.989	
Total Meter Volume	(V_m)	47.460	dcf			**Barometric Pressure**	(P_b)	28.04	in Hg
Average Stack Temp	$(t_s)_{avg}$	1613	°F			**Stack Static Pressure**	(P_{static})	0.00	in H_2O
Average Meter Temp	$(t_m)_{avg}$	77	°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)	876.40	706.70	593.70	905.00				
Initial Value	(V_i),(W_i)	838.70	700.70	590.80	888.80				
Net Value	(V_n),(W_n)	37.7	6.0	2.9	16.2				
Results									
Total Weight	(W_t)	62.80	g			**Water Vol Weighed**	($V_{wsg(std)}$)	2.961	scf
Std Meter Volume	($V_{m(std)}$)	43.447	dscf			**Sat. Moisture Content**	($B_{ws(svp)}$)	100.00	%
Calc Moisture Content	($B_{ws(calc)}$)	6.38	%			**Final Moisture Content**	(B_{ws})	6.38	%

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

Plant Name	Elk City Facilty
Sampling Location	SCD-60
Project #	sfi-elkcity.ok-comp#1

Date	10/10/16
Operator	TW
Run Number	70-100-70%-7

Ideal Nozzle Diameter and IsoKinetic Factor Setup			
Pitot Coefficient	(C_p)	0.840	
Average Stack Temp	(t_s)	1536.0	°F
Average Meter Temp	(t_m)	73.8	
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})	5.89	%
Stack Dry Molecular Weight	(M_d)	29.13	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 (-)**	0.3	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})	0.4284	in
Probe Number	SAMP-PF-0003		in
Probe Length	60		in
Liner Material	inconel		
Sample Case / Oven Number			
Impinger Case Number	SAMP-BC-0032		

Pressures			
Barometric Pressure	(P_b)	28.14	in Hg
Stack Static Pressure	(P_{static})	0.00	in H_2O
Absolute Stack Pressure	(P_s)	28.14	in Hg
Absolute Meter Pressure	(P_m)	28.26	in Hg

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

Run Time			
Start	11:02	**End**	12:11

Weights	**Imp 1**	**Imp 2**	**Imp 3**	**Imp 4**	**Imp 5**	**Imp 6**	**Imp 7**	**Imp 8**
Pre	770.1	688.3	585.4	885.0				
Post	803.7	694.7	588.3	900.9				

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 (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	86.650	0.015	1.585	1.50	1354	254		63			74	69	10.0	0.12	13.23	1.827		43.989
A-2	2.7	00:02:42	88.620	0.020	1.585	1.50	1356	257		61			75	69	10.0	0.14	15.29	3.663		44.012
A-3	5.4	00:05:25	90.600	0.015	1.585	1.50	1485	255		58			75	70	10.0	0.12	13.70	5.551		44.451
A-4	8.1	00:08:07	92.640	0.020	1.585	1.50	1545	253		58			76	70	10.0	0.14	16.07	7.374		44.271
A-5	10.8	00:10:50	94.610	0.025	1.585	1.50	1575	251		63			77	70	10.0	0.16	18.10	9.139		43.888
A-6	13.5	00:13:32	96.520	0.030	1.585	1.50	1584	251		65			76	71	10.0	0.17	19.87	10.941		43.781
A-7	16.2	00:16:15	98.470	0.030	1.585	1.50	1648	251		66			77	72	10.0	0.17	20.18	12.777		43.820
A-8	19.0	00:18:57	100.460	0.030	1.585	1.50	1520	251		67			77	72	10.0	0.17	19.55	14.594		43.793
A-9	21.7	00:21:40	102.430	0.035	1.585	1.50	1450	252		65			77	72	10.0	0.19	20.74	16.457		43.896
A-10	24.4	00:24:22	104.450	0.040	1.585	1.50	1633	252		64			77	72	10.0	0.20	23.21	18.358		44.066
A-11	27.1	00:27:04	106.510	0.045	1.585	1.50	1656	252		64			78	73	10.0	0.21	24.76	20.144		43.957
A-12	29.8	00:29:47	108.450	0.045	1.585	1.50	1646	252		64			78	73	10.0	0.21	24.70	22.031		44.068
B-1	32.5	00:32:29	110.500	0.025	1.585	1.50	1137	250		66			75	74	10.0	0.16	16.03	23.968		44.254
B-2	35.2	00:35:12	112.600	0.015	1.585	1.50	1404	253		63			77	74	10.0	0.12	13.42	25.782		44.202
B-3	37.9	00:37:54	114.570	0.030	1.585	1.50	1588	253		63			78	75	10.0	0.17	19.89	27.611		44.181
B-4	40.6	00:40:37	116.560	0.025	1.585	1.50	1650	252		63			77	75	10.0	0.16	18.43	29.506		44.262
B-5	43.3	00:43:20	118.620	0.040	1.585	1.50	1676	251		64			75	74	10.0	0.20	23.45	31.323		44.223
B-6	46.0	00:46:02	120.590	0.045	1.585	1.50	1667	252		64			74	74	10.0	0.21	24.82	33.281		44.376
B-7	48.7	00:48:45	122.710	0.030	1.585	1.50	1504	251		64			75	74	10.0	0.17	19.47	34.978		44.184
B-8	51.5	00:51:27	124.550	0.030	1.585	1.50	1457	252		63			74	73	10.0	0.17	19.24	36.910		44.293
B-9	54.2	00:54:10	126.640	0.035	1.585	1.50	1447	252		61			73	72	10.0	0.19	20.73	38.761		44.300
B-10	56.9	00:56:52	128.640	0.03	1.585	1.50	1608	252		61			72	71	10.0	0.17	19.98	40.552		44.239
B-11	59.6	00:59:35	130.570	0.04	1.585	1.50	1635	252		60			72	70	10.0	0.19	21.72	42.511		44.360
B-12	62.3	01:02:17	132.680	0.03	1.585	1.50	1638	252		58			72	70	10.0	0.17	20.13	44.294		44.294
Last Pt	65.0	01:05:00	134.600																	
Final Val	65.0	01:05:00	134.600											**Max Vac**	10.0	**Final Values**		44.294		
Average Values				0.03		1.50	1536	252		63			75	72		0.17	19.45			
													74							

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

Plant Name	Elk City Facilty
Sampling Location	SCD-60
Project #	sfi-elkcity.ok-comp#1

Date	10/10/16
Operator	TW
Run Number	70-100-70%-8

Ideal Nozzle Diameter and IsoKinetic Factor Setup			
Pitot Coefficient	(C_p)	0.840	
Average Stack Temp	(t_s)	1584.3	°F
Average Meter Temp	(t_m)	70.3	
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})	5.68	%
Stack Dry Molecular Weight	(M_d)	29.41	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 (-)**	0.3	in H_2O for	15.0	sec
	Post (+)	0.3	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})	0.4155	in
Probe Number	SAMP-SP-0001		in
Probe Length	60		in
Liner Material	inconel		
Sample Case / Oven Number			
Impinger Case Number	SAMP-BC-0032		

Pressures			
Barometric Pressure	(P_b)	28.09	in Hg
Stack Static Pressure	(P_{static})	0.00	in H_2O
Absolute Stack Pressure	(P_s)	28.09	in Hg
Absolute Meter Pressure	(P_m)	28.21	in Hg

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

Run Time			
Start	12:30	**End**	13:39

Weights	**Imp 1**	**Imp 2**	**Imp 3**	**Imp 4**	**Imp 5**	**Imp 6**	**Imp 7**	**Imp 8**
Pre	803.7	694.7	588.3	900.9				
Post	838.7	700.7	590.8	915.0				

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	134.730	0.025	1.585	1.50	1335	252		56			67	66	10.0	0.16	16.92	1.879		45.095
A-2	2.7	00:02:43	136.740	0.020	1.585	1.50	1344	256		52			69	66	10.0	0.14	15.18	3.624		43.485
A-3	5.4	00:05:25	138.610	0.020	1.585	1.50	1528	255		51			71	66	10.0	0.14	15.93	5.524		44.188
A-4	8.1	00:08:07	140.650	0.015	1.585	1.50	1641	252		52			71	66	10.0	0.12	14.18	7.386		44.317
A-5	10.8	00:10:50	142.650	0.020	1.585	1.50	1664	251		54			71	66	10.0	0.14	16.47	9.230		44.304
A-6	13.5	00:13:33	144.630	0.035	1.585	1.50	1666	251		56			71	66	10.0	0.19	21.79	11.102		44.408
A-7	16.3	00:16:15	146.640	0.040	1.585	1.50	1641	251		57			72	67	10.0	0.20	23.16	12.942		44.374
A-8	19.0	00:18:58	148.620	0.035	1.585	1.50	1650	251		56			72	67	10.0	0.19	21.71	14.885		44.655
A-9	21.7	00:21:40	150.710	0.035	1.585	1.50	1677	252		56			72	67	10.0	0.19	21.85	16.595		44.254
A-10	24.4	00:24:22	152.550	0.040	1.585	1.50	1681	250		57			71	67	10.0	0.20	23.38	18.326		43.982
A-11	27.1	00:27:05	154.410	0.030	1.585	1.50	1664	253		56			70	67	10.0	0.17	20.17	20.114		43.885
A-12	29.8	00:29:47	156.330	0.030	1.585	1.50	1691	251		56			70	67	10.0	0.17	20.29	22.293		44.586
B-1	32.5	00:32:30	158.670	0.035	1.585	1.50	1344	251		63			69	67	10.0	0.19	20.07	24.101		44.495
B-2	35.2	00:35:12	160.610	0.020	1.585	1.50	1402	254		59			71	69	10.0	0.14	15.42	26.079		44.708
B-3	37.9	00:37:55	162.740	0.030	1.585	1.50	1575	254		59			73	68	10.0	0.17	19.74	28.204		45.126
B-4	40.6	00:40:37	165.030	0.025	1.585	1.50	1642	252		61			74	69	10.0	0.16	18.31	30.028		45.042
B-5	43.3	00:43:20	167.000	0.025	1.585	1.50	1631	252		65			75	69	10.5	0.16	18.27	31.990		45.162
B-6	46.0	00:46:03	169.120	0.025	1.585	1.50	1621	252		65			76	70	11.0	0.16	18.22	33.781		45.041
B-7	48.8	00:48:45	171.060	0.030	1.585	1.50	1648	252		65			76	69	11.0	0.17	20.09	35.685		45.076
B-8	51.5	00:51:28	173.120	0.025	1.585	1.50	1449	252		63			76	69	11.0	0.16	17.45	37.608		45.129
B-9	54.2	00:54:10	175.200	0.030	1.585	1.50	1584	252		63			76	70	11.0	0.17	19.78	39.565		45.217
B-10	56.9	00:56:53	177.320	0.03	1.585	1.50	1652	252		64			78	70	11.0	0.17	20.11	41.344		45.103
B-11	59.6	00:59:35	179.250	0.03	1.585	1.50	1658	252		65			78	70	11.0	0.17	20.14	43.233		45.113
B-12	62.3	01:02:18	181.300	0.03	1.585	1.50	1634	252		66			78	70	11.0	0.17	20.02	45.123		45.123
Last Pt	65.0	01:05:00	183.350																	
Final Val	65.0	01:05:00	183.350											**Max Vac**	11.0	**Final Values**		45.123		
Average Values				0.03		1.50	1584	252		59			73	68		0.17	19.11			
													70							

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

Plant Name	Elk City Facilty
Sampling Location	SCD-60
Project #	sfi-elkcity.ok-comp#1

Date	10/10/16
Operator	TW
Run Number	70-100-70%-9

Ideal Nozzle Diameter and IsoKinetic Factor Setup			
Pitot Coefficient	(C_p)	0.840	
Average Stack Temp	(t_s)	1612.8	°F
Average Meter Temp	(t_m)	76.7	
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})	6.38	%
Stack Dry Molecular Weight	(M_d)	29.39	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 (+)	0.3	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})	0.4113	in
Probe Number	SAMP-SP-0001		in
Probe Length	60		in
Liner Material	inconel		
Sample Case / Oven Number			
Impinger Case Number	SAMP-BC-0032		

Pressures			
Barometric Pressure	(P_b)	28.04	in Hg
Stack Static Pressure	(P_{static})	0.00	in H_2O
Absolute Stack Pressure	(P_s)	28.04	in Hg
Absolute Meter Pressure	(P_m)	28.16	in Hg

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

Run Time			
Start	13:56	**End**	15:05

Weights	**Imp 1**	**Imp 2**	**Imp 3**	**Imp 4**	**Imp 5**	**Imp 6**	**Imp 7**	**Imp 8**
Pre	838.7	700.7	590.8	888.8				
Post	876.4	706.7	593.7	905.0				

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	183.700	0.020	1.585	1.50	1423	255		60			78	72	7.0	0.14	15.55	1.580		33.319
A-2	3.1	00:03:06	185.420	0.020	1.585	1.50	1433	256		57			78	72	7.0	0.14	15.59	3.214		36.186
A-3	5.8	00:05:48	187.200	0.025	1.585	1.50	1593	256		57			80	73	7.0	0.16	18.15	4.670		35.858
A-4	8.5	00:08:31	188.790	0.025	1.585	1.50	1649	254		57			78	73	7.0	0.16	18.39	6.358		37.041
A-5	11.2	00:11:14	190.630	0.025	1.585	1.50	1652	252		59			79	74	10.5	0.16	18.41	8.272		38.823
A-6	13.9	00:13:56	192.720	0.035	1.585	1.50	1682	252		60			79	74	10.5	0.19	21.93	9.811		38.550
A-7	16.6	00:16:38	194.400	0.030	1.585	1.50	1648	252		60			79	74	10.5	0.17	20.14	11.633		39.313
A-8	19.4	00:19:21	196.390	0.030	1.585	1.50	1496	251		61			79	74	10.5	0.17	19.40	13.501		40.024
A-9	22.1	00:22:03	198.430	0.040	1.585	1.50	1572	252		62			80	74	10.5	0.20	22.84	15.395		40.648
A-10	24.8	00:24:46	200.500	0.040	1.585	1.50	1667	252		63			80	74	10.5	0.20	23.37	17.069		40.626
A-11	27.5	00:27:28	202.330	0.040	1.585	1.50	1679	252		63			79	75	10.5	0.20	23.43	19.137		41.460
A-12	30.2	00:30:11	204.590	0.040	1.585	1.50	1687	252		64			80	75	10.5	0.20	23.48	21.020		41.790
B-1	32.9	00:32:53	206.650	0.025	1.585	1.50	1382	251		66			77	76	10.5	0.16	17.19	22.952		42.160
B-2	35.6	00:35:36	208.760	0.025	1.585	1.50	1432	253		63			78	75	10.5	0.16	17.42	24.820		42.368
B-3	38.3	00:38:18	210.800	0.020	1.585	1.50	1632	253		64			79	75	10.5	0.14	16.39	26.678		42.532
B-4	41.0	00:41:01	212.830	0.030	1.585	1.50	1669	253		65			79	75	10.5	0.17	20.24	28.526		42.661
B-5	43.7	00:43:44	214.850	0.035	1.585	1.50	1707	252		66			79	75	10.5	0.19	22.06	30.401		42.814
B-6	46.4	00:46:26	216.900	0.040	1.585	1.50	1688	251		66			79	75	10.5	0.20	23.48	32.295		42.975
B-7	49.1	00:49:09	218.970	0.035	1.585	1.50	1465	252		66			79	75	10.5	0.19	20.79	34.125		43.038
B-8	51.9	00:51:51	220.970	0.030	1.585	1.50	1774	252		66			80	75	10.5	0.17	20.74	35.981		43.125
B-9	54.6	00:54:34	223.000	0.040	1.585	1.50	1679	252		66			80	75	10.5	0.20	23.43	37.836		43.204
B-10	57.3	00:57:16	225.030	0.04	1.585	1.50	1712	252		66			79	75	10.5	0.20	23.61	39.739		43.328
B-11	60.0	00:59:59	227.110	0.04	1.585	1.50	1687	252		65			80	74	10.5	0.20	23.48	41.578		43.375
B-12	62.7	01:02:41	229.120	0.04	1.585	1.50	1699	252		65			80	74	10.5	0.20	23.54	43.445		43.445
Last Pt	65.4	01:05:24	231.160																	
Final Val	65.4	01:05:24	231.160											**Max Vac**	10.5	**Final Values**		43.445		
Average Values				0.03		1.50	1613	253		63			79	74		0.18	20.54			
													77							

Superior Fabrication, INC
October 10, 2016
SCD-60
Elk City Plant

Unit Data

Meas. Stack Moisture	5.9	%
Stack Exhaust Flow (M2)	354,831	SCFH

Weather Data

Barometric Pressure	28.14	in. Hg
Relative Humidity	66	%
Ambient Temperature	50	^{o}F
Specific Humidity	0.005335	lb H_2O / lb air

70-100-70 Load, Run - SCD-60 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	10/10/16 11:02:09	13500	14.91	7.47	0.05	4.26	0.64	79.00	2,442.00
	10/10/16 11:02:39	13530	14.71	9.56	0.01	4.29	0.64	79.00	2,442.00
	10/10/16 11:03:09	13560	14.74	8.64	0.04	4.34	0.64	79.00	2,441.00
	10/10/16 11:03:39	13590	14.87	8.34	0.05	4.23	0.64	79.00	2,441.00
	10/10/16 11:04:09	13620	14.74	9.48	0.05	4.29	0.64	79.00	2,441.00
	10/10/16 11:04:39	13650	14.57	8.79	0.03	4.39	0.64	79.00	2,441.00
	10/10/16 11:05:09	13680	15.00	8.70	0.05	4.15	0.68	78.90	2,505.00
	10/10/16 11:05:39	13710	14.62	11.39	0.03	4.36	0.68	78.90	2,505.00
	10/10/16 11:06:09	13740	14.68	10.61	0.04	4.34	1.30	78.30	3,565.00
	10/10/16 11:06:39	13770	14.59	10.04	0.02	4.40	1.30	78.30	3,565.00
	10/10/16 11:07:09	13800	14.22	9.81	0.03	4.57	1.41	77.30	3,713.00
	10/10/16 11:07:39	13830	13.32	5.79	0.03	5.20	1.41	77.30	3,713.00
	10/10/16 11:08:09	13860	13.68	1.73	0.06	5.02	1.41	77.10	3,687.00
	10/10/16 11:08:39	13890	13.49	1.11	0.03	5.09	1.41	77.10	3,687.00
	10/10/16 11:09:09	13920	13.44	1.19	0.03	5.12	1.40	77.50	3,680.00
	10/10/16 11:09:39	13950	13.82	1.23	0.01	4.99	1.40	77.50	3,680.00
	10/10/16 11:10:09	13980	14.09	1.32	0.04	4.76	1.41	78.20	3,677.00
	10/10/16 11:10:39	14010	14.24	1.41	0.03	4.58	1.41	78.20	3,677.00
	10/10/16 11:11:09	14040	13.83	1.42	0.04	4.88	1.41	78.80	3,673.00
	10/10/16 11:11:39	14070	13.85	1.16	0.02	4.92	1.41	78.80	3,673.00
	10/10/16 11:12:09	14100	13.93	0.98	0.01	4.84	1.41	79.60	3,672.00
	10/10/16 11:12:39	14130	13.94	0.95	0.04	4.84	1.41	79.60	3,672.00
	10/10/16 11:13:09	14160	13.63	0.88	0.06	5.00	1.41	80.20	3,664.00
	10/10/16 11:13:39	14190	13.16	0.76	0.06	5.29	1.41	80.20	3,664.00
	10/10/16 11:14:09	14220	13.69	0.59	0.03	5.09	1.41	80.70	3,660.00
	10/10/16 11:14:39	14250	13.74	0.49	0.04	4.95	1.41	80.70	3,660.00
	10/10/16 11:15:09	14280	13.73	0.52	0.06	4.97	1.42	81.10	3,658.00
	10/10/16 11:15:39	14310	13.66	0.59	0.04	4.97	1.42	81.10	3,658.00
	10/10/16 11:16:09	14340	12.57	0.52	0.05	5.79	1.42	81.40	3,654.00
	10/10/16 11:16:39	14370	13.12	0.45	0.05	5.42	1.42	81.40	3,654.00
	10/10/16 11:17:09	14400	13.64	0.40	0.05	5.04	1.42	81.80	3,653.00
	10/10/16 11:17:39	14430	12.79	0.45	0.06	5.57	1.42	81.80	3,653.00
	10/10/16 11:18:09	14460	13.24	0.43	0.06	5.36	1.35	82.00	3,549.00
	10/10/16 11:18:39	14490	13.00	0.45	0.02	5.42	1.35	82.00	3,549.00
	10/10/16 11:19:09	14520	13.53	0.41	0.02	5.12	0.79	82.40	2,619.00
	10/10/16 11:19:39	14550	12.38	0.51	0.05	5.82	0.79	82.40	2,619.00
	10/10/16 11:20:09	14580	12.60	0.53	0.05	5.90	0.66	83.10	2,400.00
	10/10/16 11:20:39	14610	14.31	0.63	0.04	4.64	0.66	83.10	2,400.00
	10/10/16 11:21:09	14640	14.89	1.38	0.05	4.20	0.65	83.40	2,423.00
	10/10/16 11:21:39	14670	14.64	2.55	0.07	4.33	0.65	83.40	2,423.00
	10/10/16 11:22:09	14700	14.56	2.85	0.06	4.44	0.66	83.20	2,433.00
A2	10/10/16 11:22:39	14730	14.59	3.27	0.02	4.42	0.66	83.20	2,433.00
	10/10/16 11:23:09	14760	14.48	3.53	0.01	4.50	0.65	82.90	2,431.00
	10/10/16 11:23:39	14790	14.64	3.82	0.06	4.37	0.65	82.90	2,431.00
	10/10/16 11:24:09	14820	14.61	4.16	0.03	4.36	1.22	82.30	3,390.00
	10/10/16 11:24:39	14850	14.70	4.04	0.04	4.38	1.22	82.30	3,390.00
	10/10/16 11:25:09	14880	14.88	5.38	0.02	4.22	1.41	81.10	3,645.00
	10/10/16 11:25:39	14910	13.83	5.68	0.02	4.84	1.41	81.10	3,645.00
	10/10/16 11:26:09	14940	13.08	2.83	0.05	5.32	1.41	80.60	3,659.00
	10/10/16 11:26:39	14970	13.00	1.20	0.06	5.54	1.41	80.60	3,659.00
	10/10/16 11:27:09	15000	13.71	0.87	0.05	4.98	1.41	80.60	3,660.00
	10/10/16 11:27:39	15030	13.08	0.82	0.01	5.40	1.41	80.60	3,660.00
	10/10/16 11:28:09	15060	13.14	0.72	0.01	5.36	1.41	80.80	3,654.00
	10/10/16 11:28:39	15090	13.43	0.60	0.02	5.19	1.41	80.80	3,654.00
	10/10/16 11:29:09	15120	13.74	0.63	0.02	4.94	1.41	81.00	3,652.00
	10/10/16 11:29:39	15150	13.56	0.70	0.02	5.09	1.41	81.00	3,652.00
	10/10/16 11:30:09	15180	13.26	0.80	0.03	5.24	1.42	81.30	3,653.00
	10/10/16 11:30:39	15210	13.54	0.77	0.04	5.05	1.42	81.30	3,653.00
	10/10/16 11:31:09	15240	13.42	0.77	0.04	5.18	1.40	81.80	3,646.00
	10/10/16 11:31:39	15270	13.85	0.80	0.04	4.92	1.40	81.80	3,646.00

Superior Fabrication, INC
October 10, 2016
SCD-60
Elk City Plant

Unit Data

Meas. Stack Moisture	5.9	%
Stack Exhaust Flow (M2)	354,831	SCFH

Weather Data

Barometric Pressure	28.14	in. Hg
Relative Humidity	66	%
Ambient Temperature	50	°F
Specific Humidity	0.005335	lb H_2O / lb air

70-100-70 Load, Run - SCD-60 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
	10/10/16 11:32:09	15300	13.83	0.87	0.03	4.89	1.41	82.20	3,645.00
	10/10/16 11:32:39	15330	13.30	0.92	0.04	5.21	1.41	82.20	3,645.00
	10/10/16 11:33:09	15360	13.40	0.92	0.04	5.24	1.41	82.60	3,651.00
	10/10/16 11:33:39	15390	13.45	0.82	0.02	5.11	1.41	82.60	3,651.00
	10/10/16 11:34:09	15420	13.74	0.72	0.02	5.01	1.42	82.80	3,647.00
	10/10/16 11:34:39	15450	13.45	0.80	0.01	5.07	1.42	82.80	3,647.00
	10/10/16 11:35:09	15480	13.58	0.79	0.01	5.07	1.09	83.00	3,168.00
	10/10/16 11:35:39	15510	13.21	0.72	0.00	5.33	1.09	83.00	3,168.00
	10/10/16 11:36:09	15540	12.44	0.72	0.02	5.79	0.72	83.50	2,547.00
	10/10/16 11:36:39	15570	12.38	0.72	0.04	5.98	0.72	83.50	2,547.00
	10/10/16 11:37:09	15600	13.75	0.76	0.02	4.98	0.66	84.10	2,411.00
	10/10/16 11:37:39	15630	14.26	0.95	0.02	4.65	0.66	84.10	2,411.00
	10/10/16 11:38:09	15660	14.65	1.61	0.01	4.34	0.67	84.40	2,424.00
	10/10/16 11:38:39	15690	14.66	2.72	0.02	4.33	0.67	84.40	2,424.00
	10/10/16 11:39:09	15720	14.31	3.45	0.02	4.55	0.66	84.10	2,430.00
	10/10/16 11:39:39	15750	14.05	3.64	0.02	4.76	0.66	84.10	2,430.00
	10/10/16 11:40:09	15780	14.40	3.25	0.03	4.51	0.66	83.80	2,425.00
	10/10/16 11:40:39	15810	14.67	3.47	0.01	4.40	0.66	83.80	2,425.00
	10/10/16 11:41:09	15840	14.59	4.76	0.01	4.39	1.09	83.40	3,147.00
	10/10/16 11:41:39	15870	14.46	5.15	0.02	4.48	1.09	83.40	3,147.00
	10/10/16 11:42:09	15900	14.54	4.92	0.02	4.40	1.38	82.20	3,638.00
A3	10/10/16 11:42:39	15930	13.88	4.68	0.00	4.82	1.38	82.20	3,638.00
	10/10/16 11:43:09	15960	13.37	3.12	0.01	5.22	1.40	81.60	3,648.00
	10/10/16 11:43:39	15990	13.41	1.68	0.01	5.13	1.40	81.60	3,648.00
	10/10/16 11:44:09	16020	13.07	1.22	0.02	5.41	1.40	81.60	3,647.00
	10/10/16 11:44:39	16050	13.41	0.88	0.03	5.17	1.40	81.60	3,647.00
	10/10/16 11:45:09	16080	13.61	0.65	0.02	5.05	1.40	81.80	3,651.00
	10/10/16 11:45:39	16110	13.64	0.55	0.02	5.02	1.40	81.80	3,651.00
	10/10/16 11:46:09	16140	13.65	0.48	0.01	5.01	1.41	82.10	3,644.00
	10/10/16 11:46:39	16170	13.08	0.52	0.02	5.36	1.41	82.10	3,644.00
	10/10/16 11:47:09	16200	13.39	0.52	0.02	5.18	1.41	82.50	3,641.00
	10/10/16 11:47:39	16230	13.12	0.51	0.01	5.36	1.41	82.50	3,641.00
	10/10/16 11:48:09	16260	13.86	0.52	0.00	4.86	1.42	82.90	3,646.00
	10/10/16 11:48:39	16290	13.01	0.53	0.00	5.39	1.42	82.90	3,646.00
	10/10/16 11:49:09	16320	12.93	0.49	0.00	5.49	1.43	83.20	3,651.00
	10/10/16 11:49:39	16350	13.74	0.48	0.01	4.98	1.43	83.20	3,651.00
	10/10/16 11:50:09	16380	12.63	0.49	0.00	5.63	1.43	83.50	3,647.00
	10/10/16 11:50:39	16410	12.99	0.49	0.02	5.54	1.43	83.50	3,647.00
	10/10/16 11:51:09	16440	12.86	0.50	0.02	5.47	1.41	83.90	3,645.00
	10/10/16 11:51:39	16470	13.72	0.60	0.02	5.05	1.41	83.90	3,645.00
	10/10/16 11:52:09	16500	13.37	0.63	0.02	5.13	1.21	84.30	3,341.00
	10/10/16 11:52:39	16530	13.40	0.72	0.02	5.18	1.21	84.30	3,341.00
	10/10/16 11:53:09	16560	13.72	0.72	0.02	4.92	0.75	85.00	2,596.00
	10/10/16 11:53:39	16590	13.35	0.69	0.02	5.17	0.75	85.00	2,596.00
	10/10/16 11:54:09	16620	13.45	0.73	0.02	5.18	0.66	85.80	2,393.00
	10/10/16 11:54:39	16650	14.48	1.04	0.01	4.46	0.66	85.80	2,393.00
	10/10/16 11:55:09	16680	14.56	1.58	0.01	4.40	0.66	86.20	2,415.00
	10/10/16 11:55:39	16710	14.55	2.35	0.02	4.39	0.66	86.20	2,415.00
	10/10/16 11:56:09	16740	14.32	3.10	0.02	4.51	0.66	86.10	2,420.00
	10/10/16 11:56:39	16770	14.30	3.18	0.03	4.58	0.66	86.10	2,420.00
	10/10/16 11:57:09	16800	14.39	2.94	0.05	4.54	0.66	85.90	2,429.00
	10/10/16 11:57:39	16830	14.10	3.27	0.04	4.69	0.66	85.90	2,429.00
	10/10/16 11:58:09	16860	14.29	3.31	0.02	4.58	0.65	85.70	2,428.00
	10/10/16 11:58:39	16890	14.53	3.43	0.02	4.43	0.65	85.70	2,428.00
	10/10/16 11:59:09	16920	14.24	3.69	0.02	4.57	1.23	85.20	3,392.00
	10/10/16 11:59:39	16950	14.49	3.80	0.02	4.47	1.23	85.20	3,392.00
	10/10/16 12:00:09	16980	14.69	4.49	0.01	4.31	1.38	84.10	3,621.00
	10/10/16 12:00:39	17010	13.41	4.89	0.02	5.12	1.38	84.10	3,621.00
	10/10/16 12:01:09	17040	13.28	2.89	0.02	5.26	1.40	83.60	3,648.00
	10/10/16 12:01:39	17070	13.40	1.44	0.01	5.12	1.40	83.60	3,648.00

Superior Fabrication, INC
October 10, 2016
SCD-60
Elk City Plant

Unit Data

Meas. Stack Moisture	5.9	%
Stack Exhaust Flow (M2)	354,831	SCFH

Weather Data

Barometric Pressure	28.14	in. Hg
Relative Humidity	66	%
Ambient Temperature	50	°F
Specific Humidity	0.005335	lb H_2O / lb air

70-100-70 Load, Run - SCD-60 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
10/10/16 12:02:09	17100	13.33	0.98	0.02	5.25	1.39	83.60	3,643.00
10/10/16 12:02:39	17130	13.63	0.76	0.02	5.01	1.39	83.60	3,643.00
10/10/16 12:03:09	17160	13.11	0.69	0.02	5.32	1.40	83.80	3,636.00
10/10/16 12:03:39	17190	13.41	0.59	0.06	5.14	1.40	83.80	3,636.00
10/10/16 12:04:09	17220	13.18	0.51	0.05	5.37	1.39	84.20	3,632.00
10/10/16 12:04:39	17250	13.67	0.42	0.05	4.97	1.39	84.20	3,632.00
10/10/16 12:05:09	17280	13.45	0.49	0.06	5.08	1.40	84.50	3,631.00
10/10/16 12:05:39	17310	13.36	0.52	0.05	5.22	1.40	84.50	3,631.00
10/10/16 12:06:09	17340	13.56	0.52	0.04	5.05	1.39	85.00	3,627.00
10/10/16 12:06:39	17370	13.64	0.52	0.06	5.00	1.39	85.00	3,627.00
10/10/16 12:07:09	17400	13.14	0.52	0.06	5.32	1.40	85.30	3,623.00
10/10/16 12:07:39	17430	13.06	0.52	0.06	5.39	1.40	85.30	3,623.00
10/10/16 12:08:09	17460	13.22	0.52	0.06	5.22	1.09	85.70	3,185.00
10/10/16 12:08:39	17490	13.06	0.51	0.07	5.43	1.09	85.70	3,185.00
10/10/16 12:09:09	17520	13.73	0.52	0.06	4.95	0.64	86.70	2,345.00
10/10/16 12:09:39	17550	12.83	0.59	0.07	5.54	0.64	86.70	2,345.00
10/10/16 12:10:09	17580	14.20	0.67	0.06	4.67	0.66	87.40	2,398.00
10/10/16 12:10:39	17610	14.32	1.09	0.06	4.57	0.66	87.40	2,398.00
10/10/16 12:11:09	17640	14.74	1.79	0.06	4.27	0.65	87.40	2,408.00
10/10/16 12:11:39	17670	14.88	3.07	0.06	4.21	0.65	87.40	2,408.00
10/10/16 12:12:09	17700	14.76	4.67	0.06	4.25	0.65	87.20	2,416.00
RAW AVERAGE		**13.79**	**2.19**	**0.03**	**4.92**	**1.14**	**82.59**	**3,213.77**

		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	1434717	1434717	
						(in. H_2O)	**(°F)**	**(SCFH)**
	Initial Zero	0.02	-0.02	-0.01	0.06	1434717	1434717	1434717
	Final Zero	-0.02	-0.01	-0.03	0.04			
	Avg. Zero	0.00	-0.02	-0.02	0.05			
Bias								
	Initial UpScale	11.96	9.21	2.94	8.85			
	Final UpScale	11.94	9.21	2.97	8.82			
	Avg. UpScale	11.95	9.21	2.96	8.84			
Upscale Cal Gas		11.90	9.21	3.00	8.95			

EMISSIONS DATA	O_2	CO	THC	CO_2
Corrected Raw Average (ppm/% dry basis)	13.73	2.20	0.05	4.97
Corrected Raw Average (ppm/% wet basis)	12.92	2.07	0.05	4.67
Emission Rate (lb/hr)	N/A	0.06	0.00	N/A

Superior Fabrication, INC
October 10, 2016
SCD-60
Elk City Plant

Unit Data

Meas. Stack Moisture	5.7	%
Stack Exhaust Flow (M2)	340,646	SCFH

Weather Data

Barometric Pressure	28.09	in. Hg
Relative Humidity	48	%
Ambient Temperature	73	^{o}F
Specific Humidity	0.008826	lb H_2O / lb air

70-100-70 Load, Run - SCD-60 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	10/10/16 12:30:09	18780	14.66	16.80	0.14	4.38	0.63	87.10	2,406.00
	10/10/16 12:30:39	18810	15.10	14.23	0.15	4.07	0.63	87.10	2,406.00
	10/10/16 12:31:09	18840	14.46	21.39	0.15	4.48	0.62	87.10	2,405.00
	10/10/16 12:31:39	18870	15.05	15.97	0.13	4.10	0.62	87.10	2,405.00
	10/10/16 12:32:09	18900	14.53	17.10	0.13	4.41	0.87	86.80	2,844.00
	10/10/16 12:32:39	18930	14.70	12.92	0.13	4.33	0.87	86.80	2,844.00
	10/10/16 12:33:09	18960	14.73	9.23	0.12	4.29	1.33	85.90	3,595.00
	10/10/16 12:33:39	18990	14.38	10.54	0.12	4.43	1.33	85.90	3,595.00
	10/10/16 12:34:09	19020	13.82	8.88	0.12	4.92	1.35	85.00	3,618.00
	10/10/16 12:34:39	19050	12.99	3.24	0.13	5.43	1.35	85.00	3,618.00
	10/10/16 12:35:09	19080	13.04	0.67	0.15	5.37	1.37	84.70	3,627.00
	10/10/16 12:35:39	19110	12.45	0.25	0.17	5.80	1.37	84.70	3,627.00
	10/10/16 12:36:09	19140	12.59	0.19	0.16	5.83	1.37	84.90	3,617.00
	10/10/16 12:36:39	19170	13.13	0.30	0.16	5.34	1.37	84.90	3,617.00
	10/10/16 12:37:09	19200	13.30	0.41	0.16	5.20	1.38	85.20	3,631.00
	10/10/16 12:37:39	19230	13.59	0.47	0.14	5.05	1.38	85.20	3,631.00
	10/10/16 12:38:09	19260	13.59	0.60	0.15	4.98	1.39	85.70	3,626.00
	10/10/16 12:38:39	19290	13.30	0.66	0.16	5.21	1.39	85.70	3,626.00
	10/10/16 12:39:09	19320	13.14	0.68	0.17	5.34	1.39	86.10	3,623.00
	10/10/16 12:39:39	19350	12.60	0.70	0.15	5.74	1.39	86.10	3,623.00
	10/10/16 12:40:09	19380	13.01	0.72	0.15	5.43	1.39	86.50	3,619.00
	10/10/16 12:40:39	19410	12.59	0.71	0.14	5.71	1.39	86.50	3,619.00
	10/10/16 12:41:09	19440	13.10	0.72	0.15	5.36	1.39	86.80	3,621.00
	10/10/16 12:41:39	19470	13.12	0.69	0.15	5.39	1.39	86.80	3,621.00
	10/10/16 12:42:09	19500	13.24	0.69	0.15	5.24	1.39	87.10	3,615.00
	10/10/16 12:42:39	19530	13.33	0.72	0.14	5.21	1.39	87.10	3,615.00
	10/10/16 12:43:09	19560	13.67	0.73	0.13	5.00	1.39	87.50	3,615.00
	10/10/16 12:43:39	19590	13.62	0.76	0.16	4.98	1.39	87.50	3,615.00
	10/10/16 12:44:09	19620	13.67	0.74	0.10	5.02	1.38	87.90	3,610.00
	10/10/16 12:44:39	19650	13.88	0.73	0.12	4.84	1.38	87.90	3,610.00
	10/10/16 12:45:09	19680	13.83	0.73	0.09	4.90	1.38	88.40	3,608.00
	10/10/16 12:45:39	19710	13.57	0.75	0.13	5.05	1.38	88.40	3,608.00
	10/10/16 12:46:09	19740	13.57	0.71	0.17	5.07	0.89	88.90	2,855.00
	10/10/16 12:46:39	19770	13.74	0.59	0.15	4.94	0.89	88.90	2,855.00
	10/10/16 12:47:09	19800	13.43	0.59	0.15	5.10	0.66	89.80	2,412.00
	10/10/16 12:47:39	19830	13.31	0.59	0.16	5.31	0.66	89.80	2,412.00
	10/10/16 12:48:09	19860	14.07	0.68	0.16	4.70	0.64	90.50	2,375.00
	10/10/16 12:48:39	19890	14.34	1.01	0.16	4.60	0.64	90.50	2,375.00
	10/10/16 12:49:09	19920	14.67	1.70	0.16	4.32	0.66	90.70	2,394.00
	10/10/16 12:49:39	19950	14.31	2.36	0.15	4.55	0.66	90.70	2,394.00
	10/10/16 12:50:09	19980	14.40	2.28	0.15	4.51	0.64	90.70	2,400.00
A2	10/10/16 12:50:39	20010	14.67	2.72	0.15	4.37	0.64	90.70	2,400.00
	10/10/16 12:51:09	20040	14.80	4.64	0.15	4.24	1.08	90.30	3,142.00
	10/10/16 12:51:39	20070	14.41	5.75	0.16	4.48	1.08	90.30	3,142.00
	10/10/16 12:52:09	20100	14.18	4.29	0.16	4.67	1.36	89.10	3,592.00
	10/10/16 12:52:39	20130	14.14	3.16	0.15	4.65	1.36	89.10	3,592.00
	10/10/16 12:53:09	20160	13.21	2.26	0.15	5.27	1.36	88.40	3,607.00
	10/10/16 12:53:39	20190	13.57	1.18	0.16	5.10	1.36	88.40	3,607.00
	10/10/16 12:54:09	20220	13.84	0.80	0.14	4.87	1.37	88.30	3,599.00
	10/10/16 12:54:39	20250	13.92	0.73	0.16	4.82	1.37	88.30	3,599.00
	10/10/16 12:55:09	20280	13.34	0.75	0.15	5.19	1.35	88.20	3,583.00
	10/10/16 12:55:39	20310	13.91	0.60	0.13	4.87	1.35	88.20	3,583.00
	10/10/16 12:56:09	20340	13.55	0.51	0.15	5.05	1.35	87.90	3,578.00
	10/10/16 12:56:39	20370	12.90	0.40	0.15	5.49	1.35	87.90	3,578.00
	10/10/16 12:57:09	20400	13.72	0.30	0.15	4.98	1.39	88.00	3,619.00
	10/10/16 12:57:39	20430	13.71	0.31	0.13	4.92	1.39	88.00	3,619.00
	10/10/16 12:58:09	20460	13.23	0.32	0.14	5.27	1.38	88.10	3,607.00
	10/10/16 12:58:39	20490	13.44	0.31	0.14	5.09	1.38	88.10	3,607.00
	10/10/16 12:59:09	20520	12.36	0.23	0.15	5.87	1.39	88.00	3,609.00
	10/10/16 12:59:39	20550	12.63	0.22	0.15	5.81	1.39	88.00	3,609.00

Superior Fabrication, INC
October 10, 2016
SCD-60
Elk City Plant

Unit Data

Meas. Stack Moisture	5.7	%
Stack Exhaust Flow (M2)	340,646	SCFH

Weather Data

Barometric Pressure	28.09	in. Hg
Relative Humidity	48	%
Ambient Temperature	73	^{o}F
Specific Humidity	0.008826	lb H_2O / lb air

70-100-70 Load, Run - SCD-60 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
	10/10/16 13:00:09	20580	13.10	0.18	0.16	5.30	1.40	88.20	3,609.00
	10/10/16 13:00:39	20610	12.82	0.23	0.15	5.57	1.40	88.20	3,609.00
	10/10/16 13:01:09	20640	12.74	0.23	0.15	5.63	1.40	88.50	3,606.00
	10/10/16 13:01:39	20670	13.28	0.27	0.15	5.17	1.40	88.50	3,606.00
	10/10/16 13:02:09	20700	12.63	0.32	0.14	5.75	1.39	88.90	3,600.00
	10/10/16 13:02:39	20730	13.29	0.33	0.16	5.20	1.39	88.90	3,600.00
	10/10/16 13:03:09	20760	13.39	0.40	0.16	5.20	1.12	89.20	3,196.00
	10/10/16 13:03:39	20790	13.17	0.41	0.22	5.31	1.12	89.20	3,196.00
	10/10/16 13:04:09	20820	13.18	0.49	0.21	5.29	0.67	89.80	2,408.00
	10/10/16 13:04:39	20850	13.30	0.51	0.21	5.20	0.67	89.80	2,408.00
	10/10/16 13:05:09	20880	13.67	0.58	0.18	5.06	0.65	90.50	2,377.00
	10/10/16 13:05:39	20910	14.28	0.88	0.15	4.54	0.65	90.50	2,377.00
	10/10/16 13:06:09	20940	14.58	1.32	0.15	4.42	0.64	90.80	2,373.00
	10/10/16 13:06:39	20970	15.20	2.33	0.17	4.03	0.64	90.80	2,373.00
	10/10/16 13:07:09	21000	15.14	4.54	0.20	4.03	0.63	90.90	2,386.00
	10/10/16 13:07:39	21030	15.14	7.13	0.18	4.04	0.63	90.90	2,386.00
	10/10/16 13:08:09	21060	14.95	8.28	0.17	4.16	0.79	90.70	2,658.00
	10/10/16 13:08:39	21090	14.93	7.52	0.15	4.16	0.79	90.70	2,658.00
	10/10/16 13:09:09	21120	14.71	6.44	0.15	4.32	1.33	89.80	3,584.00
	10/10/16 13:09:39	21150	15.52	7.32	0.17	3.79	1.33	89.80	3,584.00
	10/10/16 13:10:09	21180	13.97	12.69	0.17	4.74	1.37	88.80	3,601.00
A3	10/10/16 13:10:39	21210	13.65	6.78	0.17	5.00	1.37	88.80	3,601.00
	10/10/16 13:11:09	21240	13.54	2.01	0.17	5.10	1.36	88.30	3,600.00
	10/10/16 13:11:39	21270	14.10	1.87	0.15	4.66	1.36	88.30	3,600.00
	10/10/16 13:12:09	21300	14.16	1.94	0.15	4.64	1.38	88.30	3,607.00
	10/10/16 13:12:39	21330	13.75	1.67	0.11	4.84	1.38	88.30	3,607.00
	10/10/16 13:13:09	21360	13.88	1.81	0.15	4.85	1.37	88.40	3,599.00
	10/10/16 13:13:39	21390	14.32	2.47	0.15	4.48	1.37	88.40	3,599.00
	10/10/16 13:14:09	21420	14.25	2.80	0.15	4.60	1.38	88.60	3,596.00
	10/10/16 13:14:39	21450	13.72	2.69	0.16	4.86	1.38	88.60	3,596.00
	10/10/16 13:15:09	21480	13.73	2.50	0.17	4.93	1.38	88.90	3,598.00
	10/10/16 13:15:39	21510	13.16	2.72	0.20	5.25	1.38	88.90	3,598.00
	10/10/16 13:16:09	21540	13.54	3.63	0.20	5.01	1.38	89.30	3,595.00
	10/10/16 13:16:39	21570	14.01	4.08	0.15	4.76	1.38	89.30	3,595.00
	10/10/16 13:17:09	21600	13.98	3.84	0.13	4.68	1.38	89.60	3,600.00
	10/10/16 13:17:39	21630	13.91	3.48	0.11	4.78	1.38	89.60	3,600.00
	10/10/16 13:18:09	21660	13.64	3.44	0.19	4.94	1.39	89.90	3,599.00
	10/10/16 13:18:39	21690	14.33	4.04	0.18	4.57	1.39	89.90	3,599.00
	10/10/16 13:19:09	21720	13.82	4.28	0.15	4.82	1.37	90.10	3,593.00
	10/10/16 13:19:39	21750	14.25	3.75	0.08	4.58	1.37	90.10	3,593.00
	10/10/16 13:20:09	21780	14.61	3.11	0.08	4.32	1.38	90.50	3,592.00
	10/10/16 13:20:39	21810	13.98	2.60	0.06	4.70	1.38	90.50	3,592.00
	10/10/16 13:21:09	21840	13.97	2.44	0.05	4.79	1.01	90.80	3,047.00
	10/10/16 13:21:39	21870	13.72	2.44	0.04	4.86	1.01	90.80	3,047.00
	10/10/16 13:22:09	21900	13.46	2.73	0.05	5.03	0.75	91.10	2,609.00
	10/10/16 13:22:39	21930	12.75	3.14	0.06	5.63	0.75	91.10	2,609.00
	10/10/16 13:23:09	21960	13.58	3.51	0.05	5.07	0.66	91.70	2,403.00
	10/10/16 13:23:39	21990	14.45	3.45	0.05	4.46	0.66	91.70	2,403.00
	10/10/16 13:24:09	22020	14.84	3.44	0.06	4.23	0.64	92.20	2,380.00
	10/10/16 13:24:39	22050	14.71	3.86	0.06	4.30	0.64	92.20	2,380.00
	10/10/16 13:25:09	22080	15.03	4.26	0.06	4.10	0.63	92.30	2,388.00
	10/10/16 13:25:39	22110	14.81	5.22	0.09	4.20	0.63	92.30	2,388.00
	10/10/16 13:26:09	22140	14.66	5.12	0.07	4.35	1.09	92.10	3,187.00
	10/10/16 13:26:39	22170	15.10	5.28	0.06	4.06	1.09	92.10	3,187.00
	10/10/16 13:27:09	22200	14.65	6.91	0.06	4.30	1.36	91.00	3,595.00
	10/10/16 13:27:39	22230	14.51	5.71	0.06	4.43	1.36	91.00	3,595.00
	10/10/16 13:28:09	22260	14.43	3.77	0.07	4.48	1.36	90.20	3,594.00
	10/10/16 13:28:39	22290	13.91	2.78	0.08	4.79	1.36	90.20	3,594.00
	10/10/16 13:29:09	22320	14.53	2.05	0.06	4.43	1.36	90.00	3,583.00
	10/10/16 13:29:39	22350	14.17	1.69	0.05	4.61	1.36	90.00	3,583.00

Superior Fabrication, INC
October 10, 2016
SCD-60
Elk City Plant

Unit Data

Meas. Stack Moisture	5.7	%
Stack Exhaust Flow (M2)	340,646	SCFH

Weather Data

Barometric Pressure	28.09	in. Hg
Relative Humidity	48	%
Ambient Temperature	73	^{o}F
Specific Humidity	0.008826	lb H_2O / lb air

70-100-70 Load, Run - SCD-60 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
10/10/16 13:30:09	22380	14.17	1.70	0.05	4.65	1.36	90.30	3,590.00
10/10/16 13:30:39	22410	13.80	1.91	0.08	4.84	1.36	90.30	3,590.00
10/10/16 13:31:09	22440	14.11	2.29	0.09	4.69	1.36	90.40	3,583.00
10/10/16 13:31:39	22470	14.27	2.76	0.10	4.56	1.36	90.40	3,583.00
10/10/16 13:32:09	22500	14.19	3.07	0.07	4.60	1.36	90.60	3,582.00
10/10/16 13:32:39	22530	13.51	3.26	0.10	5.05	1.36	90.60	3,582.00
10/10/16 13:33:09	22560	14.12	3.50	0.11	4.69	1.38	90.90	3,598.00
10/10/16 13:33:39	22590	14.15	3.61	0.10	4.63	1.38	90.90	3,598.00
10/10/16 13:34:09	22620	13.94	3.68	0.13	4.71	1.38	91.00	3,592.00
10/10/16 13:34:39	22650	13.38	3.83	0.12	5.19	1.38	91.00	3,592.00
10/10/16 13:35:09	22680	14.00	3.92	0.15	4.70	1.37	91.10	3,592.00
10/10/16 13:35:39	22710	13.86	4.00	0.14	4.88	1.37	91.10	3,592.00
10/10/16 13:36:09	22740	13.87	4.04	0.10	4.78	1.38	91.50	3,594.00
10/10/16 13:36:39	22770	13.66	4.12	0.08	4.94	1.38	91.50	3,594.00
10/10/16 13:37:09	22800	13.80	4.20	0.08	4.90	0.80	92.10	2,687.00
10/10/16 13:37:39	22830	14.50	4.12	0.05	4.39	0.80	92.10	2,687.00
10/10/16 13:38:09	22860	14.39	4.05	0.06	4.47	0.63	93.00	2,349.00
10/10/16 13:38:39	22890	14.58	3.90	0.05	4.37	0.63	93.00	2,349.00
10/10/16 13:39:09	22920	14.58	3.88	0.05	4.36	0.64	93.50	2,382.00
10/10/16 13:39:39	22950	14.66	3.79	0.06	4.30	0.64	93.50	2,382.00
10/10/16 13:40:09	22980	14.46	3.83	0.08	4.46	0.65	93.60	2,395.00
RAW AVERAGE		**13.90**	**3.21**	**0.13**	**4.83**	**1.16**	**89.22**	**3,247.68**

		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	1434717	1434717	1434717
		(%)	(ppmvd)	(ppmvw)	(%)	(in. H_2O)	(^{o}F)	(SCFH)
Bias	Initial Zero	-0.02	-0.01	-0.03	0.04			
	Final Zero	0.02	-0.05	-0.02	0.07			
	Avg. Zero	0.00	-0.03	-0.03	0.06			
	Initial UpScale	11.94	9.21	2.97	8.82			
	Final UpScale	11.95	9.20	2.96	8.92			
	Avg. UpScale	11.95	9.21	2.97	8.87			
Upscale Cal Gas		11.90	9.21	3.00	8.95			

EMISSIONS DATA	O_2	CO	THC	CO_2
Corrected Raw Average (ppm/% dry basis)	13.85	3.24	0.16	4.84
Corrected Raw Average (ppm/% wet basis)	13.06	3.05	0.16	4.57
Emission Rate (lb/hr)	N/A	0.08	0.01	N/A

Superior Fabrication, INC
October 10, 2016
SCD-60
Elk City Plant

Unit Data

Meas. Stack Moisture	6.4	%
Stack Exhaust Flow (M2)	357,807	SCFH

Weather Data

Barometric Pressure	28.04	in. Hg
Relative Humidity	46	%
Ambient Temperature	75	^{o}F
Specific Humidity	0.009065	lb H_2O / lb air

70-100-70 Load, Run - SCD-60 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. ^{o}F	Fuel Flow SCFH
A1	10/10/16 13:56:09	23940	14.58	2.86	0.06	4.50	0.63	89.10	2,391.00
	10/10/16 13:56:39	23970	14.52	3.68	0.06	4.41	0.63	89.10	2,391.00
	10/10/16 13:57:09	24000	14.60	4.27	0.06	4.48	0.63	89.20	2,394.00
	10/10/16 13:57:39	24030	14.31	3.94	0.05	4.59	0.63	89.20	2,394.00
	10/10/16 13:58:09	24060	14.51	2.90	0.05	4.61	0.63	89.30	2,398.00
	10/10/16 13:58:39	24090	15.19	2.77	0.07	4.75	0.63	89.30	2,398.00
	10/10/16 13:59:09	24120	15.36	2.75	0.07	4.73	0.92	89.20	2,913.00
	10/10/16 13:59:39	24150	15.22	2.77	0.05	4.85	0.92	89.20	2,913.00
	10/10/16 14:00:09	24180	15.18	2.09	0.05	4.94	1.35	88.50	3,598.00
	10/10/16 14:00:39	24210	16.70	4.12	0.12	3.94	1.35	88.50	3,598.00
	10/10/16 14:01:09	24240	14.37	9.43	0.06	4.61	1.34	88.00	3,584.00
	10/10/16 14:01:39	24270	14.01	5.03	0.05	4.76	1.34	88.00	3,584.00
	10/10/16 14:02:09	24300	13.65	1.24	0.06	5.01	1.37	88.10	3,608.00
	10/10/16 14:02:39	24330	13.28	0.87	0.05	5.20	1.37	88.10	3,608.00
	10/10/16 14:03:09	24360	13.29	1.32	0.05	5.31	1.38	88.30	3,601.00
	10/10/16 14:03:39	24390	13.31	1.92	0.06	5.14	1.38	88.30	3,601.00
	10/10/16 14:04:09	24420	12.89	2.40	0.05	5.52	1.38	88.40	3,604.00
	10/10/16 14:04:39	24450	13.43	2.83	0.06	5.19	1.38	88.40	3,604.00
	10/10/16 14:05:09	24480	13.62	3.18	0.05	4.95	1.39	88.40	3,610.00
	10/10/16 14:05:39	24510	13.57	3.48	0.07	5.02	1.39	88.40	3,610.00
	10/10/16 14:06:09	24540	13.87	3.78	0.06	4.96	1.39	88.60	3,604.00
	10/10/16 14:06:39	24570	14.10	3.96	0.05	4.71	1.39	88.60	3,604.00
	10/10/16 14:07:09	24600	14.06	4.03	0.05	4.70	1.38	88.50	3,601.00
	10/10/16 14:07:39	24630	13.63	4.06	0.06	4.92	1.38	88.50	3,601.00
	10/10/16 14:08:09	24660	13.69	4.16	0.07	5.05	1.38	88.60	3,594.00
	10/10/16 14:08:39	24690	13.71	4.12	0.07	4.96	1.38	88.60	3,594.00
	10/10/16 14:09:09	24720	13.64	4.15	0.06	4.99	1.39	88.80	3,597.00
	10/10/16 14:09:39	24750	13.82	4.16	0.04	4.89	1.39	88.80	3,597.00
	10/10/16 14:10:09	24780	13.41	4.19	0.07	5.12	1.39	89.10	3,598.00
	10/10/16 14:10:39	24810	13.84	4.23	0.06	4.88	1.39	89.10	3,598.00
	10/10/16 14:11:09	24840	14.24	4.23	0.06	4.62	1.37	89.60	3,575.00
	10/10/16 14:11:39	24870	13.55	4.22	0.05	5.00	1.37	89.60	3,575.00
	10/10/16 14:12:09	24900	14.01	4.23	0.05	4.80	0.73	90.20	2,551.00
	10/10/16 14:12:39	24930	13.88	4.10	0.06	4.76	0.73	90.20	2,551.00
	10/10/16 14:13:09	24960	13.73	4.08	0.06	5.00	0.64	90.90	2,339.00
	10/10/16 14:13:39	24990	13.86	4.18	0.06	4.90	0.64	90.90	2,339.00
	10/10/16 14:14:09	25020	13.95	4.21	0.06	4.73	0.65	90.80	2,388.00
	10/10/16 14:14:39	25050	14.02	4.19	0.06	4.85	0.65	90.80	2,388.00
	10/10/16 14:15:09	25080	14.46	3.94	0.06	4.46	0.64	90.70	2,398.00
	10/10/16 14:15:39	25110	14.41	3.71	0.07	4.53	0.64	90.70	2,398.00
	10/10/16 14:16:09	25140	14.49	3.62	0.07	4.45	0.65	90.60	2,403.00
A2	10/10/16 14:16:39	25170	14.95	3.63	0.05	4.21	0.65	90.60	2,403.00
	10/10/16 14:17:09	25200	14.14	4.50	0.04	4.66	1.30	90.20	3,515.00
	10/10/16 14:17:39	25230	14.24	3.93	0.06	4.66	1.30	90.20	3,515.00
	10/10/16 14:18:09	25260	14.15	3.07	0.06	4.66	1.38	89.40	3,606.00
	10/10/16 14:18:39	25290	14.39	2.72	0.06	4.55	1.38	89.40	3,606.00
	10/10/16 14:19:09	25320	13.45	2.20	0.06	5.14	1.37	89.30	3,592.00
	10/10/16 14:19:39	25350	14.38	1.88	0.06	4.55	1.37	89.30	3,592.00
	10/10/16 14:20:09	25380	14.45	1.88	0.07	4.48	1.35	89.60	3,579.00
	10/10/16 14:20:39	25410	14.08	1.95	0.06	4.72	1.35	89.60	3,579.00
	10/10/16 14:21:09	25440	14.01	1.95	0.10	4.72	1.35	89.90	3,574.00
	10/10/16 14:21:39	25470	13.74	2.02	0.06	4.91	1.35	89.90	3,574.00
	10/10/16 14:22:09	25500	13.95	2.11	0.06	4.90	1.36	90.30	3,572.00
	10/10/16 14:22:39	25530	14.09	2.21	0.06	4.65	1.36	90.30	3,572.00
	10/10/16 14:23:09	25560	14.02	2.35	0.06	4.74	1.36	90.60	3,570.00
	10/10/16 14:23:39	25590	13.95	2.57	0.06	4.84	1.36	90.60	3,570.00
	10/10/16 14:24:09	25620	13.80	2.72	0.06	4.87	1.36	90.80	3,570.00
	10/10/16 14:24:39	25650	14.07	2.87	0.05	4.77	1.36	90.80	3,570.00
	10/10/16 14:25:09	25680	14.05	2.98	0.05	4.71	1.36	91.10	3,568.00
	10/10/16 14:25:39	25710	13.73	3.04	0.06	4.95	1.36	91.10	3,568.00

Superior Fabrication, INC
October 10, 2016
SCD-60
Elk City Plant

Unit Data

Meas. Stack Moisture	6.4	%
Stack Exhaust Flow (M2)	357,807	SCFH

Weather Data

Barometric Pressure	28.04	in. Hg
Relative Humidity	46	%
Ambient Temperature	75	^{o}F
Specific Humidity	0.009065	lb H_2O / lb air

70-100-70 Load, Run - SCD-60 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. ^{o}F	Fuel Flow SCFH
	10/10/16 14:26:09	25740	13.89	3.20	0.05	4.85	1.38	91.30	3,596.00
	10/10/16 14:26:39	25770	14.08	3.31	0.05	4.67	1.38	91.30	3,596.00
	10/10/16 14:27:09	25800	13.95	3.41	0.06	4.84	1.39	91.30	3,589.00
	10/10/16 14:27:39	25830	14.14	3.51	0.05	4.64	1.39	91.30	3,589.00
	10/10/16 14:28:09	25860	13.77	3.53	0.05	4.93	1.38	91.20	3,587.00
	10/10/16 14:28:39	25890	13.85	3.59	0.06	4.85	1.38	91.20	3,587.00
	10/10/16 14:29:09	25920	14.09	3.68	0.05	4.73	0.74	91.30	2,573.00
	10/10/16 14:29:39	25950	14.34	3.69	0.06	4.53	0.74	91.30	2,573.00
	10/10/16 14:30:09	25980	14.52	3.69	0.06	4.39	0.65	91.70	2,378.00
	10/10/16 14:30:39	26010	14.55	3.86	0.06	4.45	0.65	91.70	2,378.00
	10/10/16 14:31:09	26040	14.37	4.05	0.13	4.54	0.63	91.80	2,372.00
	10/10/16 14:31:39	26070	14.61	4.10	0.04	4.35	0.63	91.80	2,372.00
	10/10/16 14:32:09	26100	14.50	3.95	0.03	4.48	0.64	91.50	2,381.00
	10/10/16 14:32:39	26130	14.21	3.79	0.05	4.62	0.64	91.50	2,381.00
	10/10/16 14:33:09	26160	14.15	3.57	0.06	4.69	0.65	91.00	2,392.00
	10/10/16 14:33:39	26190	14.35	3.15	0.06	4.58	0.65	91.00	2,392.00
	10/10/16 14:34:09	26220	14.29	2.93	0.06	4.56	0.74	90.60	2,582.00
	10/10/16 14:34:39	26250	14.40	2.65	0.05	4.54	0.74	90.60	2,582.00
	10/10/16 14:35:09	26280	14.50	2.54	0.05	4.45	1.18	89.70	3,339.00
	10/10/16 14:35:39	26310	14.32	2.71	0.06	4.65	1.18	89.70	3,339.00
	10/10/16 14:36:09	26340	15.26	3.86	0.06	3.95	1.36	88.50	3,598.00
A3	10/10/16 14:36:39	26370	14.64	4.86	0.06	4.33	1.36	88.50	3,598.00
	10/10/16 14:37:09	26400	13.80	3.11	0.07	4.89	1.36	88.00	3,603.00
	10/10/16 14:37:39	26430	13.51	1.75	0.05	5.12	1.36	88.00	3,603.00
	10/10/16 14:38:09	26460	13.70	1.52	0.06	4.93	1.38	87.60	3,603.00
	10/10/16 14:38:39	26490	12.80	1.64	0.06	5.61	1.38	87.60	3,603.00
	10/10/16 14:39:09	26520	13.29	1.85	0.06	5.26	1.38	87.50	3,609.00
	10/10/16 14:39:39	26550	13.45	2.01	0.06	5.12	1.38	87.50	3,609.00
	10/10/16 14:40:09	26580	13.42	2.14	0.06	5.20	1.37	87.80	3,604.00
	10/10/16 14:40:39	26610	13.88	2.20	0.07	4.87	1.37	87.80	3,604.00
	10/10/16 14:41:09	26640	14.10	2.20	0.06	4.71	1.38	88.10	3,603.00
	10/10/16 14:41:39	26670	14.02	2.22	0.06	4.74	1.38	88.10	3,603.00
	10/10/16 14:42:09	26700	13.75	2.20	0.08	4.95	1.38	88.40	3,600.00
	10/10/16 14:42:39	26730	13.91	2.07	0.06	4.83	1.38	88.40	3,600.00
	10/10/16 14:43:09	26760	13.79	2.00	0.06	4.93	1.39	88.70	3,598.00
	10/10/16 14:43:39	26790	13.04	1.90	0.06	5.38	1.39	88.70	3,598.00
	10/10/16 14:44:09	26820	13.45	1.93	0.07	5.12	1.39	89.00	3,599.00
	10/10/16 14:44:39	26850	13.48	1.93	0.14	5.13	1.39	89.00	3,599.00
	10/10/16 14:45:09	26880	13.67	2.01	0.08	5.03	1.37	89.30	3,593.00
	10/10/16 14:45:39	26910	14.06	1.99	0.06	4.71	1.37	89.30	3,593.00
	10/10/16 14:46:09	26940	13.76	2.02	0.05	4.92	1.26	89.40	3,420.00
	10/10/16 14:46:39	26970	13.67	2.12	0.07	4.92	1.26	89.40	3,420.00
	10/10/16 14:47:09	27000	13.52	2.22	0.10	5.12	0.68	89.90	2,454.00
	10/10/16 14:47:39	27030	13.99	2.19	0.14	4.80	0.68	89.90	2,454.00
	10/10/16 14:48:09	27060	13.87	2.29	0.14	4.86	0.65	90.50	2,392.00
	10/10/16 14:48:39	27090	14.09	2.51	0.14	4.72	0.65	90.50	2,392.00
	10/10/16 14:49:09	27120	14.19	2.68	0.13	4.66	0.65	90.80	2,379.00
	10/10/16 14:49:39	27150	14.69	2.88	0.13	4.34	0.65	90.80	2,379.00
	10/10/16 14:50:09	27180	14.68	3.17	0.07	4.33	0.64	91.00	2,391.00
	10/10/16 14:50:39	27210	14.45	3.47	0.08	4.48	0.64	91.00	2,391.00
	10/10/16 14:51:09	27240	14.61	3.54	0.11	4.36	0.91	91.00	2,845.00
	10/10/16 14:51:39	27270	14.45	3.46	0.05	4.46	0.91	91.00	2,845.00
	10/10/16 14:52:09	27300	14.34	3.27	0.06	4.57	1.37	90.00	3,582.00
	10/10/16 14:52:39	27330	13.32	3.01	0.06	5.16	1.37	90.00	3,582.00
	10/10/16 14:53:09	27360	13.05	2.32	0.07	5.47	1.37	89.50	3,587.00
	10/10/16 14:53:39	27390	13.14	1.66	0.05	5.30	1.37	89.50	3,587.00
	10/10/16 14:54:09	27420	13.54	1.33	0.08	5.15	1.39	89.50	3,593.00
	10/10/16 14:54:39	27450	13.33	1.28	0.07	5.21	1.39	89.50	3,593.00
	10/10/16 14:55:09	27480	13.56	1.39	0.07	5.04	1.39	89.50	3,594.00
	10/10/16 14:55:39	27510	12.89	1.52	0.09	5.54	1.39	89.50	3,594.00

Superior Fabrication, INC
October 10, 2016
SCD-60
Elk City Plant

Unit Data

Meas. Stack Moisture	6.4	%
Stack Exhaust Flow (M2)	357,807	SCFH

Weather Data

Barometric Pressure	28.04	in. Hg
Relative Humidity	46	%
Ambient Temperature	75	°F
Specific Humidity	0.009065	lb H_2O / lb air

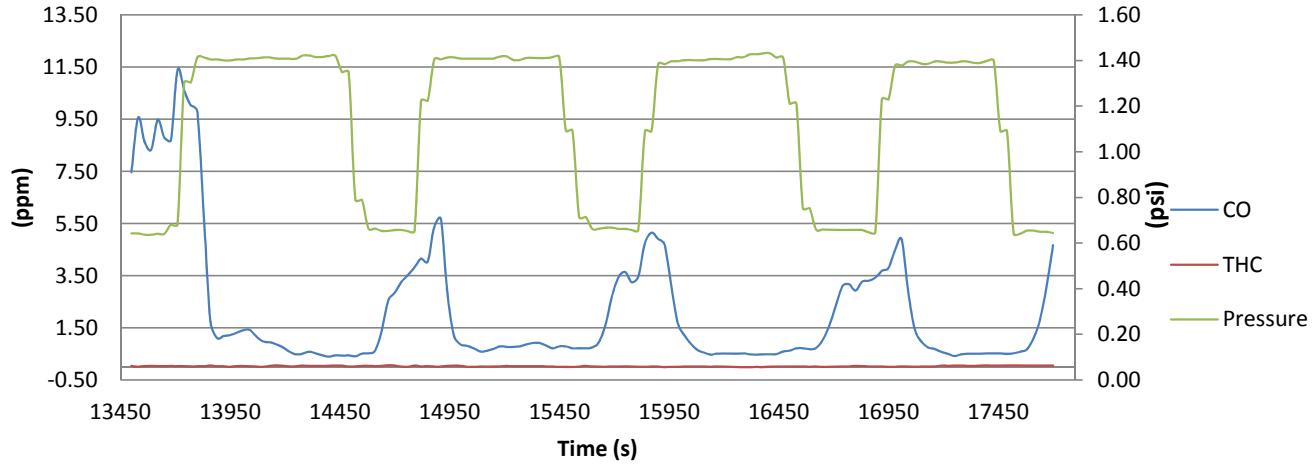
70-100-70 Load, Run - SCD-60 R9

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
10/10/16 14:56:09	27540	13.39	1.61	0.07	5.13	1.40	89.80	3,599.00
10/10/16 14:56:39	27570	13.28	1.69	0.06	5.28	1.40	89.80	3,599.00
10/10/16 14:57:09	27600	12.99	1.82	0.09	5.35	1.40	90.10	3,594.00
10/10/16 14:57:39	27630	13.27	1.95	0.17	5.30	1.40	90.10	3,594.00
10/10/16 14:58:09	27660	12.95	2.04	0.06	5.38	1.40	90.50	3,594.00
10/10/16 14:58:39	27690	13.26	2.23	0.05	5.29	1.40	90.50	3,594.00
10/10/16 14:59:09	27720	13.58	2.34	0.02	5.06	1.40	90.80	3,590.00
10/10/16 14:59:39	27750	13.57	2.42	0.05	5.02	1.40	90.80	3,590.00
10/10/16 15:00:09	27780	13.67	2.56	0.03	4.99	1.39	91.20	3,589.00
10/10/16 15:00:39	27810	13.63	2.65	0.05	4.99	1.39	91.20	3,589.00
10/10/16 15:01:09	27840	13.88	2.68	0.06	4.83	1.39	91.60	3,588.00
10/10/16 15:01:39	27870	13.98	2.62	0.13	4.70	1.39	91.60	3,588.00
10/10/16 15:02:09	27900	13.24	2.62	0.15	5.26	1.39	92.00	3,586.00
10/10/16 15:02:39	27930	13.44	2.63	0.16	5.13	1.39	92.00	3,586.00
10/10/16 15:03:09	27960	13.84	2.59	0.16	4.90	0.80	92.30	2,695.00
10/10/16 15:03:39	27990	13.63	2.57	0.14	5.00	0.80	92.30	2,695.00
10/10/16 15:04:09	28020	13.84	2.68	0.18	4.88	0.64	93.20	2,391.00
10/10/16 15:04:39	28050	14.50	2.67	0.16	4.40	0.64	93.20	2,391.00
10/10/16 15:05:09	28080	13.99	2.81	0.16	4.75	0.64	93.60	2,359.00
10/10/16 15:05:39	28110	14.07	3.14	0.16	4.77	0.64	93.60	2,359.00
10/10/16 15:06:09	28140	14.82	3.41	0.16	4.21	0.65	93.80	2,382.00
RAW AVERAGE		**13.97**	**2.94**	**0.07**	**4.83**	**1.14**	**89.95**	**3,210.03**

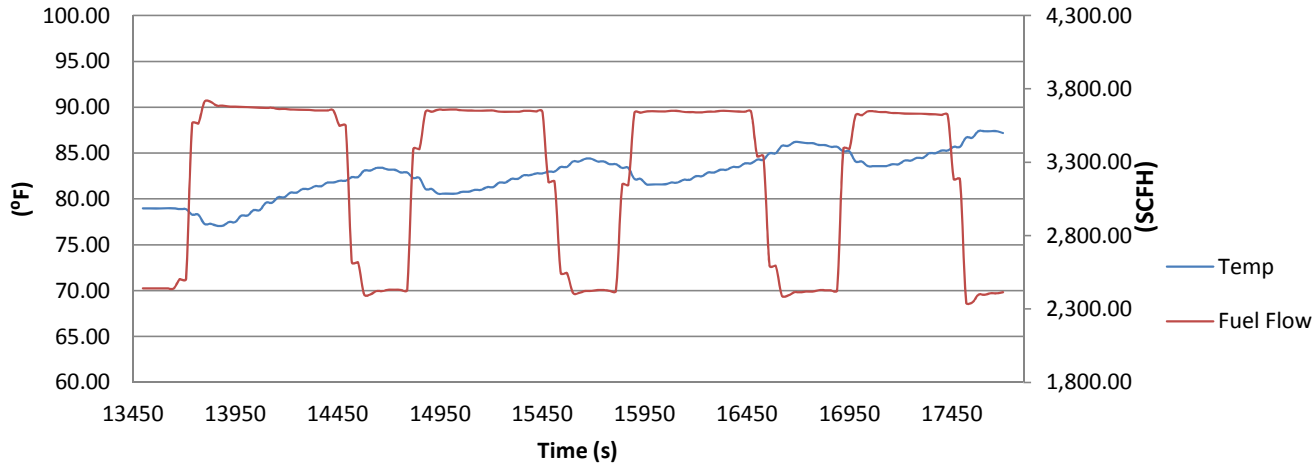
		O_2	CO	THC	CO_2	Press. Trans	Temp. Trans.	F-Flow Trans.
	Serial Number:	INSTO2-0011	INST-CO-0022	INST-TH-0002	INST-C2-0013	1434717	1434717	1434717
		(%)	(ppmvd)	(ppmvw)	(%)	(in. H_2O)	(°F)	(SCFH)
Bias	Initial Zero	0.02	-0.05	-0.02	0.07			
	Final Zero	0.01	-0.06	0.04	0.05			
	Avg. Zero	0.02	-0.06	0.01	0.06			
	Initial UpScale	11.95	9.20	2.96	8.92			
	Final UpScale	11.90	9.11	2.97	8.86			
	Avg. UpScale	11.93	9.16	2.97	8.89			
Upscale Cal Gas		11.90	9.21	3.00	8.95			

EMISSIONS DATA	O_2	CO	THC	CO_2
Corrected Raw Average (ppm/% dry basis)	13.94	2.99	0.06	4.83
Corrected Raw Average (ppm/% wet basis)	13.05	2.81	0.06	4.52
Emission Rate (lb/hr)	N/A	0.08	0.00	N/A

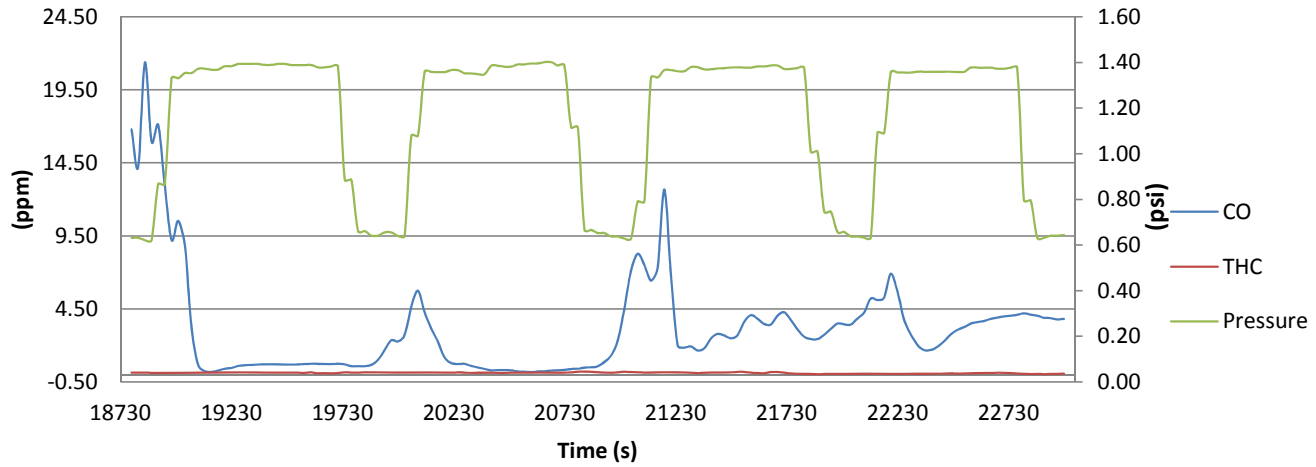
SCD-60 R7



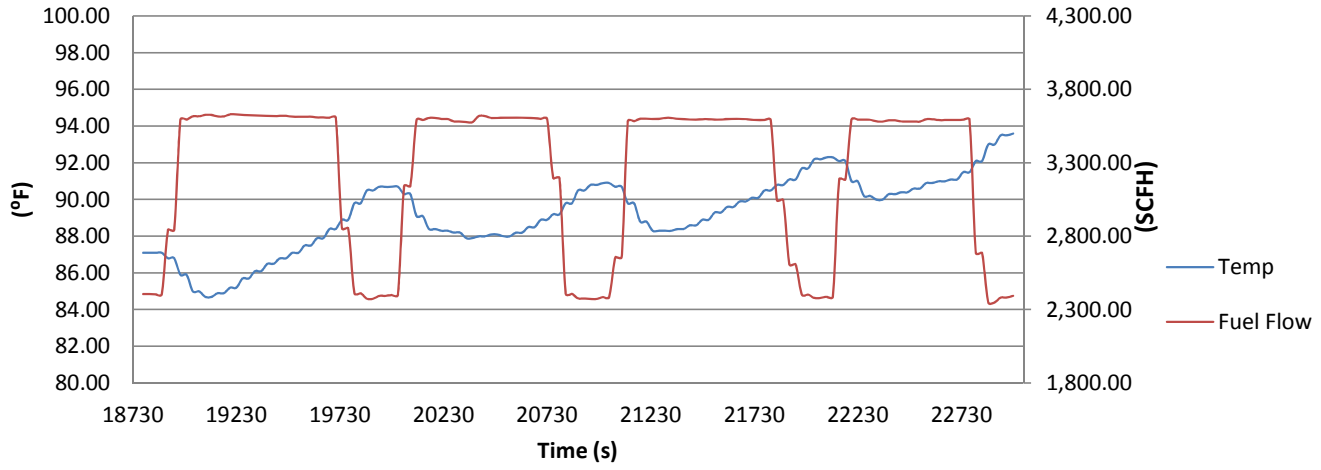
SCD-60 R7



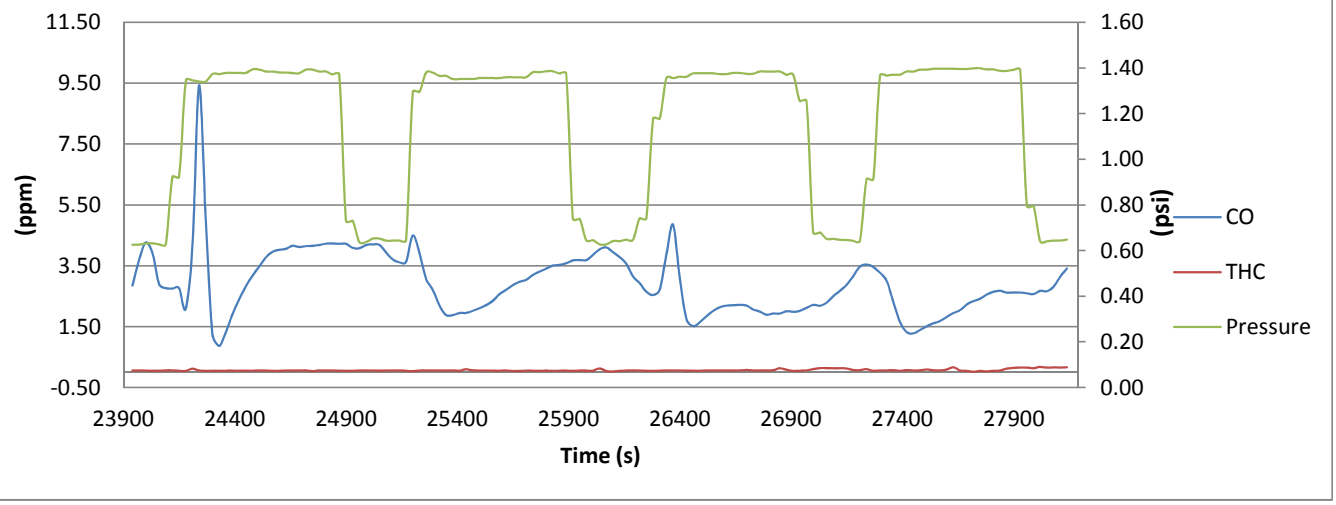
SCD-60 R8



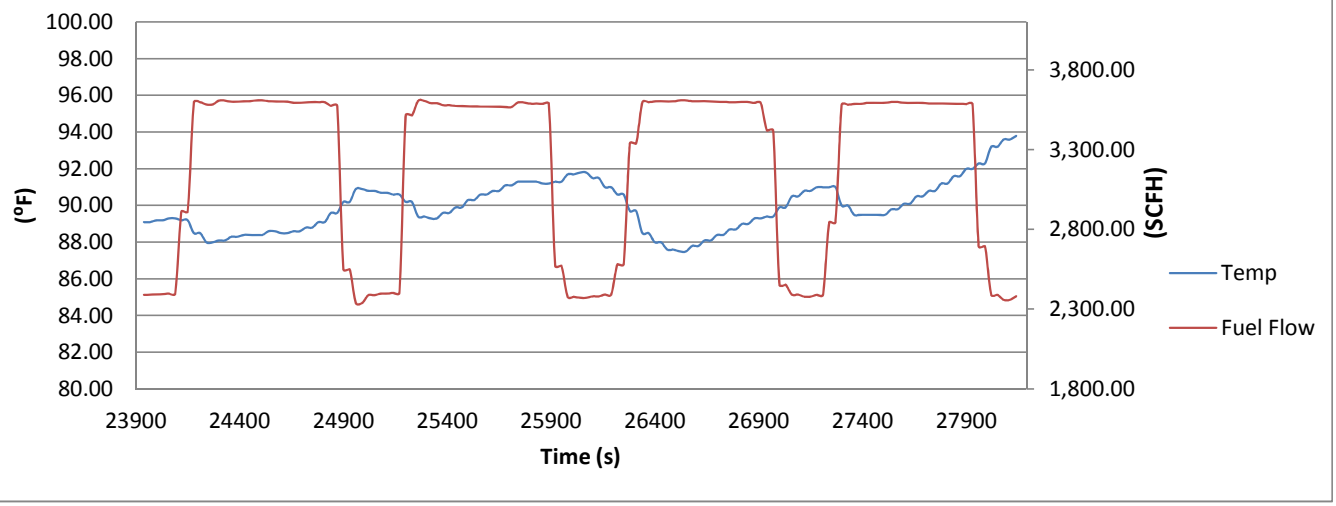
SCD-60 R8

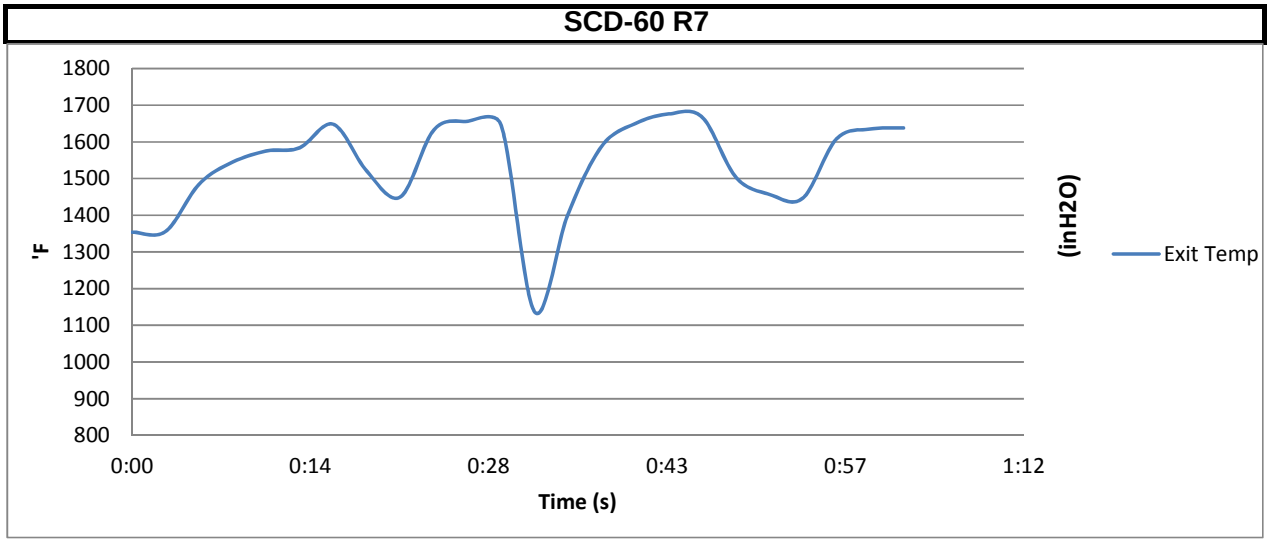


SCD-60 R9



SCD-60 R9




SCD-60 R7
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1700
1600
1500
1400
1300
1200
1100
1000
900
800
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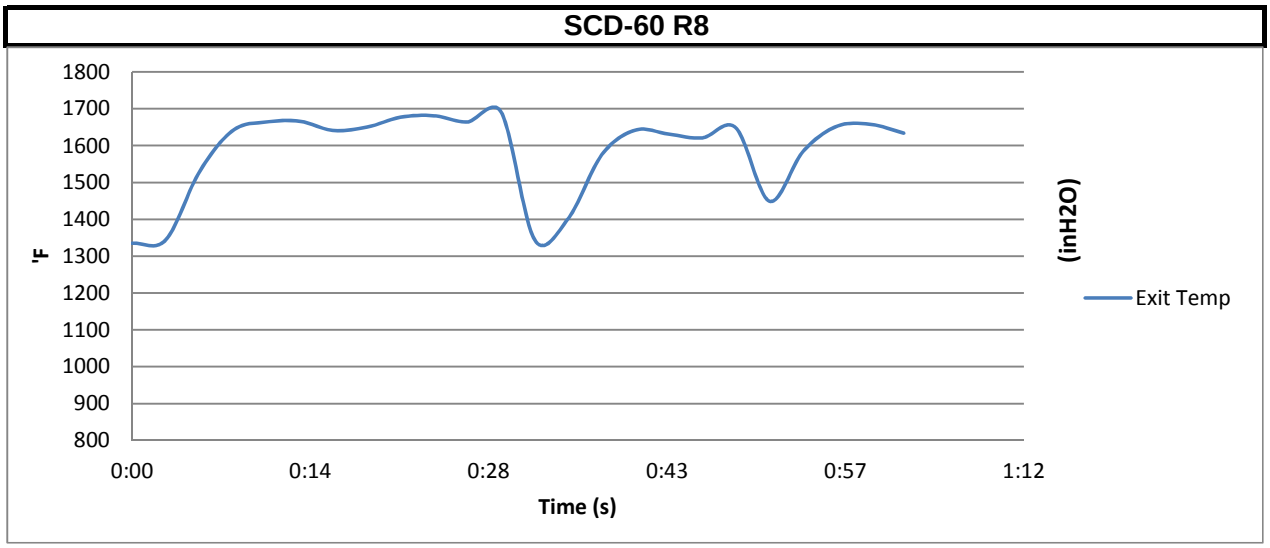
0:57
1:12
Time (s)
(inH2O)
Exit Temp


SCD-60 R8
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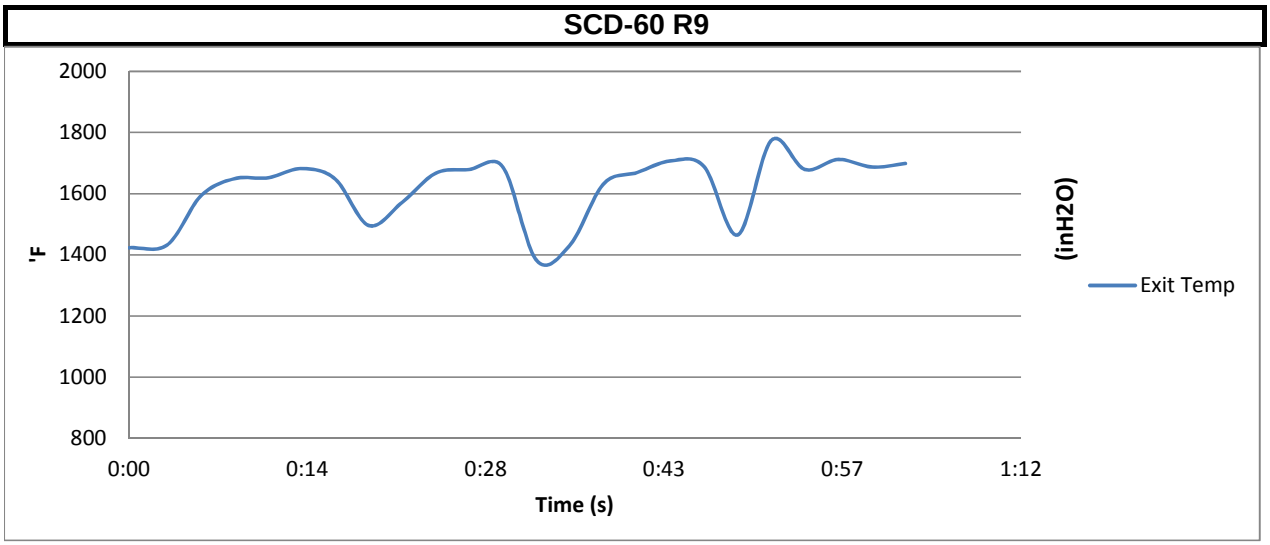
1:12
Time (s)
(inH2O)
Exit Temp


SCD-60 R9
2000
1800
1600
1400
1200
1000
800
'F
0:00
0:14
0:28
0:43
0:57
1:12
Time (s)
(inH2O)
Exit Temp

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	Elk City Facilty
Sampling Location	SCD-60
Fuel Type	Gas, Propene

Test Information			
Project #		sfi-elkcity.ok-comp#1	
Operator		MJ/BL/TW	
Date for Preliminary Run	(mm/dd/yy)	10/7/-102016	
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		SCD-48	
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		**1**	**2**	**3**	
Test Date	(mm/dd/yy)	10/07/16	10/10/16	10/10/16	
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-0003	SAMP-SP-0001	SAMP-SP-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-0032	SAMP-BC-0032	SAMP-BC-0032	

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	Elk City Facilty
Sampling Location	SCD-60
Project #	sfi-elkcity.ok-comp#1

Historical Data	**90-100%-1**	**90-100%-2**	**90-100%-3**	**Average**	**Units**
Run Start Time	13:01	08:04	09:29		hh:mm
Run Stop Time	14:06	09:12	10:40		hh:mm
Test Date	10/07/16	10/10/16	10/10/16		mm/dd/yy
Meter Calibration Factor	0.989	0.989	0.989		
Pitot Tube Coefficient	0.840	0.840	0.840		
Initial Meter Volume	939.760	989.100	37.300		ft^3
Final Meter Volume	989.070	1037.150	84.270		ft^3
Total Meter Volume	49.310	48.050	46.970	48.110	ft^3
Total Sampling Time	65.00	65.00	65.00	65.00	min
Average Meter Temperature	68.00	68.69	71.10	69.26	°F
Average Stack Temperature	1528.58	1529.04	1566.79	1541.47	°F
Barometric Pressure	28.30	28.12	28.14	28.19	in Hg
Stack Static Pressure	0.00	0.00	0.00	0.00	in H_2O
Absolute Stack Pressure	28.30	28.12	28.14	28.19	in Hg
Average Orifice Pressure Drop	1.50	1.50	1.50	1.50	in H_2O
Absolute Meter Pressure	28.42	28.24	28.26	28.30	in Hg
Avg Square Root Pitot Pressure	0.15	0.18	0.18	0.17	$\sqrt{(in\ H_2O)}$
Moisture Content Data	**90-100%-1**	**90-100%-2**	**90-100%-3**	**Average**	**Units**
Impinger Water Weight Gain	37.10	44.60	44.30	42.00	g
Silica Gel Weight Gain	15.00	7.50	9.70	10.73	g
Total Water Volume Collected	52.19	52.19	54.10	52.83	ml
Standard Water Vapor Volume	2.46	2.46	2.55	2.49	scf
Standard Meter Volume	46.3	44.8	43.6	44.9	dscf
Calculated Stack Moisture	5.04	5.20	5.52	5.25	%
Saturated Stack Moisture	100.00	100.00	100.00	100.00	%
Reported Stack Moisture Content	5.04	5.20	5.52	5.25	%
Method 3C Gas Analysis Data	**90-100%-1**	**90-100%-2**	**90-100%-3**	**Average**	**Units**
Carbon Dioxide Content	4.8	5.0	5.3	5.0	%
Oxygen Content	14.6	14.6	14.3	14.5	%
Nitrogen Content	80.7	80.4	80.4	80.5	%
Stack Dry Molecular Weight	29.34	29.39	29.40	29.38	lb/lb-mole
Stack Wet Molecular Weight	28.77	28.80	28.77	28.78	lb/lb-mole
Percent Excess Air	218.2	220.6	206.5	215.1	%
Volumetric Flow Rate Data	**90-100%-1**	**90-100%-2**	**90-100%-3**	**Average**	**Units**
Average Stack Gas Velocity	17.02	20.41	20.98	19.47	ft/sec
Stack Cross-Sectional Area	21.65	21.65	21.65	21.65	ft^2
Actual Stack Flow Rate	22,110	26,515	27,250	25,292	acfm
Wet Standard Stack Flow Rate	333	397	401	377	wkscfh
Dry Standard Stack Flow Rate	316,380	376,257	378,495	357,044	dscfh

METHOD 3C - DETERMINATION OF DRY MOLECULAR WEIGHT BY ANALYZER

Plant Name	Elk City Facilty	**Preliminary Date**	10/7/-102016		
Sampling Location	SCD-60	**Operator**	MJ/BL/TW		
Project #	sfi-elkcity.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%-1		**Date**	10/07/16	**Run Start Time**	13:01	**Run Stop Time**	14:06
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		%	
01:05	4.8	14.6	0.0	80.7	29.34	1.326	218.2	N/A

Gas Analysis Data

Run Number	90-100%-2		**Date**	10/10/16	**Run Start Time**	08:04	**Run Stop Time**	09:12
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	5.0	14.6	0.0	80.4	29.39	1.252	220.6	N/A

Gas Analysis Data

Run Number	90-100%-3		**Date**	10/10/16	**Run Start Time**	09:29	**Run Stop Time**	10:40
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	5.3	14.3	0.0	80.4	29.40	1.257	206.5	N/A

METHOD 4 - DETERMINATION OF MOISTURE CONTENT IN STACK GASES

Plant Name	Elk City Facilty	**Preliminary Date**	10/7/-102016
Sampling Location	SCD-60	**Operator**	MJ/BL/TW
Project #	sfi-elkcity.ok-comp#1	**Ports Used**	2

Scale Daily Calibration					
Scale Number	SAMP-SC-0027	**Standard**	**Result**	**Difference**	**Pass/Fail**
Date		(g)	(g)	(g)	(± 0.5 g)
Test Day 1	10/07/16	500	499.6	-0.5	Pass
Test Day 1	10/10/16	500	500.1	-0.5	Pass

Moisture Content Data									
Run Number		90-100%-1		**Date**	10/07/16	**Start Time**	13:01	**Stop Time**	14:06
Meter Box Number		SAMP-CP-0011				**Meter Cal Factor**	(Y)	0.989	
Total Meter Volume		(V_m)	49.310	dcf		**Barometric Pressure**	(P_b)	28.30	in Hg
Average Stack Temp		$(t_s)_{avg}$	1529	°F		**Stack Static Pressure**	(P_{static})	0.00	in H_2O
Average Meter Temp		$(t_m)_{avg}$	68	°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)	798.80	705.00	593.20	823.20				
Initial Value	(V_i),(W_i)	768.10	701.80	590.00	808.20				
Net Value	(V_n),(W_n)	30.7	3.2	3.2	15.0				
Results									
Total Weight		(W_t)	52.10	g		**Water Vol Weighed**	($V_{wsg(std)}$)	2.457	scf
Std Meter Volume		($V_{m(std)}$)	46.307	dscf		**Sat. Moisture Content**	($B_{ws(svp)}$)	100.00	%
Calc Moisture Content		($B_{ws(calc)}$)	5.04	%		**Final Moisture Content**	(B_{ws})	5.04	%

Moisture Content Data									
Run Number		90-100%-2		**Date**	10/10/16	**Start Time**	08:04	**Stop Time**	09:12
Meter Box Number		SAMP-CP-0011				**Meter Cal Factor**	(Y)	0.989	
Total Meter Volume		(V_m)	48.050	dcf		**Barometric Pressure**	(P_b)	28.12	in Hg
Average Stack Temp		$(t_s)_{avg}$	1529	°F		**Stack Static Pressure**	(P_{static})	0.00	in H_2O
Average Meter Temp		$(t_m)_{avg}$	69	°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)	737.20	680.00	582.30	834.70				
Initial Value	(V_i),(W_i)	704.90	669.70	580.30	827.20				
Net Value	(V_n),(W_n)	32.3	10.3	2.0	7.5				
Results									
Total Weight		(W_t)	52.10	g		**Water Vol Weighed**	($V_{wsg(std)}$)	2.457	scf
Std Meter Volume		($V_{m(std)}$)	44.779	dscf		**Sat. Moisture Content**	($B_{ws(svp)}$)	100.00	%
Calc Moisture Content		($B_{ws(calc)}$)	5.20	%		**Final Moisture Content**	(B_{ws})	5.20	%

Moisture Content Data									
Run Number		90-100%-3		**Date**	10/10/16	**Start Time**	09:29	**Stop Time**	10:40
Meter Box Number		SAMP-CP-0011				**Meter Cal Factor**	(Y)	0.989	
Total Meter Volume		(V_m)	46.970	dcf		**Barometric Pressure**	(P_b)	28.14	in Hg
Average Stack Temp		$(t_s)_{avg}$	1567	°F		**Stack Static Pressure**	(P_{static})	0.00	in H_2O
Average Meter Temp		$(t_m)_{avg}$	71	°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)	770.10	688.30	585.40	844.40				
Initial Value	(V_i),(W_i)	737.20	680.00	582.30	834.70				
Net Value	(V_n),(W_n)	32.9	8.3	3.1	9.7				
Results									
Total Weight		(W_t)	54.00	g		**Water Vol Weighed**	($V_{wsg(std)}$)	2.546	scf
Std Meter Volume		($V_{m(std)}$)	43.605	dscf		**Sat. Moisture Content**	($B_{ws(svp)}$)	100.00	%
Calc Moisture Content		($B_{ws(calc)}$)	5.52	%		**Final Moisture Content**	(B_{ws})	5.52	%

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

Plant Name	Elk City Facilty
Sampling Location	SCD-60
Project #	sfi-elkcity.ok-comp#1

Date	10/07/16
Operator	MJ/BL/TW
Run Number	90-100%-1

Ideal Nozzle Diameter and IsoKinetic Factor Setup			
Pitot Coefficient	(C_p)	0.840	
Average Stack Temp	(t_s)	1528.6	°F
Average Meter Temp	(t_m)	68.0	
Orifice Meter Coefficient	($\Delta H@$)	1.585	in H_2O
Square Root ΔP	($\Delta p^{1/2}_{avg}$)	0.15	in H_2O
Stack Moisture Content	(B_{ws})	5.04	%
Stack Dry Molecular Weight	(M_d)	29.34	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	20.0	sec
< 3.0	**Pre (-)**	0.2	in H_2O for	20.0	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})	0.4454	in
Probe Number	SAMP-PF-0003		in
Probe Length	60		in
Liner Material	inconel		
Sample Case / Oven Number			
Impinger Case Number	SAMP-BC-0032		

Pressures			
Barometric Pressure	(P_b)	28.30	in Hg
Stack Static Pressure	(P_{static})	0.00	in H_2O
Absolute Stack Pressure	(P_s)	28.30	in Hg
Absolute Meter Pressure	(P_m)	28.42	in Hg

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

Run Time			
Start	13:01	**End**	14:06

Weights	**Imp 1**	**Imp 2**	**Imp 3**	**Imp 4**	**Imp 5**	**Imp 6**	**Imp 7**	**Imp 8**
Pre	768.1	701.8	590.0	808.2				
Post	798.8	705.0	593.2	823.2				

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	939.760	0.020	1.585	1.50	1408	256		61			69	67	12.0	0.14	15.38	1.981		47.556
A-2	2.7	00:02:43	941.870	0.020	1.585	1.50	1431	258		61			69	67	12.0	0.14	15.48	3.935		47.218
A-3	5.4	00:05:25	943.950	0.020	1.585	1.50	1421	258		61			69	67	12.0	0.14	15.44	5.832		46.654
A-4	8.1	00:08:07	945.970	0.020	1.585	1.50	1422	256		61			69	67	12.0	0.14	15.44	7.748		46.485
A-5	10.8	00:10:50	948.010	0.040	1.585	1.50	1481	252		61			69	67	12.0	0.20	22.17	9.691		46.519
A-6	13.5	00:13:33	950.080	0.040	1.585	1.50	1541	250		61			69	67	12.0	0.20	22.51	11.598		46.391
A-7	16.3	00:16:15	952.110	0.025	1.585	1.50	1565	250		61			69	67	12.0	0.16	17.91	13.551		46.461
A-8	19.0	00:18:58	954.190	0.020	1.585	1.50	1555	251		61			69	67	12.0	0.14	15.98	15.486		46.457
A-9	21.7	00:21:40	956.250	0.020	1.585	1.50	1528	252		61			69	67	12.0	0.14	15.87	17.420		46.454
A-10	24.4	00:24:22	958.310	0.020	1.585	1.50	1457	252		61			69	67	12.0	0.14	15.58	19.364		46.474
A-11	27.1	00:27:05	960.380	0.020	1.585	1.50	1547	252		61			69	67	12.0	0.14	15.94	21.280		46.429
A-12	29.8	00:29:47	962.420	0.020	1.585	1.50	1455	252		61			69	67	12.0	0.14	15.57	23.252		46.504
B-1	32.5	00:32:30	964.520	0.020	1.585	1.50	1578	251		61			69	67	12.0	0.14	16.07	27.131		50.087
B-2	35.2	00:35:12	968.650	0.020	1.585	1.50	1526	256		61			69	67	12.0	0.14	15.86	29.056		49.810
B-3	37.9	00:37:55	970.700	0.020	1.585	1.50	1536	254		61			69	67	12.0	0.14	15.90	30.981		49.569
B-4	40.6	00:40:37	972.750	0.020	1.585	1.50	1580	252		61			69	67	12.0	0.14	16.07	32.915		49.373
B-5	43.3	00:43:20	974.810	0.020	1.585	1.50	1569	251		61			69	67	12.0	0.14	16.03	34.831		49.173
B-6	46.0	00:46:03	976.850	0.025	1.585	1.50	1491	251		61			69	67	12.0	0.16	17.58	36.822		49.096
B-7	48.8	00:48:45	978.970	0.030	1.585	1.50	1498	251		61			69	67	12.0	0.17	19.29	38.738		48.932
B-8	51.5	00:51:28	981.010	0.020	1.585	1.50	1545	252		61			69	67	12.0	0.14	15.94	41.480		49.776
B-9	54.2	00:54:10	983.930	0.020	1.585	1.50	1612	252		61			69	67	12.0	0.14	16.20	41.546		47.481
B-10	56.9	00:56:53	984.000	0.030	1.585	1.50	1617	252		61			69	67	12.0	0.17	19.87	44.363		48.396
B-11	59.6	00:59:35	987.000	0.030	1.585	1.50	1668	252		61			69	67	12.0	0.17	20.11	46.307		48.320
B-12	62.3	01:02:18	989.070	0.020	1.585	1.50	1655	252		61			69	67	12.0	0.14	16.37	46.307		46.307
Last Pt	65.0	01:05:00	989.070																	
Final Val	65.0	01:05:00	989.070											**Max Vac**	12.0	**Final Values**		46.307		
Average Values				0.02		1.50	1529	253		61			69	67		0.15	17.02			
													68							

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

Plant Name	Elk City Facilty
Sampling Location	SCD-60
Project #	sfi-elkcity.ok-comp#1

Date	10/10/16
Operator	MJ/BL/TW
Run Number	90-100%-2

Ideal Nozzle Diameter and IsoKinetic Factor Setup			
Pitot Coefficient	(C_p)	0.840	
Average Stack Temp	(t_s)	1529.0	°F
Average Meter Temp	(t_m)	68.7	
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})	5.20	%
Stack Dry Molecular Weight	(M_d)	29.39	lb/lb-mole
Estimated Orifice Flow Rate	(Q_m)	0.71	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 (+)**	0.0	in H_2O for	15.0	sec
< 3.0	**Pre (-)**	0.0	in H_2O for	15.0	sec
	Post (+)	0.0	in H_2O for	15.0	sec
	Post (-)	0.0	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})	0.4144	in
Probe Number	SAMP-SP-0001		in
Probe Length	60		in
Liner Material	inconel		
Sample Case / Oven Number			
Impinger Case Number	SAMP-BC-0032		

Pressures			
Barometric Pressure	(P_b)	28.12	in Hg
Stack Static Pressure	(P_{static})	0.00	in H_2O
Absolute Stack Pressure	(P_s)	28.12	in Hg
Absolute Meter Pressure	(P_m)	28.24	in Hg

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

Run Time			
Start	08:04	**End**	09:12

Weights	**Imp 1**	**Imp 2**	**Imp 3**	**Imp 4**	**Imp 5**	**Imp 6**	**Imp 7**	**Imp 8**
Pre	704.9	669.7	580.3	827.2				
Post	737.2	680.0	582.3	834.7				

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	989.100	0.025	1.585	1.50	1406	254		63			67	64	10.0	0.16	17.24	1.969		47.254
A-2	2.7	00:02:43	991.200	0.025	1.585	1.50	1408	257		64			70	64	10.0	0.16	17.25	3.745		44.943
A-3	5.4	00:05:25	993.100	0.025	1.585	1.50	1397	255		65			70	65	10.0	0.16	17.19	5.707		45.654
A-4	8.1	00:08:07	995.200	0.025	1.585	1.50	1410	253		62			70	65	10.0	0.16	17.25	7.500		45.000
A-5	10.8	00:10:50	997.120	0.025	1.585	1.50	1411	251		60			71	65	10.0	0.16	17.26	9.394		45.093
A-6	13.5	00:13:33	999.150	0.025	1.585	1.50	1489	251		59			72	66	10.0	0.16	17.62	12.058		48.233
A-7	16.3	00:16:15	1002.010	0.025	1.585	1.50	1501	252		59			72	65	10.0	0.16	17.67	13.214		45.306
A-8	19.0	00:18:58	1003.250	0.025	1.585	1.50	1550	251		59			72	65	10.0	0.16	17.89	14.939		44.816
A-9	21.7	00:21:40	1005.100	0.025	1.585	1.50	1579	252		60			72	56	10.0	0.16	18.02	16.866		44.977
A-10	24.4	00:24:22	1007.150	0.045	1.585	1.50	1562	252		60			73	65	10.0	0.21	24.07	18.738		44.972
A-11	27.1	00:27:05	1009.160	0.045	1.585	1.50	1591	252		59			72	67	10.0	0.21	24.24	20.693		45.147
A-12	29.8	00:29:47	1011.260	0.025	1.585	1.50	1578	252		59			72	68	10.0	0.16	18.01	22.319		44.639
B-1	32.5	00:32:30	1013.010	0.030	1.585	1.50	1535	250		61			68	68	10.0	0.17	19.52	24.363		44.978
B-2	35.2	00:35:12	1015.200	0.025	1.585	1.50	1521	254		58			71	68	10.0	0.16	17.76	26.922		46.152
B-3	37.9	00:37:55	1017.950	0.030	1.585	1.50	1532	254		58			71	68	10.0	0.17	19.51	28.243		45.189
B-4	40.6	00:40:37	1019.370	0.020	1.585	1.50	1527	253		59			71	69	10.0	0.14	15.91	29.991		44.986
B-5	43.3	00:43:20	1021.250	0.035	1.585	1.50	1543	252		59			72	68	10.0	0.19	21.13	31.804		44.899
B-6	46.0	00:46:03	1023.200	0.040	1.585	1.50	1563	252		59			72	69	10.0	0.20	22.70	33.661		44.881
B-7	48.8	00:48:45	1025.200	0.050	1.585	1.50	1597	252		58			72	68	10.0	0.22	25.59	35.558		44.915
B-8	51.5	00:51:28	1027.240	0.045	1.585	1.50	1587	252		59			72	68	10.0	0.21	24.22	37.473		44.967
B-9	54.2	00:54:10	1029.300	0.050	1.585	1.50	1597	252		57			71	67	10.0	0.22	25.59	39.242		44.848
B-10	56.9	00:56:53	1031.200	0.050	1.585	1.50	1603	252		58			71	67	10.0	0.22	25.63	41.077		44.811
B-11	59.6	00:59:35	1033.170	0.045	1.585	1.50	1600	252		58			71	67	10.0	0.21	24.30	42.949		44.816
B-12	62.3	01:02:18	1035.180	0.045	1.585	1.50	1610	252		57			72	68	10.0	0.21	24.36	44.780		44.780
Last Pt	65.0	01:05:00	1037.150																	
Final Val	65.0	01:05:00	1037.150											**Max Vac**	10.0	**Final Values**		44.780		
Average Values				0.03		1.50	1529	252		60			71	66		0.18	20.41			
													69							

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

Plant Name	Elk City Facilty
Sampling Location	SCD-60
Project #	sfi-elkcity.ok-comp#1

Date	10/10/16
Operator	MJ/BL/TW
Run Number	90-100%-3

Ideal Nozzle Diameter and IsoKinetic Factor Setup			
Pitot Coefficient	(C_p)	0.840	
Average Stack Temp	(t_s)	1566.8	°F
Average Meter Temp	(t_m)	71.1	
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})	5.52	%
Stack Dry Molecular Weight	(M_d)	29.40	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})	0.4068	in
Probe Number	SAMP-SP-0001		in
Probe Length	60		in
Liner Material	inconel		
Sample Case / Oven Number			
Impinger Case Number	SAMP-BC-0032		

Pressures			
Barometric Pressure	(P_b)	28.14	in Hg
Stack Static Pressure	(P_{static})	0.00	in H_2O
Absolute Stack Pressure	(P_s)	28.14	in Hg
Absolute Meter Pressure	(P_m)	28.26	in Hg

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

Run Time			
Start	09:29	**End**	10:40

Weights	**Imp 1**	**Imp 2**	**Imp 3**	**Imp 4**	**Imp 5**	**Imp 6**	**Imp 7**	**Imp 8**
Pre	737.2	680.0	582.3	834.7				
Post	770.1	688.3	585.4	844.4				

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	37.300	0.025	1.585	1.50	1454	253		56			69	66	10.0	0.16	17.46	1.776		42.622
A-2	2.7	00:02:43	39.200	0.020	1.585	1.50	1452	256		54			71	66	10.0	0.14	15.61	3.679		44.149
A-3	5.4	00:05:25	41.240	0.020	1.585	1.50	1454	255		55			72	66	10.0	0.14	15.62	5.664		45.315
A-4	8.1	00:08:07	43.370	0.025	1.585	1.50	1450	253		55			72	67	10.0	0.16	17.44	7.461		44.769
A-5	10.8	00:10:50	45.300	0.025	1.585	1.50	1471	252		57			72	67	10.0	0.16	17.54	9.454		45.380
A-6	13.5	00:13:33	47.440	0.025	1.585	1.50	1506	251		57			73	67	10.0	0.16	17.69	11.380		45.519
A-7	16.3	00:16:15	49.510	0.025	1.585	1.50	1572	252		58			73	67	10.0	0.16	17.99	13.250		45.428
A-8	19.0	00:18:58	51.520	0.035	1.585	1.50	1580	251		58			74	69	10.0	0.19	21.33	14.994		44.981
A-9	21.7	00:21:40	53.400	0.035	1.585	1.50	1614	252		59			74	69	10.0	0.19	21.50	16.970		45.252
A-10	24.4	00:24:22	55.530	0.045	1.585	1.50	1608	252		60			75	69	10.0	0.21	24.35	18.888		45.331
A-11	27.1	00:27:05	57.600	0.050	1.585	1.50	1596	252		60			74	69	10.0	0.22	25.59	20.753		45.279
A-12	29.8	00:29:47	59.610	0.045	1.585	1.50	1624	252		60			74	70	10.0	0.21	24.44	22.690		45.379
B-1	32.5	00:32:30	61.700	0.025	1.585	1.50	1545	252		62			71	70	10.0	0.16	17.87	24.641		45.492
B-2	35.2	00:35:12	63.800	0.020	1.585	1.50	1543	253		60			73	70	10.0	0.14	15.97	26.562		45.534
B-3	37.9	00:37:55	65.870	0.020	1.585	1.50	1548	253		61			74	71	10.0	0.14	15.99	27.617		44.188
B-4	40.6	00:40:37	67.010	0.025	1.585	1.50	1542	252		61			73	71	10.0	0.16	17.86	30.527		45.791
B-5	43.3	00:43:20	70.150	0.025	1.585	1.50	1588	252		60			74	71	10.0	0.16	18.06	32.425		45.777
B-6	46.0	00:46:03	72.200	0.030	1.585	1.50	1558	252		61			74	71	10.0	0.17	19.64	34.379		45.839
B-7	48.8	00:48:45	74.310	0.040	1.585	1.50	1602	252		61			74	70	10.0	0.20	22.92	36.316		45.873
B-8	51.5	00:51:28	76.400	0.055	1.585	1.50	1651	252		60			74	70	10.0	0.23	27.20	37.966		45.559
B-9	54.2	00:54:10	78.180	0.060	1.585	1.50	1658	252		60			74	71	10.0	0.24	28.45	39.855		45.548
B-10	56.9	00:56:53	80.220	0.055	1.585	1.50	1675	252		60			74	70	10.0	0.23	27.35	41.708		45.500
B-11	59.6	00:59:35	82.220	0.060	1.585	1.50	1656	252		61			74	70	10.0	0.24	28.44	43.608		45.504
B-12	62.3	01:02:18	84.270	0.055	1.585	1.50	1656	252		60			74	70	10.0	0.23	27.23	43.608		43.608
Last Pt	65.0	01:05:00	84.270																	
Final Val	65.0	01:05:00	84.270											**Max Vac**	10.0	**Final Values**		43.608		
Average Values				0.04		1.50	1567	252		59			73	69		0.18	20.98			
													71							

Superior Fabrication, INC
October 7, 2016
SCD-60
Elk City Plant

Unit Data

Meas. Stack Moisture	5.0	%
Stack Exhaust Flow (M2)	376,257	SCFH

Weather Data

Barometric Pressure	28.30	in. Hg
Relative Humidity	48	%
Ambient Temperature	60	^{o}F
Specific Humidity	0.005555	lb H_2O / lb air

90-100 Load, Run - SCD-60 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	10/07/16 13:01:07	21180	14.03	7.29	0.06	4.86	1.08	74.00	3,233.00
	10/07/16 13:01:37	21210	13.99	7.85	0.07	4.89	1.08	74.00	3,233.00
	10/07/16 13:02:07	21240	14.35	8.56	0.07	4.66	1.08	74.70	3,220.00
	10/07/16 13:02:37	21270	14.34	10.29	0.05	4.65	1.08	74.70	3,220.00
	10/07/16 13:03:07	21300	14.31	10.12	0.05	4.66	1.07	75.30	3,214.00
	10/07/16 13:03:37	21330	14.31	9.34	0.07	4.64	1.07	75.30	3,214.00
	10/07/16 13:04:07	21360	14.37	9.22	0.07	4.62	1.06	75.90	3,205.00
	10/07/16 13:04:37	21390	14.27	9.67	0.07	4.68	1.06	75.90	3,205.00
	10/07/16 13:05:07	21420	14.12	10.04	0.07	4.76	1.06	76.50	3,198.00
	10/07/16 13:05:37	21450	14.11	9.20	0.06	4.79	1.06	76.50	3,198.00
	10/07/16 13:06:07	21480	14.04	8.72	0.06	4.83	1.06	77.00	3,193.00
	10/07/16 13:06:37	21510	13.99	8.62	0.07	4.87	1.06	77.00	3,193.00
	10/07/16 13:07:07	21540	14.13	7.75	0.07	4.76	1.06	77.30	3,194.00
	10/07/16 13:07:37	21570	14.14	8.04	0.06	4.79	1.06	77.30	3,194.00
	10/07/16 13:08:07	21600	14.25	9.63	0.06	4.71	1.06	77.70	3,192.00
	10/07/16 13:08:37	21630	14.24	11.20	0.07	4.72	1.06	77.70	3,192.00
	10/07/16 13:09:07	21660	13.95	11.08	0.07	4.89	1.37	78.00	3,635.00
	10/07/16 13:09:37	21690	13.78	7.97	0.05	5.00	1.37	78.00	3,635.00
	10/07/16 13:10:07	21720	12.83	4.37	0.05	5.67	1.32	78.40	3,570.00
	10/07/16 13:10:37	21750	13.02	1.54	0.06	5.55	1.32	78.40	3,570.00
	10/07/16 13:11:07	21780	13.08	1.14	0.07	5.47	1.30	78.70	3,557.00
	10/07/16 13:11:37	21810	13.30	1.30	0.06	5.35	1.30	78.70	3,557.00
	10/07/16 13:12:07	21840	13.28	1.51	0.06	5.30	1.34	79.00	3,572.00
	10/07/16 13:12:37	21870	13.17	1.70	0.06	5.42	1.34	79.00	3,572.00
	10/07/16 13:13:07	21900	13.15	1.48	0.06	5.41	1.34	79.40	3,579.00
	10/07/16 13:13:37	21930	13.05	1.28	0.08	5.50	1.34	79.40	3,579.00
	10/07/16 13:14:07	21960	13.16	1.35	0.12	5.40	1.38	79.80	3,617.00
	10/07/16 13:14:37	21990	13.08	1.41	0.11	5.48	1.38	79.80	3,617.00
	10/07/16 13:15:07	22020	13.10	1.09	0.12	5.42	1.42	80.00	3,661.00
	10/07/16 13:15:37	22050	12.94	0.96	0.12	5.59	1.42	80.00	3,661.00
	10/07/16 13:16:07	22080	12.78	0.88	0.08	5.73	1.42	80.10	3,654.00
	10/07/16 13:16:37	22110	12.84	0.84	0.11	5.64	1.42	80.10	3,654.00
	10/07/16 13:17:07	22140	12.68	1.00	0.12	5.75	1.42	80.40	3,659.00
	10/07/16 13:17:37	22170	12.75	1.08	0.14	5.71	1.42	80.40	3,659.00
	10/07/16 13:18:07	22200	12.91	1.20	0.10	5.58	1.46	80.80	3,721.00
	10/07/16 13:18:37	22230	12.83	1.29	0.15	5.67	1.46	80.80	3,721.00
	10/07/16 13:19:07	22260	12.79	1.30	0.11	5.70	1.43	81.20	3,682.00
	10/07/16 13:19:37	22290	12.93	1.38	0.04	5.56	1.43	81.20	3,682.00
	10/07/16 13:20:07	22320	12.85	1.39	0.06	5.63	1.41	81.70	3,647.00
	10/07/16 13:20:37	22350	13.00	1.56	0.09	5.52	1.41	81.70	3,647.00
	10/07/16 13:21:07	22380	13.18	1.73	0.11	5.43	1.44	82.00	3,677.00
A2	10/07/16 13:21:37	22410	13.05	1.84	0.12	5.44	1.44	82.00	3,677.00
	10/07/16 13:22:07	22440	12.94	1.83	0.13	5.57	1.43	82.10	3,663.00
	10/07/16 13:22:37	22470	13.09	1.80	0.12	5.45	1.43	82.10	3,663.00
	10/07/16 13:23:07	22500	13.01	1.86	0.14	5.49	1.41	82.30	3,653.00
	10/07/16 13:23:37	22530	13.02	1.92	0.10	5.53	1.41	82.30	3,653.00
	10/07/16 13:24:07	22560	13.10	1.97	0.14	5.42	1.42	82.70	3,640.00
	10/07/16 13:24:37	22590	13.08	2.08	0.17	5.44	1.42	82.70	3,640.00
	10/07/16 13:25:07	22620	12.96	2.12	0.16	5.55	1.41	83.00	3,634.00
	10/07/16 13:25:37	22650	12.51	2.10	0.15	5.90	1.41	83.00	3,634.00
	10/07/16 13:26:07	22680	12.68	1.89	0.15	5.77	1.45	83.20	3,677.00
	10/07/16 13:26:37	22710	12.72	1.80	0.17	5.72	1.45	83.20	3,677.00
	10/07/16 13:27:07	22740	12.76	1.90	0.13	5.72	1.42	83.60	3,643.00
	10/07/16 13:27:37	22770	12.84	2.07	0.09	5.63	1.42	83.60	3,643.00
	10/07/16 13:28:07	22800	12.95	2.23	0.11	5.54	1.40	84.10	3,627.00
	10/07/16 13:28:37	22830	13.20	2.29	0.10	5.40	1.40	84.10	3,627.00
	10/07/16 13:29:07	22860	13.27	2.29	0.08	5.31	1.37	84.40	3,587.00
	10/07/16 13:29:37	22890	13.27	2.38	0.12	5.33	1.37	84.40	3,587.00
	10/07/16 13:30:07	22920	13.03	2.54	0.12	5.48	1.48	84.90	3,738.00
	10/07/16 13:30:37	22950	13.21	2.58	0.09	5.37	1.48	84.90	3,738.00

Superior Fabrication, INC
October 7, 2016
SCD-60
Elk City Plant

Unit Data

Meas. Stack Moisture	5.0	%
Stack Exhaust Flow (M2)	376,257	SCFH

Weather Data

Barometric Pressure	28.30	in. Hg
Relative Humidity	48	%
Ambient Temperature	60	^{o}F
Specific Humidity	0.005555	lb H_2O / lb air

90-100 Load, Run - SCD-60 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
	10/07/16 13:31:07	22980	13.12	2.76	0.11	5.42	1.58	85.30	3,896.00
	10/07/16 13:31:37	23010	12.64	2.94	0.13	5.78	1.58	85.30	3,896.00
	10/07/16 13:32:07	23040	12.61	2.79	0.15	5.83	1.44	85.40	3,673.00
	10/07/16 13:32:37	23070	12.73	2.39	0.15	5.77	1.44	85.40	3,673.00
	10/07/16 13:33:07	23100	13.08	1.97	0.14	5.44	1.42	85.50	3,646.00
	10/07/16 13:33:37	23130	13.08	1.97	0.13	5.44	1.42	85.50	3,646.00
	10/07/16 13:34:07	23160	13.15	2.34	0.15	5.40	1.41	85.50	3,635.00
	10/07/16 13:34:37	23190	13.30	2.57	0.16	5.32	1.41	85.50	3,635.00
	10/07/16 13:35:07	23220	13.18	2.73	0.17	5.38	1.40	85.40	3,626.00
	10/07/16 13:35:37	23250	13.42	2.92	0.15	5.25	1.40	85.40	3,626.00
	10/07/16 13:36:07	23280	14.14	3.35	0.15	4.79	1.40	85.10	3,632.00
	10/07/16 13:36:37	23310	15.08	3.46	0.21	4.11	1.40	85.10	3,632.00
	10/07/16 13:37:07	23340	15.13	3.88	1.68	3.98	1.43	84.40	3,653.00
	10/07/16 13:37:37	23370	15.15	9.79	9.93	4.04	1.43	84.40	3,653.00
	10/07/16 13:38:07	23400	14.64	73.02	6.02	4.38	1.40	84.00	3,628.00
	10/07/16 13:38:37	23430	14.34	96.07	4.40	4.61	1.40	84.00	3,628.00
	10/07/16 13:39:07	23460	14.58	39.64	3.61	4.46	1.42	83.80	3,638.00
	10/07/16 13:39:37	23490	14.57	6.80	4.57	4.47	1.42	83.80	3,638.00
	10/07/16 13:40:07	23520	14.44	3.00	1.72	4.56	1.41	83.80	3,633.00
	10/07/16 13:40:37	23550	14.67	2.82	1.00	4.40	1.41	83.80	3,633.00
	10/07/16 13:41:07	23580	14.79	2.73	0.77	4.33	1.40	83.80	3,632.00
A3	10/07/16 13:41:37	23610	14.62	2.63	7.64	4.41	1.40	83.80	3,632.00
	10/07/16 13:42:07	23640	14.59	2.45	6.61	4.45	1.41	83.90	3,639.00
	10/07/16 13:42:37	23670	14.51	2.24	5.42	4.50	1.41	83.90	3,639.00
	10/07/16 13:43:07	23700	14.64	2.10	7.53	4.45	1.40	84.10	3,632.00
	10/07/16 13:43:37	23730	14.64	2.26	5.90	4.39	1.40	84.10	3,632.00
	10/07/16 13:44:07	23760	14.46	2.33	4.65	4.54	1.39	84.50	3,630.00
	10/07/16 13:44:37	23790	14.56	2.32	3.99	4.47	1.39	84.50	3,630.00
	10/07/16 13:45:07	23820	14.76	2.62	3.42	4.34	1.40	84.80	3,634.00
	10/07/16 13:45:37	23850	14.16	3.61	3.00	4.72	1.40	84.80	3,634.00
	10/07/16 13:46:07	23880	14.26	3.45	2.72	4.72	1.39	85.10	3,631.00
	10/07/16 13:46:37	23910	14.45	3.52	2.59	4.55	1.39	85.10	3,631.00
	10/07/16 13:47:07	23940	14.44	3.97	2.41	4.56	1.38	85.10	3,628.00
	10/07/16 13:47:37	23970	14.37	3.78	2.19	4.61	1.38	85.10	3,628.00
	10/07/16 13:48:07	24000	14.37	3.70	2.01	4.63	1.38	85.30	3,627.00
	10/07/16 13:48:37	24030	14.56	3.60	1.97	4.47	1.38	85.30	3,627.00
	10/07/16 13:49:07	24060	14.27	4.26	1.95	4.66	1.38	85.30	3,625.00
	10/07/16 13:49:37	24090	14.23	4.15	1.72	4.73	1.38	85.30	3,625.00
	10/07/16 13:50:07	24120	14.41	3.22	1.62	4.60	1.38	85.30	3,626.00
	10/07/16 13:50:37	24150	14.54	3.26	1.62	4.50	1.38	85.30	3,626.00
	10/07/16 13:51:07	24180	14.41	4.03	1.42	4.59	1.37	85.20	3,625.00
	10/07/16 13:51:37	24210	14.53	3.86	1.11	4.51	1.37	85.20	3,625.00
	10/07/16 13:52:07	24240	14.59	3.81	0.92	4.46	1.36	85.10	3,625.00
	10/07/16 13:52:37	24270	14.56	4.30	0.80	4.48	1.36	85.10	3,625.00
	10/07/16 13:53:07	24300	14.49	4.18	0.69	4.54	1.37	84.90	3,625.00
	10/07/16 13:53:37	24330	14.49	3.71	0.60	4.52	1.37	84.90	3,625.00
	10/07/16 13:54:07	24360	14.44	3.28	0.60	4.57	1.38	84.80	3,631.00
	10/07/16 13:54:37	24390	14.41	2.98	0.60	4.58	1.38	84.80	3,631.00
	10/07/16 13:55:07	24420	14.32	3.17	0.59	4.65	1.37	84.90	3,634.00
	10/07/16 13:55:37	24450	14.15	3.24	0.54	4.78	1.37	84.90	3,634.00
	10/07/16 13:56:07	24480	14.38	3.20	0.54	4.61	1.37	85.20	3,628.00
	10/07/16 13:56:37	24510	14.56	4.16	0.54	4.50	1.37	85.20	3,628.00
	10/07/16 13:57:07	24540	14.41	5.21	0.50	4.57	1.37	85.50	3,627.00
	10/07/16 13:57:37	24570	14.48	4.97	0.51	4.54	1.37	85.50	3,627.00
	10/07/16 13:58:07	24600	14.52	4.01	0.50	4.49	1.37	85.70	3,622.00
	10/07/16 13:58:37	24630	14.29	2.79	0.50	4.69	1.37	85.70	3,622.00
	10/07/16 13:59:07	24660	14.23	1.91	0.50	4.68	1.38	85.80	3,623.00
	10/07/16 13:59:37	24690	14.41	1.73	0.50	4.56	1.38	85.80	3,623.00
	10/07/16 14:00:07	24720	14.13	1.68	0.50	4.78	1.37	86.00	3,617.00
	10/07/16 14:00:37	24750	14.49	1.54	0.43	4.51	1.37	86.00	3,617.00

Superior Fabrication, INC
October 7, 2016
SCD-60
Elk City Plant

Unit Data

Meas. Stack Moisture	5.0	%
Stack Exhaust Flow (M2)	376,257	SCFH

Weather Data

Barometric Pressure	28.30	in. Hg
Relative Humidity	48	%
Ambient Temperature	60	^{o}F
Specific Humidity	0.005555	lb H_2O / lb air

90-100 Load, Run - SCD-60 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
10/07/16 14:01:07	24780	14.05	1.69	0.42	4.83	1.38	86.20	3,622.00
10/07/16 14:01:37	24810	13.90	1.57	0.40	4.93	1.38	86.20	3,622.00
10/07/16 14:02:07	24840	14.36	1.51	0.39	4.62	1.39	86.50	3,623.00
10/07/16 14:02:37	24870	14.21	1.48	0.41	4.72	1.39	86.50	3,623.00
10/07/16 14:03:07	24900	14.25	1.48	0.41	4.67	1.39	86.70	3,620.00
10/07/16 14:03:37	24930	14.27	1.74	0.41	4.66	1.39	86.70	3,620.00
10/07/16 14:04:07	24960	14.01	1.99	0.38	4.85	1.39	86.80	3,617.00
10/07/16 14:04:37	24990	14.05	1.68	0.39	4.81	1.39	86.80	3,617.00
10/07/16 14:05:07	25020	14.25	1.26	0.38	4.69	1.39	86.80	3,615.00
10/07/16 14:05:37	25050	14.29	1.21	0.37	4.65	1.39	86.80	3,615.00
10/07/16 14:06:07	25080	14.20	1.28	0.36	4.70	1.39	86.80	3,615.00
10/07/16 14:06:37	25110	14.15	1.41	0.34	4.74	1.39	86.80	3,615.00
10/07/16 14:07:07	25140	14.11	1.38	0.34	4.78	1.39	86.80	3,613.00
10/07/16 14:07:37	25170	14.53	1.33	0.31	4.52	1.39	86.80	3,613.00
10/07/16 14:08:07	25200	14.64	1.57	0.30	4.41	1.38	86.90	3,614.00
10/07/16 14:08:37	25230	14.71	1.96	0.35	4.36	1.38	86.90	3,614.00
10/07/16 14:09:07	25260	14.64	2.30	0.28	4.40	1.38	87.00	3,612.00
10/07/16 14:09:37	25290	14.64	2.50	0.25	4.42	1.38	87.00	3,612.00
10/07/16 14:10:07	25320	14.71	2.68	0.25	4.37	1.38	86.70	3,611.00
10/07/16 14:10:37	25350	14.67	2.57	0.25	4.40	1.38	86.70	3,611.00
10/07/16 14:11:07	25380	14.47	2.34	0.25	4.52	1.38	86.50	3,614.00
RAW AVERAGE		**13.87**	**4.76**	**0.92**	**4.94**	**1.36**	**83.08**	**3,587.69**

		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	1434717	1434717	1434717
		(%)	**(ppmvd)**	**(ppmvw)**	**(%)**	**(in. H_2O)**	**(^{o}F)**	**(SCFH)**
Bias	**Initial Zero**	-0.03	0.02	-0.03	-0.01			
	Final Zero	-0.02	-0.09	0.02	0.01			
	Avg. Zero	-0.03	-0.04	-0.01	0.00			
	Initial UpScale	12.05	9.18	3.01	8.85			
	Final UpScale	12.00	9.19	2.93	8.88			
	Avg. UpScale	12.03	9.19	2.97	8.87			
Upscale Cal Gas		11.90	9.21	3.00	8.95			

EMISSIONS DATA	O_2	CO	THC	CO_2
Corrected Raw Average (ppm/% dry basis)	13.73	4.79	0.99	4.99
Corrected Raw Average (ppm/% wet basis)	13.04	4.55	0.94	4.74
Emission Rate (lb/hr)	N/A	0.13	0.04	N/A

Superior Fabrication, INC
October 10, 2016
SCD-60
Elk City Plant

Unit Data

Meas. Stack Moisture	5.2	%
Stack Exhaust Flow (M2)	378,495	SCFH

Weather Data

Barometric Pressure	28.12	in. Hg
Relative Humidity	64	%
Ambient Temperature	58	^{o}F
Specific Humidity	0.006955	lb H_2O / lb air

90-100 Load, Run - SCD-60 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	10/10/16 08:04:09	2820	13.62	6.01	0.06	5.03	1.18	53.40	3,423.00
	10/10/16 08:04:39	2850	13.84	5.33	0.05	4.95	1.18	53.40	3,423.00
	10/10/16 08:05:09	2880	13.78	7.15	0.05	4.93	1.18	54.30	3,413.00
	10/10/16 08:05:39	2910	13.82	7.93	0.06	4.94	1.18	54.30	3,413.00
	10/10/16 08:06:09	2940	13.75	8.26	0.06	4.96	1.18	55.10	3,405.00
	10/10/16 08:06:39	2970	13.81	8.22	0.07	4.94	1.18	55.10	3,405.00
	10/10/16 08:07:09	3000	13.72	7.70	0.08	4.98	1.18	56.00	3,398.00
	10/10/16 08:07:39	3030	13.98	7.12	0.08	4.83	1.18	56.00	3,398.00
	10/10/16 08:08:09	3060	13.85	8.56	0.09	4.90	1.17	56.90	3,393.00
	10/10/16 08:08:39	3090	13.84	7.70	0.08	4.93	1.17	56.90	3,393.00
	10/10/16 08:09:09	3120	13.96	6.90	0.07	4.83	1.16	57.80	3,384.00
	10/10/16 08:09:39	3150	14.03	8.16	0.05	4.79	1.16	57.80	3,384.00
	10/10/16 08:10:09	3180	14.16	9.52	0.05	4.72	1.15	58.60	3,375.00
	10/10/16 08:10:39	3210	14.11	11.30	0.05	4.72	1.15	58.60	3,375.00
	10/10/16 08:11:09	3240	14.27	11.57	0.05	4.64	1.15	59.50	3,370.00
	10/10/16 08:11:39	3270	14.24	13.77	0.05	4.64	1.15	59.50	3,370.00
	10/10/16 08:12:09	3300	14.08	14.34	0.05	4.73	1.15	60.30	3,370.00
	10/10/16 08:12:39	3330	13.70	11.66	0.06	5.01	1.15	60.30	3,370.00
	10/10/16 08:13:09	3360	13.64	7.59	0.06	5.06	1.15	60.90	3,367.00
	10/10/16 08:13:39	3390	13.81	6.56	0.05	4.92	1.15	60.90	3,367.00
	10/10/16 08:14:09	3420	14.16	7.00	0.05	4.79	1.14	61.60	3,360.00
	10/10/16 08:14:39	3450	14.42	10.03	0.05	4.76	1.14	61.60	3,360.00
	10/10/16 08:15:09	3480	14.45	11.27	0.04	4.81	1.14	62.20	3,352.00
	10/10/16 08:15:39	3510	14.37	11.05	0.06	4.88	1.14	62.20	3,352.00
	10/10/16 08:16:09	3540	14.44	10.16	0.06	4.83	1.29	62.90	3,561.00
	10/10/16 08:16:39	3570	14.23	9.99	0.04	4.99	1.29	62.90	3,561.00
	10/10/16 08:17:09	3600	14.49	8.18	0.05	4.84	1.46	63.80	3,797.00
	10/10/16 08:17:39	3630	14.21	9.56	0.06	4.99	1.46	63.80	3,797.00
	10/10/16 08:18:09	3660	13.26	7.59	0.05	5.66	1.46	64.80	3,779.00
	10/10/16 08:18:39	3690	13.43	2.43	0.06	5.54	1.46	64.80	3,779.00
	10/10/16 08:19:09	3720	13.28	1.28	0.06	5.68	1.47	65.80	3,784.00
	10/10/16 08:19:39	3750	13.58	1.14	0.07	5.45	1.47	65.80	3,784.00
	10/10/16 08:20:09	3780	13.33	1.31	0.07	5.67	1.47	66.80	3,769.00
	10/10/16 08:20:39	3810	13.70	1.31	0.05	5.21	1.47	66.80	3,769.00
	10/10/16 08:21:09	3840	13.11	1.55	0.05	5.35	1.47	67.70	3,766.00
	10/10/16 08:21:39	3870	13.04	1.29	0.07	5.41	1.47	67.70	3,766.00
	10/10/16 08:22:09	3900	12.92	0.97	0.06	5.55	1.47	68.60	3,766.00
	10/10/16 08:22:39	3930	13.13	0.91	0.05	5.33	1.47	68.60	3,766.00
	10/10/16 08:23:09	3960	12.97	0.99	0.05	5.49	1.46	69.30	3,755.00
	10/10/16 08:23:39	3990	13.19	0.90	0.06	5.35	1.46	69.30	3,755.00
	10/10/16 08:24:09	4020	13.23	1.24	0.05	5.28	1.47	69.50	3,758.00
A2	10/10/16 08:24:39	4050	13.33	1.38	0.07	5.25	1.47	69.50	3,758.00
	10/10/16 08:25:09	4080	13.20	1.42	0.06	5.28	1.47	69.60	3,755.00
	10/10/16 08:25:39	4110	12.85	1.26	0.07	5.58	1.47	69.60	3,755.00
	10/10/16 08:26:09	4140	13.01	0.88	0.07	5.44	1.46	69.80	3,755.00
	10/10/16 08:26:39	4170	12.91	0.89	0.06	5.54	1.46	69.80	3,755.00
	10/10/16 08:27:09	4200	13.26	1.01	0.06	5.29	1.47	70.10	3,755.00
	10/10/16 08:27:39	4230	13.29	1.20	0.04	5.24	1.47	70.10	3,755.00
	10/10/16 08:28:09	4260	13.12	1.42	0.05	5.39	1.46	70.40	3,749.00
	10/10/16 08:28:39	4290	13.33	1.43	0.04	5.23	1.46	70.40	3,749.00
	10/10/16 08:29:09	4320	13.34	1.64	0.02	5.23	1.45	70.90	3,744.00
	10/10/16 08:29:39	4350	13.29	1.68	0.05	5.26	1.45	70.90	3,744.00
	10/10/16 08:30:09	4380	13.00	1.46	0.06	5.44	1.46	71.20	3,745.00
	10/10/16 08:30:39	4410	12.97	1.17	0.06	5.45	1.46	71.20	3,745.00
	10/10/16 08:31:09	4440	12.81	1.05	0.06	5.59	1.46	71.70	3,734.00
	10/10/16 08:31:39	4470	12.87	0.99	0.07	5.56	1.46	71.70	3,734.00
	10/10/16 08:32:09	4500	13.14	1.03	0.06	5.36	1.45	72.10	3,723.00
	10/10/16 08:32:39	4530	13.29	1.24	0.06	5.25	1.45	72.10	3,723.00
	10/10/16 08:33:09	4560	13.12	1.40	0.06	5.37	1.44	72.50	3,720.00
	10/10/16 08:33:39	4590	12.91	1.27	0.05	5.50	1.44	72.50	3,720.00

Superior Fabrication, INC
October 10, 2016
SCD-60
Elk City Plant

Unit Data

Meas. Stack Moisture	5.2	%
Stack Exhaust Flow (M2)	378,495	SCFH

Weather Data

Barometric Pressure	28.12	in. Hg
Relative Humidity	64	%
Ambient Temperature	58	^{o}F
Specific Humidity	0.006955	lb H_2O / lb air

90-100 Load, Run - SCD-60 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
	10/10/16 08:34:09	4620	13.24	1.25	0.05	5.33	1.45	72.90	3,720.00
	10/10/16 08:34:39	4650	13.11	1.41	0.06	5.38	1.45	72.90	3,720.00
	10/10/16 08:35:09	4680	12.95	1.30	0.06	5.52	1.43	73.30	3,714.00
	10/10/16 08:35:39	4710	13.32	1.32	0.07	5.23	1.43	73.30	3,714.00
	10/10/16 08:36:09	4740	13.28	1.64	0.07	5.26	1.44	73.70	3,709.00
	10/10/16 08:36:39	4770	12.88	1.59	0.06	5.57	1.44	73.70	3,709.00
	10/10/16 08:37:09	4800	13.40	1.45	0.06	5.23	1.43	74.00	3,707.00
	10/10/16 08:37:39	4830	13.45	1.87	0.07	5.16	1.43	74.00	3,707.00
	10/10/16 08:38:09	4860	13.14	2.06	0.06	5.33	1.42	74.30	3,700.00
	10/10/16 08:38:39	4890	12.92	1.82	0.07	5.48	1.42	74.30	3,700.00
	10/10/16 08:39:09	4920	12.98	1.54	0.07	5.53	1.43	74.50	3,701.00
	10/10/16 08:39:39	4950	13.16	1.62	0.05	5.34	1.43	74.50	3,701.00
	10/10/16 08:40:09	4980	13.13	1.85	0.05	5.37	1.43	74.80	3,700.00
	10/10/16 08:40:39	5010	13.04	2.06	0.05	5.42	1.43	74.80	3,700.00
	10/10/16 08:41:09	5040	13.00	2.04	0.05	5.46	1.43	75.10	3,697.00
	10/10/16 08:41:39	5070	12.97	1.92	0.06	5.50	1.43	75.10	3,697.00
	10/10/16 08:42:09	5100	13.14	1.94	0.06	5.37	1.43	75.40	3,692.00
	10/10/16 08:42:39	5130	12.96	2.16	0.05	5.46	1.43	75.40	3,692.00
	10/10/16 08:43:09	5160	12.86	1.92	0.05	5.57	1.42	75.50	3,689.00
	10/10/16 08:43:39	5190	12.73	1.56	0.06	5.68	1.42	75.50	3,689.00
	10/10/16 08:44:09	5220	12.89	1.56	0.06	5.54	1.43	75.60	3,695.00
A3	10/10/16 08:44:39	5250	12.71	1.61	0.06	5.68	1.43	75.60	3,695.00
	10/10/16 08:45:09	5280	12.93	1.53	0.06	5.50	1.43	75.60	3,689.00
	10/10/16 08:45:39	5310	12.67	1.61	0.22	5.73	1.43	75.60	3,689.00
	10/10/16 08:46:09	5340	12.75	2.01	0.09	5.63	1.43	75.50	3,689.00
	10/10/16 08:46:39	5370	12.51	1.91	0.06	5.80	1.43	75.50	3,689.00
	10/10/16 08:47:09	5400	12.56	1.59	0.05	5.86	1.43	75.50	3,690.00
	10/10/16 08:47:39	5430	12.69	1.52	0.06	5.67	1.43	75.50	3,690.00
	10/10/16 08:48:09	5460	12.77	1.56	0.06	5.68	1.43	75.40	3,686.00
	10/10/16 08:48:39	5490	12.85	1.68	0.07	5.52	1.43	75.40	3,686.00
	10/10/16 08:49:09	5520	12.52	1.83	0.07	5.83	1.44	75.30	3,700.00
	10/10/16 08:49:39	5550	12.85	1.83	0.06	5.61	1.44	75.30	3,700.00
	10/10/16 08:50:09	5580	12.90	1.83	0.06	5.52	1.44	75.20	3,706.00
	10/10/16 08:50:39	5610	12.76	1.93	0.07	5.65	1.44	75.20	3,706.00
	10/10/16 08:51:09	5640	12.88	2.01	0.07	5.53	1.44	75.20	3,707.00
	10/10/16 08:51:39	5670	12.94	2.10	0.05	5.51	1.44	75.20	3,707.00
	10/10/16 08:52:09	5700	12.88	2.09	0.07	5.53	1.44	75.20	3,705.00
	10/10/16 08:52:39	5730	12.93	2.06	0.06	5.53	1.44	75.20	3,705.00
	10/10/16 08:53:09	5760	12.58	2.09	0.07	5.75	1.43	75.40	3,700.00
	10/10/16 08:53:39	5790	12.86	2.01	0.05	5.57	1.43	75.40	3,700.00
	10/10/16 08:54:09	5820	12.68	2.03	0.05	5.70	1.43	75.50	3,695.00
	10/10/16 08:54:39	5850	12.62	1.98	0.05	5.79	1.43	75.50	3,695.00
	10/10/16 08:55:09	5880	12.93	1.89	0.05	5.50	1.43	75.70	3,693.00
	10/10/16 08:55:39	5910	12.96	1.99	0.07	5.49	1.43	75.70	3,693.00
	10/10/16 08:56:09	5940	13.02	2.07	0.06	5.43	1.43	75.70	3,693.00
	10/10/16 08:56:39	5970	12.89	2.24	0.06	5.54	1.43	75.70	3,693.00
	10/10/16 08:57:09	6000	12.83	2.24	0.07	5.55	1.42	75.70	3,690.00
	10/10/16 08:57:39	6030	12.66	2.13	0.06	5.74	1.42	75.70	3,690.00
	10/10/16 08:58:09	6060	12.72	2.02	0.05	5.67	1.43	75.60	3,691.00
	10/10/16 08:58:39	6090	12.71	1.92	0.04	5.70	1.43	75.60	3,691.00
	10/10/16 08:59:09	6120	12.57	1.90	0.05	5.80	1.43	75.70	3,692.00
	10/10/16 08:59:39	6150	12.73	1.82	0.06	5.66	1.43	75.70	3,692.00
	10/10/16 09:00:09	6180	13.00	1.85	0.06	5.49	1.42	75.80	3,689.00
	10/10/16 09:00:39	6210	13.04	2.06	0.05	5.43	1.42	75.80	3,689.00
	10/10/16 09:01:09	6240	12.97	2.25	0.05	5.47	1.42	75.80	3,688.00
	10/10/16 09:01:39	6270	13.01	2.21	0.06	5.45	1.42	75.80	3,688.00
	10/10/16 09:02:09	6300	13.05	2.20	0.07	5.43	1.42	75.90	3,679.00
	10/10/16 09:02:39	6330	12.91	2.18	0.05	5.52	1.42	75.90	3,679.00
	10/10/16 09:03:09	6360	12.65	2.10	0.05	5.72	1.43	76.00	3,680.00
	10/10/16 09:03:39	6390	12.83	2.03	0.06	5.56	1.43	76.00	3,680.00

Superior Fabrication, INC
October 10, 2016
SCD-60
Elk City Plant

Unit Data

Meas. Stack Moisture	5.2	%
Stack Exhaust Flow (M2)	378,495	SCFH

Weather Data

Barometric Pressure	28.12	in. Hg
Relative Humidity	64	%
Ambient Temperature	58	°F
Specific Humidity	0.006955	lb H_2O / lb air

90-100 Load, Run - SCD-60 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. °F	Fuel Flow SCFH
10/10/16 09:04:09	6420	12.70	1.95	0.06	5.69	1.42	76.00	3,679.00
10/10/16 09:04:39	6450	12.70	1.85	0.06	5.74	1.42	76.00	3,679.00
10/10/16 09:05:09	6480	12.84	1.85	0.06	5.56	1.42	76.00	3,678.00
10/10/16 09:05:39	6510	12.55	1.85	0.07	5.78	1.42	76.00	3,678.00
10/10/16 09:06:09	6540	12.57	1.79	0.06	5.83	1.42	76.10	3,678.00
10/10/16 09:06:39	6570	13.06	1.83	0.05	5.42	1.42	76.10	3,678.00
10/10/16 09:07:09	6600	12.95	2.01	0.05	5.50	1.41	76.30	3,671.00
10/10/16 09:07:39	6630	12.92	2.11	0.07	5.50	1.41	76.30	3,671.00
10/10/16 09:08:09	6660	12.70	2.11	0.07	5.70	1.42	76.50	3,669.00
10/10/16 09:08:39	6690	13.01	2.07	0.05	5.47	1.42	76.50	3,669.00
10/10/16 09:09:09	6720	12.67	2.10	0.05	5.73	1.42	76.70	3,669.00
10/10/16 09:09:39	6750	12.91	2.09	0.07	5.53	1.42	76.70	3,669.00
10/10/16 09:10:09	6780	12.70	2.08	0.08	5.64	1.45	76.90	3,707.00
10/10/16 09:10:39	6810	12.72	2.00	0.09	5.72	1.45	76.90	3,707.00
10/10/16 09:11:09	6840	12.47	2.01	0.07	5.87	1.45	77.10	3,703.00
10/10/16 09:11:39	6870	12.67	1.88	0.07	5.73	1.45	77.10	3,703.00
10/10/16 09:12:09	6900	12.66	1.86	0.09	5.69	1.45	77.10	3,699.00
10/10/16 09:12:39	6930	12.70	1.84	0.05	5.72	1.45	77.10	3,699.00
10/10/16 09:13:09	6960	12.69	1.84	0.08	5.66	1.45	77.10	3,700.00
10/10/16 09:13:39	6990	12.53	1.83	0.07	5.83	1.45	77.10	3,700.00
10/10/16 09:14:09	7020	12.58	1.83	0.07	5.81	1.45	77.20	3,705.00
RAW AVERAGE		**13.16**	**3.21**	**0.06**	**5.40**	**1.39**	**70.83**	**3,654.13**

		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	1434717	1434717	1434717
						(in. H_2O)	**(°F)**	**(SCFH)**
	Initial Zero	-0.01	-0.02	-0.03	0.04			
	Final Zero	-0.03	-0.01	-0.02	0.06			
Bias	**Avg. Zero**	-0.02	-0.02	-0.03	0.05			
	Initial UpScale	12.05	9.20	3.00	8.84			
	Final UpScale	11.97	9.30	2.91	8.85			
	Avg. UpScale	12.01	9.25	2.96	8.85			
Upscale Cal Gas		11.90	9.21	3.00	8.95			

EMISSIONS DATA	O_2	CO	THC	CO_2
Corrected Raw Average (ppm/% dry basis)	13.03	3.20	0.09	5.44
Corrected Raw Average (ppm/% wet basis)	12.36	3.04	0.08	5.16
Emission Rate (lb/hr)	N/A	0.09	0.00	N/A

Superior Fabrication, INC
October 10, 2016
SCD-60
Elk City Plant

Unit Data

Meas. Stack Moisture	5.5	%
Stack Exhaust Flow (M2)	354,831	SCFH

Weather Data

Barometric Pressure	28.14	in. Hg
Relative Humidity	58	%
Ambient Temperature	60	°F
Specific Humidity	0.006764	lb H_2O / lb air

90-100 Load, Run - SCD-60 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	10/10/16 09:29:09	7920	13.25	2.99	0.05	5.33	1.12	74.00	3,270.00
	10/10/16 09:29:39	7950	13.60	3.16	0.06	5.07	1.12	74.00	3,270.00
	10/10/16 09:30:09	7980	13.37	3.44	0.05	5.32	1.12	73.90	3,271.00
	10/10/16 09:30:39	8010	13.44	3.19	0.07	5.17	1.12	73.90	3,271.00
	10/10/16 09:31:09	8040	13.46	3.26	0.06	5.16	1.12	73.70	3,270.00
	10/10/16 09:31:39	8070	13.22	3.37	0.05	5.30	1.12	73.70	3,270.00
	10/10/16 09:32:09	8100	13.36	3.14	0.04	5.20	1.11	73.60	3,271.00
	10/10/16 09:32:39	8130	13.54	3.20	0.06	5.11	1.11	73.60	3,271.00
	10/10/16 09:33:09	8160	13.64	3.52	0.07	5.01	1.12	73.50	3,268.00
	10/10/16 09:33:39	8190	13.19	3.58	0.07	5.33	1.12	73.50	3,268.00
	10/10/16 09:34:09	8220	12.90	2.83	0.08	5.50	1.11	73.30	3,267.00
	10/10/16 09:34:39	8250	13.47	2.47	0.07	5.16	1.11	73.30	3,267.00
	10/10/16 09:35:09	8280	13.35	2.68	0.06	5.23	1.12	73.30	3,268.00
	10/10/16 09:35:39	8310	12.99	2.62	0.05	5.48	1.12	73.30	3,268.00
	10/10/16 09:36:09	8340	13.66	2.56	0.05	5.08	1.11	73.30	3,268.00
	10/10/16 09:36:39	8370	13.73	3.27	0.05	5.00	1.11	73.30	3,268.00
	10/10/16 09:37:09	8400	13.46	3.74	0.06	5.15	1.12	73.30	3,266.00
	10/10/16 09:37:39	8430	13.53	3.11	0.06	5.12	1.12	73.30	3,266.00
	10/10/16 09:38:09	8460	13.24	3.09	0.06	5.30	1.16	73.30	3,332.00
	10/10/16 09:38:39	8490	13.59	2.97	0.05	5.09	1.16	73.30	3,332.00
	10/10/16 09:39:09	8520	13.25	3.16	0.05	5.28	1.41	73.30	3,682.00
	10/10/16 09:39:39	8550	13.32	2.84	0.07	5.24	1.41	73.30	3,682.00
	10/10/16 09:40:09	8580	12.49	2.34	0.07	5.90	1.46	73.60	3,753.00
	10/10/16 09:40:39	8610	12.57	1.72	0.05	5.79	1.46	73.60	3,753.00
	10/10/16 09:41:09	8640	12.73	1.32	0.06	5.68	1.45	73.80	3,730.00
	10/10/16 09:41:39	8670	12.25	1.30	0.06	6.01	1.45	73.80	3,730.00
	10/10/16 09:42:09	8700	12.78	1.22	0.07	5.75	1.44	73.90	3,713.00
	10/10/16 09:42:39	8730	12.89	1.33	0.06	5.49	1.44	73.90	3,713.00
	10/10/16 09:43:09	8760	13.25	1.34	0.05	5.39	1.43	74.10	3,707.00
	10/10/16 09:43:39	8790	13.65	1.32	0.05	5.03	1.43	74.10	3,707.00
	10/10/16 09:44:09	8820	13.38	1.48	0.03	5.16	1.41	74.10	3,695.00
	10/10/16 09:44:39	8850	13.57	1.54	0.06	5.14	1.41	74.10	3,695.00
	10/10/16 09:45:09	8880	13.17	1.82	0.07	5.34	1.41	74.20	3,693.00
	10/10/16 09:45:39	8910	13.84	1.89	0.02	4.95	1.41	74.20	3,693.00
	10/10/16 09:46:09	8940	13.72	1.95	0.03	4.94	1.40	74.20	3,688.00
	10/10/16 09:46:39	8970	13.79	1.85	0.05	4.99	1.40	74.20	3,688.00
	10/10/16 09:47:09	9000	14.20	2.02	0.05	4.68	1.40	74.30	3,685.00
	10/10/16 09:47:39	9030	13.42	2.56	0.06	5.13	1.40	74.30	3,685.00
	10/10/16 09:48:09	9060	13.51	2.14	0.06	5.11	1.40	74.30	3,682.00
	10/10/16 09:48:39	9090	13.70	1.90	0.06	4.96	1.40	74.30	3,682.00
	10/10/16 09:49:09	9120	13.55	1.97	0.06	5.14	1.40	74.30	3,677.00
A2	10/10/16 09:49:39	9150	13.35	1.71	0.06	5.20	1.40	74.30	3,677.00
	10/10/16 09:50:09	9180	13.44	1.62	0.05	5.19	1.40	74.10	3,677.00
	10/10/16 09:50:39	9210	13.27	1.51	0.05	5.30	1.40	74.10	3,677.00
	10/10/16 09:51:09	9240	13.12	1.51	0.02	5.33	1.39	74.00	3,671.00
	10/10/16 09:51:39	9270	13.01	1.48	0.03	5.45	1.39	74.00	3,671.00
	10/10/16 09:52:09	9300	13.32	1.54	0.05	5.29	1.39	74.00	3,668.00
	10/10/16 09:52:39	9330	13.80	1.67	0.05	4.96	1.39	74.00	3,668.00
	10/10/16 09:53:09	9360	13.57	1.90	0.05	5.07	1.42	74.00	3,708.00
	10/10/16 09:53:39	9390	13.84	2.10	0.05	4.92	1.42	74.00	3,708.00
	10/10/16 09:54:09	9420	13.30	2.28	0.03	5.19	1.40	74.00	3,699.00
	10/10/16 09:54:39	9450	13.29	2.23	0.05	5.30	1.40	74.00	3,699.00
	10/10/16 09:55:09	9480	13.99	2.05	0.05	4.82	1.41	74.00	3,698.00
	10/10/16 09:55:39	9510	13.70	2.42	0.05	4.99	1.41	74.00	3,698.00
	10/10/16 09:56:09	9540	13.52	2.54	0.08	5.08	1.41	73.90	3,695.00
	10/10/16 09:56:39	9570	13.31	2.58	0.05	5.23	1.41	73.90	3,695.00
	10/10/16 09:57:09	9600	13.33	2.36	0.05	5.24	1.41	73.80	3,694.00
	10/10/16 09:57:39	9630	13.31	2.01	0.06	5.21	1.41	73.80	3,694.00
	10/10/16 09:58:09	9660	13.22	1.78	0.05	5.29	1.41	73.90	3,690.00
	10/10/16 09:58:39	9690	13.53	1.65	0.03	5.15	1.41	73.90	3,690.00

Superior Fabrication, INC
October 10, 2016
SCD-60
Elk City Plant

Unit Data

Meas. Stack Moisture	5.5	%
Stack Exhaust Flow (M2)	354,831	SCFH

Weather Data

Barometric Pressure	28.14	in. Hg
Relative Humidity	58	%
Ambient Temperature	60	°F
Specific Humidity	0.006764	lb H_2O / lb air

90-100 Load, Run - SCD-60 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
	10/10/16 09:59:09	9720	13.33	1.88	0.05	5.21	1.40	74.00	3,688.00
	10/10/16 09:59:39	9750	13.54	2.04	0.06	5.09	1.40	74.00	3,688.00
	10/10/16 10:00:09	9780	13.07	2.03	0.08	5.38	1.41	74.00	3,690.00
	10/10/16 10:00:39	9810	13.27	1.88	0.17	5.33	1.41	74.00	3,690.00
	10/10/16 10:01:09	9840	13.53	1.86	0.14	5.07	1.41	74.00	3,686.00
	10/10/16 10:01:39	9870	13.24	2.04	0.15	5.30	1.41	74.00	3,686.00
	10/10/16 10:02:09	9900	13.48	2.09	0.07	5.18	1.39	74.10	3,676.00
	10/10/16 10:02:39	9930	13.84	2.16	0.05	4.92	1.39	74.10	3,676.00
	10/10/16 10:03:09	9960	13.82	2.48	0.05	4.89	1.34	74.20	3,627.00
	10/10/16 10:03:39	9990	13.65	2.67	0.06	5.02	1.34	74.20	3,627.00
	10/10/16 10:04:09	10020	13.78	2.60	0.06	4.98	1.34	74.30	3,618.00
	10/10/16 10:04:39	10050	13.76	2.50	0.05	4.94	1.34	74.30	3,618.00
	10/10/16 10:05:09	10080	13.37	2.57	0.04	5.16	1.35	74.20	3,619.00
	10/10/16 10:05:39	10110	13.19	2.67	0.05	5.38	1.35	74.20	3,619.00
	10/10/16 10:06:09	10140	13.15	2.81	0.05	5.40	1.36	74.10	3,614.00
	10/10/16 10:06:39	10170	13.67	3.28	0.05	5.03	1.36	74.10	3,614.00
	10/10/16 10:07:09	10200	13.43	3.34	0.05	5.15	1.35	74.00	3,618.00
	10/10/16 10:07:39	10230	13.46	3.32	0.07	5.16	1.35	74.00	3,618.00
	10/10/16 10:08:09	10260	13.68	3.43	0.07	5.06	1.35	74.00	3,612.00
	10/10/16 10:08:39	10290	13.55	3.44	0.06	5.05	1.35	74.00	3,612.00
	10/10/16 10:09:09	10320	13.74	3.49	0.06	5.06	1.35	74.10	3,609.00
A3	10/10/16 10:09:39	10350	13.69	3.50	0.07	4.96	1.35	74.10	3,609.00
	10/10/16 10:10:09	10380	13.42	3.25	0.06	5.23	1.42	74.00	3,718.00
	10/10/16 10:10:39	10410	13.29	3.14	0.06	5.27	1.42	74.00	3,718.00
	10/10/16 10:11:09	10440	13.18	3.46	0.06	5.30	1.45	74.10	3,746.00
	10/10/16 10:11:39	10470	13.45	3.97	0.04	5.22	1.45	74.10	3,746.00
	10/10/16 10:12:09	10500	13.77	3.66	0.04	4.94	1.46	74.20	3,773.00
	10/10/16 10:12:39	10530	13.60	3.00	0.01	5.05	1.46	74.20	3,773.00
	10/10/16 10:13:09	10560	13.44	2.76	0.05	5.12	1.49	74.10	3,790.00
	10/10/16 10:13:39	10590	12.82	2.70	0.06	5.60	1.49	74.10	3,790.00
	10/10/16 10:14:09	10620	13.41	2.56	0.06	5.20	1.45	74.00	3,749.00
	10/10/16 10:14:39	10650	13.42	2.61	0.06	5.17	1.45	74.00	3,749.00
	10/10/16 10:15:09	10680	13.53	2.62	0.05	5.09	1.46	74.10	3,751.00
	10/10/16 10:15:39	10710	13.44	2.67	0.04	5.18	1.46	74.10	3,751.00
	10/10/16 10:16:09	10740	13.36	2.85	0.03	5.18	1.45	74.10	3,752.00
	10/10/16 10:16:39	10770	13.22	2.86	0.07	5.35	1.45	74.10	3,752.00
	10/10/16 10:17:09	10800	13.73	2.82	0.05	4.96	1.44	74.20	3,750.00
	10/10/16 10:17:39	10830	13.61	2.79	0.03	5.04	1.44	74.20	3,750.00
	10/10/16 10:18:09	10860	13.76	2.89	0.02	4.96	1.45	74.50	3,752.00
	10/10/16 10:18:39	10890	13.31	2.98	0.02	5.22	1.45	74.50	3,752.00
	10/10/16 10:19:09	10920	13.69	2.83	0.01	5.01	1.45	74.70	3,755.00
	10/10/16 10:19:39	10950	13.53	2.79	0.02	5.11	1.45	74.70	3,755.00
	10/10/16 10:20:09	10980	13.34	2.74	0.03	5.20	1.45	74.80	3,756.00
	10/10/16 10:20:39	11010	13.39	2.63	0.03	5.20	1.45	74.80	3,756.00
	10/10/16 10:21:09	11040	13.39	2.68	0.02	5.23	1.46	75.00	3,756.00
	10/10/16 10:21:39	11070	13.32	2.66	0.03	5.22	1.46	75.00	3,756.00
	10/10/16 10:22:09	11100	13.50	2.66	0.02	5.13	1.45	75.00	3,755.00
	10/10/16 10:22:39	11130	13.42	2.60	0.03	5.15	1.45	75.00	3,755.00
	10/10/16 10:23:09	11160	13.16	2.61	0.02	5.31	1.47	75.10	3,758.00
	10/10/16 10:23:39	11190	12.58	2.86	0.05	5.76	1.47	75.10	3,758.00
	10/10/16 10:24:09	11220	12.89	3.09	0.06	5.56	1.47	75.20	3,755.00
	10/10/16 10:24:39	11250	13.22	3.39	0.05	5.33	1.47	75.20	3,755.00
	10/10/16 10:25:09	11280	13.37	3.62	0.03	5.18	1.48	75.30	3,753.00
	10/10/16 10:25:39	11310	13.07	3.58	0.05	5.45	1.48	75.30	3,753.00
	10/10/16 10:26:09	11340	13.24	3.68	0.04	5.25	1.47	75.40	3,751.00
	10/10/16 10:26:39	11370	13.14	3.61	0.03	5.37	1.47	75.40	3,751.00
	10/10/16 10:27:09	11400	13.67	3.53	0.03	5.04	1.47	75.60	3,748.00
	10/10/16 10:27:39	11430	13.39	3.55	0.02	5.13	1.47	75.60	3,748.00
	10/10/16 10:28:09	11460	12.76	3.53	0.03	5.64	1.46	75.60	3,745.00
	10/10/16 10:28:39	11490	12.50	3.45	0.04	5.79	1.46	75.60	3,745.00

Superior Fabrication, INC
October 10, 2016
SCD-60
Elk City Plant

Unit Data

Meas. Stack Moisture	5.5	%
Stack Exhaust Flow (M2)	354,831	SCFH

Weather Data

Barometric Pressure	28.14	in. Hg
Relative Humidity	58	%
Ambient Temperature	60	°F
Specific Humidity	0.006764	lb H_2O / lb air

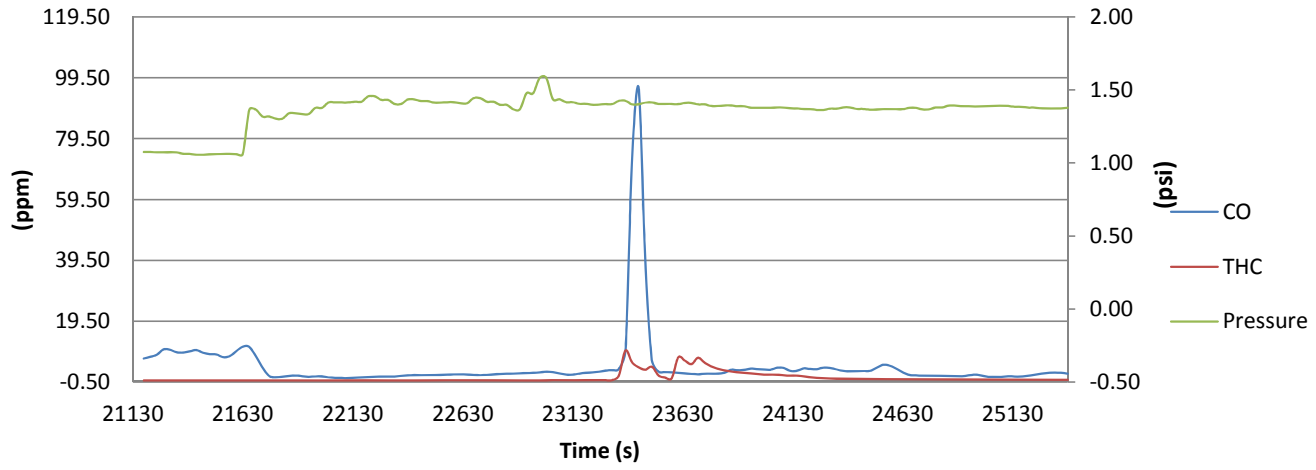
90-100 Load, Run - SCD-60 R12

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
10/10/16 10:29:09	11520	13.11	3.31	0.03	5.43	1.47	75.60	3,749.00
10/10/16 10:29:39	11550	13.40	3.26	0.02	5.19	1.47	75.60	3,749.00
10/10/16 10:30:09	11580	13.24	3.36	0.04	5.27	1.46	75.60	3,745.00
10/10/16 10:30:39	11610	13.26	3.42	0.03	5.26	1.46	75.60	3,745.00
10/10/16 10:31:09	11640	13.43	3.51	0.04	5.12	1.46	75.50	3,742.00
10/10/16 10:31:39	11670	13.14	3.49	0.03	5.40	1.46	75.50	3,742.00
10/10/16 10:32:09	11700	13.35	3.40	0.05	5.20	1.46	75.50	3,742.00
10/10/16 10:32:39	11730	12.94	3.33	0.04	5.46	1.46	75.50	3,742.00
10/10/16 10:33:09	11760	13.15	3.27	0.03	5.33	1.46	75.60	3,745.00
10/10/16 10:33:39	11790	12.84	3.26	0.04	5.60	1.46	75.60	3,745.00
10/10/16 10:34:09	11820	13.29	3.22	0.01	5.24	1.46	75.90	3,741.00
10/10/16 10:34:39	11850	13.24	3.22	0.01	5.27	1.46	75.90	3,741.00
10/10/16 10:35:09	11880	13.02	3.32	0.02	5.43	1.46	76.30	3,741.00
10/10/16 10:35:39	11910	13.54	3.30	0.04	5.11	1.46	76.30	3,741.00
10/10/16 10:36:09	11940	13.11	3.36	0.27	5.38	1.44	76.80	3,734.00
10/10/16 10:36:39	11970	13.29	3.40	0.21	5.24	1.44	76.80	3,734.00
10/10/16 10:37:09	12000	13.19	3.32	0.20	5.32	1.45	77.30	3,732.00
10/10/16 10:37:39	12030	13.25	3.22	0.16	5.27	1.45	77.30	3,732.00
10/10/16 10:38:09	12060	12.84	3.19	0.15	5.59	1.44	77.60	3,729.00
10/10/16 10:38:39	12090	13.39	3.06	0.10	5.18	1.44	77.60	3,729.00
10/10/16 10:39:09	12120	13.07	3.01	0.06	5.41	1.45	77.90	3,734.00
RAW AVERAGE		**13.35**	**2.70**	**0.06**	**5.23**	**1.38**	**74.46**	**3,649.55**

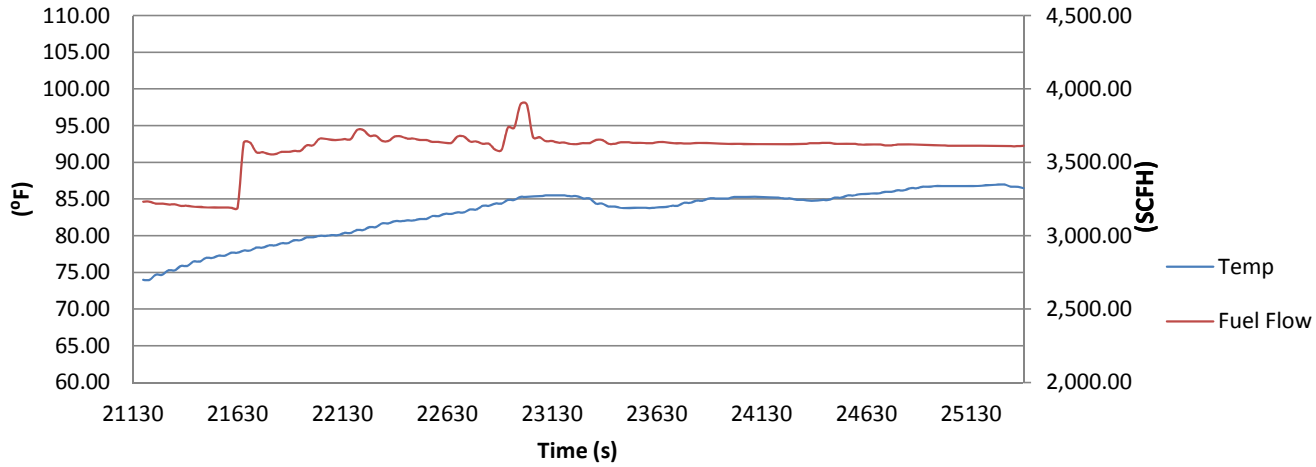
		O_2	CO	THC	CO_2	Press. Trans	Temp. Trans.	F-Flow Trans.
	Serial Number:	INSTO2-0011	INST-CO-0022	INST-TH-0002	INST-C2-0013	1434717	1434717	1434717
		(%)	(ppmvd)	(ppmvw)	(%)	(in. H_2O)	(°F)	(SCFH)
Bias	Initial Zero	-0.03	-0.01	-0.02	0.06			
	Final Zero	0.02	-0.02	-0.01	0.06			
	Avg. Zero	-0.01	-0.02	-0.02	0.06			
	Initial UpScale	11.97	9.30	2.91	8.85			
	Final UpScale	11.96	9.21	2.94	8.85			
	Avg. UpScale	11.97	9.26	2.93	8.85			
Upscale Cal Gas		11.90	9.21	3.00	8.95			

EMISSIONS DATA	O_2	CO	THC	CO_2
Corrected Raw Average (ppm/% dry basis)	13.28	2.70	0.07	5.26
Corrected Raw Average (ppm/% wet basis)	12.55	2.55	0.07	4.97
Emission Rate (lb/hr)	N/A	0.07	0.00	N/A

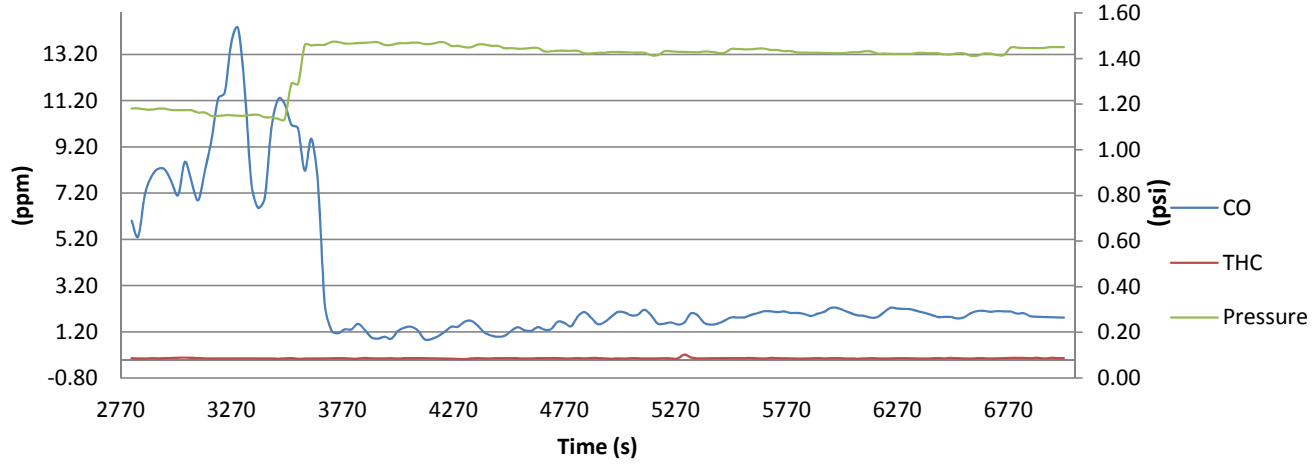
SCD-60 R10



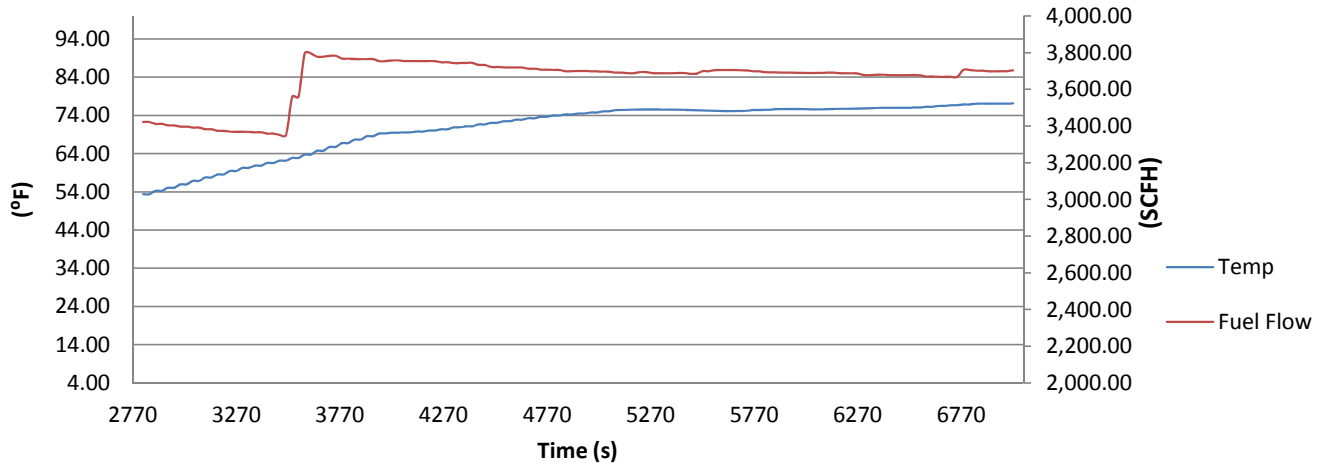
SCD-60 R10



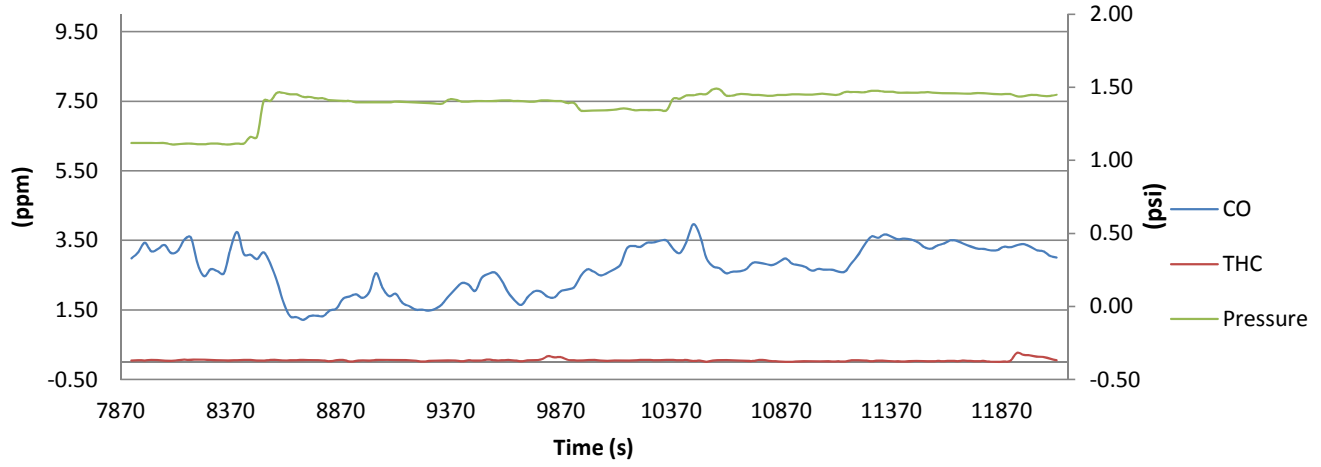
SCD-60 R11



SCD-60 R11



SCD-60 R12



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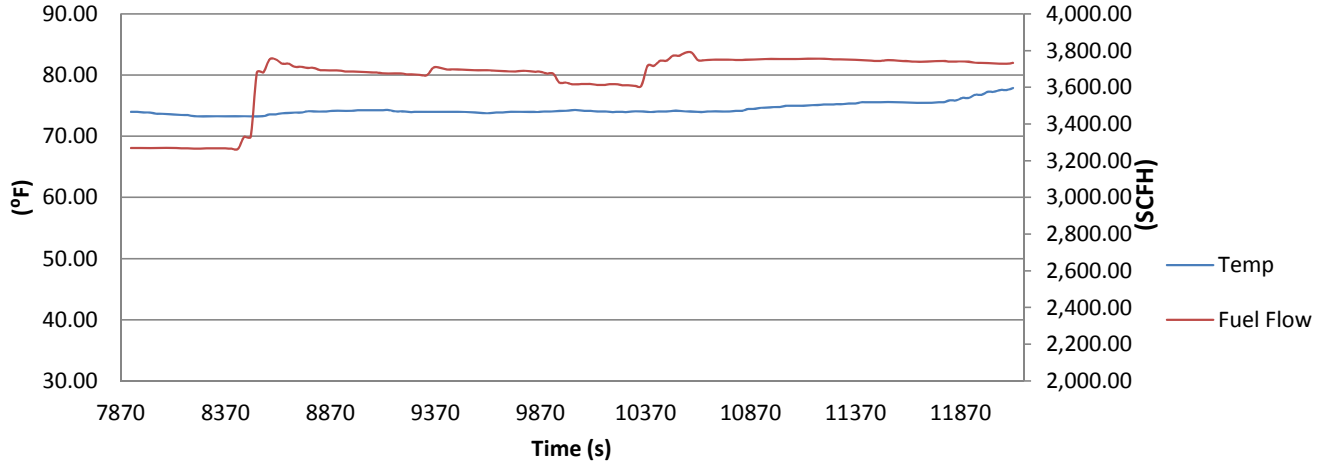
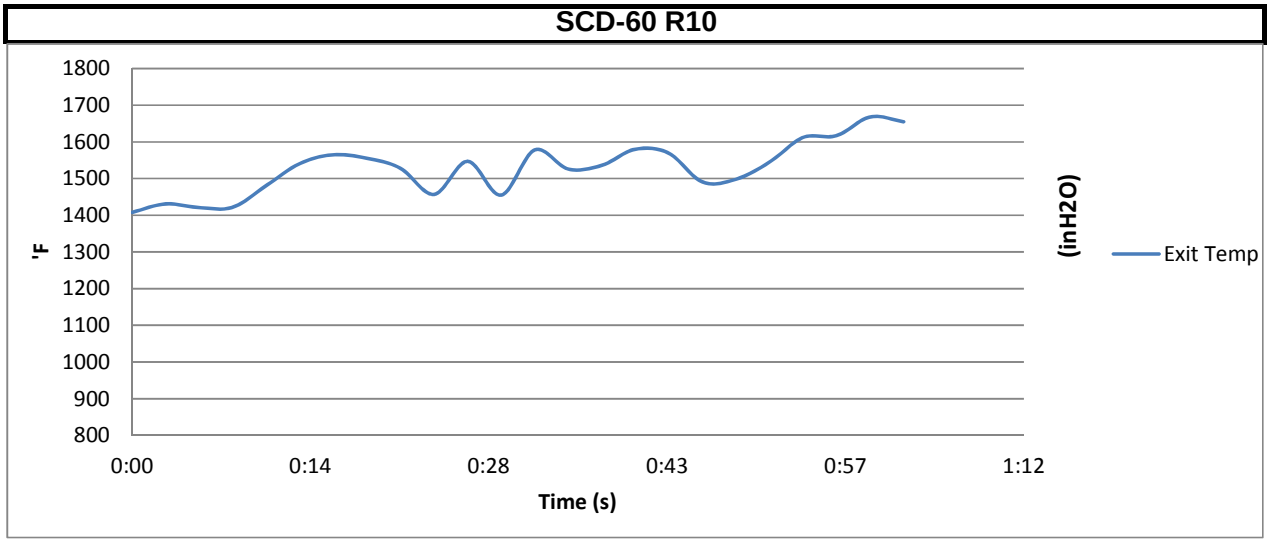
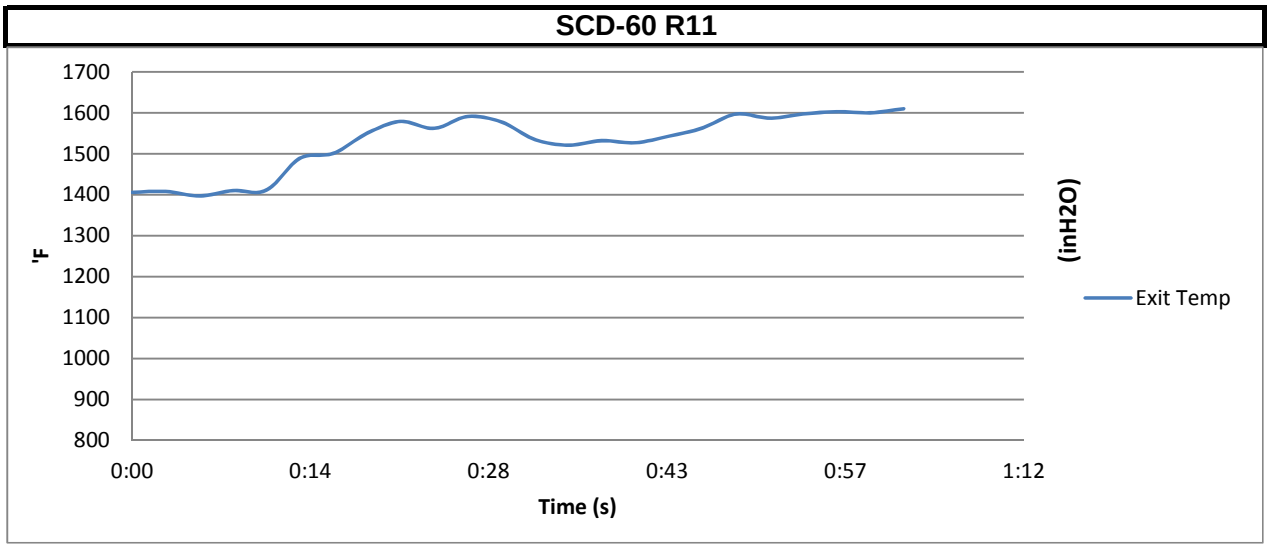
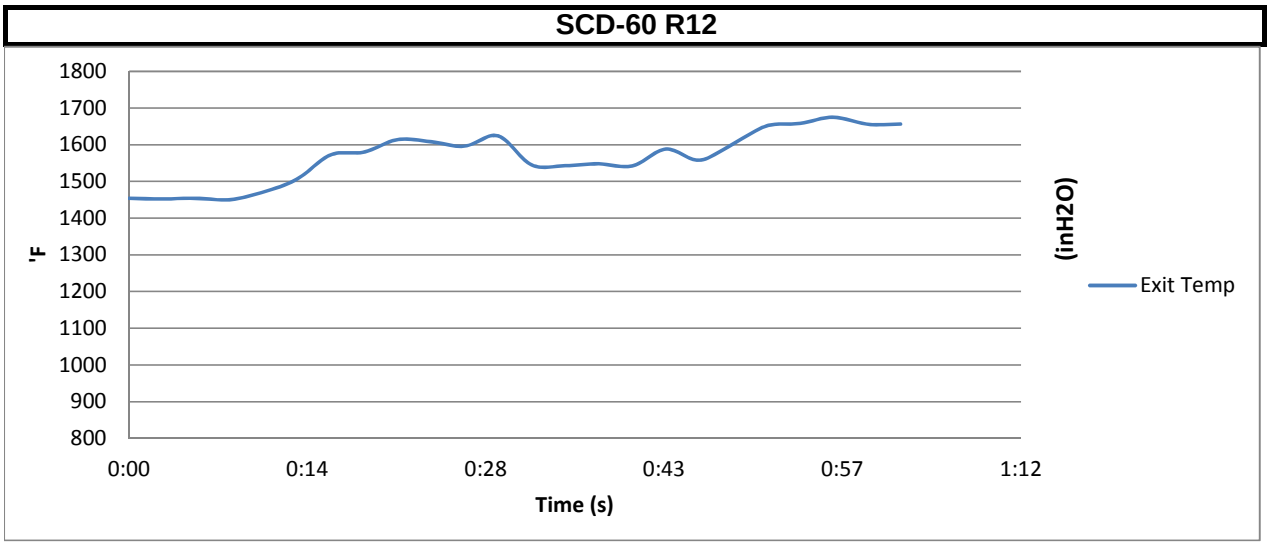



SCD-60 R10
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
'F
0:00
0:14
0:28
0:43
0:57
1:12
Time (s)
(inH2O)
Exit Temp


SCD-60 R11
1700
1600
1500
1400
1300
1200
1100
1000
900
800
'F
0:00
0:14
0:28
0:43
0:57
1:12
Time (s)
(inH2O)
Exit Temp


SCD-60 R12
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
'F
0:00
0:14
0:28
0:43
0:57
1:12
Time (s)
(inH2O)
Exit Temp

EMISSION DATA RECORDS

VISUAL EMISSION RECORD

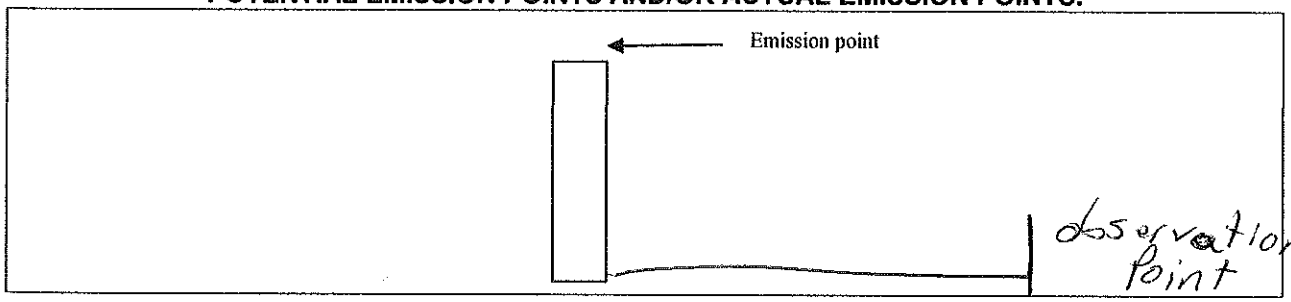
AIR HYGIENE

METHOD 22
FUGITIVE OR SMOKE EMISSION
INSPECTION FORM

COMPANY: Superior Fabrication Inc **LOCATION:** Elk City **COMPANY REP:** Adam Yow	**OBSERVER:** Bryan Brown **AFFILIATION:** Air Hygiene Inc **DATE:** 10/12/16
SKY CONDITIONS: Cloudy **PRECIPITATION:** None	**WIND DIRECTION:** N **WIND SPEED:** 13 mph
INDUSTRY: Fabrication	**PROCESS UNIT:** SCD-60

Run #1

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
15:01	20:00	00:00	S/E of Stack.
15:21	5:00	Break	
15:26	20:00	00:00	
15:46	5:00	Break	
15:51	20:00	00:00	
16:11			

SIGNATURE

10.12.2016 15:04

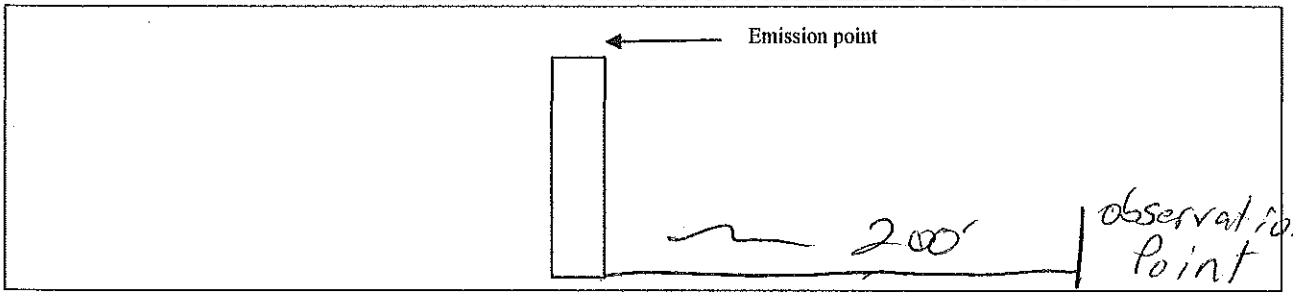
Run #2

METHOD 22
FUGITIVE OR SMOKE EMISSION
INSPECTION FORM

AIR HYGIENE

COMPANY: Superior Fabrication Inc **LOCATION:** Elk City **COMPANY REP:** Adam Yow	**OBSERVER:** Bryan Brown **AFFILIATION:** Air Hygiene Inc **DATE:** 10/12/16
SKY CONDITIONS: Cloudy **PRECIPITATION:** None	**WIND DIRECTION:** N **WIND SPEED:** 12
INDUSTRY: Fabrication	**PROCESS UNIT:** SCD-60

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
16:22	20:00	00:00	N/W of Stack
16:42	5:00	Break	
16:47	20:00	00:00	
17:07	5:00	Break	
17:12	20:00	00:00	
17:32			

SIGNATURE

10.12.2016 17:24

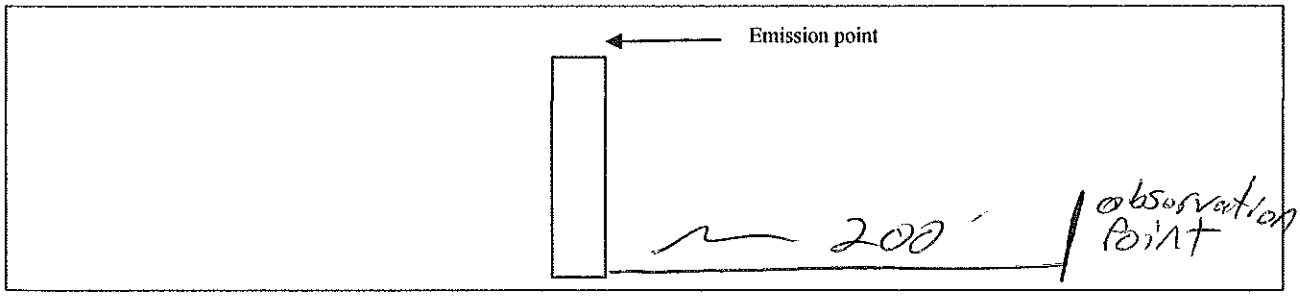
AIR HYGIENE

METHOD 22
FUGITIVE OR SMOKE EMISSION
INSPECTION FORM

Run 3

COMPANY: Superior Fabrication Inc **LOCATION:** Elk City **COMPANY REP:** Adam Yow	**OBSERVER:** Bryan Brown **AFFILIATION:** Air Hygiene Inc **DATE:** 10/12/16
SKY CONDITIONS: Cloudy **PRECIPITATION:** None	**WIND DIRECTION:** N **WIND SPEED:** 14
INDUSTRY: Fabrication	**PROCESS UNIT:** SCD-60

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
17:42	20:00	00:00	N/W of Stack
18:02	5:00	Break	
18:07	20:00	00:00	
18:27	5:00	Break	
18:32	20:00	00:00	
18:52			

SIGNATURE

10.12.2016 17:44

AIR HYGIENE

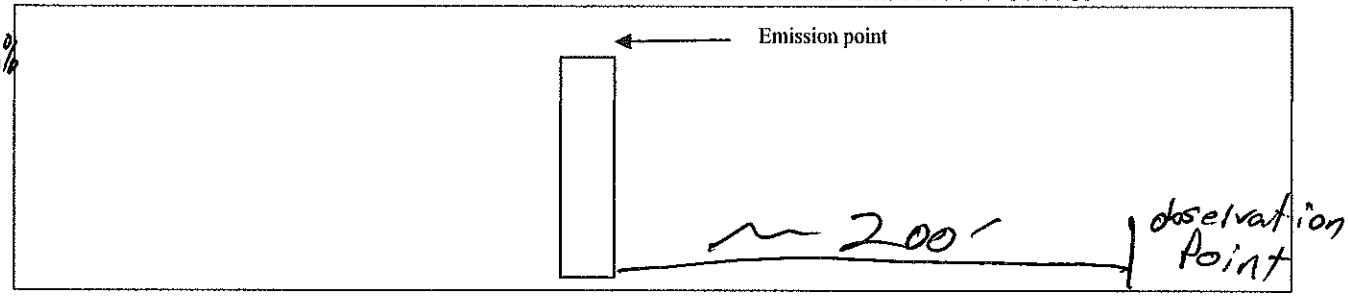
METHOD 22
FUGITIVE OR SMOKE EMISSION
INSPECTION FORM

COMPANY: Superior Fabrication Inc **LOCATION:** Elk City **COMPANY REP:** Adam Yow	**OBSERVER:** Bryan Brown **AFFILIATION:** Air Hygiene Inc **DATE:** 10/10/16
SKY CONDITIONS: clear **PRECIPITATION:** none	**WIND DIRECTION:** 12 mph **WIND SPEED:** SW
INDUSTRY: Fabrication	**PROCESS UNIT:** SCD-60

Run #4

30-70-30%

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	N/W of stack
16:30	5:00	Break	
16:35	20:00	00:00	
16:55	5:00	Break	
17:00	20:00	00:00	
17:20			

SIGNATURE

10.10.2016 16:11

AIR HYGIENE

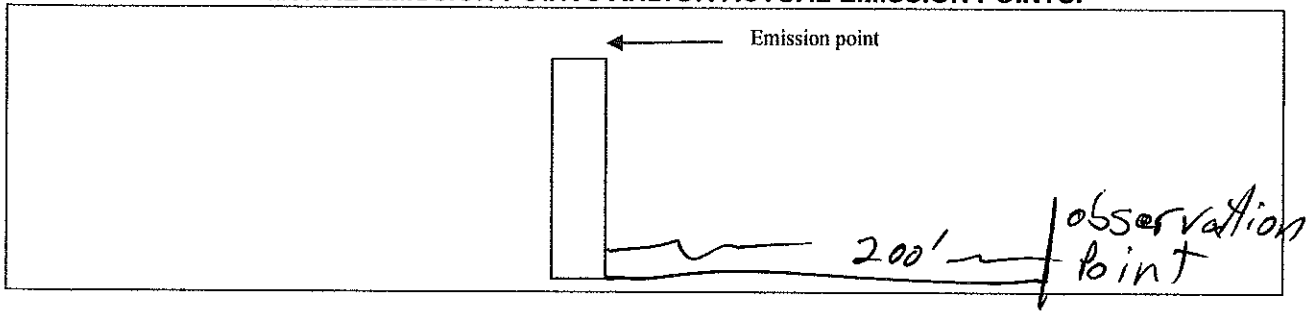
METHOD 22
FUGITIVE OR SMOKE EMISSION
INSPECTION FORM

Run #5

30-70-30%

COMPANY: Superior Fabrication Inc **LOCATION:** Elk City **COMPANY REP:** Adam Yow	**OBSERVER:** Bryan Brown **AFFILIATION:** Air Hygiene Inc **DATE:** 10/10/16
SKY CONDITIONS: Clear **PRECIPITATION:** None	**WIND DIRECTION:** 12 mph **WIND SPEED:** S/W
INDUSTRY: Fabrication	**PROCESS UNIT:** SCD-60

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
17:32	20:00	00:00	N/W of stack
17:52	5:00	Break	
17:57	20:00	00:00	
18:17	5:00	Break	
18:22	20:00	00:00	
18:42			

SIGNATURE

10.10.2016 17:36

Run # 6

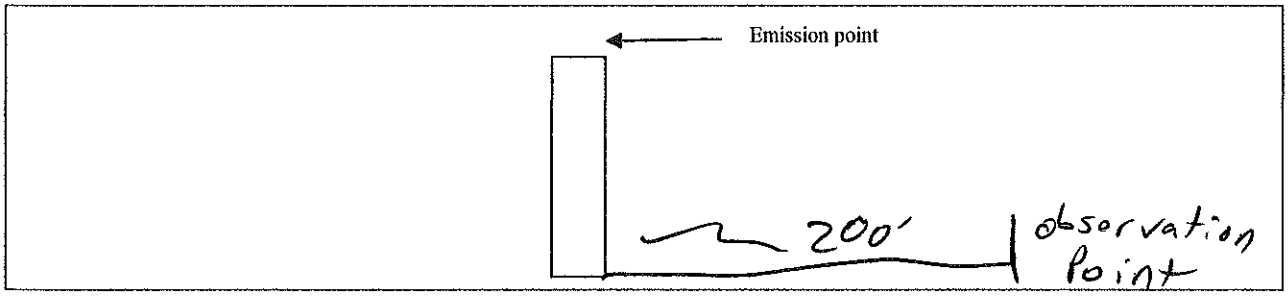
30-70-30

AIR HYGIENE

METHOD 22
FUGITIVE OR SMOKE EMISSION
INSPECTION FORM

COMPANY: Superior Fabrication Inc **LOCATION:** Elk City **COMPANY REP:** Adam Yow	**OBSERVER:** Bryan Brown **AFFILIATION:** Air Hygiene Inc **DATE:** 10/11/16
SKY CONDITIONS: Clear **PRECIPITATION:** None	**WIND DIRECTION:** S **WIND SPEED:** 3mph
INDUSTRY: Fabrication	**PROCESS UNIT:** SCD-60

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
08:03	20:00	00:00	E of Stack
08:23	5:00	Break	
08:28	20:00	00:00	
08:48	5:00	Break	
08:53	20:00	00:00	
09:13			

SIGNATURE

10.11.2016 08:04

Run 7)

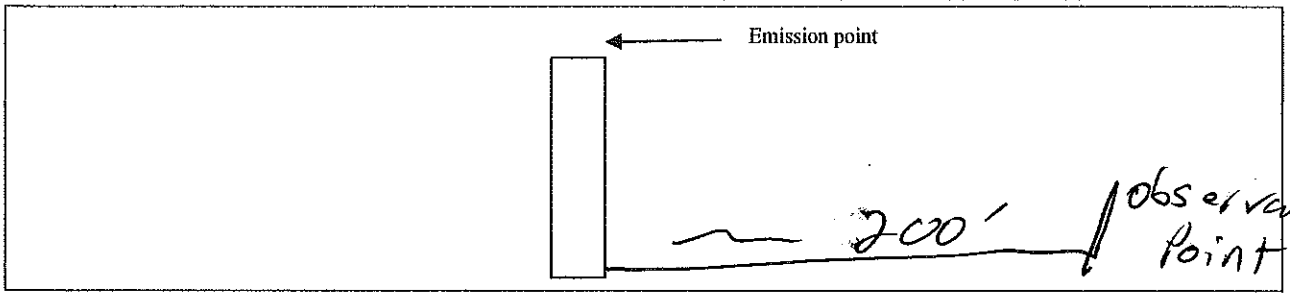
70-100-708

METHOD 22
FUGITIVE OR SMOKE EMISSION
INSPECTION FORM

AIR HYGIENE

COMPANY: Superior Fabrication Inc **LOCATION:** Elk City **COMPANY REP:** Adam Yow	**OBSERVER:** Bryan Brown **AFFILIATION:** Air Hygiene Inc **DATE:** 10/10/16
SKY CONDITIONS: Clear **PRECIPITATION:** None	**WIND DIRECTION:** S/E **WIND SPEED:** 8
INDUSTRY: Fabrication	**PROCESS UNIT:** SCD-60

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
11:02	20:00	00:00	E of stack
11:22	5:00	Break	
11:27	20:00	00:00	
11:47	5:00	Break	
11:52	20:00	00:00	
12:12			

SIGNATURE

10.10.2016 11:49

Run 8

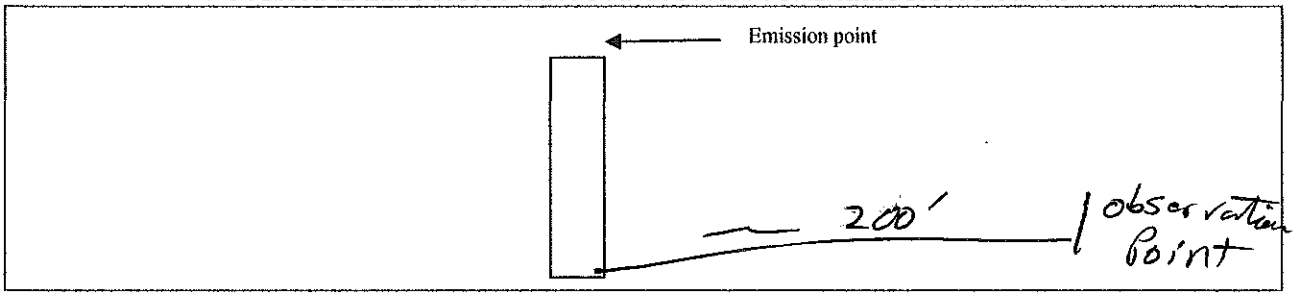
10-100-70

AIR HYGIENE

METHOD 22
FUGITIVE OR SMOKE EMISSION
INSPECTION FORM

COMPANY: Superior Fabrication Inc **LOCATION:** Elk City **COMPANY REP:** Adam Yow	**OBSERVER:** Bryan Brown **AFFILIATION:** Air Hygiene Inc **DATE:** 10/10/16
SKY CONDITIONS: clear **PRECIPITATION:** none	**WIND DIRECTION:** S **WIND SPEED:** 12 mph
INDUSTRY: Fabrication	**PROCESS UNIT:** SCD-60

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
12:30	20:00	00:00	Ej stack
12:50	5:00	Break	
12:55	20:00	00:00	
13:15	5:00	Break	
13:20	20:00	00:00	
13:40			

SIGNATURE

10.10.2016 12:34

Run #9

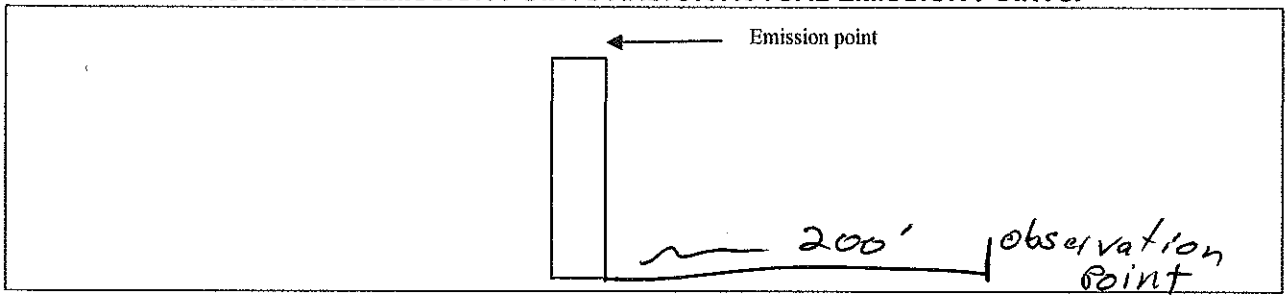
70-100-70

METHOD 22
FUGITIVE OR SMOKE EMISSION
INSPECTION FORM

AIR HYGIENE

COMPANY: Superior Fabrication Inc **LOCATION:** Elk City **COMPANY REP:** Adam Yow	**OBSERVER:** Bryan Brown **AFFILIATION:** Air Hygiene Inc **DATE:** 10/10/16
SKY CONDITIONS: Broken **PRECIPITATION:** None	**WIND DIRECTION:** E **WIND SPEED:** 10mpH
INDUSTRY: Fabrication	**PROCESS UNIT:** SCD-60

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
13:56	20:00	00:00	S/w of stak
14:16	5:00	Break	
14:21	20:00	00:00	
14:41	5:00	Break	
14:46	20:00	00:00	
15:06			

SIGNATURE

10.10.2016 14:16

Run #10

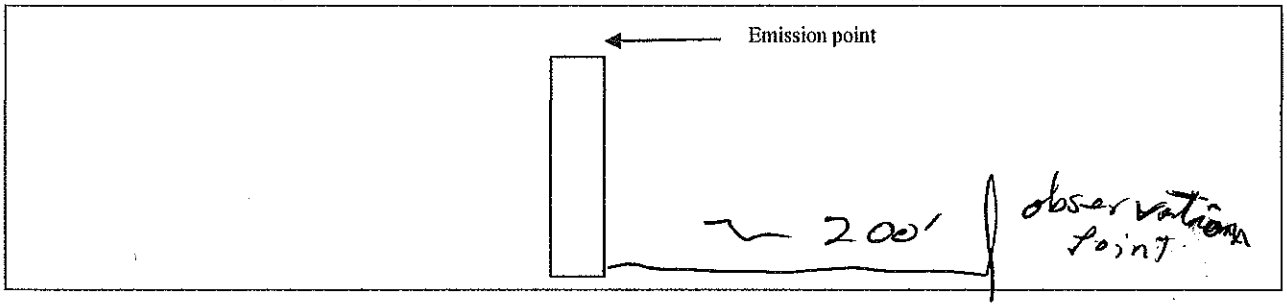
METHOD 22
FUGITIVE OR SMOKE EMISSION
INSPECTION FORM

AIR HYGIENE

90-100

COMPANY: Superior Fabrication Inc **LOCATION:** Elk City **COMPANY REP:** Adam Yow	**OBSERVER:** Bryan Brown **AFFILIATION:** Air Hygiene Inc **DATE:** 10/7/16
SKY CONDITIONS: clear **PRECIPITATION:** None	**WIND DIRECTION:** S **WIND SPEED:** 10 mph
INDUSTRY: Fabrication	**PROCESS UNIT:** SCD-60

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



Temp 60°
Hum. 48%
Baro: 28.30

OBSERVATIONS

CLOCK TIME	OBSERVATION PERIOD DURACTION (MIN:SEC)	ACCUMULATION EMISSION TIME (MIN:SEC)	OBSERVATION LOCATION
13:01	20:00	00:00	E of stack
13:21	5:00	Break	
13:26	20:00	00:00	
13:46	5:00	Break	
13:51	20:00	00:00	
14:11			

SIGNATURE

10 7 2016 14:02

AIR HYGIENE

METHOD 22
FUGITIVE OR SMOKE EMISSION
INSPECTION FORM

Run 11

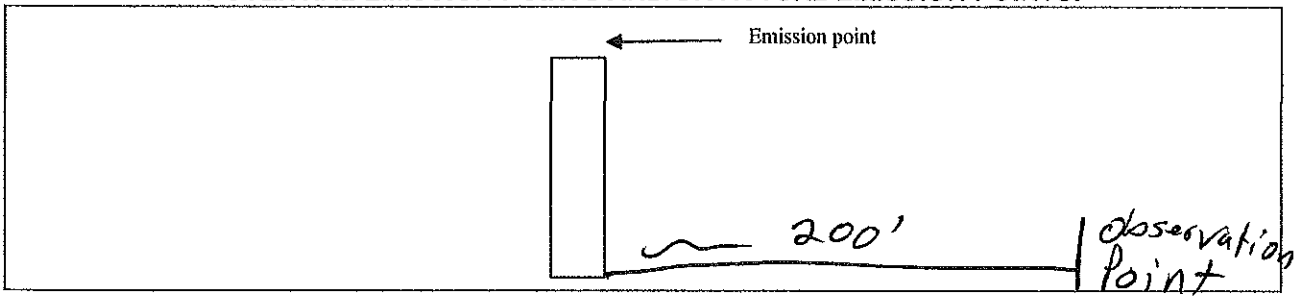
COMPANY: Superior Fabrication Inc **LOCATION:** Elk City **COMPANY REP:** Adam Yow	**OBSERVER:** Bryan Brown **AFFILIATION:** Air Hygiene Inc **DATE:** 10/10/16
SKY CONDITIONS: cloudy **PRECIPITATION:** None	**WIND DIRECTION:** E **WIND SPEED:** 5
INDUSTRY: Fabrication	**PROCESS UNIT:** SCD-60

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

Temp 57.7

Hum: 64.1

Baro 29.12



OBSERVATIONS

CLOCK TIME	OBSERVATION PERIOD DURACTION (MIN:SEC)	ACCUMULATION EMISSION TIME (MIN:SEC)	OBSERVATION LOCATION
08:04	20:00	00:00	S/E of Stack
08:24	5:00	Break	
08:29	20:00	00:00	
08:49	~~5~~ BB 10/10 5:00	Break	
08:54	20:00	00:00	
09:14			

SIGNATURE

10.10.2016 08:15

AIR HYGIENE

METHOD 22
FUGITIVE OR SMOKE EMISSION
INSPECTION FORM

Run 12

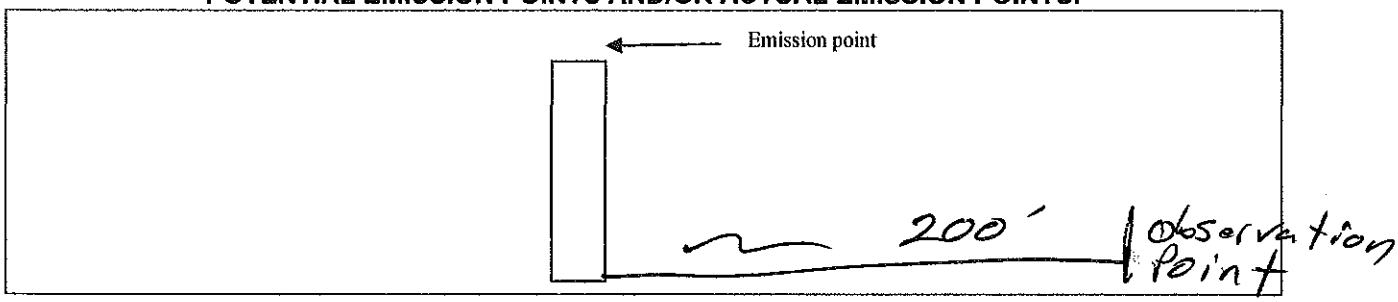
COMPANY: Superior Fabrication Inc **LOCATION:** Elk City **COMPANY REP:** Adam Yow	**OBSERVER:** Bryan Brown **AFFILIATION:** Air Hygiene Inc **DATE:** 10/10/16
SKY CONDITIONS: Broken **PRECIPITATION:** None	**WIND DIRECTION:** S **WIND SPEED:** 13 mph
INDUSTRY: Fabrication	**PROCESS UNIT:** SCD-60

Temp 60°

Hum. 58%

Baro 28.14

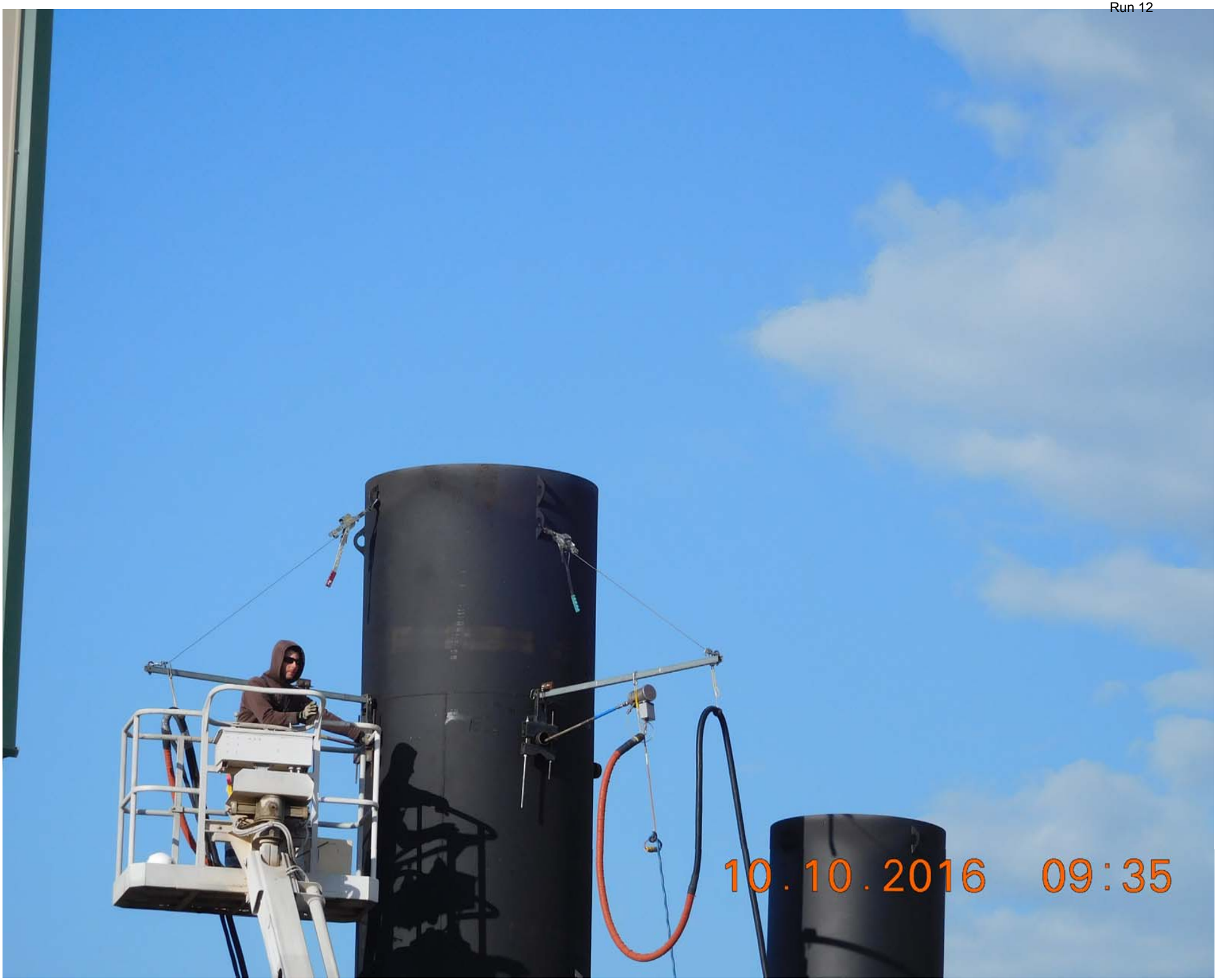
SKETCH PROCESS UNIT: INDICATE OBSERVER POSITION RELATIVE TO SOURCE; INDICATE POTENTIAL EMISSION POINTS AND/OR ACTUAL EMISSION POINTS.



OBSERVATIONS

CLOCK TIME	OBSERVATION PERIOD DURACTION (MIN:SEC)	ACCUMULATION EMISSION TIME (MIN:SEC)	OBSERVATION LOCATION
09:29	20:00	00:00	E of stack
09:49	5:00	Break	
09:54	20:00	00:00	
10:14 BB 10/10	5:00	Break	
10:19	20:00	00:00	
10:39			

SIGNATURE


10.10.2016 09:35

APPENDIX C

CALIBRATION GAS CERTIFICATIONS

Air Liquide America
Specialty Gases LLC

1290 COMBERMERE STREET, TROY, MI 48083 Phone: 248-589-2950 Fax: 248-589-2134

RATA CLASS

Guaranteed +/- 1% Accuracy

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 # : 54692590-005
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.

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)

Accreditation #62754

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.

Version 02-E, Revised on 2016-04-27

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

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

RATA CLASS
Guaranteed +/- 1% Accuracy

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:

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: October 7-12, 2016
Company: Superior Fabrication, INC.
Location: Elk City, Oklahoma
Techs: BB/MJ

Sample System Leak Check

Date	Sample System	Leak Rate (l/min)
October 7-12, 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

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.

Field Balance Weight Verfication
Annual 500g Field Balance Stock Weight vs. 500g ISO 17025 Traceable Weight
Air Hygiene Asset ID: samp-sc-0027

Filename: Z:\Shared\QAQC\Calibrations\Field Balance Weights\[samp-sc-0027_210-100316.xlsm]Balance
Make: Ohaus
Model #: Scout Pro SP2001-US
Serial #: B228113237
Field Weight #: sc-0027
Trailer #: 210

NIST ID LABS-WT-0005
NIST S/N 1000128090
Cal Due 9/29/2016

ISO 17025 Certfified Weight (g)	Field Balance Weight (g)	± g
500.00	500.20	0.20

must be <0.5

Sean Barnes _____ 10/13/16 _____

(signature) *(date)*

ISO 17025 Certfified Weight (g)	Field Balance Weight (g)	± g
500.00	500.20	0.20

must be <0.5

Sean Barnes _____ 10/13/16 _____

(signature) *(date)*

ISO 17025 Certfified Weight (g)	Field Balance Weight (g)	± g
500.00	500.20	0.20

must be <0.5

Sean Barnes _____ 10/13/16 _____

(signature) *(date)*

Note: Calibrated against ISO 17025 Certified weight LABS-WT-0005

EPA Method 4 - Section 10.3, EPA Method 5 - Section 10.7, EPA Method 202 - Section 10.3: Field Balance Calibration Check. Check the calibration of the balance used to weigh impingers with a weight that is at least 500g or within 50g of a loaded impinger. The weight must be ASTM E617-13 "Standard Specification for Laboratory Weights and Precision Mass Standards" Class 6 (or better). Daily before used, the field balance must meausure within ±0.5g of the certified mass. If the daily balance calibration check fails, perform corrective measures and repeat the check before using balance.

ISO 17025 Certified 500g Weight is certified annually. Certified weight is used to verify Class 6 or better weight that accompanies each field balance on the balance it will be used. Acceptance critieria is certified weight must be within ±0.5g of Class 6 or better weight.

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)	(ft³)	(ft³)	(ft³)	(°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) (ft³)	VOLUME CORRECTED Vm(std) (liters)	VOLUME CORRECTED Vcr(std) (ft³)	VOLUME CORRECTED Vcr(std) (liters)	VOLUME NOMINAL Vcr (ft³)
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**.

GE Oil & Gas
Dresser Inc.
16240 Port Northwest Drive, Suite 100
Houston, TX 77041
USA
T +1 800 521 1114 +1 832 590 2303
F +1 800 335 5224 +1 832 590 2494

Customer Information
Name : KOONS GAS MEASUREMENT (GAS)
PO No. : 4490
Badge No. : NONE

Date Printed : 07 14 2016
Bill of Material 055215-012
Model : 3M175
Serial No. : 1633266
Accessory S/N: UC385309
Sales Order No. 217579-1
Spec. Req. No:
Prover Used : 50 cu. ft. (A)
WME :

Unit Description

3M175 SERIES B3 ROOTS METER, COUNTER VERSION

MIN STATIC TEST PRESSURE	MIN LEAK TEST PRESSURE	MAX ALLOWABLE OPER PRESSURE
350 psig	219 psig	175 psig

TC Acc at (deg F)	Accuracy	Proof	% Error

This meter has been tested and successfully passed a Shell Pressure Test and Leak Test at the above conditions.

P R O V E R T E S T D A T A

Test Point	Flow Rate Dis Vol	% Rated Capacity	Meter Accuracy	ERROR +/- %	Diff Pressure	TC Meter Accuracy	TC Meter Proof %	ERROR +/- %
1	3036.4	101.2	100.19	0.19	1.13			
2	299.4	10.0	99.74	-0.26	0.04			

Above data has been determined from tests performed with air at atmospheric pressure and ambient temperature, using positive displacement bell or piston provers or sonic nozzle provers dimensionally traceable to the United States National Institute of Standards and Technology (NIST) and/or traceable to the Netherlands Measurement Institute (NMI) for volumetric flow rate.

TC instrument accuracy has been determined from test performed in liquid baths at the temperatures show above using calibrated measurement instruments whose accuracy is traceable to NIST. TC Meter Accuracy (TC Meter Proof) of both meter and instrument in conjunction is calculated using TC accuracy (TC proof) at 60 degree F.

NMi accredited laboratory no: CE-085

This meter conforms to purchaser specifications.

Test date 13-July-16 by Ray, Taylor

STATION 1	4
STATION 2	2
STATION 3	29
STATION 4	29
STATION 5	wm

GE Oil & Gas
Dresser Inc.
16240 Port Northwest Drive, Suite 100
Houston, TX 77041
USA
T +1 800 521 1114 +1 832 590 2303
F +1 800 335 5224 +1 832 590 2494

Customer Information
Name : KOONS GAS MEASUREMENT (GAS)
PO No. : 4424
Badge No. : NONE

Date Printed : 09 15 2016
Bill of Material 057474-100
Model : 8C175
Serial No. : 1631359
Accessory S/N: 1606041954
Sales Order No. 217120-1
Spec. Req. No:
Prover Used : 50 cu. ft. (A)
WME :

Unit Description

8C175 SERIES B ROOTS METER WITH IMC/W2-PTZ+LOG, MSC SINGLE PULSE OUTPUT CIRCULAR CONNECTOR,180 GAUGE, INTERNAL PRESSURE AND INTERNAL TEMPERATURE CONNECTIONS

MIN STATIC TEST PRESSURE	MIN LEAK TEST PRESSURE	MAX ALLOWABLE OPER PRESSURE
350 psig	219 psig	175 psig

TC Acc at (deg F)	Accuracy	Proof	% Error

This meter has been tested and successfully passed a Shell Pressure Test and Leak Test at the above conditions.

P R O V E R T E S T D A T A

Test Point	Flow Rate Dis Vol	% Rated Capacity	Meter Accuracy	ERROR +/- %	Diff Pressure	TC Meter Accuracy	TC Meter Proof %	ERROR +/- %
1	786.0	98.3	100.49	0.49	0.31			
2	79.9	10.0	100.01	0.01	0.02			

Above data has been determined from tests performed with air at atmospheric pressure and ambient temperature, using positive displacement bell or piston provers dimensionally traceable to the United States National Institute of Standards and Technology (NIST) and traceable to NMi- Netherlands Measurement Institute for volumetric flow rate.

TC instrument accuracy has been determined from test performed in liquid baths at the temperatures show above using calibrated measurement instruments whose accuracy is traceable to NIST. TC Meter Accuracy (TC Meter Proof) of both meter and instrument in conjunction is calculated using TC accuracy (TC proof) at 60 degree F.

NMi accredited laboratory no: CE-085

This meter conforms to purchaser specifications.

Test date 18-July-16 by Ray, Taylor

Dresser Roots Meters
and Instruments
Dresser, Inc
16240 Port Northwest
Houston, TX 77041
Tel: 832-590-2300

Calibration Certificate

Corrector Serial No 03/15/145887
Transducer Serial No. 50587-016
PCB Serial No. 566032350

Transducer: 12bar G
Date: 12/03/2015

Test Equipment

Envio. Chamber: LE0061
Druck 1: 51501570

PRT Simulator: RIG_C
Druck 2: 0624/98-02

Calibration Points

Temperatures: 60.00°C, 35.00°C, 10.00°C, -15.00°C, -40.00°C
Pressures: 0.000bar , 3.000bar , 6.000bar , 9.000bar , 12.000bar

Pressure Checks

Applied Pressure	Ambient @60.0°C		Ambient @35.0°C		Ambient @10.0°C		Ambient @-15.0°C		Ambient @-40.0°C	
	PTZ Reading	Deviation %	PTZ Reading	Deviation %	PTZ Reading	Deviation %	PTZ Reading	Deviation %	PTZ Reading	Deviation %
0.000Bar	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3.000Bar	3.004	0.030	2.998	-0.019	3.000	0.001	2.999	-0.005	3.000	-0.001
6.000Bar	6.004	0.030	5.994	-0.053	6.000	-0.001	5.999	-0.008	6.000	-0.000
9.000Bar	9.012	0.102	9.000	0.002	9.000	-0.000	8.999	-0.009	8.996	-0.033
12.000Bar	12.043	0.356	12.013	0.109	12.008	0.069	12.004	0.034	11.999	-0.005

Errors are shown as %RDG at or above 20% of range, otherwise errors are displayed as %FS

Temperature Checks

Nominal Temperature	Ambient @60°C		Ambient @35°C		Ambient @10°C		Ambient @-15°C		Ambient @-40°C	
	PTZ Reading	Diff. °C	PTZ Reading	Diff. °C	PTZ Reading	Diff. °C	PTZ Reading	Diff. °C	PTZ Reading	Diff. °C
-40.0°C	-39.99	0.01	-40.01	-0.01	-40.02	-0.02	-40.05	-0.05	-40.09	-0.09
10.0°C	10.01	0.01	10.02	0.02	9.97	-0.03	9.95	-0.05	9.91	-0.09
60.0°C	59.99	-0.01	59.99	-0.01	59.97	-0.03	59.94	-0.06	59.91	-0.09

Note 1: Accuracy limits of the Micro Series Corrector readings are better than 0.7% of reading for 20% to 100% pressure range over the full temperature range of -40.0°C to 60.0°C (-40.0°F to 140.0°F).

Note 2: All pressure Measurements used in the calibration and check procedures have certificates issued in accordance with the conditions of accreditation granted by the National Measurement Accreditation Service. NMAS has assessed the measuring capability of the laboratory issuing the certificate and its traceability to British national standards and to the units of measurement realised at the corresponding laboratory (National Physical Laboratory).

Certified By M Burnett

Date 3-11-15

Volume Certification

Instrument

Type:	IMC/W2
Firmware:	1.95
Serial Number:	03/15/145887

Configuration

Meter Type:	Series B, Imperial
Meter Size:	3M
Pulse Outputs:	Single

Test Conditions

Test Date:	03-14-2015	Time: 07:35:16
Fixture:	11	
Temperature:	71.1 °F.	
Line Pressure:	0.07 psi G	PASS
Battery:	6.04 Volts	PASS
Flow Rate:	3000 cfh	
Test Volume:	100.0 cu.ft. (uncorrected)	
Correction Factor:	0.98299	

Results: **PASS**

VOLUME (CU.FT.)

	Uncorrected	Corrected
Initial:	-0.0063	-0.0061
Final:	99.9875	98.2942
Accumulated:	99.9938	98.3003
Calculated:	100.0000	98.2993
Error:	-0.01 %	0.00 %

	HF (Unc.)	Corrected (Prove)
Comms Pulses:	PASS	PASS

PULSE OUTPUTS

	Uncorrected	Corrected	Fault
Multiplier:	1.0	1.0	-
Expected (±1):	100	98	-
Received (Ch.A):	100	98	-
Error:	0	0	-
Min. Width (msec):	187.33	187.33	499.86
Result:	PASS	PASS	PASS

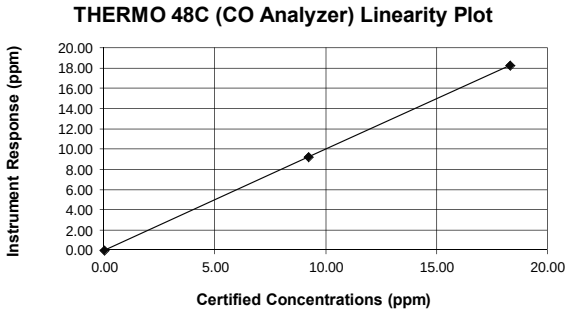
This test performs a check of the configuration, volume input, and pulse outputs of the instrument. The volume input is driven at a precise flow rate for a precise number of revolutions. The test is performed at ambient temperature and pressure.

Operator: DBJ

Calibration Date: October 7, 2016
Client: Superior Fabrication, INC

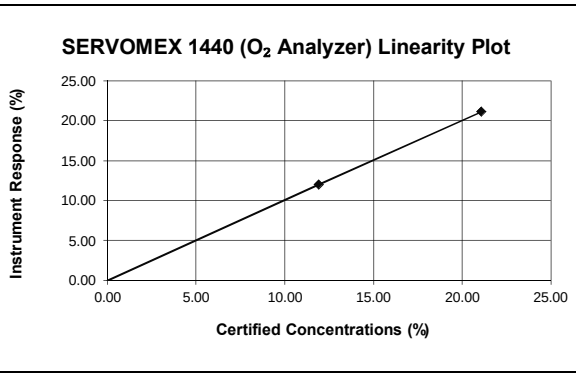
CO Span (ppm) = 18.30

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 (%)
9.21	9.20	-0.05	0.01	YES (%)
18.30	18.29	-0.05	0.01	YES (%)
Linearity = 1.002				



O_2 Span (%) = 21.10

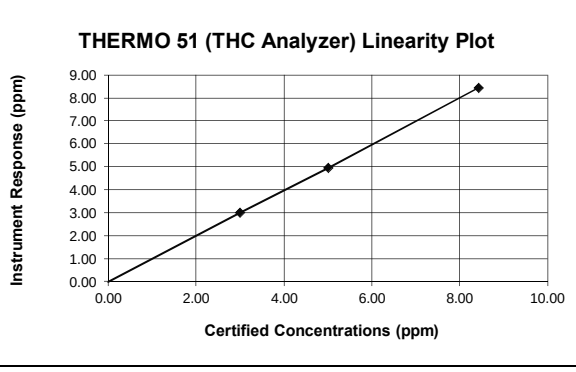
SERVOMEX 1440 (O_2 Analyzer)				
Certified Concentration (%)	**Instrument Response (%)**	**Calibration Error (%)**	**Absolute Conc. (%)**	**Pass or Fail (±2%, ≤0.5%)**
0.00	-0.02	-0.09	0.02	YES (%)
11.90	12.04	0.66	0.14	YES (%)
21.10	21.10	0.00	0.00	YES (%)
Linearity = 0.998				



THC Range (ppm) = 10

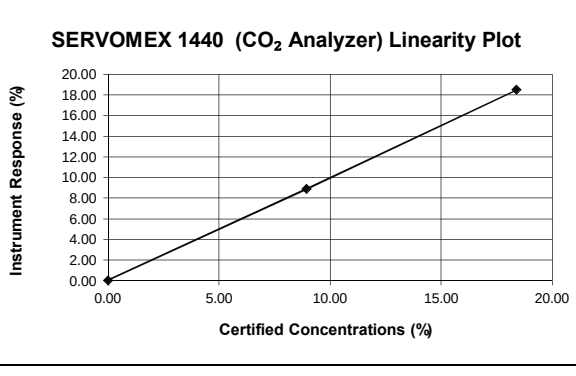
THERMO 51 (THC Analyzer)				
Certified Concentration (ppm)	**Instrument Response (ppm)**	**Calibration Error (%)**	**Estimated Point (ppm)**	**Pass or Fail (±2,5%)[1]**
0.00	-0.02	-0.20	N/A	YES
3.00	3.01	0.62	2.99	YES
5.01	4.96	-0.98	5.01	YES
8.43	8.44	0.12	N/A	YES
Linearity = 0.998				

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



CO_2 Span (%) = 18.40

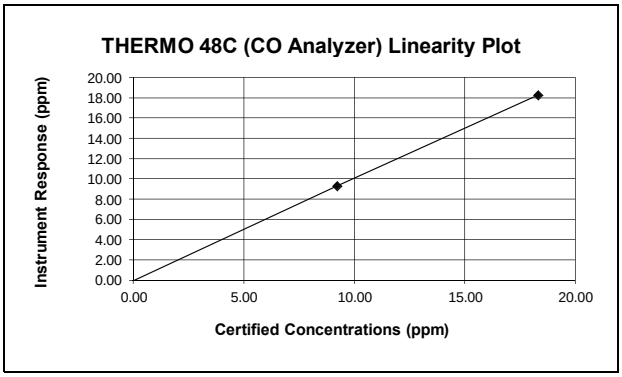
SERVOMEX 1440 (CO_2 Analyzer)				
Certified Concentration (%)	**Instrument Response (%)**	**Calibration Error (%)**	**Absolute Conc. (%)**	**Pass or Fail (±2%, ≤0.5%)**
0.00	0.06	0.33	0.06	YES (%)
8.95	8.89	-0.33	0.06	YES (%)
18.40	18.47	0.38	0.07	YES (%)
Linearity = 0.999				



Calibration Date: October 10, 2016
Client: Superior Fabrication, INC

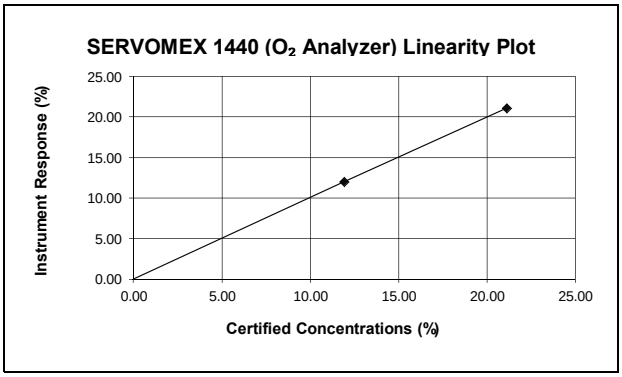
CO Span (ppm) = 18.30

THERMO 48C (CO Analyzer)				
Certified Concentration (ppm)	**Instrument Response (ppm)**	**Calibration Error (%)**	**Absolute Conc. (ppm)**	**Pass or Fail (±2%, ≤0.5ppm)**
0.00	-0.03	-0.16	0.03	YES (%)
9.21	9.29	0.44	0.08	YES (%)
18.30	18.29	-0.05	0.01	YES (%)
Linearity = 0.999				



O2 Span (%) = 21.10

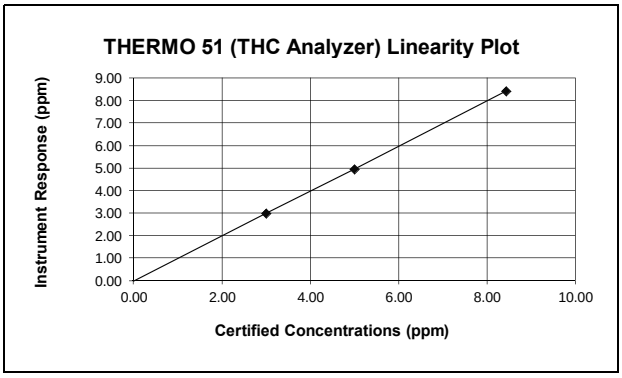
SERVOMEX 1440 (O_2 Analyzer)				
Certified Concentration (%)	**Instrument Response (%)**	**Calibration Error (%)**	**Absolute Conc. (%)**	**Pass or Fail (±2%, ≤0.5%)**
0.00	-0.02	-0.09	0.02	YES (%)
11.90	11.99	0.43	0.09	YES (%)
21.10	21.08	-0.09	0.02	YES (%)
Linearity = 1.000				



THC Range (ppm) = 10

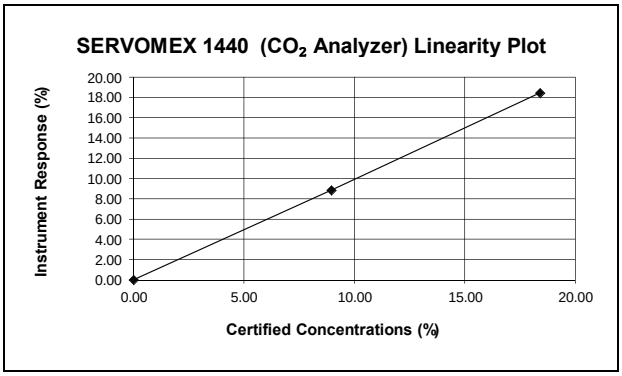
THERMO 51 (THC Analyzer)				
Certified Concentration (ppm)	**Instrument Response (ppm)**	**Calibration Error (%)**	**Estimated Point (ppm)**	**Pass or Fail (±2,5%)[1]**
0.00	-0.02	-0.20	N/A	YES
3.00	2.99	0.21	2.98	YES
5.00	4.96	-0.52	4.99	YES
8.43	8.42	-0.10	N/A	YES
Linearity = 0.999				

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



CO2 Span (%) = 18.40

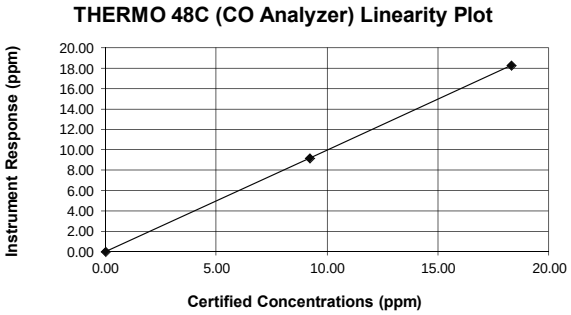
SERVOMEX 1440 (CO_2 Analyzer)				
Certified Concentration (%)	**Instrument Response (%)**	**Calibration Error (%)**	**Absolute Conc. (%)**	**Pass or Fail (±2%, ≤0.5%)**
0.00	0.01	0.05	0.01	YES (%)
8.95	8.88	-0.38	0.07	YES (%)
18.40	18.47	0.38	0.07	YES (%)
Linearity = 0.997				



Calibration Date: October 11, 2016
Client: Superior Fabrication, INC

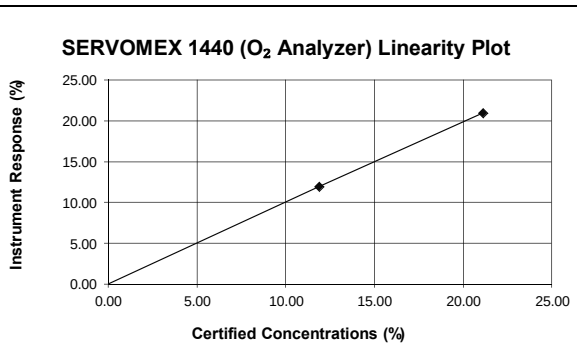
CO Span (ppm) = 18.30

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 (%)
9.21	9.18	-0.16	0.03	YES (%)
18.30	18.28	-0.11	0.02	YES (%)
Linearity = 1.002				



O2 Span (%) = 21.10

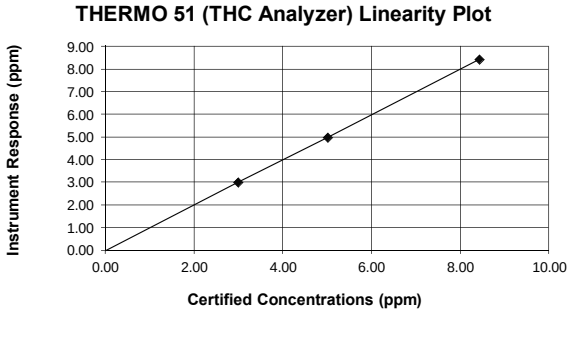
SERVOMEX 1440 (O_2 Analyzer)				
Certified Concentration (%)	Instrument Response (%)	Calibration Error (%)	Absolute Conc. (%)	Pass or Fail (±2%, ≤0.5%)
0.00	-0.02	-0.09	0.02	YES (%)
11.90	11.93	0.14	0.03	YES (%)
21.10	20.99	-0.52	0.11	YES (%)
Linearity = 1.004				



THC Range (ppm) = 10

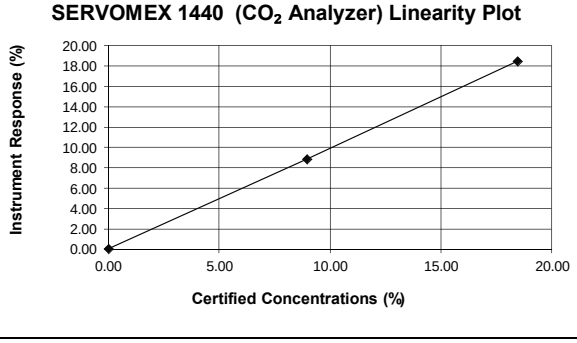
THERMO 51 (THC Analyzer)				
Certified Concentration (ppm)	Instrument Response (ppm)	Calibration Error (%)	Estimated Point (ppm)	Pass or Fail (±2,5%)[1]
0.00	-0.03	-0.30	N/A	YES
3.00	2.99	0.43	2.98	YES
5.01	4.97	-0.44	4.99	YES
8.43	8.42	-0.10	N/A	YES
Linearity = 0.999				

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



CO2 Span (%) = 18.46

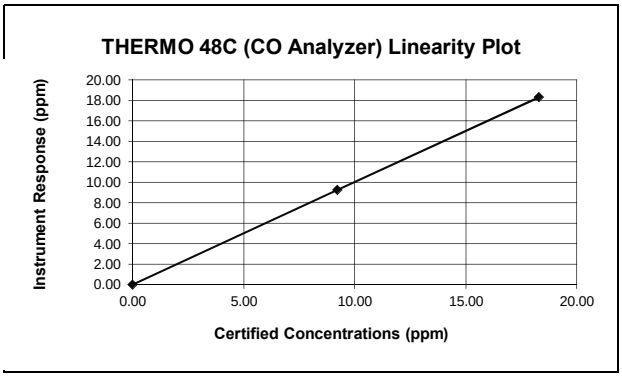
SERVOMEX 1440 (CO_2 Analyzer)				
Certified Concentration (%)	Instrument Response (%)	Calibration Error (%)	Absolute Conc. (%)	Pass or Fail (±2%, ≤0.5%)
0.00	0.04	0.22	0.04	YES (%)
8.95	8.89	-0.33	0.06	YES (%)
18.46	18.46	0.00	0.00	YES (%)
Linearity = 1.002				



Calibration Date: October 12, 2016
Client: Superior Fabrication, INC

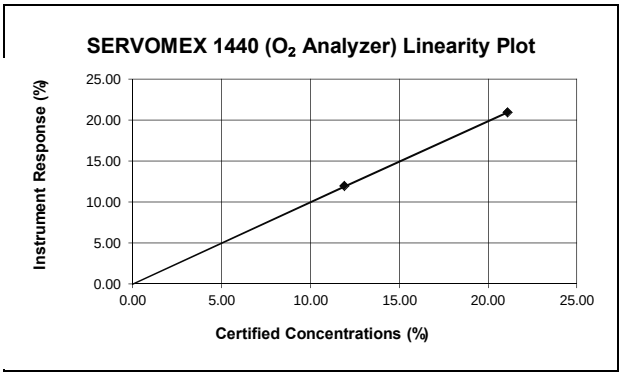
CO Span (ppm) = 18.30

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 (%)
9.21	9.22	0.05	0.01	YES (%)
18.30	18.29	-0.05	0.01	YES (%)
Linearity = 1.001				



O2 Span (%) = 21.10

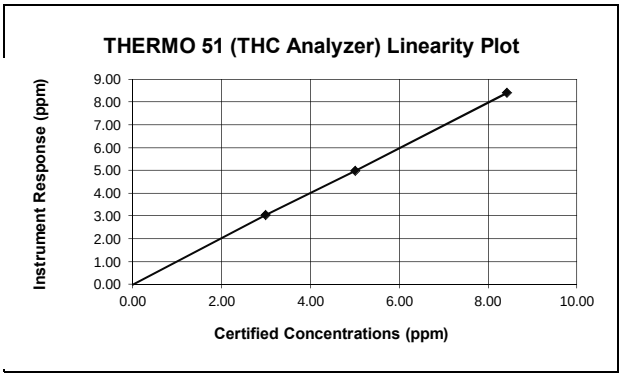
SERVOMEX 1440 (O_2 Analyzer)				
Certified Concentration (%)	Instrument Response (%)	Calibration Error (%)	Absolute Conc. (%)	Pass or Fail (±2%, ≤0.5%)
0.00	-0.01	-0.05	0.01	YES (%)
11.90	11.91	0.05	0.01	YES (%)
21.10	20.92	-0.85	0.18	YES (%)
Linearity = 1.008				



THC Range (ppm) = 10

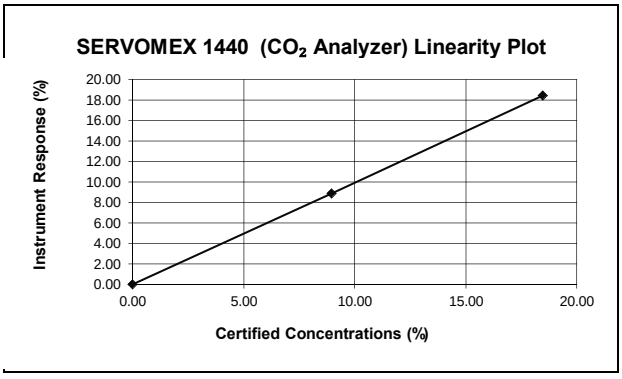
THERMO 51 (THC Analyzer)				
Certified Concentration (ppm)	Instrument Response (ppm)	Calibration Error (%)	Estimated Point (ppm)	Pass or Fail (±2,5%)[1]
0.00	-0.03	-0.30	N/A	YES
3.00	3.04	2.33	2.97	YES
5.01	4.97	-0.20	4.98	YES
8.43	8.40	-0.30	N/A	YES
Linearity = 1.011				

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



CO2 Span (%) = 18.46

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	8.90	-0.27	0.05	YES (%)
18.46	18.41	-0.27	0.05	YES (%)
Linearity = 1.004				



DRIFT AND BIAS CHECK				
90-100 Load, Run - SCD-60 R10	O_2	CO	THC	CO_2
Raw Average	13.87	4.76	0.92	4.94
Corrected Average	13.73	4.79	0.99	4.99
Initial Zero	-0.03	0.02	-0.03	-0.01
Final Zero	-0.02	-0.09	0.02	0.01
Avg. Zero	-0.03	-0.04	-0.01	0.00
Initial UpScale	12.05	9.18	3.01	8.85
Final UpScale	12.00	9.19	2.93	8.88
Avg. UpScale	12.03	9.19	2.97	8.87
Sys Resp (Zero)	-0.02	0.02	-0.02	0.06
Sys Resp (Upscale)	12.04	9.20	3.01	8.89
Upscale Cal Gas	11.90	9.21	3.00	8.95
Initial Zero Bias	-0.05%	0.00%	-0.10%	-0.38%
Final Zero Bias	0.00%	-0.60%	0.40%	-0.27%
Zero Drift	0.05%	0.60%	0.50%	0.11%
Initial Upscale Bias	0.05%	-0.11%	0.00%	-0.22%
Final Upscale Bias	-0.19%	-0.05%	-0.80%	-0.05%
Upscale Drift	0.24%	0.05%	0.80%	0.16%
Alternative Specification Abs Diff: Initial Zero	0.01	0.00	--	0.07
Alternative Specification Abs Diff: Final Zero	0.00	0.11	--	0.05
Alternative Specification Abs Diff: Initial Upscale	0.01	0.02	--	0.04
Alternative Specification Abs Diff: Final Upscale	0.04	0.01	--	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				
90-100 Load, Run - SCD-60 R11	O_2	CO	THC	CO_2
Raw Average	13.16	3.21	0.06	5.40
Corrected Average	13.03	3.20	0.09	5.44
Initial Zero	-0.01	-0.02	-0.03	0.04
Final Zero	-0.03	-0.01	-0.02	0.06
Avg. Zero	-0.02	-0.02	-0.03	0.05
Initial UpScale	12.05	9.20	3.00	8.84
Final UpScale	11.97	9.30	2.91	8.85
Avg. UpScale	12.01	9.25	2.96	8.85
Sys Resp (Zero)	-0.02	-0.03	-0.02	0.01
Sys Resp (Upscale)	11.99	9.29	2.99	8.88
Upscale Cal Gas	11.90	9.21	3.00	8.95
Initial Zero Bias	0.05%	0.05%	-0.10%	0.16%
Final Zero Bias	-0.05%	0.11%	0.00%	0.27%
Zero Drift	0.09%	0.05%	0.10%	0.11%
Initial Upscale Bias	0.28%	-0.49%	0.10%	-0.22%
Final Upscale Bias	-0.09%	0.05%	-0.80%	-0.16%
Upscale Drift	0.38%	0.55%	0.90%	0.05%
Alternative Specification Abs Diff: Initial Zero	0.01	0.01	--	0.03
Alternative Specification Abs Diff: Final Zero	0.01	0.02	--	0.05
Alternative Specification Abs Diff: Initial Upscale	0.06	0.09	--	0.04
Alternative Specification Abs Diff: Final Upscale	0.02	0.01	--	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 - SCD-60 R12	O_2	CO	THC	CO_2
Raw Average	13.35	2.70	0.06	5.23
Corrected Average	13.28	2.70	0.07	5.26
Initial Zero	-0.03	-0.01	-0.02	0.06
Final Zero	0.02	-0.02	-0.01	0.06
Avg. Zero	-0.01	-0.02	-0.02	0.06
Initial UpScale	11.97	9.30	2.91	8.85
Final UpScale	11.96	9.21	2.94	8.85
Avg. UpScale	11.97	9.26	2.93	8.85
Sys Resp (Zero)	-0.02	-0.03	-0.02	0.01
Sys Resp (Upscale)	11.99	9.29	2.99	8.88
Upscale Cal Gas	11.90	9.21	3.00	8.95
Initial Zero Bias	-0.05%	0.11%	0.00%	0.27%
Final Zero Bias	0.19%	0.05%	0.10%	0.27%
Zero Drift	0.24%	0.05%	0.10%	0.00%
Initial Upscale Bias	-0.09%	0.05%	-0.80%	-0.16%
Final Upscale Bias	-0.14%	-0.44%	-0.50%	-0.16%
Upscale Drift	0.05%	0.49%	0.30%	0.00%
Alternative Specification Abs Diff **Initial Zero**	0.01	0.02	--	0.05
Alternative Specification Abs Diff **Final Zero**	0.04	0.01	--	0.05
Alternative Specification Abs Diff **Initial Upscale**	0.02	0.01	--	0.03
Alternative Specification Abs Diff **Final Upscale**	0.03	0.08	--	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				
70-100-70 Load, Run - SCD-60 R7	O_2	CO	THC	CO_2
Raw Average	13.79	2.19	0.03	4.92
Corrected Average	13.73	2.20	0.05	4.97
Initial Zero	0.02	-0.02	-0.01	0.06
Final Zero	-0.02	-0.01	-0.03	0.04
Avg. Zero	0.00	-0.02	-0.02	0.05
Initial UpScale	11.96	9.21	2.94	8.85
Final UpScale	11.94	9.21	2.97	8.82
Avg. UpScale	11.95	9.21	2.96	8.84
Sys Resp (Zero)	-0.02	-0.03	-0.02	0.01
Sys Resp (Upscale)	11.99	9.29	2.99	8.88
Upscale Cal Gas	11.90	9.21	3.00	8.95
Initial Zero Bias	0.19%	0.05%	0.10%	0.27%
Final Zero Bias	0.00%	0.11%	-0.10%	0.16%
Zero Drift	0.19%	0.05%	0.20%	0.11%
Initial Upscale Bias	-0.14%	-0.44%	-0.50%	-0.16%
Final Upscale Bias	-0.24%	-0.44%	-0.20%	-0.33%
Upscale Drift	0.09%	0.00%	0.30%	0.16%
Alternative Specification Abs Diff **Initial Zero**	0.04	0.01	--	0.05
Alternative Specification Abs Diff **Final Zero**	0.00	0.02	--	0.03
Alternative Specification Abs Diff **Initial Upscale**	0.03	0.08	--	0.03
Alternative Specification Abs Diff **Final Upscale**	0.05	0.08	--	0.06
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 - SCD-60 R8	O_2	CO	THC	CO_2
Raw Average	13.90	3.21	0.13	4.83
Corrected Average	13.85	3.24	0.16	4.84
Initial Zero	-0.02	-0.01	-0.03	0.04
Final Zero	0.02	-0.05	-0.02	0.07
Avg. Zero	0.00	-0.03	-0.03	0.06
Initial UpScale	11.94	9.21	2.97	8.82
Final UpScale	11.95	9.20	2.96	8.92
Avg. UpScale	11.95	9.21	2.97	8.87
Sys Resp (Zero)	-0.02	-0.03	-0.02	0.01
Sys Resp (Upscale)	11.99	9.29	2.99	8.88
Upscale Cal Gas	11.90	9.21	3.00	8.95
Initial Zero Bias	0.00%	0.11%	-0.10%	0.16%
Final Zero Bias	0.19%	-0.11%	0.00%	0.33%
Zero Drift	0.19%	0.22%	0.10%	0.16%
Initial Upscale Bias	-0.24%	-0.44%	-0.20%	-0.33%
Final Upscale Bias	-0.19%	-0.49%	-0.30%	0.22%
Upscale Drift	0.05%	0.05%	0.10%	0.54%
Alternative Specification Abs Diff **Initial Zero**	0.00	0.02	--	0.03
Alternative Specification Abs Diff **Final Zero**	0.04	0.02	--	0.06
Alternative Specification Abs Diff **Initial Upscale**	0.05	0.08	--	0.06
Alternative Specification Abs Diff **Final Upscale**	0.04	0.09	--	0.04
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 - SCD-60 R9	O_2	CO	THC	CO_2
Raw Average	13.97	2.94	0.07	4.83
Corrected Average	13.94	2.99	0.06	4.83
Initial Zero	0.02	-0.05	-0.02	0.07
Final Zero	0.01	-0.06	0.04	0.05
Avg. Zero	0.02	-0.06	0.01	0.06
Initial UpScale	11.95	9.20	2.96	8.92
Final UpScale	11.90	9.11	2.97	8.86
Avg. UpScale	11.93	9.16	2.97	8.89
Sys Resp (Zero)	-0.02	-0.03	-0.02	0.01
Sys Resp (Upscale)	11.99	9.29	2.99	8.88
Upscale Cal Gas	11.90	9.21	3.00	8.95
Initial Zero Bias	0.19%	-0.11%	0.00%	0.33%
Final Zero Bias	0.14%	-0.16%	0.60%	0.22%
Zero Drift	0.05%	0.05%	0.60%	0.11%
Initial Upscale Bias	-0.19%	-0.49%	-0.30%	0.22%
Final Upscale Bias	-0.43%	-0.98%	-0.20%	-0.11%
Upscale Drift	0.24%	0.49%	0.10%	0.33%
Alternative Specification Abs Diff **Initial Zero**	0.04	0.02	--	0.06
Alternative Specification Abs Diff **Final Zero**	0.03	0.03	--	0.04
Alternative Specification Abs Diff **Initial Upscale**	0.04	0.09	--	0.04
Alternative Specification Abs Diff **Final Upscale**	0.09	0.18	--	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				
30-70-30 Load, Run - SCD-60 R4	O_2	CO	THC	CO_2
Raw Average	13.41	2.81	0.10	5.16
Corrected Average	13.41	2.80	0.08	5.14
Initial Zero	-0.03	0.01	0.01	0.05
Final Zero	0.01	-0.04	0.02	0.07
Avg. Zero	-0.01	-0.02	0.02	0.06
Initial UpScale	11.94	9.44	2.96	9.05
Final UpScale	11.87	9.12	2.96	8.84
Avg. UpScale	11.91	9.28	2.96	8.95
Sys Resp (Zero)	-0.02	-0.03	-0.02	0.01
Sys Resp (Upscale)	11.99	9.29	2.99	8.88
Upscale Cal Gas	11.90	9.21	3.00	8.95
Initial Zero Bias	-0.05%	0.22%	0.30%	0.22%
Final Zero Bias	0.14%	-0.05%	0.40%	0.33%
Zero Drift	0.19%	0.27%	0.10%	0.11%
Initial Upscale Bias	-0.24%	0.82%	-0.30%	0.92%
Final Upscale Bias	-0.57%	-0.93%	-0.30%	-0.22%
Upscale Drift	0.33%	1.75%	0.00%	1.14%
Alternative Specification Abs Diff **Initial Zero**	0.01	0.04	--	0.04
Alternative Specification Abs Diff **Final Zero**	0.03	0.01	--	0.06
Alternative Specification Abs Diff **Initial Upscale**	0.05	0.15	--	0.17
Alternative Specification Abs Diff **Final Upscale**	0.12	0.17	--	0.04
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 - SCD-60 R5	O_2	CO	THC	CO_2
Raw Average	13.63	0.76	0.02	5.05
Corrected Average	13.64	0.75	0.04	5.08
Initial Zero	0.01	-0.04	0.02	0.07
Final Zero	-0.04	0.07	-0.05	0.05
Avg. Zero	-0.02	0.02	-0.02	0.06
Initial UpScale	11.87	9.12	2.96	8.84
Final UpScale	11.90	9.22	2.95	8.85
Avg. UpScale	11.89	9.17	2.96	8.85
Sys Resp (Zero)	-0.02	-0.03	-0.02	0.01
Sys Resp (Upscale)	11.99	9.29	2.99	8.88
Upscale Cal Gas	11.90	9.21	3.00	8.95
Initial Zero Bias	0.14%	-0.05%	0.40%	0.33%
Final Zero Bias	-0.09%	0.55%	-0.30%	0.22%
Zero Drift	0.24%	0.60%	0.70%	0.11%
Initial Upscale Bias	-0.57%	-0.93%	-0.30%	-0.22%
Final Upscale Bias	-0.43%	-0.38%	-0.40%	-0.16%
Upscale Drift	0.14%	0.55%	0.10%	0.05%
Alternative Specification Abs Diff **Initial Zero**	0.03	0.01	--	0.06
Alternative Specification Abs Diff **Final Zero**	0.02	0.10	--	0.04
Alternative Specification Abs Diff **Initial Upscale**	0.12	0.17	--	0.04
Alternative Specification Abs Diff **Final Upscale**	0.09	0.07	--	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				
30-70-30 Load, Run - SCD-60 R6	O_2	CO	THC	CO_2
Raw Average	14.22	1.66	0.08	4.65
Corrected Average	14.19	1.64	0.07	4.69
Initial Zero	-0.02	-0.02	0.01	0.03
Final Zero	0.01	0.07	0.02	0.04
Avg. Zero	-0.01	0.03	0.02	0.04
Initial UpScale	11.96	9.23	5.02	8.84
Final UpScale	11.88	9.20	4.87	8.84
Avg. UpScale	11.92	9.22	4.95	8.84
Sys Resp (Zero)	-0.02	0.01	-0.03	0.04
Sys Resp (Upscale)	11.93	9.18	4.97	8.89
Upscale Cal Gas	11.90	9.21	5.01	8.95
Initial Zero Bias	0.00%	-0.16%	0.40%	-0.05%
Final Zero Bias	0.14%	0.33%	0.50%	0.00%
Zero Drift	0.14%	0.49%	0.10%	0.05%
Initial Upscale Bias	0.14%	0.27%	0.50%	-0.27%
Final Upscale Bias	-0.24%	0.11%	-1.00%	-0.27%
Upscale Drift	0.38%	0.16%	1.50%	0.00%
Alternative Specification Abs Diff **Initial Zero**	0.00	0.03	--	0.01
Alternative Specification Abs Diff **Final Zero**	0.03	0.06	--	0.00
Alternative Specification Abs Diff **Initial Upscale**	0.03	0.05	--	0.05
Alternative Specification Abs Diff **Final Upscale**	0.05	0.02	--	0.05
Calibration Span	21.10	18.30	10.00	18.46
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 - SCD-60 R1	O_2	CO	THC	CO_2
Raw Average	13.90	0.65	0.27	4.95
Corrected Average	13.85	0.68	0.24	4.93
Initial Zero	0.04	-0.08	-0.04	0.04
Final Zero	0.03	0.02	0.09	0.08
Avg. Zero	0.04	-0.03	0.03	0.06
Initial UpScale	11.93	9.22	5.01	8.92
Final UpScale	11.96	9.22	4.99	8.97
Avg. UpScale	11.95	9.22	5.00	8.95
Sys Resp (Zero)	-0.01	0.01	-0.03	0.02
Sys Resp (Upscale)	11.91	9.22	4.97	8.90
Upscale Cal Gas	11.90	9.21	5.01	8.95
Initial Zero Bias	0.24%	-0.49%	-0.10%	0.11%
Final Zero Bias	0.19%	0.05%	1.20%	0.33%
Zero Drift	0.05%	0.55%	1.30%	0.22%
Initial Upscale Bias	0.09%	0.00%	0.40%	0.11%
Final Upscale Bias	0.24%	0.00%	0.20%	0.38%
Upscale Drift	0.14%	0.00%	0.20%	0.27%
Alternative Specification Abs Diff **Initial Zero**	0.05	0.09	--	0.02
Alternative Specification Abs Diff **Final Zero**	0.04	0.01	--	0.06
Alternative Specification Abs Diff **Initial Upscale**	0.02	0.00	--	0.02
Alternative Specification Abs Diff **Final Upscale**	0.05	0.00	--	0.07
Calibration Span	21.10	18.30	10.00	18.46
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 - SCD-60 R2	O_2	CO	THC	CO_2
Raw Average	13.92	0.81	0.16	4.96
Corrected Average	13.83	0.81	0.07	4.91
Initial Zero	0.03	0.02	0.09	0.08
Final Zero	-0.02	-0.02	0.11	0.07
Avg. Zero	0.01	0.00	0.10	0.08
Initial UpScale	11.96	9.22	4.99	8.97
Final UpScale	11.98	9.17	4.96	8.99
Avg. UpScale	11.97	9.20	4.98	8.98
Sys Resp (Zero)	-0.01	0.01	-0.03	0.02
Sys Resp (Upscale)	11.91	9.22	4.97	8.90
Upscale Cal Gas	11.90	9.21	5.01	8.95
Initial Zero Bias	0.19%	0.05%	1.20%	0.33%
Final Zero Bias	-0.05%	-0.16%	1.40%	0.27%
Zero Drift	0.24%	0.22%	0.20%	0.05%
Initial Upscale Bias	0.24%	0.00%	0.20%	0.38%
Final Upscale Bias	0.33%	-0.27%	-0.10%	0.49%
Upscale Drift	0.09%	0.27%	0.30%	0.11%
Alternative Specification Abs Diff **Initial Zero**	0.04	0.01	--	0.06
Alternative Specification Abs Diff **Final Zero**	0.01	0.03	--	0.05
Alternative Specification Abs Diff **Initial Upscale**	0.05	0.00	--	0.07
Alternative Specification Abs Diff **Final Upscale**	0.07	0.05	--	0.09
Calibration Span	21.10	18.30	10.00	18.46
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 - SCD-60 R3	O_2	CO	THC	CO_2
Raw Average	14.09	0.42	0.14	4.83
Corrected Average	14.00	0.42	0.05	4.79
Initial Zero	-0.02	-0.02	0.11	0.07
Final Zero	-0.04	0.01	0.07	0.11
Avg. Zero	-0.03	-0.01	0.09	0.09
Initial UpScale	11.98	9.17	4.96	8.99
Final UpScale	11.96	9.12	4.96	8.88
Avg. UpScale	11.97	9.15	4.96	8.94
Sys Resp (Zero)	-0.01	0.01	-0.03	0.02
Sys Resp (Upscale)	11.91	9.22	4.97	8.90
Upscale Cal Gas	11.90	9.21	5.01	8.95
Initial Zero Bias	-0.05%	-0.16%	1.40%	0.27%
Final Zero Bias	-0.14%	0.00%	1.00%	0.49%
Zero Drift	0.09%	0.16%	0.40%	0.22%
Initial Upscale Bias	0.33%	-0.27%	-0.10%	0.49%
Final Upscale Bias	0.24%	-0.55%	-0.10%	-0.11%
Upscale Drift	0.09%	0.27%	0.00%	0.60%
Alternative Specification Abs Diff **Initial Zero**	0.01	0.03	--	0.05
Alternative Specification Abs Diff **Final Zero**	0.03	0.00	--	0.09
Alternative Specification Abs Diff **Initial Upscale**	0.07	0.05	--	0.09
Alternative Specification Abs Diff **Final Upscale**	0.05	0.10	--	0.02
Calibration Span	21.10	18.30	10.00	18.46
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

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

November 7, 2016

Min Lee
Air Hygiene, Incorporated
1600 West Tacoma Street
Broken Arrow, OK 74012

RE: SFI-flare testing / SFI-elkcity.ok-comp#1

Dear Min:

Enclosed are the results of the samples submitted to our laboratory on October 17, 2016. For your reference, these analyses have been assigned our service request number P1604901.

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

Kelly Horiuchi
Laboratory Director

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www.alsglobal.com

Client: Air Hygiene, Incorporated
Project: SFI-flare testing / SFI-elkcity.ok-comp#1

Service Request No: P1604901

CASE NARRATIVE

The samples were received intact under chain of custody on October 17, 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: P1604901
Project: SFI-flare testing / SFI-elkcity.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: P1604901
Project ID: SFI-flare testing / SFI-elkcity.ok-comp#1

Date Received: 10/17/2016
Time Received: 09:30

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
SFI-90-100%-can-SCD-60	P1604901-001	Air	10/10/2016	10:48	SSC00339	-0.52	3.29	X	X	X
SFI-70-100-70%-can-SCD-60	P1604901-002	Air	10/10/2016	15:15	SSC00101	-1.08	3.47	X	X	X
SFI-30-70-30%-can-SCD-60	P1604901-003	Air	10/11/2016	09:22	SSC00198	-0.36	3.38	X	X	X
SFI-0-30-0%-can-SCD-60	P1604901-004	Air	10/12/2016	19:01	SSC00216	-0.47	3.68	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: P1604901

Company Name & Address (Reporting Information): Superior Fabrication Inc

Project Name: Sfl-flare Testing

Project Number: Sfl-elk city. Ok-comp#1

Project Manager: Min Sun Lee

P.O. # / Billing Information:

Phone: 918 565 5379

Fax:

Email Address for Result Reporting: mlee@airhygiene.com, lab@airhygiene.com

Sampler (Print & Sign): Min S 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 1945-03	Analysis Method: ASTM 3588-99	Comments e.g. Actual Preservative or specific instructions
Sfl-90-100%-can-SCD-60	1	10/10/16	10:48	SSC00339	OA01218	-27.06	-0.52		X	X	
Sfl-70-70%-can-SCD-60	2	10/10/16	15:15	SSC00010	OA01237	-28.38	-0.38		X	X	
Sfl-30-70-30%-can-SCD-60	3	10/11/16	9:22	SSC00198	OA01771	-28.28	-0.33		X	X	
Sfl-0-30-0%-can-SCD-60	4	10/11/16	19:01	SSC00216	OA00958	-28.13	-0.37				

Report Tier Levels - please select

Tier I - Results (Default in not specified) _____ Tier III (Results + QC & Calibration Summaries) _____

Tier II (Results + QC Summaries _____ Tier IV (Date 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:	Time:	Received by: (Signature)	Date:	Time:
	10/12/16	19:05			
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
				10/17/16	0930

Cooler / Blank Temperature _____ °C

ALS Environmental
Sample Acceptance Check Form

Client: Air Hygiene, Incorporated Work order: P1604901

Project: SFI-flare testing / SFI-elkcity.ok-comp#1

Sample(s) received on: 10/17/16 Date opened: 10/17/16 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
P1604901-001.01	6.0 L Silonite Can					
P1604901-002.01	6.0 L Silonite Can					
P1604901-003.01	6.0 L Silonite Can					
P1604901-004.01	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: **SFI-flare testing / SFI-elkcity.ok-comp#1** ALS Project ID: P1604901

Benzene

Test Code: ASTM D1945-03
Instrument ID: HP5890 II/GC8/FID
Analyst: Adam McAfee
Sampling Media: 6.0 L Silonite Canister(s)
Test Notes:

Date(s) Collected: 10/10 - 10/12/16
Date Received: 10/17/16
Date Analyzed: 10/19/16

Client Sample ID	ALS Sample ID	Canister Dilution Factor	Injection Volume ml(s)	Result ppmV	MRL ppmV	Data Qualifier
SFI-90-100%-can-SCD-60	P1604901-001	1.27	0.050	ND	15	
SFI-70-100-70%-can-SCD-60	P1604901-002	1.33	0.050	ND	16	
SFI-30-70-30%-can-SCD-60	P1604901-003	1.26	0.050	ND	15	
SFI-0-30-0%-can-SCD-60	P1604901-004	1.29	0.050	ND	15	
Method Blank	P161019-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: P1604901
Client Project ID: **SFI-flare testing / SFI-elkcity.ok-comp#1** ALS Sample ID: P161019-LCS

Test Code: ASTM D1945-03 Date Collected: NA
Instrument ID: HP5890 II/GC8/FID Date Received: NA
Analyst: Adam McAfee Date Analyzed: 10/19/16
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	**1,090**	**99**	50-150	

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **SFI-90-100%-can-SCD-60** ALS Project ID: P1604901
Client Project ID: **SFI-flare testing / SFI-elkcity.ok-comp#1** ALS Sample ID: P1604901-001

Test Code: ASTM D3588-98
Analyst: Mike Conejo/Adam McAfee Date Collected: 10/10/16
Sample Type: 6.0 L Silonite Canister Date Received: 10/17/16
Test Notes:
Container ID: SSC00339

Initial Pressure (psig): -0.52 Final Pressure (psig): 3.29

Canister Dilution Factor: 1.27

Components	Result Volume %	Result Weight %	Data Qualifier
Hydrogen	< 0.01	< 0.01	
Oxygen	**0.20**	**0.15**	
Nitrogen	**0.75**	**0.48**	
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	**99.04**	**99.36**	
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	**27.23**	**81.20**
Hydrogen	**72.60**	**18.17**
Oxygen	< 0.10	**0.15**
Nitrogen	**0.14**	**0.48**
Sulfur	< 0.10	< 0.10

Specific Gravity (Air = 1)		**1.5174**
Specific Volume	ft3/lb	**8.63**
Gross Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/ft3	**2,535.3**
Net Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/ft3	**2,332.6**
Gross Heating Value (Water Saturated at 0.25636 psia)	BTU/ft3	**2,448.5**
Net Heating Value (Water Saturated at 0.25636 psia)	BTU/ft3	**2,252.7**
Gross Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/lb	**21,891.4**
Net Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/lb	**20,140.9**
Compressibility Factor "Z" (60 F, 14.696 psia)		**0.9829**

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **SFI-70-100-70%-can-SCD-60** ALS Project ID: P1604901
Client Project ID: **SFI-flare testing / SFI-elkcity.ok-comp#1** ALS Sample ID: P1604901-002

Test Code: ASTM D3588-98
Analyst: Mike Conejo/Adam McAfee Date Collected: 10/10/16
Sample Type: 6.0 L Silonite Canister Date Received: 10/17/16
Test Notes:
Container ID: SSC00101

Initial Pressure (psig): -1.08 Final Pressure (psig): 3.47

Canister Dilution Factor: 1.33

Components	Result Volume %	Result Weight %	Data Qualifier
Hydrogen	< 0.01	< 0.01	
Oxygen	**0.06**	**0.04**	
Nitrogen	**0.22**	**0.14**	
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	**99.71**	**99.80**	
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**	**81.57**
Hydrogen	**72.69**	**18.25**
Oxygen	< 0.10	< 0.10
Nitrogen	< 0.10	**0.14**
Sulfur	< 0.10	< 0.10

Specific Gravity (Air = 1)		**1.5210**
Specific Volume	ft3/lb	**8.61**
Gross Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/ft3	**2,553.0**
Net Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/ft3	**2,348.9**
Gross Heating Value (Water Saturated at 0.25636 psia)	BTU/ft3	**2,465.1**
Net Heating Value (Water Saturated at 0.25636 psia)	BTU/ft3	**2,268.0**
Gross Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/lb	**21,993.1**
Net Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/lb	**20,234.5**
Compressibility Factor "Z" (60 F, 14.696 psia)		**0.9827**

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **SFI-30-70-30%-can-SCD-60** ALS Project ID: P1604901
Client Project ID: **SFI-flare testing / SFI-elkcity.ok-comp#1** ALS Sample ID: P1604901-003

Test Code: ASTM D3588-98
Analyst: Mike Conejo/Adam McAfee Date Collected: 10/11/16
Sample Type: 6.0 L Silonite Canister Date Received: 10/17/16
Test Notes:
Container ID: SSC00198

Initial Pressure (psig): -0.36 Final Pressure (psig): 3.38

Canister Dilution Factor: 1.26

Components	Result Volume %	Result Weight %	Data Qualifier
Hydrogen	< 0.01	< 0.01	
Oxygen	**0.67**	**0.49**	
Nitrogen	**2.41**	**1.55**	
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	**96.90**	**97.94**	
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	**27.12**	**80.05**
Hydrogen	**72.31**	**17.91**
Oxygen	**0.13**	**0.49**
Nitrogen	**0.45**	**1.55**
Sulfur	< 0.10	< 0.10

Specific Gravity (Air = 1)		**1.5063**
Specific Volume	ft3/lb	**8.70**
Gross Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/ft3	**2,479.1**
Net Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/ft3	**2,280.9**
Gross Heating Value (Water Saturated at 0.25636 psia)	BTU/ft3	**2,395.8**
Net Heating Value (Water Saturated at 0.25636 psia)	BTU/ft3	**2,204.2**
Gross Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/lb	**21,565.3**
Net Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/lb	**19,840.9**
Compressibility Factor "Z" (60 F, 14.696 psia)		**0.9835**

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **SFI-0-30-0%-can-SCD-60** ALS Project ID: P1604901
Client Project ID: **SFI-flare testing / SFI-elkcity.ok-comp#1** ALS Sample ID: P1604901-004

Test Code: ASTM D3588-98
Analyst: Mike Conejo/Adam McAfee Date Collected: 10/12/16
Sample Type: 6.0 L Silonite Canister Date Received: 10/17/16
Test Notes:
Container ID: SSC00216

Initial Pressure (psig): -0.47 Final Pressure (psig): 3.68

Canister Dilution Factor: 1.29

Components	Result Volume %	Result Weight %	Data Qualifier
Hydrogen	< 0.01	< 0.01	
Oxygen	**0.02**	**0.01**	
Nitrogen	**0.06**	**0.04**	
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	**99.91**	**99.94**	
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	**27.27**	**81.67**
Hydrogen	**72.72**	**18.28**
Oxygen	< 0.10	< 0.10
Nitrogen	< 0.10	< 0.10
Sulfur	< 0.10	< 0.10

Specific Gravity (Air = 1)		**1.5221**
Specific Volume	ft3/lb	**8.61**
Gross Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/ft3	**2,558.4**
Net Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/ft3	**2,353.8**
Gross Heating Value (Water Saturated at 0.25636 psia)	BTU/ft3	**2,470.2**
Net Heating Value (Water Saturated at 0.25636 psia)	BTU/ft3	**2,272.7**
Gross Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/lb	**22,024.0**
Net Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/lb	**20,262.8**
Compressibility Factor "Z" (60 F, 14.696 psia)		**0.9826**

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **SFI-90-100%-can-SCD-60** ALS Project ID: P1604901
Client Project ID: **SFI-flare testing / SFI-elkcity.ok-comp#1** ALS Sample ID: P1604901-001

Test Code: ASTM D1945-03 Date Collected: 10/10/16
Instrument ID: HP5890 II/GC8/FID Date Received: 10/17/16
Analyst: Adam McAfee Date Analyzed: 10/19/16
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.050 ml(s)
Test Notes:
Container ID: SSC00339

Initial Pressure (psig): -0.52 Final Pressure (psig): 3.29

Canister Dilution Factor: 1.27

Compound	Result ppmV	MRL ppmV	Data Qualifier
Methane	ND	13	
C_2 as Ethane	**31**	13	
C_3 as Propane	**990,000**	13	
C_4 as n-Butane	**15**	13	
C_5 as n-Pentane	ND	13	
C_6 as n-Hexane	ND	13	
C_6+ as n-Hexane	ND	25	

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: **SFI-70-100-70%-can-SCD-60**
Client Project ID: **SFI-flare testing / SFI-elkcity.ok-comp#1**

ALS Project ID: P1604901
ALS Sample ID: P1604901-002

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: SSC00101

Date Collected: 10/10/16
Date Received: 10/17/16
Date Analyzed: 10/19/16
Volume(s) Analyzed: 0.050 ml(s)

Initial Pressure (psig): -1.08 Final Pressure (psig): 3.47

Canister Dilution Factor: 1.33

Compound	Result ppmV	MRL ppmV	Data Qualifier
Methane	ND	13	
C_2 as Ethane	**28**	13	
C_3 as Propane	**1,000,000**	13	
C_4 as n-Butane	**17**	13	
C_5 as n-Pentane	ND	13	
C_6 as n-Hexane	ND	13	
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: **SFI-30-70-30%-can-SCD-60** ALS Project ID: P1604901
Client Project ID: **SFI-flare testing / SFI-elkcity.ok-comp#1** ALS Sample ID: P1604901-003

Test Code: ASTM D1945-03 Date Collected: 10/11/16
Instrument ID: HP5890 II/GC8/FID Date Received: 10/17/16
Analyst: Adam McAfee Date Analyzed: 10/19/16
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.050 ml(s)
Test Notes:
Container ID: SSC00198

Initial Pressure (psig): -0.36 Final Pressure (psig): 3.38

Canister Dilution Factor: 1.26

Compound	Result ppmV	MRL ppmV	Data Qualifier
Methane	ND	13	
C_2 as Ethane	**24**	13	
C_3 as Propane	**970,000**	13	
C_4 as n-Butane	**16**	13	
C_5 as n-Pentane	ND	13	
C_6 as n-Hexane	ND	13	
C_6+ as n-Hexane	ND	25	

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: **SFI-0-30-0%-can-SCD-60**
Client Project ID: **SFI-flare testing / SFI-elkcity.ok-comp#1**

ALS Project ID: P1604901
ALS Sample ID: P1604901-004

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: SSC00216

Date Collected: 10/12/16
Date Received: 10/17/16
Date Analyzed: 10/19/16
Volume(s) Analyzed: 0.050 ml(s)

Initial Pressure (psig): -0.47 Final Pressure (psig): 3.68

Canister Dilution Factor: 1.29

Compound	Result ppmV	MRL ppmV	Data Qualifier
Methane	ND	13	
C_2 as Ethane	**19**	13	
C_3 as Propane	**1,000,000**	13	
C_4 as n-Butane	**15**	13	
C_5 as n-Pentane	ND	13	
C_6 as n-Hexane	ND	13	
C_6+ as n-Hexane	ND	26	

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: P1604901
Client Project ID: **SFI-flare testing / SFI-elkcity.ok-comp#1** ALS Sample ID: P161019-MB

Test Code: ASTM D1945-03 Date Collected: NA
Instrument ID: HP5890 II/GC8/FID Date Received: NA
Analyst: Adam McAfee Date Analyzed: 10/19/16
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: P1604901
Client Project ID: **SFI-flare testing / SFI-elkcity.ok-comp#1** ALS Sample ID: P161019-LCS

Test Code: ASTM D1945-03 Date Collected: NA
Instrument ID: HP5890 II/GC8/FID Date Received: NA
Analyst: Adam McAfee Date Analyzed: 10/19/16
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	**996**	**99**	79-107	
Ethane	1,020	**1,020**	**100**	85-117	
Propane	1,040	**1,100**	**106**	85-116	
n-Butane	1,010	**1,070**	**106**	84-114	
n-Pentane	1,000	**1,020**	**102**	85-124	
n-Hexane	1,010	**1,110**	**110**	84-132	

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **SFI-90-100%-can-SCD-60**
Client Project ID: **SFI-flare testing / SFI-elkcity.ok-comp#1**

ALS Project ID: P1604901
ALS Sample ID: P1604901-001

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: SSC00339

Date Collected: 10/10/16
Date Received: 10/17/16
Date Analyzed: 10/25/16
Volume(s) Analyzed: 0.10 ml(s)

Initial Pressure (psig): -0.52 Final Pressure (psig): 3.29

Canister Dilution Factor: 1.27

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
1333-74-0	Hydrogen	ND	0.13	
7782-44-7	**Oxygen***	**0.200**	0.13	
7727-37-9	**Nitrogen**	**0.751**	0.13	
630-08-0	Carbon Monoxide	ND	0.13	
124-38-9	Carbon Dioxide	ND	0.13	

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: **SFI-70-100-70%-can-SCD-60** ALS Project ID: P1604901
Client Project ID: **SFI-flare testing / SFI-elkcity.ok-comp#1** ALS Sample ID: P1604901-002

Test Code: ASTM D1945-03 Date Collected: 10/10/16
Instrument ID: HP5890 II/GC1/TCD Date Received: 10/17/16
Analyst: Adam McAfee Date Analyzed: 10/25/16
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.10 ml(s)
Test Notes:
Container ID: SSC00101

Initial Pressure (psig): -1.08 Final Pressure (psig): 3.47

Canister Dilution Factor: 1.33

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
1333-74-0	Hydrogen	ND	0.13	
7782-44-7	Oxygen*	ND	0.13	
7727-37-9	**Nitrogen**	**0.218**	0.13	
630-08-0	Carbon Monoxide	ND	0.13	
124-38-9	Carbon Dioxide	ND	0.13	

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: **SFI-30-70-30%-can-SCD-60** ALS Project ID: P1604901
Client Project ID: **SFI-flare testing / SFI-elkcity.ok-comp#1** ALS Sample ID: P1604901-003

Test Code: ASTM D1945-03 Date Collected: 10/11/16
Instrument ID: HP5890 II/GC1/TCD Date Received: 10/17/16
Analyst: Adam McAfee Date Analyzed: 10/25/16
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.10 ml(s)
Test Notes:
Container ID: SSC00198

Initial Pressure (psig): -0.36 Final Pressure (psig): 3.38

Canister Dilution Factor: 1.26

CAS #	Compound	Result %, v/v		MRL %, v/v	Data Qualifier
1333-74-0	Hydrogen		ND	0.13	
7782-44-7	**Oxygen***	**0.672**		0.13	
7727-37-9	**Nitrogen**	**2.41**		0.13	
630-08-0	Carbon Monoxide		ND	0.13	
124-38-9	Carbon Dioxide		ND	0.13	

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: **SFI-0-30-0%-can-SCD-60** ALS Project ID: P1604901
Client Project ID: **SFI-flare testing / SFI-elkcity.ok-comp#1** ALS Sample ID: P1604901-004

Test Code: ASTM D1945-03 Date Collected: 10/12/16
Instrument ID: HP5890 II/GC1/TCD Date Received: 10/17/16
Analyst: Adam McAfee Date Analyzed: 10/25/16
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.10 ml(s)
Test Notes:
Container ID: SSC00216

Initial Pressure (psig): -0.47 Final Pressure (psig): 3.68

Canister Dilution Factor: 1.29

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
1333-74-0	Hydrogen	ND	0.13	
7782-44-7	Oxygen*	ND	0.13	
7727-37-9	**Nitrogen**	**0.0576**	0.13	**K**
630-08-0	Carbon Monoxide	ND	0.13	
124-38-9	Carbon Dioxide	ND	0.13	

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.
K = Analyte was detected above the method reporting limit prior to normalization.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **Method Blank** ALS Project ID: P1604901
Client Project ID: **SFI-flare testing / SFI-elkcity.ok-comp#1** ALS Sample ID: P161025-MB

Test Code: ASTM D1945-03 Date Collected: NA
Instrument ID: HP5890 II/GC1/TCD Date Received: NA
Analyst: Adam McAfee Date Analyzed: 10/25/16
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: P1604901
Client Project ID: **SFI-flare testing / SFI-elkcity.ok-comp#1** ALS Sample ID: P161025-LCS

Test Code: ASTM D1945-03 Date Collected: NA
Instrument ID: HP5890 II/GC1/TCD Date Received: NA
Analyst: Adam McAfee Date Analyzed: 10/25/16
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: NA ml(s)
Test Notes:

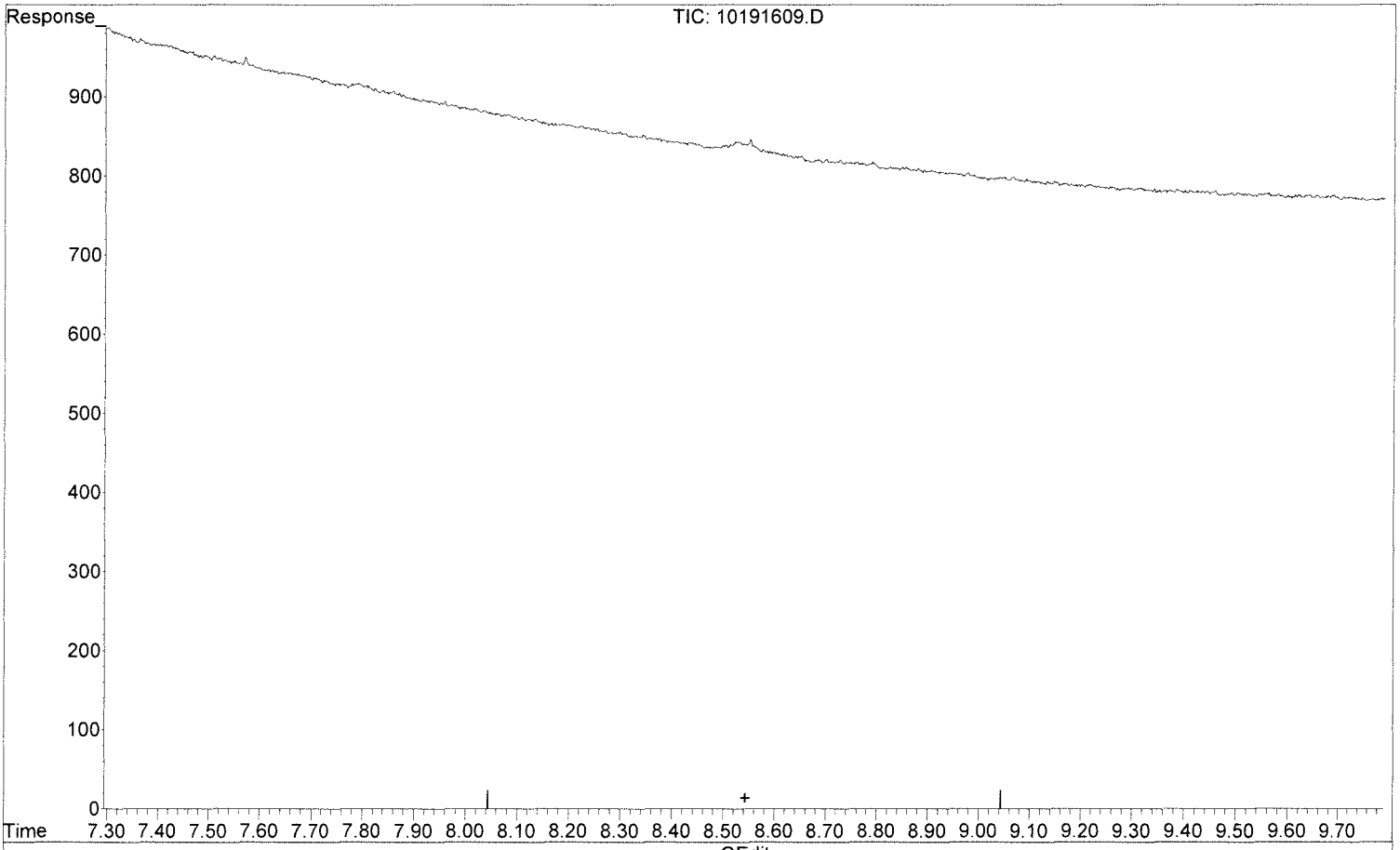
CAS #	Compound	Spike Amount ppmV	Result ppmV	% Recovery	ALS Acceptance Limits	Data Qualifier
1333-74-0	Hydrogen	50,000	**49,600**	**99**	94-105	
7782-44-7	Oxygen*	50,000	**52,100**	**104**	97-108	
7727-37-9	Nitrogen	50,000	**52,500**	**105**	89-113	
630-08-0	Carbon Monoxide	50,000	**51,500**	**103**	98-108	
124-38-9	Carbon Dioxide	50,000	**49,500**	**99**	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\19B\
Data File : 10191609.D
Signal(s) : FID2B.CH
Acq On : 19-Oct-2016, 14:43:22
Operator : amf
Sample : 4901-001 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 20 13:29:53 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 0.000 ppm

response 0

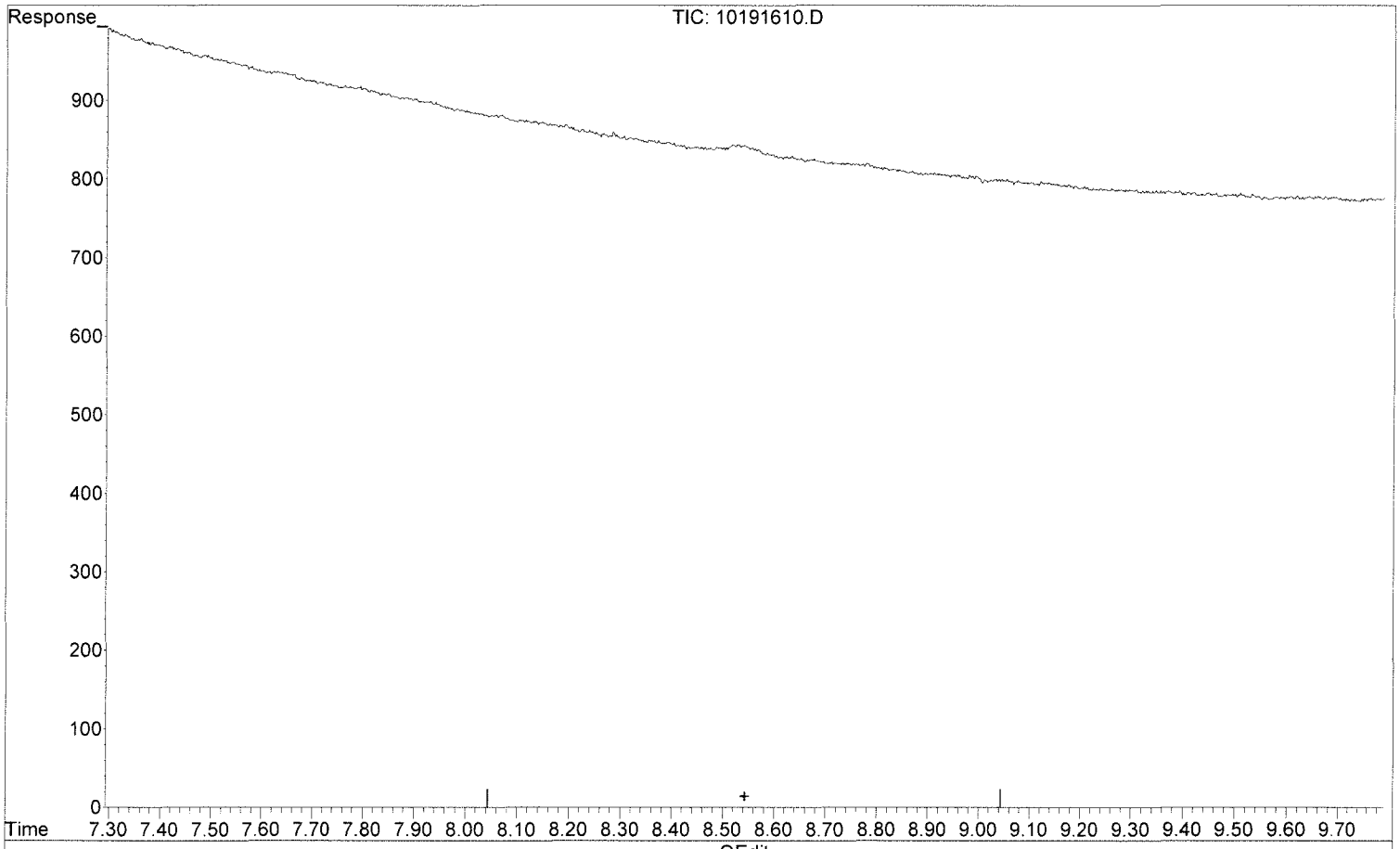
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : I:\GC08\DATA\TO_3M\2016_10\19B\
Data File : 10191610.D
Signal(s) : FID2B.CH
Acq On : 19-Oct-2016, 15:06:18
Operator : amf
Sample : 4901-002 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 20 13:30:07 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 0.000 ppm

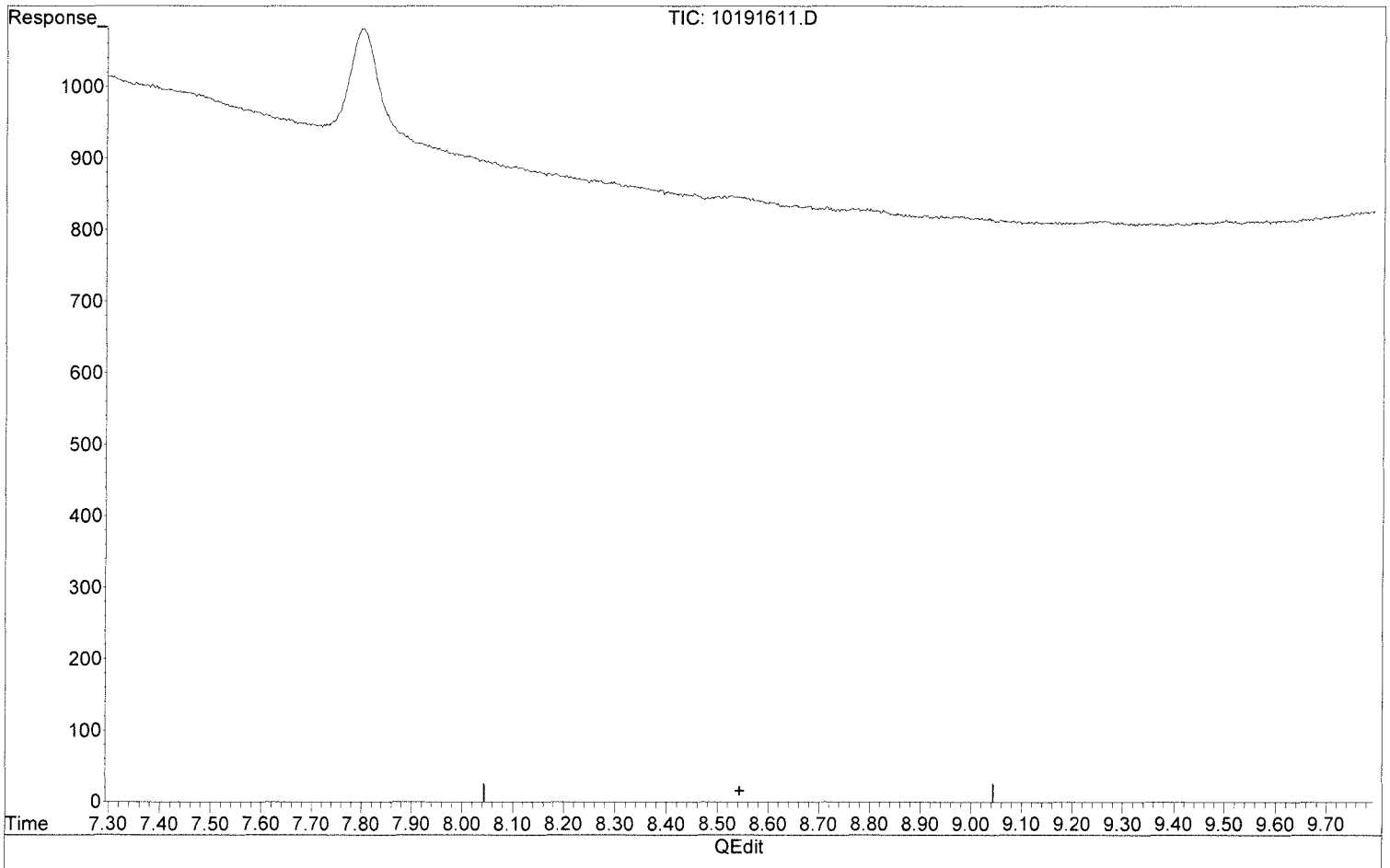
response 0

(+) = Expected Retention Time

Data Path : I:\GC08\DATA\TO_3M\2016_10\19B\
Data File : 10191611.D
Signal(s) : FID2B.CH
Acq On : 19-Oct-2016, 16:06:54
Operator : amf
Sample : 4901-003 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 20 13:30:22 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 0.000 ppm

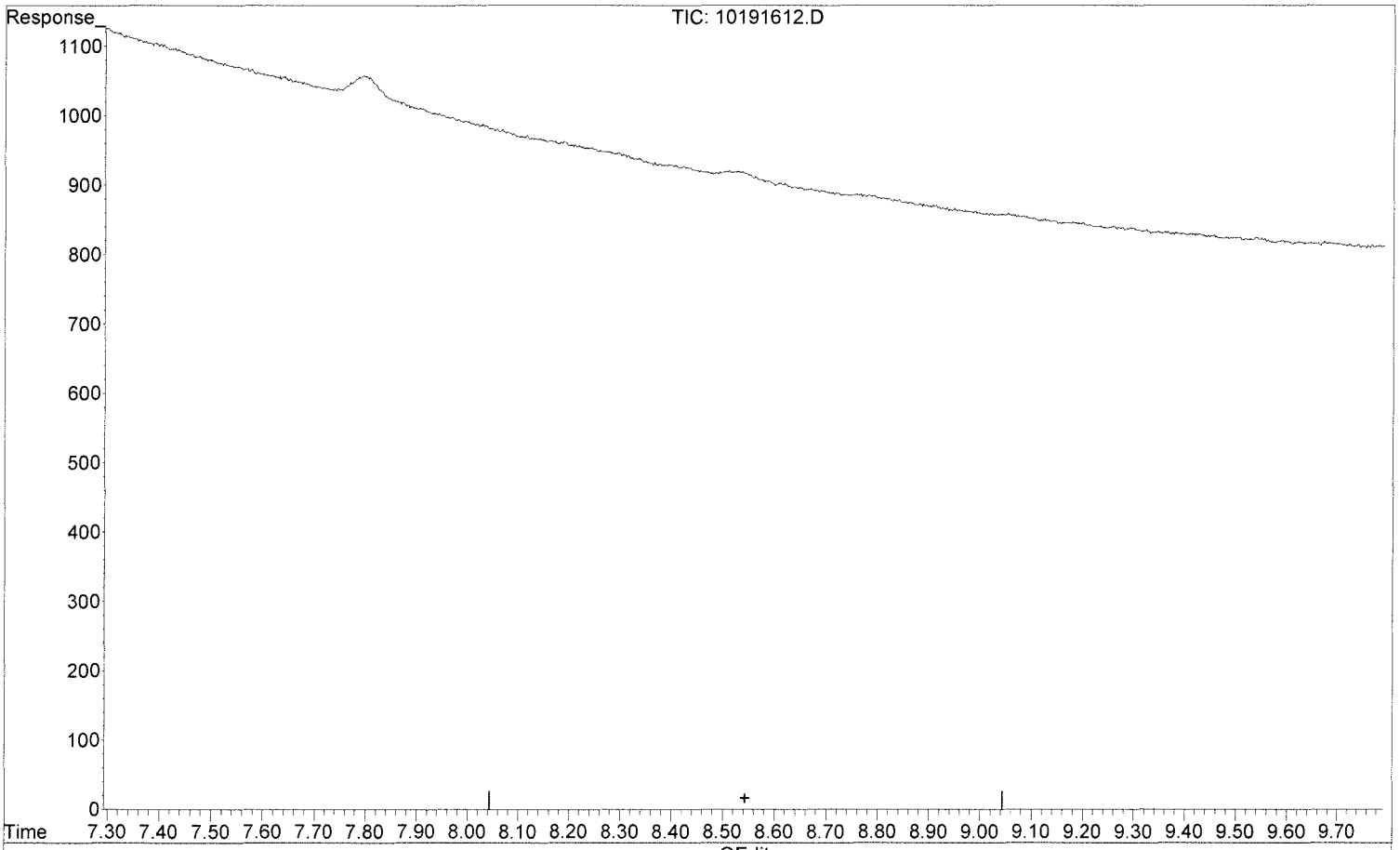
response 0

(+) = Expected Retention Time

Data Path : I:\GC08\DATA\TO_3M\2016_10\19B\
Data File : 10191612.D
Signal(s) : FID2B.CH
Acq On : 19-Oct-2016, 16:29:49
Operator : amf
Sample : 4901-004 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 20 13:30:33 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)

8.544min 0.000 ppm

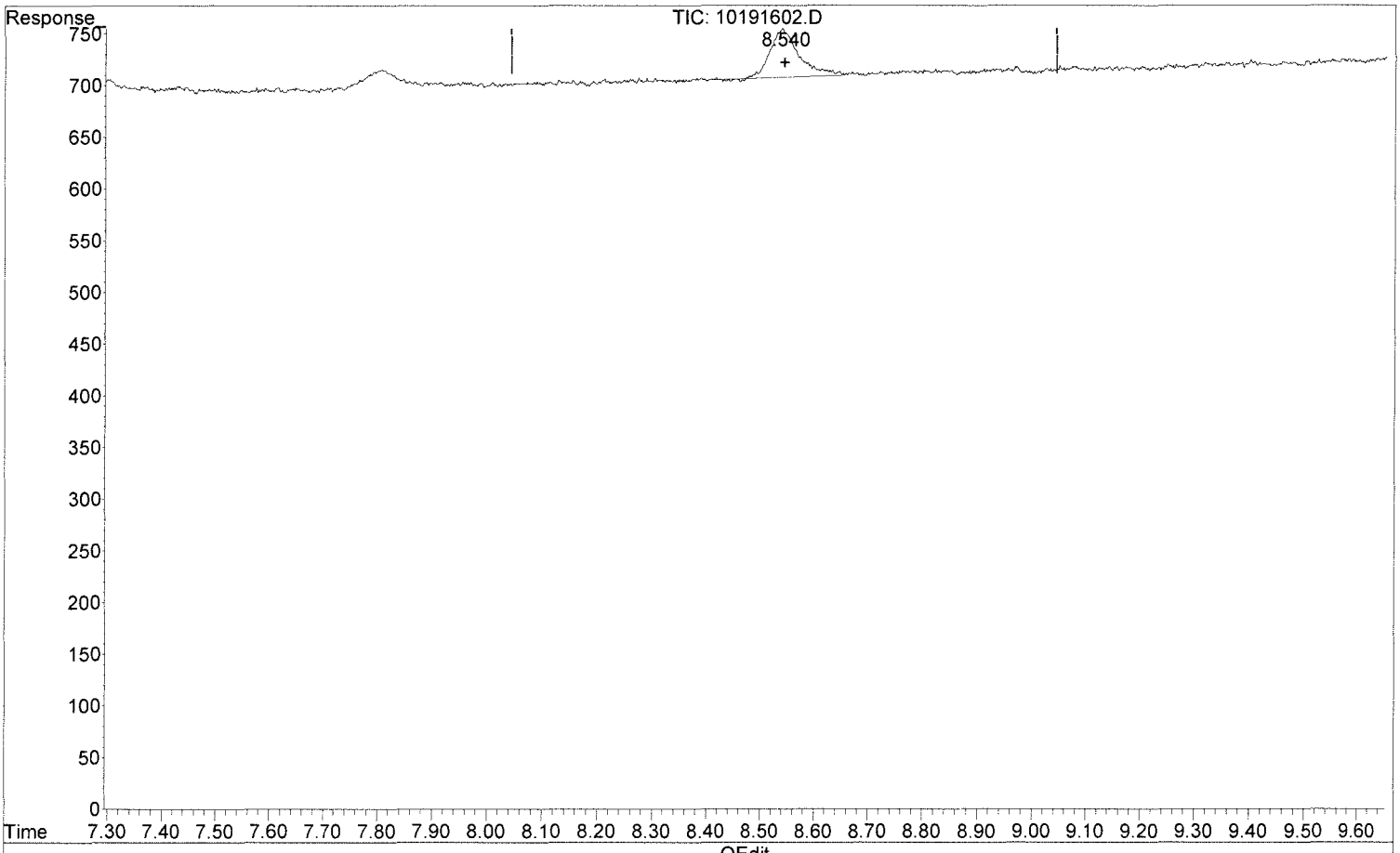
response 0

(+) = Expected Retention Time

Data Path : I:\GC08\DATA\TO_3M\2016_10\19B\
Data File : 10191602.D
Signal(s) : FID2B.CH
Acq On : 19-Oct-2016, 10:26:23
Operator : amf
Sample : mb 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 19 10:32:08 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)

8.540min 0.016 ppm

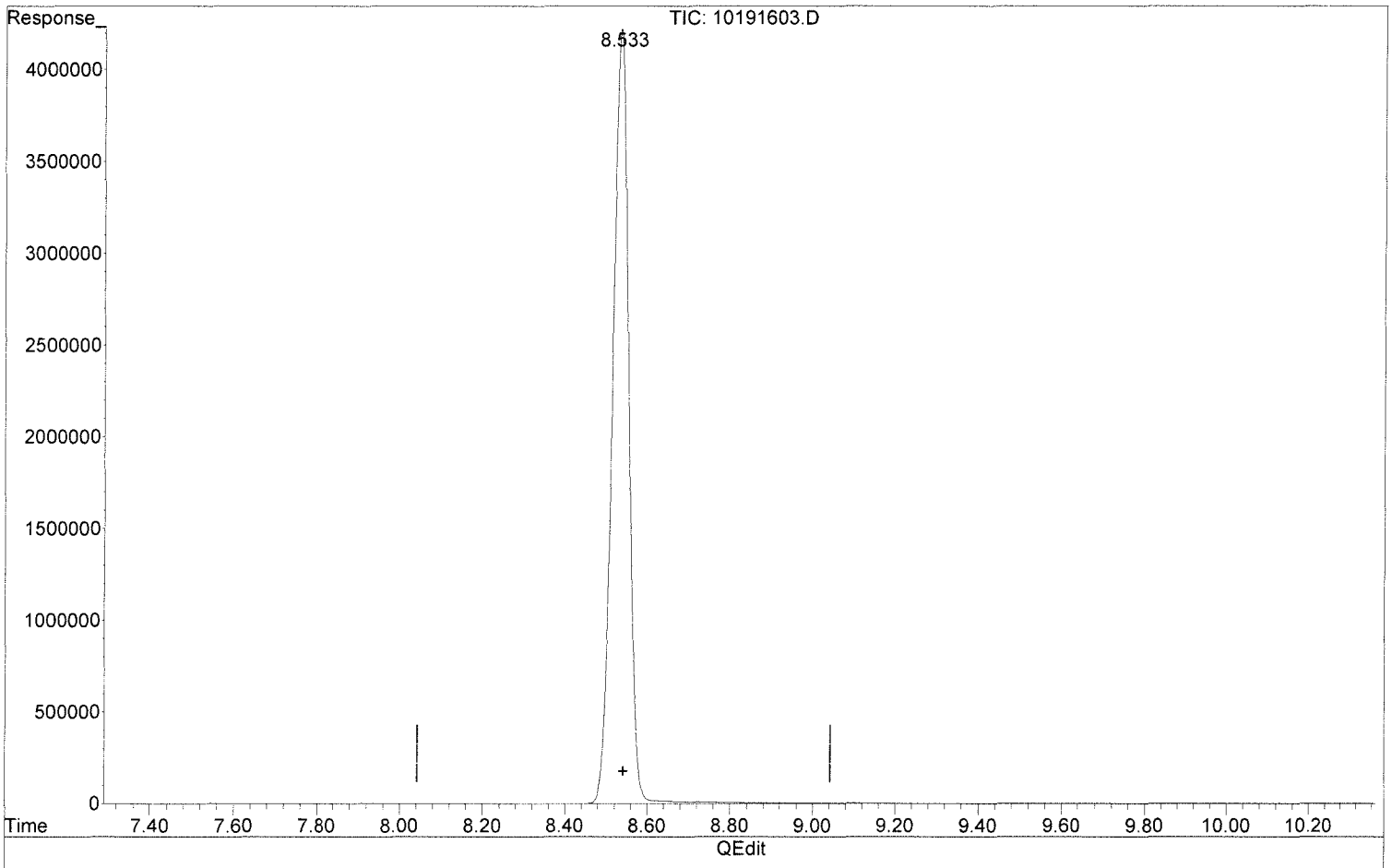
response 1675

(+) = Expected Retention Time

Data Path : I:\GC08\DATA\TO_3M\2016_10\19B\
Data File : 10191603.D
Signal(s) : FID2B.CH
Acq On : 19-Oct-2016, 10:39:37
Operator : amf
Sample : lcs s30-10191602
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 19 10:53:57 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)

8.534min 1086.026 ppm

response 117133626

(+) = Expected Retention Time

Response Factor Report HP5890

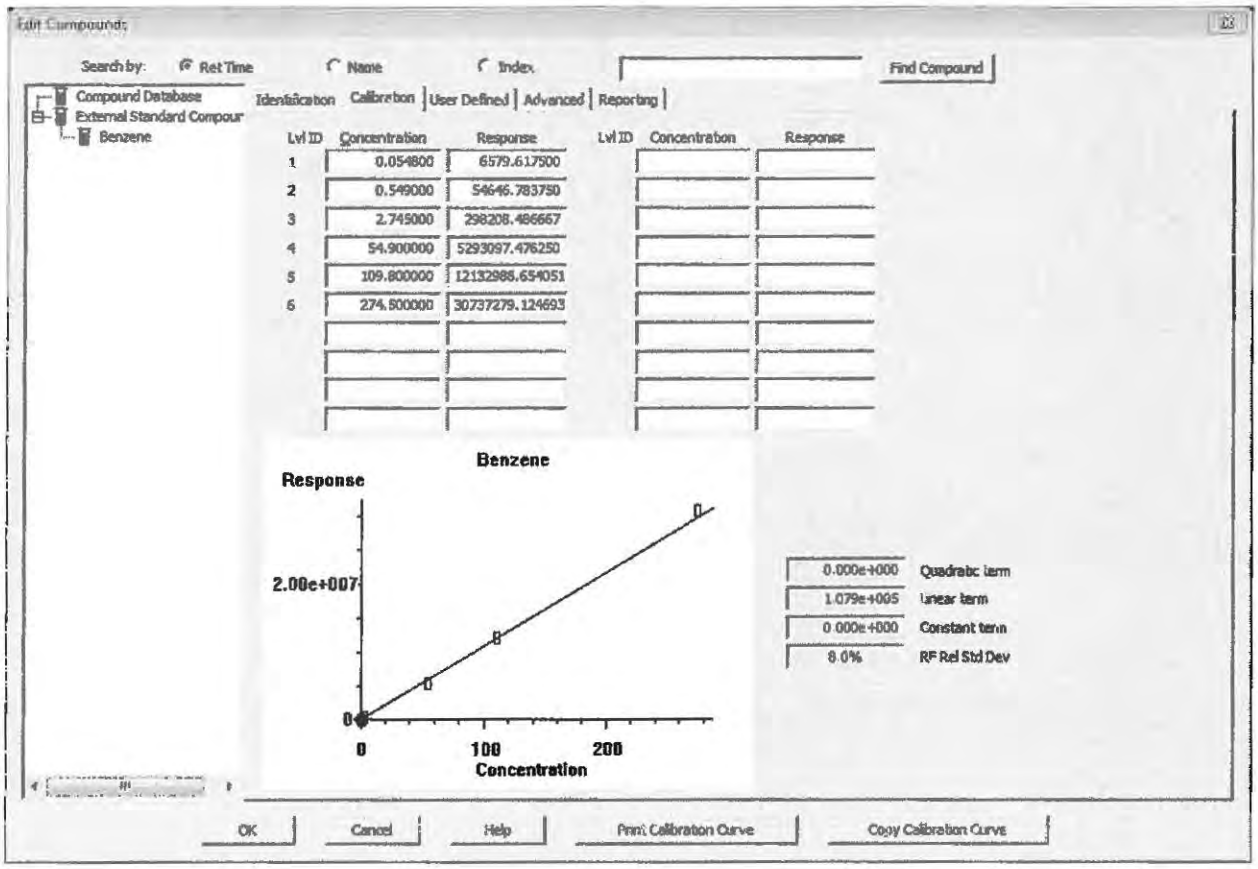
Method Path : I:\GC08\METHODS\
Method File : BE100316.M
Title : Benzene by GC/FID#8
Last Update : Mon Oct 03 13:23:14 2016
Response Via : Initial Calibration

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

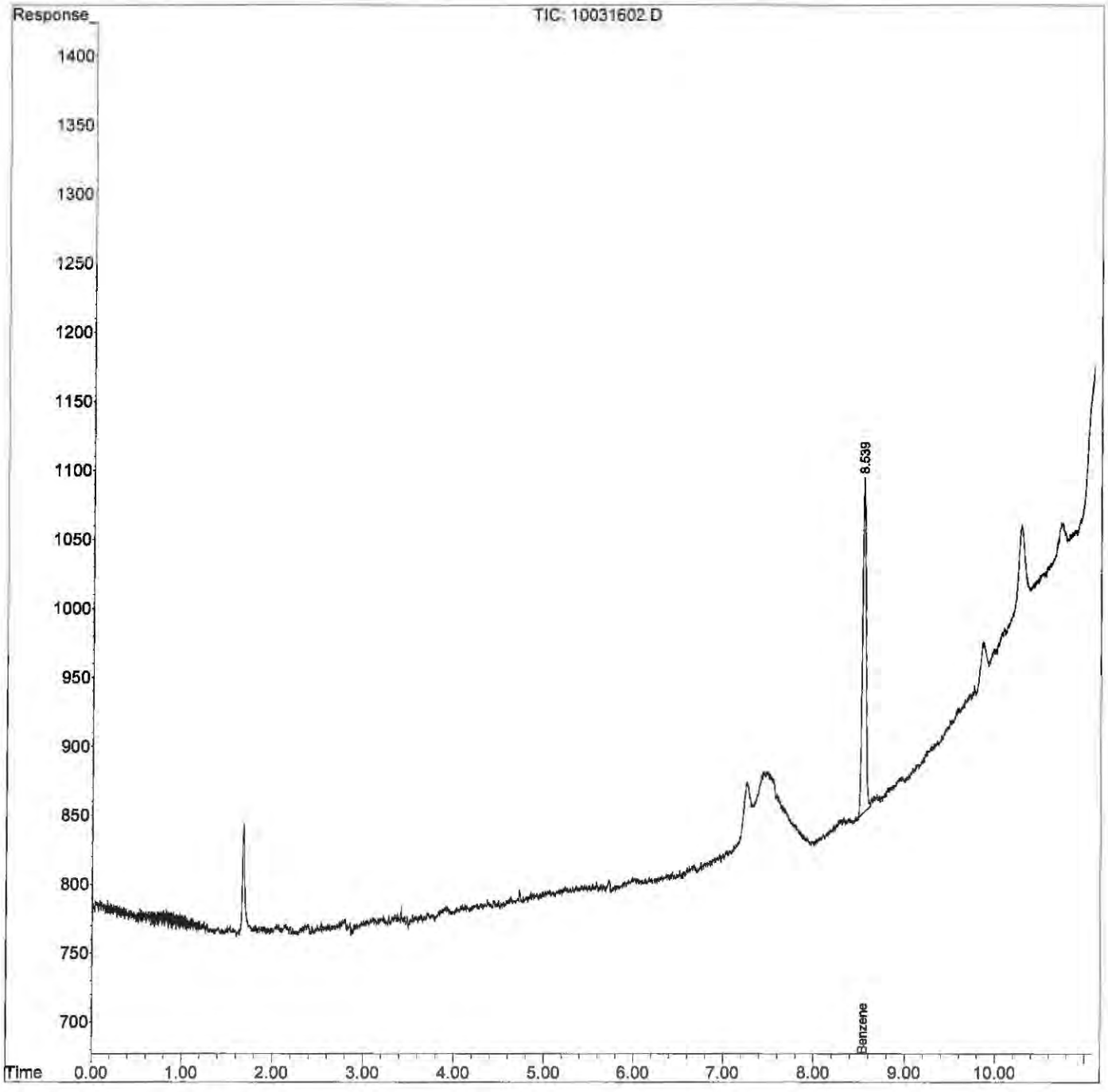
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

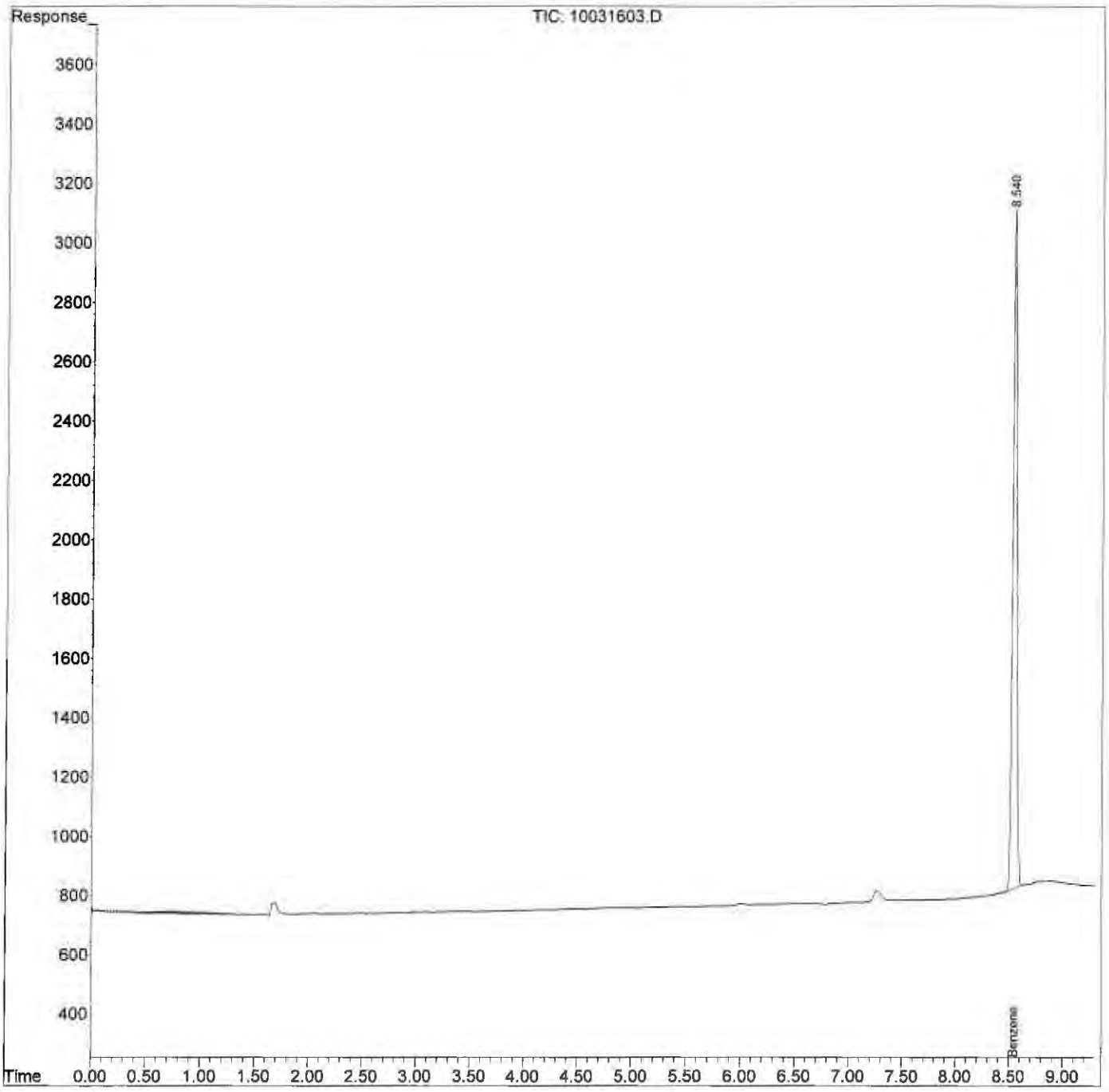
Compound	R.T.	Response	Conc Units
Target Compounds			
1) T Benzene	8.541	61946	0.574 ppm

(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 :

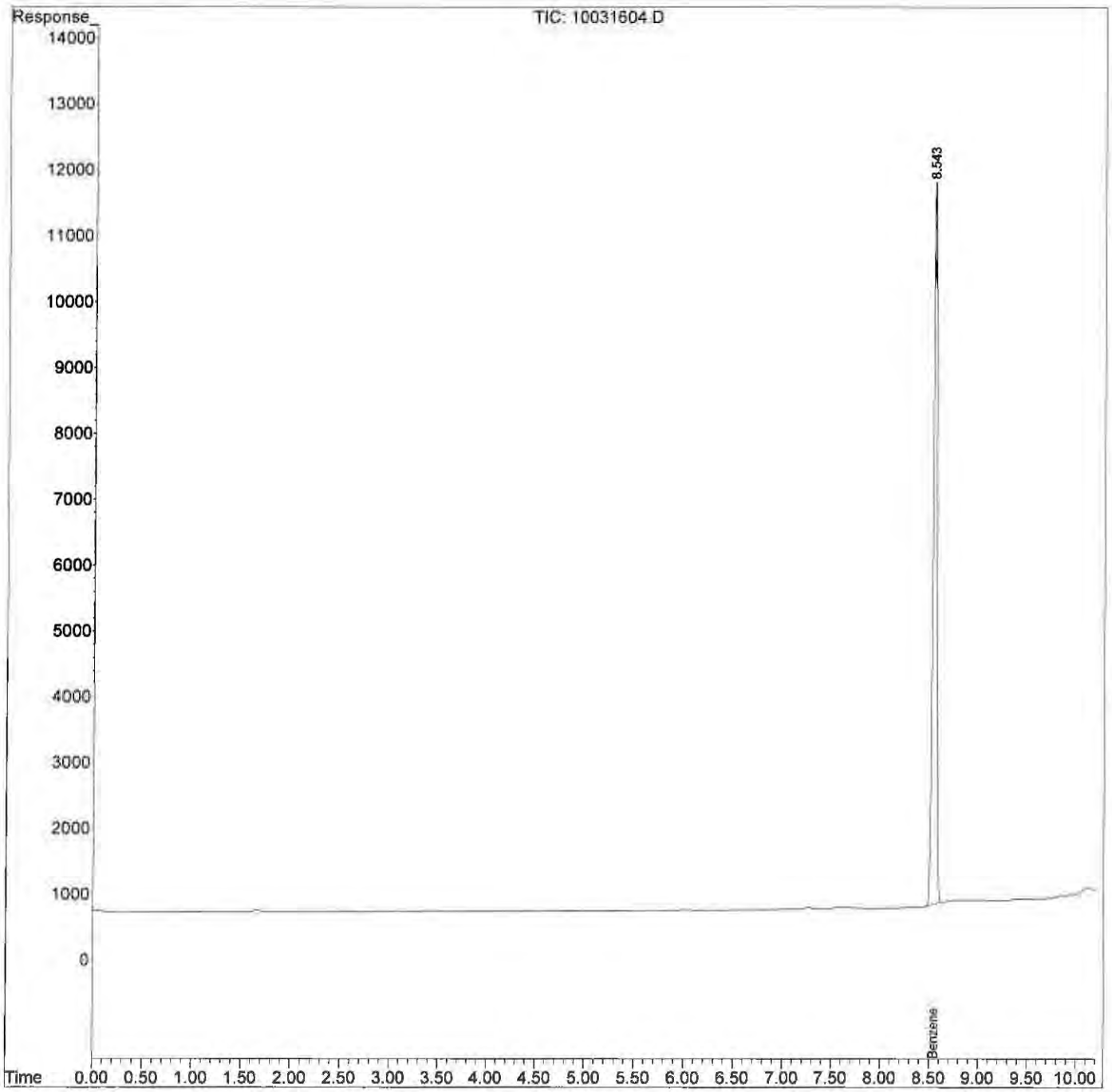
Compound	R.T.	Response	Conc Units
Target Compounds			
1) T Benzene	8.543	298208	2.765 ppm

(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 :

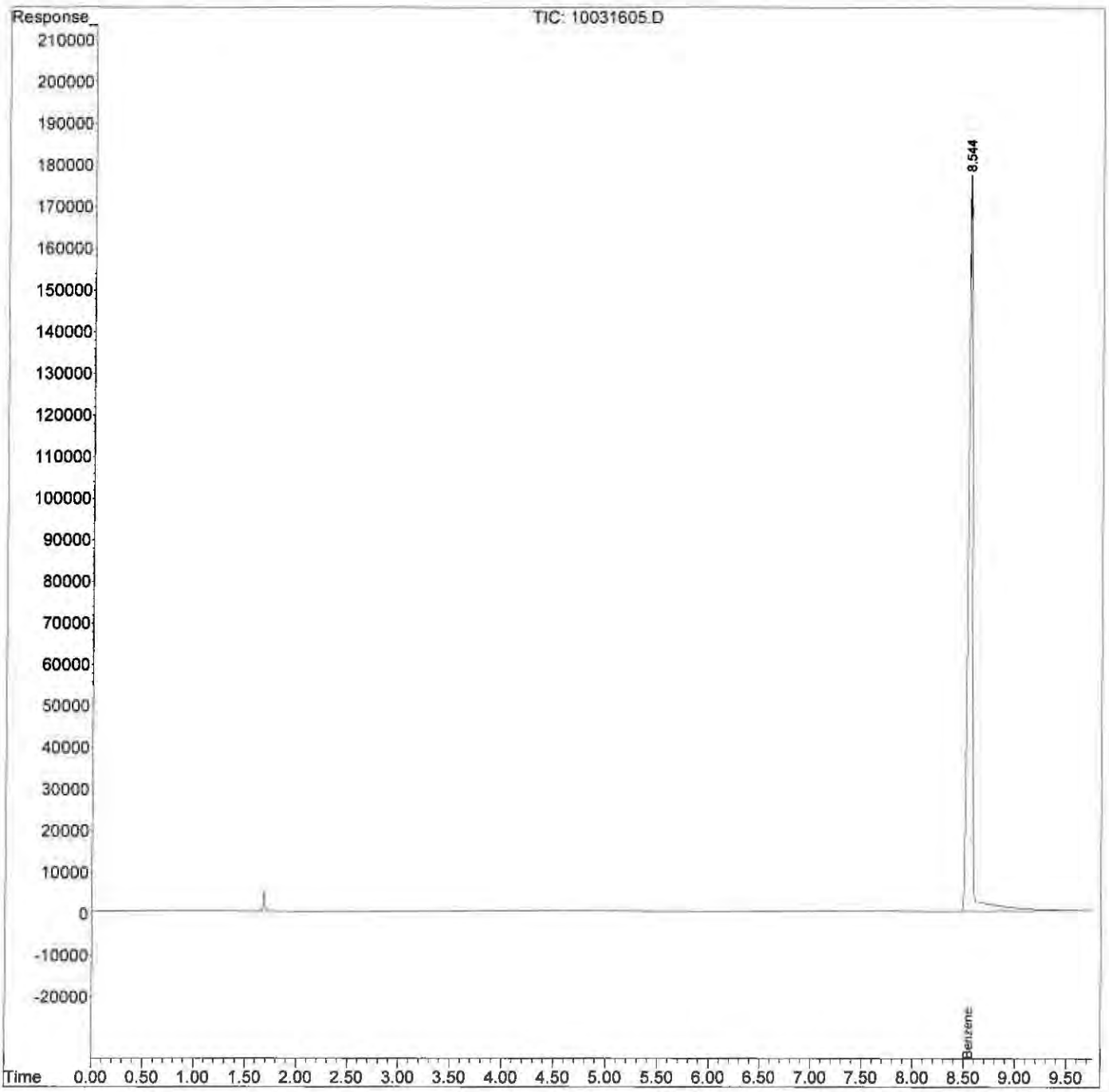
Compound	R.T.	Response	Conc Units
Target Compounds			
1) T Benzene	8.544	5293097	49.076 ppm

(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 :

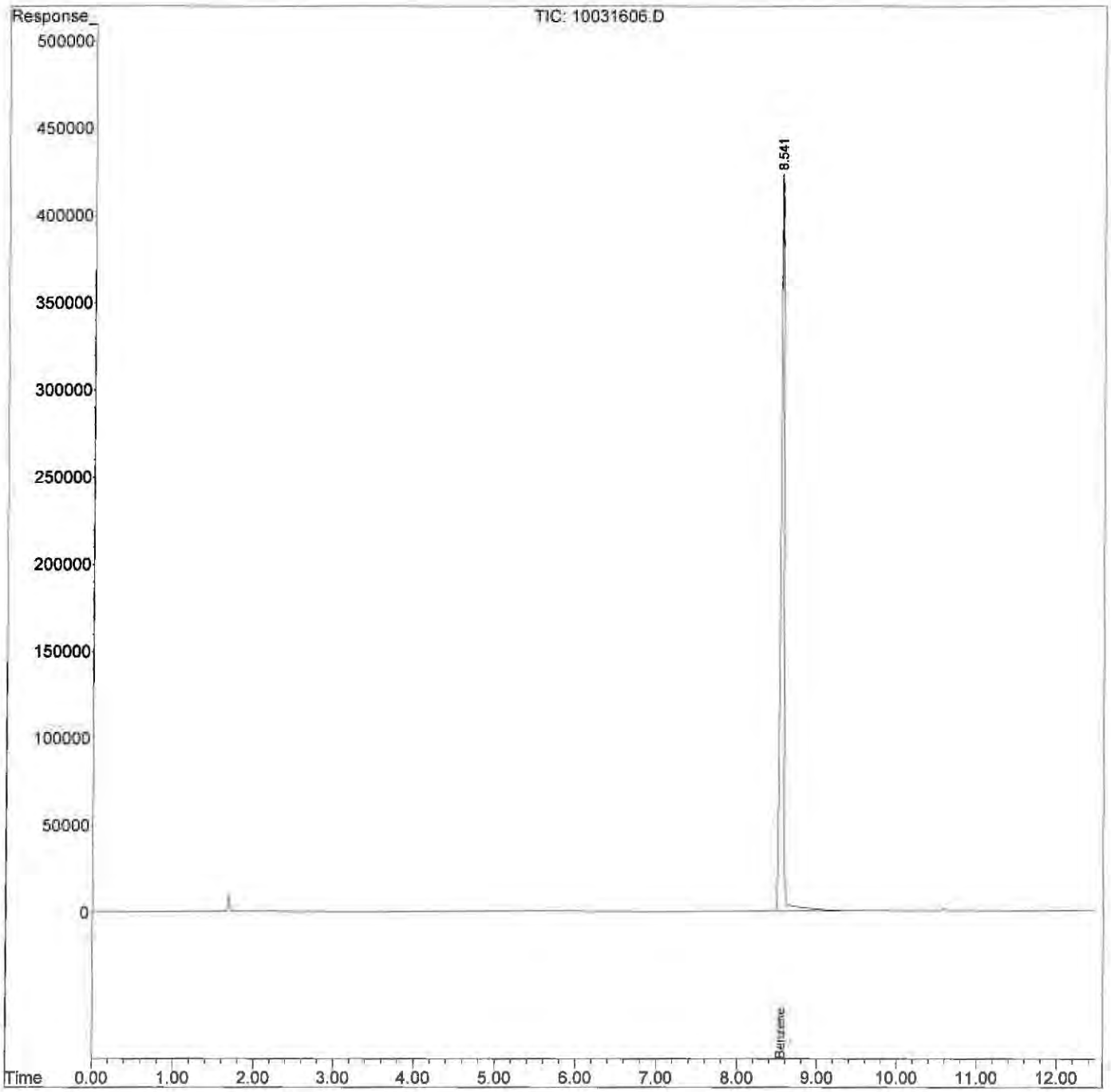
Compound	R.T.	Response	Conc Units
Target Compounds			
1) T Benzene	8.542	12132989	112.493 ppm

(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

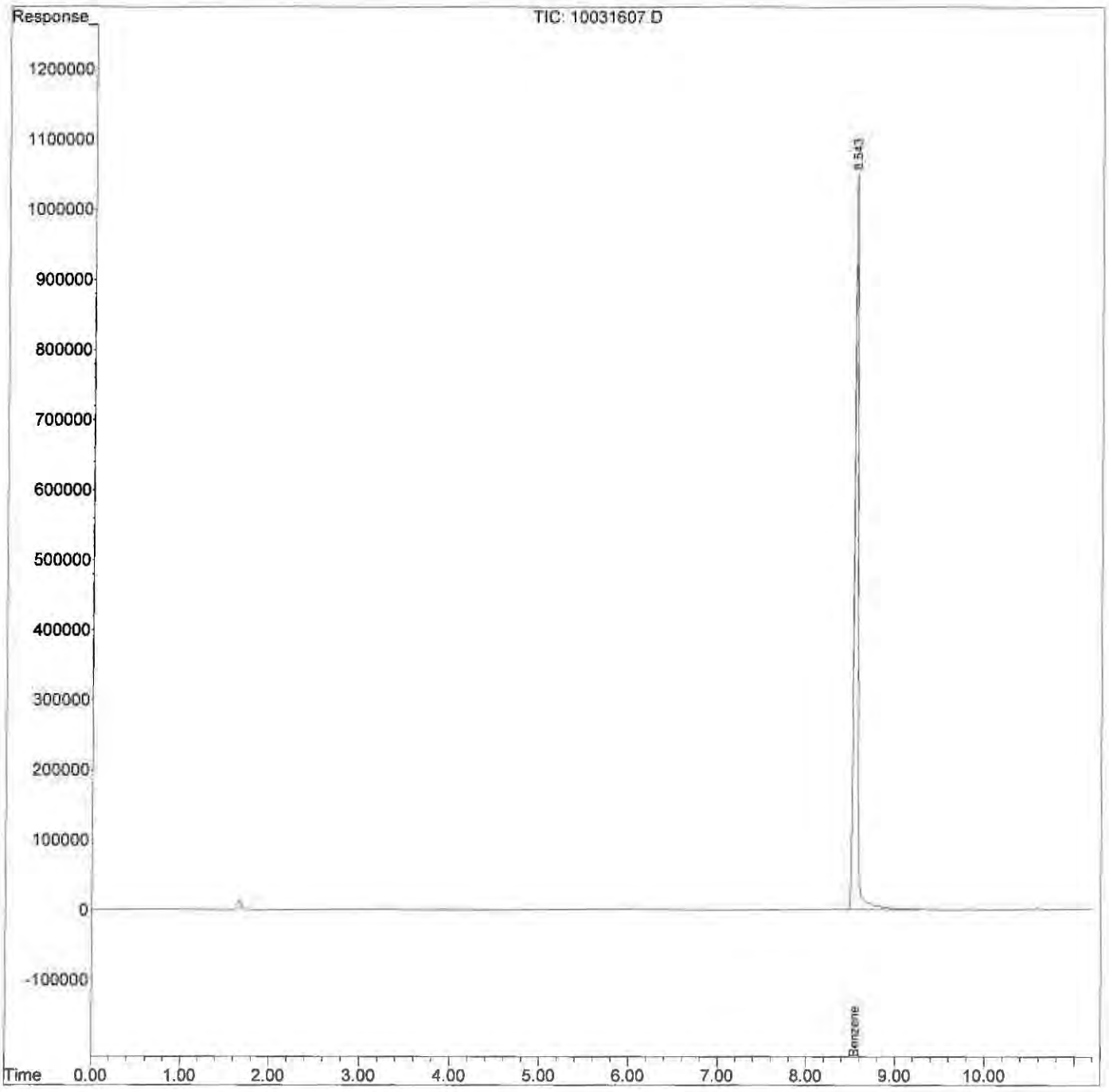
(f)=RT Delta > 1/2 Window (m)=manual int.

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.

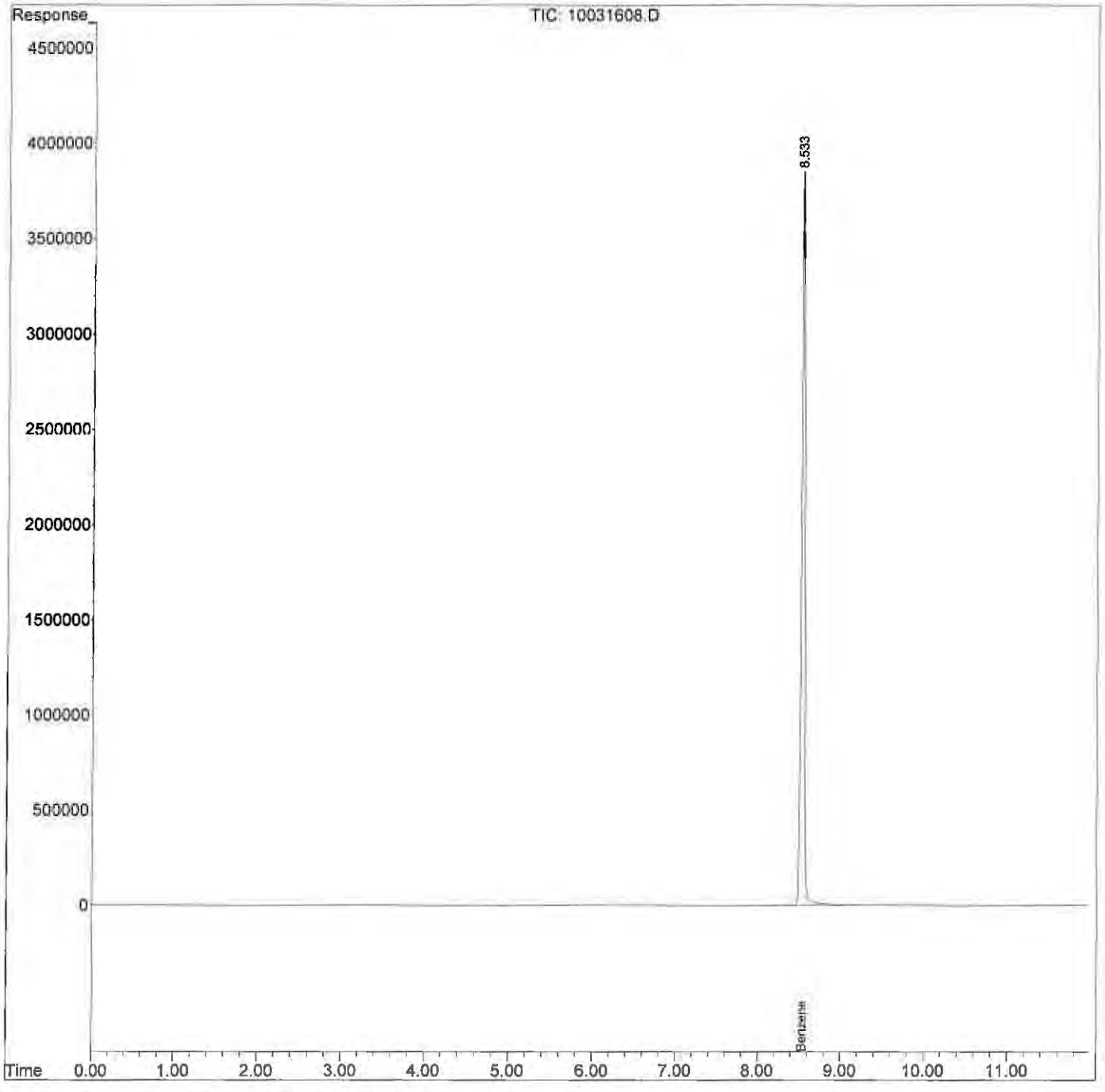
Quantitation Report (QT Reviewed)

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 P1604901
Instrument : Instrument 8 / FID #8
Date Acquired : 10/19/2016

SAMPLE RESULT SUMMARIES (ppm)

Sample ID	Inject. Vol(ml)	Dilution DF	Benzene
std s30-10191601	1.0	1.0	1087.6
ACTUAL			1098.0
%Difference			0.9%
lcs s30-10191602	1.0	1.0	1086.00
ACTUAL			1098.0
%Recovery			98.9%
lcsds30-10191602	1.0	1.0	1078.40
ACTUAL			1098.0
%Recovery			98.2%
%RPD			0.7%
mb 1ml	1.0	1.0	0.04
4901-001 0.05m	0.1	1.0	0.00
4901-002 0.05m	0.1	1.0	0.00
4901-003 0.05m	0.1	1.0	0.00
4901-004 0.05m	0.1	1.0	0.00
std s30-10191601	1.0	1.0	1048.3
ACTUAL			1098.0
%Difference			4.5%

FINAL SAMPLE RESULT SUMMARIES (ppm)

Sample ID	Pi	Pf	Benzene
MRL			0.06
mb 1ml	0.00	0.00	ND
4901-001 0.05m	-0.52	3.29	ND
4901-002 0.05m	-1.08	3.47	ND
4901-003 0.05m	-0.36	3.38	ND
4901-004 0.05m	-0.47	3.68	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
4901-001 0.05m	1.27	0.00	0.00	0.00	100.00
4901-002 0.05m	1.33	0.00	0.00	0.00	100.00
4901-003 0.05m	1.26	0.00	0.00	0.00	100.00
4901-004 0.05m	1.29	0.00	0.00	0.00	100.00

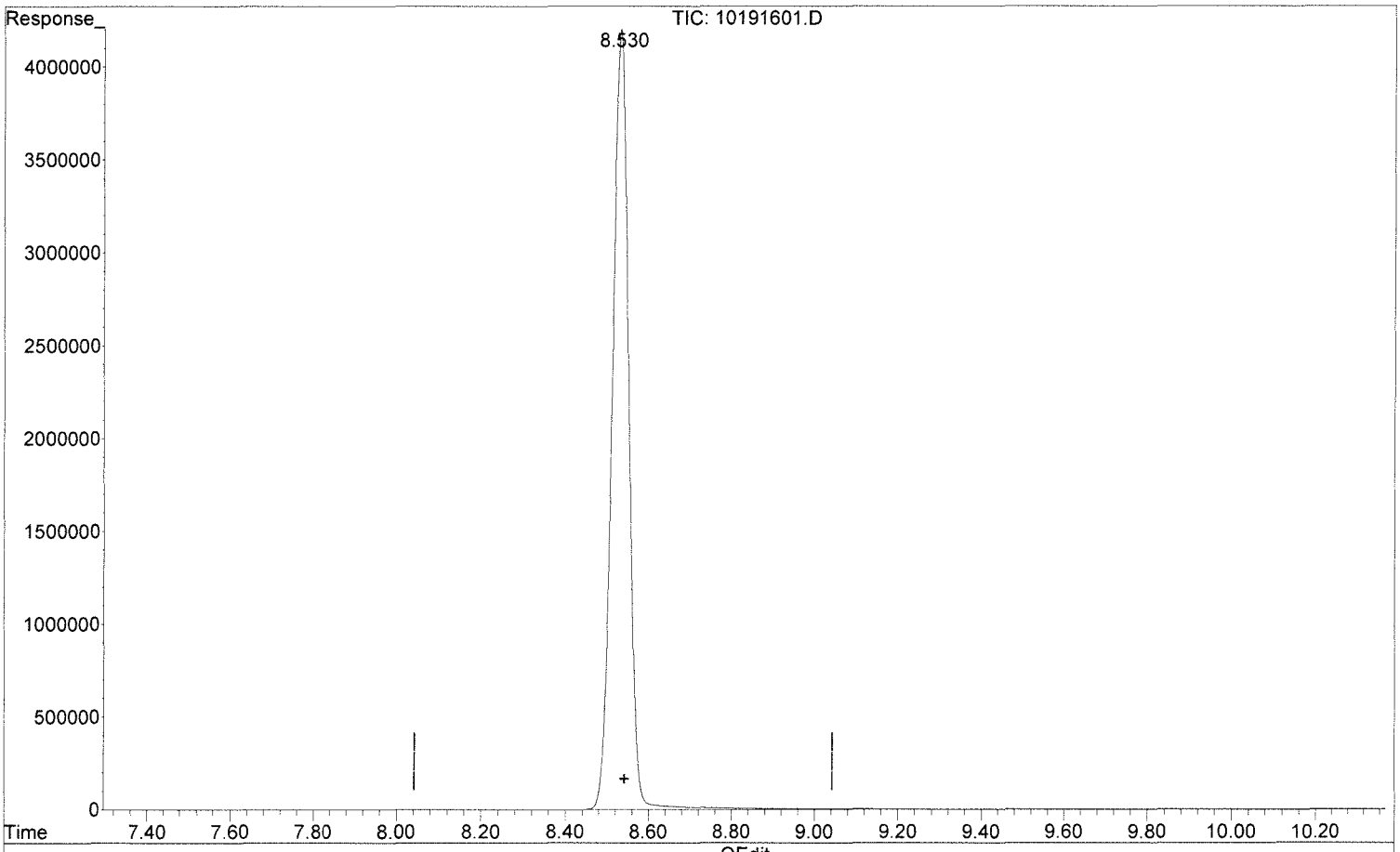
10/20/16

Quantitation Report (Qedit)

Data Path : I:\GC08\DATA\TO_3M\2016_10\19B\
Data File : 10191601.D
Signal(s) : FID2B.CH
Acq On : 19-Oct-2016, 09:45:14
Operator : amf
Sample : s30-10191601
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 19 09:54:37 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)

8.531min 1087.650 ppm

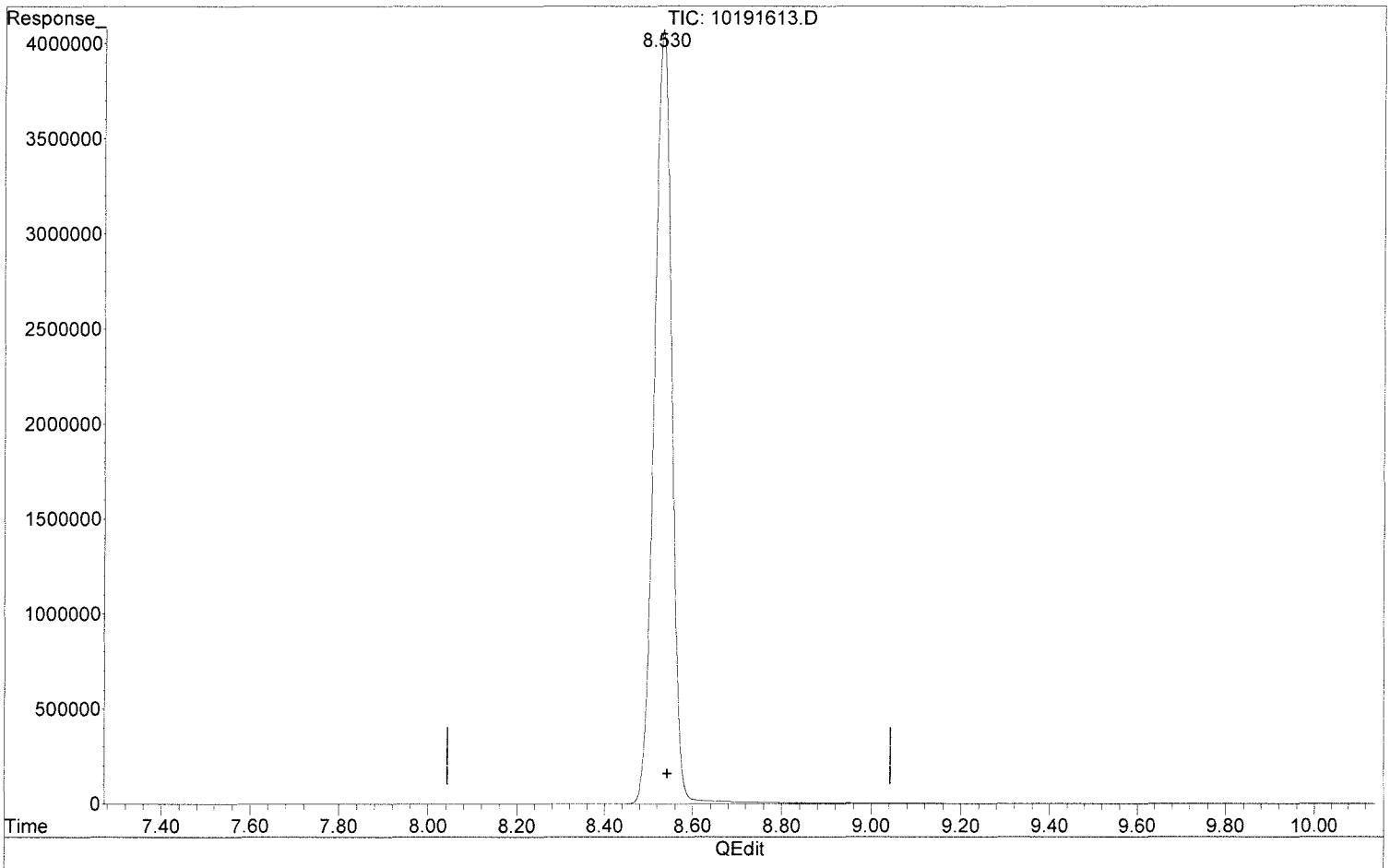
response 117308771

(+) = Expected Retention Time

Data Path : I:\GC08\DATA\TO_3M\2016_10\19B\
Data File : 10191613.D
Signal(s) : FID2B.CH
Acq On : 19-Oct-2016, 17:05:08
Operator : amf
Sample : std s30-10191601
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 19 17:10:48 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)

8.531min 1048.370 ppm

response 113072163

(+) = 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 10/3/16						

Injection Log

Directory: I:\GC08\DATA\TO_3M\2016_10\19B\

	Sample ID	Date/Time	Acquisition Method	File Name	Misc Info	Operator	Comments
	s30-10191601	19-Oct-16, 09:45:14	TO3.M	10191601.D		amf	
	mb 1ml	19-Oct-16, 10:26:23	TO3.M	10191602.D		amf	
	lcs s30-10191602	19-Oct-16, 10:39:37	TO3.M	10191603.D		amf	
	lcsds30-10191602	19-Oct-16, 11:02:50	TO3.M	10191604.D		amf	
	4860-001 0.05ml	19-Oct-16, 12:58:14	TO3.M	10191605.D		amf	
	4860-002 0.05ml	19-Oct-16, 13:34:36	TO3.M	10191606.D		amf	
	4860-003 0.05ml	19-Oct-16, 13:57:27	TO3.M	10191607.D		amf	
	4860-004 0.05ml	19-Oct-16, 14:20:20	TO3.M	10191608.D		amf	
	4901-001 0.05ml	19-Oct-16, 14:43:22	TO3.M	10191609.D		amf	
	4901-002 0.05ml	19-Oct-16, 15:06:18	TO3.M	10191610.D		amf	
	4901-003 0.05ml	19-Oct-16, 16:06:54	TO3.M	10191611.D		amf	
	4901-004 0.05ml	19-Oct-16, 16:29:49	TO3.M	10191612.D		amf	
	std s30-10191601	19-Oct-16, 17:05:08	TO3.M	10191613.D		amf	

Quantitation Report (QT Reviewed)

Data Path : I:\GC08\DATA\TO_3M\2016_10\19\
Data File : 10191613.D
Signal(s) : FID2B.CH
Acq On : 19-Oct-2016, 14:43:22
Operator : amf
Sample : 4901-001 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 20 12:42:57 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 :

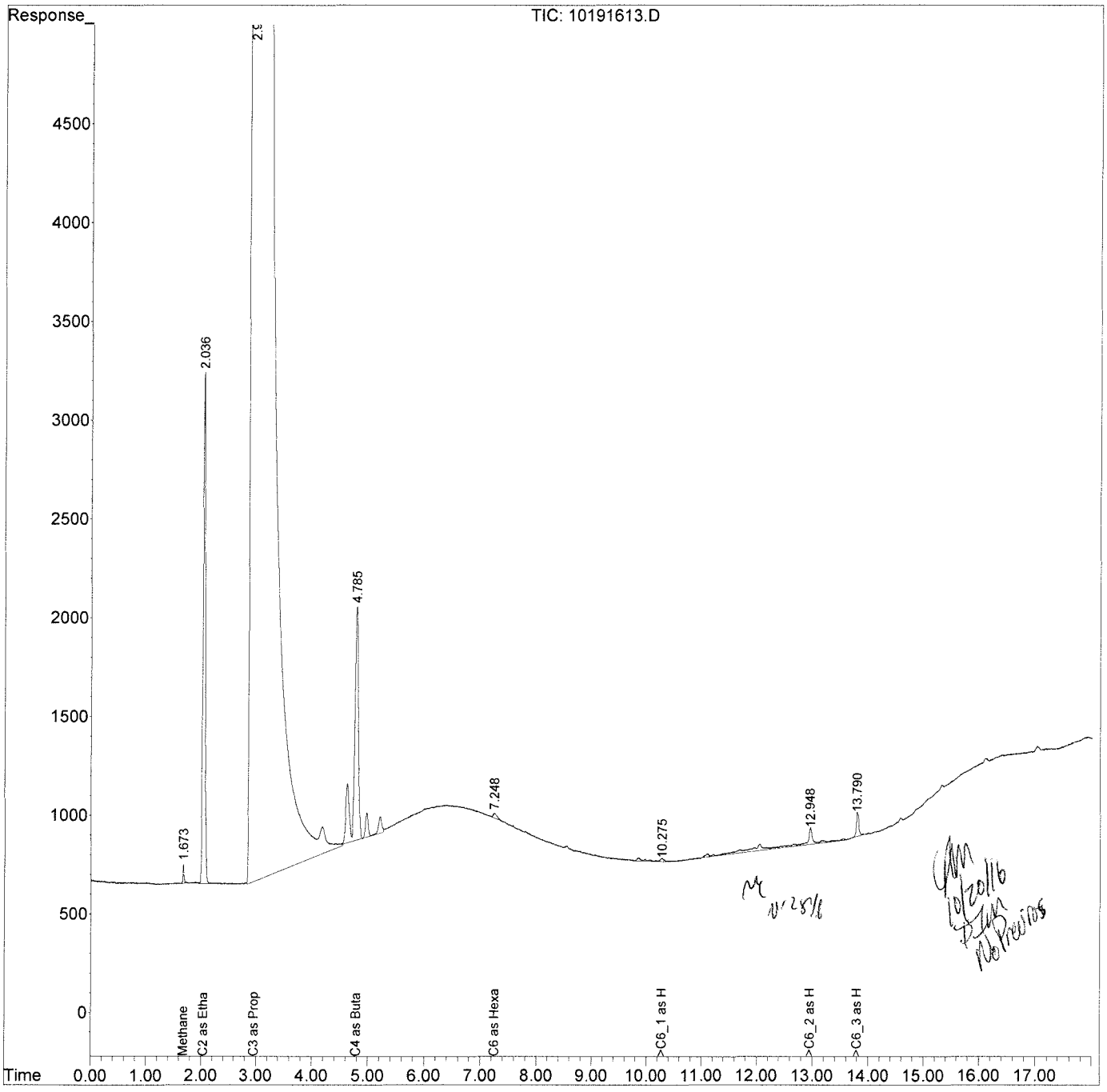
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Methane	1.673	1280	0.058	ppm	
2)	C2 as Ethane	2.037	74314	1.880	ppm	
3)	C3 as Propane	2.959f	3437924221	60672.489	ppm	m
4)	C4 as Butane	4.785	69413	0.924	ppm	m
5)	C5 as Pentane	0.000	0	N.D.	ppm	d
6)	C6 as Hexane	7.248f	1158	0.011	ppm	m
7)	>C6_1 as Hexane	10.275f	2016	0.019	ppm	m
8)	>C6_2 as Hexane	12.948f	15727	0.151	ppm	m
9)	>C6_3 as Hexane	13.790f	3909	0.038	ppm	m

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC08\DATA\TO_3M\2016_10\19\
Data File : 10191613.D
Signal(s) : FID2B.CH
Acq On : 19-Oct-2016, 14:43:22
Operator : amf
Sample : 4901-001 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 20 12:42:57 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\19\
Data File : 10191614.D
Signal(s) : FID2B.CH
Acq On : 19-Oct-2016, 15:06:18
Operator : amf
Sample : 4901-002 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 20 12:46:56 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 :

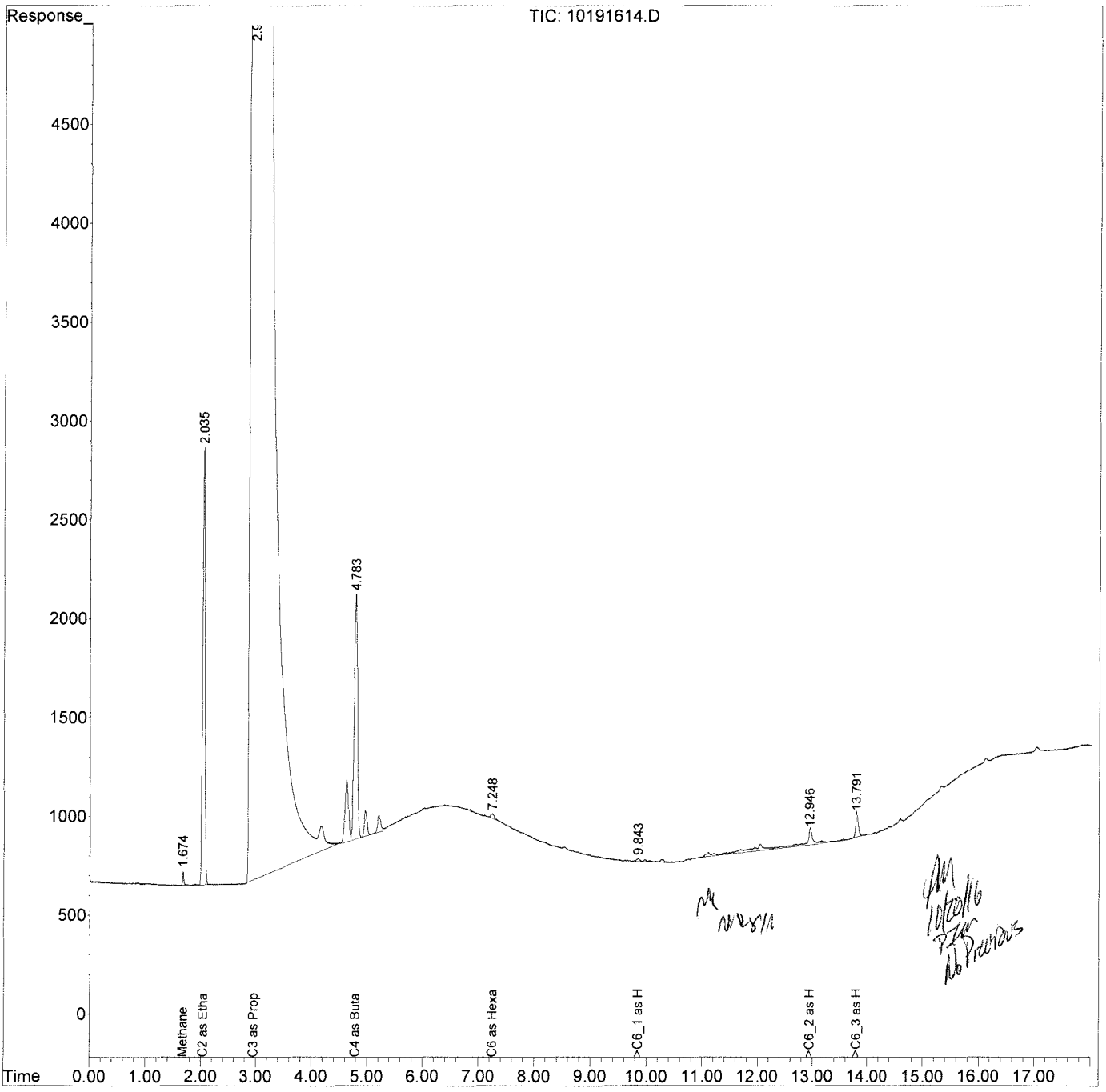
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Methane	1.675	939	0.043	ppm	
2)	C2 as Ethane	2.036	63214	1.599	ppm	
3)	C3 as Propane	2.957f	3236520193	57118.111	ppm	m
4)	C4 as Butane	4.783	72193	0.961	ppm	m
5)	C5 as Pentane	0.000	0	N.D.	ppm	d
6)	C6 as Hexane	7.248f	1025	0.010	ppm	m
7)	>C6_1 as Hexane	9.843f	1871	0.018	ppm	m
8)	>C6_2 as Hexane	12.946f	16544	0.159	ppm	m
9)	>C6_3 as Hexane	13.791f	4297	0.041	ppm	m

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC08\DATA\TO_3M\2016_10\19\
Data File : 10191614.D
Signal(s) : FID2B.CH
Acq On : 19-Oct-2016, 15:06:18
Operator : amf
Sample : 4901-002 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 20 12:46:56 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\19\
Data File : 10191616.D
Signal(s) : FID2B.CH
Acq On : 19-Oct-2016, 16:06:54
Operator : amf
Sample : 4901-003 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 20 12:49:33 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 :

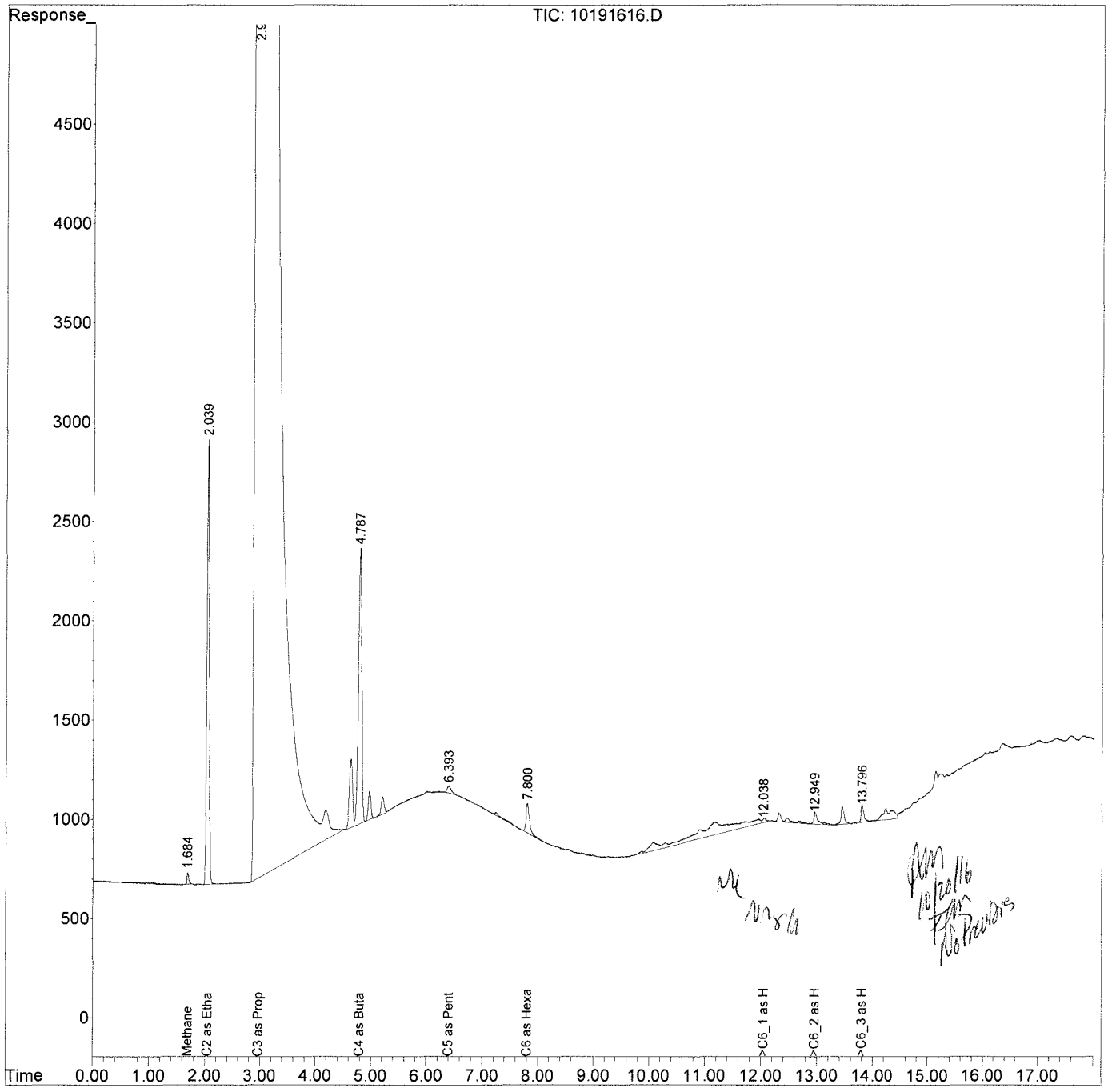
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Methane	1.685	1264	0.058	ppm	
2)	C2 as Ethane	2.040	64159	1.623	ppm	
3)	C3 as Propane	2.962f	3678504779	64918.255	ppm	m
4)	C4 as Butane	4.787	80311	1.069	ppm	m
5)	C5 as Pentane	6.393	1798	0.019	ppm	m
6)	C6 as Hexane	7.800	7508	0.072	ppm	m
7)	>C6_1 as Hexane	12.038f	36387	0.350	ppm	m
8)	>C6_2 as Hexane	12.949f	6766	0.065	ppm	m
9)	>C6_3 as Hexane	13.796f	14306	0.138	ppm	m

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC08\DATA\TO_3M\2016_10\19\
Data File : 10191616.D
Signal(s) : FID2B.CH
Acq On : 19-Oct-2016, 16:06:54
Operator : amf
Sample : 4901-003 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 20 12:49:33 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\19\
Data File : 10191617.D
Signal(s) : FID2B.CH
Acq On : 19-Oct-2016, 16:29:49
Operator : amf
Sample : 4901-004 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 20 12:52:53 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 :

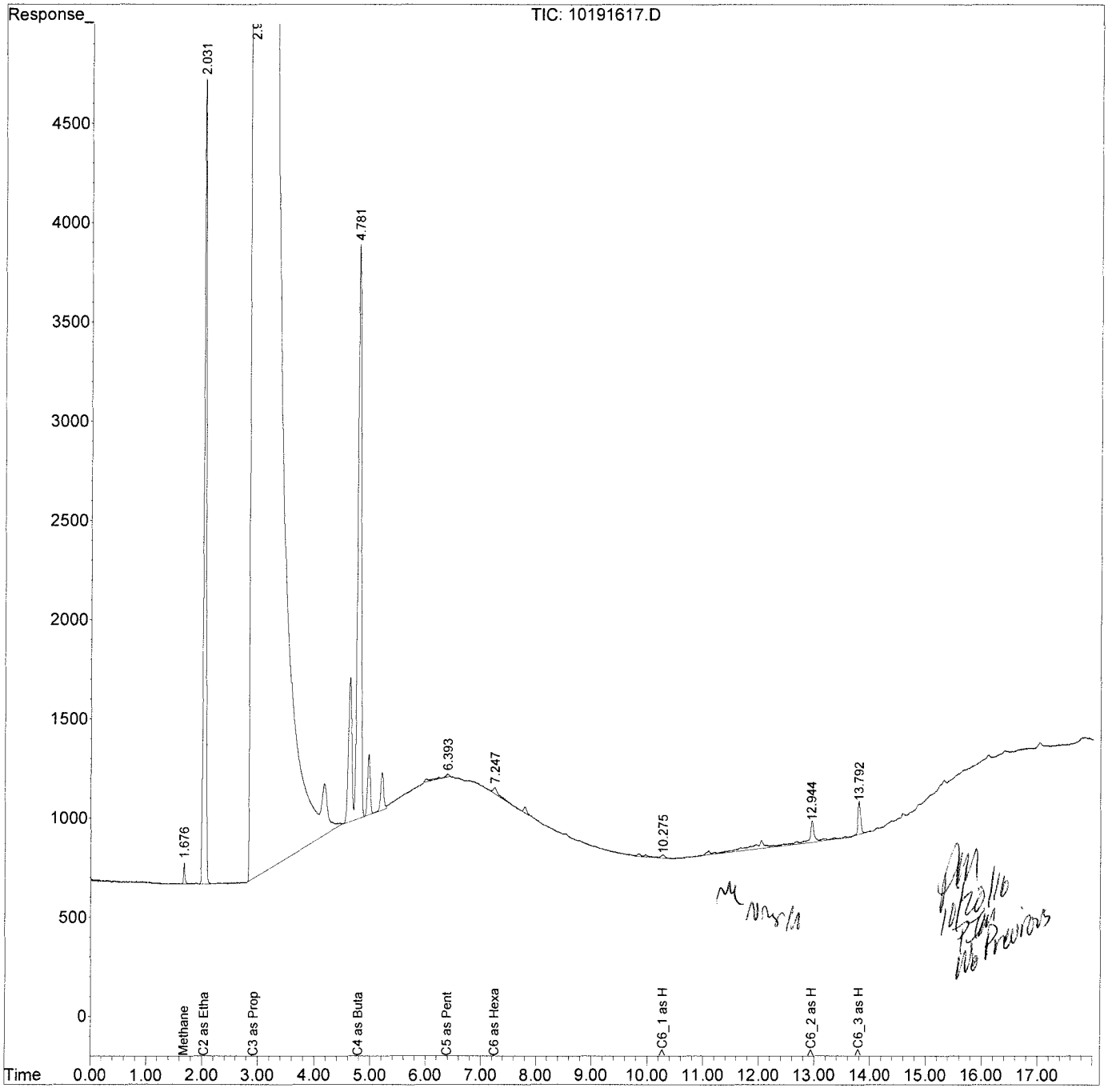
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Methane	1.677	1698	0.077	ppm	
2)	C2 as Ethane	2.032	115711	2.927	ppm	
3)	C3 as Propane	2.921f	8712528136	153758.703	ppm	m
4)	C4 as Butane	4.781	167943	2.235	ppm	m
5)	C5 as Pentane	6.393	1655	0.017	ppm	m
6)	C6 as Hexane	7.247f	3257	0.031	ppm	m
7)	>C6_1 as Hexane	10.275f	2100	0.020	ppm	m
8)	>C6_2 as Hexane	12.944f	16955	0.163	ppm	m
9)	>C6_3 as Hexane	13.791f	5359	0.052	ppm	m

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC08\DATA\TO_3M\2016_10\19\
Data File : 10191617.D
Signal(s) : FID2B.CH
Acq On : 19-Oct-2016, 16:29:49
Operator : amf
Sample : 4901-004 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 20 12:52:53 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\19\
Data File : 10191602.D
Signal(s) : FID2B.CH
Acq On : 19-Oct-2016, 08:56:55
Operator : amf
Sample : mb 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 19 09:14:06 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 :

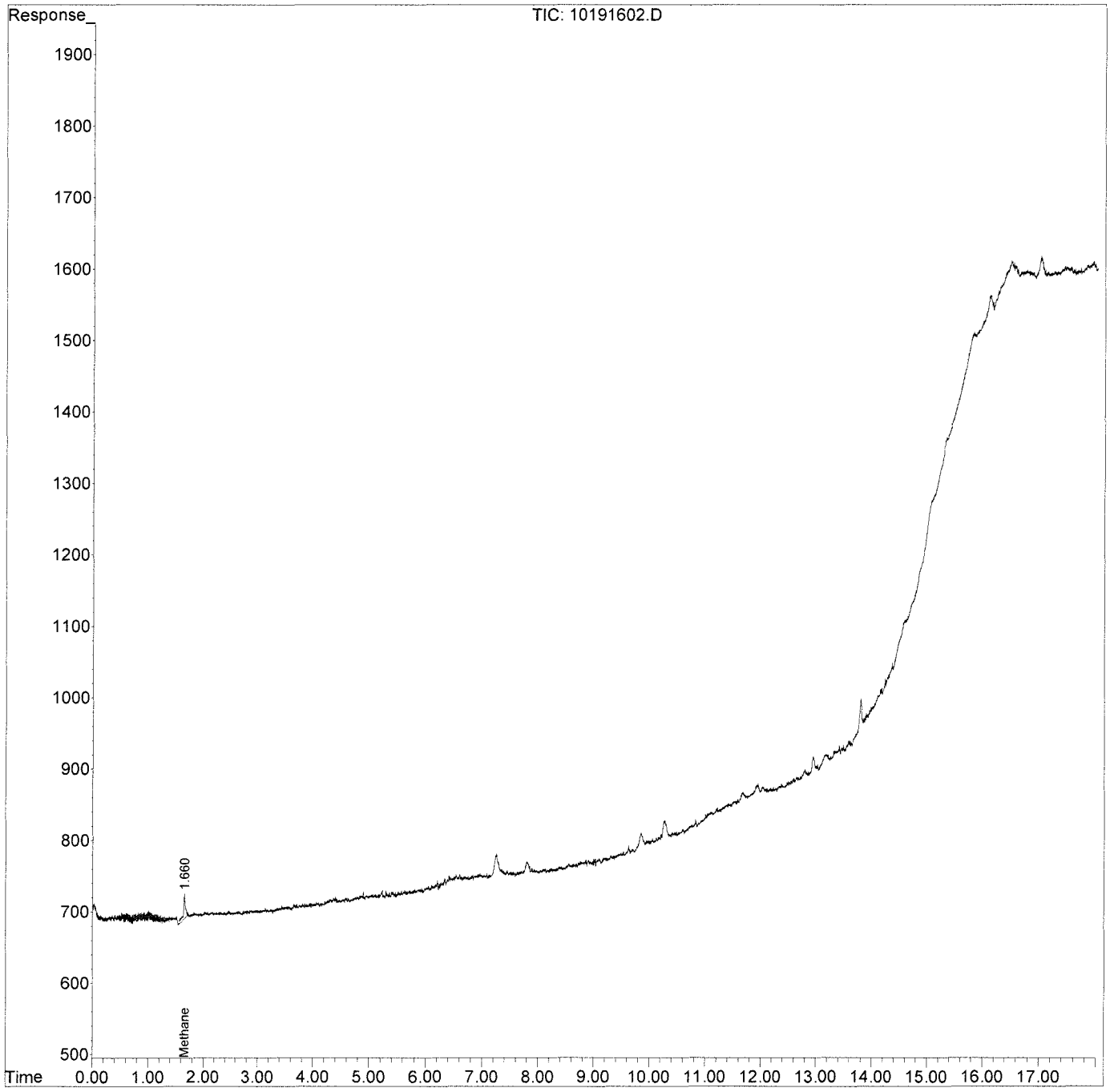
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Methane	1.662	816	0.037	ppm	
2)	C2 as Ethane	0.000	0	N.D.	ppm	
3)	C3 as Propane	0.000	0	N.D.	ppm	
4)	C4 as Butane	0.000	0	N.D.	ppm	
5)	C5 as Pentane	0.000	0	N.D.	ppm	
6)	C6 as Hexane	0.000	0	N.D.	ppm	
7)	>C6_1 as Hexane	0.000	0	N.D.	ppm	
8)	>C6_2 as Hexane	0.000	0	N.D.	ppm	d
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\19\
Data File : 10191602.D
Signal(s) : FID2B.CH
Acq On : 19-Oct-2016, 08:56:55
Operator : amf
Sample : mb 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 19 09:14:06 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\19\
Data File : 10191603.D
Signal(s) : FID2B.CH
Acq On : 19-Oct-2016, 09:20:05
Operator : amf
Sample : lcs s30-08011601
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 19 09:24:42 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 :

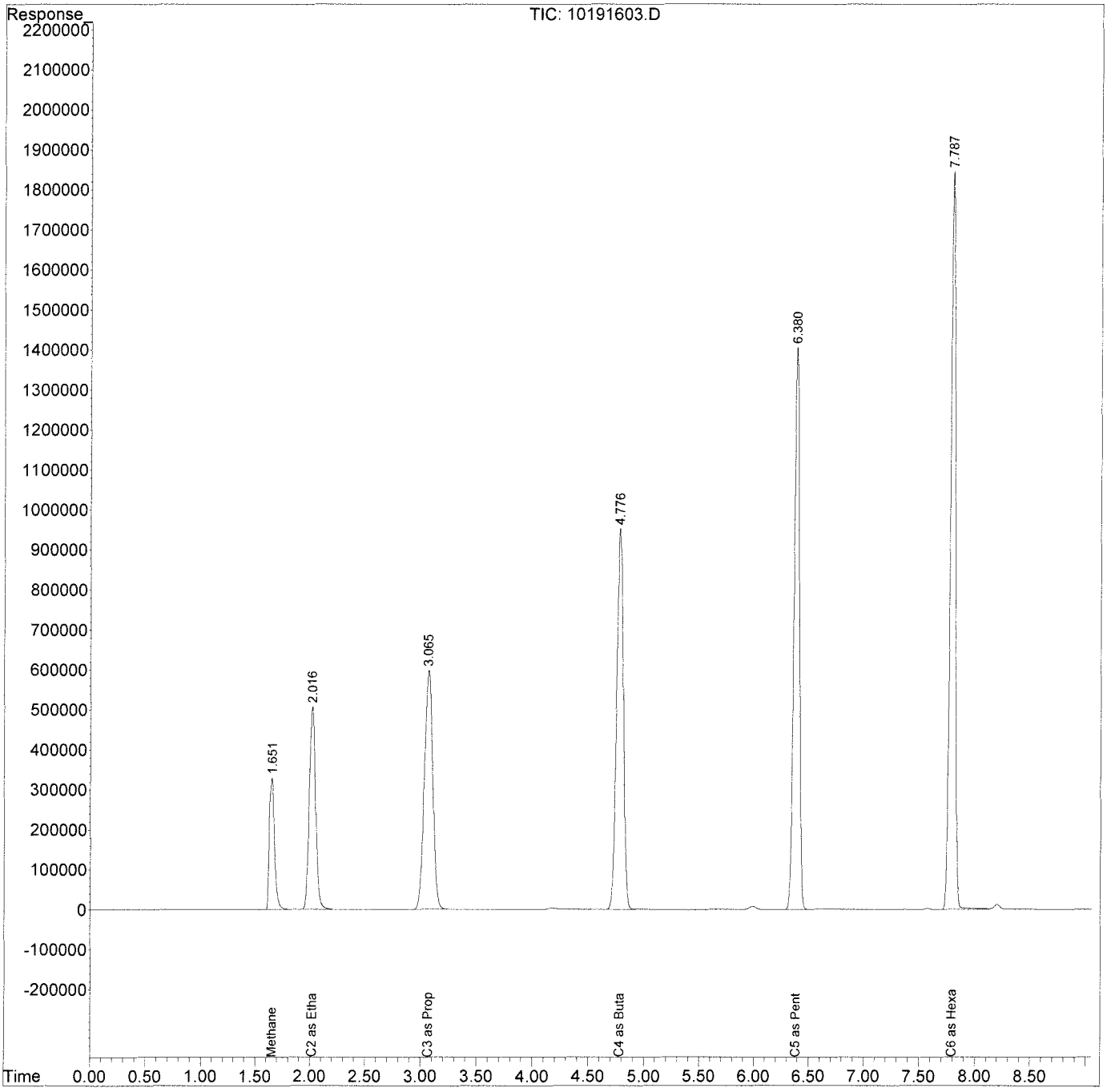
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Methane	1.651	10922488	497.993	ppm
2)	C2 as Ethane	2.017	20204489	511.018	ppm
3)	C3 as Propane	3.066	31063695	548.212	ppm
4)	C4 as Butane	4.777	40252564	535.705	ppm
5)	C5 as Pentane	6.381	48629177	511.957	ppm
6)	C6 as Hexane	7.788	57492484	552.604	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\19\
Data File : 10191603.D
Signal(s) : FID2B.CH
Acq On : 19-Oct-2016, 09:20:05
Operator : amf
Sample : lcs s30-08011601
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 19 09:24:42 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

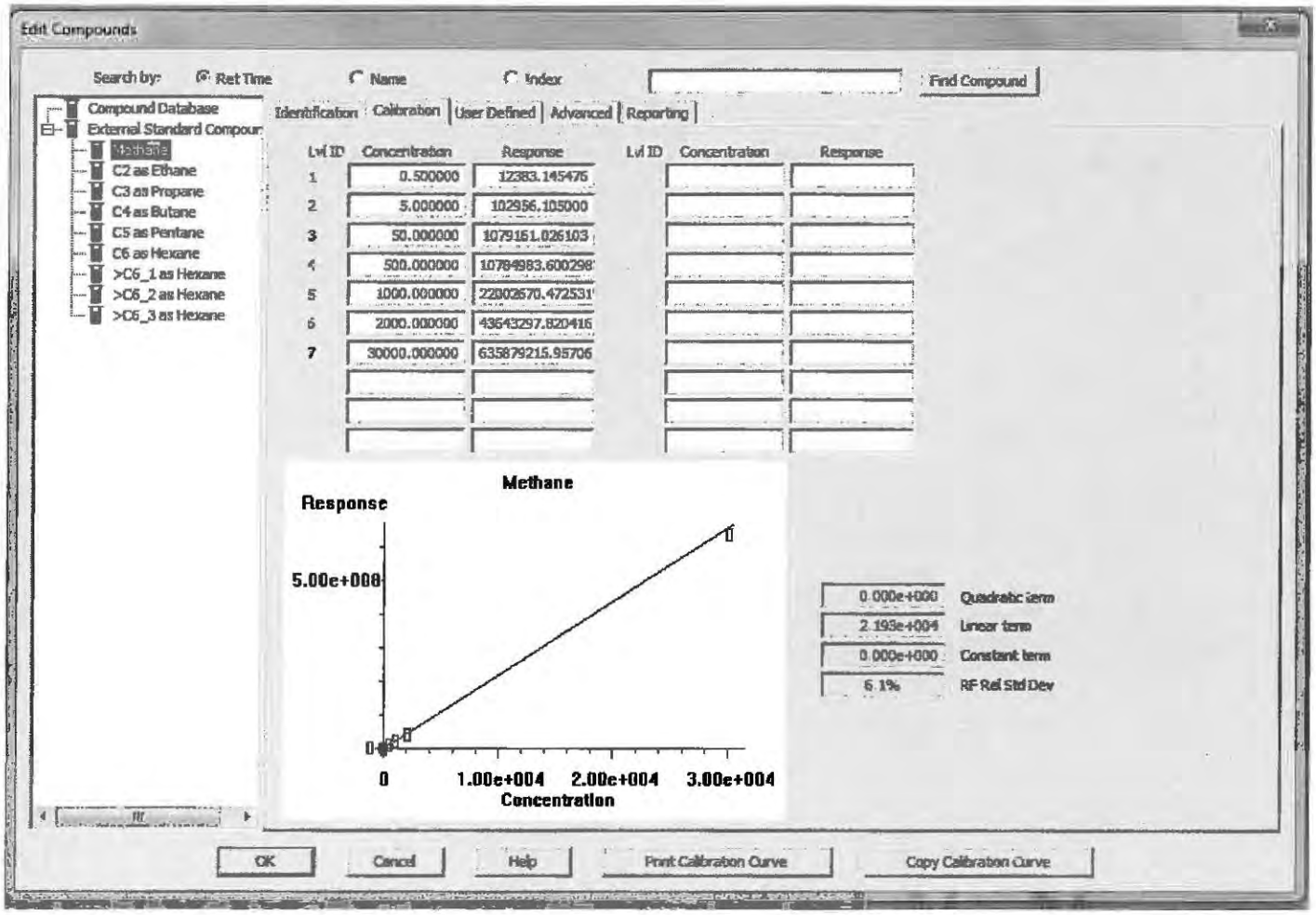
Method Path : I:\GC08\METHODS\
Method File : TF042116.M
Title : VOA-TO3C1C6
Last Update : Fri Apr 22 09:01:46 2016
Response Via : Initial Calibration

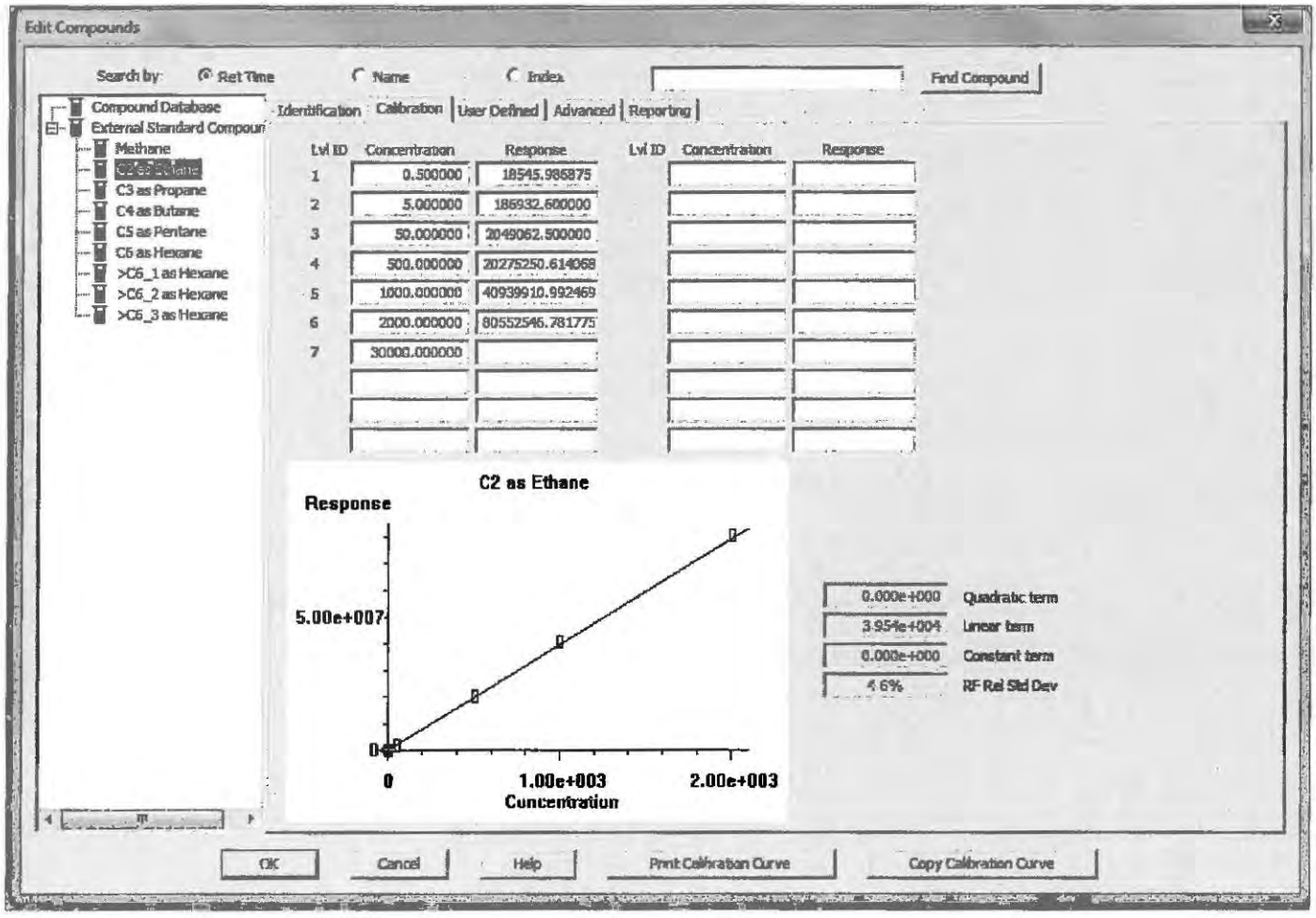
Calibration Files
1 =04211630.D 2 =04211631.D 3 =04211633.D
4 =04211634.D 5 =04211635.D 6 =04211636.D

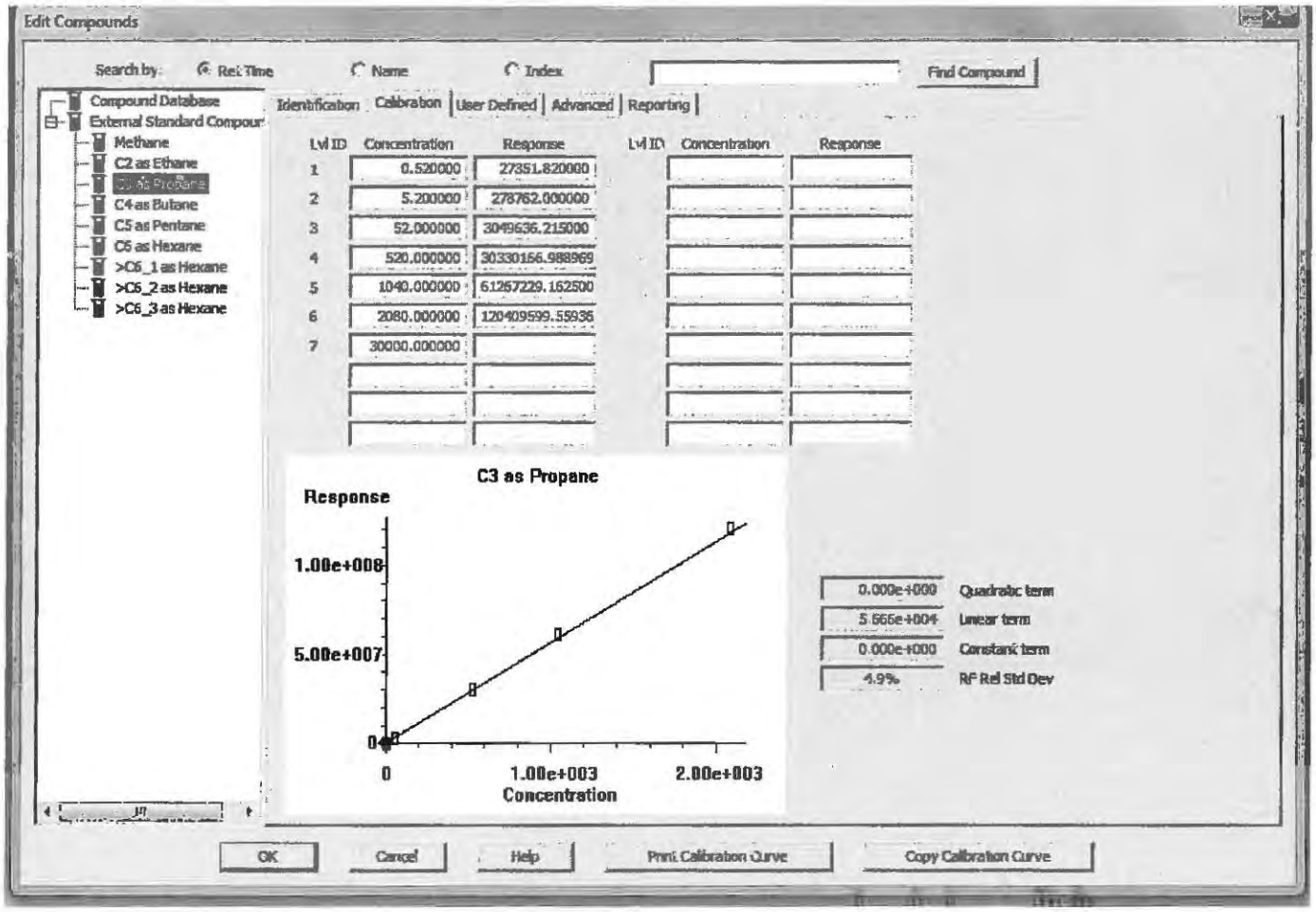
		Compound	1	2	3	4	5	6	Avg		%RSD
1)	T	Methane	2.477	2.059	2.158	2.157	2.200	2.182	2.193	E4	6.07
2)	T	C2 as Ethane	3.709	3.739	4.098	4.055	4.094	4.028	3.954	E4	4.56
3)	T	C3 as Propane	5.260	5.361	5.865	5.833	5.891	5.789	5.666	E4	4.94
4)	T	C4 as Butane	6.902	7.139	7.688	7.767	7.857	7.731	7.514	E4	5.23
5)	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

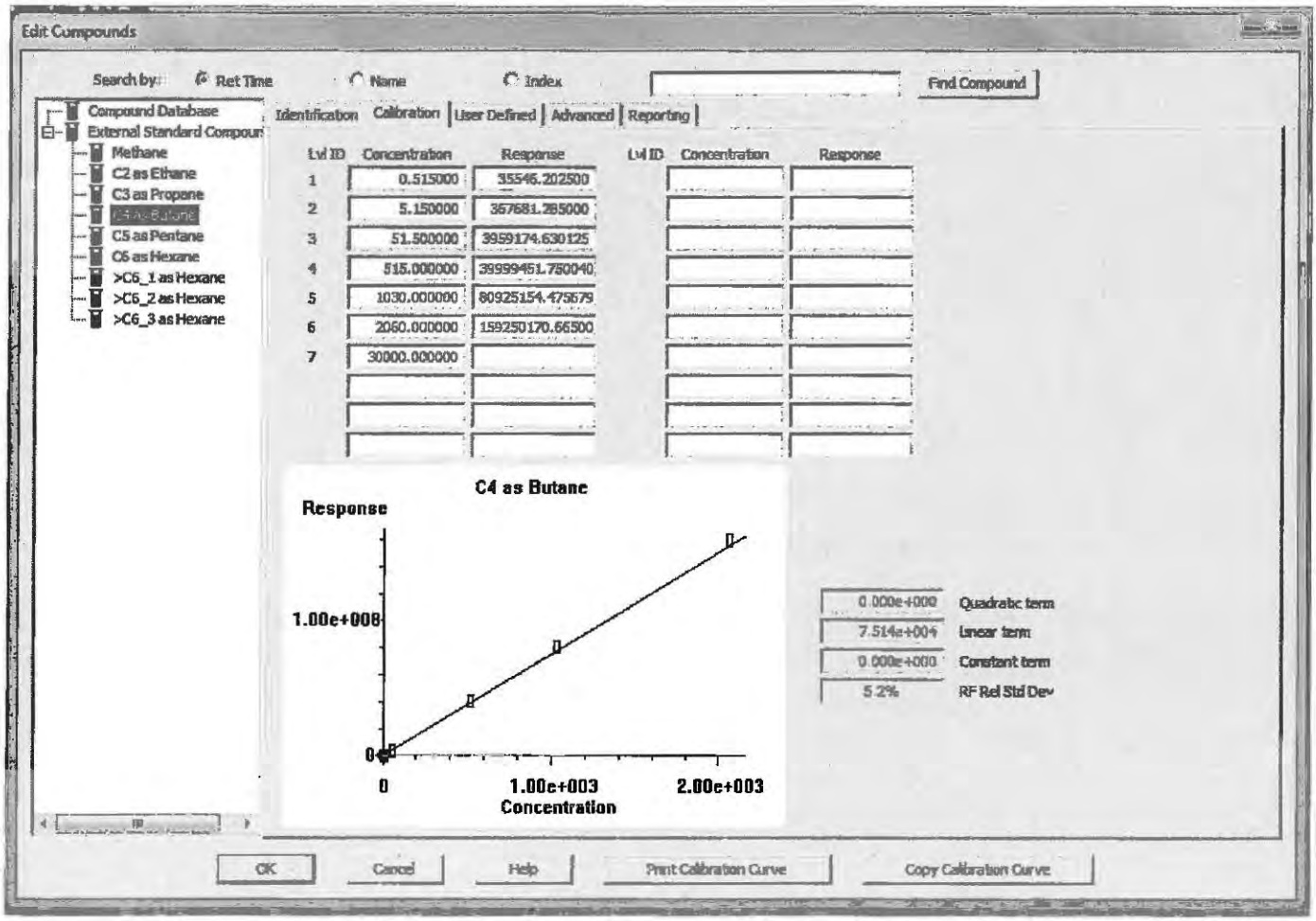
(#) = Out of Range ### Number of calibration levels exceeded format ###

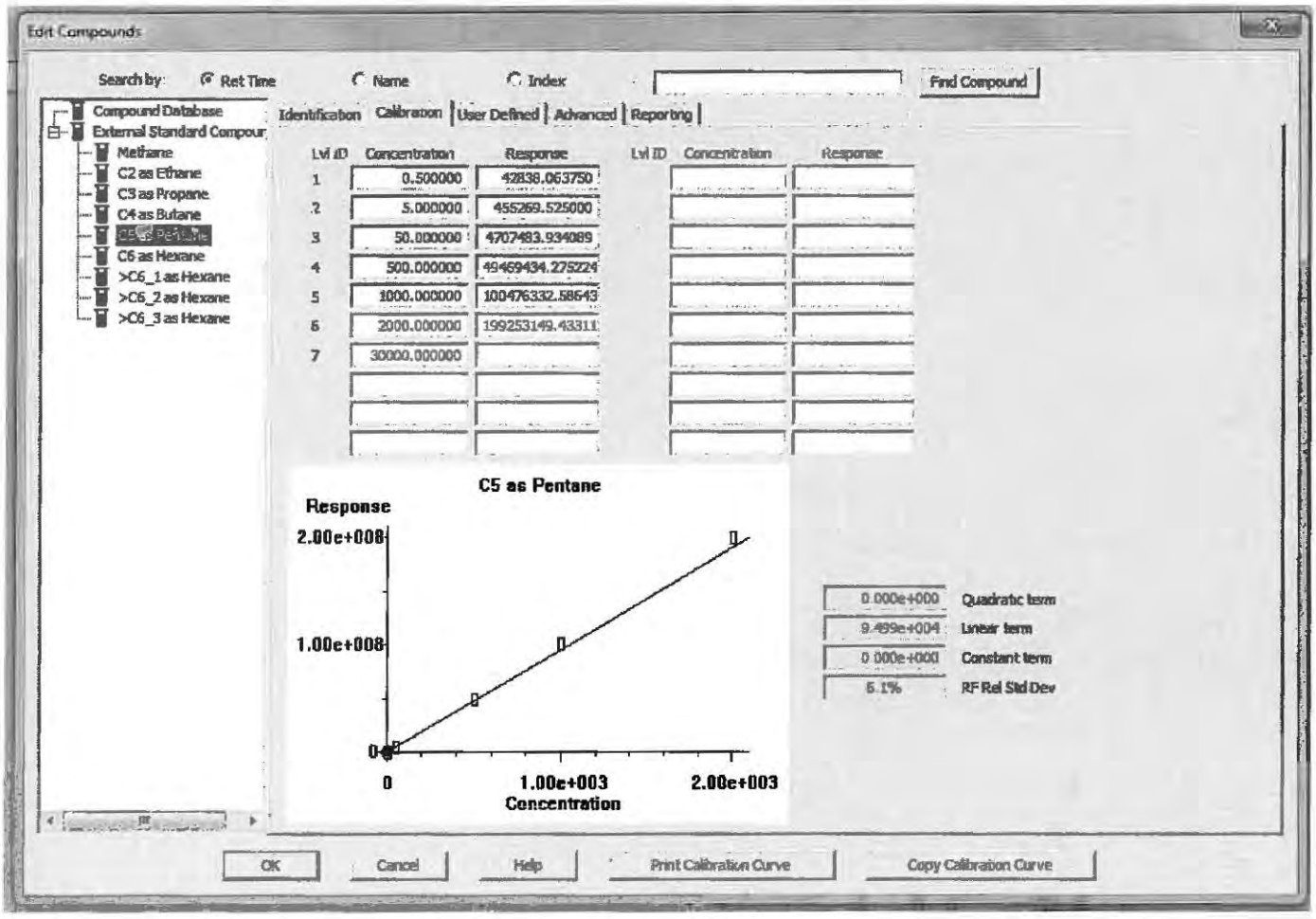
TF042116.M Fri Apr 22 09:01:57 2016

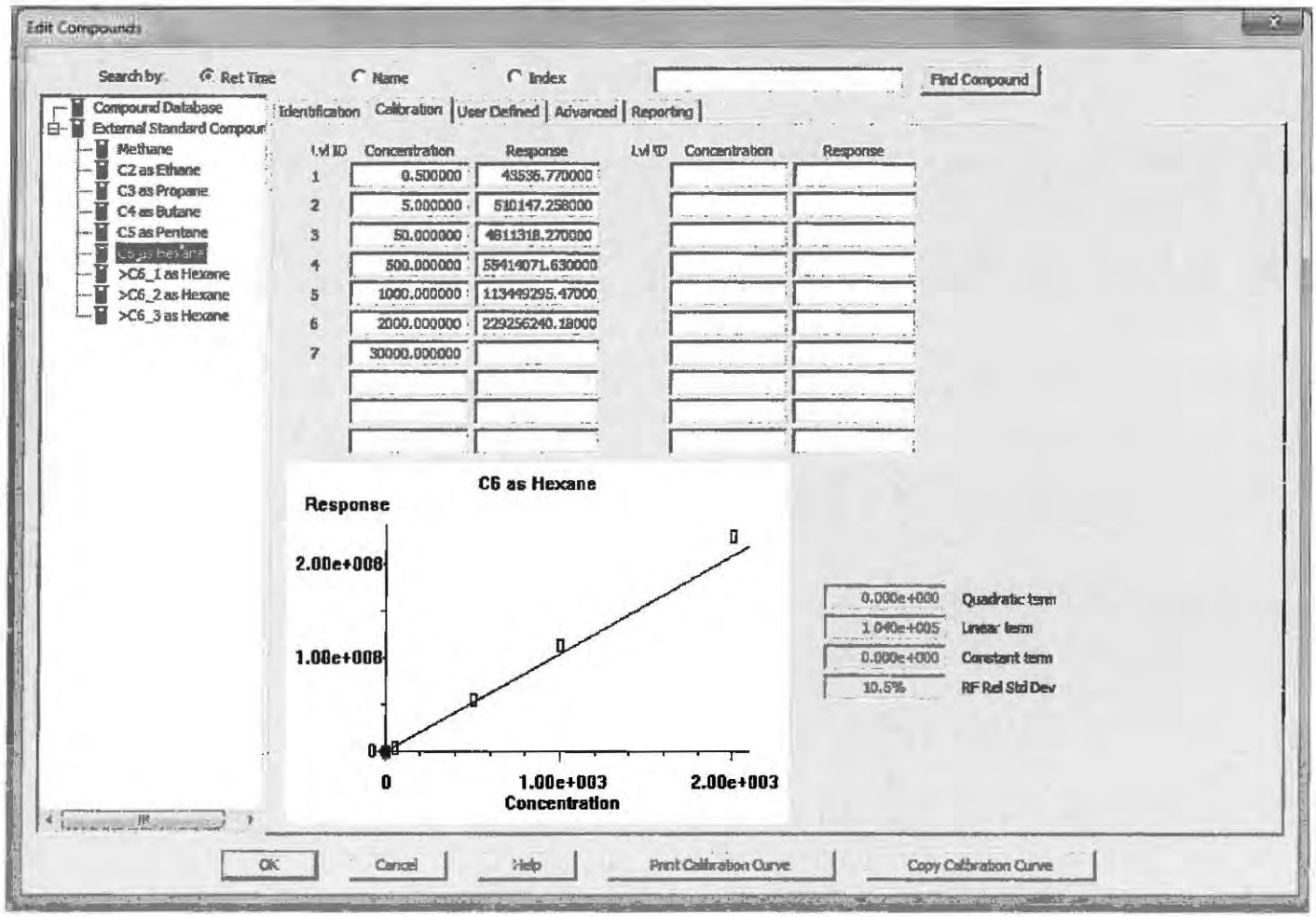

Edit Compounds
Search by:
Ret Time
Name
Index
Find Compound
Compound Database
External Standard Compour
Methane
C2 as Ethane
C3 as Propane
C4 as Butane
C5 as Pentane
C6 as Hexane
>C6_1 as Hexane
>C6_2 as Hexane
>C6_3 as Hexane
Identification
Calibration
User Defined
Advanced
Reporting
Lvl ID
Concentration
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 :

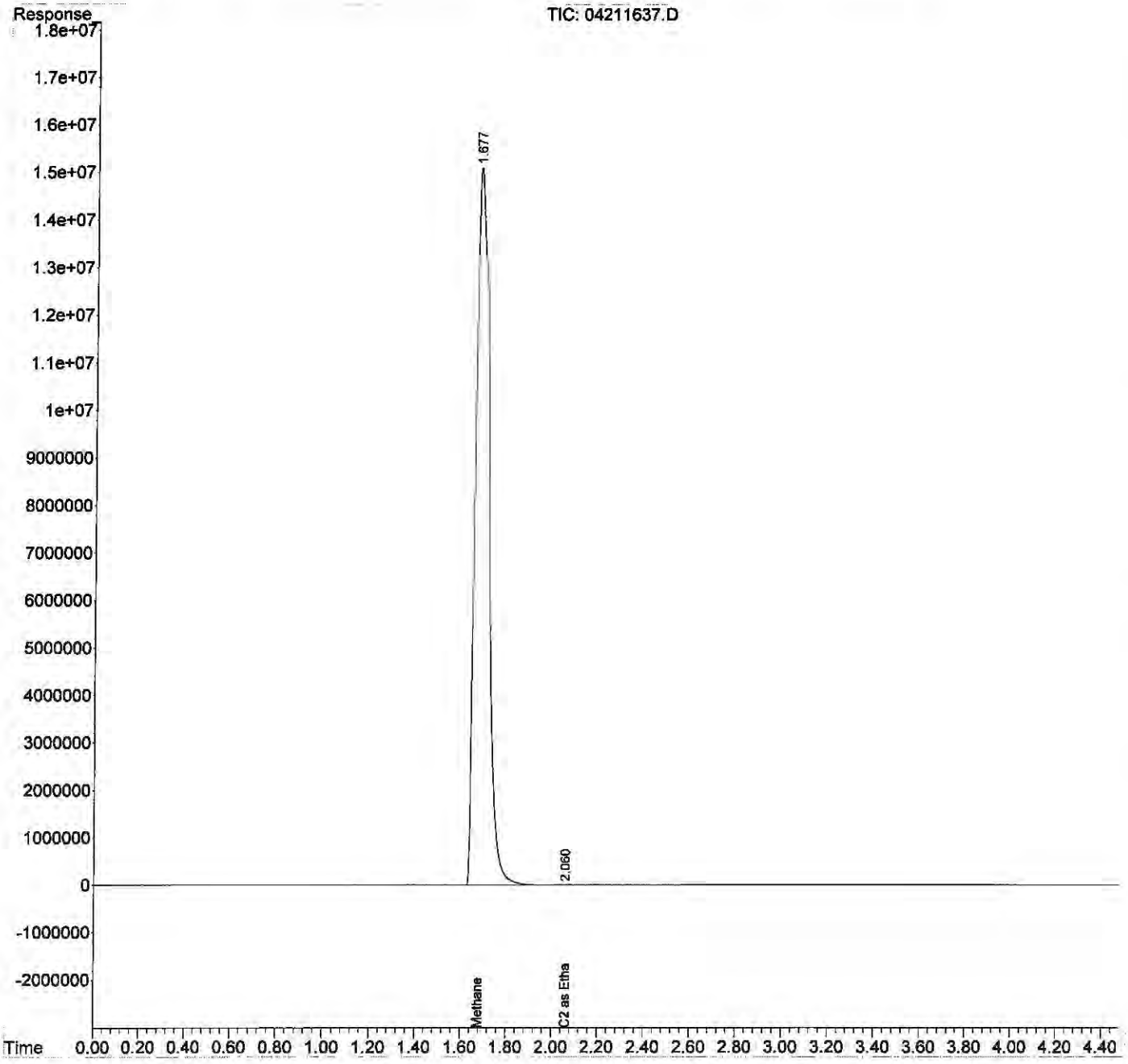
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1) T	Methane	1.679	635879216	29164.446	ppm
2) T	C2 as Ethane	2.060	31606	0.799	ppm
3) T	C3 as Propane	0.000	0	N.D.	ppm
4) T	C4 as Butane	0.000	0	N.D.	ppm
5) T	C5 as Pentane	0.000	0	N.D.	ppm
6) T	C6 as Hexane	0.000	0	N.D.	ppm
7) T	>C6_1 as Hexane	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.

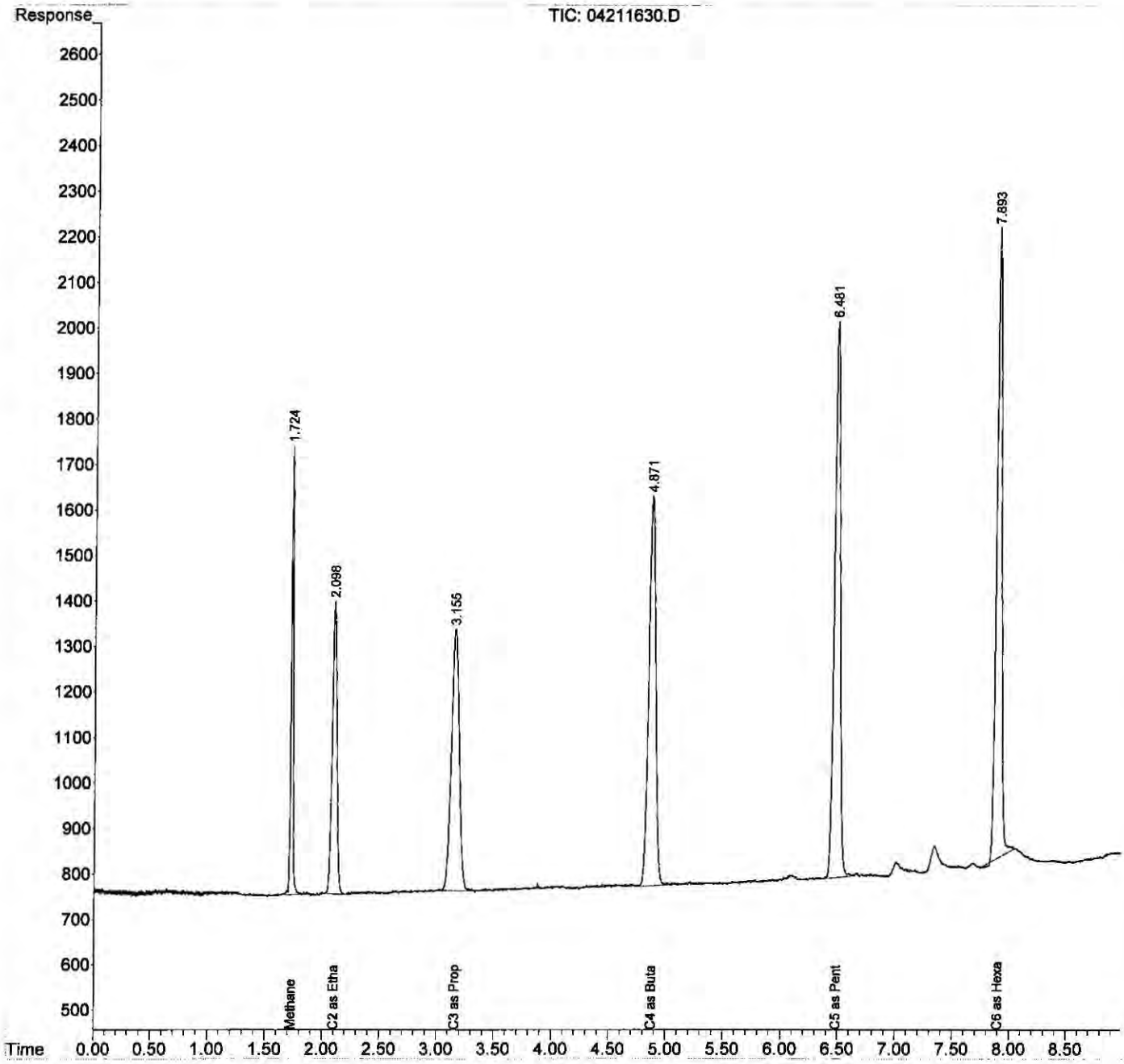
4/22/16

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	

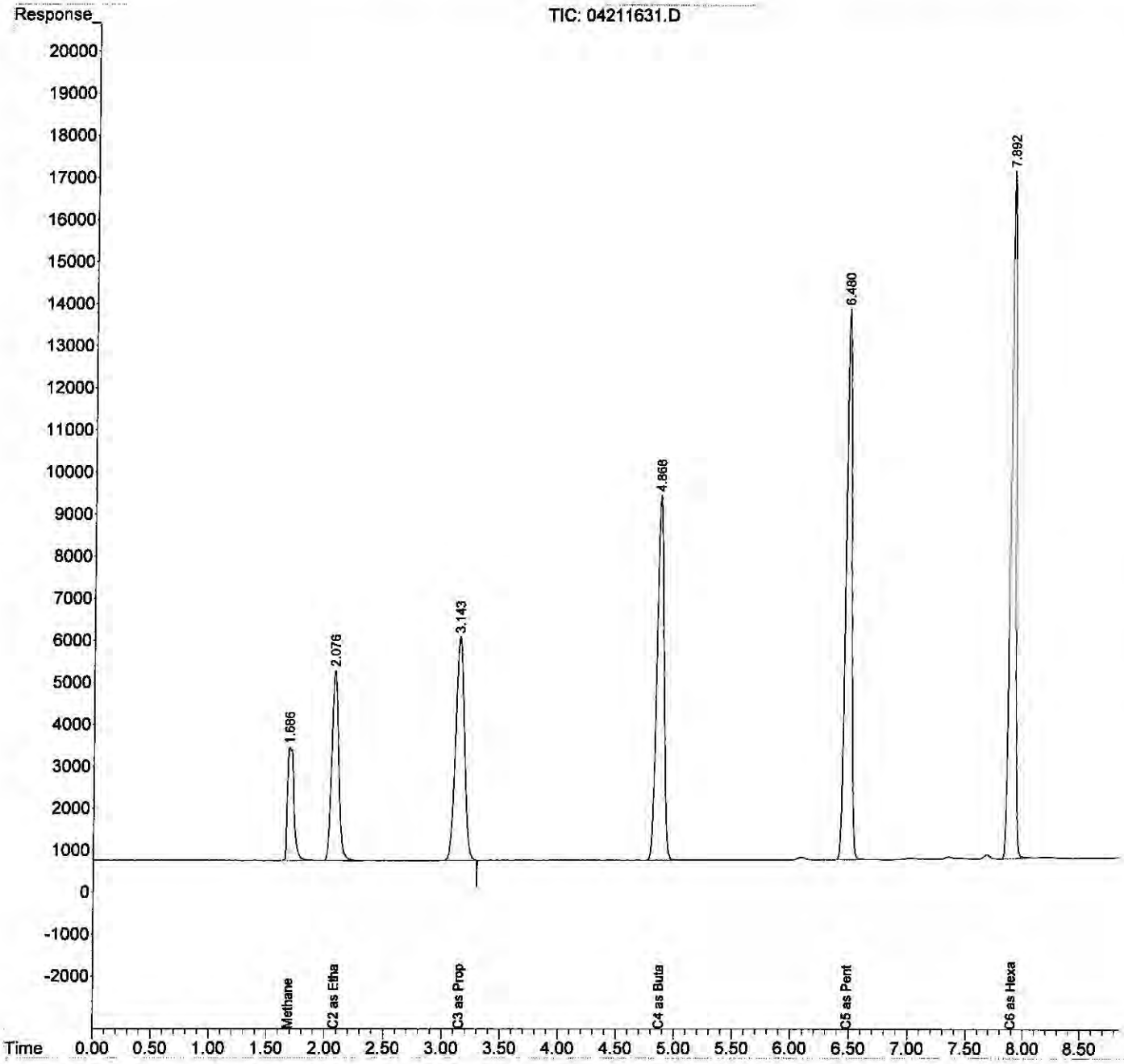
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

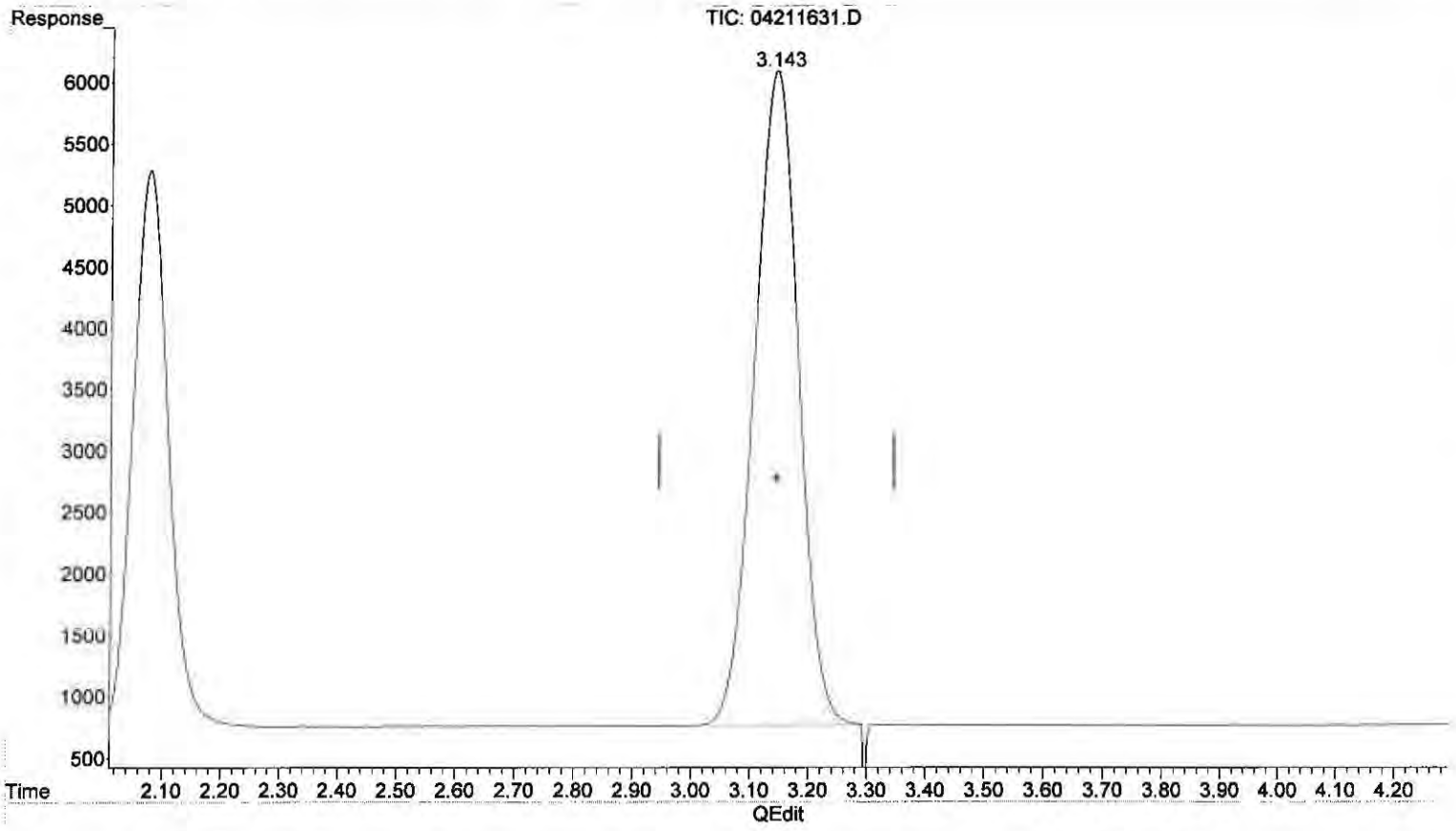


Quantitation Report (Qedit)

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
Bh
No previous
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

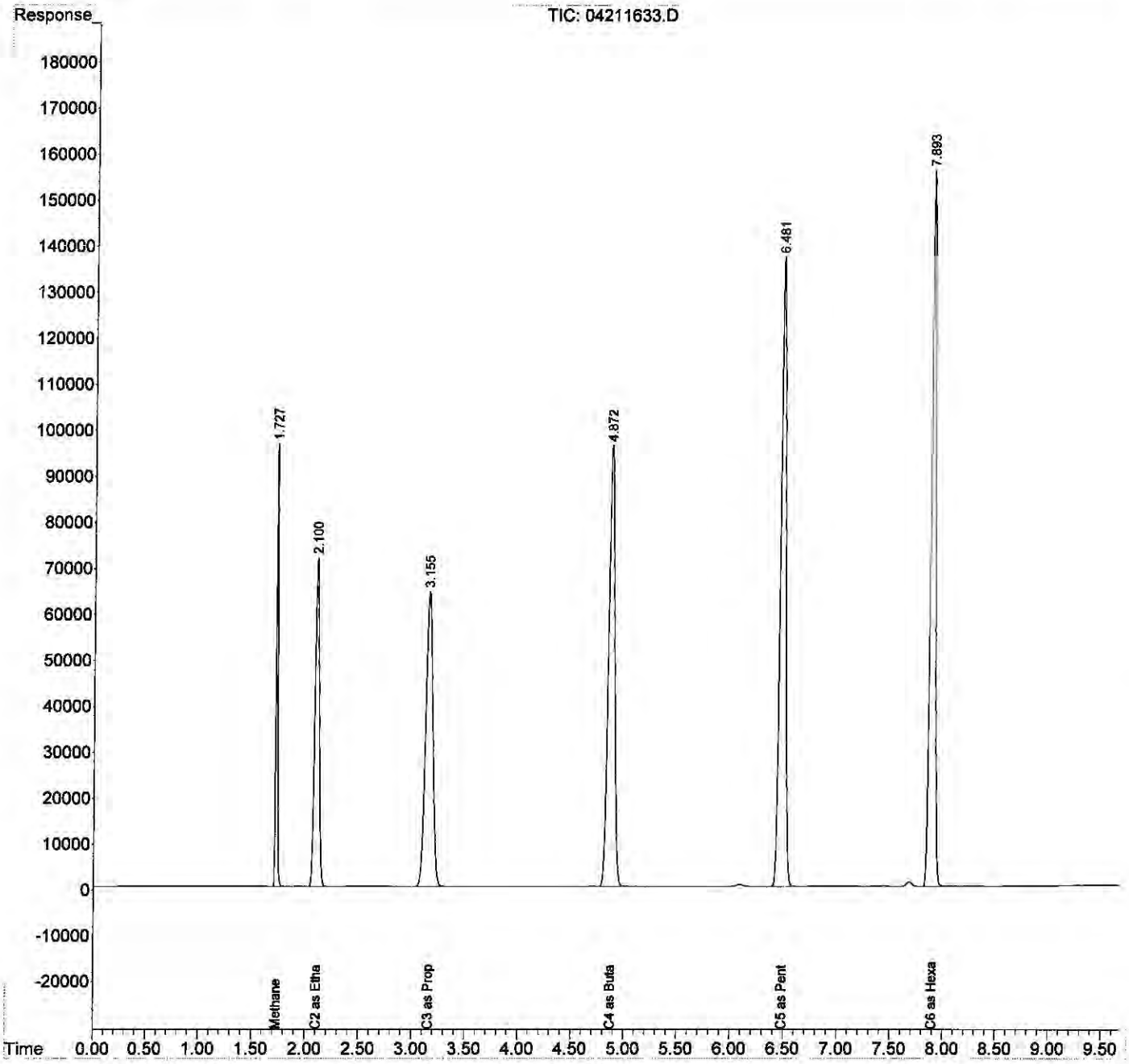
(f)=RT Delta > 1/2 Window (m)=manual int.

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

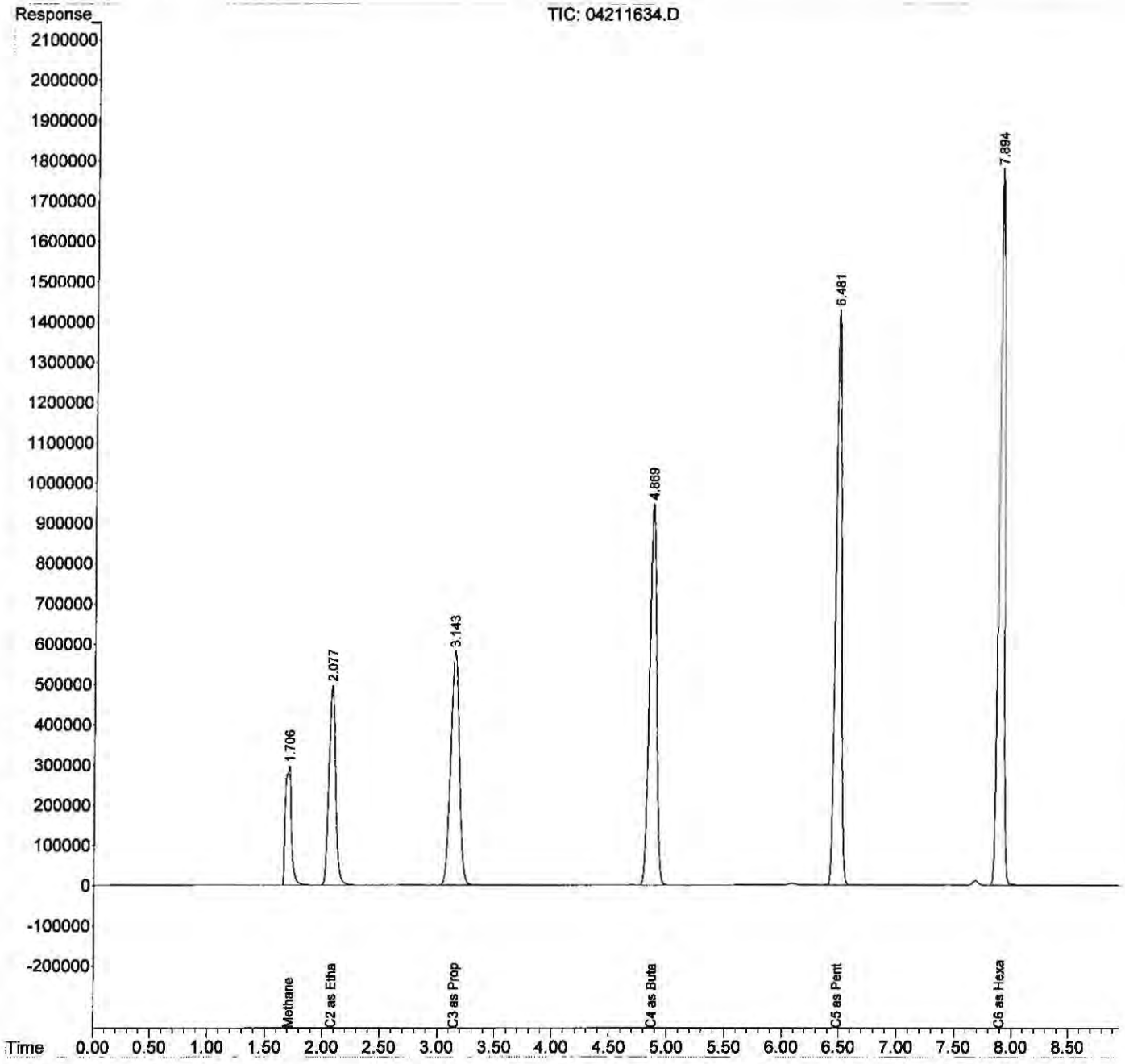
(f)=RT Delta > 1/2 Window (m)=manual int.

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

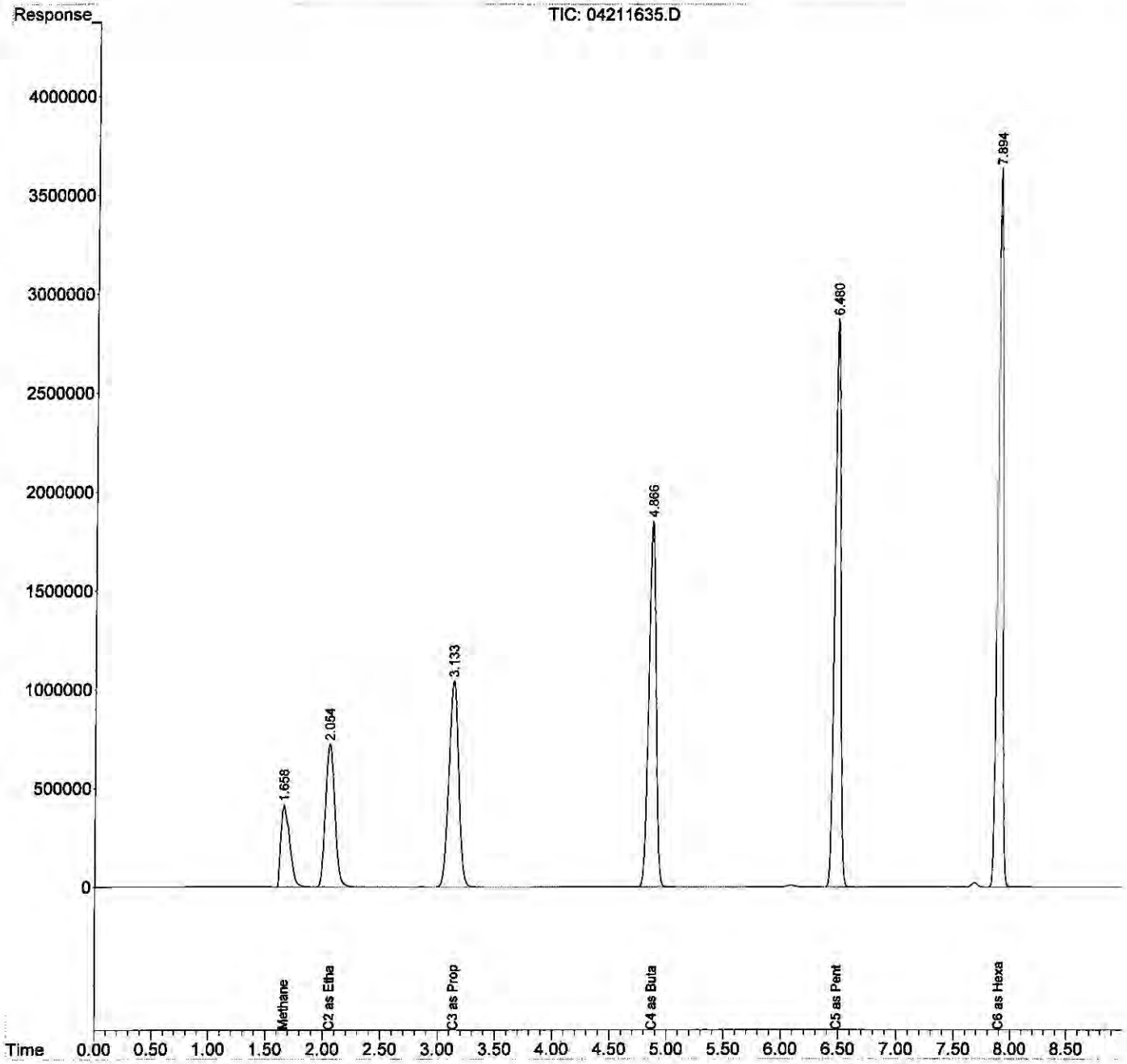
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

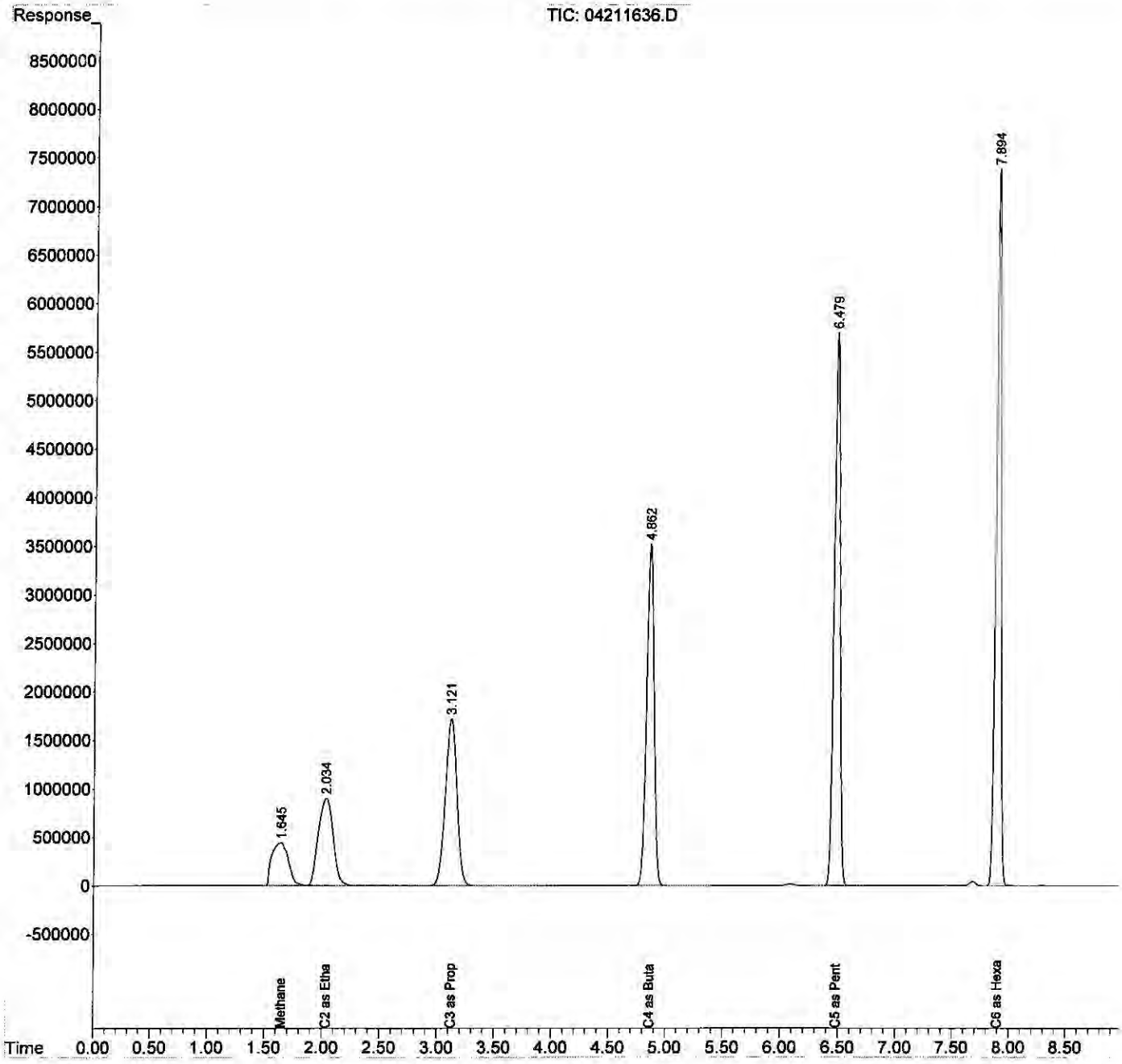
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1) T	Methane	1.644	43643298	2011.697	ppm
2) T	C2 as Ethane	2.034	80552547	2035.967	ppm
3) T	C3 as Propane	3.121	120409600	2126.901	ppm
4) T	C4 as Butane	4.863	159250171	2114.540	ppm
5) T	C5 as Pentane	6.480	199253149	2096.400	ppm
6) T	C6 as Hexane	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	

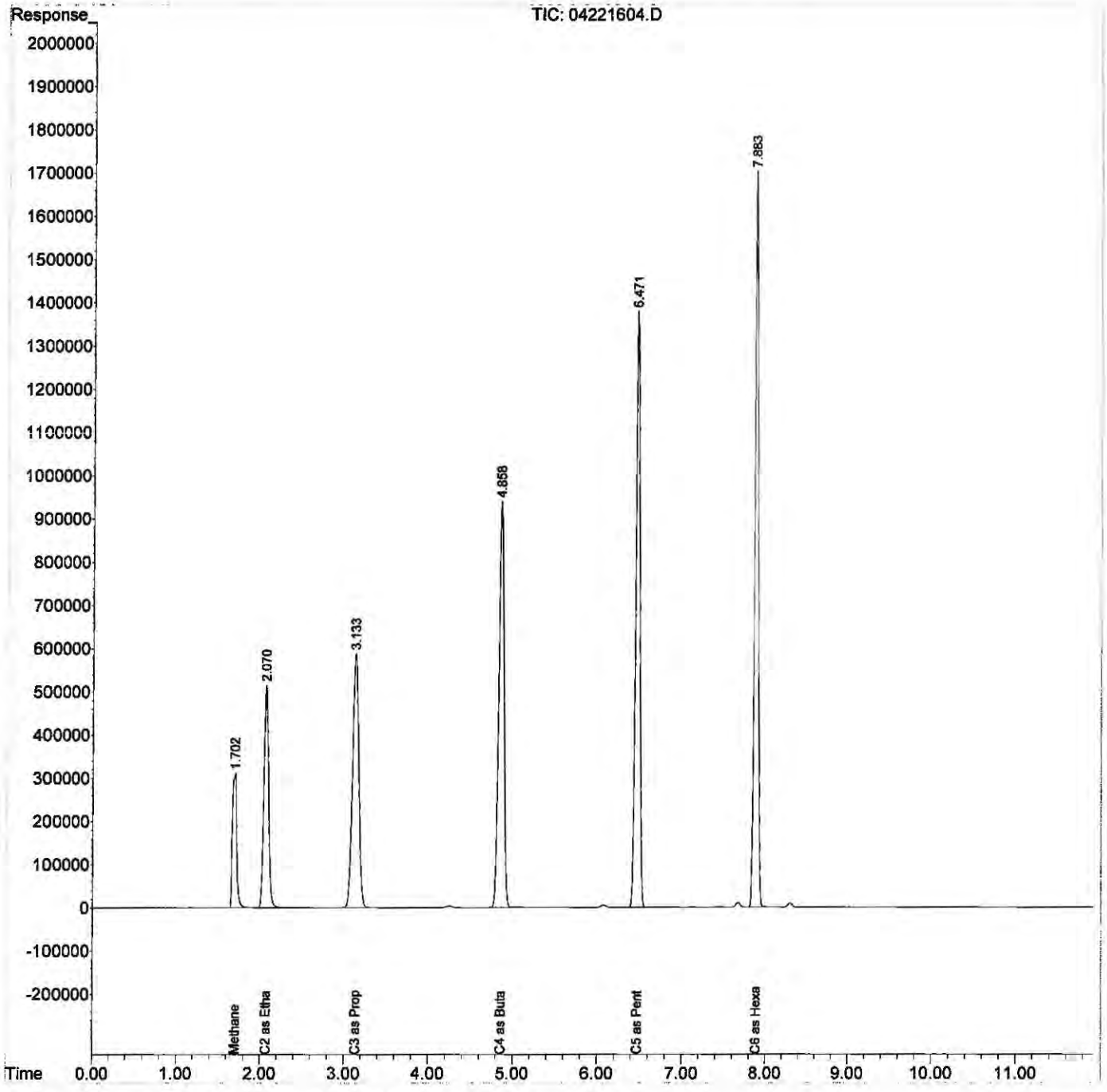
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



ALS Environmental

REPORT SUMMARY

Method : VOA-TO3C1C6
Client : Air Hygiene, Incorporated
Analyst : amf

ALS Service Request P1604901
Instrument : Instrument 8 / FID #8
Date Acquired : 10/19/2016

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	994.1	1019.7	1065.3	1053.6	1013.8	1006.0	0.0	0.0	0.0
ACTUAL			1000.0	1000.0	1000.0	1000.0	1000.0	1000.0			
%Difference			0.6%	2.0%	6.5%	5.4%	1.4%	0.6%			
lcs s30-08011601	0.5	1.0	995.98	1022.04	1096.42	1071.42	1023.92	1105.20			
ACTUAL			1010.0	1020.0	1040.0	1010.0	1000.0	1010.0			
%Recovery			98.6%	100.2%	105.4%	106.1%	102.4%	109.4%			
lcsds30-08011601	0.5	1.0	1009.88	1038.94	1117.78	1100.44	1052.84	1140.92			
ACTUAL			1010.0	1020.0	1040.0	1010.0	1000.0	1010.0			
%Recovery			100.0%	101.9%	107.5%	109.0%	105.3%	113.0%			
%RPD			1.4%	1.6%	1.9%	2.7%	2.8%	3.2%			
mb 1ml	1.0	1.0	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4901-001 0.05m	0.1	1.0	0.06	1.88	60672.49	0.92	0.00	0.01	0.02	0.15	0.04
4901-002 0.05m	0.1	1.0	0.04	1.60	57118.11	0.96	0.00	0.01	0.02	0.16	0.04
4901-003 0.05m	0.1	1.0	0.06	1.62	64918.26	1.07	0.02	0.07	0.35	0.07	0.14
4901-004 0.05m	0.1	1.0	0.08	2.93	153758.70	2.24	0.02	0.03	0.02	0.16	0.05
std s30-05021602	0.5	1.0	995.9	1031.0	1079.6	1072.3	1035.5	1021.1			
ACTUAL			1000.0	1000.0	1040.0	1030.0	1000.0	1000.0			
%Difference			0.4%	3.1%	3.8%	4.1%	3.5%	2.1%			

FINAL SAMPLE RESULT SUMMARIES (ppm)

Sample ID	Pi	Pf	Methane	C2 as Ethane	C3 as Propane	C4 as n-Butane	C5 as n-Pentane	C6 as n-Hexane	>C6 as n-Hexane
MRL			0.50	0.50	0.50	0.50	0.50	0.50	1.00
mb 1ml	0.00	0.00	ND	ND	ND	ND	ND	ND	ND
4901-001 0.05m	-0.52	3.29	ND	47.70	1539489.56	23.34	ND	ND	ND
4901-002 0.05m	-1.08	3.47	ND	42.69	1523988.34	25.61	ND	ND	ND
4901-003 0.05m	-0.36	3.38	ND	40.85	1636990.43	26.98	ND	ND	ND
4901-004 0.05m	-0.47	3.68	ND	75.69	3972009.71	57.87	ND	ND	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
4901-001 0.05m	1.27	4618657.45	769776.24	153.96	-53.96
4901-002 0.05m	1.33	4572152.85	762025.48	152.41	-52.41
4901-003 0.05m	1.26	4911160.93	818526.82	163.71	-63.71
4901-004 0.05m	1.29	11916411.96	1986068.66	397.21	-297.21

10/20/16

Data Path : I:\GC08\DATA\TO_3M\2016_10\19\
Data File : 10191601.D
Signal(s) : FID2B.CH
Acq On : 19-Oct-2016, 08:31:30
Operator : amf
Sample : std s30-05021602
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 19 08:45:58 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 :

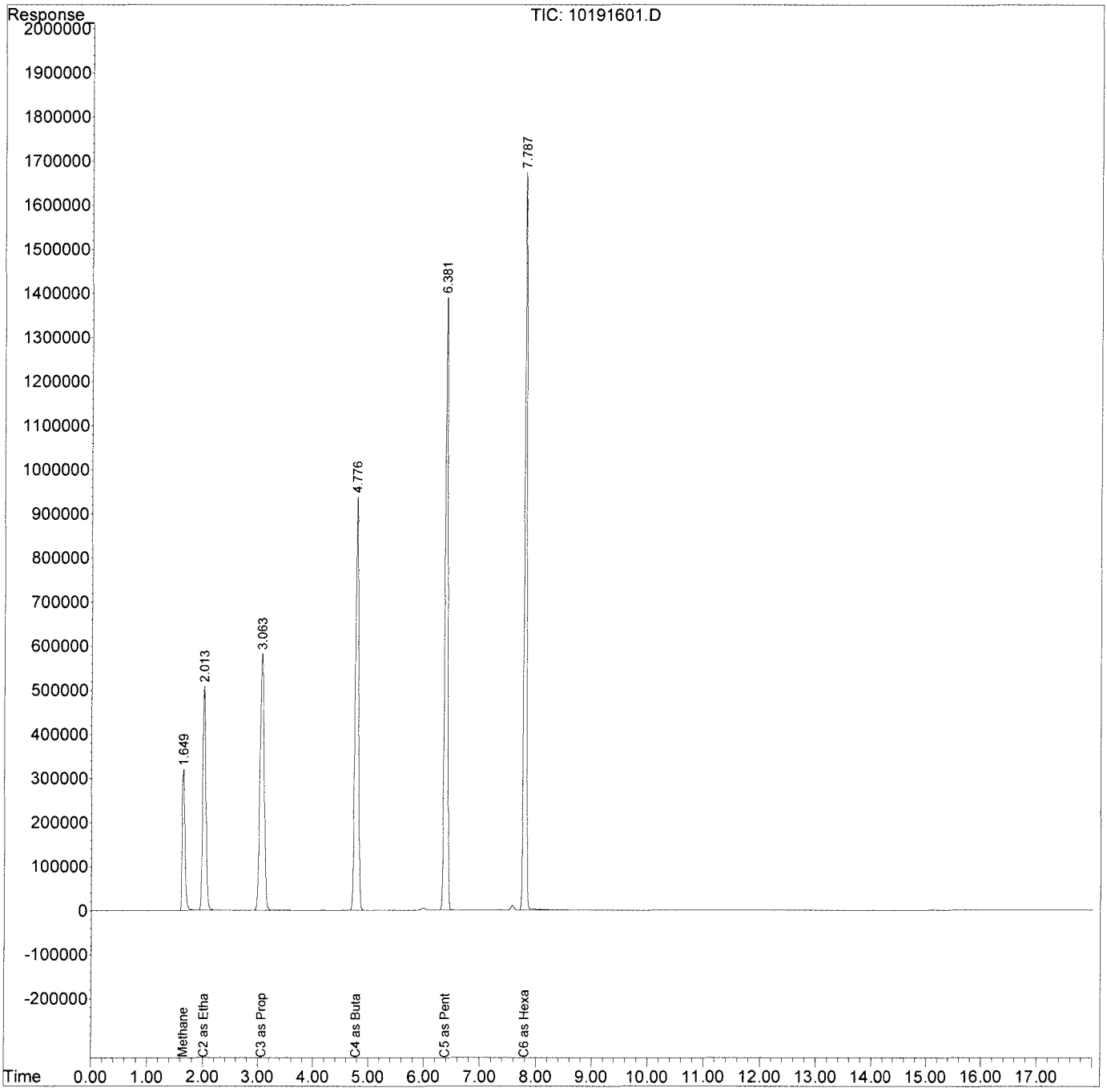
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Methane	1.649	10901574	497.040	ppm	
2)	C2 as Ethane	2.013	20157629	509.833	ppm	
3)	C3 as Propane	3.063	30182107	532.654	ppm	
4)	C4 as Butane	4.777	39585294	526.825	ppm	
5)	C5 as Pentane	6.381	48150089	506.913	ppm	
6)	C6 as Hexane	7.788	52330567	502.989	ppm	
7)	>C6_1 as Hexane	0.000	0	N.D.	ppm	
8)	>C6_2 as Hexane	0.000	0	N.D.	ppm	d
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\19\
Data File : 10191601.D
Signal(s) : FID2B.CH
Acq On : 19-Oct-2016, 08:31:30
Operator : amf
Sample : std s30-05021602
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 19 08:45:58 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 :



Quantitation Report (QT Reviewed)

Data Path : I:\GC08\DATA\TO_3M\2016_10\19\
Data File : 10191615.D
Signal(s) : FID2B.CH
Acq On : 19-Oct-2016, 15:54:29
Operator : amf
Sample : std s30-05021602
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 19 15:59:42 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 :

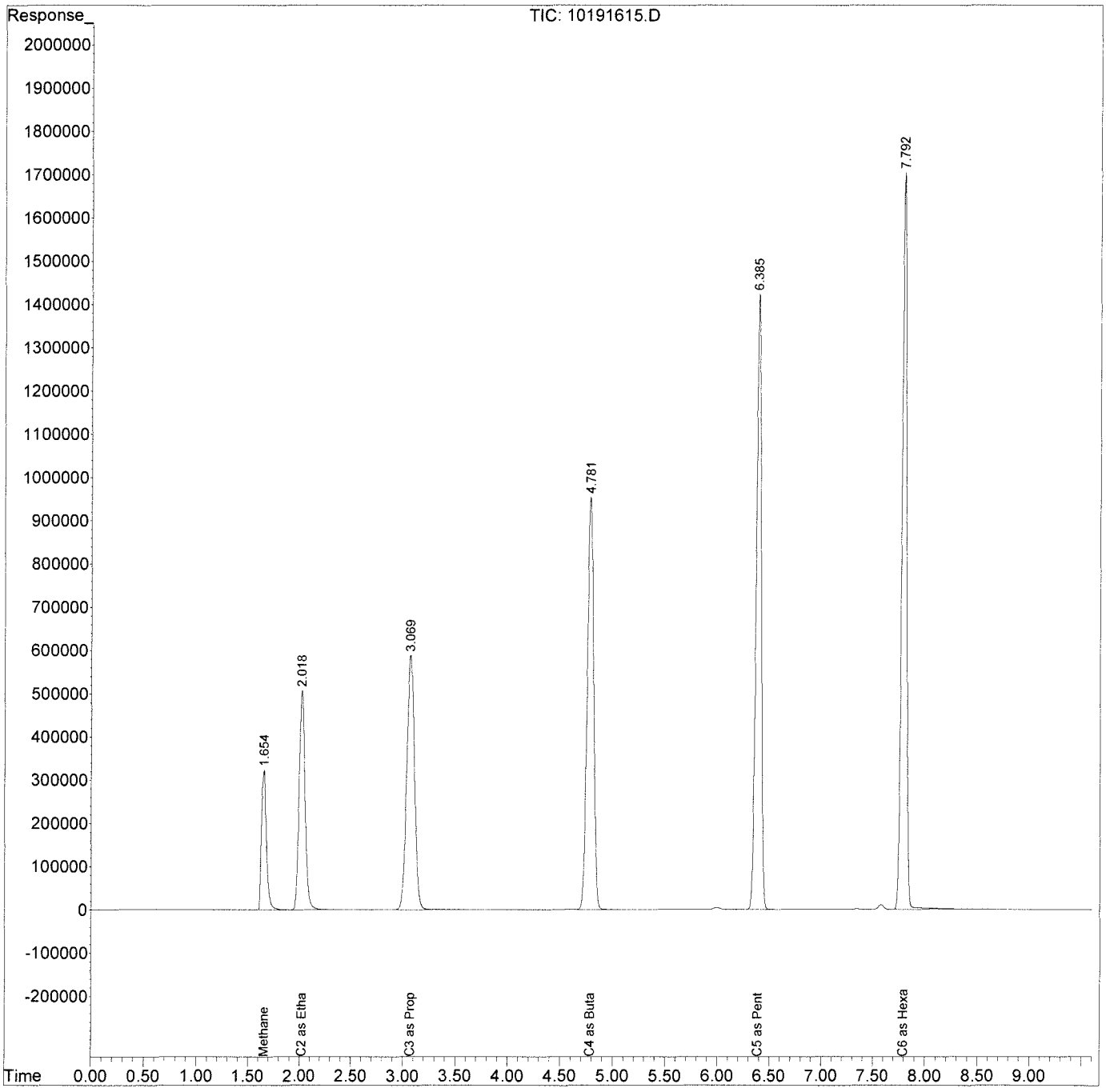
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Methane	1.654	11089562	505.611	ppm
2)	C2 as Ethane	2.019	20596773	520.940	ppm
3)	C3 as Propane	3.069	30823627	543.975	ppm
4)	C4 as Butane	4.782	40388691	537.517	ppm
5)	C5 as Pentane	6.386	49162203	517.568	ppm
6)	C6 as Hexane	7.793	53493107	514.163	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\19\
Data File : 10191615.D
Signal(s) : FID2B.CH
Acq On : 19-Oct-2016, 15:54:29
Operator : amf
Sample : std s30-05021602
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 19 15:59:42 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\19\
Data File : 10191618.D
Signal(s) : FID2B.CH
Acq On : 19-Oct-2016, 16:52:50
Operator : amf
Sample : std s30-05021602
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 19 16:57:54 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 :

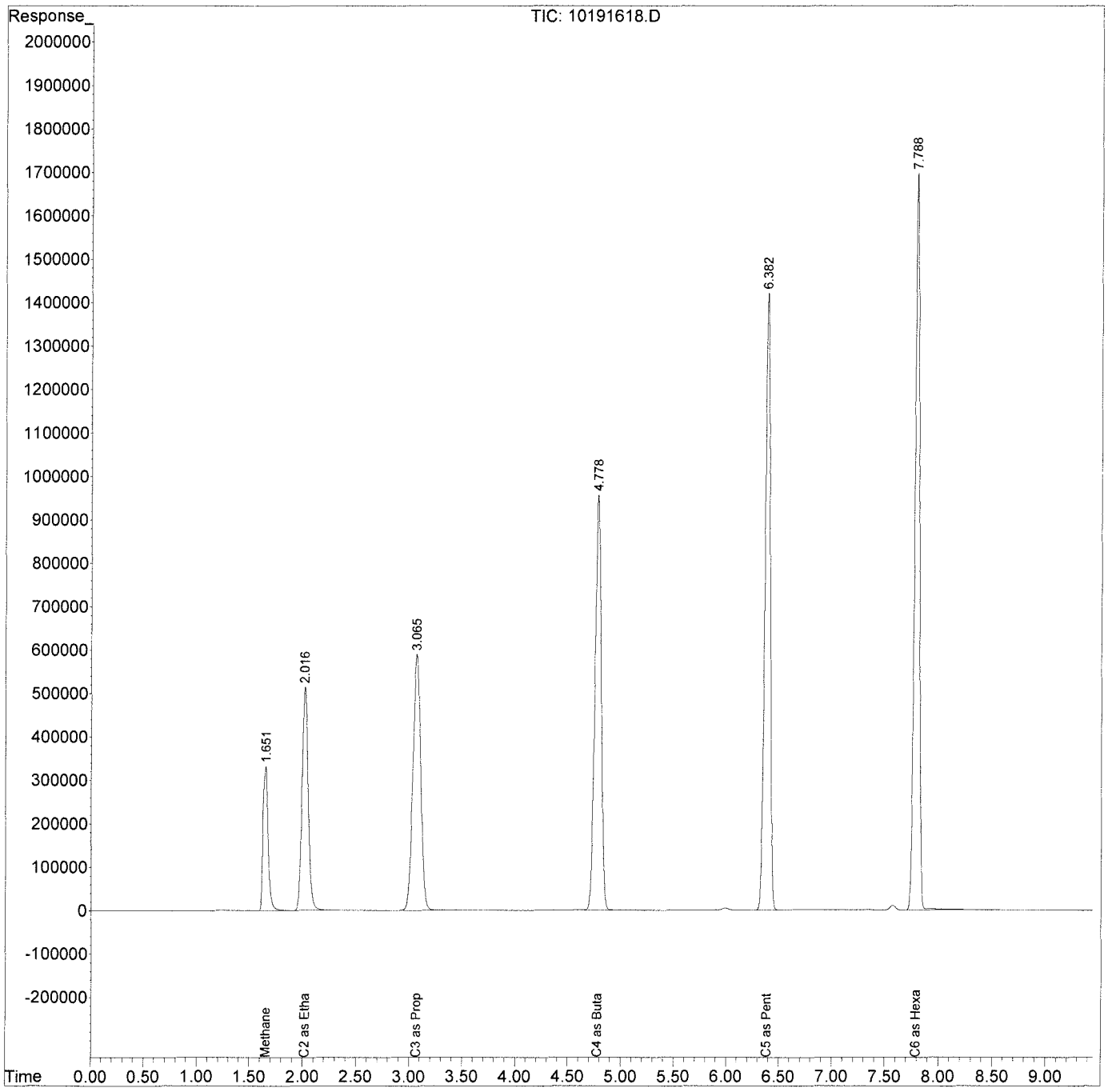
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Methane	1.652	10921255	497.937	ppm
2)	C2 as Ethane	2.017	20381350	515.491	ppm
3)	C3 as Propane	3.066	30587639	539.811	ppm
4)	C4 as Butane	4.778	40284272	536.127	ppm
5)	C5 as Pentane	6.382	49178063	517.735	ppm
6)	C6 as Hexane	7.789	53116745	510.546	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\19\
Data File : 10191618.D
Signal(s) : FID2B.CH
Acq On : 19-Oct-2016, 16:52:50
Operator : amf
Sample : std s30-05021602
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 19 16:57:54 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\19\

	Sample ID	Date/Time	Acquisition Method	File Name	Misc Info	Operator	Comments
	std s30-05021602	19-Oct-16, 08:31:30	TO3.M	10191601.D		amf	
	mb 1ml	19-Oct-16, 08:56:55	TO3.M	10191602.D		amf	
	lcs s30-08011601	19-Oct-16, 09:20:05	TO3.M	10191603.D		amf	
	lcsds30-08011601	19-Oct-16, 09:31:49	TO3.M	10191604.D		amf	
	QC SSC00297	19-Oct-16, 11:26:16	TO3.M	10191605.D		amf	
	QC SC00903	19-Oct-16, 11:49:19	TO3.M	10191606.D		amf	
	4919-001 0.1ml	19-Oct-16, 12:12:16	TO3.M	10191607.D		amf	
	4920-001 0.1ml	19-Oct-16, 12:35:09	TO3.M	10191608.D		amf	
	4860-001 0.05ml	19-Oct-16, 12:58:14	TO3.M	10191609.D		amf	
	4860-002 0.05ml	19-Oct-16, 13:34:36	TO3.M	10191610.D		amf	
	4860-003 0.05ml	19-Oct-16, 13:57:27	TO3.M	10191611.D		amf	
	4860-004 0.05ml	19-Oct-16, 14:20:20	TO3.M	10191612.D		amf	
	4901-001 0.05ml	19-Oct-16, 14:43:22	TO3.M	10191613.D		amf	
	4901-002 0.05ml	19-Oct-16, 15:06:18	TO3.M	10191614.D		amf	
	std s30-05021602	19-Oct-16, 15:54:29	TO3.M	10191615.D		amf	
	4901-003 0.05ml	19-Oct-16, 16:06:54	TO3.M	10191616.D		amf	
	4901-004 0.05ml	19-Oct-16, 16:29:49	TO3.M	10191617.D		amf	
	std s30-05021602	19-Oct-16, 16:52:50	TO3.M	10191618.D		amf	

Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_10\25\
Data File : 10251606.D
Signal(s) : TCD1A.CH
Acq On : 25 Oct 2016 9:58 am
Operator : amf
Sample : 4901-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 25 14:44:02 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 :

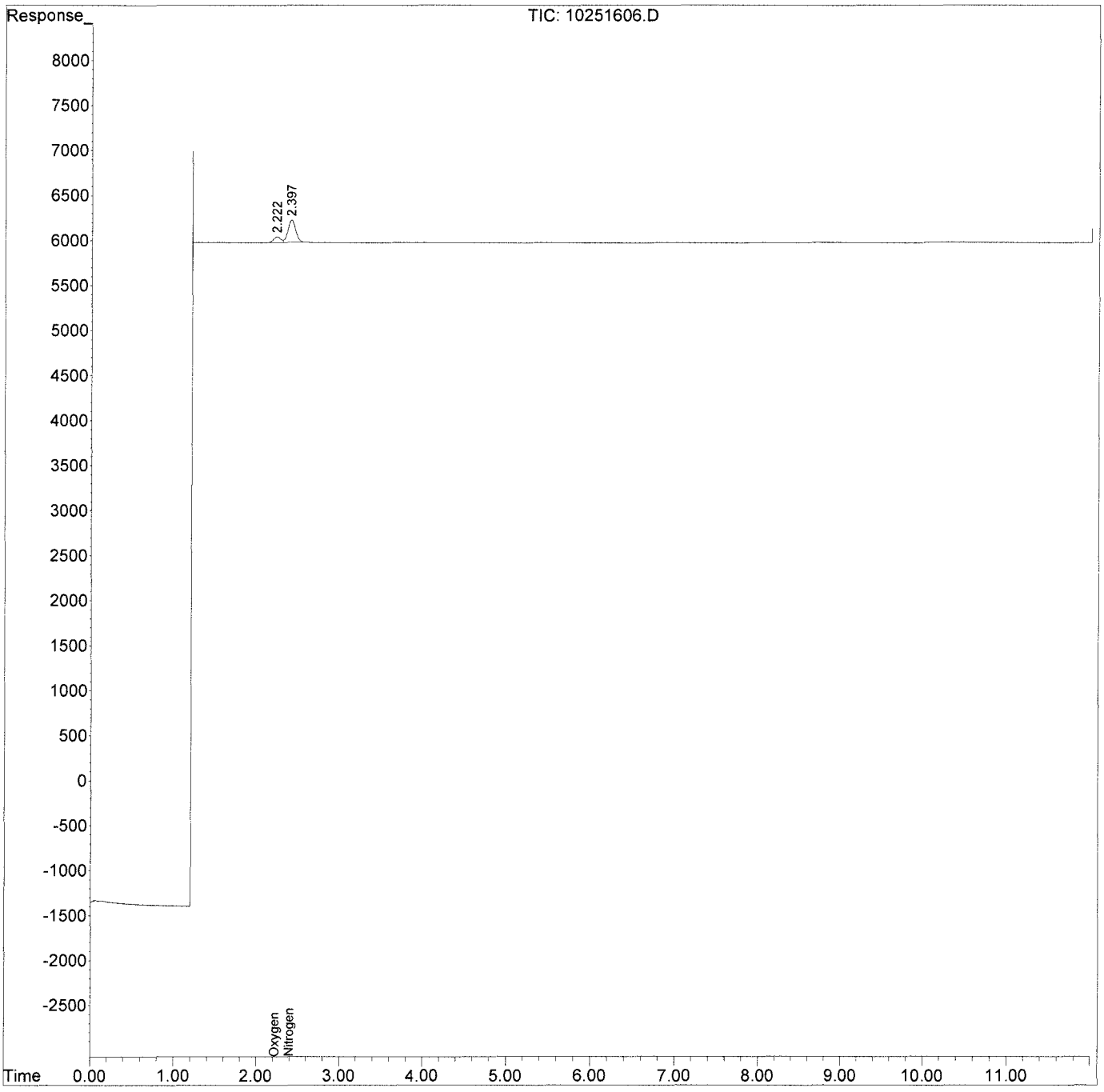
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.224	3703	2447.126	ppm
3)	Nitrogen	2.399	16126	9197.914	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\25\
Data File : 10251606.D
Signal(s) : TCD1A.CH
Acq On : 25 Oct 2016 9:58 am
Operator : amf
Sample : 4901-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 25 14:44:02 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\25\
Data File : 10251607.D
Signal(s) : TCD1A.CH
Acq On : 25 Oct 2016 10:15 am
Operator : amf
Sample : 4901-002
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 25 14:44:56 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 :

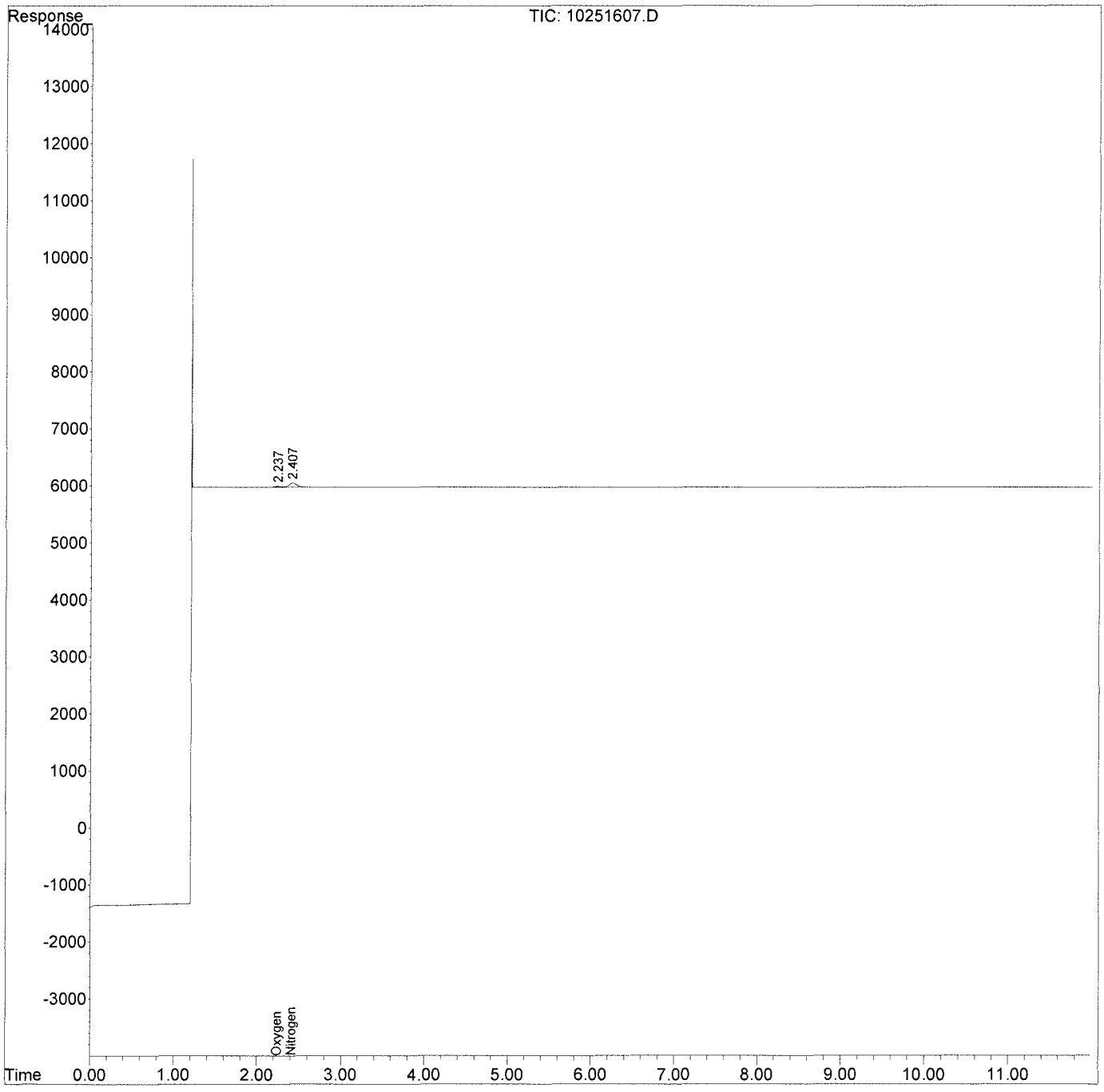
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.000	0	N.D.	ppm	
2)	Oxygen	2.237	1052	695.385	ppm	m
3)	Nitrogen	2.407	4370	2492.655	ppm	m
4)	Carbon Monoxide	0.000	0	N.D.	ppm	
5)	Methane	0.000	0	N.D.	ppm	
6)	Carbon Dioxide	0.000	0	N.D.	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\25\
Data File : 10251607.D
Signal(s) : TCD1A.CH
Acq On : 25 Oct 2016 10:15 am
Operator : amf
Sample : 4901-002
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 25 14:44:56 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

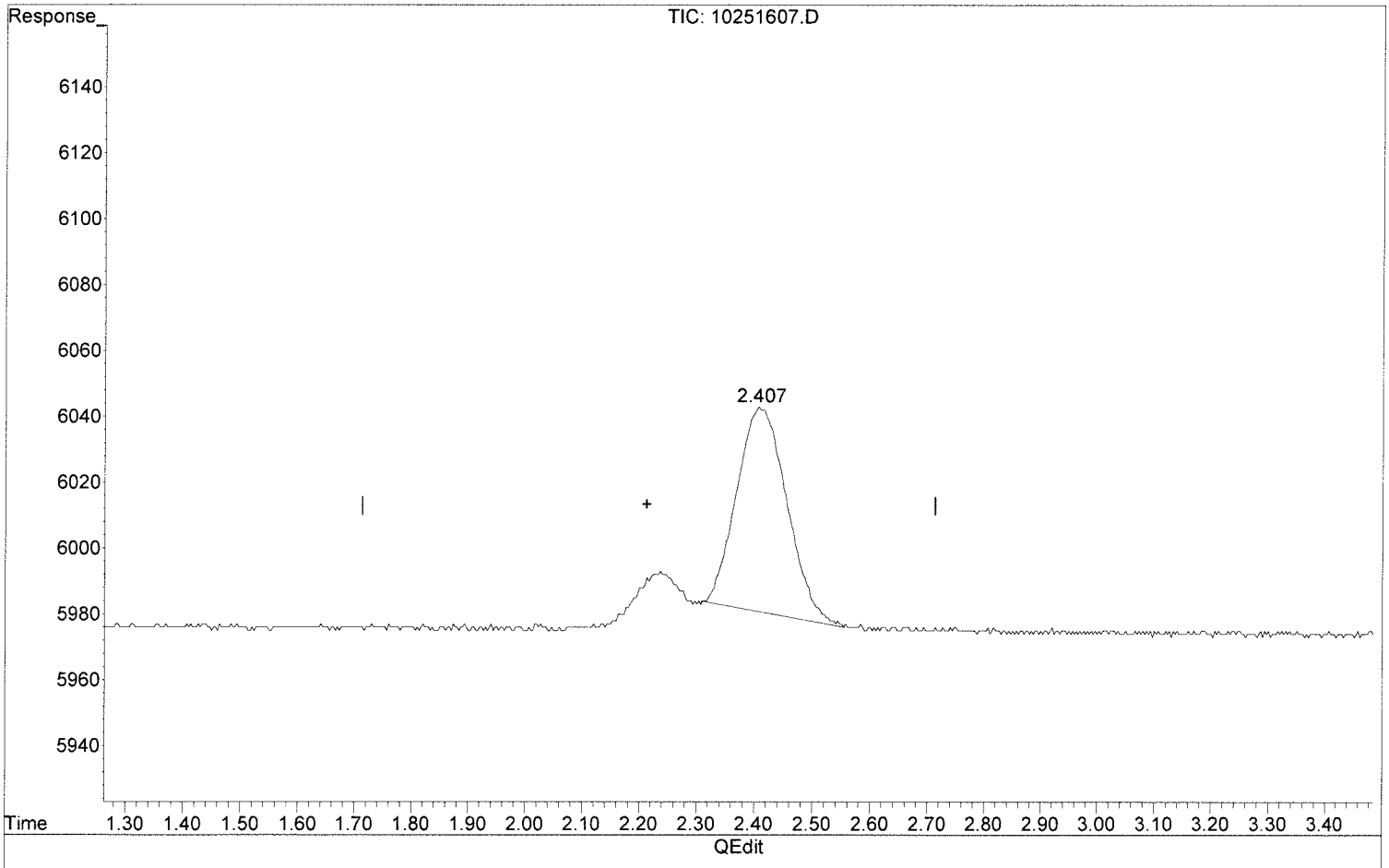
Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Data Path : I:\GC01\DATA\FXG\2016_10\25\
Data File : 10251607.D
Signal(s) : TCD1A.CH
Acq On : 25 Oct 2016 10:15 am
Operator : amf
Sample : 4901-002
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 25 14:44:21 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

2.408min 2478.617 ppm

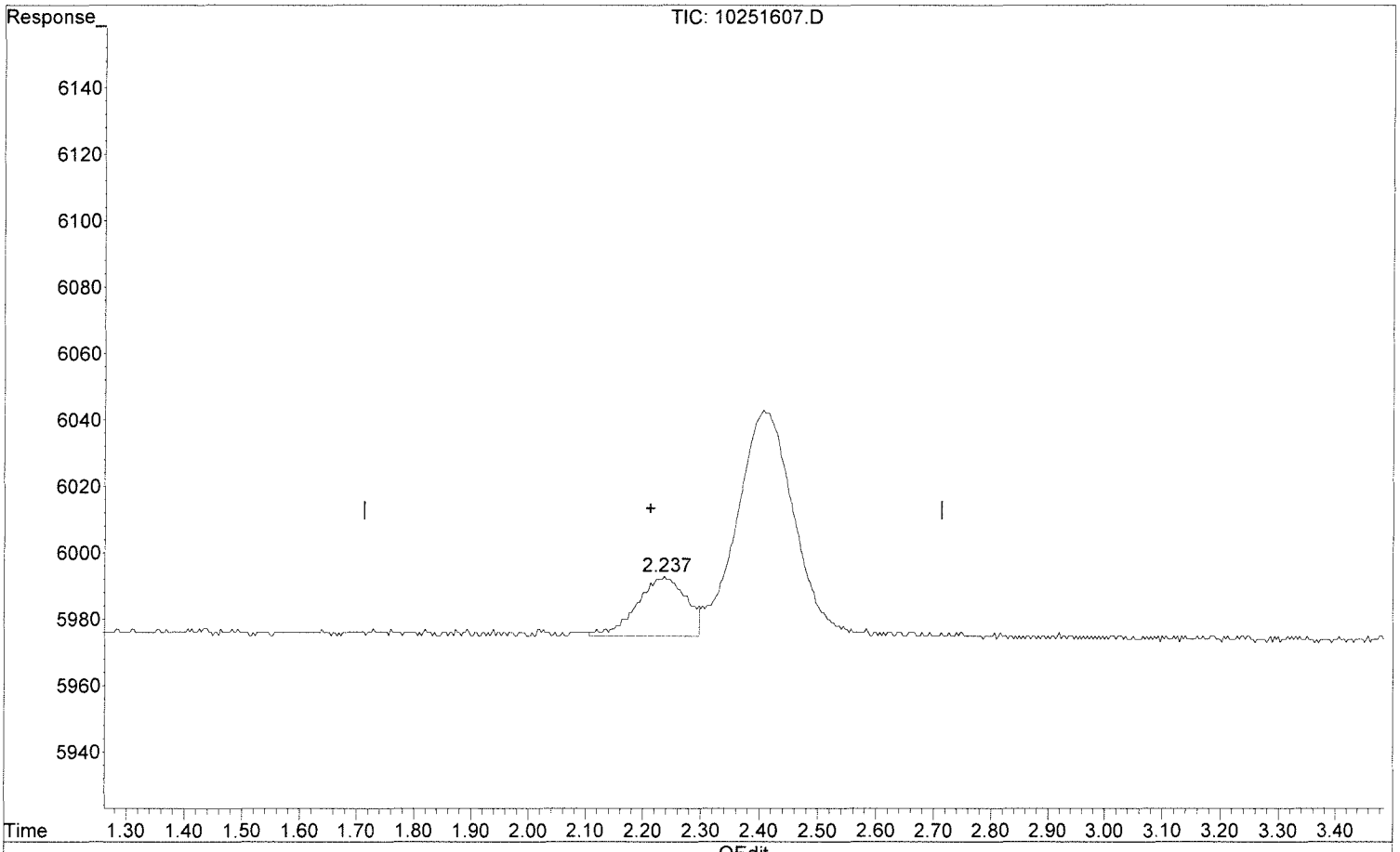
response 3751

(+) = Expected Retention Time

Data Path : I:\GC01\DATA\FXG\2016_10\25\
Data File : 10251607.D
Signal(s) : TCD1A.CH
Acq On : 25 Oct 2016 10:15 am
Operator : amf
Sample : 4901-002
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 25 14:44:21 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

2.237min 695.385 ppm m

response 1052

10/25/16

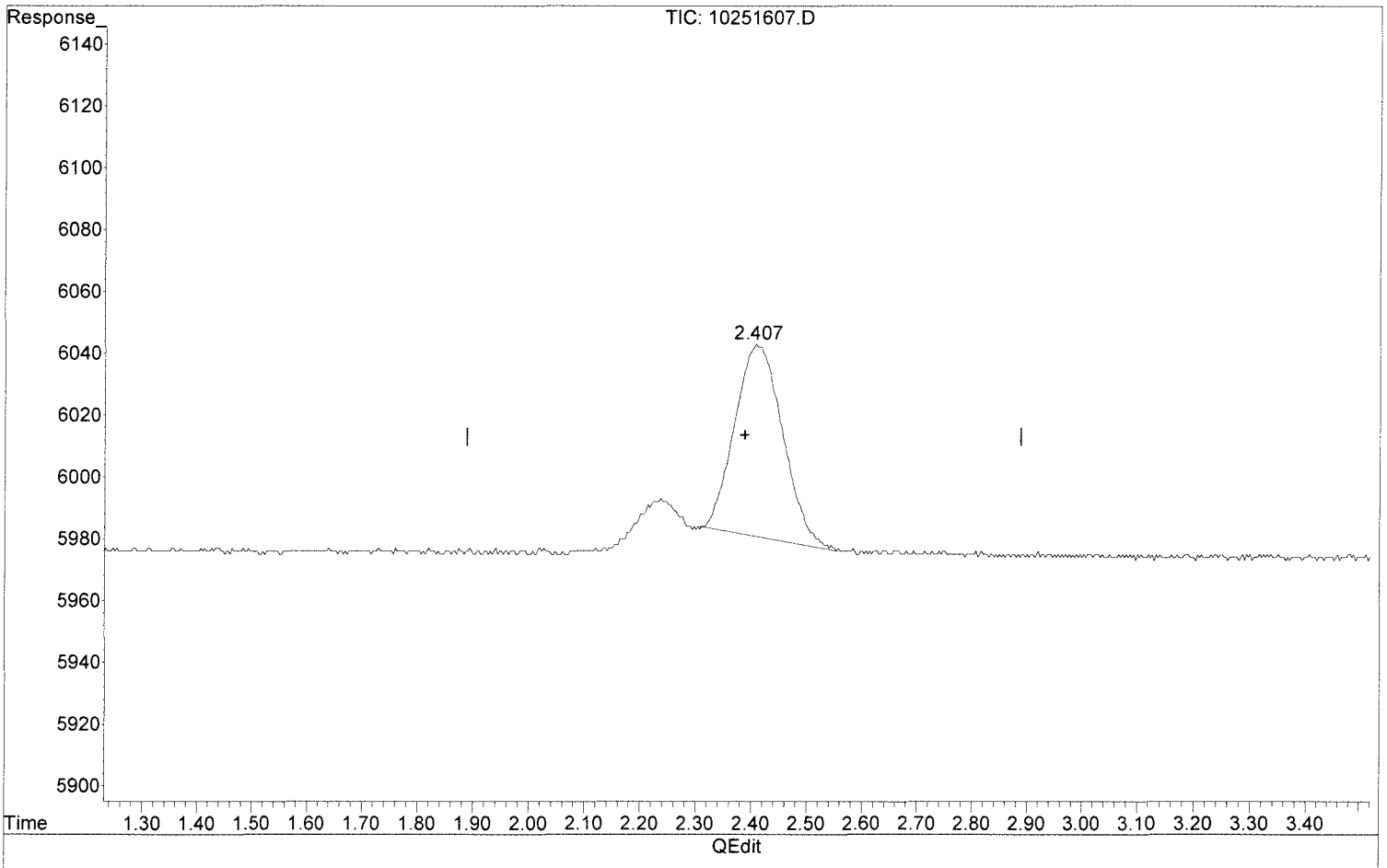
10/25/16

(+) = Expected Retention Time

Data Path : I:\GC01\DATA\FXG\2016_10\25\
Data File : 10251607.D
Signal(s) : TCD1A.CH
Acq On : 25 Oct 2016 10:15 am
Operator : amf
Sample : 4901-002
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 25 14:44:21 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

2.408min 2139.385 ppm

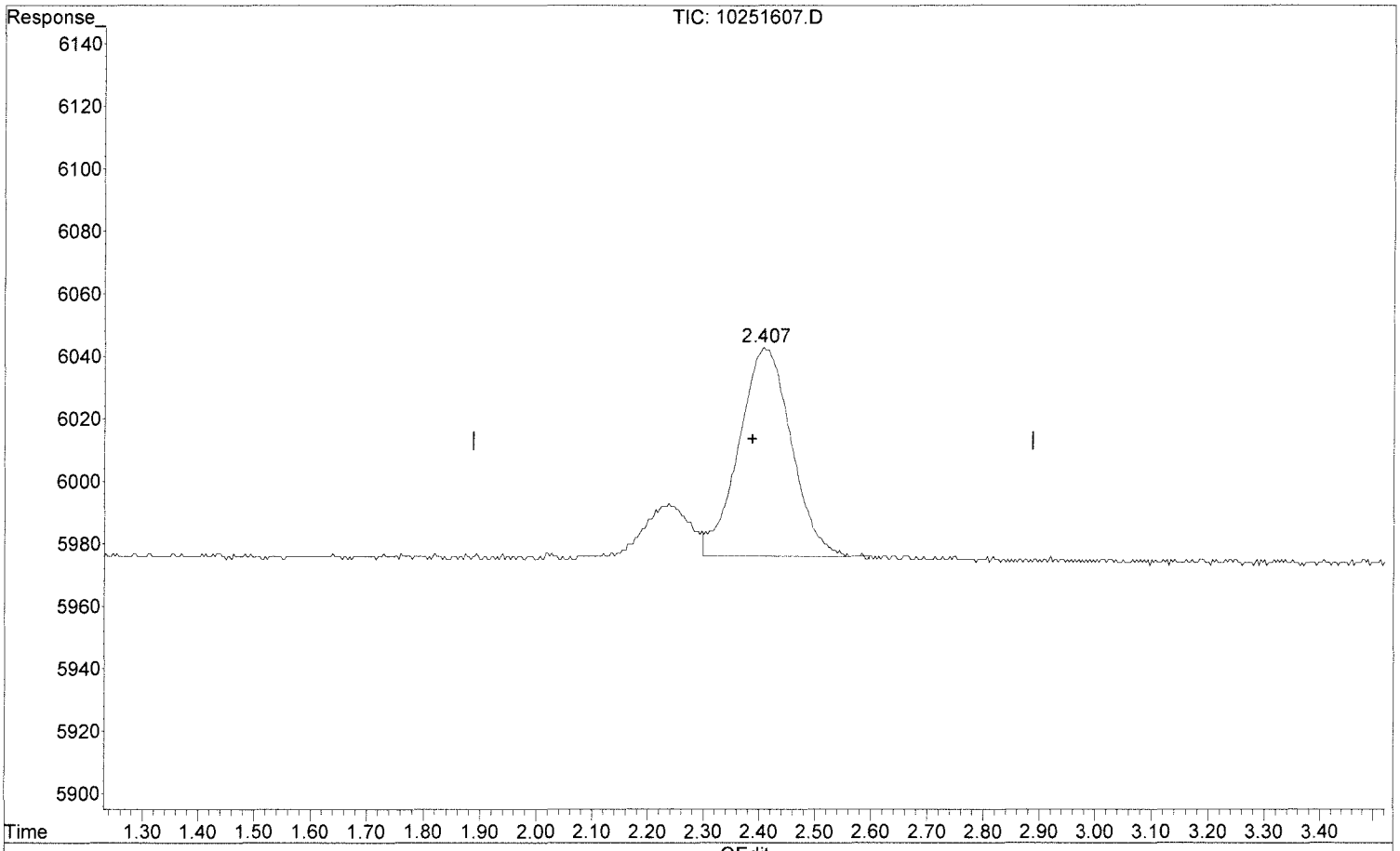
response 3751

(+) = Expected Retention Time

Data Path : I:\GC01\DATA\FXG\2016_10\25\
Data File : 10251607.D
Signal(s) : TCD1A.CH
Acq On : 25 Oct 2016 10:15 am
Operator : amf
Sample : 4901-002
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 25 14:44:21 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 2492.655 ppm m

response 4370

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_10\25\
Data File : 10251608.D
Signal(s) : TCD1A.CH
Acq On : 25 Oct 2016 10:33 am
Operator : amf
Sample : 4901-003
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 25 14:45:16 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 :

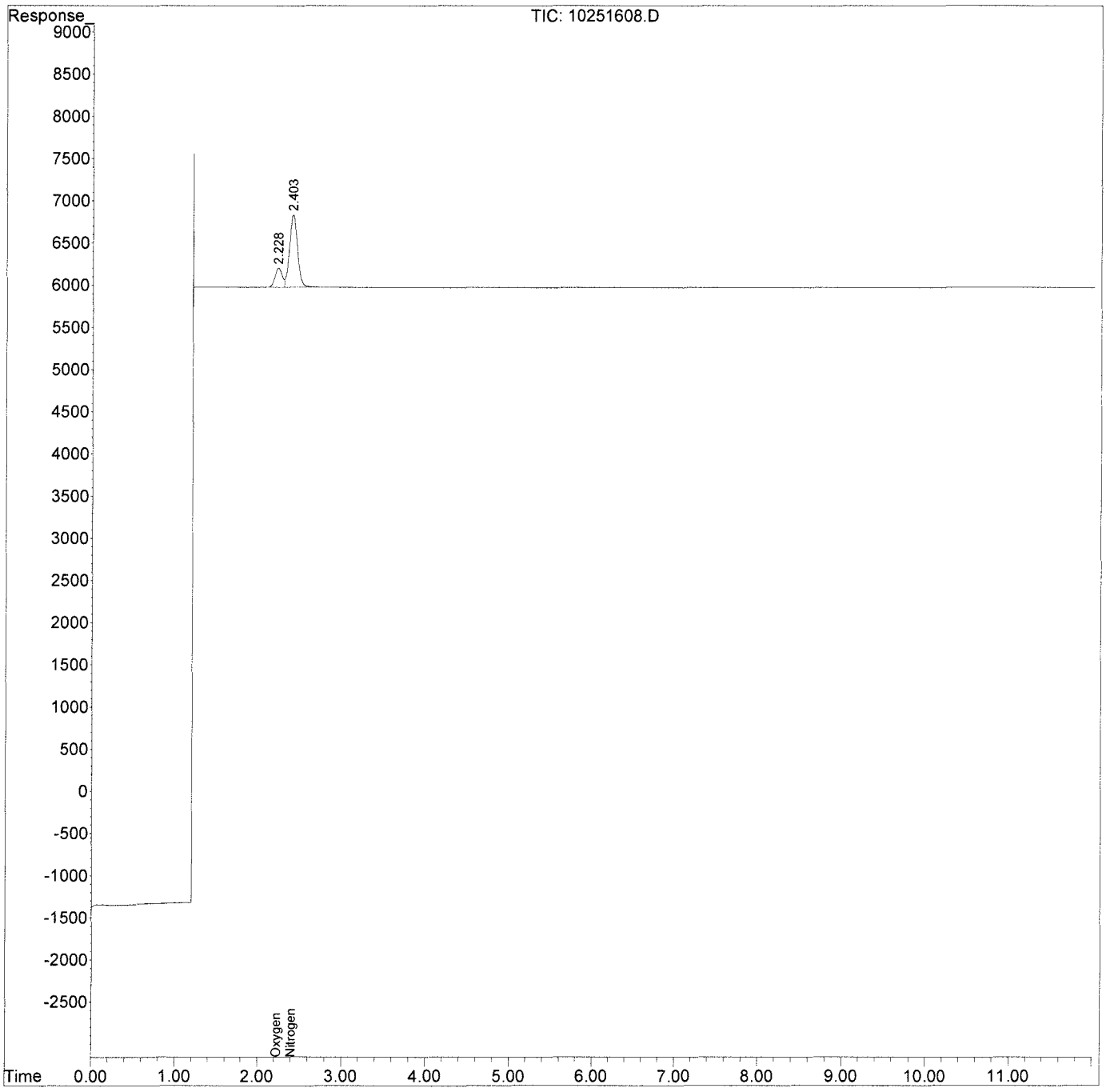
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.231	13618	8999.303	ppm
3)	Nitrogen	2.404	56686	32332.668	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\25\
Data File : 10251608.D
Signal(s) : TCD1A.CH
Acq On : 25 Oct 2016 10:33 am
Operator : amf
Sample : 4901-003
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 25 14:45:16 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 :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_10\25\
Data File : 10251609.D
Signal(s) : TCD1A.CH
Acq On : 25 Oct 2016 10:50 am
Operator : amf
Sample : 4901-004
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 25 14:46:10 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 :

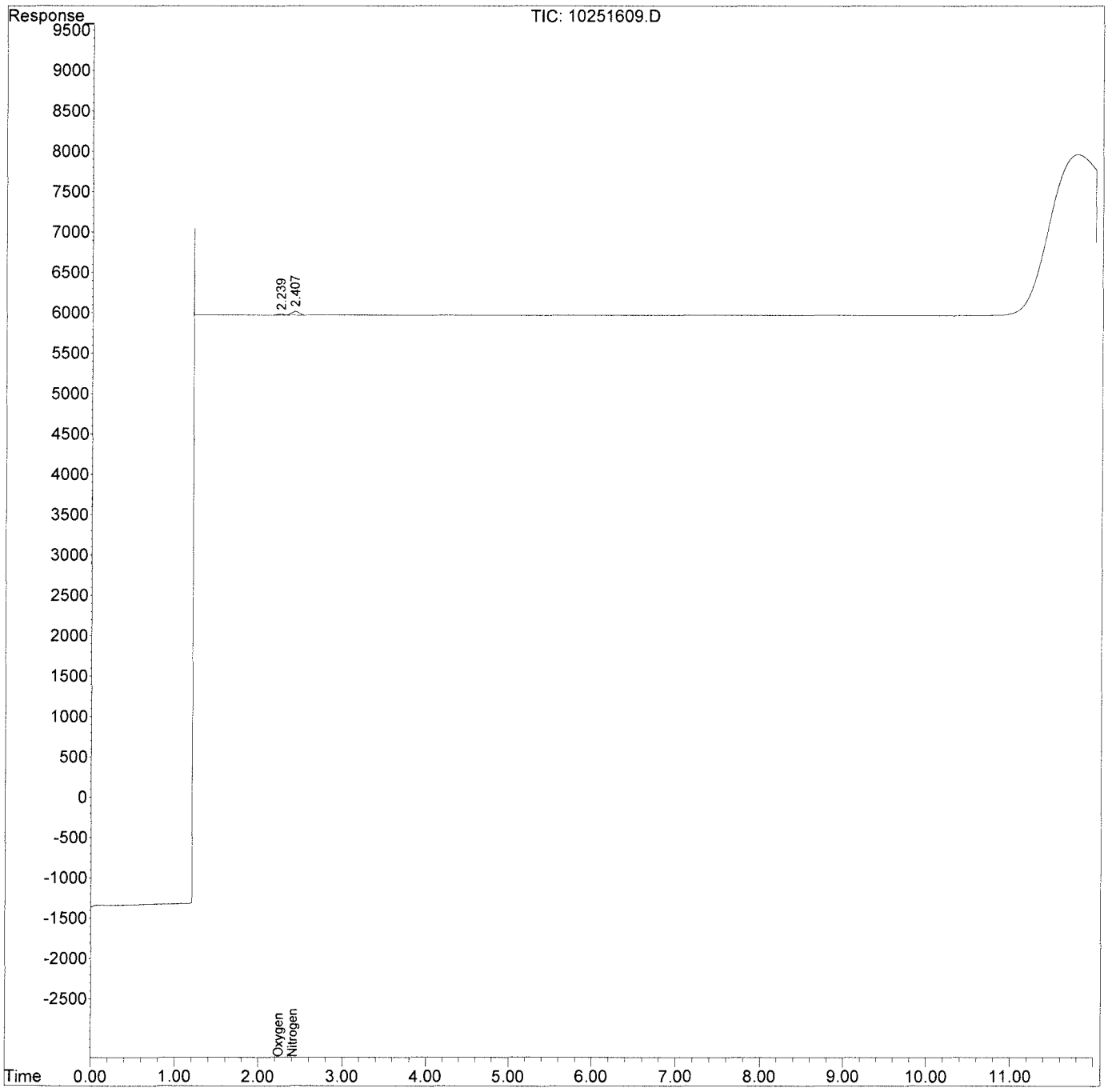
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.000	0	N.D.	ppm	
2)	Oxygen	2.239	765	505.761	ppm	m
3)	Nitrogen	2.407	3111	1774.298	ppm	m
4)	Carbon Monoxide	0.000	0	N.D.	ppm	
5)	Methane	0.000	0	N.D.	ppm	
6)	Carbon Dioxide	0.000	0	N.D.	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\25\
Data File : 10251609.D
Signal(s) : TCD1A.CH
Acq On : 25 Oct 2016 10:50 am
Operator : amf
Sample : 4901-004
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 25 14:46:10 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

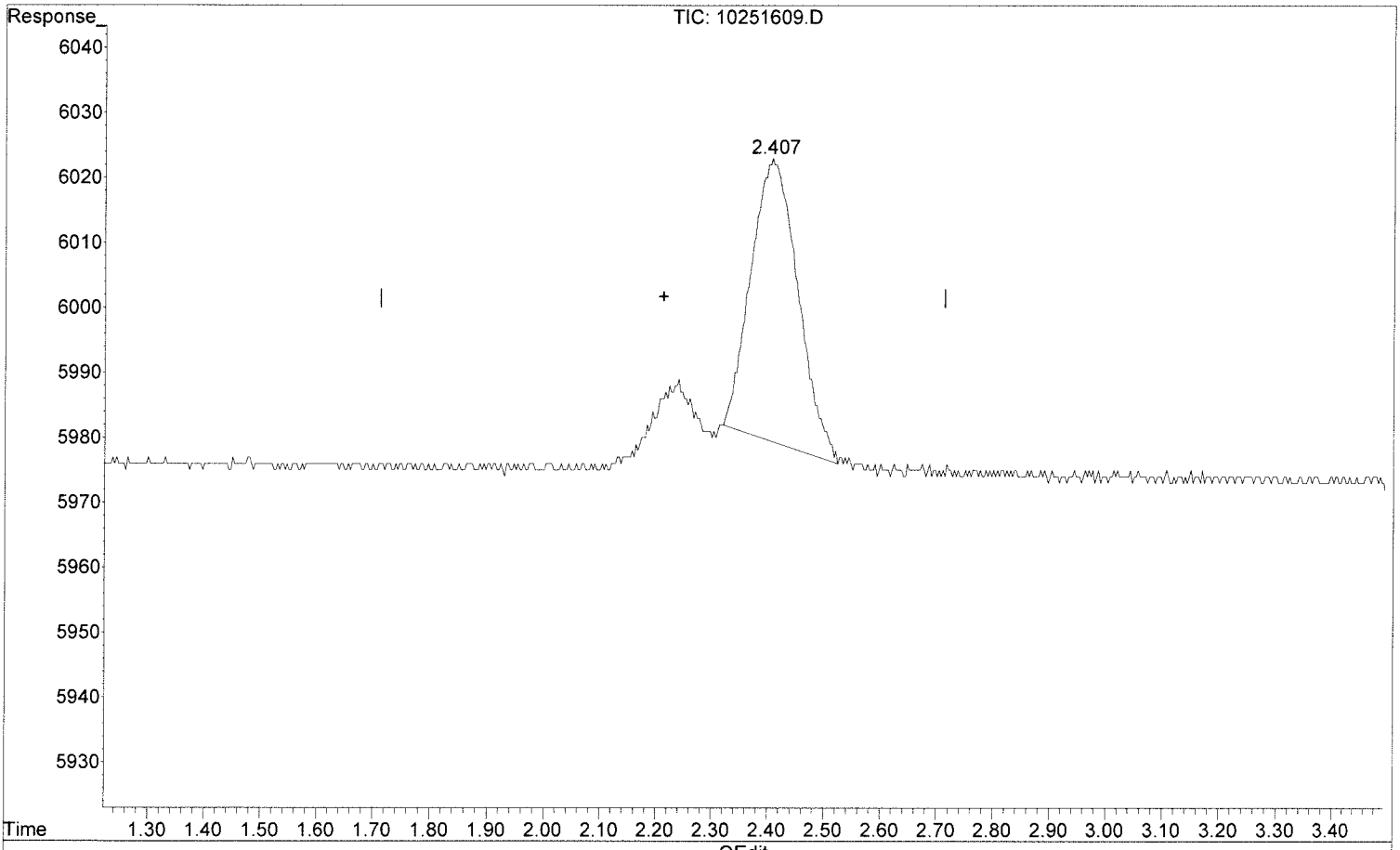
Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :



Data Path : I:\GC01\DATA\FXG\2016_10\25\
Data File : 10251609.D
Signal(s) : TCD1A.CH
Acq On : 25 Oct 2016 10:50 am
Operator : amf
Sample : 4901-004
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 25 14:45:34 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

2.408min 1659.999 ppm

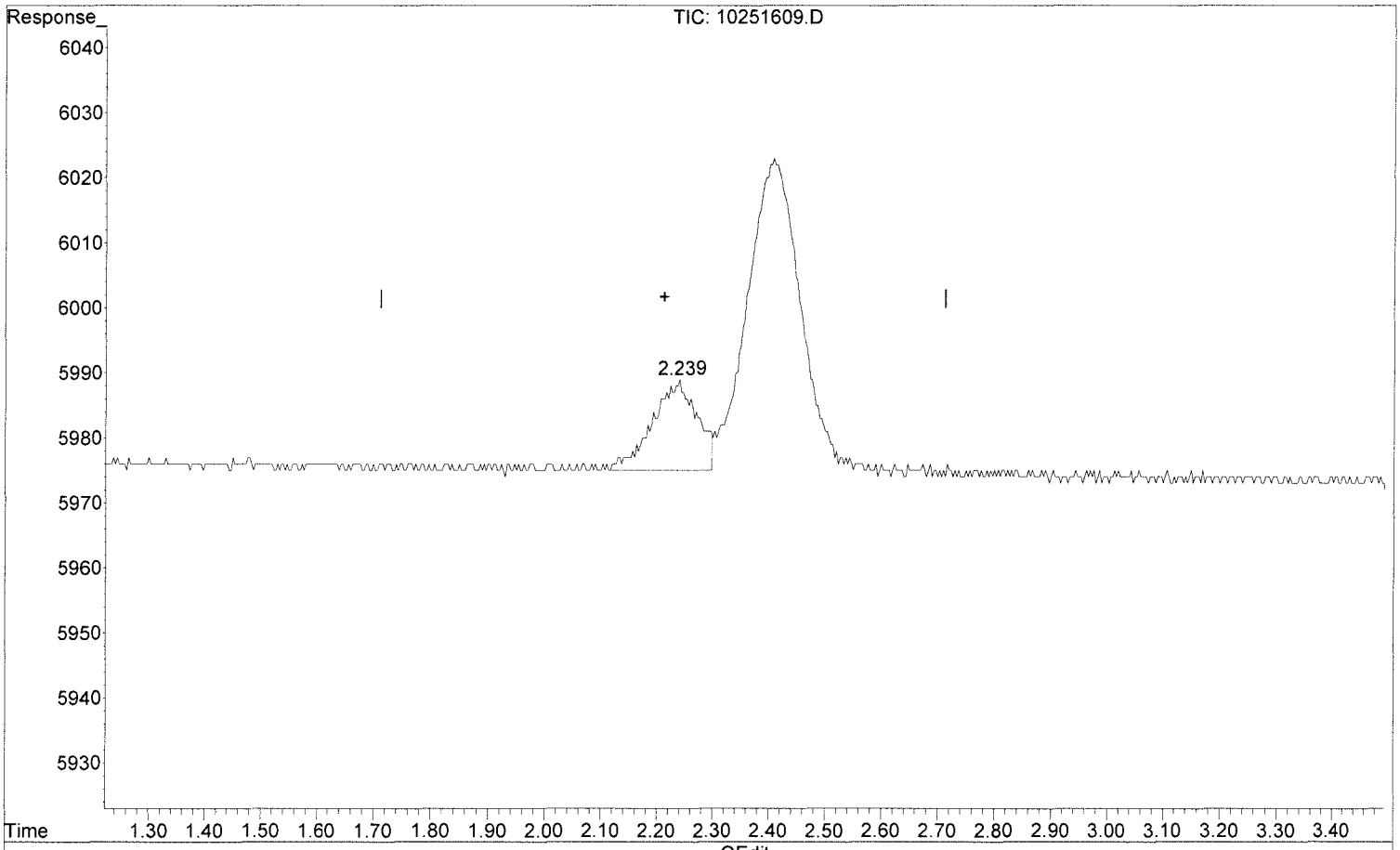
response 2512

(+) = Expected Retention Time

Data Path : I:\GC01\DATA\FXG\2016_10\25\
Data File : 10251609.D
Signal(s) : TCD1A.CH
Acq On : 25 Oct 2016 10:50 am
Operator : amf
Sample : 4901-004
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 25 14:45:34 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 :



QEdit

(2) Oxygen

2.239min 505.761 ppm m

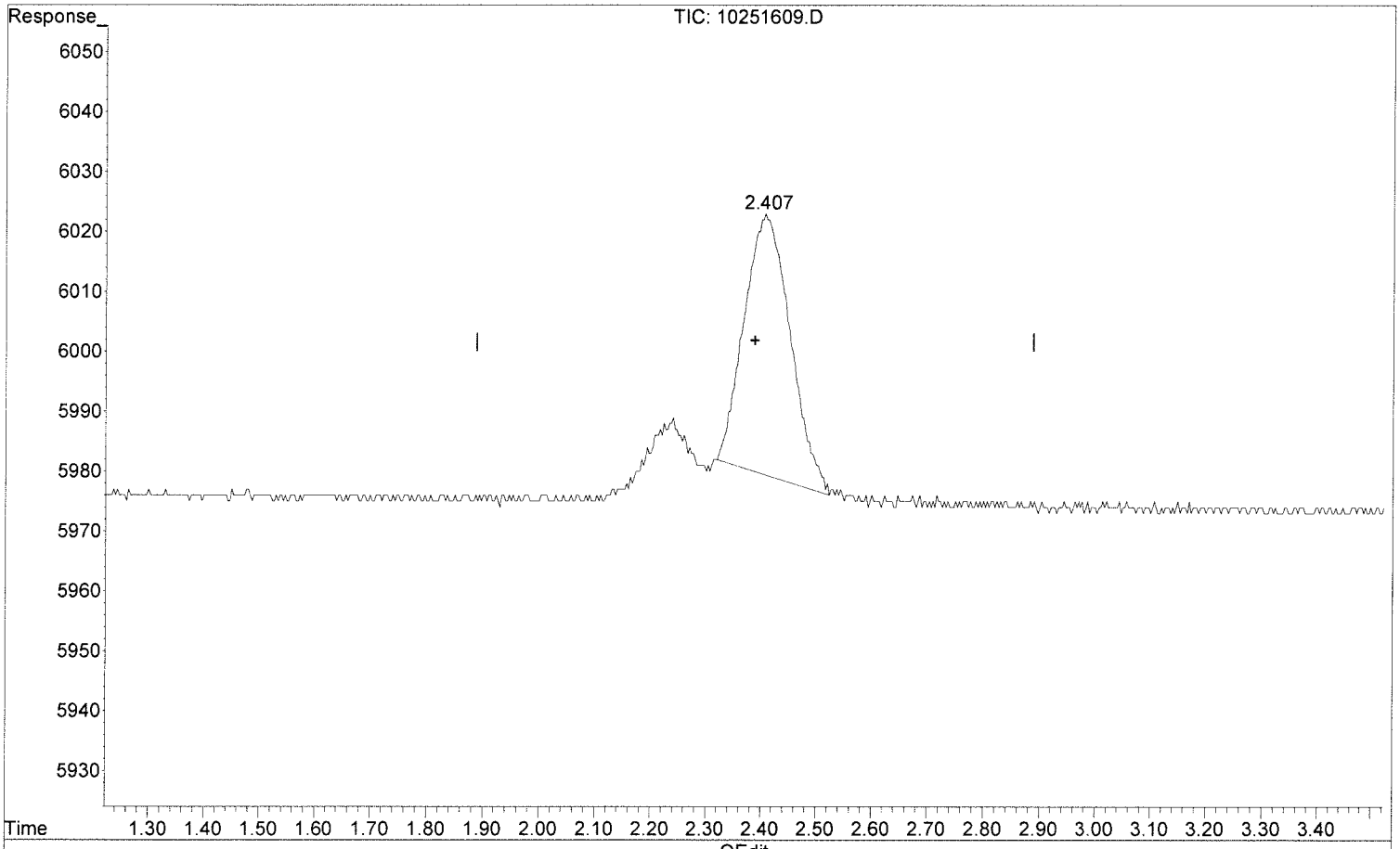
response 765

(+) = Expected Retention Time

Data Path : I:\GC01\DATA\FXG\2016_10\25\
Data File : 10251609.D
Signal(s) : TCD1A.CH
Acq On : 25 Oct 2016 10:50 am
Operator : amf
Sample : 4901-004
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 25 14:45:34 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

2.408min 1432.805 ppm

response 2512

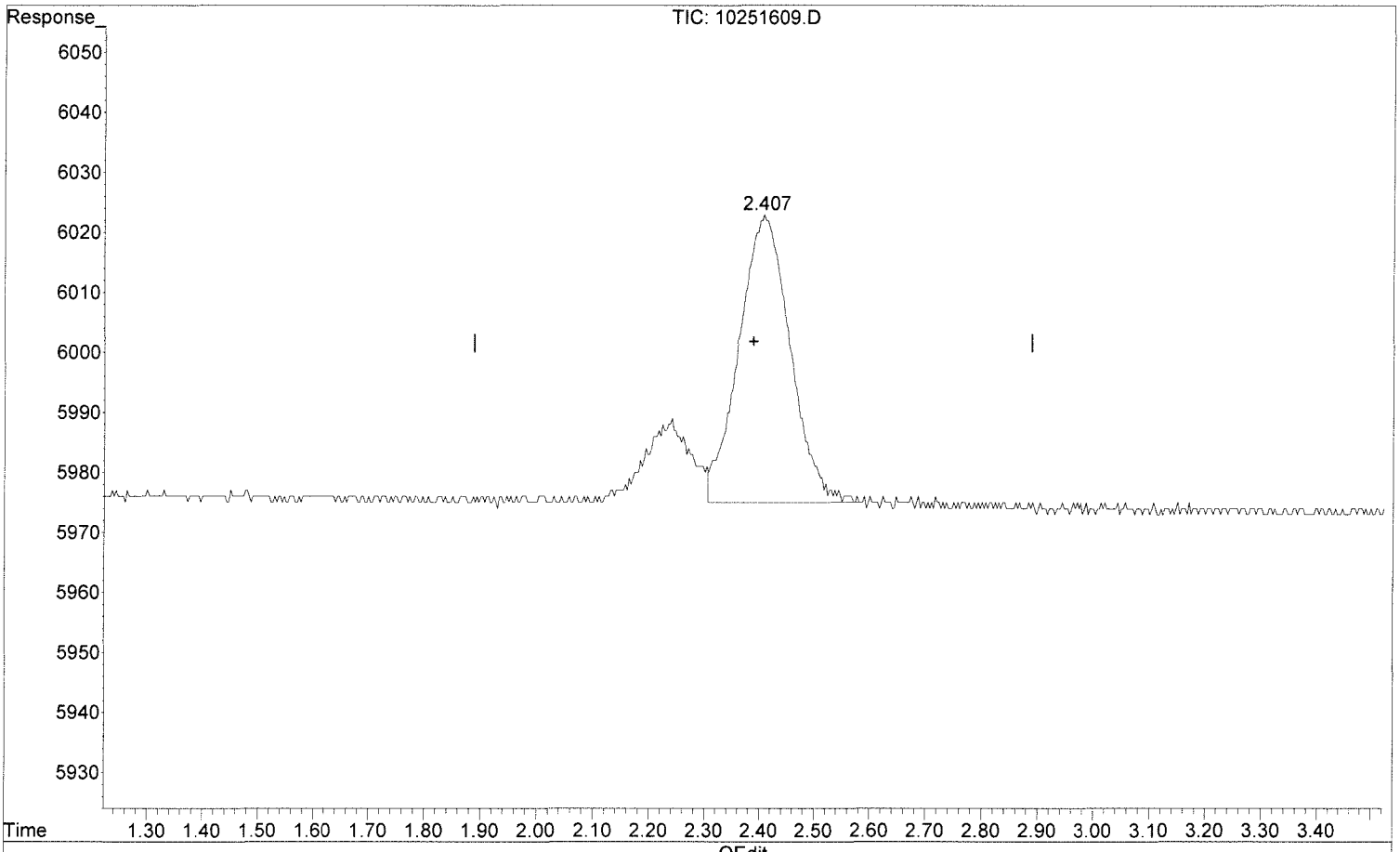
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : I:\GC01\DATA\FXG\2016_10\25\
Data File : 10251609.D
Signal(s) : TCD1A.CH
Acq On : 25 Oct 2016 10:50 am
Operator : amf
Sample : 4901-004
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 25 14:45:34 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 :



QEdit

(3) Nitrogen

2.407min 1774.298 ppm m

response 3111

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_10\25\
Data File : 10251602.D
Signal(s) : TCD1A.CH
Acq On : 25 Oct 2016 8:35 am
Operator : amf
Sample : mb
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 25 09:07:51 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 :

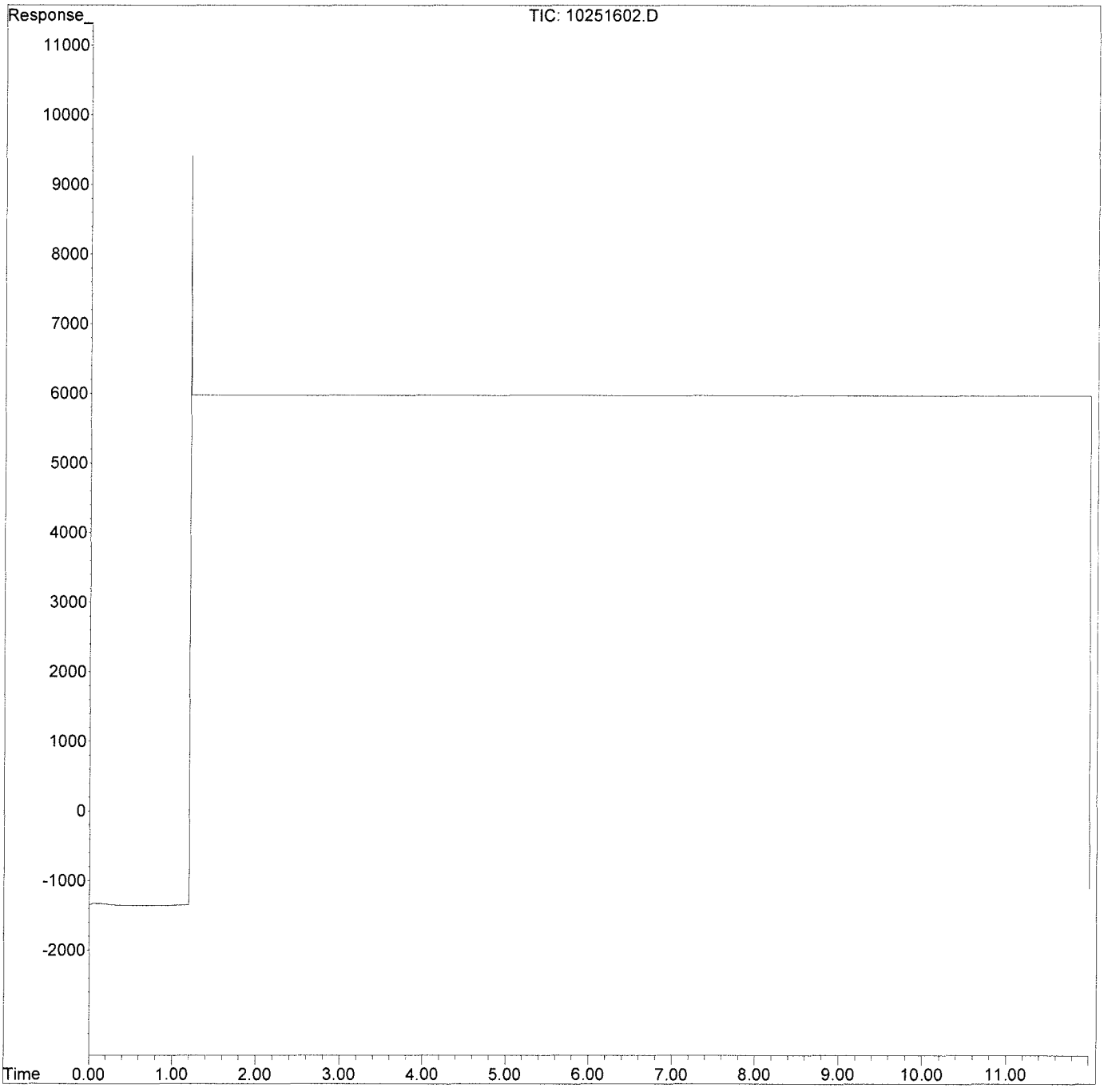
Compound	R.T.	Response	Conc	Units
Target Compounds				
1) Hydrogen	0.000	0	N.D.	ppm
2) Oxygen	0.000	0	N.D.	ppm
3) Nitrogen	0.000	0	N.D.	ppm
4) Carbon Monoxide	0.000	0	N.D.	ppm
5) Methane	0.000	0	N.D.	ppm
6) Carbon Dioxide	0.000	0	N.D.	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\25\
Data File : 10251602.D
Signal(s) : TCD1A.CH
Acq On : 25 Oct 2016 8:35 am
Operator : amf
Sample : mb
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 25 09:07:51 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\25\
Data File : 10251604.D
Signal(s) : TCD1A.CH
Acq On : 25 Oct 2016 9:28 am
Operator : amf
Sample : lcs s11-07281601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 25 09:44:38 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 :

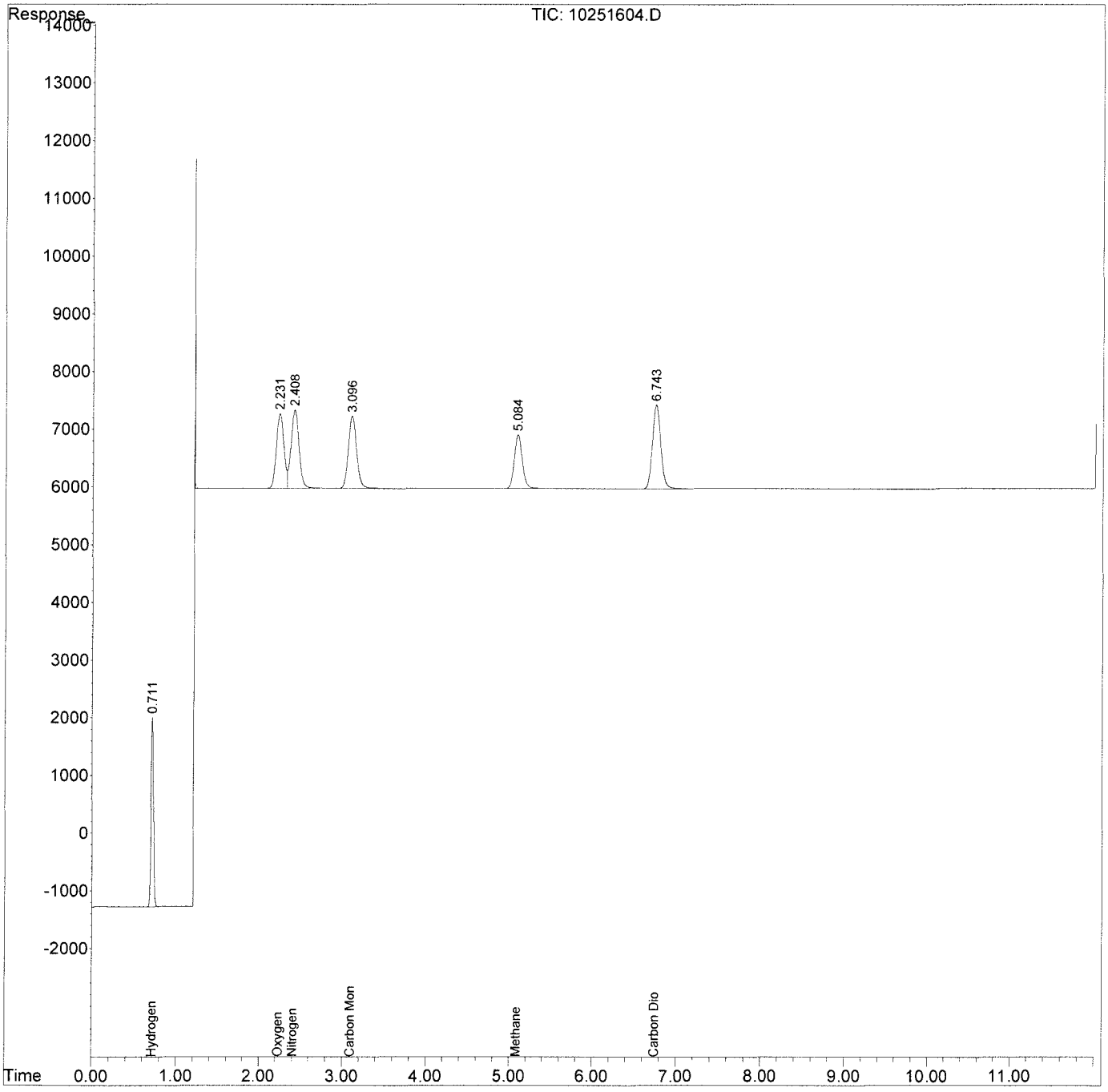
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.712	65404	49645.796	ppm
2)	Oxygen	2.233	78886	52129.225	ppm
3)	Nitrogen	2.410	91970	52457.721	ppm
4)	Carbon Monoxide	3.097	87414	51500.702	ppm
5)	Methane	5.085	62260	49458.030	ppm
6)	Carbon Dioxide	6.744	100485	49517.118	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\25\
Data File : 10251604.D
Signal(s) : TCD1A.CH
Acq On : 25 Oct 2016 9:28 am
Operator : amf
Sample : lcs s11-07281601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 25 09:44:38 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 :



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	

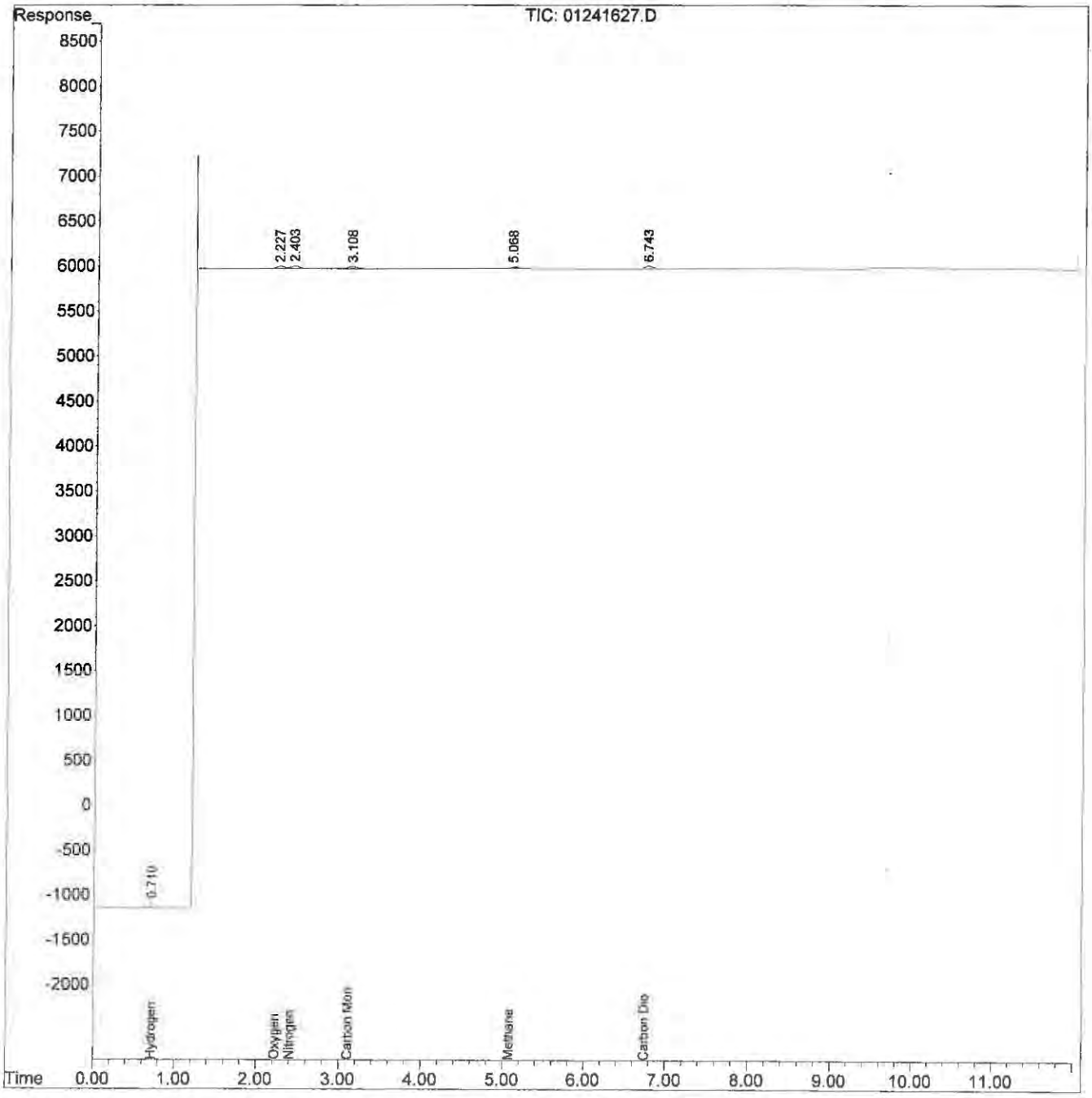
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

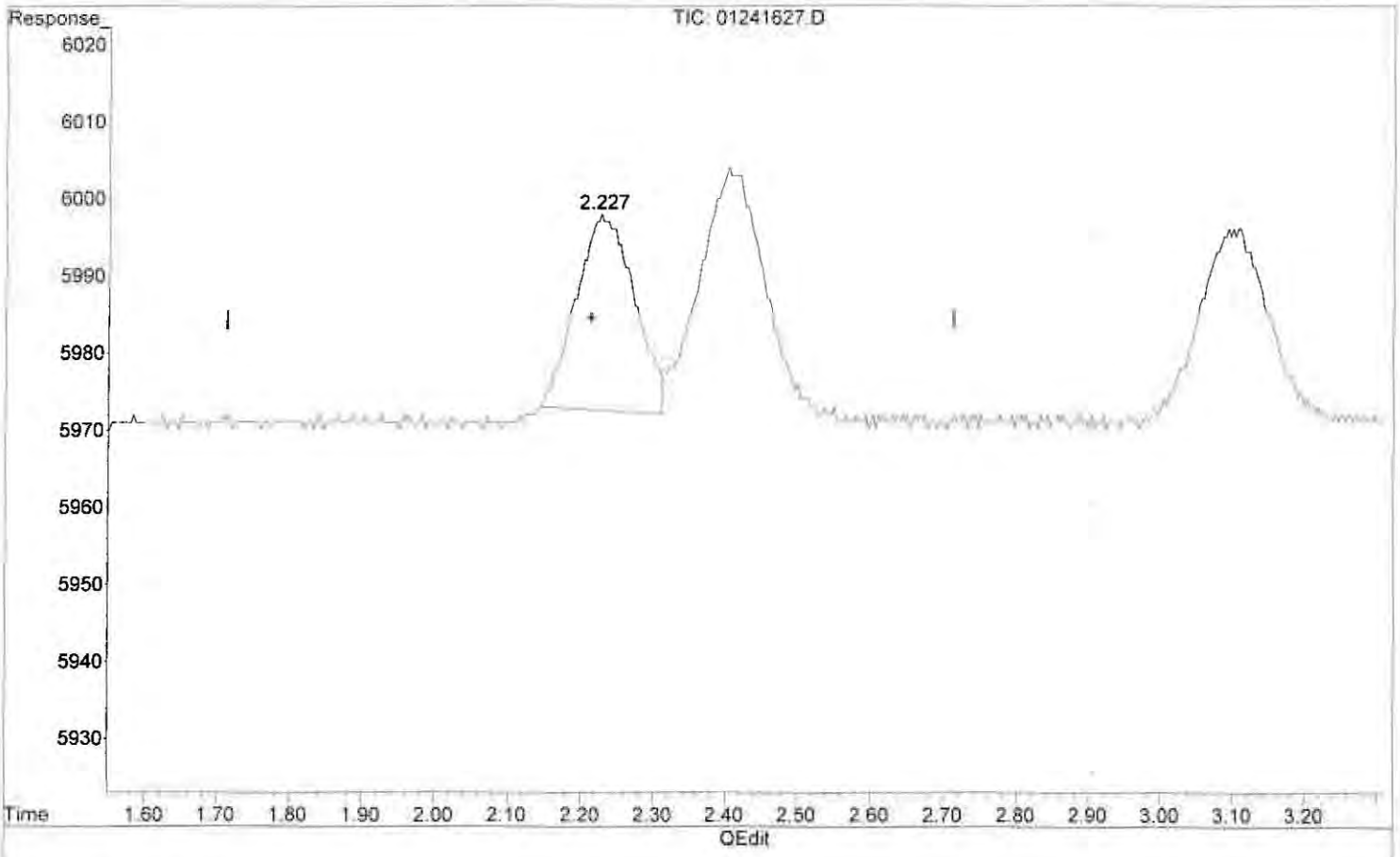


Quantitation Report (Qedit)

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

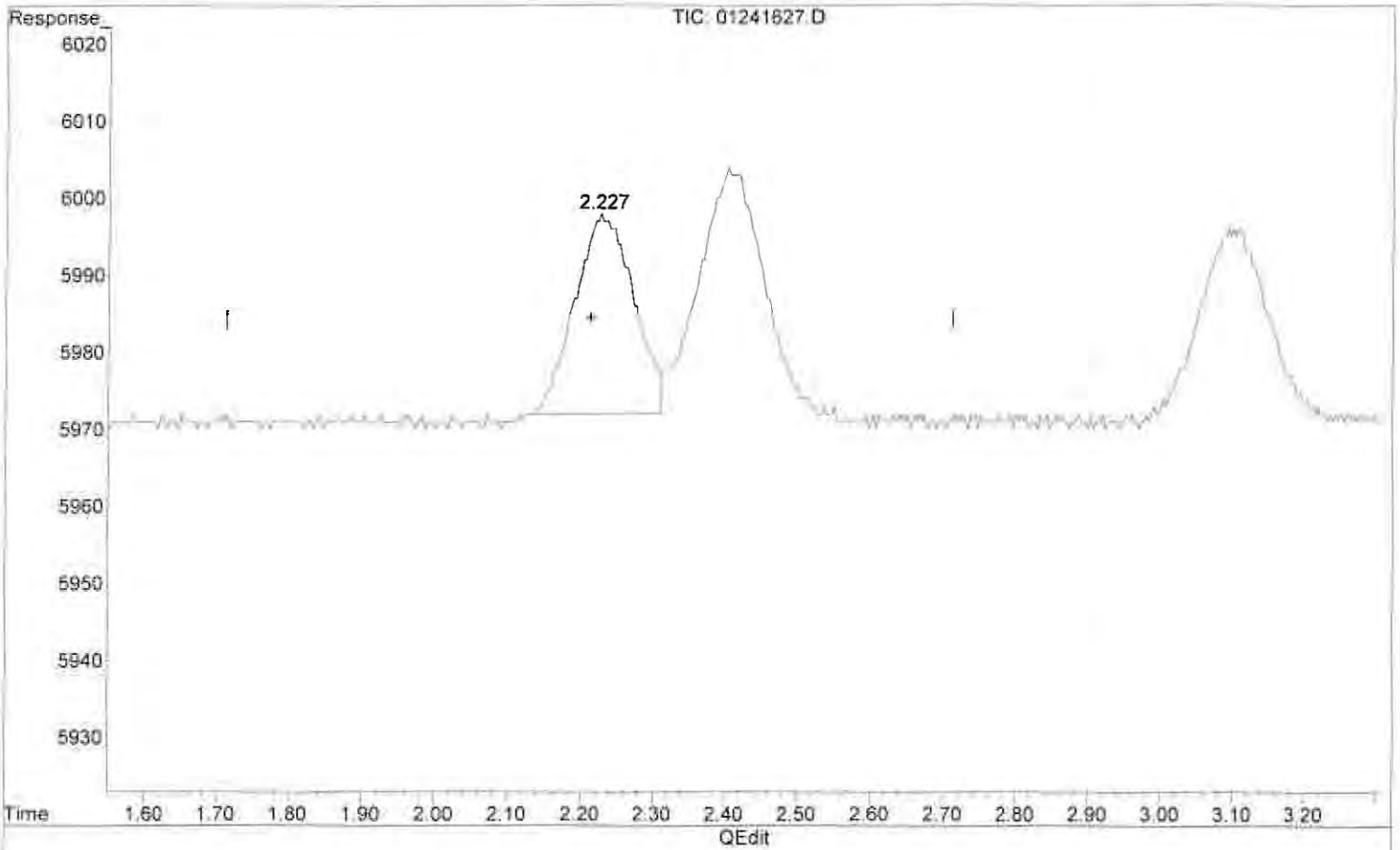
(+) = Expected Retention Time

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

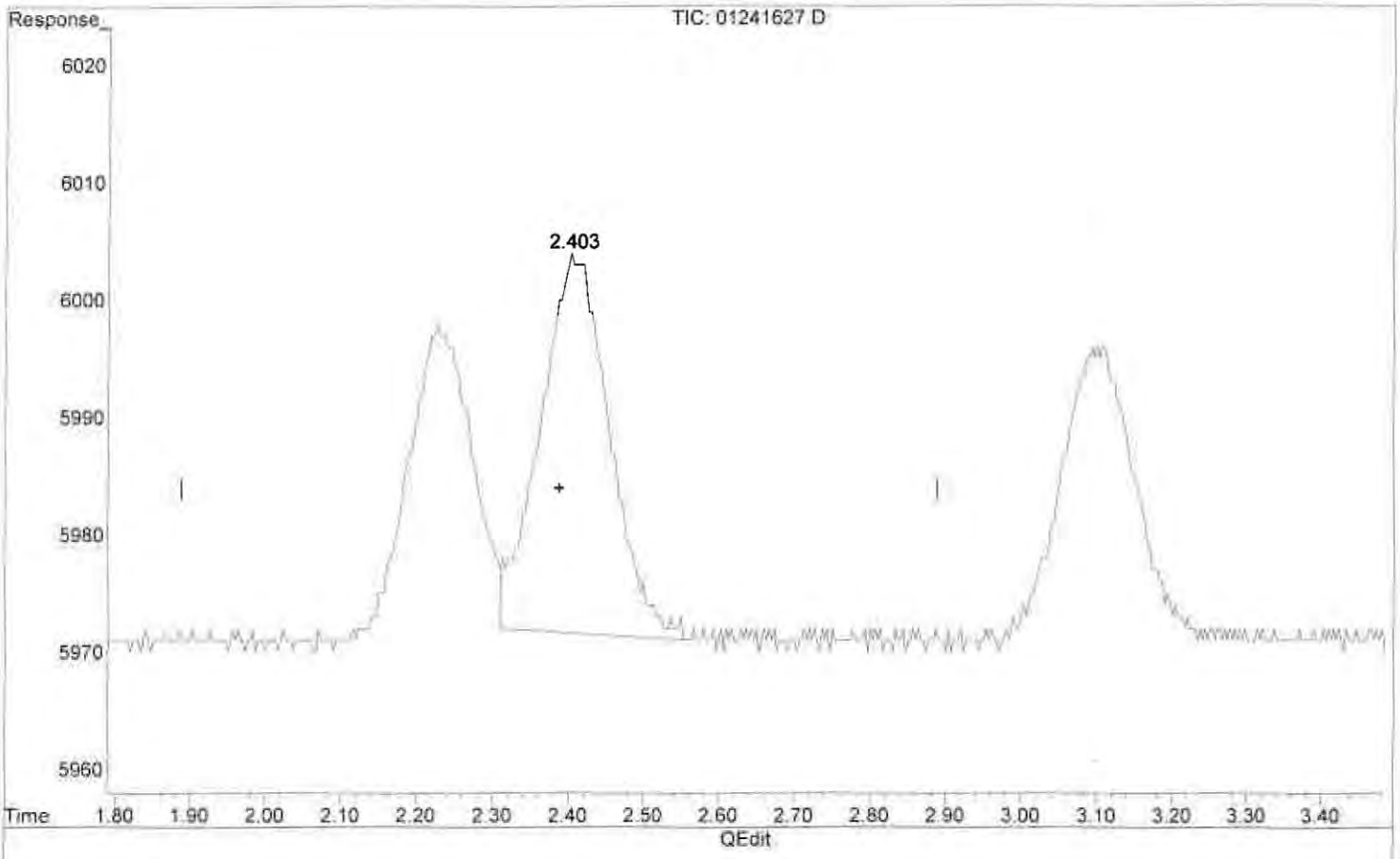
(+) = Expected Retention Time

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

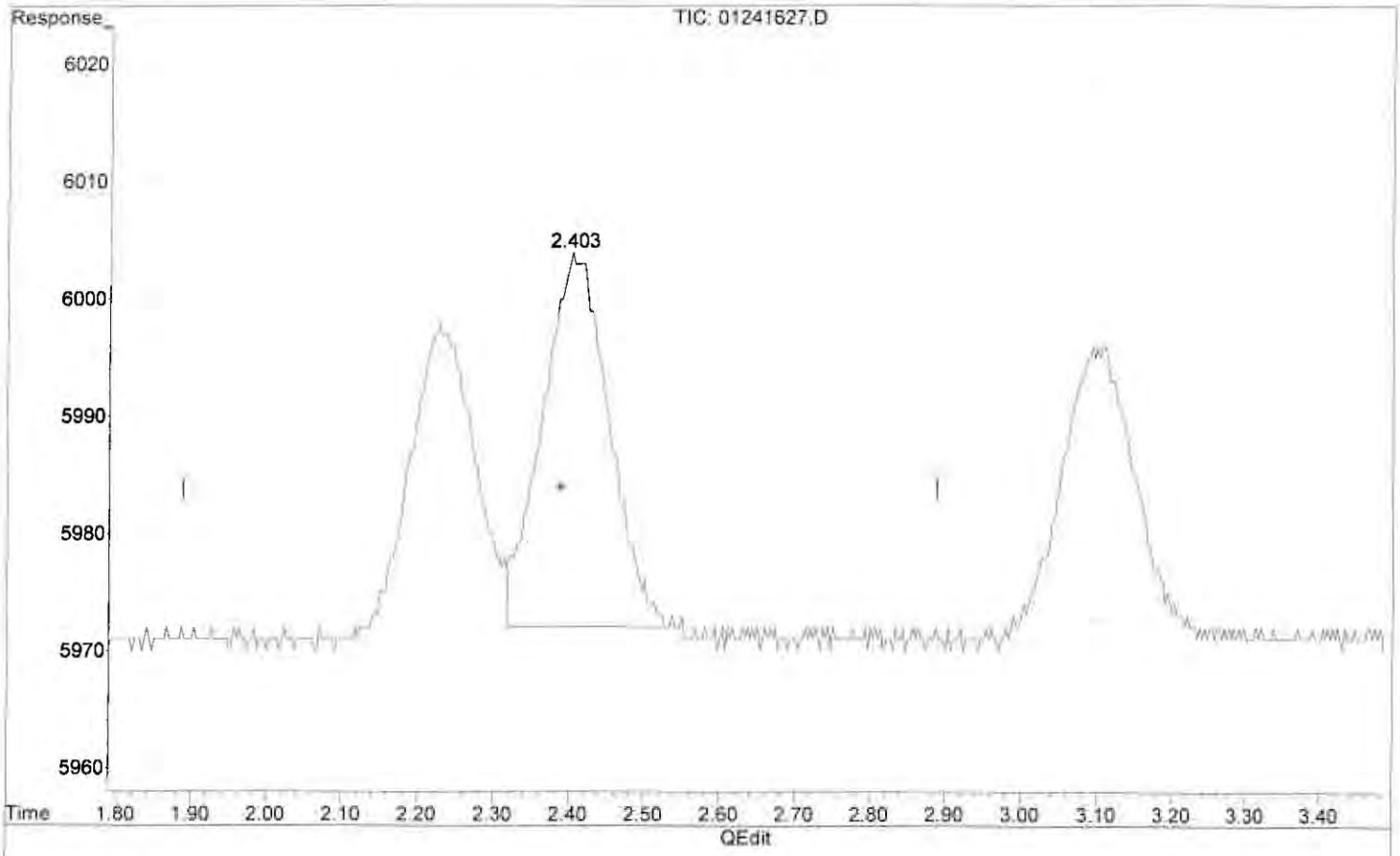
(+) = Expected Retention Time

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

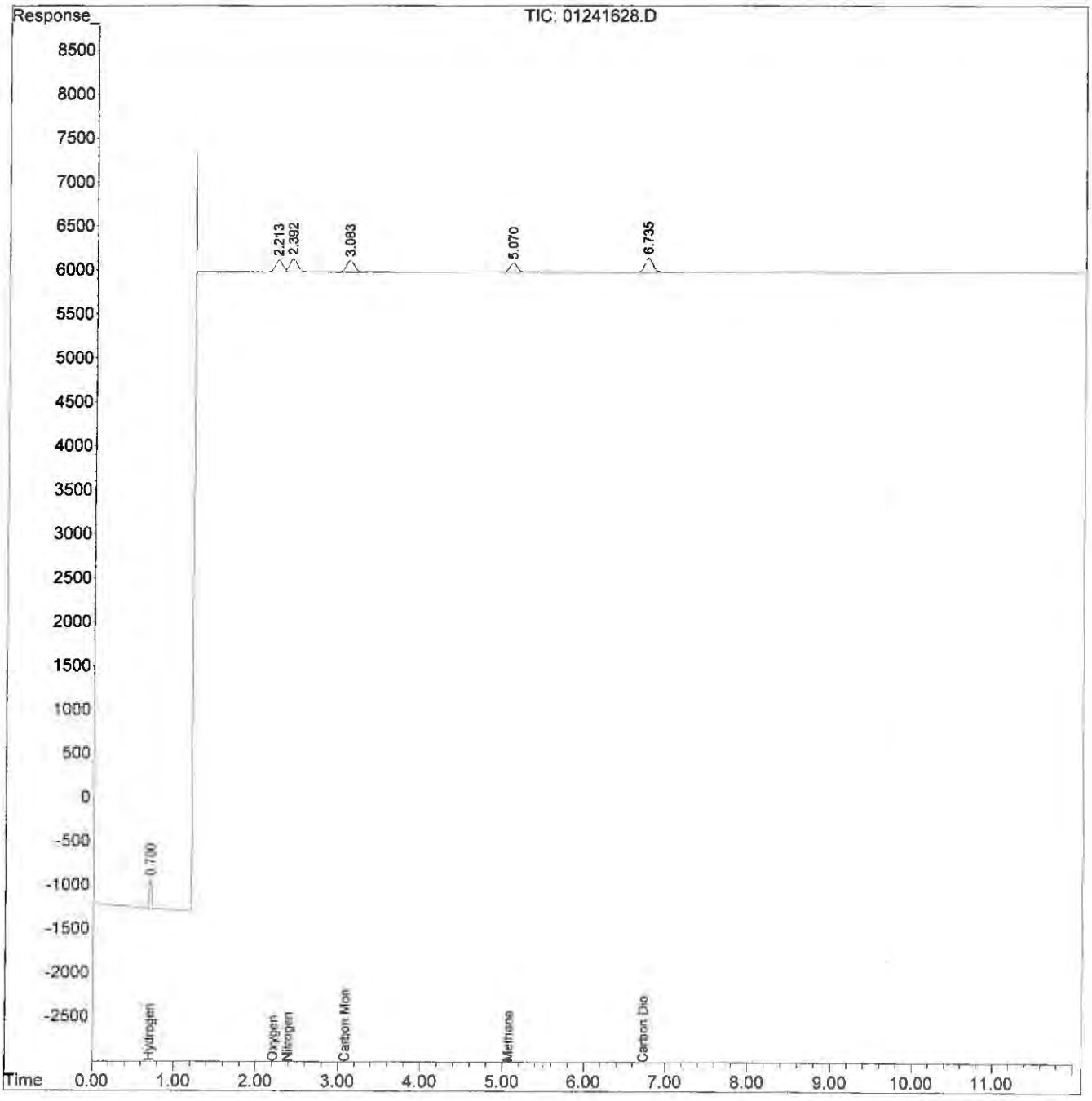
(f)=RT Delta > 1/2 Window (m)=manual int.

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

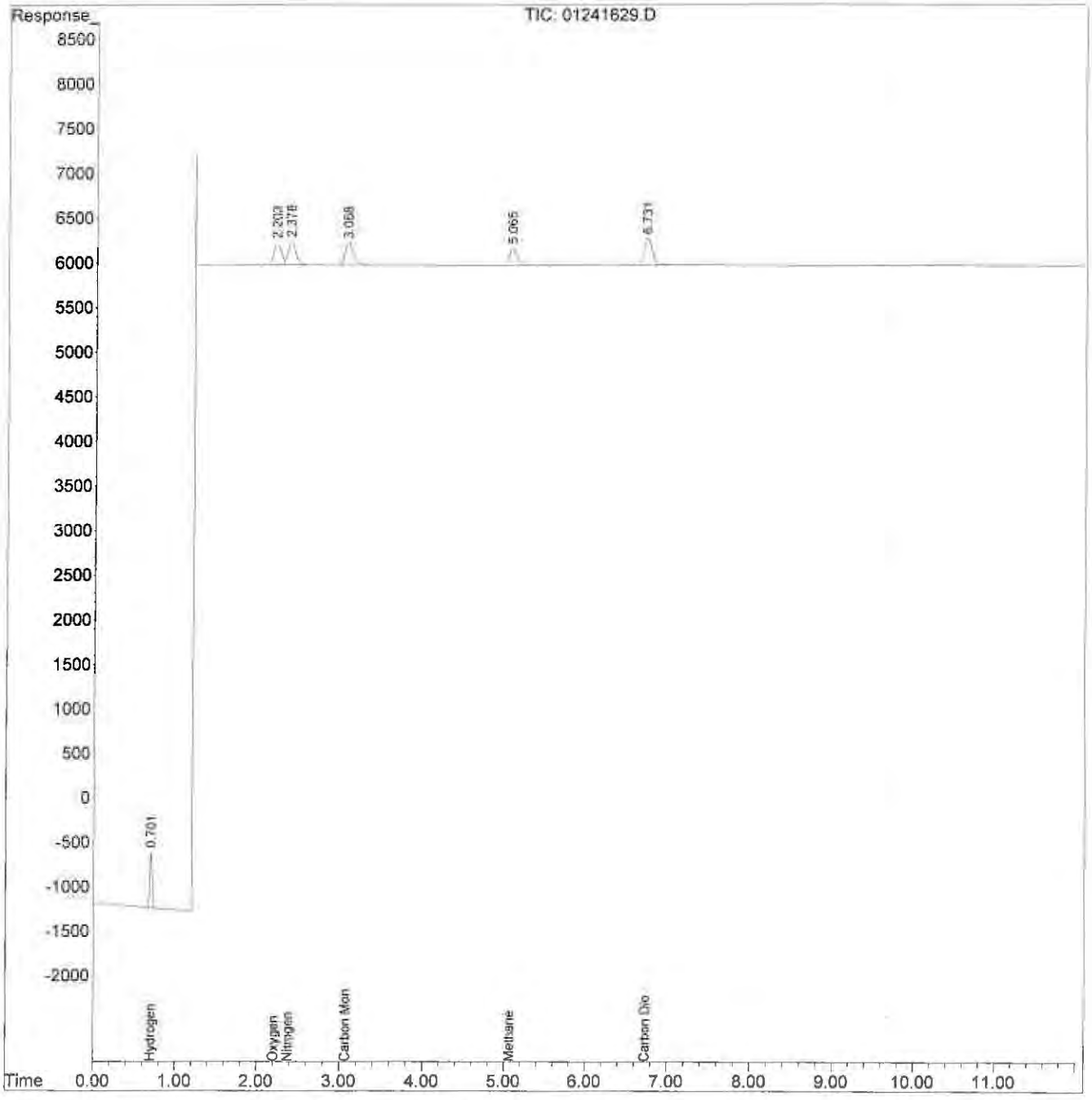
(f)=RT Delta > 1/2 Window (m)=manual int.

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

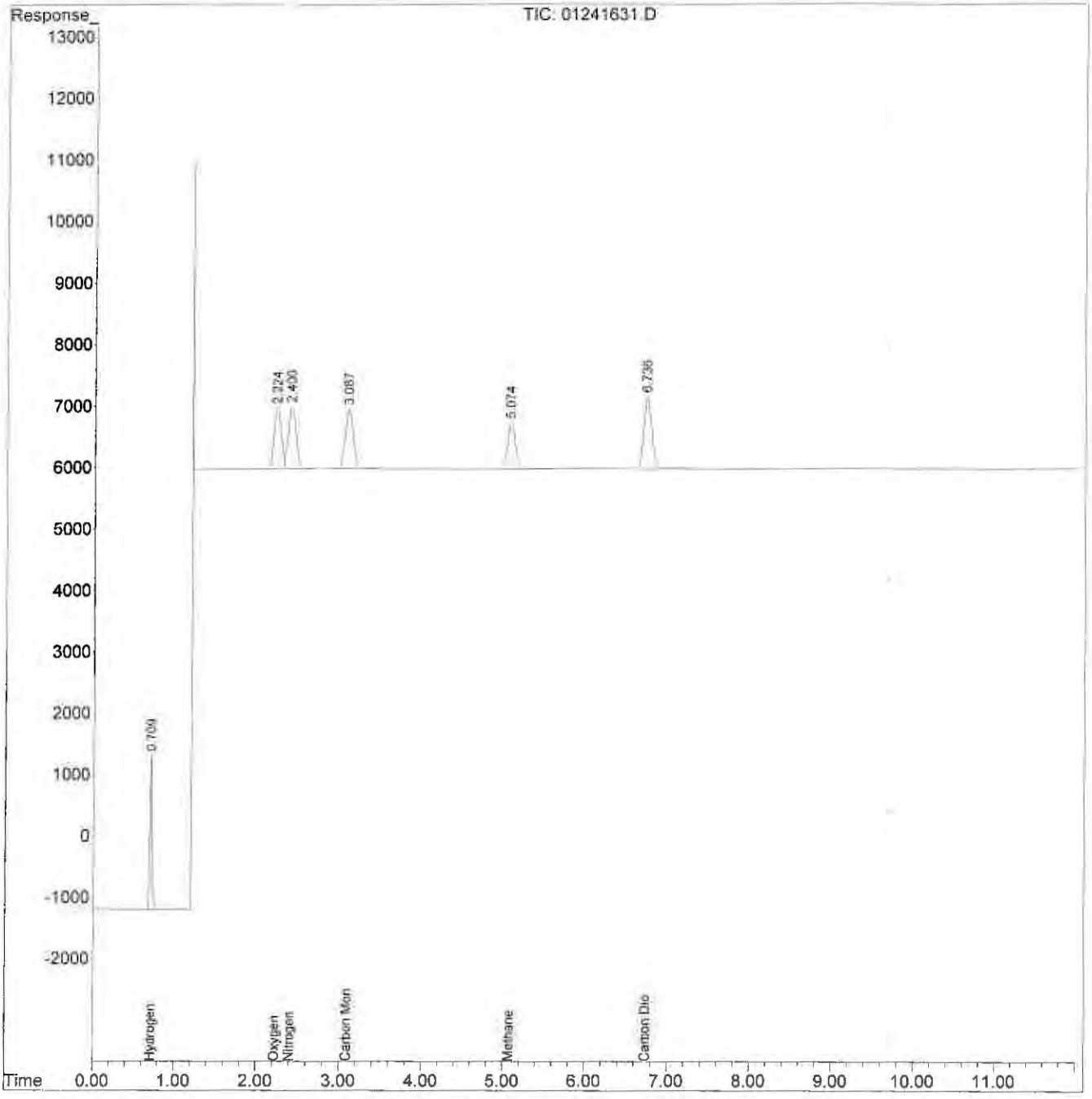
(f)=RT Delta > 1/2 Window (m)=manual int.

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

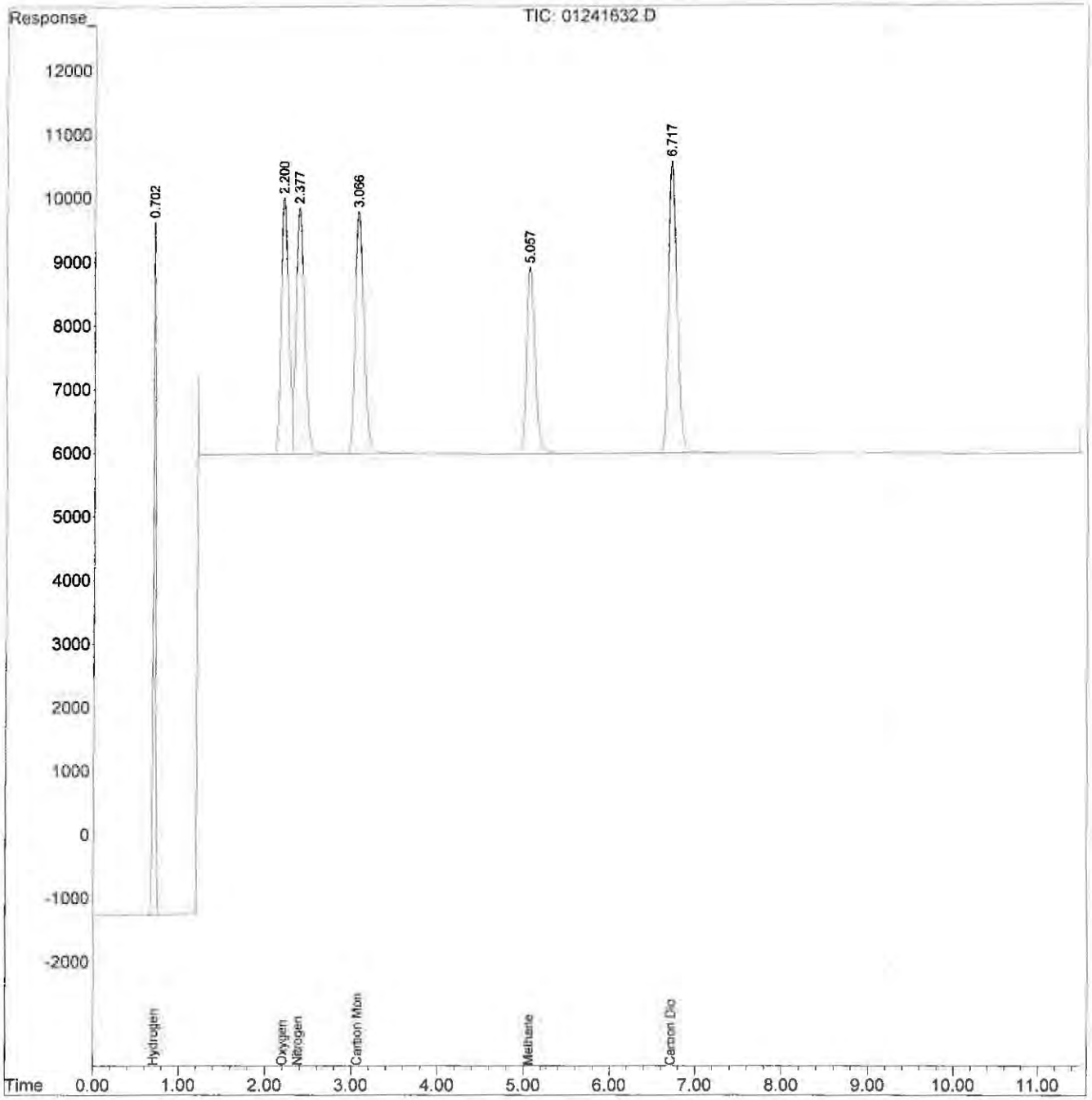
(f)=RT Delta > 1/2 Window (m)=manual int.

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	

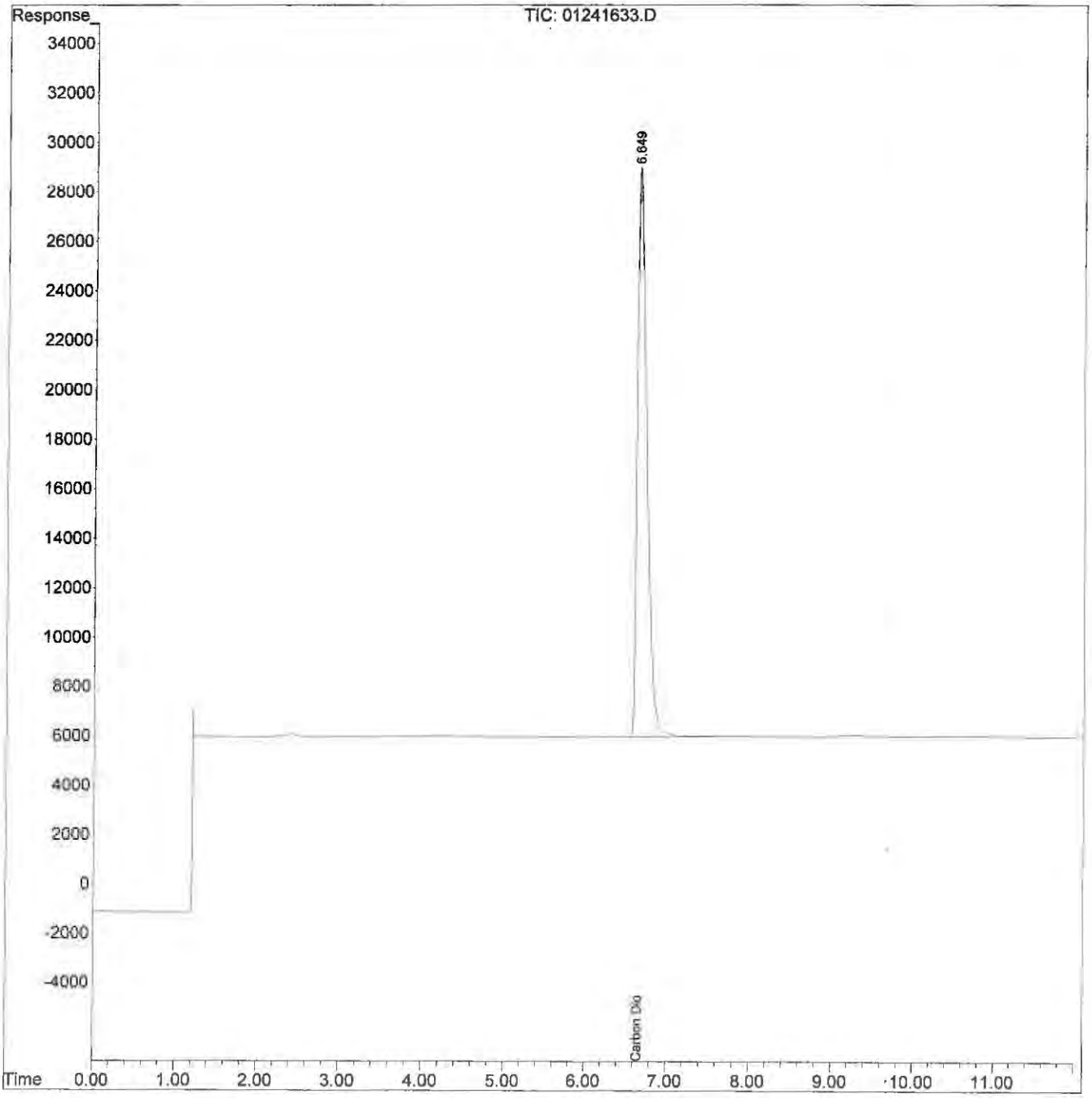
(f)=RT Delta > 1/2 Window (m)=manual int.

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

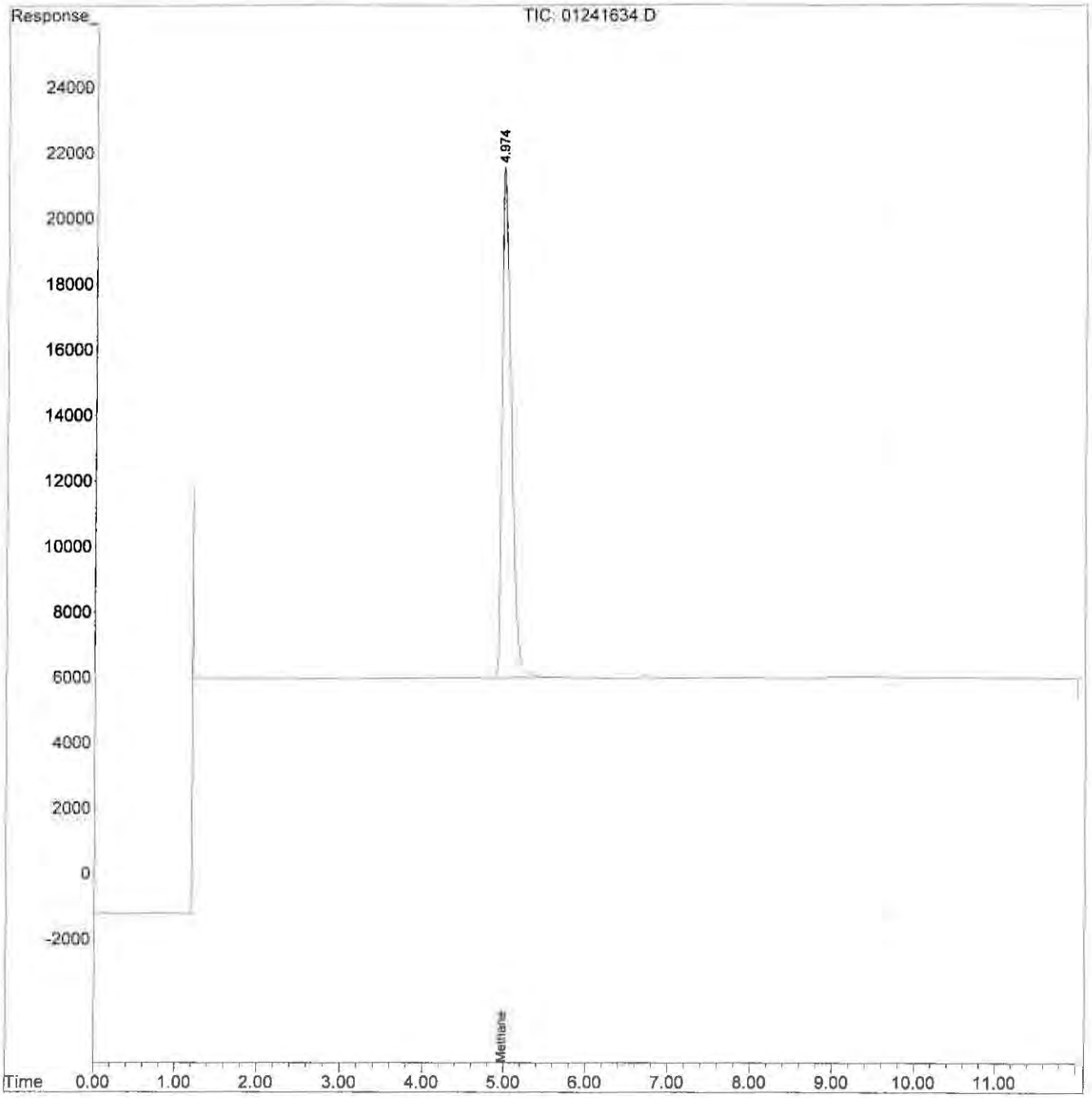
(f)=RT Delta > 1/2 Window (m)=manual int.

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	

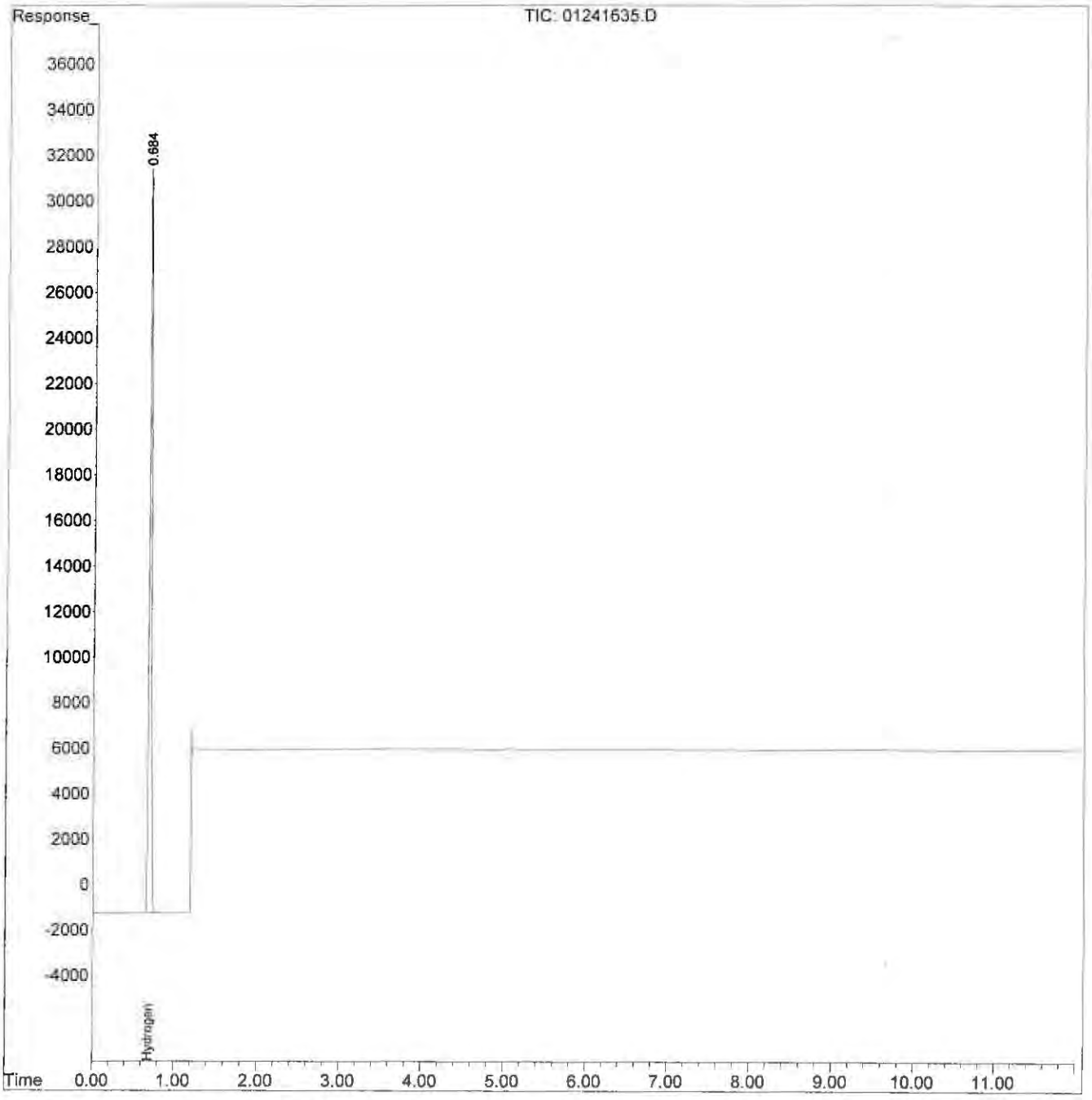
(f)=RT Delta > 1/2 Window (m)=manual int.

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

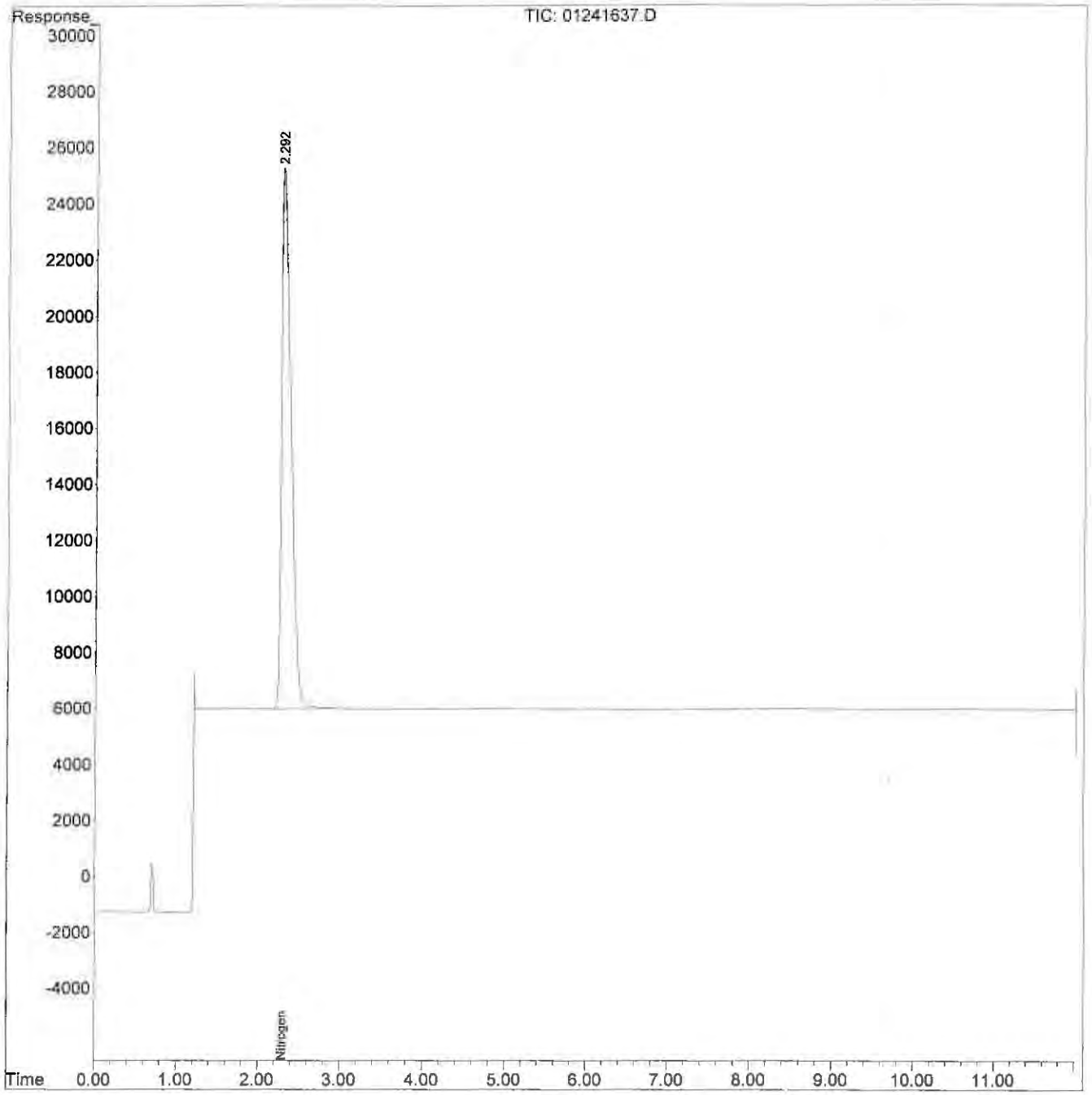
(f)=RT Delta > 1/2 Window (m)=manual int.

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

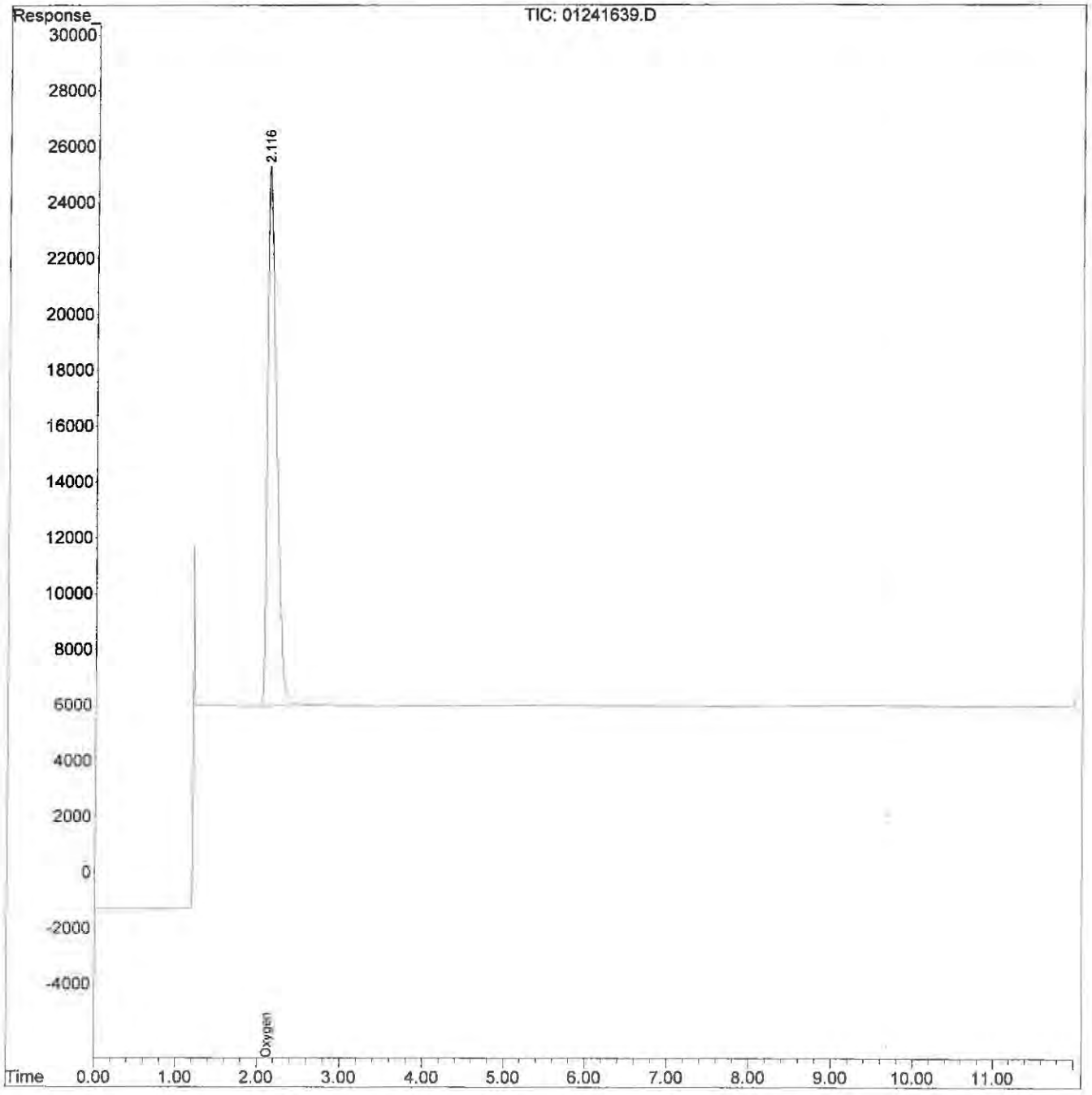
(f)=RT Delta > 1/2 Window (m)=manual int.

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

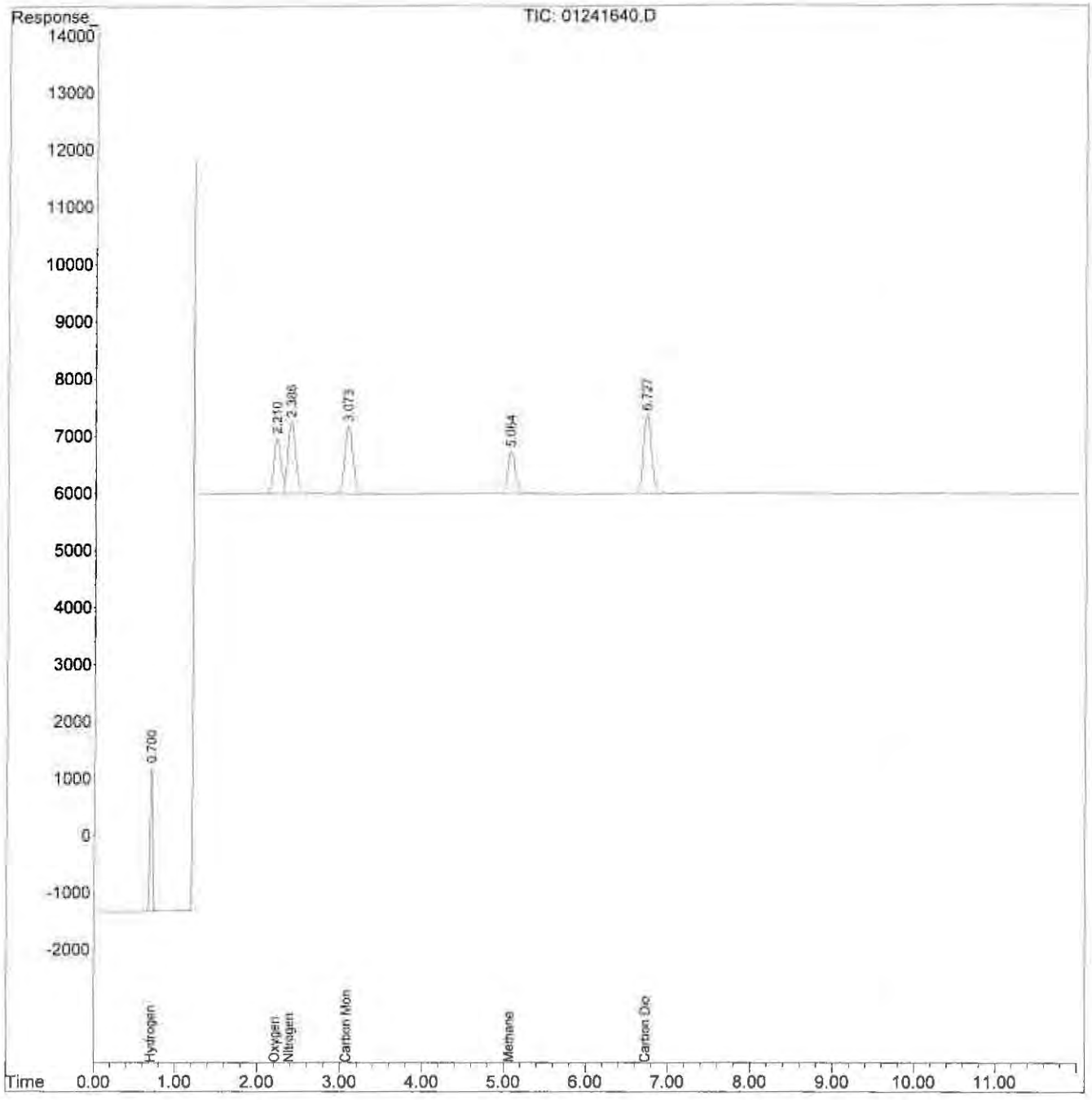
(f)=RT Delta > 1/2 Window (m)=manual int.

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	Actual ppm	R.T.	Response	Conc	Units	% Recovery
Target Compounds							
1)	Hydrogen	39900	0.706	49672	37704.490	ppm	94.5 %
2)	Oxygen	24900	2.219	37333	24670.381	ppm	99.1 %
3)	Nitrogen	50000	2.393	84889	48418.601	ppm	96.8 %
4)	Carbon Monoxide	50000	3.079	83785	49362.383	ppm	98.7 %
5)	Methane	40100	5.068	50643	40229.211	ppm	100.3 %
6)	Carbon Dioxide	50000	6.729	97009	47803.956	ppm	95.6 %

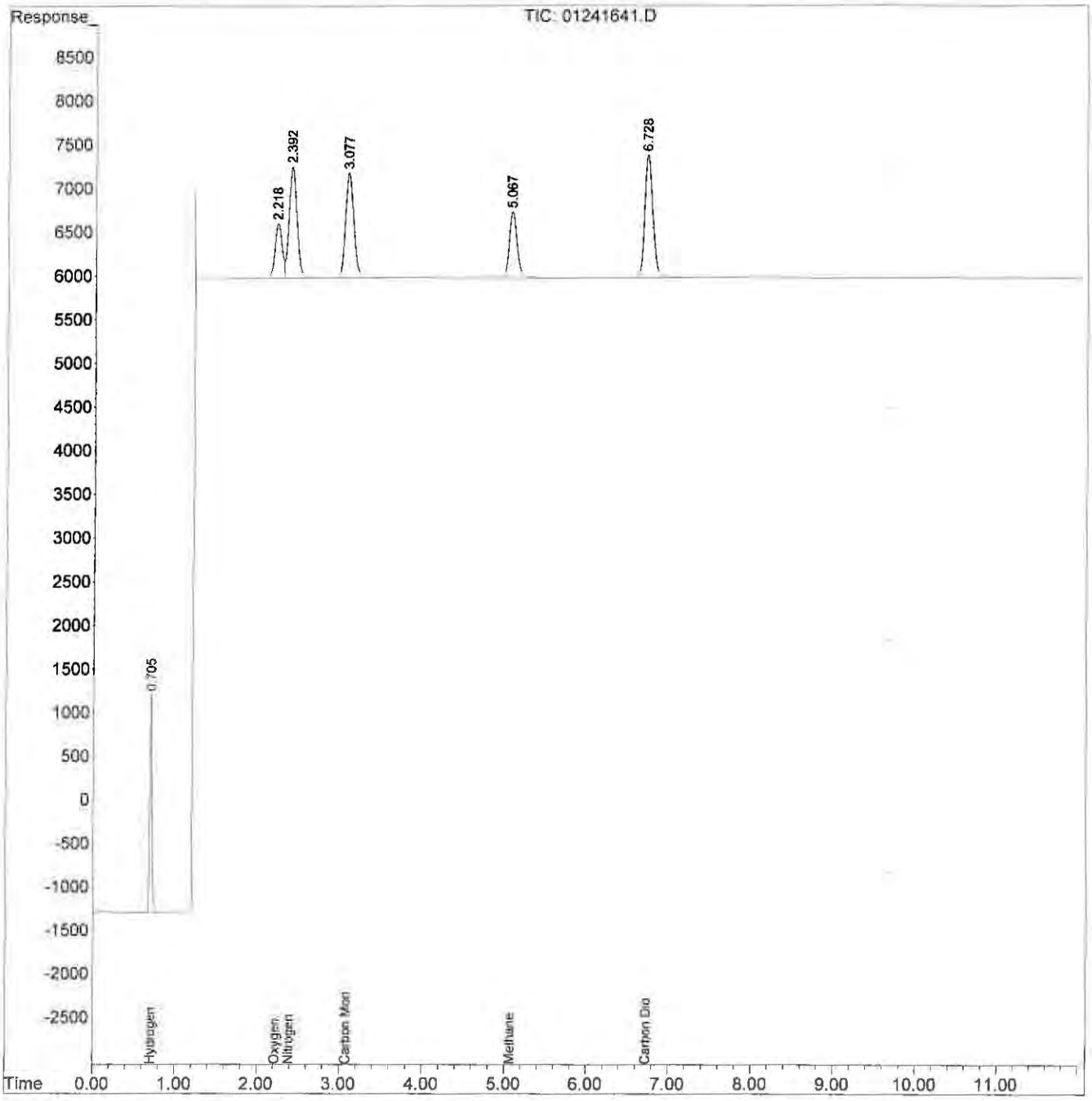
(f)=RT Delta > 1/2 Window (m)=manual int.

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 : 10/25/2016

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 s30-05021602	0.711	2.228	2.403	3.091	5.082	6.742	10251601.D	08:18
+/- 0.33min of ICAL Mean RT	Pass	Pass	Pass	Pass	Pass	Pass		
mb							10251602.D	08:35
lab air		2.173 Pass	2.310 Pass			6.755 Pass	10251603.D	09:08
lcs s11-07281601	0.712 Pass	2.233 Pass	2.410 Pass	3.097 Pass	5.085 Pass	6.744 Pass	10251604.D	09:28
lcsd s11-07281601	0.711 Pass	2.229 Pass	2.406 Pass	3.093 Pass	5.082 Pass	6.741 Pass	10251605.D	09:46
4901-001		2.224 Pass	2.399 Pass				10251606.D	09:58
4901-002		2.237 Pass	2.407 Pass				10251607.D	10:15
4901-003		2.231 Pass	2.404 Pass				10251608.D	10:33
4901-004		2.239 Pass	2.407 Pass				10251609.D	10:50
std s30-10051601	0.709 Pass	2.222 Pass	2.398 Pass	3.085 Pass	5.078 Pass	6.738 Pass	10251616.D	13:48

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 s30-05021602	40843.3 2.1%	41458.5 3.6%	51076.3 2.2%	52352.6 4.7%	42252.2 5.6%	50304.2 0.6%	10251601.D	08:18
std s30-10051601	41186.0 3.0%	41786.7 4.5%	51404.7 2.8%	52543.2 5.1%	42573.1 6.4%	50593.3 1.2%	10251616.D	13:48
	#####	#####	#####	#####	#####	#####		
	#####	#####	#####	#####	#####	#####		

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	49645.8	52129.2	52457.7	51500.7	49458.0	49517.1	10251604.D	09:28
LCS % Recovery	99% Pass	104% Pass	105% Pass	103% Pass	99% Pass	99% Pass		
lcsd s11-07281601	49776.0	51644.6	50601.8	51471.0	49670.3	49574.9	10251605.D	09:46
LCS % Recovery	100% Pass	103% Pass	101% Pass	103% Pass	99% Pass	99% Pass		
Duplicate % RPD	0.3%	0.9%	3.6%	0.1%	0.4%	0.1%		
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		225450.1	802946.0			470.4	102.9% Pass
Lab Air Normalized (%)		21.91%	78.03%			0.05%	100.0%

Data Path : I:\GC01\DATA\FXG\2016_10\25\
Data File : 10251601.D
Signal(s) : TCD1A.CH
Acq On : 25 Oct 2016 8:18 am
Operator : amf
Sample : std s30-05021602
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 25 08:37:13 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	0.711	53807	40843.314	ppm
2)	Oxygen	2.228	62738	41458.494	ppm
3)	Nitrogen	2.403	89548	51076.269	ppm
4)	Carbon Monoxide	3.091	88860	52352.627	ppm
5)	Methane	5.082	53189	42252.190	ppm
6)	Carbon Dioxide	6.742	102082	50304.229	ppm

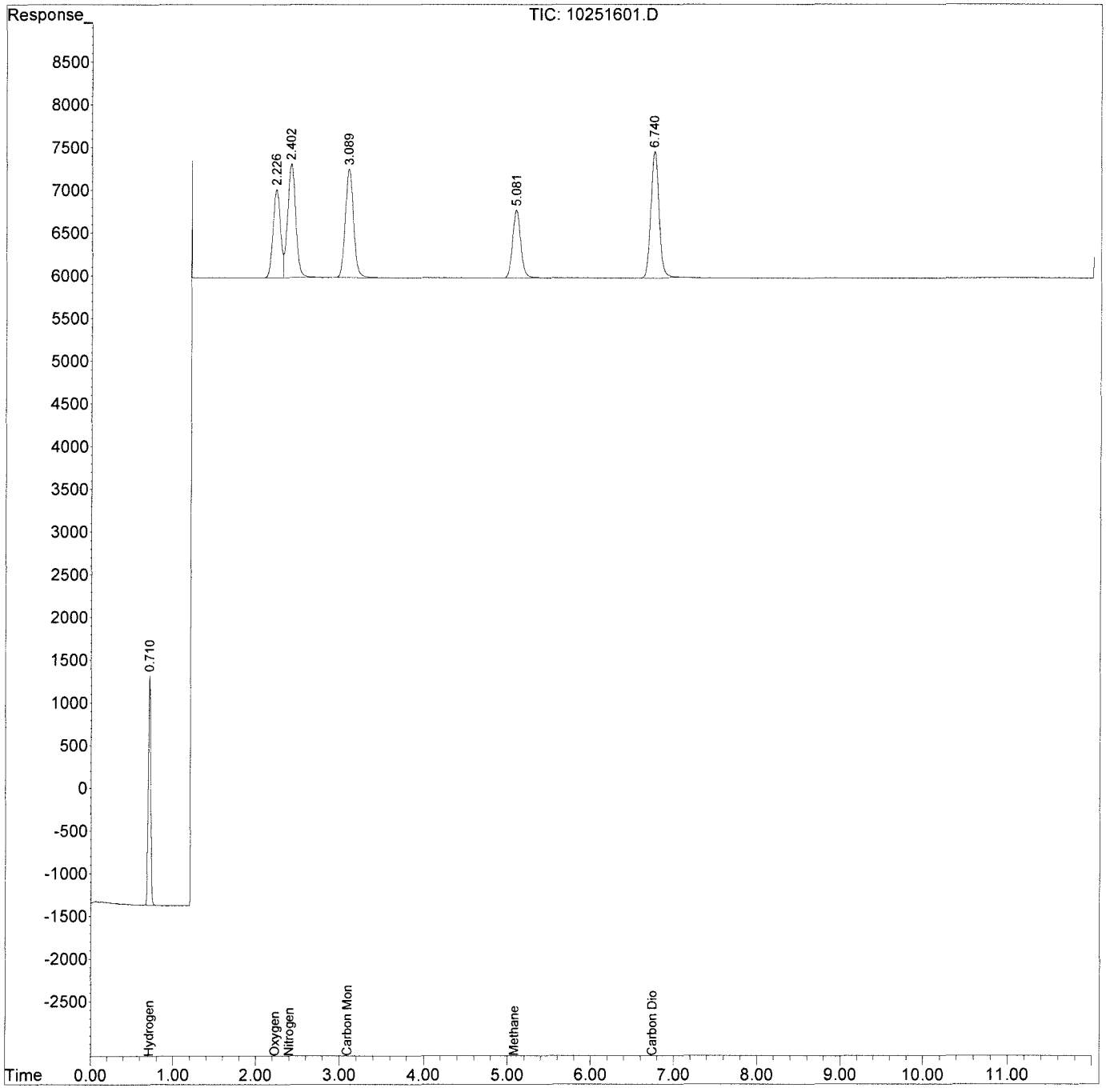
(f)=RT Delta > 1/2 Window (m)=manual int.

10/25/16

Data Path : I:\GC01\DATA\FXG\2016_10\25\
Data File : 10251601.D
Signal(s) : TCD1A.CH
Acq On : 25 Oct 2016 8:18 am
Operator : amf
Sample : std s30-05021602
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 25 08:37:13 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\25\
Data File : 10251616.D
Signal(s) : TCD1A.CH
Acq On : 25 Oct 2016 1:48 pm
Operator : amf
Sample : std s30-10051601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 25 14:03:59 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 :

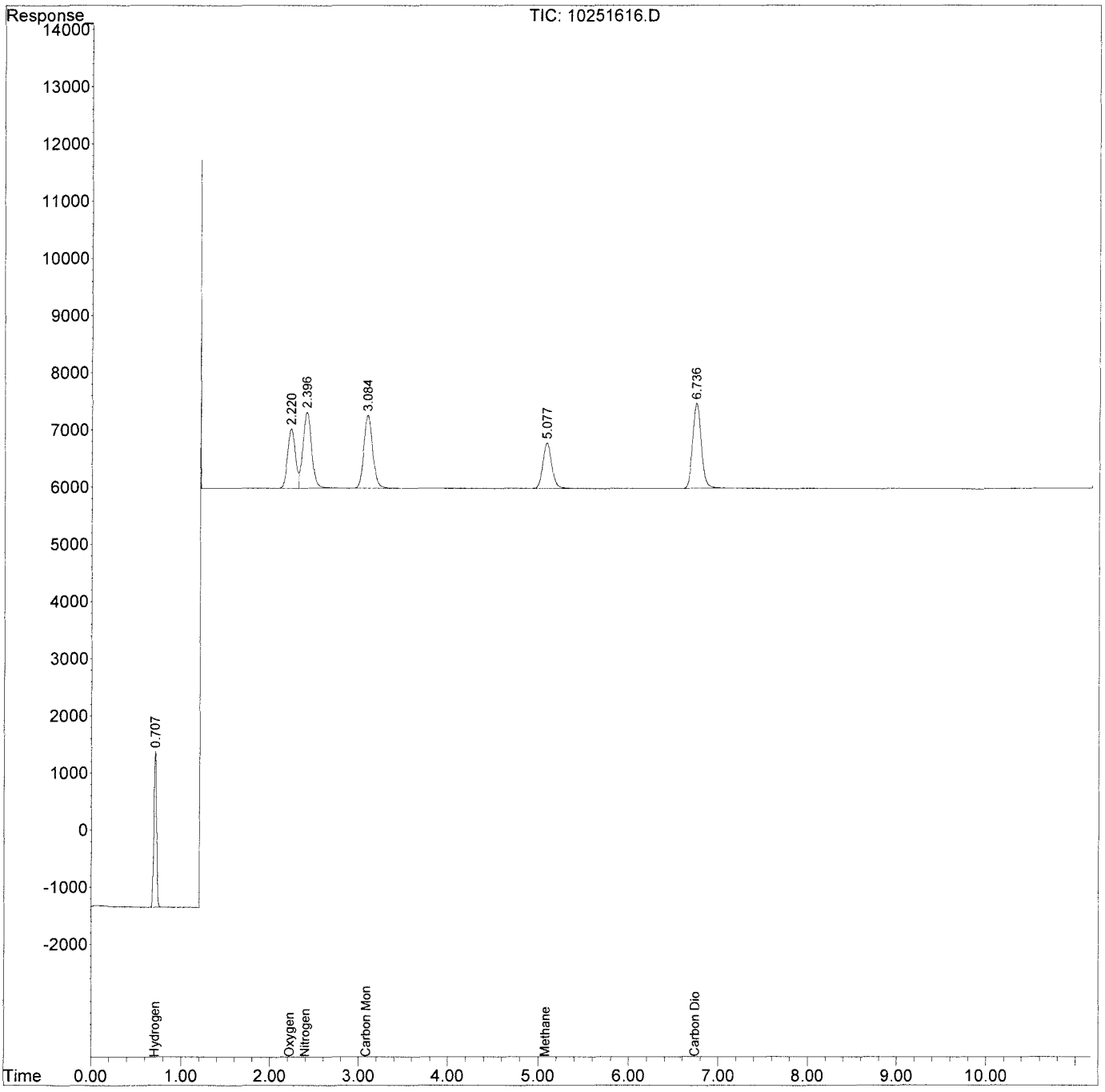
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.709	54259	41185.946	ppm
2)	Oxygen	2.222	63235	41786.719	ppm
3)	Nitrogen	2.398	90124	51404.649	ppm
4)	Carbon Monoxide	3.085	89184	52543.194	ppm
5)	Methane	5.078	53593	42573.110	ppm
6)	Carbon Dioxide	6.738	102669	50593.249	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\25\
Data File : 10251616.D
Signal(s) : TCD1A.CH
Acq On : 25 Oct 2016 1:48 pm
Operator : amf
Sample : std s30-10051601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 25 14:03:59 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\25\

	Sample ID	Date/Time	Acquisition Method	File Name	Misc Info	Operator	Comments
	std s30-05021602	25 Oct 116 8:18 am	MFXGS25C.M	10251601.D		amf	
	mb	25 Oct 116 8:35 am	MFXGS25C.M	10251602.D		amf	
	lab air	25 Oct 116 9:08 am	MFXGS25C.M	10251603.D		amf	
	lcs s11-07281601	25 Oct 116 9:28 am	MFXGS25C.M	10251604.D		amf	
	lcsd s11-07281601	25 Oct 116 9:46 am	MFXGS25C.M	10251605.D		amf	
	4901-001	25 Oct 116 9:58 am	MFXGS25C.M	10251606.D		amf	
	4901-002	25 Oct 116 10:15 am	MFXGS25C.M	10251607.D		amf	
	4901-003	25 Oct 116 10:33 am	MFXGS25C.M	10251608.D		amf	
	4901-004	25 Oct 116 10:50 am	MFXGS25C.M	10251609.D		amf	
	4980-001	25 Oct 116 11:47 am	MFXGS25C.M	10251610.D		amf	
	4980-002	25 Oct 116 12:04 pm	MFXGS25C.M	10251611.D		amf	
	4980-003	25 Oct 116 12:20 pm	MFXGS25C.M	10251612.D		amf	
	4980-004	25 Oct 116 12:37 pm	MFXGS25C.M	10251613.D		amf	
	4980-005	25 Oct 116 12:53 pm	MFXGS25C.M	10251614.D		amf	
	4980-006	25 Oct 116 1:32 pm	MFXGS25C.M	10251615.D		amf	
	std s30-10051601	25 Oct 116 1:48 pm	MFXGS25C.M	10251616.D		amf	
	4980-007	25 Oct 116 2:04 pm	MFXGS25C.M	10251617.D		amf	
	4980-008	25 Oct 116 2:20 pm	MFXGS25C.M	10251618.D		amf	
	4980-009	25 Oct 116 2:36 pm	MFXGS25C.M	10251619.D		amf	
	4980-010	25 Oct 116 2:52 pm	MFXGS25C.M	10251620.D		amf	
	4979-001	25 Oct 116 3:08 pm	MFXGS25C.M	10251621.D		amf	
	4979-002	25 Oct 116 3:24 pm	MFXGS25C.M	10251622.D		amf	
	4979-003	25 Oct 116 3:41 pm	MFXGS25C.M	10251623.D		amf	
	4979-004	25 Oct 116 3:57 pm	MFXGS25C.M	10251624.D		amf	
	4979-005	25 Oct 116 4:13 pm	MFXGS25C.M	10251625.D		amf	
	4979-006	25 Oct 116 4:29 pm	MFXGS25C.M	10251626.D		amf	
	std s30-10051601	25 Oct 116 4:45 pm	MFXGS25C.M	10251627.D		amf	

Data Path : J:\GC13\DATA\SCD\2016_10\19\
Data File : 10191617.D
Signal(s) : AIB1B.CH
Acq On : 19 Oct 2016 11:45 am
Operator : MC
Sample : 4901-001 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 24 08:15:59 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	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	

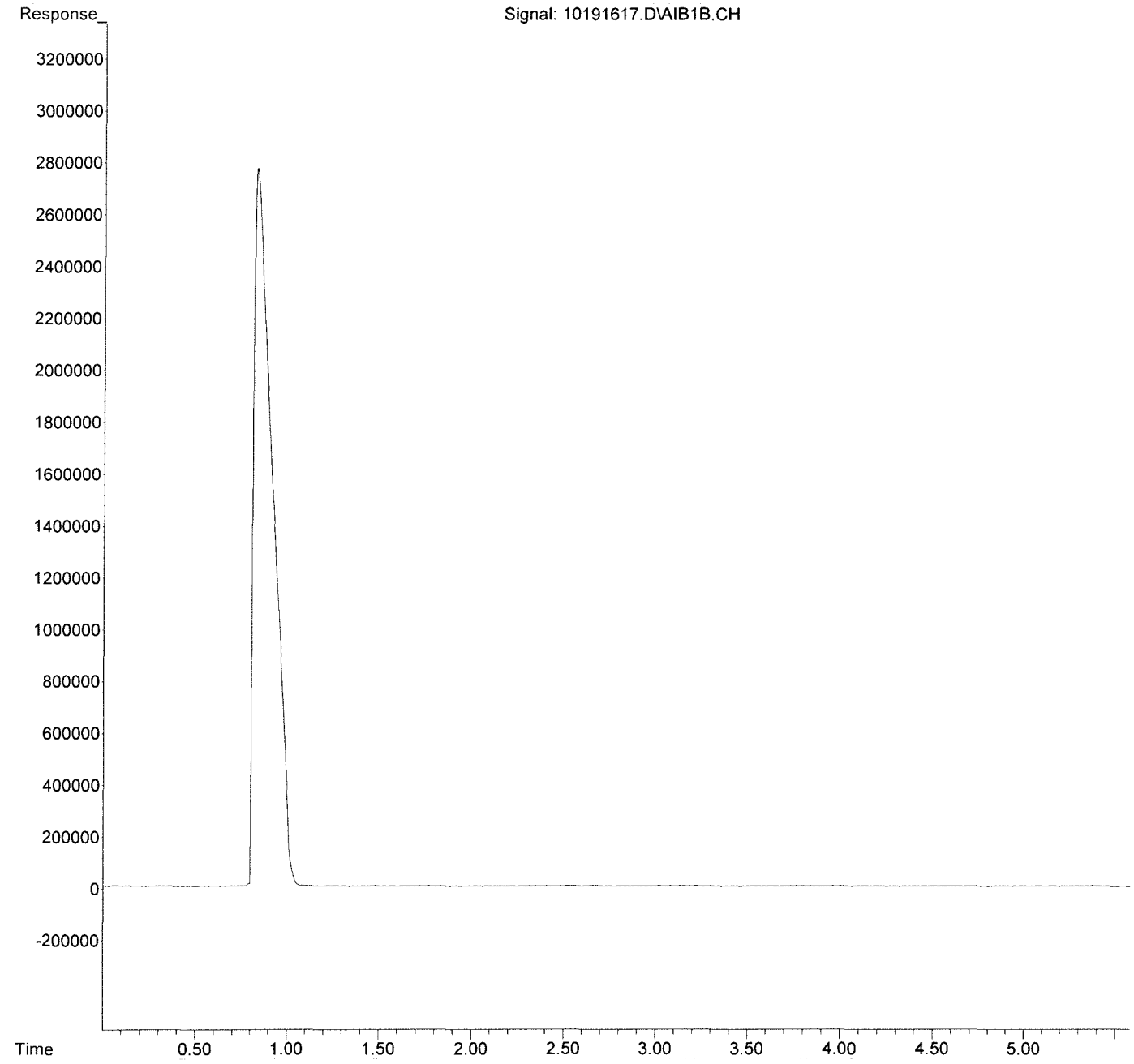
(f)=RT Delta > 1/2 Window (m)=manual int.

MK 11/24/16

Data Path : J:\GC13\DATA\SCD\2016_10\19\
Data File : 10191617.D
Signal(s) : AIB1B.CH
Acq On : 19 Oct 2016 11:45 am
Operator : MC
Sample : 4901-001 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 24 08:15:59 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 :



Data Path : J:\GC13\DATA\SCD\2016_10\19\
Data File : 10191618.D
Signal(s) : AIB1B.CH
Acq On : 19 Oct 2016 11:52 am
Operator : MC
Sample : 4901-002 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 24 08:16:12 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 :

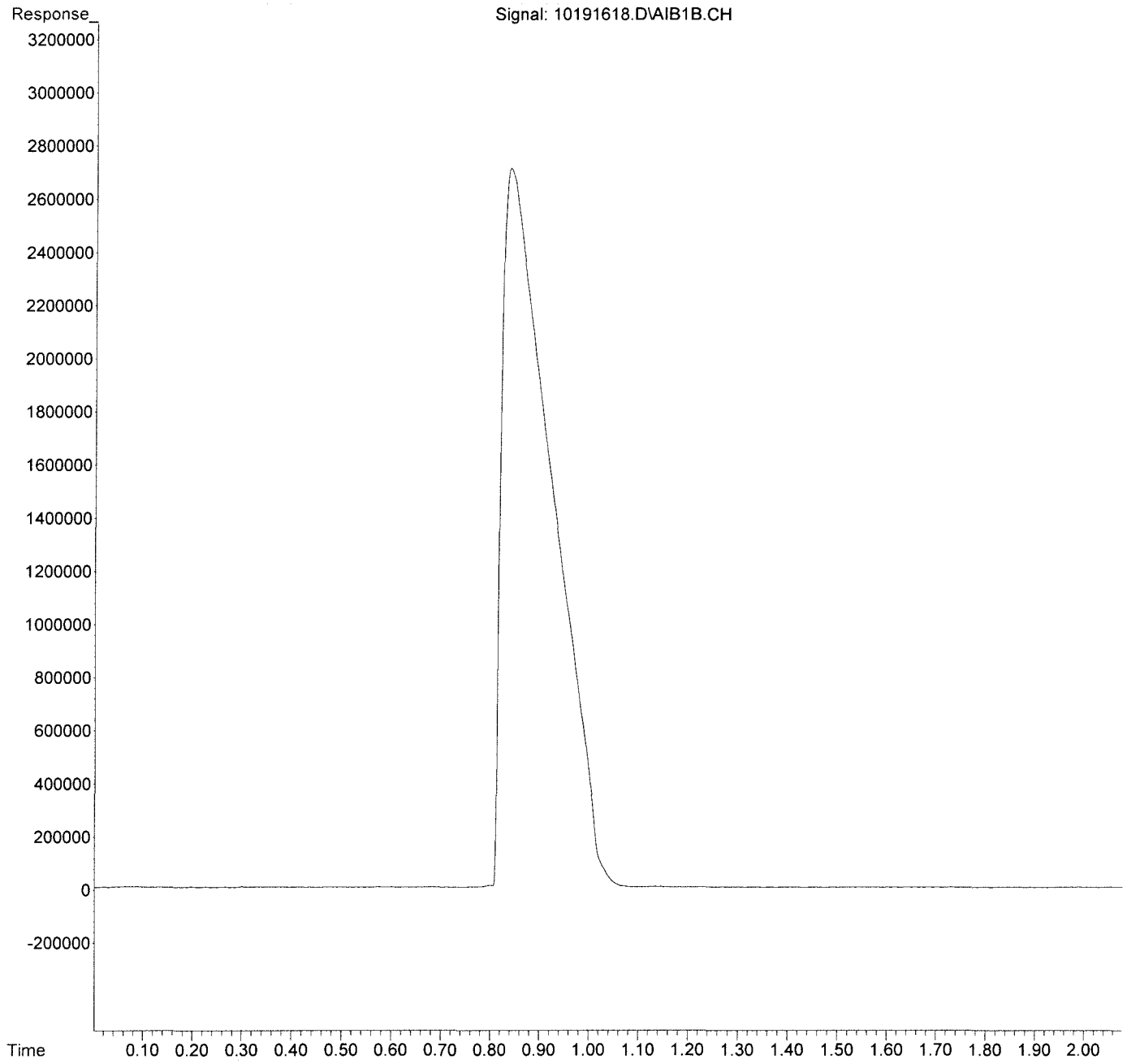
		Compound	R.T.	Response	Conc	Units	
Target Compounds							
1)	Z	Hydrogen_Sulfide	0.000	0	N.D.	ppb	d
2)	W	Carbonyl_Sulfide	0.000	0	N.D.	ppb	
3)	T	Methyl_Mercaptan	0.000	0	N.D.	ppb	
4)	T	Ethyl_Mercaptan	0.000	0	N.D.	ppb	
5)	T	Dimethyl_Sulfide	0.000	0	N.D.	ppb	
6)	T	Carbon_Disulfide	0.000	0	N.D.	ppb	
7)	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 : J:\GC13\DATA\SCD\2016_10\19\
Data File : 10191618.D
Signal(s) : AIB1B.CH
Acq On : 19 Oct 2016 11:52 am
Operator : MC
Sample : 4901-002 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 24 08:16:12 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\19\
Data File : 10191619.D
Signal(s) : AIB1B.CH
Acq On : 19 Oct 2016 1:03 pm
Operator : MC
Sample : 4901-003 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 24 08:16:23 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 :

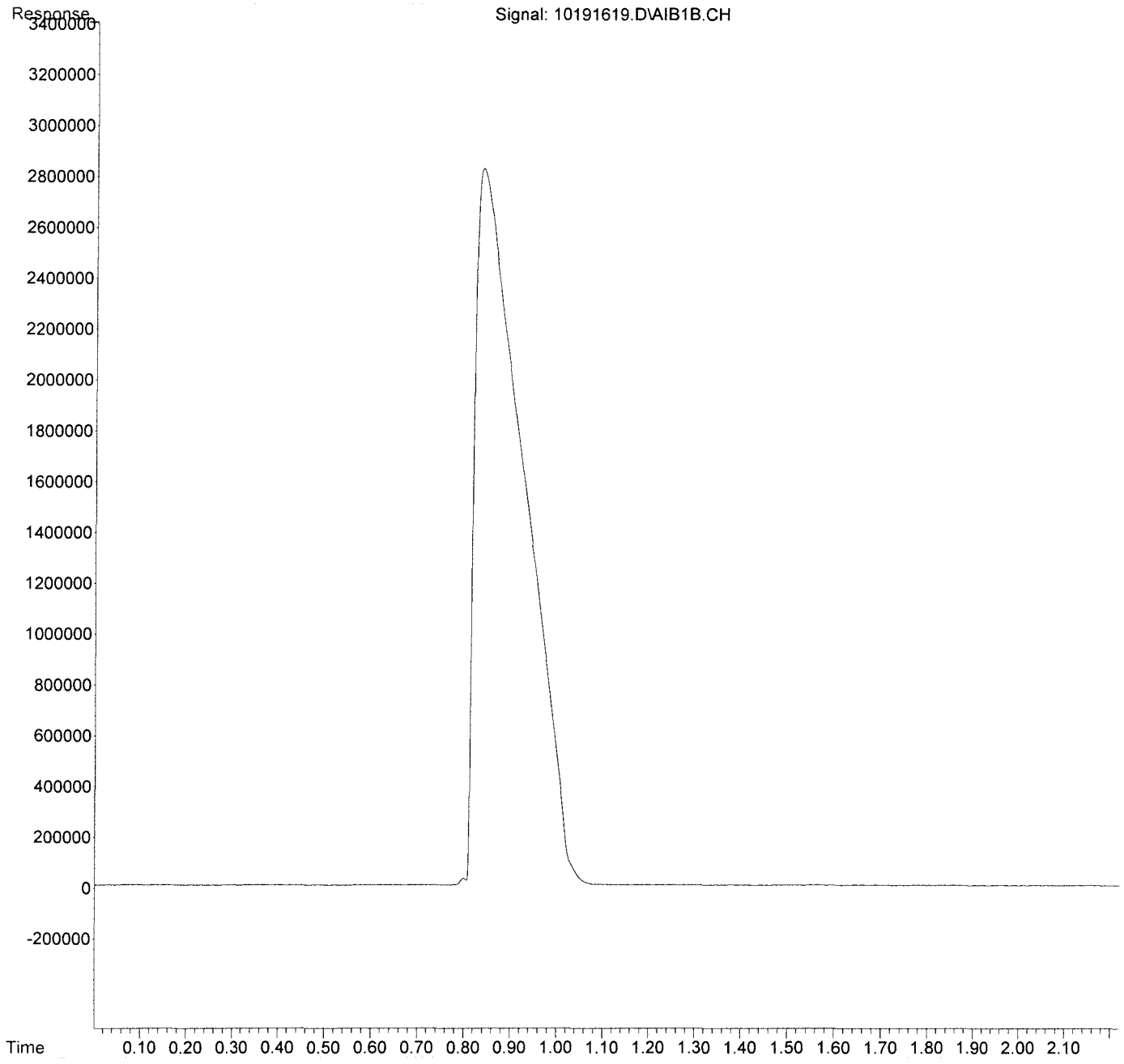
		Compound	R.T.	Response	Conc	Units	
Target Compounds							
1)	Z	Hydrogen_Sulfide	0.000	0	N.D.	ppb	d
2)	W	Carbonyl_Sulfide	0.000	0	N.D.	ppb	
3)	T	Methyl_Mercaptan	0.000	0	N.D.	ppb	
4)	T	Ethyl_Mercaptan	0.000	0	N.D.	ppb	
5)	T	Dimethyl_Sulfide	0.000	0	N.D.	ppb	
6)	T	Carbon_Disulfide	0.000	0	N.D.	ppb	
7)	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 : J:\GC13\DATA\SCD\2016_10\19\
Data File : 10191619.D
Signal(s) : AIB1B.CH
Acq On : 19 Oct 2016 1:03 pm
Operator : MC
Sample : 4901-003 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 24 08:16:23 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\19\
Data File : 10191620.D
Signal(s) : AIB1B.CH
Acq On : 19 Oct 2016 1:05 pm
Operator : MC
Sample : 4901-004 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 24 08:16:37 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 :

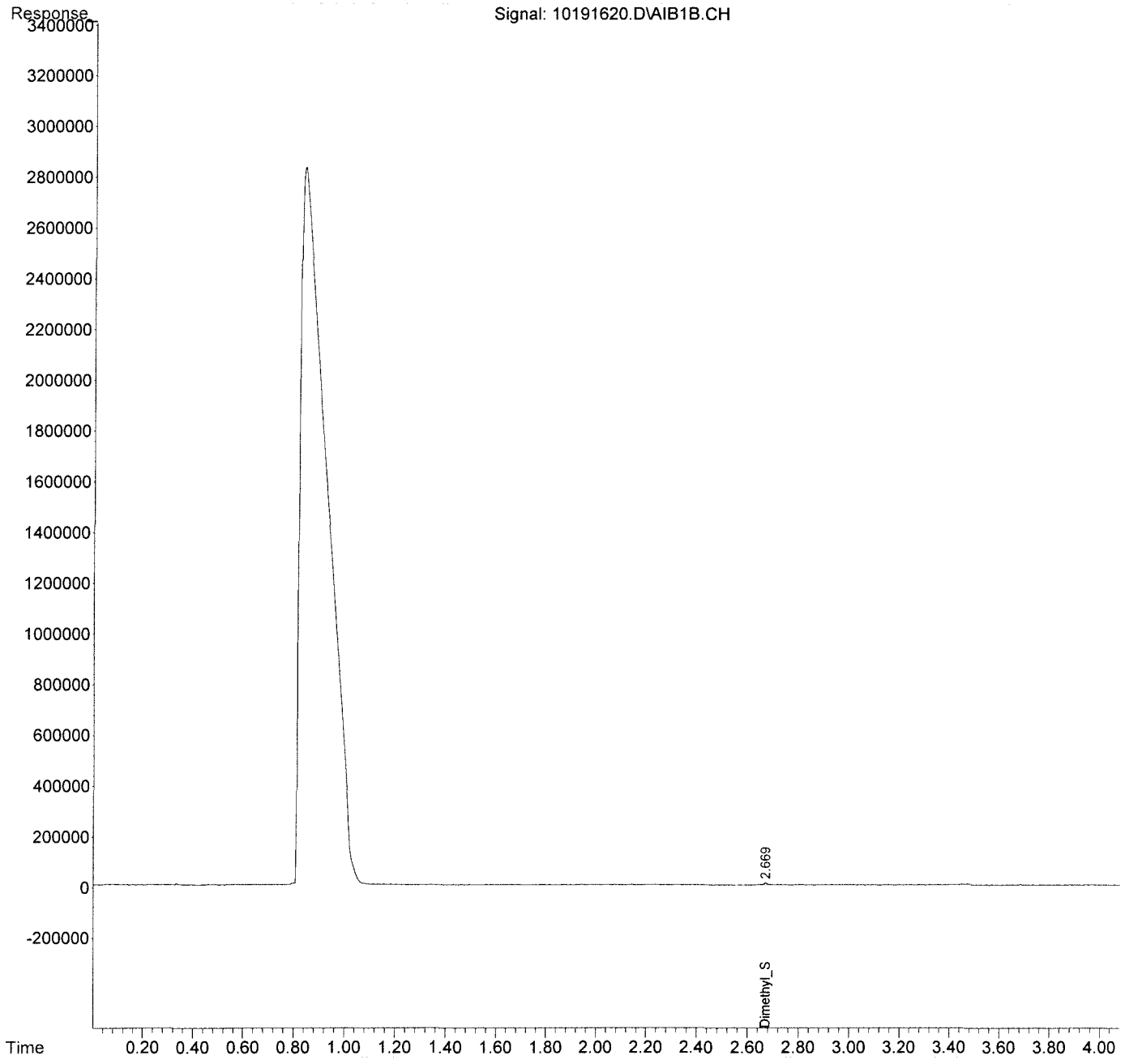
		Compound	R.T.	Response	Conc	Units	
Target Compounds							
1)	Z	Hydrogen_Sulfide	0.000	0	N.D.	ppb	d
2)	W	Carbonyl_Sulfide	0.000	0	N.D.	ppb	
3)	T	Methyl_Mercaptan	0.000	0	N.D.	ppb	
4)	T	Ethyl_Mercaptan	0.000	0	N.D.	ppb	
5)	T	Dimethyl_Sulfide	2.670	158236	2.359	ppb	
6)	T	Carbon_Disulfide	0.000	0	N.D.	ppb	
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 : J:\GC13\DATA\SCD\2016_10\19\
Data File : 10191620.D
Signal(s) : AIB1B.CH
Acq On : 19 Oct 2016 1:05 pm
Operator : MC
Sample : 4901-004 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 24 08:16:37 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\19\
Data File : 10191606.D
Signal(s) : AIB1B.CH
Acq On : 19 Oct 2016 8:15 am
Operator : MC
Sample : mb 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 24 08:02:12 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

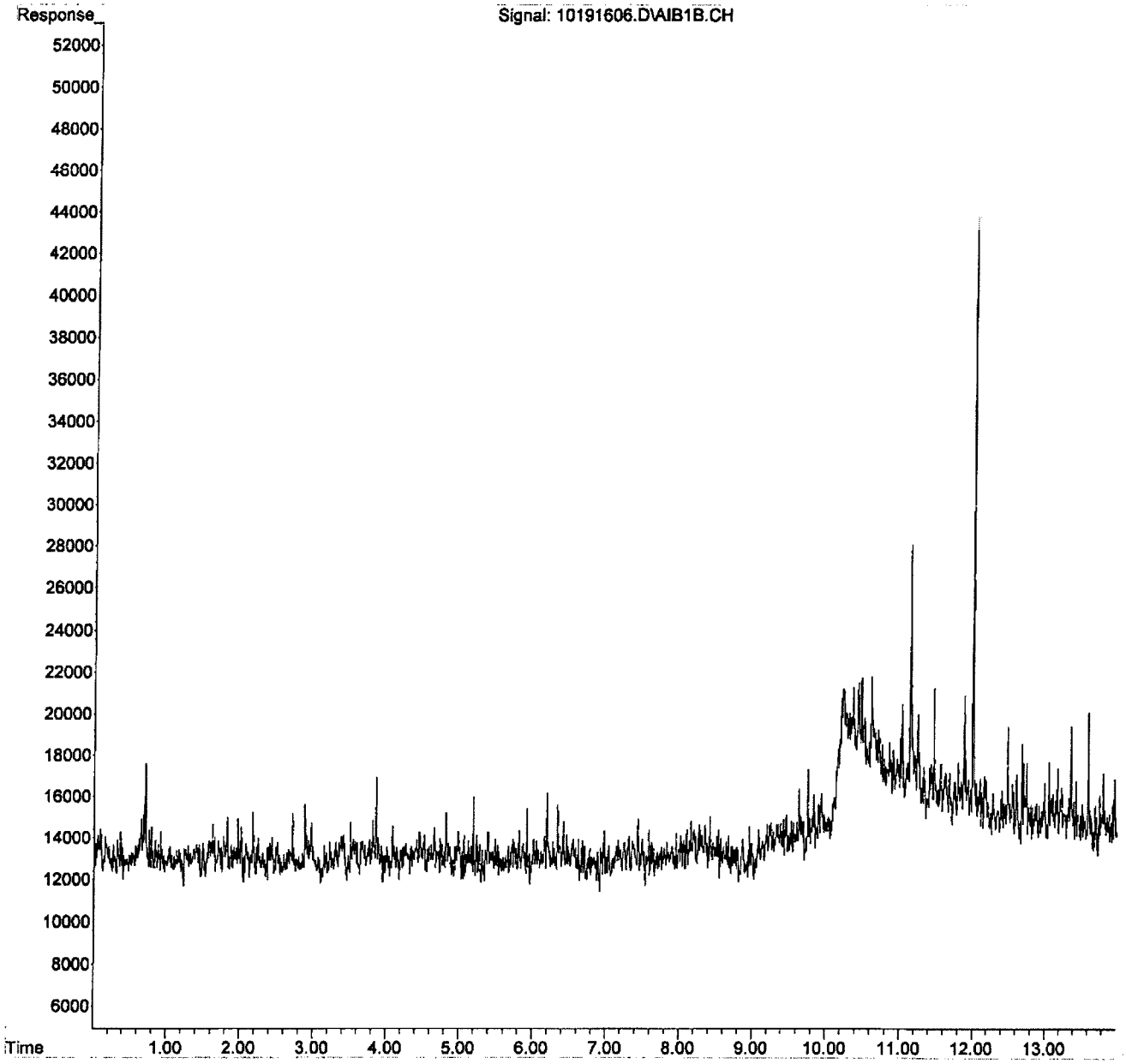
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC13\DATA\SCD\2016_10\19\
Data File : 10191606.D
Signal(s) : AIB1B.CH
Acq On : 19 Oct 2016 8:15 am
Operator : MC
Sample : mb 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 24 08:02:12 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\19\
Data File : 10191603.D
Signal(s) : AIB1B.CH
Acq On : 19 Oct 2016 7:48 am
Operator : MC
Sample : lcs s30-10171602
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 24 08:01:25 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	62636793	1002.717	ppb
2)	W	Carbonyl_Sulfide	0.973	69467814	991.798	ppb
3)	T	Methyl_Mercaptan	1.680	64730485	965.134	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

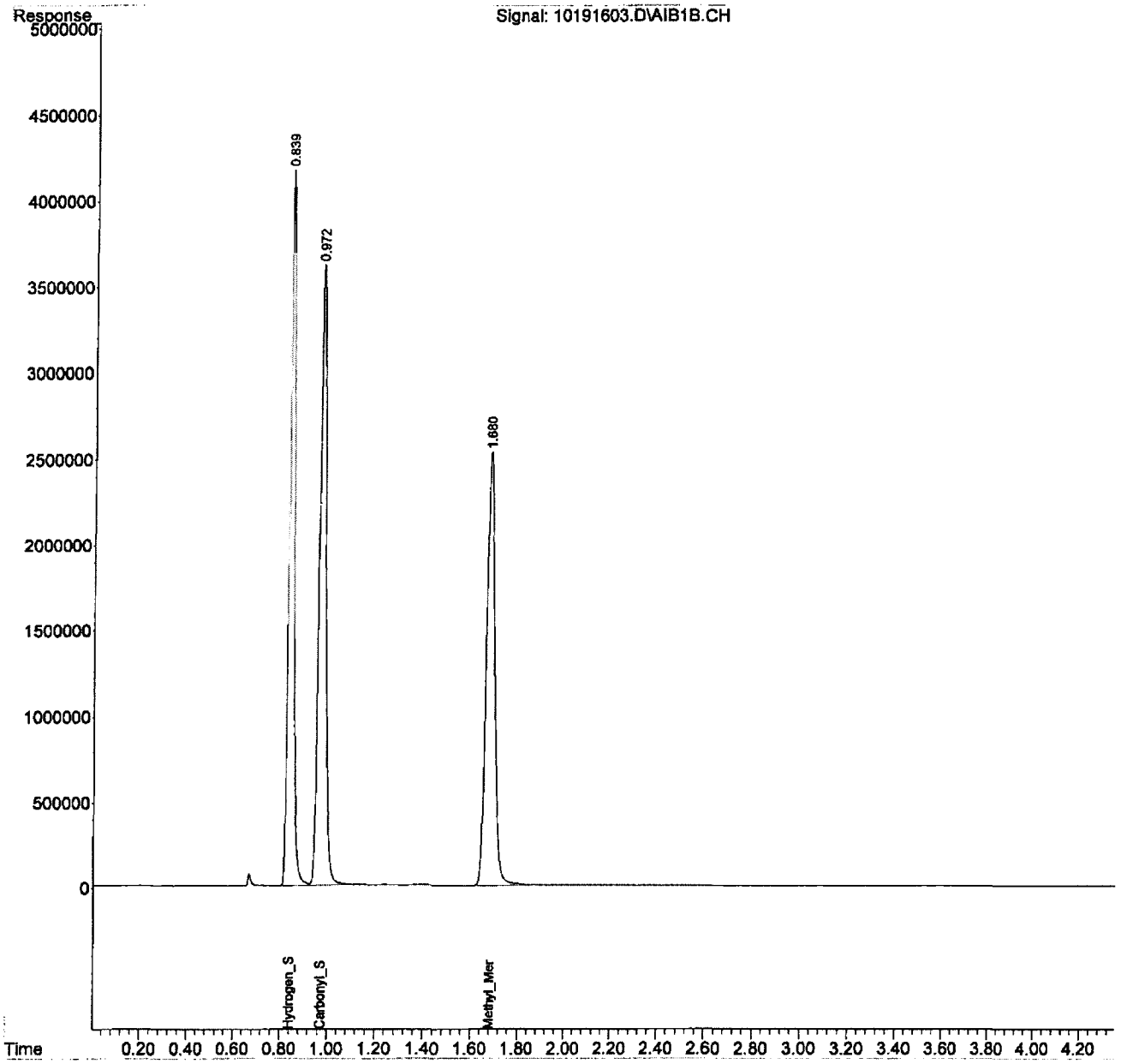
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC13\DATA\SCD\2016_10\19\
Data File : 10191603.D
Signal(s) : AIB1B.CH
Acq On : 19 Oct 2016 7:48 am
Operator : MC
Sample : lcs s30-10171602
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 24 08:01:25 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

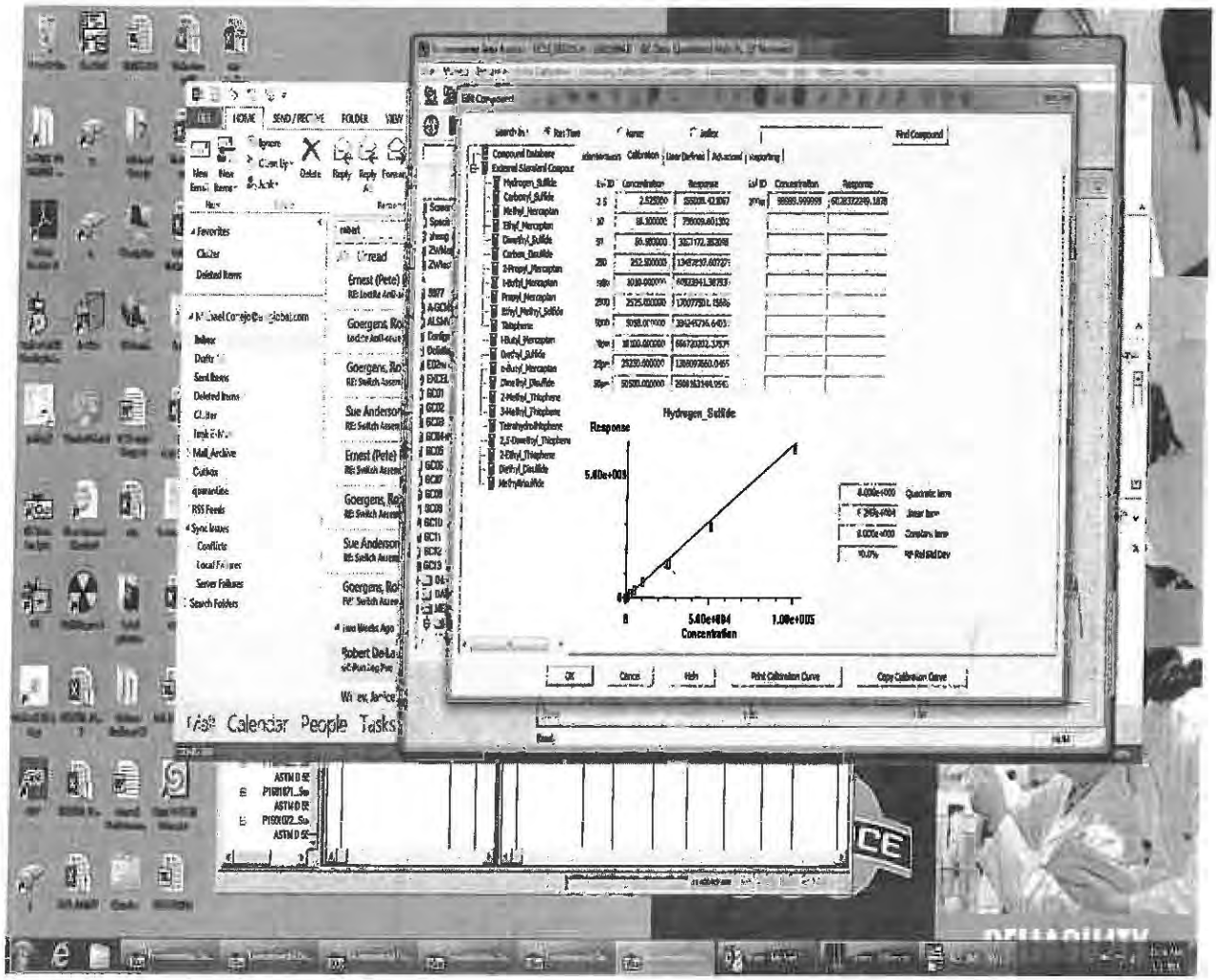
Method Path : J:\GC13\METHODS\
Method File : GC13_030216.M
Title : ASTM D5504, VOA-S307M_SCD, VOA SH2O_SCD
Last Update : Tue May 03 15:14:01 2016
Response Via : Initial Calibration

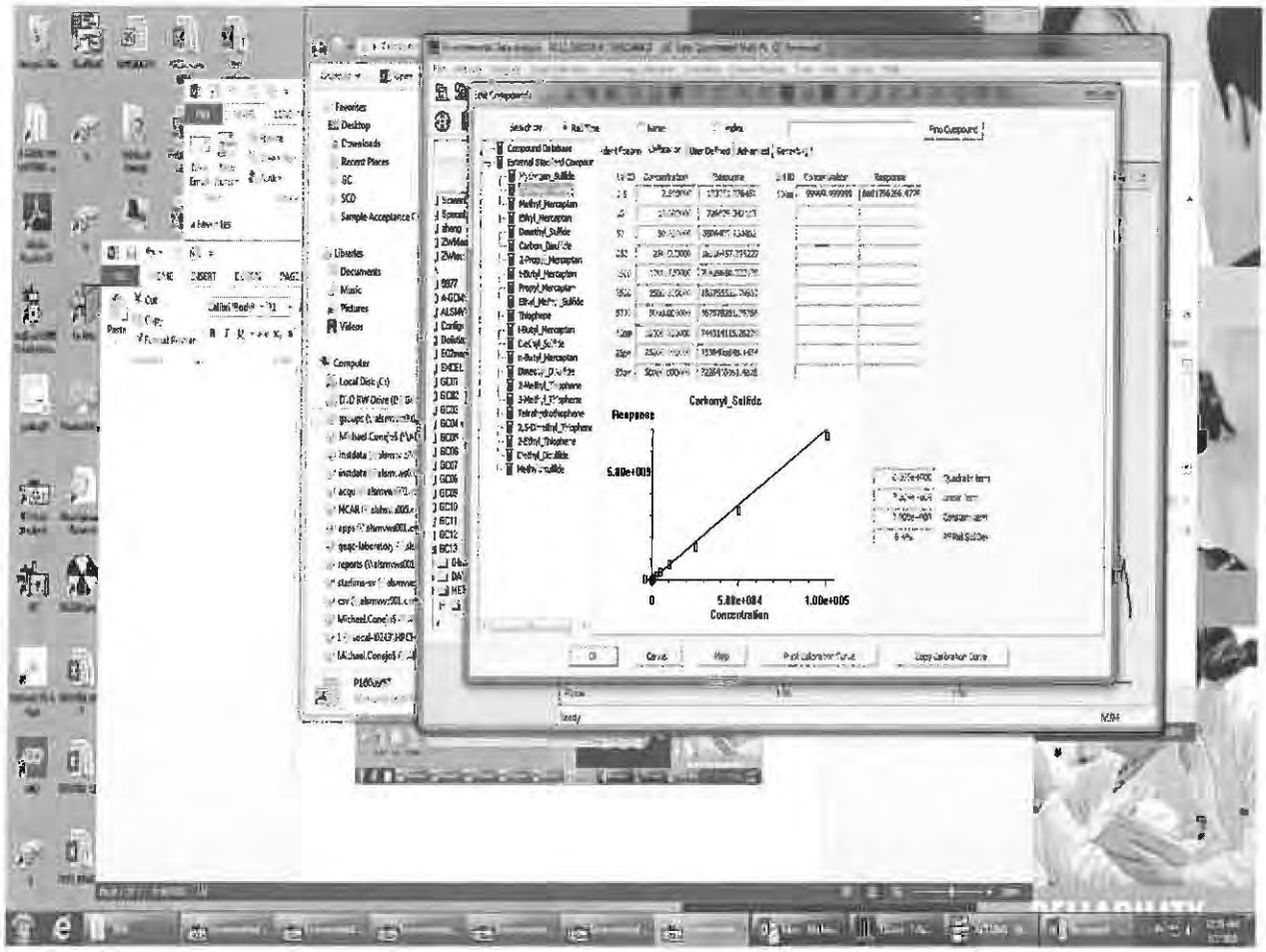
Calibration Files
2.5 =03021604.D 10 =03021605.D 50 =03021606.D
250 =03021607.D 1000 =03021608.D 2500 =03021609.D

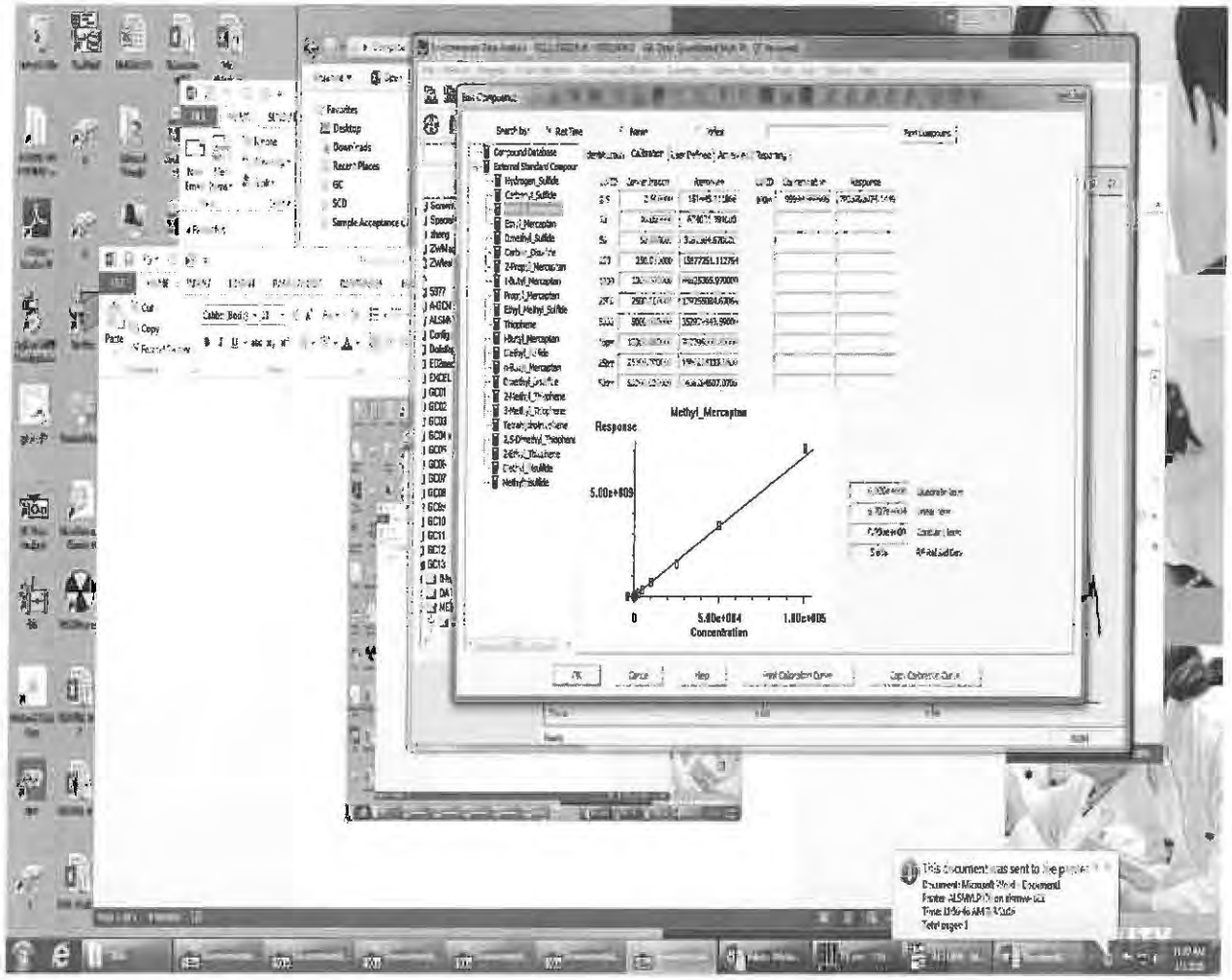
		Compound	2.5	10	50	250	1000	2500	Avg		%RSD
1)	Z	Hydrogen_Sulfide	6.139	7.485	6.511	5.330	6.032	6.736	6.247	E4	9.97
2)	W	Carbonyl_Sulfide	7.330	7.261	7.013	6.727	7.083	7.550	7.004	E4	6.38
3)	T	Methyl_Mercaptan	6.058	6.748	6.363	6.351	6.863	7.170	6.707	E4	5.78
4)	T	Ethyl_Mercaptan	6.058	6.748	6.363	6.351	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
Find Compound


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	

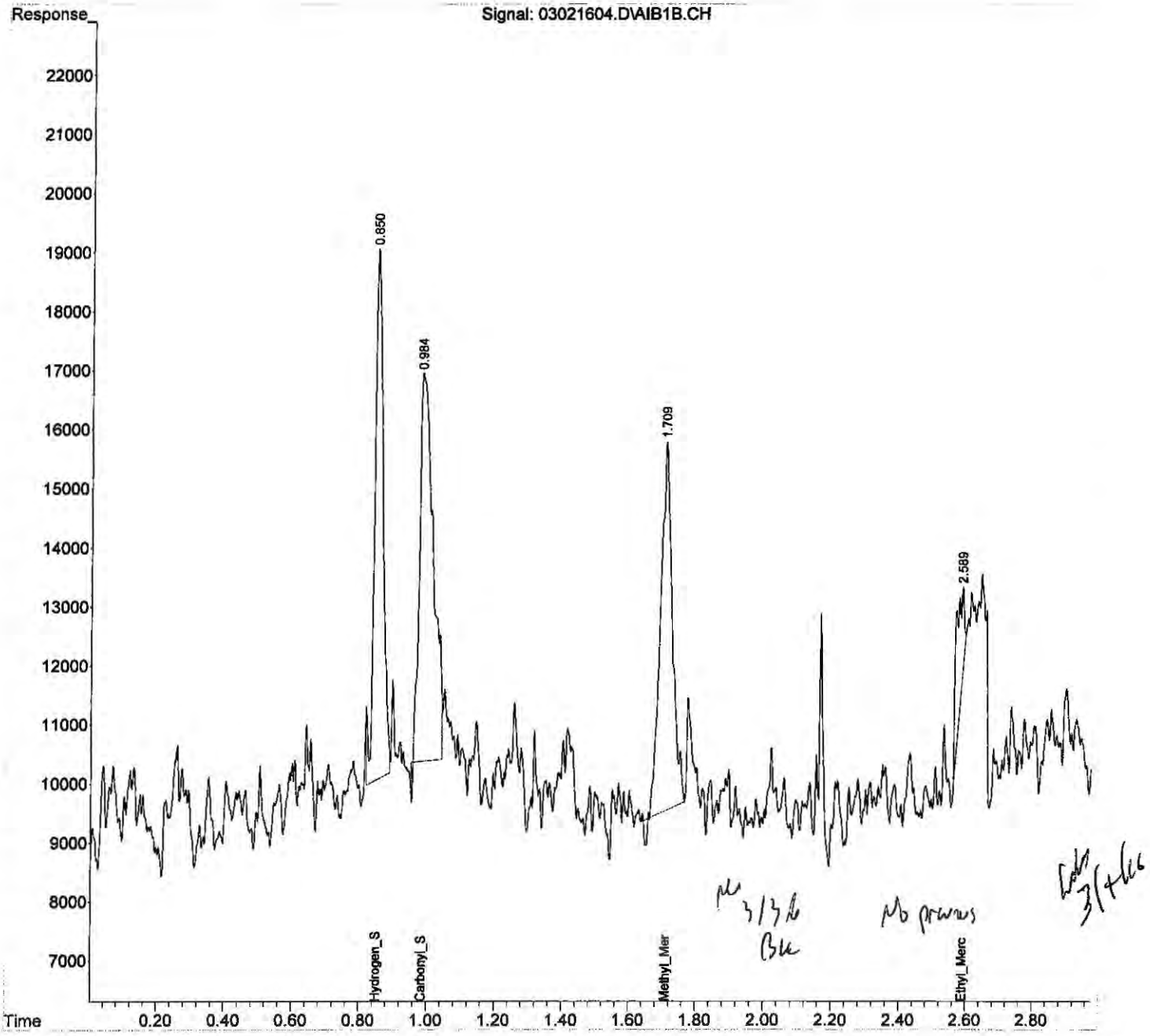
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



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	

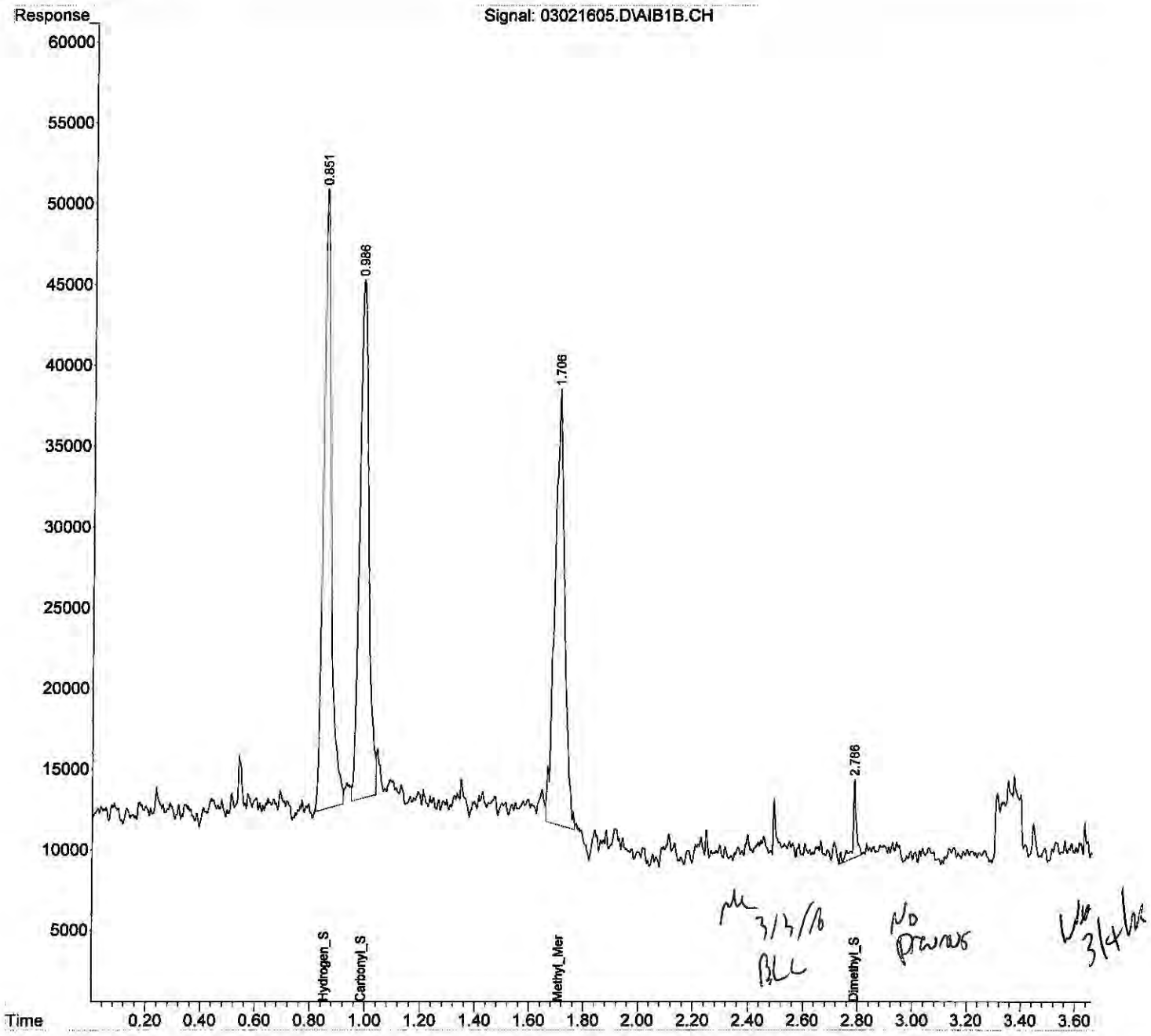
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



3/3/16 BLL

NO Peaks

3/4/16

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	

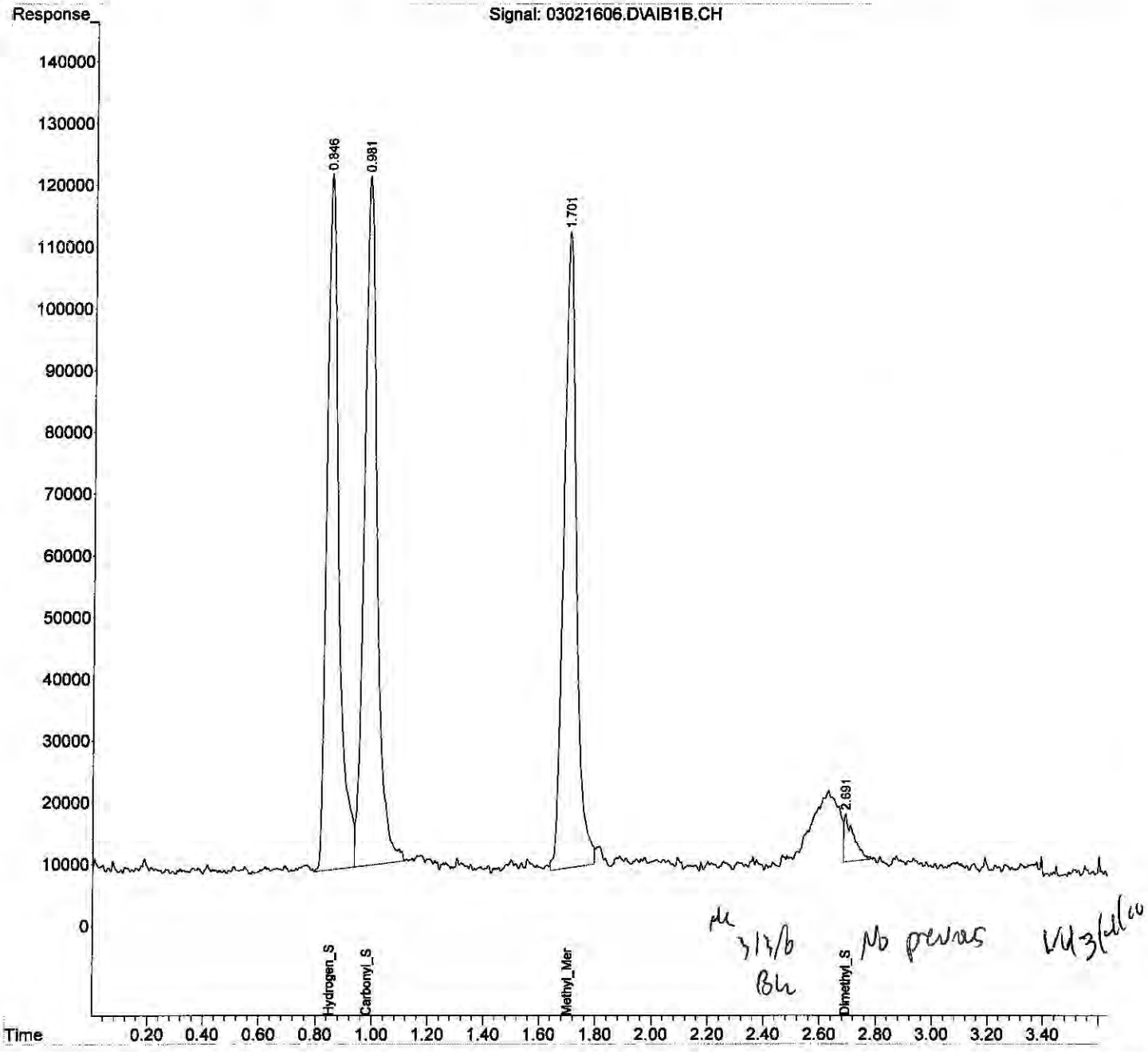
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



pk 3/3/16 No peaks VM 3/4/16
Blk

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 :

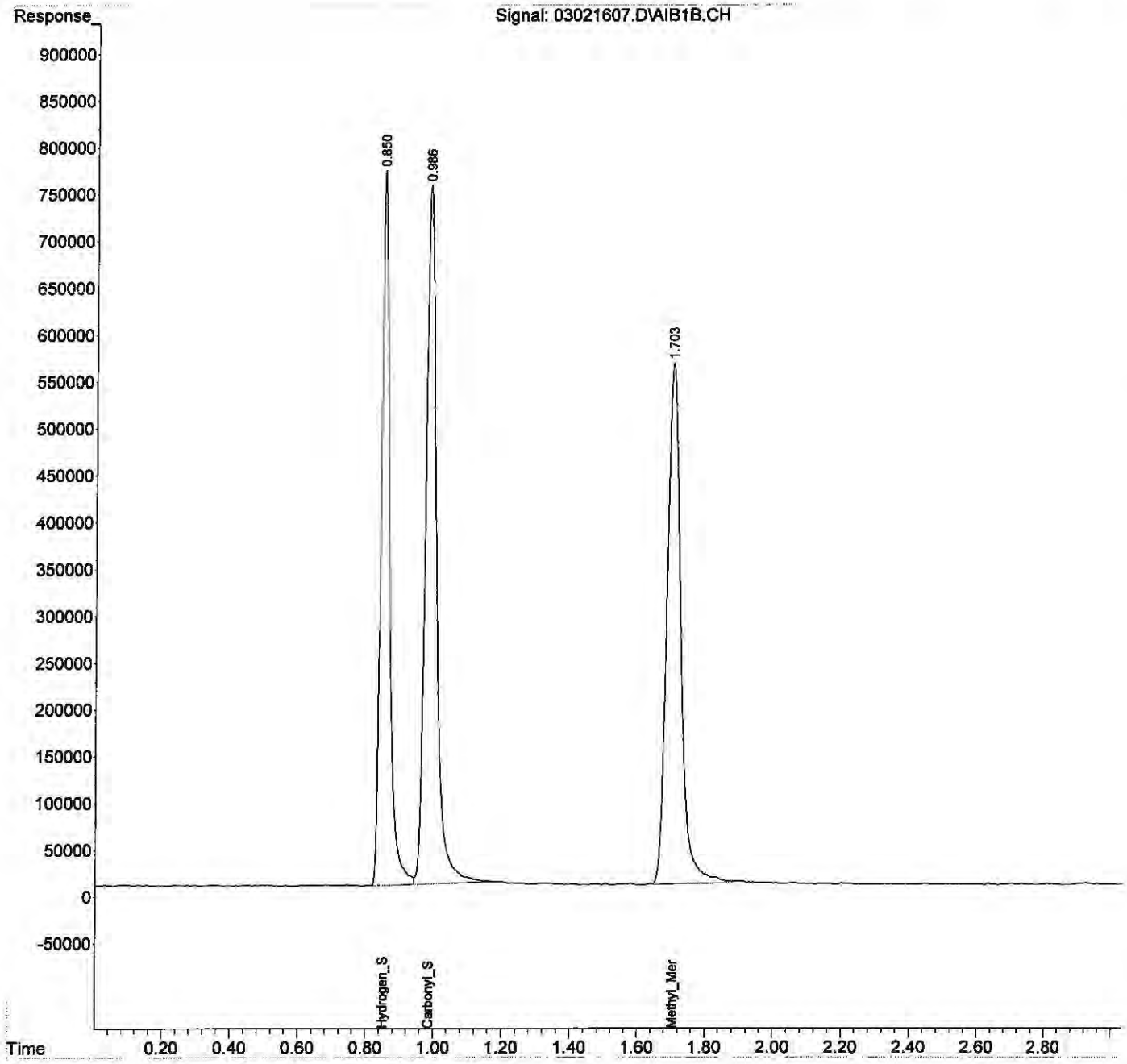
		Compound	R.T.	Response	Conc	Units
Target Compounds						
1)	Z	Hydrogen_Sulfide	0.851	13457888	198.525	ppb
2)	W	Carbonyl_Sulfide	0.986	16816957	233.530	ppb
3)	T	Methyl_Mercaptan	1.704	15877251	248.485	ppb
4)	T	Ethyl_Mercaptan	0.000	0	N.D.	ppb
5)	T	Dimethyl_Sulfide	0.000	0	N.D.	ppb
6)	T	Carbon_Disulfide	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.

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 :

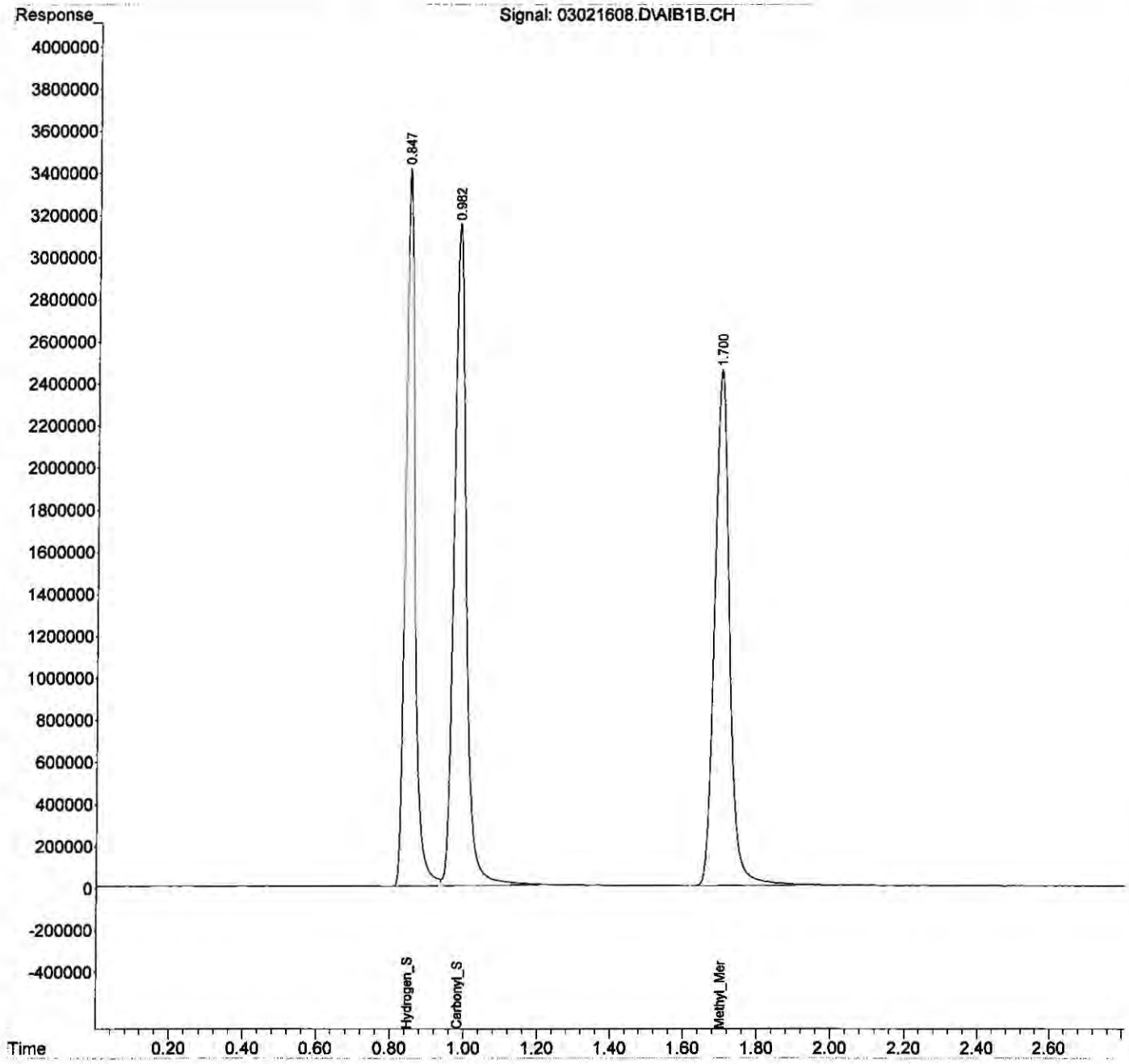
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1) Z	Hydrogen_Sulfide	0.848	60923941	966.480	ppb
2) W	Carbonyl_Sulfide	0.983	70829650	1011.241	ppb
3) T	Methyl_Mercaptan	1.701	68625366	1023.207	ppb
4) T	Ethyl_Mercaptan	0.000	0	N.D.	ppb
5) T	Dimethyl_Sulfide	0.000	0	N.D.	ppb
6) T	Carbon_Disulfide	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

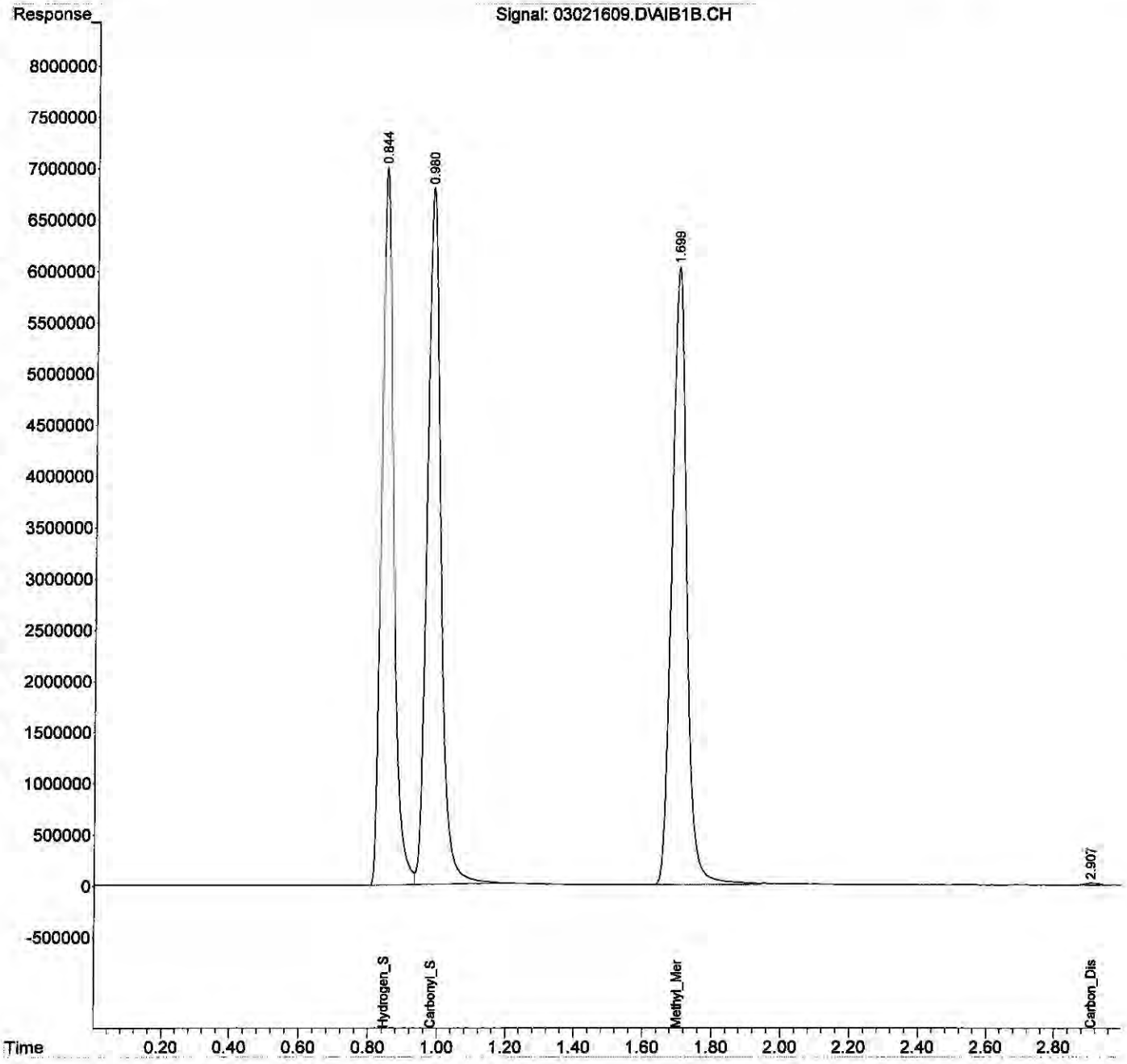
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

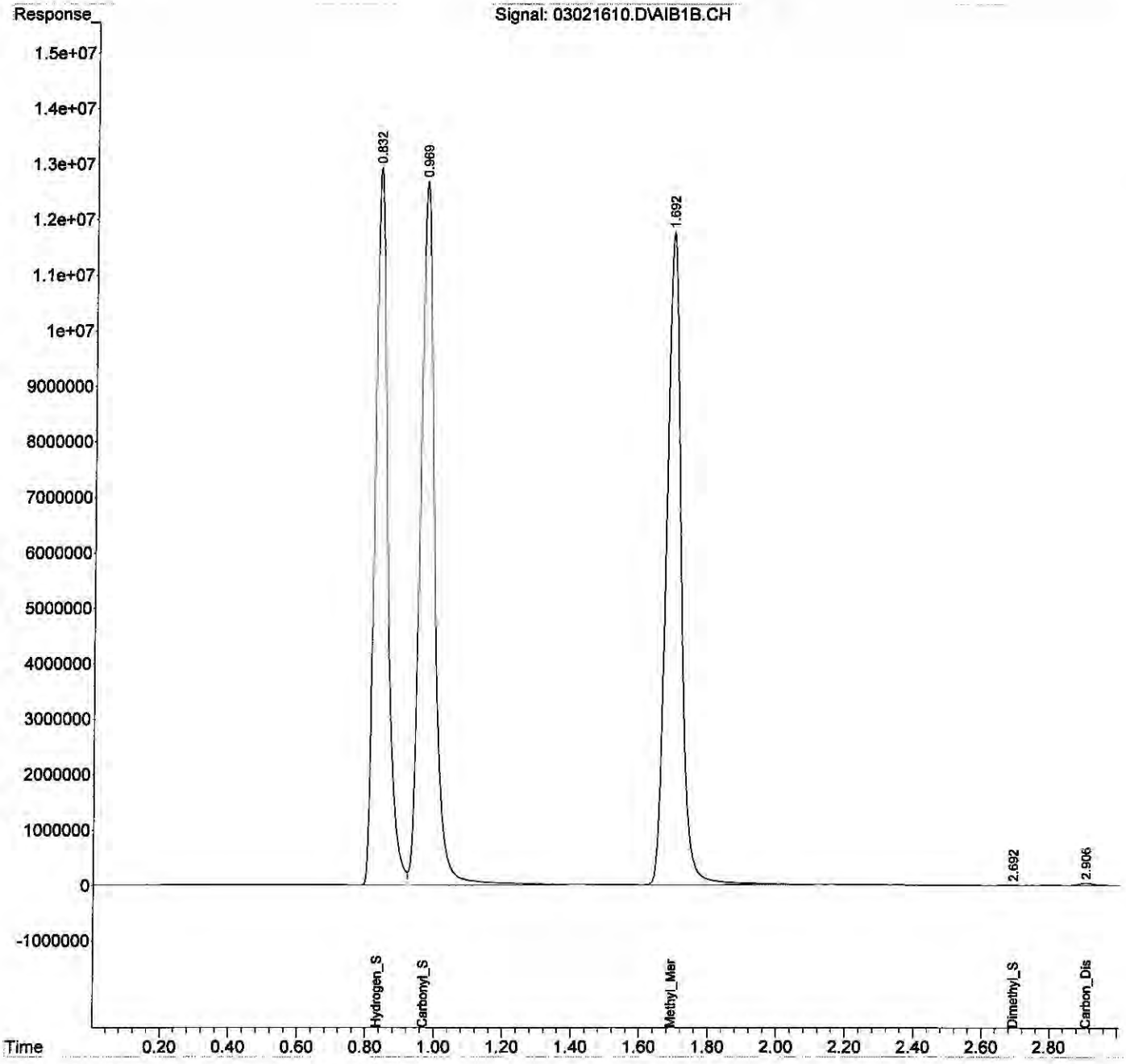
		Compound	R.T.	Response	Conc	Units
Target Compounds						
1)	Z	Hydrogen_Sulfide	0.833	334245717	5193.454	ppb
2)	W	Carbonyl_Sulfide	0.970	367578252	5133.345	ppb
3)	T	Methyl_Mercaptan	1.692	352979844	5354.603	ppb
4)	T	Ethyl_Mercaptan	0.000	0	N.D.	ppb
5)	T	Dimethyl_Sulfide	2.692	216055	53.780	ppb
6)	T	Carbon_Disulfide	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.

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

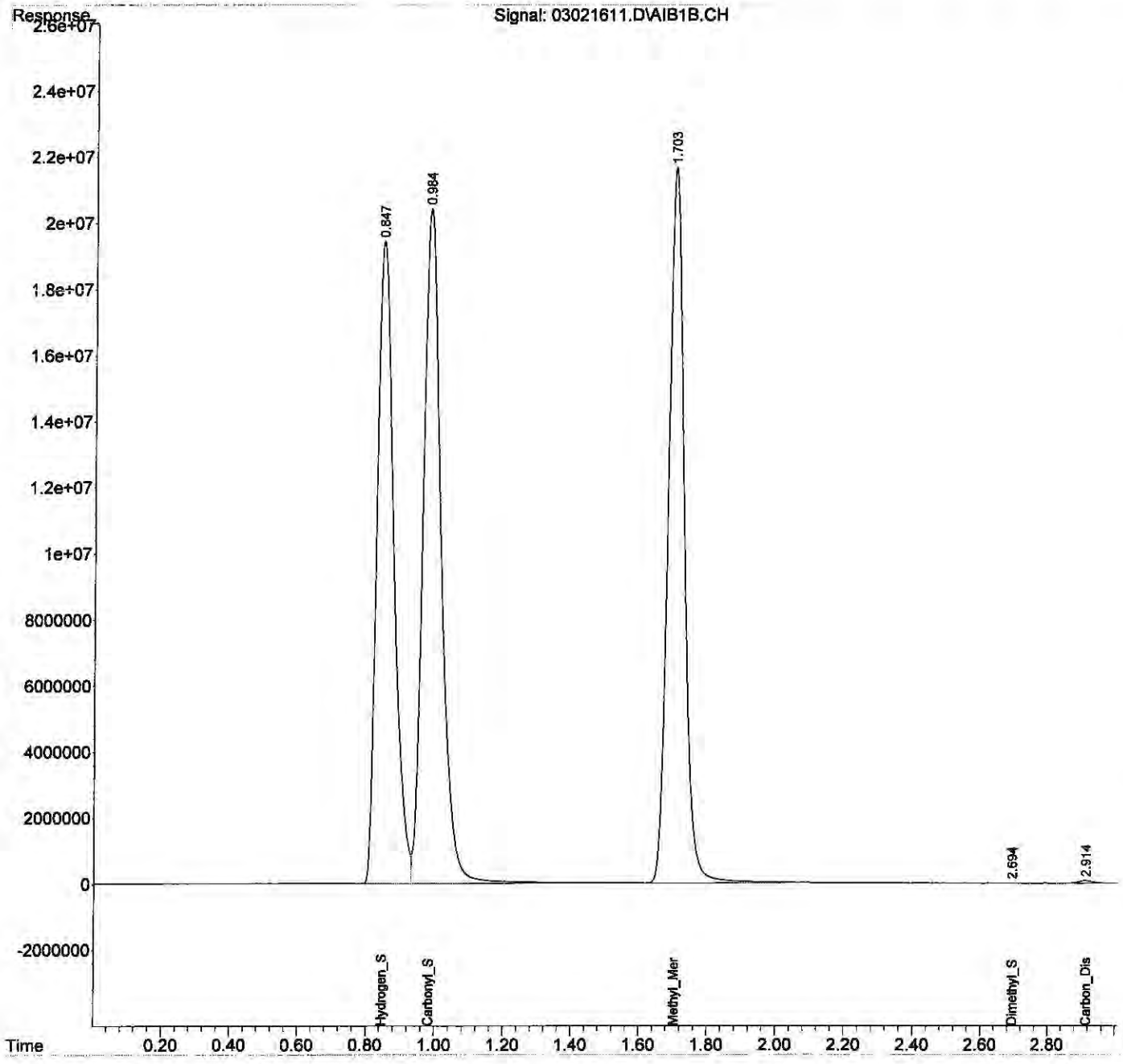
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

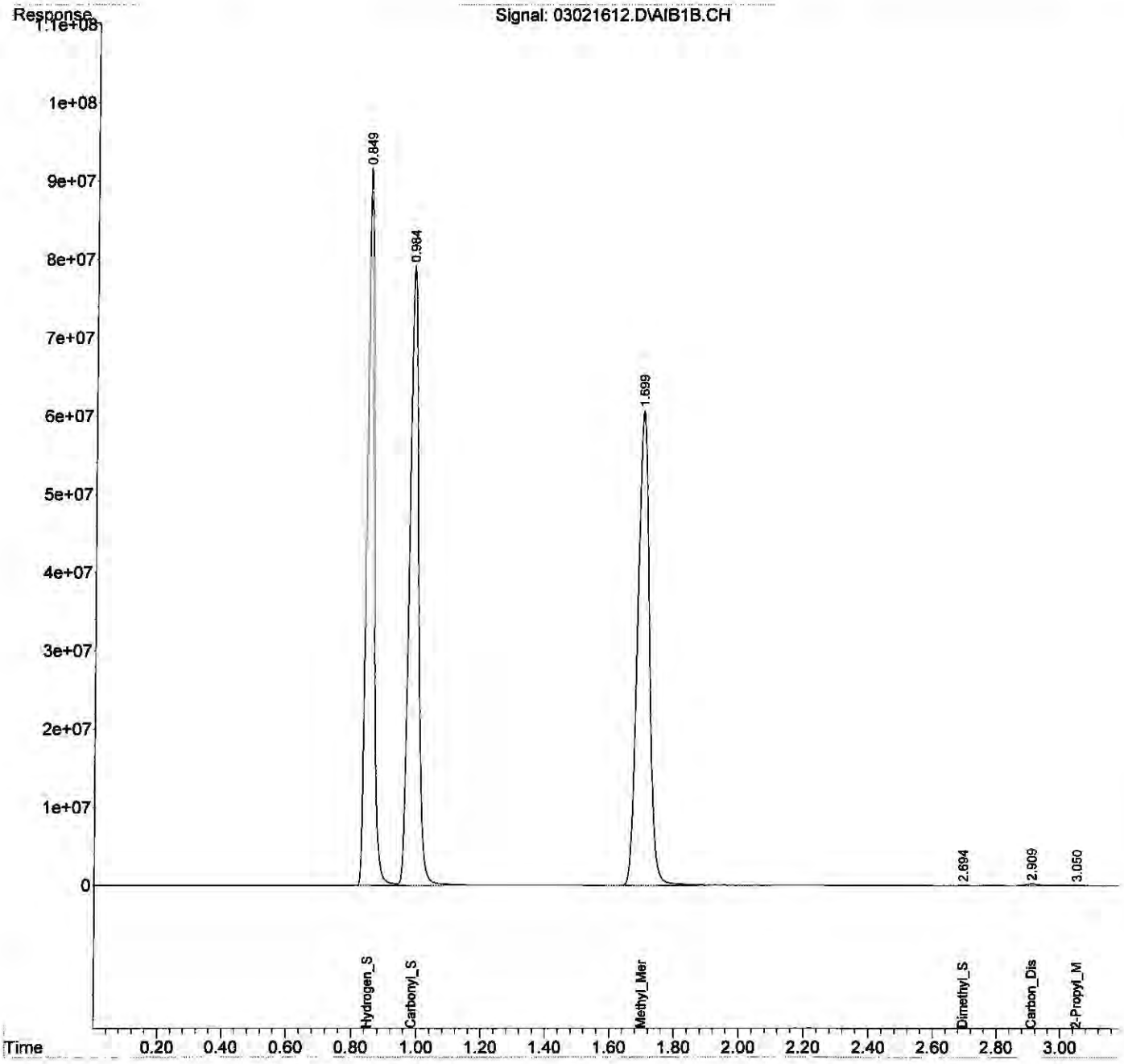
		Compound	R.T.	Response	Conc	Units
Target Compounds						
1)	Z	Hydrogen_Sulfide	0.850	1386097660	21337.898	ppb
2)	W	Carbonyl_Sulfide	0.985	1538408848	21308.229	ppb
3)	T	Methyl_Mercaptan	1.700	1560233333	23271.845	ppb
4)	T	Ethyl_Mercaptan	0.000	0	N.D.	ppb
5)	T	Dimethyl_Sulfide	2.694	419001	6.917	ppb
6)	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	

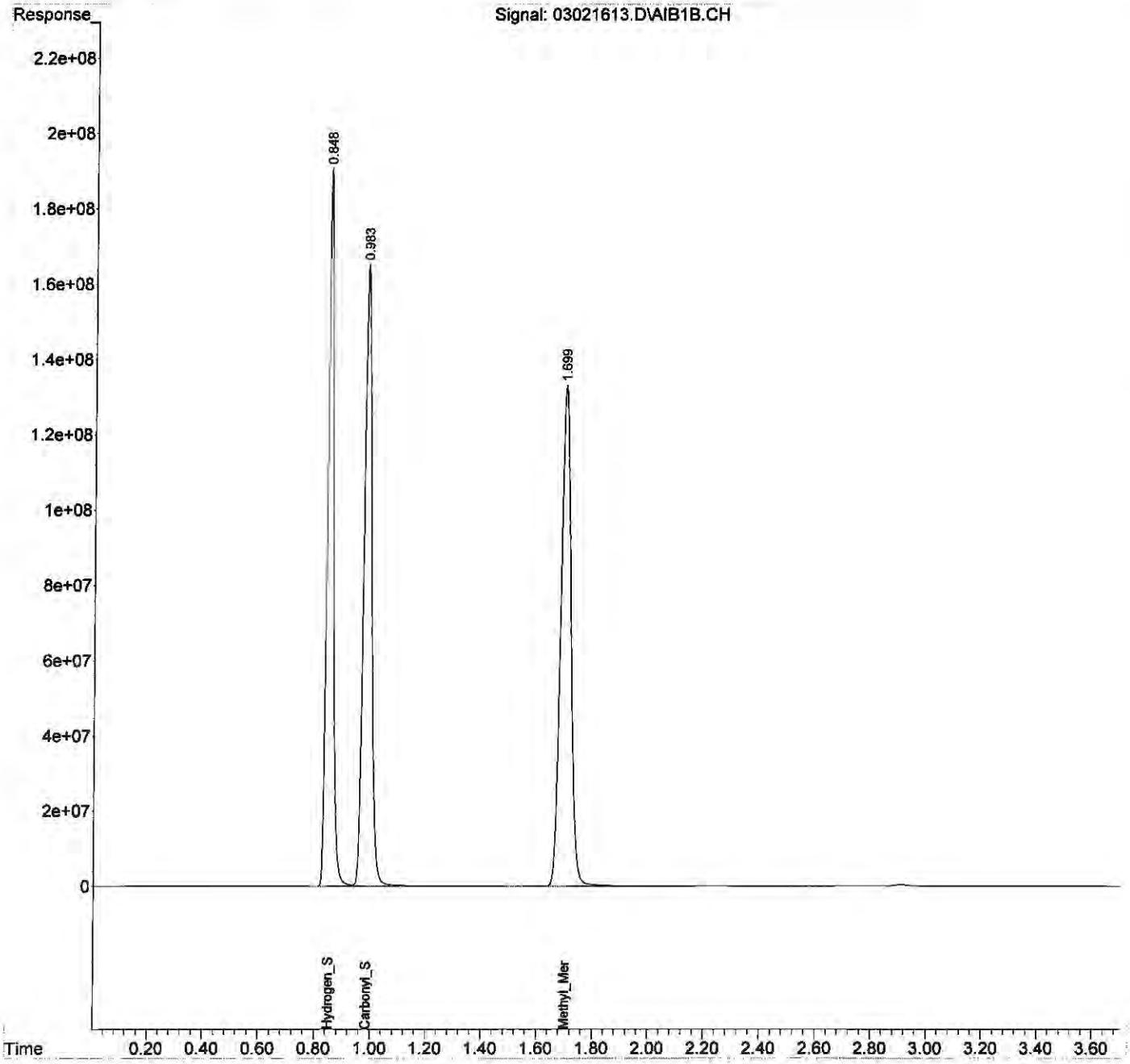
(f)=RT Delta > 1/2 Window (m)=manual int.

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	

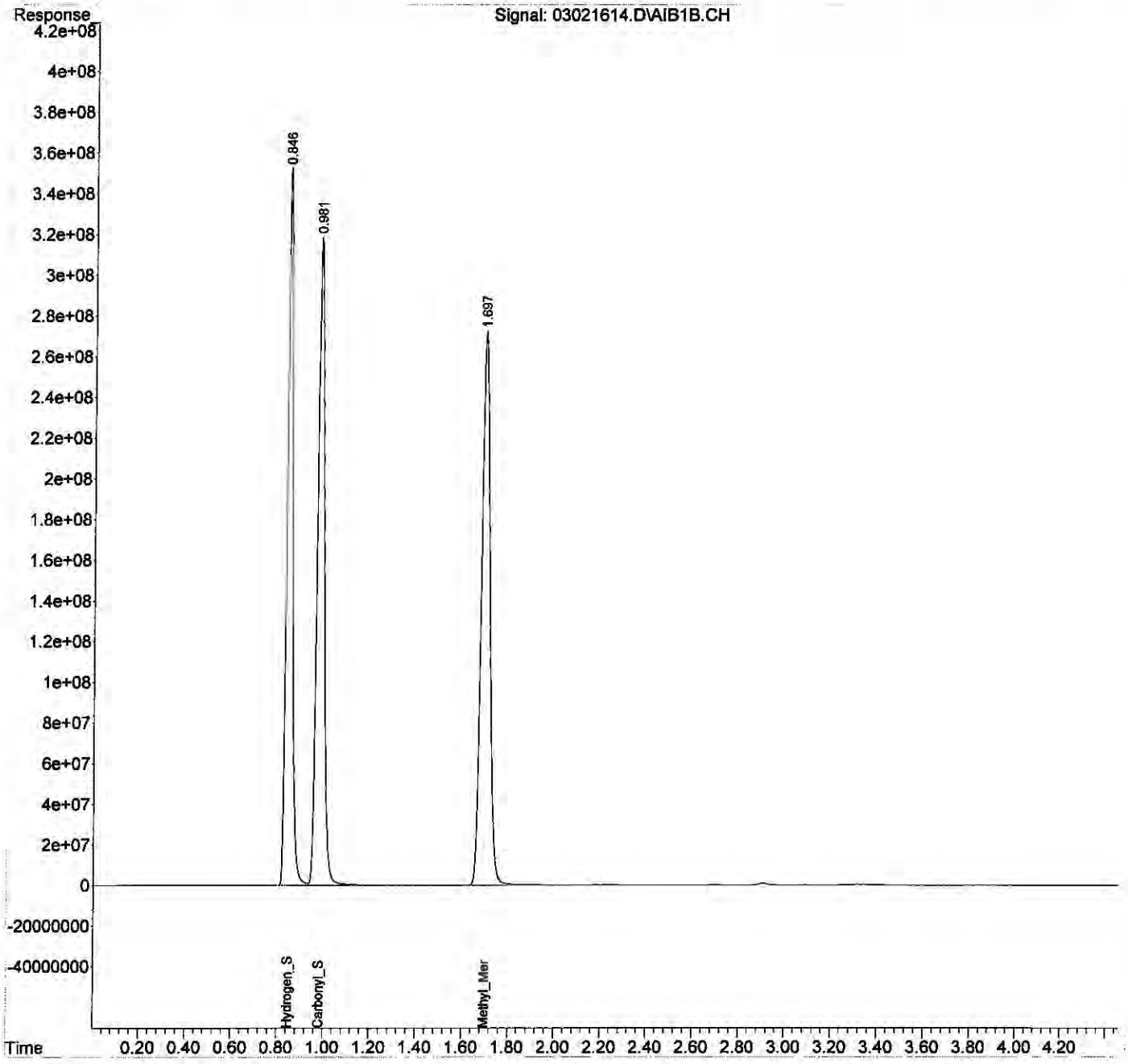
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

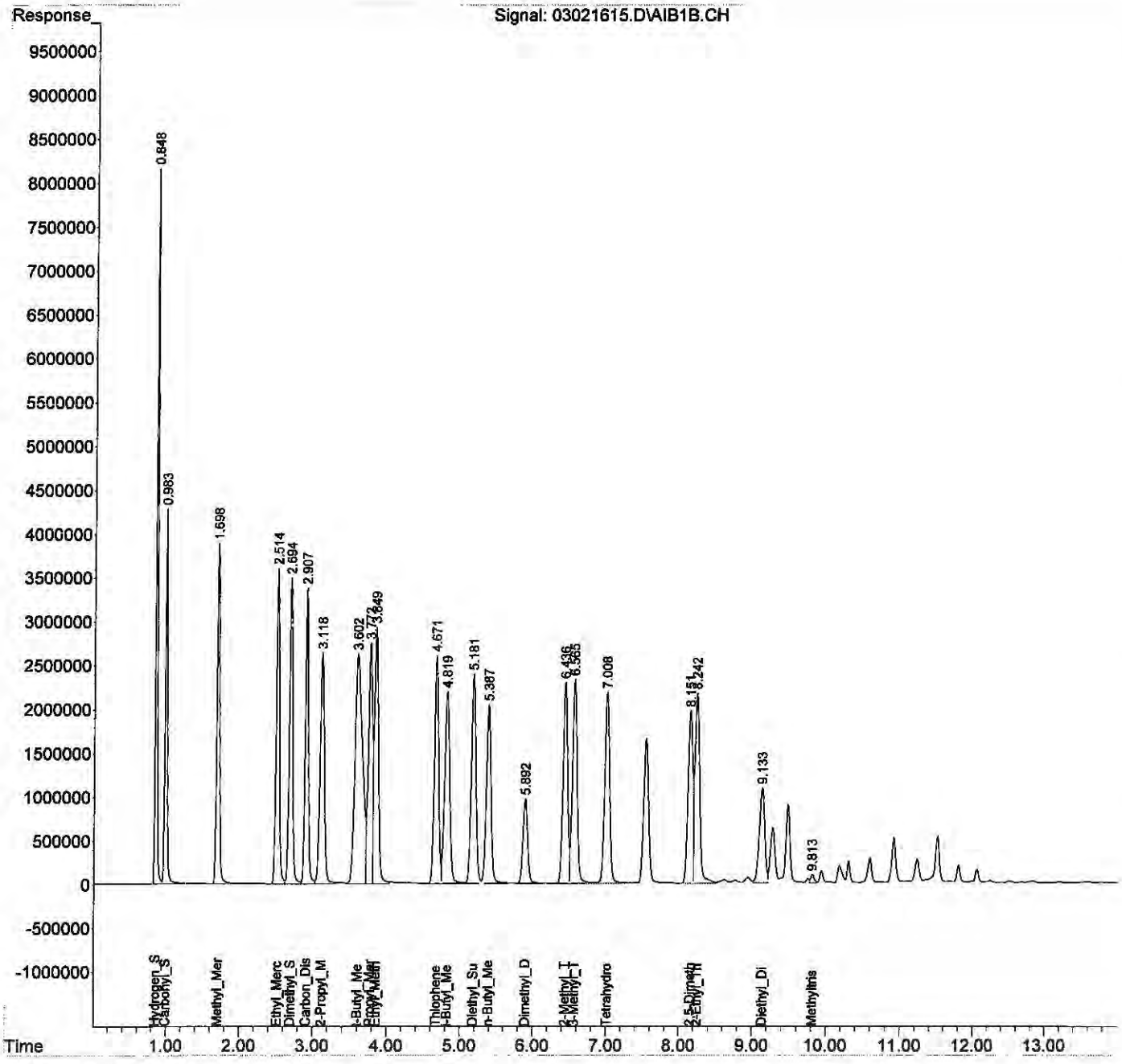
		Compound	R.T.	Response	Conc	Units
Target Compounds						
1)	Z	Hydrogen_Sulfide	0.848	126924093	2013.488	ppb
2)	W	Carbonyl_Sulfide	0.984	87210398	1245.111	ppb
3)	T	Methyl_Mercaptan	1.699	102751642	1532.031	ppb
4)	T	Ethyl_Mercaptan	2.515	108203445	1613.318	ppb
5)	T	Dimethyl_Sulfide	2.694	109139117	1627.269	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	

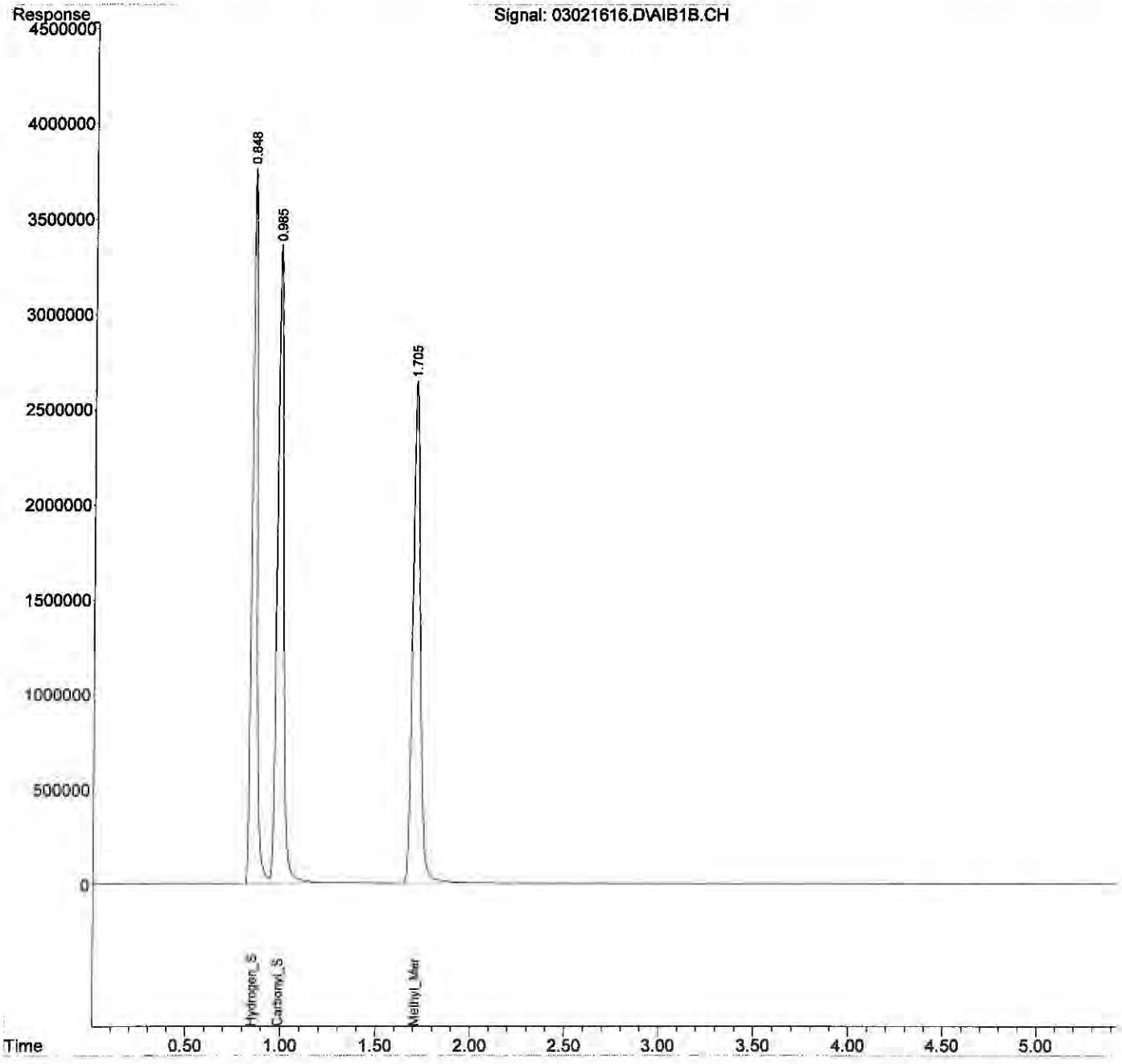
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



ALS Environmental

REPORT SUMMARY

Method : ASTM D5504, VOA-S307M_SCD, VOA SH2O_SCD
Client : Air Hygiene, Incorporated
Analyst : MC

Service Request : P1604901
Instrument : GC13
Date Acquired : 10/19/16

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 s30-10171601		std s30-10171601		std s30-10171601		std s30-10171601		std s30-10171601			
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						1224.80	21.3%	862.752	14.6%	1155.177	14.4%	1071.373	6.1%	1016.766	0.7%		
Carbonyl_Sulfide	1.700	5.000	ND	P						1146.93	14.7%	842.901	15.7%	1126.793	12.7%	1043.708	4.4%	955.503	4.4%		
Methyl_Mercaptan	1.200	5.000	ND	P						1118.07	11.8%	829.534	17.0%	1138.921	13.9%	1047.850	4.8%	949.688	5.0%		
Ethyl_Mercaptan	1.200	5.000	ND	P																	
Dimethyl_Sulfide	1.200	5.000	ND	P						7:45 AM		9:06 AM		10:20 AM		11:24 AM		1:14 PM			
Carbon_Disulfide	0.600	2.500	ND	P						10191602.D		10191609.D		10191613.D		10191616.D		10191622.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			8:15 AM																		
DataFile			10191606.D																		

LCS / LCS Dup Summary (ppbv)

	ppbv	%R		ppbv	% R	%RPD	Actual
Hydrogen_Sulfide	1002.72	100.3%		1125.59	112.6%	11.55%	1000.00
Carbonyl_Sulfide	991.80	99.2%		1110.09	111.0%	11.26%	1000.00
Methyl_Mercaptan	965.13	96.5%		1108.11	110.8%	13.79%	1000.00
Acqisition Time	7:48 AM			7:53 AM			
DataFile	10191603.D			10191604.D			

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Quantitation Report (QT Reviewed)

Data Path : J:\GC13\DATA\SCD\2016_10\19\
Data File : 10191602.D
Signal(s) : AIB1B.CH
Acq On : 19 Oct 2016 7:45 am
Operator : MC
Sample : std s30-10171601
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 19 07:42:51 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	0.838	76509503	1224.797	ppb
2)	W	Carbonyl_Sulfide	0.972	80333770	1146.932	ppb
3)	T	Methyl_Mercaptan	1.681	74987572	1118.068	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.

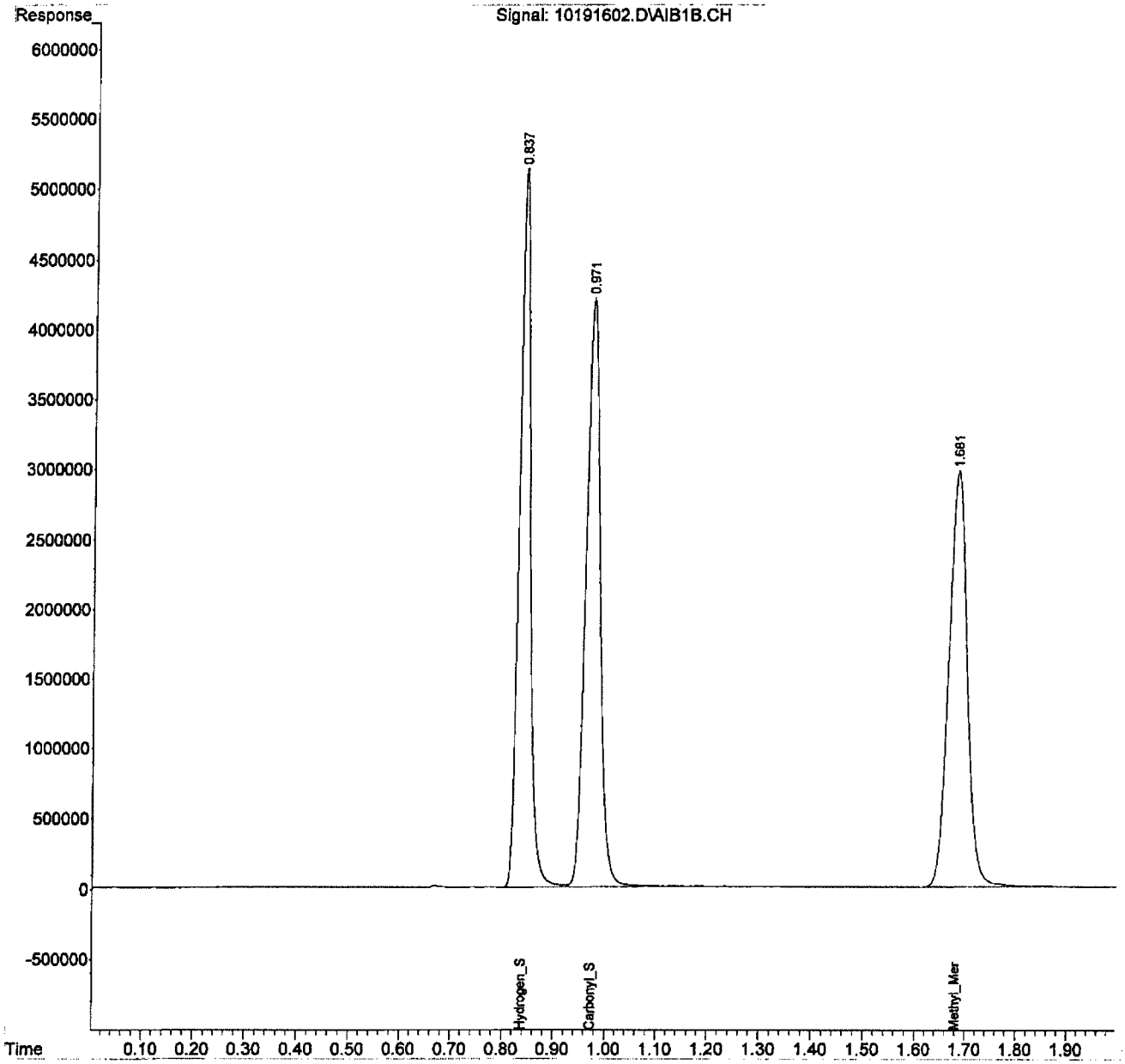
10/24/16

Quantitation Report (QT Reviewed)

Data Path : J:\GC13\DATA\SCD\2016_10\19\
Data File : 10191602.D
Signal(s) : AIB1B.CH
Acq On : 19 Oct 2016 7:45 am
Operator : MC
Sample : std s30-10171601
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 19 07:42:51 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\19\
Data File : 10191609.D
Signal(s) : AIB1B.CH
Acq On : 19 Oct 2016 9:06 am
Operator : MC
Sample : std s30-10171601
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 24 08:02:30 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	53893595	862.752	ppb
2)	W	Carbonyl_Sulfide	0.972	59038684	842.901	ppb
3)	T	Methyl_Mercaptan	1.681	55635953	829.534	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	5.853	410087	3.057	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

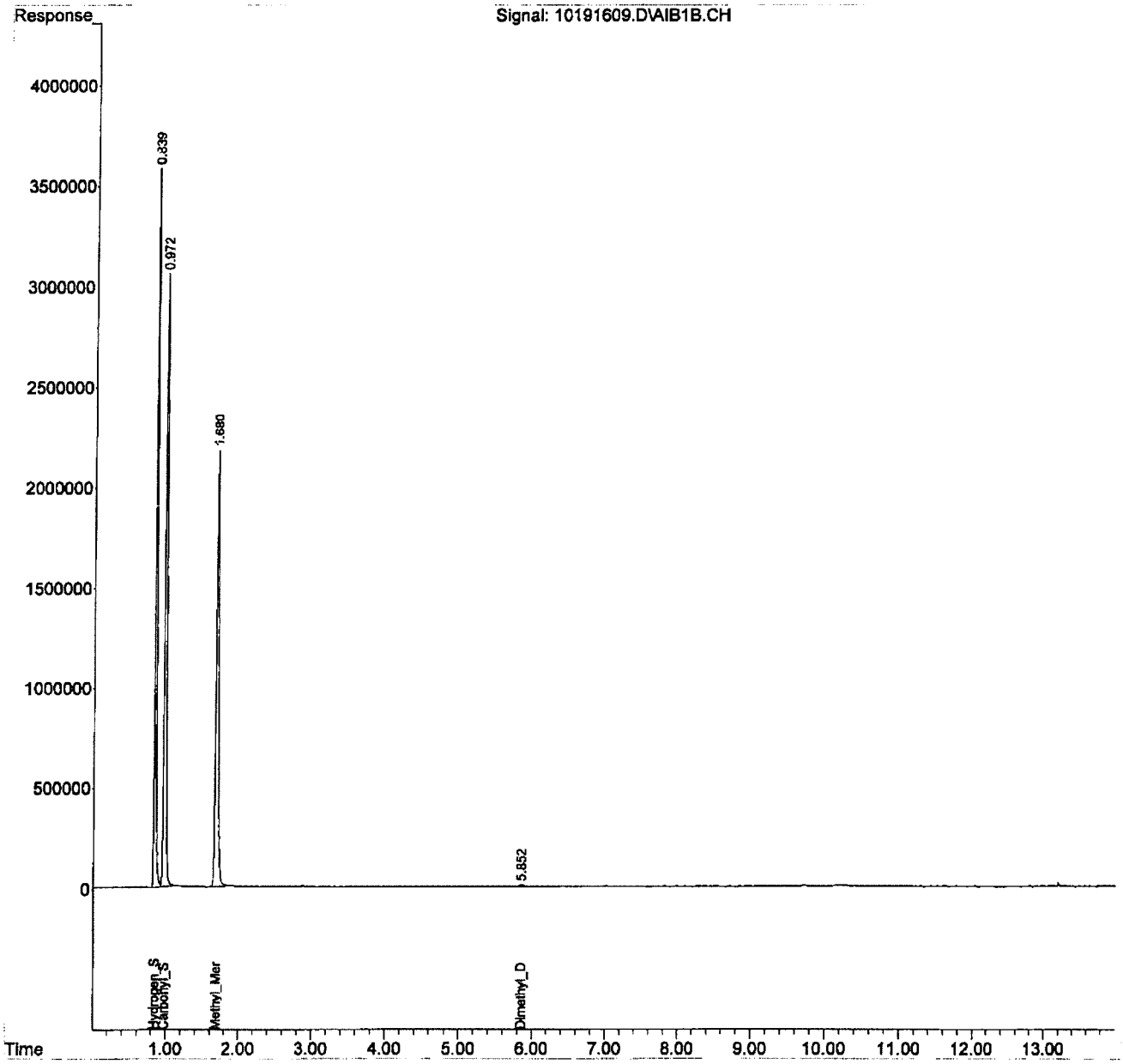
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC13\DATA\SCD\2016_10\19\
Data File : 10191609.D
Signal(s) : AIB1B.CH
Acq On : 19 Oct 2016 9:06 am
Operator : MC
Sample : std s30-10171601
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 24 08:02:30 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\19\
Data File : 10191613.D
Signal(s) : AIB1B.CH
Acq On : 19 Oct 2016 10:20 am
Operator : MC
Sample : std s30-10171601
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 19 10:32:48 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	72160512	1155.177	ppb
2)	W	Carbonyl_Sulfide	0.973	78923137	1126.793	ppb
3)	T	Methyl_Mercaptan	1.684	76386142	1138.921	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	2.888	245217	1.828	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	5.856	479893	3.578	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

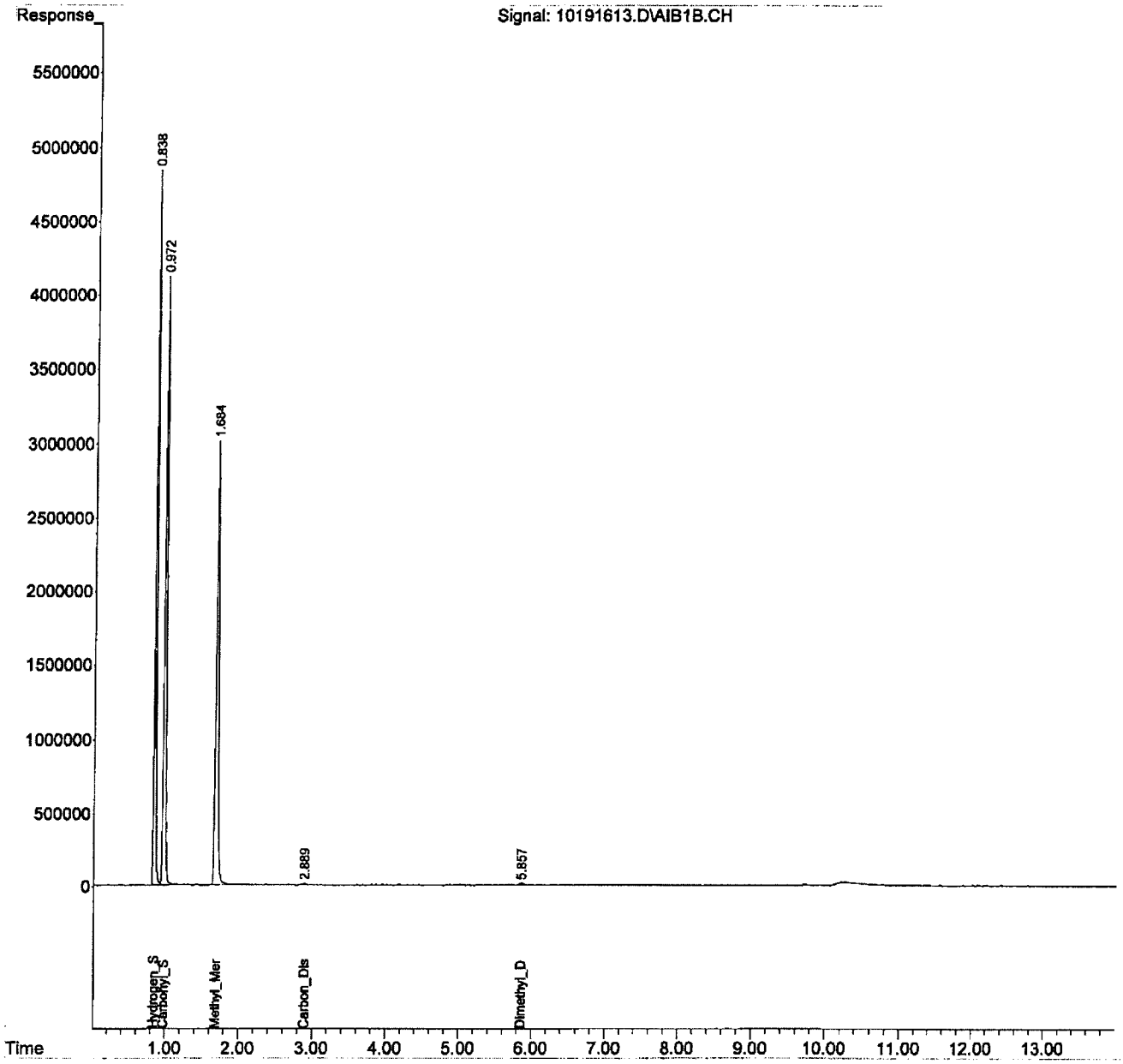
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC13\DATA\SCD\2016_10\19\
Data File : 10191613.D
Signal(s) : AIB1B.CH
Acq On : 19 Oct 2016 10:20 am
Operator : MC
Sample : std s30-10171601
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 19 10:32:48 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\19\
Data File : 10191616.D
Signal(s) : AIB1B.CH
Acq On : 19 Oct 2016 11:24 am
Operator : MC
Sample : std s30-10171601
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 24 08:02:58 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 :

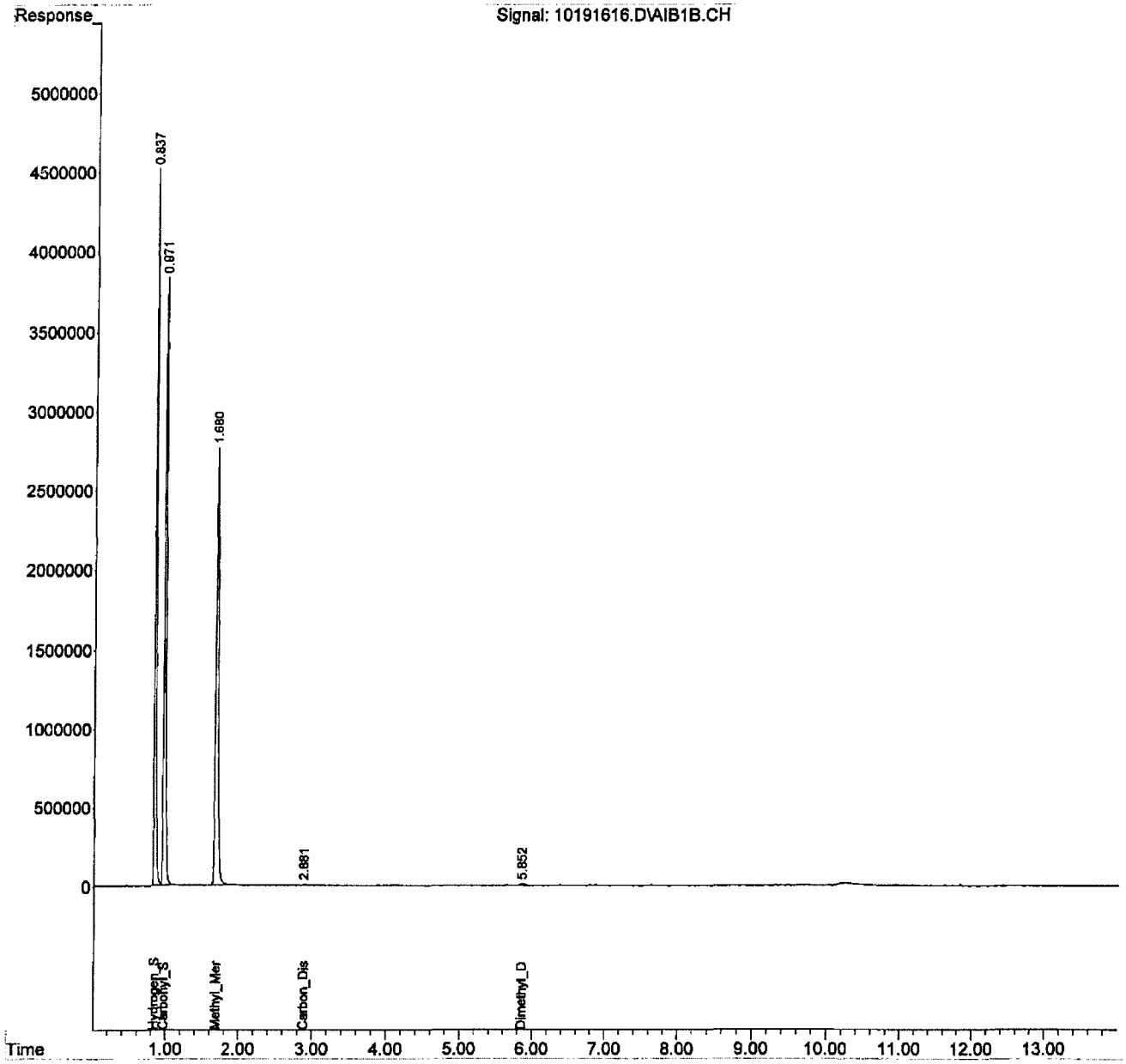
		Compound	R.T.	Response	Conc	Units
Target Compounds						
1)	Z	Hydrogen_Sulfide	0.838	66925510	1071.373	ppb
2)	W	Carbonyl_Sulfide	0.972	73103658	1043.708	ppb
3)	T	Methyl_Mercaptan	1.680	70278139	1047.850	ppb
4)	T	Ethyl_Mercaptan	0.000	0	N.D.	ppb
5)	T	Dimethyl_Sulfide	0.000	0	N.D.	ppb
6)	T	Carbon_Disulfide	2.882	203668	1.518	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	5.853	497346	3.708	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\19\
Data File : 10191616.D
Signal(s) : AIB1B.CH
Acq On : 19 Oct 2016 11:24 am
Operator : MC
Sample : std s30-10171601
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 24 08:02:58 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\19\
Data File : 10191622.D
Signal(s) : AIB1B.CH
Acq On : 19 Oct 2016 1:14 pm
Operator : MC
Sample : std s30-10171601
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 24 08:03:15 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	0.837	63514395	1016.766	ppb
2) W	Carbonyl_Sulfide	0.970	66925632	955.503	ppb
3) T	Methyl_Mercaptan	1.679	63694504	949.688	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

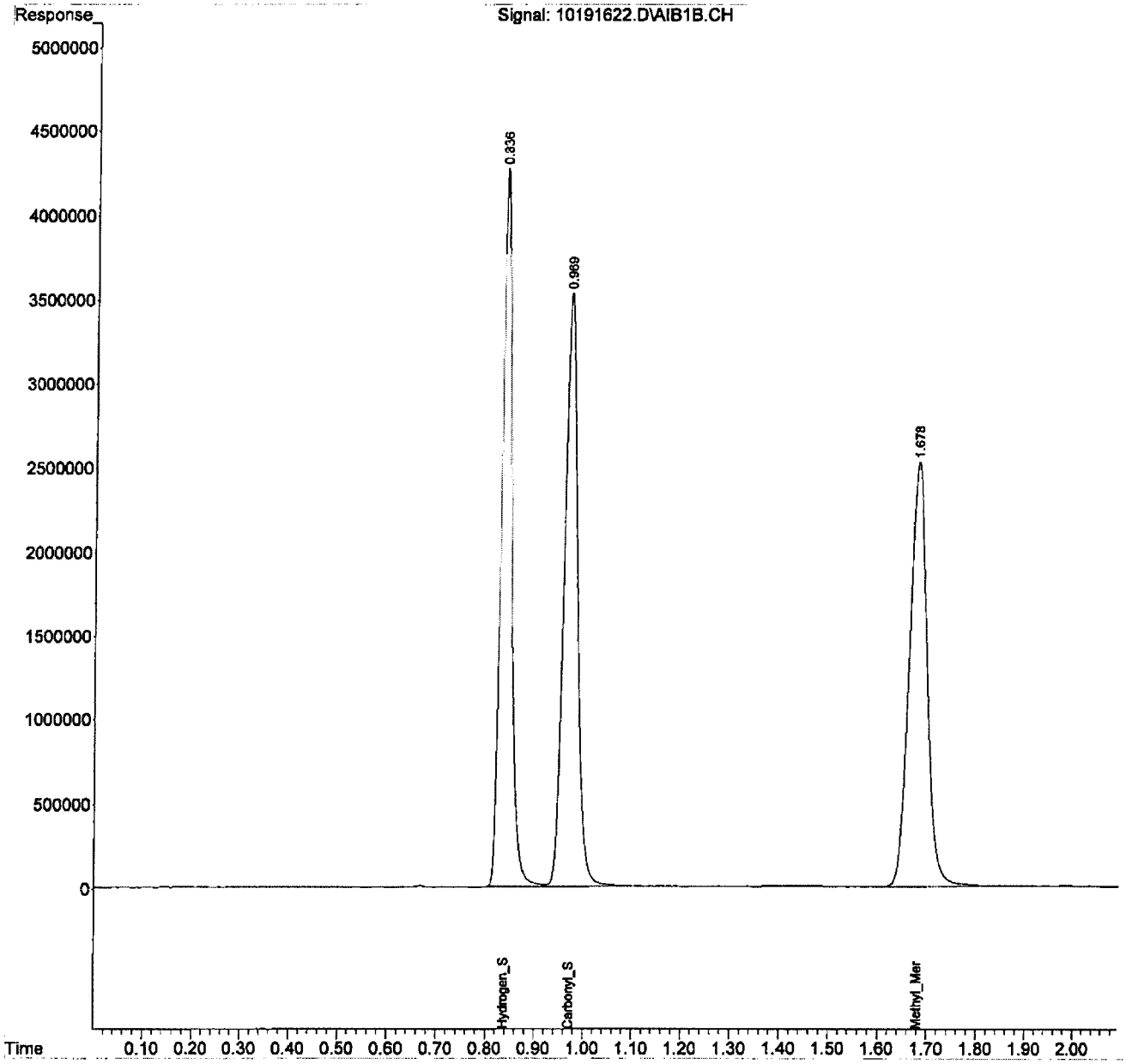
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC13\DATA\SCD\2016_10\19\
Data File : 10191622.D
Signal(s) : AIB1B.CH
Acq On : 19 Oct 2016 1:14 pm
Operator : MC
Sample : std s30-10171601
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 24 08:03:15 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\19\

	Sample ID	Date/Time	Acquisition Method	File Name	Misc Info	Operator	Comments
1	std s30-10171601	10/19/16 7:41	GC13_SCD.M	10191601.D		MC	Fail
2	std s30-10171601	10/19/16 7:45	GC13_SCD.M	10191602.D		MC	Pass
	lcs s30-10171602	10/19/16 7:48	GC13_SCD.M	10191603.D		MC	
	lcsd s30-10171602	10/19/16 7:53	GC13_SCD.M	10191604.D		MC	
	rt	10/19/16 7:57	GC13_SCD.M	10191605.D		MC	
	mb 1ml	10/19/16 8:15	GC13_SCD.M	10191606.D		MC	
	4919-001 1ml(x	10/19/16 8:46	GC13_SCD.M	10191607.D		MC	
	4919-001 0.1ml	10/19/16 8:48	GC13_SCD.M	10191608.D		MC	
#VALUE!	std s30-10171601	10/19/16 9:06	GC13_SCD.M	10191609.D		MC	Pass
	4920-001 0.1ml	10/19/16 9:26	GC13_SCD.M	10191610.D		MC	
	QC SSC00297 1ml	10/19/16 9:44	GC13_SCD.M	10191611.D		MC	
#VALUE!	std s30-10171601	10/19/16 10:03	GC13_SCD.M	10191612.D		MC	Fail
#VALUE!	std s30-10171601	10/19/16 10:20	GC13_SCD.M	10191613.D		MC	Pass
	4921-001 1ml	10/19/16 10:47	GC13_SCD.M	10191614.D		MC	
	4921-002 1ml	10/19/16 11:05	GC13_SCD.M	10191615.D		MC	
#VALUE!	std s30-10171601	10/19/16 11:24	GC13_SCD.M	10191616.D		MC	Pass
	4901-001 1ml	10/19/16 11:45	GC13_SCD.M	10191617.D		MC	
	4901-002 1ml	10/19/16 11:52	GC13_SCD.M	10191618.D		MC	
	4901-003 1ml	10/19/16 13:03	GC13_SCD.M	10191619.D		MC	
	4901-004 1ml	10/19/16 13:05	GC13_SCD.M	10191620.D		MC	
#VALUE!	std s30-10171601	10/19/16 13:11	GC13_SCD.M	10191621.D		MC	Fail
#VALUE!	std s30-10171601	10/19/16 13:14	GC13_SCD.M	10191622.D		MC	Pass

APPENDIX F

METHOD 3C RESULTS

2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
F: +1 805 526 7270
www.alsglobal.com

LABORATORY REPORT

October 26, 2016

Min Lee
Air Hygiene, Incorporated
1600 West Tacoma Street
Broken Arrow, OK 74012

RE: sfi-elkcity.ok-comp#1

Dear Min:

Enclosed are the results of the samples submitted to our laboratory on October 12, 2016. For your reference, these analyses have been assigned our service request number P1604794.

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 4:08 pm, Oct 26, 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: sfi-elkcity.ok-comp#1

Service Request No: P1604794

CASE NARRATIVE

The samples were received intact under chain of custody on October 12, 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.

2655 Park Center Dr., Suite A
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www.alsglobal.com

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: sfi-elkcity.ok-comp#1
Service Request: P1604794

Date Received: 10/12/2016
Time Received: 07:40

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	3C Modified - Fxd Gases Bag 2X
R11-90-100%-SCD-60	P1604794-001	Air	10/10/2016	09:18	X
R12-90-100%-SCD-60	P1604794-003	Air	10/10/2016	10:42	X
R7-70-100-70%-SCD-60	P1604794-005	Air	10/10/2016	12:15	X
R8-70-100-70%-SCD-60	P1604794-007	Air	10/10/2016	13:45	X
R9-70-100-70%-SCD-60	P1604794-009	Air	10/10/2016	15:10	X
R4-30-70-30%-SCD-60	P1604794-011	Air	10/10/2016	17:24	X
R5-30-70-30%-SCD-60	P1604794-013	Air	10/10/2016	18:46	X

P1604794

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:	sfi-elkcity.ok-comp#1	Laboratory Analysis Requested:	3
Person Taking Samples:	BL/MJ / TW		

	Sample Number	Location	Date	Time	Volume	Analysis Method			
						O_2	CO_2	N_2	Methane
1	R11-90-100%-SCD-60	Elk City Facility	10/10/2016	9:18	10	x	x	x	x
2	R11-90-100%-SCD-60-Backup	Elk City Facility	10/10/2016	9:18	5	x	x	x	x
3	R12-90-100%-SCD-60	Elk City Facility	10/10/2016	10:42	10	x	x	x	x
4	R12-90-100%-SCD-60-Backup	Elk City Facility	10/10/2016	10:42	5	x	x	x	x
5	R7-70-100-70%-SCD-60	Elk City Facility	10/10/2016	12:15	10	x	x	x	x
6	R7-70-100-70%-SCD-60-Backup	Elk City Facility	10/10/2016	12:15	5	x	x	x	x
7	R8-70-100-70%-SCD-60	Elk City Facility	10/10/2016	13:45	10	x	x	x	x
8	R8-70-100-70%-SCD-60-Backup	Elk City Facility	10/10/2016	13:45	5	x	x	x	x
9	R9-70-100-70%-SCD-60	Elk City Facility	10/10/2016	15:10	10	x	x	x	x
10	R9-70-100-70%-SCD-60-Backup	Elk City Facility	10/10/2016	15:10	5	x	x	x	x
11	R4-30-70-30%-SCD-60	Elk City Facility	10/10/2016	17:24	10	x	x	x	x
12	R4-30-70-30%-SCD-60-Backup	Elk City Facility	10/10/2016	17:24	5	x	x	x	x
13	R5-30-70-30%-SCD-60	Elk City Facility	10/10/2016	18:46	6	x	x	x	x
14	R5-30-70-30%-SCD-60-Backup	Elk City Facility	10/10/2016	18:46	5	x	x	x	x

Relinquished by: (Signature)	Date: 10/10/16	Time: 18:56	Received by: (Signature)	Date: 10/12/16 Time: 0750
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date: Time:

I-COC

ALS Environmental
Sample Acceptance Check Form

Client: Air Hygiene, Incorporated Work order: P1604794

Project: sfi-elkcity.ok-comp#1

Sample(s) received on: 10/12/16 Date opened: 10/12/16 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
P1604794-001.01	10 L Tedlar Bag					
P1604794-002.01	5.0 L Tedlar Bag					
P1604794-003.01	10 L Tedlar Bag					
P1604794-004.01	5.0 L Tedlar Bag					
P1604794-005.01	10 L Tedlar Bag					
P1604794-006.01	5.0 L Tedlar Bag					
P1604794-007.01	10 L Tedlar Bag					
P1604794-008.01	5.0 L Tedlar Bag					
P1604794-009.01	10 L Tedlar Bag					
P1604794-010.01	5.0 L Tedlar Bag					
P1604794-011.01	10 L Tedlar Bag					
P1604794-012.01	5.0 L Tedlar Bag					
P1604794-013.01	10 L Tedlar Bag					
P1604794-014.01	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: **R11-90-100%-SCD-60**
Client Project ID: **sfi-elkcity.ok-comp#1**

ALS Project ID: P1604794
ALS Sample ID: P1604794-001

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: 10/10/16
Date Received: 10/12/16
Date Analyzed: 10/12/16
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
7782-44-7	**Oxygen***	**14.6**	0.10	
7727-37-9	**Nitrogen**	**80.4**	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	**Carbon Dioxide**	**5.03**	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.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **R12-90-100%-SCD-60**
Client Project ID: **sfi-elkcity.ok-comp#1**

ALS Project ID: P1604794
ALS Sample ID: P1604794-003

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: 10/10/16
Date Received: 10/12/16
Date Analyzed: 10/12/16
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
7782-44-7	**Oxygen***	**14.3**	0.10	
7727-37-9	**Nitrogen**	**80.4**	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	**Carbon Dioxide**	**5.25**	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%-SCD-60**
Client Project ID: **sfi-elkcity.ok-comp#1**

ALS Project ID: P1604794
ALS Sample ID: P1604794-005

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: 10/10/16
Date Received: 10/12/16
Date Analyzed: 10/12/16
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
7782-44-7	**Oxygen***	**18.8**	0.10	
7727-37-9	**Nitrogen**	**78.9**	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	**Carbon Dioxide**	**2.34**	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: **R8-70-100-70-%SCD-60**
Client Project ID: **sfi-elkcity.ok-comp#1**

ALS Project ID: P1604794
ALS Sample ID: P1604794-007

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: 10/10/16
Date Received: 10/12/16
Date Analyzed: 10/12/16
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
7782-44-7	**Oxygen***	**14.2**	0.10	
7727-37-9	**Nitrogen**	**80.5**	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	**Carbon Dioxide**	**5.27**	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: **R9-70-100-70%-SCD-60**
Client Project ID: **sfi-elkcity.ok-comp#1**

ALS Project ID: P1604794
ALS Sample ID: P1604794-009

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: 10/10/16
Date Received: 10/12/16
Date Analyzed: 10/12/16
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
7782-44-7	**Oxygen***	**14.6**	0.10	
7727-37-9	**Nitrogen**	**80.4**	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	**Carbon Dioxide**	**5.02**	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%-SCD-60**
Client Project ID: **sfi-elkcity.ok-comp#1**

ALS Project ID: P1604794
ALS Sample ID: P1604794-011

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: 10/10/16
Date Received: 10/12/16
Date Analyzed: 10/12/16
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
7782-44-7	**Oxygen***	**14.1**	0.10	
7727-37-9	**Nitrogen**	**80.5**	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	**Carbon Dioxide**	**5.37**	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: **R5-30-70-30%-SCD-60**
Client Project ID: **sfi-elkcity.ok-comp#1**

ALS Project ID: P1604794
ALS Sample ID: P1604794-013

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: 10/10/16
Date Received: 10/12/16
Date Analyzed: 10/12/16
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
7782-44-7	**Oxygen***	**15.2**	0.10	
7727-37-9	**Nitrogen**	**80.2**	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	**Carbon Dioxide**	**4.65**	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: **sfi-elkcity.ok-comp#1**

ALS Project ID: P1604794
ALS Sample ID: P161012-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: 10/12/16
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\12\
Data File : 10121604.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 9:23 am
Operator : amf
Sample : 4794-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 09:52:26 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 :

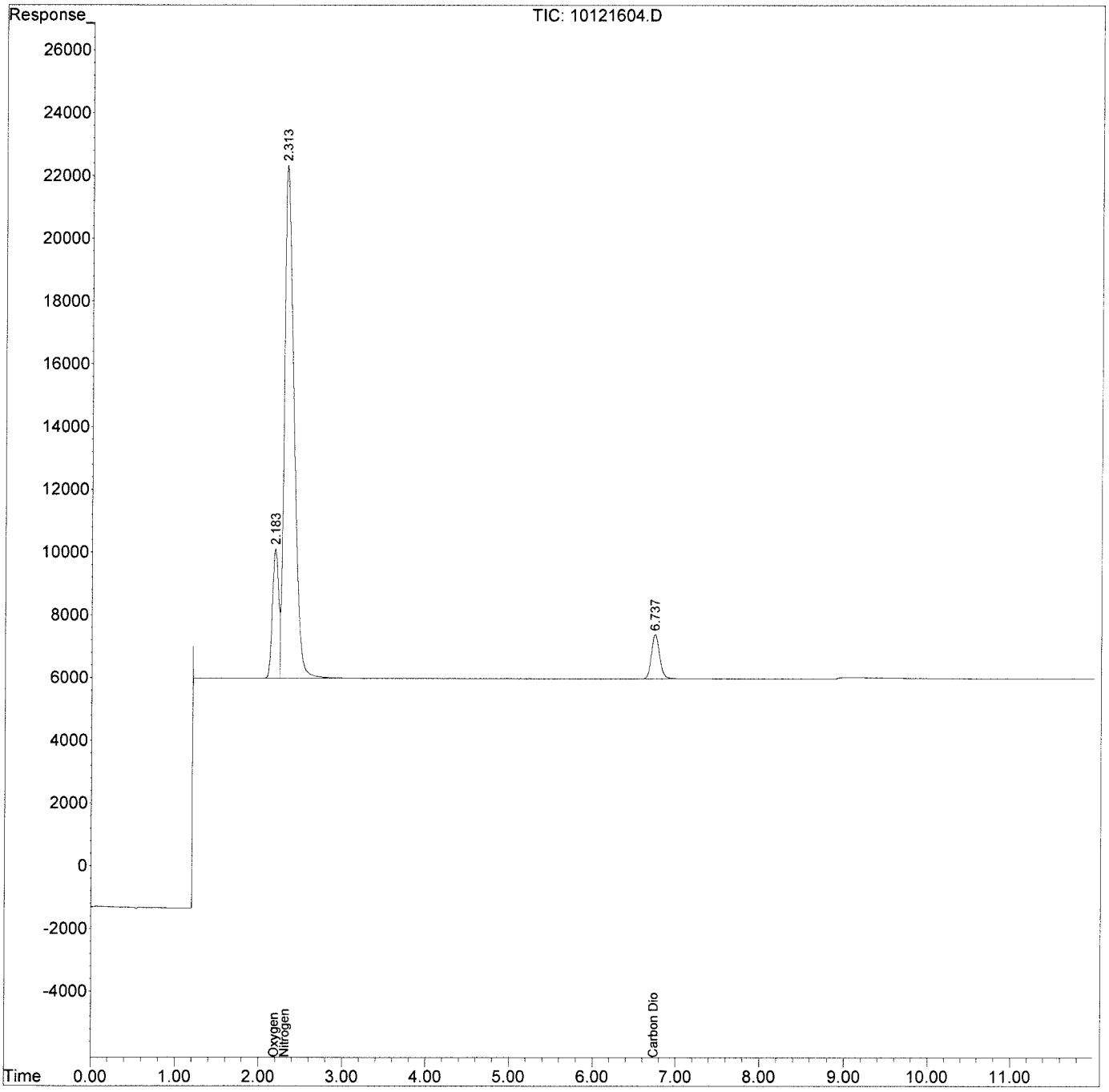
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.185	208560	134899.746	ppm
3)	Nitrogen	2.314	1311771	742288.485	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.739	97142	46314.860	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\12\
Data File : 10121604.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 9:23 am
Operator : amf
Sample : 4794-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 09:52:26 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 :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_10\12\
Data File : 10121605.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 9:39 am
Operator : amf
Sample : 4794-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 09:58:52 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 :

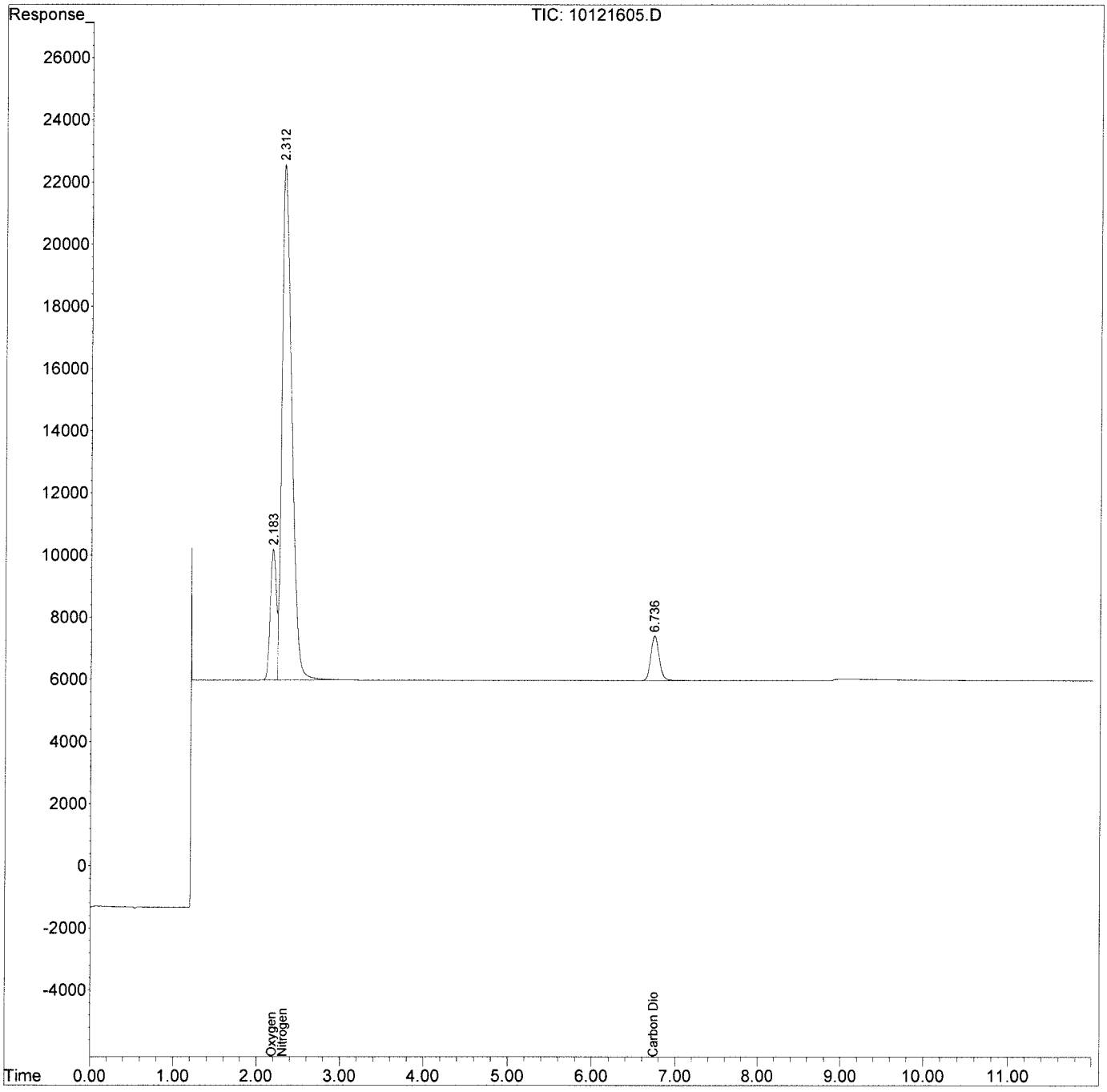
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.185	212212	137261.725	ppm
3)	Nitrogen	2.314	1335257	755578.248	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.737	99095	47246.217	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\12\
Data File : 10121605.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 9:39 am
Operator : amf
Sample : 4794-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 09:58:52 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_10\12\
Data File : 10121606.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 9:55 am
Operator : amf
Sample : 4794-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 10:18:20 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 :

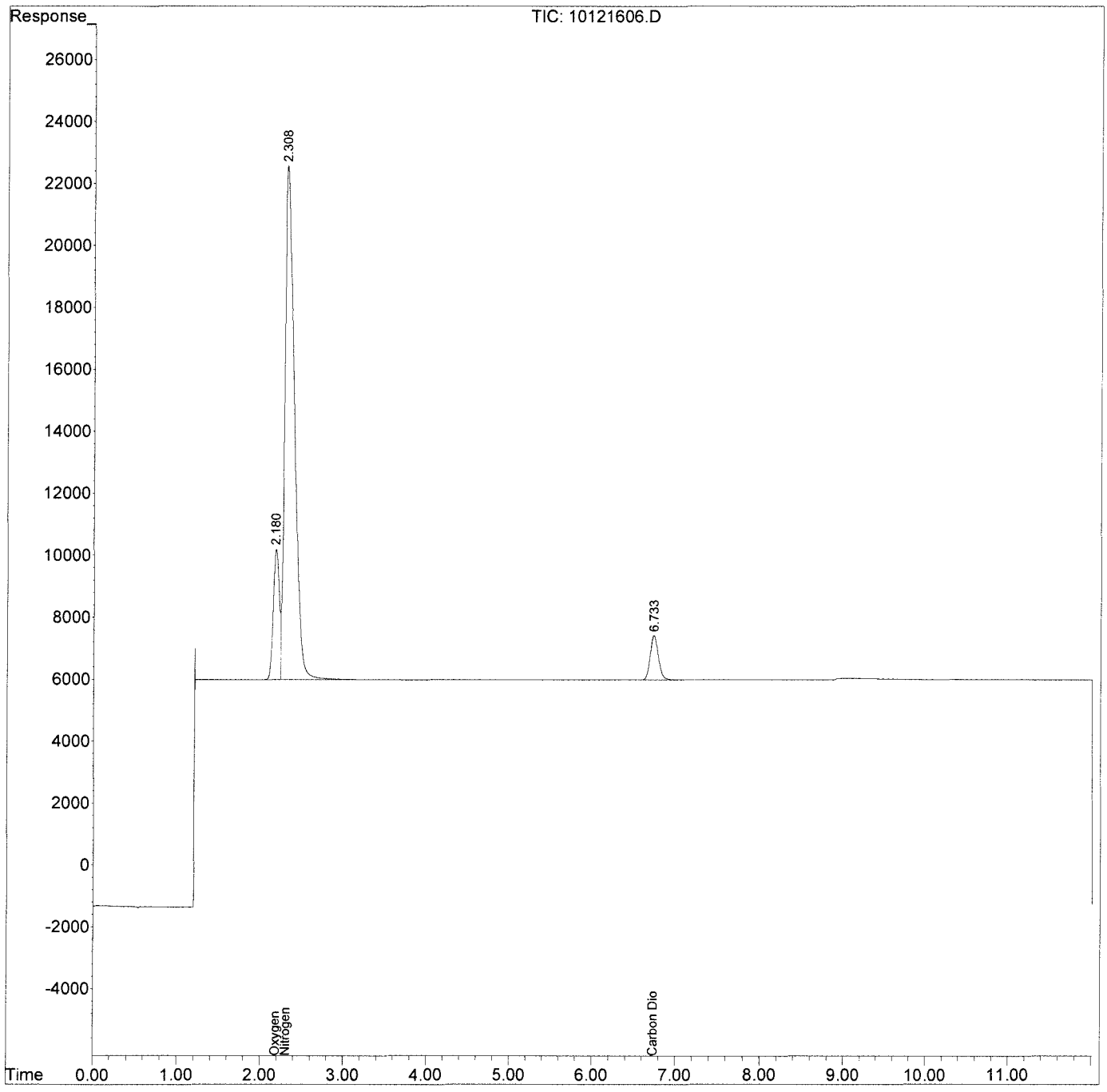
	Compound	R.T.	Response	Conc Units
Target Compounds				
1)	Hydrogen	0.000	0	N.D. ppm
2)	Oxygen	2.181	212161	137228.641 ppm
3)	Nitrogen	2.309	1334763	755298.887 ppm
4)	Carbon Monoxide	0.000	0	N.D. ppm
5)	Methane	0.000	0	N.D. ppm
6)	Carbon Dioxide	6.734	99526	47451.657 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\12\
Data File : 10121606.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 9:55 am
Operator : amf
Sample : 4794-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 10:18:20 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\12\
Data File : 10121607.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 10:14 am
Operator : amf
Sample : 4794-003
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 10:51:21 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 :

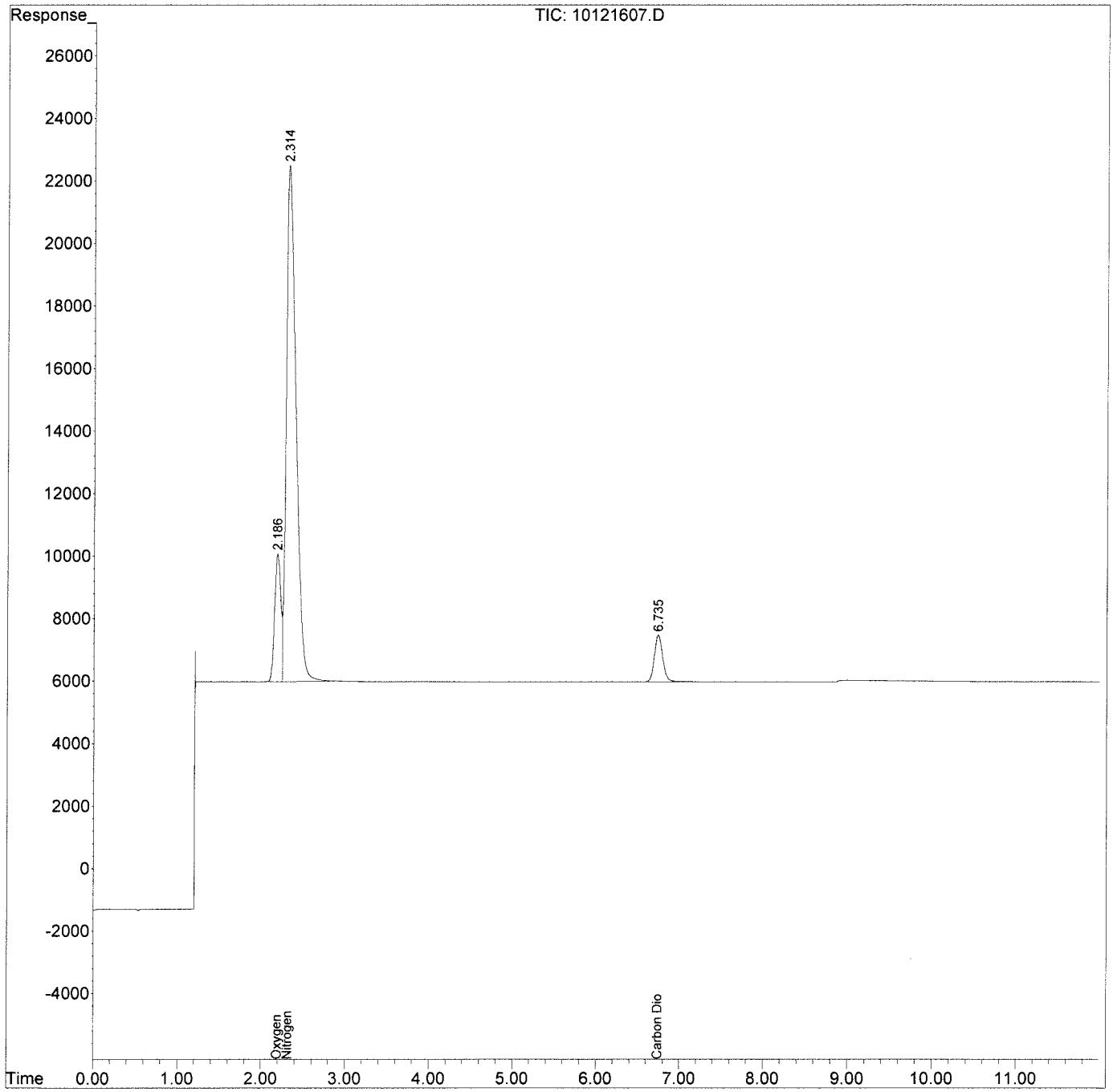
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.187	205647	133015.685	ppm
3)	Nitrogen	2.316	1320395	747168.578	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.737	102468	48854.390	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\12\
Data File : 10121607.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 10:14 am
Operator : amf
Sample : 4794-003
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 10:51:21 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 :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_10\12\
Data File : 10121608.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 10:32 am
Operator : amf
Sample : 4794-003
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 10:51:36 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 :

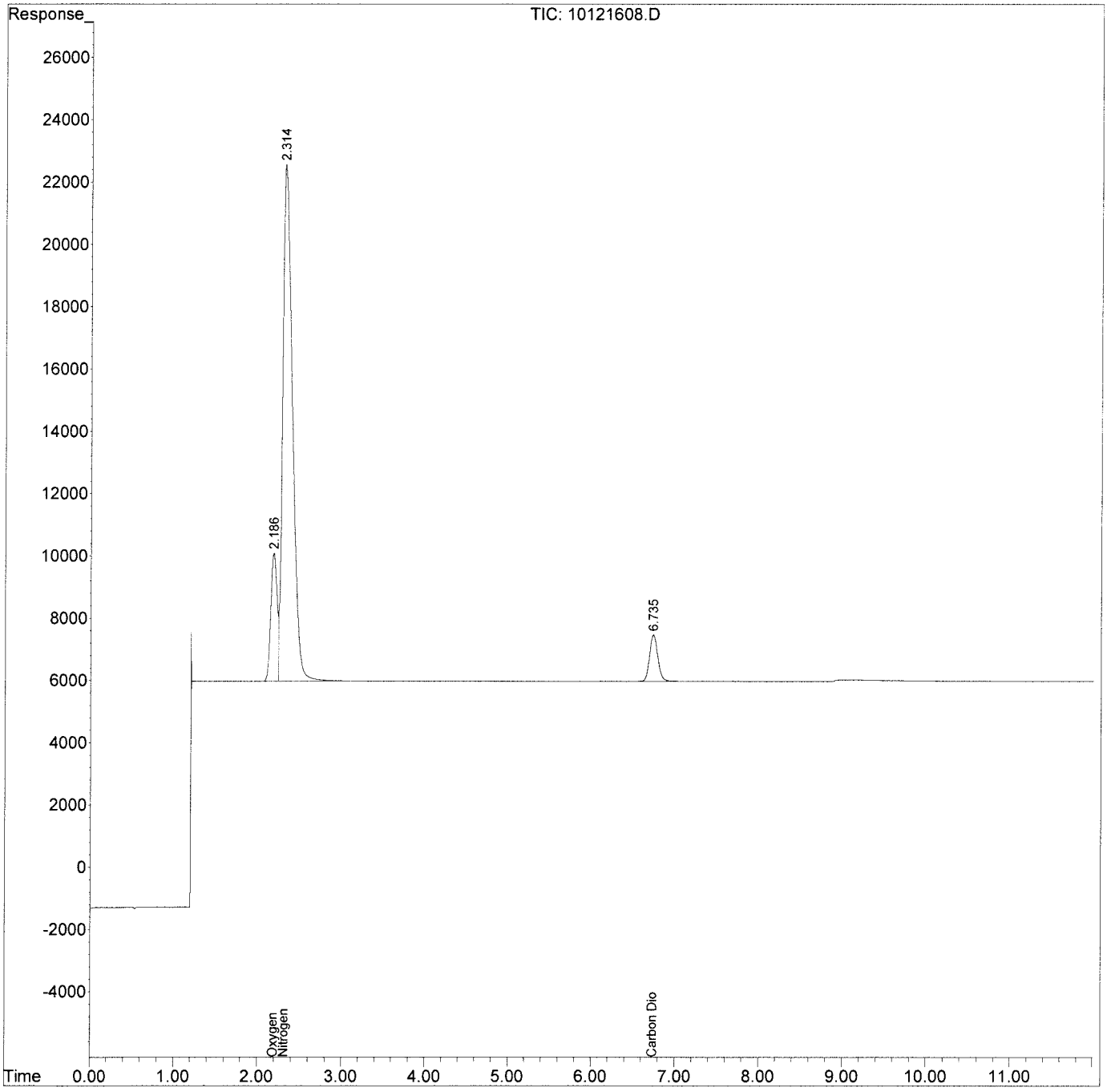
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.187	206857	133797.877	ppm
3)	Nitrogen	2.316	1331702	753566.882	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.737	102956	49086.870	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\12\
Data File : 10121608.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 10:32 am
Operator : amf
Sample : 4794-003
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 10:51:36 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\12\
Data File : 10121609.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 10:48 am
Operator : amf
Sample : 4794-003
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 11:07:35 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 :

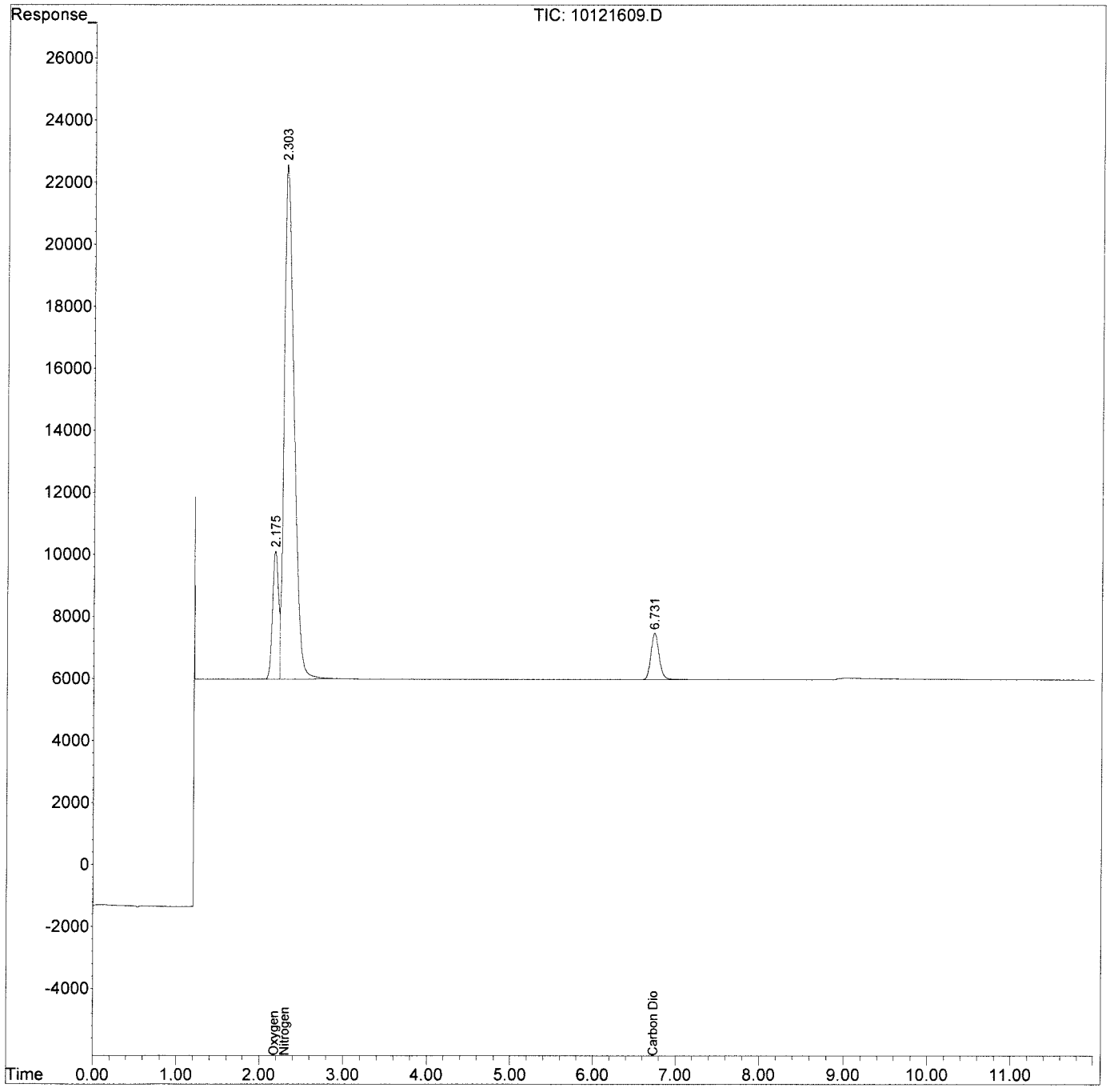
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.176	207328	134102.589	ppm
3)	Nitrogen	2.305	1334420	755105.015	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.732	103622	49404.400	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\12\
Data File : 10121609.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 10:48 am
Operator : amf
Sample : 4794-003
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 11:07:35 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_10\12\
Data File : 10121610.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 11:03 am
Operator : amf
Sample : 4794-005
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 11:40:39 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 :

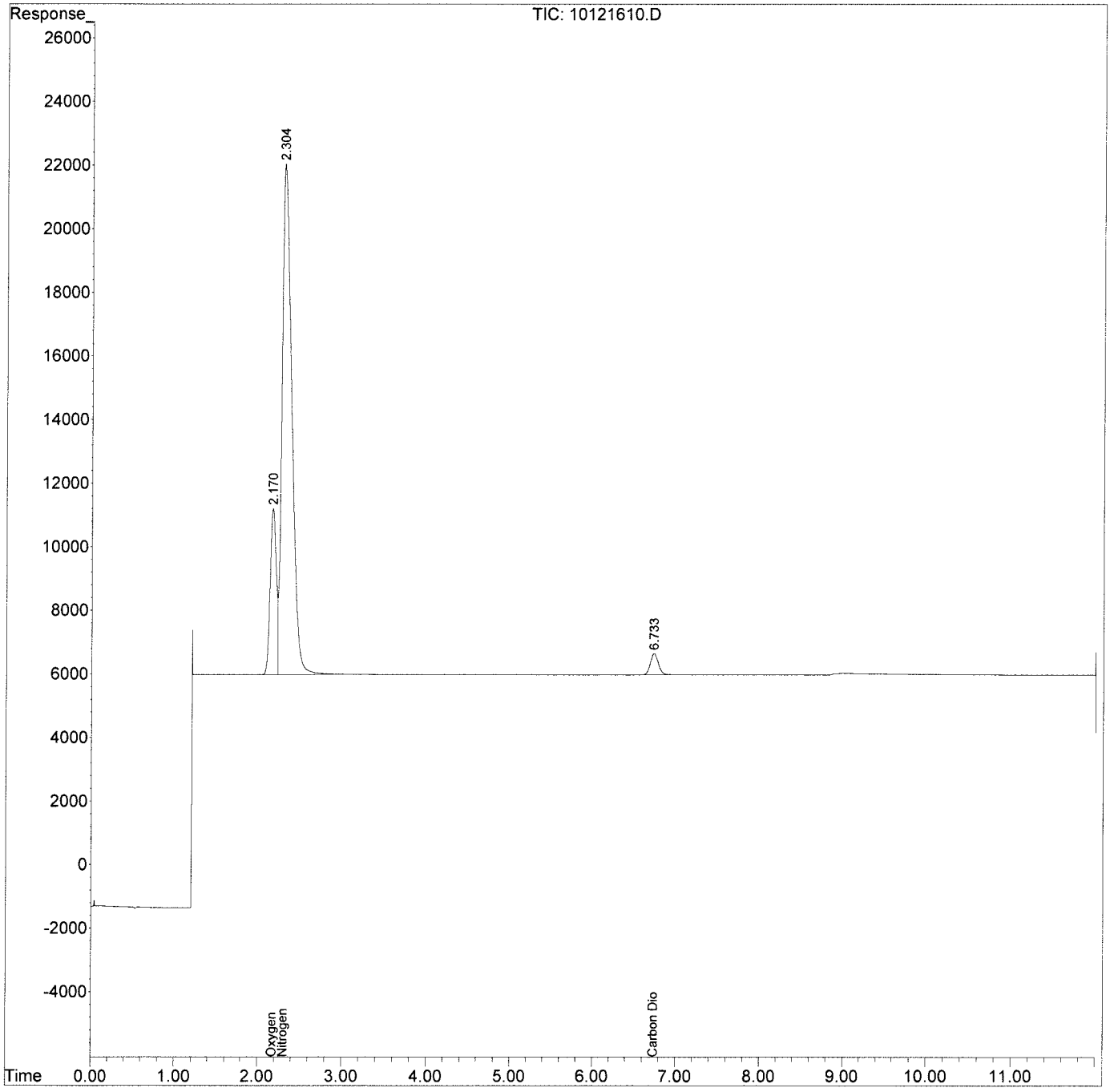
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.171	269631	174401.181	ppm
3)	Nitrogen	2.306	1297190	734037.396	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.735	45798	21835.281	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\12\
Data File : 10121610.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 11:03 am
Operator : amf
Sample : 4794-005
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 11:40:39 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\12\
Data File : 10121611.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 11:21 am
Operator : amf
Sample : 4794-005
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 11:41:53 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 :

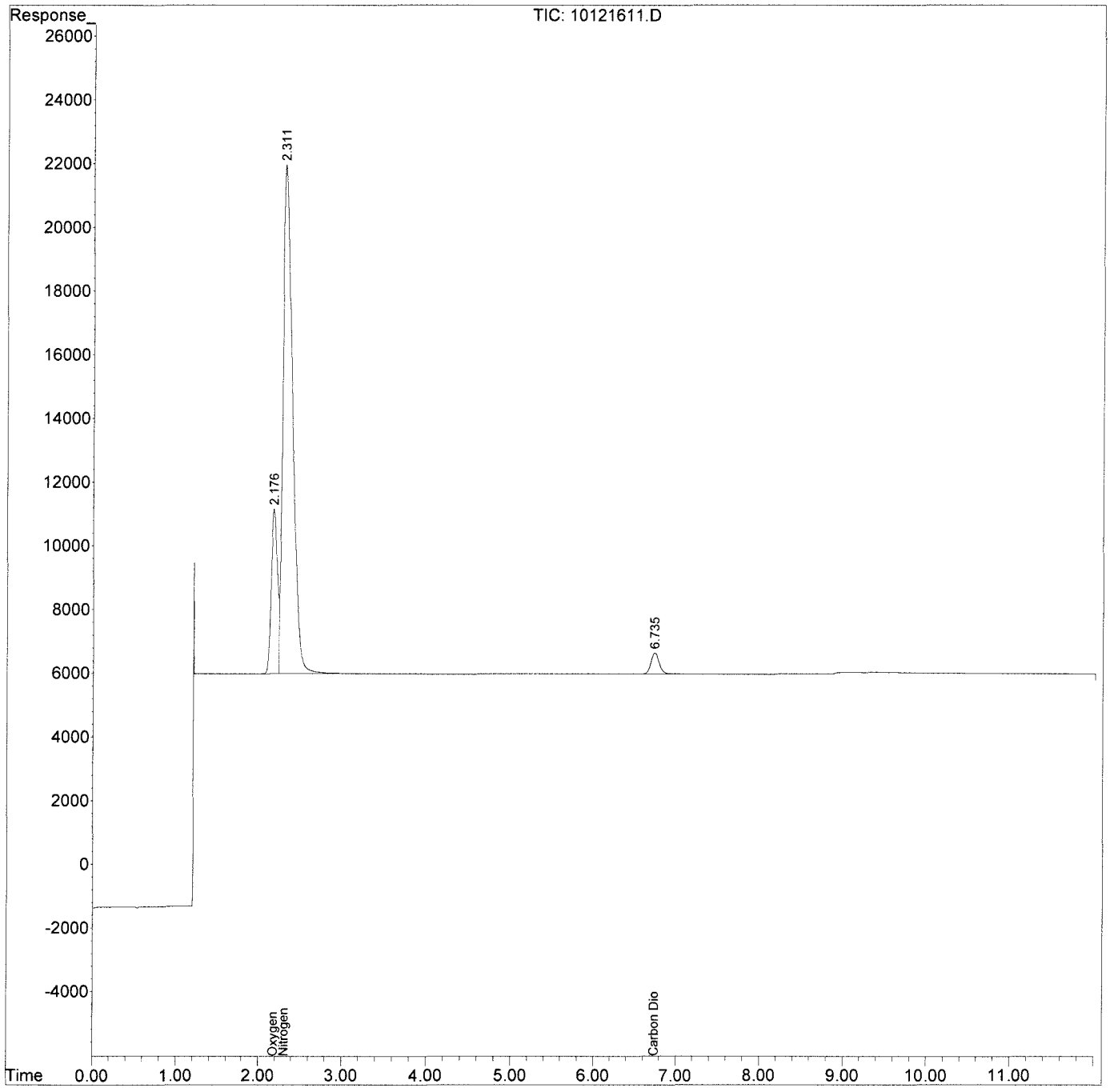
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.000	0	N.D.	ppm	d
2)	Oxygen	2.178	267533	173044.256	ppm	
3)	Nitrogen	2.313	1286717	728111.206	ppm	
4)	Carbon Monoxide	0.000	0	N.D.	ppm	
5)	Methane	0.000	0	N.D.	ppm	
6)	Carbon Dioxide	6.736	45478	21683.024	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\12\
Data File : 10121611.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 11:21 am
Operator : amf
Sample : 4794-005
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 11:41:53 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\12\
Data File : 10121612.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 11:37 am
Operator : amf
Sample : 4794-005
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 11:57:08 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 :

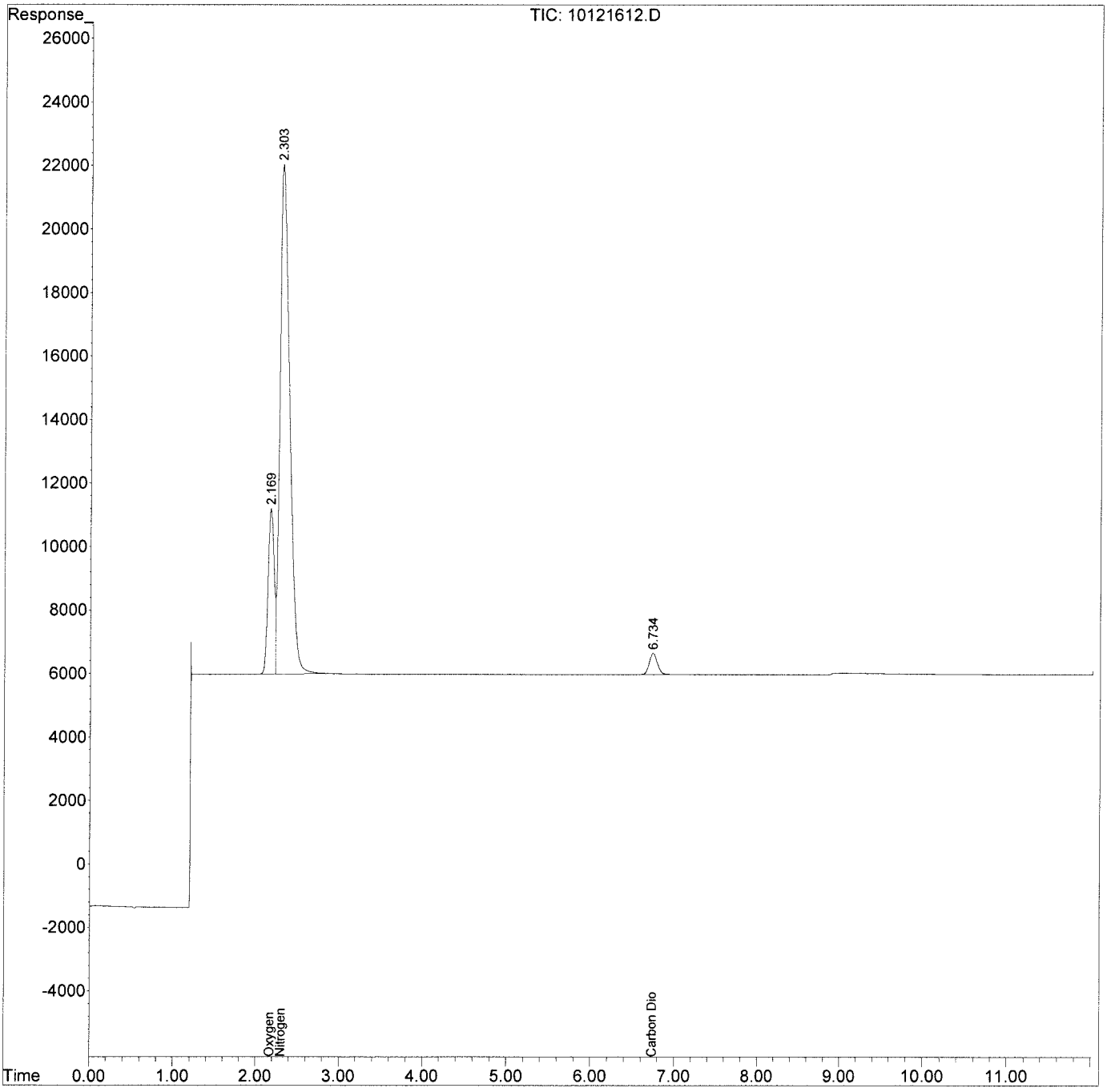
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.170	269521	174330.050	ppm
3)	Nitrogen	2.305	1293842	732143.005	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.735	45527	21706.062	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\12\
Data File : 10121612.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 11:37 am
Operator : amf
Sample : 4794-005
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 11:57:08 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_10\12\
Data File : 10121613.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 11:53 am
Operator : amf
Sample : 4794-007
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 12:33:19 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 :

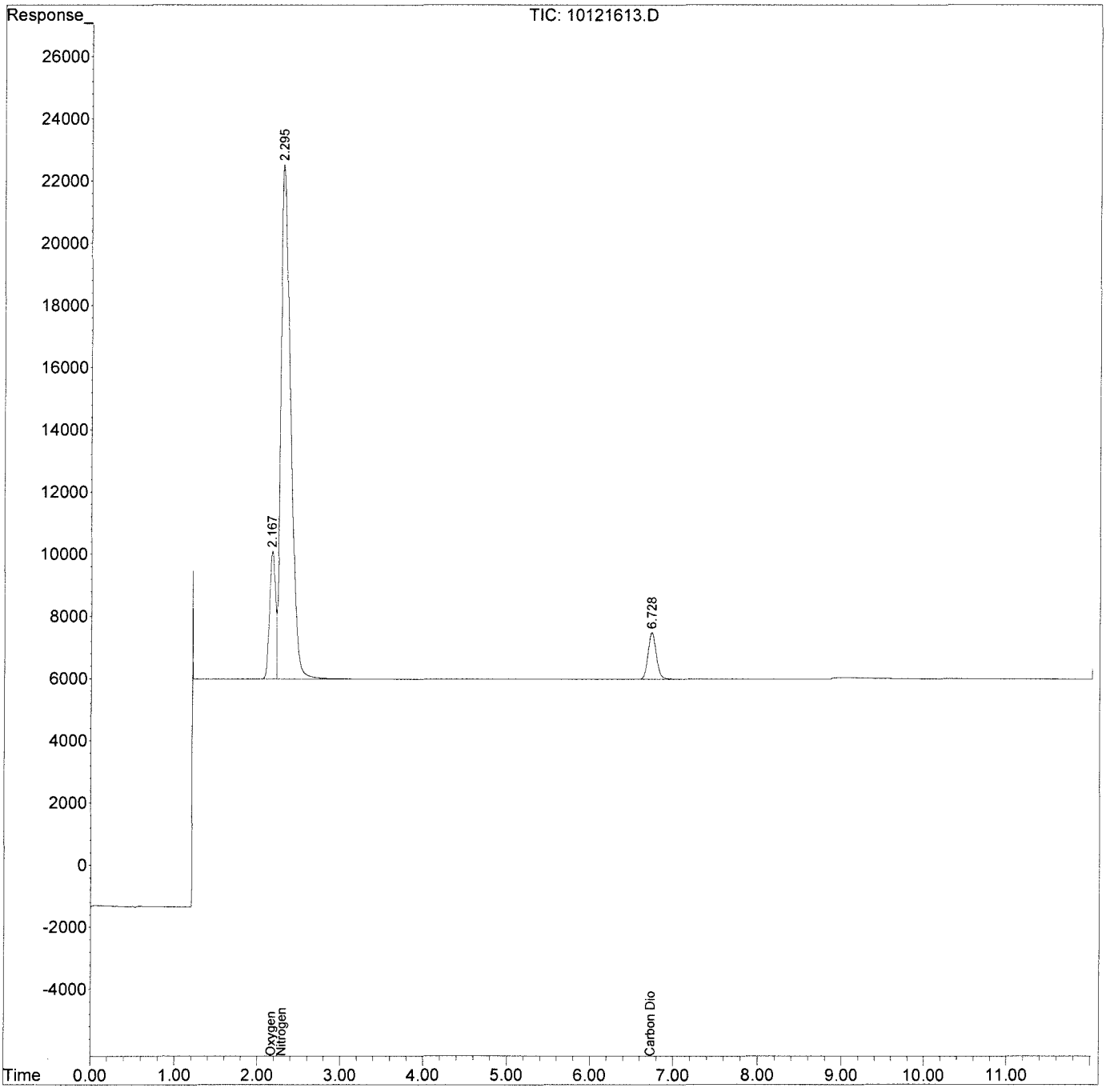
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.168	206346	133467.214	ppm
3)	Nitrogen	2.297	1333576	754627.519	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.730	103697	49440.371	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\12\
Data File : 10121613.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 11:53 am
Operator : amf
Sample : 4794-007
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 12:33:19 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\12\
Data File : 10121614.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 12:09 pm
Operator : amf
Sample : 4794-007
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 12:40:46 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 :

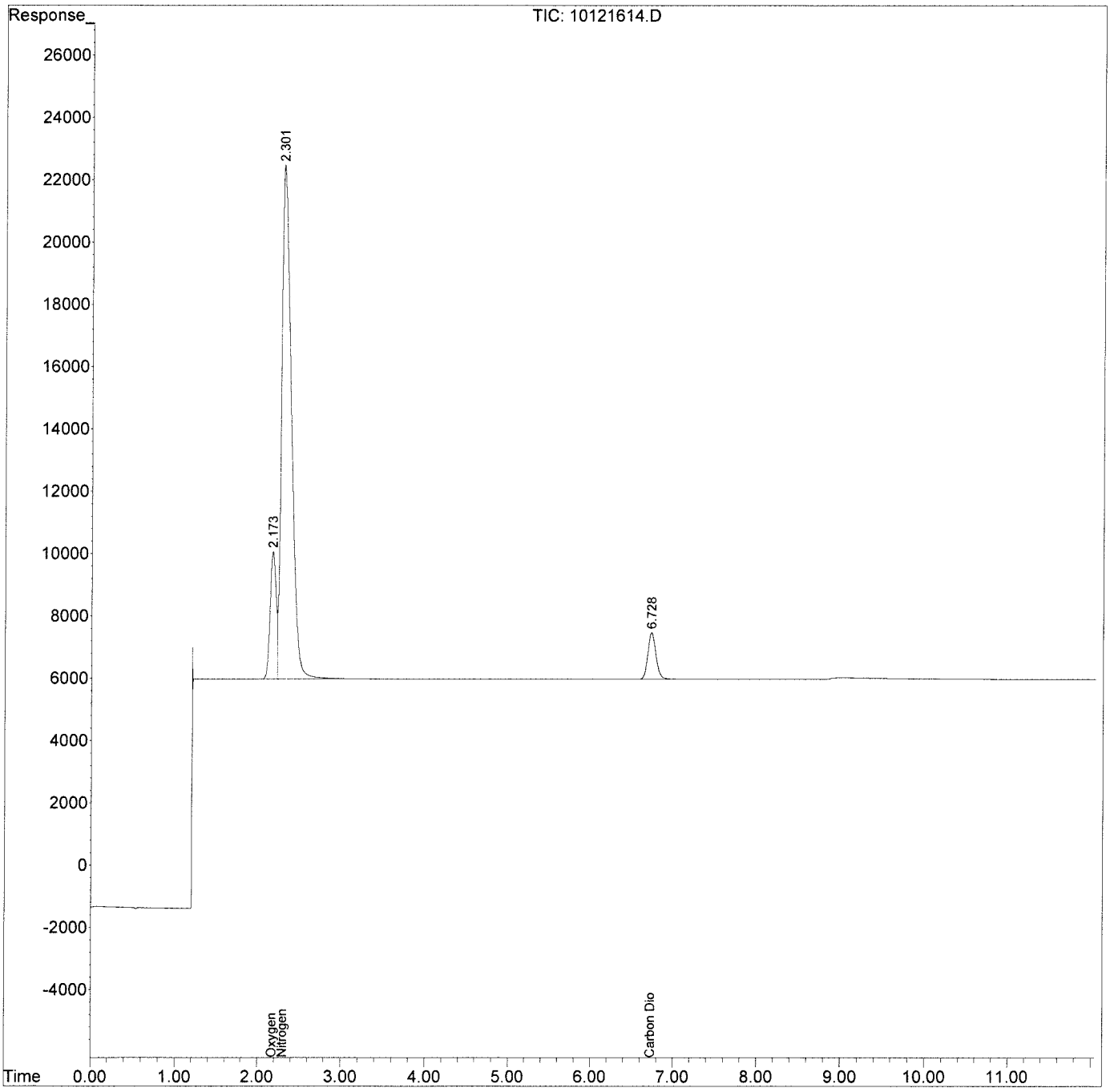
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.000	0	N.D.	ppm	d
2)	Oxygen	2.175	205022	132611.264	ppm	
3)	Nitrogen	2.303	1324319	749388.749	ppm	
4)	Carbon Monoxide	0.000	0	N.D.	ppm	
5)	Methane	0.000	0	N.D.	ppm	
6)	Carbon Dioxide	6.729	102825	49024.431	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\12\
Data File : 10121614.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 12:09 pm
Operator : amf
Sample : 4794-007
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 12:40:46 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\12\
Data File : 10121615.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 12:25 pm
Operator : amf
Sample : 4794-007
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 12:44:54 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 :

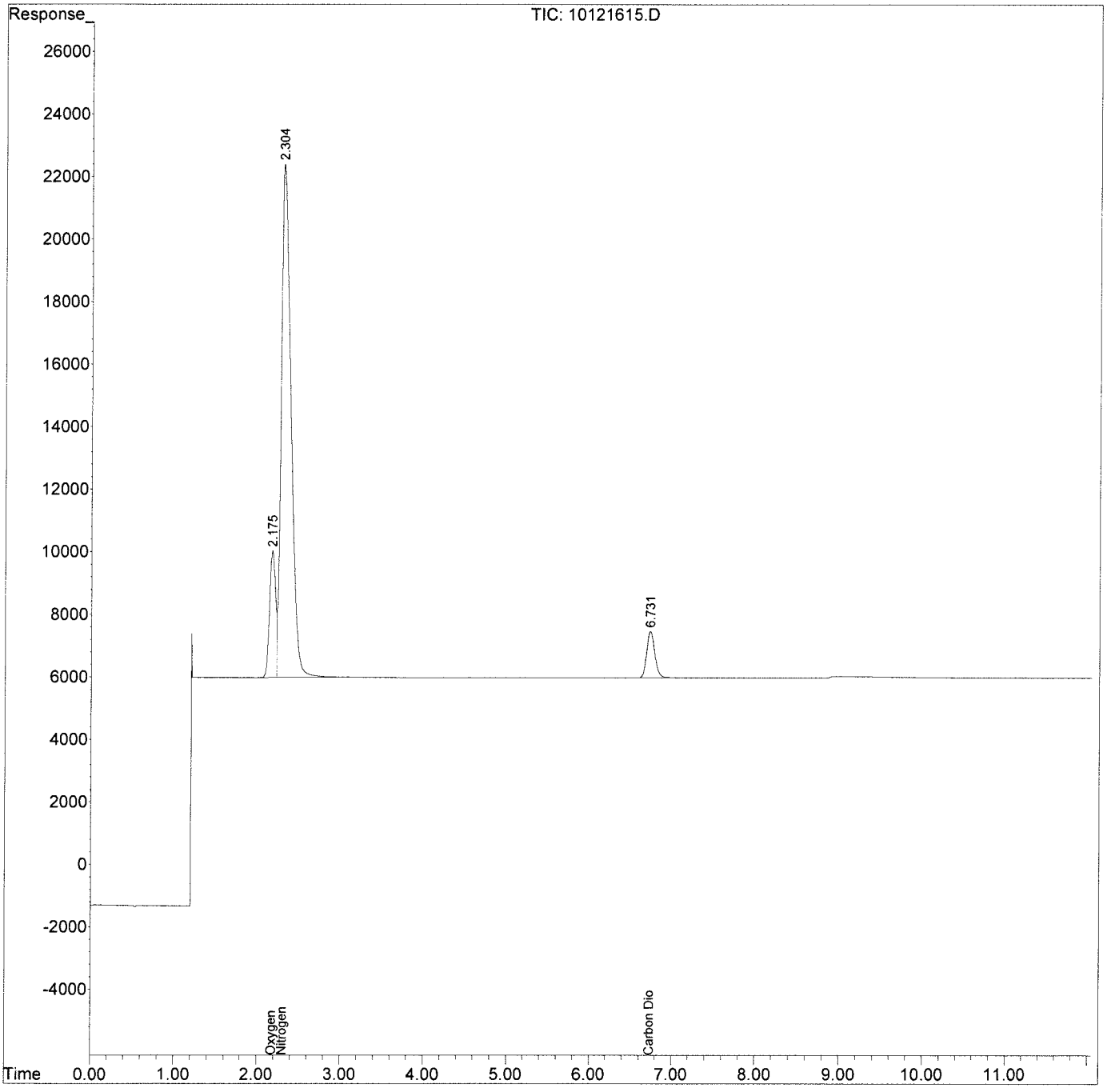
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.177	203876	131869.772	ppm
3)	Nitrogen	2.305	1316880	745179.730	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.732	102455	48848.086	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\12\
Data File : 10121615.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 12:25 pm
Operator : amf
Sample : 4794-007
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 12:44:54 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 :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_10\12\
Data File : 10121616.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 12:41 pm
Operator : amf
Sample : 4794-009
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 13:49:28 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 :

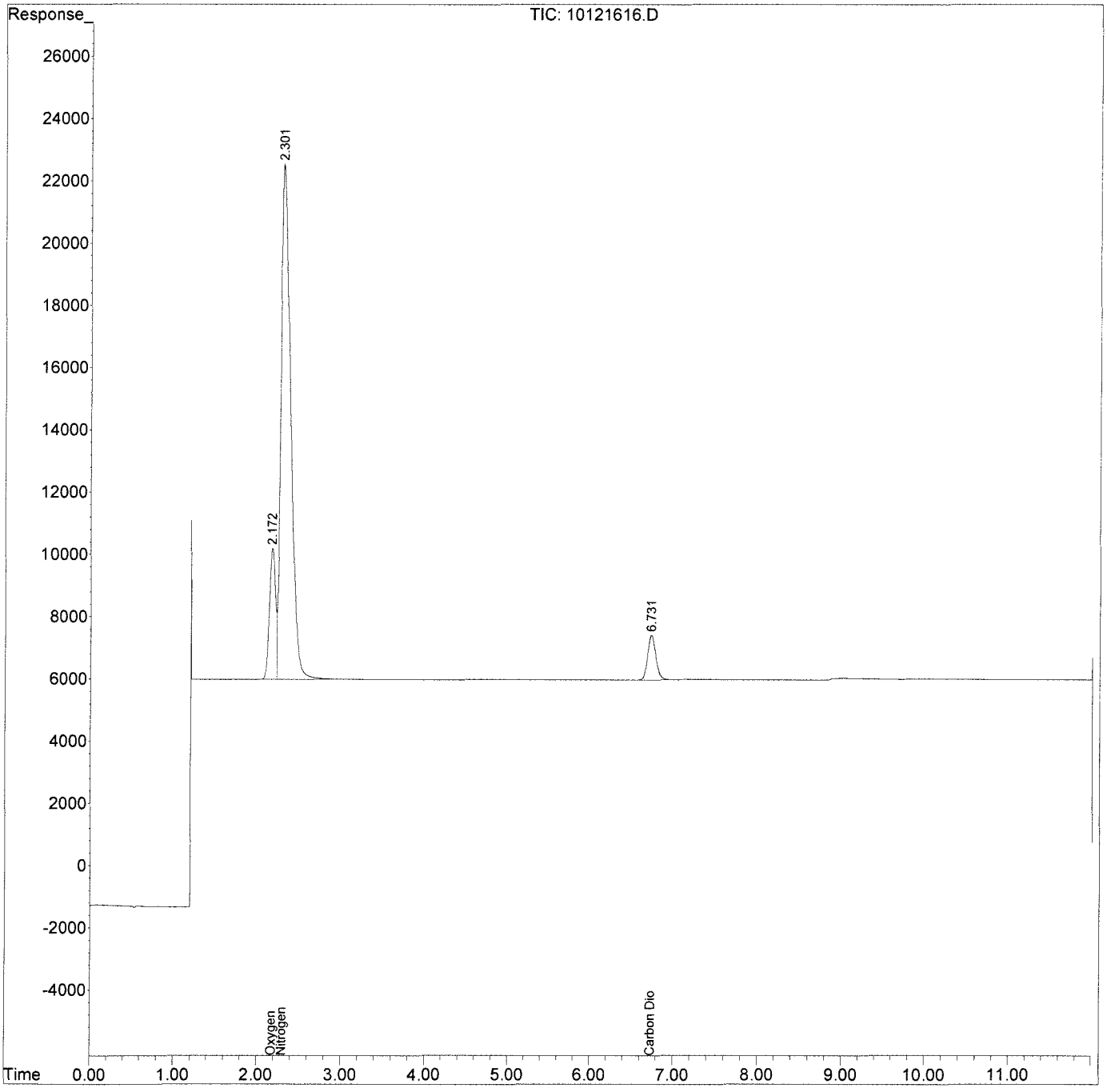
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.174	211637	136889.748	ppm
3)	Nitrogen	2.303	1332853	754218.347	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.733	98614	47016.774	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\12\
Data File : 10121616.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 12:41 pm
Operator : amf
Sample : 4794-009
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 13:49:28 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\12\
Data File : 10121617.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 12:57 pm
Operator : amf
Sample : 4794-009
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 13:49:42 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

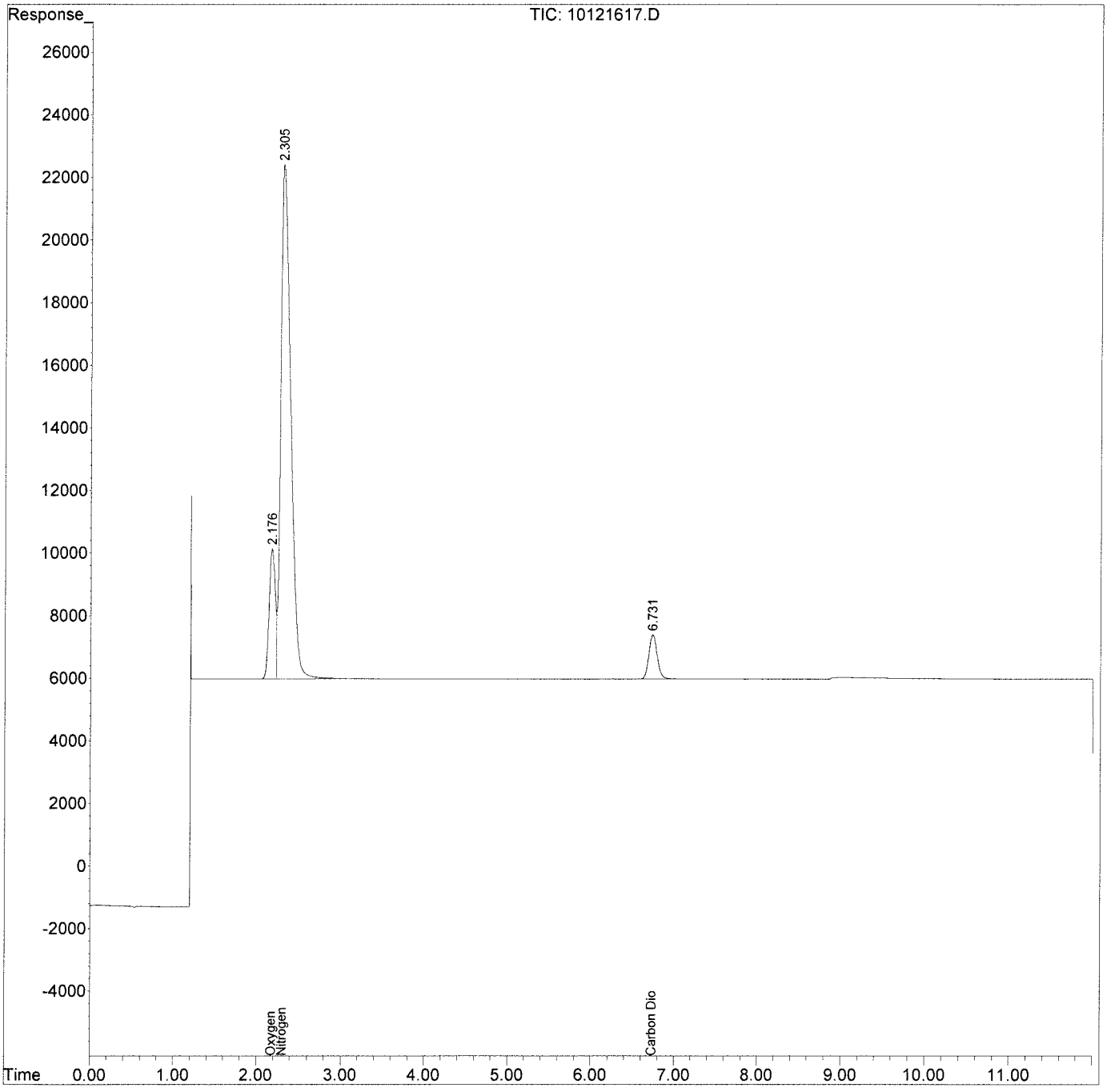
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.177	209612	135580.235	ppm
3)	Nitrogen	2.306	1319646	746744.804	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.733	97562	46515.042	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\12\
Data File : 10121617.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 12:57 pm
Operator : amf
Sample : 4794-009
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 13:49:42 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 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\12\
Data File : 10121618.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 1:35 pm
Operator : amf
Sample : 4794-009
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 13:55:06 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 :

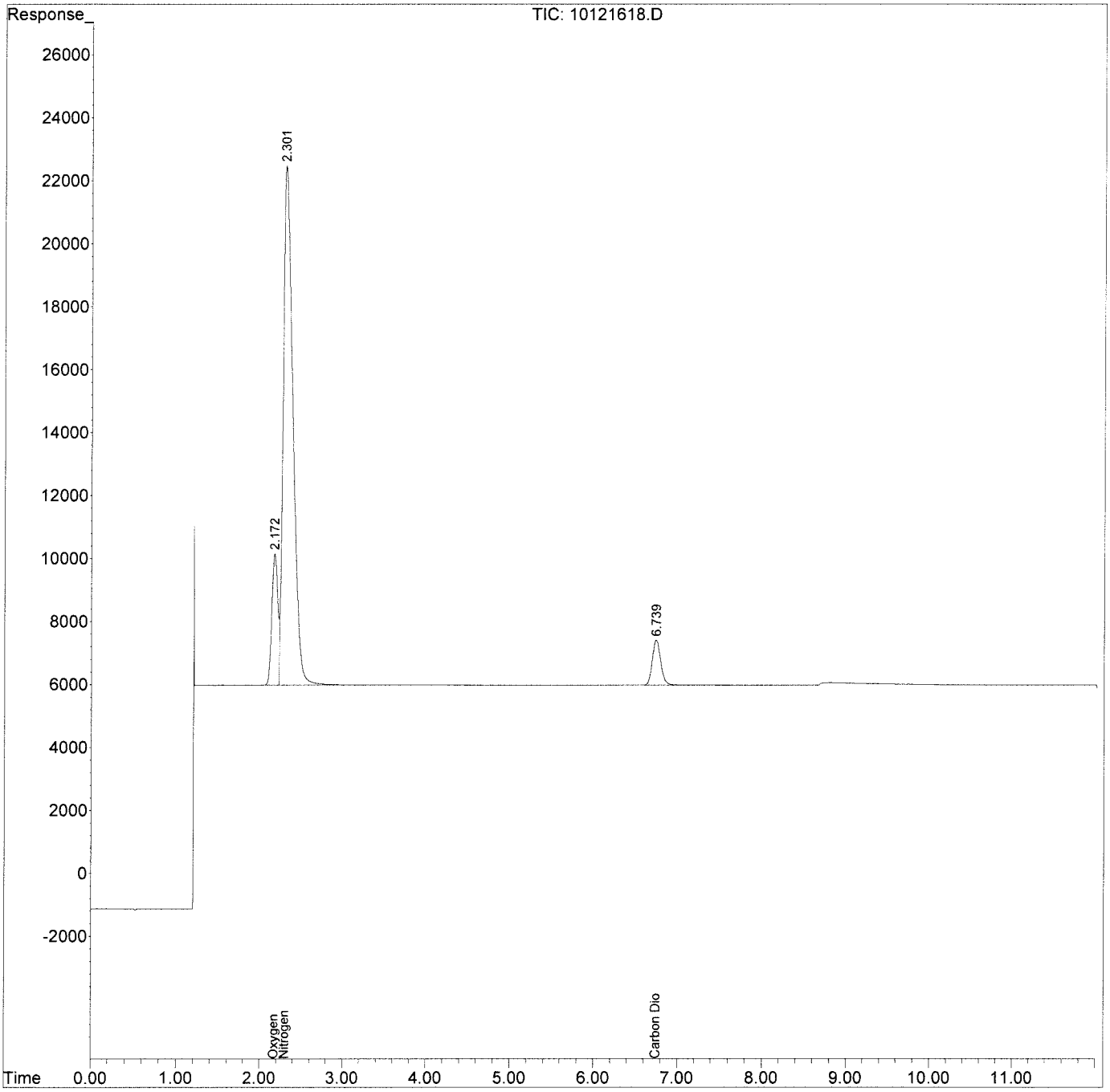
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.173	211642	136892.820	ppm
3)	Nitrogen	2.303	1331608	753513.762	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.740	98954	47178.854	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\12\
Data File : 10121618.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 1:35 pm
Operator : amf
Sample : 4794-009
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 13:55:06 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\12\
Data File : 10121619.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 1:51 pm
Operator : amf
Sample : 4794-011
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 14:31:13 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 :

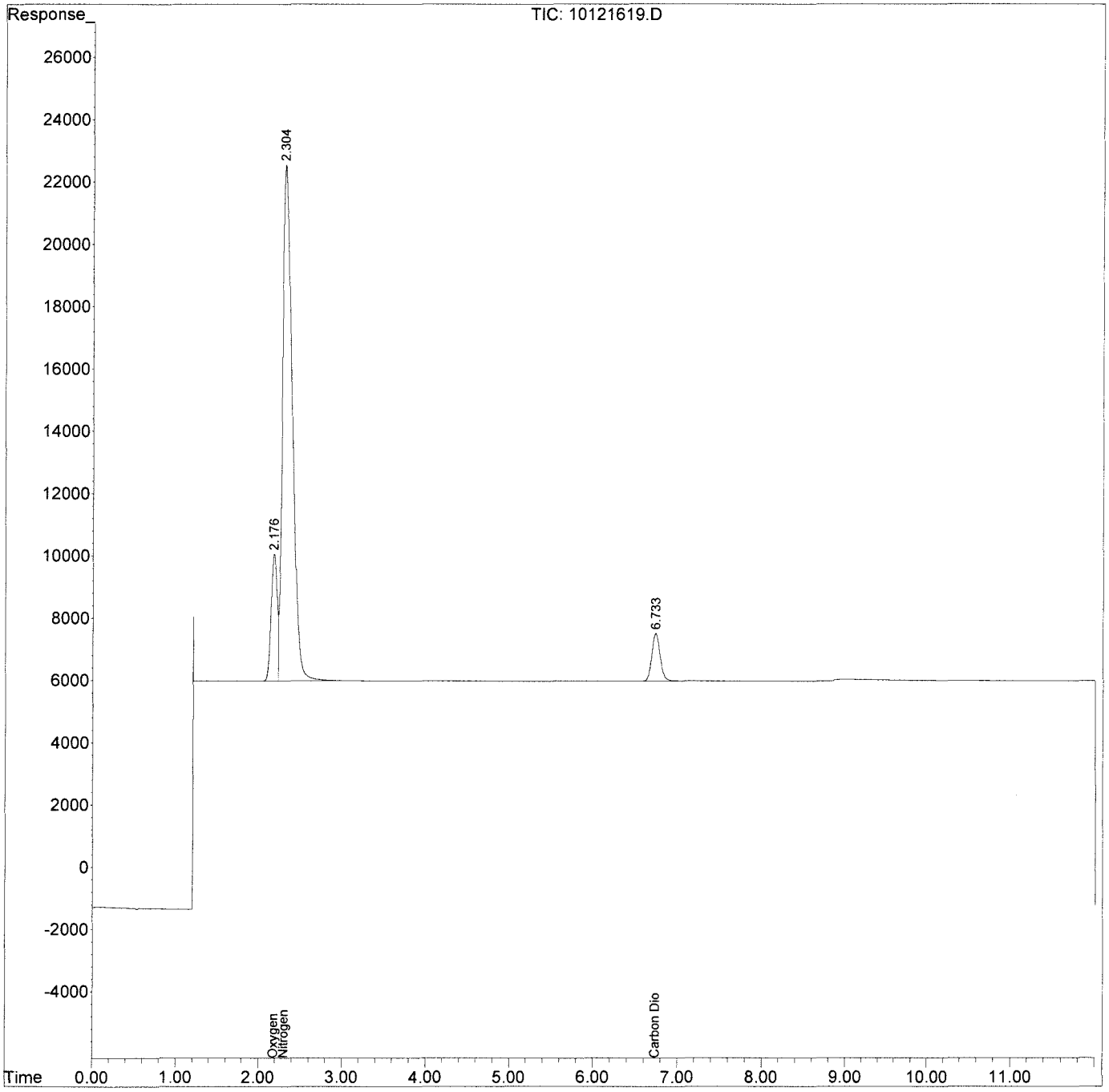
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.178	204468	132252.757	ppm
3)	Nitrogen	2.306	1332392	753957.020	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.734	105710	50400.030	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\12\
Data File : 10121619.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 1:51 pm
Operator : amf
Sample : 4794-011
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 14:31:13 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\12\
Data File : 10121620.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 2:07 pm
Operator : amf
Sample : 4794-011
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 14:31:27 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 :

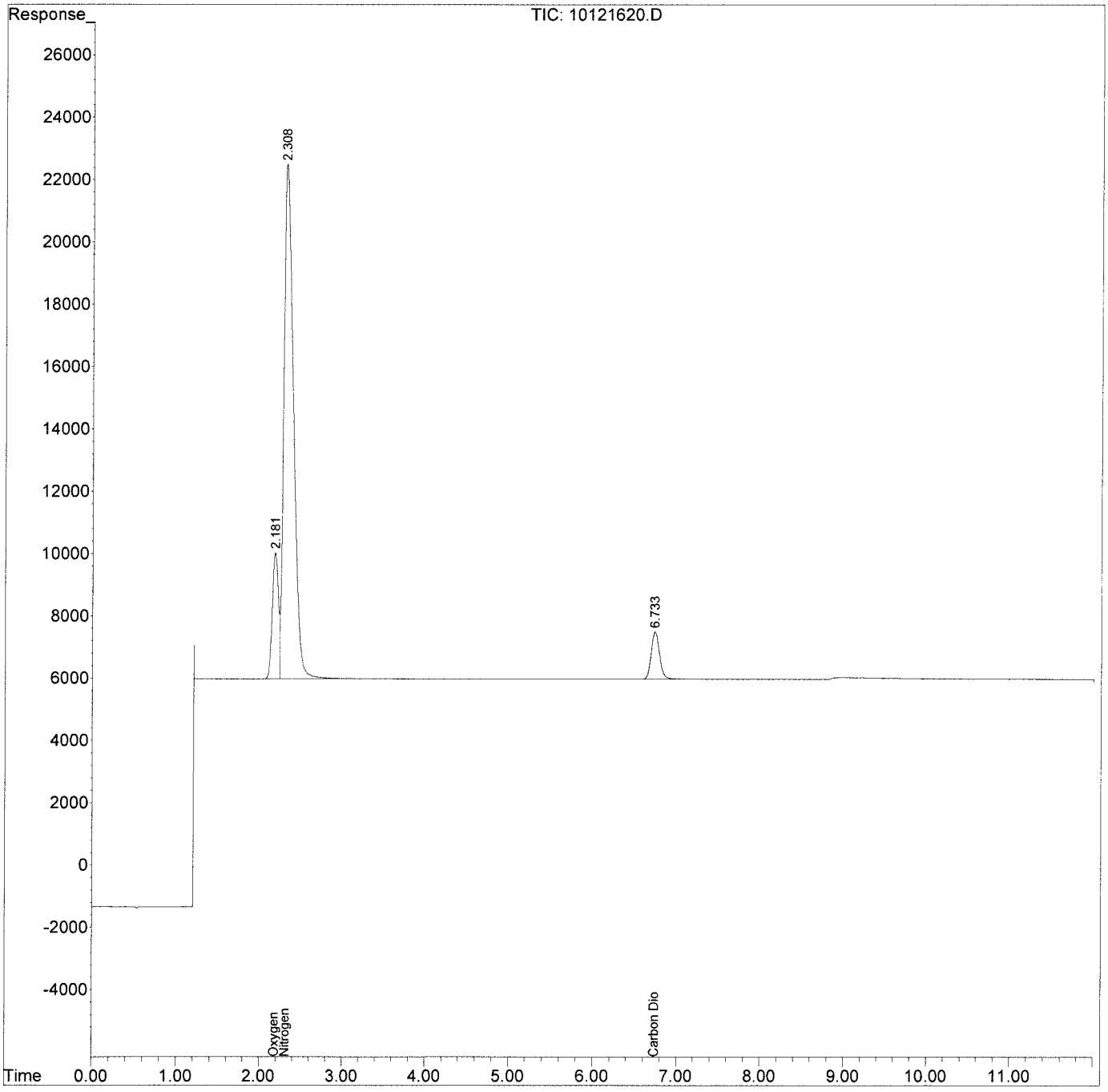
	Compound	R.T.	Response	Conc Units
Target Compounds				
1)	Hydrogen	0.000	0	N.D. ppm
2)	Oxygen	2.182	203409	131567.508 ppm
3)	Nitrogen	2.310	1324908	749722.097 ppm
4)	Carbon Monoxide	0.000	0	N.D. ppm
5)	Methane	0.000	0	N.D. ppm
6)	Carbon Dioxide	6.734	104718	49927.207 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\12\
Data File : 10121620.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 2:07 pm
Operator : amf
Sample : 4794-011
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 14:31:27 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\12\
Data File : 10121621.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 2:23 pm
Operator : amf
Sample : 4794-011
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 14:45:32 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 :

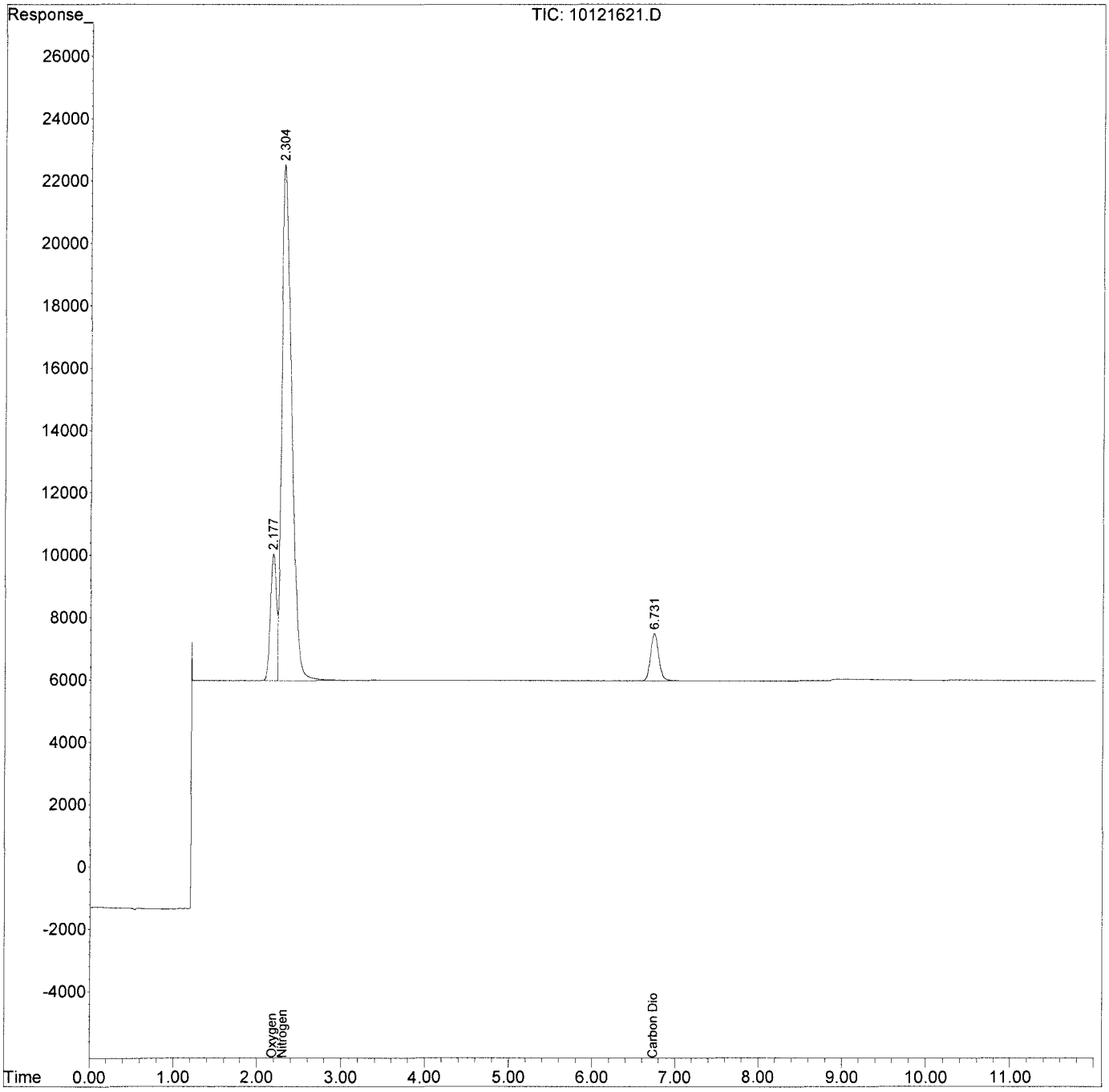
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.178	203903	131887.265	ppm
3)	Nitrogen	2.306	1329152	752123.908	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.732	105338	50222.398	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\12\
Data File : 10121621.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 2:23 pm
Operator : amf
Sample : 4794-011
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 14:45:32 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 :



Data Path : I:\GC01\DATA\FXG\2016_10\12\
Data File : 10121622.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 2:40 pm
Operator : amf
Sample : 4794-013
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 15:09:12 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 :

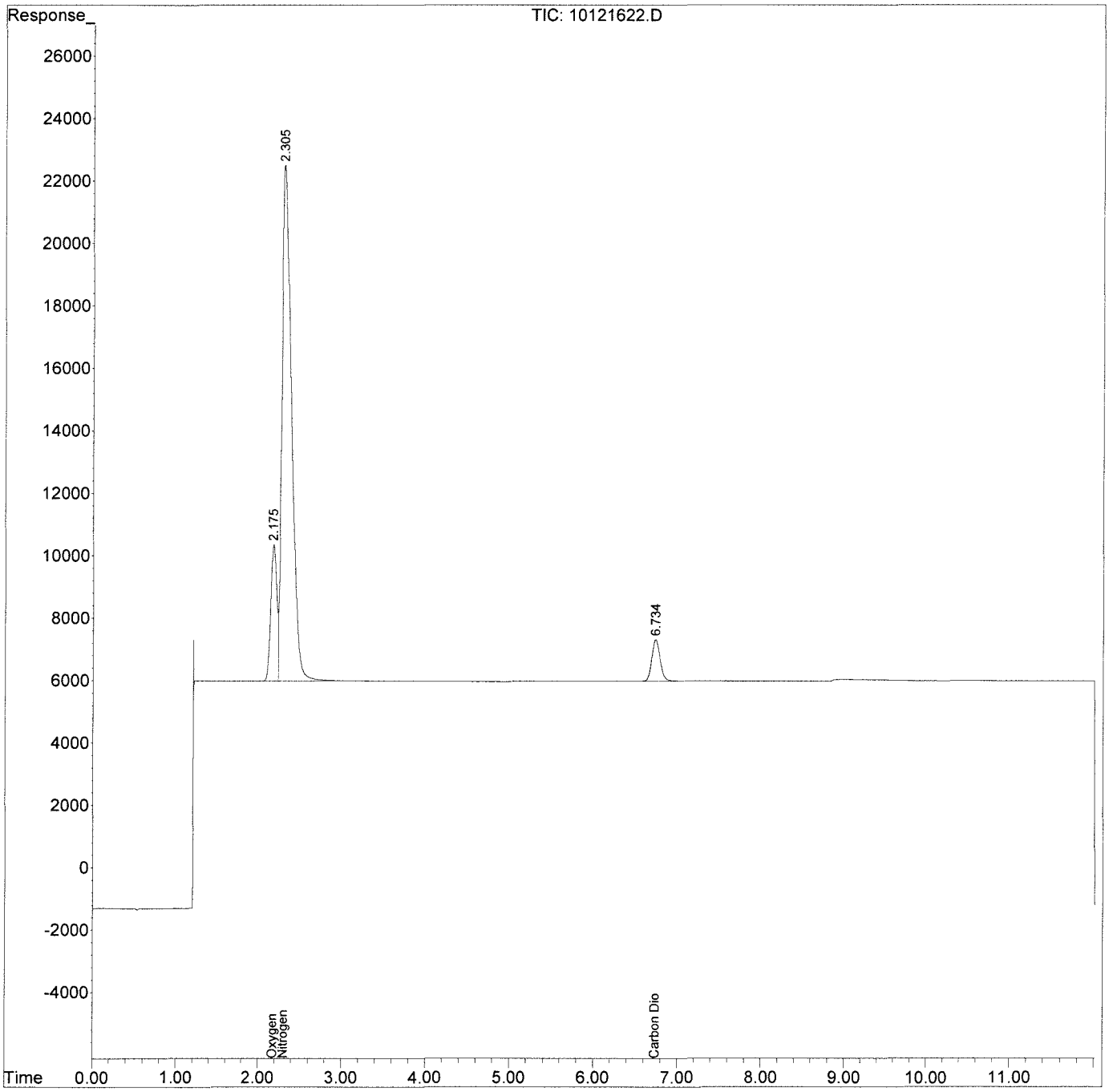
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.177	221116	143021.168	ppm
3)	Nitrogen	2.306	1331477	753439.624	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.735	91709	43724.672	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\12\
Data File : 10121622.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 2:40 pm
Operator : amf
Sample : 4794-013
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 15:09:12 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 :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_10\12\
Data File : 10121623.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 2:56 pm
Operator : amf
Sample : 4794-013
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 15:20:03 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	220384	142547.648	ppm
3)	Nitrogen	2.306	1328437	751719.054	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.735	91823	43779.100	ppm

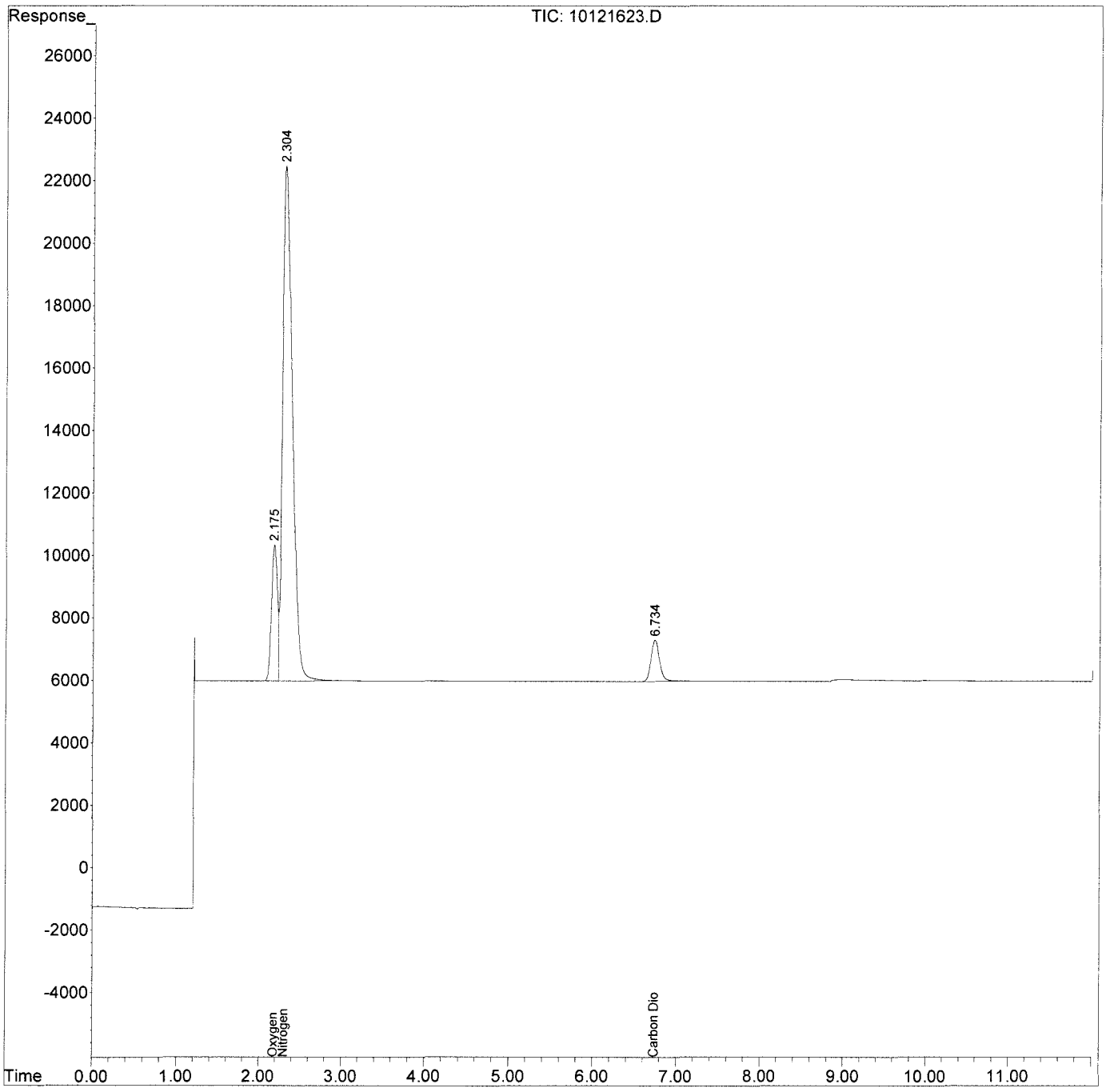
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_10\12\
Data File : 10121623.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 2:56 pm
Operator : amf
Sample : 4794-013
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 15:20:03 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\12\
Data File : 10121624.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 3:12 pm
Operator : amf
Sample : 4794-013
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 15:32:05 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 :

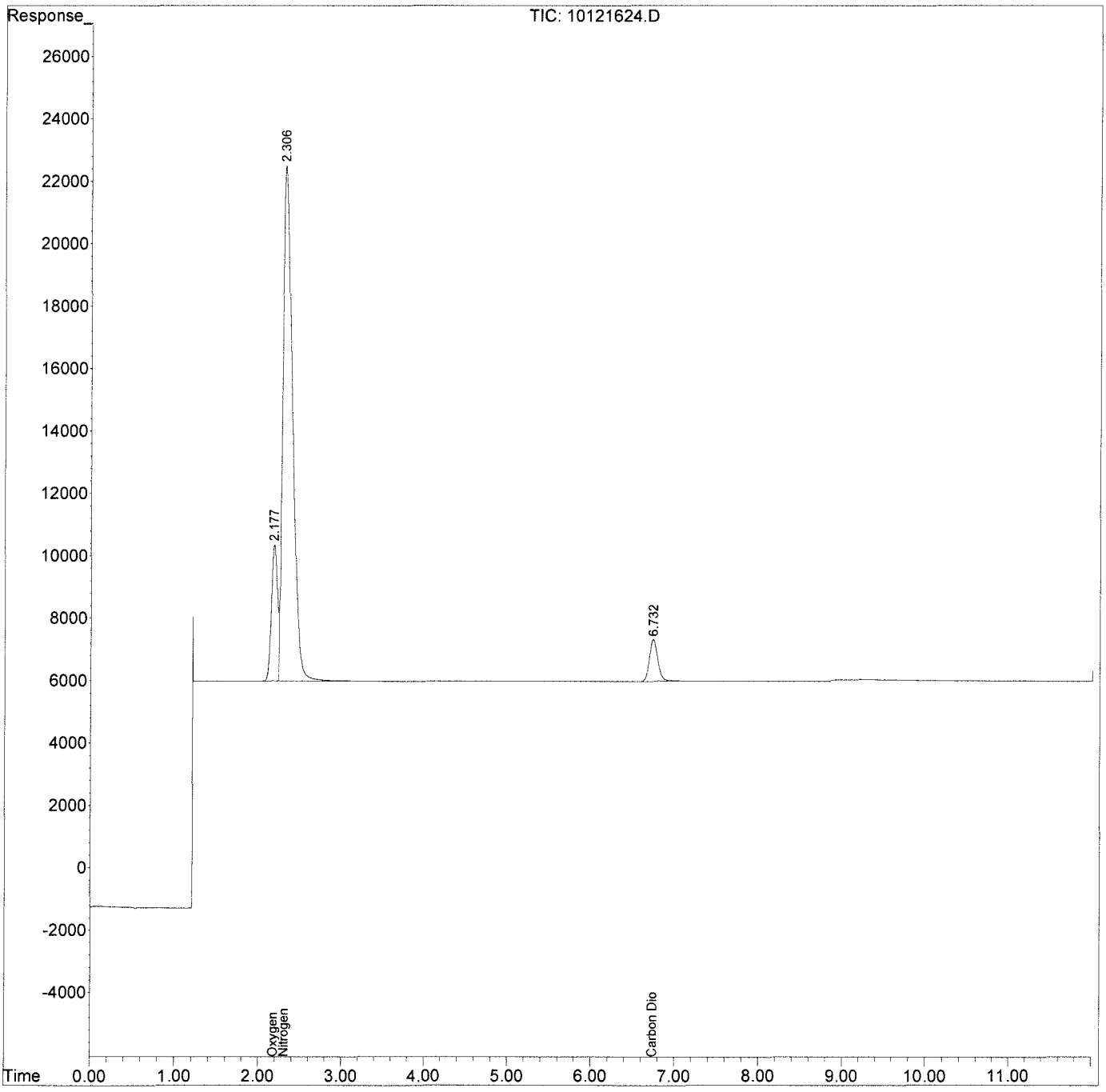
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.178	220738	142776.758	ppm
3)	Nitrogen	2.308	1331245	753308.050	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.734	91630	43686.752	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\12\
Data File : 10121624.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 3:12 pm
Operator : amf
Sample : 4794-013
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 15:32:05 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\12\
Data File : 10121602.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 8:33 am
Operator : amf
Sample : mb
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 09:26:18 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 :

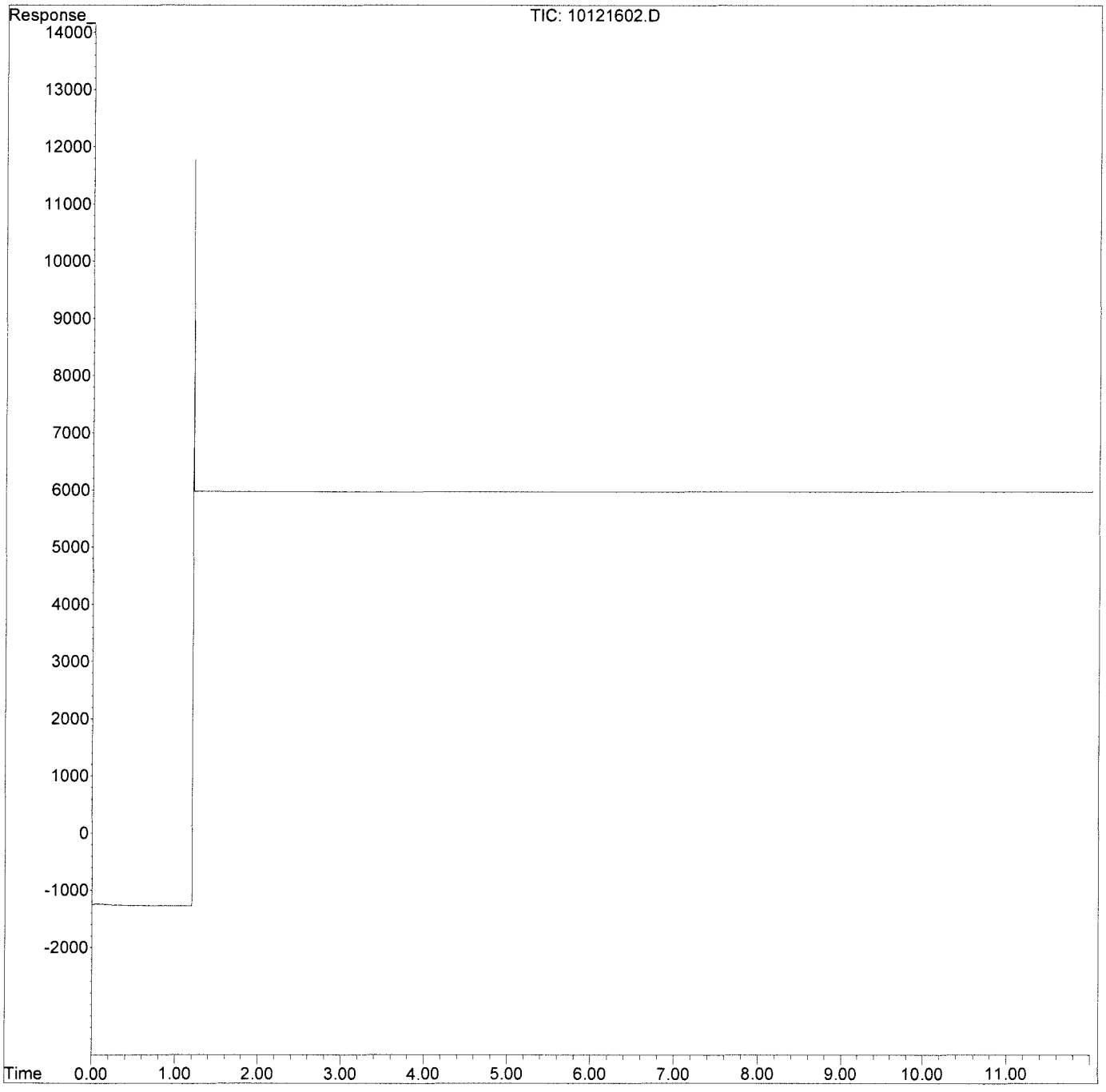
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\12\
Data File : 10121602.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 8:33 am
Operator : amf
Sample : mb
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 09:26:18 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

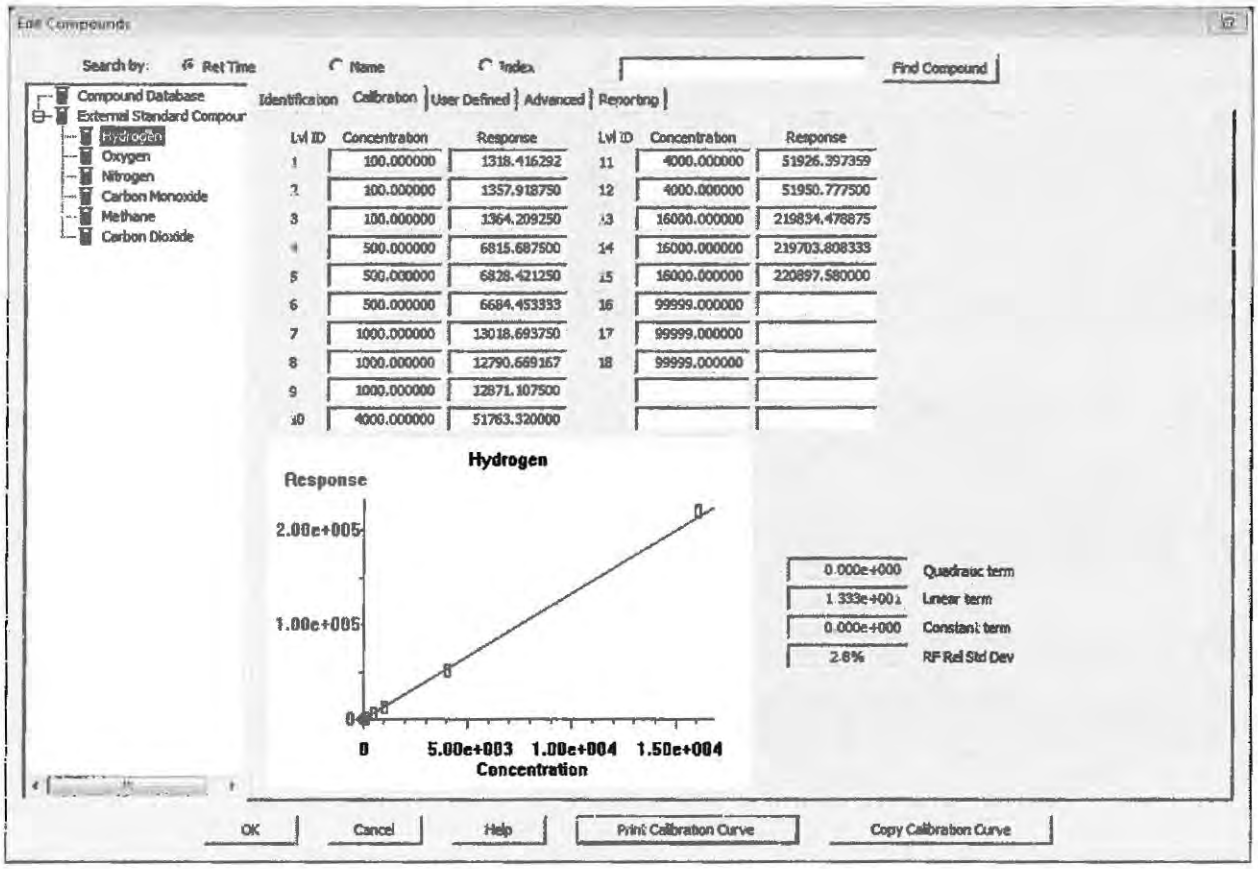
Method Path : I:\GC01\METHODS\
Method File : GC1_trip082216.M
Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
Last Update : Tue Aug 23 11:02:57 2016
Response Via : Initial Calibration

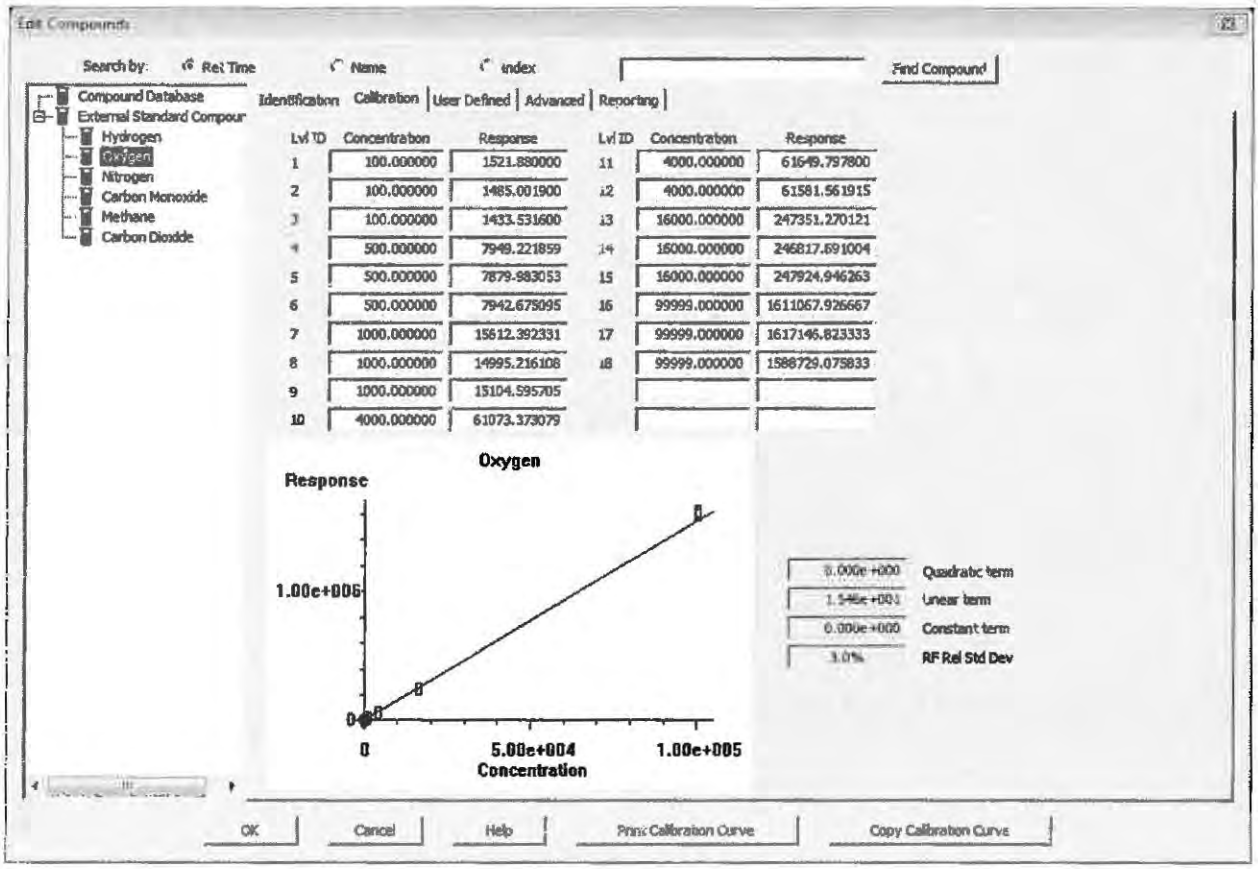
Calibration Files
1 =08221601.D 2 =08221602.D 3 =08221603.D
4 =08221604.D 5 =08221605.D 6 =08221606.D

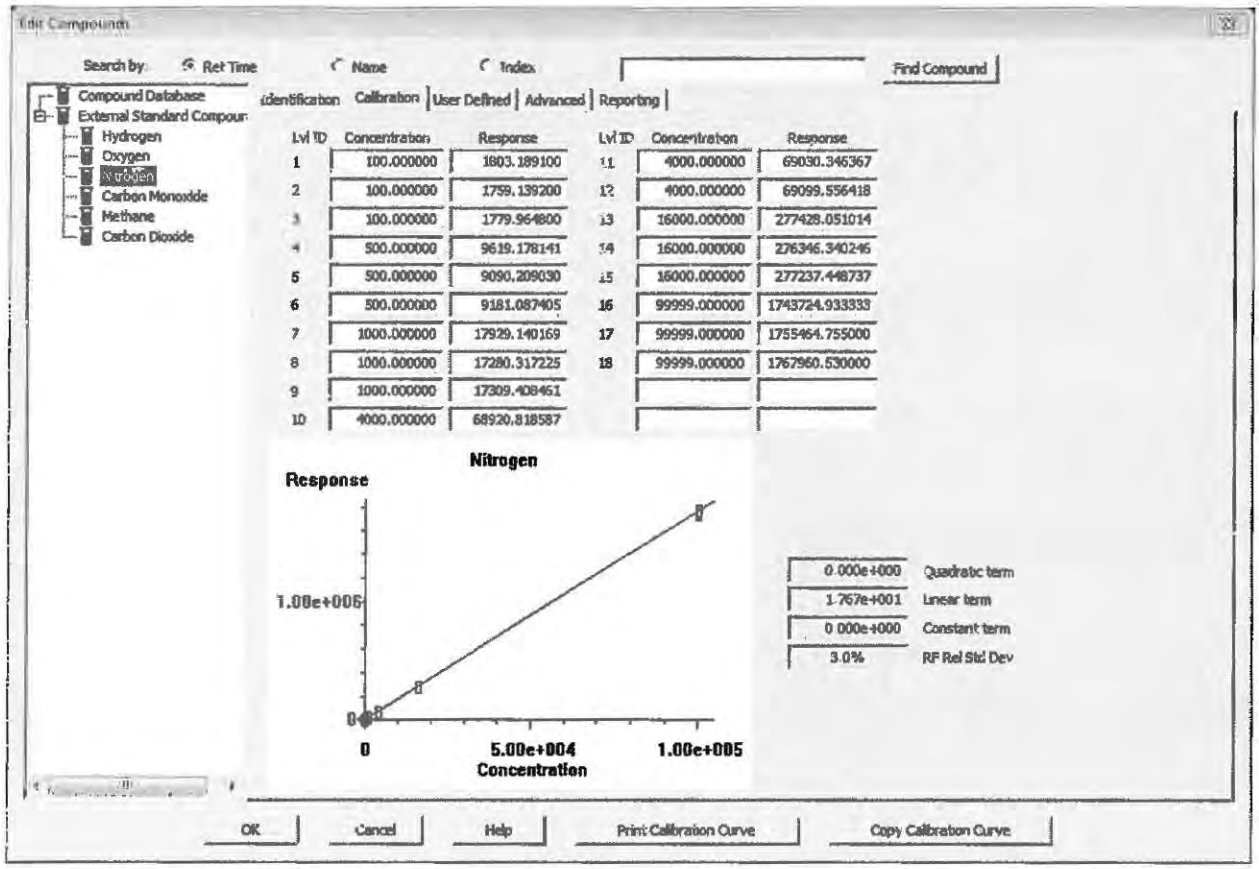
	Compound	1	2	3	4	5	6	Avg		%RSD
1)	Hydrogen	1.318	1.358	1.364	1.363	1.366	1.337	1.333	E1	2.78
2)	Oxygen	1.522	1.485	1.434	1.590	1.576	1.589	1.546	E1	3.01
3)	Nitrogen	1.803	1.759	1.780	1.924	1.818	1.836	1.767	E1	2.97
4)	Carbon Monoxide	1.653	1.676	1.610	1.844	1.851	1.826	1.735	E1	3.80
5)	Methane	1.240	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

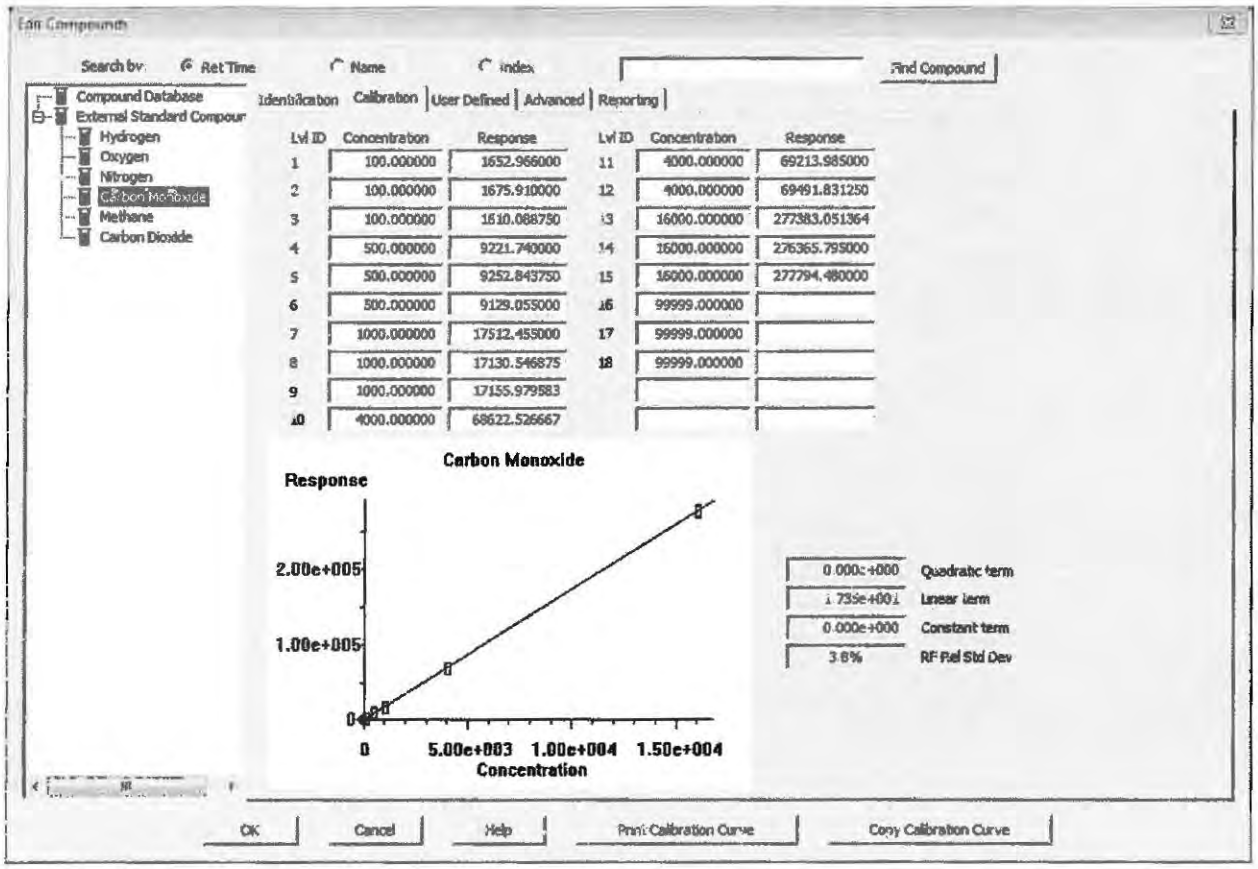
(#) = Out of Range ### Number of calibration levels exceeded format ###

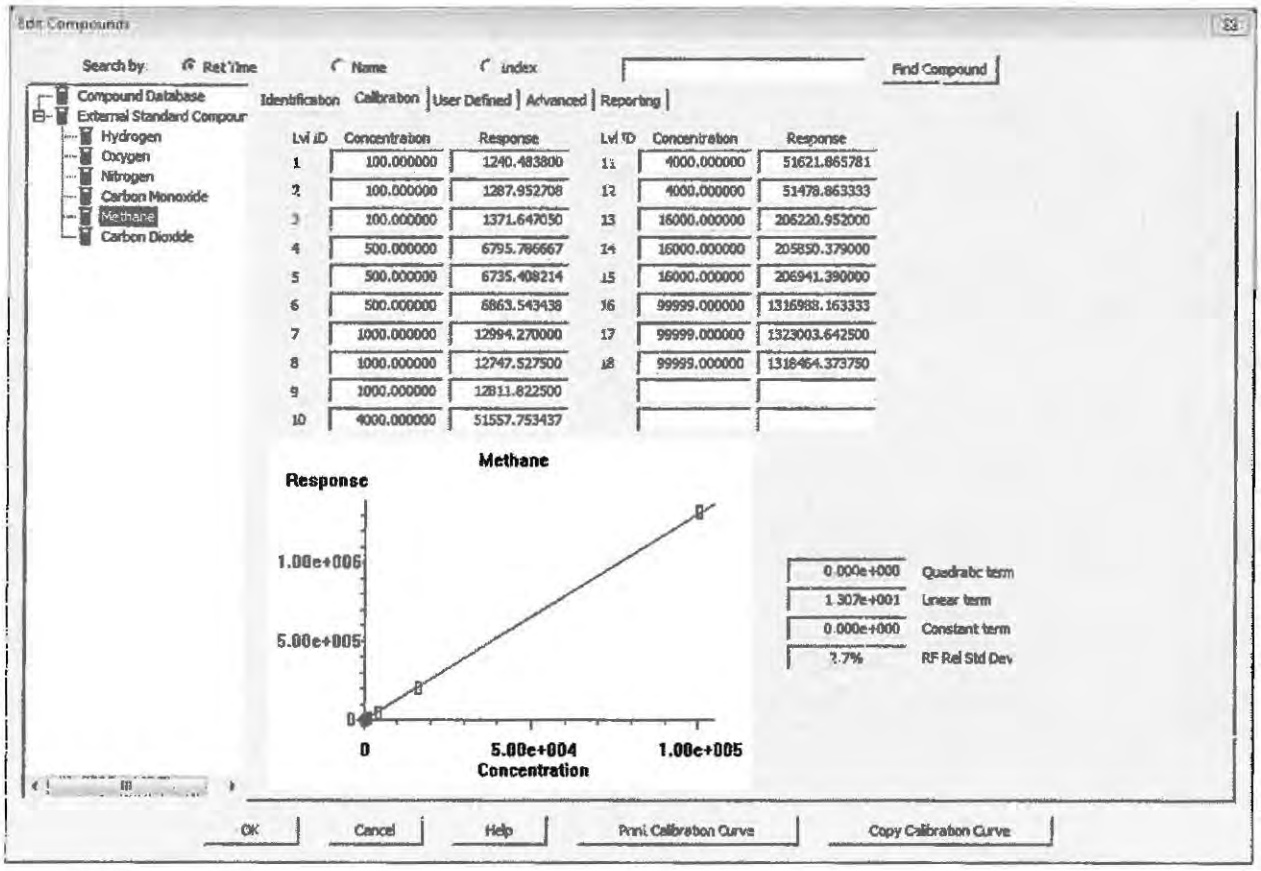
GC1_trip082216.M Tue Aug 23 12:46:23 2016

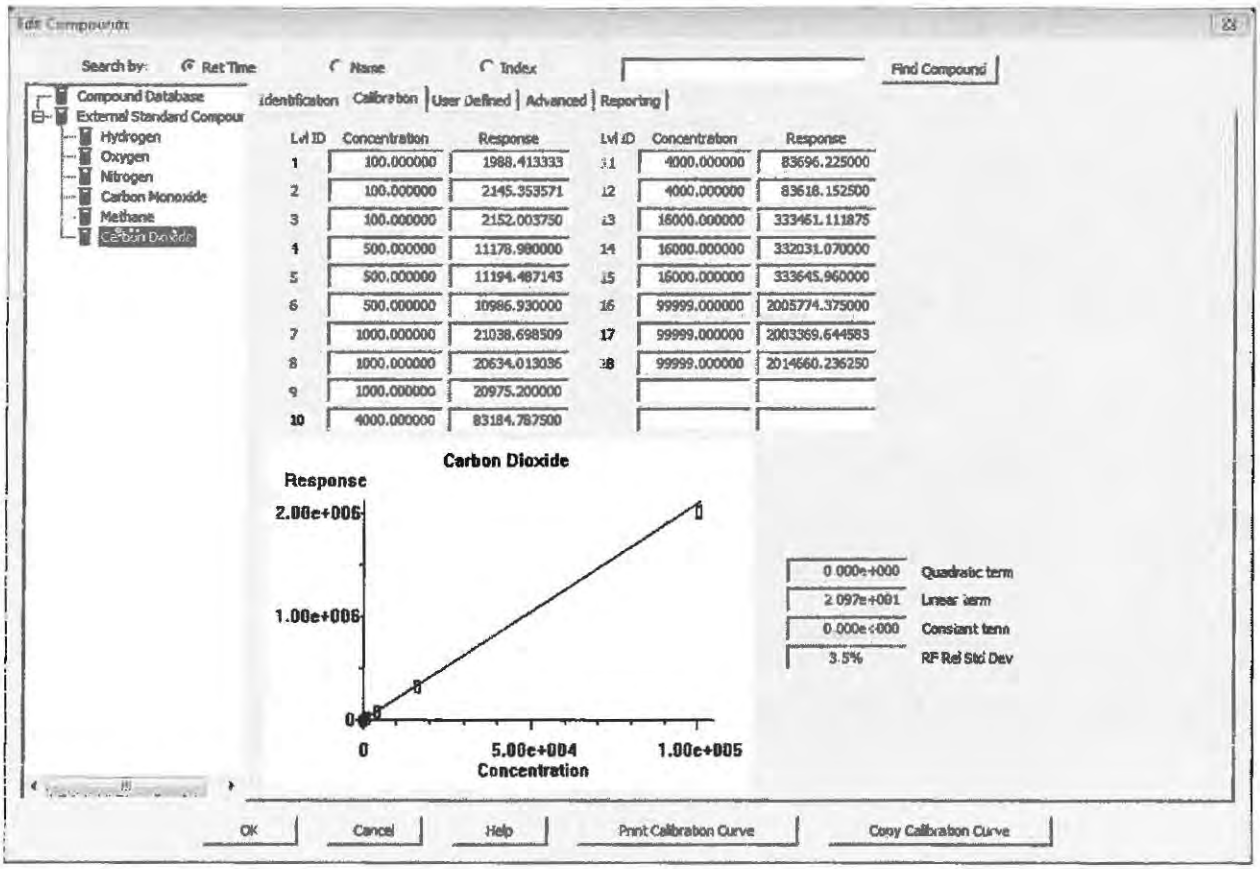

Edit Compounds
Search by:
Ret Time
Name
Index
Find Compound
Compound Database
External Standard Compour
Hydrogen
Oxygen
Nitrogen
Carbon Monoxide
Methane
Carbon Dioxide
Identification
Calibration
User Defined
Advanced
Reporting
Lvl ID
Concentration
Response
1 100.000000 1318.416292
2 100.000000 1357.918750
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


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 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 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	

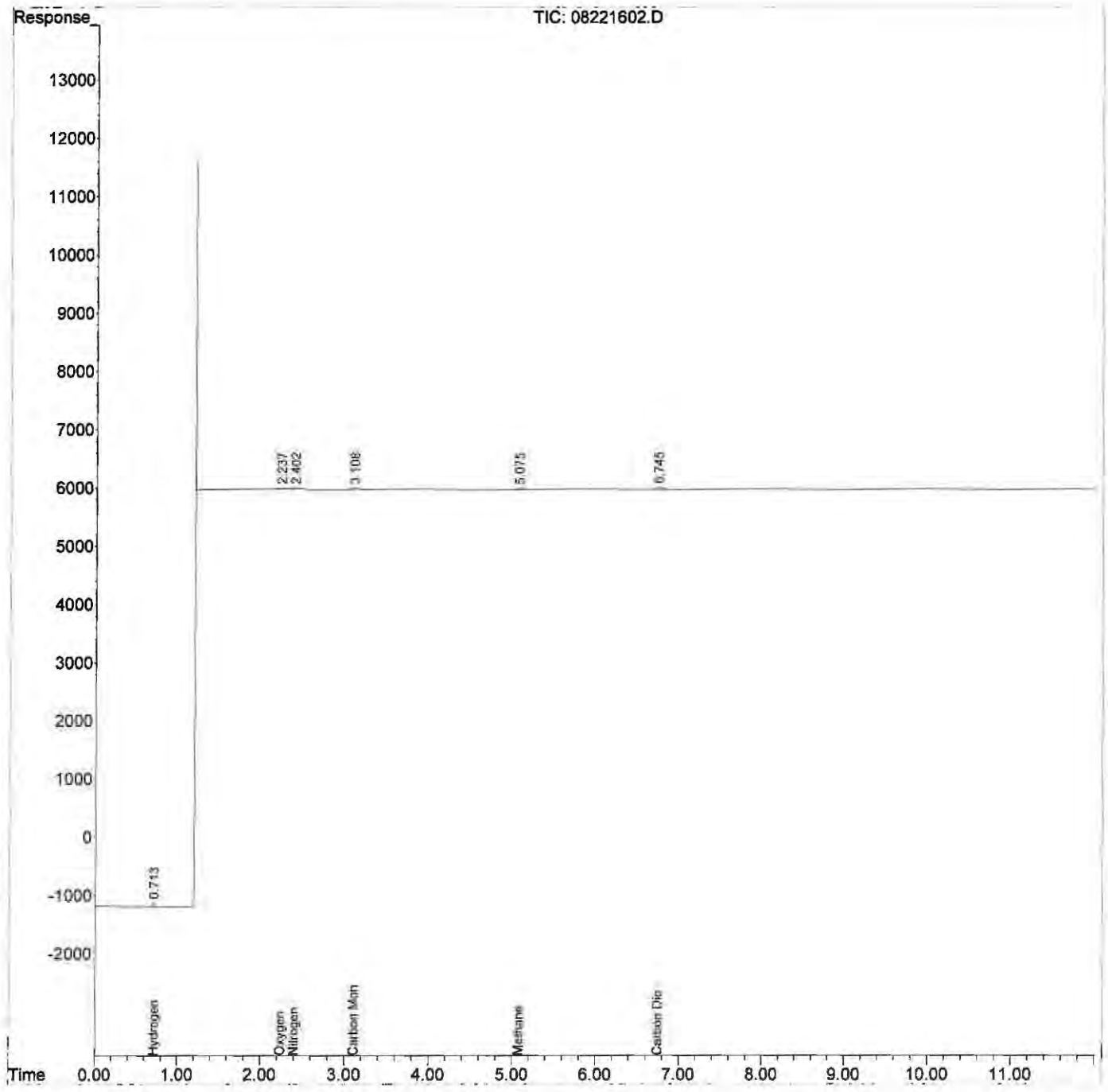
(f)=RT Delta > 1/2 Window (m)=manual int.

8/22/16

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 :

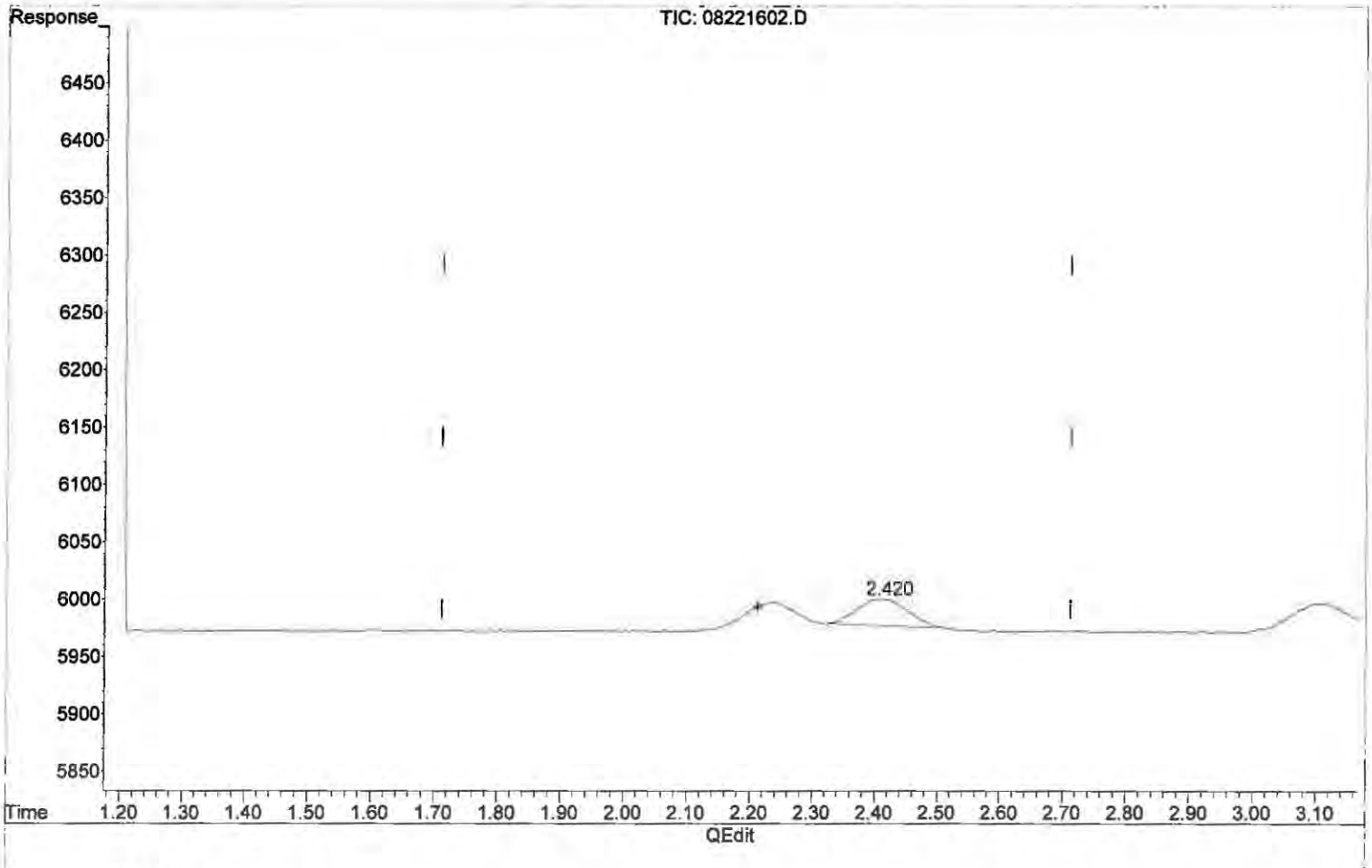


Quantitation Report (Qedit)

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

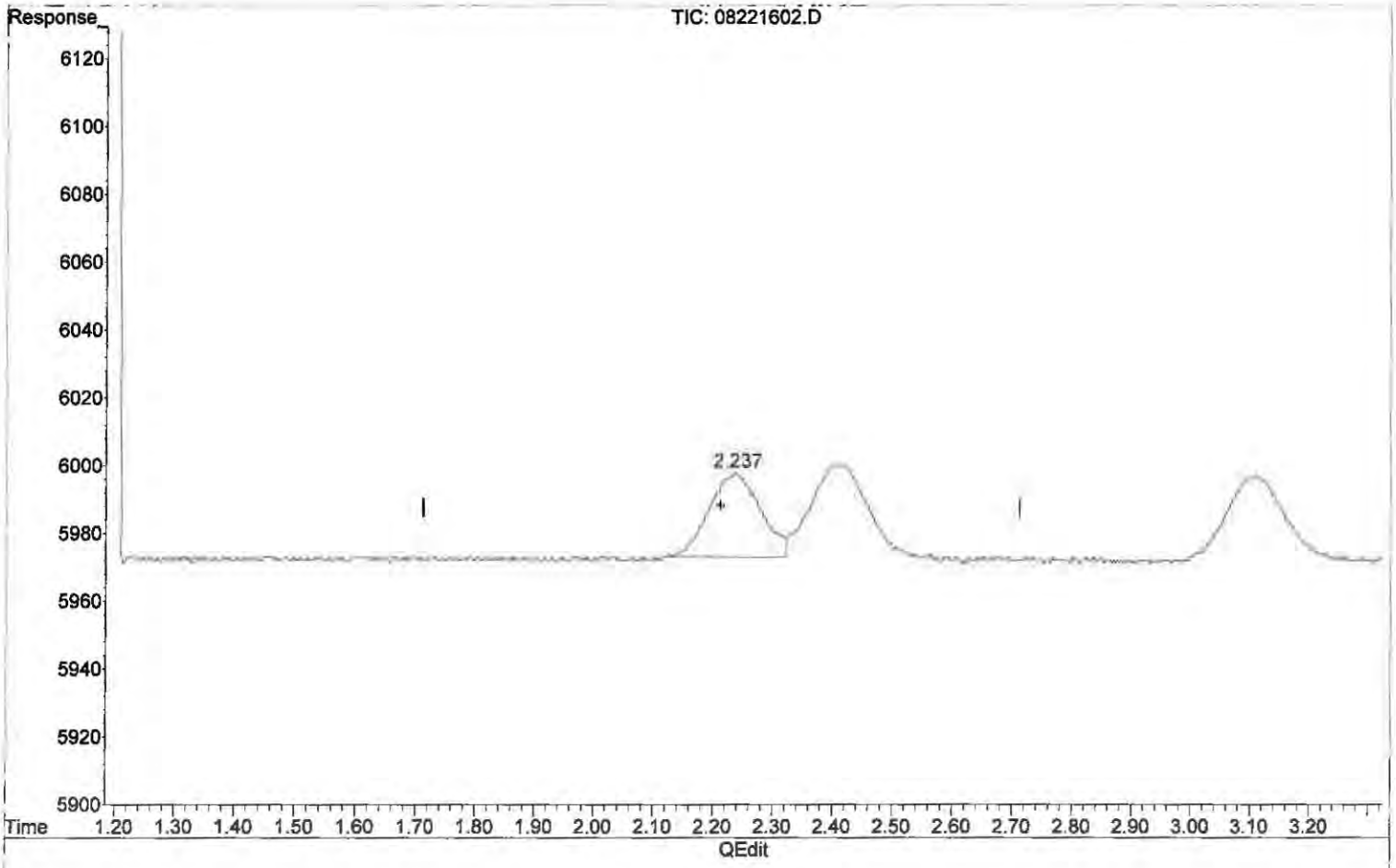
(+) = Expected Retention Time

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

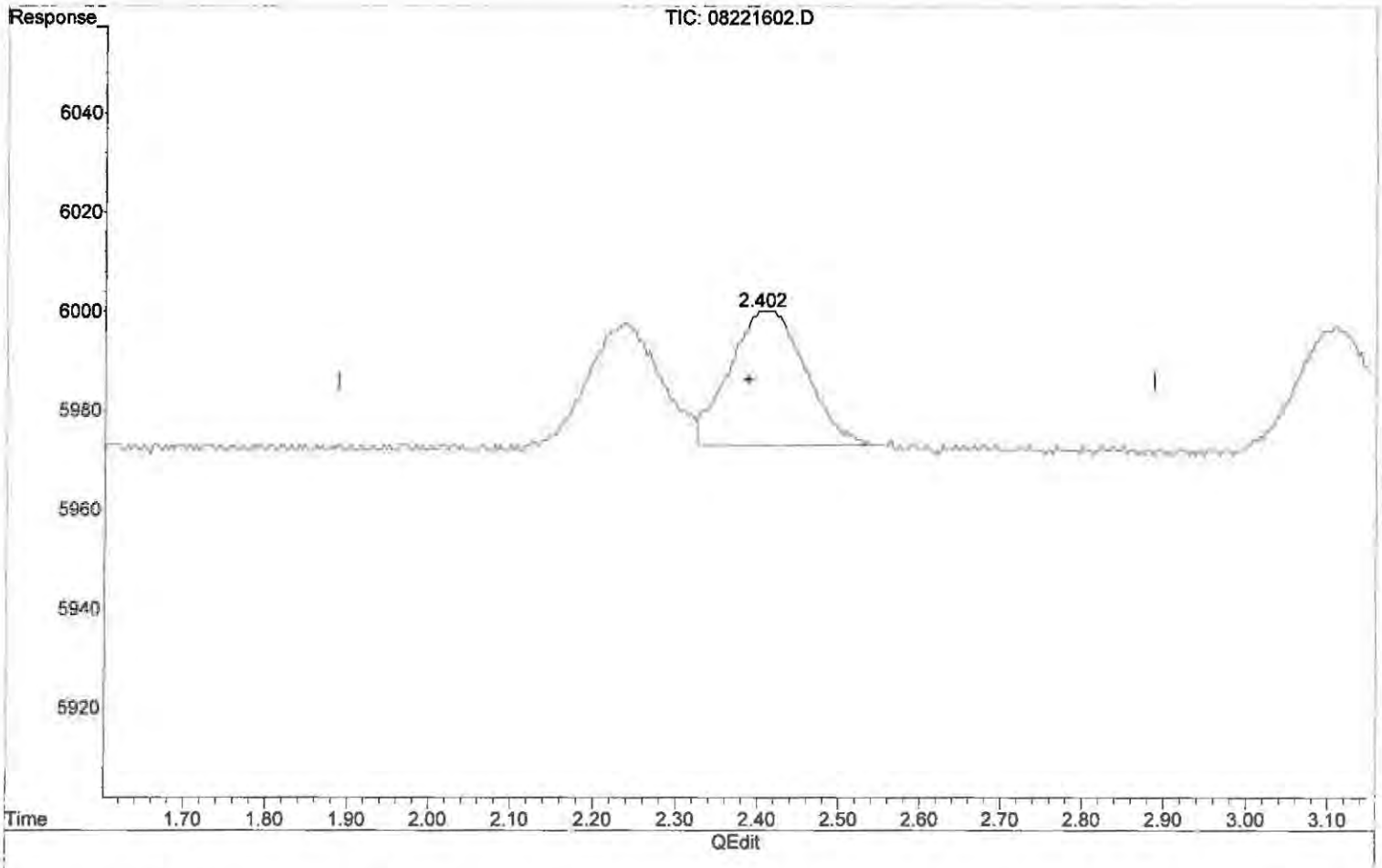
(+) = Expected Retention Time

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
No Revisions

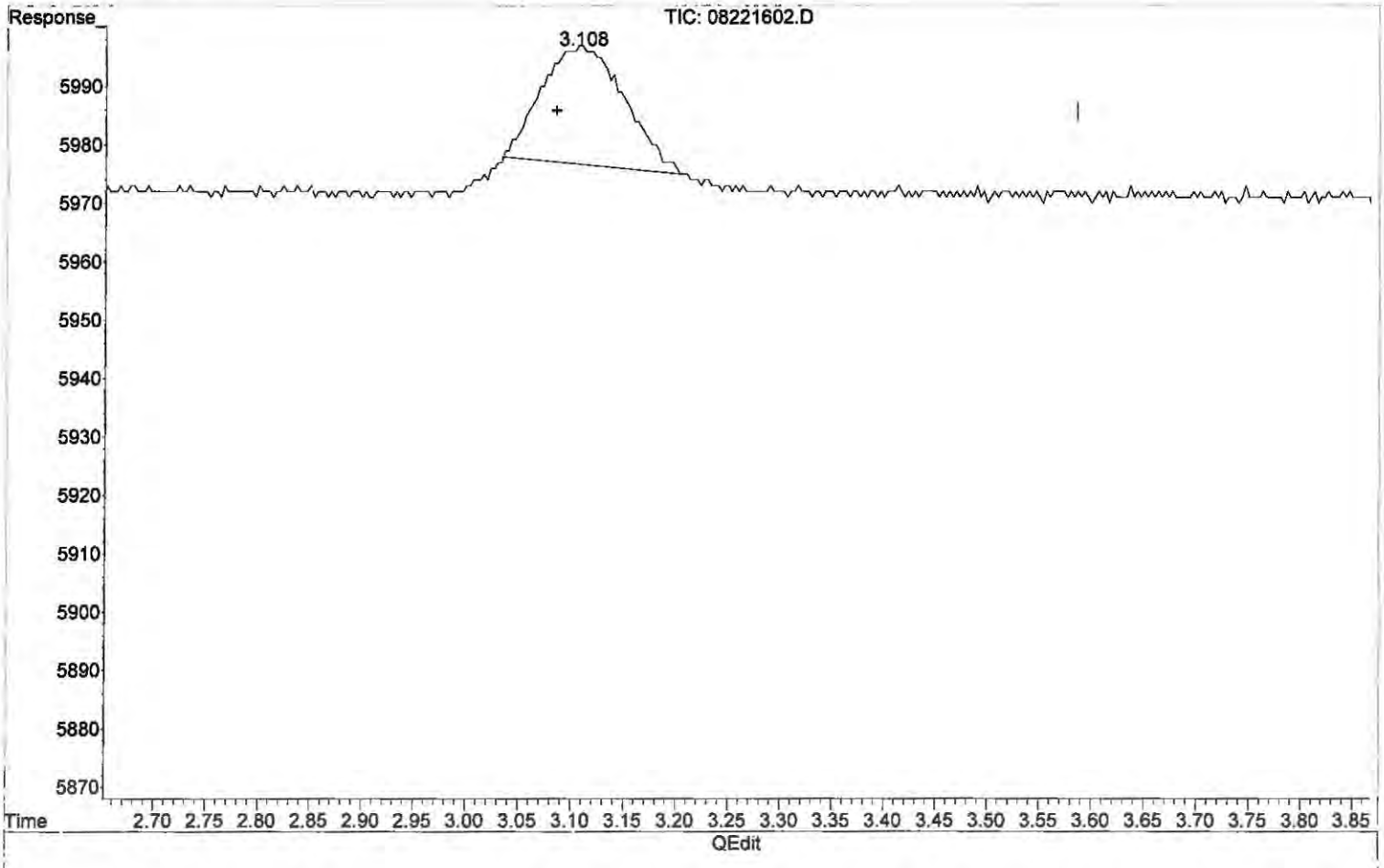
(+) = Expected Retention Time

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 :



(4) Carbon Monoxide

3.111min 669.201 ppm

response 1106

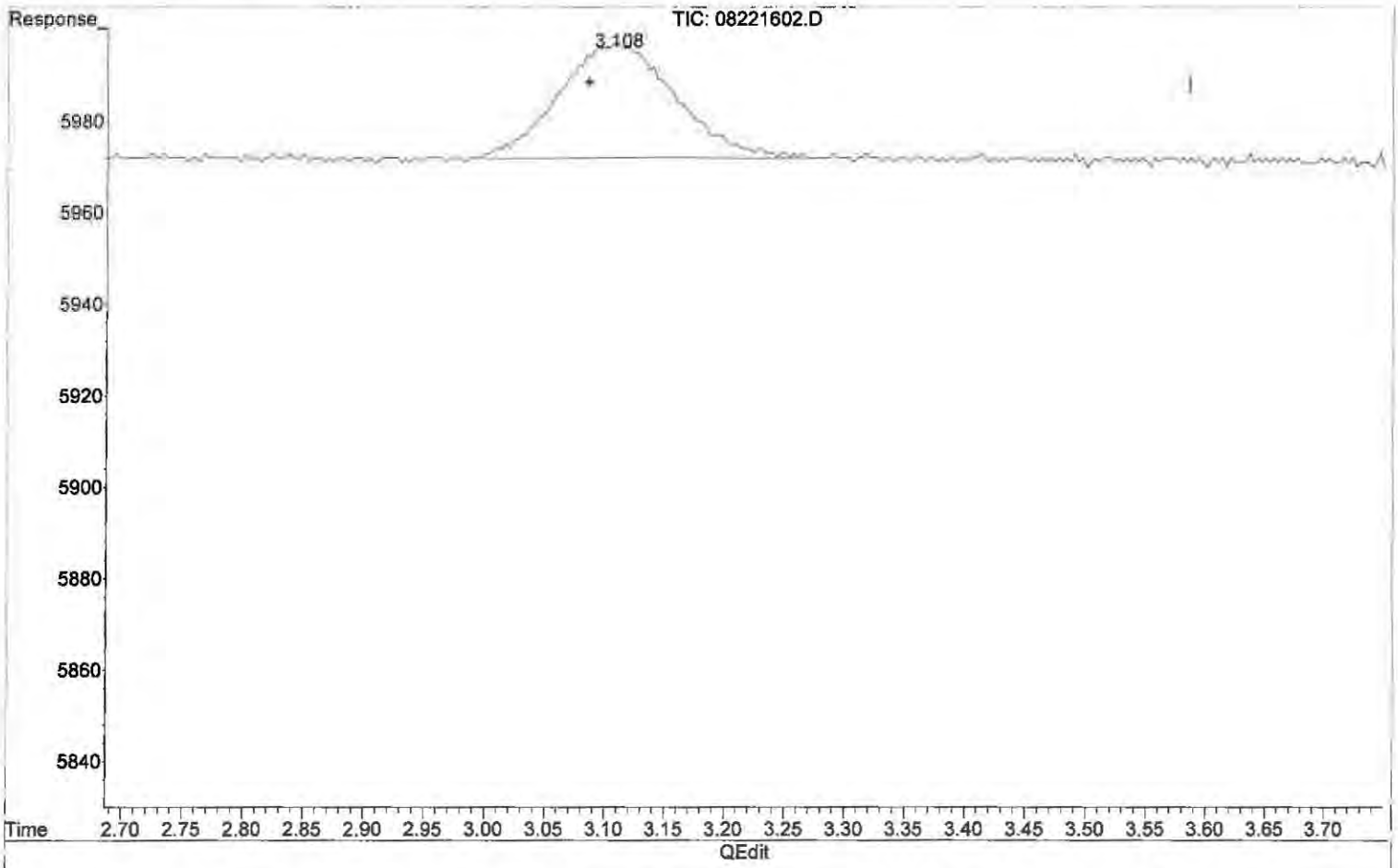
(+) = Expected Retention Time

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 :

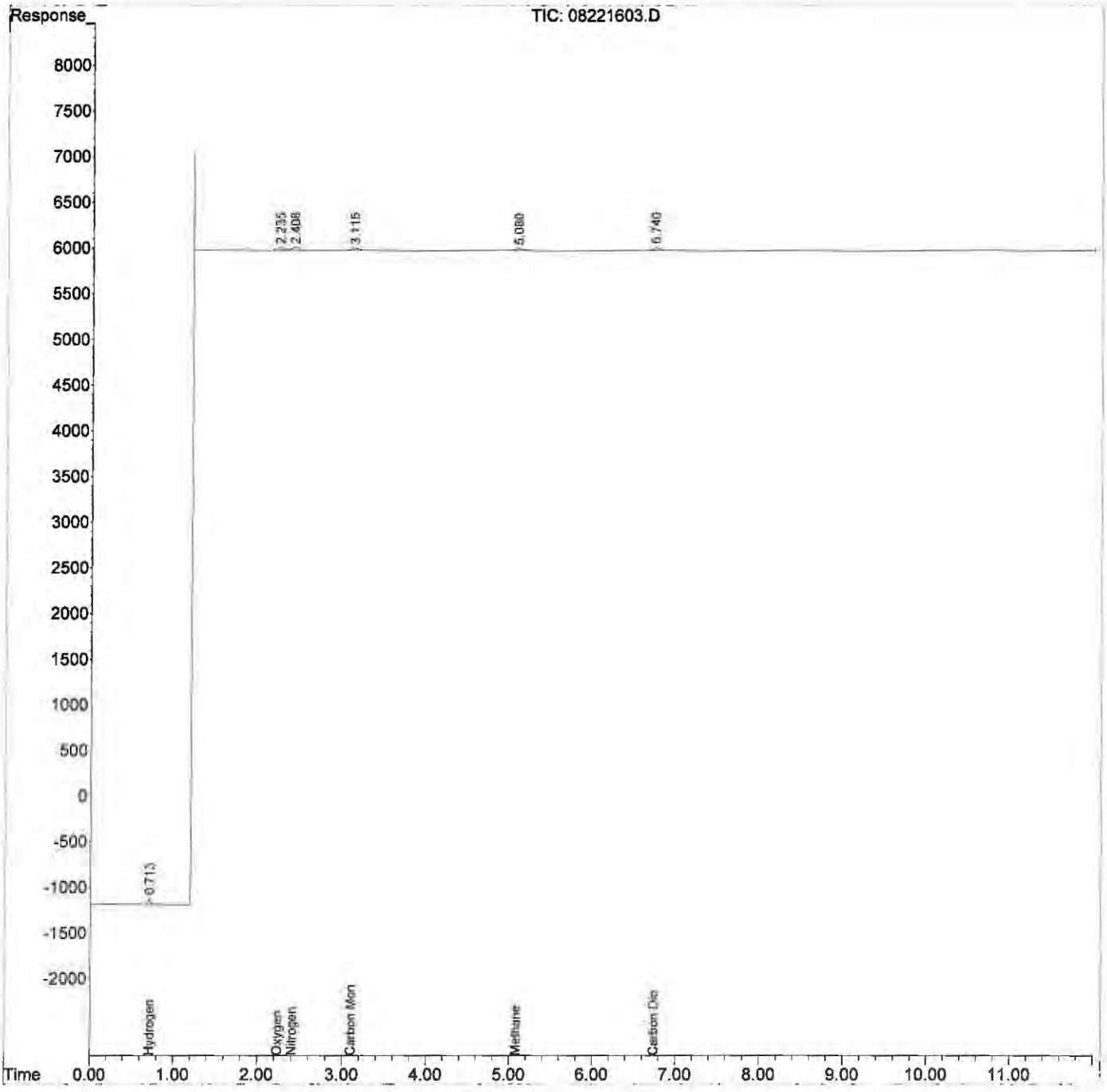
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.713	1364	1019.461	ppm	m
2)	Oxygen	2.235	1434	953.500	ppm	m
3)	Nitrogen	2.408	1780	999.327	ppm	m
4)	Carbon Monoxide	3.106	1610	967.347	ppm	
5)	Methane	5.080	1372	1084.976	ppm	m
6)	Carbon Dioxide	6.749	2152	1041.183	ppm	

(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 :

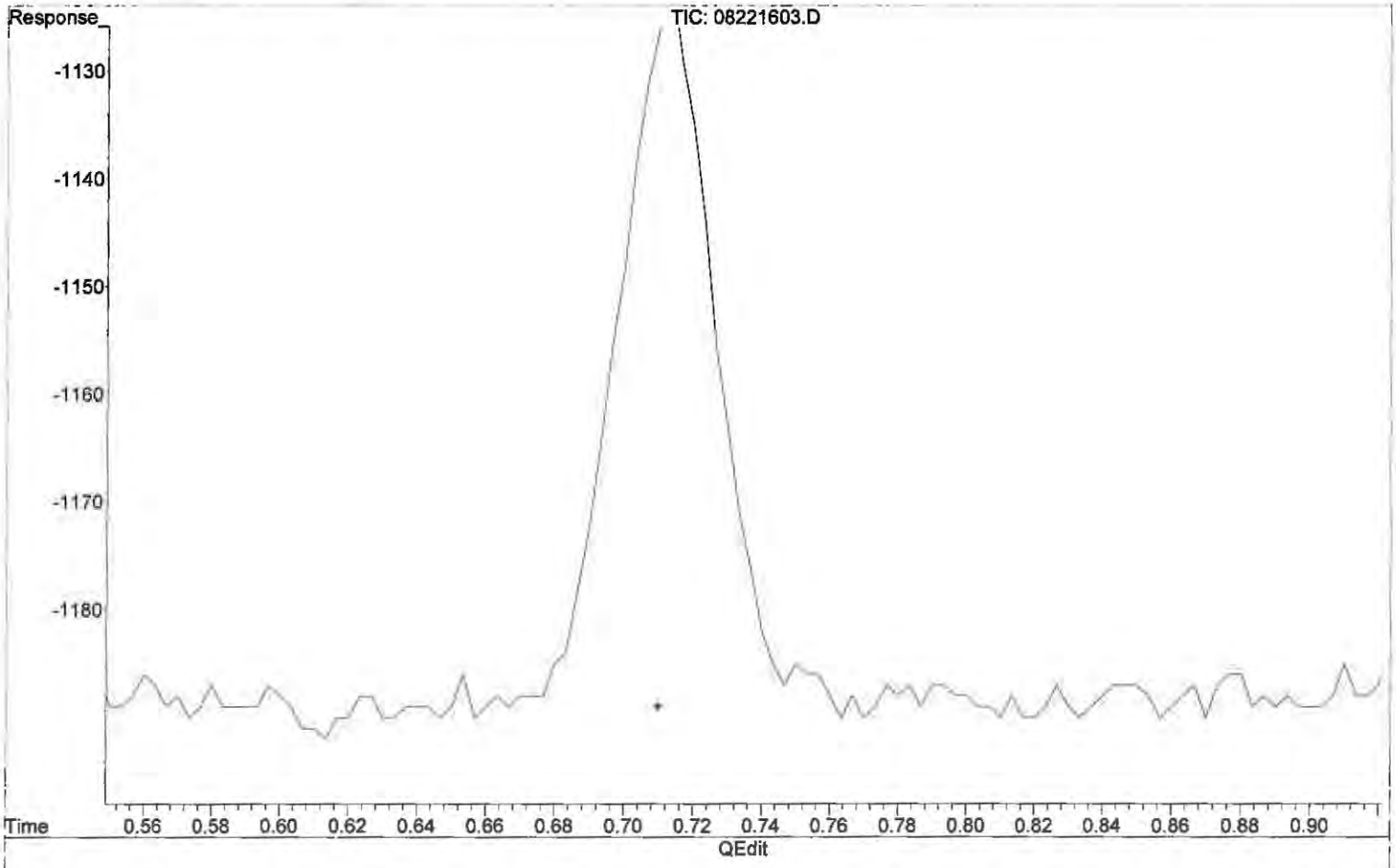


Quantitation Report (Qedit)

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

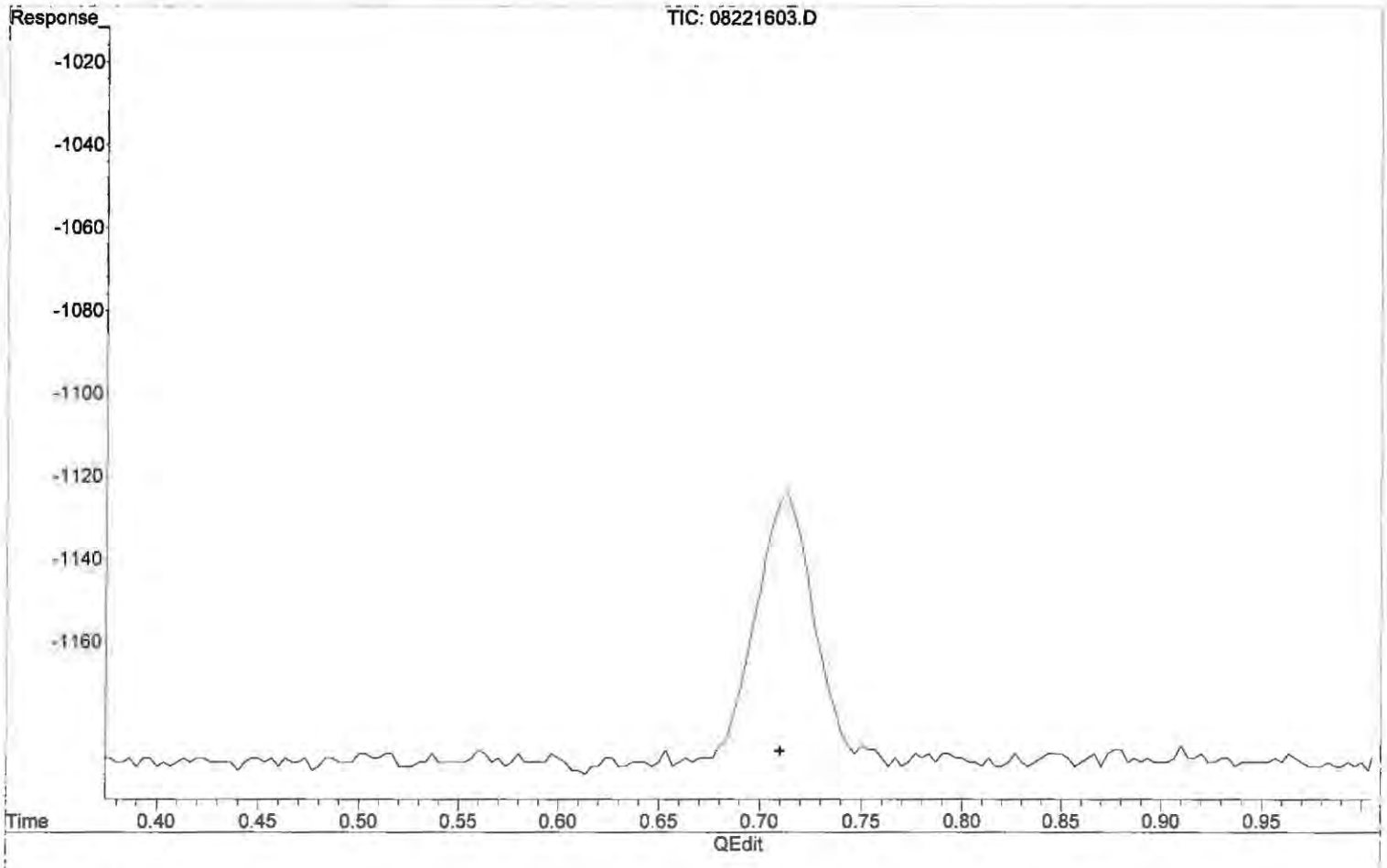
(+) = Expected Retention Time

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

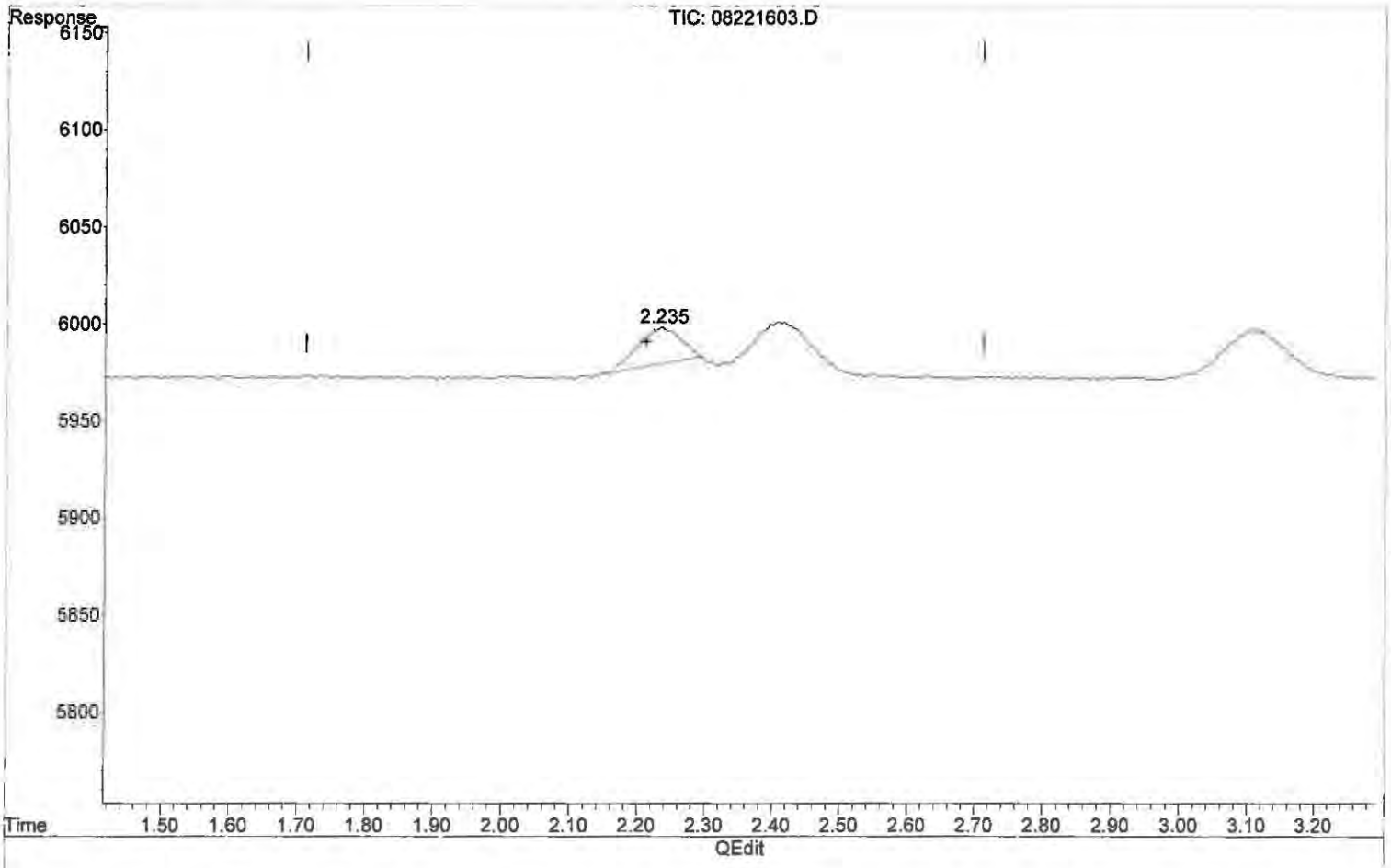
(+) = Expected Retention Time

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

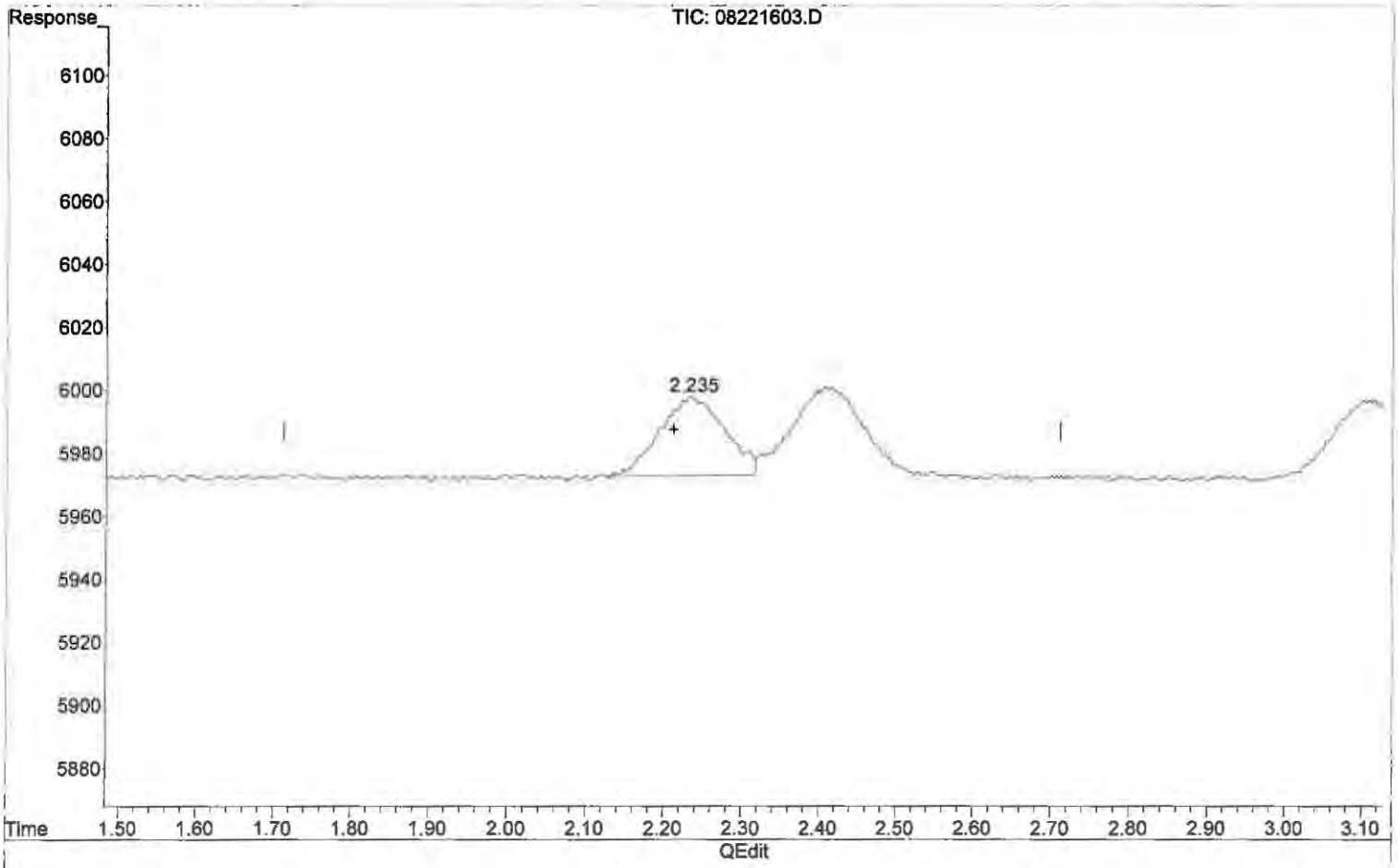
(+) = Expected Retention Time

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

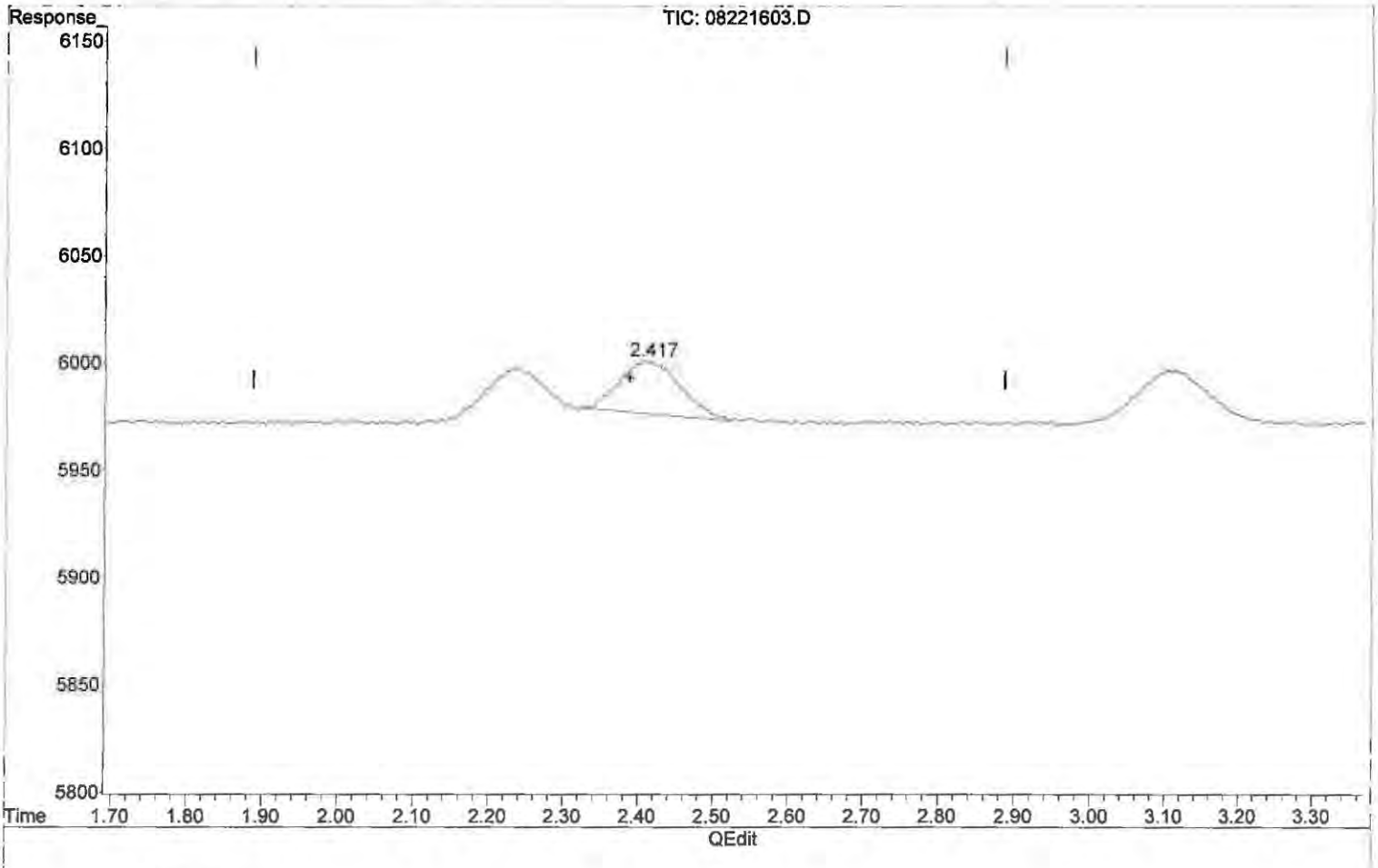
(+) = Expected Retention Time

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

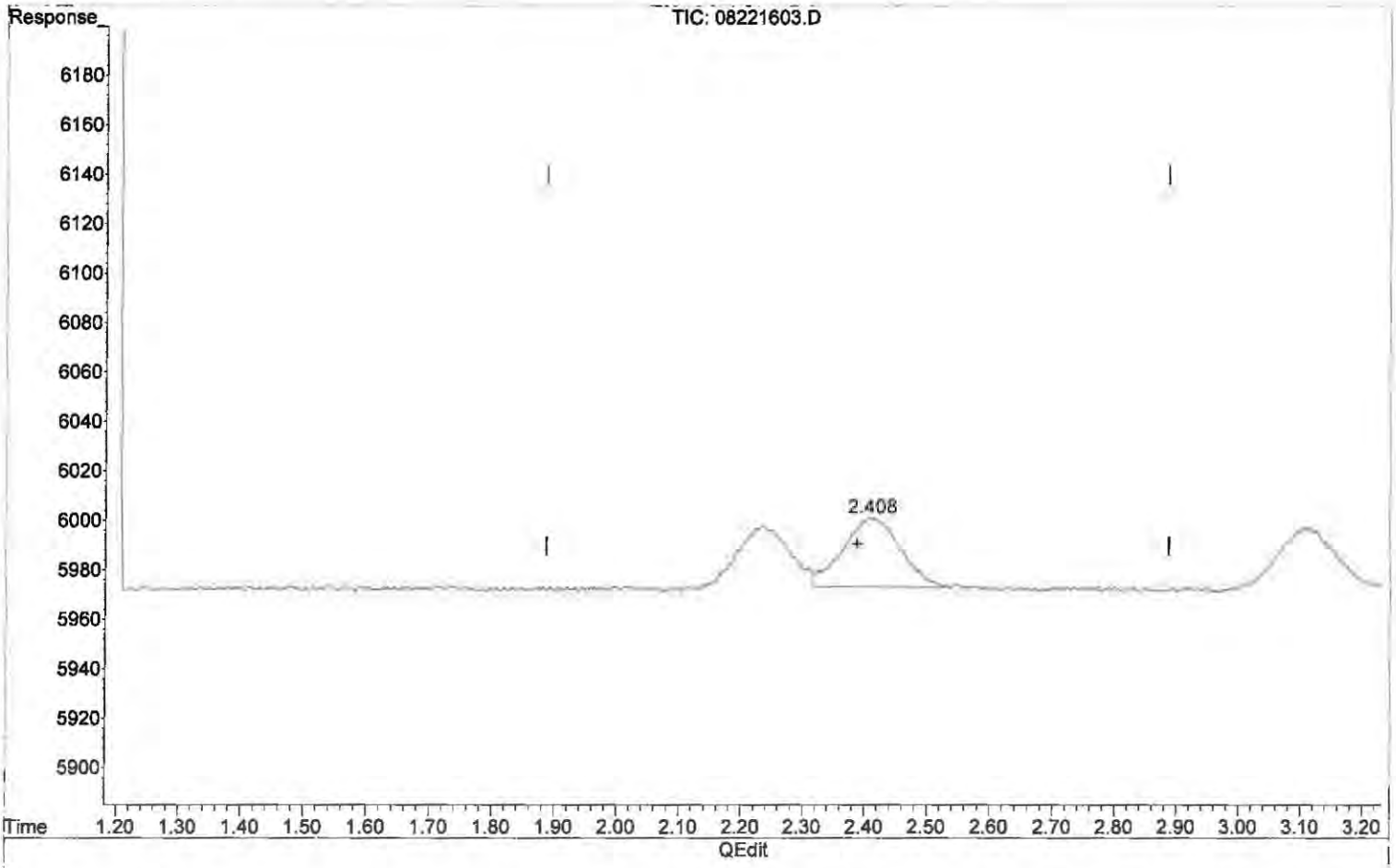
(+) = Expected Retention Time

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

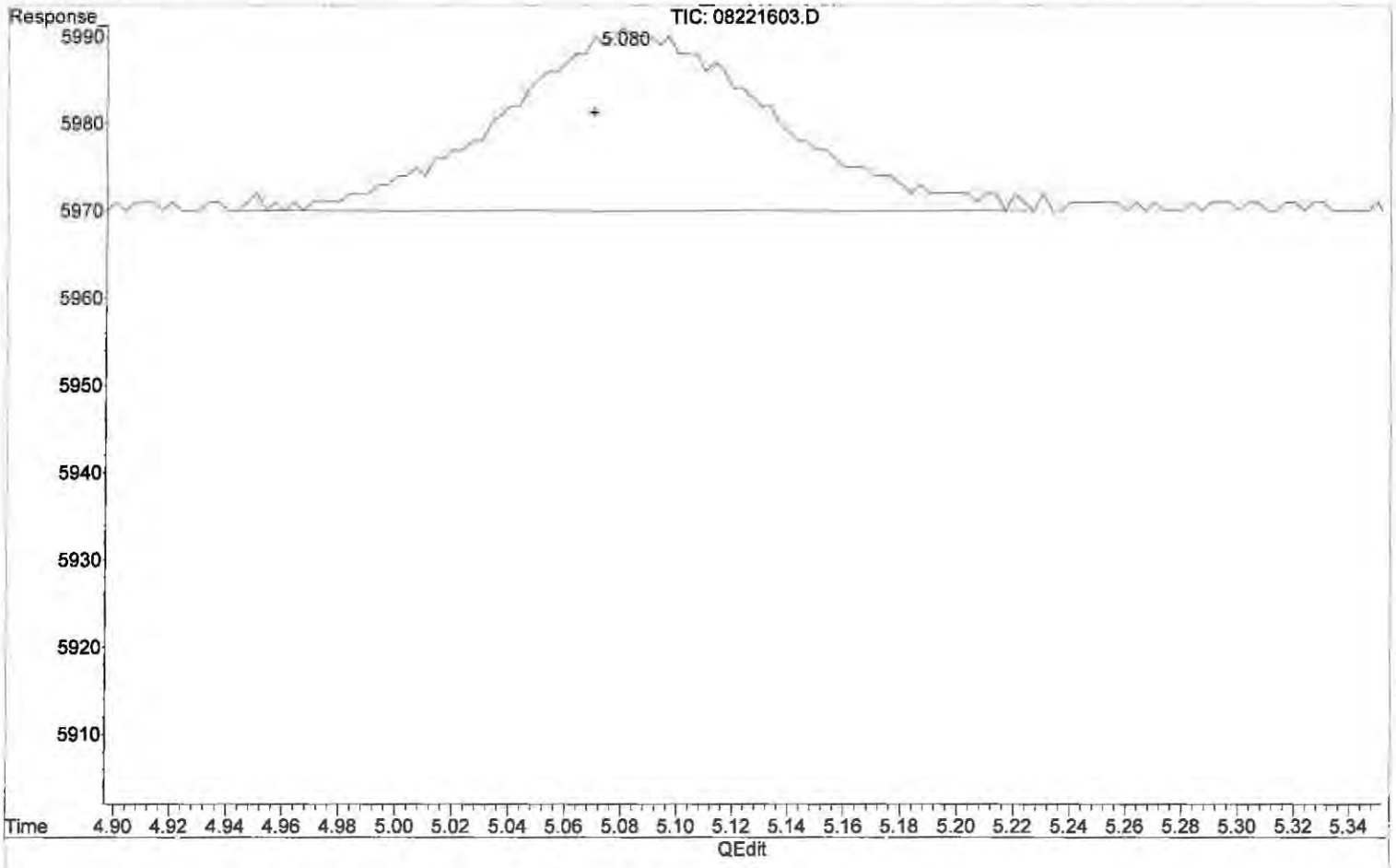
(+) = Expected Retention Time

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

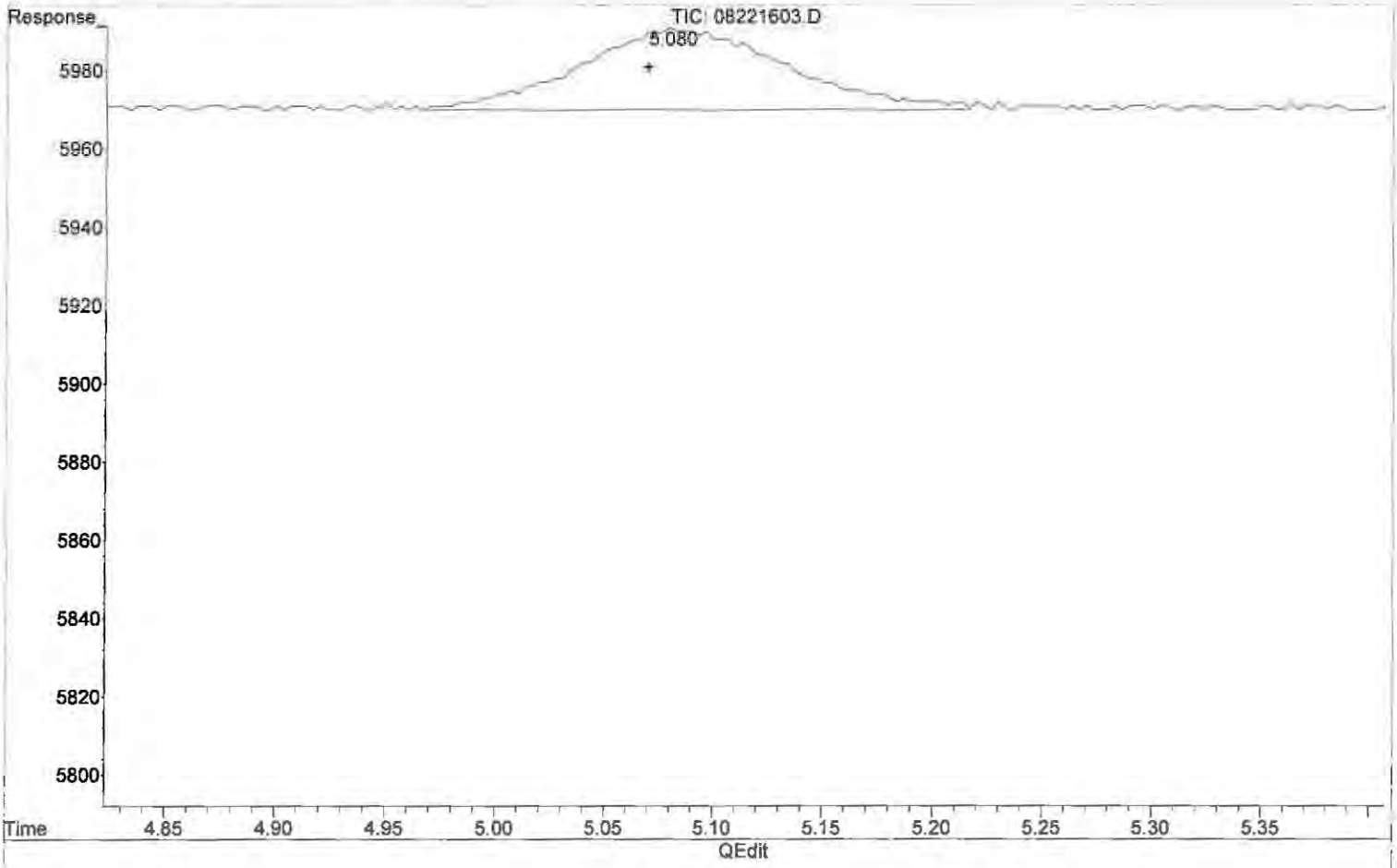
(+) = Expected Retention Time

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

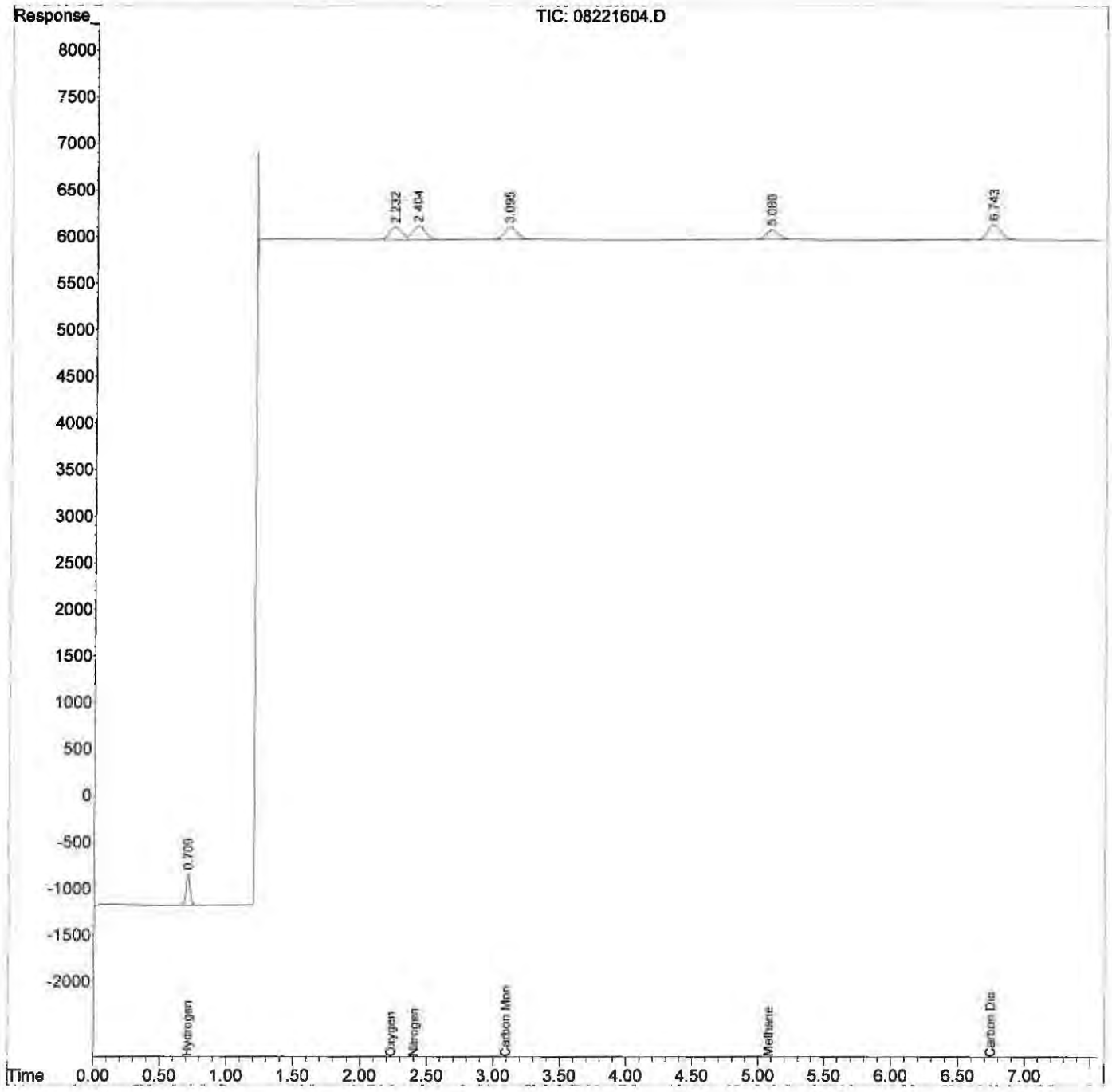
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

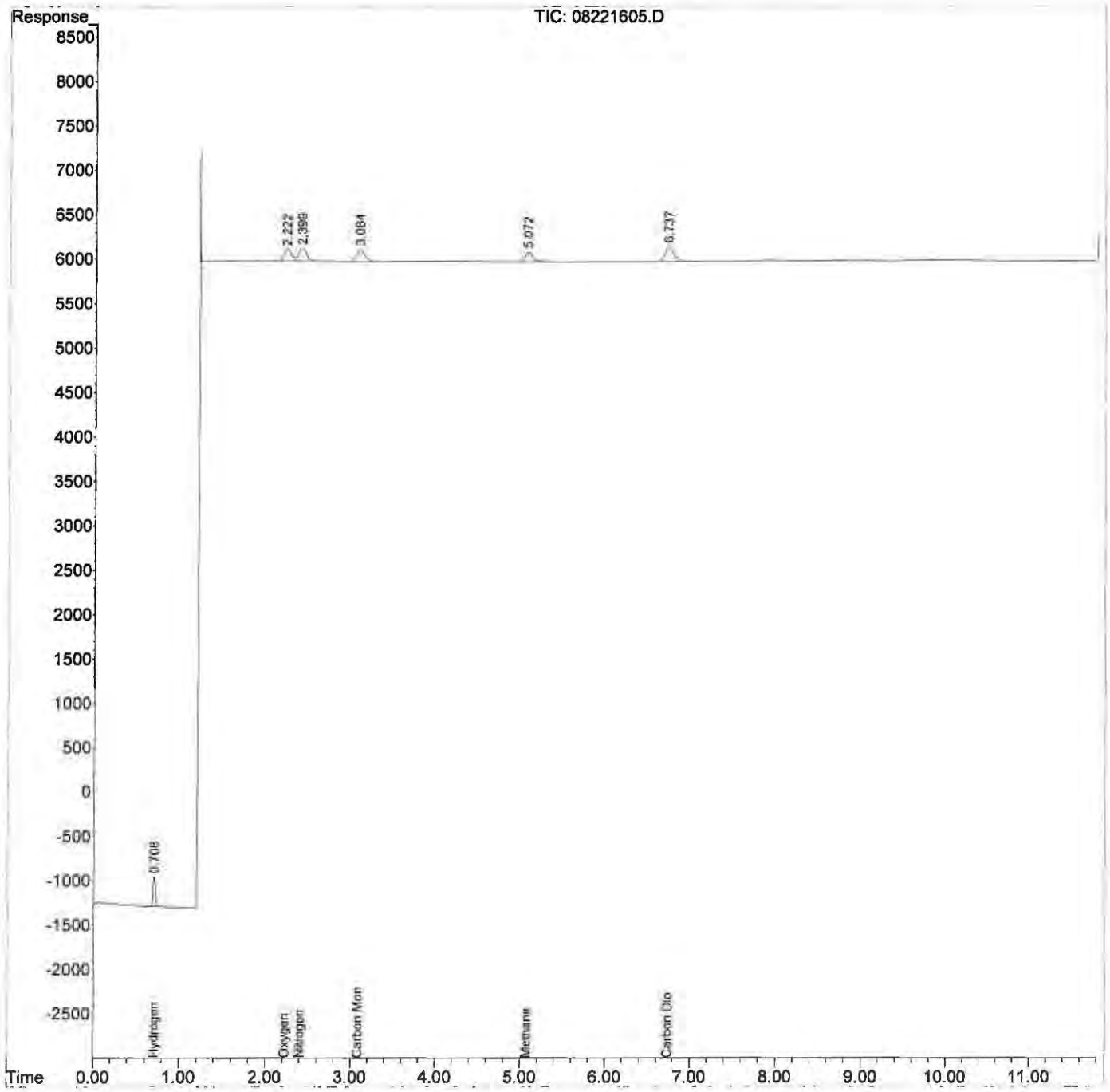
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.709	6828	5054.643	ppm
2)	Oxygen	2.224	7880	5226.963	ppm
3)	Nitrogen	2.401	9090	5004.155	ppm
4)	Carbon Monoxide	3.088	9253	5456.239	ppm
5)	Methane	5.075	6735	5122.723	ppm
6)	Carbon Dioxide	6.740	11194	5254.662	ppm

(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 :

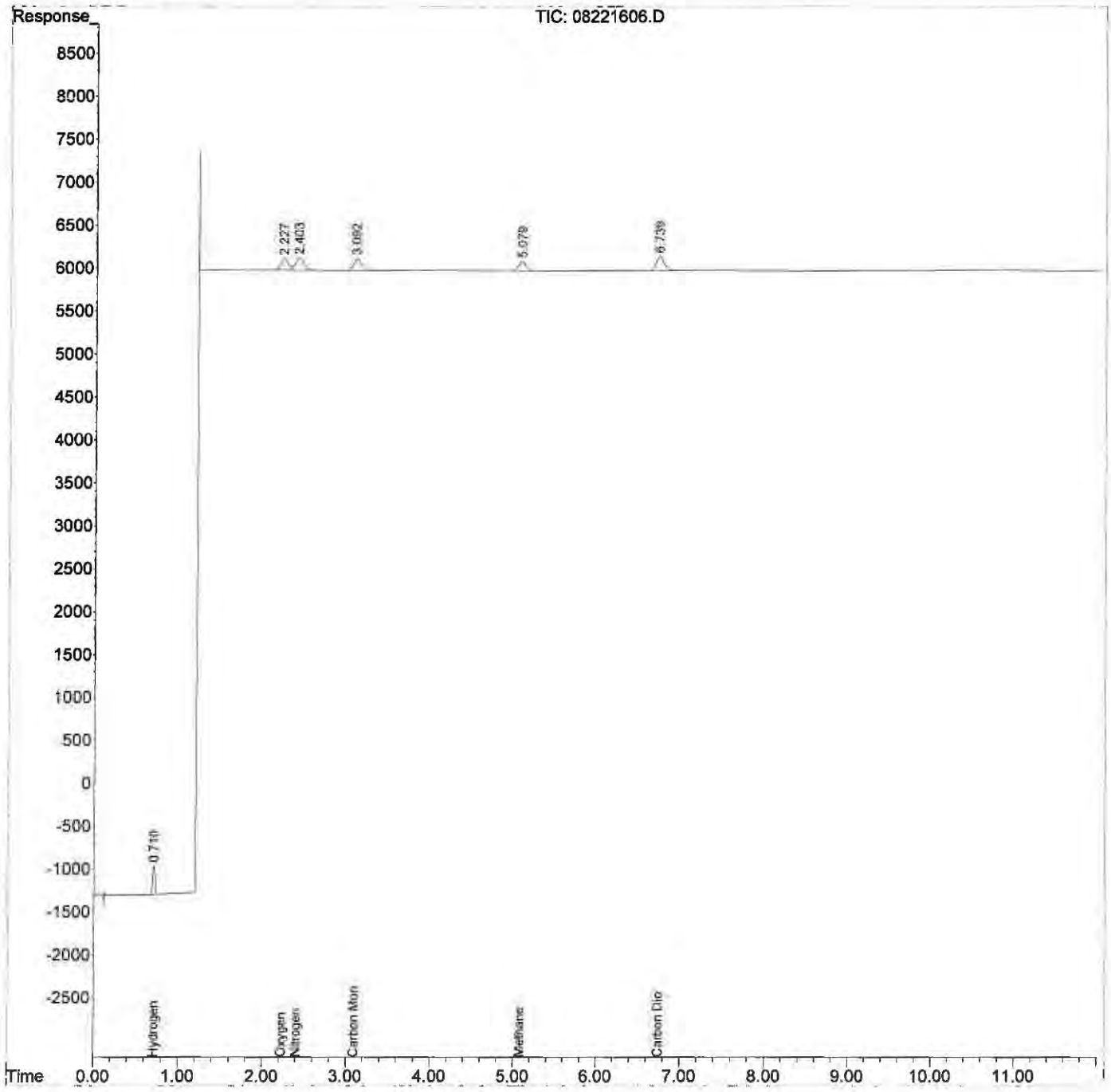
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.712	6684	4937.282	ppm
2)	Oxygen	2.229	7943	5221.147	ppm
3)	Nitrogen	2.405	9181	5053.344	ppm
4)	Carbon Monoxide	3.096	9129	5286.762	ppm
5)	Methane	5.079	6864	5194.678	ppm
6)	Carbon Dioxide	6.741	10987	5105.231	ppm

(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

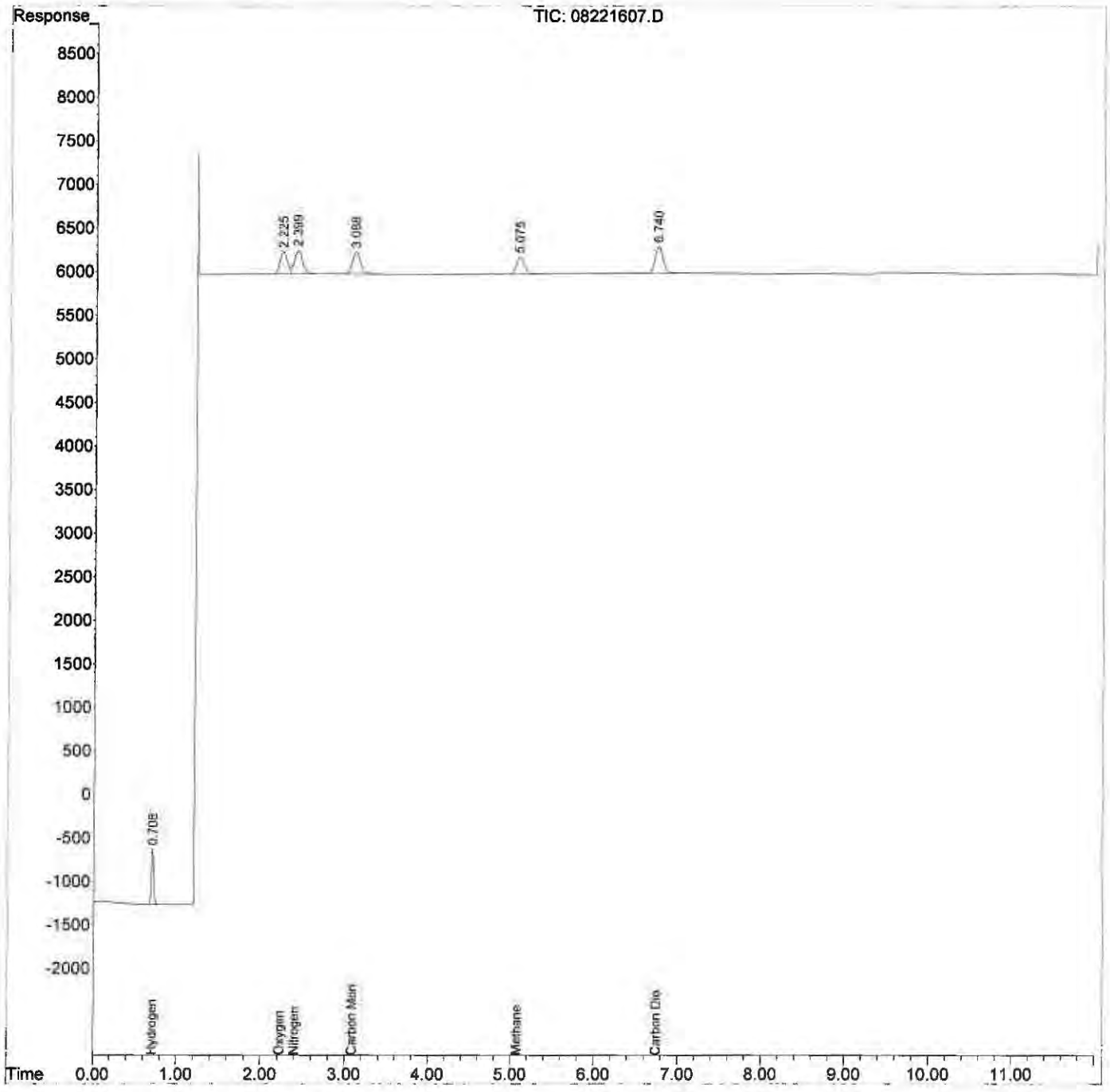
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



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 :

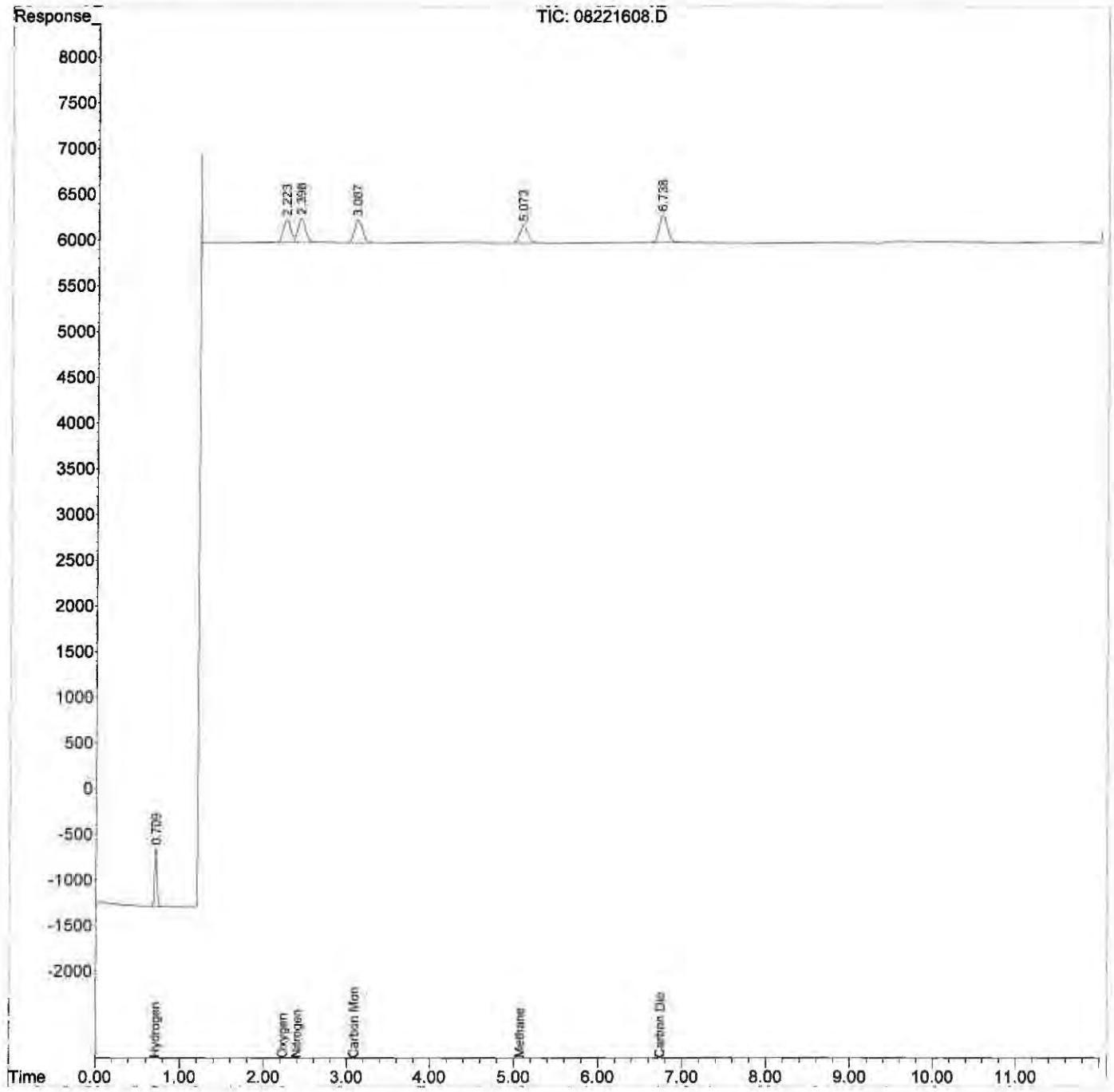
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.710	12791	9516.739	ppm
2)	Oxygen	2.225	14995	9758.854	ppm
3)	Nitrogen	2.401	17280	9514.619	ppm
4)	Carbon Monoxide	3.089	17131	9820.198	ppm
5)	Methane	5.075	12748	9617.190	ppm
6)	Carbon Dioxide	6.739	20634	9589.748	ppm

(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

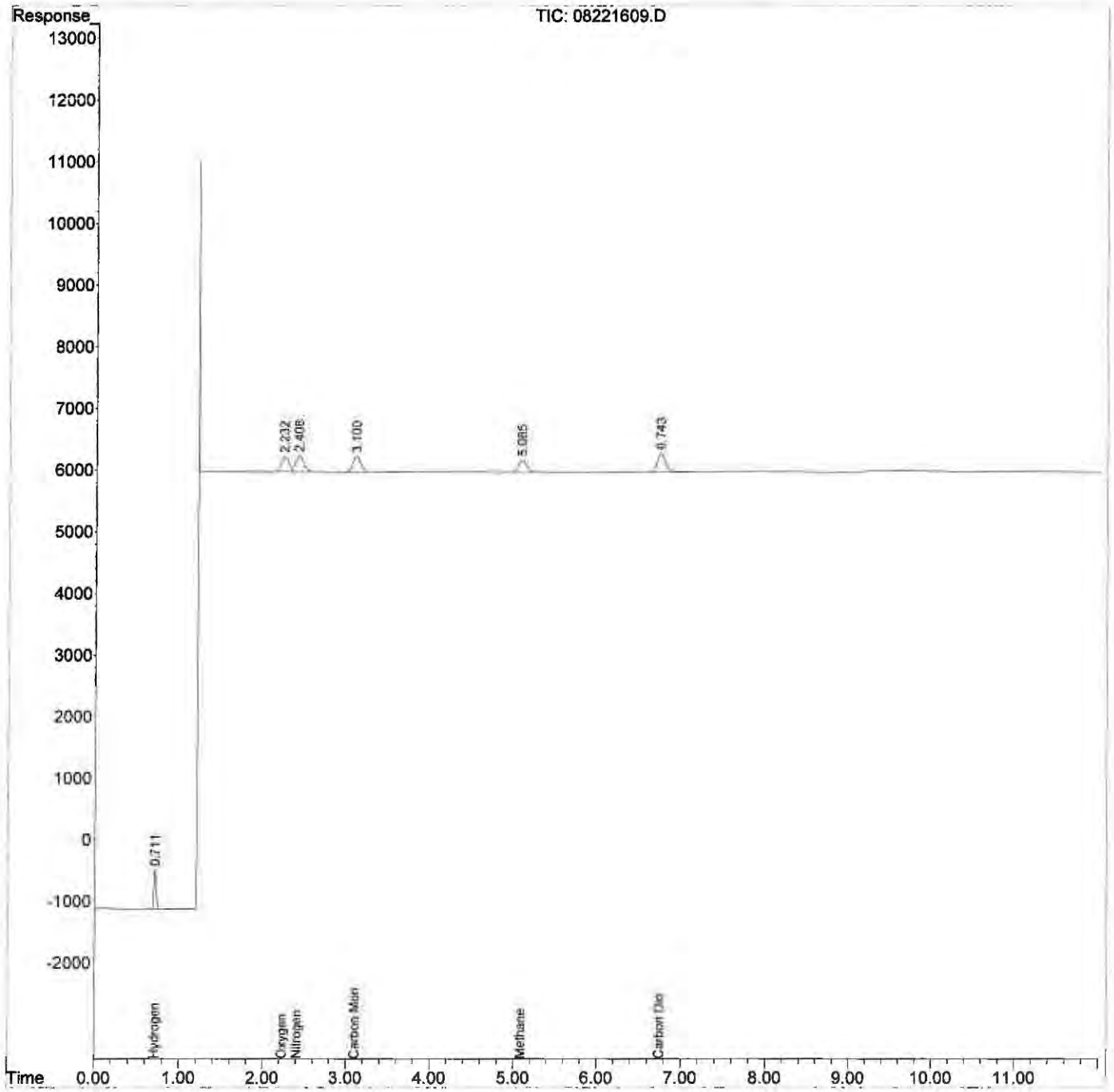
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

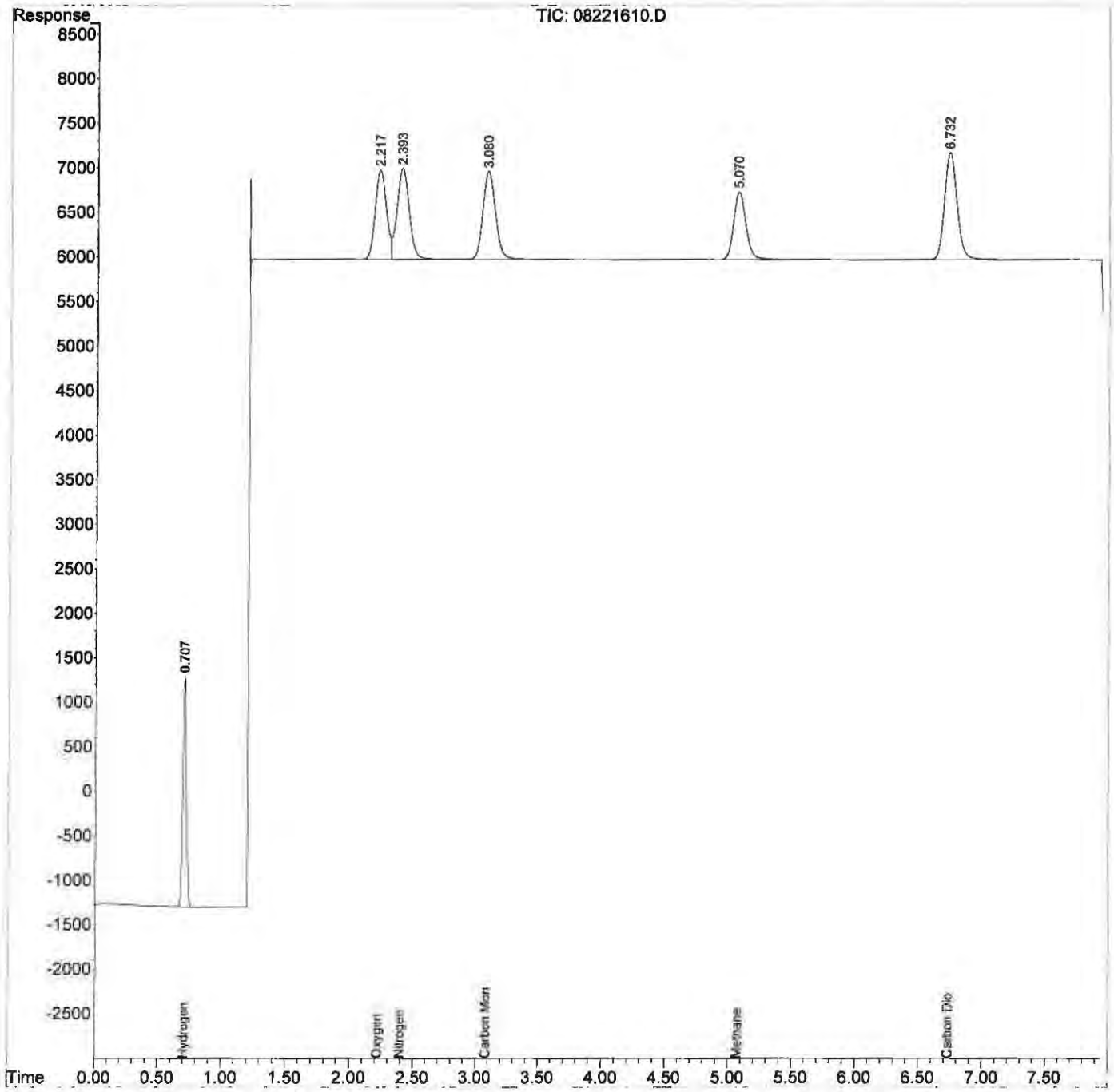
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.709	51763	38905.801	ppm
2)	Oxygen	2.219	61073	39928.807	ppm
3)	Nitrogen	2.395	68921	38354.986	ppm
4)	Carbon Monoxide	3.082	68623	39489.700	ppm
5)	Methane	5.072	51558	39209.427	ppm
6)	Carbon Dioxide	6.734	83185	38946.942	ppm

(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 :

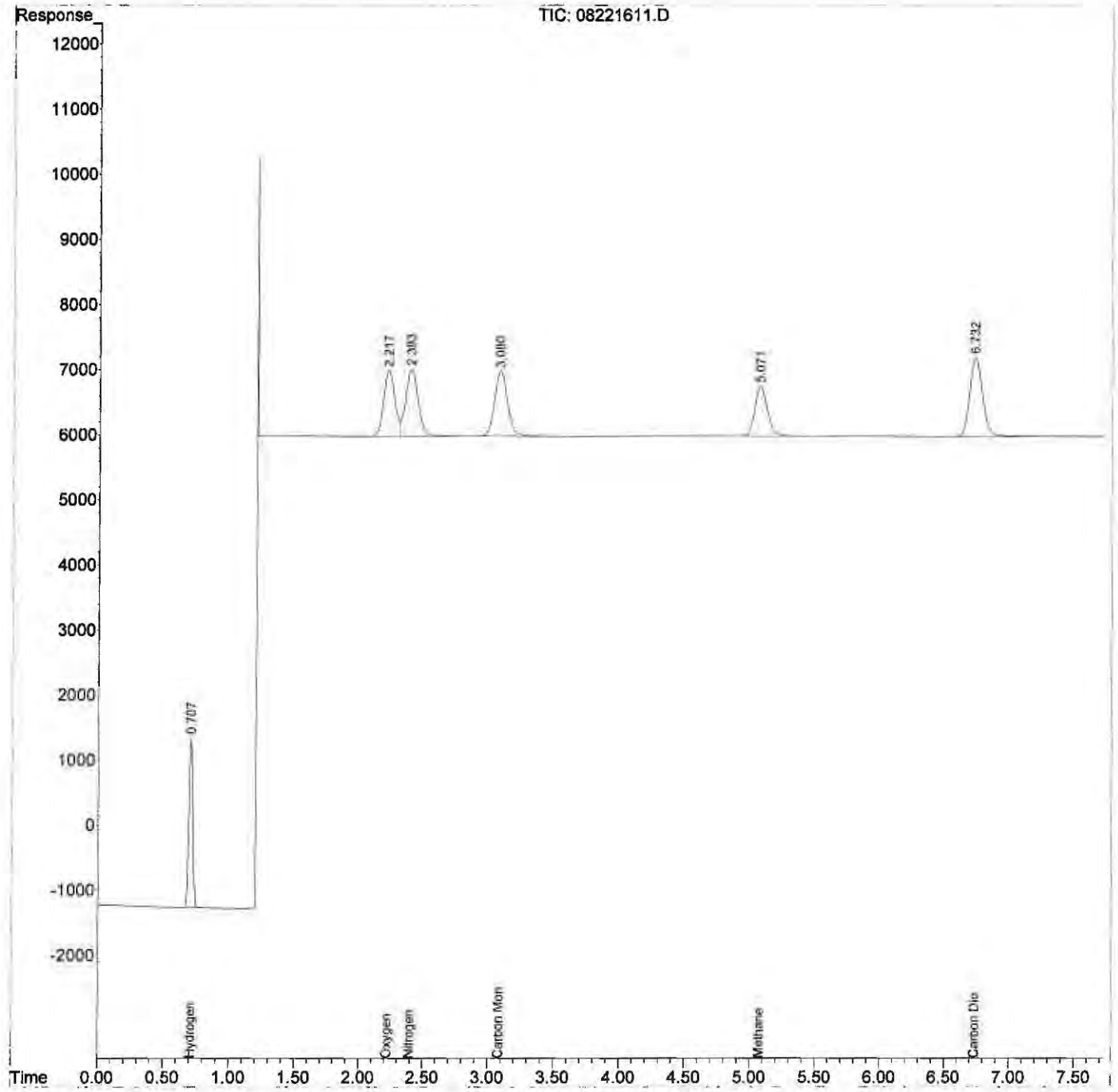
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.708	51926	39135.426	ppm
2)	Oxygen	2.219	61650	40312.840	ppm
3)	Nitrogen	2.395	69030	38574.578	ppm
4)	Carbon Monoxide	3.082	69214	39880.940	ppm
5)	Methane	5.072	51622	39335.929	ppm
6)	Carbon Dioxide	6.734	83696	39289.832	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

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

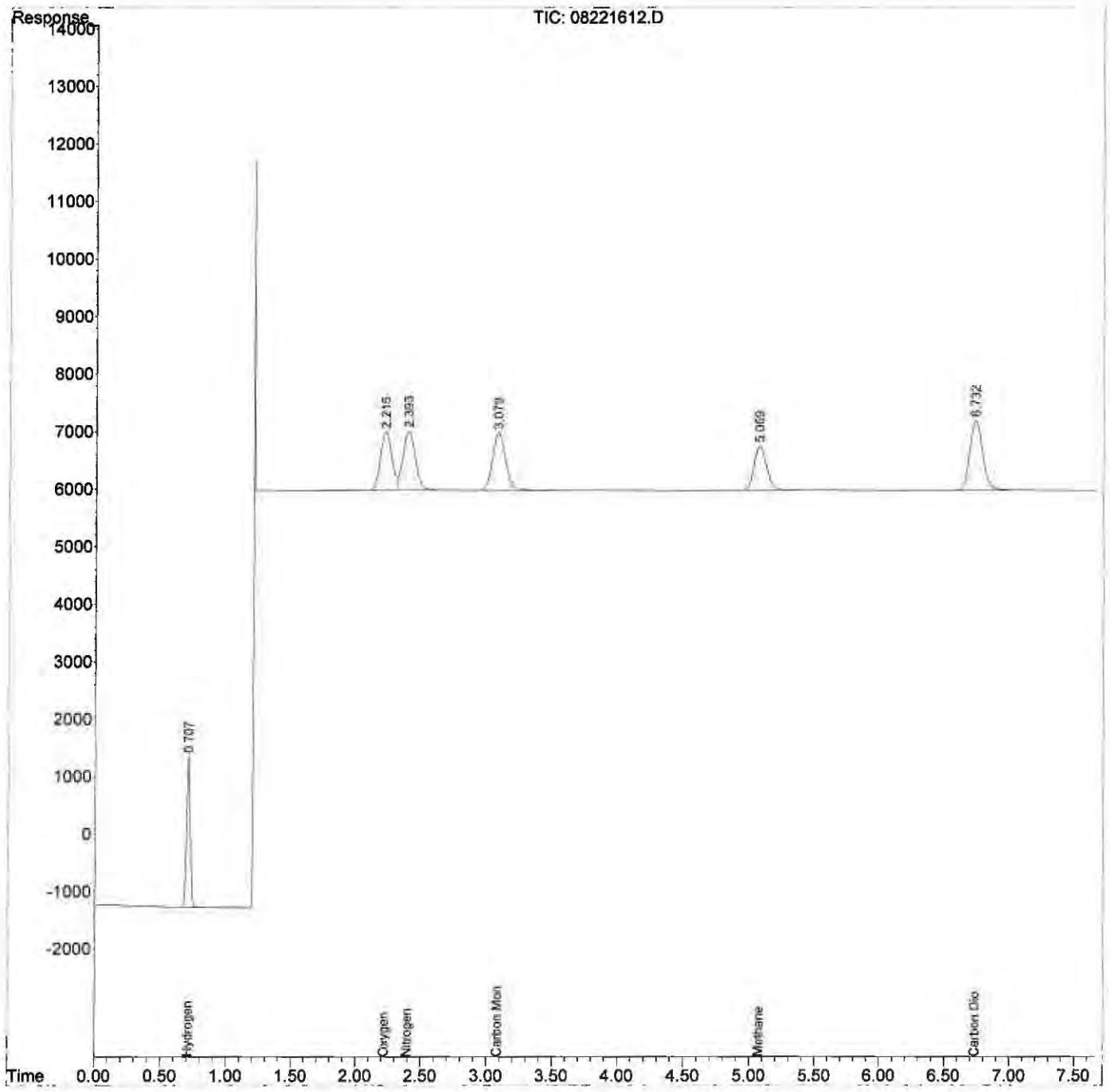
(f)=RT Delta > 1/2 Window (m)=manual int.

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

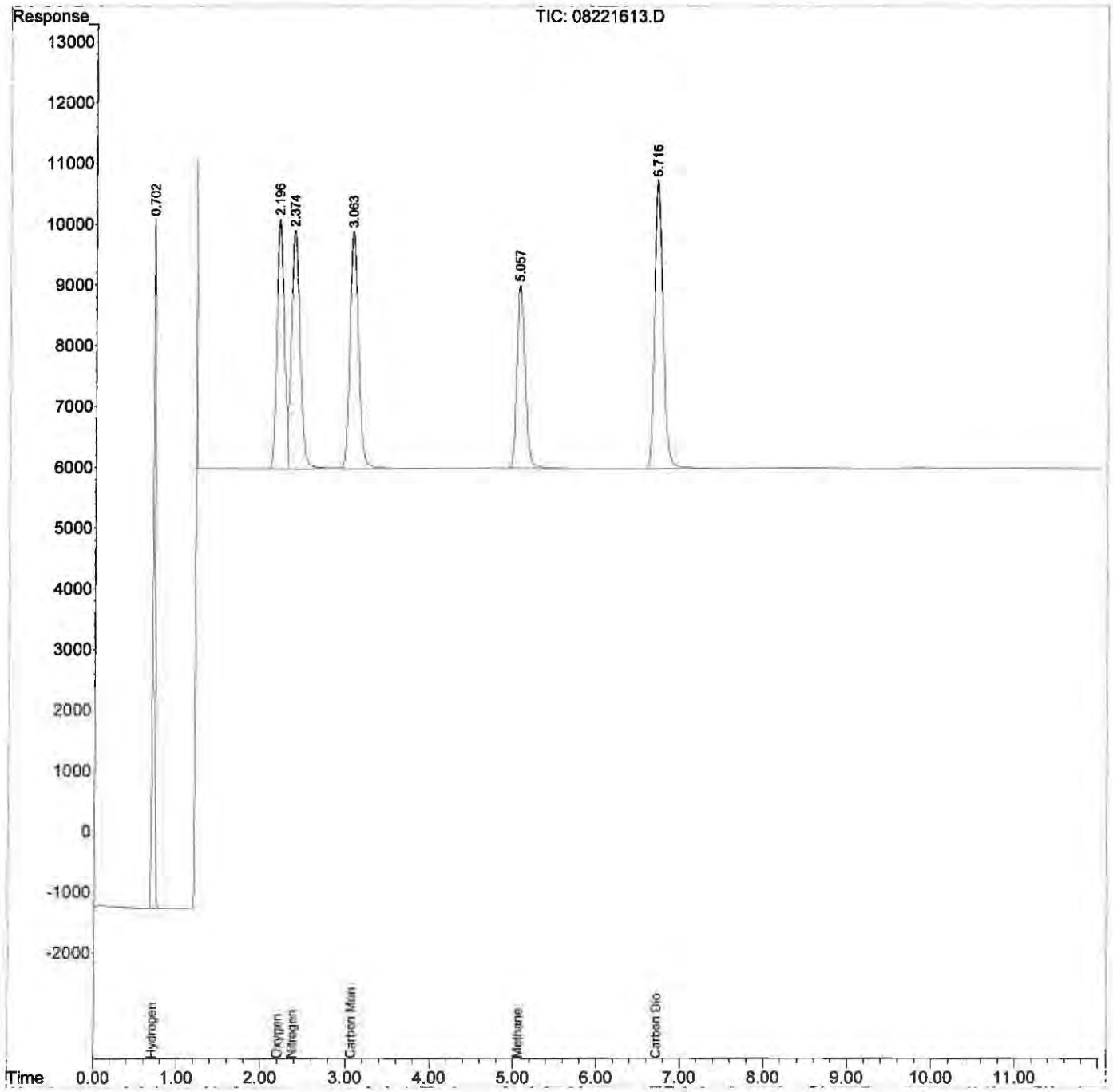
(f)=RT Delta > 1/2 Window (m)=manual int.

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

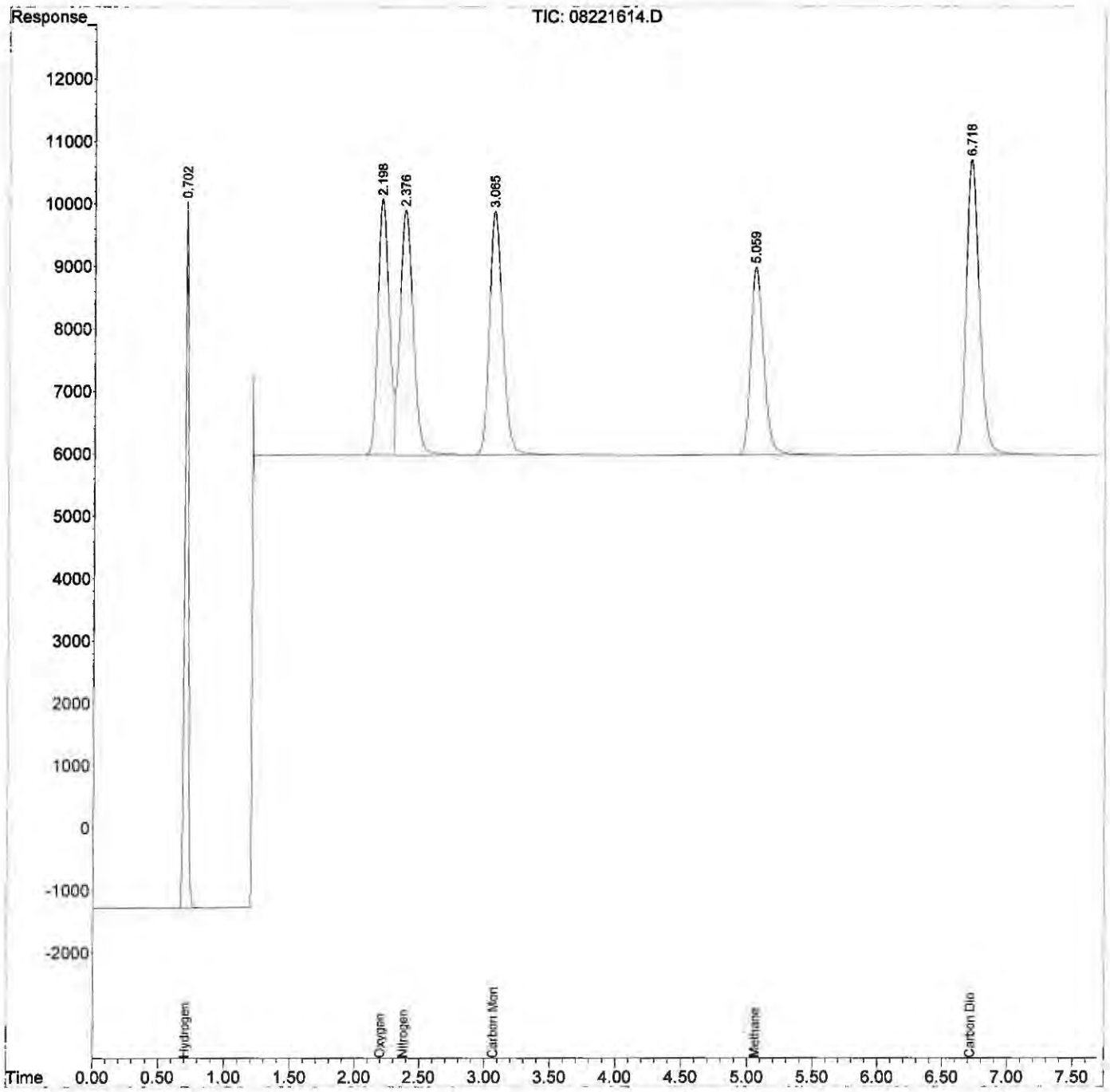
(f)=RT Delta > 1/2 Window (m)=manual int.

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

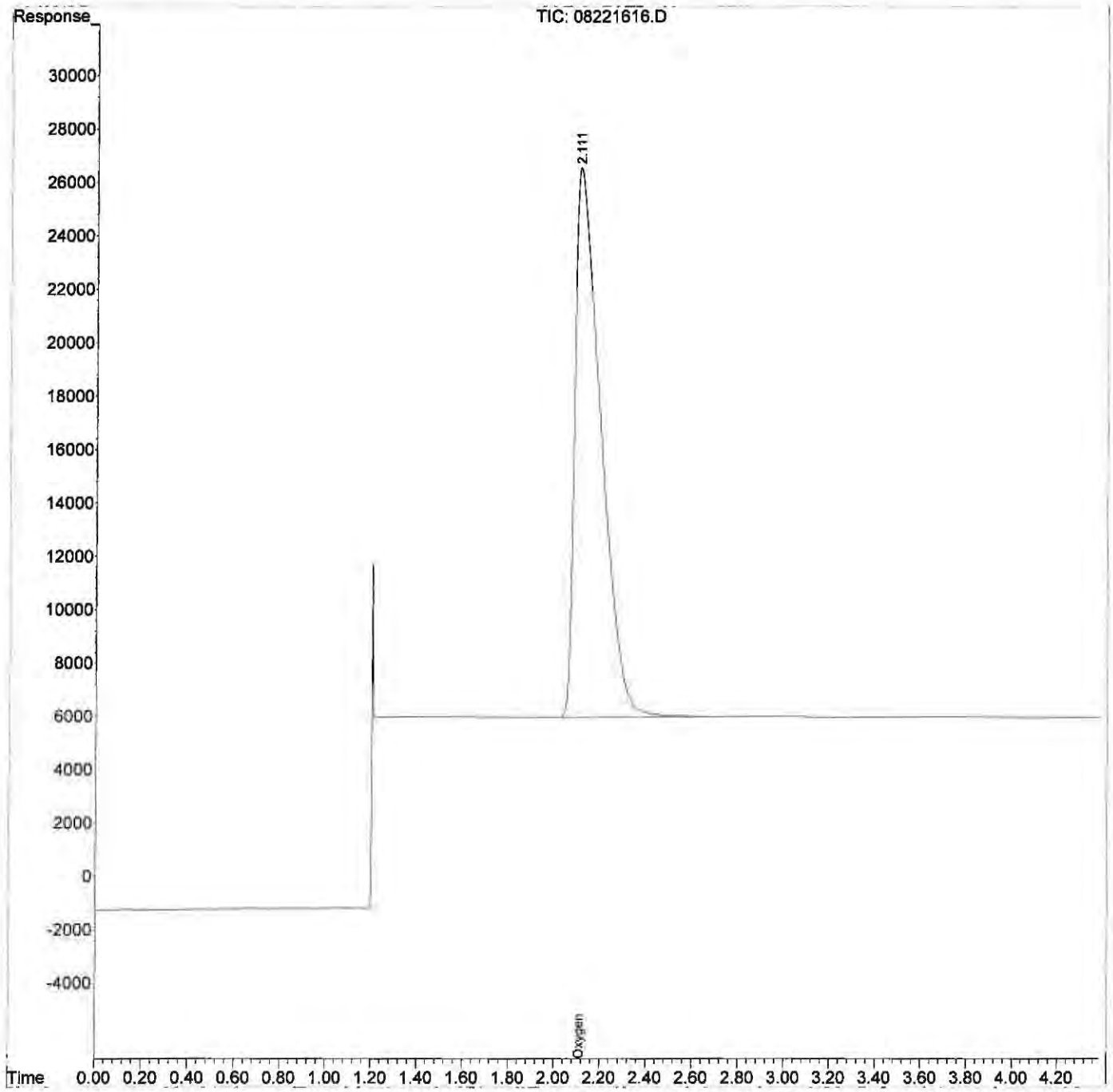
(f)=RT Delta > 1/2 Window (m)=manual int.

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

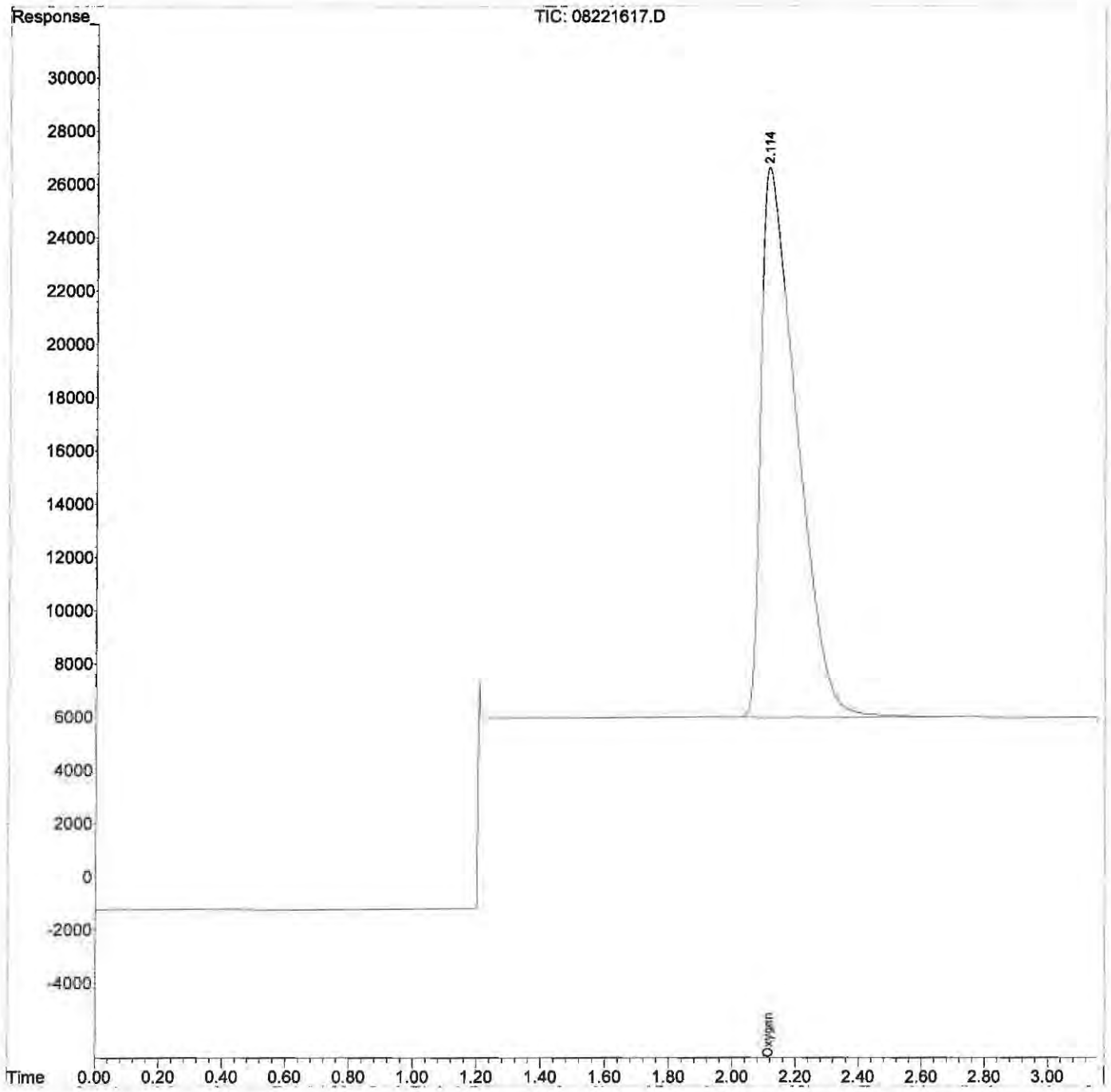
(f)=RT Delta > 1/2 Window (m)=manual int.

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

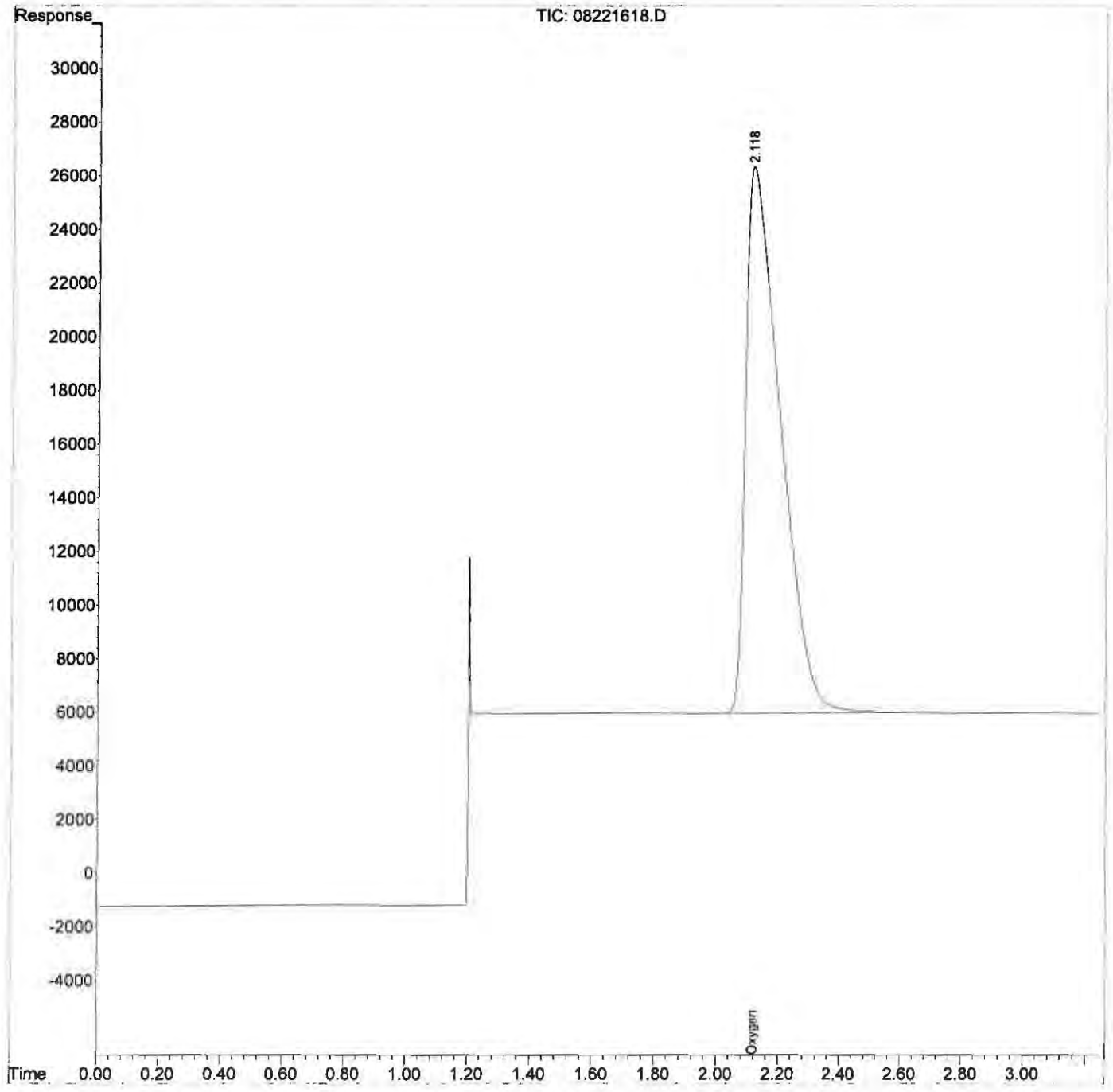
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

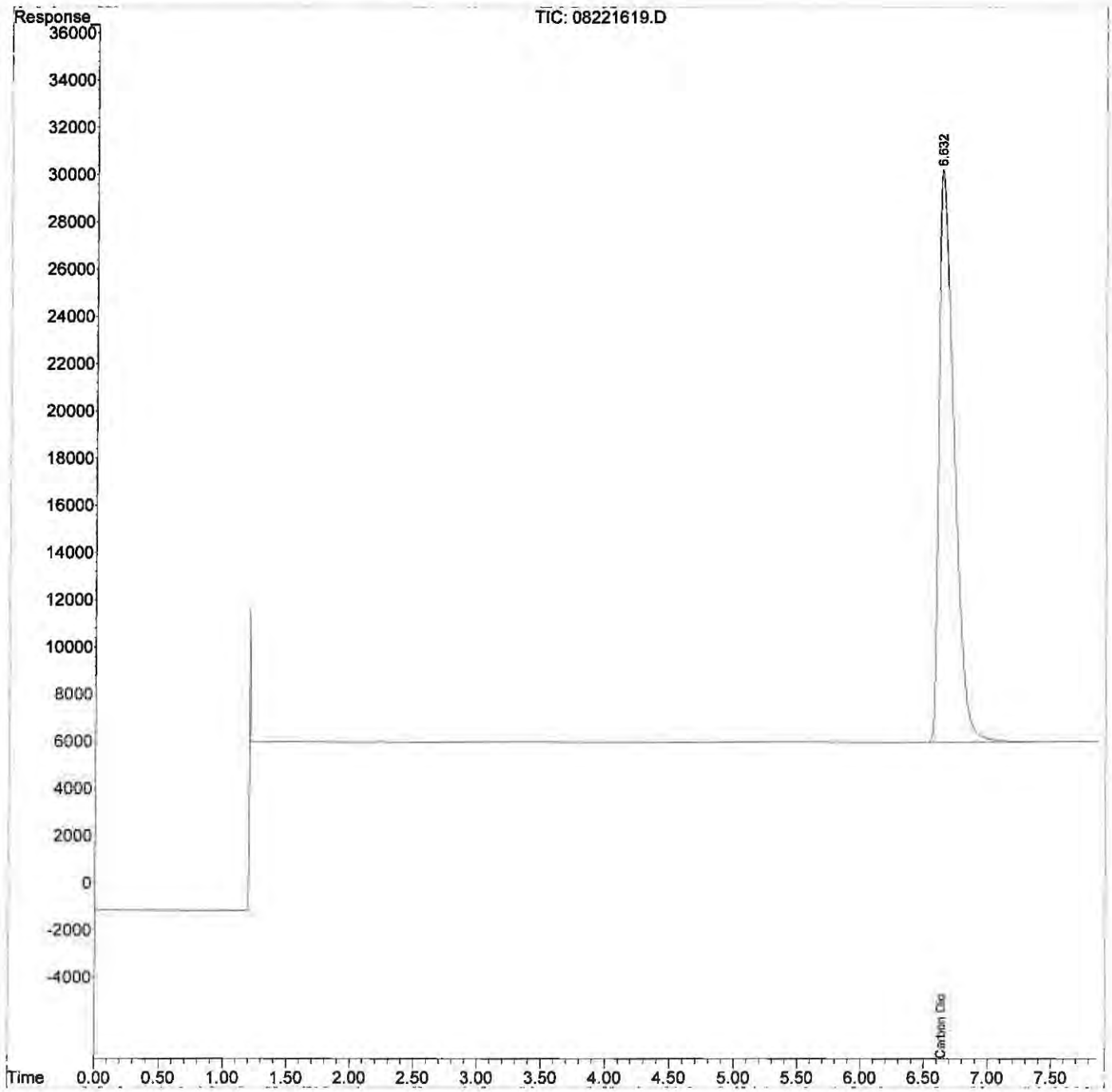
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.634	2005774	948215.193	ppm

(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

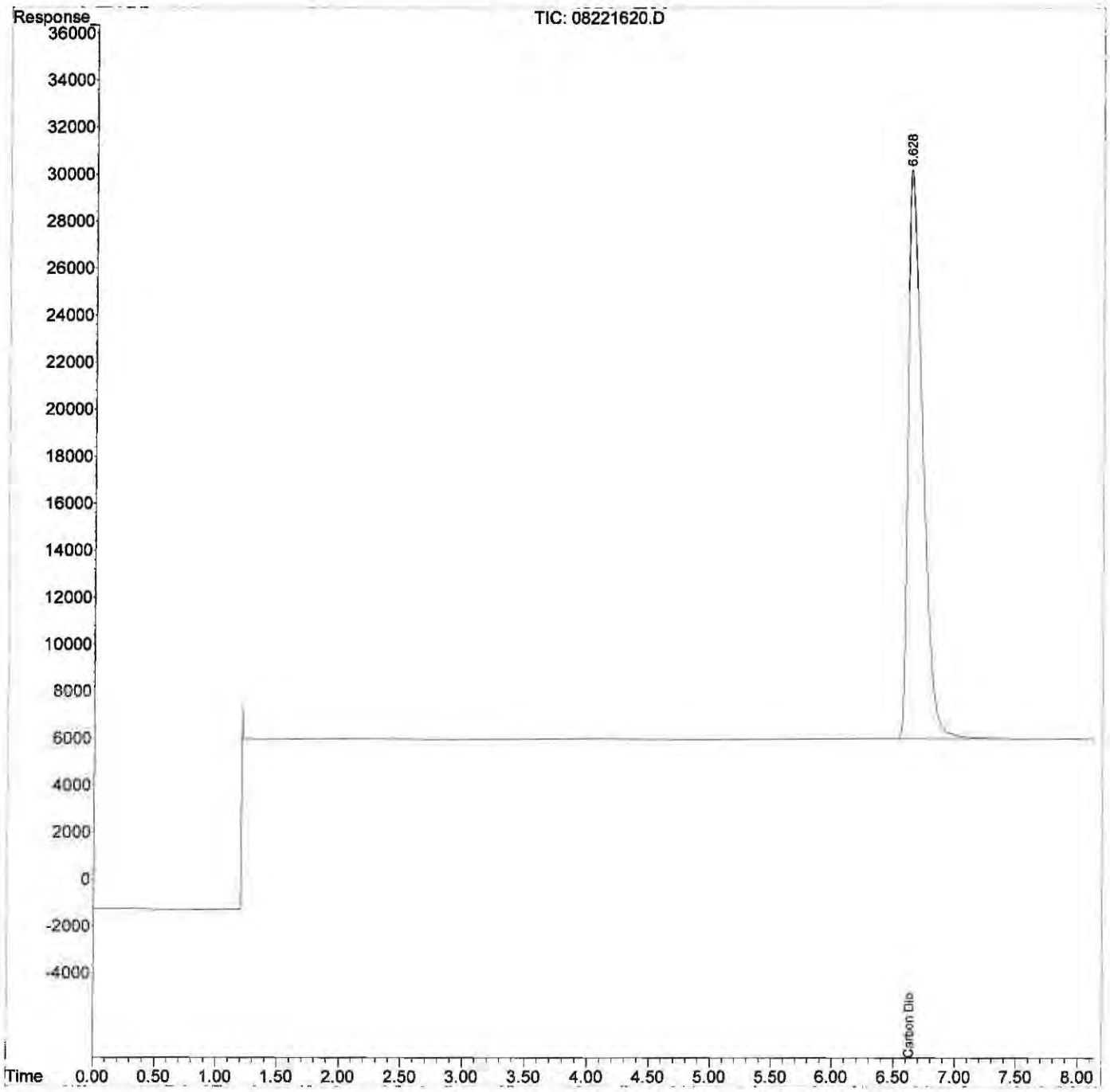
(f)=RT Delta > 1/2 Window (m)=manual int.

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

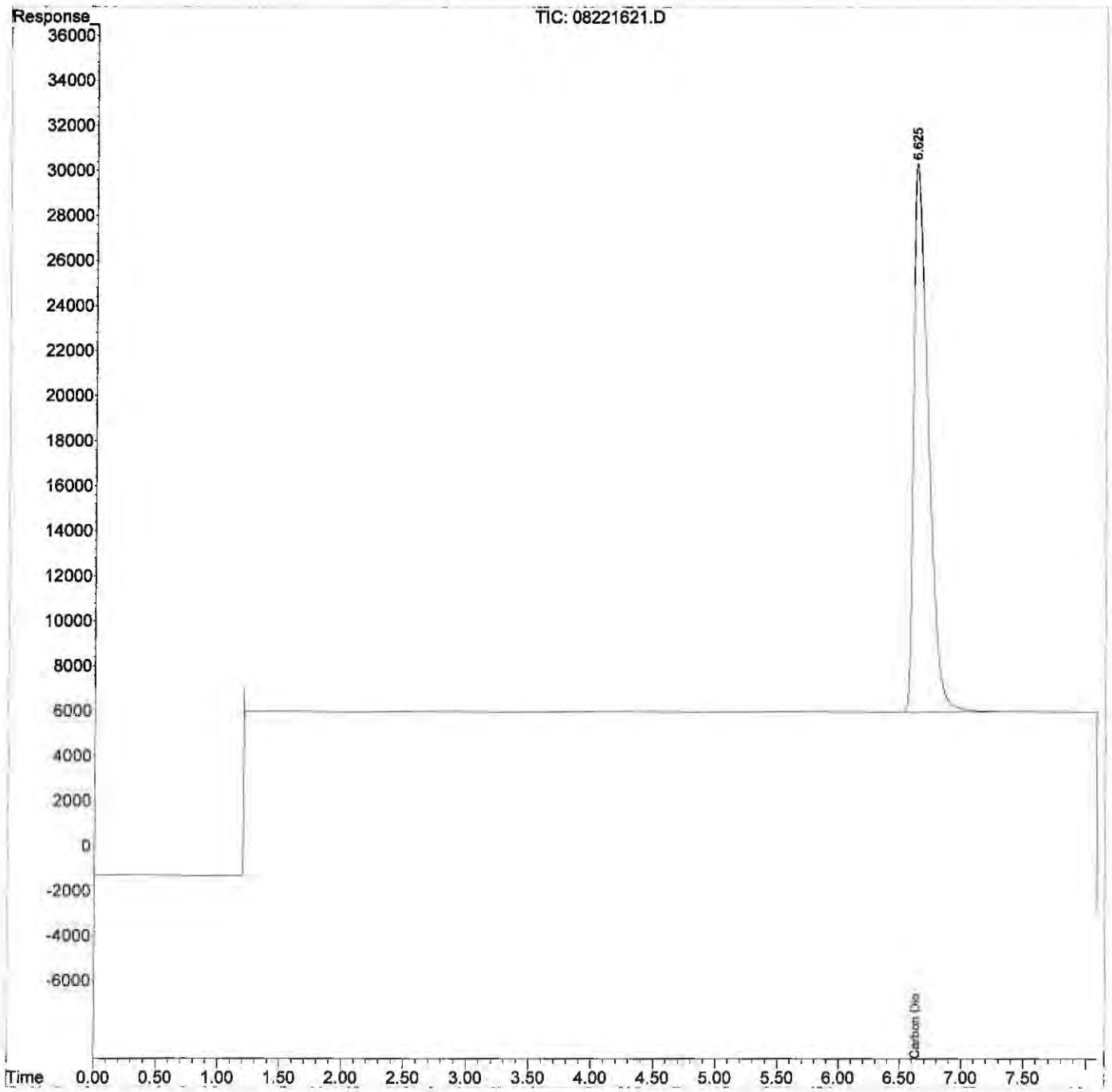
(f)=RT Delta > 1/2 Window (m)=manual int.

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

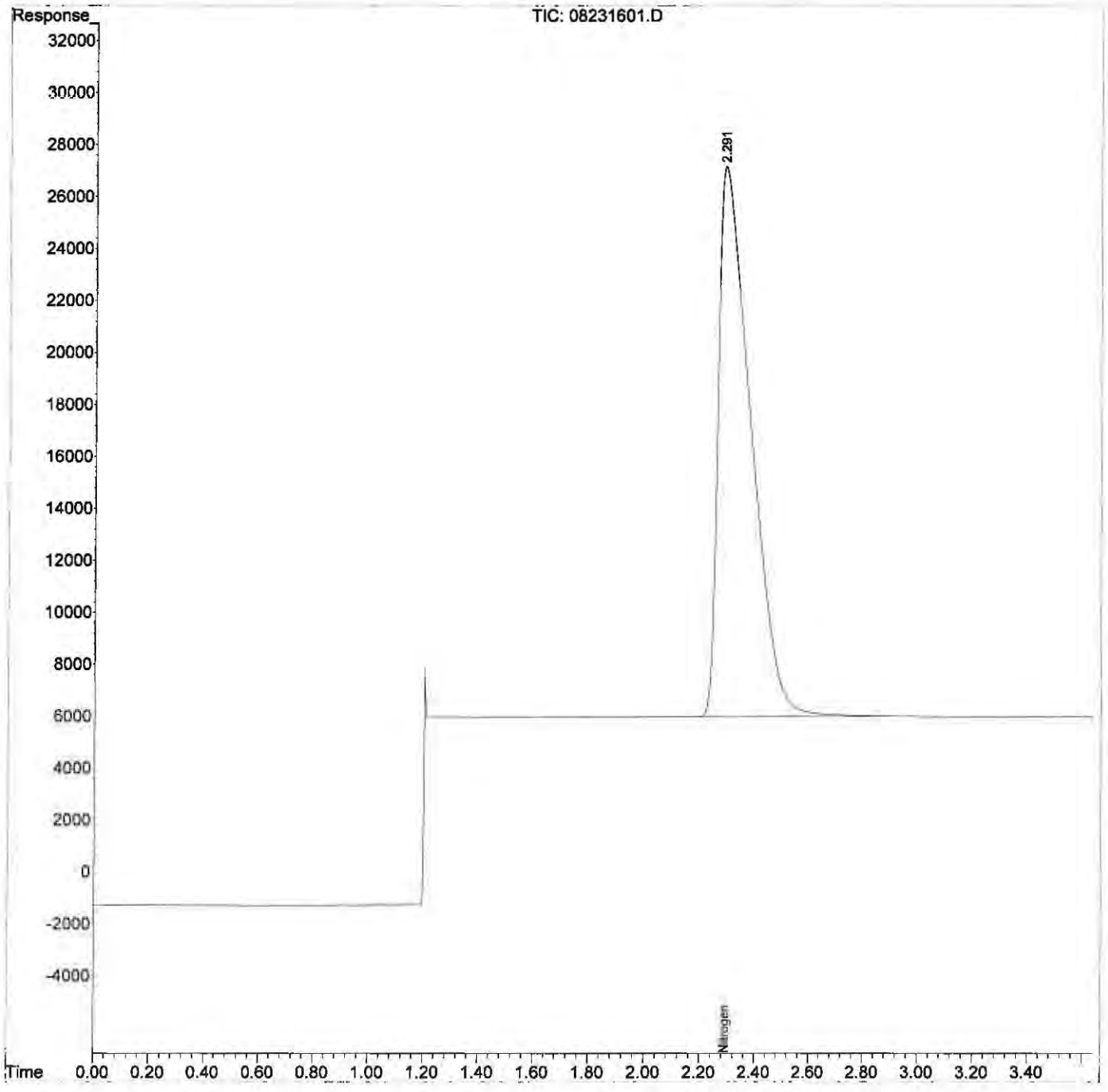
(f)=RT Delta > 1/2 Window (m)=manual int.

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	

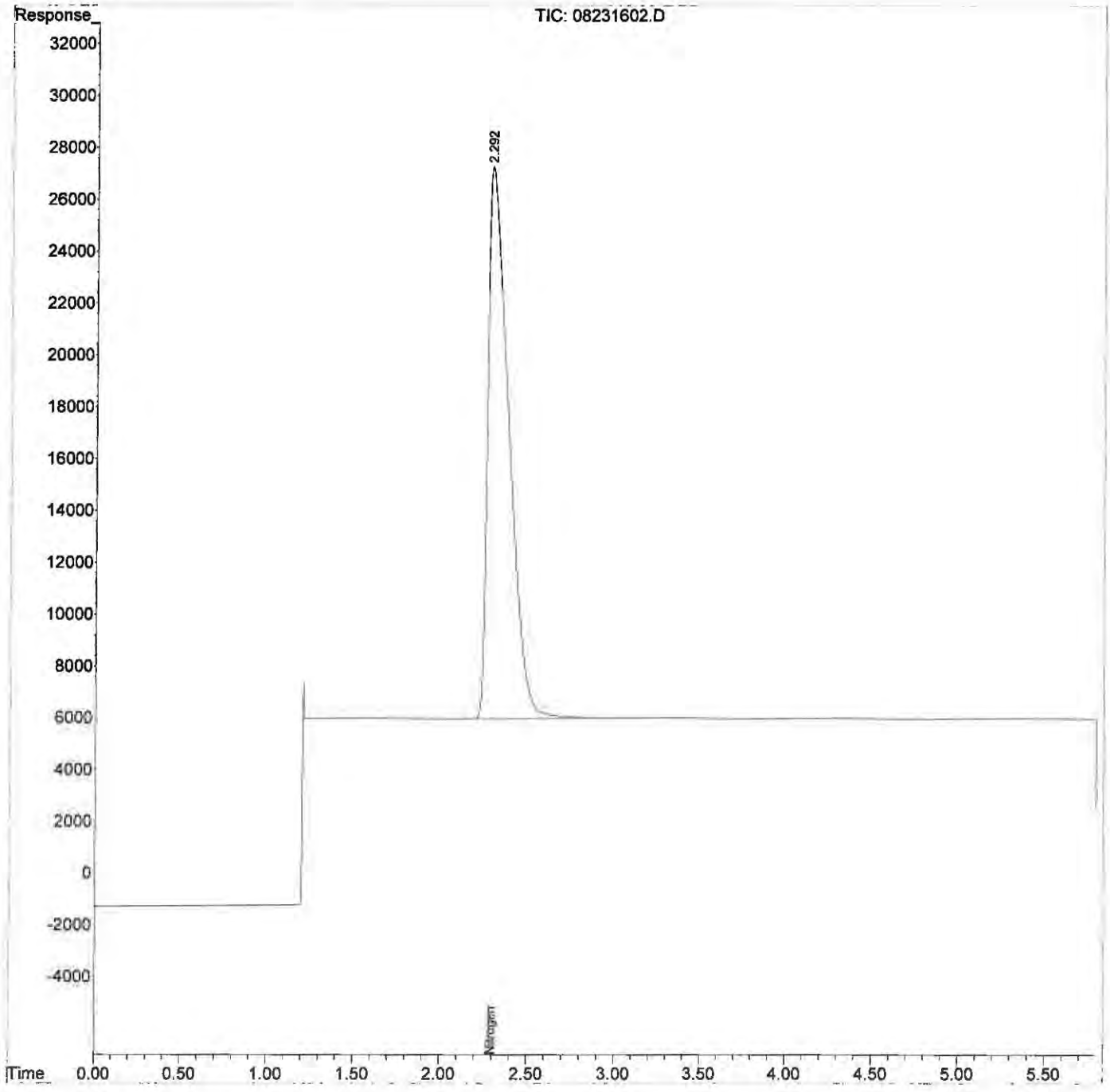
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

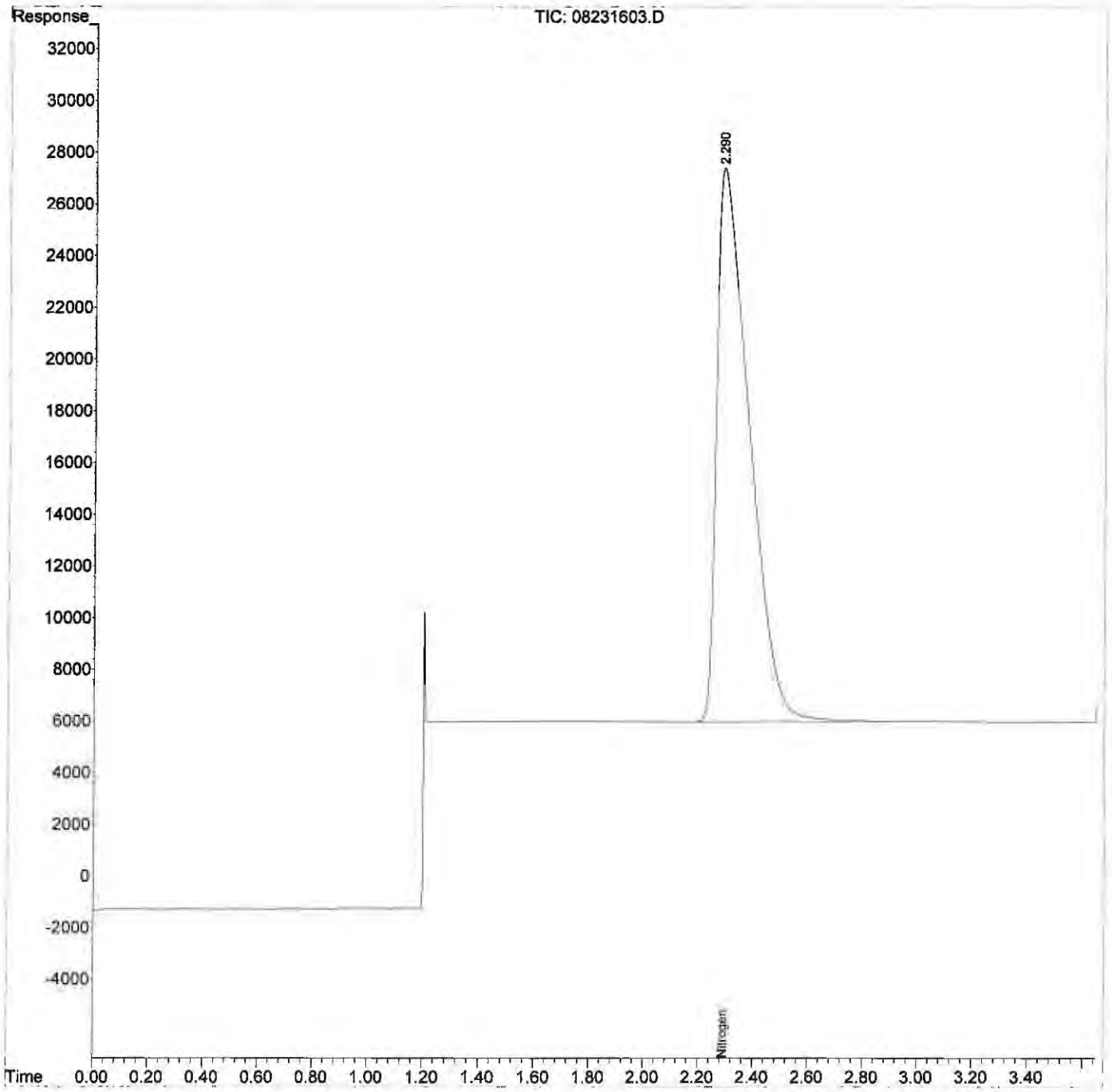
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm d
3)	Nitrogen	2.292	1767961	1000457.289	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

(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

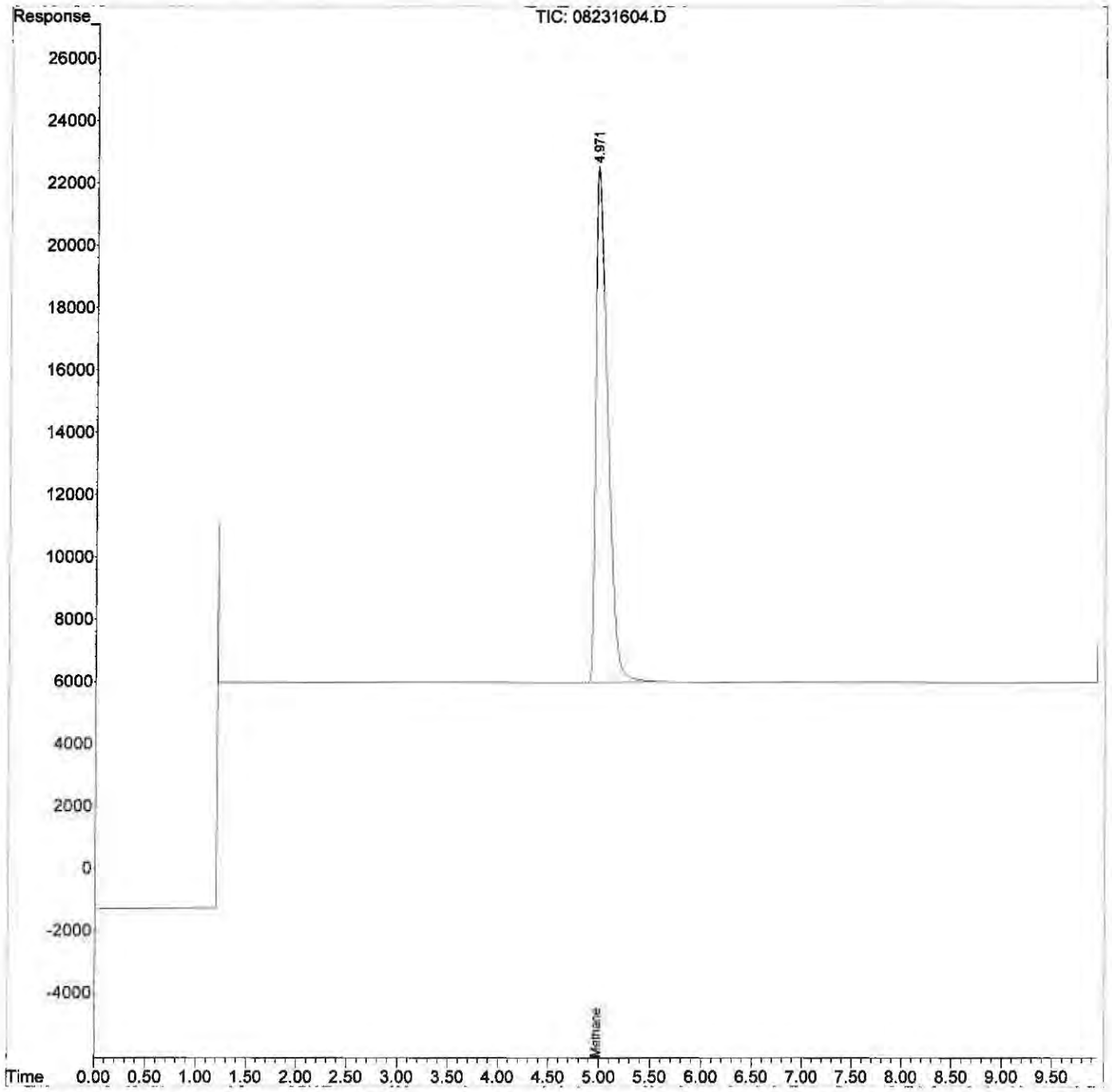
(f)=RT Delta > 1/2 Window (m)=manual int.

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

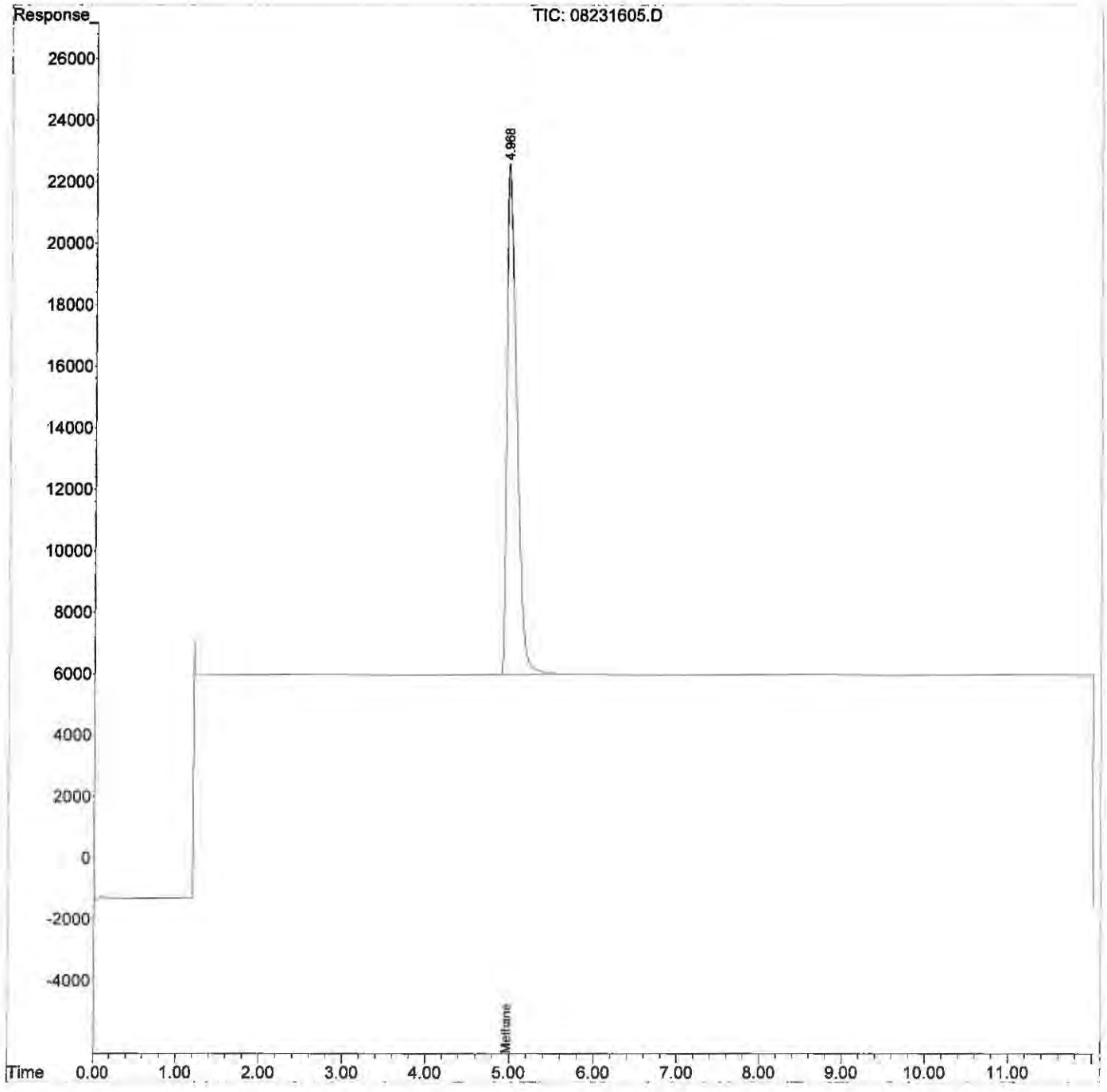
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

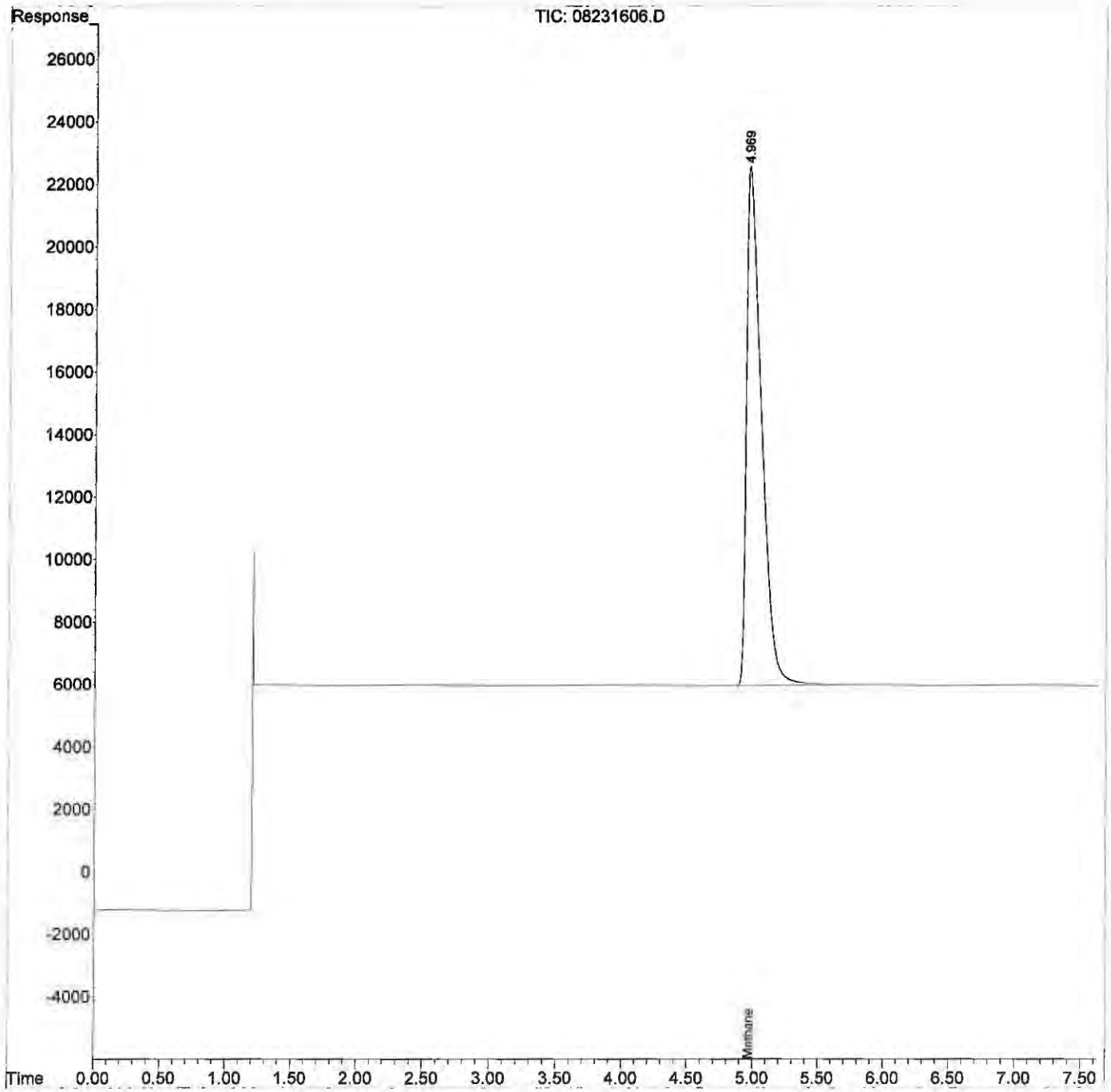
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	4.971	1318464	1009193.790	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

(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 :

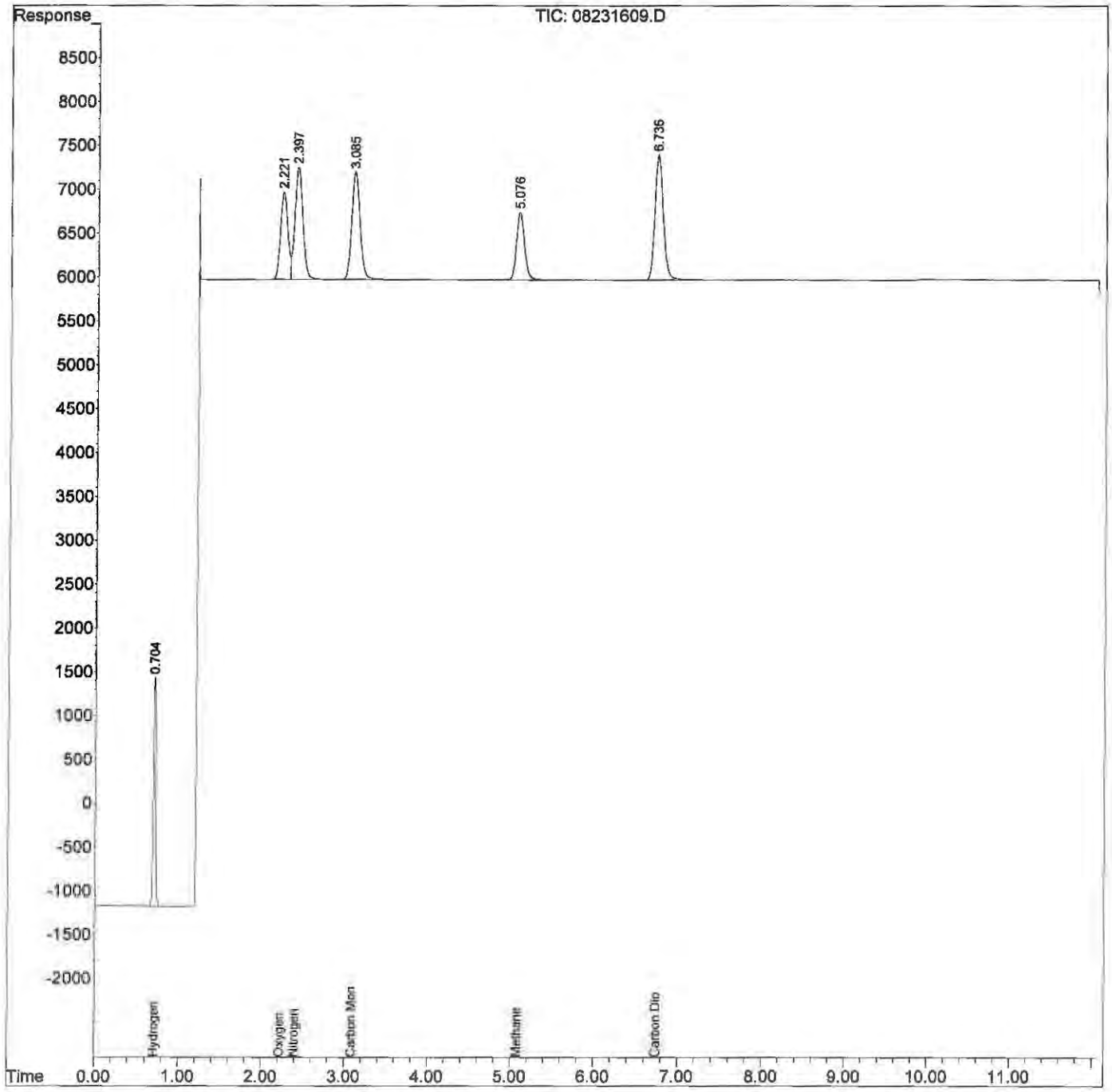
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.705	51930	38960.985	ppm	2,60 %
2)	Oxygen	2.222	60278	38988.977	ppm	2.53 %
3)	Nitrogen	2.398	86058	48697.524	ppm	2.06 %
4)	Carbon Monoxide	3.086	85978	49564.451	ppm	0,87 %
5)	Methane	5.077	52066	39832.238	ppm	0.42 %
6)	Carbon Dioxide	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 :



REPORT SUMMARYS FIXED GASES BY GC/TCD
CLIENT : Air Hygiene
Analyst : amf
PAI Job : P1604794

Printed : 10/12/2016
Instrument : GC #1 / TCD #1
Date analyzed : 10/12/2016
Sample amount : 100uL

Sample Result

Sample ID	Hydrogen	Oxygen	Nitrogen	Carbon Monoxide	Methane	Carbon Dioxide	Pi1	Pf1	Pi2	Pf2	BF
s30-10051601	39642	39845	49949	50686	40375	47911					
ACTUAL	40000	40000	50000	50000	40000	50000					
% Difference	0.9%	0.4%	0.1%	1.4%	0.9%	4.2%					
Lab Air		215960	780571			421					
MB	ND	ND	ND	ND	ND	ND					
4794-001		134900	742288			46315					
4794-001		137262	755578			47246					
4794-001		137229	755299			47452					
% RSD		1.0%	1.0%			1.3%					
4794-003		133016	747169			48854					
4794-003		133798	753567			49087					
4794-003		134103	755105			49404					
% RSD		0.4%	0.6%			0.6%					
4794-005		174401	734037			21835					
4794-005		173044	728111			21683					
4794-005		174330	732143			21706					
% RSD		0.4%	0.4%			0.4%					
4794-007		133467	754628			49440					
4794-007		132611	749389			49024					
4794-007		131870	745180			48848					
% RSD		0.6%	0.6%			0.6%					
4794-009		136890	754218			47016					
4794-009		135580	746745			46515					
4794-009		136892	753514			47179					
% RSD		0.6%	0.5%			0.7%					
4794-011		132253	753957			50400					
4794-011		131568	749722			49927					
4794-011		131887	752124			50222					
% RSD		0.3%	0.3%			0.5%					
4794-013		143021	753440			43725					
4794-013		142548	754719			43779					
4794-013		142777	753308			43687					
% RSD		0.2%	0.1%			0.1%					
s30-10051601	40451	40456	50324	51038	40870	48580					
ACTUAL	40000	40000	50000	50000	40000	50000					
% Difference	1.1%	1.1%	0.6%	2.1%	2.2%	2.8%					

Data Path : I:\GC01\DATA\FXG\2016_10\12\
Data File : 10121601.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 8:16 am
Operator : amf
Sample : std s30-10051601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 08:38:25 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. : 100ul
Signal Phase : CarboSieve Packed Column
Signal Info :

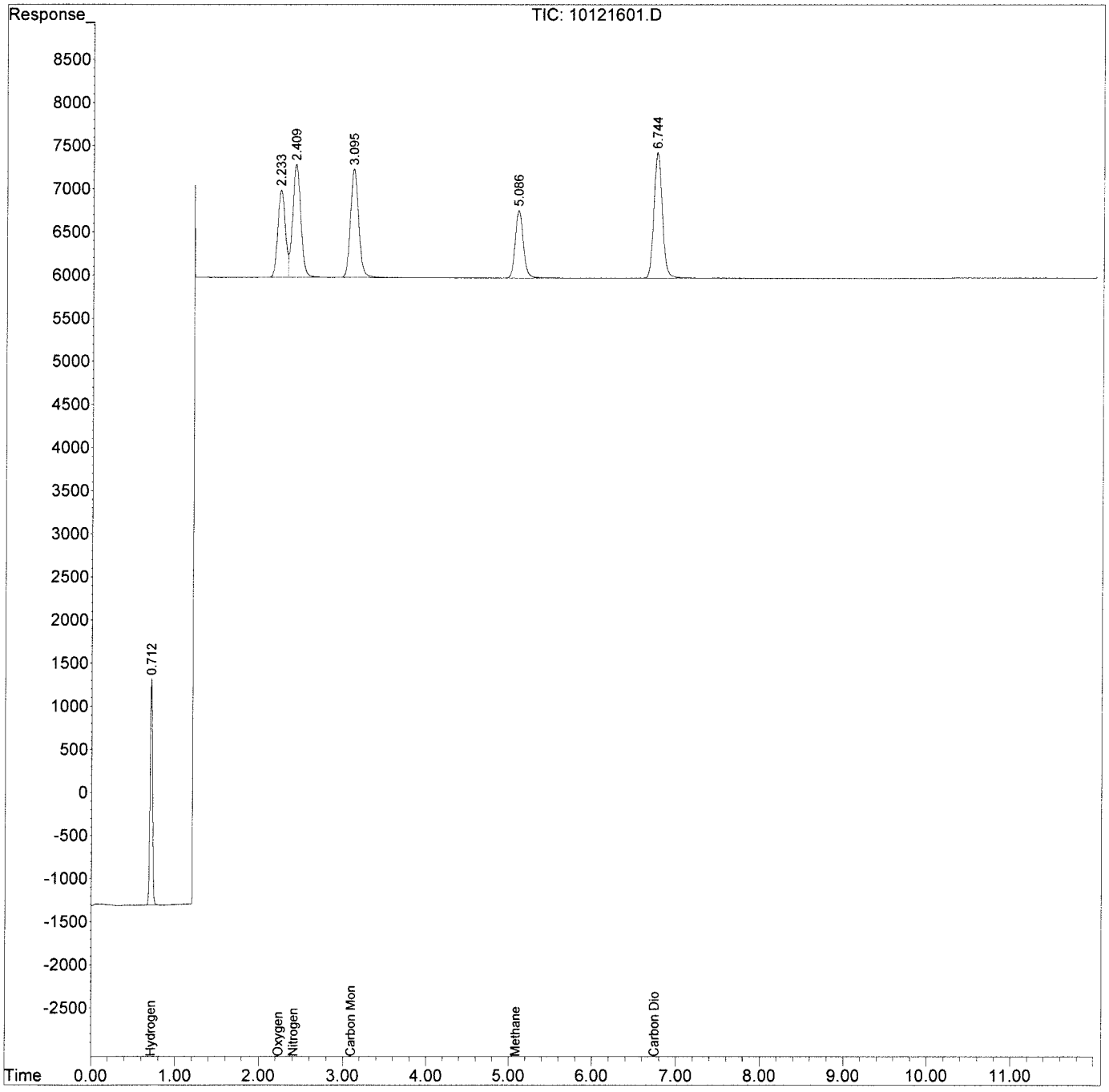
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.713	52838	39642.269	ppm
2)	Oxygen	2.235	61602	39844.721	ppm
3)	Nitrogen	2.410	88270	49949.294	ppm
4)	Carbon Monoxide	3.097	87923	50685.658	ppm
5)	Methane	5.087	52775	40374.609	ppm
6)	Carbon Dioxide	6.746	100491	47911.471	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\12\
Data File : 10121601.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 8:16 am
Operator : amf
Sample : std s30-10051601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 08:38:25 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 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\12\
Data File : 10121625.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 3:29 pm
Operator : amf
Sample : std s30-10051601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 15:47:46 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 :

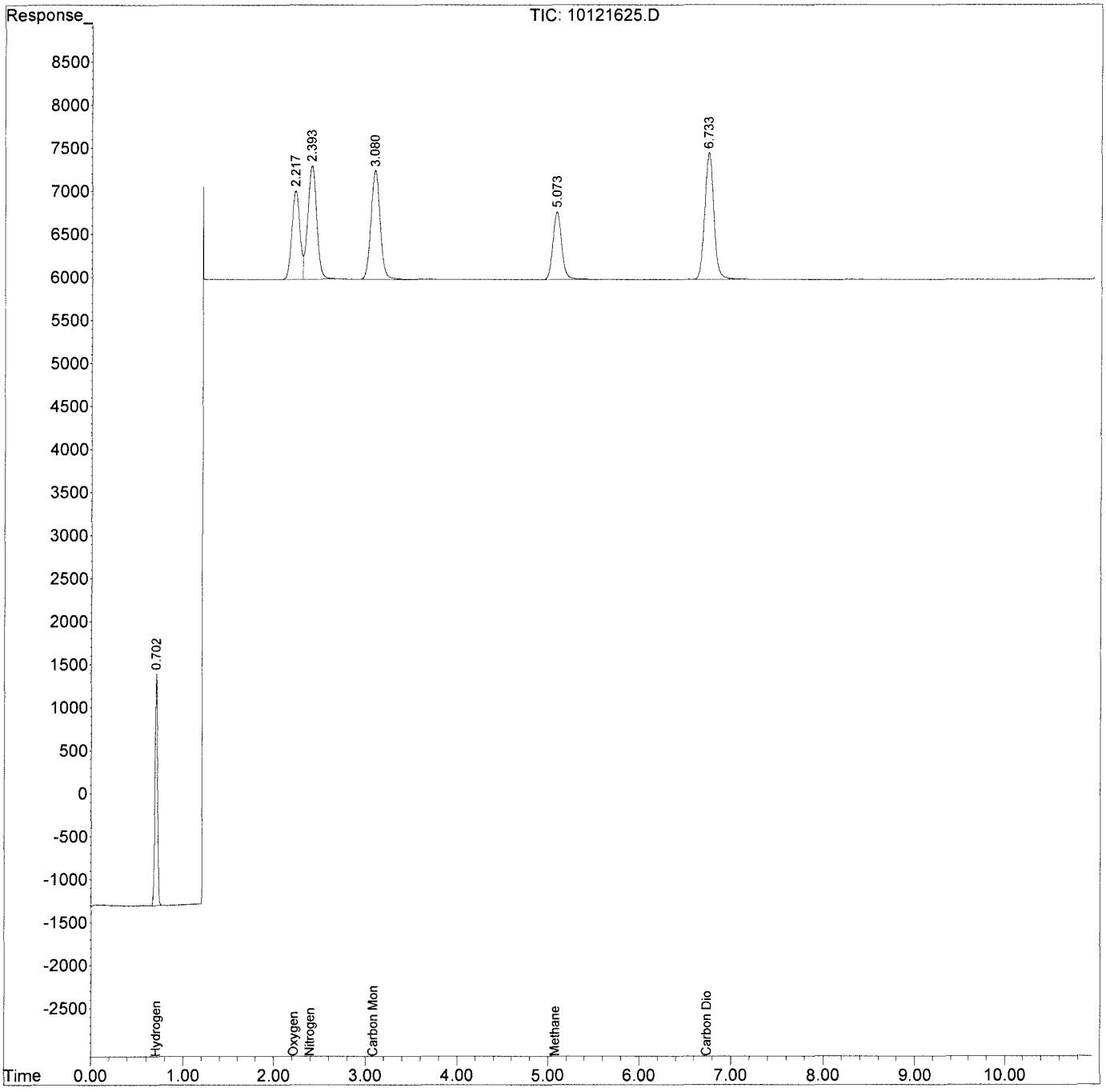
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.703	53916	40450.830	ppm
2)	Oxygen	2.219	62546	40455.825	ppm
3)	Nitrogen	2.395	88932	50323.820	ppm
4)	Carbon Monoxide	3.082	88533	51037.618	ppm
5)	Methane	5.074	53422	40870.225	ppm
6)	Carbon Dioxide	6.735	101893	48579.994	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\12\
Data File : 10121625.D
Signal(s) : TCD1A.CH
Acq On : 12 Oct 2016 3:29 pm
Operator : amf
Sample : std s30-10051601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 12 15:47:46 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\12\

	Sample ID	Date/Time	Acquisition Method	File Name	Misc Info	Operator	Comments
	std s30-10051601	12 Oct 116 8:16 am	MFXGS25C.M	10121601.D		amf	
	mb	12 Oct 116 8:33 am	MFXGS25C.M	10121602.D		amf	
	lab air	12 Oct 116 9:06 am	MFXGS25C.M	10121603.D		amf	
	4794-001	12 Oct 116 9:23 am	MFXGS25C.M	10121604.D		amf	
	4794-001	12 Oct 116 9:39 am	MFXGS25C.M	10121605.D		amf	
	4794-001	12 Oct 116 9:55 am	MFXGS25C.M	10121606.D		amf	
	4794-003	12 Oct 116 10:14 am	MFXGS25C.M	10121607.D		amf	
	4794-003	12 Oct 116 10:32 am	MFXGS25C.M	10121608.D		amf	
	4794-003	12 Oct 116 10:48 am	MFXGS25C.M	10121609.D		amf	
	4794-005	12 Oct 116 11:03 am	MFXGS25C.M	10121610.D		amf	
	4794-005	12 Oct 116 11:21 am	MFXGS25C.M	10121611.D		amf	
	4794-005	12 Oct 116 11:37 am	MFXGS25C.M	10121612.D		amf	
	4794-007	12 Oct 116 11:53 am	MFXGS25C.M	10121613.D		amf	
	4794-007	12 Oct 116 12:09 pm	MF25VCH4.M	10121614.D		amf	
	4794-007	12 Oct 116 12:25 pm	MF25VCH4.M	10121615.D		amf	
	4794-009	12 Oct 116 12:41 pm	MFXGS25C.M	10121616.D		amf	
	4794-009	12 Oct 116 12:57 pm	MFXGS25C.M	10121617.D		amf	
	4794-009	12 Oct 116 1:35 pm	MFXGS25C.M	10121618.D		amf	
	4794-011	12 Oct 116 1:51 pm	MFXGS25C.M	10121619.D		amf	
	4794-011	12 Oct 116 2:07 pm	MFXGS25C.M	10121620.D		amf	
	4794-011	12 Oct 116 2:23 pm	MFXGS25C.M	10121621.D		amf	
	4794-013	12 Oct 116 2:40 pm	MFXGS25C.M	10121622.D		amf	
	4794-013	12 Oct 116 2:56 pm	MFXGS25C.M	10121623.D		amf	
	4794-013	12 Oct 116 3:12 pm	MFXGS25C.M	10121624.D		amf	
	std s30-10051601	12 Oct 116 3:29 pm	MFXGS25C.M	10121625.D		amf	

LABORATORY REPORT

October 26, 2016

Min Lee
Air Hygiene, Incorporated
1600 West Tacoma Street
Broken Arrow, OK 74012

RE: sfi-16-elkcity.ok-comp#1

Dear Min:

Enclosed are the results of the sample submitted to our laboratory on October 13, 2016. For your reference, this analysis has been assigned our service request number P1604820.

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 3:07 pm, Oct 26, 2016

Kelly Horiuchi
Laboratory Director

Client: Air Hygiene, Incorporated Service Request No: P1604820
Project: sfi-16-elkcity.ok-comp#1

CASE NARRATIVE

The sample was received intact under chain of custody on October 13, 2016 and was 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 sample at the time of sample receipt.

Fixed Gases Analysis

The sample was 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.

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: P1604820
Project ID: sfi-16-elkcity.ok-comp#1

Date Received: 10/13/2016
Time Received: 09:45

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	3C Modified - Fxd Gases Bag 2X
R6-30-70-30%-SCD-60	P1604820-001	Air	10/11/2016	09:16	X

PW04820

SAMPLE DESCRIPTION AND CHAIN OF CUSTODY RECORD

Air Hygiene International, Inc.
1930 W Tacoma Street
Broken Arrow, Oklahoma 74012
(888) 461-8778
www.airhygiene.com

Project Number:	[illegible]	Laboratory Analysis Requested:	
Person Taking Samples:	TW/MC/RA		

Sample Number	Location	Date	Time	Volume	Analysis Method			
					O_2	CO_2	N_2	Methane
1	RS-SD-70-3045-SCD-60	EB City Facility	10/1/2015	9:15	10	x	x	x	x
2	[illegible]	EB City Facility	10/1/2015	9:15	1	x	x	x	x

[illegible] — Relinquished by (Signature) — Date: 10/13/15 — Time: [illegible]

[illegible] — Received by (Signature) — Date: [illegible] — Time: [illegible]

Notes:

ALS Environmental
Sample Acceptance Check Form

Client: Air Hygiene, Incorporated Work order: P1604820

Project: sfi-16-elkcity.ok-comp#1

Sample(s) received on: 10/13/16 Date opened: 10/13/16 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
P1604820-001.01	10 L Tedlar Bag					
P1604820-002.01	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: **R6-30-70-30%-SCD-60**
Client Project ID: **sfi-16-elkcity.ok-comp#1**

ALS Project ID: P1604820
ALS Sample ID: P1604820-001

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: 10/11/16
Date Received: 10/13/16
Date Analyzed: 10/13/16
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**	**4.46**	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: P1604820
Client Project ID: **sfi-16-elkcity.ok-comp#1** ALS Sample ID: P161013-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: 10/13/16
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_10\13\
Data File : 10131604.D
Signal(s) : TCD1A.CH
Acq On : 13 Oct 2016 10:04 am
Operator : amf
Sample : 4820-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 13 10:44:18 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 :

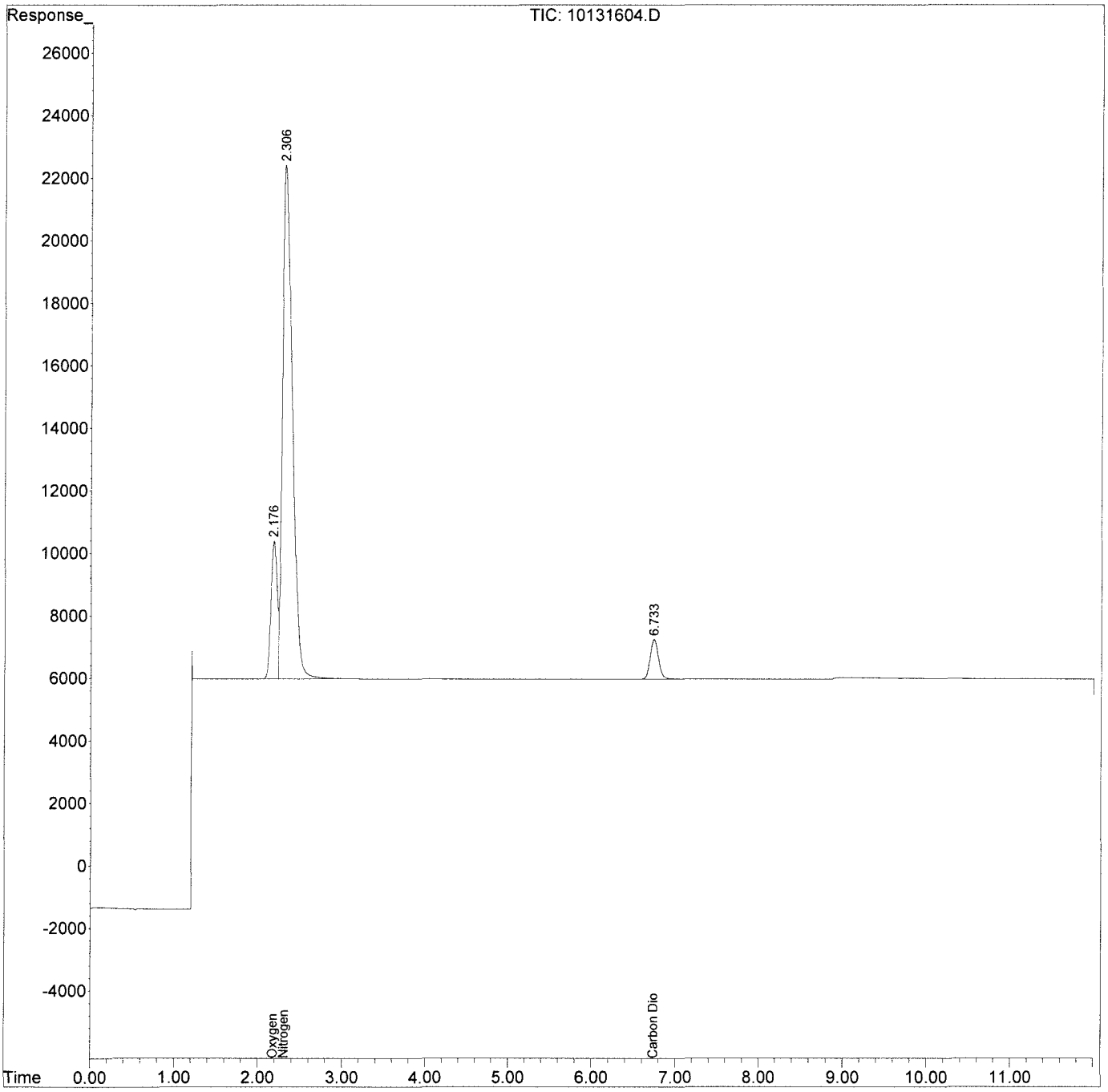
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.178	222933	144196.071	ppm
3)	Nitrogen	2.308	1322516	748368.973	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.734	87390	41665.260	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\13\
Data File : 10131604.D
Signal(s) : TCD1A.CH
Acq On : 13 Oct 2016 10:04 am
Operator : amf
Sample : 4820-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 13 10:44:18 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\13\
Data File : 10131605.D
Signal(s) : TCD1A.CH
Acq On : 13 Oct 2016 10:20 am
Operator : amf
Sample : 4820-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 13 10:44:35 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 :

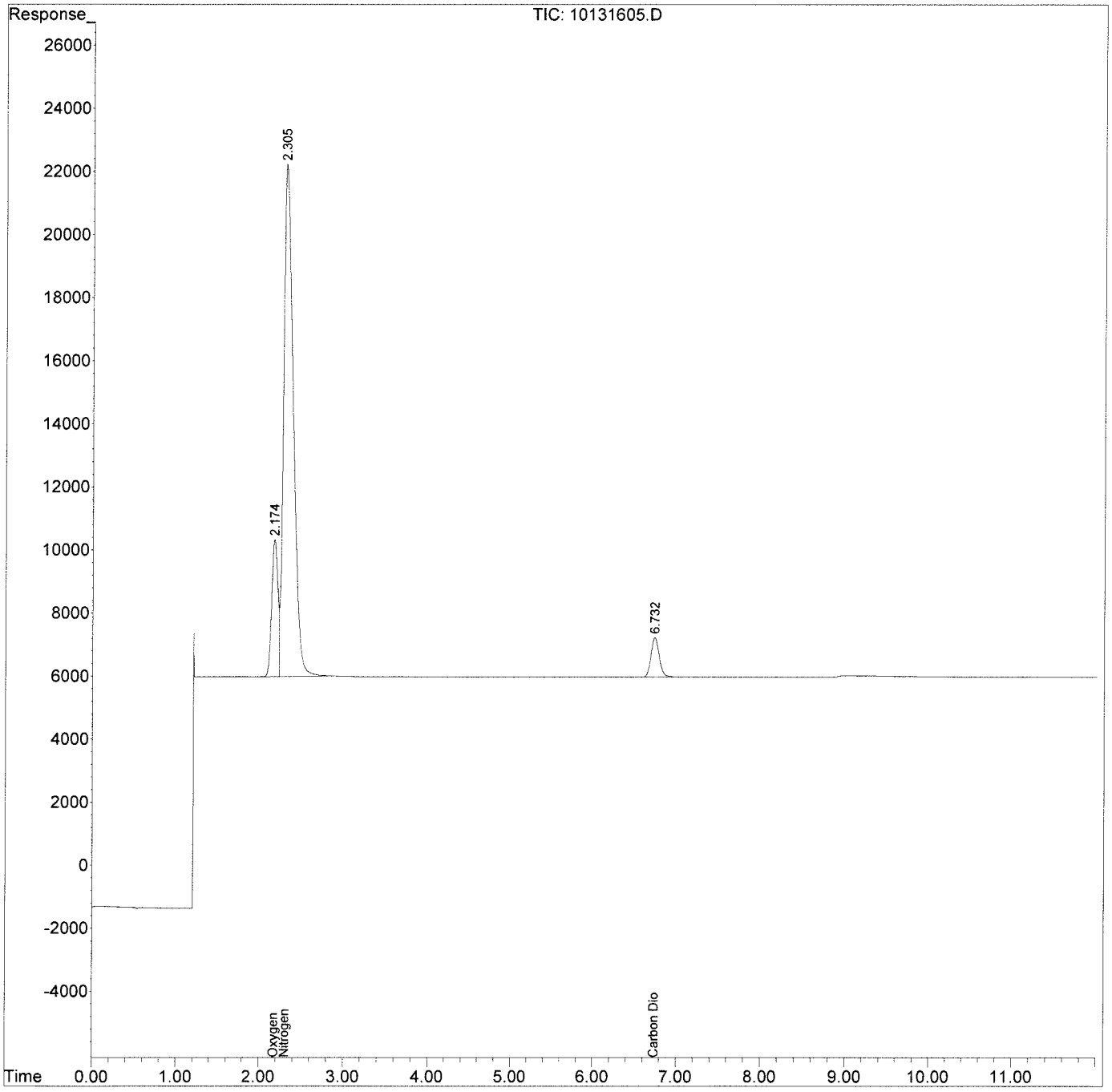
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.176	219823	142184.857	ppm
3)	Nitrogen	2.306	1300915	736145.661	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.733	86388	41187.645	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\13\
Data File : 10131605.D
Signal(s) : TCD1A.CH
Acq On : 13 Oct 2016 10:20 am
Operator : amf
Sample : 4820-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 13 10:44:35 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 :



Data Path : I:\GC01\DATA\FXG\2016_10\13\
Data File : 10131606.D
Signal(s) : TCD1A.CH
Acq On : 13 Oct 2016 10:36 am
Operator : amf
Sample : 4820-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 13 10:56:10 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 :

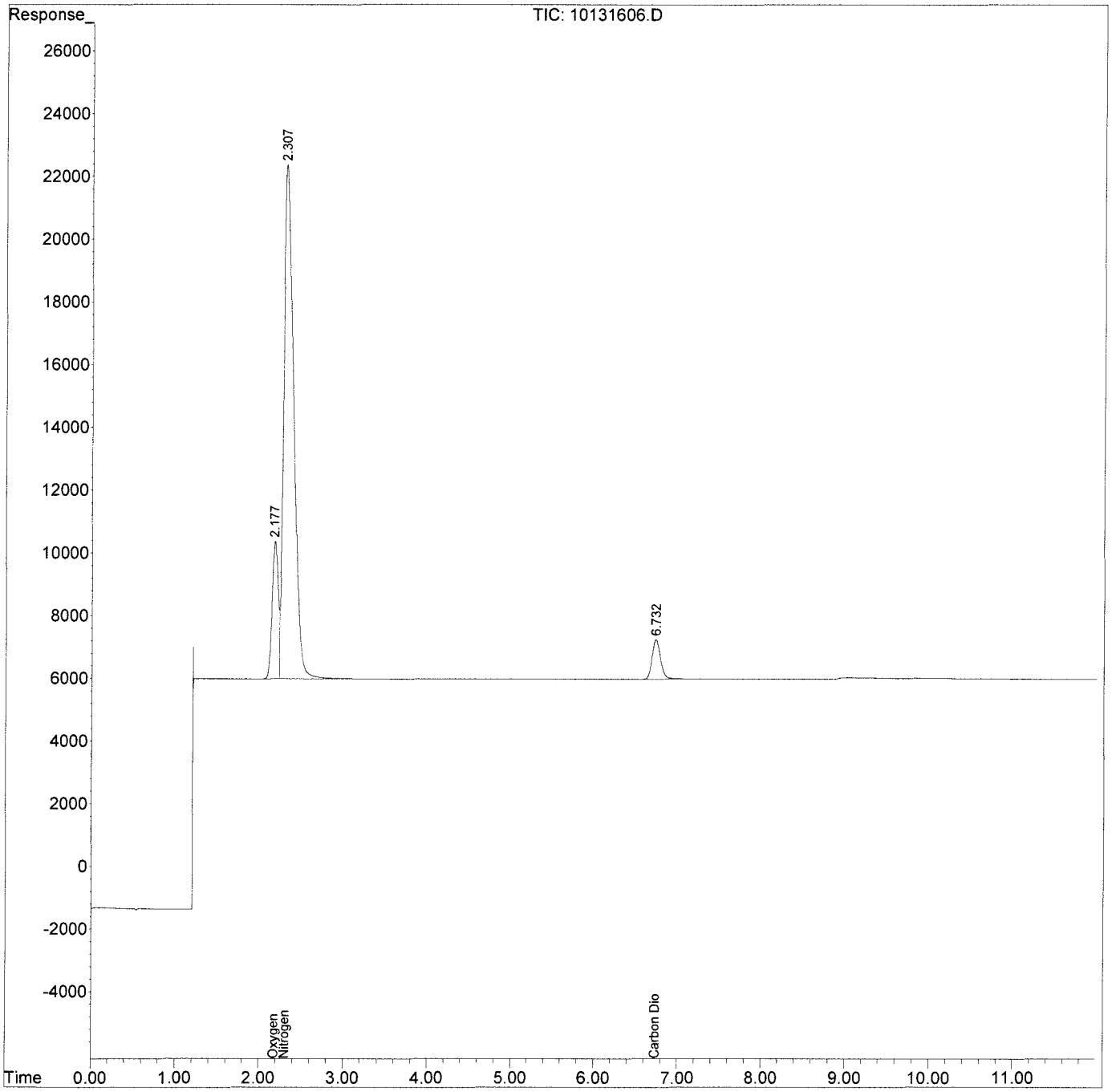
	Compound	R.T.	Response	Conc Units
Target Compounds				
1)	Hydrogen	0.000	0	N.D. ppm
2)	Oxygen	2.178	222377	143836.520 ppm
3)	Nitrogen	2.308	1317742	745667.171 ppm
4)	Carbon Monoxide	0.000	0	N.D. ppm
5)	Methane	0.000	0	N.D. ppm
6)	Carbon Dioxide	6.734	86942	41451.825 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\13\
Data File : 10131606.D
Signal(s) : TCD1A.CH
Acq On : 13 Oct 2016 10:36 am
Operator : amf
Sample : 4820-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 13 10:56:10 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\13\
Data File : 10131602.D
Signal(s) : TCD1A.CH
Acq On : 13 Oct 2016 8:40 am
Operator : amf
Sample : mb
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 13 10:14:27 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 :

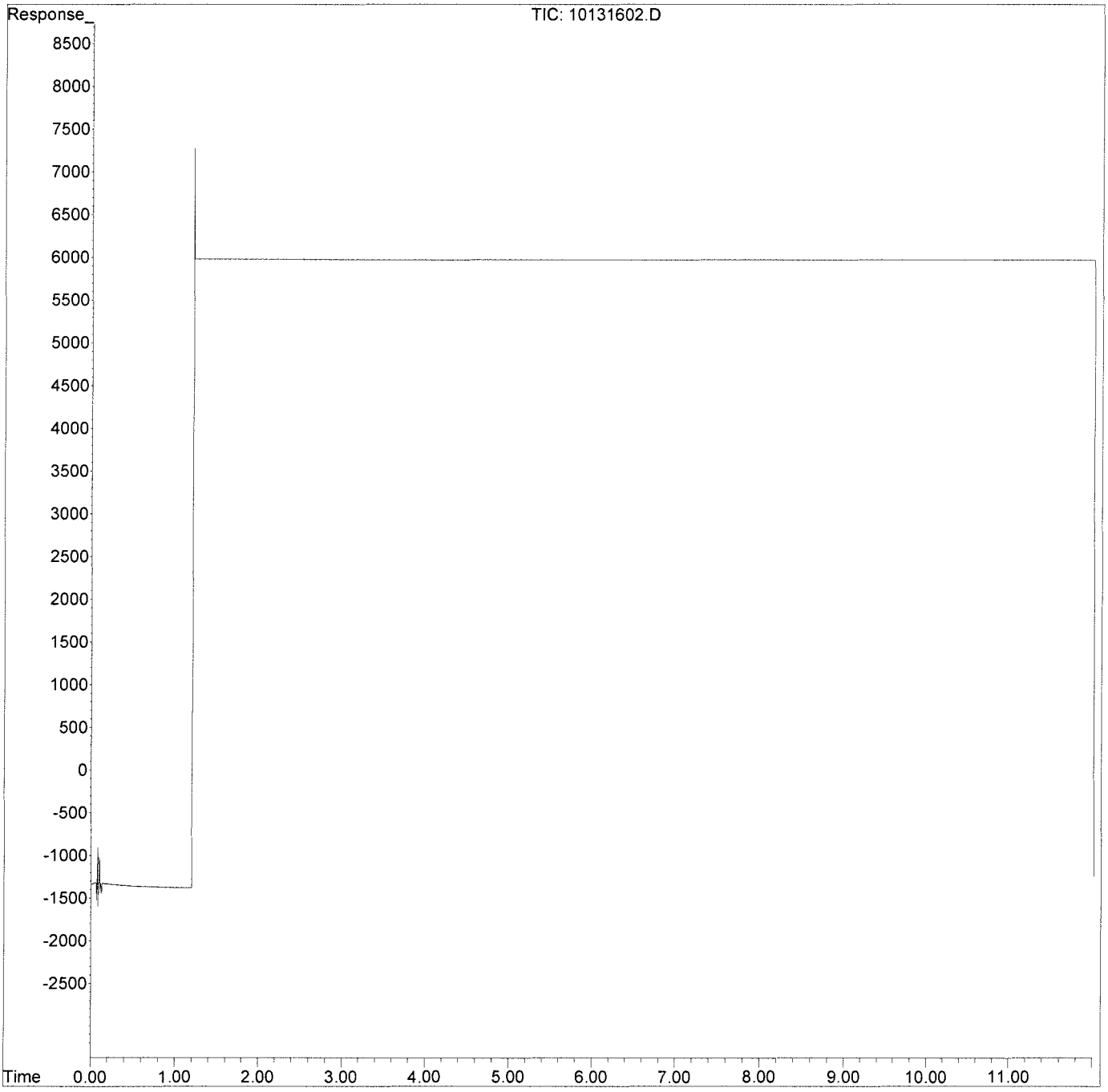
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\13\
Data File : 10131602.D
Signal(s) : TCD1A.CH
Acq On : 13 Oct 2016 8:40 am
Operator : amf
Sample : mb
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 13 10:14:27 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

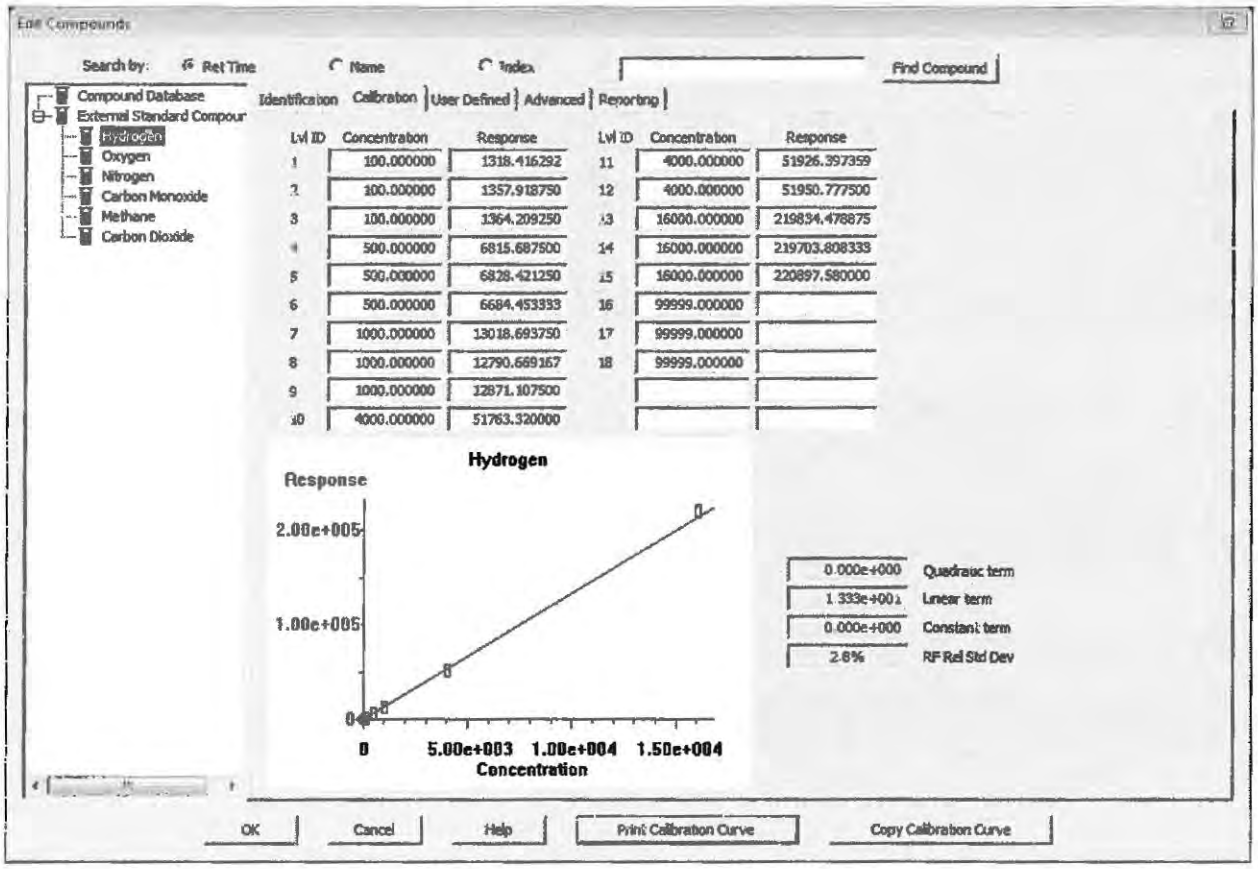
Method Path : I:\GC01\METHODS\
Method File : GC1_trip082216.M
Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
Last Update : Tue Aug 23 11:02:57 2016
Response Via : Initial Calibration

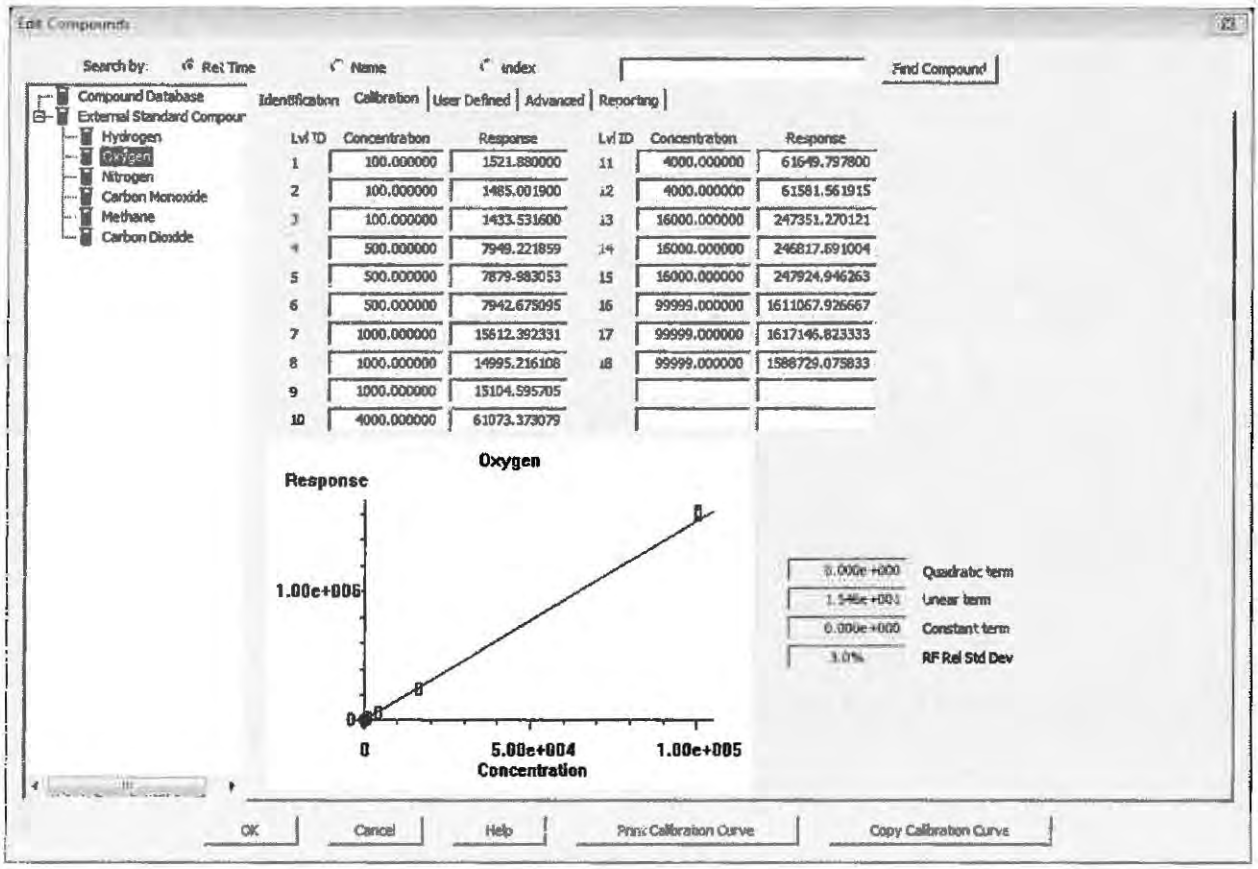
Calibration Files
1 =08221601.D 2 =08221602.D 3 =08221603.D
4 =08221604.D 5 =08221605.D 6 =08221606.D

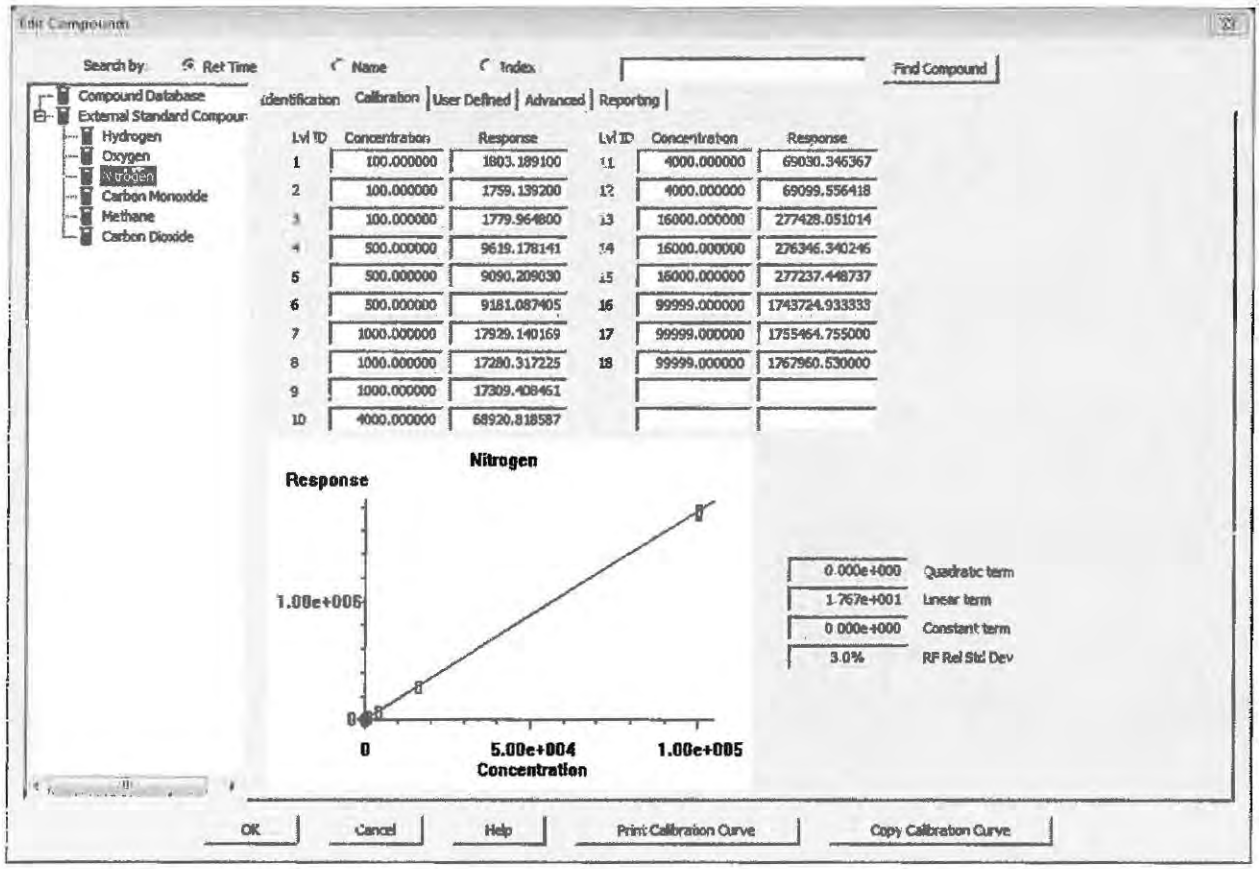
	Compound	1	2	3	4	5	6	Avg		%RSD
1)	Hydrogen	1.318	1.358	1.364	1.363	1.366	1.337	1.333	E1	2.78
2)	Oxygen	1.522	1.485	1.434	1.590	1.576	1.589	1.546	E1	3.01
3)	Nitrogen	1.803	1.759	1.780	1.924	1.818	1.836	1.767	E1	2.97
4)	Carbon Monoxide	1.653	1.676	1.610	1.844	1.851	1.826	1.735	E1	3.80
5)	Methane	1.240	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

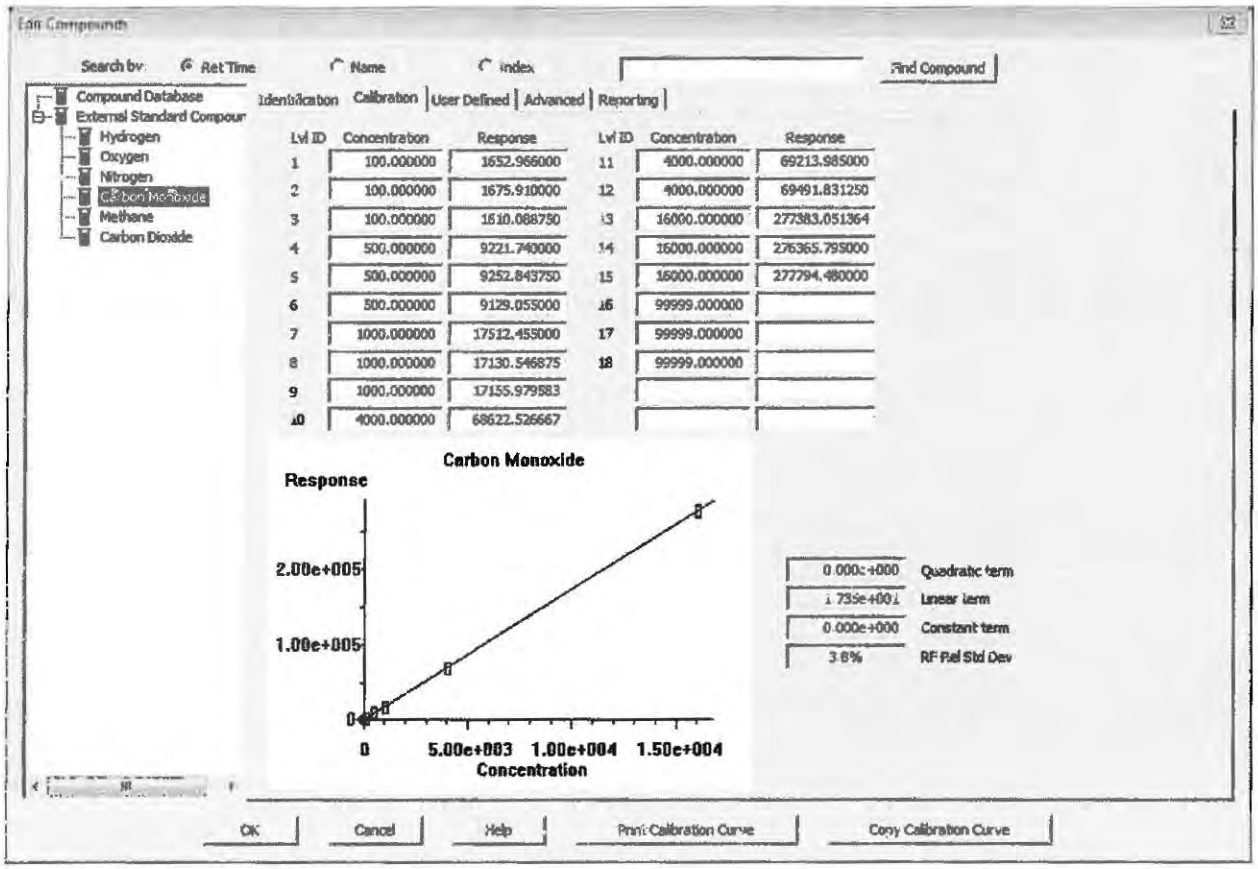
(#) = Out of Range ### Number of calibration levels exceeded format ###

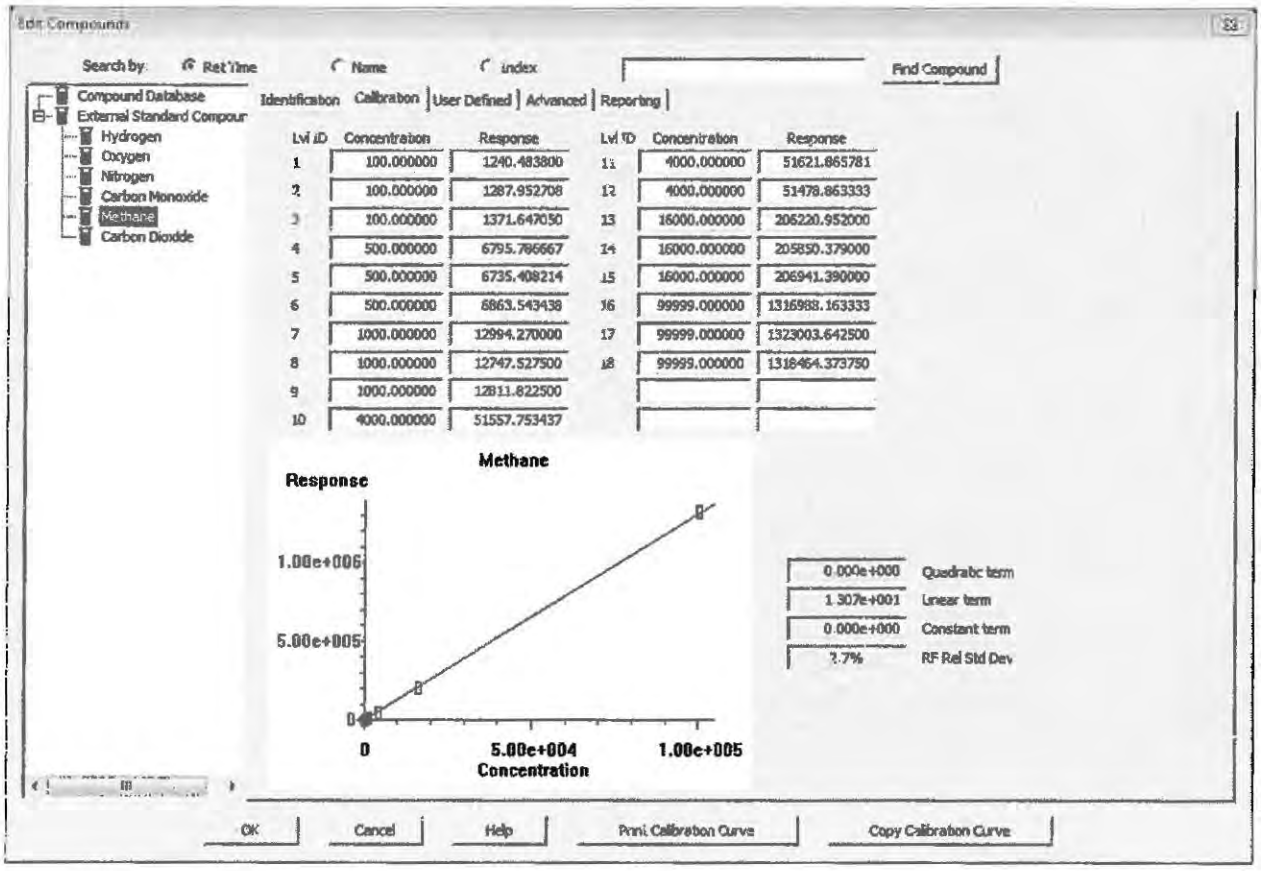
GC1_trip082216.M Tue Aug 23 12:46:23 2016

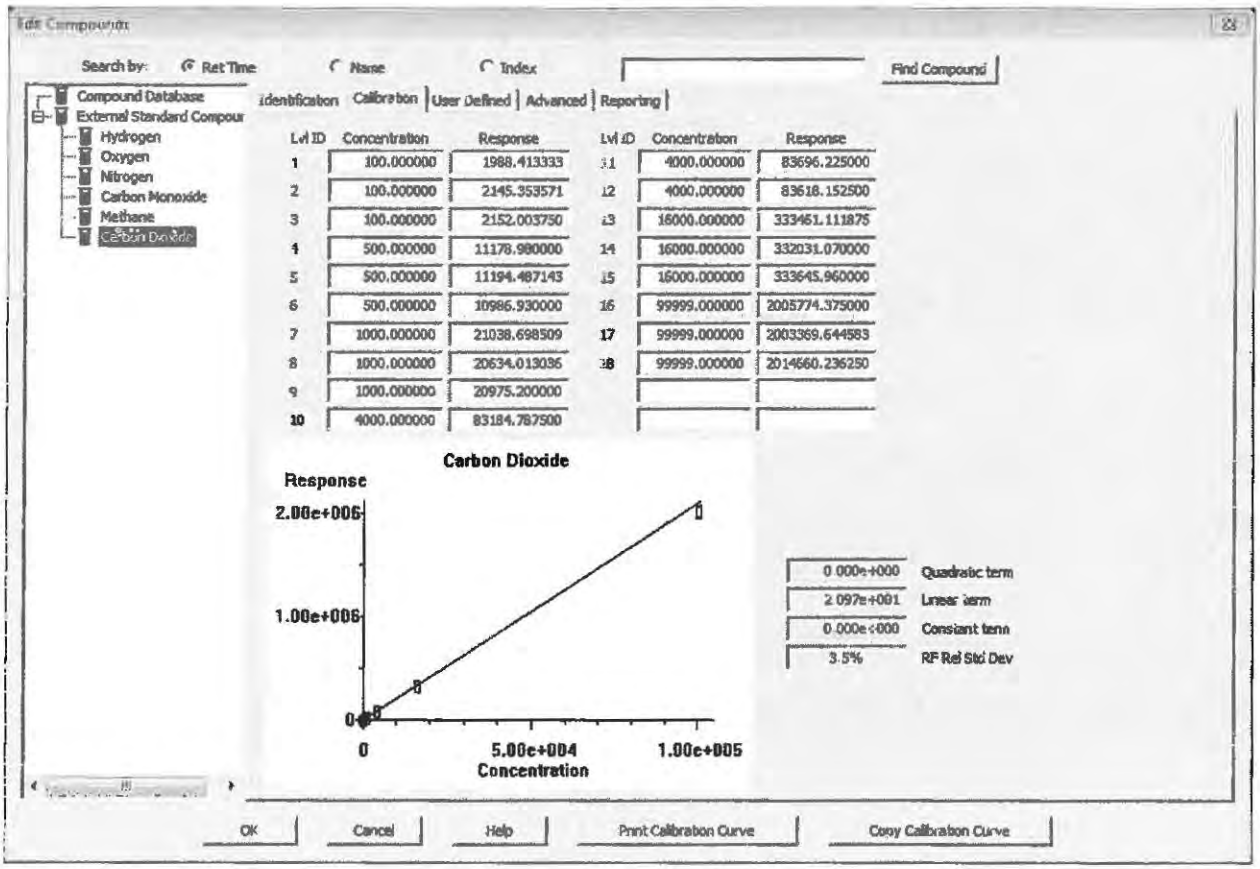

Edit Compounds
Search by:
Ret Time
Name
Index
Find Compound
Compound Database
External Standard Compour
Hydrogen
Oxygen
Nitrogen
Carbon Monoxide
Methane
Carbon Dioxide
Identification
Calibration
User Defined
Advanced
Reporting
Lvl ID
Concentration
Response
1 100.000000 1318.416292
2 100.000000 1357.918750
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+006
1.00e+006
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	

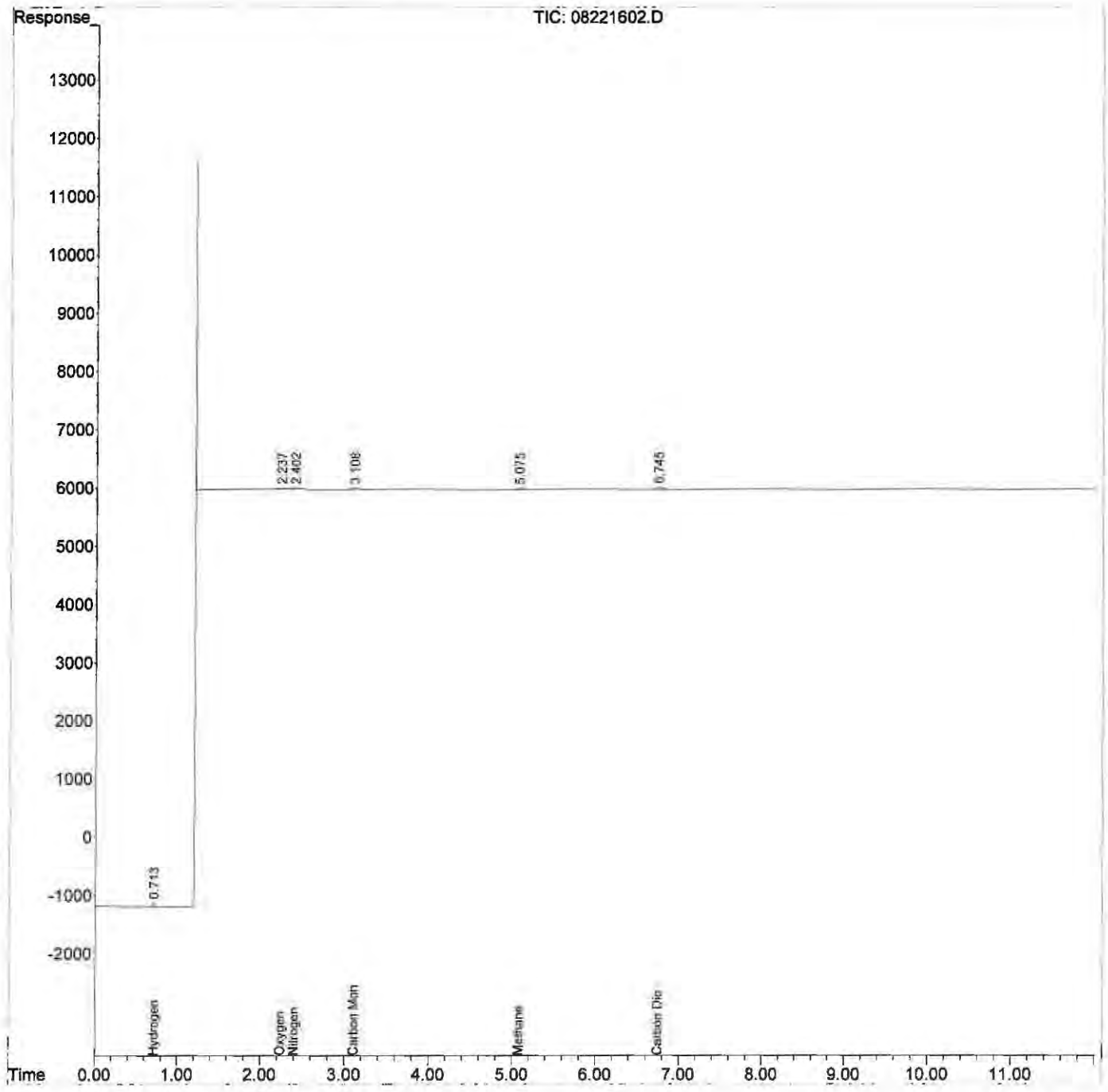
(f)=RT Delta > 1/2 Window (m)=manual int.

8/22/16

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 :

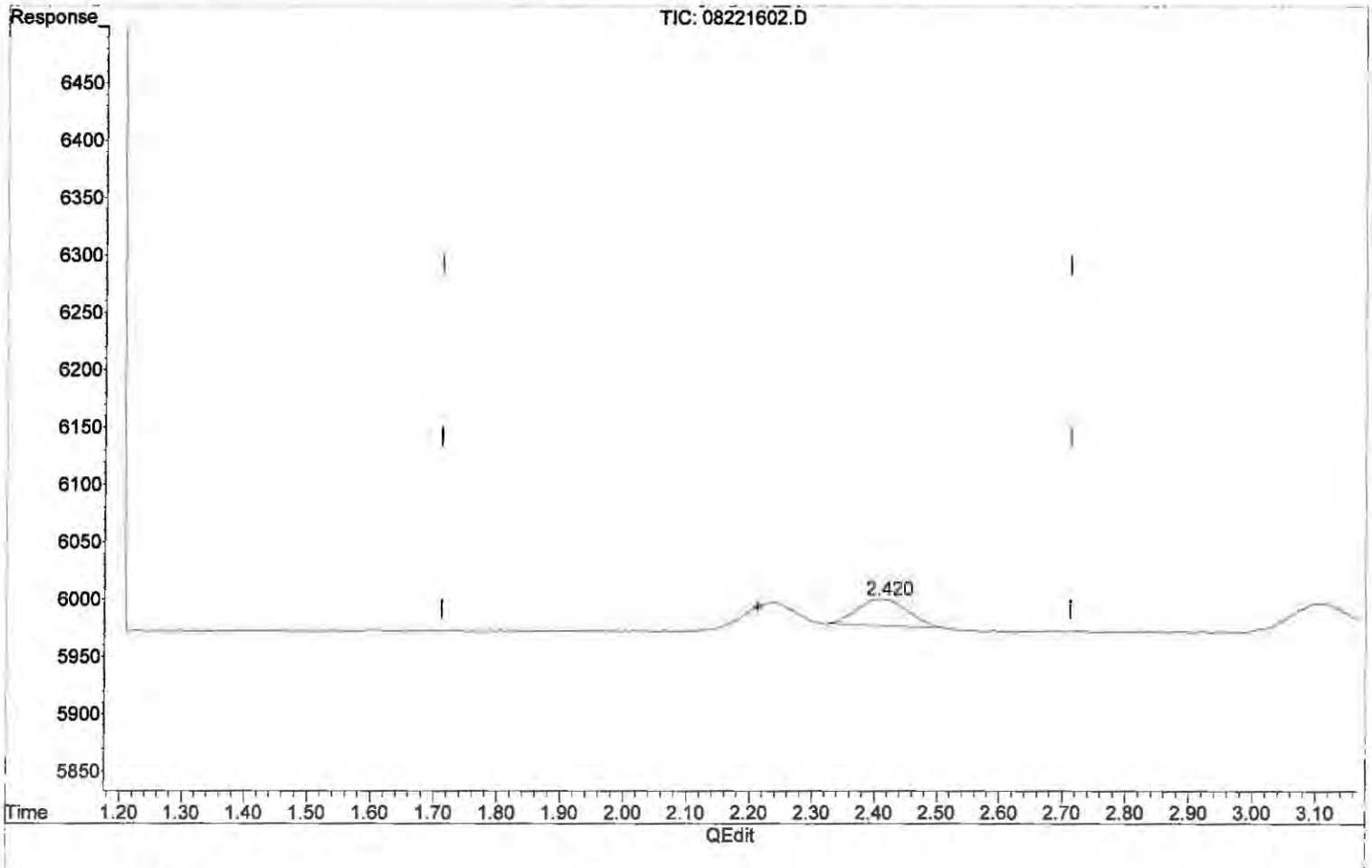


Quantitation Report (Qedit)

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

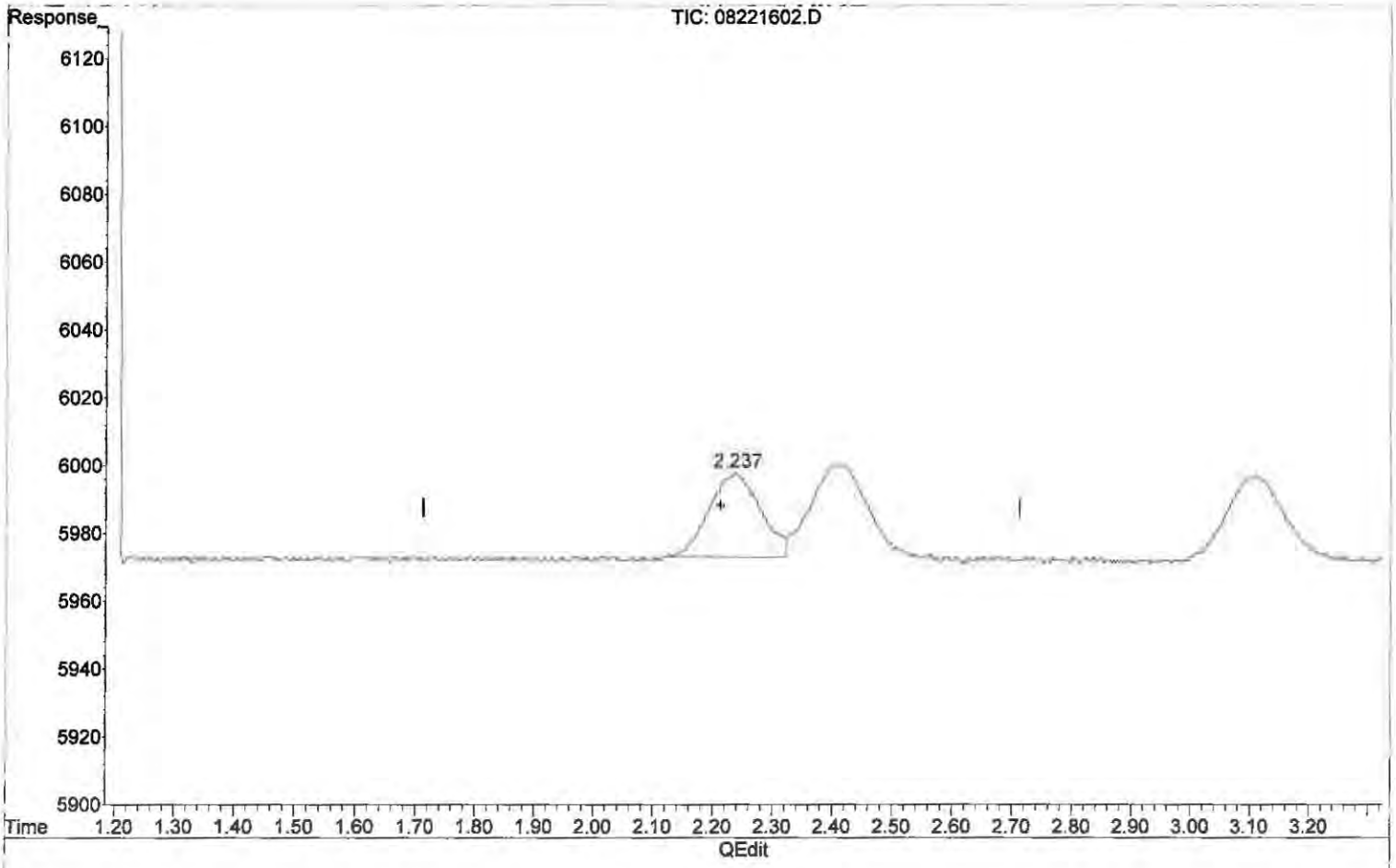
(+) = Expected Retention Time

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

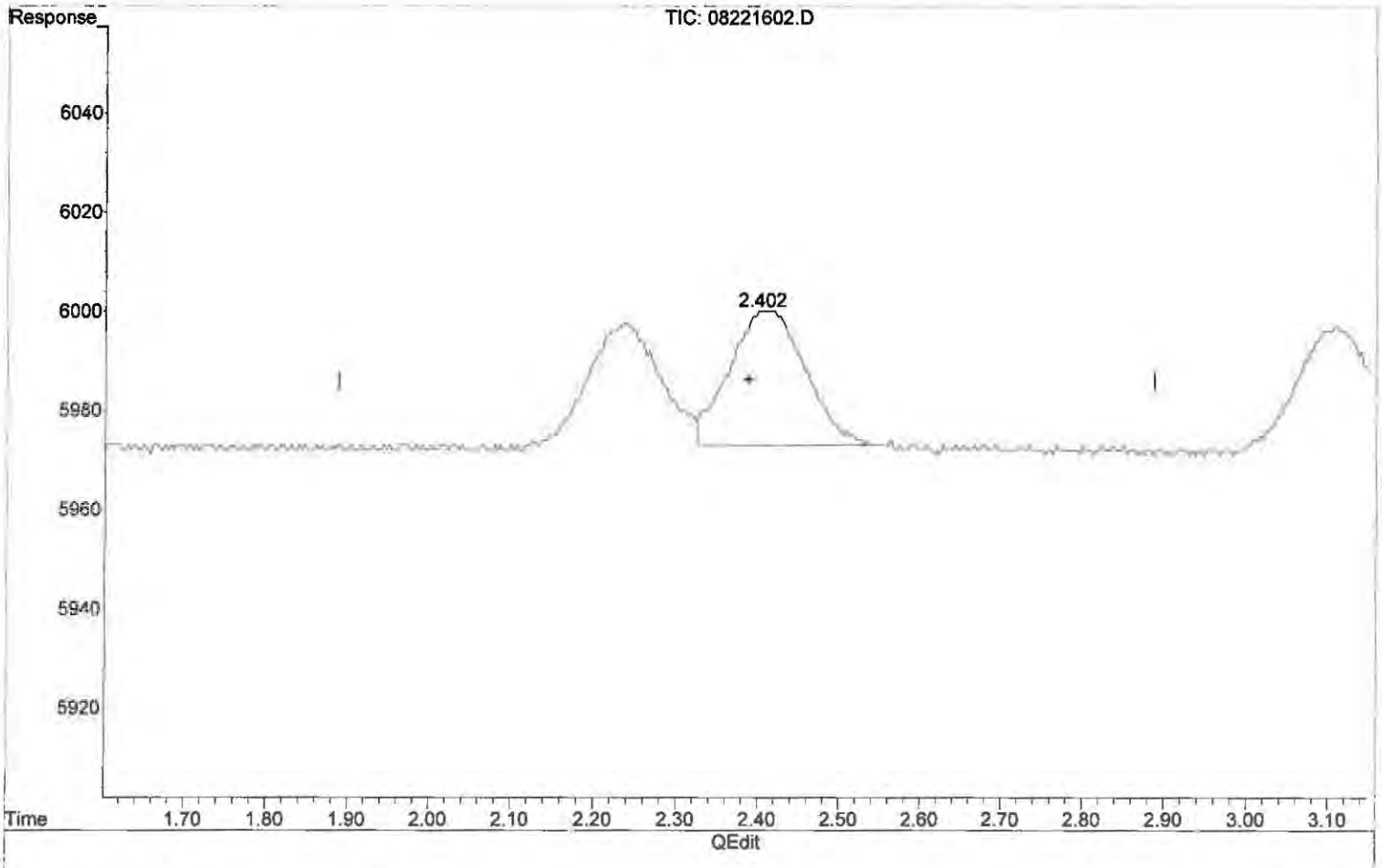
(+) = Expected Retention Time

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
No Revisions

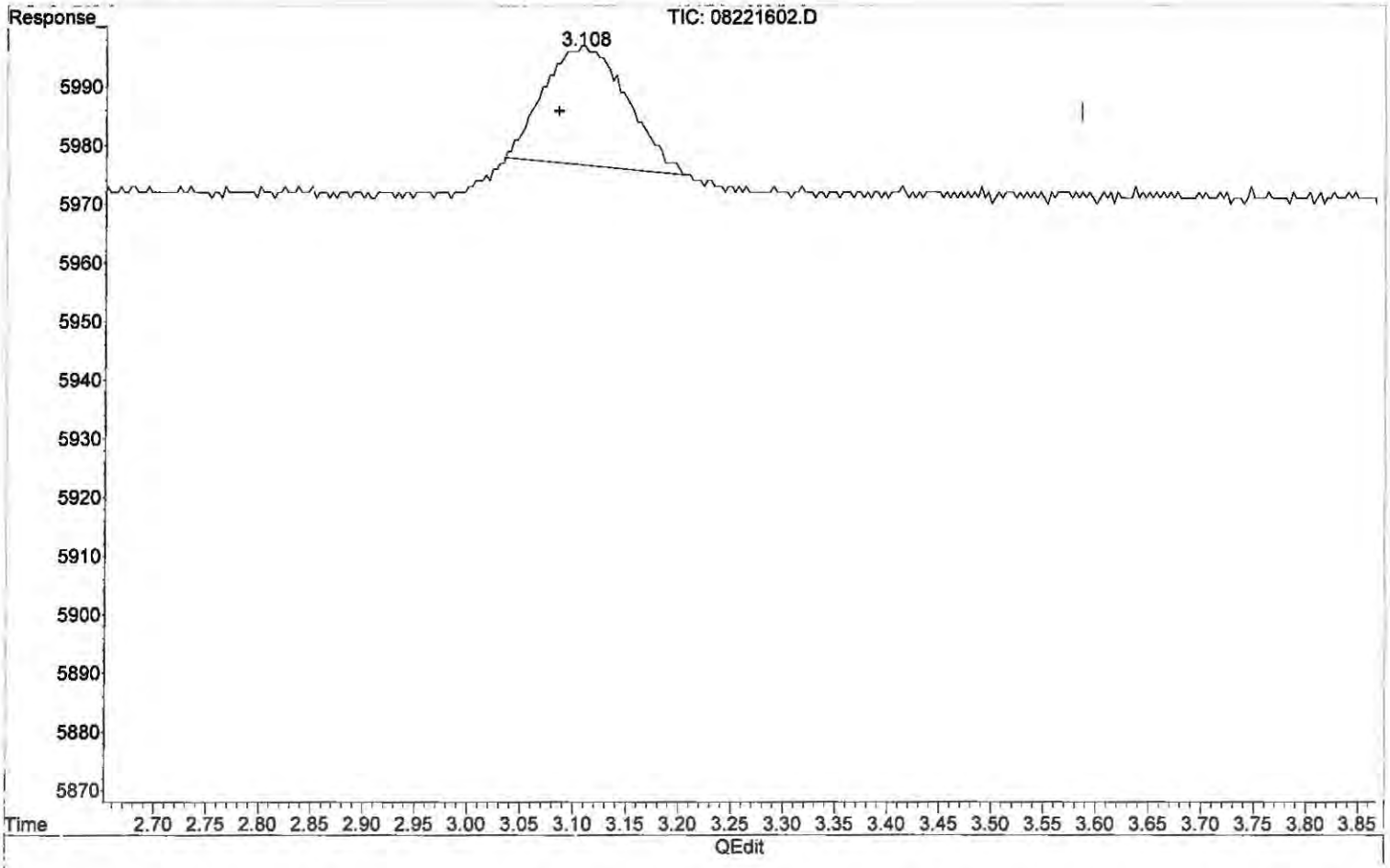
(+) = Expected Retention Time

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 :



(4) Carbon Monoxide

3.111min 669.201 ppm

response 1106

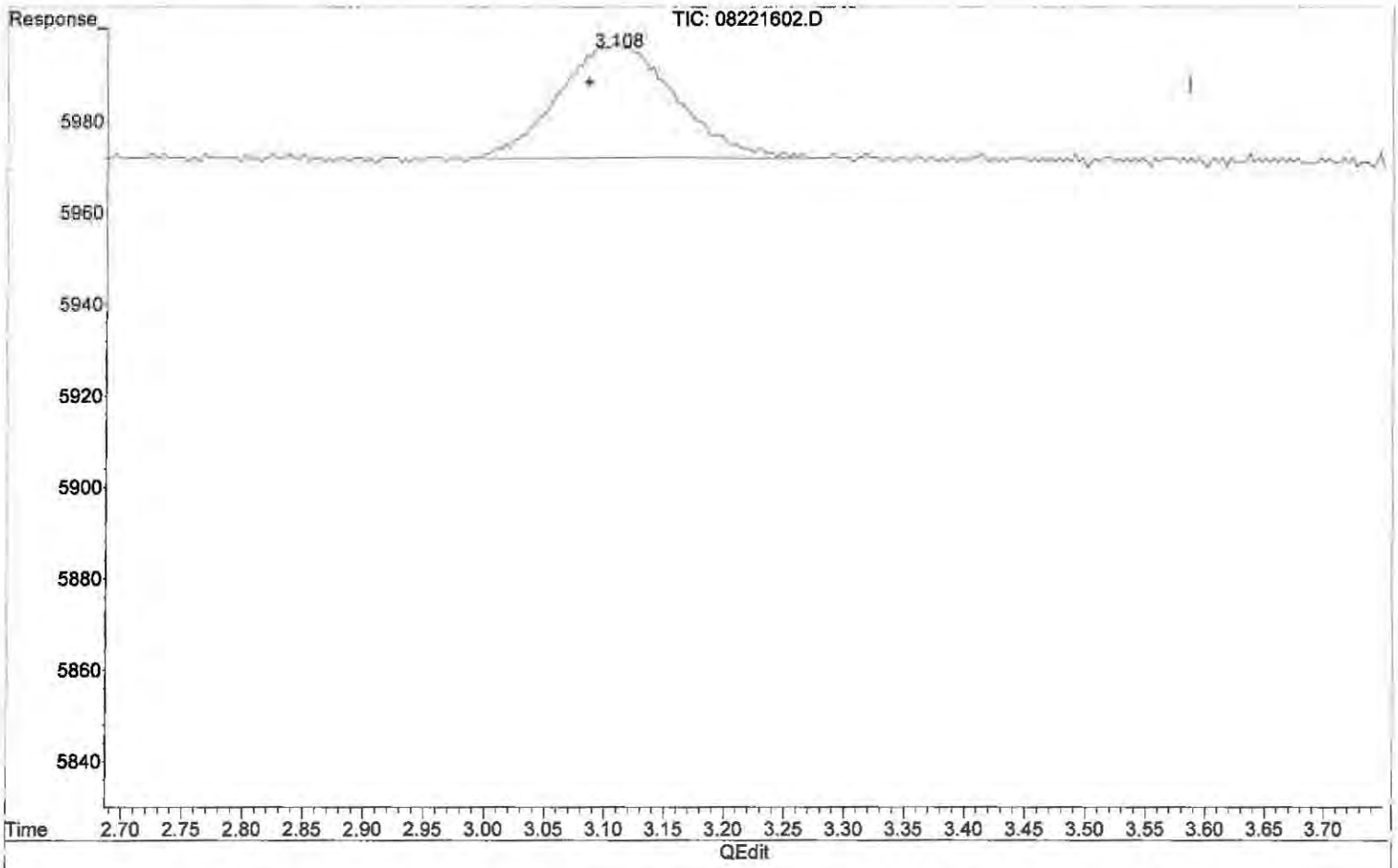
(+) = Expected Retention Time

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 :

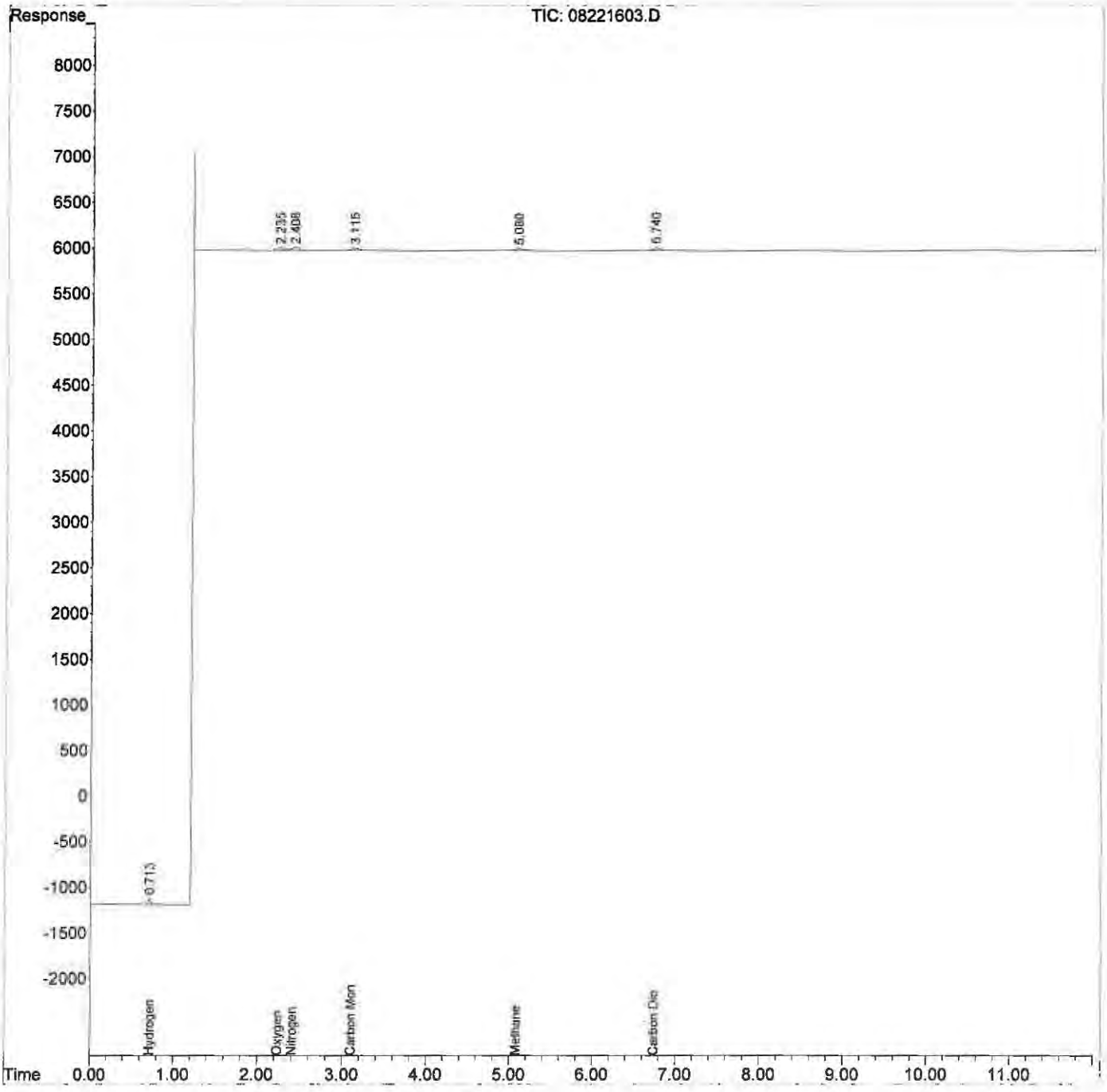
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.713	1364	1019.461	ppm	m
2)	Oxygen	2.235	1434	953.500	ppm	m
3)	Nitrogen	2.408	1780	999.327	ppm	m
4)	Carbon Monoxide	3.106	1610	967.347	ppm	
5)	Methane	5.080	1372	1084.976	ppm	m
6)	Carbon Dioxide	6.749	2152	1041.183	ppm	

(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 :

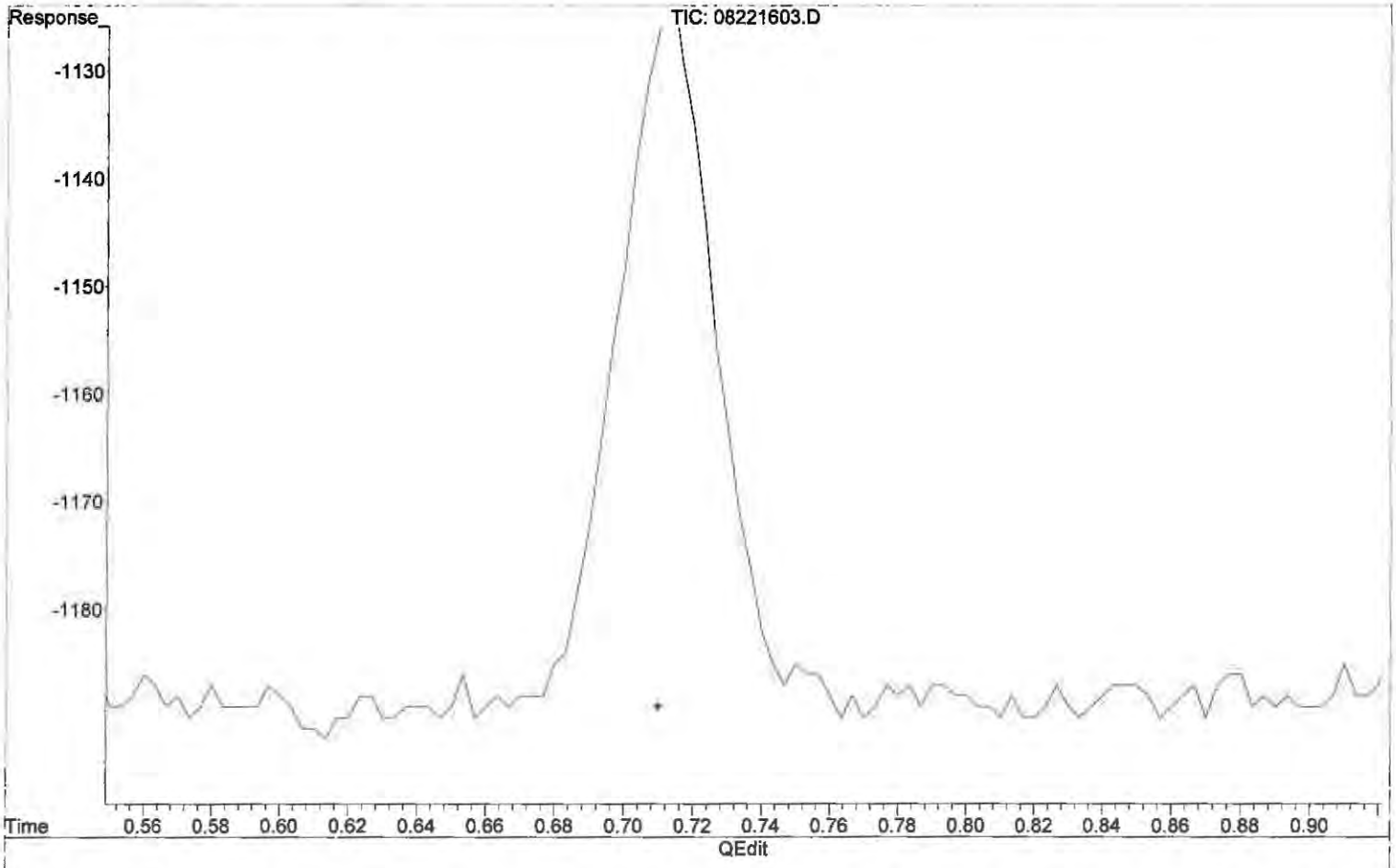


Quantitation Report (Qedit)

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

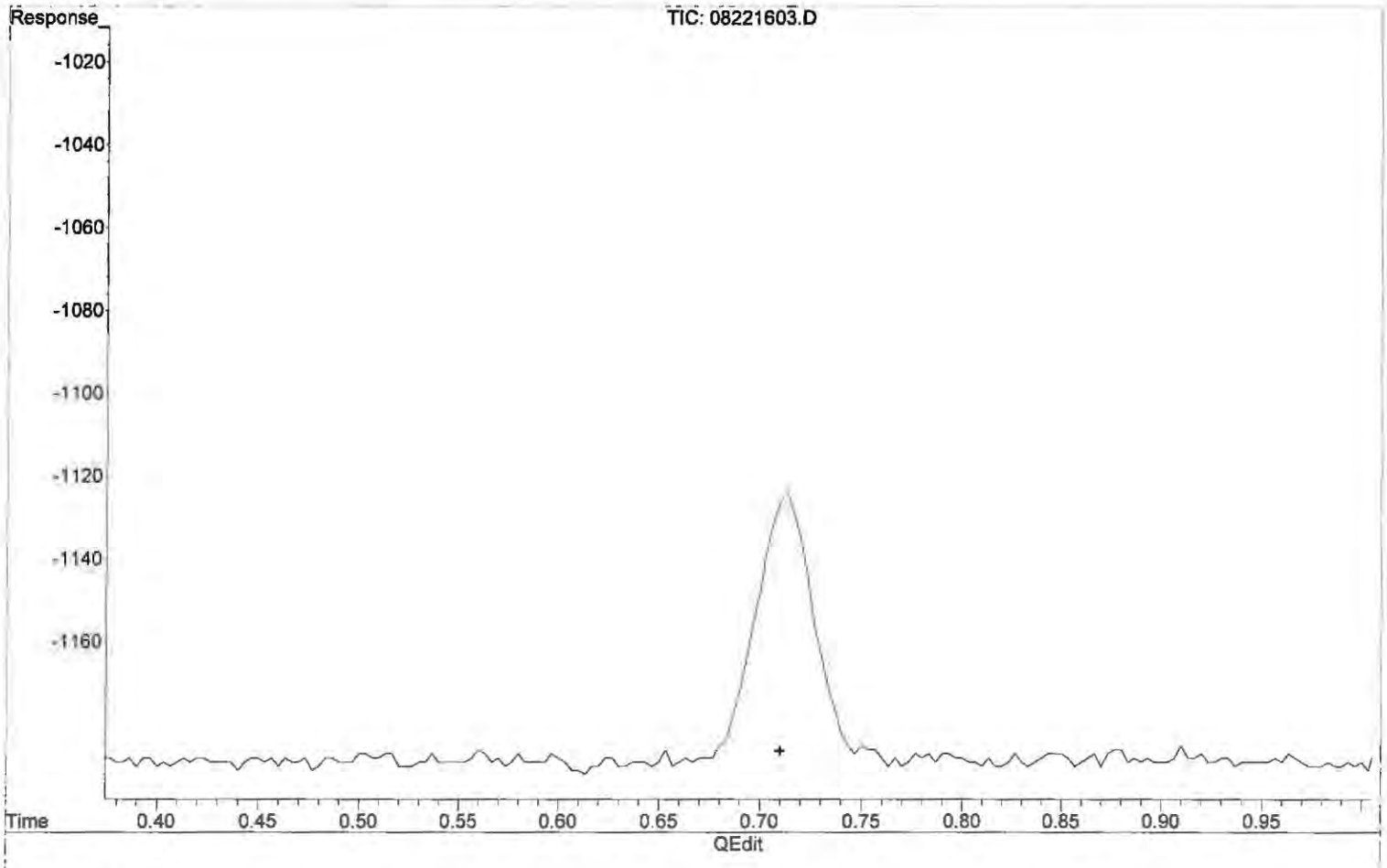
(+) = Expected Retention Time

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

8/24/16 BLC

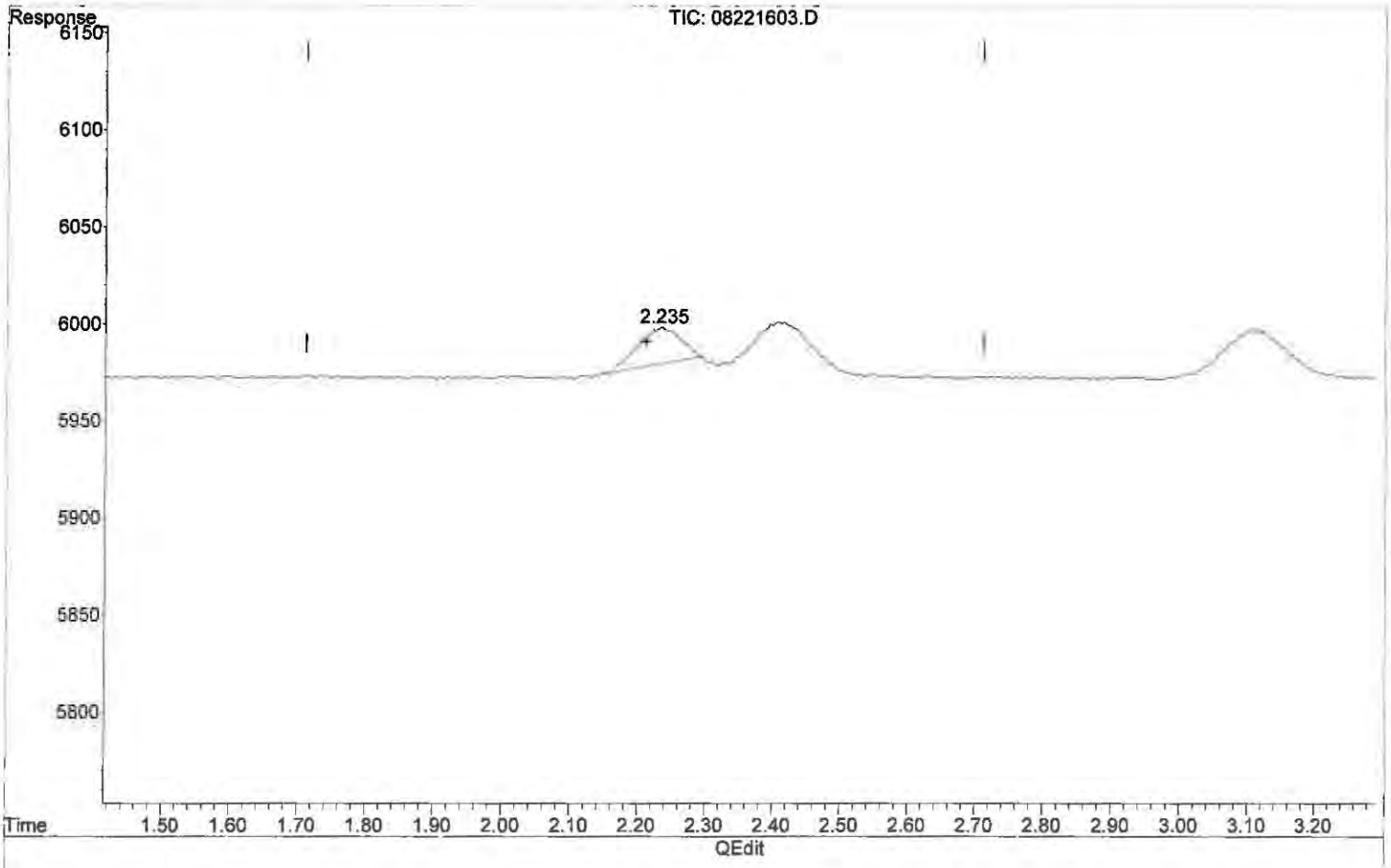
(+) = Expected Retention Time

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

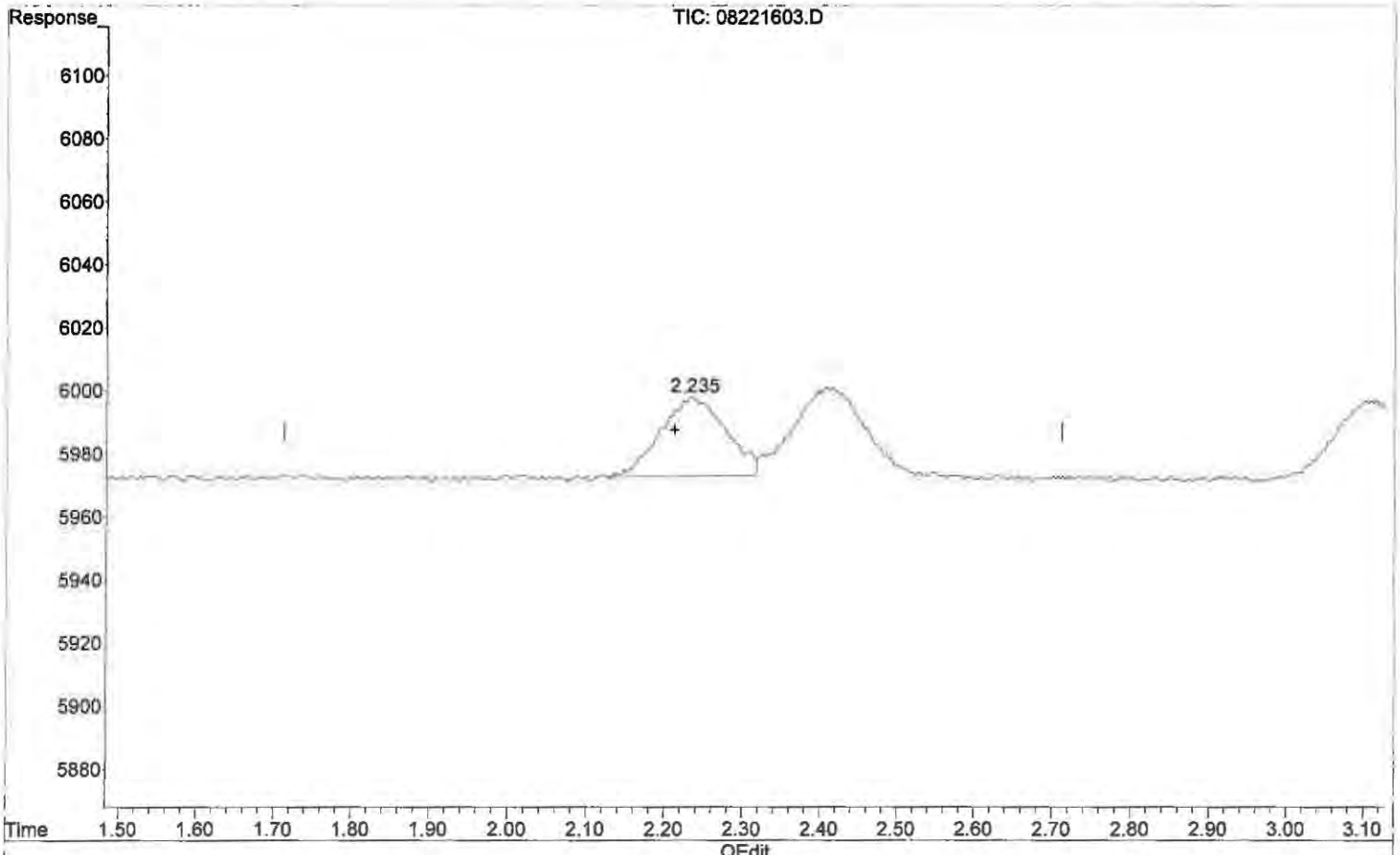
(+) = Expected Retention Time

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

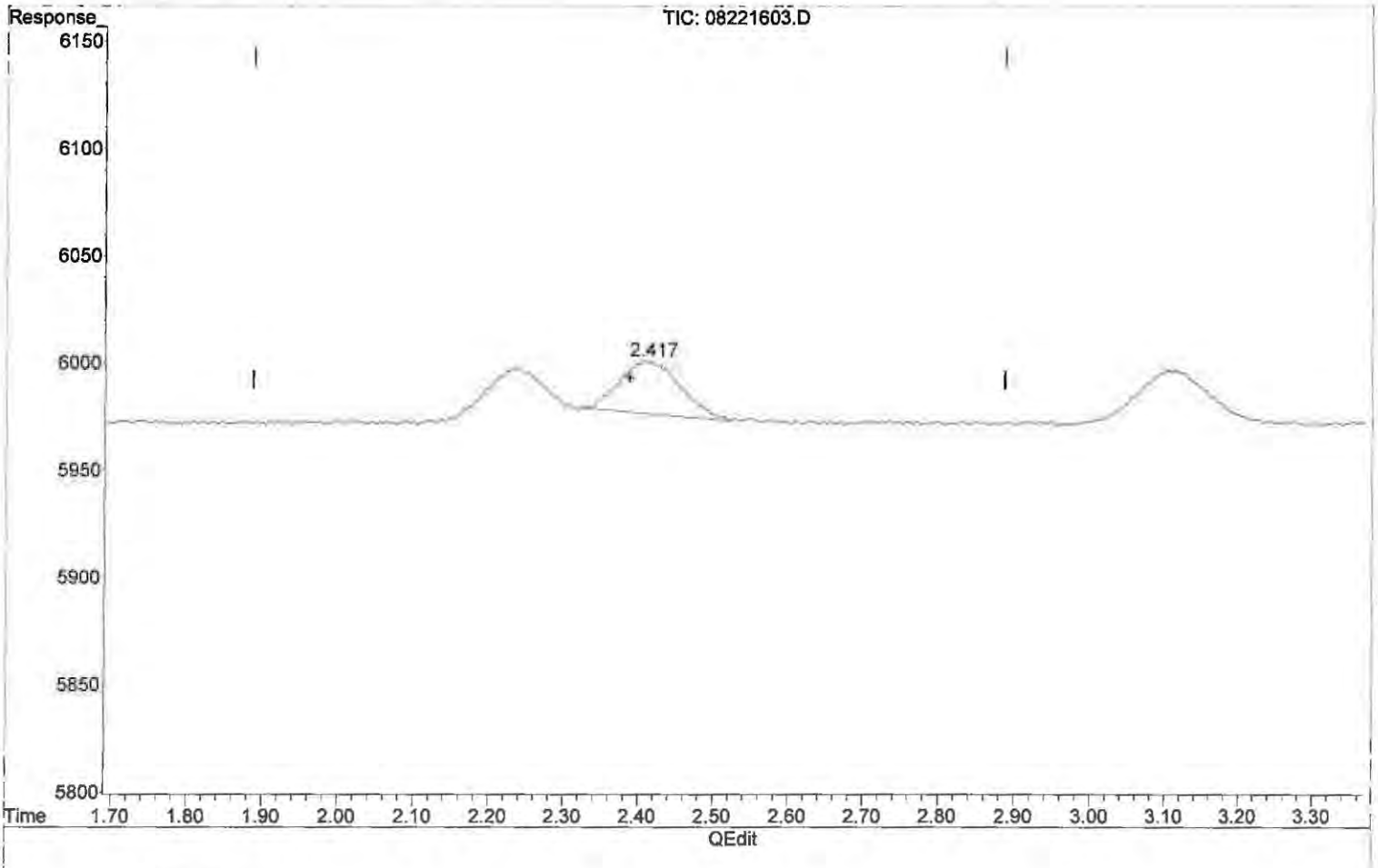
(+) = Expected Retention Time

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

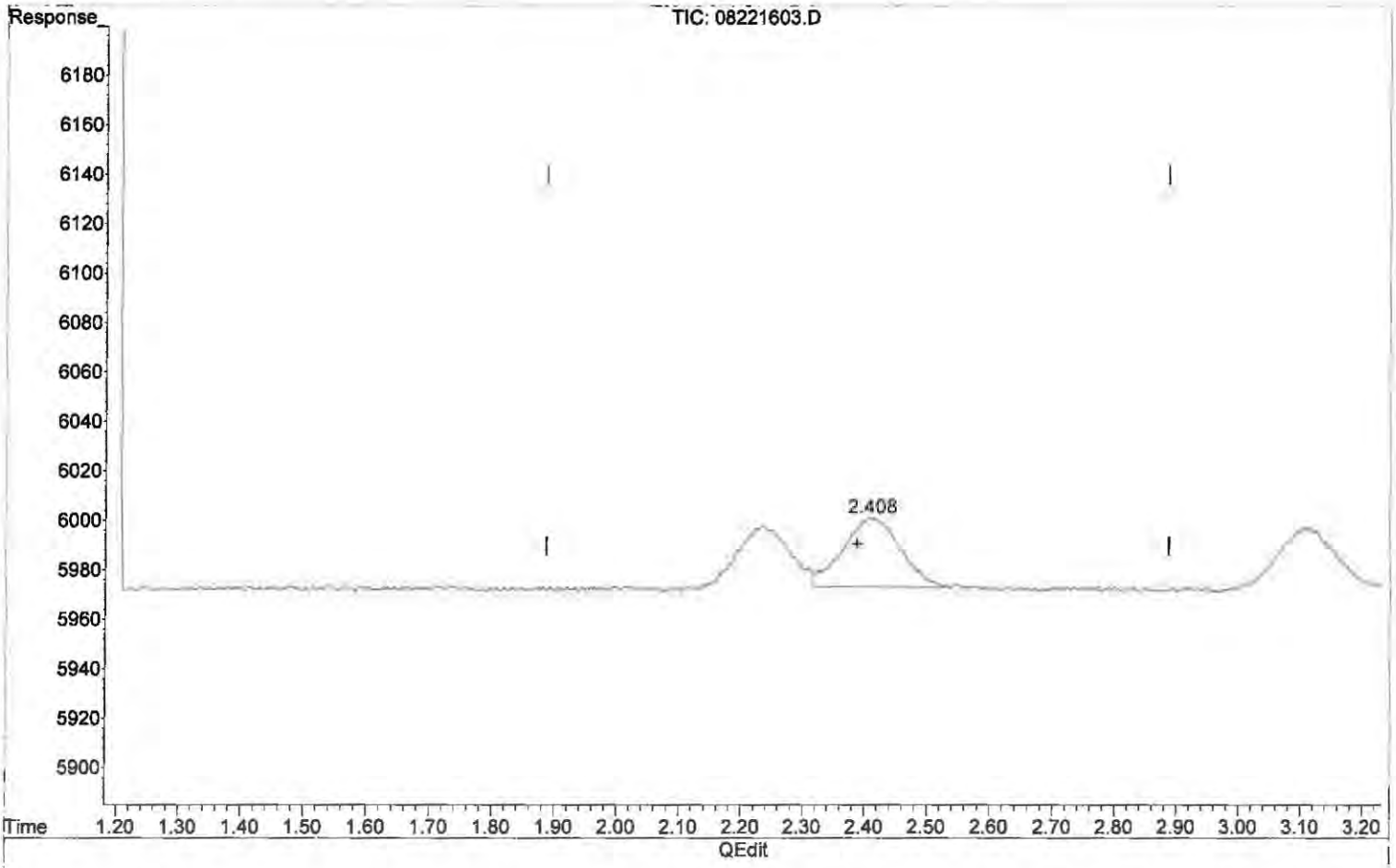
(+) = Expected Retention Time

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

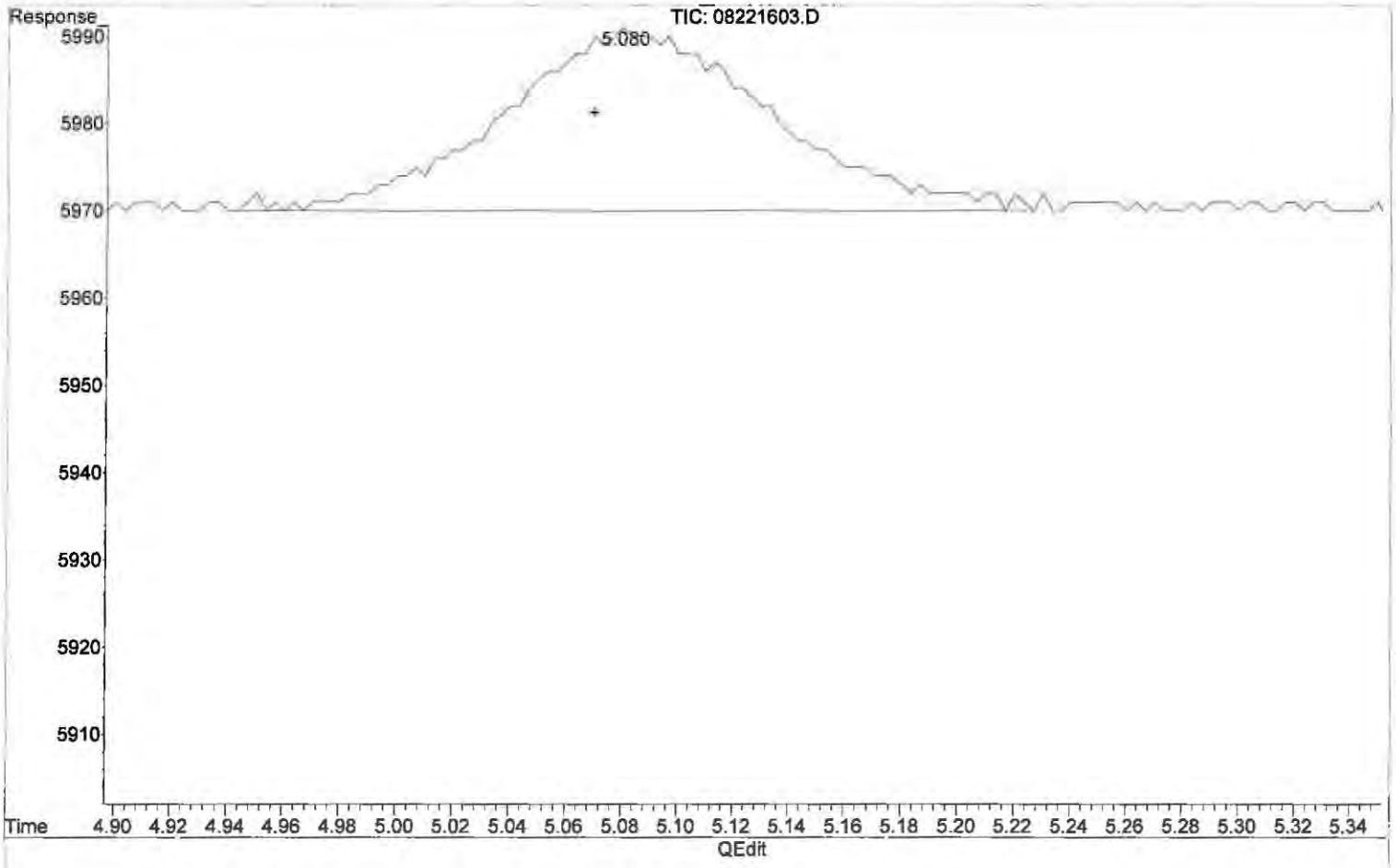
(+) = Expected Retention Time

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

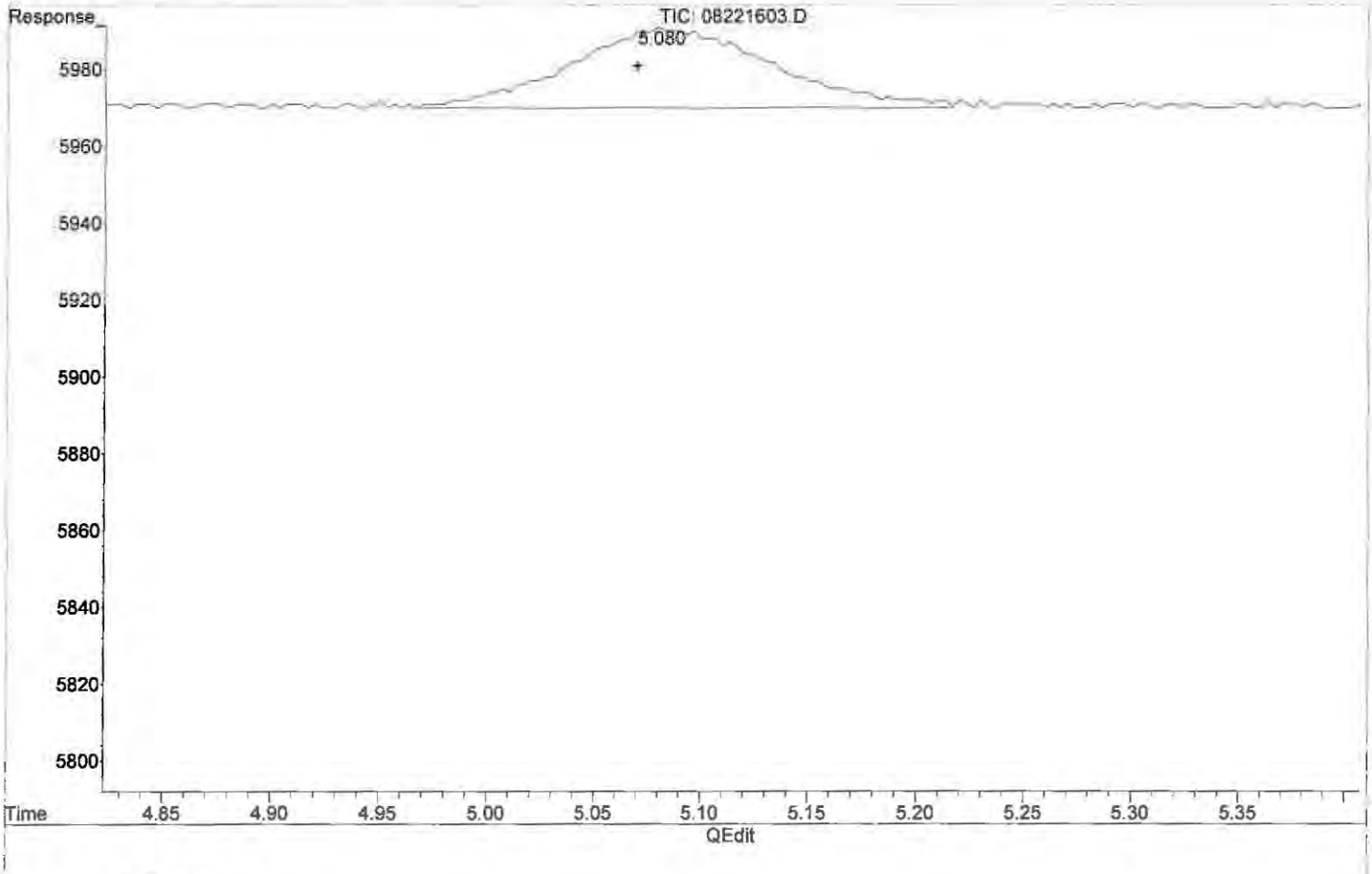
(+) = Expected Retention Time

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 :

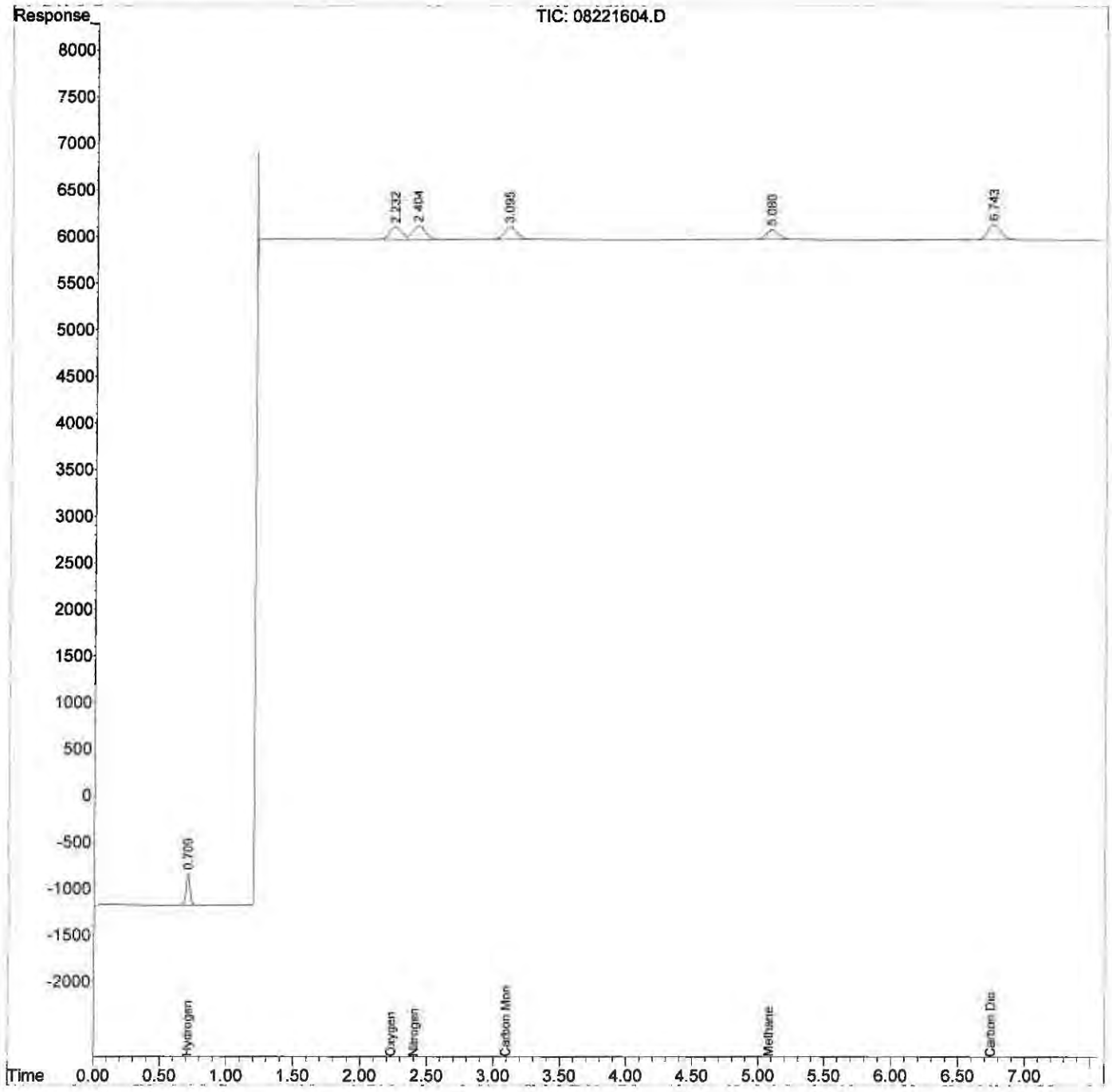
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.710	6816	5069.580	ppm
2)	Oxygen	2.234	7949	5211.853	ppm
3)	Nitrogen	2.407	9619	5141.082	ppm
4)	Carbon Monoxide	3.101	9222	5438.969	ppm
5)	Methane	5.083	6796	5087.540	ppm
6)	Carbon Dioxide	6.745	11179	5222.308	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

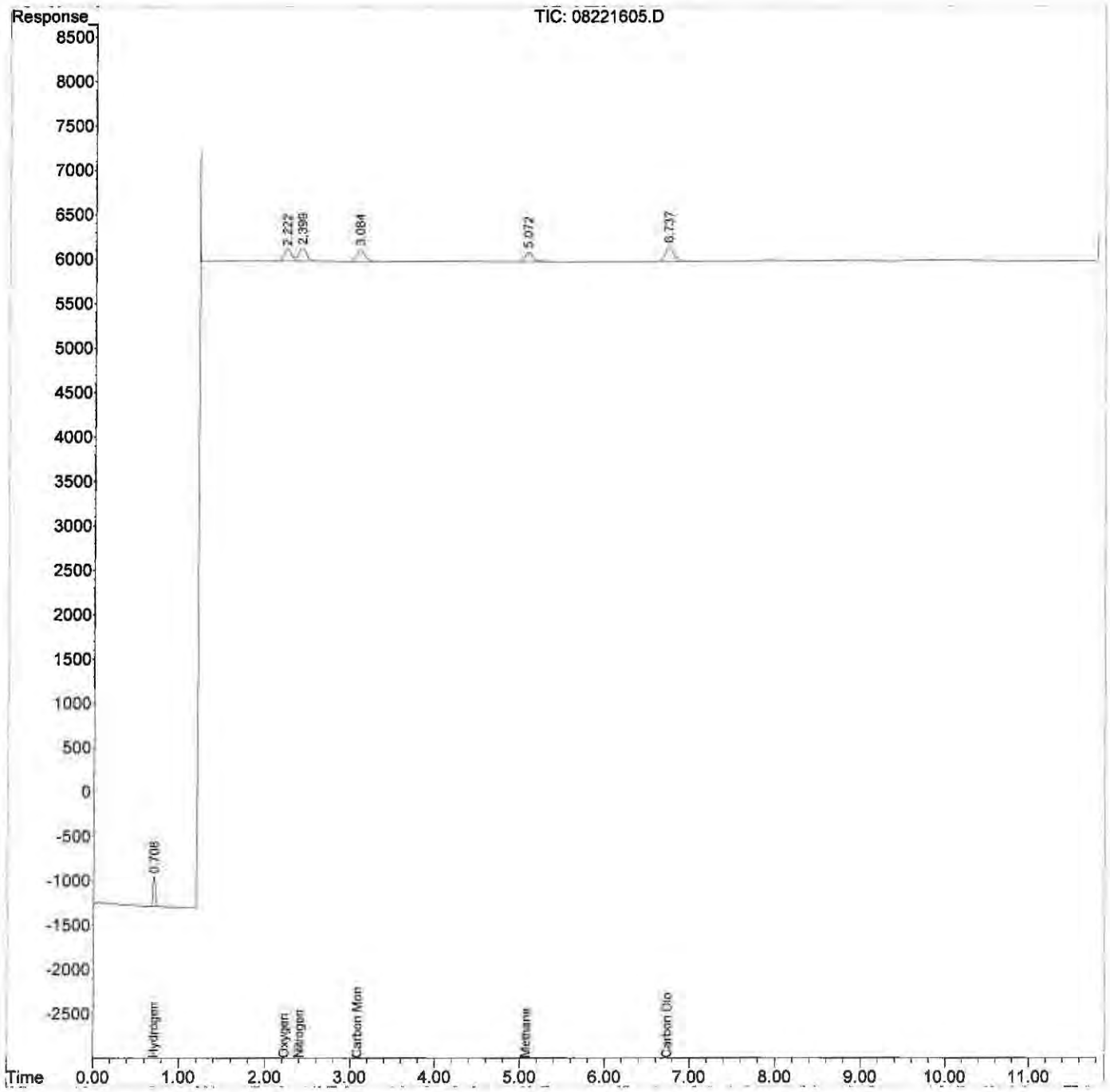
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.709	6828	5054.643	ppm
2)	Oxygen	2.224	7880	5226.963	ppm
3)	Nitrogen	2.401	9090	5004.155	ppm
4)	Carbon Monoxide	3.088	9253	5456.239	ppm
5)	Methane	5.075	6735	5122.723	ppm
6)	Carbon Dioxide	6.740	11194	5254.662	ppm

(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 :

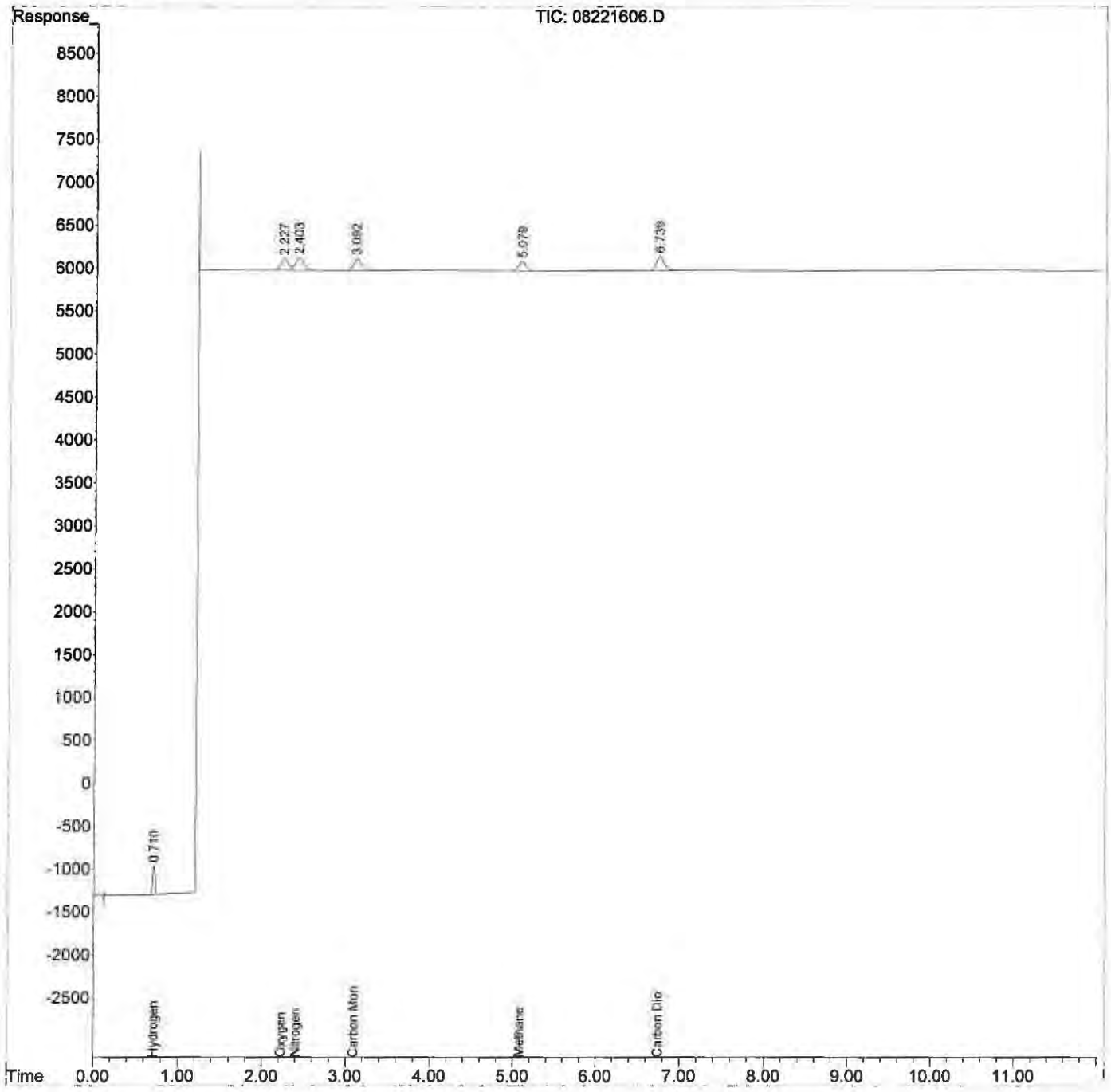
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.712	6684	4937.282	ppm
2)	Oxygen	2.229	7943	5221.147	ppm
3)	Nitrogen	2.405	9181	5053.344	ppm
4)	Carbon Monoxide	3.096	9129	5286.762	ppm
5)	Methane	5.079	6864	5194.678	ppm
6)	Carbon Dioxide	6.741	10987	5105.231	ppm

(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 :

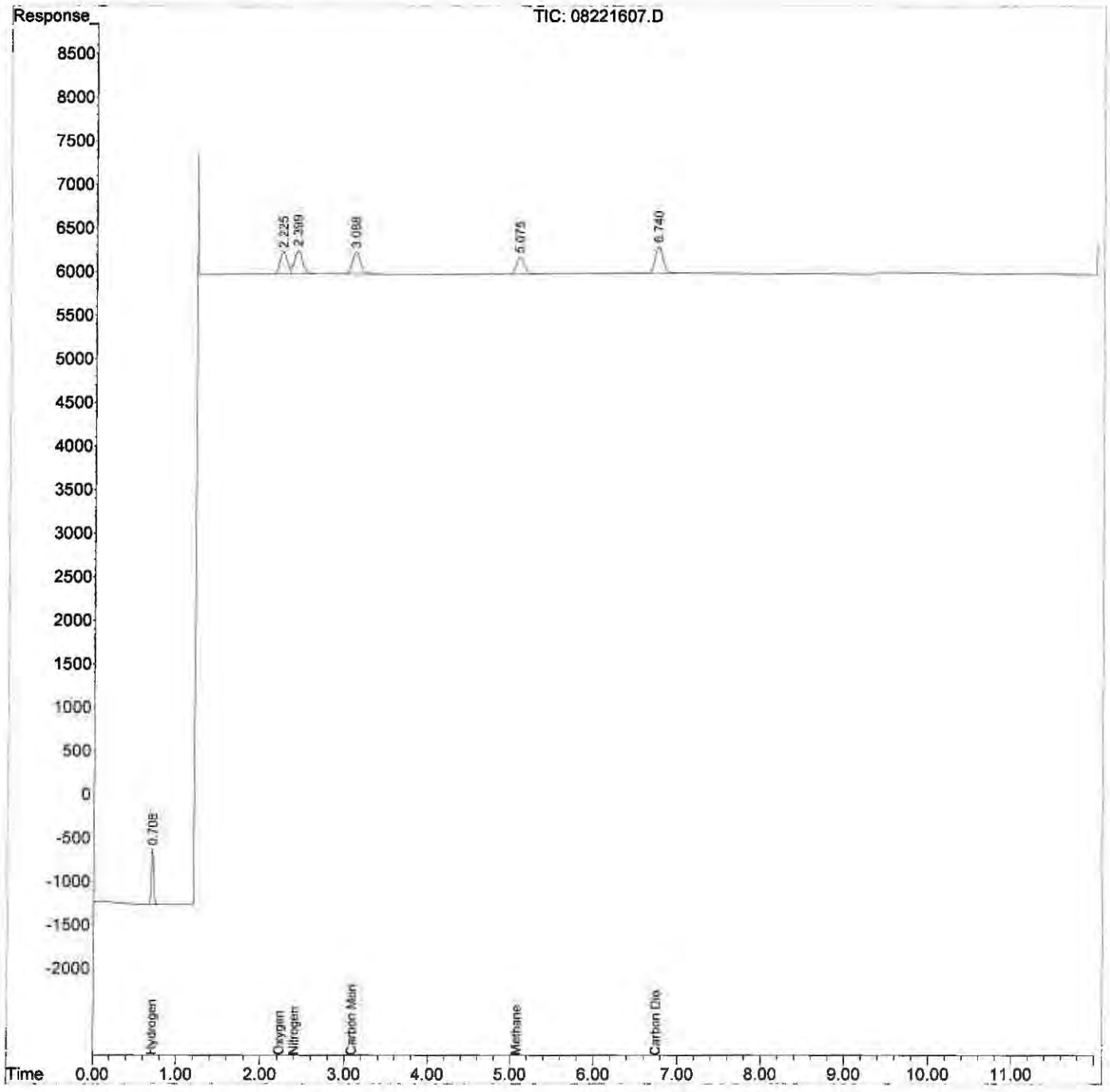
	Compound	R.T.	Response	Conc Units
Target Compounds				
1)	Hydrogen	0.710	13019	9636.034 ppm
2)	Oxygen	2.226	15612	10187.765 ppm
3)	Nitrogen	2.402	17929	9850.826 ppm
4)	Carbon Monoxide	3.090	17512	10045.681 ppm
5)	Methane	5.078	12994	9771.314 ppm
6)	Carbon Dioxide	6.741	21039	9741.754 ppm

(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 :

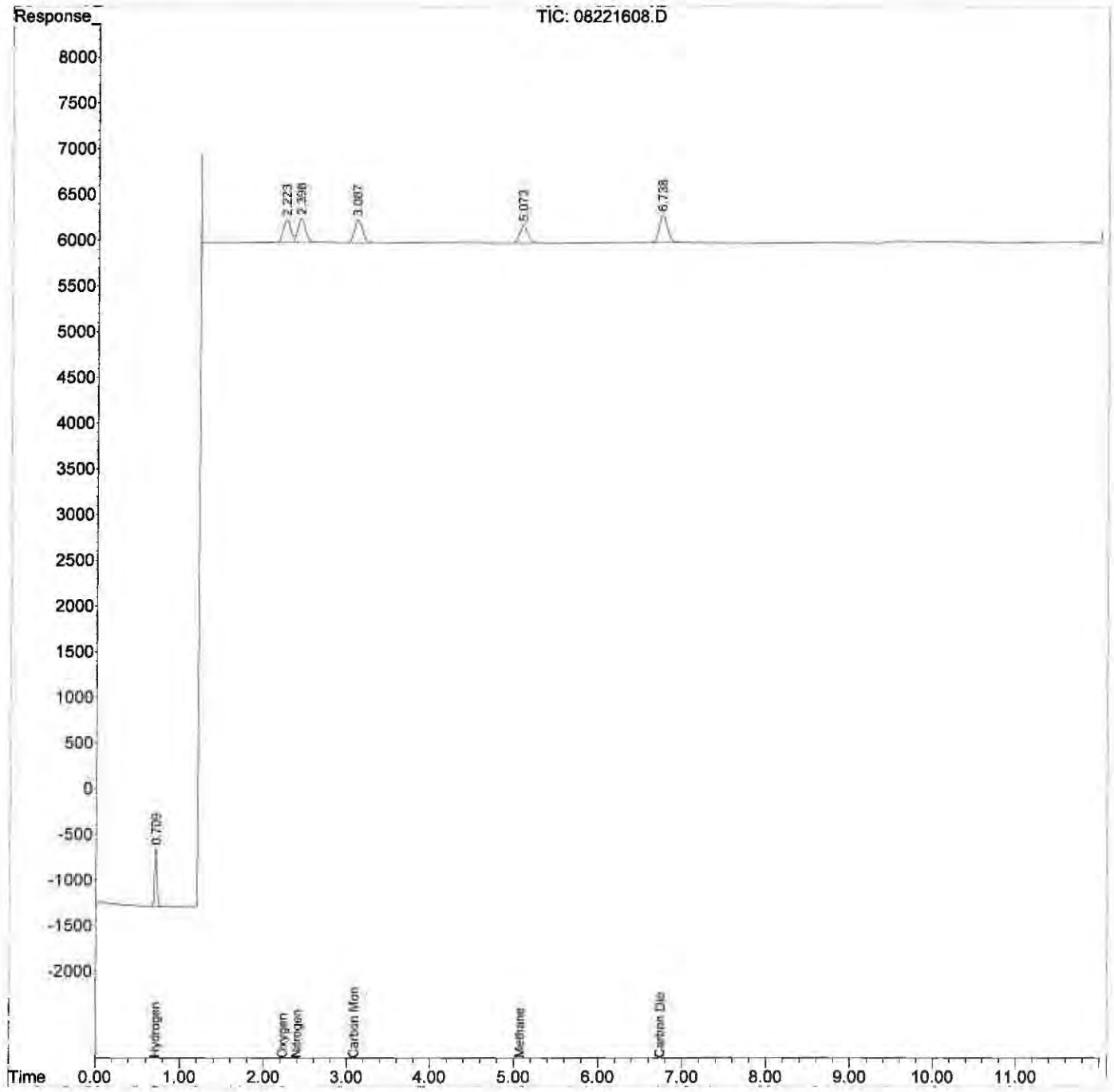
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.710	12791	9516.739	ppm
2)	Oxygen	2.225	14995	9758.854	ppm
3)	Nitrogen	2.401	17280	9514.619	ppm
4)	Carbon Monoxide	3.089	17131	9820.198	ppm
5)	Methane	5.075	12748	9617.190	ppm
6)	Carbon Dioxide	6.739	20634	9589.748	ppm

(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 :

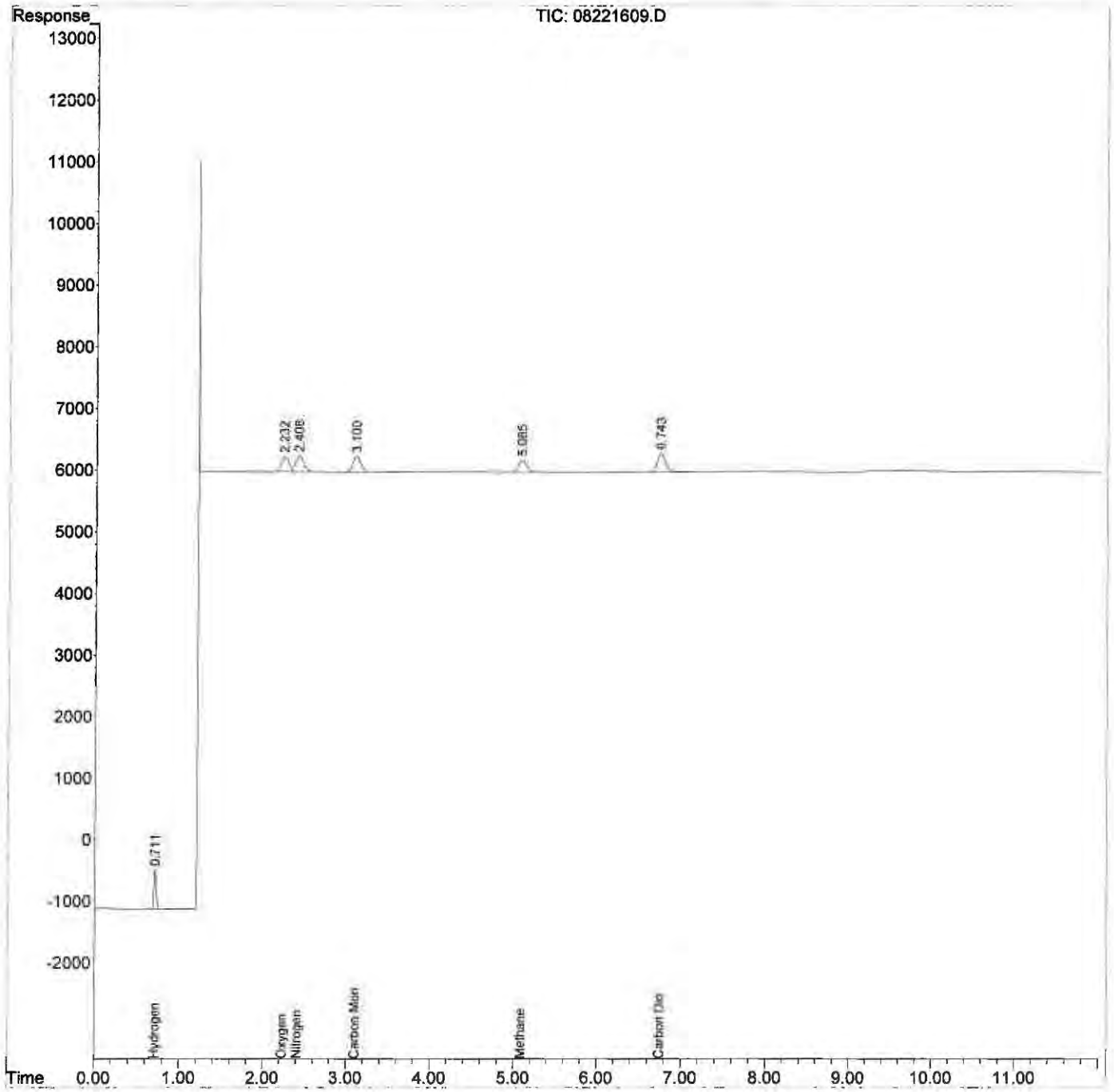
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.712	12871	9634.790	ppm
2)	Oxygen	2.235	15105	9859.758	ppm
3)	Nitrogen	2.412	17309	9588.814	ppm
4)	Carbon Monoxide	3.102	17156	9856.931	ppm
5)	Methane	5.086	12812	9712.170	ppm
6)	Carbon Dioxide	6.746	20975	9798.564	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

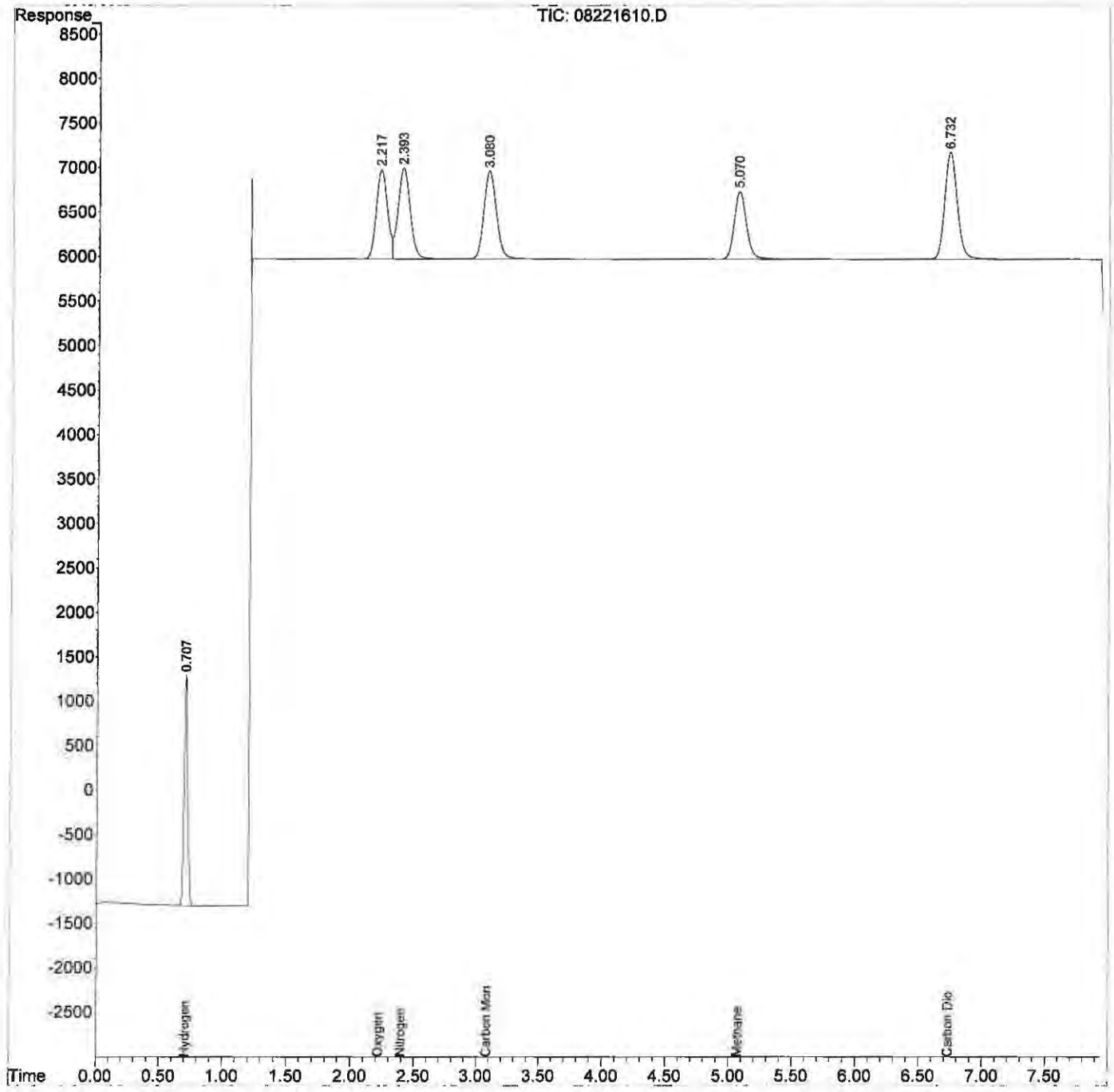
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.709	51763	38905.801	ppm
2)	Oxygen	2.219	61073	39928.807	ppm
3)	Nitrogen	2.395	68921	38354.986	ppm
4)	Carbon Monoxide	3.082	68623	39489.700	ppm
5)	Methane	5.072	51558	39209.427	ppm
6)	Carbon Dioxide	6.734	83185	38946.942	ppm

(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 :

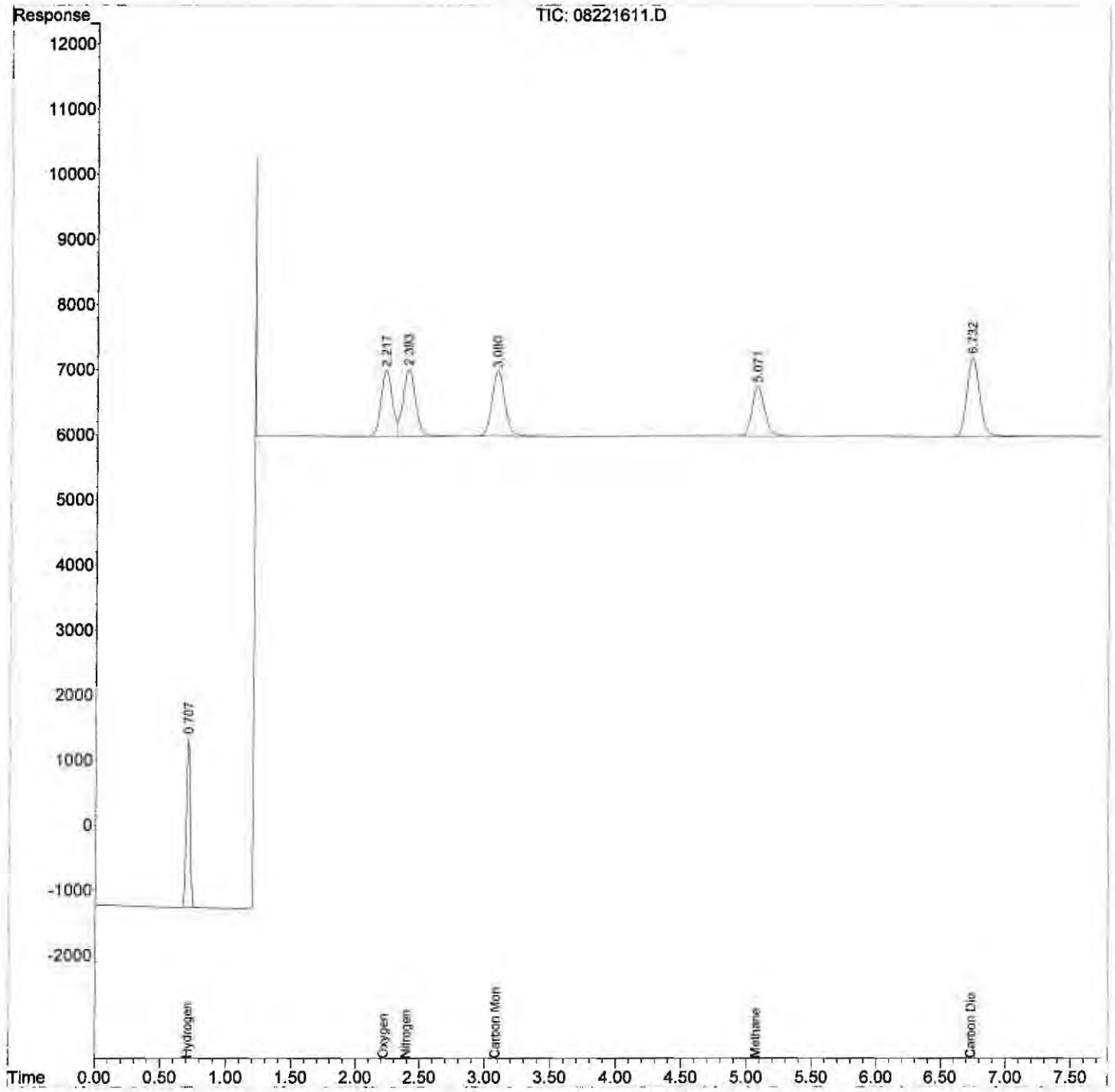
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.708	51926	39135.426	ppm
2)	Oxygen	2.219	61650	40312.840	ppm
3)	Nitrogen	2.395	69030	38574.578	ppm
4)	Carbon Monoxide	3.082	69214	39880.940	ppm
5)	Methane	5.072	51622	39335.929	ppm
6)	Carbon Dioxide	6.734	83696	39289.832	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

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

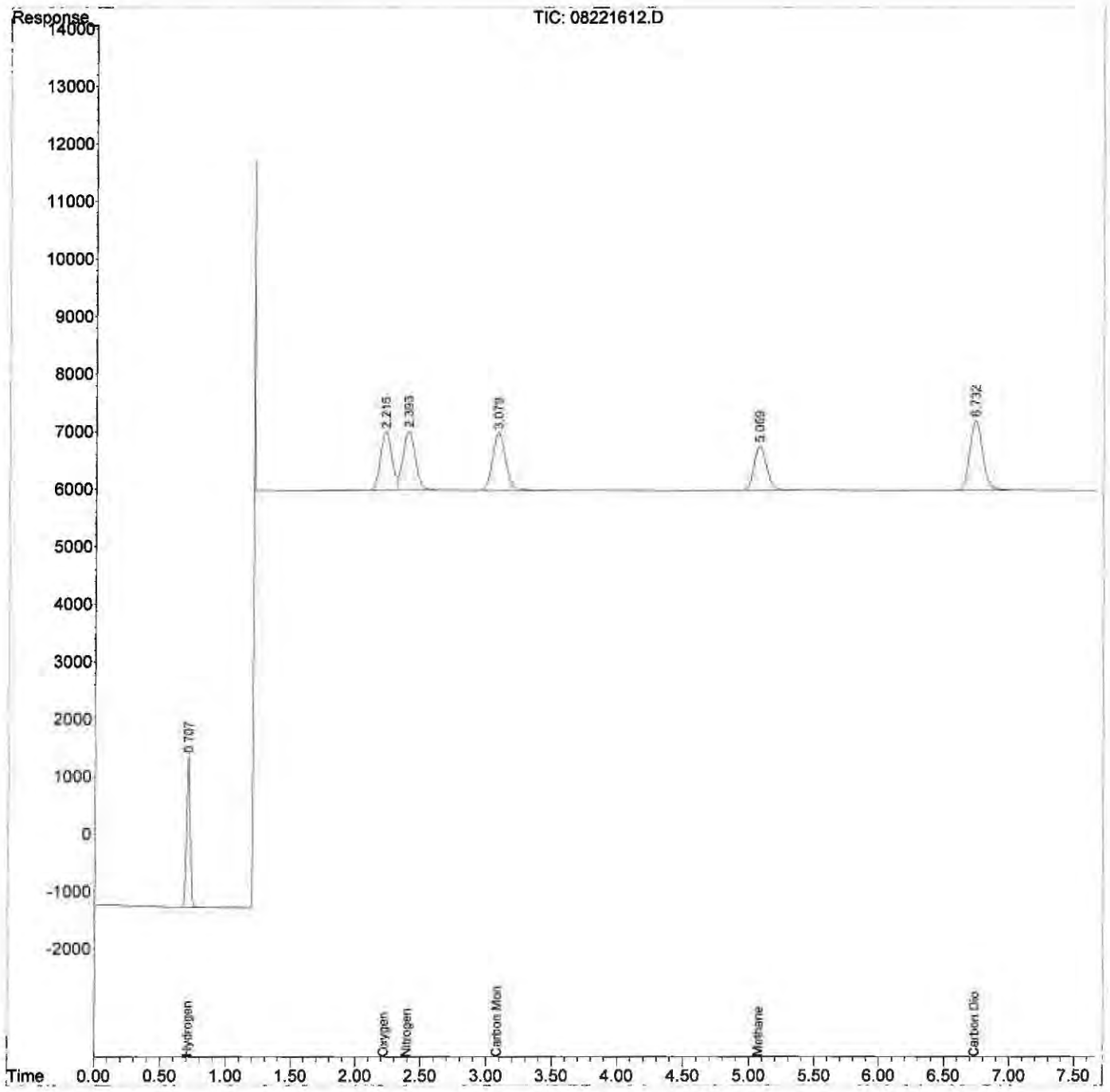
(f)=RT Delta > 1/2 Window (m)=manual int.

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

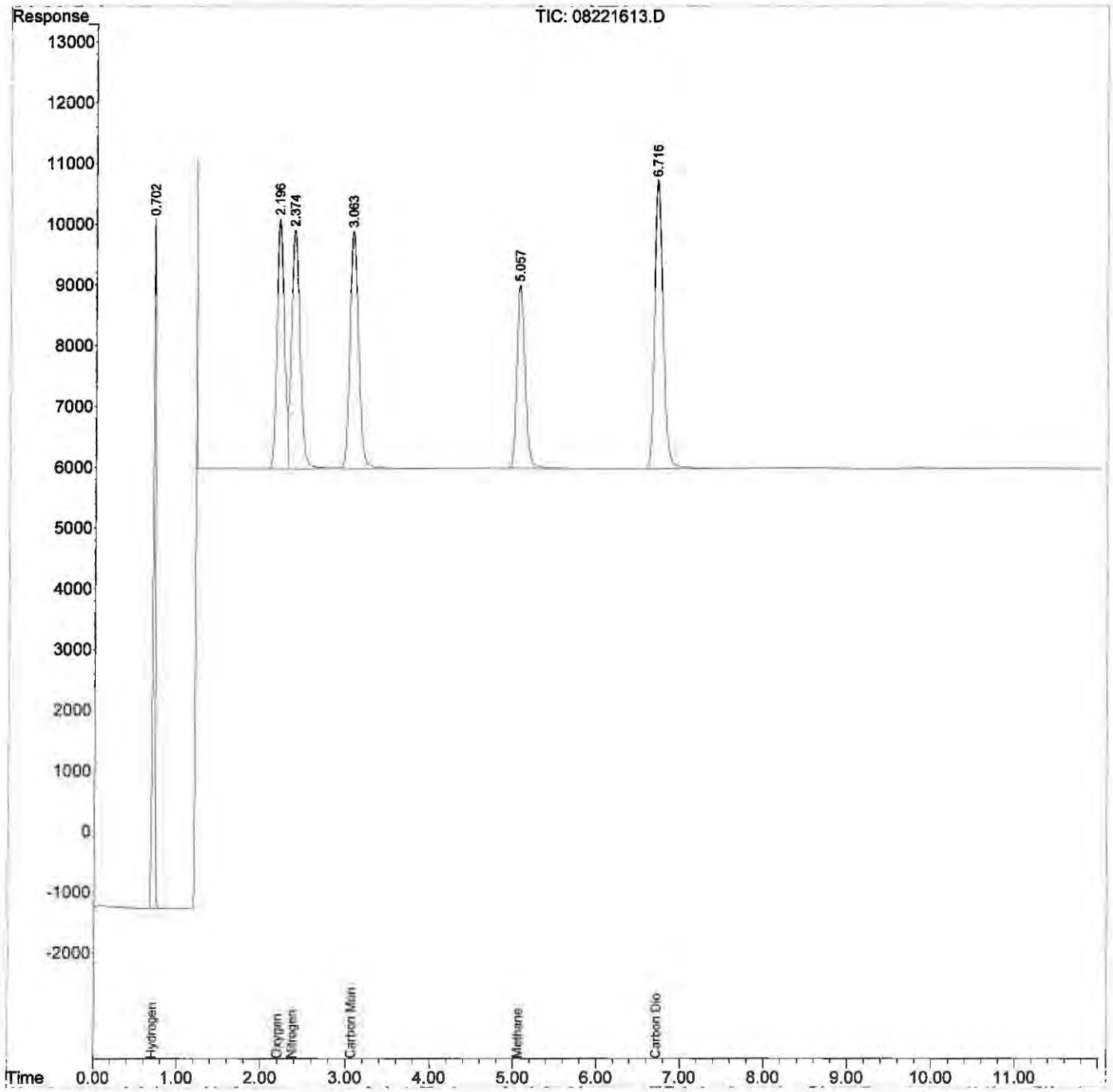
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

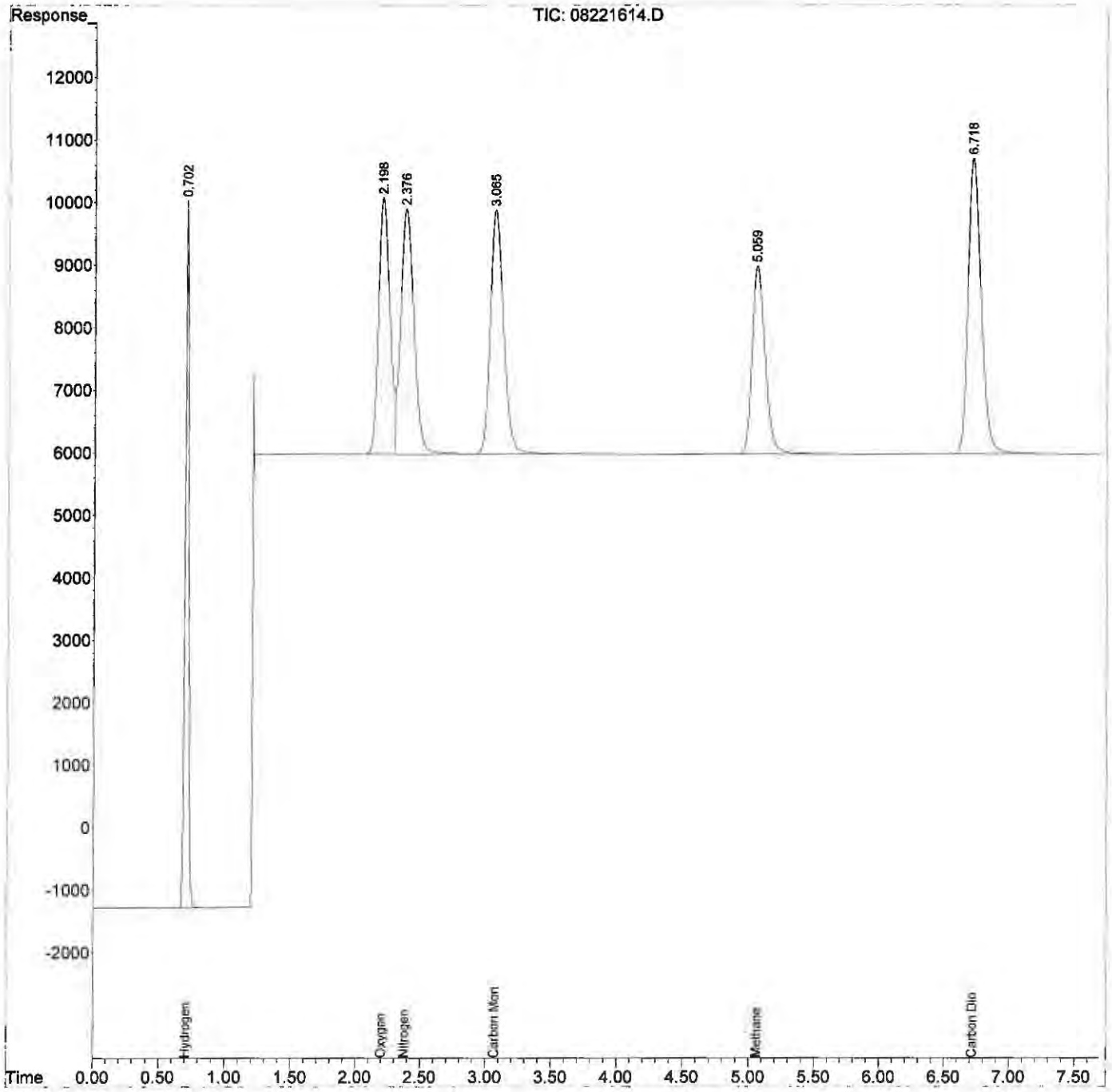
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.703	219704	165676.829	ppm
2)	Oxygen	2.200	246818	161079.250	ppm
3)	Nitrogen	2.378	276346	155637.709	ppm
4)	Carbon Monoxide	3.066	276366	159278.450	ppm
5)	Methane	5.060	205850	157510.093	ppm
6)	Carbon Dioxide	6.719	332031	156565.868	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

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

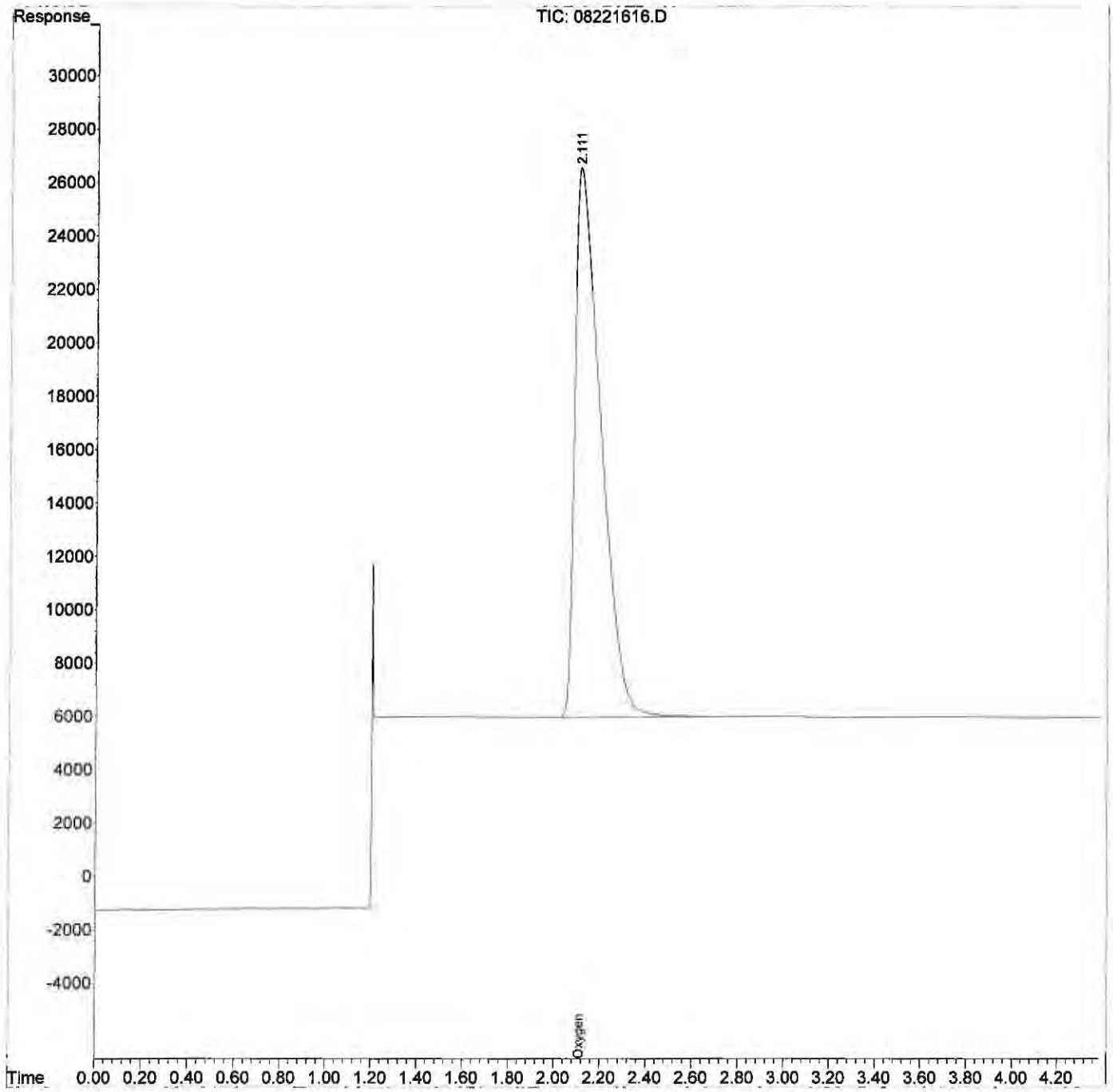
(f)=RT Delta > 1/2 Window (m)=manual int.

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

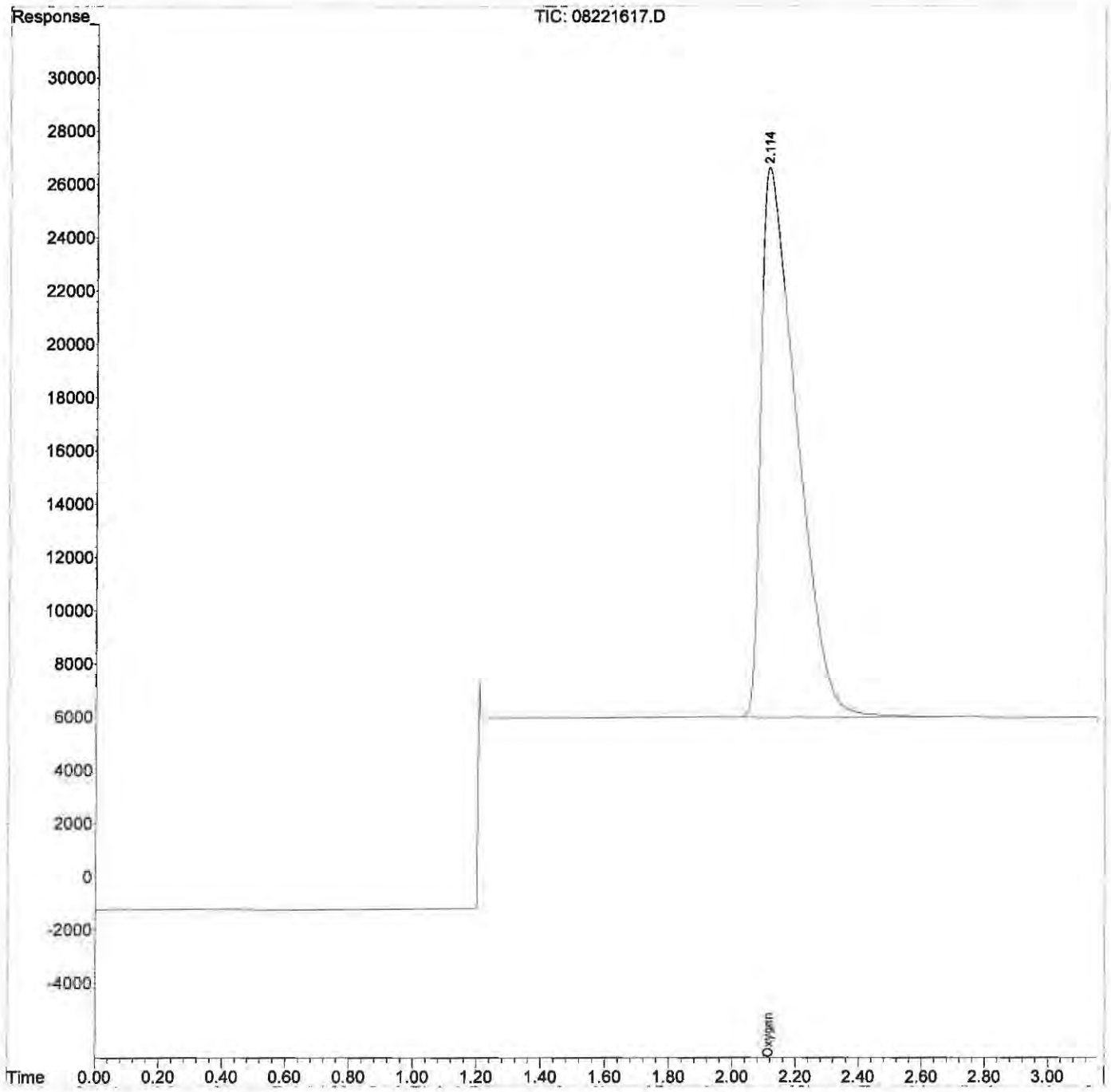
(f)=RT Delta > 1/2 Window (m)=manual int.

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

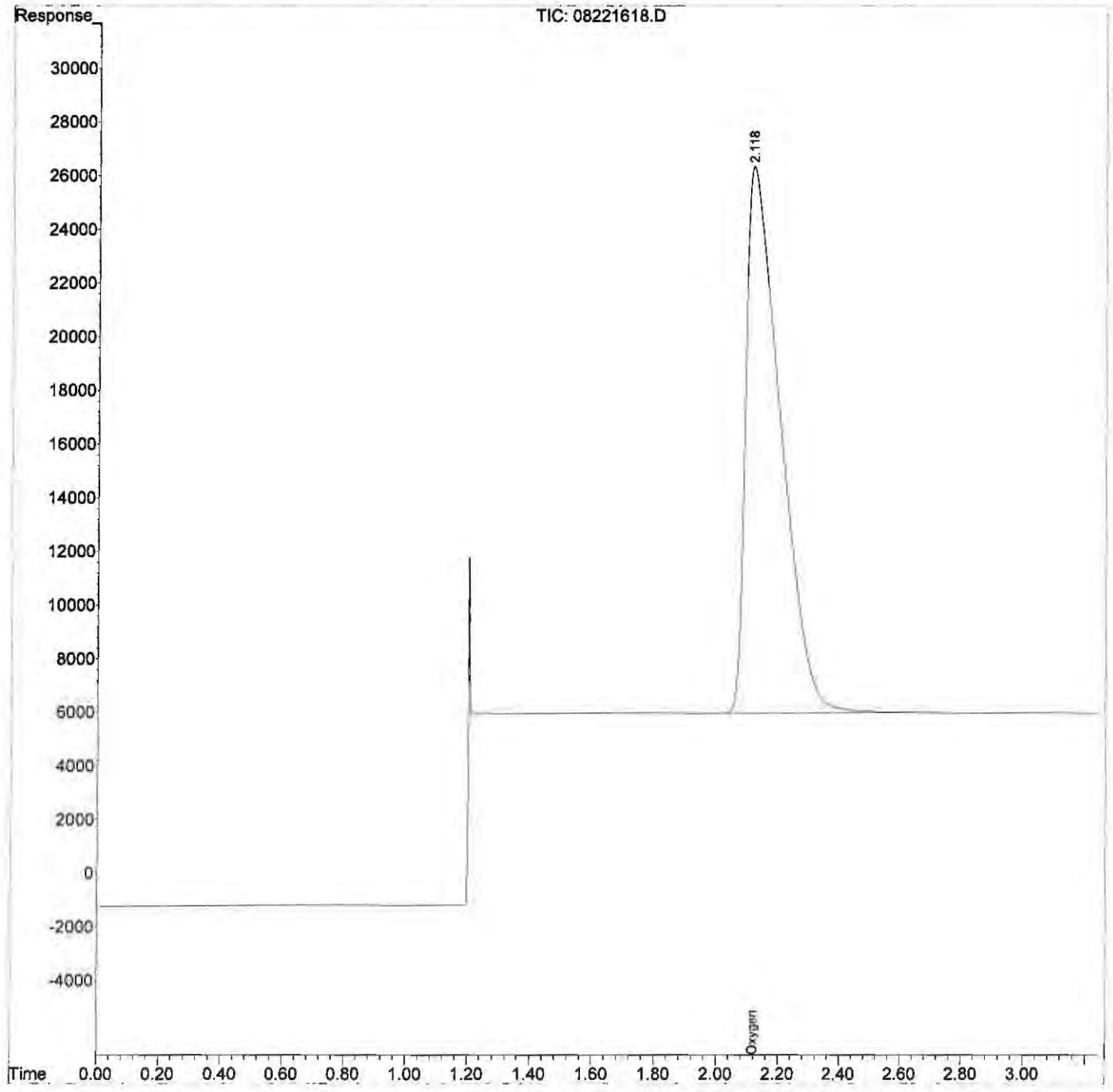
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

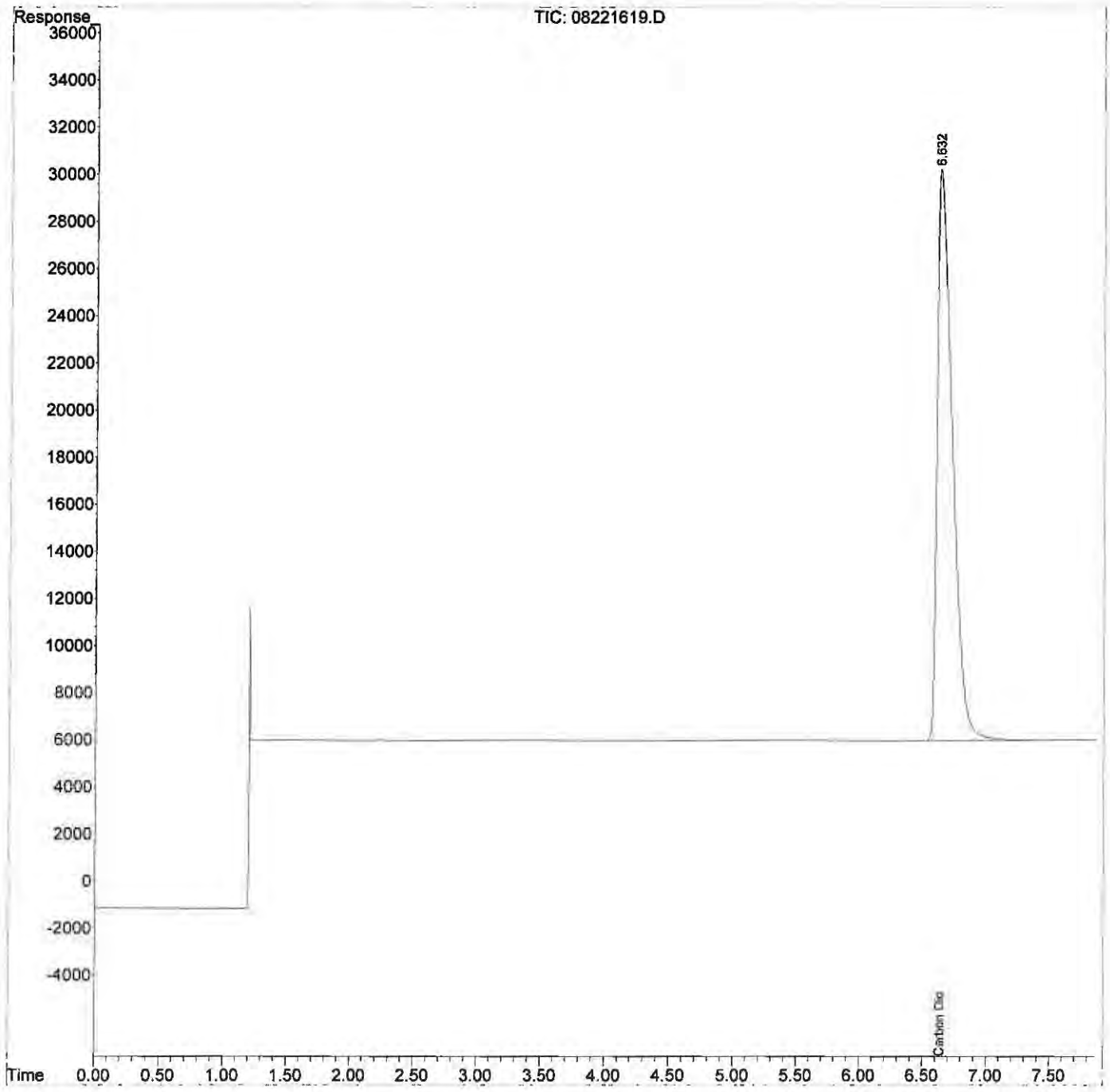
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.634	2005774	948215.193	ppm

(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

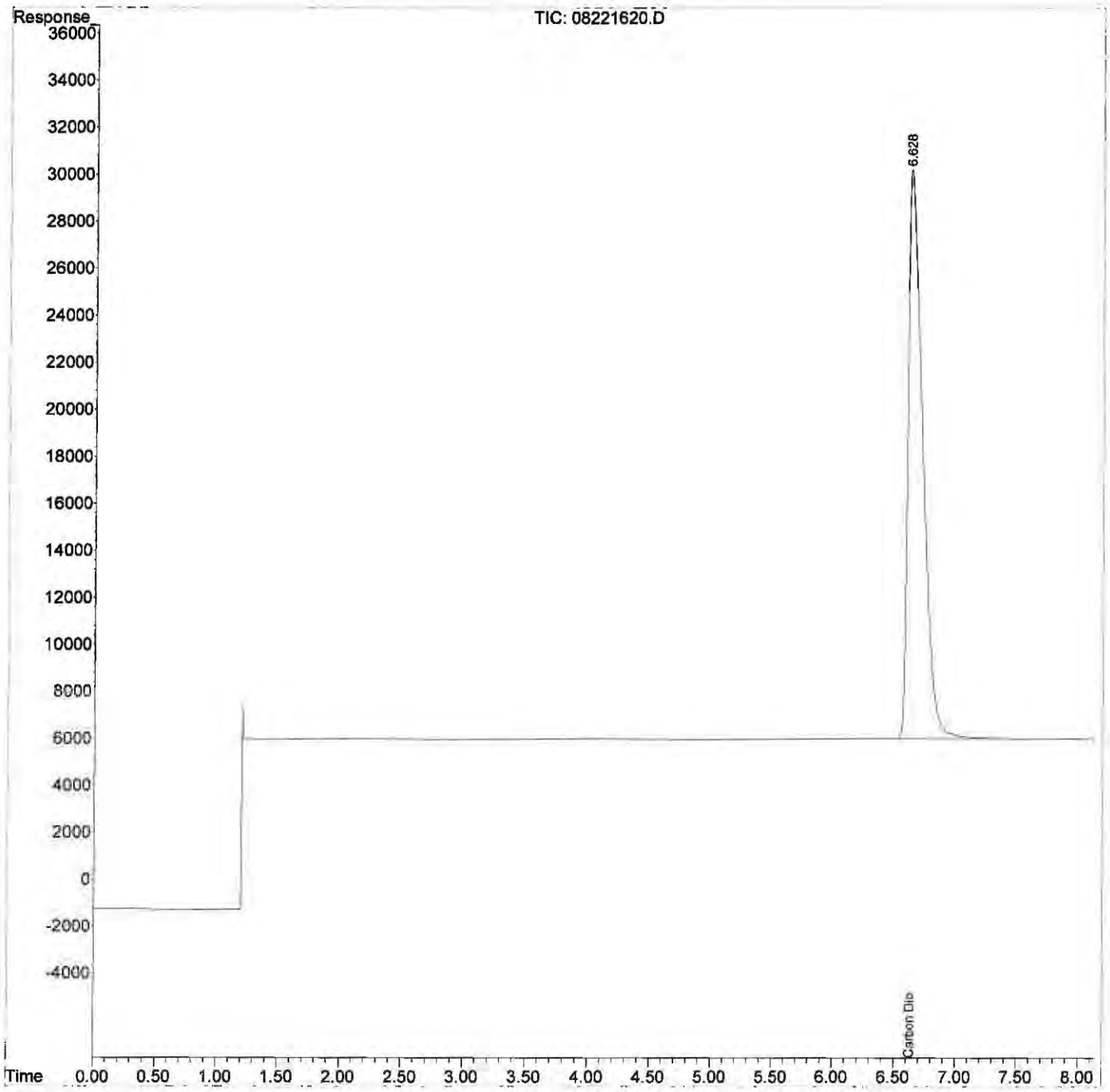
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

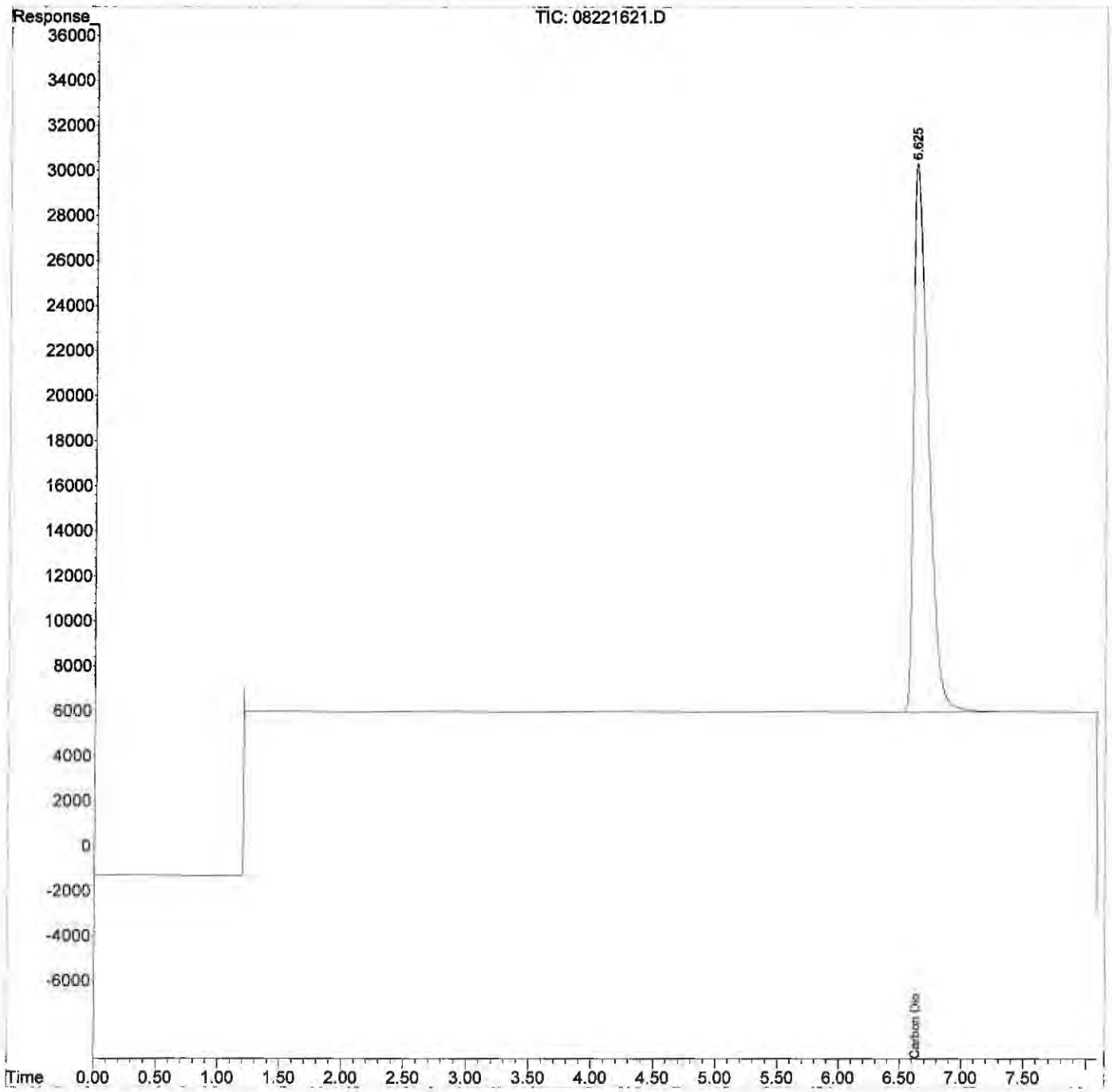
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.627	2014660	958317.321	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

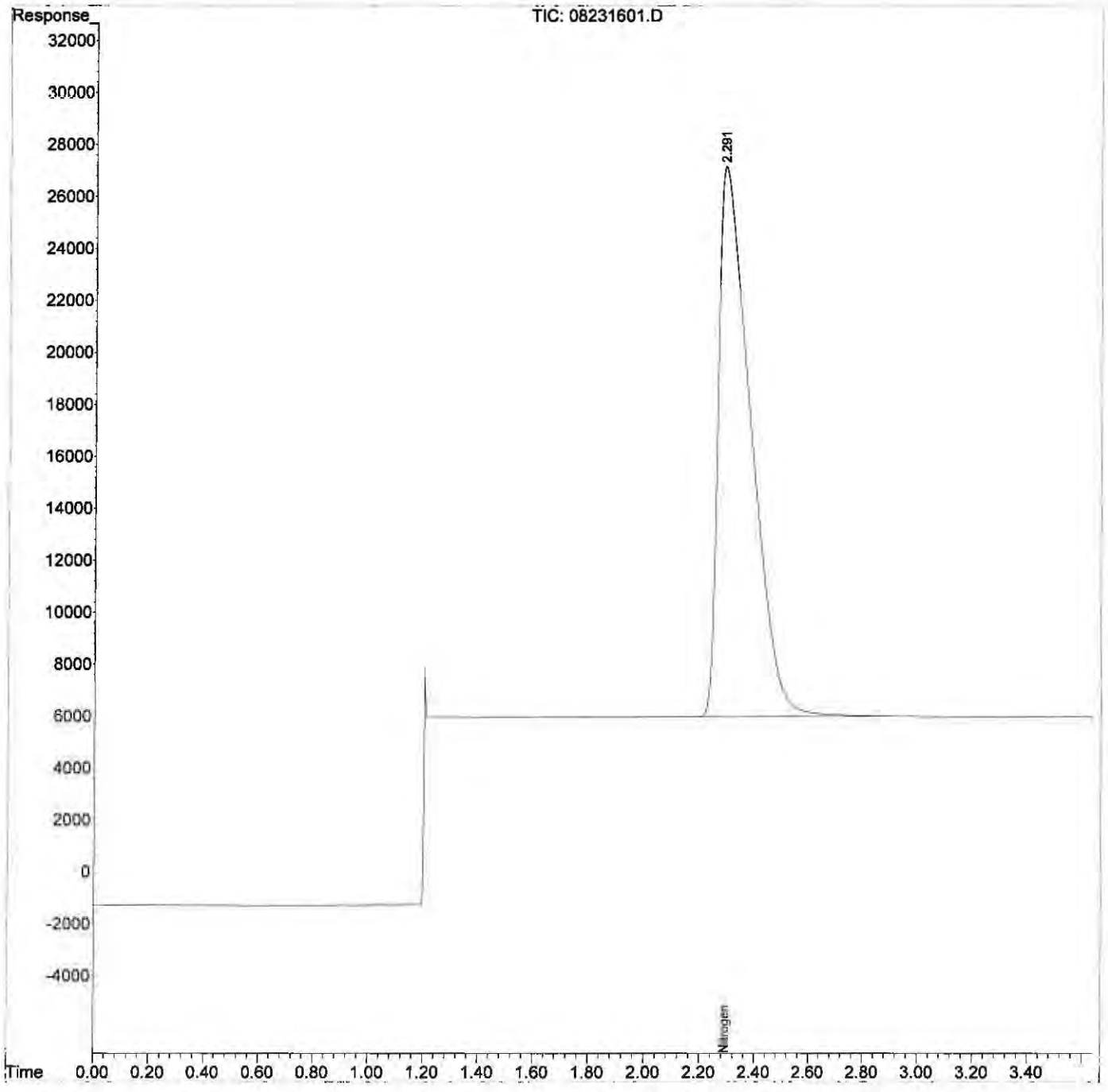
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm d
3)	Nitrogen	2.292	1743725	985438.652	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

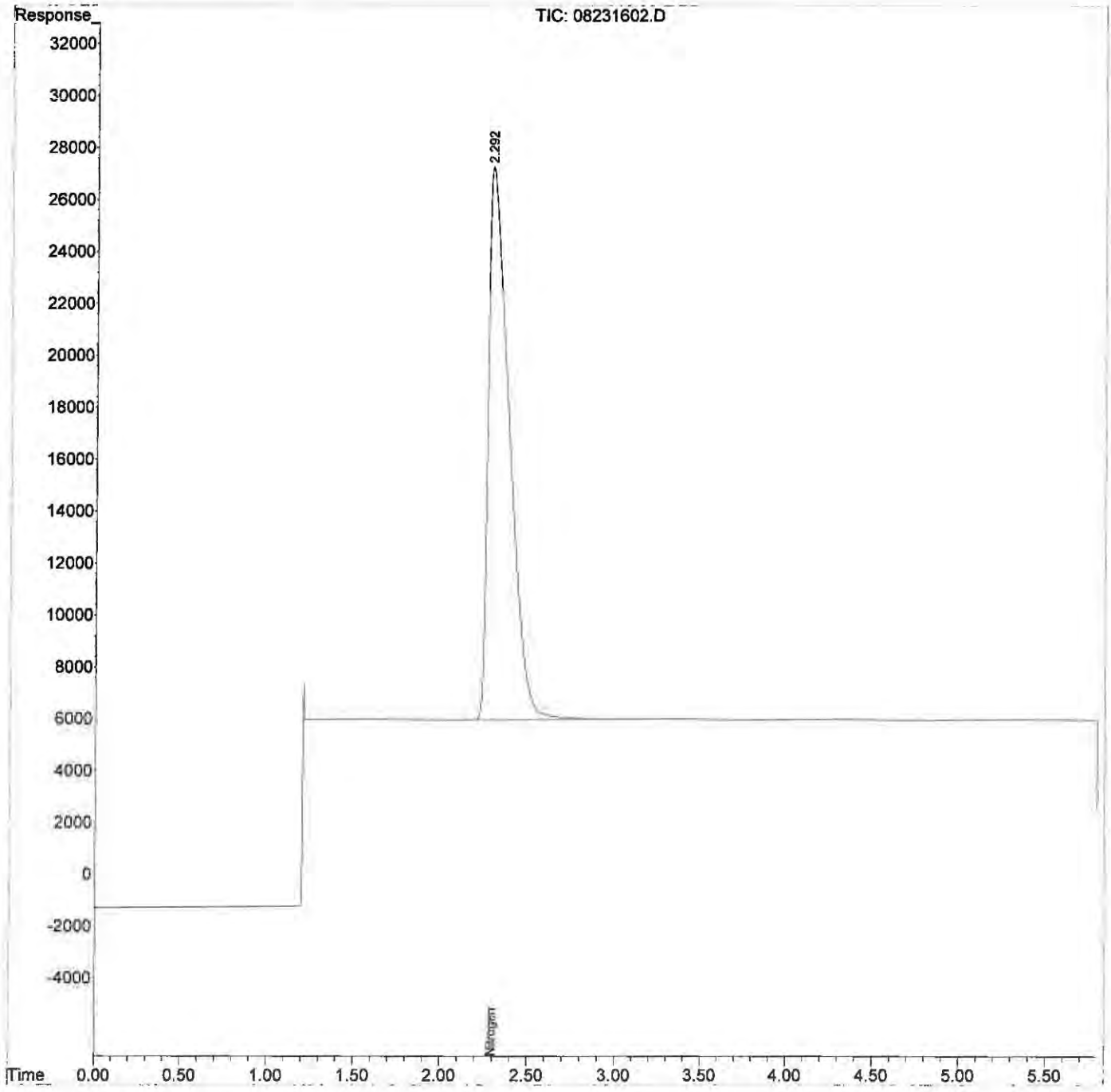
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.000	0	N.D.	ppm	
2)	Oxygen	0.000	0	N.D.	ppm	d
3)	Nitrogen	2.294	1755465	992976.308	ppm	
4)	Carbon Monoxide	0.000	0	N.D.	ppm	
5)	Methane	0.000	0	N.D.	ppm	
6)	Carbon Dioxide	0.000	0	N.D.	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

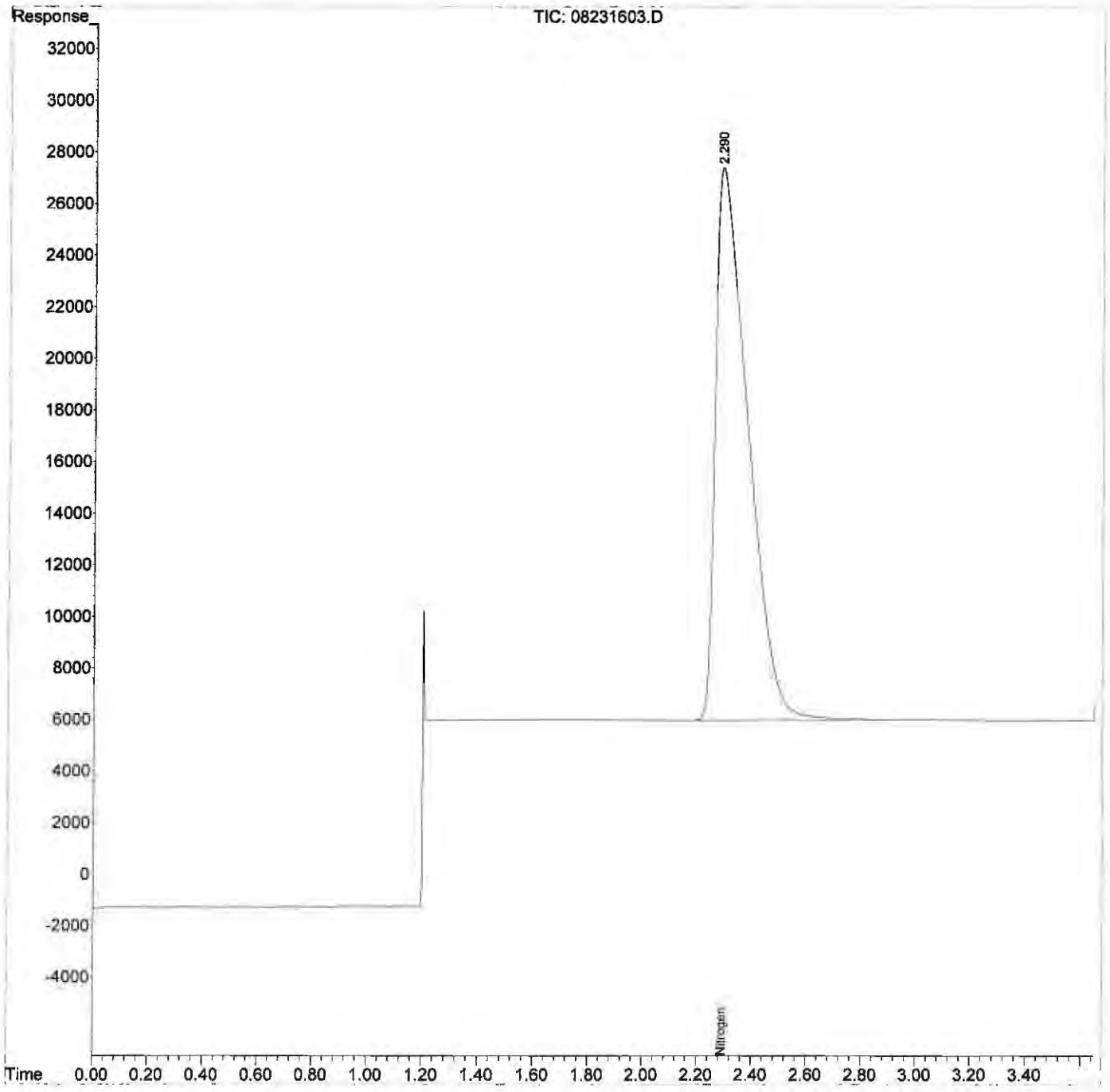
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm d
3)	Nitrogen	2.292	1767961	1000457.289	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

(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

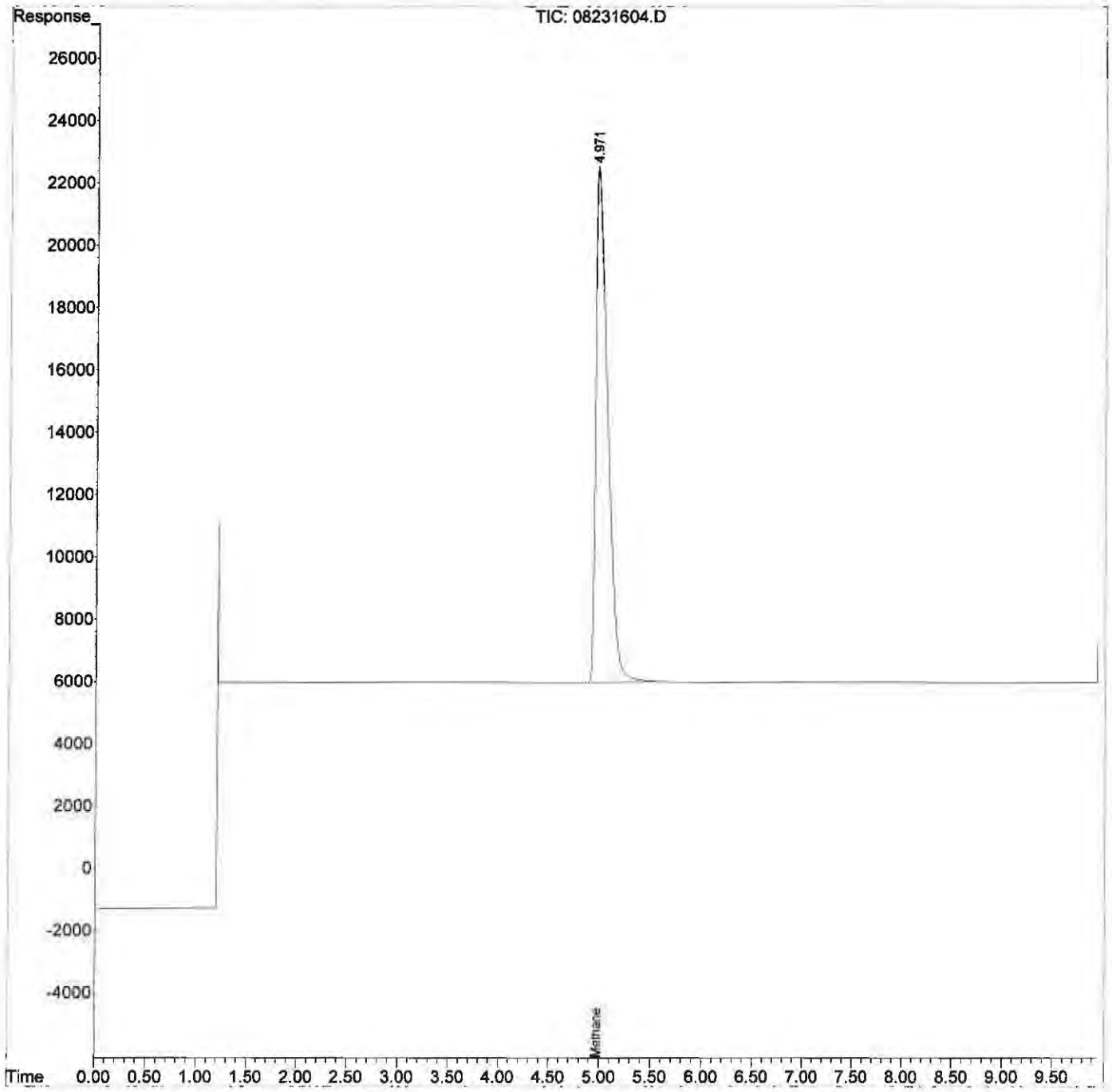
(f)=RT Delta > 1/2 Window (m)=manual int.

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

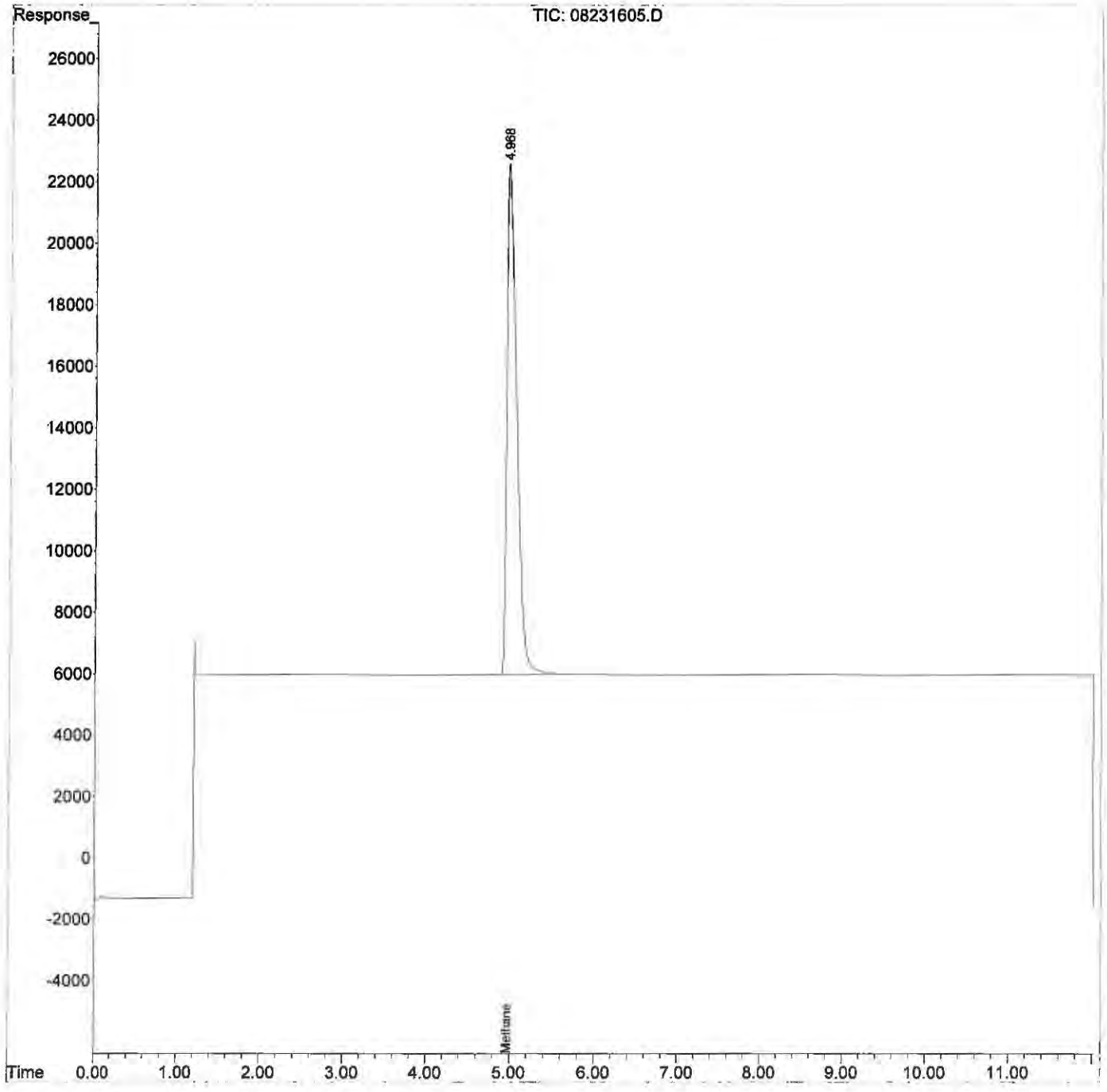
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

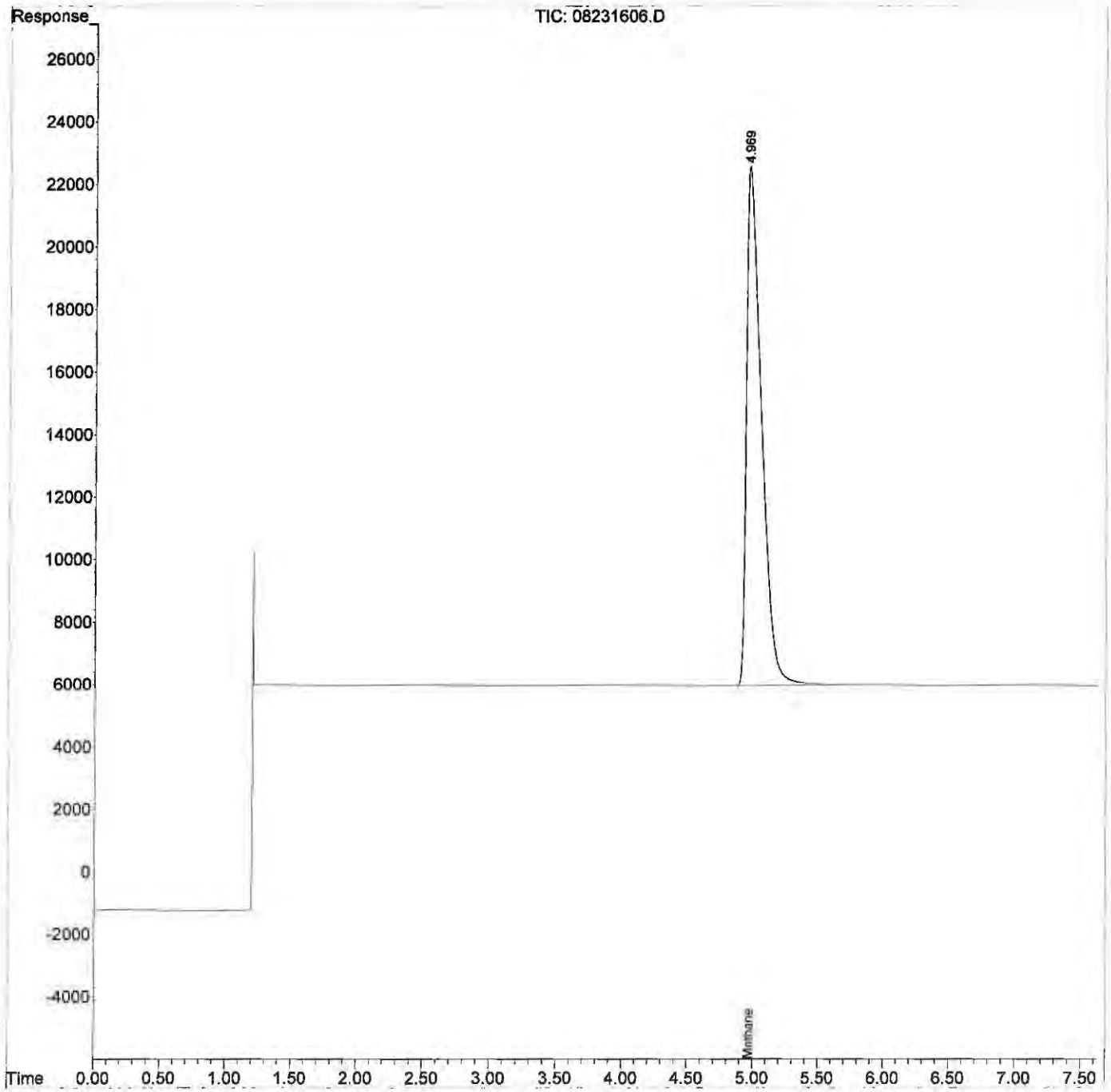
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	4.971	1318464	1009193.790	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

(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 :

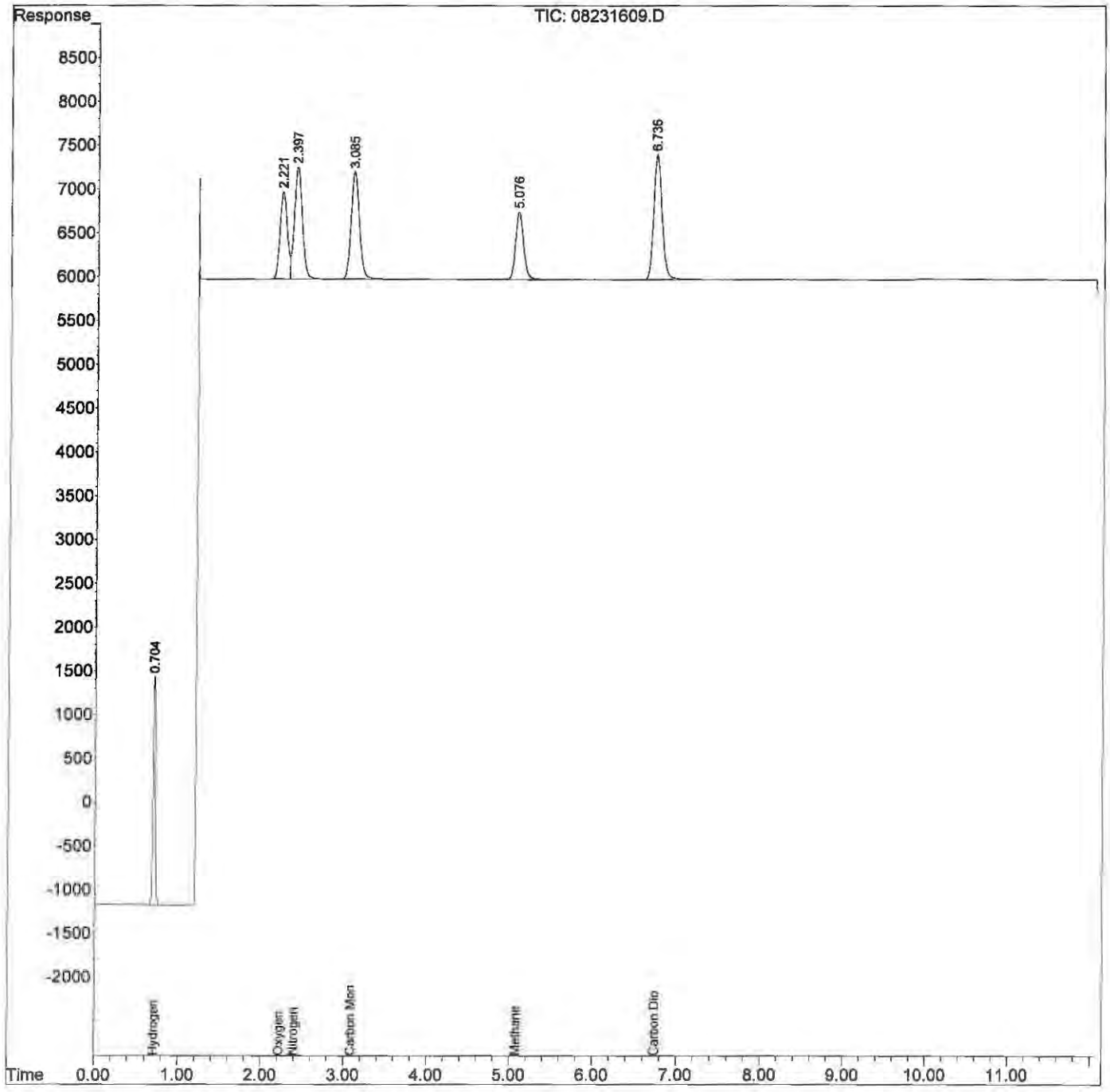
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.705	51930	38960.985	ppm	2,60 %
2)	Oxygen	2.222	60278	38988.977	ppm	2.53 %
3)	Nitrogen	2.398	86058	48697.524	ppm	2.06 %
4)	Carbon Monoxide	3.086	85978	49564.451	ppm	0,87 %
5)	Methane	5.077	52066	39832.238	ppm	0.42 %
6)	Carbon Dioxide	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 : P1604820

Printed : 10/13/2016
Instrument : GC #1 / TCD #1
Date analyzed : 10/13/2016
Sample amount : 100uL

Sample Result

Sample ID	Hydrogen	Oxygen	Nitrogen	Carbon Monoxide	Methane	Carbon Dioxide	Pi1	Pf1	Pi2	Pf2	BF
s30-10051601	39842	399922	50070	50643	40451	48267					
ACTUAL	40000	40000	50000	50000	40000	50000					
% Difference	0.4%	899.8%	0.1%	1.3%	1.1%	3.5%					
Lab Air		218025	787284			417					
MB	ND	ND	ND	ND	ND	ND					
4820-001		144196	748369			41665					
4820-001		142185	736146			41188					
4820-001		143837	745667			41452					
% RSD		0.7%	0.9%			0.6%					
s30-10051601	40001	40135	50122	50572	40156	48349					
ACTUAL	40000	40000	50000	50000	40000	50000					
% Difference	0.0%	0.3%	0.2%	1.1%	0.4%	3.3%					

90 of 97

Average Sample Result in ppm with the DILUTION FACTOR

Sample ID	Hydrogen	Oxygen	Nitrogen	Carbon Monoxide	Methane	Carbon Dioxide	Total(%)	D.F.
Lab Air		218025	787284			417	100.57	1.00
MB	ND	ND	ND	ND	ND	ND		1.00
4820-001		143406	743394			41435	92.82	1.00

Data Path : I:\GC01\DATA\FXG\2016_10\13\
Data File : 10131601.D
Signal(s) : TCD1A.CH
Acq On : 13 Oct 2016 8:24 am
Operator : amf
Sample : std s30-10051601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 13 08:44:27 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	0.711	53104	39841.799	ppm
2)	Oxygen	2.228	61721	39921.867	ppm
3)	Nitrogen	2.403	88484	50069.999	ppm
4)	Carbon Monoxide	3.090	87848	50642.841	ppm
5)	Methane	5.079	52875	40451.266	ppm
6)	Carbon Dioxide	6.738	101236	48266.982	ppm

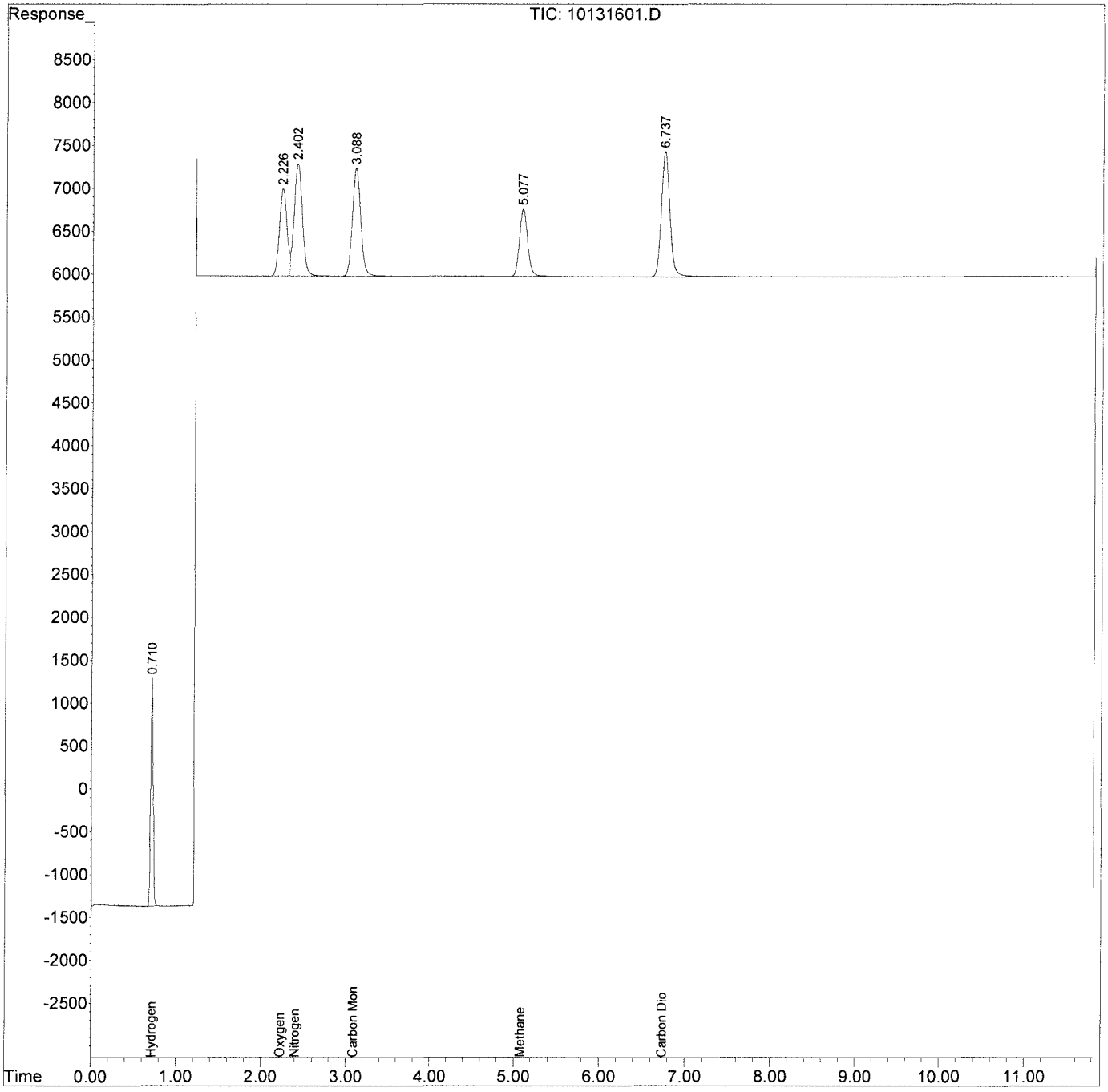
(f)=RT Delta > 1/2 Window (m)=manual int.

10/13/16

Data Path : I:\GC01\DATA\FXG\2016_10\13\
Data File : 10131601.D
Signal(s) : TCD1A.CH
Acq On : 13 Oct 2016 8:24 am
Operator : amf
Sample : std s30-10051601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 13 08:44:27 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\13\
Data File : 10131607.D
Signal(s) : TCD1A.CH
Acq On : 13 Oct 2016 10:53 am
Operator : amf
Sample : std s30-10051601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 13 11:15:53 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 :

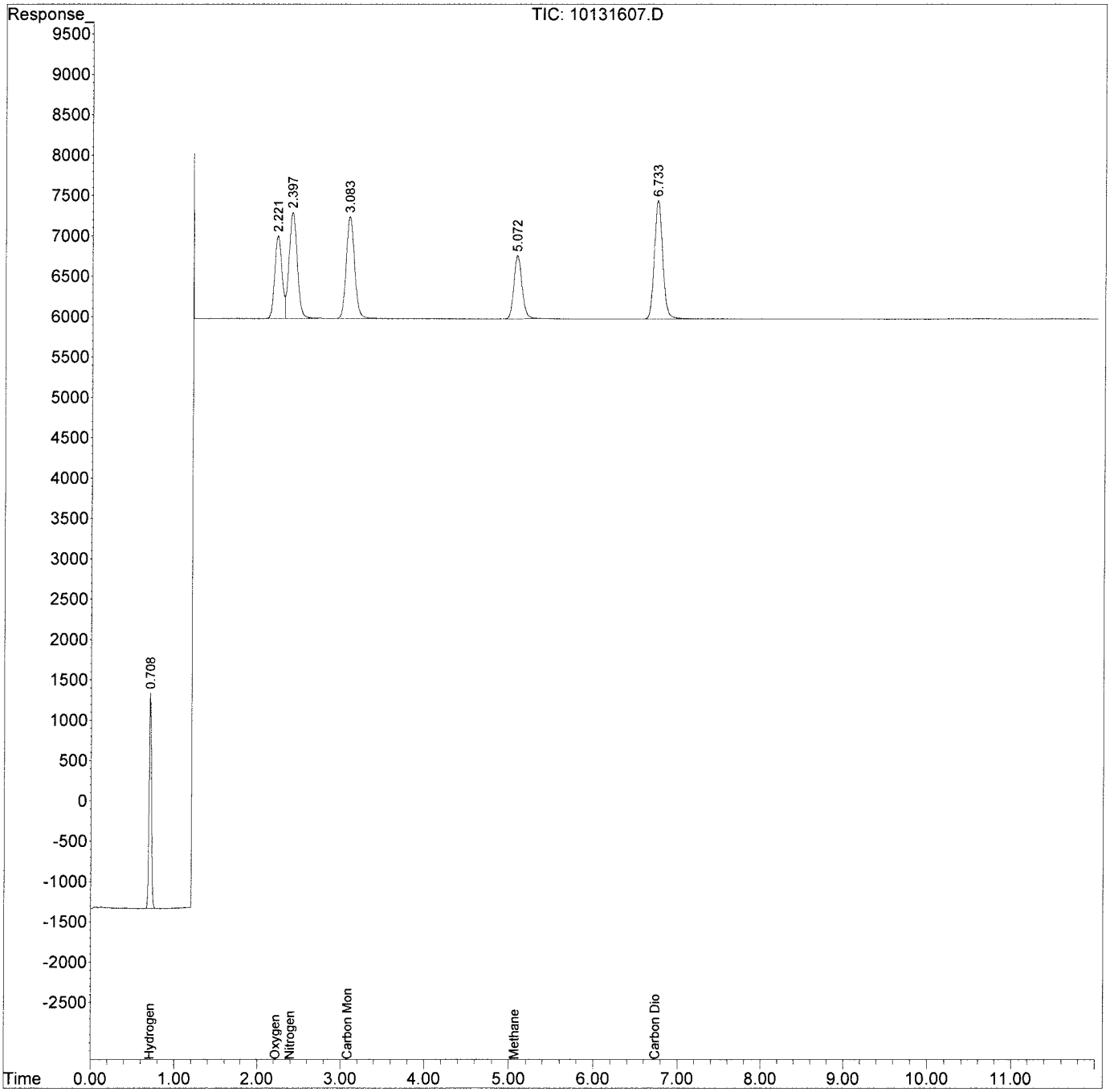
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.709	53316	40001.235	ppm
2)	Oxygen	2.223	62050	40135.121	ppm
3)	Nitrogen	2.399	88576	50122.046	ppm
4)	Carbon Monoxide	3.084	87725	50571.920	ppm
5)	Methane	5.073	52489	40155.840	ppm
6)	Carbon Dioxide	6.734	101409	48349.390	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\13\
Data File : 10131607.D
Signal(s) : TCD1A.CH
Acq On : 13 Oct 2016 10:53 am
Operator : amf
Sample : std s30-10051601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 13 11:15:53 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 :



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\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	

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LABORATORY REPORT

October 25, 2016

Min Lee
Air Hygiene, Incorporated
1600 West Tacoma Street
Broken Arrow, OK 74012

RE: sfi-16-elkcity.ok-comp#1

Dear Min:

Enclosed are the results of the samples submitted to our laboratory on October 8, 2016. For your reference, these analyses have been assigned our service request number P1604754.

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

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: sfi-16-elkcity.ok-comp#1

Service Request No: P1604754

CASE NARRATIVE

The samples were received intact under chain of custody on October 8, 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: sfi-16-elkcity.ok-comp#1
Service Request: P1604754

Date Received: 10/8/2016
Time Received: 08:55

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	3C Modified - Fxd Gases Bag 2X
R8-70-100-70%-SCD-36	P1604754-001	Air	10/6/2016	09:11	X
R9-70-100-70%-SCD-36	P1604754-003	Air	10/6/2016	10:40	X
R2-0-30-0%-SCD-36	P1604754-005	Air	10/6/2016	14:30	X
R3-0-30-0%-SCD-36	P1604754-007	Air	10/6/2016	15:56	X
R4-30-70-30%-SCD-36	P1604754-009	Air	10/6/2016	17:30	X
R5-30-70-30%-SCD-36	P1604754-011	Air	10/7/2016	09:09	X
R6-30-70-30%-SCD-36	P1604754-013	Air	10/7/2016	10:35	X
R10-90-100%-SCD-60	P1604754-015	Air	10/7/2016	14:15	X

P1604754

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

SAMPLE DESCRIPTION AND CHAIN OF CUSTODY RECORD

Project Number:	sfi-elkcity.ok-comp#1	Laboratory Analysis Requested	3C
Person Taking Samples:	BL/MJ		

Sample Number	Location	Date	Time	Volume	Analysis Method			
					O_2	CO_2	Methane	N_2
R10-90-100%-SCD-60	Elk City Facility	10/7/2016	14:15	10	x	x	x	x
R10-90-100%-SCD-60-Backup	Elk City Facility	10/7/2016	14:15	5	x	x	x	x

Relinquished by: (Signature)	10/7/16 Date	14:20 Time	Received by: (Signature)	10/8/16 Date	855am Time
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time

I-COC

ALS Environmental
Sample Acceptance Check Form

Client: Air Hygiene, Incorporated Work order: P1604754

Project: sfi-16-elkcity.ok-comp#1

Sample(s) received on: 10/8/16 Date opened: 10/8/16 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
P1604754-001.01	10 L Tedlar Bag					
P1604754-002.01	5.0 L Tedlar Bag					
P1604754-003.01	10 L Tedlar Bag					
P1604754-004.01	5.0 L Tedlar Bag					
P1604754-005.01	10 L Tedlar Bag					
P1604754-006.01	5.0 L Tedlar Bag					
P1604754-007.01	10 L Tedlar Bag					
P1604754-008.01	5.0 L Tedlar Bag					
P1604754-009.01	10 L Tedlar Bag					
P1604754-010.01	5.0 L Tedlar Bag					
P1604754-011.01	10 L Tedlar Bag					
P1604754-012.01	5.0 L Tedlar Bag					
P1604754-013.01	10 L Tedlar Bag					
P1604754-014.01	5.0 L Tedlar Bag					
P1604754-015.01	10 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: **R10-90-100%-SCD-60**
Client Project ID: **sfi-16-elkcity.ok-comp#1**

ALS Project ID: P1604754
ALS Sample ID: P1604754-015

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: 10/7/16
Date Received: 10/8/16
Date Analyzed: 10/8/16
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
7782-44-7	**Oxygen***	**14.6**	0.10	
7727-37-9	**Nitrogen**	**80.7**	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	**Carbon Dioxide**	**4.75**	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: P1604754
Client Project ID: **sfi-16-elkcity.ok-comp#1** ALS Sample ID: P161008-MB

Test Code: EPA Method 3C Modified Date Collected: NA
Instrument ID: Agilent 7890A/GC20/FID Date Received: NA
Analyst: Mike Conejo Date Analyzed: 10/08/16
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.

ALS Environmental
Sample Acceptance Check Form

Client: Air Hygiene, Incorporated Work order: P1604754

Project: sfi-16-elkcity.ok-comp#1

Sample(s) received on: 10/8/16 Date opened: 10/8/16 by: KHORIUCHI

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1604754-016.01	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)

LABORATORY REPORT

October 26, 2016

Sean Barnes
Air Hygiene, Incorporated
1600 West Tacoma Street
Broken Arrow, OK 74012

RE: sfi-16-elkcity.ok-comp#1

Dear Sean:

Enclosed are the results of the samples submitted to our laboratory on October 14, 2016. For your reference, these analyses have been assigned our service request number P1604849.

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 3:07 pm, Oct 26, 2016

Kelly Horiuchi
Laboratory Director

Client: Air Hygiene, Incorporated Service Request No: P1604849
Project: sfi-16-elkcity.ok-comp#1

CASE NARRATIVE

The samples were received intact under chain of custody on October 14, 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.

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: P1604849
Project ID: sfi-16-elkcity.ok-comp#1

Date Received: 10/14/2016
Time Received: 09:50

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	3C Modified - Fxd Gases Bag 2X
R1-0-30-0%-SCD-60	P1604849-001	Air	10/12/2016	16:18	X
R2-0-30-0%-SCD-60	P1604849-003	Air	10/12/2016	17:34	X
R3-0-30-0%-SCD-60	P1604849-005	Air	10/12/2016	18:58	X

P1609849

SAMPLE DESCRIPTION AND CHAIN OF CUSTODY RECORD

MSL 10/25/16

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

Project Number:	~~Coyote-10-enid.ok-comp#1~~ Elk-City OK-comp#1	Laboratory Analysis Requested:	3C
Person Taking Samples:	TW/MSL/MJ		

	Sample Number	Location	Date	Time	Volume	Analysis Method			
						O_2	CO_2	N_2	Methane
1	R1-0-30-0%-SCD-60	Elk City Facility	10/12/2016	16:18	10	x	x	x	x
2	R1-0-30-0%-SCD-60-Backup	Elk City Facility	10/12/2016	16:18	5	x	x	x	x
3	R2-0-30-0%-SCD-60	Elk City Facility	10/12/2016	17:34	10	x	x	x	x
4	R2-0-30-0%-SCD-60-Backup	Elk City Facility	10/12/2016	17:34	5	x	x	x	x
5	R3-0-30-0%-SCD-60	Elk City Facility	10/12/2016	18:58	10	x	x	x	x
6	R3-0-30-0%-SCD-60-Backup	Elk City Facility	10/12/2016	18:58	5	x	x	x	x

Relinquished by: (Signature)	Date: 10/12/16	Time: 19:15	Received by: (Signature)	Date: 10/14/16 Time: 0950
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date: Time:

)-coc

ALS Environmental
Sample Acceptance Check Form

Client: Air Hygiene, Incorporated Work order: P1604849

Project: sfi-16-elkcity.ok-comp#1

Sample(s) received on: 10/14/16 Date opened: 10/14/16 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
P1604849-001.01	10 L Tedlar Bag					
P1604849-002.01	5.0 L Tedlar Bag					
P1604849-003.01	10 L Tedlar Bag					
P1604849-004.01	5.0 L Tedlar Bag					
P1604849-005.01	10 L Tedlar Bag					
P1604849-006.01	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%-SCD-60** ALS Project ID: P1604849
Client Project ID: **sfi-16-elkcity.ok-comp#1** ALS Sample ID: P1604849-001

Test Code: EPA Method 3C Modified Date Collected: 10/12/16
Instrument ID: HP5890 II/GC1/FID/TCD Date Received: 10/14/16
Analyst: Adam McAfee Date Analyzed: 10/14/16
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***	**14.5**	0.10	
7727-37-9	**Nitrogen**	**80.4**	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	**Carbon Dioxide**	**5.15**	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%-SCD-60**
Client Project ID: **sfi-16-elkcity.ok-comp#1**

ALS Project ID: P1604849
ALS Sample ID: P1604849-003

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: 10/12/16
Date Received: 10/14/16
Date Analyzed: 10/14/16
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
7782-44-7	**Oxygen***	**15.2**	0.10	
7727-37-9	**Nitrogen**	**80.1**	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	**Carbon Dioxide**	**4.67**	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%-SCD-60**
Client Project ID: **sfi-16-elkcity.ok-comp#1**

ALS Project ID: P1604849
ALS Sample ID: P1604849-005

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: 10/12/16
Date Received: 10/14/16
Date Analyzed: 10/14/16
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**	**79.9**	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	**Carbon Dioxide**	**4.44**	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: P1604849
Client Project ID: **sfi-16-elkcity.ok-comp#1** ALS Sample ID: P161014-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: 10/14/16
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_10\14T\
Data File : 10141606.D
Signal(s) : TCD1A.CH
Acq On : 14 Oct 2016 10:11 am
Operator : amf
Sample : 4849-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 10:41:59 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 :

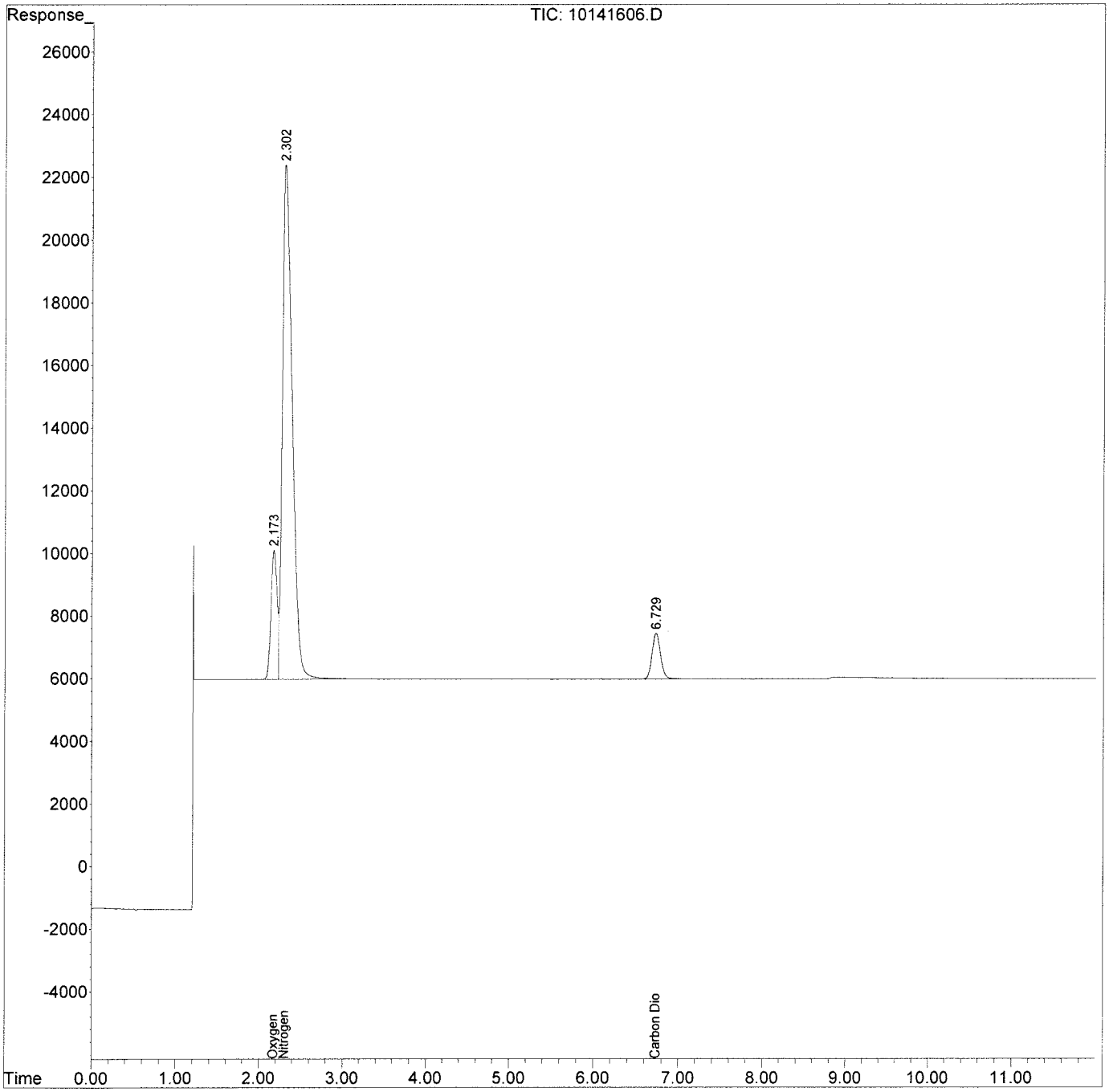
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.175	207063	133931.516	ppm
3)	Nitrogen	2.304	1316288	744844.259	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.730	100540	47934.910	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\14T\
Data File : 10141606.D
Signal(s) : TCD1A.CH
Acq On : 14 Oct 2016 10:11 am
Operator : amf
Sample : 4849-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 10:41:59 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\14T\
Data File : 10141607.D
Signal(s) : TCD1A.CH
Acq On : 14 Oct 2016 10:29 am
Operator : amf
Sample : 4849-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 10:53:30 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 :

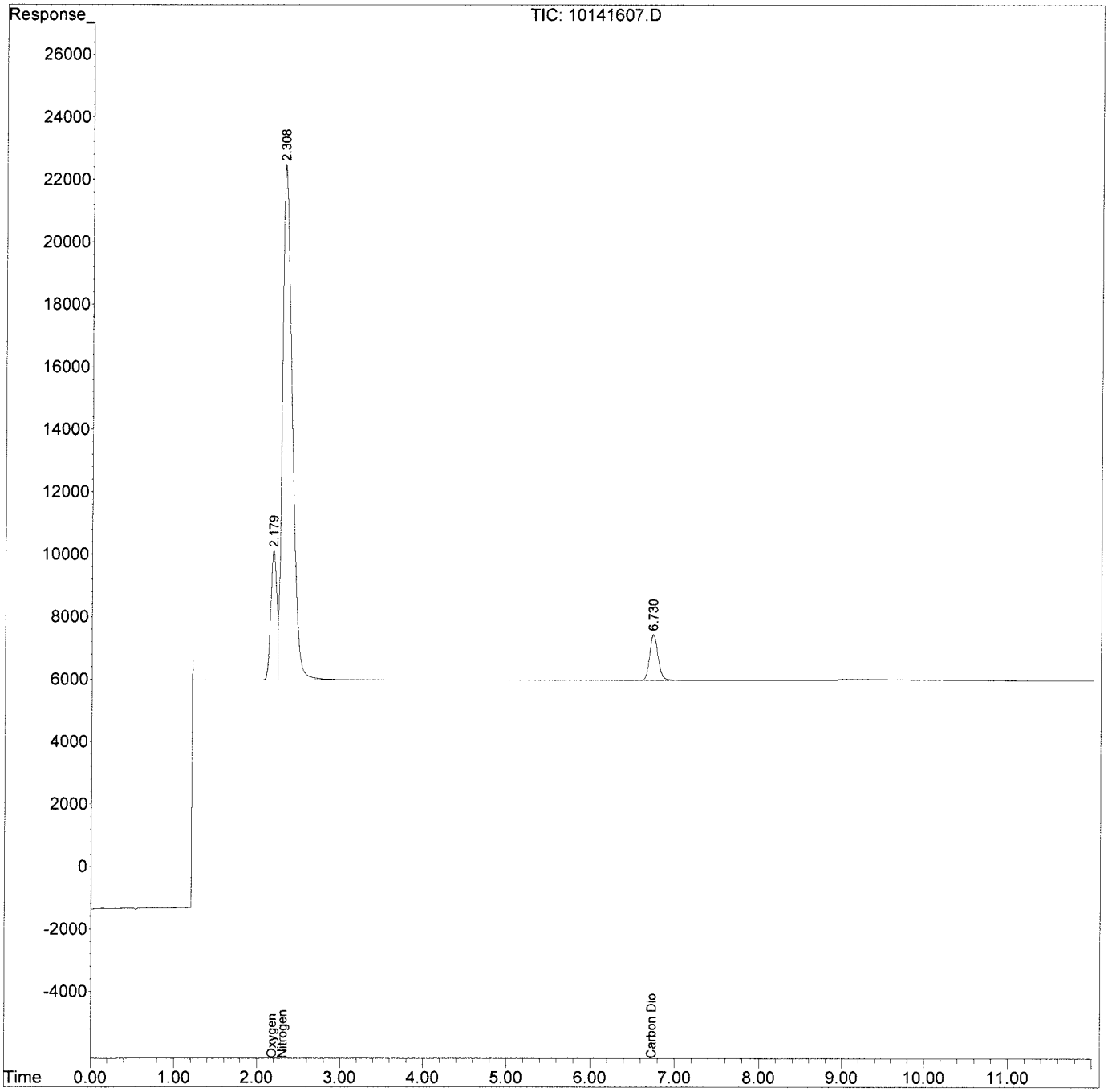
	Compound	R.T.	Response	Conc Units
Target Compounds				
1)	Hydrogen	0.000	0	N.D. ppm
2)	Oxygen	2.181	207589	134271.196 ppm
3)	Nitrogen	2.309	1321243	747648.417 ppm
4)	Carbon Monoxide	0.000	0	N.D. ppm
5)	Methane	0.000	0	N.D. ppm
6)	Carbon Dioxide	6.732	100664	47994.261 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\14T\
Data File : 10141607.D
Signal(s) : TCD1A.CH
Acq On : 14 Oct 2016 10:29 am
Operator : amf
Sample : 4849-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 10:53:30 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\14T\
Data File : 10141608.D
Signal(s) : TCD1A.CH
Acq On : 14 Oct 2016 10:45 am
Operator : amf
Sample : 4849-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 11:05:54 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 :

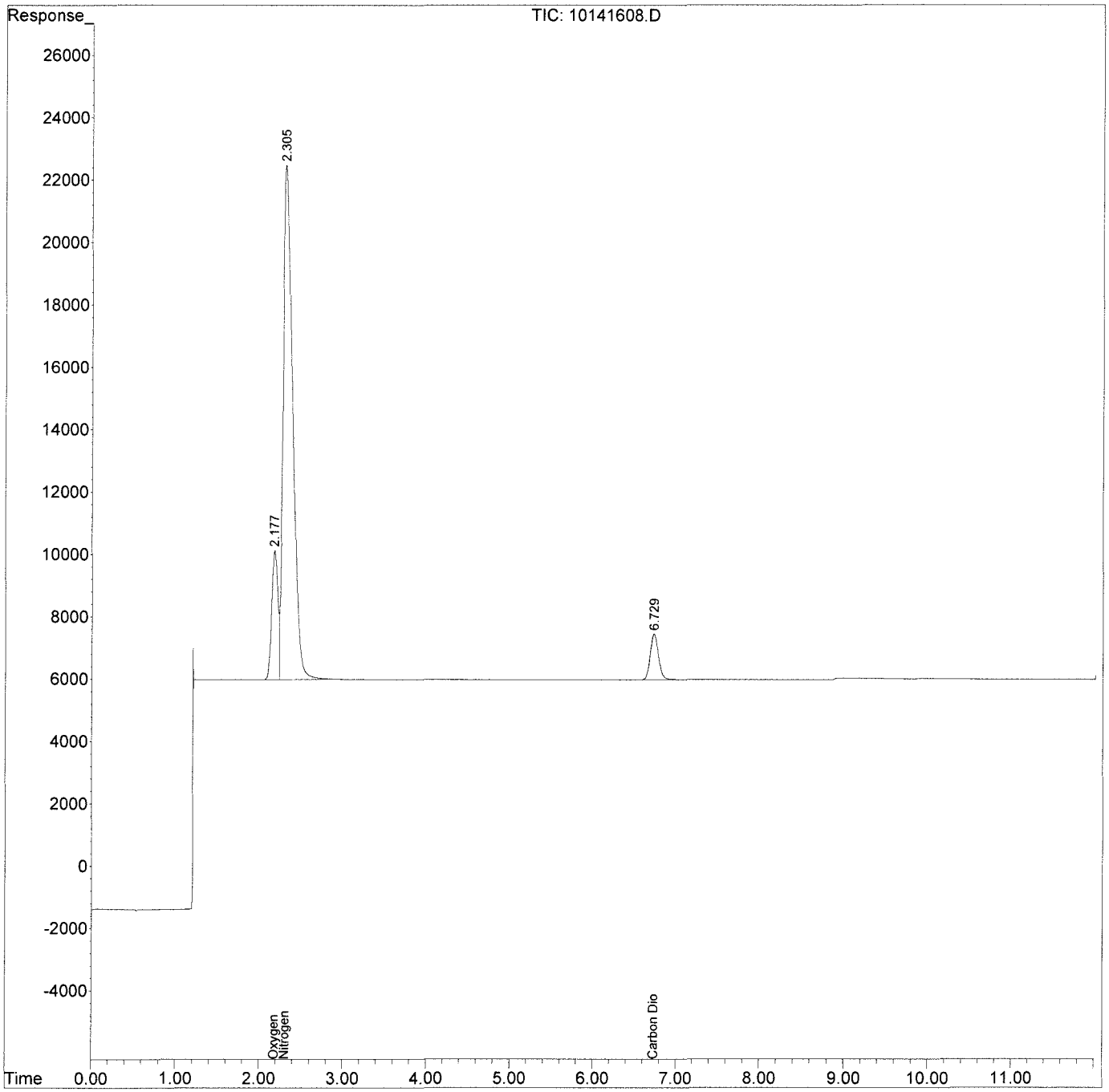
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.178	207771	134389.362	ppm
3)	Nitrogen	2.307	1320103	747003.437	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.730	101121	48212.014	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\14T\
Data File : 10141608.D
Signal(s) : TCD1A.CH
Acq On : 14 Oct 2016 10:45 am
Operator : amf
Sample : 4849-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 11:05:54 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 :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_10\14T\
Data File : 10141609.D
Signal(s) : TCD1A.CH
Acq On : 14 Oct 2016 11:02 am
Operator : amf
Sample : 4849-003
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 11:25:22 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 :

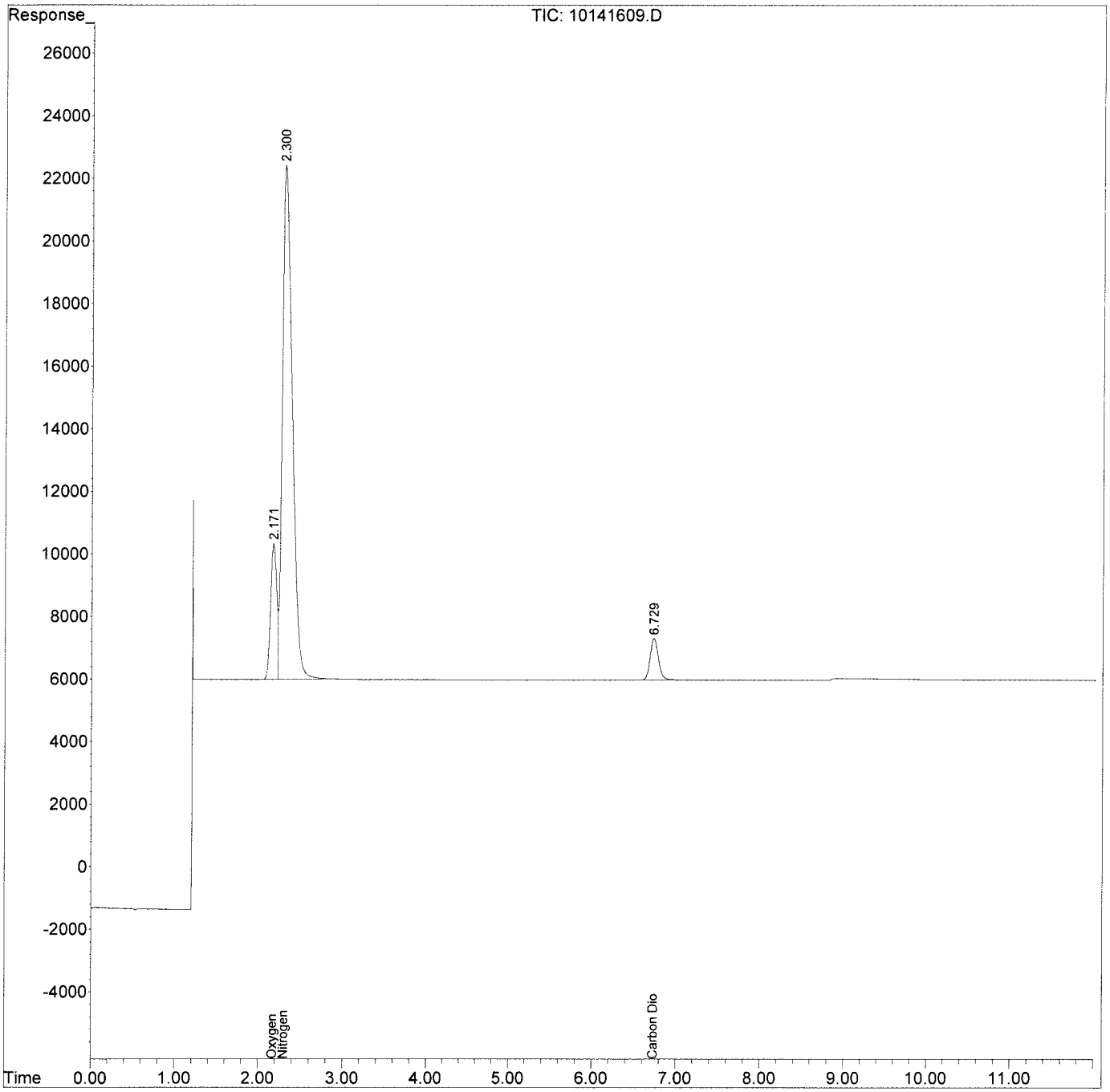
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.172	219346	141876.210	ppm
3)	Nitrogen	2.302	1319582	746708.252	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.730	91132	43449.679	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\14T\
Data File : 10141609.D
Signal(s) : TCD1A.CH
Acq On : 14 Oct 2016 11:02 am
Operator : amf
Sample : 4849-003
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 11:25:22 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_10\14T\
Data File : 10141610.D
Signal(s) : TCD1A.CH
Acq On : 14 Oct 2016 11:17 am
Operator : amf
Sample : 4849-003
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 11:41:28 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 :

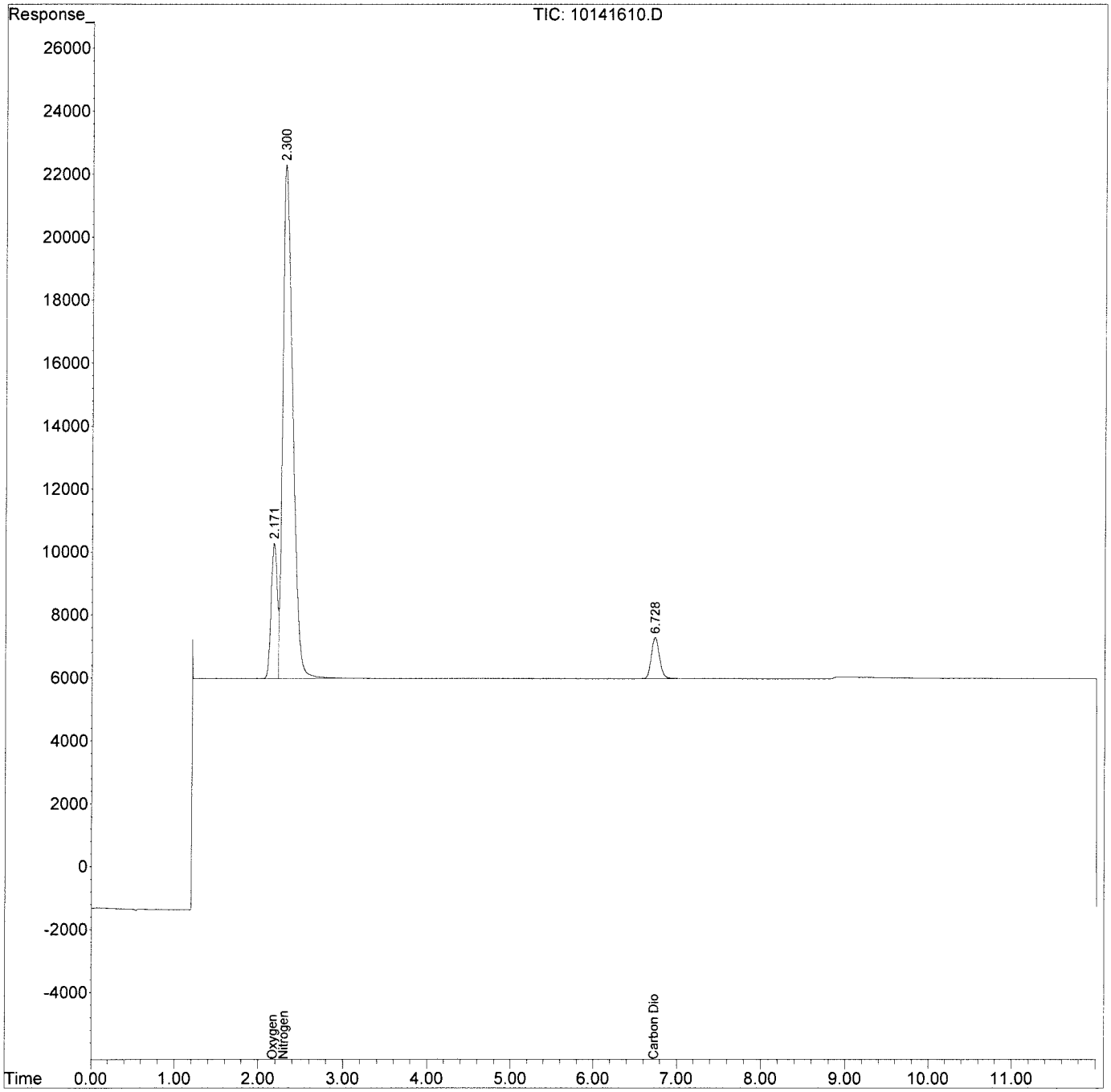
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.172	217544	140710.726	ppm
3)	Nitrogen	2.302	1310863	741774.428	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.729	90365	43083.917	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\14T\
Data File : 10141610.D
Signal(s) : TCD1A.CH
Acq On : 14 Oct 2016 11:17 am
Operator : amf
Sample : 4849-003
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 11:41:28 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\14T\
Data File : 10141611.D
Signal(s) : TCD1A.CH
Acq On : 14 Oct 2016 11:34 am
Operator : amf
Sample : 4849-003
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 11:55:21 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 :

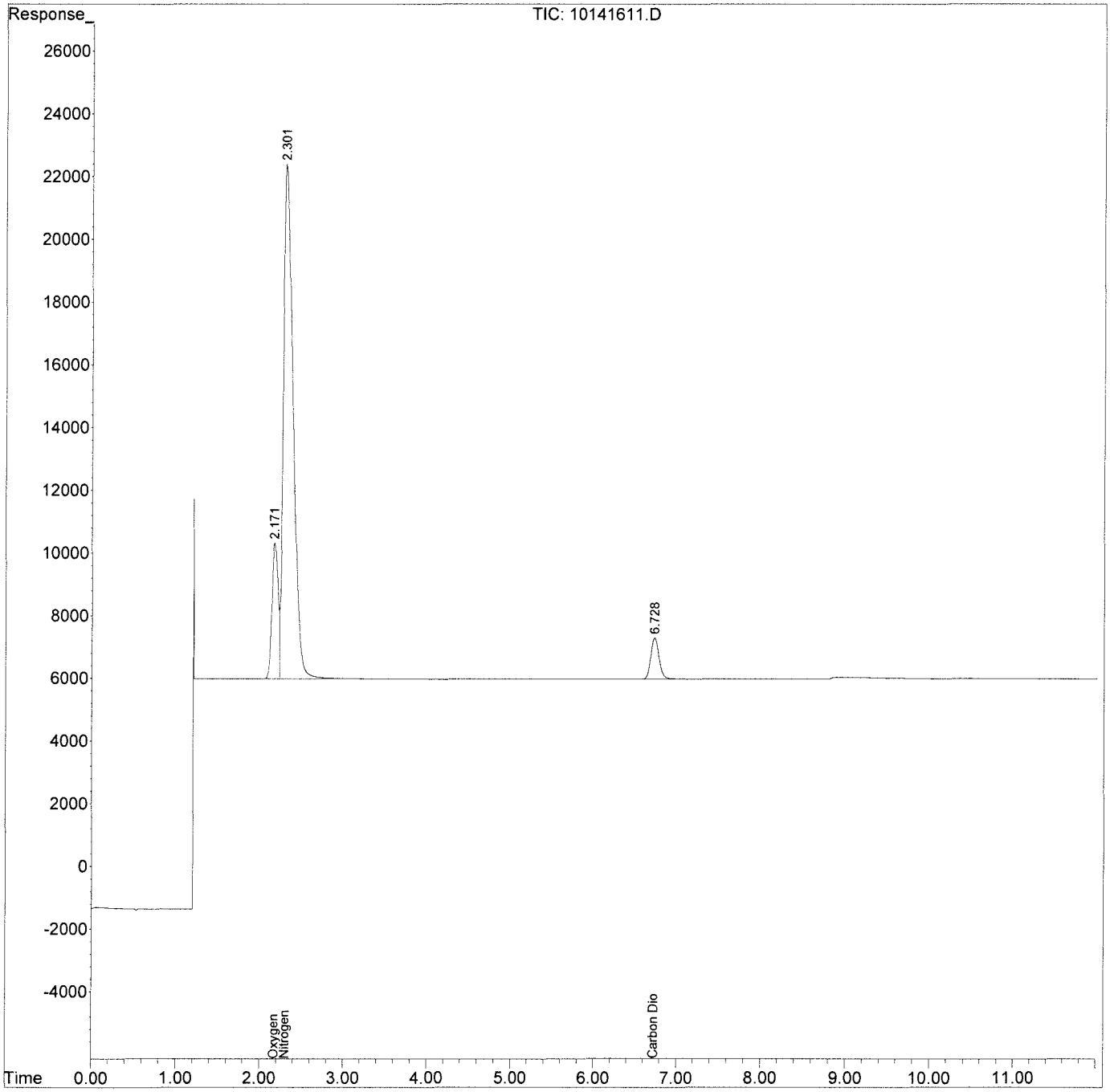
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.173	218799	141522.183	ppm
3)	Nitrogen	2.302	1319043	746403.252	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.730	91481	43615.988	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\14T\
Data File : 10141611.D
Signal(s) : TCD1A.CH
Acq On : 14 Oct 2016 11:34 am
Operator : amf
Sample : 4849-003
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 11:55:21 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 :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_10\14T\
Data File : 10141612.D
Signal(s) : TCD1A.CH
Acq On : 14 Oct 2016 11:50 am
Operator : amf
Sample : 4849-005
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 12:11:38 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 :

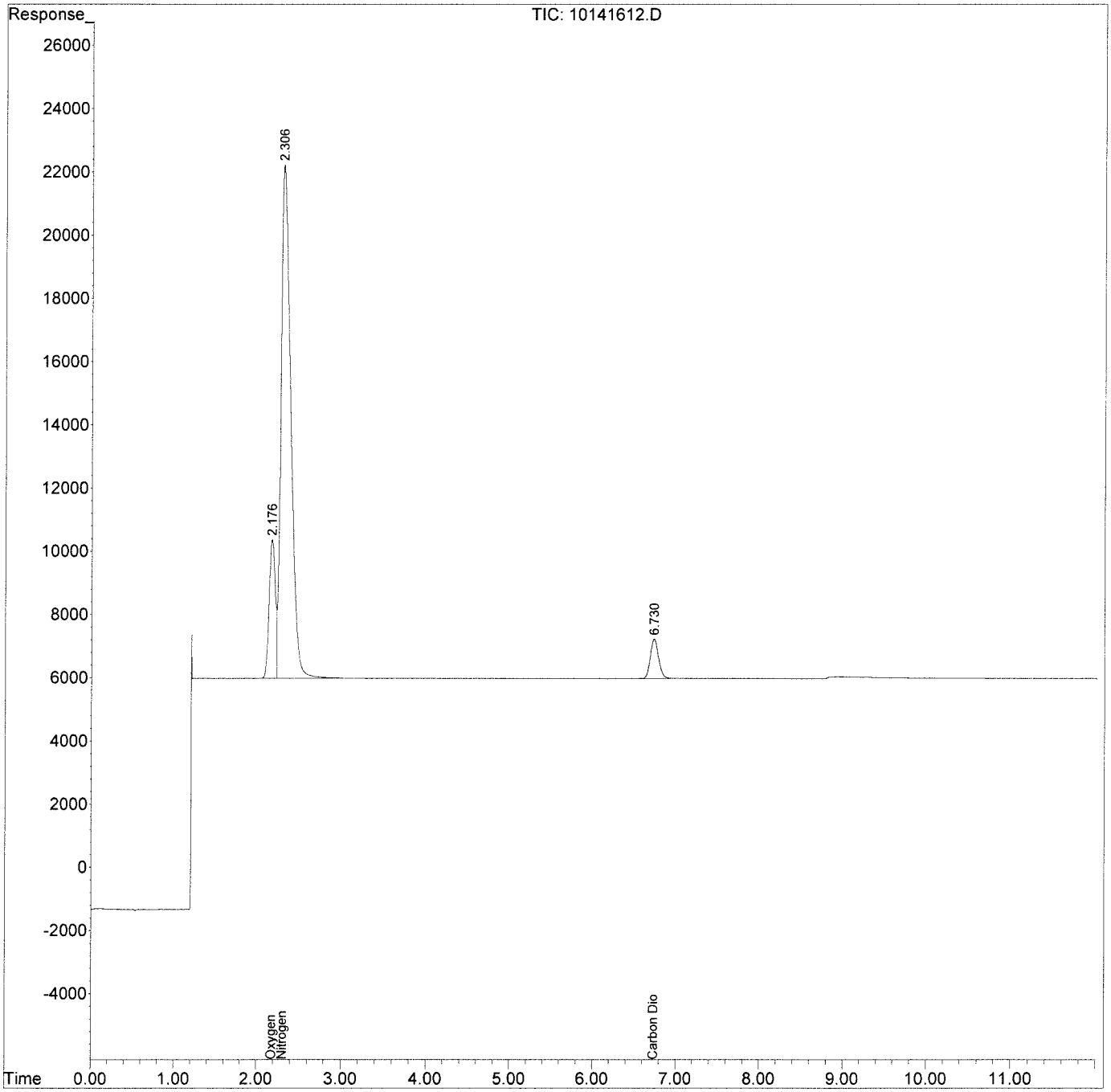
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.000	0	N.D.	ppm	d
2)	Oxygen	2.177	222959	144212.701	ppm	
3)	Nitrogen	2.307	1303766	737758.854	ppm	
4)	Carbon Monoxide	0.000	0	N.D.	ppm	
5)	Methane	0.000	0	N.D.	ppm	
6)	Carbon Dioxide	6.732	85946	40976.832	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\14T\
Data File : 10141612.D
Signal(s) : TCD1A.CH
Acq On : 14 Oct 2016 11:50 am
Operator : amf
Sample : 4849-005
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 12:11:38 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\14T\
Data File : 10141613.D
Signal(s) : TCD1A.CH
Acq On : 14 Oct 2016 12:06 pm
Operator : amf
Sample : 4849-005
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 12:29:43 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 :

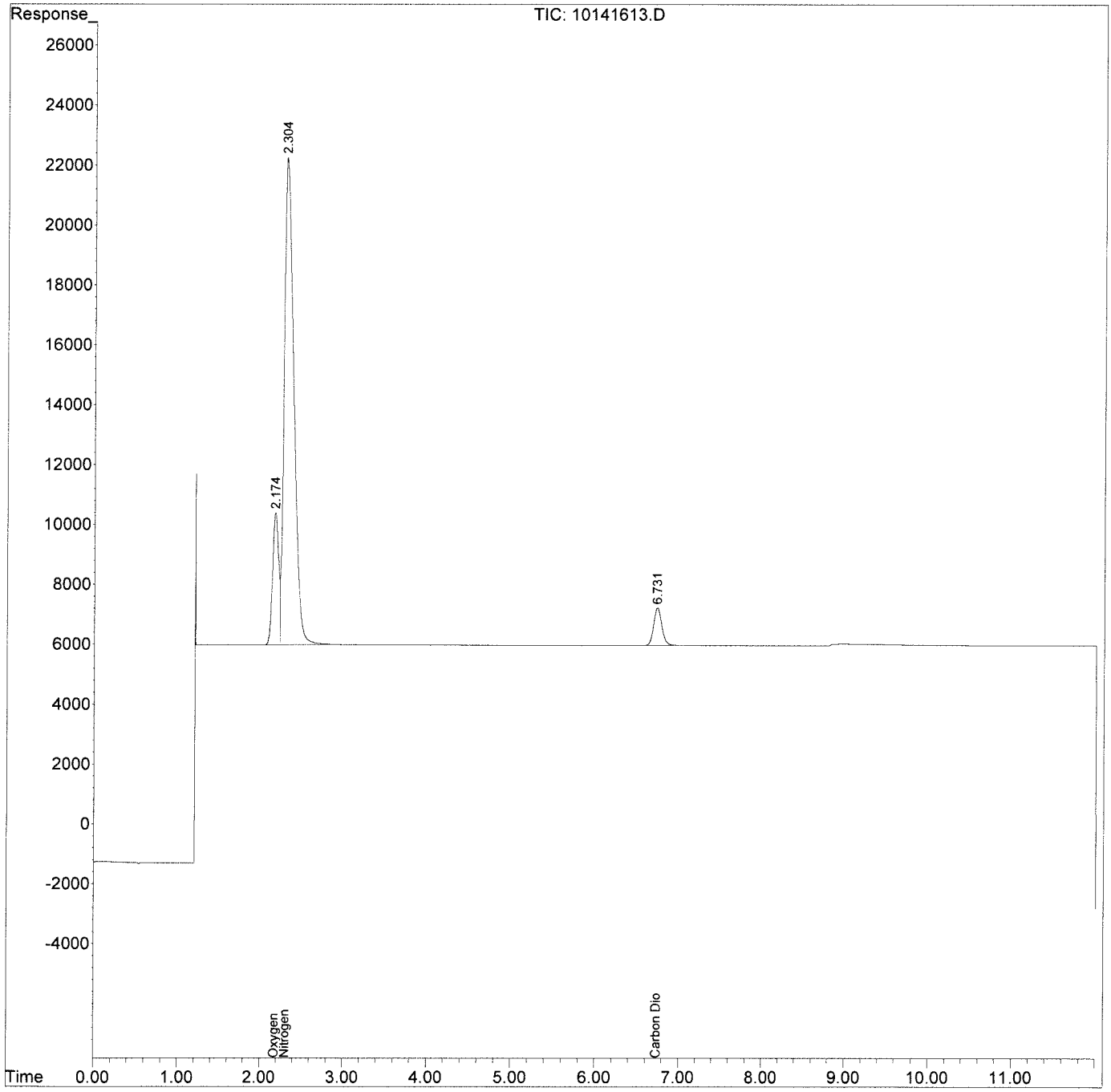
	Compound	R.T.	Response	Conc Units
Target Compounds				
1)	Hydrogen	0.000	0	N.D. ppm
2)	Oxygen	2.175	223445	144527.174 ppm
3)	Nitrogen	2.306	1304263	738039.916 ppm
4)	Carbon Monoxide	0.000	0	N.D. ppm
5)	Methane	0.000	0	N.D. ppm
6)	Carbon Dioxide	6.732	85963	40985.022 ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\14T\
Data File : 10141613.D
Signal(s) : TCD1A.CH
Acq On : 14 Oct 2016 12:06 pm
Operator : amf
Sample : 4849-005
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 12:29:43 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\14T\
Data File : 10141614.D
Signal(s) : TCD1A.CH
Acq On : 14 Oct 2016 12:24 pm
Operator : amf
Sample : 4849-005
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 12:45:01 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 :

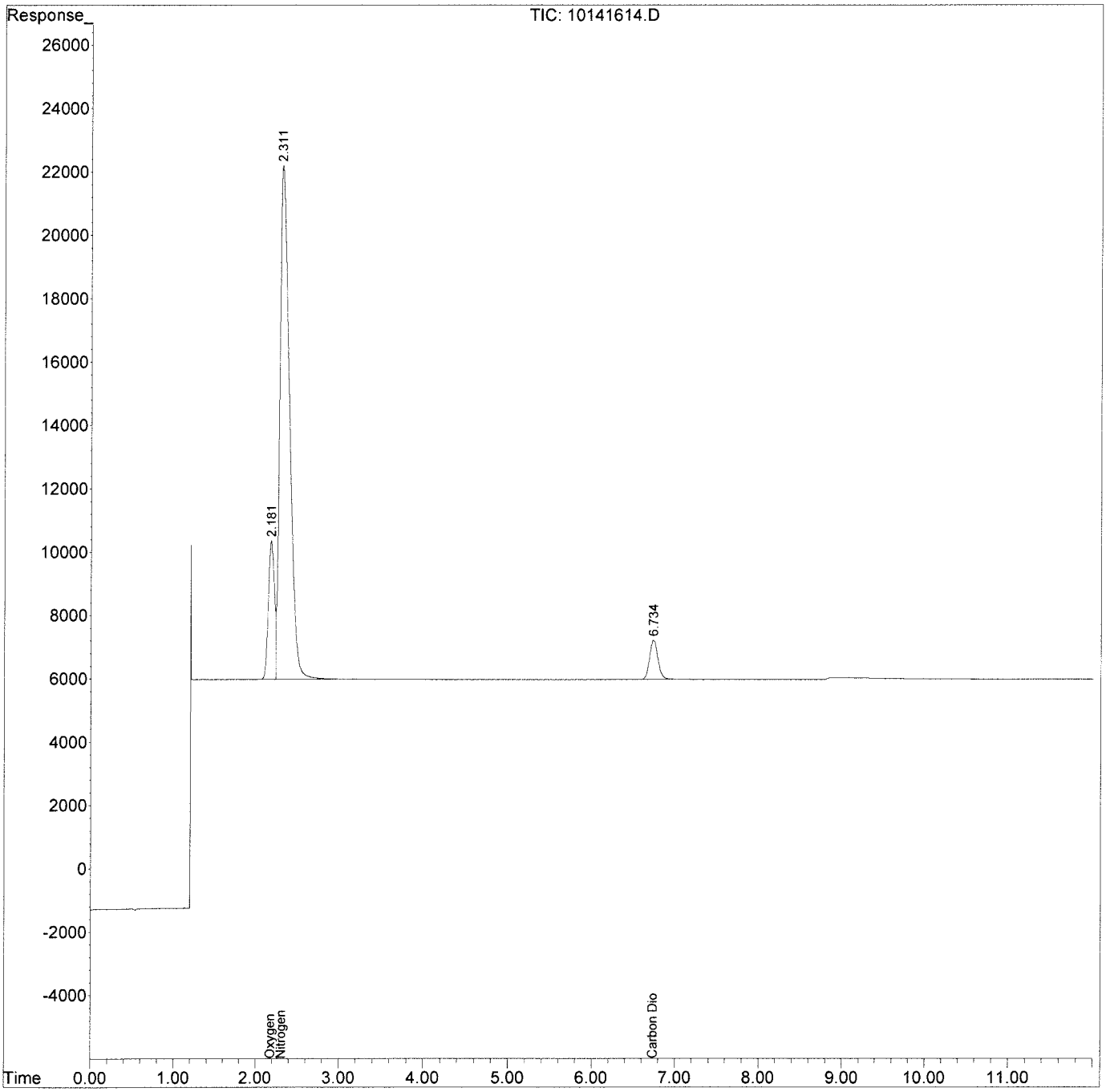
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.000	0	N.D.	ppm	d
2)	Oxygen	2.182	222358	143824.570	ppm	
3)	Nitrogen	2.313	1299708	735462.662	ppm	
4)	Carbon Monoxide	0.000	0	N.D.	ppm	
5)	Methane	0.000	0	N.D.	ppm	
6)	Carbon Dioxide	6.735	85477	40753.494	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\14T\
Data File : 10141614.D
Signal(s) : TCD1A.CH
Acq On : 14 Oct 2016 12:24 pm
Operator : amf
Sample : 4849-005
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 12:45:01 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\14T\
Data File : 10141602.D
Signal(s) : TCD1A.CH
Acq On : 14 Oct 2016 8:37 am
Operator : amf
Sample : mb
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 10:11:21 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 :

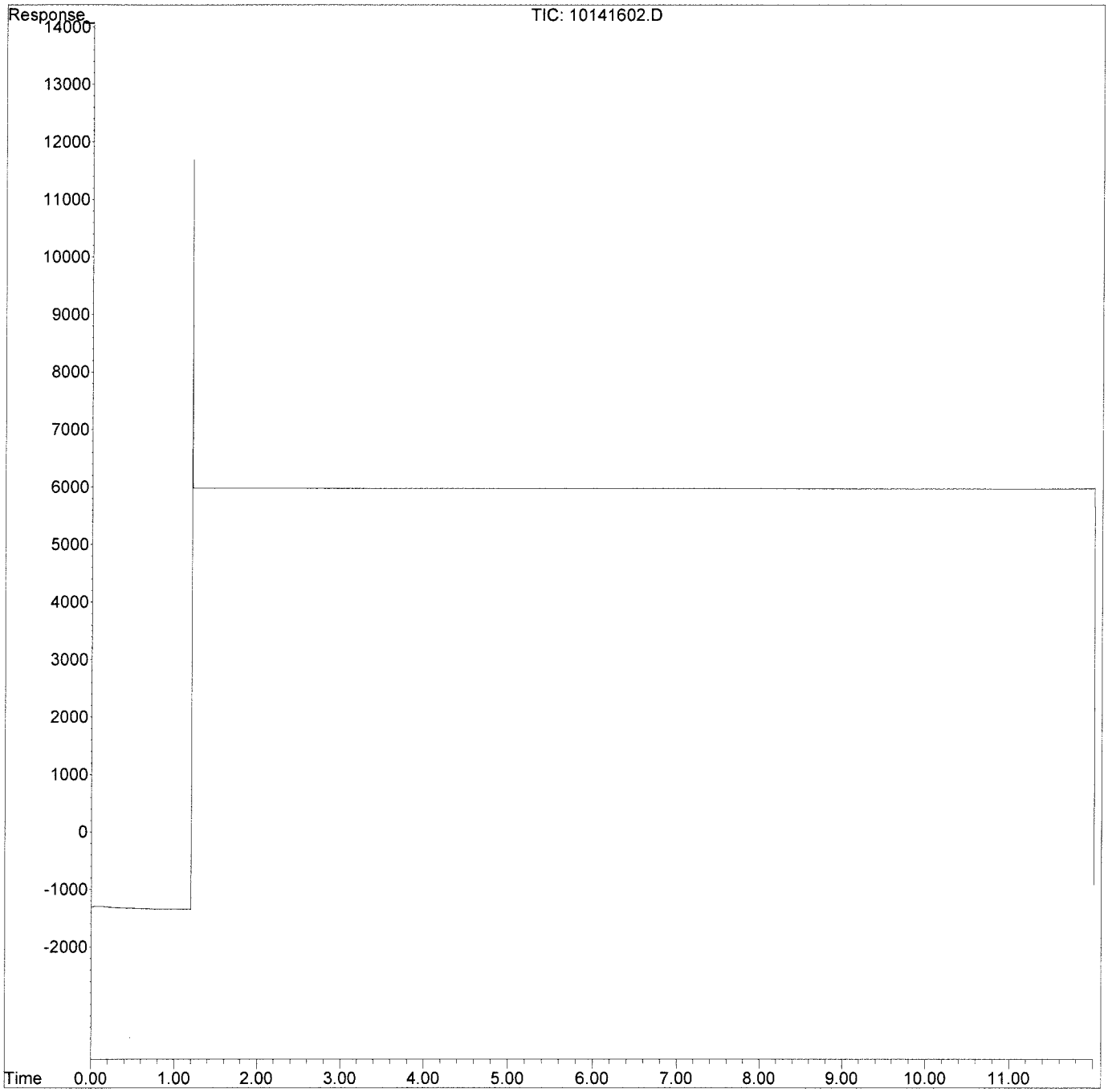
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\14T\
Data File : 10141602.D
Signal(s) : TCD1A.CH
Acq On : 14 Oct 2016 8:37 am
Operator : amf
Sample : mb
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 10:11:21 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

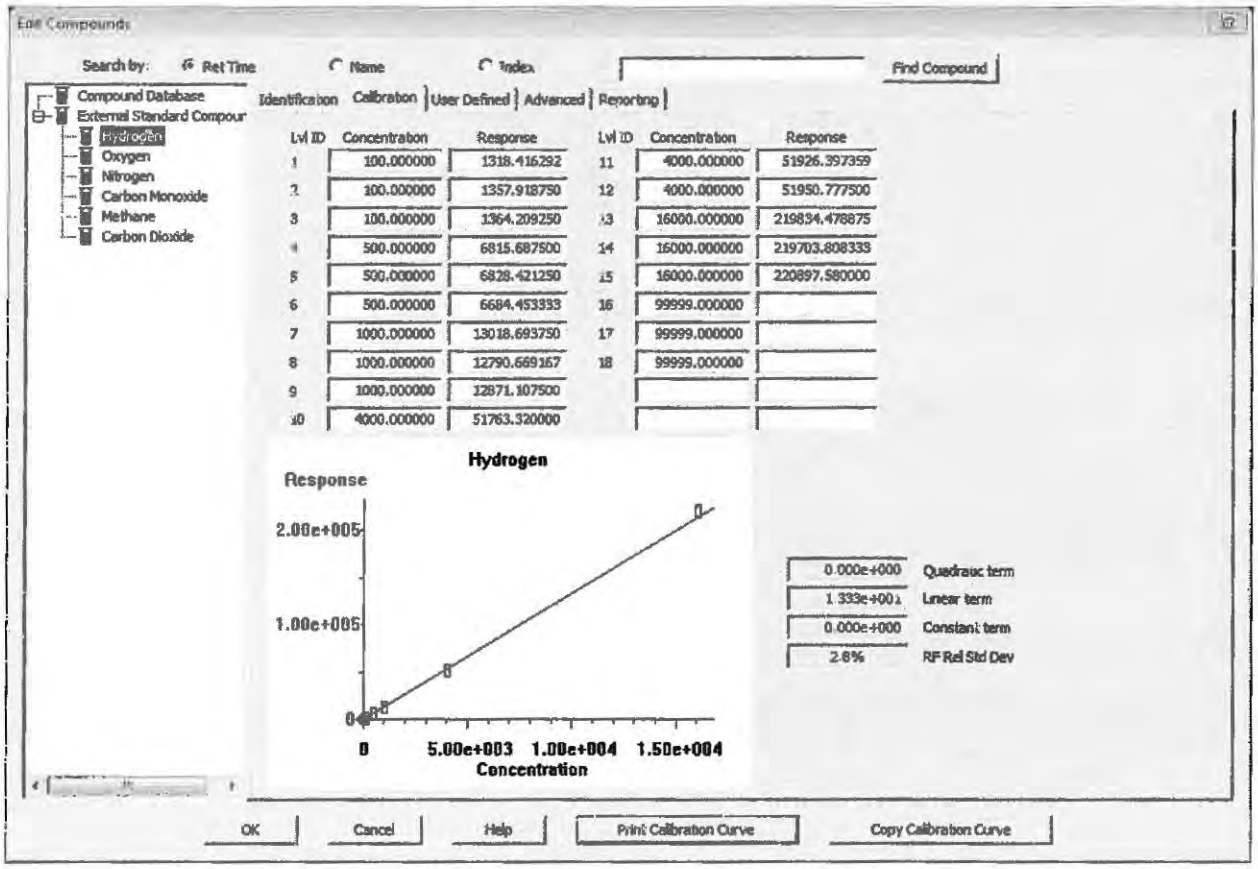
Method Path : I:\GC01\METHODS\
Method File : GC1_trip082216.M
Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
Last Update : Tue Aug 23 11:02:57 2016
Response Via : Initial Calibration

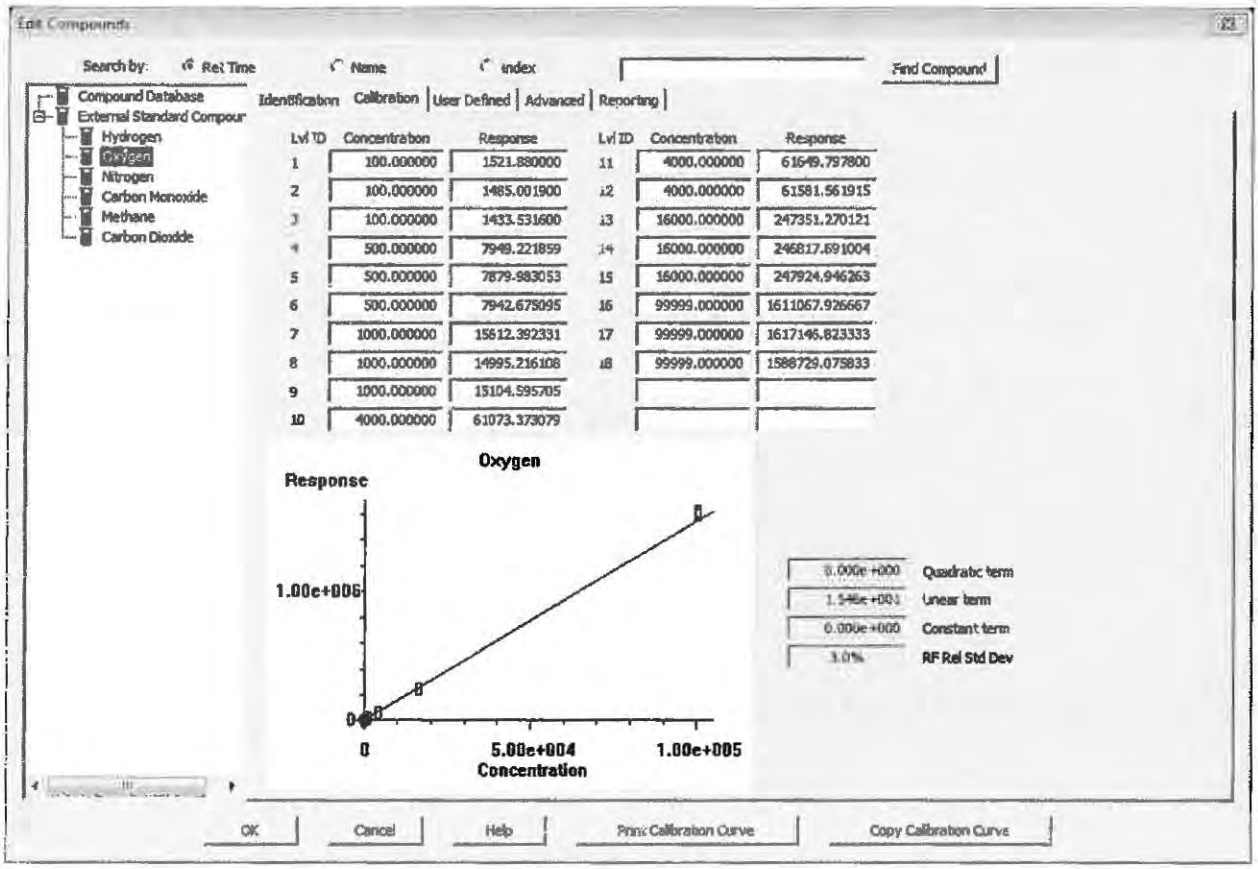
Calibration Files
1 =08221601.D 2 =08221602.D 3 =08221603.D
4 =08221604.D 5 =08221605.D 6 =08221606.D

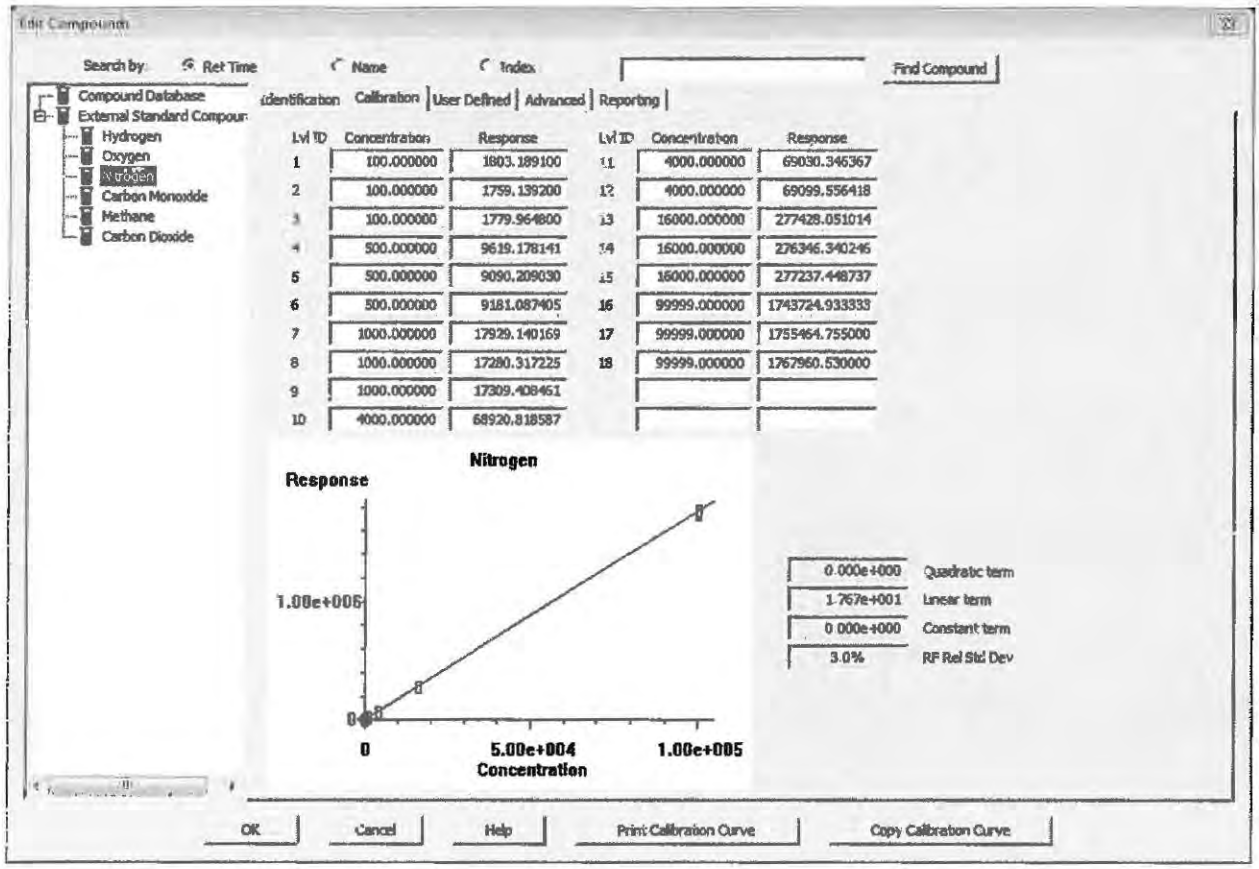
	Compound	1	2	3	4	5	6	Avg		%RSD
1)	Hydrogen	1.318	1.358	1.364	1.363	1.366	1.337	1.333	E1	2.78
2)	Oxygen	1.522	1.485	1.434	1.590	1.576	1.589	1.546	E1	3.01
3)	Nitrogen	1.803	1.759	1.780	1.924	1.818	1.836	1.767	E1	2.97
4)	Carbon Monoxide	1.653	1.676	1.610	1.844	1.851	1.826	1.735	E1	3.80
5)	Methane	1.240	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

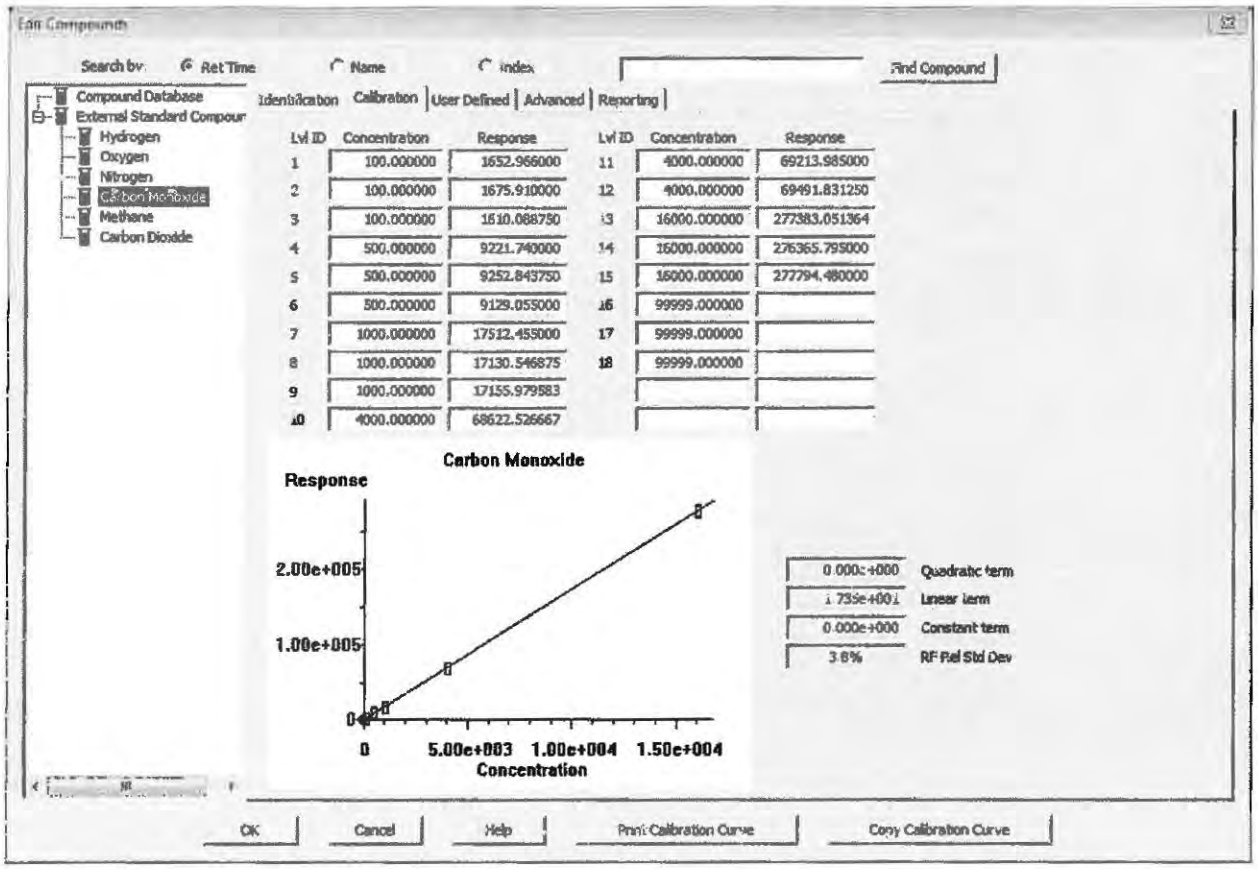
(#) = Out of Range ### Number of calibration levels exceeded format ###

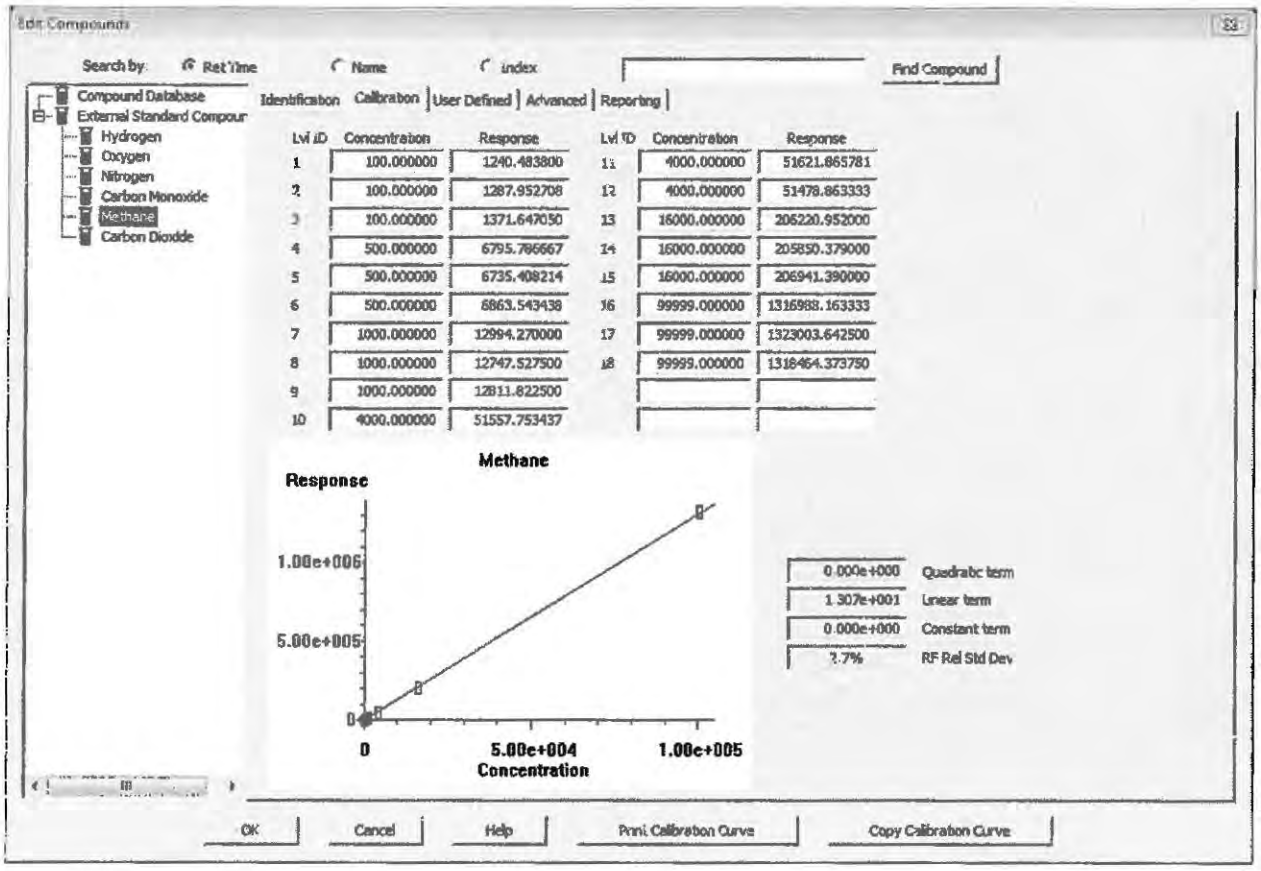
GC1_trip082216.M Tue Aug 23 12:46:23 2016

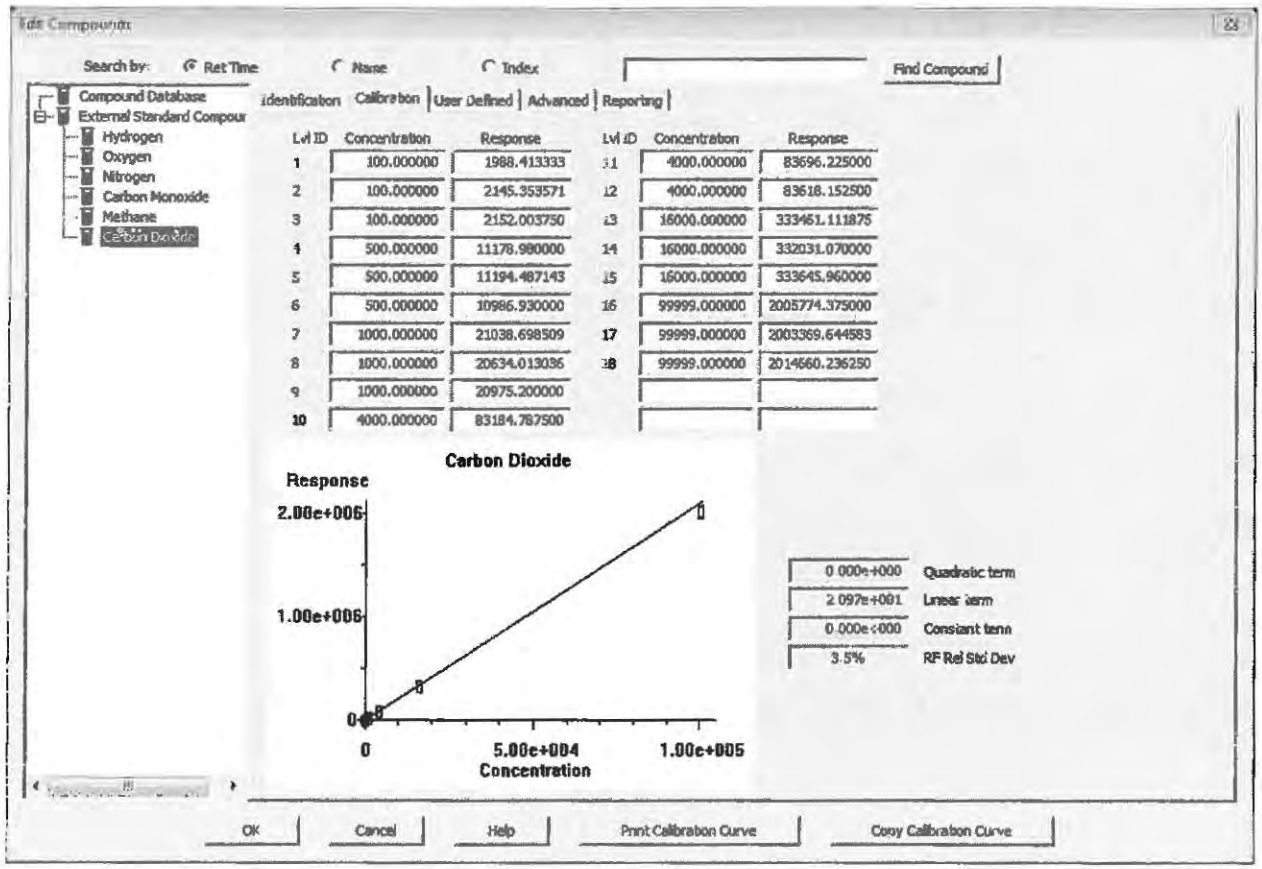

Edit Compounds
Search by:
Ret Time
Name
Index
Find Compound
Compound Database
External Standard Compour
Hydrogen
Oxygen
Nitrogen
Carbon Monoxide
Methane
Carbon Dioxide
Identification
Calibration
User Defined
Advanced
Reporting
Lvl ID
Concentration
Response
1 100.000000 1318.416292
2 100.000000 1357.918750
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 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 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	

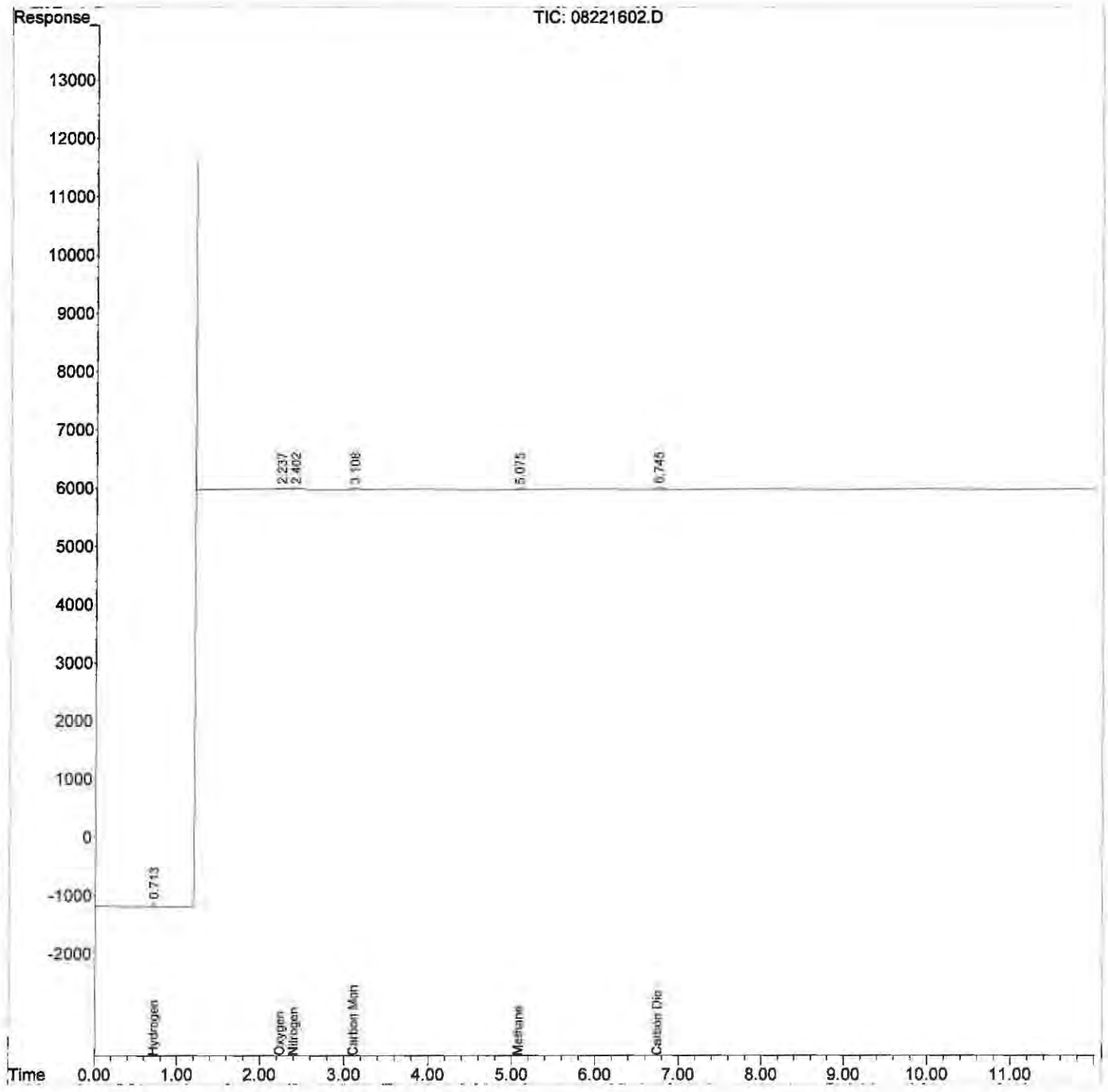
(f)=RT Delta > 1/2 Window (m)=manual int.

8/22/16

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 :

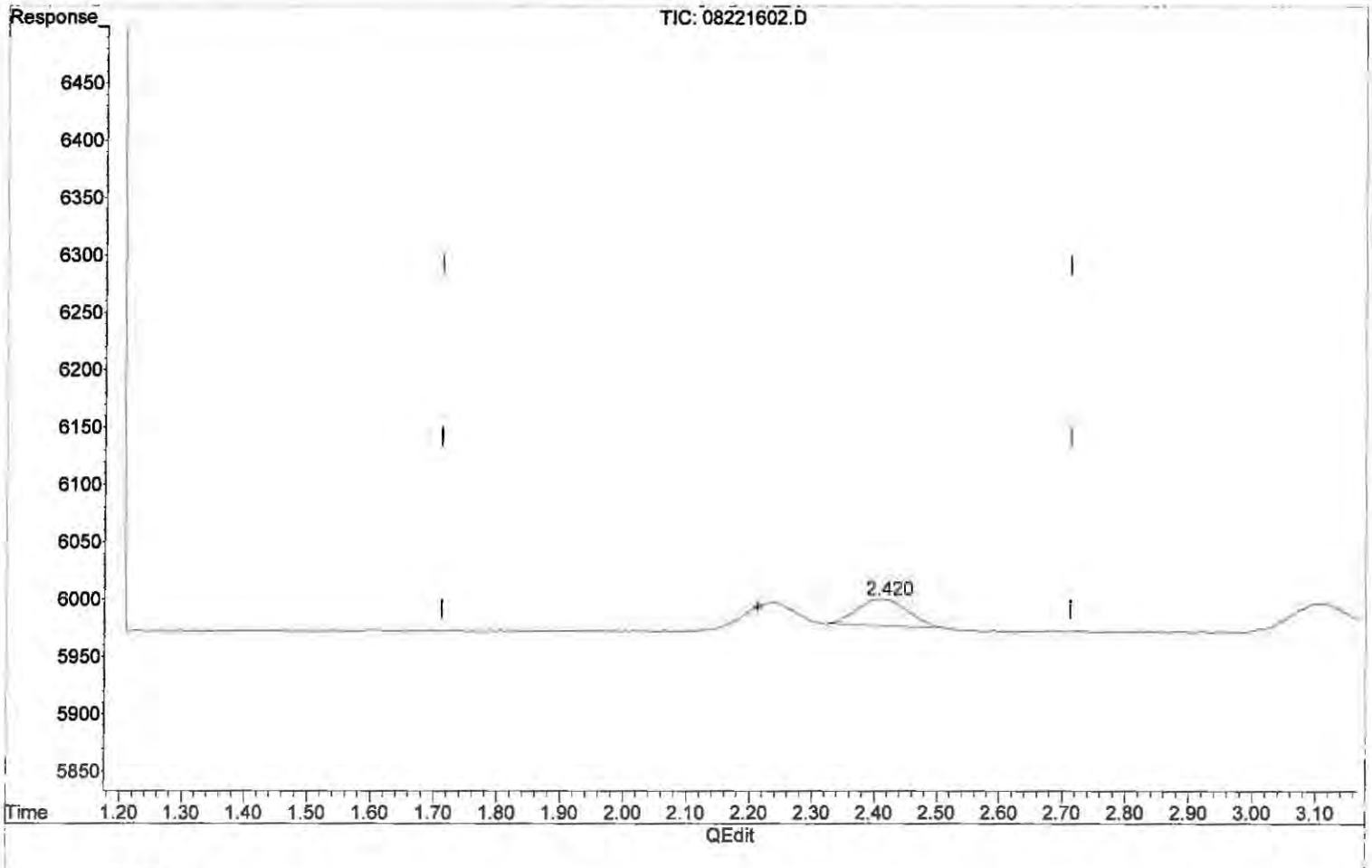


Quantitation Report (Qedit)

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

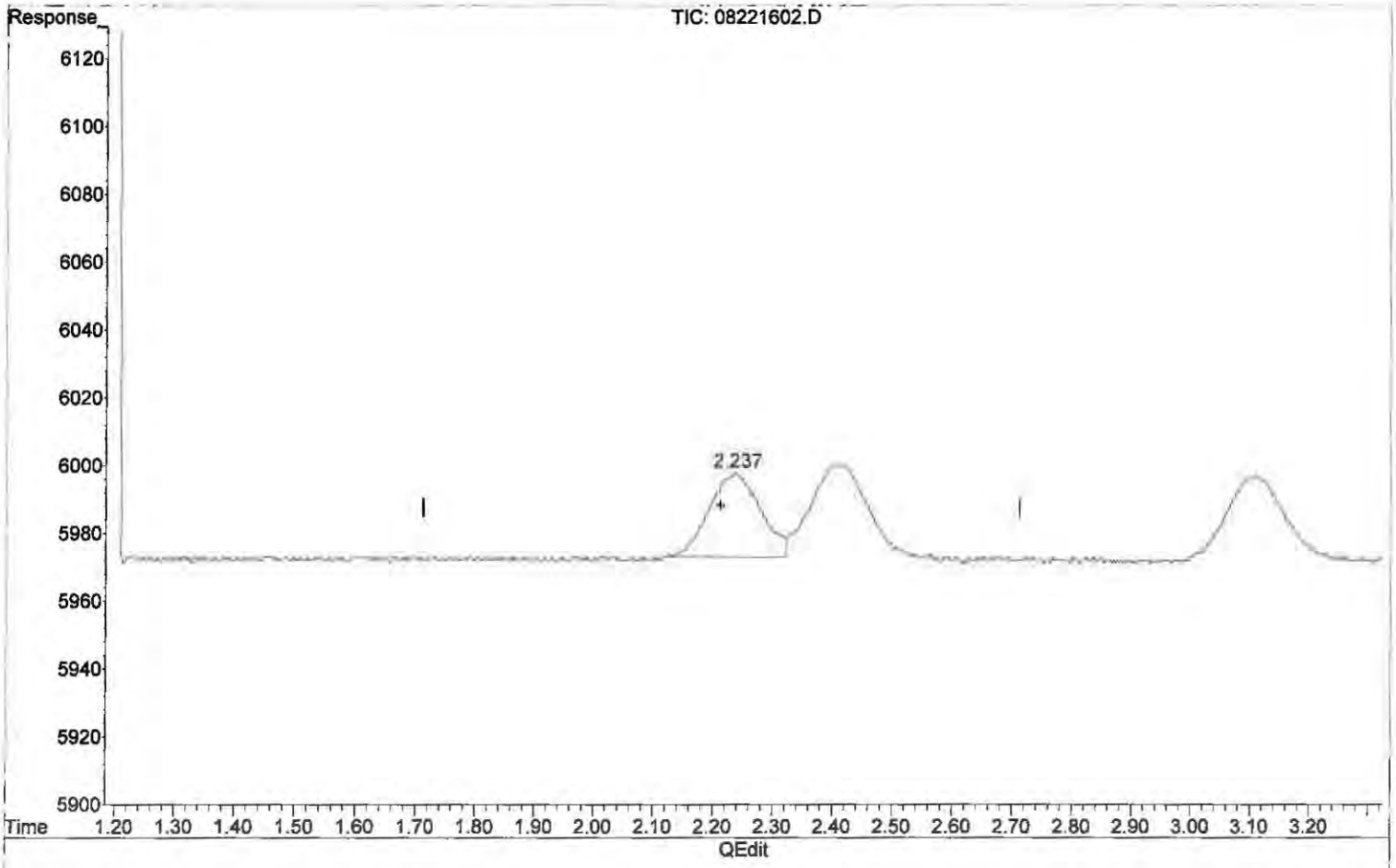
(+) = Expected Retention Time

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

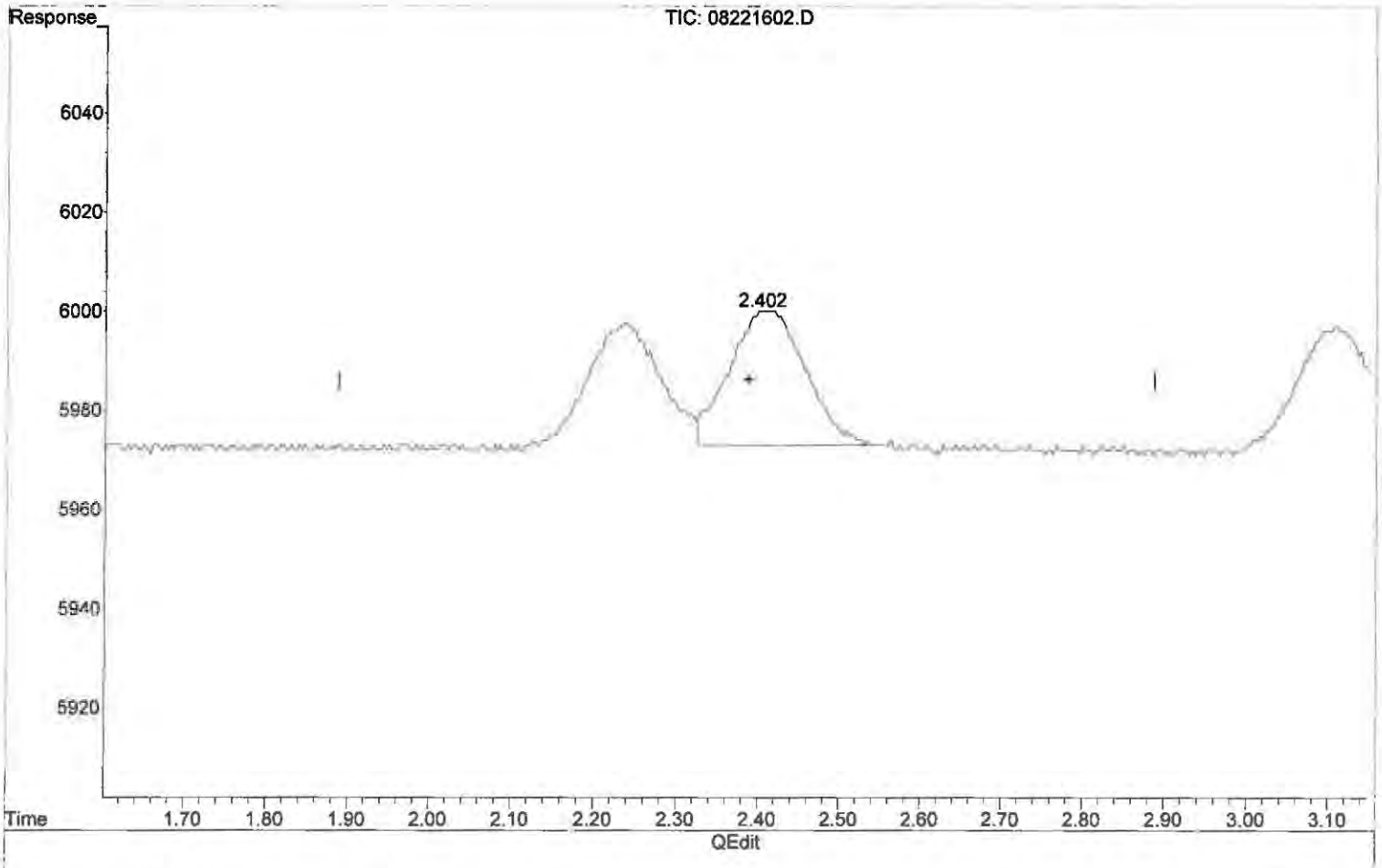
(+) = Expected Retention Time

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

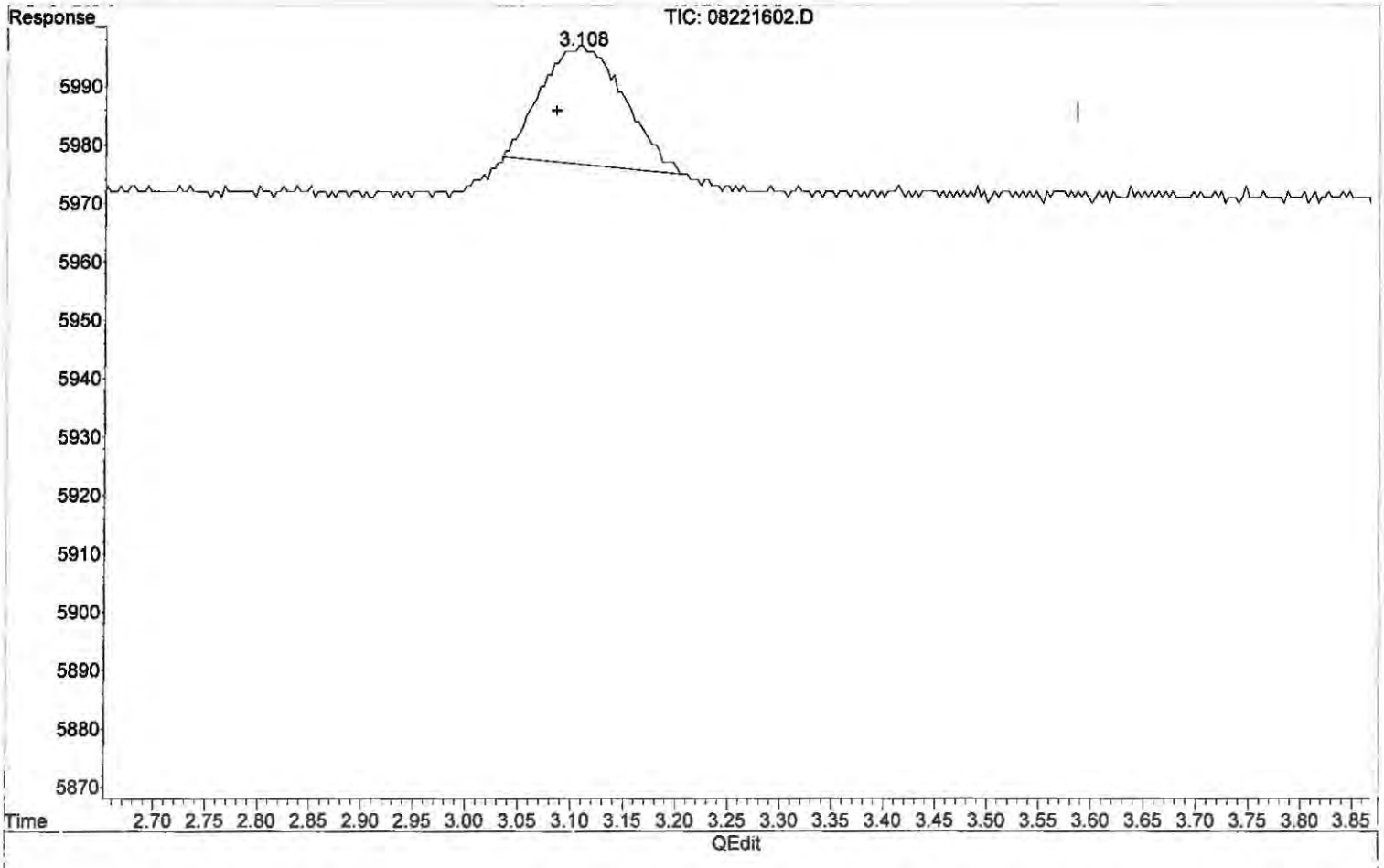
(+) = Expected Retention Time

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 :



(4) Carbon Monoxide

3.111min 669.201 ppm

response 1106

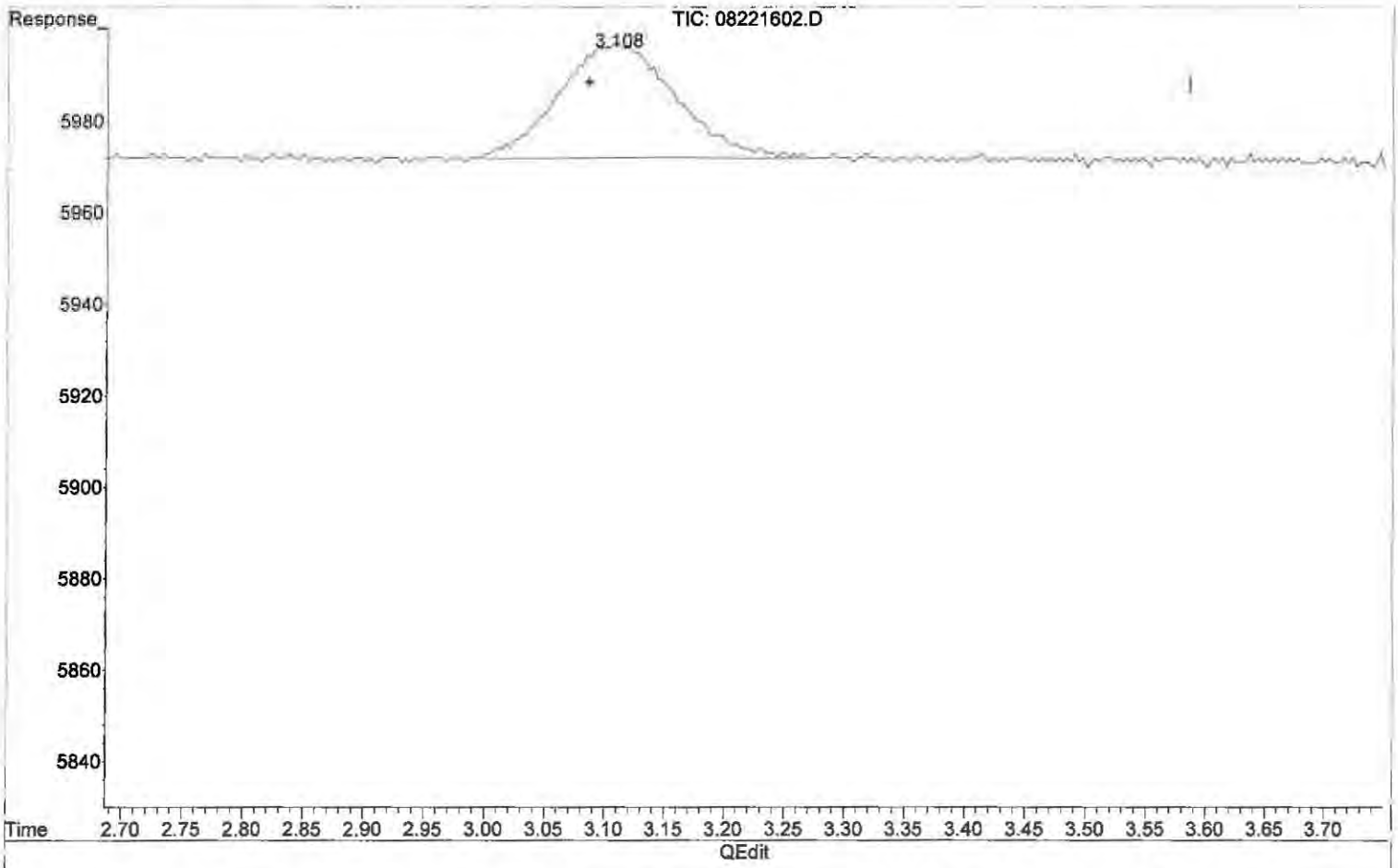
(+) = Expected Retention Time

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 :

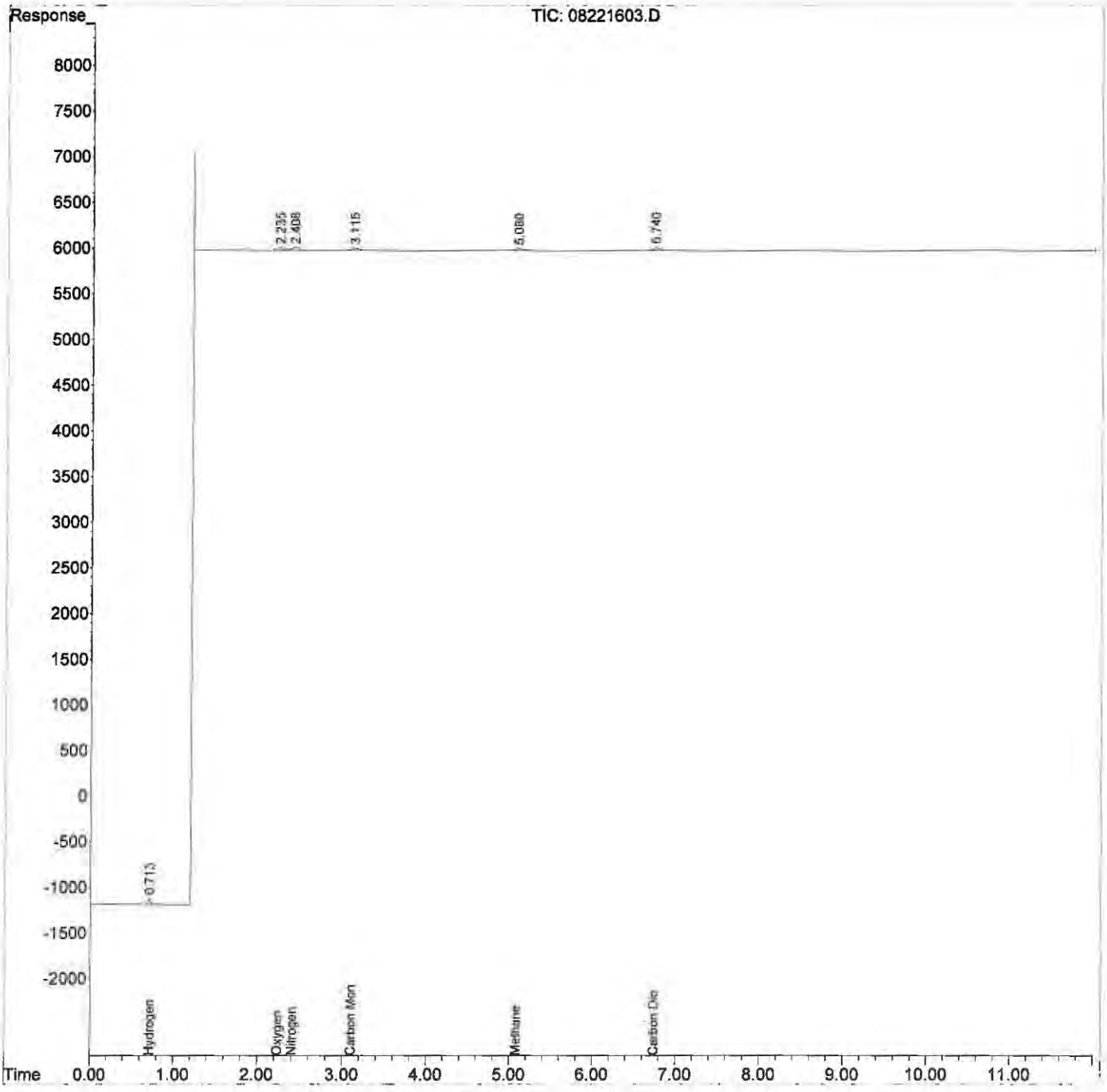
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.713	1364	1019.461	ppm	m
2)	Oxygen	2.235	1434	953.500	ppm	m
3)	Nitrogen	2.408	1780	999.327	ppm	m
4)	Carbon Monoxide	3.106	1610	967.347	ppm	
5)	Methane	5.080	1372	1084.976	ppm	m
6)	Carbon Dioxide	6.749	2152	1041.183	ppm	

(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 :

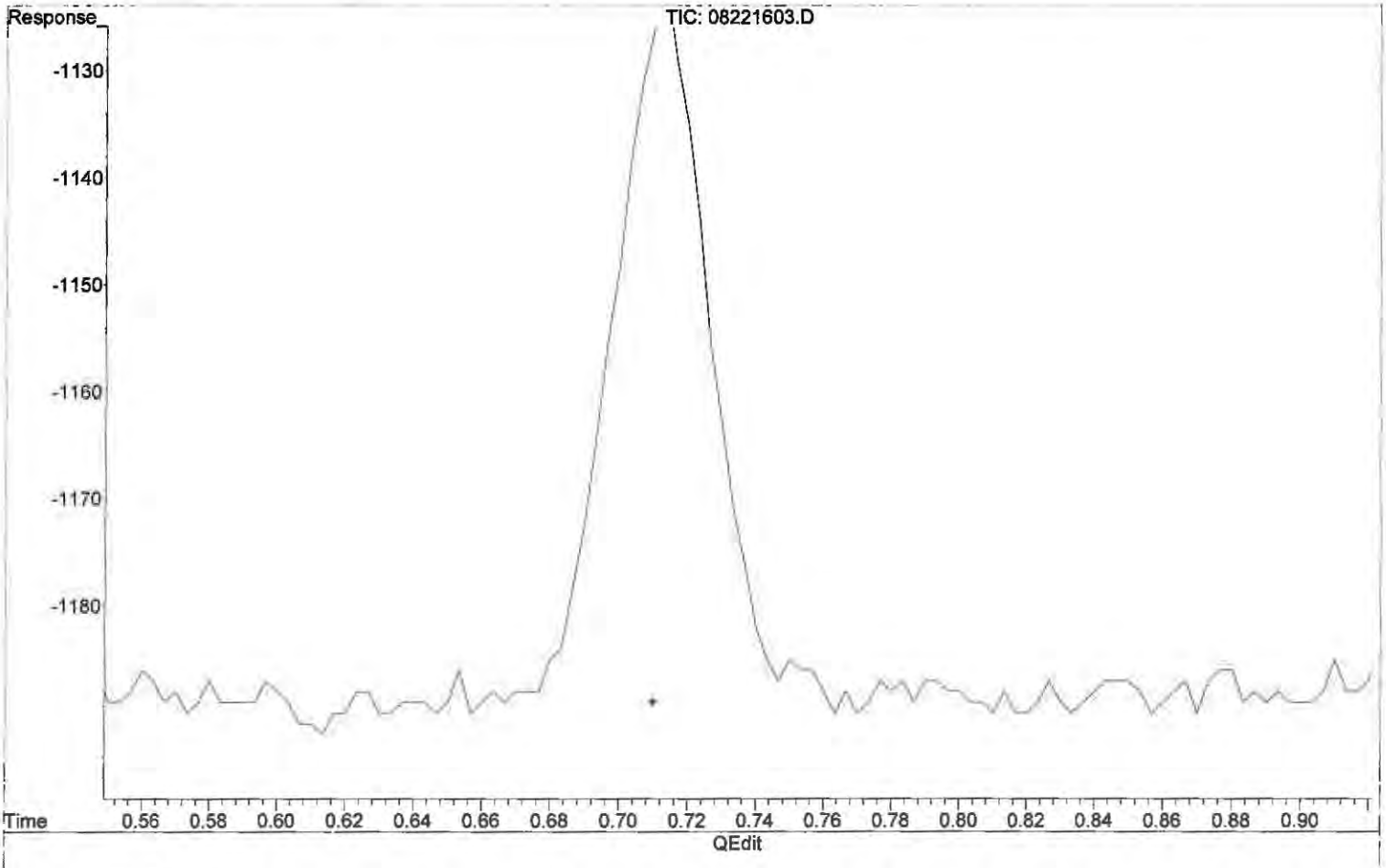


Quantitation Report (Qedit)

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

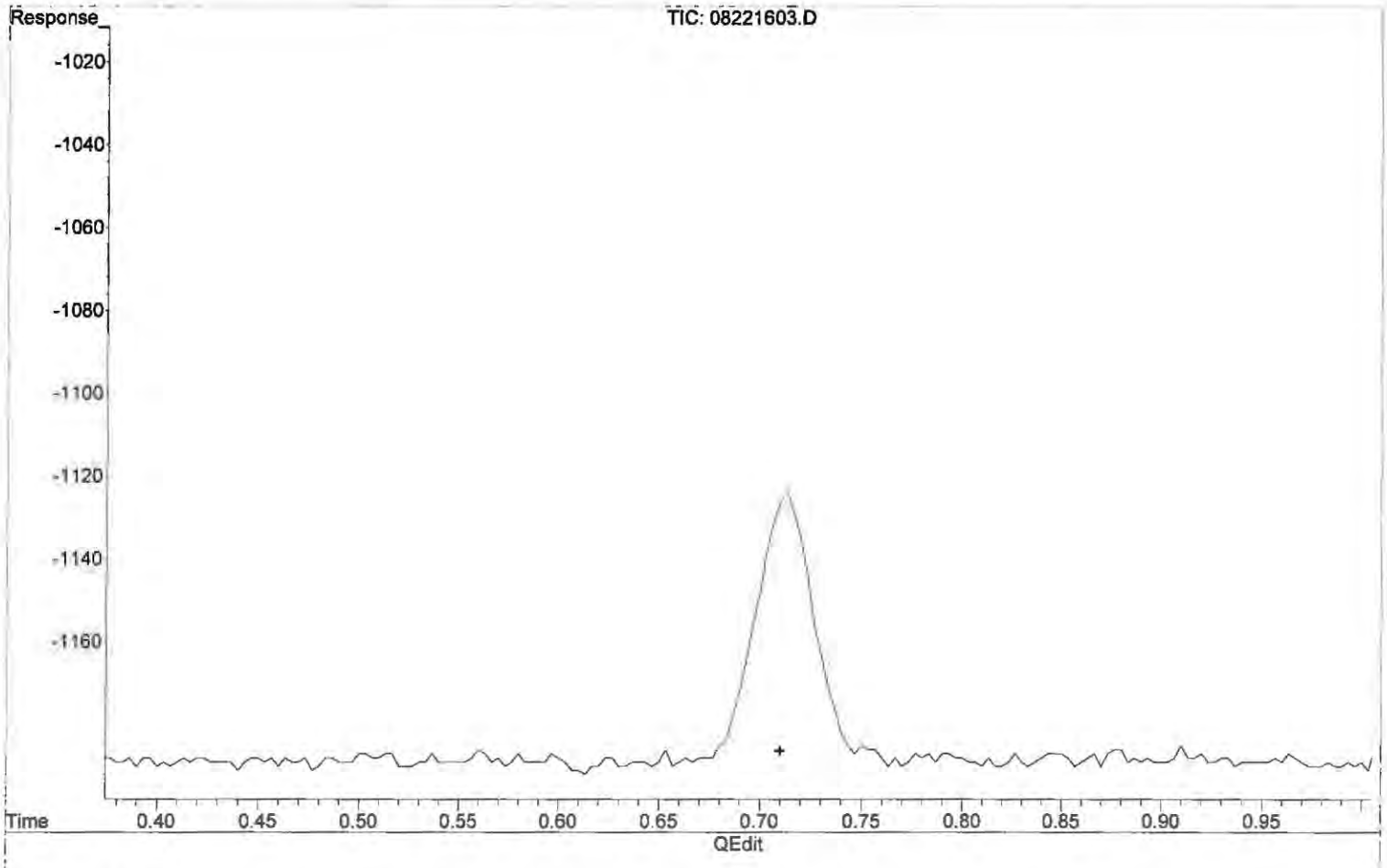
(+) = Expected Retention Time

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

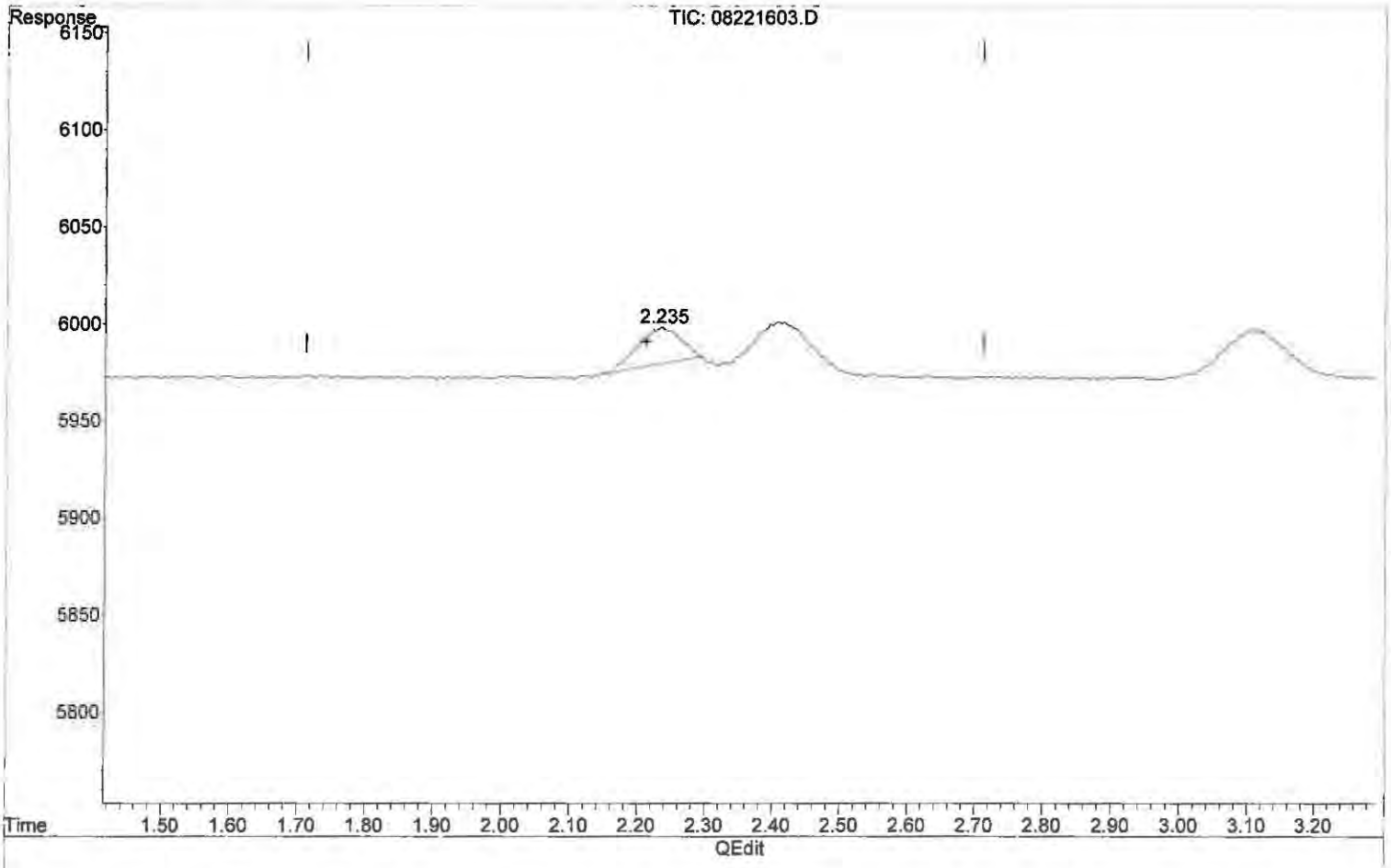
(+) = Expected Retention Time

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

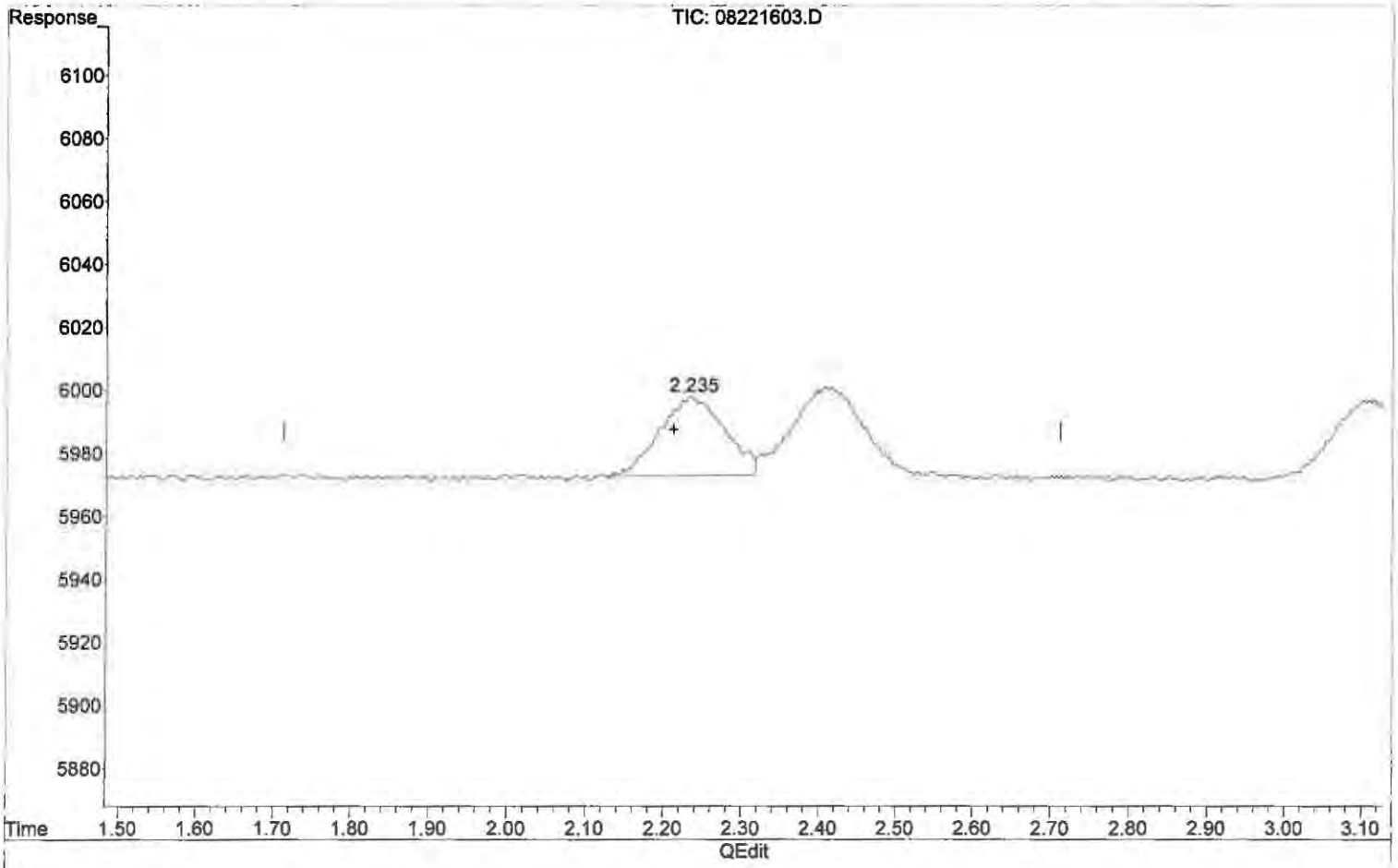
(+) = Expected Retention Time

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

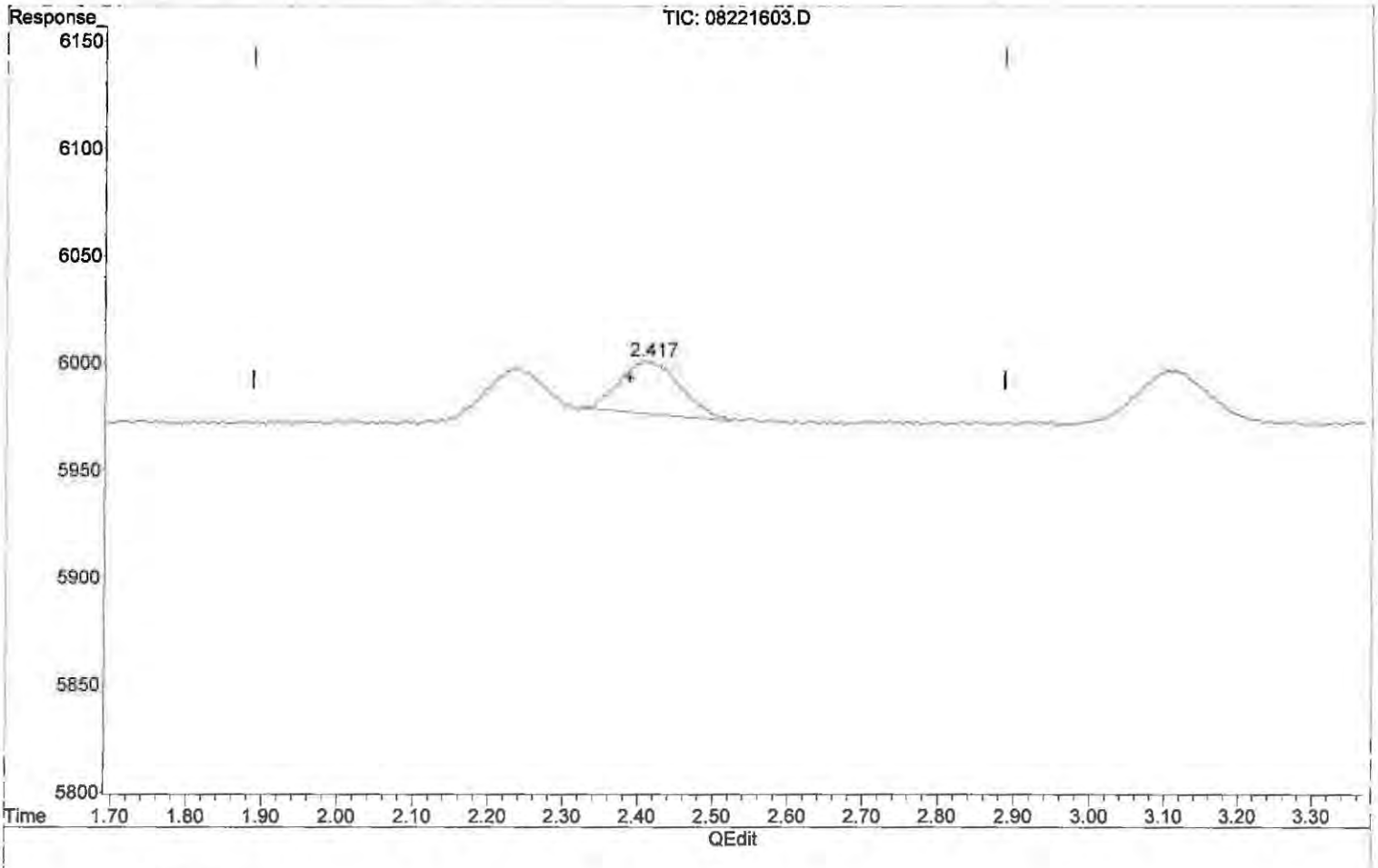
(+) = Expected Retention Time

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

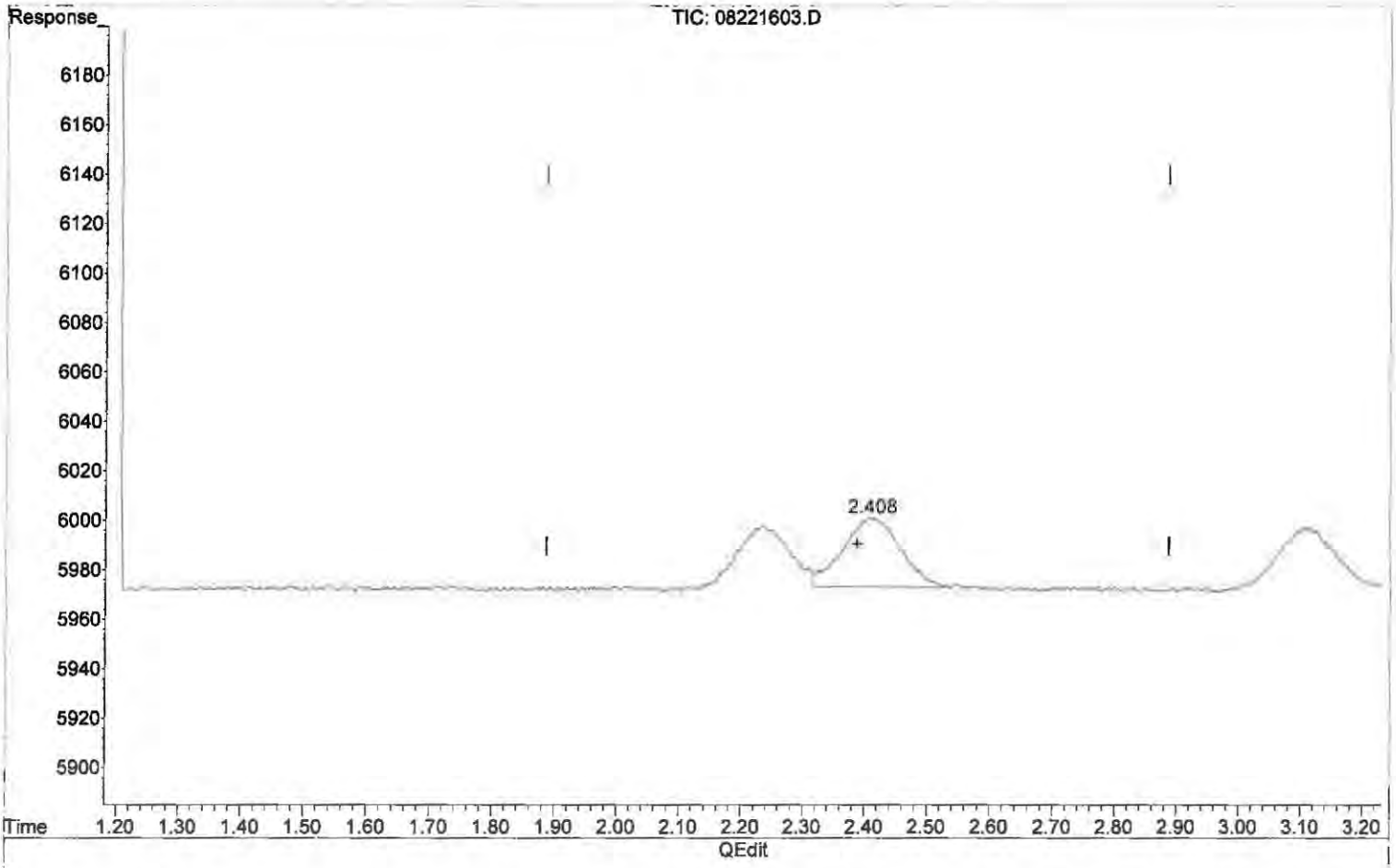
(+) = Expected Retention Time

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

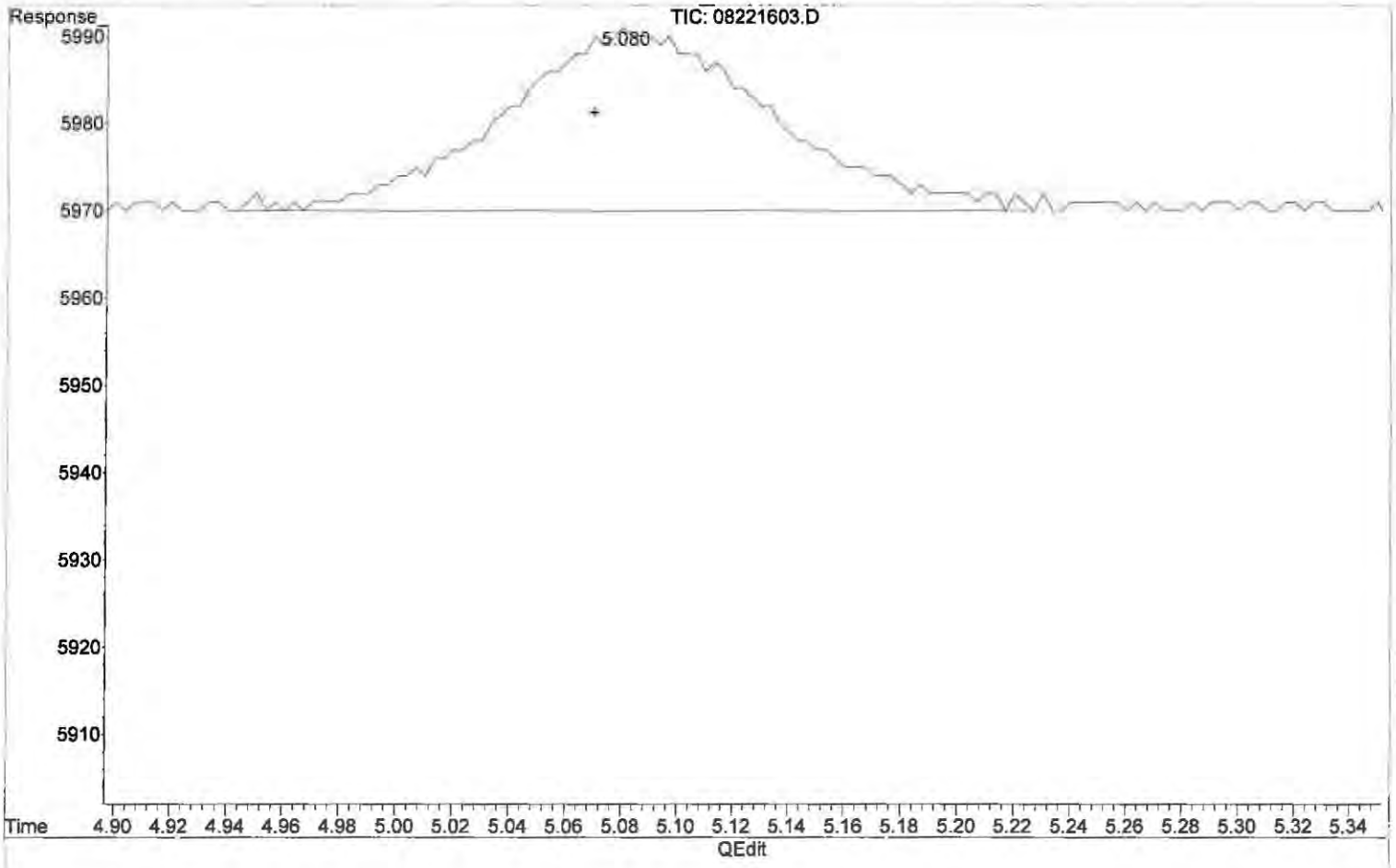
(+) = Expected Retention Time

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

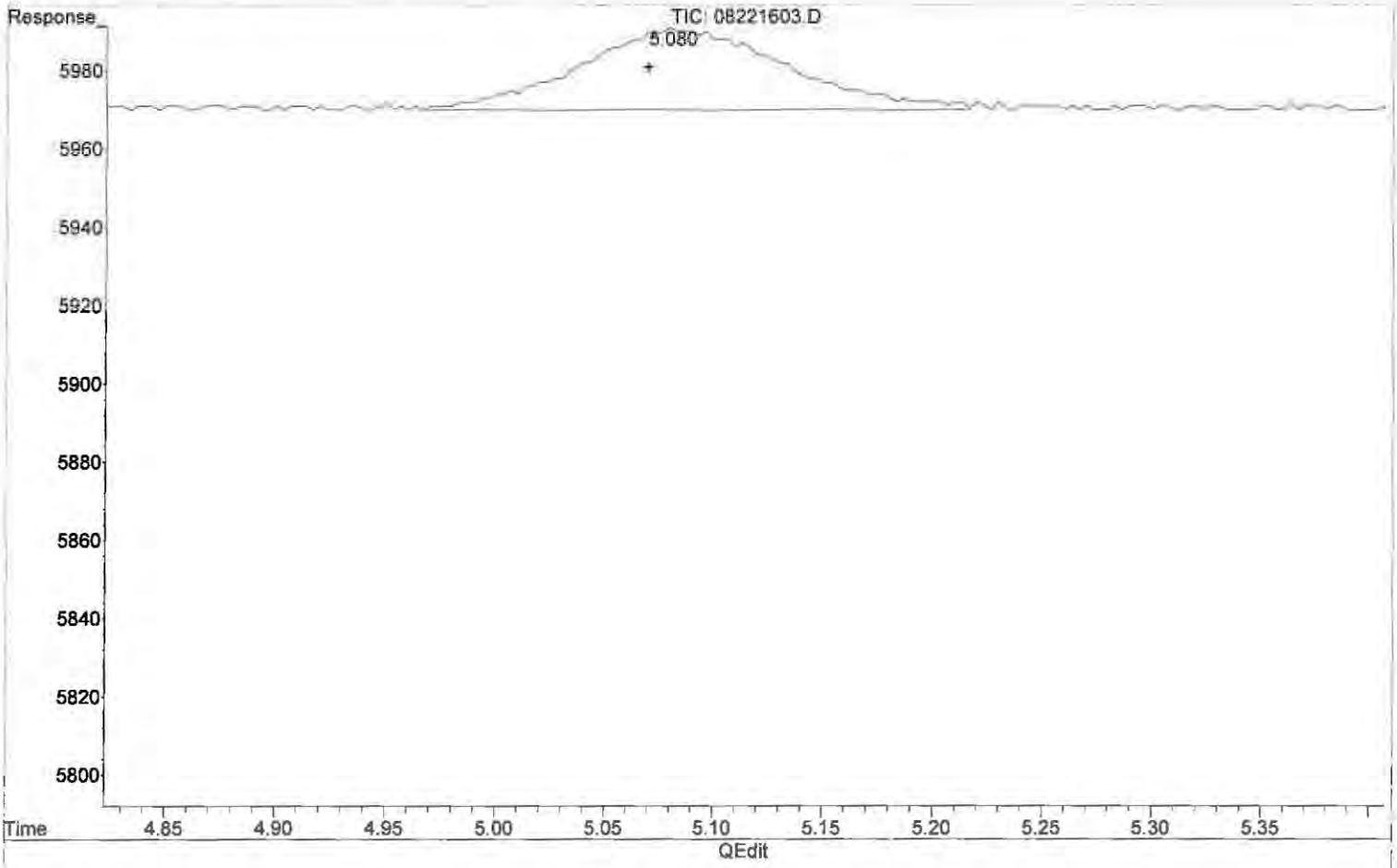
(+) = Expected Retention Time

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

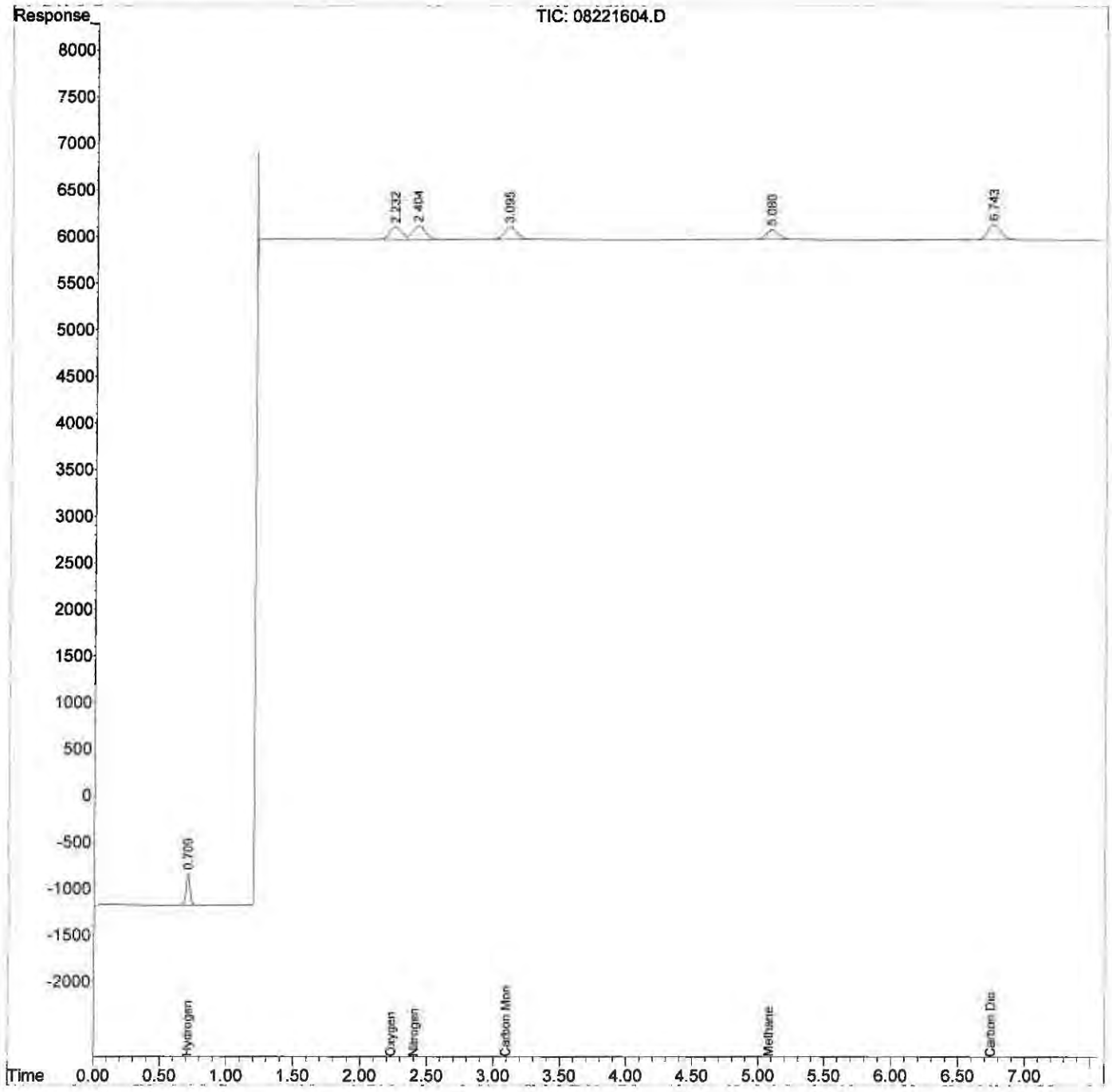
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

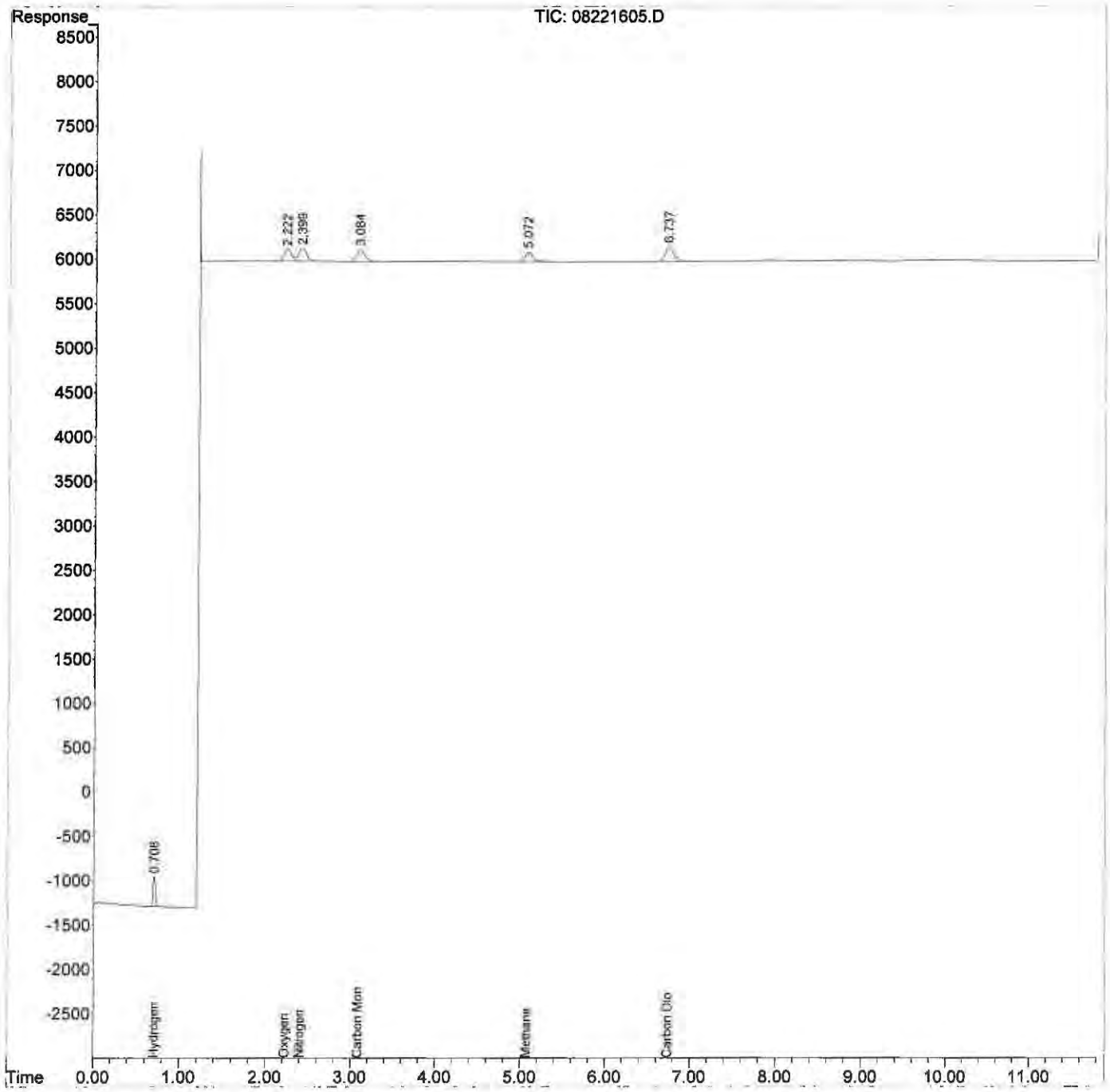
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.709	6828	5054.643	ppm
2)	Oxygen	2.224	7880	5226.963	ppm
3)	Nitrogen	2.401	9090	5004.155	ppm
4)	Carbon Monoxide	3.088	9253	5456.239	ppm
5)	Methane	5.075	6735	5122.723	ppm
6)	Carbon Dioxide	6.740	11194	5254.662	ppm

(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 :

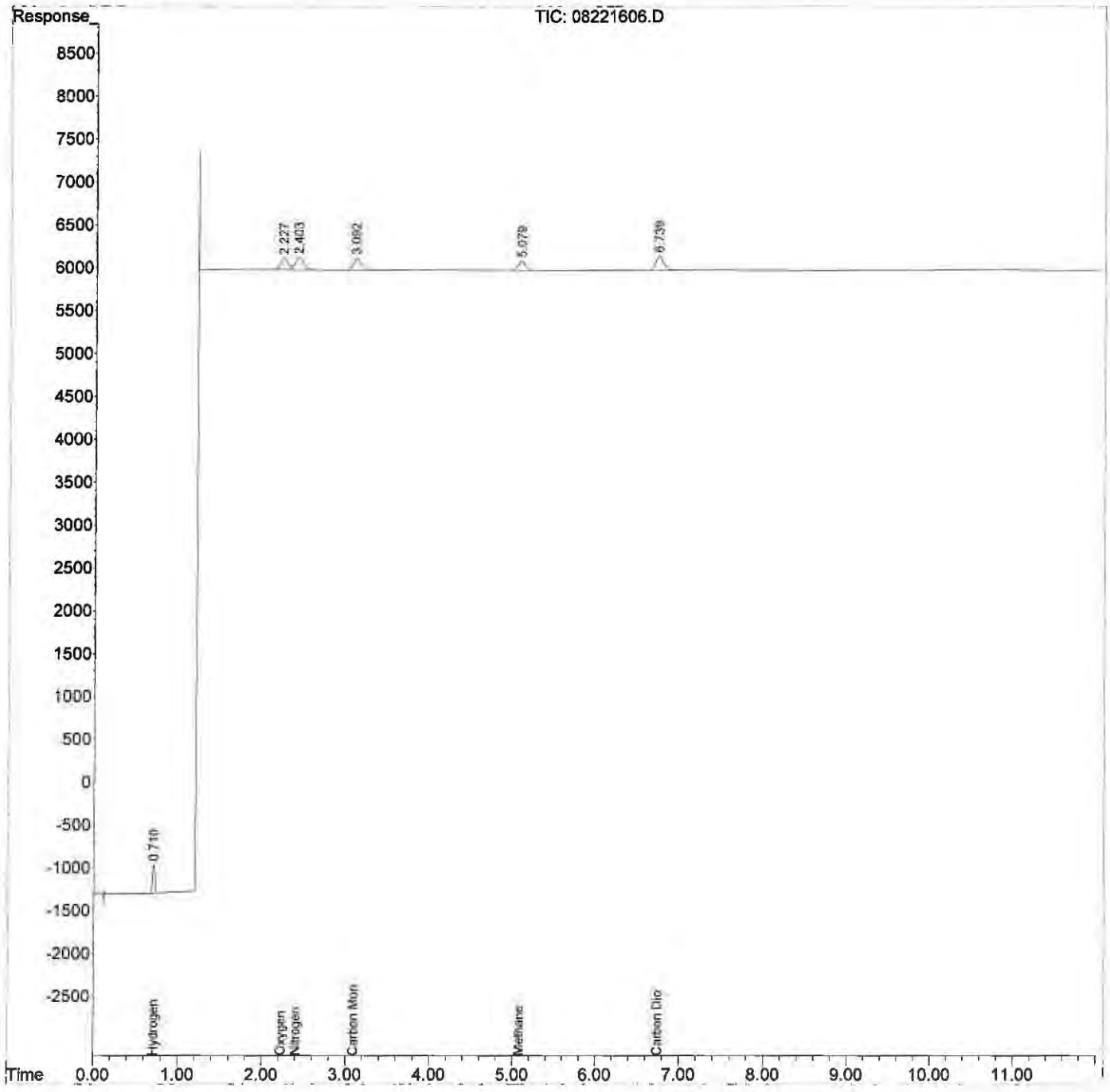
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.712	6684	4937.282	ppm
2)	Oxygen	2.229	7943	5221.147	ppm
3)	Nitrogen	2.405	9181	5053.344	ppm
4)	Carbon Monoxide	3.096	9129	5286.762	ppm
5)	Methane	5.079	6864	5194.678	ppm
6)	Carbon Dioxide	6.741	10987	5105.231	ppm

(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 :

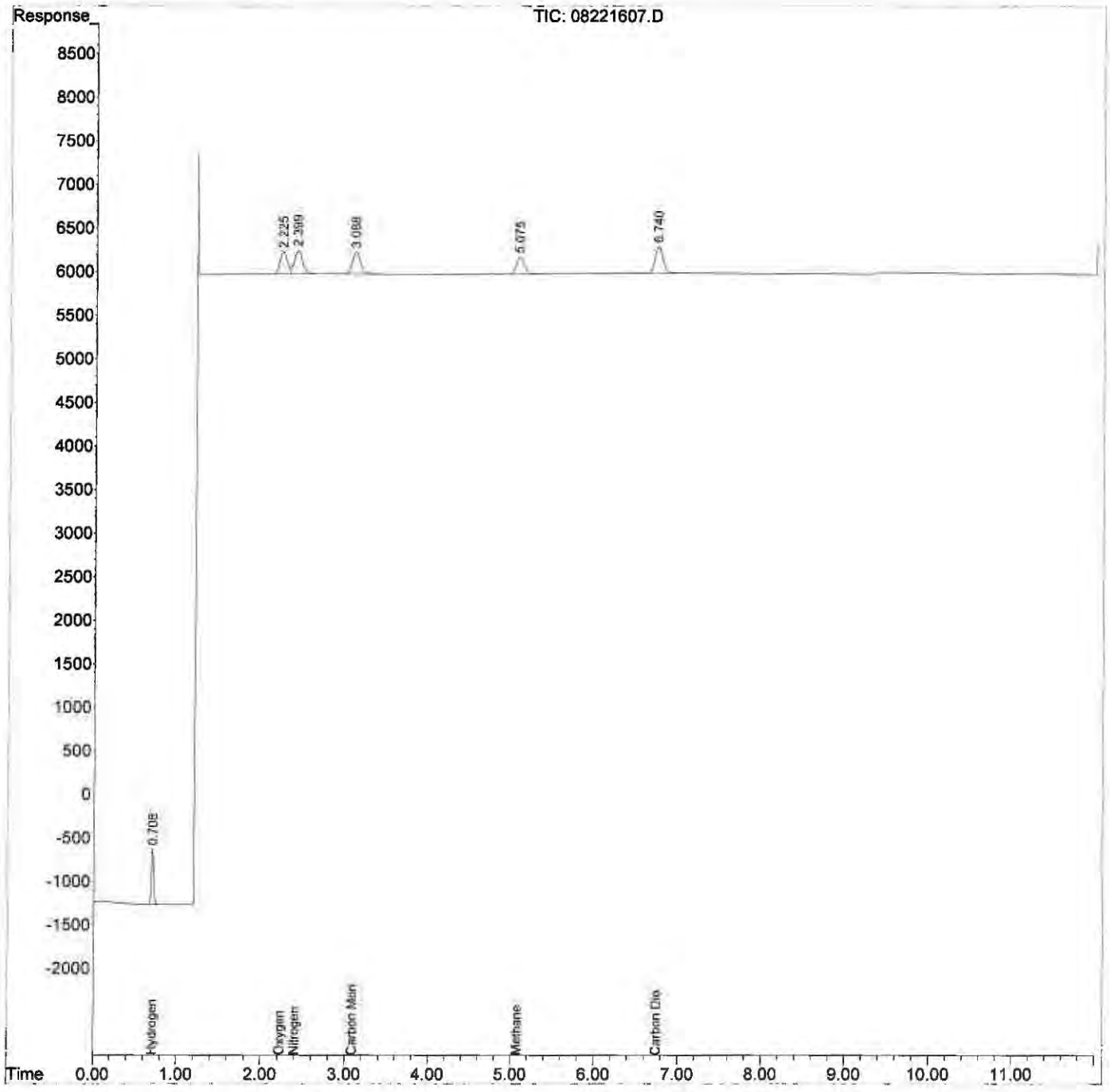
	Compound	R.T.	Response	Conc Units
Target Compounds				
1)	Hydrogen	0.710	13019	9636.034 ppm
2)	Oxygen	2.226	15612	10187.765 ppm
3)	Nitrogen	2.402	17929	9850.826 ppm
4)	Carbon Monoxide	3.090	17512	10045.681 ppm
5)	Methane	5.078	12994	9771.314 ppm
6)	Carbon Dioxide	6.741	21039	9741.754 ppm

(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 :

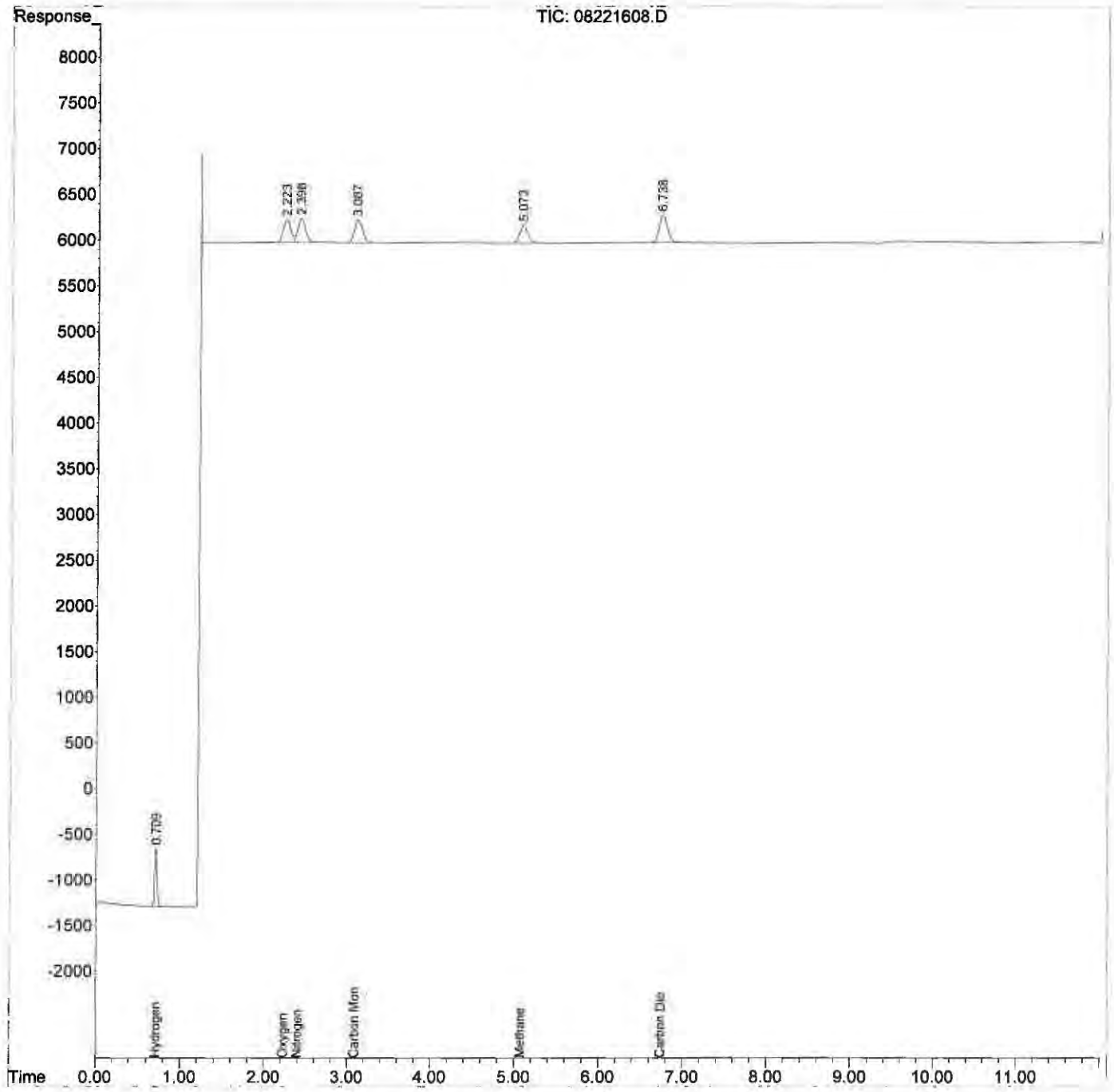
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.710	12791	9516.739	ppm
2)	Oxygen	2.225	14995	9758.854	ppm
3)	Nitrogen	2.401	17280	9514.619	ppm
4)	Carbon Monoxide	3.089	17131	9820.198	ppm
5)	Methane	5.075	12748	9617.190	ppm
6)	Carbon Dioxide	6.739	20634	9589.748	ppm

(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

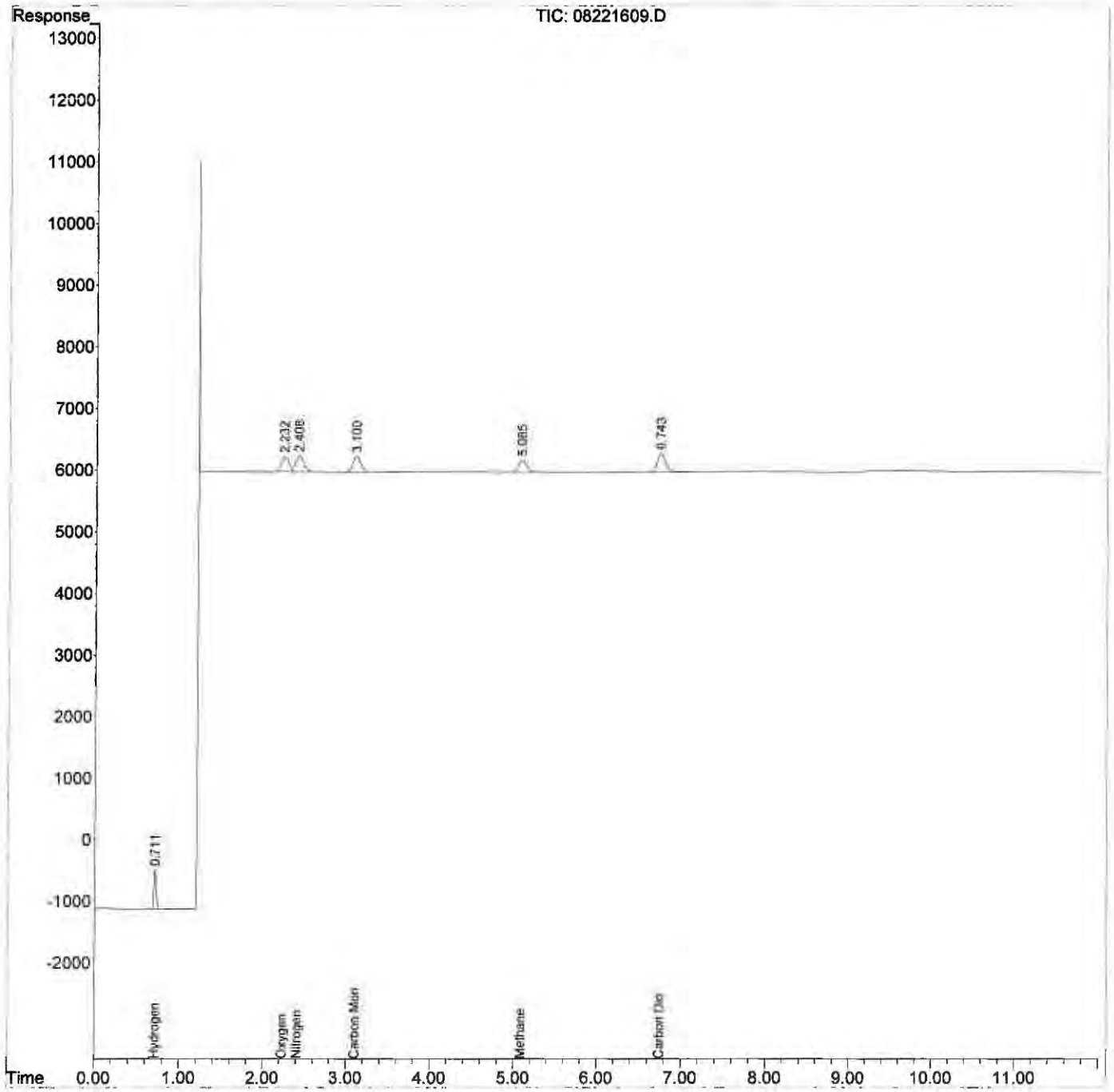
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

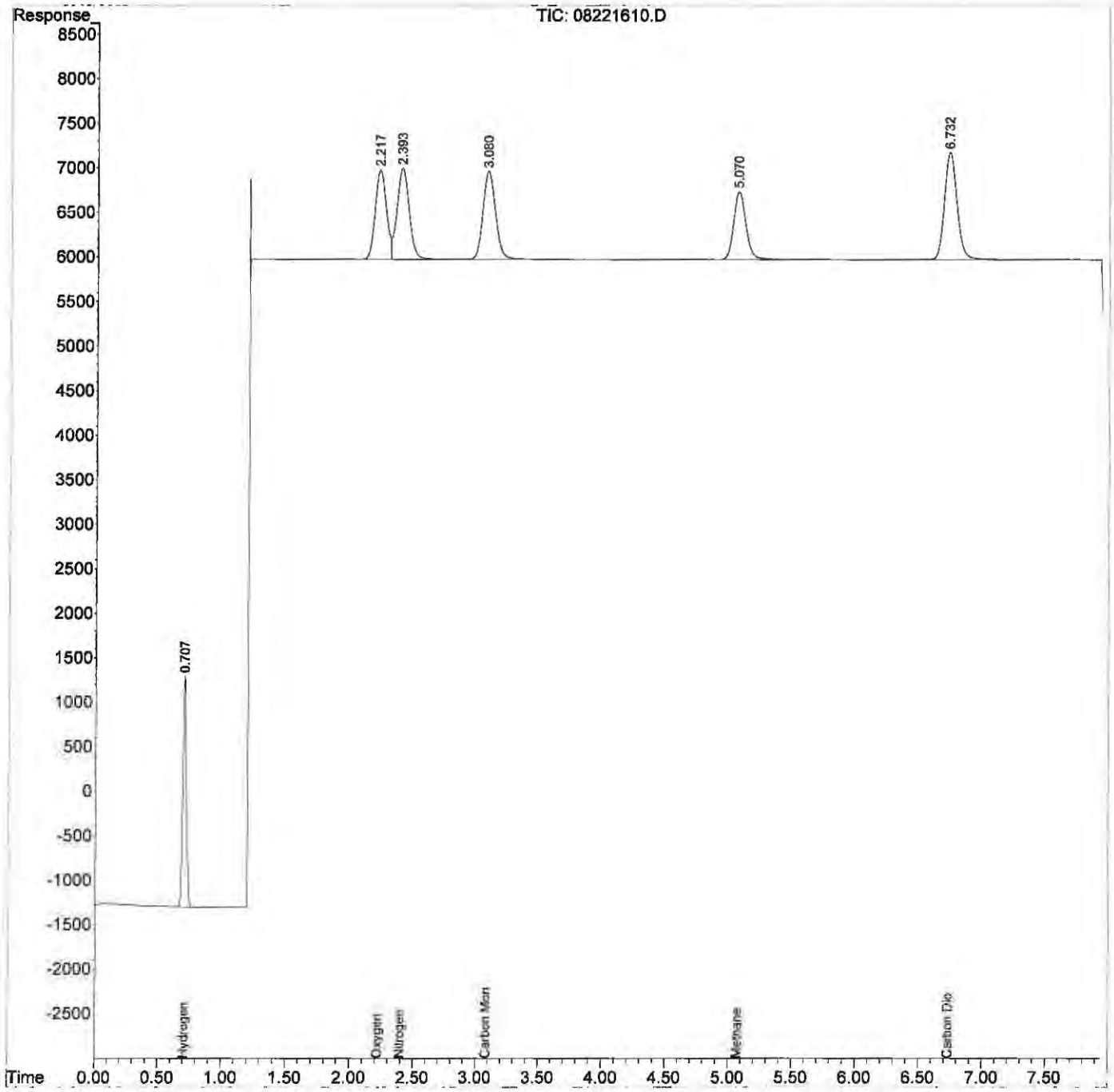
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.709	51763	38905.801	ppm
2)	Oxygen	2.219	61073	39928.807	ppm
3)	Nitrogen	2.395	68921	38354.986	ppm
4)	Carbon Monoxide	3.082	68623	39489.700	ppm
5)	Methane	5.072	51558	39209.427	ppm
6)	Carbon Dioxide	6.734	83185	38946.942	ppm

(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 :

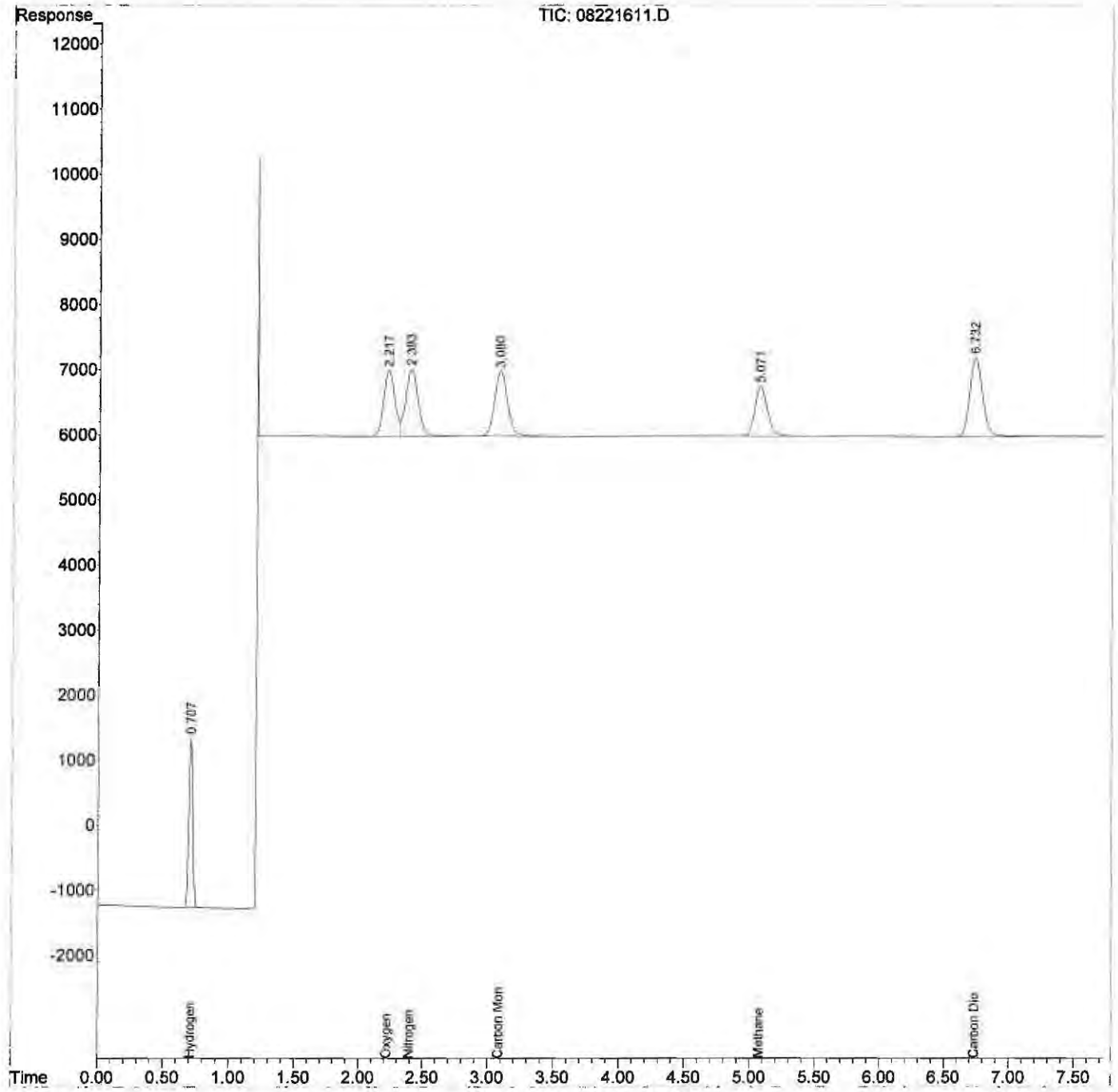
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.708	51926	39135.426	ppm
2)	Oxygen	2.219	61650	40312.840	ppm
3)	Nitrogen	2.395	69030	38574.578	ppm
4)	Carbon Monoxide	3.082	69214	39880.940	ppm
5)	Methane	5.072	51622	39335.929	ppm
6)	Carbon Dioxide	6.734	83696	39289.832	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

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

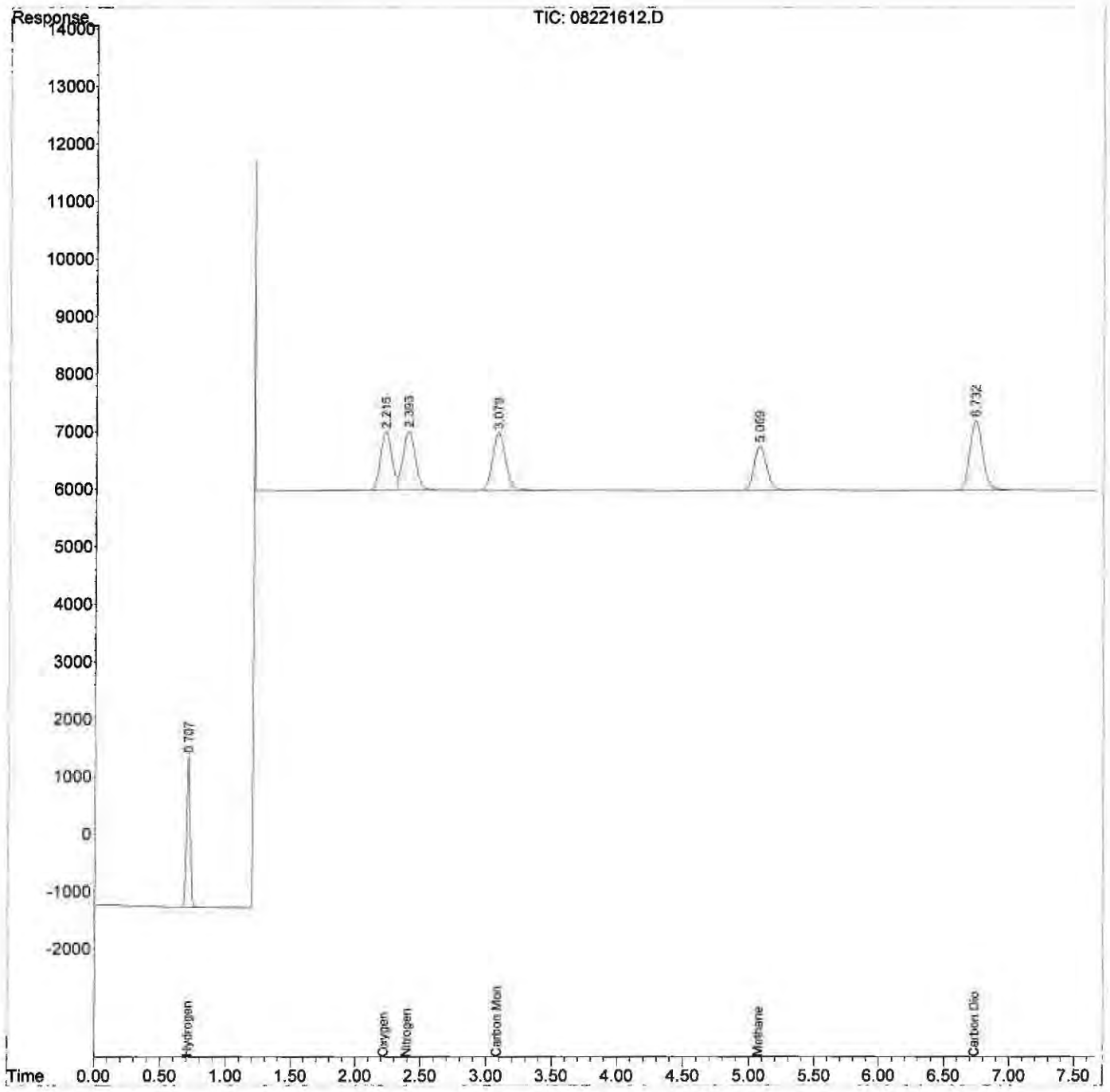
(f)=RT Delta > 1/2 Window (m)=manual int.

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

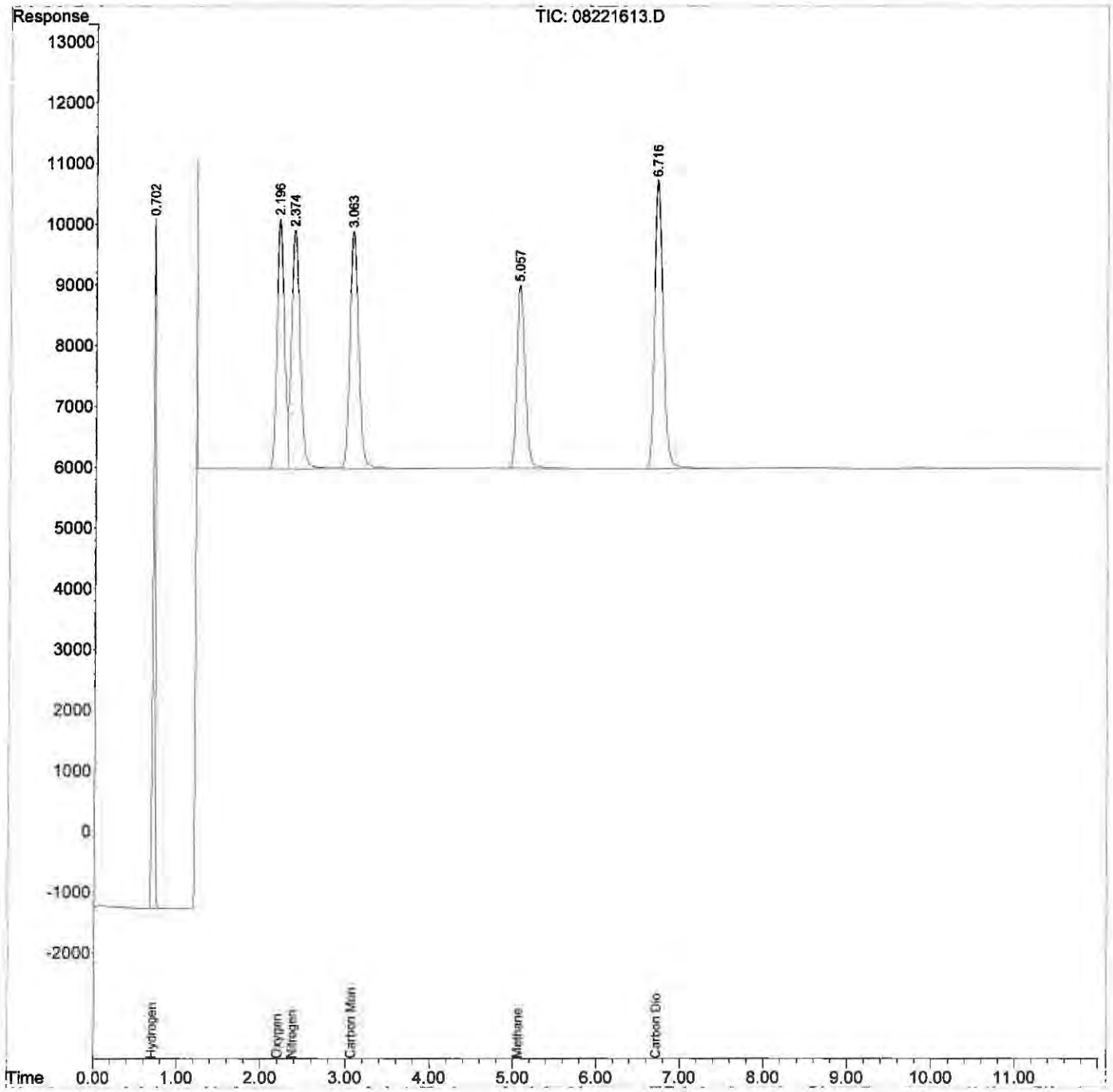
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

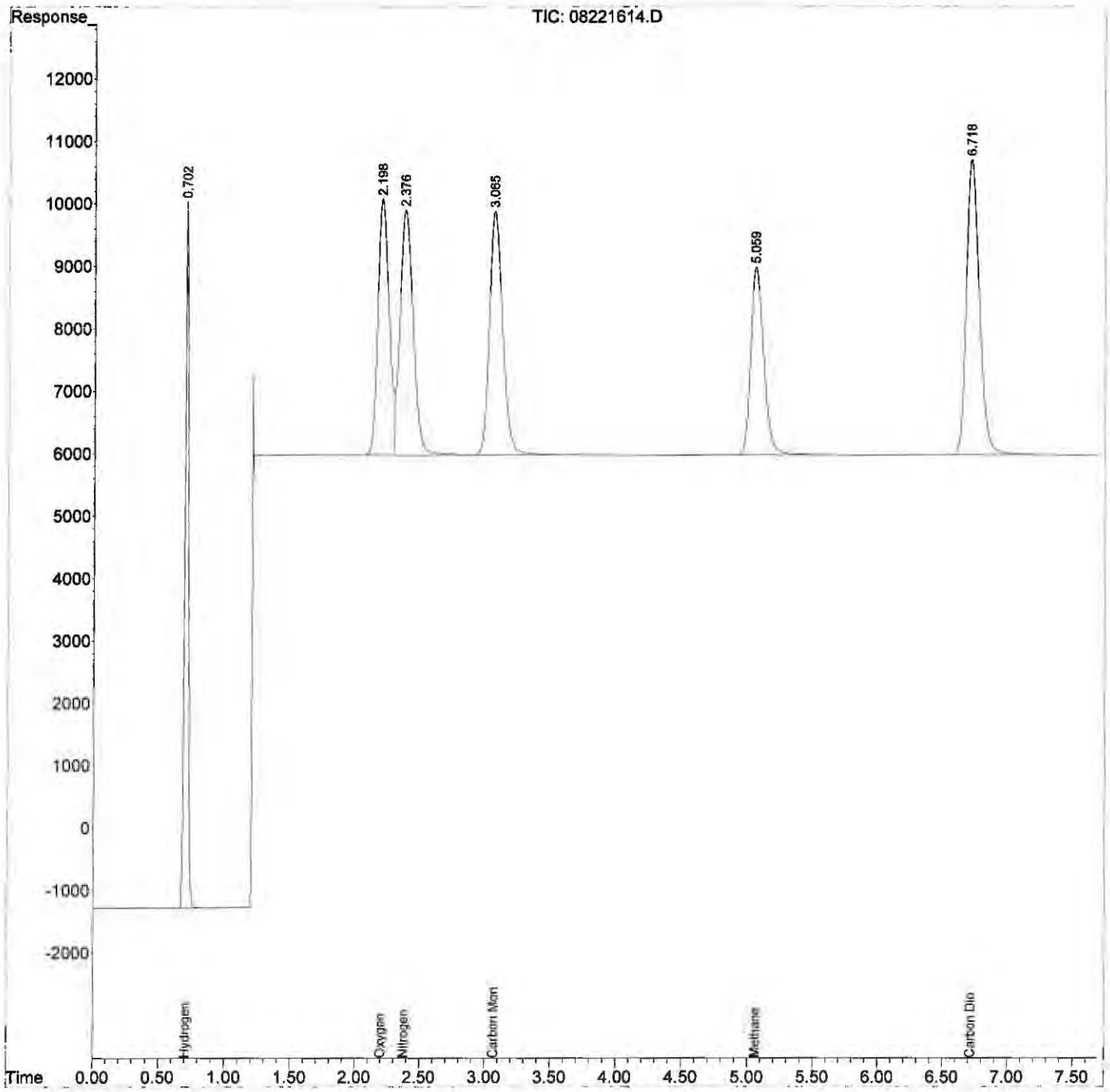
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.703	219704	165676.829	ppm
2)	Oxygen	2.200	246818	161079.250	ppm
3)	Nitrogen	2.378	276346	155637.709	ppm
4)	Carbon Monoxide	3.066	276366	159278.450	ppm
5)	Methane	5.060	205850	157510.093	ppm
6)	Carbon Dioxide	6.719	332031	156565.868	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

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

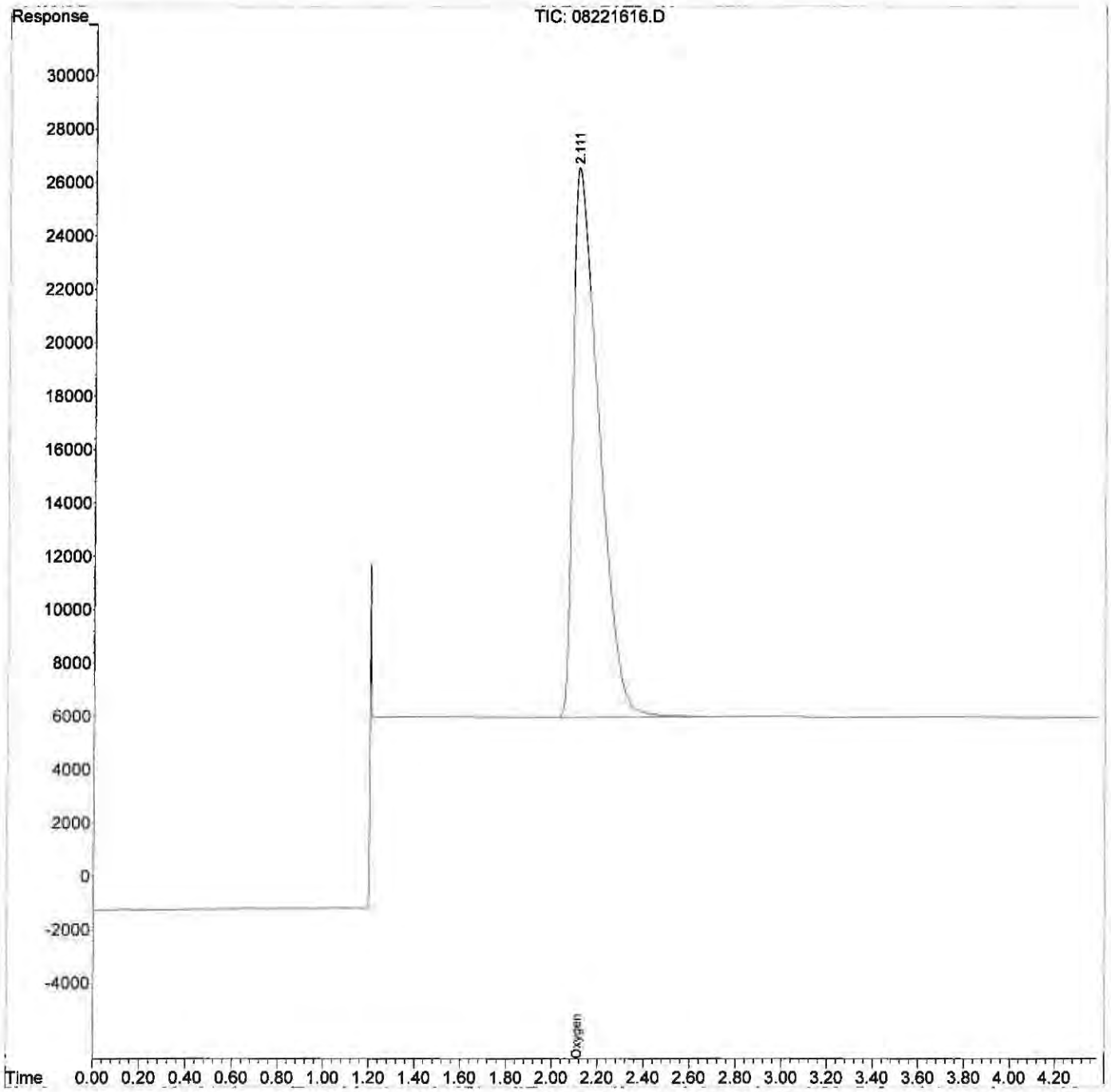
(f)=RT Delta > 1/2 Window (m)=manual int.

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

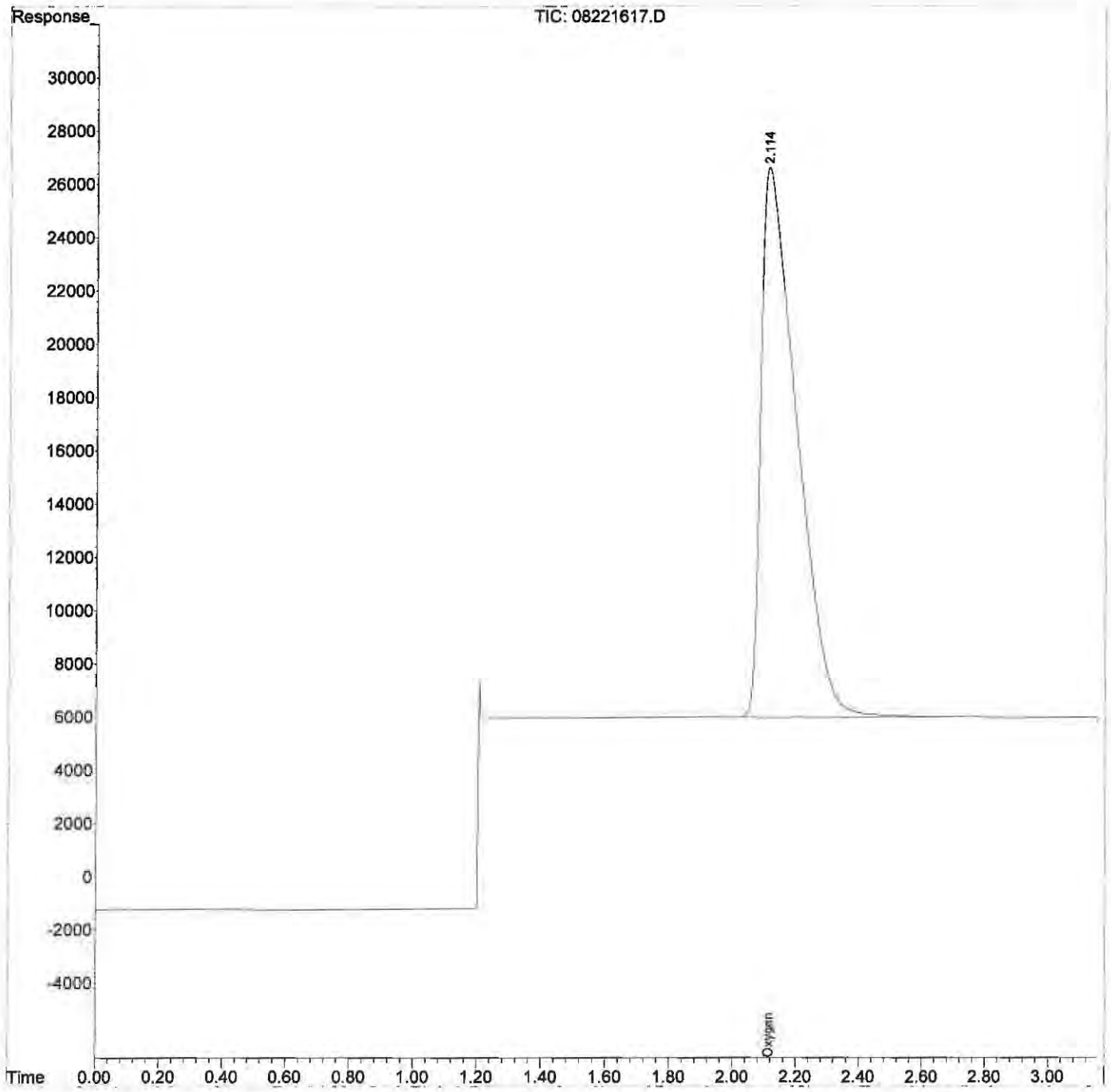
(f)=RT Delta > 1/2 Window (m)=manual int.

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

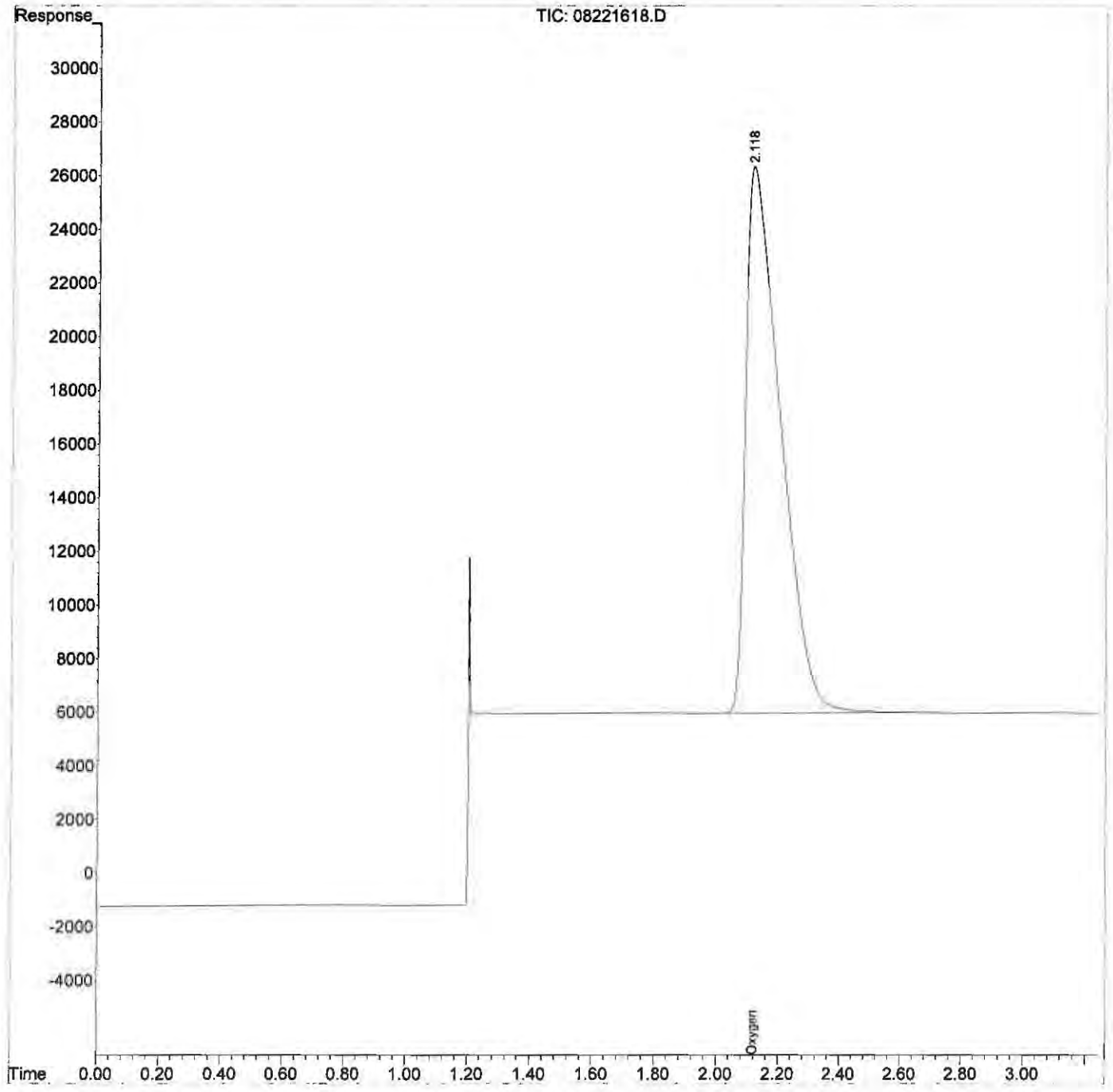
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

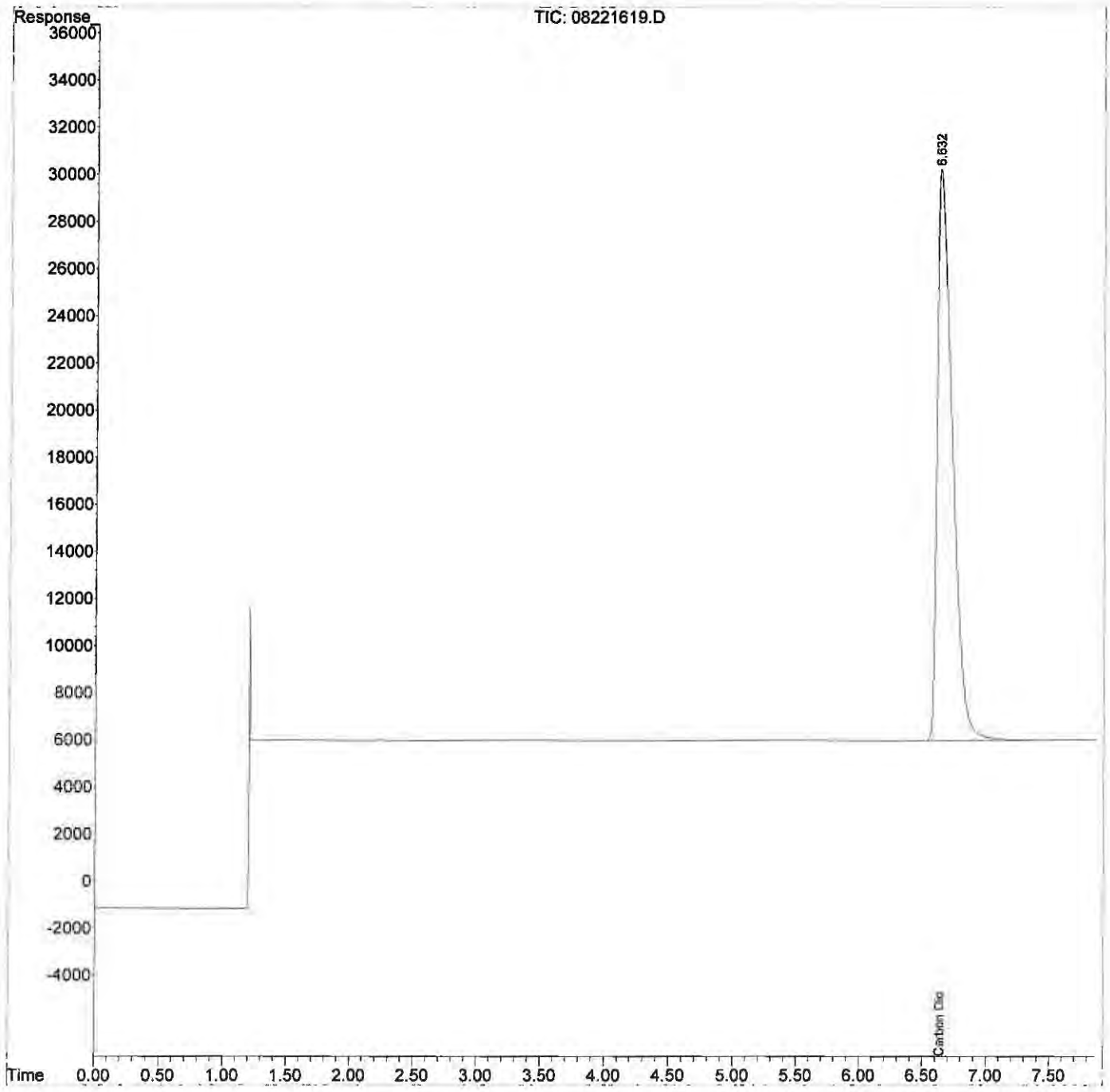
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.634	2005774	948215.193	ppm

(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

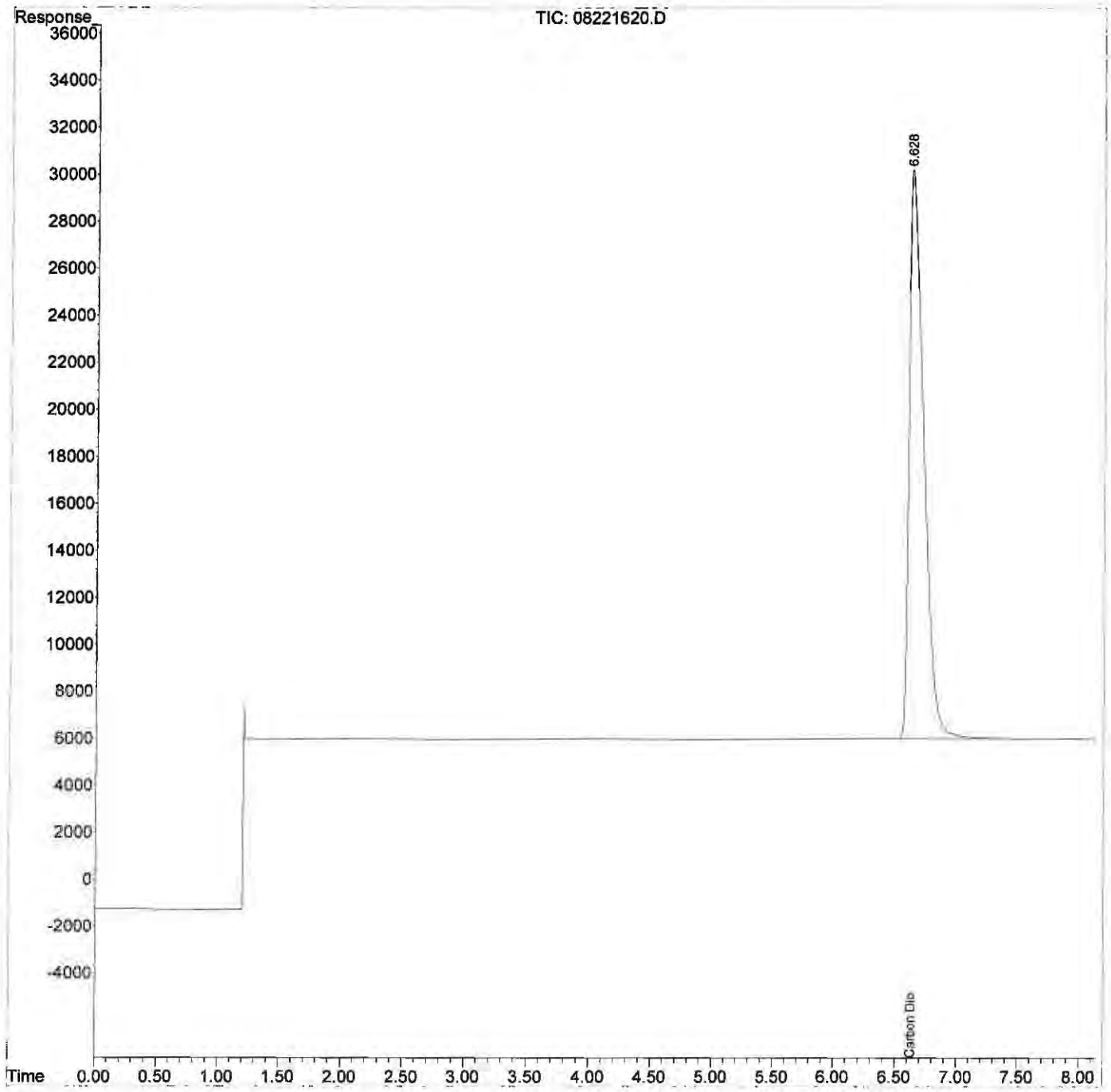
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

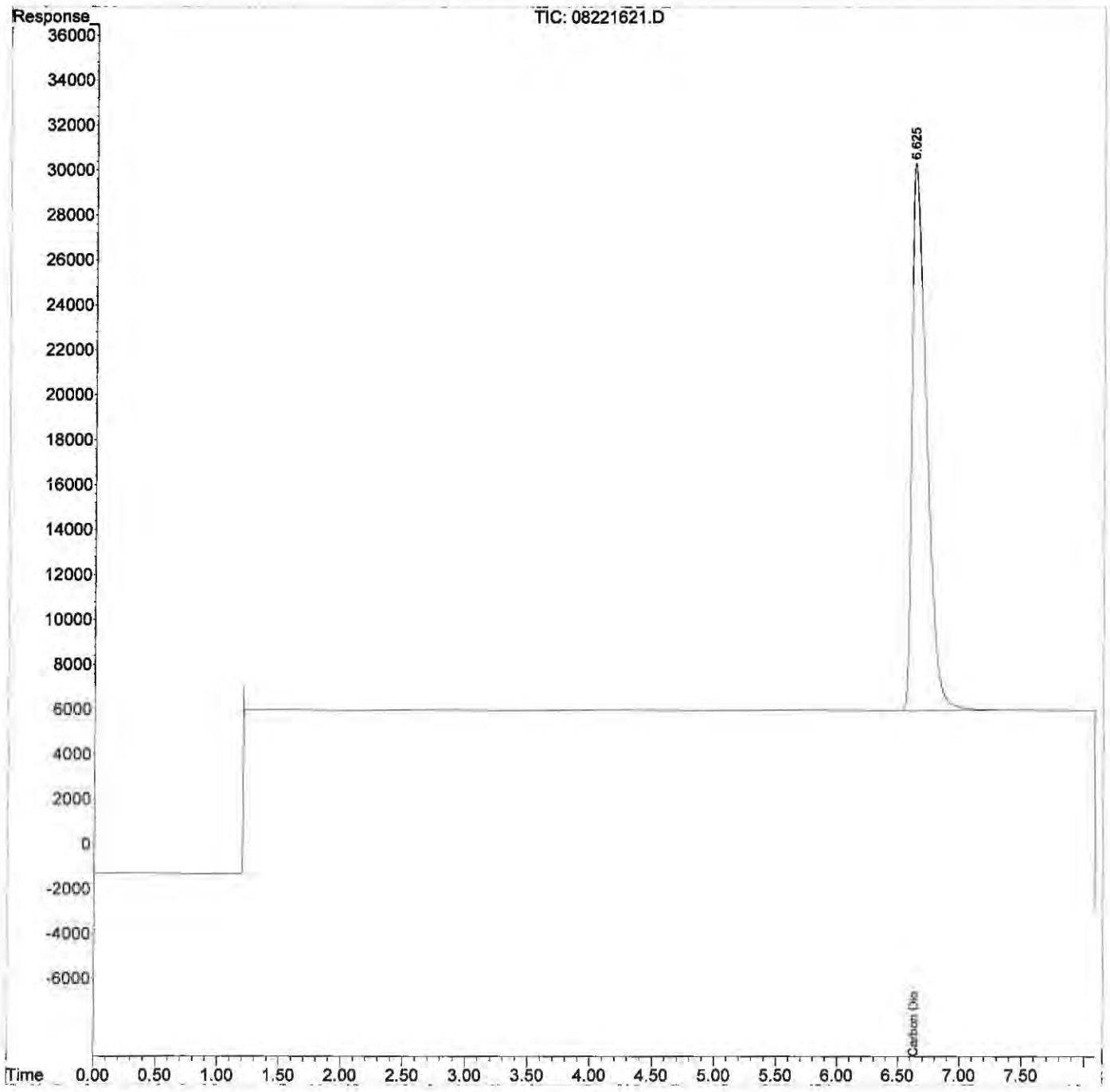
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.627	2014660	958317.321	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

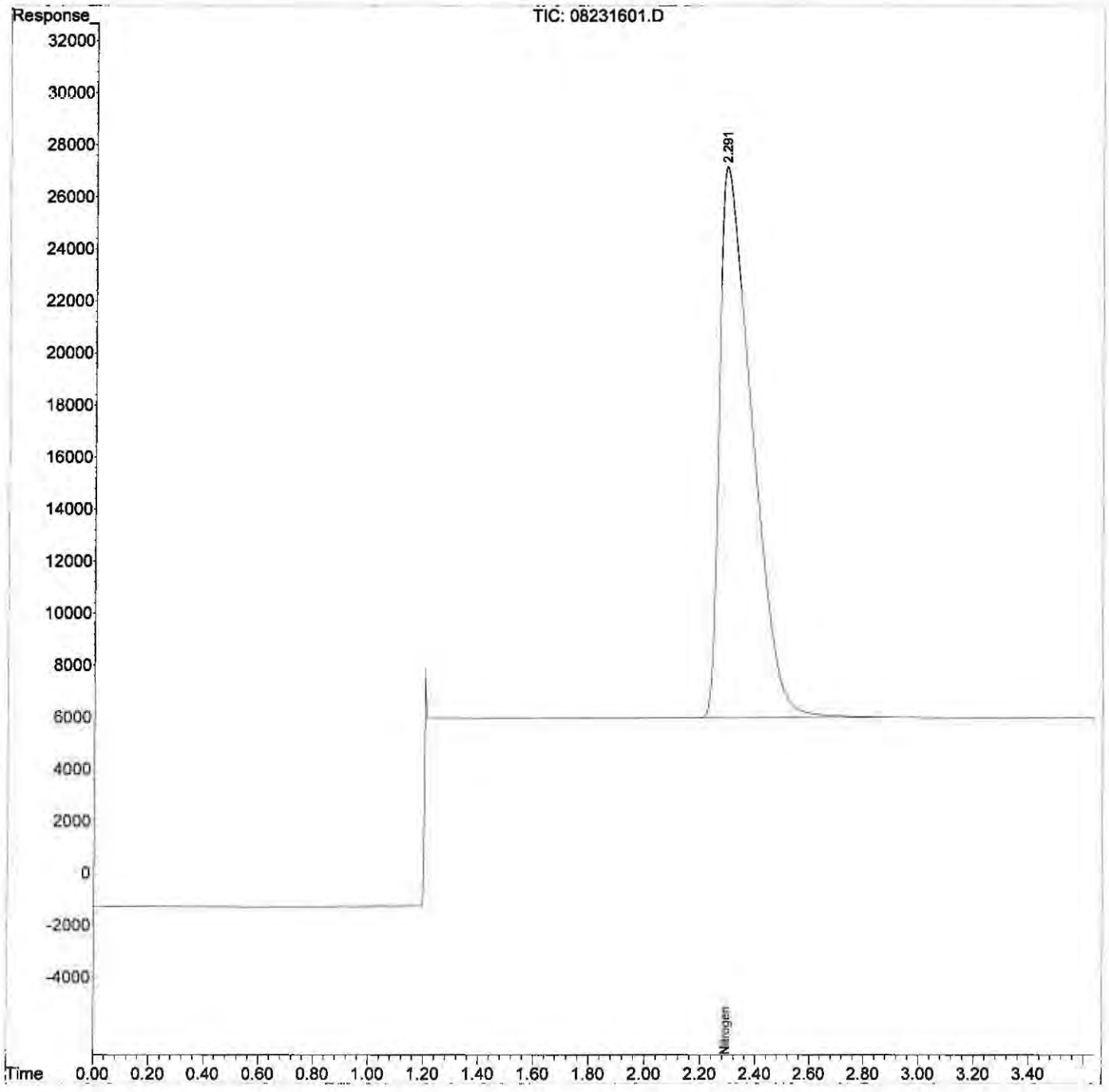
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.000	0	N.D.	ppm	
2)	Oxygen	0.000	0	N.D.	ppm	d
3)	Nitrogen	2.292	1743725	985438.652	ppm	
4)	Carbon Monoxide	0.000	0	N.D.	ppm	
5)	Methane	0.000	0	N.D.	ppm	
6)	Carbon Dioxide	0.000	0	N.D.	ppm	

(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

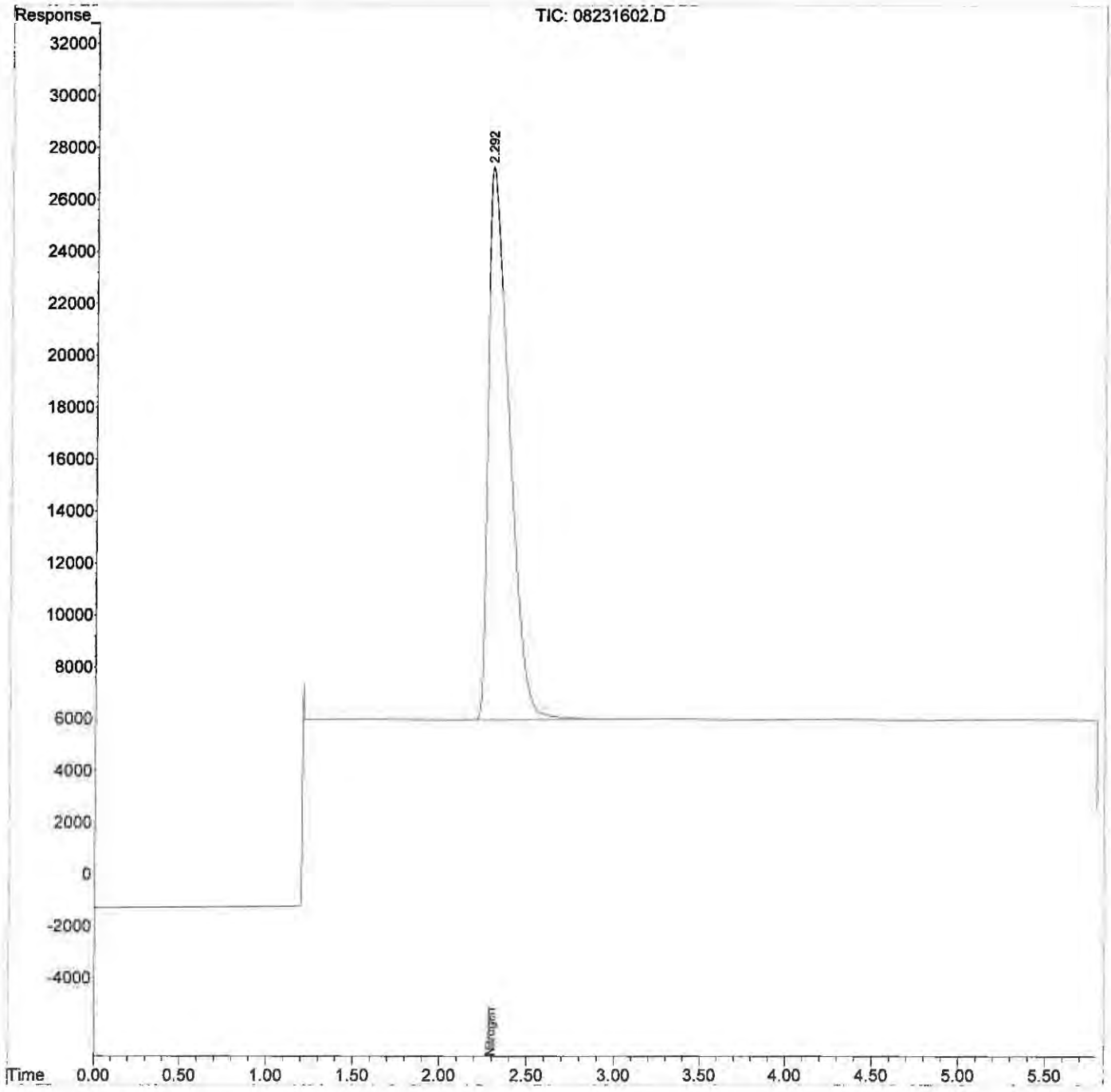
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm d
3)	Nitrogen	2.294	1755465	992976.308	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

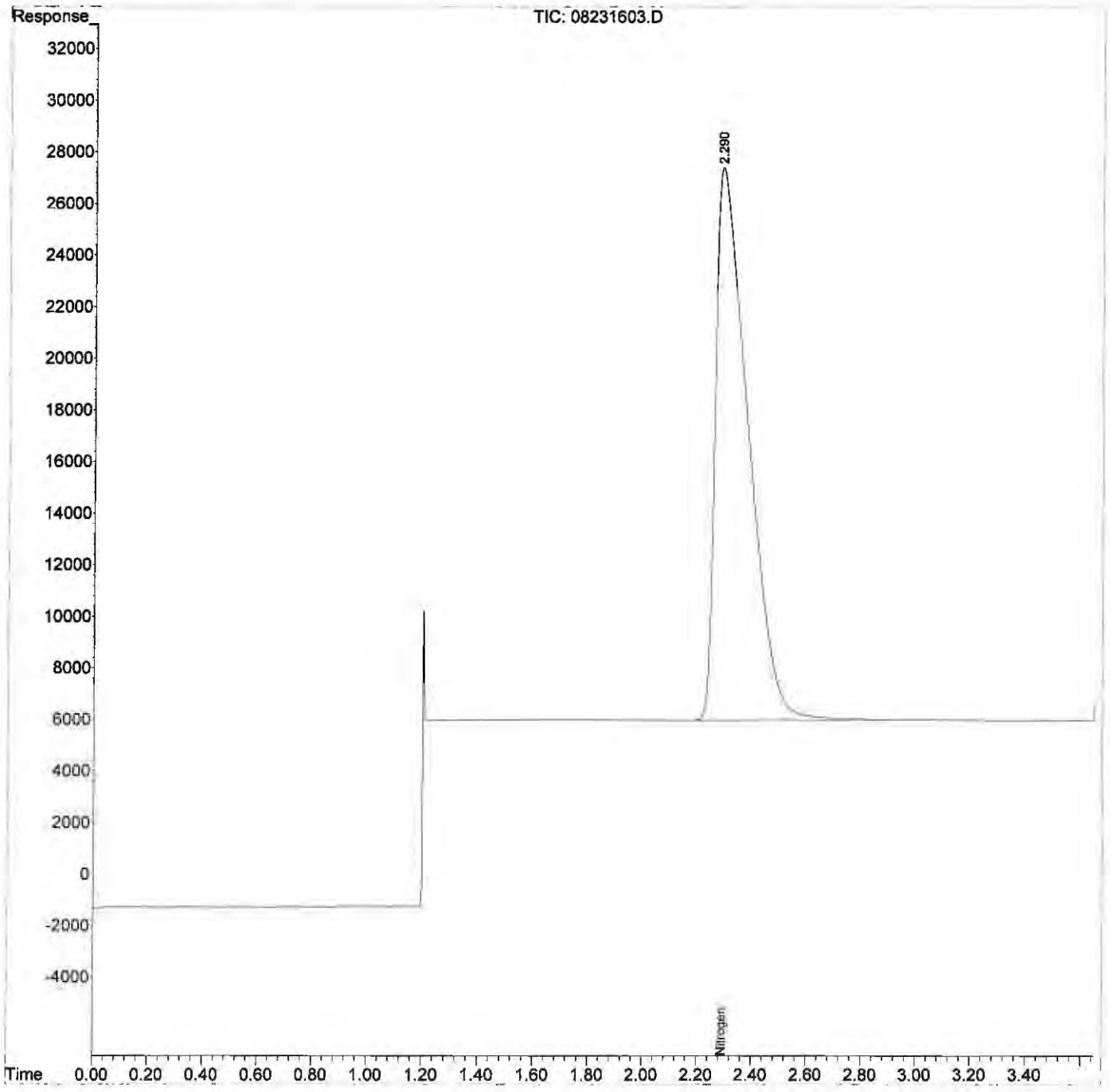
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm d
3)	Nitrogen	2.292	1767961	1000457.289	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

(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

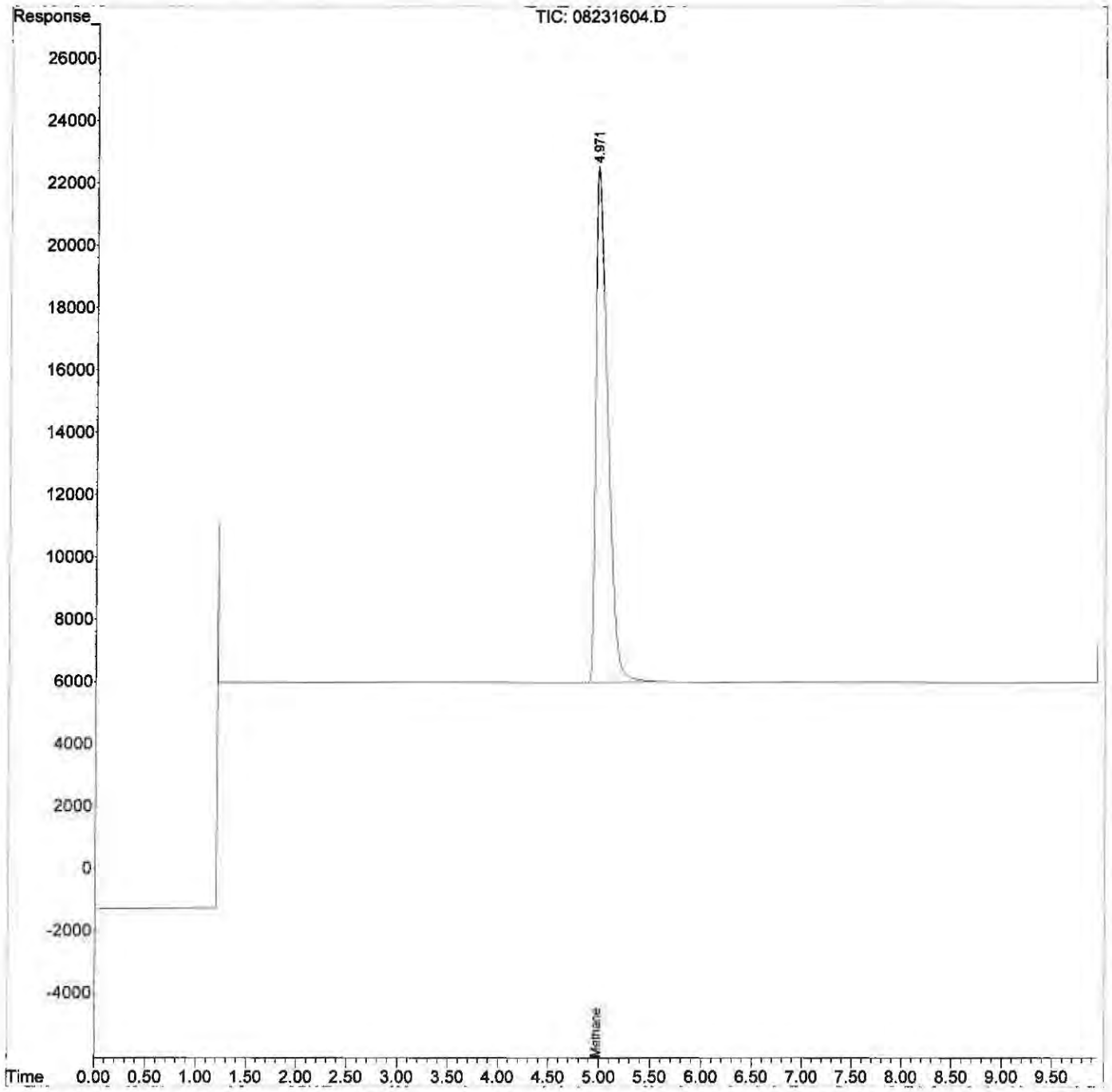
(f)=RT Delta > 1/2 Window (m)=manual int.

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

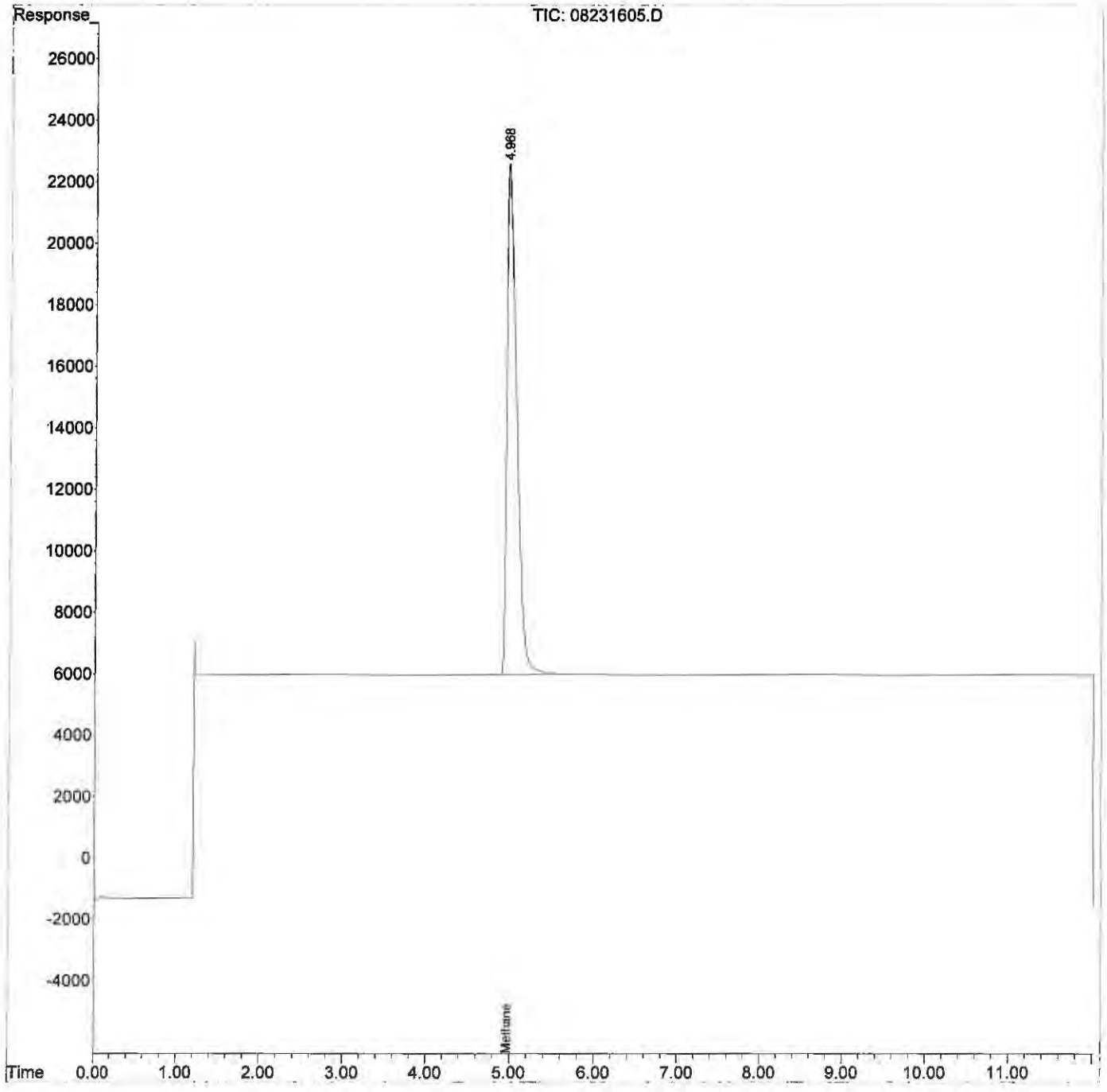
(f)=RT Delta > 1/2 Window (m)=manual int.

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

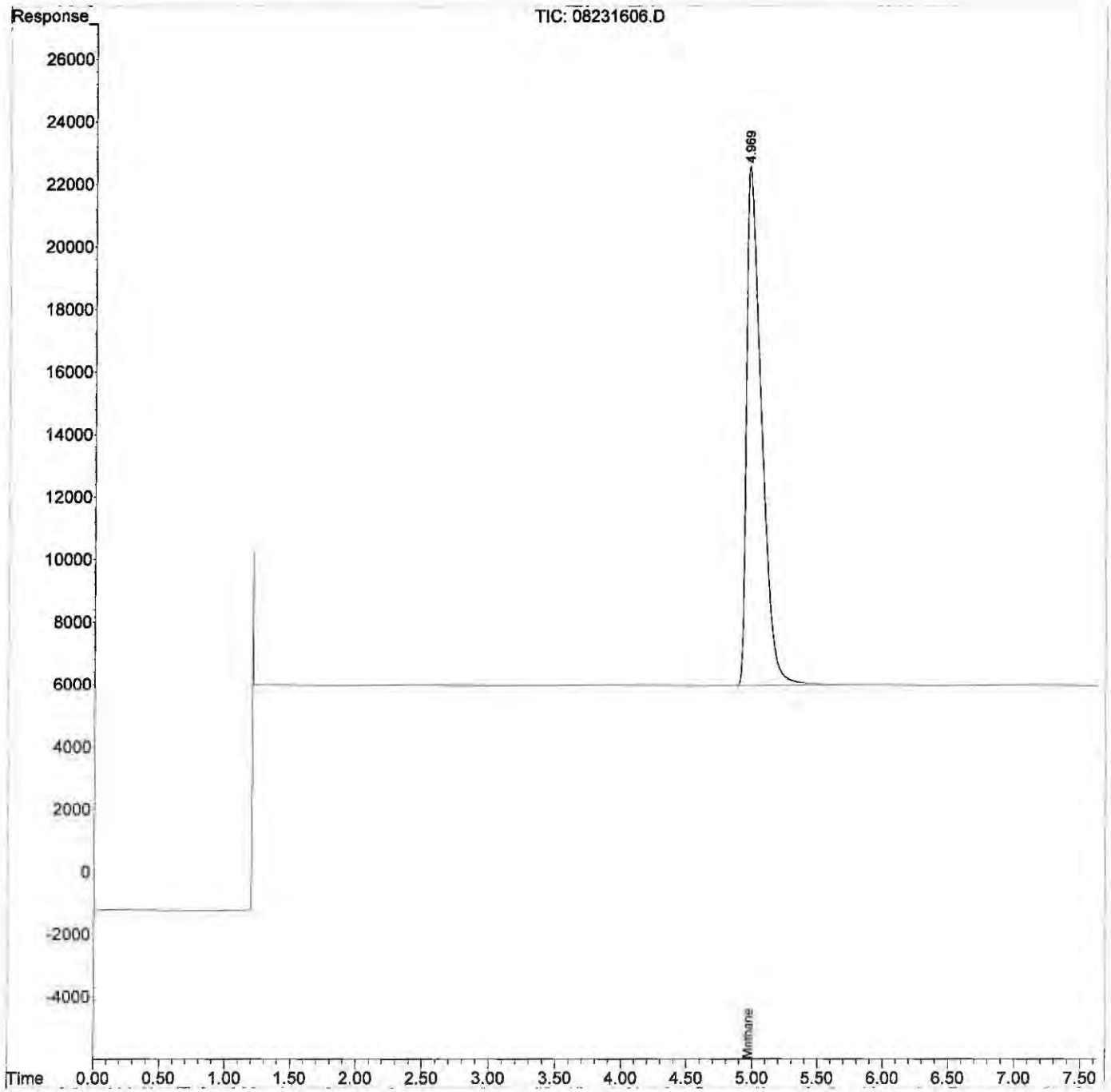
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



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 :

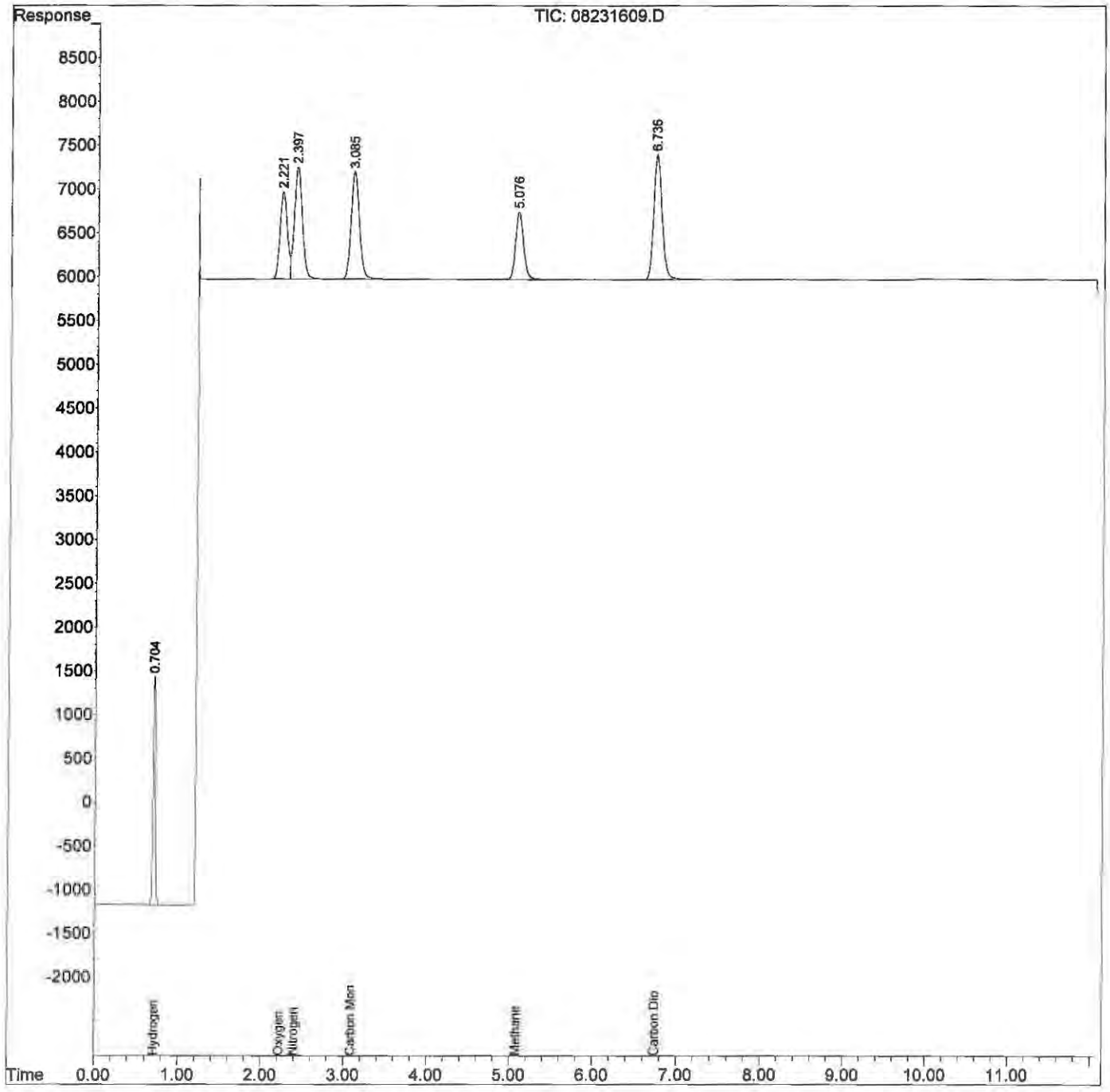
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.705	51930	38960.985	ppm	2,60 %
2)	Oxygen	2.222	60278	38988.977	ppm	2.53 %
3)	Nitrogen	2.398	86058	48697.524	ppm	2.06 %
4)	Carbon Monoxide	3.086	85978	49564.451	ppm	0,87 %
5)	Methane	5.077	52066	39832.238	ppm	0.42 %
6)	Carbon Dioxide	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 Hugiene
Analyst : amf
PAI Job : P1604849

Printed : 10/14/2016
Instrument : GC #1 / TCD #1
Date analyzed : 10/14/2016
Sample amount : 100uL

Sample Result

Sample ID	Hydrogen	Oxygen	Nitrogen	Carbon Monoxide	Methane	Carbon Dioxide	Pi1	Pf1	Pi2	Pf2	BF
STANDARD	40360	40634	51088	51075	41383	47703					
ACTUAL	40000	40000	50000	50000	40000	50000					
% Difference	0.9%	1.6%	2.2%	2.2%	3.5%	4.6%					
Lab Air		220659	798108			516					
MB	ND	ND	ND	ND	ND	ND					
4849-001		133932	744844			47395					
4849-001		134271	747648			47994					
4849-001		134389	747003			48212					
% RSD		0.2%	0.2%			0.9%					
4849-003		141876	746708			43450					
4849-003		140711	741774			43084					
4849-003		141522	746403			43616					
% RSD		0.4%	0.4%			0.6%					
4849-005		144213	737759			40977					
4849-005		144527	738040			40985					
4849-005		143825	735163			40753					
% RSD		0.2%	0.2%			0.3%					
STANDARD	40324	40305	50342	50809	40708	48385					
ACTUAL	40000	40000	50000	50000	40000	50000					
% Difference	0.8%	0.8%	0.7%	1.6%	1.8%	3.2%					

Average Sample Result in ppm with the DILUTION FACTOR

Sample ID	Hydrogen	Oxygen	Nitrogen	Carbon Monoxide	Methane	Carbon Dioxide	Total(%)	D.F.
Lab Air		220659	798108			516	101.93	1.00
MB	ND	ND	ND	ND	ND	ND		1.00
4849-001		134197	746498			47867	92.86	1.00
4849-003		141370	744962			43383	92.97	1.00
4849-005		144188	736987			40905	92.21	1.00

Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_10\14T\
Data File : 10141601.D
Signal(s) : TCD1A.CH
Acq On : 14 Oct 2016 8:21 am
Operator : amf
Sample : std s30-10051601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 10:10:22 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 :

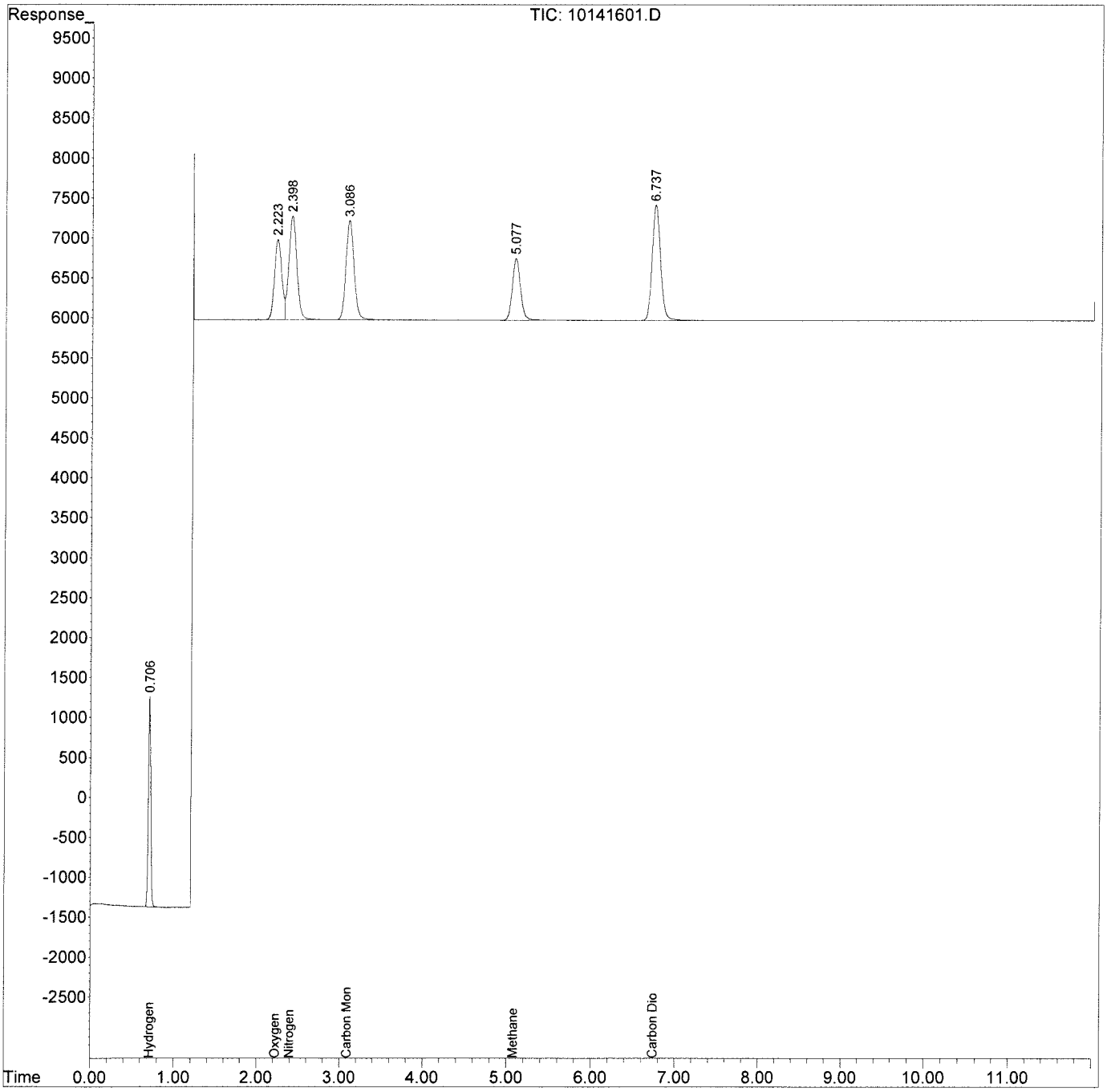
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.708	52651	39501.731	ppm
2)	Oxygen	2.224	61042	39482.967	ppm
3)	Nitrogen	2.400	87593	49565.791	ppm
4)	Carbon Monoxide	3.087	86791	50033.337	ppm
5)	Methane	5.079	52551	40203.983	ppm
6)	Carbon Dioxide	6.739	100053	47702.863	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\14T\
Data File : 10141601.D
Signal(s) : TCD1A.CH
Acq On : 14 Oct 2016 8:21 am
Operator : amf
Sample : std s30-10051601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 10:10:22 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_10\14T\
Data File : 10141615.D
Signal(s) : TCD1A.CH
Acq On : 14 Oct 2016 12:40 pm
Operator : amf
Sample : std s30-10051601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 12:56:15 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 :

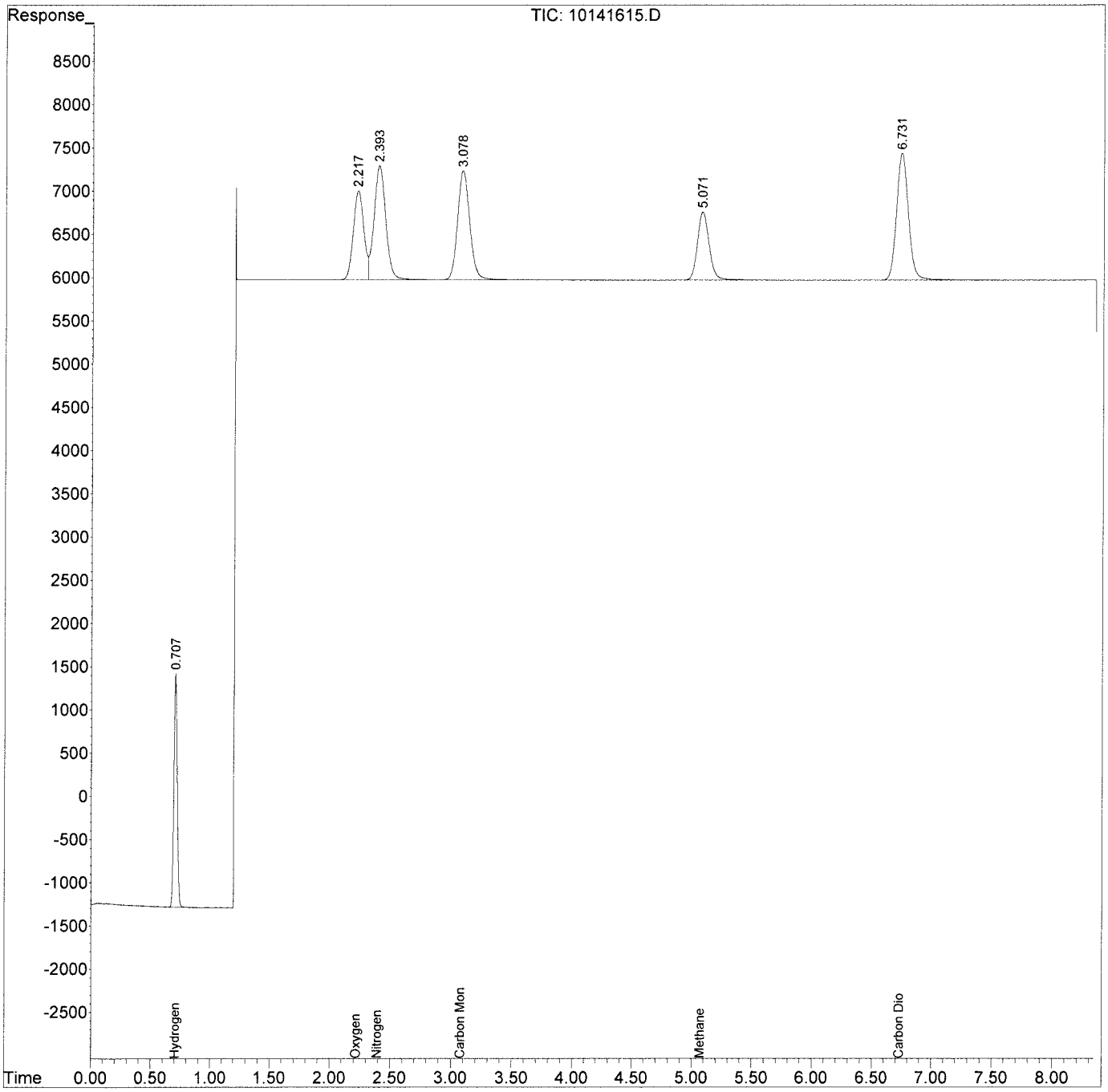
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.709	53746	40323.866	ppm
2)	Oxygen	2.219	62313	40304.923	ppm
3)	Nitrogen	2.394	88964	50341.747	ppm
4)	Carbon Monoxide	3.081	88137	50809.151	ppm
5)	Methane	5.072	53210	40707.588	ppm
6)	Carbon Dioxide	6.733	101483	48384.672	ppm

(f)=RT Delta > 1/2 Window (m)=manual int.

Data Path : I:\GC01\DATA\FXG\2016_10\14T\
Data File : 10141615.D
Signal(s) : TCD1A.CH
Acq On : 14 Oct 2016 12:40 pm
Operator : amf
Sample : std s30-10051601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Oct 14 12:56:15 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 :



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\14T\

	Sample ID	Date/Time	Acquisition Method	File Name	Misc Info	Operator	Comments
	std s30-10051601	14 Oct 116 8:21 am	MFXGS25C.M	10141601.D		amf	
	mb	14 Oct 116 8:37 am	MFXGS25C.M	10141602.D		amf	
	lab air	14 Oct 116 9:17 am	MFXGS25C.M	10141603.D		amf	
	lcs s11-07281601	14 Oct 116 9:40 am	MFXGS25C.M	10141604.D		amf	
	lcsd s11-07281601	14 Oct 116 10:00 am	MFXGS25C.M	10141605.D		amf	
	4849-001	14 Oct 116 10:11 am	MFXGS25C.M	10141606.D		amf	
	4849-001	14 Oct 116 10:29 am	MFXGS25C.M	10141607.D		amf	
	4849-001	14 Oct 116 10:45 am	MFXGS25C.M	10141608.D		amf	
	4849-003	14 Oct 116 11:02 am	MFXGS25C.M	10141609.D		amf	
	4849-003	14 Oct 116 11:17 am	MFXGS25C.M	10141610.D		amf	
	4849-003	14 Oct 116 11:34 am	MFXGS25C.M	10141611.D		amf	
	4849-005	14 Oct 116 11:50 am	MFXGS25C.M	10141612.D		amf	
	4849-005	14 Oct 116 12:06 pm	MFXGS25C.M	10141613.D		amf	
	4849-005	14 Oct 116 12:24 pm	MFXGS25C.M	10141614.D		amf	
	std s30-10051601	14 Oct 116 12:40 pm	MFXGS25C.M	10141615.D		amf	

APPENDIX G

FIELD DATA SHEET

MULTI LOAD TEST - FIELD DATA SHEET

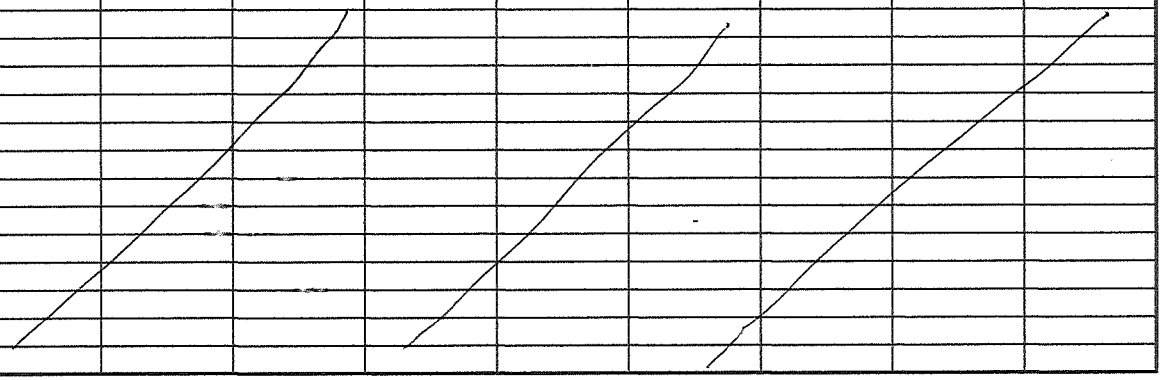
AIR HYGIENE

Company:	Superior Fabrication
Location:	Elk City Plant
Date:	10/12/16
Unit Make and Model:	
Unit Number:	CCD-60
Serial Number:	
Data Recorded By:	
Tested With AHI Unit(s):	Truck(s): 156 Trailer(s): 210
LDEQ Warmup/Cal Req:	On (Day/Time): 7:00 Cal (Day/Time): 7:30

CYLINDER SERIAL NUMBERS		O_2	NOx	CO	THC	CO_2	SO_2
	Low				ALM066568		
	Mid	EB006530		EB0034492	ALM010278	EB006530	
	High	CC67536		EB0085244	CC156074	CC67536	

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	___ % #1	___ % #2	___ % #3	___ % #1	___ % #2	___ % #3	___ % #1	___ % #2	___ % #3
Time Start (hh:mm:ss)	15:01:12	16:22:12	17:42:12									
Time Stop (hh:mm:ss)	16:11:12	17:32:12	18:52:12									
Rated MegaWatts (MW or hp)												
Actual MegaWatts (MW or hp)												
Barometric Pressure (in. Hg)	28.14	28.14	28.14									
Ambient Temperature (°F)	59	60	59									
Relative Humidity (%)	55	54	52									
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		CO		THC		CO_2	
	Conc.	Actual	Conc.	Actual	Conc.	Actual	Conc.	Actual
Zero Gas	0	-0.01	0	0.01	0	-0.03	0	0.02
Low Gas					3.00	3.04		
Mid Gas	11.9	11.91	9.21	9.22	5.01	4.97	8.95	8.90
High Gas	21.1	20.92	18.3	18.29	8.43	8.40	18.4	18.41

BIAS	O_2		CO		THC		CO_2	
	Zero	Mid	Zero	Mid	Zero	Mid	Zero	Mid
Initial Low Load Run #1	0.04	11.93	-0.03	9.22	-0.04	5.01	0.04	8.92
Load 1 Run #1 / Load 1 Run #2	-0.03	11.96	0.02	9.22	0.09	4.99	0.08	8.97
Load 1 Run #2 / Load 1 Run #3	-0.02	11.98	-0.02	9.17	0.11	4.96	0.07	8.99
Load 1 Run #3 / Load 2 Run #1	-0.04	11.96	0.01	9.12	0.07	4.96	0.11	8.88
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:	Superior Fabrication
Location:	Elk City Plant
Date:	10/11/16
Unit Make and Model:	SCB-60
Unit Number:	
Serial Number:	
Data Recorded By:	MJL
Tested With AHI Unit(s):	Truck(s): 156 Trailer(s): 210
LDEQ Warmup/Cal Req:	On (Day/Time): 7214hr Cal (Day/Time): 7:20

CYLINDER SERIAL NUMBERS		O_2	NOx	CO	THC	CO_2	SO_2
	Low				ALM066568		
	Mid	EB006530		EB0034492	ALM010278	EB006530	
	High	CC67536		EB0085244	CC156074	CC67536	

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	30-70-30 % #2	30-70-30 % #3	____ % #1	____ % #2	____ % #3	____ % #1	____ % #2	____ % #3
Time Start (hh:mm:ss)	12:49:21					8:03:21						
Time Stop (hh:mm:ss)	13:09:21					9:13:21						
Rated MegaWatts (MW or hp)												
Actual MegaWatts (MW or hp)												
Barometric Pressure (in. Hg)	29.00					27.99						
Ambient Temperature (°F)	79					57						
Relative Humidity (%)	59					70						
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		CO		THC		CO_2	
	Conc.	Actual	Conc.	Actual	Conc.	Actual	Conc.	Actual
Zero Gas	0	-0.02	0	0.01	0	-0.03	0	0.04
Low Gas					3.00	2.99		
Mid Gas	11.9	11.93	9.21	9.18	5.01	4.94	8.95	8.89
High Gas	21.1	20.99	18.3	18.28	8.43	8.42	18.4	18.46

BIAS	O_2		CO		THC		CO_2	
	Zero	Mid	Zero	Mid	Zero	Mid	Zero	Mid
Initial Low Load Run #1	-0.02	11.96	-0.02	9.23	0.01	5.02	0.03	8.84
Load 1 Run #1 / Load 1 Run #2	0.01	11.88	0.07	9.20	0.02	4.87	0.04	8.84
Load 1 Run #2 / Load 1 Run #3								
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.								

MULTI LOAD TEST - FIELD DATA SHEET

AIR HYGIENE

Company:	Superior Fabrication
Location:	Elk City Plant
Date:	10/10/16
Unit Make and Model:	
Unit Number:	SCD-60
Serial Number:	
Data Recorded By:	MK
Tested With AHI Unit(s):	Truck(s): 156 Trailer(s): 210
LDEQ Warmup/Cal Req:	On (Day/Time): 7244 Cal (Day/Time): 7:15

CYLINDER SERIAL NUMBERS		O_2	NOx	CO	THC	CO_2	SO_2
	Low				ALM066568		
	Mid	EB006530		EB0034492	ALM010278	EB006530	
	High	CC67536		EB0085244	CC156074	CC67536	

Stack Dia. = _____
Measured By: _____
Measured With: _____

RUN INFORMATION	Low Load			Mid Load			Mid-High Load			High Load		
	___% #1	___% #2	___% #3	30-35% #1	30-35% #2	___% #3	70-75% #1	70-75% #2	70-75% #3	90-100% #1	90-100% #2	90-100% #3
Time Start (hh:mm:ss)				16:10:09	17:32:09		11:02:09	12:30:09	13:58:09		8:04:09	9:29:09
Time Stop (hh:mm:ss)				17:20:09	18:42:09		12:12:09	13:40:09	15:06:09		9:14:09	10:39:09
Rated MegaWatts (MW or hp)												
Actual MegaWatts (MW or hp)												
Barometric Pressure (in. Hg)				28.01	28.01		28.14	28.09	28.04		28.12	28.14
Ambient Temperature (°F)				78	75		66	73	75		58	60
Relative Humidity (%)				43	43		50.2	48	46		64	58
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		CO		THC		CO_2	
	Conc.	Actual	Conc.	Actual	Conc.	Actual	Conc.	Actual
Zero Gas	0	-0.02	0	-0.03	0	-0.02	0	0.01
Low Gas					3.00	2.99		
Mid Gas	11.9	11.99	9.21	9.29	5.01	4.96	8.95	8.88
High Gas	21.1	21.08	18.3	18.29	8.43	8.42	18.4	18.47

BIAS	O_2		CO		THC		CO_2	
	Zero	Mid	Zero	Mid	Zero	Mid	Zero	Mid
Initial Low Load Run #1	-0.01	12.05	-0.02	9.20	-0.03	3.00	0.04	8.84
Load 1 Run #1 / Load 1 Run #2	-0.03	11.97	-0.01	9.30	-0.02	2.91	0.06	8.85
Load 1 Run #2 / Load 1 Run #3	0.02	11.96	-0.02	9.21	-0.01	2.94	0.06	8.85
Load 1 Run #3 / Load 2 Run #1	-0.02	11.94	-0.01	9.21	-0.03	2.97	0.04	8.82
Load 2 Run #1 / Load 2 Run #2	0.02	11.95	-0.05	9.20	-0.02	2.96	0.07	8.97
Load 2 Run #2 / Load 2 Run #3	0.01	11.90	-0.06	9.11	0.04	2.97	0.05	8.86
Load 2 Run #3 / Load 3 Run #1	0.01	11.87	-0.04	9.12	0.02	2.96	0.07	8.84
Load 3 Run #1 / Load 3 Run #2	-0.04	11.90	0.07	9.22	-0.05	2.95	0.05	8.85
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:	Superior Fabrication
Location:	Elk City Plant
Date:	10/7/16
Unit Make and Model:	
Unit Number:	SCD-60
Serial Number:	
Data Recorded By:	MSL
Tested With AHI Unit(s):	Truck(s): 156 Trailer(s): 210
LDEQ Warmup/Cal Req:	On (Day/Time): >24hr Cal (Day/Time): 10/5 30

CYLINDER SERIAL NUMBERS		O_2	NOx	CO	THC	CO_2	SO_2
	Low		/		ALM066568		
	Mid	EB006530	/	EB0034492	ALM010278	EB006530	/
	High	CC67536	/	EB0085244	CC156074	CC67536	

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	90-10 % #2	90-10 % #3
Time Start (hh:mm:ss)										13:01:07		
Time Stop (hh:mm:ss)										14:11:07		
Rated MegaWatts (MW or hp)												
Actual MegaWatts (MW or hp)												
Barometric Pressure (in. Hg)										28.30		
Ambient Temperature (°F)										60		
Relative Humidity (%)										48		
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		CO		THC		CO_2	
	Conc.	Actual	Conc.	Actual	Conc.	Actual	Conc.	Actual
Zero Gas	0	-0.02	0	0.02	0	-0.02	0	0.06
Low Gas					3.00	3.01		
Mid Gas	11.9	12.04	~~9.44~~ 9.21	9.20	5.01	4.96	8.95	8.89
High Gas	21.1	21.1	18.3	18.29	8.43	8.44	18.4	18.47

BIAS	O_2		CO		THC		CO_2	
	Zero	Mid	Zero	Mid	Zero	Mid	Zero	Mid
Initial Low Load Run #1	-0.03	12.05	0.02	9.18	-0.03	3.01	-0.01	8.85
Load 1 Run #1 / Load 1 Run #2	-0.02	12.00	-0.01	9.19	0.02	2.93	0.01	8.88
Load 1 Run #2 / Load 1 Run #3								
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.	_____		_____		_____		_____	

Sf1 - 90-100% - can - SCD-60

- 27.06 10/7/16
- 19.48
- 10.21
- 0.52 10/10/16

Sf1-70-90-70% - can - SCD-60

- 28.38
- 20.08
- 11.33
- 0.50 10/10/16

Sf1- 30-70-30% - SCD-60

- 28.28
- 17.79
- 9.96 10/10/16
- 0.33 10/11/16

Sf1-0-30-0% - SCD-60

- 28.13
- 17.90
- 10.88
- 0.37 10/12/16

1

0-30-0

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

Plant Name	Elk City Facility
Sampling Location	SCD-60 Ports
Project #	sfi-elkcity.ok-comp#1

Date	10-12-16
Operator	TW
Run Number	1

Leak Checks					
Train	Pre	0	ft³/min@	Ø15"	in Hg
	Post	0	ft³/min@	15	in Hg
Pitot	Pre (+)	.085	in H_2O for	15	sec
	Pre (-)	.125	in H_2O for	15	sec
	Post (+)	.10	in H_2O for	15	sec
	Post (-)	.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)	28.14	in Hg

Run Time			
Start	15:01	End	16:09

	Impinger 1	Impinger 2	Impinger 3	Silica Gel
Pre Weight	720.5	682.5	585.4	903.0
Post Weight	750.3	690.0	588.0	918.6

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	468.01	.005	1.5	1160	255	60	66	66	10
A-2	2.7	00:02:43	470.65	.015		1270	256	56	67	66	10
A-3	5.4	00:05:25	472.05	.010		1301	256	55	68	66	10
A-4	8.1	00:08:07	474.06	.010		1337	253	55	68	66	10
A-5	10.8	00:10:50	476.10	.010		1351	252	56	69	66	10
A-6	13.5	00:13:33	478.12	.010		1364	250	57	71	66	10
A-7	16.3	00:16:15	480.15	.010		1364	250	58	71	67	10
A-8	19.0	00:18:58	482.26	.015		1328	251	59	72	68	10
A-9	21.7	00:21:40	484.19	.010		1343	252	60	72	69	10
A-10	24.4	00:24:22	486.27	.010		1368	252	60	73	69	10
A-11	27.1	00:27:05	488.30	.005		1375	252	61	73	69	10
A-12	29.8	00:29:47	490.33	.010		1379	252	61	73	70	10
B-1	32.5	00:32:30	492.38	.005		1376	249	64	70	70	10
B-2	35.2	00:35:12	494.45	.010		1317	253	62	72	70	10
B-3	37.9	00:37:55	496.40	.010		1381	253	61	73	70	10
B-4	40.6	00:40:37	498.49	.005		1383	252	62	73	70	10
B-5	43.3	00:43:20	500.61	.010		1398	252	67	73	70	10
B-6	46.0	00:46:03	502.59	.005		1400	252	64	73	70	10
B-7	48.8	00:48:45	504.61	.010		1386	252	63	73	70	10
B-8	51.5	00:51:28	506.50	.010		1326	252	64	77	70	10
B-9	54.2	00:54:10	508.38	.010		1320	252	65	74	70	10
B-10	56.9	00:56:53	510.42	.010		1350	252	64	74	71	10
B-11	59.6	00:59:35	512.96	.010		1309	252	64	73	70	10
B-12	62.3	01:02:18	514.90	.010		1319	252	65	74	70	10
Last Pt	65.0	01:05:00	517.95								
Final Val	65.0	01:05:00								Max Vac	
Average Values											

2
10-30-0
40

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

Plant Name	Elk City Facility
Sampling Location	SCD-60 Ports
Project #	sfi-elkcity.ok-comp#1

Date	10-12-16
Operator	TW
Run Number	2

Leak Checks					
Train	Pre	0	ft³/min@	15	in Hg
	Post	0	ft³/min@	15	in Hg
Pitot	Pre (+)	.110	in H_2O for	15	sec
	Pre (-)	.075	in H_2O for	15	sec
	Post (+)	.120	in H_2O for	15	sec
	Post (-)	.080	in H_2O for	15	sec

Sampling Equipment			
Meter Box Number	SAMP-CP-0011		
Orifice Meter Coefficient	1.744	in H_2O	

Pressures			
Barometric Pressure	(P_b)	28.14	in Hg

Run Time			
Start	16:22	End	17:31

	Impinger 1	Impinger 2	Impinger 3	Silica Gel
Pre Weight				
Post Weight	782.8	696.7	590.5	932.5

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	517.10	.010	1.5	1358	255	62	70	70	10
A-2	2.7	00:02:43	519.30	.005		1365	257	59	71	70	10
A-3	5.4	00:05:25	521.33	.010		1317	256	59	71	70	10
A-4	8.1	00:08:07	523.30	.010		1349	253	59	72	70	10
A-5	10.8	00:10:50	525.31	.010		1369	252	61	73	70	10
A-6	13.5	00:13:33	527.36	.010		1383	251	63	74	70	10
A-7	16.3	00:16:15	529.37	.010		1380	251	63	74	71	10
A-8	19.0	00:18:58	531.45	.010		1328	252	64	75	71	10
A-9	21.7	00:21:40	533.50	.010		1380	252	61	74	71	10
A-10	24.4	00:24:22	535.53	.010		1363	252	59	75	72	10
A-11	27.1	00:27:05	537.64	.010		1362	252	58	75	72	10
A-12	29.8	00:29:47	539.70	.005		1380	246	59	75	72	10
B-1	32.5	00:32:30	541.62	.010		1336	250	61	72	72	10
B-2	35.2	00:35:12	543.70	.010		1332	253	56	74	72	10
B-3	37.9	00:37:55	545.75	.010		1380	254	56	75	72	10
B-4	40.6	00:40:37	547.74	.010		1396	253	57	76	72	10
B-5	43.3	00:43:20	549.77	.010		1415	252	58	75	72	10
B-6	46.0	00:46:03	551.90	.005		1413	252	58	75	72	10
B-7	48.8	00:48:45	553.81	.010		1412	252	58	75	72	10
B-8	51.5	00:51:28	555.83	.010		1363	252	58	75	72	10
B-9	54.2	00:54:10	557.92	.010		1351	252	59	75	72	10
B-10	56.9	00:56:53	559.71	.010		1353	252	58	76	70	10
B-11	59.6	00:59:35	562.05	.010		1368	252	58	76	72	10
B-12	62.3	01:02:18	564.04	.010		1377	252	58	76	72	10
Last Pt	65.0	01:05:00	566.06								
Final Val	65.0	01:05:00								Max Vac	
Average Values											

3
10-30-0

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

Plant Name	Elk City Facility
Sampling Location	SCD-60 Ports
Project #	sfi-elkcity.ok-comp#1

Date	10-12-16
Operator	TW
Run Number	3

Leak Checks					
Train	Pre	0	ft³/min@	15	in Hg
	Post	0	ft³/min@	15	in Hg
Pitot	Pre (+)	.105	in H_2O for	15	sec
	Pre (-)	.085	in H_2O for	15	sec
	Post (+)	.15	in H_2O for	15	sec
	Post (-)	-20	in H_2O for	15	sec

Sampling Equipment		
Meter Box Number	SAMP-CP-0011	
Orifice Meter Coefficient	~~1.746~~ 1.585	in H_2O

Pressures			
Barometric Pressure	(P_b)	28.14	in Hg

Run Time			
Start	17:42	End	18:53

	Impinger 1	Impinger 2	Impinger 3	Silica Gel
Pre Weight				
Post Weight	815.0	703.0	892.6	943.1

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	566.20	.085	1.5	1336	253	57	77	72	10
A-2	2.7	00:02:43	568.23	.085		1334	256	55	74	71	10
A-3	5.4	00:05:25	570.30	.010		1385	255	54	74	71	10
A-4	8.1	00:08:07	572.30	.010		1389	254	55	76	72	10
A-5	10.8	00:10:50	574.31	.010		1389	252	56	76	72	10
A-6	13.5	00:13:33	576.40	.010		1398	251	58	76	72	10
A-7	16.3	00:16:15	578.43	.005		1374	251	58	76	73	10
A-8	19.0	00:18:58	580.45	.010		1340	253	59	76	73	10
A-9	21.7	00:21:40	582.44	.010		1349	252	59	76	72	10
A-10	24.4	00:24:22	584.55	.010		1348	252	60	76	72	10
A-11	27.1	00:27:05	586.62	.010		1362	252	60	76	72	10
A-12	29.8	00:29:47	588.67	.010		1358	252	60	76	72	10
B-1	32.5	00:32:30	590.74	.010		1316	252	63	78	72	10
B-2	35.2	00:35:12	592.80	.005		1372	254	59	75	72	10
B-3	37.9	00:37:55	594.86	.005		1381	254	59	76	72	10
B-4	40.6	00:40:37	596.96	.005		1386	252	60	76	72	10
B-5	43.3	00:43:20	599.00	.005		1387	253	60	76	72	10
B-6	46.0	00:46:03	601.01	.005		1381	253	66	77	73	10
B-7	48.8	00:48:45	603.11	.005		1317	252	60	77	72	10
B-8	51.5	00:51:28	605.20	.005		1347	252	60	77	72	10
B-9	54.2	00:54:10	607.12	.005		1376	252	60	76	72	10
B-10	56.9	00:56:53	609.17	.005		1346	252	60	76	72	10
B-11	59.6	00:59:35	611.20	.010		1334	252	60	76	72	10
B-12	62.3	01:02:18	613.30	.005		1361	252	60	76	72	10
Last Pt	65.0	01:05:00	615.28								
Final Val	65.0	01:05:00								Max Vac	
Average Values											

4

30-70-30

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

Plant Name	Elk City Facility
Sampling Location	SCD-3/~~4~~6D Stack
Project #	sfi-16-elkcity,ok-comp#1

Date	10/16/16
Operator	BL/MJ
Run Number	4

Leak Checks					
Train	Pre	0	ft³/min@	15	in Hg
	Post	0	ft³/min@	15	in Hg
Pitot	Pre (+)	.105	in H_2O for	15	sec
	Pre (-)	.075	in H_2O for	15	sec
	Post (+)	.09	in H_2O for	15	sec
	Post (-)	.140	in H_2O for	15	sec

Sampling Equipment		
Meter Box Number	SAMP-CP-0011	
Orifice Meter Coefficient	1.588	in H_2O

Pressures			
Barometric Pressure	(P_b)	28.01	in Hg

Run Time			
Start	16:10	End	17:19

Moisture Content Data					
		Impinger 1	Impinger 2	Impinger 3	Impinger 4
Initial Value	(Vi),(Wi)	712.1			
Final Value	(Vi),(Wi)	749.0	714.5	596.2	918.7

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±26°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	236.30	.010	1.5	1252	252	51	69	69	10
A-2	2.7	00:02:43	233.31	.010		1304	258	49	67	70	10
A-3	5.4	00:05:25	235.25	.015		1652	256	48	69	69	10
A-4	8.1	00:08:07	237.25	.020		1604	254	48	70	68	10
A-5	10.8	00:10:50	239.24	.020		1594	251	49	71	69	10
A-6	13.5	00:13:33	241.26	.020		1569	250	50	71	68	10
A-7	16.3	00:16:15	243.37	.020		1577	251	50	71	68	10
A-8	19.0	00:18:58	245.30	.020		1668	251	50	72	68	10
A-9	21.7	00:21:40	247.41	.015		1297	252	50	72	68	10
A-10	24.4	00:24:22	249.43	.020		1552	252	52	72	68	10
A-11	27.1	00:27:05	251.52	.020		1565	252	52	72	69	10
A-12	29.8	00:29:47	253.57	.020		1566	252	52	72	68	10
B-1	32.5	00:32:30	255.55	.015		1256	251	53	68	68	10
B-2	35.2	00:35:12	257.61	.020		1354	253	50	73	69	10
B-3	37.9	00:37:55	259.65	.015		1557	253	51	75	68	10
B-4	40.6	00:40:37	261.70	.020		1581	252	52	76	69	10
B-5	43.3	00:43:20	263.70	.020		1581	252	53	76	69	10
B-6	46.0	00:46:03	265.74	.030		1569	251	54	76	70	10
B-7	48.8	00:48:45	267.75	.020		1627	251	54	77	71	10
B-8	51.5	00:51:28	269.80	.015		1272	252	56	77	70	10
B-9	54.2	00:54:10	271.93	.020		1439	252	56	78	71	10
B-10	56.9	00:56:53	273.90	.020		1574	252	56	78	71	10
B-11	59.6	00:59:35	275.95	.020		1612	252	56	78	71	10
B-12	62.3	01:02:18	278.00	.020		1553	252	58	78	71	10
Last Pt	65.0	01:05:00	280.13								
Final Val	65.0	01:05:00								Max Vac	
Average Values											

5
9630-70-30

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

Plant Name	Elk City Facility
Sampling Location	SCR 60 Stack
Project #	s8-16-elkcity.ok-comp#1

Date	10-10-16
Operator	BL/MJ
Run Number	5

Leak Checks					
Train	Pre	0	ft³/min@	15	in Hg
	Post	0	ft³/min@	15	in Hg
Pitot	Pre (+)	.115	in H_2O for	15	sec
	Pre (-)	.905	in H_2O for	15	sec
	Post (+)	.220	in H_2O for	15	sec
	Post (-)	.170	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)	28.01	in Hg

Run Time			
Start	17:32	End	18:41

Moisture Content Data					
		Impinger 1	Impinger 2	Impinger 3	Impinger 4
Initial Value	(V_i),(W_i)				
Final Value	(V_f),(W_f)	785.6	721.1	598.5	931.4

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	280.80	.015	1.50	1258	252	62	72	72	10
A-2	2.7	00:02:43	282.88	.020		1258	256	55	74	72	10
A-3	5.4	00:05:26	284.93	.020		1512	255	55	76	71	10
A-4	8.1	00:08:07	287.06	.025		1532	257	57	77	72	10
A-5	10.8	00:10:50	289.05	.020		1548	251	58	78	72	10
A-6	13.5	00:13:33	291.10	.025		1511	251	59	79	72	10
A-7	16.3	00:16:15	293.16	.020		1537	251	60	79	73	10
A-8	19.0	00:18:58	295.20	.015		1482	251	60	80	73	10
A-9	21.7	00:21:40	297.26	.020		1458	252	60	80	74	10
A-10	24.4	00:24:22	299.32	.020		1615	252	61	80	74	10
A-11	27.1	00:27:05	301.40	.015		1631	252	61	80	75	10
A-12	29.8	00:29:47	303.45	.020		1612	252	62	80	75	10
B-1	32.5	00:32:30	305.80	.015		1232	251	63	76	75	10
B-2	35.2	00:35:12	307.60	.005		1532	253	61	79	75	10
B-3	37.9	00:37:55	309.67	.010		1536	254	61	80	75	10
B-4	40.6	00:40:37	311.70	.010		1538	253	63	80	75	10
B-5	43.3	00:43:20	313.81	.015		1542	252	62	80	75	10
B-6	46.0	00:46:03	315.85	.015		1537	252	64	80	75	10
B-7	48.8	00:48:45	318.04	.010		1323	252	64	81	75	10
B-8	51.5	00:51:28	319.91	.010		1346	252	64	80	75	10
B-9	54.2	00:54:10	321.95	.015		1389	252	65	81	75	10
B-10	56.9	00:56:53	324.01	.015		1517	252	65	81	74	10
B-11	59.6	00:59:35	326.11	.010		1539	252	65	81	75	10
B-12	62.3	01:02:18	328.15	.015		1564	252	66	81	75	10
Last Pt	65.0	01:05:00	330.18								
Final Val	65.0	01:05:00								Max Vac	
Average Values											

6
o/o 30-70-30

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

Plant Name	Elk City Facility
Sampling Location	SCDP Stack
Project #	sfi-16-elkcity.ok-comp#1

Date	10-11-16
Operator	BLMJ
Run Number	6

Leak Checks					
Train	Pre	0	ft³/min@	15	in Hg
	Post	0	ft³/min@	15	in Hg
Pitot	Pre (+)	.078	in H_2O for	15	sec
	Pre (-)	.105	in H_2O for	15	sec
	Post (+)	.155	in H_2O for	15	sec
	Post (-)	.106	in H_2O for	15	sec

Sampling Equipment		
Meter Box Number	SAMP-CP-0011	
Orifice Meter Coefficient	1.5855	in H_2O

Pressures			
Barometric Pressure	(P_b)	27.99	in Hg

Run Time			
Start	8:03	End	9:11

Moisture Content Data					
		Impinger 1	Impinger 2	Impinger 3	Impinger 4
Initial Value	(V_i),(W_i)	727.8	720.7	581.3	894.5
Final Value	(V_f),(W_f)	763.6	729.1	583.2	908.7

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	330.60	.010	1.5	1196	255	53	62	63	10
A-2	2.7	00:02:43	332.27	.010		1191	258	50	63	63	10
A-3	5.4	00:05:25	334.25	.015		1409	256	48	64	62	10
A-4	8.1	00:08:07	336.70	.015		1422	253	48	66	63	10
A-5	10.8	00:10:50	338.30	.010		1417	251	48	68	67	10
A-6	13.5	00:13:33	340.26	.015		1411	250	49	70	64	10
A-7	16.3	00:16:15	342.40	.010		1409	250	49	70	65	10
A-8	19.0	00:18:58	344.43	.010		1419	251	50	72	64	10
A-9	21.7	00:21:40	346.46	.010		1484	252	50	73	65	10
A-10	24.4	00:24:22	348.29	.005		1420	252	51	74	66	10
A-11	27.1	00:27:05	350.57	.015		1414	252	52	74	67	10
A-12	29.8	00:29:47	352.62	.010		1410	252	53	74	67	10
B-1	32.5	00:32:30	354.78	.010		1361	252	55	69	68	10
B-2	35.2	00:35:12	356.75	.015		1314	253	53	73	69	10
B-3	37.9	00:37:55	358.80	.005		1460	253	53	72	68	10
B-4	40.6	00:40:37	360.77	.010		1452	253	54	72	69	10
B-5	43.3	00:43:20	362.90	.015		1435	252	54	73	68	10
B-6	46.0	00:46:03	364.90	.010		1429	252	53	72	68	10
B-7	48.8	00:48:45	367.00	.010		1460	252	52	73	68	10
B-8	51.5	00:51:28	368.95	.010		1382	252	52	72	69	10
B-9	54.2	00:54:10	371.00	.015		1290	252	52	72	67	10
B-10	56.9	00:56:53	373.02	.010		1464	252	52	73	68	10
B-11	59.6	00:59:35	375.00	.015		1457	252	52	73	67	10
B-12	62.3	01:02:18	377.06	.010		1447	252	53	73	68	10
Last Pt	65.0	01:05:00	379.17								
Final Val	65.0	01:05:00								Max Vac	
Average Values											

7

9670-100-70

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

Plant Name	Elk City Facility
Sampling Location	SCD-6 Stack
Project #	s8-16-elkcity.ok-comp#1

Date	10-10-16
Operator	BUMS
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 (-)	0.20	in H_2O for	15	sec
	Post (+)	0.9	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)	28.14	in Hg

Run Time			
Start	11:02	End	12:11

Moisture Content Data					
		Impinger 1	Impinger 2	Impinger 3	Impinger 4
Initial Value	(Vi),(Wi)				885.0
Final Value	(Vi),(Wi)	863.7	694.7	588.3	900.9

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	86.65	.015	1.50	1354	254	63	74	69	10
A-2	2.7	00:02:43	88.62	.020		1356	257	61	75	69	10
A-3	5.4	00:05:25	90.60	.015		1485	255	58	75	70	10
A-4	8.1	00:08:07	92.64	.020		1545	252	58	76	70	10
A-5	10.8	00:10:50	94.610	.025		1575	251	60	77	70	10
A-6	13.5	00:13:33	96.52	.030		1594	251	65	76	71	10
A-7	16.3	00:16:15	98.47	.030		1648	251	66	77	72	10
A-8	19.0	00:18:58	100.46	.030		1520	251	67	77	72	10
A-9	21.7	00:21:40	102.43	.035		1450	252	65	77	72	10
A-10	24.4	00:24:22	104.45	.040		1633	252	64	77	72	10
A-11	27.1	00:27:05	106.51	.045		1656	252	64	78	73	10
A-12	29.8	00:29:47	108.45	.045		1649	252	64	78	73	10
B-1	32.5	00:32:30	110.50	.025		1137	250	66	75	74	10
B-2	35.2	00:35:12	112.60	.015		1404	253	63	77	74	10
B-3	37.9	00:37:55	114.57	.030		1588	253	62	78	75	10
B-4	40.6	00:40:37	116.56	.025		1650	252	62	77	75	10
B-5	43.3	00:43:20	118.62	.040		1676	251	64	75	74	10
B-6	46.0	00:46:03	120.59	.045		1667	252	64	74	74	10
B-7	48.8	00:48:45	122.71	.030		1504	251	64	73	74	10
B-8	51.5	00:51:28	124.55	.030		1457	252	63	74	73	10
B-9	54.2	00:54:10	126.64	.035		1447	252	61	73	72	10
B-10	56.9	00:56:53	128.64	.030		1608	252	61	72	71	10
B-11	59.6	00:59:35	130.57	.035		1635	252	60	72	70	10
B-12	62.3	01:02:18	132.68	.030		1638	252	58	72	70	10
Last Pt	65.0	01:05:00	134.60								
Final Val	65.0	01:05:00								Max Vac	
Average Values											

8

320-100-70

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

Plant Name	Elk City Facility
Sampling Location	SCU4 Stack
Project #	68 s6-16-elkcity.ok-comp#1

Date	10-10-16
Operator	BUMJ
Run Number	8

Leak Checks					
Train	Pre	0	ft³/min@		in Hg
	Post	0	ft³/min@		in Hg
Pitot	Pre (+)	0.1	in H_2O for		sec
	Pre (-)	0.25	in H_2O for		sec
	Post (+)	0.25	in H_2O for		sec
	Post (-)	0.25	in H_2O for		sec

Sampling Equipment		
Meter Box Number	SAMP-CP-0011	
Orifice Meter Coefficient	1.581	in H_2O

Pressures			
Barometric Pressure	(P_r)	28.09	in Hg

Run Time			
Start	12:30	End	15:59

Moisture Content Data					
		Impinger 1	Impinger 2	Impinger 3	Impinger 4
Initial Value	(V_i),(W_i)				
Final Value	(V_f),(W_f)	838.7	700.7	590.3	915.0

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	134.73	.025	1.5	1335	252	56	67	66	10
A-2	2.7	00:02:43	136.74	.020		1344	256	52	69	66	10
A-3	5.4	00:05:25	138.61	.020		1528	255	51	71	66	10
A-4	8.1	00:08:07	140.65	.015		1641	252	52	71	66	10
A-5	10.8	00:10:50	142.65	.020		1664	251	54	71	66	10
A-6	13.5	00:13:33	144.63	.035		1666	251	56	71	66	10
A-7	16.3	00:16:15	146.64	.040		1641	251	57	72	67	10
A-8	19.0	00:18:58	148.62	.035		1650	251	56	72	67	10
A-9	21.7	00:21:40	150.71	.035		1679	252	56	72	67	10
A-10	24.4	00:24:22	152.55	.040		1681	250	57	71	67	10
A-11	27.1	00:27:05	154.41	.030		1664	253	54	70	67	10
A-12	29.8	00:29:47	156.33	.030		1691	251	56	70	67	10
B-1	32.5	00:32:30	158.67	.035		1344	251	63	69	67	10
B-2	35.2	00:35:12	160.61	.020		1402	254	59	71	69	10
B-3	37.9	00:37:55	162.71	.030		1575	254	59	73	68	10
B-4	40.6	00:40:37	165.03	.025		1642	252	61	74	69	10
B-5	43.3	00:43:20	167.00	.025		1637	252	62	75	69	10.5
B-6	46.0	00:46:03	169.12	.025		1621	252	62	76	70	11
B-7	48.8	00:48:45	171.06	.030		1648	252	63	76	69	11
B-8	51.5	00:51:28	173.12	.025		1449	252	63	76	69	11
B-9	54.2	00:54:10	175.20	.030		1584	252	63	76	70	11
B-10	56.9	00:56:53	177.32	.030		1652	252	64	78	70	11
B-11	59.6	00:59:35	179.25	.030		1658	252	65	78	70	11
B-12	62.3	01:02:18	181.30	.030		1684	252	66	78	70	11
Last Pt	65.0	01:05:00	183.35								
Final Val	65.0	01:05:00								Max Vac	
Average Values											

9

%10 70-400-70

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

Plant Name	Elk City Facility
Sampling Location	SCD ~~60~~ Stack
Project #	sfl-16-elkcity.ok-comp#1

Date	10/10/16
Operator	BL/MJ
Run Number	9

Leak Checks

Train	Pre	0	ft³/min@	15	in Hg
	Post	0	ft³/min@		in Hg
Pitot	Pre (+)	0.2	in H_2O for	15	sec
	Pre (-)	0.2	in H_2O for	20	sec
	Post (+)	0.25	in H_2O for		sec
	Post (-)	0.25	in H_2O for		sec

Sampling Equipment

Meter Box Number	SAMP-CP-0011	
Orifice Meter Coefficient		in H_2O

Pressures

Barometric Pressure	(P_b)	28.04	in Hg

Run Time

Start	13:56	End	15:05

Moisture Content Data

		Impinger 1	Impinger 2	Impinger 3	Impinger 4
Initial Value	(Vi),(Wi)				888.8
Final Value	(Vi),(Wi)	876.4	706.7	593.7	905.0

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±26°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	183.70	0.07	1.5	1423	255	60	78	72	7
A-2	2.7	00:02:43	185.42	0.02		1433	256	59	78	72	7
A-3	5.4	00:05:25	187.20	0.025		1593	256	57	80	73	7
A-4	8.1	00:08:07	188.79	0.025		1649	256	57	78	73	7
A-5	10.8	00:10.50	190.63	.025		1652	252	59	79	74	10.5
A-6	13.5	00:13:33	192.72	.035		1682	252	60	79	74	10.5
A-7	16.3	00:16:15	194.40	.030		1648	252	60	79	74	10.5
A-8	19.0	00:18:58	196.39	.030		1496	251	61	79	74	10.5
A-9	21.7	00:21:40	198.43	.040		1572	252	62	80	74	10.5
A-10	24.4	00:24:22	200.50	.040		1667	252	63	80	74	10.5
A-11	27.1	00:27:05	202.53	.040		1679	252	62	79	75	10.5
A-12	29.8	00:29:47	204.59	.040		1687	252	64	80	75	10.5
B-1	32.5	00:32:30	206.65	.035		1382	251	66	77	76	10.5
B-2	35.2	00:35:12	208.76	.025		1437	253	63	78	75	10.5
B-3	37.9	00:37.55	210.80	.020		1632	253	64	79	75	10.5
B-4	40.6	00:40:37	212.83	.030		1669	253	65	79	76	10.5
B-5	43.3	00:43:20	214.85	.035		1707	252	66	79	75	10.5
B-6	46.0	00:46:03	216.90	.040		1688	251	66	79	75	10.5
B-7	48.8	00:48:45	218.97	.035		1465	252	66	79	75	10.5
B-8	51.5	00:51:28	220.97	.030		1447	252	66	80	75	10.5
B-9	54.2	00:54:10	223.00	.040		1679	252	66	80	75	10.5
B-10	56.9	00:56:53	225.03	.040		1712	252	66	79	75	10.5
B-11	59.6	00:59:35	227.11	.040		1697	252	65	80	74	10.5
B-12	62.3	01:02:18	229.12	.040		1899	252	65	80	74	10.5
Last Pt	65.0	01:05:00	231.16								
Final Val	65.0	01:05:00								Max Vac	
Average Values											

90-120%

10

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

Plant Name	Elk City Facility
Sampling Location	SCD-60 Stack
Project #	s6-16-elkcity.ok-comp#1

Date	10/17
Operator	BL/MJ
Run Number	10

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	20	sec
	Pre (-)	0.2	in H_2O for	20	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		in H_2O

Pressures			
Barometric Pressure	(P_b)	28.30	in Hg

Run Time			
Start	13:01	End	

Moisture Content Data					
		Impinger 1	Impinger 2	Impinger 3	Impinger 4
Initial Value	(Vi),(Wi)	768.1	701.8	590.0	808.2
Final Value	(Vf),(Wf)	798.8	705.0	593.2	823.2

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	939.76	[illegible]	1.5	1408	246	61	69	67	12
A-2	2.7	00:02:43	941.87	0.02	1.5	1431	256	61	69	67	12
A-3	5.4	00:05:25	943.95	0.02	1.5	1421	255	61	69	67	12
A-4	8.1	00:08:07	945.97	0.02	1.5	1427	256	61	69	67	12
A-5	10.8	00:10:50	948.01	0.03	1.5	1481	252	61	69	67	12
A-6	13.5	00:13:33	950.08	0.03	1.5	1541	250	61	69	67	12
A-7	16.3	00:16:15	952.11	0.025	1.5	1565	250	61	69	67	12
A-8	19.0	00:18:58	954.19	0.02	1.5	1555	251	61	69	67	12
A-9	21.7	00:21:40	956.25	0.02	1.5	1525	252	61	69	67	12
A-10	24.4	00:24:22	958.31	0.02	1.5	1487	252	61	69	67	12
A-11	27.1	00:27:05	960.38	0.02	1.5	1547	252	61	69	67	12
A-12	29.8	00:29:47	962.42	0.02	1.5	1455	252	61	69	67	12
B-1	32.5	00:32:30	964.52	0.02	1.5	1538	251	61	69	67	12
B-2	35.2	00:35:12	966.57	0.02	1.5	1526	254	61	69	67	12
B-3	37.9	00:37:55	968.65	0.02	1.5	1534	254	61	68	67	12
B-4	40.6	00:40:37	970.70	0.02	1.5	1488	252	61	69	67	12
B-5	43.3	00:43:20	972.75	0.02	1.5	1469	251	61	69	67	12
B-6	46.0	00:46:03	974.81	0.02	1.5	1491	251	61	69	67	12
B-7	48.8	00:48:45	976.85	0.025	1.5	1498	251	61	69	67	12
B-8	51.5	00:51:28	978.97	0.07	1.5	1545	252	61	69	67	12
B-9	54.2	00:54:10	981.01	0.02	1.5	1613	252	61	69	67	12
B-10	56.9	00:56:53	983.03	0.03	1.5	1617	252	61	69	67	12
B-11	59.6	00:59:35	984.96	0.03	1.5	1668	252	61	69	67	12
B-12	62.3	01:02:18	987.00	0.02	1.5	1655	252	61	69	67	12
Last Pt	65.0	01:05:00	989.07								
Final Val	65.0	01:05:00								Max Vac	
Average Values											

11
890-100

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

Plant Name	Elk City Facility
Sampling Location	SCD, 8D Stack
Project #	sfi-16-elkcity,ok-comp#1

Date	10-10-16
Operator	BL/MJ
Run Number	11

Leak Checks

Train	Pre	0	ft³/min@	15	in Hg
	Post	0	ft³/min@	15	in Hg
Pitot	Pre (+)	0	in H_2O for	15	sec
	Pre (-)	0	in H_2O for	15	sec
	Post (+)	0	in H_2O for	15	sec
	Post (-)	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)	28.12	in Hg

Run Time

Start	8:04	End	9:082

Moisture Content Data

		Impinger 1	Impinger 2	Impinger 3	Impinger 4
Initial Value	(Vi),(Wi)	704.9	669.7	580.3	827.2
Final Value	(Vi),(Wi)	737.2	680.0	583.3	834.7

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	989.10	.025	1.5	1486	254	63	67	64	10
A-2	2.7	00:02:43	991.20	.025		1408	257	64	70	64	10
A-3	5.4	00:05:25	993.10	.025		1397	255	65	70	65	10
A-4	8.1	00:08:07	995.20	.025		1410	253	62	70	65	10
A-5	10.8	00:10:50	997.12	.025		1411	251	60	71	65	10
A-6	13.5	00:13:33	999.15	.025		1489	251	59	72	66	10
A-7	16.3	00:16:15	1002.01	.025		1501	252	59	72	65	10
A-8	19.0	00:18:58	1003.85	.030		1550	251	59	72	65	10
A-9	21.7	00:21:40	1005.10	.025		1579	252	60	72	65	10
A-10	24.4	00:24:22	1007.15	.025		1560	252	60	73	65	10
A-11	27.1	00:27:05	1009.16	.40		1591	252	59	72	67	10
A-12	29.8	00:29:47	1011.23	.45		1578	252	59	72	68	10
B-1	32.5	00:32:30	1013.01	.025		1335	250	61	68	68	10
B-2	35.2	00:35:12	1015.20	.030		1521	254	58	71	68	10
B-3	37.9	00:37:55	1017.95	.025		1532	254	58	71	68	10
B-4	40.6	00:40:37	1019.37	.030		1527	253	59	71	69	10
B-5	43.3	00:43:20	1021.25	.020		1543	252	59	72	68	10
B-6	46.0	00:46:03	1027.20	.075		1563	252	59	72	69	10
B-7	48.8	00:48:45	1025.20	.040		1547	252	58	72	68	10
B-8	51.5	00:51:28	1027.24	.050		1585	252	59	72	68	10
B-9	54.2	00:54:10	1029.30	.045		1597	252	57	71	67	10
B-10	56.9	00:56:53	1031.20	.050		1603	252	58	71	67	10
B-11	59.6	00:59:35	1033.17	.050		1600	252	58	71	67	10
B-12	62.3	01:02:18	1035.18	.045		1610	252	57	72	68	10
Last Pt	65.0	01:05:00	[illegible]								
Final Val	65.0	01:05:00	1037.15							Max Vac	
Average Values											

12
90-10006

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

Plant Name	Elk City Facility
Sampling Location	SCD ~~6~~ 5 Stack
Project #	sfi-16-elkcity.ok-comp#1

Date	10-10-16
Operator	BL/MJ
Run Number	12

Leak Checks					
Train	Pre		ft³/min@	15	in Hg
	Post		ft³/min@	15	in Hg
Pitot	Pre (+)		in H_2O for	15	sec
	Pre (-)		in H_2O for	15	sec
	Post (+)		in H_2O for	15	sec
	Post (-)		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)	28.14	in Hg

Run Time			
Start	9:29	End	16:40

Moisture Content Data					
		Impinger 1	Impinger 2	Impinger 3	Impinger 4
Initial Value	(V_i),(W_i)				
Final Value	(V_f),(W_f)	770.1	688.3	585.4	844.4

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	37.30	.025	1.5	1454	253	56	69	66	10
A-2	2.7	00:02:43	39.20	.020		1452	256	54	71	66	10
A-3	5.4	00:05:25	41.24	.20		1454	255	55	72	66	10
A-4	8.1	00:08:07	43.37	.025		1450	257	55	72	67	10
A-5	10.8	00:10:50	45.30	.025		1471	252	57	72	67	10
A-6	13.5	00:13:33	47.44	.025		1506	251	57	73	67	10
A-7	16.3	00:16:15	49.51	.025		1572	252	58	73	67	10
A-8	19.0	00:18:58	51.52	.035		1580	251	58	74	69	10
A-9	21.7	00:21:40	53.40	.035		1614	252	59	74	69	10
A-10	24.4	00:24:22	55.53	.045		1608	252	60	75	69	10
A-11	27.1	00:27:05	57.60	.050		1596	252	60	74	69	10
A-12	29.8	00:29:47	59.61	.045		1624	252	60	74	70	10
B-1	32.5	00:32:30	61.70	.025		1545	252	62	71	70	10
B-2	35.2	00:35:12	63.80	.020		1543	253	60	73	70	10
B-3	37.9	00:37:55	65.87	.020		1548	253	61	74	71	10
B-4	40.6	00:40:37	67.01	.025		1542	252	61	73	71	10
B-5	43.3	00:43:20	70.15	.025		1588	252	60	74	71	10
B-6	46.0	00:46:03	72.20	.030		1558	252	61	74	71	10
B-7	48.8	00:48:45	74.31	.040		1602	252	61	74	70	10
B-8	51.5	00:51:28	76.40	.055		1651	252	60	74	70	10
B-9	54.2	00:54:10	78.18	.060		1658	252	60	74	71	10
B-10	56.9	00:56:53	80.22	.055		1675	252	60	74	70	10
B-11	59.6	00:59:35	82.22	.060		1656	252	61	74	70	10
B-12	62.3	01:02:16	84.27	.055		1656	252	60	74	70	10
Last Pt	65.0	01:05:00									
Final Val	65.0	01:05:00								Max Vac	
Average Values											

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end of report

From:	Adam Yow
To:	Mia, Marcia
Cc:	Mark Axtell; "Tim Rickel"; mlee@airhygiene.com; "Randy Morse"; Jason Huckaby; Garwood, Gerri
Subject:	RE: Superior Fabrication Inc. SCD-36 & SCD-60 OOOO Performance Test Results
Date:	Thursday, February 09, 2017 5:50:56 PM
Attachments:	P&ID R1.pdf True-Lite with Overview.pdf Superior Fabrication Cover Letter-EPA response-SCD-60.pdf

Marcia,

Please see answers below and attachments regarding the SCD-60.

I was also wondering if you have heard anything on the SCD-48 that was submitted?

Let me know if you have any questions.

Thanks,

Adam Yow | **Engineering**
P.O. Box 429
Elk City, OK 73648
580-243-7012 Office
adamyow@superiorfab.com

SFI
A Tri-Point Company

From: Mia, Marcia [mailto:Mia.Marcia@epa.gov]
Sent: Wednesday, January 11, 2017 1:05 PM
To: Adam Yow
Cc: Mark Axtell; 'Tim Rickel'; mlee@airhygiene.com; 'Randy Morse'; Jason Huckaby; Garwood, Gerri
Subject: Superior Fabrication Inc. SCD-36 & SCD-60 OOOO Performance Test Results

Adam,
We have completed our initial review of the SCD 36 and 60 performance tests. We have the following items, for which we need additional information or clarity, in order to complete our review.

SCD-36

1. We noted some apparent typos in the report which is complicating our review. See Table 2.3 which is mislabeled. Also there are similar typos on pages 33, 64-72 and Table A.1. for the 30-70-30 and 70-100-70 runs. Please provide corrected pages and tables.
2. Section 60.5413(d)(4)(i) inlet fuel metering – Your report does not provide a key to the diagram components. The location of the sample port and flow meter location is not specified on the diagram. Please provide a key and locations of the sample port and inlet fuel meter location.
3. Section 60.5413(d)(12)(v)(B) Fuel Gas Moisture Range – Your summary page report states

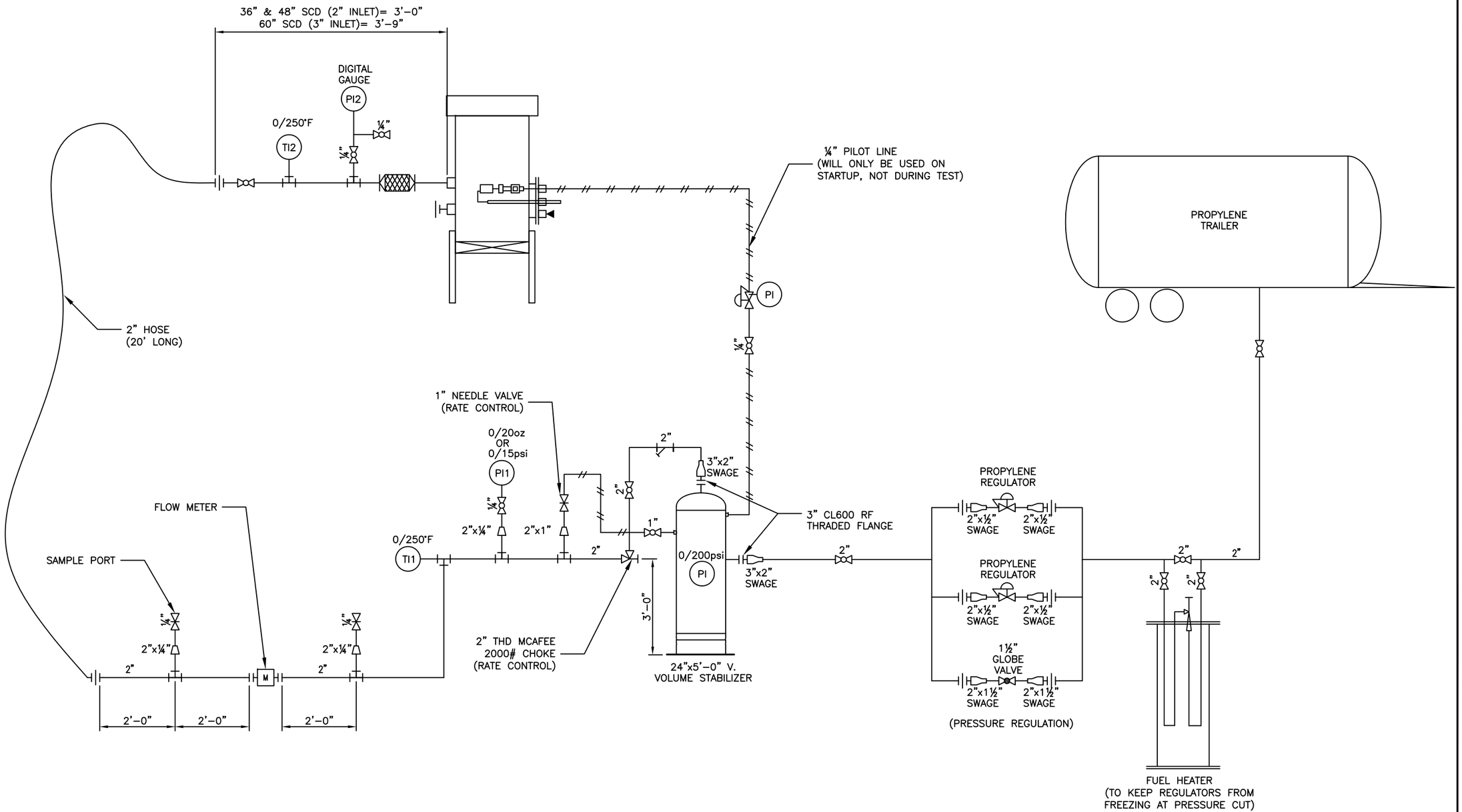
that the fuel gas moisture range is >2ppm. The analysis from the supplier on page 180 has 0.05 ppm. Please reconcile the error.

4. Section 60.5413(d)(12)(v)(I) pilot flame indicator – Please provide a description (manufacturer literature is acceptable) of the pilot indicator system.

SCD-60

1. Section 60.5413(d)(4)(i) inlet fuel metering – Your report does not provide a key to the diagram components. The location of the sample port and flow meter location is not specified on the diagram. Please provide a key and locations of the sample port and inlet fuel meter location. ***[Adam Yow]*** The updated P&ID is attached.
2. Section 60.5413(d)(11)(i)(D) requires EA>150% - While your unit meets this requirement for all test conditions, we noted an anomaly for Run 7, in that the M3C results are significantly different for Run 7 (EA = 931% and O2 = 18.8%); compared to other runs (~200-270% EA and 14.1-15.4 % O2). Please provide an explanation ***[Adam Yow]*** Please see attached document on page 2 for explanation.
3. Section 60.5413(d)(12)(v)(B) Fuel Gas Moisture Range – Your summary page report states that the fuel gas moisture range is >2ppm. The analysis from the supplier on page 180 has 0.05 ppm. Please reconcile the error. ***[Adam Yow]*** The corrected summary page is attached.
4. Section 60.5413(d)(12)(v)(I) pilot flame indicator – Please provide a description (manufacturer literature is acceptable) of the pilot indicator system.***[Adam Yow]*** Please see the attached document labeled "True-Lite with Overview"
5. Section 60.5413(d)(12)(v)(O) requires the exit flow rate to be reported - We note an anomaly in that R4 (30-70-30) is the highest flow rate of any run at 390k dscfh, which is ~130-160k higher than the other 2 runs for this condition. Please provide an explanation. ***[Adam Yow]*** A typo was found that made this value incorrect. Please see attached document for updated reports.

Marcia B Mia
Office of Compliance/Air Branch
2227A WJCS
U.S. Environmental Protection Agency
202-564-7042



NO.	DATE	BY:	CKD	APD	DESCRIPTION

DRAWN: A. YOW	SFI SUPERIOR FABRICATION, INC. ELK CITY, OKLAHOMA, USA	DRAWING NO: SCD TEST
DATE: 2016-08-30		
CHKD: NONE	DWG. SCALE: NONE PLOT SCALE: 1:1 CUSTOMER: STANDARD	REVISION NO. 1
BOM YES ■ NO □	SCD TEST P&ID	AAY 2016-01-25-1000

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SFI
SUPERIOR FABRICATION, INC.

True-Lite Igniter

Overview

The True-Lite Igniter is designed to provide a constant pilot flame on burner systems. During the ignition sequence, the igniter will attempt to light the pilot up to three times unless ignition is successful. After successful ignition, the True-Lite uses ionization to monitor the pilot flame. If the pilot goes out, the unit will attempt to reignite. SCADA connections are built in to give the end user the status of the pilot flame.

Installation

1.) Mount igniter unit on flush vertical surface and bolt securely.
2.) Cut and install conduit and connectors.
3.) Cut the igniter wire and ground wire to the length needed and run it inside the conduit. Attach the ground wire to the ground terminal bolt that is located on the bottom left corner of the enclosure. Connect the igniter wire with the rubber boot to the coil inside the unit.
4.) If using a solar panel, run the wire through the round pre-cut hole at the bottom of the unit and attach to the positive and negative solar terminals of the terminal block marked “Solar”. Shield the panel from sunlight until the battery is connected.
5.) If used, Install conduit for the Magnalatch Valve and run wires through conduit. Attach to the positive and negative terminals for the valve on the terminal block marked “Valve”.
6.) Connect electrode to the end of the igniter wire and attach the ground wire to the burner piping on the vessel. (Position electrode per sketch.) Do not ground the electrode by touching the tip of the electrode to the metal piping.
7.) Check wiring to ensure proper connection and connect the battery to test the unit.
Note: it is the installer’s/user’s responsibility to adhere to all Local, State and Federal codes for wiring and gas connections.

Start-Up

Operation

Caution: For safety, ensure flame arrestor is secure and in proper working order prior to lighting flame.
It is recommended to follow API RP-12N for testing the flame arrestor and accessories.

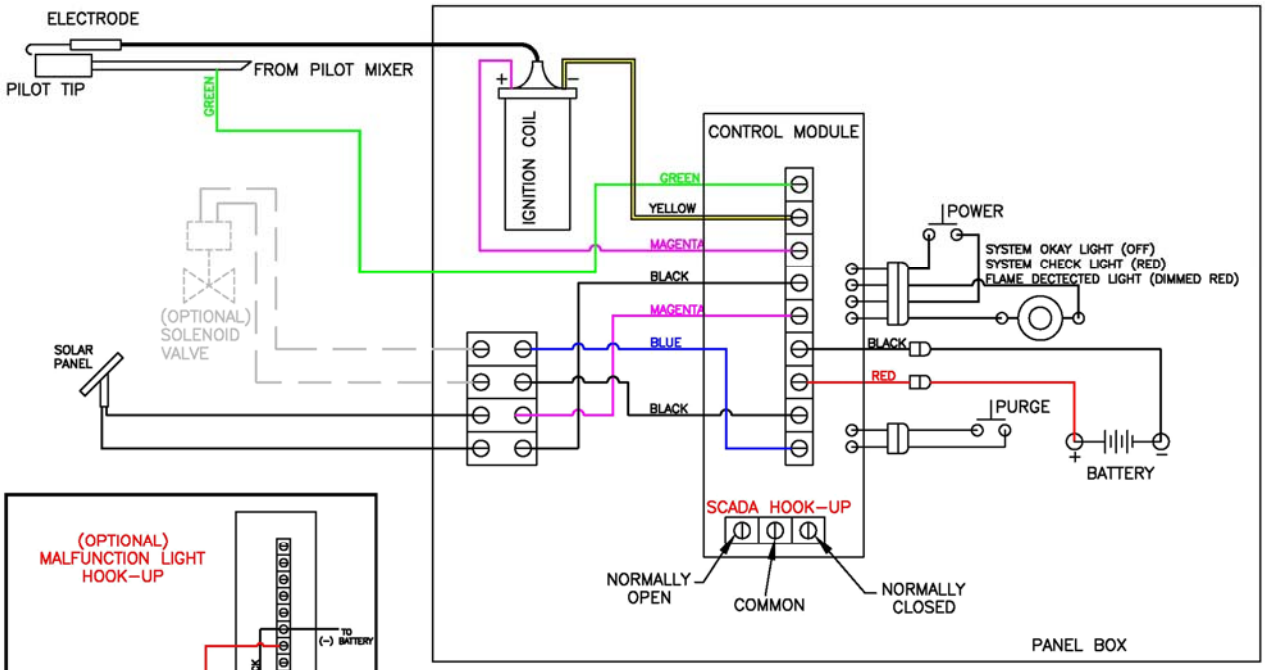
1.) Make sure the battery has a full charge and all the terminal connections are tight with no loose wiring. Keep the manual valves that control the pilot and main burner gas lines closed until ready to ignite.
2.) Open the valve and press the ignition button. A red LED indicator light will flash bright red while attempting to light. the igniter will fire up to 62 times during one-15 second cycle unless ignition is successful. Once the pilot is lit and in flame monitoring mode, the LED will flash dim red. If ignition fails, refer to trouble shooting guide.

Shutdown

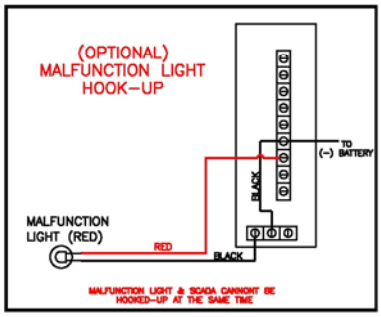
1.) Close the manual gas valves for the pilot and main burner. The unit will attempt to relight and will time out in 15 seconds, shutting down the system.

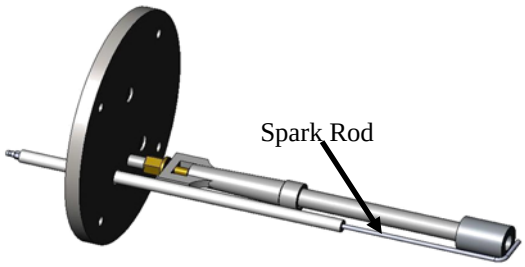
If in need of any further technical help, please contact:

Superior Fabrication, Inc.
801 S. Eastern
Elk City, OK 73644
Phone: (580) 243-5693
Fax: (580) 243-5507
Email: superiorfab@superiorfab.com



Schematic A





Pilot Assembly

Figure 3

NOTES:

1.) IGNITER INPUT VOLTAGE RANGE FOR 12VDC OPERATION: 10.5 VOLTS TO 14.5 VOLTS
2.) IGNITER INPUT VOLTAGE RANGE FOR 24VDC OPERATION: 20 VOLTS TO 32 VOLTS
3.) THE POWER SUPPLY MUST BE CAPABLE OF SUPPLYING A 7A PULSE FOR WHEN THE IGNITER IS IN SPARKING MODE
4.) MAXIMUM SOLAR PANEL INPUT IS 12V-12W & 1A
5.) SCADA INTERFACE NO AND NC CONNECTIONS RATED AT 0.5A @ 120VAC OR 2A @24VDC
6.) CURRNET DRAW IS 5-6A DURING IGNITE MODE AND 0.1A IN FLAME MONITORING MODE.

Troubleshooting

Problem	Cause	Remedy
1.) Nothing happens when pushing the ignition button.	a.) Loose connections at battery.	a.) Tighten all connections.
	b.) Bad battery, low voltage.	b.) Install new battery or charge existing battery and check solar charger.
2.) Igniter sparks but fails to light pilot.	a.) Pilot gas valve shut off.	a.) Turn gas valve on.
	b.) Air in gas line.	b.) Purge air with gas.
	c.) Plugged line, no gas.	c.) Clean out strainers, filters, orifices, etc., as needed and purge line.
3.) Igniter fails to spark.	a.) Improper placement of electrode.	a.) Reposition electrode according to sketch in installation instructions.
	b.) Improper ground.	b.) Check continuity in ground wire.
	c.) Loose or damaged wiring.	c.) Tighten or replace damaged wires.
	d.) Loose or damaged igniter cable.	d.) Check continuity of ignition cable, & tighten connections.
	e.) Wired incorrectly.	e.) Refer to schematic, correct as needed.
4.) Igniter lights pilot but continues to spark.	a.) Improper placement of electrode.	a.) Reposition electrode according to sketch in installation instructions.

Disclaimer:

This Guide is a reference for the installation of True-Lite Igniter. You should check with Federal, State, Local, and/or company specifications before doing any piping or electrical wiring.

SFI

SUPERIOR FABRICATION, INC.

Summary:
Superior Fabrication, Inc. contracted Air Hygiene Inc. to conduct performance testing on Combustion Device on model SCD-60. The unit was tested on October 7th through 12th, 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 SCD-60 is 9.59MMBtu/hr
- The inlet gas fuel range for 0% (min. rate) and 100% (max. rate) are 22.44MSCFD, and 90.82MSCFD, respectively
- Air/Stream injection/assist is not applicable for SCD-60
- 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 – >0.05ppm
    - 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

February 8, 2017

Adam Yow
SFI Oil & Gas Production System
801 S Eastern
Elk City, OK 73644

Mr. Yow,

Please find the attached revisions in response to Ms. Marcia Mia's January 11th, 2017 email request.

SCD-60
Item #2
Section 60.5413(d)(11)(i)(D) requires EA>150% - While your unit meets this requirement for all test conditions, we noted an anomaly for Run 7, in that the M3C results are significantly different for Run 7 (EA = 931% and O2 = 18.8%); compared to other runs (~200-270% EA and 14.1-15.4 % O2). Please provide an explanation.

- ALS Environmental Statement: The sample is analyzed in triplicate and we verified the runs are correct and were averaged appropriately. For that sample the increased O2 and lower CO2 gives us an indication the bag may have been leaking slightly so you are seeing some ambient air intrusion which yielded a higher O2 result.

Item #5
Section 60.5413(d)(12)(v)(O) requires the exit flow rate to be reported - We note an anomaly in that R4 (30-70-30) is the highest flow rate of any run at 390k dscfh, which is ~130-160k higher than the other 2 runs for this condition. Please provide an explanation

- Exhaust flow rate was compromised due to a typo on page 61, line A4. Correct data was updated from field data sheet and all exhaust flow was recalculated. Please find the correction in the attachment.

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

AIR HYGIENE, INC.

Testing Solutions for a Better World

STACK EMISSIONS STUDY
EPA 40 CFR PART 60 SUBPART OOOO
FOR THE
COMBUSTION DEVICE SCD-60 MODEL
PREPARED FOR
SUPERIOR FABRICATION, INC.
AT THE
ELK CITY FACILITY
ELK CITY, OKLAHOMA
OCTOBER 7-12, 2016

Corporate Headquarters
1600 W Tacoma Street
Broken Arrow, Oklahoma 74012

AIR HYGIENE, INC.

(918) 307-8865 or (888) 461-8778
www.airhygiene.com

Remote Testing Offices
Las Vegas, NV 89156
Ft. Worth, TX 76028
Humble, TX 77338
Shreveport, LA 71115
Miami, FL 33101
Pittsburgh, PA 15205

TABLE 2.2

SCD-60 30-70-30 LOAD DATA SUMMARY

Parameter	30-70-30 Load, Run - SCD-60 R4	30-70-30 Load, Run - SCD-60 R5	30-70-30 Load, Run - SCD-60 R6	Average
Date (mm/dd/yy)	10/10/16	10/10/16	10/11/16	--
Start Time (hh:mm:ss)	16:10:09	17:32:09	8:03:21	--
End Time (hh:mm:ss)	17:20:09	18:42:09	9:13:21	--
Run Duration (min / run)	71	71	71	71
Bar. Pressure (in. Hg)	28.01	28.01	27.99	28.00
Amb. Temp. (°F)	78	75	57	70
Rel. Humidity (%)	43	43	70	52
Spec. Humidity (lb water / lb air)	0.009376	0.008475	0.007377	0.008409
Wind Speed (mph)	12.0	12.0	3.0	9.0
Wind Direction (--)	SW	SW	S	--
Inlet Gas Canister Pressure Start (inHg)	-28.28	-17.79	-9.96	--
Inlet Gas Canister Pressure Stop (inHg)	-17.79	-9.96	-0.33	--
Gross Fuel Heating Value (Btu/ft3)	2,479	2,479	2,479	2,479
Stack Flow (M2) (dscfh)	277,936	259,378	224,237	253,850
Stack Moisture (Method 4)	6.0	5.7	5.9	5.9
Gross Fuel Heating Value (Btu/ft^3)	2,479.1	2,479.1	2,479.1	2,479.10
Average Inlet Fuel Flowrate (SCFH)	2,048.3	2,008.1	2,129.5	2,061.97
Average Inlet Mass Fuel Flowrate (lb/hr)	236.8	233.2	226.3	232.11
% Excess Air	196.9	255.1	267.5	239.83
CO_2 (%) - Modified method 3C	5.37	4.65	4.46	4.83
O_2 (%) - Modified Method 3C	14.10	15.20	15.40	14.90
N_2 (%) - Modified Method 3C	80.53	80.15	80.14	80.27
Visual Emission (mm:ss)	0:00	0:00	0:00	0:00
CO (ppmvd)	2.80	0.75	1.64	1.73
CO (ppm@3%CO_2)	1.56	0.48	1.10	1.05
THC (ppmvw)	0.08	0.04	0.07	0.06
THC (ppm@3%CO_2)	0.04	0.02	0.04	0.04
THC (lb/hr)	0.00	0.00	0.00	0.00
VOC Destruction Efficiency (%)	99.999	100.000	99.999	99.999

Superior Fabrication, INC

Air Permit # :	40 CFR 60 Sub Part OOOO
Plant Name or Location:	Elk City Plant
Date:	October 7, 2016
Project Number:	sfi-16-elkcity.ok-comp#1
Manufacturer & Equipment:	SCD-60
Test Load:	Multiple
Tester(s) / Test Unit(s):	MSL/BB/TW/MJ

		RUN											
	UNITS	**SCD-60 R10**	**SCD-60 R11**	**SCD-60 R12**	**SCD-60 R7**	**SCD-60 R8**	**SCD-60 R9**	**SCD-60 R4**	**SCD-60 R5**	**SCD-60 R6**	**SCD-60 R1**	**SCD-60 R2**	**SCD-60 R3**
Start Time	hh:mm:ss	13:01:07	08:04:09	09:29:09	11:02:09	12:30:09	13:56:09	16:10:09	17:32:09	08:03:21	15:01:12	16:22:12	17:42:12
End Time	hh:mm:ss	14:11:07	09:14:09	10:39:09	12:12:09	13:40:09	15:06:09	17:20:09	18:42:09	09:13:21	16:11:12	17:32:12	18:52:12
Bar. Pressure	in. Hg	28.30	28.12	28.14	28.14	28.09	28.04	28.01	28.01	27.99	28.14	28.14	28.14
Amb. Temp.	°F	60	58	60	50	73	75	78	75	57	59	60	59
Rel. Humidity	%	48	64	58	66	48	46	43	43	70	55	54	52
Spec. Humidity	lb water / lb air	0.005555	0.006955	0.006764	0.005335	0.008826	0.009065	0.009376	0.008475	0.007377	0.006183	0.006292	0.005843
Date	mm/dd/yy	10/07/16	10/10/16	10/10/16	10/10/16	10/10/16	10/10/16	10/10/16	10/10/16	10/11/16	10/12/16	10/12/16	10/12/16
Unit Number		SCD-60	SCD-60	SCD-60	SCD-60	SCD-60	SCD-60	SCD-60	SCD-60	SCD-60	SCD-60	SCD-60	SCD-60
Load Designator	%	90-100	90-100	90-100	70-100-70	70-100-70	70-100-70	30-70-30	30-70-30	30-70-30	0-30-0	0-30-0	0-30-0
Gross Fuel Heating Value	Btu/ft3	2,535	2,535	2,535	2,553	2,553	2,553	2,479	2,479	2,479	2,558	2,558	2,558
Stack Flow (M2)	dscfh	316,380	376,257	378,495	354,831	340,646	357,807	277,936	259,378	224,237	208,452	209,862	182,803
Stack Moisture	Method 4	5.04	5.20	5.52	5.89	5.68	6.38	5.97	5.73	5.92	5.34	5.42	5.06
Wind Speed	mph	10	5	13	8	12	10	12	12	3	13	12	14
Wind Direction	--	S	E	S	SE	S	E	SW	SW	S	N	N	N
CO_2 - Method 3C	%	4.75	5.03	5.25	2.34	5.27	5.02	5.37	4.65	4.46	5.15	4.67	4.67
O_2 - Method 3C	%	14.60	14.60	14.30	18.80	14.20	14.60	14.10	15.20	15.40	14.50	15.20	15.20
N_2 -Method 3C	%	80.65	80.37	80.40	78.86	80.53	80.38	80.53	80.15	80.14	80.35	80.13	80.13
Excess Air	%	218.18	220.62	206.48	931.14	201.14	220.53	196.93	255.05	267.50	216.02	255.28	255.28

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

Plant Name	Elk City Facilty
Sampling Location	SCD-60
Project #	sfi-elkcity.ok-comp#1

Historical Data	**30-70-30%-4**	**30-70-30%-5**	**30-70-30%-6**	**Average**	**Units**
Run Start Time	16:10	17:32	08:03		hh:mm
Run Stop Time	17:19	18:41	09:11		hh:mm
Test Date	10/10/16	10/10/16	10/11/16		mm/dd/yy
Meter Calibration Factor	0.989	0.989	0.989		
Pitot Tube Coefficient	0.840	0.840	0.840		
Initial Meter Volume	231.300	280.800	330.600		ft^3
Final Meter Volume	280.130	330.180	379.130		ft^3
Total Meter Volume	48.830	49.380	48.530	48.913	ft^3
Total Sampling Time	65.00	65.00	65.00	65.00	min
Average Meter Temperature	71.21	76.44	68.44	72.03	°F
Average Stack Temperature	1507.29	1477.88	1388.88	1458.01	°F
Barometric Pressure	28.10	28.01	27.99	28.03	in Hg
Stack Static Pressure	0.00	0.00	0.00	0.00	in H_2O
Absolute Stack Pressure	28.10	28.01	27.99	28.03	in Hg
Average Orifice Pressure Drop	1.50	1.50	1.50	1.50	in H_2O
Absolute Meter Pressure	28.22	28.13	28.11	28.15	in Hg
Avg Square Root Pitot Pressure	0.13	0.12	0.11	0.12	$\sqrt{(in\ H_2O)}$
Moisture Content Data	**30-70-30%-4**	**30-70-30%-5**	**30-70-30%-6**	**Average**	**Units**
Impinger Water Weight Gain	47.20	45.50	46.10	46.27	g
Silica Gel Weight Gain	13.70	12.70	14.00	13.47	g
Total Water Volume Collected	61.01	58.30	60.21	59.84	ml
Standard Water Vapor Volume	2.87	2.74	2.83	2.82	scf
Standard Meter Volume	45.3	45.2	45.0	45.2	dscf
Calculated Stack Moisture	5.97	5.73	5.92	5.87	%
Saturated Stack Moisture	100.00	100.00	100.00	100.00	%
Reported Stack Moisture Content	5.97	5.73	5.92	5.87	%
Method 3C Gas Analysis Data	**30-70-30%-4**	**30-70-30%-5**	**30-70-30%-6**	**Average**	**Units**
Carbon Dioxide Content	5.4	4.7	4.5	4.8	%
Oxygen Content	14.1	15.2	15.4	14.9	%
Nitrogen Content	80.5	80.2	80.1	80.3	%
Stack Dry Molecular Weight	29.42	29.35	29.33	29.37	lb/lb-mole
Stack Wet Molecular Weight	28.74	28.70	28.66	28.70	lb/lb-mole
Percent Excess Air	196.9	255.1	267.5	239.8	%
Volumetric Flow Rate Data	**30-70-30%-4**	**30-70-30%-5**	**30-70-30%-6**	**Average**	**Units**
Average Stack Gas Velocity	15.05	13.84	11.45	13.45	ft/sec
Stack Cross-Sectional Area	21.65	21.65	21.65	21.65	ft^2
Actual Stack Flow Rate	19,543	17,978	14,869	17,463	acfm
Wet Standard Stack Flow Rate	296	275	238	270	wkscfh
Dry Standard Stack Flow Rate	277,936	259,378	224,237	253,850	dscfh

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

Plant Name	Elk City Facilty
Sampling Location	SCD-60
Project #	sfi-elkcity.ok-comp#1

Date	10/10/16
Operator	TW
Run Number	30-70-30%-4

Ideal Nozzle Diameter and IsoKinetic Factor Setup			
Pitot Coefficient	(C_p)	0.840	
Average Stack Temp	(t_s)	1507.3	°F
Average Meter Temp	(t_m)	71.2	
Orifice Meter Coefficient	($\Delta H@$)	1.585	in H_2O
Square Root ΔP	($\Delta p^{1/2}_{avg}$)	0.13	in H_2O
Stack Moisture Content	(B_{ws})	5.97	%
Stack Dry Molecular Weight	(M_d)	29.42	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 (+)**	0.1	in H_2O for	15.0	sec
< 3.0	**Pre (-)**	0.1	in H_2O for	15.0	sec
	Post (+)	0.1	in H_2O for	15.0	sec
	Post (-)	0.1	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})	0.4558	in
Probe Number	SAMP-PF-0003		in
Probe Length	60		in
Liner Material	inconel		
Sample Case / Oven Number			
Impinger Case Number	SAMP-BC-0032		

Pressures			
Barometric Pressure	(P_b)	28.10	in Hg
Stack Static Pressure	(P_{static})	0.00	in H_2O
Absolute Stack Pressure	(P_s)	28.10	in Hg
Absolute Meter Pressure	(P_m)	28.22	in Hg

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

Run Time			
Start	16:10	**End**	17:19

Weights	**Imp 1**	**Imp 2**	**Imp 3**	**Imp 4**	**Imp 5**	**Imp 6**	**Imp 7**	**Imp 8**
Pre	712.1	706.7	593.7	905.0				
Post	749.0	714.5	596.2	918.7				

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	231.300	0.010	1.585	1.50	1252	252		51			69	69	10.0	0.10	10.46	1.871		44.898
A-2	2.7	00:02:43	233.310	0.010	1.585	1.50	1304	258		49			67	70	10.0	0.10	10.61	3.678		44.137
A-3	5.4	00:05:25	235.250	0.015	1.585	1.50	1652	256		48			69	69	10.0	0.12	14.22	5.540		44.316
A-4	8.1	00:08:07	237.250	0.020	1.585	1.50	1604	254		48			70	68	10.0	0.14	16.24	7.392		44.350
A-5	10.8	00:10:50	239.240	0.020	1.585	1.50	1594	251		49			71	69	10.0	0.14	16.20	9.268		44.487
A-6	13.5	00:13:33	241.260	0.020	1.585	1.50	1569	250		50			71	68	10.0	0.14	16.10	11.230		44.921
A-7	16.3	00:16:15	243.370	0.020	1.585	1.50	1577	251		50			71	68	10.0	0.14	16.13	13.025		44.656
A-8	19.0	00:18:58	245.300	0.020	1.585	1.50	1668	251		50			72	68	10.0	0.14	16.48	14.985		44.955
A-9	21.7	00:21:40	247.410	0.015	1.585	1.50	1297	252		50			72	68	10.0	0.12	12.97	16.861		44.964
A-10	24.4	00:24:22	249.430	0.020	1.585	1.50	1552	252		52			72	68	10.0	0.14	16.03	18.803		45.127
A-11	27.1	00:27:05	251.520	0.020	1.585	1.50	1565	252		52			72	69	10.0	0.14	16.08	20.705		45.176
A-12	29.8	00:29:47	253.570	0.020	1.585	1.50	1566	252		52			72	68	10.0	0.14	16.08	22.545		45.090
B-1	32.5	00:32:30	255.550	0.015	1.585	1.50	1256	251		53			68	68	10.0	0.12	12.82	24.466		45.168
B-2	35.2	00:35:12	257.610	0.020	1.585	1.50	1354	253		50			73	69	10.0	0.14	15.22	26.357		45.184
B-3	37.9	00:37:55	259.650	0.015	1.585	1.50	1557	253		51			75	68	10.0	0.12	13.90	28.256		45.210
B-4	40.6	00:40:37	261.700	0.020	1.585	1.50	1581	252		52			76	69	10.0	0.14	16.14	30.106		45.158
B-5	43.3	00:43:20	263.700	0.020	1.585	1.50	1581	252		53			76	69	10.0	0.14	16.14	31.992		45.165
B-6	46.0	00:46:03	265.740	0.020	1.585	1.50	1569	251		54			76	70	10.0	0.14	16.10	33.848		45.131
B-7	48.8	00:48:45	267.750	0.020	1.585	1.50	1627	251		54			77	71	10.0	0.14	16.33	35.739		45.143
B-8	51.5	00:51:28	269.800	0.015	1.585	1.50	1272	252		56			77	70	10.0	0.12	12.88	37.704		45.245
B-9	54.2	00:54:10	271.930	0.020	1.585	1.50	1439	252		56			78	71	10.0	0.14	15.57	39.519		45.164
B-10	56.9	00:56:53	273.900	0.020	1.585	1.50	1574	252		56			78	71	10.0	0.14	16.12	41.407		45.172
B-11	59.6	00:59:35	275.950	0.020	1.585	1.50	1612	252		56			78	71	10.0	0.14	16.27	43.296		45.178
B-12	62.3	01:02:18	278.000	0.020	1.585	1.50	1553	252		58			78	71	10.0	0.14	16.03	45.258		45.258
Last Pt	65.0	01:05:00	280.130																	
Final Val	65.0	01:05:00	280.130											**Max Vac**	10.0	**Final Values**		45.258		
Average Values				0.02		1.50	1507	252		52			73	69		0.13	15.05			
													71							

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30-70-30

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

Plant Name	Elk City Facility
Sampling Location	SCD-3/~~4~~6D Stack
Project #	sfi-16-elkcity,ok-comp#1

Date	10/16/16
Operator	BL/MJ
Run Number	4

Leak Checks					
Train	Pre	0	ft³/min@	15	in Hg
	Post	0	ft³/min@	15	in Hg
Pitot	Pre (+)	.105	in H_2O for	15	sec
	Pre (-)	.075	in H_2O for	15	sec
	Post (+)	.09	in H_2O for	15	sec
	Post (-)	.140	in H_2O for	15	sec

Sampling Equipment		
Meter Box Number	SAMP-CP-0011	
Orifice Meter Coefficient	1.588	in H_2O

Pressures			
Barometric Pressure	(P_b)	28.01	in Hg

Run Time			
Start	16:10	End	17:19

Moisture Content Data					
		Impinger 1	Impinger 2	Impinger 3	Impinger 4
Initial Value	(Vi),(Wi)	712.1			
Final Value	(Vi),(Wi)	749.0	714.5	596.2	918.7

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±26°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	236.30	.010	1.5	1252	252	51	69	69	10
A-2	2.7	00:02:43	233.31	.010		1304	258	49	67	70	10
A-3	5.4	00:05:25	235.25	.015		1652	256	48	69	69	10
A-4	8.1	00:08:07	237.25	.020		1604	254	48	70	68	10
A-5	10.8	00:10:50	239.24	.020		1594	251	49	71	69	10
A-6	13.5	00:13:33	241.26	.020		1569	250	50	71	68	10
A-7	16.3	00:16:15	243.37	.020		1577	251	50	71	68	10
A-8	19.0	00:18:58	245.30	.020		1668	251	50	72	68	10
A-9	21.7	00:21:40	247.41	.015		1297	252	50	72	68	10
A-10	24.4	00:24:22	249.43	.020		1552	252	52	72	68	10
A-11	27.1	00:27:05	251.52	.020		1565	252	52	72	69	10
A-12	29.8	00:29:47	253.57	.020		1566	252	52	72	68	10
B-1	32.5	00:32:30	255.55	.015		1256	251	53	68	68	10
B-2	35.2	00:35:12	257.61	.020		1354	253	50	73	69	10
B-3	37.9	00:37:55	259.65	.015		1557	253	51	75	68	10
B-4	40.6	00:40:37	261.70	.020		1581	252	52	76	69	10
B-5	43.3	00:43:20	263.70	.020		1581	252	53	76	69	10
B-6	46.0	00:46:03	265.74	.030		1569	251	54	76	70	10
B-7	48.8	00:48:45	267.75	.020		1627	251	54	77	71	10
B-8	51.5	00:51:28	269.80	.015		1272	252	56	77	70	10
B-9	54.2	00:54:10	271.93	.020		1439	252	56	78	71	10
B-10	56.9	00:56:53	273.90	.020		1574	252	56	78	71	10
B-11	59.6	00:59:35	275.95	.020		1612	252	56	78	71	10
B-12	62.3	01:02:18	278.00	.020		1553	252	58	78	71	10
Last Pt	65.0	01:05:00	280.13								
Final Val	65.0	01:05:00								Max Vac	
Average Values											