SFI

SUPERIOR FABRICATION, INC.

Summary:
Superior Fabrication, Inc. contracted Air Hygiene Inc. to conduct performance testing on Combustion Device on model SCD-48. The unit was tested on September 13th through 15th, 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

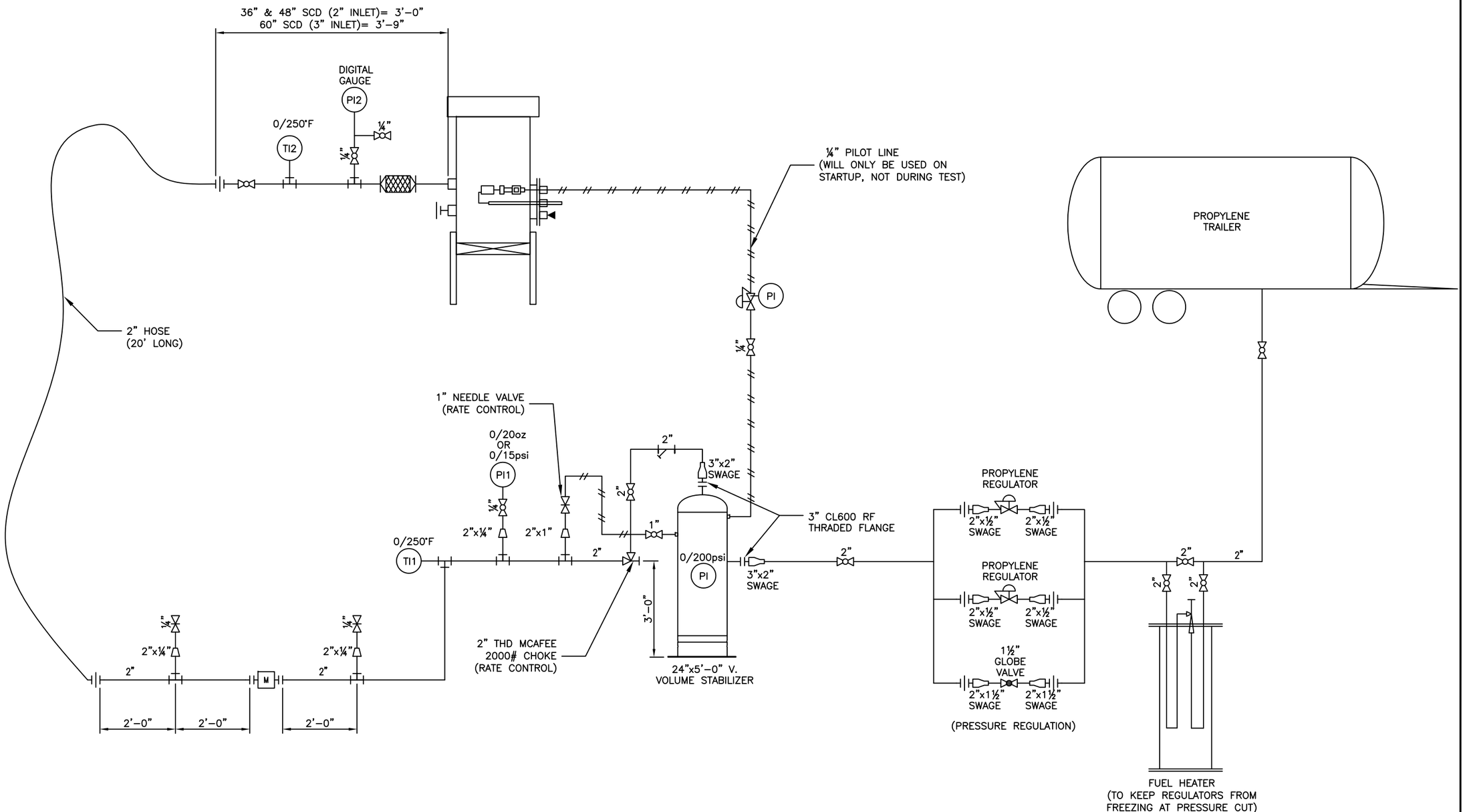
Requirement Specification:
In accordance to 40 CFR 60 Subpart OOOO, §60.5413(d)(12)(i) through (vi), this report contains the following information.

- A full schematic and dimensions of the flare unit are presented in page 3
- The maximum net Heat Input Rating of the SCD-48 is 7.47MMBtu/hr
- The inlet gas fuel range for 0% (min. rate) and 100% (max. rate) are 13.01MSCFD, and 70.32MSCFD, respectively
- Air/Stream injection/assist is not applicable for SCD-48
- The test parameter ranges below, as applicable to this unit
    - Fuel gas delivery pressure and temperature – See Air Hygiene report Appendix B
    - Fuel gas moisture range – >2ppm
    - Purge gas usage range – Not applicable
    - Condensate liquid fuel separation range – No liquid in the gas
    - Combustion temperature range – See Air Hygiene report Appendix B
    - Excess combustion air range – See Table 2.1 - 2.4
    - Flame arrestor – See blue print of the production flare unit on page 3

- Burner manifold pressure – 0.09psi 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-48:

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



NO.	DATE	BY:	CKD	APD	DESCRIPTION

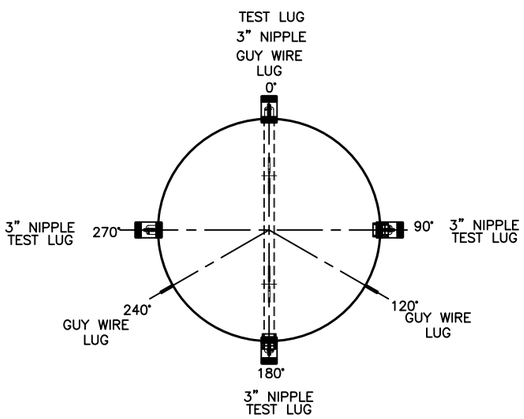
DRAWN: A. YOW
DATE: 2016-08-30
CHKD: NONE
BOM YES ■ NO □

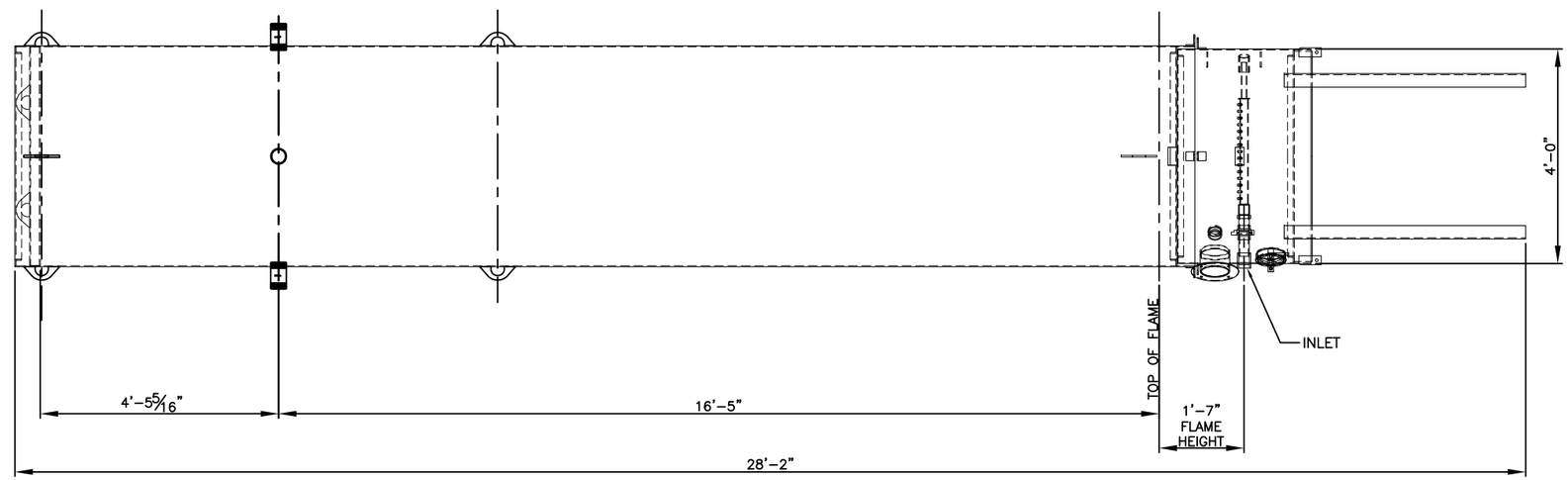
SFI SUPERIOR FABRICATION, INC.
ELK CITY, OKLAHOMA, USA

DWG. SCALE: NONE | PLOT SCALE: 1:1 | CUSTOMER: STANDARD

SCD TEST P&ID

DRAWING NO: SCD TEST
REVISION NO. 0
AAY 2016-09-26-1356





NOTES:
1.) ESTIMATED DRY WEIGHT LBS:
2.)

NO.	DATE	BY:	CKD	APD	DESCRIPTION

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

SFI SUPERIOR FABRICATION, INC.
ELK CITY, OKLAHOMA, USA

DWG. SCALE: 1:16
SCALE
APP. BASE CUSTOMER: STANDARD

48" SCD FOR FLARE TEST

DRAWING NO: 48" TEST
REVISION NO. 0
MAY 2016-08-22-0850

AIR HYGIENE, INC.

Testing Solutions for a Better World

STACK EMISSIONS STUDY
EPA 40 CFR PART 60 SUBPART OOOO
FOR THE
COMBUSTION DEVICE SCD-48 MODEL
PREPARED FOR
SUPERIOR FABRICATION, INC.
AT THE
ELK CITY FACILITY
ELK CITY, OKLAHOMA
SEPTEMBER 13-15, 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

STACK EMISSIONS STUDY
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FOR THE
COMBUSTION DEVICE SCD-48 MODEL
PREPARED FOR
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AT THE
ELK CITY FACILITY
ELK CITY, OKLAHOMA
SEPTEMBER 13-15, 2016

Prepared and Reviewed by:

Michael Stockwell, QSTI
Sr. Project Manager

Aaron Blum
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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Table of Contents

APPENDICES

Stack Emissions Study
Combustion Device SCD-48 Model
Superior Fabrication, INC.
Elk City Facility
Elk City, Oklahoma
September 13-15, 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-48 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 September 13-15, 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-48 Model.

1.2 SUMMARY OF TEST PROGRAM

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

1.2.1 Participating Organizations
- Environment Protection Agency (EPA)
- 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-48 Model

1.2.6 Emission Points
- For all gases, three sample points in the exhaust duct from the Combustion Device SCD-48 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-48 Model
- For visual emission, one sample visual observation point from the exit of the exhaust duct to the atmosphere from the Combustion Device SCD-48 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

- September 13-15, 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-48 Model located at the Elk City Facility on September 13-15, 2016 are summarized in the following table and relate only to the items tested.

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

Parameter	0-30-0 Load, Run - SCD-48 R1	0-30-0 Load, Run - SCD-48 R2	0-30-0 Load, Run - SCD-48 R3	Average
Date (mm/dd/yy)	09/14/16	09/14/16	09/15/16	--
Start Time (hh:mm:ss)	16:47:29	18:08:29	11:37:00	--
End Time (hh:mm:ss)	17:57:29	19:18:29	12:47:00	--
Run Duration (min / run)	71	70	71	71
Bar. Pressure (in. Hg)	30.14	30.12	30.14	30.13
Amb. Temp. (°F)	86	81	75	81
Rel. Humidity (%)	62	59	73	65
Spec. Humidity (lb water / lb air)	0.016467	0.013280	0.013477	0.014408
Wind Speed (mph)	10.0	10.0	15.0	11.7
Wind Direction (--)	ESE	NE	S	--
Inlet Gas Canister Pressure Start (inHg)	-28.37	-18.22	-10.38	--
Inlet Gas Canister Pressure Stop (inHg)	-18.22	-10.38	-1.40	--
Gross Fuel Heating Value (Btu/ft3)	2,554	2,554	2,554	2,554
Stack Flow (M2) (dscfh)	127,820	138,933	135,457	134,070
Stack Moisture (Method 4)	4.6	5.1	4.6	4.8
Gross Fuel Heating Value (Btu/ft^3)	2,554.3	2,554.3	2,554.3	2,554.30
Average Inlet Fuel Flowrate (SCFH)	715.9	714.9	723.0	717.94
Average Inlet Mass Fuel Flowrate (lb/hr)	82.8	83.0	76.8	80.88
% Excess Air	354.5	366.0	442.4	387.63
CO_2 (%) - Modified method 3C	3.40	3.30	2.90	3.20
O_2 (%) - Modified Method 3C	16.50	16.60	17.20	16.77
N_2 (%) - Modified Method 3C	80.10	80.10	79.90	80.03
Visual Emission (mm:ss)	0:00	0:00	0:00	0:00
CO (ppmvd)	5.15	5.45	3.87	4.82
CO (ppm@3%CO_2)	4.54	4.96	4.00	4.50
THC (ppmvw)	0.43	0.41	0.47	0.44
THC (ppm@3%CO_2)	0.38	0.37	0.49	0.41
THC (lb/hr)	0.01	0.01	0.01	0.01
VOC Destruction Efficiency (%)	99.992	99.992	99.990	99.991

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

Parameter	30-70-30 Load, Run - SCD-48 R4	30-70-30 Load, Run - SCD-48 R5	30-70-30 Load, Run - SCD-48 R6	Average
Date (mm/dd/yy)	09/15/16	09/15/16	09/15/16	--
Start Time (hh:mm:ss)	14:39:00	16:01:00	17:22:00	--
End Time (hh:mm:ss)	15:49:00	17:11:00	18:32:00	--
Run Duration (min / run)	70	71	71	71
Bar. Pressure (in. Hg)	30.02	30.02	30.01	30.02
Amb. Temp. (°F)	85	78	83	82
Rel. Humidity (%)	65	74	65	68
Spec. Humidity (lb water / lb air)	0.016796	0.015193	0.015729	0.015906
Wind Speed (mph)	15.0	10.0	10.0	11.7
Wind Direction (--)	S	S	S	--
Inlet Gas Canister Pressure Start (inHg)	-26.90	-18.00	-9.70	--
Inlet Gas Canister Pressure Stop (inHg)	-18.00	-9.70	-0.34	--
Gross Fuel Heating Value (Btu/ft3)	2,522	2,522	2,522	2,522
Stack Flow (M2) (dscfh)	129,450	123,249	136,726	129,808
Stack Moisture (Method 4)	5.6	4.6	5.5	5.2
Gross Fuel Heating Value (Btu/ft^3)	2,522.1	2,522.1	2,522.1	2,522.10
Average Inlet Fuel Flowrate (SCFH)	1,583.1	1,514.5	1,574.1	1,557.25
Average Inlet Mass Fuel Flowrate (lb/hr)	183.9	174.9	182.8	180.53
% Excess Air	239.9	309.3	225.8	258.33
CO_2 (%) - Modified method 3C	4.40	3.80	5.00	4.40
O_2 (%) - Modified Method 3C	15.00	16.00	14.70	15.23
N_2 (%) - Modified Method 3C	80.50	80.20	80.30	80.33
Visual Emission (mm:ss)	0:00	0:00	0:00	0:00
CO (ppmvd)	0.76	0.85	0.65	0.75
CO (ppm@3%CO_2)	0.52	0.67	0.39	0.52
THC (ppmvw)	0.13	0.19	0.17	0.17
THC (ppm@3%CO_2)	0.09	0.15	0.10	0.12
THC (lb/hr)	0.00	0.00	0.00	0.00
VOC Destruction Efficiency (%)	99.999	99.999	99.998	99.999

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

Parameter	70-100-70 Load, Run - SCD-48 R7	70-100-70 Load, Run - SCD-48 R8	70-100-70 Load, Run - SCD-48 R9	Average
Date (mm/dd/yy)	09/14/16	09/14/16	09/14/16	--
Start Time (hh:mm:ss)	8:13:29	9:43:29	11:13:29	--
End Time (hh:mm:ss)	9:23:29	10:53:29	12:23:29	--
Run Duration (min / run)	70	70	71	70
Bar. Pressure (in. Hg)	30.24	30.25	30.26	30.25
Amb. Temp. (°F)	69	72	72	71
Rel. Humidity (%)	69	71	61	67
Spec. Humidity (lb water / lb air)	0.010312	0.011776	0.010087	0.010725
Wind Speed (mph)	5.0	15.0	15.0	11.7
Wind Direction (--)	NNE	NNE	NNE	--
Inlet Gas Canister Pressure Start (inHg)	-28.28	-16.40	-8.87	-17.85
Inlet Gas Canister Pressure Stop (inHg)	-16.40	-8.87	-0.28	-8.52
Gross Fuel Heating Value (Btu/ft3)	2,555	2,555	2,555	2,555
Stack Flow (M2) (dscfh)	181,358	178,156	188,328	182,614
Stack Moisture (Method 4)	5.8	2.4	5.8	4.6
Gross Fuel Heating Value (Btu/ft^3)	2,554.9	2,554.9	2,554.9	2,554.90
Average Inlet Fuel Flowrate (SCFH)	2,729.1	2,711.2	2,677.1	2,705.78
Average Inlet Mass Fuel Flowrate (lb/hr)	317.0	314.9	310.9	314.26
% Excess Air	384.7	469.1	305.8	386.53
CO_2 (%) - Modified method 3C	3.60	3.10	4.20	3.63
O_2 (%) - Modified Method 3C	16.70	17.30	15.90	16.63
N_2 (%) - Modified Method 3C	79.70	79.50	79.90	79.70
Visual Emission (mm:ss)	0:00	0:00	0:00	0:00
CO (ppmvd)	1.78	2.01	2.39	2.06
CO (ppm@3%CO_2)	1.49	1.95	1.71	1.71
THC (ppmvw)	0.34	0.43	0.24	0.34
THC (ppm@3%CO_2)	0.29	0.41	0.17	0.29
THC (lb/hr)	0.01	0.01	0.01	0.01
VOC Destruction Efficiency (%)	99.998	99.997	99.998	99.998

TABLE 2.4
SCD-48 90-100 LOAD DATA SUMMARY

Parameter	90-100 Load, Run - SCD-48 R10	90-100 Load, Run - SCD-48 R11	90-100 Load, Run - SCD-48 R12	Average
Date (mm/dd/yy)	09/13/16	09/13/16	09/13/16	--
Start Time (hh:mm:ss)	11:11:26	12:50:26	14:14:26	--
End Time (hh:mm:ss)	12:21:26	14:00:26	15:24:26	--
Run Duration (min / run)	71	71	71	71
Bar. Pressure (in. Hg)	30.07	30.08	30.05	30.07
Amb. Temp. (°F)	82	89	91	87
Rel. Humidity (%)	62	54	48	55
Spec. Humidity (lb water / lb air)	0.014468	0.015788	0.014937	0.015064
Wind Speed (mph)	15.0	10.0	3.0	9.3
Wind Direction (--)	S	S	S	--
Inlet Gas Canister Pressure Start (inHg)	-28.16	-17.39	-9.88	--
Inlet Gas Canister Pressure Stop (inHg)	-17.39	-9.88	-0.57	--
Gross Fuel Heating Value (Btu/ft3)	2,551	2,551	2,551	2,551
Stack Flow (M2) (dscfh)	304,223	254,540	237,703	265,489
Stack Moisture (Method 4)	5.5	5.1	6.5	5.7
Gross Fuel Heating Value (Btu/ft^3)	2,551.0	2,551.0	2,551.0	2,551.00
Average Inlet Fuel Flowrate (SCFH)	2,867.0	2,796.0	2,817.4	2,826.77
Average Inlet Mass Fuel Flowrate (lb/hr)	333.0	324.7	327.2	328.31
% Excess Air	361.3	306.1	410.0	359.13
CO_2 (%) - Modified method 3C	3.70	4.10	3.50	3.77
O_2 (%) - Modified Method 3C	16.50	15.90	16.90	16.43
N_2 (%) - Modified Method 3C	79.80	79.90	79.60	79.77
Visual Emission (mm:ss)	0:00	0:00	0:00	0.00
CO (ppmvd)	-0.06	0.06	0.02	0.01
CO (ppm@3%CO_2)	-0.05	0.04	0.02	0.00
THC (ppmvw)	0.36	0.29	0.30	0.32
THC (ppm@3%CO_2)	0.29	0.21	0.26	0.25
THC (lb/hr)	0.01	0.01	0.01	0.01
VOC Destruction Efficiency (%)	99.997	99.997	99.998	99.997

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 19.5 feet above grade level on the exhaust system. The stack had a 33 inches inner diameter and was equipped with four, 3 inch ports oriented at 90 degrees. The ports were 5.6 duct diameters downstream from the flare tip and 1.4 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-48 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 September 13-15, 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-48 Model for CO, THC, CO_2, and O_2.

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

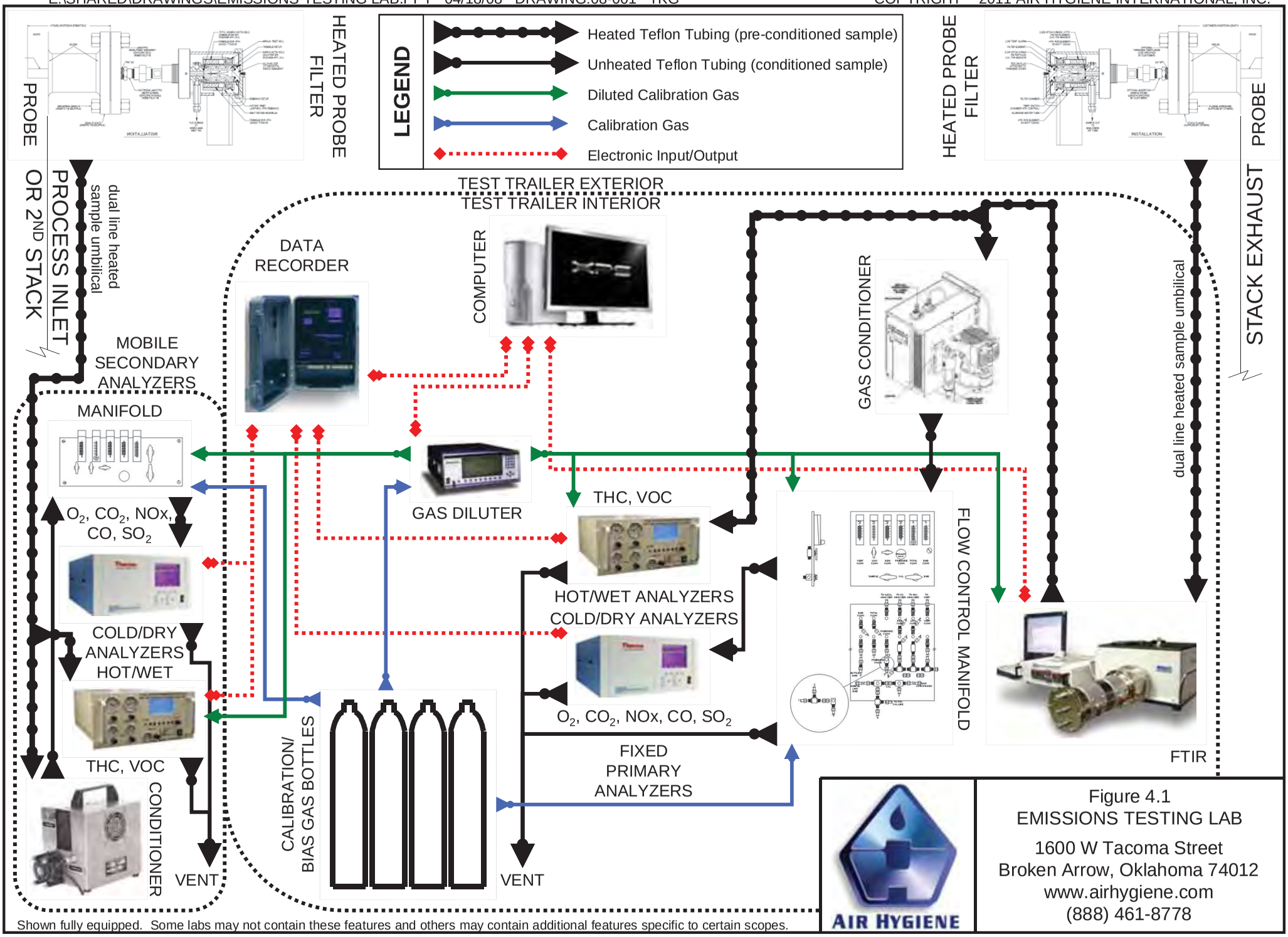
The stack gas analysis for O_2 and CO_2 concentrations was performed in accordance with procedures set forth in EPA Method 3C. The sample were collected in a tedlar bag and analyzed by GC-TCD at an offsite laboratory.

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

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

TABLE 4.2
ANALYTICAL INSTRUMENTATION

Parameter	Manufacturer and Model	Range	Sensitivity	Detection Principle
CO	THERMO 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



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

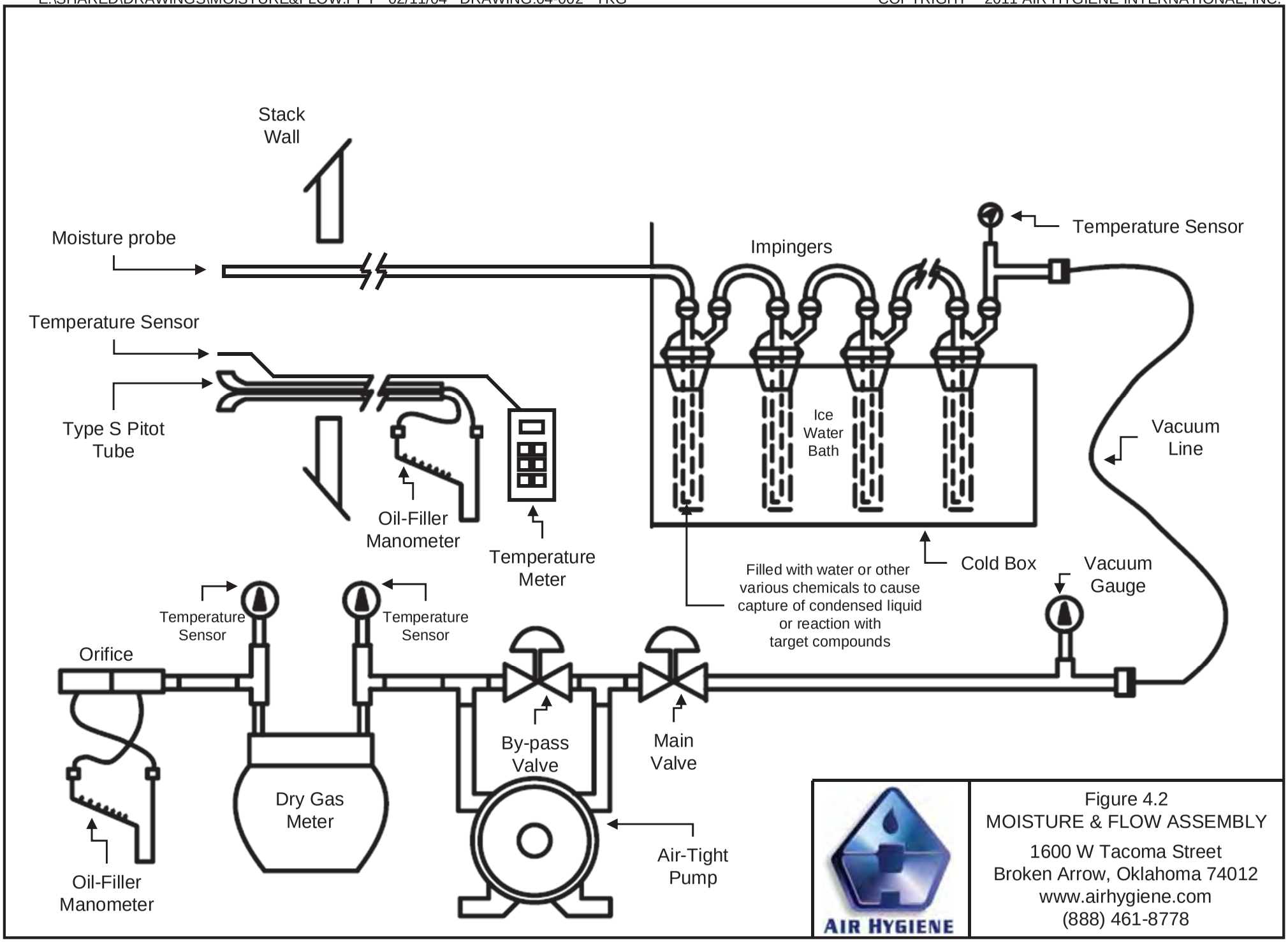
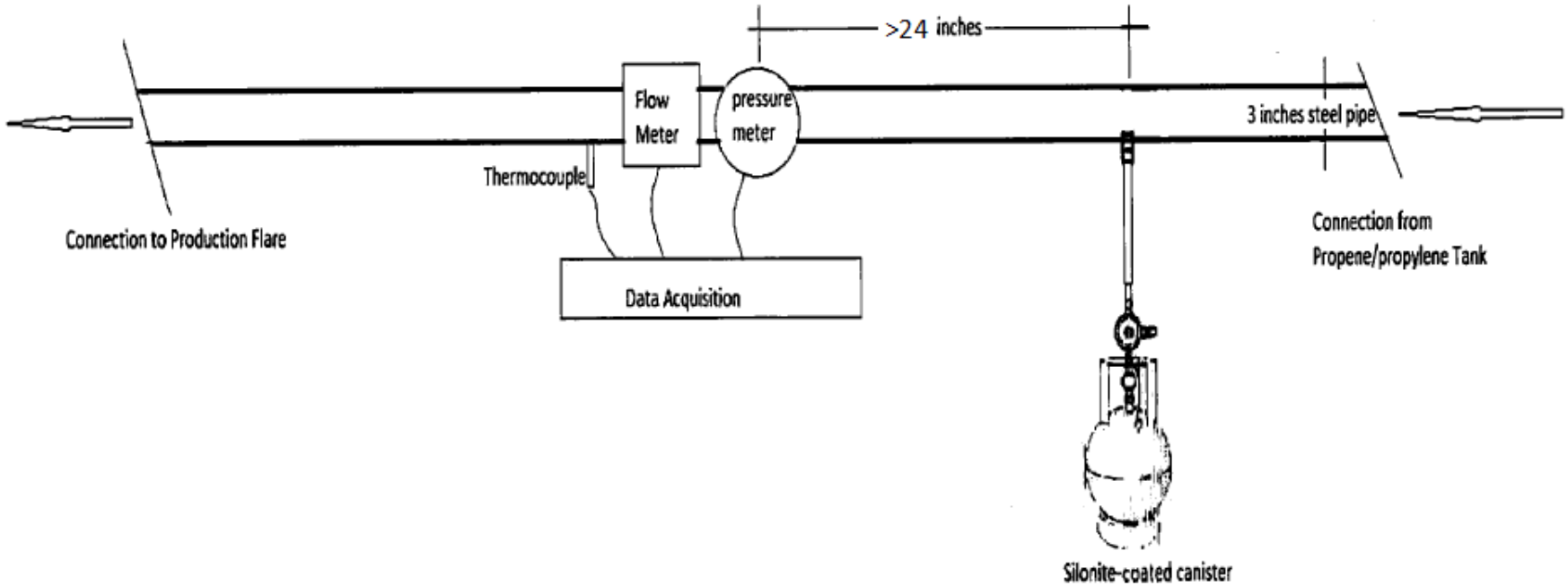


Figure 4.2
MOISTURE & FLOW ASSEMBLY

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



AIR HYGIENE

Figure 4.3

FUEL SAMPLING SETUP

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APPENDIX A

TEST RESULTS AND CALCULATIONS

TABLE A.1:
EMISSIONS TESTING SCHEDULE

Unit	Load	Test Type	Run	Date	Start	Stop	Time Sync
SCD-48	90-100	CO,THC & Fuel Sampling	SCD-48 R10	09/13/16	11:11:26	12:21:26	CST
SCD-48	90-100	CO,THC & Fuel Sampling	SCD-48 R11	09/13/16	12:50:26	14:00:26	CST
SCD-48	90-100	CO,THC & Fuel Sampling	SCD-48 R12	09/13/16	14:14:26	15:24:26	CST
SCD-48	70-100-70	CO,THC & Fuel Sampling	SCD-48 R7	09/14/16	8:13:29	9:23:29	CST
SCD-48	70-100-70	CO,THC & Fuel Sampling	SCD-48 R8	09/14/16	9:43:29	10:53:29	CST
SCD-48	70-100-70	CO,THC & Fuel Sampling	SCD-48 R9	09/14/16	11:13:29	12:23:29	CST
SCD-48	0-30-0	CO,THC & Fuel Sampling	SCD-48 R1	09/14/16	16:47:29	17:57:29	CST
SCD-48	0-30-0	CO,THC & Fuel Sampling	SCD-48 R2	09/14/16	18:08:29	19:18:29	CST
SCD-48	0-30-0	CO,THC & Fuel Sampling	SCD-48 R3	09/15/16	11:37:00	12:47:00	CST
SCD-48	30-70-30	CO,THC & Fuel Sampling	SCD-48 R4	09/15/16	14:39:00	15:49:00	CST
SCD-48	30-70-30	CO,THC & Fuel Sampling	SCD-48 R5	09/15/16	16:01:00	17:11:00	CST
SCD-48	30-70-30	CO,THC & Fuel Sampling	SCD-48 R6	09/15/16	17:22:00	18:32:00	CST
SCD-48	90-100	Fixed Gas & Moisture	90-100%-1	09/13/16	11:11	12:31	CST
SCD-48	90-100	Fixed Gas & Moisture	90-100%-2	09/13/16	12:50	14:00	CST
SCD-48	90-100	Fixed Gas & Moisture	90-100%-3	09/13/16	14:14	15:20	CST
SCD-48	70-100-70	Fixed Gas & Moisture	70-100-70%-1	09/14/16	8:13	9:23	CST
SCD-48	70-100-70	Fixed Gas & Moisture	70-100-70%-2	09/14/16	9:43	10:53	CST
SCD-48	70-100-70	Fixed Gas & Moisture	70-100-70%-3	09/14/16	11:13	12:23	CST
SCD-48	0-30-0	Fixed Gas & Moisture	0-30-0%-1	09/14/16	16:47	17:57	CST
SCD-48	0-30-0	Fixed Gas & Moisture	0-30-0%-2	09/14/16	18:08	19:18	CST
SCD-48	0-30-0	Fixed Gas & Moisture	0-30-0%-3	09/15/16	11:37	12:47	CST
SCD-48	30-70-30	Fixed Gas & Moisture	30-70-30%-1	09/15/16	14:39	15:49	CST
SCD-48	30-70-30	Fixed Gas & Moisture	30-70-30%-2	09/15/16	16:01	17:11	CST
EC48-2S	30-70-30	Fixed Gas & Moisture	30-70-30%-3	09/15/16	17:22	18:32	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.

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

$$RH_{sp} = \frac{101.27\ gr}{lb} \times \frac{1\ lb}{7000\ gr} = 0.014468\ \frac{lb\ H_2O}{lb\ Air}$$

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

$$E_p = \frac{8.26\ ppm - 0.05\ ppm}{8.43\ ppm - 0.00\ ppm} \times 4.96\ ppm + 0.05 = 4.88\ ppm$$

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

Eq. 7E-1

$$ACE_{THC} = \frac{5.02\ ppm - 4.88\ ppm}{4.96\ ppm} \times 100 = 2.73\ \%$$

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

$$SB = \frac{3.07\ ppm - 3.08\ ppm}{10.00\ ppm} \times 100 = -0.10\ \%$$

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

$$D = |\ -1.20\ \% - -0.10\ \%\ | = 1.10\ \%$$

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

$$SB/D_{Alt} = |\ 3.07\ ppm - 3.08\ ppm\ | = 0.01\ ppm$$

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

$$C_{Gas} = \left(0.44\ ppm - 0.09\ ppm\right) \times \left(\frac{3.00\ ppm}{3.02\ ppm - 0.09\ ppm}\right) = 0.36\ ppm$$

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

$$C_{adj} = 0.38 \text{ ppm} \times \left(\frac{3.00\ \%}{4.48\ \%}\right) = 0.26 \text{ ppm@3\%}CO_2$$

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)

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

$$E_{lb/hr} = \frac{0.38 \text{ ppm}}{10^6 \text{ ppm/part}} \times \frac{254{,}540 \text{ SCFH} \times 44.00 \text{ lb/lb-mol}}{385.23 \text{ SCF/lb-mol}} = \frac{0.011 \text{ lb}}{\text{hr}}$$

VOC Destruction Efficiency

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

$$DE\% = \frac{332.980 - 0.011 \text{ lb/hr}}{332.980 \text{ lb/hr}} \times 100 = 99.997\ \%$$

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

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

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

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

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

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

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

Calculations, Formulas, and Constants

The following information supports the spreadsheets for this testing project.

Given Data:

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

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

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

ASTM D 3588

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

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

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

NOTE: units are lb/ppm*ft^3

Formulas:

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

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

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

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

EXAMPLE CALCULATIONS (Reference Method 1 - Circular Stack)

Diameter of Stack (in.)

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

D (in.) = 51.00 in. - 6.00 in. = 45.00 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 ($\frac{45.00 \text{ in.}}{2 \text{ x } 12\text{in./ft}}$)^2 = 11.04 ft^2

Stack Diameters Downstream

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

B_D (dia.) = $\frac{198.00 \text{ in.}}{45.00 \text{ in.}}$ = 4.40 diameters

Stack Diameters Upstream

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

A_D (dia.) = $\frac{86.00 \text{ in.}}{45.00 \text{ in.}}$ = 1.91 diameters

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

Carbon Monoxide Concentration (%)

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

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

Nitrogen Concentration (%)

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

$\%N_2$ (%) = 100 - 3.37 % - 16.50 % - 0.00 / 10,000 % = 80.13 %

Stack Dry Molecular Weight (lb/lb-mole)

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

M_d (lb/lb-mol) = ($\frac{44 \text{ lb/lb-mol}}{100}$ x 3.37 %) +

($\frac{32 \text{ lb/lb-mol}}{100}$ x 16.50 %) + ($\frac{28 \text{ lb/lb-mol}}{100}$ x [$\frac{0.00}{10{,}000}$ + 80.13]) = $\frac{29.20 \text{ lb}}{\text{lb-mol}}$

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) = { $\frac{29.20 \text{ lb}}{\text{lb-mol}}$ x (1 - $\frac{4.58 \%}{100}$) } + { $\frac{18 \text{ lb}}{\text{lb-mol}}$ x $\frac{4.58 \%}{100}$ } = $\frac{28.69 \text{ lb}}{\text{lb-mol}}$

Average Excess Air (%)

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

$(\%EA)_{AVG}$ = $\frac{100 \text{ x } \{ 16.50 \% - (0.5 \text{ x } 0.000 \%) \}}{(0.264 \text{ x } 80.13 \%) - \{ 16.50 \% - (0.5 \text{ x } 0.000 \%)\}}$ = 354.51 %

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) = 30.14 in. Hg + $\frac{0.00 \text{ in. } H_2O}{13.6 \text{ in. } H_2O/\text{in. Hg}}$ = 30.14 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) =

$$\left(\frac{85.49 \text{ ft}}{\text{sec}} \frac{(\text{lb/lb-mol})(\text{in. Hg})}{(^oR)(\text{in. } H_2O)}\right)^{1/2} \times 0.84 \times 0.10 \text{ in.}H_2O^{1/2} \times \sqrt{\frac{1025.75 + 460\ ^oR}{30.14 \text{ in. Hg} \times 28.69 \text{ lb/lb-mol}}} = \frac{9.4 \text{ ft}}{\text{sec}}$$

Average Stack Dry Standard Flow Rate (dscfh)

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

Q_{sd} (dscf/hr) = $\frac{3600 \text{ sec}}{\text{hr}}$ x (1 - $\frac{4.58\ \%}{100}$) x $\frac{9.41 \text{ ft}}{\text{sec}}$ x 11.04 ft^2 x

$\frac{68.00 + 460\ ^oR}{1{,}025.75 + 460\ ^oR}$ x $\frac{30.14 \text{ in. Hg}}{29.92 \text{ in. Hg}}$ = $\frac{127{,}819.90 \text{ dscf}}{\text{hr}}$

Average Stack Wet Flow Rate (acfm)

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

Q_{aw} (acf/min) = $\frac{60 \text{ sec}}{\text{min}}$ x $\frac{9.41 \text{ ft}}{\text{sec}}$ x 11.04 ft^2 = $\frac{6{,}236.76 \text{ acf}}{\text{min}}$

Average Stack Wet Standard Flow Rate (ascfh)

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

Q_{sw} (ascf/hr) = $\frac{60 \text{ min}}{\text{hr}}$ x $\frac{6{,}236.76 \text{ acf}}{\text{min}}$ x

$\frac{68.00 + 460\ ^oR}{1{,}025.75 + 460\ ^oR}$ x $\frac{30.14 \text{ in. Hg}}{29.92 \text{ in. Hg}}$ = $\frac{133{,}961.48 \text{ ascf}}{\text{hr}}$

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)

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

$V_{wsg(std)}$ = 47.90 g x 0.04715 ft^3/g = 2.260 scf

Standard Meter Volume (dscf)

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

$$V_{m(std)} = \frac{\frac{17.65\ ^oR}{in.\ Hg} \times 0.98 \times 49.45\ dcf \times \left(30.14\ in.\ Hg + \frac{1.70\ in.\ H_2O}{13.6\ in.\ H_2O / in.\ Hg}\right)}{88.40\ ^oF + 460\ ^oR} = 47.00\ dscf$$

Calculated Moisture Content (%)

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

$$B_{ws(calc)} = 100 \times \frac{2.26\ dscf}{2.26\ dscf + 47.00\ dscf} = 4.58\ \%$$

Saturated Moisture Content (%)

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

$$B_{ws(svp)} = 100 \times \frac{10^{\left(6.691 - \frac{3144}{1025.75\ ^oF + 390.86}\right)}}{30.14\ in.\ Hg + \frac{0.00\ in.\ H_2O}{13.6\ in.\ H_2O / in.\ Hg}} \leq 100 = 100.00\ \%$$

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
- $D_{50\text{-}1}$ = 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^oF, 528^oR
- T_u = absolute temperature offset, 460^oR
- V_a = Volume of acetone blank, ml
- V_{aw} = Volume of acetone used in sample recovery wash, ml
- V_b = Volume of aliquot taken for IC analysis, ml
- V_c = Quantity of water captured in impingers and silica gel, ml
- V_f = final impinger volume (ml)
- V_i = initial impinger volume (ml)
- V_{ic} = Volume of impinger contents sample, ml
- V_m = Dry gas meter volume sampled, acf
- $V_{m(std)}$ = standard meter volume (dscf)
- v_{max} = Maximum gas velocity calculated from Equations 18 or 19, ft/sec
- v_{max} = maximum nozzle velocity (ft/sec)
- V_{mf} = final dry gas meter reading (dcf)
- V_{mi} = initial dry gas meter reading (dcf)
- v_{min} = Minimum gas velocity calculated from Method 201A, Equations 16 or 17, ft/sec
- V_{ms} = Dry gas meter volume sampled, corrected to standard conditions, dscf
- v_n = Sample gas velocity in the nozzle, ft/sec
- v_{org} = organics wash volume (ml)
- V_p = Volume of water added during train purge
- v_s = average stack gas velocity (ft/sec)
- v_{sl} = local velocity (ft/sec)
- V_t = total impinger volume (ml) = ;(V_f-V_i)
- V_t = Volume of NH4OH titrant, ml
- $V_{w(std)}$ = volume of water vapor in gas sample at standard conditions (scf)
- v_x = blank volume (ml)
- W = width of stack (in.)
- $W_{2,3,4}$ = Weight of PM recovered from Containers #2, #3, and #4, mg
- W_a = Weight of blank residue in acetone used to recover samples, mg
- W_f = final impinger weight (g)
- W_i = initial impinger weight (g)
- W_t = total impinger weight (g) = ;(W_f-W_i)
- w_x = blank weight of solids (g)
- Y = meter calibration factor (a.k.a gamma)
- Z = Ratio between estimated cyclone IV D_{50} values, dimensionless
- γ = Dry gas meter gamma value, dimensionless
- ΔH = Meter box orifice pressure drop, inches W.C.
- $\Delta H@$ = 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

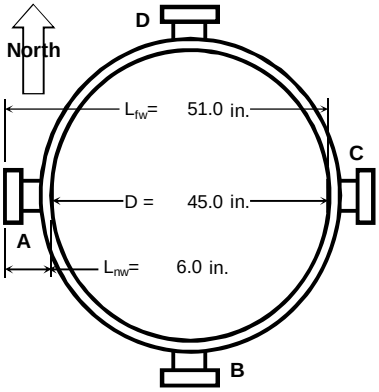
Air Permit # :	40 CFR 60 Sub Part OOOO
Plant Name or Location:	Elk City Plant
Date:	September 13, 2016
Project Number:	leed-15-brighton.co-comp#1
Manufacturer & Equipment:	SCD-48
Test Load:	Multiple
Tester(s) / Test Unit(s):	MSL/DA/TW/JB

		RUN											
	UNITS	**SCD-48 R10**	**SCD-48 R11**	**SCD-48 R12**	**SCD-48 R7**	**SCD-48 R8**	**SCD-48 R9**	**SCD-48 R1**	**SCD-48 R2**	**SCD-48 R3**	**SCD-48 R4**	**SCD-48 R5**	**SCD-48 R6**
Start Time	hh:mm:ss	11:11:26	12:50:26	14:14:26	08:13:29	09:43:29	11:13:29	16:47:29	18:08:29	11:37:00	14:39:00	16:01:00	17:22:00
End Time	hh:mm:ss	12:21:26	14:00:26	15:24:26	09:23:29	10:53:29	12:23:29	17:57:29	19:18:29	12:47:00	15:49:00	17:11:00	18:32:00
Bar. Pressure	in. Hg	30.07	30.08	30.05	30.24	30.25	30.26	30.14	30.12	30.14	30.02	30.02	30.01
Amb. Temp.	°F	82	89	91	69	72	72	86	81	75	85	78	83
Rel. Humidity	%	62	54	48	69	71	61	62	59	73	65	74	65
Spec. Humidity	lb water / lb air	0.014468	0.015788	0.014937	0.010312	0.011776	0.010087	0.016467	0.013280	0.013477	0.016796	0.015193	0.015729
Date	mm/dd/yy	09/13/16	09/13/16	09/13/16	09/14/16	09/14/16	09/14/16	09/14/16	09/14/16	09/15/16	09/15/16	09/15/16	09/15/16
Unit Number		SCD-48	SCD-48	SCD-48	SCD-48	SCD-48	SCD-48	SCD-48	SCD-48	SCD-48	SCD-48	SCD-48	SCD-48
Load Designator	%	90-100	90-100	90-100	70-100-70	70-100-70	70-100-70	0-30-0	0-30-0	0-30-0	30-70-30	30-70-30	30-70-30
Gross Fuel Heating Value	Btu/ft3	2,551	2,551	2,551	2,555	2,555	2,555	2,554	2,554	2,554	2,522	2,522	2,522
Stack Flow (M2)	dscfh	304,223	254,540	237,703	181,358	178,156	188,328	127,820	138,933	135,457	129,450	123,249	136,726
Stack Moisture	Method 4	5.49	5.14	6.53	5.76	2.35	5.76	4.58	5.05	4.61	5.64	4.63	5.47
Wind Speed	mph	15	10	3	5	15	15	10	10	15	15	10	10
Wind Direction	--	S	S	S	NNE	NNE	NNE	ESE	NE	S	S	S	S
CO_2 - Method 3C	%	3.70	4.10	3.50	3.60	3.10	4.20	3.40	3.30	2.90	4.40	3.80	5.00
O_2 - Method 3C	%	16.50	15.90	16.90	16.70	17.30	15.90	16.50	16.60	17.20	15.00	16.00	14.70
N_2 -Method 3C	%	79.80	79.90	79.60	79.70	79.50	79.90	80.10	80.10	79.90	80.50	80.20	80.30
Excess Air	%	361.30	306.10	410.00	384.70	469.10	305.80	354.50	366.00	442.40	239.90	309.30	225.80

METHOD 1 - ISOKINETIC TRAVERSE FOR A CIRCULAR SOURCE

Company	Superior Fabrication Inc.	**Date**	09/13/16
Plant Name	Elk City Facilty	**Project #**	sfi-elkcity.ok-comp#1
Equipment	SCD-48	**# of Ports Available**	2
Location	Ports	**# of Ports Used**	2

Circular Stack or Duct Diameter			
Distance to Far Wall of Stack	(L_{fw})	51.00	in.
Distance to Near Wall of Stack	(L_{nw})	6.00	in.
Diameter of Stack	(D)	45.00	in.
Area of Stack	(A_s)	11.04	ft^2

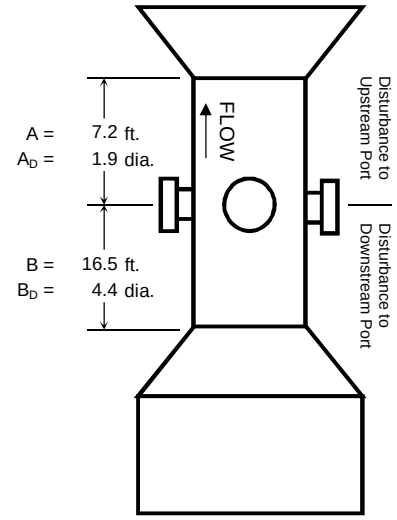


Distance from Disturbances to Port			
Distance Upstream	(A)	86.00	in.
Diameters Upstream	(A_D)	1.91	diameters
Distance Downstream	(B)	198.00	in.
Diameters Downstream	(B_D)	4.40	diameters

Number of Traverse Points Required					
Diameters to Flow Disturbance		**Minimum Number of[1] Traverse Points**		Minimum Number of Traverse Points Comp Stratification	
Down (B_D) Stream	**Up (A_D) Stream**	**Particulate Points**	Velocity 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 Traverse Points RATA Stratification	
Upstream Spec		12	12		
Downstream Spec		24	16		
Traverse Pts Required		24	16	Criteria	Points
				Part75/60	12 RM1 pts
				75 abrv (a)	3 points
				75 abrv (b)	6 points

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

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



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

Traverse Point Locations			
Traverse Point Number	**Percent of Stack Diameter**	**Distance from Inside Wall**	**Distance Including Reference Length**
	%	in.	in.
1	16.7%	7 4/8	13 4/8
2	50.0%	22 4/8	28 4/8
3	83.3%	37 4/8	43 4/8
4			
5			
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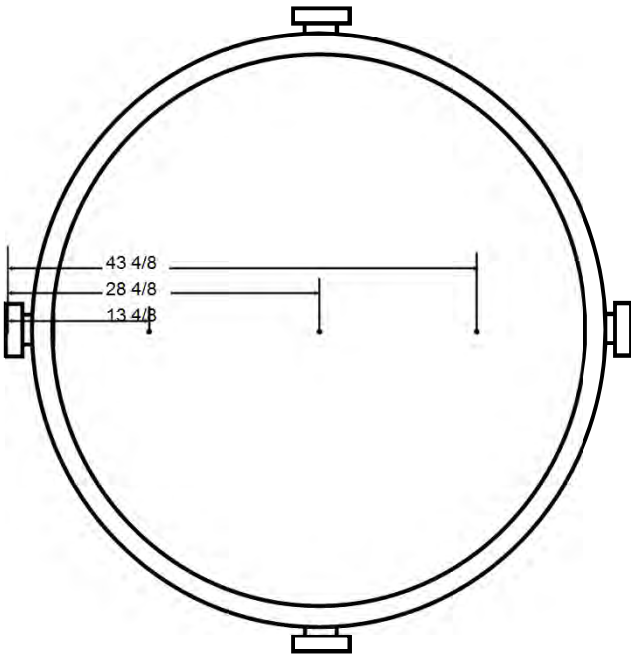
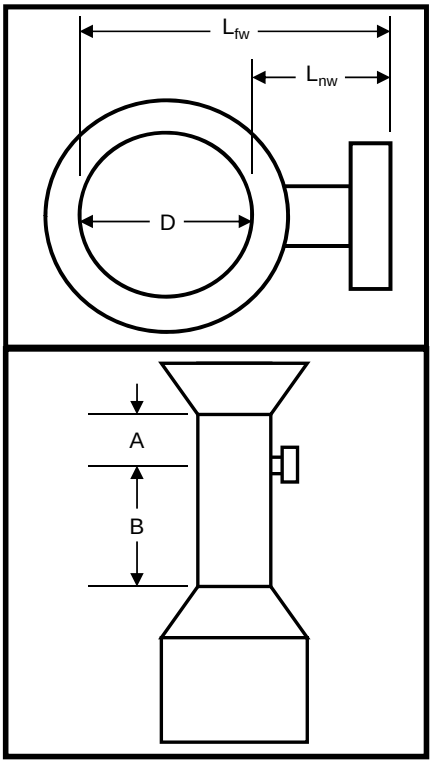


METHOD 1 - SAMPLE AND VELOCITY TRAVERSES FOR CIRCULAR SOURCES

Plant Name	Elk City Facilty	**Date**	09/13/16
Sampling Location	SCD-48	**Stack Type**	Circular
Operator	DA/BB	**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})	51.00	in
Distance to Near Wall of Stack	(L_{nw})	6.00	in
Diameter of Stack	(D)	45.00	in
Area of Stack	(A_s)	11.04	ft^2



Distance from Port to Disturbances			
Distance Upstream	(A)	86.00	in
Diameters Upstream	(A_D)	1.91	diameters
Distance Downstream	(B)	198.00	in
Diameters Downstream	(B_D)	4.40	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		12	12
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 Point Number	(Fraction of Stack Dimension from Inside Wall to Traverse Point) Number of Traverse Points Across the Stack								
	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 Locations			
Traverse Point Number	**Fraction of Stack Diameter**	**Distance from Inside Wall**	**Distance Including Reference Length**
		in	in
1	0.021	1	7
2	0.067	3	9
3	0.118	5 2/8	11 2/8
4	0.177	8	14
5	0.250	11 2/8	17 2/8
6	0.356	16	22
7	0.644	29	35
8	0.750	33 6/8	39 6/8
9	0.823	37	43
10	0.882	39 6/8	45 6/8
11	0.933	42	48
12	0.979	44	50

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-48
Fuel Type	Gas, Propene

Test Information			
Project #		sfi-elkcity.ok-comp#1	
Operator		DA/BB	
Date for Preliminary Run	(mm/dd/yy)	09/13/16	
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		0-30-0%	
Number of Ports Available		2	
Number of Ports Used		2	
Port Inside Diameter		3.00	in
Stack Shape		Circular	

Test Equipment Information					
Run		**1**	**2**	**3**	
Test Date	(mm/dd/yy)	09/14/16	09/14/16	09/14/16	
Load	% or w/DB	0-30-0	0-30-0	0-30-0	
Meter Box Number	from ACS	SAMP-CP-0007	SAMP-CP-0007	SAMP-CP-0007	
Meter Calibration Factor	(Y)	0.976	0.976	0.976	
Orifice Meter Coefficient	($\Delta H_@$)	1.744	1.744	1.744	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-0002	SAMP-BC-0002	SAMP-BC-0002	

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

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

Plant Name	Elk City Facilty
Sampling Location	SCD-48
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	16:47	18:08	11:37		hh:mm
Run Stop Time	17:57	19:18	12:47		hh:mm
Test Date	09/14/16	09/14/16	09/14/16		mm/dd/yy
Meter Calibration Factor	0.976	0.976	0.976		
Pitot Tube Coefficient	0.840	0.840	0.840		
Initial Meter Volume	586.960	637.160	686.320		ft^3
Final Meter Volume	636.410	685.990	736.320		ft^3
Total Meter Volume	49.450	48.830	50.000	49.427	ft^3
Total Sampling Time	65.00	65.00	65.00	65.00	min
Average Meter Temperature	88.40	91.19	80.98	86.85	°F
Average Stack Temperature	1025.75	1024.75	859.54	970.01	°F
Barometric Pressure	30.14	30.12	30.14	30.13	in Hg
Stack Static Pressure	0.00	0.00	0.00	0.00	in H_2O
Absolute Stack Pressure	30.14	30.12	30.14	30.13	in Hg
Average Orifice Pressure Drop	1.70	1.70	1.70	1.70	in H_2O
Absolute Meter Pressure	30.27	30.25	30.27	30.26	in Hg
Avg Square Root Pitot Pressure	0.10	0.11	0.10	0.10	√(in H_2O)
Moisture Content Data	**0-30-0%-1**	**0-30-0%-2**	**0-30-0%-3**	**Average**	**Units**
Impinger Water Weight Gain	38.60	38.10	37.10	37.93	g
Silica Gel Weight Gain	9.30	14.00	12.30	11.87	g
Total Water Volume Collected	47.99	52.19	49.49	49.89	ml
Standard Water Vapor Volume	2.26	2.46	2.33	2.35	scf
Standard Meter Volume	47.0	46.1	48.2	47.1	dscf
Calculated Stack Moisture	4.58	5.05	4.61	4.75	%
Saturated Stack Moisture	100.00	100.00	100.00	100.00	%
Reported Stack Moisture Content	4.58	5.05	4.61	4.75	%
Method 3C Gas Analysis Data	**0-30-0%-1**	**0-30-0%-2**	**0-30-0%-3**	**Average**	**Units**
Carbon Dioxide Content	3.4	3.3	2.9	3.2	%
Oxygen Content	16.5	16.6	17.2	16.8	%
Nitrogen Content	80.1	80.1	79.9	80.0	%
Stack Dry Molecular Weight	29.20	29.20	29.16	29.18	lb/lb-mole
Stack Wet Molecular Weight	28.69	28.63	28.64	28.65	lb/lb-mole
Percent Excess Air	354.5	366.0	442.4	387.6	%
Volumetric Flow Rate Data	**0-30-0%-1**	**0-30-0%-2**	**0-30-0%-3**	**Average**	**Units**
Average Stack Gas Velocity	9.41	10.28	8.86	9.52	ft/sec
Stack Cross-Sectional Area	11.04	11.04	11.04	11.04	ft^2
Actual Stack Flow Rate	6,237	6,812	5,872	6,307	acfm
Wet Standard Stack Flow Rate	134	146	142	141	wkscfh
Dry Standard Stack Flow Rate	127,820	138,933	135,457	134,070	dscfh

METHOD 3C - DETERMINATION OF DRY MOLECULAR WEIGHT BY ANALYZER

Plant Name	Elk City Facilty	**Preliminary Date**	09/13/16		
Sampling Location	SCD-48	**Operator**	DA/BB		
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**	09/14/16	**Run Start Time**	16:47		**Run Stop Time**	17:57
Sample Analysis Time	**CO_2 Conc.**	**O_2 Conc.**	**Methane Conc.**	**N_2 Conc.**	**Dry Molecular Weight**	**Calculated Fuel Factor**		**Excess Air**	**Fuel Factor in Range**
	(%CO_2)	(%O_2)	(ppmCO)	(%N_2)	(M_d)	$(F_o)_{avg}$		$(\%EA)_{avg}$	
hh:mm	%	%	ppm	%	lb/lb-mole			%	
01:10	3.4	16.5	0.0	80.1	29.20	1.306		354.5	N/A

Gas Analysis Data									
Run Number	0-30-0%-2		**Date**	09/14/16	**Run Start Time**	18:08		**Run Stop Time**	19:18
Sample Analysis Time	**CO_2 Conc.**	**O_2 Conc.**	**Methane Conc.**	**N_2 Conc.**	**Dry Molecular Weight**	**Calculated Fuel Factor**		**Excess Air**	**Fuel Factor in Range**
	(%CO_2)	(%O_2)	(ppmCO)	(%N_2)	(M_d)	$(F_o)_{avg}$		$(\%EA)_{avg}$	
hh:mm	%	%	ppm	%	lb/lb-mole			%	
01:10	3.3	16.6	0.0	80.1	29.20	1.287		366.0	N/A

Gas Analysis Data									
Run Number	0-30-0%-3		**Date**	09/14/16	**Run Start Time**	11:37		**Run Stop Time**	12:47
Sample Analysis Time	**CO_2 Conc.**	**O_2 Conc.**	**Methane Conc.**	**N_2 Conc.**	**Dry Molecular Weight**	**Calculated Fuel Factor**		**Excess Air**	**Fuel Factor in Range**
	(%CO_2)	(%O_2)	(ppmCO)	(%N_2)	(M_d)	$(F_o)_{avg}$		$(\%EA)_{avg}$	
hh:mm	%	%	ppm	%	lb/lb-mole			%	
01:10	2.9	17.2	0.0	79.9	29.16	1.267		442.4	N/A

METHOD 4 - DETERMINATION OF MOISTURE CONTENT IN STACK GASES

Plant Name	Elk City Facilty	**Preliminary Date**	09/13/16
Sampling Location	SCD-48	**Operator**	DA/BB
Project #	sfi-elkcity.ok-comp#1	**Ports Used**	2

Moisture Content Data									
Run Number		0-30-0%-1		**Date**	09/14/16	**Start Time**	16:47	**Stop Time**	17:57
Meter Box Number		SAMP-CP-0007				**Meter Cal Factor**	(Y)	0.976	
Total Meter Volume		(V_m)	49.450	dcf		**Barometric Pressure**	(P_b)	30.14	in Hg
Average Stack Temp		$(t_s)_{avg}$	1026	°F		**Stack Static Pressure**	(P_{static})	0.00	in H_2O
Average Meter Temp		$(t_m)_{avg}$	88	°F		**Avg Orifice Pressure**	$(\Delta H)_{avg}$	1.70	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)	775.10	684.50	597.50	922.30				
Initial Value	(V_i),(W_i)	746.30	679.00	593.20	913.00				
Net Value	(V_n),(W_n)	28.8	5.5	4.3	9.3				
Results									
Total Weight		(W_t)	47.90	g		**Water Vol Weighed**	($V_{wsg(std)}$)	2.258	scf
Std Meter Volume		($V_{m(std)}$)	47.004	dscf		**Sat. Moisture Content**	($B_{ws(svp)}$)	100.00	%
Calc Moisture Content		($B_{ws(calc)}$)	4.58	%		**Final Moisture Content**	(B_{ws})	4.58	%

Moisture Content Data									
Run Number		0-30-0%-2		**Date**	09/14/16	**Start Time**	18:08	**Stop Time**	19:18
Meter Box Number		SAMP-CP-0007				**Meter Cal Factor**	(Y)	0.976	
Total Meter Volume		(V_m)	48.830	dcf		**Barometric Pressure**	(P_b)	30.12	in Hg
Average Stack Temp		$(t_s)_{avg}$	1025	°F		**Stack Static Pressure**	(P_{static})	0.00	in H_2O
Average Meter Temp		$(t_m)_{avg}$	91	°F		**Avg Orifice Pressure**	$(\Delta H)_{avg}$	1.70	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)	801.80	691.40	602.00	882.50				
Initial Value	(V_i),(W_i)	775.10	684.50	597.50	868.50				
Net Value	(V_n),(W_n)	26.7	6.9	4.5	14.0				
Results									
Total Weight		(W_t)	52.10	g		**Water Vol Weighed**	($V_{wsg(std)}$)	2.457	scf
Std Meter Volume		($V_{m(std)}$)	46.149	dscf		**Sat. Moisture Content**	($B_{ws(svp)}$)	100.00	%
Calc Moisture Content		($B_{ws(calc)}$)	5.05	%		**Final Moisture Content**	(B_{ws})	5.05	%

Moisture Content Data									
Run Number		0-30-0%-3		**Date**	09/14/16	**Start Time**	11:37	**Stop Time**	12:47
Meter Box Number		SAMP-CP-0007				**Meter Cal Factor**	(Y)	0.976	
Total Meter Volume		(V_m)	50.000	dcf		**Barometric Pressure**	(P_b)	30.14	in Hg
Average Stack Temp		$(t_s)_{avg}$	860	°F		**Stack Static Pressure**	(P_{static})	0.00	in H_2O
Average Meter Temp		$(t_m)_{avg}$	81	°F		**Avg Orifice Pressure**	$(\Delta H)_{avg}$	1.70	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)	825.90	699.30	582.20	894.80				
Initial Value	(V_i),(W_i)	801.80	691.40	577.10	882.50				
Net Value	(V_n),(W_n)	24.1	7.9	5.1	12.3				
Results									
Total Weight		(W_t)	49.40	g		**Water Vol Weighed**	($V_{wsg(std)}$)	2.329	scf
Std Meter Volume		($V_{m(std)}$)	48.178	dscf		**Sat. Moisture Content**	($B_{ws(svp)}$)	100.00	%
Calc Moisture Content		($B_{ws(calc)}$)	4.61	%		**Final Moisture Content**	(B_{ws})	4.61	%

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

Plant Name	Elk City Facilty
Sampling Location	SCD-48
Project #	sfi-elkcity.ok-comp#1

Date	09/14/16
Operator	DA/BB
Run Number	0-30-0%-1

Ideal Nozzle Diameter and IsoKinetic Factor Setup			
Pitot Coefficient	(C_p)	0.840	
Average Stack Temp	(t_s)	1025.8	°F
Average Meter Temp	(t_m)	88.4	
Orifice Meter Coefficient	($\Delta H@$)	1.744	in H_2O
Square Root ΔP	($\Delta p^{1/2}_{avg}$)	0.10	in H_2O
Stack Moisture Content	(B_{ws})	4.58	%
Stack Dry Molecular Weight	(M_d)	29.20	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	30.0	sec
< 3.0	**Pre (-)**	0.3	in H_2O for	30.0	sec
	Post (+)	0.3	in H_2O for	30.0	sec
	Post (-)	0.3	in H_2O for	30.0	sec

Sampling Equipment			
Meter Box Number	SAMP-CP-0007		
Meter Cal Factor	(Y)	0.976	
Low Flow Meter	SAMP-MN-0001		
Average Nozzle Diameter	(D_{na})		in
Suggested Nozzle Diameter	(D_{ni})	0.4577	in
Probe Number	SAMP-PF-0003		in
Probe Length	60		in
Liner Material	inconel		
Sample Case / Oven Number			
Impinger Case Number	SAMP-BC-0002		

Pressures			
Barometric Pressure	(P_b)	30.14	in Hg
Stack Static Pressure	(P_{static})	0.00	in H_2O
Absolute Stack Pressure	(P_s)	30.14	in Hg
Absolute Meter Pressure	(P_m)	30.27	in Hg

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

Run Time			
Start	16:47	**End**	17:57

Weights	**Imp 1**	**Imp 2**	**Imp 3**	**Imp 4**	**Imp 5**	**Imp 6**	**Imp 7**	**Imp 8**
Pre	746.3	679.0	593.2	913.0				
Post	775.1	684.5	597.5	922.3				

Wash Volumes					ml
					ml

Traverse Point #	**Sampling Time (Θ)**	**Timer Time**	**Dry Gas Meter Reading (V_m)**	**Velocity Head (Δp)**	**Desired Orifice ΔH (ΔH_d)**	**Actual Orifice ΔH (ΔH_a)**	**Stack Temp (t_s)**	**Snorkel Temp (248±25°F)**	**Filter Temp (248±25°F)**	**Impinger Exit Temp (≤68°F)**	**Cond. Temp (≤--°F)**	**CPM Filter Temp (--±--°F)**	**Meter Inlet Temp (t_{mi})**	**Meter Outlet Temp (t_{mo})**	**Pump Vacuum**	**Square Root ΔP ($\Delta p^{1/2}$)**	**Local Stack Velocity (v_s)$_l$**	**Cumul. Meter Volume (V_m)$_{std}$**	**Cumul. Percent IsoKinetic (I)**	**Est-Run Meter Volume (V_m)$_{std}$**
	min	hh:mm:ss	ft³	in H_2O	in H_2O	in H_2O	°F	°F	°F	°F	°F	°F	°F	°F	in Hg	√(in H_2O)	ft/sec	dscf	%	dscf
A-1	0.0	00:00:00	586.960	0.010	1.744	1.70	931	250		58			86	81	7.0	0.10	9.11	2.081		49.950
A-2	2.7	00:02:43	589.130	0.010	1.744	1.70	1048	250		54			88	81	7.0	0.10	9.48	4.178		50.134
A-3	5.4	00:05:25	591.320	0.010	1.744	1.70	1077	250		54			89	81	7.0	0.10	9.57	5.986		47.884
A-4	8.1	00:08:07	593.210	0.010	1.744	1.70	1083	250		54			90	81	7.0	0.10	9.59	7.897		47.380
A-5	10.8	00:10:50	595.210	0.010	1.744	1.70	1085	250		54			91	82	7.0	0.10	9.60	9.890		47.473
A-6	13.5	00:13:33	597.300	0.010	1.744	1.70	1086	250		54			91	83	7.0	0.10	9.60	11.996		47.985
A-7	16.3	00:16:15	599.510	0.010	1.744	1.70	1023	250		54			91	82	7.0	0.10	9.41	13.475		46.199
A-8	19.0	00:18:58	601.060	0.010	1.744	1.70	965	250		54			92	83	7.0	0.10	9.22	15.436		46.308
A-9	21.7	00:21:40	603.120	0.010	1.744	1.70	851	250		54			92	83	7.0	0.10	8.84	17.512		46.697
A-10	24.4	00:24:22	605.300	0.010	1.744	1.70	948	250		54			92	83	7.0	0.10	9.16	19.768		47.443
A-11	27.1	00:27:05	607.670	0.010	1.744	1.70	980	250		54			93	83	7.0	0.10	9.27	21.223		46.306
A-12	29.8	00:29:47	609.200	0.010	1.744	1.70	992	250		54			93	83	7.0	0.10	9.31	23.183		46.366
B-1	32.5	00:32:30	611.260	0.010	1.744	1.70	1013	250		53			94	84	7.0	0.10	9.37	25.414		46.919
B-2	35.2	00:35:12	613.610	0.010	1.744	1.70	1039	250		53			94	85	7.0	0.10	9.46	27.074		46.413
B-3	37.9	00:37:55	615.360	0.010	1.744	1.70	1058	250		53			95	85	7.0	0.10	9.52	29.463		47.140
B-4	40.6	00:40:37	617.880	0.010	1.744	1.70	1086	250		53			95	85	7.0	0.10	9.60	30.808		46.213
B-5	43.3	00:43:20	619.300	0.010	1.744	1.70	1088	250		53			95	85	7.0	0.10	9.61	32.988		46.572
B-6	46.0	00:46:03	621.600	0.010	1.744	1.70	1082	250		53			95	85	7.0	0.10	9.59	34.543		46.057
B-7	48.8	00:48:45	623.240	0.010	1.744	1.70	1059	250		53			95	85	7.0	0.10	9.52	36.343		45.907
B-8	51.5	00:51:28	625.140	0.010	1.744	1.70	925	250		53			96	86	7.0	0.10	9.09	38.869		46.643
B-9	54.2	00:54:10	627.810	0.010	1.744	1.70	1070	250		53			96	86	7.0	0.10	9.55	40.913		46.758
B-10	56.9	00:56:53	629.970	0.01	1.744	1.70	1084	250		54			96	86	7.0	0.10	9.60	43.221		47.150
B-11	59.6	00:59:35	632.410	0.01	1.744	1.70	1085	250		54			96	87	7.0	0.10	9.60	45.575		47.556
B-12	62.3	01:02:18	634.900	0.01	1.744	1.70	960	250		54			95	88	7.0	0.10	9.20	47.002		47.002
Last Pt	65.0	01:05:00	636.410																	
Final Val	65.0	01:05:00	636.410											**Max Vac**	7.0	**Final Values**		47.002		
Average Values				0.01		1.70	1026	250		54			93	84		0.10	9.41			
													88							

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

Plant Name	Elk City Facilty
Sampling Location	SCD-48
Project #	sfi-elkcity.ok-comp#1

Date	09/14/16
Operator	DA/BB
Run Number	0-30-0%-2

Ideal Nozzle Diameter and IsoKinetic Factor Setup			
Pitot Coefficient	(C_p)	0.840	
Average Stack Temp	(t_s)	1024.8	°F
Average Meter Temp	(t_m)	91.2	
Orifice Meter Coefficient	($\Delta H@$)	1.744	in H_2O
Square Root ΔP	($\Delta p^{1/2}_{avg}$)	0.11	in H_2O
Stack Moisture Content	(B_{ws})	5.05	%
Stack Dry Molecular Weight	(M_d)	29.20	lb/lb-mole
Estimated Orifice Flow Rate	(Q_m)	0.72	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	30.0	sec
< 3.0	**Pre (-)**	0.3	in H_2O for	30.0	sec
	Post (+)	0.3	in H_2O for	30.0	sec
	Post (-)	0.3	in H_2O for	30.0	sec

Sampling Equipment			
Meter Box Number	SAMP-CP-0007		
Meter Cal Factor	(Y)	0.976	
Low Flow Meter	SAMP-MN-0001		
Average Nozzle Diameter	(D_{na})		in
Suggested Nozzle Diameter	(D_{ni})	0.4384	in
Probe Number	SAMP-SP-0001		in
Probe Length	60		in
Liner Material	inconel		
Sample Case / Oven Number			
Impinger Case Number	SAMP-BC-0002		

Pressures			
Barometric Pressure	(P_b)	30.12	in Hg
Stack Static Pressure	(P_{static})	0.00	in H_2O
Absolute Stack Pressure	(P_s)	30.12	in Hg
Absolute Meter Pressure	(P_m)	30.25	in Hg

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

Run Time			
Start	18:08	**End**	19:18

Weights	**Imp 1**	**Imp 2**	**Imp 3**	**Imp 4**	**Imp 5**	**Imp 6**	**Imp 7**	**Imp 8**
Pre	775.1	684.5	597.5	868.5				
Post	801.8	691.4	602.0	882.5				

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	637.160	0.010	1.744	1.70	1020	250		52			96	86	7.0	0.10	9.41	1.891		45.380
A-2	2.7	00:02:43	639.160	0.010	1.744	1.70	1019	250		52			96	86	7.0	0.10	9.40	4.245		50.939
A-3	5.4	00:05:25	641.650	0.010	1.744	1.70	1053	250		52			96	86	7.0	0.10	9.51	6.145		49.162
A-4	8.1	00:08:07	643.660	0.010	1.744	1.70	1069	250		52			96	86	7.0	0.10	9.56	7.440		44.643
A-5	10.8	00:10:50	645.030	0.010	1.744	1.70	1018	250		52			96	86	7.0	0.10	9.40	9.899		47.513
A-6	13.5	00:13:33	647.630	0.010	1.744	1.70	1018	250		53			96	86	7.0	0.10	9.40	11.685		46.741
A-7	16.3	00:16:15	649.520	0.010	1.744	1.70	1015	250		53			95	86	7.0	0.10	9.39	13.852		47.494
A-8	19.0	00:18:58	651.810	0.010	1.744	1.70	1015	250		54			95	86	7.0	0.10	9.39	15.546		46.639
A-9	21.7	00:21:40	653.600	0.010	1.744	1.70	1020	250		55			95	86	7.0	0.10	9.41	17.249		45.999
A-10	24.4	00:24:22	655.400	0.010	1.744	1.70	1045	250		56			96	86	7.0	0.10	9.49	19.358		46.459
A-11	27.1	00:27:05	657.630	0.010	1.744	1.70	1045	250		57			96	86	7.0	0.10	9.49	20.814		45.412
A-12	29.8	00:29:47	659.170	0.010	1.744	1.70	1042	250		57			96	87	7.0	0.10	9.48	22.835		45.670
B-1	32.5	00:32:30	661.310	0.010	1.744	1.70	813	250		58			96	87	7.0	0.10	8.72	24.960		46.081
B-2	35.2	00:35:12	663.560	0.010	1.744	1.70	1065	250		58			96	87	7.0	0.10	9.55	26.538		45.493
B-3	37.9	00:37:55	665.230	0.010	1.744	1.70	1077	250		59			96	87	7.0	0.10	9.59	28.672		45.876
B-4	40.6	00:40:37	667.490	0.010	1.744	1.70	1079	250		60			96	87	7.0	0.10	9.59	30.373		45.559
B-5	43.3	00:43:20	669.290	0.010	1.744	1.70	1083	250		61			96	87	7.0	0.10	9.61	32.753		46.239
B-6	46.0	00:46:03	671.810	0.010	1.744	1.70	1063	250		63			95	87	7.0	0.10	9.54	34.719		46.293
B-7	48.8	00:48:45	673.890	0.010	1.744	1.70	943	250		63			96	87	7.0	0.10	9.16	36.675		46.326
B-8	51.5	00:51:28	675.960	0.010	1.744	1.70	902	250		63			96	87	7.0	0.10	9.02	38.507		46.209
B-9	54.2	00:54:10	677.900	0.100	1.744	1.70	1063	250		64			96	87	7.0	0.32	30.18	40.481		46.264
B-10	56.9	00:56:53	679.990	0.01	1.744	1.70	1072	250		64			96	87	7.0	0.10	9.57	42.370		46.222
B-11	59.6	00:59:35	681.990	0.01	1.744	1.70	1077	250		65			96	87	7.0	0.10	9.59	44.165		46.085
B-12	62.3	01:02:18	683.890	0.01	1.744	1.70	978	250		65			96	87	7.0	0.10	9.27	46.149		46.149
Last Pt	65.0	01:05:00	685.990																	
Final Val	65.0	01:05:00	685.990											**Max Vac**	7.0	**Final Values**		46.149		
Average Values				0.01		1.70	1025	250		58			96	87		0.11	10.28			
													91							

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

Plant Name	Elk City Facilty
Sampling Location	SCD-48
Project #	sfi-elkcity.ok-comp#1

Date	09/14/16
Operator	DA/BB
Run Number	0-30-0%-3

Ideal Nozzle Diameter and IsoKinetic Factor Setup			
Pitot Coefficient	(C_p)	0.840	
Average Stack Temp	(t_s)	859.5	°F
Average Meter Temp	(t_m)	81.0	
Orifice Meter Coefficient	($\Delta H@$)	1.744	in H_2O
Square Root ΔP	($\Delta p^{1/2}_{avg}$)	0.10	in H_2O
Stack Moisture Content	(B_{ws})	4.61	%
Stack Dry Molecular Weight	(M_d)	29.16	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 (+)**	0.3	in H_2O for	30.0	sec
< 3.0	**Pre (-)**	0.2	in H_2O for	30.0	sec
	Post (+)	0.3	in H_2O for	30.0	sec
	Post (-)	0.3	in H_2O for	30.0	sec

Sampling Equipment			
Meter Box Number	SAMP-CP-0007		
Meter Cal Factor	(Y)	0.976	
Low Flow Meter	SAMP-MN-0001		
Average Nozzle Diameter	(D_{na})		in
Suggested Nozzle Diameter	(D_{ni})	0.4351	in
Probe Number	SAMP-SP-0001		in
Probe Length	60		in
Liner Material	inconel		
Sample Case / Oven Number			
Impinger Case Number	SAMP-BC-0002		

Pressures			
Barometric Pressure	(P_b)	30.14	in Hg
Stack Static Pressure	(P_{static})	0.00	in H_2O
Absolute Stack Pressure	(P_s)	30.14	in Hg
Absolute Meter Pressure	(P_m)	30.27	in Hg

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

Run Time			
Start	11:37	**End**	12:47

Weights	**Imp 1**	**Imp 2**	**Imp 3**	**Imp 4**	**Imp 5**	**Imp 6**	**Imp 7**	**Imp 8**
Pre	801.8	691.4	577.1	882.5				
Post	825.9	699.3	582.2	894.8				

Wash Volumes					
					ml
					ml

Traverse Point #	**Sampling Time (Θ)**	**Timer Time**	**Dry Gas Meter Reading (V_m)**	**Velocity Head (Δp)**	**Desired Orifice ΔH (ΔH_d)**	**Actual Orifice ΔH (ΔH_a)**	**Stack Temp (t_s)**	**Snorkel Temp (248±25°F)**	**Filter Temp (248±25°F)**	**Impinger Exit Temp (≤68°F)**	**Cond. Temp (≤--°F)**	**CPM Filter Temp (--±--°F)**	**Meter Inlet Temp (t_{mi})**	**Meter Outlet Temp (t_{mo})**	**Pump Vacuum**	**Square Root ΔP ($\Delta p^{1/2}$)**	**Local Stack Velocity (v_s)$_l$**	**Cumul. Meter Volume (V_m)$_{std}$**	**Cumul. Percent IsoKinetic (I)**	**Est-Run Meter Volume (V_m)$_{std}$**
	min	hh:mm:ss	ft³	in H_2O	in H_2O	in H_2O	°F	°F	°F	°F	°F	°F	°F	°F	in Hg	√(in H_2O)	ft/sec	dscf	%	dscf
A-1	0.0	00:00:00	686.320	0.010	1.744	1.70	783	250		59			80	73	8.0	0.10	8.62	2.429		58.297
A-2	2.7	00:02:43	688.820	0.010	1.744	1.70	870	250		59			80	73	8.0	0.10	8.91	4.022		48.270
A-3	5.4	00:05:25	690.460	0.010	1.744	1.70	959	250		55			82	74	8.0	0.10	9.21	5.989		47.915
A-4	8.1	00:08:07	692.490	0.010	1.744	1.70	976	250		54			83	74	8.0	0.10	9.26	7.993		47.959
A-5	10.8	00:10:50	694.560	0.010	1.744	1.70	988	250		55			83	74	8.0	0.10	9.30	10.065		48.310
A-6	13.5	00:13:33	696.700	0.010	1.744	1.70	993	250		56			84	75	8.0	0.10	9.32	12.181		48.723
A-7	16.3	00:16:15	698.890	0.010	1.744	1.70	995	250		58			86	76	8.0	0.10	9.32	14.040		48.138
A-8	19.0	00:18:58	700.820	0.010	1.744	1.70	854	250		57			86	77	8.0	0.10	8.86	16.062		48.185
A-9	21.7	00:21:40	702.920	0.010	1.744	1.70	711	250		58			86	77	8.0	0.10	8.36	18.160		48.428
A-10	24.4	00:24:22	705.100	0.010	1.744	1.70	509	250		58			87	78	8.0	0.10	7.61	20.418		49.004
A-11	27.1	00:27:05	707.450	0.010	1.744	1.70	468	250		57			87	78	8.0	0.10	7.45	22.571		49.245
A-12	29.8	00:29:47	709.690	0.010	1.744	1.70	466	250		57			87	78	8.0	0.10	7.44	24.492		48.985
B-1	32.5	00:32:30	711.690	0.010	1.744	1.70	891	250		58			83	80	8.0	0.10	8.98	26.543		49.002
B-2	35.2	00:35:12	713.820	0.010	1.744	1.70	893	250		58			83	80	8.0	0.10	8.99	28.536		48.918
B-3	37.9	00:37:55	715.890	0.010	1.744	1.70	932	250		57			82	80	8.0	0.10	9.12	30.520		48.833
B-4	40.6	00:40:37	717.950	0.010	1.744	1.70	935	250		58			82	80	8.0	0.10	9.13	32.486		48.729
B-5	43.3	00:43:20	719.990	0.010	1.744	1.70	973	250		58			82	80	8.0	0.10	9.25	34.413		48.583
B-6	46.0	00:46:03	721.990	0.010	1.744	1.70	920	250		58			82	81	8.0	0.10	9.08	36.367		48.490
B-7	48.8	00:48:45	724.020	0.010	1.744	1.70	836	250		59			84	80	8.0	0.10	8.80	38.570		48.720
B-8	51.5	00:51:28	726.310	0.010	1.744	1.70	878	250		58			84	80	8.0	0.10	8.94	40.839		49.007
B-9	54.2	00:54:10	728.670	0.010	1.744	1.70	974	250		62			85	81	8.0	0.10	9.26	42.116		48.133
B-10	56.9	00:56:53	730.000	0.01	1.744	1.70	981	250		59			85	81	8.0	0.10	9.28	44.699		48.762
B-11	59.6	00:59:35	732.690	0.01	1.744	1.70	983	250		59			86	81	8.0	0.10	9.28	46.732		48.764
B-12	62.3	01:02:18	734.810	0.01	1.744	1.70	861	250		60			86	81	8.0	0.10	8.88	48.180		48.180
Last Pt	65.0	01:05:00	736.320																	
Final Val	65.0	01:05:00	736.320											**Max Vac**	8.0	**Final Values**		48.180		
Average Values				0.01		1.70	860	250		58			84	78		0.10	8.86			
													81							

Superior Fabrication, INC
September 14, 2016
SCD-48
Elk City Plant

Unit Data

Meas. Stack Moisture	4.6	%
Stack Exhaust Flow (M2)	127,820	SCFH

Weather Data

Barometric Pressure	30.14	in. Hg
Relative Humidity	62	%
Ambient Temperature	86	^{o}F
Specific Humidity	0.016467	lb H_2O / lb air

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

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
A1	09/14/16 16:47:29	36300	17.40	6.56	0.92	2.57	0.09	84.80	549.00
	09/14/16 16:47:59	36330	17.43	6.43	0.95	2.55	0.09	84.80	549.00
	09/14/16 16:48:29	36360	17.36	6.26	0.91	2.59	0.09	85.30	548.00
	09/14/16 16:48:59	36390	17.40	5.99	0.93	2.58	0.09	85.30	548.00
	09/14/16 16:49:29	36420	17.40	5.96	0.97	2.58	0.10	85.80	548.00
	09/14/16 16:49:59	36450	17.43	6.12	1.00	2.55	0.10	85.80	548.00
	09/14/16 16:50:29	36480	17.06	6.30	0.67	2.75	0.09	86.10	543.00
	09/14/16 16:50:59	36510	16.12	5.54	0.41	3.46	0.09	86.10	543.00
	09/14/16 16:51:29	36540	16.21	4.51	0.45	3.41	0.21	86.30	798.00
	09/14/16 16:51:59	36570	16.14	4.39	0.37	3.46	0.21	86.30	798.00
	09/14/16 16:52:29	36600	16.10	4.22	0.38	3.48	0.21	86.50	793.00
	09/14/16 16:52:59	36630	16.12	4.11	0.38	3.45	0.21	86.50	793.00
	09/14/16 16:53:29	36660	16.05	4.24	0.36	3.49	0.21	86.80	792.00
	09/14/16 16:53:59	36690	16.06	4.19	0.34	3.50	0.21	86.80	792.00
	09/14/16 16:54:29	36720	16.07	4.10	0.36	3.48	0.20	87.10	794.00
	09/14/16 16:54:59	36750	16.04	3.99	0.35	3.50	0.20	87.10	794.00
	09/14/16 16:55:29	36780	16.08	3.79	0.35	3.48	0.21	87.20	794.00
	09/14/16 16:55:59	36810	16.08	3.71	0.35	3.47	0.21	87.20	794.00
	09/14/16 16:56:29	36840	16.13	3.79	0.35	3.44	0.21	87.40	791.00
	09/14/16 16:56:59	36870	16.11	4.00	0.35	3.45	0.21	87.40	791.00
	09/14/16 16:57:29	36900	15.99	4.03	0.36	3.53	0.21	87.60	794.00
	09/14/16 16:57:59	36930	16.03	3.99	0.36	3.51	0.21	87.60	794.00
	09/14/16 16:58:29	36960	15.98	4.12	0.36	3.54	0.21	87.80	793.00
	09/14/16 16:58:59	36990	16.04	4.39	0.37	3.51	0.21	87.80	793.00
	09/14/16 16:59:29	37020	16.09	4.92	0.39	3.47	0.21	88.00	795.00
	09/14/16 16:59:59	37050	16.08	5.16	0.36	3.49	0.21	88.00	795.00
	09/14/16 17:00:29	37080	16.10	5.25	0.36	3.49	0.21	88.10	793.00
	09/14/16 17:00:59	37110	16.10	5.34	0.36	3.49	0.21	88.10	793.00
	09/14/16 17:01:29	37140	15.97	5.16	0.36	3.57	0.20	88.30	795.00
	09/14/16 17:01:59	37170	16.12	4.71	0.35	3.46	0.20	88.30	795.00
	09/14/16 17:02:29	37200	16.06	4.78	0.34	3.48	0.22	88.60	793.00
	09/14/16 17:02:59	37230	16.04	4.71	0.35	3.51	0.22	88.60	793.00
	09/14/16 17:03:29	37260	16.10	4.51	0.36	3.46	0.21	88.80	795.00
	09/14/16 17:03:59	37290	16.09	4.56	0.36	3.49	0.21	88.80	795.00
	09/14/16 17:04:29	37320	16.08	4.75	0.37	3.49	0.21	88.90	792.00
	09/14/16 17:04:59	37350	16.67	5.02	0.49	3.10	0.21	88.90	792.00
	09/14/16 17:05:29	37380	16.88	5.85	0.56	2.90	0.14	89.00	685.00
	09/14/16 17:05:59	37410	16.92	6.42	0.62	2.87	0.14	89.00	685.00
	09/14/16 17:06:29	37440	17.04	6.68	0.68	2.79	0.12	89.30	626.00
	09/14/16 17:06:59	37470	17.13	6.67	0.71	2.73	0.12	89.30	626.00
	09/14/16 17:07:29	37500	17.23	6.69	0.82	2.68	0.11	89.40	590.00
A2	09/14/16 17:07:59	37530	17.28	6.60	0.86	2.63	0.11	89.40	590.00
	09/14/16 17:08:29	37560	17.27	6.60	0.84	2.64	0.09	89.40	565.00
	09/14/16 17:08:59	37590	17.29	6.34	0.85	2.61	0.09	89.40	565.00
	09/14/16 17:09:29	37620	17.31	6.19	0.88	2.62	0.09	89.20	550.00
	09/14/16 17:09:59	37650	17.34	6.40	0.90	2.58	0.09	89.20	550.00
	09/14/16 17:10:29	37680	17.33	6.50	0.88	2.59	0.09	88.90	550.00
	09/14/16 17:10:59	37710	16.77	6.54	0.51	2.94	0.09	88.90	550.00
	09/14/16 17:11:29	37740	16.30	5.99	0.39	3.32	0.15	88.70	676.00
	09/14/16 17:11:59	37770	16.20	5.34	0.37	3.39	0.15	88.70	676.00
	09/14/16 17:12:29	37800	16.13	5.00	0.36	3.43	0.19	88.50	771.00
	09/14/16 17:12:59	37830	16.14	4.64	0.35	3.44	0.19	88.50	771.00
	09/14/16 17:13:29	37860	16.10	4.70	0.32	3.46	0.20	88.10	780.00
	09/14/16 17:13:59	37890	16.09	4.70	0.34	3.47	0.20	88.10	780.00
	09/14/16 17:14:29	37920	16.11	4.69	0.35	3.46	0.20	87.70	778.00
	09/14/16 17:14:59	37950	16.13	4.68	0.35	3.44	0.20	87.70	778.00
	09/14/16 17:15:29	37980	16.13	4.67	0.34	3.45	0.20	87.60	778.00
	09/14/16 17:15:59	38010	16.14	4.71	0.35	3.44	0.20	87.60	778.00
	09/14/16 17:16:29	38040	16.15	4.71	0.34	3.43	0.20	87.30	781.00
	09/14/16 17:16:59	38070	16.08	4.57	0.33	3.48	0.20	87.30	781.00

Superior Fabrication, INC
September 14, 2016
SCD-48
Elk City Plant

Unit Data

Meas. Stack Moisture	4.6	%
Stack Exhaust Flow (M2)	127,820	SCFH

Weather Data

Barometric Pressure	30.14	in. Hg
Relative Humidity	62	%
Ambient Temperature	86	^{o}F
Specific Humidity	0.016467	lb H_2O / lb air

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

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
	09/14/16 17:17:29	38100	16.08	4.29	0.32	3.47	0.21	87.10	782.00
	09/14/16 17:17:59	38130	16.11	4.42	0.34	3.46	0.21	87.10	782.00
	09/14/16 17:18:29	38160	16.13	4.56	0.34	3.45	0.20	86.90	784.00
	09/14/16 17:18:59	38190	16.13	4.48	0.35	3.45	0.20	86.90	784.00
	09/14/16 17:19:29	38220	16.13	4.50	0.35	3.45	0.21	86.90	784.00
	09/14/16 17:19:59	38250	16.14	4.63	0.34	3.43	0.21	86.90	784.00
	09/14/16 17:20:29	38280	16.05	4.65	0.34	3.50	0.20	87.00	784.00
	09/14/16 17:20:59	38310	16.04	4.47	0.31	3.51	0.20	87.00	784.00
	09/14/16 17:21:29	38340	16.06	4.34	0.31	3.48	0.21	87.10	787.00
	09/14/16 17:21:59	38370	16.12	4.43	0.34	3.46	0.21	87.10	787.00
	09/14/16 17:22:29	38400	16.39	4.67	0.43	3.30	0.20	87.40	783.00
	09/14/16 17:22:59	38430	17.01	5.65	0.60	2.81	0.20	87.40	783.00
	09/14/16 17:23:29	38460	17.22	6.49	0.74	2.67	0.11	87.80	597.00
	09/14/16 17:23:59	38490	17.28	6.63	0.82	2.63	0.11	87.80	597.00
	09/14/16 17:24:29	38520	17.34	6.61	0.87	2.59	0.09	88.00	556.00
	09/14/16 17:24:59	38550	17.37	6.76	0.90	2.56	0.09	88.00	556.00
	09/14/16 17:25:29	38580	17.33	6.81	0.87	2.59	0.09	88.30	545.00
	09/14/16 17:25:59	38610	17.26	6.75	0.83	2.65	0.09	88.30	545.00
	09/14/16 17:26:29	38640	17.22	6.68	0.76	2.66	0.09	88.50	545.00
	09/14/16 17:26:59	38670	16.34	6.34	0.38	3.27	0.09	88.50	545.00
	09/14/16 17:27:29	38700	16.12	5.54	0.34	3.46	0.18	88.40	745.00
A3	09/14/16 17:27:59	38730	16.12	5.05	0.35	3.46	0.18	88.40	745.00
	09/14/16 17:28:29	38760	16.10	4.92	0.35	3.47	0.20	88.20	774.00
	09/14/16 17:28:59	38790	16.06	4.84	0.33	3.50	0.20	88.20	774.00
	09/14/16 17:29:29	38820	16.03	4.80	0.33	3.52	0.21	88.00	778.00
	09/14/16 17:29:59	38850	16.03	4.70	0.34	3.51	0.21	88.00	778.00
	09/14/16 17:30:29	38880	16.06	4.66	0.34	3.51	0.20	87.80	777.00
	09/14/16 17:30:59	38910	16.11	4.72	0.32	3.47	0.20	87.80	777.00
	09/14/16 17:31:29	38940	16.15	4.87	0.33	3.44	0.21	87.70	778.00
	09/14/16 17:31:59	38970	16.19	5.01	0.34	3.41	0.21	87.70	778.00
	09/14/16 17:32:29	39000	16.05	4.89	0.32	3.51	0.20	87.60	781.00
	09/14/16 17:32:59	39030	16.10	4.72	0.31	3.48	0.20	87.60	781.00
	09/14/16 17:33:29	39060	16.09	4.71	0.34	3.48	0.20	87.60	783.00
	09/14/16 17:33:59	39090	16.11	4.70	0.33	3.46	0.20	87.60	783.00
	09/14/16 17:34:29	39120	16.09	4.76	0.33	3.48	0.21	87.60	781.00
	09/14/16 17:34:59	39150	16.00	4.54	0.31	3.53	0.21	87.60	781.00
	09/14/16 17:35:29	39180	16.00	4.38	0.32	3.56	0.21	87.60	783.00
	09/14/16 17:35:59	39210	16.00	4.43	0.31	3.53	0.21	87.60	783.00
	09/14/16 17:36:29	39240	16.10	4.60	0.32	3.48	0.20	87.60	780.00
	09/14/16 17:36:59	39270	16.08	4.70	0.31	3.49	0.20	87.60	780.00
	09/14/16 17:37:29	39300	16.04	4.60	0.31	3.52	0.21	87.40	779.00
	09/14/16 17:37:59	39330	16.11	4.56	0.31	3.46	0.21	87.40	779.00
	09/14/16 17:38:29	39360	16.09	4.70	0.33	3.48	0.21	87.20	784.00
	09/14/16 17:38:59	39390	16.14	4.75	0.33	3.45	0.21	87.20	784.00
	09/14/16 17:39:29	39420	16.18	4.82	0.31	3.43	0.20	86.90	784.00
	09/14/16 17:39:59	39450	16.10	4.85	0.30	3.47	0.20	86.90	784.00
	09/14/16 17:40:29	39480	16.19	4.82	0.34	3.41	0.21	86.70	780.00
	09/14/16 17:40:59	39510	16.33	5.07	0.36	3.31	0.21	86.70	780.00
	09/14/16 17:41:29	39540	16.69	5.48	0.53	3.09	0.19	86.50	738.00
	09/14/16 17:41:59	39570	17.30	6.15	0.78	2.63	0.19	86.50	738.00
	09/14/16 17:42:29	39600	17.33	6.68	0.81	2.60	0.10	86.50	550.00
	09/14/16 17:42:59	39630	17.39	6.70	0.91	2.57	0.10	86.50	550.00
	09/14/16 17:43:29	39660	17.41	6.70	0.93	2.55	0.09	86.70	542.00
	09/14/16 17:43:59	39690	17.39	6.75	0.90	2.56	0.09	86.70	542.00
	09/14/16 17:44:29	39720	17.39	6.77	0.90	2.56	0.09	86.80	542.00
	09/14/16 17:44:59	39750	16.83	6.72	0.53	2.88	0.09	86.80	542.00
	09/14/16 17:45:29	39780	16.10	5.99	0.34	3.47	0.16	87.00	663.00
	09/14/16 17:45:59	39810	16.04	5.13	0.30	3.51	0.16	87.00	663.00
	09/14/16 17:46:29	39840	16.13	4.80	0.33	3.45	0.20	87.10	776.00
	09/14/16 17:46:59	39870	16.04	4.84	0.31	3.51	0.20	87.10	776.00

Superior Fabrication, INC
September 14, 2016
SCD-48
Elk City Plant

Unit Data

Meas. Stack Moisture	4.6	%
Stack Exhaust Flow (M2)	127,820	SCFH

Weather Data

Barometric Pressure	30.14	in. Hg
Relative Humidity	62	%
Ambient Temperature	86	^{o}F
Specific Humidity	0.016467	lb H_2O / lb air

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

Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
09/14/16 17:47:29	39900	15.97	4.71	0.31	3.55	0.22	87.10	782.00
09/14/16 17:47:59	39930	16.06	4.57	0.33	3.49	0.22	87.10	782.00
09/14/16 17:48:29	39960	16.05	4.73	0.33	3.50	0.22	87.10	785.00
09/14/16 17:48:59	39990	15.99	4.63	0.33	3.54	0.22	87.10	785.00
09/14/16 17:49:29	40020	16.04	4.42	0.34	3.51	0.21	87.00	780.00
09/14/16 17:49:59	40050	16.06	4.60	0.31	3.49	0.21	87.00	780.00
09/14/16 17:50:29	40080	15.97	4.62	0.31	3.54	0.21	86.90	782.00
09/14/16 17:50:59	40110	16.07	4.53	0.34	3.49	0.21	86.90	782.00
09/14/16 17:51:29	40140	16.06	4.67	0.32	3.49	0.22	86.70	783.00
09/14/16 17:51:59	40170	16.10	4.60	0.32	3.46	0.22	86.70	783.00
09/14/16 17:52:29	40200	16.08	4.70	0.30	3.47	0.22	86.40	783.00
09/14/16 17:52:59	40230	16.04	4.71	0.32	3.51	0.22	86.40	783.00
09/14/16 17:53:29	40260	16.06	4.61	0.32	3.49	0.21	86.10	781.00
09/14/16 17:53:59	40290	16.11	4.69	0.31	3.46	0.21	86.10	781.00
09/14/16 17:54:29	40320	16.63	4.84	0.52	3.13	0.11	85.80	559.00
09/14/16 17:54:59	40350	17.22	5.87	0.77	2.67	0.11	85.80	559.00
09/14/16 17:55:29	40380	17.35	6.74	0.83	2.58	0.10	85.60	546.00
09/14/16 17:55:59	40410	17.32	6.83	0.83	2.60	0.10	85.60	546.00
09/14/16 17:56:29	40440	17.32	6.68	0.84	2.58	0.10	85.40	546.00
09/14/16 17:56:59	40470	17.31	6.58	0.85	2.59	0.10	85.40	546.00
09/14/16 17:57:29	40500	17.33	6.60	0.85	2.59	0.11	85.20	544.00
RAW AVERAGE		**16.44**	**5.20**	**0.48**	**3.23**	**0.17**	**87.39**	**715.94**

		O_2	CO	THC	CO_2	Press. Trans	Temp. Trans.	F-Flow Trans.
	Serial Number:	INSTO2-0011	INST-CO-0022	INST-TH-0001	INST-C2-0013	1633266	1633266	1633266
		(%)	(ppmvd)	(ppmvw)	(%)	(in. H_2O)	(^{o}F)	(SCFH)
Bias	**Initial Zero**	-0.03	0.01	0.01	0.05			
	Final Zero	0.07	0.05	0.05	-0.02			
	Avg. Zero	0.02	0.03	0.03	0.02			
	Initial UpScale	11.94	9.44	2.96	9.05			
	Final UpScale	11.97	9.18	3.12	9.01			
	Avg. UpScale	11.96	9.31	3.04	9.03			
Upscale Cal Gas		12.00	9.24	3.00	8.99			

EMISSIONS DATA	O_2	CO	THC	CO_2
Corrected Raw Average (ppm/% dry basis)	16.51	5.15	0.45	3.21
Corrected Raw Average (ppm/% wet basis)	15.75	4.91	0.43	3.06
Emission Rate (lb/hr)	N/A	0.05	0.01	N/A

Superior Fabrication, INC
SCD-48
Elk City Plant

Unit Data

Meas. Stack Moisture	5.1	%
Stack Exhaust Flow (M2)	138,933	SCFH

Weather Data

Barometric Pressure	30.12	in. Hg
Relative Humidity	59	%
Ambient Temperature	81	^{o}F
Specific Humidity	0.013280	lb H_2O / lb air

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

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
A1	09/14/16 18:08:29	41160	17.39	6.46	1.00	2.55	0.10	85.10	544.00
	09/14/16 18:08:59	41190	17.37	6.63	0.95	2.58	0.10	85.10	544.00
	09/14/16 18:09:29	41220	17.38	6.41	0.95	2.57	0.10	85.10	544.00
	09/14/16 18:09:59	41250	17.36	6.32	0.92	2.60	0.10	85.10	544.00
	09/14/16 18:10:29	41280	17.35	6.51	0.96	2.60	0.10	85.10	542.00
	09/14/16 18:10:59	41310	17.37	6.63	0.92	2.58	0.10	85.10	542.00
	09/14/16 18:11:29	41340	16.33	6.34	0.39	3.23	0.10	85.10	544.00
	09/14/16 18:11:59	41370	16.13	5.16	0.34	3.46	0.10	85.10	544.00
	09/14/16 18:12:29	41400	16.09	4.59	0.34	3.50	0.10	85.00	542.00
	09/14/16 18:12:59	41430	16.11	4.43	0.34	3.47	0.10	85.00	542.00
	09/14/16 18:13:29	41460	16.10	4.48	0.33	3.45	0.20	85.00	782.00
	09/14/16 18:13:59	41490	16.08	4.80	0.34	3.47	0.20	85.00	782.00
	09/14/16 18:14:29	41520	16.08	4.74	0.32	3.47	0.21	84.90	788.00
	09/14/16 18:14:59	41550	16.10	4.59	0.32	3.45	0.21	84.90	788.00
	09/14/16 18:15:29	41580	16.12	4.76	0.35	3.44	0.21	84.80	788.00
	09/14/16 18:15:59	41610	16.11	4.80	0.34	3.44	0.21	84.80	788.00
	09/14/16 18:16:29	41640	16.09	4.83	0.33	3.45	0.21	84.70	788.00
	09/14/16 18:16:59	41670	16.07	4.75	0.33	3.47	0.21	84.70	788.00
	09/14/16 18:17:29	41700	16.06	4.55	0.34	3.49	0.22	84.50	788.00
	09/14/16 18:17:59	41730	16.08	4.50	0.34	3.46	0.22	84.50	788.00
	09/14/16 18:18:29	41760	16.00	4.43	0.32	3.52	0.21	84.30	788.00
	09/14/16 18:18:59	41790	16.07	4.45	0.34	3.48	0.21	84.30	788.00
	09/14/16 18:19:29	41820	16.01	4.57	0.33	3.51	0.21	84.20	789.00
	09/14/16 18:19:59	41850	16.11	4.60	0.32	3.47	0.21	84.20	789.00
	09/14/16 18:20:29	41880	16.09	4.83	0.35	3.47	0.22	84.00	789.00
	09/14/16 18:20:59	41910	16.09	4.82	0.34	3.48	0.22	84.00	789.00
	09/14/16 18:21:29	41940	16.17	4.72	0.31	3.43	0.21	83.80	789.00
	09/14/16 18:21:59	41970	16.10	4.87	0.32	3.46	0.21	83.80	789.00
	09/14/16 18:22:29	42000	16.06	4.64	0.30	3.49	0.22	83.70	790.00
	09/14/16 18:22:59	42030	16.12	4.42	0.32	3.46	0.22	83.70	790.00
	09/14/16 18:23:29	42060	16.06	4.52	0.30	3.49	0.22	83.50	792.00
	09/14/16 18:23:59	42090	16.11	4.45	0.30	3.48	0.22	83.50	792.00
	09/14/16 18:24:29	42120	16.06	4.52	0.30	3.50	0.22	83.40	790.00
	09/14/16 18:24:59	42150	16.07	4.54	0.29	3.49	0.22	83.40	790.00
	09/14/16 18:25:29	42180	16.57	4.54	0.48	3.19	0.22	83.20	791.00
	09/14/16 18:25:59	42210	17.35	5.58	0.81	2.61	0.22	83.20	791.00
	09/14/16 18:26:29	42240	17.39	6.71	0.85	2.57	0.22	83.10	793.00
	09/14/16 18:26:59	42270	17.35	6.86	0.83	2.58	0.22	83.10	793.00
	09/14/16 18:27:29	42300	17.35	6.61	0.80	2.59	0.11	82.90	562.00
	09/14/16 18:27:59	42330	17.38	6.22	0.80	2.57	0.11	82.90	562.00
	09/14/16 18:28:29	42360	17.41	6.07	0.86	2.56	0.11	82.80	550.00
A2	09/14/16 18:28:59	42390	17.42	6.32	0.89	2.54	0.11	82.80	550.00
	09/14/16 18:29:29	42420	17.38	6.62	0.91	2.57	0.11	82.70	547.00
	09/14/16 18:29:59	42450	17.37	6.79	0.84	2.56	0.11	82.70	547.00
	09/14/16 18:30:29	42480	16.32	6.53	0.37	3.25	0.10	82.60	547.00
	09/14/16 18:30:59	42510	16.06	5.51	0.34	3.51	0.10	82.60	547.00
	09/14/16 18:31:29	42540	16.10	5.04	0.34	3.48	0.14	82.50	617.00
	09/14/16 18:31:59	42570	16.04	4.93	0.31	3.52	0.14	82.50	617.00
	09/14/16 18:32:29	42600	16.05	4.78	0.32	3.52	0.21	82.40	786.00
	09/14/16 18:32:59	42630	16.11	4.98	0.33	3.47	0.21	82.40	786.00
	09/14/16 18:33:29	42660	16.15	5.04	0.34	3.43	0.22	82.20	782.00
	09/14/16 18:33:59	42690	16.13	5.27	0.34	3.46	0.22	82.20	782.00
	09/14/16 18:34:29	42720	16.17	5.92	0.35	3.42	0.21	82.20	784.00
	09/14/16 18:34:59	42750	16.07	5.94	0.35	3.49	0.21	82.20	784.00
	09/14/16 18:35:29	42780	16.13	5.20	0.36	3.47	0.21	82.10	787.00
	09/14/16 18:35:59	42810	16.18	5.19	0.36	3.42	0.21	82.10	787.00
	09/14/16 18:36:29	42840	16.13	5.17	0.35	3.47	0.22	82.00	782.00
	09/14/16 18:36:59	42870	16.11	4.99	0.33	3.47	0.22	82.00	782.00
	09/14/16 18:37:29	42900	16.20	5.15	0.34	3.40	0.22	81.90	785.00
	09/14/16 18:37:59	42930	16.05	5.16	0.30	3.51	0.22	81.90	785.00
	09/14/16 18:38:29	42960	15.96	4.91	0.29	3.58	0.22	81.90	785.00

Superior Fabrication, INC
SCD-48
Elk City Plant

Unit Data

Meas. Stack Moisture	5.1	%
Stack Exhaust Flow (M2)	138,933	SCFH

Weather Data

Barometric Pressure	30.12	in. Hg
Relative Humidity	59	%
Ambient Temperature	81	^{o}F
Specific Humidity	0.013280	lb H_2O / lb air

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

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
	09/14/16 18:38:59	42990	16.08	4.69	0.31	3.50	0.22	81.90	785.00
	09/14/16 18:39:29	43020	16.16	4.85	0.33	3.45	0.23	81.80	793.00
	09/14/16 18:39:59	43050	16.07	5.07	0.32	3.50	0.23	81.80	793.00
	09/14/16 18:40:29	43080	16.08	4.92	0.33	3.49	0.23	81.80	793.00
	09/14/16 18:40:59	43110	16.05	4.91	0.31	3.52	0.23	81.80	793.00
	09/14/16 18:41:29	43140	16.10	4.88	0.29	3.47	0.22	81.70	793.00
	09/14/16 18:41:59	43170	16.06	4.85	0.31	3.51	0.22	81.70	793.00
	09/14/16 18:42:29	43200	16.15	4.71	0.40	3.48	0.23	81.70	791.00
	09/14/16 18:42:59	43230	17.23	5.35	0.82	2.72	0.23	81.70	791.00
	09/14/16 18:43:29	43260	17.39	6.82	0.87	2.57	0.22	81.60	790.00
	09/14/16 18:43:59	43290	17.33	7.14	0.85	2.61	0.22	81.60	790.00
	09/14/16 18:44:29	43320	17.38	7.02	0.87	2.58	0.11	81.50	558.00
	09/14/16 18:44:59	43350	17.35	7.03	0.88	2.60	0.11	81.50	558.00
	09/14/16 18:45:29	43380	17.36	7.03	0.92	2.60	0.11	81.50	548.00
	09/14/16 18:45:59	43410	17.33	7.00	0.87	2.61	0.11	81.50	548.00
	09/14/16 18:46:29	43440	17.37	6.93	0.91	2.58	0.11	81.50	553.00
	09/14/16 18:46:59	43470	17.15	6.98	0.71	2.69	0.11	81.50	553.00
	09/14/16 18:47:29	43500	16.18	6.57	0.36	3.40	0.11	81.50	553.00
	09/14/16 18:47:59	43530	16.19	5.53	0.36	3.42	0.11	81.50	553.00
	09/14/16 18:48:29	43560	16.06	5.31	0.34	3.50	0.17	81.50	660.00
A3	09/14/16 18:48:59	43590	16.12	5.12	0.35	3.48	0.17	81.50	660.00
	09/14/16 18:49:29	43620	16.14	5.10	0.36	3.46	0.23	81.40	788.00
	09/14/16 18:49:59	43650	16.11	5.16	0.35	3.47	0.23	81.40	788.00
	09/14/16 18:50:29	43680	16.09	5.03	0.36	3.49	0.22	81.30	788.00
	09/14/16 18:50:59	43710	16.10	4.90	0.34	3.49	0.22	81.30	788.00
	09/14/16 18:51:29	43740	16.17	4.93	0.37	3.44	0.22	81.20	789.00
	09/14/16 18:51:59	43770	16.14	4.94	0.36	3.45	0.22	81.20	789.00
	09/14/16 18:52:29	43800	16.13	4.98	0.35	3.46	0.22	81.20	791.00
	09/14/16 18:52:59	43830	16.09	4.98	0.36	3.50	0.22	81.20	791.00
	09/14/16 18:53:29	43860	16.10	4.98	0.35	3.49	0.23	81.10	789.00
	09/14/16 18:53:59	43890	16.09	4.84	0.34	3.50	0.23	81.10	789.00
	09/14/16 18:54:29	43920	16.14	4.89	0.36	3.45	0.22	81.10	789.00
	09/14/16 18:54:59	43950	16.14	5.09	0.36	3.47	0.22	81.10	789.00
	09/14/16 18:55:29	43980	16.10	5.04	0.34	3.48	0.23	81.00	792.00
	09/14/16 18:55:59	44010	16.04	4.92	0.31	3.53	0.23	81.00	792.00
	09/14/16 18:56:29	44040	16.04	4.72	0.32	3.54	0.23	80.90	789.00
	09/14/16 18:56:59	44070	16.11	4.80	0.36	3.48	0.23	80.90	789.00
	09/14/16 18:57:29	44100	16.10	5.00	0.35	3.49	0.23	80.90	792.00
	09/14/16 18:57:59	44130	16.16	4.87	0.34	3.45	0.23	80.90	792.00
	09/14/16 18:58:29	44160	16.13	4.70	0.31	3.48	0.23	80.80	790.00
	09/14/16 18:58:59	44190	16.11	4.58	0.32	3.48	0.23	80.80	790.00
	09/14/16 18:59:29	44220	16.15	4.68	0.35	3.44	0.24	80.70	793.00
	09/14/16 18:59:59	44250	16.07	4.70	0.33	3.52	0.24	80.70	793.00
	09/14/16 19:00:29	44280	16.23	4.48	0.38	3.42	0.24	80.60	793.00
	09/14/16 19:00:59	44310	17.13	5.09	0.74	2.79	0.24	80.60	793.00
	09/14/16 19:01:29	44340	17.34	6.46	0.82	2.61	0.24	80.40	791.00
	09/14/16 19:01:59	44370	17.40	6.67	0.88	2.58	0.24	80.40	791.00
	09/14/16 19:02:29	44400	17.39	6.79	0.90	2.58	0.14	80.30	591.00
	09/14/16 19:02:59	44430	17.37	6.91	0.87	2.60	0.14	80.30	591.00
	09/14/16 19:03:29	44460	17.43	6.84	0.93	2.55	0.11	80.20	552.00
	09/14/16 19:03:59	44490	17.40	6.95	0.94	2.57	0.11	80.20	552.00
	09/14/16 19:04:29	44520	17.39	6.96	0.94	2.57	0.11	80.20	550.00
	09/14/16 19:04:59	44550	17.43	7.01	0.97	2.55	0.11	80.20	550.00
	09/14/16 19:05:29	44580	16.59	6.89	0.48	3.06	0.11	80.10	550.00
	09/14/16 19:05:59	44610	16.13	6.03	0.35	3.47	0.11	80.10	550.00
	09/14/16 19:06:29	44640	16.13	5.27	0.35	3.47	0.12	80.00	560.00
	09/14/16 19:06:59	44670	16.06	5.06	0.34	3.51	0.12	80.00	560.00
	09/14/16 19:07:29	44700	16.18	4.82	0.34	3.44	0.23	79.90	791.00
	09/14/16 19:07:59	44730	16.13	4.97	0.35	3.47	0.23	79.90	791.00
	09/14/16 19:08:29	44760	16.14	5.10	0.35	3.47	0.23	79.80	791.00
	09/14/16 19:08:59	44790	16.08	5.08	0.36	3.50	0.23	79.80	791.00

Superior Fabrication, INC
SCD-48
Elk City Plant

Unit Data

Meas. Stack Moisture	5.1	%
Stack Exhaust Flow (M2)	138,933	SCFH

Weather Data

Barometric Pressure	30.12	in. Hg
Relative Humidity	59	%
Ambient Temperature	81	^{o}F
Specific Humidity	0.013280	lb H_2O / lb air

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

Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
09/14/16 19:09:29	44820	16.09	4.92	0.34	3.50	0.23	79.60	794.00
09/14/16 19:09:59	44850	16.09	4.65	0.35	3.50	0.23	79.60	794.00
09/14/16 19:10:29	44880	16.14	4.67	0.36	3.46	0.22	79.50	791.00
09/14/16 19:10:59	44910	16.15	4.96	0.36	3.46	0.22	79.50	791.00
09/14/16 19:11:29	44940	16.14	5.08	0.36	3.46	0.23	79.30	797.00
09/14/16 19:11:59	44970	16.12	5.10	0.33	3.47	0.23	79.30	797.00
09/14/16 19:12:29	45000	16.10	4.96	0.34	3.50	0.23	79.20	797.00
09/14/16 19:12:59	45030	16.13	5.07	0.33	3.47	0.23	79.20	797.00
09/14/16 19:13:29	45060	16.16	5.07	0.31	3.44	0.24	79.10	795.00
09/14/16 19:13:59	45090	16.12	5.02	0.33	3.48	0.24	79.10	795.00
09/14/16 19:14:29	45120	16.13	4.92	0.36	3.46	0.24	79.00	795.00
09/14/16 19:14:59	45150	16.26	4.91	0.43	3.42	0.24	79.00	795.00
09/14/16 19:15:29	45180	17.29	5.60	0.79	2.68	0.17	78.90	677.00
09/14/16 19:15:59	45210	17.39	6.62	0.85	2.58	0.17	78.90	677.00
09/14/16 19:16:29	45240	17.38	6.83	0.87	2.58	0.12	78.80	554.00
09/14/16 19:16:59	45270	17.39	6.88	0.90	2.58	0.12	78.80	554.00
09/14/16 19:17:29	45300	17.40	6.99	0.92	2.57	0.12	78.70	554.00
09/14/16 19:17:59	45330	17.38	7.03	0.94	2.58	0.12	78.70	554.00
RAW AVERAGE		**16.47**	**5.44**	**0.49**	**3.22**	**0.19**	**81.86**	**714.87**

		O_2	CO	THC	CO_2	Press. Trans	Temp. Trans.	F-Flow Trans.
	Serial Number:	INSTO2-0011	INST-CO-0022	INST-TH-0001	INST-C2-0013	1633266	1633266	1633266
		(%)	**(ppmvd)**	**(ppmvw)**	**(%)**	**(in. H_2O)**	**(^{o}F)**	**(SCFH)**
Bias	**Initial Zero**	0.07	0.05	0.05	-0.02			
	Final Zero	0.03	0.02	0.05	0.01			
	Avg. Zero	0.05	0.04	0.05	-0.01			
	Initial UpScale	11.97	9.18	3.12	9.01			
	Final UpScale	11.98	9.21	3.10	9.00			
	Avg. UpScale	11.98	9.20	3.11	9.01			
Upscale Cal Gas		12.00	9.24	3.00	8.99			

EMISSIONS DATA	O_2	CO	THC	CO_2
Corrected Raw Average (ppm/% dry basis)	16.53	5.45	0.44	3.21
Corrected Raw Average (ppm/% wet basis)	15.69	5.17	0.41	3.05
Emission Rate (lb/hr)	N/A	0.06	0.01	N/A

Superior Fabrication, INC
September 15, 2016
SCD-48
Elk City Plant

Unit Data

Meas. Stack Moisture	4.6	%
Stack Exhaust Flow (M2)	135,457	SCFH

Weather Data

Barometric Pressure	30.14	in. Hg
Relative Humidity	73	%
Ambient Temperature	75	^{o}F
Specific Humidity	0.013477	lb H_2O / lb air

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

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
A1	09/15/16 11:37:00	13860	17.79	3.81	0.83	2.31	0.11	73.40	546.00
	09/15/16 11:37:30	13890	17.79	3.82	0.82	2.33	0.11	73.40	546.00
	09/15/16 11:38:00	13920	17.78	3.75	0.81	2.33	0.10	73.40	546.00
	09/15/16 11:38:30	13950	17.78	3.80	0.80	2.34	0.10	73.40	546.00
	09/15/16 11:39:00	13980	17.78	3.80	0.81	2.34	0.10	73.50	548.00
	09/15/16 11:39:30	14010	17.80	3.82	0.84	2.33	0.10	73.50	548.00
	09/15/16 11:40:00	14040	17.76	3.81	0.81	2.32	0.23	73.60	847.00
	09/15/16 11:40:30	14070	17.59	3.74	0.70	2.38	0.23	73.60	847.00
	09/15/16 11:41:00	14100	16.43	3.54	0.49	3.27	0.22	73.60	805.00
	09/15/16 11:41:30	14130	16.63	3.62	0.52	3.11	0.22	73.60	805.00
	09/15/16 11:42:00	14160	16.64	3.91	0.51	3.10	0.21	73.70	804.00
	09/15/16 11:42:30	14190	16.67	4.15	0.52	3.08	0.21	73.70	804.00
	09/15/16 11:43:00	14220	16.65	4.31	0.51	3.10	0.21	73.80	804.00
	09/15/16 11:43:30	14250	16.65	4.35	0.51	3.10	0.21	73.80	804.00
	09/15/16 11:44:00	14280	16.68	4.37	0.51	3.08	0.22	73.90	805.00
	09/15/16 11:44:30	14310	16.67	4.48	0.51	3.08	0.22	73.90	805.00
	09/15/16 11:45:00	14340	16.63	4.50	0.48	3.10	0.22	74.00	804.00
	09/15/16 11:45:30	14370	16.66	4.35	0.48	3.08	0.22	74.00	804.00
	09/15/16 11:46:00	14400	16.65	4.35	0.47	3.09	0.21	74.00	804.00
	09/15/16 11:46:30	14430	16.66	4.39	0.47	3.11	0.21	74.00	804.00
	09/15/16 11:47:00	14460	16.64	4.31	0.45	3.13	0.21	74.10	804.00
	09/15/16 11:47:30	14490	16.64	4.17	0.47	3.13	0.21	74.10	804.00
	09/15/16 11:48:00	14520	16.68	4.11	0.49	3.09	0.22	74.20	804.00
	09/15/16 11:48:30	14550	16.71	4.11	0.47	3.08	0.22	74.20	804.00
	09/15/16 11:49:00	14580	16.64	4.01	0.45	3.12	0.22	74.20	804.00
	09/15/16 11:49:30	14610	16.68	3.73	0.47	3.11	0.22	74.20	804.00
	09/15/16 11:50:00	14640	16.68	3.68	0.47	3.09	0.21	74.20	798.00
	09/15/16 11:50:30	14670	16.70	3.79	0.48	3.09	0.21	74.20	798.00
	09/15/16 11:51:00	14700	16.69	3.83	0.48	3.09	0.22	74.20	799.00
	09/15/16 11:51:30	14730	16.66	3.81	0.46	3.11	0.22	74.20	799.00
	09/15/16 11:52:00	14760	16.66	3.77	0.45	3.11	0.21	74.20	798.00
	09/15/16 11:52:30	14790	16.70	3.82	0.45	3.09	0.21	74.20	798.00
	09/15/16 11:53:00	14820	16.69	3.92	0.46	3.09	0.22	74.30	798.00
	09/15/16 11:53:30	14850	16.68	3.91	0.46	3.09	0.22	74.30	798.00
	09/15/16 11:54:00	14880	16.67	3.88	0.46	3.11	0.19	74.20	740.00
	09/15/16 11:54:30	14910	16.68	3.79	0.46	3.08	0.19	74.20	740.00
	09/15/16 11:55:00	14940	16.67	3.84	0.47	3.10	0.11	74.30	561.00
	09/15/16 11:55:30	14970	17.46	3.83	0.70	2.60	0.11	74.30	561.00
	09/15/16 11:56:00	15000	17.78	3.89	0.77	2.33	0.11	74.40	553.00
	09/15/16 11:56:30	15030	17.78	3.75	0.76	2.34	0.11	74.40	553.00
	09/15/16 11:57:00	15060	17.75	3.68	0.77	2.35	0.11	74.40	555.00
A2	09/15/16 11:57:30	15090	17.77	3.65	0.78	2.34	0.11	74.40	555.00
	09/15/16 11:58:00	15120	17.75	3.62	0.77	2.35	0.11	74.40	553.00
	09/15/16 11:58:30	15150	17.80	3.61	0.79	2.33	0.11	74.40	553.00
	09/15/16 11:59:00	15180	17.79	3.65	0.80	2.32	0.13	74.40	582.00
	09/15/16 11:59:30	15210	17.79	3.75	0.79	2.32	0.13	74.40	582.00
	09/15/16 12:00:00	15240	17.77	3.81	0.80	2.34	0.21	74.30	801.00
	09/15/16 12:00:30	15270	16.99	3.79	0.53	2.80	0.21	74.30	801.00
	09/15/16 12:01:00	15300	16.67	3.73	0.49	3.11	0.22	74.20	804.00
	09/15/16 12:01:30	15330	16.65	3.85	0.46	3.10	0.22	74.20	804.00
	09/15/16 12:02:00	15360	16.64	3.88	0.46	3.11	0.22	74.10	804.00
	09/15/16 12:02:30	15390	16.68	3.85	0.48	3.10	0.22	74.10	804.00
	09/15/16 12:03:00	15420	16.68	3.85	0.48	3.09	0.22	74.00	804.00
	09/15/16 12:03:30	15450	16.68	3.81	0.47	3.09	0.22	74.00	804.00
	09/15/16 12:04:00	15480	16.67	3.75	0.46	3.10	0.22	73.90	802.00
	09/15/16 12:04:30	15510	16.71	3.85	0.48	3.06	0.22	73.90	802.00
	09/15/16 12:05:00	15540	16.67	4.00	0.48	3.09	0.22	73.90	799.00
	09/15/16 12:05:30	15570	16.67	3.88	0.46	3.09	0.22	73.90	799.00
	09/15/16 12:06:00	15600	16.63	3.84	0.43	3.13	0.22	73.80	805.00
	09/15/16 12:06:30	15630	16.66	3.71	0.44	3.10	0.22	73.80	805.00

Superior Fabrication, INC
September 15, 2016
SCD-48
Elk City Plant

Unit Data

Meas. Stack Moisture	4.6	%
Stack Exhaust Flow (M2)	135,457	SCFH

Weather Data

Barometric Pressure	30.14	in. Hg
Relative Humidity	73	%
Ambient Temperature	75	^{o}F
Specific Humidity	0.013477	lb H_2O / lb air

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

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
	09/15/16 12:07:00	15660	16.69	3.72	0.46	3.08	0.21	73.80	802.00
	09/15/16 12:07:30	15690	16.72	3.78	0.47	3.06	0.21	73.80	802.00
	09/15/16 12:08:00	15720	16.68	3.81	0.45	3.09	0.22	73.80	804.00
	09/15/16 12:08:30	15750	16.60	3.64	0.45	3.14	0.22	73.80	804.00
	09/15/16 12:09:00	15780	16.64	3.46	0.45	3.12	0.22	73.70	805.00
	09/15/16 12:09:30	15810	16.66	3.45	0.45	3.10	0.22	73.70	805.00
	09/15/16 12:10:00	15840	16.66	3.58	0.47	3.09	0.22	73.60	805.00
	09/15/16 12:10:30	15870	16.67	3.68	0.45	3.08	0.22	73.60	805.00
	09/15/16 12:11:00	15900	16.63	3.75	0.44	3.11	0.16	73.40	681.00
	09/15/16 12:11:30	15930	16.65	3.71	0.46	3.10	0.16	73.40	681.00
	09/15/16 12:12:00	15960	17.10	3.80	0.62	2.83	0.11	73.20	554.00
	09/15/16 12:12:30	15990	17.78	3.98	0.74	2.33	0.11	73.20	554.00
	09/15/16 12:13:00	16020	17.77	3.73	0.75	2.33	0.11	73.00	557.00
	09/15/16 12:13:30	16050	17.75	3.53	0.74	2.34	0.11	73.00	557.00
	09/15/16 12:14:00	16080	17.76	3.43	0.74	2.34	0.11	72.90	555.00
	09/15/16 12:14:30	16110	17.76	3.39	0.73	2.33	0.11	72.90	555.00
	09/15/16 12:15:00	16140	17.77	3.40	0.73	2.33	0.11	72.60	552.00
	09/15/16 12:15:30	16170	17.78	3.48	0.75	2.32	0.11	72.60	552.00
	09/15/16 12:16:00	16200	17.80	3.51	0.75	2.31	0.22	72.30	791.00
	09/15/16 12:16:30	16230	17.60	3.60	0.64	2.39	0.22	72.30	791.00
	09/15/16 12:17:00	16260	16.72	3.53	0.44	3.03	0.20	71.90	796.00
A3	09/15/16 12:17:30	16290	16.62	3.45	0.44	3.14	0.20	71.90	796.00
	09/15/16 12:18:00	16320	16.70	3.52	0.44	3.06	0.21	71.50	795.00
	09/15/16 12:18:30	16350	16.71	3.65	0.45	3.06	0.21	71.50	795.00
	09/15/16 12:19:00	16380	16.68	3.81	0.45	3.08	0.21	71.20	792.00
	09/15/16 12:19:30	16410	16.69	3.75	0.46	3.06	0.21	71.20	792.00
	09/15/16 12:20:00	16440	16.71	3.79	0.46	3.06	0.21	70.90	790.00
	09/15/16 12:20:30	16470	16.70	3.77	0.44	3.05	0.21	70.90	790.00
	09/15/16 12:21:00	16500	16.67	3.77	0.43	3.07	0.21	70.70	788.00
	09/15/16 12:21:30	16530	16.69	3.71	0.45	3.06	0.21	70.70	788.00
	09/15/16 12:22:00	16560	16.68	3.72	0.45	3.08	0.21	70.50	788.00
	09/15/16 12:22:30	16590	16.69	3.71	0.45	3.07	0.21	70.50	788.00
	09/15/16 12:23:00	16620	16.71	3.71	0.46	3.06	0.21	70.30	794.00
	09/15/16 12:23:30	16650	16.68	3.66	0.45	3.08	0.21	70.30	794.00
	09/15/16 12:24:00	16680	16.74	3.68	0.48	3.04	0.22	70.10	789.00
	09/15/16 12:24:30	16710	16.71	3.78	0.46	3.06	0.22	70.10	789.00
	09/15/16 12:25:00	16740	16.72	3.81	0.45	3.05	0.23	69.90	787.00
	09/15/16 12:25:30	16770	16.71	3.80	0.45	3.05	0.23	69.90	787.00
	09/15/16 12:26:00	16800	16.70	3.81	0.45	3.05	0.23	69.80	788.00
	09/15/16 12:26:30	16830	16.71	3.70	0.45	3.05	0.23	69.80	788.00
	09/15/16 12:27:00	16860	16.71	3.70	0.45	3.05	0.22	69.70	788.00
	09/15/16 12:27:30	16890	16.71	3.69	0.45	3.04	0.22	69.70	788.00
	09/15/16 12:28:00	16920	16.73	3.71	0.46	3.05	0.22	69.60	785.00
	09/15/16 12:28:30	16950	16.77	3.76	0.44	3.02	0.22	69.60	785.00
	09/15/16 12:29:00	16980	16.75	3.88	0.44	3.03	0.13	69.50	554.00
	09/15/16 12:29:30	17010	16.94	3.85	0.54	2.94	0.13	69.50	554.00
	09/15/16 12:30:00	17040	17.78	3.91	0.75	2.33	0.12	69.60	561.00
	09/15/16 12:30:30	17070	17.74	3.79	0.74	2.35	0.12	69.60	561.00
	09/15/16 12:31:00	17100	17.74	3.53	0.74	2.35	0.13	69.60	559.00
	09/15/16 12:31:30	17130	17.74	3.51	0.75	2.35	0.13	69.60	559.00
	09/15/16 12:32:00	17160	17.76	3.51	0.75	2.34	0.13	69.60	559.00
	09/15/16 12:32:30	17190	17.76	3.40	0.74	2.33	0.13	69.60	559.00
	09/15/16 12:33:00	17220	17.75	3.45	0.73	2.34	0.12	69.60	556.00
	09/15/16 12:33:30	17250	17.75	3.45	0.73	2.34	0.12	69.60	556.00
	09/15/16 12:34:00	17280	17.77	3.42	0.73	2.33	0.23	69.60	798.00
	09/15/16 12:34:30	17310	17.64	3.46	0.64	2.37	0.23	69.60	798.00
	09/15/16 12:35:00	17340	16.67	3.41	0.45	3.07	0.24	69.50	802.00
	09/15/16 12:35:30	17370	16.69	3.64	0.44	3.07	0.24	69.50	802.00
	09/15/16 12:36:00	17400	16.70	3.82	0.44	3.07	0.23	69.40	799.00
	09/15/16 12:36:30	17430	16.66	3.76	0.45	3.10	0.23	69.40	799.00

Superior Fabrication, INC
September 15, 2016
SCD-48
Elk City Plant

Unit Data

Meas. Stack Moisture	4.6	%
Stack Exhaust Flow (M2)	135,457	SCFH

Weather Data

Barometric Pressure	30.14	in. Hg
Relative Humidity	73	%
Ambient Temperature	75	^oF
Specific Humidity	0.013477	lb H_2O / lb air

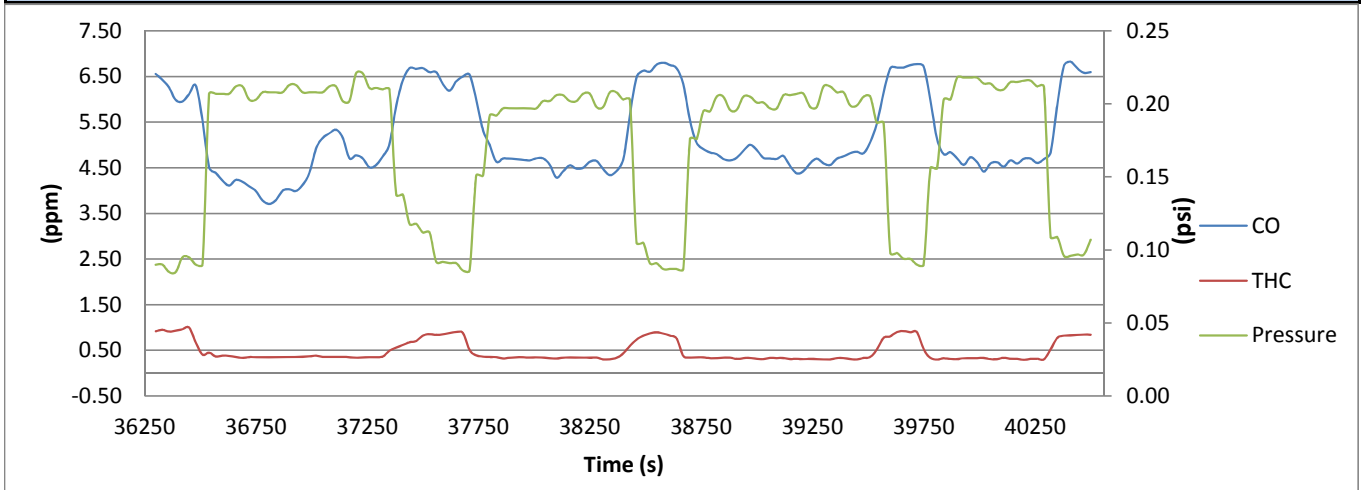
0-30-0 Load, Run - SCD-48 R3

Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^oF	Fuel Flow SCFH
09/15/16 12:37:00	17460	16.71	3.79	0.45	3.06	0.24	69.40	796.00
09/15/16 12:37:30	17490	16.72	3.81	0.45	3.05	0.24	69.40	796.00
09/15/16 12:38:00	17520	16.69	3.80	0.45	3.07	0.24	69.40	796.00
09/15/16 12:38:30	17550	16.70	3.70	0.42	3.06	0.24	69.40	796.00
09/15/16 12:39:00	17580	16.73	3.71	0.43	3.06	0.24	69.40	797.00
09/15/16 12:39:30	17610	16.70	3.67	0.41	3.06	0.24	69.40	797.00
09/15/16 12:40:00	17640	16.71	3.68	0.45	3.06	0.24	69.50	794.00
09/15/16 12:40:30	17670	16.70	3.71	0.44	3.07	0.24	69.50	794.00
09/15/16 12:41:00	17700	16.72	3.71	0.45	3.06	0.23	69.50	796.00
09/15/16 12:41:30	17730	16.71	3.74	0.45	3.06	0.23	69.50	796.00
09/15/16 12:42:00	17760	16.74	3.75	0.46	3.04	0.24	69.60	794.00
09/15/16 12:42:30	17790	16.73	3.84	0.45	3.05	0.24	69.60	794.00
09/15/16 12:43:00	17820	16.72	3.88	0.45	3.06	0.14	69.60	577.00
09/15/16 12:43:30	17850	16.70	3.81	0.44	3.06	0.14	69.60	577.00
09/15/16 12:44:00	17880	16.73	3.72	0.44	3.04	0.12	69.80	564.00
09/15/16 12:44:30	17910	17.04	3.79	0.59	2.89	0.12	69.80	564.00
09/15/16 12:45:00	17940	17.70	3.89	0.70	2.37	0.15	69.90	562.00
09/15/16 12:45:30	17970	17.71	3.68	0.71	2.37	0.15	69.90	562.00
09/15/16 12:46:00	18000	17.74	3.52	0.73	2.36	0.12	70.00	560.00
09/15/16 12:46:30	18030	17.76	3.56	0.75	2.34	0.12	70.00	560.00
09/15/16 12:47:00	18060	17.73	3.61	0.74	2.35	0.12	70.10	561.00
RAW AVERAGE		**17.01**	**3.77**	**0.55**	**2.86**	**0.19**	**72.15**	**723.00**

		O_2	CO	THC	CO_2	Press. Trans	Temp. Trans.	F-Flow Trans.
	Serial Number:	INSTO2-0011	INST-CO-0022	INST-TH-0001	INST-C2-0013	1633266	1633266	1633266
		(%)	(ppmvd)	(ppmvw)	(%)	(in. H_2O)	(^oF)	(SCFH)
Bias	**Initial Zero**	0.05	-0.09	0.01	-0.02			
	Final Zero	0.06	-0.06	0.09	0.01			
	Avg. Zero	0.06	-0.08	0.05	-0.01			
	Initial UpScale	11.98	9.12	3.02	8.99			
	Final UpScale	11.99	9.11	3.13	8.98			
	Avg. UpScale	11.99	9.12	3.08	8.99			
Upscale Cal Gas		12.00	9.24	3.00	8.99			

EMISSIONS DATA	O_2	CO	THC	CO_2
Corrected Raw Average (ppm/% dry basis)	17.05	3.87	0.50	2.86
Corrected Raw Average (ppm/% wet basis)	16.26	3.69	0.47	2.73
Emission Rate (lb/hr)	N/A	0.04	0.01	N/A

SCD-48 R1



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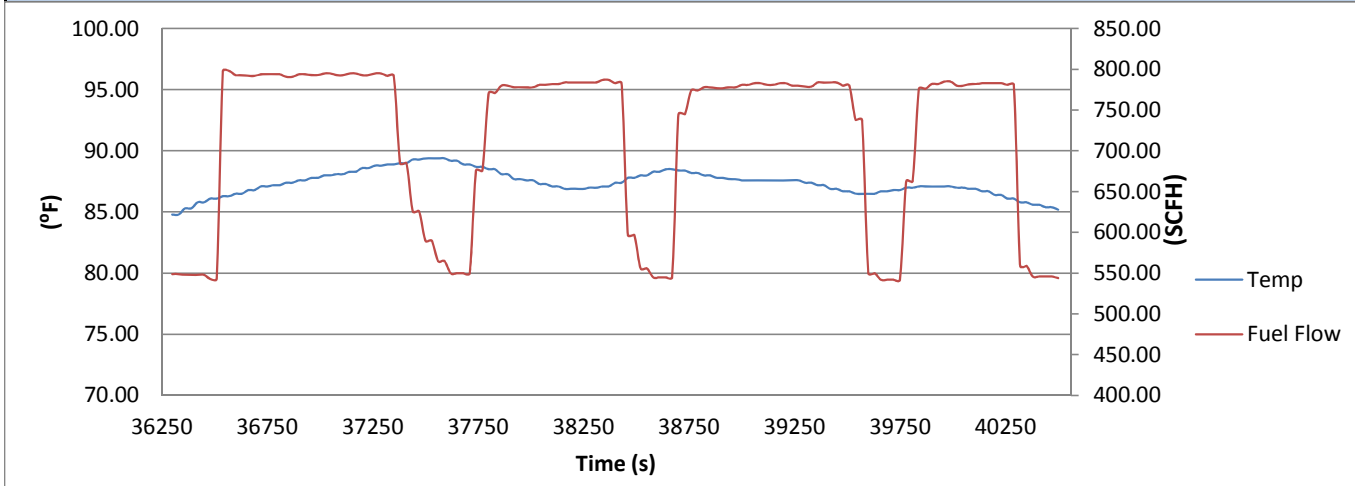

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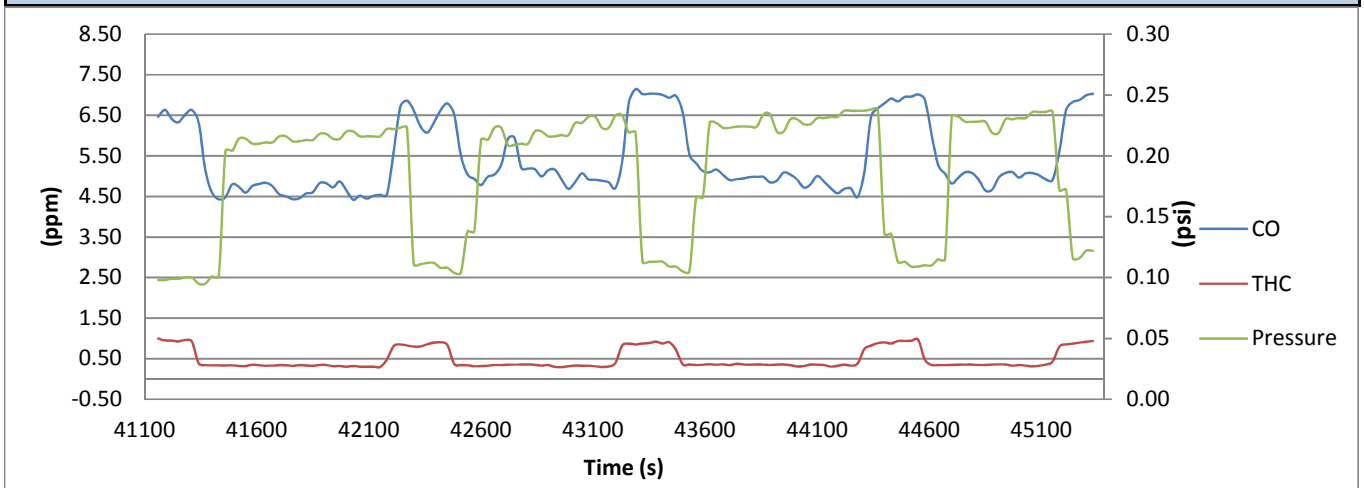

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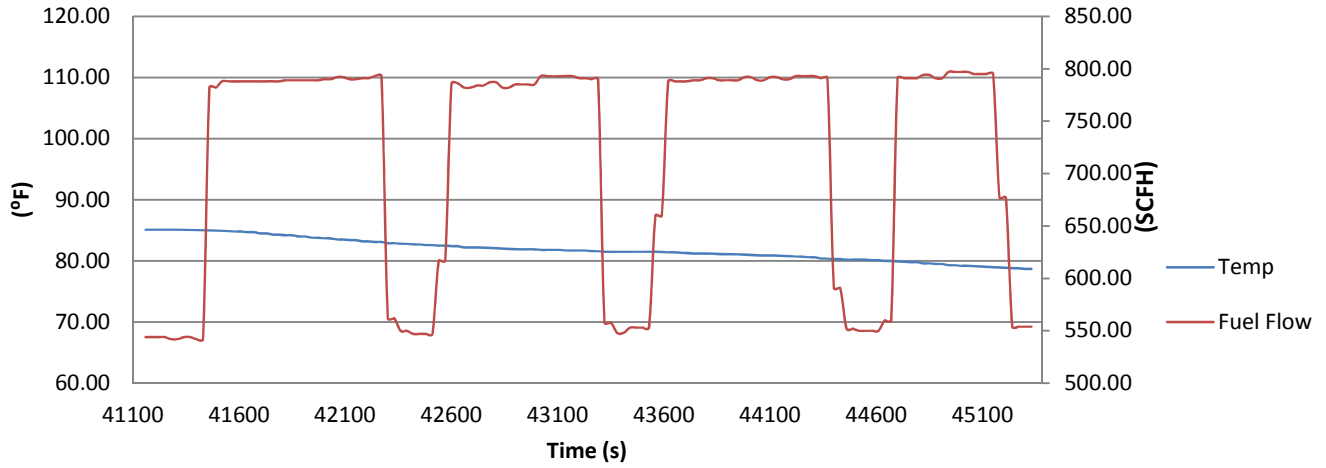

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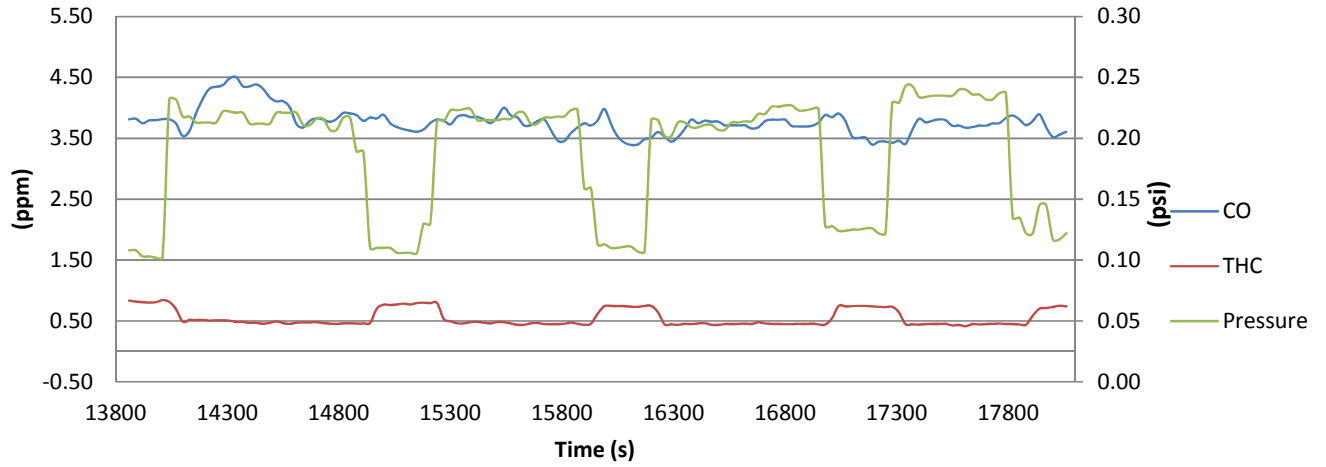

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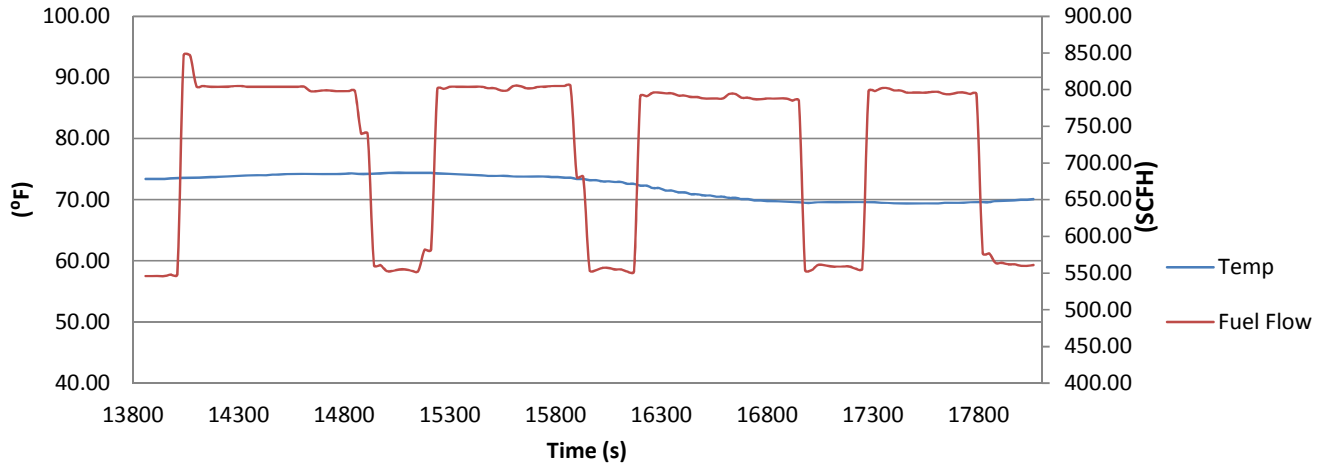
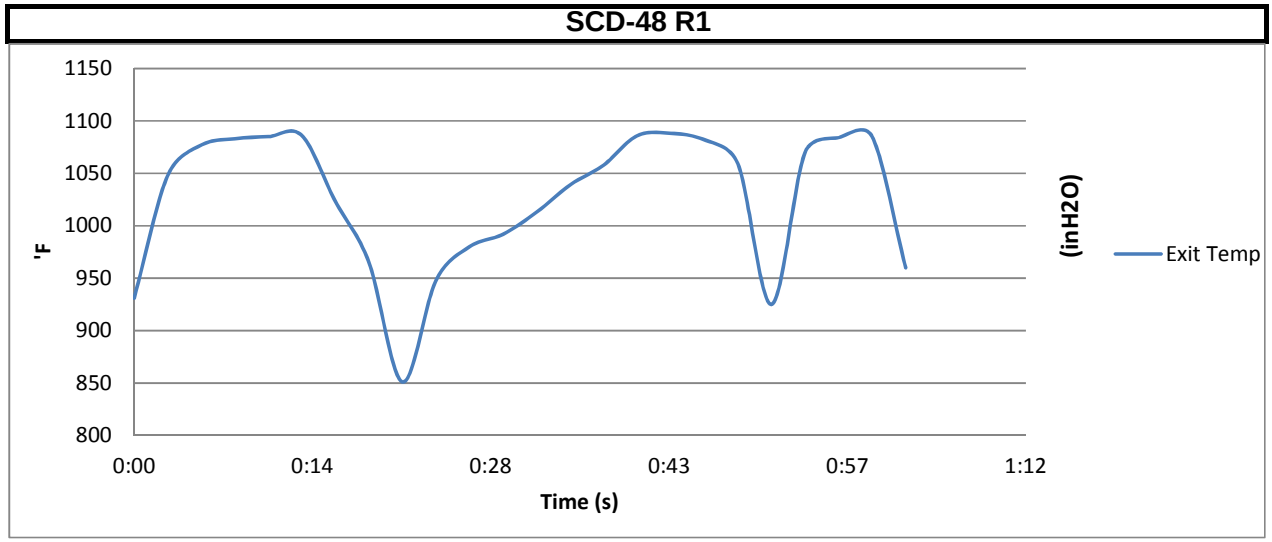
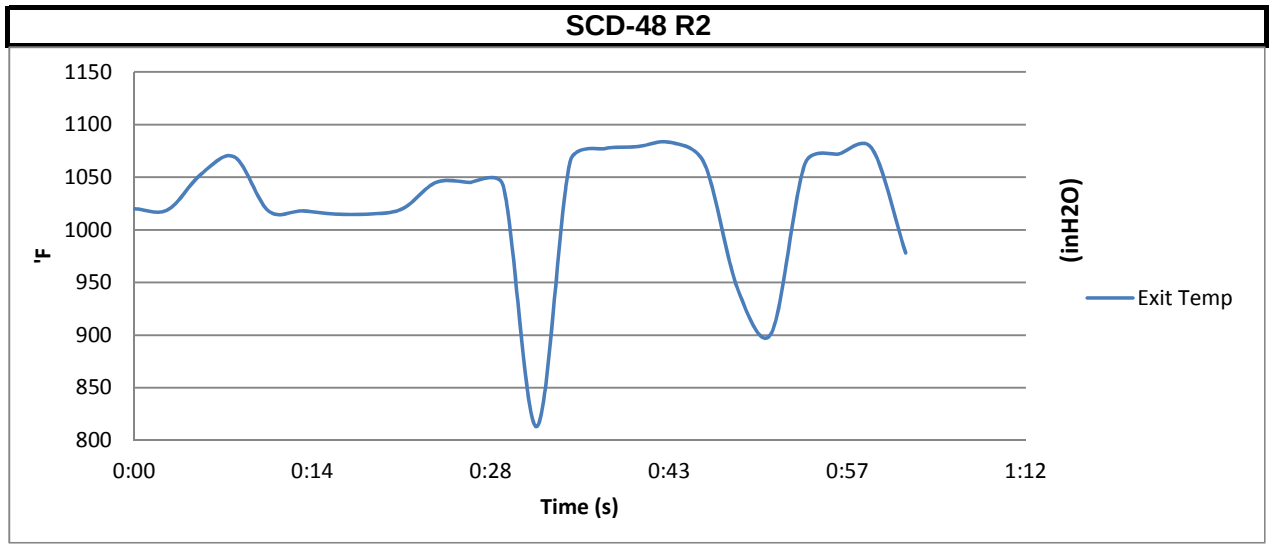



SCD-48 R1
1150
1100
1050
1000
950
900
850
800
'F
0:00
0:14
0:28
0:43
0:57
1:12
Time (s)
(inH2O)
Exit Temp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1100
1050
1000
950
900
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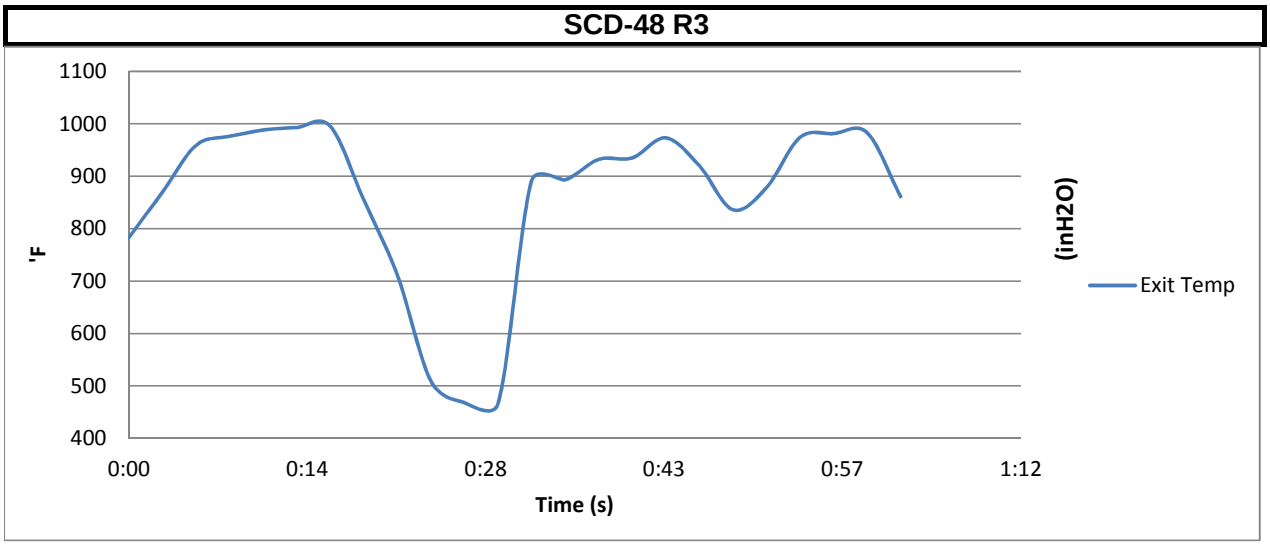
800
'F
0:00
0:14
0:28
0:43
0:57
1:12
Time (s)
(inH2O)
Exit Temp


SCD-48 R3
1100
1000
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700
600
500
400
'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-48
Fuel Type	Gas, Propene

Test Information			
Project #		sfi-elkcity.ok-comp#1	
Operator		DA/BB	
Date for Preliminary Run	(mm/dd/yy)	09/13/16	
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		**1**	**2**	**3**	
Test Date	(mm/dd/yy)	09/15/16	09/15/16	09/15/16	
Load	% or w/DB	30-70-30	30-70-30	30-70-30	
Meter Box Number	from ACS	SAMP-CP-0007	SAMP-CP-0007	SAMP-CP-0007	
Meter Calibration Factor	(Y)	0.976	0.976	0.976	
Orifice Meter Coefficient	($\Delta H_@$)	1.744	1.744	1.744	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-0002	SAMP-BC-0002	SAMP-BC-0002	

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

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

Plant Name	Elk City Facilty
Sampling Location	SCD-48
Project #	sfi-elkcity.ok-comp#1

Historical Data	**30-70-30%-1**	**30-70-30%-2**	**30-70-30%-3**	**Average**	**Units**
Run Start Time	14:39	16:01	17:22		hh:mm
Run Stop Time	15:49	17:11	18:32		hh:mm
Test Date	09/15/16	09/15/16	09/15/16		mm/dd/yy
Meter Calibration Factor	0.976	0.976	0.976		
Pitot Tube Coefficient	0.840	0.840	0.840		
Initial Meter Volume	737.700	787.690	838.690		ft^3
Final Meter Volume	786.990	838.220	888.500		ft^3
Total Meter Volume	49.290	50.530	49.810	49.877	ft^3
Total Sampling Time	65.00	65.00	65.00	65.00	min
Average Meter Temperature	84.08	87.83	88.27	86.73	°F
Average Stack Temperature	1348.67	1304.17	1371.67	1341.50	°F
Barometric Pressure	30.02	30.02	30.01	30.02	in Hg
Stack Static Pressure	0.00	0.00	0.00	0.00	in H_2O
Absolute Stack Pressure	30.02	30.02	30.01	30.02	in Hg
Average Orifice Pressure Drop	1.70	1.70	1.70	1.70	in H_2O
Absolute Meter Pressure	30.15	30.15	30.14	30.14	in Hg
Avg Square Root Pitot Pressure	0.11	0.11	0.12	0.11	√(in H_2O)
Moisture Content Data	**30-70-30%-1**	**30-70-30%-2**	**30-70-30%-3**	**Average**	**Units**
Impinger Water Weight Gain	46.20	37.40	45.30	42.97	g
Silica Gel Weight Gain	13.40	11.90	12.60	12.63	g
Total Water Volume Collected	59.71	49.39	58.00	55.70	ml
Standard Water Vapor Volume	2.81	2.32	2.73	2.62	scf
Standard Meter Volume	47.0	47.9	47.2	47.4	dscf
Calculated Stack Moisture	5.64	4.63	5.47	5.25	%
Saturated Stack Moisture	100.00	100.00	100.00	100.00	%
Reported Stack Moisture Content	5.64	4.63	5.47	5.25	%
Method 3C Gas Analysis Data	**30-70-30%-1**	**30-70-30%-2**	**30-70-30%-3**	**Average**	**Units**
Carbon Dioxide Content	4.4	3.8	5.0	4.4	%
Oxygen Content	15.0	16.0	14.7	15.2	%
Nitrogen Content	80.5	80.2	80.3	80.3	%
Stack Dry Molecular Weight	29.28	29.23	29.38	29.30	lb/lb-mole
Stack Wet Molecular Weight	28.65	28.71	28.76	28.70	lb/lb-mole
Percent Excess Air	239.9	309.3	225.8	258.3	%
Volumetric Flow Rate Data	**30-70-30%-1**	**30-70-30%-2**	**30-70-30%-3**	**Average**	**Units**
Average Stack Gas Velocity	11.78	10.82	12.58	11.73	ft/sec
Stack Cross-Sectional Area	11.04	11.04	11.04	11.04	ft^2
Actual Stack Flow Rate	7,806	7,173	8,338	7,772	acfm
Wet Standard Stack Flow Rate	137	129	145	137	wkscfh
Dry Standard Stack Flow Rate	129,450	123,249	136,726	129,808	dscfh

METHOD 3C - DETERMINATION OF DRY MOLECULAR WEIGHT BY ANALYZER

Plant Name	Elk City Facilty	**Preliminary Date**	09/13/16		
Sampling Location	SCD-48	**Operator**	DA/BB		
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%-1		**Date**	09/15/16	**Run Start Time**	14:39		**Run Stop Time**	15:49
Sample Analysis Time	**CO_2 Conc.**	**O_2 Conc.**	**Methane Conc.**	**N_2 Conc.**	**Dry Molecular Weight**	**Calculated Fuel Factor**		**Excess Air**	**Fuel Factor in Range**
	(%CO_2)	(%O_2)	(ppmCO)	(%N_2)	(M_d)	$(F_o)_{avg}$		$(\%EA)_{avg}$	
hh:mm	%	%	ppm	%	lb/lb-mole			%	
01:10	4.4	15.0	0.0	80.5	29.28	1.335		239.9	N/A

Gas Analysis Data									
Run Number	30-70-30%-2		**Date**	09/15/16	**Run Start Time**	16:01		**Run Stop Time**	17:11
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			%	
01:10	3.8	16.0	0.0	80.2	29.23	1.307		309.3	N/A

Gas Analysis Data									
Run Number	30-70-30%-3		**Date**	09/15/16	**Run Start Time**	17:22		**Run Stop Time**	18:32
Sample Analysis Time	**CO_2 Conc.**	**O_2 Conc.**	**Methane Conc.**	**N_2 Conc.**	**Dry Molecular Weight**	**Calculated Fuel Factor**		**Excess Air**	**Fuel Factor in Range**
	(%CO_2)	(%O_2)	(ppmCO)	(%N_2)	(M_d)	$(F_o)_{avg}$		$(\%EA)_{avg}$	
hh:mm	%	%	ppm	%	lb/lb-mole			%	
01:10	5.0	14.7	0.0	80.3	29.38	1.250		225.8	N/A

METHOD 4 - DETERMINATION OF MOISTURE CONTENT IN STACK GASES

Plant Name	Elk City Facilty	**Preliminary Date**	09/13/16
Sampling Location	SCD-48	**Operator**	DA/BB
Project #	sfi-elkcity.ok-comp#1	**Ports Used**	2

Moisture Content Data									
Run Number		30-70-30%-1		**Date**	09/15/16	**Start Time**	14:39	**Stop Time**	15:49
Meter Box Number		SAMP-CP-0007				**Meter Cal Factor**	(Y)	0.976	
Total Meter Volume		(V_m)	49.290	dcf		**Barometric Pressure**	(P_b)	30.02	in Hg
Average Stack Temp		$(t_s)_{avg}$	1349	°F		**Stack Static Pressure**	(P_{static})	0.00	in H_2O
Average Meter Temp		$(t_m)_{avg}$	84	°F		**Avg Orifice Pressure**	$(\Delta H)_{avg}$	1.70	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)	861.10	677.30	583.60	933.00				
Initial Value	(V_i),(W_i)	825.90	667.70	582.20	919.60				
Net Value	(V_n),(W_n)	35.2	9.6	1.4	13.4				
Results									
Total Weight		(W_t)	59.60	g		**Water Vol Weighed**	($V_{wsg(std)}$)	2.810	scf
Std Meter Volume		($V_{m(std)}$)	47.036	dscf		**Sat. Moisture Content**	($B_{ws(svp)}$)	100.00	%
Calc Moisture Content		($B_{ws(calc)}$)	5.64	%		**Final Moisture Content**	(B_{ws})	5.64	%

Moisture Content Data									
Run Number		30-70-30%-2		**Date**	09/15/16	**Start Time**	16:01	**Stop Time**	17:11
Meter Box Number		SAMP-CP-0007				**Meter Cal Factor**	(Y)	0.976	
Total Meter Volume		(V_m)	50.530	dcf		**Barometric Pressure**	(P_b)	30.02	in Hg
Average Stack Temp		$(t_s)_{avg}$	1304	°F		**Stack Static Pressure**	(P_{static})	0.00	in H_2O
Average Meter Temp		$(t_m)_{avg}$	88	°F		**Avg Orifice Pressure**	$(\Delta H)_{avg}$	1.70	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)	886.60	687.70	585.10	944.90				
Initial Value	(V_i),(W_i)	861.10	677.30	583.60	933.00				
Net Value	(V_n),(W_n)	25.5	10.4	1.5	11.9				
Results									
Total Weight		(W_t)	49.30	g		**Water Vol Weighed**	($V_{wsg(std)}$)	2.324	scf
Std Meter Volume		($V_{m(std)}$)	47.889	dscf		**Sat. Moisture Content**	($B_{ws(svp)}$)	100.00	%
Calc Moisture Content		($B_{ws(calc)}$)	4.63	%		**Final Moisture Content**	(B_{ws})	4.63	%

Moisture Content Data									
Run Number		30-70-30%-3		**Date**	09/15/16	**Start Time**	17:22	**Stop Time**	18:32
Meter Box Number		SAMP-CP-0007				**Meter Cal Factor**	(Y)	0.976	
Total Meter Volume		(V_m)	49.810	dcf		**Barometric Pressure**	(P_b)	30.01	in Hg
Average Stack Temp		$(t_s)_{avg}$	1372	°F		**Stack Static Pressure**	(P_{static})	0.00	in H_2O
Average Meter Temp		$(t_m)_{avg}$	88	°F		**Avg Orifice Pressure**	$(\Delta H)_{avg}$	1.70	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)	794.40	698.20	588.10	957.50				
Initial Value	(V_i),(W_i)	762.60	687.70	585.10	944.90				
Net Value	(V_n),(W_n)	31.8	10.5	3.0	12.6				
Results									
Total Weight		(W_t)	57.90	g		**Water Vol Weighed**	($V_{wsg(std)}$)	2.730	scf
Std Meter Volume		($V_{m(std)}$)	47.154	dscf		**Sat. Moisture Content**	($B_{ws(svp)}$)	100.00	%
Calc Moisture Content		($B_{ws(calc)}$)	5.47	%		**Final Moisture Content**	(B_{ws})	5.47	%

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

Plant Name	Elk City Facilty
Sampling Location	SCD-48
Project #	sfi-elkcity.ok-comp#1

Date	09/15/16
Operator	DA/BB
Run Number	30-70-30%-1

Ideal Nozzle Diameter and IsoKinetic Factor Setup			
Pitot Coefficient	(C_p)	0.840	
Average Stack Temp	(t_s)	1348.7	°F
Average Meter Temp	(t_m)	84.1	
Orifice Meter Coefficient	($\Delta H@$)	1.744	in H_2O
Square Root ΔP	($\Delta p^{1/2}_{avg}$)	0.11	in H_2O
Stack Moisture Content	(B_{ws})	5.64	%
Stack Dry Molecular Weight	(M_d)	29.28	lb/lb-mole
Estimated Orifice Flow Rate	(Q_m)	0.75	acfm
ΔP to ΔH Isokinetic Factor	(K)		

Leak Checks					
Train	**Pre**	0.000	ft³/min@	15.0	in Hg
PASS	**Post**	0.000	ft³/min@	15.0	in Hg
Pitot	**Pre (+)**	0.3	in H_2O for	30.0	sec
< 3.0	**Pre (-)**	0.3	in H_2O for	30.0	sec
	Post (+)	0.3	in H_2O for	30.0	sec
	Post (-)	0.3	in H_2O for	30.0	sec

Sampling Equipment			
Meter Box Number	SAMP-CP-0007		
Meter Cal Factor	(Y)	0.976	
Low Flow Meter	SAMP-MN-0001		
Average Nozzle Diameter	(D_{na})		in
Suggested Nozzle Diameter	(D_{ni})	0.4671	in
Probe Number	SAMP-PF-0003		in
Probe Length	60		in
Liner Material	inconel		
Sample Case / Oven Number			
Impinger Case Number	SAMP-BC-0002		

Pressures			
Barometric Pressure	(P_b)	30.02	in Hg
Stack Static Pressure	(P_{static})	0.00	in H_2O
Absolute Stack Pressure	(P_s)	30.02	in Hg
Absolute Meter Pressure	(P_m)	30.15	in Hg

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

Run Time			
Start	14:39	**End**	15:49

Weights	**Imp 1**	**Imp 2**	**Imp 3**	**Imp 4**	**Imp 5**	**Imp 6**	**Imp 7**	**Imp 8**
Pre	825.9	667.7	582.2	919.6				
Post	861.1	677.3	583.6	933.0				

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	737.700	0.010	1.744	1.70	1259	250		61			80	78	8.0	0.10	10.15	1.686		40.457
A-2	2.7	00:02:43	739.450	0.010	1.744	1.70	1489	250		60			82	78	8.0	0.10	10.81	4.061		48.727
A-3	5.4	00:05:25	741.920	0.010	1.744	1.70	1462	250		58			82	78	9.0	0.10	10.74	5.964		47.715
A-4	8.1	00:08:07	743.900	0.010	1.744	1.70	1468	250		58			83	78	9.0	0.10	10.75	7.886		47.313
A-5	10.8	00:10:50	745.900	0.010	1.744	1.70	1487	250		59			83	78	9.0	0.10	10.80	9.855		47.303
A-6	13.5	00:13:33	747.950	0.010	1.744	1.70	1483	250		60			84	78	9.0	0.10	10.79	11.813		47.250
A-7	16.3	00:16:15	749.990	0.010	1.744	1.70	1265	250		62			85	78	9.0	0.10	10.17	13.740		47.108
A-8	19.0	00:18:58	752.000	0.010	1.744	1.70	1102	250		63			86	80	9.0	0.10	9.68	15.929		47.788
A-9	21.7	00:21:40	754.290	0.010	1.744	1.70	1423	250		64			87	79	9.0	0.10	10.63	17.679		47.145
A-10	24.4	00:24:22	756.120	0.020	1.744	1.70	1475	250		66			89	80	9.0	0.14	15.23	19.567		46.961
A-11	27.1	00:27:05	758.100	0.020	1.744	1.70	1506	250		64			89	80	9.0	0.14	15.35	21.493		46.895
A-12	29.8	00:29:47	760.120	0.010	1.744	1.70	1486	250		60			89	81	9.0	0.10	10.80	23.837		47.674
B-1	32.5	00:32:30	762.580	0.010	1.744	1.70	1004	250		58			86	82	9.0	0.10	9.37	25.574		47.214
B-2	35.2	00:35:12	764.400	0.010	1.744	1.70	1436	250		56			87	82	9.0	0.10	10.66	27.481		47.110
B-3	37.9	00:37:55	766.400	0.010	1.744	1.70	1452	250		55			88	82	9.0	0.10	10.71	29.444		47.110
B-4	40.6	00:40:37	768.460	0.010	1.744	1.70	1479	250		54			89	82	9.0	0.10	10.78	31.281		46.921
B-5	43.3	00:43:20	770.390	0.020	1.744	1.70	1545	250		54			91	82	9.0	0.14	15.51	33.219		46.897
B-6	46.0	00:46:03	772.430	0.010	1.744	1.70	1422	250		54			91	82	9.0	0.10	10.62	35.233		46.977
B-7	48.8	00:48:45	774.550	0.010	1.744	1.70	1186	250		54			91	82	9.0	0.10	9.93	37.247		47.049
B-8	51.5	00:51:28	776.670	0.010	1.744	1.70	1361	250		54			92	82	9.0	0.10	10.45	39.269		47.122
B-9	54.2	00:54:10	778.800	0.030	1.744	1.70	1344	250		54			92	83	9.0	0.17	18.01	41.260		47.154
B-10	56.9	00:56:53	780.900	0.02	1.744	1.70	1076	250		54			92	83	9.0	0.14	13.57	43.157		47.080
B-11	59.6	00:59:35	782.900	0.02	1.744	1.70	1075	250		54			92	83	9.0	0.14	13.57	45.063		47.022
B-12	62.3	01:02:18	784.910	0.02	1.744	1.70	1083	250		54			92	83	9.0	0.14	13.60	47.035		47.035
Last Pt	65.0	01:05:00	786.990																	
Final Val	65.0	01:05:00	786.990											**Max Vac**	9.0	**Final Values**		47.035		
Average Values				0.01		1.70	1349	250		58			88	81		0.11	11.78			
													84							

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

Plant Name	Elk City Facilty
Sampling Location	SCD-48
Project #	sfi-elkcity.ok-comp#1

Date	09/15/16
Operator	DA/BB
Run Number	30-70-30%-2

Ideal Nozzle Diameter and IsoKinetic Factor Setup			
Pitot Coefficient	(C_p)	0.840	
Average Stack Temp	(t_s)	1304.2	°F
Average Meter Temp	(t_m)	87.8	
Orifice Meter Coefficient	($\Delta H@$)	1.744	in H_2O
Square Root ΔP	($\Delta p^{1/2}_{avg}$)	0.11	in H_2O
Stack Moisture Content	(B_{ws})	4.63	%
Stack Dry Molecular Weight	(M_d)	29.23	lb/lb-mole
Estimated Orifice Flow Rate	(Q_m)	0.72	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	0.25	30.0	sec
< 3.0	**Pre (-)**	0.3	in H_2O for	30.0	sec
	Post (+)	0.3	in H_2O for	30.0	sec
	Post (-)	0.3	in H_2O for	30.0	sec

Sampling Equipment			
Meter Box Number	SAMP-CP-0007		
Meter Cal Factor	(Y)	0.976	
Low Flow Meter	SAMP-MN-0001		
Average Nozzle Diameter	(D_{na})		in
Suggested Nozzle Diameter	(D_{ni})	0.4633	in
Probe Number	SAMP-SP-0001		in
Probe Length	60		in
Liner Material	inconel		
Sample Case / Oven Number			
Impinger Case Number	SAMP-BC-0002		

Pressures			
Barometric Pressure	(P_b)	30.02	in Hg
Stack Static Pressure	(P_{static})	0.00	in H_2O
Absolute Stack Pressure	(P_s)	30.02	in Hg
Absolute Meter Pressure	(P_m)	30.15	in Hg

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

Run Time			
Start	16:01	**End**	17:11

Weights	**Imp 1**	**Imp 2**	**Imp 3**	**Imp 4**	**Imp 5**	**Imp 6**	**Imp 7**	**Imp 8**
Pre	861.1	677.3	583.6	933.0				
Post	886.6	687.7	585.1	944.9				

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	787.690	0.010	1.744	1.70	1067	250		54			90	83	9.0	0.10	9.56	2.138		51.303
A-2	2.7	00:02:43	789.940	0.010	1.744	1.70	1069	250		54			90	83	9.0	0.10	9.57	3.990		47.883
A-3	5.4	00:05:25	791.890	0.010	1.744	1.70	1356	250		53			90	83	9.0	0.10	10.42	5.900		47.199
A-4	8.1	00:08:07	793.900	0.010	1.744	1.70	1435	250		54			91	84	9.0	0.10	10.65	7.853		47.120
A-5	10.8	00:10:50	795.960	0.010	1.744	1.70	1471	250		54			92	84	9.0	0.10	10.75	9.767		46.883
A-6	13.5	00:13:33	797.980	0.020	1.744	1.70	1528	250		55			92	84	9.0	0.14	15.42	11.624		46.497
A-7	16.3	00:16:15	799.940	0.010	1.744	1.70	1163	250		55			92	84	9.0	0.10	9.86	13.566		46.514
A-8	19.0	00:18:58	801.990	0.010	1.744	1.70	1058	250		56			92	84	9.0	0.10	9.53	15.755		47.265
A-9	21.7	00:21:40	804.300	0.010	1.744	1.70	810	250		56			92	83	9.0	0.10	8.72	17.775		47.400
A-10	24.4	00:24:22	806.430	0.010	1.744	1.70	1447	250		57			92	83	9.0	0.10	10.68	19.833		47.599
A-11	27.1	00:27:05	808.600	0.020	1.744	1.70	1476	250		57			92	83	9.0	0.14	15.22	21.824		47.617
A-12	29.8	00:29:47	810.700	0.020	1.744	1.70	1599	250		57			93	83	9.0	0.14	15.70	23.880		47.761
B-1	32.5	00:32:30	812.870	0.010	1.744	1.70	1101	250		59			88	84	9.0	0.10	9.67	26.201		48.370
B-2	35.2	00:35:12	815.310	0.010	1.744	1.70	1184	250		57			91	84	9.0	0.10	9.92	28.050		48.085
B-3	37.9	00:37:55	817.260	0.010	1.744	1.70	1492	250		57			93	84	9.0	0.10	10.81	29.981		47.969
B-4	40.6	00:40:37	819.300	0.010	1.744	1.70	1515	250		57			93	84	9.0	0.10	10.87	32.158		48.237
B-5	43.3	00:43:20	821.600	0.010	1.744	1.70	1516	250		57			93	84	9.0	0.10	10.87	34.098		48.139
B-6	46.0	00:46:03	823.650	0.010	1.744	1.70	1532	250		58			93	84	9.0	0.10	10.92	35.850		47.800
B-7	48.8	00:48:45	825.500	0.010	1.744	1.70	1190	250		58			93	84	9.0	0.10	9.94	37.894		47.866
B-8	51.5	00:51:28	827.660	0.010	1.744	1.70	1162	250		58			93	84	9.0	0.10	9.85	39.948		47.938
B-9	54.2	00:54:10	829.830	0.010	1.744	1.70	1249	250		58			93	84	9.0	0.10	10.11	41.813		47.786
B-10	56.9	00:56:53	831.800	0.01	1.744	1.70	1295	250		58			93	84	9.0	0.10	10.25	43.858		47.845
B-11	59.6	00:59:35	833.960	0.01	1.744	1.70	1297	250		58			93	84	9.0	0.10	10.25	45.751		47.740
B-12	62.3	01:02:18	835.960	0.01	1.744	1.70	1288	250		58			93	84	9.0	0.10	10.23	47.890		47.890
Last Pt	65.0	01:05:00	838.220			1.70														
Final Val	65.0	01:05:00	838.220											**Max Vac**	9.0	**Final Values**		47.890		
Average Values				0.01		1.70	1304	250		56			92	84		0.11	10.82			
													88							

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

Plant Name	Elk City Facilty
Sampling Location	SCD-48
Project #	sfi-elkcity.ok-comp#1

Date	09/15/16
Operator	DA/BB
Run Number	30-70-30%-3

Ideal Nozzle Diameter and IsoKinetic Factor Setup			
Pitot Coefficient	(C_p)	0.840	
Average Stack Temp	(t_s)	1371.7	°F
Average Meter Temp	(t_m)	88.3	
Orifice Meter Coefficient	(ΔH@)	1.744	in H_2O
Square Root ΔP	($\Delta p^{1/2}_{avg}$)	0.12	in H_2O
Stack Moisture Content	(B_{ws})	5.47	%
Stack Dry Molecular Weight	(M_d)	29.38	lb/lb-mole
Estimated Orifice Flow Rate	(Q_m)	0.74	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	30.0	sec
< 3.0	**Pre (-)**	0.3	in H_2O for	30.0	sec
	Post (+)	0.3	in H_2O for	30.0	sec
	Post (-)	0.3	in H_2O for	30.0	sec

Sampling Equipment			
Meter Box Number	SAMP-CP-0007		
Meter Cal Factor	(Y)	0.976	
Low Flow Meter	SAMP-MN-0001		
Average Nozzle Diameter	(D_{na})		in
Suggested Nozzle Diameter	(D_{ni})	0.4567	in
Probe Number	SAMP-SP-0001		in
Probe Length	60		in
Liner Material	inconel		
Sample Case / Oven Number			
Impinger Case Number	SAMP-BC-0002		

Pressures			
Barometric Pressure	(P_b)	30.01	in Hg
Stack Static Pressure	(P_{static})	0.00	in H_2O
Absolute Stack Pressure	(P_s)	30.01	in Hg
Absolute Meter Pressure	(P_m)	30.14	in Hg

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

Run Time			
Start	17:22	**End**	18:32

Weights	**Imp 1**	**Imp 2**	**Imp 3**	**Imp 4**	**Imp 5**	**Imp 6**	**Imp 7**	**Imp 8**
Pre	762.6	687.7	585.1	944.9				
Post	794.4	698.2	588.1	957.5				

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 ($Δp^{1/2}$)**	**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	838.690	0.010	1.744	1.70	1068	250		60			90	83	9.0	0.10	9.56	1.966		47.183
A-2	2.7	00:02:43	840.760	0.010	1.744	1.70	1076	250		60			90	83	9.0	0.10	9.58	3.894		46.727
A-3	5.4	00:05:25	842.790	0.010	1.744	1.70	1577	250		58			91	83	9.0	0.10	11.03	5.858		46.865
A-4	8.1	00:08:07	844.860	0.020	1.744	1.70	1630	250		58			91	83	9.0	0.14	15.80	7.765		46.592
A-5	10.8	00:10:50	846.870	0.030	1.744	1.70	1644	250		59			91	83	9.0	0.17	19.42	9.644		46.292
A-6	13.5	00:13:33	848.850	0.030	1.744	1.70	1649	250		59			91	83	9.0	0.17	19.44	11.646		46.585
A-7	16.3	00:16:15	850.960	0.020	1.744	1.70	1595	250		60			91	82	9.0	0.14	15.67	13.584		46.572
A-8	19.0	00:18:58	853.000	0.010	1.744	1.70	1202	250		60			91	83	9.0	0.10	9.97	15.662		46.985
A-9	21.7	00:21:40	855.190	0.010	1.744	1.70	809	250		60			91	83	9.0	0.10	8.71	17.616		46.977
A-10	24.4	00:24:22	857.250	0.020	1.744	1.70	1072	250		61			91	83	9.0	0.14	13.53	19.742		47.380
A-11	27.1	00:27:05	859.490	0.020	1.744	1.70	1156	250		62			92	83	9.0	0.14	13.90	21.676		47.292
A-12	29.8	00:29:47	861.530	0.020	1.744	1.70	1158	250		62			92	84	9.0	0.14	13.91	23.769		47.538
B-1	32.5	00:32:30	863.740	0.010	1.744	1.70	1298	250		64			89	85	9.0	0.10	10.25	25.856		47.735
B-2	35.2	00:35:12	865.940	0.010	1.744	1.70	1329	250		64			91	84	9.0	0.10	10.34	27.714		47.511
B-3	37.9	00:37:55	867.900	0.010	1.744	1.70	1517	250		64			93	85	9.0	0.10	10.87	29.653		47.444
B-4	40.6	00:40:37	869.950	0.020	1.744	1.70	1538	250		62			94	85	9.0	0.14	15.45	31.579		47.369
B-5	43.3	00:43:20	871.990	0.020	1.744	1.70	1564	250		63			94	85	9.0	0.14	15.55	33.355		47.090
B-6	46.0	00:46:03	873.870	0.020	1.744	1.70	1593	250		64			94	85	9.0	0.14	15.66	35.329		47.106
B-7	48.8	00:48:45	875.960	0.010	1.744	1.70	1270	250		64			94	86	9.0	0.10	10.17	37.641		47.547
B-8	51.5	00:51:28	878.410	0.010	1.744	1.70	1152	250		65			95	86	9.0	0.10	9.81	39.433		47.319
B-9	54.2	00:54:10	880.310	0.010	1.744	1.70	1416	250		65			95	86	9.0	0.10	10.59	41.347		47.253
B-10	56.9	00:56:53	882.340	0.01	1.744	1.70	1516	250		65			95	86	9.0	0.10	10.87	43.242		47.173
B-11	59.6	00:59:35	884.350	0.01	1.744	1.70	1540	250		65			95	86	9.0	0.10	10.93	45.080		47.040
B-12	62.3	01:02:18	886.300	0.01	1.744	1.70	1551	250		65			95	86	9.0	0.10	10.96	47.155		47.155
Last Pt	65.0	01:05:00	888.500																	
Final Val	65.0	01:05:00	888.500											**Max Vac**	9.0	**Final Values**		47.155		
Average Values				0.02		1.70	1372	250		62			92	84		0.12	12.58			
													88							

Superior Fabrication, INC
SCD-48
Elk City Plant

Unit Data

Meas. Stack Moisture	5.6	%
Stack Exhaust Flow (M2)	129,450	SCFH

Weather Data

Barometric Pressure	30.02	in. Hg
Relative Humidity	65	%
Ambient Temperature	85	^{o}F
Specific Humidity	0.016796	lb H_2O / lb air

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

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
A1	09/15/16 14:39:00	24780	16.42	2.28	0.29	3.24	0.23	75.70	805.00
	09/15/16 14:39:30	24810	16.44	2.49	0.28	3.22	0.23	75.70	805.00
	09/15/16 14:40:00	24840	16.40	2.61	0.27	3.25	0.23	75.60	803.00
	09/15/16 14:40:30	24870	16.46	2.59	0.30	3.22	0.23	75.60	803.00
	09/15/16 14:41:00	24900	16.46	2.68	0.30	3.22	0.24	75.40	801.00
	09/15/16 14:41:30	24930	16.41	2.83	0.29	3.24	0.24	75.40	801.00
	09/15/16 14:42:00	24960	16.39	2.75	0.30	3.24	0.34	75.10	906.00
	09/15/16 14:42:30	24990	16.42	2.84	0.28	3.25	0.34	75.10	906.00
	09/15/16 14:43:00	25020	16.44	2.82	0.29	3.22	1.40	74.60	2,004.00
	09/15/16 14:43:30	25050	14.12	2.57	0.15	4.62	1.40	74.60	2,004.00
	09/15/16 14:44:00	25080	12.78	0.82	0.10	5.71	1.45	74.00	2,033.00
	09/15/16 14:44:30	25110	12.26	-0.37	0.12	6.09	1.45	74.00	2,033.00
	09/15/16 14:45:00	25140	14.01	-0.54	0.20	5.01	1.46	74.00	2,037.00
	09/15/16 14:45:30	25170	15.17	-0.09	0.22	4.08	1.46	74.00	2,037.00
	09/15/16 14:46:00	25200	15.02	0.26	0.21	4.17	1.45	74.20	2,033.00
	09/15/16 14:46:30	25230	14.90	0.20	0.20	4.26	1.45	74.20	2,033.00
	09/15/16 14:47:00	25260	14.63	0.09	0.19	4.42	1.46	74.50	2,030.00
	09/15/16 14:47:30	25290	15.02	0.02	0.20	4.20	1.46	74.50	2,030.00
	09/15/16 14:48:00	25320	14.99	0.14	0.20	4.21	1.46	74.80	2,028.00
	09/15/16 14:48:30	25350	15.00	0.19	0.19	4.17	1.46	74.80	2,028.00
	09/15/16 14:49:00	25380	14.59	0.09	0.20	4.51	1.45	75.20	2,026.00
	09/15/16 14:49:30	25410	14.93	0.02	0.21	4.24	1.45	75.20	2,026.00
	09/15/16 14:50:00	25440	15.21	0.15	0.21	4.08	1.44	75.80	2,028.00
	09/15/16 14:50:30	25470	15.11	0.22	0.20	4.14	1.44	75.80	2,028.00
	09/15/16 14:51:00	25500	15.12	0.15	0.21	4.13	1.44	76.50	2,028.00
	09/15/16 14:51:30	25530	14.87	0.08	0.21	4.27	1.44	76.50	2,028.00
	09/15/16 14:52:00	25560	14.91	0.02	0.21	4.24	1.41	77.40	2,024.00
	09/15/16 14:52:30	25590	14.90	-0.08	0.21	4.25	1.41	77.40	2,024.00
	09/15/16 14:53:00	25620	14.97	-0.11	0.20	4.24	1.41	78.50	2,019.00
	09/15/16 14:53:30	25650	15.14	-0.17	0.20	4.11	1.41	78.50	2,019.00
	09/15/16 14:54:00	25680	15.25	-0.09	0.22	4.07	1.39	79.30	2,016.00
	09/15/16 14:54:30	25710	15.36	-0.10	0.22	3.94	1.39	79.30	2,016.00
	09/15/16 14:55:00	25740	15.31	-0.09	0.21	4.01	1.39	80.30	2,012.00
	09/15/16 14:55:30	25770	15.54	0.00	0.21	3.86	1.39	80.30	2,012.00
	09/15/16 14:56:00	25800	15.42	0.05	0.21	3.91	0.49	81.20	1,189.00
	09/15/16 14:56:30	25830	15.26	-0.14	0.21	4.01	0.49	81.20	1,189.00
	09/15/16 14:57:00	25860	16.99	0.26	0.27	3.00	0.15	81.90	773.00
	09/15/16 14:57:30	25890	17.27	5.64	0.26	2.55	0.15	81.90	773.00
	09/15/16 14:58:00	25920	16.60	7.92	0.24	3.09	0.15	82.30	793.00
	09/15/16 14:58:30	25950	16.52	3.40	0.25	3.14	0.15	82.30	793.00
	09/15/16 14:59:00	25980	16.50	2.39	0.28	3.16	0.15	82.70	792.00
	09/15/16 14:59:30	26010	16.57	2.59	0.30	3.12	0.15	82.70	792.00
A2	09/15/16 15:00:00	26040	16.54	2.92	0.29	3.12	0.13	83.10	793.00
	09/15/16 15:00:30	26070	16.51	2.96	0.26	3.16	0.13	83.10	793.00
	09/15/16 15:01:00	26100	16.52	2.97	0.27	3.16	0.98	83.40	1,709.00
	09/15/16 15:01:30	26130	16.44	3.14	0.27	3.15	0.98	83.40	1,709.00
	09/15/16 15:02:00	26160	14.43	2.44	0.21	4.54	1.28	83.50	1,973.00
	09/15/16 15:02:30	26190	15.14	1.21	0.21	4.13	1.28	83.50	1,973.00
	09/15/16 15:03:00	26220	15.04	1.01	0.21	4.14	1.33	83.90	1,980.00
	09/15/16 15:03:30	26250	15.11	0.73	0.21	4.14	1.33	83.90	1,980.00
	09/15/16 15:04:00	26280	15.12	0.35	0.21	4.10	1.37	84.50	1,980.00
	09/15/16 15:04:30	26310	14.90	0.15	0.21	4.22	1.37	84.50	1,980.00
	09/15/16 15:05:00	26340	14.99	0.11	0.21	4.22	1.35	85.00	1,977.00
	09/15/16 15:05:30	26370	14.98	0.22	0.21	4.22	1.35	85.00	1,977.00
	09/15/16 15:06:00	26400	15.06	0.22	0.21	4.11	1.38	85.50	1,979.00
	09/15/16 15:06:30	26430	14.78	0.19	0.21	4.36	1.38	85.50	1,979.00
	09/15/16 15:07:00	26460	15.24	0.08	0.21	4.04	1.38	86.00	1,977.00
	09/15/16 15:07:30	26490	14.79	0.07	0.22	4.27	1.38	86.00	1,977.00
	09/15/16 15:08:00	26520	14.78	-0.05	0.22	4.34	1.39	86.30	1,977.00
	09/15/16 15:08:30	26550	14.78	-0.19	0.22	4.35	1.39	86.30	1,977.00
	09/15/16 15:09:00	26580	15.19	-0.09	0.24	4.05	1.40	86.70	1,976.00

Superior Fabrication, INC
SCD-48
Elk City Plant

Unit Data

Meas. Stack Moisture	5.6	%
Stack Exhaust Flow (M2)	129,450	SCFH

Weather Data

Barometric Pressure	30.02	in. Hg
Relative Humidity	65	%
Ambient Temperature	85	^{o}F
Specific Humidity	0.016796	lb H_2O / lb air

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

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
	09/15/16 15:09:30	26610	14.96	-0.14	0.25	4.24	1.40	86.70	1,976.00
	09/15/16 15:10:00	26640	14.93	-0.19	0.25	4.19	1.39	87.00	1,974.00
	09/15/16 15:10:30	26670	14.89	-0.25	0.25	4.25	1.39	87.00	1,974.00
	09/15/16 15:11:00	26700	14.56	-0.27	0.25	4.48	1.39	87.10	1,970.00
	09/15/16 15:11:30	26730	14.85	-0.30	0.26	4.27	1.39	87.10	1,970.00
	09/15/16 15:12:00	26760	15.22	-0.21	0.26	4.07	0.73	87.30	1,342.00
	09/15/16 15:12:30	26790	15.06	-0.12	0.24	4.11	0.73	87.30	1,342.00
	09/15/16 15:13:00	26820	15.54	-0.08	0.24	3.89	0.22	87.60	794.00
	09/15/16 15:13:30	26850	16.29	0.33	0.26	3.31	0.22	87.60	794.00
	09/15/16 15:14:00	26880	16.23	0.44	0.27	3.33	0.21	87.70	788.00
	09/15/16 15:14:30	26910	16.25	0.83	0.25	3.33	0.21	87.70	788.00
	09/15/16 15:15:00	26940	16.30	1.08	0.25	3.30	0.20	87.50	788.00
	09/15/16 15:15:30	26970	16.34	1.36	0.25	3.25	0.20	87.50	788.00
	09/15/16 15:16:00	27000	16.26	1.60	0.25	3.32	0.21	87.30	791.00
	09/15/16 15:16:30	27030	16.28	1.61	0.27	3.31	0.21	87.30	791.00
	09/15/16 15:17:00	27060	16.26	1.62	0.26	3.32	0.34	87.30	972.00
	09/15/16 15:17:30	27090	16.28	1.70	0.27	3.30	0.34	87.30	972.00
	09/15/16 15:18:00	27120	16.26	1.77	0.26	3.29	1.36	86.90	1,970.00
	09/15/16 15:18:30	27150	12.62	1.47	0.19	5.58	1.36	86.90	1,970.00
	09/15/16 15:19:00	27180	11.66	0.00	0.18	6.85	1.37	86.80	1,978.00
	09/15/16 15:19:30	27210	14.76	-0.39	0.21	4.32	1.37	86.80	1,978.00
A3	09/15/16 15:20:00	27240	15.01	0.00	0.22	4.17	1.37	87.10	1,976.00
	09/15/16 15:20:30	27270	14.85	0.02	0.21	4.26	1.37	87.10	1,976.00
	09/15/16 15:21:00	27300	15.05	-0.15	0.21	4.14	1.37	87.40	1,969.00
	09/15/16 15:21:30	27330	14.79	-0.12	0.22	4.28	1.37	87.40	1,969.00
	09/15/16 15:22:00	27360	14.88	-0.21	0.25	4.26	1.36	87.80	1,973.00
	09/15/16 15:22:30	27390	15.03	-0.19	0.25	4.17	1.36	87.80	1,973.00
	09/15/16 15:23:00	27420	15.34	-0.19	0.23	3.96	1.37	88.10	1,970.00
	09/15/16 15:23:30	27450	15.15	-0.03	0.21	4.02	1.37	88.10	1,970.00
	09/15/16 15:24:00	27480	14.80	-0.09	0.21	4.30	1.38	88.40	1,973.00
	09/15/16 15:24:30	27510	15.19	-0.24	0.21	4.06	1.38	88.40	1,973.00
	09/15/16 15:25:00	27540	15.15	-0.20	0.21	4.07	1.37	88.80	1,970.00
	09/15/16 15:25:30	27570	14.78	-0.19	0.23	4.29	1.37	88.80	1,970.00
	09/15/16 15:26:00	27600	14.90	-0.28	0.22	4.22	1.37	89.10	1,972.00
	09/15/16 15:26:30	27630	14.78	-0.29	0.21	4.30	1.37	89.10	1,972.00
	09/15/16 15:27:00	27660	14.97	-0.34	0.21	4.21	1.38	89.40	1,971.00
	09/15/16 15:27:30	27690	15.01	-0.30	0.22	4.17	1.38	89.40	1,971.00
	09/15/16 15:28:00	27720	15.07	-0.27	0.21	4.10	1.39	89.70	1,969.00
	09/15/16 15:28:30	27750	15.18	-0.31	0.22	4.08	1.39	89.70	1,969.00
	09/15/16 15:29:00	27780	15.02	-0.28	0.21	4.12	1.37	90.10	1,968.00
	09/15/16 15:29:30	27810	15.08	-0.28	0.21	4.15	1.37	90.10	1,968.00
	09/15/16 15:30:00	27840	15.36	-0.20	0.21	3.95	0.79	90.30	1,369.00
	09/15/16 15:30:30	27870	14.58	-0.16	0.21	4.37	0.79	90.30	1,369.00
	09/15/16 15:31:00	27900	14.75	-0.31	0.16	4.41	0.20	90.60	786.00
	09/15/16 15:31:30	27930	16.23	-0.09	0.20	3.35	0.20	90.60	786.00
	09/15/16 15:32:00	27960	16.23	0.31	0.22	3.35	0.19	90.70	783.00
	09/15/16 15:32:30	27990	16.35	0.63	0.25	3.26	0.19	90.70	783.00
	09/15/16 15:33:00	28020	16.38	1.16	0.24	3.23	0.19	90.60	783.00
	09/15/16 15:33:30	28050	16.38	1.51	0.25	3.24	0.19	90.60	783.00
	09/15/16 15:34:00	28080	16.32	1.69	0.25	3.28	0.19	90.60	783.00
	09/15/16 15:34:30	28110	16.38	1.66	0.26	3.24	0.19	90.60	783.00
	09/15/16 15:35:00	28140	16.37	1.73	0.25	3.26	0.93	90.50	1,609.00
	09/15/16 15:35:30	28170	16.34	1.82	0.25	3.24	0.93	90.50	1,609.00
	09/15/16 15:36:00	28200	15.29	2.31	0.21	3.91	1.32	90.10	1,956.00
	09/15/16 15:36:30	28230	15.10	3.12	0.21	4.14	1.32	90.10	1,956.00
	09/15/16 15:37:00	28260	14.81	1.78	0.20	4.25	1.33	90.00	1,959.00
	09/15/16 15:37:30	28290	14.82	0.64	0.20	4.32	1.33	90.00	1,959.00
	09/15/16 15:38:00	28320	14.85	0.19	0.20	4.26	1.34	90.10	1,953.00
	09/15/16 15:38:30	28350	14.36	0.01	0.20	4.59	1.34	90.10	1,953.00
	09/15/16 15:39:00	28380	14.75	-0.16	0.21	4.33	1.35	90.30	1,959.00
	09/15/16 15:39:30	28410	15.01	-0.19	0.21	4.18	1.35	90.30	1,959.00

Superior Fabrication, INC
SCD-48
Elk City Plant

Unit Data

Meas. Stack Moisture	5.6	%
Stack Exhaust Flow (M2)	129,450	SCFH

Weather Data

Barometric Pressure	30.02	in. Hg
Relative Humidity	65	%
Ambient Temperature	85	^{o}F
Specific Humidity	0.016796	lb H_2O / lb air

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

Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
09/15/16 15:40:00	28440	14.92	-0.19	0.21	4.20	1.35	90.30	1,960.00
09/15/16 15:40:30	28470	14.81	-0.25	0.21	4.32	1.35	90.30	1,960.00
09/15/16 15:41:00	28500	14.78	-0.23	0.20	4.30	1.36	90.30	1,961.00
09/15/16 15:41:30	28530	14.76	-0.22	0.18	4.33	1.36	90.30	1,961.00
09/15/16 15:42:00	28560	14.20	-0.27	0.12	4.71	1.36	90.30	1,959.00
09/15/16 15:42:30	28590	14.31	-0.34	0.12	4.65	1.36	90.30	1,959.00
09/15/16 15:43:00	28620	14.44	-0.36	0.12	4.53	1.37	90.30	1,963.00
09/15/16 15:43:30	28650	14.77	-0.44	0.21	4.37	1.37	90.30	1,963.00
09/15/16 15:44:00	28680	14.55	-0.41	0.21	4.46	1.02	90.50	1,716.00
09/15/16 15:44:30	28710	14.38	-0.41	0.17	4.59	1.02	90.50	1,716.00
09/15/16 15:45:00	28740	14.50	-0.48	0.13	4.46	0.20	90.90	786.00
09/15/16 15:45:30	28770	14.86	-0.41	0.19	4.36	0.20	90.90	786.00
09/15/16 15:46:00	28800	14.81	-0.38	0.20	4.31	0.19	91.20	788.00
09/15/16 15:46:30	28830	16.14	-0.05	0.21	3.48	0.19	91.20	788.00
09/15/16 15:47:00	28860	16.26	1.33	0.21	3.33	0.18	91.40	782.00
09/15/16 15:47:30	28890	16.25	0.92	0.22	3.34	0.18	91.40	782.00
09/15/16 15:48:00	28920	16.29	0.77	0.23	3.31	0.19	91.40	782.00
09/15/16 15:48:30	28950	16.29	1.09	0.23	3.31	0.19	91.40	782.00
09/15/16 15:49:00	28980	16.35	1.32	0.21	3.27	0.19	91.40	782.00
RAW AVERAGE		**15.31**	**0.67**	**0.22**	**3.97**	**0.98**	**84.98**	**1,583.08**

		O_2	CO	THC	CO_2	Press. Trans	Temp. Trans.	F-Flow Trans.
	Serial Number:	INSTO2-0011	INST-CO-0022	INST-TH-0001	INST-C2-0013	1633266	1633266	1633266
		(%)	**(ppmvd)**	**(ppmvw)**	**(%)**	**(in. H_2O)**	**(^{o}F)**	**(SCFH)**
Bias	**Initial Zero**	0.06	-0.06	0.09	0.01			
	Final Zero	0.05	-0.11	0.07	0.01			
	Avg. Zero	0.06	-0.09	0.08	0.01			
	Initial UpScale	11.99	9.11	3.13	8.98			
	Final UpScale	11.95	9.10	2.98	8.97			
	Avg. UpScale	11.97	9.11	3.06	8.98			
Upscale Cal Gas		12.00	9.24	3.00	8.99			

EMISSIONS DATA	O_2	CO	THC	CO_2
Corrected Raw Average (ppm/% dry basis)	15.36	0.76	0.14	3.97
Corrected Raw Average (ppm/% wet basis)	14.49	0.72	0.13	3.75
Emission Rate (lb/hr)	N/A	0.01	0.00	N/A

Superior Fabrication, INC
SCD-48
Elk City Plant

Unit Data

Meas. Stack Moisture	4.6	%
Stack Exhaust Flow (M2)	123,249	SCFH

Weather Data

Barometric Pressure	30.02	in. Hg
Relative Humidity	74	%
Ambient Temperature	78	^{o}F
Specific Humidity	0.015193	lb H_2O / lb air

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

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
A1	09/15/16 16:01:00	29700	16.18	2.07	0.35	3.40	0.17	89.50	784.00
	09/15/16 16:01:30	29730	16.30	1.90	0.36	3.31	0.17	89.50	784.00
	09/15/16 16:02:00	29760	16.29	1.95	0.35	3.32	0.18	89.60	786.00
	09/15/16 16:02:30	29790	16.31	2.11	0.36	3.29	0.18	89.60	786.00
	09/15/16 16:03:00	29820	16.31	2.21	0.33	3.30	0.17	89.70	783.00
	09/15/16 16:03:30	29850	16.21	2.17	0.31	3.37	0.17	89.70	783.00
	09/15/16 16:04:00	29880	16.34	2.08	0.33	3.28	0.18	89.80	788.00
	09/15/16 16:04:30	29910	16.24	2.27	0.32	3.33	0.18	89.80	788.00
	09/15/16 16:05:00	29940	16.30	2.17	0.32	3.31	0.20	90.00	807.00
	09/15/16 16:05:30	29970	15.12	2.03	0.27	3.97	0.20	90.00	807.00
	09/15/16 16:06:00	30000	14.37	1.28	0.25	4.62	1.25	89.70	1,936.00
	09/15/16 16:06:30	30030	14.68	0.81	0.25	4.39	1.25	89.70	1,936.00
	09/15/16 16:07:00	30060	14.81	0.74	0.25	4.32	1.29	89.10	1,956.00
	09/15/16 16:07:30	30090	14.94	0.78	0.24	4.22	1.29	89.10	1,956.00
	09/15/16 16:08:00	30120	14.76	0.66	0.24	4.33	1.30	89.10	1,954.00
	09/15/16 16:08:30	30150	14.73	0.28	0.25	4.36	1.30	89.10	1,954.00
	09/15/16 16:09:00	30180	14.87	-0.01	0.24	4.26	1.31	89.10	1,959.00
	09/15/16 16:09:30	30210	14.68	0.04	0.25	4.38	1.31	89.10	1,959.00
	09/15/16 16:10:00	30240	14.82	-0.16	0.26	4.32	1.35	89.30	1,971.00
	09/15/16 16:10:30	30270	14.65	-0.19	0.23	4.35	1.35	89.30	1,971.00
	09/15/16 16:11:00	30300	14.23	-0.23	0.24	4.69	1.34	89.50	1,967.00
	09/15/16 16:11:30	30330	14.53	-0.41	0.25	4.48	1.34	89.50	1,967.00
	09/15/16 16:12:00	30360	14.82	-0.38	0.25	4.30	1.35	89.60	1,964.00
	09/15/16 16:12:30	30390	14.82	-0.28	0.24	4.31	1.35	89.60	1,964.00
	09/15/16 16:13:00	30420	15.03	0.05	0.24	4.16	1.36	90.00	1,967.00
	09/15/16 16:13:30	30450	14.99	0.15	0.25	4.17	1.36	90.00	1,967.00
	09/15/16 16:14:00	30480	14.58	0.08	0.25	4.43	1.36	90.40	1,965.00
	09/15/16 16:14:30	30510	14.78	-0.02	0.24	4.34	1.36	90.40	1,965.00
	09/15/16 16:15:00	30540	14.60	-0.02	0.24	4.42	1.36	90.80	1,961.00
	09/15/16 16:15:30	30570	14.52	-0.05	0.25	4.45	1.36	90.80	1,961.00
	09/15/16 16:16:00	30600	14.35	-0.11	0.24	4.62	1.37	91.20	1,961.00
	09/15/16 16:16:30	30630	14.33	-0.08	0.23	4.65	1.37	91.20	1,961.00
	09/15/16 16:17:00	30660	14.50	-0.09	0.23	4.50	1.36	91.50	1,960.00
	09/15/16 16:17:30	30690	14.88	-0.12	0.24	4.26	1.36	91.50	1,960.00
	09/15/16 16:18:00	30720	15.05	-0.05	0.25	4.15	0.80	91.90	1,425.00
	09/15/16 16:18:30	30750	15.95	0.23	0.25	3.61	0.80	91.90	1,425.00
	09/15/16 16:19:00	30780	16.33	0.57	0.27	3.29	0.20	92.30	784.00
	09/15/16 16:19:30	30810	16.34	1.04	0.30	3.26	0.20	92.30	784.00
	09/15/16 16:20:00	30840	16.24	1.38	0.30	3.34	0.20	92.60	786.00
	09/15/16 16:20:30	30870	16.24	1.41	0.29	3.34	0.20	92.60	786.00
	09/15/16 16:21:00	30900	16.33	1.63	0.30	3.28	0.19	92.80	785.00
	09/15/16 16:21:30	30930	16.36	1.90	0.31	3.24	0.19	92.80	785.00
A2	09/15/16 16:22:00	30960	16.32	2.05	0.30	3.28	0.18	92.70	780.00
	09/15/16 16:22:30	30990	16.31	2.00	0.31	3.28	0.18	92.70	780.00
	09/15/16 16:23:00	31020	16.30	1.95	0.31	3.30	0.18	92.70	777.00
	09/15/16 16:23:30	31050	16.35	2.15	0.31	3.24	0.18	92.70	777.00
	09/15/16 16:24:00	31080	16.34	2.22	0.31	3.26	0.18	92.50	775.00
	09/15/16 16:24:30	31110	15.29	2.11	0.25	3.92	0.18	92.50	775.00
	09/15/16 16:25:00	31140	15.09	1.68	0.25	4.11	1.26	92.20	1,920.00
	09/15/16 16:25:30	31170	15.08	1.67	0.25	4.10	1.26	92.20	1,920.00
	09/15/16 16:26:00	31200	15.08	1.26	0.25	4.14	1.31	91.80	1,952.00
	09/15/16 16:26:30	31230	15.20	0.80	0.25	4.04	1.31	91.80	1,952.00
	09/15/16 16:27:00	31260	14.93	0.59	0.26	4.20	1.31	92.00	1,951.00
	09/15/16 16:27:30	31290	14.65	0.32	0.25	4.37	1.31	92.00	1,951.00
	09/15/16 16:28:00	31320	14.83	0.17	0.25	4.28	1.31	92.20	1,945.00
	09/15/16 16:28:30	31350	14.77	0.10	0.25	4.33	1.31	92.20	1,945.00
	09/15/16 16:29:00	31380	15.10	0.15	0.25	4.12	1.32	92.40	1,948.00
	09/15/16 16:29:30	31410	14.89	0.29	0.23	4.26	1.32	92.40	1,948.00
	09/15/16 16:30:00	31440	14.90	0.25	0.24	4.24	1.33	92.60	1,951.00
	09/15/16 16:30:30	31470	14.99	0.17	0.25	4.20	1.33	92.60	1,951.00
	09/15/16 16:31:00	31500	14.78	0.10	0.25	4.31	1.33	92.80	1,949.00

Superior Fabrication, INC
SCD-48
Elk City Plant

Unit Data

Meas. Stack Moisture	4.6	%
Stack Exhaust Flow (M2)	123,249	SCFH

Weather Data

Barometric Pressure	30.02	in. Hg
Relative Humidity	74	%
Ambient Temperature	78	^{o}F
Specific Humidity	0.015193	lb H_2O / lb air

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

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
	09/15/16 16:31:30	31530	14.54	0.00	0.25	4.43	1.33	92.80	1,949.00
	09/15/16 16:32:00	31560	14.70	-0.09	0.25	4.39	1.34	92.90	1,952.00
	09/15/16 16:32:30	31590	14.91	-0.01	0.26	4.25	1.34	92.90	1,952.00
	09/15/16 16:33:00	31620	14.69	-0.01	0.25	4.38	1.35	92.90	1,952.00
	09/15/16 16:33:30	31650	14.75	0.00	0.25	4.31	1.35	92.90	1,952.00
	09/15/16 16:34:00	31680	14.58	0.00	0.23	4.46	1.35	92.90	1,950.00
	09/15/16 16:34:30	31710	14.72	-0.01	0.24	4.37	1.35	92.90	1,950.00
	09/15/16 16:35:00	31740	14.94	0.07	0.24	4.24	0.76	92.80	1,380.00
	09/15/16 16:35:30	31770	16.21	0.30	0.25	3.43	0.76	92.80	1,380.00
	09/15/16 16:36:00	31800	16.31	0.82	0.25	3.29	0.19	92.90	790.00
	09/15/16 16:36:30	31830	16.29	1.27	0.29	3.31	0.19	92.90	790.00
	09/15/16 16:37:00	31860	16.33	1.63	0.28	3.27	0.19	93.20	782.00
	09/15/16 16:37:30	31890	16.33	1.86	0.30	3.29	0.19	93.20	782.00
	09/15/16 16:38:00	31920	16.29	2.05	0.29	3.31	0.18	93.30	779.00
	09/15/16 16:38:30	31950	16.29	2.08	0.29	3.31	0.18	93.30	779.00
	09/15/16 16:39:00	31980	16.36	2.16	0.29	3.26	0.18	93.20	779.00
	09/15/16 16:39:30	32010	16.41	2.38	0.34	3.23	0.18	93.20	779.00
	09/15/16 16:40:00	32040	16.40	2.64	0.31	3.22	0.17	93.20	781.00
	09/15/16 16:40:30	32070	15.70	2.75	0.29	3.56	0.17	93.20	781.00
	09/15/16 16:41:00	32100	14.25	1.78	0.25	4.75	1.28	93.10	1,910.00
	09/15/16 16:41:30	32130	14.76	1.06	0.23	4.34	1.28	93.10	1,910.00
A3	09/15/16 16:42:00	32160	14.81	0.84	0.23	4.35	1.30	92.80	1,947.00
	09/15/16 16:42:30	32190	15.08	0.73	0.25	4.11	1.30	92.80	1,947.00
	09/15/16 16:43:00	32220	14.81	0.66	0.25	4.28	1.31	92.80	1,949.00
	09/15/16 16:43:30	32250	14.14	0.41	0.22	4.74	1.31	92.80	1,949.00
	09/15/16 16:44:00	32280	14.37	0.12	0.24	4.60	1.31	92.70	1,946.00
	09/15/16 16:44:30	32310	14.51	0.09	0.25	4.51	1.31	92.70	1,946.00
	09/15/16 16:45:00	32340	14.64	0.12	0.23	4.41	1.34	92.70	1,958.00
	09/15/16 16:45:30	32370	14.24	0.03	0.22	4.67	1.34	92.70	1,958.00
	09/15/16 16:46:00	32400	14.67	0.01	0.25	4.43	1.36	92.70	1,960.00
	09/15/16 16:46:30	32430	14.97	0.07	0.25	4.24	1.36	92.70	1,960.00
	09/15/16 16:47:00	32460	15.19	0.05	0.25	4.07	1.35	93.00	1,955.00
	09/15/16 16:47:30	32490	14.54	0.11	0.25	4.47	1.35	93.00	1,955.00
	09/15/16 16:48:00	32520	14.78	0.02	0.25	4.34	1.35	93.10	1,955.00
	09/15/16 16:48:30	32550	14.62	-0.01	0.25	4.42	1.35	93.10	1,955.00
	09/15/16 16:49:00	32580	14.60	-0.02	0.23	4.44	1.36	92.90	1,954.00
	09/15/16 16:49:30	32610	14.68	-0.02	0.22	4.40	1.36	92.90	1,954.00
	09/15/16 16:50:00	32640	14.51	-0.03	0.24	4.51	1.36	92.60	1,956.00
	09/15/16 16:50:30	32670	14.59	-0.08	0.25	4.44	1.36	92.60	1,956.00
	09/15/16 16:51:00	32700	14.87	-0.11	0.25	4.28	1.37	92.40	1,955.00
	09/15/16 16:51:30	32730	14.75	0.01	0.25	4.35	1.37	92.40	1,955.00
	09/15/16 16:52:00	32760	14.83	-0.02	0.25	4.32	1.37	92.20	1,955.00
	09/15/16 16:52:30	32790	15.04	0.02	0.25	4.17	1.37	92.20	1,955.00
	09/15/16 16:53:00	32820	15.30	0.16	0.25	4.04	0.67	92.00	1,317.00
	09/15/16 16:53:30	32850	16.36	0.36	0.25	3.30	0.67	92.00	1,317.00
	09/15/16 16:54:00	32880	16.37	0.83	0.28	3.27	0.19	91.90	789.00
	09/15/16 16:54:30	32910	16.31	1.31	0.29	3.30	0.19	91.90	789.00
	09/15/16 16:55:00	32940	16.35	1.63	0.30	3.28	0.19	91.90	779.00
	09/15/16 16:55:30	32970	16.38	1.82	0.29	3.26	0.19	91.90	779.00
	09/15/16 16:56:00	33000	16.36	2.10	0.31	3.27	0.20	91.70	782.00
	09/15/16 16:56:30	33030	16.37	2.22	0.30	3.27	0.20	91.70	782.00
	09/15/16 16:57:00	33060	16.34	2.25	0.31	3.28	0.19	91.70	781.00
	09/15/16 16:57:30	33090	16.35	2.31	0.30	3.27	0.19	91.70	781.00
	09/15/16 16:58:00	33120	16.35	2.40	0.30	3.27	0.26	91.60	880.00
	09/15/16 16:58:30	33150	14.21	2.17	0.24	4.61	0.26	91.60	880.00
	09/15/16 16:59:00	33180	15.07	1.11	0.25	4.20	1.30	91.00	1,940.00
	09/15/16 16:59:30	33210	15.27	1.29	0.25	4.01	1.30	91.00	1,940.00
	09/15/16 17:00:00	33240	15.10	1.13	0.25	4.11	1.32	90.60	1,952.00
	09/15/16 17:00:30	33270	15.03	0.71	0.24	4.21	1.32	90.60	1,952.00
	09/15/16 17:01:00	33300	15.40	0.51	0.25	3.93	1.32	90.50	1,953.00
	09/15/16 17:01:30	33330	15.22	0.47	0.24	4.03	1.32	90.50	1,953.00

Superior Fabrication, INC
SCD-48
Elk City Plant

Unit Data

Meas. Stack Moisture	4.6	%
Stack Exhaust Flow (M2)	123,249	SCFH

Weather Data

Barometric Pressure	30.02	in. Hg
Relative Humidity	74	%
Ambient Temperature	78	^{o}F
Specific Humidity	0.015193	lb H_2O / lb air

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

Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
09/15/16 17:02:00	33360	14.71	0.33	0.24	4.38	1.33	90.50	1,953.00
09/15/16 17:02:30	33390	14.88	0.31	0.25	4.27	1.33	90.50	1,953.00
09/15/16 17:03:00	33420	14.88	0.22	0.25	4.25	1.34	90.50	1,951.00
09/15/16 17:03:30	33450	15.04	0.18	0.25	4.17	1.34	90.50	1,951.00
09/15/16 17:04:00	33480	14.97	0.21	0.25	4.21	1.34	90.60	1,952.00
09/15/16 17:04:30	33510	15.17	0.08	0.25	4.09	1.34	90.60	1,952.00
09/15/16 17:05:00	33540	15.30	0.17	0.25	3.99	1.34	90.80	1,946.00
09/15/16 17:05:30	33570	15.19	0.12	0.25	4.08	1.34	90.80	1,946.00
09/15/16 17:06:00	33600	15.12	0.17	0.25	4.11	1.35	90.90	1,948.00
09/15/16 17:06:30	33630	14.94	0.09	0.24	4.21	1.35	90.90	1,948.00
09/15/16 17:07:00	33660	14.95	0.10	0.24	4.22	0.72	91.00	1,368.00
09/15/16 17:07:30	33690	14.91	0.10	0.24	4.24	0.72	91.00	1,368.00
09/15/16 17:08:00	33720	15.62	0.23	0.25	3.83	0.20	91.10	785.00
09/15/16 17:08:30	33750	16.19	1.29	0.26	3.41	0.20	91.10	785.00
09/15/16 17:09:00	33780	16.26	1.32	0.26	3.34	0.20	91.10	783.00
09/15/16 17:09:30	33810	16.37	1.27	0.27	3.26	0.20	91.10	783.00
09/15/16 17:10:00	33840	16.35	1.64	0.26	3.28	0.19	91.00	783.00
09/15/16 17:10:30	33870	16.38	1.85	0.30	3.25	0.19	91.00	783.00
09/15/16 17:11:00	33900	16.40	2.10	0.29	3.23	0.20	90.80	783.00
RAW AVERAGE		**15.32**	**0.81**	**0.26**	**3.96**	**0.90**	**91.60**	**1,514.55**

		O_2	CO	THC	CO_2	Press. Trans	Temp. Trans.	F-Flow Trans.
	Serial Number:	INSTO2-0011	INST-CO-0022	INST-TH-0001	INST-C2-0013	1633266	1633266	1633266
		(%)	**(ppmvd)**	**(ppmvw)**	**(%)**	**(in. H_2O)**	**(^{o}F)**	**(SCFH)**
Bias	**Initial Zero**	0.05	-0.11	0.07	0.01			
	Final Zero	0.05	0.05	0.05	0.01			
	Avg. Zero	0.05	-0.03	0.06	0.01			
	Initial UpScale	11.95	9.10	2.98	8.97			
	Final UpScale	11.93	9.09	3.11	8.98			
	Avg. UpScale	11.94	9.10	3.05	8.98			
Upscale Cal Gas		12.00	9.24	3.00	8.99			

EMISSIONS DATA	O_2	CO	THC	CO_2
Corrected Raw Average (ppm/% dry basis)	15.41	0.85	0.20	3.96
Corrected Raw Average (ppm/% wet basis)	14.70	0.81	0.19	3.78
Emission Rate (lb/hr)	N/A	0.01	0.00	N/A

Superior Fabrication, INC
September 15, 2016
SCD-48
Elk City Plant

Unit Data

Meas. Stack Moisture	5.5	%
Stack Exhaust Flow (M2)	136,726	SCFH

Weather Data

Barometric Pressure	30.01	in. Hg
Relative Humidity	65	%
Ambient Temperature	83	^{o}F
Specific Humidity	0.015729	lb H_2O / lb air

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

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
A1	09/15/16 17:22:00	34560	16.26	2.49	0.36	3.32	0.20	89.30	793.00
	09/15/16 17:22:30	34590	16.24	2.40	0.34	3.34	0.20	89.30	793.00
	09/15/16 17:23:00	34620	16.28	2.42	0.33	3.32	0.19	89.30	787.00
	09/15/16 17:23:30	34650	16.29	2.43	0.32	3.31	0.19	89.30	787.00
	09/15/16 17:24:00	34680	16.28	2.49	0.31	3.31	0.19	89.20	792.00
	09/15/16 17:24:30	34710	16.33	2.41	0.34	3.28	0.19	89.20	792.00
	09/15/16 17:25:00	34740	16.28	2.44	0.31	3.32	0.19	89.10	793.00
	09/15/16 17:25:30	34770	16.30	2.41	0.32	3.29	0.19	89.10	793.00
	09/15/16 17:26:00	34800	14.02	2.34	0.24	4.58	0.74	88.80	1,368.00
	09/15/16 17:26:30	34830	10.35	0.97	0.21	7.54	0.74	88.80	1,368.00
	09/15/16 17:27:00	34860	10.33	-0.08	0.22	7.58	1.32	88.10	1,944.00
	09/15/16 17:27:30	34890	10.96	-0.19	0.20	7.20	1.32	88.10	1,944.00
	09/15/16 17:28:00	34920	11.25	-0.19	0.19	6.90	1.40	87.60	1,975.00
	09/15/16 17:28:30	34950	11.41	-0.22	0.19	6.81	1.40	87.60	1,975.00
	09/15/16 17:29:00	34980	11.42	-0.20	0.21	6.76	1.42	87.30	1,971.00
	09/15/16 17:29:30	35010	11.35	-0.20	0.20	6.82	1.42	87.30	1,971.00
	09/15/16 17:30:00	35040	11.36	-0.25	0.19	6.84	1.46	87.40	1,985.00
	09/15/16 17:30:30	35070	11.59	-0.23	0.19	6.64	1.46	87.40	1,985.00
	09/15/16 17:31:00	35100	11.48	-0.24	0.19	6.72	1.47	87.50	1,985.00
	09/15/16 17:31:30	35130	11.60	-0.22	0.19	6.65	1.47	87.50	1,985.00
	09/15/16 17:32:00	35160	11.58	-0.24	0.15	6.63	1.48	87.50	1,984.00
	09/15/16 17:32:30	35190	11.40	-0.24	0.18	6.79	1.48	87.50	1,984.00
	09/15/16 17:33:00	35220	11.49	-0.28	0.20	6.72	1.49	87.50	1,985.00
	09/15/16 17:33:30	35250	11.44	-0.19	0.20	6.75	1.49	87.50	1,985.00
	09/15/16 17:34:00	35280	11.59	-0.27	0.20	6.65	1.50	87.60	1,983.00
	09/15/16 17:34:30	35310	11.50	-0.26	0.21	6.69	1.50	87.60	1,983.00
	09/15/16 17:35:00	35340	11.43	-0.28	0.18	6.78	1.50	87.60	1,986.00
	09/15/16 17:35:30	35370	11.51	-0.29	0.20	6.71	1.50	87.60	1,986.00
	09/15/16 17:36:00	35400	11.56	-0.22	0.20	6.66	1.49	87.60	1,984.00
	09/15/16 17:36:30	35430	11.61	-0.27	0.16	6.64	1.49	87.60	1,984.00
	09/15/16 17:37:00	35460	11.47	-0.21	0.18	6.74	1.50	87.70	1,986.00
	09/15/16 17:37:30	35490	11.45	-0.24	0.17	6.71	1.50	87.70	1,986.00
	09/15/16 17:38:00	35520	11.52	-0.21	0.12	6.69	1.51	88.00	1,984.00
	09/15/16 17:38:30	35550	11.53	-0.21	0.17	6.68	1.51	88.00	1,984.00
	09/15/16 17:39:00	35580	11.45	-0.25	0.20	6.72	1.51	88.20	1,988.00
	09/15/16 17:39:30	35610	11.26	-0.22	0.16	6.92	1.51	88.20	1,988.00
	09/15/16 17:40:00	35640	15.57	-0.19	0.24	4.05	0.45	88.60	1,085.00
	09/15/16 17:40:30	35670	16.34	0.39	0.23	3.22	0.45	88.60	1,085.00
	09/15/16 17:41:00	35700	16.26	0.80	0.25	3.31	0.22	88.90	790.00
	09/15/16 17:41:30	35730	16.13	1.01	0.25	3.40	0.22	88.90	790.00
	09/15/16 17:42:00	35760	16.27	1.18	0.25	3.34	0.22	89.00	787.00
A2	09/15/16 17:42:30	35790	16.30	1.41	0.25	3.30	0.22	89.00	787.00
	09/15/16 17:43:00	35820	16.28	1.59	0.25	3.31	0.22	89.00	787.00
	09/15/16 17:43:30	35850	16.31	1.81	0.25	3.29	0.22	89.00	787.00
	09/15/16 17:44:00	35880	16.19	1.89	0.24	3.38	0.22	88.90	787.00
	09/15/16 17:44:30	35910	16.25	1.83	0.24	3.34	0.22	88.90	787.00
	09/15/16 17:45:00	35940	16.00	1.91	0.24	3.43	0.73	88.80	1,302.00
	09/15/16 17:45:30	35970	11.53	1.37	0.19	6.53	0.73	88.80	1,302.00
	09/15/16 17:46:00	36000	11.62	0.20	0.12	6.60	1.39	88.20	1,962.00
	09/15/16 17:46:30	36030	11.59	-0.18	0.16	6.66	1.39	88.20	1,962.00
	09/15/16 17:47:00	36060	14.05	-0.17	0.19	5.02	1.42	87.80	1,972.00
	09/15/16 17:47:30	36090	14.77	0.14	0.21	4.35	1.42	87.80	1,972.00
	09/15/16 17:48:00	36120	14.89	0.22	0.21	4.26	1.41	87.80	1,982.00
	09/15/16 17:48:30	36150	14.87	0.12	0.20	4.27	1.41	87.80	1,982.00
	09/15/16 17:49:00	36180	14.80	0.13	0.21	4.30	1.40	88.00	1,980.00
	09/15/16 17:49:30	36210	14.87	0.09	0.21	4.27	1.40	88.00	1,980.00
	09/15/16 17:50:00	36240	14.62	0.04	0.20	4.40	1.41	88.20	1,981.00
	09/15/16 17:50:30	36270	14.31	-0.02	0.21	4.63	1.41	88.20	1,981.00
	09/15/16 17:51:00	36300	14.63	-0.13	0.22	4.44	1.41	88.50	1,980.00
	09/15/16 17:51:30	36330	14.87	-0.03	0.21	4.27	1.41	88.50	1,980.00

Superior Fabrication, INC
September 15, 2016
SCD-48
Elk City Plant

Unit Data

Meas. Stack Moisture	5.5	%
Stack Exhaust Flow (M2)	136,726	SCFH

Weather Data

Barometric Pressure	30.01	in. Hg
Relative Humidity	65	%
Ambient Temperature	83	^{o}F
Specific Humidity	0.015729	lb H_2O / lb air

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

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
	09/15/16 17:52:00	36360	14.64	0.00	0.20	4.42	1.42	88.90	1,979.00
	09/15/16 17:52:30	36390	14.68	0.01	0.21	4.38	1.42	88.90	1,979.00
	09/15/16 17:53:00	36420	14.73	0.01	0.22	4.35	1.40	89.20	1,976.00
	09/15/16 17:53:30	36450	14.47	0.01	0.21	4.49	1.40	89.20	1,976.00
	09/15/16 17:54:00	36480	14.63	-0.04	0.21	4.43	1.41	89.50	1,976.00
	09/15/16 17:54:30	36510	14.78	0.00	0.21	4.31	1.41	89.50	1,976.00
	09/15/16 17:55:00	36540	14.54	0.01	0.21	4.44	1.41	89.80	1,975.00
	09/15/16 17:55:30	36570	14.91	-0.02	0.24	4.25	1.41	89.80	1,975.00
	09/15/16 17:56:00	36600	15.16	-0.02	0.23	4.18	0.80	90.10	1,366.00
	09/15/16 17:56:30	36630	17.62	2.30	0.28	2.39	0.80	90.10	1,366.00
	09/15/16 17:57:00	36660	16.33	8.71	0.25	3.23	0.22	90.10	798.00
	09/15/16 17:57:30	36690	16.22	5.12	0.25	3.36	0.22	90.10	798.00
	09/15/16 17:58:00	36720	16.29	1.70	0.27	3.31	0.20	90.10	787.00
	09/15/16 17:58:30	36750	16.30	1.69	0.26	3.30	0.20	90.10	787.00
	09/15/16 17:59:00	36780	16.34	1.91	0.27	3.29	0.20	90.10	785.00
	09/15/16 17:59:30	36810	16.34	2.08	0.29	3.28	0.20	90.10	785.00
	09/15/16 18:00:00	36840	16.29	2.03	0.28	3.33	0.19	89.90	782.00
	09/15/16 18:00:30	36870	16.29	2.15	0.28	3.31	0.19	89.90	782.00
	09/15/16 18:01:00	36900	16.19	2.18	0.28	3.36	0.58	89.80	1,191.00
	09/15/16 18:01:30	36930	14.82	2.36	0.25	4.26	0.58	89.80	1,191.00
	09/15/16 18:02:00	36960	14.53	1.83	0.25	4.48	1.42	89.40	2,010.00
A3	09/15/16 18:02:30	36990	14.22	0.75	0.24	4.68	1.42	89.40	2,010.00
	09/15/16 18:03:00	37020	14.39	0.24	0.23	4.63	1.43	89.20	2,012.00
	09/15/16 18:03:30	37050	14.51	0.07	0.23	4.50	1.43	89.20	2,012.00
	09/15/16 18:04:00	37080	14.47	0.12	0.23	4.54	1.44	89.20	2,016.00
	09/15/16 18:04:30	37110	14.71	0.03	0.21	4.38	1.44	89.20	2,016.00
	09/15/16 18:05:00	37140	14.61	0.02	0.21	4.44	1.44	89.20	2,014.00
	09/15/16 18:05:30	37170	14.17	-0.04	0.21	4.73	1.44	89.20	2,014.00
	09/15/16 18:06:00	37200	14.04	-0.11	0.23	4.85	1.44	89.20	2,011.00
	09/15/16 18:06:30	37230	14.13	-0.10	0.22	4.74	1.44	89.20	2,011.00
	09/15/16 18:07:00	37260	13.96	-0.10	0.22	4.88	1.47	89.10	2,021.00
	09/15/16 18:07:30	37290	14.52	-0.09	0.23	4.55	1.47	89.10	2,021.00
	09/15/16 18:08:00	37320	14.65	-0.10	0.25	4.41	1.48	89.10	2,022.00
	09/15/16 18:08:30	37350	14.68	-0.09	0.24	4.38	1.48	89.10	2,022.00
	09/15/16 18:09:00	37380	13.97	-0.09	0.21	4.85	1.49	89.00	2,027.00
	09/15/16 18:09:30	37410	14.46	-0.11	0.25	4.54	1.49	89.00	2,027.00
	09/15/16 18:10:00	37440	14.04	-0.09	0.22	4.81	1.49	88.90	2,021.00
	09/15/16 18:10:30	37470	14.39	-0.16	0.22	4.62	1.49	88.90	2,021.00
	09/15/16 18:11:00	37500	14.07	-0.10	0.22	4.80	1.49	88.90	2,022.00
	09/15/16 18:11:30	37530	14.42	-0.12	0.24	4.56	1.49	88.90	2,022.00
	09/15/16 18:12:00	37560	14.36	-0.09	0.23	4.64	1.49	88.90	2,022.00
	09/15/16 18:12:30	37590	13.94	-0.18	0.23	4.87	1.49	88.90	2,022.00
	09/15/16 18:13:00	37620	14.42	-0.19	0.24	4.59	1.50	88.90	2,022.00
	09/15/16 18:13:30	37650	14.39	-0.16	0.25	4.55	1.50	88.90	2,022.00
	09/15/16 18:14:00	37680	14.46	-0.17	0.23	4.52	0.97	89.00	1,639.00
	09/15/16 18:14:30	37710	15.42	-0.13	0.25	4.03	0.97	89.00	1,639.00
	09/15/16 18:15:00	37740	16.24	0.14	0.25	3.34	0.22	89.00	785.00
	09/15/16 18:15:30	37770	16.26	0.65	0.25	3.33	0.22	89.00	785.00
	09/15/16 18:16:00	37800	16.22	1.04	0.25	3.38	0.22	88.90	785.00
	09/15/16 18:16:30	37830	16.27	1.34	0.26	3.34	0.22	88.90	785.00
	09/15/16 18:17:00	37860	16.26	1.59	0.28	3.33	0.21	88.70	784.00
	09/15/16 18:17:30	37890	16.26	1.72	0.27	3.34	0.21	88.70	784.00
	09/15/16 18:18:00	37920	16.30	1.85	0.27	3.31	0.21	88.50	787.00
	09/15/16 18:18:30	37950	16.30	2.01	0.29	3.32	0.21	88.50	787.00
	09/15/16 18:19:00	37980	16.25	2.11	0.29	3.34	0.21	88.30	788.00
	09/15/16 18:19:30	38010	16.29	2.02	0.29	3.31	0.21	88.30	788.00
	09/15/16 18:20:00	38040	15.38	2.27	0.22	3.83	0.82	88.00	1,404.00
	09/15/16 18:20:30	38070	14.45	2.01	0.22	4.50	0.82	88.00	1,404.00
	09/15/16 18:21:00	38100	14.22	0.78	0.21	4.72	1.44	87.50	2,014.00
	09/15/16 18:21:30	38130	14.51	0.16	0.21	4.51	1.44	87.50	2,014.00

Superior Fabrication, INC
September 15, 2016
SCD-48
Elk City Plant

Unit Data

Meas. Stack Moisture	5.5	%
Stack Exhaust Flow (M2)	136,726	SCFH

Weather Data

Barometric Pressure	30.01	in. Hg
Relative Humidity	65	%
Ambient Temperature	83	^{o}F
Specific Humidity	0.015729	lb H_2O / lb air

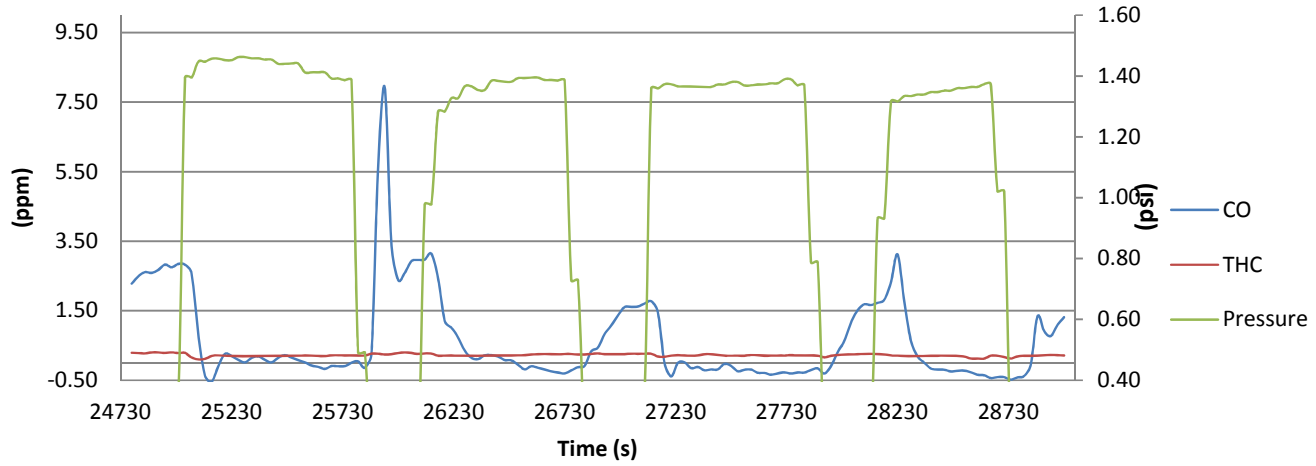
30-70-30 Load, Run - SCD-48 R6

Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
09/15/16 18:22:00	38160	14.80	0.09	0.21	4.31	1.45	87.30	2,022.00
09/15/16 18:22:30	38190	14.82	0.12	0.22	4.30	1.45	87.30	2,022.00
09/15/16 18:23:00	38220	14.65	0.06	0.22	4.40	1.47	87.10	2,030.00
09/15/16 18:23:30	38250	14.63	-0.02	0.21	4.41	1.47	87.10	2,030.00
09/15/16 18:24:00	38280	14.61	-0.02	0.21	4.43	1.43	87.10	2,022.00
09/15/16 18:24:30	38310	14.54	-0.08	0.25	4.46	1.43	87.10	2,022.00
09/15/16 18:25:00	38340	14.48	-0.10	0.24	4.52	1.48	87.00	2,027.00
09/15/16 18:25:30	38370	14.57	-0.12	0.20	4.45	1.48	87.00	2,027.00
09/15/16 18:26:00	38400	14.56	-0.12	0.21	4.44	1.49	87.00	2,031.00
09/15/16 18:26:30	38430	14.59	-0.08	0.25	4.49	1.49	87.00	2,031.00
09/15/16 18:27:00	38460	14.60	-0.09	0.25	4.43	1.49	87.00	2,029.00
09/15/16 18:27:30	38490	14.62	-0.09	0.25	4.44	1.49	87.00	2,029.00
09/15/16 18:28:00	38520	14.58	-0.09	0.24	4.42	0.95	87.00	1,564.00
09/15/16 18:28:30	38550	14.50	-0.09	0.25	4.51	0.95	87.00	1,564.00
09/15/16 18:29:00	38580	14.84	-0.09	0.24	4.36	0.22	87.00	785.00
09/15/16 18:29:30	38610	16.10	0.20	0.25	3.47	0.22	87.00	785.00
09/15/16 18:30:00	38640	16.28	0.59	0.26	3.32	0.18	87.00	791.00
09/15/16 18:30:30	38670	16.24	0.85	0.26	3.34	0.18	87.00	791.00
09/15/16 18:31:00	38700	16.27	1.22	0.26	3.33	0.22	86.80	790.00
09/15/16 18:31:30	38730	17.10	1.75	0.29	3.28	0.22	86.80	790.00
09/15/16 18:32:00	38760	17.25	1.95	0.30	3.45	0.22	86.70	791.00
RAW AVERAGE		**14.44**	**0.64**	**0.23**	**4.60**	**1.01**	**88.44**	**1,574.12**

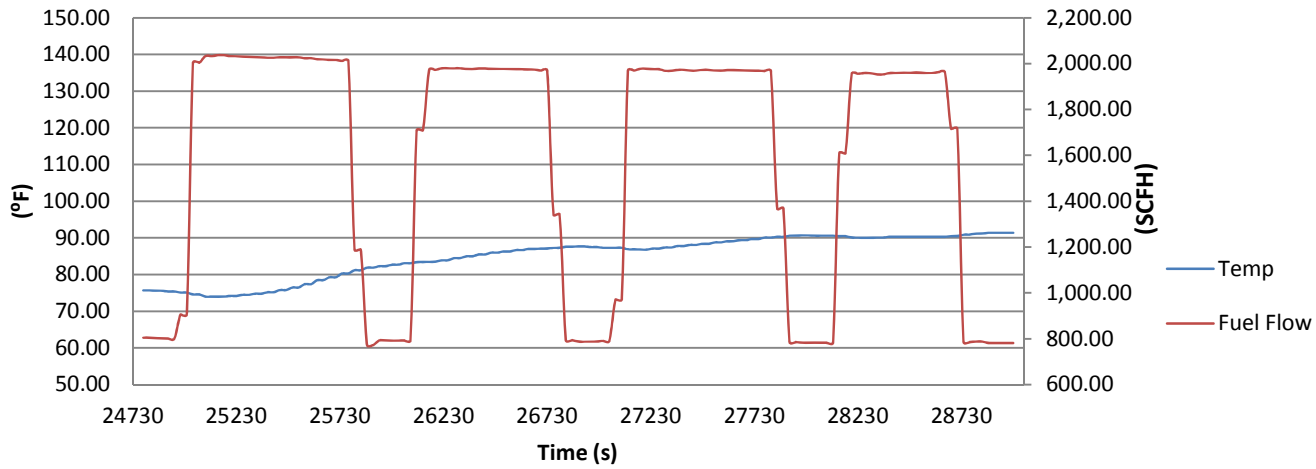
		O_2	CO	THC	CO_2	Press. Trans	Temp. Trans.	F-Flow Trans.
	Serial Number:	INSTO2-0011	INST-CO-0022	INST-TH-0001	INST-C2-0013	1633266	1633266	1633266
		(%)	**(ppmvd)**	**(ppmvw)**	**(%)**	**(in. H_2O)**	**(^{o}F)**	**(SCFH)**
Bias	**Initial Zero**	0.05	0.05	0.05	0.01			
	Final Zero	0.03	-0.03	0.04	-0.01			
	Avg. Zero	0.04	0.01	0.05	0.00			
	Initial UpScale	11.93	9.09	3.11	8.98			
	Final UpScale	11.91	9.11	2.98	8.99			
	Avg. UpScale	11.92	9.10	3.05	8.99			
Upscale Cal Gas		12.00	9.24	3.00	8.99			

EMISSIONS DATA	O_2	CO	THC	CO_2
Corrected Raw Average (ppm/% dry basis)	14.54	0.65	0.19	4.61
Corrected Raw Average (ppm/% wet basis)	13.75	0.61	0.17	4.35
Emission Rate (lb/hr)	N/A	0.01	0.00	N/A

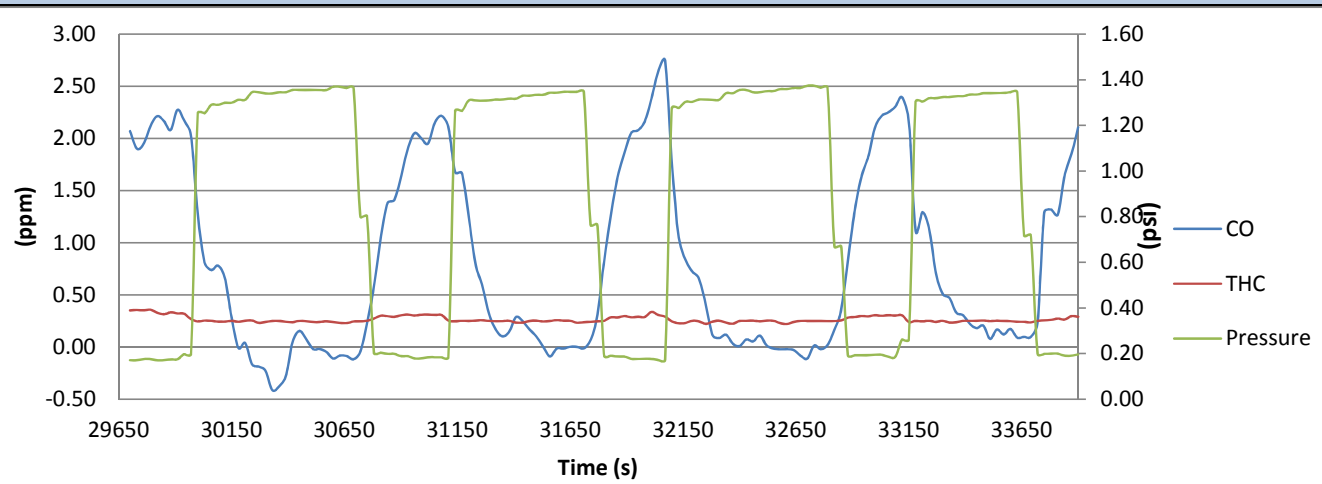
SCD-48 R4



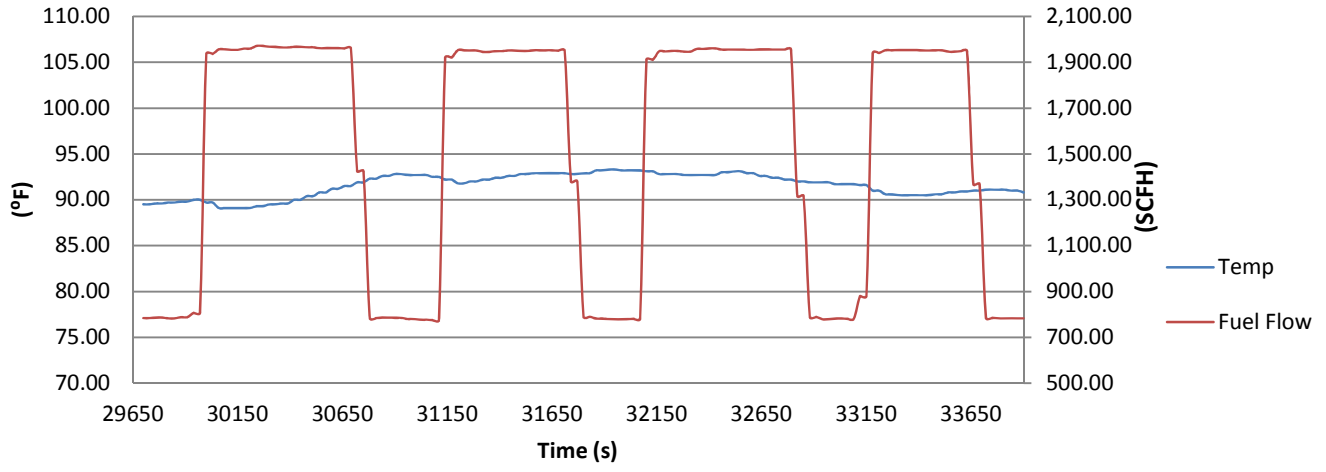
SCD-48 R4



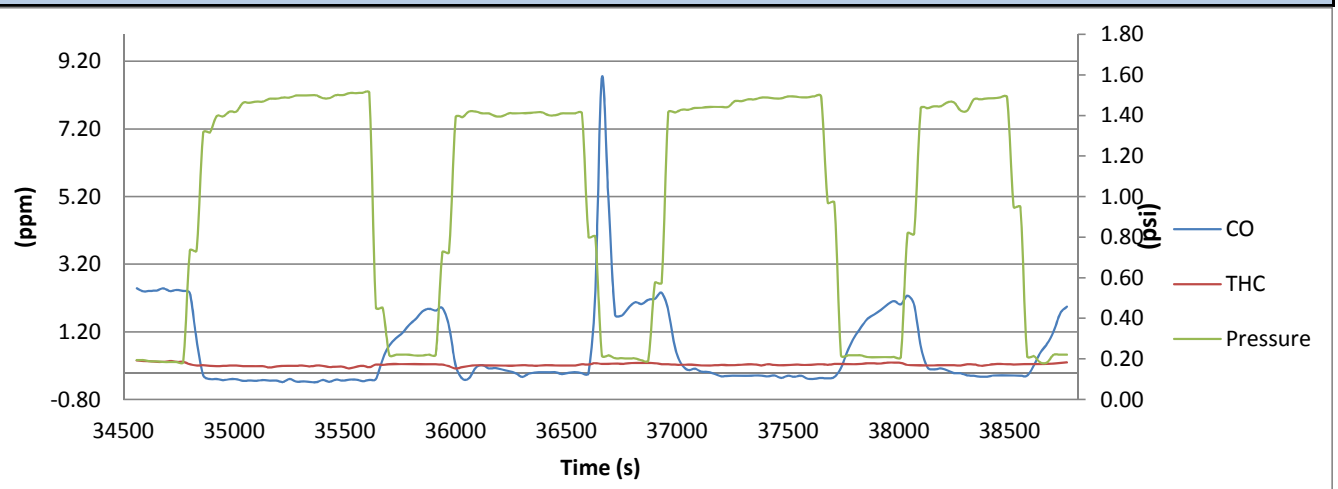
SCD-48 R5



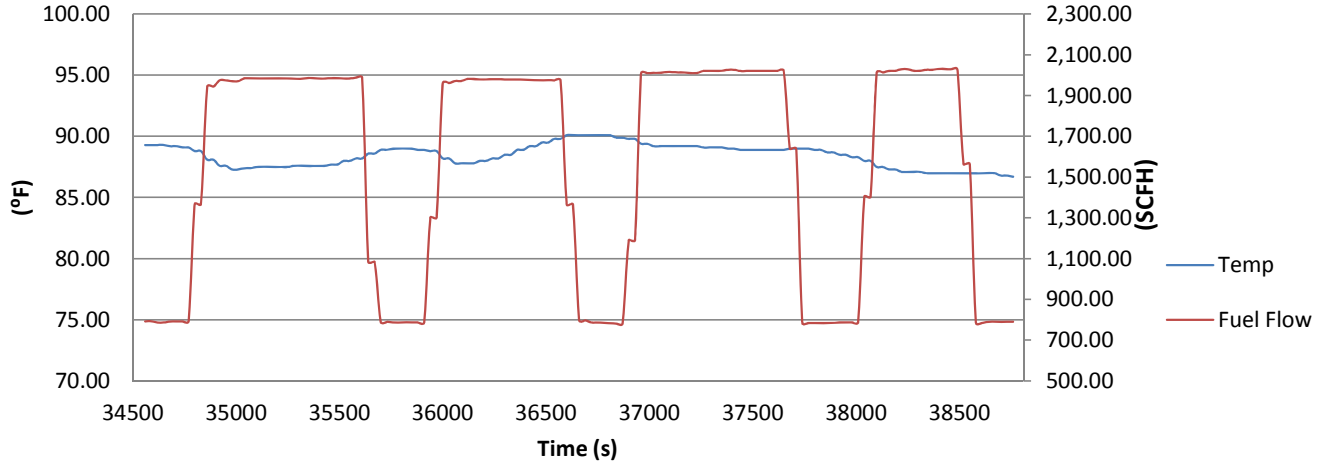
SCD-48 R5

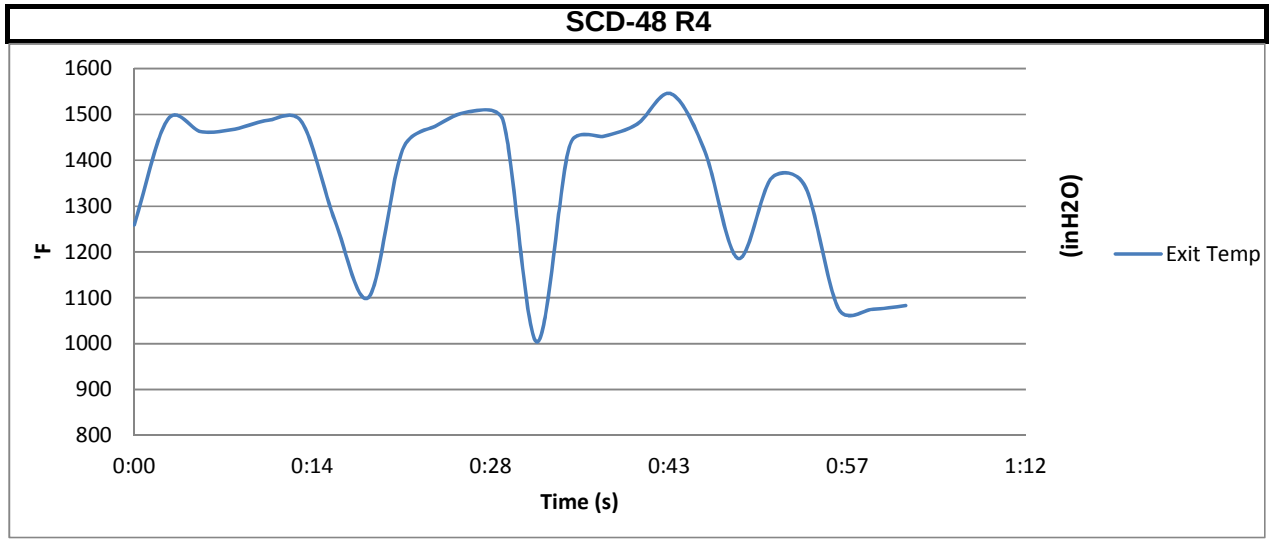


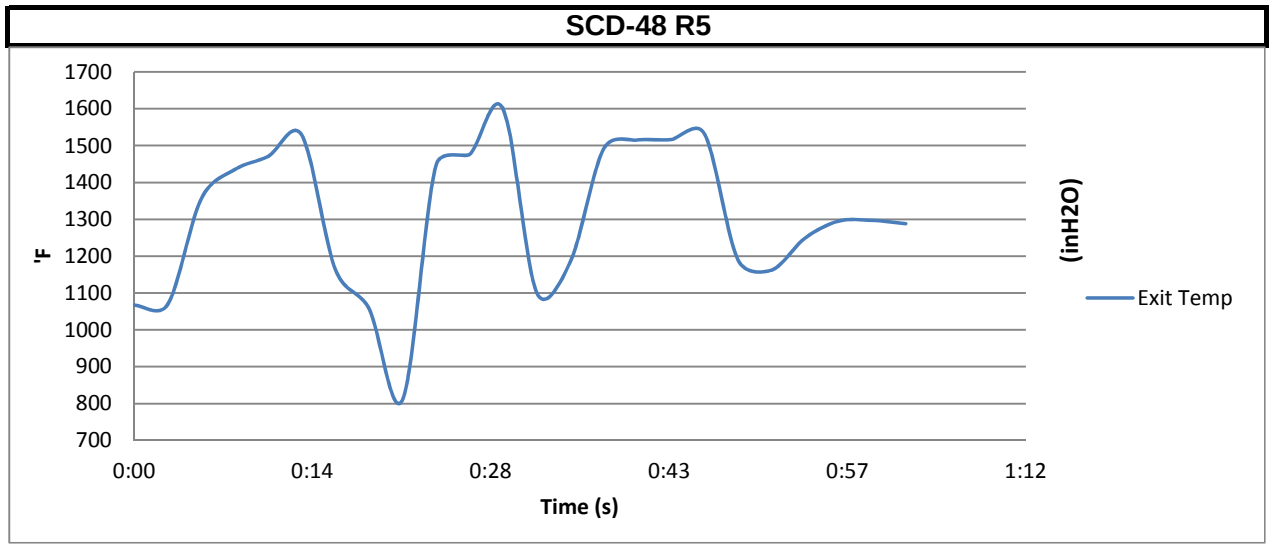
SCD-48 R6

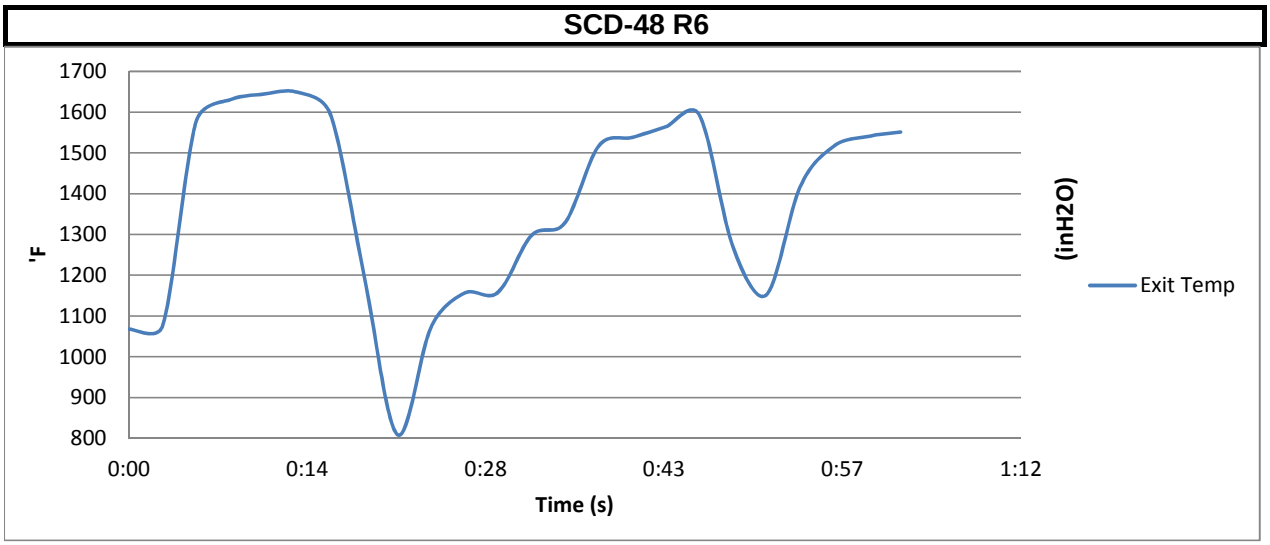


SCD-48 R6




SCD-48 R4
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-48 R5
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
'F
0:00
0:14
0:28
0:43
0:57
1:12
Time (s)
(inH2O)
Exit Temp


SCD-48 R6
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

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-48
Fuel Type	Gas, Propene

Test Information			
Project #		sfi-elkcity.ok-comp#1	
Operator		DA/BB	
Date for Preliminary Run	(mm/dd/yy)	09/13/16	
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		**1**	**2**	**3**	
Test Date	(mm/dd/yy)	09/14/16	09/14/16	09/14/16	
Load	% or w/DB	70-100-70	70-100-70	70-100-70	
Meter Box Number	from ACS	SAMP-CP-0007	SAMP-CP-0007	SAMP-CP-0007	
Meter Calibration Factor	(Y)	0.976	0.976	0.976	
Orifice Meter Coefficient	($\Delta H_@$)	1.744	1.744	1.744	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-0002	SAMP-BC-0002	SAMP-BC-0002	

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

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

Plant Name	Elk City Facilty
Sampling Location	SCD-48
Project #	sfi-elkcity.ok-comp#1

Historical Data	70-100-70%-1	70-100-70%-2	70-100-70%-3	**Average**	**Units**
Run Start Time	08:13	09:43	11:13		hh:mm
Run Stop Time	09:23	10:53	12:23		hh:mm
Test Date	09/14/16	09/14/16	09/14/16		mm/dd/yy
Meter Calibration Factor	0.976	0.976	0.976		
Pitot Tube Coefficient	0.840	0.840	0.840		
Initial Meter Volume	432.080	482.310	533.120		ft^3
Final Meter Volume	480.810	530.910	583.990		ft^3
Total Meter Volume	48.730	48.600	50.870	49.400	ft^3
Total Sampling Time	65.00	65.00	65.00	65.00	min
Average Meter Temperature	76.52	82.23	81.85	80.20	°F
Average Stack Temperature	1521.33	1507.58	1559.25	1529.39	°F
Barometric Pressure	30.24	30.25	30.26	30.25	in Hg
Stack Static Pressure	0.00	0.00	0.00	0.00	in H_2O
Absolute Stack Pressure	30.24	30.25	30.26	30.25	in Hg
Average Orifice Pressure Drop	1.70	1.70	1.70	1.70	in H_2O
Absolute Meter Pressure	30.37	30.38	30.39	30.38	in Hg
Avg Square Root Pitot Pressure	0.16	0.16	0.17	0.16	√(in H_2O)
Moisture Content Data	70-100-70%-1	70-100-70%-2	70-100-70%-3	**Average**	**Units**
Impinger Water Weight Gain	51.40	14.10	49.20	38.23	g
Silica Gel Weight Gain	10.20	9.80	14.50	11.50	g
Total Water Volume Collected	61.71	23.94	63.81	49.82	ml
Standard Water Vapor Volume	2.90	1.13	3.00	2.34	scf
Standard Meter Volume	47.5	46.9	49.1	47.8	dscf
Calculated Stack Moisture	5.76	2.35	5.76	4.62	%
Saturated Stack Moisture	100.00	100.00	100.00	100.00	%
Reported Stack Moisture Content	5.76	2.35	5.76	4.62	%
Method 3C Gas Analysis Data	70-100-70%-1	70-100-70%-2	70-100-70%-3	**Average**	**Units**
Carbon Dioxide Content	3.6	3.1	4.2	3.6	%
Oxygen Content	16.7	17.3	15.9	16.6	%
Nitrogen Content	79.7	79.5	79.9	79.7	%
Stack Dry Molecular Weight	29.22	29.18	29.30	29.23	lb/lb-mole
Stack Wet Molecular Weight	28.58	28.92	28.65	28.71	lb/lb-mole
Percent Excess Air	384.7	469.1	305.8	386.5	%
Volumetric Flow Rate Data	70-100-70%-1	70-100-70%-2	70-100-70%-3	**Average**	**Units**
Average Stack Gas Velocity	17.97	16.91	19.01	17.96	ft/sec
Stack Cross-Sectional Area	11.04	11.04	11.04	11.04	ft^2
Actual Stack Flow Rate	11,909	11,207	12,594	11,903	acfm
Wet Standard Stack Flow Rate	192	182	200	192	wkscfh
Dry Standard Stack Flow Rate	181,358	178,156	188,328	182,614	dscfh

METHOD 3C - DETERMINATION OF DRY MOLECULAR WEIGHT BY ANALYZER

Plant Name	Elk City Facilty	**Preliminary Date**	09/13/16		
Sampling Location	SCD-48	**Operator**	DA/BB		
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%-1		**Date**	09/14/16	**Run Start Time**	08:13		**Run Stop Time**	09:23
Sample Analysis Time	**CO_2 Conc.**	**O_2 Conc.**	**Methane Conc.**	**N_2 Conc.**	**Dry Molecular Weight**	**Calculated Fuel Factor**		**Excess Air**	**Fuel Factor in Range**
	(%CO_2)	(%O_2)	(ppmCO)	(%N_2)	(M_d)	$(F_o)_{avg}$		$(\%EA)_{avg}$	
hh:mm	%	%	ppm	%	lb/lb-mole			%	
01:10	3.6	16.7	0.0	79.7	29.22	1.183		384.7	N/A

Gas Analysis Data									
Run Number	70-100-70%-2		**Date**	09/14/16	**Run Start Time**	09:43		**Run Stop Time**	10:53
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			%	
01:10	3.1	17.3	0.0	79.5	29.18	1.146		469.1	N/A

Gas Analysis Data									
Run Number	70-100-70%-3		**Date**	09/14/16	**Run Start Time**	11:13		**Run Stop Time**	12:23
Sample Analysis Time	**CO_2 Conc.**	**O_2 Conc.**	**Methane Conc.**	**N_2 Conc.**	**Dry Molecular Weight**	**Calculated Fuel Factor**		**Excess Air**	**Fuel Factor in Range**
	(%CO_2)	(%O_2)	(ppmCO)	(%N_2)	(M_d)	$(F_o)_{avg}$		$(\%EA)_{avg}$	
hh:mm	%	%	ppm	%	lb/lb-mole			%	
01:10	4.2	15.9	0.0	79.9	29.30	1.196		305.8	N/A

METHOD 4 - DETERMINATION OF MOISTURE CONTENT IN STACK GASES

Plant Name	Elk City Facilty	**Preliminary Date**	09/13/16
Sampling Location	SCD-48	**Operator**	DA/BB
Project #	sfi-elkcity.ok-comp#1	**Ports Used**	2

Moisture Content Data									
Run Number		70-100-70%-1		**Date**	09/14/16	**Start Time**	08:13	**Stop Time**	09:23
Meter Box Number		SAMP-CP-0007				**Meter Cal Factor**	(Y)	0.976	
Total Meter Volume		(V_m)	48.730	dcf		**Barometric Pressure**	(P_b)	30.24	in Hg
Average Stack Temp		$(t_s)_{avg}$	1521	°F		**Stack Static Pressure**	(P_{static})	0.00	in H_2O
Average Meter Temp		$(t_m)_{avg}$	77	°F		**Avg Orifice Pressure**	$(\Delta H)_{avg}$	1.70	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)	865.40	781.20	588.10	926.50				
Initial Value	(V_i),(W_i)	830.10	768.80	584.40	916.30				
Net Value	(V_n),(W_n)	35.3	12.4	3.7	10.2				
Results									
Total Weight		(W_t)	61.60	g		**Water Vol Weighed**	($V_{wsg(std)}$)	2.904	scf
Std Meter Volume		($V_{m(std)}$)	47.501	dscf		**Sat. Moisture Content**	($B_{ws(svp)}$)	100.00	%
Calc Moisture Content		($B_{ws(calc)}$)	5.76	%		**Final Moisture Content**	(B_{ws})	5.76	%

Moisture Content Data									
Run Number		70-100-70%-2		**Date**	09/14/16	**Start Time**	09:43	**Stop Time**	10:53
Meter Box Number		SAMP-CP-0007				**Meter Cal Factor**	(Y)	0.976	
Total Meter Volume		(V_m)	48.600	dcf		**Barometric Pressure**	(P_b)	30.25	in Hg
Average Stack Temp		$(t_s)_{avg}$	1508	°F		**Stack Static Pressure**	(P_{static})	0.00	in H_2O
Average Meter Temp		$(t_m)_{avg}$	82	°F		**Avg Orifice Pressure**	$(\Delta H)_{avg}$	1.70	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)	876.50	783.10	589.20	898.50				
Initial Value	(V_i),(W_i)	865.40	781.20	588.10	888.70				
Net Value	(V_n),(W_n)	11.1	1.9	1.1	9.8				
Results									
Total Weight		(W_t)	23.90	g		**Water Vol Weighed**	($V_{wsg(std)}$)	1.127	scf
Std Meter Volume		($V_{m(std)}$)	46.891	dscf		**Sat. Moisture Content**	($B_{ws(svp)}$)	100.00	%
Calc Moisture Content		($B_{ws(calc)}$)	2.35	%		**Final Moisture Content**	(B_{ws})	2.35	%

Moisture Content Data									
Run Number		70-100-70%-3		**Date**	09/14/16	**Start Time**	11:13	**Stop Time**	12:23
Meter Box Number		SAMP-CP-0007				**Meter Cal Factor**	(Y)	0.976	
Total Meter Volume		(V_m)	50.870	dcf		**Barometric Pressure**	(P_b)	30.26	in Hg
Average Stack Temp		$(t_s)_{avg}$	1559	°F		**Stack Static Pressure**	(P_{static})	0.00	in H_2O
Average Meter Temp		$(t_m)_{avg}$	82	°F		**Avg Orifice Pressure**	$(\Delta H)_{avg}$	1.70	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)	908.80	796.00	593.20	913.00				
Initial Value	(V_i),(W_i)	876.50	783.10	589.20	898.50				
Net Value	(V_n),(W_n)	32.3	12.9	4.0	14.5				
Results									
Total Weight		(W_t)	63.70	g		**Water Vol Weighed**	($V_{wsg(std)}$)	3.003	scf
Std Meter Volume		($V_{m(std)}$)	49.132	dscf		**Sat. Moisture Content**	($B_{ws(svp)}$)	100.00	%
Calc Moisture Content		($B_{ws(calc)}$)	5.76	%		**Final Moisture Content**	(B_{ws})	5.76	%

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

Plant Name	Elk City Facilty
Sampling Location	SCD-48
Project #	sfi-elkcity.ok-comp#1

Date	09/14/16
Operator	DA/BB
Run Number	70-100-70%-1

Ideal Nozzle Diameter and IsoKinetic Factor Setup			
Pitot Coefficient	(C_p)	0.840	
Average Stack Temp	(t_s)	1521.3	°F
Average Meter Temp	(t_m)	76.5	
Orifice Meter Coefficient	($\Delta H@$)	1.744	in H_2O
Square Root ΔP	($\Delta p^{1/2}_{avg}$)	0.16	in H_2O
Stack Moisture Content	(B_{ws})	5.76	%
Stack Dry Molecular Weight	(M_d)	29.22	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
INCOMPLETE	**Post**		ft³/min@		in Hg
Pitot	**Pre (+)**	0.3	in H_2O for	30.0	sec
INCOMPLETE	**Pre (-)**	0.2	in H_2O for	30.0	sec
	Post (+)		in H_2O for		sec
	Post (-)		in H_2O for		sec

Sampling Equipment			
Meter Box Number	SAMP-CP-0007		
Meter Cal Factor	(Y)	0.976	
Low Flow Meter	SAMP-MN-0001		
Average Nozzle Diameter	(D_{na})		in
Suggested Nozzle Diameter	(D_{ni})	0.4395	in
Probe Number	SAMP-PF-0003		in
Probe Length	60		in
Liner Material	inconel		
Sample Case / Oven Number			
Impinger Case Number	SAMP-BC-0002		

Pressures			
Barometric Pressure	(P_b)	30.24	in Hg
Stack Static Pressure	(P_{static})	0.00	in H_2O
Absolute Stack Pressure	(P_s)	30.24	in Hg
Absolute Meter Pressure	(P_m)	30.37	in Hg

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

Run Time			
Start	08:13	**End**	09:23

Weights	**Imp 1**	**Imp 2**	**Imp 3**	**Imp 4**	**Imp 5**	**Imp 6**	**Imp 7**	**Imp 8**
Pre	830.1	768.8	584.4	916.3				
Post	865.4	781.2	588.1	926.5				

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	432.080	0.010	1.744	1.70	1208	250		51			71	67	8.0	0.10	9.98	2.066		49.590
A-2	2.7	00:02:43	434.170	0.020	1.744	1.70	1555	250		50			74	67	8.0	0.14	15.51	3.959		47.509
A-3	5.4	00:05:25	436.090	0.030	1.744	1.70	1648	250		50			75	68	8.0	0.17	19.43	6.055		48.440
A-4	8.1	00:08:07	438.220	0.040	1.744	1.70	1718	250		51			76	68	8.0	0.20	22.80	8.110		48.658
A-5	10.8	00:10:50	440.310	0.040	1.744	1.70	1762	250		51			77	69	8.0	0.20	23.03	9.778		46.933
A-6	13.5	00:13:33	442.010	0.040	1.744	1.70	1602	250		52			78	70	8.0	0.20	22.19	11.805		47.220
A-7	16.3	00:16:15	444.080	0.030	1.744	1.70	1367	250		52			78	70	8.0	0.17	18.09	13.754		47.157
A-8	19.0	00:18:58	446.070	0.040	1.744	1.70	1469	250		53			79	71	8.0	0.20	21.46	16.198		48.594
A-9	21.7	00:21:40	448.570	0.040	1.744	1.70	1599	250		53			79	71	8.0	0.20	22.17	17.615		46.974
A-10	24.4	00:24:22	450.020	0.040	1.744	1.70	1679	250		53			80	72	8.0	0.20	22.60	19.713		47.312
A-11	27.1	00:27:05	452.170	0.045	1.744	1.70	1693	250		54			81	73	8.0	0.21	24.05	21.583		47.090
A-12	29.8	00:29:47	454.090	0.045	1.744	1.70	1682	250		54			81	73	8.0	0.21	23.98	23.521		47.042
B-1	32.5	00:32:30	456.080	0.010	1.744	1.70	1301	250		55			78	74	8.0	0.10	10.25	25.863		47.747
B-2	35.2	00:35:12	458.480	0.020	1.744	1.70	1551	250		53			81	75	8.0	0.14	15.49	27.700		47.486
B-3	37.9	00:37:55	460.370	0.030	1.744	1.70	1763	250		53			81	75	8.0	0.17	19.95	29.742		47.587
B-4	40.6	00:40:37	462.470	0.040	1.744	1.70	1645	250		54			82	76	8.0	0.20	22.42	31.799		47.698
B-5	43.3	00:43:20	464.590	0.035	1.744	1.70	1577	250		54			82	76	8.0	0.19	20.63	33.924		47.892
B-6	46.0	00:46:03	466.780	0.030	1.744	1.70	1377	250		54			82	82	8.0	0.17	18.14	36.027		48.036
B-7	48.8	00:48:45	468.960	0.060	1.744	1.70	1647	250		54			82	76	8.0	0.24	27.47	37.997		47.996
B-8	51.5	00:51:28	470.990	0.010	1.744	1.70	1569	250		54			83	76	8.0	0.10	11.00	39.848		47.818
B-9	54.2	00:54:10	472.900	0.010	1.744	1.70	1483	250		54			84	77	8.0	0.10	10.77	41.513		47.443
B-10	56.9	00:56:53	474.620	0.01	1.744	1.70	1267	250		54			84	77	8.0	0.10	10.15	43.525		47.482
B-11	59.6	00:59:35	476.700	0.01	1.744	1.70	1170	250		54			84	77	8.0	0.10	9.86	45.654		47.639
B-12	62.3	01:02:18	478.900	0.01	1.744	1.70	1180	250		54			84	77	8.0	0.10	9.89	47.502		47.502
Last Pt	65.0	01:05:00	480.810																	
Final Val	65.0	01:05:00	480.810											**Max Vac**	8.0	**Final Values**		47.502		
Average Values				0.03		1.70	1521	250		53			80	73		0.16	17.97			
													77							

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

Plant Name	Elk City Facilty
Sampling Location	SCD-48
Project #	sfi-elkcity.ok-comp#1

Date	09/14/16
Operator	DA/BB
Run Number	70-100-70%-2

Ideal Nozzle Diameter and IsoKinetic Factor Setup			
Pitot Coefficient	(C_p)	0.840	
Average Stack Temp	(t_s)	1507.6	°F
Average Meter Temp	(t_m)	82.2	
Orifice Meter Coefficient	($\Delta H@$)	1.744	in H_2O
Square Root ΔP	($\Delta p^{1/2}_{avg}$)	0.16	in H_2O
Stack Moisture Content	(B_{ws})	2.35	%
Stack Dry Molecular Weight	(M_d)	29.18	lb/lb-mole
Estimated Orifice Flow Rate	(Q_m)	0.73	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	30.0	sec
< 3.0	**Pre (-)**	0.3	in H_2O for	30.0	sec
	Post (+)	0.3	in H_2O for	30.0	sec
	Post (-)	0.3	in H_2O for	30.0	sec

Sampling Equipment			
Meter Box Number	SAMP-CP-0007		
Meter Cal Factor	(Y)	0.976	
Low Flow Meter	SAMP-MN-0001		
Average Nozzle Diameter	(D_{na})		in
Suggested Nozzle Diameter	(D_{ni})	0.4372	in
Probe Number	SAMP-SP-0001		in
Probe Length	60		in
Liner Material	inconel		
Sample Case / Oven Number			
Impinger Case Number	SAMP-BC-0002		

Pressures			
Barometric Pressure	(P_b)	30.25	in Hg
Stack Static Pressure	(P_{static})	0.00	in H_2O
Absolute Stack Pressure	(P_s)	30.25	in Hg
Absolute Meter Pressure	(P_m)	30.38	in Hg

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

Run Time			
Start	09:43	**End**	10:53

Weights	**Imp 1**	**Imp 2**	**Imp 3**	**Imp 4**	**Imp 5**	**Imp 6**	**Imp 7**	**Imp 8**
Pre	865.4	781.2	588.1	888.7				
Post	876.5	783.1	589.2	898.5				

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	482.310	0.010	1.744	1.70	1250	250		58			80	78	2.0	0.10	10.04	2.126		51.016
A-2	2.7	00:02:43	484.500	0.010	1.744	1.70	1273	250		58			80	78	2.0	0.10	10.11	4.543		54.510
A-3	5.4	00:05:25	486.990	0.020	1.744	1.70	1501	250		55			82	78	2.0	0.14	15.21	6.141		49.129
A-4	8.1	00:08:07	488.640	0.030	1.744	1.70	1553	250		55			83	77	2.0	0.17	18.87	8.243		49.460
A-5	10.8	00:10:50	490.810	0.040	1.744	1.70	1635	250		55			84	77	2.0	0.20	22.23	9.753		46.816
A-6	13.5	00:13:33	492.370	0.050	1.744	1.70	1785	250		55			84	78	2.0	0.22	25.73	11.900		47.601
A-7	16.3	00:16:15	494.590	0.040	1.744	1.70	1406	250		56			84	77	2.0	0.20	20.98	13.913		47.703
A-8	19.0	00:18:58	496.670	0.040	1.744	1.70	1407	250		56			83	78	2.0	0.20	20.98	16.033		48.100
A-9	21.7	00:21:40	498.860	0.040	1.744	1.70	1311	250		55			84	79	2.0	0.20	20.44	17.531		46.749
A-10	24.4	00:24:22	500.410	0.010	1.744	1.70	1406	250		55			85	79	2.0	0.10	10.49	19.732		47.356
A-11	27.1	00:27:05	502.690	0.010	1.744	1.70	1436	250		55			85	79	2.0	0.10	10.57	21.585		47.094
A-12	29.8	00:29:47	504.610	0.010	1.744	1.70	1530	250		55			86	79	2.0	0.10	10.83	23.822		47.644
B-1	32.5	00:32:30	506.930	0.010	1.744	1.70	1219	250		58			83	80	2.0	0.10	9.95	25.812		47.654
B-2	35.2	00:35:12	508.990	0.015	1.744	1.70	1385	250		56			85	80	2.0	0.12	12.77	27.722		47.523
B-3	37.9	00:37:55	510.970	0.020	1.744	1.70	1647	250		55			86	80	2.0	0.14	15.76	29.552		47.284
B-4	40.6	00:40:37	512.870	0.030	1.744	1.70	1694	250		56			86	81	2.0	0.17	19.52	31.401		47.101
B-5	43.3	00:43:20	514.790	0.040	1.744	1.70	1771	250		56			87	81	2.0	0.20	22.94	33.516		47.317
B-6	46.0	00:46:03	516.990	0.040	1.744	1.70	1752	250		56			87	81	2.0	0.20	22.84	35.363		47.150
B-7	48.8	00:48:45	518.910	0.030	1.744	1.70	1375	250		56			87	81	2.0	0.17	18.02	37.305		47.123
B-8	51.5	00:51:28	520.930	0.030	1.744	1.70	1331	250		57			87	82	2.0	0.17	17.80	39.265		47.119
B-9	54.2	00:54:10	522.970	0.020	1.744	1.70	1627	250		57			87	82	2.0	0.14	15.69	41.187		47.071
B-10	56.9	00:56:53	524.970	0.02	1.744	1.70	1634	250		57			87	82	2.0	0.14	15.71	43.128		47.049
B-11	59.6	00:59:35	526.990	0.03	1.744	1.70	1629	250		57			87	82	2.0	0.17	19.22	45.011		46.968
B-12	62.3	01:02:18	528.950	0.03	1.744	1.70	1625	250		58			87	82	2.0	0.17	19.20	46.894		46.894
Last Pt	65.0	01:05:00	530.910																	
Final Val	65.0	01:05:00	530.910											**Max Vac**	2.0	**Final Values**		46.894		
Average Values				0.03		1.70	1508	250		56			85	80		0.16	16.91			
													82							

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

Plant Name	Elk City Facilty
Sampling Location	SCD-48
Project #	sfi-elkcity.ok-comp#1

Date	09/14/16
Operator	DA/BB
Run Number	70-100-70%-3

Ideal Nozzle Diameter and IsoKinetic Factor Setup			
Pitot Coefficient	(C_p)	0.840	
Average Stack Temp	(t_s)	1559.3	°F
Average Meter Temp	(t_m)	81.9	
Orifice Meter Coefficient	($\Delta H@$)	1.744	in H_2O
Square Root ΔP	($\Delta p^{1/2}_{avg}$)	0.17	in H_2O
Stack Moisture Content	(B_{ws})	5.76	%
Stack Dry Molecular Weight	(M_d)	29.30	lb/lb-mole
Estimated Orifice Flow Rate	(Q_m)	0.72	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	30.0	sec
< 3.0	**Pre (-)**	0.3	in H_2O for	30.0	sec
	Post (+)	0.3	in H_2O for	30.0	sec
	Post (-)	0.3	in H_2O for	30.0	sec

Sampling Equipment			
Meter Box Number	SAMP-CP-0007		
Meter Cal Factor	(Y)	0.976	
Low Flow Meter	SAMP-MN-0001		
Average Nozzle Diameter	(D_{na})		in
Suggested Nozzle Diameter	(D_{ni})	0.4260	in
Probe Number	SAMP-SP-0001		in
Probe Length	60		in
Liner Material	inconel		
Sample Case / Oven Number			
Impinger Case Number	SAMP-BC-0002		

Pressures			
Barometric Pressure	(P_b)	30.26	in Hg
Stack Static Pressure	(P_{static})	0.00	in H_2O
Absolute Stack Pressure	(P_s)	30.26	in Hg
Absolute Meter Pressure	(P_m)	30.39	in Hg

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

Run Time			
Start	11:13	**End**	12:23

Weights	**Imp 1**	**Imp 2**	**Imp 3**	**Imp 4**	**Imp 5**	**Imp 6**	**Imp 7**	**Imp 8**
Pre	876.5	783.1	589.2	898.5				
Post	908.8	796.0	593.2	913.0				

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	533.120	0.030	1.744	1.70	1289	250		59			84	80	8.0	0.17	17.67	2.607		62.569
A-2	2.7	00:02:43	535.820	0.025	1.744	1.70	1667	250		55			84	79	8.0	0.16	17.78	4.134		49.608
A-3	5.4	00:05:25	537.400	0.030	1.744	1.70	1710	250		55			85	79	8.0	0.17	19.68	6.181		49.448
A-4	8.1	00:08:07	539.520	0.035	1.744	1.70	1788	250		56			85	79	8.0	0.19	21.63	8.112		48.673
A-5	10.8	00:10:50	541.520	0.045	1.744	1.70	1755	250		58			86	78	8.0	0.21	24.35	10.188		48.903
A-6	13.5	00:13:33	543.670	0.045	1.744	1.70	1742	250		58			86	78	8.0	0.21	24.28	12.409		49.636
A-7	16.3	00:16:15	545.970	0.030	1.744	1.70	1376	250		61			87	79	8.0	0.17	18.10	14.163		48.559
A-8	19.0	00:18:58	547.790	0.030	1.744	1.70	1369	250		61			86	79	8.0	0.17	18.07	16.102		48.306
A-9	21.7	00:21:40	549.800	0.050	1.744	1.70	1760	250		58			86	80	8.0	0.22	25.69	18.444		49.184
A-10	24.4	00:24:22	552.230	0.050	1.744	1.70	1762	250		62			86	80	8.0	0.22	25.71	20.757		49.817
A-11	27.1	00:27:05	554.630	0.050	1.744	1.70	1813	250		63			86	79	8.0	0.22	26.00	22.494		49.077
A-12	29.8	00:29:47	556.430	0.050	1.744	1.70	1799	250		63			86	79	8.0	0.22	25.92	24.230		48.460
B-1	32.5	00:32:30	558.230	0.010	1.744	1.70	1313	250		64			82	80	8.0	0.10	10.27	26.436		48.804
B-2	35.2	00:35:12	560.510	0.010	1.744	1.70	1230	250		64			84	79	8.0	0.10	10.03	28.368		48.632
B-3	37.9	00:37:55	562.510	0.020	1.744	1.70	1574	250		64			84	80	8.0	0.14	15.55	30.203		48.325
B-4	40.6	00:40:37	564.410	0.030	1.744	1.70	1613	250		65			84	80	8.0	0.17	19.23	32.511		48.766
B-5	43.3	00:43:20	566.800	0.030	1.744	1.70	1636	250		65			84	80	8.0	0.17	19.34	34.345		48.487
B-6	46.0	00:46:03	568.700	0.040	1.744	1.70	1411	250		65			84	80	8.0	0.20	21.10	36.914		49.218
B-7	48.8	00:48:45	571.360	0.040	1.744	1.70	1639	250		65			82	80	8.0	0.20	22.35	39.110		49.402
B-8	51.5	00:51:28	573.630	0.030	1.744	1.70	1532	250		66			82	80	8.0	0.17	18.85	41.276		49.532
B-9	54.2	00:54:10	575.870	0.030	1.744	1.70	1538	250		67			82	80	8.0	0.17	18.88	42.592		48.677
B-10	56.9	00:56:53	577.230	0.02	1.744	1.70	1421	250		67			82	80	8.0	0.14	14.96	44.798		48.870
B-11	59.6	00:59:35	579.510	0.01	1.744	1.70	1375	250		67			82	80	8.0	0.10	10.45	46.403		48.421
B-12	62.3	01:02:18	581.170	0.01	1.744	1.70	1310	250		67			82	80	8.0	0.10	10.26	49.131		49.131
Last Pt	65.0	01:05:00	583.990																	
Final Val	65.0	01:05:00	583.990											**Max Vac**	8.0	**Final Values**		49.131		
Average Values				0.03		1.70	1559	250		62			84	80		0.17	19.01			
													82							

Superior Fabrication, INC
September 14, 2016
SCD-48
Elk City Plant

Unit Data

Meas. Stack Moisture	5.8	%
Stack Exhaust Flow (M2)	181,358	SCFH

Weather Data

Barometric Pressure	30.24	in. Hg
Relative Humidity	69	%
Ambient Temperature	69	^{o}F
Specific Humidity	0.010312	lb H_2O / lb air

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

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
A1	09/14/16 08:13:29	5460	16.02	3.61	0.46	3.59	0.78	51.00	2,035.00
	09/14/16 08:13:59	5490	15.87	4.68	0.43	3.67	0.78	51.00	2,035.00
	09/14/16 08:14:29	5520	15.81	4.66	0.41	3.73	0.78	50.90	2,032.00
	09/14/16 08:14:59	5550	15.83	4.17	0.37	3.69	0.78	50.90	2,032.00
	09/14/16 08:15:29	5580	15.70	3.51	0.37	3.80	0.79	50.80	2,034.00
	09/14/16 08:15:59	5610	15.96	3.61	0.43	3.63	0.79	50.80	2,034.00
	09/14/16 08:16:29	5640	15.84	4.08	0.42	3.68	0.79	50.80	2,033.00
	09/14/16 08:16:59	5670	15.99	3.99	0.45	3.61	0.79	50.80	2,033.00
	09/14/16 08:17:29	5700	15.87	4.11	0.43	3.67	0.79	50.80	2,033.00
	09/14/16 08:17:59	5730	15.84	3.93	0.44	3.69	0.79	50.80	2,033.00
	09/14/16 08:18:29	5760	15.82	3.82	0.42	3.72	0.79	50.80	2,034.00
	09/14/16 08:18:59	5790	15.23	3.44	0.30	4.06	0.79	50.80	2,034.00
	09/14/16 08:19:29	5820	13.79	1.85	0.20	5.04	1.09	50.80	2,372.00
	09/14/16 08:19:59	5850	13.77	0.32	0.24	5.16	1.09	50.80	2,372.00
	09/14/16 08:20:29	5880	16.07	0.05	0.31	3.54	1.78	50.80	3,110.00
	09/14/16 08:20:59	5910	15.99	0.18	0.31	3.57	1.78	50.80	3,110.00
	09/14/16 08:21:29	5940	15.77	0.04	0.29	3.71	1.81	50.20	3,149.00
	09/14/16 08:21:59	5970	15.68	-0.09	0.33	3.78	1.81	50.20	3,149.00
	09/14/16 08:22:29	6000	15.48	-0.12	0.32	3.91	1.81	49.10	3,144.00
	09/14/16 08:22:59	6030	15.64	-0.21	0.35	3.84	1.81	49.10	3,144.00
	09/14/16 08:23:29	6060	15.58	-0.21	0.34	3.83	1.82	47.80	3,144.00
	09/14/16 08:23:59	6090	15.63	-0.22	0.38	3.89	1.82	47.80	3,144.00
	09/14/16 08:24:29	6120	15.68	-0.22	0.35	3.71	1.78	46.60	3,116.00
	09/14/16 08:24:59	6150	15.33	-0.22	0.30	4.04	1.78	46.60	3,116.00
	09/14/16 08:25:29	6180	14.98	-0.22	0.29	4.21	1.82	45.70	3,149.00
	09/14/16 08:25:59	6210	15.92	-0.22	0.33	3.72	1.82	45.70	3,149.00
	09/14/16 08:26:29	6240	15.59	-0.20	0.30	3.82	1.74	45.20	3,074.00
	09/14/16 08:26:59	6270	15.28	-0.22	0.30	4.07	1.74	45.20	3,074.00
	09/14/16 08:27:29	6300	15.25	-0.25	0.31	4.06	1.79	45.10	3,115.00
	09/14/16 08:27:59	6330	15.27	-0.27	0.37	4.17	1.79	45.10	3,115.00
	09/14/16 08:28:29	6360	14.70	-0.25	0.32	4.39	1.89	45.30	3,189.00
	09/14/16 08:28:59	6390	15.27	-0.30	0.32	4.12	1.89	45.30	3,189.00
	09/14/16 08:29:29	6420	16.07	-0.23	0.34	3.57	1.87	45.30	3,164.00
	09/14/16 08:29:59	6450	15.48	-0.23	0.33	3.92	1.87	45.30	3,164.00
	09/14/16 08:30:29	6480	16.32	-0.29	0.36	3.44	1.72	45.50	3,075.00
	09/14/16 08:30:59	6510	17.27	-0.03	0.39	2.68	1.72	45.50	3,075.00
	09/14/16 08:31:29	6540	17.17	0.82	0.37	2.73	0.95	45.90	2,232.00
	09/14/16 08:31:59	6570	17.20	2.27	0.39	2.74	0.95	45.90	2,232.00
	09/14/16 08:32:29	6600	17.27	4.06	0.39	2.68	0.84	46.20	2,090.00
	09/14/16 08:32:59	6630	17.11	5.20	0.42	2.75	0.84	46.20	2,090.00
	09/14/16 08:33:29	6660	17.10	6.04	0.43	2.79	0.82	46.60	2,064.00
A2	09/14/16 08:33:59	6690	16.65	6.14	0.41	3.13	0.82	46.60	2,064.00
	09/14/16 08:34:29	6720	16.84	4.95	0.41	3.00	0.81	47.00	2,057.00
	09/14/16 08:34:59	6750	17.35	5.68	0.44	2.62	0.81	47.00	2,057.00
	09/14/16 08:35:29	6780	17.50	8.11	0.48	2.53	0.81	47.60	2,052.00
	09/14/16 08:35:59	6810	16.15	8.60	0.33	3.37	0.81	47.60	2,052.00
	09/14/16 08:36:29	6840	15.09	3.33	0.31	4.22	1.40	48.10	2,710.00
	09/14/16 08:36:59	6870	15.56	0.36	0.29	3.89	1.40	48.10	2,710.00
	09/14/16 08:37:29	6900	15.58	-0.06	0.30	3.88	1.78	48.60	3,121.00
	09/14/16 08:37:59	6930	15.78	-0.20	0.30	3.74	1.78	48.60	3,121.00
	09/14/16 08:38:29	6960	16.05	-0.22	0.31	3.59	1.78	48.90	3,126.00
	09/14/16 08:38:59	6990	16.16	-0.11	0.33	3.43	1.78	48.90	3,126.00
	09/14/16 08:39:29	7020	15.70	-0.17	0.31	3.82	1.79	49.20	3,129.00
	09/14/16 08:39:59	7050	15.96	-0.19	0.34	3.58	1.79	49.20	3,129.00
	09/14/16 08:40:29	7080	15.63	-0.19	0.33	3.86	1.79	49.40	3,121.00
	09/14/16 08:40:59	7110	15.18	-0.19	0.30	4.07	1.79	49.40	3,121.00
	09/14/16 08:41:29	7140	15.00	-0.22	0.29	4.32	1.80	49.70	3,126.00
	09/14/16 08:41:59	7170	15.72	-0.27	0.30	3.79	1.80	49.70	3,126.00
	09/14/16 08:42:29	7200	15.46	-0.20	0.31	3.95	1.80	50.00	3,123.00
	09/14/16 08:42:59	7230	15.17	-0.25	0.32	4.13	1.80	50.00	3,123.00

Superior Fabrication, INC
September 14, 2016
SCD-48
Elk City Plant

Unit Data

Meas. Stack Moisture	5.8	%
Stack Exhaust Flow (M2)	181,358	SCFH

Weather Data

Barometric Pressure	30.24	in. Hg
Relative Humidity	69	%
Ambient Temperature	69	^{o}F
Specific Humidity	0.010312	lb H_2O / lb air

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

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
	09/14/16 08:43:29	7260	15.41	-0.22	0.30	4.01	1.81	50.20	3,131.00
	09/14/16 08:43:59	7290	15.57	-0.29	0.31	3.88	1.81	50.20	3,131.00
	09/14/16 08:44:29	7320	15.94	-0.27	0.34	3.65	1.81	50.40	3,129.00
	09/14/16 08:44:59	7350	15.76	-0.21	0.32	3.70	1.81	50.40	3,129.00
	09/14/16 08:45:29	7380	15.81	-0.28	0.31	3.74	1.81	50.50	3,125.00
	09/14/16 08:45:59	7410	16.05	-0.28	0.31	3.54	1.81	50.50	3,125.00
	09/14/16 08:46:29	7440	15.81	-0.23	0.31	3.68	1.80	50.60	3,126.00
	09/14/16 08:46:59	7470	15.50	-0.20	0.32	3.95	1.80	50.60	3,126.00
	09/14/16 08:47:29	7500	15.88	-0.28	0.31	3.65	1.81	50.60	3,128.00
	09/14/16 08:47:59	7530	16.52	-0.24	0.36	3.26	1.81	50.60	3,128.00
	09/14/16 08:48:29	7560	17.29	0.12	0.36	2.69	1.13	50.70	2,439.00
	09/14/16 08:48:59	7590	17.69	1.79	0.46	2.39	1.13	50.70	2,439.00
	09/14/16 08:49:29	7620	17.43	4.61	0.45	2.53	0.80	51.00	2,034.00
	09/14/16 08:49:59	7650	17.47	6.44	0.47	2.55	0.80	51.00	2,034.00
	09/14/16 08:50:29	7680	17.20	7.59	0.48	2.71	0.80	51.00	2,043.00
	09/14/16 08:50:59	7710	17.42	7.48	0.50	2.59	0.80	51.00	2,043.00
	09/14/16 08:51:29	7740	17.66	8.30	0.50	2.41	0.80	50.90	2,044.00
	09/14/16 08:51:59	7770	17.22	10.44	0.45	2.66	0.80	50.90	2,044.00
	09/14/16 08:52:29	7800	17.27	9.80	0.46	2.68	0.79	50.90	2,039.00
	09/14/16 08:52:59	7830	17.48	8.79	0.48	2.55	0.79	50.90	2,039.00
	09/14/16 08:53:29	7860	17.73	10.63	0.52	2.33	0.79	50.90	2,033.00
A3	09/14/16 08:53:59	7890	16.36	9.34	0.33	3.21	0.79	50.90	2,033.00
	09/14/16 08:54:29	7920	15.76	3.17	0.40	3.76	1.35	50.90	2,684.00
	09/14/16 08:54:59	7950	15.90	0.53	0.45	3.68	1.35	50.90	2,684.00
	09/14/16 08:55:29	7980	16.38	0.06	0.46	3.24	1.75	50.90	3,109.00
	09/14/16 08:55:59	8010	16.09	-0.03	0.46	3.52	1.75	50.90	3,109.00
	09/14/16 08:56:29	8040	16.35	-0.10	0.45	3.34	1.77	50.90	3,108.00
	09/14/16 08:56:59	8070	15.63	-0.16	0.43	3.71	1.77	50.90	3,108.00
	09/14/16 08:57:29	8100	14.76	-0.25	0.49	4.47	1.77	51.00	3,112.00
	09/14/16 08:57:59	8130	15.68	-0.28	0.55	3.80	1.77	51.00	3,112.00
	09/14/16 08:58:29	8160	15.33	-0.26	0.54	4.02	1.79	51.10	3,114.00
	09/14/16 08:58:59	8190	15.52	-0.28	0.47	3.88	1.79	51.10	3,114.00
	09/14/16 08:59:29	8220	15.10	-0.30	0.44	4.25	1.79	51.30	3,113.00
	09/14/16 08:59:59	8250	15.54	-0.30	0.45	3.85	1.79	51.30	3,113.00
	09/14/16 09:00:29	8280	15.07	-0.29	0.44	4.16	1.80	51.40	3,112.00
	09/14/16 09:00:59	8310	14.51	-0.30	0.45	4.63	1.80	51.40	3,112.00
	09/14/16 09:01:29	8340	15.67	-0.31	0.51	3.84	1.79	51.40	3,113.00
	09/14/16 09:01:59	8370	15.49	-0.24	0.53	3.93	1.79	51.40	3,113.00
	09/14/16 09:02:29	8400	15.91	-0.27	0.59	3.62	1.79	51.40	3,112.00
	09/14/16 09:02:59	8430	15.60	-0.27	0.55	3.84	1.79	51.40	3,112.00
	09/14/16 09:03:29	8460	15.22	-0.27	0.55	4.08	1.79	51.40	3,112.00
	09/14/16 09:03:59	8490	14.49	-0.31	0.60	4.62	1.79	51.40	3,112.00
	09/14/16 09:04:29	8520	14.89	-0.31	0.58	4.30	1.80	51.40	3,115.00
	09/14/16 09:04:59	8550	15.57	-0.28	0.62	3.91	1.80	51.40	3,115.00
	09/14/16 09:05:29	8580	15.08	-0.28	0.62	4.19	1.80	51.50	3,115.00
	09/14/16 09:05:59	8610	16.61	-0.29	0.65	3.24	1.80	51.50	3,115.00
	09/14/16 09:06:29	8640	17.08	-0.09	0.59	2.75	1.19	51.60	2,509.00
	09/14/16 09:06:59	8670	16.69	0.74	0.52	3.11	1.19	51.60	2,509.00
	09/14/16 09:07:29	8700	16.92	1.87	0.49	2.92	0.82	51.80	2,039.00
	09/14/16 09:07:59	8730	17.28	3.55	0.48	2.66	0.82	51.80	2,039.00
	09/14/16 09:08:29	8760	17.36	5.21	0.48	2.61	0.80	51.80	2,032.00
	09/14/16 09:08:59	8790	17.53	7.30	0.50	2.51	0.80	51.80	2,032.00
	09/14/16 09:09:29	8820	17.36	8.99	0.50	2.60	0.80	51.70	2,037.00
	09/14/16 09:09:59	8850	17.39	8.68	0.49	2.59	0.80	51.70	2,037.00
	09/14/16 09:10:29	8880	17.24	10.26	0.44	2.62	0.79	51.60	2,037.00
	09/14/16 09:10:59	8910	15.70	7.96	0.33	3.74	0.79	51.60	2,037.00
	09/14/16 09:11:29	8940	15.03	1.97	0.30	4.20	1.55	51.60	2,901.00
	09/14/16 09:11:59	8970	15.31	0.15	0.32	4.12	1.55	51.60	2,901.00
	09/14/16 09:12:29	9000	15.20	-0.13	0.31	4.11	1.75	51.50	3,105.00
	09/14/16 09:12:59	9030	15.19	-0.28	0.30	4.13	1.75	51.50	3,105.00

Superior Fabrication, INC
September 14, 2016
SCD-48
Elk City Plant

Unit Data

Meas. Stack Moisture	5.8	%
Stack Exhaust Flow (M2)	181,358	SCFH

Weather Data

Barometric Pressure	30.24	in. Hg
Relative Humidity	69	%
Ambient Temperature	69	^oF
Specific Humidity	0.010312	lb H_2O / lb air

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

Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^oF	Fuel Flow SCFH
09/14/16 09:13:29	9060	15.23	-0.29	0.30	4.14	1.77	51.60	3,107.00
09/14/16 09:13:59	9090	15.92	-0.28	0.31	3.63	1.77	51.60	3,107.00
09/14/16 09:14:29	9120	15.44	-0.22	0.31	3.98	1.78	51.90	3,105.00
09/14/16 09:14:59	9150	15.91	-0.31	0.36	3.64	1.78	51.90	3,105.00
09/14/16 09:15:29	9180	16.17	-0.24	0.35	3.49	1.77	52.00	3,105.00
09/14/16 09:15:59	9210	16.11	-0.19	0.35	3.47	1.77	52.00	3,105.00
09/14/16 09:16:29	9240	15.88	-0.20	0.35	3.67	1.78	52.20	3,109.00
09/14/16 09:16:59	9270	15.93	-0.23	0.34	3.62	1.78	52.20	3,109.00
09/14/16 09:17:29	9300	15.70	-0.27	0.34	3.79	1.78	52.40	3,106.00
09/14/16 09:17:59	9330	15.97	-0.27	0.36	3.61	1.78	52.40	3,106.00
09/14/16 09:18:29	9360	15.83	-0.27	0.35	3.70	1.79	52.50	3,106.00
09/14/16 09:18:59	9390	16.17	-0.21	0.36	3.46	1.79	52.50	3,106.00
09/14/16 09:19:29	9420	16.21	-0.19	0.37	3.45	1.78	52.60	3,104.00
09/14/16 09:19:59	9450	16.33	-0.22	0.43	3.35	1.78	52.60	3,104.00
09/14/16 09:20:29	9480	15.68	-0.22	0.42	3.77	1.46	52.70	2,770.00
09/14/16 09:20:59	9510	15.84	-0.25	0.45	3.75	1.46	52.70	2,770.00
09/14/16 09:21:29	9540	17.42	-0.12	0.49	2.63	0.81	53.00	2,036.00
09/14/16 09:21:59	9570	17.54	0.85	0.48	2.49	0.81	53.00	2,036.00
09/14/16 09:22:29	9600	17.49	2.81	0.49	2.52	0.80	53.10	2,031.00
09/14/16 09:22:59	9630	17.39	4.38	0.49	2.61	0.80	53.10	2,031.00
09/14/16 09:23:29	9660	17.53	7.01	0.49	2.49	0.79	53.10	2,033.00
RAW AVERAGE		**16.04**	**1.76**	**0.40**	**3.54**	**1.43**	**50.13**	**2,729.06**

		O_2	CO	THC	CO_2	Press. Trans	Temp. Trans.	F-Flow Trans.
	Serial Number:	INSTO2-0011	INST-CO-0022	INST-TH-0001	INST-C2-0013	1633266	1633266	1633266
						(in. H_2O)	**(^oF)**	**(SCFH)**
	Initial Zero	0.06	-0.09	0.02	-0.02	1633266	1633266	1633266
	Final Zero	0.04	0.09	0.02	-0.04			
	Avg. Zero	0.05	0.00	0.02	-0.03			
Bias								
	Initial UpScale	12.04	9.20	3.22	9.02			
	Final UpScale	11.96	9.01	3.03	9.06			
	Avg. UpScale	12.00	9.11	3.13	9.04			
Upscale Cal Gas		12.00	9.24	3.00	8.99			

EMISSIONS DATA	O_2	CO	THC	CO_2
Corrected Raw Average (ppm/% dry basis)	16.06	1.78	0.37	3.54
Corrected Raw Average (ppm/% wet basis)	15.13	1.68	0.34	3.34
Emission Rate (lb/hr)	N/A	0.02	0.01	N/A

Superior Fabrication, INC
September 14, 2016
SCD-48
Elk City Plant

Unit Data

Meas. Stack Moisture	2.4	%
Stack Exhaust Flow (M2)	178,156	SCFH

Weather Data

Barometric Pressure	30.25	in. Hg
Relative Humidity	71	%
Ambient Temperature	72	^{o}F
Specific Humidity	0.011776	lb H_2O / lb air

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

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
A1	09/14/16 09:43:29	10860	17.34	13.08	0.70	2.61	0.73	55.30	1,974.00
	09/14/16 09:43:59	10890	17.11	13.03	0.61	2.73	0.73	55.30	1,974.00
	09/14/16 09:44:29	10920	16.92	10.80	0.62	2.89	0.76	55.40	2,014.00
	09/14/16 09:44:59	10950	17.24	10.20	0.66	2.68	0.76	55.40	2,014.00
	09/14/16 09:45:29	10980	16.98	12.05	0.60	2.83	0.75	55.40	2,010.00
	09/14/16 09:45:59	11010	17.14	10.48	0.64	2.70	0.75	55.40	2,010.00
	09/14/16 09:46:29	11040	17.11	10.77	0.65	2.76	0.75	55.40	2,007.00
	09/14/16 09:46:59	11070	17.35	12.54	0.69	2.57	0.75	55.40	2,007.00
	09/14/16 09:47:29	11100	17.13	13.22	0.56	2.68	0.77	55.50	2,026.00
	09/14/16 09:47:59	11130	16.42	7.48	0.43	3.17	0.77	55.50	2,026.00
	09/14/16 09:48:29	11160	15.98	2.33	0.40	3.54	1.52	55.60	2,889.00
	09/14/16 09:48:59	11190	15.91	0.69	0.38	3.50	1.52	55.60	2,889.00
	09/14/16 09:49:29	11220	15.72	0.16	0.43	3.74	1.68	55.70	3,059.00
	09/14/16 09:49:59	11250	15.65	-0.12	0.41	3.78	1.68	55.70	3,059.00
	09/14/16 09:50:29	11280	15.33	-0.21	0.37	3.97	1.71	55.90	3,069.00
	09/14/16 09:50:59	11310	15.67	-0.26	0.45	3.80	1.71	55.90	3,069.00
	09/14/16 09:51:29	11340	15.55	-0.28	0.45	3.83	1.72	56.00	3,070.00
	09/14/16 09:51:59	11370	15.48	-0.28	0.41	3.87	1.72	56.00	3,070.00
	09/14/16 09:52:29	11400	15.74	-0.28	0.44	3.74	1.73	56.10	3,077.00
	09/14/16 09:52:59	11430	15.87	-0.26	0.44	3.60	1.73	56.10	3,077.00
	09/14/16 09:53:29	11460	15.59	-0.24	0.39	3.82	1.74	56.10	3,077.00
	09/14/16 09:53:59	11490	15.73	-0.26	0.42	3.76	1.74	56.10	3,077.00
	09/14/16 09:54:29	11520	15.98	-0.27	0.43	3.54	1.74	56.20	3,074.00
	09/14/16 09:54:59	11550	16.01	-0.28	0.45	3.52	1.74	56.20	3,074.00
	09/14/16 09:55:29	11580	15.97	-0.27	0.46	3.57	1.74	56.20	3,077.00
	09/14/16 09:55:59	11610	15.84	-0.26	0.45	3.63	1.74	56.20	3,077.00
	09/14/16 09:56:29	11640	15.48	-0.29	0.46	3.92	1.75	56.20	3,082.00
	09/14/16 09:56:59	11670	15.86	-0.30	0.45	3.64	1.75	56.20	3,082.00
	09/14/16 09:57:29	11700	15.79	-0.30	0.44	3.67	1.75	56.30	3,079.00
	09/14/16 09:57:59	11730	15.49	-0.28	0.46	3.88	1.75	56.30	3,079.00
	09/14/16 09:58:29	11760	15.83	-0.28	0.46	3.69	1.76	56.30	3,084.00
	09/14/16 09:58:59	11790	15.46	-0.27	0.45	3.90	1.76	56.30	3,084.00
	09/14/16 09:59:29	11820	15.39	-0.27	0.45	4.00	1.76	56.30	3,083.00
	09/14/16 09:59:59	11850	15.65	-0.30	0.45	3.78	1.76	56.30	3,083.00
	09/14/16 10:00:29	11880	15.47	-0.30	0.45	3.94	1.77	56.20	3,085.00
	09/14/16 10:00:59	11910	16.65	-0.28	0.50	3.12	1.77	56.20	3,085.00
	09/14/16 10:01:29	11940	17.15	0.00	0.50	2.74	1.04	56.20	2,325.00
	09/14/16 10:01:59	11970	17.37	0.97	0.49	2.59	1.04	56.20	2,325.00
	09/14/16 10:02:29	12000	17.55	2.91	0.52	2.41	0.80	56.40	2,027.00
	09/14/16 10:02:59	12030	17.29	4.93	0.49	2.62	0.80	56.40	2,027.00
	09/14/16 10:03:29	12060	16.98	5.36	0.50	2.83	0.79	56.30	2,017.00
A2	09/14/16 10:03:59	12090	17.41	6.10	0.53	2.55	0.79	56.30	2,017.00
	09/14/16 10:04:29	12120	17.44	8.46	0.54	2.53	0.78	56.20	2,011.00
	09/14/16 10:04:59	12150	17.24	9.19	0.53	2.61	0.78	56.20	2,011.00
	09/14/16 10:05:29	12180	16.54	7.59	0.49	3.08	0.83	56.10	2,071.00
	09/14/16 10:05:59	12210	15.76	3.53	0.43	3.66	0.83	56.10	2,071.00
	09/14/16 10:06:29	12240	15.81	0.71	0.45	3.71	1.64	56.00	2,991.00
	09/14/16 10:06:59	12270	15.58	-0.03	0.45	3.81	1.64	56.00	2,991.00
	09/14/16 10:07:29	12300	15.26	-0.18	0.43	4.08	1.72	56.00	3,065.00
	09/14/16 10:07:59	12330	15.74	-0.27	0.45	3.74	1.72	56.00	3,065.00
	09/14/16 10:08:29	12360	15.88	-0.28	0.45	3.63	1.73	56.10	3,069.00
	09/14/16 10:08:59	12390	16.06	-0.32	0.44	3.54	1.73	56.10	3,069.00
	09/14/16 10:09:29	12420	16.01	-0.26	0.44	3.50	1.74	56.10	3,081.00
	09/14/16 10:09:59	12450	15.84	-0.28	0.46	3.67	1.74	56.10	3,081.00
	09/14/16 10:10:29	12480	15.74	-0.27	0.44	3.70	1.75	56.20	3,081.00
	09/14/16 10:10:59	12510	15.67	-0.32	0.44	3.79	1.75	56.20	3,081.00
	09/14/16 10:11:29	12540	15.71	-0.30	0.45	3.72	1.76	56.20	3,083.00
	09/14/16 10:11:59	12570	15.51	-0.28	0.42	3.94	1.76	56.20	3,083.00
	09/14/16 10:12:29	12600	15.50	-0.28	0.43	3.87	1.77	56.30	3,090.00
	09/14/16 10:12:59	12630	15.63	-0.35	0.45	3.83	1.77	56.30	3,090.00

Superior Fabrication, INC
September 14, 2016
SCD-48
Elk City Plant

Unit Data

Meas. Stack Moisture	2.4	%
Stack Exhaust Flow (M2)	178,156	SCFH

Weather Data

Barometric Pressure	30.25	in. Hg
Relative Humidity	71	%
Ambient Temperature	72	^{o}F
Specific Humidity	0.011776	lb H_2O / lb air

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

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
	09/14/16 10:13:29	12660	15.88	-0.29	0.45	3.61	1.77	56.30	3,091.00
	09/14/16 10:13:59	12690	15.60	-0.27	0.42	3.83	1.77	56.30	3,091.00
	09/14/16 10:14:29	12720	15.72	-0.33	0.42	3.72	1.77	56.40	3,091.00
	09/14/16 10:14:59	12750	15.69	-0.27	0.45	3.78	1.77	56.40	3,091.00
	09/14/16 10:15:29	12780	15.76	-0.31	0.43	3.69	1.78	56.40	3,089.00
	09/14/16 10:15:59	12810	15.81	-0.29	0.43	3.71	1.78	56.40	3,089.00
	09/14/16 10:16:29	12840	15.91	-0.29	0.45	3.62	1.78	56.30	3,092.00
	09/14/16 10:16:59	12870	16.85	-0.26	0.49	3.03	1.78	56.30	3,092.00
	09/14/16 10:17:29	12900	17.46	0.25	0.50	2.51	1.21	56.40	2,516.00
	09/14/16 10:17:59	12930	17.52	1.86	0.48	2.45	1.21	56.40	2,516.00
	09/14/16 10:18:29	12960	17.35	3.91	0.48	2.58	0.80	56.60	2,032.00
	09/14/16 10:18:59	12990	17.59	5.78	0.54	2.42	0.80	56.60	2,032.00
	09/14/16 10:19:29	13020	17.47	8.52	0.53	2.47	0.79	56.50	2,022.00
	09/14/16 10:19:59	13050	17.52	8.93	0.54	2.48	0.79	56.50	2,022.00
	09/14/16 10:20:29	13080	17.18	9.50	0.53	2.68	0.79	56.50	2,022.00
	09/14/16 10:20:59	13110	17.20	8.14	0.54	2.70	0.79	56.50	2,022.00
	09/14/16 10:21:29	13140	17.19	7.63	0.55	2.68	0.79	56.50	2,027.00
	09/14/16 10:21:59	13170	17.23	8.24	0.53	2.65	0.79	56.50	2,027.00
	09/14/16 10:22:29	13200	16.85	8.58	0.47	2.91	0.78	56.50	2,026.00
	09/14/16 10:22:59	13230	15.38	5.08	0.38	3.90	0.78	56.50	2,026.00
	09/14/16 10:23:29	13260	15.56	1.24	0.39	3.87	1.36	56.60	2,689.00
A3	09/14/16 10:23:59	13290	15.32	0.07	0.36	4.03	1.36	56.60	2,689.00
	09/14/16 10:24:29	13320	15.17	-0.21	0.38	4.14	1.66	56.70	3,010.00
	09/14/16 10:24:59	13350	15.74	-0.27	0.43	3.76	1.66	56.70	3,010.00
	09/14/16 10:25:29	13380	15.68	-0.27	0.41	3.73	1.71	56.80	3,058.00
	09/14/16 10:25:59	13410	15.57	-0.28	0.42	3.88	1.71	56.80	3,058.00
	09/14/16 10:26:29	13440	15.67	-0.27	0.39	3.78	1.72	56.90	3,056.00
	09/14/16 10:26:59	13470	15.55	-0.28	0.40	3.89	1.72	56.90	3,056.00
	09/14/16 10:27:29	13500	16.01	-0.28	0.45	3.52	1.74	57.10	3,073.00
	09/14/16 10:27:59	13530	15.66	-0.30	0.40	3.79	1.74	57.10	3,073.00
	09/14/16 10:28:29	13560	15.71	-0.39	0.42	3.78	1.73	57.20	3,060.00
	09/14/16 10:28:59	13590	15.44	-0.27	0.39	3.95	1.73	57.20	3,060.00
	09/14/16 10:29:29	13620	15.30	-0.30	0.38	4.01	1.74	57.30	3,060.00
	09/14/16 10:29:59	13650	15.87	-0.35	0.44	3.66	1.74	57.30	3,060.00
	09/14/16 10:30:29	13680	15.68	-0.31	0.43	3.77	1.73	57.50	3,062.00
	09/14/16 10:30:59	13710	15.09	-0.36	0.41	4.16	1.73	57.50	3,062.00
	09/14/16 10:31:29	13740	14.66	-0.40	0.37	4.45	1.74	57.60	3,060.00
	09/14/16 10:31:59	13770	14.84	-0.41	0.38	4.38	1.74	57.60	3,060.00
	09/14/16 10:32:29	13800	15.37	-0.40	0.39	4.00	1.75	57.70	3,063.00
	09/14/16 10:32:59	13830	14.91	-0.31	0.36	4.33	1.75	57.70	3,063.00
	09/14/16 10:33:29	13860	14.96	-0.40	0.36	4.26	1.76	57.80	3,067.00
	09/14/16 10:33:59	13890	15.27	-0.31	0.42	4.09	1.76	57.80	3,067.00
	09/14/16 10:34:29	13920	15.79	-0.30	0.44	3.72	1.75	57.80	3,066.00
	09/14/16 10:34:59	13950	15.60	-0.37	0.44	3.81	1.75	57.80	3,066.00
	09/14/16 10:35:29	13980	16.44	-0.39	0.48	3.31	1.76	57.90	3,066.00
	09/14/16 10:35:59	14010	17.24	-0.14	0.49	2.67	1.76	57.90	3,066.00
	09/14/16 10:36:29	14040	17.58	0.69	0.50	2.44	0.82	58.10	2,043.00
	09/14/16 10:36:59	14070	17.49	2.54	0.51	2.46	0.82	58.10	2,043.00
	09/14/16 10:37:29	14100	17.24	3.71	0.50	2.67	0.79	58.10	2,011.00
	09/14/16 10:37:59	14130	17.32	4.47	0.49	2.62	0.79	58.10	2,011.00
	09/14/16 10:38:29	14160	17.66	5.99	0.53	2.36	0.78	58.00	2,015.00
	09/14/16 10:38:59	14190	17.62	7.97	0.54	2.38	0.78	58.00	2,015.00
	09/14/16 10:39:29	14220	17.14	8.33	0.52	2.73	0.77	57.90	2,008.00
	09/14/16 10:39:59	14250	17.27	7.45	0.50	2.59	0.77	57.90	2,008.00
	09/14/16 10:40:29	14280	15.89	5.84	0.44	3.57	1.13	57.80	2,403.00
	09/14/16 10:40:59	14310	15.60	1.62	0.43	3.83	1.13	57.80	2,403.00
	09/14/16 10:41:29	14340	15.19	0.07	0.42	4.10	1.66	57.90	3,008.00
	09/14/16 10:41:59	14370	15.23	-0.23	0.42	4.11	1.66	57.90	3,008.00
	09/14/16 10:42:29	14400	15.96	-0.27	0.46	3.60	1.72	58.00	3,064.00
	09/14/16 10:42:59	14430	16.04	-0.27	0.47	3.55	1.72	58.00	3,064.00

Superior Fabrication, INC
September 14, 2016
SCD-48
Elk City Plant

Unit Data

Meas. Stack Moisture	2.4	%
Stack Exhaust Flow (M2)	178,156	SCFH

Weather Data

Barometric Pressure	30.25	in. Hg
Relative Humidity	71	%
Ambient Temperature	72	^oF
Specific Humidity	0.011776	lb H_2O / lb air

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

Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^oF	Fuel Flow SCFH
09/14/16 10:43:29	14460	16.24	-0.27	0.46	3.37	1.71	58.20	3,056.00
09/14/16 10:43:59	14490	15.82	-0.27	0.44	3.62	1.71	58.20	3,056.00
09/14/16 10:44:29	14520	15.93	-0.28	0.44	3.62	1.73	58.40	3,058.00
09/14/16 10:44:59	14550	15.65	-0.31	0.45	3.77	1.73	58.40	3,058.00
09/14/16 10:45:29	14580	15.47	-0.31	0.45	3.91	1.74	58.50	3,065.00
09/14/16 10:45:59	14610	16.13	-0.31	0.45	3.51	1.74	58.50	3,065.00
09/14/16 10:46:29	14640	16.19	-0.28	0.45	3.40	1.73	58.70	3,056.00
09/14/16 10:46:59	14670	16.53	-0.27	0.48	3.13	1.73	58.70	3,056.00
09/14/16 10:47:29	14700	16.11	-0.28	0.46	3.43	1.74	58.70	3,059.00
09/14/16 10:47:59	14730	15.89	-0.28	0.44	3.63	1.74	58.70	3,059.00
09/14/16 10:48:29	14760	15.75	-0.34	0.43	3.72	1.73	58.80	3,060.00
09/14/16 10:48:59	14790	16.11	-0.28	0.45	3.46	1.73	58.80	3,060.00
09/14/16 10:49:29	14820	16.20	-0.28	0.45	3.39	1.74	58.80	3,061.00
09/14/16 10:49:59	14850	16.23	-0.26	0.50	3.34	1.74	58.80	3,061.00
09/14/16 10:50:29	14880	16.53	-0.27	0.59	3.26	0.79	58.90	2,001.00
09/14/16 10:50:59	14910	17.12	-0.01	0.55	2.71	0.79	58.90	2,001.00
09/14/16 10:51:29	14940	17.07	0.81	0.51	2.74	0.78	59.00	2,011.00
09/14/16 10:51:59	14970	17.08	1.72	0.51	2.80	0.78	59.00	2,011.00
09/14/16 10:52:29	15000	17.26	3.31	0.51	2.63	0.77	59.00	2,013.00
09/14/16 10:52:59	15030	17.54	4.72	0.54	2.45	0.77	59.00	2,013.00
09/14/16 10:53:29	15060	17.40	6.81	0.53	2.50	0.78	58.90	2,008.00
RAW AVERAGE		**16.21**	**2.03**	**0.47**	**3.39**	**1.41**	**56.90**	**2,711.22**

		O_2	CO	THC	CO_2	Press. Trans	Temp. Trans.	F-Flow Trans.
	Serial Number:	INSTO2-0011	INST-CO-0022	INST-TH-0001	INST-C2-0013	1633266	1633266	1633266
		(%)	**(ppmvd)**	**(ppmvw)**	**(%)**	**(in. H_2O)**	**(^oF)**	**(SCFH)**
Bias	**Initial Zero**	0.04	0.09	0.02	-0.04			
	Final Zero	0.03	0.02	0.07	-0.06			
	Avg. Zero	0.04	0.06	0.05	-0.05			
	Initial UpScale	11.96	9.01	3.03	9.06			
	Final UpScale	12.06	9.21	2.96	9.07			
	Avg. UpScale	12.01	9.11	3.00	9.07			
Upscale Cal Gas		12.00	9.24	3.00	8.99			

EMISSIONS DATA	O_2	CO	THC	CO_2
Corrected Raw Average (ppm/% dry basis)	16.21	2.01	0.44	3.39
Corrected Raw Average (ppm/% wet basis)	15.82	1.96	0.43	3.32
Emission Rate (lb/hr)	N/A	0.03	0.01	N/A

Superior Fabrication, INC
September 14, 2016
SCD-48
Elk City Plant

Unit Data

Meas. Stack Moisture	5.8	%
Stack Exhaust Flow (M2)	188,328	SCFH

Weather Data

Barometric Pressure	30.26	in. Hg
Relative Humidity	61	%
Ambient Temperature	72	^{o}F
Specific Humidity	0.010087	lb H_2O / lb air

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

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
A1	09/14/16 11:13:29	16260	16.99	6.34	0.66	2.95	0.76	60.90	2,000.00
	09/14/16 11:13:59	16290	16.90	7.48	0.61	2.93	0.76	60.90	2,000.00
	09/14/16 11:14:29	16320	16.54	7.25	0.53	3.29	0.76	61.10	1,997.00
	09/14/16 11:14:59	16350	17.00	5.94	0.54	2.93	0.76	61.10	1,997.00
	09/14/16 11:15:29	16380	16.95	7.21	0.57	2.94	0.75	61.20	1,999.00
	09/14/16 11:15:59	16410	16.79	8.07	0.55	3.05	0.75	61.20	1,999.00
	09/14/16 11:16:29	16440	16.88	7.26	0.59	2.98	1.33	61.20	2,621.00
	09/14/16 11:16:59	16470	16.56	7.26	0.48	3.12	1.33	61.20	2,621.00
	09/14/16 11:17:29	16500	14.72	5.34	0.34	4.43	1.60	61.50	2,974.00
	09/14/16 11:17:59	16530	14.78	1.19	0.36	4.45	1.60	61.50	2,974.00
	09/14/16 11:18:29	16560	15.07	-0.04	0.36	4.25	1.67	61.80	3,012.00
	09/14/16 11:18:59	16590	15.02	-0.18	0.36	4.24	1.67	61.80	3,012.00
	09/14/16 11:19:29	16620	14.33	-0.24	0.34	4.70	1.68	62.30	3,017.00
	09/14/16 11:19:59	16650	14.97	-0.31	0.35	4.32	1.68	62.30	3,017.00
	09/14/16 11:20:29	16680	15.04	-0.31	0.32	4.26	1.68	62.60	3,018.00
	09/14/16 11:20:59	16710	14.80	-0.28	0.31	4.41	1.68	62.60	3,018.00
	09/14/16 11:21:29	16740	14.91	-0.27	0.32	4.30	1.70	62.80	3,026.00
	09/14/16 11:21:59	16770	14.82	-0.28	0.30	4.44	1.70	62.80	3,026.00
	09/14/16 11:22:29	16800	14.53	-0.28	0.31	4.57	1.70	63.00	3,019.00
	09/14/16 11:22:59	16830	14.00	-0.35	0.28	5.00	1.70	63.00	3,019.00
	09/14/16 11:23:29	16860	14.62	-0.38	0.24	4.50	1.71	63.10	3,021.00
	09/14/16 11:23:59	16890	13.93	-0.34	0.25	5.05	1.71	63.10	3,021.00
	09/14/16 11:24:29	16920	14.59	-0.38	0.30	4.57	1.71	63.00	3,025.00
	09/14/16 11:24:59	16950	15.41	-0.31	0.30	4.04	1.71	63.00	3,025.00
	09/14/16 11:25:29	16980	15.02	-0.26	0.30	4.30	1.71	63.00	3,028.00
	09/14/16 11:25:59	17010	15.58	-0.33	0.31	3.91	1.71	63.00	3,028.00
	09/14/16 11:26:29	17040	14.84	-0.27	0.30	4.37	1.71	63.00	3,027.00
	09/14/16 11:26:59	17070	15.49	-0.32	0.28	3.98	1.71	63.00	3,027.00
	09/14/16 11:27:29	17100	15.12	-0.03	0.30	4.23	1.72	63.10	3,034.00
	09/14/16 11:27:59	17130	15.36	-0.01	0.28	4.07	1.72	63.10	3,034.00
	09/14/16 11:28:29	17160	15.64	0.02	0.29	3.88	1.71	63.10	3,030.00
	09/14/16 11:28:59	17190	15.77	0.02	0.29	3.78	1.71	63.10	3,030.00
	09/14/16 11:29:29	17220	15.30	0.06	0.30	4.10	1.71	63.10	3,032.00
	09/14/16 11:29:59	17250	15.63	0.02	0.31	3.84	1.71	63.10	3,032.00
	09/14/16 11:30:29	17280	15.15	-0.01	0.31	4.18	1.72	63.10	3,038.00
	09/14/16 11:30:59	17310	15.30	0.00	0.29	4.08	1.72	63.10	3,038.00
	09/14/16 11:31:29	17340	16.58	0.01	0.34	3.32	0.79	63.20	2,009.00
	09/14/16 11:31:59	17370	16.89	0.55	0.35	2.98	0.79	63.20	2,009.00
	09/14/16 11:32:29	17400	17.10	1.61	0.34	2.84	0.76	63.10	1,998.00
	09/14/16 11:32:59	17430	17.08	3.94	0.37	2.82	0.76	63.10	1,998.00
	09/14/16 11:33:29	17460	16.98	5.18	0.39	2.89	0.76	63.00	1,990.00
A2	09/14/16 11:33:59	17490	17.01	5.91	0.37	2.96	0.76	63.00	1,990.00
	09/14/16 11:34:29	17520	17.22	6.64	0.40	2.76	0.76	62.90	1,993.00
	09/14/16 11:34:59	17550	16.61	8.48	0.33	3.10	0.76	62.90	1,993.00
	09/14/16 11:35:29	17580	16.71	6.78	0.36	3.16	0.75	62.80	1,992.00
	09/14/16 11:35:59	17610	16.81	5.72	0.36	3.06	0.75	62.80	1,992.00
	09/14/16 11:36:29	17640	16.85	7.05	0.35	3.03	0.76	62.70	1,993.00
	09/14/16 11:36:59	17670	17.16	8.22	0.42	2.78	0.76	62.70	1,993.00
	09/14/16 11:37:29	17700	17.22	9.79	0.41	2.73	1.44	62.80	2,793.00
	09/14/16 11:37:59	17730	15.47	9.47	0.27	3.90	1.44	62.80	2,793.00
	09/14/16 11:38:29	17760	14.99	3.21	0.28	4.25	1.64	62.90	2,994.00
	09/14/16 11:38:59	17790	15.24	0.64	0.27	4.16	1.64	62.90	2,994.00
	09/14/16 11:39:29	17820	15.01	0.34	0.25	4.24	1.67	63.00	3,020.00
	09/14/16 11:39:59	17850	15.21	0.17	0.25	4.18	1.67	63.00	3,020.00
	09/14/16 11:40:29	17880	14.91	0.11	0.24	4.35	1.69	63.20	3,021.00
	09/14/16 11:40:59	17910	15.03	0.02	0.27	4.29	1.69	63.20	3,021.00
	09/14/16 11:41:29	17940	15.08	0.06	0.27	4.20	1.69	63.20	3,022.00
	09/14/16 11:41:59	17970	14.42	0.05	0.26	4.67	1.69	63.20	3,022.00
	09/14/16 11:42:29	18000	15.05	-0.02	0.26	4.27	1.70	63.30	3,027.00
	09/14/16 11:42:59	18030	15.26	0.02	0.29	4.14	1.70	63.30	3,027.00

Superior Fabrication, INC
September 14, 2016
SCD-48
Elk City Plant

Unit Data

Meas. Stack Moisture	5.8	%
Stack Exhaust Flow (M2)	188,328	SCFH

Weather Data

Barometric Pressure	30.26	in. Hg
Relative Humidity	61	%
Ambient Temperature	72	^{o}F
Specific Humidity	0.010087	lb H_2O / lb air

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

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
	09/14/16 11:43:29	18060	15.14	0.02	0.29	4.19	1.70	63.20	3,027.00
	09/14/16 11:43:59	18090	15.42	0.07	0.29	4.03	1.70	63.20	3,027.00
	09/14/16 11:44:29	18120	14.70	0.06	0.24	4.42	1.72	63.30	3,030.00
	09/14/16 11:44:59	18150	14.40	0.01	0.21	4.73	1.72	63.30	3,030.00
	09/14/16 11:45:29	18180	14.95	0.01	0.29	4.34	1.70	63.30	3,027.00
	09/14/16 11:45:59	18210	15.20	0.01	0.30	4.17	1.70	63.30	3,027.00
	09/14/16 11:46:29	18240	15.06	0.04	0.30	4.25	1.71	63.40	3,029.00
	09/14/16 11:46:59	18270	14.96	-0.02	0.27	4.26	1.71	63.40	3,029.00
	09/14/16 11:47:29	18300	14.72	-0.02	0.28	4.55	1.71	63.40	3,026.00
	09/14/16 11:47:59	18330	15.31	-0.02	0.28	4.05	1.71	63.40	3,026.00
	09/14/16 11:48:29	18360	15.09	0.02	0.28	4.21	1.30	63.40	2,636.00
	09/14/16 11:48:59	18390	15.31	0.01	0.29	4.18	1.30	63.40	2,636.00
	09/14/16 11:49:29	18420	16.66	0.16	0.31	3.16	0.77	63.50	1,995.00
	09/14/16 11:49:59	18450	16.46	0.84	0.30	3.27	0.77	63.50	1,995.00
	09/14/16 11:50:29	18480	16.68	1.68	0.32	3.15	0.77	63.50	1,995.00
	09/14/16 11:50:59	18510	16.86	3.09	0.34	3.01	0.77	63.50	1,995.00
	09/14/16 11:51:29	18540	17.02	4.76	0.35	2.89	0.76	63.30	1,992.00
	09/14/16 11:51:59	18570	16.94	5.41	0.32	2.93	0.76	63.30	1,992.00
	09/14/16 11:52:29	18600	17.23	6.70	0.34	2.75	0.76	63.20	1,998.00
	09/14/16 11:52:59	18630	17.26	8.92	0.35	2.74	0.76	63.20	1,998.00
	09/14/16 11:53:29	18660	16.07	9.81	0.28	3.35	1.69	63.20	3,055.00
A3	09/14/16 11:53:59	18690	14.71	5.67	0.20	4.54	1.69	63.20	3,055.00
	09/14/16 11:54:29	18720	15.03	1.23	0.21	4.28	1.65	63.20	2,997.00
	09/14/16 11:54:59	18750	15.14	0.35	0.22	4.21	1.65	63.20	2,997.00
	09/14/16 11:55:29	18780	14.33	0.25	0.22	4.72	1.69	63.40	3,024.00
	09/14/16 11:55:59	18810	14.34	0.07	0.21	4.71	1.69	63.40	3,024.00
	09/14/16 11:56:29	18840	14.50	0.04	0.21	4.56	1.69	63.50	3,027.00
	09/14/16 11:56:59	18870	14.35	0.02	0.22	4.79	1.69	63.50	3,027.00
	09/14/16 11:57:29	18900	14.47	-0.02	0.21	4.65	1.70	63.50	3,028.00
	09/14/16 11:57:59	18930	14.35	0.01	0.21	4.72	1.70	63.50	3,028.00
	09/14/16 11:58:29	18960	15.01	0.01	0.21	4.28	1.70	63.60	3,028.00
	09/14/16 11:58:59	18990	14.82	0.05	0.21	4.42	1.70	63.60	3,028.00
	09/14/16 11:59:29	19020	15.15	0.02	0.25	4.19	1.70	63.60	3,028.00
	09/14/16 11:59:59	19050	15.21	0.05	0.25	4.13	1.70	63.60	3,028.00
	09/14/16 12:00:29	19080	14.87	0.08	0.24	4.35	1.71	63.70	3,029.00
	09/14/16 12:00:59	19110	15.04	0.04	0.25	4.26	1.71	63.70	3,029.00
	09/14/16 12:01:29	19140	15.03	0.07	0.25	4.29	1.71	63.80	3,028.00
	09/14/16 12:01:59	19170	14.60	0.04	0.22	4.47	1.71	63.80	3,028.00
	09/14/16 12:02:29	19200	14.10	0.01	0.21	4.94	1.72	63.90	3,030.00
	09/14/16 12:02:59	19230	14.37	0.02	0.21	4.67	1.72	63.90	3,030.00
	09/14/16 12:03:29	19260	15.13	0.01	0.22	4.25	1.72	64.00	3,029.00
	09/14/16 12:03:59	19290	15.46	0.07	0.28	3.95	1.72	64.00	3,029.00
	09/14/16 12:04:29	19320	14.72	0.07	0.25	4.45	1.62	64.00	2,955.00
	09/14/16 12:04:59	19350	15.12	0.01	0.26	4.22	1.62	64.00	2,955.00
	09/14/16 12:05:29	19380	16.38	0.05	0.32	3.44	0.77	64.00	1,991.00
	09/14/16 12:05:59	19410	16.85	0.68	0.34	3.01	0.77	64.00	1,991.00
	09/14/16 12:06:29	19440	17.13	2.02	0.36	2.80	0.77	64.00	2,007.00
	09/14/16 12:06:59	19470	16.99	4.40	0.34	2.89	0.77	64.00	2,007.00
	09/14/16 12:07:29	19500	16.61	5.50	0.34	3.18	0.78	63.90	2,014.00
	09/14/16 12:07:59	19530	16.58	5.44	0.36	3.21	0.78	63.90	2,014.00
	09/14/16 12:08:29	19560	16.83	5.11	0.36	3.04	0.76	63.80	1,998.00
	09/14/16 12:08:59	19590	16.86	5.92	0.36	2.99	0.76	63.80	1,998.00
	09/14/16 12:09:29	19620	17.14	7.51	0.35	2.78	1.49	63.80	2,796.00
	09/14/16 12:09:59	19650	15.18	7.36	0.23	4.07	1.49	63.80	2,796.00
	09/14/16 12:10:29	19680	14.92	2.92	0.23	4.29	1.65	64.10	2,992.00
	09/14/16 12:10:59	19710	15.06	0.83	0.22	4.30	1.65	64.10	2,992.00
	09/14/16 12:11:29	19740	14.87	0.43	0.22	4.33	1.66	64.40	3,003.00
	09/14/16 12:11:59	19770	14.91	0.24	0.22	4.39	1.66	64.40	3,003.00
	09/14/16 12:12:29	19800	15.24	0.22	0.22	4.13	1.68	64.60	3,009.00
	09/14/16 12:12:59	19830	15.06	0.22	0.24	4.19	1.68	64.60	3,009.00

Superior Fabrication, INC
September 14, 2016
SCD-48
Elk City Plant

Unit Data

Meas. Stack Moisture	5.8	%
Stack Exhaust Flow (M2)	188,328	SCFH

Weather Data

Barometric Pressure	30.26	in. Hg
Relative Humidity	61	%
Ambient Temperature	72	^oF
Specific Humidity	0.010087	lb H_2O / lb air

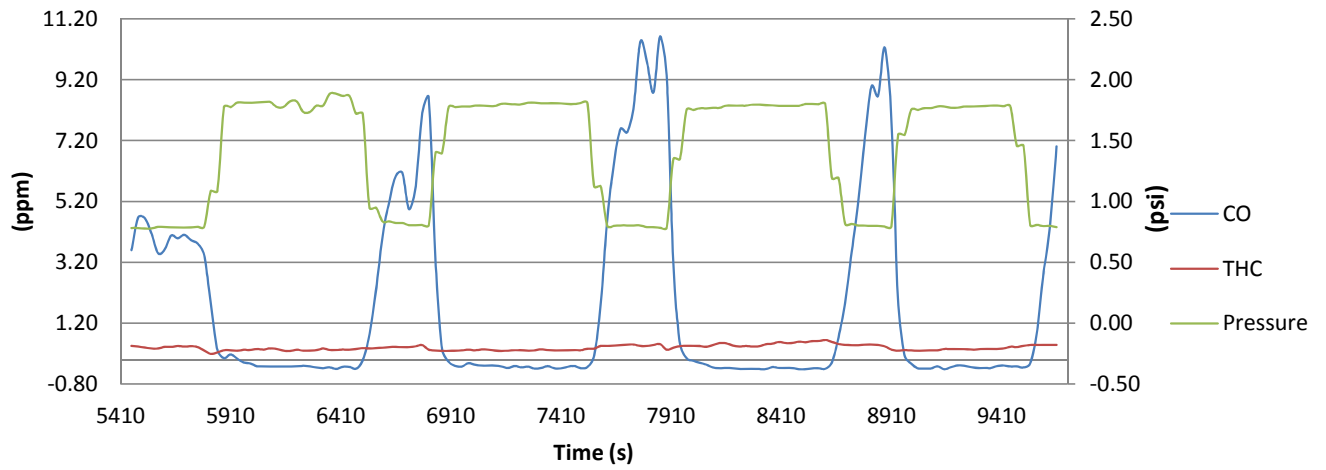
70-100-70 Load, Run - SCD-48 R9

Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^oF	Fuel Flow SCFH
09/14/16 12:13:29	19860	14.83	0.14	0.23	4.47	1.68	64.80	3,005.00
09/14/16 12:13:59	19890	15.13	0.11	0.22	4.18	1.68	64.80	3,005.00
09/14/16 12:14:29	19920	15.05	0.15	0.22	4.21	1.69	64.90	3,009.00
09/14/16 12:14:59	19950	15.38	0.20	0.25	4.07	1.69	64.90	3,009.00
09/14/16 12:15:29	19980	15.59	0.34	0.20	3.89	1.68	65.00	3,007.00
09/14/16 12:15:59	20010	14.87	0.40	0.21	4.32	1.68	65.00	3,007.00
09/14/16 12:16:29	20040	14.96	0.30	0.21	4.34	1.66	65.20	2,988.00
09/14/16 12:16:59	20070	15.24	0.27	0.23	4.14	1.66	65.20	2,988.00
09/14/16 12:17:29	20100	15.34	0.27	0.23	4.06	1.67	65.20	2,989.00
09/14/16 12:17:59	20130	15.17	0.31	0.23	4.15	1.67	65.20	2,989.00
09/14/16 12:18:29	20160	15.33	0.37	0.29	4.06	0.91	65.20	2,206.00
09/14/16 12:18:59	20190	14.25	0.37	0.24	4.77	0.91	65.20	2,206.00
09/14/16 12:19:29	20220	14.78	0.20	0.27	4.45	0.77	65.30	1,990.00
09/14/16 12:19:59	20250	16.78	0.36	0.29	3.17	0.77	65.30	1,990.00
09/14/16 12:20:29	20280	17.26	2.74	0.31	2.71	0.76	65.20	1,987.00
09/14/16 12:20:59	20310	16.93	7.63	0.30	2.92	0.76	65.20	1,987.00
09/14/16 12:21:29	20340	16.97	12.02	0.30	2.89	0.75	65.10	1,983.00
09/14/16 12:21:59	20370	16.76	15.15	0.30	3.06	0.75	65.10	1,983.00
09/14/16 12:22:29	20400	16.56	16.36	0.31	3.24	0.75	65.00	1,983.00
09/14/16 12:22:59	20430	16.97	17.36	0.32	2.92	0.75	65.00	1,983.00
09/14/16 12:23:29	20460	16.43	20.75	0.34	3.26	0.74	64.90	1,986.00
RAW AVERAGE		**15.59**	**2.39**	**0.30**	**3.88**	**1.38**	**63.43**	**2,677.06**

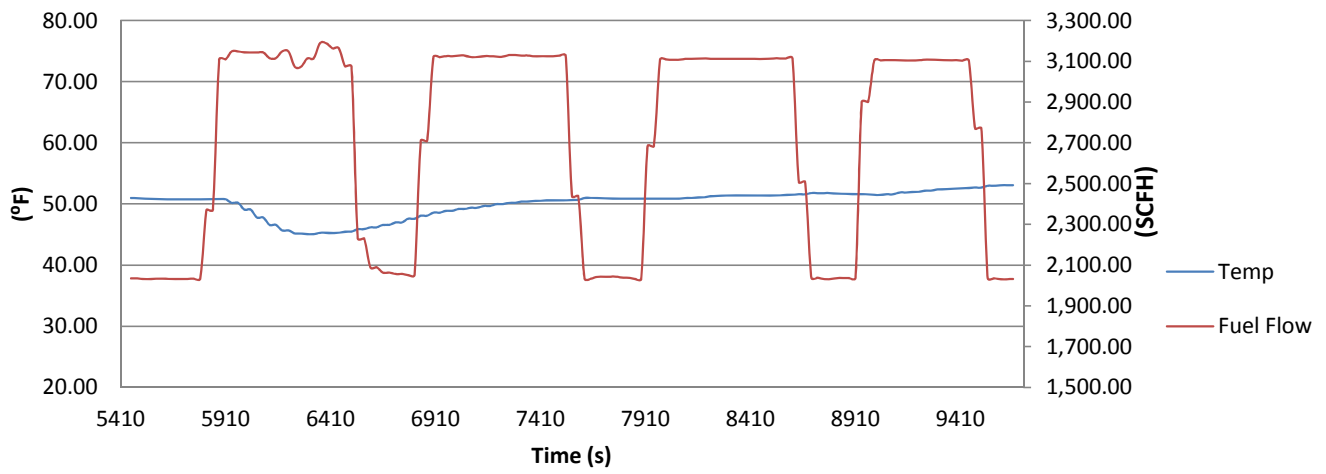
		O_2	CO	THC	CO_2	Press. Trans	Temp. Trans.	F-Flow Trans.
	Serial Number:	INSTO2-0011	INST-CO-0022	INST-TH-0001	INST-C2-0013	1633266	1633266	1633266
		(%)	(ppmvd)	(ppmvw)	(%)	(in. H_2O)	(^oF)	(SCFH)
Bias	**Initial Zero**	0.03	0.02	0.07	-0.06			
	Final Zero	0.04	-0.01	0.02	-0.03			
	Avg. Zero	0.04	0.01	0.05	-0.05			
	Initial UpScale	12.06	9.21	2.96	9.07			
	Final UpScale	12.01	9.21	3.03	9.08			
	Avg. UpScale	12.04	9.21	3.00	9.08			
Upscale Cal Gas		12.00	9.24	3.00	8.99			

EMISSIONS DATA	O_2	CO	THC	CO_2
Corrected Raw Average (ppm/% dry basis)	15.56	2.39	0.26	3.86
Corrected Raw Average (ppm/% wet basis)	14.66	2.25	0.24	3.64
Emission Rate (lb/hr)	N/A	0.03	0.01	N/A

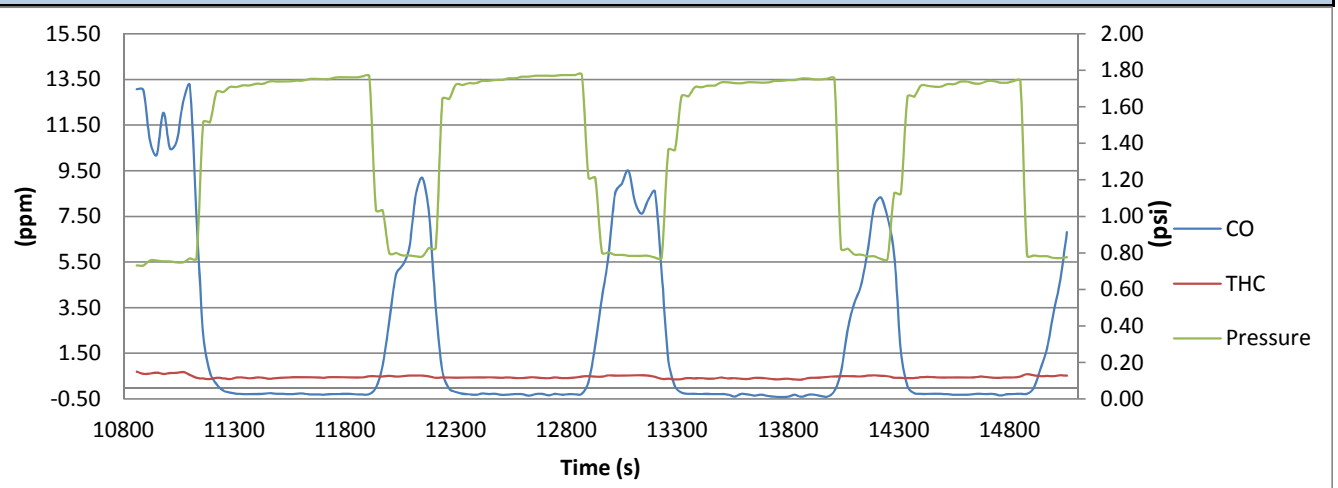
SCD-48 R7



SCD-48 R7



SCD-48 R8



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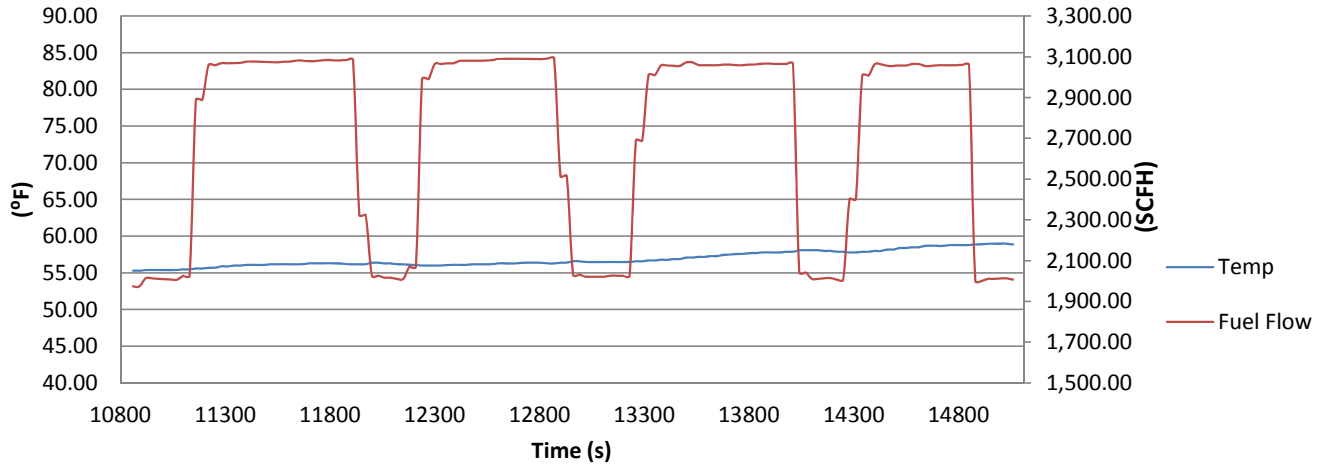

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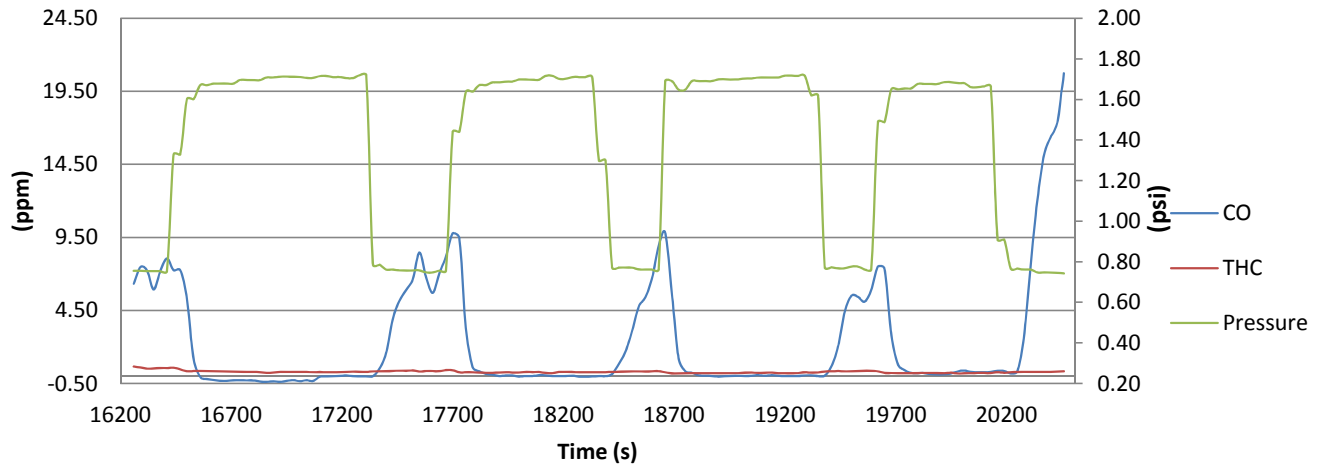

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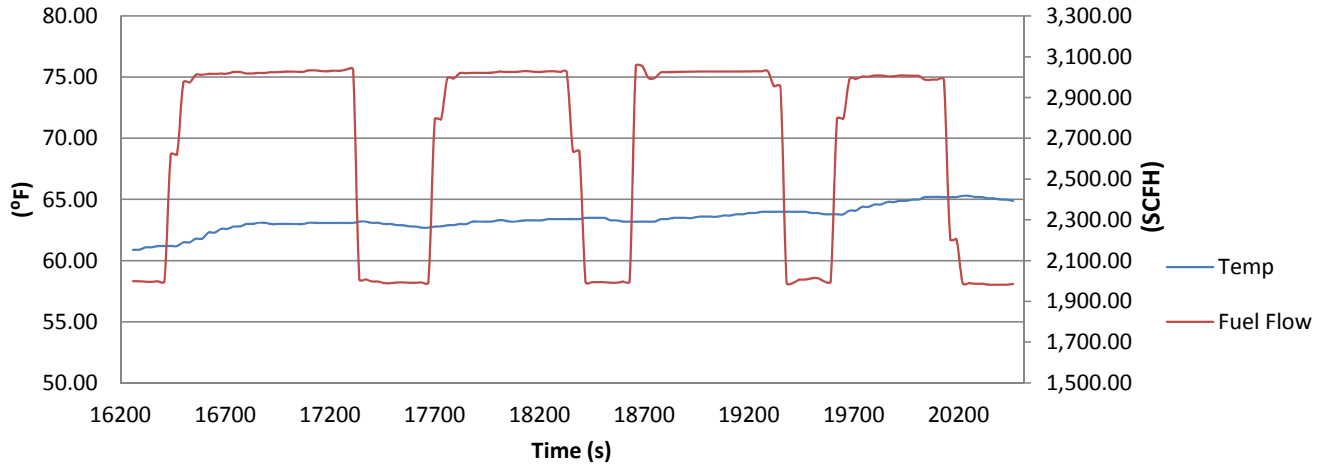

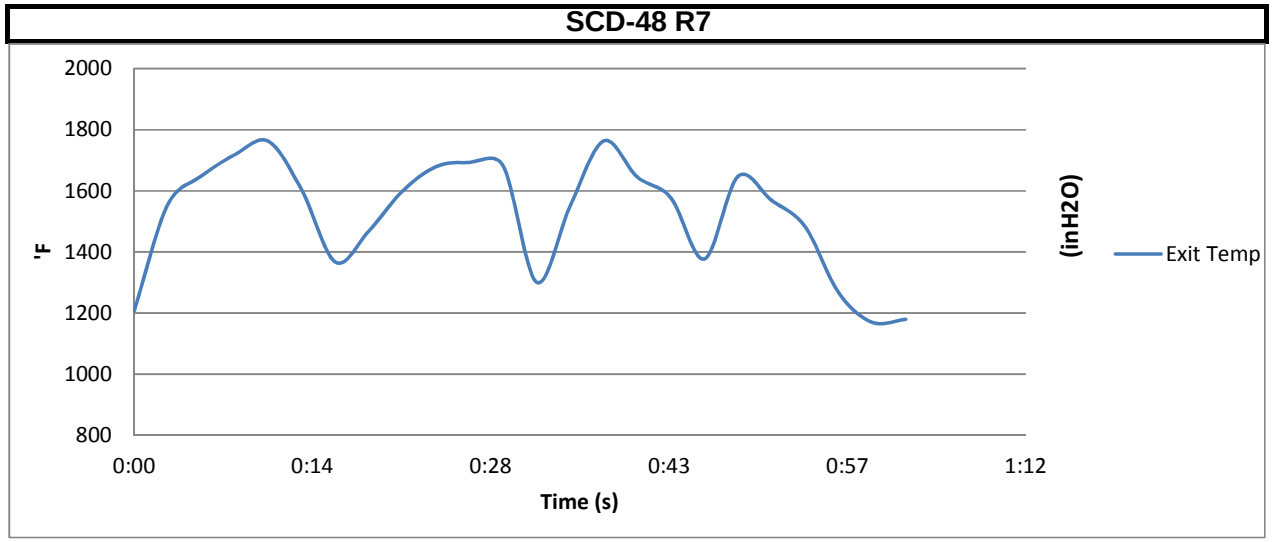
SCD-48 R7
2000
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1400
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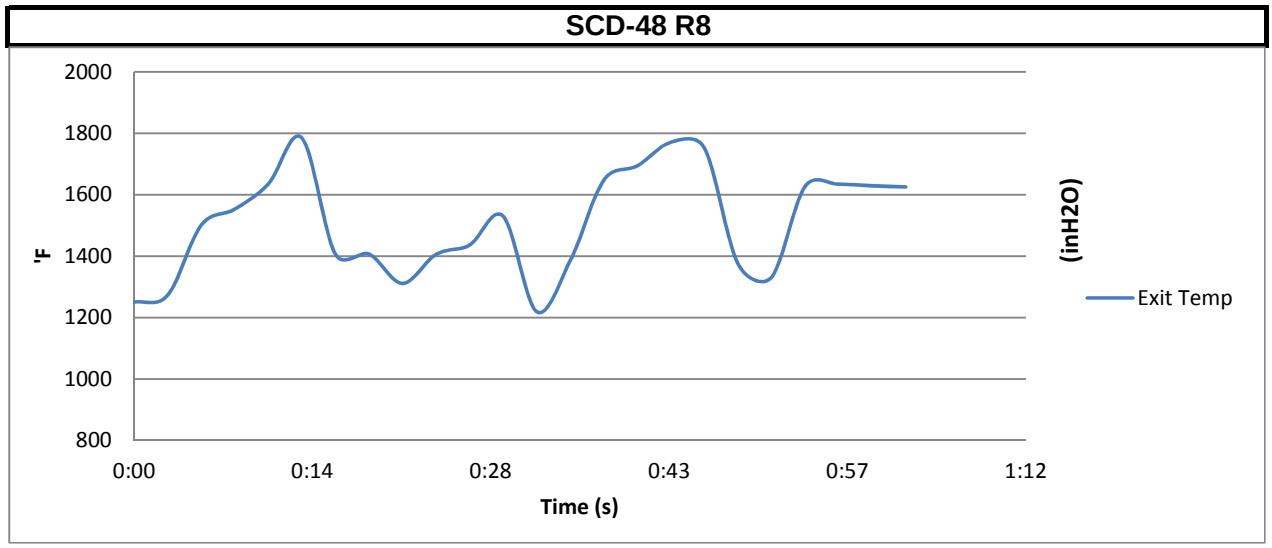
0:00
0:14
0:28
0:43
0:57
1:12
Time (s)
(inH2O)
Exit Temp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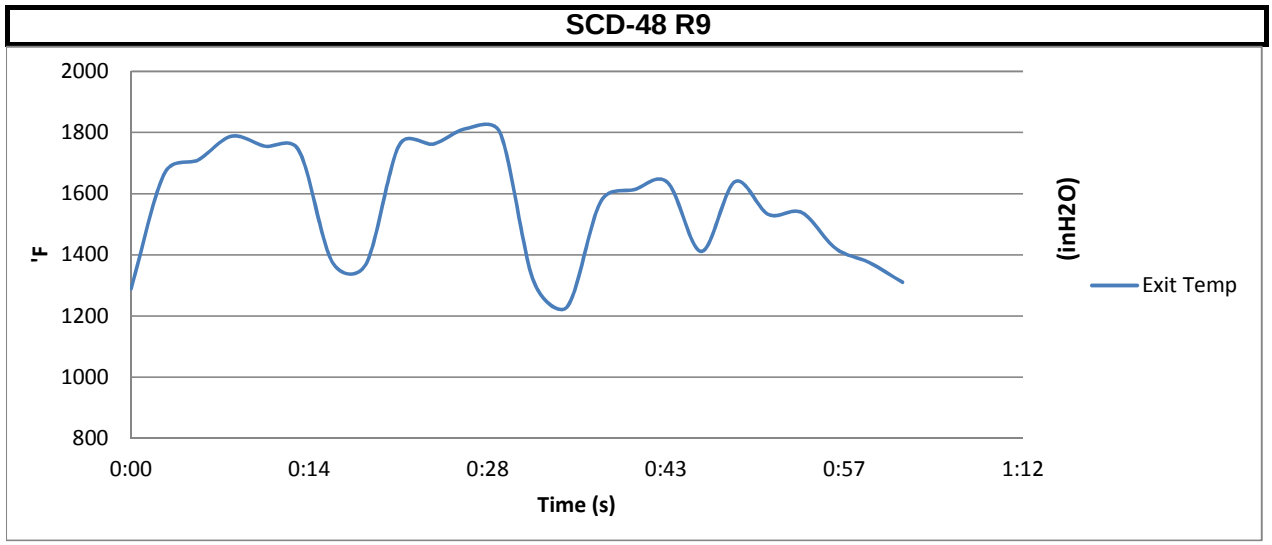
1:12
Time (s)
(inH2O)
Exit Temp


SCD-48 R9
2000
1800
1600
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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-48
Fuel Type	Gas, Propene

Test Information			
Project #		sfi-elkcity.ok-comp#1	
Operator		DA/BB	
Date for Preliminary Run	(mm/dd/yy)	09/13/16	
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		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)	09/13/16	09/13/16	09/13/16	
Load	% or w/DB	90-100	90-100	90-100	
Meter Box Number	from ACS	SAMP-CP-0007	SAMP-CP-0007	SAMP-CP-0007	
Meter Calibration Factor	(Y)	0.976	0.976	0.976	
Orifice Meter Coefficient	($\Delta H_@$)	1.744	1.744	1.744	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-0002	SAMP-BC-0002	SAMP-BC-0002	

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

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

Plant Name	Elk City Facilty
Sampling Location	SCD-48
Project #	sfi-elkcity.ok-comp#1

Historical Data	**90-100%-1**	**90-100%-2**	**90-100%-3**	**Average**	**Units**
Run Start Time	11:11	12:50	14:14		hh:mm
Run Stop Time	12:31	14:00	15:20		hh:mm
Test Date	09/13/16	09/13/16	09/13/16		mm/dd/yy
Meter Calibration Factor	0.976	0.976	0.976		
Pitot Tube Coefficient	0.840	0.840	0.840		
Initial Meter Volume	283.230	332.510	382.100		ft^3
Final Meter Volume	331.280	380.360	430.120		ft^3
Total Meter Volume	48.050	47.850	48.020	47.973	ft^3
Total Sampling Time	65.00	65.00	65.00	65.00	min
Average Meter Temperature	80.38	84.35	90.56	85.10	°F
Average Stack Temperature	1506.21	1526.29	1587.92	1540.14	°F
Barometric Pressure	30.08	30.08	30.08	30.08	in Hg
Stack Static Pressure	0.00	0.00	0.00	0.00	in H_2O
Absolute Stack Pressure	30.08	30.08	30.08	30.08	in Hg
Average Orifice Pressure Drop	1.70	1.70	1.70	1.70	in H_2O
Absolute Meter Pressure	30.21	30.21	30.21	30.21	in Hg
Avg Square Root Pitot Pressure	0.27	0.23	0.22	0.24	√(in H_2O)
Moisture Content Data	**90-100%-1**	**90-100%-2**	**90-100%-3**	**Average**	**Units**
Impinger Water Weight Gain	43.70	41.70	55.10	46.83	g
Silica Gel Weight Gain	13.30	10.90	12.10	12.10	g
Total Water Volume Collected	57.10	52.69	67.32	59.04	ml
Standard Water Vapor Volume	2.69	2.48	3.17	2.78	scf
Standard Meter Volume	46.3	45.7	45.4	45.8	dscf
Calculated Stack Moisture	5.49	5.14	6.53	5.72	%
Saturated Stack Moisture	100.00	100.00	100.00	100.00	%
Reported Stack Moisture Content	5.49	5.14	6.53	5.72	%
Method 3C Gas Analysis Data	**90-100%-1**	**90-100%-2**	**90-100%-3**	**Average**	**Units**
Carbon Dioxide Content	3.7	4.1	3.5	3.8	%
Oxygen Content	16.5	15.9	16.9	16.4	%
Nitrogen Content	79.8	79.9	79.6	79.8	%
Stack Dry Molecular Weight	29.25	29.28	29.23	29.25	lb/lb-mole
Stack Wet Molecular Weight	28.63	28.70	28.50	28.61	lb/lb-mole
Percent Excess Air	361.3	306.1	410.0	359.1	%
Volumetric Flow Rate Data	**90-100%-1**	**90-100%-2**	**90-100%-3**	**Average**	**Units**
Average Stack Gas Velocity	29.99	25.25	24.67	26.64	ft/sec
Stack Cross-Sectional Area	11.04	11.04	11.04	11.04	ft^2
Actual Stack Flow Rate	19,872	16,735	16,352	17,653	acfm
Wet Standard Stack Flow Rate	322	268	254	282	wkscfh
Dry Standard Stack Flow Rate	304,223	254,540	237,703	265,489	dscfh

METHOD 3C - DETERMINATION OF DRY MOLECULAR WEIGHT BY ANALYZER

Plant Name	Elk City Facilty	**Preliminary Date**	09/13/16		
Sampling Location	SCD-48	**Operator**	DA/BB		
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**	09/13/16	**Run Start Time**	11:11		**Run Stop Time**	12:31
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			%	
01:20	3.7	16.5	0.0	79.8	29.25	1.189		361.3	N/A

Gas Analysis Data									
Run Number	90-100%-2		**Date**	09/13/16	**Run Start Time**	12:50		**Run Stop Time**	14:00
Sample Analysis Time	**CO_2 Conc.**	**O_2 Conc.**	**Methane Conc.**	**N_2 Conc.**	**Dry Molecular Weight**	**Calculated Fuel Factor**		**Excess Air**	**Fuel Factor in Range**
	(%CO_2)	(%O_2)	(ppmCO)	(%N_2)	(M_d)	$(F_o)_{avg}$		$(\%EA)_{avg}$	
hh:mm	%	%	ppm	%	lb/lb-mole			%	
01:10	4.1	15.9	0.0	79.9	29.28	1.211		306.1	N/A

Gas Analysis Data									
Run Number	90-100%-3		**Date**	09/13/16	**Run Start Time**	14:14		**Run Stop Time**	15:20
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			%	
01:06	3.5	16.9	0.0	79.6	29.23	1.153		410.0	N/A

METHOD 4 - DETERMINATION OF MOISTURE CONTENT IN STACK GASES

Plant Name	Elk City Facilty	**Preliminary Date**	09/13/16
Sampling Location	SCD-48	**Operator**	DA/BB
Project #	sfi-elkcity.ok-comp#1	**Ports Used**	2

Moisture Content Data									
Run Number		90-100%-1		**Date**	09/13/16	**Start Time**	11:11	**Stop Time**	12:31
Meter Box Number		SAMP-CP-0007			**Meter Cal Factor**		(Y)	0.976	
Total Meter Volume		(V_m)	48.050	dcf	**Barometric Pressure**		(P_b)	30.08	in Hg
Average Stack Temp		$(t_s)_{avg}$	1506	°F	**Stack Static Pressure**		(P_{static})	0.00	in H_2O
Average Meter Temp		$(t_m)_{avg}$	80	°F	**Avg Orifice Pressure**		$(\Delta H)_{avg}$	1.70	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)	762.80	746.70	577.00	893.30				
Initial Value	(V_i),(W_i)	735.50	735.20	572.10	880.00				
Net Value	(V_n),(W_n)	27.3	11.5	4.9	13.3				
Results									
Total Weight		(W_t)	57.00	g	**Water Vol Weighed**		($V_{wsg(std)}$)	2.688	scf
Std Meter Volume		($V_{m(std)}$)	46.259	dscf	**Sat. Moisture Content**		($B_{ws(svp)}$)	100.00	%
Calc Moisture Content		($B_{ws(calc)}$)	5.49	%	**Final Moisture Content**		(B_{ws})	5.49	%

Moisture Content Data									
Run Number		90-100%-2		**Date**	09/13/16	**Start Time**	12:50	**Stop Time**	14:00
Meter Box Number		SAMP-CP-0007			**Meter Cal Factor**		(Y)	0.976	
Total Meter Volume		(V_m)	47.850	dcf	**Barometric Pressure**		(P_b)	30.08	in Hg
Average Stack Temp		$(t_s)_{avg}$	1526	°F	**Stack Static Pressure**		(P_{static})	0.00	in H_2O
Average Meter Temp		$(t_m)_{avg}$	84	°F	**Avg Orifice Pressure**		$(\Delta H)_{avg}$	1.70	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)	790.40	757.00	580.80	904.20				
Initial Value	(V_i),(W_i)	762.80	746.70	577.00	893.30				
Net Value	(V_n),(W_n)	27.6	10.3	3.8	10.9				
Results									
Total Weight		(W_t)	52.60	g	**Water Vol Weighed**		($V_{wsg(std)}$)	2.480	scf
Std Meter Volume		($V_{m(std)}$)	45.730	dscf	**Sat. Moisture Content**		($B_{ws(svp)}$)	100.00	%
Calc Moisture Content		($B_{ws(calc)}$)	5.14	%	**Final Moisture Content**		(B_{ws})	5.14	%

Moisture Content Data									
Run Number		90-100%-3		**Date**	09/13/16	**Start Time**	14:14	**Stop Time**	15:20
Meter Box Number		SAMP-CP-0007			**Meter Cal Factor**		(Y)	0.976	
Total Meter Volume		(V_m)	48.020	dcf	**Barometric Pressure**		(P_b)	30.08	in Hg
Average Stack Temp		$(t_s)_{avg}$	1588	°F	**Stack Static Pressure**		(P_{static})	0.00	in H_2O
Average Meter Temp		$(t_m)_{avg}$	91	°F	**Avg Orifice Pressure**		$(\Delta H)_{avg}$	1.70	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)	830.10	768.80	584.40	916.30				
Initial Value	(V_i),(W_i)	790.40	757.00	580.80	904.20				
Net Value	(V_n),(W_n)	39.7	11.8	3.6	12.1				
Results									
Total Weight		(W_t)	67.20	g	**Water Vol Weighed**		($V_{wsg(std)}$)	3.168	scf
Std Meter Volume		($V_{m(std)}$)	45.375	dscf	**Sat. Moisture Content**		($B_{ws(svp)}$)	100.00	%
Calc Moisture Content		($B_{ws(calc)}$)	6.53	%	**Final Moisture Content**		(B_{ws})	6.53	%

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

Plant Name	Elk City Facilty
Sampling Location	SCD-48
Project #	sfi-elkcity.ok-comp#1

Date	09/13/16
Operator	DA/BB
Run Number	90-100%-1

Ideal Nozzle Diameter and IsoKinetic Factor Setup			
Pitot Coefficient	(C_p)	0.840	
Average Stack Temp	(t_s)	1506.2	°F
Average Meter Temp	(t_m)	80.4	
Orifice Meter Coefficient	($\Delta H@$)	1.744	in H_2O
Square Root ΔP	($\Delta p^{1/2}_{avg}$)	0.27	in H_2O
Stack Moisture Content	(B_{ws})	5.49	%
Stack Dry Molecular Weight	(M_d)	29.25	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	30.0	sec
< 3.0	**Pre (-)**	0.3	in H_2O for	30.0	sec
	Post (+)	0.2	in H_2O for	30.0	sec
	Post (-)	0.2	in H_2O for	30.0	sec

Sampling Equipment			
Meter Box Number	SAMP-CP-0007		
Meter Cal Factor	(Y)	0.976	
Low Flow Meter	SAMP-MN-0001		
Average Nozzle Diameter	(D_{na})		in
Suggested Nozzle Diameter	(D_{ni})	0.3844	in
Probe Number	SAMP-PF-0003		in
Probe Length	60		in
Liner Material	inconel		
Sample Case / Oven Number			
Impinger Case Number	SAMP-BC-0002		

Pressures			
Barometric Pressure	(P_b)	30.08	in Hg
Stack Static Pressure	(P_{static})	0.00	in H_2O
Absolute Stack Pressure	(P_s)	30.08	in Hg
Absolute Meter Pressure	(P_m)	30.21	in Hg

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

Run Time			
Start	11:11	**End**	12:31

Weights	**Imp 1**	**Imp 2**	**Imp 3**	**Imp 4**	**Imp 5**	**Imp 6**	**Imp 7**	**Imp 8**
Pre	735.5	735.2	572.1	880.0				
Post	762.8	746.7	577.0	893.3				

Wash Volumes					
					ml
					ml

Traverse Point #	Sampling Time (Θ)	Timer Time	Dry Gas Meter Reading (V_m)	Velocity Head (Δp)	Desired Orifice ΔH (ΔH_d)	Actual Orifice ΔH (ΔH_a)	Stack Temp (t_s)	Snorkel Temp (248±25°F)	Filter Temp (248±25°F)	Impinger Exit Temp (≤68°F)	Cond. Temp (≤--°F)	CPM Filter Temp (--±--°F)	Meter Inlet Temp (t_{mi})	Meter Outlet Temp (t_{mo})	Pump Vacuum	Square Root ΔP ($\Delta p^{1/2}$)	Local Stack Velocity (v_s)$_l$	Cumul. Meter Volume (V_m)$_{std}$	Cumul. Percent IsoKinetic (I)	Est-Run Meter Volume (V_m)$_{std}$
	min	hh:mm:ss	ft³	in H_2O	in H_2O	in H_2O	°F	°F	°F	°F	°F	°F	°F	°F	in Hg	√(in H_2O)	ft/sec	dscf	%	dscf
A-1	0.0	00:00:00	283.230	0.050	1.744	1.70	1430	250		42			78	78	5.0	0.22	23.79	1.383		33.187
A-2	2.7	00:02:43	284.660	0.050	1.744	1.70	1430	250		49			81	74	5.0	0.22	23.79	3.561		42.726
A-3	5.4	00:05:25	286.910	0.050	1.744	1.70	1461	250		49			82	75	8.0	0.22	23.98	5.435		43.478
A-4	8.1	00:08:07	288.850	0.030	1.744	1.70	1467	250		49			82	75	8.0	0.17	18.60	7.338		44.027
A-5	10.8	00:10:50	290.820	0.050	1.744	1.70	1728	250		59			82	76	8.0	0.22	25.59	8.786		42.171
A-6	13.5	00:13:33	292.320	0.040	1.744	1.70	1832	250		50			82	75	8.0	0.20	23.43	10.534		42.137
A-7	16.3	00:16:15	294.130	0.040	1.744	1.70	1462	250		51			82	75	8.0	0.20	21.45	12.901		44.233
A-8	19.0	00:18:58	296.580	0.020	1.744	1.70	1335	250		52			83	75	8.0	0.14	14.66	14.388		43.163
A-9	21.7	00:21:40	298.120	0.020	1.744	1.70	1228	250		52			83	75	8.0	0.14	14.22	16.801		44.802
A-10	24.4	00:24:22	300.620	0.030	1.744	1.70	1231	250		54			84	76	8.0	0.17	17.43	18.246		43.790
A-11	27.1	00:27:05	302.120	0.010	1.744	1.70	1012	250		54			84	76	8.0	0.10	9.39	20.230		44.139
A-12	29.8	00:29:47	304.180	0.010	1.744	1.70	1013	250		54			84	76	8.0	0.10	9.39	22.417		44.834
B-1	32.5	00:32:30	306.450	0.100	1.744	1.70	1718	250		53			84	76	8.0	0.32	36.11	23.959		44.231
B-2	35.2	00:35:12	308.050	0.160	1.744	1.70	1668	250		53			84	76	8.0	0.40	45.15	26.762		45.878
B-3	37.9	00:37:55	310.960	0.190	1.744	1.70	1714	250		55			84	77	8.0	0.44	49.73	28.649		45.838
B-4	40.6	00:40:37	312.920	0.130	1.744	1.70	1733	250		55			84	78	8.0	0.36	41.31	30.274		45.411
B-5	43.3	00:43:20	314.610	0.130	1.744	1.70	1733	250		55			84	78	8.0	0.36	41.31	32.553		45.957
B-6	46.0	00:46:03	316.980	0.130	1.744	1.70	1733	250		56			84	78	8.0	0.36	41.31	34.072		45.430
B-7	48.8	00:48:45	318.560	0.090	1.744	1.70	1659	250		57			86	78	8.0	0.30	33.79	36.376		45.948
B-8	51.5	00:51:28	320.960	0.090	1.744	1.70	1659	250		57			86	78	8.0	0.30	33.79	38.152		45.782
B-9	54.2	00:54:10	322.810	0.180	1.744	1.70	1502	250		57			86	78	8.0	0.42	45.98	40.225		45.971
B-10	56.9	00:56:53	324.970	0.20	1.744	1.70	1463	250		58			86	78	8.0	0.45	47.99	41.751		45.547
B-11	59.6	00:59:35	326.560	0.13	1.744	1.70	1469	250		59			86	85	8.0	0.36	38.75	43.992		45.905
B-12	62.3	01:02:18	328.910	0.13	1.744	1.70	1469	250		59			86	85	8.0	0.36	38.75	46.252		46.252
Last Pt	65.0	01:05:00	331.280																	
Final Val	65.0	01:05:00	331.280											**Max Vac**	8.0	**Final Values**		46.252		
Average Values				0.09		1.70	1506	250		54			84	77		0.27	29.99			
													80							

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

Plant Name	Elk City Facilty
Sampling Location	SCD-48
Project #	sfi-elkcity.ok-comp#1

Date	09/13/16
Operator	DA/BB
Run Number	90-100%-2

Ideal Nozzle Diameter and IsoKinetic Factor Setup			
Pitot Coefficient	(C_p)	0.840	
Average Stack Temp	(t_s)	1526.3	°F
Average Meter Temp	(t_m)	84.4	
Orifice Meter Coefficient	($\Delta H@$)	1.744	in H_2O
Square Root ΔP	($\Delta p^{1/2}_{avg}$)	0.23	in H_2O
Stack Moisture Content	(B_{ws})	5.14	%
Stack Dry Molecular Weight	(M_d)	29.28	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 (+)**	0.3	in H_2O for	30.0	sec
< 3.0	**Pre (-)**	0.3	in H_2O for	30.0	sec
	Post (+)	0.3	in H_2O for	30.0	sec
	Post (-)	0.3	in H_2O for	30.0	sec

Sampling Equipment			
Meter Box Number	SAMP-CP-0007		
Meter Cal Factor	(Y)	0.976	
Low Flow Meter	SAMP-MN-0001		
Average Nozzle Diameter	(D_{na})		in
Suggested Nozzle Diameter	(D_{ni})	0.3905	in
Probe Number	SAMP-SP-0001		in
Probe Length	60		in
Liner Material	inconel		
Sample Case / Oven Number			
Impinger Case Number	SAMP-BC-0002		

Pressures			
Barometric Pressure	(P_b)	30.08	in Hg
Stack Static Pressure	(P_{static})	0.00	in H_2O
Absolute Stack Pressure	(P_s)	30.08	in Hg
Absolute Meter Pressure	(P_m)	30.21	in Hg

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

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

Weights	Imp 1	Imp 2	Imp 3	Imp 4	Imp 5	Imp 6	Imp 7	Imp 8
Pre	762.8	746.7	577.0	893.3				
Post	790.4	757.0	580.8	904.2				

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	332.510	0.020	1.744	1.70	1427	250		63			84	77	8.0	0.14	15.02	1.704		40.887
A-2	2.7	00:02:43	334.280	0.020	1.744	1.70	1472	250		63			84	77	8.0	0.14	15.19	3.600		43.197
A-3	5.4	00:05:25	336.250	0.070	1.744	1.70	1506	250		63			84	77	8.0	0.26	28.67	5.477		43.813
A-4	8.1	00:08:07	338.200	0.030	1.744	1.70	1556	250		63			84	77	8.0	0.17	19.01	7.806		46.836
A-5	10.8	00:10:50	340.620	0.130	1.744	1.70	1632	250		55			84	77	8.0	0.36	40.31	10.058		48.280
A-6	13.5	00:13:33	342.960	0.130	1.744	1.70	1672	250		55			86	77	8.0	0.36	40.69	11.240		44.960
A-7	16.3	00:16:15	344.190	0.080	1.744	1.70	1680	250		57			86	79	8.0	0.28	31.98	13.177		45.178
A-8	19.0	00:18:58	346.210	0.050	1.744	1.70	1699	250		58			86	79	8.0	0.22	25.40	15.191		45.573
A-9	21.7	00:21:40	348.310	0.060	1.744	1.70	1683	250		58			86	79	8.0	0.24	27.72	17.396		46.391
A-10	24.4	00:24:22	350.610	0.030	1.744	1.70	1552	250		58			87	78	8.0	0.17	18.99	19.353		46.447
A-11	27.1	00:27:05	352.650	0.060	1.744	1.70	1411	250		58			87	78	8.0	0.24	25.90	20.868		45.530
A-12	29.8	00:29:47	354.230	0.070	1.744	1.70	1398	250		58			87	78	8.0	0.26	27.87	23.448		46.895
B-1	32.5	00:32:30	356.920	0.040	1.744	1.70	1499	250		60			84	80	8.0	0.20	21.64	24.695		45.591
B-2	35.2	00:35:12	358.220	0.090	1.744	1.70	1551	250		56			89	80	8.0	0.30	32.88	26.874		46.069
B-3	37.9	00:37:55	360.500	0.100	1.744	1.70	1548	250		56			91	80	8.0	0.32	34.64	29.067		46.508
B-4	40.6	00:40:37	362.800	0.010	1.744	1.70	1559	250		56			93	81	8.0	0.10	10.98	30.598		45.898
B-5	43.3	00:43:20	364.410	0.090	1.744	1.70	1684	250		57			93	81	8.0	0.30	33.95	32.605		46.031
B-6	46.0	00:46:03	366.520	0.050	1.744	1.70	1744	250		58			93	81	8.0	0.22	25.66	34.174		45.566
B-7	48.8	00:48:45	368.170	0.130	1.744	1.70	1763	250		57			94	82	8.0	0.36	41.55	36.472		46.070
B-8	51.5	00:51:28	370.590	0.080	1.744	1.70	1476	250		58			94	83	8.0	0.28	30.42	38.672		46.407
B-9	54.2	00:54:10	372.910	0.050	1.744	1.70	1310	250		58			94	84	8.0	0.22	22.99	40.321		46.081
B-10	56.9	00:56:53	374.650	0.02	1.744	1.70	1221	250		58			94	84	8.0	0.14	14.17	42.197		46.034
B-11	59.6	00:59:35	376.630	0.01	1.744	1.70	1281	250		58			94	84	8.0	0.10	10.20	44.405		46.336
B-12	62.3	01:02:18	378.960	0.01	1.744	1.70	1307	250		58			94	84	8.0	0.10	10.27	45.732		45.732
Last Pt	65.0	01:05:00	380.360																	
Final Val	65.0	01:05:00	380.360											**Max Vac**	8.0	**Final Values**		45.732		
Average Values				0.06		1.70	1526	250		58			89	80		0.23	25.25			
													84							

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

Plant Name	Elk City Facilty
Sampling Location	SCD-48
Project #	sfi-elkcity.ok-comp#1

Date	09/13/16
Operator	DA/BB
Run Number	90-100%-3

Ideal Nozzle Diameter and IsoKinetic Factor Setup			
Pitot Coefficient	(C_p)	0.840	
Average Stack Temp	(t_s)	1587.9	°F
Average Meter Temp	(t_m)	90.6	
Orifice Meter Coefficient	($\Delta H@$)	1.744	in H_2O
Square Root ΔP	($\Delta p^{1/2}_{avg}$)	0.22	in H_2O
Stack Moisture Content	(B_{ws})	6.53	%
Stack Dry Molecular Weight	(M_d)	29.23	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 (+)**	0.3	in H_2O for	30.0	sec
< 3.0	**Pre (-)**	0.3	in H_2O for	30.0	sec
	Post (+)	0.3	in H_2O for	30.0	sec
	Post (-)	0.3	in H_2O for	30.0	sec

Sampling Equipment			
Meter Box Number	SAMP-CP-0007		
Meter Cal Factor	(Y)	0.976	
Low Flow Meter	SAMP-MN-0001		
Average Nozzle Diameter	(D_{na})		in
Suggested Nozzle Diameter	(D_{ni})	0.3919	in
Probe Number	SAMP-SP-0001		in
Probe Length	60		in
Liner Material	inconel		
Sample Case / Oven Number			
Impinger Case Number	SAMP-BC-0002		

Pressures			
Barometric Pressure	(P_b)	30.08	in Hg
Stack Static Pressure	(P_{static})	0.00	in H_2O
Absolute Stack Pressure	(P_s)	30.08	in Hg
Absolute Meter Pressure	(P_m)	30.21	in Hg

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

Run Time			
Start	14:14	**End**	15:20

Weights	**Imp 1**	**Imp 2**	**Imp 3**	**Imp 4**	**Imp 5**	**Imp 6**	**Imp 7**	**Imp 8**
Pre	790.4	757.0	580.8	904.2				
Post	830.1	768.8	584.4	916.3				

Wash Volumes					
					ml
					ml

Traverse Point #	**Sampling Time (Θ)**	**Timer Time**	**Dry Gas Meter Reading (V_m)**	**Velocity Head (Δp)**	**Desired Orifice ΔH (ΔH_d)**	**Actual Orifice ΔH (ΔH_a)**	**Stack Temp (t_s)**	**Snorkel Temp (248±25°F)**	**Filter Temp (248±25°F)**	**Impinger Exit Temp (≤68°F)**	**Cond. Temp (≤--°F)**	**CPM Filter Temp (--±--°F)**	**Meter Inlet Temp (t_{mi})**	**Meter Outlet Temp (t_{mo})**	**Pump Vacuum**	**Square Root ΔP ($\Delta p^{1/2}$)**	**Local Stack Velocity (v_s)$_l$**	**Cumul. Meter Volume (V_m)$_{std}$**	**Cumul. Percent IsoKinetic (I)**	**Est-Run Meter Volume (V_m)$_{std}$**
	min	hh:mm:ss	ft³	in H_2O	in H_2O	in H_2O	°F	°F	°F	°F	°F	°F	°F	°F	in Hg	√(in H_2O)	ft/sec	dscf	%	dscf
A-1	0.0	00:00:00	382.100	0.080	1.744	1.70	1418	250		55			97	86	8.0	0.28	30.06	2.387		57.278
A-2	2.7	00:02:43	384.630	0.080	1.744	1.70	1418	250		55			97	86	8.0	0.28	30.06	4.311		51.731
A-3	5.4	00:05:25	386.670	0.100	1.744	1.70	1438	250		56			96	86	8.0	0.32	33.79	5.888		47.102
A-4	8.1	00:08:07	388.340	0.120	1.744	1.70	1495	250		56			96	86	8.0	0.35	37.57	8.003		48.016
A-5	10.8	00:10:50	390.580	0.090	1.744	1.70	1495	250		56			96	86	8.0	0.30	32.53	9.900		47.522
A-6	13.5	00:13:33	392.590	0.070	1.744	1.70	1638	250		56			97	86	8.0	0.26	29.72	11.966		47.865
A-7	16.3	00:16:15	394.780	0.010	1.744	1.70	1791	250		58			96	88	8.0	0.10	11.64	13.974		47.910
A-8	19.0	00:18:58	396.910	0.010	1.744	1.70	1794	250		59			96	88	8.0	0.10	11.64	15.105		45.314
A-9	21.7	00:21:40	398.110	0.030	1.744	1.70	1680	250		59			96	88	8.0	0.17	19.65	17.197		45.858
A-10	24.4	00:24:22	400.330	0.030	1.744	1.70	1153	250		59			97	88	8.0	0.17	17.06	19.203		46.086
A-11	27.1	00:27:05	402.460	0.010	1.744	1.70	1049	250		59			97	88	8.0	0.10	9.53	21.105		46.046
A-12	29.8	00:29:47	404.480	0.010	1.744	1.70	1031	250		59			97	88	8.0	0.10	9.47	22.715		45.429
B-1	32.5	00:32:30	406.190	0.060	1.744	1.70	1733	250		59			93	87	8.0	0.24	28.13	25.335		46.772
B-2	35.2	00:35:12	408.960	0.120	1.744	1.70	1734	250		59			93	87	8.0	0.35	39.80	26.933		46.171
B-3	37.9	00:37:55	410.650	0.170	1.744	1.70	1716	250		59			93	87	8.0	0.41	47.17	29.071		46.514
B-4	40.6	00:40:37	412.910	0.150	1.744	1.70	1719	250		59			93	87	8.0	0.39	44.34	30.102		45.153
B-5	43.3	00:43:20	414.000	0.100	1.744	1.70	1722	250		60			93	87	8.0	0.32	36.23	32.211		45.475
B-6	46.0	00:46:03	416.230	0.080	1.744	1.70	1718	250		60			93	87	8.0	0.28	32.38	34.198		45.597
B-7	48.8	00:48:45	418.330	0.050	1.744	1.70	1726	250		62			93	86	8.0	0.22	25.64	36.688		46.342
B-8	51.5	00:51:28	420.960	0.030	1.744	1.70	1726	250		62			93	86	8.0	0.17	19.86	37.767		45.320
B-9	54.2	00:54:10	422.100	0.010	1.744	1.70	1723	250		62			93	86	8.0	0.10	11.46	40.408		46.181
B-10	56.9	00:56:53	424.890	0.01	1.744	1.70	1730	250		64			91	85	8.0	0.10	11.48	41.975		45.791
B-11	59.6	00:59:35	426.540	0.01	1.744	1.70	1740	250		64			91	85	8.0	0.10	11.50	43.949		45.860
B-12	62.3	01:02:18	428.620	0.01	1.744	1.70	1723	250		64			91	85	8.0	0.10	11.46	45.373		45.373
Last Pt	65.0	01:05:00	430.120																	
Final Val	65.0	01:05:00	430.120											**Max Vac**	8.0	**Final Values**		45.373		
Average Values				0.06		1.70	1588	250		59			95	87		0.22	24.67			
													91							

Superior Fabrication, INC
September 13, 2016
SCD-48
Elk City Plant

Unit Data

Meas. Stack Moisture	5.5	%
Stack Exhaust Flow (M2)	254,540	SCFH

Weather Data

Barometric Pressure	30.07	in. Hg
Relative Humidity	62	%
Ambient Temperature	82	°F
Specific Humidity	0.014468	lb H_2O / lb air

90-100 Load, Run - SCD-48 R10

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. °F	Fuel Flow SCFH
A1	09/13/16 11:11:26	10830	17.25	0.38	0.67	2.62	1.26	72.20	2,594.00
	09/13/16 11:11:56	10860	17.44	0.32	0.65	2.49	1.26	72.20	2,594.00
	09/13/16 11:12:26	10890	17.39	0.32	0.64	2.53	1.28	72.10	2,597.00
	09/13/16 11:12:56	10920	17.41	0.23	0.64	2.52	1.28	72.10	2,597.00
	09/13/16 11:13:26	10950	17.31	0.18	0.65	2.57	1.28	72.00	2,598.00
	09/13/16 11:13:56	10980	17.35	0.16	0.63	2.56	1.28	72.00	2,598.00
	09/13/16 11:14:26	11010	17.53	0.17	0.64	2.45	1.28	71.90	2,598.00
	09/13/16 11:14:56	11040	17.41	0.19	0.64	2.51	1.28	71.90	2,598.00
	09/13/16 11:15:26	11070	17.43	0.12	0.64	2.49	1.27	71.80	2,601.00
	09/13/16 11:15:56	11100	17.49	0.12	0.61	2.47	1.27	71.80	2,601.00
	09/13/16 11:16:26	11130	17.44	0.07	0.63	2.49	1.28	71.70	2,602.00
	09/13/16 11:16:56	11160	17.31	0.11	0.64	2.56	1.28	71.70	2,602.00
	09/13/16 11:17:26	11190	17.38	0.08	0.61	2.53	1.27	71.60	2,605.00
	09/13/16 11:17:56	11220	17.50	0.08	0.59	2.45	1.27	71.60	2,605.00
	09/13/16 11:18:26	11250	17.22	0.12	0.58	2.62	1.28	71.50	2,606.00
	09/13/16 11:18:56	11280	17.15	0.06	0.55	2.67	1.28	71.50	2,606.00
	09/13/16 11:19:26	11310	17.42	0.02	0.53	2.52	1.28	71.50	2,606.00
	09/13/16 11:19:56	11340	17.39	0.08	0.53	2.51	1.28	71.50	2,606.00
	09/13/16 11:20:26	11370	17.53	0.07	0.55	2.54	1.28	71.60	2,606.00
	09/13/16 11:20:56	11400	17.20	0.05	0.55	2.77	1.28	71.60	2,606.00
	09/13/16 11:21:26	11430	17.36	-0.01	0.55	2.68	1.28	71.70	2,608.00
	09/13/16 11:21:56	11460	17.44	-0.01	0.55	2.63	1.28	71.70	2,608.00
	09/13/16 11:22:26	11490	17.54	-0.02	0.57	2.59	1.28	71.90	2,607.00
	09/13/16 11:22:56	11520	17.37	-0.02	0.56	2.69	1.28	71.90	2,607.00
	09/13/16 11:23:26	11550	17.49	-0.05	0.52	2.57	1.28	72.00	2,607.00
	09/13/16 11:23:56	11580	17.11	-0.07	0.50	2.85	1.28	72.00	2,607.00
	09/13/16 11:24:26	11610	17.02	-0.19	0.54	2.92	1.28	72.20	2,606.00
	09/13/16 11:24:56	11640	17.07	-0.11	0.54	2.88	1.28	72.20	2,606.00
	09/13/16 11:25:26	11670	16.94	-0.08	0.50	2.94	1.28	72.50	2,596.00
	09/13/16 11:25:56	11700	16.47	-0.04	0.52	3.35	1.28	72.50	2,596.00
	09/13/16 11:26:26	11730	17.06	-0.02	0.51	2.88	1.61	72.80	2,923.00
	09/13/16 11:26:56	11760	16.75	-0.03	0.49	3.11	1.61	72.80	2,923.00
	09/13/16 11:27:26	11790	16.49	-0.09	0.50	3.30	1.63	72.90	2,952.00
	09/13/16 11:27:56	11820	16.34	-0.09	0.50	3.28	1.63	72.90	2,952.00
	09/13/16 11:28:26	11850	16.28	-0.12	0.48	3.29	1.62	73.10	2,950.00
	09/13/16 11:28:56	11880	16.42	-0.12	0.48	3.15	1.62	73.10	2,950.00
	09/13/16 11:29:26	11910	16.44	-0.09	0.50	3.12	1.62	73.60	2,944.00
	09/13/16 11:29:56	11940	16.19	0.01	0.50	3.30	1.62	73.60	2,944.00
	09/13/16 11:30:26	11970	16.26	-0.05	0.50	3.28	1.65	73.90	2,953.00
	09/13/16 11:30:56	12000	16.27	0.00	0.50	3.29	1.65	73.90	2,953.00
	09/13/16 11:31:26	12030	16.19	-0.04	0.48	3.34	1.65	74.30	2,961.00
A2	09/13/16 11:31:56	12060	16.38	-0.12	0.49	3.23	1.65	74.30	2,961.00
	09/13/16 11:32:26	12090	16.12	-0.10	0.49	3.35	1.64	74.60	2,954.00
	09/13/16 11:32:56	12120	16.24	-0.10	0.50	3.35	1.64	74.60	2,954.00
	09/13/16 11:33:26	12150	16.20	-0.12	0.50	3.36	1.65	74.90	2,954.00
	09/13/16 11:33:56	12180	16.56	-0.13	0.49	3.06	1.65	74.90	2,954.00
	09/13/16 11:34:26	12210	16.16	-0.11	0.47	3.35	1.66	75.20	2,954.00
	09/13/16 11:34:56	12240	16.27	-0.11	0.49	3.27	1.66	75.20	2,954.00
	09/13/16 11:35:26	12270	16.06	-0.10	0.48	3.42	1.66	75.50	2,955.00
	09/13/16 11:35:56	12300	16.23	-0.12	0.47	3.32	1.66	75.50	2,955.00
	09/13/16 11:36:26	12330	16.32	-0.09	0.46	3.25	1.66	75.70	2,956.00
	09/13/16 11:36:56	12360	16.53	-0.09	0.50	3.09	1.66	75.70	2,956.00
	09/13/16 11:37:26	12390	16.71	-0.10	0.49	2.97	1.66	75.90	2,955.00
	09/13/16 11:37:56	12420	16.51	-0.10	0.48	3.12	1.66	75.90	2,955.00
	09/13/16 11:38:26	12450	16.46	-0.09	0.48	3.15	1.65	76.10	2,959.00
	09/13/16 11:38:56	12480	16.46	-0.09	0.48	3.15	1.65	76.10	2,959.00
	09/13/16 11:39:26	12510	16.39	-0.10	0.48	3.20	1.66	76.30	2,958.00
	09/13/16 11:39:56	12540	16.31	-0.10	0.46	3.26	1.66	76.30	2,958.00
	09/13/16 11:40:26	12570	16.42	-0.09	0.47	3.16	1.67	76.40	2,960.00
	09/13/16 11:40:56	12600	16.33	-0.09	0.46	3.29	1.67	76.40	2,960.00

Superior Fabrication, INC
September 13, 2016
SCD-48
Elk City Plant

Unit Data

Meas. Stack Moisture	5.5	%
Stack Exhaust Flow (M2)	254,540	SCFH

Weather Data

Barometric Pressure	30.07	in. Hg
Relative Humidity	62	%
Ambient Temperature	82	°F
Specific Humidity	0.014468	lb H_2O / lb air

90-100 Load, Run - SCD-48 R10

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. °F	Fuel Flow SCFH
	09/13/16 11:41:26	12630	16.57	-0.10	0.45	3.05	1.66	76.30	2,960.00
	09/13/16 11:41:56	12660	16.55	-0.10	0.46	3.10	1.66	76.30	2,960.00
	09/13/16 11:42:26	12690	16.47	-0.10	0.46	3.15	1.65	76.40	2,960.00
	09/13/16 11:42:56	12720	16.53	-0.09	0.46	3.12	1.65	76.40	2,960.00
	09/13/16 11:43:26	12750	16.46	-0.12	0.49	3.16	1.65	76.60	2,958.00
	09/13/16 11:43:56	12780	16.58	-0.12	0.45	3.05	1.65	76.60	2,958.00
	09/13/16 11:44:26	12810	13.28	-0.12	0.37	5.14	1.65	76.80	2,957.00
	09/13/16 11:44:56	12840	11.18	-0.10	0.36	6.90	1.65	76.80	2,957.00
	09/13/16 11:45:26	12870	11.10	0.12	0.36	6.98	1.65	77.00	2,960.00
	09/13/16 11:45:56	12900	11.13	-0.04	0.42	6.97	1.65	77.00	2,960.00
	09/13/16 11:46:26	12930	11.28	-0.19	0.42	6.86	1.65	77.10	2,961.00
	09/13/16 11:46:56	12960	11.51	-0.20	0.45	6.67	1.65	77.10	2,961.00
	09/13/16 11:47:26	12990	11.33	-0.18	0.39	6.80	1.65	77.10	2,961.00
	09/13/16 11:47:56	13020	11.65	-0.18	0.43	6.56	1.65	77.10	2,961.00
	09/13/16 11:48:26	13050	11.61	-0.22	0.45	6.61	1.64	77.40	2,961.00
	09/13/16 11:48:56	13080	11.72	-0.19	0.41	6.52	1.64	77.40	2,961.00
	09/13/16 11:49:26	13110	11.64	-0.17	0.44	6.55	1.64	77.70	2,960.00
	09/13/16 11:49:56	13140	11.47	-0.13	0.45	6.71	1.64	77.70	2,960.00
	09/13/16 11:50:26	13170	11.52	-0.20	0.45	6.64	1.65	78.00	2,961.00
	09/13/16 11:50:56	13200	11.59	-0.20	0.38	6.61	1.65	78.00	2,961.00
	09/13/16 11:51:26	13230	11.66	-0.19	0.36	6.56	1.66	78.40	2,965.00
A3	09/13/16 11:51:56	13260	11.73	-0.19	0.35	6.52	1.66	78.40	2,965.00
	09/13/16 11:52:26	13290	11.71	-0.20	0.35	6.49	1.66	78.60	2,964.00
	09/13/16 11:52:56	13320	10.80	-0.19	0.34	7.02	1.66	78.60	2,964.00
	09/13/16 11:53:26	13350	8.38	-0.22	0.30	8.89	1.66	78.90	2,965.00
	09/13/16 11:53:56	13380	8.26	-0.13	0.29	9.09	1.66	78.90	2,965.00
	09/13/16 11:54:26	13410	16.26	0.01	0.36	3.76	1.66	79.10	2,964.00
	09/13/16 11:54:56	13440	17.05	0.19	0.35	2.77	1.66	79.10	2,964.00
	09/13/16 11:55:26	13470	17.11	0.40	0.35	2.66	1.67	79.20	2,961.00
	09/13/16 11:55:56	13500	16.72	0.76	0.35	2.89	1.67	79.20	2,961.00
	09/13/16 11:56:26	13530	16.02	1.14	0.33	3.19	1.62	79.40	2,918.00
	09/13/16 11:56:56	13560	10.43	0.89	0.24	7.20	1.62	79.40	2,918.00
	09/13/16 11:57:26	13590	11.94	0.26	0.28	6.55	1.63	79.30	2,925.00
	09/13/16 11:57:56	13620	13.18	-0.02	0.29	5.37	1.63	79.30	2,925.00
	09/13/16 11:58:26	13650	13.01	-0.15	0.29	5.49	1.63	79.40	2,924.00
	09/13/16 11:58:56	13680	13.08	-0.18	0.23	5.45	1.63	79.40	2,924.00
	09/13/16 11:59:26	13710	13.16	-0.20	0.27	5.38	1.62	79.60	2,922.00
	09/13/16 11:59:56	13740	12.97	-0.17	0.28	5.46	1.62	79.60	2,922.00
	09/13/16 12:00:26	13770	12.78	-0.19	0.31	5.62	1.62	79.70	2,921.00
	09/13/16 12:00:56	13800	12.59	-0.21	0.30	5.76	1.62	79.70	2,921.00
	09/13/16 12:01:26	13830	12.61	-0.19	0.33	5.81	1.63	79.90	2,922.00
	09/13/16 12:01:56	13860	12.40	-0.19	0.31	5.93	1.63	79.90	2,922.00
	09/13/16 12:02:26	13890	12.41	-0.16	0.31	5.98	1.61	79.90	2,915.00
	09/13/16 12:02:56	13920	12.84	-0.22	0.31	5.68	1.61	79.90	2,915.00
	09/13/16 12:03:26	13950	13.13	-0.17	0.33	5.41	1.61	80.00	2,917.00
	09/13/16 12:03:56	13980	13.01	-0.09	0.36	5.49	1.61	80.00	2,917.00
	09/13/16 12:04:26	14010	13.00	-0.16	0.36	5.50	1.60	80.10	2,916.00
	09/13/16 12:04:56	14040	13.24	-0.16	0.36	5.32	1.60	80.10	2,916.00
	09/13/16 12:05:26	14070	12.97	-0.16	0.36	5.55	1.60	80.20	2,914.00
	09/13/16 12:05:56	14100	13.11	-0.18	0.36	5.42	1.60	80.20	2,914.00
	09/13/16 12:06:26	14130	13.16	-0.21	0.39	5.40	1.60	80.30	2,914.00
	09/13/16 12:06:56	14160	12.90	-0.18	0.36	5.56	1.60	80.30	2,914.00
	09/13/16 12:07:26	14190	12.95	-0.23	0.36	5.54	1.60	80.30	2,917.00
	09/13/16 12:07:56	14220	12.90	-0.23	0.36	5.56	1.60	80.30	2,917.00
	09/13/16 12:08:26	14250	13.04	-0.16	0.40	5.47	1.60	80.60	2,919.00
	09/13/16 12:08:56	14280	12.85	-0.20	0.36	5.58	1.60	80.60	2,919.00
	09/13/16 12:09:26	14310	12.76	-0.22	0.36	5.72	1.61	80.80	2,919.00
	09/13/16 12:09:56	14340	13.12	-0.22	0.39	5.42	1.61	80.80	2,919.00
	09/13/16 12:10:26	14370	12.97	-0.19	0.44	5.49	1.61	81.10	2,913.00
	09/13/16 12:10:56	14400	13.07	-0.21	0.41	5.48	1.61	81.10	2,913.00

Superior Fabrication, INC
September 13, 2016
SCD-48
Elk City Plant

Unit Data

Meas. Stack Moisture	5.5	%
Stack Exhaust Flow (M2)	254,540	SCFH

Weather Data

Barometric Pressure	30.07	in. Hg
Relative Humidity	62	%
Ambient Temperature	82	^oF
Specific Humidity	0.014468	lb H_2O / lb air

90-100 Load, Run - SCD-48 R10

Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^oF	Fuel Flow SCFH
09/13/16 12:11:26	14430	13.17	-0.19	0.34	5.40	1.60	81.20	2,915.00
09/13/16 12:11:56	14460	12.74	-0.15	0.34	5.65	1.60	81.20	2,915.00
09/13/16 12:12:26	14490	12.94	-0.15	0.35	5.56	1.60	81.40	2,916.00
09/13/16 12:12:56	14520	13.06	-0.12	0.34	5.48	1.60	81.40	2,916.00
09/13/16 12:13:26	14550	13.08	-0.19	0.36	5.44	1.61	81.60	2,917.00
09/13/16 12:13:56	14580	12.97	-0.19	0.36	5.52	1.61	81.60	2,917.00
09/13/16 12:14:26	14610	12.69	-0.21	0.36	5.69	1.60	81.60	2,913.00
09/13/16 12:14:56	14640	12.72	-0.22	0.36	5.72	1.60	81.60	2,913.00
09/13/16 12:15:26	14670	12.63	-0.18	0.34	5.79	1.60	81.30	2,914.00
09/13/16 12:15:56	14700	13.18	-0.19	0.37	5.44	1.60	81.30	2,914.00
09/13/16 12:16:26	14730	13.26	-0.09	0.43	5.31	1.59	81.00	2,918.00
09/13/16 12:16:56	14760	13.16	-0.09	0.36	5.38	1.59	81.00	2,918.00
09/13/16 12:17:26	14790	12.82	-0.12	0.37	5.62	1.59	80.80	2,916.00
09/13/16 12:17:56	14820	12.78	-0.19	0.42	5.66	1.59	80.80	2,916.00
09/13/16 12:18:26	14850	12.84	-0.19	0.45	5.63	1.59	80.70	2,923.00
09/13/16 12:18:56	14880	12.99	-0.19	0.41	5.53	1.59	80.70	2,923.00
09/13/16 12:19:26	14910	13.41	-0.09	0.37	5.22	1.60	80.50	2,921.00
09/13/16 12:19:56	14940	12.74	-0.16	0.39	5.67	1.60	80.50	2,921.00
09/13/16 12:20:26	14970	13.00	-0.20	0.38	5.51	1.58	80.60	2,903.00
09/13/16 12:20:56	15000	13.11	-0.12	0.38	5.42	1.58	80.60	2,903.00
09/13/16 12:21:26	15030	13.15	-0.13	0.36	5.40	1.56	80.70	2,891.00
RAW AVERAGE		**14.62**	**-0.06**	**0.44**	**4.44**	**1.55**	**76.82**	**2,866.96**

		O_2	CO	THC	CO_2	Press. Trans	Temp. Trans.	F-Flow Trans.
	Serial Number:	INSTO2-0011	INST-CO-0022	INST-TH-0001	INST-C2-0013	1633266	1633266	1633266
		(%)	**(ppmvd)**	**(ppmvw)**	**(%)**	**(in. H_2O)**	**(^oF)**	**(SCFH)**
Bias	**Initial Zero**	0.05	0.01	0.14	-0.03			
	Final Zero	0.03	-0.01	0.04	-0.02			
	Avg. Zero	0.04	0.00	0.09	-0.03			
	Initial UpScale	11.96	9.10	3.07	8.94			
	Final UpScale	11.97	9.30	2.96	8.93			
	Avg. UpScale	11.97	9.20	3.02	8.94			
Upscale Cal Gas		12.00	9.24	3.00	8.99			

EMISSIONS DATA	O_2	CO	THC	CO_2
Corrected Raw Average (ppm/% dry basis)	14.67	-0.06	0.38	4.48
Corrected Raw Average (ppm/% wet basis)	13.87	-0.06	0.36	4.24
Emission Rate (lb/hr)	N/A	0.00	0.01	N/A

Superior Fabrication, INC
September 13, 2016
SCD-48
Elk City Plant

Unit Data

Meas. Stack Moisture	5.1	%
Stack Exhaust Flow (M2)	237,703	SCFH

Weather Data

Barometric Pressure	30.08	in. Hg
Relative Humidity	54	%
Ambient Temperature	89	^{o}F
Specific Humidity	0.015788	lb H_2O / lb air

90-100 Load, Run - SCD-48 R11

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
A1	09/13/16 12:50:26	16770	16.41	1.40	0.45	3.22	1.06	86.50	2,478.00
	09/13/16 12:50:56	16800	16.37	1.28	0.44	3.21	1.06	86.50	2,478.00
	09/13/16 12:51:26	16830	16.37	1.31	0.44	3.23	1.09	86.60	2,488.00
	09/13/16 12:51:56	16860	16.50	1.28	0.44	3.14	1.09	86.60	2,488.00
	09/13/16 12:52:26	16890	16.47	1.24	0.45	3.16	1.10	86.60	2,491.00
	09/13/16 12:52:56	16920	16.41	1.18	0.45	3.20	1.10	86.60	2,491.00
	09/13/16 12:53:26	16950	16.48	1.27	0.43	3.13	1.12	86.50	2,494.00
	09/13/16 12:53:56	16980	16.39	1.14	0.45	3.21	1.12	86.50	2,494.00
	09/13/16 12:54:26	17010	16.26	1.08	0.44	3.34	1.12	86.40	2,494.00
	09/13/16 12:54:56	17040	16.43	1.08	0.43	3.12	1.12	86.40	2,494.00
	09/13/16 12:55:26	17070	15.87	1.21	0.40	3.61	1.13	86.50	2,495.00
	09/13/16 12:55:56	17100	16.11	1.15	0.41	3.43	1.13	86.50	2,495.00
	09/13/16 12:56:26	17130	16.43	1.32	0.44	3.25	1.13	86.70	2,502.00
	09/13/16 12:56:56	17160	16.25	1.21	0.41	3.37	1.13	86.70	2,502.00
	09/13/16 12:57:26	17190	16.33	0.73	0.42	3.25	1.14	87.10	2,502.00
	09/13/16 12:57:56	17220	16.88	0.78	0.44	2.91	1.14	87.10	2,502.00
	09/13/16 12:58:26	17250	16.40	0.87	0.42	3.18	1.14	87.40	2,495.00
	09/13/16 12:58:56	17280	16.95	0.81	0.44	2.81	1.14	87.40	2,495.00
	09/13/16 12:59:26	17310	16.31	0.87	0.40	3.29	1.13	87.70	2,490.00
	09/13/16 12:59:56	17340	16.71	0.91	0.37	3.00	1.13	87.70	2,490.00
	09/13/16 13:00:26	17370	16.80	0.87	0.36	2.90	1.14	88.00	2,496.00
	09/13/16 13:00:56	17400	16.74	0.78	0.38	2.95	1.14	88.00	2,496.00
	09/13/16 13:01:26	17430	16.04	0.75	0.37	3.39	1.14	88.20	2,495.00
	09/13/16 13:01:56	17460	15.82	0.35	0.36	3.60	1.14	88.20	2,495.00
	09/13/16 13:02:26	17490	16.01	0.11	0.34	3.47	1.15	88.30	2,490.00
	09/13/16 13:02:56	17520	15.80	0.01	0.34	3.59	1.15	88.30	2,490.00
	09/13/16 13:03:26	17550	16.10	0.00	0.35	3.43	1.14	88.10	2,490.00
	09/13/16 13:03:56	17580	16.12	0.01	0.37	3.38	1.14	88.10	2,490.00
	09/13/16 13:04:26	17610	15.73	0.01	0.34	3.63	1.46	87.80	2,817.00
	09/13/16 13:04:56	17640	13.07	-0.10	0.30	5.27	1.46	87.80	2,817.00
	09/13/16 13:05:26	17670	12.54	-0.21	0.31	5.82	1.49	87.30	2,850.00
	09/13/16 13:05:56	17700	12.34	-0.22	0.32	5.97	1.49	87.30	2,850.00
	09/13/16 13:06:26	17730	12.03	-0.20	0.32	6.24	1.49	86.90	2,856.00
	09/13/16 13:06:56	17760	12.48	-0.17	0.34	5.90	1.49	86.90	2,856.00
	09/13/16 13:07:26	17790	13.58	-0.15	0.40	5.32	1.50	86.60	2,859.00
	09/13/16 13:07:56	17820	15.94	-0.04	0.45	3.49	1.50	86.60	2,859.00
	09/13/16 13:08:26	17850	15.76	0.04	0.44	3.64	1.50	86.20	2,864.00
	09/13/16 13:08:56	17880	15.98	0.01	0.45	3.50	1.50	86.20	2,864.00
	09/13/16 13:09:26	17910	16.05	-0.07	0.46	3.44	1.50	85.90	2,865.00
	09/13/16 13:09:56	17940	16.42	-0.06	0.46	3.17	1.50	85.90	2,865.00
	09/13/16 13:10:26	17970	16.03	-0.06	0.45	3.43	1.51	85.70	2,868.00
A2	09/13/16 13:10:56	18000	16.02	-0.12	0.44	3.46	1.51	85.70	2,868.00
	09/13/16 13:11:26	18030	15.96	-0.09	0.41	3.50	1.52	85.50	2,877.00
	09/13/16 13:11:56	18060	16.04	-0.09	0.40	3.47	1.52	85.50	2,877.00
	09/13/16 13:12:26	18090	16.21	-0.10	0.38	3.33	1.52	85.20	2,877.00
	09/13/16 13:12:56	18120	16.16	-0.10	0.36	3.34	1.52	85.20	2,877.00
	09/13/16 13:13:26	18150	16.23	-0.10	0.37	3.31	1.52	85.10	2,878.00
	09/13/16 13:13:56	18180	16.31	-0.10	0.37	3.24	1.52	85.10	2,878.00
	09/13/16 13:14:26	18210	16.15	-0.11	0.36	3.34	1.50	85.00	2,878.00
	09/13/16 13:14:56	18240	16.14	-0.10	0.36	3.38	1.50	85.00	2,878.00
	09/13/16 13:15:26	18270	16.24	-0.09	0.36	3.30	1.50	84.80	2,871.00
	09/13/16 13:15:56	18300	16.19	-0.09	0.36	3.31	1.50	84.80	2,871.00
	09/13/16 13:16:26	18330	16.38	-0.11	0.36	3.21	1.52	84.60	2,876.00
	09/13/16 13:16:56	18360	16.16	-0.12	0.36	3.35	1.52	84.60	2,876.00
	09/13/16 13:17:26	18390	16.12	-0.09	0.35	3.41	1.52	84.40	2,880.00
	09/13/16 13:17:56	18420	16.10	-0.10	0.36	3.37	1.52	84.40	2,880.00
	09/13/16 13:18:26	18450	15.92	-0.11	0.36	3.55	1.53	84.30	2,883.00
	09/13/16 13:18:56	18480	16.01	-0.11	0.36	3.44	1.53	84.30	2,883.00
	09/13/16 13:19:26	18510	16.09	-0.11	0.35	3.43	1.54	84.20	2,878.00
	09/13/16 13:19:56	18540	15.84	-0.12	0.35	3.55	1.54	84.20	2,878.00

Superior Fabrication, INC
September 13, 2016
SCD-48
Elk City Plant

Unit Data

Meas. Stack Moisture	5.1	%
Stack Exhaust Flow (M2)	237,703	SCFH

Weather Data

Barometric Pressure	30.08	in. Hg
Relative Humidity	54	%
Ambient Temperature	89	^{o}F
Specific Humidity	0.015788	lb H_2O / lb air

90-100 Load, Run - SCD-48 R11

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
	09/13/16 13:20:26	18570	15.93	-0.09	0.36	3.55	1.53	84.20	2,877.00
	09/13/16 13:20:56	18600	16.37	-0.09	0.36	3.22	1.53	84.20	2,877.00
	09/13/16 13:21:26	18630	16.33	-0.10	0.35	3.23	1.54	84.10	2,879.00
	09/13/16 13:21:56	18660	16.20	-0.10	0.35	3.33	1.54	84.10	2,879.00
	09/13/16 13:22:26	18690	16.55	-0.12	0.34	3.08	1.53	84.00	2,882.00
	09/13/16 13:22:56	18720	16.22	-0.12	0.33	3.28	1.53	84.00	2,882.00
	09/13/16 13:23:26	18750	16.18	-0.12	0.35	3.34	1.54	83.90	2,881.00
	09/13/16 13:23:56	18780	16.20	-0.13	0.35	3.33	1.54	83.90	2,881.00
	09/13/16 13:24:26	18810	15.94	-0.10	0.32	3.52	1.54	84.10	2,879.00
	09/13/16 13:24:56	18840	16.20	-0.09	0.32	3.36	1.54	84.10	2,879.00
	09/13/16 13:25:26	18870	16.23	-0.08	0.34	3.28	1.55	84.30	2,880.00
	09/13/16 13:25:56	18900	16.03	-0.09	0.34	3.45	1.55	84.30	2,880.00
	09/13/16 13:26:26	18930	16.14	-0.12	0.32	3.37	1.54	84.50	2,877.00
	09/13/16 13:26:56	18960	16.14	-0.12	0.31	3.37	1.54	84.50	2,877.00
	09/13/16 13:27:26	18990	15.96	-0.09	0.31	3.48	1.54	84.70	2,885.00
	09/13/16 13:27:56	19020	15.97	-0.06	0.31	3.49	1.54	84.70	2,885.00
	09/13/16 13:28:26	19050	16.13	-0.12	0.31	3.36	1.54	84.90	2,878.00
	09/13/16 13:28:56	19080	15.88	-0.12	0.32	3.57	1.54	84.90	2,878.00
	09/13/16 13:29:26	19110	16.08	-0.10	0.30	3.41	1.54	85.40	2,872.00
	09/13/16 13:29:56	19140	16.32	-0.08	0.31	3.25	1.54	85.40	2,872.00
	09/13/16 13:30:26	19170	16.17	-0.06	0.31	3.34	1.54	85.50	2,875.00
A3	09/13/16 13:30:56	19200	16.04	-0.11	0.32	3.44	1.54	85.50	2,875.00
	09/13/16 13:31:26	19230	15.90	-0.09	0.29	3.54	1.54	85.30	2,870.00
	09/13/16 13:31:56	19260	15.86	-0.10	0.29	3.55	1.54	85.30	2,870.00
	09/13/16 13:32:26	19290	15.96	-0.13	0.33	3.49	1.54	85.10	2,872.00
	09/13/16 13:32:56	19320	16.08	-0.12	0.35	3.42	1.54	85.10	2,872.00
	09/13/16 13:33:26	19350	16.22	-0.12	0.33	3.32	1.55	84.80	2,874.00
	09/13/16 13:33:56	19380	16.12	-0.11	0.32	3.38	1.55	84.80	2,874.00
	09/13/16 13:34:26	19410	15.88	-0.10	0.35	3.55	1.55	84.70	2,878.00
	09/13/16 13:34:56	19440	15.99	-0.10	0.32	3.48	1.55	84.70	2,878.00
	09/13/16 13:35:26	19470	15.99	-0.12	0.31	3.47	1.54	84.60	2,885.00
	09/13/16 13:35:56	19500	16.08	-0.13	0.35	3.41	1.54	84.60	2,885.00
	09/13/16 13:36:26	19530	15.91	-0.12	0.31	3.52	1.55	84.50	2,881.00
	09/13/16 13:36:56	19560	16.05	-0.12	0.30	3.44	1.55	84.50	2,881.00
	09/13/16 13:37:26	19590	16.11	-0.10	0.33	3.39	1.55	84.90	2,880.00
	09/13/16 13:37:56	19620	16.12	-0.10	0.35	3.38	1.55	84.90	2,880.00
	09/13/16 13:38:26	19650	16.31	-0.09	0.35	3.25	1.55	85.30	2,874.00
	09/13/16 13:38:56	19680	16.28	-0.08	0.33	3.27	1.55	85.30	2,874.00
	09/13/16 13:39:26	19710	16.29	-0.10	0.31	3.27	1.55	85.50	2,876.00
	09/13/16 13:39:56	19740	16.23	-0.13	0.33	3.28	1.55	85.50	2,876.00
	09/13/16 13:40:26	19770	16.06	-0.09	0.31	3.43	1.54	85.70	2,874.00
	09/13/16 13:40:56	19800	16.26	-0.09	0.32	3.28	1.54	85.70	2,874.00
	09/13/16 13:41:26	19830	16.15	-0.11	0.31	3.36	1.54	85.90	2,873.00
	09/13/16 13:41:56	19860	16.03	-0.11	0.32	3.42	1.54	85.90	2,873.00
	09/13/16 13:42:26	19890	15.77	-0.10	0.32	3.63	1.54	86.20	2,874.00
	09/13/16 13:42:56	19920	15.97	-0.10	0.34	3.48	1.54	86.20	2,874.00
	09/13/16 13:43:26	19950	16.04	-0.12	0.34	3.44	1.53	86.60	2,867.00
	09/13/16 13:43:56	19980	16.04	-0.13	0.33	3.42	1.53	86.60	2,867.00
	09/13/16 13:44:26	20010	16.30	-0.12	0.35	3.24	1.54	87.10	2,866.00
	09/13/16 13:44:56	20040	16.20	-0.09	0.36	3.32	1.54	87.10	2,866.00
	09/13/16 13:45:26	20070	16.26	-0.11	0.33	3.28	1.53	87.50	2,862.00
	09/13/16 13:45:56	20100	16.23	-0.08	0.30	3.29	1.53	87.50	2,862.00
	09/13/16 13:46:26	20130	16.25	-0.09	0.35	3.28	1.54	87.90	2,861.00
	09/13/16 13:46:56	20160	16.37	-0.04	0.34	3.22	1.54	87.90	2,861.00
	09/13/16 13:47:26	20190	16.22	-0.07	0.32	3.27	1.51	87.90	2,857.00
	09/13/16 13:47:56	20220	15.87	-0.11	0.31	3.54	1.51	87.90	2,857.00
	09/13/16 13:48:26	20250	15.97	-0.07	0.31	3.46	1.53	87.90	2,860.00
	09/13/16 13:48:56	20280	15.98	-0.10	0.33	3.49	1.53	87.90	2,860.00
	09/13/16 13:49:26	20310	15.90	-0.10	0.30	3.52	1.53	88.10	2,864.00
	09/13/16 13:49:56	20340	16.02	-0.10	0.30	3.44	1.53	88.10	2,864.00

Superior Fabrication, INC
September 13, 2016
SCD-48
Elk City Plant

Unit Data

Meas. Stack Moisture	5.1	%
Stack Exhaust Flow (M2)	237,703	SCFH

Weather Data

Barometric Pressure	30.08	in. Hg
Relative Humidity	54	%
Ambient Temperature	89	^{o}F
Specific Humidity	0.015788	lb H_2O / lb air

90-100 Load, Run - SCD-48 R11

Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
09/13/16 13:50:26	20370	16.15	-0.09	0.30	3.37	1.53	88.20	2,861.00
09/13/16 13:50:56	20400	16.12	-0.10	0.30	3.37	1.53	88.20	2,861.00
09/13/16 13:51:26	20430	15.81	-0.12	0.31	3.56	1.53	88.20	2,859.00
09/13/16 13:51:56	20460	15.89	-0.12	0.31	3.53	1.53	88.20	2,859.00
09/13/16 13:52:26	20490	15.95	-0.10	0.31	3.50	1.53	88.10	2,865.00
09/13/16 13:52:56	20520	16.03	-0.10	0.34	3.44	1.53	88.10	2,865.00
09/13/16 13:53:26	20550	15.91	-0.12	0.33	3.50	1.53	87.60	2,871.00
09/13/16 13:53:56	20580	16.01	-0.12	0.30	3.45	1.53	87.60	2,871.00
09/13/16 13:54:26	20610	16.08	-0.10	0.33	3.40	1.53	87.30	2,874.00
09/13/16 13:54:56	20640	16.20	-0.10	0.32	3.35	1.53	87.30	2,874.00
09/13/16 13:55:26	20670	15.87	-0.09	0.31	3.50	1.53	87.10	2,873.00
09/13/16 13:55:56	20700	15.84	-0.09	0.33	3.59	1.53	87.10	2,873.00
09/13/16 13:56:26	20730	16.10	-0.09	0.33	3.40	1.53	86.80	2,867.00
09/13/16 13:56:56	20760	16.17	-0.07	0.29	3.34	1.53	86.80	2,867.00
09/13/16 13:57:26	20790	16.00	-0.12	0.30	3.45	1.53	86.50	2,868.00
09/13/16 13:57:56	20820	16.25	-0.12	0.33	3.30	1.53	86.50	2,868.00
09/13/16 13:58:26	20850	16.34	-0.06	0.33	3.20	1.53	86.30	2,873.00
09/13/16 13:58:56	20880	16.10	-0.13	0.30	3.37	1.53	86.30	2,873.00
09/13/16 13:59:26	20910	16.20	-0.04	0.30	3.32	1.53	86.10	2,876.00
09/13/16 13:59:56	20940	16.17	-0.05	0.30	3.33	1.53	86.10	2,876.00
09/13/16 14:00:26	20970	16.03	-0.02	0.30	3.42	1.54	85.90	2,876.00
RAW AVERAGE		**16.00**	**0.10**	**0.35**	**3.47**	**1.45**	**86.10**	**2,795.96**

		O_2	CO	THC	CO_2	Press. Trans	Temp. Trans.	F-Flow Trans.
	Serial Number:	INSTO2-0011	INST-CO-0022	INST-TH-0001	INST-C2-0013	1633266	1633266	1633266
						(in. H_2O)	**(^{o}F)**	**(SCFH)**
Bias	**Initial Zero**	0.03	-0.01	0.04	-0.02			
	Final Zero	0.10	0.09	0.07	-0.04			
	Avg. Zero	0.07	0.04	0.06	-0.03			
	Initial UpScale	11.97	9.30	2.96	8.93			
	Final UpScale	11.92	9.30	2.95	8.85			
	Avg. UpScale	11.95	9.30	2.96	8.89			
Upscale Cal Gas		12.00	9.24	3.00	8.99			

EMISSIONS DATA	O_2	CO	THC	CO_2
Corrected Raw Average (ppm/% dry basis)	16.09	0.06	0.31	3.52
Corrected Raw Average (ppm/% wet basis)	15.26	0.05	0.29	3.35
Emission Rate (lb/hr)	N/A	0.00	0.01	N/A

Superior Fabrication, INC
September 13, 2016
SCD-48
Elk City Plant

Unit Data

Meas. Stack Moisture	6.5	%
Stack Exhaust Flow (M2)	181,358	SCFH

Weather Data

Barometric Pressure	30.05	in. Hg
Relative Humidity	48	%
Ambient Temperature	91	^{o}F
Specific Humidity	0.014937	lb H_2O / lb air

90-100 Load, Run - SCD-48 R12

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
A1	09/13/16 14:14:26	21810	16.52	0.52	0.49	3.00	1.18	84.60	2,517.00
	09/13/16 14:14:56	21840	16.41	0.60	0.45	3.17	1.18	84.60	2,517.00
	09/13/16 14:15:26	21870	16.64	0.57	0.46	2.97	1.19	84.40	2,522.00
	09/13/16 14:15:56	21900	16.70	0.63	0.45	2.89	1.19	84.40	2,522.00
	09/13/16 14:16:26	21930	16.49	0.62	0.44	3.07	1.20	84.30	2,528.00
	09/13/16 14:16:56	21960	16.73	0.62	0.44	2.90	1.20	84.30	2,528.00
	09/13/16 14:17:26	21990	16.71	0.72	0.46	2.90	1.19	84.30	2,524.00
	09/13/16 14:17:56	22020	16.42	0.81	0.45	3.11	1.19	84.30	2,524.00
	09/13/16 14:18:26	22050	16.37	0.81	0.44	3.18	1.19	84.80	2,524.00
	09/13/16 14:18:56	22080	16.42	0.81	0.43	3.13	1.19	84.80	2,524.00
	09/13/16 14:19:26	22110	16.70	0.75	0.43	2.93	1.18	85.10	2,521.00
	09/13/16 14:19:56	22140	16.26	0.70	0.44	3.23	1.18	85.10	2,521.00
	09/13/16 14:20:26	22170	15.97	0.72	0.37	3.40	1.18	85.50	2,520.00
	09/13/16 14:20:56	22200	15.80	0.80	0.37	3.58	1.18	85.50	2,520.00
	09/13/16 14:21:26	22230	15.92	0.80	0.37	3.48	1.18	85.90	2,517.00
	09/13/16 14:21:56	22260	16.16	0.73	0.42	3.32	1.18	85.90	2,517.00
	09/13/16 14:22:26	22290	15.92	0.76	0.42	3.48	1.17	86.10	2,512.00
	09/13/16 14:22:56	22320	16.17	0.72	0.38	3.33	1.17	86.10	2,512.00
	09/13/16 14:23:26	22350	16.43	0.79	0.40	3.11	1.17	86.40	2,511.00
	09/13/16 14:23:56	22380	16.44	0.81	0.41	3.11	1.17	86.40	2,511.00
	09/13/16 14:24:26	22410	16.29	0.81	0.40	3.21	1.17	86.70	2,511.00
	09/13/16 14:24:56	22440	16.05	0.66	0.36	3.39	1.17	86.70	2,511.00
	09/13/16 14:25:26	22470	15.94	0.28	0.39	3.47	1.17	86.70	2,507.00
	09/13/16 14:25:56	22500	16.04	0.15	0.36	3.35	1.17	86.70	2,507.00
	09/13/16 14:26:26	22530	15.87	0.06	0.36	3.50	1.17	86.50	2,507.00
	09/13/16 14:26:56	22560	15.84	-0.01	0.36	3.52	1.17	86.50	2,507.00
	09/13/16 14:27:26	22590	15.82	-0.03	0.36	3.54	1.43	86.20	2,778.00
	09/13/16 14:27:56	22620	15.43	-0.02	0.36	3.78	1.43	86.20	2,778.00
	09/13/16 14:28:26	22650	15.62	-0.07	0.39	3.70	1.50	86.00	2,857.00
	09/13/16 14:28:56	22680	15.70	-0.07	0.39	3.59	1.50	86.00	2,857.00
	09/13/16 14:29:26	22710	15.57	-0.07	0.36	3.73	1.51	85.90	2,856.00
	09/13/16 14:29:56	22740	15.58	-0.13	0.36	3.68	1.51	85.90	2,856.00
	09/13/16 14:30:26	22770	15.49	-0.06	0.38	3.80	1.51	86.10	2,857.00
	09/13/16 14:30:56	22800	15.73	-0.04	0.35	3.55	1.51	86.10	2,857.00
	09/13/16 14:31:26	22830	14.85	-0.04	0.35	4.16	1.50	86.60	2,854.00
	09/13/16 14:31:56	22860	15.47	-0.09	0.36	3.80	1.50	86.60	2,854.00
	09/13/16 14:32:26	22890	15.19	-0.06	0.36	3.96	1.51	87.10	2,858.00
	09/13/16 14:32:56	22920	15.00	-0.10	0.36	4.11	1.51	87.10	2,858.00
	09/13/16 14:33:26	22950	15.05	-0.09	0.36	4.06	1.51	87.60	2,853.00
	09/13/16 14:33:56	22980	15.54	-0.09	0.36	3.76	1.51	87.60	2,853.00
	09/13/16 14:34:26	23010	15.09	-0.09	0.34	4.04	1.52	87.90	2,853.00
A2	09/13/16 14:34:56	23040	14.71	-0.10	0.34	4.27	1.52	87.90	2,853.00
	09/13/16 14:35:26	23070	15.37	-0.12	0.36	3.89	1.50	88.20	2,847.00
	09/13/16 14:35:56	23100	16.05	-0.06	0.36	3.43	1.50	88.20	2,847.00
	09/13/16 14:36:26	23130	16.27	-0.05	0.36	3.22	1.52	88.10	2,851.00
	09/13/16 14:36:56	23160	16.16	-0.04	0.36	3.29	1.52	88.10	2,851.00
	09/13/16 14:37:26	23190	16.08	-0.12	0.37	3.37	1.51	88.10	2,849.00
	09/13/16 14:37:56	23220	16.05	-0.11	0.36	3.38	1.51	88.10	2,849.00
	09/13/16 14:38:26	23250	16.00	-0.10	0.36	3.40	1.51	88.00	2,853.00
	09/13/16 14:38:56	23280	15.95	-0.10	0.38	3.45	1.51	88.00	2,853.00
	09/13/16 14:39:26	23310	16.01	-0.09	0.37	3.45	1.51	87.90	2,854.00
	09/13/16 14:39:56	23340	16.06	-0.09	0.36	3.33	1.51	87.90	2,854.00
	09/13/16 14:40:26	23370	15.97	-0.09	0.34	3.47	1.51	88.00	2,853.00
	09/13/16 14:40:56	23400	16.04	-0.09	0.35	3.40	1.51	88.00	2,853.00
	09/13/16 14:41:26	23430	15.92	-0.02	0.38	3.48	1.50	88.20	2,854.00
	09/13/16 14:41:56	23460	15.84	0.00	0.36	3.49	1.50	88.20	2,854.00
	09/13/16 14:42:26	23490	16.02	0.00	0.35	3.45	1.52	88.10	2,854.00
	09/13/16 14:42:56	23520	15.70	0.00	0.35	3.62	1.52	88.10	2,854.00
	09/13/16 14:43:26	23550	15.62	-0.08	0.36	3.67	1.52	87.80	2,856.00
	09/13/16 14:43:56	23580	15.71	-0.05	0.36	3.67	1.52	87.80	2,856.00

Superior Fabrication, INC
September 13, 2016
SCD-48
Elk City Plant

Unit Data

Meas. Stack Moisture	6.5	%
Stack Exhaust Flow (M2)	181,358	SCFH

Weather Data

Barometric Pressure	30.05	in. Hg
Relative Humidity	48	%
Ambient Temperature	91	^{o}F
Specific Humidity	0.014937	lb H_2O / lb air

90-100 Load, Run - SCD-48 R12

	Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^{o}F	Fuel Flow SCFH
	09/13/16 14:44:26	23610	16.19	-0.01	0.34	3.32	1.52	87.50	2,857.00
	09/13/16 14:44:56	23640	15.91	0.02	0.32	3.41	1.52	87.50	2,857.00
	09/13/16 14:45:26	23670	14.36	-0.07	0.29	4.49	1.53	87.10	2,865.00
	09/13/16 14:45:56	23700	15.58	-0.12	0.33	3.78	1.53	87.10	2,865.00
	09/13/16 14:46:26	23730	15.75	-0.09	0.35	3.61	1.53	86.60	2,870.00
	09/13/16 14:46:56	23760	15.35	-0.01	0.35	3.83	1.53	86.60	2,870.00
	09/13/16 14:47:26	23790	14.80	-0.08	0.31	4.17	1.52	86.10	2,868.00
	09/13/16 14:47:56	23820	15.18	-0.09	0.35	4.04	1.52	86.10	2,868.00
	09/13/16 14:48:26	23850	15.61	-0.08	0.36	3.68	1.53	85.70	2,881.00
	09/13/16 14:48:56	23880	15.74	-0.12	0.36	3.61	1.53	85.70	2,881.00
	09/13/16 14:49:26	23910	15.63	-0.03	0.35	3.65	1.54	85.20	2,880.00
	09/13/16 14:49:56	23940	15.37	-0.10	0.34	3.87	1.54	85.20	2,880.00
	09/13/16 14:50:26	23970	15.43	-0.12	0.35	3.82	1.54	84.80	2,881.00
	09/13/16 14:50:56	24000	15.67	-0.12	0.35	3.63	1.54	84.80	2,881.00
	09/13/16 14:51:26	24030	15.56	-0.10	0.36	3.72	1.54	84.40	2,884.00
	09/13/16 14:51:56	24060	15.28	-0.09	0.34	3.83	1.54	84.40	2,884.00
	09/13/16 14:52:26	24090	15.40	-0.09	0.34	3.89	1.55	84.00	2,890.00
	09/13/16 14:52:56	24120	15.78	-0.10	0.36	3.60	1.55	84.00	2,890.00
	09/13/16 14:53:26	24150	15.30	-0.08	0.35	3.85	1.56	83.50	2,893.00
	09/13/16 14:53:56	24180	15.48	-0.08	0.34	3.75	1.56	83.50	2,893.00
	09/13/16 14:54:26	24210	15.27	-0.11	0.35	3.93	1.56	83.10	2,894.00
A3	09/13/16 14:54:56	24240	15.39	-0.12	0.36	3.87	1.56	83.10	2,894.00
	09/13/16 14:55:26	24270	14.87	-0.09	0.33	4.16	1.56	82.70	2,897.00
	09/13/16 14:55:56	24300	14.88	-0.10	0.31	4.09	1.56	82.70	2,897.00
	09/13/16 14:56:26	24330	14.82	-0.15	0.33	4.19	1.56	82.30	2,905.00
	09/13/16 14:56:56	24360	14.72	-0.11	0.35	4.34	1.56	82.30	2,905.00
	09/13/16 14:57:26	24390	15.00	-0.12	0.35	4.06	1.56	82.00	2,909.00
	09/13/16 14:57:56	24420	15.17	-0.12	0.32	4.00	1.56	82.00	2,909.00
	09/13/16 14:58:26	24450	15.52	-0.09	0.34	3.72	1.57	81.70	2,901.00
	09/13/16 14:58:56	24480	15.12	-0.09	0.33	4.00	1.57	81.70	2,901.00
	09/13/16 14:59:26	24510	15.13	-0.09	0.33	4.06	1.56	81.30	2,899.00
	09/13/16 14:59:56	24540	15.48	-0.09	0.33	3.72	1.56	81.30	2,899.00
	09/13/16 15:00:26	24570	15.63	-0.09	0.35	3.73	1.57	81.00	2,899.00
	09/13/16 15:00:56	24600	15.22	-0.09	0.32	3.88	1.57	81.00	2,899.00
	09/13/16 15:01:26	24630	15.07	-0.09	0.33	4.08	1.57	80.60	2,904.00
	09/13/16 15:01:56	24660	15.05	-0.09	0.31	4.08	1.57	80.60	2,904.00
	09/13/16 15:02:26	24690	15.20	-0.13	0.32	3.97	1.58	80.40	2,903.00
	09/13/16 15:02:56	24720	15.30	-0.13	0.35	3.89	1.58	80.40	2,903.00
	09/13/16 15:03:26	24750	15.29	-0.16	0.35	3.88	1.57	80.10	2,904.00
	09/13/16 15:03:56	24780	15.78	-0.12	0.36	3.60	1.57	80.10	2,904.00
	09/13/16 15:04:26	24810	15.51	-0.09	0.31	3.76	1.58	79.80	2,904.00
	09/13/16 15:04:56	24840	15.93	-0.09	0.34	3.48	1.58	79.80	2,904.00
	09/13/16 15:05:26	24870	15.94	-0.09	0.34	3.40	1.59	79.50	2,907.00
	09/13/16 15:05:56	24900	14.80	-0.10	0.30	4.22	1.59	79.50	2,907.00
	09/13/16 15:06:26	24930	15.08	-0.13	0.30	4.05	1.58	79.30	2,905.00
	09/13/16 15:06:56	24960	15.72	-0.12	0.34	3.59	1.58	79.30	2,905.00
	09/13/16 15:07:26	24990	15.76	-0.12	0.34	3.61	1.58	79.00	2,906.00
	09/13/16 15:07:56	25020	15.51	-0.10	0.31	3.72	1.58	79.00	2,906.00
	09/13/16 15:08:26	25050	15.85	-0.05	0.34	3.54	1.57	78.70	2,904.00
	09/13/16 15:08:56	25080	16.15	-0.10	0.36	3.30	1.57	78.70	2,904.00
	09/13/16 15:09:26	25110	15.60	-0.02	0.34	3.66	1.57	78.50	2,905.00
	09/13/16 15:09:56	25140	15.75	-0.09	0.34	3.54	1.57	78.50	2,905.00
	09/13/16 15:10:26	25170	15.41	-0.10	0.34	3.81	1.58	78.30	2,905.00
	09/13/16 15:10:56	25200	14.88	-0.10	0.33	4.19	1.58	78.30	2,905.00
	09/13/16 15:11:26	25230	14.90	-0.10	0.32	4.09	1.58	78.10	2,905.00
	09/13/16 15:11:56	25260	14.42	-0.12	0.30	4.51	1.58	78.10	2,905.00
	09/13/16 15:12:26	25290	14.73	-0.14	0.30	4.26	1.58	77.90	2,903.00
	09/13/16 15:12:56	25320	15.41	-0.09	0.32	3.84	1.58	77.90	2,903.00
	09/13/16 15:13:26	25350	15.13	-0.09	0.33	3.93	1.57	77.80	2,906.00
	09/13/16 15:13:56	25380	14.83	-0.11	0.31	4.21	1.57	77.80	2,906.00

Superior Fabrication, INC
September 13, 2016
SCD-48
Elk City Plant

Unit Data

Meas. Stack Moisture	6.5	%
Stack Exhaust Flow (M2)	181,358	SCFH

Weather Data

Barometric Pressure	30.05	in. Hg
Relative Humidity	48	%
Ambient Temperature	91	^oF
Specific Humidity	0.014937	lb H_2O / lb air

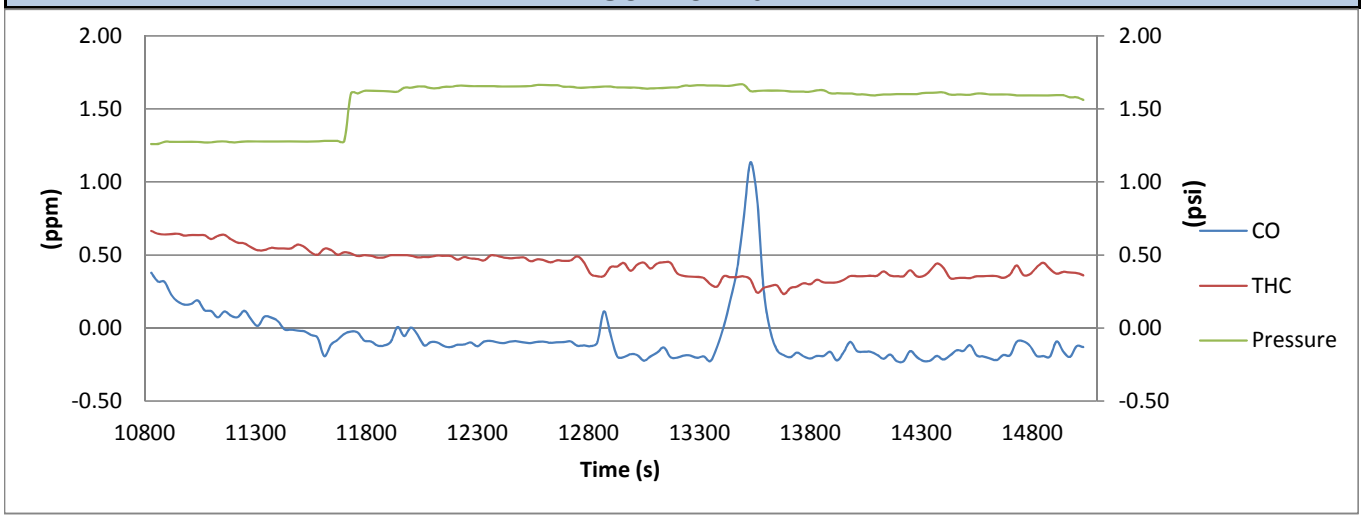
90-100 Load, Run - SCD-48 R12

Date/Time (mm/dd/yy hh:mm:ss)	Elapsed Time (seconds)	O_2 (%)	CO (ppmvd)	THC (ppmvw)	CO_2 (%)	Fuel Pressure psi	Fuel Temp. ^oF	Fuel Flow SCFH
09/13/16 15:14:26	25410	15.59	-0.14	0.36	3.74	1.59	77.60	2,912.00
09/13/16 15:14:56	25440	15.43	-0.09	0.32	3.77	1.59	77.60	2,912.00
09/13/16 15:15:26	25470	15.65	-0.10	0.35	3.66	1.59	77.50	2,920.00
09/13/16 15:15:56	25500	15.38	-0.10	0.36	3.85	1.59	77.50	2,920.00
09/13/16 15:16:26	25530	15.58	-0.12	0.35	3.71	1.59	77.40	2,915.00
09/13/16 15:16:56	25560	15.56	-0.12	0.31	3.70	1.59	77.40	2,915.00
09/13/16 15:17:26	25590	15.90	-0.12	0.31	3.50	1.60	77.10	2,915.00
09/13/16 15:17:56	25620	15.87	-0.12	0.33	3.50	1.60	77.10	2,915.00
09/13/16 15:18:26	25650	15.01	-0.12	0.31	4.07	1.60	76.90	2,916.00
09/13/16 15:18:56	25680	15.75	-0.12	0.33	3.55	1.60	76.90	2,916.00
09/13/16 15:19:26	25710	15.39	-0.09	0.33	3.86	1.59	76.80	2,915.00
09/13/16 15:19:56	25740	15.73	-0.09	0.33	3.60	1.59	76.80	2,915.00
09/13/16 15:20:26	25770	14.87	-0.12	0.31	4.18	1.59	76.60	2,916.00
09/13/16 15:20:56	25800	15.63	-0.15	0.32	3.69	1.59	76.60	2,916.00
09/13/16 15:21:26	25830	15.66	-0.09	0.32	3.60	1.60	76.60	2,912.00
09/13/16 15:21:56	25860	15.06	-0.09	0.33	4.10	1.60	76.60	2,912.00
09/13/16 15:22:26	25890	15.49	-0.12	0.33	3.76	1.59	76.40	2,914.00
09/13/16 15:22:56	25920	15.67	-0.12	0.34	3.65	1.59	76.40	2,914.00
09/13/16 15:23:26	25950	15.68	-0.10	0.32	3.59	1.61	76.30	2,933.00
09/13/16 15:23:56	25980	15.70	-0.10	0.85	3.68	1.61	76.30	2,933.00
09/13/16 15:24:26	26010	16.10	-0.09	2.69	3.37	1.61	76.00	2,934.00
RAW AVERAGE		**15.63**	**0.04**	**0.38**	**3.67**	**1.48**	**83.14**	**2,817.40**

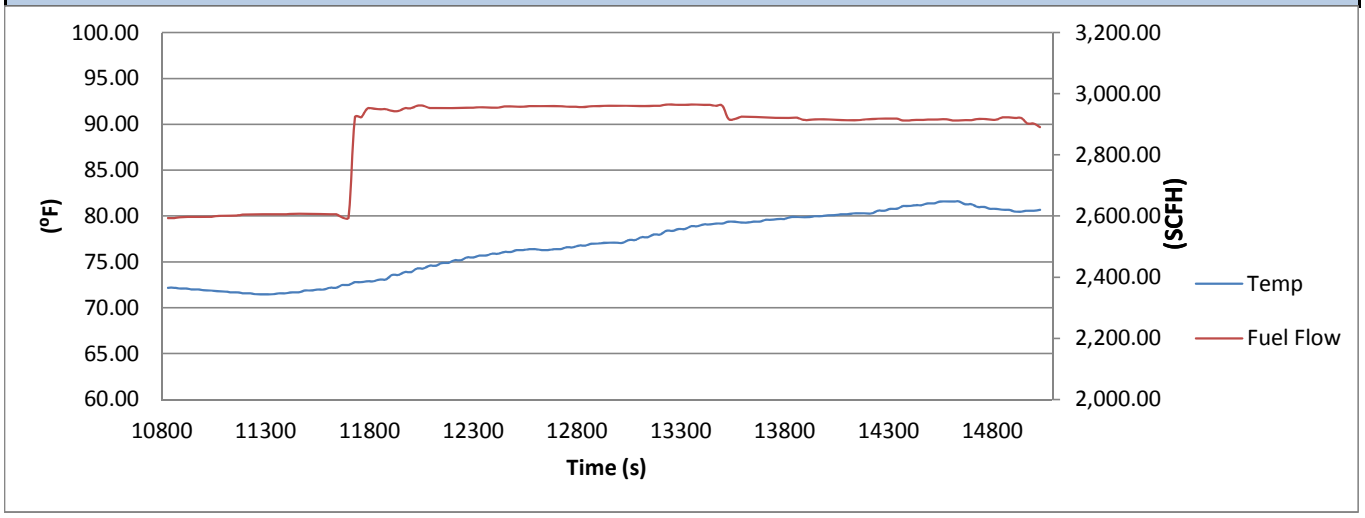
		O_2	CO	THC	CO_2	Press. Trans	Temp. Trans.	F-Flow Trans.
	Serial Number:	INSTO2-0011	INST-CO-0022	INST-TH-0001	INST-C2-0013	1633266	1633266	1633266
		(%)	(ppmvd)	(ppmvw)	(%)	(in. H_2O)	(^oF)	(SCFH)
Bias	**Initial Zero**	0.10	0.09	0.07	-0.04			
	Final Zero	0.06	-0.05	0.04	-0.04			
	Avg. Zero	0.08	0.02	0.06	-0.04			
	Initial UpScale	11.92	9.30	2.95	8.85			
	Final UpScale	11.94	9.37	3.07	8.86			
	Avg. UpScale	11.93	9.34	3.01	8.86			
Upscale Cal Gas		12.00	9.24	3.00	8.99			

EMISSIONS DATA	O_2	CO	THC	CO_2
Corrected Raw Average (ppm/% dry basis)	15.74	0.02	0.33	3.75
Corrected Raw Average (ppm/% wet basis)	14.71	0.02	0.30	3.51
Emission Rate (lb/hr)	N/A	0.00	0.01	N/A

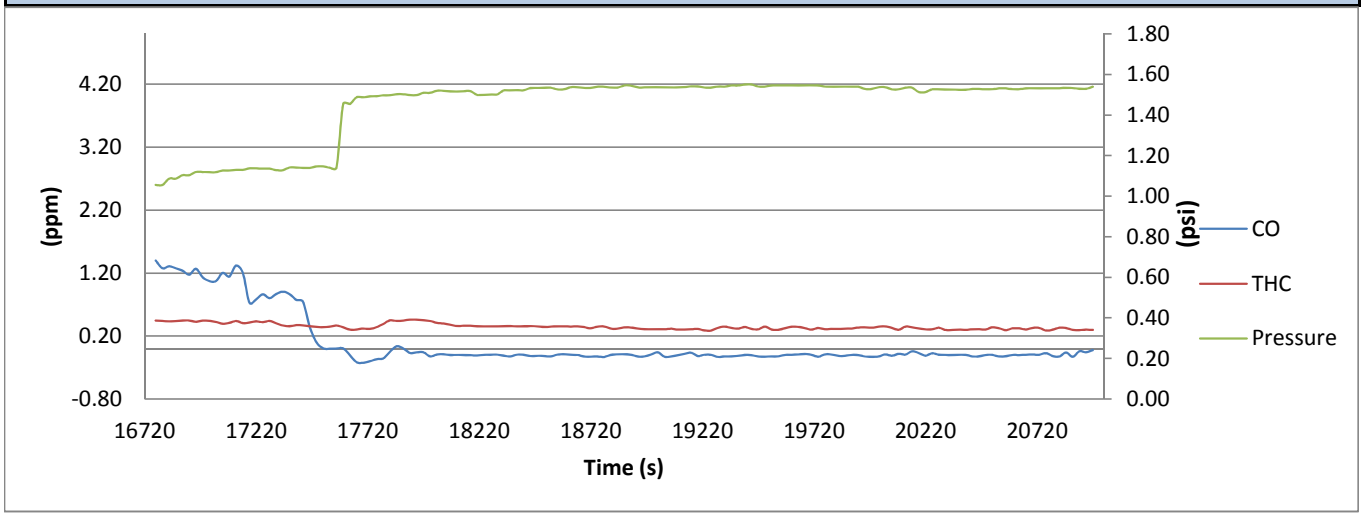
SCD-48 R10



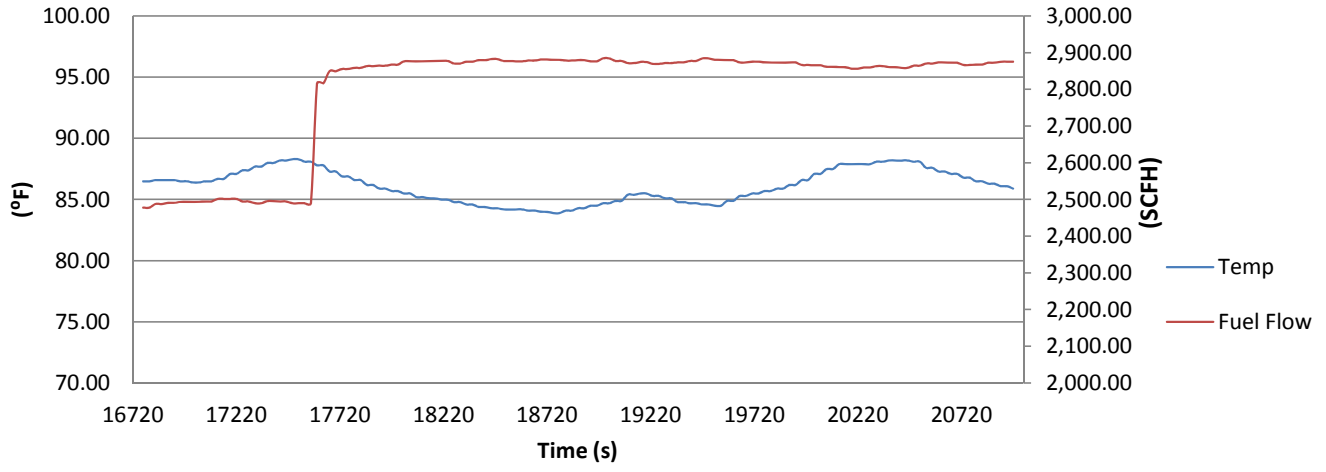
SCD-48 R10



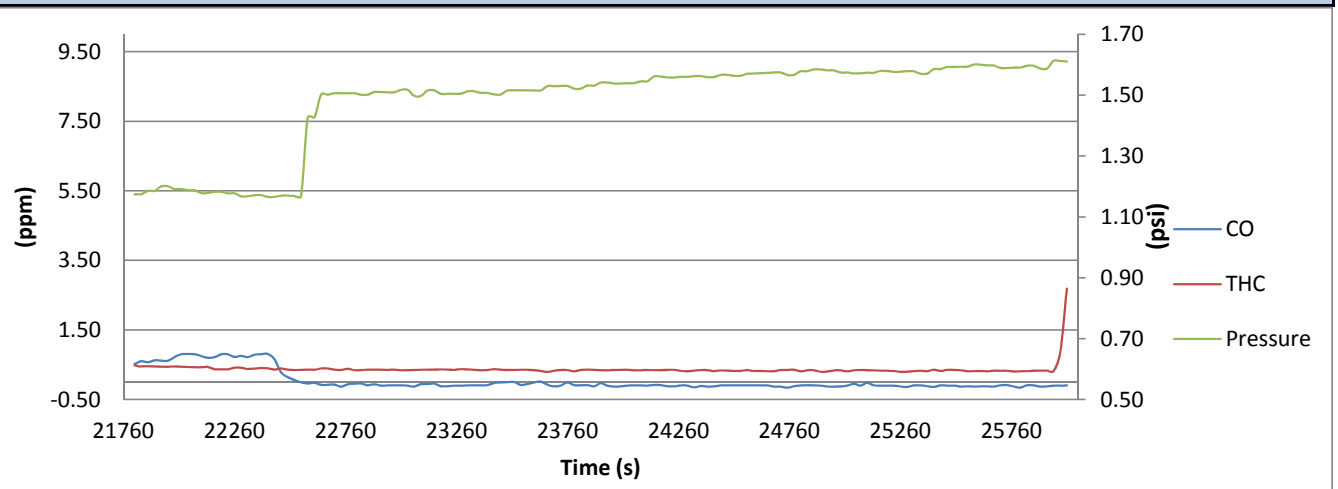
SCD-48 R11



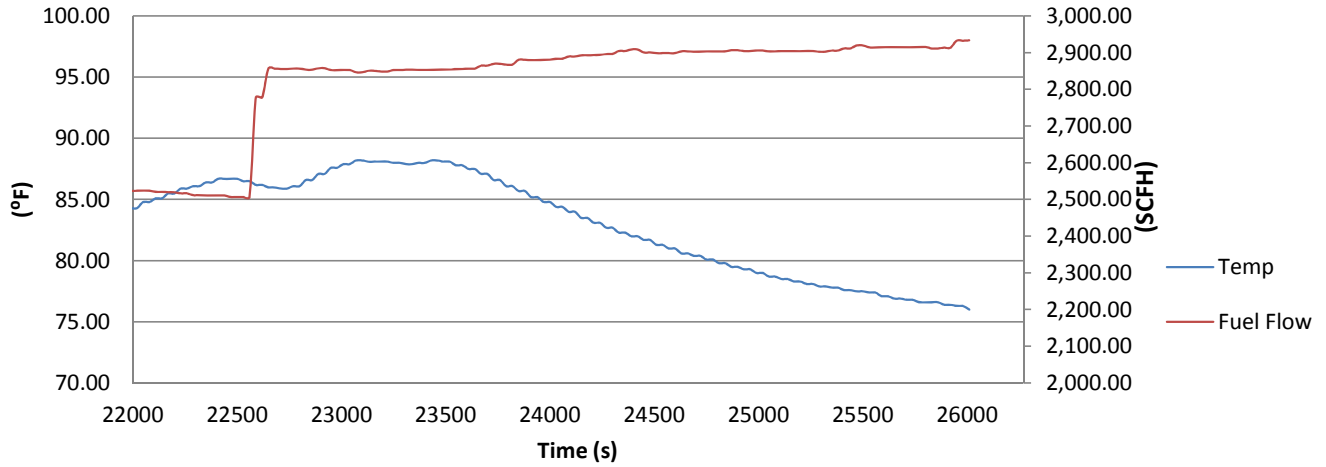
SCD-48 R11

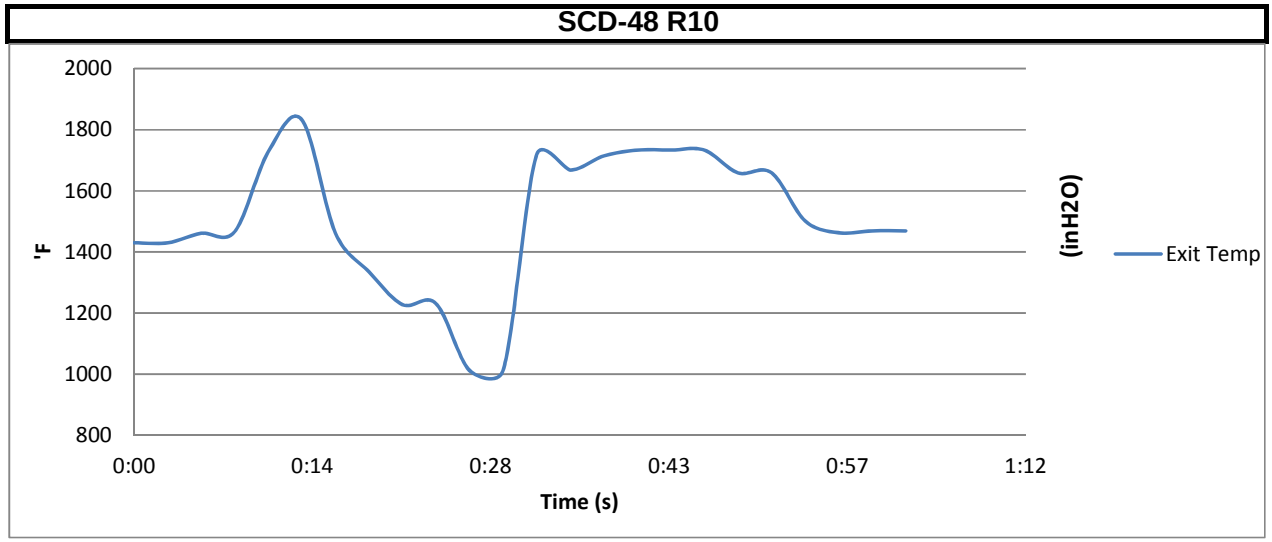


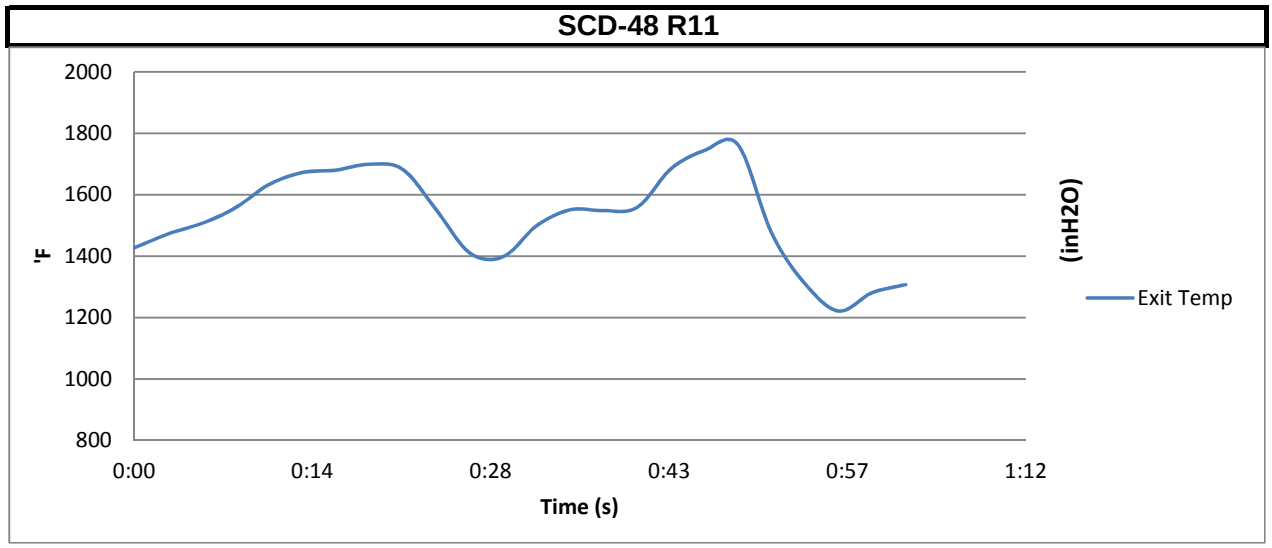
SCD-48 R12

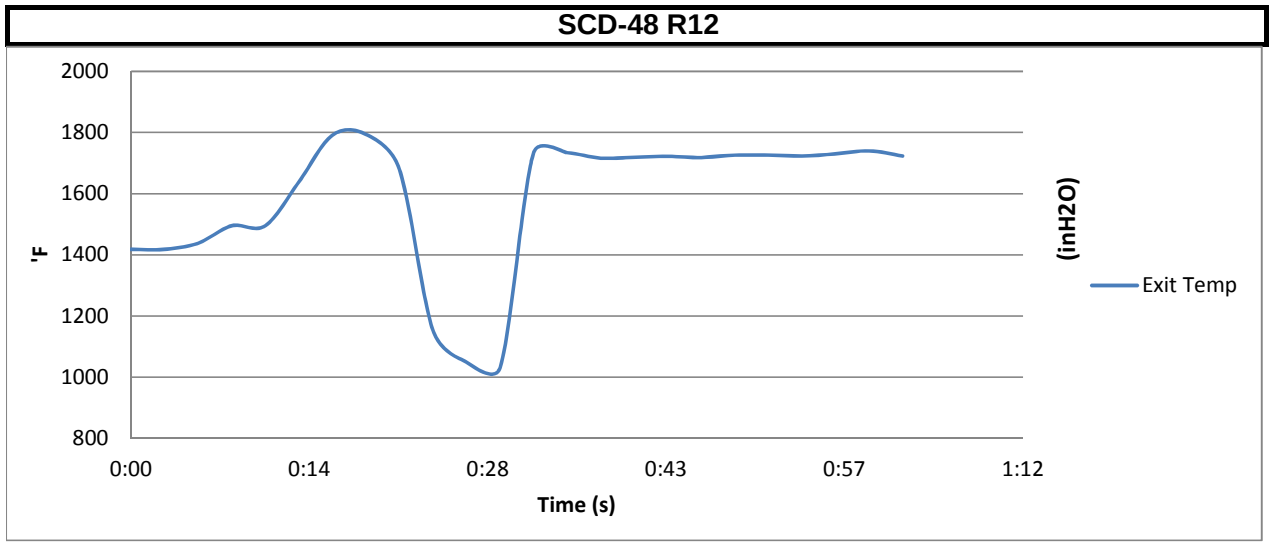


SCD-48 R12




SCD-48 R10
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


SCD-48 R11
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


SCD-48 R12
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

VISUAL EMISSION RECORD

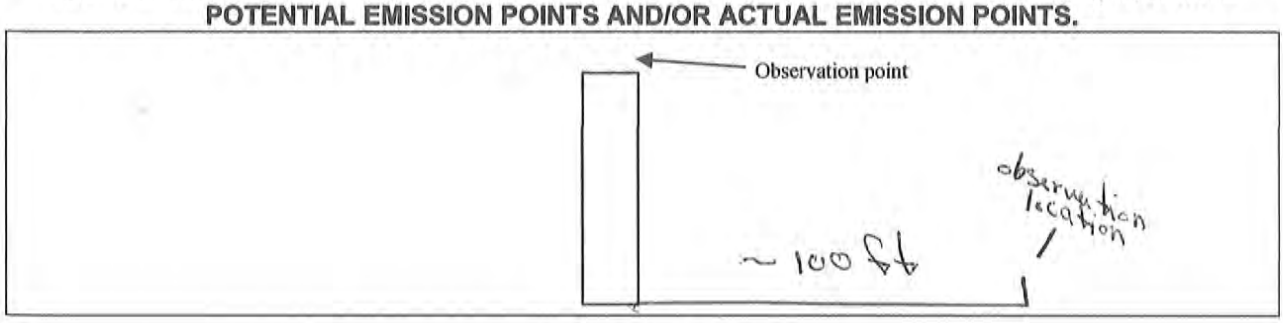
%0-30-0
1

METHOD 22
FUGITIVE OR SMOKE EMISSION
INSPECTION FORM

AIR HYGIENE

COMPANY: Superior Fabrication INC LOCATION: Elk City COMPANY REP: Adam Yow	OBSERVER: Taylor Williams AFFILIATION: Air Hygiene Inc DATE: 9-14-16
SKY CONDITIONS: Broken PRECIPITATION: None	WIND DIRECTION: ESE WIND SPEED: 5-10 mph
INDUSTRY: Fabrication	PROCESS UNIT: SCD-48

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



OBSERVATIONS

CLOCK TIME	OBSERVATION PERIOD DURACTION (MIN:SEC)	ACCUMULATION EMISSION TIME (MIN:SEC)	OBSERVATION LOCATION
16:47			
17:07	20:00	00:00	SW of Stack
17:12	05:00	break	
17:32	20:00	00:00	
17:37	05:00	break	
17:57	20:00	00:00	

SIGNATURE


9.14.2016 16:52

% 0-50-0

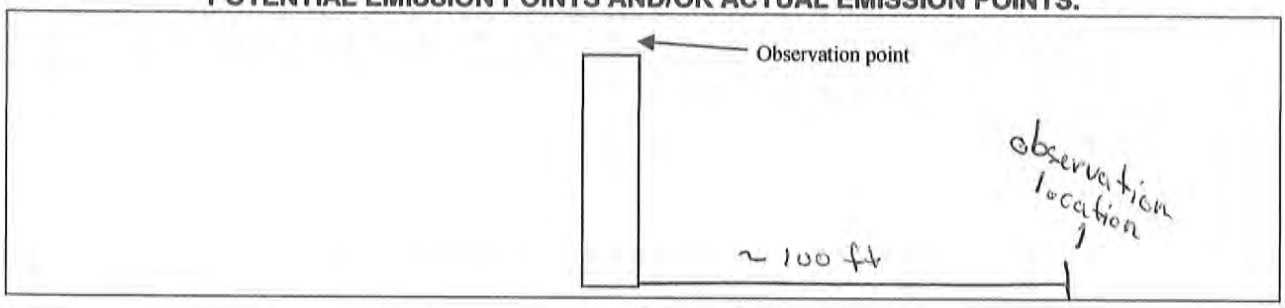
2

METHOD 22
FUGITIVE OR SMOKE EMISSION
INSPECTION FORM

AIR HYGIENE

COMPANY: Superior Fabrication INC **LOCATION:** Elk City **COMPANY REP:** Adam Yow	**OBSERVER:** Taylor Williams **AFFILIATION:** Air Hygiene Inc **DATE:** 9-14-16
SKY CONDITIONS: Broken **PRECIPITATION:** None	**WIND DIRECTION:** NE **WIND SPEED:** 5-10 mph
INDUSTRY: Fabrication	**PROCESS UNIT:** SCD-48

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



OBSERVATIONS

CLOCK TIME	OBSERVATION PERIOD DURACTION (MIN:SEC)	ACCUMULATION EMISSION TIME (MIN:SEC)	OBSERVATION LOCATION
18:08			
18:28	20:00	00:00	West of Stack
18:33	05:00	break	
18:53	20:00	00:00	
18:58	05:00	break	
19:18	20:00	00:00	

SIGNATURE

Run 2

0/0 0-30-0

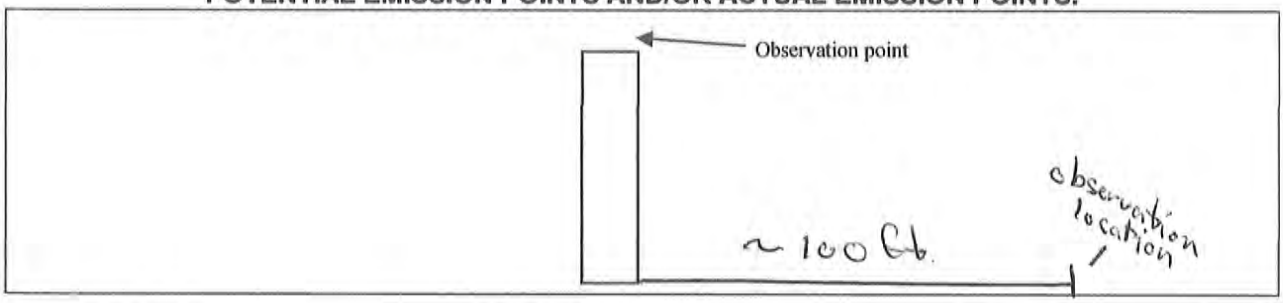
3

METHOD 22
FUGITIVE OR SMOKE EMISSION
INSPECTION FORM

AIR HYGIENE

COMPANY: Superior Fabrication INC **LOCATION:** Elk City **COMPANY REP:** Adam Yow	**OBSERVER:** Taylor Williams **AFFILIATION:** Air Hygiene Inc **DATE:** 9-15-16
SKY CONDITIONS: Over cast **PRECIPITATION:** None	**WIND DIRECTION:** South **WIND SPEED:** 10-15 mph
INDUSTRY: Fabrication	**PROCESS UNIT:** SCD-48

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



OBSERVATIONS

CLOCK TIME	OBSERVATION PERIOD DURACTION (MIN:SEC)	ACCUMULATION EMISSION TIME (MIN:SEC)	OBSERVATION LOCATION
11:37			
11:57	20:00	00:00	East of Stack
12:02	05:00	break	
12:22	20:00	00:00	
12:27	5:00	break	
12:47	20:00	00:00	

SIGNATURE


9.15.2016 11:44

0/30-70-70

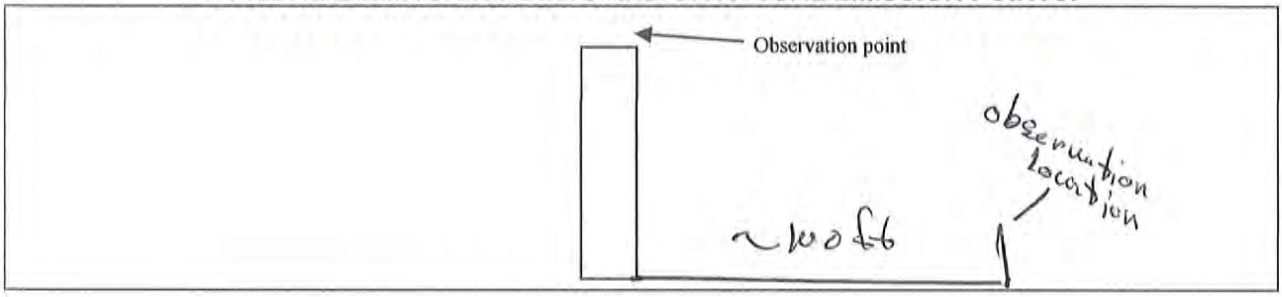
4

METHOD 22
FUGITIVE OR SMOKE EMISSION
INSPECTION FORM

AIR HYGIENE

COMPANY: Superior Fabrication INC **LOCATION:** Elk City **COMPANY REP:** Adam Yow	**OBSERVER:** Taylor Williams **AFFILIATION:** Air Hygiene Inc **DATE:** 9-15-16
SKY CONDITIONS: overcast **PRECIPITATION:** none	**WIND DIRECTION:** South **WIND SPEED:** 10-15 mph
INDUSTRY: Fabrication	**PROCESS UNIT:** SCD-48

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



OBSERVATIONS

CLOCK TIME	OBSERVATION PERIOD DURACTION (MIN:SEC)	ACCUMULATION EMISSION TIME (MIN:SEC)	OBSERVATION LOCATION
14:39	20:00	00:00	SW of stack
14:59	05:00	break	
15:04	20:00	00:00	
15:24	05:00	break	
15:29	20:00	00:00	
15:49			

SIGNATURE

Run 4

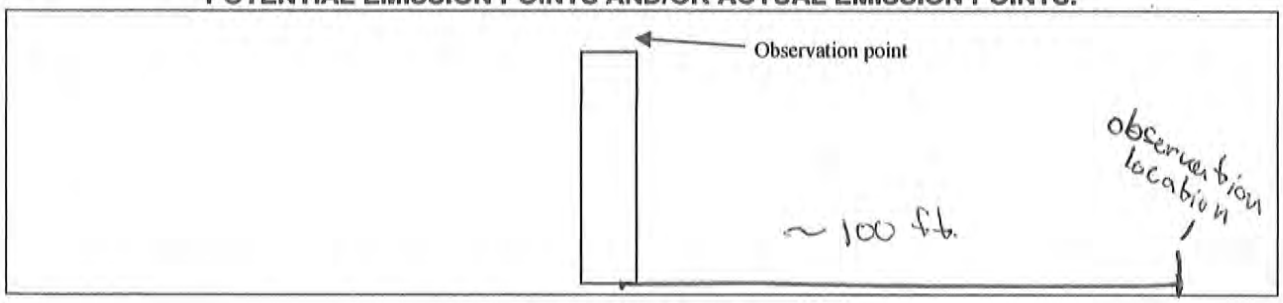
20 30-10-30
5

METHOD 22
FUGITIVE OR SMOKE EMISSION
INSPECTION FORM

AIR HYGIENE

COMPANY: Superior Fabrication INC LOCATION: Elk City COMPANY REP: Adam Yow	OBSERVER: Taylor Williams AFFILIATION: Air Hygiene Inc DATE: 9/15/16
SKY CONDITIONS: Broken PRECIPITATION: None	WIND DIRECTION: South WIND SPEED: 5-10 mph
INDUSTRY: Fabrication	PROCESS UNIT: SCD-48

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



OBSERVATIONS

CLOCK TIME	OBSERVATION PERIOD DURACTION (MIN:SEC)	ACCUMULATION EMISSION TIME (MIN:SEC)	OBSERVATION LOCATION
16:01	20:00	00:00	SW of Stack
16:21	05:00	break	
16:26	20:00	00:00	
16:46	05:00	break	
16:51	20:00	00:00	
17:11			

SIGNATURE

Run 5

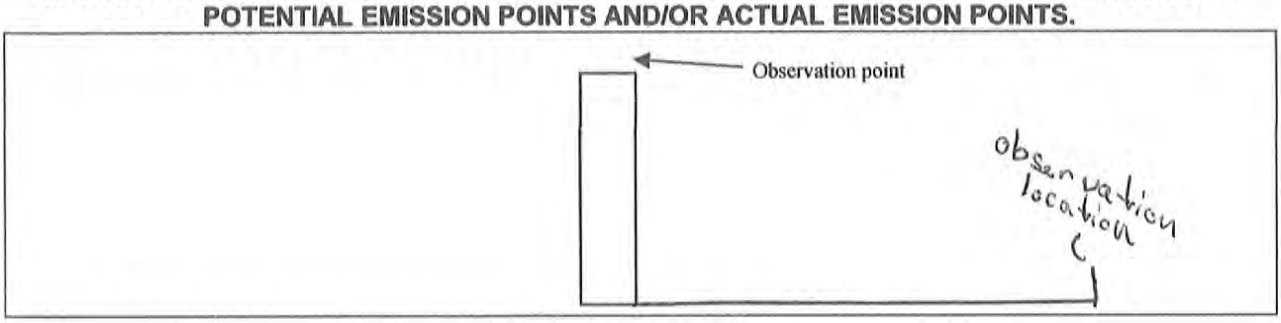
0/0 30-70-30
6

METHOD 22
FUGITIVE OR SMOKE EMISSION
INSPECTION FORM

AIR HYGIENE

COMPANY: Superior Fabrication INC **LOCATION:** Elk City **COMPANY REP:** Adam Yow	**OBSERVER:** Taylor Williams **AFFILIATION:** Air Hygiene Inc **DATE:** 9/15/16
SKY CONDITIONS: Broken **PRECIPITATION:** None	**WIND DIRECTION:** South **WIND SPEED:** 10-15mph
INDUSTRY: Fabrication	**PROCESS UNIT:** SCD-48

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



OBSERVATIONS

CLOCK TIME	OBSERVATION PERIOD DURACTION (MIN:SEC)	ACCUMULATION EMISSION TIME (MIN:SEC)	OBSERVATION LOCATION
17:22			
17:42	20:00	00:00	SW of Stack
17:47	05:00	break	
18:07	20:00	00:00	
18:12	05:00	break	
18:32	20:00	00:00	

SIGNATURE

Run 6

0%70-100-70

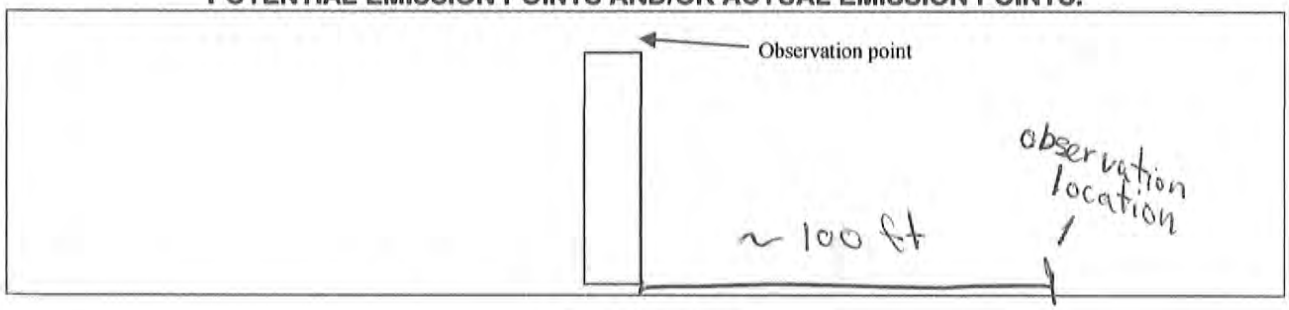
7

METHOD 22
FUGITIVE OR SMOKE EMISSION
INSPECTION FORM

AIR HYGIENE

COMPANY: Superior Fabrication INC LOCATION: Elk City COMPANY REP: Adam Yow	OBSERVER: Taylor Williams AFFILIATION: Air Hygiene Inc DATE: 9-14-16
SKY CONDITIONS: over cast PRECIPITATION: none	WIND DIRECTION: NNE WIND SPEED: 1-5 mph
INDUSTRY: Fabrication	PROCESS UNIT: SCD-48

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



OBSERVATIONS

CLOCK TIME	OBSERVATION PERIOD DURACTION (MIN:SEC)	ACCUMULATION EMISSION TIME (MIN:SEC)	OBSERVATION LOCATION
8:13	20:00	00:00	South East of Stack
8:33	05:00	break	
8:38	20:00	00:00	
8:58	05:00	break	
9:03	20:00	00:00	
9:23			

SIGNATURE


9.14.2016 08:57

%70-100-70

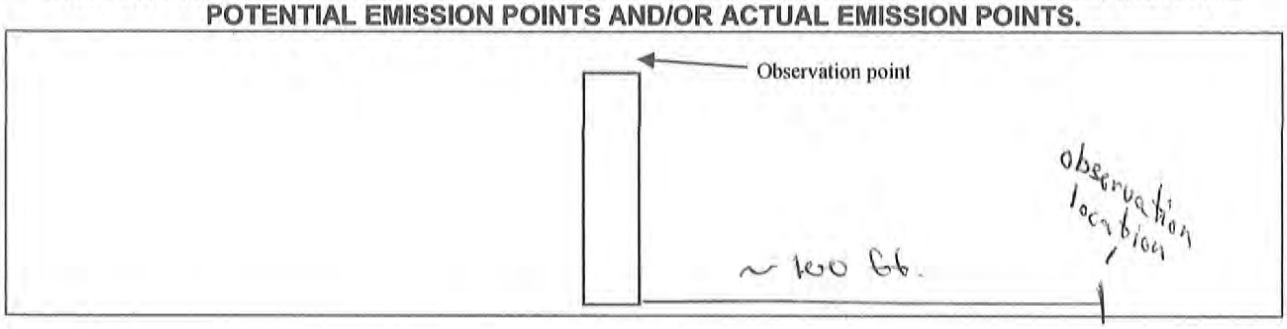
8

METHOD 22
FUGITIVE OR SMOKE EMISSION
INSPECTION FORM

AIR HYGIENE

COMPANY: Superior Fabrication INC **LOCATION:** Elk City **COMPANY REP:** Adam Yow	**OBSERVER:** Taylor Williams **AFFILIATION:** Air Hygiene Inc **DATE:** 9-14-16
SKY CONDITIONS: overcast **PRECIPITATION:** None	**WIND DIRECTION:** NNE **WIND SPEED:** 10-15 mph
INDUSTRY: Fabrication	**PROCESS UNIT:** SCD-48

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



OBSERVATIONS

CLOCK TIME	OBSERVATION PERIOD DURACTION (MIN:SEC)	ACCUMULATION EMISSION TIME (MIN:SEC)	OBSERVATION LOCATION
9:43	20:00	00:00	SE of Stack
10:03	05:00	break	
10:08	20:00	00:00	
10:28	05:00	break	
10:33	20:00	00:00	
10:53			

SIGNATURE


9.14.2016 10:13

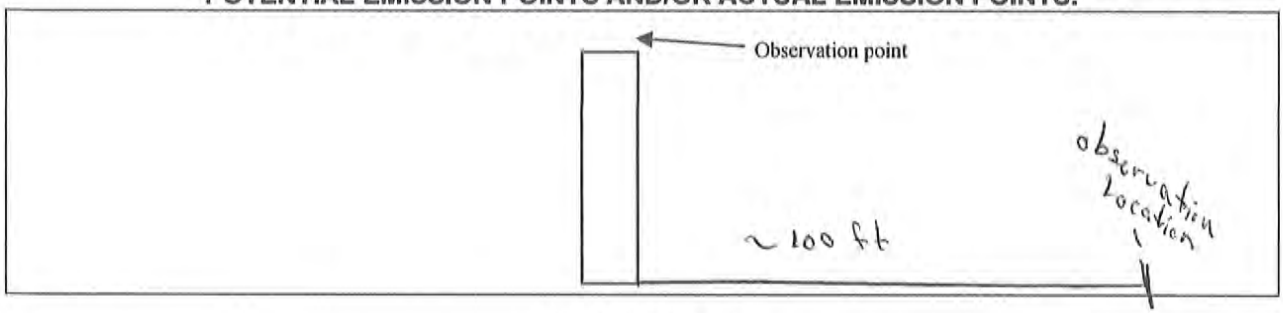
90 90-100-90
9

METHOD 22
FUGITIVE OR SMOKE EMISSION
INSPECTION FORM

AIR HYGIENE

COMPANY: Superior Fabrication INC LOCATION: Elk City COMPANY REP: Adam Yow	OBSERVER: Taylor Williams AFFILIATION: Air Hygiene Inc DATE: 9-14-16
SKY CONDITIONS: Broken PRECIPITATION: None	WIND DIRECTION: NNE WIND SPEED: 10 - 15 mph
INDUSTRY: Fabrication	PROCESS UNIT: SCD-48

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



OBSERVATIONS

CLOCK TIME	OBSERVATION PERIOD DURACTION (MIN:SEC)	ACCUMULATION EMISSION TIME (MIN:SEC)	OBSERVATION LOCATION
11:13	20:00	00:00	SE of Stack
11:33	05:00	break	
11:38	20:00	00:00	
11:58	05:00	break	
12:18	20:00	00:00	
12:38			

SIGNATURE


9.14.2016 11:17

%90-100

10

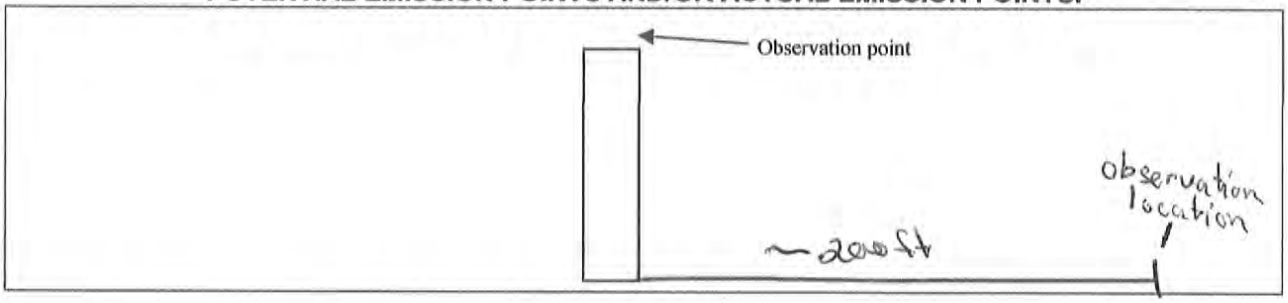
CoolPix S4000

AIR HYGIENE

METHOD 22
FUGITIVE OR SMOKE EMISSION
INSPECTION FORM

COMPANY: Superior Fabrication INC LOCATION: Elk City COMPANY REP: Adam Yow	OBSERVER: Taylor Williams AFFILIATION: Air Hygiene Inc DATE: 9-13-16
SKY CONDITIONS: Broken PRECIPITATION: None	WIND DIRECTION: South WIND SPEED: 10-15 mph
INDUSTRY: Fabrication	PROCESS UNIT: SCD-48

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



OBSERVATIONS

CLOCK TIME	OBSERVATION PERIOD DURACTION (MIN:SEC)	ACCUMULATION EMISSION TIME (MIN:SEC)	OBSERVATION LOCATION
11:11	20:00	00:00	East of Stack
11:31	05:00	Break	
11:36	20:00	00:00	
11:56	05:00	Break	
12:01	20:00	00:00	
12:21			

SIGNATURE


9.13.2016 11:40

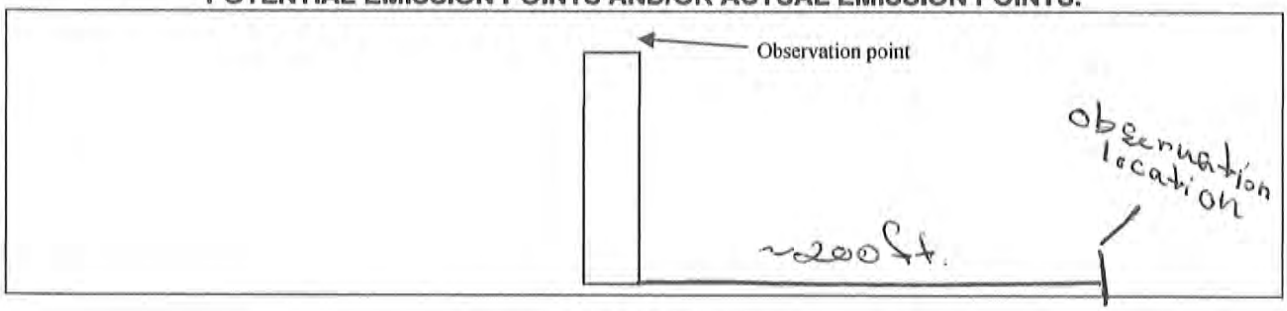
0/0 90-100
11

METHOD 22
FUGITIVE OR SMOKE EMISSION
INSPECTION FORM

AIR HYGIENE

COMPANY: Superior Fabrication INC LOCATION: Elk City COMPANY REP: Adam Yow	OBSERVER: Taylor Williams AFFILIATION: Air Hygiene Inc DATE: 9-13-16
SKY CONDITIONS: Broken PRECIPITATION: None	WIND DIRECTION: S WIND SPEED: 5-10 mph
INDUSTRY: Fabrication	PROCESS UNIT: SCD-48

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



OBSERVATIONS

CLOCK TIME	OBSERVATION PERIOD DURACTION (MIN:SEC)	ACCUMULATION EMISSION TIME (MIN:SEC)	OBSERVATION LOCATION
12:50	20:00	00:00	South West of Stack
13:10	05:00	Break	
13:15	20:00	00:00	
13:35	05:00	Break	
13:40	20:00	00:00	
14:00	~~05:00~~	Break	
~~14:05~~	~~20:00~~		
14:25			

TW 9/13/16

SIGNATURE


9.13.2016 13:16

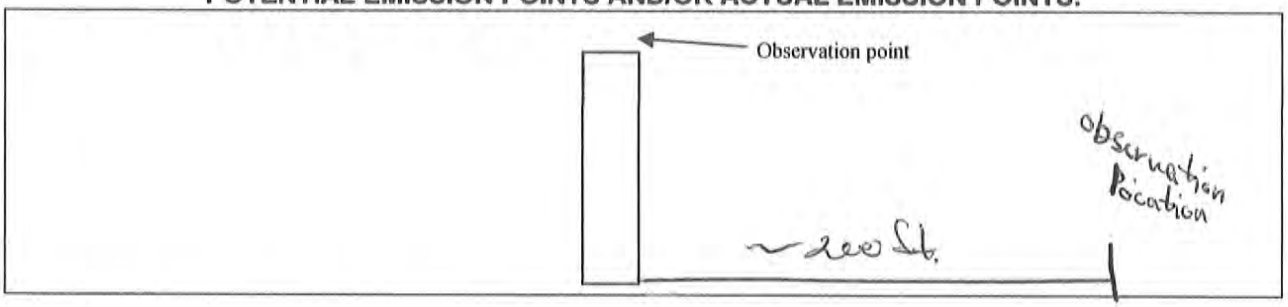
%90-100
12

METHOD 22
FUGITIVE OR SMOKE EMISSION INSPECTION FORM

AIR HYGIENE

COMPANY: Superior Fabrication INC LOCATION: Elk City COMPANY REP: Adam Yow	OBSERVER: Taylor Williams AFFILIATION: Air Hygiene Inc DATE: 9/13/16
SKY CONDITIONS: Broken PRECIPITATION: None	WIND DIRECTION: South WIND SPEED: 1 - 3 mph
INDUSTRY: Fabrication	PROCESS UNIT: SCD-48

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



OBSERVATIONS

CLOCK TIME	OBSERVATION PERIOD DURACTION (MIN:SEC)	ACCUMULATION EMISSION TIME (MIN:SEC)	OBSERVATION LOCATION
14:14	20:00	00:00	SW of Stack
14:34	05:00	Break	
14:39	20:00	00:00	
14:59	05:00	Break	
15:04	20:00	00:00	
15:24			

SIGNATURE

Run 12

APPENDIX C

CALIBRATION GAS CERTIFICATIONS

RED BALL TECHNICAL GAS SERVICES

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

EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

Cylinder Number:	EB0060615	**Certification Date**:	09/17/2015
Product ID Number:	125780	**Expiration Date:**	09/16/2018
Cylinder Pressure:	1900 PSIG	**MFG Facility:**	RBTGS-Shreveport-LA
COA #	EB0060615.20150818-0	**Lot Number:**	EB0060615.20150818
Customer PO. NO.:		**Tracking Number:**	082997119
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	**18.2 PPM**	±0.13 PPM	FTIR	09/17/2015
Nitric Oxide	**18.57 PPM**	±0.09 PPM	Chemiluminescence	08/26/2015, 09/02/2015, 09/09/2015
Total Oxides of Nitrogen	18.61 PPM			
Nitrogen	Balance			

Analytical Measurement Data Available Online.

Reference Standard(s)

Serial Number	Lot	Expiration	Type	Balance	Component	Concentration	Uncertainty(%)	NIST Reference
EB0055322	EB0055322.20140403	06/16/2017	GMIS	N2	NO	14.84 PPM	1.083	121001
EB00554438	EB0055438.20140403g	06/16/2017	GMIS	N2	NO	31.56 PPM	1.066	121001
CC238434	GC080521744	09/16/2019	GMIS	N2	CO	242 PPM	1.029	021003
EB0003545	GC1102091144	07/26/2019	GMIS	N2	CO	30.1 PPM	0.611	1679c

Analytical Instrumentation

Component	Analytical Principle	Make	Model	Serial	MPC Date
NO	Chemiluminescence	Thermo	T42C	42C-68400-360	08/21/2015
CO	FTIR	MKS	MKS 2031DJG2EKVS13T	017146467	09/16/2015

Red Ball Technical Gas Service
PGVP Vendor ID # G12015
Information and Ordering
800-551-8150
Fax (318-425-6309)

ilac-MRA

PJLA Calibration and Testing

Accreditation #62754

Fred Holt

Fred Holt
Analyst

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

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

EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

Cylinder Number:	EB0073249	**Certification Date:**	06/25/2016
Product ID Number:	124737	**Expiration Date:**	06/25/2019
Cylinder Pressure:	1900 PSIG	**MFG Facility:**	RBTGS-Shreveport-LA
COA #	EB0073249.20160610-0	**Lot Number:**	EB0073249.20160610
Customer PO. NO.:		**Tracking Number:**	084247601
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	**9.24 PPM**	±0.05 PPM	FTIR	06/25/2016
Nitric Oxide	**8.96 PPM**	±0.017 PPM	Chemiluminescence	06/14/2016, 06/21/2016
Total Oxides of Nitrogen	9.00 PPM			
Nitrogen	Balance			

Analytical Measurement Data Available Online.

Reference Standard(s)

Serial Number	Lot	Expiration	Type	Balance	Component	Concentration	Uncertainty(%)	NIST Reference
EB0041029	EB0041029.20150713g	02/25/2019	GMIS	N2	NO	9.83 PPM	1.008	2628a
EB0046586	EB0046586.20150713g	11/29/2019	GMIS	N2	NO	9.96 PPM	1.158	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
NO	Chemiluminescence	Thermo	T42C	42C-68400-360	05/16/2016
NO	Chemiluminescence	Thermo	T42C	42C-68400-360	06/16/2016
CO	FTIR	MKS	MKS 2031DJG2EKVS13T	017146467	06/17/2016

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

PJLA Calibration and Testing
Accreditation #62754

Fred Holt
Analyst

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

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number:	E02AI99E15A1471	Reference Number:	122-124440891-11
Cylinder Number:	CC274549	Cylinder Volume:	146.2 CF
Laboratory:	ASG - Durham - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22014	Valve Outlet:	590
Gas Code:	PPN,BALA	Certification Date:	Jun 25, 2014

Expiration Date: Jun 25, 2022

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	5.000 PPM	4.963 PPM	G1	+/- 1.0% NIST Traceable	06/25/2014
AIR	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	10061415	CC315930	9.93 PPM PROPANE/AIR	+/- 0.6%	Jul 20, 2016

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet 6700 AHR0801333 C3H8	FTIR	Jun 12, 2014

Triad Data Available Upon Request

Signature on file

Approved for Release

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:

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

EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

Cylinder Number:	EB0020052	**Certification Date**:	01/08/2016
Product ID Number:	124605	**Expiration Date:**	01/06/2024
Cylinder Pressure:	1900 PSIG	**MFG Facility:**	RBTGS-Shreveport-LA
COA #	EB0020052.20160104-0	**Lot Number:**	EB0020052.20160104
Customer PO. NO.:		**Tracking Number:**	040266639
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	**18.8 %**	±0.14 %	FTIR	01/08/2016
Oxygen	**20.91 %**	±0.06 %	MPA	01/08/2016
Nitrogen	Balance			

Analytical Measurement Data Available Online.

Reference Standard(s)

Serial Number	Lot	Expiration	Type	Balance	Component	Concentration	Uncertainty(%)	NIST Reference
EB0022114	EB0022114.20141111	02/25/2023	GMIS	N2	CO2	19.37 %	0.799	101001
EB0055387	EB0055387.20140228G	10/07/2022	GMIS	N2	O2	23.79 %	0.505	071001
EB0055414	EB0055414.20140228-1G	10/07/2022	GMIS	N2	O2	23.8 %	0.505	071001

Analytical Instrumentation

Component	Analytical Principle	Make	Model	Serial	MPC Date
O2	MPA	Horiba	VA-3013	H0000P11	12/28/2015
CO2	FTIR	MKS	MKS 2031DJG2EKVS13T	017146467	12/18/2015

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

Accreditation #62754

Fred Holt
Analyst

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

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

EPA PROTOCOL GAS CERTIFICATE OF ANALYSIS

Cylinder Number:	EB0073833	**Certification Date**:	07/08/2016
Product ID Number:	124606	**Expiration Date:**	07/06/2024
Cylinder Pressure:	1900 PSIG	**MFG Facility:**	RBTGS-Shreveport-LA
COA #	EB0073833.20160623-0	**Lot Number:**	EB0073833.20160623
Customer PO. NO.:		**Tracking Number:**	084251701
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	**8.99 %**	±0.02 %	FTIR	07/08/2016
Oxygen	**11.94 %**	±0.08 %	MPA	07/01/2016
Nitrogen	Balance			

Analytical Measurement Data Available Online.

Reference Standard(s)

Serial Number	Lot	Expiration	Type	Balance	Component	Concentration	Uncertainty(%)	NIST Reference
EB0055306	EB0055306.20140228Gb	10/07/2022	GMIS	N2	O2	19.92 %	0.508	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	06/22/2016
CO2	FTIR	MKS	MKS 2031DJG2EKVS13T	017146467	07/07/2016

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

LaMeka Dennis
LaMeka Dennis
Laboratory Operations Manager

APPENDIX D

QUALITY ASSURANCE AND QUALITY CONTROL DATA

QA/QC PROGRAM

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

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

Field Qualifications

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

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

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

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

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

QA Reviews

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

Equipment Calibration and Maintenance

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

Chain-of-Custody

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

Training

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

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

Knowledge of Current Test Methods

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

Reproduction and Distribution Policy

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

COMBUSTION TESTING QUALITY ASSURANCE ACTIVITIES

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

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

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

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

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

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

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

INSTRUMENTAL ANALYSIS
QUALITY ASSURANCE DATA

Date: September 13-15, 2016
Company: Superior Fabrication, INC.
Location: Elk City, Oklahoma
Techs: BB/DA

Sample System Leak Check

Date	Sample System	Leak Rate (l/min)
September 13-15, 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*).

AMERICAN ASSOCIATION FOR LABORATORY ACCREDITATION
CORPORATE SEAL 1978
DISTRICT OF COLUMBIA
A2LA

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.

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.

AMERICAN ASSOCIATION FOR LABORATORY ACCREDITATION
CORPORATE SEAL 1978
DISTRICT OF COLUMBIA
A2LA

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

C. David Bagwell, QSTI/QSTO Review Board

Peter S. Pakalnis, QSTI/QSTO Review Board

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

LeRoy Owens, 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.

METERING SYSTEM DRY GAS METER CALIBRATION SHEET
EPA Reference Method
Metering System Pre-Test Calibration
Air Hygiene Assett ID: samp-cp-0007

Filename: Z:\Shared\QAQC\Calibrations\PM-Equipment\M-5 Consoles\Calibration Sheet v4.1\Current\[SAMP-CP-0007 Calibration 4-20-16.xls]Original (5 point)

Make: Thermo Environmental
Model #: MST-C1
Serial #: 90704

Date: 04/20/16
Barometric Pressure: 29.45 (in. Hg)
Theoretical Critical Vacuum: 13.89 (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)
0.27	17.00	623.050	628.440	5.390	73.0	69.0
0.57	12.00	628.440	633.890	5.450	75.0	71.0
1.10	10.00	633.890	639.990	6.100	78.0	72.0
1.90	10.00	639.990	648.040	8.050	81.0	72.0
3.50	10.00	648.040	658.840	10.800	82.0	73.0

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)
76.0	71.0	40	0.2354	16.0	70.9	70.9	70.9
79.0	72.0	48	0.3359	16.0	70.9	70.9	70.9
81.0	72.0	55	0.4542	16.0	70.9	70.9	70.9
82.0	73.0	63	0.5991	16.0	70.9	70.9	70.9
84.0	75.0	73	0.8065	14.5	70.9	70.9	70.9

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)
5.264	149.09	5.115	144.9	5.227
5.307	150.30	5.152	145.9	5.265
5.931	167.97	5.805	164.4	5.933
7.825	221.59	7.657	216.9	7.825
10.510	297.64	10.308	291.9	10.534

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)
-0.005	0.972	1.645	41.79	-0.099
-0.005	0.971	1.701	43.20	-0.043
0.003	0.979	1.794	45.55	0.049
0.003	0.979	1.779	45.18	0.035
0.005	0.981	1.803	45.80	0.059
AVERAGE:	**0.976**	**1.744**	44.31	**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: 04/20/16 04/20/16

METERING SYSTEM THERMOCOUPLE CALIBRATION SHEET
EPA Reference Method
Metering System Pre-Test Calibration
Air Hygiene Assett ID: samp-cp-0007

Filename: Z:\Shared\QAQC\Calibrations\PM-Equipment\M-5 Consoles\Calibration Sheet v4.1\Current\[SAMP-CP-0007 Calibration 4-20-16.xls]Original (5 point)

Make: Thermo Environmental
Model #: MST-C1
Serial #: 90704

Date: 04/20/16
Barometric Pressure: 29.45 (in. Hg)
Temperature (ASTM cal): 70.90 (°F)

Thermocouple	100	(°F)	600	(°F)	1200	(°F)
	Reading	% Error	Reading	% Error	Reading	% Error
Stack	100.00	0.00	602.00	0.33	1204.00	0.33
Probe	100.00	0.00	602.00	0.33	1204.00	0.33
Filter	100.00	0.00	602.00	0.33	1204.00	0.33
Dryer	100.00	0.00	602.00	0.33	1204.00	0.33
Aux.	100.00	0.00	602.00	0.33	1204.00	0.33

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	70.90	(°F)
	Reading	(±°F)
DGM In	70.0	0.90
DGM Out	69.0	1.90

Note: Calibrated against ASTM Reference Thermometer.

SIGNATURE: Craig McCarty DATE: 04/20/16 04/20/16

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-0007 Calibration 4-20-16.xls]Original (5 point)

Barometric Pressure: 29.45

Thermo-couples		Temps (°F)	Signature		Date	
Stack	Ref	70.90	Craig McCarty		04/20/16	04/20/16
	Read	71.00				
	±°F	0.10				
Filter	Ref	70.90	Craig McCarty		04/20/16	04/20/16
	Read	70.00				
	±°F	0.90				
Exit	Ref	70.90	Craig McCarty		04/20/16	04/20/16
	Read	70.00				
	±°F	0.90				

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-0007

Filename: Z:\Shared\QAQC\Calibrations\PM-Equipment\M-5 Consoles\Calibration Sheet v4.1\Current\[SAMP-CP-0007 Calibration 4-20-16.xls]First (3 point) (5)

Make: Thermo Environmental
Model #: MST-C1
Serial #: 90704

Date: 09/19/16
Barometric Pressure: 29.21 (in. Hg)
Theoretical Critical Vacuum: 13.78 (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)
1.90	10.00	5.200	13.230	8.030	79.0	75.0
1.90	10.00	13.230	21.270	8.040	79.0	75.0
1.90	10.00	21.270	29.320	8.050	79.0	75.0

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)
79.0	75.0	63	0.5991	16.0	72.5	72.5	72.5
79.0	75.0	63	0.5991	16.0	72.5	72.7	72.6
80.0	75.0	63	0.5991	16.0	72.7	72.8	72.8

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)
7.742	219.25	7.584	214.8	7.837
7.751	219.52	7.583	214.7	7.838
7.758	219.69	7.582	214.7	7.839

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)
0.001	0.980	1.791	45.48	0.000
0.000	0.978	1.791	45.49	0.000
-0.001	0.977	1.791	45.50	0.000
AVERAGE:	**0.978**	**1.791**	45.49	**PASSED**
LAST 5-PT:	**0.976**	**1.744**	**PASSED**	5-PT Date:
% DIFF:	**0.2%**	**2.7%**		04/20/16

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 ºF 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: 09/19/16 09/19/16

METERING SYSTEM THERMOCOUPLE CALIBRATION SHEET
EPA Reference Method
Metering System Post-Test Calibration
Air Hygiene Assett ID: samp-cp-0007

Filename: Z:\Shared\QAQC\Calibrations\PM-Equipment\M-5 Consoles\Calibration Sheet v4.1\Current\[SAMP-CP-0007 Calibration 4-20-16.xls]First (3 point) (5)

Make: Thermo Environmental
Model #: MST-C1
Serial #: 90704

Date: 09/19/16
Barometric Pressure: 29.21 (in. Hg)
Temperature (ASTM cal): 71.50 (°F)

Thermocouple	100	(°F)	600	(°F)	1200	(°F)
	Reading	% Error	Reading	% Error	Reading	% Error
Stack	100.00	0.00	602.00	0.33	1204.00	0.33
Probe	100.00	0.00	602.00	0.33	1204.00	0.33
Filter	100.00	0.00	602.00	0.33	1204.00	0.33
Dryer	100.00	0.00	602.00	0.33	1204.00	0.33
Aux.	100.00	0.00	602.00	0.33	1204.00	0.33

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	71.50	(°F)
	Reading	(±°F)
DGM In	73.0	1.50
DGM Out	70.0	1.50

Note: Calibrated against ASTM Reference Thermometer.

SIGNATURE: Craig McCarty DATE: 09/19/16 09/19/16

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-0007 Calibration 4-20-16.xls]First (3 point) (5)

Barometric Pressure: 29.21

Thermo-couples		Temps (°F)	Signature		Date	
Stack	Ref	71.60	Craig McCarty		09/19/16	09/19/16
	Read	72.00				
	±°F	0.40				
Filter	Ref	71.60	Craig McCarty		09/19/16	09/19/16
	Read	71.00				
	±°F	0.60				
Exit	Ref	71.60	Craig McCarty		09/19/16	09/19/16
	Read	72.00				
	±°F	0.40				

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.

PROVER TEST DATA

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	
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	TC Acc at (deg F)	Accuracy	Proof	% Error
350 psig	219 psig	175 psig				

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

PROVER TEST DATA

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. 556032350

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 3-16-15

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

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

DRIFT AND BIAS CHECK				
90-100 Load, Run - SCD-48 R10	O_2	CO	THC	CO_2
Raw Average	14.62	-0.06	0.44	4.44
Corrected Average	14.67	-0.06	0.38	4.48
Initial Zero	0.05	0.01	0.14	-0.03
Final Zero	0.03	-0.01	0.04	-0.02
Avg. Zero	0.04	0.00	0.09	-0.03
Initial UpScale	11.96	9.10	3.07	8.94
Final UpScale	11.97	9.30	2.96	8.93
Avg. UpScale	11.97	9.20	3.02	8.94
Sys Resp (Zero)	0.01	0.03	0.05	-0.07
Sys Resp (Upscale)	11.98	8.96	3.08	8.99
Upscale Cal Gas	12.00	9.24	3.00	8.99
Initial Zero Bias	0.19%	-0.11%	0.90%	0.21%
Final Zero Bias	0.10%	-0.22%	-0.10%	0.27%
Zero Drift	0.10%	0.11%	1.00%	0.05%
Initial Upscale Bias	-0.10%	0.77%	-0.10%	-0.27%
Final Upscale Bias	-0.05%	1.87%	-1.20%	-0.32%
Upscale Drift	0.05%	1.10%	1.10%	0.05%
Alternative Specification Abs Diff: Initial Zero	0.04	0.02	--	0.04
Alternative Specification Abs Diff: Final Zero	0.02	0.04	--	0.05
Alternative Specification Abs Diff: Initial Upscale	0.02	0.14	--	0.05
Alternative Specification Abs Diff: Final Upscale	0.01	0.34	--	0.06
Calibration Span	20.92	18.20	10.00	18.85
3% of Cal. Span (drift)	0.63	0.55	0.30	0.57
5% of Cal. Span (bias)	1.05	0.91	0.50	0.94

DRIFT AND BIAS CHECK				
90-100 Load, Run - SCD-48 R11	O_2	CO	THC	CO_2
Raw Average	16.00	0.10	0.35	3.47
Corrected Average	16.09	0.06	0.31	3.52
Initial Zero	0.03	-0.01	0.04	-0.02
Final Zero	0.10	0.09	0.07	-0.04
Avg. Zero	0.07	0.04	0.06	-0.03
Initial UpScale	11.97	9.30	2.96	8.93
Final UpScale	11.92	9.30	2.95	8.85
Avg. UpScale	11.95	9.30	2.96	8.89
Sys Resp (Zero)	0.01	0.03	0.05	-0.07
Sys Resp (Upscale)	11.98	8.96	3.08	8.99
Upscale Cal Gas	12.00	9.24	3.00	8.99
Initial Zero Bias	0.10%	-0.22%	-0.10%	0.27%
Final Zero Bias	0.43%	0.33%	0.20%	0.16%
Zero Drift	0.33%	0.55%	0.30%	0.11%
Initial Upscale Bias	-0.05%	1.87%	-1.20%	-0.32%
Final Upscale Bias	-0.29%	1.87%	-1.30%	-0.74%
Upscale Drift	0.24%	0.00%	0.10%	0.42%
Alternative Specification Abs Diff: Initial Zero	0.02	0.04	--	0.05
Alternative Specification Abs Diff: Final Zero	0.09	0.06	--	0.03
Alternative Specification Abs Diff: Initial Upscale	0.01	0.34	--	0.06
Alternative Specification Abs Diff: Final Upscale	0.06	0.34	--	0.14
Calibration Span	20.92	18.20	10.00	18.85
3% of Cal. Span (drift)	0.63	0.55	0.30	0.57
5% of Cal. Span (bias)	1.05	0.91	0.50	0.94

DRIFT AND BIAS CHECK				
90-100 Load, Run - SCD-48 R12	O_2	CO	THC	CO_2
Raw Average	15.63	0.04	0.38	3.67
Corrected Average	15.74	0.02	0.33	3.75
Initial Zero	0.10	0.09	0.07	-0.04
Final Zero	0.06	-0.05	0.04	-0.04
Avg. Zero	0.08	0.02	0.06	-0.04
Initial UpScale	11.92	9.30	2.95	8.85
Final UpScale	11.94	9.37	3.07	8.86
Avg. UpScale	11.93	9.34	3.01	8.86
Sys Resp (Zero)	0.01	0.03	0.05	-0.07
Sys Resp (Upscale)	11.98	8.96	3.08	8.99
Upscale Cal Gas	12.00	9.24	3.00	8.99
Initial Zero Bias	0.43%	0.33%	0.20%	0.16%
Final Zero Bias	0.24%	-0.44%	-0.10%	0.16%
Zero Drift	0.19%	0.77%	0.30%	0.00%
Initial Upscale Bias	-0.29%	1.87%	-1.30%	-0.74%
Final Upscale Bias	-0.19%	2.25%	-0.10%	-0.69%
Upscale Drift	0.10%	0.38%	1.20%	0.05%
Alternative Specification Abs Diff: Initial Zero	0.09	0.06	--	0.03
Alternative Specification Abs Diff: Final Zero	0.05	0.08	--	0.03
Alternative Specification Abs Diff: Initial Upscale	0.06	0.34	--	0.14
Alternative Specification Abs Diff: Final Upscale	0.04	0.41	--	0.13
Calibration Span	20.92	18.20	10.00	18.85
3% of Cal. Span (drift)	0.63	0.55	0.30	0.57
5% of Cal. Span (bias)	1.05	0.91	0.50	0.94

DRIFT AND BIAS CHECK				
70-100-70 Load, Run - SCD-48 R7	O_2	CO	THC	CO_2
Raw Average	16.04	1.76	0.40	3.54
Corrected Average	16.06	1.78	0.37	3.54
Initial Zero	0.06	-0.09	0.02	-0.02
Final Zero	0.04	0.09	0.02	-0.04
Avg. Zero	0.05	0.00	0.02	-0.03
Initial UpScale	12.04	9.20	3.22	9.02
Final UpScale	11.96	9.01	3.03	9.06
Avg. UpScale	12.00	9.11	3.13	9.04
Sys Resp (Zero)	-0.02	0.02	0.07	0.07
Sys Resp (Upscale)	11.96	9.11	3.22	9.00
Upscale Cal Gas	12.00	9.24	3.00	8.99
Initial Zero Bias	0.38%	-0.60%	-0.50%	-0.48%
Final Zero Bias	0.29%	0.38%	-0.50%	-0.58%
Zero Drift	0.10%	0.99%	0.00%	0.11%
Initial Upscale Bias	0.38%	0.49%	0.00%	0.11%
Final Upscale Bias	0.00%	-0.55%	-1.90%	0.32%
Upscale Drift	0.38%	1.04%	1.90%	0.21%
Alternative Specification Abs Diff: Initial Zero	0.08	0.11	--	0.09
Alternative Specification Abs Diff: Final Zero	0.06	0.07	--	0.11
Alternative Specification Abs Diff: Initial Upscale	0.08	0.09	--	0.02
Alternative Specification Abs Diff: Final Upscale	0.00	0.10	--	0.06
Calibration Span	20.92	18.20	10.00	18.85
3% of Cal. Span (drift)	0.63	0.55	0.30	0.57
5% of Cal. Span (bias)	1.05	0.91	0.50	0.94

DRIFT AND BIAS CHECK				
70-100-70 Load, Run - SCD-48 R8	O_2	CO	THC	CO_2
Raw Average	16.21	2.03	0.47	3.39
Corrected Average	16.21	2.01	0.44	3.39
Initial Zero	0.04	0.09	0.02	-0.04
Final Zero	0.03	0.02	0.07	-0.06
Avg. Zero	0.04	0.06	0.05	-0.05
Initial UpScale	11.96	9.01	3.03	9.06
Final UpScale	12.06	9.21	2.96	9.07
Avg. UpScale	12.01	9.11	3.00	9.07
Sys Resp (Zero)	-0.02	0.02	0.07	0.07
Sys Resp (Upscale)	11.96	9.11	3.22	9.00
Upscale Cal Gas	12.00	9.24	3.00	8.99
Initial Zero Bias	0.29%	0.38%	-0.50%	-0.58%
Final Zero Bias	0.24%	0.00%	0.00%	-0.69%
Zero Drift	0.05%	0.38%	0.50%	0.11%
Initial Upscale Bias	0.00%	-0.55%	-1.90%	0.32%
Final Upscale Bias	0.48%	0.55%	-2.60%	0.37%
Upscale Drift	0.48%	1.10%	0.70%	0.05%
Alternative Specification Abs Diff: Initial Zero	0.06	0.07	--	0.11
Alternative Specification Abs Diff: Final Zero	0.05	0.00	--	0.13
Alternative Specification Abs Diff: Initial Upscale	0.00	0.10	--	0.06
Alternative Specification Abs Diff: Final Upscale	0.10	0.10	--	0.07
Calibration Span	20.92	18.20	10.00	18.85
3% of Cal. Span (drift)	0.63	0.55	0.30	0.57
5% of Cal. Span (bias)	1.05	0.91	0.50	0.94

DRIFT AND BIAS CHECK				
70-100-70 Load, Run - SCD-48 R9	O_2	CO	THC	CO_2
Raw Average	15.59	2.39	0.30	3.88
Corrected Average	15.56	2.39	0.26	3.86
Initial Zero	0.03	0.02	0.07	-0.06
Final Zero	0.04	-0.01	0.02	-0.03
Avg. Zero	0.04	0.01	0.05	-0.05
Initial UpScale	12.06	9.21	2.96	9.07
Final UpScale	12.01	9.21	3.03	9.08
Avg. UpScale	12.04	9.21	3.00	9.08
Sys Resp (Zero)	-0.02	0.02	0.07	0.07
Sys Resp (Upscale)	11.96	9.11	3.22	9.00
Upscale Cal Gas	12.00	9.24	3.00	8.99
Initial Zero Bias	0.24%	0.00%	0.00%	-0.69%
Final Zero Bias	0.29%	-0.16%	-0.50%	-0.53%
Zero Drift	0.05%	0.16%	0.50%	0.16%
Initial Upscale Bias	0.48%	0.55%	-2.60%	0.37%
Final Upscale Bias	0.24%	0.55%	-1.90%	0.42%
Upscale Drift	0.24%	0.00%	0.70%	0.05%
Alternative Specification Abs Diff: Initial Zero	0.05	0.00	--	0.13
Alternative Specification Abs Diff: Final Zero	0.06	0.03	--	0.10
Alternative Specification Abs Diff: Initial Upscale	0.10	0.10	--	0.07
Alternative Specification Abs Diff: Final Upscale	0.05	0.10	--	0.08
Calibration Span	20.92	18.20	10.00	18.85
3% of Cal. Span (drift)	0.63	0.55	0.30	0.57
5% of Cal. Span (bias)	1.05	0.91	0.50	0.94

DRIFT AND BIAS CHECK				
0-30-0 Load, Run - SCD-48 R1	O_2	CO	THC	CO_2
Raw Average	16.44	5.20	0.48	3.23
Corrected Average	16.51	5.15	0.45	3.21
Initial Zero	-0.03	0.01	0.01	0.05
Final Zero	0.07	0.05	0.05	-0.02
Avg. Zero	0.02	0.03	0.03	0.02
Initial UpScale	11.94	9.44	2.96	9.05
Final UpScale	11.97	9.18	3.12	9.01
Avg. UpScale	11.96	9.31	3.04	9.03
Sys Resp (Zero)	-0.02	0.02	0.07	0.07
Sys Resp (Upscale)	11.96	9.11	3.22	9.00
Upscale Cal Gas	12.00	9.24	3.00	8.99
Initial Zero Bias	-0.05%	-0.05%	-0.60%	-0.11%
Final Zero Bias	0.43%	0.16%	-0.20%	-0.48%
Zero Drift	0.48%	0.22%	0.40%	0.37%
Initial Upscale Bias	-0.10%	1.81%	-2.60%	0.27%
Final Upscale Bias	0.05%	0.38%	-1.00%	0.05%
Upscale Drift	0.14%	1.43%	1.60%	0.21%
Alternative Specification Abs Diff: Initial Zero	0.01	0.01	--	0.02
Alternative Specification Abs Diff: Final Zero	0.09	0.03	--	0.09
Alternative Specification Abs Diff: Initial Upscale	0.02	0.33	--	0.05
Alternative Specification Abs Diff: Final Upscale	0.01	0.07	--	0.01
Calibration Span	20.92	18.20	10.00	18.85
3% of Cal. Span (drift)	0.63	0.55	0.30	0.57
5% of Cal. Span (bias)	1.05	0.91	0.50	0.94

DRIFT AND BIAS CHECK				
0-30-0 Load, Run - SCD-48 R2	O_2	CO	THC	CO_2
Raw Average	16.47	5.44	0.49	3.22
Corrected Average	16.53	5.45	0.44	3.21
Initial Zero	0.07	0.05	0.05	-0.02
Final Zero	0.03	0.02	0.05	0.01
Avg. Zero	0.05	0.04	0.05	-0.01
Initial UpScale	11.97	9.18	3.12	9.01
Final UpScale	11.98	9.21	3.10	9.00
Avg. UpScale	11.98	9.20	3.11	9.01
Sys Resp (Zero)	-0.02	0.02	0.07	0.07
Sys Resp (Upscale)	11.96	9.11	3.22	9.00
Upscale Cal Gas	12.00	9.24	3.00	8.99
Initial Zero Bias	0.43%	0.16%	-0.20%	-0.48%
Final Zero Bias	0.24%	0.00%	-0.20%	-0.32%
Zero Drift	0.19%	0.16%	0.00%	0.16%
Initial Upscale Bias	0.05%	0.38%	-1.00%	0.05%
Final Upscale Bias	0.10%	0.55%	-1.20%	0.00%
Upscale Drift	0.05%	0.16%	0.20%	0.05%
Alternative Specification Abs Diff: Initial Zero	0.09	0.03	--	0.09
Alternative Specification Abs Diff: Final Zero	0.05	0.00	--	0.06
Alternative Specification Abs Diff: Initial Upscale	0.01	0.07	--	0.01
Alternative Specification Abs Diff: Final Upscale	0.02	0.10	--	0.00
Calibration Span	20.92	18.20	10.00	18.85
3% of Cal. Span (drift)	0.63	0.55	0.30	0.57
5% of Cal. Span (bias)	1.05	0.91	0.50	0.94

DRIFT AND BIAS CHECK				
0-30-0 Load, Run - SCD-48 R3	O_2	CO	THC	CO_2
Raw Average	17.01	3.77	0.55	2.86
Corrected Average	17.05	3.87	0.50	2.86
Initial Zero	0.05	-0.09	0.01	-0.02
Final Zero	0.06	-0.06	0.09	0.01
Avg. Zero	0.06	-0.08	0.05	-0.01
Initial UpScale	11.98	9.12	3.02	8.99
Final UpScale	11.99	9.11	3.13	8.98
Avg. UpScale	11.99	9.12	3.08	8.99
Sys Resp (Zero)	0.05	0.02	-0.03	-0.01
Sys Resp (Upscale)	11.98	9.16	3.03	9.05
Upscale Cal Gas	12.00	9.24	3.00	8.99
Initial Zero Bias	0.00%	-0.60%	0.40%	-0.05%
Final Zero Bias	0.05%	-0.44%	1.20%	0.11%
Zero Drift	0.05%	0.16%	0.80%	0.16%
Initial Upscale Bias	0.00%	-0.22%	-0.10%	-0.32%
Final Upscale Bias	0.05%	-0.27%	1.00%	-0.37%
Upscale Drift	0.05%	0.05%	1.10%	0.05%
Alternative Specification Abs Diff: Initial Zero	0.00	0.11	--	0.01
Alternative Specification Abs Diff: Final Zero	0.01	0.08	--	0.02
Alternative Specification Abs Diff: Initial Upscale	0.00	0.04	--	0.06
Alternative Specification Abs Diff: Final Upscale	0.01	0.05	--	0.07
Calibration Span	20.92	18.20	10.00	18.85
3% of Cal. Span (drift)	0.63	0.55	0.30	0.57
5% of Cal. Span (bias)	1.05	0.91	0.50	0.94

DRIFT AND BIAS CHECK				
30-70-30 Load, Run - SCD-48 R4	O_2	CO	THC	CO_2
Raw Average	15.31	0.67	0.22	3.97
Corrected Average	15.36	0.76	0.14	3.97
Initial Zero	0.06	-0.06	0.09	0.01
Final Zero	0.05	-0.11	0.07	0.01
Avg. Zero	0.06	-0.09	0.08	0.01
Initial UpScale	11.99	9.11	3.13	8.98
Final UpScale	11.95	9.10	2.98	8.97
Avg. UpScale	11.97	9.11	3.06	8.98
Sys Resp (Zero)	0.05	0.02	-0.03	-0.01
Sys Resp (Upscale)	11.98	9.16	3.03	9.05
Upscale Cal Gas	12.00	9.24	3.00	8.99
Initial Zero Bias	0.05%	-0.44%	1.20%	0.11%
Final Zero Bias	0.00%	-0.71%	1.00%	0.11%
Zero Drift	0.05%	0.27%	0.20%	0.00%
Initial Upscale Bias	0.05%	-0.27%	1.00%	-0.37%
Final Upscale Bias	-0.14%	-0.33%	-0.50%	-0.42%
Upscale Drift	0.19%	0.05%	1.50%	0.05%
Alternative Specification Abs Diff: Initial Zero	0.01	0.08	--	0.02
Alternative Specification Abs Diff: Final Zero	0.00	0.13	--	0.02
Alternative Specification Abs Diff: Initial Upscale	0.01	0.05	--	0.07
Alternative Specification Abs Diff: Final Upscale	0.03	0.06	--	0.08
Calibration Span	20.92	18.20	10.00	18.85
3% of Cal. Span (drift)	0.63	0.55	0.30	0.57
5% of Cal. Span (bias)	1.05	0.91	0.50	0.94

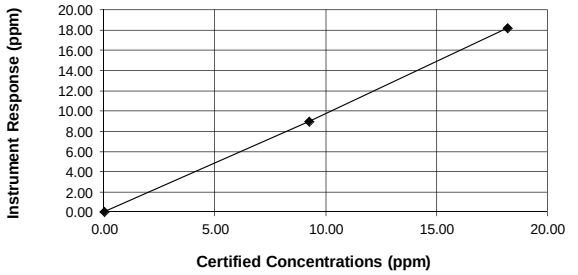
DRIFT AND BIAS CHECK				
30-70-30 Load, Run - SCD-48 R5	O_2	CO	THC	CO_2
Raw Average	15.32	0.81	0.26	3.96
Corrected Average	15.41	0.85	0.20	3.96
Initial Zero	0.05	-0.11	0.07	0.01
Final Zero	0.05	0.05	0.05	0.01
Avg. Zero	0.05	-0.03	0.06	0.01
Initial UpScale	11.95	9.10	2.98	8.97
Final UpScale	11.93	9.09	3.11	8.98
Avg. UpScale	11.94	9.10	3.05	8.98
Sys Resp (Zero)	0.05	0.02	-0.03	-0.01
Sys Resp (Upscale)	11.98	9.16	3.03	9.05
Upscale Cal Gas	12.00	9.24	3.00	8.99
Initial Zero Bias	0.00%	-0.71%	1.00%	0.11%
Final Zero Bias	0.00%	0.16%	0.80%	0.11%
Zero Drift	0.00%	0.88%	0.20%	0.00%
Initial Upscale Bias	-0.14%	-0.33%	-0.50%	-0.42%
Final Upscale Bias	-0.24%	-0.38%	0.80%	-0.37%
Upscale Drift	0.10%	0.05%	1.30%	0.05%
Alternative Specification Abs Diff: Initial Zero	0.00	0.13	--	0.02
Alternative Specification Abs Diff: Final Zero	0.00	0.03	--	0.02
Alternative Specification Abs Diff: Initial Upscale	0.03	0.06	--	0.08
Alternative Specification Abs Diff: Final Upscale	0.05	0.07	--	0.07
Calibration Span	20.92	18.20	10.00	18.85
3% of Cal. Span (drift)	0.63	0.55	0.30	0.57
5% of Cal. Span (bias)	1.05	0.91	0.50	0.94

DRIFT AND BIAS CHECK				
30-70-30 Load, Run - SCD-48 R6	O_2	CO	THC	CO_2
Raw Average	14.44	0.64	0.23	4.60
Corrected Average	14.54	0.65	0.19	4.61
Initial Zero	0.05	0.05	0.05	0.01
Final Zero	0.03	-0.03	0.04	-0.01
Avg. Zero	0.04	0.01	0.05	0.00
Initial UpScale	11.93	9.09	3.11	8.98
Final UpScale	11.91	9.11	2.98	8.99
Avg. UpScale	11.92	9.10	3.05	8.99
Sys Resp (Zero)	0.05	0.02	-0.03	-0.01
Sys Resp (Upscale)	11.98	9.16	3.03	9.05
Upscale Cal Gas	12.00	9.24	3.00	8.99
Initial Zero Bias	0.00%	0.16%	0.80%	0.11%
Final Zero Bias	-0.10%	-0.27%	0.70%	0.00%
Zero Drift	0.10%	0.44%	0.10%	0.11%
Initial Upscale Bias	-0.24%	-0.38%	0.80%	-0.37%
Final Upscale Bias	-0.33%	-0.27%	-0.50%	-0.32%
Upscale Drift	0.10%	0.11%	1.30%	0.05%
Alternative Specification Abs Diff: Initial Zero	0.00	0.03	--	0.02
Alternative Specification Abs Diff: Final Zero	0.02	0.05	--	0.00
Alternative Specification Abs Diff: Initial Upscale	0.05	0.07	--	0.07
Alternative Specification Abs Diff: Final Upscale	0.07	0.05	--	0.06
Calibration Span	20.92	18.20	10.00	18.85
3% of Cal. Span (drift)	0.63	0.55	0.30	0.57
5% of Cal. Span (bias)	1.05	0.91	0.50	0.94

Calibration Date: September 13, 2016
Client: Superior Fabrication, INC

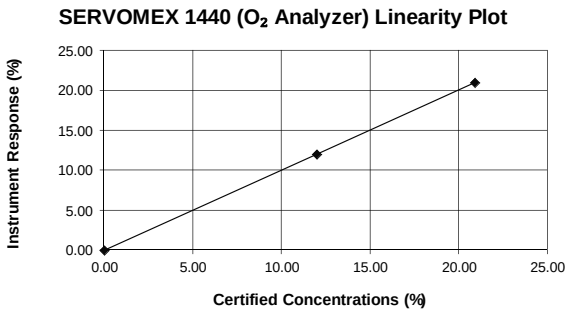
CO Span (ppm) = 18.20

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 (%)
9.24	8.96	-1.54	0.28	YES (%)
18.20	18.19	-0.05	0.01	YES (%)
Linearity = 1.002				



O_2 Span (%) = 20.92

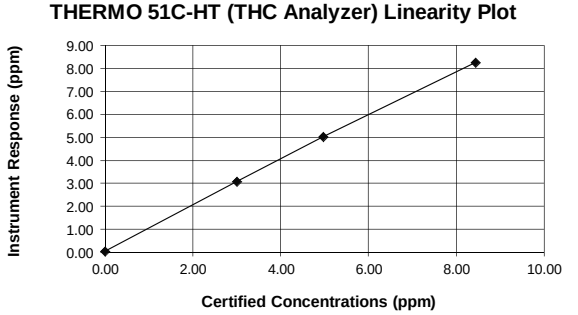
SERVOMEX 1440 (O_2 Analyzer)				
Certified Concentration (%)	Instrument Response (%)	Calibration Error (%)	Absolute Conc. (%)	Pass or Fail (±2%, ≤0.5%)
0.00	0.01	0.05	0.01	YES (%)
12.00	11.98	-0.10	0.02	YES (%)
20.92	20.93	0.05	0.01	YES (%)
Linearity = 1.000				



THC Range (ppm) = 10

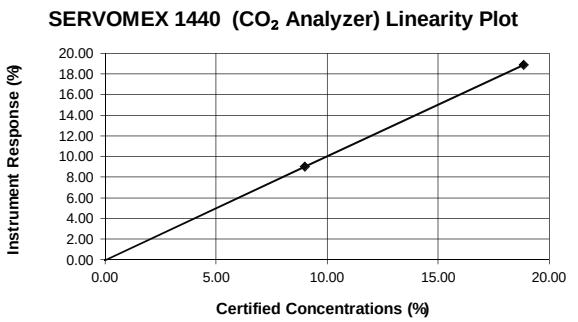
THERMO 51C-HT (THC Analyzer)				
Certified Concentration (ppm)	Instrument Response (ppm)	Calibration Error (%)	Estimated Point (ppm)	Pass or Fail (±2,5%)[1]
0.00	0.05	0.50	N/A	YES
3.00	3.08	3.59	2.97	YES
4.96	5.02	2.73	4.88	YES
8.43	8.26	-1.68	N/A	YES
Linearity = 1.050				

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



CO_2 Span (%) = 18.85

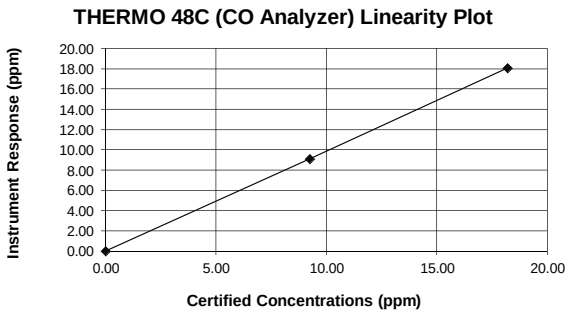
SERVOMEX 1440 (CO_2 Analyzer)				
Certified Concentration (%)	Instrument Response (%)	Calibration Error (%)	Absolute Conc. (%)	Pass or Fail (±2%, ≤0.5%)
0.00	-0.07	-0.37	0.07	YES (%)
8.99	8.99	0.00	0.00	YES (%)
18.85	18.87	0.11	0.02	YES (%)
Linearity = 0.995				



Calibration Date: September 14, 2016
Client: Superior Fabrication, INC

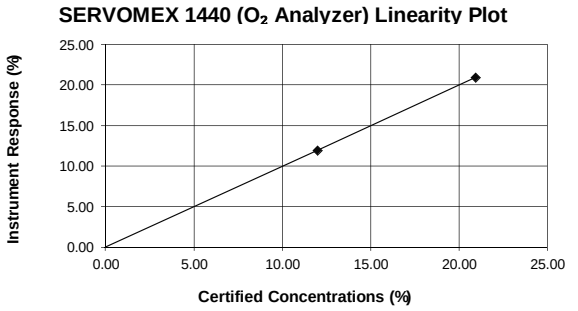
CO Span (ppm) = 18.20

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 (%)
9.24	9.11	-0.71	0.13	YES (%)
18.20	18.08	-0.66	0.12	YES (%)
Linearity = 1.008				



O2 Span (%) = 20.92

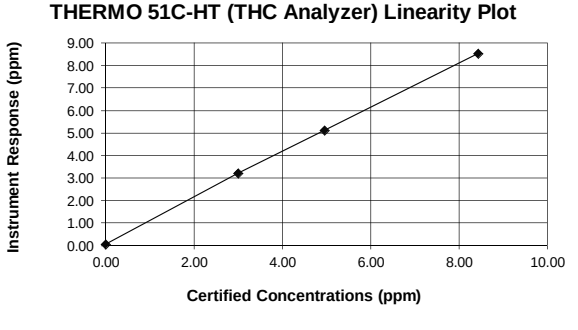
SERVOMEX 1440 (O_2 Analyzer)				
Certified Concentration (%)	**Instrument Response (%)**	**Calibration Error (%)**	**Absolute Conc. (%)**	**Pass or Fail (±2%, ≤0.5%)**
0.00	-0.02	-0.10	0.02	YES (%)
12.00	11.96	-0.19	0.04	YES (%)
20.92	20.93	0.05	0.01	YES (%)
Linearity = 0.999				



THC Range (ppm) = 10

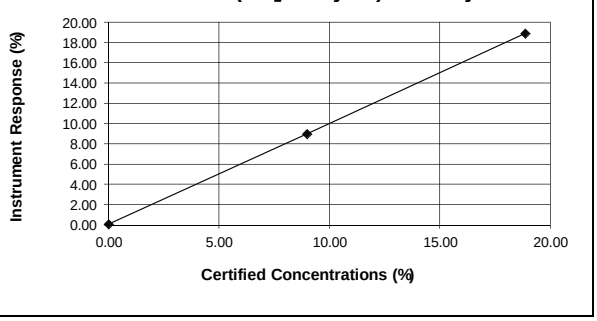
THERMO 51C-HT (THC Analyzer)				
Certified Concentration (ppm)	**Instrument Response (ppm)**	**Calibration Error (%)**	**Estimated Point (ppm)**	**Pass or Fail (±2,5%)[1]**
0.00	0.07	0.70	N/A	YES
3.00	3.22	4.53	3.08	YES
4.96	5.12	1.34	5.05	YES
8.43	8.54	1.10	N/A	YES
Linearity = 1.020				

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



CO2 Span (%) = 18.85

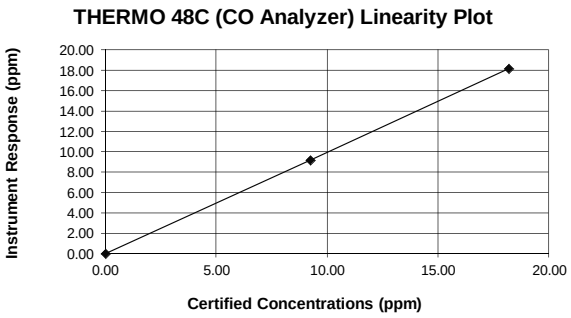
SERVOMEX 1440 (CO_2 Analyzer)				
Certified Concentration (%)	**Instrument Response (%)**	**Calibration Error (%)**	**Absolute Conc. (%)**	**Pass or Fail (±2%, ≤0.5%)**
0.00	0.07	0.37	0.07	YES (%)
8.99	9.00	0.05	0.01	YES (%)
18.85	18.91	0.32	0.06	YES (%)
Linearity = 1.000				



Calibration Date: September 15, 2016
Client: Superior Fabrication, INC

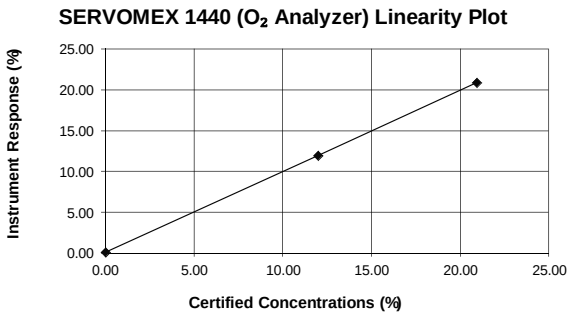
CO Span (ppm) = 18.20

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 (%)
9.24	9.16	-0.44	0.08	YES (%)
18.20	18.18	-0.11	0.02	YES (%)
Linearity = 1.002				



O2 Span (%) = 20.92

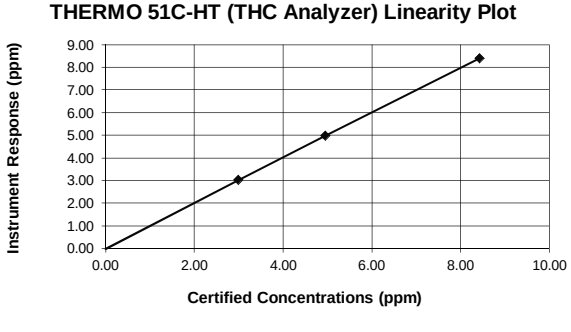
SERVOMEX 1440 (O_2 Analyzer)				
Certified Concentration (%)	**Instrument Response (%)**	**Calibration Error (%)**	**Absolute Conc. (%)**	**Pass or Fail (±2%, ≤0.5%)**
0.00	0.05	0.24	0.05	YES (%)
12.00	11.98	-0.10	0.02	YES (%)
20.92	20.90	-0.10	0.02	YES (%)
Linearity = 1.003				



THC Range (ppm) = 10

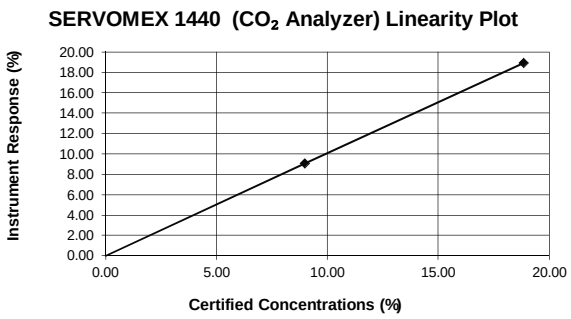
THERMO 51C-HT (THC Analyzer)				
Certified Concentration (ppm)	**Instrument Response (ppm)**	**Calibration Error (%)**	**Estimated Point (ppm)**	**Pass or Fail (±2,5%)[1]**
0.00	-0.03	-0.30	N/A	YES
3.00	3.03	2.00	2.97	YES
4.96	4.98	1.01	4.93	YES
8.43	8.40	-0.30	N/A	YES
Linearity = 1.012				

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



CO2 Span (%) = 18.85

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 (%)
8.99	9.05	0.32	0.06	YES (%)
18.85	18.90	0.27	0.05	YES (%)
Linearity = 0.997				



APPENDIX E

FUEL ANALYSIS RECORDS

Sample Date **8/16/2016** **Truck/Trailer No.:**

Property	Result	Specification
Methane, PPM Wgt.	BDL	Note (1)
Ethane, PPM Wgt.	19	Note (1)
Ethylene, PPM Wgt.	BDL	100 max.
Propane, Wgt. %	0.44	0.5 max.
Propylene, Wgt. %	99.55	99.5 min.
Total Saturated C4's, PPM Mole	BDL	Note (1)
Propadiene, PPM Wgt.	BDL	5 max.
Methyl Acetylene, PPM Wgt.	BDL	7 max.
Acetylene, PPM Wgt.	BDL	3 max.
Total Butadienes, PPM Wgt.	BDL	10 max.
Total Butenes, PPM Wgt.	BDL	100 max.
1-Butyne, PPM Wgt.	BDL	7 max.
2-Butyne, PPM Wgt.	BDL	7 max.
Cyclopropane, PPM Wgt.	BDL	1 max.
3-Methyl 1-Butene, PPM Wgt.	BDL	1 max.
Total > C5, PPM Wgt.	BDL	20 max.
Carbon Monoxide, PPM Wgt.	BDL	0.033 max.
Carbon Dioxide, PPM Wgt.	0.3	2 max.
Carbonyl Sulfide, PPM Wgt.	BDL	0.043 max.
Hydrogen Sulfide, PPM Wgt.	BDL	1 max.
Total Sulfur, PPM Wgt.	BDL	1 max.
Arsine, PPM Wgt.	BDL	0.056 max.
Phosphine, PPM Wgt.	BDL	0.1 max.
Methanol, PPM Wgt.	0.01	4 max.
2-Propanol, PPM Wgt.	BDL	7 max.
Water, PPM Wgt.	0.05	2 max.
Hydrogen, PPM Wgt.	BDL	1 max.
Oxygen, PPM Wgt.*	BDL	2 max.
Nitrogen, PPM Wgt.	BDL	Note (1)
Ammonia, PPM Wgt.	BDL	0.2 max.

JED

REF ID# CY35029 by/for Robert D. Freeman

SOURCE Tank 5 Laboratory Manager

Note (1) Total Non-Propane Inerts = 1000 Wt. ppm max

revised 09/09/13

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LABORATORY REPORT

October 12, 2016

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

RE: SFI Flare testing / sfi-16-elkcity.ok-comp#1

Dear Min:

Enclosed are the results of the samples submitted to our laboratory on September 22, 2016. For your reference, these analyses have been assigned our service request number P1604504.

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 12:45 pm, Oct 12, 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 Flare testing / sfi-16-elkcity.ok-comp#1

Service Request No: P1604504

CASE NARRATIVE

The samples were received intact under chain of custody on September 22, 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 per ASTM D1945-03 for benzene using a gas chromatograph equipped with a flame ionization detector (FID). This procedure is described in laboratory SOP VOA-TO3C1C6. This method is not included on the laboratory's NELAP, DoD-ELAP, or AIHA-LAP, LLC scope of 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 modified EPA Method TO-3 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 modified EPA Method 3C (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 modified SCAQMD Method 307-91 and 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. Method SCAQMD 307-91 is not included on the laboratory's NELAP, DoD-ELAP, or AIHA-LAP, LLC accreditation.

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www.alsglobal.com

Client: Air Hygiene, Incorporated
Project: SFI Flare testing / sfi-16-elkcity.ok-comp#1

Service Request No: P1604504

Sulfur Analysis

The samples were also analyzed for twenty sulfur compounds per ASTM D 5504-12 using a gas chromatograph equipped with a sulfur chemiluminescence detector (SCD). All compounds with the exception of hydrogen sulfide and carbonyl sulfide are quantitated against the initial calibration curve for methyl mercaptan. This method is included on the laboratory's NELAP scope of accreditation, however it is not part of the DoD-ELAP 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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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

Service Request: P1604504

Project ID: SFI Flare testing / sfi-16-elkcity.ok-comp#1

Date Received: 9/22/2016

Time Received: 10:05

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	ASTM D 5504-12 - Sulfur Can
SFI-90-100%-can-SCD-48	P1604504-001	Air	9/13/2016	15:30	SSC00249	-1.37	5.86	X	X	X	X
SFI-70-100-70%-can-SCD-48	P1604504-002	Air	9/14/2016	12:45	SSC00306	-0.70	5.69	X	X	X	X
SFI-0-30-0%-can-SCD-48	P1604504-003	Air	9/15/2016	12:55	SSC00298	-1.12	5.59	X	X	X	X
SFI-30-70-30%-can-SCD-48	P1604504-004	Air	9/15/2016	18:50	SSC00022	-1.12	5.76	X	X	X	X

Air - Chain of Custody Record & Analytical Service Request

2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

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: 1604504

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

Project Name: SFI Flare Testing

Project Number: SFI-elkcity, Ok-compl#1

Project Manager: Min Sum Lee

P.O. # / Billing Information: 1600 W Tacoma St. Broken Arrow, 74012, Ok

Phone: 9185655379

Fax:

Email Address for Result Reporting: mlee@airhygiene.com & Lab@airhygiene.com

Sampler (Print & Sign): [signature]

ALS Contact:

Analysis Method

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/~~mg~~	Sample Volume	ASTM 1945-03	ASTM 3588-98	Comments e.g. Actual Preservative or specific instructions
SFI-90-100%-Can-SC048		9/13/16	15:30	SSC00249	OA01146	-28.16	-0.57		X	X	
SFI-70-100-70%-can-SC048		9/14/16	12:45	SSC00306	OA01745	-28.28	-0.28		X	X	
SFI-0-30-0%-can-SC0-48		9/15/16	12:55	SSC00298	OA01378	-28.37	-1.40		X	X	
SFI-30-70-30%-can-SC0-48		9/15/16	18:50	SSC00022	OA01085	-26.90	-0.34				

Report Tier Levels - please select
Tier I - Results (Default in not specified) ____
Tier II (Results + QC Summaries ____
Tier III (Results + QC & Calibration 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: 9/15/16	Time: 19:00	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature) UPS	Date:	Time:	Received by: (Signature) [signature]	Date: 9/22/16	Time: 1005

Cooler / Blank Temperature ____ °C

ALS Environmental
Sample Acceptance Check Form

Client: Air Hygiene, Incorporated Work order: P1604504
Project: SFI Flare testing / SFI
Sample(s) received on: 9/22/16 Date opened: 9/22/16 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
P1604504-001.01	6.0 L Silonite Can					
P1604504-002.01	6.0 L Silonite Can					
P1604504-003.01	6.0 L Silonite Can					
P1604504-004.01	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-16-elkcity.ok-comp#1** ALS Project ID: P1604504

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: 9/13 - 9/15/16
Date Received: 9/22/16
Date Analyzed: 10/4/16

Client Sample ID	ALS Sample ID	Canister Dilution Factor	Injection Volume ml(s)	**Result ppmV**	MRL ppmV	Data Qualifier
SFI-90-100%-can-SCD-48	P1604504-001	1.54	0.050	ND	18	
SFI-70-100-70%-can-SCD-48	P1604504-002	1.46	0.050	ND	18	
SFI-0-30-0%-can-SCD-48	P1604504-003	1.49	0.050	ND	18	
SFI-30-70-30%-can-SCD-48	P1604504-004	1.51	0.050	ND	18	
Method Blank	P161004-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: P1604504
Client Project ID: **SFI Flare testing / sfi-16-elkcity.ok-comp#1** ALS Sample ID: P161004-LCS

Test Code: ASTM D1945-03 Date Collected: NA
Instrument ID: HP5890 II/GC8/FID Date Received: NA
Analyst: Adam McAfee Date Analyzed: 10/04/16
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	**1,040**	**95**	50-150	

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **SFI-90-100%-can-SCD-48** ALS Project ID: P1604504
Client Project ID: **SFI Flare testing / sfi-16-elkcity.ok-comp#1** ALS Sample ID: P1604504-001

Test Code: ASTM D3588-98
Analyst: Mike Conejo/Adam McAfee Date Collected: 9/13/16
Sample Type: 6.0 L Silonite Canister Date Received: 9/22/16
Test Notes:
Container ID: SSC00249

Initial Pressure (psig): -1.37 Final Pressure (psig): 5.86

Canister Dilution Factor: 1.54

Components	Result Volume %	Result Weight %	Data Qualifier
Hydrogen	< 0.01	< 0.01	
Oxygen	**0.06**	**0.04**	
Nitrogen	**0.30**	**0.19**	
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	**99.63**	**99.75**	
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**	**81.53**
Hydrogen	**72.68**	**18.24**
Oxygen	< 0.10	< 0.10
Nitrogen	< 0.10	**0.19**
Sulfur	< 0.10	< 0.10

Specific Gravity (Air = 1)		**1.5205**
Specific Volume	ft3/lb	**8.62**
Gross Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/ft3	**2,551.0**
Net Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/ft3	**2,347.0**
Gross Heating Value (Water Saturated at 0.25636 psia)	BTU/ft3	**2,463.2**
Net Heating Value (Water Saturated at 0.25636 psia)	BTU/ft3	**2,266.2**
Gross Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/lb	**21,981.8**
Net Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/lb	**20,224.0**
Compressibility Factor "Z" (60 F, 14.696 psia)		**0.9827**

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **SFI-70-100-70%-can-SCD-48** ALS Project ID: P1604504
Client Project ID: **SFI Flare testing / sfi-16-elkcity.ok-comp#1** ALS Sample ID: P1604504-002

Test Code: ASTM D3588-98
Analyst: Mike Conejo/Adam McAfee Date Collected: 9/14/16
Sample Type: 6.0 L Silonite Canister Date Received: 9/22/16
Test Notes:
Container ID: SSC00306

Initial Pressure (psig): -0.70 Final Pressure (psig): 5.69

Canister Dilution Factor: 1.46

Components	Result Volume %	Result Weight %	Data Qualifier
Hydrogen	< 0.01	< 0.01	
Oxygen	**0.03**	**0.02**	
Nitrogen	**0.18**	**0.11**	
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	**99.77**	**99.85**	
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**	**81.60**
Hydrogen	**72.70**	**18.26**
Oxygen	< 0.10	< 0.10
Nitrogen	< 0.10	**0.11**
Sulfur	< 0.10	< 0.10

Specific Gravity (Air = 1)		**1.5213**
Specific Volume	ft3/lb	**8.61**
Gross Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/ft3	**2,554.9**
Net Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/ft3	**2,350.6**
Gross Heating Value (Water Saturated at 0.25636 psia)	BTU/ft3	**2,466.8**
Net Heating Value (Water Saturated at 0.25636 psia)	BTU/ft3	**2,269.6**
Gross Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/lb	**22,004.0**
Net Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/lb	**20,244.5**
Compressibility Factor "Z" (60 F, 14.696 psia)		**0.9827**

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **SFI-0-30-0%-can-SCD-48** ALS Project ID: P1604504
Client Project ID: **SFI Flare testing / sfi-16-elkcity.ok-comp#1** ALS Sample ID: P1604504-003

Test Code: ASTM D3588-98
Analyst: Mike Conejo/Adam McAfee Date Collected: 9/15/16
Sample Type: 6.0 L Silonite Canister Date Received: 9/22/16
Test Notes:
Container ID: SSC00298

Initial Pressure (psig): -1.12 Final Pressure (psig): 5.59

Canister Dilution Factor: 1.49

Components	Result Volume %	Result Weight %	Data Qualifier
Hydrogen	< 0.01	< 0.01	
Oxygen	**0.04**	**0.03**	
Nitrogen	**0.19**	**0.12**	
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	**99.75**	**99.83**	
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**	**81.59**
Hydrogen	**72.70**	**18.26**
Oxygen	< 0.10	< 0.10
Nitrogen	< 0.10	**0.12**
Sulfur	< 0.10	< 0.10

Specific Gravity (Air = 1)		**1.5212**
Specific Volume	ft3/lb	**8.61**
Gross Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/ft3	**2,554.3**
Net Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/ft3	**2,350.0**
Gross Heating Value (Water Saturated at 0.25636 psia)	BTU/ft3	**2,466.3**
Net Heating Value (Water Saturated at 0.25636 psia)	BTU/ft3	**2,269.1**
Gross Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/lb	**22,000.4**
Net Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/lb	**20,241.1**
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-48** ALS Project ID: P1604504
Client Project ID: **SFI Flare testing / sfi-16-elkcity.ok-comp#1** ALS Sample ID: P1604504-004

Test Code: ASTM D3588-98
Analyst: Mike Conejo/Adam McAfee Date Collected: 9/15/16
Sample Type: 6.0 L Silonite Canister Date Received: 9/22/16
Test Notes:
Container ID: SSC00022

Initial Pressure (psig): -1.12 Final Pressure (psig): 5.76

Canister Dilution Factor: 1.51

Components	Result Volume %	Result Weight %	Data Qualifier
Hydrogen	< 0.01	< 0.01	
Oxygen	**0.29**	**0.21**	
Nitrogen	**1.16**	**0.74**	
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	**98.53**	**99.03**	
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	**27.20**	**80.94**
Hydrogen	**72.53**	**18.11**
Oxygen	< 0.10	**0.21**
Nitrogen	**0.21**	**0.74**
Sulfur	< 0.10	< 0.10

Specific Gravity (Air = 1)		**1.5148**
Specific Volume	ft3/lb	**8.65**
Gross Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/ft3	**2,522.1**
Net Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/ft3	**2,320.4**
Gross Heating Value (Water Saturated at 0.25636 psia)	BTU/ft3	**2,436.2**
Net Heating Value (Water Saturated at 0.25636 psia)	BTU/ft3	**2,241.3**
Gross Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/lb	**21,815.5**
Net Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/lb	**20,071.0**
Compressibility Factor "Z" (60 F, 14.696 psia)		**0.9830**

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **SFI-90-100%-can-SCD-48**
Client Project ID: **SFI Flare testing / sfi-16-elkcity.ok-comp#1**

ALS Project ID: P1604504
ALS Sample ID: P1604504-001

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: SSC00249

Date Collected: 9/13/16
Date Received: 9/22/16
Date Analyzed: 10/4/16
Volume(s) Analyzed: 0.050 ml(s)

Initial Pressure (psig): -1.37 Final Pressure (psig): 5.86

Canister Dilution Factor: 1.54

Compound	**Result ppmV**	MRL ppmV	Data Qualifier
Methane	ND	15	
C_2 as Ethane	**51**	15	
C_3 as Propane	**1,000,000**	15	
C_4 as n-Butane	**25**	15	
C_5 as n-Pentane	ND	15	
C_6 as n-Hexane	ND	15	
C_6+ as n-Hexane	ND	31	

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-48** ALS Project ID: P1604504
Client Project ID: **SFI Flare testing / sfi-16-elkcity.ok-comp#1** ALS Sample ID: P1604504-002

Test Code: ASTM D1945-03 Date Collected: 9/14/16
Instrument ID: HP5890 II/GC8/FID Date Received: 9/22/16
Analyst: Adam McAfee Date Analyzed: 10/4/16
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.050 ml(s)
Test Notes:
Container ID: SSC00306

Initial Pressure (psig): -0.70 Final Pressure (psig): 5.69

Canister Dilution Factor: 1.46

Compound	**Result ppmV**	MRL ppmV	Data Qualifier
Methane	ND	15	
C_2 as Ethane	**51**	15	
C_3 as Propane	**1,000,000**	15	
C_4 as n-Butane	**25**	15	
C_5 as n-Pentane	ND	15	
C_6 as n-Hexane	ND	15	
C_6+ as n-Hexane	ND	29	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **SFI-0-30-0%-can-SCD-48**
Client Project ID: **SFI Flare testing / sfi-16-elkcity.ok-comp#1**

ALS Project ID: P1604504
ALS Sample ID: P1604504-003

Test Code: ASTM D1945-03
Instrument ID: HP5890 II/GC8/FID
Analyst: Adam McAfee
Sampling Media: 6.0 L Silonite Canister
Test Notes:
Container ID: SSC00298

Date Collected: 9/15/16
Date Received: 9/22/16
Date Analyzed: 10/4/16
Volume(s) Analyzed: 0.050 ml(s)

Initial Pressure (psig): -1.12 Final Pressure (psig): 5.59

Canister Dilution Factor: 1.49

Compound	**Result ppmV**	MRL ppmV	Data Qualifier
Methane	ND	15	
C_2 as Ethane	**49**	15	
C_3 as Propane	**1,000,000**	15	
C_4 as n-Butane	**25**	15	
C_5 as n-Pentane	ND	15	
C_6 as n-Hexane	ND	15	
C_6+ as n-Hexane	ND	30	

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-48** ALS Project ID: P1604504
Client Project ID: **SFI Flare testing / sfi-16-elkcity.ok-comp#1** ALS Sample ID: P1604504-004

Test Code: ASTM D1945-03 Date Collected: 9/15/16
Instrument ID: HP5890 II/GC8/FID Date Received: 9/22/16
Analyst: Adam McAfee Date Analyzed: 10/4/16
Sampling Media: 6.0 L Silonite Canister Volume(s) Analyzed: 0.050 ml(s)
Test Notes:
Container ID: SSC00022

Initial Pressure (psig): -1.12 Final Pressure (psig): 5.76

Canister Dilution Factor: 1.51

Compound	**Result ppmV**	MRL ppmV	Data Qualifier
Methane	ND	15	
C_2 as Ethane	**45**	15	
C_3 as Propane	**990,000**	15	
C_4 as n-Butane	**25**	15	
C_5 as n-Pentane	ND	15	
C_6 as n-Hexane	ND	15	
C_6+ as n-Hexane	ND	30	

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: P1604504
Client Project ID: **SFI Flare testing / sfi-16-elkcity.ok-comp#1** ALS Sample ID: P161004-MB

Test Code: ASTM D1945-03 Date Collected: NA
Instrument ID: HP5890 II/GC8/FID Date Received: NA
Analyst: Adam McAfee Date Analyzed: 10/04/16
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: P1604504
Client Project ID: **SFI Flare testing / sfi-16-elkcity.ok-comp#1** ALS Sample ID: P161004-LCS

Test Code: ASTM D1945-03 Date Collected: NA
Instrument ID: HP5890 II/GC8/FID Date Received: NA
Analyst: Adam McAfee Date Analyzed: 10/04/16
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	**1,000**	**99**	79-107	
Ethane	1,020	**1,030**	**101**	85-117	
Propane	1,040	**1,110**	**107**	85-116	
n-Butane	1,010	**1,080**	**107**	84-114	
n-Pentane	1,000	**1,030**	**103**	85-124	
n-Hexane	1,010	**1,130**	**112**	84-132	

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **SFI-90-100%-can-SCD-48** ALS Project ID: P1604504
Client Project ID: **SFI Flare testing / sfi-16-elkcity.ok-comp#1** ALS Sample ID: P1604504-001

Test Code: ASTM D1945-03 Date Collected: 9/13/16
Instrument ID: HP5890 II/GC1/TCD Date Received: 9/22/16
Analyst: Adam McAfee Date Analyzed: 9/28/16
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.10 ml(s)
Test Notes:
Container ID: SSC00249

Initial Pressure (psig): -1.37 Final Pressure (psig): 5.86

Canister Dilution Factor: 1.54

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
1333-74-0	Hydrogen	ND	0.15	
7782-44-7	Oxygen*	ND	0.15	
7727-37-9	**Nitrogen**	**0.296**	0.15	
630-08-0	Carbon Monoxide	ND	0.15	
124-38-9	Carbon Dioxide	ND	0.15	

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-48** ALS Project ID: P1604504
Client Project ID: **SFI Flare testing / sfi-16-elkcity.ok-comp#1** ALS Sample ID: P1604504-002

Test Code: ASTM D1945-03 Date Collected: 9/14/16
Instrument ID: HP5890 II/GC1/TCD Date Received: 9/22/16
Analyst: Adam McAfee Date Analyzed: 9/28/16
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.10 ml(s)
Test Notes:
Container ID: SSC00306

Initial Pressure (psig): -0.70 Final Pressure (psig): 5.69

Canister Dilution Factor: 1.46

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
1333-74-0	Hydrogen	ND	0.15	
7782-44-7	Oxygen*	ND	0.15	
7727-37-9	**Nitrogen**	**0.181**	0.15	
630-08-0	Carbon Monoxide	ND	0.15	
124-38-9	Carbon Dioxide	ND	0.15	

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-48** ALS Project ID: P1604504
Client Project ID: **SFI Flare testing / sfi-16-elkcity.ok-comp#1** ALS Sample ID: P1604504-003

Test Code: ASTM D1945-03 Date Collected: 9/15/16
Instrument ID: HP5890 II/GC1/TCD Date Received: 9/22/16
Analyst: Adam McAfee Date Analyzed: 9/28/16
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.10 ml(s)
Test Notes:
Container ID: SSC00298

Initial Pressure (psig): -1.12 Final Pressure (psig): 5.59

Canister Dilution Factor: 1.49

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
1333-74-0	Hydrogen	ND	0.15	
7782-44-7	Oxygen*	ND	0.15	
7727-37-9	**Nitrogen**	**0.194**	0.15	
630-08-0	Carbon Monoxide	ND	0.15	
124-38-9	Carbon Dioxide	ND	0.15	

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-48** ALS Project ID: P1604504
Client Project ID: **SFI Flare testing / sfi-16-elkcity.ok-comp#1** ALS Sample ID: P1604504-004

Test Code: ASTM D1945-03 Date Collected: 9/15/16
Instrument ID: HP5890 II/GC1/TCD Date Received: 9/22/16
Analyst: Adam McAfee Date Analyzed: 9/28/16
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.10 ml(s)
Test Notes:
Container ID: SSC00022

Initial Pressure (psig): -1.12 Final Pressure (psig): 5.76

Canister Dilution Factor: 1.51

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
1333-74-0	Hydrogen	ND	0.15	
7782-44-7	**Oxygen***	**0.288**	0.15	
7727-37-9	**Nitrogen**	**1.16**	0.15	
630-08-0	Carbon Monoxide	ND	0.15	
124-38-9	Carbon Dioxide	ND	0.15	

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: P1604504
Client Project ID: **SFI Flare testing / sfi-16-elkcity.ok-comp#1** ALS Sample ID: P160928-MB

Test Code: ASTM D1945-03 Date Collected: NA
Instrument ID: HP5890 II/GC1/TCD Date Received: NA
Analyst: Adam McAfee Date Analyzed: 9/28/16
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: P1604504
Client Project ID: **SFI Flare testing / sfi-16-elkcity.ok-comp#1** ALS Sample ID: P160928-LCS

Test Code: ASTM D1945-03 Date Collected: NA
Instrument ID: HP5890 II/GC1/TCD Date Received: NA
Analyst: Adam McAfee Date Analyzed: 9/28/16
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	**50,400**	**101**	94-105	
7782-44-7	Oxygen*	50,000	**52,600**	**105**	97-108	
7727-37-9	Nitrogen	50,000	**53,100**	**106**	89-113	
630-08-0	Carbon Monoxide	50,000	**51,800**	**104**	98-108	
124-38-9	Carbon Dioxide	50,000	**49,600**	**99**	94-104	

* = 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-90-100%-can-SCD-48**
Client Project ID: **SFI Flare testing / sfi-16-elkcity.ok-comp#1**

ALS Project ID: P1604504
ALS Sample ID: P1604504-001

Test Code: ASTM D 5504-12
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Mike Conejo
Sample Type: 6.0 L Silonite Canister
Test Notes:

Date Collected: 9/13/16
Time Collected: 15:30
Date Received: 9/22/16
Date Analyzed: 9/26/16
Time Analyzed: 10:00
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -1.37 Final Pressure (psig): 5.86

Canister Dilution Factor: 1.54

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	11	ND	7.7	
463-58-1	Carbonyl Sulfide	ND	19	ND	7.7	
74-93-1	Methyl Mercaptan	ND	15	ND	7.7	
75-08-1	Ethyl Mercaptan	ND	20	ND	7.7	
75-18-3	Dimethyl Sulfide	ND	20	ND	7.7	
75-15-0	Carbon Disulfide	ND	12	ND	3.9	
75-33-2	Isopropyl Mercaptan	ND	24	ND	7.7	
75-66-1	tert-Butyl Mercaptan	ND	28	ND	7.7	
107-03-9	n-Propyl Mercaptan	ND	24	ND	7.7	
624-89-5	Ethyl Methyl Sulfide	ND	24	ND	7.7	
110-02-1	Thiophene	ND	26	ND	7.7	
513-44-0	Isobutyl Mercaptan	ND	28	ND	7.7	
352-93-2	Diethyl Sulfide	ND	28	ND	7.7	
109-79-5	n-Butyl Mercaptan	ND	28	ND	7.7	
624-92-0	Dimethyl Disulfide	ND	15	ND	3.9	
616-44-4	3-Methylthiophene	ND	31	ND	7.7	
110-01-0	Tetrahydrothiophene	ND	28	ND	7.7	
638-02-8	2,5-Dimethylthiophene	ND	35	ND	7.7	
872-55-9	2-Ethylthiophene	ND	35	ND	7.7	
110-81-6	Diethyl Disulfide	ND	19	ND	3.9	

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-48**
Client Project ID: **SFI Flare testing / sfi-16-elkcity.ok-comp#1**

ALS Project ID: P1604504
ALS Sample ID: P1604504-002

Test Code: ASTM D 5504-12
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Mike Conejo
Sample Type: 6.0 L Silonite Canister
Test Notes:

Date Collected: 9/14/16
Time Collected: 12:45
Date Received: 9/22/16
Date Analyzed: 9/26/16
Time Analyzed: 10:14
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -0.70 Final Pressure (psig): 5.69

Canister Dilution Factor: 1.46

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	10	ND	7.3	
463-58-1	Carbonyl Sulfide	ND	18	ND	7.3	
74-93-1	Methyl Mercaptan	ND	14	ND	7.3	
75-08-1	Ethyl Mercaptan	ND	19	ND	7.3	
75-18-3	Dimethyl Sulfide	ND	19	ND	7.3	
75-15-0	Carbon Disulfide	ND	11	ND	3.7	
75-33-2	Isopropyl Mercaptan	ND	23	ND	7.3	
75-66-1	tert-Butyl Mercaptan	ND	27	ND	7.3	
107-03-9	n-Propyl Mercaptan	ND	23	ND	7.3	
624-89-5	Ethyl Methyl Sulfide	ND	23	ND	7.3	
110-02-1	Thiophene	ND	25	ND	7.3	
513-44-0	Isobutyl Mercaptan	ND	27	ND	7.3	
352-93-2	Diethyl Sulfide	ND	27	ND	7.3	
109-79-5	n-Butyl Mercaptan	ND	27	ND	7.3	
624-92-0	Dimethyl Disulfide	ND	14	ND	3.7	
616-44-4	3-Methylthiophene	ND	29	ND	7.3	
110-01-0	Tetrahydrothiophene	ND	26	ND	7.3	
638-02-8	2,5-Dimethylthiophene	ND	33	ND	7.3	
872-55-9	2-Ethylthiophene	ND	33	ND	7.3	
110-81-6	Diethyl Disulfide	ND	18	ND	3.7	

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-48**
Client Project ID: **SFI Flare testing / sfi-16-elkcity.ok-comp#1**

ALS Project ID: P1604504
ALS Sample ID: P1604504-003

Test Code: ASTM D 5504-12
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Mike Conejo
Sample Type: 6.0 L Silonite Canister
Test Notes:

Date Collected: 9/15/16
Time Collected: 12:55
Date Received: 9/22/16
Date Analyzed: 9/26/16
Time Analyzed: 10:28
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -1.12 Final Pressure (psig): 5.59

Canister Dilution Factor: 1.49

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	10	ND	7.5	
463-58-1	Carbonyl Sulfide	ND	18	ND	7.5	
74-93-1	Methyl Mercaptan	ND	15	ND	7.5	
75-08-1	Ethyl Mercaptan	ND	19	ND	7.5	
75-18-3	Dimethyl Sulfide	ND	19	ND	7.5	
75-15-0	Carbon Disulfide	ND	12	ND	3.7	
75-33-2	Isopropyl Mercaptan	ND	23	ND	7.5	
75-66-1	tert-Butyl Mercaptan	ND	27	ND	7.5	
107-03-9	n-Propyl Mercaptan	ND	23	ND	7.5	
624-89-5	Ethyl Methyl Sulfide	ND	23	ND	7.5	
110-02-1	Thiophene	ND	26	ND	7.5	
513-44-0	Isobutyl Mercaptan	ND	27	ND	7.5	
352-93-2	Diethyl Sulfide	ND	27	ND	7.5	
109-79-5	n-Butyl Mercaptan	ND	27	ND	7.5	
624-92-0	Dimethyl Disulfide	ND	14	ND	3.7	
616-44-4	3-Methylthiophene	ND	30	ND	7.5	
110-01-0	Tetrahydrothiophene	ND	27	ND	7.5	
638-02-8	2,5-Dimethylthiophene	ND	34	ND	7.5	
872-55-9	2-Ethylthiophene	ND	34	ND	7.5	
110-81-6	Diethyl Disulfide	ND	19	ND	3.7	

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-48**
Client Project ID: **SFI Flare testing / sfi-16-elkcity.ok-comp#1**

ALS Project ID: P1604504
ALS Sample ID: P1604504-004

Test Code: ASTM D 5504-12
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Mike Conejo
Sample Type: 6.0 L Silonite Canister
Test Notes:

Date Collected: 9/15/16
Time Collected: 18:50
Date Received: 9/22/16
Date Analyzed: 9/26/16
Time Analyzed: 10:45
Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -1.12 Final Pressure (psig): 5.76

Canister Dilution Factor: 1.51

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	11	ND	7.6	
463-58-1	Carbonyl Sulfide	ND	19	ND	7.6	
74-93-1	Methyl Mercaptan	ND	15	ND	7.6	
75-08-1	Ethyl Mercaptan	ND	19	ND	7.6	
75-18-3	Dimethyl Sulfide	ND	19	ND	7.6	
75-15-0	Carbon Disulfide	ND	12	ND	3.8	
75-33-2	Isopropyl Mercaptan	ND	24	ND	7.6	
75-66-1	tert-Butyl Mercaptan	ND	28	ND	7.6	
107-03-9	n-Propyl Mercaptan	ND	24	ND	7.6	
624-89-5	Ethyl Methyl Sulfide	ND	24	ND	7.6	
110-02-1	Thiophene	ND	26	ND	7.6	
513-44-0	Isobutyl Mercaptan	ND	28	ND	7.6	
352-93-2	Diethyl Sulfide	ND	28	ND	7.6	
109-79-5	n-Butyl Mercaptan	ND	28	ND	7.6	
624-92-0	Dimethyl Disulfide	ND	15	ND	3.8	
616-44-4	3-Methylthiophene	ND	30	ND	7.6	
110-01-0	Tetrahydrothiophene	ND	27	ND	7.6	
638-02-8	2,5-Dimethylthiophene	ND	35	ND	7.6	
872-55-9	2-Ethylthiophene	ND	35	ND	7.6	
110-81-6	Diethyl Disulfide	ND	19	ND	3.8	

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**
Client Project ID: **SFI Flare testing / sfi-16-elkcity.ok-comp#1**

ALS Project ID: P1604504
ALS Sample ID: P160926-MB

Test Code: ASTM D 5504-12
Instrument ID: Agilent 6890A/GC13/SCD
Analyst: Mike Conejo
Sample Type: 6.0 L Silonite Canister
Test Notes:

Date Collected: NA
Time Collected: NA
Date Received: NA
Date Analyzed: 9/26/16
Time Analyzed: 08:08
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

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: P1604504
Client Project ID: **SFI Flare testing / sfi-16-elkcity.ok-comp#1** ALS Sample ID: P160926-LCS

Test Code: ASTM D 5504-12 Date Collected: NA
Instrument ID: Agilent 6890A/GC13/SCD Date Received: NA
Analyst: Mike Conejo Date Analyzed: 9/26/16
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: NA ml(s)
Test Notes:

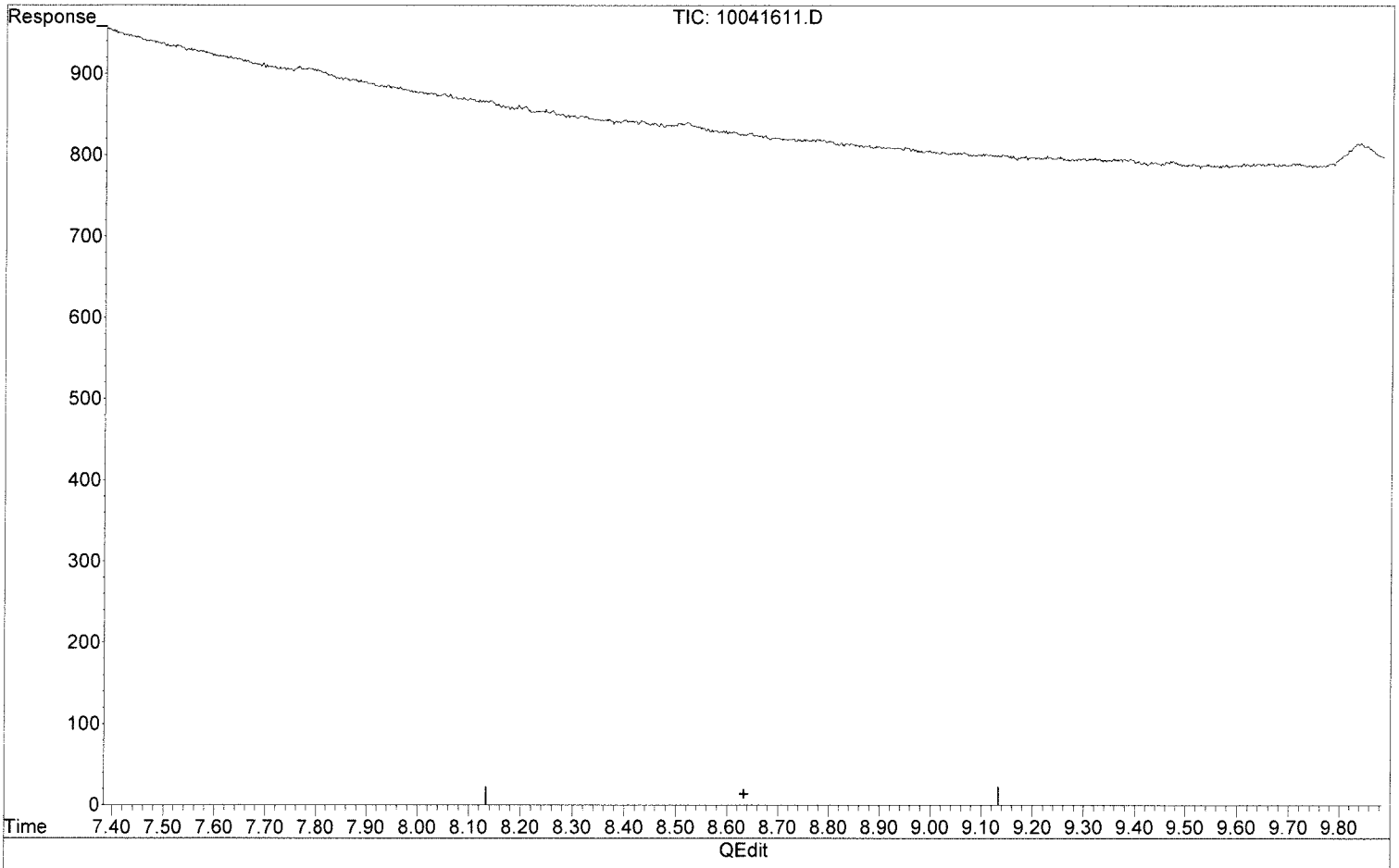
CAS #	Compound	Spike Amount ppbV	Result ppbV	% Recovery	ALS Acceptance Limits	Data Qualifier
7783-06-4	Hydrogen Sulfide	1,000	**879**	**88**	75-148	
463-58-1	Carbonyl Sulfide	1,000	**891**	**89**	70-137	
74-93-1	Methyl Mercaptan	1,000	**852**	**85**	72-139	

Quantitation Report (Qedit)

Data Path : I:\GC08\DATA\TO_3M\2016_10\04B\
Data File : 10041611.D
Signal(s) : FID2B.CH
Acq On : 04-Oct-2016, 16:10:08
Operator : amf
Sample : 4504-001 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 05 09:50:59 2016
Quant Method : I:\GC08\METHODS\BE100316.M
Quant Title : Benzene by GC/FID#8
QLast Update : Mon Oct 03 13:23:14 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



(1) Benzene (T)

8.634min 0.000 ppm

response 0

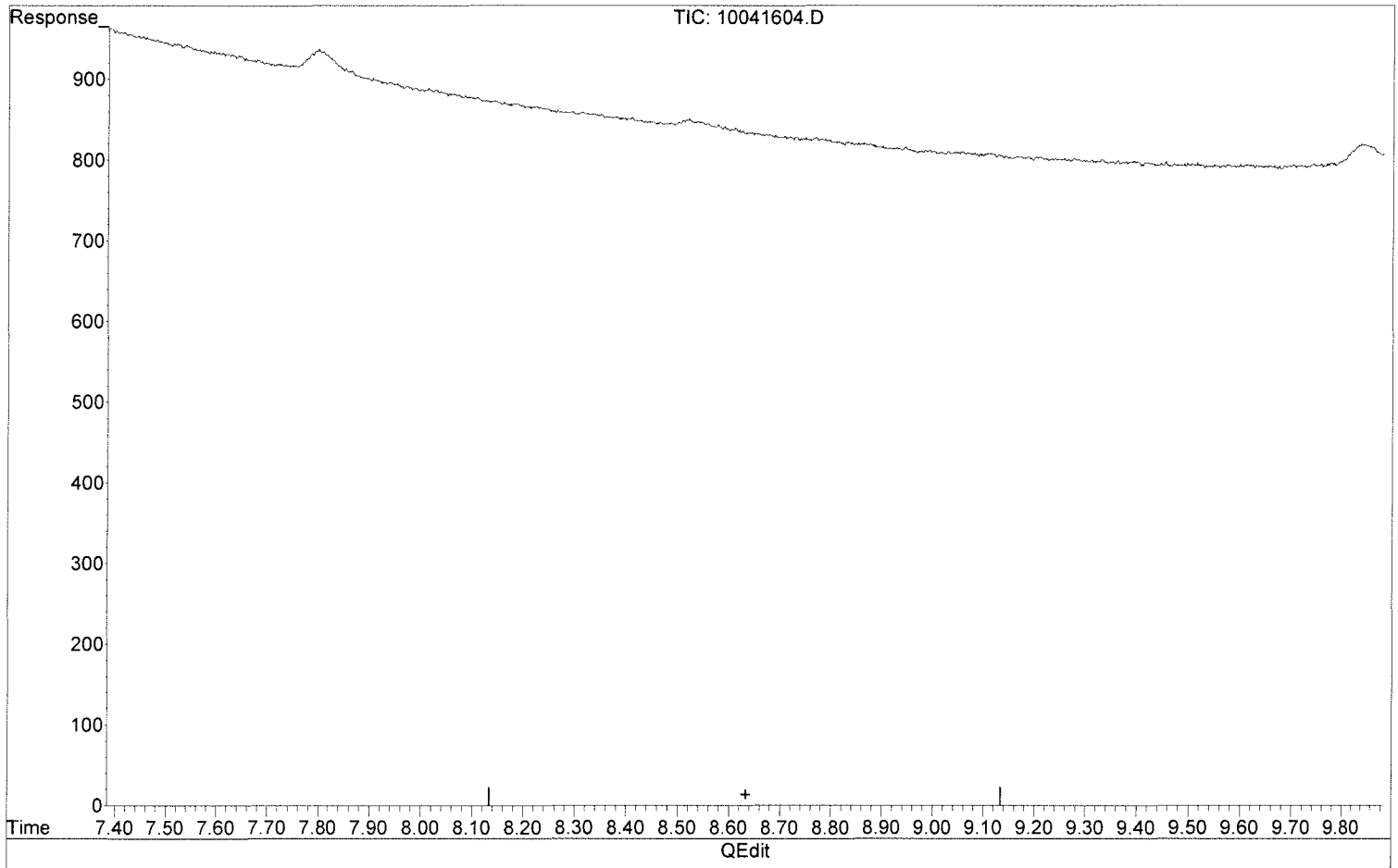
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : I:\GC08\DATA\TO_3M\2016_10\04B\
Data File : 10041604.D
Signal(s) : FID2B.CH
Acq On : 04-Oct-2016, 11:27:36
Operator : amf
Sample : 4504-002 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 05 09:50:15 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 :



(1) Benzene (T)

8.634min 0.000 ppm

response 0

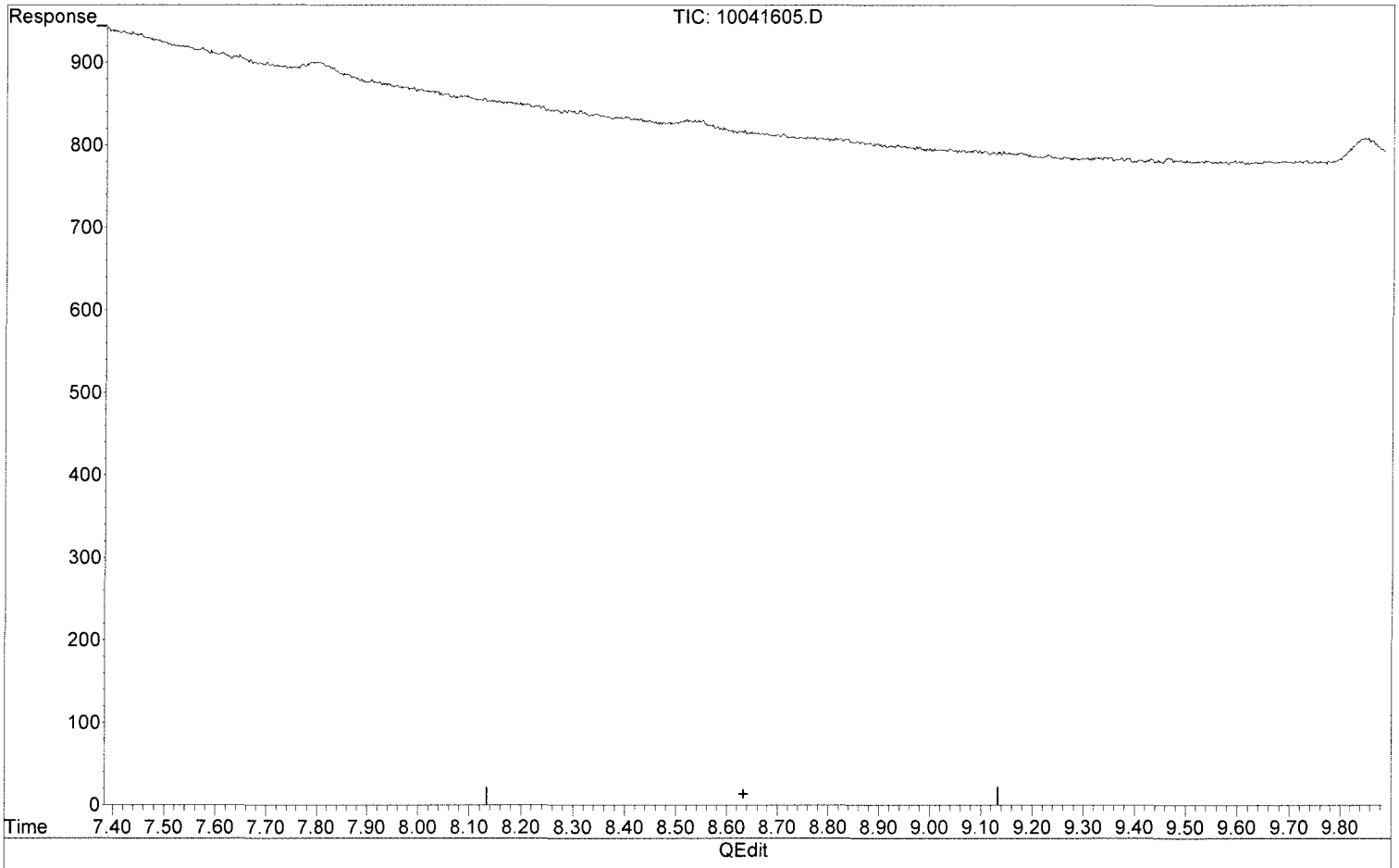
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : I:\GC08\DATA\TO_3M\2016_10\04B\
Data File : 10041605.D
Signal(s) : FID2B.CH
Acq On : 04-Oct-2016, 11:50:28
Operator : amf
Sample : 4504-003 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 05 09:50:28 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 :



(1) Benzene (T)

8.634min 0.000 ppm

response 0

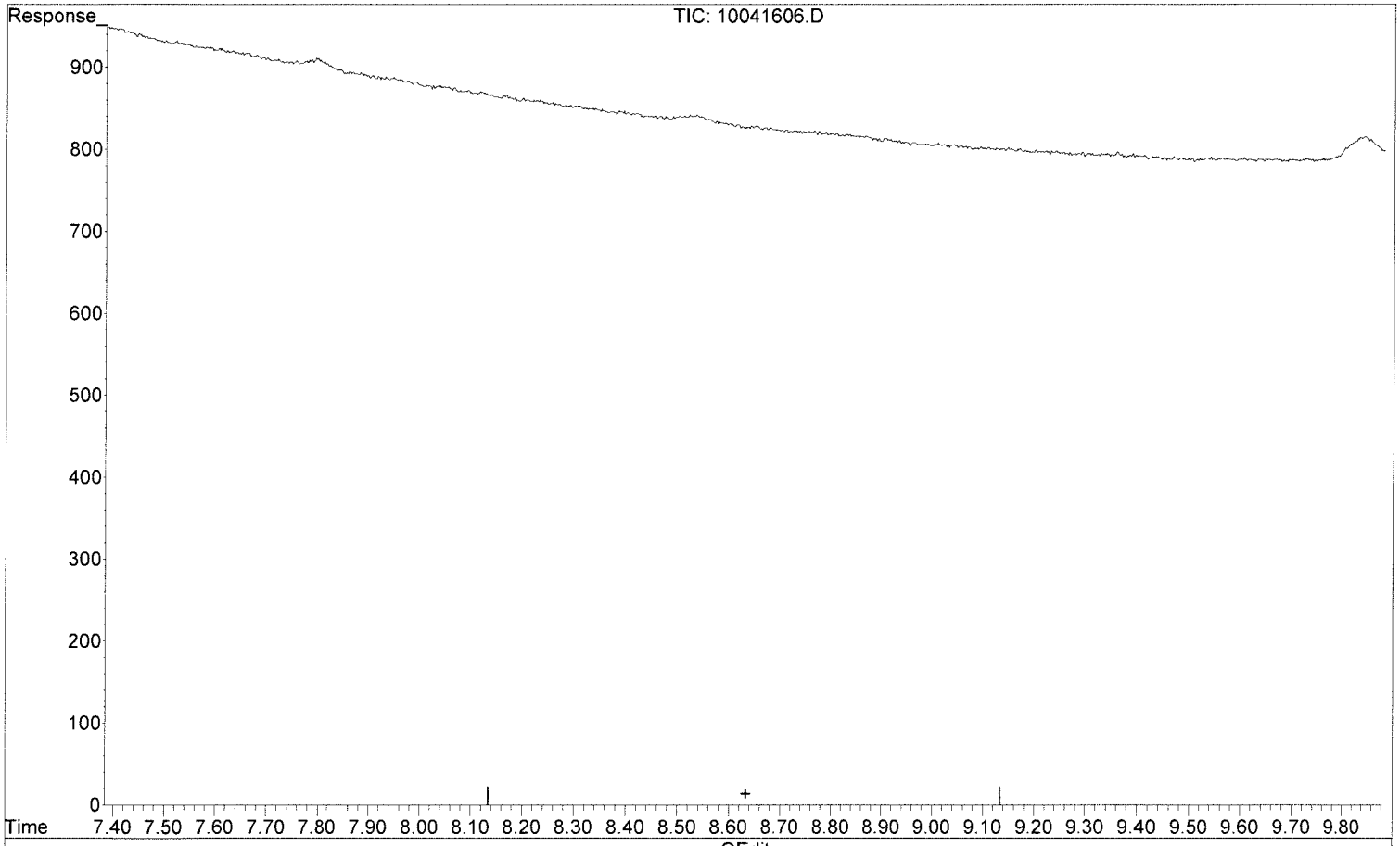
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : I:\GC08\DATA\TO_3M\2016_10\04B\
Data File : 10041606.D
Signal(s) : FID2B.CH
Acq On : 04-Oct-2016, 12:13:17
Operator : amf
Sample : 4504-004 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 05 09:50:43 2016
Quant Method : I:\GC08\METHODS\BE100316.M
Quant Title : Benzene by GC/FID#8
QLast Update : Mon Oct 03 13:23:14 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



(1) Benzene (T)

8.634min 0.000 ppm

response 0

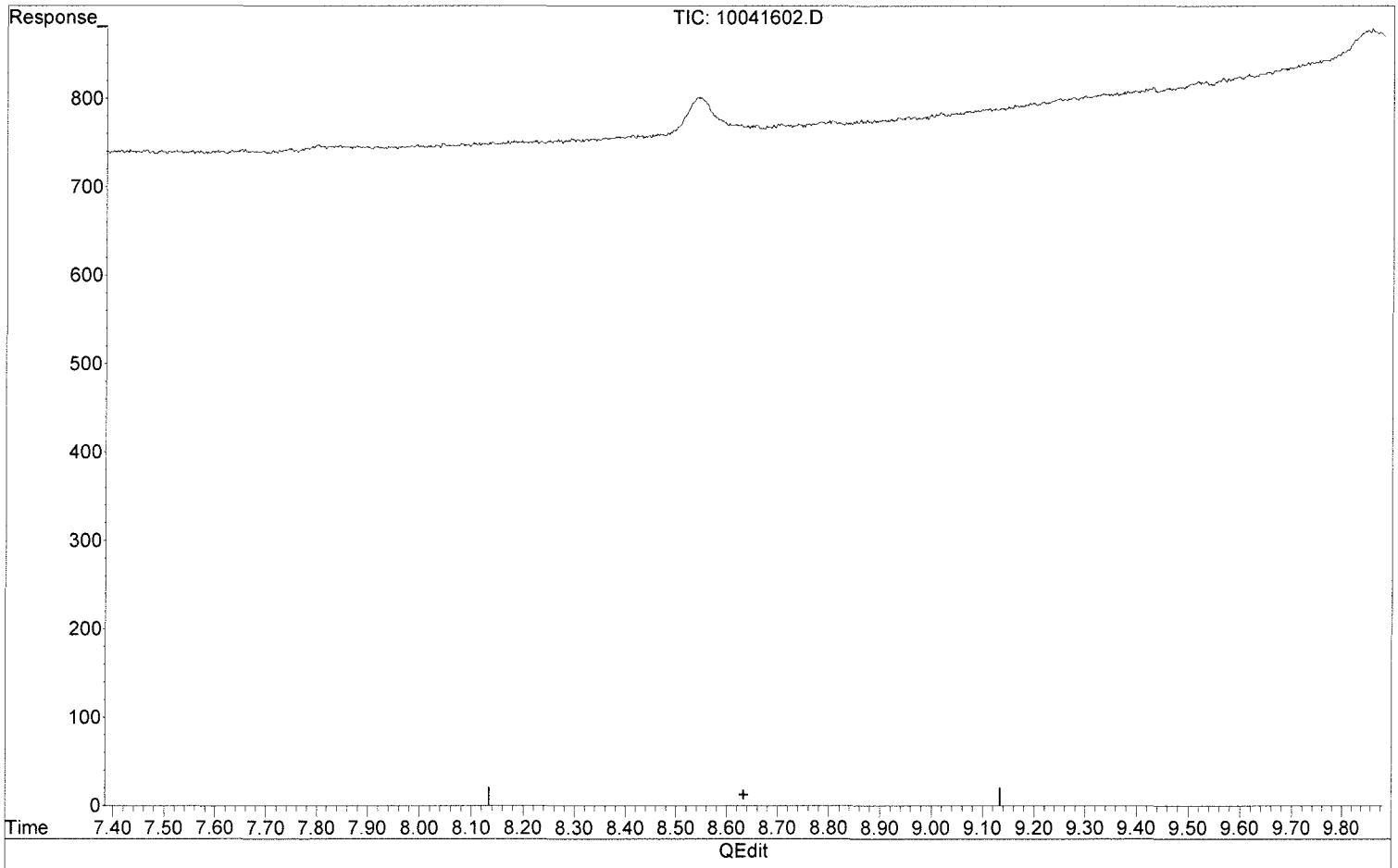
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : I:\GC08\DATA\TO_3M\2016_10\04B\
Data File : 10041602.D
Signal(s) : FID2B.CH
Acq On : 04-Oct-2016, 09:20:05
Operator : amf
Sample : mb 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 04 09:33:36 2016
Quant Method : I:\GC08\METHODS\BE100316.M
Quant Title : Benzene by GC/FID#8
QLast Update : Mon Oct 03 13:23:14 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



(1) Benzene (T)

8.634min 0.000 ppm

response 0

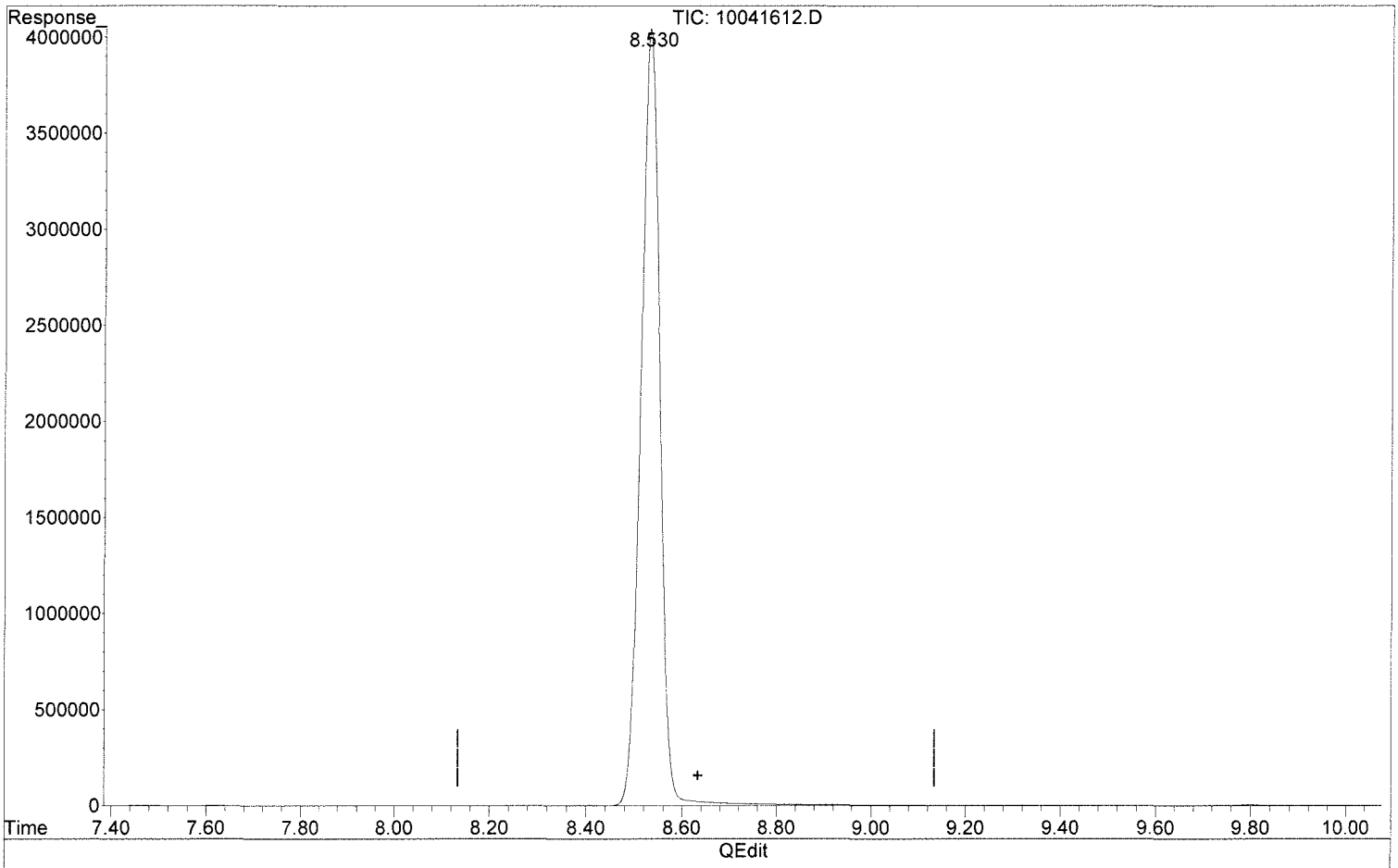
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : I:\GC08\DATA\TO_3M\2016_10\04B\
Data File : 10041612.D
Signal(s) : FID2B.CH
Acq On : 04-Oct-2016, 16:48:03
Operator : amf
Sample : lcs s30-10031604
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 04 16:58:49 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 :



(1) Benzene (T)

8.531min 1044.094 ppm

response 112611010

(+) = Expected Retention Time

Response Factor Report HP5890

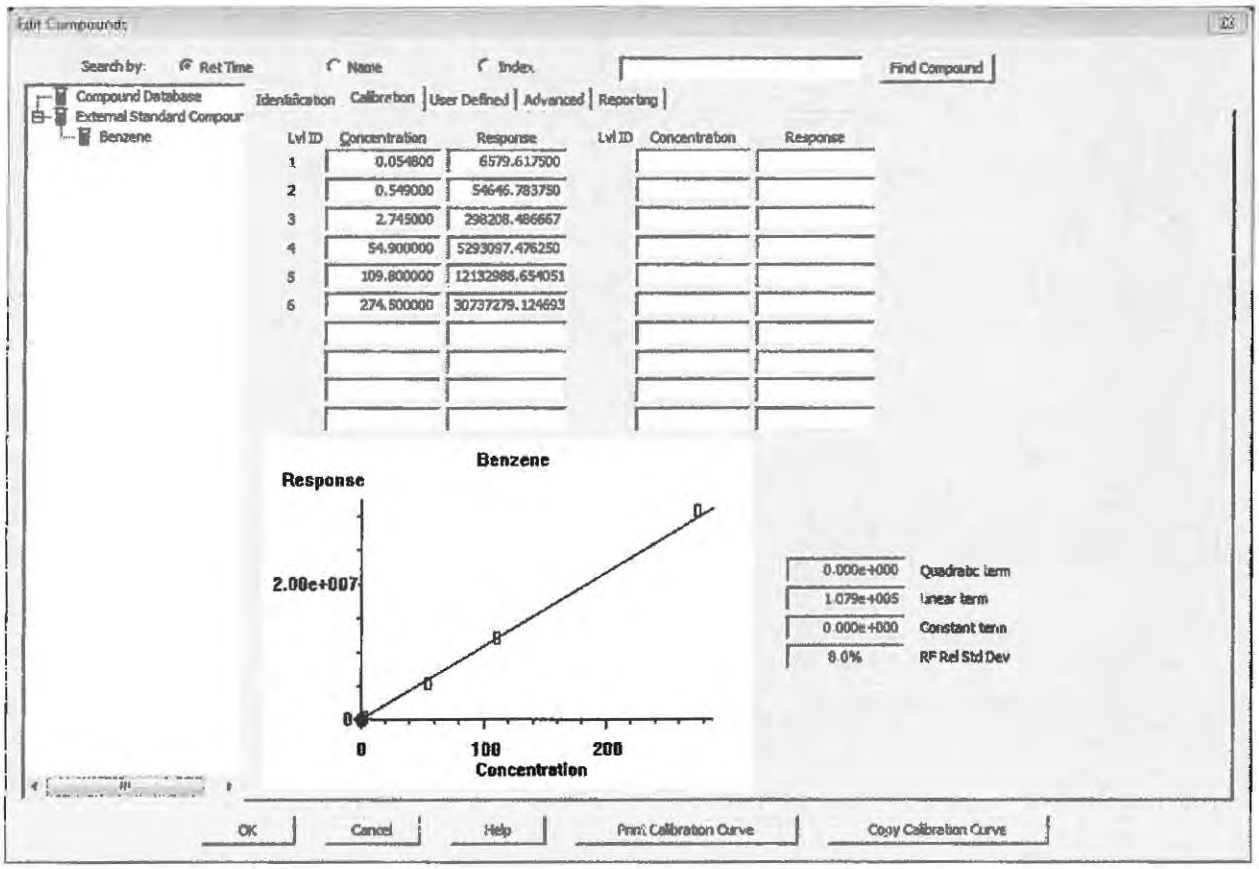
Method Path : I:\GC08\METHODS\
Method File : BE100316.M
Title : Benzene by GC/FID#8
Last Update : Mon Oct 03 13:23:14 2016
Response Via : Initial Calibration

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 Compound:
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
8.0% 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

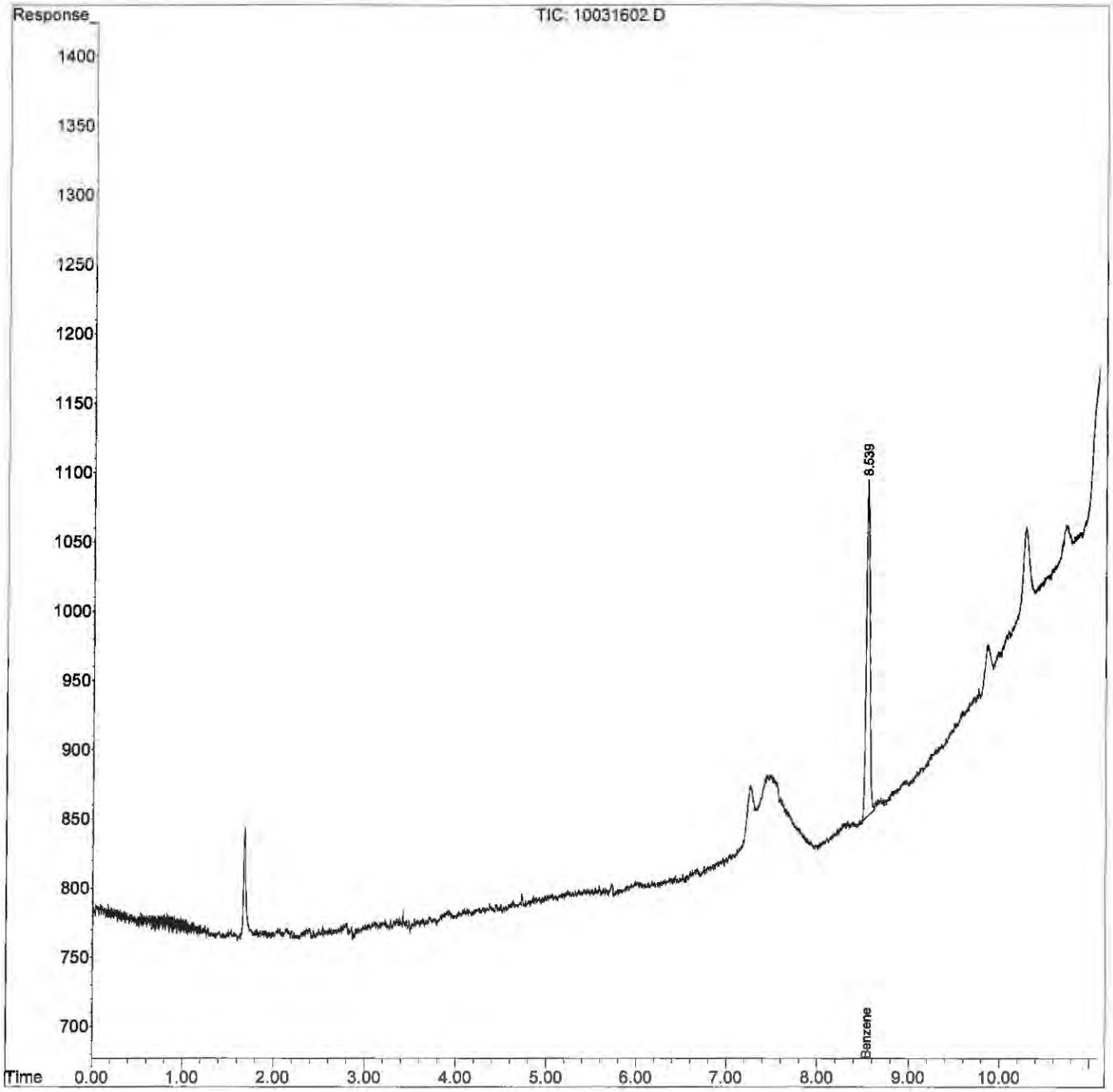
(f)=RT Delta > 1/2 Window (m)=manual int.

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

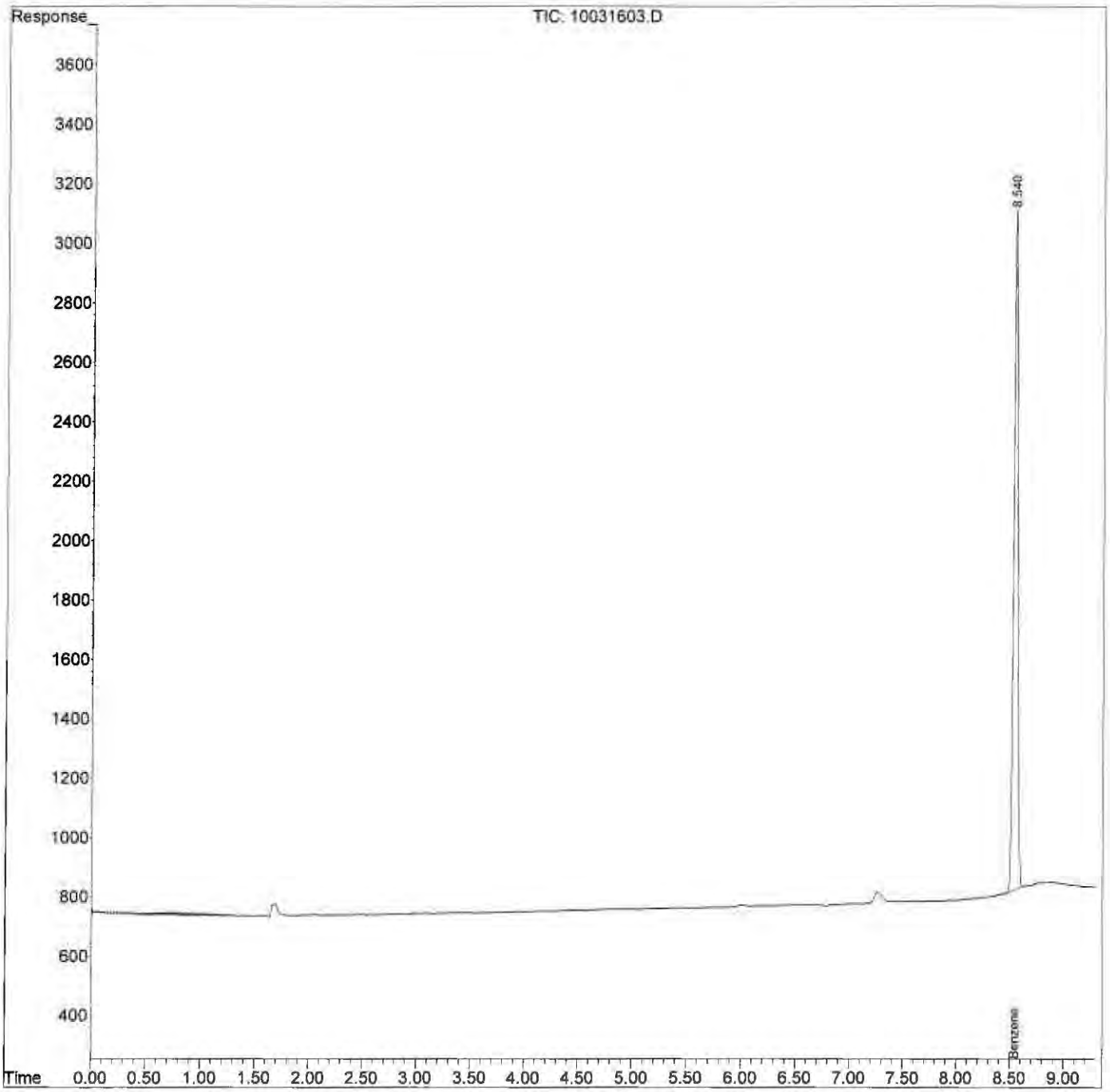
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



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

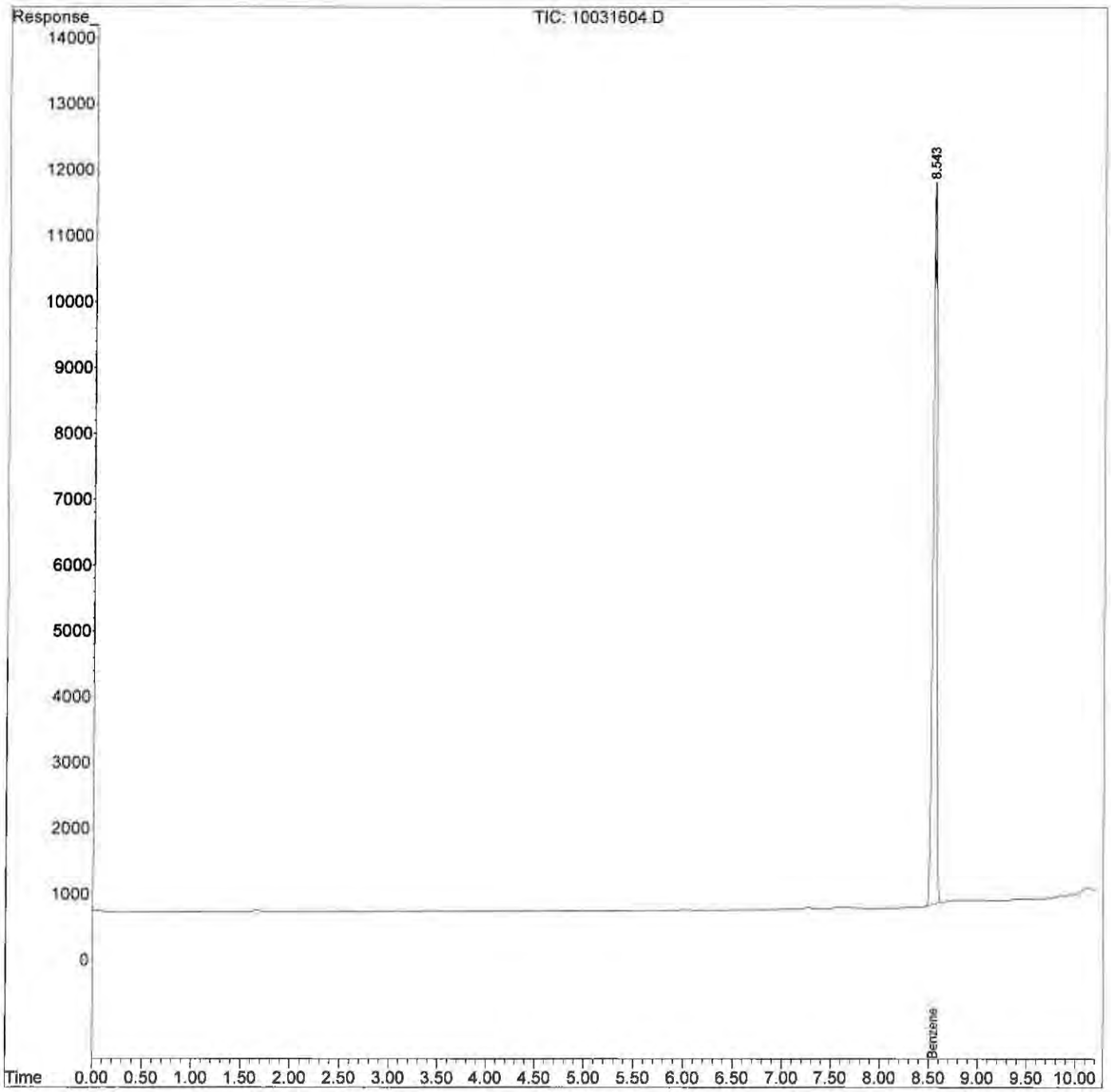
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



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

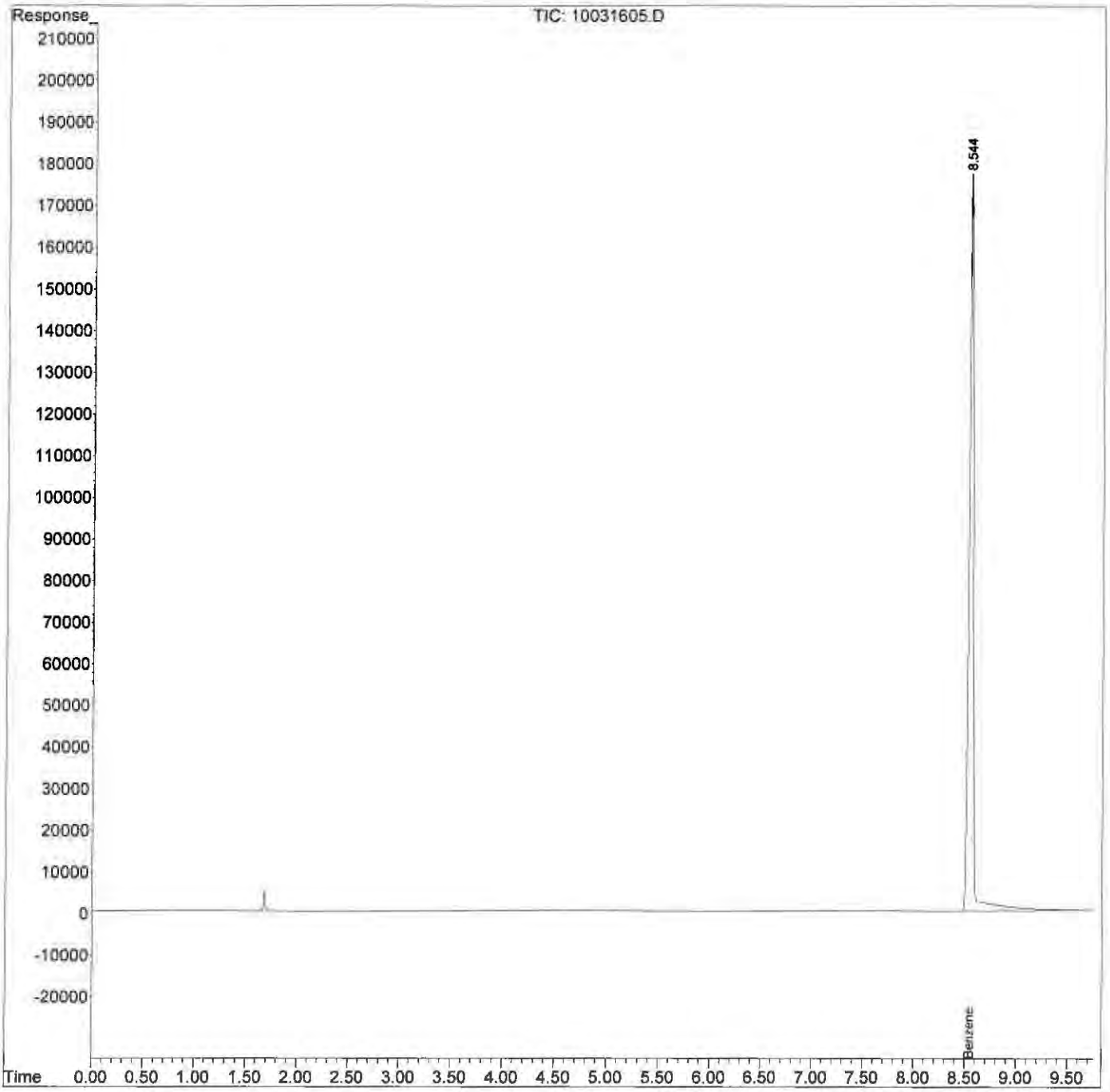
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



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

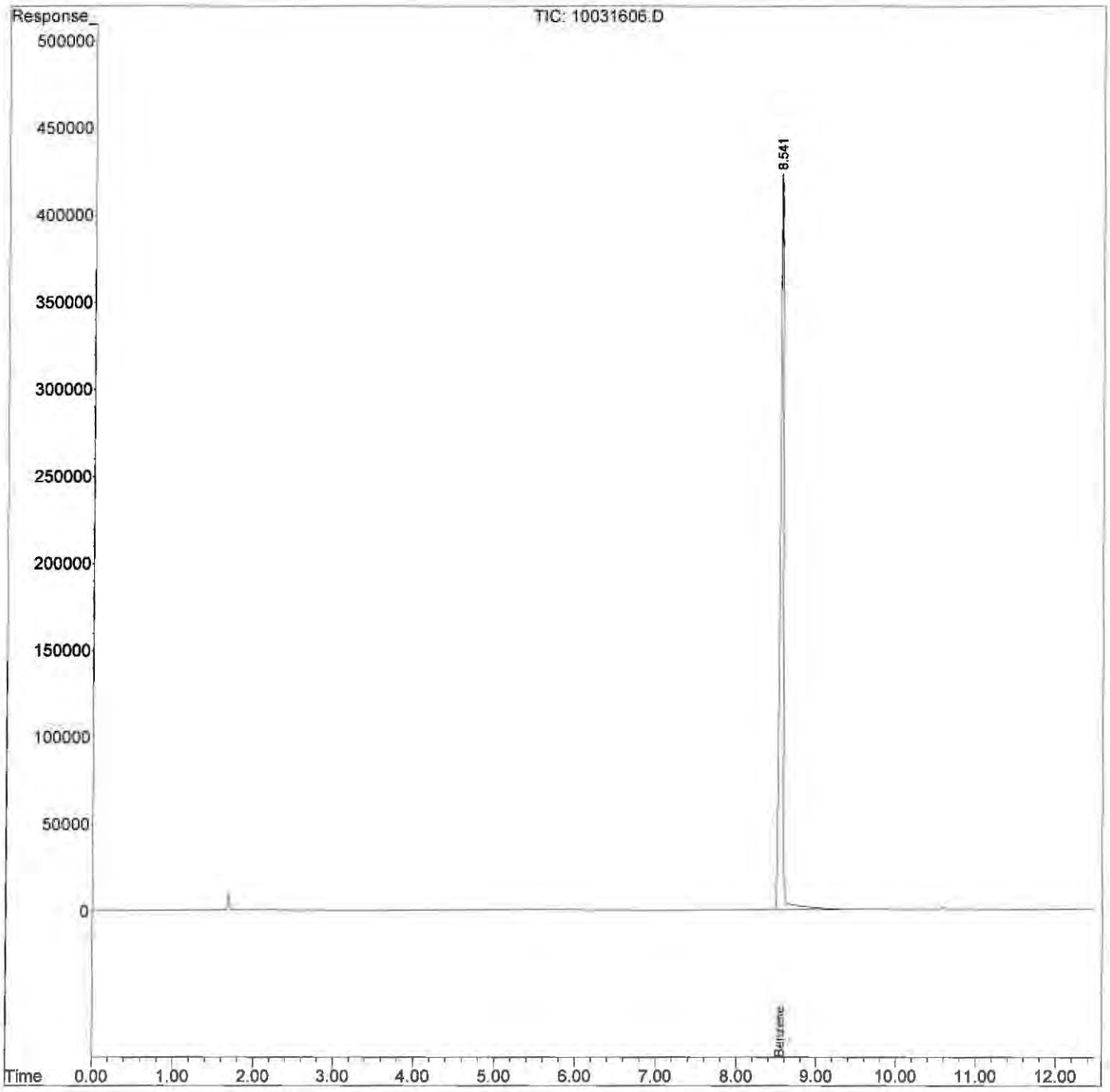
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



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

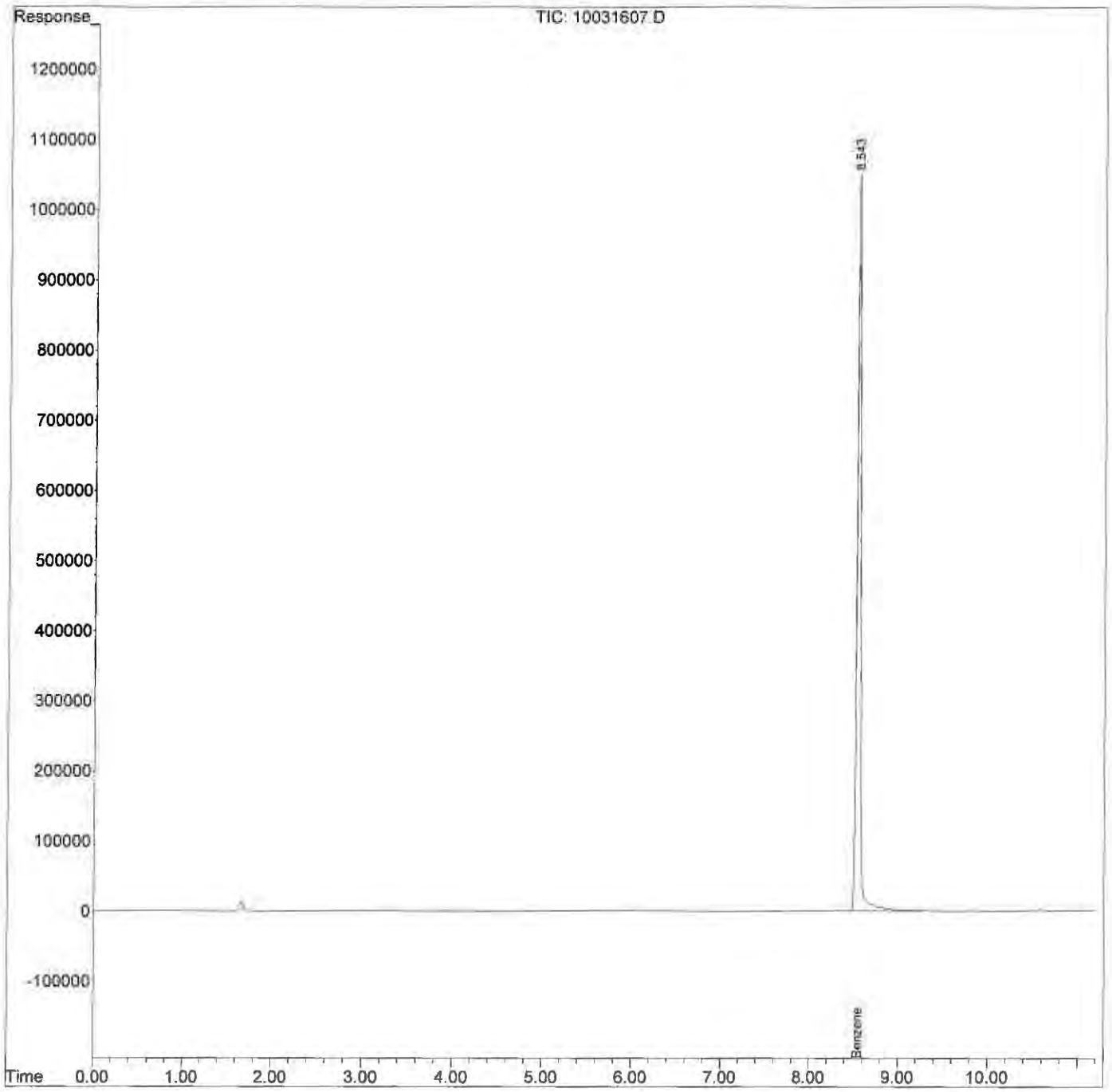
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

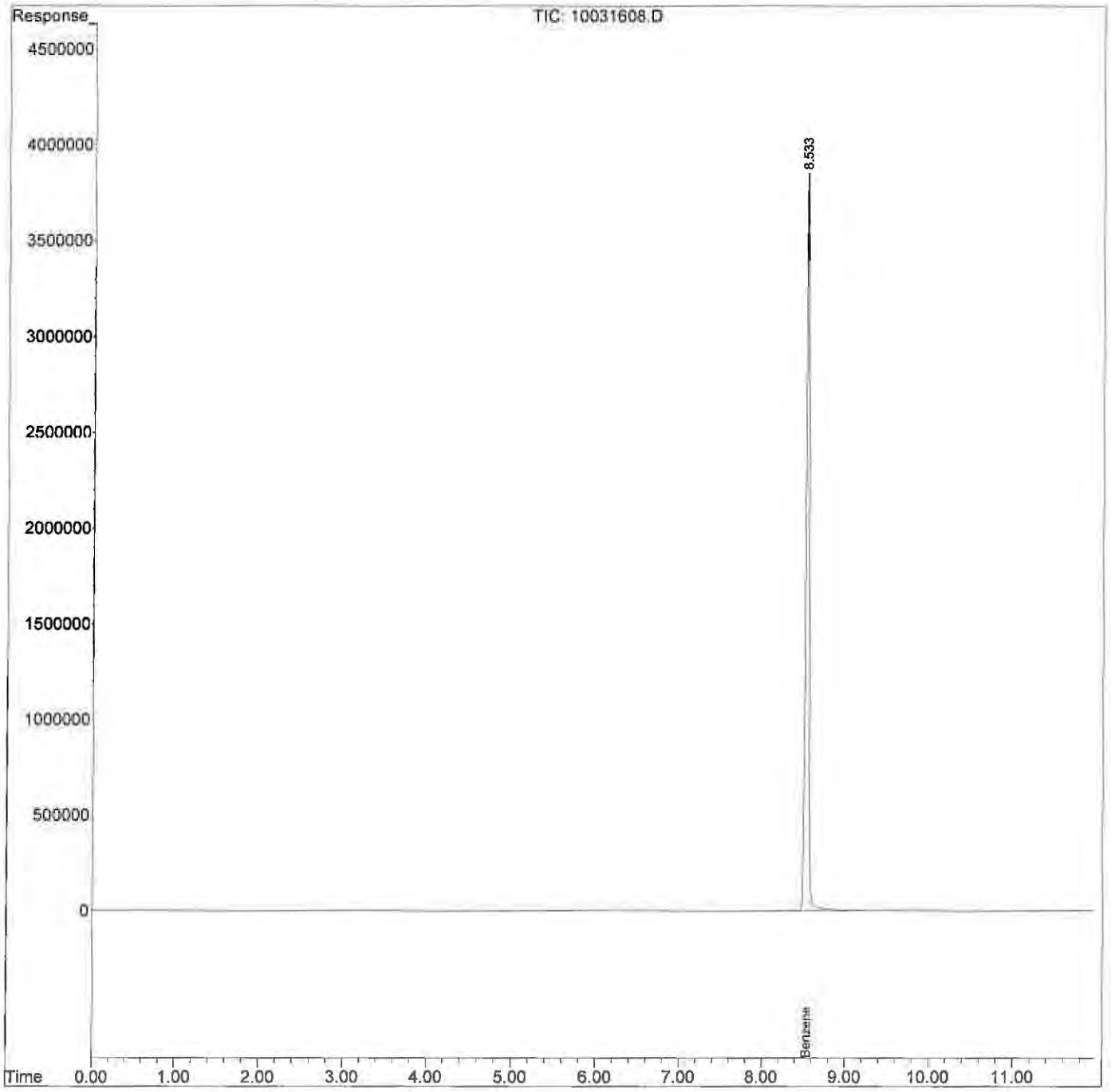
Compound	R.T.	Response	Conc Units
Target Compounds			
1) T Benzene	8.534	108105893	1002.324 ppm

(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 : ~~IRV~~
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 P1604504
Instrument : Instrument 8 / FID #8
Date Acquired : 10/4/2016

SAMPLE RESULT SUMMARIES (ppm)

Sample ID	Inject. Vol(ml)	Dilution DF	Benzene
std s30-10031601	1.0	1.0	1048.0
ACTUAL			1098.0
%Difference			4.6%
lcs s30-10031604	1.0	1.0	1044.00
ACTUAL			1098.0
%Recovery			95.1%
lcsds30-10031604	1.0	1.0	1058.00
ACTUAL			1098.0
%Recovery			96.4%
%RPD			1.3%
mb 1ml	1.0	1.0	0.00
4504-001 0.05m	0.1	1.0	0.00
4504-002 0.05m	0.1	1.0	0.00
4504-003 0.05m	0.1	1.0	0.00
4504-004 0.05m	0.1	1.0	0.00
std s30-100316010	1.0	1.0	1054.0
ACTUAL			1098.0
%Difference			4.0%

FINAL SAMPLE RESULT SUMMARIES (ppm)

Sample ID	Pi	Pf	Benzene
MRL			~~0.50~~ 0.6
mb 1ml	0.00	0.00	ND
4504-001 0.05m	-1.37	5.86	ND
4504-002 0.05m	-0.70	5.69	ND
4504-003 0.05m	-1.12	5.59	ND
4504-004 0.05m	-1.12	5.76	ND

hw 10/6/16

TGNMO-HC RESULT SUMMARIES (as ppm Methane)

Sample ID	PiPf DF
MRL(ppm Methane)	1.0
mb 1ml	1.00
4504-001 0.05m	1.54
4504-002 0.05m	1.46
4504-003 0.05m	1.49
4504-004 0.05m	1.51

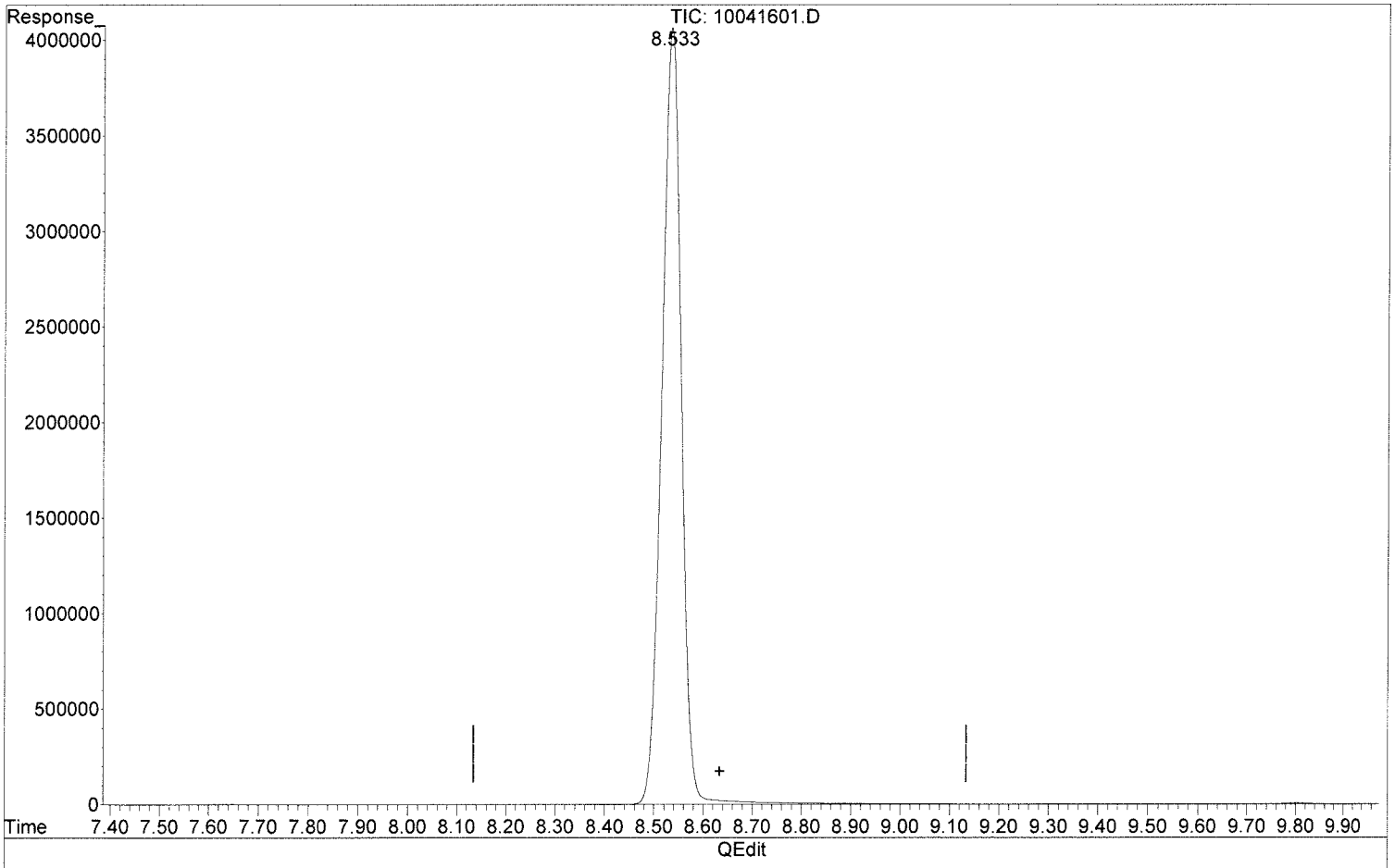
10/5/16

Quantitation Report (Qedit)

Data Path : I:\GC08\DATA\TO_3M\2016_10\04B\
Data File : 10041601.D
Signal(s) : FID2B.CH
Acq On : 04-Oct-2016, 08:45:19
Operator : amf
Sample : std s30-10031601
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 04 08:55:45 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 1048.468 ppm

response 113082828

10/5/16

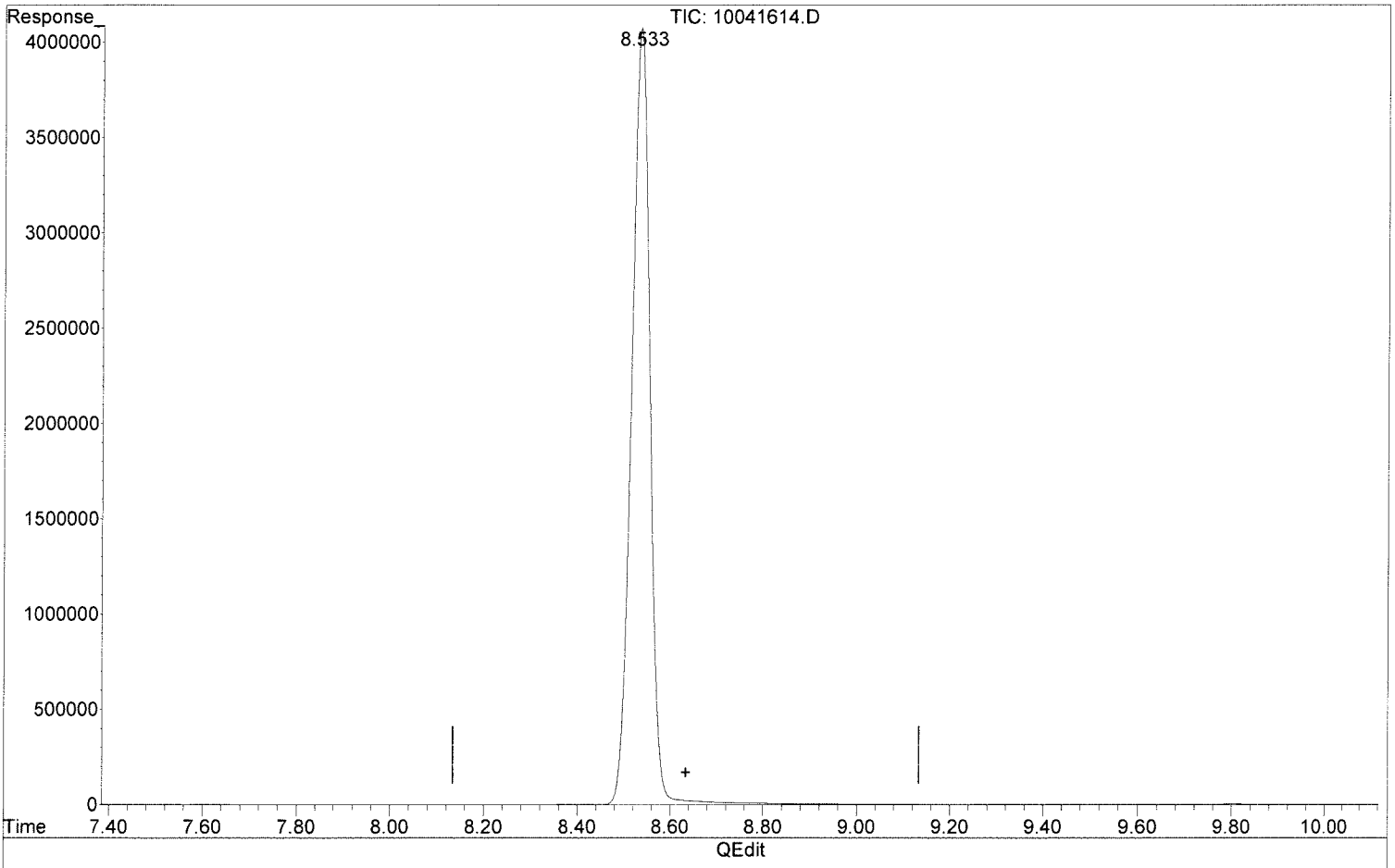
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : I:\GC08\DATA\TO_3M\2016_10\04B\
Data File : 10041614.D
Signal(s) : FID2B.CH
Acq On : 04-Oct-2016, 17:16:31
Operator : amf
Sample : std s30-10031601
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 04 17:26:52 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 1054.388 ppm

response 113721277

(+) = 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	
	FCV 10/3/16						

Injection Log

Directory: I:\GC08\DATA\TO_3M\2016_10\04B\

	Sample ID	Date/Time	Acquisition Method	File Name	Misc Info	Operator	Comments
	std s30-10031601	04-Oct-16, 08:45:19	TO3.M	10041601.D		amf	
	mb 1ml	04-Oct-16, 09:20:05	TO3.M	10041602.D		amf	
	4504-001 0.05ml	04-Oct-16, 11:04:51	TO3.M	10041603.D		amf	
	4504-002 0.05ml	04-Oct-16, 11:27:36	TO3.M	10041604.D		amf	
	4504-003 0.05ml	04-Oct-16, 11:50:28	TO3.M	10041605.D		amf	
	4504-004 0.05ml	04-Oct-16, 12:13:17	TO3.M	10041606.D		amf	
	4524-001 0.05ml	04-Oct-16, 12:36:14	TO3.M	10041607.D		amf	
	4524-002 0.05ml	04-Oct-16, 12:59:25	TO3.M	10041608.D		amf	
	4524-003 0.05ml	04-Oct-16, 13:38:50	TO3.M	10041609.D		amf	
	4524-004 0.05ml	04-Oct-16, 14:01:42	TO3.M	10041610.D		amf	
	4504-001 0.05ml	04-Oct-16, 16:10:08	TO3.M	10041611.D		amf	
	lcs s30-10031604	04-Oct-16, 16:48:03	TO3.M	10041612.D		amf	
	lcsds30-10031604	04-Oct-16, 17:01:05	TO3.M	10041613.D		amf	
	std s30-10031601	04-Oct-16, 17:16:31	TO3.M	10041614.D		amf	

Quantitation Report (QT Reviewed)

Data Path : I:\GC08\DATA\TO_3M\2016_10\04\
Data File : 10041606.D
Signal(s) : FID2B.CH
Acq On : 04-Oct-2016, 11:04:51
Operator : amf
Sample : 4504-001 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 04 12:52:06 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	1.673	2660	0.121	ppm	
2)	C2 as Ethane	2.036	140073	3.543	ppm	
3)	C3 as Propane	2.949f	4187480667	73900.662	ppm	m
4)	C4 as Butane	4.787	126966	1.690	ppm	m
5)	C5 as Pentane	6.388	3147	0.033	ppm	m
6)	C6 as Hexane	7.800	9529	0.092	ppm	m
7)	>C6_1 as Hexane	10.285f	3840	0.037	ppm	m
8)	>C6_2 as Hexane	13.416f	51597	0.496	ppm	m
9)	>C6_3 as Hexane	13.801f	9210	0.089	ppm	m

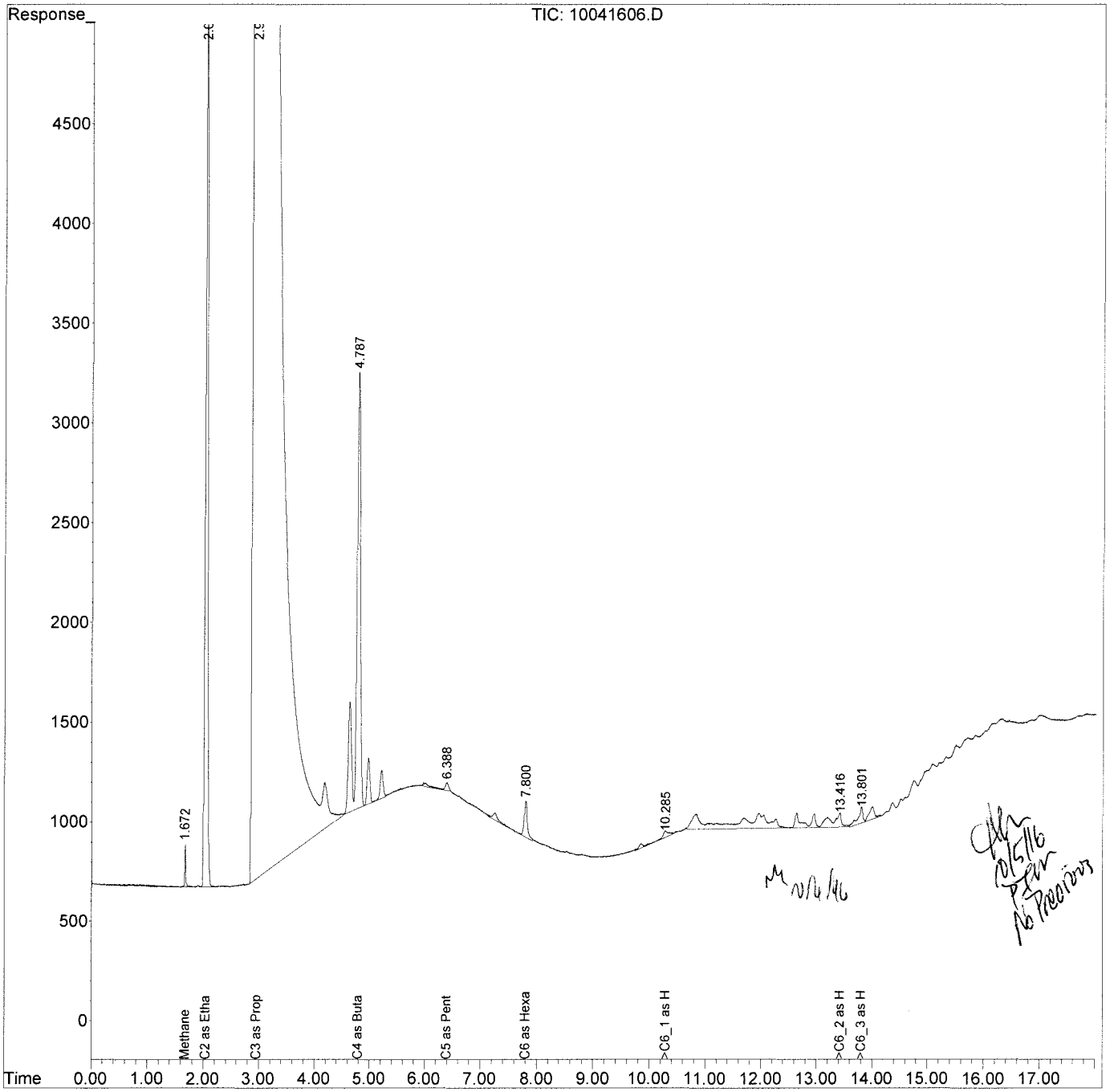
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC08\DATA\TO_3M\2016_10\04\
Data File : 10041606.D
Signal(s) : FID2B.CH
Acq On : 04-Oct-2016, 11:04:51
Operator : amf
Sample : 4504-001 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 04 12:52:06 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 :



Quantitation Report (QT Reviewed)

Data Path : I:\GC08\DATA\TO_3M\2016_10\04\
Data File : 10041607.D
Signal(s) : FID2B.CH
Acq On : 04-Oct-2016, 11:27:36
Operator : amf
Sample : 4504-002 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 04 12:53:33 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	1.678	1665	0.076	ppm	
2)	C2 as Ethane	2.039	91672	2.319	ppm	
3)	C3 as Propane	2.964f	2576632815	45472.418	ppm	m
4)	C4 as Butane	4.787	86369	1.149	ppm	m
5)	C5 as Pentane	0.000	0	N.D.	ppm	d
6)	C6 as Hexane	7.253f	4979	0.048	ppm	m
7)	>C6_1 as Hexane	10.277f	3660	0.035	ppm	m
8)	>C6_2 as Hexane	12.951f	19007	0.183	ppm	m
9)	>C6_3 as Hexane	13.795f	6566	0.063	ppm	m

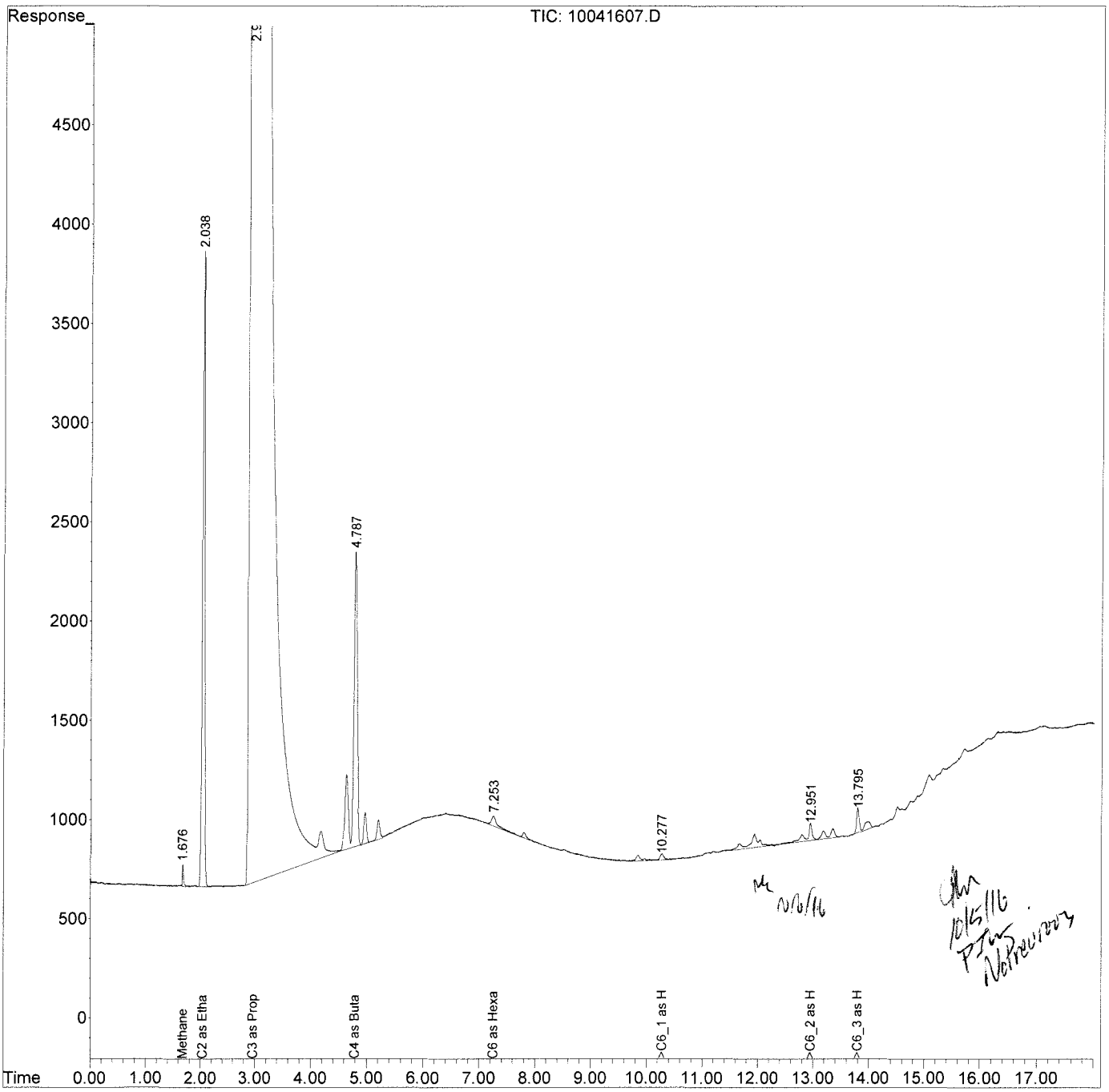
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC08\DATA\TO_3M\2016_10\04\
Data File : 10041607.D
Signal(s) : FID2B.CH
Acq On : 04-Oct-2016, 11:27:36
Operator : amf
Sample : 4504-002 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 04 12:53:33 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\04\
Data File : 10041608.D
Signal(s) : FID2B.CH
Acq On : 04-Oct-2016, 11:50:28
Operator : amf
Sample : 4504-003 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 04 13:41:36 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	1.671	1486	0.068	ppm	
2)	C2 as Ethane	2.034	80257	2.030	ppm	
3)	C3 as Propane	2.961f	2363271792	41707.022	ppm	m
4)	C4 as Butane	4.784	77570	1.032	ppm	m
5)	C5 as Pentane	5.207f	3210	0.034	ppm	m
6)	C6 as Hexane	7.250f	3776	0.036	ppm	m
7)	>C6_1 as Hexane	10.257f	2978	0.029	ppm	m
8)	>C6_2 as Hexane	12.948f	18135	0.174	ppm	m
9)	>C6_3 as Hexane	13.794f	7862	0.076	ppm	m

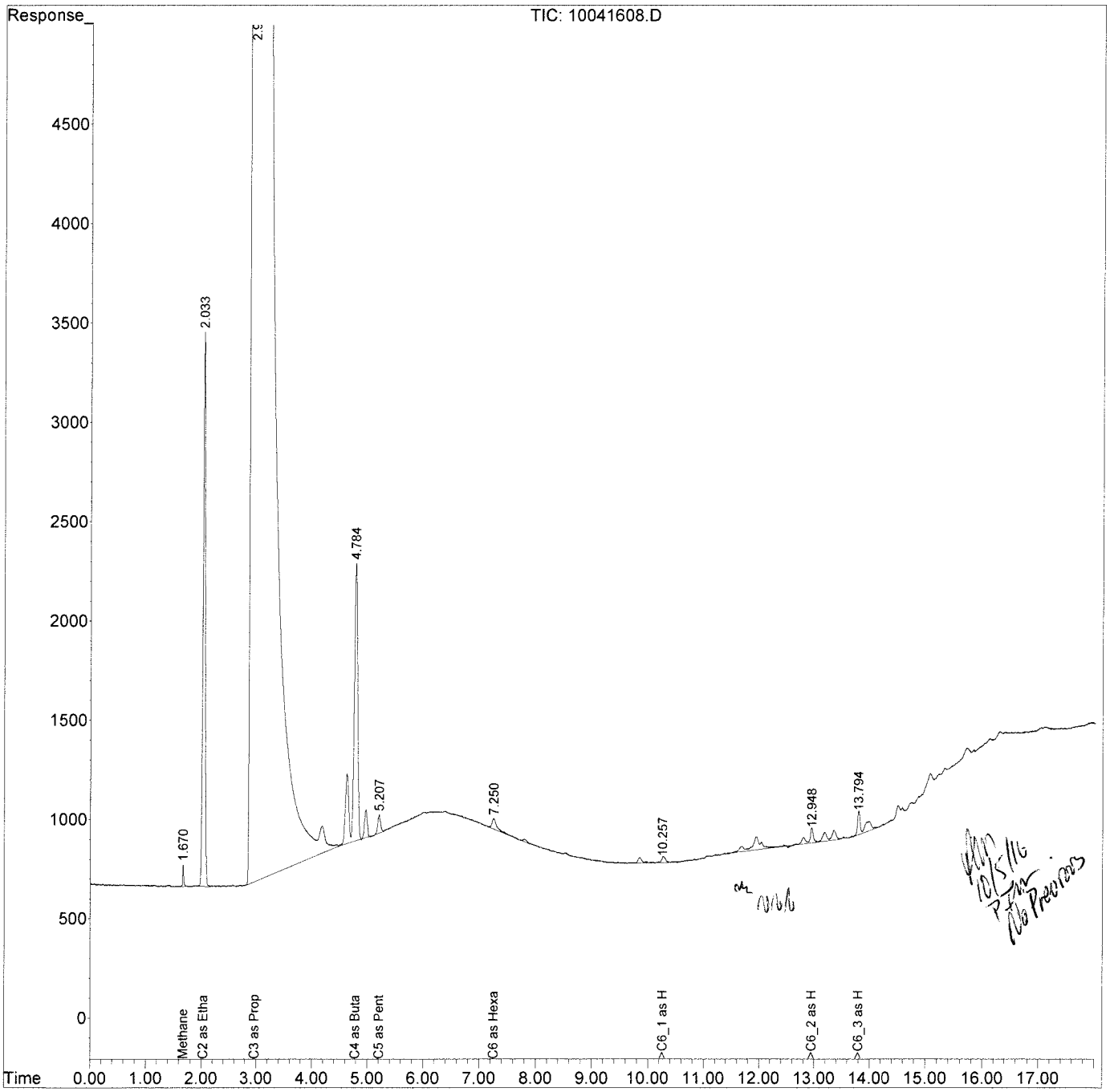
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC08\DATA\TO_3M\2016_10\04\
Data File : 10041608.D
Signal(s) : FID2B.CH
Acq On : 04-Oct-2016, 11:50:28
Operator : amf
Sample : 4504-003 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 04 13:41:36 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\04\
Data File : 10041609.D
Signal(s) : FID2B.CH
Acq On : 04-Oct-2016, 12:13:17
Operator : amf
Sample : 4504-004 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 04 13:43:01 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	1.674	1178	0.054	ppm	
2)	C2 as Ethane	2.037	78177	1.977	ppm	
3)	C3 as Propane	2.962f	2461104836	43433.580	ppm	m
4)	C4 as Butane	4.783	81905	1.090	ppm	m
5)	C5 as Pentane	5.199f	3660	0.039	ppm	m
6)	C6 as Hexane	7.257f	2028	0.019	ppm	m
7)	>C6_1 as Hexane	10.266f	3350	0.032	ppm	m
8)	>C6_2 as Hexane	12.947f	17686	0.170	ppm	m
9)	>C6_3 as Hexane	13.788f	8050	0.077	ppm	m

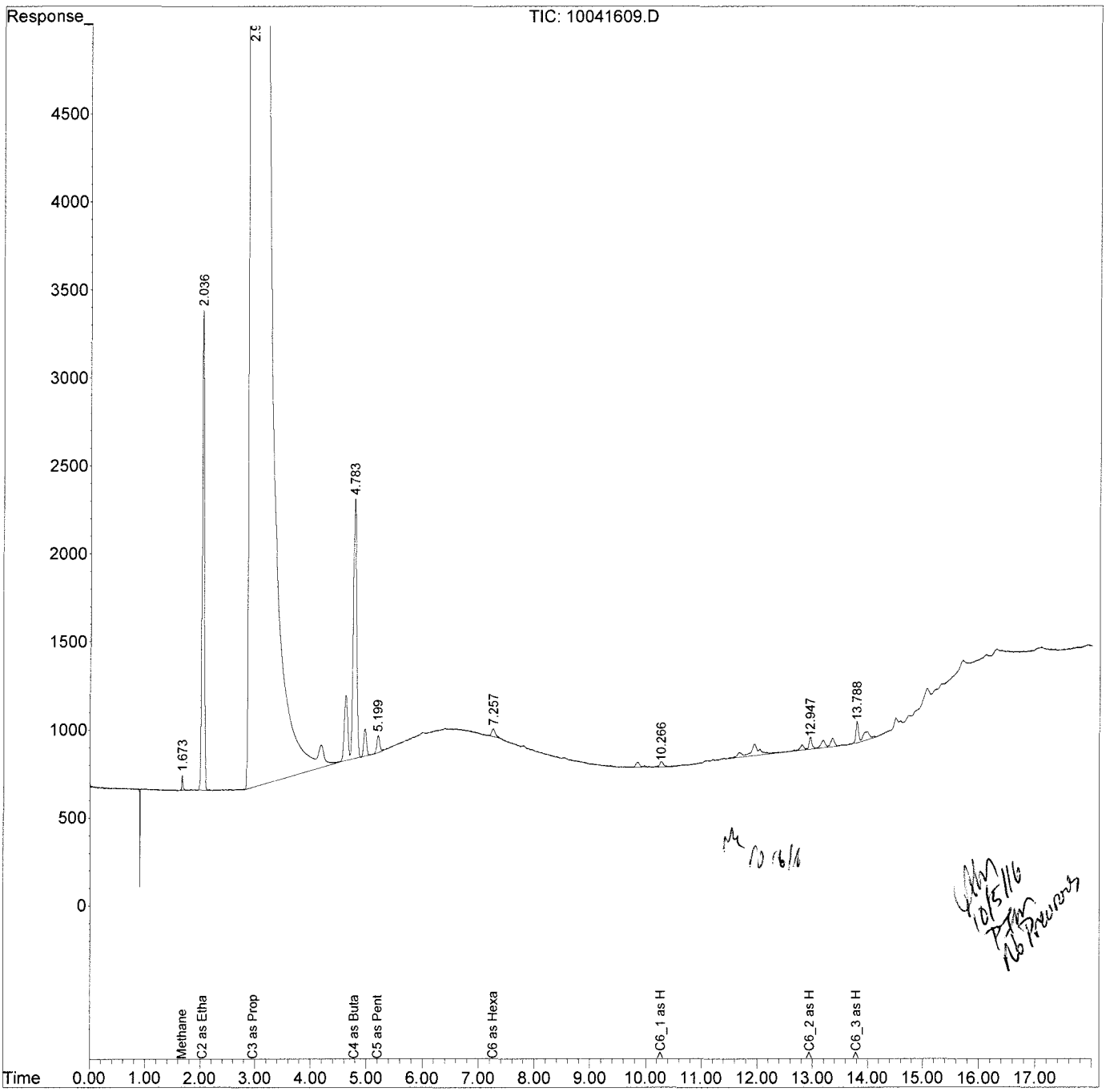
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC08\DATA\TO_3M\2016_10\04\
Data File : 10041609.D
Signal(s) : FID2B.CH
Acq On : 04-Oct-2016, 12:13:17
Operator : amf
Sample : 4504-004 0.05ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 04 13:43:01 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\04\
Data File : 10041602.D
Signal(s) : FID2B.CH
Acq On : 04-Oct-2016, 09:43:03
Operator : amf
Sample : mb 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 04 10:41:42 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 :

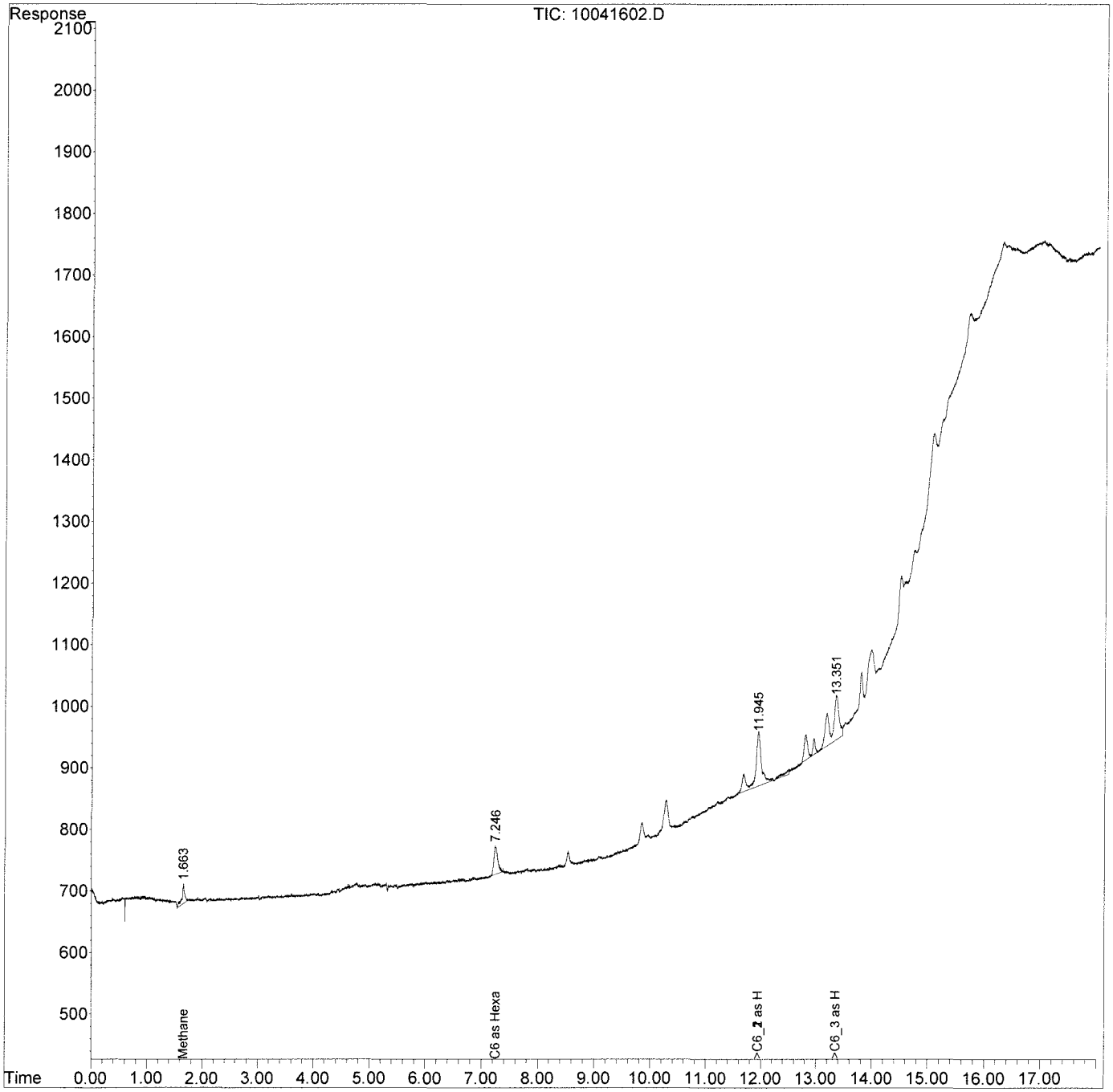
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Methane	1.664	1072	0.049	ppm	
2)	C2 as Ethane	0.000	0	N.D.	ppm	
3)	C3 as Propane	0.000	0	N.D.	ppm	
4)	C4 as Butane	0.000	0	N.D.	ppm	
5)	C5 as Pentane	0.000	0	N.D.	ppm	
6)	C6 as Hexane	7.246f	2224	0.021	ppm	m
7)	>C6_1 as Hexane	11.945f	12614	0.121	ppm	m
8)	>C6_2 as Hexane	11.945f	7695	0.074	ppm	m
9)	>C6_3 as Hexane	13.351f	9723	0.093	ppm	m

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

Data Path : I:\GC08\DATA\TO_3M\2016_10\04\
Data File : 10041602.D
Signal(s) : FID2B.CH
Acq On : 04-Oct-2016, 09:43:03
Operator : amf
Sample : mb 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 04 10:41:42 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\04\
Data File : 10041604.D
Signal(s) : FID2B.CH
Acq On : 04-Oct-2016, 10:38:26
Operator : amf
Sample : lcs s30-08011601
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 04 10:49:11 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	11018888	502.389	ppm
2)	C2 as Ethane	2.019	20402861	516.035	ppm
3)	C3 as Propane	3.068	31343628	553.152	ppm
4)	C4 as Butane	4.779	40547118	539.625	ppm
5)	C5 as Pentane	6.383	49130637	517.236	ppm
6)	C6 as Hexane	7.790	58610245	563.348	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

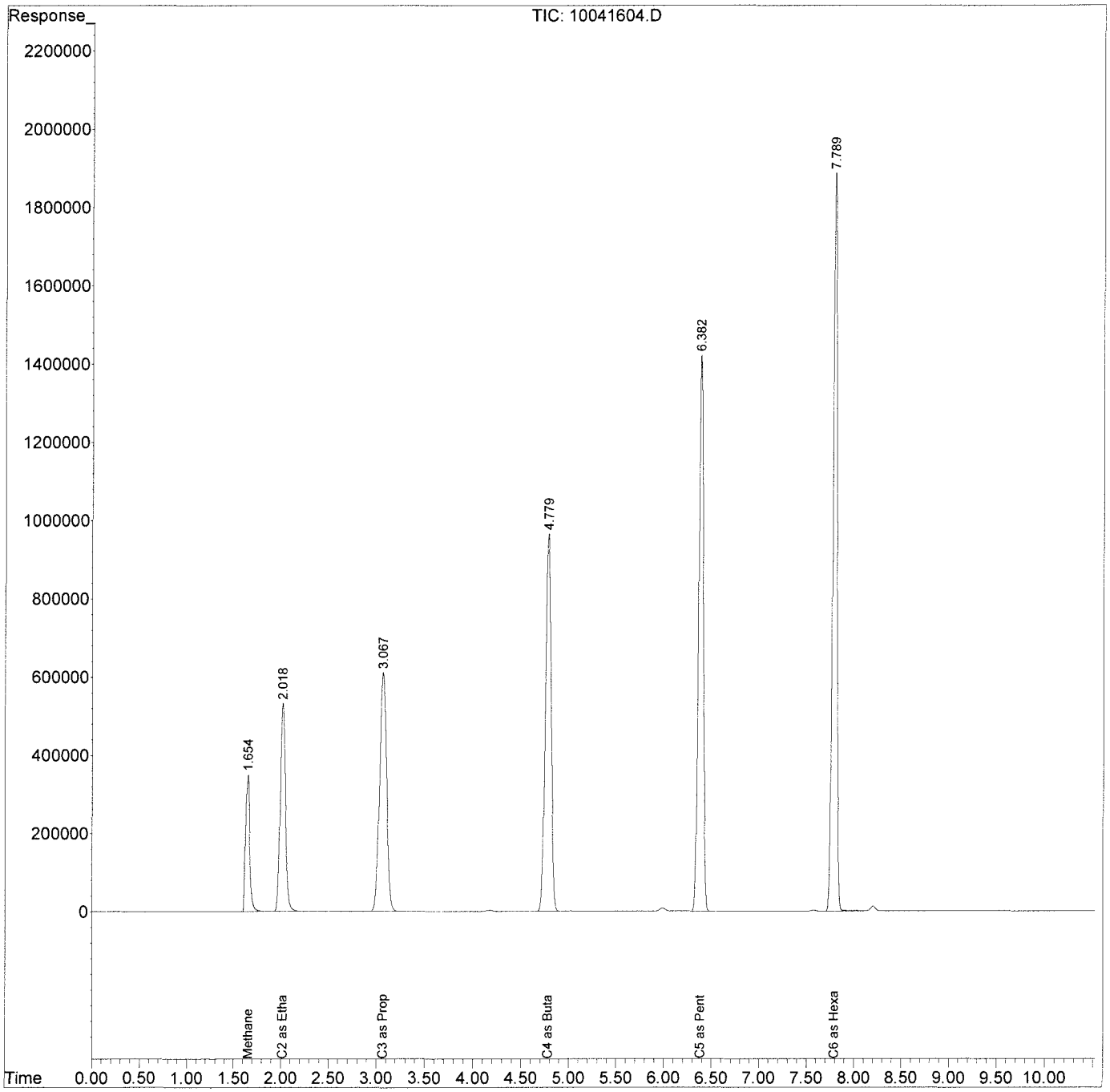
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC08\DATA\TO_3M\2016_10\04\
Data File : 10041604.D
Signal(s) : FID2B.CH
Acq On : 04-Oct-2016, 10:38:26
Operator : amf
Sample : lcs s30-08011601
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 04 10:49:11 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

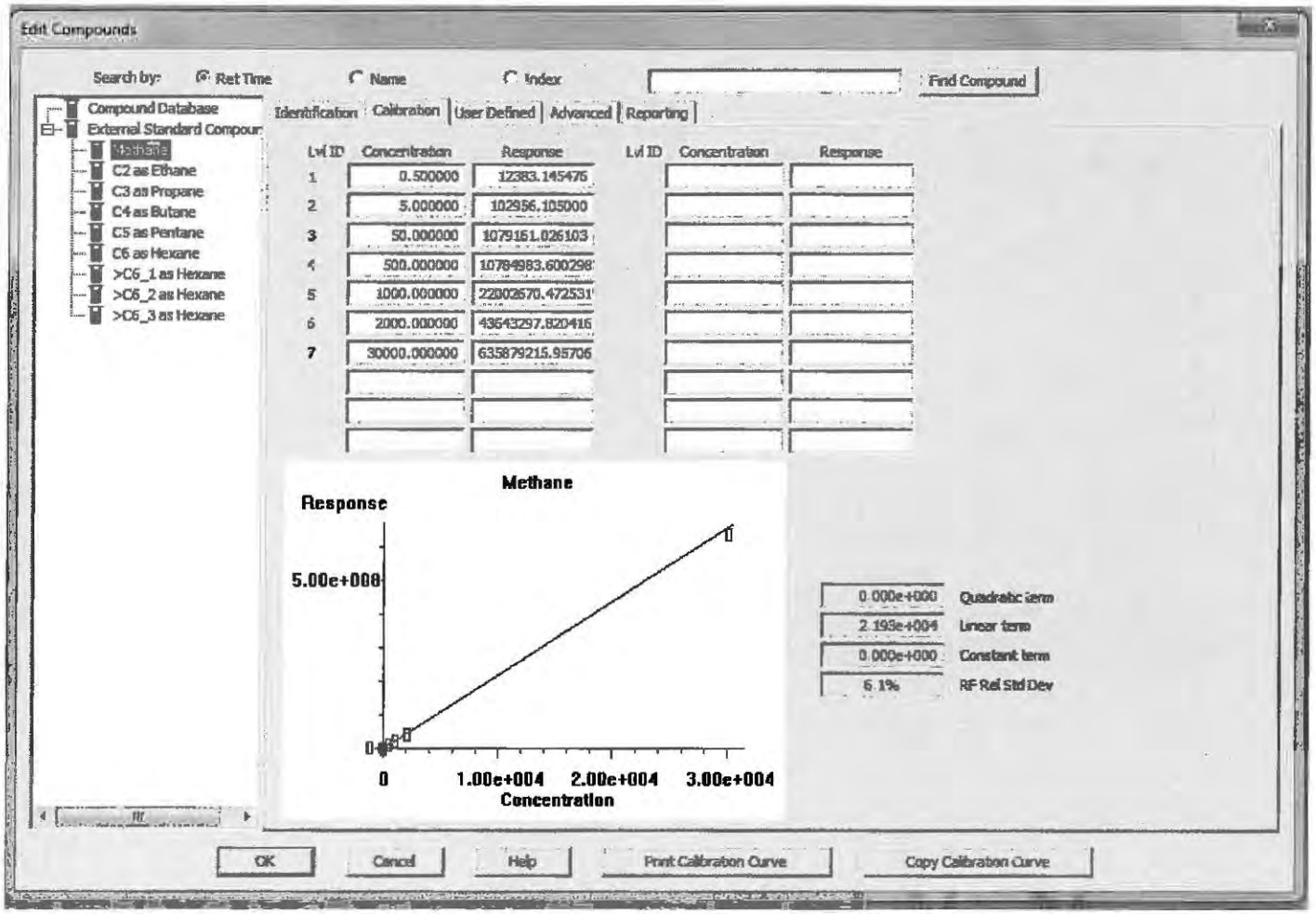
Method Path : I:\GC08\METHODS\
Method File : TF042116.M
Title : VOA-TO3C1C6
Last Update : Fri Apr 22 09:01:46 2016
Response Via : Initial Calibration

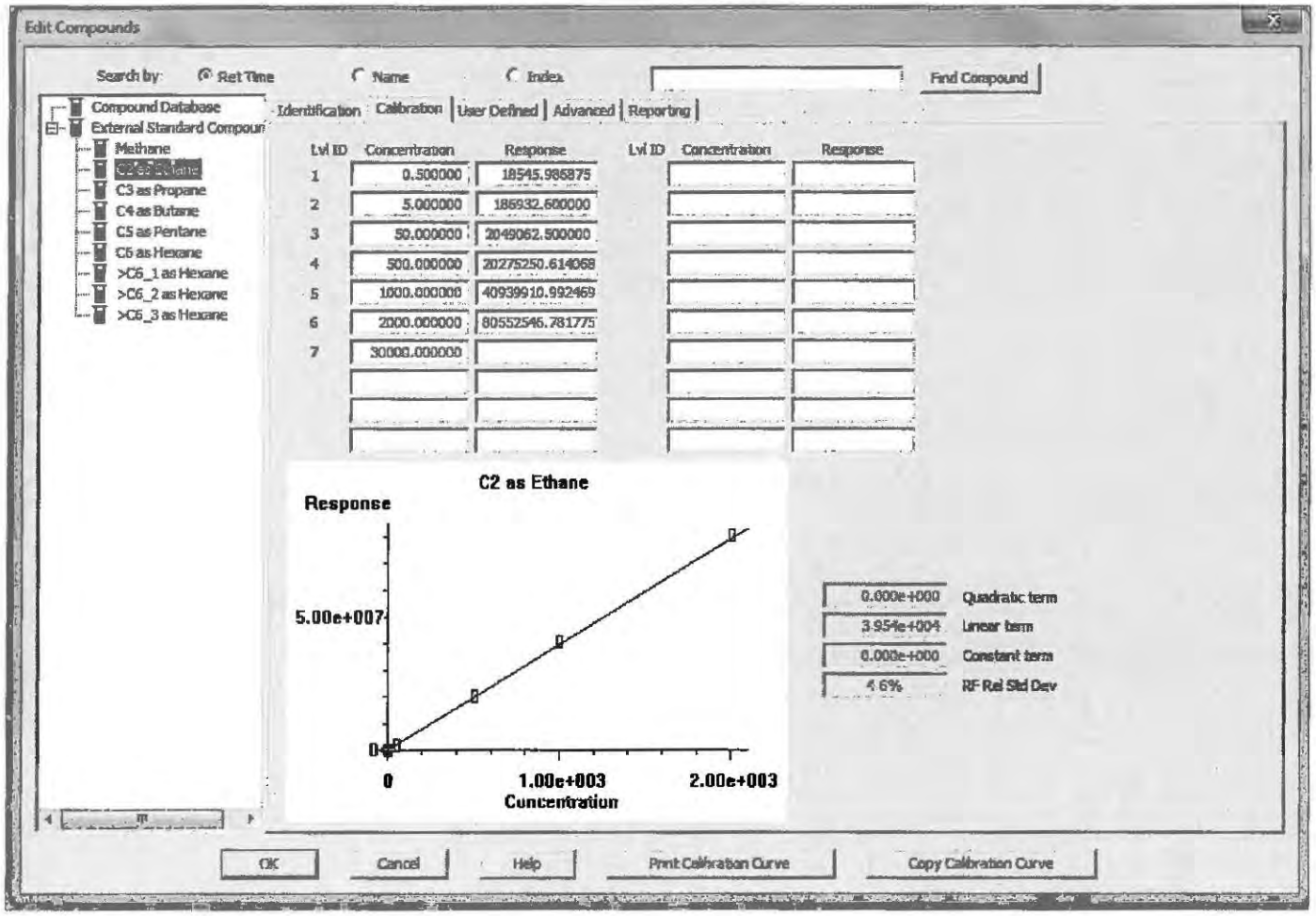
Calibration Files
1 =04211630.D 2 =04211631.D 3 =04211633.D
4 =04211634.D 5 =04211635.D 6 =04211636.D

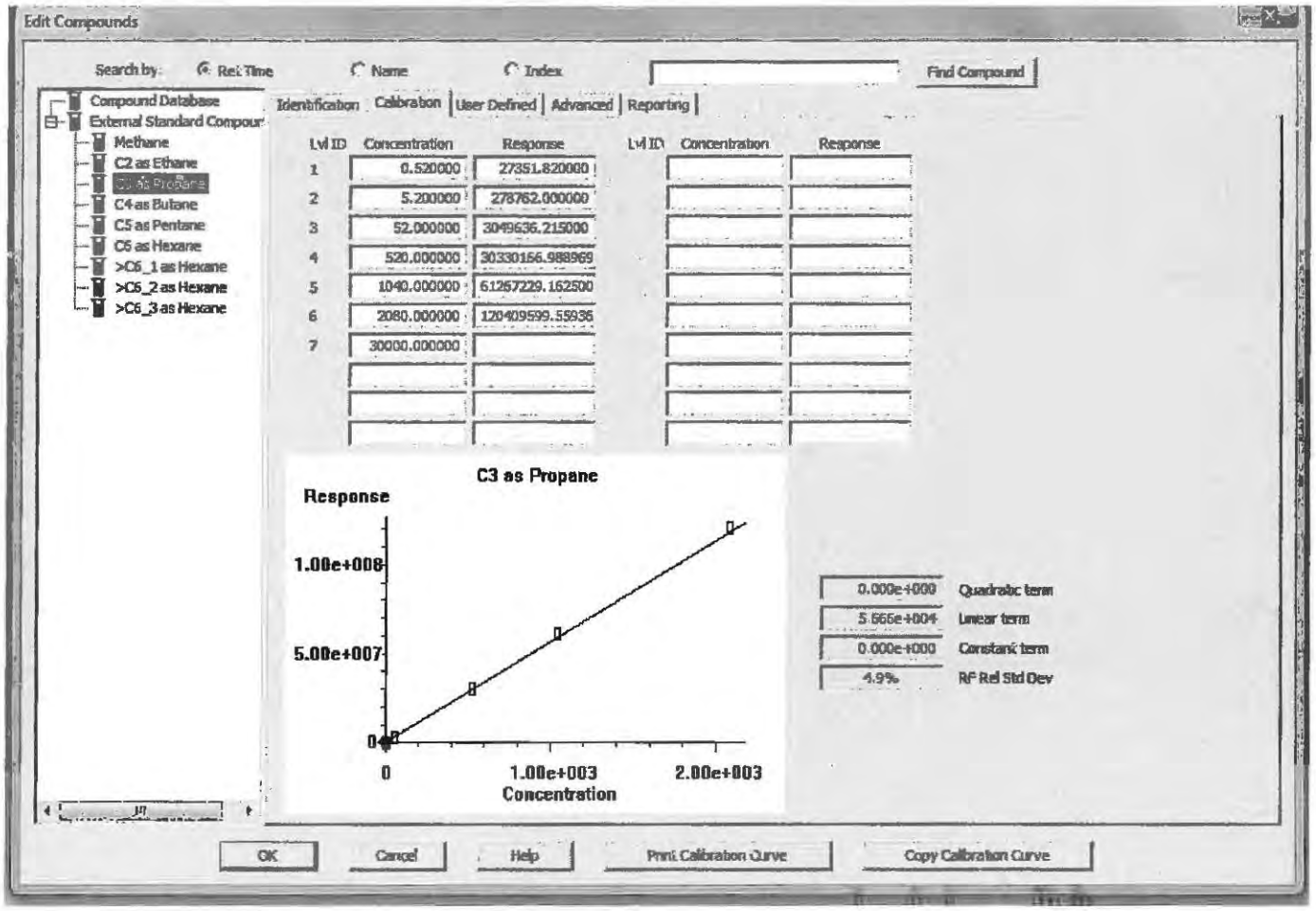
		Compound	1	2	3	4	5	6	Avg		%RSD
1)	T	Methane	2.477	2.059	2.158	2.157	2.200	2.182	2.193	E4	6.07
2)	T	C2 as Ethane	3.709	3.739	4.098	4.055	4.094	4.028	3.954	E4	4.56
3)	T	C3 as Propane	5.260	5.361	5.865	5.833	5.891	5.789	5.666	E4	4.94
4)	T	C4 as Butane	6.902	7.139	7.688	7.767	7.857	7.731	7.514	E4	5.23
5)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

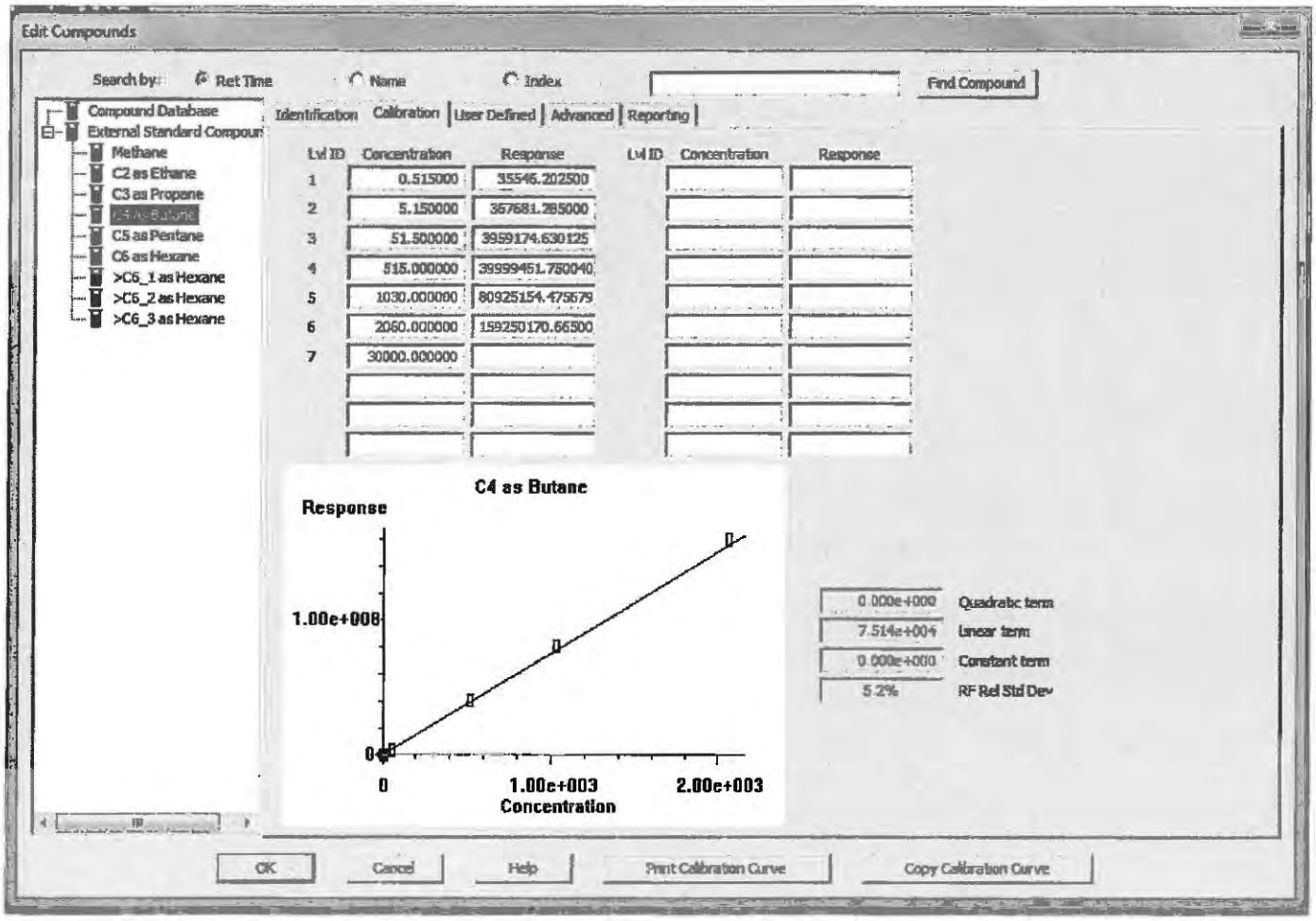
(#) = Out of Range ### Number of calibration levels exceeded format ###

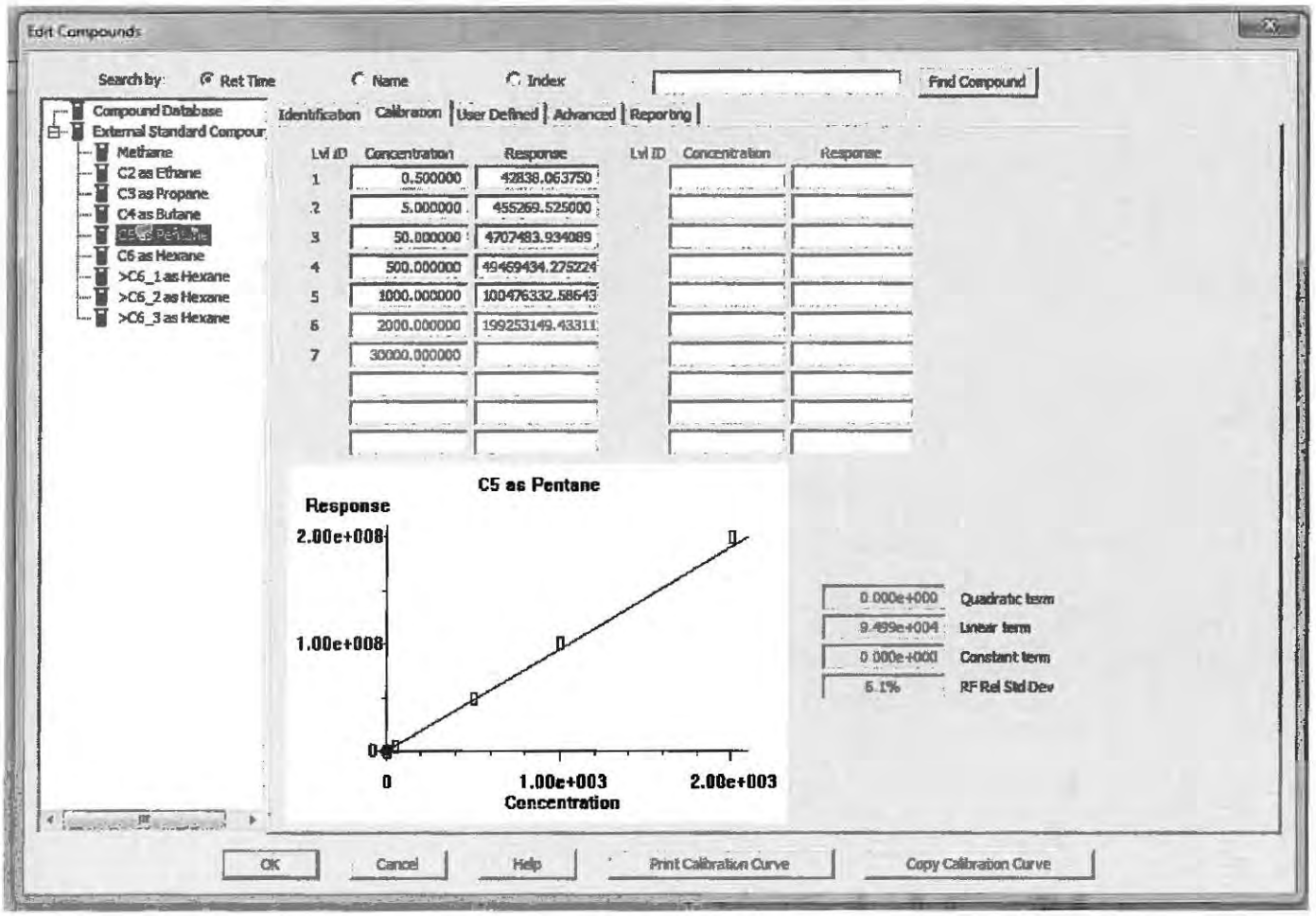
TF042116.M Fri Apr 22 09:01:57 2016

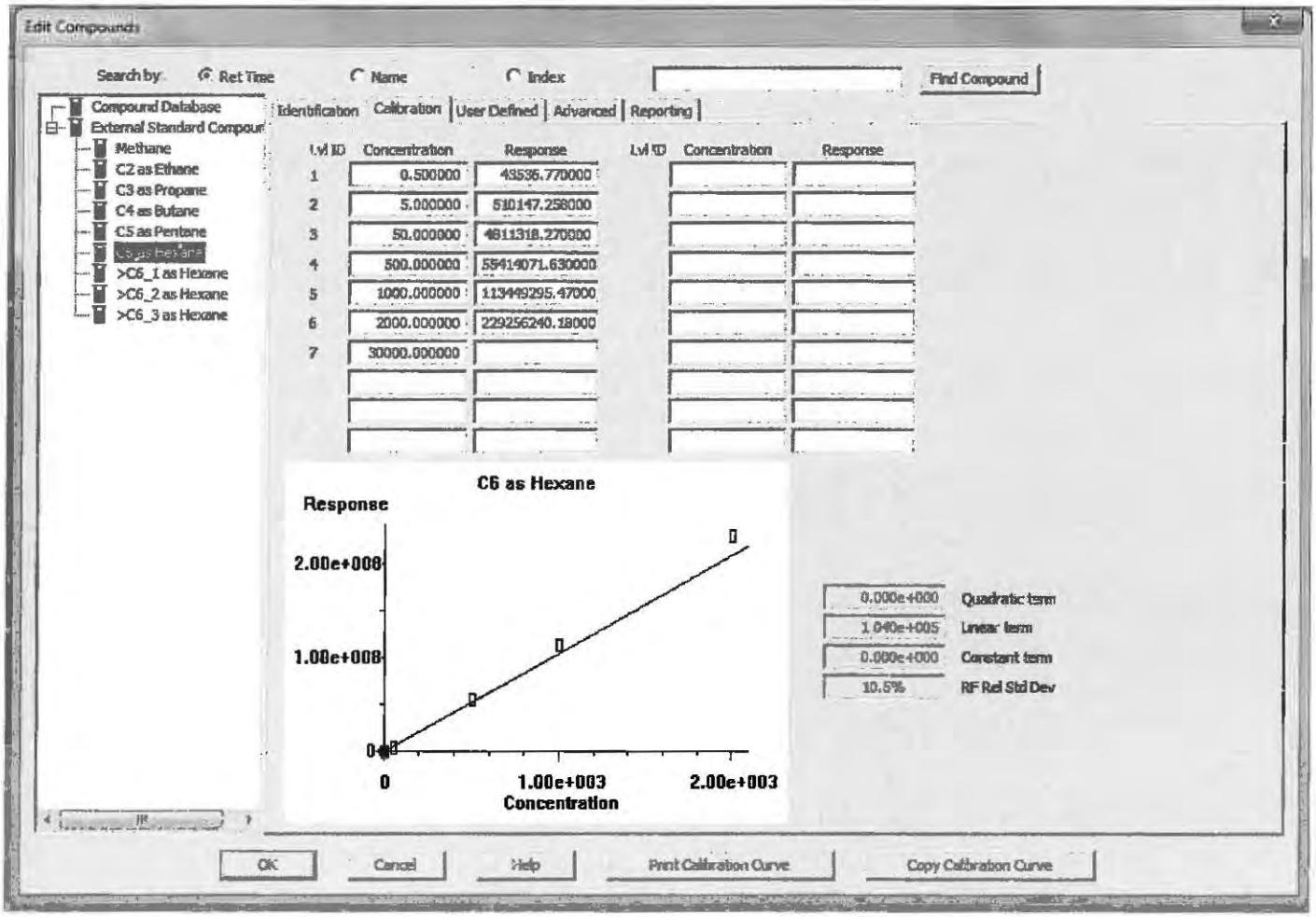

Edit Compounds
Search by:
Ret Time
Name
Index
Find Compound
Compound Database
External Standard Compour
Methane
C2 as Ethane
C3 as Propane
C4 as Butane
C5 as Pentane
C6 as Hexane
>C6_1 as Hexane
>C6_2 as Hexane
>C6_3 as Hexane
Identification
Calibration
User Defined
Advanced
Reporting
Lvl ID
Concentration
Response
1 0.500000 12383.145476
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
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 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
Lvl ID Concentration Response
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 61267229.162500
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 80925154.479679
6 2060.000000 159250170.66500
7 30000.000000
Lvl ID Concentration Response
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 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 0.500000 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

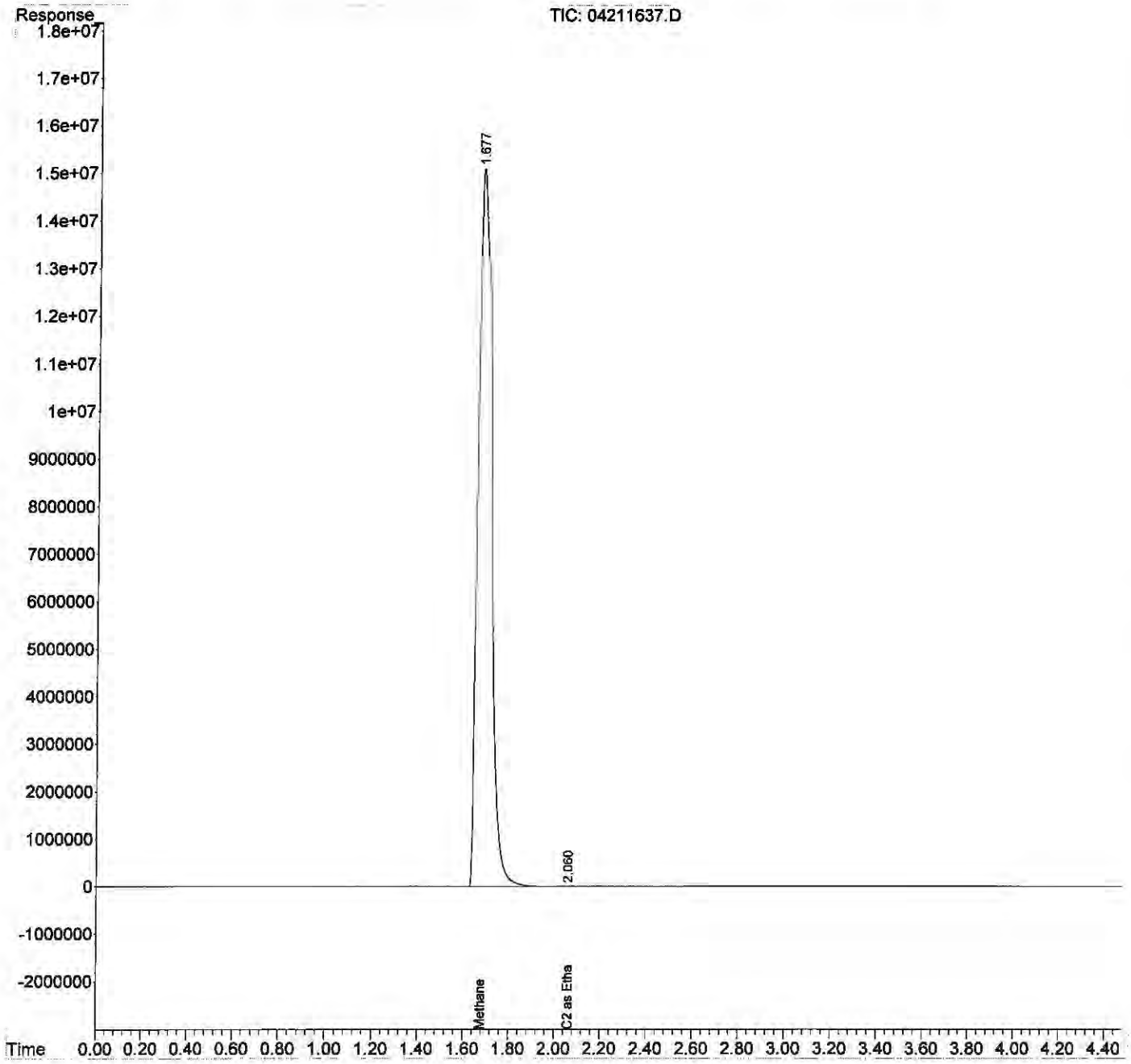
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



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.

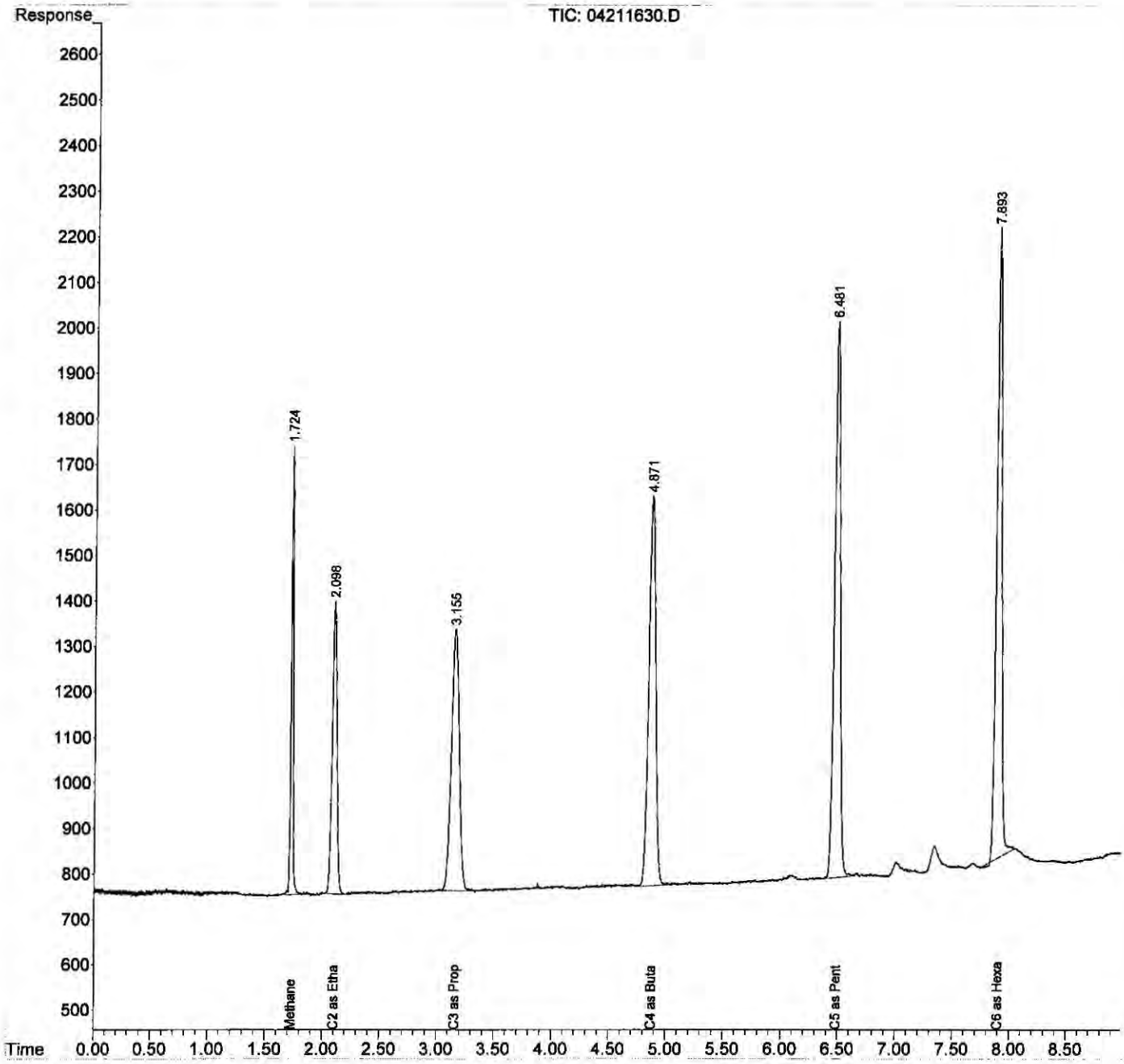
MK 4/22/16

Quantitation Report (QT Reviewed)

Data Path : J:\GC08\DATA\TO_3M\2016_04\21\
Data File : 04211630.D
Signal(s) : FID2B.CH
Acq On : 21-Apr-2016, 16:45:35
Operator : amf
Sample : std s30-04211601 0.05ml(x100)
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Apr 22 08:40:36 2016
Quant Method : I:\GC08\METHODS\TF042116.M
Quant Title : VOA-TO3C1C6
QLast Update : Fri Apr 22 08:25:17 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC08\DATA\TO_3M\2016_04\21\
Data File : 04211631.D
Signal(s) : FID2B.CH
Acq On : 21-Apr-2016, 16:57:19
Operator : amf
Sample : std s30-04211601 0.5ml(x100)
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Apr 22 08:43:02 2016
Quant Method : I:\GC08\METHODS\TF042116.M
Quant Title : VOA-TO3C1C6
QLast Update : Fri Apr 22 08:41:09 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc Units	
Target Compounds					
1) T	Methane	1.690	102956	5.363 ppm	
2) T	C2 as Ethane	2.077	186933	5.501 ppm	
3) T	C3 as Propane	3.143	278762	5.725 ppm	m
4) T	C4 as Butane	4.868	367681	5.628 ppm	
5) T	C5 as Pentane	6.480	455270	5.496 ppm	
6) T	C6 as Hexane	7.892	510147	5.979 ppm	
7) T	>C6_1 as Hexane	0.000	0	N.D. ppm	
8) T	>C6_2 as Hexane	0.000	0	N.D. ppm	
9) T	>C6_3 as Hexane	0.000	0	N.D. ppm	

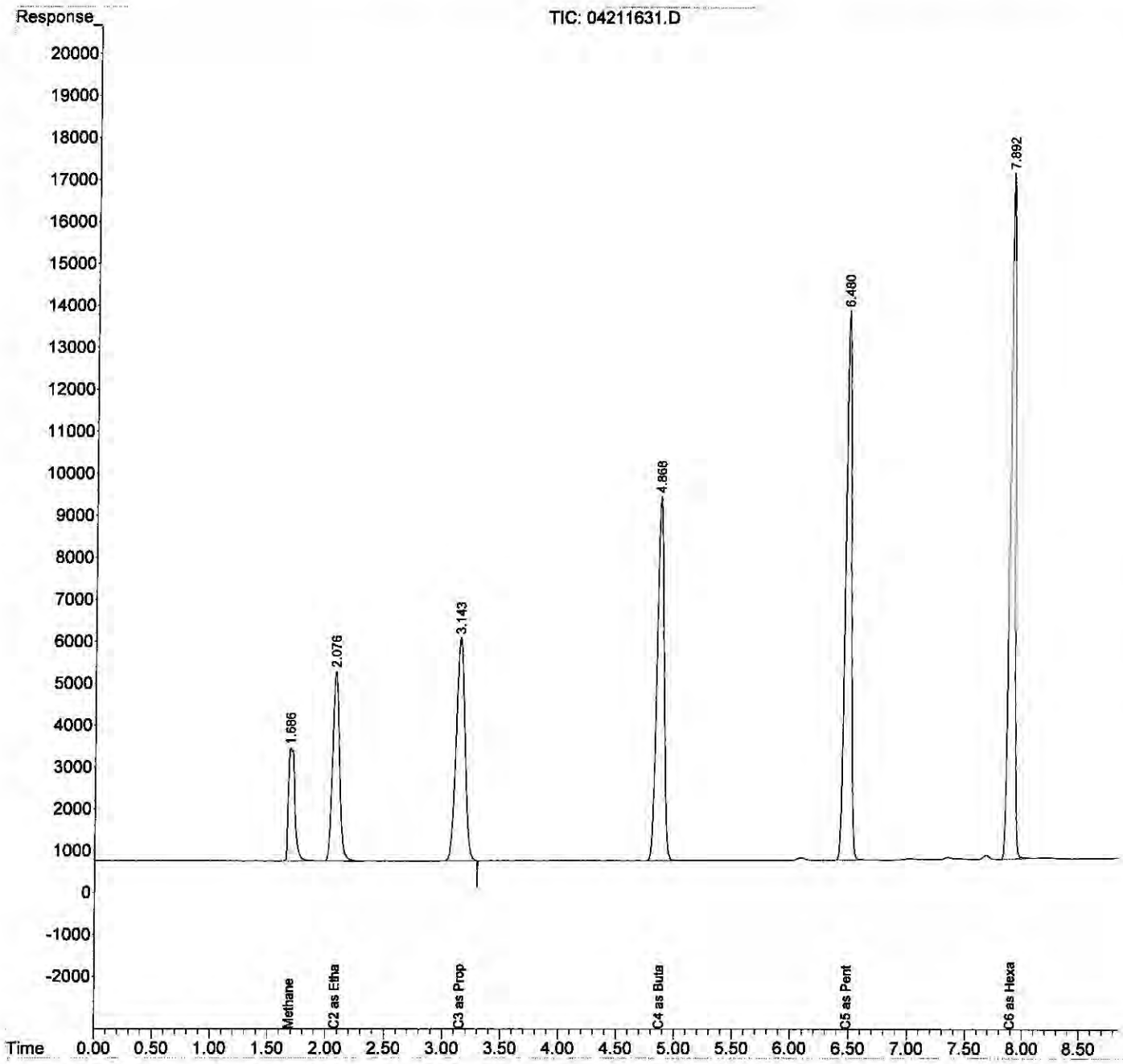
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC08\DATA\TO_3M\2016_04\21\
Data File : 04211631.D
Signal(s) : FID2B.CH
Acq On : 21-Apr-2016, 16:57:19
Operator : amf
Sample : std s30-04211601 0.5ml(x100)
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Apr 22 08:43:02 2016
Quant Method : I:\GC08\METHODS\TF042116.M
Quant Title : VOA-TO3C1C6
QLast Update : Fri Apr 22 08:41:09 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

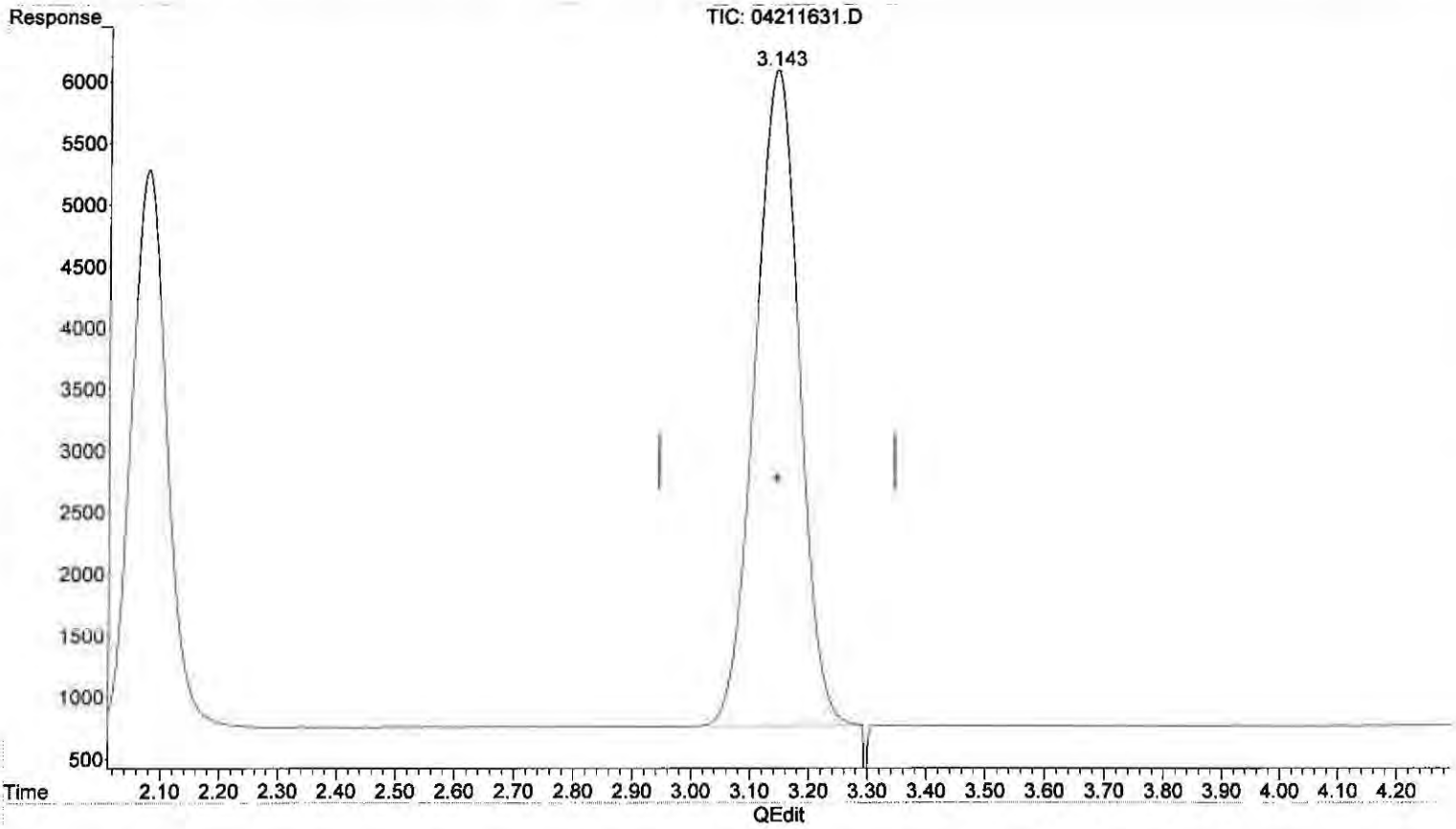


Quantitation Report (Qedit)

Data Path : J:\GC08\DATA\TO_3M\2016_04\21\
Data File : 04211631.D
Signal(s) : FID2B.CH
Acq On : 21-Apr-2016, 16:57:19
Operator : amf
Sample : std s30-04211601 0.5ml(x100)
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Apr 22 08:43:02 2016
Quant Method : I:\GC08\METHODS\TF042116.M
Quant Title : VOA-TO3C1C6
QLast Update : Fri Apr 22 08:41:09 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



(3) C3 as Propane (T)
3.143min 5.725 ppm m
response 278762

Mc 4/22/16 No previous
Bh
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

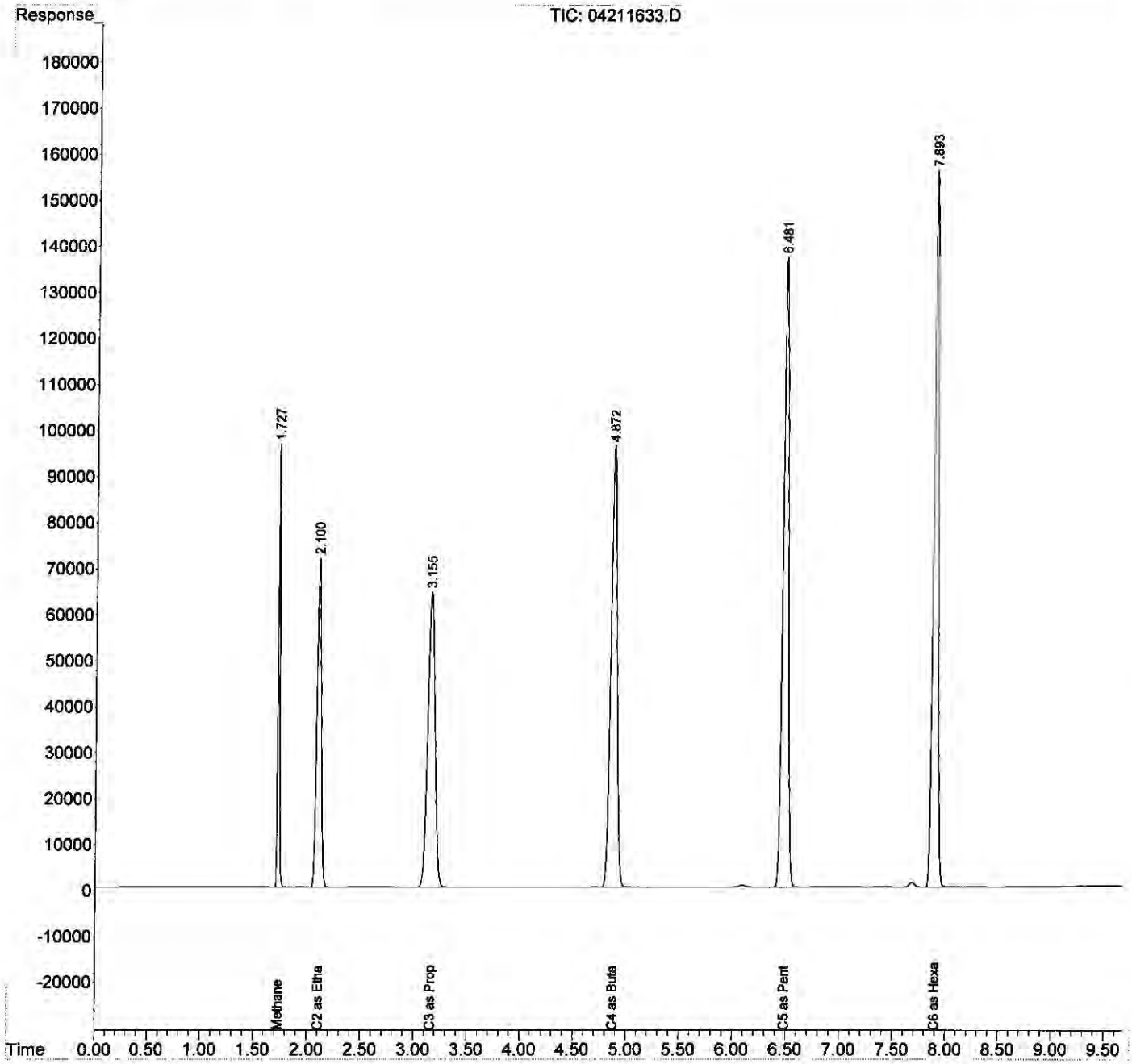
(f)=RT Delta > 1/2 Window (m)=manual int.

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

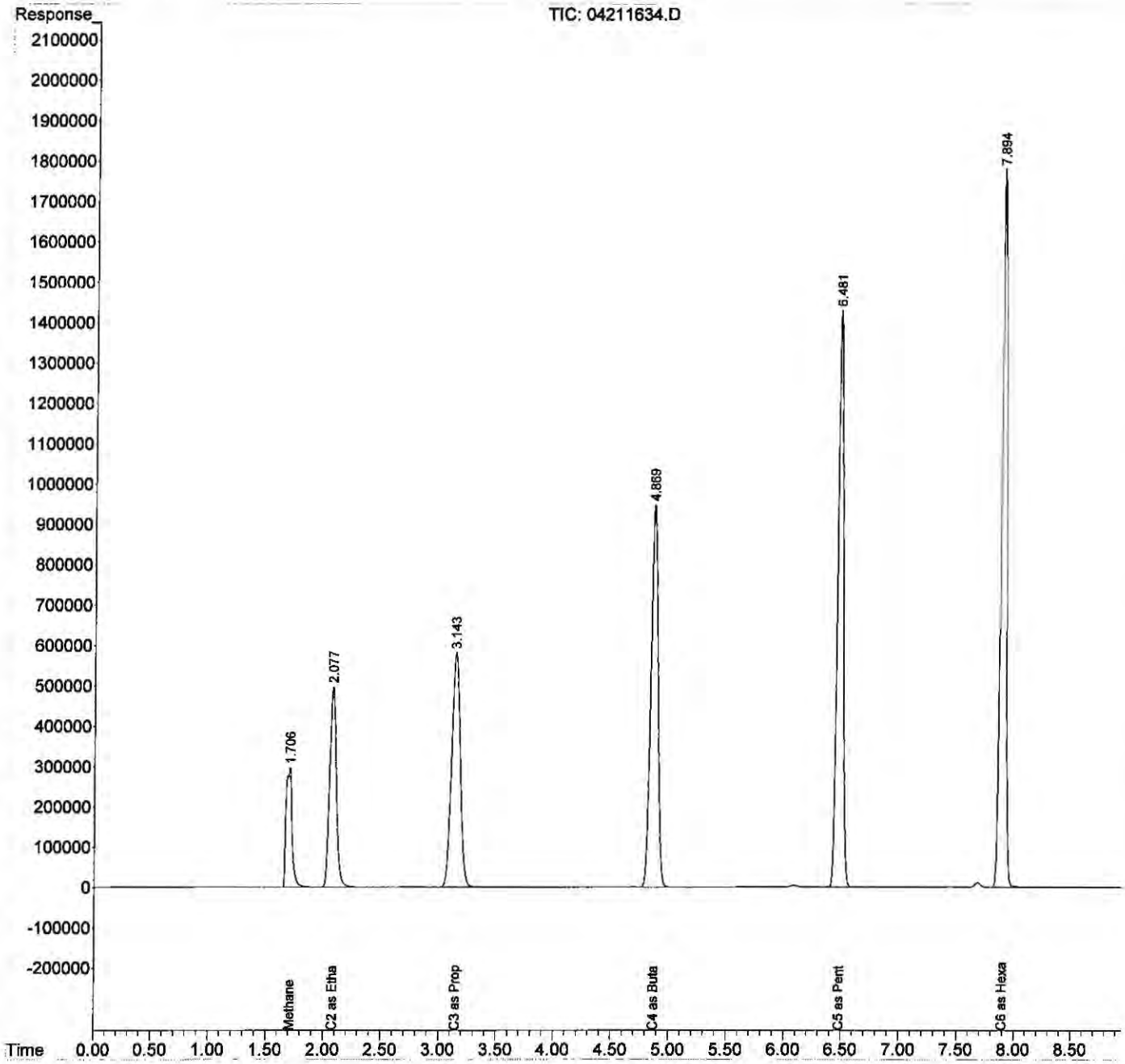
(f)=RT Delta > 1/2 Window (m)=manual int.

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

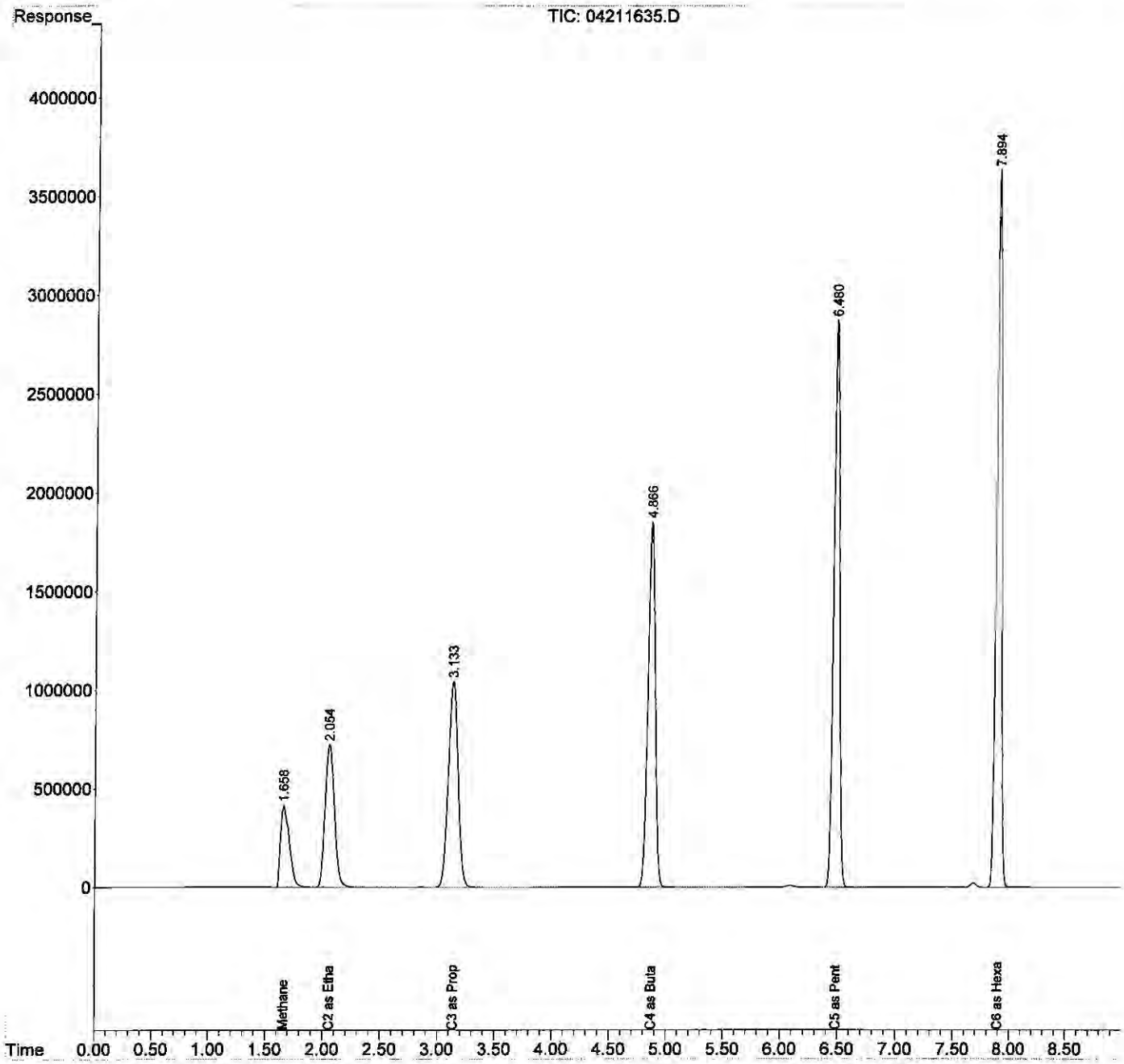
(f)=RT Delta > 1/2 Window (m)=manual int.

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

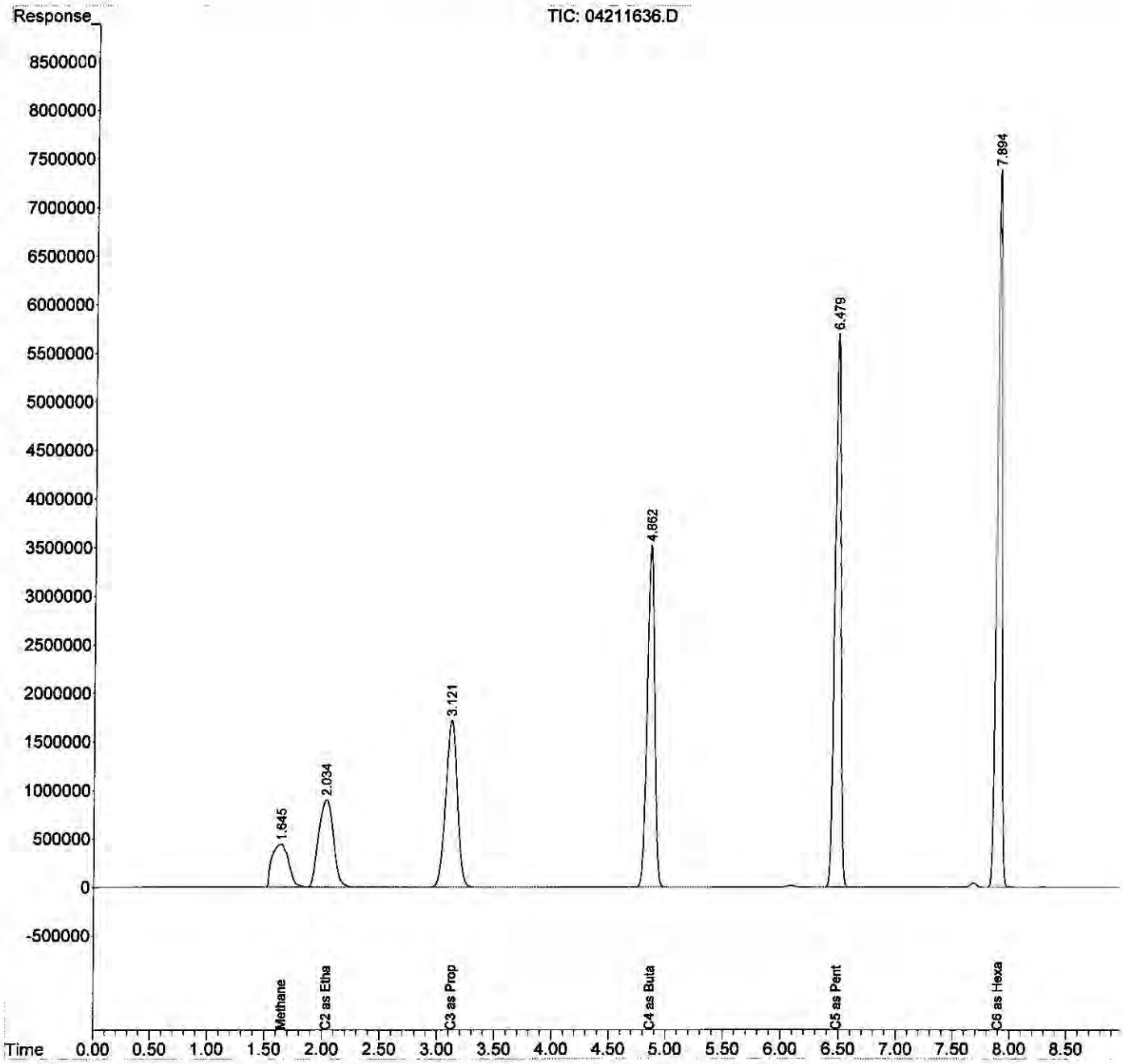
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



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	% Recovery
Target Compounds						
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	

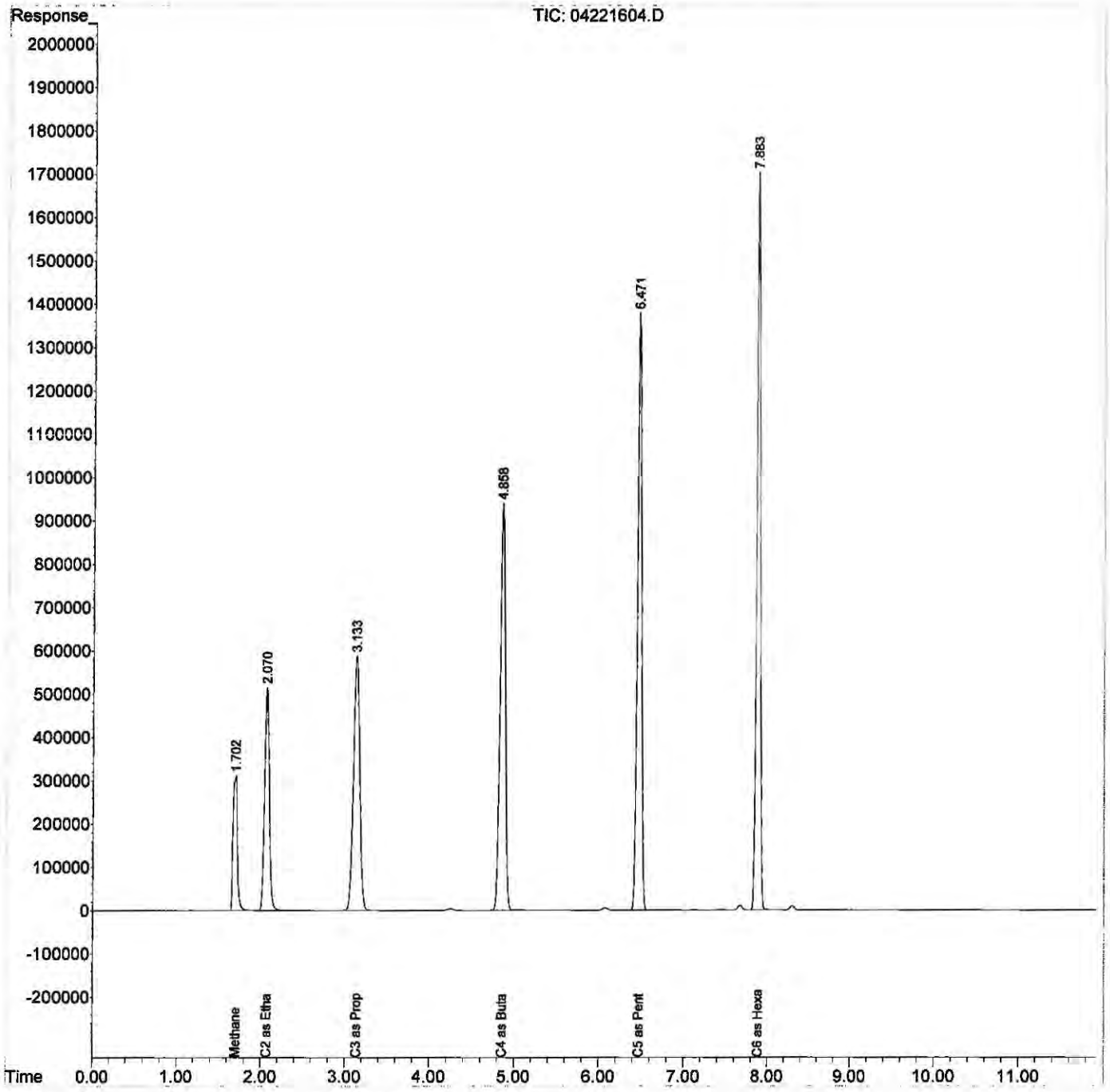
(f)=RT Delta > 1/2 Window (m)=manual int.

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: P1604504
Instrument : Instrument 8 / FID #8
Date Acquired : 10/4/16

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	999.3	1026.5	1071.6	1062.2	1024.9	1014.1	0.0	0.0	0.0
ACTUAL			1000.0	1000.0	1000.0	1000.0	1000.0	1000.0			
%Difference			0.1%	2.6%	7.2%	6.2%	2.5%	1.4%			
lcs s30-08011601	0.5	1.0	1004.78	1032.08	1106.30	1079.26	1034.48	1126.70			
ACTUAL			1010.0	1020.0	1040.0	1010.0	1000.0	1010.0			
%Recovery			99.5%	101.2%	106.4%	106.9%	103.4%	111.6%			
lcsds30-08011601	0.5	1.0	1006.20	1035.00	1110.54	1082.46	1033.90	1117.86			
ACTUAL			1010.0	1020.0	1040.0	1010.0	1000.0	1010.0			
%Recovery			99.6%	101.5%	106.8%	107.2%	103.4%	110.7%			
%RPD			0.1%	0.3%	0.4%	0.3%	0.1%	0.8%			
mb 1ml	1.0	1.0	0.05	0.00	0.00	0.00	0.00	0.02	0.12	0.07	0.09
4504-001 0.05ml	0.1	1.0	0.09	2.41	46670.32	1.16	0.00	0.03	0.03	0.21	0.09
4504-002 0.05ml	0.1	1.0	0.08	2.32	45472.42	1.15	0.00	0.05	0.04	0.18	0.06
4504-003 0.05ml	0.1	1.0	0.07	2.03	41707.02	1.03	0.03	0.04	0.03	0.17	0.08
4504-004 0.05ml	0.1	1.0	0.05	1.98	43433.58	1.09	0.04	0.02	0.03	0.17	0.08
std s30-05021602	0.5	1.0	988.8	1023.7	1072.6	1066.3	1030.1	1022.7			
ACTUAL			1000.0	1000.0	1040.0	1030.0	1000.0	1000.0			
%Difference			1.1%	2.4%	3.1%	3.5%	3.0%	2.3%			

Quantitation Report (QT Reviewed)

Data Path : I:\GC08\DATA\TO_3M\2016_10\04\
Data File : 10041601.D
Signal(s) : FID2B.CH
Acq On : 04-Oct-2016, 08:31:51
Operator : amf
Sample : std s30-05021602
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 04 09:36:33 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	1.651	10959039	499.660	ppm
2)	C2 as Ethane	2.016	20291820	513.227	ppm
3)	C3 as Propane	3.065	30359130	535.778	ppm
4)	C4 as Butane	4.779	39906110	531.095	ppm
5)	C5 as Pentane	6.383	48677184	512.462	ppm
6)	C6 as Hexane	7.790	52754865	507.067	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

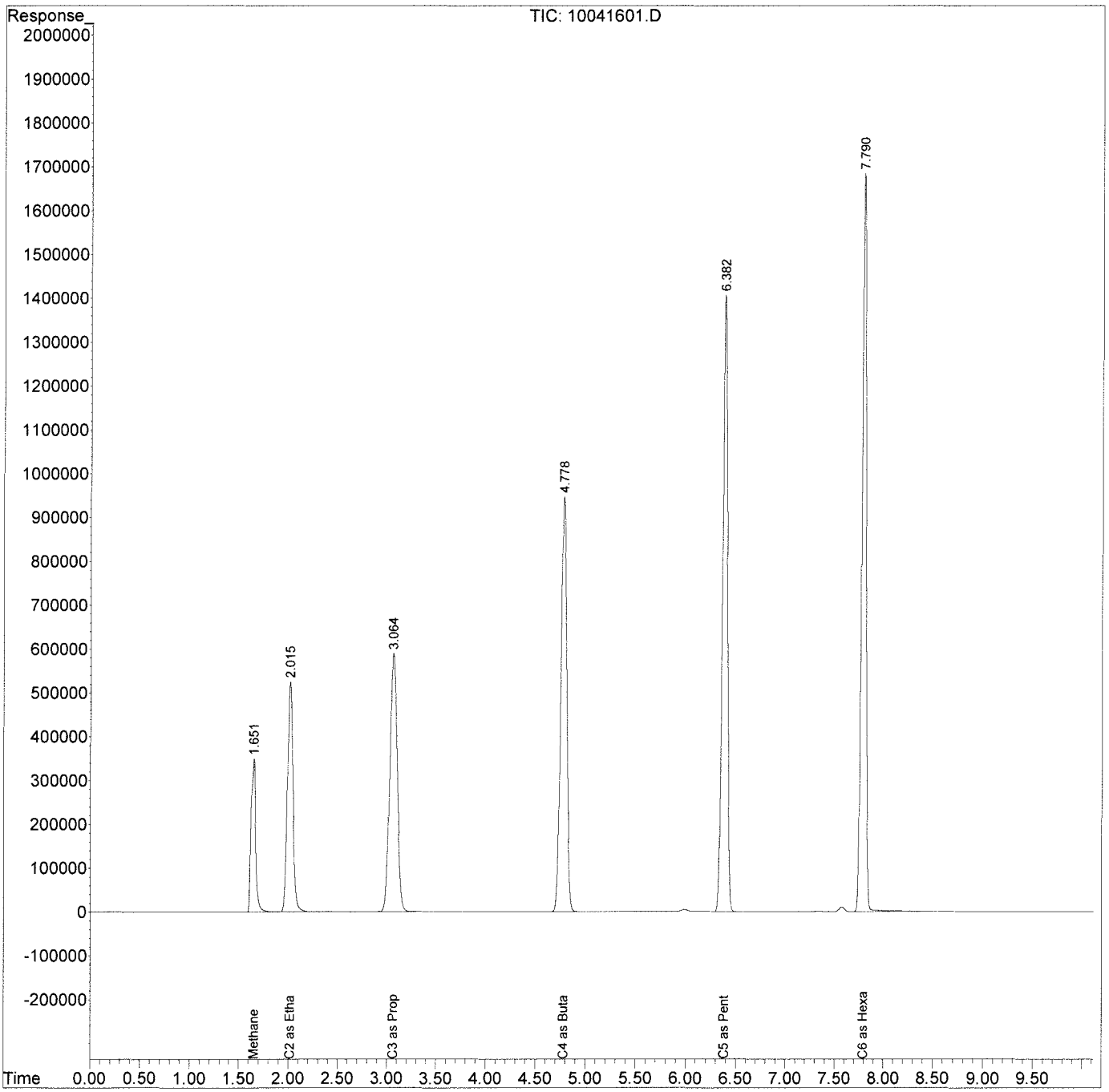
(f)=RT Delta > 1/2 Window (m)=manual int.

10/5/16

Data Path : I:\GC08\DATA\TO_3M\2016_10\04\
Data File : 10041601.D
Signal(s) : FID2B.CH
Acq On : 04-Oct-2016, 08:31:51
Operator : amf
Sample : std s30-05021602
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 04 09:36:33 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\04\
Data File : 10041619.D
Signal(s) : FID2B.CH
Acq On : 04-Oct-2016, 16:33:27
Operator : amf
Sample : std s30-05021602
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 04 16:44:35 2016
Quant Method : I:\GC08\METHODS\TF042116.M
Quant Title : VOA-TO3C1C6
QLast Update : Fri Apr 22 09:01:46 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

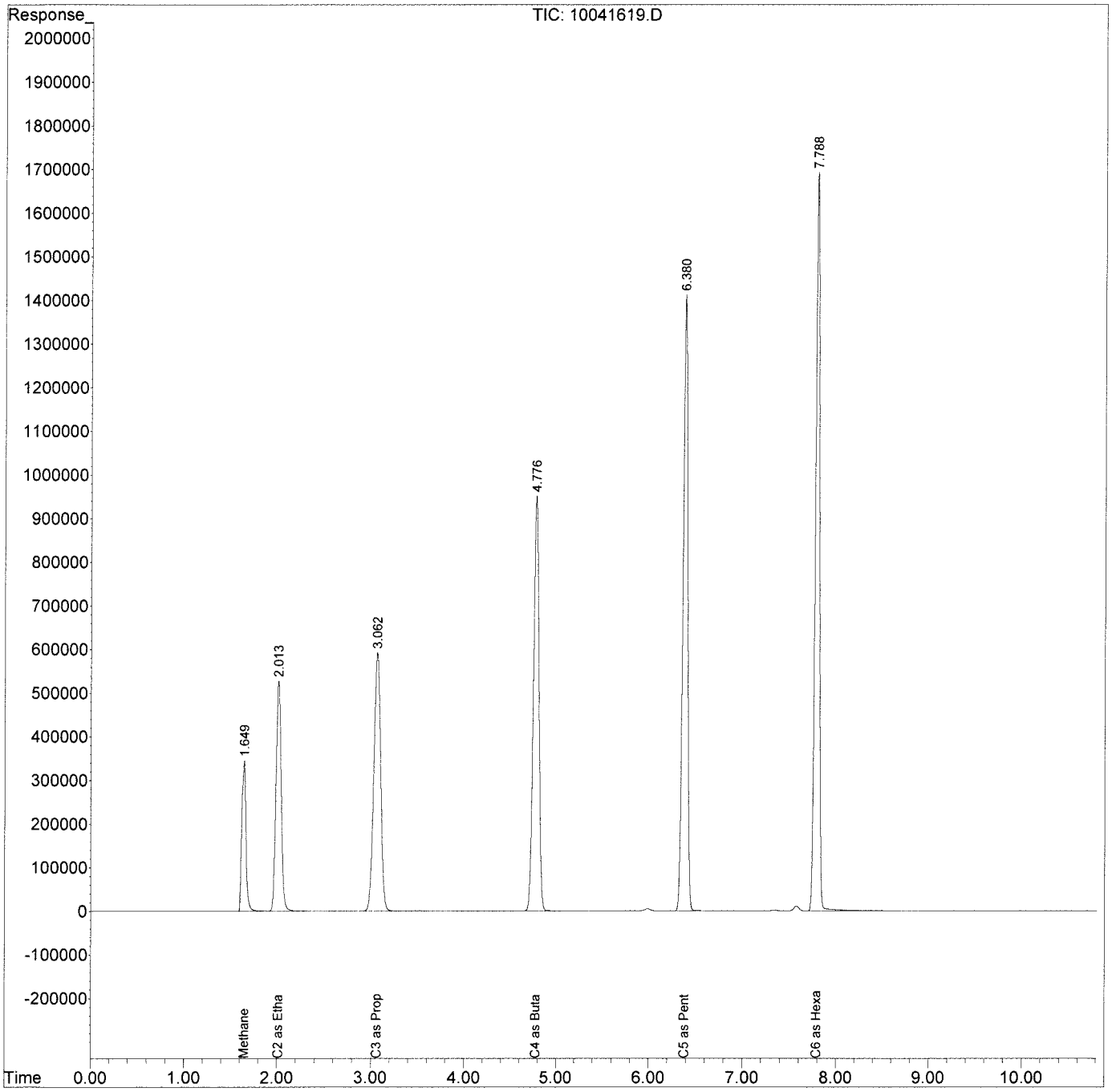
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Methane	1.650	10843307	494.383	ppm	
2)	C2 as Ethane	2.013	20236921	511.838	ppm	
3)	C3 as Propane	3.063	30388055	536.288	ppm	
4)	C4 as Butane	4.777	40062424	533.175	ppm	
5)	C5 as Pentane	6.381	48921889	515.038	ppm	
6)	C6 as Hexane	7.789	53199051	511.337	ppm	
7)	>C6_1 as Hexane	0.000	0	N.D.	ppm	d
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\04\
Data File : 10041619.D
Signal(s) : FID2B.CH
Acq On : 04-Oct-2016, 16:33:27
Operator : amf
Sample : std s30-05021602
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Oct 04 16:44:35 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\04\

	Sample ID	Date/Time	Acquisition Method	File Name	Misc Info	Operator	Comments
	std s30-05021602	04-Oct-16, 08:31:51	TO3.M	10041601.D		amf	
	mb 1ml	04-Oct-16, 09:43:03	TO3.M	10041602.D		amf	
	mb 1ml	04-Oct-16, 10:15:41	TO3.M	10041603.D		amf	
	lcs s30-08011601	04-Oct-16, 10:38:26	TO3.M	10041604.D		amf	
	lcsds30-08011601	04-Oct-16, 10:52:22	TO3.M	10041605.D		amf	
	4504-001 0.05ml	04-Oct-16, 11:04:51	TO3.M	10041606.D		amf	
	4504-002 0.05ml	04-Oct-16, 11:27:36	TO3.M	10041607.D		amf	
	4504-003 0.05ml	04-Oct-16, 11:50:28	TO3.M	10041608.D		amf	
	4504-004 0.05ml	04-Oct-16, 12:13:17	TO3.M	10041609.D		amf	
	4524-001 0.05ml	04-Oct-16, 12:36:14	TO3.M	10041610.D		amf	
	4524-002 0.05ml	04-Oct-16, 12:59:25	TO3.M	10041611.D		amf	
	4524-003 0.05ml	04-Oct-16, 13:38:50	TO3.M	10041612.D		amf	
	4524-004 0.05ml	04-Oct-16, 14:01:42	TO3.M	10041613.D		amf	
	std s30-05021602	04-Oct-16, 14:24:45	TO3.M	10041614.D		amf	
	4516-001 0.1ml	04-Oct-16, 15:00:42	TO3.M	10041615.D		amf	
	4516-002 0.1ml	04-Oct-16, 15:24:03	TO3.M	10041616.D		amf	
	4516-003 0.1ml	04-Oct-16, 15:47:05	TO3.M	10041617.D		amf	
	4504-001 0.05ml	04-Oct-16, 16:10:08	TO3.M	10041618.D		amf	
	std s30-05021602	04-Oct-16, 16:33:27	TO3.M	10041619.D		amf	

Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\28\
Data File : 09281618.D
Signal(s) : TCD1A.CH
Acq On : 28 Sep 2016 2:32 pm
Operator : amf
Sample : 4504-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 29 17:25:24 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 :

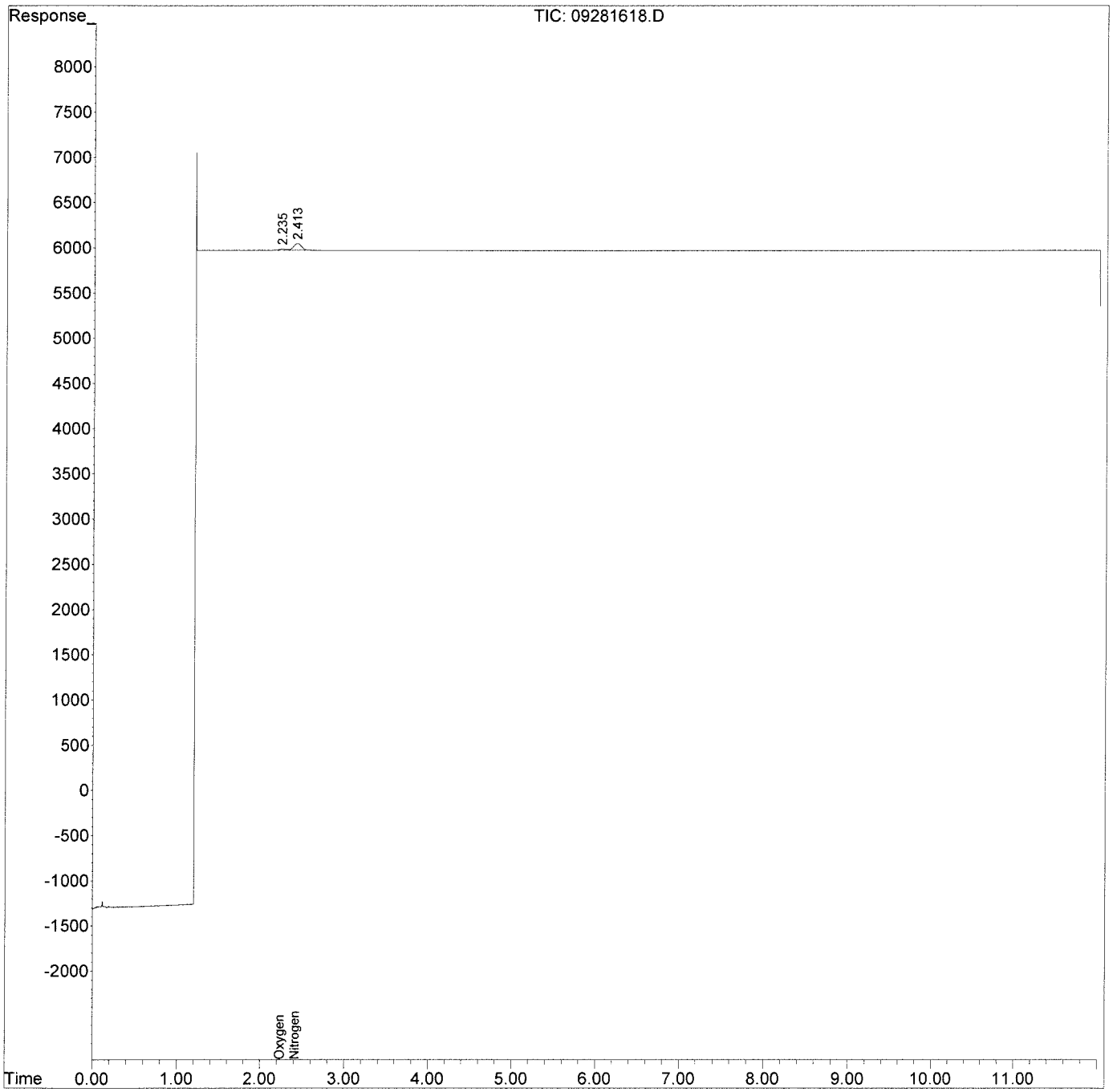
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.000	0	N.D.	ppm	
2)	Oxygen	2.235	850	561.490	ppm	m
3)	Nitrogen	2.413	4854	2768.639	ppm	m
4)	Carbon Monoxide	0.000	0	N.D.	ppm	
5)	Methane	0.000	0	N.D.	ppm	
6)	Carbon Dioxide	0.000	0	N.D.	ppm	

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

Data Path : I:\GC01\DATA\FXG\2016_09\28\
Data File : 09281618.D
Signal(s) : TCD1A.CH
Acq On : 28 Sep 2016 2:32 pm
Operator : amf
Sample : 4504-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 29 17:25:24 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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

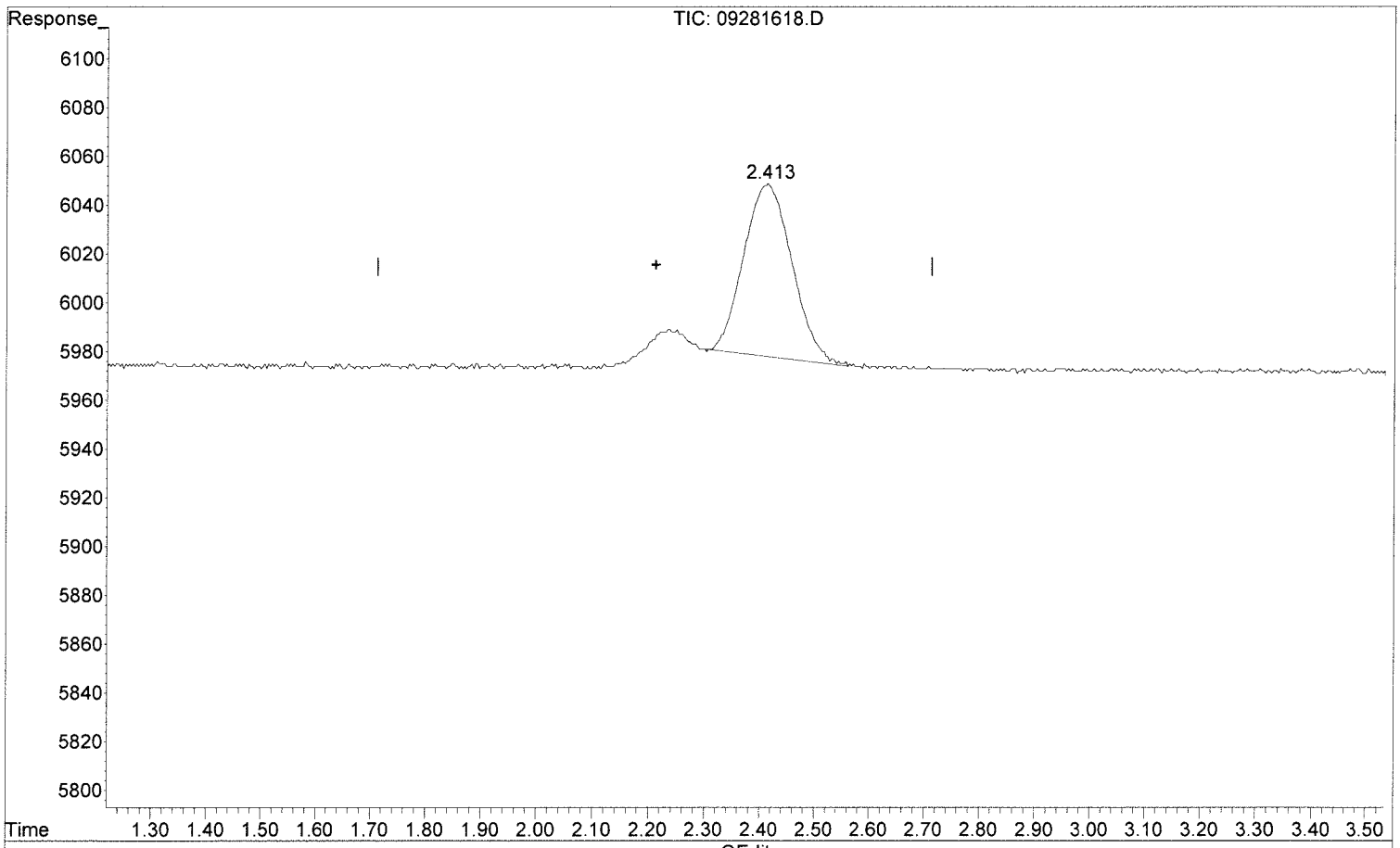


Quantitation Report (Qedit)

Data Path : I:\GC01\DATA\FXG\2016_09\28\
Data File : 09281618.D
Signal(s) : TCD1A.CH
Acq On : 28 Sep 2016 2:32 pm
Operator : amf
Sample : 4504-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 29 17:24:55 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

2.416min 2829.276 ppm

response 4281

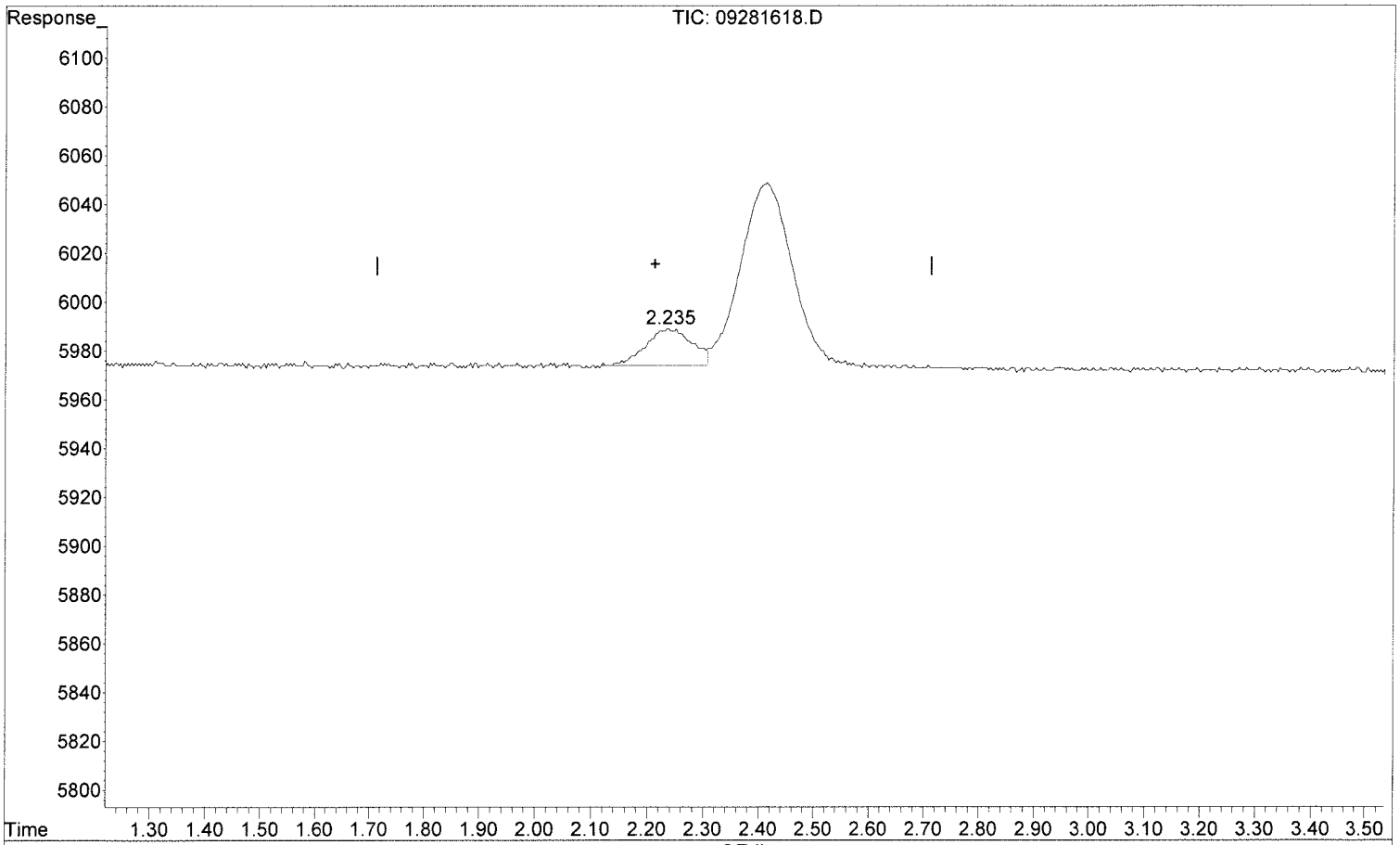
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : I:\GC01\DATA\FXG\2016_09\28\
Data File : 09281618.D
Signal(s) : TCD1A.CH
Acq On : 28 Sep 2016 2:32 pm
Operator : amf
Sample : 4504-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 29 17:24:55 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

2.235min 561.490 ppm m

response 850

9/30/16

9/30/16

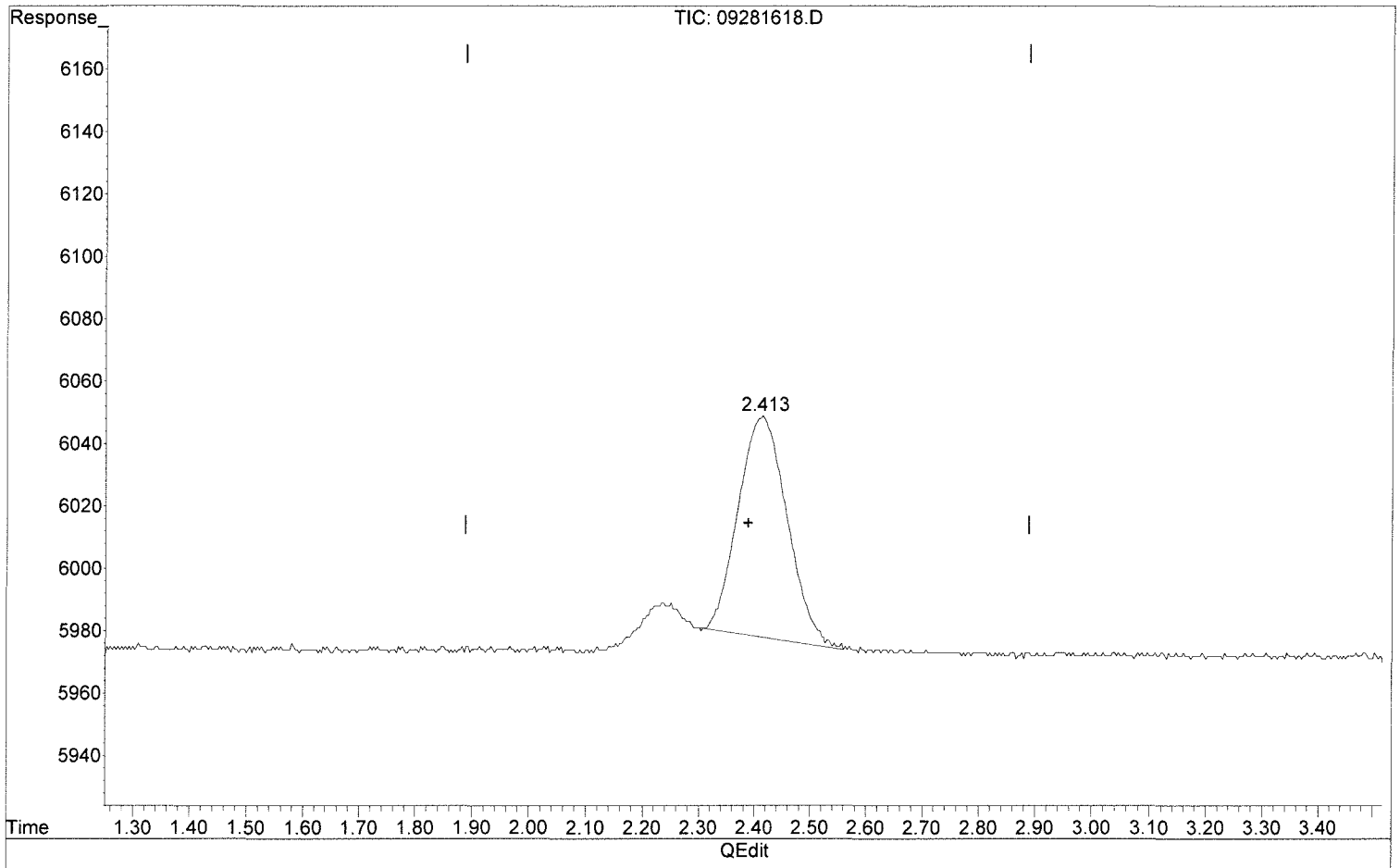
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : I:\GC01\DATA\FXG\2016_09\28\
Data File : 09281618.D
Signal(s) : TCD1A.CH
Acq On : 28 Sep 2016 2:32 pm
Operator : amf
Sample : 4504-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 29 17:24:55 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

2.416min 2442.052 ppm

response 4281

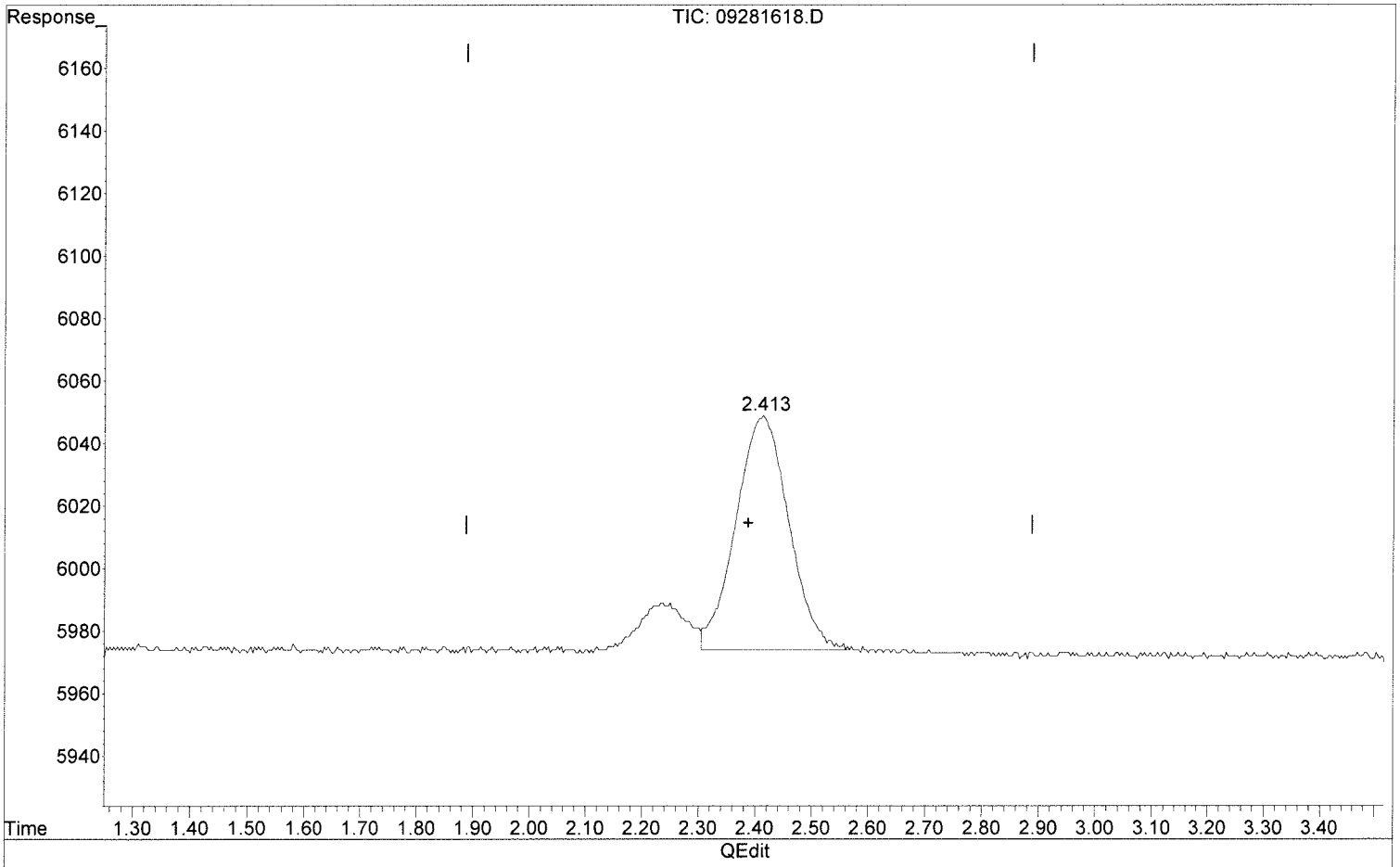
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : I:\GC01\DATA\FXG\2016_09\28\
Data File : 09281618.D
Signal(s) : TCD1A.CH
Acq On : 28 Sep 2016 2:32 pm
Operator : amf
Sample : 4504-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 29 17:24:55 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

2.413min 2768.639 ppm m

response 4854

9/29/16 BLC

9/30/16

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\28\
Data File : 09281619.D
Signal(s) : TCD1A.CH
Acq On : 28 Sep 2016 2:48 pm
Operator : amf
Sample : 4504-002
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 29 17:26:24 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 :

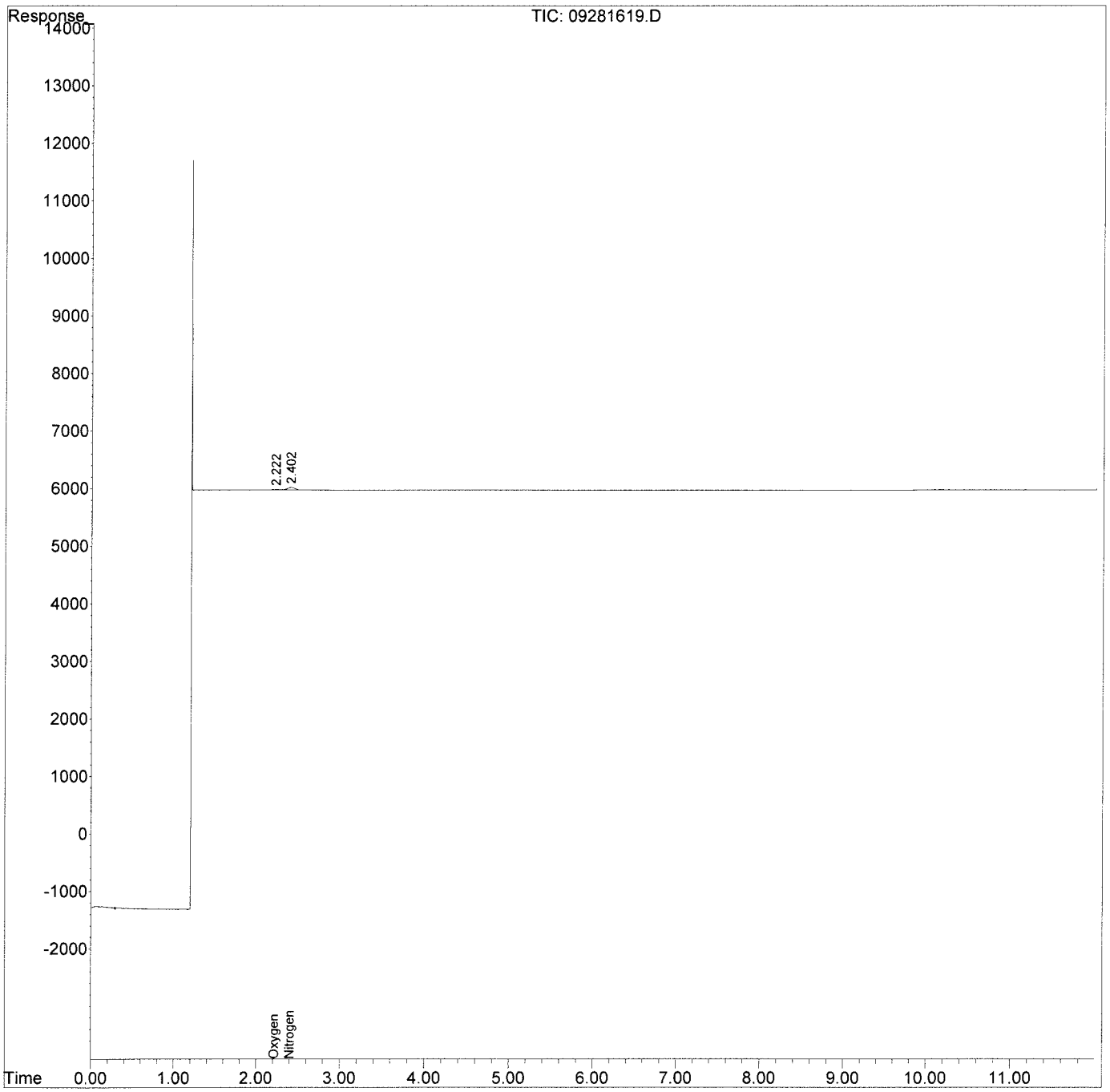
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.000	0	N.D.	ppm	
2)	Oxygen	2.222	383	253.094	ppm	m
3)	Nitrogen	2.402	2888	1647.356	ppm	m
4)	Carbon Monoxide	0.000	0	N.D.	ppm	
5)	Methane	0.000	0	N.D.	ppm	
6)	Carbon Dioxide	0.000	0	N.D.	ppm	

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

Data Path : I:\GC01\DATA\FXG\2016_09\28\
Data File : 09281619.D
Signal(s) : TCD1A.CH
Acq On : 28 Sep 2016 2:48 pm
Operator : amf
Sample : 4504-002
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 29 17:26:24 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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

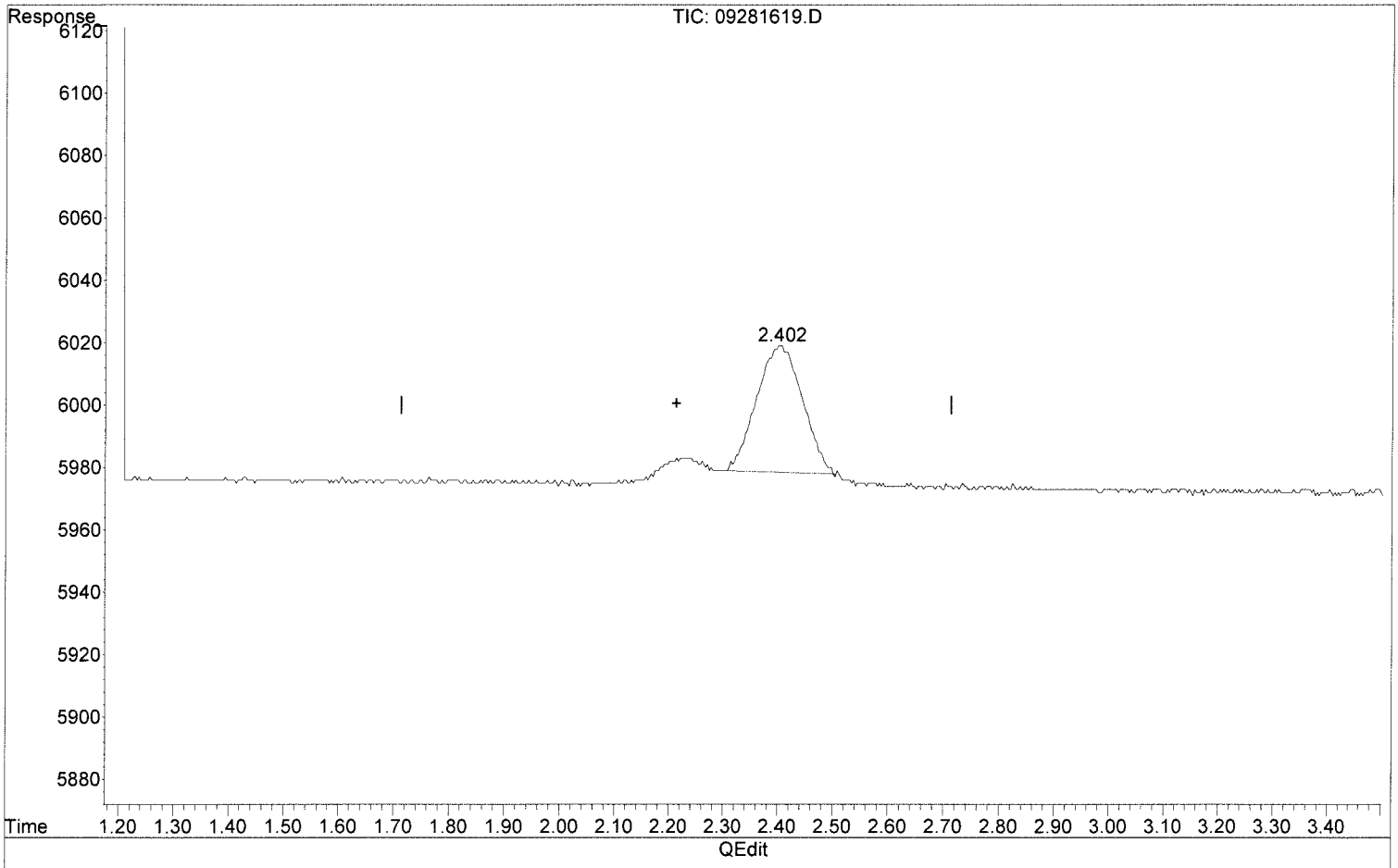


Quantitation Report (Qedit)

Data Path : I:\GC01\DATA\FXG\2016_09\28\
Data File : 09281619.D
Signal(s) : TCD1A.CH
Acq On : 28 Sep 2016 2:48 pm
Operator : amf
Sample : 4504-002
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 29 17:25:53 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

2.406min 1563.206 ppm

response 2366

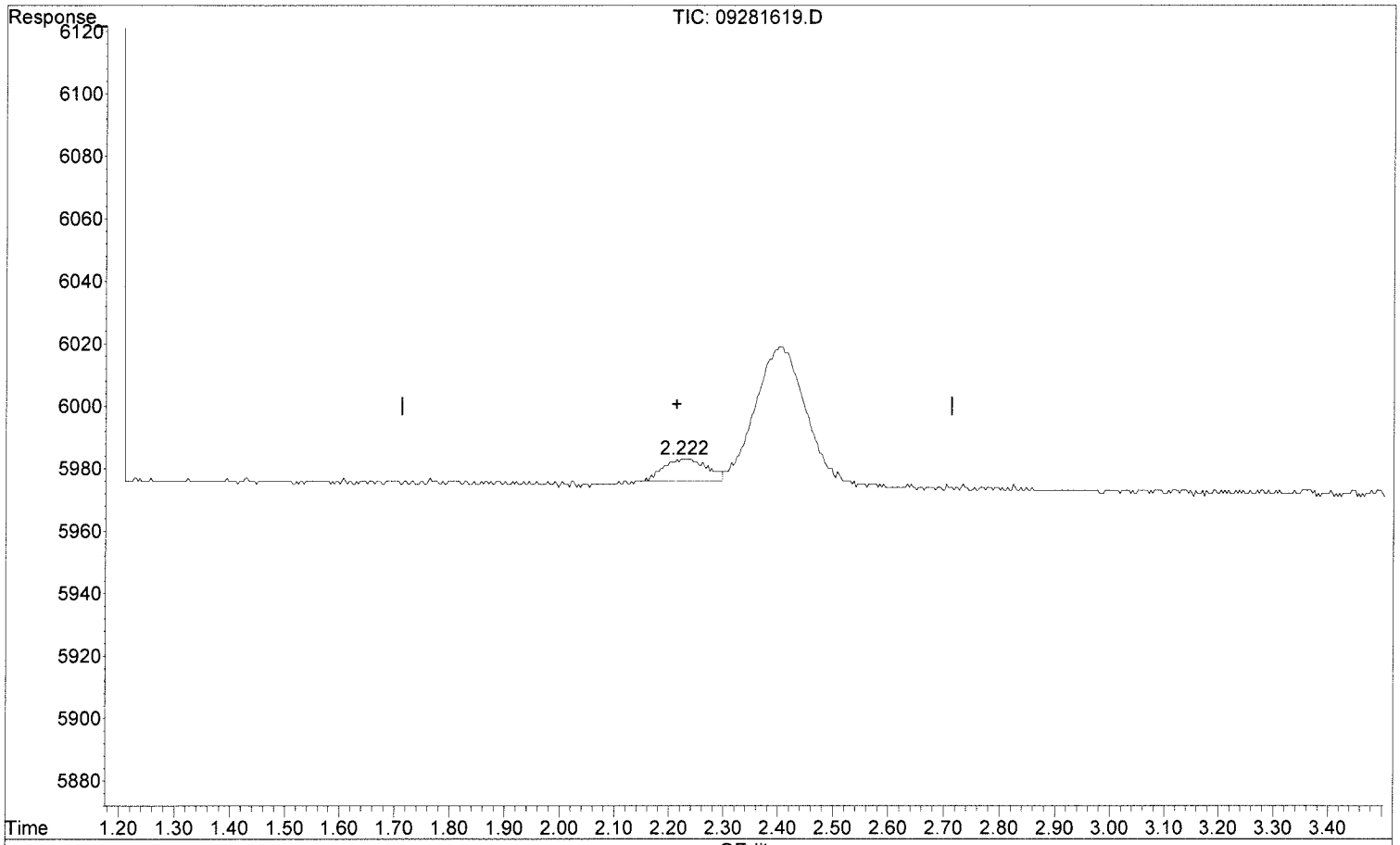
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : I:\GC01\DATA\FXG\2016_09\28\
Data File : 09281619.D
Signal(s) : TCD1A.CH
Acq On : 28 Sep 2016 2:48 pm
Operator : amf
Sample : 4504-002
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 29 17:25:53 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

2.222min 253.094 ppm m

response 383

9/30/16

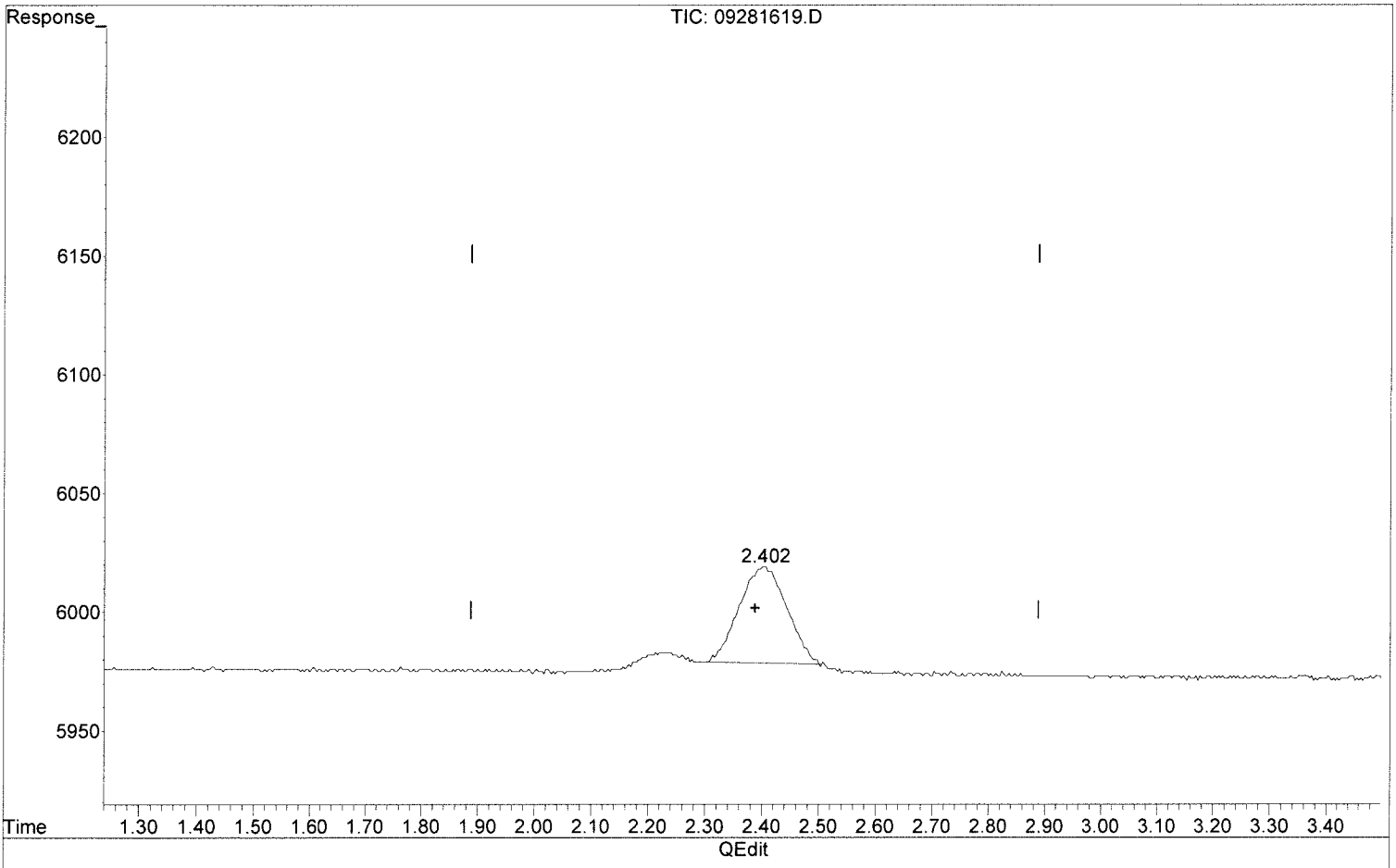
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : I:\GC01\DATA\FXG\2016_09\28\
Data File : 09281619.D
Signal(s) : TCD1A.CH
Acq On : 28 Sep 2016 2:48 pm
Operator : amf
Sample : 4504-002
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 29 17:25:53 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

2.406min 1349.261 ppm

response 2366

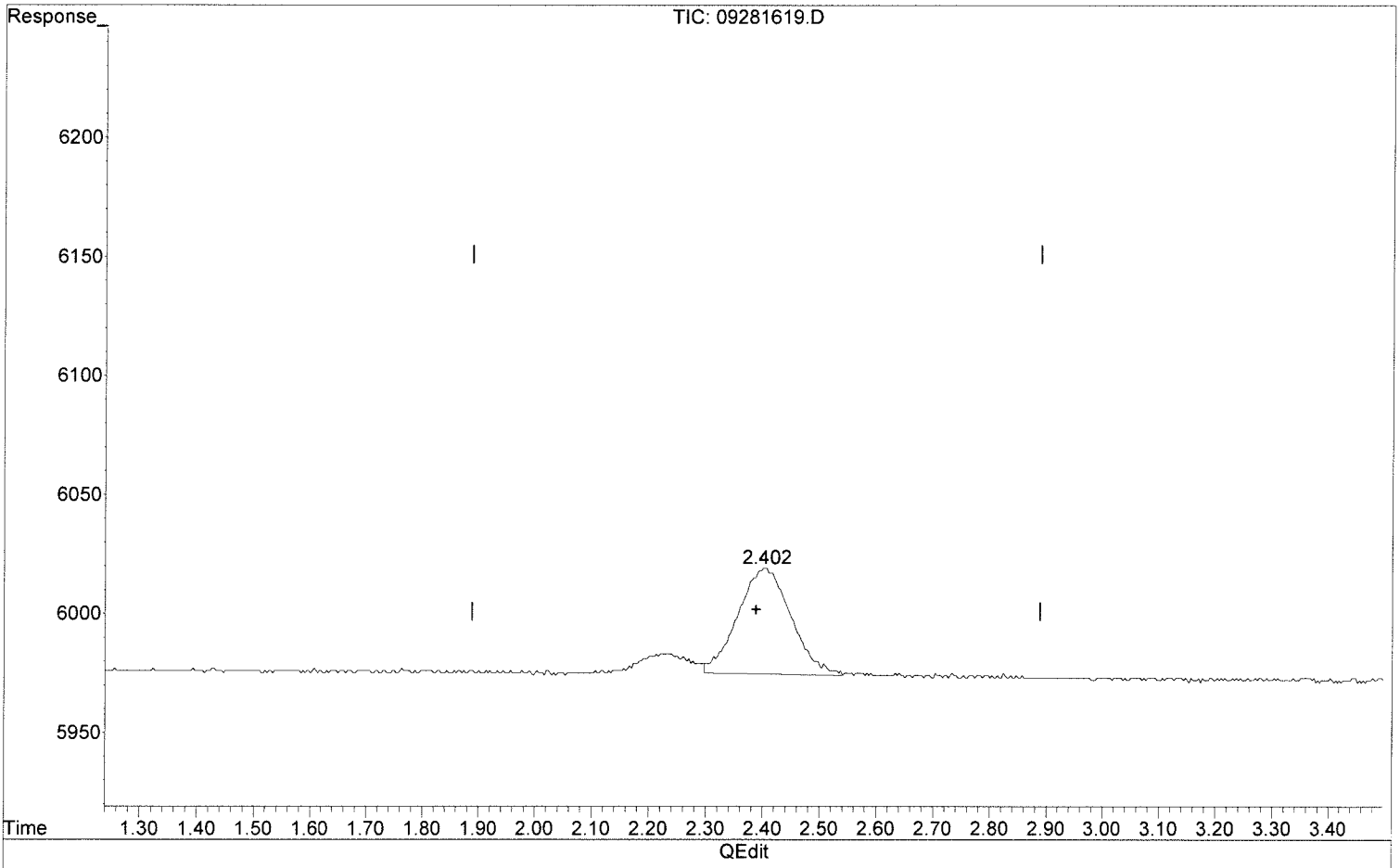
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : I:\GC01\DATA\FXG\2016_09\28\
Data File : 09281619.D
Signal(s) : TCD1A.CH
Acq On : 28 Sep 2016 2:48 pm
Operator : amf
Sample : 4504-002
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 29 17:25:53 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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



(3) Nitrogen

2.402min 1647.356 ppm m

response 2888

9/30/16

9/30/16

(+) = Expected Retention Time

3C012416.M Thu Sep 29 17:26:28 2016

Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\28\
Data File : 09281620.D
Signal(s) : TCD1A.CH
Acq On : 28 Sep 2016 3:06 pm
Operator : amf
Sample : 4504-003
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 29 17:27:17 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 :

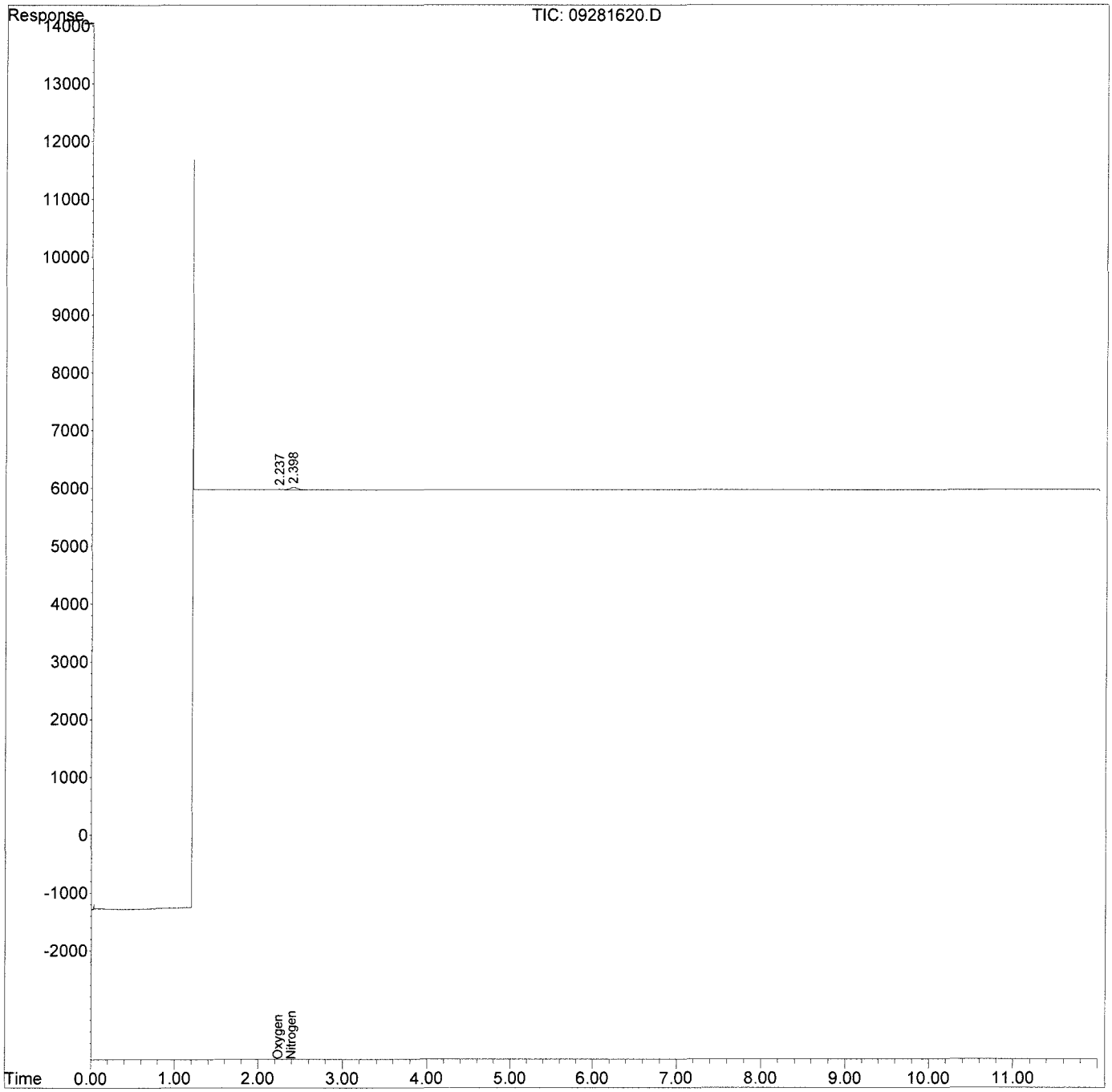
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.000	0	N.D.	ppm	
2)	Oxygen	2.237	479	316.635	ppm	m
3)	Nitrogen	2.398	2846	1623.235	ppm	m
4)	Carbon Monoxide	0.000	0	N.D.	ppm	
5)	Methane	0.000	0	N.D.	ppm	
6)	Carbon Dioxide	0.000	0	N.D.	ppm	

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

Data Path : I:\GC01\DATA\FXG\2016_09\28\
Data File : 09281620.D
Signal(s) : TCD1A.CH
Acq On : 28 Sep 2016 3:06 pm
Operator : amf
Sample : 4504-003
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 29 17:27:17 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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

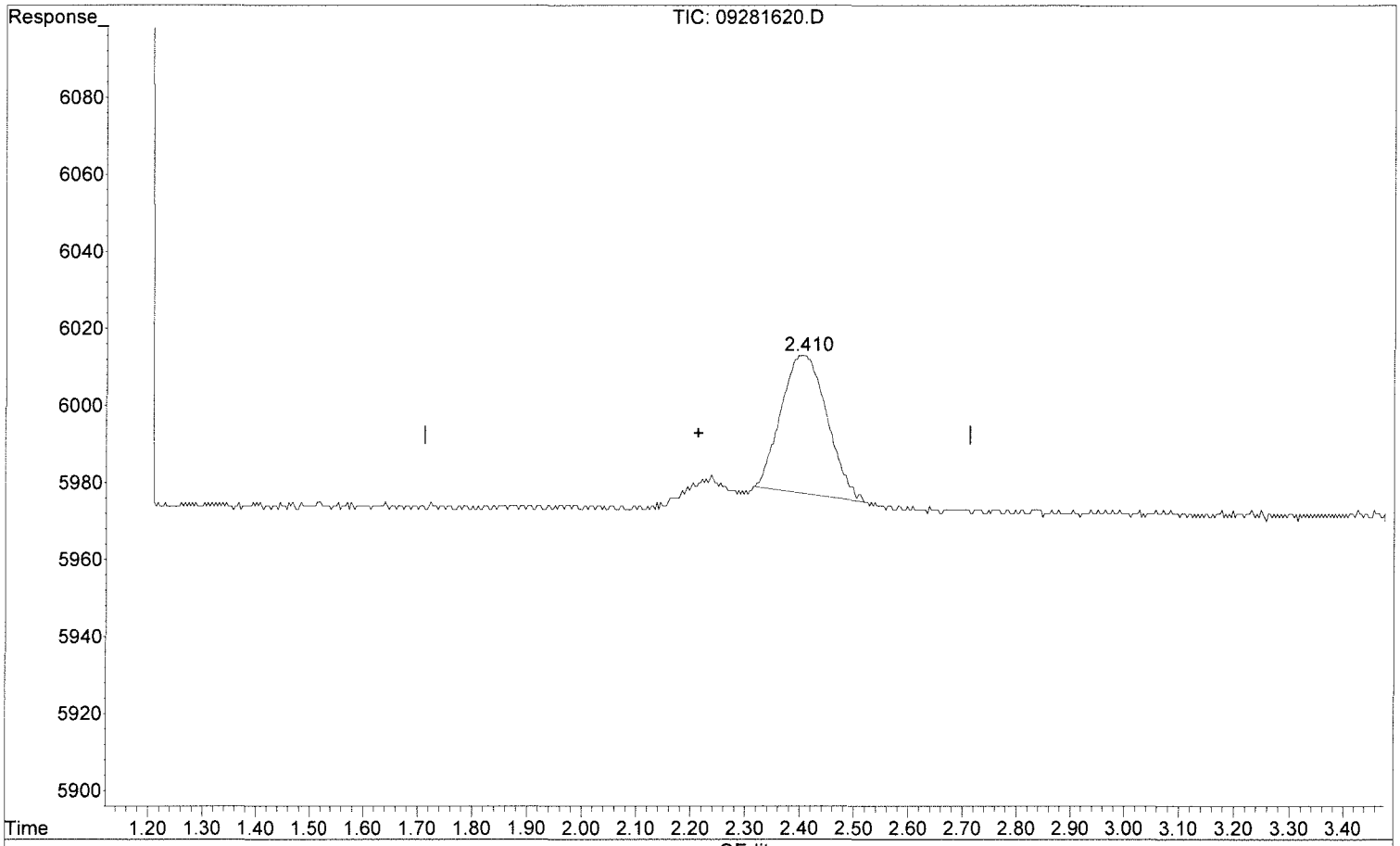


Quantitation Report (Qedit)

Data Path : I:\GC01\DATA\FXG\2016_09\28\
Data File : 09281620.D
Signal(s) : TCD1A.CH
Acq On : 28 Sep 2016 3:06 pm
Operator : amf
Sample : 4504-003
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 29 17:26:44 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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



(2) Oxygen

2.412min 1386.635 ppm

response 2098

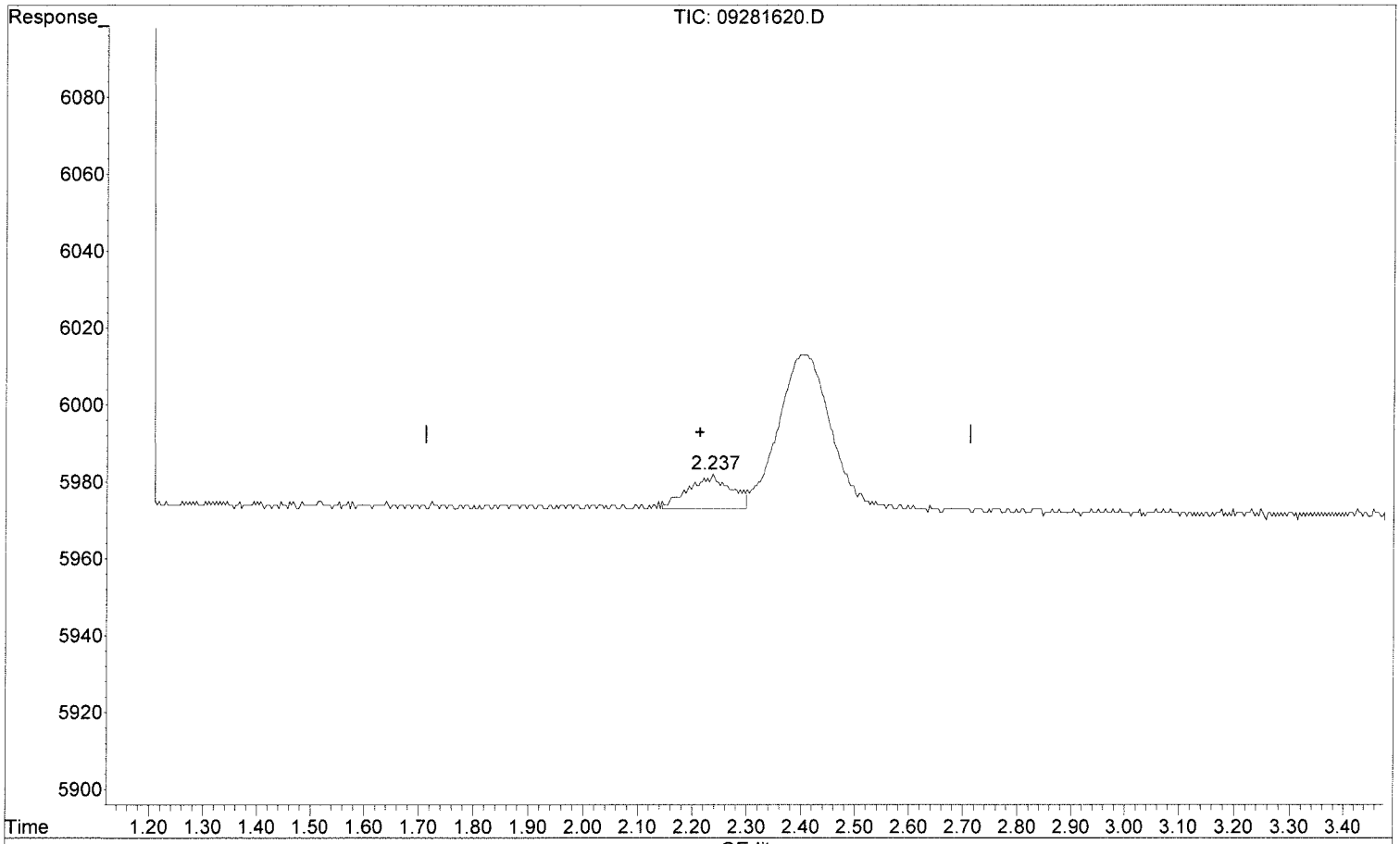
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : I:\GC01\DATA\FXG\2016_09\28\
Data File : 09281620.D
Signal(s) : TCD1A.CH
Acq On : 28 Sep 2016 3:06 pm
Operator : amf
Sample : 4504-003
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 29 17:26:44 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 316.635 ppm m

response 479

9/29/16 BLC

9/30/16

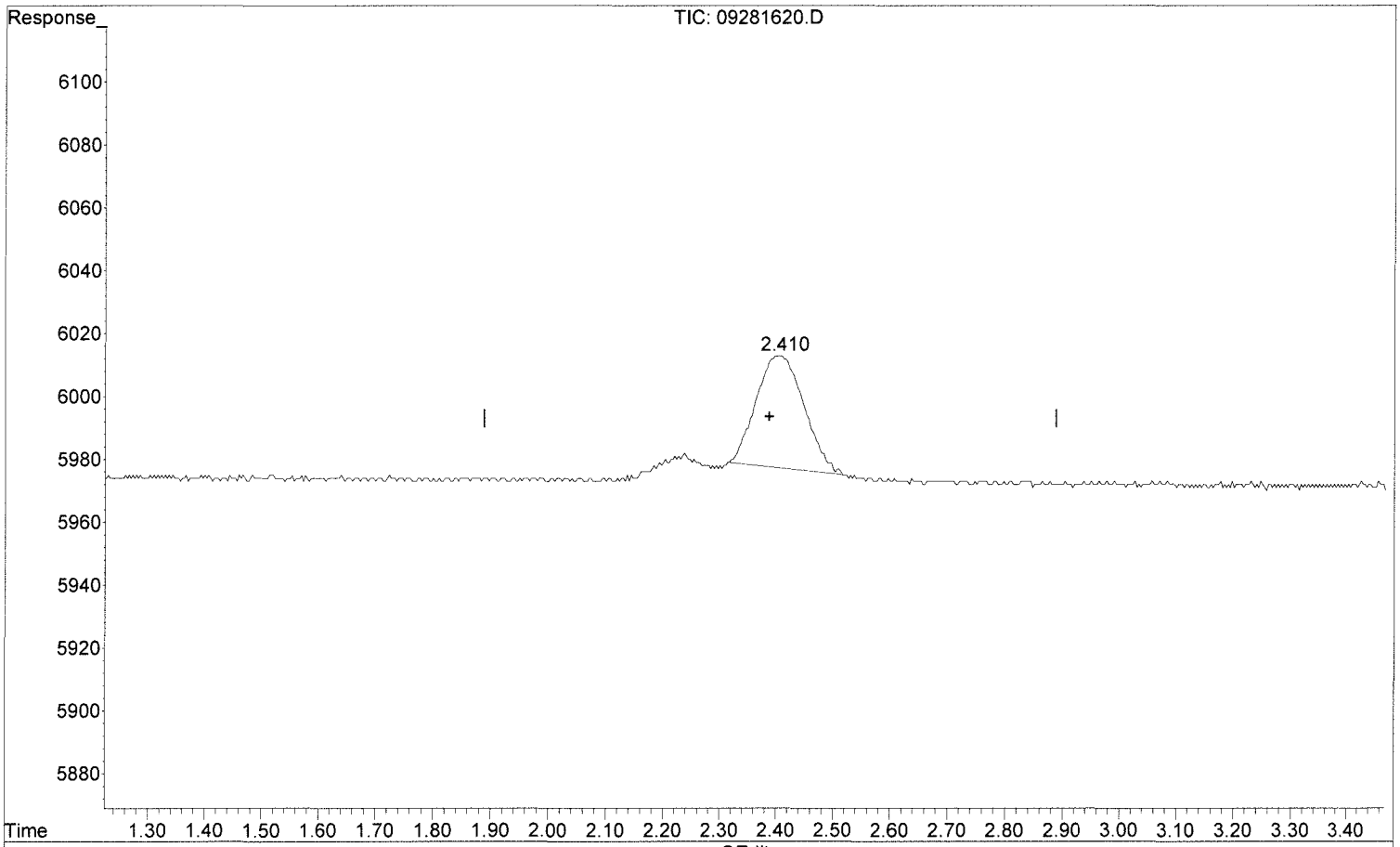
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : I:\GC01\DATA\FXG\2016_09\28\
Data File : 09281620.D
Signal(s) : TCD1A.CH
Acq On : 28 Sep 2016 3:06 pm
Operator : amf
Sample : 4504-003
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 29 17:26:44 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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



(3) Nitrogen

2.412min 1196.856 ppm

response 2098

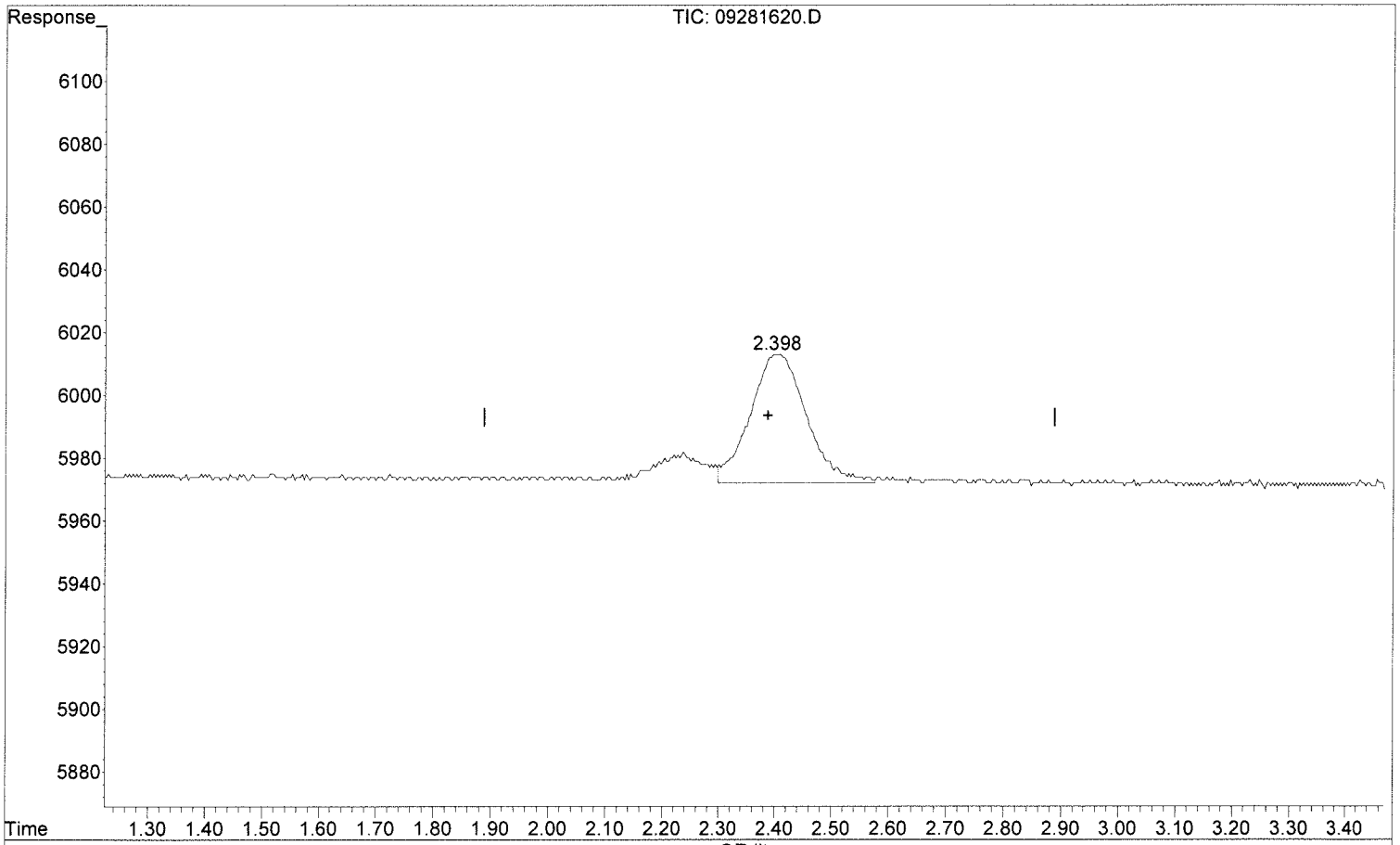
(+) = Expected Retention Time

Quantitation Report (Qedit)

Data Path : I:\GC01\DATA\FXG\2016_09\28\
Data File : 09281620.D
Signal(s) : TCD1A.CH
Acq On : 28 Sep 2016 3:06 pm
Operator : amf
Sample : 4504-003
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 29 17:26:44 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

2.398min 1623.235 ppm m

response 2846

9/29/16 BLC

9/30/16

(+) = Expected Retention Time

Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\28\
Data File : 09281621.D
Signal(s) : TCD1A.CH
Acq On : 28 Sep 2016 3:22 pm
Operator : amf
Sample : 4504-004
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 29 17:27:35 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 :

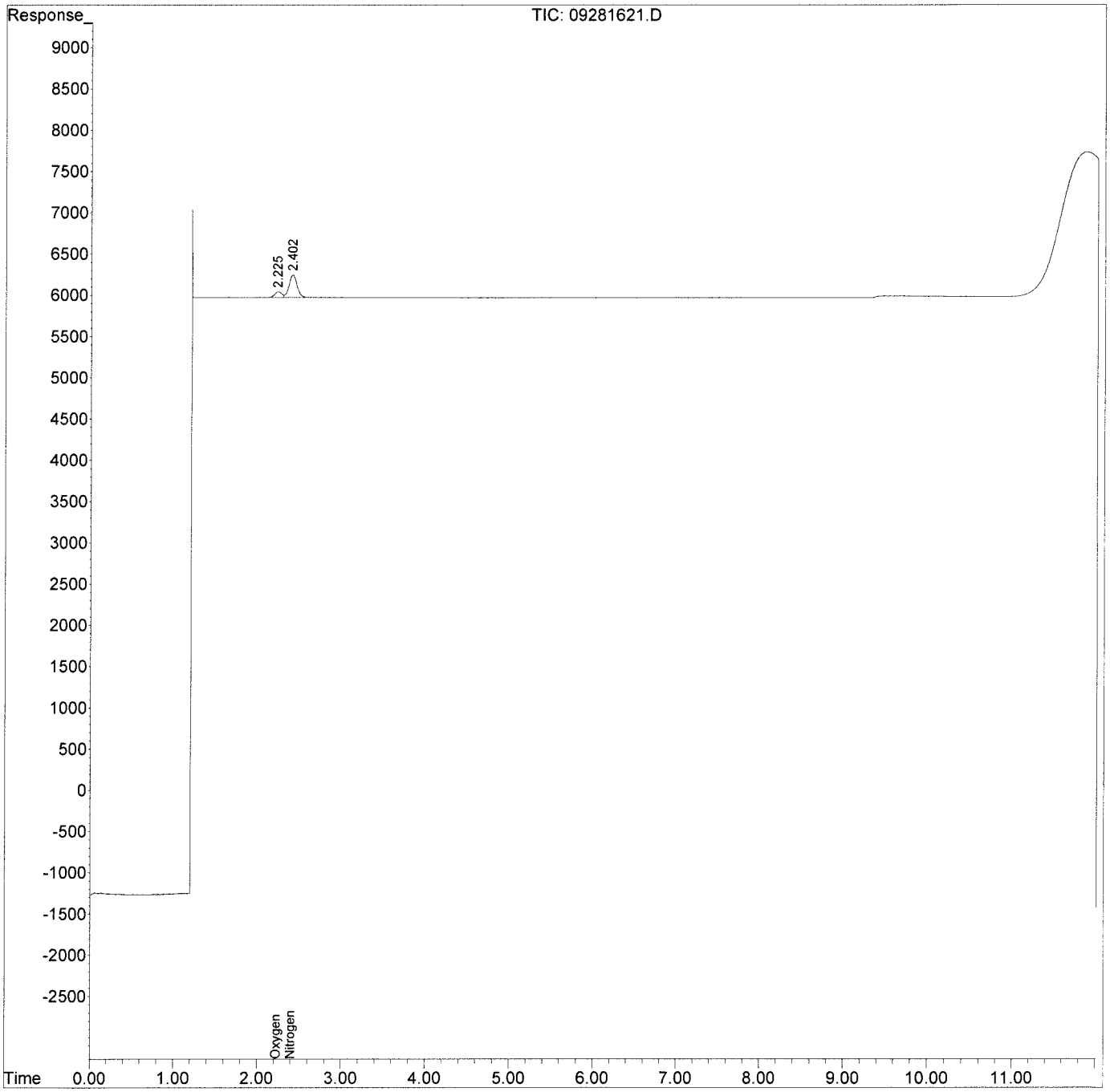
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.231	3845	2540.965	ppm
3)	Nitrogen	2.405	18000	10266.584	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

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

Data Path : I:\GC01\DATA\FXG\2016_09\28\
Data File : 09281621.D
Signal(s) : TCD1A.CH
Acq On : 28 Sep 2016 3:22 pm
Operator : amf
Sample : 4504-004
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 29 17:27:35 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_09\28\
Data File : 09281602.D
Signal(s) : TCD1A.CH
Acq On : 28 Sep 2016 9:29 am
Operator : amf
Sample : mb
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 28 10:06:56 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 :

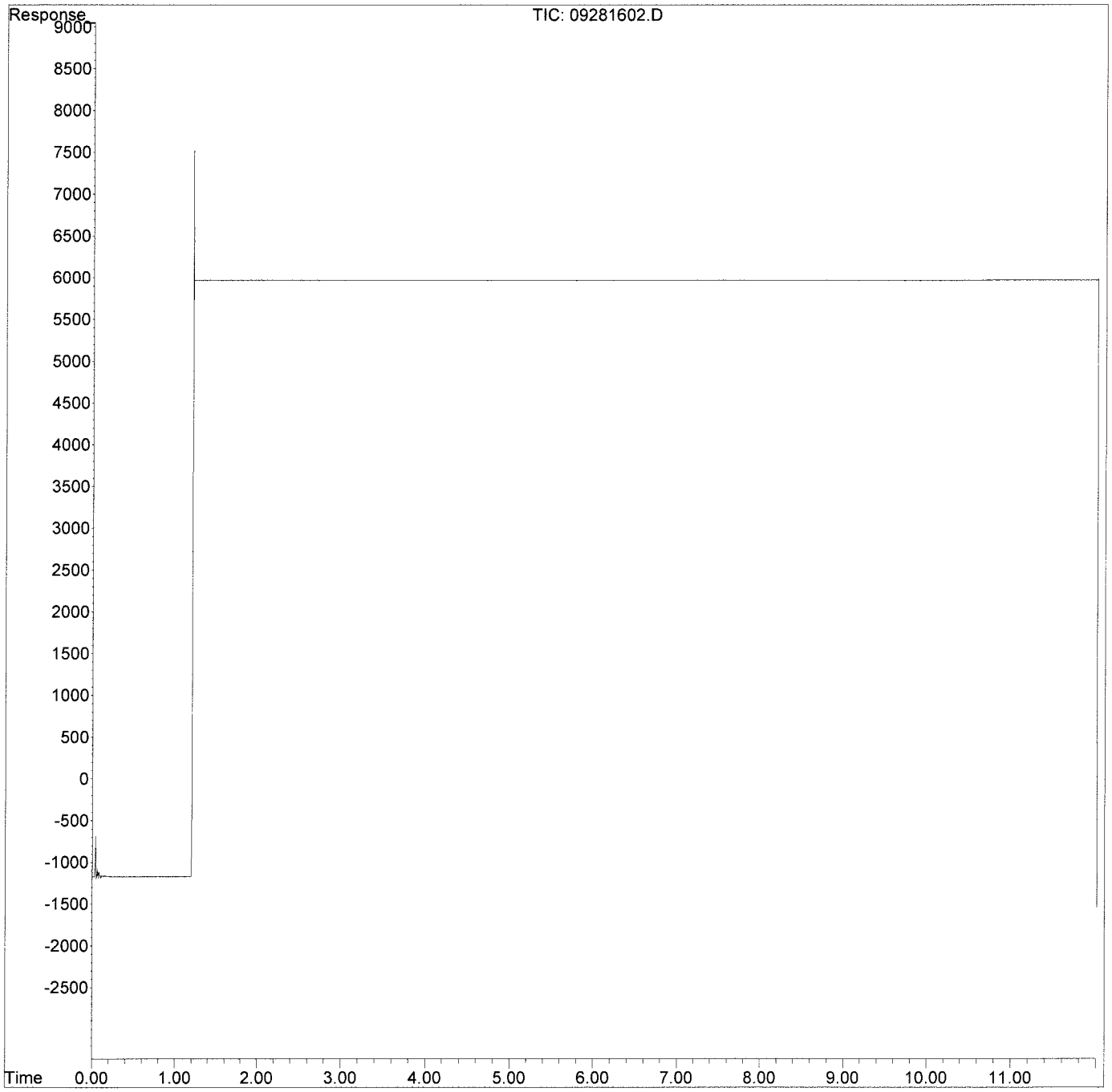
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

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

Data Path : I:\GC01\DATA\FXG\2016_09\28\
Data File : 09281602.D
Signal(s) : TCD1A.CH
Acq On : 28 Sep 2016 9:29 am
Operator : amf
Sample : mb
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 28 10:06:56 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 :



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\28\
Data File : 09281604.D
Signal(s) : TCD1A.CH
Acq On : 28 Sep 2016 10:03 am
Operator : amf
Sample : lcs s11-07281601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 29 13:00:37 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.708	66365	50375.348	ppm
2)	Oxygen	2.219	79539	52560.659	ppm
3)	Nitrogen	2.396	93014	53053.414	ppm
4)	Carbon Monoxide	3.084	87870	51768.812	ppm
5)	Methane	5.075	62484	49635.550	ppm
6)	Carbon Dioxide	6.737	100694	49619.826	ppm

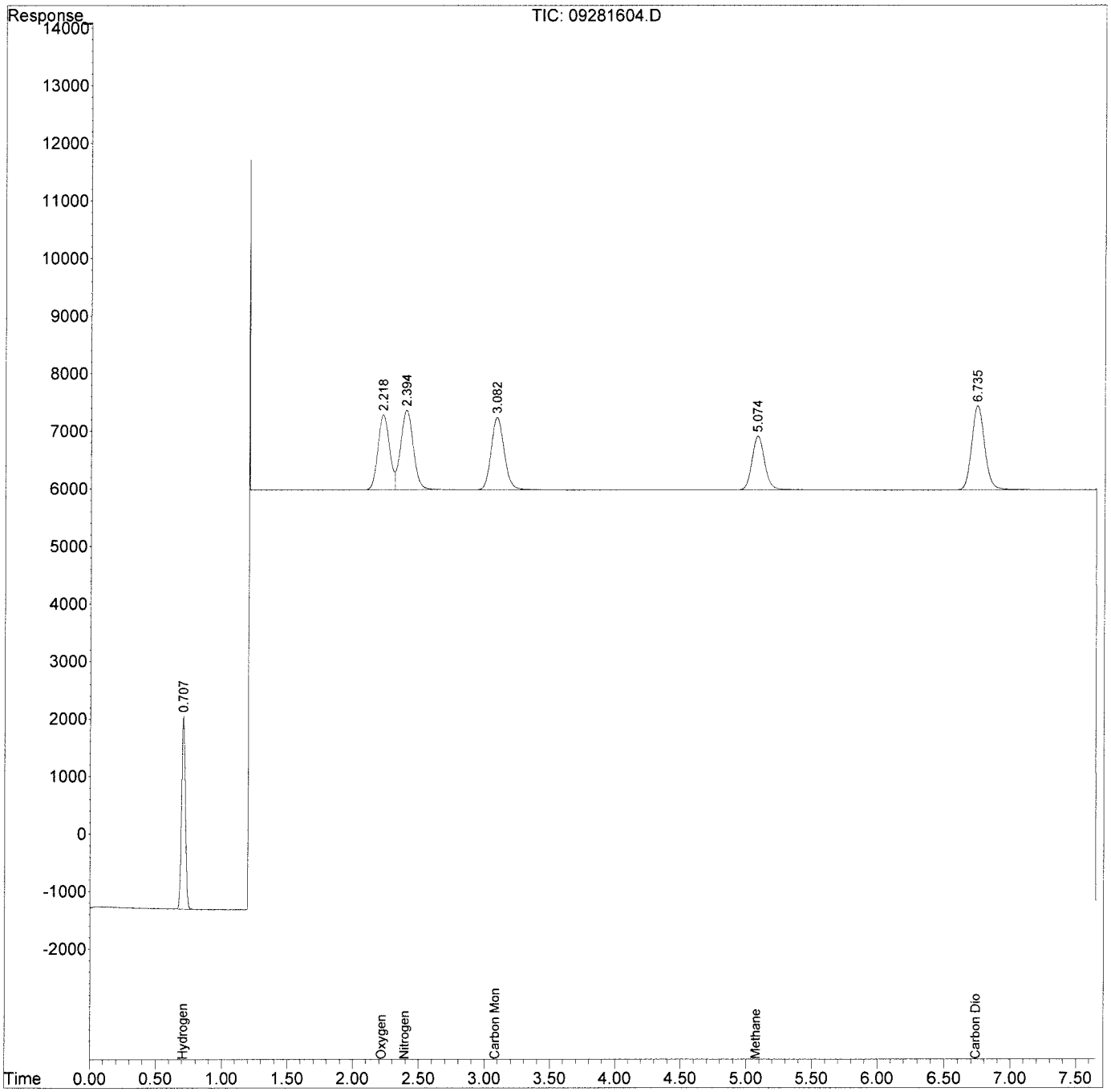
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\28\
Data File : 09281604.D
Signal(s) : TCD1A.CH
Acq On : 28 Sep 2016 10:03 am
Operator : amf
Sample : lcs s11-07281601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 29 13:00:37 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	

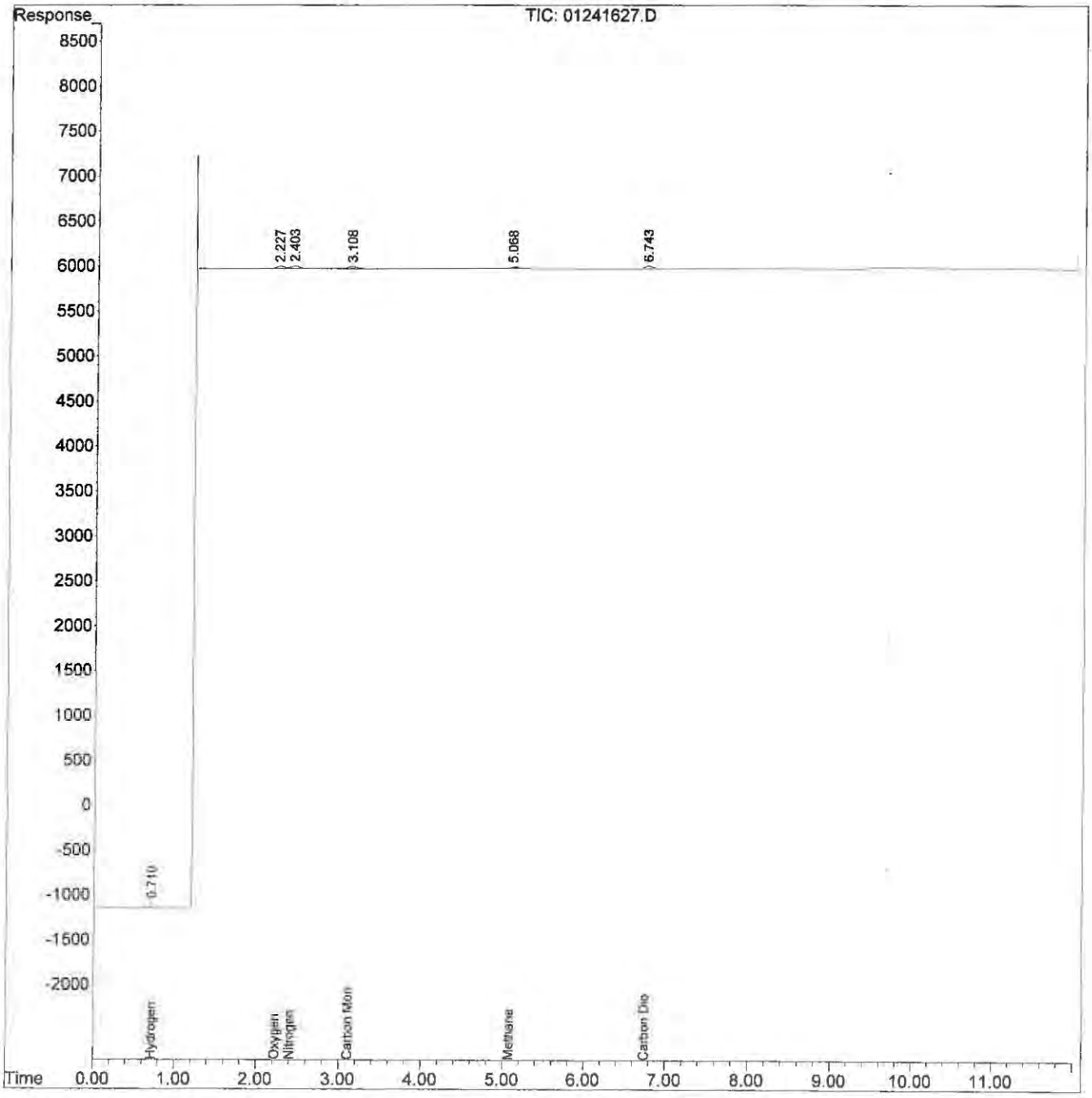
(f)=RT Delta > 1/2 Window (m)=manual int.

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: autointl.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 :

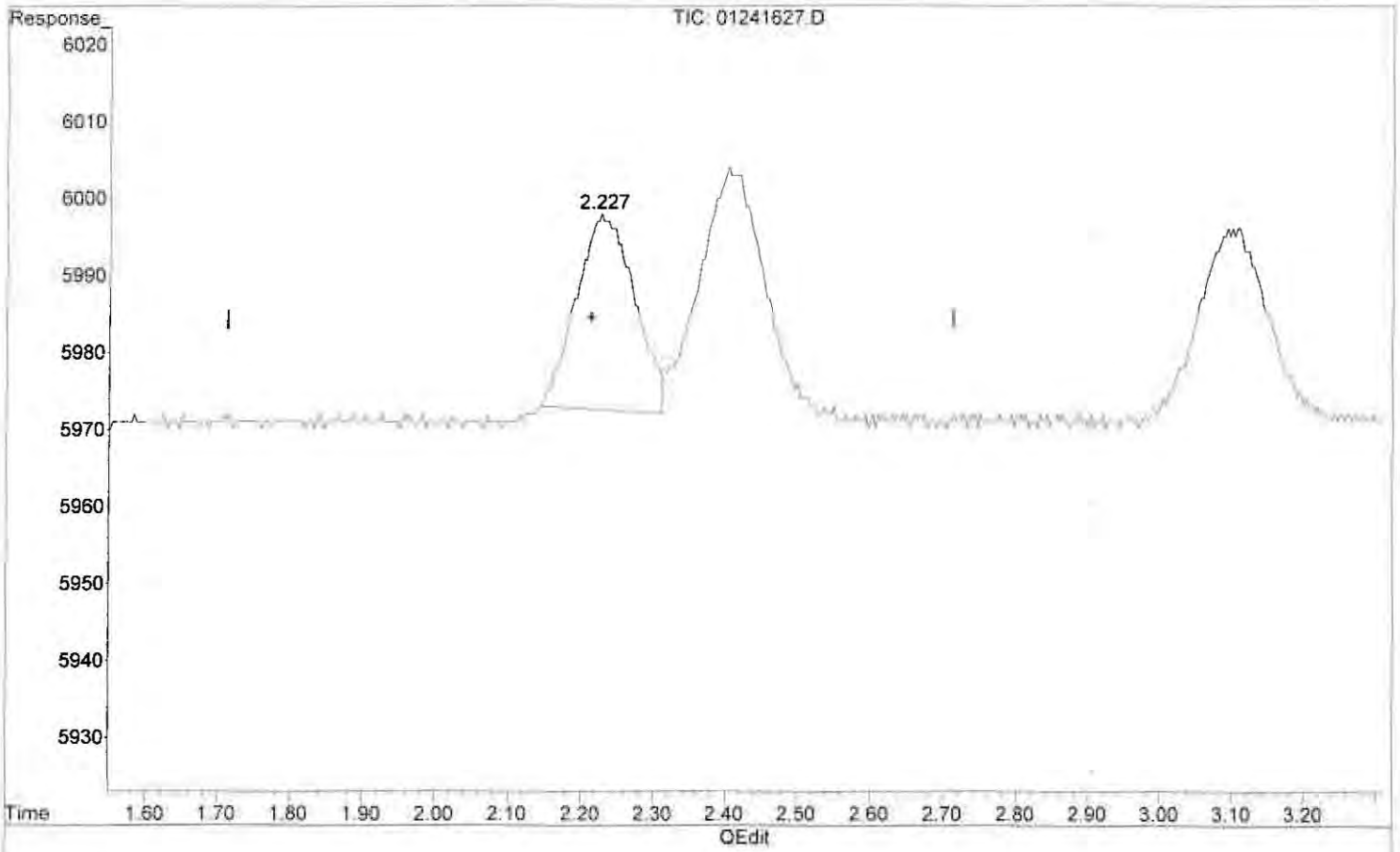


Quantitation Report (Qedit)

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

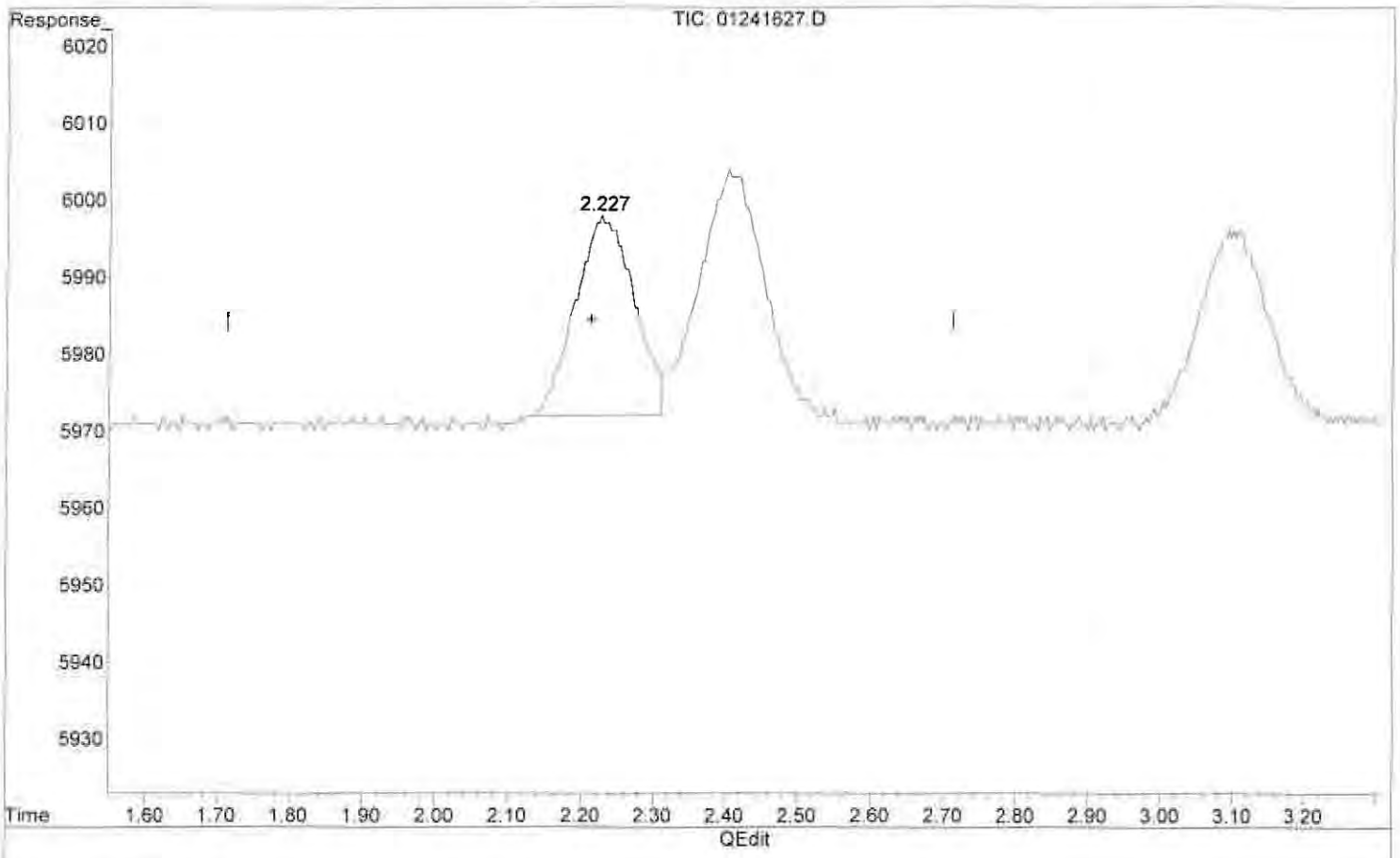
(+) = Expected Retention Time

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

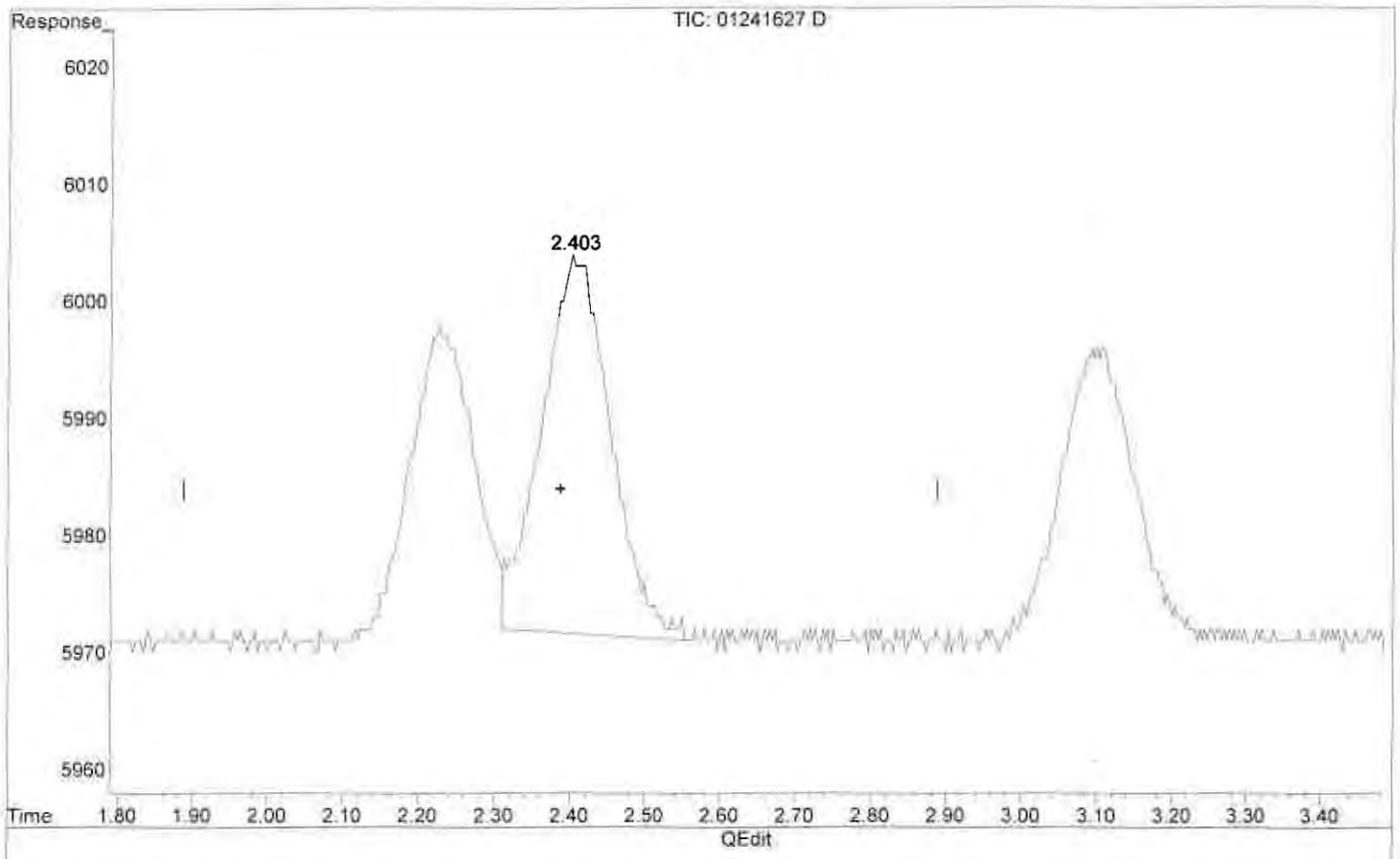
(+) = Expected Retention Time

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

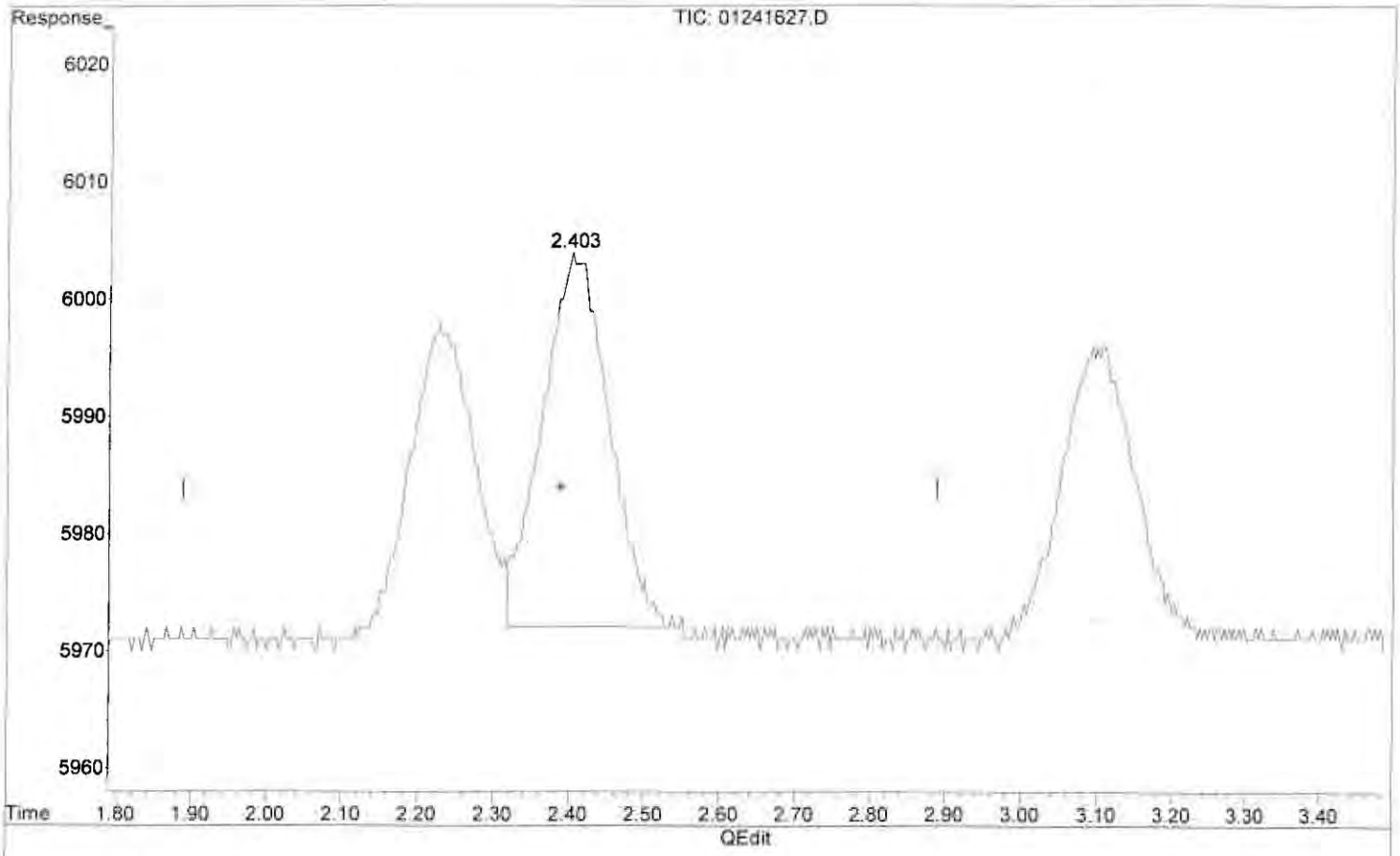
(+) = Expected Retention Time

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

2/6

1/24/15

(+) = 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

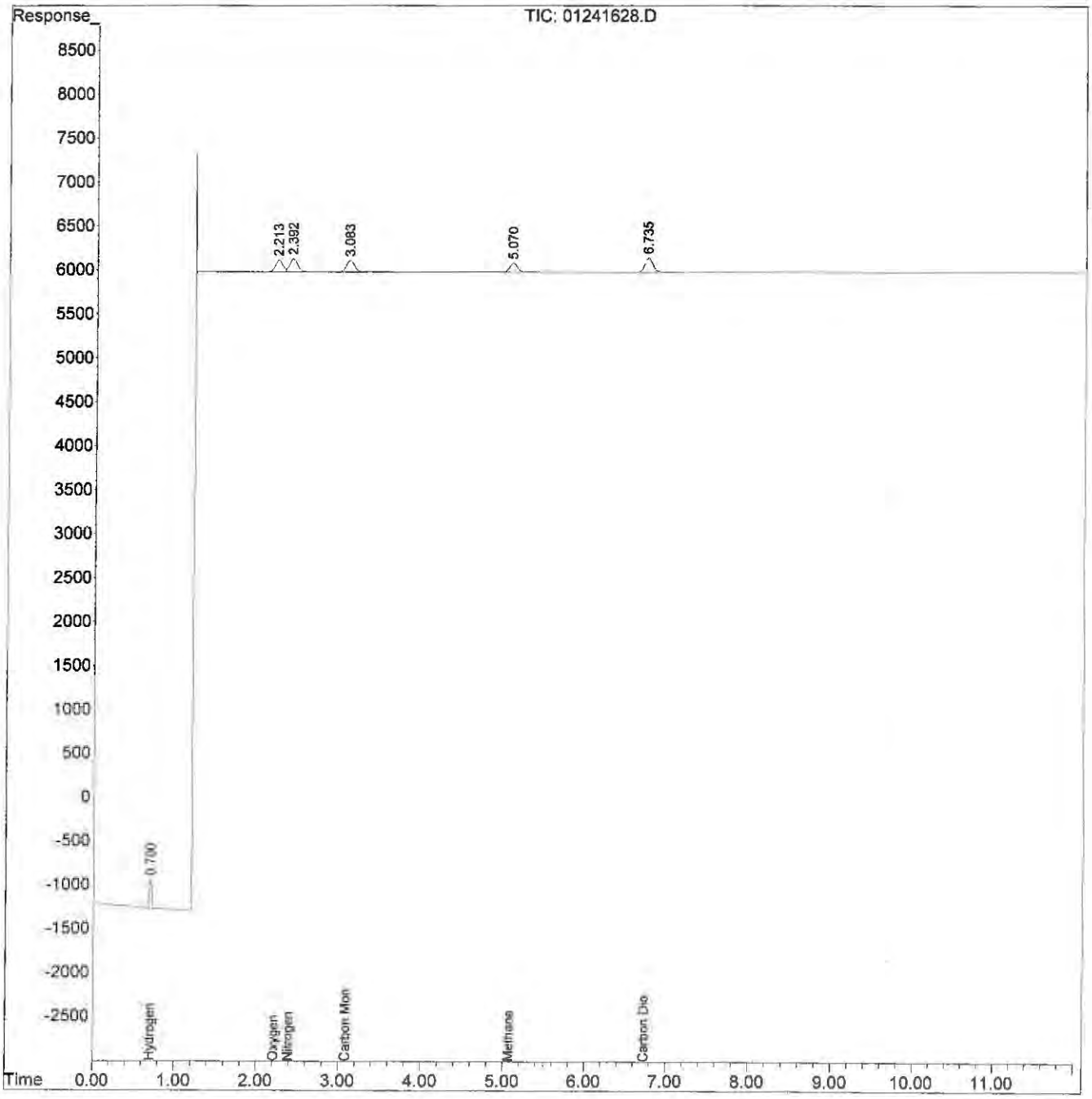
(f)=RT Delta > 1/2 Window (m)=manual int.

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

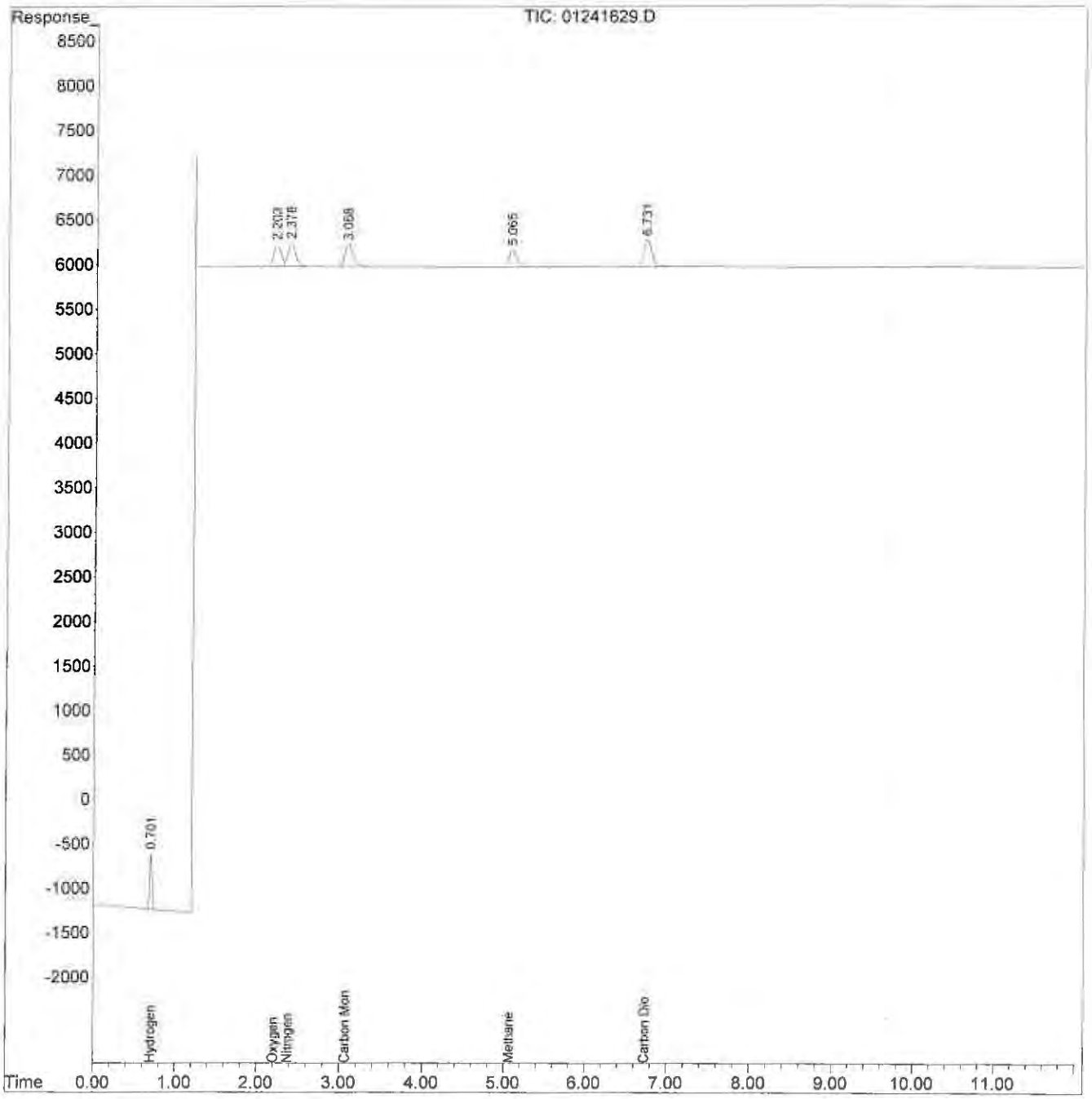
(f)=RT Delta > 1/2 Window (m)=manual int.

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: autointl.e
Quant Time: Jan 24 19:52:57 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 19:52:26 2016
Response via : Initial Calibration
Integrator: ChemStation

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



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241631.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 18:16
Operator : WH
Sample : std 4% S11-12041501
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 19:55:30 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 19:54:31 2016
Response via : Initial Calibration
Integrator: ChemStation

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

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.710	49891	38867.951	ppm
2)	Oxygen	2.225	60887	39358.143	ppm
3)	Nitrogen	2.402	68113	36714.941	ppm
4)	Carbon Monoxide	3.089	67550	39160.311	ppm
5)	Methane	5.075	50534	39329.825	ppm
6)	Carbon Dioxide	6.737	81525	38955.184	ppm

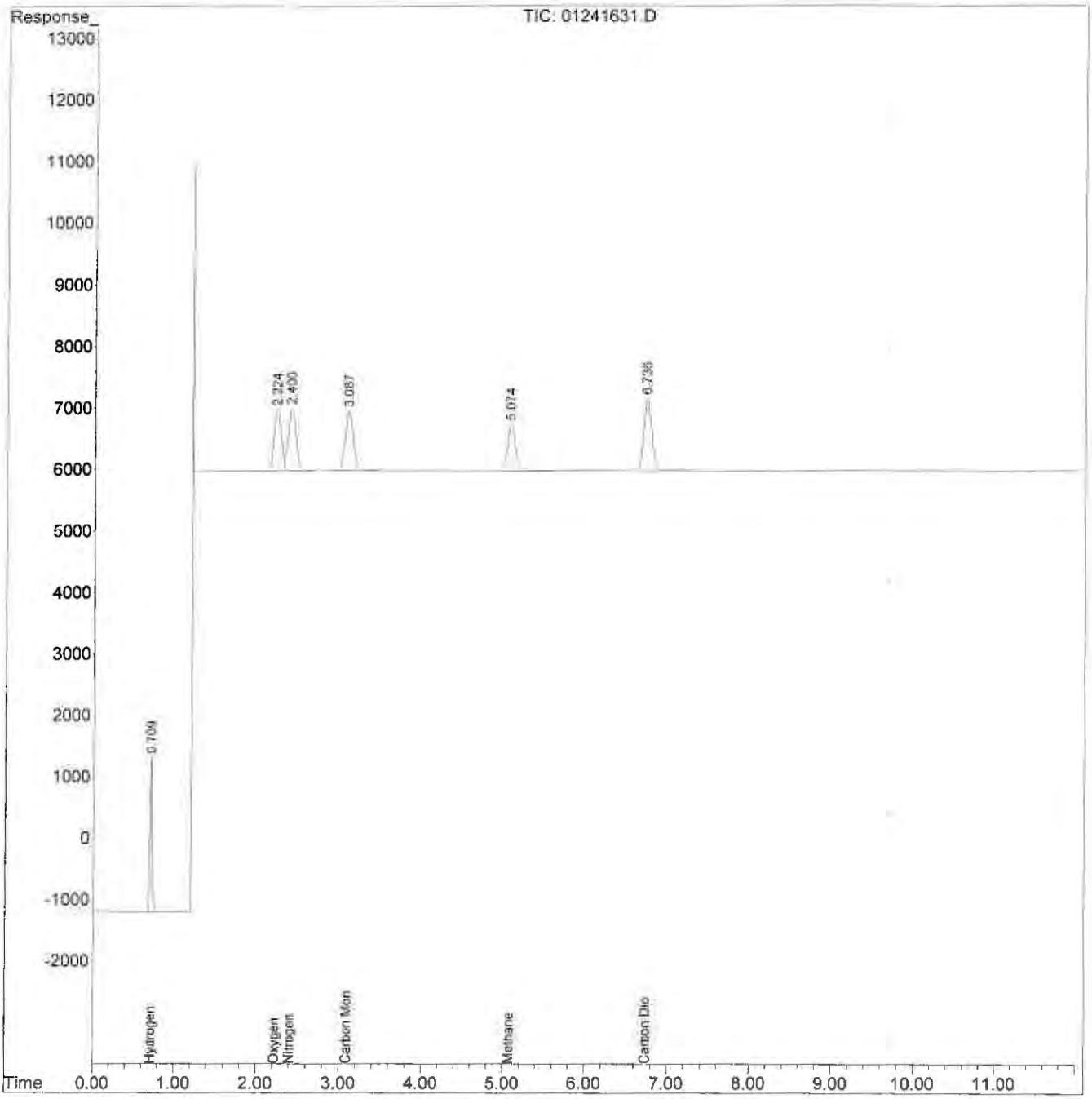
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241631.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 18:16
Operator : WH
Sample : std 4% S11-12041501
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 19:55:30 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 19:54:31 2016
Response via : Initial Calibration
Integrator: ChemStation

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



Quantitation Report (Not Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241632.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 18:33
Operator : WH
Sample : std 16.66% S11-12031501
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 19:57:29 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 19:54:31 2016
Response via : Initial Calibration
Integrator: ChemStation

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

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.704	209940	163554.818	ppm
2)	Oxygen	2.201	242272	156607.855	ppm
3)	Nitrogen	2.379	271989	146611.136	ppm
4)	Carbon Monoxide	3.067	269360	156155.237	ppm
5)	Methane	5.058	199750	155461.848	ppm
6)	Carbon Dioxide	6.719	321532	153637.732	ppm

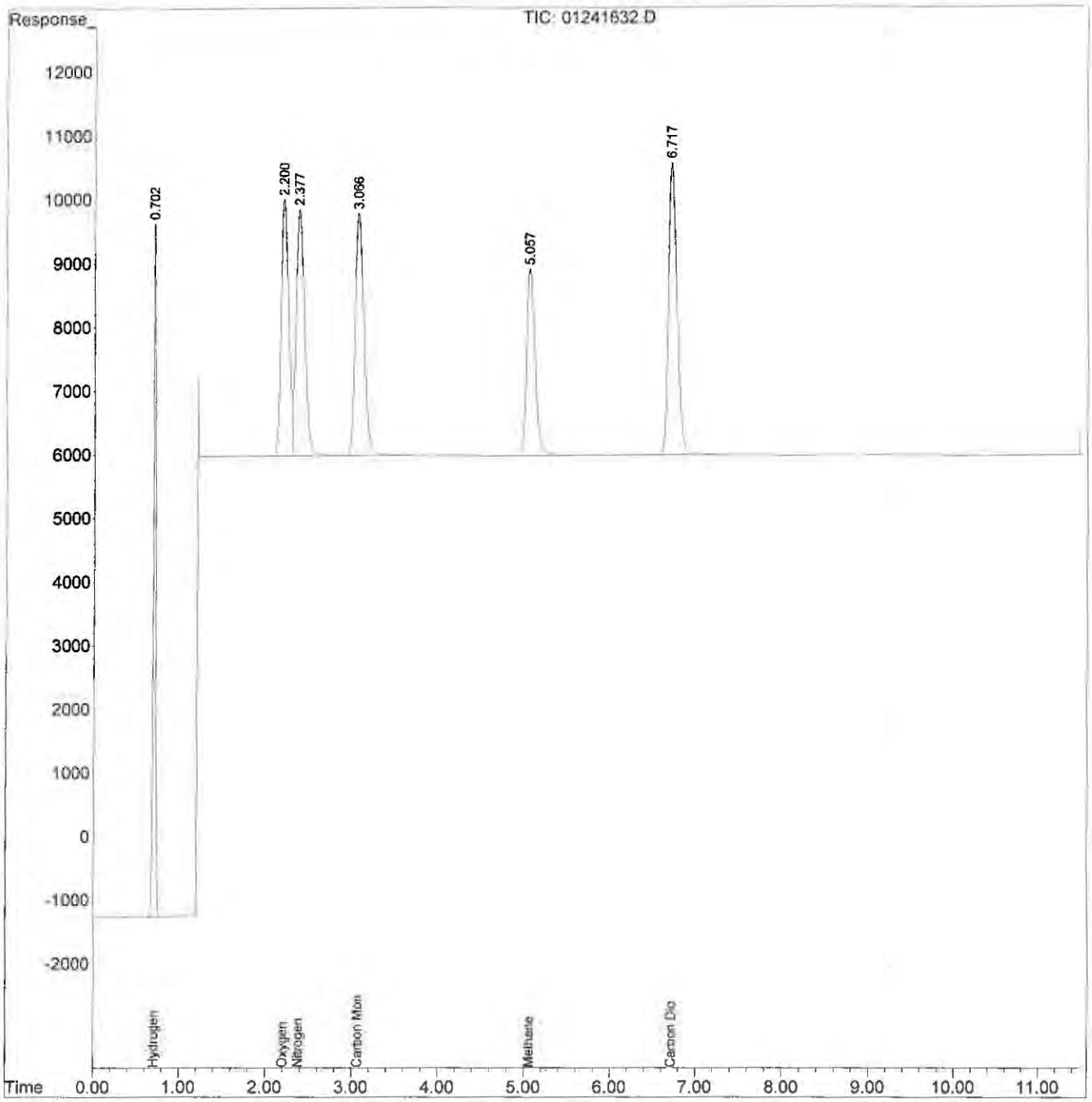
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (Not Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241632.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 18:33
Operator : WH
Sample : std 16.66% S11-12031501
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 19:57:29 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 19:54:31 2016
Response via : Initial Calibration
Integrator: ChemStation

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



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241633.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 19:02
Operator : WH
Sample : std co2
Misc : S17-02131201
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 19:58:39 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 19:57:50 2016
Response via : Initial Calibration
Integrator: ChemStation

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

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.000	0	N.D.	ppm	
2)	Oxygen	0.000	0	N.D.	ppm	d
3)	Nitrogen	0.000	0	N.D.	ppm	d
4)	Carbon Monoxide	0.000	0	N.D.	ppm	
5)	Methane	0.000	0	N.D.	ppm	
6)	Carbon Dioxide	6.651	1875387	910352.314	ppm	

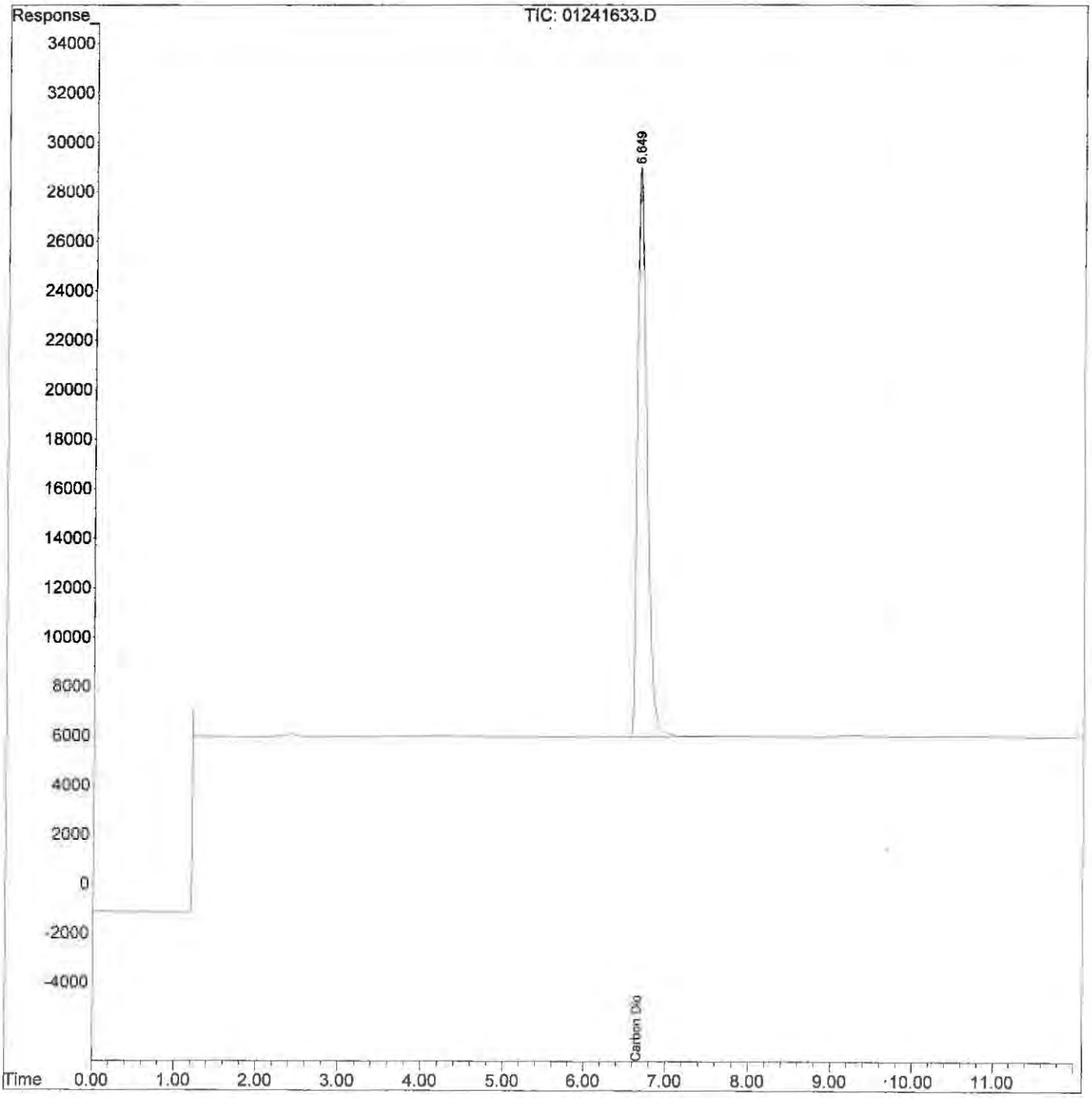
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241633.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 19:02
Operator : WH
Sample : std co2
Misc : S17-02131201
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 19:58:39 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 19:57:50 2016
Response via : Initial Calibration
Integrator: ChemStation

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



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241634.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 20:04
Operator : WH
Sample : std ch4
Misc : S30-11301401
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 20:36:02 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 20:00:56 2016
Response via : Initial Calibration
Integrator: ChemStation

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

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.000	0	N.D.	ppm	
2)	Oxygen	0.000	0	N.D.	ppm	
3)	Nitrogen	0.000	0	N.D.	ppm	
4)	Carbon Monoxide	0.000	0	N.D.	ppm	
5)	Methane	4.976	1219046	961698.203	ppm	
6)	Carbon Dioxide	0.000	0	N.D.	ppm	d

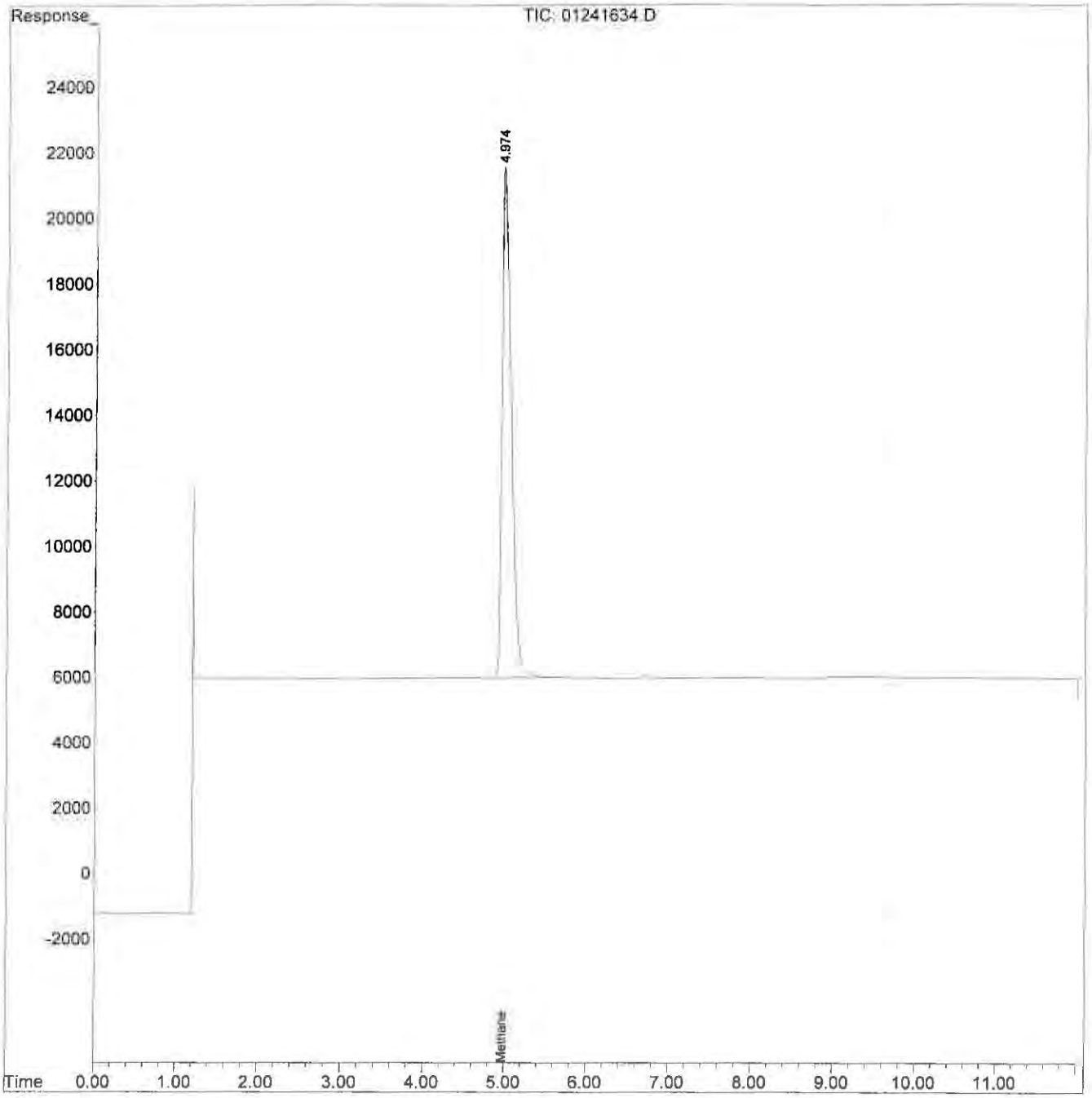
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241634.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 20:04
Operator : WH
Sample : std ch4
Misc : S30-11301401
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 20:36:02 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 20:00:56 2016
Response via : Initial Calibration
Integrator: ChemStation

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



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241635.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 20:39
Operator : WH
Sample : std h2
Misc : small loop of S11-12021501
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 20:56:25 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 20:37:18 2016
Response via : Initial Calibration
Integrator: ChemStation

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

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.686	638516	499304.194	ppm	
2)	Oxygen	0.000	0	N.D.	ppm	
3)	Nitrogen	0.000	0	N.D.	ppm	
4)	Carbon Monoxide	0.000	0	N.D.	ppm	
5)	Methane	0.000	0	N.D.	ppm	d
6)	Carbon Dioxide	0.000	0	N.D.	ppm	

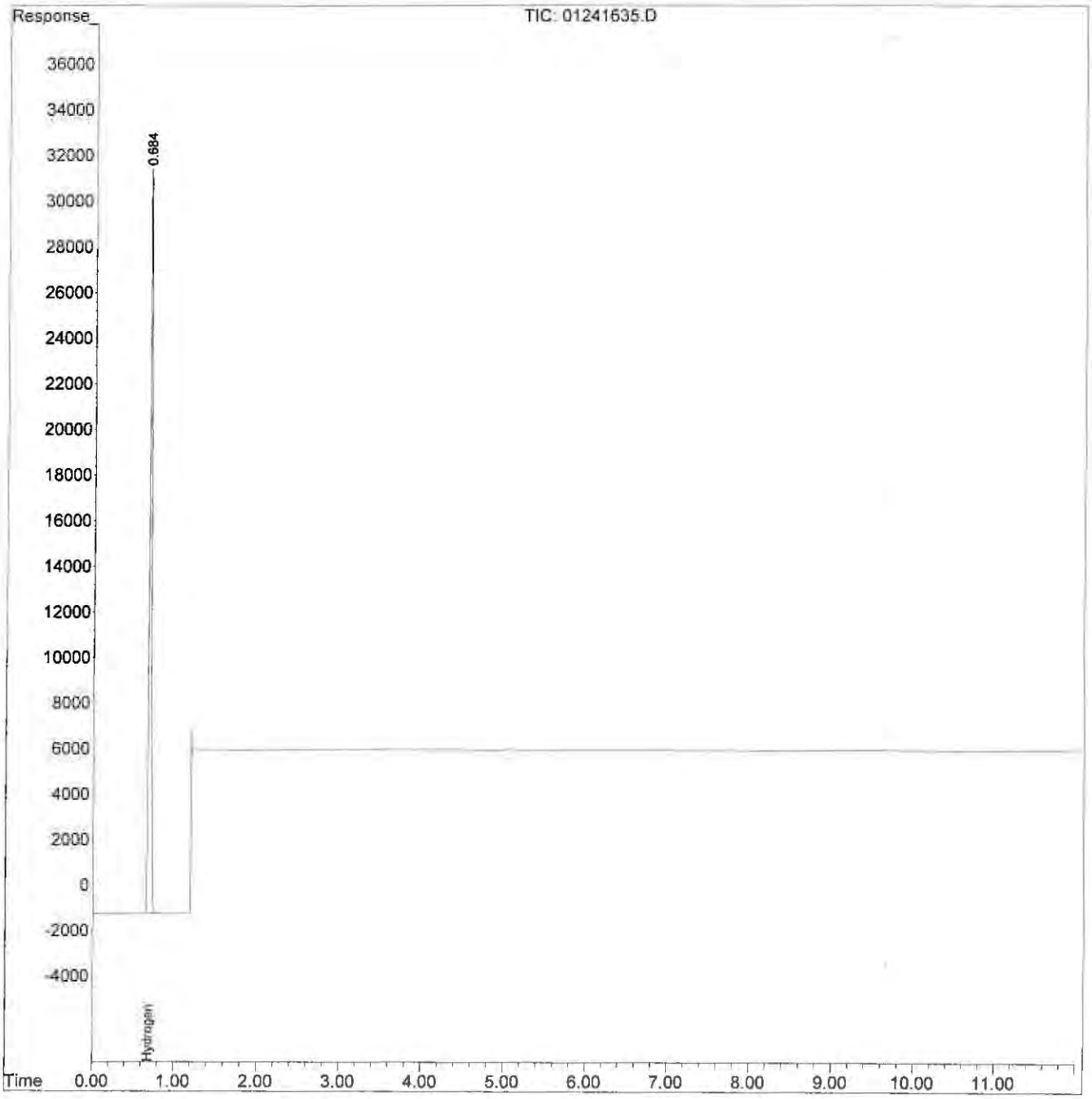
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241635.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 20:39
Operator : WH
Sample : std h2
Misc : small loop of S11-12021501
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 20:56:25 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 20:37:18 2016
Response via : Initial Calibration
Integrator: ChemStation

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



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241637.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 21:19
Operator : WH
Sample : STD N2
Misc : S11-12021502
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 21:35:15 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 21:18:19 2016
Response via : Initial Calibration
Integrator: ChemStation

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

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.000	0	N.D.	ppm	d
2)	Oxygen	0.000	0	N.D.	ppm	d
3)	Nitrogen	2.293	1540603	857917.729	ppm	
4)	Carbon Monoxide	0.000	0	N.D.	ppm	
5)	Methane	0.000	0	N.D.	ppm	d
6)	Carbon Dioxide	0.000	0	N.D.	ppm	

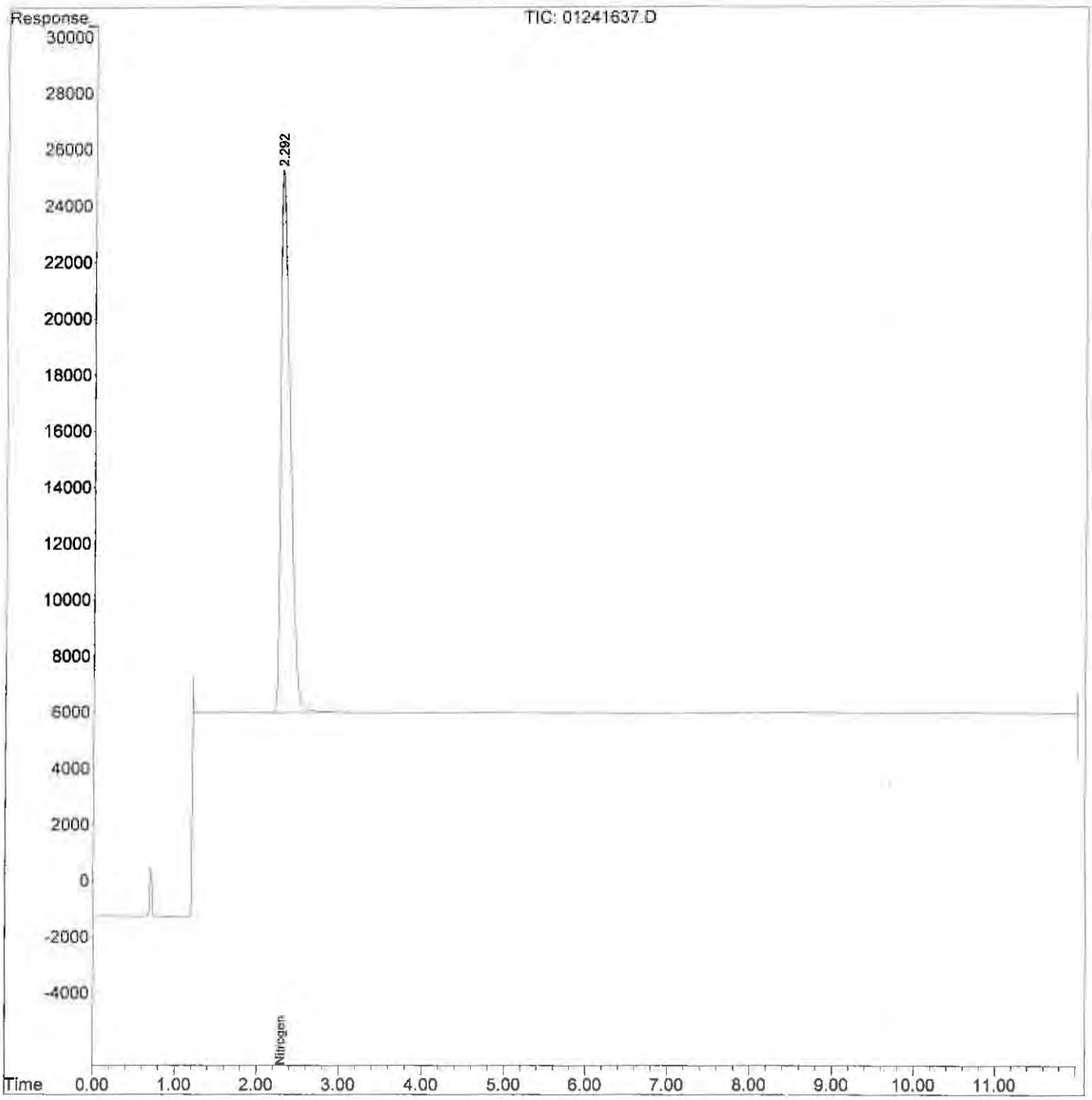
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241637.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 21:19
Operator : WH
Sample : STD N2
Misc : S11-12021502
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 21:35:15 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 21:18:19 2016
Response via : Initial Calibration
Integrator: ChemStation

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



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241639.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 21:56
Operator : WH
Sample : STD O2
Misc : s11-12021503
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 22:12:05 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 21:54:52 2016
Response via : Initial Calibration
Integrator: ChemStation

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

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.117	1478054	974822.367	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

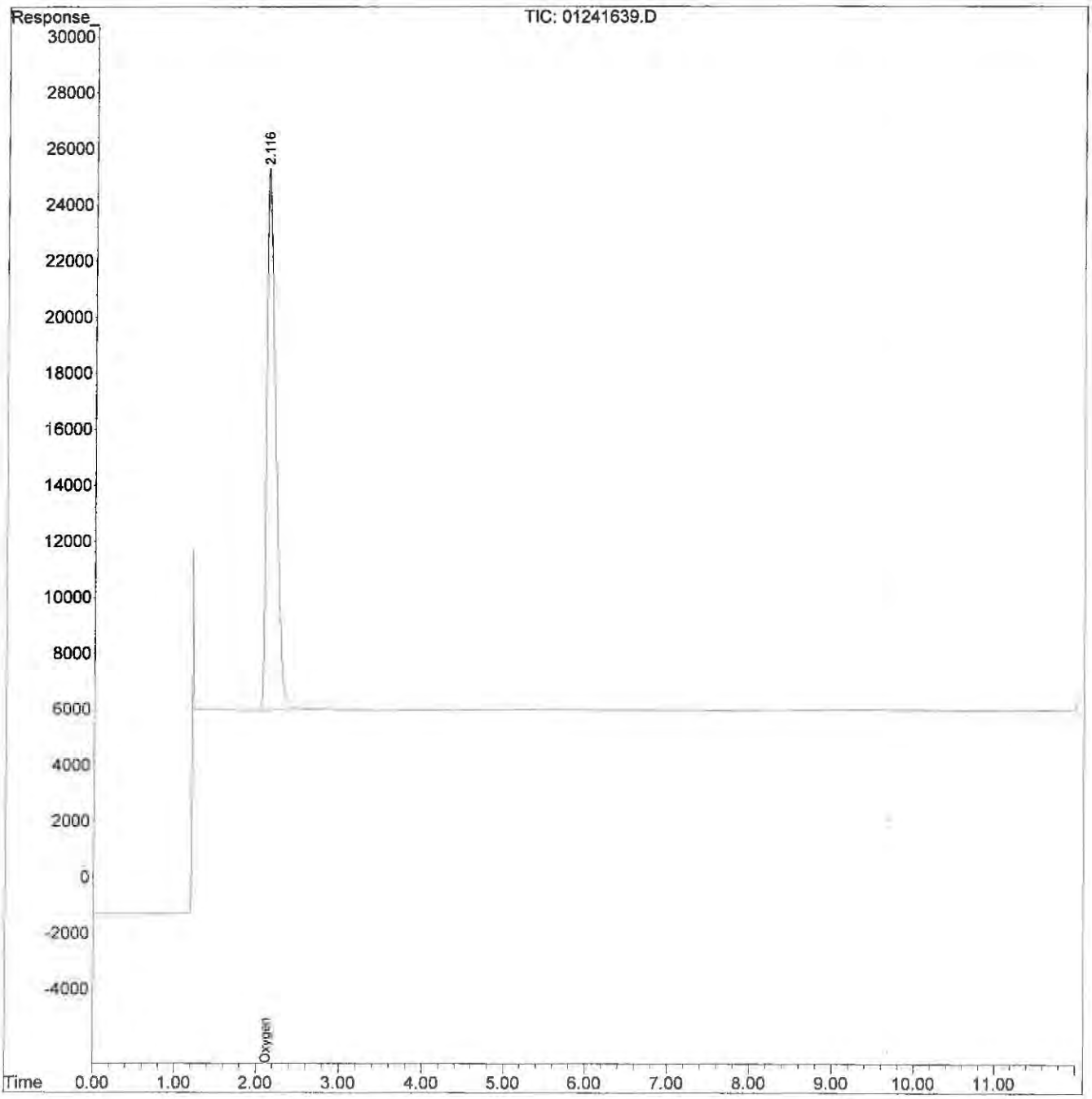
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241639.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 21:56
Operator : WH
Sample : STD O2
Misc : s11-12021503
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 22:12:05 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 21:54:52 2016
Response via : Initial Calibration
Integrator: ChemStation

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



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241640.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 22:13
Operator : WH
Sample : icv math
Misc : S30-01211601
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 22:32:48 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.702	49998	37951.830	ppm
2)	Oxygen	2.212	59532	39339.676	ppm
3)	Nitrogen	2.387	85443	48734.916	ppm
4)	Carbon Monoxide	3.074	82976	48885.688	ppm
5)	Methane	5.066	50003	39721.416	ppm
6)	Carbon Dioxide	6.728	95530	47075.322	ppm

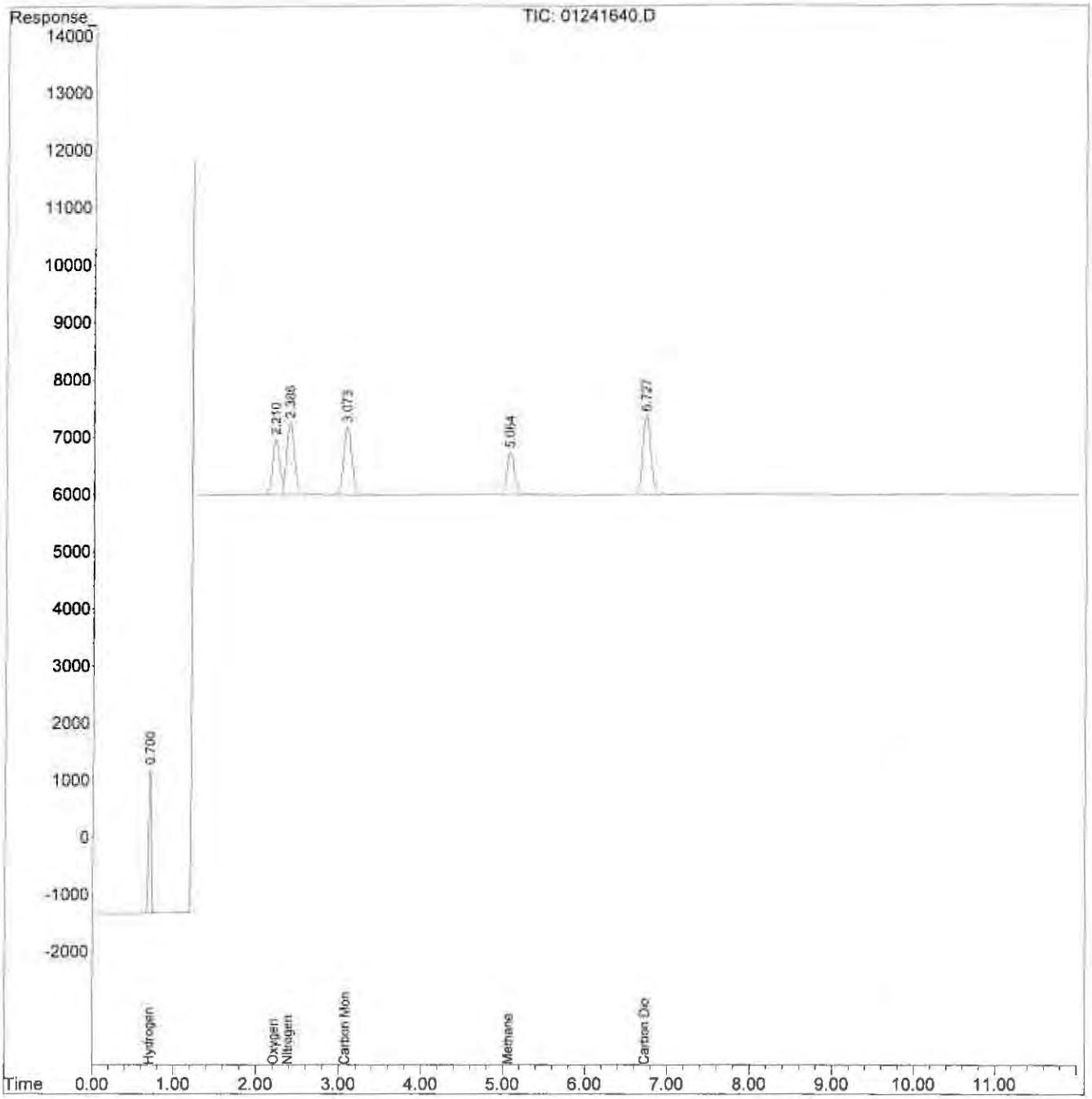
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241640.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 22:13
Operator : WH
Sample : icv math
Misc : S30-01211601
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 22:32:48 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241641.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 22:32
Operator : WH
Sample : icv scott
Misc : S30-12281502
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 22:48:42 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.706	49672	37704.490	ppm
2)	Oxygen	2.219	37333	24670.381	ppm
3)	Nitrogen	2.393	84889	48418.601	ppm
4)	Carbon Monoxide	3.079	83785	49362.383	ppm
5)	Methane	5.068	50643	40229.211	ppm
6)	Carbon Dioxide	6.729	97009	47803.956	ppm

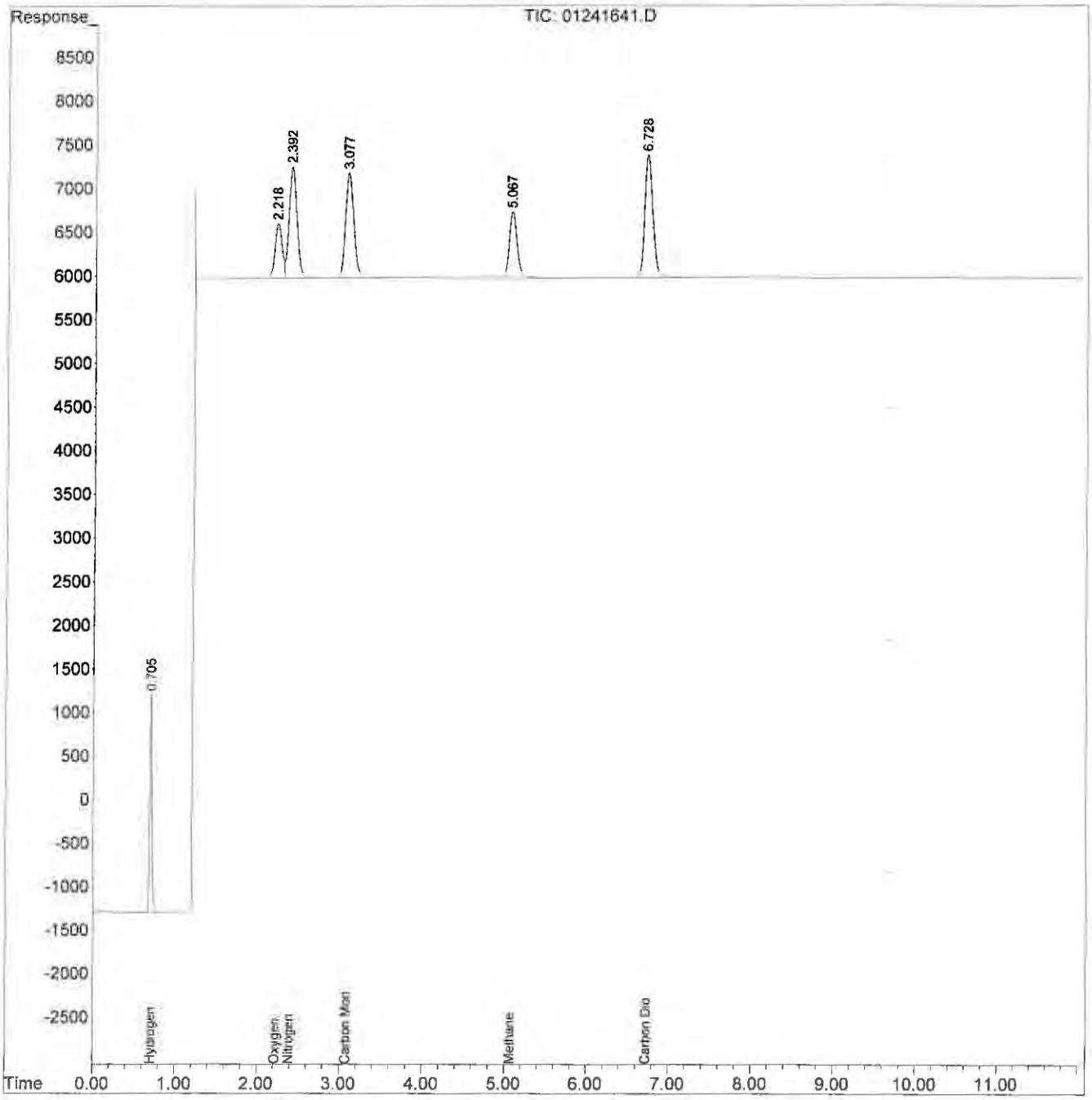
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_01\24\
Data File : 01241641.D
Signal(s) : TCD1A.CH
Acq On : 24 Jan 2016 22:32
Operator : WH
Sample : icv scott
Misc : S30-12281502
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Jan 24 22:48:42 2016
Quant Method : I:\GC01\METHODS\3C012416.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Sun Jan 24 22:12:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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



Modified EPA Method 3C Daily QC Summary

Client : Air Hygiene, Incorporated
Analyst : amf
Method Name : EPA 3C, ASTM D 1946-90, VOA-EPA3C

Instrument :
Date Analyzed : 9/28/2016

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 s30-07271601	0.713	2.236	2.412	3.099	5.089	6.748	09281601.D	08:37
+/- 0.33min of ICAL Mean RT	Pass	Pass	Pass	Pass	Pass	Pass		
mb							09281602.D	09:29
lab air		2.173 Pass	2.310 Pass			6.751 Pass	09281603.D	09:47
lcs s11-07281601	0.708 Pass	2.219 Pass	2.396 Pass	3.084 Pass	5.075 Pass	6.737 Pass	09281604.D	10:03
lcsd s11-07281601	0.710 Pass	2.223 Pass	2.400 Pass	3.088 Pass	5.079 Pass	6.740 Pass	09281605.D	10:15
4504-001		2.235 Pass	2.413 Pass				09281618.D	14:32
4504-002		2.222 Pass	2.402 Pass				09281619.D	14:48
4504-003		2.237 Pass	2.398 Pass				09281620.D	15:06
4504-004		2.231 Pass	2.405 Pass				09281621.D	15:22
std s30-07271601	0.711 Pass	2.225 Pass	2.400 Pass	3.088 Pass	5.080 Pass	6.740 Pass	09281622.D	16:37

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 s30-07271601	41467.6 3.7%	41615.4 4.0%	52090.0 4.2%	52882.1 5.8%	42811.0 7.0%	50767.2 1.5%	09281601.D	08:37
std s30-07271601	41458.9 3.6%	41121.7 2.8%	51036.7 2.1%	52332.7 4.7%	42334.8 5.8%	50630.4 1.3%	09281622.D	16:37
	#####	#####	#####	#####	#####	#####		
	#####	#####	#####	#####	#####	#####		

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	50375.4	52560.7	53053.4	51768.8	49635.6	49619.8	09281604.D	10:03
LCS % Recovery	101% Pass	105% Pass	106% Pass	104% Pass	99% Pass	99% Pass		
lcsd s11-07281601	49279.0	51909.1	54258.0	50440.7	48318.9	48229.1	09281605.D	10:15
LCS % Recovery	99% Pass	104% Pass	109% Pass	101% Pass	97% Pass	96% Pass		
Duplicate % RPD	2.2%	1.2%	2.2%	2.6%	2.7%	2.8%		
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		222149.3	794583.5			475.3	101.7% Pass
Lab Air Normalized (%)		21.84%	78.11%			0.05%	100.0%

Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\28\
Data File : 09281601.D
Signal(s) : TCD1A.CH
Acq On : 28 Sep 2016 8:37 am
Operator : amf
Sample : std s30-07271601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 28 08:57:41 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 :

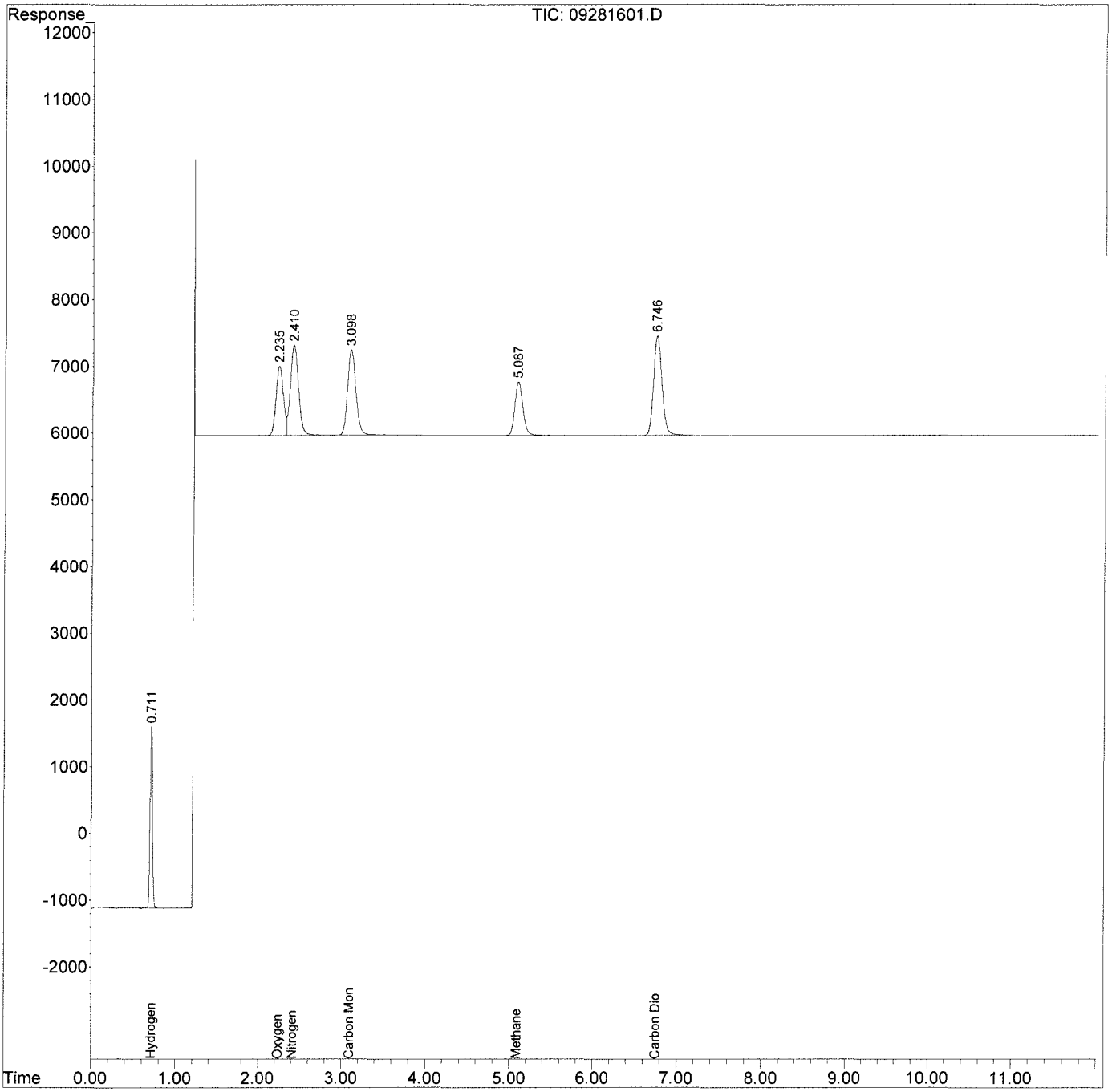
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.713	54630	41467.626	ppm
2)	Oxygen	2.236	62975	41615.383	ppm
3)	Nitrogen	2.412	91325	52090.001	ppm
4)	Carbon Monoxide	3.099	89759	52882.144	ppm
5)	Methane	5.089	53893	42810.967	ppm
6)	Carbon Dioxide	6.748	103022	50767.158	ppm

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

Data Path : I:\GC01\DATA\FXG\2016_09\28\
Data File : 09281601.D
Signal(s) : TCD1A.CH
Acq On : 28 Sep 2016 8:37 am
Operator : amf
Sample : std s30-07271601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 28 08:57:41 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_09\28\
Data File : 09281617.D
Signal(s) : TCD1A.CH
Acq On : 28 Sep 2016 2:15 pm
Operator : amf
Sample : std s30-07271601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 29 12:59:54 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 :

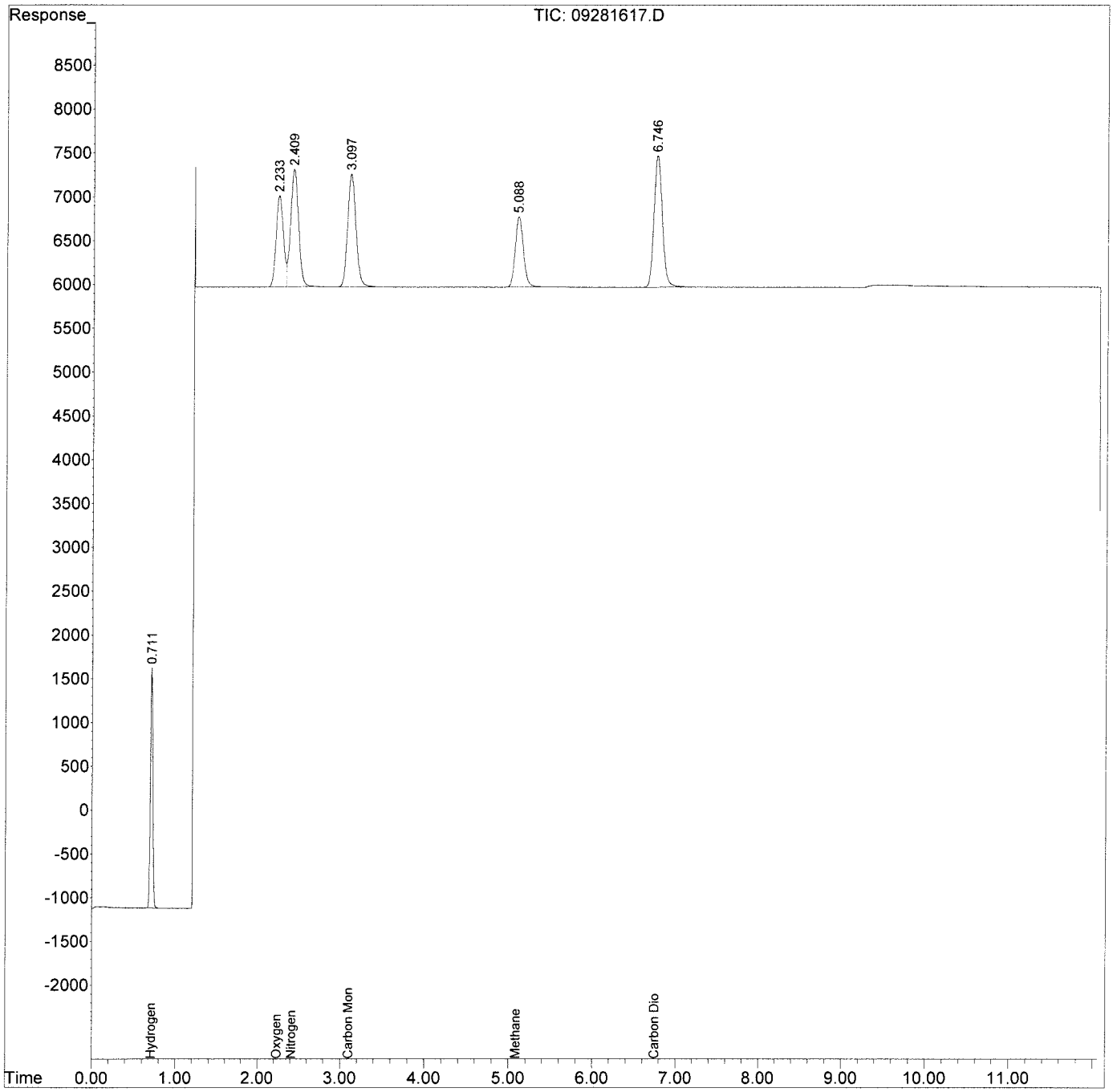
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.713	55226	41919.961	ppm
2)	Oxygen	2.234	63322	41844.594	ppm
3)	Nitrogen	2.411	89955	51308.100	ppm
4)	Carbon Monoxide	3.099	89646	52815.178	ppm
5)	Methane	5.089	54045	42932.146	ppm
6)	Carbon Dioxide	6.748	103624	51063.892	ppm

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

Data Path : I:\GC01\DATA\FXG\2016_09\28\
Data File : 09281617.D
Signal(s) : TCD1A.CH
Acq On : 28 Sep 2016 2:15 pm
Operator : amf
Sample : std s30-07271601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 29 12:59:54 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_09\28\
Data File : 09281622.D
Signal(s) : TCD1A.CH
Acq On : 28 Sep 2016 4:37 pm
Operator : amf
Sample : std s30-07271601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 28 17:01:58 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 :

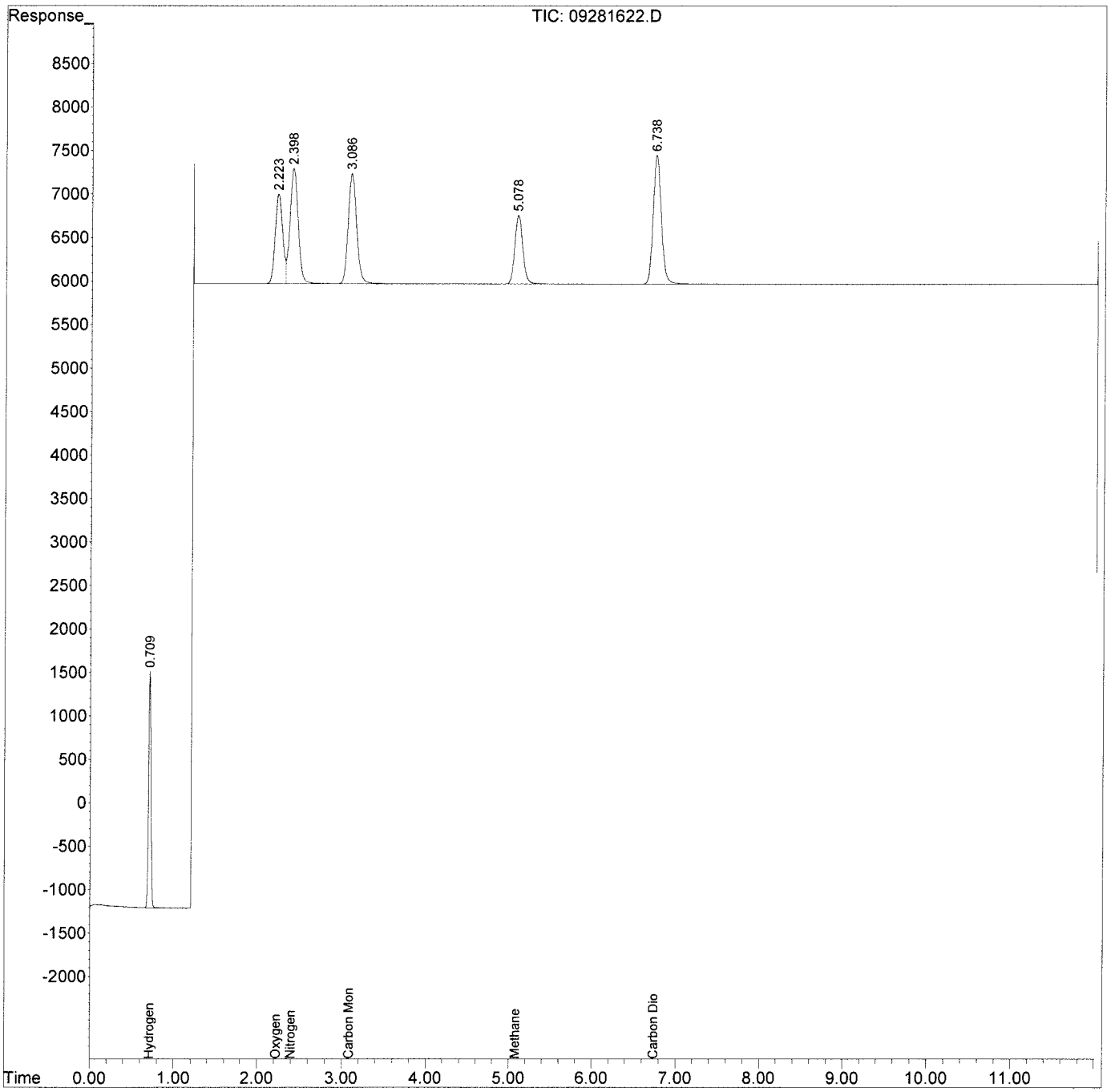
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.711	54618	41458.858	ppm
2)	Oxygen	2.225	62228	41121.658	ppm
3)	Nitrogen	2.400	89479	51036.714	ppm
4)	Carbon Monoxide	3.088	88827	52332.704	ppm
5)	Methane	5.080	53293	42334.827	ppm
6)	Carbon Dioxide	6.740	102744	50630.389	ppm

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

Data Path : I:\GC01\DATA\FXG\2016_09\28\
Data File : 09281622.D
Signal(s) : TCD1A.CH
Acq On : 28 Sep 2016 4:37 pm
Operator : amf
Sample : std s30-07271601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 28 17:01:58 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_09\28\

	Sample ID	Date/Time	Acquisition Method	File Name	Misc Info	Operator	Comments
	std s30-07271601	28 Sep 116 8:37 am	MFXGS25C.M	09281601.D		amf	
	mb	28 Sep 116 9:29 am	MFXGS25C.M	09281602.D		amf	
	lab air	28 Sep 116 9:47 am	MFXGS25C.M	09281603.D		amf	
	lcs s11-07281601	28 Sep 116 10:03 am	MFXGS25C.M	09281604.D		amf	
	lcsd s11-07281601	28 Sep 116 10:15 am	MFXGS25C.M	09281605.D		amf	
	4589-001	28 Sep 116 10:32 am	MFXGS25C.M	09281606.D		amf	
	4589-002	28 Sep 116 10:48 am	MFXGS25C.M	09281607.D		amf	
	4592-001	28 Sep 116 11:04 am	MFXGS25C.M	09281608.D		amf	
	4590-001	28 Sep 116 11:23 am	MFXGS25C.M	09281609.D		amf	
	4590-002	28 Sep 116 11:41 am	MF25VCH4.M	09281610.D		amf	
	4590-003	28 Sep 116 11:58 am	MF25VCH4.M	09281611.D		amf	
	4590-004	28 Sep 116 12:14 pm	MF25VCH4.M	09281612.D		amf	
	4551-001	28 Sep 116 12:31 pm	MF25VCH4.M	09281613.D		amf	
	4551-002	28 Sep 116 12:47 pm	MFXGS25C.M	09281614.D		amf	
	4514-001	28 Sep 116 1:04 pm	MFXGS25C.M	09281615.D		amf	
	xstd s30-05021602	28 Sep 116 1:20 pm	MFXGS25C.M	09281616.D		amf	
	std s30-07271601	28 Sep 116 2:15 pm	MF25VCH4.M	09281617.D		amf	
	4504-001	28 Sep 116 2:32 pm	MFXGS25C.M	09281618.D		amf	
	4504-002	28 Sep 116 2:48 pm	MFXGS25C.M	09281619.D		amf	
	4504-003	28 Sep 116 3:06 pm	MFXGS25C.M	09281620.D		amf	
	4504-004	28 Sep 116 3:22 pm	MFXGS25C.M	09281621.D		amf	
	std s30-07271601	28 Sep 116 4:37 pm	MFXGS25C.M	09281622.D		amf	

Quantitation Report (QT Reviewed)

Data Path : J:\GC13\DATA\SCD\2016_09\26\
Data File : 09261612.D
Signal(s) : AIB1B.CH
Acq On : 26 Sep 2016 10:00 am
Operator : MC
Sample : 4504-001 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Sep 27 09:39:22 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.

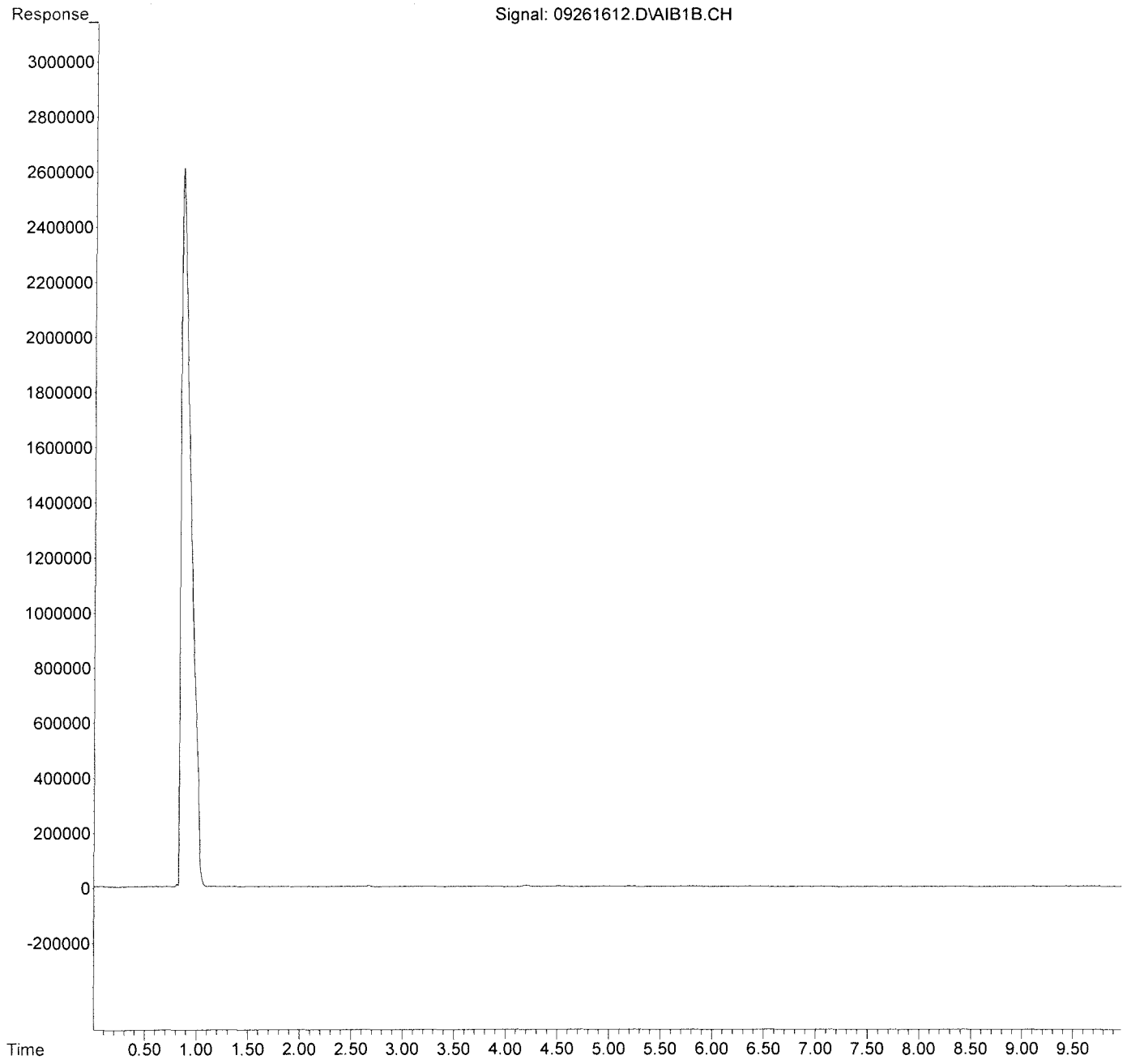
MC
9/27/16

Quantitation Report (QT Reviewed)

Data Path : J:\GC13\DATA\SCD\2016_09\26\
Data File : 09261612.D
Signal(s) : AIB1B.CH
Acq On : 26 Sep 2016 10:00 am
Operator : MC
Sample : 4504-001 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Sep 27 09:39:22 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_09\26\
Data File : 09261613.D
Signal(s) : AIB1B.CH
Acq On : 26 Sep 2016 10:14 am
Operator : MC
Sample : 4504-002 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Sep 27 09:39:45 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	

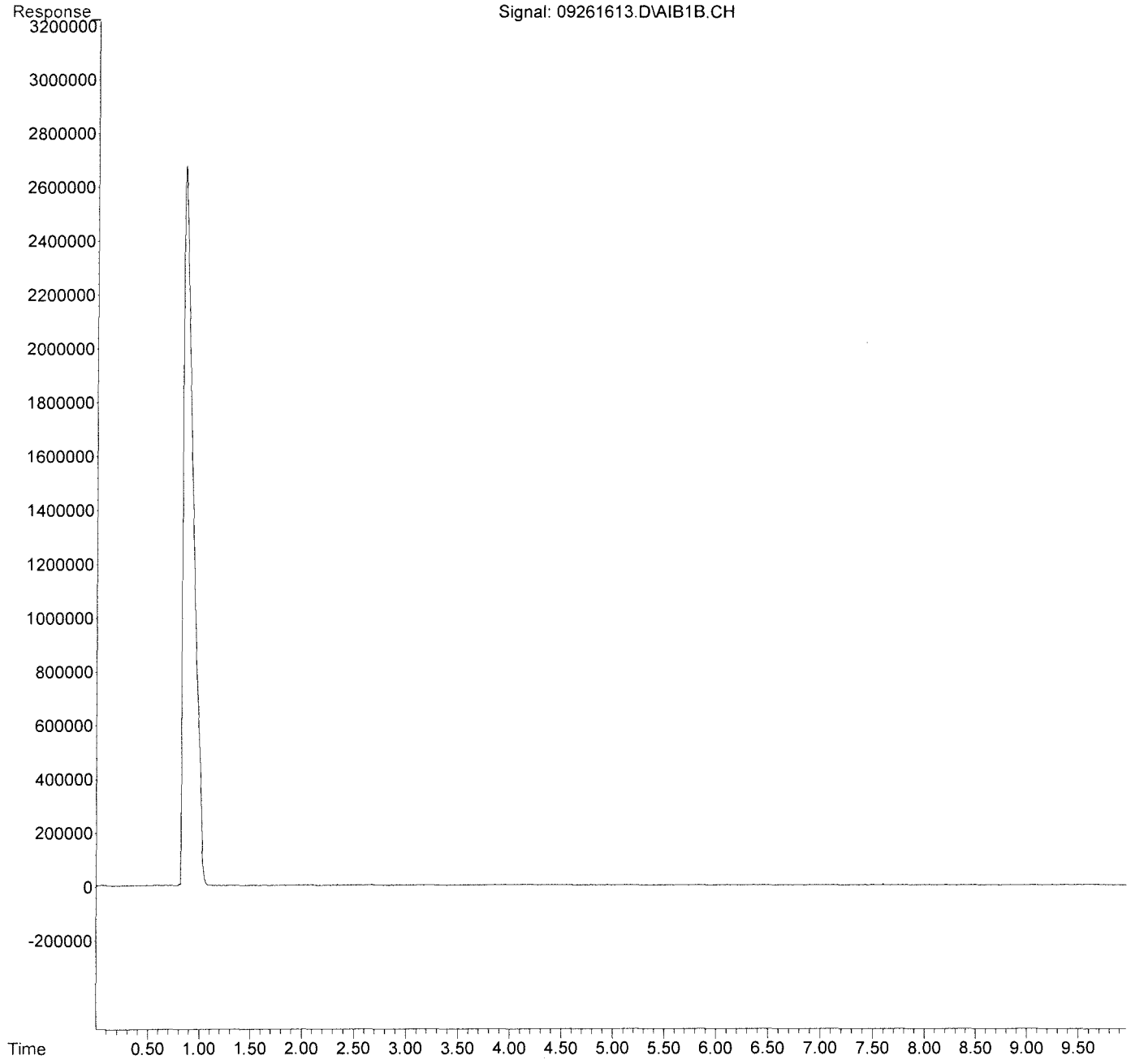
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC13\DATA\SCD\2016_09\26\
Data File : 09261613.D
Signal(s) : AIB1B.CH
Acq On : 26 Sep 2016 10:14 am
Operator : MC
Sample : 4504-002 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Sep 27 09:39:45 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_09\26\
Data File : 09261614.D
Signal(s) : AIB1B.CH
Acq On : 26 Sep 2016 10:28 am
Operator : MC
Sample : 4504-003 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Sep 27 09:40:22 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	

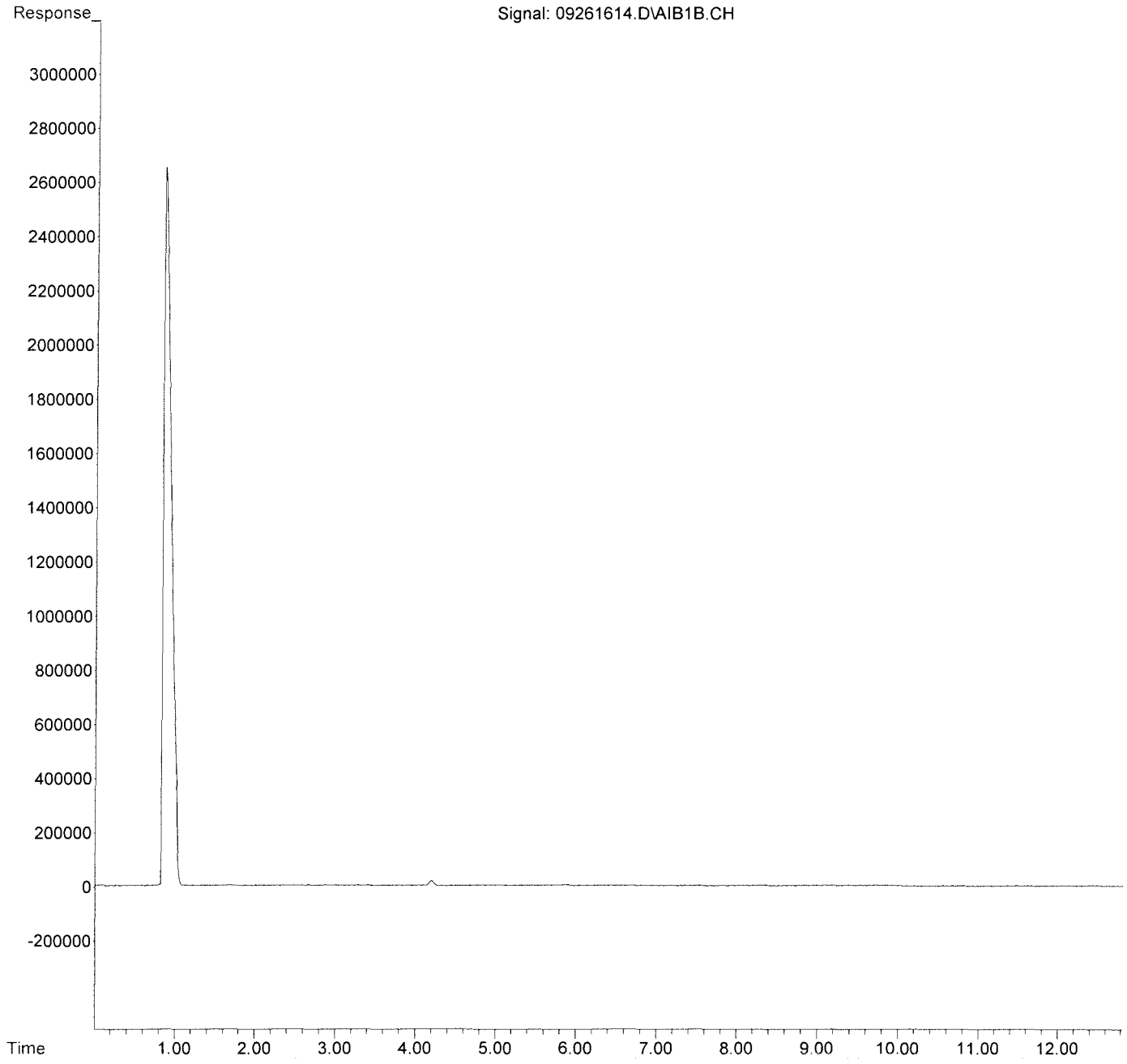
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC13\DATA\SCD\2016_09\26\
Data File : 09261614.D
Signal(s) : AIB1B.CH
Acq On : 26 Sep 2016 10:28 am
Operator : MC
Sample : 4504-003 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Sep 27 09:40:22 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_09\26\
Data File : 09261615.D
Signal(s) : AIB1B.CH
Acq On : 26 Sep 2016 10:45 am
Operator : MC
Sample : 4504-004 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Sep 27 09:40:45 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	

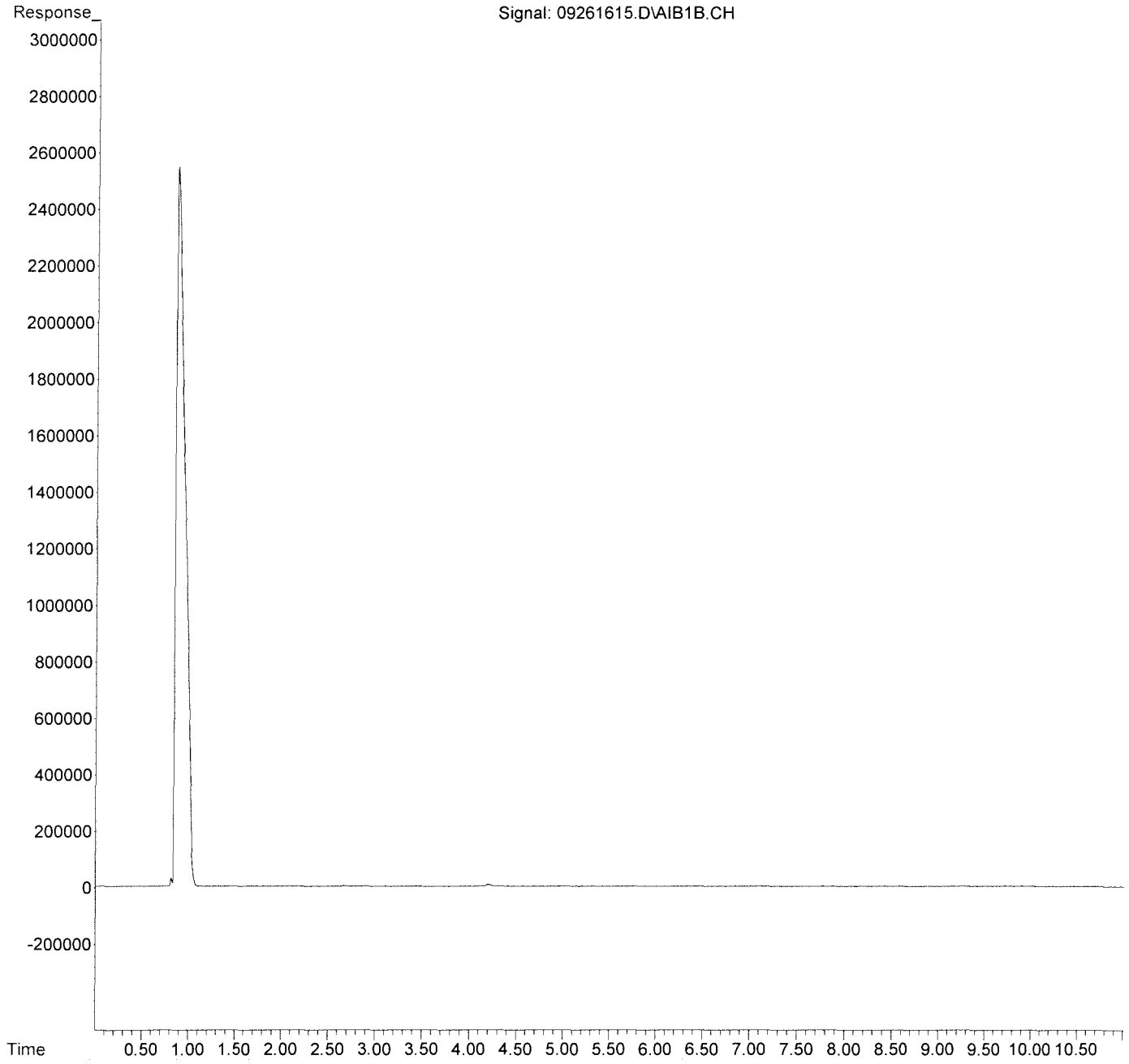
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC13\DATA\SCD\2016_09\26\
Data File : 09261615.D
Signal(s) : AIB1B.CH
Acq On : 26 Sep 2016 10:45 am
Operator : MC
Sample : 4504-004 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Sep 27 09:40:45 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_09\26\
Data File : 09261606.D
Signal(s) : AIB1B.CH
Acq On : 26 Sep 2016 8:08 am
Operator : MC
Sample : mb 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Sep 27 09:01:32 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

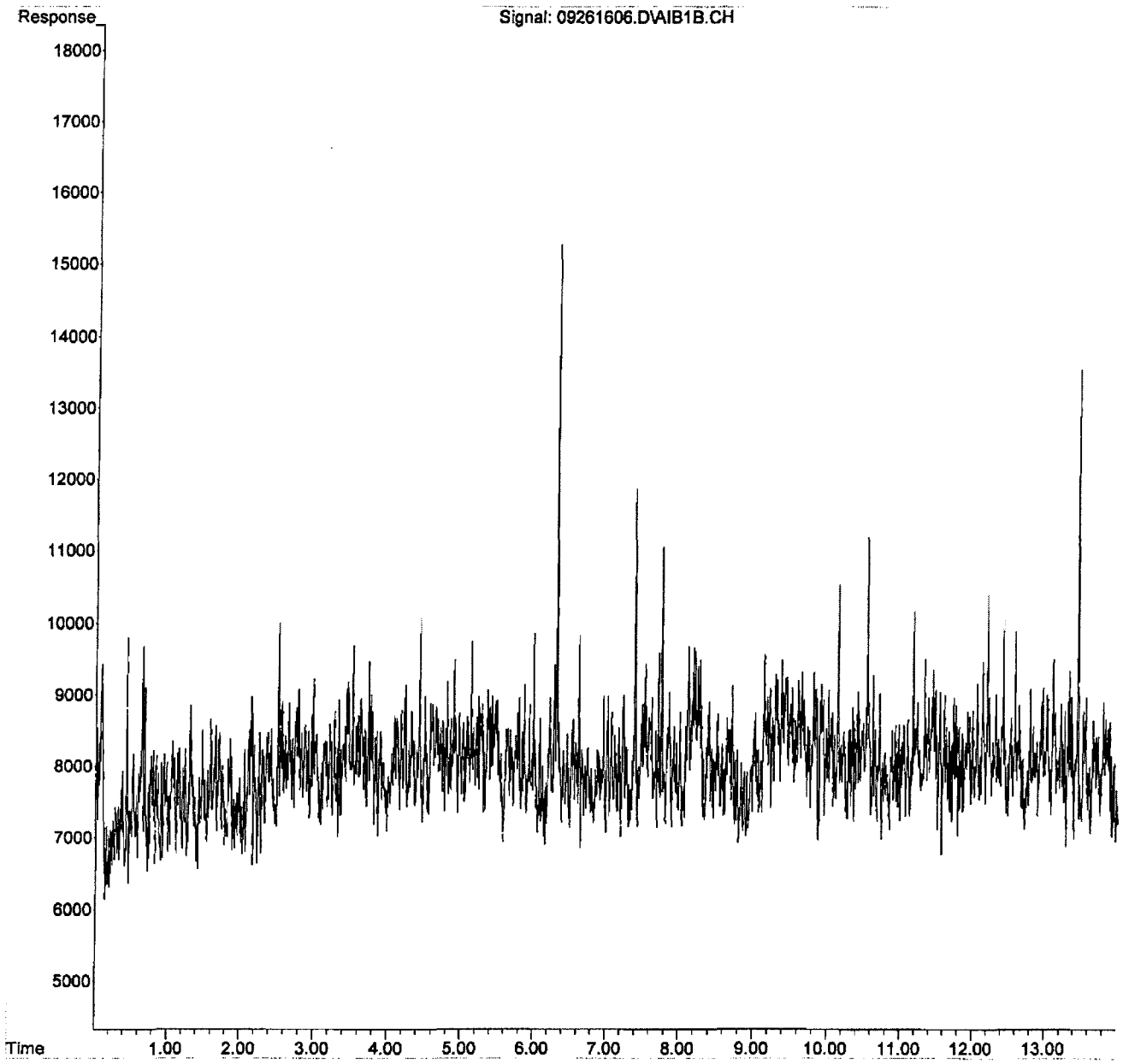
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC13\DATA\SCD\2016_09\26\
Data File : 09261606.D
Signal(s) : AIB1B.CH
Acq On : 26 Sep 2016 8:08 am
Operator : MC
Sample : mb 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Sep 27 09:01:32 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_09\26\
Data File : 09261603.D
Signal(s) : AIB1B.CH
Acq On : 26 Sep 2016 7:43 am
Operator : MC
Sample : lcs s30-08221602
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Sep 27 09:00:00 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	0.842	54904056	878.928	ppb
2)	W	Carbonyl_Sulfide	0.976	62421992	891.204	ppb
3)	T	Methyl_Mercaptan	1.687	57113128	851.559	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

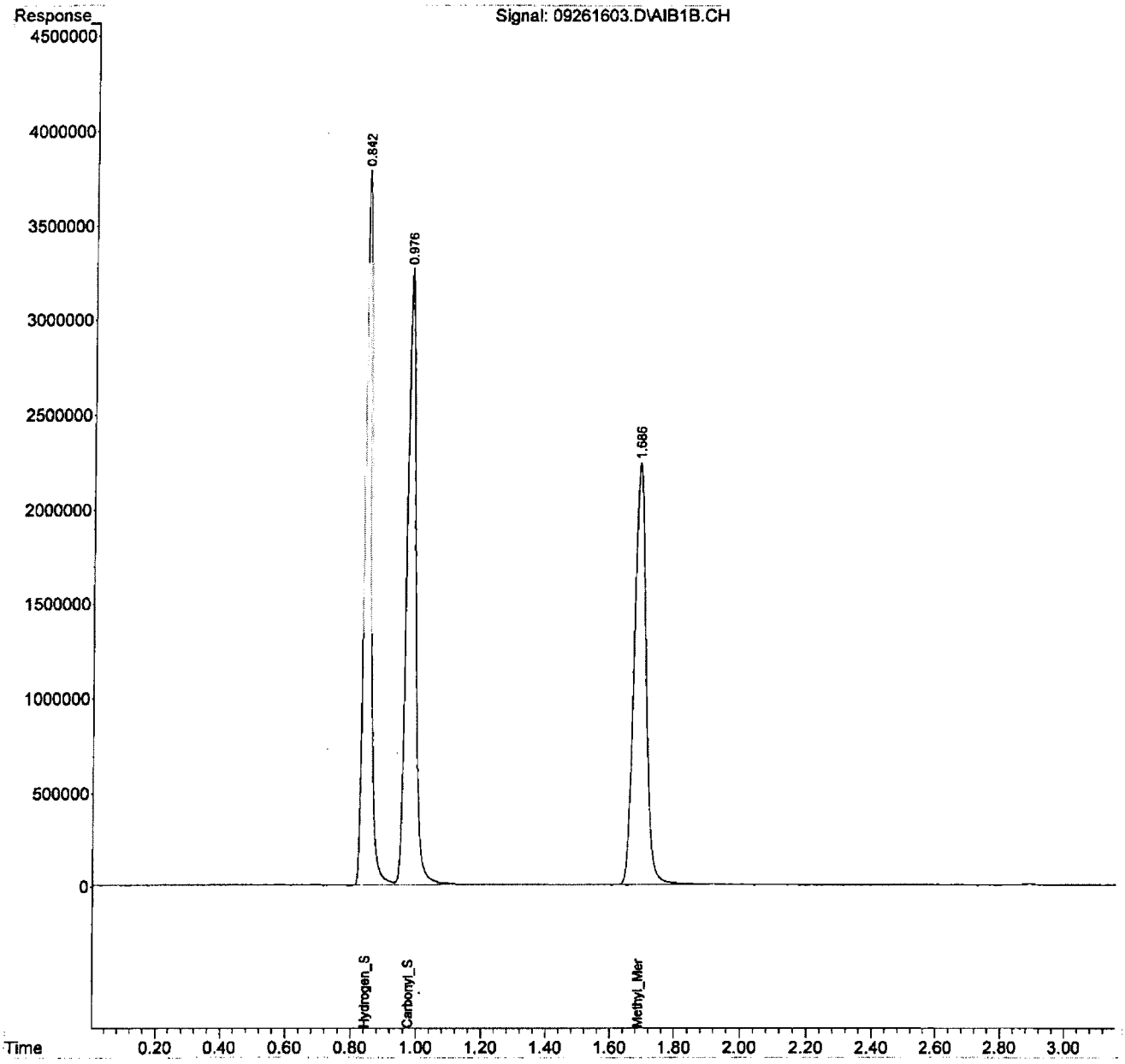
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC13\DATA\SCD\2016_09\26\
Data File : 09261603.D
Signal(s) : AIB1B.CH
Acq On : 26 Sep 2016 7:43 am
Operator : MC
Sample : lcs s30-08221602
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Sep 27 09:00:00 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

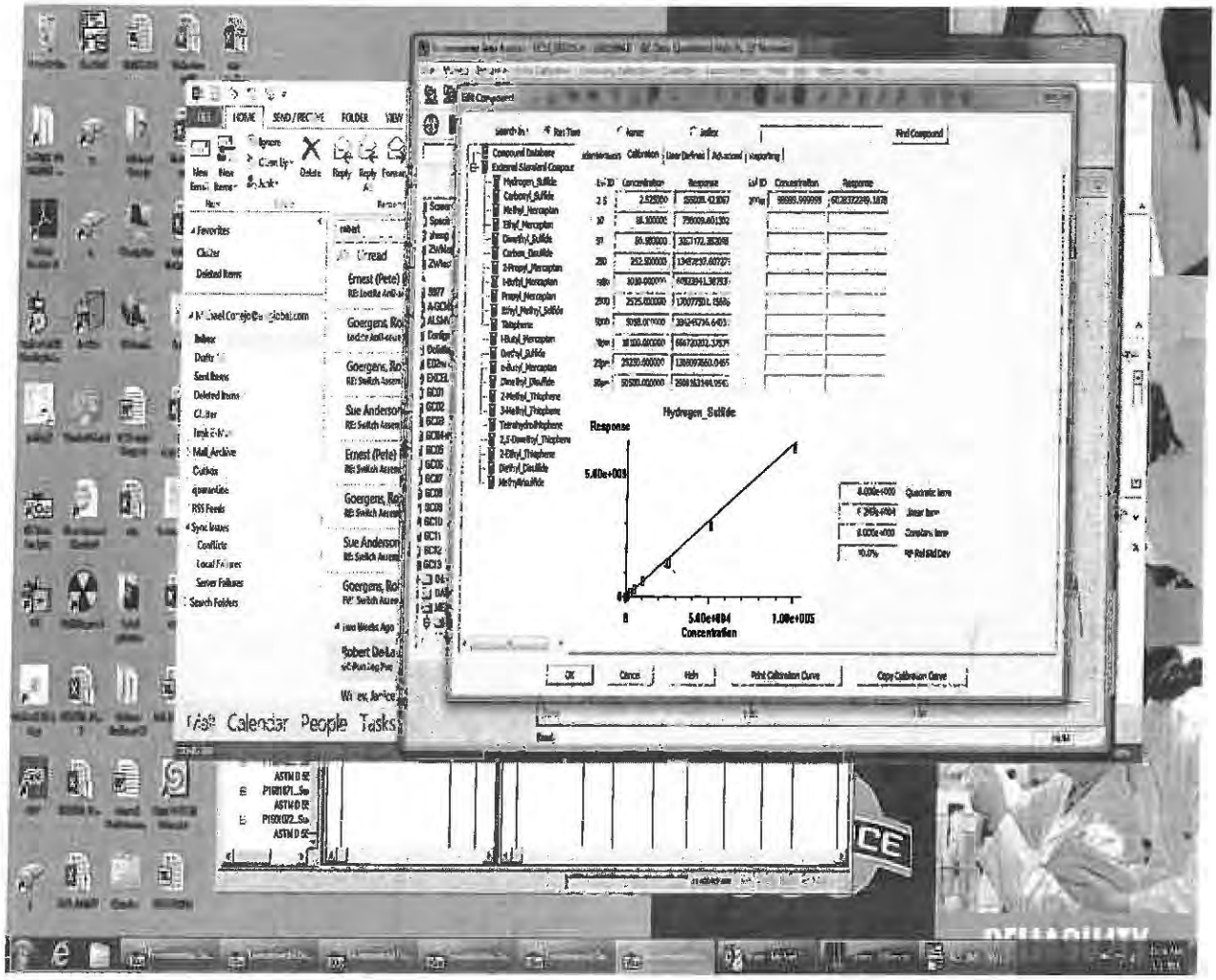
Method Path : J:\GC13\METHODS\
Method File : GC13_030216.M
Title : ASTM D5504, VOA-S307M_SCD, VOA SH2O_SCD
Last Update : Tue May 03 15:14:01 2016
Response Via : Initial Calibration

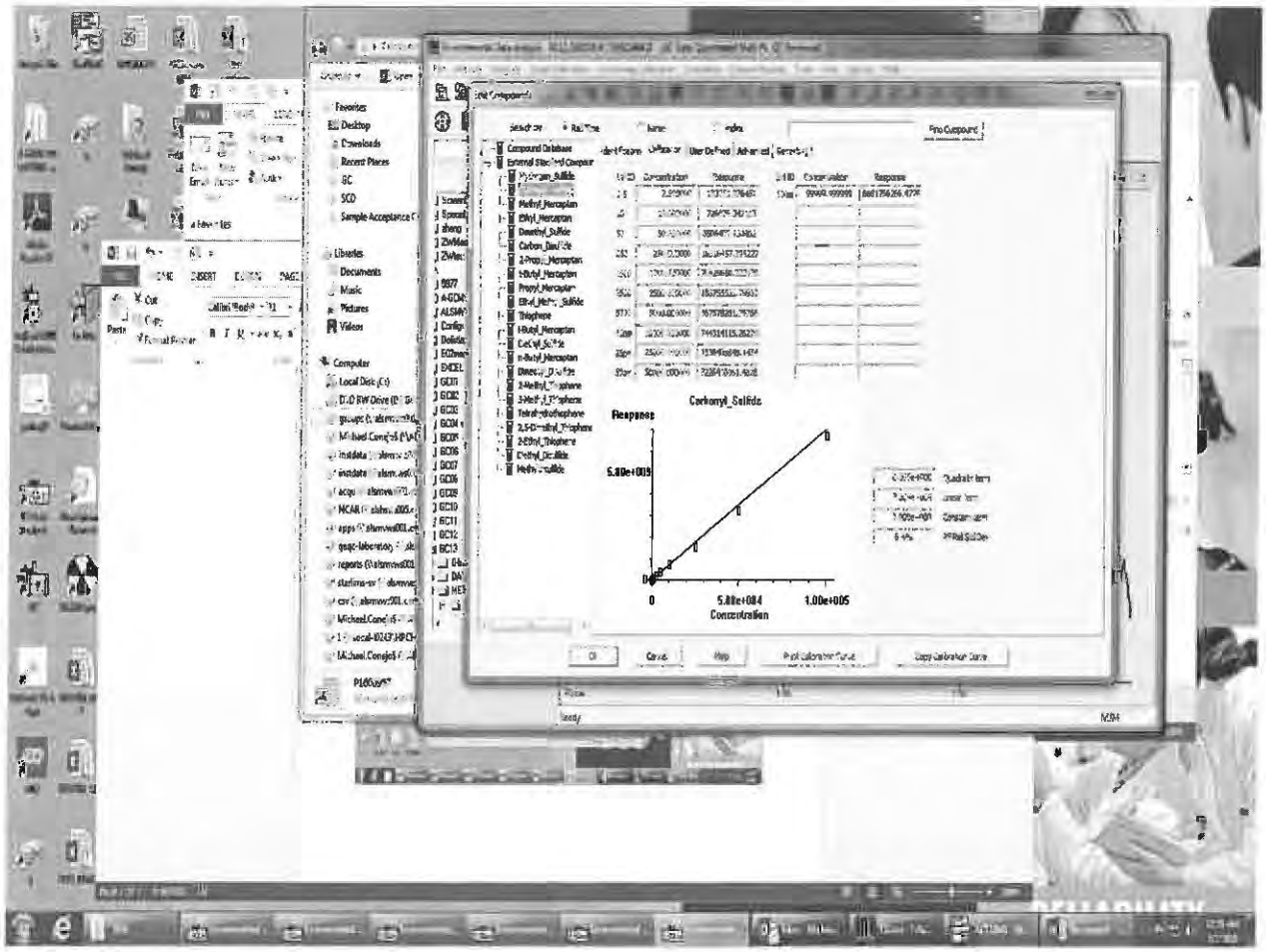
Calibration Files
2.5 =03021604.D 10 =03021605.D 50 =03021606.D
250 =03021607.D 1000 =03021608.D 2500 =03021609.D

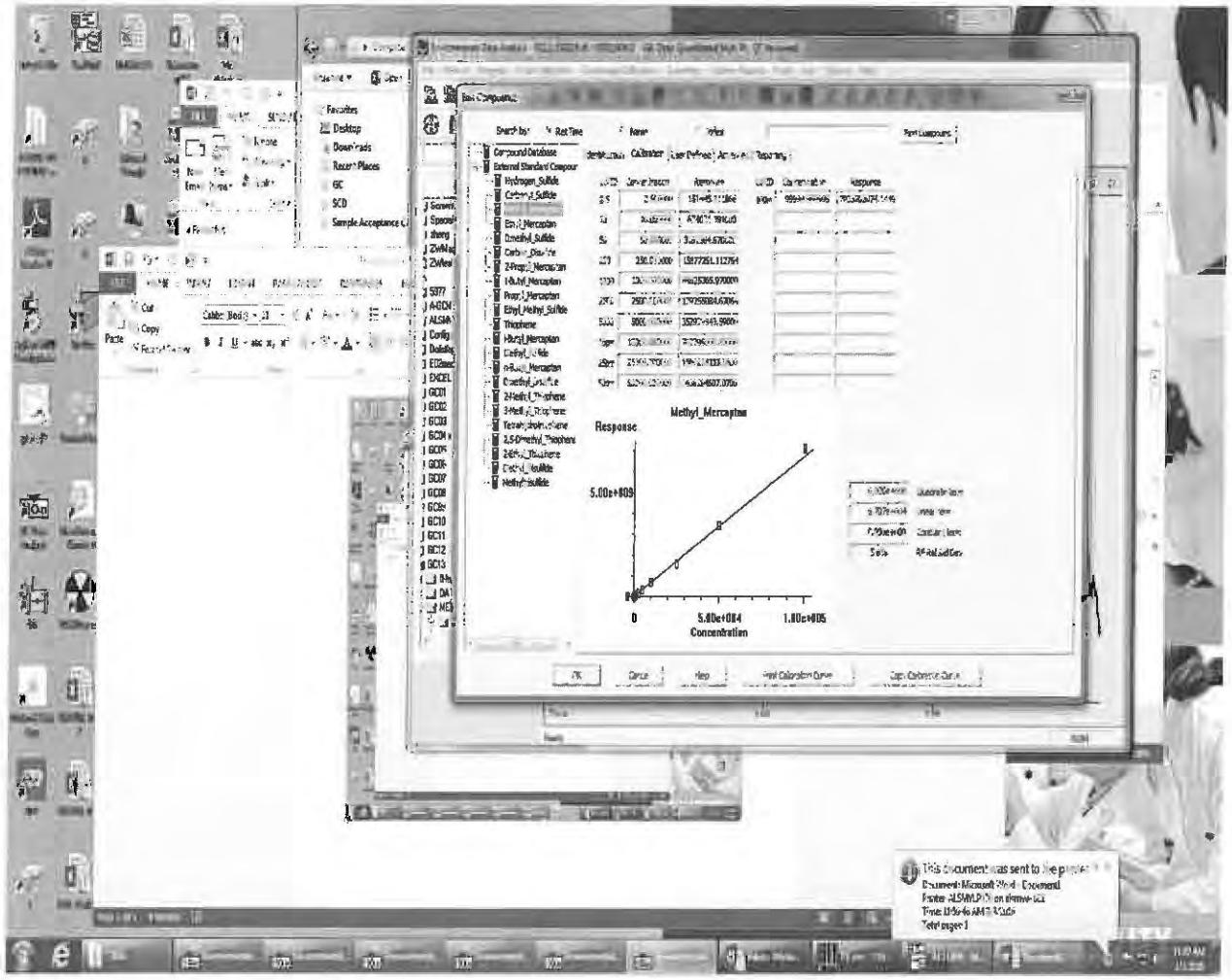
		Compound	2.5	10	50	250	1000	2500	Avg		%RSD
1)	Z	Hydrogen_Sulfide	6.139	7.485	6.511	5.330	6.032	6.736	6.247	E4	9.97
2)	W	Carbonyl_Sulfide	7.330	7.261	7.013	6.727	7.083	7.550	7.004	E4	6.38
3)	T	Methyl_Mercaptan	6.058	6.748	6.363	6.351	6.863	7.170	6.707	E4	5.78
4)	T	Ethyl_Mercaptan	6.058	6.748	6.363	6.351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


Carbonyl_Sulfide
Response
5.00e+005
0
5.00e+004
1.00e+005
Concentration


Methyl_Mercaptan
Response
5.00e+009
0
5.00e+004
1.00e+005
Concentration

Calibration Status Report HP G1530A

Method Path : J:\GC13\METHODS\
Method File : GC13_030216.M
Title : 20 Sulfurs
Last Update : Wed Mar 02 12:32:01 2016
Response Via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	2.5	3	0	J:\GC13\DATA\SCD\2016_03\02\03021604.D
2	10	10	0	J:\GC13\DATA\SCD\2016_03\02\03021605.D
3	50	50	0	J:\GC13\DATA\SCD\2016_03\02\03021606.D
4	250	250	0	J:\GC13\DATA\SCD\2016_03\02\03021607.D
5	1000	1000	0	J:\GC13\DATA\SCD\2016_03\02\03021608.D
6	2500	2500	0	J:\GC13\DATA\SCD\2016_03\02\03021609.D
7	5000	5000	0	J:\GC13\DATA\SCD\2016_03\02\03021610.D
8	10pm	10000	0	J:\GC13\DATA\SCD\2016_03\02\03021611.D
9	25pm	25000	0	J:\GC13\DATA\SCD\2016_03\02\03021612.D
10	50pm	50000	0	J:\GC13\DATA\SCD\2016_03\02\03021613.D
11	100m	100000	0	J:\GC13\DATA\SCD\2016_03\02\03021614.D

#	ID	Update Time	Quant Time	Acquisition Time
1	2.5	Mar 02 11:50 2016	Mar 02 11:47 2016	02 Mar 2016 11:27
2	10	Mar 02 11:51 2016	Mar 02 11:48 2016	02 Mar 2016 11:36
3	50	Mar 02 11:52 2016	Mar 02 11:52 2016	02 Mar 2016 11:41
4	250	Mar 02 11:54 2016	Mar 02 11:52 2016	02 Mar 2016 11:45
5	1000	Mar 02 11:55 2016	Mar 02 11:54 2016	02 Mar 2016 11:49
6	2500	Mar 02 11:58 2016	Mar 02 11:57 2016	02 Mar 2016 11:53
7	5000	Mar 02 12:01 2016	Mar 02 12:01 2016	02 Mar 2016 11:57
8	10pm	Mar 02 12:05 2016	Mar 02 12:05 2016	02 Mar 2016 12:00
9	25pm	Mar 02 12:09 2016	Mar 02 12:09 2016	02 Mar 2016 12:04
10	50pm	Mar 02 12:14 2016	Mar 02 12:14 2016	02 Mar 2016 12:08
11	100m	Mar 02 12:20 2016	Mar 02 12:20 2016	02 Mar 2016 12:13

GC13_030216.M Thu Mar 03 11:45:28 2016

Quantitation Report (QT Reviewed)

Data Path : I:\GC13\DATA\SCD\2016_03\02\
Data File : 03021604.D
Signal(s) : AIB1B.CH
Acq On : 02 Mar 2016 11:27 am
Operator : MC
Sample : 2.5ppb S11-0302160225ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 02 11:47:52 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : 20 Sulfurs
QLast Update : Wed Feb 17 15:56:38 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :

		Compound	R.T.	Response	Conc	Units	
Target Compounds							
1)	Z	Hydrogen_Sulfide	0.850	155008	1.495	ppb	m
2)	W	Carbonyl_Sulfide	0.984	183251	1.573	ppb	m
3)	T	Methyl_Mercaptan	1.710	151445	1.414	ppb	
4)	T	Ethyl_Mercaptan	2.590f	29959	0.280	ppb	
5)	T	Dimethyl_Sulfide	0.000	0	N.D.	ppb	
6)	T	Carbon_Disulfide	0.000	0	N.D.	ppb	
7)	T	2-Propyl_Mercaptan	0.000	0	N.D.	ppb	
8)	T	t-Butyl_Mercaptan	0.000	0	N.D.	ppb	
9)	T	Propyl_Mercaptan	0.000	0	N.D.	ppb	
10)	T	Ethyl_Methyl_Sulfide	0.000	0	N.D.	ppb	
11)	T	Thiophene	0.000	0	N.D.	ppb	
12)	T	i-Butyl_Mercaptan	0.000	0	N.D.	ppb	
13)	T	Diethyl_Sulfide	0.000	0	N.D.	ppb	
14)	t	n-Butyl_Mercaptan	0.000	0	N.D.	ppb	
15)	t	Dimethyl_Disulfide	0.000	0	N.D.	ppb	
16)	T	2-Methyl_Thiophene	0.000	0	N.D.	ppb	
17)	t	3-Methyl_Thiophene	0.000	0	N.D.	ppb	
18)	T	Tetrahydrothiophene	0.000	0	N.D.	ppb	
19)	t	2,5-Dimethyl_Thiophene	0.000	0	N.D.	ppb	
20)	T	2-Ethyl_Thiophene	0.000	0	N.D.	ppb	
21)	T	Diethyl_Disulfide	0.000	0	N.D.	ppb	
22)	T	Methyltrisulfide	0.000	0	N.D.	ppb	

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

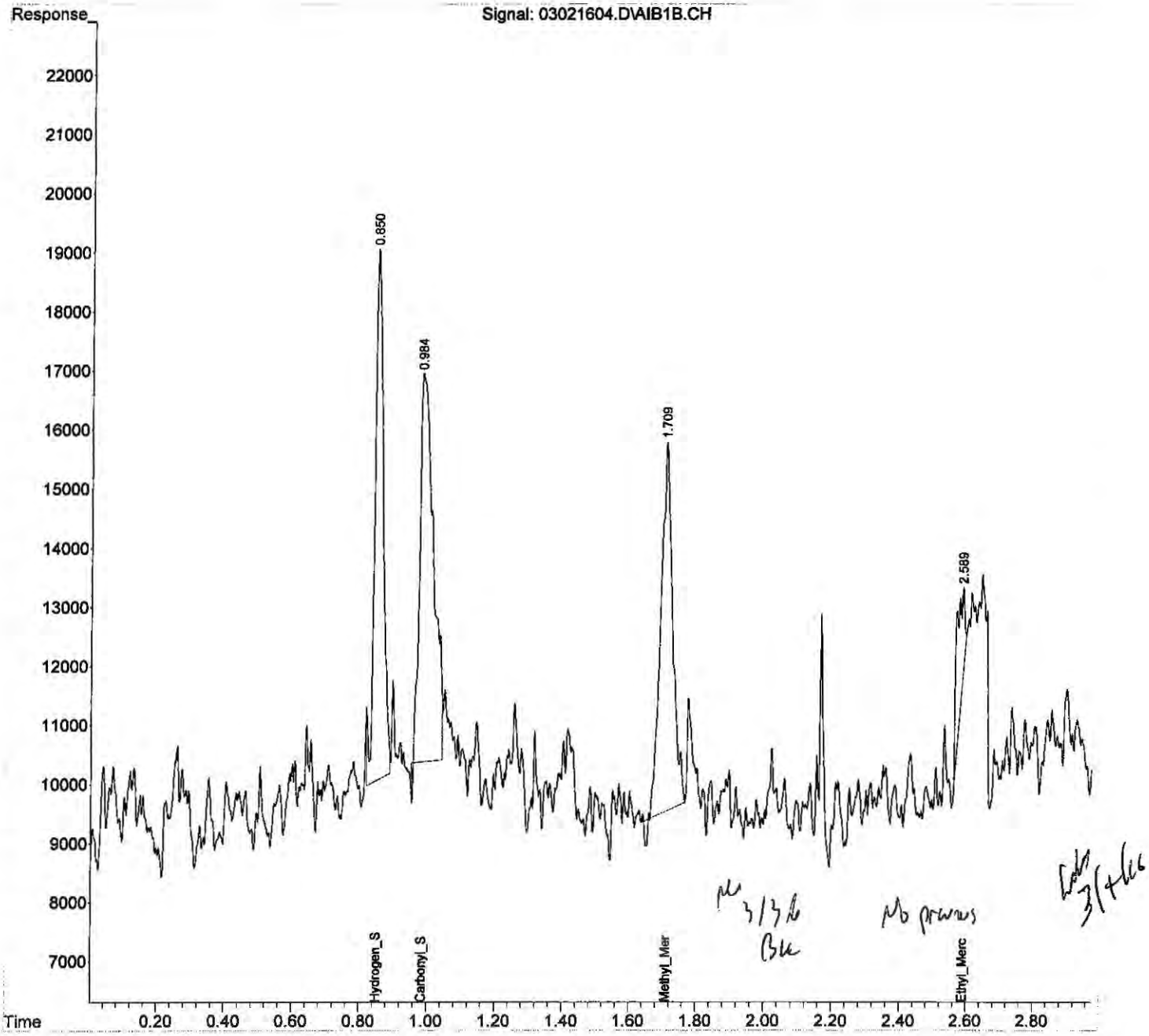
3/3/16

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	

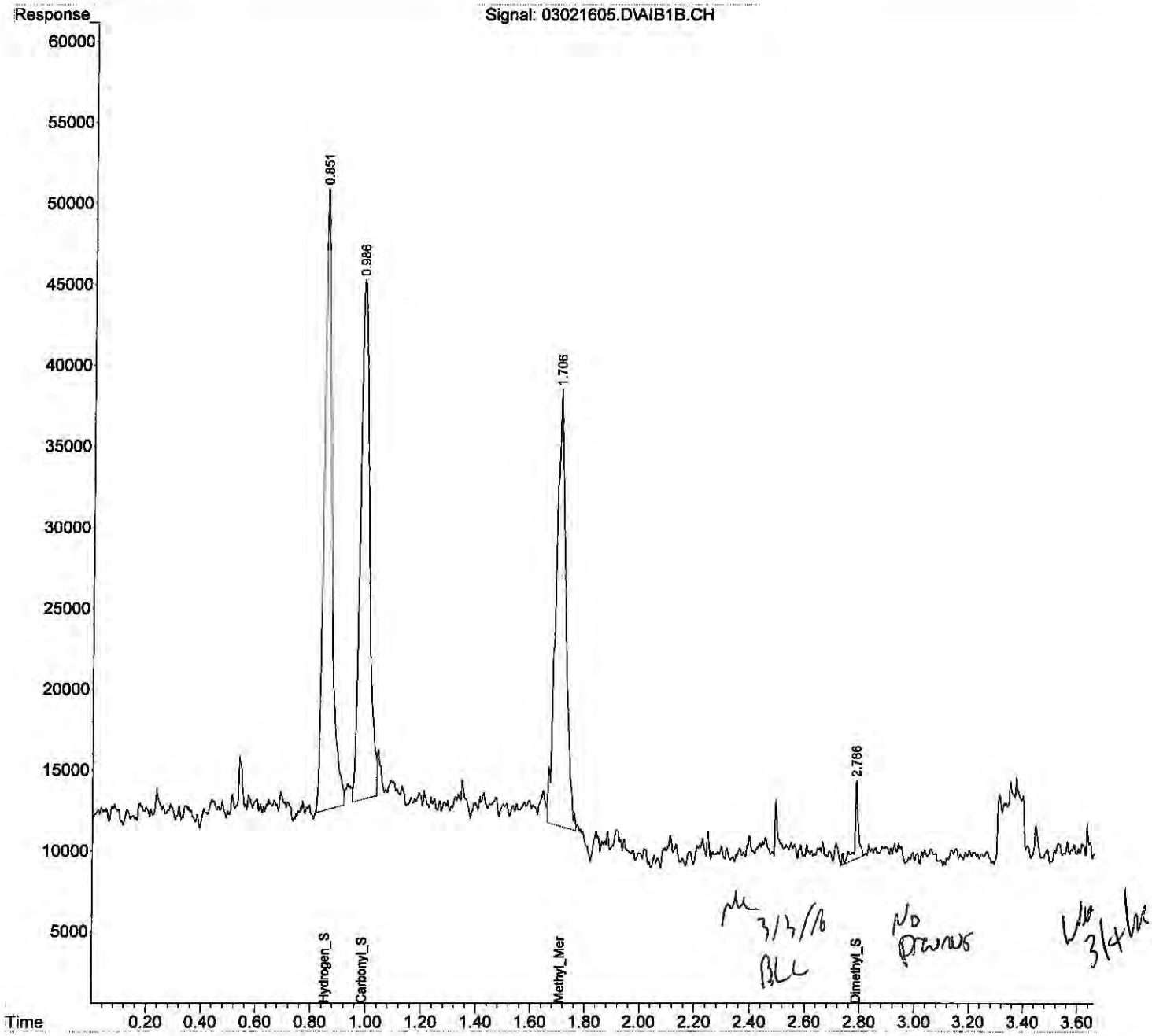
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



MC 3/3/16 BLC

No Prevous

VH 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	

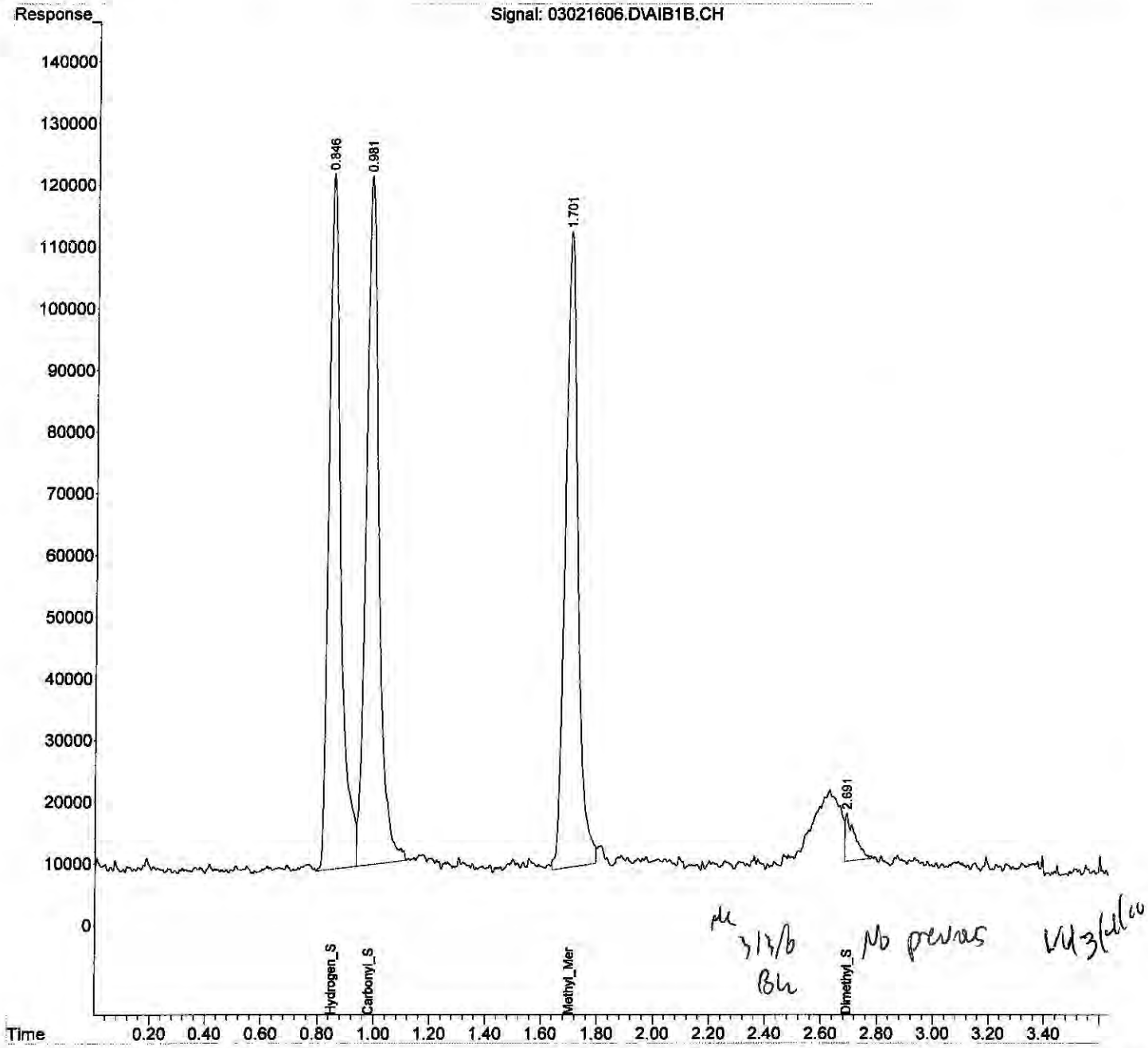
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



pl 3/3/16 No peaks
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

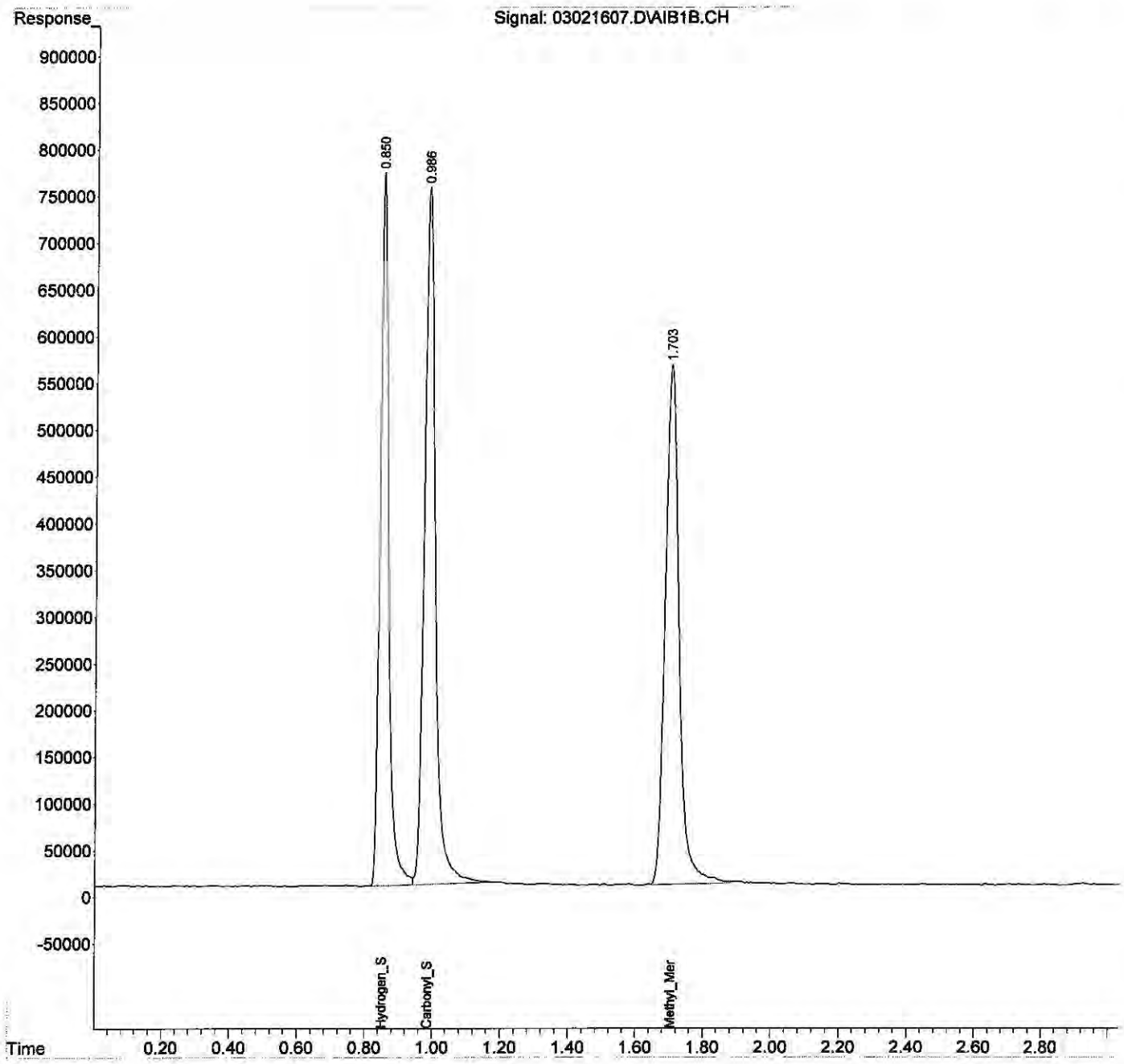
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC13\DATA\SCD\2016_03\02\
Data File : 03021607.D
Signal(s) : AIB1B.CH
Acq On : 02 Mar 2016 11:45 am
Operator : MC
Sample : 250ppbS11- 03021601 25ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 02 11:52:33 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : 20 Sulfurs
QLast Update : Wed Mar 02 11:52:22 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC13\DATA\SCD\2016_03\02\
Data File : 03021608.D
Signal(s) : AIB1B.CH
Acq On : 02 Mar 2016 11:49 am
Operator : MC
Sample : 1000ppb S11-03021601 100ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 02 13:51:20 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : 20 Sulfurs
QLast Update : Wed Mar 02 12:32:01 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :

		Compound	R.T.	Response	Conc	Units
Target Compounds						
1)	Z	Hydrogen_Sulfide	0.848	60923941	966.480	ppb
2)	W	Carbonyl_Sulfide	0.983	70829650	1011.241	ppb
3)	T	Methyl_Mercaptan	1.701	68625366	1023.207	ppb
4)	T	Ethyl_Mercaptan	0.000	0	N.D.	ppb
5)	T	Dimethyl_Sulfide	0.000	0	N.D.	ppb
6)	T	Carbon_Disulfide	0.000	0	N.D.	ppb
7)	T	2-Propyl_Mercaptan	0.000	0	N.D.	ppb
8)	T	t-Butyl_Mercaptan	0.000	0	N.D.	ppb
9)	T	Propyl_Mercaptan	0.000	0	N.D.	ppb
10)	T	Ethyl_Methyl_Sulfide	0.000	0	N.D.	ppb
11)	T	Thiophene	0.000	0	N.D.	ppb
12)	T	i-Butyl_Mercaptan	0.000	0	N.D.	ppb
13)	T	Diethyl_Sulfide	0.000	0	N.D.	ppb
14)	t	n-Butyl_Mercaptan	0.000	0	N.D.	ppb
15)	t	Dimethyl_Disulfide	0.000	0	N.D.	ppb
16)	T	2-Methyl_Thiophene	0.000	0	N.D.	ppb
17)	t	3-Methyl_Thiophene	0.000	0	N.D.	ppb
18)	T	Tetrahydrothiophene	0.000	0	N.D.	ppb
19)	t	2,5-Dimethyl_Thiophene	0.000	0	N.D.	ppb
20)	T	2-Ethyl_Thiophene	0.000	0	N.D.	ppb
21)	T	Diethyl_Disulfide	0.000	0	N.D.	ppb
22)	T	Methyltrisulfide	0.000	0	N.D.	ppb

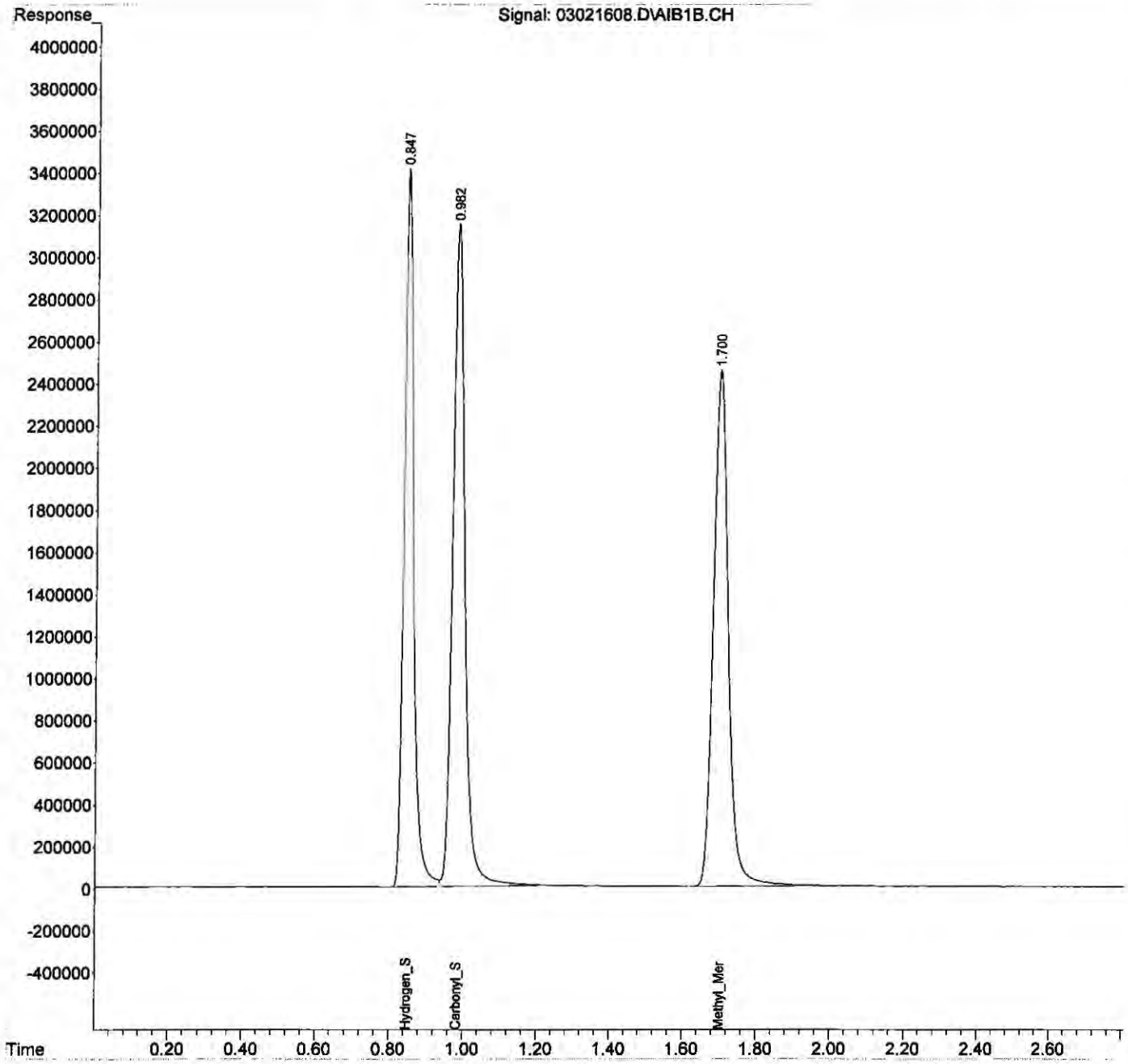
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



Quantitation Report (QT Reviewed)

Data Path : I:\GC13\DATA\SCD\2016_03\02\
Data File : 03021609.D
Signal(s) : AIB1B.CH
Acq On : 02 Mar 2016 11:53 am
Operator : MC
Sample : 2500ppb S11-03021601 250ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 02 13:52:48 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : 20 Sulfurs
QLast Update : Wed Mar 02 12:32:01 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :

		Compound	R.T.	Response	Conc	Units
Target Compounds						
1)	Z	Hydrogen_Sulfide	0.845	170077501	2698.061	ppb
2)	W	Carbonyl_Sulfide	0.981	188755506	2694.879	ppb
3)	T	Methyl_Mercaptan	1.700	179255085	2672.701	ppb
4)	T	Ethyl_Mercaptan	0.000	0	N.D.	ppb
5)	T	Dimethyl_Sulfide	0.000	0	N.D.	ppb
6)	T	Carbon_Disulfide	2.908	542676	8.091	ppb
7)	T	2-Propyl_Mercaptan	0.000	0	N.D.	ppb
8)	T	t-Butyl_Mercaptan	0.000	0	N.D.	ppb
9)	T	Propyl_Mercaptan	0.000	0	N.D.	ppb
10)	T	Ethyl_Methyl_Sulfide	0.000	0	N.D.	ppb
11)	T	Thiophene	0.000	0	N.D.	ppb
12)	T	i-Butyl_Mercaptan	0.000	0	N.D.	ppb
13)	T	Diethyl_Sulfide	0.000	0	N.D.	ppb
14)	t	n-Butyl_Mercaptan	0.000	0	N.D.	ppb
15)	t	Dimethyl_Disulfide	0.000	0	N.D.	ppb
16)	T	2-Methyl_Thiophene	0.000	0	N.D.	ppb
17)	t	3-Methyl_Thiophene	0.000	0	N.D.	ppb
18)	T	Tetrahydrothiophene	0.000	0	N.D.	ppb
19)	t	2,5-Dimethyl_Thiophene	0.000	0	N.D.	ppb
20)	T	2-Ethyl_Thiophene	0.000	0	N.D.	ppb
21)	T	Diethyl_Disulfide	0.000	0	N.D.	ppb
22)	T	Methyltrisulfide	0.000	0	N.D.	ppb

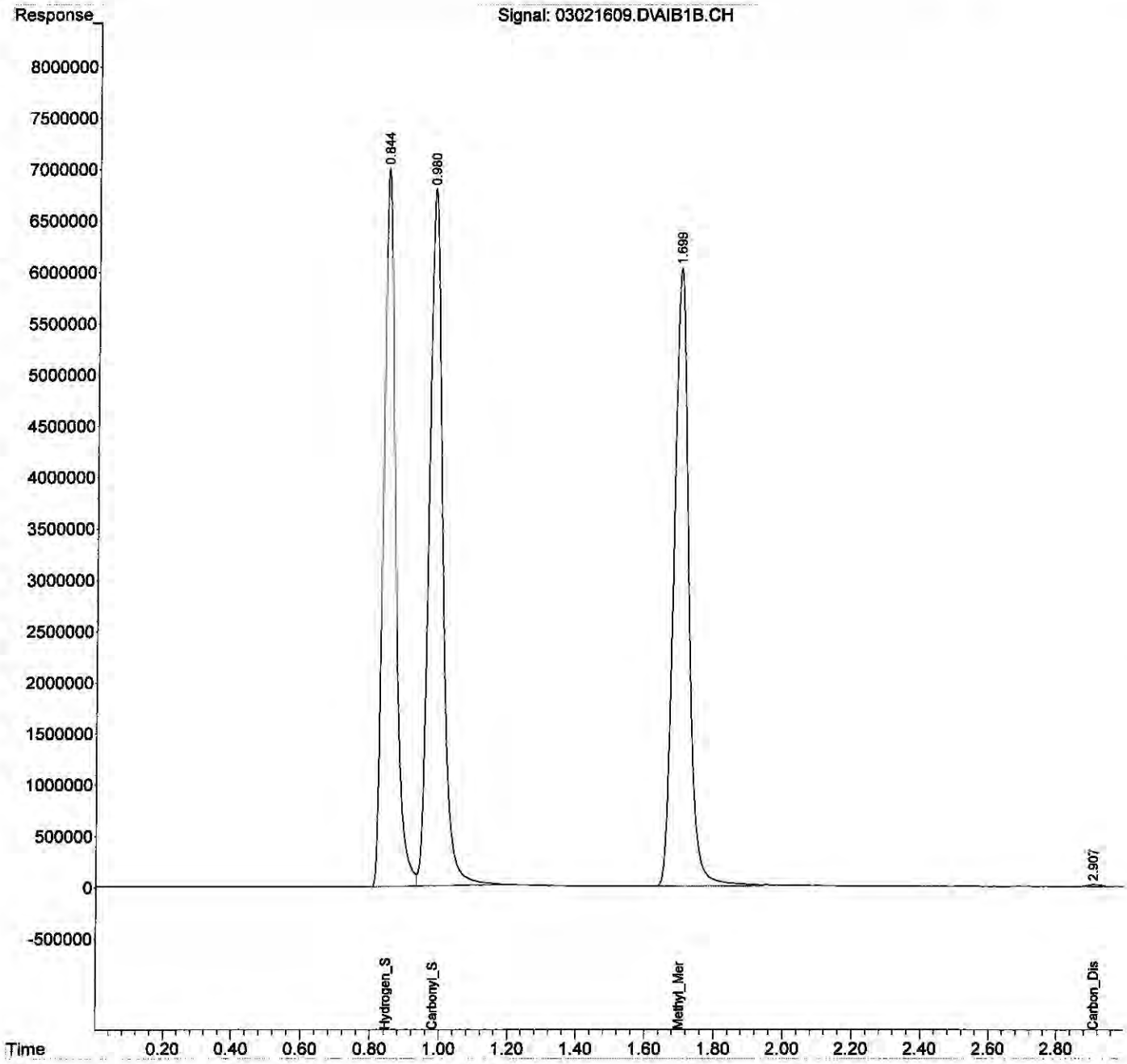
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC13\DATA\SCD\2016_03\02\
Data File : 03021609.D
Signal(s) : AIB1B.CH
Acq On : 02 Mar 2016 11:53 am
Operator : MC
Sample : 2500ppb S11-03021601 250ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 02 13:52:48 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : 20 Sulfurs
QLast Update : Wed Mar 02 12:32:01 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC13\DATA\SCD\2016_03\02\
Data File : 03021610.D
Signal(s) : AIB1B.CH
Acq On : 02 Mar 2016 11:57 am
Operator : MC
Sample : 5000ppb S11-03021601 500ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 02 12:01:12 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : 20 Sulfurs
QLast Update : Wed Mar 02 11:58:08 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :

		Compound	R.T.	Response	Conc	Units
Target Compounds						
1)	Z	Hydrogen_Sulfide	0.833	334245717	5193.454	ppb
2)	W	Carbonyl_Sulfide	0.970	367578252	5133.345	ppb
3)	T	Methyl_Mercaptan	1.692	352979844	5354.603	ppb
4)	T	Ethyl_Mercaptan	0.000	0	N.D.	ppb
5)	T	Dimethyl_Sulfide	2.692	216055	53.780	ppb
6)	T	Carbon_Disulfide	2.907	1134685	5227.264	ppb
7)	T	2-Propyl_Mercaptan	0.000	0	N.D.	ppb
8)	T	t-Butyl_Mercaptan	0.000	0	N.D.	ppb
9)	T	Propyl_Mercaptan	0.000	0	N.D.	ppb
10)	T	Ethyl_Methyl_Sulfide	0.000	0	N.D.	ppb
11)	T	Thiophene	0.000	0	N.D.	ppb
12)	T	i-Butyl_Mercaptan	0.000	0	N.D.	ppb
13)	T	Diethyl_Sulfide	0.000	0	N.D.	ppb
14)	t	n-Butyl_Mercaptan	0.000	0	N.D.	ppb
15)	t	Dimethyl_Disulfide	0.000	0	N.D.	ppb
16)	T	2-Methyl_Thiophene	0.000	0	N.D.	ppb
17)	t	3-Methyl_Thiophene	0.000	0	N.D.	ppb
18)	T	Tetrahydrothiophene	0.000	0	N.D.	ppb
19)	t	2,5-Dimethyl_Thiophene	0.000	0	N.D.	ppb
20)	T	2-Ethyl_Thiophene	0.000	0	N.D.	ppb
21)	T	Diethyl_Disulfide	0.000	0	N.D.	ppb
22)	T	Methyltrisulfide	0.000	0	N.D.	ppb

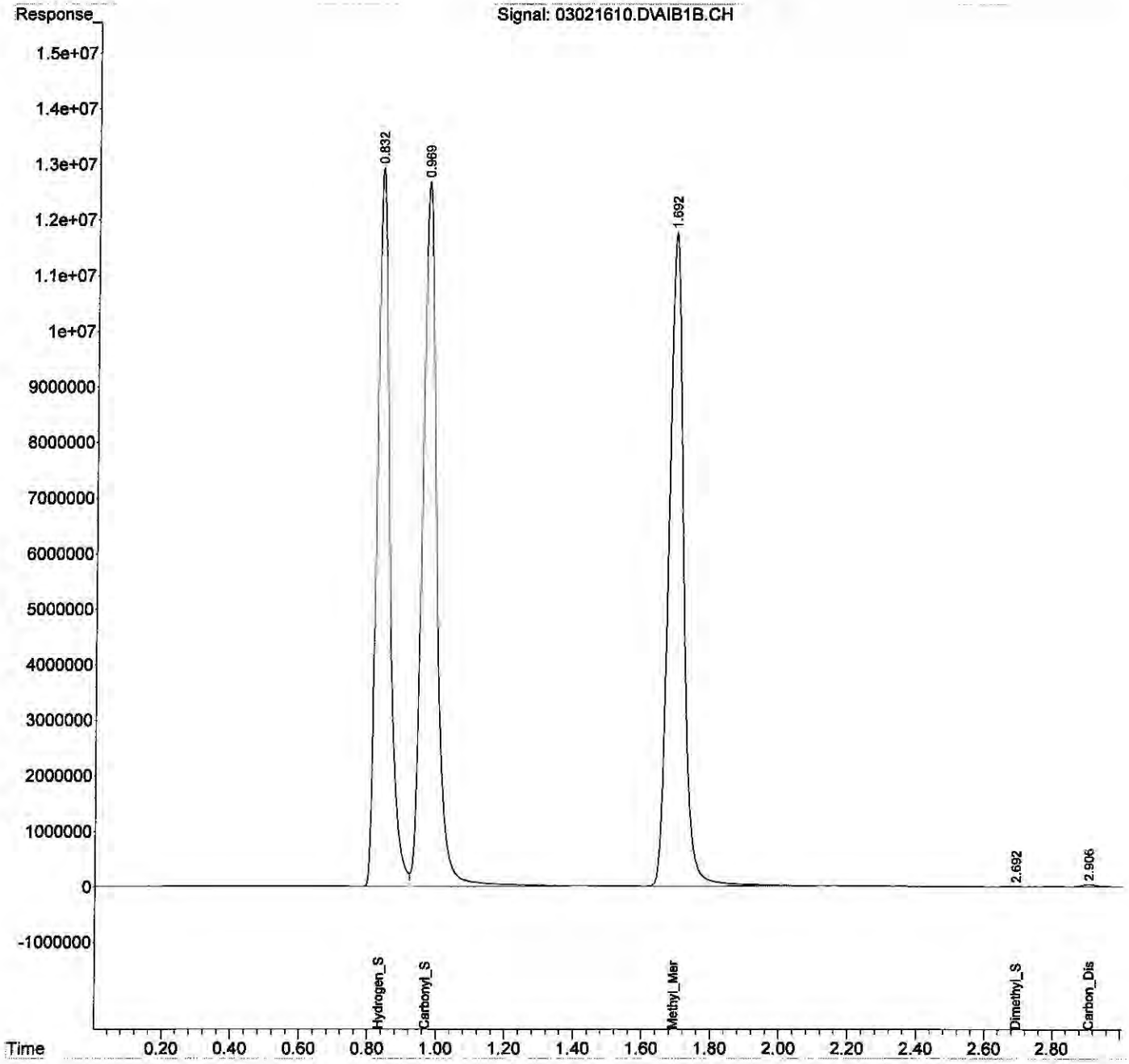
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC13\DATA\SCD\2016_03\02\
Data File : 03021610.D
Signal(s) : AIB1B.CH
Acq On : 02 Mar 2016 11:57 am
Operator : MC
Sample : 5000ppb S11-03021601 500ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 02 12:01:12 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : 20 Sulfurs
QLast Update : Wed Mar 02 11:58:08 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : I:\GC13\DATA\SCD\2016_03\02\
Data File : 03021611.D
Signal(s) : AIB1B.CH
Acq On : 02 Mar 2016 12:00 pm
Operator : MC
Sample : 10ppm S11-03021601 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 02 12:05:10 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : 20 Sulfurs
QLast Update : Wed Mar 02 12:01:28 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :

		Compound	R.T.	Response	Conc	Units
Target Compounds						
1)	Z	Hydrogen_Sulfide	0.848	666720202	10302.442	ppb
2)	W	Carbonyl_Sulfide	0.984	744314115	10355.127	ppb
3)	T	Methyl_Mercaptan	1.704	702296001	10546.774	ppb
4)	T	Ethyl_Mercaptan	0.000	0	N.D.	ppb
5)	T	Dimethyl_Sulfide	2.693	226440	84.095	ppb
6)	T	Carbon_Disulfide	2.913	2223163	10014.082	ppb
7)	T	2-Propyl_Mercaptan	0.000	0	N.D.	ppb
8)	T	t-Butyl_Mercaptan	0.000	0	N.D.	ppb
9)	T	Propyl_Mercaptan	0.000	0	N.D.	ppb
10)	T	Ethyl_Methyl_Sulfide	0.000	0	N.D.	ppb
11)	T	Thiophene	0.000	0	N.D.	ppb
12)	T	i-Butyl_Mercaptan	0.000	0	N.D.	ppb
13)	T	Diethyl_Sulfide	0.000	0	N.D.	ppb
14)	t	n-Butyl_Mercaptan	0.000	0	N.D.	ppb
15)	t	Dimethyl_Disulfide	0.000	0	N.D.	ppb
16)	T	2-Methyl_Thiophene	0.000	0	N.D.	ppb
17)	t	3-Methyl_Thiophene	0.000	0	N.D.	ppb
18)	T	Tetrahydrothiophene	0.000	0	N.D.	ppb
19)	t	2,5-Dimethyl_Thiophene	0.000	0	N.D.	ppb
20)	T	2-Ethyl_Thiophene	0.000	0	N.D.	ppb
21)	T	Diethyl_Disulfide	0.000	0	N.D.	ppb
22)	T	Methyltrisulfide	0.000	0	N.D.	ppb

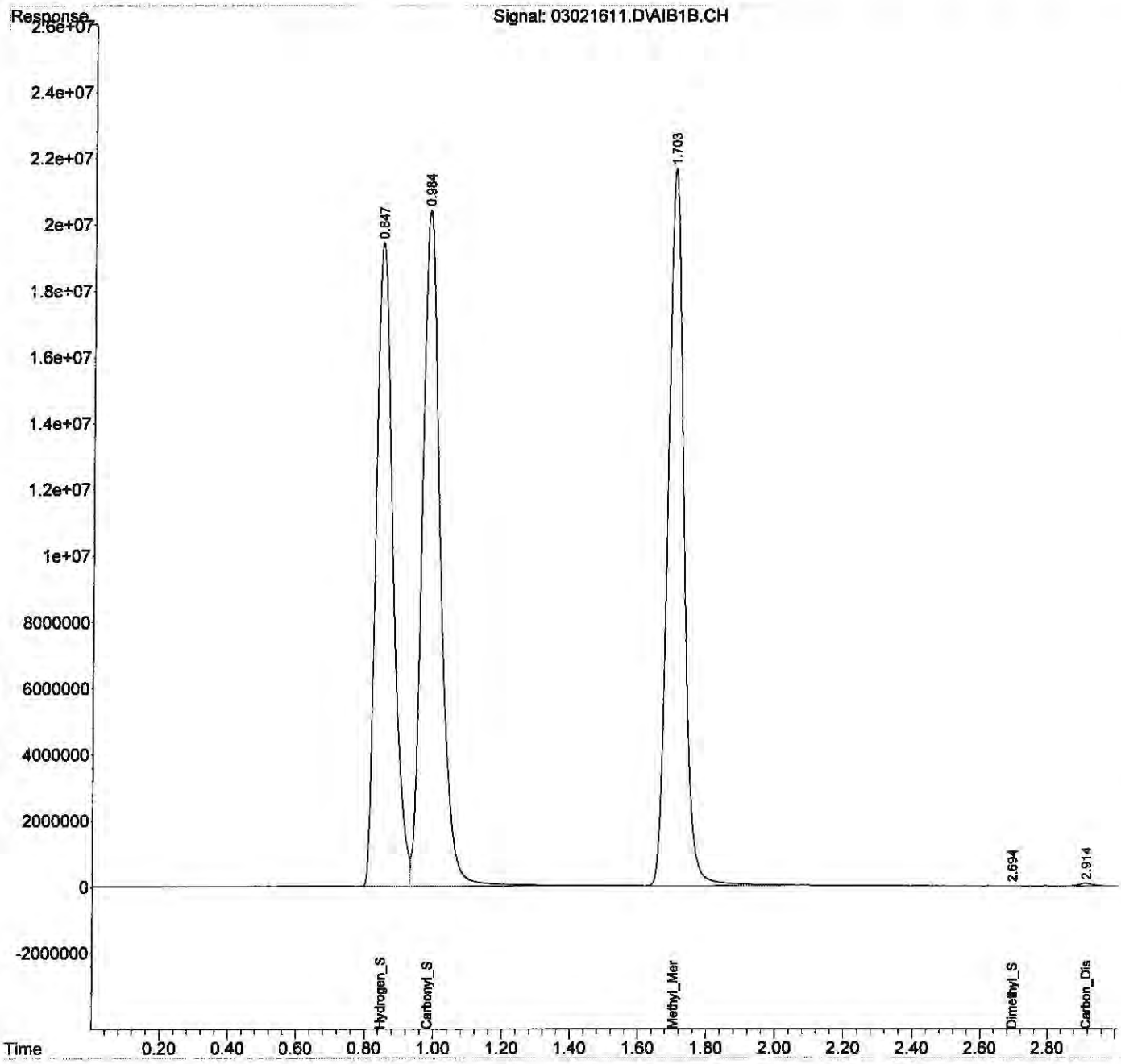
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC13\DATA\SCD\2016_03\02\
Data File : 03021611.D
Signal(s) : AIB1B.CH
Acq On : 02 Mar 2016 12:00 pm
Operator : MC
Sample : 10ppm S11-03021601 1ml
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 02 12:05:10 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : 20 Sulfurs
QLast Update : Wed Mar 02 12:01:28 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC13\DATA\SCD\2016_03\02\
Data File : 03021612.D
Signal(s) : AIB1B.CH
Acq On : 02 Mar 2016 12:04 pm
Operator : MC
Sample : 25ppm S30-11031401 25ul
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Mar 02 13:09:09 2016
Quant Method : J:\GC13\METHODS\GC13_030216.M
Quant Title : 20 Sulfurs
QLast Update : Wed Mar 02 12:07:47 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. :
Signal Phase :
Signal Info :

		Compound	R.T.	Response	Conc	Units
Target Compounds						
1)	Z	Hydrogen_Sulfide	0.850	1386097660	21337.898	ppb
2)	W	Carbonyl_Sulfide	0.985	1538408848	21308.229	ppb
3)	T	Methyl_Mercaptan	1.700	1560233333	23271.845	ppb
4)	T	Ethyl_Mercaptan	0.000	0	N.D.	ppb
5)	T	Dimethyl_Sulfide	2.694	419001	6.917	ppb
6)	T	Carbon_Disulfide	2.909	5845671	96.498	ppb
7)	T	2-Propyl_Mercaptan	3.051f	797865	13.171	ppb
8)	T	t-Butyl_Mercaptan	0.000	0	N.D.	ppb
9)	T	Propyl_Mercaptan	0.000	0	N.D.	ppb
10)	T	Ethyl_Methyl_Sulfide	0.000	0	N.D.	ppb
11)	T	Thiophene	0.000	0	N.D.	ppb
12)	T	i-Butyl_Mercaptan	0.000	0	N.D.	ppb
13)	T	Diethyl_Sulfide	0.000	0	N.D.	ppb
14)	t	n-Butyl_Mercaptan	0.000	0	N.D.	ppb
15)	t	Dimethyl_Disulfide	0.000	0	N.D.	ppb
16)	T	2-Methyl_Thiophene	0.000	0	N.D.	ppb
17)	t	3-Methyl_Thiophene	0.000	0	N.D.	ppb
18)	T	Tetrahydrothiophene	0.000	0	N.D.	ppb
19)	t	2,5-Dimethyl_Thiophene	0.000	0	N.D.	ppb
20)	T	2-Ethyl_Thiophene	0.000	0	N.D.	ppb
21)	T	Diethyl_Disulfide	0.000	0	N.D.	ppb
22)	T	Methyltrisulfide	0.000	0	N.D.	ppb

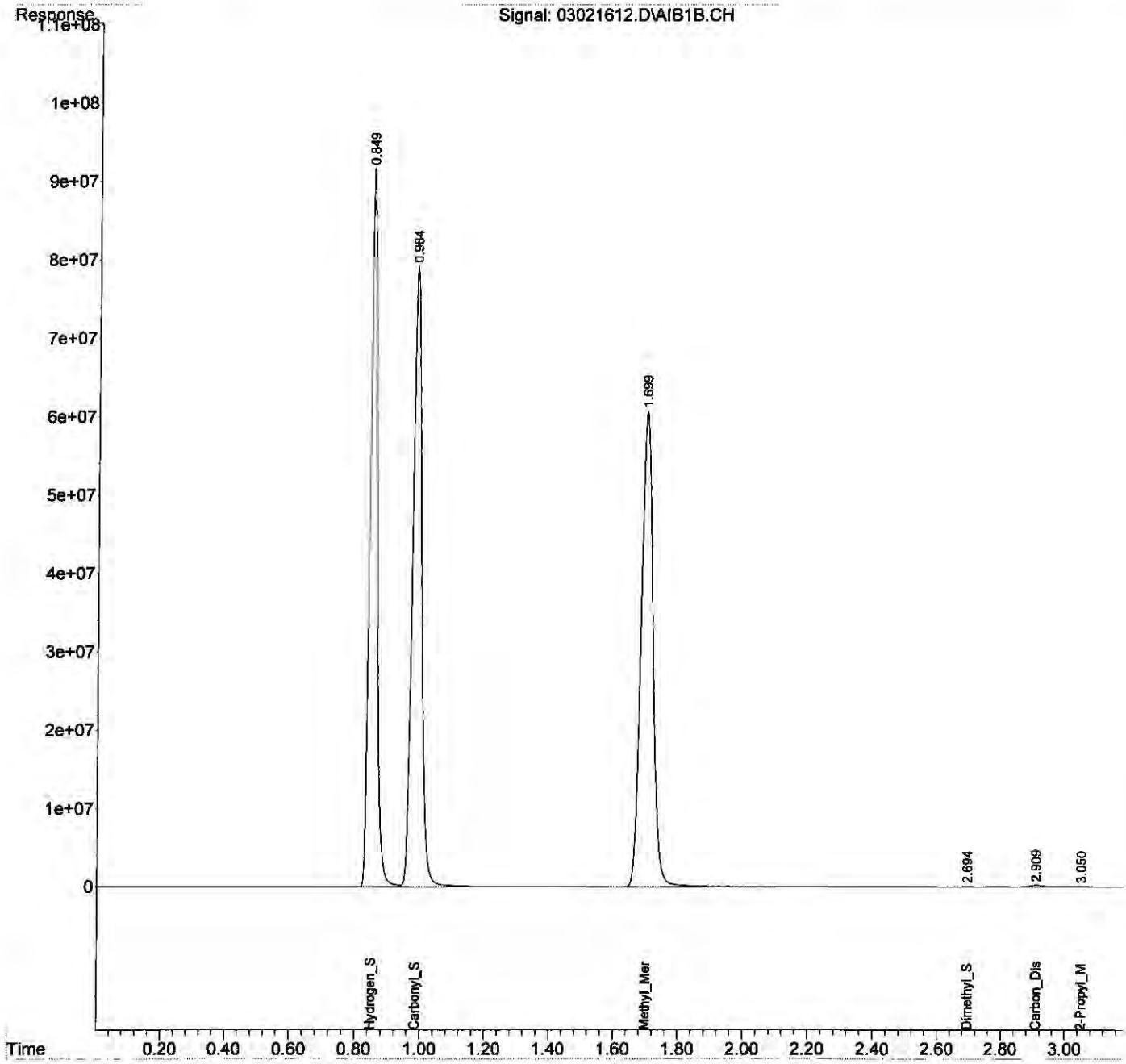
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



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	

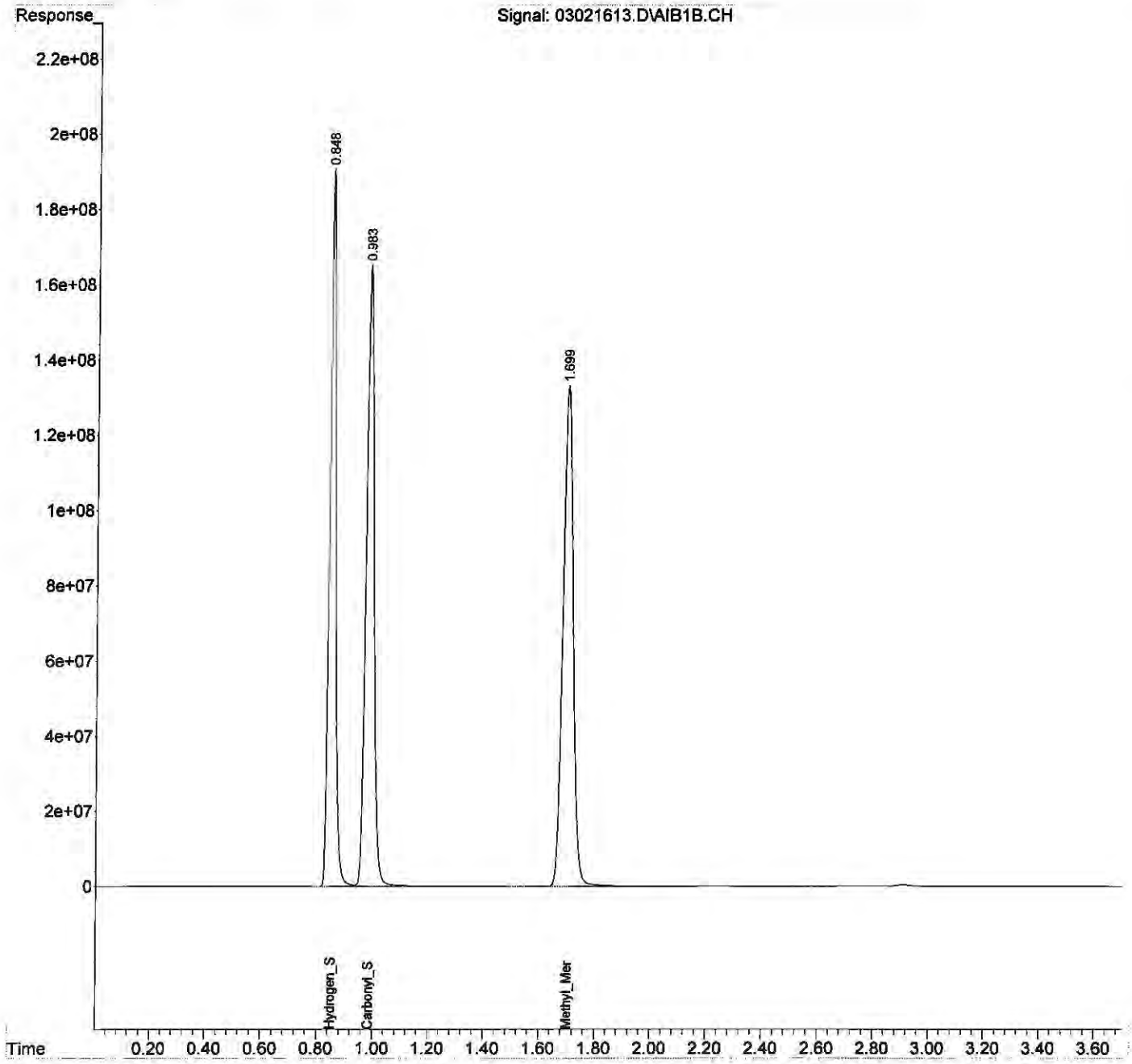
(f)=RT Delta > 1/2 Window (m)=manual int.

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	

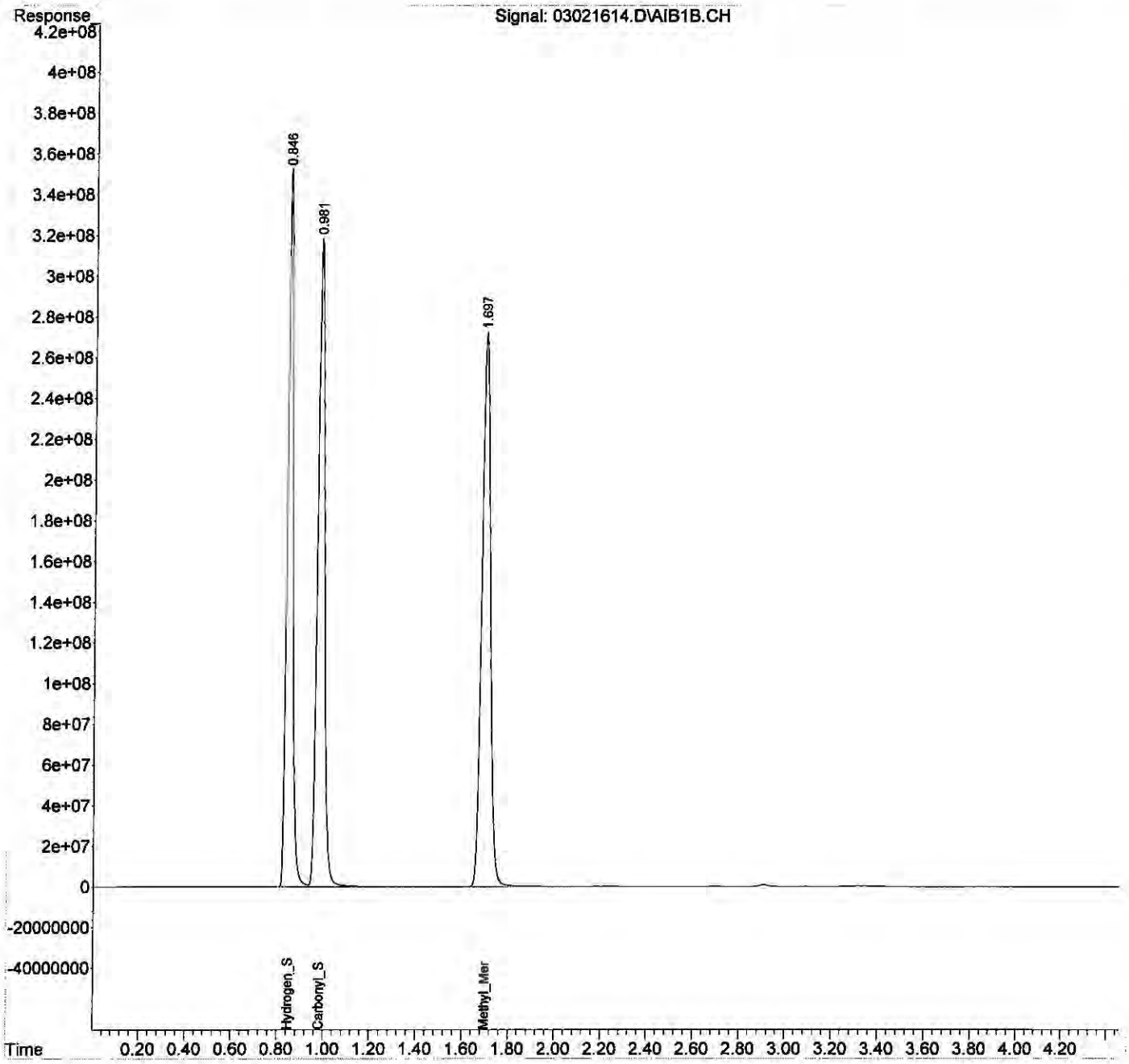
(f)=RT Delta > 1/2 Window (m)=manual int.

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

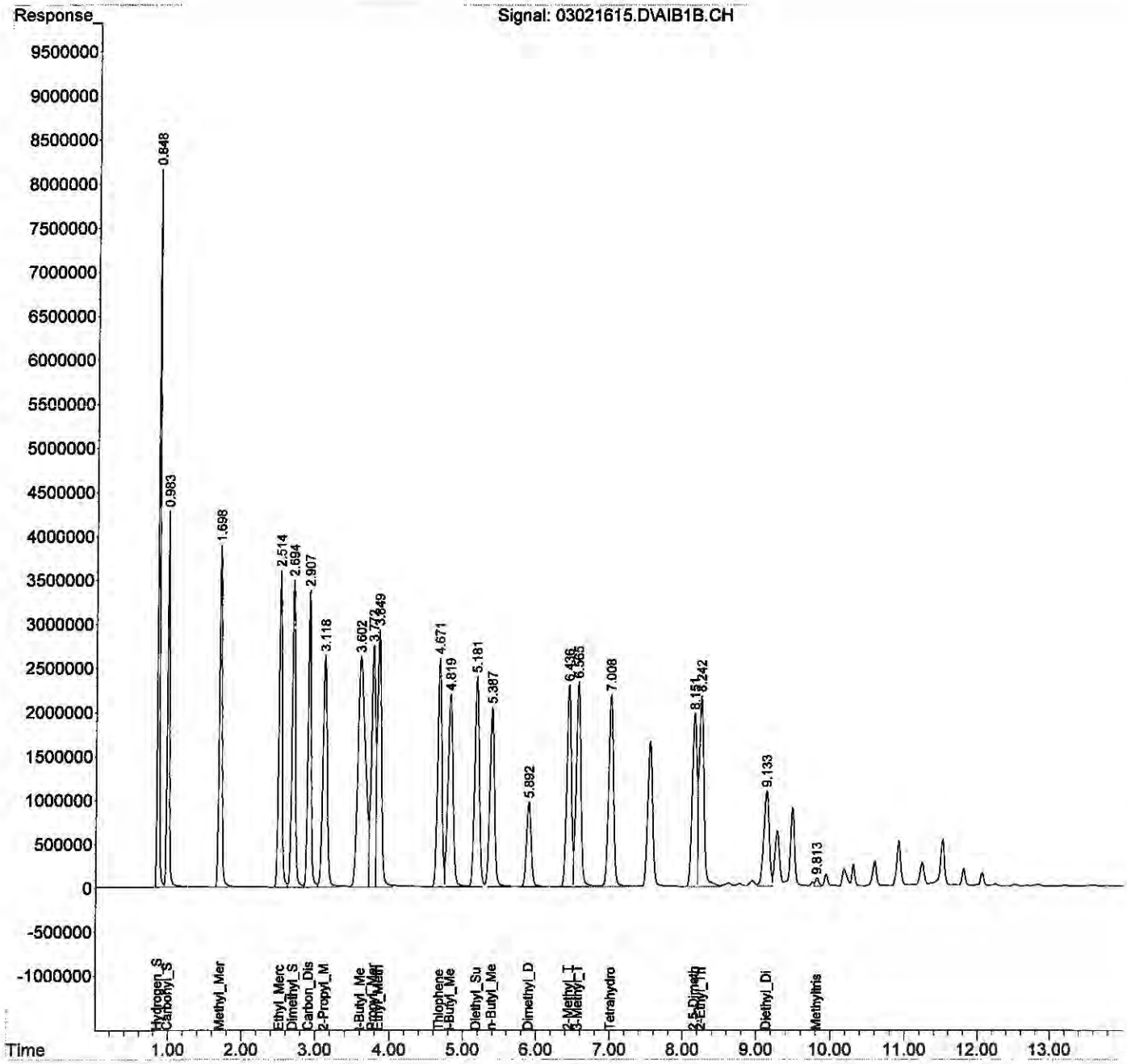
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



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	110.131 %
2)	W	Carbonyl_Sulfide	0.985	75695693	1080.714	ppb	108.0714 %
3)	T	Methyl_Mercaptan	1.706	73290985	1092.772	ppb	109.2772 %
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	

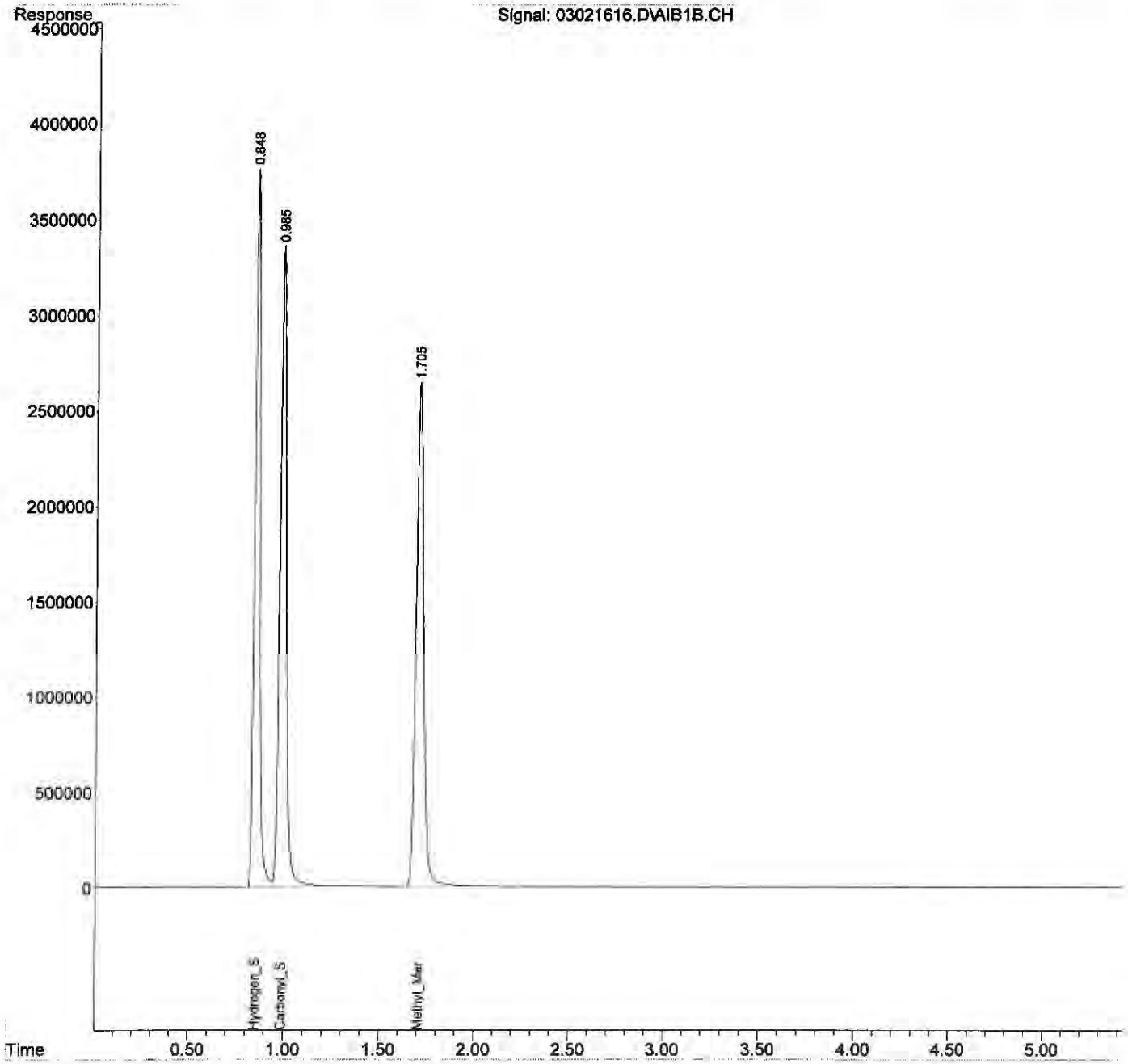
(f)=RT Delta > 1/2 Window (m)=manual int.

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 : P1604504
Instrument : GC13
Date Acquired : 9/26/16

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	ppbv	% Diff
Sample Information :	ppb	ppb	mb 1ml				0	0		std s30-08221601		std s30-08221601		std s30-08221601									
Inj. Vol. (ml)	1.0	1.0	1.00		1.0	1.0	1.0	1.0		0.10		0.10		0.10		0.10		0.10		0.10		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						884.53	12.4%	779.238	22.8%	882.682	12.6%								
Carbonyl_Sulfide	1.700	5.000	ND	P						874.01	12.6%	755.355	24.5%	861.408	13.9%								
Methyl_Mercaptan	1.200	5.000	ND	P						868.24	13.2%	737.505	26.2%	830.751	16.9%								
Ethyl_Mercaptan	1.200	5.000	ND	P																			
Dimethyl_Sulfide	1.200	5.000	ND	P						7:39 AM		11:17 AM		12:18 PM									
Carbon_Disulfide	0.600	2.500	ND	P						09261602.D		09261617.D		09261621.D									
2-Propyl_Mercaptan	1.200	5.000	ND	P																			
t-Butyl_Mercaptan	1.200	5.000	ND	P																			
Propyl_Mercaptan	1.200	5.000	ND	P																			
Ethyl_Methyl_Sulfide	1.200	5.000	ND	P																			
Thiophene	1.200	5.000	ND	P																			
i-Butyl_Mercaptan	1.200	5.000	ND	P																			
Diethyl_Sulfide	1.200	5.000	ND	P																			
n-Butyl_Mercaptan	1.200	5.000	ND	P																			
Dimethyl_Disulfide	0.600	2.500	ND	P																			
2-Methylthiophene	1.200	5.000	ND	P																			
3-Methylthiophene	1.200	5.000	ND	P																			
Tetrahydrothiophene	1.200	5.000	ND	P																			
2,5-Dimethylthiophene	1.200	5.000	ND	P																			
2-Ethylthiophene	1.200	5.000	ND	P																			
Diethyl_Disulfide	0.600	2.500	ND	P																			
Methyltrisulfide	0.600	2.500	ND	P																			
Acqisition Time			8:08 AM																				
DataFile			09261606.D																				

LCS / LCS Dup Summary (ppbv)

	ppbv	%R		ppbv	% R	%RPD	Actual
Hydrogen_Sulfide	878.93	87.9%		875.62	87.6%	0.38%	1000.00
Carbonyl_Sulfide	891.20	89.1%		885.33	88.5%	0.66%	1000.00
Methyl_Mercaptan	851.56	85.2%		830.80	83.1%	2.47%	1000.00
Acqisition Time	7:43 AM			7:46 AM			
DataFile	09261603.D			09261604.D			

211 of 219

Quantitation Report (QT Reviewed)

Data Path : J:\GC13\DATA\SCD\2016_09\26\
Data File : 09261602.D
Signal(s) : AIB1B.CH
Acq On : 26 Sep 2016 7:39 am
Operator : MC
Sample : std s30-08221601
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Sep 27 08:59:42 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	0.842	55253972	884.530	ppb
2)	W	Carbonyl_Sulfide	0.976	61217355	874.006	ppb
3)	T	Methyl_Mercaptan	1.687	58232173	868.244	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	2.892	228804	1.706	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.

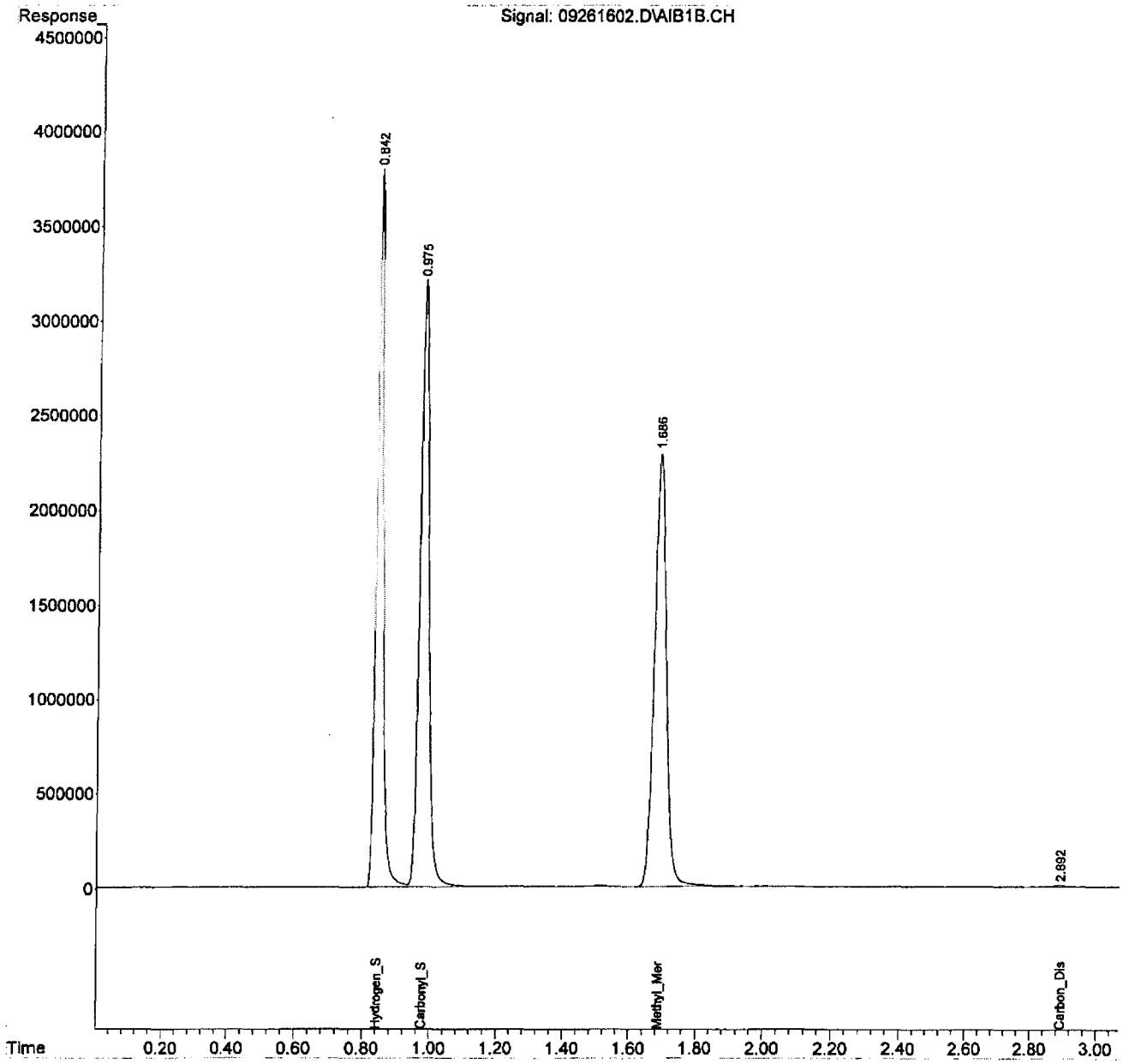
MC 9/27/16

Quantitation Report (QT Reviewed)

Data Path : J:\GC13\DATA\SCD\2016_09\26\
Data File : 09261602.D
Signal(s) : AIB1B.CH
Acq On : 26 Sep 2016 7:39 am
Operator : MC
Sample : std s30-08221601
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Sep 27 08:59:42 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_09\26\
Data File : 09261617.D
Signal(s) : AIB1B.CH
Acq On : 26 Sep 2016 11:17 am
Operator : MC
Sample : std s30-08221601
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Sep 26 11:20:46 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	0.842	48676715	779.238	ppb
2)	W	Carbonyl_Sulfide	0.976	52906791	755.355	ppb
3)	T	Methyl_Mercaptan	1.689	49463660	737.505	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

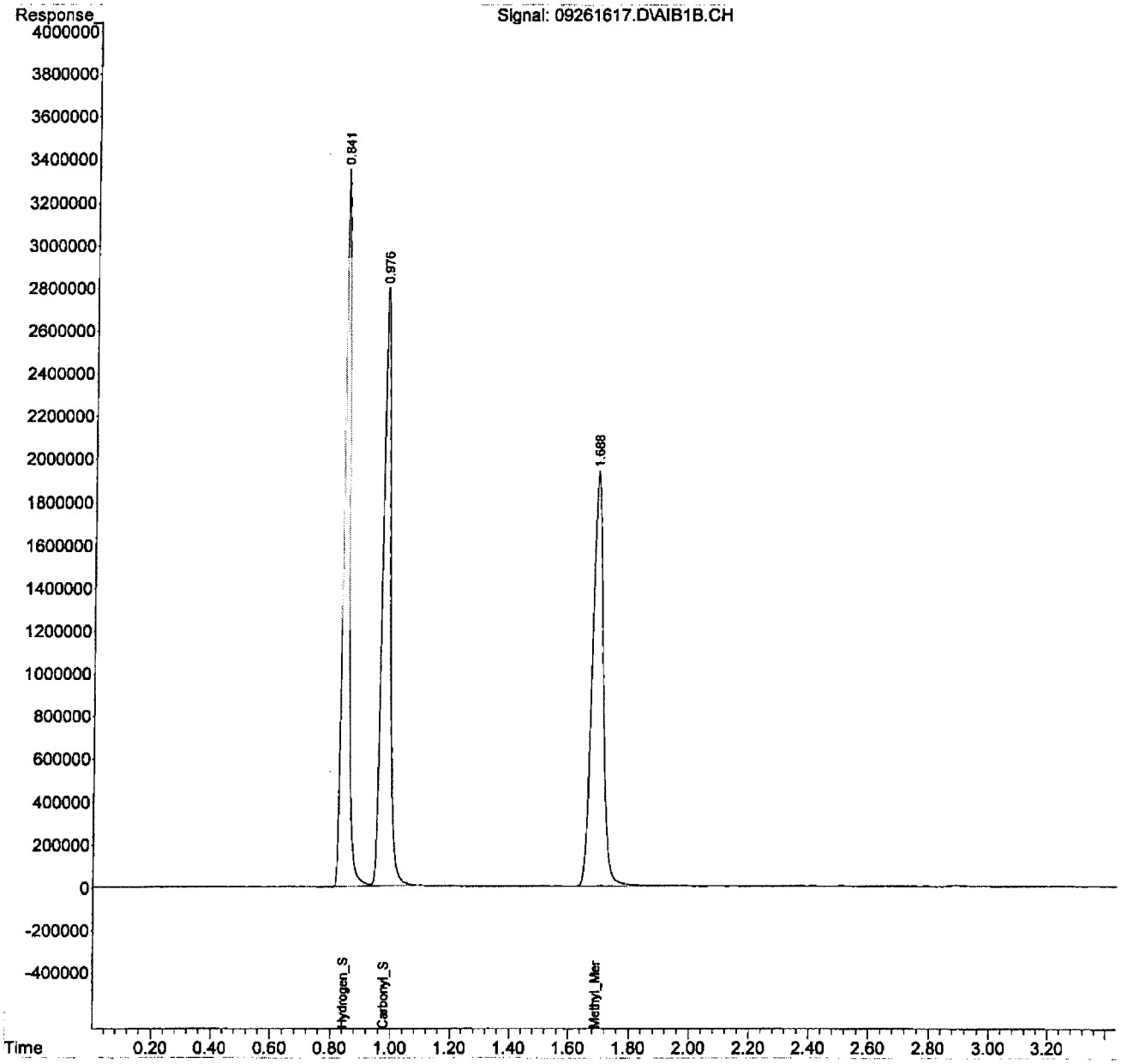
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC13\DATA\SCD\2016_09\26\
Data File : 09261617.D
Signal(s) : AIB1B.CH
Acq On : 26 Sep 2016 11:17 am
Operator : MC
Sample : std s30-08221601
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Sep 26 11:20:46 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_09\26\
Data File : 09261621.D
Signal(s) : AIB1B.CH
Acq On : 26 Sep 2016 12:18 pm
Operator : MC
Sample : std s30-08221601
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Sep 26 12:20:57 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	0.841	55138589	882.682	ppb
2)	W	Carbonyl_Sulfide	0.976	60334956	861.408	ppb
3)	T	Methyl_Mercaptan	1.690	55717536	830.751	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

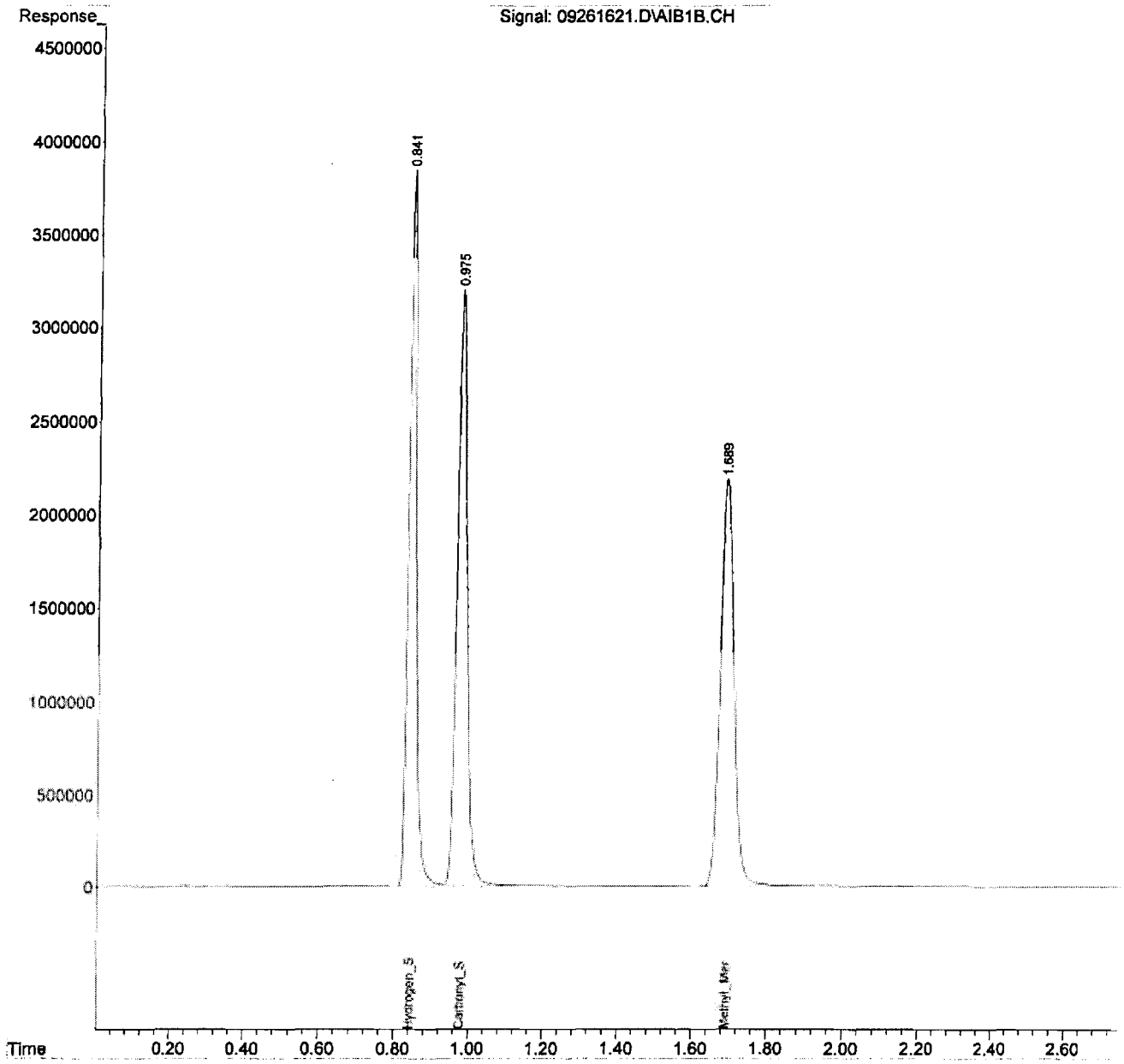
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC13\DATA\SCD\2016_09\26\
Data File : 09261621.D
Signal(s) : AIB1B.CH
Acq On : 26 Sep 2016 12:18 pm
Operator : MC
Sample : std s30-08221601
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration File: autoint1.e
Quant Time: Sep 26 12:20:57 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_09\26\

	Sample ID	Date/Time	Acquisition Method	File Name	Misc Info	Operator	Comments
1	std s30-08221601	9/26/16 7:36	GC13_SCD.M	09261601.D		MC	Fail
2	std s30-08221601	9/26/16 7:39	GC13_SCD.M	09261602.D		MC	Pass
	lcs s30-08221602	9/26/16 7:43	GC13_SCD.M	09261603.D		MC	
	lcsd s30-08221602	9/26/16 7:46	GC13_SCD.M	09261604.D		MC	
	rt	9/26/16 7:49	GC13_SCD.M	09261605.D		MC	
	mb 1ml	9/26/16 8:08	GC13_SCD.M	09261606.D		MC	
	4516-003 0.1ml	9/26/16 8:28	GC13_SCD.M	09261607.D		MC	
	4516-002 0.1ml	9/26/16 8:47	GC13_SCD.M	09261608.D		MC	
	4516-001 0.1ml	9/26/16 9:08	GC13_SCD.M	09261609.D		MC	
	4516-002 0.1ml	9/26/16 9:27	GC13_SCD.M	09261610.D		MC	
	4518-001 0.1ml	9/26/16 9:46	GC13_SCD.M	09261611.D		MC	
	4504-001 1ml	9/26/16 10:00	GC13_SCD.M	09261612.D		MC	
	4504-002 1ml	9/26/16 10:14	GC13_SCD.M	09261613.D		MC	
	4504-003 1ml	9/26/16 10:28	GC13_SCD.M	09261614.D		MC	
	4504-004 1ml	9/26/16 10:45	GC13_SCD.M	09261615.D		MC	
	4524-001 1ml	9/26/16 11:00	GC13_SCD.M	09261616.D		MC	
#VALUE!	std s30-08221601	9/26/16 11:17	GC13_SCD.M	09261617.D		MC	Pass
	4524-002 1ml	9/26/16 11:29	GC13_SCD.M	09261618.D		MC	
	4524-003 1ml	9/26/16 11:45	GC13_SCD.M	09261619.D		MC	
	4524-004 1ml	9/26/16 12:04	GC13_SCD.M	09261620.D		MC	
#VALUE!	std s30-08221601	9/26/16 12:18	GC13_SCD.M	09261621.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 1, 2016

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

RE: sfi-16-elkcity.ok-comp#1

Dear Min:

Your report number P1604409 has been amended for the samples submitted to our laboratory on September 15, 2016. The EPA 3C modified results for nitrogen have been added to the report. The revised pages have been indicated by the "Added Page" footer located at the bottom right of the page.

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 12:12 pm, Oct 01, 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: P1604409

CASE NARRATIVE

The samples were received intact under chain of custody on September 15, 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, 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.

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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: P1604409

Date Received: 9/15/2016
Time Received: 09:40

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	3C Modified - Fxd Gases Bag 2X
R10-90-100%-SCD-48	P1604409-001	Air	9/13/2016	00:00	X
R11-90-100%-SCD-48	P1604409-003	Air	9/13/2016	00:00	X
R12-90-100%-SCD-48	P1604409-005	Air	9/13/2016	00:00	X
R7-70-100-70%-SCD-48	P1604409-007	Air	9/14/2016	00:00	X
R8-70-100-70%-SCD-48	P1604409-009	Air	9/14/2016	00:00	X
R9-70-100-70%-SCD-48	P1604409-011	Air	9/14/2016	00:00	X

P1604409

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-16-elkcity.ok-comp#1	Laboratory Analysis Requested:	Method 3C
Person Taking Samples:	DA		

	Sample Number	Location	Date	Volume	Analysis Method			
					O_2	CO_2	Methane	
1	R10-90-100%-SCD-48	Elk City Facility	913/16	10	x	x	x	
2	R10-90-100%-SCD-48 Backup	Elk City Facility	913/16	5	x	x	x	
3	R11-90-100%-SCD-48	Elk City Facility	913/16	10	x	x	x	
4	R11-90-100%-SCD-48 Backup	Elk City Facility	913/16	5	x	x	x	
5	R12-90-100%-SCD-48	Elk City Facility	913/16	10	x	x	x	
6	R12-90-100%-SCD-48 Backup	Elk City Facility	913/16	5	x	x	x	
7	R7-70-100-70%-SCD-48	Elk City Facility	9/14/16	10	x	x	x	
8	R7-70-100-70%-SCD-48-Backup	Elk City Facility	9/14/16	5	x	x	x	
9	R8-70-100-70%-SCD-48	Elk City Facility	9/14/16	10	x	x	x	
10	R8-70-100-70%-SCD-48-Backup	Elk City Facility	9/14/16	5	x	x	x	
11	R9-70-100-70%-SCD-48	Elk City Facility	9/14/16	10	x	x	x	
12	R9-70-100-70%-SCD-48-Backup	Elk City Facility	9/14/16	5	x	x	x	

Relinquished by: (Signature)	Date: 9/14/16	Time: 13:00	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date: 9/15/16	Time: 0940

ALS Environmental
Sample Acceptance Check Form

Client: Air Hygiene, Incorporated Work order: P1604409
Project: Flare Testing
Sample(s) received on: 9/15/16 Date opened: 9/15/16 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
P1604409-001.01	10 L Tedlar Bag					
P1604409-002.01	5.0 L Tedlar Bag					
P1604409-003.01	10 L Tedlar Bag					
P1604409-004.01	5.0 L Tedlar Bag					
P1604409-005.01	10 L Tedlar Bag					
P1604409-006.01	5.0 L Tedlar Bag					
P1604409-007.01	10 L Tedlar Bag					
P1604409-008.01	5.0 L Tedlar Bag					
P1604409-009.01	10 L Tedlar Bag					
P1604409-010.01	5.0 L Tedlar Bag					
P1604409-011.01	10 L Tedlar Bag					
P1604409-012.01	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: **R10-90-100%-SCD-48**
Client Project ID: **sfi-16-elkcity.ok-comp#1**

ALS Project ID: P1604409
ALS Sample ID: P1604409-001

Test Code: EPA Method 3C Modified
Instrument ID: HP5890 II/GC1/TCD
Analyst: Adam McAfee
Sample Type: 10 L Tedlar Bag
Test Notes:

Date Collected: 9/13/16
Date Received: 9/15/16
Date Analyzed: 9/15/16
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
7782-44-7	**Oxygen***	**16.5**	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	**Carbon Dioxide**	**3.70**	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: **R11-90-100%-SCD-48**
Client Project ID: **sfi-16-elkcity.ok-comp#1**

ALS Project ID: P1604409
ALS Sample ID: P1604409-003

Test Code: EPA Method 3C Modified
Instrument ID: HP5890 II/GC1/TCD
Analyst: Adam McAfee
Sample Type: 10 L Tedlar Bag
Test Notes:

Date Collected: 9/13/16
Date Received: 9/15/16
Date Analyzed: 9/15/16
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
7782-44-7	**Oxygen***	**15.9**	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	**Carbon Dioxide**	**4.13**	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-48**
Client Project ID: **sfi-16-elkcity.ok-comp#1**

ALS Project ID: P1604409
ALS Sample ID: P1604409-005

Test Code: EPA Method 3C Modified
Instrument ID: HP5890 II/GC1/TCD
Analyst: Adam McAfee
Sample Type: 10 L Tedlar Bag
Test Notes:

Date Collected: 9/13/16
Date Received: 9/15/16
Date Analyzed: 9/15/16
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
7782-44-7	**Oxygen***	**16.9**	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	**Carbon Dioxide**	**3.47**	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-48**
Client Project ID: **sfi-16-elkcity.ok-comp#1**

ALS Project ID: P1604409
ALS Sample ID: P1604409-007

Test Code: EPA Method 3C Modified
Instrument ID: HP5890 II/GC1/TCD
Analyst: Adam McAfee
Sample Type: 10 L Tedlar Bag
Test Notes:

Date Collected: 9/14/16
Date Received: 9/15/16
Date Analyzed: 9/15/16
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
7782-44-7	**Oxygen***	**16.7**	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	**Carbon Dioxide**	**3.55**	0.10	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
* = The oxygen result may include argon due to coelution. Ambient air includes 0.93% argon.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **R8-70-100-70%-SCD-48**
Client Project ID: **sfi-16-elkcity.ok-comp#1**

ALS Project ID: P1604409
ALS Sample ID: P1604409-009

Test Code: EPA Method 3C Modified
Instrument ID: HP5890 II/GC1/TCD
Analyst: Adam McAfee
Sample Type: 10 L Tedlar Bag
Test Notes:

Date Collected: 9/14/16
Date Received: 9/15/16
Date Analyzed: 9/15/16
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
7782-44-7	**Oxygen***	**17.3**	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	**Carbon Dioxide**	**3.14**	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-48**
Client Project ID: **sfi-16-elkcity.ok-comp#1**

ALS Project ID: P1604409
ALS Sample ID: P1604409-011

Test Code: EPA Method 3C Modified
Instrument ID: HP5890 II/GC1/TCD
Analyst: Adam McAfee
Sample Type: 10 L Tedlar Bag
Test Notes:

Date Collected: 9/14/16
Date Received: 9/15/16
Date Analyzed: 9/15/16
Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
7782-44-7	**Oxygen***	**15.9**	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	**Carbon Dioxide**	**4.18**	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: P1604409
Client Project ID: **sfi-16-elkcity.ok-comp#1** ALS Sample ID: P160915-MB

Test Code: EPA Method 3C Modified Date Collected: NA
Instrument ID: HP5890 II/GC1/TCD Date Received: NA
Analyst: Adam McAfee Date Analyzed: 9/15/16
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	
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

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Project ID: **sfi-16-elkcity.ok-comp#1** ALS Project ID: P1604409

Nitrogen

Test Code: EPA Method 3C Modified
Instrument ID: HP5890 II/GC1/TCD Date(s) Collected: 9/13 - 9/14/16
Analyst: Adam McAfee Date Received: 9/15/16
Sample Type: 10 L Tedlar Bag(s) Date Analyzed: 9/15/16
Test Notes:

Client Sample ID	ALS Sample ID	Injection Volume ml(s)	**Result %, v/v**	MRL %, v/v	Data Qualifier
R10-90-100%-SCD-48	P1604409-001	0.10	**79.8**	0.10	
R11-90-100%-SCD-48	P1604409-003	0.10	**79.9**	0.10	
R12-90-100%-SCD-48	P1604409-005	0.10	**79.6**	0.10	
R7-70-100-70%-SCD-48	P1604409-007	0.10	**79.7**	0.10	
R8-70-100-70%-SCD-48	P1604409-009	0.10	**79.5**	0.10	
R9-70-100-70%-SCD-48	P1604409-011	0.10	**79.9**	0.10	
Method Blank	P160915-MB	0.10	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.

Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\15\
Data File : 09151604.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 10:53 am
Operator : AMF
Sample : 4409-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 11:15:54 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 :

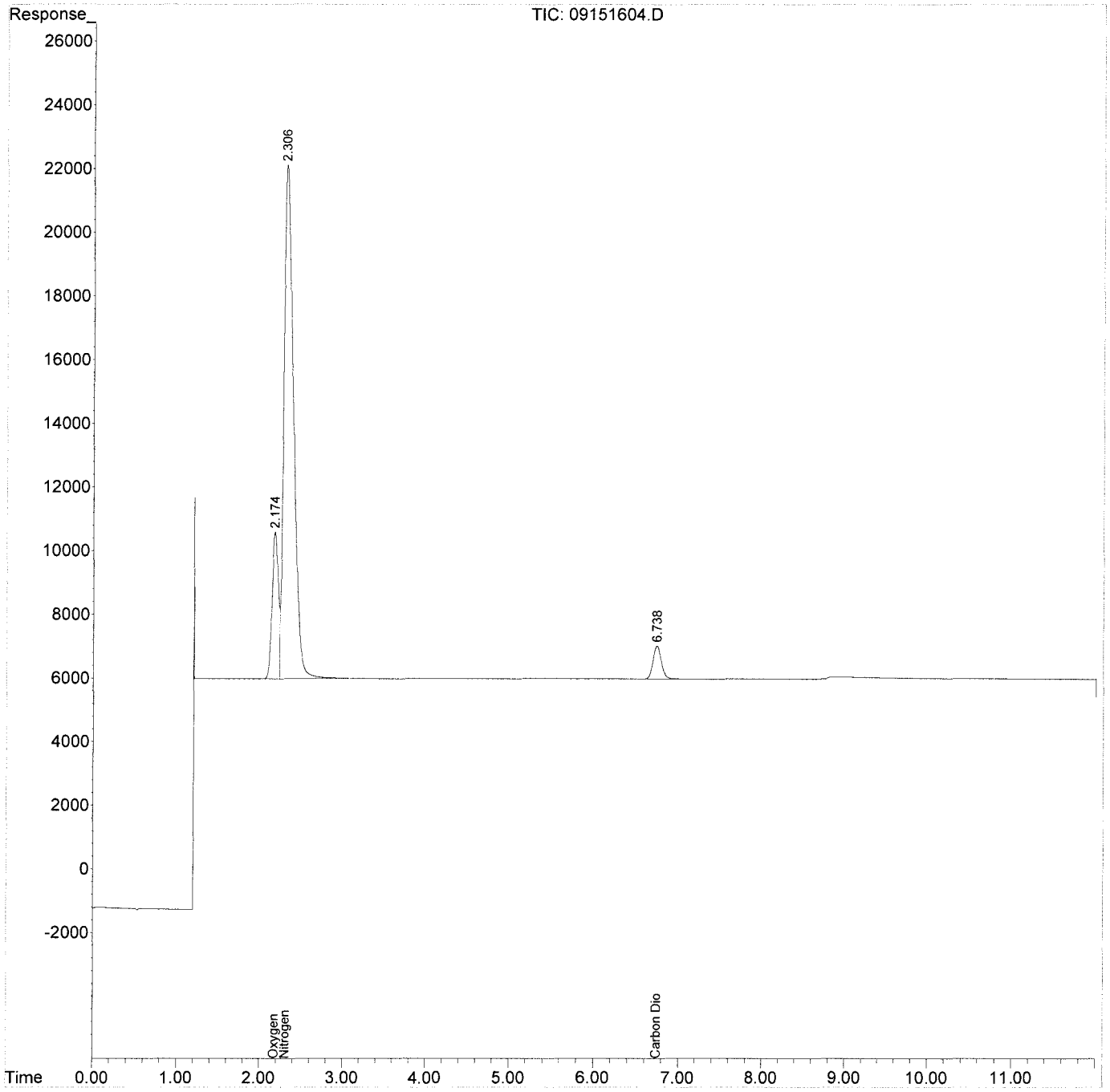
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.176	235665	152431.255	ppm
3)	Nitrogen	2.308	1298899	735004.579	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.739	71490	34084.791	ppm

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

Data Path : I:\GC01\DATA\FXG\2016_09\15\
Data File : 09151604.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 10:53 am
Operator : AMF
Sample : 4409-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 11:15:54 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_09\15\
Data File : 09151605.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 11:09 am
Operator : AMF
Sample : 4409-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 11:30:20 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 :

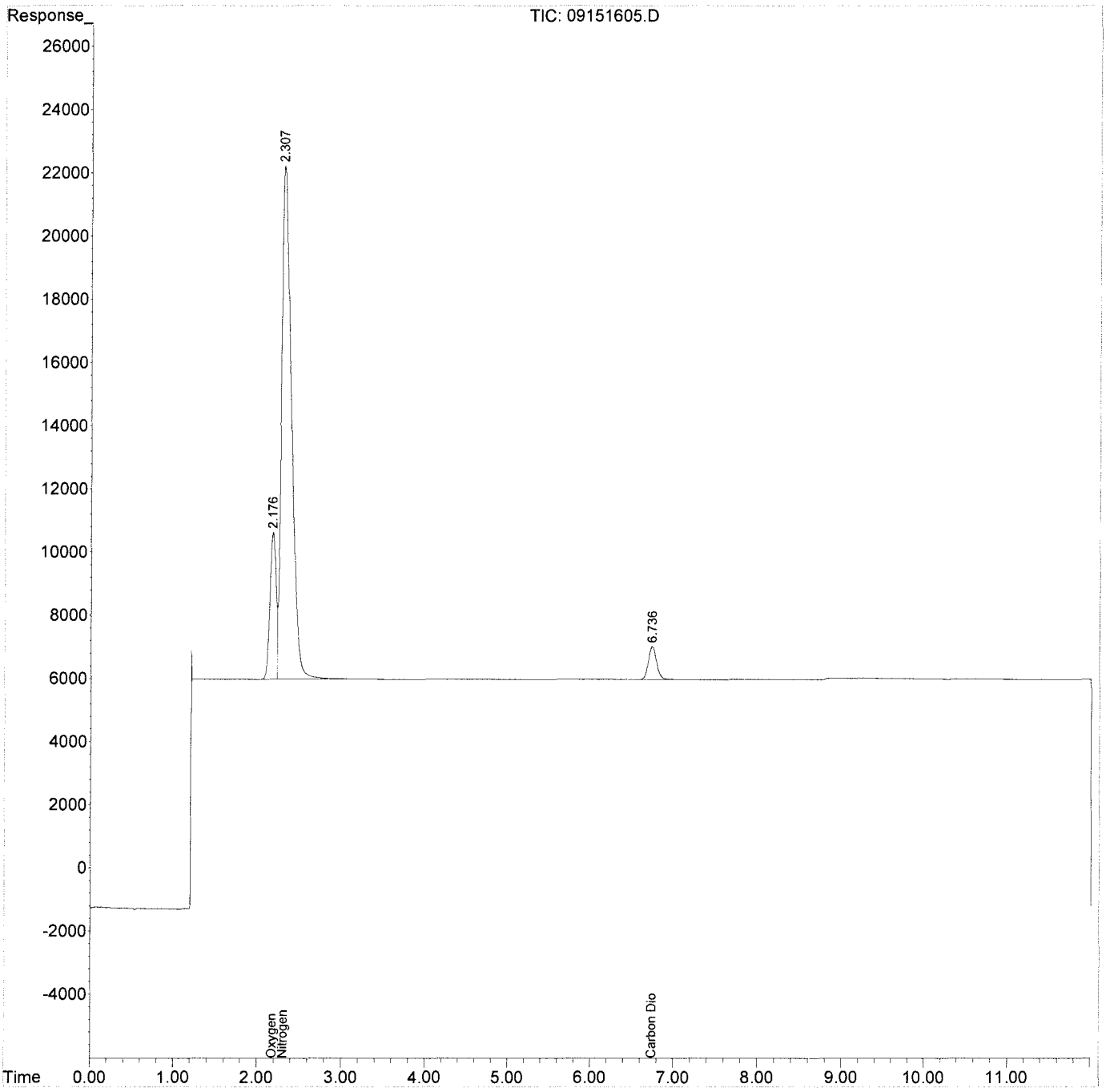
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.177	237427	153571.170	ppm
3)	Nitrogen	2.308	1309565	741040.158	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.737	72305	34473.344	ppm

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

Data Path : I:\GC01\DATA\FXG\2016_09\15\
Data File : 09151605.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 11:09 am
Operator : AMF
Sample : 4409-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 11:30:20 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_09\15\
Data File : 09151606.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 11:25 am
Operator : AMF
Sample : 4409-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 11:42:34 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

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

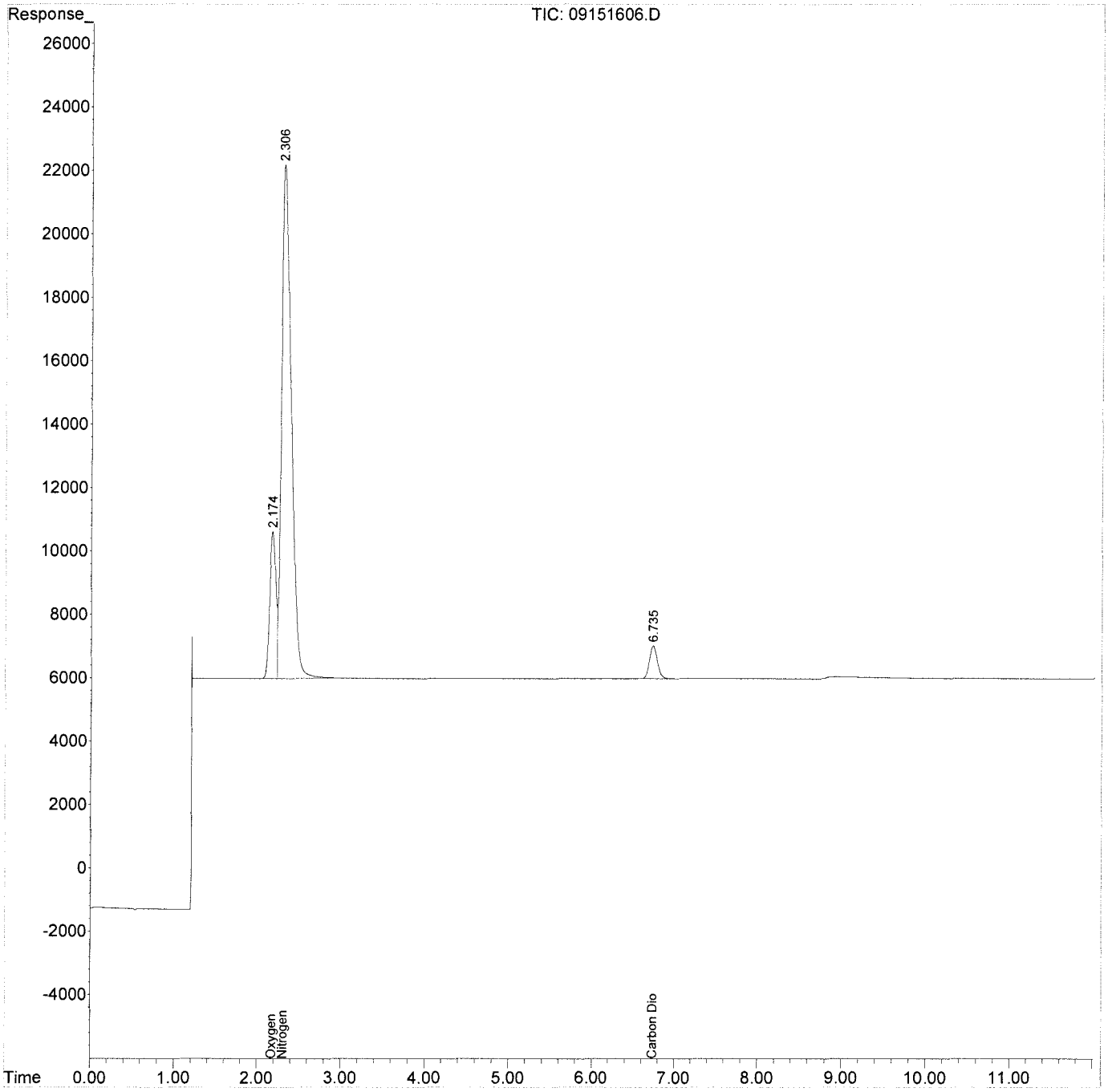
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.176	236678	153086.638	ppm
3)	Nitrogen	2.307	1304758	738319.806	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.737	71489	34084.393	ppm

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

Data Path : I:\GC01\DATA\FXG\2016_09\15\
Data File : 09151606.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 11:25 am
Operator : AMF
Sample : 4409-001
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 11:42:34 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

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



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\15\
Data File : 09151607.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 11:41 am
Operator : AMF
Sample : 4409-003
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 12:06:07 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

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

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.178	227204	146958.726	ppm
3)	Nitrogen	2.309	1304919	738411.124	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.738	80003	38143.414	ppm

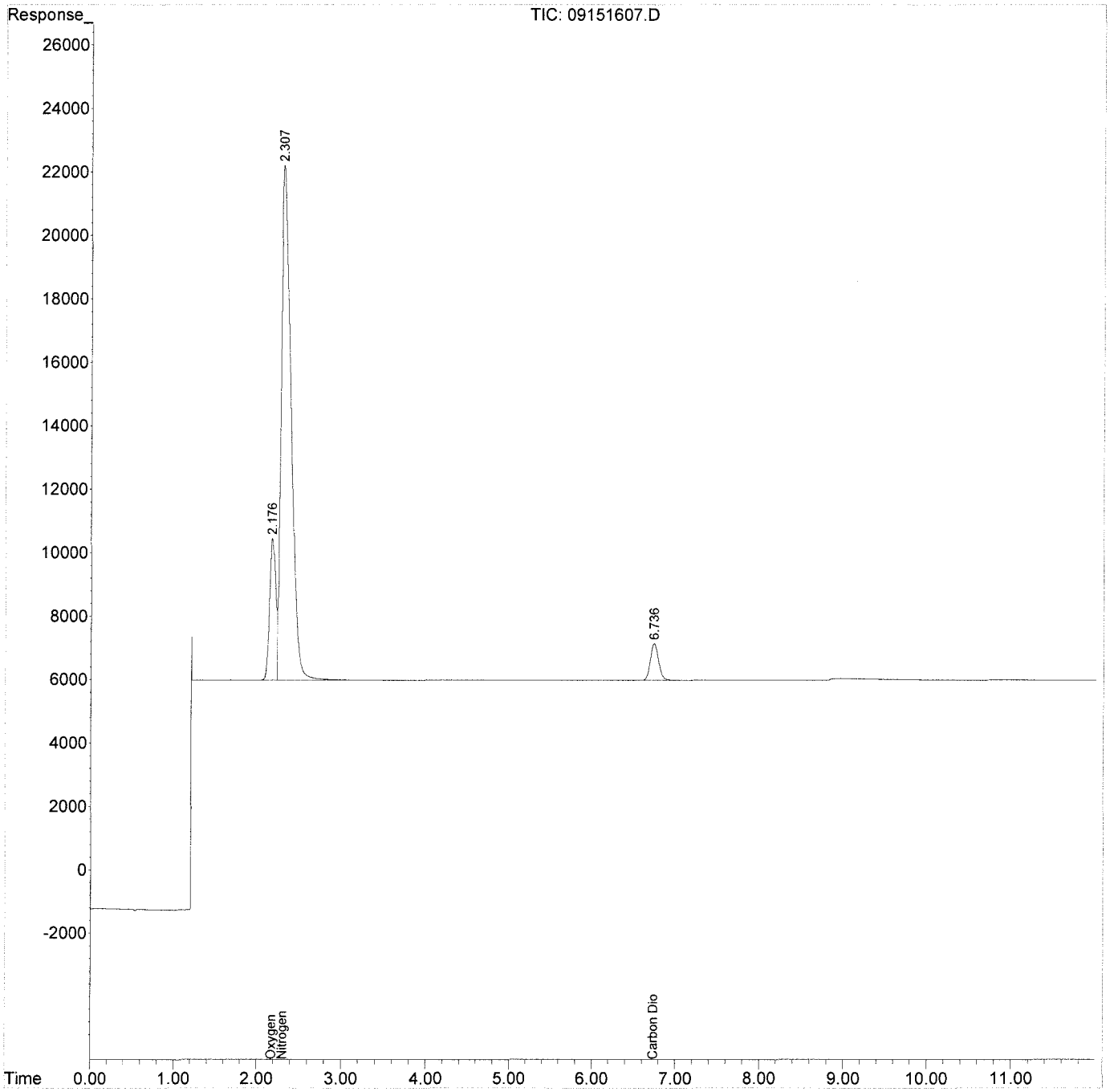
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\15\
Data File : 09151607.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 11:41 am
Operator : AMF
Sample : 4409-003
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 12:06:07 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

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



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\15\
Data File : 09151608.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 12:00 pm
Operator : AMF
Sample : 4409-003
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 12:17:51 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

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

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.184	228130	147557.798	ppm
3)	Nitrogen	2.315	1308952	740693.148	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.740	80051	38166.192	ppm

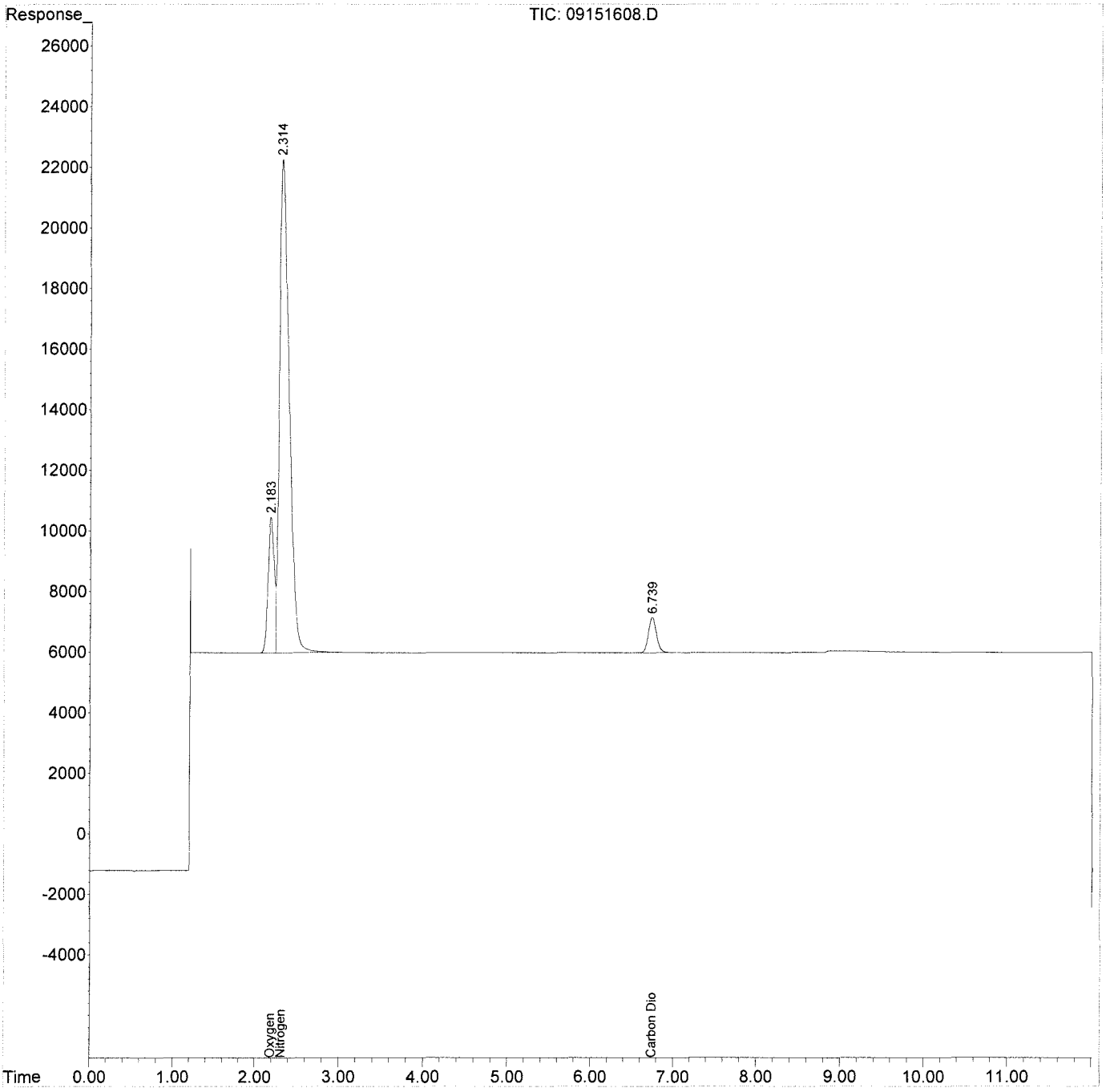
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\15\
Data File : 09151608.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 12:00 pm
Operator : AMF
Sample : 4409-003
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 12:17:51 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

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



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\15\
Data File : 09151609.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 12:16 pm
Operator : AMF
Sample : 4409-003
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 12:53:46 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 :

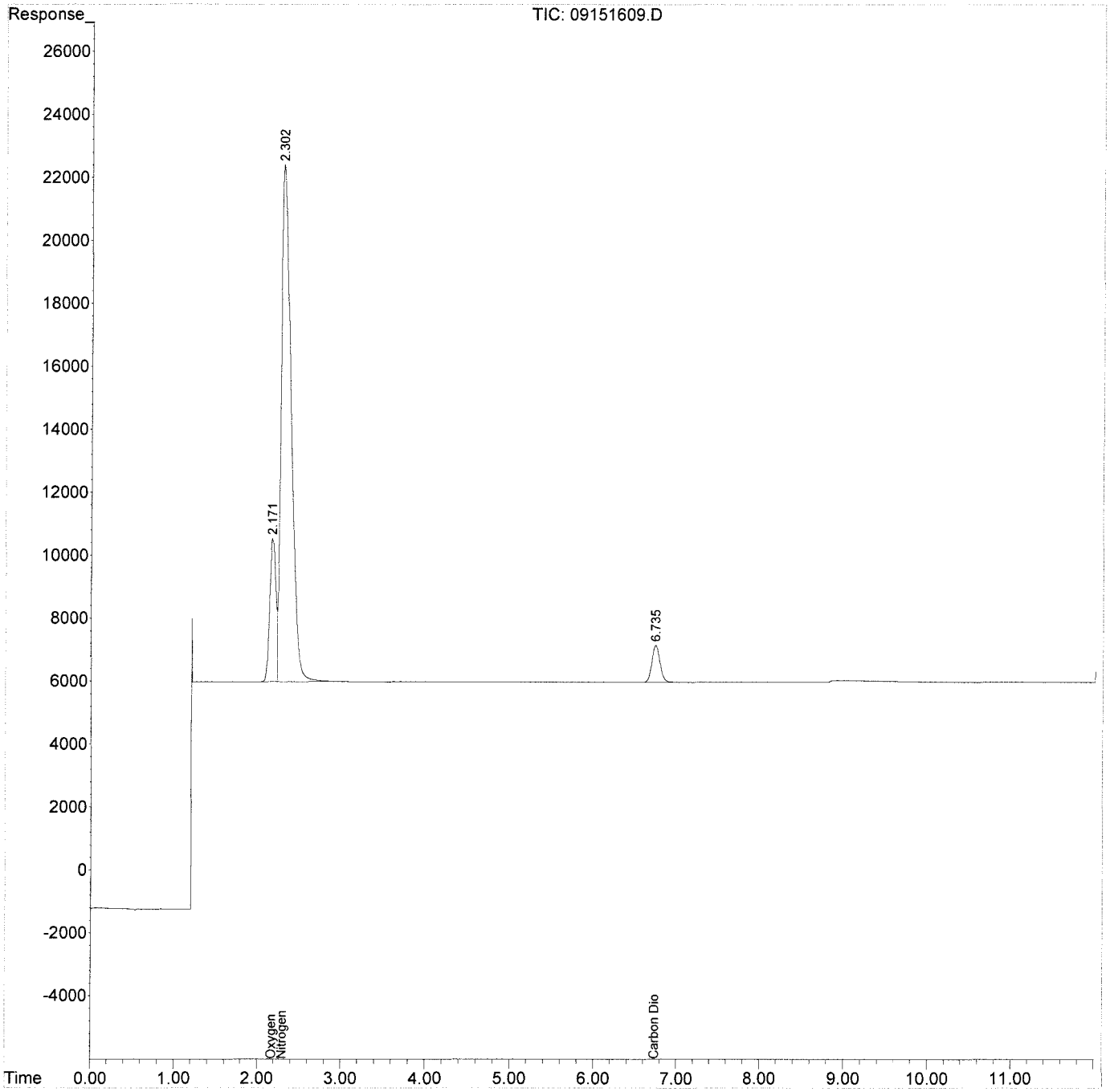
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.173	231102	149480.010	ppm
3)	Nitrogen	2.303	1326119	750407.381	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.736	81612	38910.521	ppm

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

Data Path : I:\GC01\DATA\FXG\2016_09\15\
Data File : 09151609.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 12:16 pm
Operator : AMF
Sample : 4409-003
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 12:53:46 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_09\15\
Data File : 09151610.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 12:51 pm
Operator : AMF
Sample : 4409-005
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 13:27:01 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 :

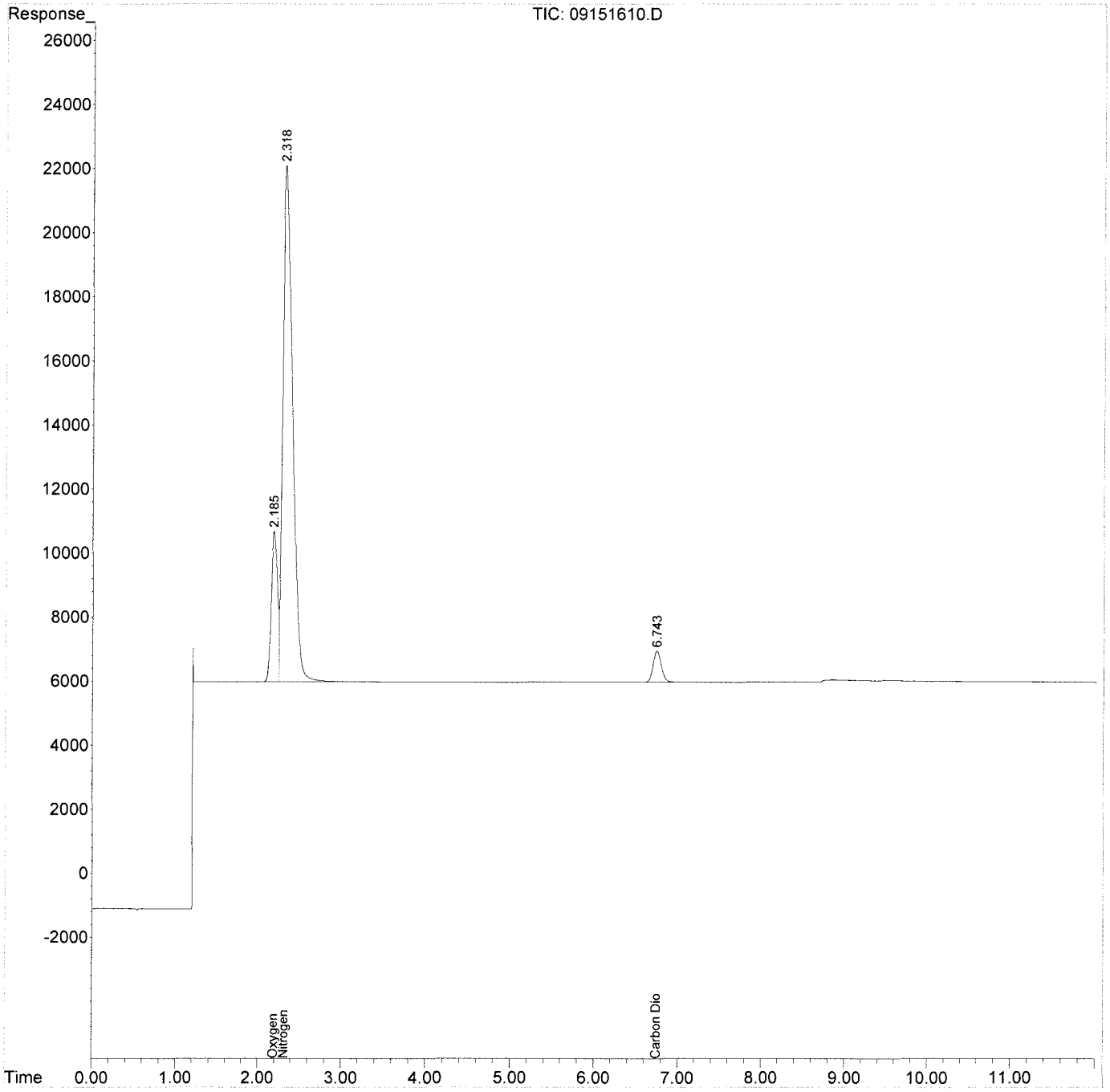
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.187	241358	156113.808	ppm
3)	Nitrogen	2.320	1297509	734218.147	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.744	67309	32091.167	ppm

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

Data Path : I:\GC01\DATA\FXG\2016_09\15\
Data File : 09151610.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 12:51 pm
Operator : AMF
Sample : 4409-005
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 13:27:01 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_09\15\
Data File : 09151611.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 1:22 pm
Operator : AMF
Sample : 4409-005
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 13:45:22 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	2.183	241842	156426.613	ppm
3)	Nitrogen	2.315	1297347	734126.558	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.744	66847	31871.213	ppm

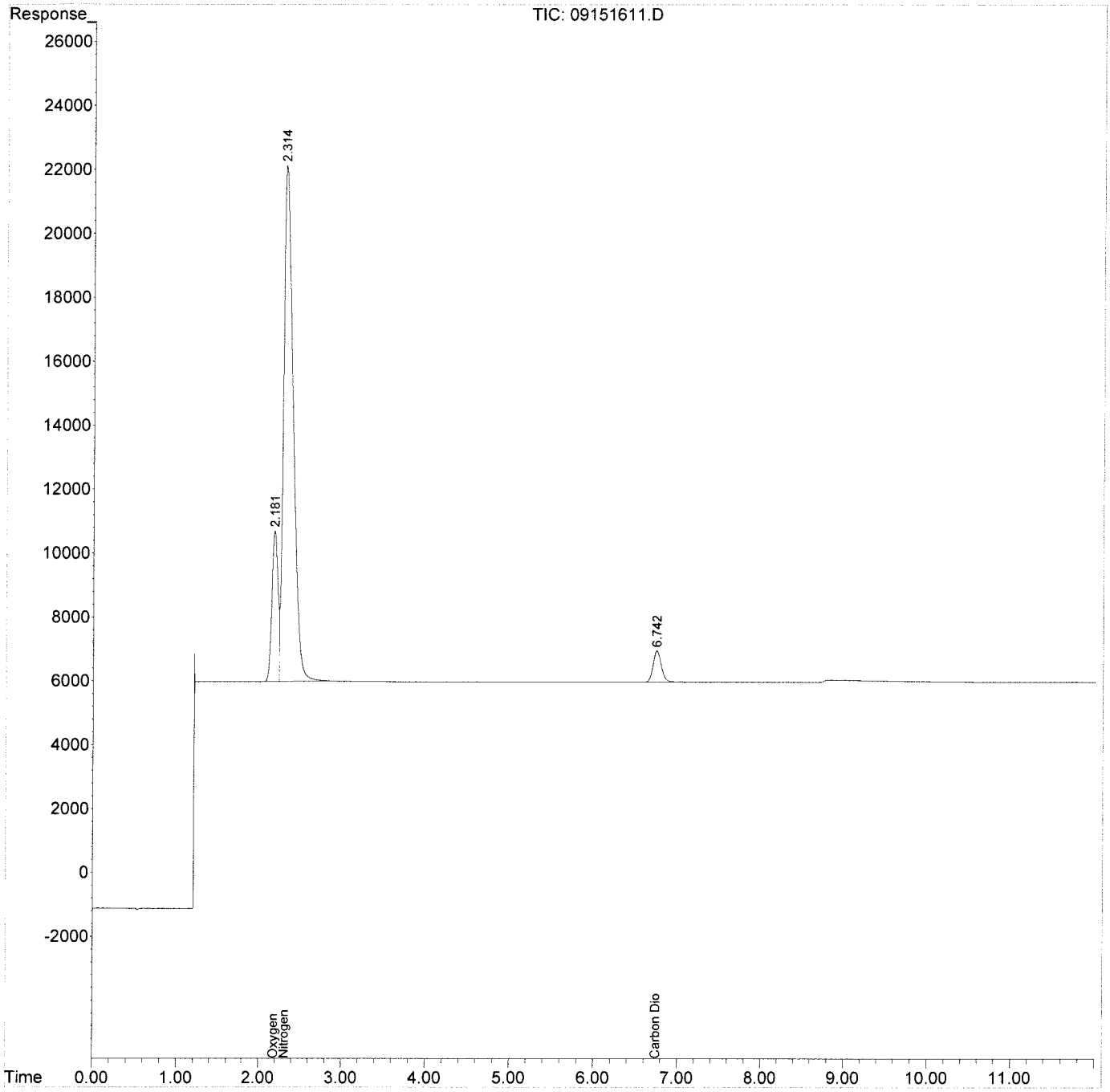
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\15\
Data File : 09151611.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 1:22 pm
Operator : AMF
Sample : 4409-005
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 13:45:22 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

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



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\15\
Data File : 09151612.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 1:39 pm
Operator : AMF
Sample : 4409-005
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 13:57:24 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 :

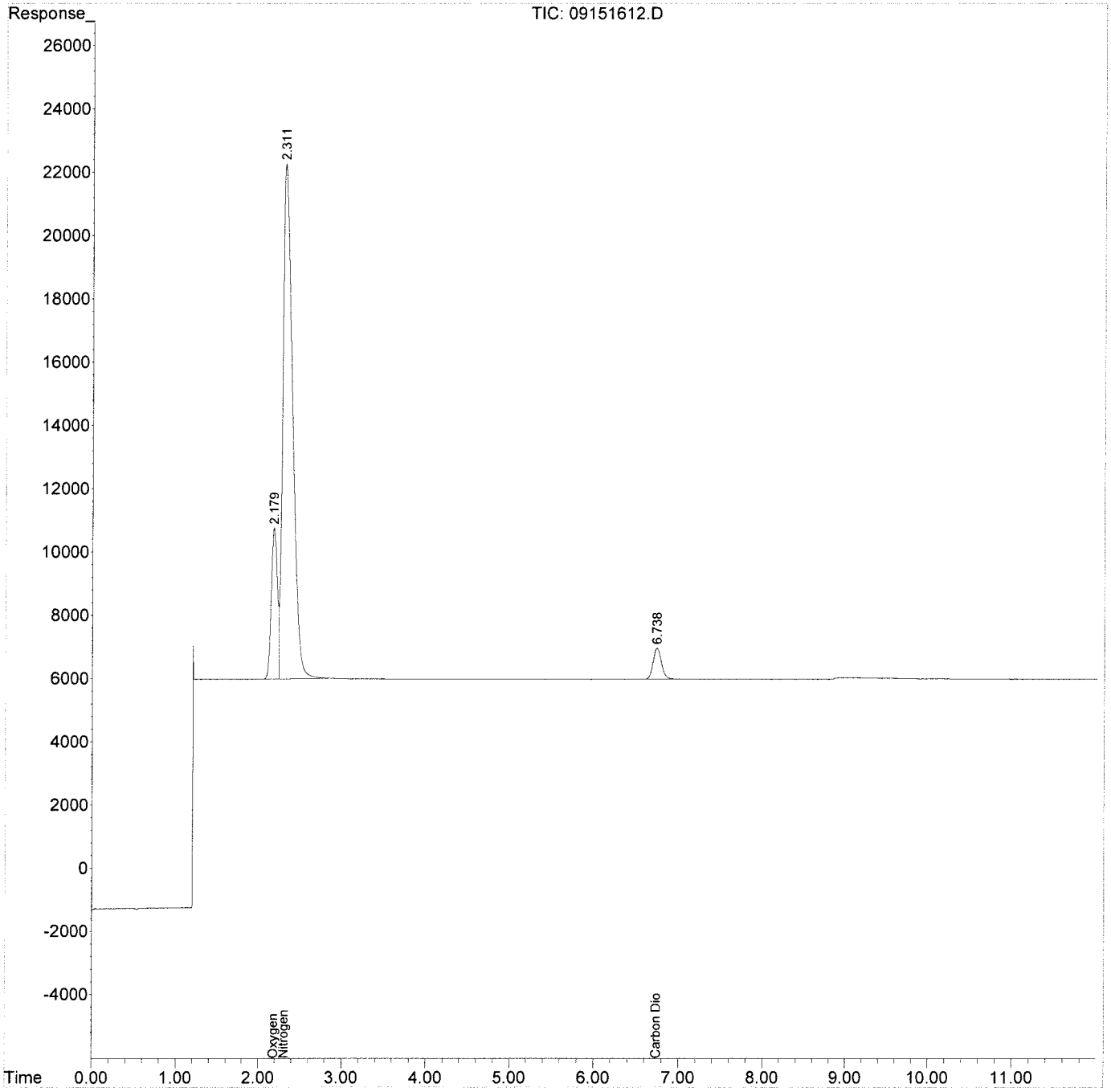
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.181	243791	157687.214	ppm
3)	Nitrogen	2.313	1309067	740758.295	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.739	67596	32228.199	ppm

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

Data Path : I:\GC01\DATA\FXG\2016_09\15\
Data File : 09151612.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 1:39 pm
Operator : AMF
Sample : 4409-005
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 13:57:24 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

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



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\15\
Data File : 09151613.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 1:56 pm
Operator : AMF
Sample : 4409-007
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 14:14:06 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	241877	156449.357	ppm
3)	Nitrogen	2.305	1316299	744850.822	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.734	69470	33121.702	ppm

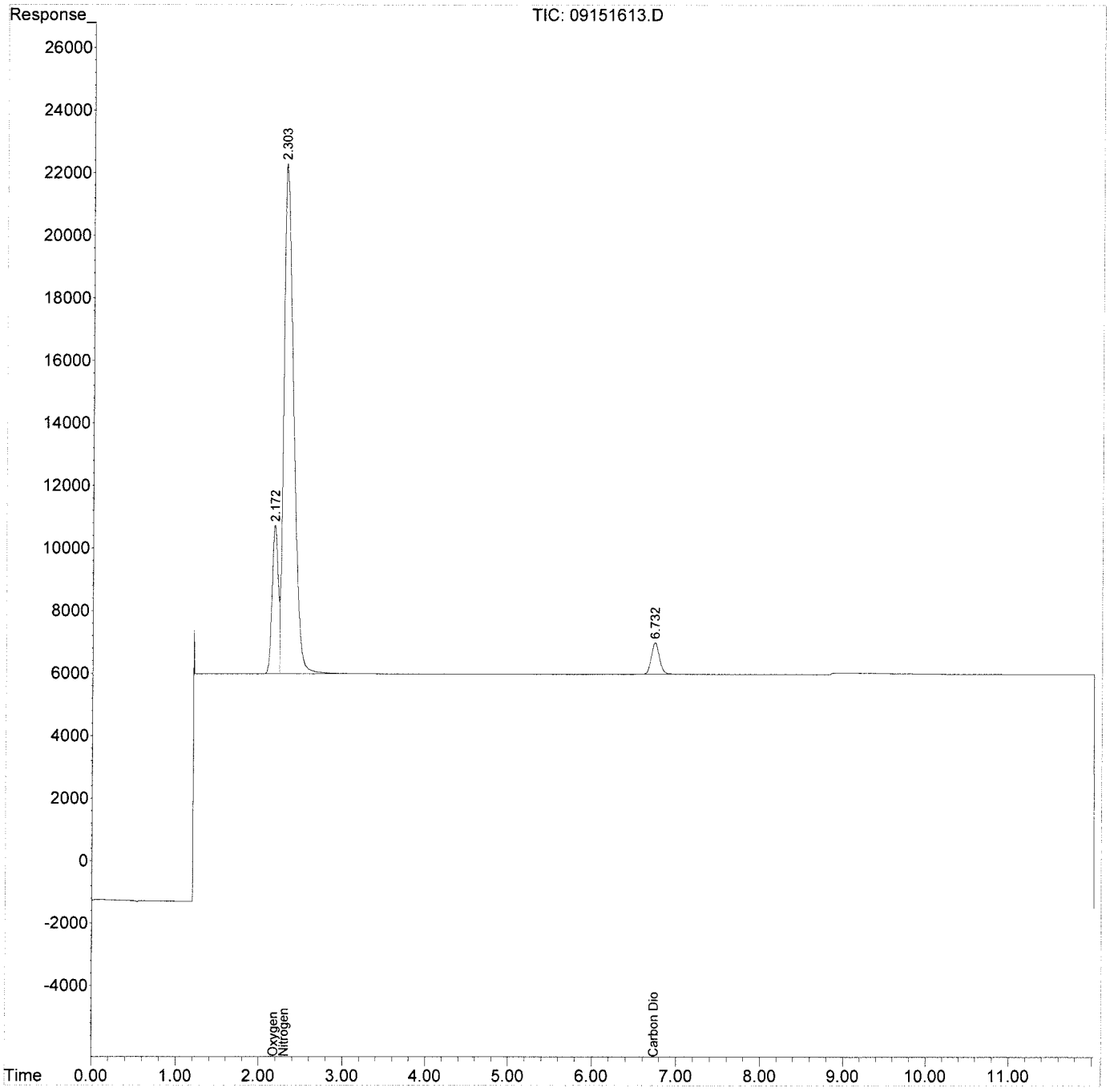
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\15\
Data File : 09151613.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 1:56 pm
Operator : AMF
Sample : 4409-007
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 14:14:06 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_09\15\
Data File : 09151614.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 2:12 pm
Operator : AMF
Sample : 4409-007
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 14:29:58 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	240778	155738.682	ppm
3)	Nitrogen	2.304	1307196	739699.563	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.735	69393	33085.093	ppm

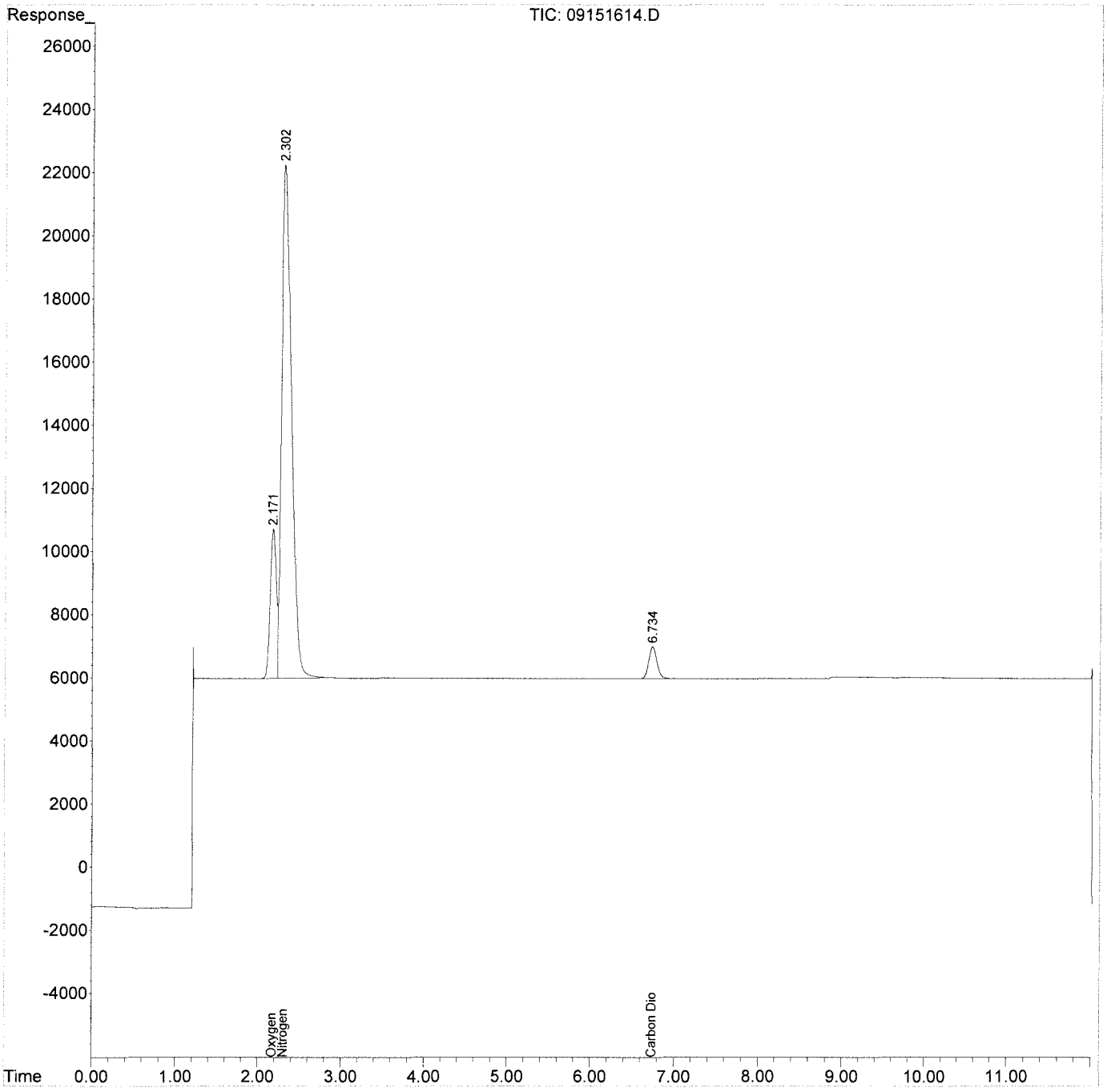
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\15\
Data File : 09151614.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 2:12 pm
Operator : AMF
Sample : 4409-007
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 14:29:58 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

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



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\15\
Data File : 09151615.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 2:28 pm
Operator : AMF
Sample : 4409-007
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 14:51:31 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 :

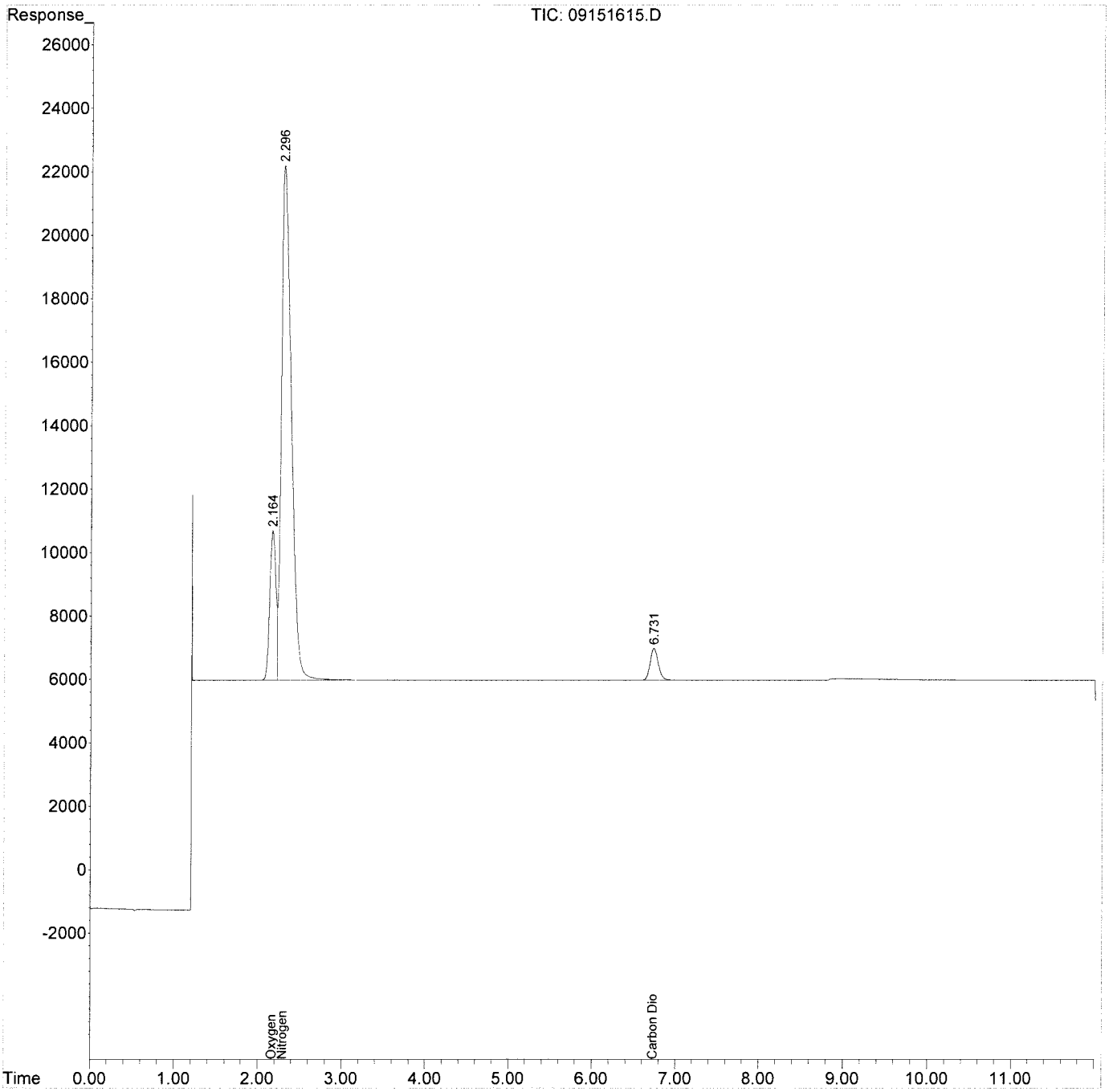
	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.000	0	N.D.	ppm	d
2)	Oxygen	2.166	240648	155654.769	ppm	
3)	Nitrogen	2.298	1310144	741367.659	ppm	
4)	Carbon Monoxide	0.000	0	N.D.	ppm	
5)	Methane	0.000	0	N.D.	ppm	
6)	Carbon Dioxide	6.733	69130	32959.473	ppm	

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

Data Path : I:\GC01\DATA\FXG\2016_09\15\
Data File : 09151615.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 2:28 pm
Operator : AMF
Sample : 4409-007
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 14:51:31 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

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



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\15\
Data File : 09151616.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 2:45 pm
Operator : AMF
Sample : 4409-009
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 15:07:01 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	2.180	248891	160986.236	ppm	
3)	Nitrogen	2.312	1303510	737613.757	ppm	
4)	Carbon Monoxide	0.000	0	N.D.	ppm	
5)	Methane	0.000	0	N.D.	ppm	
6)	Carbon Dioxide	6.739	61155	29157.412	ppm	

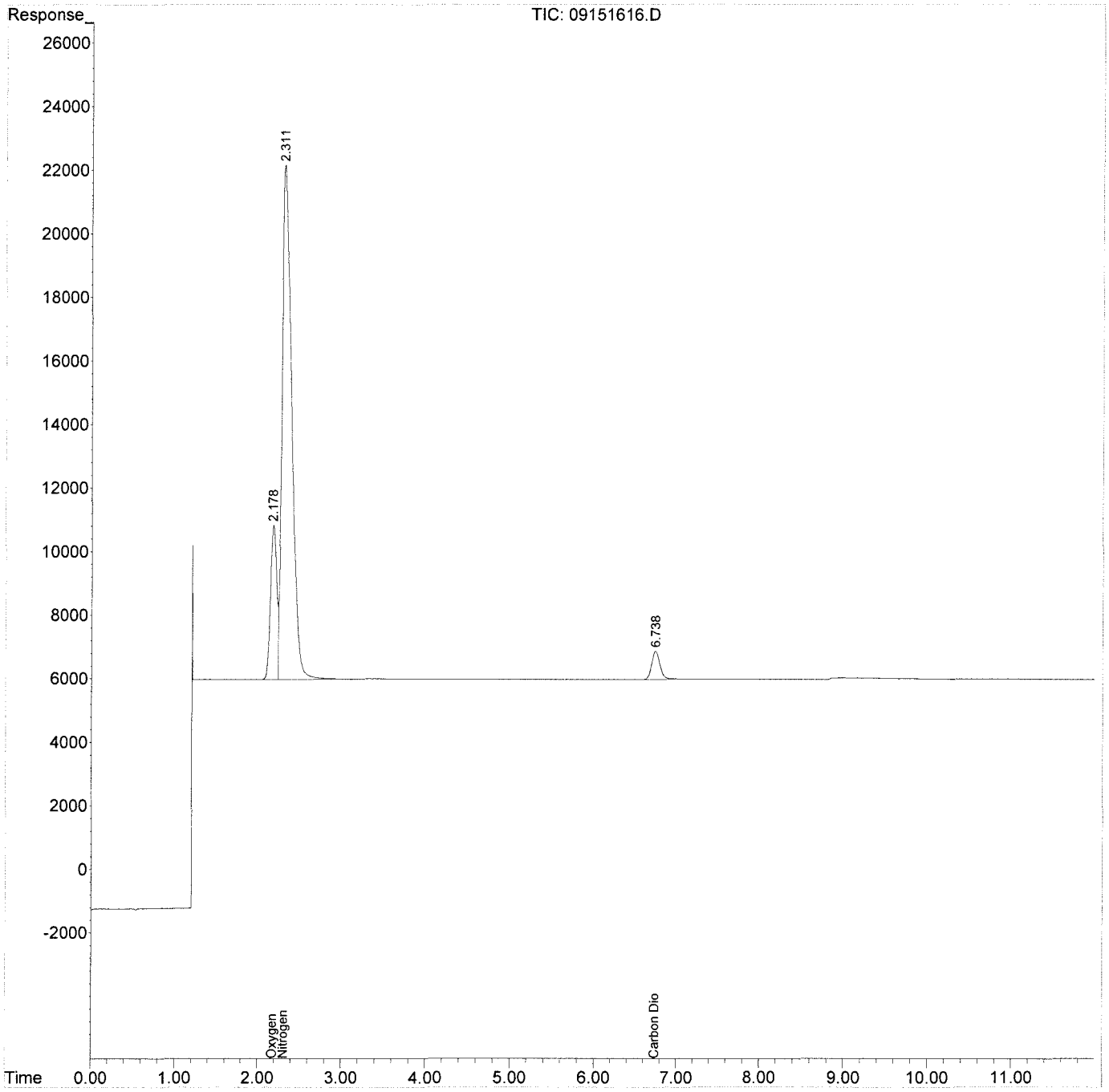
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\15\
Data File : 09151616.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 2:45 pm
Operator : AMF
Sample : 4409-009
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 15:07:01 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_09\15\
Data File : 09151617.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 3:02 pm
Operator : AMF
Sample : 4409-009
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 15:22:53 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

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

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.165	251102	162416.375	ppm
3)	Nitrogen	2.298	1316265	744831.751	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.735	61664	29400.125	ppm

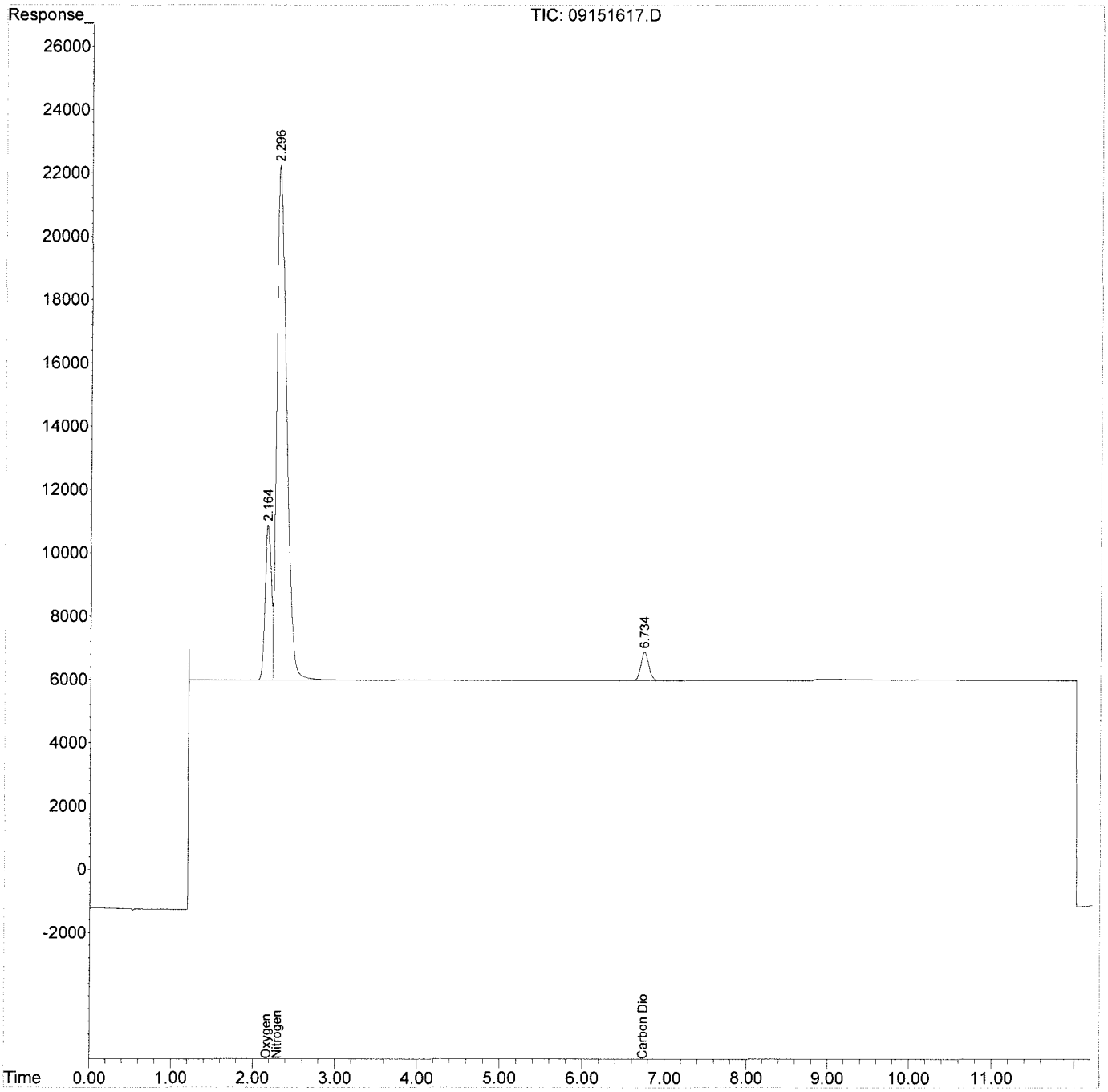
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\15\
Data File : 09151617.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 3:02 pm
Operator : AMF
Sample : 4409-009
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 15:22:53 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_09\15\
Data File : 09151618.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 3:18 pm
Operator : AMF
Sample : 4409-009
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 15:35:10 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	2.157	251182	162467.866	ppm
3)	Nitrogen	2.290	1315689	744505.803	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.735	61476	29310.193	ppm

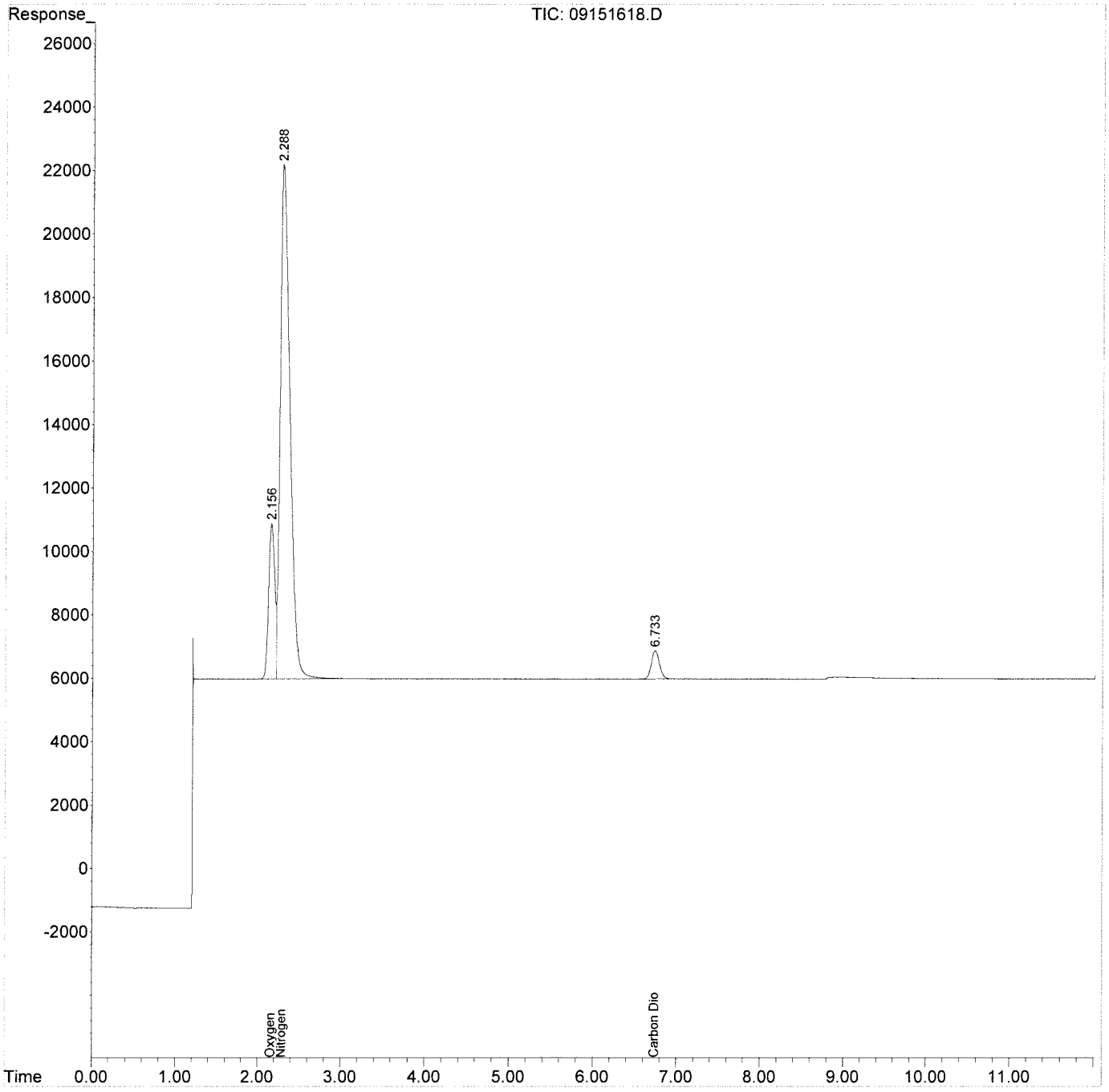
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\15\
Data File : 09151618.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 3:18 pm
Operator : AMF
Sample : 4409-009
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 15:35:10 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_09\15\
Data File : 09151619.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 3:34 pm
Operator : AMF
Sample : 4409-011
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 15:52:28 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 :

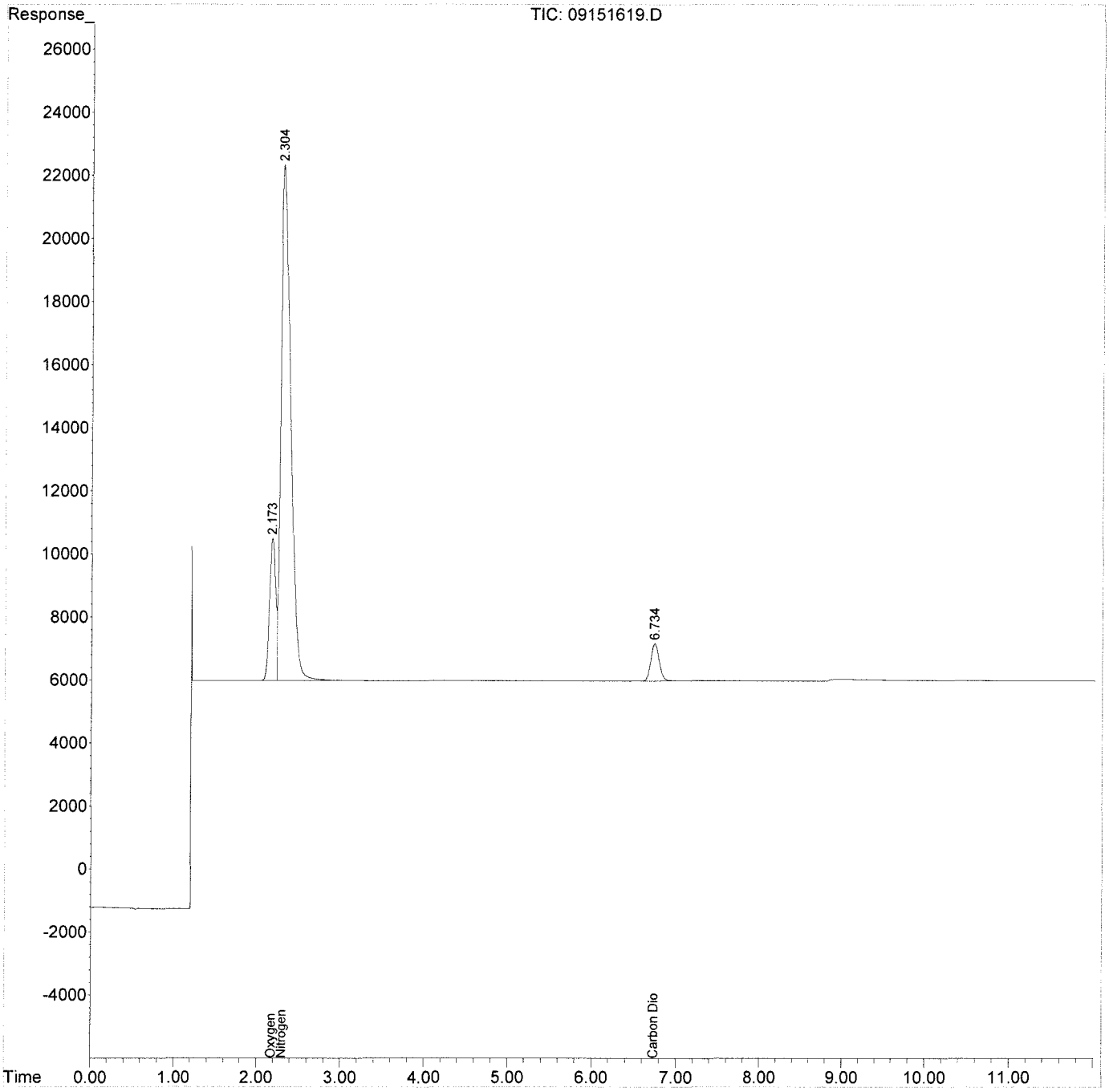
	Compound	R.T.	Response	Conc Units
Target Compounds				
1)	Hydrogen	0.000	0	N.D. ppm
2)	Oxygen	2.175	228849	148022.776 ppm
3)	Nitrogen	2.305	1317864	745736.374 ppm
4)	Carbon Monoxide	0.000	0	N.D. ppm
5)	Methane	0.000	0	N.D. ppm
6)	Carbon Dioxide	6.735	81531	38871.970 ppm

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

Data Path : I:\GC01\DATA\FXG\2016_09\15\
Data File : 09151619.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 3:34 pm
Operator : AMF
Sample : 4409-011
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 15:52:28 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_09\15\
Data File : 09151620.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 3:50 pm
Operator : AMF
Sample : 4409-011
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 16:08:58 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	229181	148237.208	ppm
3)	Nitrogen	2.305	1317147	745330.483	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.735	81710	38957.502	ppm

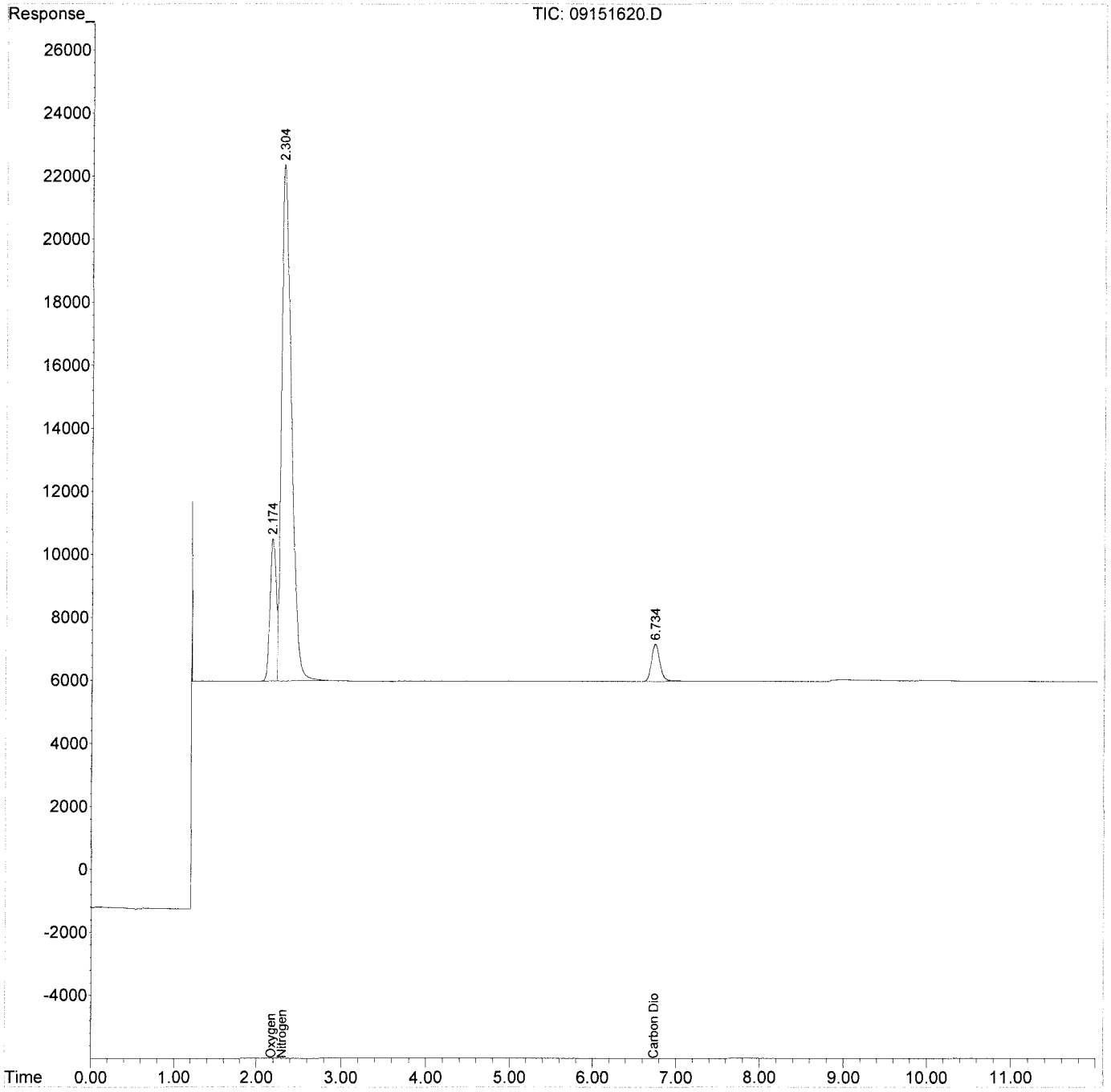
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\15\
Data File : 09151620.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 3:50 pm
Operator : AMF
Sample : 4409-011
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 16:08:58 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

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



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\15\
Data File : 09151621.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 4:06 pm
Operator : AMF
Sample : 4409-011
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 16:24:00 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

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

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.174	230716	149230.649	ppm
3)	Nitrogen	2.305	1328553	751784.634	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.735	82517	39342.202	ppm

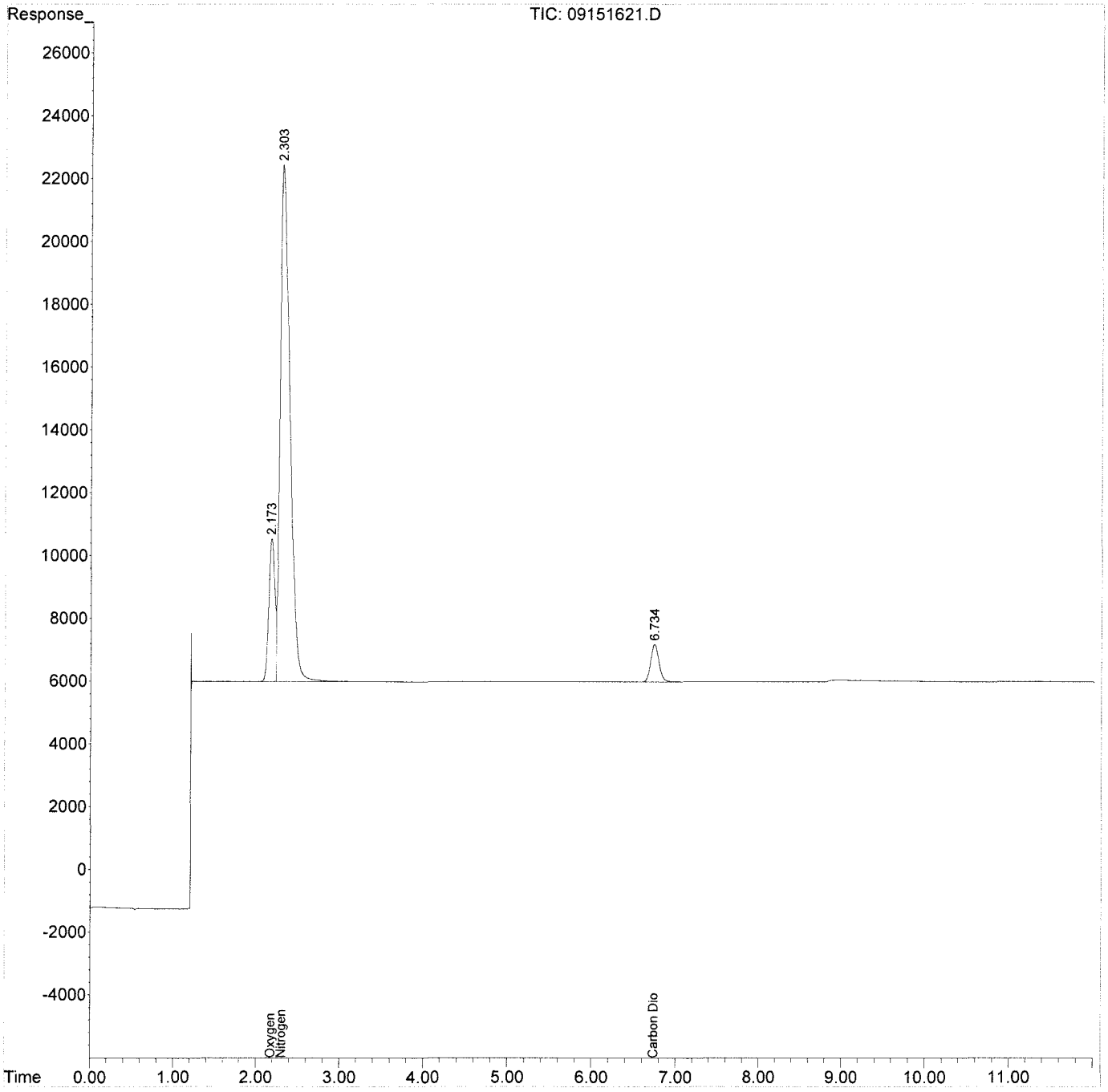
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\15\
Data File : 09151621.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 4:06 pm
Operator : AMF
Sample : 4409-011
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 16:24:00 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

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



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\15\
Data File : 09151602.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 8:42 am
Operator : AMF
Sample : mb
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 10:18:53 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 11:02:57 2016
Response via : Initial Calibration
Integrator: ChemStation

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

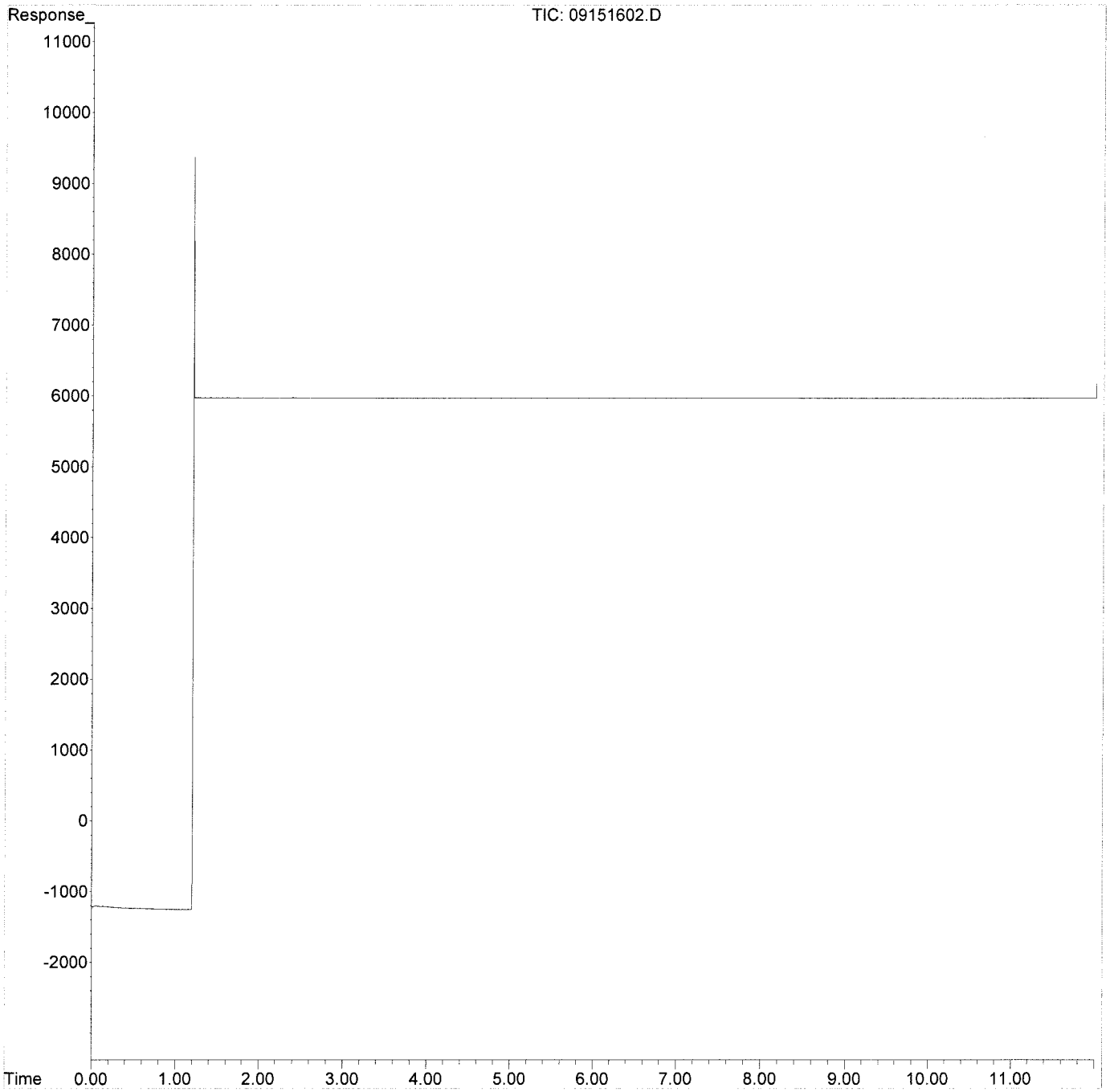
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

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

Data Path : I:\GC01\DATA\FXG\2016_09\15\
Data File : 09151602.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 8:42 am
Operator : AMF
Sample : mb
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 10:18:53 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 :



Response Factor Report GC01_FXG

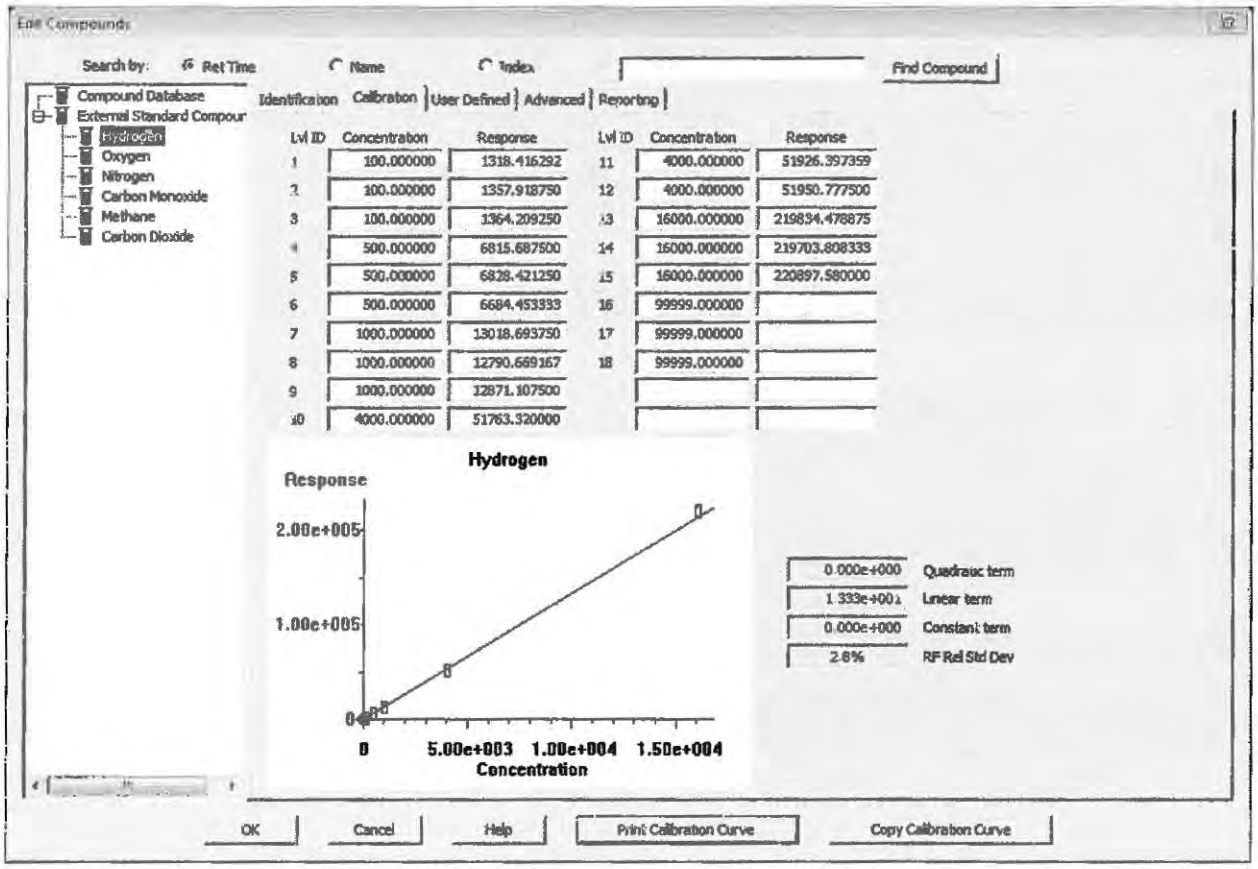
Method Path : I:\GC01\METHODS\
Method File : GC1_trip082216.M
Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
Last Update : Tue Aug 23 11:02:57 2016
Response Via : Initial Calibration

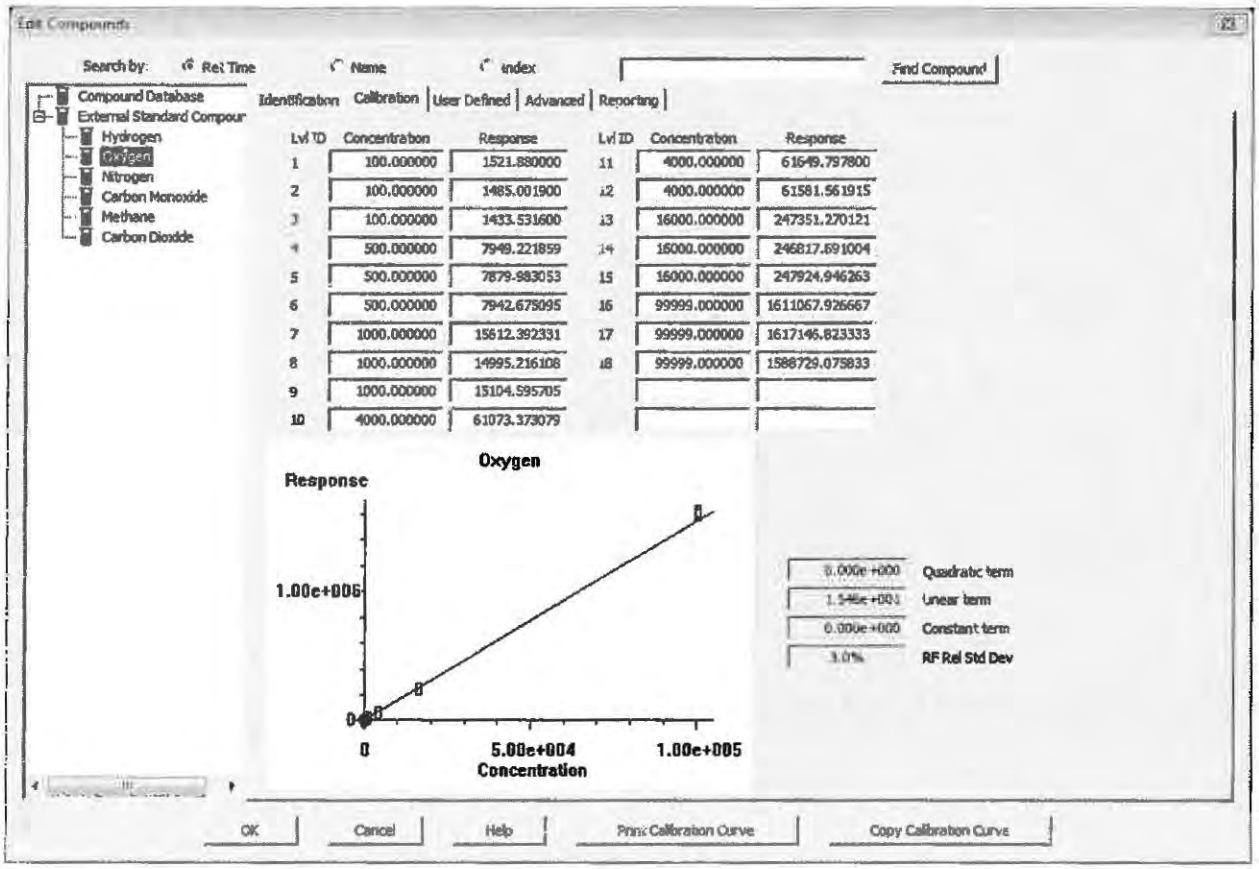
Calibration Files
1 =08221601.D 2 =08221602.D 3 =08221603.D
4 =08221604.D 5 =08221605.D 6 =08221606.D

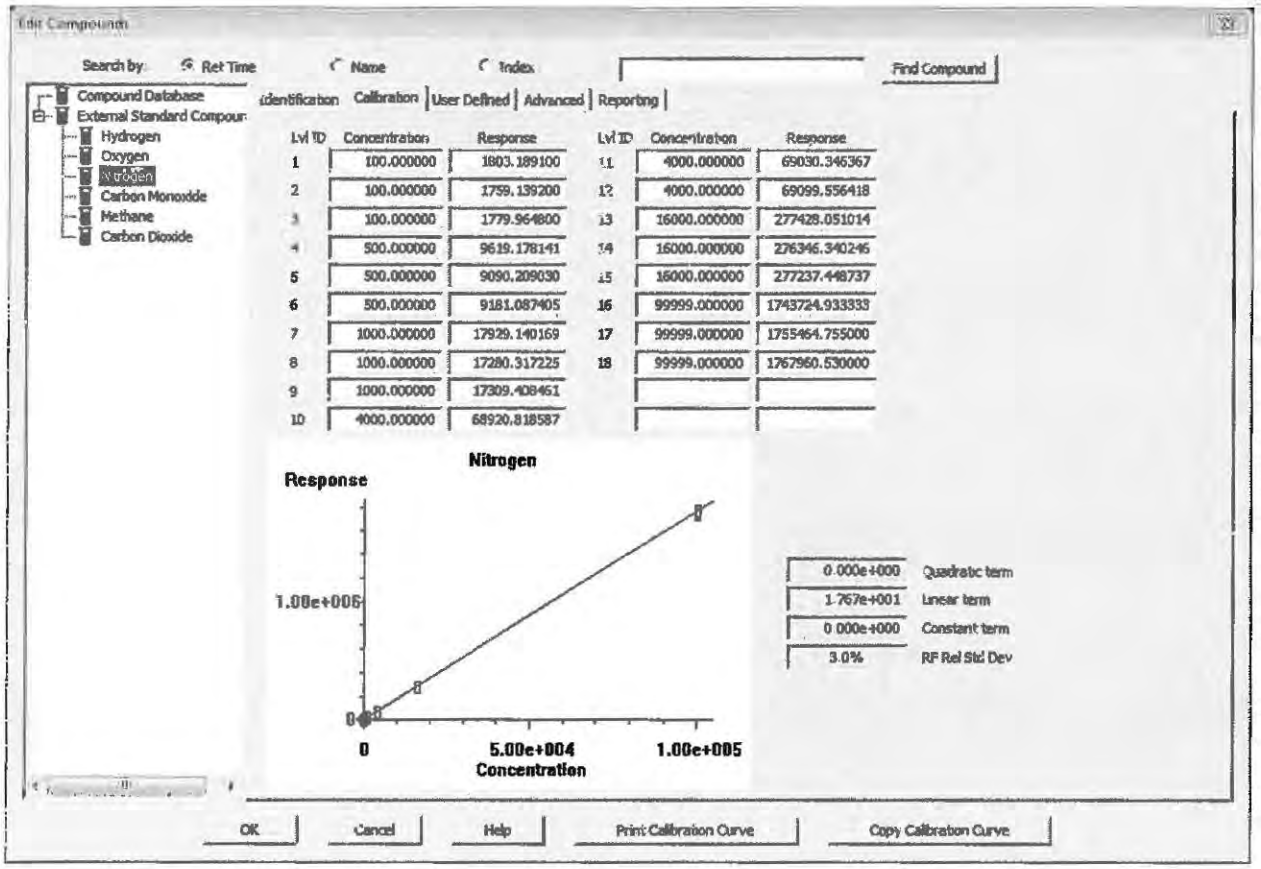
	Compound	1	2	3	4	5	6	Avg		%RSD
1)	Hydrogen	1.318	1.358	1.364	1.363	1.366	1.337	1.333	E1	2.78
2)	Oxygen	1.522	1.485	1.434	1.590	1.576	1.589	1.546	E1	3.01
3)	Nitrogen	1.803	1.759	1.780	1.924	1.818	1.836	1.767	E1	2.97
4)	Carbon Monoxide	1.653	1.676	1.610	1.844	1.851	1.826	1.735	E1	3.80
5)	Methane	1.240	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

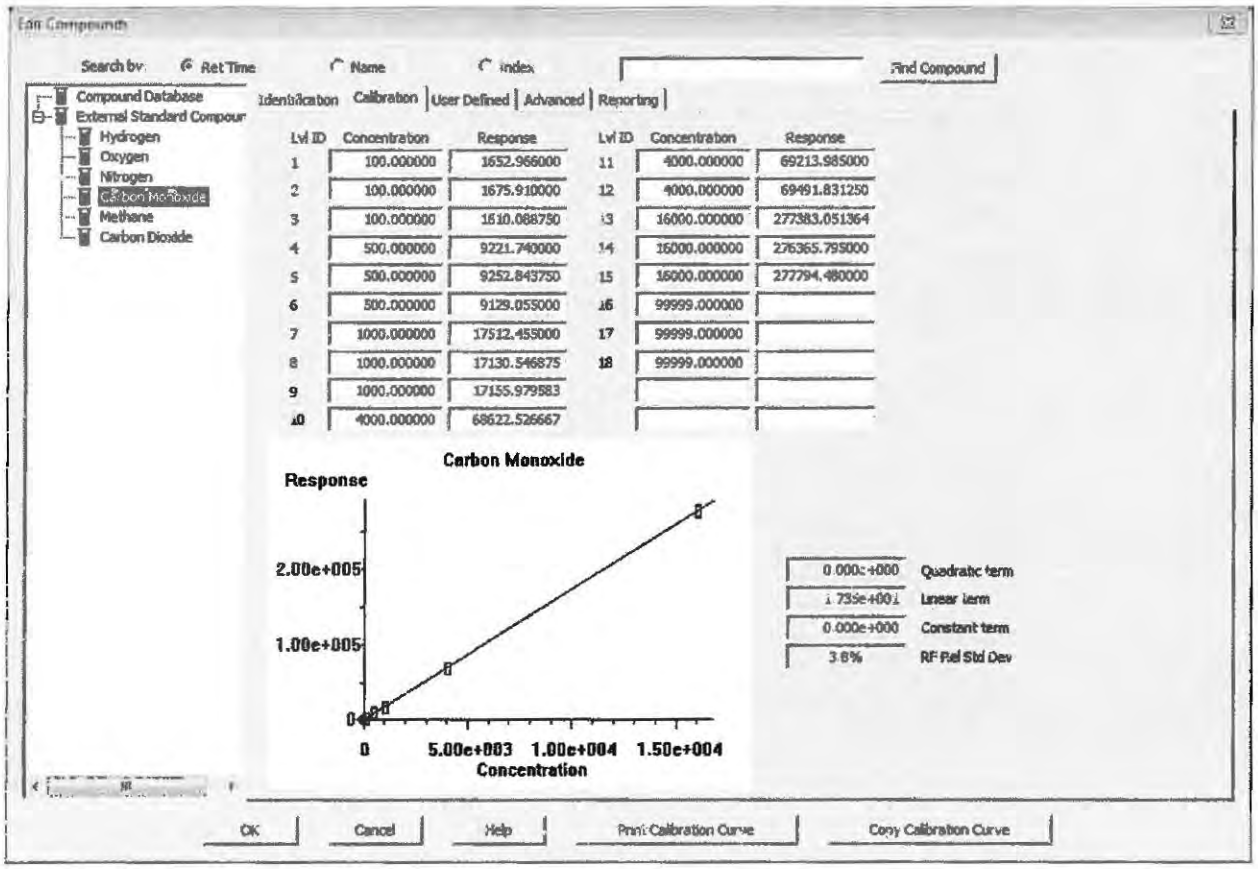
(#) = Out of Range ### Number of calibration levels exceeded format ###

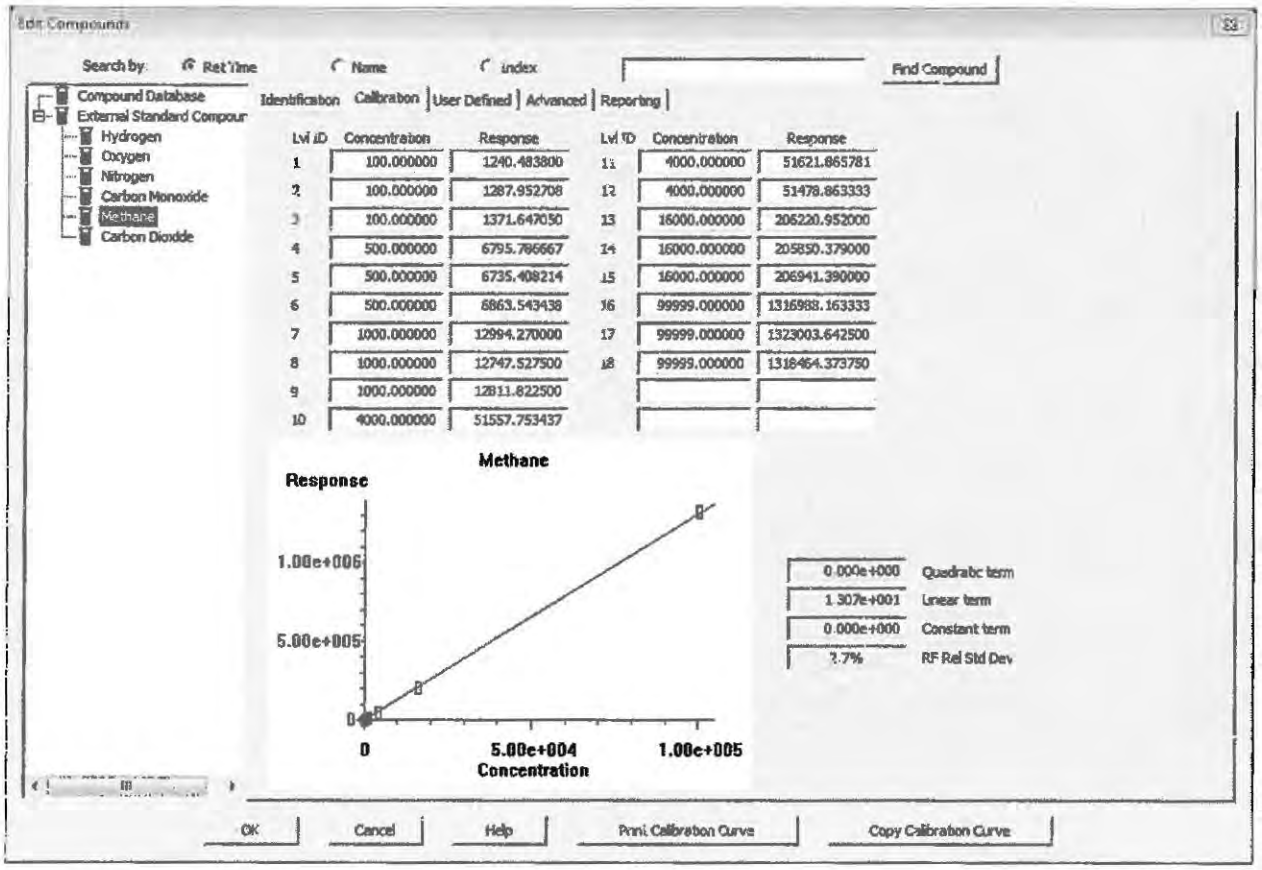
GC1_trip082216.M Tue Aug 23 12:46:23 2016

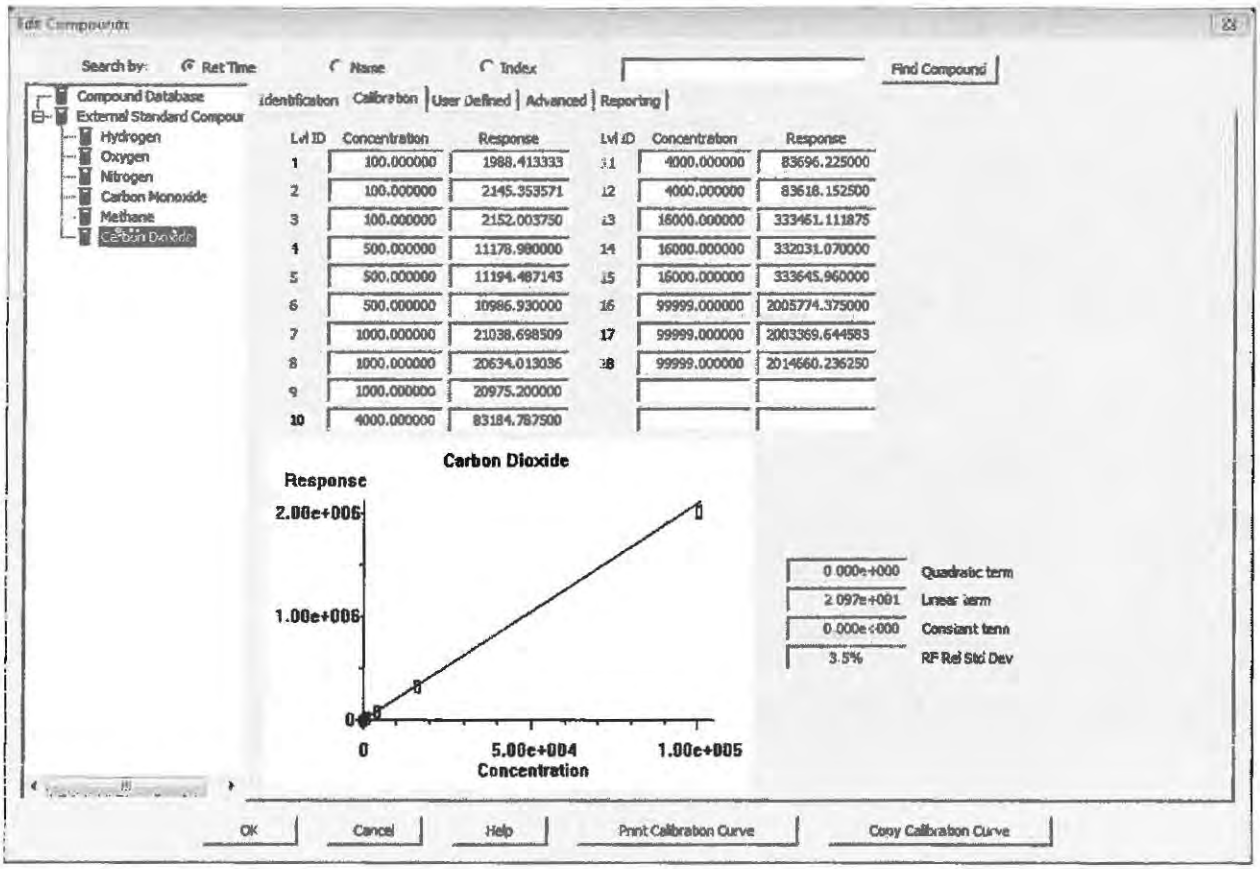

Edit Compounds
Search by: Ret Time Name Index
Find Compound
Compound Database
External Standard Compour
Hydrogen
Oxygen
Nitrogen
Carbon Monoxide
Methane
Carbon Dioxide
Identification Calibration User Defined Advanced Reporting
Lvl ID Concentration Response
1 100.000000 1318.416292
2 100.000000 1357.918750
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 7942.675095
7 1000.000000 15612.392331
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 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 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
Lvl ID Concentration Response
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
?.7% 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.

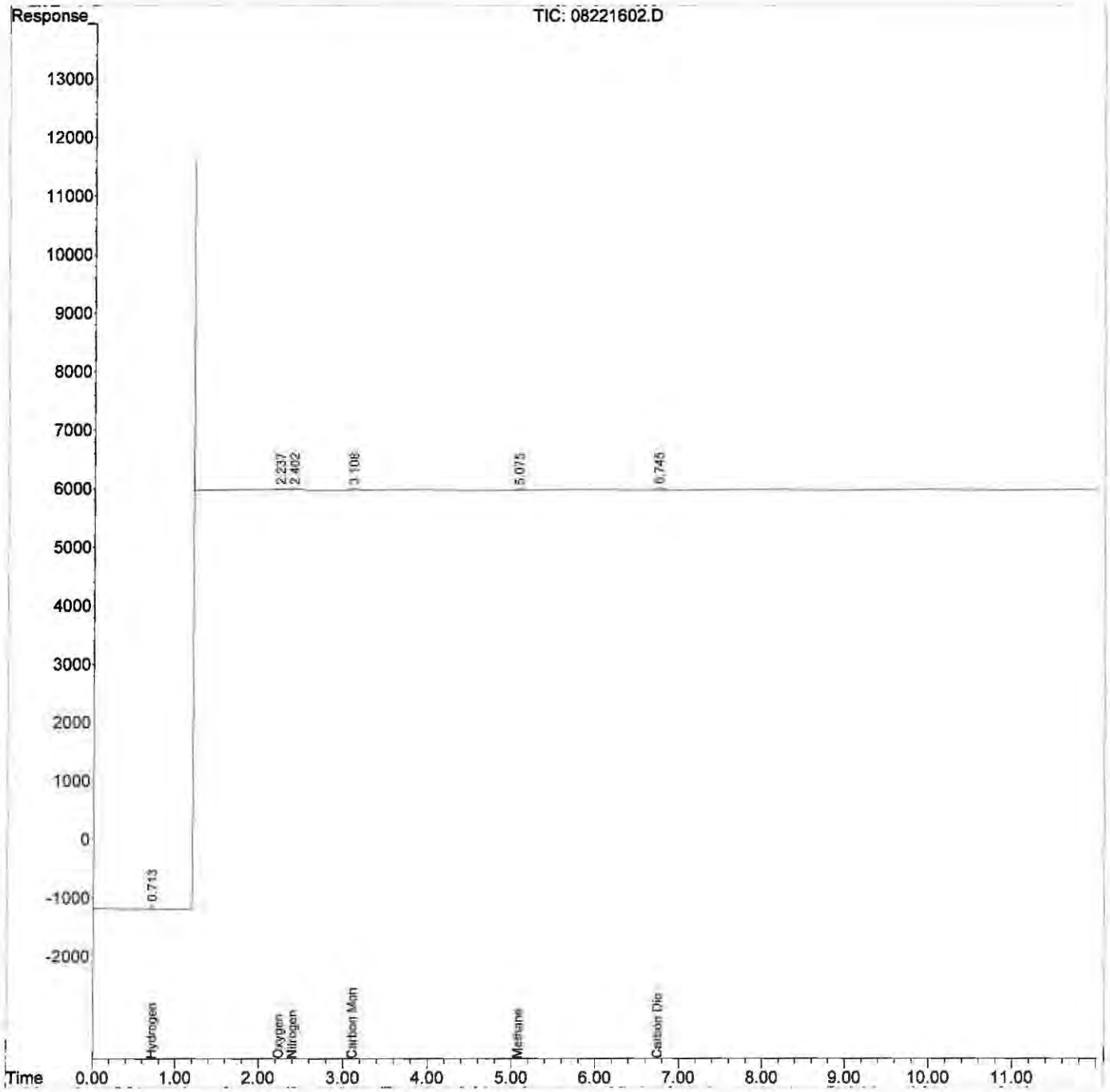
8/22/16

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 :

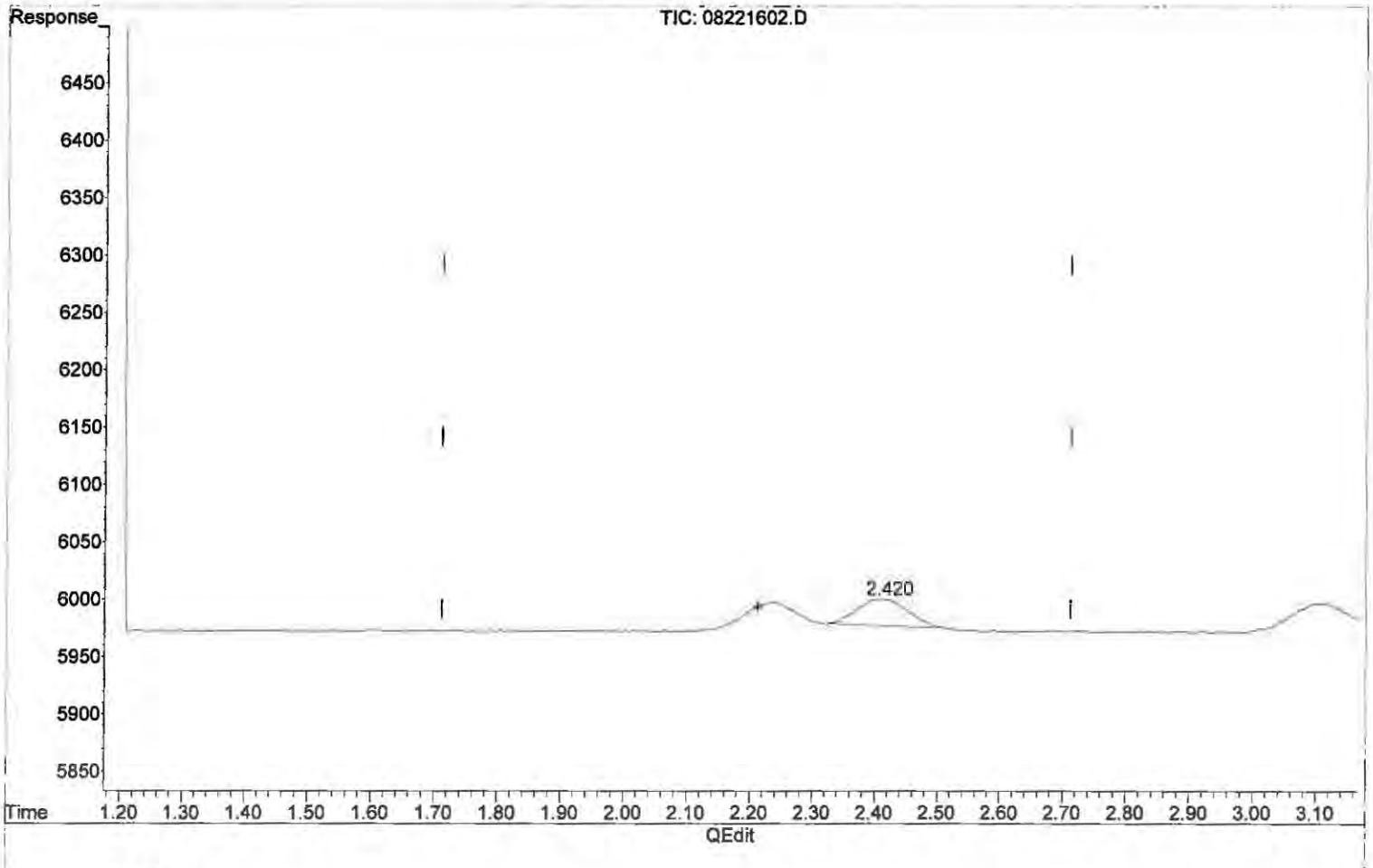


Quantitation Report (Qedit)

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

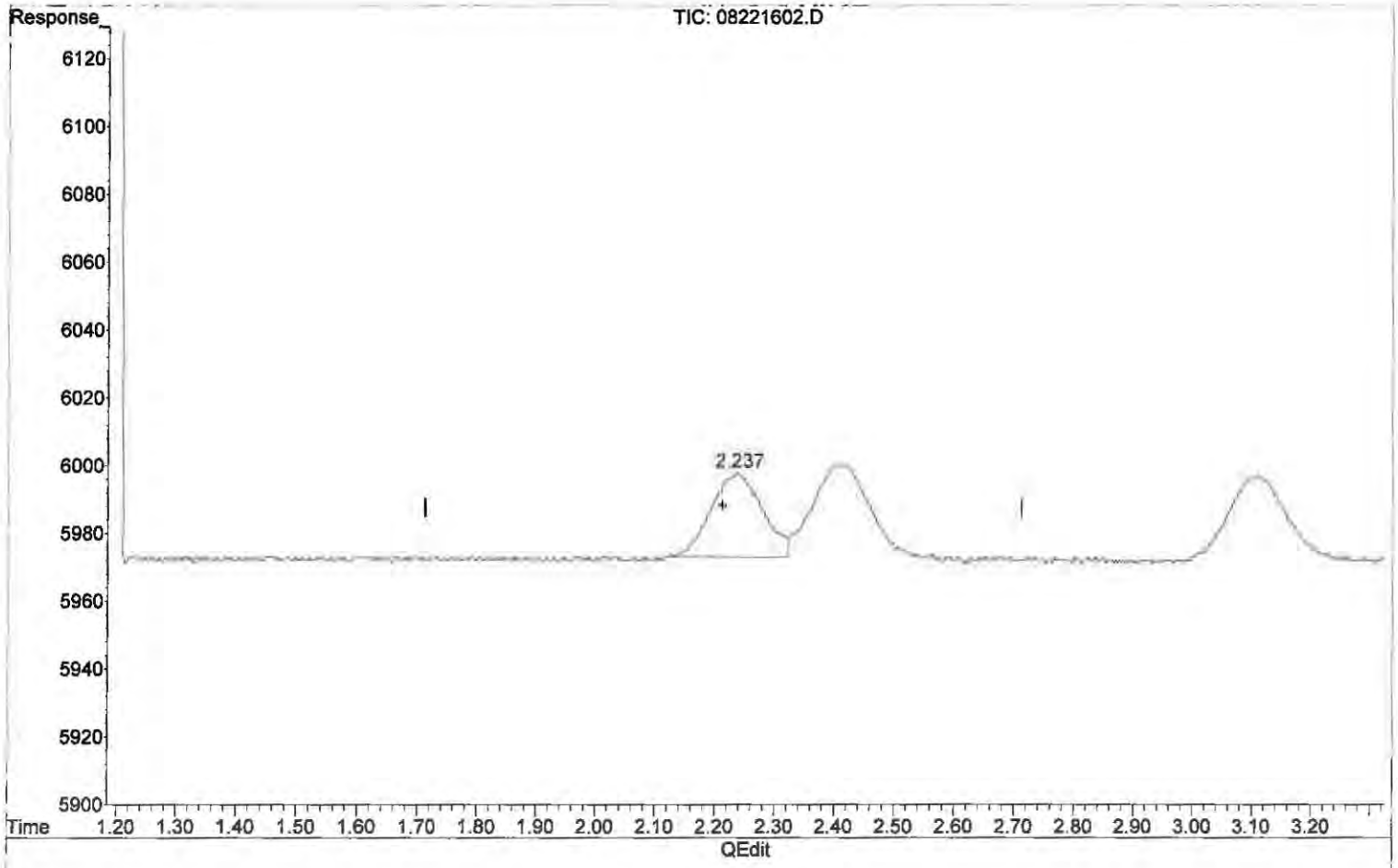
(+) = Expected Retention Time

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

8/29/16

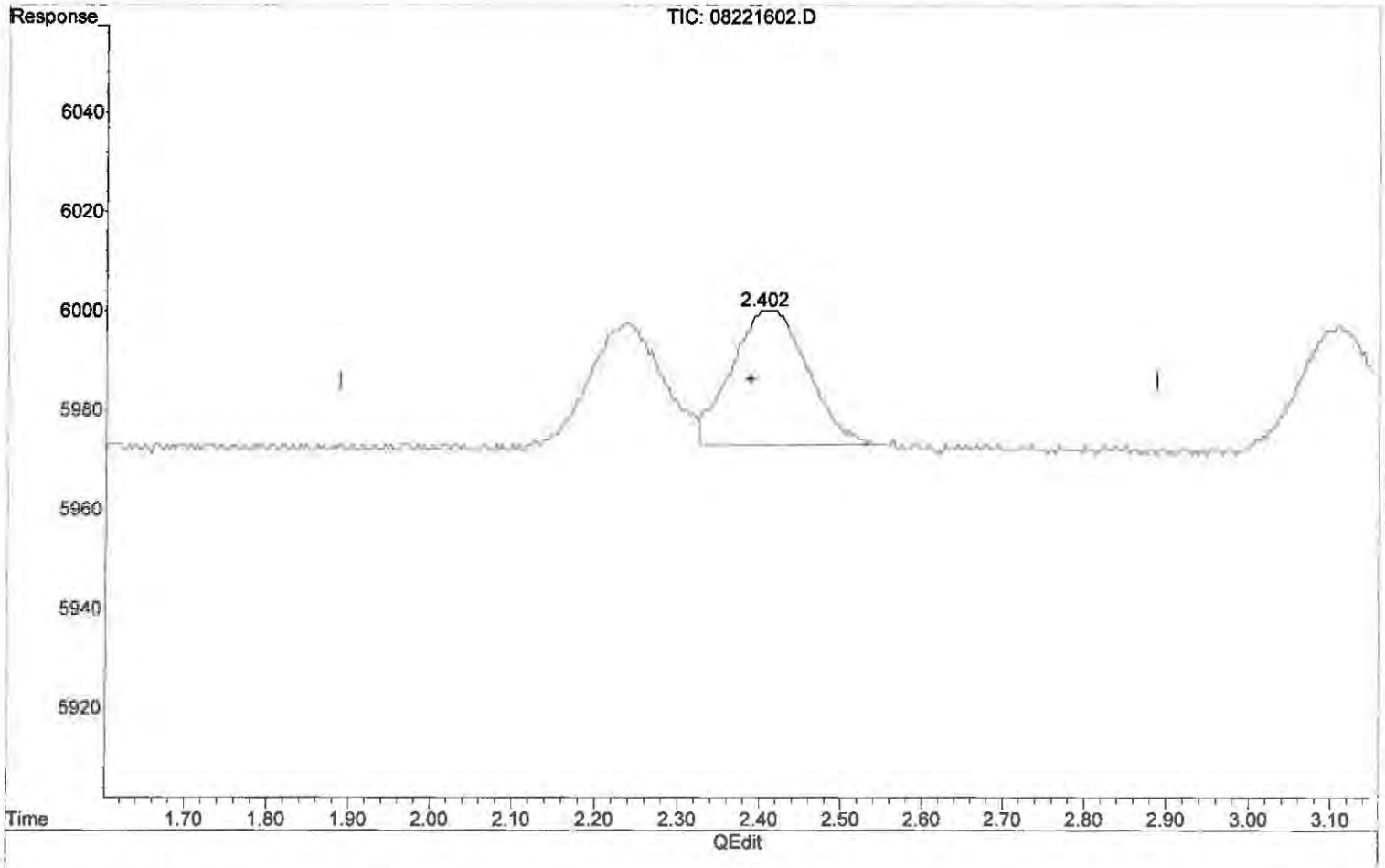
(+) = Expected Retention Time

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

LM 8/29/16

LM 8/29/16
BLC
No Revisions

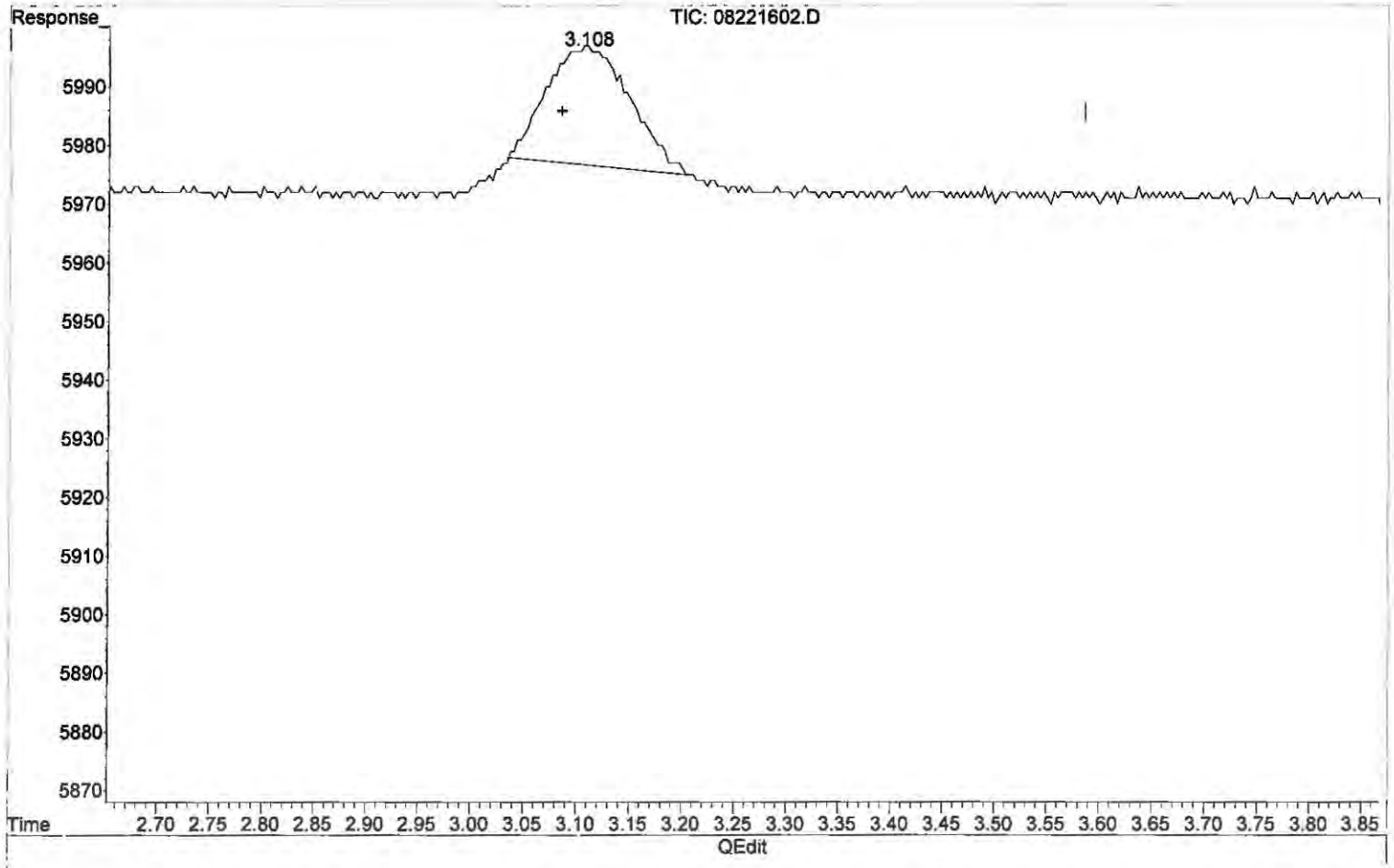
(+) = Expected Retention Time

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

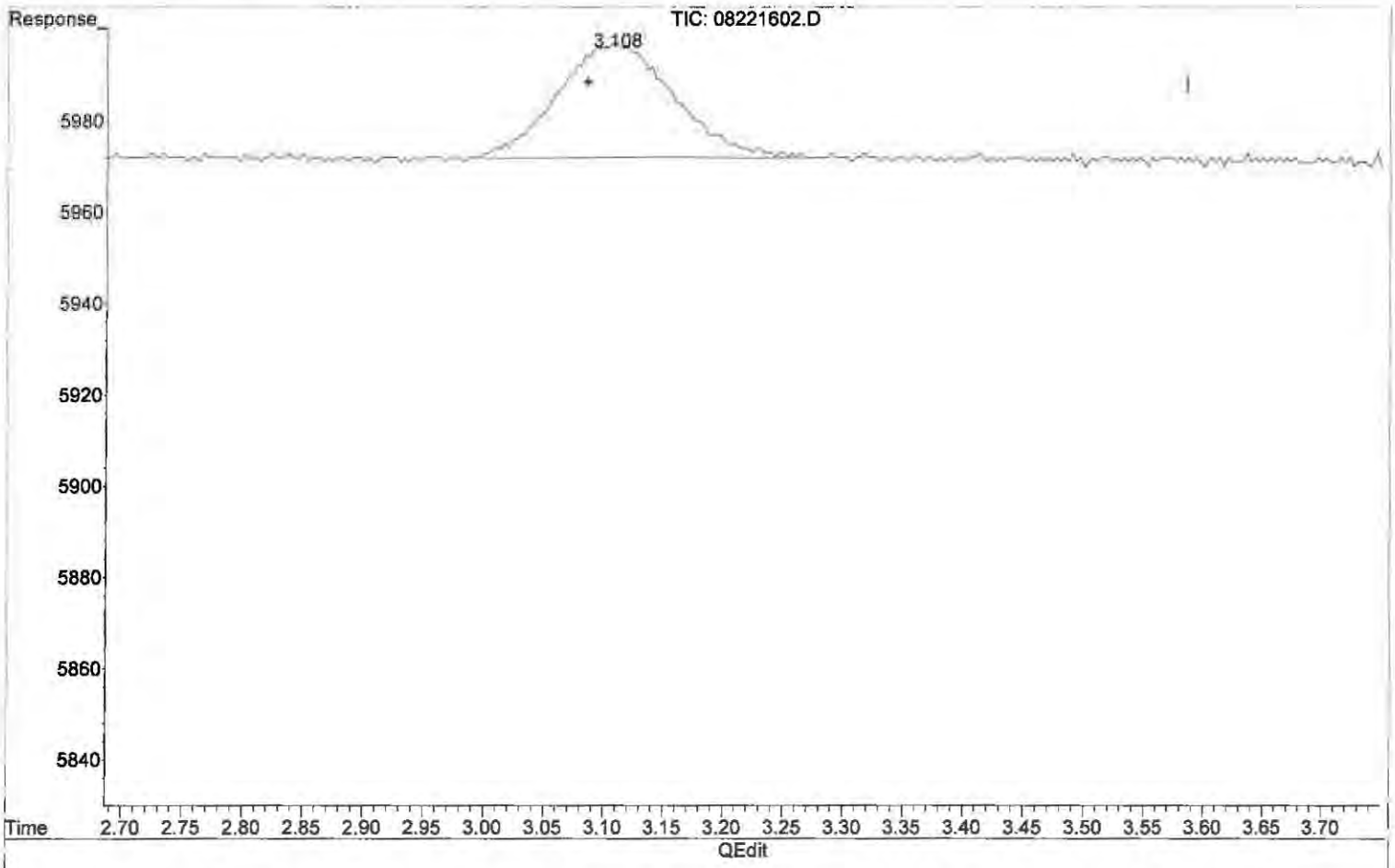
(+) = Expected Retention Time

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

8/29/16 BLC

8/29/16

(+) = Expected Retention Time

GC1_trip082216.M Mon Aug 29 12:27:00 2016 Page: 1

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	

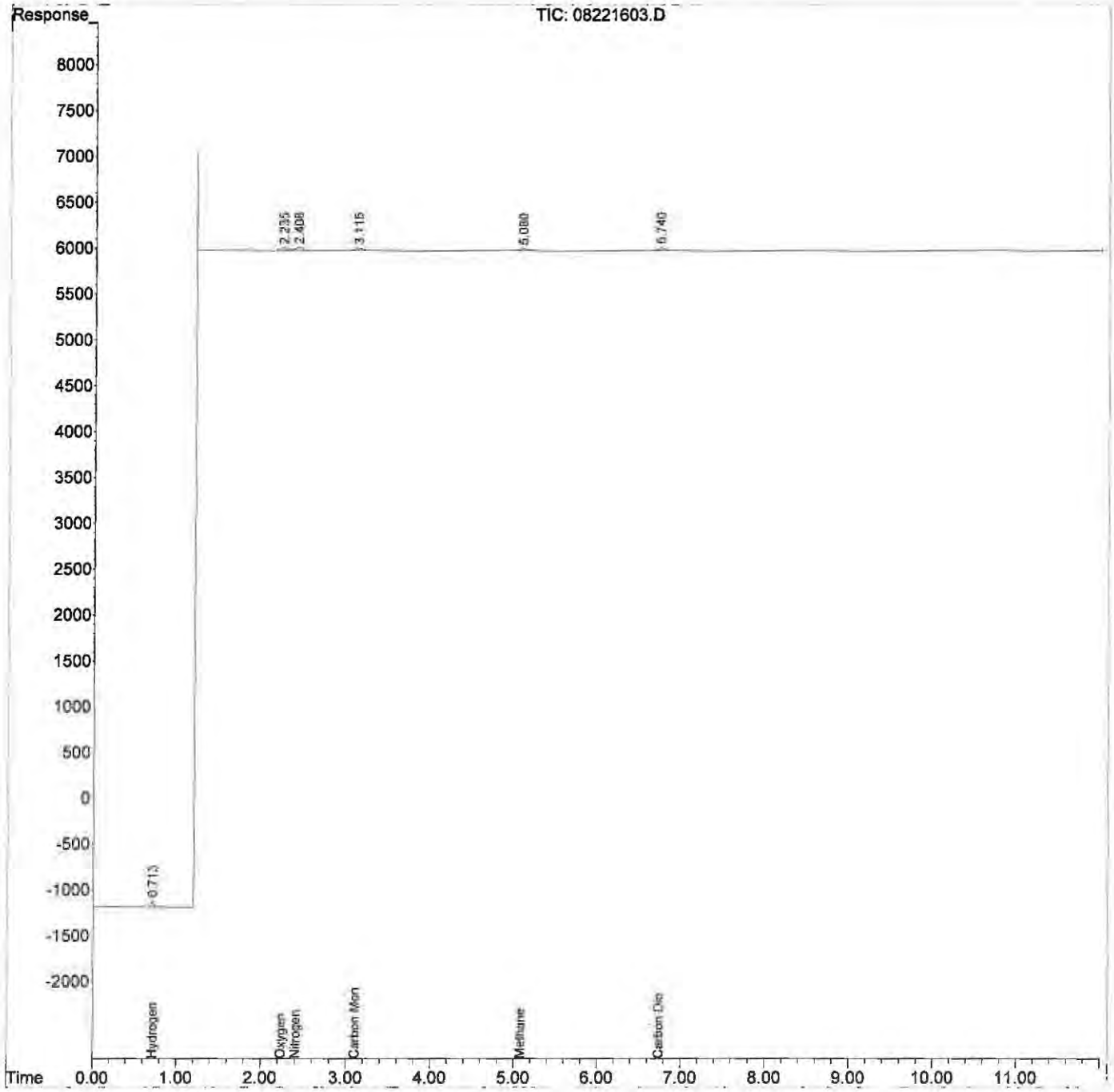
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

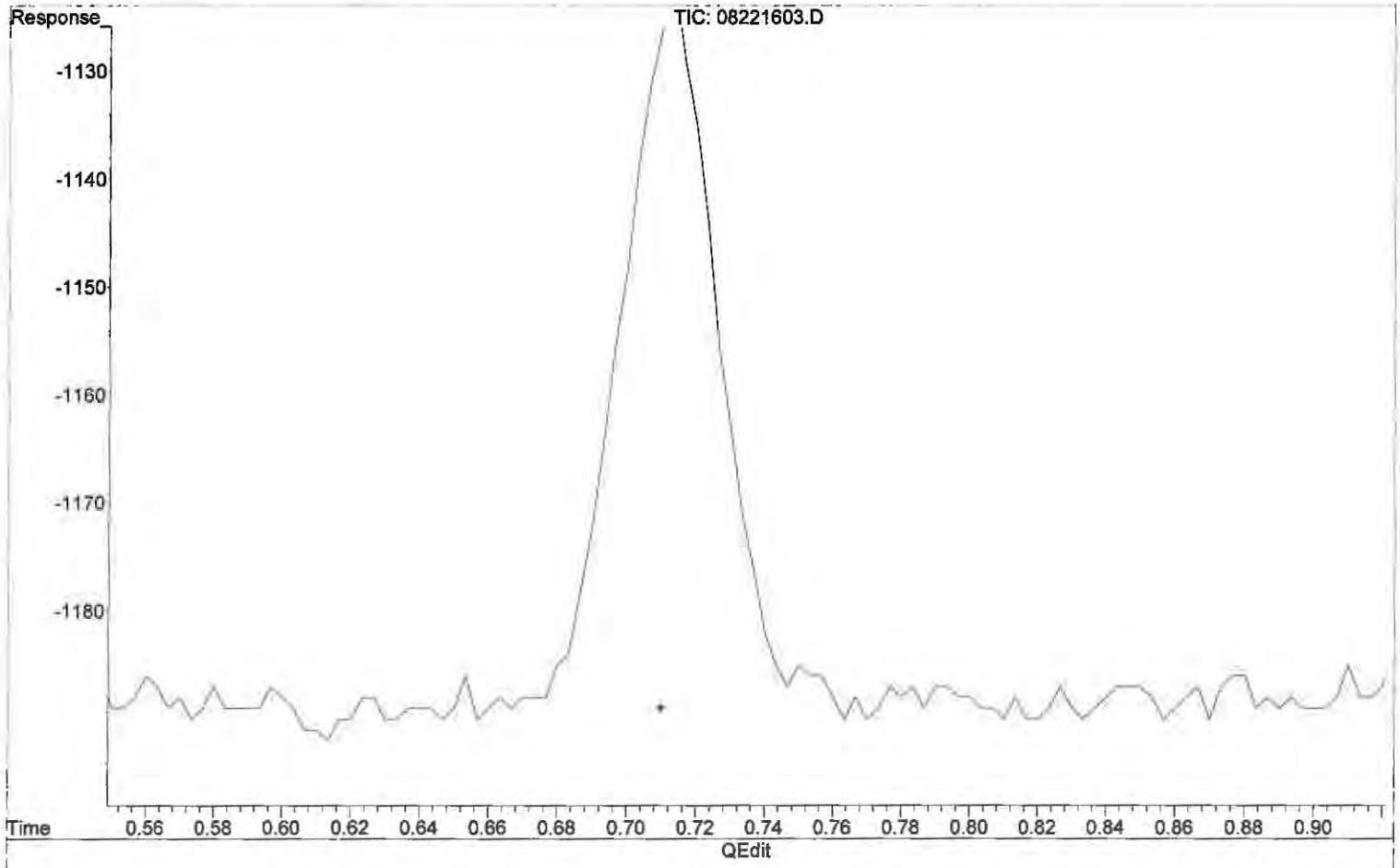


Quantitation Report (Qedit)

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

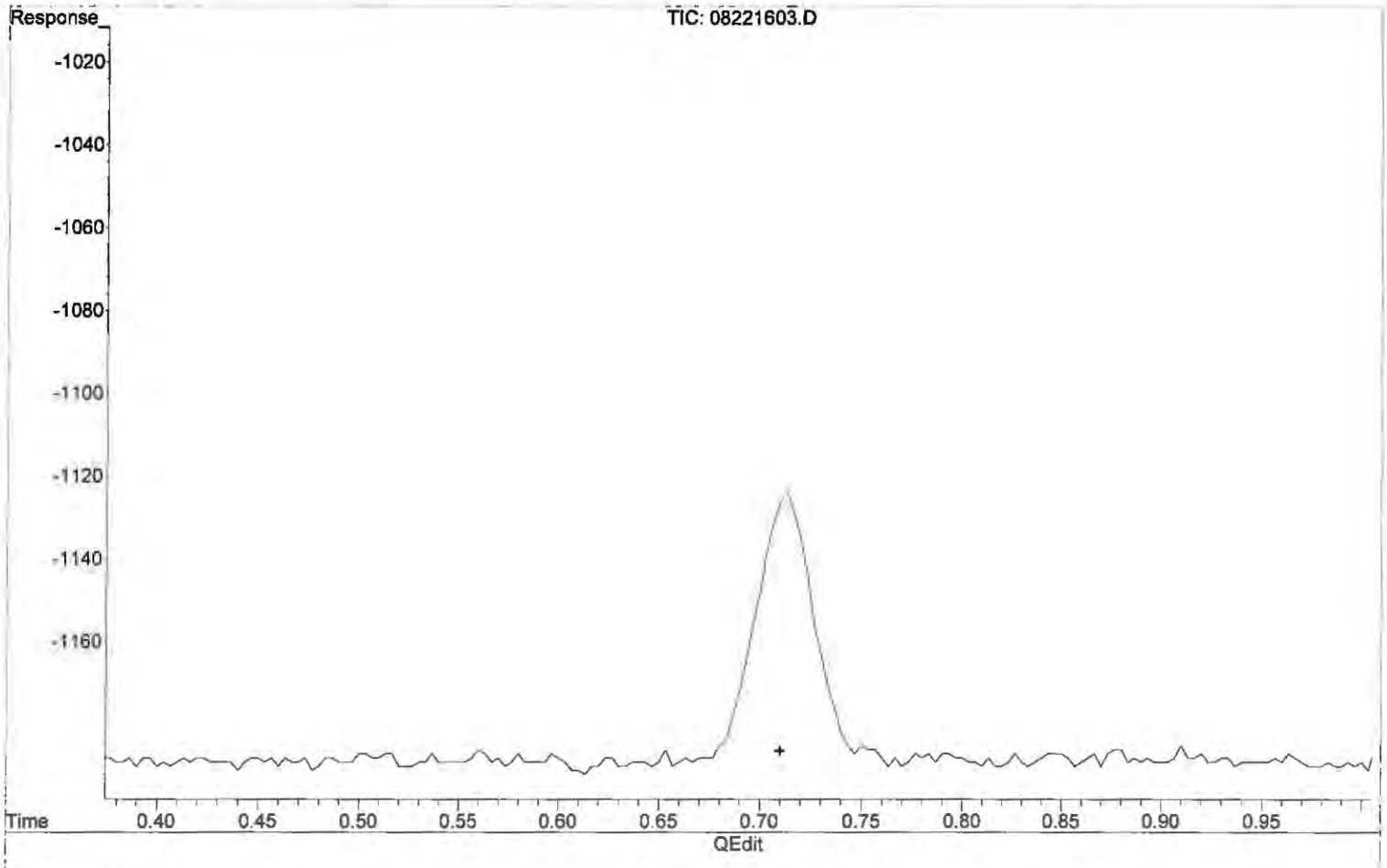
(+) = Expected Retention Time

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

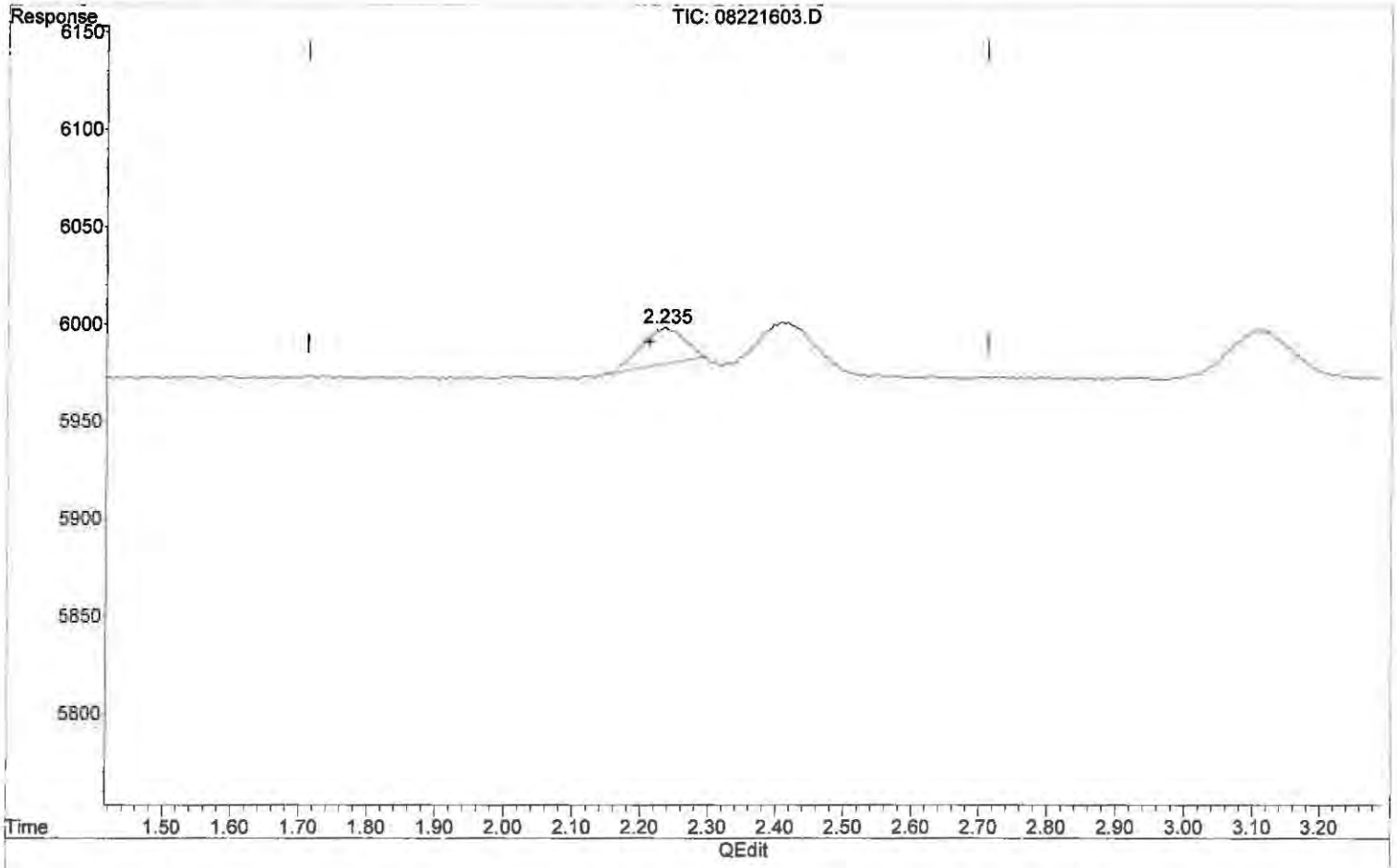
(+) = Expected Retention Time

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

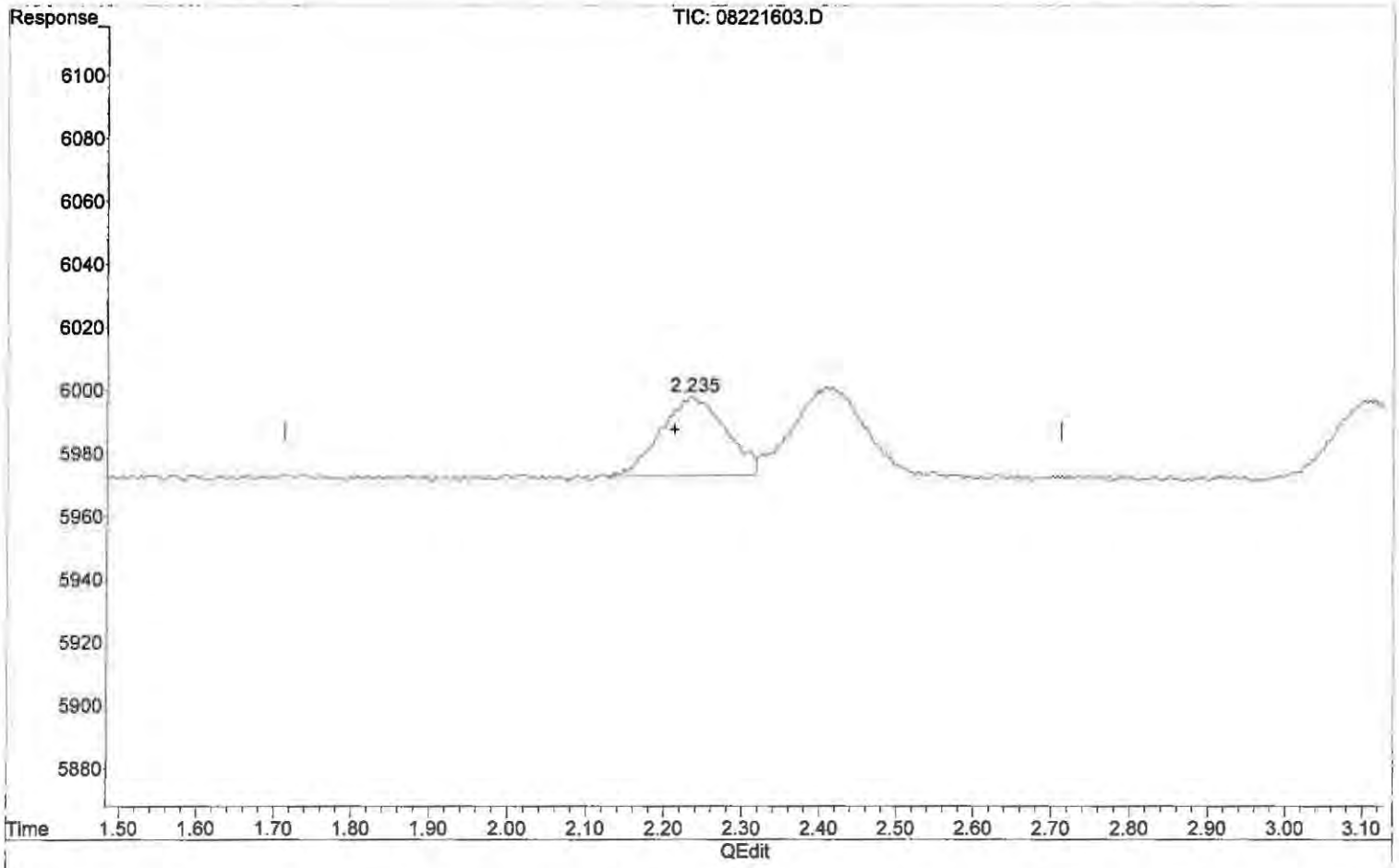
(+) = Expected Retention Time

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

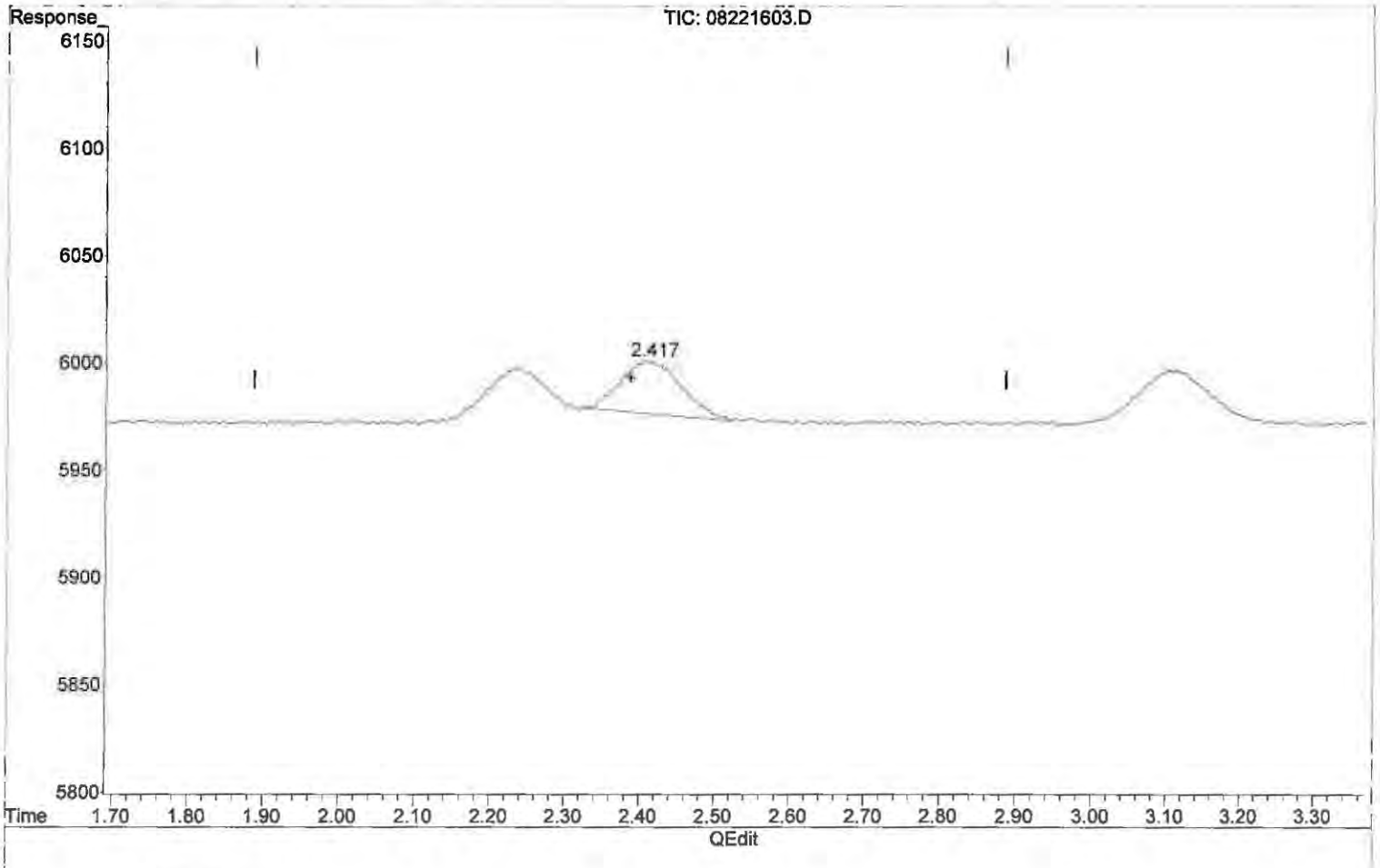
GC1_trip082216.M Mon Aug 22 11:05:35 2016 Page: 1

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

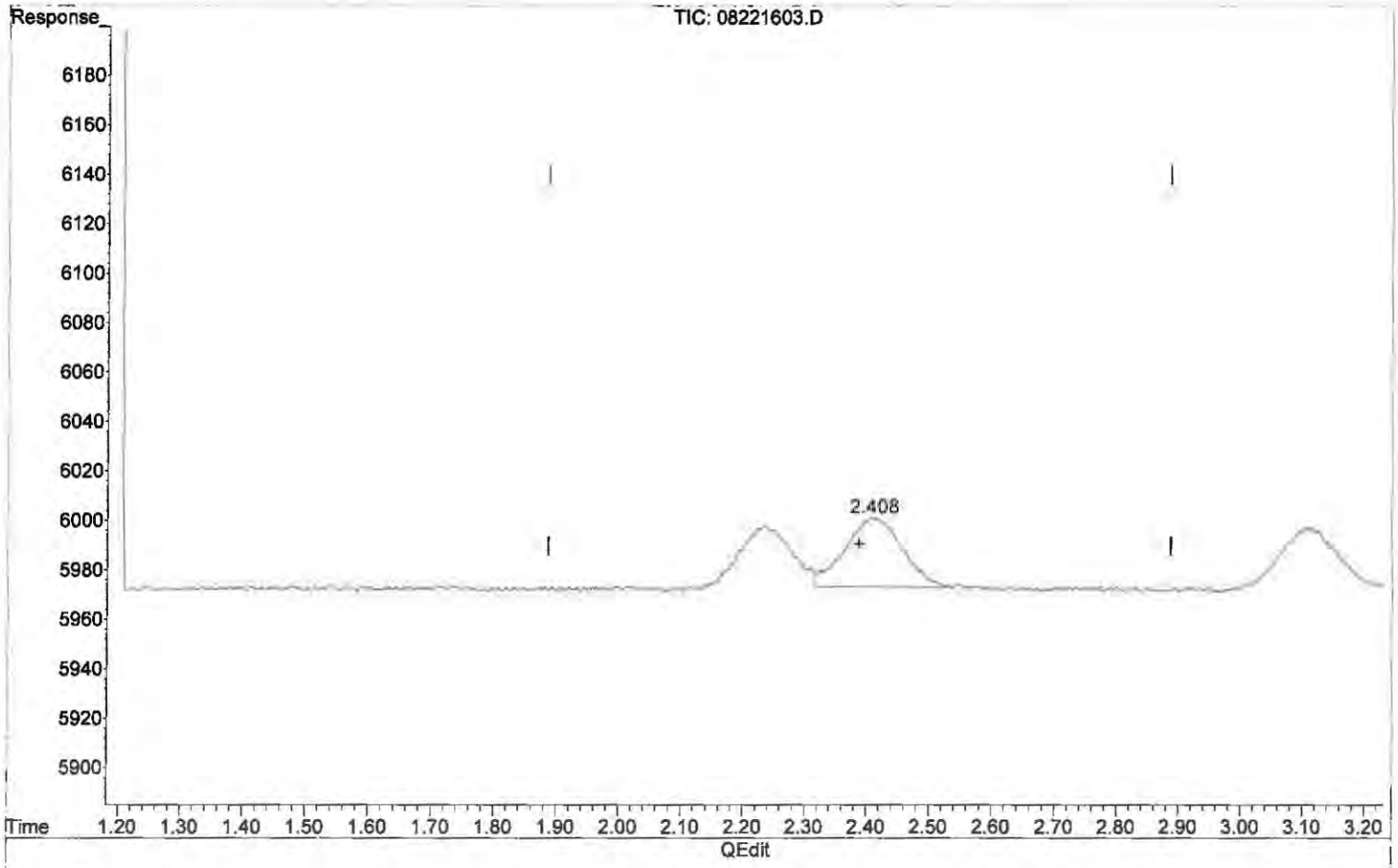
(+) = Expected Retention Time

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

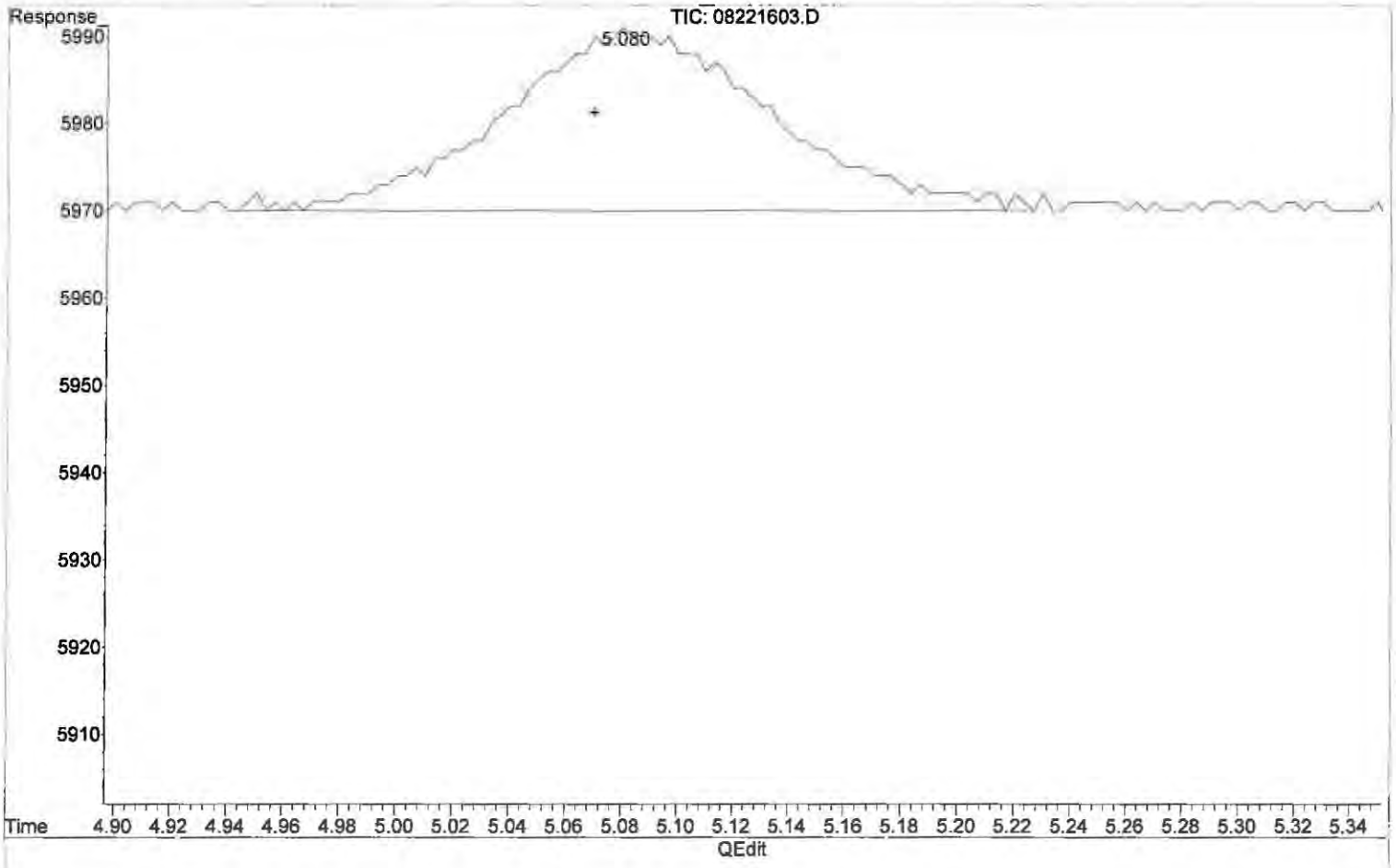
(+) = Expected Retention Time

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

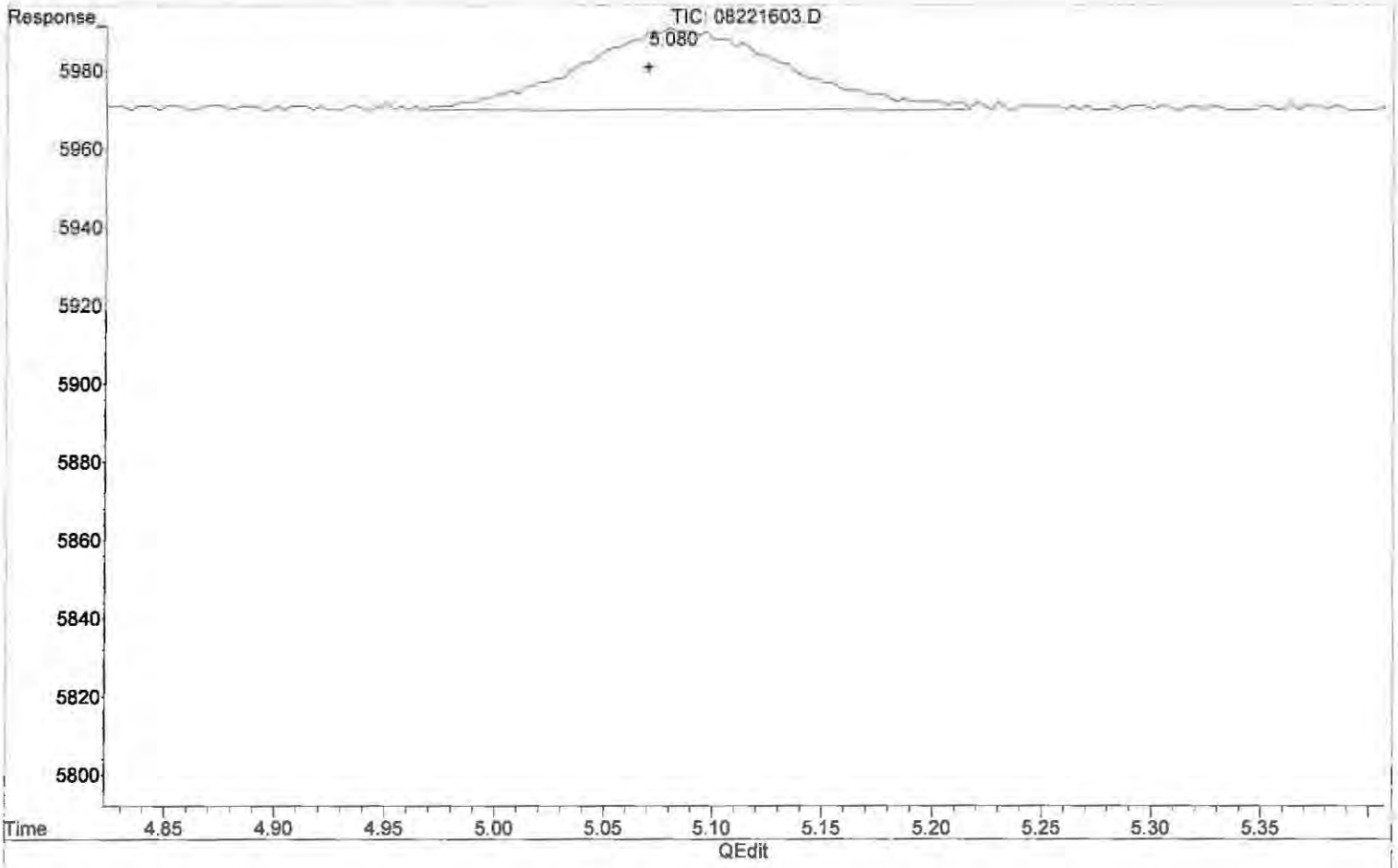
(+) = Expected Retention Time

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

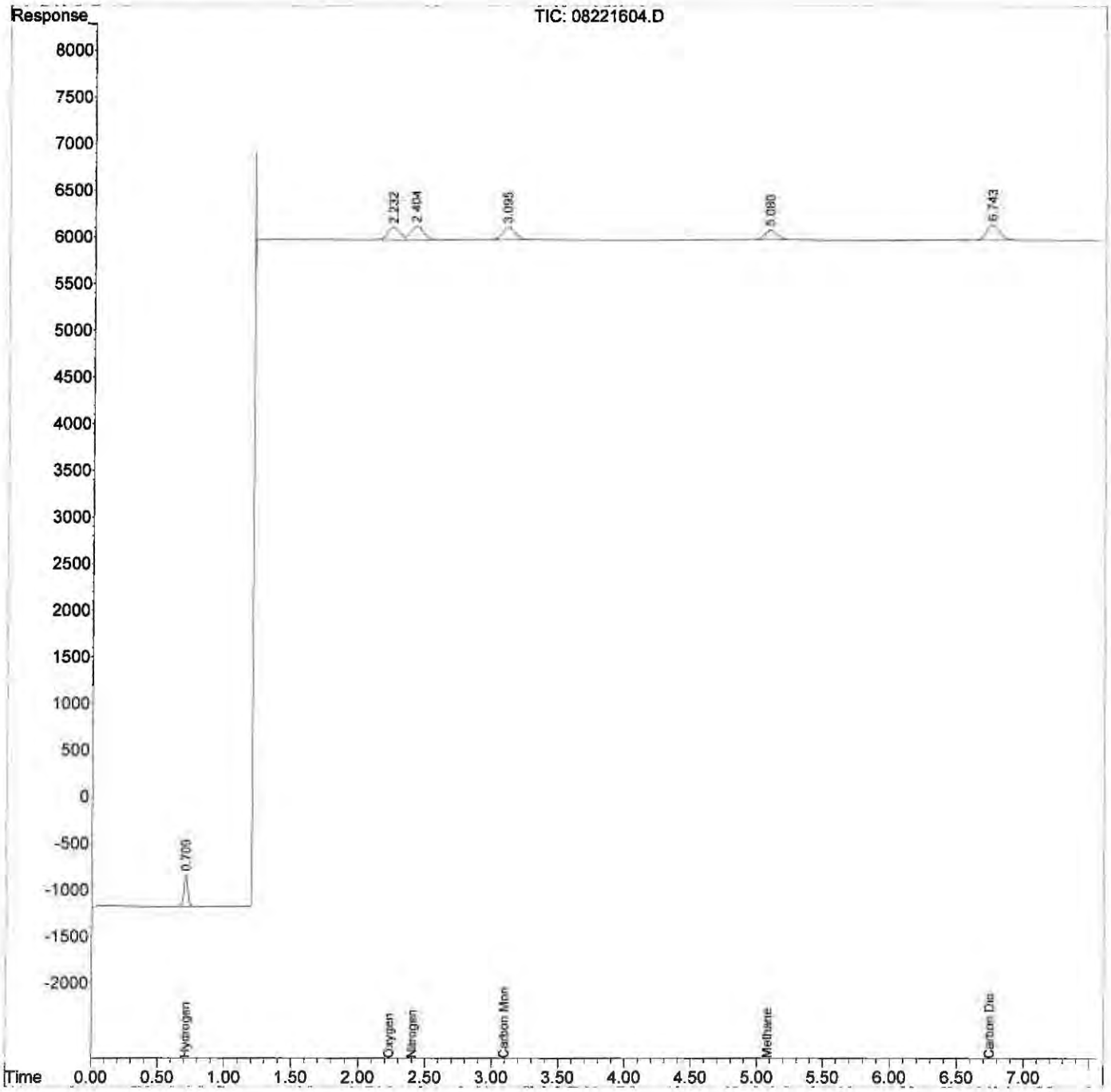
(f)=RT Delta > 1/2 Window (m)=manual int.

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

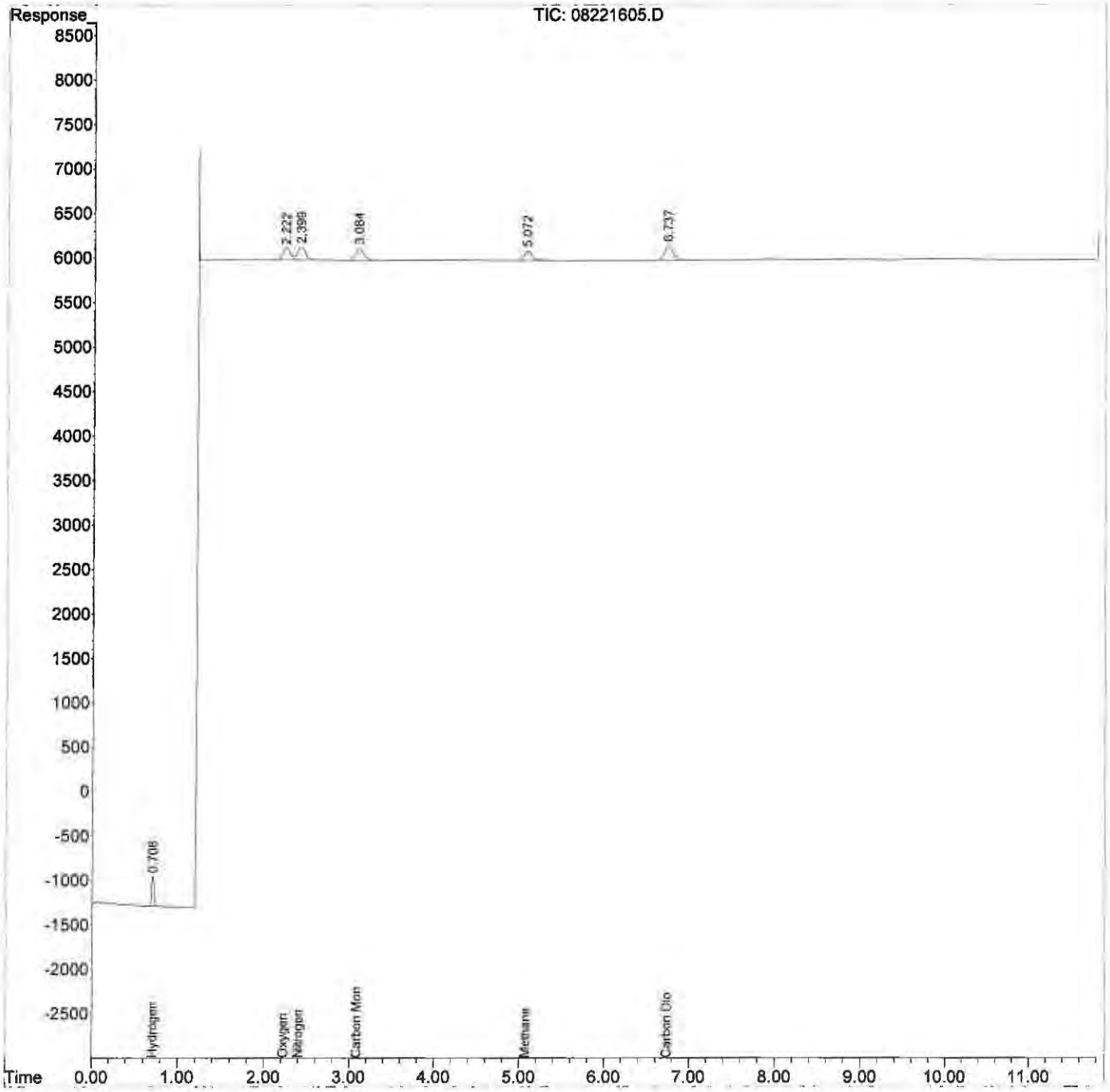
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



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

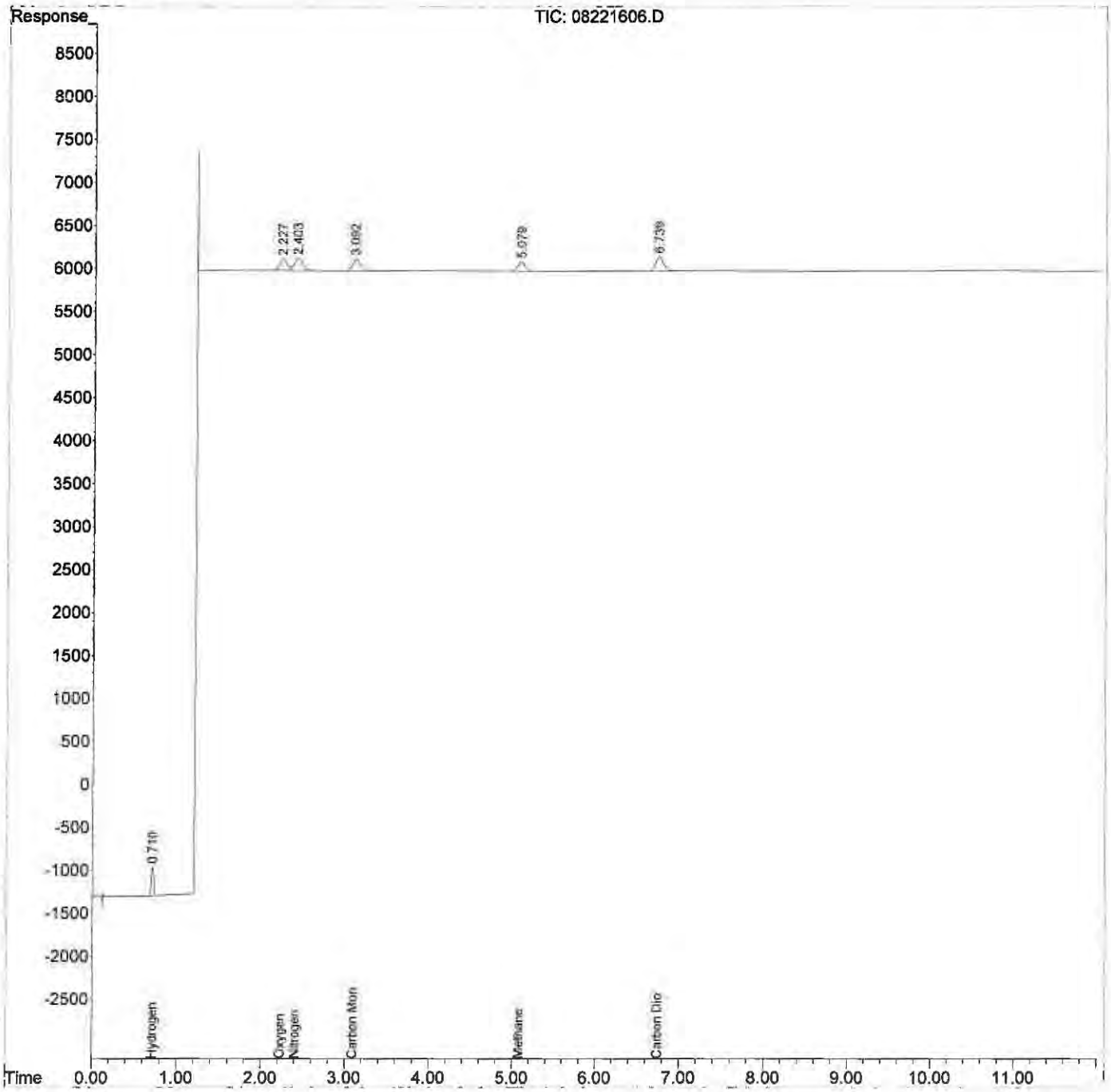
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



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

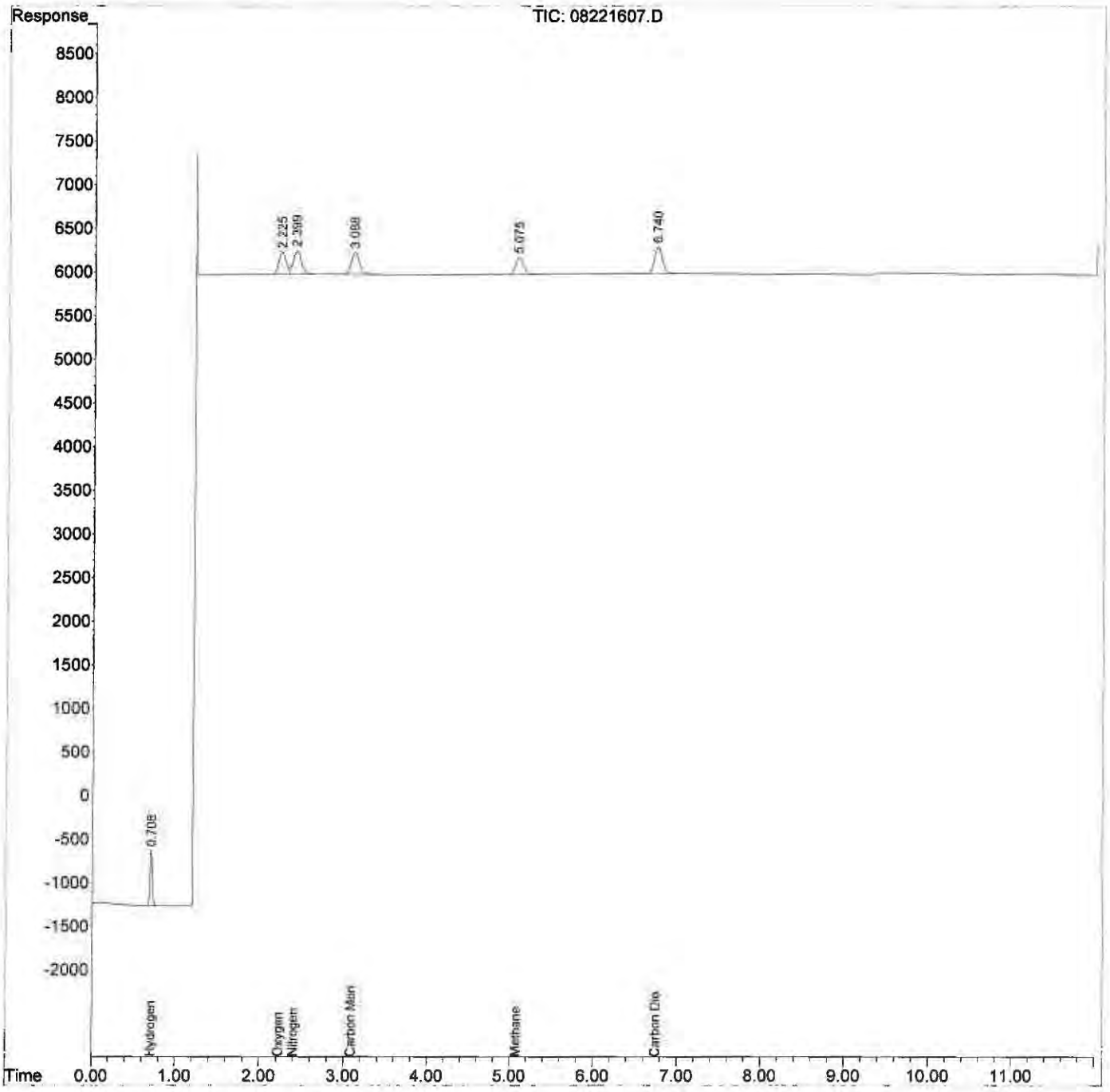
(f)=RT Delta > 1/2 Window (m)=manual int.

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

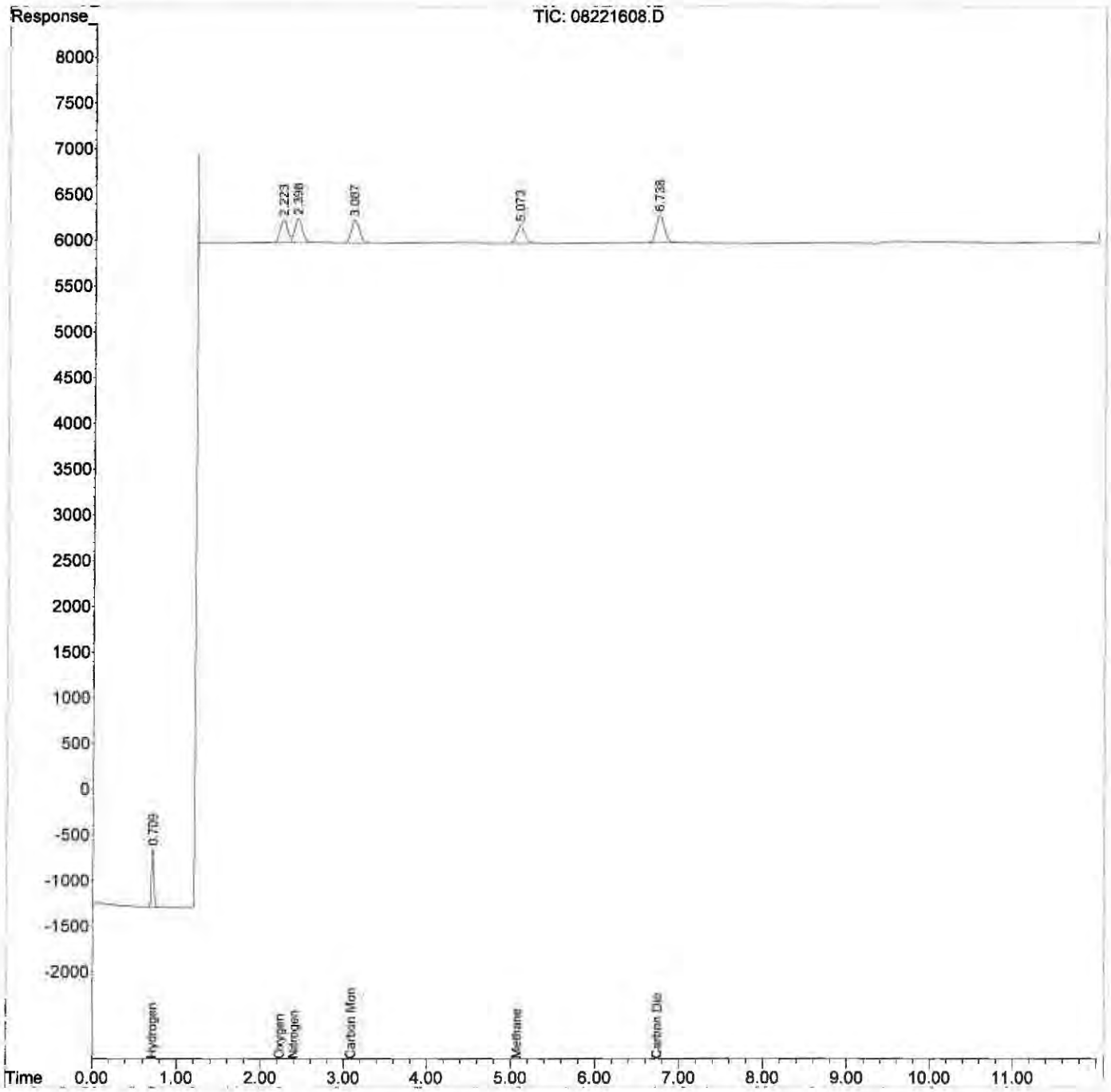
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



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

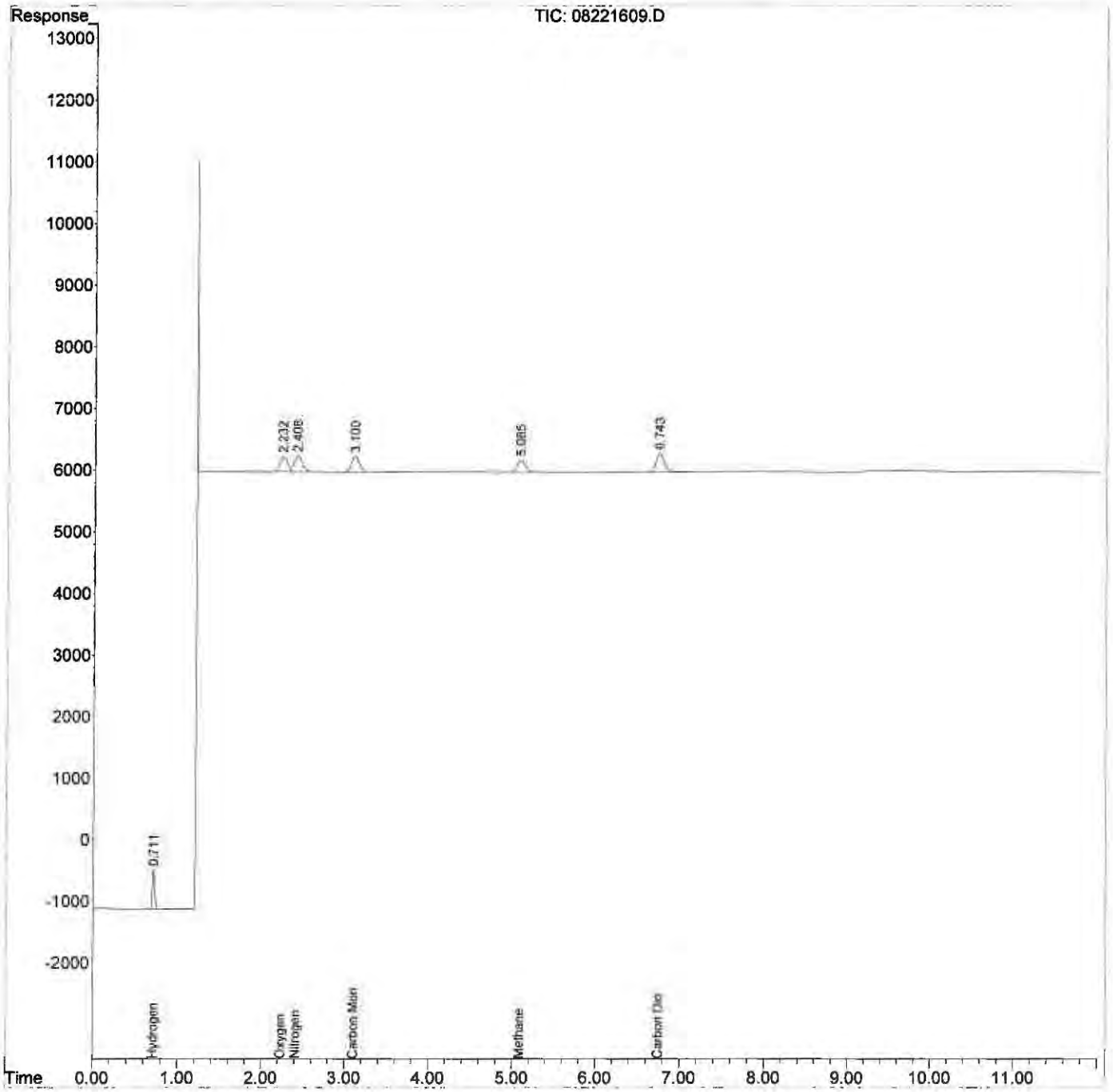
(f)=RT Delta > 1/2 Window (m)=manual int.

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

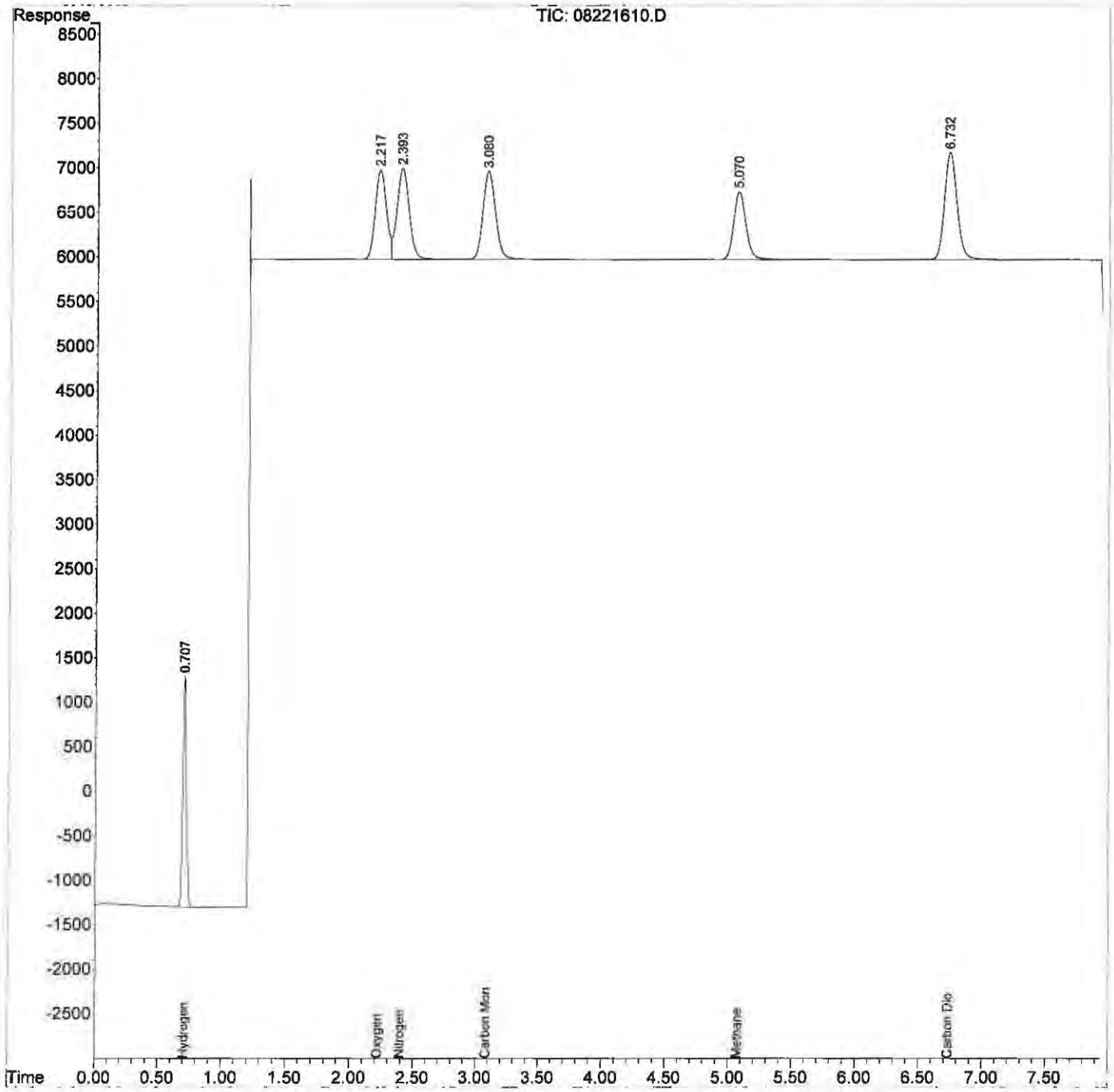
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221611.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 2:19 pm
Operator : amf
Sample : std s11-12041501
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 14:38:10 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.708	51926	39135.426	ppm
2)	Oxygen	2.219	61650	40312.840	ppm
3)	Nitrogen	2.395	69030	38574.578	ppm
4)	Carbon Monoxide	3.082	69214	39880.940	ppm
5)	Methane	5.072	51622	39335.929	ppm
6)	Carbon Dioxide	6.734	83696	39289.832	ppm

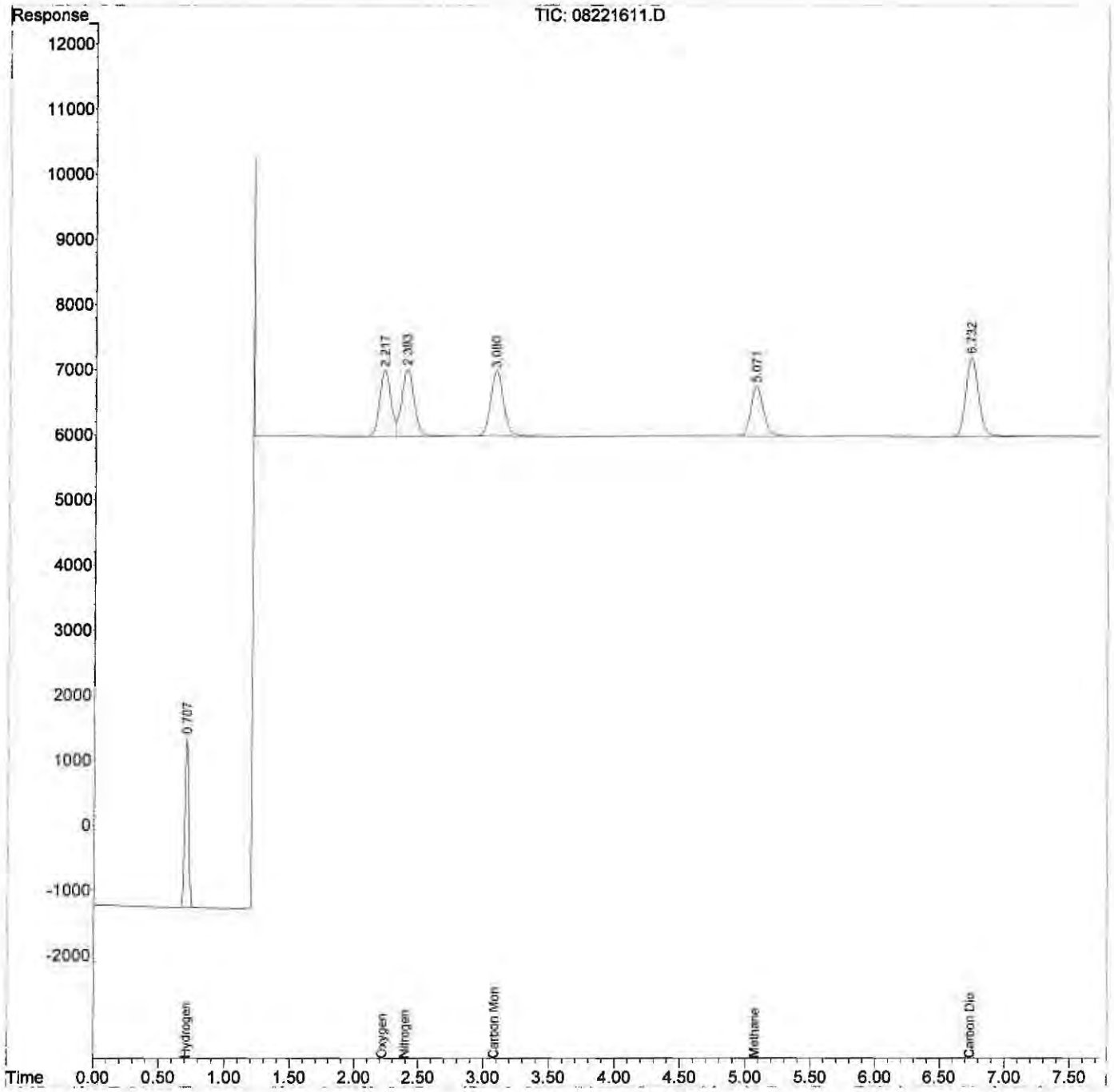
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221611.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 2:19 pm
Operator : amf
Sample : std s11-12041501
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 14:38:10 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221612.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 2:30 pm
Operator : amf
Sample : std s11-12041501
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 14:48:22 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.708	51951	39230.887	ppm
2)	Oxygen	2.218	61582	40239.610	ppm
3)	Nitrogen	2.394	69100	38738.751	ppm
4)	Carbon Monoxide	3.081	69492	40051.872	ppm
5)	Methane	5.071	51479	39286.254	ppm
6)	Carbon Dioxide	6.733	83618	39316.640	ppm

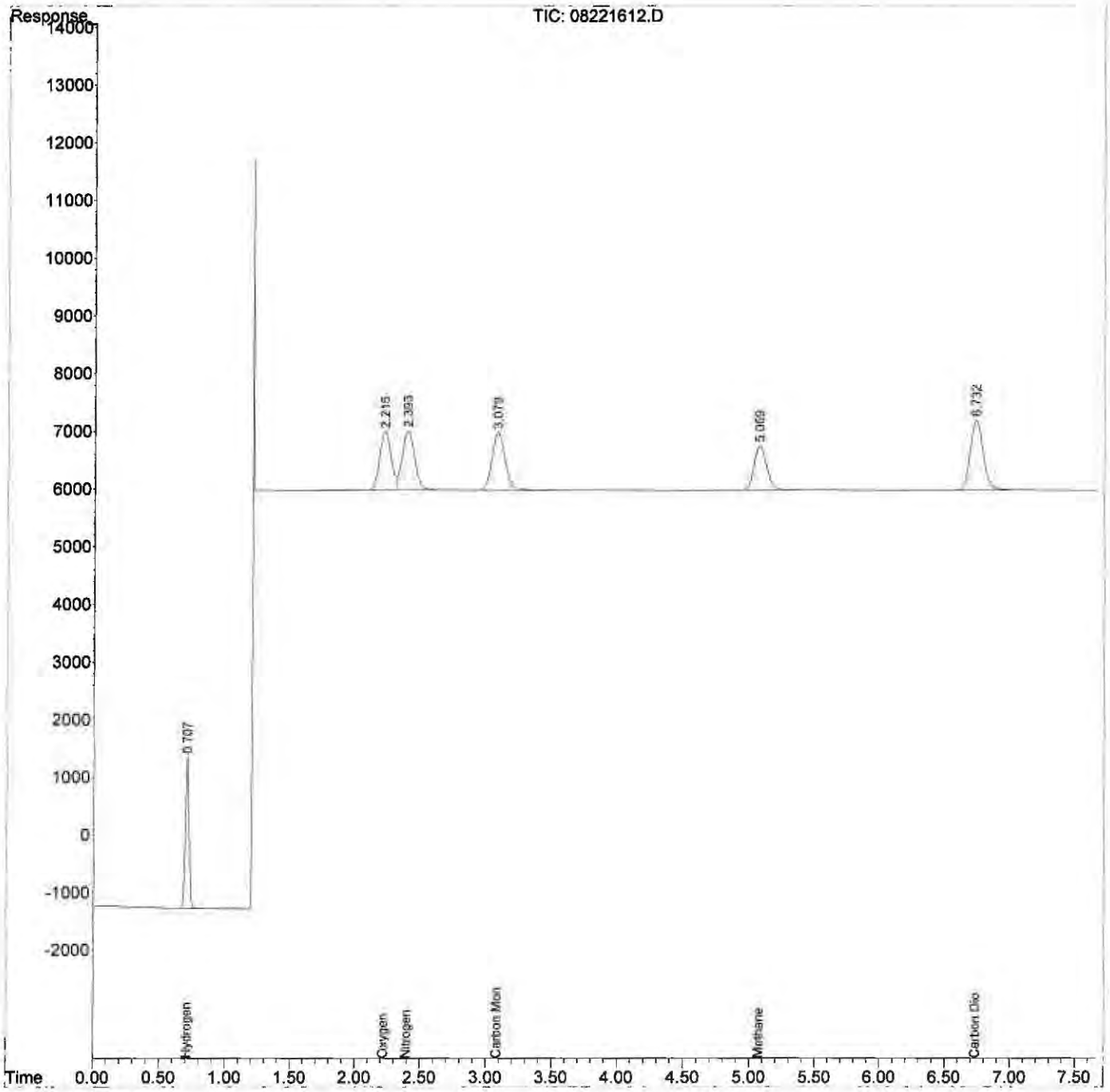
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221612.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 2:30 pm
Operator : amf
Sample : std s11-12041501
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 14:48:22 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221613.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 2:54 pm
Operator : amf
Sample : std s11-12031501
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 15:18:53 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.703	219834	166275.524	ppm
2)	Oxygen	2.198	247351	161547.583	ppm
3)	Nitrogen	2.375	277428	155942.102	ppm
4)	Carbon Monoxide	3.064	277383	159853.465	ppm
5)	Methane	5.059	206221	157612.524	ppm
6)	Carbon Dioxide	6.718	333461	157014.497	ppm

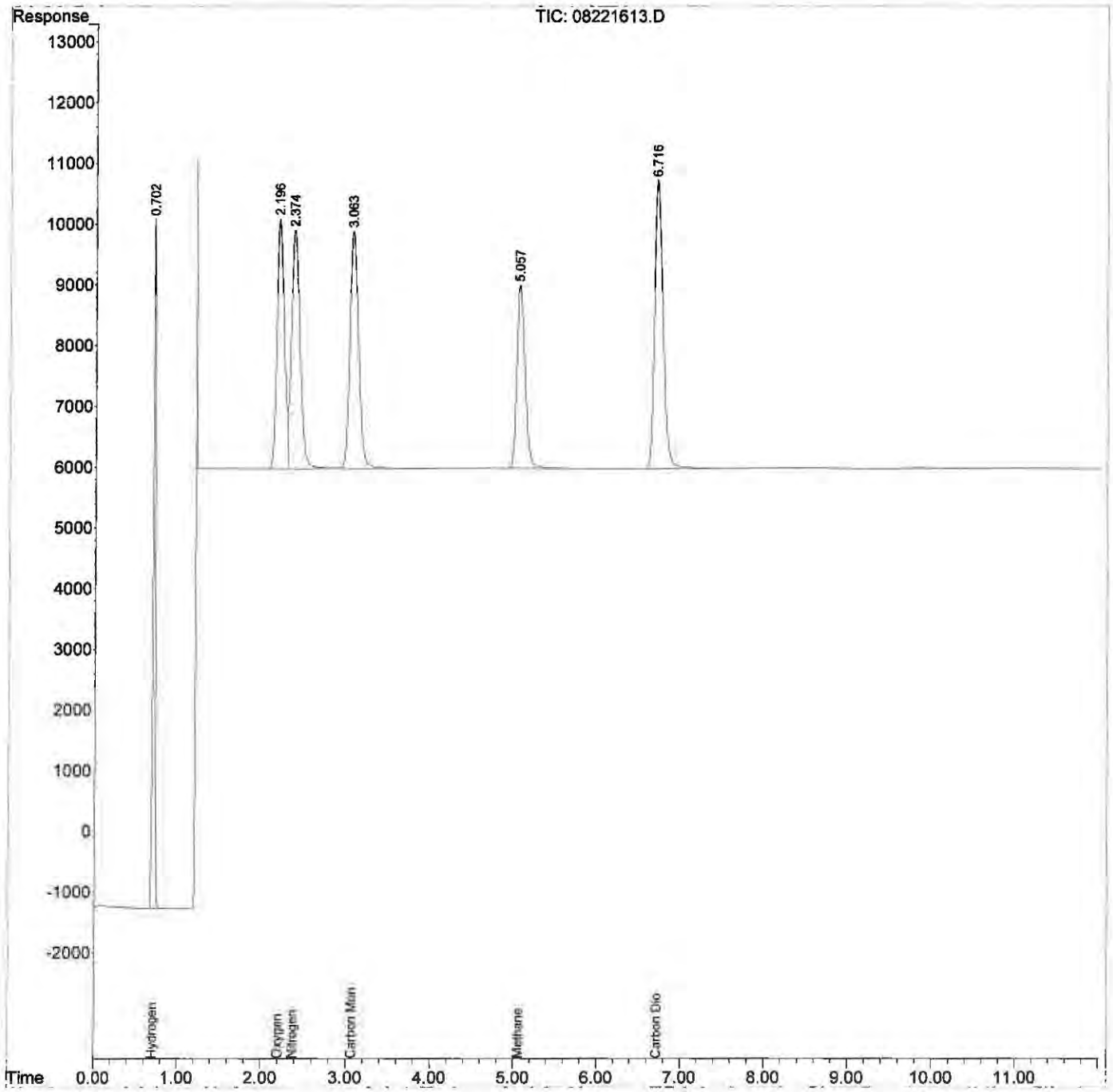
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221613.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 2:54 pm
Operator : amf
Sample : std s11-12031501
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 15:18:53 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221614.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 3:11 pm
Operator : amf
Sample : std s11-12031501
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 15:28:41 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.703	219704	165676.829	ppm
2)	Oxygen	2.200	246818	161079.250	ppm
3)	Nitrogen	2.378	276346	155637.709	ppm
4)	Carbon Monoxide	3.066	276366	159278.450	ppm
5)	Methane	5.060	205850	157510.093	ppm
6)	Carbon Dioxide	6.719	332031	156565.868	ppm

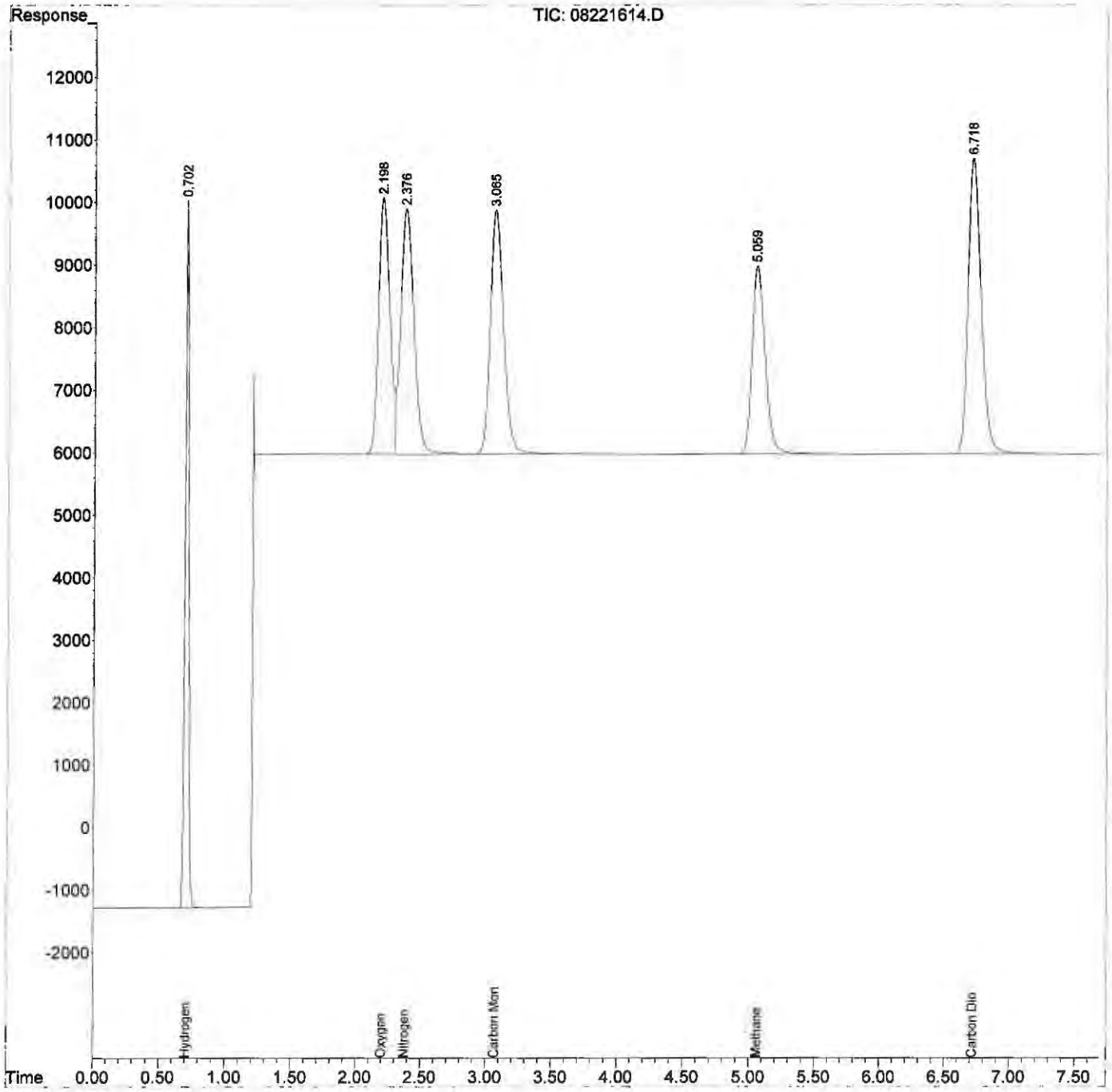
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221614.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 3:11 pm
Operator : amf
Sample : std s11-12031501
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 15:28:41 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221616.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 3:42 pm
Operator : amf
Sample : std s11-12021503
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 15:56:42 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.112	1611068	1050161.569	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

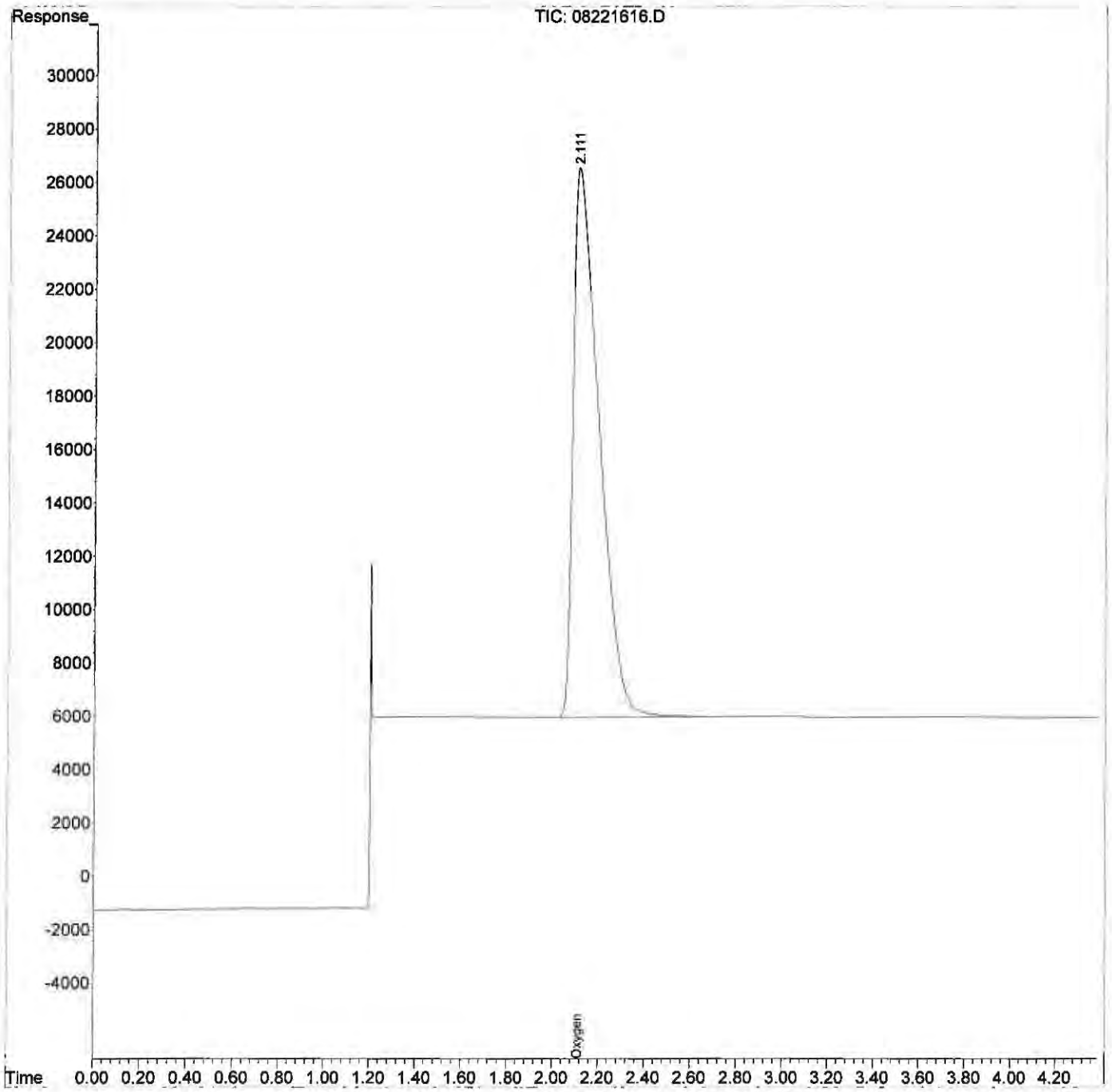
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221616.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 3:42 pm
Operator : amf
Sample : std s11-12021503
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 15:56:42 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221617.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 3:49 pm
Operator : amf
Sample : std s11-12021503
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 16:02:12 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.115	1617147	1050828.907	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

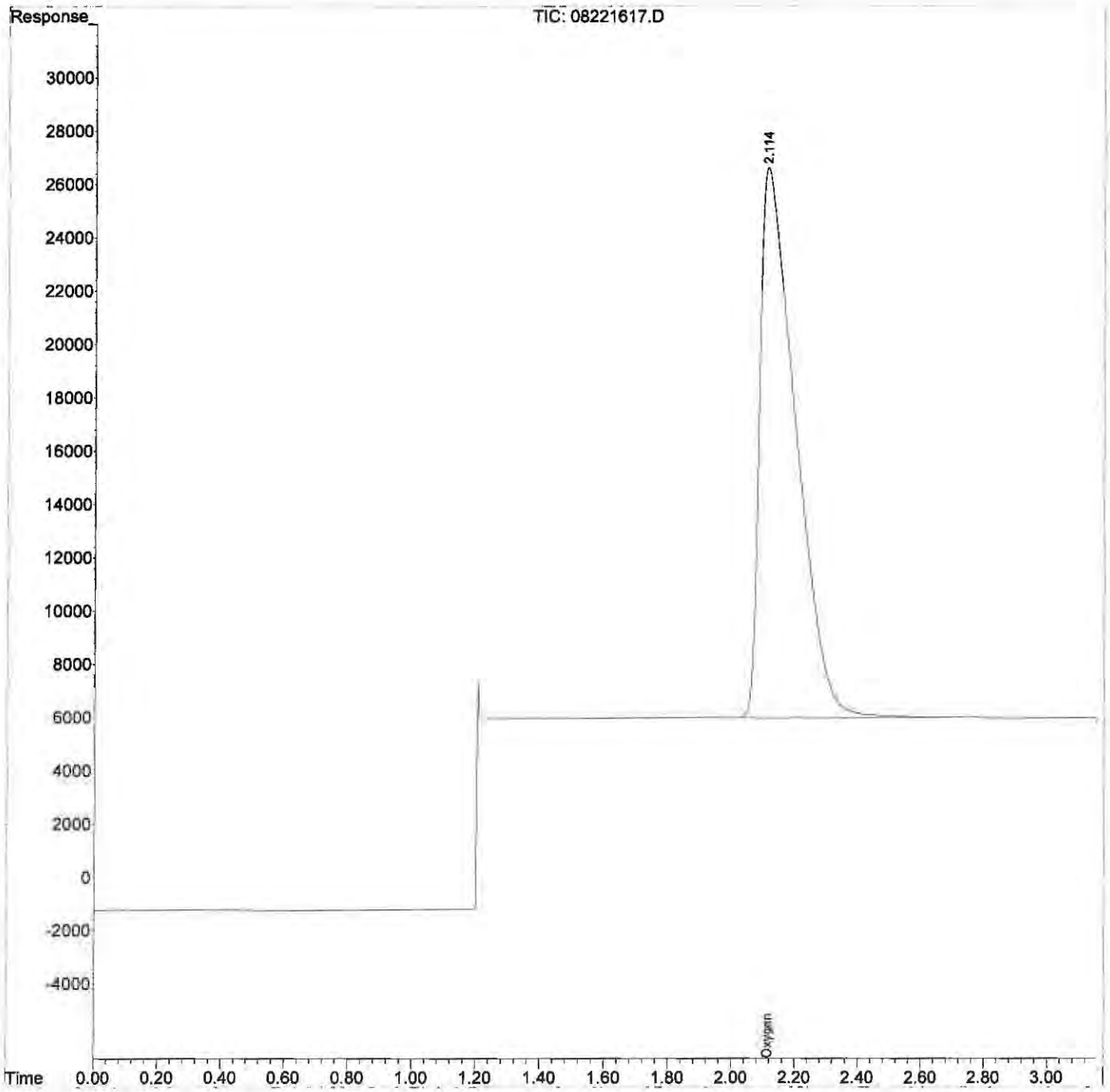
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221617.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 3:49 pm
Operator : amf
Sample : std s11-12021503
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 16:02:12 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221618.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 3:54 pm
Operator : amf
Sample : std s11-12021503
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 16:07:54 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.119	1588729	1029284.802	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

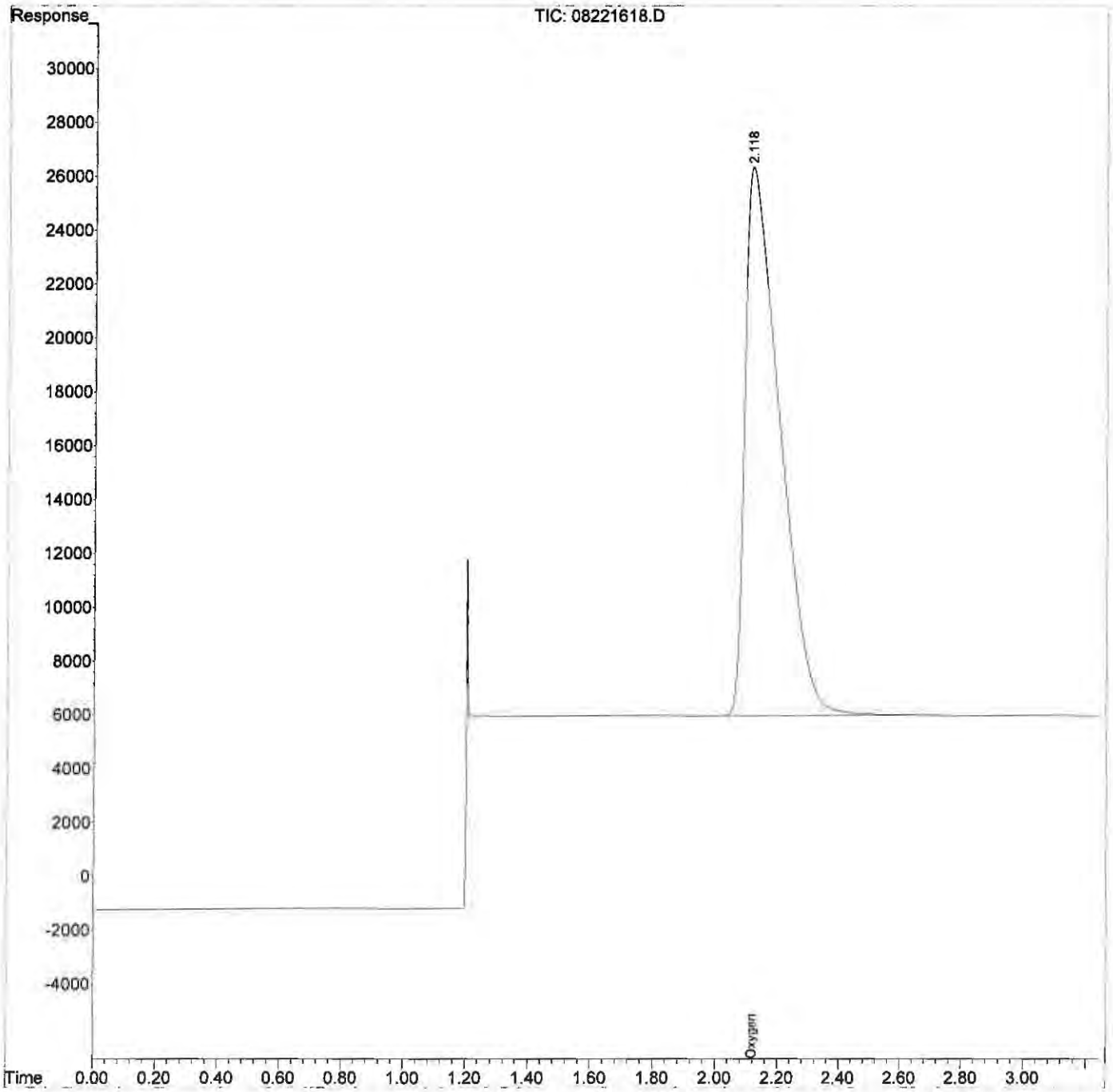
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221618.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 3:54 pm
Operator : amf
Sample : std s11-12021503
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 16:07:54 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221619.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 4:02 pm
Operator : amf
Sample : co2
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 16:20:27 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.634	2005774	948215.193	ppm

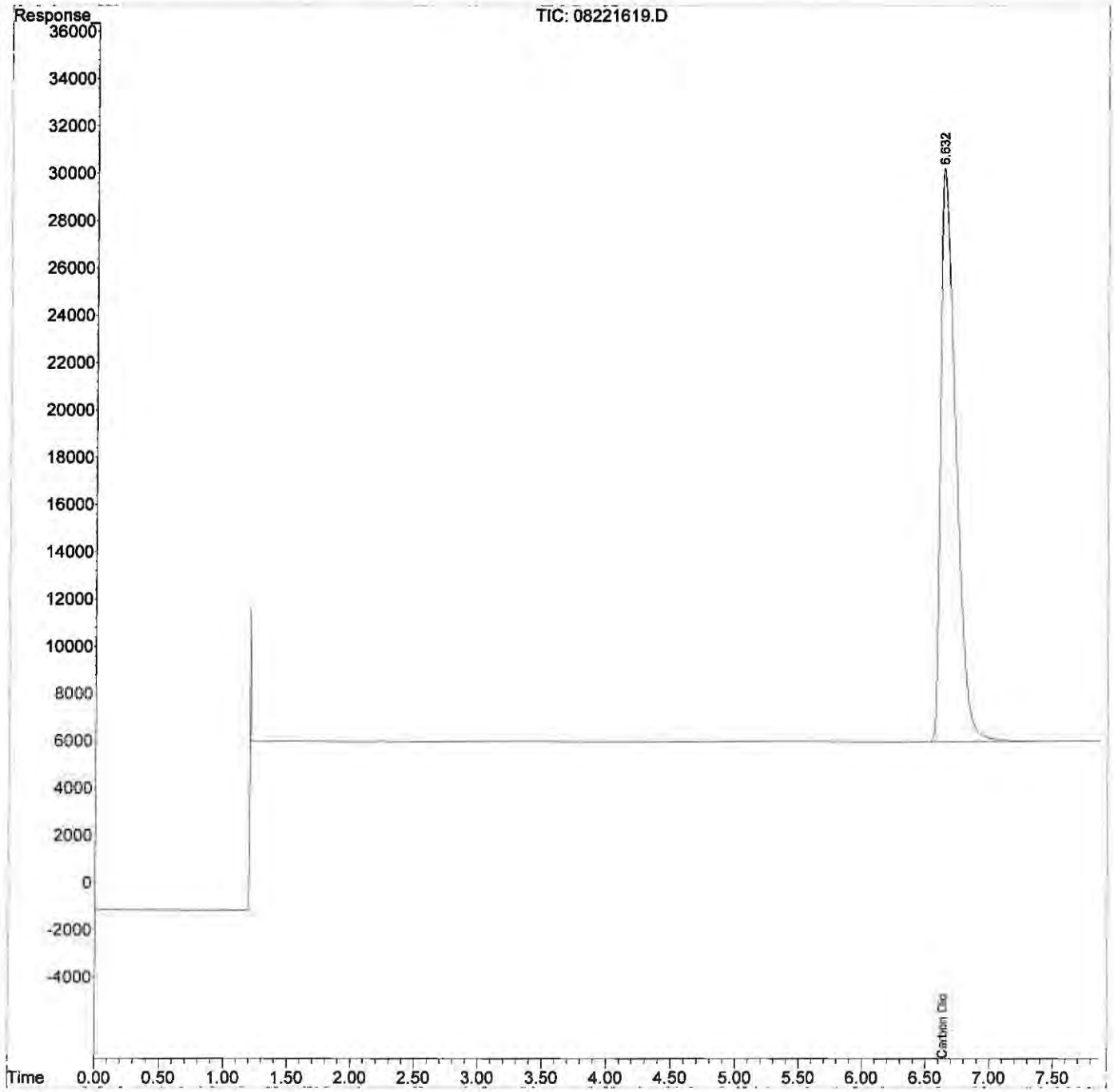
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221619.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 4:02 pm
Operator : amf
Sample : co2
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 16:20:27 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221620.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 4:14 pm
Operator : amf
Sample : co2
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 16:32:40 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.630	2003370	950153.030	ppm

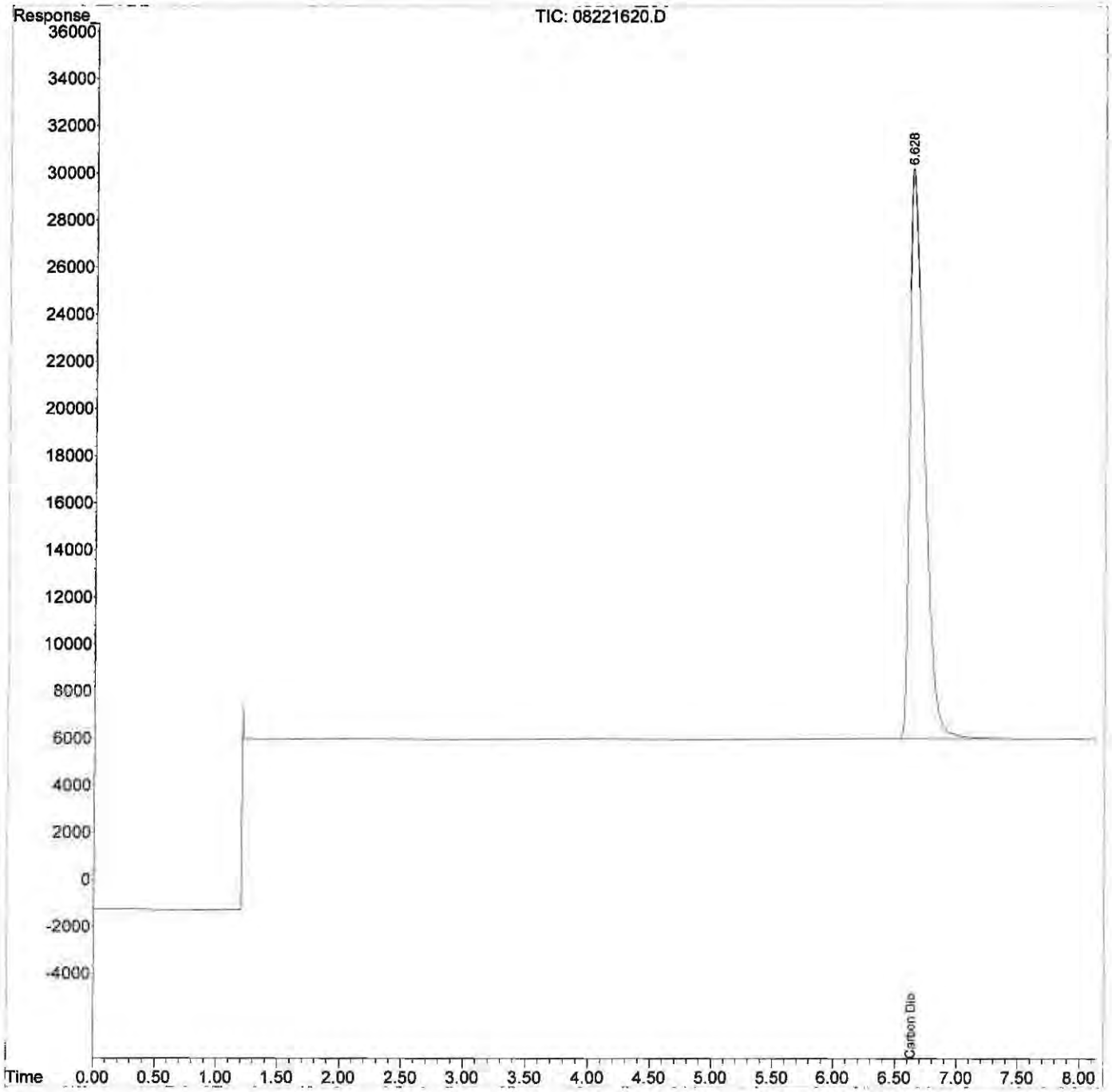
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221620.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 4:14 pm
Operator : amf
Sample : co2
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 16:32:40 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221621.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 4:26 pm
Operator : amf
Sample : co2
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 16:44:54 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.627	2014660	958317.321	ppm

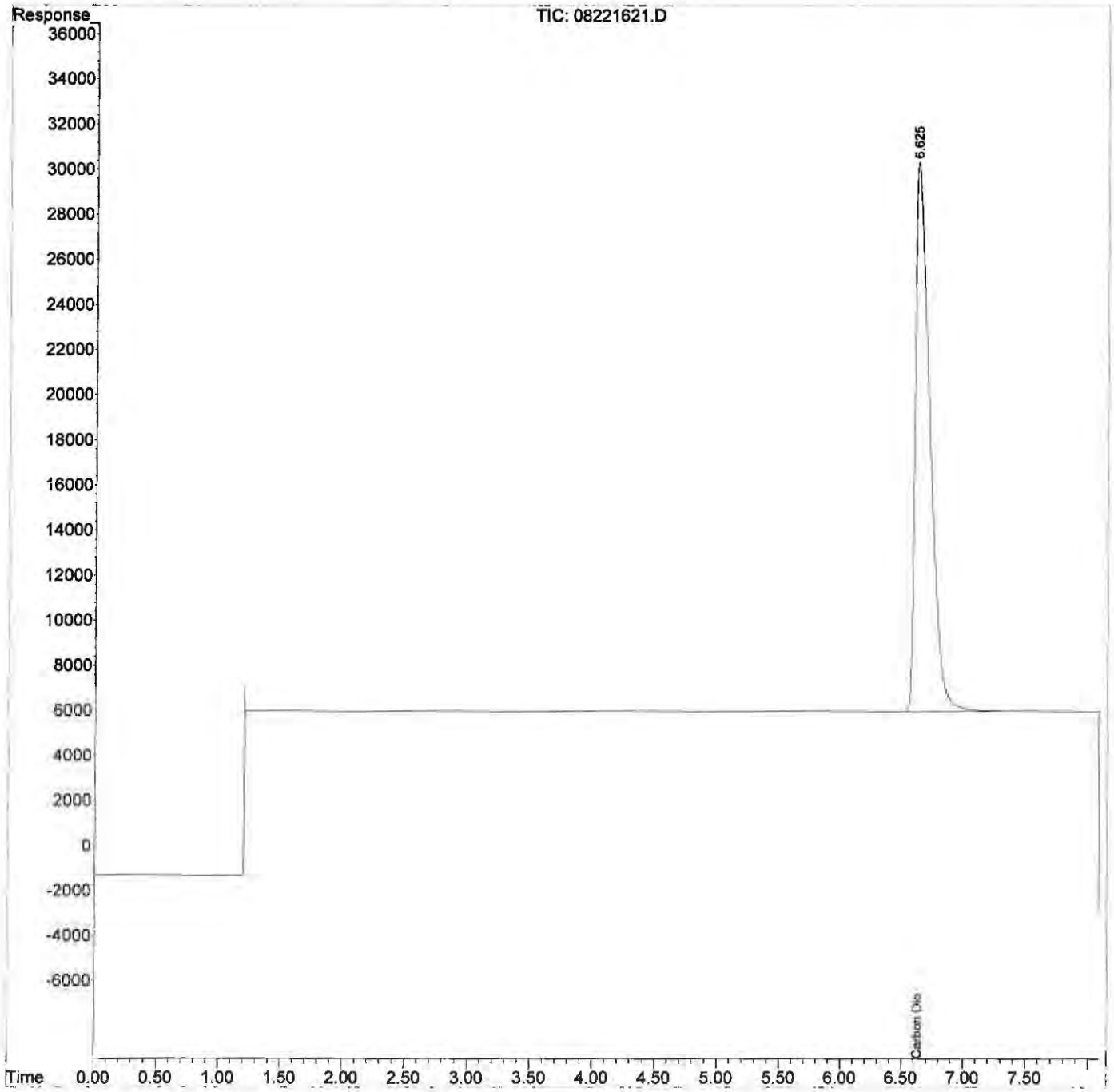
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221621.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 4:26 pm
Operator : amf
Sample : co2
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 16:44:54 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_08\23\
Data File : 08231601.D
Signal(s) : TCD1A.CH
Acq On : 23 Aug 2016 8:56 am
Operator : amf
Sample : s11-12021502
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 23 09:10:40 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 08:53:31 2016
Response via : Initial Calibration
Integrator: ChemStation

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

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.000	0	N.D.	ppm	
2)	Oxygen	0.000	0	N.D.	ppm	d
3)	Nitrogen	2.292	1743725	985438.652	ppm	
4)	Carbon Monoxide	0.000	0	N.D.	ppm	
5)	Methane	0.000	0	N.D.	ppm	
6)	Carbon Dioxide	0.000	0	N.D.	ppm	

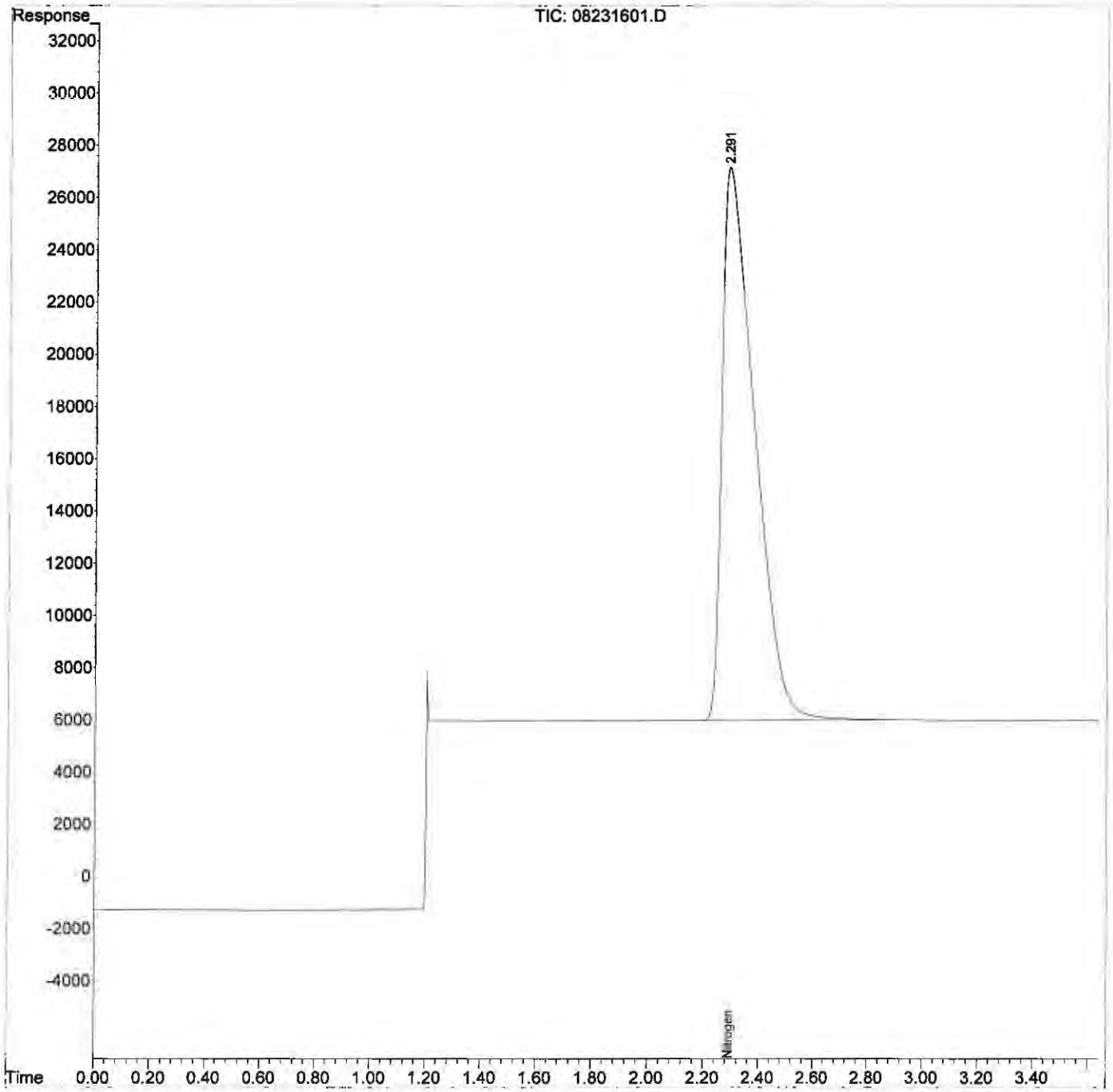
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_08\23\
Data File : 08231601.D
Signal(s) : TCD1A.CH
Acq On : 23 Aug 2016 8:56 am
Operator : amf
Sample : s11-12021502
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 23 09:10:40 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 08:53:31 2016
Response via : Initial Calibration
Integrator: ChemStation

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



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_08\23\
Data File : 08231602.D
Signal(s) : TCD1A.CH
Acq On : 23 Aug 2016 9:03 am
Operator : amf
Sample : s11-12021502
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 23 09:20:25 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 09:11:06 2016
Response via : Initial Calibration
Integrator: ChemStation

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

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.000	0	N.D.	ppm	
2)	Oxygen	0.000	0	N.D.	ppm	d
3)	Nitrogen	2.294	1755465	992976.308	ppm	
4)	Carbon Monoxide	0.000	0	N.D.	ppm	
5)	Methane	0.000	0	N.D.	ppm	
6)	Carbon Dioxide	0.000	0	N.D.	ppm	

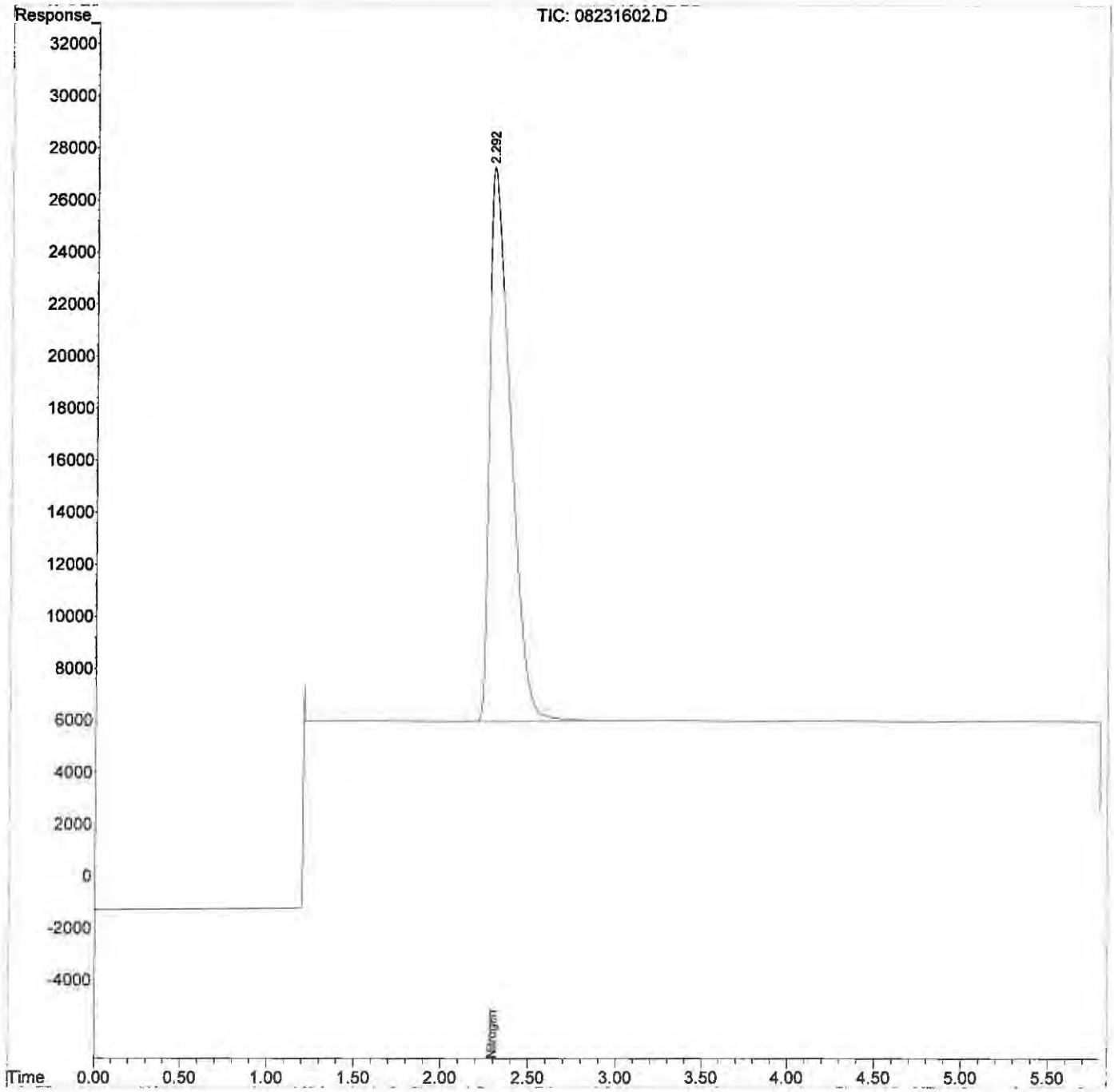
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_08\23\
Data File : 08231602.D
Signal(s) : TCD1A.CH
Acq On : 23 Aug 2016 9:03 am
Operator : amf
Sample : s11-12021502
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 23 09:20:25 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 09:11:06 2016
Response via : Initial Calibration
Integrator: ChemStation

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



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_08\23\
Data File : 08231603.D
Signal(s) : TCD1A.CH
Acq On : 23 Aug 2016 9:12 am
Operator : amf
Sample : s11-12021502
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 23 09:26:42 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 09:21:22 2016
Response via : Initial Calibration
Integrator: ChemStation

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

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm d
3)	Nitrogen	2.292	1767961	1000457.289	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

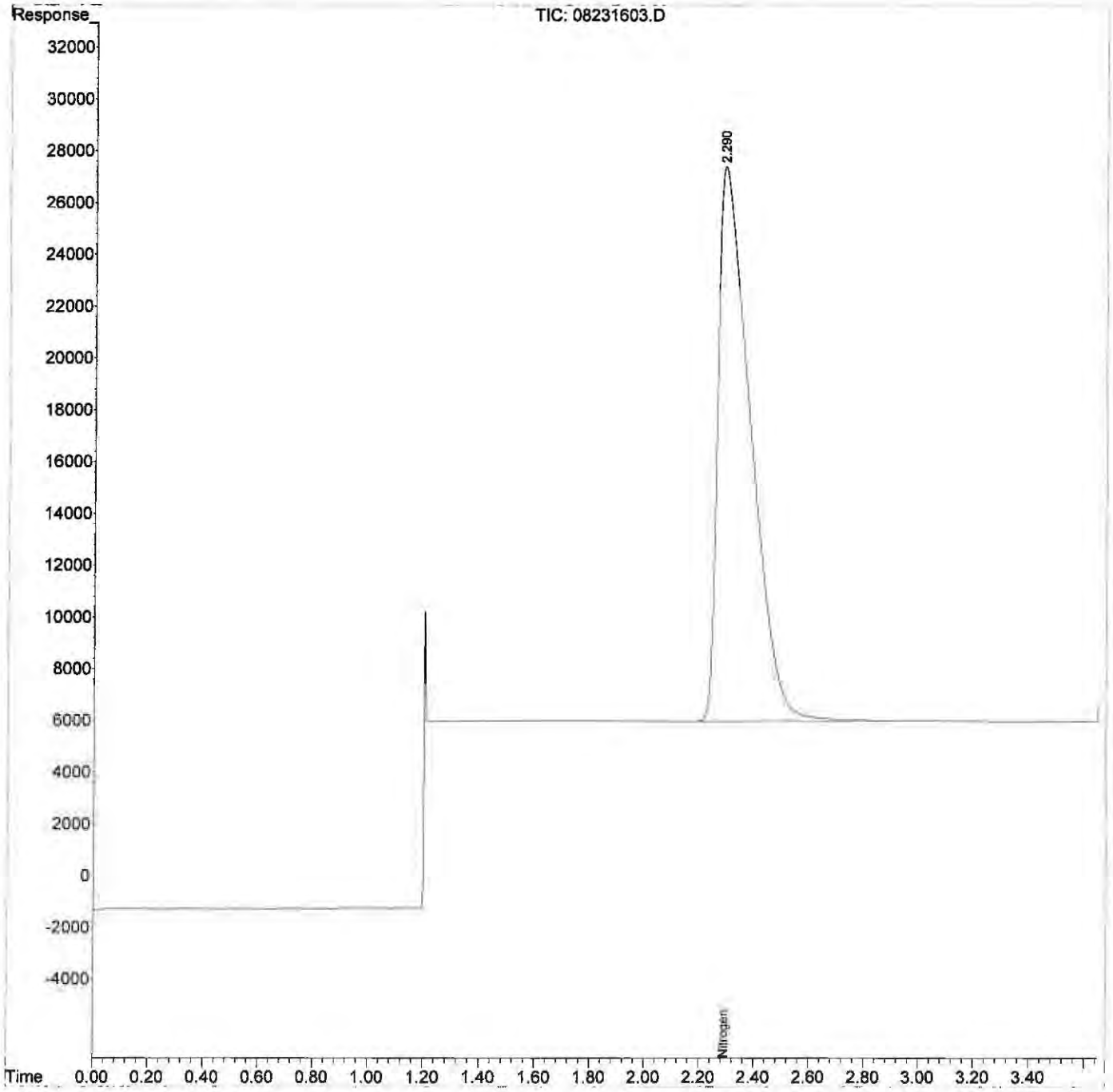
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



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

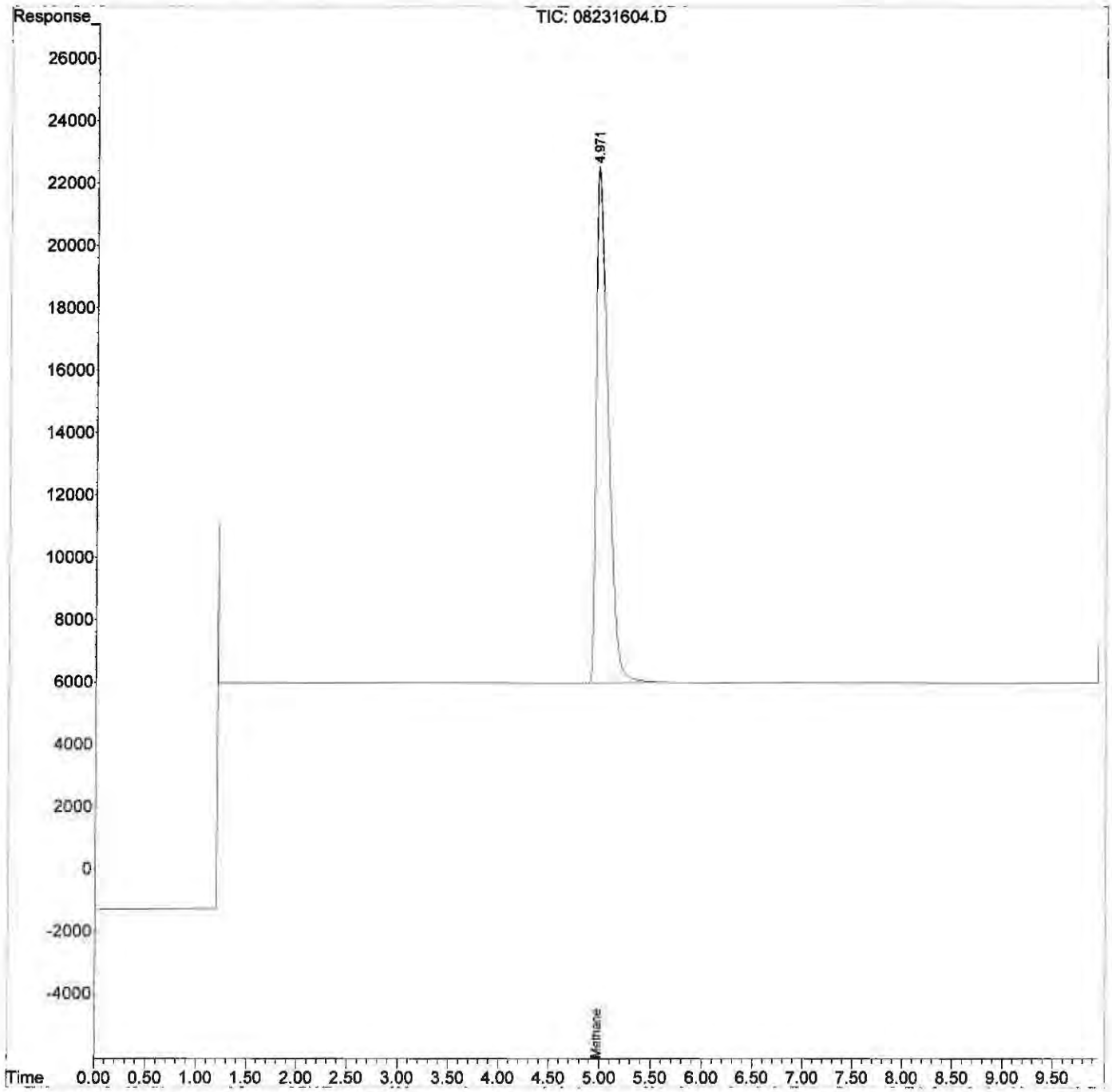
(f)=RT Delta > 1/2 Window (m)=manual int.

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

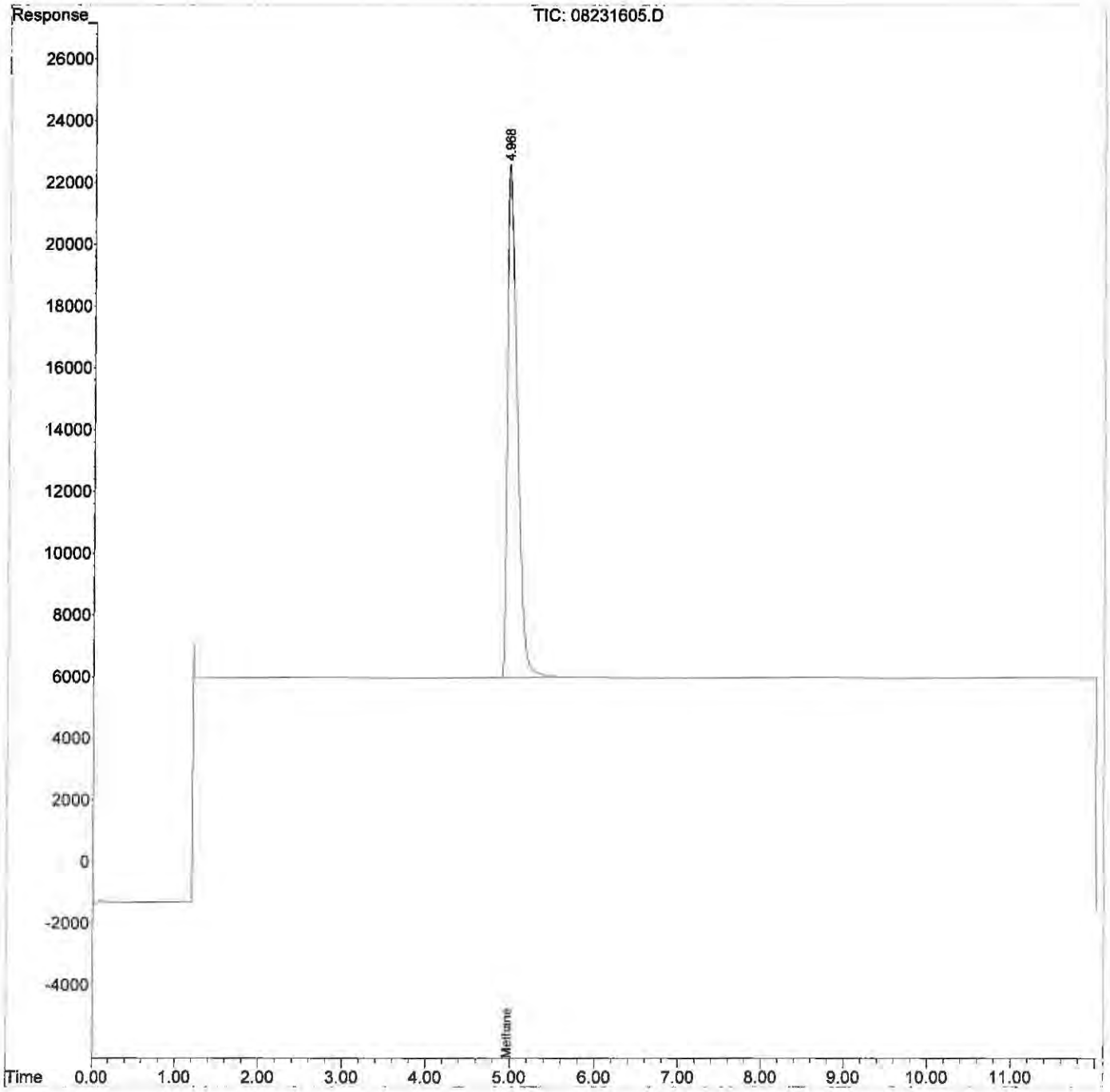
(f)=RT Delta > 1/2 Window (m)=manual int.

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

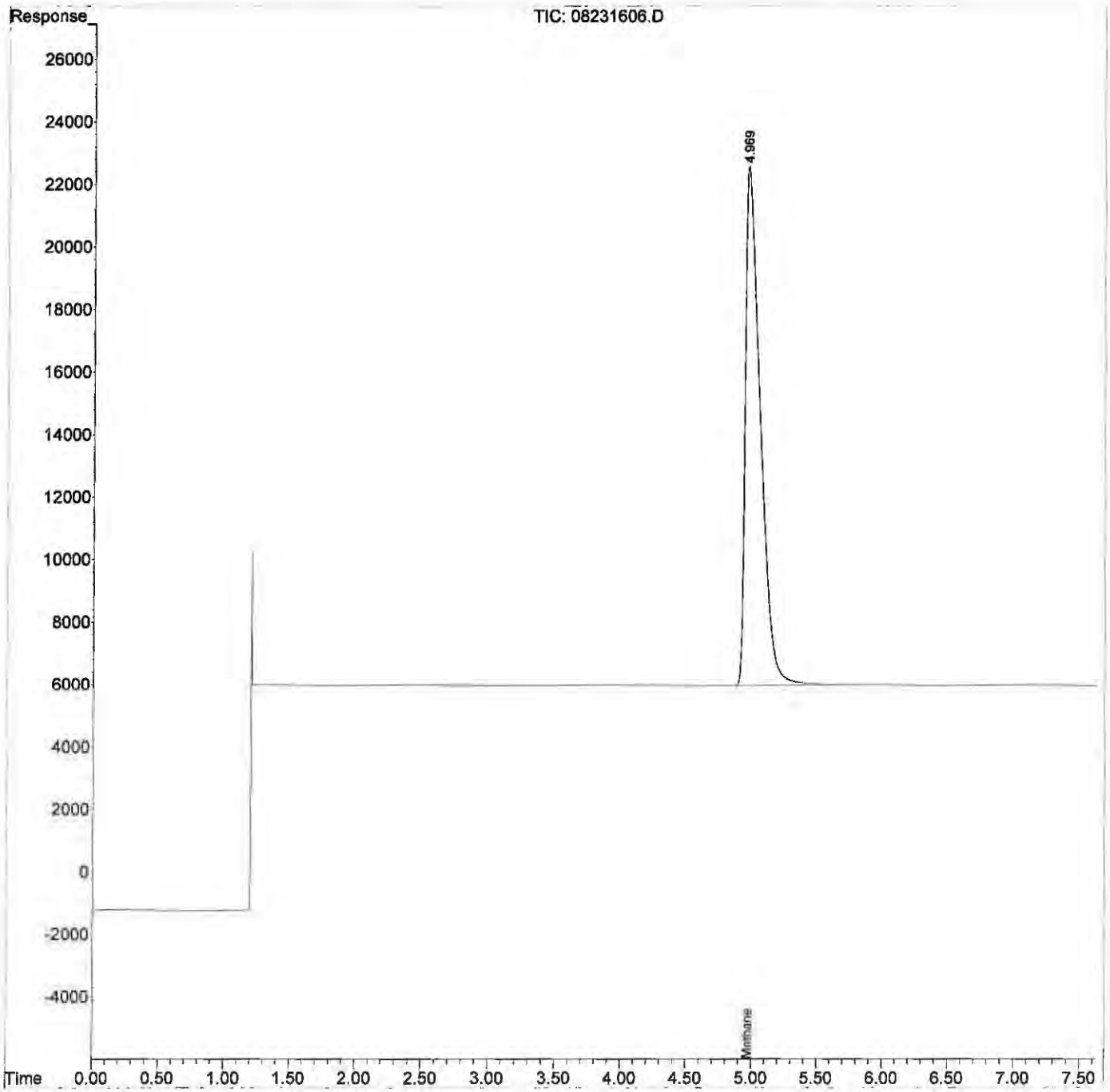
(f)=RT Delta > 1/2 Window (m)=manual int.

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 %

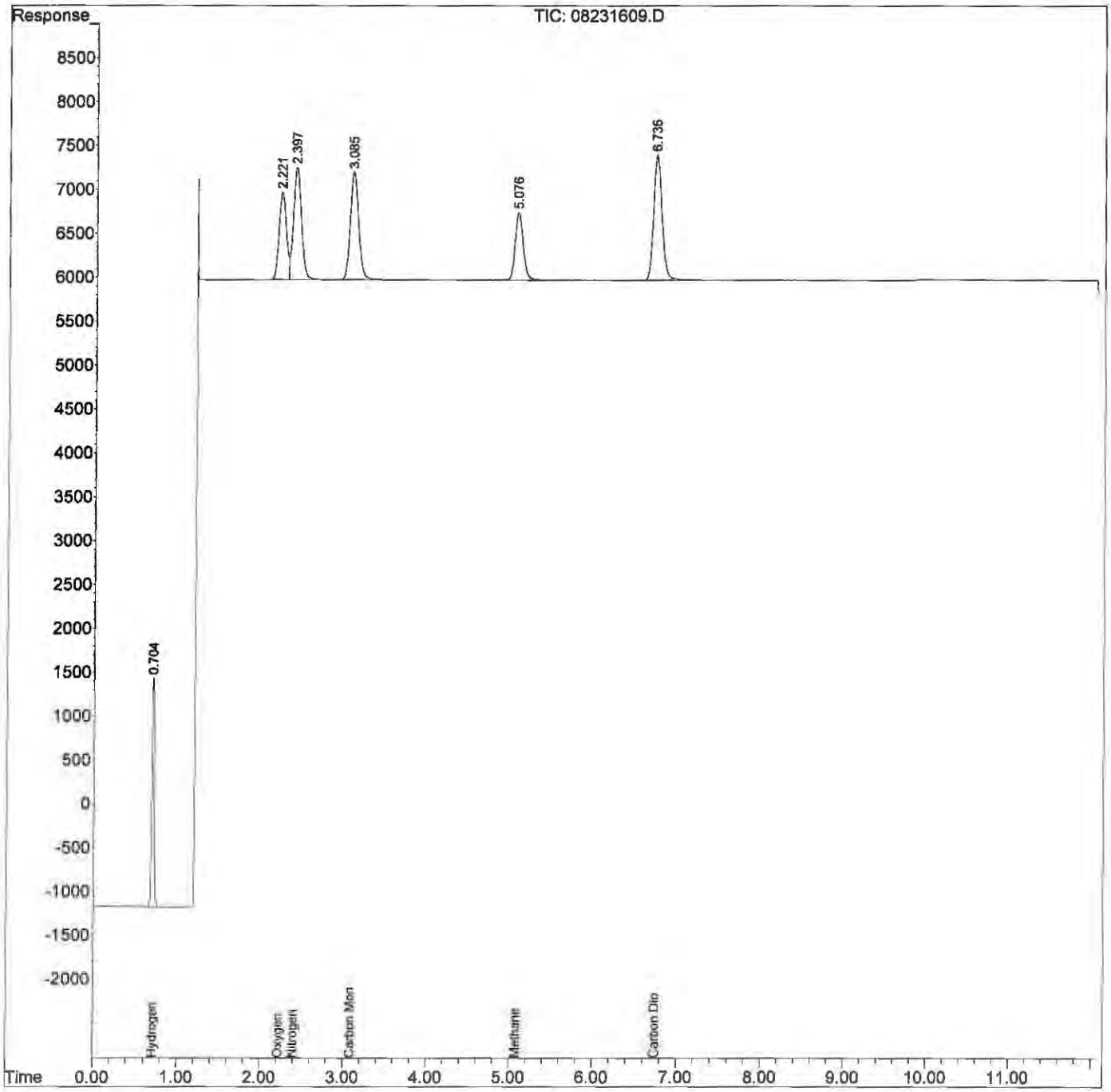
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



ALS

REPORT SUMMARYS FIXED GASES BY GC/TCD
CLIENT : Air Hygiene
Analyst : amf
PAI Job : P1604409

Printed : 9/15/2016
Instrument : GC #1 / TCD #1
Date analyzed : 9/15/2016
Sample amount : 100uL

Sample Result

Sample ID	Hydrogen	Oxygen	Nitrogen	Carbon Monoxide	Methane	Carbon Dioxide	Pi1	Pf1	Pi2	Pf2	BF
STANDARD	39625	39834	50277	50094	39804	47546					
ACTUAL	40000	40000	50000	50000	40000	50000					
% Difference	0.9%	0.4%	0.6%	0.2%	0.5%	4.9%					
Lab Air		220844	797047			415					
MB	ND	ND	ND	ND	ND	ND					
4409-001		152431	735005			34085					
4409-001		153571	741040			34473					
4409-001		153087	738320			34084					
% Difference of Average		0.4%	0.4%			0.7%					
4409-003		146959	738411			38143					
4409-003		147558	740693			38166					
4409-003		149480	750407			38911					
% Difference of Average		0.9%	0.9%			1.1%					
4409-005		156114	734218			32091					
4409-005		156427	734127			31871					
4409-005		157687	740758			32228					
% Difference of Average		0.5%	0.5%			0.6%					
4409-007		156449	744851			33122					
4409-007		155739	739700			33085					
4409-007		155655	741368			32959					
% Difference of Average		0.3%	0.4%			0.3%					
4409-009		160986	737614			29157					
4409-009		162416	744832			29400					
4409-009		162468	744506			29310					
% Difference of Average		0.5%	0.5%			0.4%					
4409-011		148023	745736			38872					
4409-011		148237	745330			38958					
4409-011		149231	751785			39342					
% Difference of Average		0.4%	0.5%			0.6%					
STANDARD	40364	40405	50174	50600	40071	48554					
ACTUAL	40000	40000	50000	50000	40000	50000					
% Difference	0.9%	1.0%	0.3%	1.2%	0.2%	2.9%					

CM 9/15/16

Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\15\
Data File : 09151601.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 8:26 am
Operator : AMF
Sample : std s30-07271601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 10:18:34 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Thu Sep 15 10:19:05 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	52815	39625.354	ppm
2)	Oxygen	2.226	61585	39834.320	ppm
3)	Nitrogen	2.401	88851	50277.669	ppm
4)	Carbon Monoxide	3.088	86897	50094.169	ppm
5)	Methane	5.079	52030	39804.837	ppm
6)	Carbon Dioxide	6.739	99723	47545.610	ppm

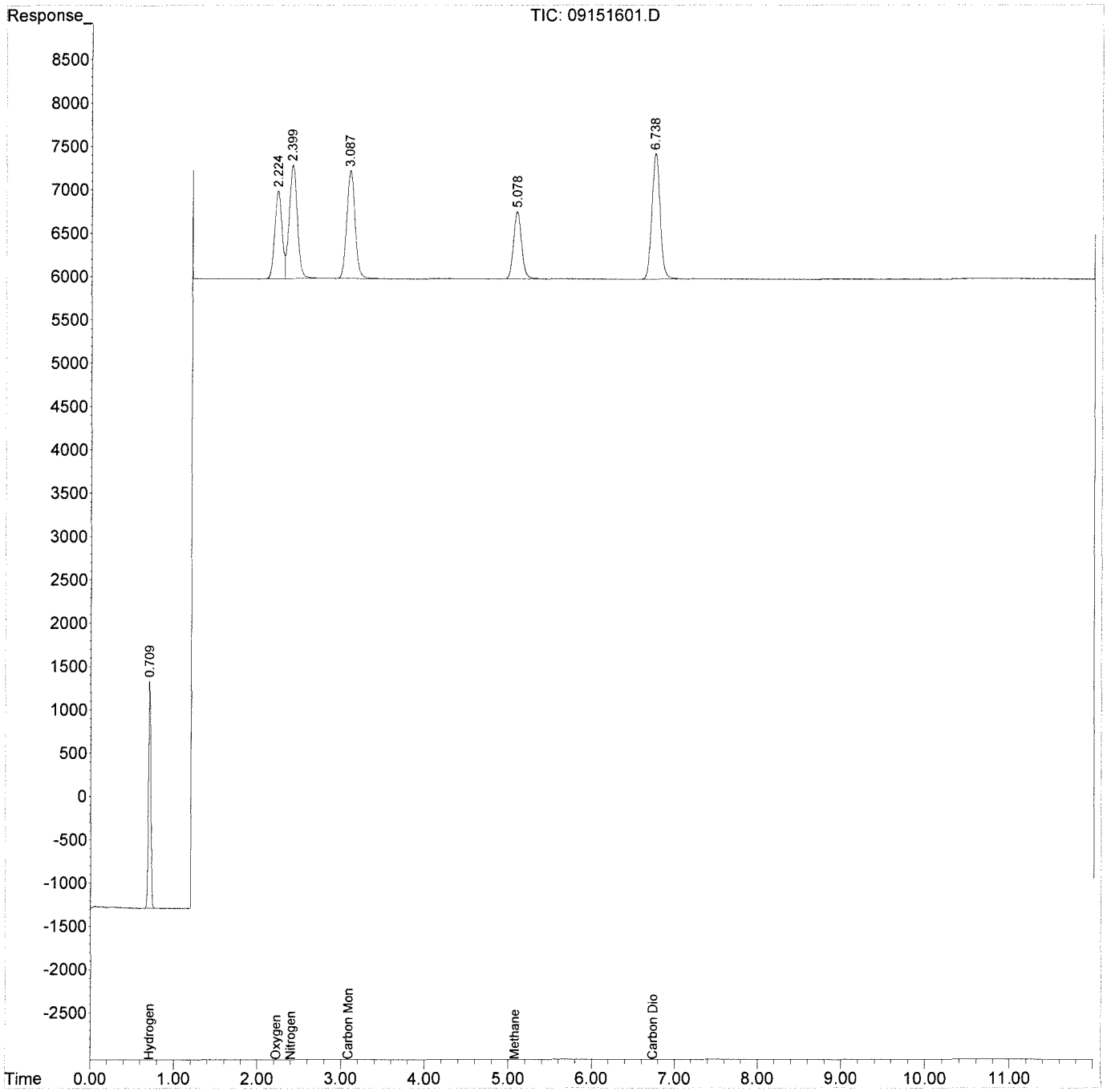
(f)=RT Delta > 1/2 Window (m)=manual int.

9/15/16

Data Path : I:\GC01\DATA\FXG\2016_09\15\
Data File : 09151601.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 8:26 am
Operator : AMF
Sample : std s30-07271601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 10:18:34 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Thu Sep 15 10:19:05 2016
Response via : Initial Calibration
Integrator: ChemStation

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



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\15\
Data File : 09151622.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 4:22 pm
Operator : AMF
Sample : std s30-07271601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 16:35:42 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	0.708	53800	40364.377	ppm
2)	Oxygen	2.217	62468	40404.890	ppm
3)	Nitrogen	2.393	88668	50174.261	ppm
4)	Carbon Monoxide	3.080	87774	50600.100	ppm
5)	Methane	5.073	52378	40071.423	ppm
6)	Carbon Dioxide	6.734	101837	48553.619	ppm

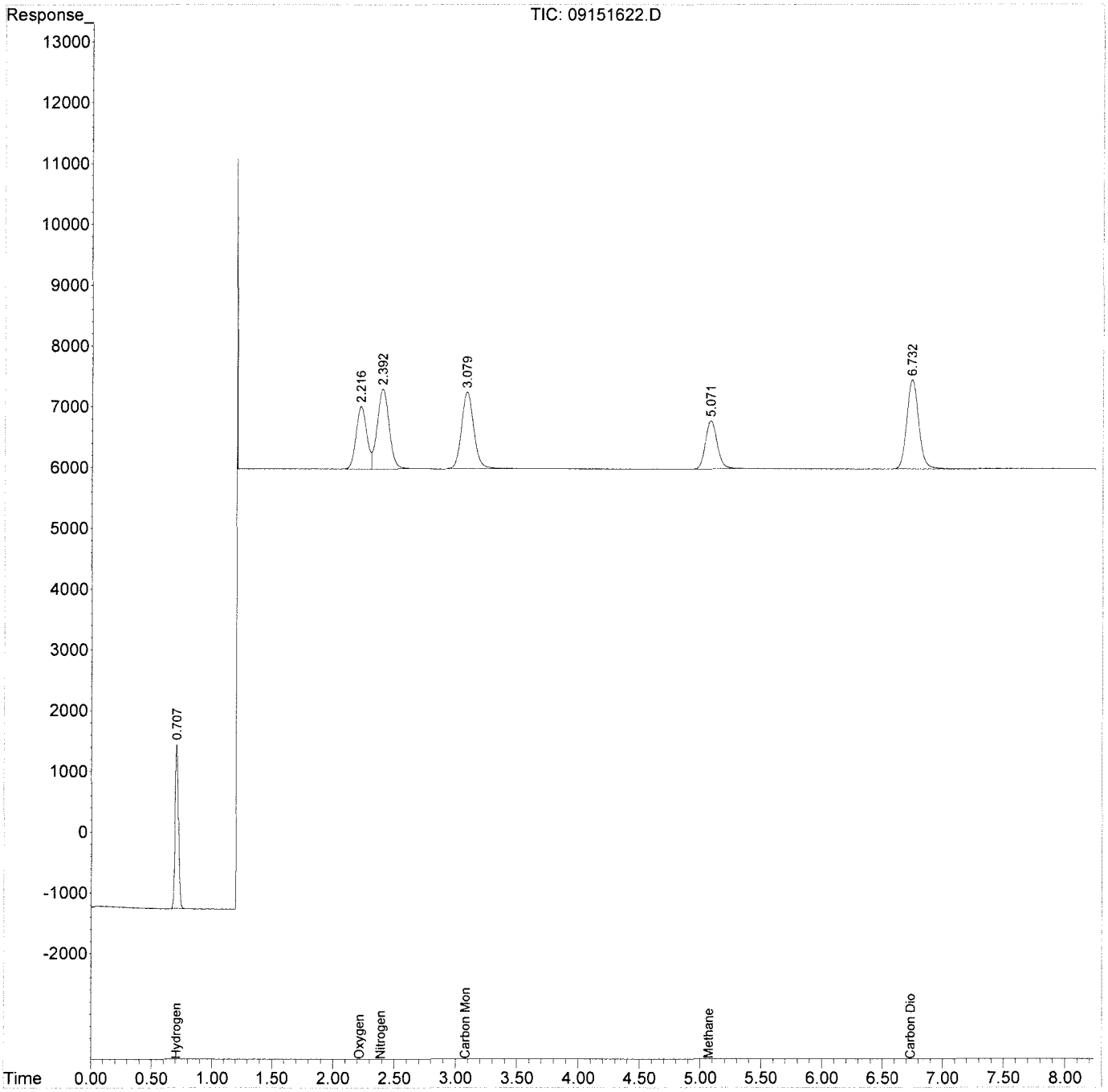
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_09\15\
Data File : 09151622.D
Signal(s) : TCD1A.CH
Acq On : 15 Sep 2016 4:22 pm
Operator : AMF
Sample : std s30-07271601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 15 16:35:42 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 :



Injection Log

Directory: I:\GC01\DATA\FXG\2016_09\15\

	Sample ID	Date/Time	Acquisition Method	File Name	Misc Info	Operator
	std s30-07271601	15 Sep 116 8:26 am	MFXGS25C.M	09151601.D		AMF
	mb	15 Sep 116 8:42 am	MFXGS25C.M	09151602.D		AMF
	lab air	15 Sep 116 9:51 am	MFXGS25C.M	09151603.D		AMF
	4409-001	15 Sep 116 10:53 am	MFXGS25C.M	09151604.D		AMF
	4409-001	15 Sep 116 11:09 am	MFXGS25C.M	09151605.D		AMF
	4409-001	15 Sep 116 11:25 am	MFXGS25C.M	09151606.D		AMF
	4409-003	15 Sep 116 11:41 am	MFXGS25C.M	09151607.D		AMF
	4409-003	15 Sep 116 12:00 pm	MFXGS25C.M	09151608.D		AMF
	4409-003	15 Sep 116 12:16 pm	MFXGS25C.M	09151609.D		AMF
	4409-005	15 Sep 116 12:51 pm	MFXGS25C.M	09151610.D		AMF
	4409-005	15 Sep 116 1:22 pm	MFXGS25C.M	09151611.D		AMF
	4409-005	15 Sep 116 1:39 pm	MFXGS25C.M	09151612.D		AMF
	4409-007	15 Sep 116 1:56 pm	MFXGS25C.M	09151613.D		AMF
	4409-007	15 Sep 116 2:12 pm	MFXGS25C.M	09151614.D		AMF
	4409-007	15 Sep 116 2:28 pm	MFXGS25C.M	09151615.D		AMF
	4409-009	15 Sep 116 2:45 pm	MFXGS25C.M	09151616.D		AMF
	4409-009	15 Sep 116 3:02 pm	MFXGS25C.M	09151617.D		AMF
	4409-009	15 Sep 116 3:18 pm	MFXGS25C.M	09151618.D		AMF
	4409-011	15 Sep 116 3:34 pm	MFXGS25C.M	09151619.D		AMF
	4409-011	15 Sep 116 3:50 pm	MFXGS25C.M	09151620.D		AMF
	4409-011	15 Sep 116 4:06 pm	MFXGS25C.M	09151621.D		AMF
	std s30-07271601	15 Sep 116 4:22 pm	MFXGS25C.M	09151622.D		AMF

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

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LABORATORY REPORT

October 7, 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 September 17, 2016. For your reference, these analyses have been assigned our service request number P1604449.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Kelly Horiuchi at 11:48 am, Oct 07, 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: P1604449

CASE NARRATIVE

The samples were received intact under chain of custody on September 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.

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.

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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: P1604449

Date Received: 9/17/2016
Time Received: 11:50

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	3C Modified - Fxd Gases Bag 2X
R1-0-30-0%-SCD-48	P1604449-001	Air	9/14/2016	00:00	X
R2-0-30-0%-SCD-48	P1604449-003	Air	9/14/2016	00:00	X
R3-0-30-0%-SCD-48	P1604449-005	Air	9/15/2016	00:00	X
R4-30-70-30%-SCD-48	P1604449-007	Air	9/15/2016	00:00	X
R5-30-70-30%-SCD-48	P1604449-009	Air	9/15/2016	00:00	X
R6-30-70-30%-SCD-48	P1604449-011	Air	9/15/2016	00:00	X

P1604449

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-16-elkcity.ok-comp#1	Laboratory Analysis Requested:	Method 3C
Person Taking Samples:	DA		

	Sample Number	Location	Date	Volume	Analysis Method			
					O_2	CO_2	Methane	
1	R1-0-30-0%-SCD-48	Elk City Facility	9/14/2016	10	x	x	x	
2	R1-0-30-0%-SCD-48-Backup	Elk City Facility	9/14/2016	5	x	x	x	
3	R2-0-30-0%-SCD-48	Elk City Facility	9/14/2016	10	x	x	x	
4	R2-0-30-0%-SCD-48-Backup	Elk City Facility	9/14/2016	5	x	x	x	
5	R3-0-30-0%-SCD-48	Elk City Facility	9/15/2016	10	x	x	x	
6	R3-0-30-0%-SCD-48-Backup	Elk City Facility	9/15/2016	5	x	x	x	
7	R4-30-70-30%-SCD-48	Elk City Facility	9/15/2016	10	x	x	x	
8	R4-30-70-30%-SCD-48-Backup	Elk City Facility	9/15/2016	5	x	x	x	
9	R5-30-70-30%-SCD-48	Elk City Facility	9/15/2016	10	x	x	x	
10	R5-30-70-30%-SCD-48-Backup	Elk City Facility	9/15/2016	5	x	x	x	
11	R6-30-70-30%-SCD-48	Elk City Facility	9/15/2016	10	x	x	x	
12	R6-30-70-30%-SCD-48-Backup	Elk City Facility	9/15/2016	5	x	x	x	

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
	9/15/16	18:40	FedEx		
FedEx			Sue Anderson	09/17/16	1150

/ of Chain of Custody-SCD

ALS Environmental
Sample Acceptance Check Form

Client: Air Hygiene, Incorporated Work order: P1604449
Project: sfi-16-elkcity.ok-comp#1
Sample(s) received on: 9/17/16 Date opened: 9/17/16 by: SANDERSON

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
P1604449-001.01	10 L Tedlar Bag					
P1604449-002.01	5.0 L Tedlar Bag					
P1604449-003.01	10 L Tedlar Bag					
P1604449-004.01	5.0 L Tedlar Bag					
P1604449-005.01	10 L Tedlar Bag					
P1604449-006.01	5.0 L Tedlar Bag					
P1604449-007.01	10 L Tedlar Bag					
P1604449-008.01	5.0 L Tedlar Bag					
P1604449-009.01	10 L Tedlar Bag					
P1604449-010.01	5.0 L Tedlar Bag					
P1604449-011.01	10 L Tedlar Bag					
P1604449-012.01	5.0 L Tedlar Bag					

Explain any discrepancies: (include lab sample ID numbers):
Chain of Custody is missing time collected

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-48** ALS Project ID: P1604449
Client Project ID: **sfi-16-elkcity.ok-comp#1** ALS Sample ID: P1604449-001

Test Code: EPA Method 3C Modified Date Collected: 9/14/16
Instrument ID: Agilent 7890A/GC20/FID Date Received: 9/17/16
Analyst: Mike Conejo Date Analyzed: 9/17/16
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***	**16.5**	0.10	
7727-37-9	**Nitrogen**	**80.1**	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	**Carbon Dioxide**	**3.37**	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: **R2-0-30-0%-SCD-48** ALS Project ID: P1604449
Client Project ID: **sfi-16-elkcity.ok-comp#1** ALS Sample ID: P1604449-003

Test Code: EPA Method 3C Modified Date Collected: 9/14/16
Instrument ID: Agilent 7890A/GC20/FID Date Received: 9/17/16
Analyst: Mike Conejo Date Analyzed: 9/17/16
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***	**16.6**	0.10	
7727-37-9	**Nitrogen**	**80.1**	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	**Carbon Dioxide**	**3.34**	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: **R3-0-30-0%-SCD-48** ALS Project ID: P1604449
Client Project ID: **sfi-16-elkcity.ok-comp#1** ALS Sample ID: P1604449-005

Test Code: EPA Method 3C Modified Date Collected: 9/15/16
Instrument ID: Agilent 7890A/GC20/FID Date Received: 9/17/16
Analyst: Mike Conejo Date Analyzed: 9/17/16
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***	**17.2**	0.10	
7727-37-9	**Nitrogen**	**79.9**	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	**Carbon Dioxide**	**2.92**	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-48** ALS Project ID: P1604449
Client Project ID: **sfi-16-elkcity.ok-comp#1** ALS Sample ID: P1604449-007

Test Code: EPA Method 3C Modified Date Collected: 9/15/16
Instrument ID: Agilent 7890A/GC20/FID Date Received: 9/17/16
Analyst: Mike Conejo Date Analyzed: 9/17/16
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***	**15.0**	0.10	
7727-37-9	**Nitrogen**	**80.5**	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	**Carbon Dioxide**	**4.42**	0.10	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
* = The oxygen result may include argon due to coelution. Ambient air includes 0.93% argon.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **R5-30-70-30%-SCD-48** ALS Project ID: P1604449
Client Project ID: **sfi-16-elkcity.ok-comp#1** ALS Sample ID: P1604449-009

Test Code: EPA Method 3C Modified Date Collected: 9/15/16
Instrument ID: Agilent 7890A/GC20/FID Date Received: 9/17/16
Analyst: Mike Conejo Date Analyzed: 9/17/16
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***	**16.0**	0.10	
7727-37-9	**Nitrogen**	**80.2**	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	**Carbon Dioxide**	**3.75**	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: **R6-30-70-30%-SCD-48** ALS Project ID: P1604449
Client Project ID: **sfi-16-elkcity.ok-comp#1** ALS Sample ID: P1604449-011

Test Code: EPA Method 3C Modified Date Collected: 9/15/16
Instrument ID: HP5890 II/GC1/FID/TCD Date Received: 9/17/16
Analyst: Mike Conejo Date Analyzed: 9/17/16
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***	**14.7**	0.10	
7727-37-9	**Nitrogen**	**80.3**	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	**Carbon Dioxide**	**4.96**	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: P1604449
Client Project ID: **sfi-16-elkcity.ok-comp#1** ALS Sample ID: P160917-MB

Test Code: EPA Method 3C Modified Date Collected: NA
Instrument ID: HP5890 II/GC1/FID/TCD Date Received: NA
Analyst: Mike Conejo Date Analyzed: 9/17/16
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

RESULTS OF ANALYSIS

Client: **Air Hygiene, Incorporated**
Client Sample ID: **Method Blank** ALS Project ID: P1604449
Client Project ID: **sfi-16-elkcity.ok-comp#1** ALS Sample ID: P160917-MB

Test Code: EPA Method 3C Modified Date Collected: NA
Instrument ID: Agilent 7890A/GC20/FID Date Received: NA
Analyst: Mike Conejo Date Analyzed: 9/17/16
Sample Type: 10 L Tedlar Bag Volume(s) Analyzed: 0.10 ml(s)
Test Notes:

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
7782-44-7	Oxygen*	ND	0.10	
7727-37-9	Nitrogen	ND	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	Carbon Dioxide	ND	0.10	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
* = The oxygen result may include argon due to coelution. Ambient air includes 0.93% argon.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\17\
Data File : 09171626.d
Signal(s) : TCD1B.ch
Acq On : 17 Sep 2016 1:29 pm
Operator : MC
Sample : 4449-001
Misc :
ALS Vial : 26 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 13:36:23 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	1.439	60077228	101343.893	ppm
3)	Nitrogen	1.508	324557296	490673.199	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	5.049	18632529	20641.183	ppm

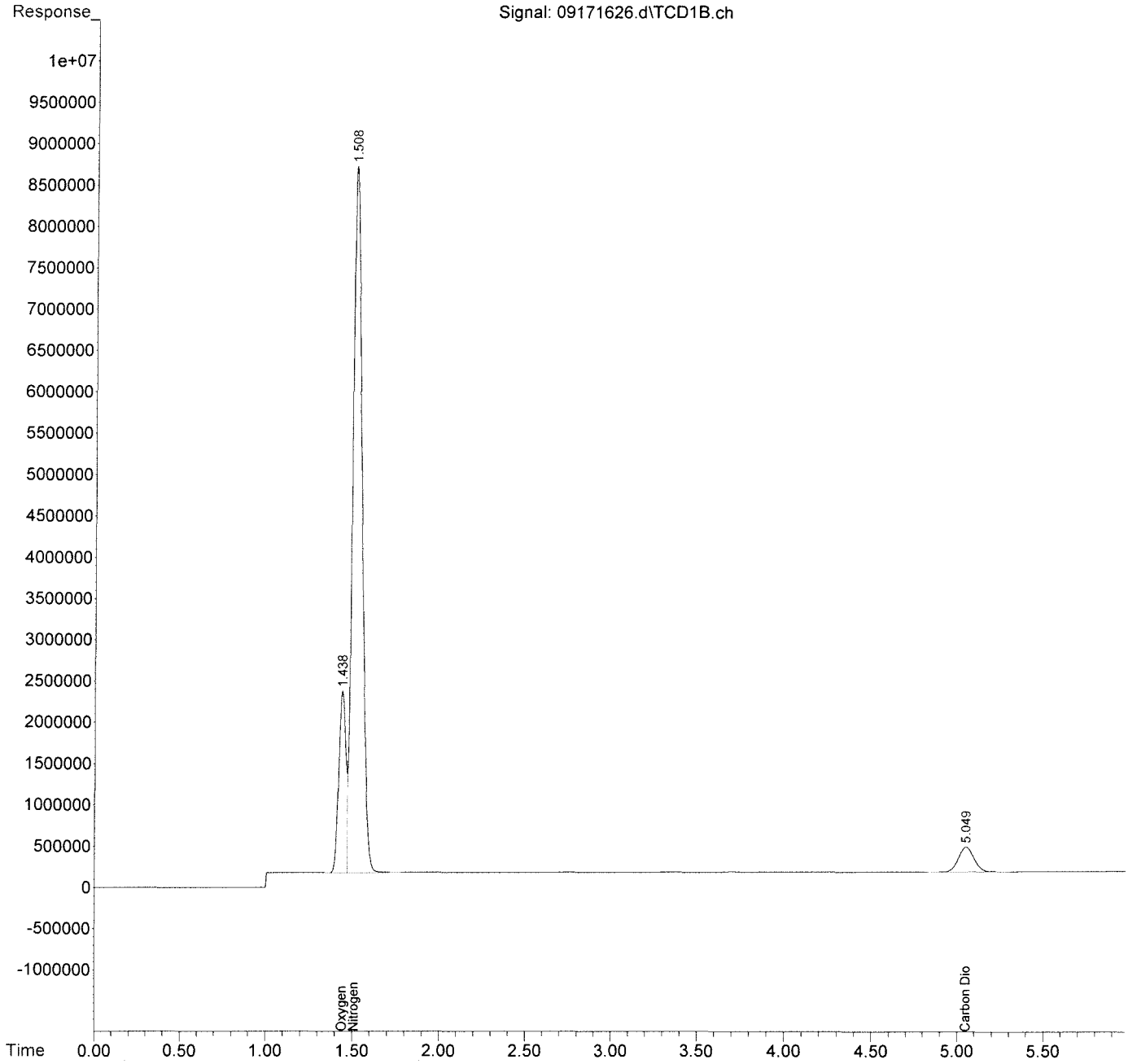
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\17\
Data File : 09171626.d
Signal(s) : TCD1B.ch
Acq On : 17 Sep 2016 1:29 pm
Operator : MC
Sample : 4449-001
Misc :
ALS Vial : 26 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 13:36:23 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\17\
Data File : 09171627.d
Signal(s) : TCD1B.ch
Acq On : 17 Sep 2016 1:38 pm
Operator : MC
Sample : 4449-001
Misc :
ALS Vial : 27 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 13:45:52 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	1.439	60946907	102810.948	ppm
3)	Nitrogen	1.508	329518375	498173.472	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	5.049	18938147	20979.747	ppm

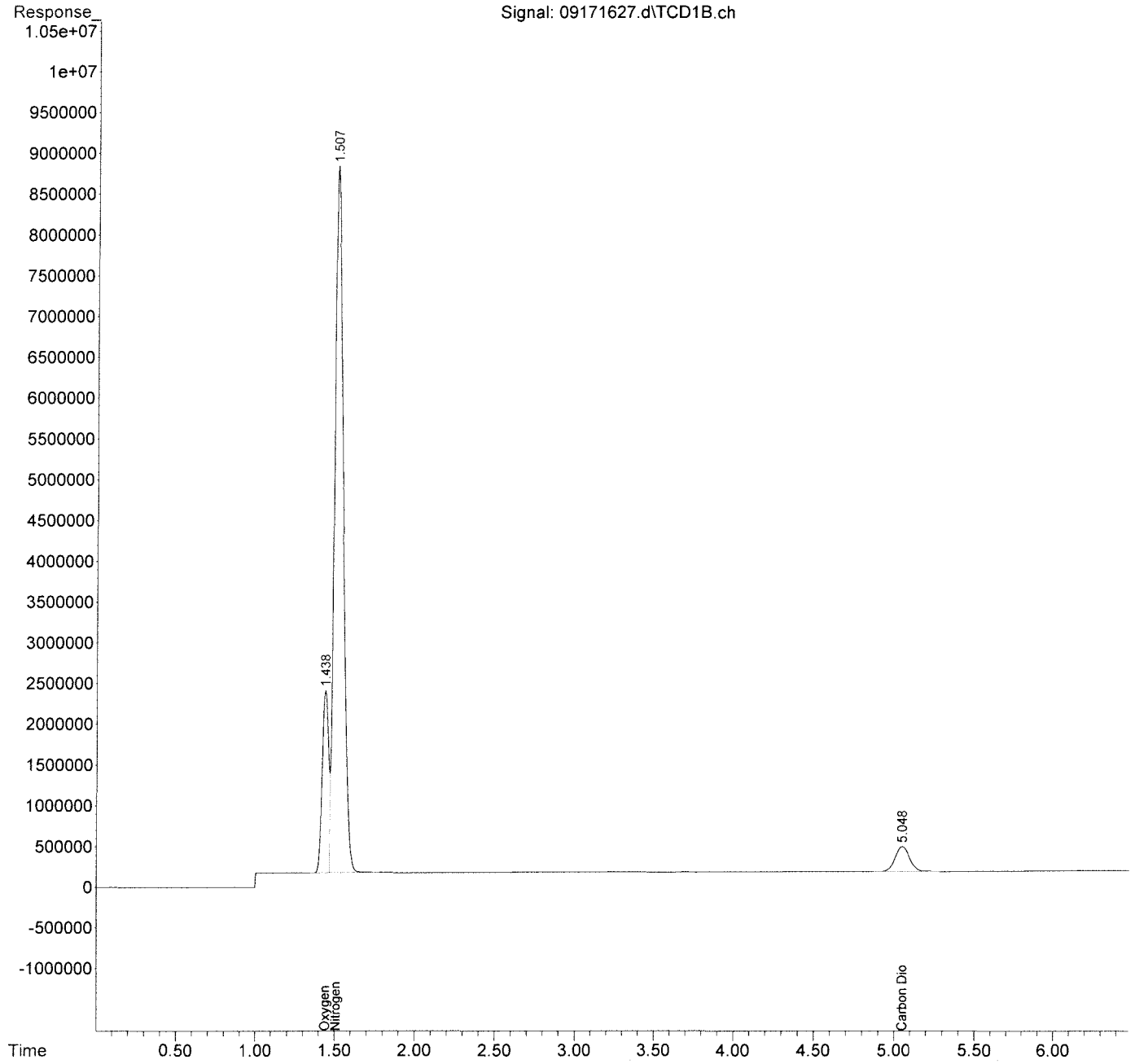
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\17\
Data File : 09171627.d
Signal(s) : TCD1B.ch
Acq On : 17 Sep 2016 1:38 pm
Operator : MC
Sample : 4449-001
Misc :
ALS Vial : 27 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 13:45:52 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\17\
Data File : 09171628.d
Signal(s) : TCD1B.ch
Acq On : 17 Sep 2016 1:48 pm
Operator : MC
Sample : 4449-001
Misc :
ALS Vial : 28 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 13:55:04 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	1.439	63528149	107165.229	ppm
3)	Nitrogen	1.507	343898926	519914.320	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	5.049	19759557	21889.708	ppm

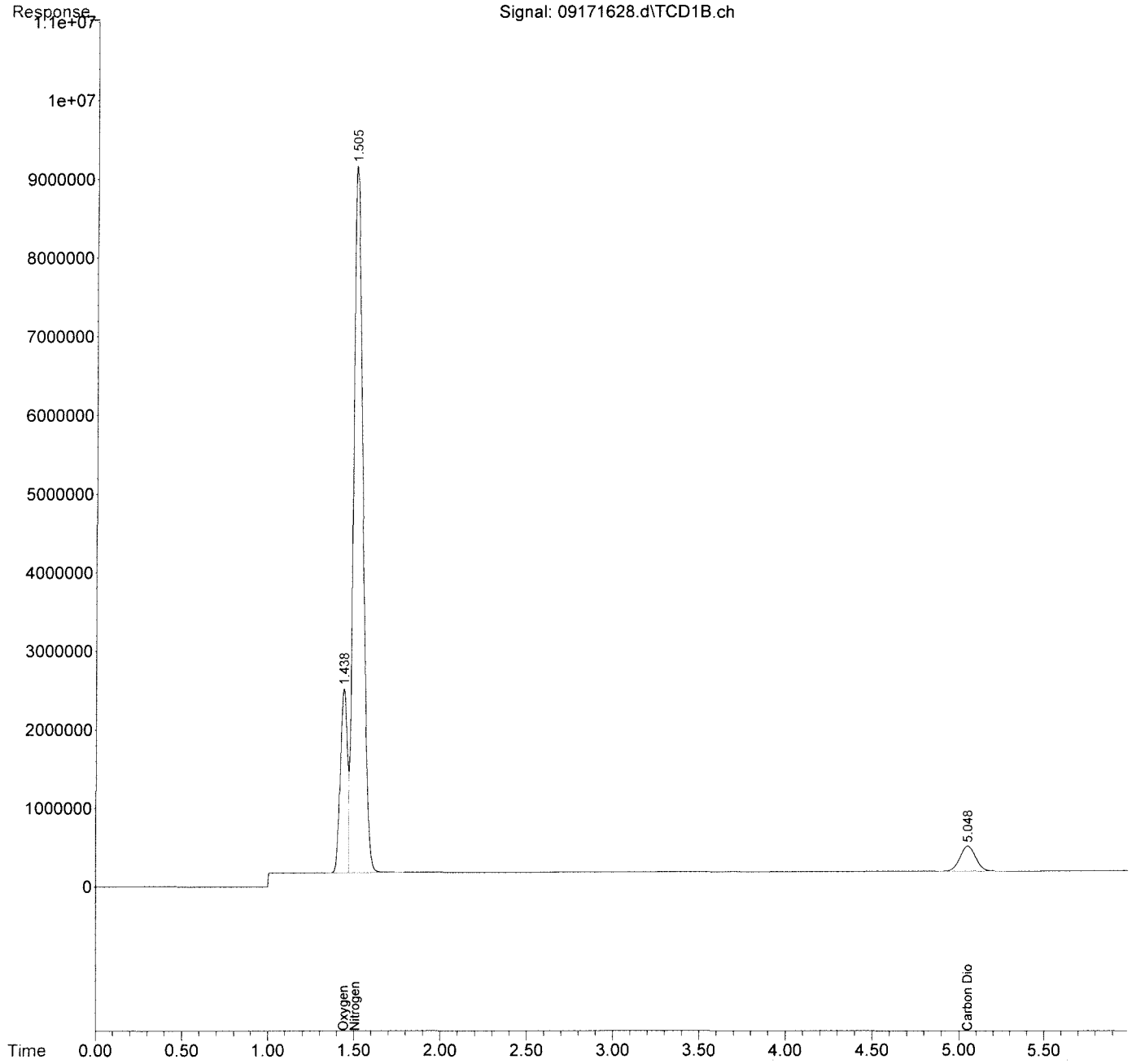
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\17\
Data File : 09171628.d
Signal(s) : TCD1B.ch
Acq On : 17 Sep 2016 1:48 pm
Operator : MC
Sample : 4449-001
Misc :
ALS Vial : 28 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 13:55:04 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\17\
Data File : 09171629.d
Signal(s) : TCD1B.ch
Acq On : 17 Sep 2016 1:57 pm
Operator : MC
Sample : 4449-003
Misc :
ALS Vial : 29 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 14:04:08 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.000	0	N.D.	ppm	d
2)	Oxygen	1.439	61937265	104481.577	ppm	
3)	Nitrogen	1.507	334134810	505152.705	ppm	
4)	Carbon Monoxide	0.000	0	N.D.	ppm	
5)	Methane	0.000	0	N.D.	ppm	
6)	Carbon Dioxide	5.049	19031998	21083.716	ppm	

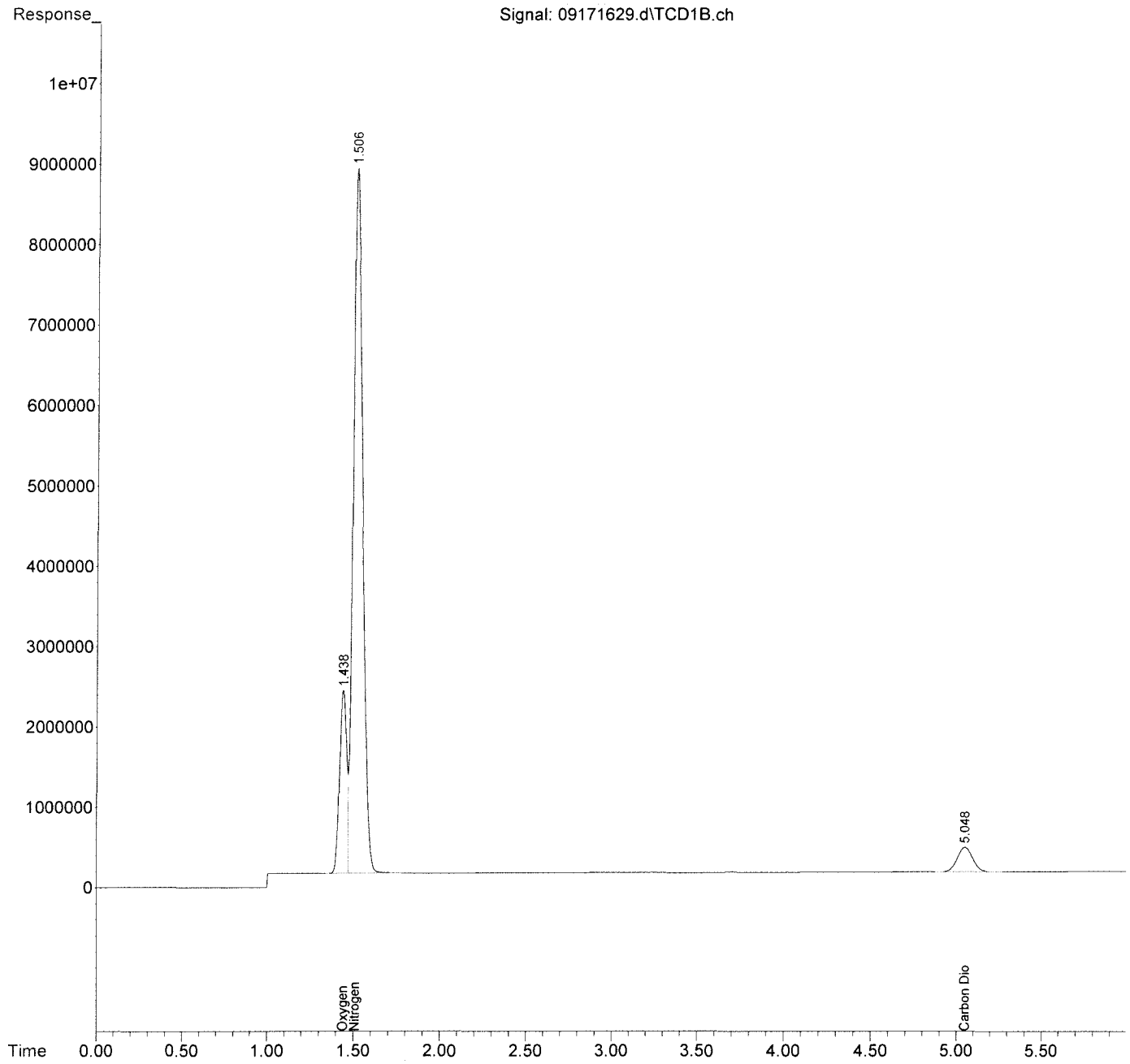
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\17\
Data File : 09171629.d
Signal(s) : TCD1B.ch
Acq On : 17 Sep 2016 1:57 pm
Operator : MC
Sample : 4449-003
Misc :
ALS Vial : 29 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 14:04:08 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\17\
Data File : 09171630.d
Signal(s) : TCD1B.ch
Acq On : 17 Sep 2016 2:05 pm
Operator : MC
Sample : 4449-003
Misc :
ALS Vial : 30 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 14:14:01 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	1.438	64224029	108339.105	ppm
3)	Nitrogen	1.506	346753510	524229.946	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	5.049	19758514	21888.553	ppm

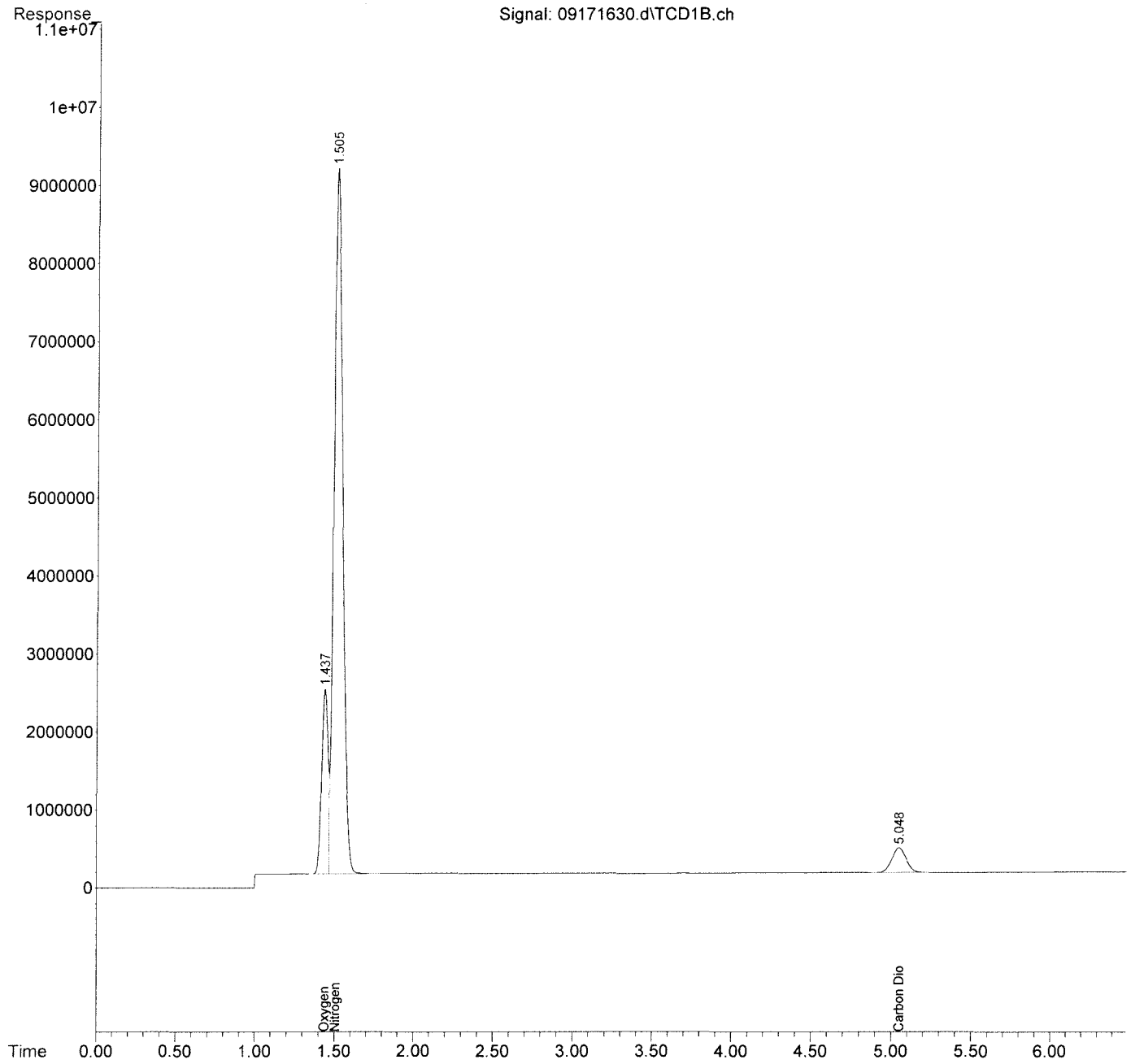
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\17\
Data File : 09171630.d
Signal(s) : TCD1B.ch
Acq On : 17 Sep 2016 2:05 pm
Operator : MC
Sample : 4449-003
Misc :
ALS Vial : 30 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 14:14:01 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\17\
Data File : 09171631.d
Signal(s) : TCD1B.ch
Acq On : 17 Sep 2016 2:15 pm
Operator : MC
Sample : 4449-003
Misc :
ALS Vial : 31 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 14:22:08 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	1.438	63517901	107147.942	ppm
3)	Nitrogen	1.506	342892600	518392.934	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	5.049	19550426	21658.032	ppm

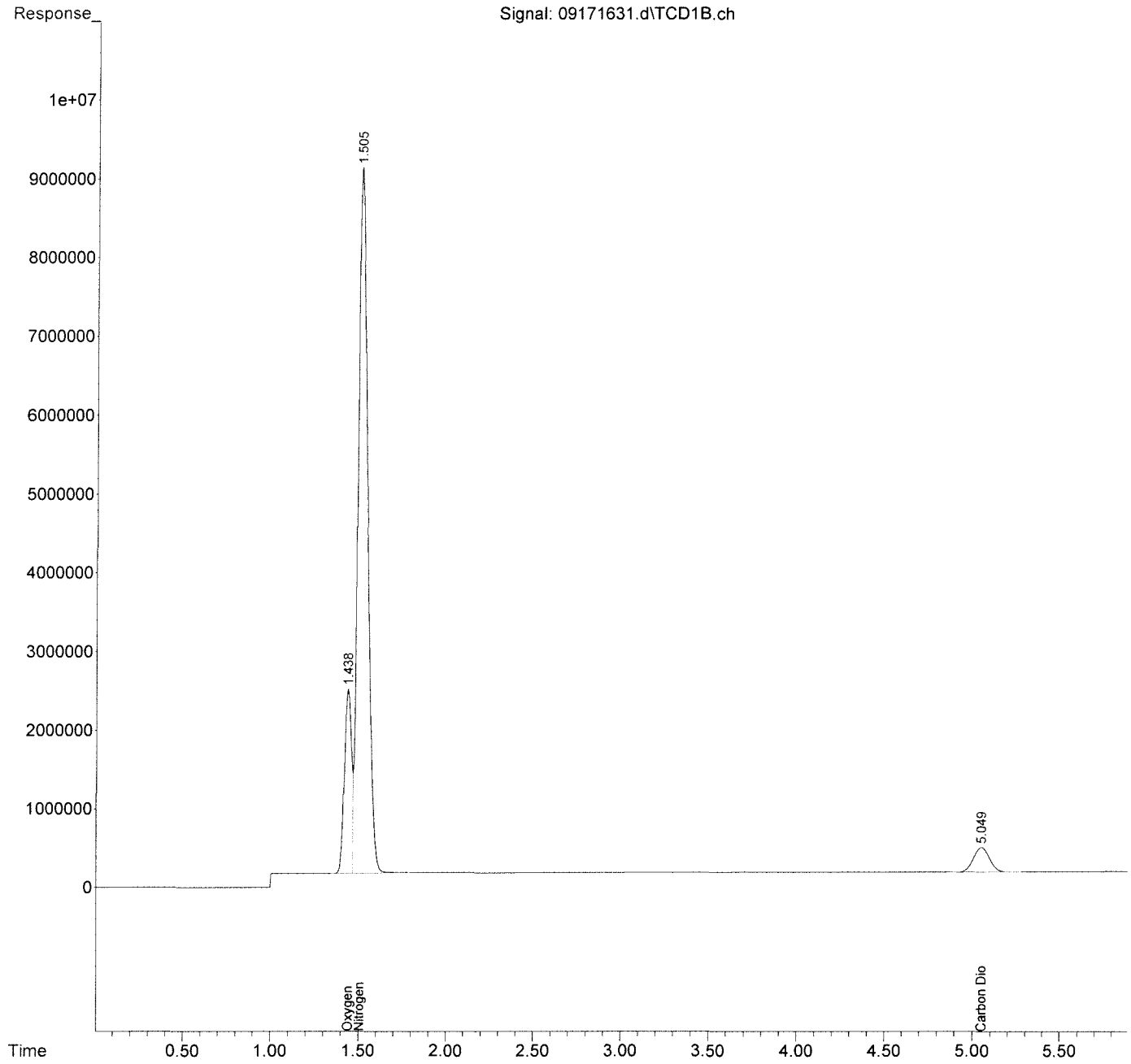
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\17\
Data File : 09171631.d
Signal(s) : TCD1B.ch
Acq On : 17 Sep 2016 2:15 pm
Operator : MC
Sample : 4449-003
Misc :
ALS Vial : 31 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 14:22:08 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\17\
Data File : 09171632.d
Signal(s) : TCD1B.ch
Acq On : 17 Sep 2016 2:24 pm
Operator : MC
Sample : 4449-005
Misc :
ALS Vial : 32 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 14:46:50 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	1.439	62180116	104891.241	ppm
3)	Nitrogen	1.509	322591125	487700.696	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	5.050	16091157	17825.841	ppm

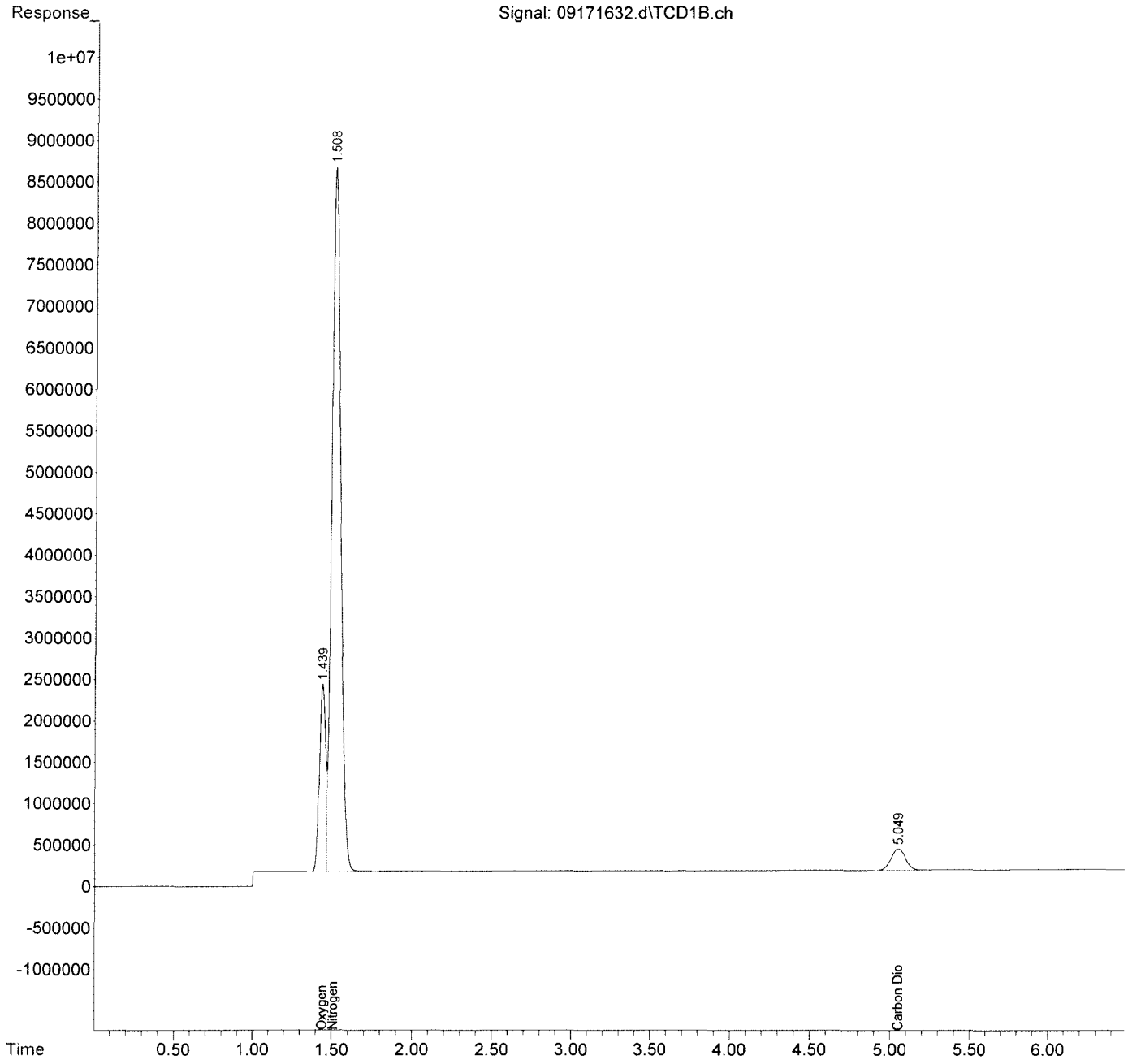
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\17\
Data File : 09171632.d
Signal(s) : TCD1B.ch
Acq On : 17 Sep 2016 2:24 pm
Operator : MC
Sample : 4449-005
Misc :
ALS Vial : 32 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 14:46:50 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\17\
Data File : 09171633.d
Signal(s) : TCD1B.ch
Acq On : 17 Sep 2016 2:44 pm
Operator : MC
Sample : 4449-005
Misc :
ALS Vial : 33 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 14:56:56 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	1.438	65118841	109848.557	ppm
3)	Nitrogen	1.507	338689471	512038.546	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	5.049	16928448	18753.396	ppm

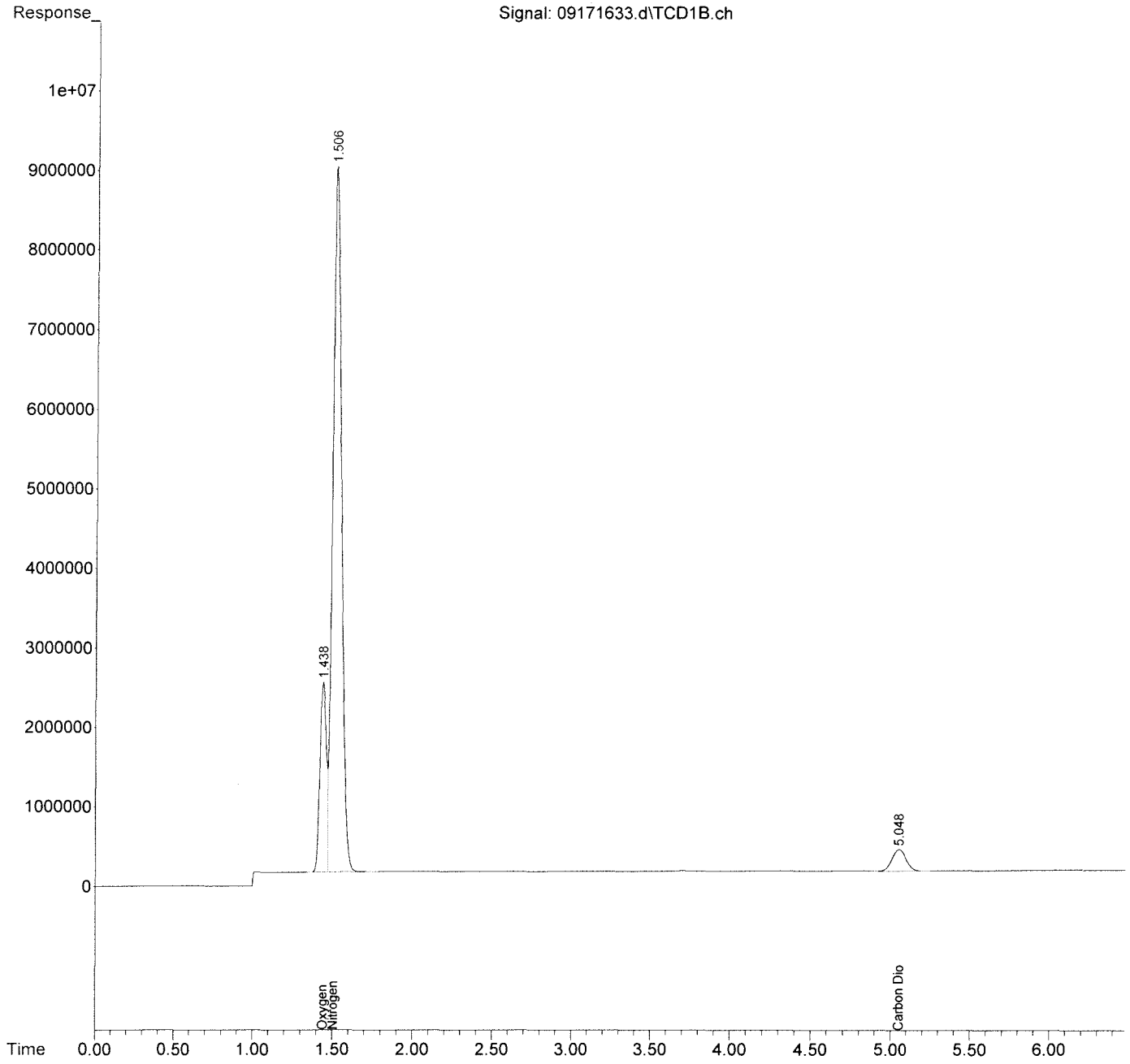
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\17\
Data File : 09171633.d
Signal(s) : TCD1B.ch
Acq On : 17 Sep 2016 2:44 pm
Operator : MC
Sample : 4449-005
Misc :
ALS Vial : 33 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 14:56:56 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\17\
Data File : 09171634.d
Signal(s) : TCD1B.ch
Acq On : 17 Sep 2016 2:54 pm
Operator : MC
Sample : 4449-005
Misc :
ALS Vial : 34 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 15:03:08 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	1.439	63026208	106318.508	ppm
3)	Nitrogen	1.508	327395433	494963.960	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	5.049	16362166	18126.066	ppm

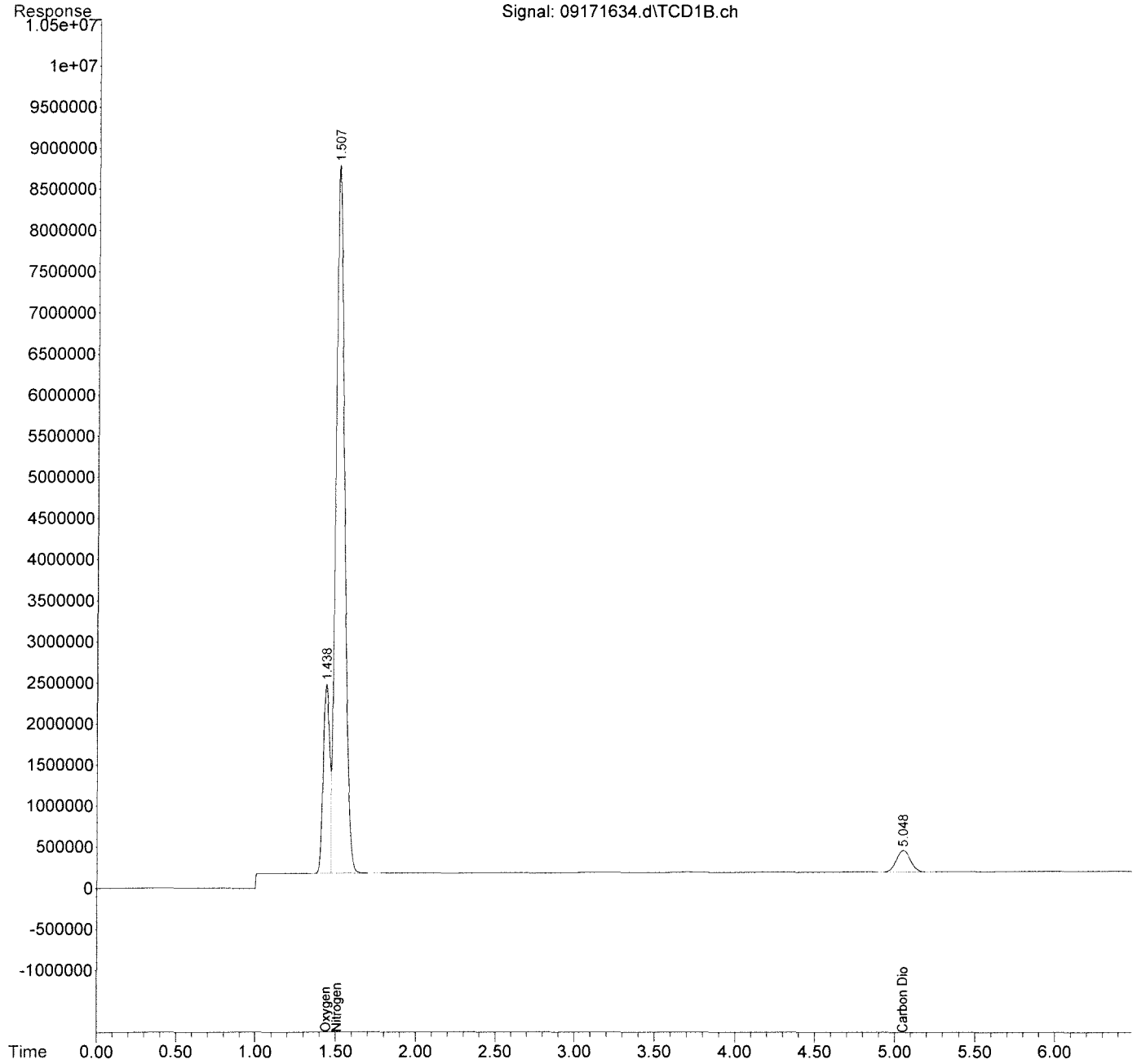
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\17\
Data File : 09171634.d
Signal(s) : TCD1B.ch
Acq On : 17 Sep 2016 2:54 pm
Operator : MC
Sample : 4449-005
Misc :
ALS Vial : 34 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 15:03:08 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\17\
Data File : 09171635.d
Signal(s) : TCD1B.ch
Acq On : 17 Sep 2016 3:04 pm
Operator : MC
Sample : 4449-007
Misc :
ALS Vial : 35 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 15:11:21 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	1.439	56636097	95539.071	ppm
3)	Nitrogen	1.507	338767401	512156.363	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	5.048	25332087	28062.977	ppm

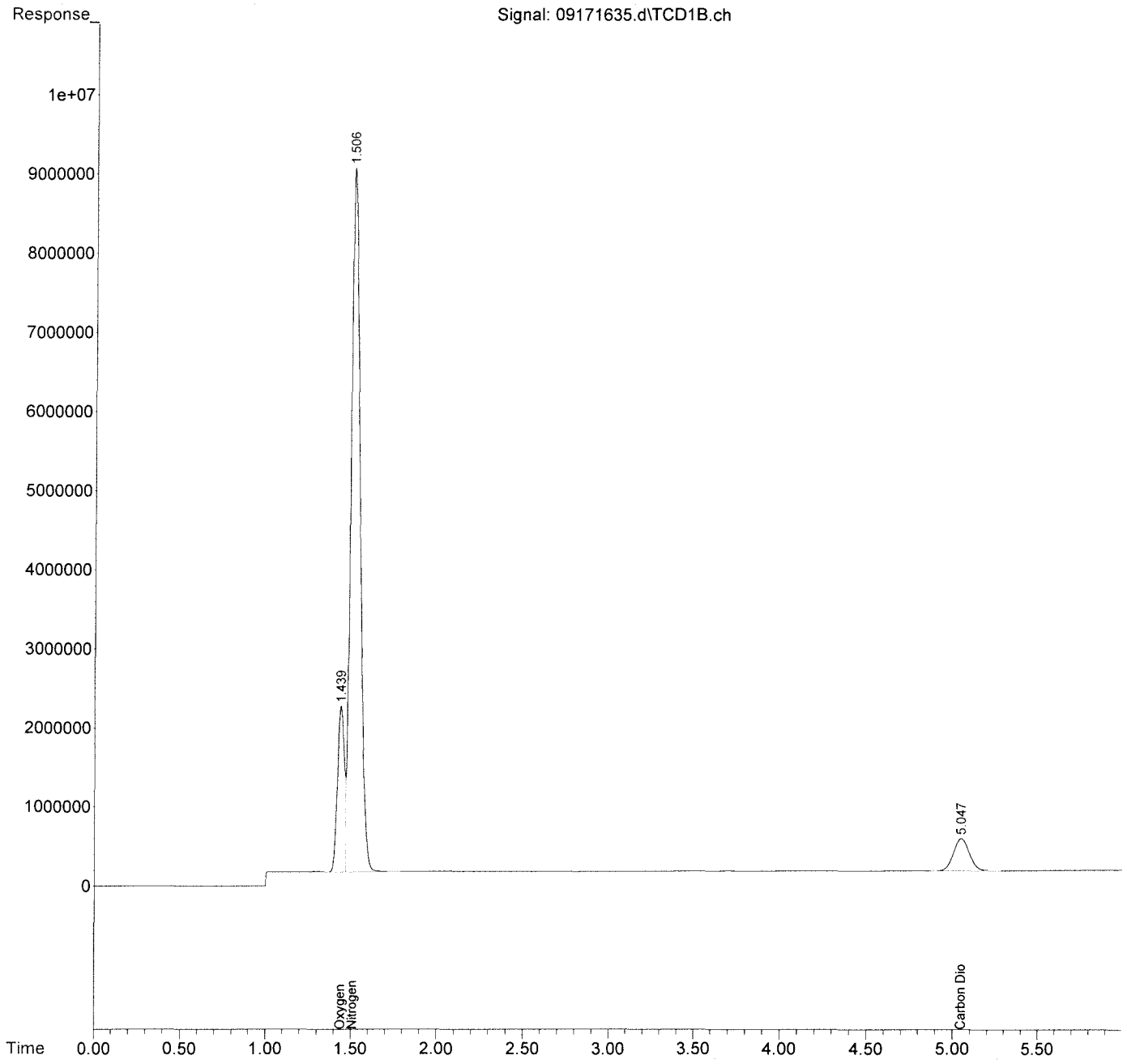
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\17\
Data File : 09171635.d
Signal(s) : TCD1B.ch
Acq On : 17 Sep 2016 3:04 pm
Operator : MC
Sample : 4449-007
Misc :
ALS Vial : 35 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 15:11:21 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\17\
Data File : 09171636.d
Signal(s) : TCD1B.ch
Acq On : 17 Sep 2016 3:13 pm
Operator : MC
Sample : 4449-007
Misc :
ALS Vial : 36 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 15:21:32 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	1.439	56540091	95377.119	ppm
3)	Nitrogen	1.507	338189642	511282.894	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	5.048	25300154	28027.601	ppm

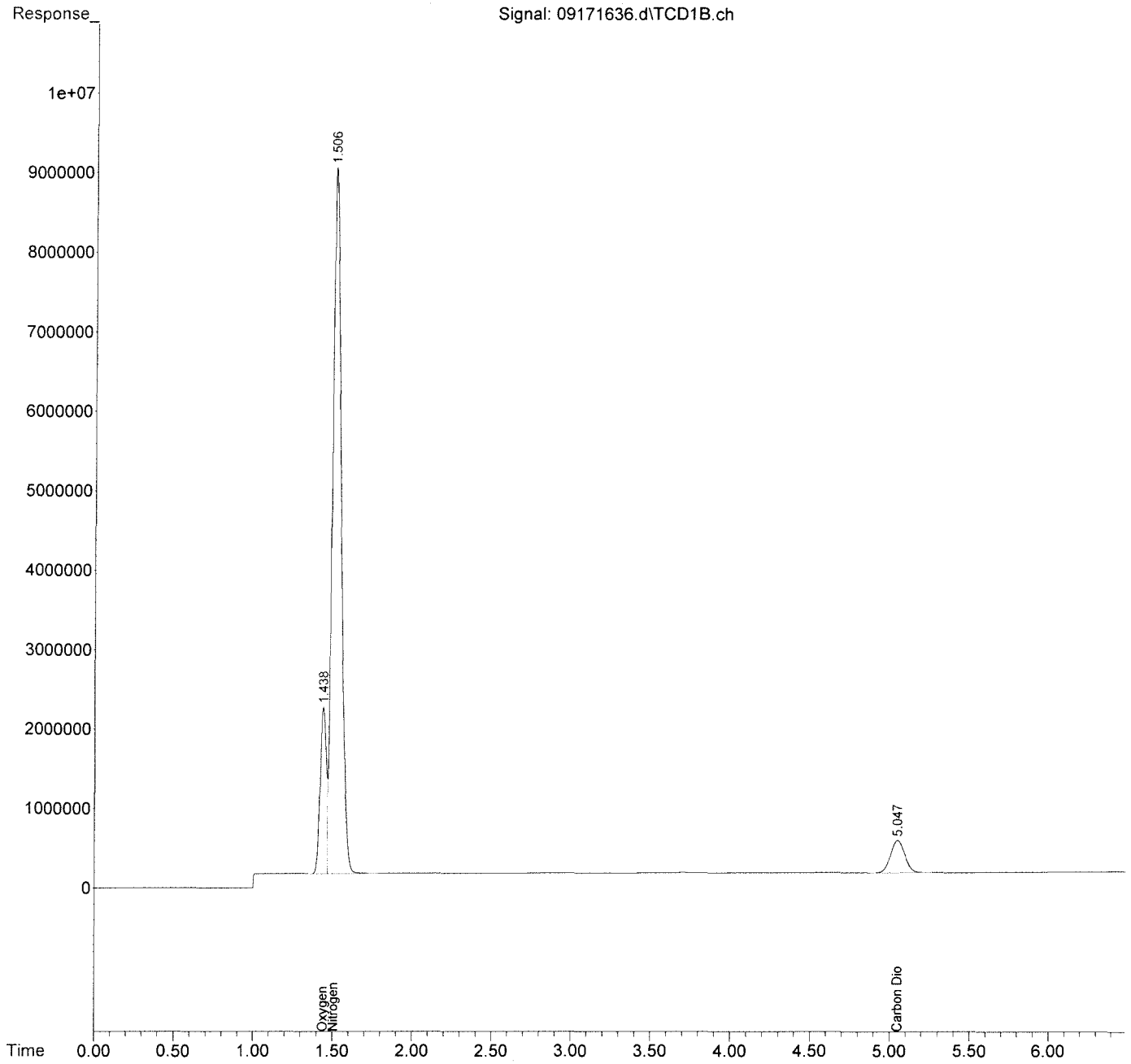
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\17\
Data File : 09171636.d
Signal(s) : TCD1B.ch
Acq On : 17 Sep 2016 3:13 pm
Operator : MC
Sample : 4449-007
Misc :
ALS Vial : 36 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 15:21:32 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\17\
Data File : 09171637.d
Signal(s) : TCD1B.ch
Acq On : 17 Sep 2016 3:22 pm
Operator : MC
Sample : 4449-007
Misc :
ALS Vial : 37 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 15:29:46 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	1.439	56670558	95597.203	ppm
3)	Nitrogen	1.507	339136257	512714.007	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	5.048	25413508	28153.176	ppm

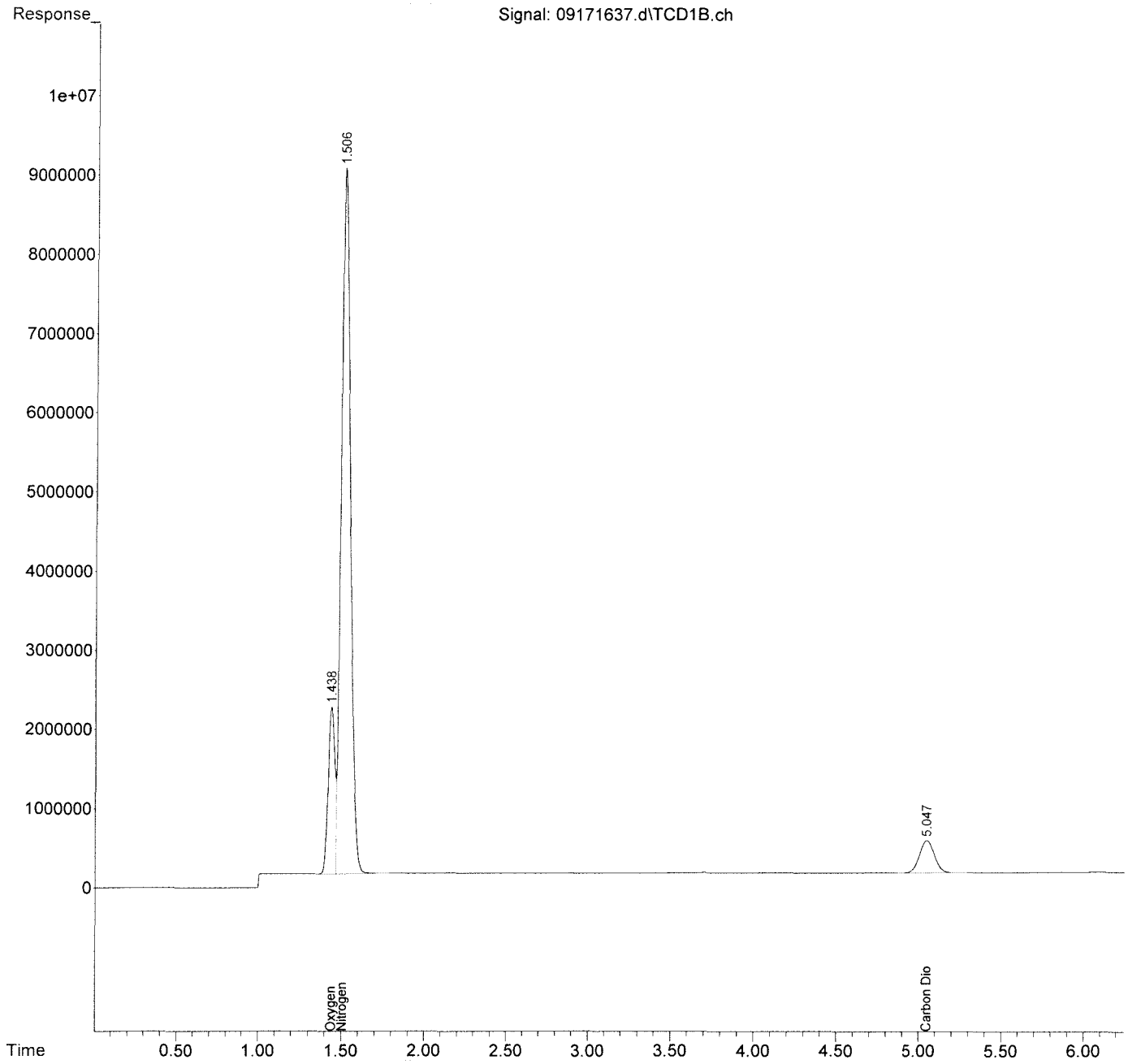
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\17\
Data File : 09171637.d
Signal(s) : TCD1B.ch
Acq On : 17 Sep 2016 3:22 pm
Operator : MC
Sample : 4449-007
Misc :
ALS Vial : 37 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 15:29:46 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\17\
Data File : 09171638.d
Signal(s) : TCD1B.ch
Acq On : 17 Sep 2016 3:31 pm
Operator : MC
Sample : 4449-009
Misc :
ALS Vial : 38 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 15:38:33 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	1.439	58377199	98476.125	ppm
3)	Nitrogen	1.508	326485497	493588.297	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	5.049	20747027	22983.631	ppm

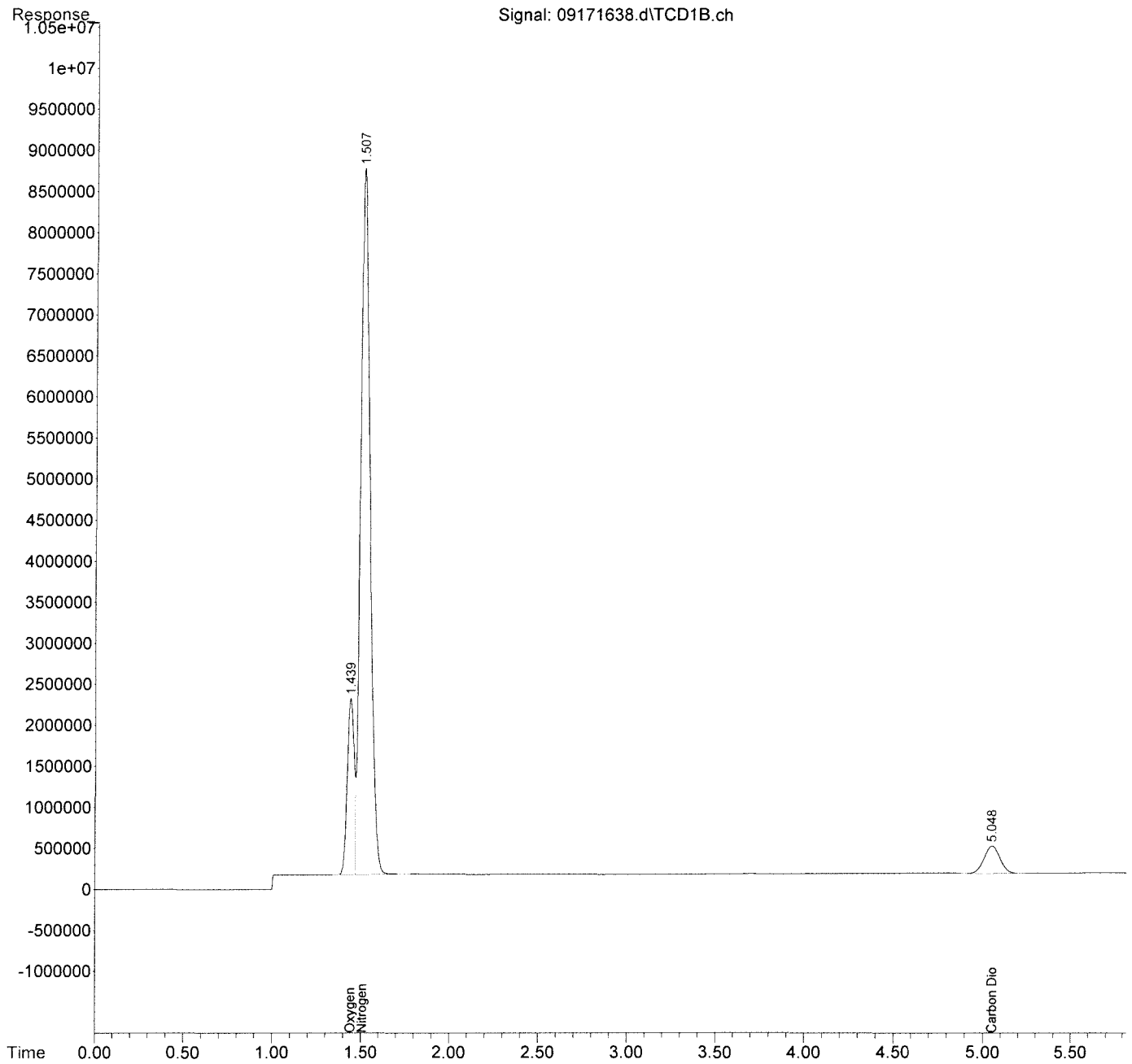
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\17\
Data File : 09171638.d
Signal(s) : TCD1B.ch
Acq On : 17 Sep 2016 3:31 pm
Operator : MC
Sample : 4449-009
Misc :
ALS Vial : 38 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 15:38:33 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\17\
Data File : 09171639.d
Signal(s) : TCD1B.ch
Acq On : 17 Sep 2016 3:40 pm
Operator : MC
Sample : 4449-009
Misc :
ALS Vial : 39 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 15:47:49 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	1.439	60368690	101835.558	ppm
3)	Nitrogen	1.507	337860184	510784.811	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	5.048	21542858	23865.255	ppm

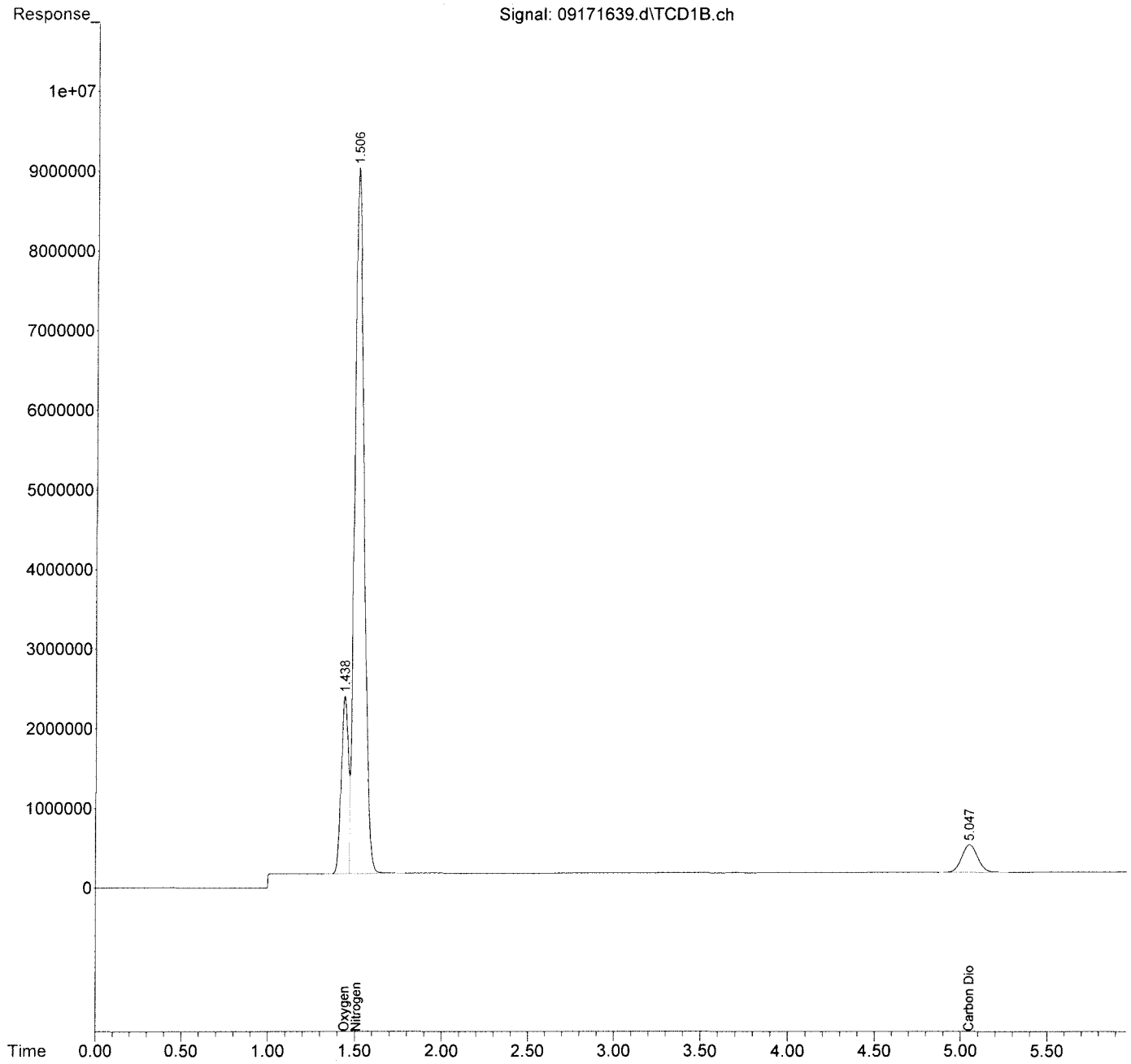
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\17\
Data File : 09171639.d
Signal(s) : TCD1B.ch
Acq On : 17 Sep 2016 3:40 pm
Operator : MC
Sample : 4449-009
Misc :
ALS Vial : 39 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 15:47:49 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\17\
Data File : 09171640.d
Signal(s) : TCD1B.ch
Acq On : 17 Sep 2016 3:49 pm
Operator : MC
Sample : 4449-009
Misc :
ALS Vial : 40 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 15:56:40 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	1.439	60756791	102490.244	ppm
3)	Nitrogen	1.507	340268990	514426.500	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	5.048	21698046	24037.173	ppm

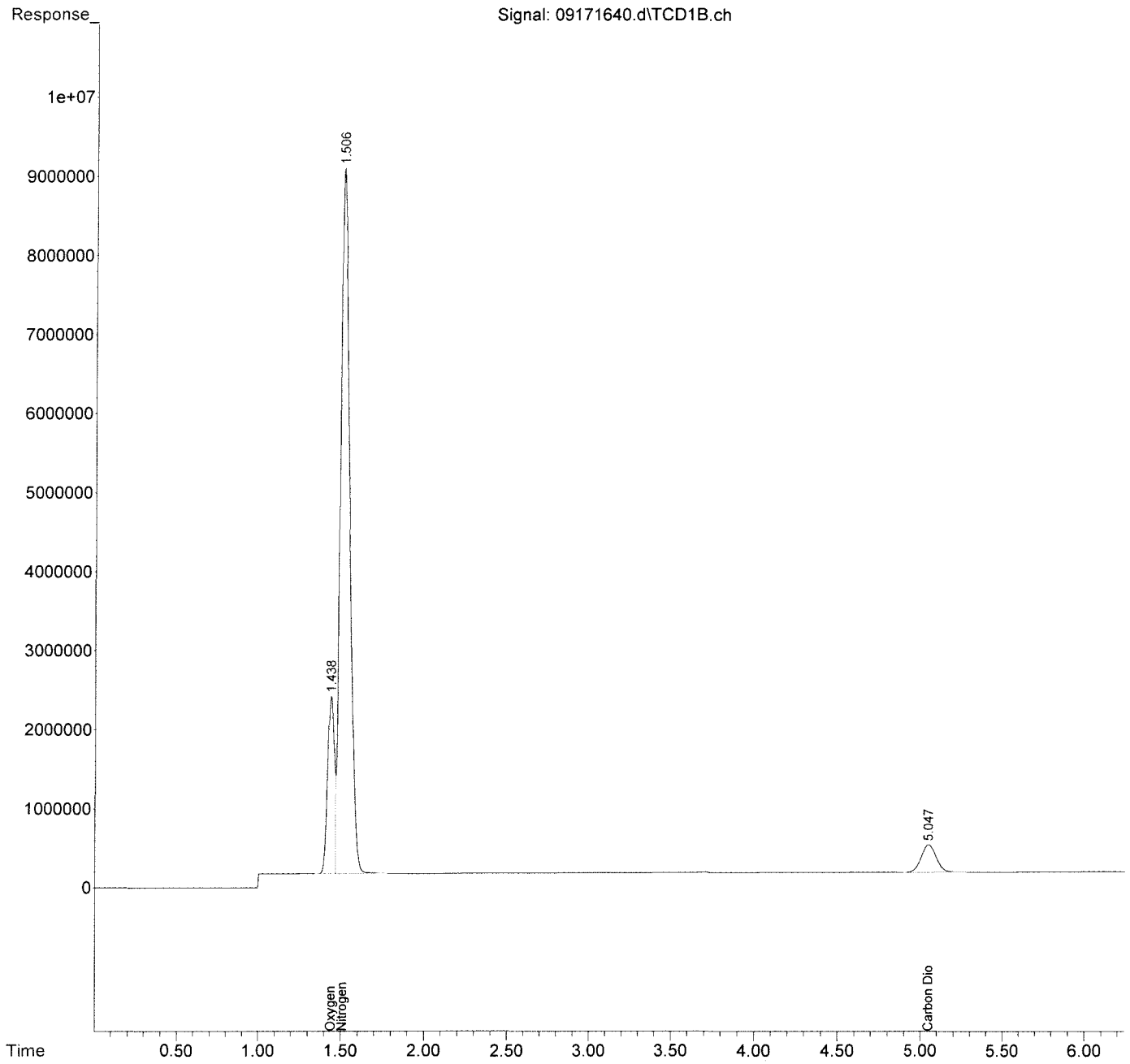
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\17\
Data File : 09171640.d
Signal(s) : TCD1B.ch
Acq On : 17 Sep 2016 3:49 pm
Operator : MC
Sample : 4449-009
Misc :
ALS Vial : 40 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 15:56:40 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_09\17\
Data File : 09171604.D
Signal(s) : TCD1A.CH
Acq On : 17 Sep 2016 2:10 pm
Operator : MC
Sample : 4449-011
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 14:47:51 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	211038	136502.583	ppm
3)	Nitrogen	2.307	1315964	744661.034	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.734	96828	46165.035	ppm

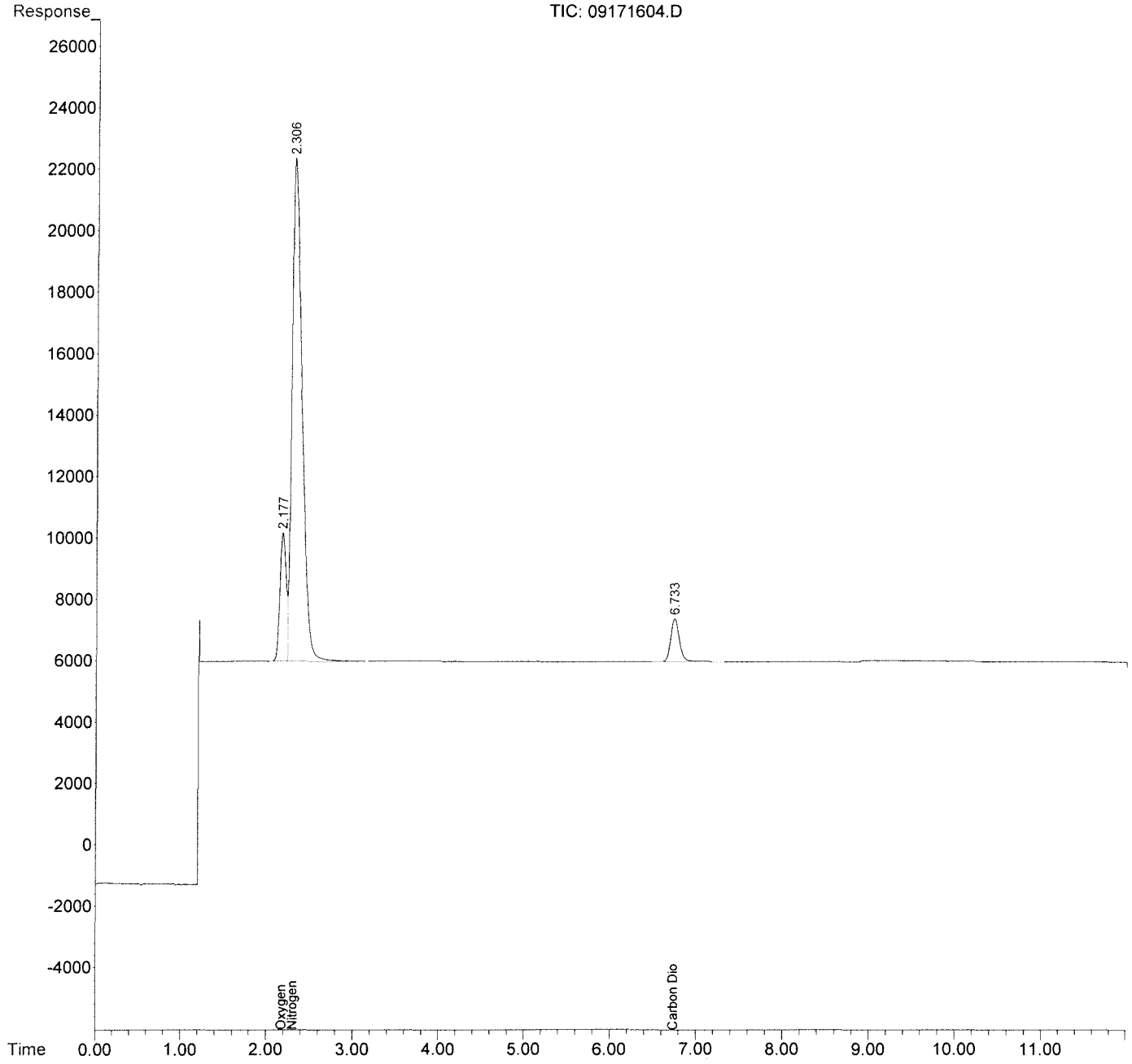
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_09\17\
Data File : 09171604.D
Signal(s) : TCD1A.CH
Acq On : 17 Sep 2016 2:10 pm
Operator : MC
Sample : 4449-011
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 14:47:51 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 : J:\GC01\DATA\FXG\2016_09\17\
Data File : 09171605.D
Signal(s) : TCD1A.CH
Acq On : 17 Sep 2016 2:41 pm
Operator : MC
Sample : 4449-011
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 15:00:05 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	2.187	209037	135207.910	ppm
3)	Nitrogen	2.317	1302252	736902.191	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.740	95370	45470.275	ppm

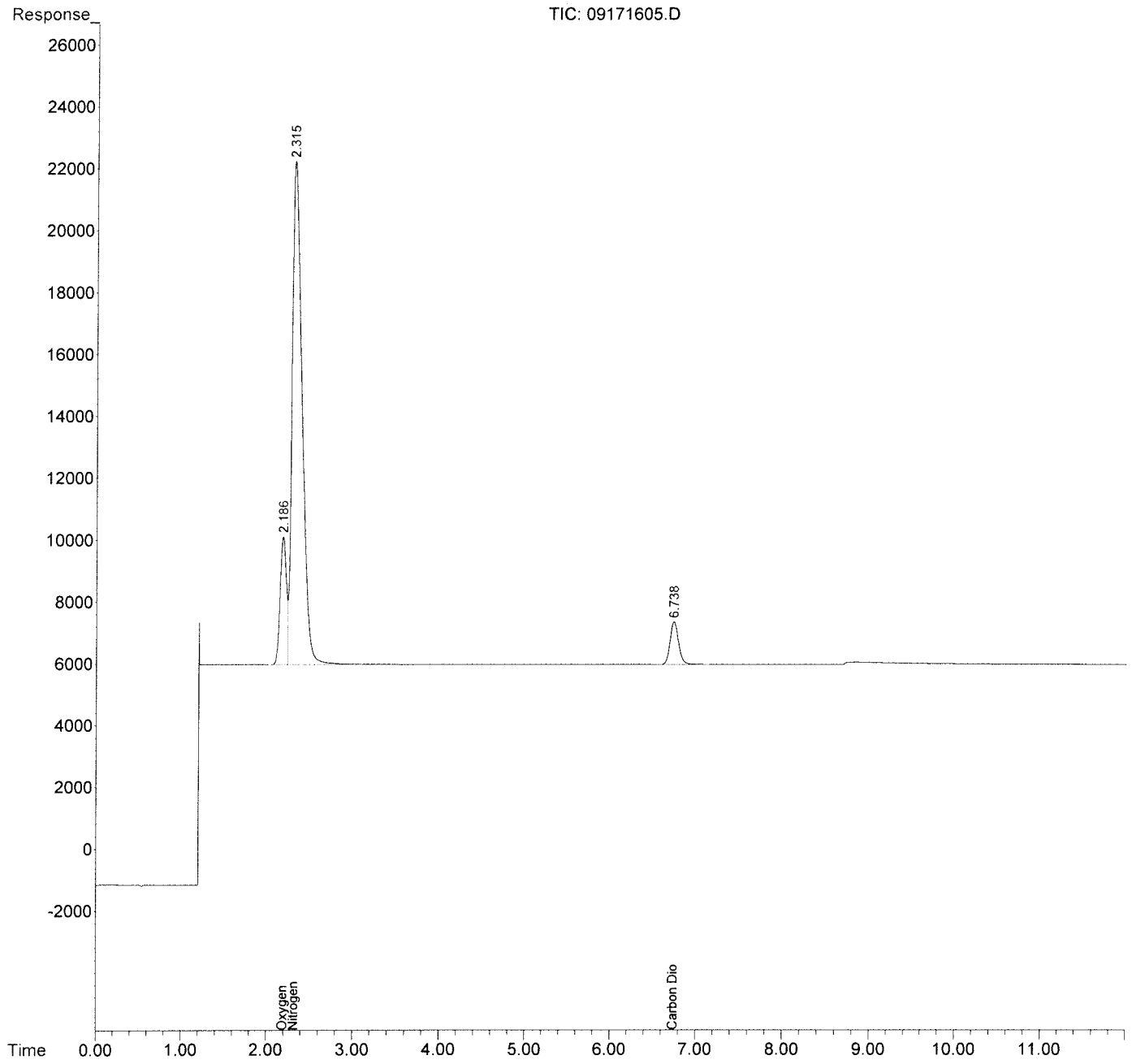
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_09\17\
Data File : 09171605.D
Signal(s) : TCD1A.CH
Acq On : 17 Sep 2016 2:41 pm
Operator : MC
Sample : 4449-011
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 15:00:05 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 : J:\GC01\DATA\FXG\2016_09\17\
Data File : 09171606.D
Signal(s) : TCD1A.CH
Acq On : 17 Sep 2016 2:57 pm
Operator : MC
Sample : 4449-011
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 15:14:47 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	209790	135694.863	ppm
3)	Nitrogen	2.305	1307096	739642.947	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.734	95791	45670.722	ppm

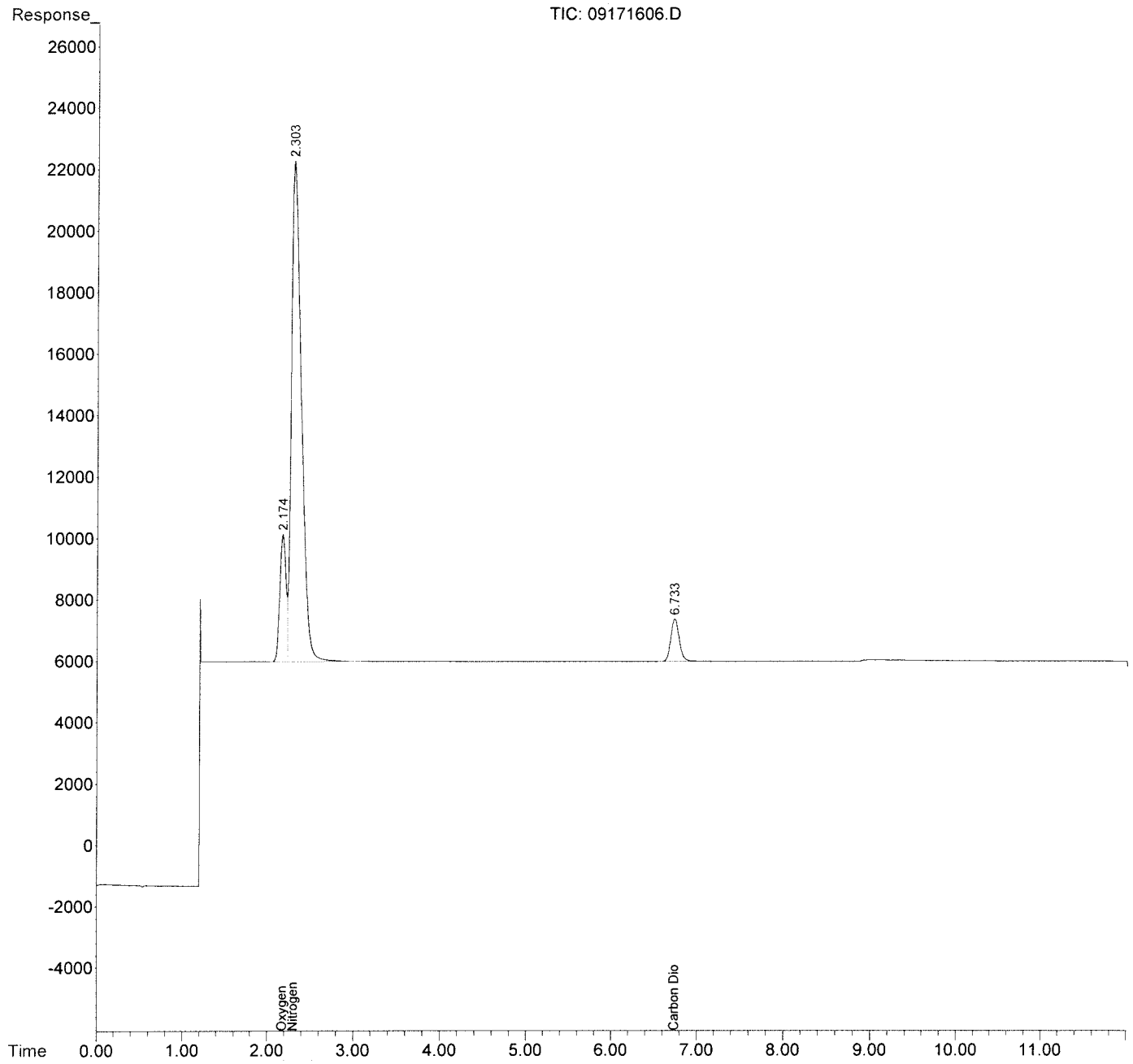
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_09\17\
Data File : 09171606.D
Signal(s) : TCD1A.CH
Acq On : 17 Sep 2016 2:57 pm
Operator : MC
Sample : 4449-011
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 15:14:47 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 : J:\GC01\DATA\FXG\2016_09\17\
Data File : 09171602.D
Signal(s) : TCD1A.CH
Acq On : 17 Sep 2016 1:38 pm
Operator : MC
Sample : mb
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 14:40:56 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

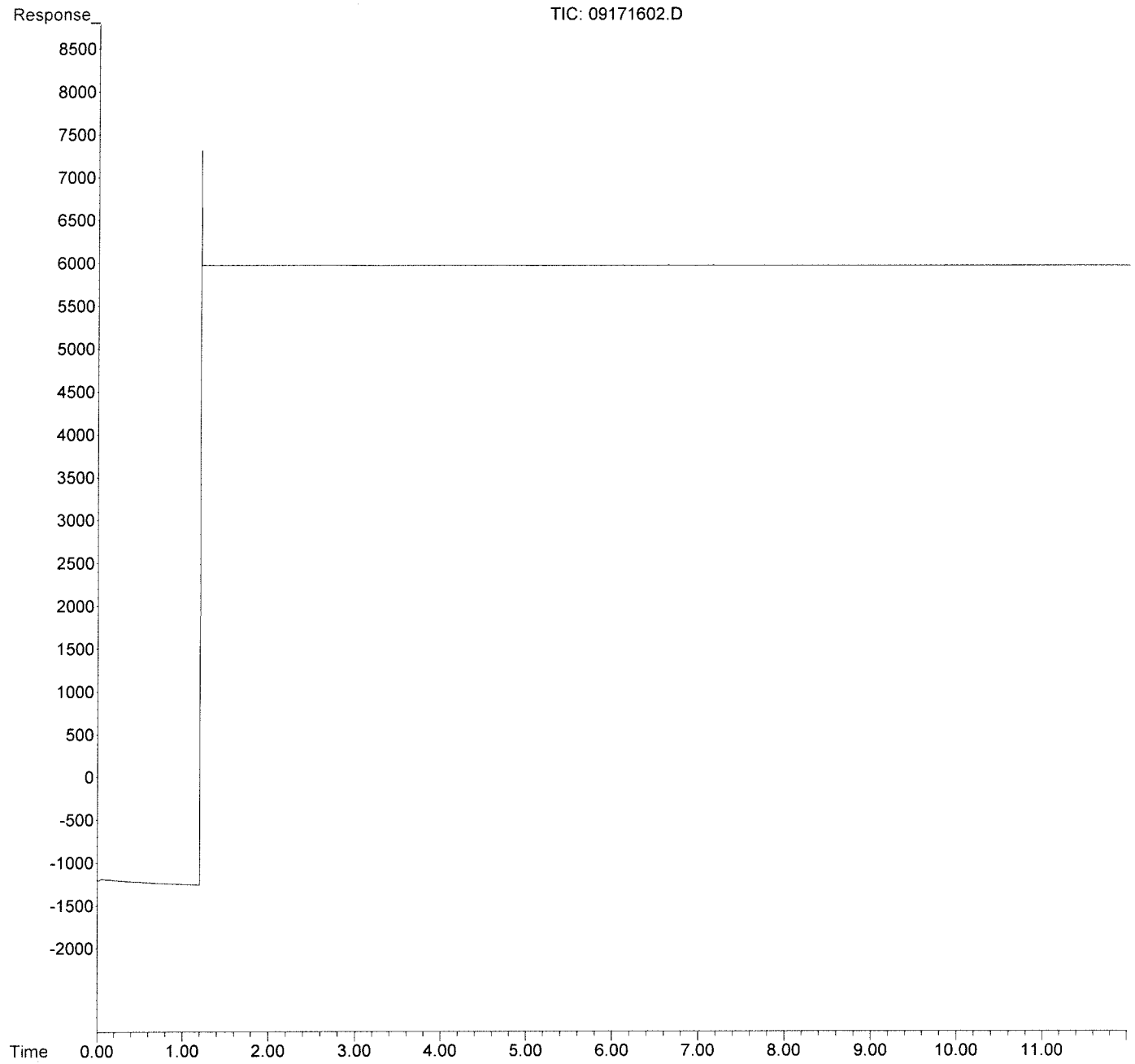
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_09\17\
Data File : 09171602.D
Signal(s) : TCD1A.CH
Acq On : 17 Sep 2016 1:38 pm
Operator : MC
Sample : mb
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 14:40:56 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 : J:\GC20\DATA\3C\2016_09\17\
Data File : 09171603.d
Signal(s) : TCD1B.ch
Acq On : 17 Sep 2016 9:36 am
Operator : MC
Sample : mb
Misc :
ALS Vial : 3 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 12:21:17 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	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

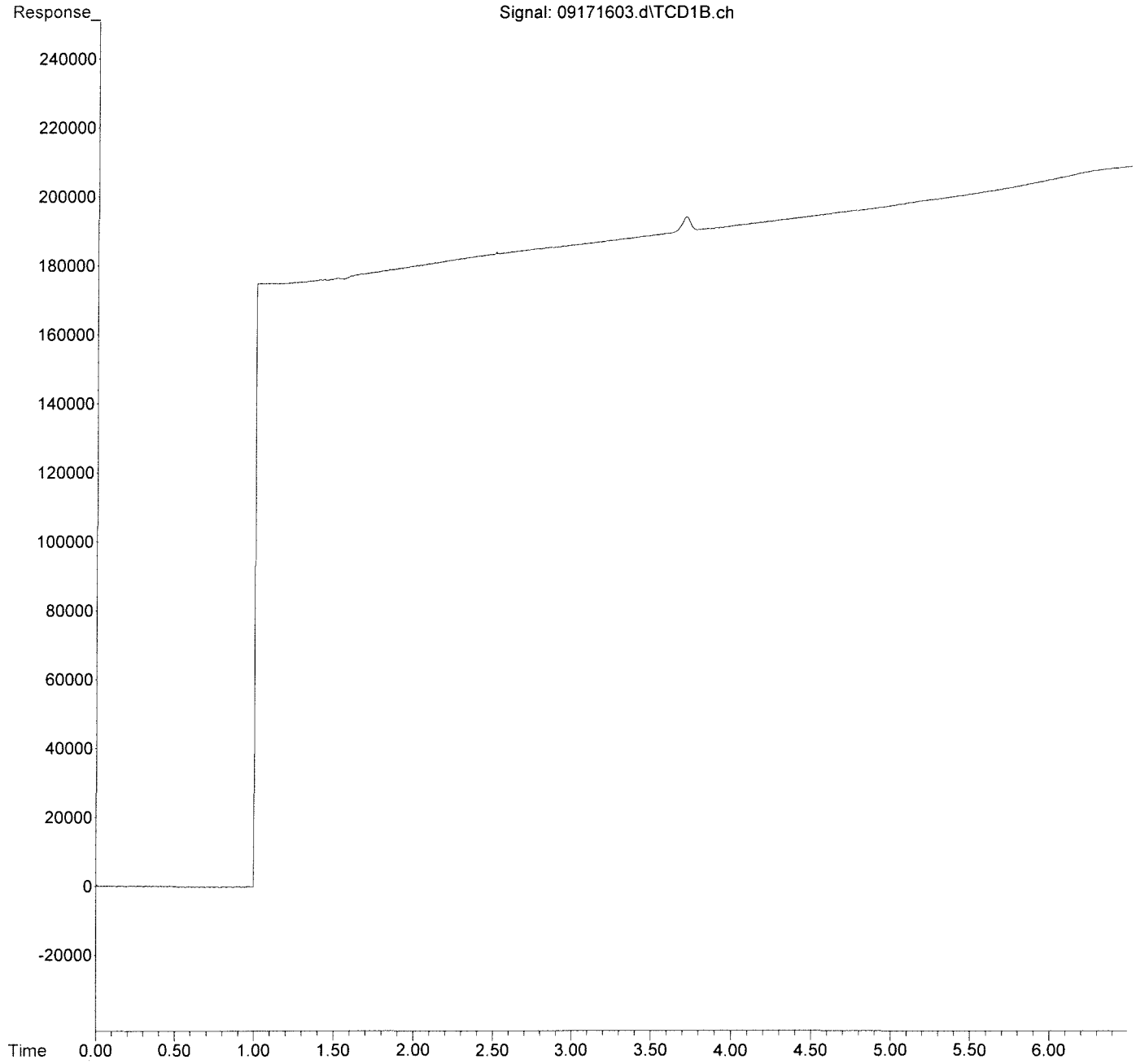
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\17\
Data File : 09171603.d
Signal(s) : TCD1B.ch
Acq On : 17 Sep 2016 9:36 am
Operator : MC
Sample : mb
Misc :
ALS Vial : 3 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 30 12:21:17 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Response Factor Report GC20

Method Path : J:\GC20\METHODS\
Method File : trip08172016.M
Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
Last Update : Wed Aug 17 16:09:17 2016
Response Via : Initial Calibration

Calibration Files
1 =08171603.d 2 =08171604.d 3 =08171605.d
4 =08171606.d 5 =08171607.d 6 =08171608.d

	Compound	1	2	3	4	5	6	Avg		%RSD
1)	Hydrogen	1.263	1.216	1.311	1.267	1.276	1.374	1.369	E2	6.11
2)	Oxygen	5.995	5.787	5.931	5.805	5.617	5.572	5.744	E3	3.05
3)	Nitrogen	7.068	6.958	7.066	6.558	6.254	6.223	6.615	E3	6.51
4)	Carbon Monoxide	6.543	6.215	6.435	6.191	6.176	6.154	6.389	E3	3.22
5)	Methane	4.972	4.788	4.972	4.791	4.772	4.736	5.090	E3	8.01
6)	Carbon Dioxide	0.892	0.856	0.870	0.846	0.845	0.841	0.903	E4	8.07

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

trip08172016.M Thu Aug 18 08:36:14 2016

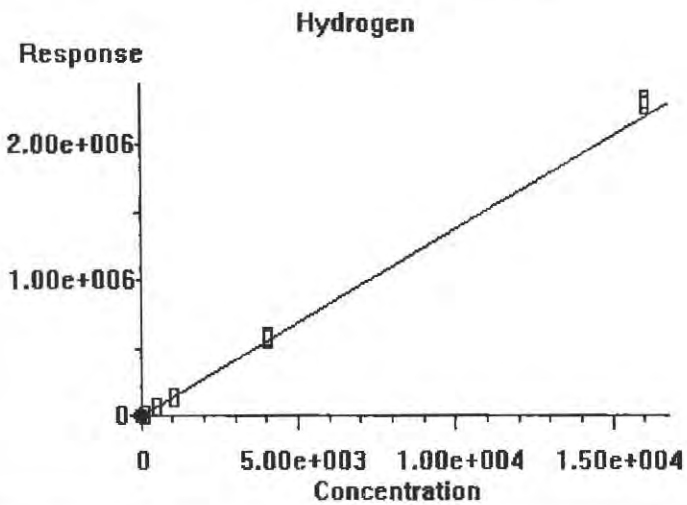
Edit Compounds

Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compour
  - Hydrogen
  - Oxygen
  - Nitrogen
  - Carbon Monoxide
  - Methane
  - Carbon Dioxide

Identification | Calibration | User Defined | Advanced | Reporting

Lvl ID	Concentration	Response	Lvl ID	Concentration	Response
1	100.000000	12632.882850	11	4000.000000	582047.701516
2	100.000000	12158.345400	12	4000.000000	584212.441000
3	100.000000	13114.025350	13	16000.000000	2298591.027391
4	500.000000	63333.202400	14	16000.000000	2289656.882538
5	500.000000	63821.192207	15	16000.000000	2323872.957738
6	500.000000	68721.641600	16	99999.000000	
7	1000.000000	139987.300362	17	99999.000000	
8	1000.000000	133581.640900	18	99999.000000	
9	1000.000000	140992.792779			
10	4000.000000	580729.821200			



0.000e+000	Quadratic term
1.359e+002	Linear term
0.000e+000	Constant term
6.1%	RF Rel Std Dev

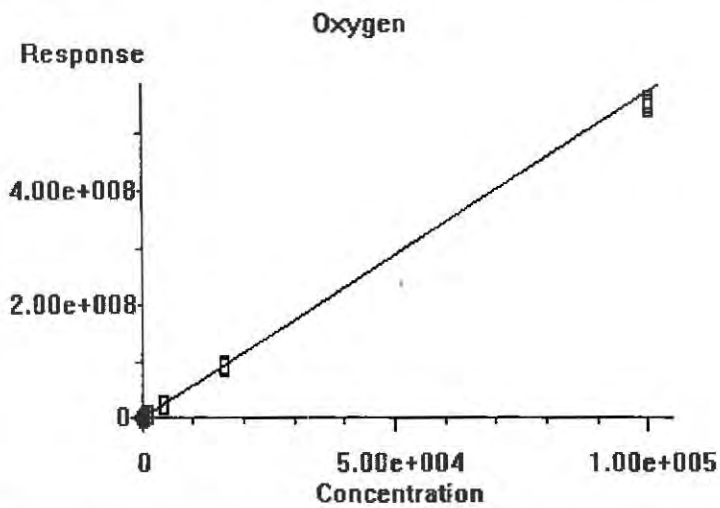
Edit Compounds

Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compour
  - Hydrogen
  - Oxygen
  - Nitrogen
  - Carbon Monoxide
  - Methane
  - Carbon Dioxide

Identification | Calibration | User Defined | Advanced | Reporting

Lvl ID	Concentration	Response	Lvl ID	Concentration	Response
1	100.000000	599487.494103	11	4000.000000	23826598.302138
2	100.000000	578670.977752	12	4000.000000	23862517.416454
3	100.000000	593092.952739	13	16000.000000	92172159.210664
4	500.000000	2902297.311542	14	16000.000000	92464939.459502
5	500.000000	2808317.269011	15	16000.000000	93438546.995218
6	500.000000	2736173.983668	16	99999.000000	559169599.50000
7	1000.000000	5641236.869851	17	99999.000000	547020814.73562
8	1000.000000	5511742.529597	18	99999.000000	554974689.16791
9	1000.000000	5643307.036994			
10	4000.000000	23935634.938654			



0.000e+000	Quadratic term
5.744e+003	Linear term
0.000e+000	Constant term
3.1%	RF Rel Std Dev

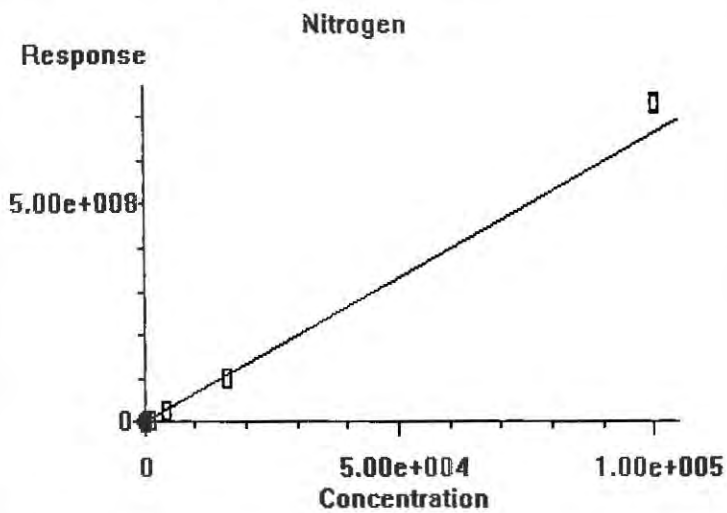
Edit Compounds

Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compour
  - Hydrogen
  - Oxygen
  - Nitrogen
  - Carbon Monoxide
  - Methane
  - Carbon Dioxide

Identification | Calibration | User Defined | Advanced | Reporting

Lvl ID	Concentration	Response	Lvl ID	Concentration	Response
1	100.000000	706803.440897	11	4000.000000	25956732.584528
2	100.000000	695841.470581	12	4000.000000	25991567.873546
3	100.000000	706599.015386	13	16000.000000	100943912.98433
4	500.000000	3279194.883874	14	16000.000000	101263114.73341
5	500.000000	3126903.101822	15	16000.000000	102307767.29478
6	500.000000	3111525.750290	16	99999.000000	732108094.01000
7	1000.000000	6229559.976399	17	99999.000000	729497758.06541
8	1000.000000	6056059.185403	18	99999.000000	730183971.82500
9	1000.000000	6192495.418423			
10	4000.000000	26073539.517180			



0.000e+000	Quadratic term
6.615e+003	Linear term
0.000e+000	Constant term
6.5%	RF Rel Std Dev

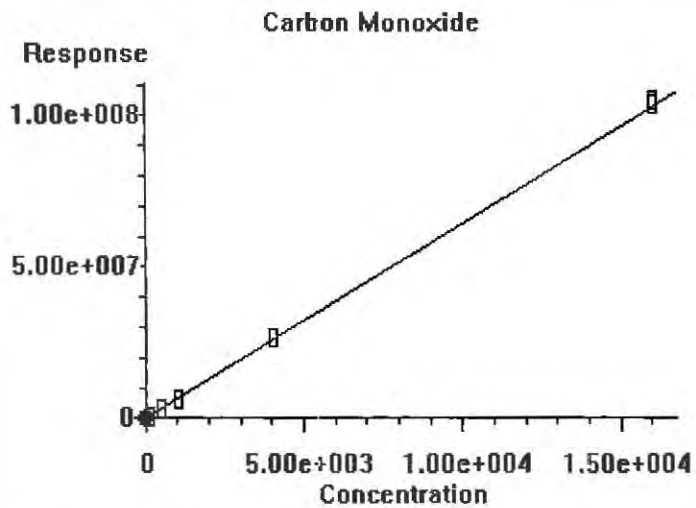
Edit Compounds

Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compour
  - Hydrogen
  - Oxygen
  - Nitrogen
  - Carbon Monoxide
  - Methane
  - Carbon Dioxide

Identification | Calibration | User Defined | Advanced | Reporting

Lvl ID	Concentration	Response	Lvl ID	Concentration	Response
1	100.000000	654271.621875	11	4000.000000	26619277.899687
2	100.000000	621542.387500	12	4000.000000	26651663.501094
3	100.000000	643506.703437	13	16000.000000	102484436.83125
4	500.000000	3095393.077500	14	16000.000000	103800819.31781
5	500.000000	3087808.537500	15	16000.000000	104922938.63281
6	500.000000	3076916.732812	16	99999.000000	
7	1000.000000	6240771.374687	17	99999.000000	
8	1000.000000	6107195.350625	18	99999.000000	
9	1000.000000	6257030.244688			
10	4000.000000	26723290.426500			



0.000e+000	Quadratic term
6.389e+003	Linear term
0.000e+000	Constant term
3.2%	RF Rel Std Dev

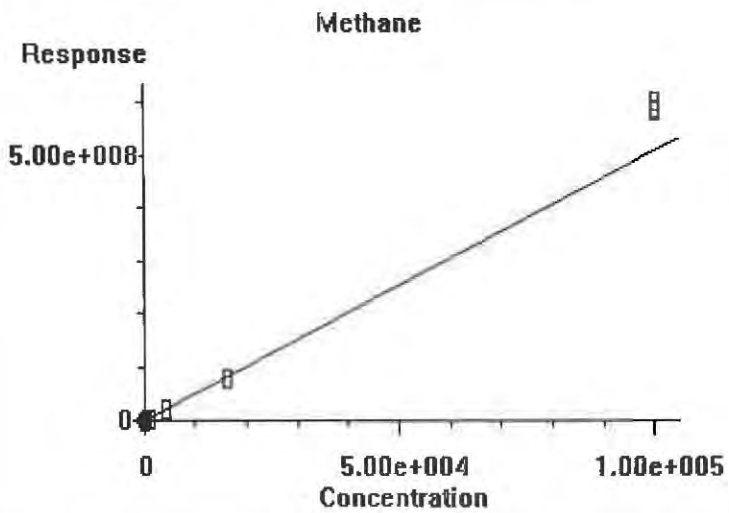
Edit Compounds

Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compour
  - Hydrogen
  - Oxygen
  - Nitrogen
  - Carbon Monoxide
  - Methane
  - Carbon Dioxide

Identification | Calibration | User Defined | Advanced | Reporting

Lvl ID	Concentration	Response	Lvl ID	Concentration	Response
1	100.000000	497237.645000	11	4000.000000	20516543.513750
2	100.000000	478795.408125	12	4000.000000	20570476.348889
3	100.000000	497158.898750	13	16000.000000	79878977.784792
4	500.000000	2395679.215000	14	16000.000000	80151028.112500
5	500.000000	2385753.487083	15	16000.000000	80982555.450833
6	500.000000	2367931.312083	16	99999.000000	586065212.67625
7	1000.000000	4808279.225000	17	99999.000000	587246388.09708
8	1000.000000	4716088.583125	18	99999.000000	602097414.76000
9	1000.000000	4820926.634306			
10	4000.000000	20612017.065000			



0.000e+000	Quadratic term
5.090e+002	Linear term
0.000e+000	Constant term
3.0%	RF Rel Std Dev

Ok | Cancel | Help | Print Calibration Curve | Copy Calibration Curve

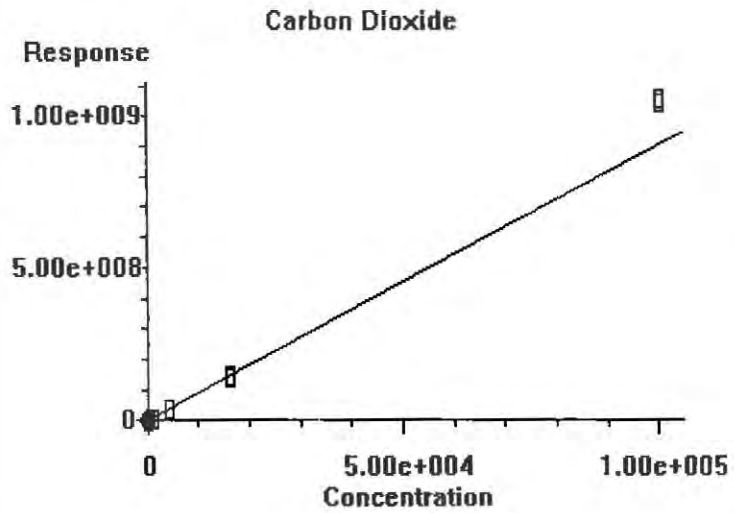
Edit Compounds

Search by: Ret Time | Name | Index | Find Compound

- Compound Database
- External Standard Compour
  - Hydrogen
  - Oxygen
  - Nitrogen
  - Carbon Monoxide
  - Methane
  - Carbon Dioxide

Identification | Calibration | User Defined | Advanced | Reporting

Lvl ID	Concentration	Response	Lvl ID	Concentration	Response
1	100.000000	891863.635000	11	4000.000000	36414212.409286
2	100.000000	855704.788750	12	4000.000000	36463544.437500
3	100.000000	869983.886429	13	16000.000000	141358480.36375
4	500.000000	4229386.239286	14	16000.000000	142064571.20517
5	500.000000	4223314.759643	15	16000.000000	143593488.51964
6	500.000000	4206309.097143	16	99999.000000	1053756921.9100
7	1000.000000	8523011.010357	17	99999.000000	1054815939.6481
8	1000.000000	8358886.069286	18	99999.000000	1045180212.9950
9	1000.000000	8536304.023571			
10	4000.000000	36504454.463125			



0.000e+000	Quadratic term
9.027e+003	Linear term
0.000e+000	Constant term
8.13%	RF Rel Std Dev

Calibration Status Report GC20

Method Path : J:\GC20\METHODS\
Method File : trip08172016.M
Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
Last Update : Wed Aug 17 16:09:17 2016
Response Via : Initial Calibration

#	ID	Conc	ISTD Conc	Path\File
1	1	100	0	J:\GC20\DATA\3C\2016_08\17\08171603.d
2	2	100	0	J:\GC20\DATA\3C\2016_08\17\08171604.d
3	3	100	0	J:\GC20\DATA\3C\2016_08\17\08171605.d
4	4	500	0	J:\GC20\DATA\3C\2016_08\17\08171606.d
5	5	500	0	J:\GC20\DATA\3C\2016_08\17\08171607.d
6	6	500	0	J:\GC20\DATA\3C\2016_08\17\08171608.d
7	7	1000	0	J:\GC20\DATA\3C\2016_08\17\08171610.d
8	8	1000	0	J:\GC20\DATA\3C\2016_08\17\08171611.d
9	9	1000	0	J:\GC20\DATA\3C\2016_08\17\08171612.d
10	10	4000	0	J:\GC20\DATA\3C\2016_08\17\08171613.d
11	11	4000	0	J:\GC20\DATA\3C\2016_08\17\08171614.d
12	12	4000	0	J:\GC20\DATA\3C\2016_08\17\08171615.d
13	13	16000	0	J:\GC20\DATA\3C\2016_08\17\08171616.d
14	14	16000	0	J:\GC20\DATA\3C\2016_08\17\08171617.d
15	15	16000	0	J:\GC20\DATA\3C\2016_08\17\08171618.d
16	16	99999	0	J:\GC20\DATA\3C\2016_08\17\08171635.d
17	17	99999	0	J:\GC20\DATA\3C\2016_08\17\08171636.d
18	18	99999	0	J:\GC20\DATA\3C\2016_08\17\08171637.d

#	ID	Update Time	Quant Time	Acquisition Time
1	1	Aug 17 08:43 2016	Aug 17 08:35 2016	17 Aug 2016 8:12 am
2	2	Aug 17 08:49 2016	Aug 17 08:37 2016	17 Aug 2016 8:22 am
3	3	Aug 17 08:49 2016	Aug 17 08:49 2016	17 Aug 2016 8:39 am
4	4	Aug 17 09:01 2016	Aug 17 09:01 2016	17 Aug 2016 8:52 am
5	5	Aug 17 09:13 2016	Aug 17 09:12 2016	17 Aug 2016 9:02 am
6	6	Aug 17 09:25 2016	Aug 17 09:25 2016	17 Aug 2016 9:14 am
7	7	Aug 17 10:09 2016	Aug 17 09:46 2016	17 Aug 2016 9:39 am
8	8	Aug 17 10:09 2016	Aug 17 10:00 2016	17 Aug 2016 9:52 am
9	9	Aug 17 10:10 2016	Aug 17 10:09 2016	17 Aug 2016 10:02 am
10	10	Aug 17 10:20 2016	Aug 17 10:19 2016	17 Aug 2016 10:12 am
11	11	Aug 17 10:30 2016	Aug 17 10:30 2016	17 Aug 2016 10:22 am
12	12	Aug 17 10:39 2016	Aug 17 10:39 2016	17 Aug 2016 10:31 am
13	13	Aug 17 10:52 2016	Aug 17 10:50 2016	17 Aug 2016 10:42 am
14	14	Aug 17 11:02 2016	Aug 17 11:02 2016	17 Aug 2016 10:55 am
15	15	Aug 17 12:23 2016	Aug 17 11:13 2016	17 Aug 2016 11:05 am
16	16	Aug 17 16:25 2016	Aug 17 16:25 2016	17 Aug 2016 4:14 pm
17	17	Aug 17 16:34 2016	Aug 17 16:34 2016	17 Aug 2016 4:27 pm
18	18	Aug 17 16:44 2016	Aug 17 16:44 2016	17 Aug 2016 4:37 pm

trip08172016.M Thu Aug 18 08:37:19 2016

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171603.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 8:12 am
Operator : MC
Sample : std s11-07191601 A
Misc :
ALS Vial : 3 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 08:35:54 2016
Quant Method : J:\GC20\METHODS\FG3C 05172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue May 17 15:46:05 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.693	12633	938.136	ppm	m
2)	Oxygen	1.454	599487	1084.193	ppm	
3)	Nitrogen	1.542	706803	1134.442	ppm	
4)	Carbon Monoxide	1.864	654272	1066.798	ppm	
5)	Methane	3.104	497238	1036.821	ppm	
6)	Carbon Dioxide	5.052	891864	1060.641	ppm	

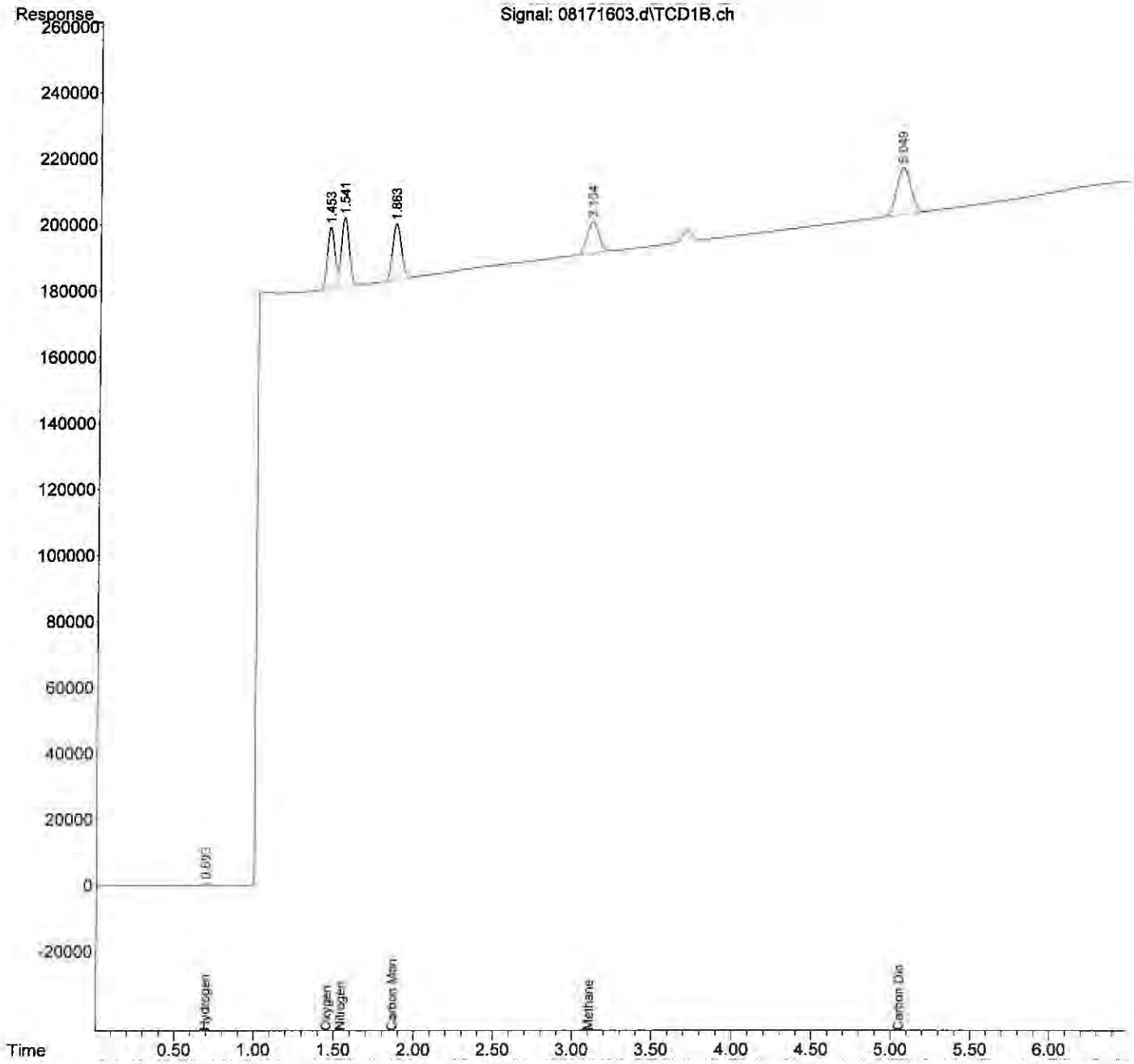
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171603.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 8:12 am
Operator : MC
Sample : std s11-07191601 A
Misc :
ALS Vial : 3 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 08:35:54 2016
Quant Method : J:\GC20\METHODS\FG3C 05172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue May 17 15:46:05 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

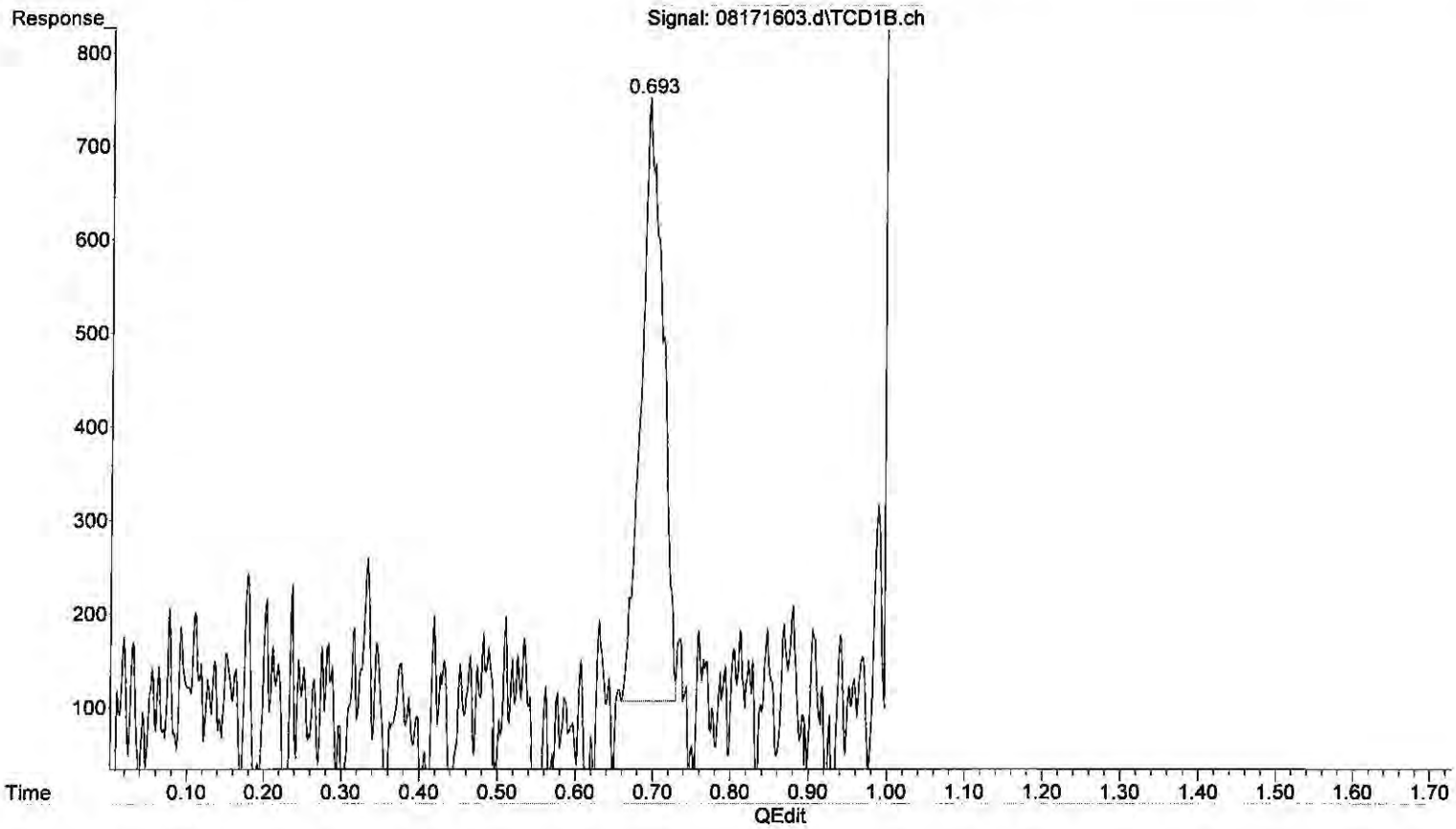


Quantitation Report (Qedit)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171603.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 8:12 am
Operator : MC
Sample : std s11-07191601 A
Misc :
ALS Vial : 3 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 08:35:54 2016
Quant Method : J:\GC20\METHODS\FG3C 05172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue May 17 15:46:05 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



(1) Hydrogen
0.693min 938.136 ppm m
response 12633

MC 8/18/16
BLL

No prints

8/24/16

(+) = Expected Retention Time
trip08172016.M Wed Aug 17 17:12:42 2016

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171604.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 8:22 am
Operator : MC
Sample : std s11-07191601 B
Misc :
ALS Vial : 4 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 08:37:59 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 08:37:01 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.698	12158	922.186	ppm	m
2)	Oxygen	1.454	578671	1038.914	ppm	
3)	Nitrogen	1.542	695841	1114.835	ppm	
4)	Carbon Monoxide	1.865	621542	1003.463	ppm	
5)	Methane	3.101	478795	984.236	ppm	
6)	Carbon Dioxide	5.053	855705	1005.943	ppm	

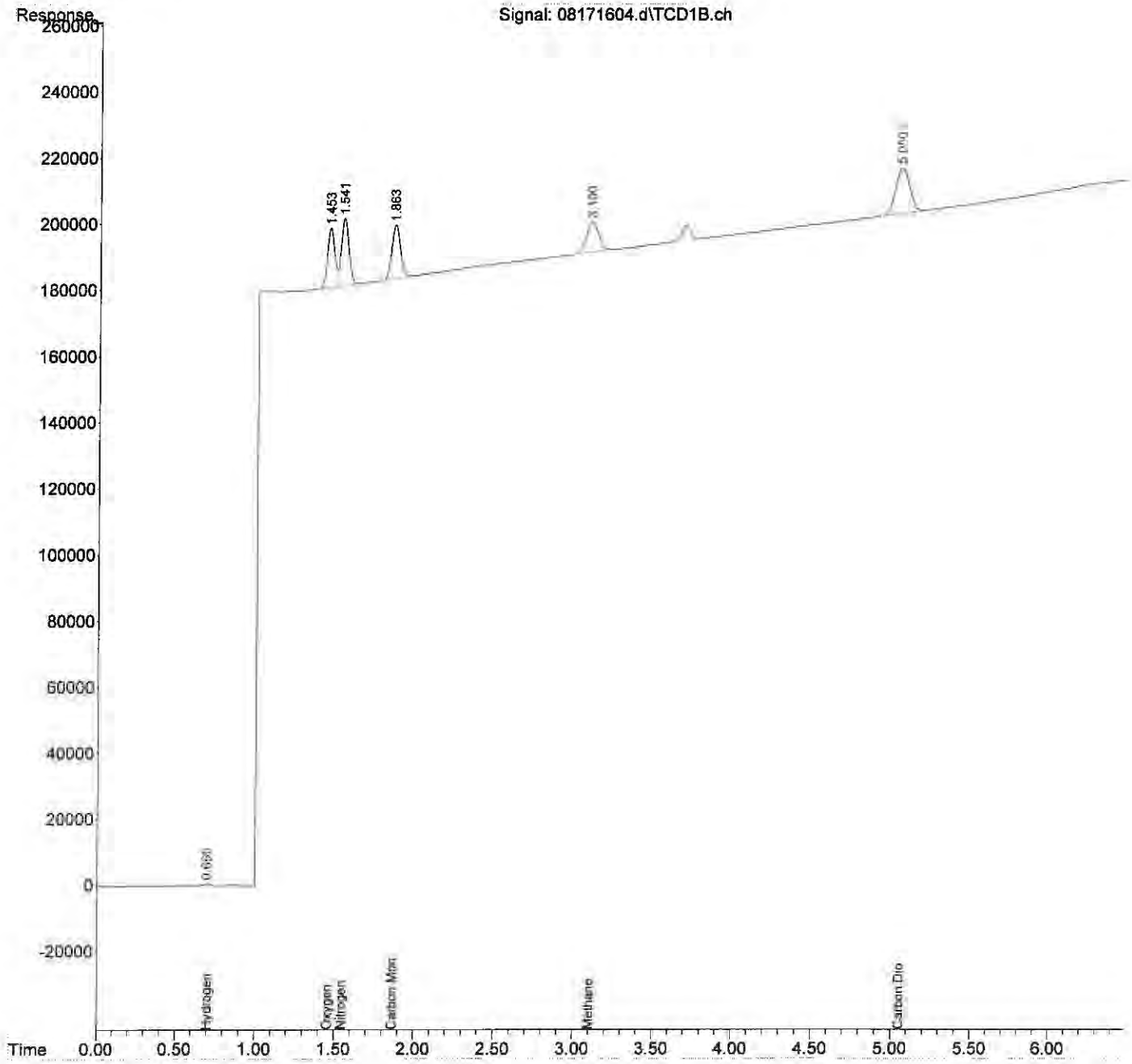
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171604.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 8:22 am
Operator : MC
Sample : std s11-07191601 B
Misc :
ALS Vial : 4 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 08:37:59 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 08:37:01 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

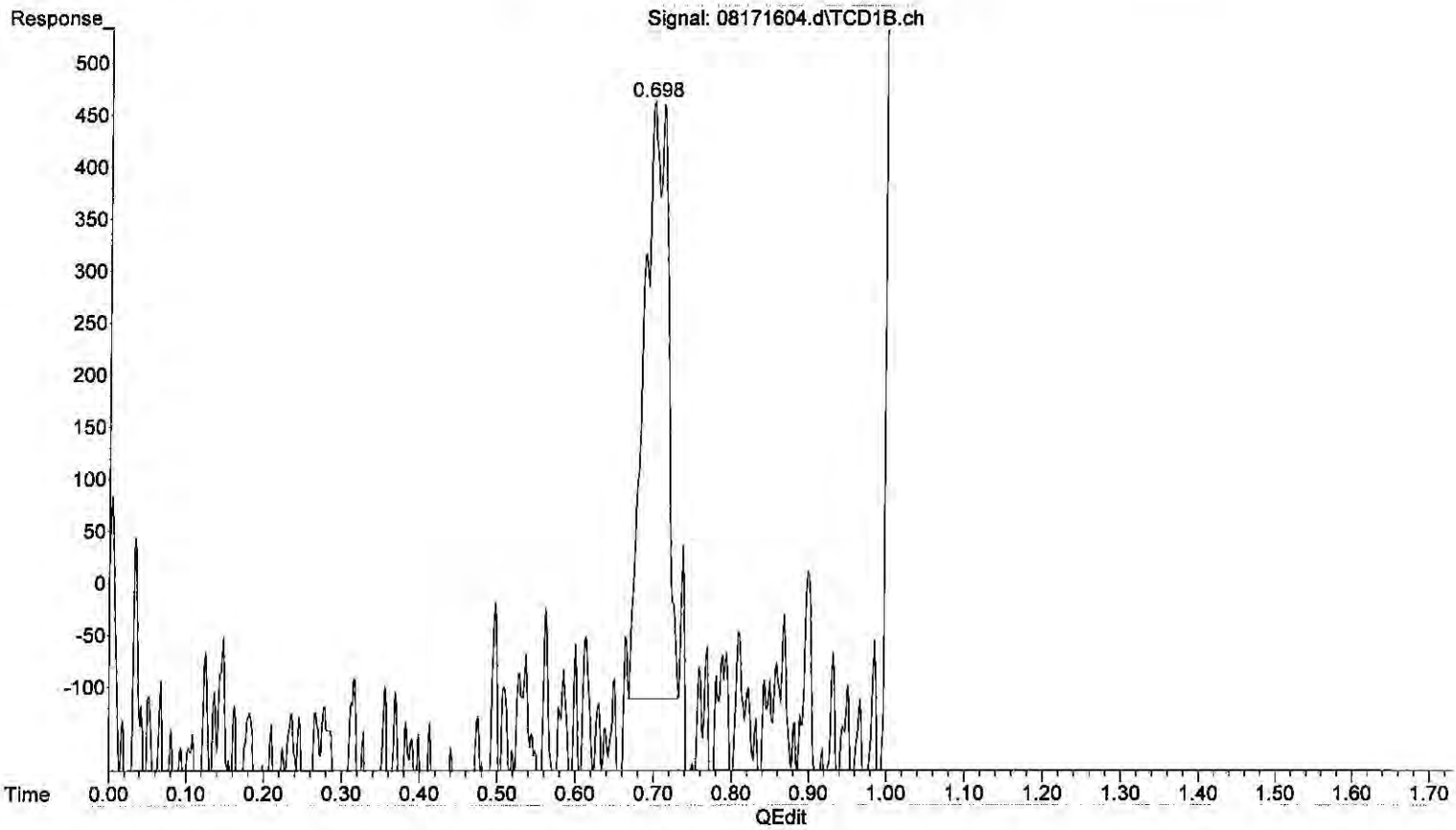


Quantitation Report (Qedit)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171604.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 8:22 am
Operator : MC
Sample : std s11-07191601 B
Misc :
ALS Vial : 4 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 08:37:59 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 08:37:01 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



(1) Hydrogen
0.698min 922.186 ppm m
response 12158

MC 8/18/16 NO Reviews WK 8/29/16
Blc

(+) = Expected Retention Time
trip08172016.M Wed Aug 17 17:13:10 2016

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171605.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 8:39 am
Operator : MC
Sample : std s11-07191601 C
Misc :
ALS Vial : 5 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 08:49:33 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 08:49:13 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.703	13114	1057.957	ppm	m
2)	Oxygen	1.454	593093	1006.814	ppm	
3)	Nitrogen	1.542	706599	1007.524	ppm	
4)	Carbon Monoxide	1.865	643507	1008.778	ppm	
5)	Methane	3.102	497159	1018.734	ppm	
6)	Carbon Dioxide	5.053	869984	995.651	ppm	

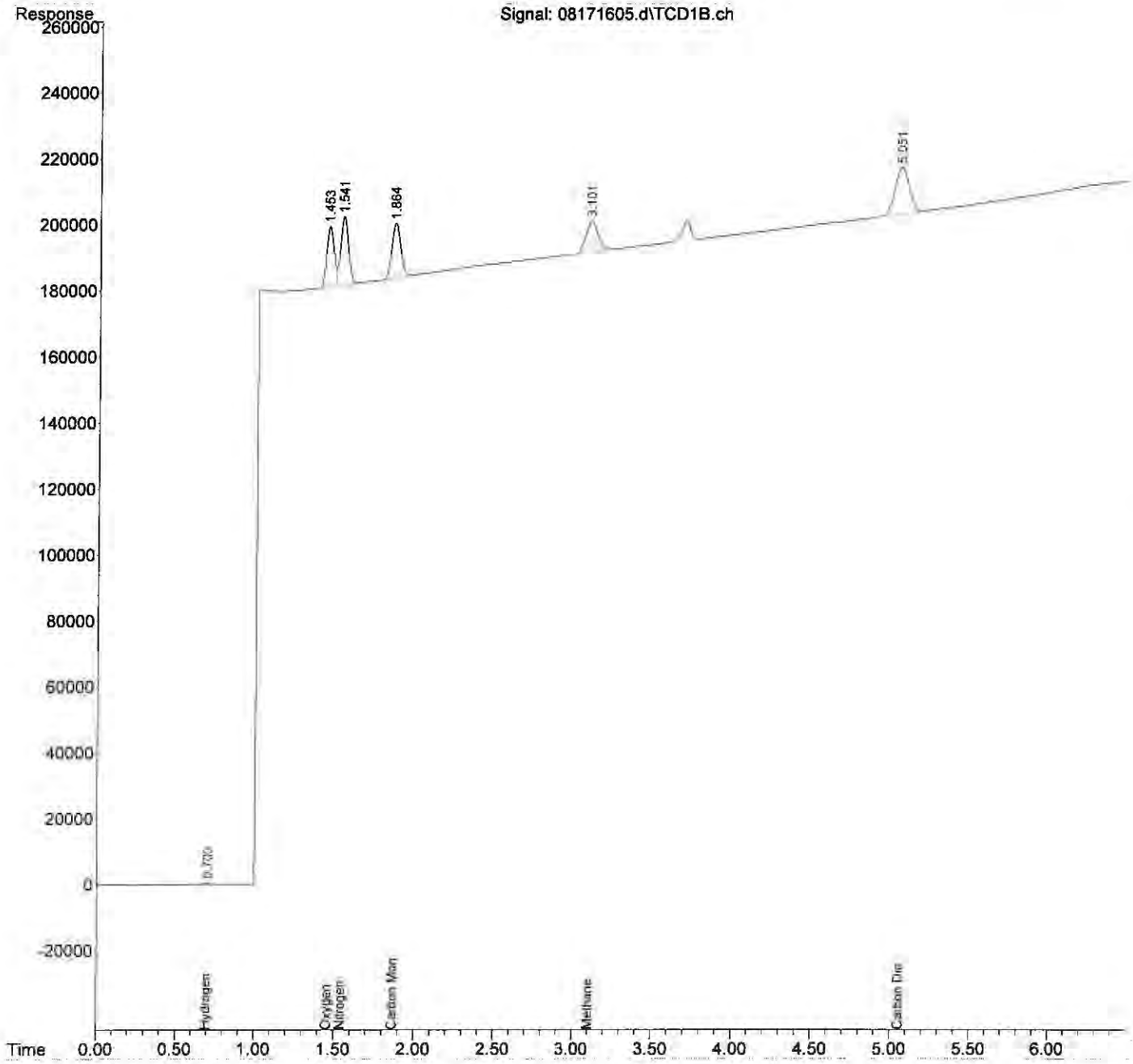
(f)=RT Delta > 1/2 Window (m)=manual int

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171605.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 8:39 am
Operator : MC
Sample : std s11-07191601 C
Misc :
ALS Vial : 5 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 08:49:33 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 08:49:13 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

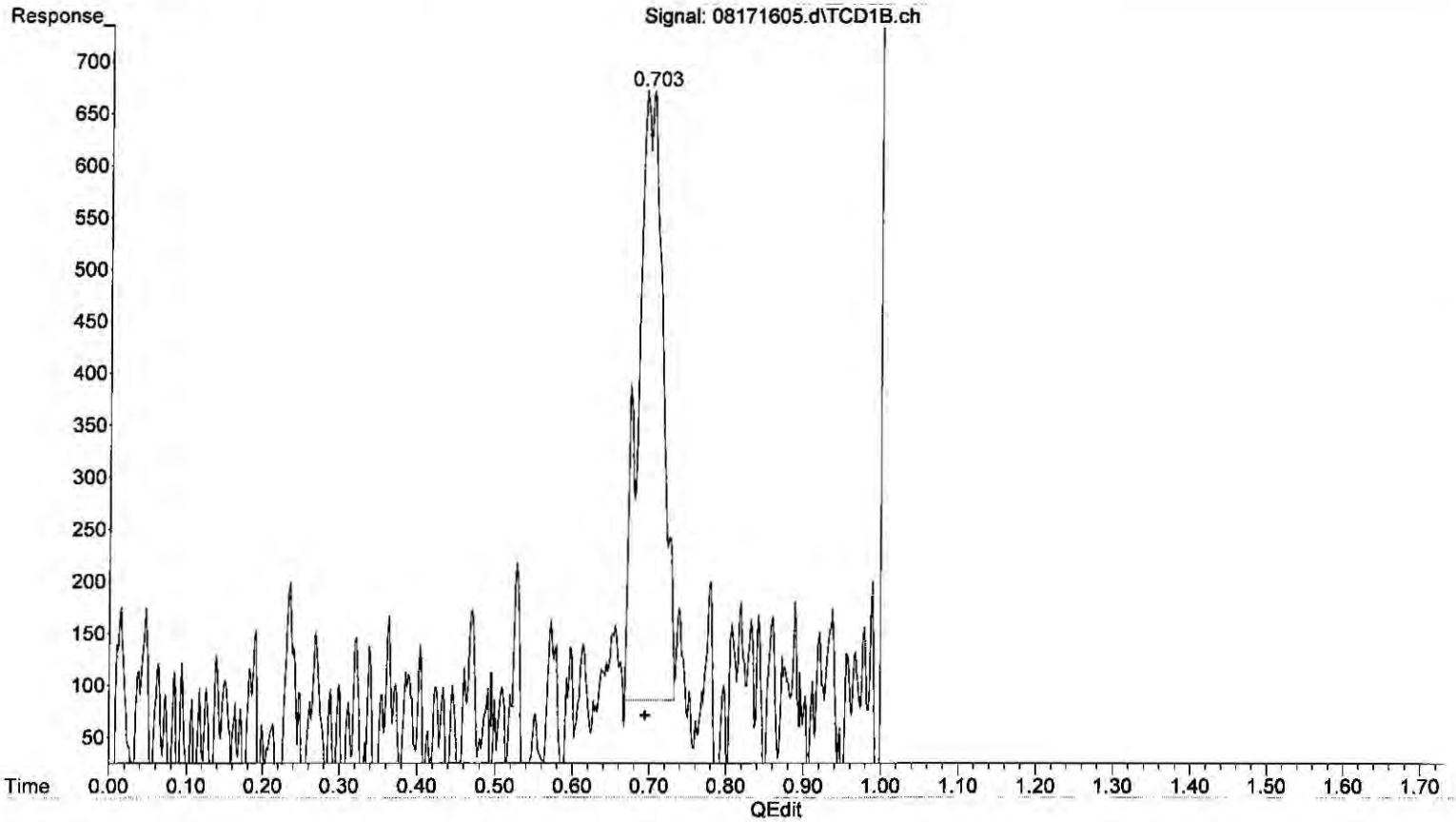


Quantitation Report (Qedit)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171605.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 8:39 am
Operator : MC
Sample : std s11-07191601 C
Misc :
ALS Vial : 5 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 08:49:33 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 08:49:13 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



(1) Hydrogen
0.703min 1057.957 ppm m
response 13114

MC 8/17/16 No previous
BL

LW 8/24/16

(+) = Expected Retention Time
trip08172016.M Wed Aug 17 17:13:33 2016

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171606.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 8:52 am
Operator : MC
Sample : std s11-12041503 A
Misc :
ALS Vial : 6 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 09:01:05 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 08:49:48 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.699	63333	5012.487	ppm	m
2)	Oxygen	1.453	2902297	4915.673	ppm	
3)	Nitrogen	1.542	3279195	4664.034	ppm	
4)	Carbon Monoxide	1.864	3095393	4838.263	ppm	
5)	Methane	3.101	2395679	4878.548	ppm	
6)	Carbon Dioxide	5.051	4229386	4847.337	ppm	

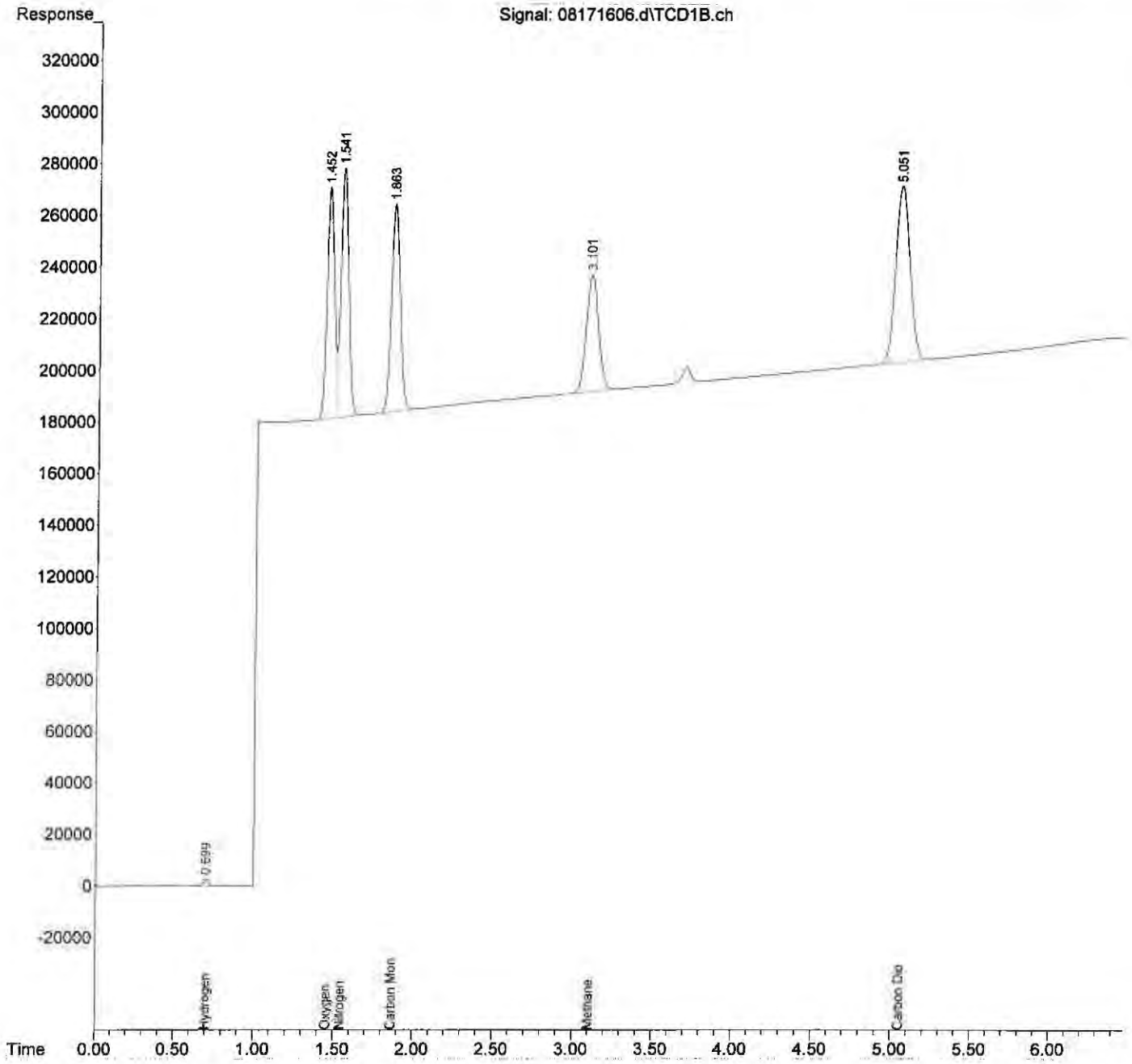
(f)=RT Delta > 1/2 Window (m)=manual int

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171606.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 8:52 am
Operator : MC
Sample : std s11-12041503 A
Misc :
ALS Vial : 6 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 09:01:05 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 08:49:48 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

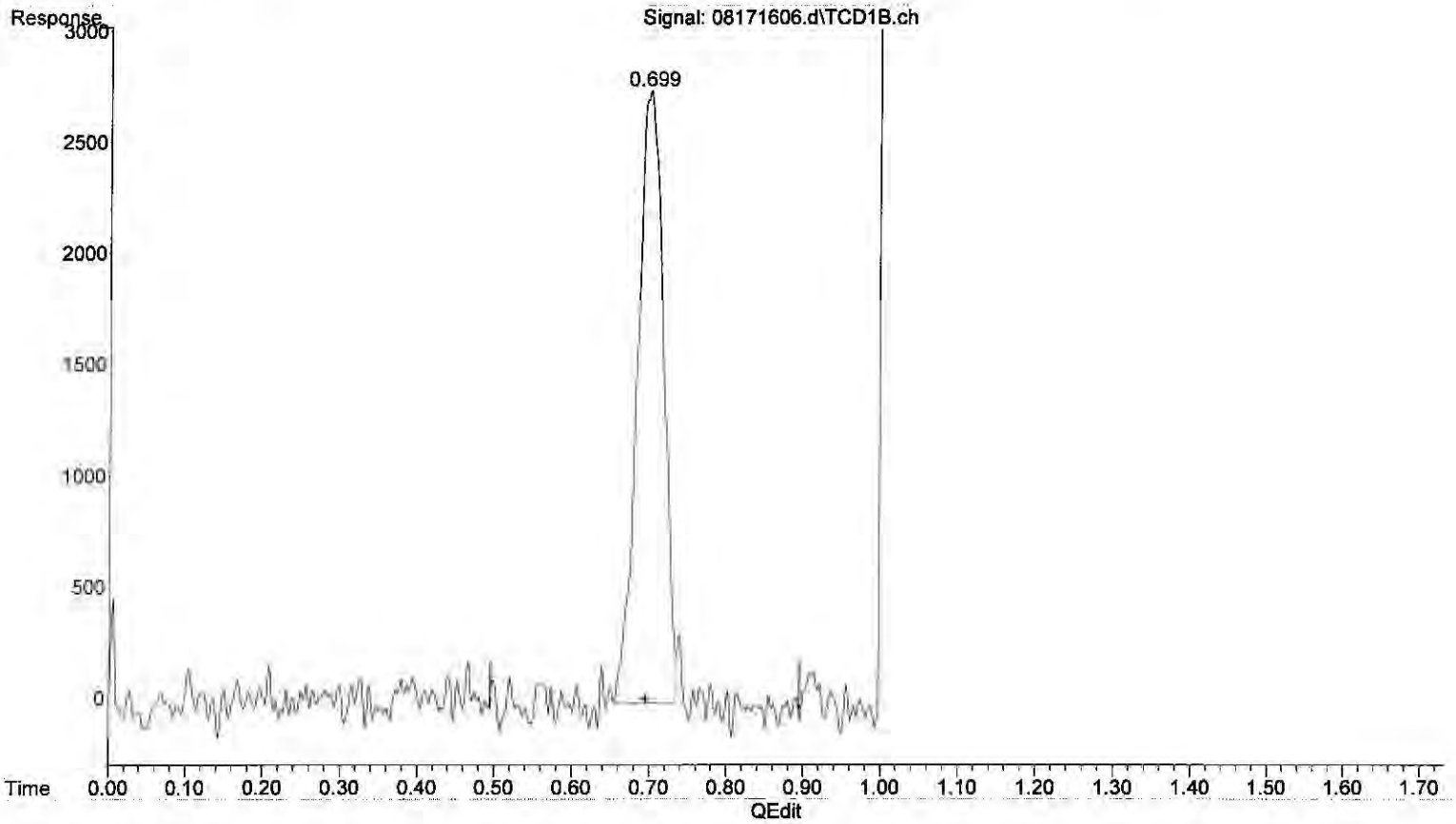


Quantitation Report (Qedit)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171606.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 8:52 am
Operator : MC
Sample : std s11-12041503 A
Misc :
ALS Vial : 6 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 09:01:05 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 08:49:48 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



(1) Hydrogen
0.699min 5012.487 ppm m
response 63333

MC 8/18/16
BLC
No peaks

(+) = Expected Retention Time
trip08172016.M Wed Aug 17 17:14:13 2016

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171607.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 9:02 am
Operator : MC
Sample : std s11-12041503 B
Misc :
ALS Vial : 7 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 09:12:52 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 09:01:20 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.699	63821	5047.957	ppm	m
2)	Oxygen	1.454	2808317	4776.637	ppm	
3)	Nitrogen	1.542	3126903	4523.413	ppm	
4)	Carbon Monoxide	1.864	3087809	4865.757	ppm	
5)	Methane	3.102	2385753	4888.018	ppm	
6)	Carbon Dioxide	5.052	4223315	4877.610	ppm	

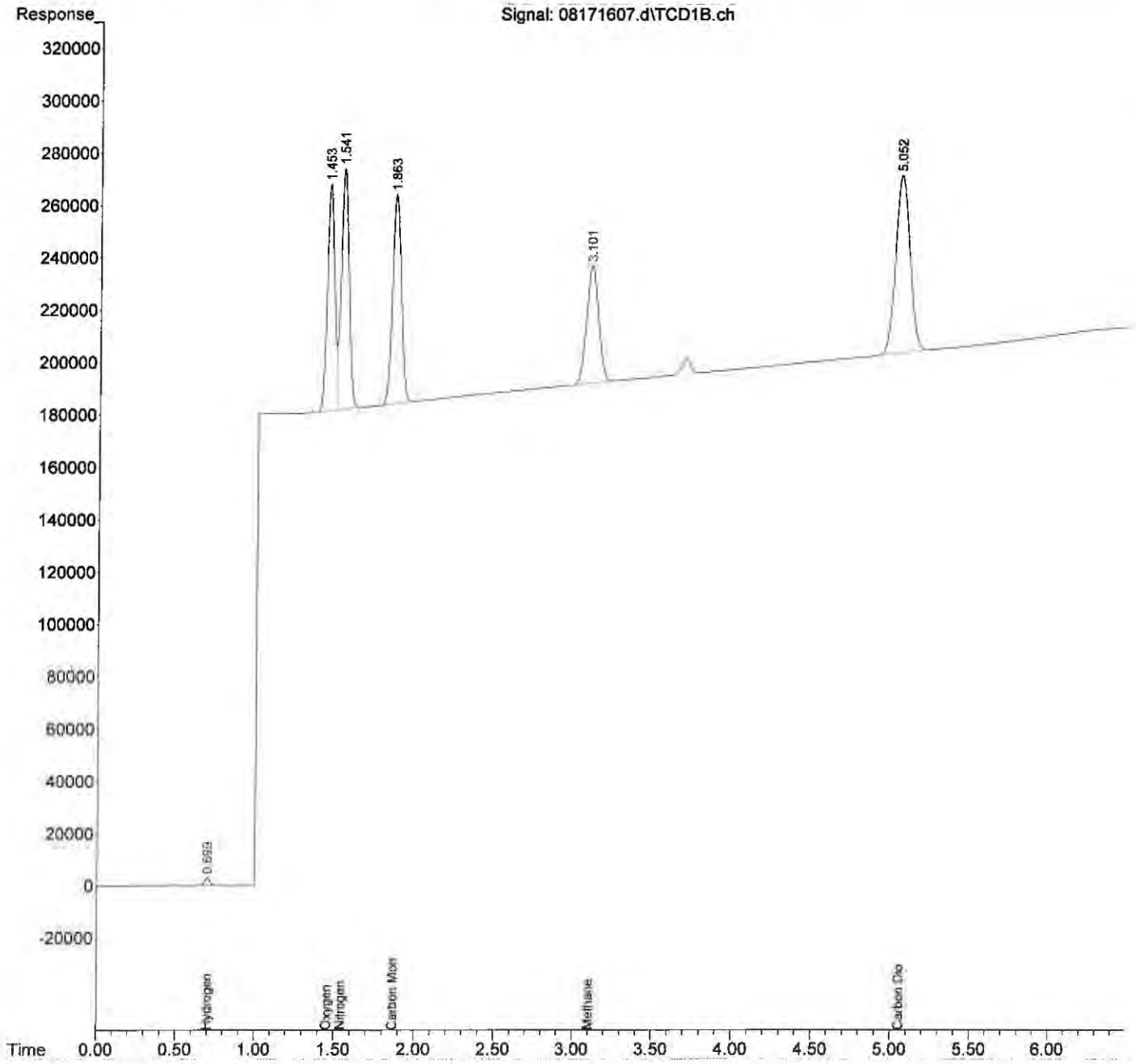
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171607.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 9:02 am
Operator : MC
Sample : std s11-12041503 B
Misc :
ALS Vial : 7 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 09:12:52 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 09:01:20 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

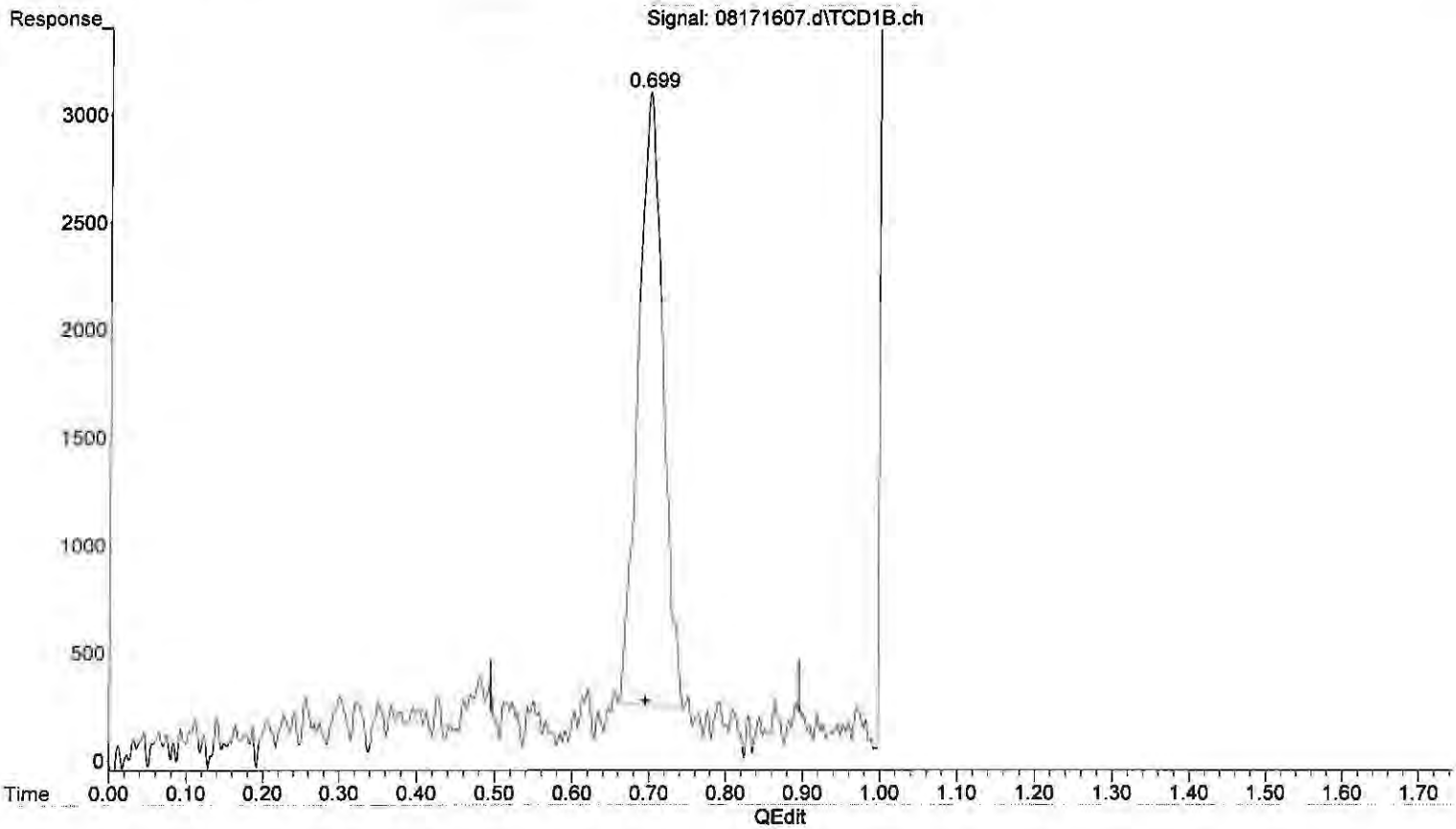


Quantitation Report (Qedit)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171607.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 9:02 am
Operator : MC
Sample : std s11-12041503 B
Misc :
ALS Vial : 7 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 09:12:52 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 09:01:20 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



(1) Hydrogen
0.699min 5047.957 ppm m
response 63821

MC 8/18/16
BLL
No previous

(+) = Expected Retention Time
trip08172016.M Wed Aug 17 17:14:30 2016

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171608.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 9:14 am
Operator : MC
Sample : std s11-12041503 C
Misc :
ALS Vial : 8 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 09:25:26 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 09:13:09 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.697	68722	5425.153	ppm	m
2)	Oxygen	1.454	2786179	4781.704	ppm	
3)	Nitrogen	1.542	3111526	4588.644	ppm	
4)	Carbon Monoxide	1.864	3076917	4874.770	ppm	
5)	Methane	3.101	2367931	4873.333	ppm	
6)	Carbon Dioxide	5.052	4206309	4881.870	ppm	

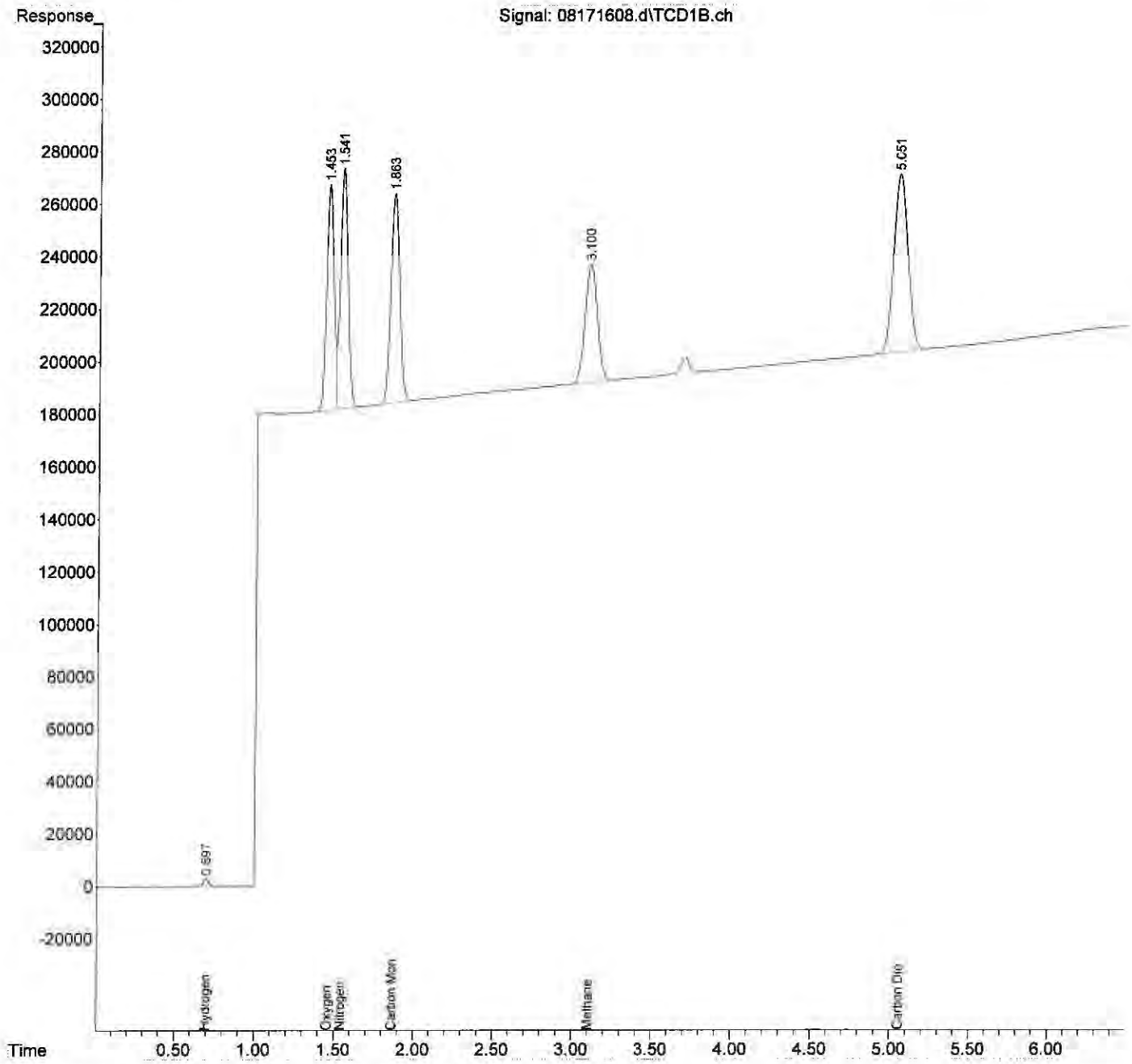
(f)=RT Delta > 1/2 Window (m)=manual int

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171608.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 9:14 am
Operator : MC
Sample : std s11-12041503 C
Misc :
ALS Vial : 8 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 09:25:26 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 09:13:09 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

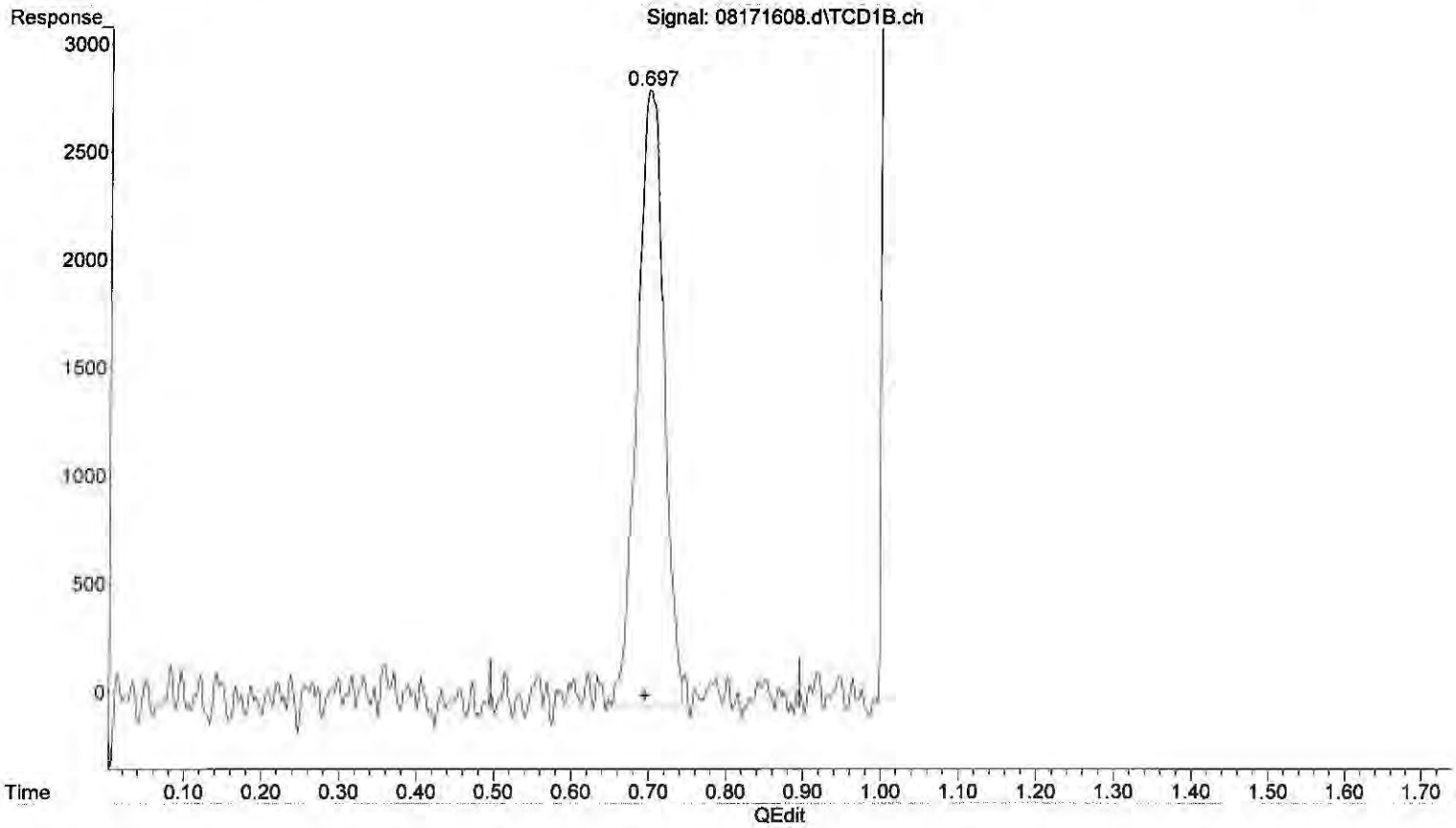


Quantitation Report (Qedit)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171608.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 9:14 am
Operator : MC
Sample : std s11-12041503 C
Misc :
ALS Vial : 8 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 09:25:26 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 09:13:09 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



(1) Hydrogen
0.697min 5425.153 ppm m
response 68722

Mc 8/18/16
BL
No previous

Crystal

(+) = Expected Retention Time
trip08172016.M Wed Aug 17 17:14:49 2016

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171610.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 9:39 am
Operator : MC
Sample : std s11-12041502 A
Misc :
ALS Vial : 10 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 09:46:29 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 09:38:11 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.700	139987	10790.289	ppm
2)	Oxygen	1.453	5641237	9695.950	ppm
3)	Nitrogen	1.541	6229560	9165.921	ppm
4)	Carbon Monoxide	1.864	6240771	9941.480	ppm
5)	Methane	3.101	4808279	9949.447	ppm
6)	Carbon Dioxide	5.051	8523011	9956.802	ppm

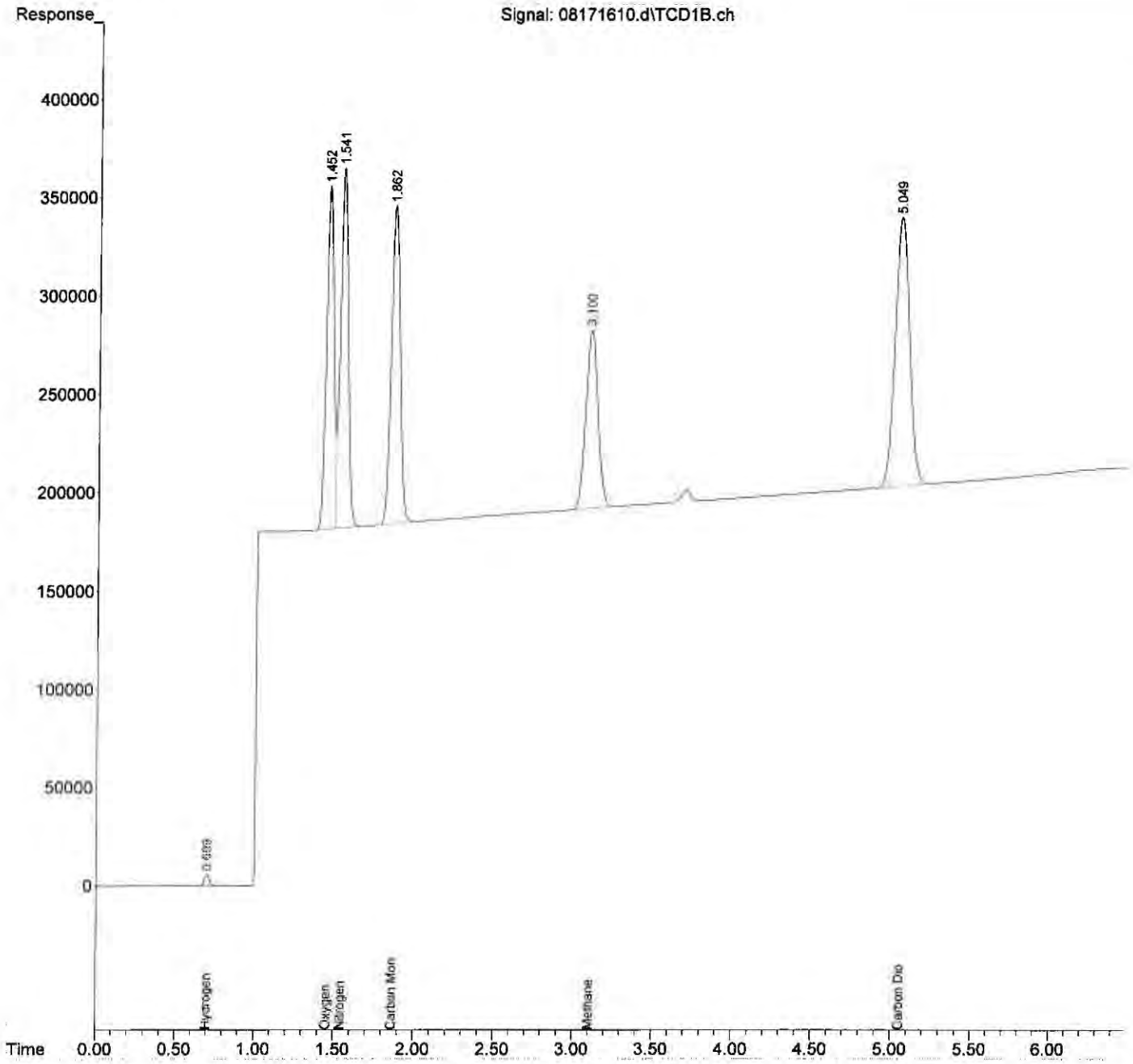
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171610.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 9:39 am
Operator : MC
Sample : std s11-12041502 A
Misc :
ALS Vial : 10 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 09:46:29 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 09:38:11 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171611.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 9:52 am
Operator : MC
Sample : std s11-12041502 B
Misc :
ALS Vial : 11 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 10:00:03 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 09:46:46 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.700	133582	10195.817	ppm	m
2)	Oxygen	1.453	5511743	9509.522	ppm	
3)	Nitrogen	1.542	6056059	9004.520	ppm	
4)	Carbon Monoxide	1.863	6107195	9735.817	ppm	
5)	Methane	3.101	4716089	9764.854	ppm	
6)	Carbon Dioxide	5.051	8358886	9770.343	ppm	

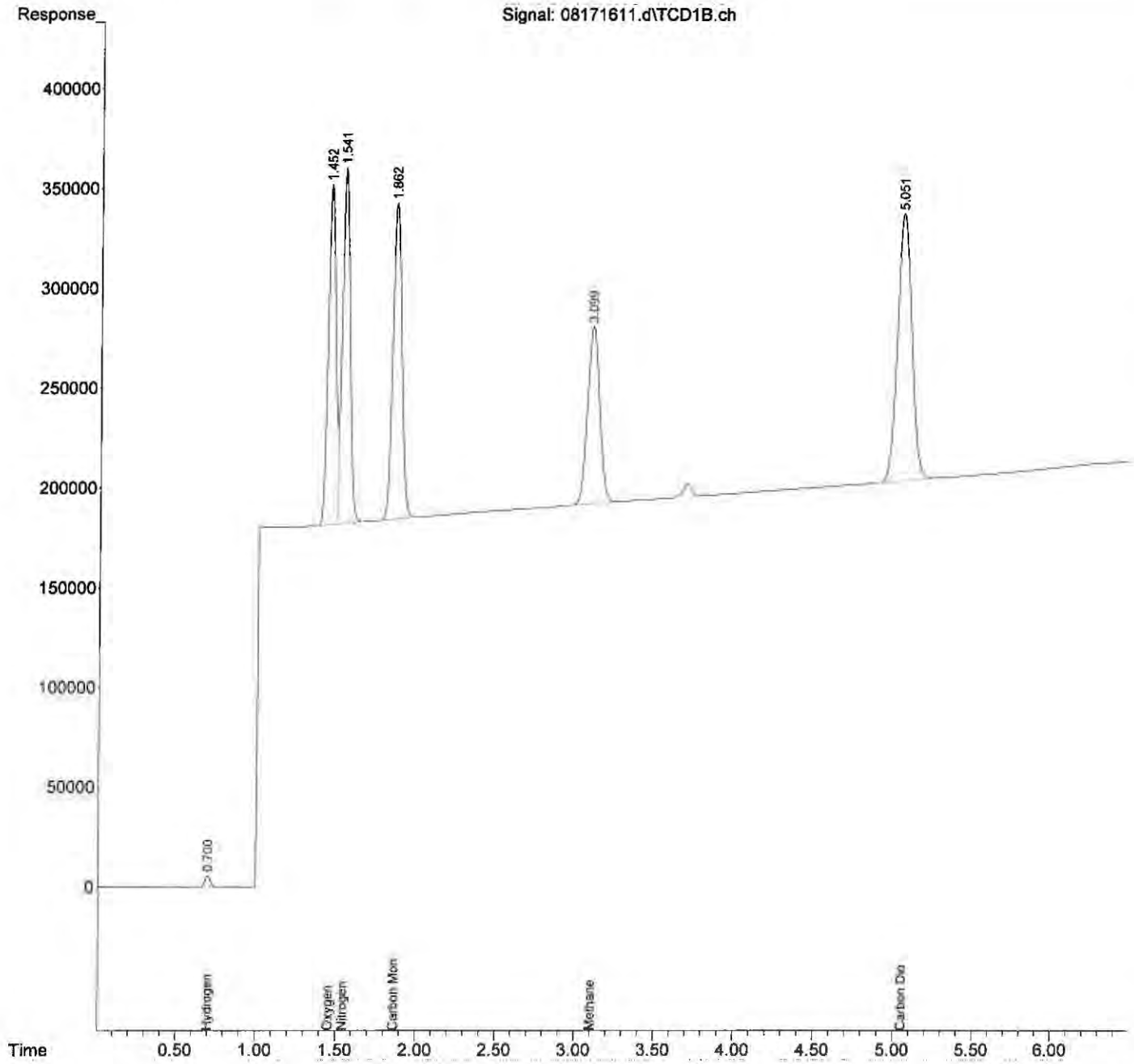
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171611.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 9:52 am
Operator : MC
Sample : std s11-12041502 B
Misc :
ALS Vial : 11 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 10:00:03 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 09:46:46 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

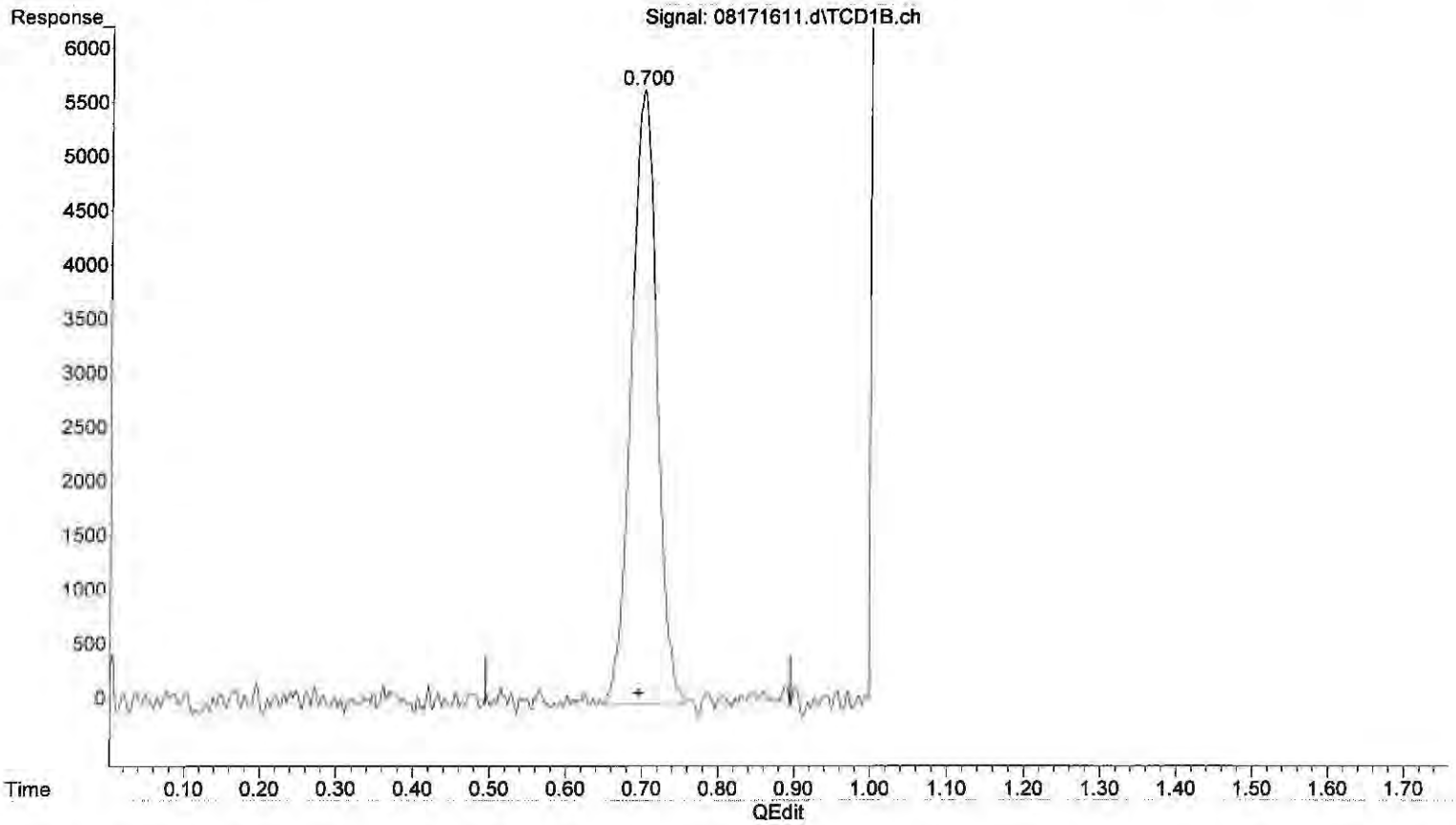


Quantitation Report (Qedit)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171611.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 9:52 am
Operator : MC
Sample : std s11-12041502 B
Misc :
ALS Vial : 11 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 10:00:03 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 09:46:46 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



(1) Hydrogen
0.700min 10195.817 ppm m
response 133582

No previous
MC
8/18/16
BL

(+) = Expected Retention Time
trip08172016.M Wed Aug 17 17:15:42 2016

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171612.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 10:02 am
Operator : MC
Sample : std s11-12041502 C
Misc :
ALS Vial : 12 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 10:09:48 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 10:09:30 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.699	140993	10772.355	ppm
2)	Oxygen	1.453	5643307	9886.889	ppm
3)	Nitrogen	1.542	6192495	9531.908	ppm
4)	Carbon Monoxide	1.864	6257030	10025.756	ppm
5)	Methane	3.101	4820927	10027.093	ppm
6)	Carbon Dioxide	5.051	8536304	10012.043	ppm

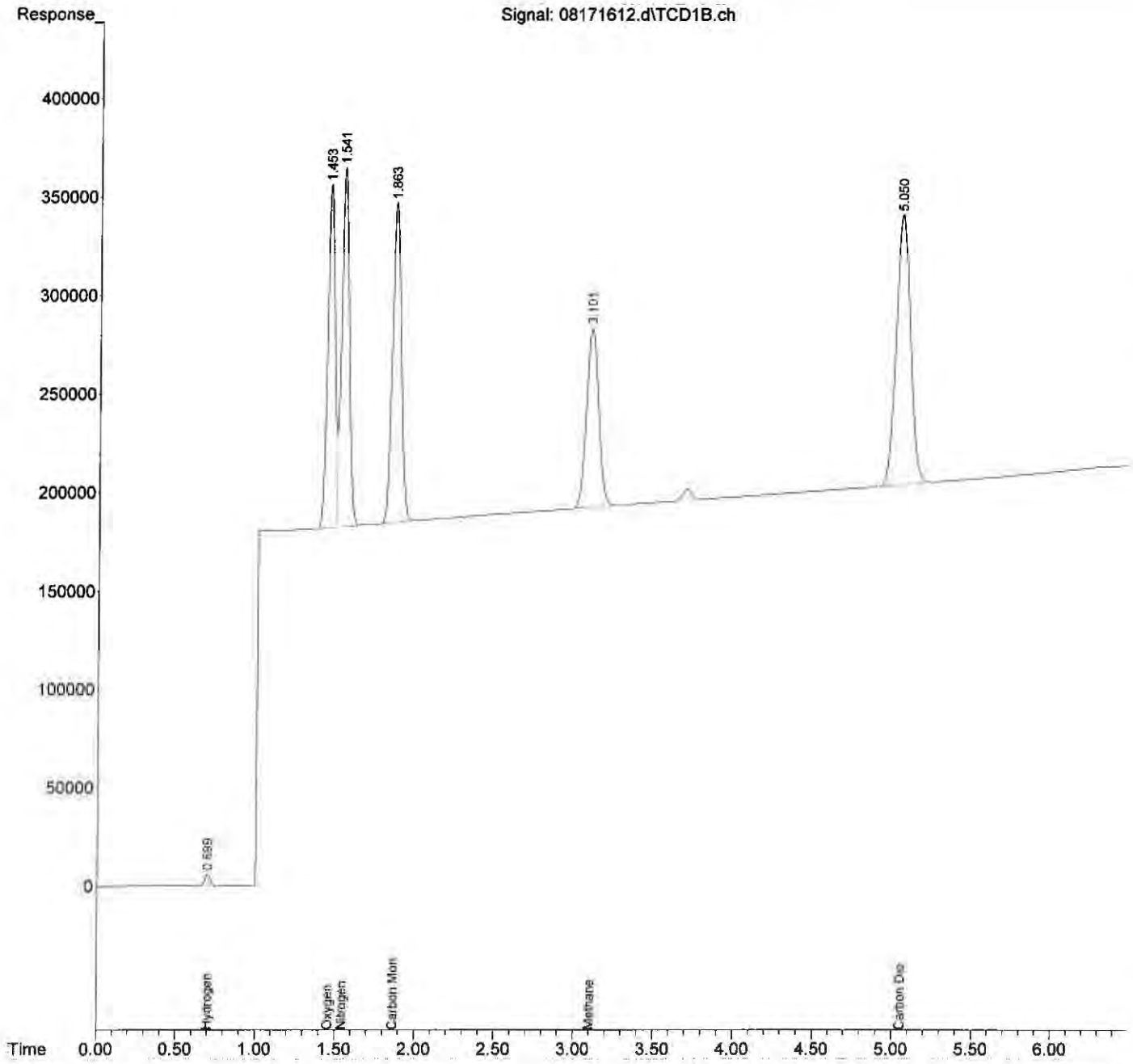
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171612.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 10:02 am
Operator : MC
Sample : std s11-12041502 C
Misc :
ALS Vial : 12 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 10:09:48 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 10:09:30 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171613.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 10:12 am
Operator : MC
Sample : std s11-12041501 A
Misc :
ALS Vial : 13 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 10:19:45 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 10:10:14 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.699	580730	44092.431	ppm	m
2)	Oxygen	1.451	23935635	41827.326	ppm	
3)	Nitrogen	1.539	26073540	40040.721	ppm	
4)	Carbon Monoxide	1.861	26728290	42713.294	ppm	
5)	Methane	3.098	20612017	42767.522	ppm	
6)	Carbon Dioxide	5.046	36504454	42716.505	ppm	

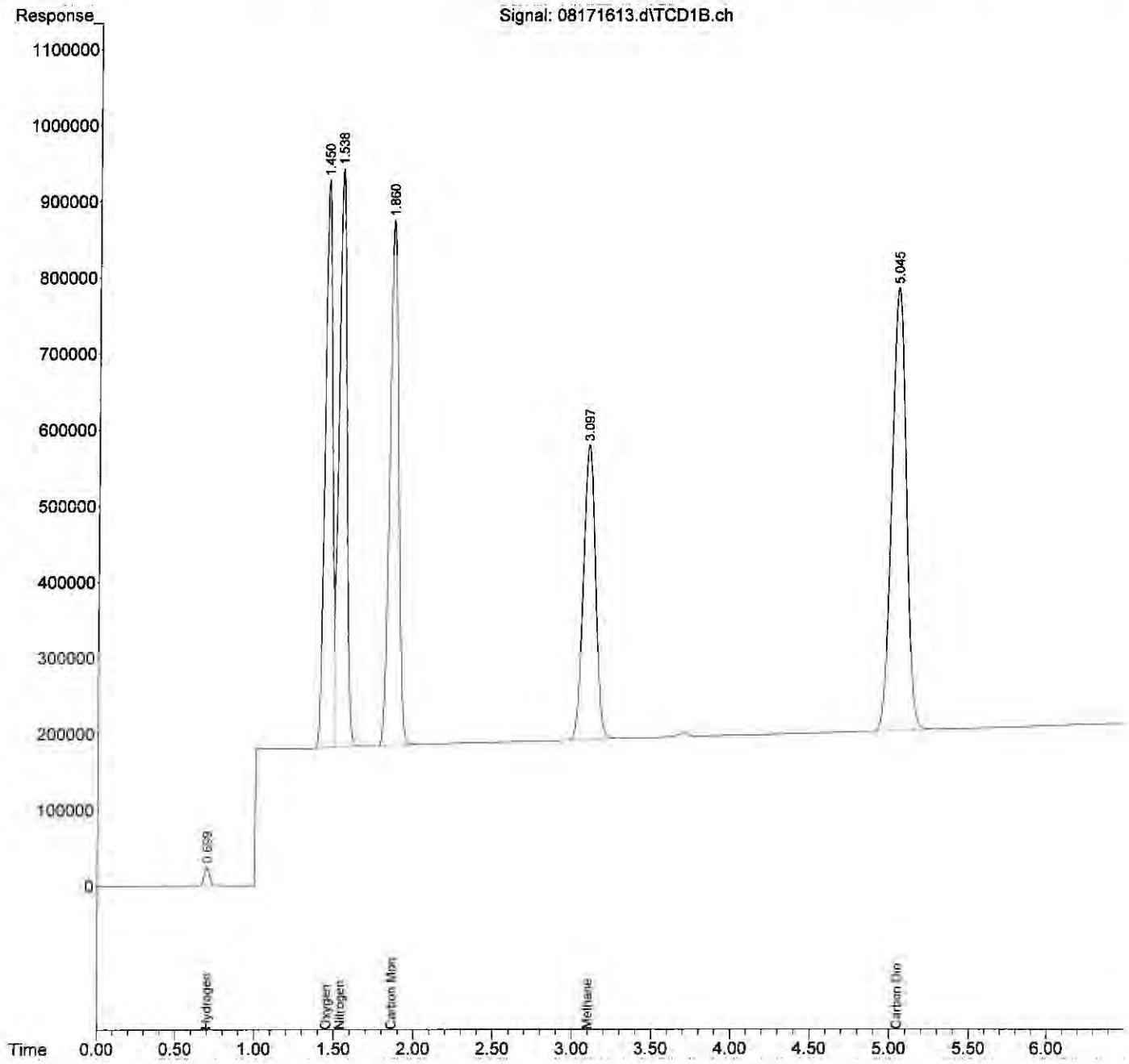
(f)=RT Delta > 1/2 Window (m)=manual int

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171613.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 10:12 am
Operator : MC
Sample : std s11-12041501 A
Misc :
ALS Vial : 13 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 10:19:45 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 10:10:14 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

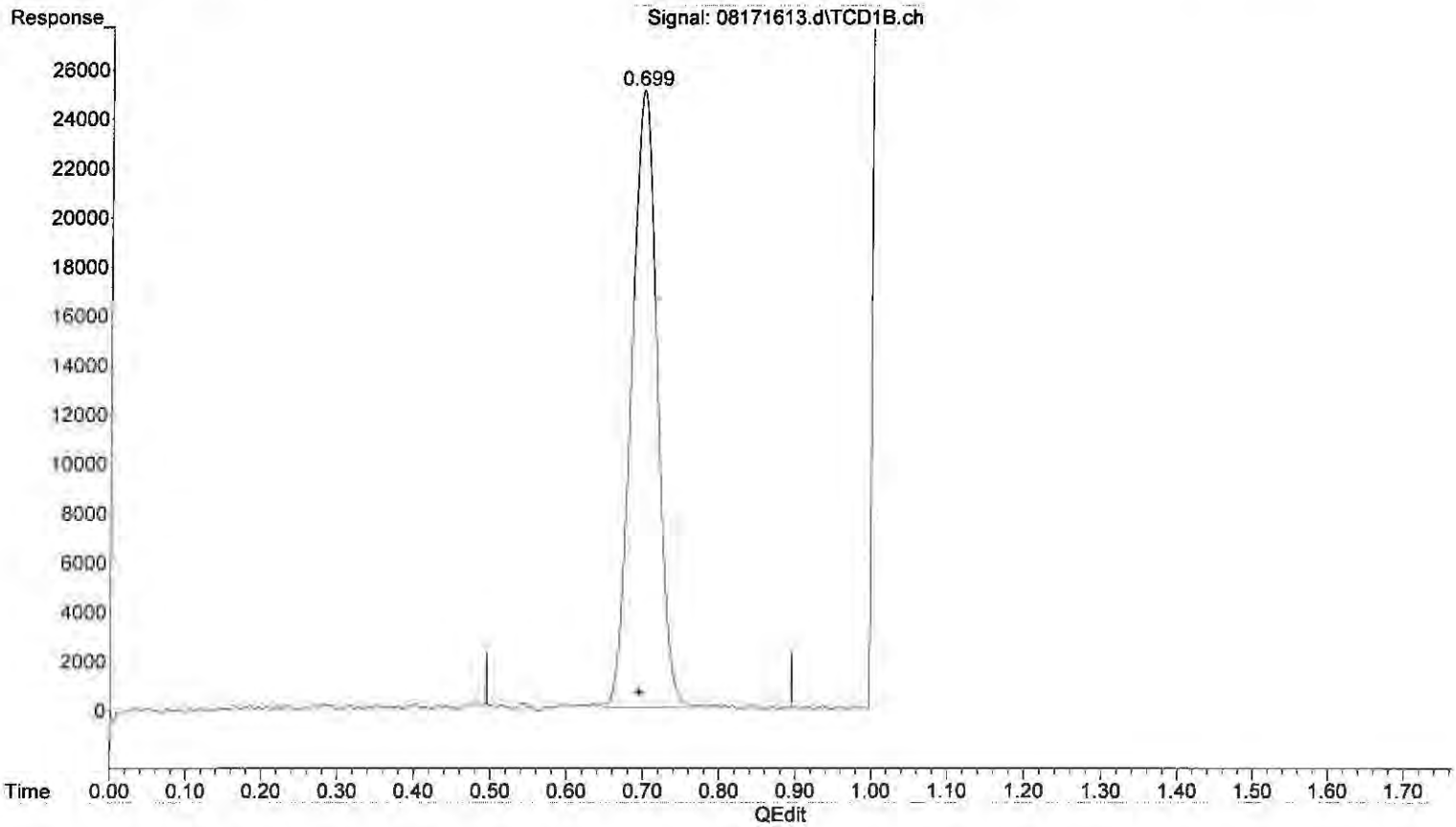


Quantitation Report (Qedit)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171613.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 10:12 am
Operator : MC
Sample : std s11-12041501 A
Misc :
ALS Vial : 13 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 10:19:45 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 10:10:14 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



(1) Hydrogen
0.699min 44092.431 ppm m
response 580730

MC 8/18/16

BLL

No peaks

(+) = Expected Retention Time
trip08172016.M Wed Aug 17 17:16:36 2016

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171614.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 10:22 am
Operator : MC
Sample : std s11-12041501 B
Misc :
ALS Vial : 14 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 10:30:18 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 10:20:03 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.699	582048	43744.935	ppm
2)	Oxygen	1.451	23826599	41447.441	ppm
3)	Nitrogen	1.539	25956733	39857.285	ppm
4)	Carbon Monoxide	1.861	26619278	42252.478	ppm
5)	Methane	3.098	20516544	42276.919	ppm
6)	Carbon Dioxide	5.046	36414212	42323.476	ppm

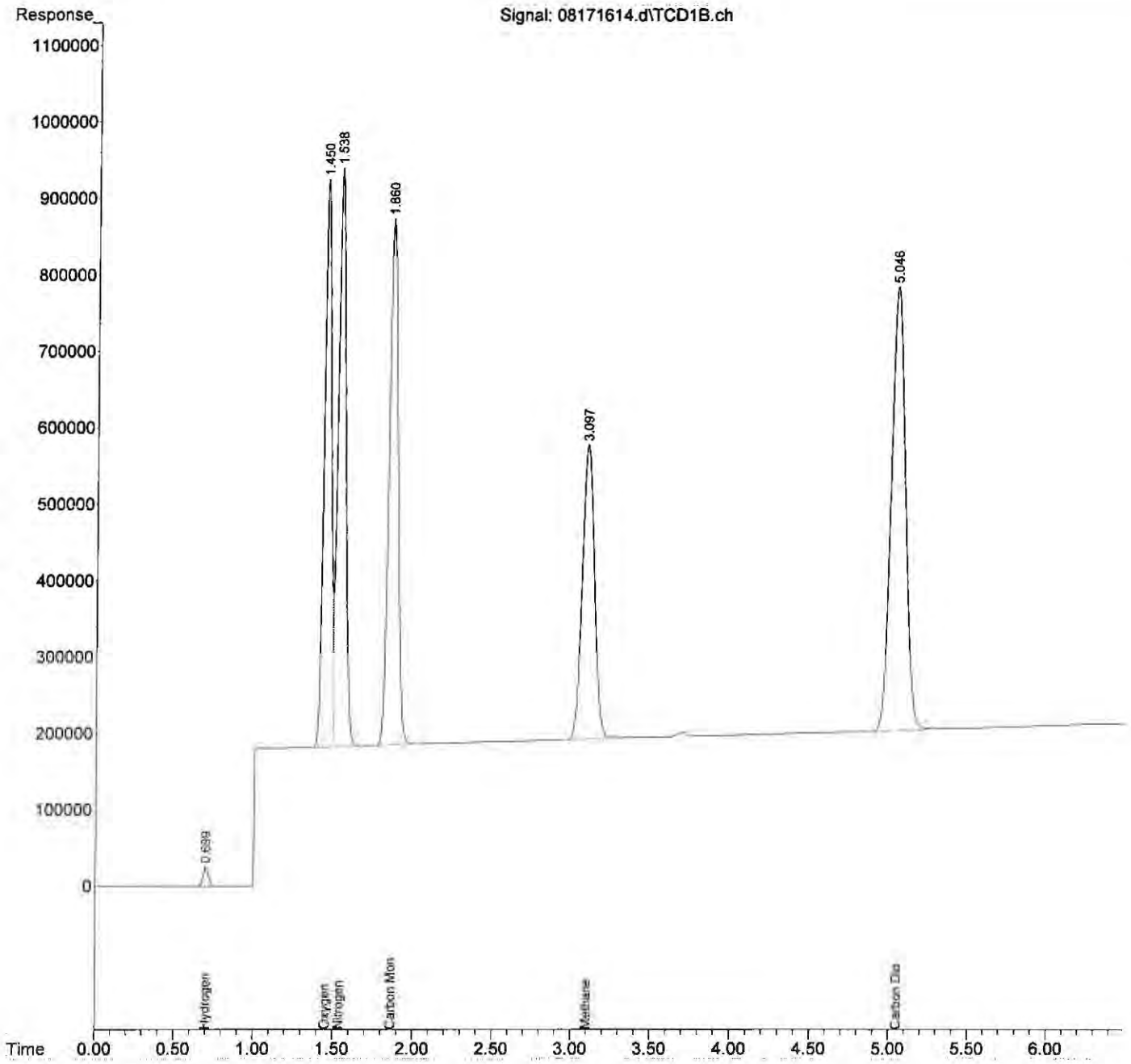
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171614.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 10:22 am
Operator : MC
Sample : std s11-12041501 B
Misc :
ALS Vial : 14 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 10:30:18 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 10:20:03 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171615.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 10:31 am
Operator : MC
Sample : std s11-12041501 C
Misc :
ALS Vial : 15 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 10:39:11 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 10:30:33 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.697	584213	43537.151	ppm	m
2)	Oxygen	1.450	23862517	41373.818	ppm	
3)	Nitrogen	1.538	25991568	39923.725	ppm	
4)	Carbon Monoxide	1.861	26651664	42088.421	ppm	
5)	Methane	3.098	20570476	42169.834	ppm	
6)	Carbon Dioxide	5.046	36463544	42158.192	ppm	

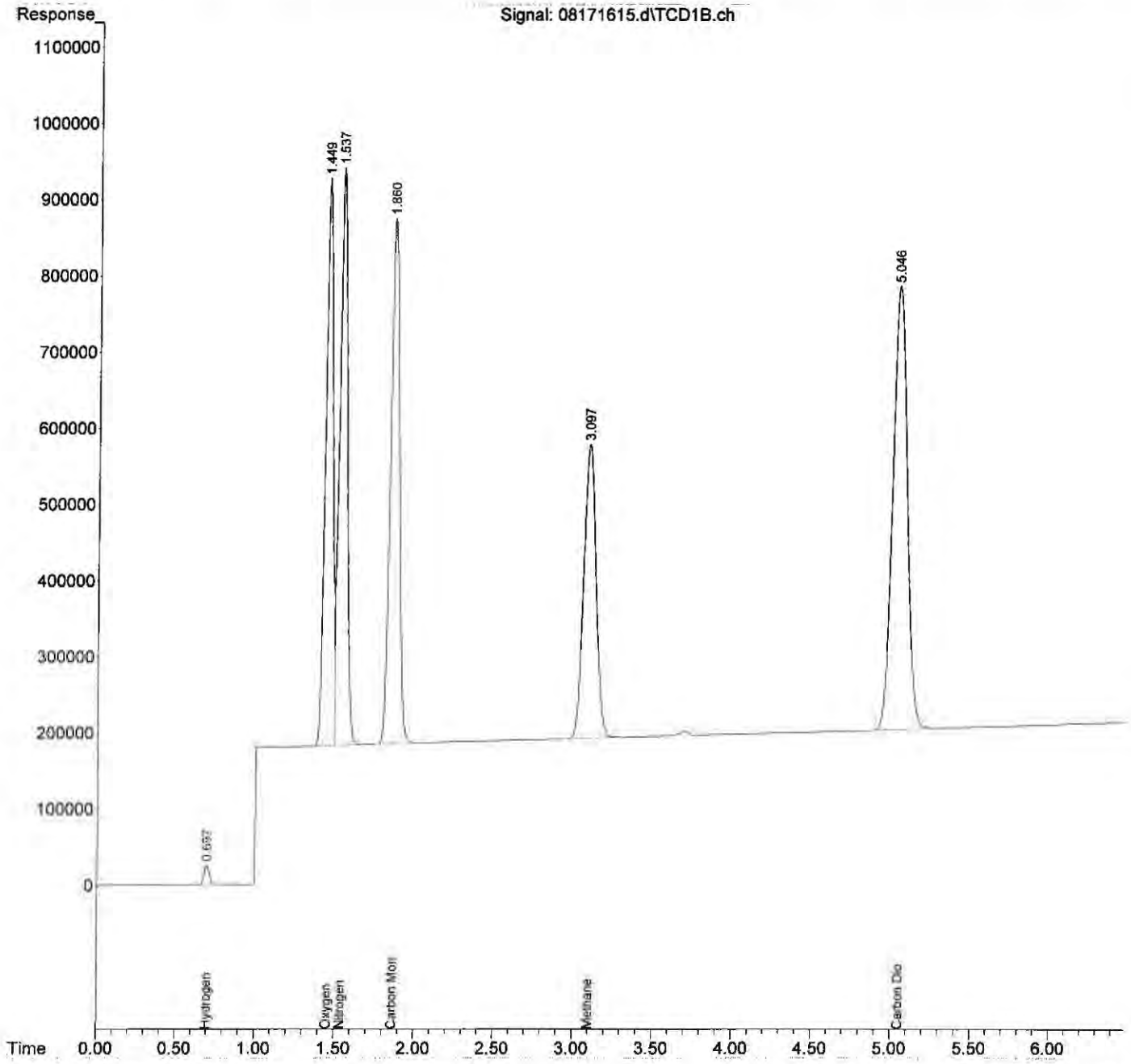
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171615.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 10:31 am
Operator : MC
Sample : std s11-12041501 C
Misc :
ALS Vial : 15 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 10:39:11 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 10:30:33 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

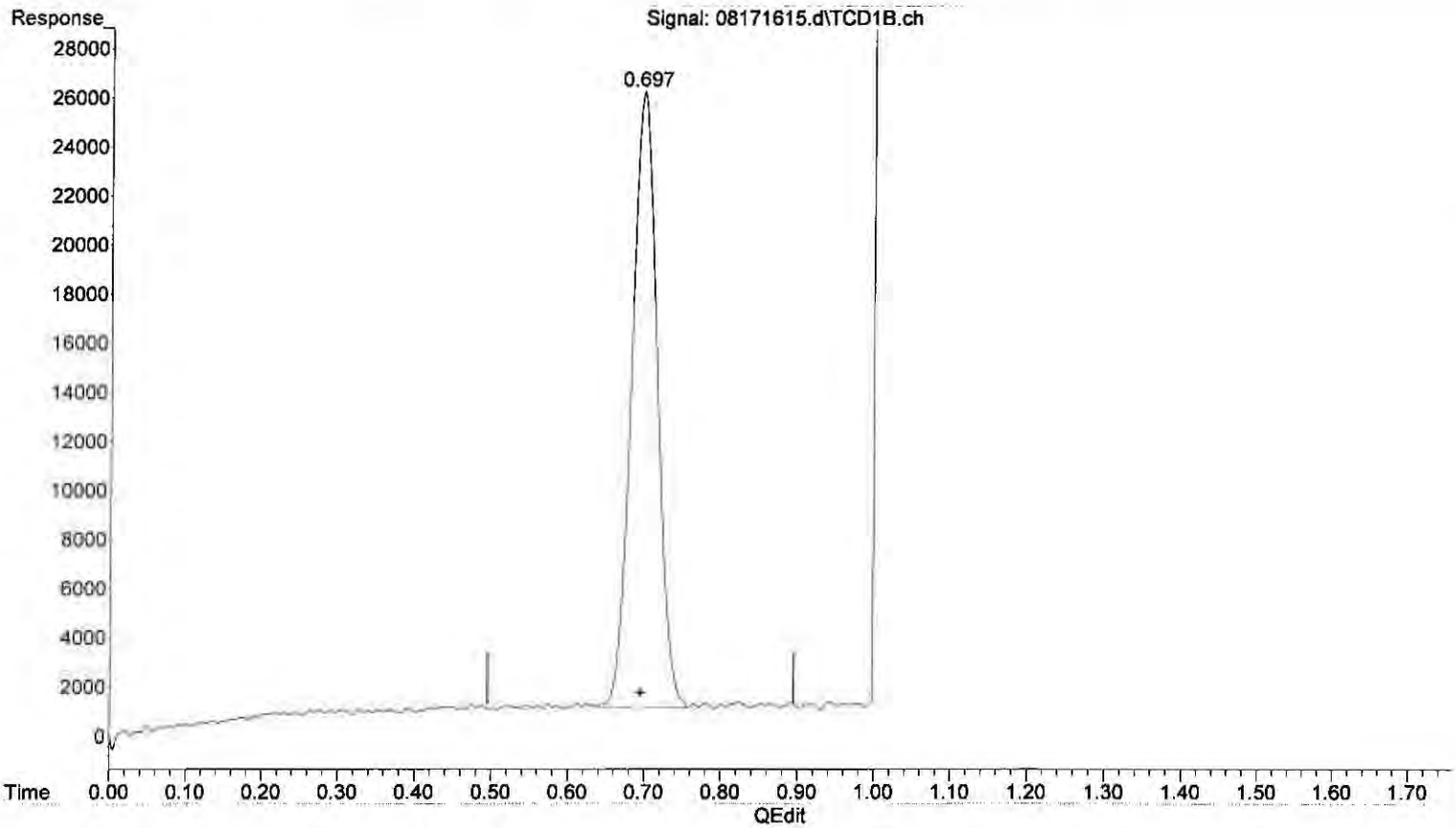


Quantitation Report (Qedit)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171615.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 10:31 am
Operator : MC
Sample : std s11-12041501 C
Misc :
ALS Vial : 15 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 10:39:11 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 10:30:33 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



(1) Hydrogen
0.697min 43537.151 ppm m
response 584213

MC 8/18/16
BL
No
primary

(+) = Expected Retention Time
trip08172016.M Wed Aug 17 17:17:11 2016

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171616.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 10:42 am
Operator : MC
Sample : std s11-12031501 A
Misc :
ALS Vial : 16 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 10:50:04 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 10:39:25 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.697	2288591	169304.321	ppm
2)	Oxygen	1.440	92172159	159355.800	ppm
3)	Nitrogen	1.528	100943913	155077.121	ppm
4)	Carbon Monoxide	1.851	103484437	162715.112	ppm
5)	Methane	3.086	79878978	163016.378	ppm
6)	Carbon Dioxide	5.030	141358480	162703.409	ppm

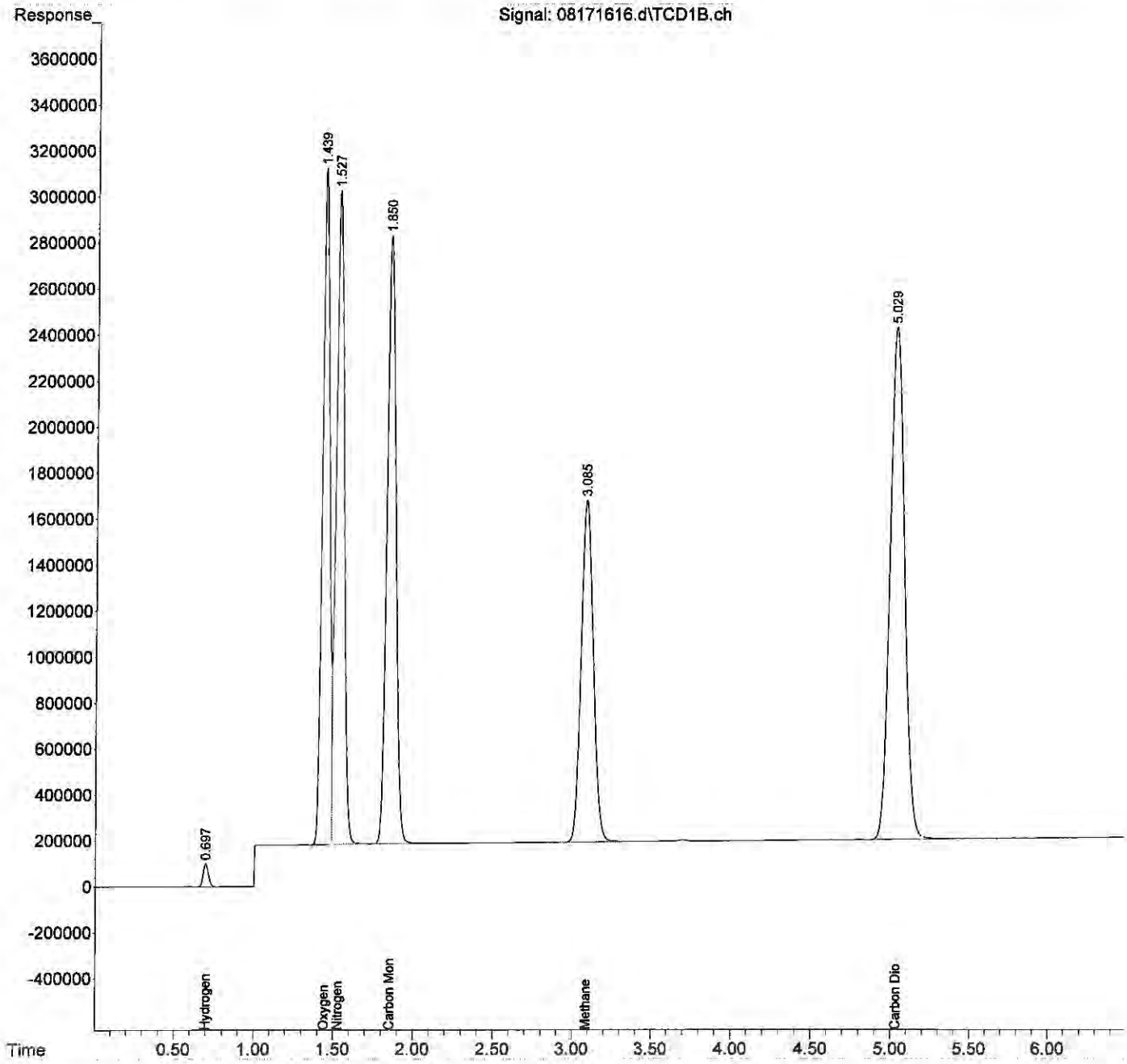
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171616.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 10:42 am
Operator : MC
Sample : std s11-12031501 A
Misc :
ALS Vial : 16 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 10:50:04 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 10:39:25 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171617.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 10:55 am
Operator : MC
Sample : std s11-12041501 B
Misc :
ALS Vial : 17 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 11:02:21 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 10:52:43 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.697	2289657	168628.854	ppm
2)	Oxygen	1.440	92464939	159911.512	ppm
3)	Nitrogen	1.528	101263115	155936.567	ppm
4)	Carbon Monoxide	1.850	103800819	162999.810	ppm
5)	Methane	3.085	80151028	163334.711	ppm
6)	Carbon Dioxide	5.030	142064571	163303.870	ppm

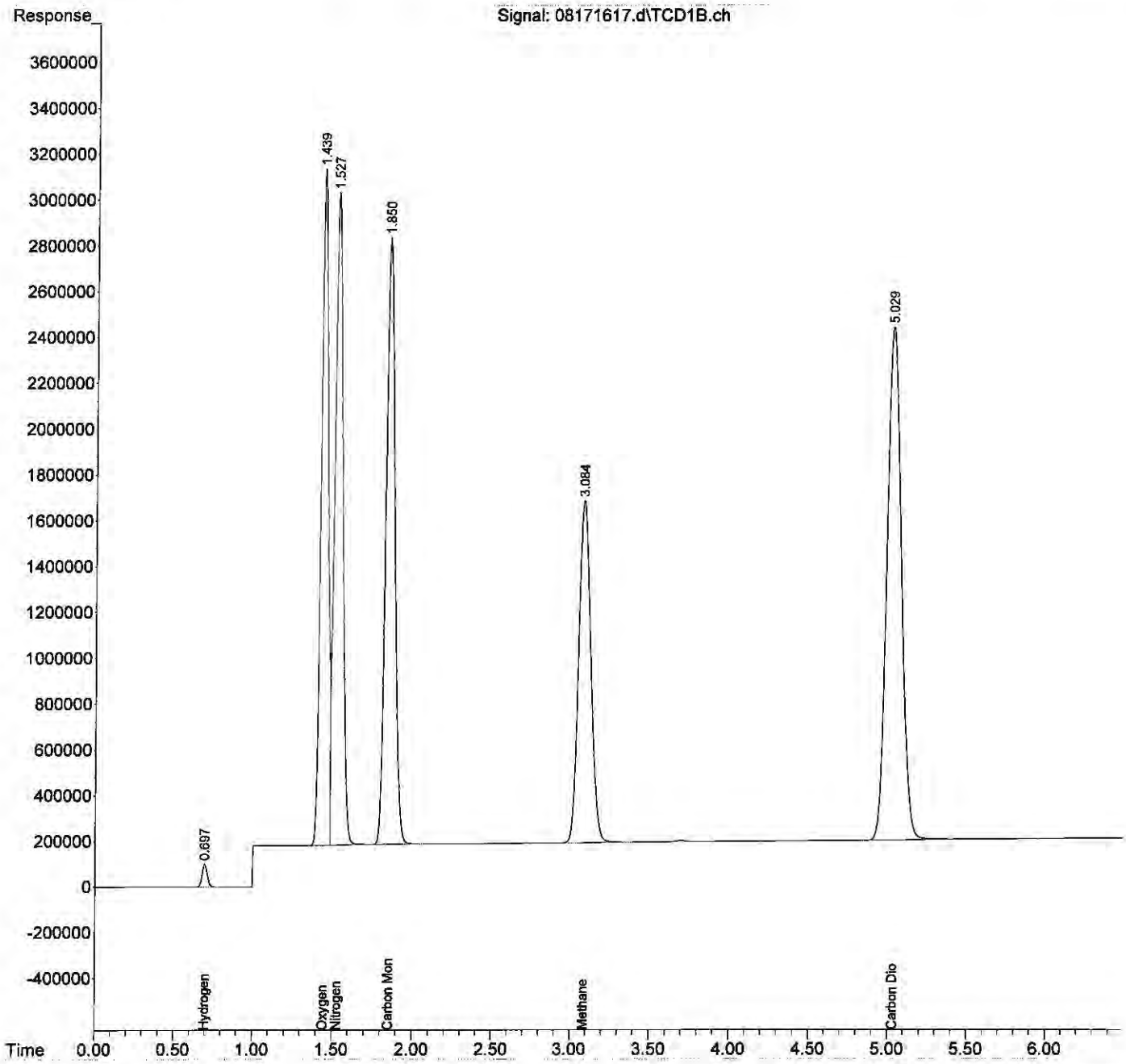
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171617.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 10:55 am
Operator : MC
Sample : std s11-12041501 B
Misc :
ALS Vial : 17 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 11:02:21 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 10:52:43 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171618.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 11:05 am
Operator : MC
Sample : std s11-12041501 C
Misc :
ALS Vial : 18 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 11:13:22 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 11:02:50 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.697	2323873	170492.039	ppm
2)	Oxygen	1.440	93438547	161601.681	ppm
3)	Nitrogen	1.528	102307767	157831.555	ppm
4)	Carbon Monoxide	1.850	104922839	164541.378	ppm
5)	Methane	3.085	80982555	164783.912	ppm
6)	Carbon Dioxide	5.030	143593489	164818.270	ppm

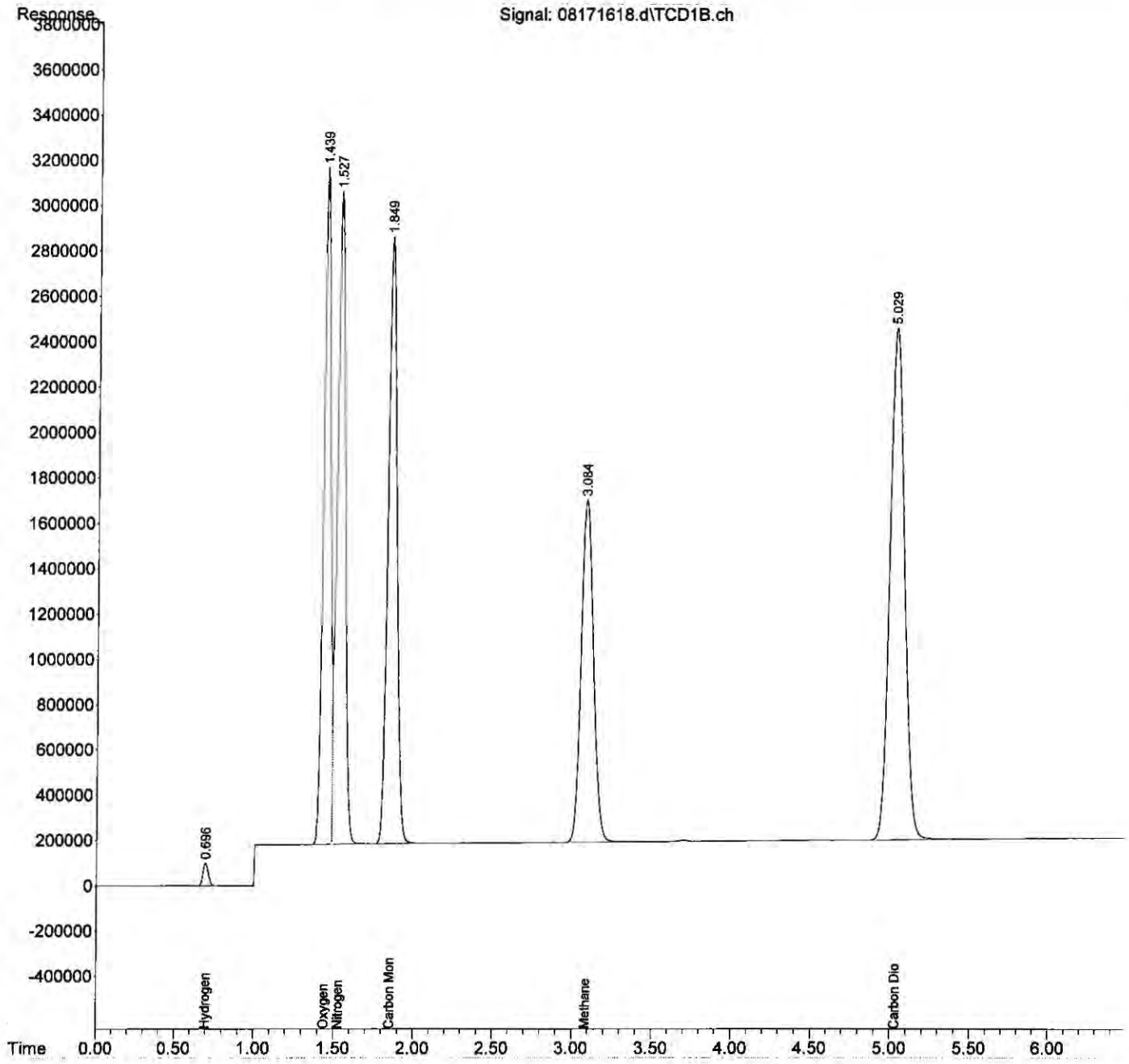
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171618.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 11:05 am
Operator : MC
Sample : std s11-12041501 C
Misc :
ALS Vial : 18 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 11:13:22 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 11:02:50 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171619.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 11:40 am
Operator : MC
Sample : std N2 a
Misc :
ALS Vial : 19 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 31 15:58:09 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 11:13:36 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.000	0	N.D.	ppm	
2)	Oxygen	0.000	0	N.D.	ppm	d
3)	Nitrogen	1.474	732108094	1130454.291	ppm	
4)	Carbon Monoxide	0.000	0	N.D.	ppm	
5)	Methane	0.000	0	N.D.	ppm	
6)	Carbon Dioxide	0.000	0	N.D.	ppm	

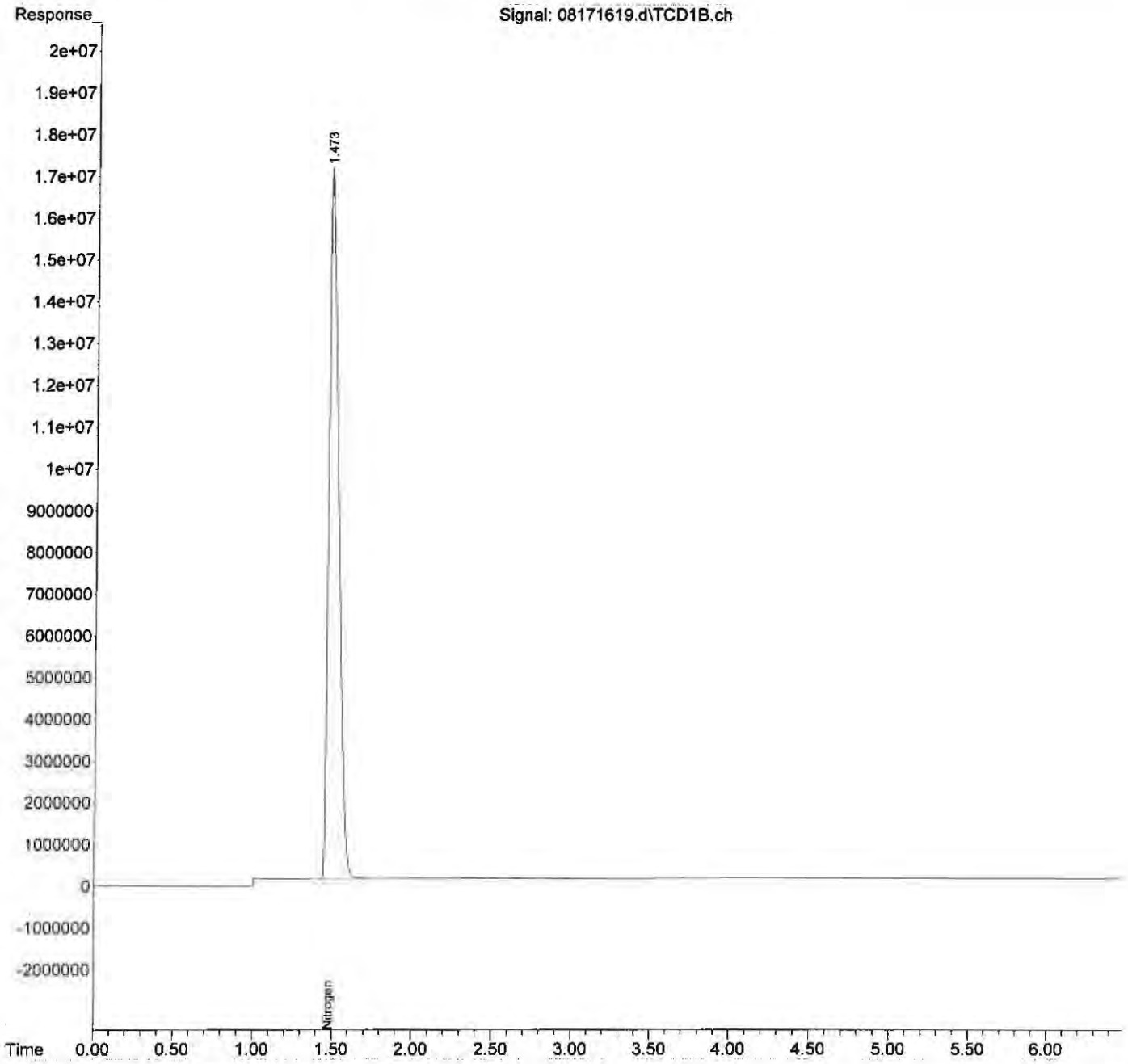
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171619.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 11:40 am
Operator : MC
Sample : std N2 a
Misc :
ALS Vial : 19 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 31 15:58:09 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 11:13:36 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171620.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 11:52 am
Operator : MC
Sample : std N2 b
Misc :
ALS Vial : 20 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 11:59:59 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 11:51:04 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.000	0	N.D.	ppm	
2)	Oxygen	0.000	0	N.D.	ppm	d
3)	Nitrogen	1.474	729497758	1117312.968	ppm	
4)	Carbon Monoxide	0.000	0	N.D.	ppm	
5)	Methane	0.000	0	N.D.	ppm	
6)	Carbon Dioxide	0.000	0	N.D.	ppm	

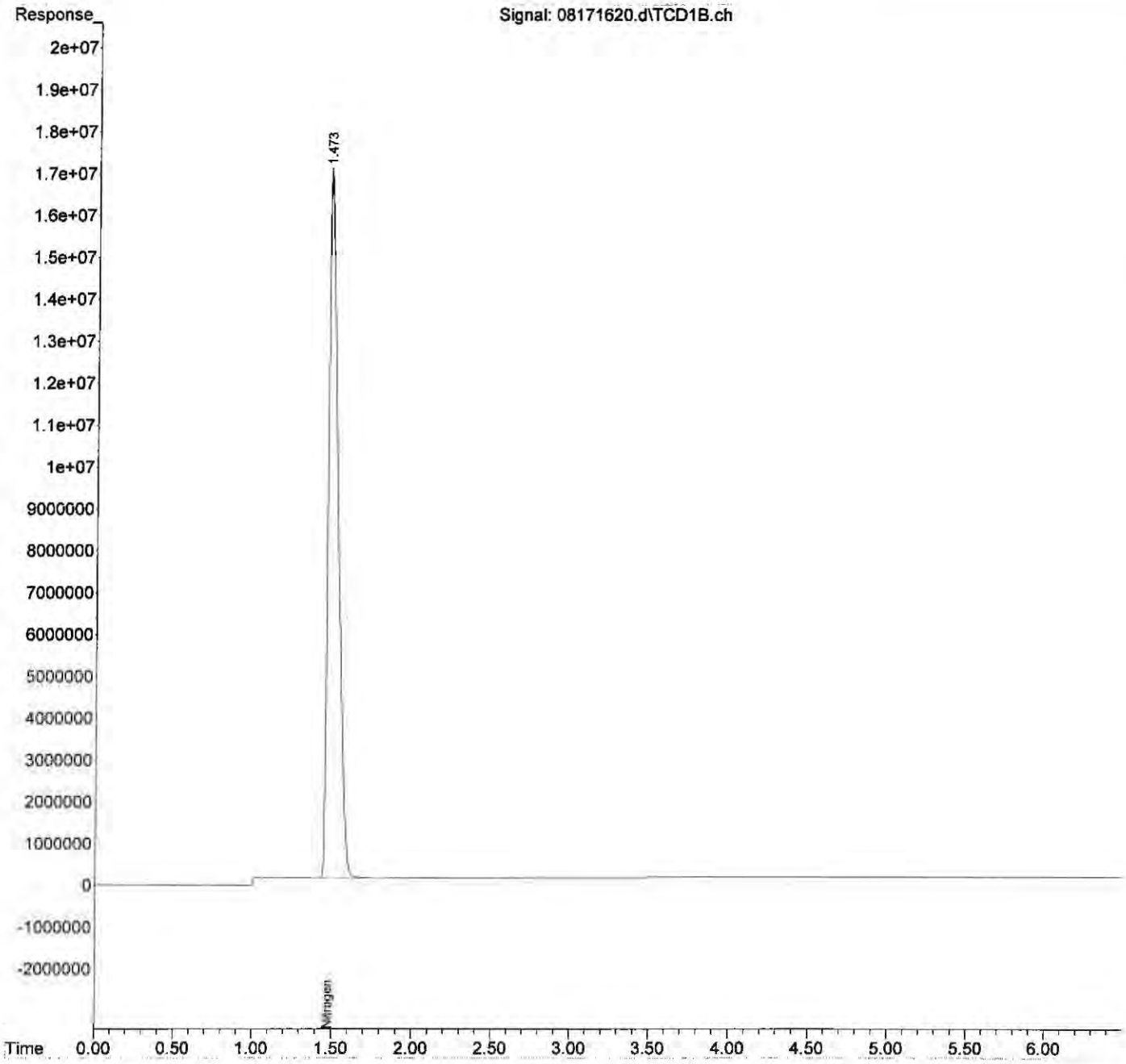
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171620.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 11:52 am
Operator : MC
Sample : std N2 b
Misc :
ALS Vial : 20 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 11:59:59 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 11:51:04 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171621.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 12:01 pm
Operator : MC
Sample : std N2 c
Misc :
ALS Vial : 21 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 12:09:09 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 11:51:04 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.000	0	N.D.	ppm	
2)	Oxygen	0.000	0	N.D.	ppm	d
3)	Nitrogen	1.474	730183972	1110698.589	ppm	
4)	Carbon Monoxide	0.000	0	N.D.	ppm	
5)	Methane	0.000	0	N.D.	ppm	
6)	Carbon Dioxide	0.000	0	N.D.	ppm	

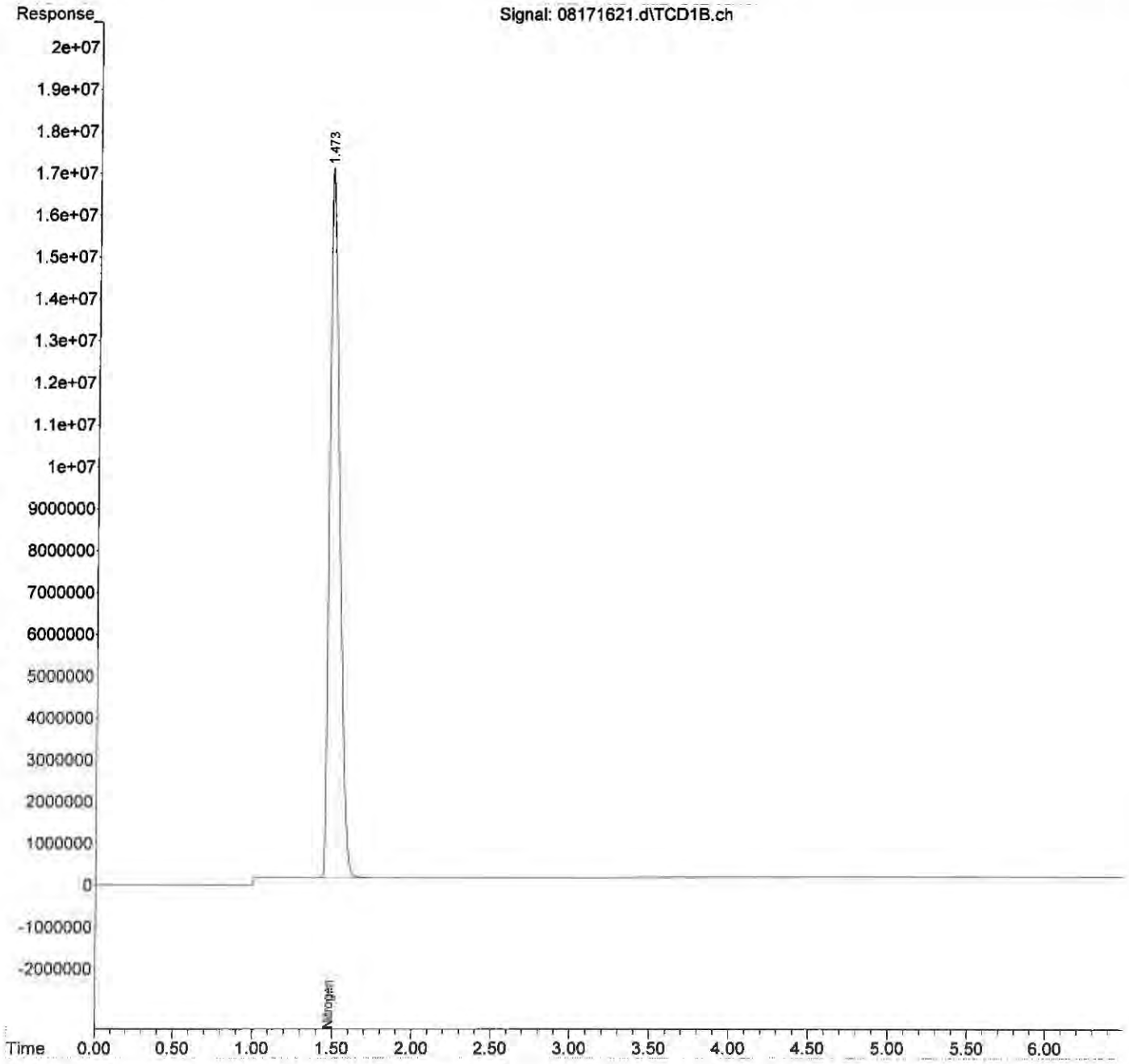
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171621.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 12:01 pm
Operator : MC
Sample : std N2 c
Misc :
ALS Vial : 21 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 12:09:09 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 11:51:04 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171625.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 12:50 pm
Operator : MC
Sample : std CO2 a
Misc :
ALS Vial : 25 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 12:57:45 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 11:51:04 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.000	0	N.D.	ppm	
2)	Oxygen	0.000	0	N.D.	ppm	d
3)	Nitrogen	0.000	0	N.D.	ppm	d
4)	Carbon Monoxide	0.000	0	N.D.	ppm	
5)	Methane	0.000	0	N.D.	ppm	
6)	Carbon Dioxide	4.926	1053756922	1207091.032	ppm	

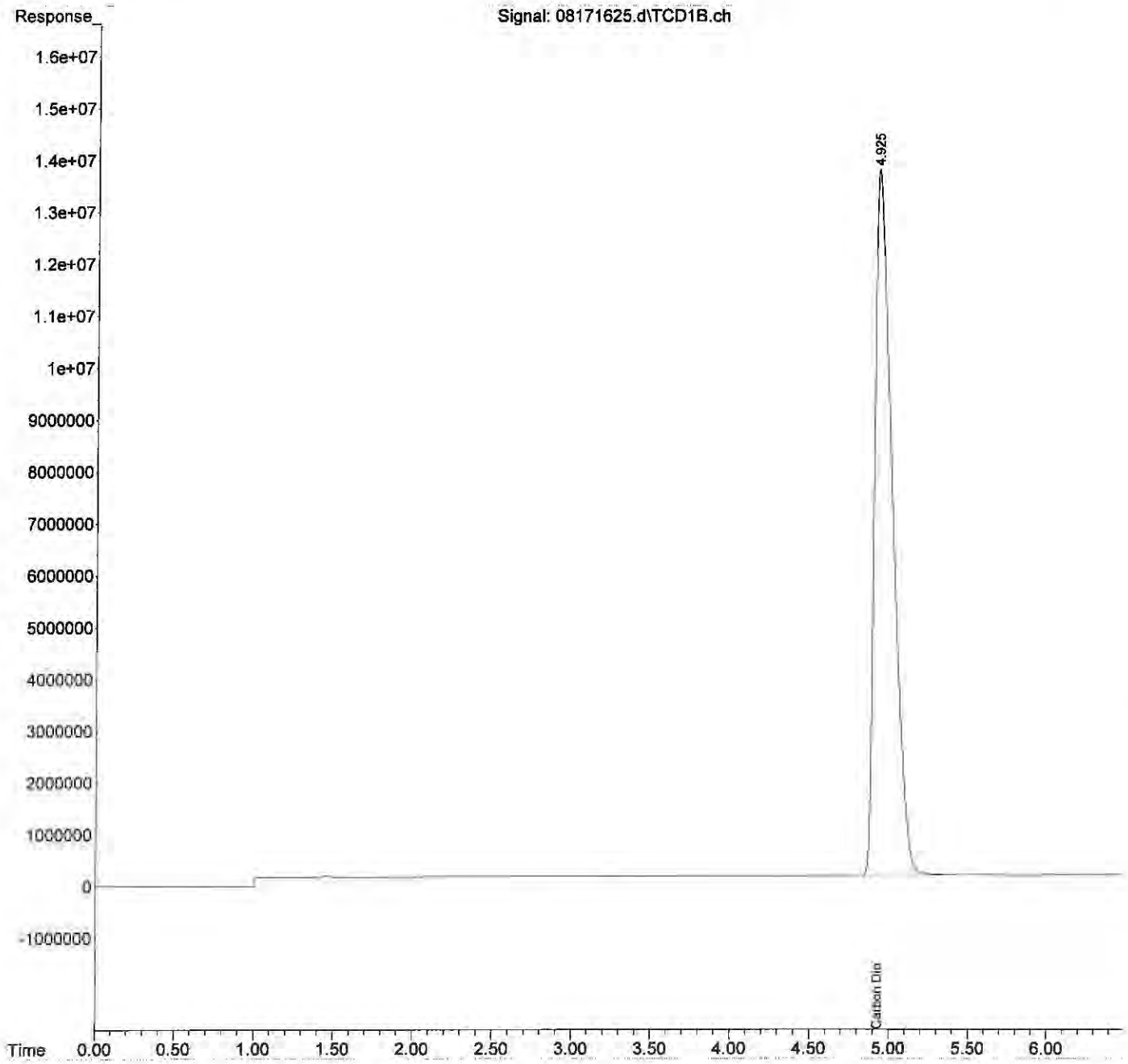
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171625.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 12:50 pm
Operator : MC
Sample : std CO2 a
Misc :
ALS Vial : 25 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 12:57:45 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 11:51:04 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171626.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 1:28 pm
Operator : MC
Sample : std CO2 b
Misc :
ALS Vial : 26 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 13:58:05 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 11:51:04 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	4.925	1054815940	1192863.788	ppm

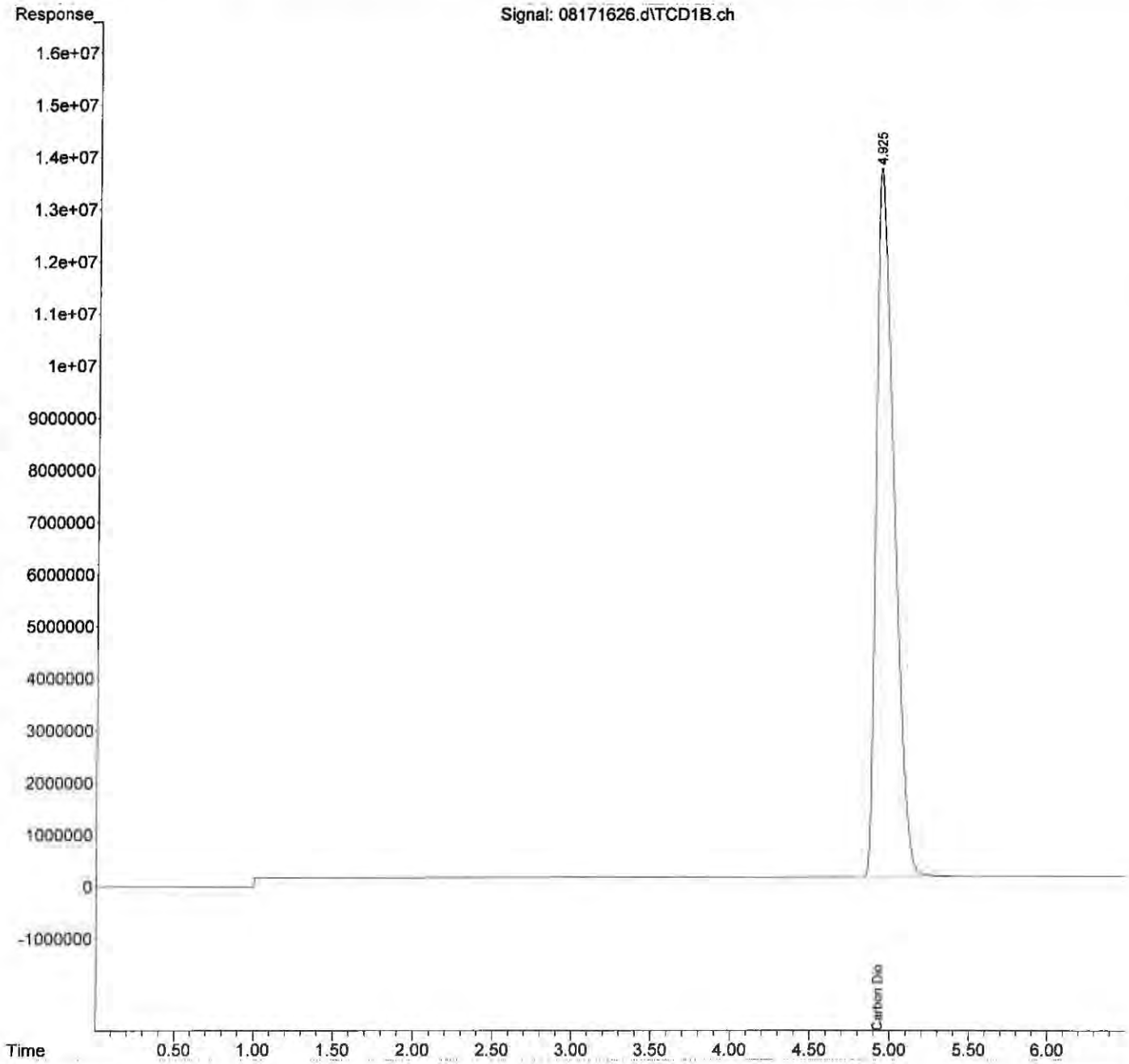
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171626.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 1:28 pm
Operator : MC
Sample : std CO2 b
Misc :
ALS Vial : 26 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 13:58:05 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 11:51:04 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171627.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 2:22 pm
Operator : MC
Sample : std CO2 c
Misc :
ALS Vial : 27 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 14:28:55 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 11:51:04 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	4.926	1045180213	1155845.185	ppm

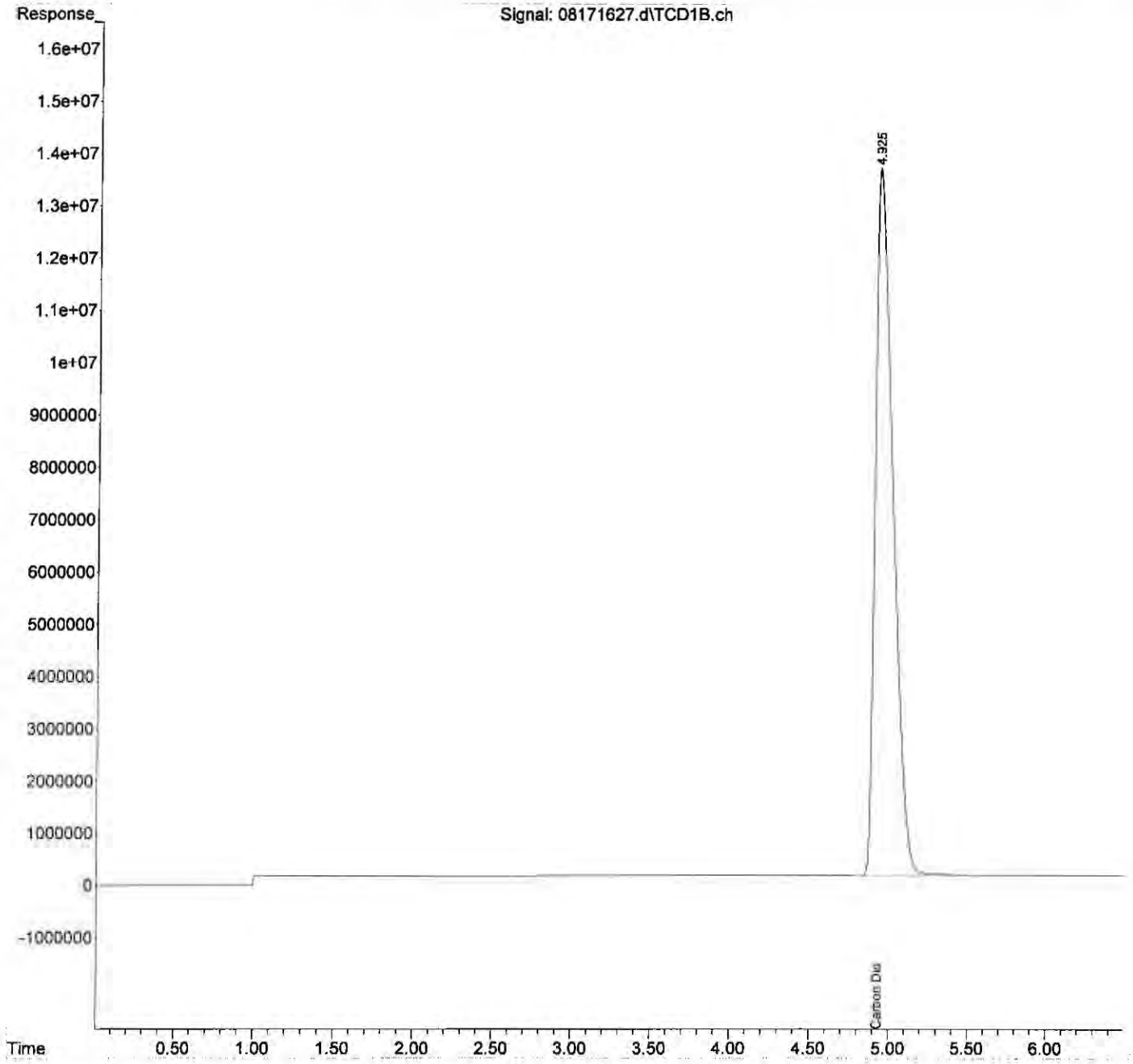
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171627.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 2:22 pm
Operator : MC
Sample : std CO2 c
Misc :
ALS Vial : 27 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 14:28:55 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 11:51:04 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171630.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 2:53 pm
Operator : MC
Sample : std CH4 A
Misc :
ALS Vial : 30 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 15:01:17 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 11:51:04 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	3.001	586065213	1145210.971	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

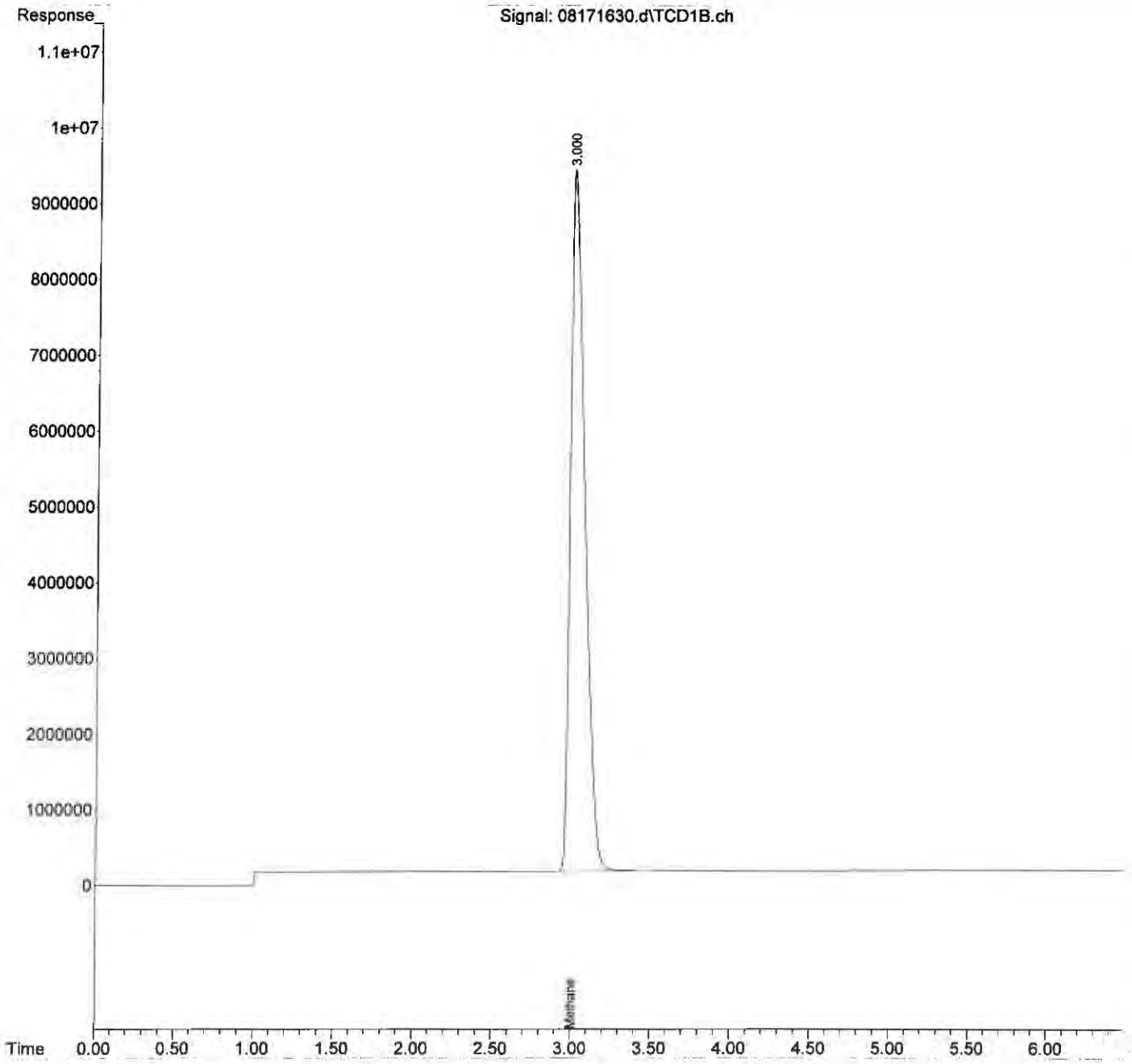
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171630.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 2:53 pm
Operator : MC
Sample : std CH4 A
Misc :
ALS Vial : 30 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 15:01:17 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 11:51:04 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171631.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 3:04 pm
Operator : MC
Sample : std CH4 B
Misc :
ALS Vial : 31 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 15:10:48 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 11:51:04 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	3.001	587246388	1157608.150	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

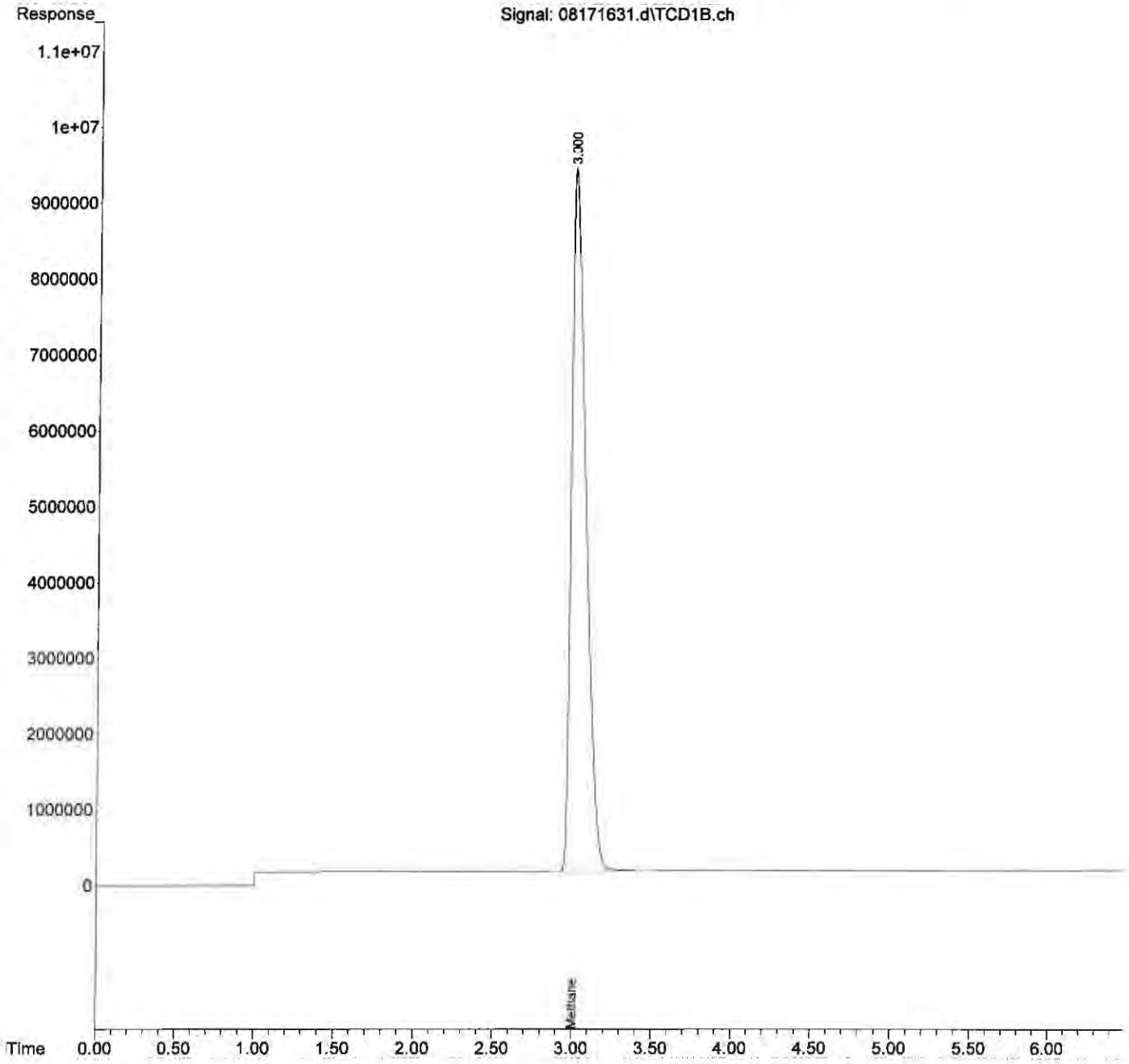
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171631.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 3:04 pm
Operator : MC
Sample : std CH4 B
Misc :
ALS Vial : 31 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 15:10:48 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 11:51:04 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171632.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 3:24 pm
Operator : MC
Sample : std CH4 C
Misc :
ALS Vial : 32 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 15:34:49 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 11:51:04 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	2.999	602097415	1195793.051	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

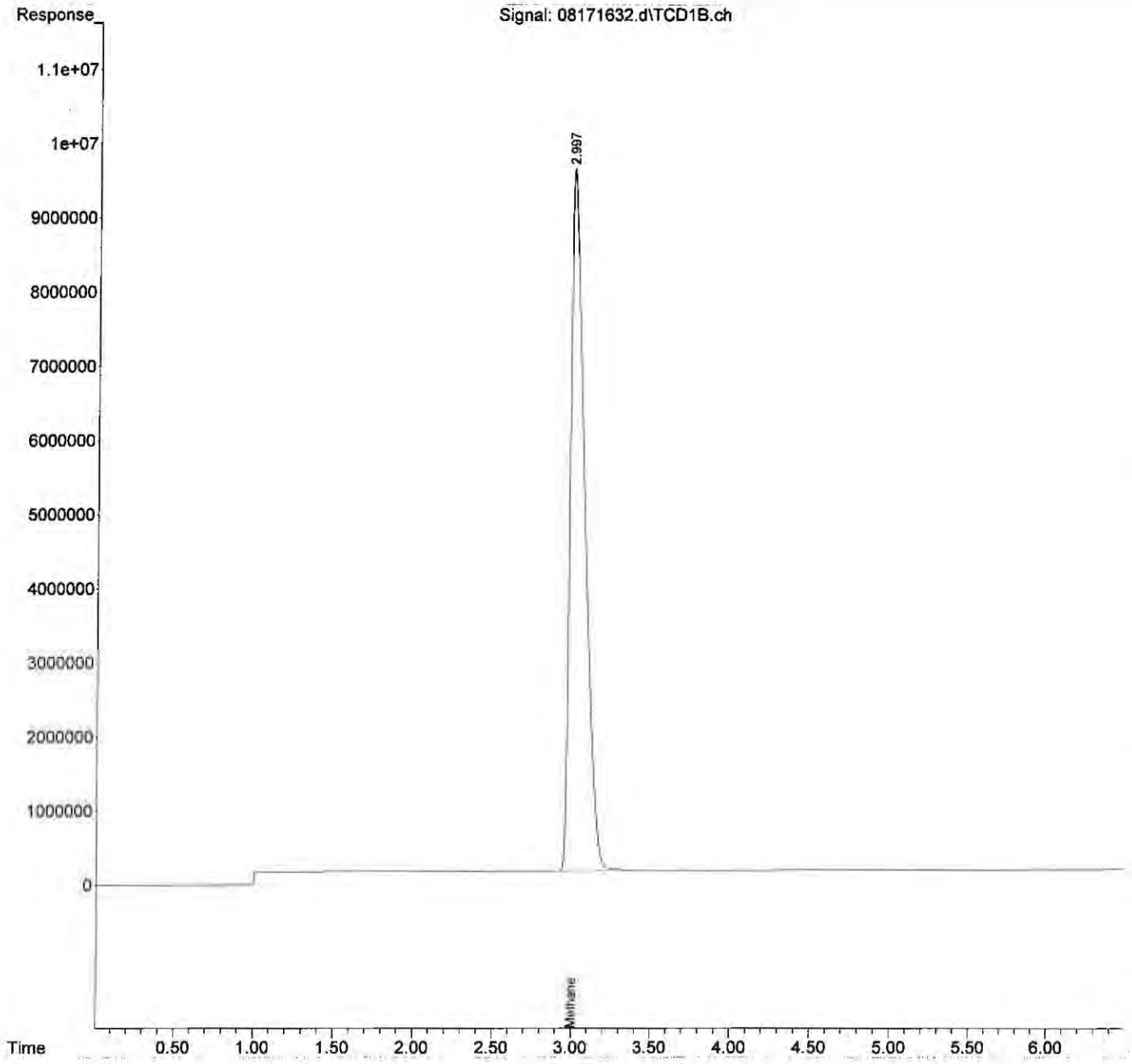
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171632.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 3:24 pm
Operator : MC
Sample : std CH4 C
Misc :
ALS Vial : 32 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 15:34:49 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 11:51:04 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171635.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 4:14 pm
Operator : MC
Sample : std O2 A
Misc :
ALS Vial : 35 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 16:25:49 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:09:17 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.000	0	N.D.	ppm	
2)	Oxygen	1.401	559169599	960511.352	ppm	
3)	Nitrogen	0.000	0	N.D.	ppm	d
4)	Carbon Monoxide	0.000	0	N.D.	ppm	
5)	Methane	0.000	0	N.D.	ppm	
6)	Carbon Dioxide	0.000	0	N.D.	ppm	

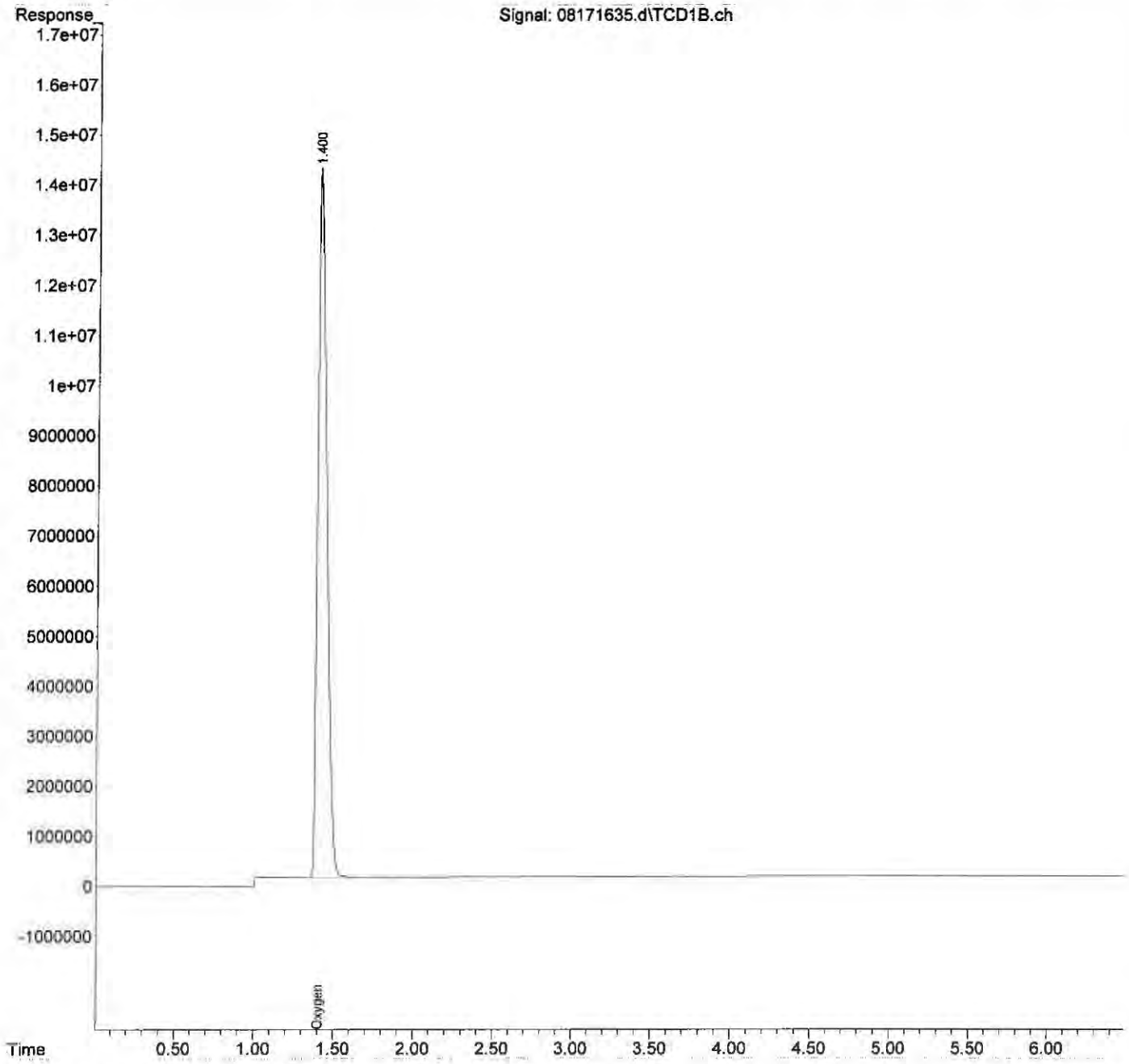
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171635.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 4:14 pm
Operator : MC
Sample : std O2 A
Misc :
ALS Vial : 35 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 16:25:49 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:09:17 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171636.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 4:27 pm
Operator : MC
Sample : std O2 B
Misc :
ALS Vial : 36 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 16:34:45 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:09:17 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.000	0	N.D.	ppm	
2)	Oxygen	1.402	547020815	943318.464	ppm	
3)	Nitrogen	0.000	0	N.D.	ppm	d
4)	Carbon Monoxide	0.000	0	N.D.	ppm	
5)	Methane	0.000	0	N.D.	ppm	
6)	Carbon Dioxide	0.000	0	N.D.	ppm	

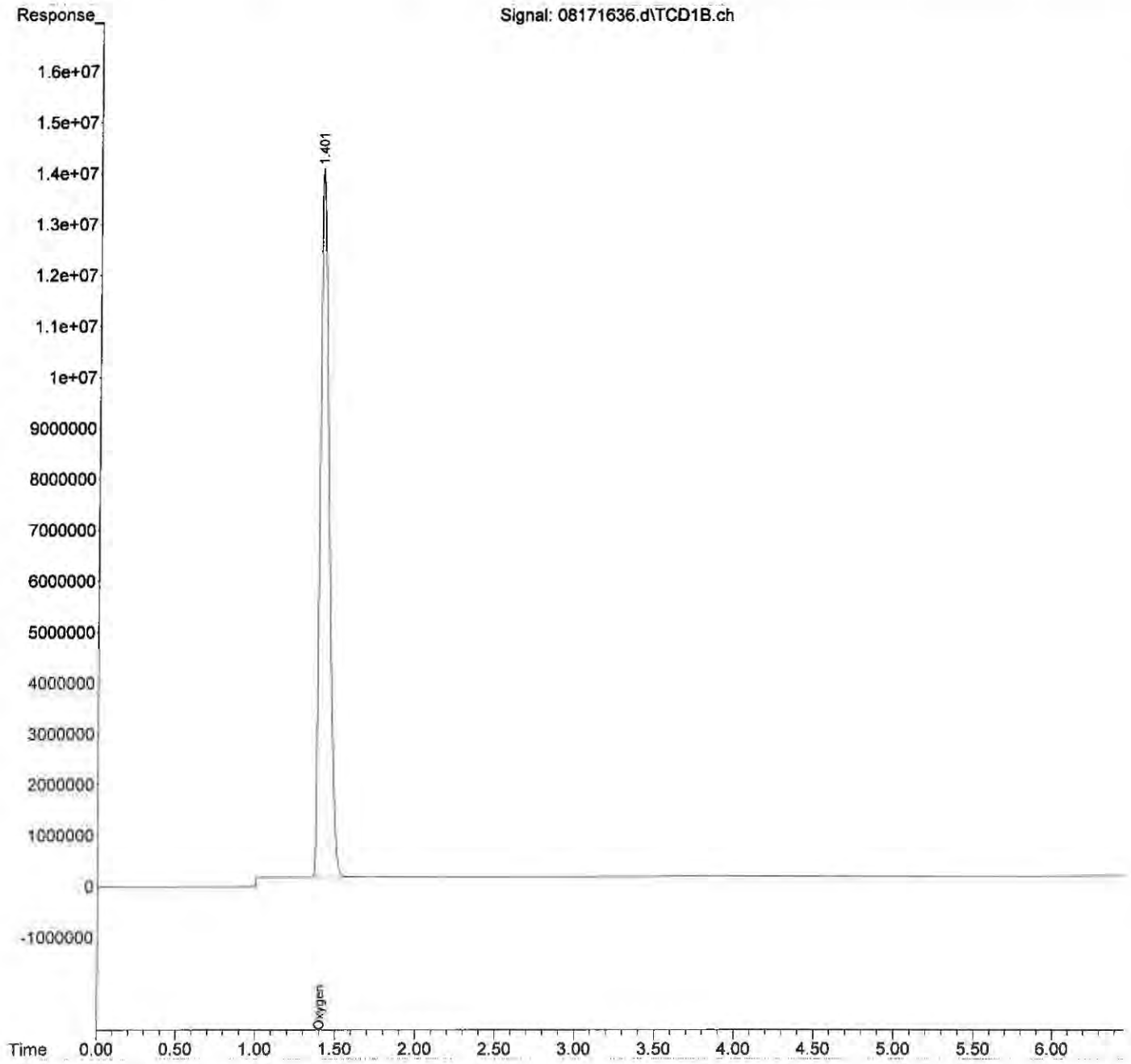
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171636.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 4:27 pm
Operator : MC
Sample : std O2 B
Misc :
ALS Vial : 36 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 16:34:45 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:09:17 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171637.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 4:37 pm
Operator : MC
Sample : std O2 C
Misc :
ALS Vial : 37 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 16:44:33 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:09:17 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.000	0	N.D.	ppm	
2)	Oxygen	1.401	554974689	961916.998	ppm	
3)	Nitrogen	0.000	0	N.D.	ppm	d
4)	Carbon Monoxide	0.000	0	N.D.	ppm	
5)	Methane	0.000	0	N.D.	ppm	
6)	Carbon Dioxide	0.000	0	N.D.	ppm	

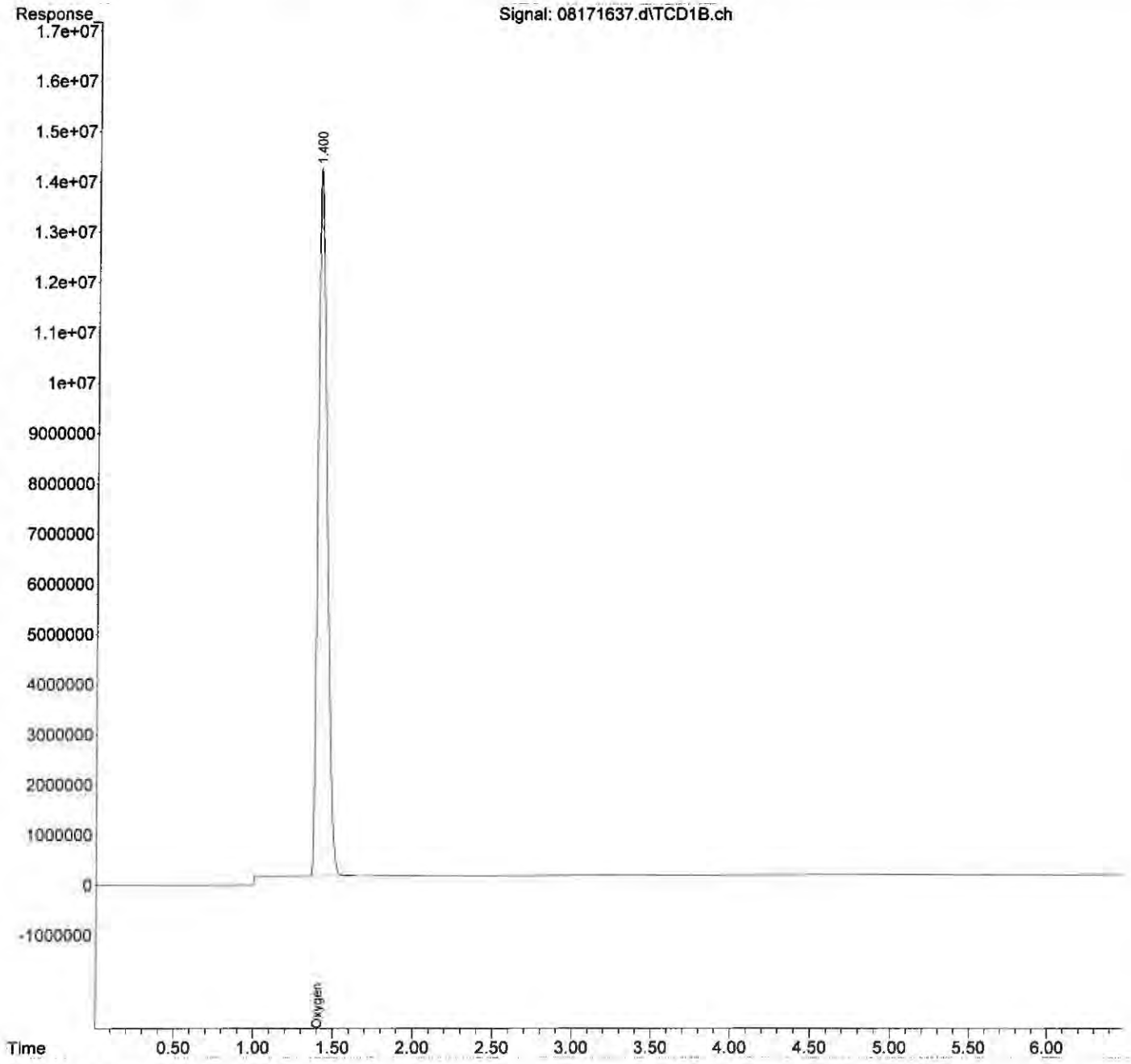
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171637.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 4:37 pm
Operator : MC
Sample : std O2 C
Misc :
ALS Vial : 37 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 16:44:33 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:09:17 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171638.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 4:55 pm
Operator : MC
Sample : ICV s30-07071601
Misc :
ALS Vial : 38 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 17:06:39 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:09:17 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units	Actual (ppm)	% Recovery
Target Compounds							
1)	Hydrogen	0.700	561161	40990.628	ppm	40000	102.5%
2)	Oxygen	1.452	14028775	24421.437	ppm	25000	97.7%
3)	Nitrogen	1.539	31651277	47851.129	ppm	50000	95.7%
4)	Carbon Monoxide	1.861	31576445	49425.073	ppm	50000	98.9%
5)	Methane	3.098	19787900	38876.773	ppm	40000	97.2%
6)	Carbon Dioxide	5.045	41558810	46038.999	ppm	50000	92.1%

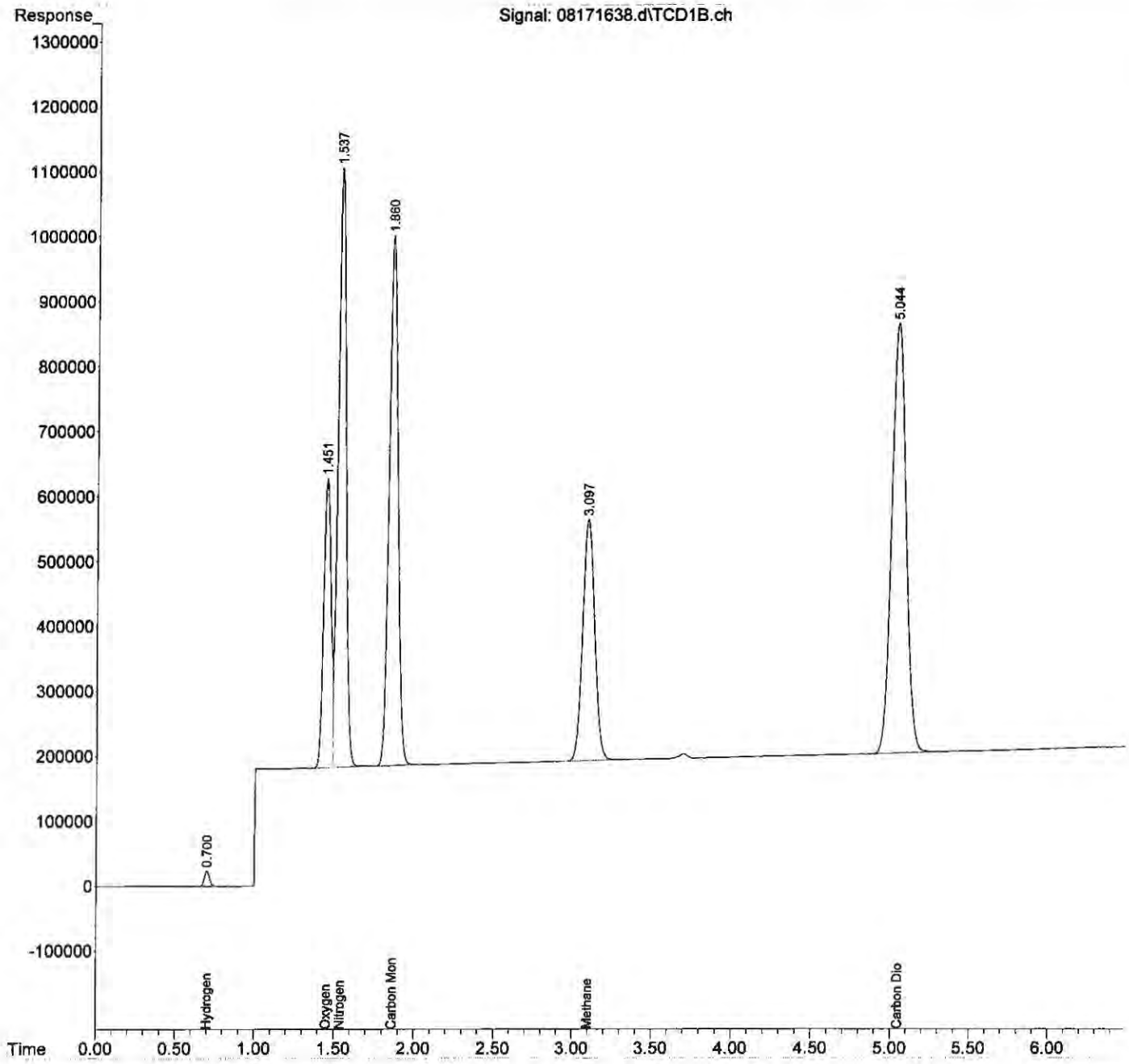
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_08\17\
Data File : 08171638.d
Signal(s) : TCD1B.ch
Acq On : 17 Aug 2016 4:55 pm
Operator : MC
Sample : ICV s30-07071601
Misc :
ALS Vial : 38 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 17 17:06:39 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:09:17 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Response Factor Report GC01_FXG

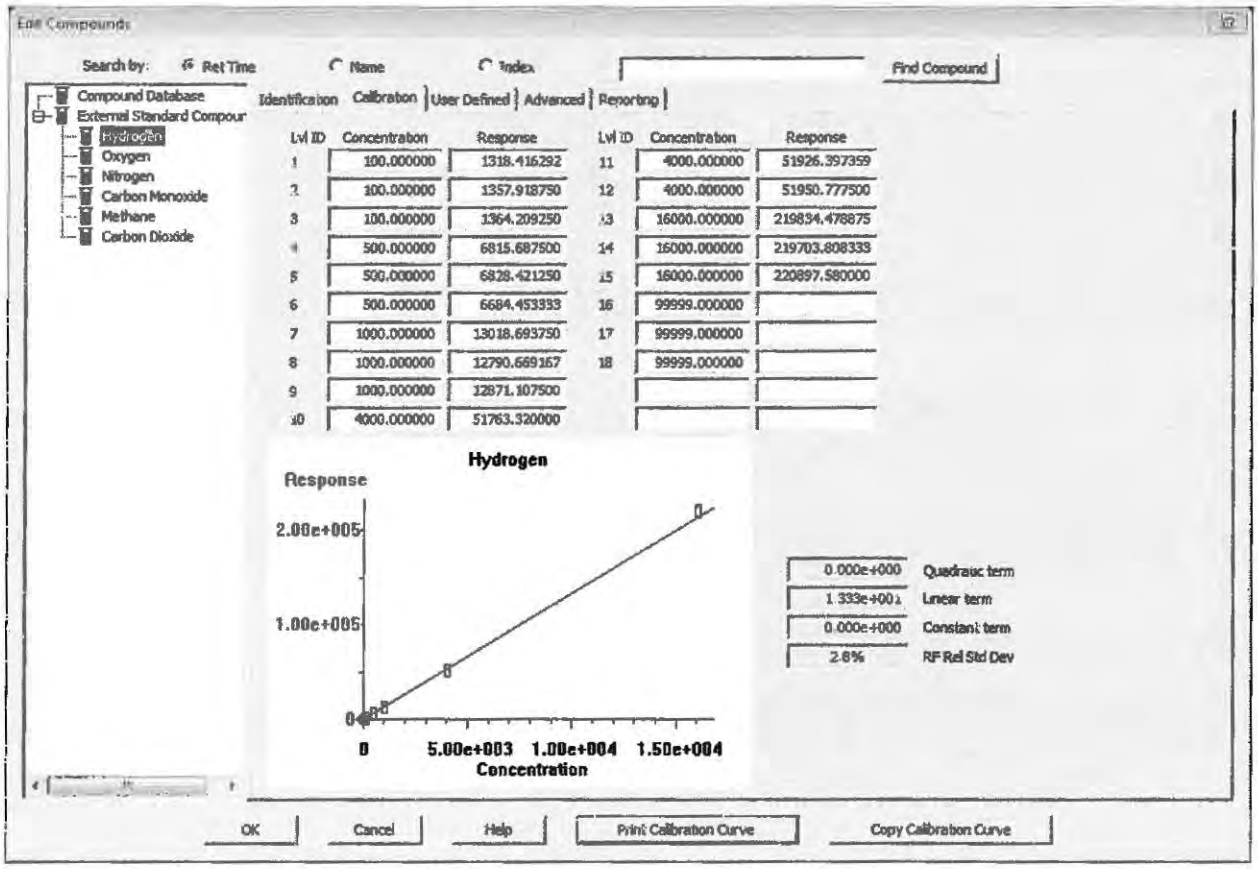
Method Path : I:\GC01\METHODS\
Method File : GC1_trip082216.M
Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
Last Update : Tue Aug 23 11:02:57 2016
Response Via : Initial Calibration

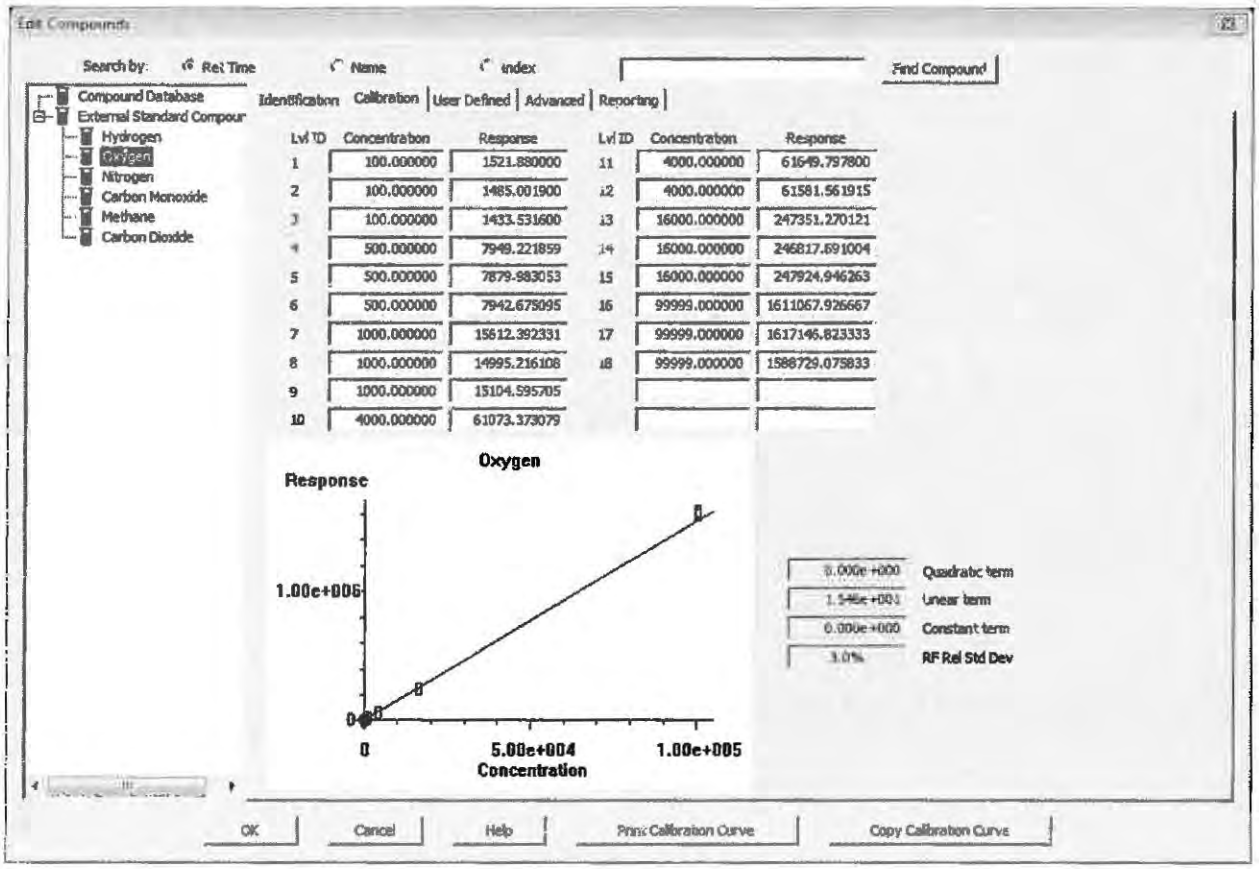
Calibration Files
1 =08221601.D 2 =08221602.D 3 =08221603.D
4 =08221604.D 5 =08221605.D 6 =08221606.D

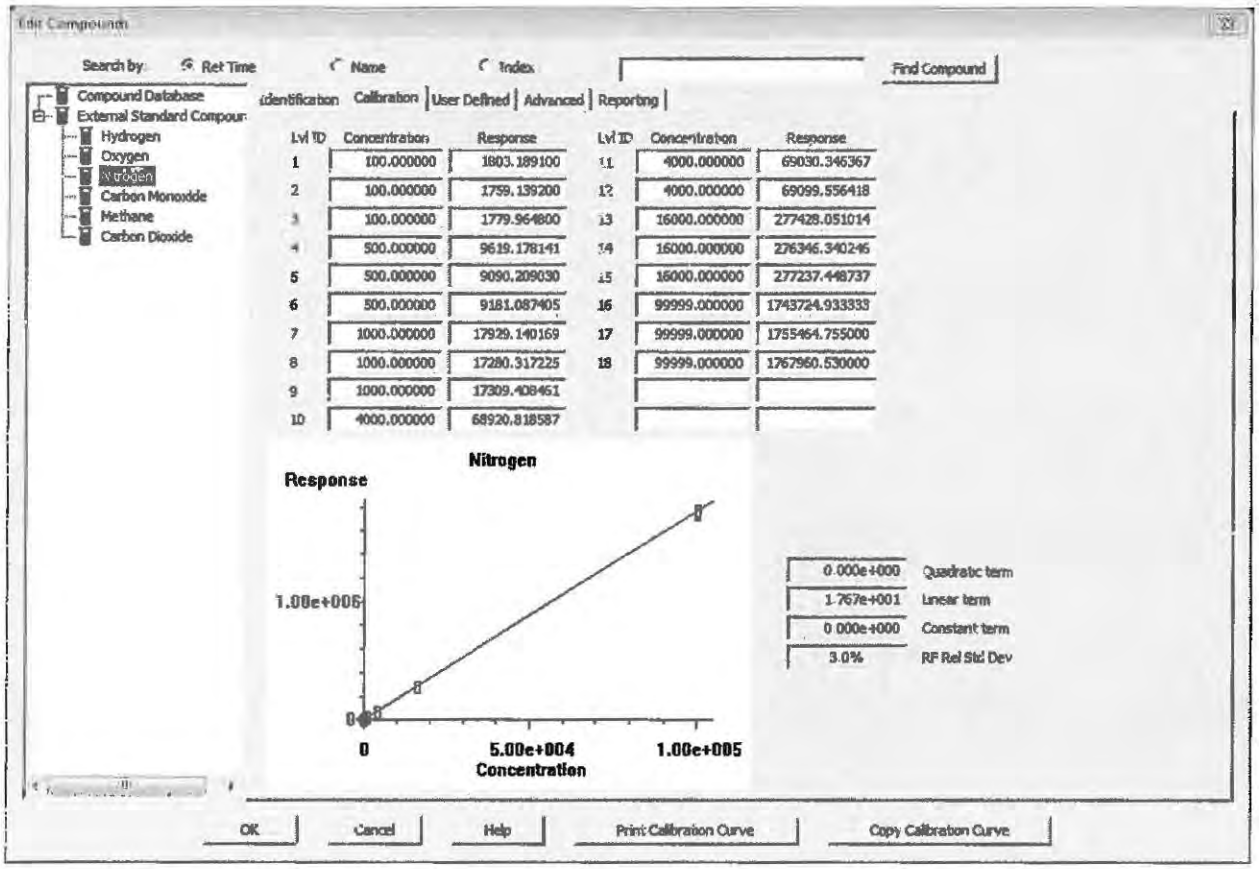
	Compound	1	2	3	4	5	6	Avg		%RSD
1)	Hydrogen	1.318	1.358	1.364	1.363	1.366	1.337	1.333	E1	2.78
2)	Oxygen	1.522	1.485	1.434	1.590	1.576	1.589	1.546	E1	3.01
3)	Nitrogen	1.803	1.759	1.780	1.924	1.818	1.836	1.767	E1	2.97
4)	Carbon Monoxide	1.653	1.676	1.610	1.844	1.851	1.826	1.735	E1	3.80
5)	Methane	1.240	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

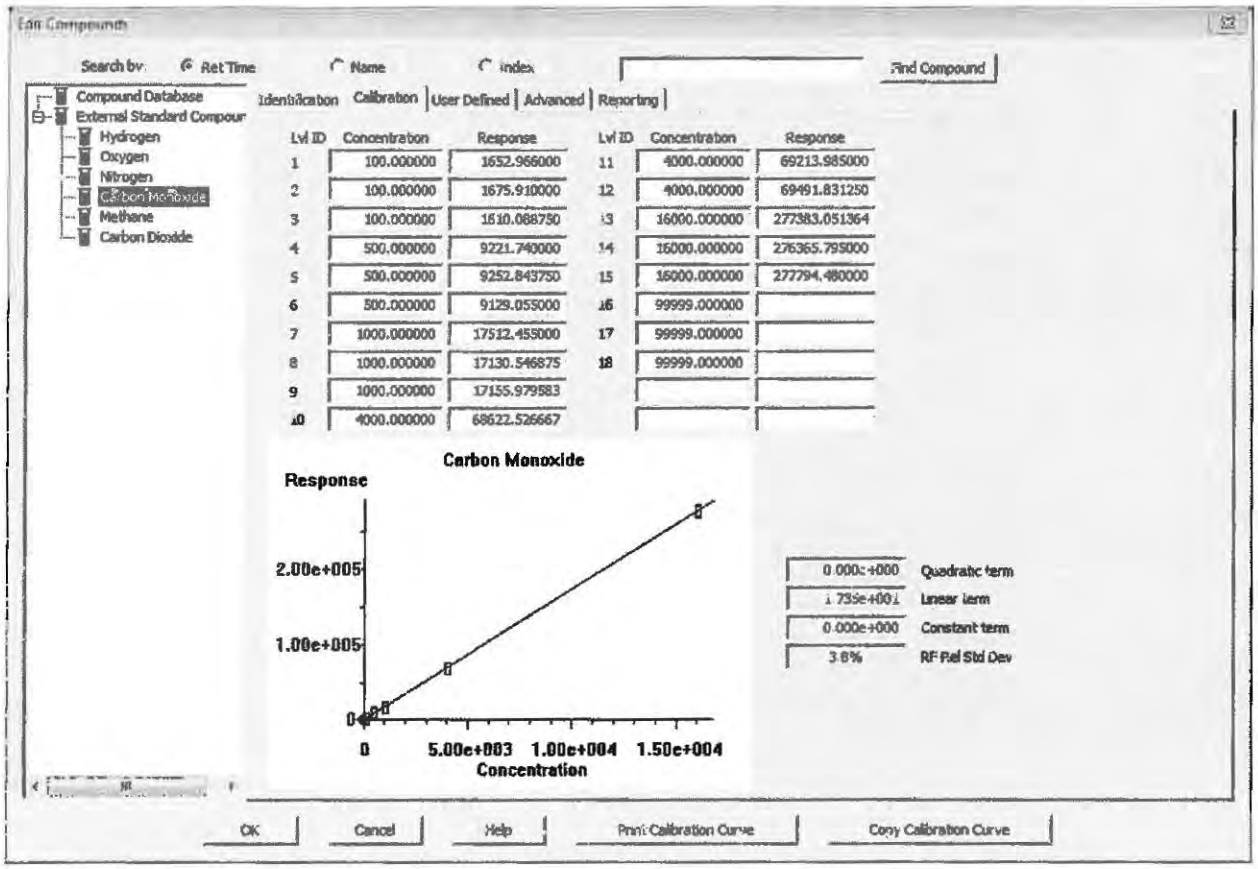
(#) = Out of Range ### Number of calibration levels exceeded format ###

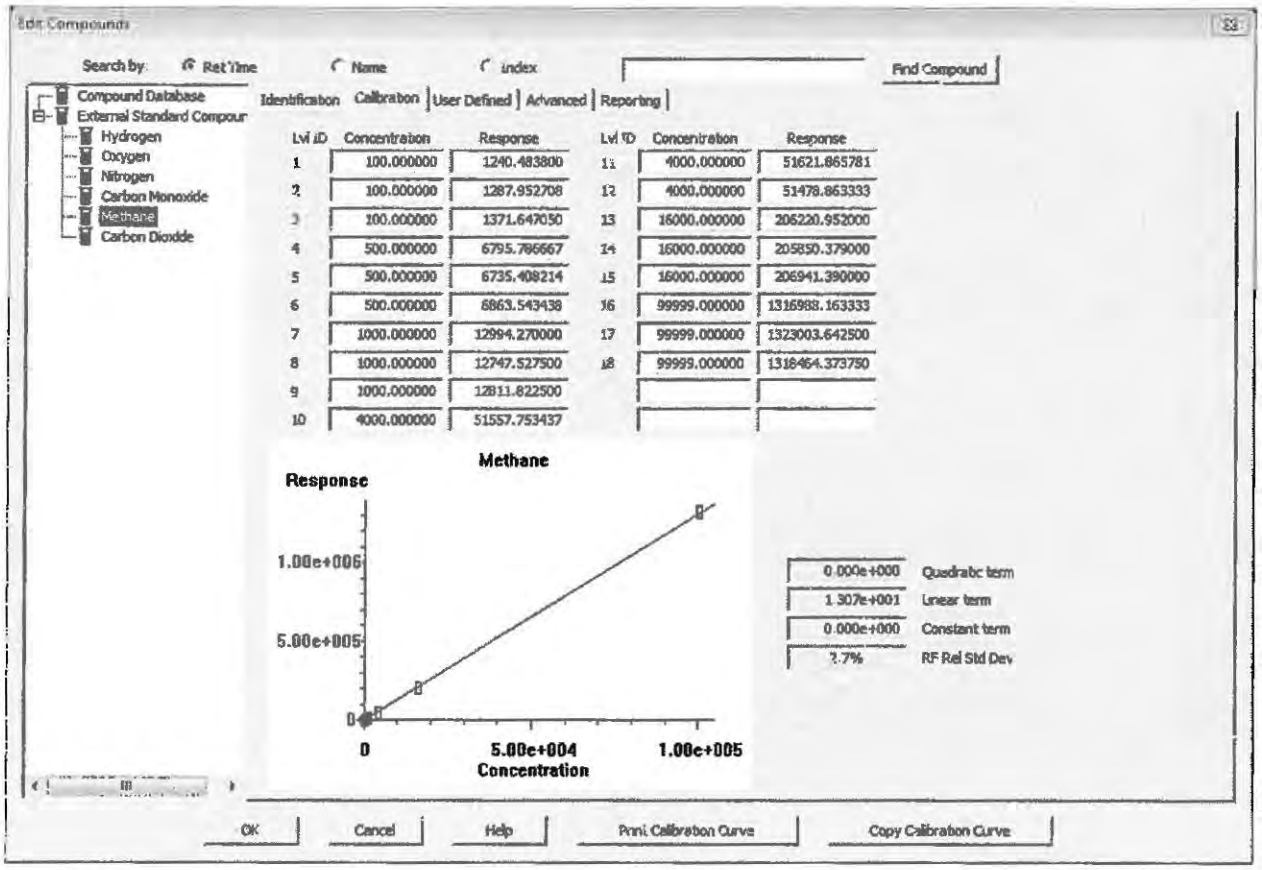
GC1_trip082216.M Tue Aug 23 12:46:23 2016

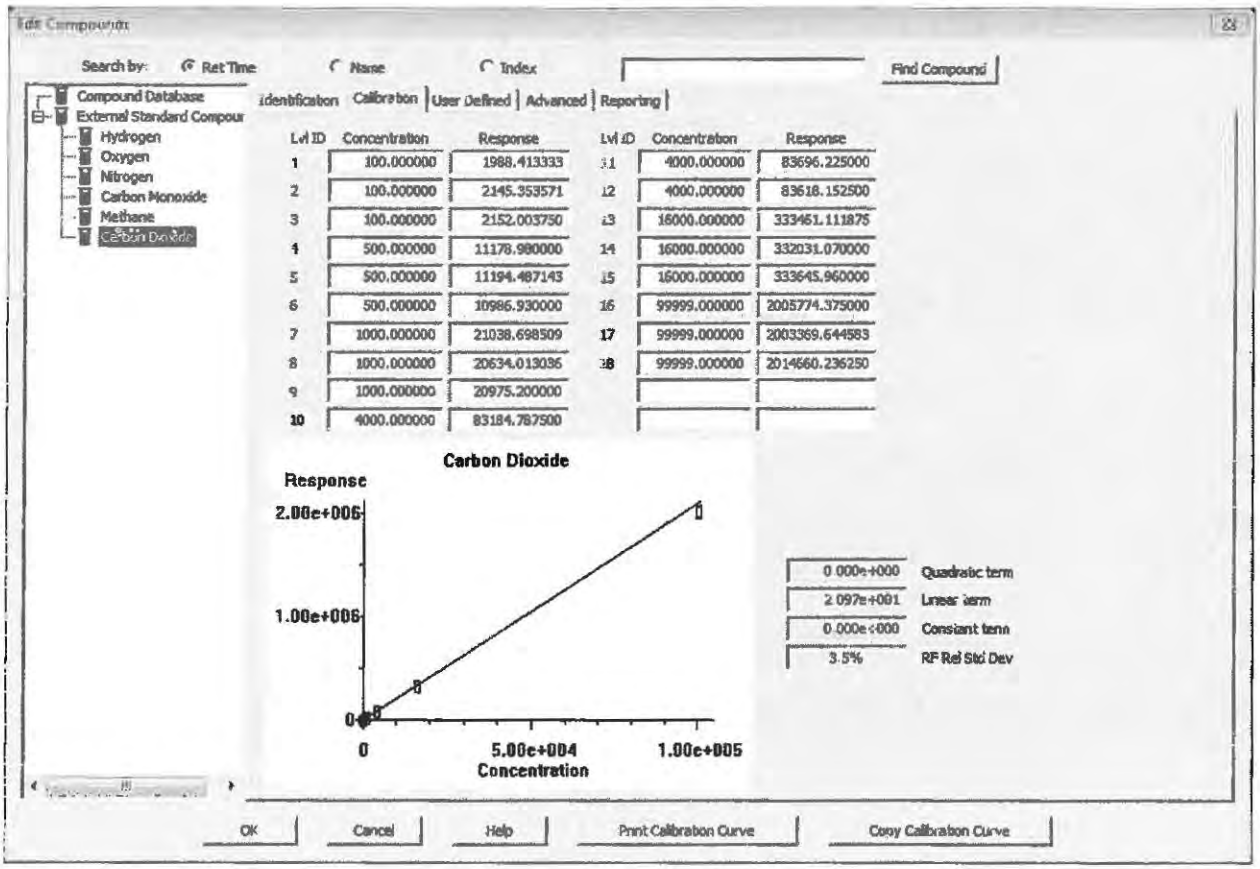

Edit Compounds
Search by: Ret Time Name Index
Find Compound
Compound Database
External Standard Compour
Hydrogen
Oxygen
Nitrogen
Carbon Monoxide
Methane
Carbon Dioxide
Identification Calibration User Defined Advanced Reporting
Lvl ID Concentration Response
1 100.000000 1318.416292
2 100.000000 1357.918750
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 7942.675095
7 1000.000000 15612.392331
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 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 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
Lvl ID Concentration Response
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
?.7% 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	

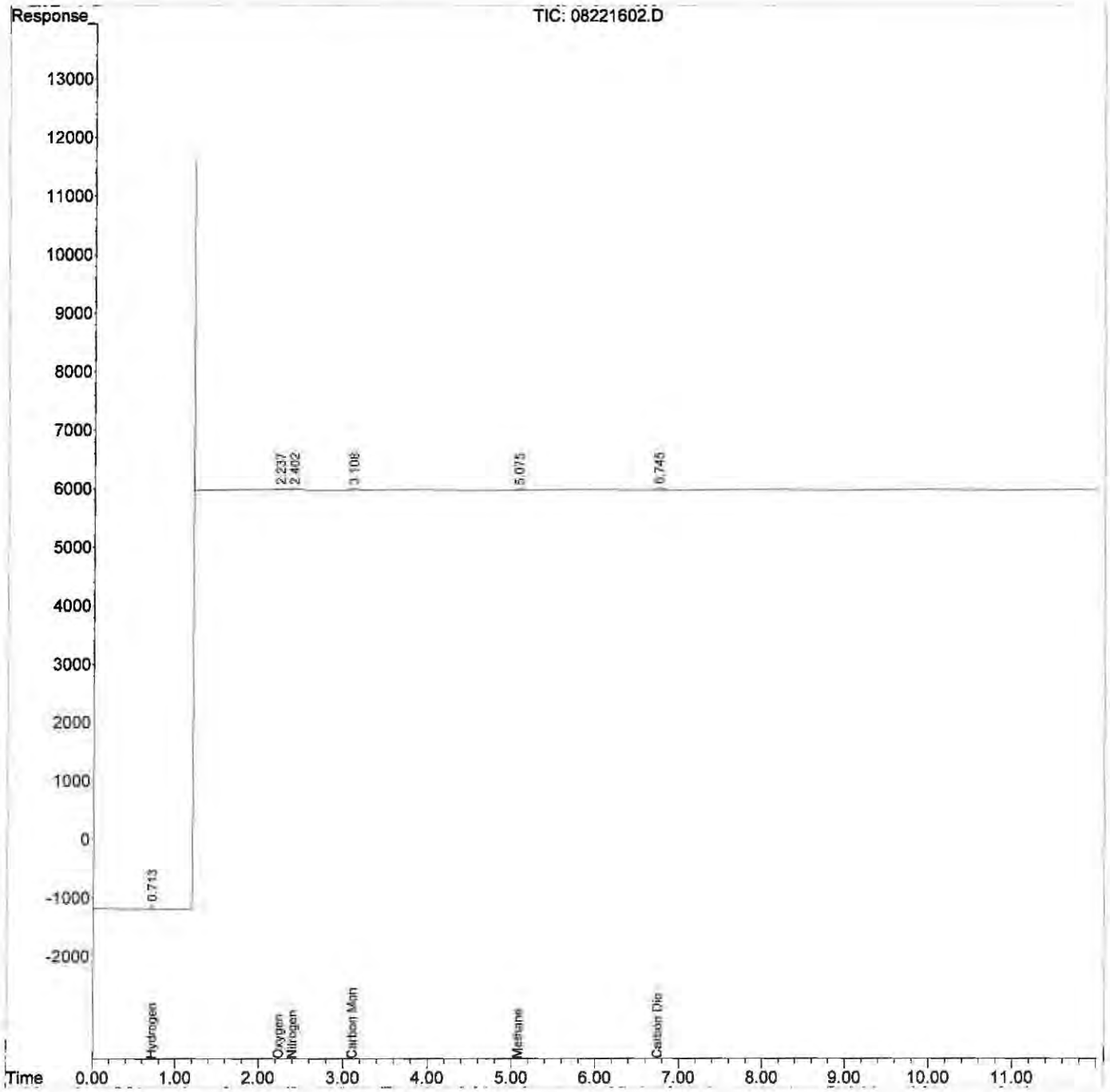
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

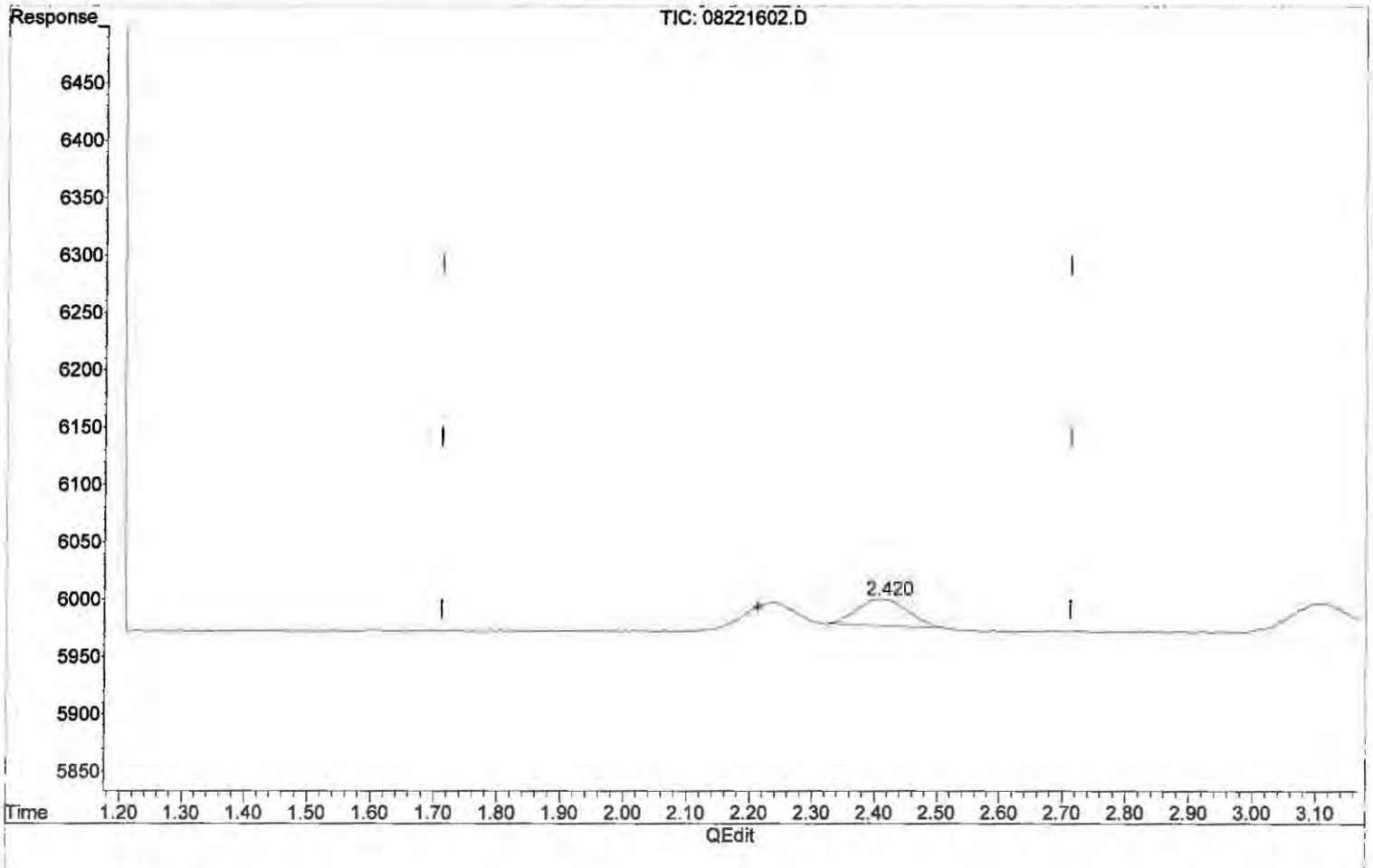


Quantitation Report (Qedit)

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

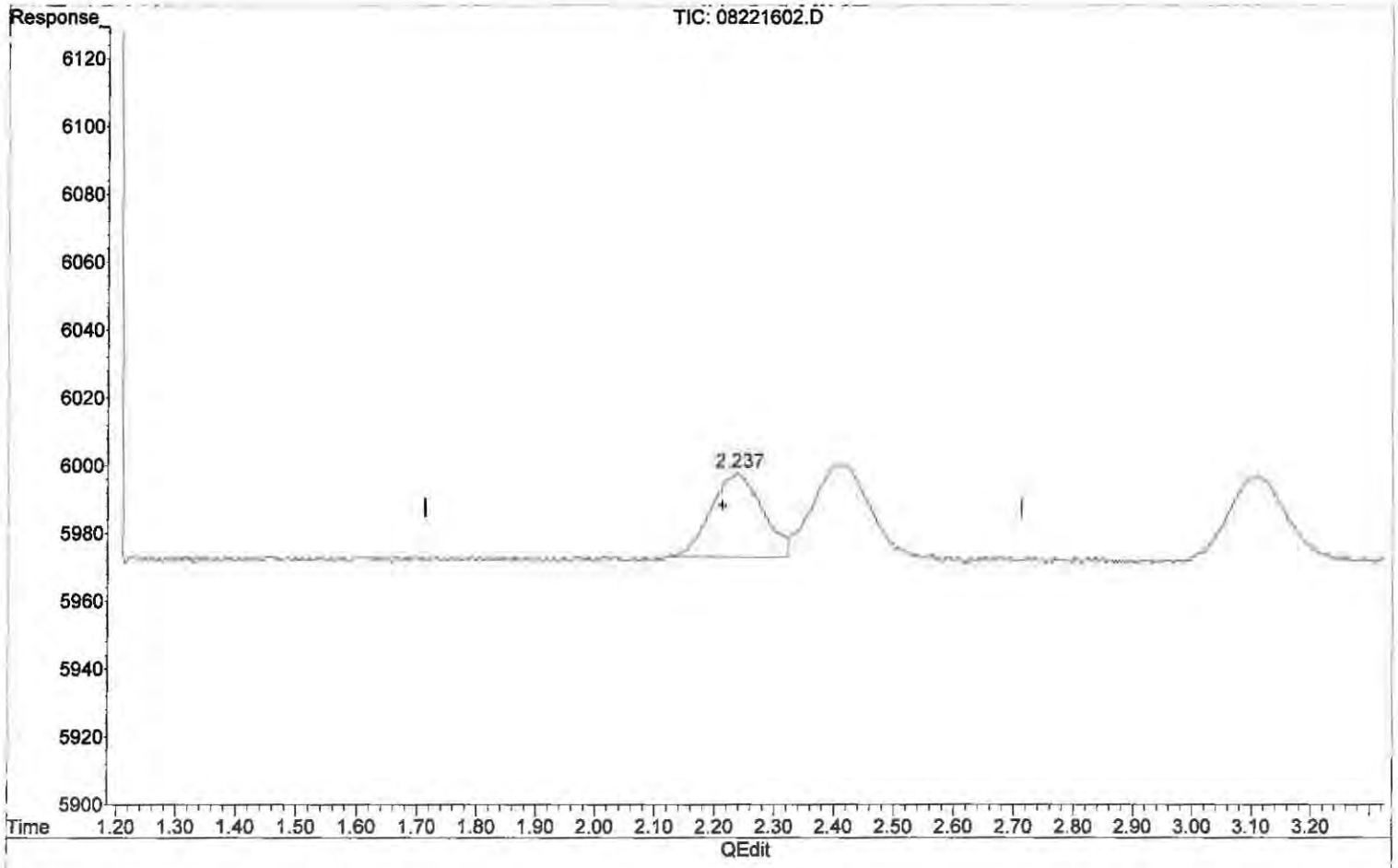
(+) = Expected Retention Time

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

8/29/16

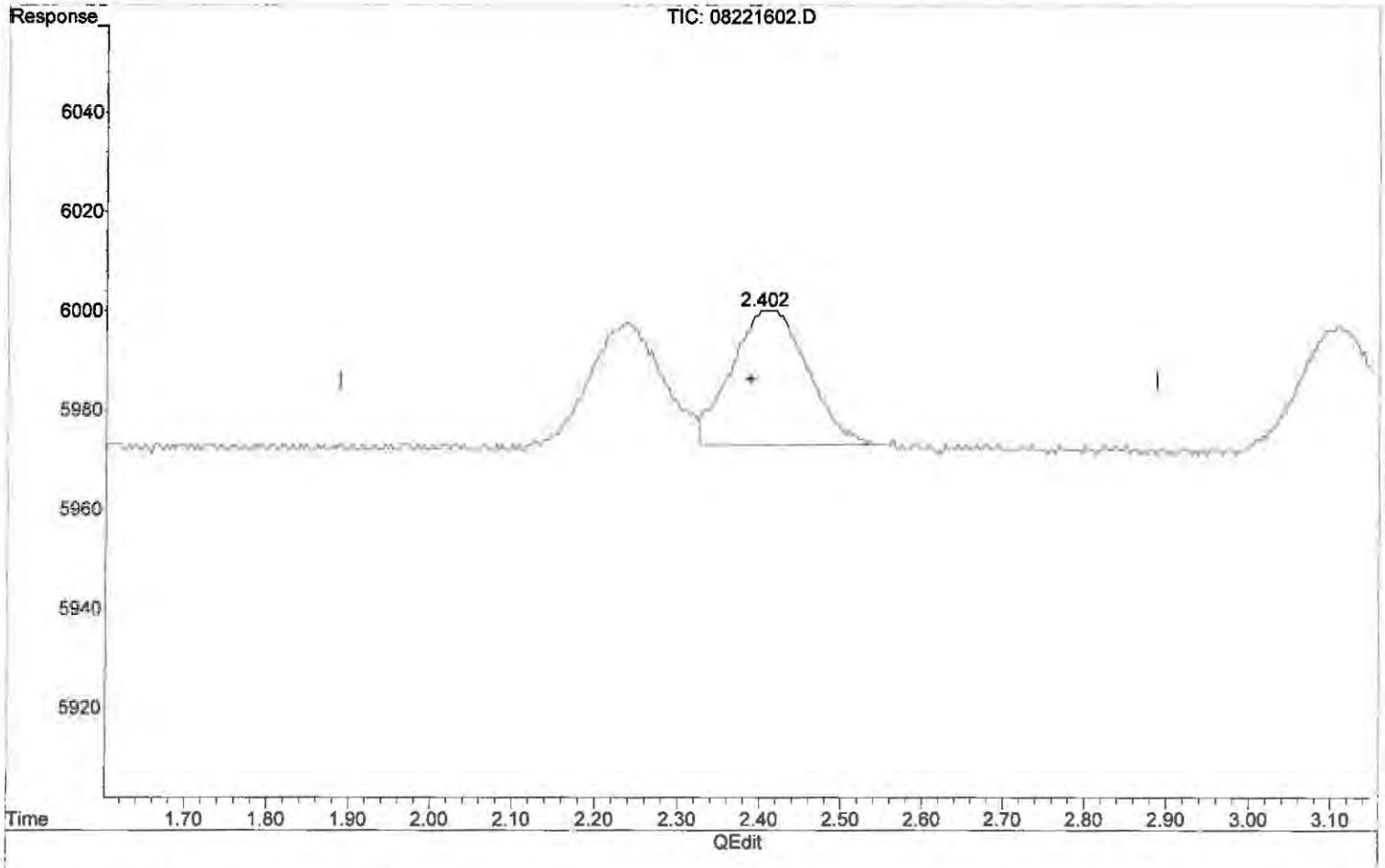
(+) = Expected Retention Time

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

LM 8/29/16

LM 8/29/16
BLC
No Revisions

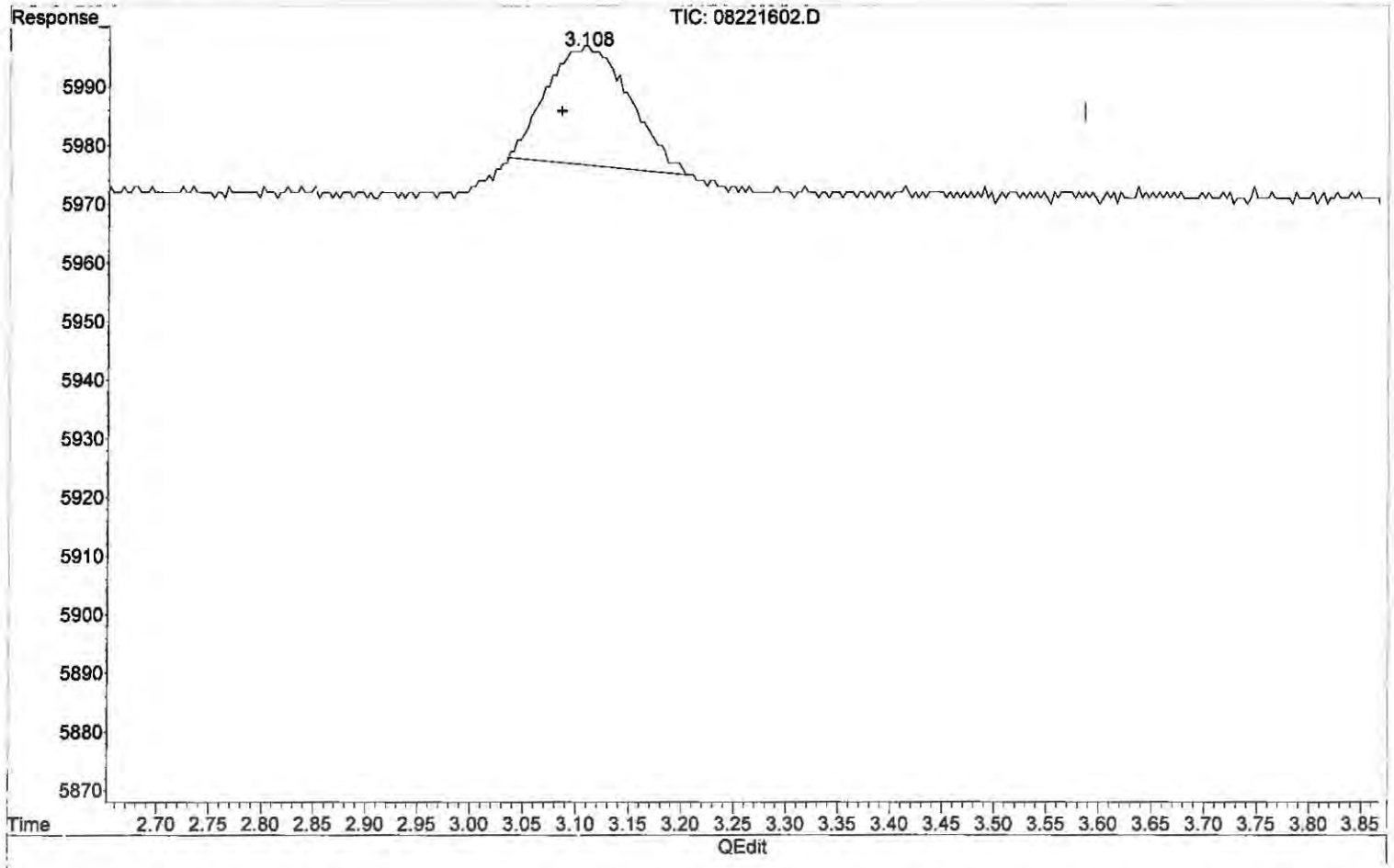
(+) = Expected Retention Time

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

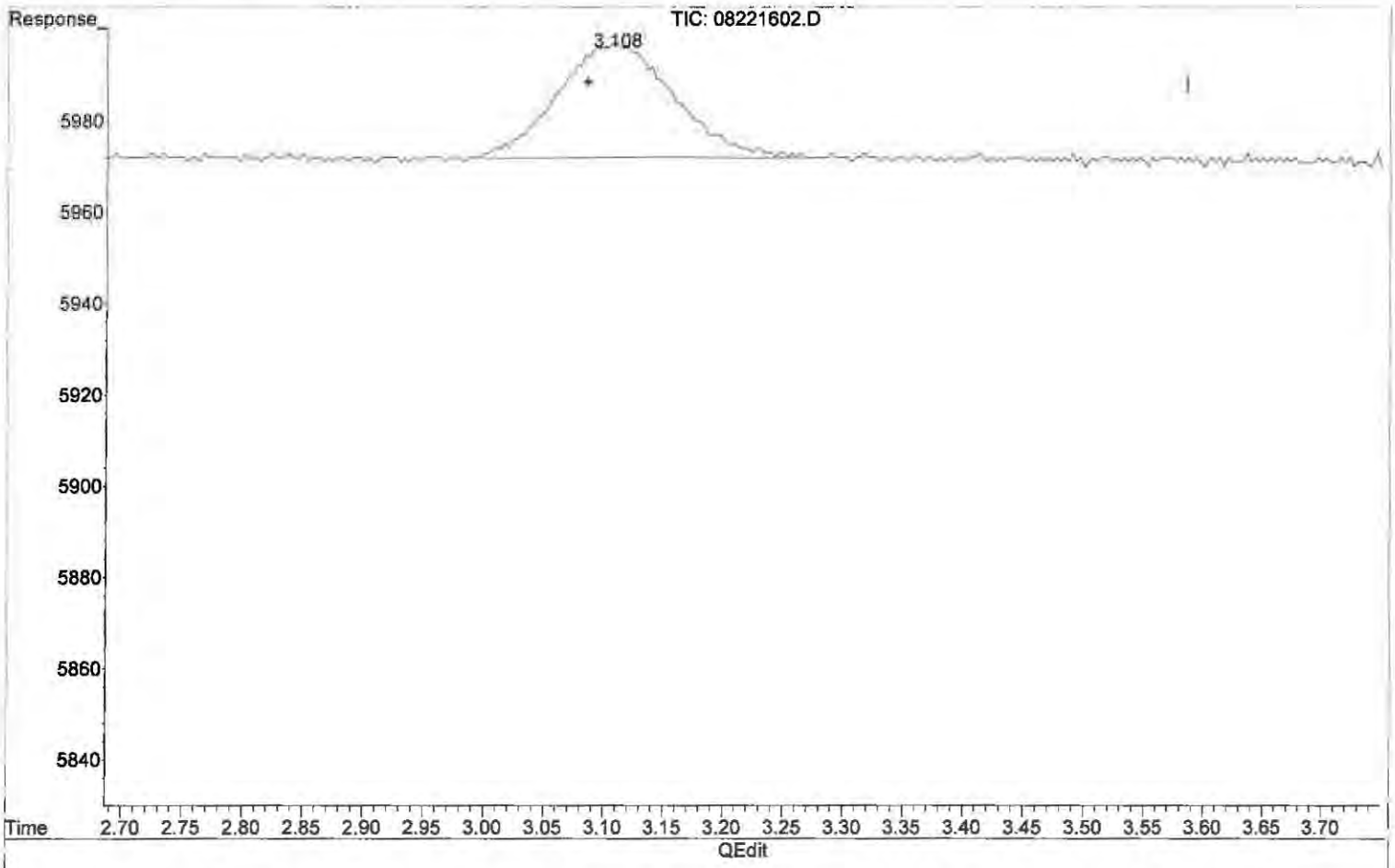
(+) = Expected Retention Time

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

8/29/16 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	

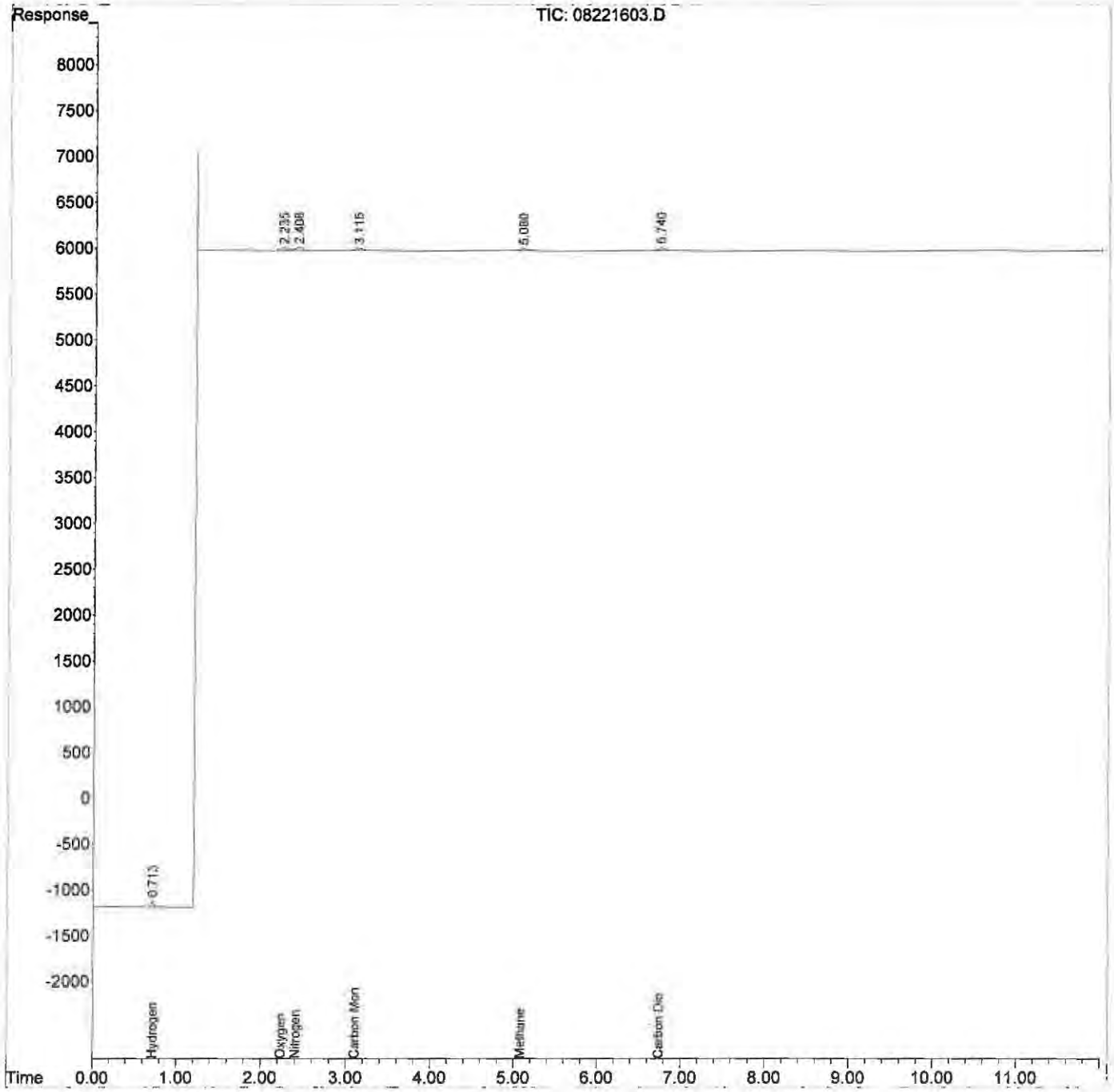
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

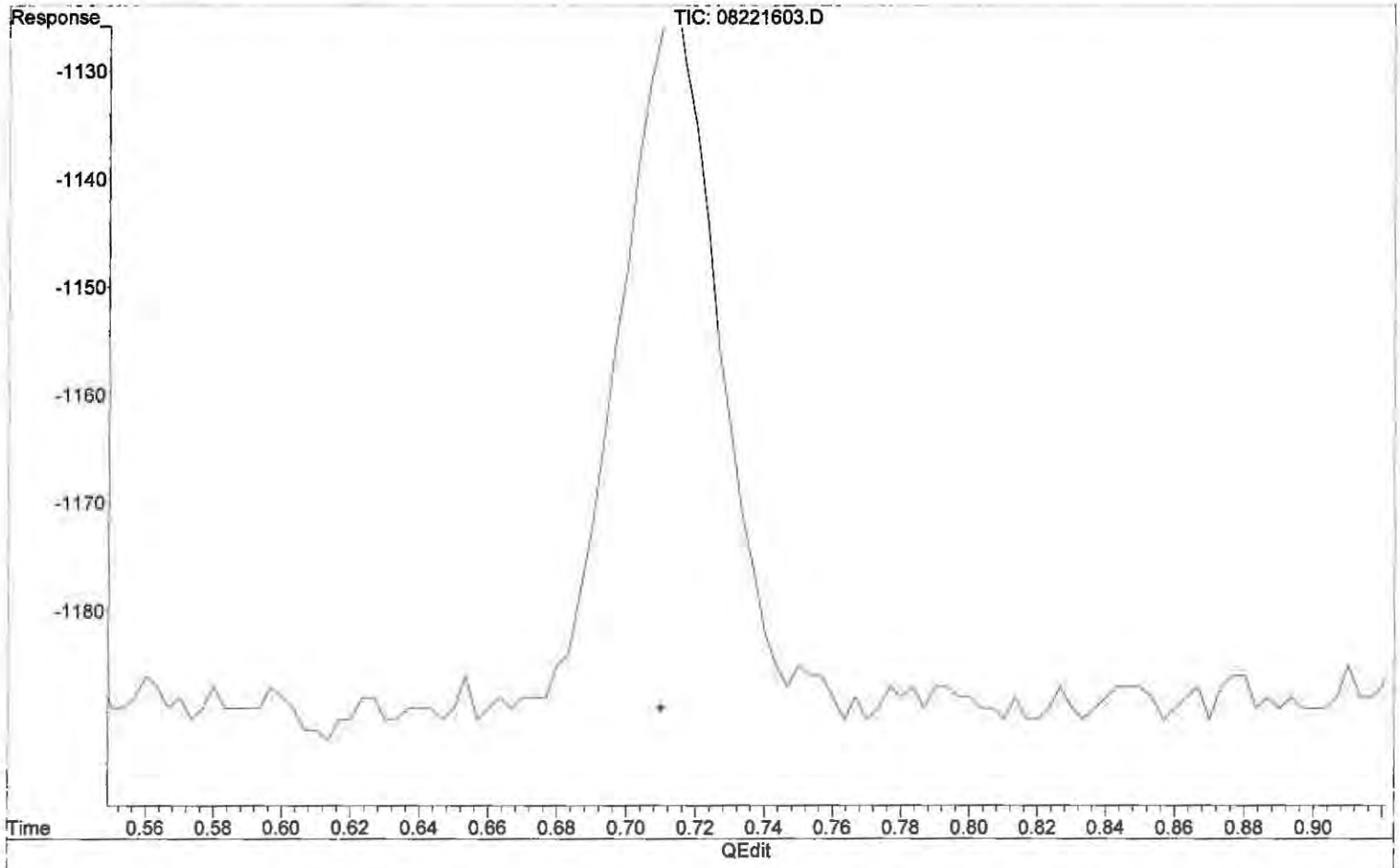


Quantitation Report (Qedit)

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

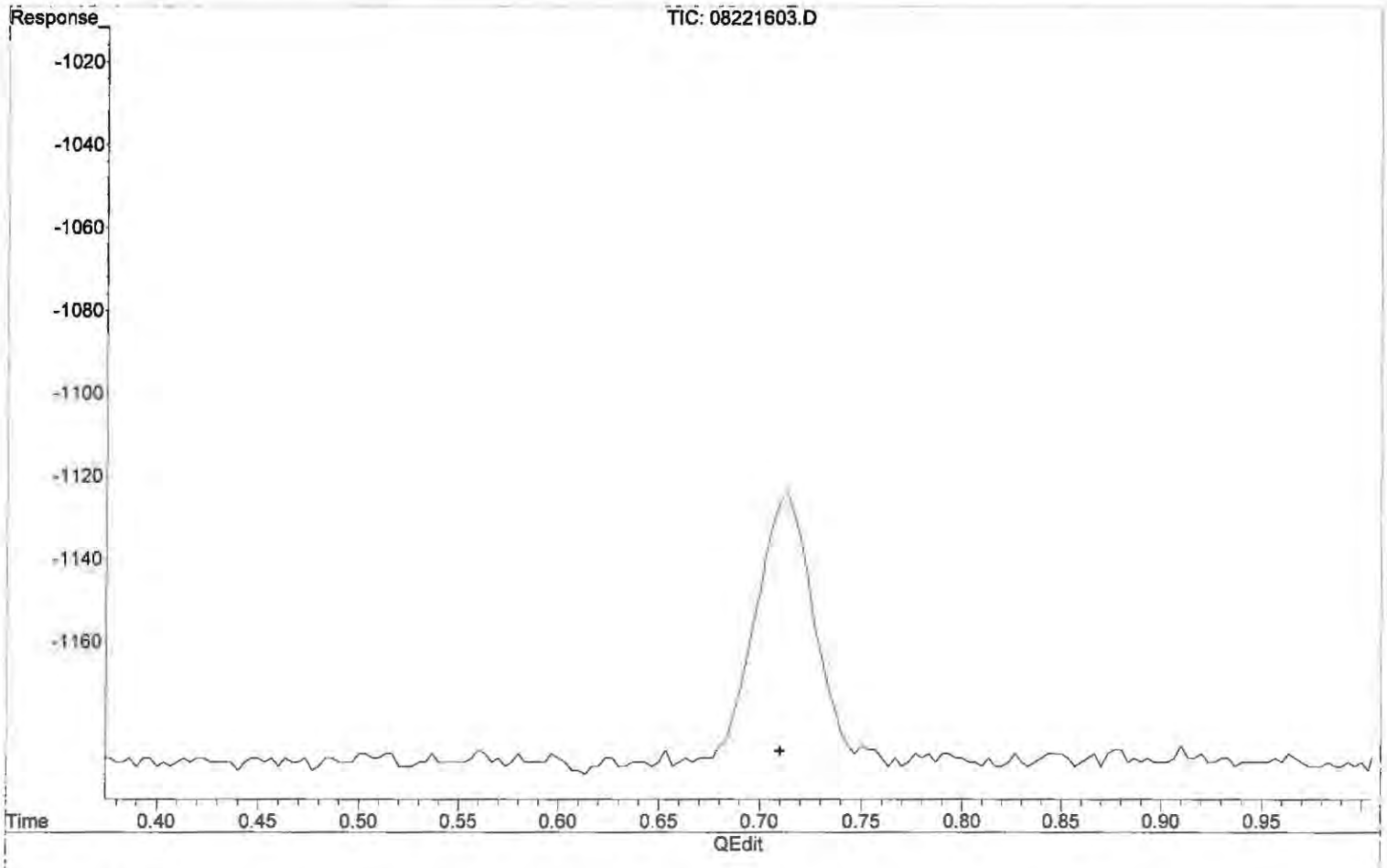
(+) = Expected Retention Time

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

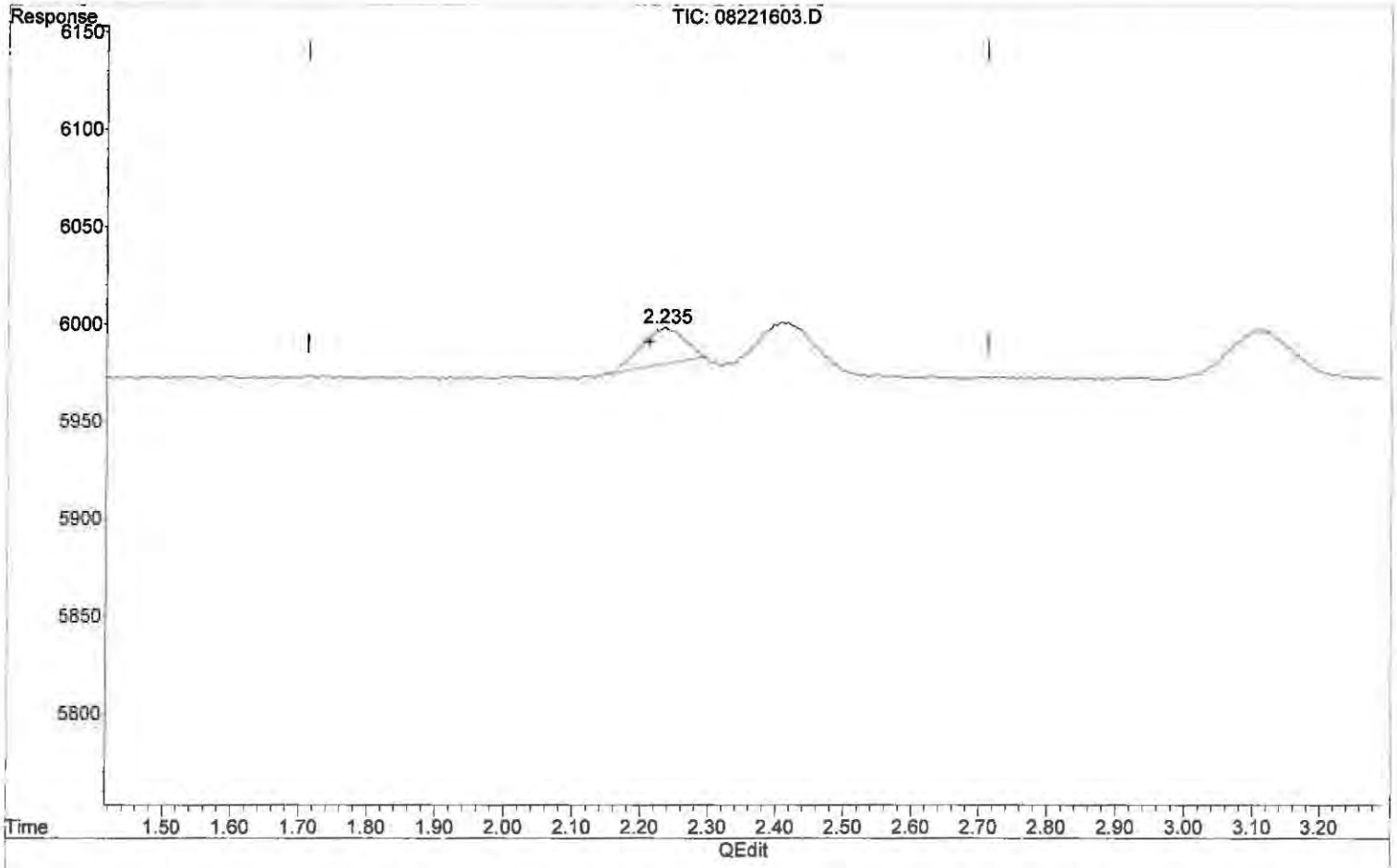
(+) = Expected Retention Time

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

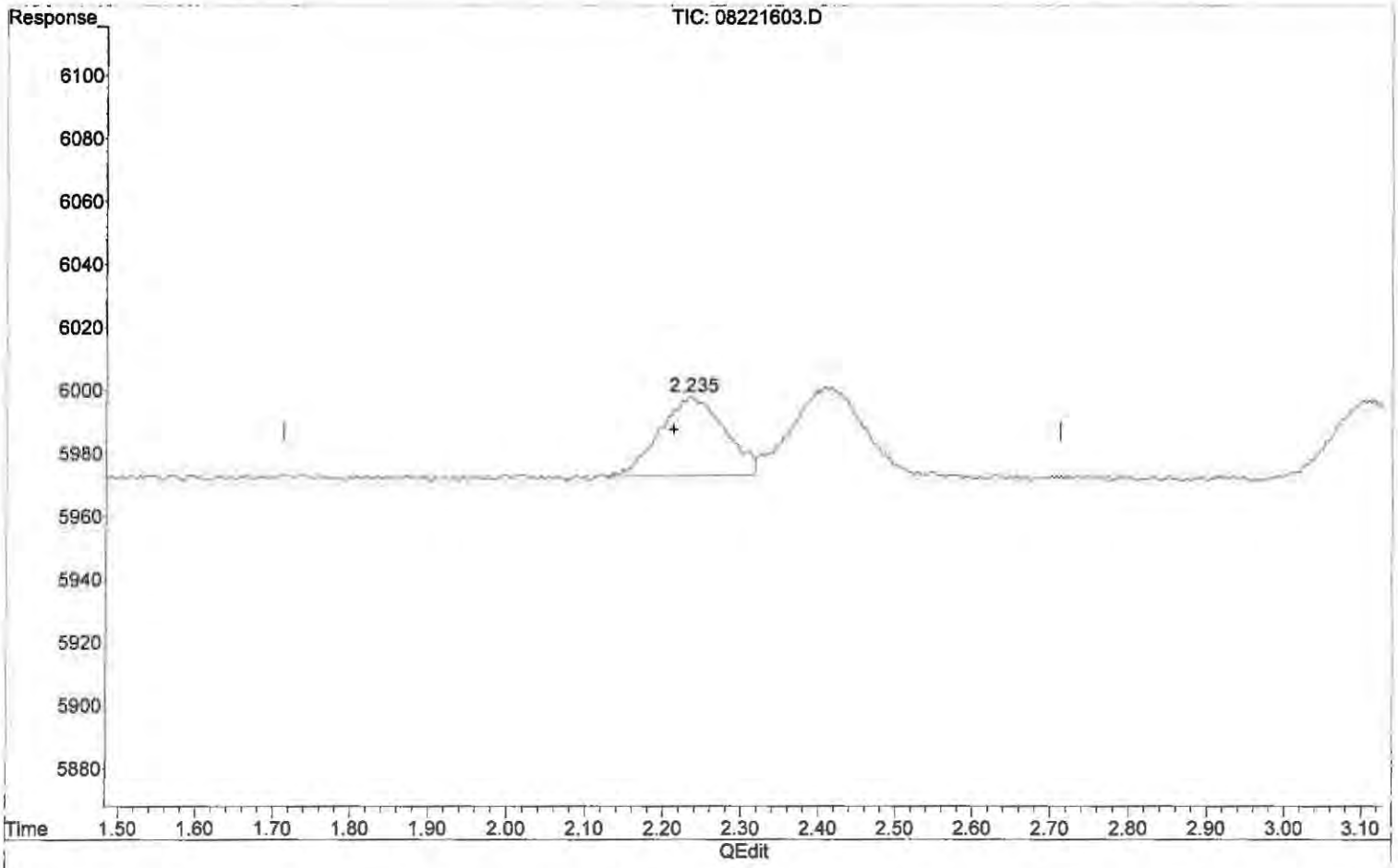
(+) = Expected Retention Time

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

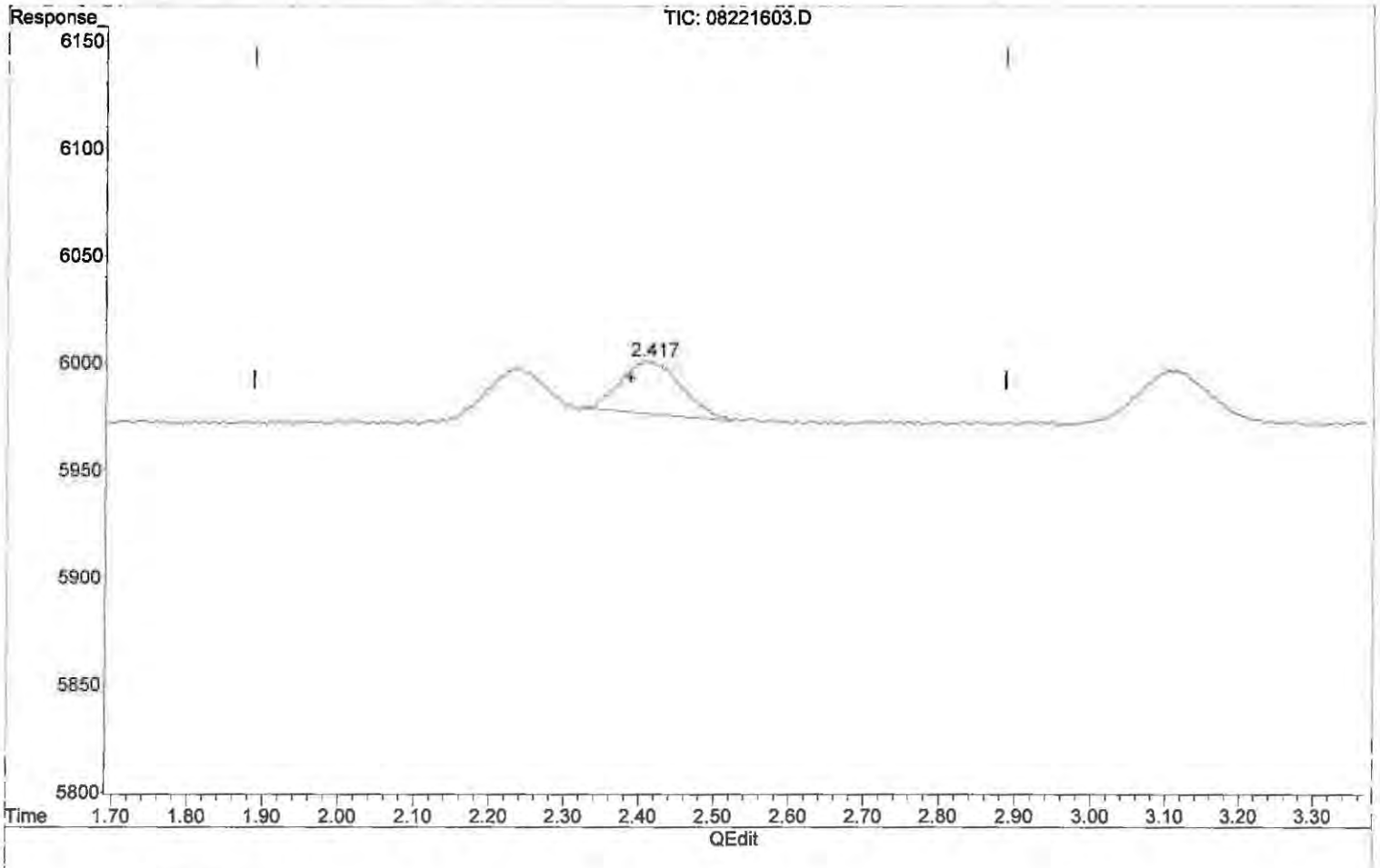
(+) = Expected Retention Time

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

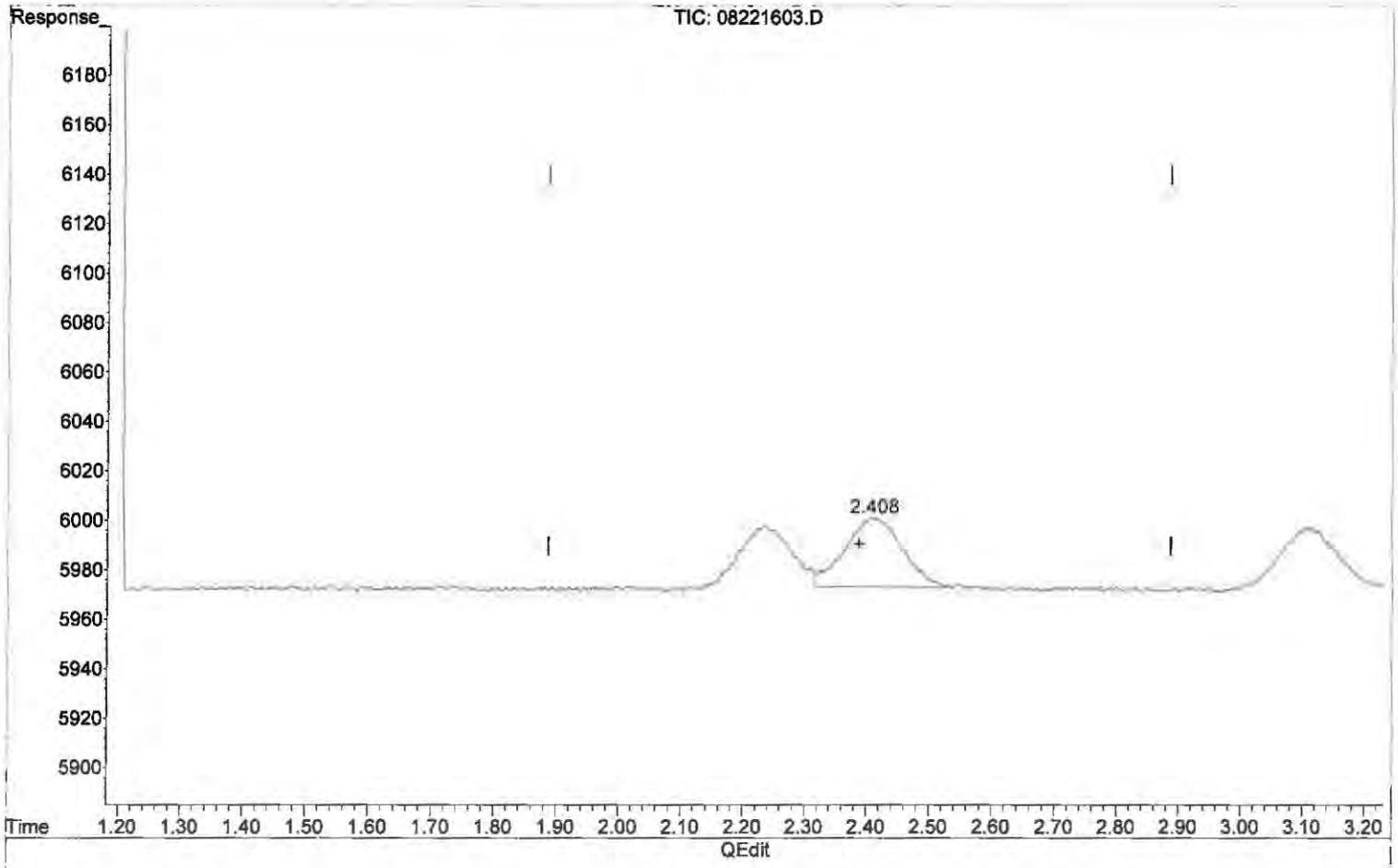
(+) = Expected Retention Time

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

8/22/16

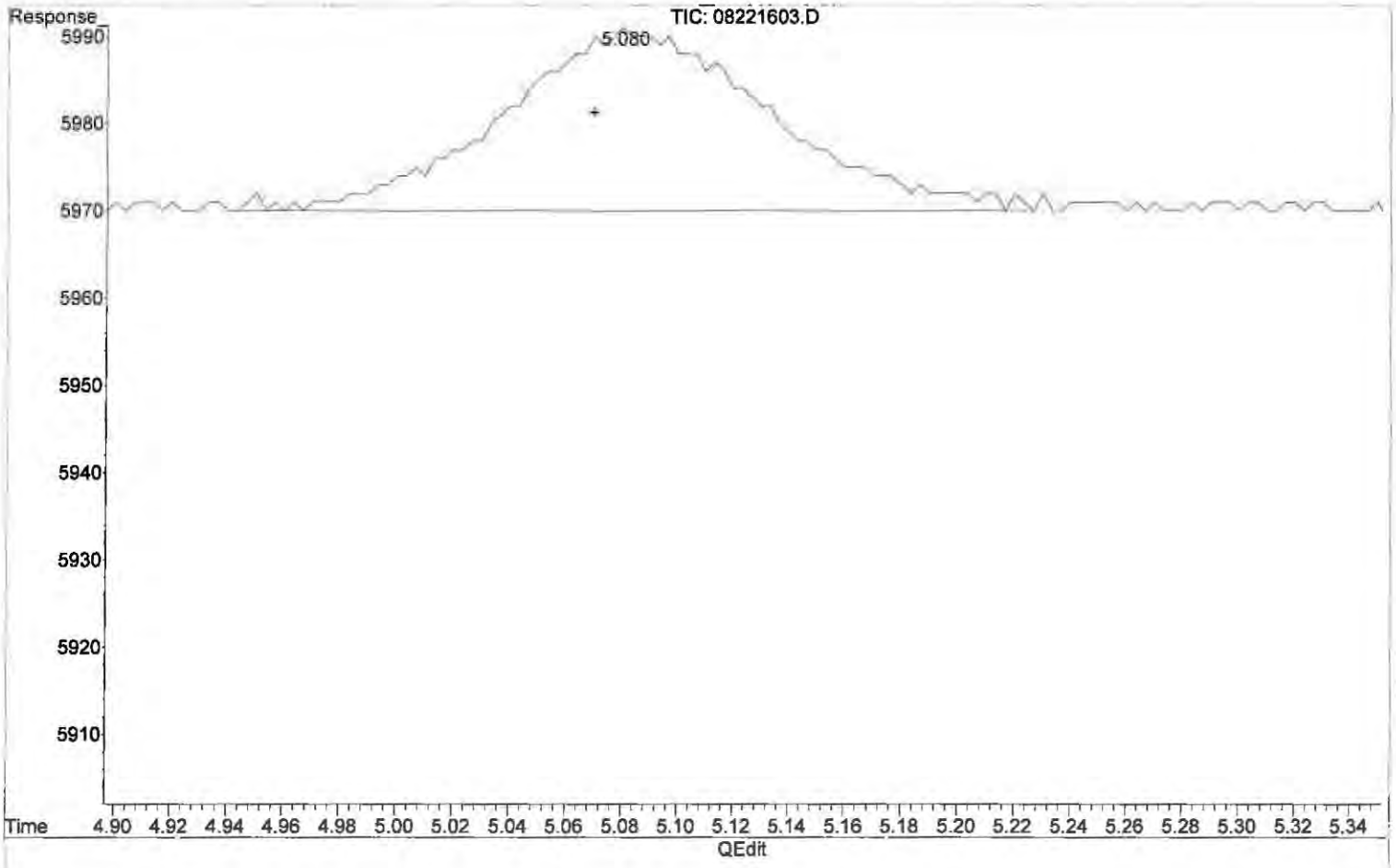
(+) = Expected Retention Time

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

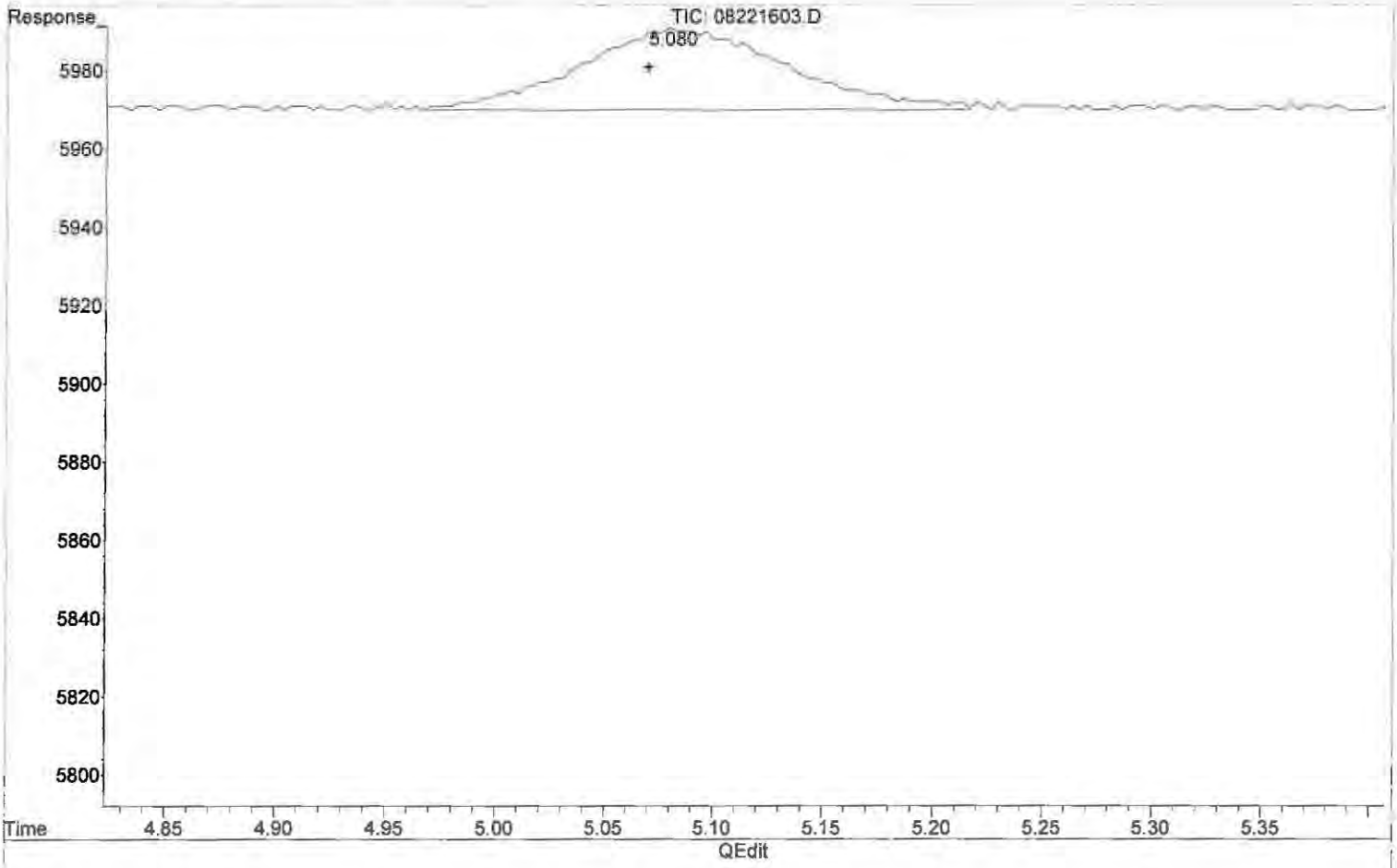
(+) = Expected Retention Time

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

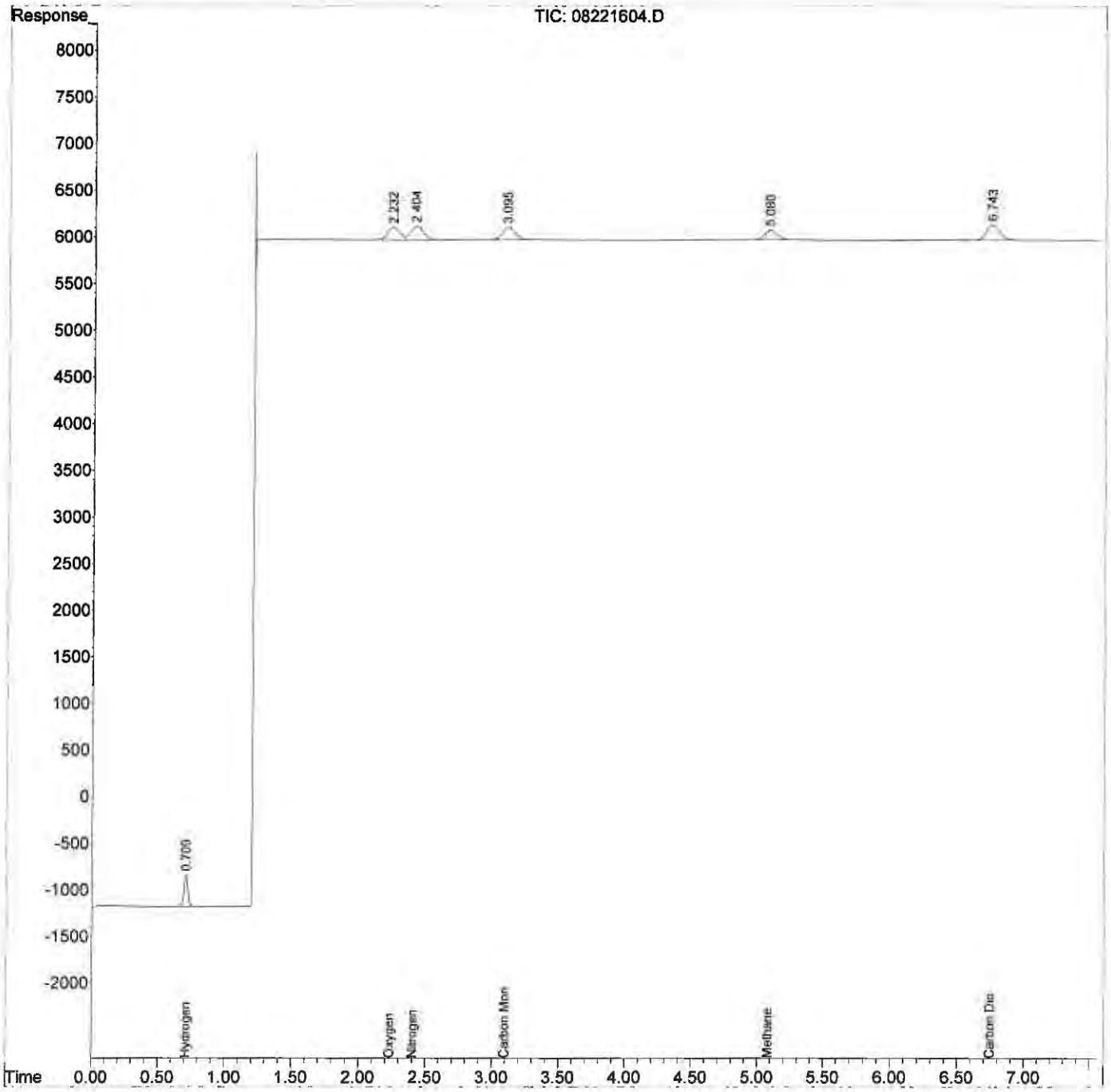
(f)=RT Delta > 1/2 Window (m)=manual int.

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

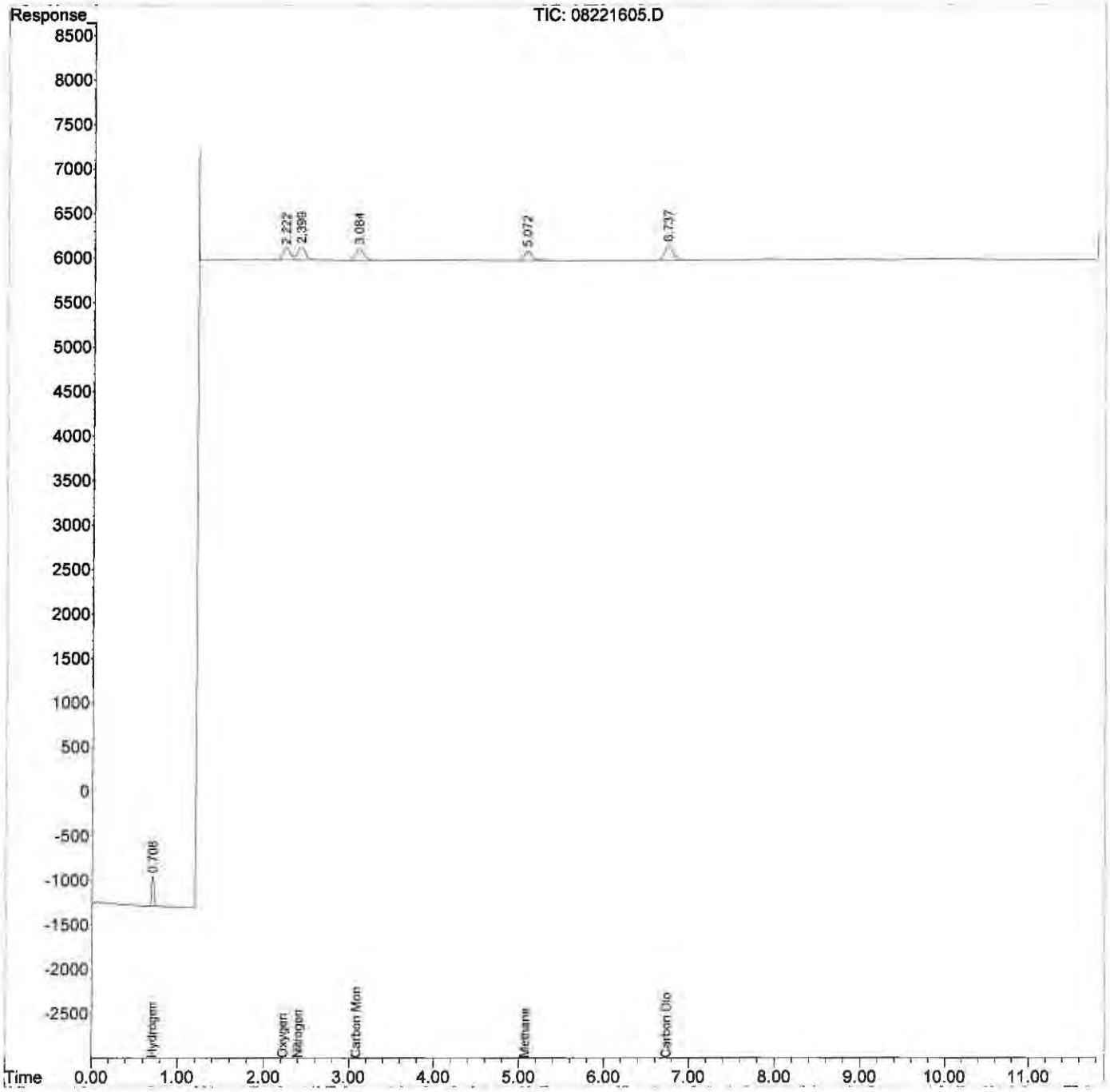
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



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

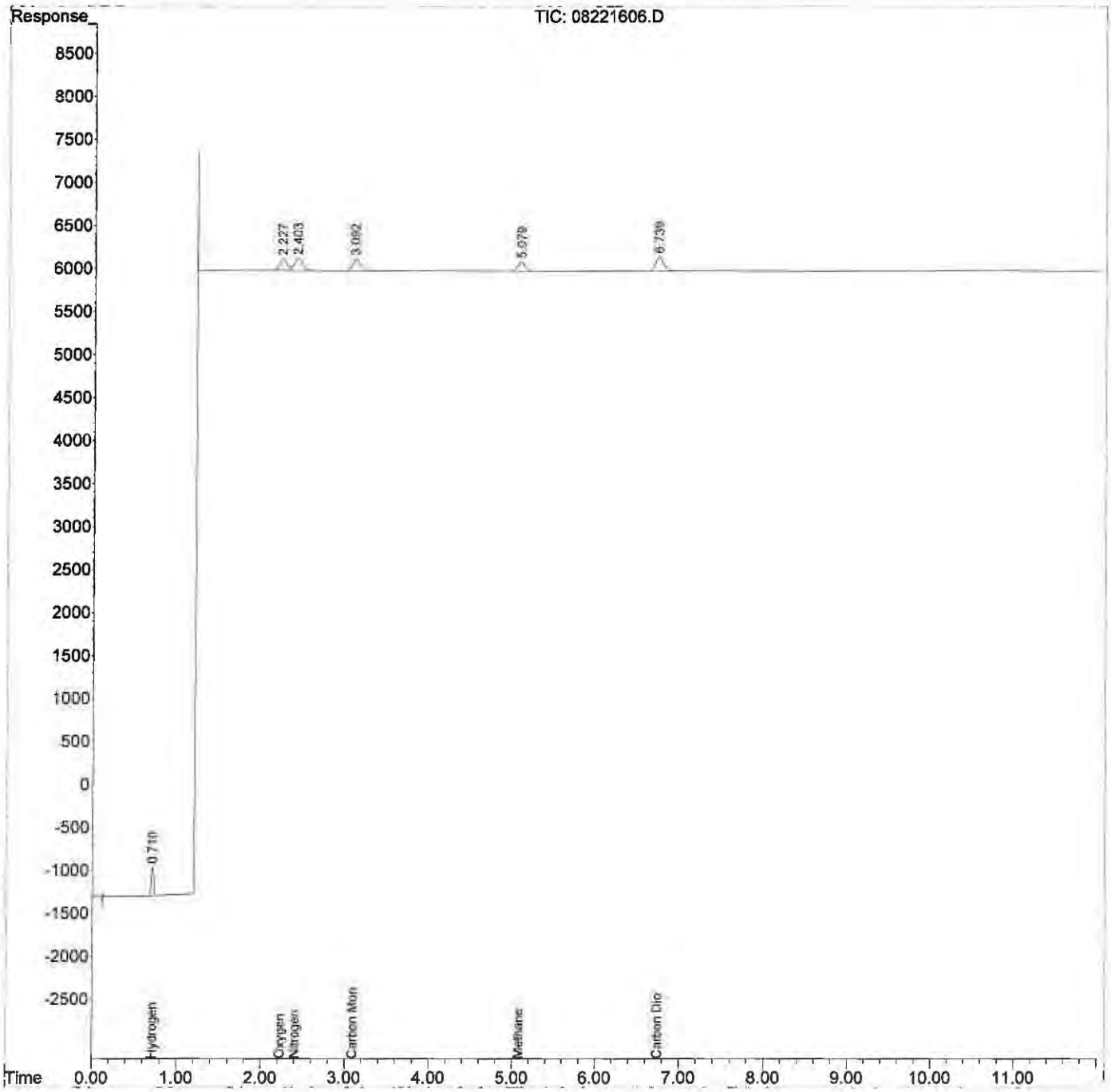
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



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

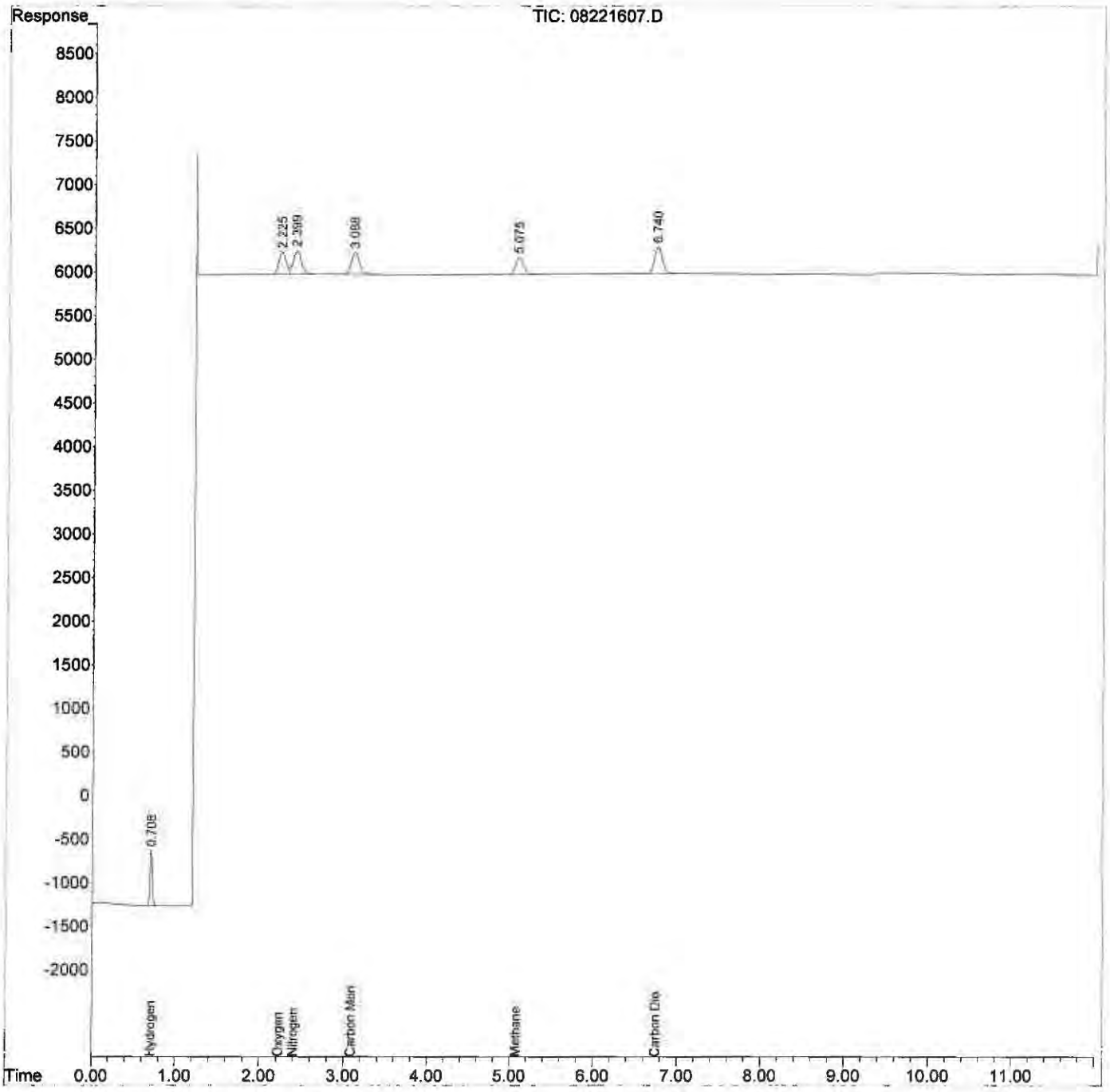
(f)=RT Delta > 1/2 Window (m)=manual int.

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

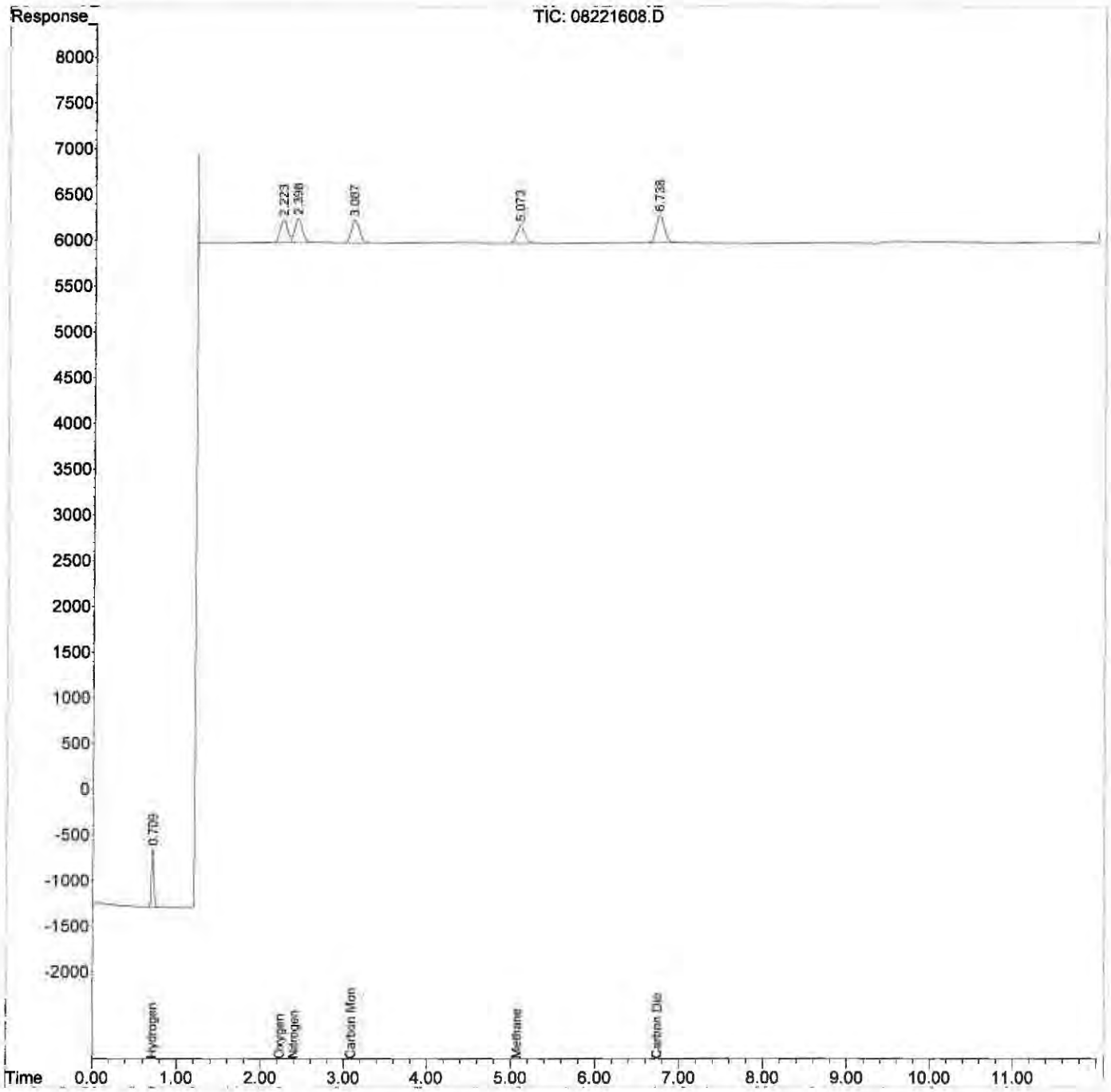
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



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

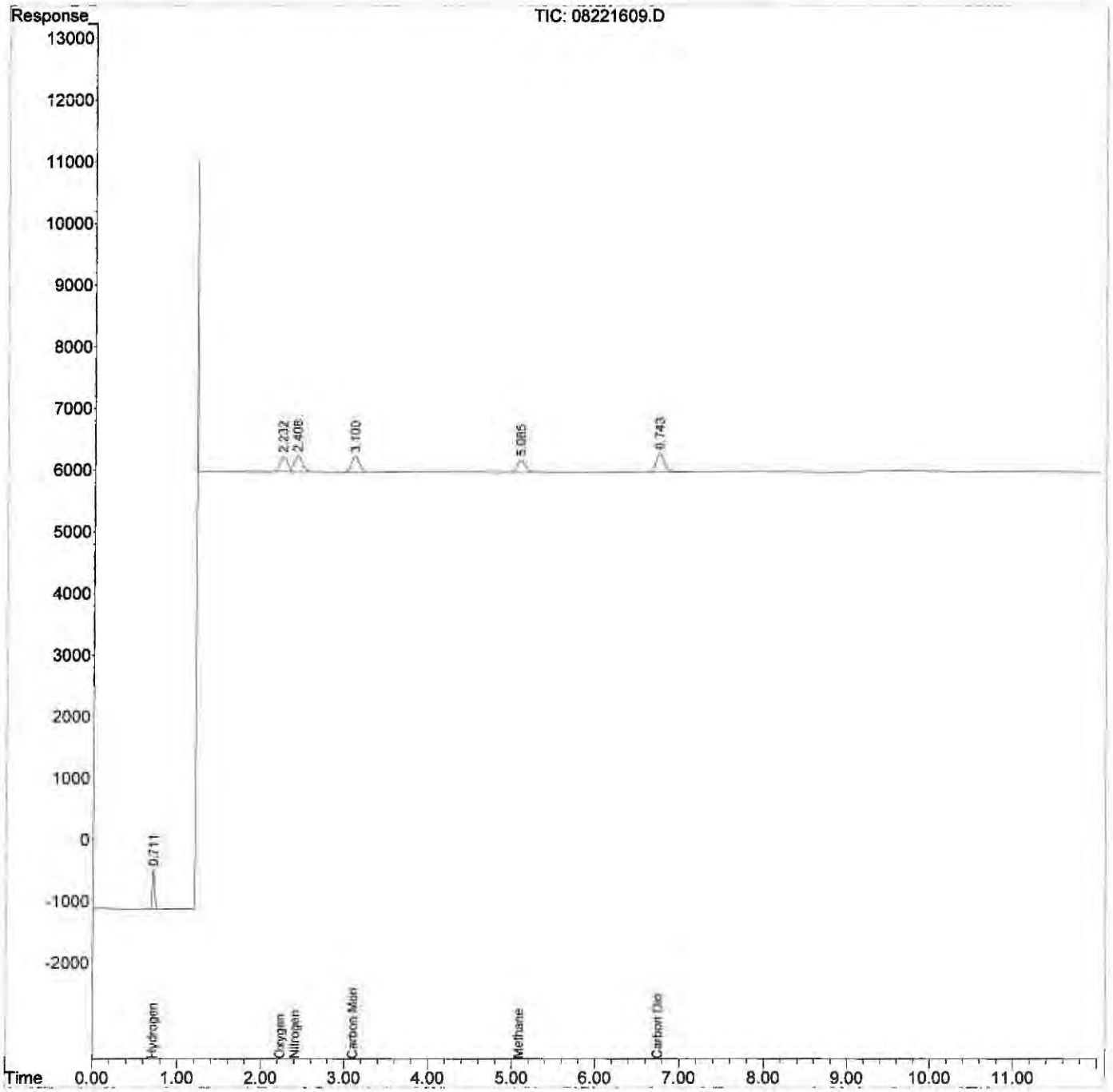
(f)=RT Delta > 1/2 Window (m)=manual int.

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

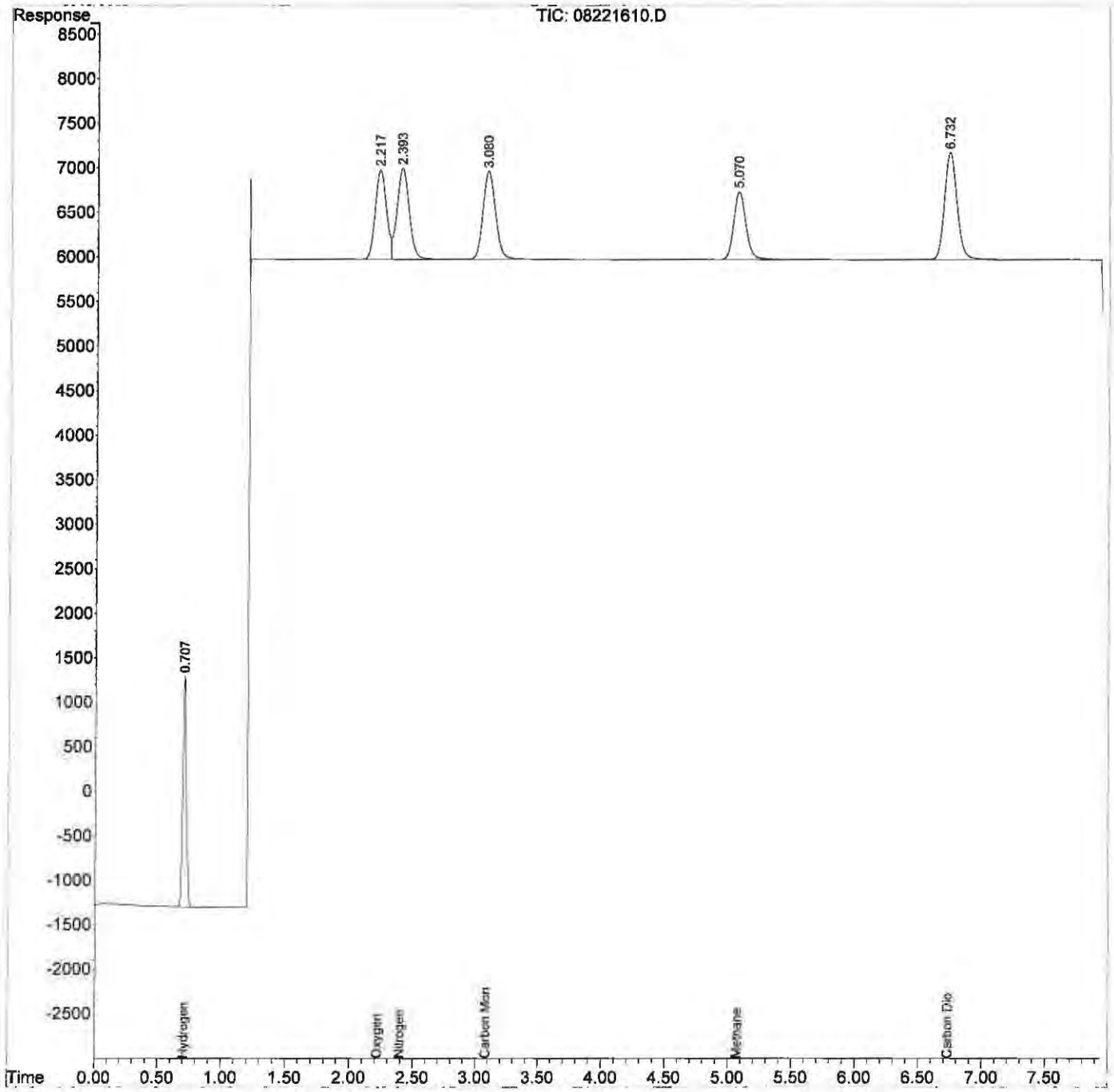
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



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 :

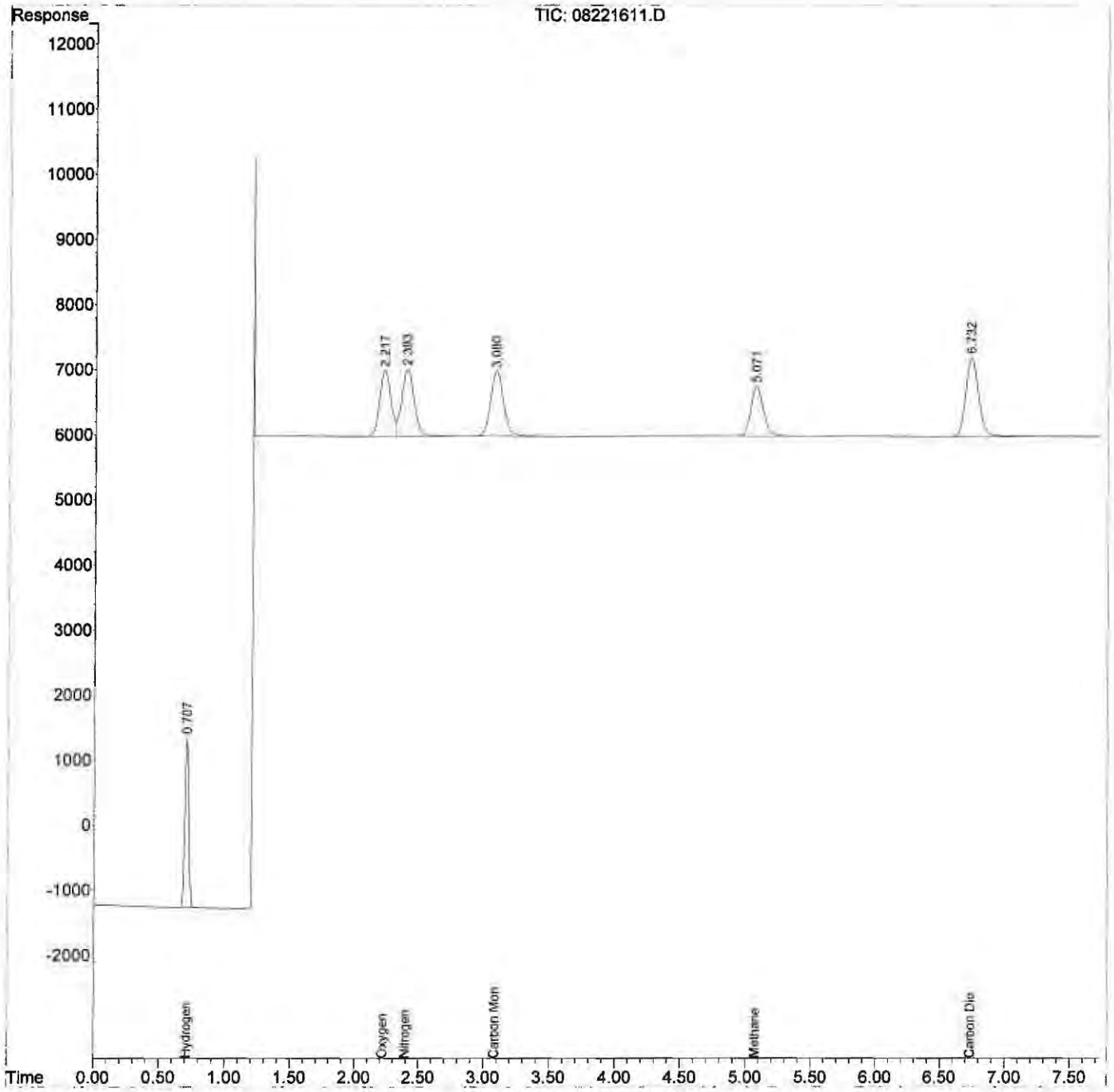
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.708	51926	39135.426	ppm
2)	Oxygen	2.219	61650	40312.840	ppm
3)	Nitrogen	2.395	69030	38574.578	ppm
4)	Carbon Monoxide	3.082	69214	39880.940	ppm
5)	Methane	5.072	51622	39335.929	ppm
6)	Carbon Dioxide	6.734	83696	39289.832	ppm

(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

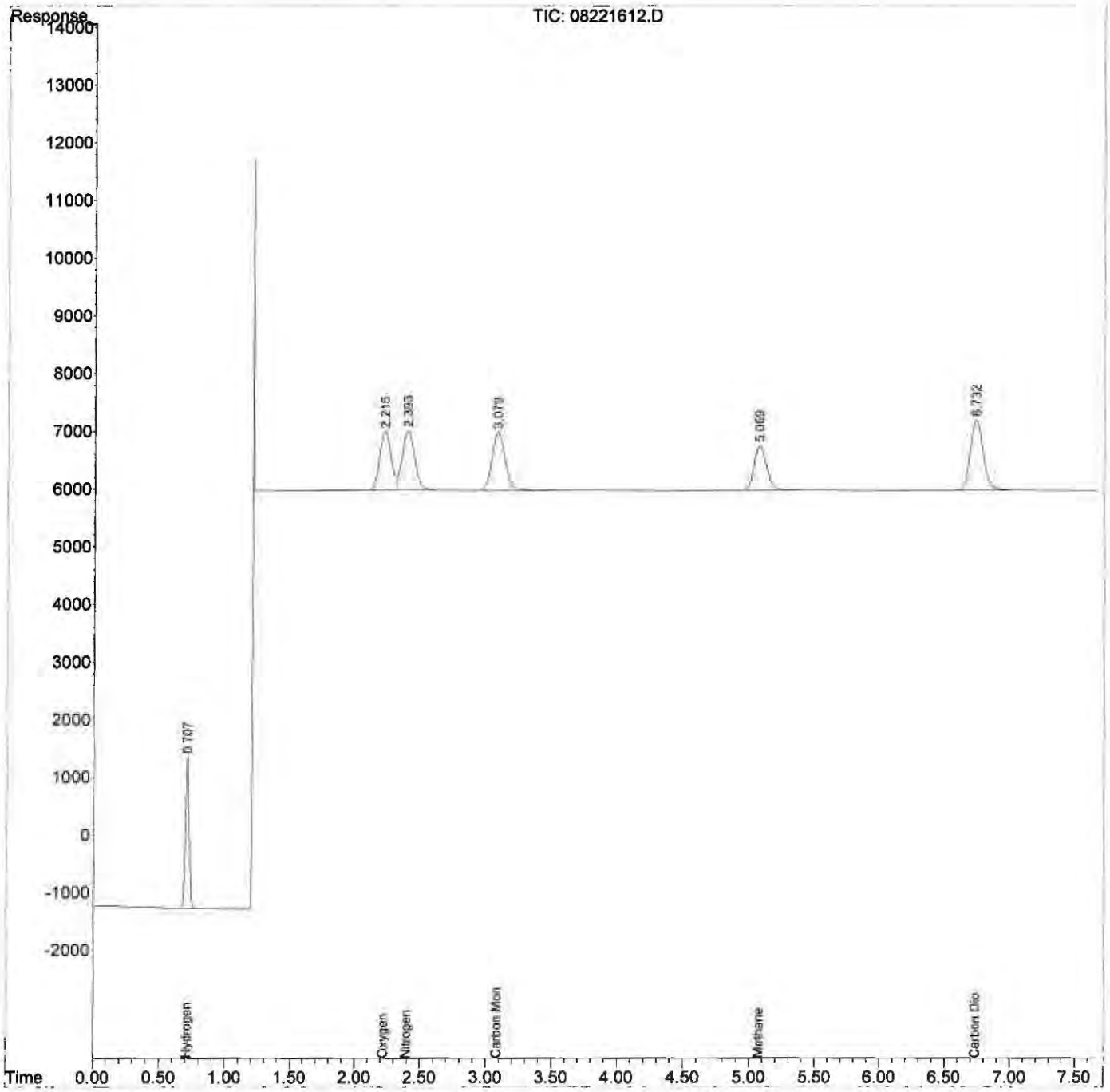
(f)=RT Delta > 1/2 Window (m)=manual int.

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

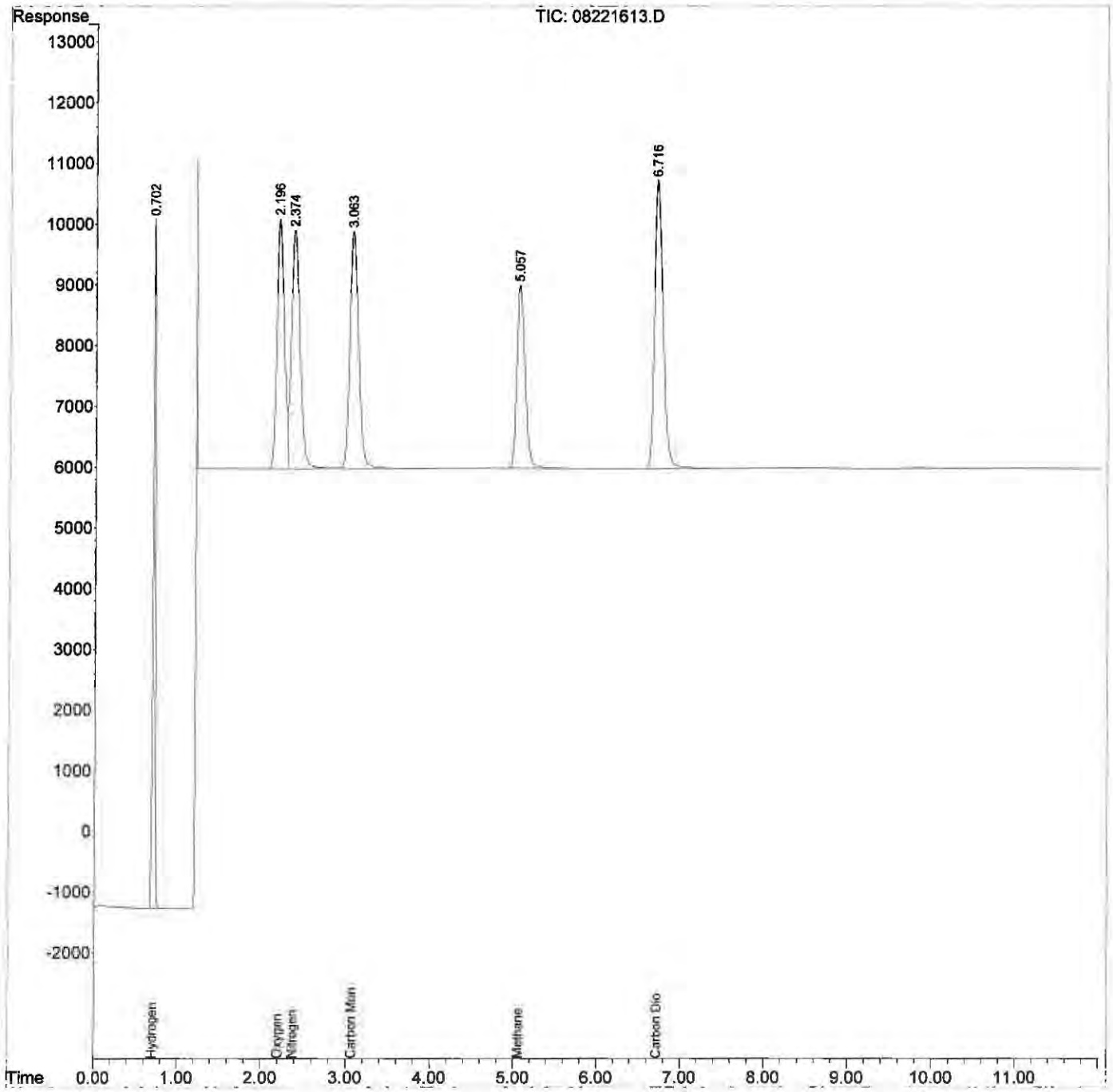
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :

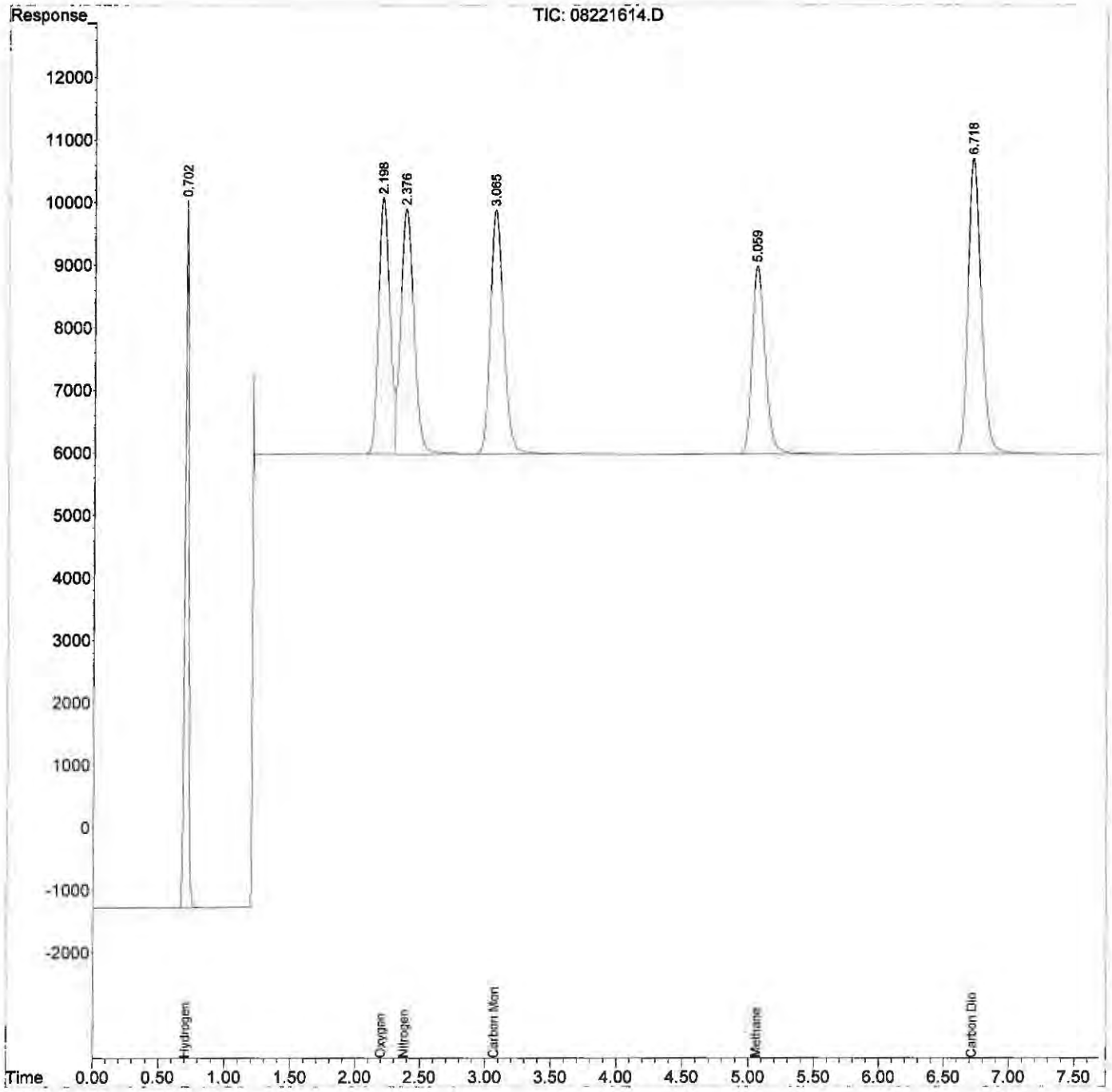
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.703	219704	165676.829	ppm
2)	Oxygen	2.200	246818	161079.250	ppm
3)	Nitrogen	2.378	276346	155637.709	ppm
4)	Carbon Monoxide	3.066	276366	159278.450	ppm
5)	Methane	5.060	205850	157510.093	ppm
6)	Carbon Dioxide	6.719	332031	156565.868	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 :

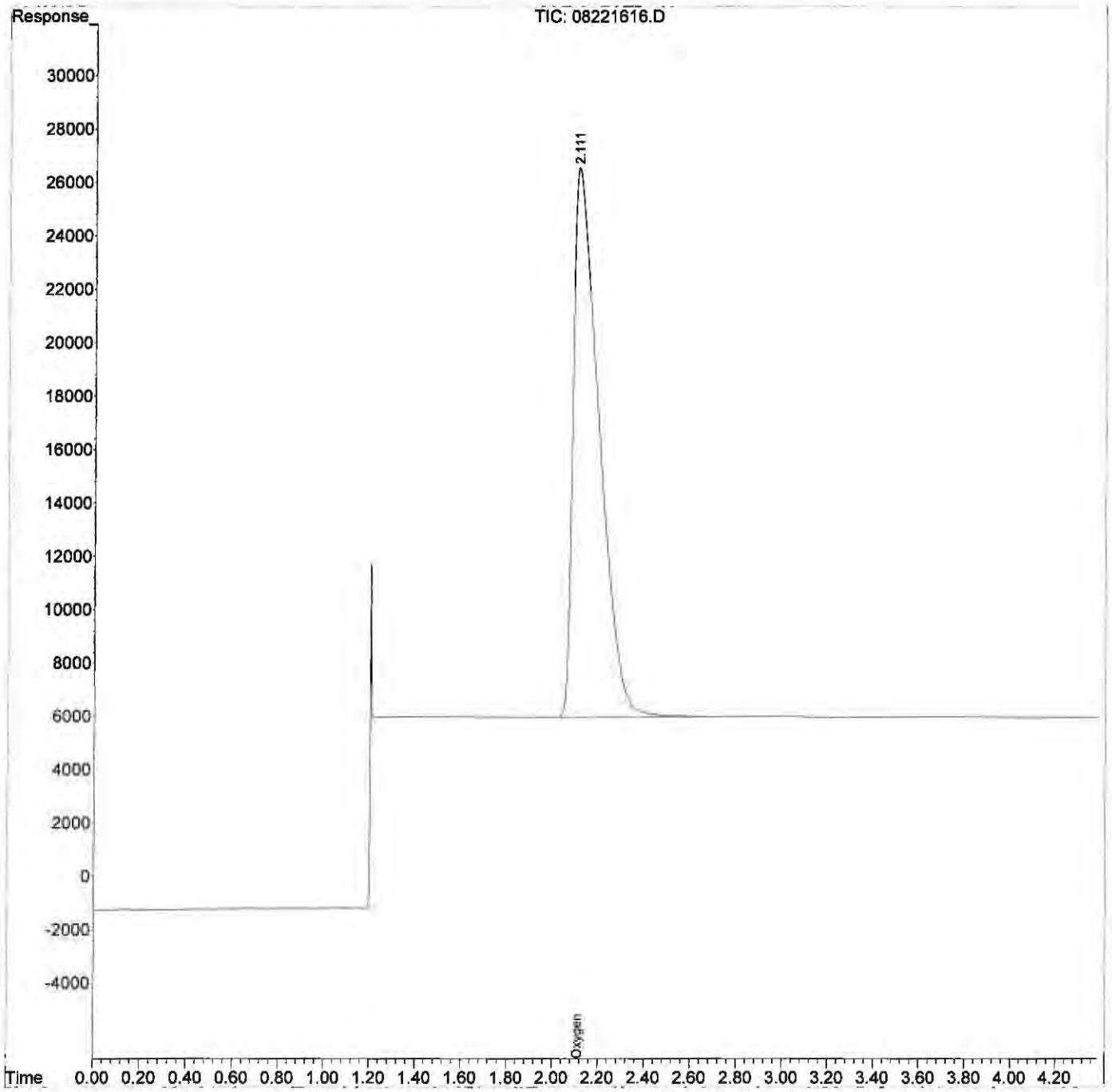
	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.112	1611068	1050161.569	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

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

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221616.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 3:42 pm
Operator : amf
Sample : std s11-12021503
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 15:56:42 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221617.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 3:49 pm
Operator : amf
Sample : std s11-12021503
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 16:02:12 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.115	1617147	1050828.907	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

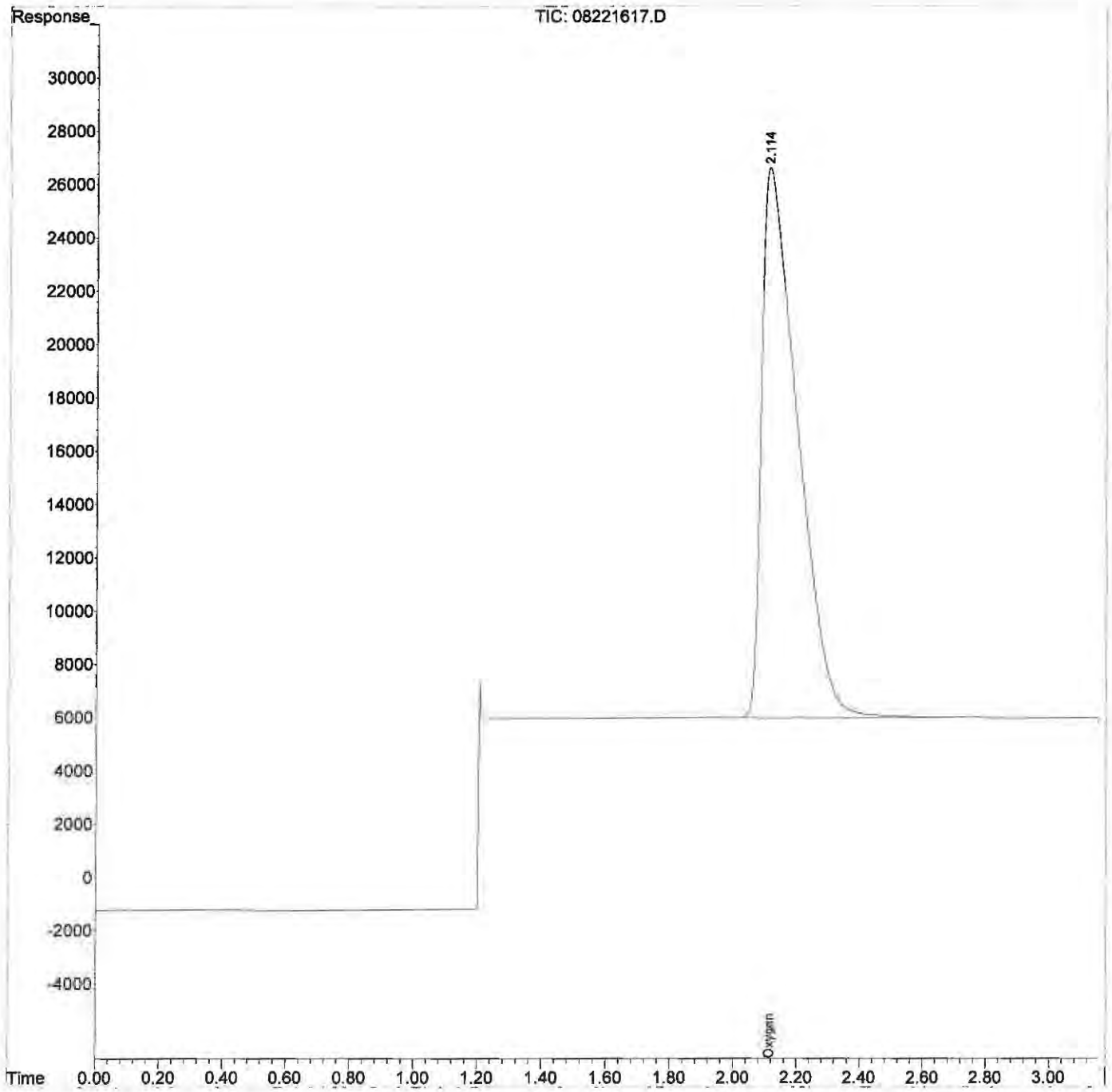
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221617.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 3:49 pm
Operator : amf
Sample : std s11-12021503
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 16:02:12 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221618.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 3:54 pm
Operator : amf
Sample : std s11-12021503
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 16:07:54 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	2.119	1588729	1029284.802	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

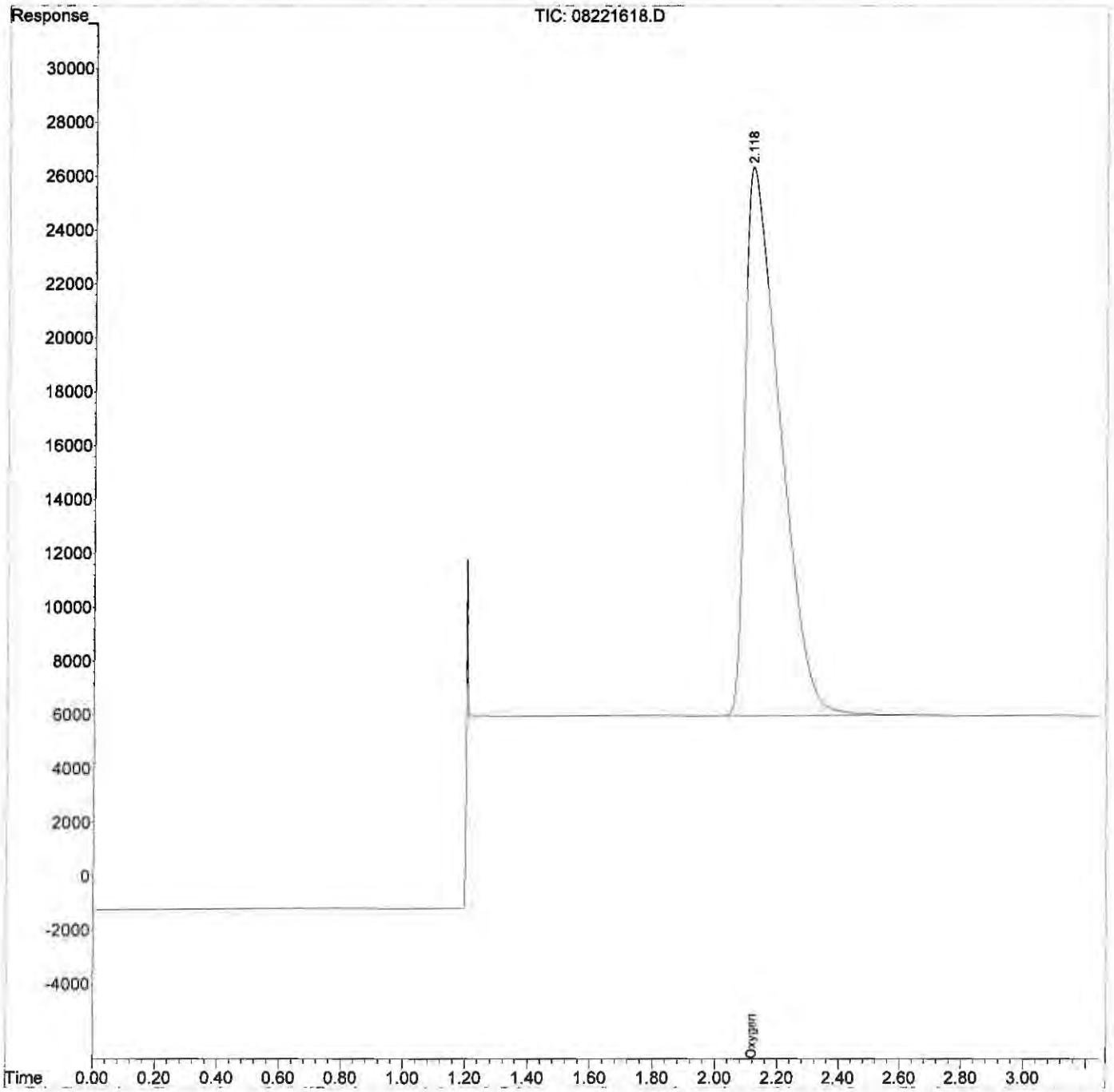
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221618.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 3:54 pm
Operator : amf
Sample : std s11-12021503
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 16:07:54 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221619.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 4:02 pm
Operator : amf
Sample : co2
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 16:20:27 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.634	2005774	948215.193	ppm

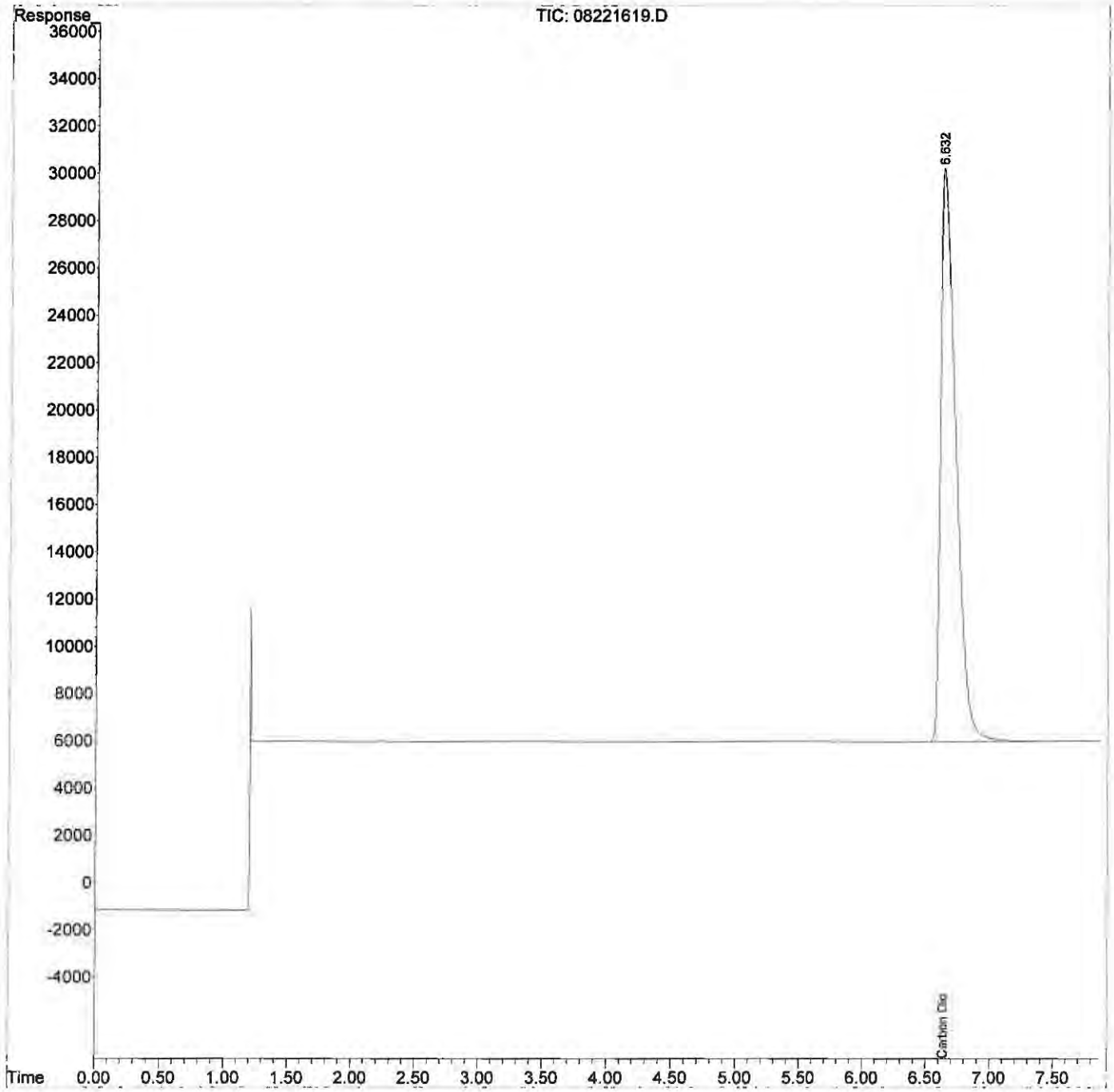
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221619.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 4:02 pm
Operator : amf
Sample : co2
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 16:20:27 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221620.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 4:14 pm
Operator : amf
Sample : co2
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 16:32:40 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.630	2003370	950153.030	ppm

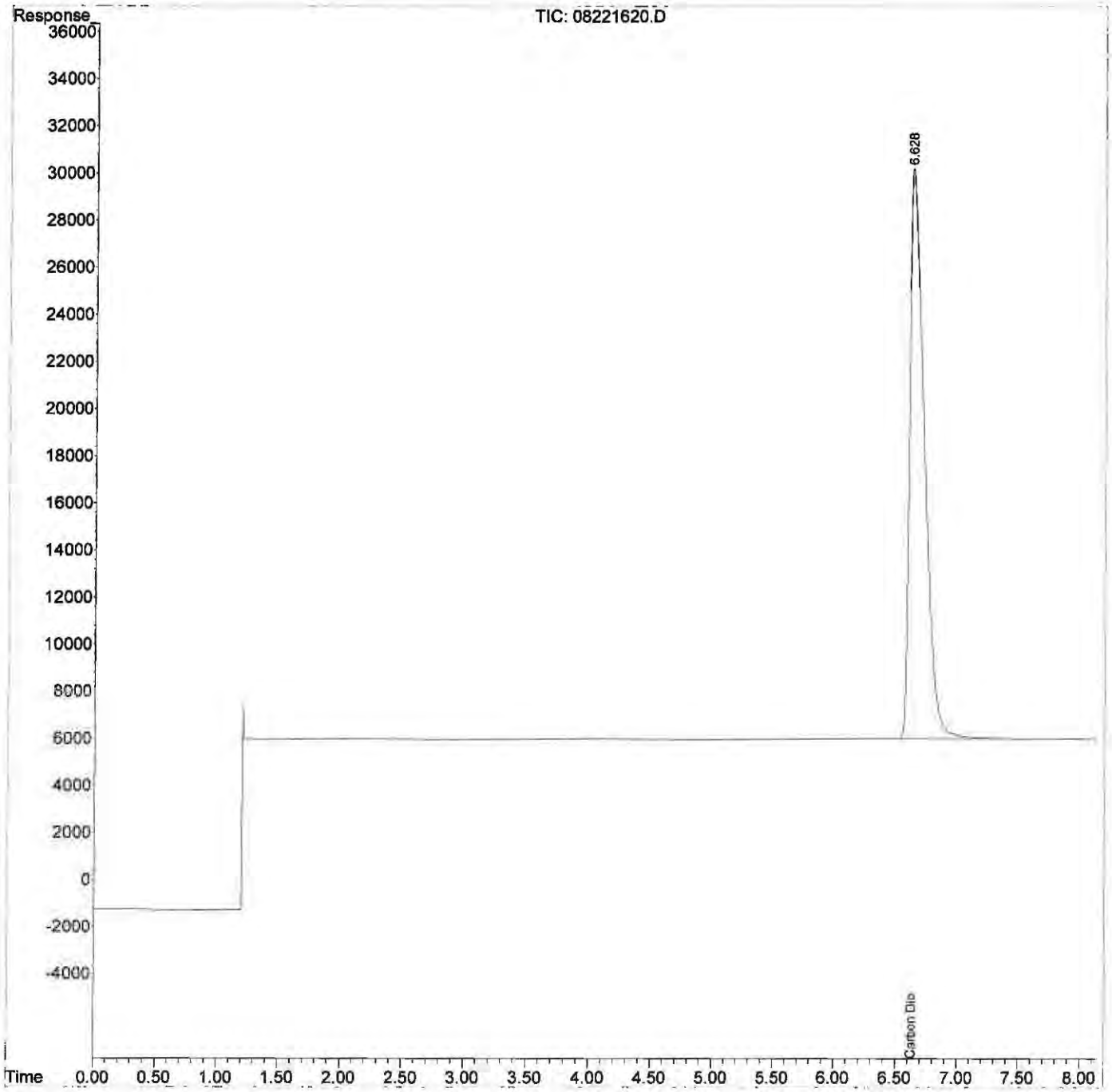
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221620.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 4:14 pm
Operator : amf
Sample : co2
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 16:32:40 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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



Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221621.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 4:26 pm
Operator : amf
Sample : co2
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 16:44:54 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm
3)	Nitrogen	0.000	0	N.D.	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	6.627	2014660	958317.321	ppm

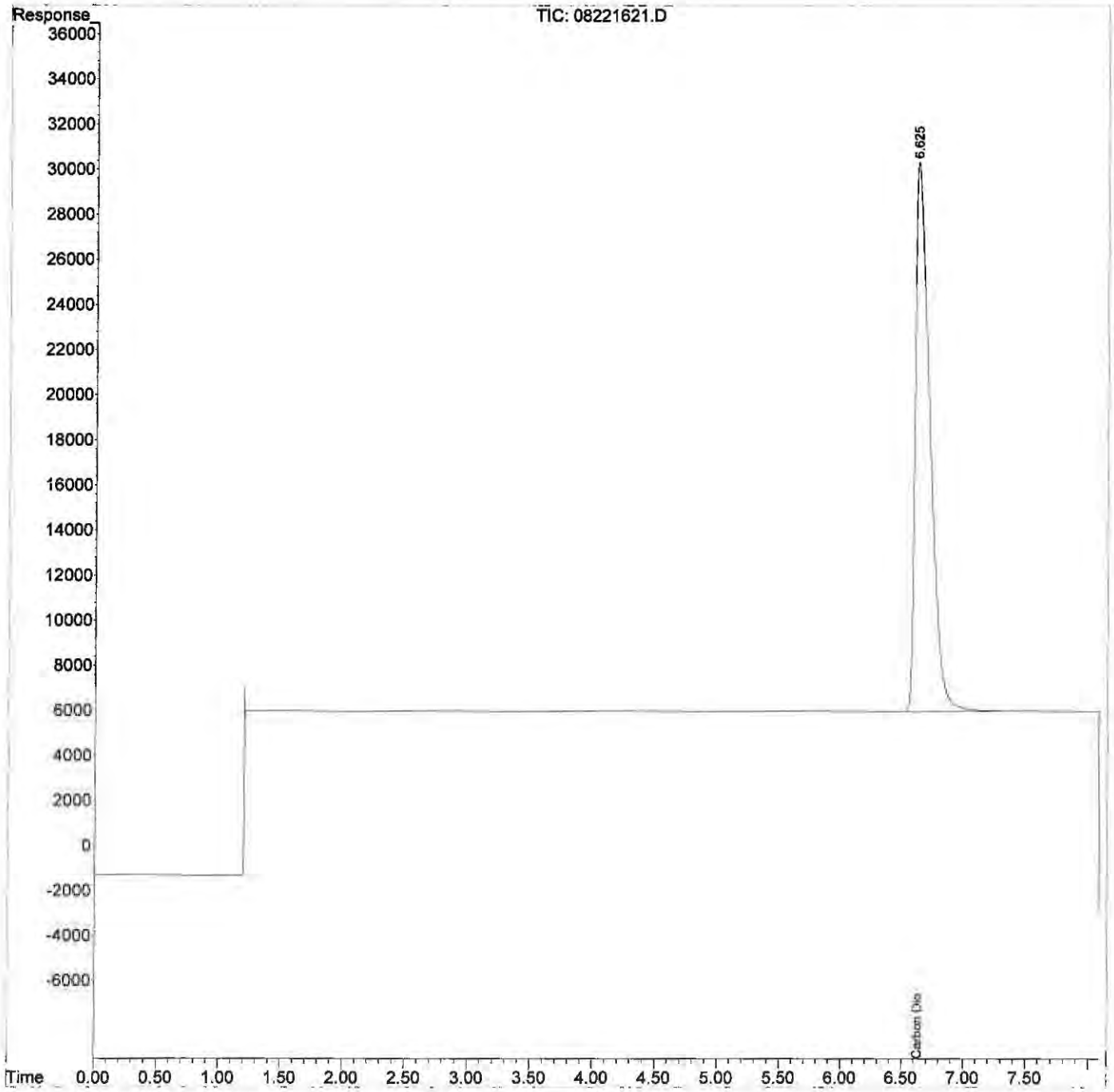
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_08\22\
Data File : 08221621.D
Signal(s) : TCD1A.CH
Acq On : 22 Aug 2016 4:26 pm
Operator : amf
Sample : co2
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 22 16:44:54 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Mon Aug 22 10:58:55 2016
Response via : Initial Calibration
Integrator: ChemStation

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



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_08\23\
Data File : 08231601.D
Signal(s) : TCD1A.CH
Acq On : 23 Aug 2016 8:56 am
Operator : amf
Sample : s11-12021502
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 23 09:10:40 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 08:53:31 2016
Response via : Initial Calibration
Integrator: ChemStation

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

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm d
3)	Nitrogen	2.292	1743725	985438.652	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

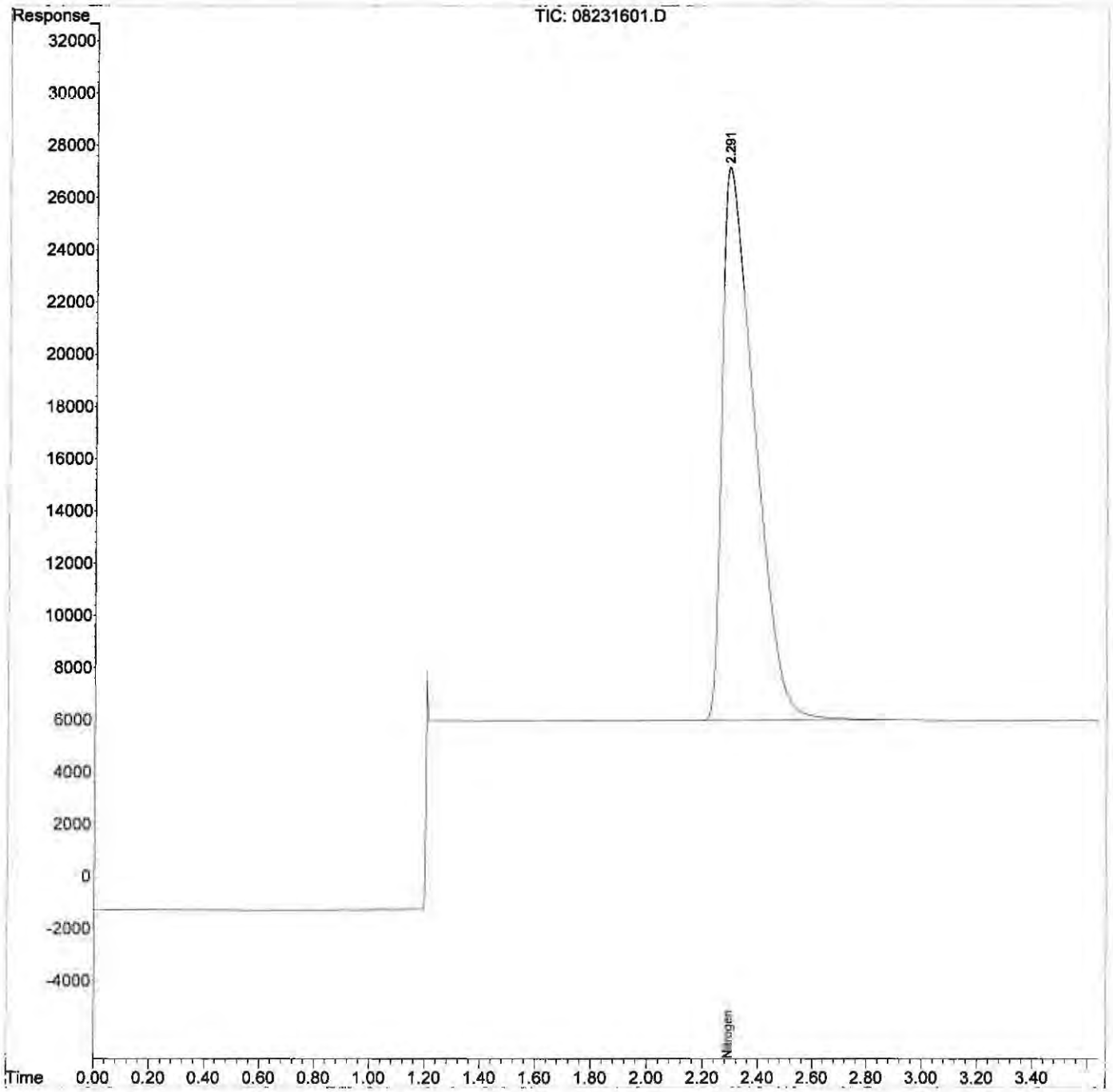
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_08\23\
Data File : 08231601.D
Signal(s) : TCD1A.CH
Acq On : 23 Aug 2016 8:56 am
Operator : amf
Sample : s11-12021502
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 23 09:10:40 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 08:53:31 2016
Response via : Initial Calibration
Integrator: ChemStation

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



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_08\23\
Data File : 08231602.D
Signal(s) : TCD1A.CH
Acq On : 23 Aug 2016 9:03 am
Operator : amf
Sample : s11-12021502
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 23 09:20:25 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 09:11:06 2016
Response via : Initial Calibration
Integrator: ChemStation

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

	Compound	R.T.	Response	Conc	Units	
Target Compounds						
1)	Hydrogen	0.000	0	N.D.	ppm	
2)	Oxygen	0.000	0	N.D.	ppm	d
3)	Nitrogen	2.294	1755465	992976.308	ppm	
4)	Carbon Monoxide	0.000	0	N.D.	ppm	
5)	Methane	0.000	0	N.D.	ppm	
6)	Carbon Dioxide	0.000	0	N.D.	ppm	

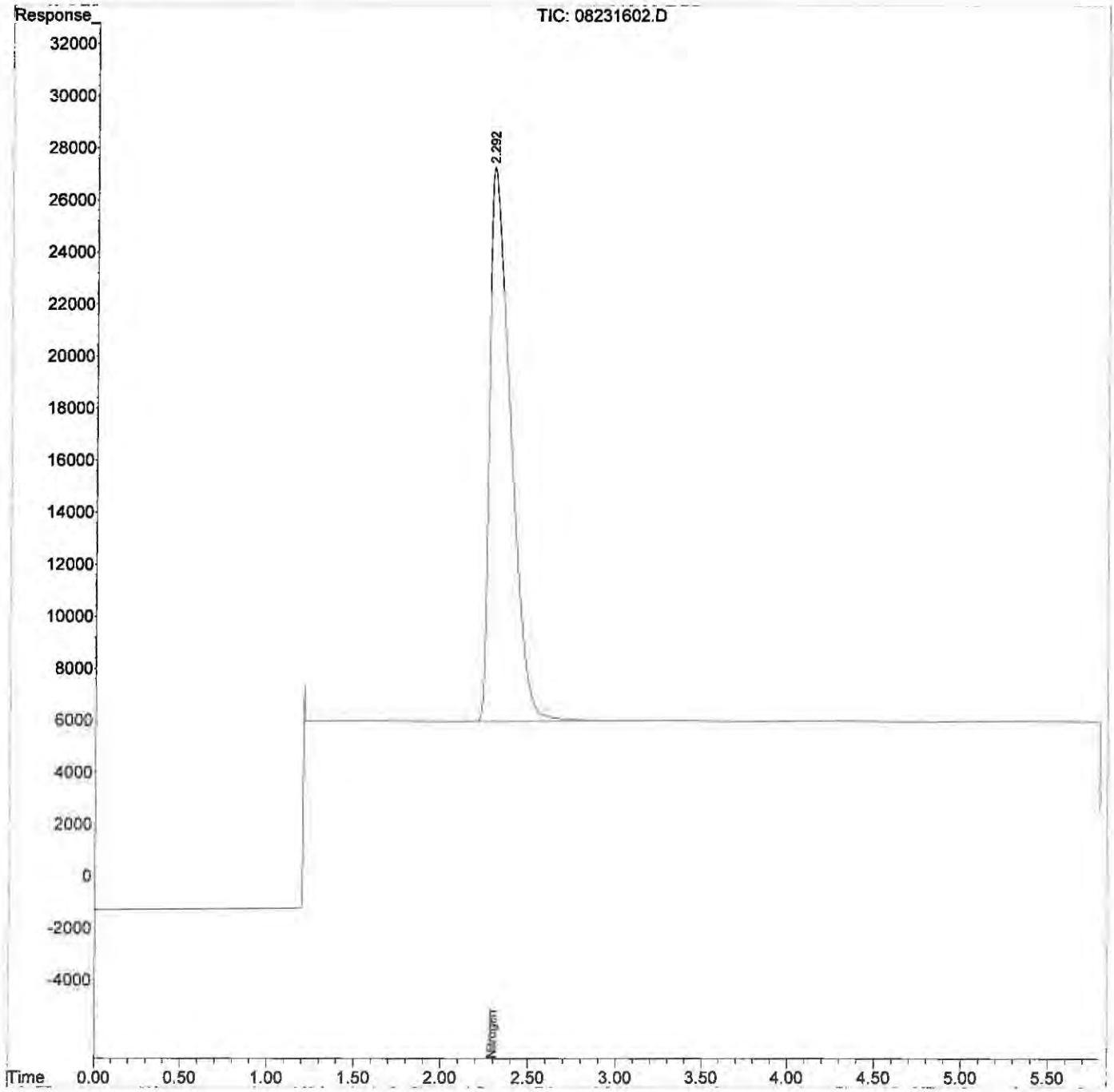
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_08\23\
Data File : 08231602.D
Signal(s) : TCD1A.CH
Acq On : 23 Aug 2016 9:03 am
Operator : amf
Sample : s11-12021502
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 23 09:20:25 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 09:11:06 2016
Response via : Initial Calibration
Integrator: ChemStation

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



Quantitation Report (QT Reviewed)

Data Path : I:\GC01\DATA\FXG\2016_08\23\
Data File : 08231603.D
Signal(s) : TCD1A.CH
Acq On : 23 Aug 2016 9:12 am
Operator : amf
Sample : s11-12021502
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Aug 23 09:26:42 2016
Quant Method : I:\GC01\METHODS\GC1_trip082216.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Tue Aug 23 09:21:22 2016
Response via : Initial Calibration
Integrator: ChemStation

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

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.000	0	N.D.	ppm
2)	Oxygen	0.000	0	N.D.	ppm d
3)	Nitrogen	2.292	1767961	1000457.289	ppm
4)	Carbon Monoxide	0.000	0	N.D.	ppm
5)	Methane	0.000	0	N.D.	ppm
6)	Carbon Dioxide	0.000	0	N.D.	ppm

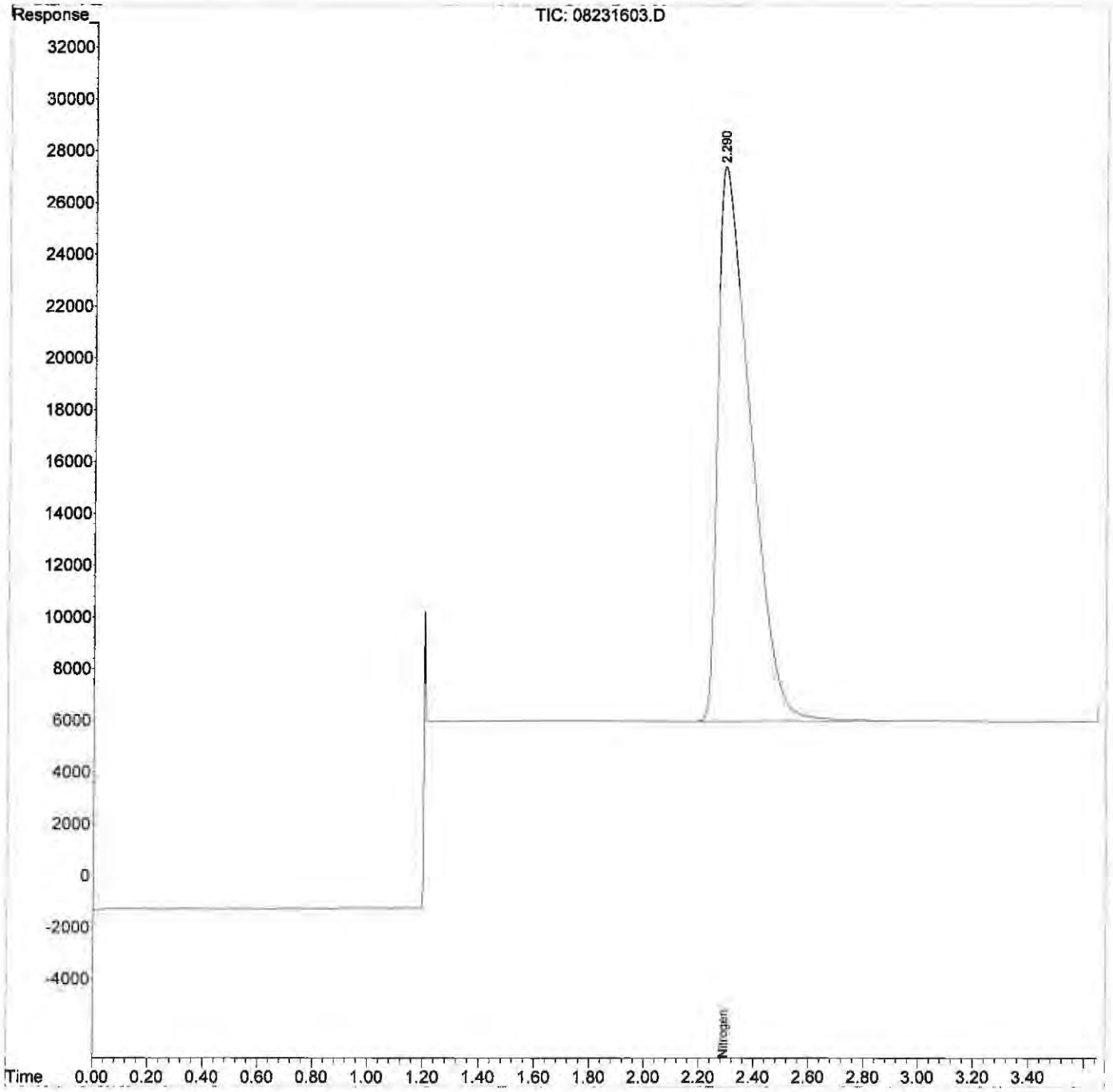
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



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

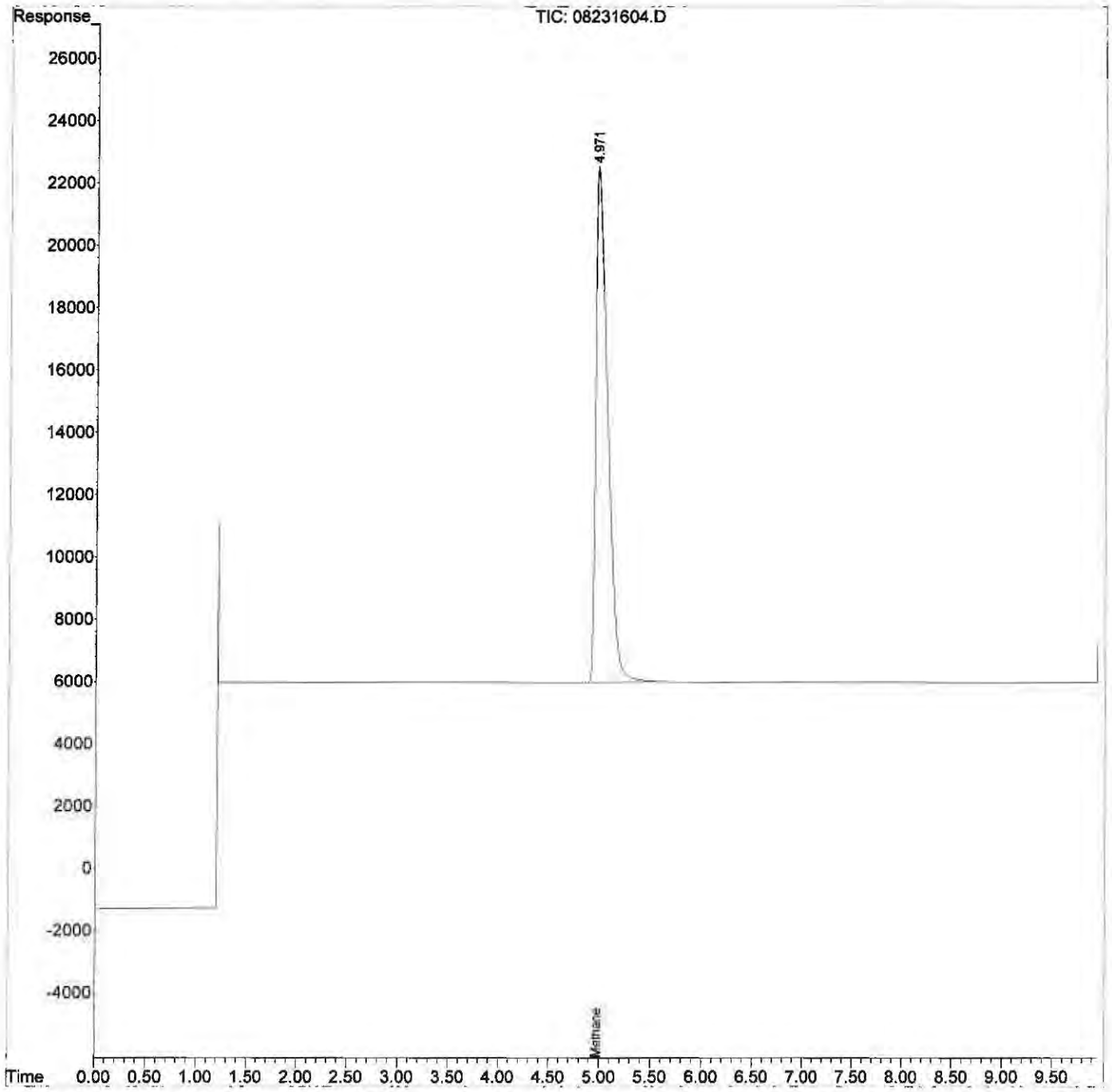
(f)=RT Delta > 1/2 Window (m)=manual int.

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

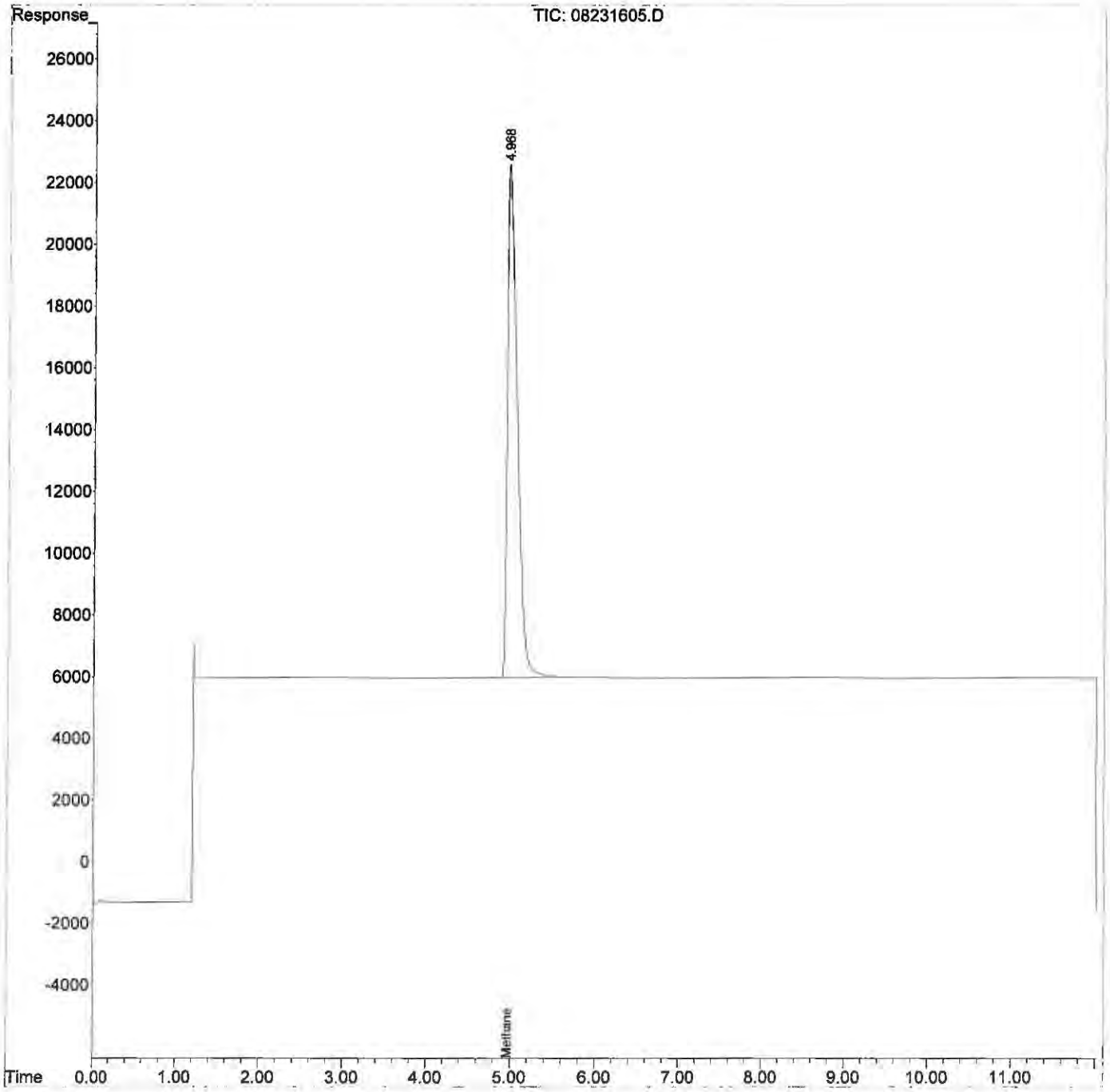
(f)=RT Delta > 1/2 Window (m)=manual int.

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

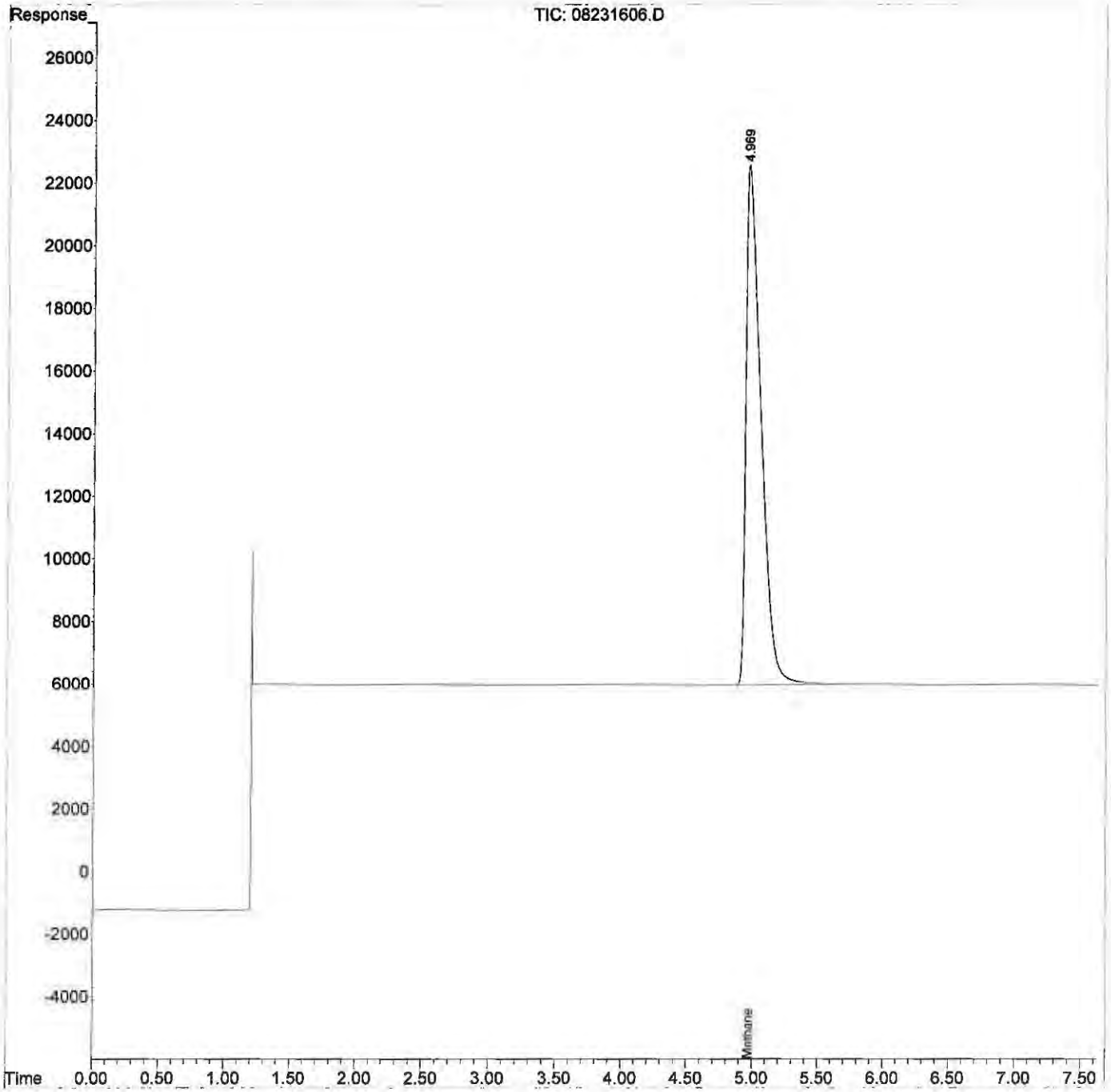
(f)=RT Delta > 1/2 Window (m)=manual int.

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	5.54 %

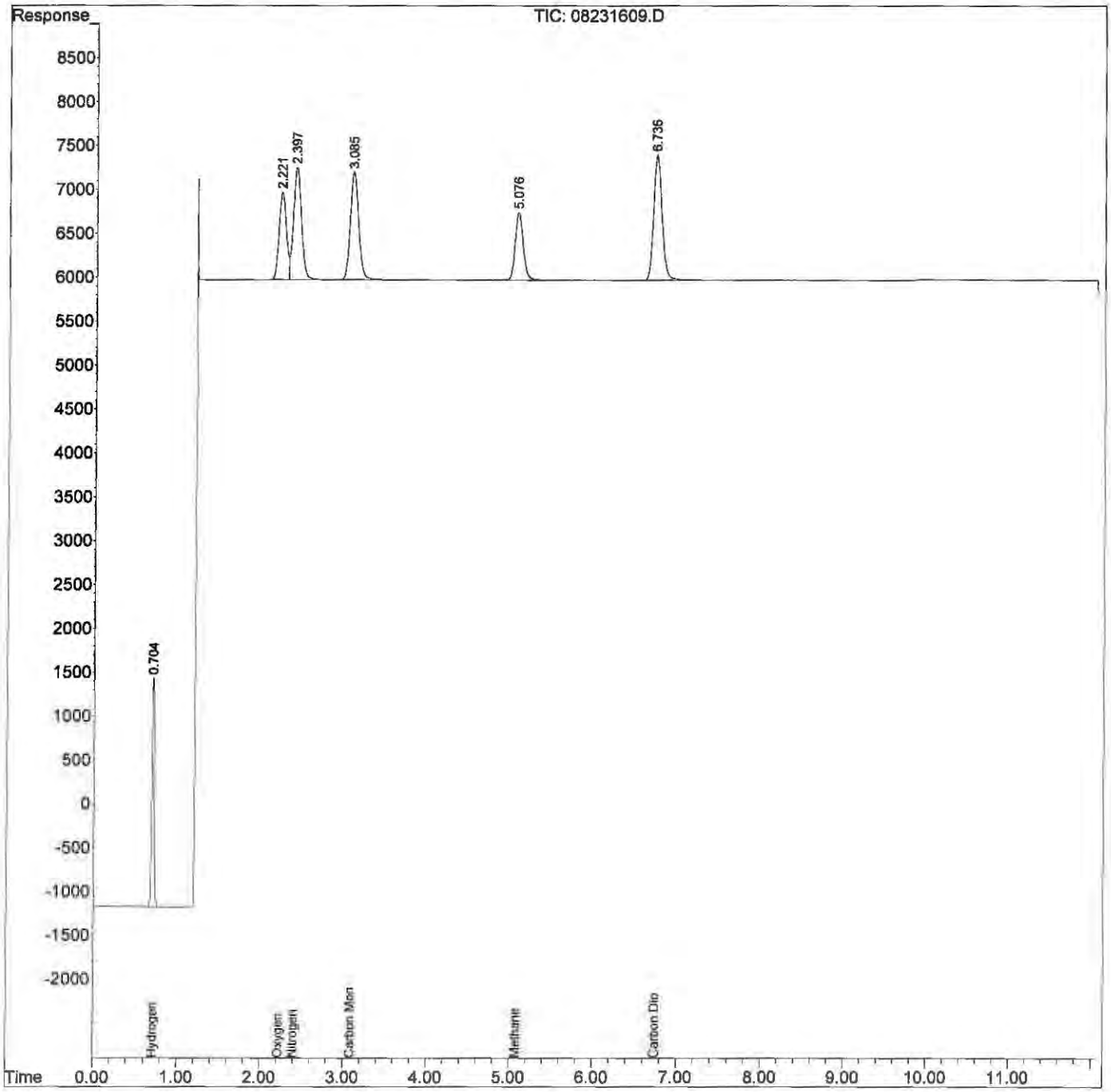
(f)=RT Delta > 1/2 Window (m)=manual int.

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 :



ALS

REPORT SUMMARYS FIXED GASES BY GC/TCD

CLIENT : Air Hygiene

Analyst : MC

PAI Job : P1604449

Printed : 9/30/2016

Instrument : GC #1 / TCD #1

Date analyzed : 9/17/2016

Sample amount : 100uL

Sample Result

Sample ID	Hydrogen	Oxygen	Nitrogen	Carbon Monoxide	Methane	Carbon Dioxide	Pi1	Pf1	Pi2	Pf2	BF
STANDARD	40215	40245	50609	50575	40683	48285					
ACTUAL	40000	40000	50000	50000	40000	50000					
% Difference	0.5%	0.6%	1.2%	1.1%	1.7%	3.4%					
Lab Air		202924	730508			353					
MB	ND	ND	ND	ND	ND	ND					
4449-011		136503	744661			46165					
4449-011		135208	736902			45470					
4449-011		135695	739643			45671					
% Difference of Average		0.5%	0.5%		#DIV/0!	0.8%					
STANDARD	40088	40051	49815	50445	40638	47948					
ACTUAL	40000	40000	50000	50000	40000	50000					
% Difference	0.2%	0.1%	0.4%	0.9%	1.6%	4.1%					

201 of 216

MC 9/30/16

9/30/16

Average Sample Result in ppm with the DILUTION FACTOR

Sample ID	Hydrogen	Oxygen	Nitrogen	Carbon Monoxide	Methane	Carbon Dioxide	Total(%)	D.F.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_09\17\
Data File : 09171601.D
Signal(s) : TCD1A.CH
Acq On : 17 Sep 2016 1:22 pm
Operator : MC
Sample : std s30-07271601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 13:40:58 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	53601	40214.860	ppm
2)	Oxygen	2.221	62220	40244.521	ppm
3)	Nitrogen	2.397	89436	50608.692	ppm
4)	Carbon Monoxide	3.084	87730	50574.568	ppm
5)	Methane	5.076	53177	40682.515	ppm
6)	Carbon Dioxide	6.737	101273	48284.578	ppm

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

9/30/16

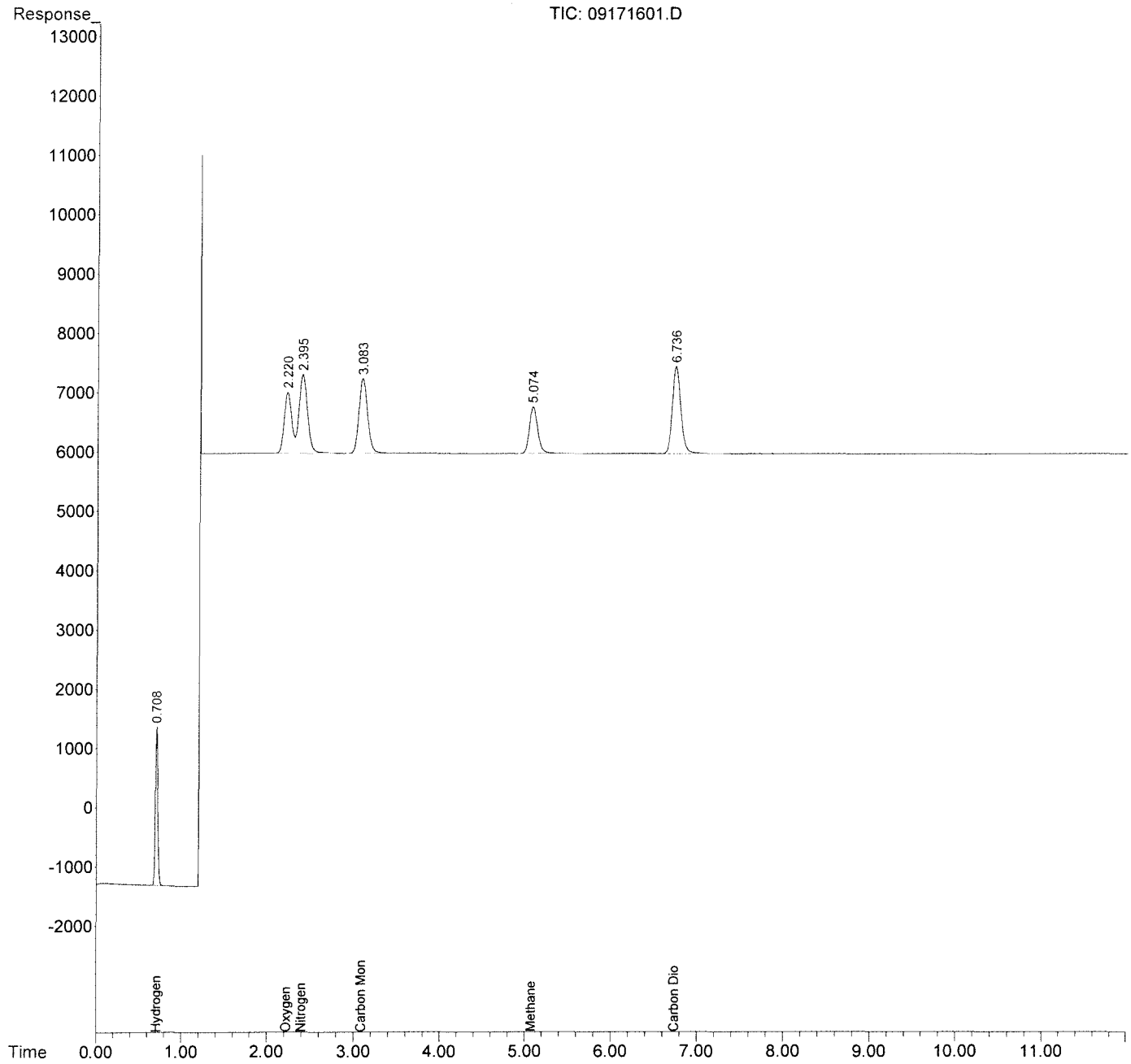
9/30/16

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_09\17\
Data File : 09171601.D
Signal(s) : TCD1A.CH
Acq On : 17 Sep 2016 1:22 pm
Operator : MC
Sample : std s30-07271601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 13:40:58 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 : J:\GC01\DATA\FXG\2016_09\17\
Data File : 09171607.D
Signal(s) : TCD1A.CH
Acq On : 17 Sep 2016 3:13 pm
Operator : MC
Sample : std s30-07271601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 15:30:54 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	0.705	53432	40088.314	ppm
2)	Oxygen	2.213	61920	40050.656	ppm
3)	Nitrogen	2.388	88032	49814.672	ppm
4)	Carbon Monoxide	3.076	87505	50444.921	ppm
5)	Methane	5.070	53119	40638.295	ppm
6)	Carbon Dioxide	6.733	100567	47947.931	ppm

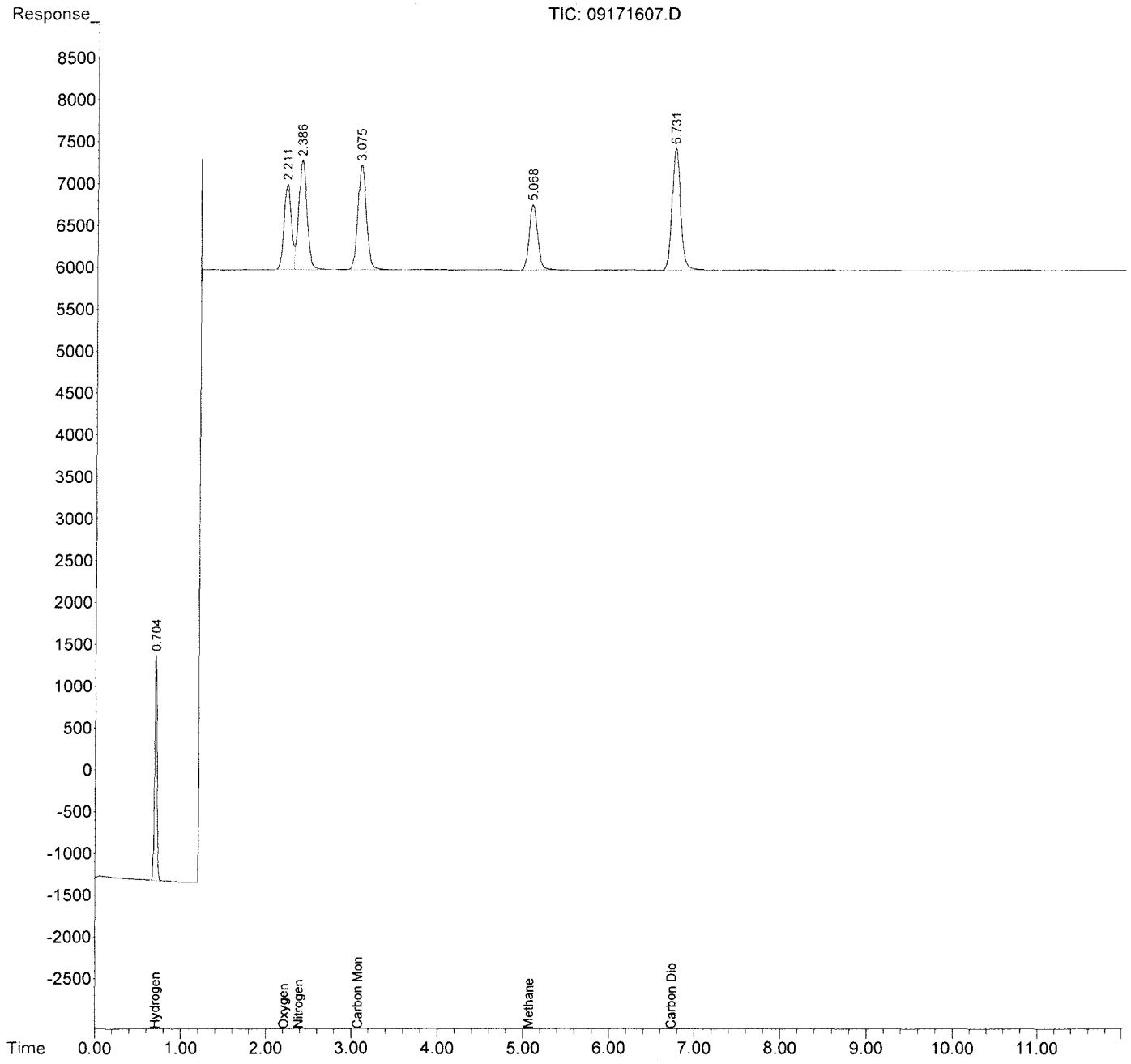
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC01\DATA\FXG\2016_09\17\
Data File : 09171607.D
Signal(s) : TCD1A.CH
Acq On : 17 Sep 2016 3:13 pm
Operator : MC
Sample : std s30-07271601
Misc :
ALS Vial : 1 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 15:30:54 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 :



ALS

REPORT SUMMARYS FIXED GASES BY GC/TCD

CLIENT : Air Hygiene

Analyst : MC

PAI Job : P1604449

Printed : 9/30/2016

Instrument : GC #20 / TCD #1

Date analyzed : 9/17/2016

Sample amount : 100uL

Sample Result

Sample ID	Hydrogen	Oxygen	Nitrogen	Carbon Monoxide	Methane	Carbon Dioxide	Pi1	Pf1	Pi2	Pf2	BF
STANDARD	42211	40029	39059	41486	40123	40108					
ACTUAL	40000	40000	40000	40000	40000	40000					
% Difference	5.5%	0.1%	2.4%	3.7%	0.3%	0.3%					
Lab Air		204171	766509			385					
MB	ND	ND	ND	ND	ND	ND					
4449-001		101344	490673			20641					
4449-001		102811	498173			20980					
4449-001		107165	519914			21890					
% Difference of Average		2.9%	3.0%		#DIV/0!	3.0%					
4449-003		104482	505153			21084					
4449-003		108339	524230			21889					
4449-003		107148	518393			21658					
% Difference of Average		1.9%	1.9%		#DIV/0!	1.9%					
4449-005		104891	487701			17826					
4449-005		109849	512039			18753					
4449-005		106319	494964			18126					
% Difference of Average		2.4%	2.5%		#DIV/0!	2.6%					
4449-007		95539	512156			28063					
4449-007		95377	511283			28028					
4449-007		95597	512714			28153					
% Difference of Average		0.1%	0.1%		#DIV/0!	0.2%					
4449-009		98476	493588			22984					
4449-009		101836	510785			23865					
4449-009		102490	514427			24037					
% Difference of Average		2.1%	2.2%		#DIV/0!	2.4%					
STANDARD	42053	40014	39054	41465	40129	40040					
ACTUAL	40000	40000	40000	40000	40000	40000					
% Difference	5.1%	0.0%	2.4%	3.7%	0.3%	0.1%					

MC 9/30/16 9/30/16

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\17\
Data File : 09171602.d
Signal(s) : TCD1B.ch
Acq On : 17 Sep 2016 9:26 am
Operator : MC
Sample : std s11-12041501
Misc :
ALS Vial : 2 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 09:34:52 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.699	577871	42211.240	ppm
2)	Oxygen	1.450	23729402	40028.977	ppm
3)	Nitrogen	1.539	25835626	39058.894	ppm
4)	Carbon Monoxide	1.861	26504457	41486.137	ppm
5)	Methane	3.098	20422271	40123.105	ppm
6)	Carbon Dioxide	5.047	36205033	40108.066	ppm

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

MC 9/30/16

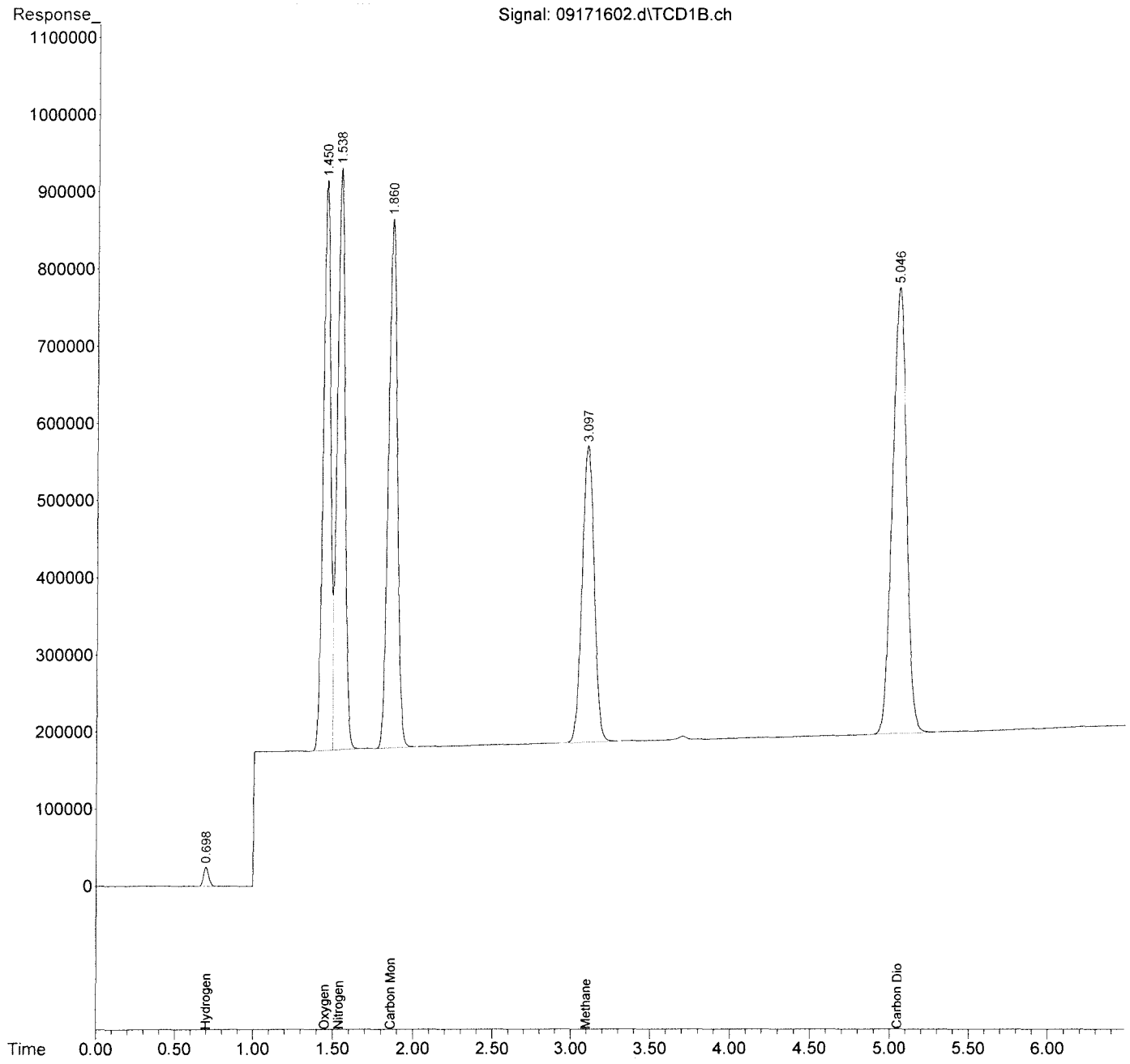
9/30/16

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\17\
Data File : 09171602.d
Signal(s) : TCD1B.ch
Acq On : 17 Sep 2016 9:26 am
Operator : MC
Sample : std s11-12041501
Misc :
ALS Vial : 2 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 09:34:52 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\17\
Data File : 09171641.d
Signal(s) : TCD1B.ch
Acq On : 17 Sep 2016 3:58 pm
Operator : MC
Sample : std s11-12041501
Misc :
ALS Vial : 41 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 16:05:35 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

	Compound	R.T.	Response	Conc	Units
Target Compounds					
1)	Hydrogen	0.700	575706	42053.083	ppm
2)	Oxygen	1.452	23720492	40013.947	ppm
3)	Nitrogen	1.540	25832127	39053.605	ppm
4)	Carbon Monoxide	1.862	26490905	41464.925	ppm
5)	Methane	3.099	20425099	40128.661	ppm
6)	Carbon Dioxide	5.046	36143714	40040.136	ppm

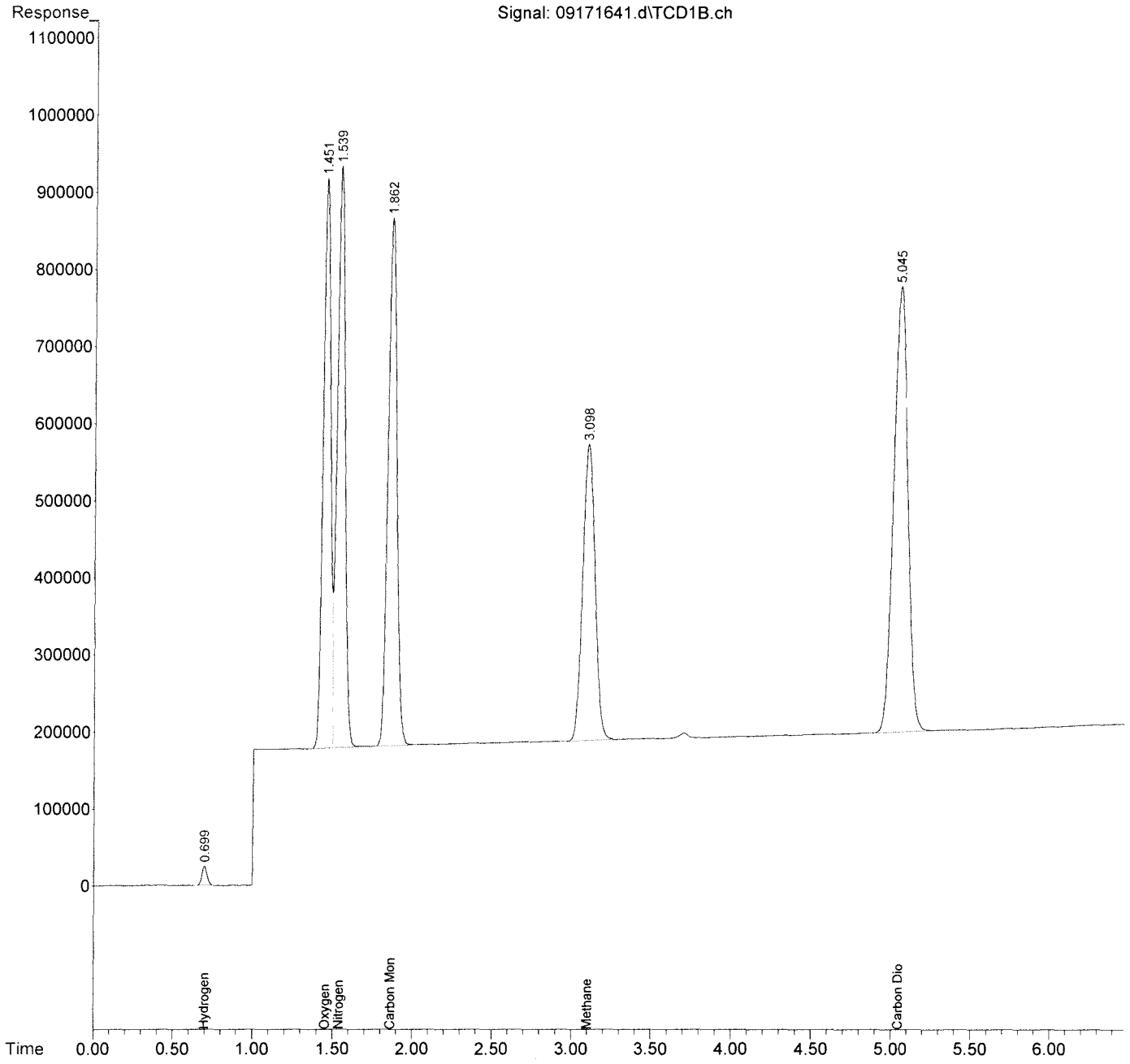
(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : J:\GC20\DATA\3C\2016_09\17\
Data File : 09171641.d
Signal(s) : TCD1B.ch
Acq On : 17 Sep 2016 3:58 pm
Operator : MC
Sample : std s11-12041501
Misc :
ALS Vial : 41 Sample Multiplier: 10

Integration File: autoint1.e
Quant Time: Sep 17 16:05:35 2016
Quant Method : J:\GC20\METHODS\trip08172016.M
Quant Title : EPA 3C, ASTM D 1946-90, VOA-EPA3C
QLast Update : Wed Aug 17 16:44:41 2016
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



Injection Log

Directory: I:\GC20\DATA\3C\2016_08\17\

	Sample ID	Date/Time	Acquisition Method	File Name	Misc Info	Operator	Comments
	std s11-12041501	8/17/16 7:51	3C.M	08171601.D		MC	
	std 1	8/17/16 8:01	3C.M	08171602.D		MC	
	std s11-07191601 A	8/17/16 8:12	3C.M	08171603.D		MC	
	std s11-07191601 B	8/17/16 8:22	3C.M	08171604.D		MC	
	std s11-07191601 C	8/17/16 8:39	3C.M	08171605.D		MC	
	std s11-12041503 A	8/17/16 8:52	3C.M	08171606.D		MC	
	std s11-12041503 B	8/17/16 9:02	3C.M	08171607.D		MC	
	std s11-12041503 C	8/17/16 9:14	3C.M	08171608.D		MC	
	xstd a	8/17/16 9:27	3C.M	08171609.D		MC	
	std s11-12041502 A	8/17/16 9:39	3C.M	08171610.D		MC	
	std s11-12041502 B	8/17/16 9:52	3C.M	08171611.D		MC	
	std s11-12041502 C	8/17/16 10:02	3C.M	08171612.D		MC	
	std s11-12041501 A	8/17/16 10:12	3C.M	08171613.D		MC	
	std s11-12041501 B	8/17/16 10:22	3C.M	08171614.D		MC	
	std s11-12041501 C	8/17/16 10:31	3C.M	08171615.D		MC	
	std s11-12031501 A	8/17/16 10:42	3C.M	08171616.D		MC	
	std s11-12041501 B	8/17/16 10:55	3C.M	08171617.D		MC	
	std s11-12041501 C	8/17/16 11:05	3C.M	08171618.D		MC	
	std N2 a	8/17/16 11:40	3C.M	08171619.D		MC	
	std N2 b	8/17/16 11:52	3C.M	08171620.D		MC	
	std N2 c	8/17/16 12:01	3C.M	08171621.D		MC	
	O2 a	8/17/16 12:13	3C.M	08171622.D		MC	
	O2 b	8/17/16 12:25	3C.M	08171623.D		MC	
	O2 c	8/17/16 12:37	3C.M	08171624.D		MC	
	std CO2 a	8/17/16 12:50	3C.M	08171625.D		MC	
	std CO2 b	8/17/16 13:28	3C.M	08171626.D		MC	
	std CO2 c	8/17/16 14:22	3C.M	08171627.D		MC	
	xCH4 a	8/17/16 14:32	3C.M	08171628.D		MC	
	xCH4 b	8/17/16 14:42	3C.M	08171629.D		MC	
	std CH4 A	8/17/16 14:53	3C.M	08171630.D		MC	
	std CH4 B	8/17/16 15:04	3C.M	08171631.D		MC	
	std CH4 C	8/17/16 15:24	3C.M	08171632.D		MC	
	mb	8/17/16 15:40	3C.M	08171633.D		MC	
	lab air	8/17/16 15:50	3C.M	08171634.D		MC	
	std O2 A	8/17/16 16:14	3C.M	08171635.D		MC	
	std O2 B	8/17/16 16:27	3C.M	08171636.D		MC	
	std O2 C	8/17/16 16:37	3C.M	08171637.D		MC	
	ICV s30-07071601	8/17/16 16:55	3C.M	08171638.D		MC	

Injection Log

Directory: I:\GC01\DATA\FXG\2016_08\22\

	Sample ID	Date/Time	Acquisition Method	File Name	Misc Info	Operator
	std s11-07191601	22 Aug 116 8:59 am	MFXGS25C.M	08221601.D		amf
	std s11-07191601	22 Aug 116 9:42 am	MFXGS25C.M	08221602.D		amf
	std s11-07191601	22 Aug 116 10:06 am	MFXGS25C.M	08221603.D		amf
	std s11-12041503	22 Aug 116 11:42 am	MFXGS25C.M	08221604.D		amf
	std s11-12041503	22 Aug 116 11:54 am	MFXGS25C.M	08221605.D		amf
	std s11-12041503	22 Aug 116 12:10 pm	MFXGS25C.M	08221606.D		amf
	std s11-12041502	22 Aug 116 12:42 pm	MFXGS25C.M	08221607.D		amf
	std s11-12041502	22 Aug 116 12:58 pm	MFXGS25C.M	08221608.D		amf
	std s11-12041502	22 Aug 116 1:34 pm	MFXGS25C.M	08221609.D		amf
	std s11-12041501	22 Aug 116 2:07 pm	MFXGS25C.M	08221610.D		amf
	std s11-12041501	22 Aug 116 2:19 pm	MFXGS25C.M	08221611.D		amf
	std s11-12041501	22 Aug 116 2:30 pm	MFXGS25C.M	08221612.D		amf
	std s11-12031501	22 Aug 116 2:54 pm	MFXGS25C.M	08221613.D		amf
	std s11-12031501	22 Aug 116 3:11 pm	MFXGS25C.M	08221614.D		amf
	std s11-12031501	22 Aug 116 3:22 pm	MFXGS25C.M	08221615.D		amf
	std s11-12021503	22 Aug 116 3:42 pm	MFXGS25C.M	08221616.D		amf
	std s11-12021503	22 Aug 116 3:49 pm	MFXGS25C.M	08221617.D		amf
	std s11-12021503	22 Aug 116 3:54 pm	MFXGS25C.M	08221618.D		amf
	co2	22 Aug 116 4:02 pm	MFXGS25C.M	08221619.D		amf
	co2	22 Aug 116 4:14 pm	MFXGS25C.M	08221620.D		amf
	co2	22 Aug 116 4:26 pm	MFXGS25C.M	08221621.D		amf

Injection Log

Directory: I:\GC01\DATA\FXG\2016_08\23\

	Sample ID	Date/Time	Acquisition Method	File Name	Misc Info	Operator
	s11-12021502	23 Aug 116 8:56 am	MFXGS25C.M	08231601.D		amf
	s11-12021502	23 Aug 116 9:03 am	MFXGS25C.M	08231602.D		amf
	s11-12021502	23 Aug 116 9:12 am	MFXGS25C.M	08231603.D		amf
	ch4	23 Aug 116 9:59 am	MFXGS25C.M	08231604.D		amf
	ch4	23 Aug 116 10:25 am	MFXGS25C.M	08231605.D		amf
	ch4	23 Aug 116 10:45 am	MFXGS25C.M	08231606.D		amf
	mb	23 Aug 116 10:57 am	MFXGS25C.M	08231607.D		amf
	lab air	23 Aug 116 11:14 am	MFXGS25C.M	08231608.D		amf
	ICV s30-07271601	23 Aug 116 2:00 pm	MF25VXXX.M	08231609.D		amf

Injection Log

Directory: I:\GC01\DATA\FXG\2016_09\17\

	Sample ID	Date/Time	Acquisition Method	File Name	Misc Info	Operator	Comments
1	std s30-07271601	17 Sep 116 1:22 pm	MFXGS25C.M	09171601.D		MC	Pass
	mb	17 Sep 116 1:38 pm	MFXGS25C.M	09171602.D		MC	
	lab air	17 Sep 116 1:54 pm	MFXGS25C.M	09171603.D		MC	
	4449-011	17 Sep 116 2:10 pm	MFXGS25C.M	09171604.D		MC	
	4449-011	17 Sep 116 2:41 pm	MFXGS25C.M	09171605.D		MC	
	4449-011	17 Sep 116 2:57 pm	MFXGS25C.M	09171606.D		MC	
#VALUE!	std s30-07271601	17 Sep 116 3:13 pm	MFXGS25C.M	09171607.D		MC	Pass

Injection Log

Directory: I:\GC20\DATA\3C\2016_09\17\

	Sample ID	Date/Time	Acquisition Method	File Name	Misc Info	Operator	Comments
	Prime	9/17/16 9:15	3C.M	09171601.D		MC	
#VALUE!	std s11-12041501	9/17/16 9:26	3C.M	09171602.D		MC	Pass
	mb air	9/17/16 9:36	3C.M	09171603.D		MC	
	test	9/17/16 9:46	3C.M	09171604.D		MC	
	test	9/17/16 9:58	3C.M	09171605.D		MC	
	test	9/17/16 10:09	C 3C.M	09171606.D		MC	
	lab air	9/17/16 10:21	3C.M	09171607.D		MC	
	4448-001	9/17/16 10:34	3C.M	09171608.D		MC	
	4448-001	9/17/16 10:43	C 3C.M	09171609.D		MC	
	4448-001	9/17/16 10:53	C 3C.M	09171610.D		MC	
	4448-003	9/17/16 11:02	3C.M	09171611.D		MC	
	4448-003	9/17/16 11:12	3C.M	09171612.D		MC	
	4448-003	9/17/16 11:22	C 3C.M	09171613.D		MC	
	4448-005	9/17/16 11:34	C 3C.M	09171614.D		MC	
	4448-005	9/17/16 11:45	3C.M	09171615.D		MC	
	4448-005	9/17/16 11:55	3C.M	09171616.D		MC	
	4448-007	9/17/16 12:04	3C.M	09171617.D		MC	
	4448-007	9/17/16 12:13	3C.M	09171618.D		MC	
	4448-007	9/17/16 12:23	3C.M	09171619.D		MC	
	4448-009	9/17/16 12:33	C 3C.M	09171620.D		MC	
	4448-009	9/17/16 12:42	C 3C.M	09171621.D		MC	
	4448-009	9/17/16 12:52	3C.M	09171622.D		MC	
	4448-011	9/17/16 13:01	C 3C.M	09171623.D		MC	
	4448-011	9/17/16 13:11	C 3C.M	09171624.D		MC	
	4448-011	9/17/16 13:20	C 3C.M	09171625.D		MC	
	4449-001	9/17/16 13:29	C 3C.M	09171626.D		MC	
	4449-001	9/17/16 13:38	3C.M	09171627.D		MC	
	4449-001	9/17/16 13:48	3C.M	09171628.D		MC	
	4449-003	9/17/16 13:57	C 3C.M	09171629.D		MC	
	4449-003	9/17/16 14:05	3C.M	09171630.D		MC	
	4449-003	9/17/16 14:15	C 3C.M	09171631.D		MC	
	4449-005	9/17/16 14:24	C 3C.M	09171632.D		MC	
	4449-005	9/17/16 14:44	C 3C.M	09171633.D		MC	
	4449-005	9/17/16 14:54	3C.M	09171634.D		MC	
	4449-007	9/17/16 15:04	C 3C.M	09171635.D		MC	
	4449-007	9/17/16 15:13	C 3C.M	09171636.D		MC	
	4449-007	9/17/16 15:22	C 3C.M	09171637.D		MC	
	4449-009	9/17/16 15:31	C 3C.M	09171638.D		MC	

Injection Log

Directory: I:\GC20\DATA\3C\2016_09\17\

	Sample ID	Date/Time	Acquisition Method	File Name	Misc Info	Operator	Comments
	4449-009	9/17/16 15:40	C 3C.M	09171639.D		MC	
	4449-009	9/17/16 15:49	C 3C.M	09171640.D		MC	
#VALUE!	std s11-12041501	9/17/16 15:58	3C.M	09171641.D		MC	Pass

APPENDIX G

FIELD DATA SHEET

SCD-48 fuel canister

90-100% 9/13/16

- 28.16
- 17.39
- 9.88
- 0.57

70-100-70% 9/14/16 - msL 9/14/16

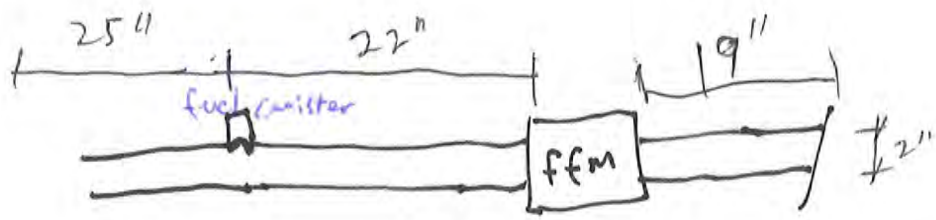
- 28.28
- 16.40
- 8.87

0-30-0% 9/14/16 - 9/15/16

- 28.37
- 18.22
- 10.38
-

30-70-30% 9/15/16

- 26.90
- 18.00
- 9.70
- 0.28



MULTI LOAD TEST - FIELD DATA SHEET

AIR HYGIENE

Company:	Superior Fabrication INC
Location:	Elk City Plant
Date:	9/13/16
Unit Make and Model:	SLD-48
Unit Number:	
Serial Number:	/
Data Recorded By:	MSL / DA / BB
Tested With AHI Unit(s):	Truck(s): 156 Trailer(s): 210
LDEQ Warmup/Cal Req:	On (Day/Time): 2 24 hrs Cal (Day/Time): 12:00

CYLINDER SERIAL NUMBERS		O_2	NOx	CO	THC	CO_2	SO_2
	Low		/		AL M06518		/
	Mid	EB0080741		EB0073749	CC274549	EB0080747	
	High	EB003 770		EB0060815	CC156094	EB003770	

RUN INFORMATION	High ~~Low~~ Load			Mid Load			Mid-High Load			High Load		
	____% #1	____% #2	____% #3	____% #1	____% #2	____% #3	____% #1	____% #2	____% #3	____% #1	____% #2	____% #3
Time Start (hh:mm:ss)	11:11:26	12:50:26	14:14:26									
Time Stop (hh:mm:ss)	12:21:26	14:00:26	15:24:26									
Rated MegaWatts (MW or hp)												
Actual MegaWatts (MW or hp)												
Barometric Pressure (in. Hg)	30.07	30.08	30.05									
Ambient Temperature (°F)	82	89	91									
Relative Humidity (%)	62	54	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		NOx		CO		THC		CO_2		SO_2	
	Conc.	Actual	Conc.	Actual	Conc.	Actual	Conc.	Actual	Conc.	Actual	Conc.	Actual
Zero Gas	0	0.01		/	0	0.03	0	0.05	0	-0.07		/
Low Gas							3.0	3.03				
Mid Gas	12.0	11.98			9.24	8.96	4.96	5.02	8.89	8.99		
High Gas	20.92	20.93			18.20	18.19	8.43	8.26	18.85	18.87		

BIAS	O_2		NOx		CO		THC		CO_2		SO_2	
	Zero	Mid	Zero	Mid	Zero	Mid	Zero	Mid	Zero	Mid	Zero	Mid
Initial Low Load Run #1	0.05	11.96		/	0.01	9.10	0.14	3.07	-0.03	8.94		/
Load 1 Run #1 / Load 1 Run #2	0.03	11.92			-0.01	9.30	0.04	2.96	-0.02	8.93		
Load 1 Run #2 / Load 1 Run #3	0.10	11.92			0.09	9.30	0.07	2.95	-0.05	8.85		
Load 1 Run #3 / Load 2 Run #1	0.06	11.94			-0.05	9.37	0.04	3.07	-0.04	8.86		
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 INC
Location:	Elk City Plant
Date:	9/14/16
Unit Make and Model:	SCD-48
Unit Number:	/
Serial Number:	
Data Recorded By:	MSL / DA / BB
Tested With AHI Unit(s):	Truck(s): 156 Trailer(s): 210
LDEQ Warmup/Cal Req:	On (Day/Time): 7241 Cal (Day/Time): 6:30

CYLINDER SERIAL NUMBERS		O_2	NOx	CO	THC	CO_2	SO_2
	Low		/		ALM06565		
	Mid	EB0080747		EB0073241	CC274549	Same as	
	High	EB0087770		EB0060615	CC156074	O_2	

RUN INFORMATION	~~Low~~ Load 70-100-70%			LOW ~~Mid~~ Load			Mid-High Load			High Load		
	70-100-70% #1	70-100-70% #2	70-100-70% #3	0-30-0 % #1	0-30-0 % #2	0-30-0 % #3	____% #1	____% #2	____% #3	____% #1	____% #2	____% #3
Time Start (hh:mm:ss)	8:13:29	9:43:29	11:13:29	16:47:29	18:08:29							
Time Stop (hh:mm:ss)	9:23:29	10:53:29	12:23:29	17:57:29	19:18:29							
Rated MegaWatts (MW or hp)												
Actual MegaWatts (MW or hp)												
Barometric Pressure (in. Hg)	30.24	30.25	30.26	30.14	30.12							
Ambient Temperature (°F)	69	72	72	86	81							
Relative Humidity (%)	69	71	61	62	59							
Fuel Flow (lb/min)												
Fuel Flow (SCF/hr)=(lb/min)*21.7												
Specific Humidity (gr/lb)												
Specific Humidity (lb H_2O/lb air)=(gr/lb)/7000												
PCD (psi)												
PCD (mm Hg)=(psi+14.24)*51.71493												
NOx Water Injection (gpm)												

CALIBRATION	O_2		NOx		CO		THC		CO_2		SO_2	
	Conc.	Actual	Conc.	Actual	Conc.	Actual	Conc.	Actual	Conc.	Actual	Conc.	Actual
Zero Gas	0	-0.02		/	0	0.02	0	0.07	0	-0.04		
Low Gas							3.0	3.22				
Mid Gas	12.0	11.96			9.24	9.11	4.96	5.12	8.89	9.00		
High Gas	20.92	20.93			18.20	18.08	8.43	8.54	18.85	18.91		

BIAS	O_2		NOx		CO		THC		CO_2		SO_2	
	Zero	Mid	Zero	Mid	Zero	Mid	Zero	Mid	Zero	Mid	Zero	Mid
Initial Low Load Run #1	0.06	12.04		/	-0.09	9.20	0.02	3.22	-0.02	9.02		/
Load 1 Run #1 / Load 1 Run #2	0.04	11.96			0.09	9.01	0.02	3.03	-0.04	9.06		
Load 1 Run #2 / Load 1 Run #3	0.03	12.06			0.02	9.21	0.07	2.96	-0.06	9.07		
Load 1 Run #3 / Load 2 Run #1	0.04	12.01			-0.01	9.21	0.02	3.03	-0.03	9.08		
Load 2 Run #1 / Load 2 Run #2	0.07	11.97			0.05	9.18	0.05	3.12	-0.02	9.01		
Load 2 Run #2 / Load 2 Run #3	0.03	11.98			0.02	9.21	0.05	3.10	0.01	9.00		
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 INC
Location:	Elk City Plant
Date:	9/15/16
Unit Make and Model:	SCD-48
Unit Number:	/
Serial Number:	/
Data Recorded By:	MSL/DA/BB
Tested With AHI Unit(s):	Truck(s): 156 Trailer(s): 210
LDEQ Warmup/Cal Req:	On (Day/Time): >24hr Cal (Day/Time): 7:23

CYLINDER SERIAL NUMBERS		O_2	NOx	CO	THC	CO_2	SO_2
	Low				ALM0 6568		
	Mid	EB0080741		EB0073249	CC274549	Sam2 00	
	High	EB0003770		EB0060615	CC156874	O_2	

weather
samp-We-0025

RUN INFORMATION	0-30.0% Low Load			30-70-30% Mid Load			Mid-High Load			High Load		
	3 % #1	% #2	% #3	% #1	% #2	% #3	% #1	% #2	% #3	% #1	% #2	% #3
Time Start (hh:mm:ss)	11:37:00	~~30.14~~		14:39:00	16:01:00	17:22:00						
Time Stop (hh:mm:ss)	12:47:00			15:49:00	17:11:00	18:32:00						
Rated MegaWatts (MW or hp)												
Actual MegaWatts (MW or hp)												
Barometric Pressure (in. Hg)	30.14			30.02	30.02	30.01						
Ambient Temperature (°F)	75			85	78	83						
Relative Humidity (%)	73			65	74	65						
Fuel Flow (lb/min)												
Fuel Flow (SCF/hr)=(lb/min)*21.7												
Specific Humidity (gr/lb)												
Specific Humidity (lb H_2O/lb air)=(gr/lb)/7000												
PCD (psi)												
PCD (mm Hg)=(psi+14.24)*51.71493												
NOx Water Injection (gpm)												

CALIBRATION	O_2		NOx		CO		THC		CO_2		SO_2	
	Conc.	Actual	Conc.	Actual	Conc.	Actual	Conc.	Actual	Conc.	Actual	Conc.	Actual
Zero Gas	0	0.05			0	0.02	0	-0.03	0	-0.01		
Low Gas							3.0	3.03				
Mid Gas	12.0	11.99			9.24	9.16	4.96	4.98	8.89	9.05		
High Gas	20.92	20.90			18.20	18.18	8.43	8.40	18.95	18.90		

BIAS	O_2		NOx		CO		THC		CO_2		SO_2	
	Zero	Mid	Zero	Mid	Zero	Mid	Zero	Mid	Zero	Mid	Zero	Mid
Initial Low Load Run #1	0.05	11.98			-0.09	9.12	0.01	3.02	-0.02	8.99		
Load 1 Run #1 / Load 1 Run #2	0.06	11.99			-0.06	9.11	0.09	3.13	0.01	8.98		
Load 1 Run #2 / Load 1 Run #3	0.05	11.95			-0.11	9.10	0.07	2.98	0.01	8.97		
Load 1 Run #3 / Load 2 Run #1	0.05	11.93			0.05	9.09	0.05	3.11	0.01	8.98		
Load 2 Run #1 / Load 2 Run #2	0.03	11.91			-0.03	9.11	0.04	2.98	-0.01	8.99		
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.												

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

Plant Name	Elk City Facility
Sampling Location	SCD-48 Ports
Project #	sfi-elkcity.ok-comp#1

Date	9/14/16
Operator	DA
Run Number	1

Leak Checks					
Train	Pre	0	ft³/min@	15	in Hg
	Post	0	ft³/min@	15	in Hg
Pitot	Pre (+)	.25	in H_2O for	30	sec
	Pre (-)	.25	in H_2O for	30	sec
	Post (+)	.25	in H_2O for	30	sec
	Post (-)	.25	in H_2O for	30	sec

Sampling Equipment		
Meter Box Number	SAMP-CP-0007	
Orifice Meter Coefficient	1.744	in H_2O

Pressures			
Barometric Pressure	(P_b)	30.14	in Hg

Run Time			
Start	16:47	End	17:57

	Impinger 1	Impinger 2	Impinger 3	Silica Gel
Pre Weight	746.3	679.0	593.2	913.0
Post Weight	775.1	684.5	597.5	922.3

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	586.96	.01	1.7	931	250	58	86	81	7
A-2	2.7	00:02:43	589.13	.01	1.7	1048	250	54	88	81	7
A-3	5.4	00:05:25	591.32	.01	1.7	1077	250	54	89	81	7
A-4	8.1	00:08:07	593.21	.01	1.7	1083	250	54	90	81	7
A-5	10.8	00:10:50	595.21	.01	1.7	1085	250	54	91	82	7
A-6	13.5	00:13:33	597.30	.01	1.7	1086	250	54	91	83	7
A-7	16.3	00:16:15	599.51	.01	1.7	1023	250	54	91	82	7
A-8	19.0	00:18:58	601.06	.01	1.7	965	250	54	92	83	7
A-9	21.7	00:21:40	603.12	.01	1.7	851	250	54	92	83	7
A-10	24.4	00:24:22	605.30	.01	1.7	948	250	54	92	83	7
A-11	27.1	00:27:05	607.67	.01	1.7	980	250	54	93	83	7
A-12	29.8	00:29:47	609.20	.01	1.7	992	250	54	93	83	7
B-1	32.5	00:32:30	611.26	.01	1.7	1013	250	53	94	84	7
B-2	35.2	00:35:12	613.61	.01	1.7	1039	250	53	94	85	7
B-3	37.9	00:37:55	615.360	.01	1.7	1058	250	53	95	85	7
B-4	40.6	00:40:37	617.880	.01	1.7	1086	250	53	95	85	7
B-5	43.3	00:43:20	619.30	.01	1.7	1088	250	53	95	85	7
B-6	46.0	00:46:03	621.60	.01	1.7	1087	250	53	95	85	7
B-7	48.8	00:48:45	623.24	.01	1.7	1059	250	53	95	85	7
B-8	51.5	00:51:28	625.140	.01	1.7	925	250	53	96	86	7
B-9	54.2	00:54:10	627.81	.01	1.7	1070	250	53	96	86	7
B-10	56.9	00:56:53	629.97	.01	1.7	1084	250	54	96	86	7
B-11	59.6	00:59:35	632.41	.01	1.7	1085	250	54	96	87	7
B-12	62.3	01:02:18	634.90	.01	1.7	960	250	54	95	88	7
Last Pt	65.0	01:05:00	636.41								
Final Val	65.0	01:05:00								Max Vac	
Average Values											

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

Plant Name	Elk City Facility
Sampling Location	SCD-48 Ports
Project #	sfl-elkcity.ok-comp#1

Date	9/14/16
Operator	DA
Run Number	2

Leak Checks					
Train	Pre	0	ft³/min@	15	in Hg
	Post	0	ft³/min@	15	in Hg
Pitot	Pre (+)	.25	in H_2O for	30	sec
	Pre (-)	.25	in H_2O for	30	sec
	Post (+)	.25	in H_2O for	30	sec
	Post (-)	.25	in H_2O for	30	sec

Sampling Equipment		
Meter Box Number	SAMP-CP-0007	
Orifice Meter Coefficient	1.784	in H_2O

Pressures			
Barometric Pressure	(P_b)	30.14	in Hg

Run Time			
Start	1808	End	1918

	Impinger 1	Impinger 2	Impinger 3	Silica Gel
Pre Weight	775.1	684.5	597.5	869.5
Post Weight	801.8	691.4	602.0	882.5

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	637.16	.01	1.7	1020	250	52	96	86	7
A-2	2.7	00:02:43	639.16	.01	1.7	1019	250	52	96	86	7
A-3	5.4	00:05:25	641.65	.01	1.7	1053	250	52	96	86	7
A-4	8.1	00:08:07	643.66	.01	1.7	1069	250	52	96	86	7
A-5	10.8	00:10:50	645.03	.01	1.7	1018	250	52	96	86	7
A-6	13.5	00:13:33	647.63	.01	1.7	1018	250	53	96	86	7
A-7	16.3	00:16:15	649.52	.01	1.7	1015	250	53	96	86	7
A-8	19.0	00:18:58	651.81	.01	1.7	1015	250	54	96	86	7
A-9	21.7	00:21:40	653.60	.01	1.7	1020	250	55	96	86	7
A-10	24.4	00:24:22	655.40	.01	1.7	1045	250	56	96	86	7
A-11	27.1	00:27:05	657.63	.01	1.7	1045	250	57	96	86	7
A-12	29.8	00:29:47	659.17	.01	1.7	1042	250	57	96	86	7
B-1	32.5	00:32:30	661.31	.01	1.7	813	250	58	96	86	7
B-2	35.2	00:35:12	663.56	.01	1.7	1065	250	58	96	86	7
B-3	37.9	00:37:55	665.23	.01	1.7	1077	250	59	96	86	7
B-4	40.6	00:40:37	667.49	.01	1.7	1079	250	60	96	87	7
B-5	43.3	00:43:20	669.29	.01	1.7	1083	250	61	96	87	7
B-6	46.0	00:46:03	671.81	.01	1.7	1063	250	63	95	87	7
B-7	48.8	00:48:45	673.89	.01	1.7	943	250	63	96	87	7
B-8	51.5	00:51:28	675.96	.01	1.7	902	250	63	96	87	7
B-9	54.2	00:54:10	677.90	.01	1.7	1063	256	64	96	87	7
B-10	56.9	00:56:53	679.99	.01	1.7	1072	256	64	96	87	7
B-11	59.6	00:59:35	681.99	.01	1.7	1077	256	65	96	87	7
B-12	62.3	01:02:18	683.89	.01	1.7	978	256	65	96	87	7
Last Pt	65.0	01:05:00	685.99								
Final Val	65.0	01:05:00								Max Vac	
Average Values											

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

Plant Name	Elk City Facility
Sampling Location	SCD-48 Ports
Project #	sfi-elkcity.ok-comp#1

Date	9/15/11
Operator	DA
Run Number	3

Leak Checks					
Train	Pre	0	ft³/min@	15	in Hg
	Post	0	ft³/min@	15	in Hg
Pitot	Pre (+)	.25	in H_2O for	30	sec
	Pre (-)	.25	in H_2O for	30	sec
	Post (+)	.25	in H_2O for	30	sec
	Post (-)	.25	in H_2O for	30	sec

Sampling Equipment		
Meter Box Number	SAMP-CP-0007	
Orifice Meter Coefficient	1.744	in H_2O

Pressures			
Barometric Pressure	(P_b)	30.14	in Hg

Run Time			
Start	11:37	End	

	Impinger 1	Impinger 2	Impinger 3	Silica Gel
Pre Weight	801.8	691.4	577.1	882.5
Post Weight	825.9	699.3	582.2	894.8

Traverse Point #	Sampling Time (Θ)	Timer Time	Dry Gas Meter Reading (V_m)	Velocity Head (Δp)	Actual Orifice ΔH (ΔH_a)	Stack Temp (t_s)	Snorkel Temp (248±25°F)	Impinger Exit Temp (≤68°F)	Meter Inlet Temp (t_{mi})	Meter Outlet Temp (t_{mo})	Pump Vacuum
	min	hh:mm:ss	ft³	in H_2O	in H_2O	°F	°F	°F	°F	°F	in Hg
A-1	0.0	00:00:00	686.32	.01	1.7	783	250	59	80	73	8
A-2	2.7	00:02:43	688.87	.01	1.7	870	250	59	80	73	8
A-3	5.4	00:05:25	690.46	.01	1.7	959	250	55	82	74	8
A-4	8.1	00:08:07	692.49	.01	1.7	976	250	54	83	74	8
A-5	10.8	00:10:50	694.56	.01	1.7	988	250	55	83	74	8
A-6	13.5	00:13:33	696.70	.01	1.7	993	250	56	84	75	8
A-7	16.3	00:16:15	698.89	.01	1.7	995	250	58	86	76	8
A-8	19.0	00:18:58	700.82	.01	1.7	854	250	57	86	77	8
A-9	21.7	00:21:40	702.92	.01	1.7	711	250	58	86	77	8
A-10	24.4	00:24:22	705.10	.01	1.7	509	250	58	87	78	8
A-11	27.1	00:27:05	707.45	.01	1.7	468	250	57	87	78	8
A-12	29.8	00:29:47	709.68	.01	1.7	466	250	57	87	78	8
B-1	32.5	00:32:30	711.69	.01	1.7	891	250	58	83	80	8
B-2	35.2	00:35:12	713.82	.01	1.7	893	250	58	83	80	8
B-3	37.9	00:37:55	715.89	.01	1.7	932	250	57	82	80	8
B-4	40.6	00:40:37	717.95	.01	1.7	935	250	58	82	80	8
B-5	43.3	00:43:20	719.99	.01	1.7	973	250	58	82	80	8
B-6	46.0	00:46:03	721.99	.01	1.7	970	250	58	82	81	8
B-7	48.8	00:48:45	724.02	.01	1.7	836	250	59	84	80	8
B-8	51.5	00:51:28	726.31	.01	1.7	878	250	58	84	80	8
B-9	54.2	00:54:10	728.67	.01	1.7	974	250	62	85	81	8
B-10	56.9	00:56:53	730.00	.01	1.7	981	250	59	85	81	8
B-11	59.6	00:59:35	732.69	.01	1.7	983	250	59	86	81	8
B-12	62.3	01:02:18	734.81	.01	1.7	961	250	60	86	81	8
Last Pt	65.0	01:05:00	736.32								
Final Val	65.0	01:05:00								Max Vac	
Average Values											

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

Plant Name	Elk City Facility
Sampling Location	SCD-48 Ports
Project #	sfi-elkcity.ok-comp#1

Date	9/15/11
Operator	DA
Run Number	4

Leak Checks					
Train	Pre	0	ft³/min@	15	in Hg
	Post	0	ft³/min@	15	in Hg
Pitot	Pre (+)	.25	in H_2O for	30	sec
	Pre (-)	.25	in H_2O for	30	sec
	Post (+)	.25	in H_2O for	30	sec
	Post (-)	.25	in H_2O for	30	sec

Sampling Equipment		
Meter Box Number	SAMP-CP-0007	
Orifice Meter Coefficient	1.744	in H_2O

Pressures			
Barometric Pressure	(P_b)	30.02	in Hg

Run Time			
Start	11:39	End	15:49

	Impinger 1	Impinger 2	Impinger 3	Silica Gel
Pre Weight	825.9	667.7	582.2	919.6
Post Weight	861.1	677.3	583.6	933.0

Traverse Point #	Sampling Time (Θ)	Timer Time	Dry Gas Meter Reading (V_m)	Velocity Head (Δp)	Actual Orifice ΔH ($\Delta H_@$)	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	737.70	.01	1.7	1259	250	61	80	78	8
A-2	2.7	00:02:43	739.45	.01	1.7	1489	250	60	82	78	8
A-3	5.4	00:05:25	741.92	.01	1.7	1462	250	58	82	78	9
A-4	8.1	00:08:07	743.70	.01	1.7	1468	250	58	83	78	9
A-5	10.8	00:10:50	745.90	.01	1.7	1487	250	59	83	78	9
A-6	13.5	00:13:33	747.95	.01	1.7	1483	250	60	84	78	9
A-7	16.3	00:16:15	749.99	.01	1.7	1265	250	62	85	78	9
A-8	19.0	00:18:58	752.00	.01	1.7	1102	250	63	86	80	9
A-9	21.7	00:21:40	754.250	.01	1.7	1423	250	64	87	81	9
A-10	24.4	00:24:22	760.100	.02	1.7	1475	250	66	89	80	9
A-11	27.1	00:27:05	758.100	.02	1.7	1506	250	64	89	80	9
A-12	29.8	00:29:47	760.12	.01	1.7	1486	250	60	89	81	9
B-1	32.5	00:32:30	762.58	.01	1.7	1004	250	58	86	82	9
B-2	35.2	00:35:12	764.40	.01	1.7	1436	250	56	87	82	9
B-3	37.9	00:37:55	766.40	.01	1.7	1452	250	55	88	82	9
B-4	40.6	00:40:37	768.46	.01	1.7	1479	250	54	89	82	9
B-5	43.3	00:43:20	770.39	.02	1.7	1545	250	54	91	82	9
B-6	46.0	00:46:03	772.43	.01	1.7	1422	250	54	91	82	9
B-7	48.8	00:48:45	774.55	.01	1.7	1186	250	54	91	82	9
B-8	51.5	00:51:28	776.67	.01	1.7	1361	250	54	92	82	9
B-9	54.2	00:54:10	778.80	.03	1.7	1344	250	54	92	83	9
B-10	56.9	00:56:53	780.90	.02	1.7	1076	250	54	92	83	9
B-11	59.6	00:59:35	782.90	.02	1.7	1075	250	54	92	83	9
B-12	62.3	01:02:18	784.91	.02	1.7	1083	250	54	92	83	9
Last Pt	65.0	01:05:00	786.99								
Final Val	65.0	01:05:00								Max Vac	
Average Values											

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

Plant Name	Elk City Facility
Sampling Location	SCD-48 Ports
Project #	sfi-elkcity.ok-comp#1

Date	9/15/16
Operator	DA
Run Number	5

Leak Checks					
Train	Pre	0	ft³/min@	15	in Hg
	Post	0	ft³/min@	15	in Hg
Pitot	Pre (+)	.25	in H_2O for	30	sec
	Pre (-)	.25	in H_2O for	30	sec
	Post (+)	.25	in H_2O for	30	sec
	Post (-)	.25	in H_2O for	30	sec

Sampling Equipment		
Meter Box Number	SAMP-CP-0007	
Orifice Meter Coefficient	1.744	in H_2O

Pressures			
Barometric Pressure	(P_b)	30.02	in Hg

Run Time			
Start	16:01	End	17:11

	Impinger 1	Impinger 2	Impinger 3	Silica Gel
Pre Weight	861.1	677.3	583.6	933.0
Post Weight	886.0	687.7	595.1	944.9

Traverse Point #	Sampling Time (Θ)	Timer Time	Dry Gas Meter Reading (V_m)	Velocity Head (Δp)	Actual Orifice ΔH ($\Delta H_@$)	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	787.69	.01	1.7	1067	250	54	90	83	9
A-2	2.7	00:02:43	789.94	.01	1.7	1069	250	54	90	83	9
A-3	5.4	00:05:25	791.89	.01	1.7	1356	250	53	90	83	9
A-4	8.1	00:08:07	793.90	.01	1.7	1435	250	54	91	84	9
A-5	10.8	00:10:50	795.96	.01	1.7	1471	256	54	92	84	9
A-6	13.5	00:13:33	797.98	.02	1.7	1528	250	55	92	84	9
A-7	16.3	00:16:15	799.910	.01	1.7	1168	250	55	92	84	9
A-8	19.0	00:18:58	801.99	.01	1.7	1058	250	56	92	84	9
A-9	21.7	00:21:40	804.30	.01	1.7	810	250	56	92	83	9
A-10	24.4	00:24:22	806.43	.01	1.7	1447	250	57	92	83	9
A-11	27.1	00:27:05	808.60	.02	1.7	1476	250	57	92	83	9
A-12	29.8	00:29:47	810.70	.02	1.7	1599	250	57	93	83	9
B-1	32.5	00:32:30	812.87	.01	1.7	1101	250	59	88	84	9
B-2	35.2	00:35:12	815.31	.01	1.7	1184	250	57	91	84	9
B-3	37.9	00:37:55	817.26	.01	1.7	1492	250	57	93	84	9
B-4	40.6	00:40:37	819.30	.01	1.7	1515	250	57	93	84	9
B-5	43.3	00:43:20	820.600	.01	1.7	1516	250	57	93	84	9
B-6	46.0	00:46:03	823.65	.01	1.7	1532	250	58	93	84	9
B-7	48.8	00:48:45	825.500	.01	1.7	1190	250	58	93	84	9
B-8	51.5	00:51:28	827.66	.01	1.7	1162	250	58	93	84	9
B-9	54.2	00:54:10	829.83	.01	1.7	1299	250	58	93	84	9
B-10	56.9	00:56:53	831.80	.01	1.7	1295	250	58	93	84	9
B-11	59.6	00:59:35	833.96	.01	1.7	1297	250	58	93	84	9
B-12	62.3	01:02:18	835.96	.01	1.7	1288	250	58	93	84	9
Last Pt	65.0	01:05:00	838.22								
Final Val	65.0	01:05:00								Max Vac	
Average Values											

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

Plant Name	Elk City Facility
Sampling Location	SCD-48 Ports
Project #	sfi-elkcity.ok-comp#1

Date	9/15/16
Operator	DA
Run Number	6

Leak Checks					
Train	Pre	0	ft³/min@	15	in Hg
	Post	0	ft³/min@	15	in Hg
Pitot	Pre (+)	.25	in H_2O for	30	sec
	Pre (-)	.25	in H_2O for	30	sec
	Post (+)	.25	in H_2O for	30	sec
	Post (-)	.25	in H_2O for	30	sec

Sampling Equipment		
Meter Box Number	SAMP-CP-0007	
Orifice Meter Coefficient	1.744	in H_2O

Pressures			
Barometric Pressure	(P_b)	30.02	in Hg

Run Time			
Start	17:22	End	18:32

	Impinger 1	Impinger 2	Impinger 3	Silica Gel
Pre Weight	762.6	687.7	585.1	944.9
Post Weight	794.4	694.2	588.1	957.5

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	838.69	.01	1.7	1068	250	60	90	83	9.0
A-2	2.7	00:02:43	840.76	.01	1.7	1076	250	60	90	83	9.0
A-3	5.4	00:05:25	842.79	.01	1.7	1577	250	58	91	83	9
A-4	8.1	00:08:07	844.86	.02	1.7	1630	250	58	91	83	9
A-5	10.8	00:10:50	846.87	.03	1.7	1644	250	59	91	83	9
A-6	13.5	00:13:33	848.85	.03	1.7	1649	250	59	91	83	9
A-7	16.3	00:16:15	850.96	.02	1.7	1595	250	66	91	82	9
A-8	19.0	00:18:58	853.00	.01	1.7	1202	250	60	91	83	9
A-9	21.7	00:21:40	855.19	.01	1.7	809	250	60	91	83	9
A-10	24.4	00:24:22	857.25	.02	1.7	1072	250	61	91	83	9
A-11	27.1	00:27:05	859.49	.02	1.7	1156	250	62	92	83	9
A-12	29.8	00:29:47	861.53	.02	1.7	1158	250	62	92	84	9
B-1	32.5	00:32:30	863.74	.01	1.7	1298	250	64	89	85	9
B-2	35.2	00:35:12	865.94	.01	1.7	1329	250	64	91	84	9
B-3	37.9	00:37:55	867.90	.01	1.7	1517	250	64	93	85	9
B-4	40.6	00:40:37	869.95	.02	1.7	1538	250	62	94	85	9
B-5	43.3	00:43:20	871.99	.02	1.7	1564	250	63	94	85	9
B-6	46.0	00:46:03	873.87	.02	1.7	1589	250	64	94	85	9
B-7	48.8	00:48:45	875.96	.01	1.7	1270	250	64	94	86	9
B-8	51.5	00:51:28	878.41	.01	1.7	1152	250	65	95	86	9
B-9	54.2	00:54:10	880.31	.01	1.7	1416	250	65	95	86	9
B-10	56.9	00:56:53	882.34	.01	1.7	1516	250	65	95	86	9
B-11	59.6	00:59:35	884.35	.01	1.7	1546	250	65	95	86	9
B-12	62.3	01:02:18	886.30	.01	1.7	250	250	65	95	86	9
Last Pt	65.0	01:05:00	888.50								
Final Val	65.0	01:05:00								Max Vac	
Average Values											

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

Plant Name	Elk City Facility
Sampling Location	SCD-48 Ports
Project #	sfi-elkcity.ok-comp#1

Date	9/14/16
Operator	DA
Run Number	7

Leak Checks					
Train	Pre	0	ft³/min@	15	in Hg
	Post	0	ft³/min@	15	in Hg
Pitot	Pre (+)	.25	in H_2O for	30	sec
	Pre (-)	.20	in H_2O for	30	sec
	Post (+)	.25	in H_2O for	30	sec
	Post (-)	.25	in H_2O for	30	sec

Sampling Equipment		
Meter Box Number	SAMP-CP-0007	
Orifice Meter Coefficient	1.744	in H_2O

Pressures			
Barometric Pressure	(P_b)	30.24	in Hg

Run Time			
Start	8:13	End	9:23

	Impinger 1	Impinger 2	Impinger 3	Silica Gel
Pre Weight	830.1	768.8	584.4	916.3
Post Weight	865.4	781.2	588.1	926.5

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	432.08	.01	1.7	1208	250	51	71	67	8
A-2	2.7	00:02:43	434.17	.02	1.7	1555	250	50	74	67	8
A-3	5.4	00:05:25	436.09	.03	1.7	1648	250	50	75	68	8
A-4	8.1	00:08:07	438.22	.04	1.7	1718	250	51	76	68	8
A-5	10.8	00:10:50	440.31	.04	1.7	1762	250	51	77	69	8
A-6	13.5	00:13:33	442.01	.04	1.7	1602	250	52	78	70	8
A-7	16.3	00:16:15	444.08	.03	1.7	1367	250	52	78	70	8
A-8	19.0	00:18:58	446.07	.04	1.7	1469	250	52	79	70	8
A-9	21.7	00:21:40	448.57	.04	1.7	1599	250	53	79	71	8
A-10	24.4	00:24:22	450.02	.04	1.7	1679	250	53	80	72	8
A-11	27.1	00:27:05	452.17	.045	1.7	1693	250	54	81	73	8
A-12	29.8	00:29:47	454.09	.045	1.7	1682	250	54	81	73	8
B-1	32.5	00:32:30	456.08	.01	1.7	1301	250	55	78	74	8
B-2	35.2	00:35:12	458.48	.02	1.7	1551	250	53	81	75	8
B-3	37.9	00:37:55	460.37	.03	1.7	1763	250	53	81	75	8
B-4	40.6	00:40:37	462.47	.04	1.7	1645	250	54	82	76	8
B-5	43.3	00:43:20	464.59	.035	1.7	1577	250	54	82	76	8
B-6	46.0	00:46:03	466.78	.03	1.7	1377	250	54	82	78	8
B-7	48.8	00:48:45	468.96	.06	1.7	1647	250	54	82	76	8
B-8	51.5	00:51:28	470.99	.01	1.7	1569	250	54	83	76	8
B-9	54.2	00:54:10	472.90	.01	1.7	1483	250	54	84	77	8
B-10	56.9	00:56:53	474.62	.03	1.7	1267	250	54	84	77	8
B-11	59.6	00:59:35	476.70	.03	1.7	1138	250	54	84	77	8
B-12	62.3	01:02:18	478.90	.01	1.7	1196	250	54	84	77	8
Last Pt	65.0	01:05:00	480.81								
Final Val	65.0	01:05:00								Max Vac	
Average Values											

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

Plant Name	Elk City Facility
Sampling Location	SCD-48 Ports
Project #	sfi-elkcity.ok-comp#1

Date	9/14/16
Operator	DA
Run Number	R8

Leak Checks					
Train	Pre	0	ft³/min@	15	in Hg
	Post	0	ft³/min@	15	in Hg
Pitot	Pre (+)	.25	in H_2O for	30	sec
	Pre (-)	.25	in H_2O for	30	sec
	Post (+)	.25	in H_2O for	30	sec
	Post (-)	.25	in H_2O for	30	sec

Sampling Equipment		
Meter Box Number	SAMP-CP-0007	
Orifice Meter Coefficient	1.744	in H_2O

Pressures			
Barometric Pressure	(P_b)	30.25	in Hg

Run Time			
Start	9:43	End	10:53

	Impinger 1	Impinger 2	Impinger 3	Silica Gel
Pre Weight	865.4	788.2	588.1	888.7
Post Weight	876.5	793.1	589.2	898.5

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	482.31	.01	1.7	1250	250	58	80	78	2
A-2	2.7	00:02:43	484.50	.01	1.7	1273	250	58	80	78	2
A-3	5.4	00:05:25	486.99	.02	1.7	1501	250	55	82	78	2
A-4	8.1	00:08:07	488.64	.03	1.7	1553	250	55	83	77	2
A-5	10.8	00:10:50	490.81	.04	1.7	1635	250	55	84	77	2
A-6	13.5	00:13:33	492.37	.05	1.7	1785	250	55	84	78	2
A-7	16.3	00:16:15	494.59	.05	1.7	1785	250	56	84	77	2
A-8	19.0	00:18:58	496.67	.04	1.7	1407	250	56	83	78	2
A-9	21.7	00:21:40	498.86	.04	1.7	1311	250	55	84	79	2
A-10	24.4	00:24:22	500.01	.01	1.7	1406	250	55	85	79	2
A-11	27.1	00:27:05	502.69	.01	1.7	1436	250	55	85	79	2
A-12	29.8	00:29:47	504.61	.01	1.7	1530	250	55	86	79	2
B-1	32.5	00:32:30	506.93	.01	1.7	1219	250	58	83	80	2
B-2	35.2	00:35:12	508.99	.015	1.7	1385	250	56	85	80	2
B-3	37.9	00:37:55	510.97	.02	1.7	1677	250	55	86	80	2
B-4	40.6	00:40:37	512.87	.03	1.7	1694	250	56	86	81	2
B-5	43.3	00:43:20	514.79	.04	1.7	1771	250	56	87	81	2
B-6	46.0	00:46:03	516.49	.04	1.7	1752	250	56	87	81	2
B-7	48.8	00:48:45	518.91	.03	1.7	1375	250	56	87	81	2
B-8	51.5	00:51:28	520.93	.03	1.7	1331	250	57	87	82	2
B-9	54.2	00:54:10	522.97	.02	1.7	1627	250	57	87	82	2
B-10	56.9	00:56:53	524.97	.03	1.7	1634	250	57	87	82	2
B-11	59.6	00:59:35	526.99	.03	1.7	1629	250	57	87	82	2
B-12	62.3	01:02:18	528.45	.03	1.7	1625	250	58	87	82	2
Last Pt	65.0	01:05:00									
Final Val	65.0	01:05:00	530.91							Max Vac	
Average Values											

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

Plant Name	Elk City Facility
Sampling Location	SCD-48 Ports
Project #	sfi-elkcity.ok-comp#1

Date	9/14/16
Operator	DA
Run Number	R9

Leak Checks					
Train	Pre	0	ft³/min@	15	in Hg
	Post	0	ft³/min@	15	in Hg
Pitot	Pre (+)	.25	in H_2O for	30	sec
	Pre (-)	.25	in H_2O for	30	sec
	Post (+)	.25	in H_2O for	30	sec
	Post (-)	.25	in H_2O for	30	sec

Sampling Equipment		
Meter Box Number	SAMP-CP-0007	
Orifice Meter Coefficient	1.744	in H_2O

Pressures			
Barometric Pressure	(P_b)	30.25	in Hg

Run Time			
Start	11:13	End	12:23

	Impinger 1	Impinger 2	Impinger 3	Silica Gel
Pre Weight	876.5	783.1	589.2	898.5
Post Weight	908.8	796.0	593.2	913.0

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	533.12	.03	1.7	1289	250	59	84	80	8
A-2	2.7	00:02:43	535.82	.025	1.7	1667	250	55	84	79	8
A-3	5.4	00:05:25	537.40	.03	1.7	1710	250	55	85	79	8
A-4	8.1	00:08:07	539.52	.035	1.7	1788	250	56	85	79	8
A-5	10.8	00:10:50	541.52	.045	1.7	1755	250	58	86	78	8
A-6	13.5	00:13:33	543.67	.045	1.7	1742	250	58	86	78	8
A-7	16.3	00:16:15	545.97	.03	1.7	1376	250	61	87	79	8
A-8	19.0	00:18:58	547.79	.03	1.7	1369	250	61	86	79	8
A-9	21.7	00:21:40	549.80	.05	1.7	1760	250	62	86	80	8
A-10	24.4	00:24:22	552.23	.05	1.7	1762	250	62	86	80	8
A-11	27.1	00:27:05	554.63	.05	1.7	1813	250	63	86	79	8
A-12	29.8	00:29:47	556.43	.05	1.7	1799	250	63	86	79	8
B-1	32.5	00:32:30	558.23	.01	1.7	1313	250	64	82	80	8
B-2	35.2	00:35:12	560.51	.01	1.7	1230	250	64	84	79	8
B-3	37.9	00:37:55	562.51	.02	1.7	1574	250	64	84	80	8
B-4	40.6	00:40:37	564.41	.03	1.7	1613	250	65	84	80	8
B-5	43.3	00:43:20	566.80	.03	1.7	1636	250	65	84	80	8
B-6	46.0	00:46:03	568.70	.04	1.7	1610	250	65	84	80	8
B-7	48.8	00:48:45	~~572.33~~	.04	1.7	1639	250	65	82	80	8
B-8	51.5	00:51:28	573.63	.03	1.7	1532	250	66	82	80	8
B-9	54.2	00:54:10	575.87	.03	1.7	1538	250	67	82	80	8
B-10	56.9	00:56:53	577.23	.02	1.7	1421	250	67	82	80	8
B-11	59.6	00:59:35	579.51	.01	1.7	1375	250	67	82	80	8
B-12	62.3	01:02:18	581.17	.01	1.7	1310	250	67	82	80	8
Last Pt	65.0	01:05:00									
Final Val	65.0	01:05:00								Max Vac	
Average Values											

571.30
DA

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

Plant Name	Elk City Facility
Sampling Location	SCD-48 Ports
Project #	sfi-elkcity.ok-comp#1

Date	9-13-16
Operator	DA
Run Number	10

Leak Checks					
Train	Pre	0	ft³/min@	15	in Hg
	Post	0	ft³/min@	15	in Hg
Pitot	Pre (+)	.25	in H_2O for	30	sec
	Pre (-)	.25	in H_2O for	30	sec
	Post (+)	.25	in H_2O for	30	sec
	Post (-)	.25	in H_2O for	30	sec

Sampling Equipment		
Meter Box Number	SAMP-CP-0007	
Orifice Meter Coefficient	1.744	in H_2O

Pressures			
Barometric Pressure	(P_b)	30.04	in Hg

Run Time			
Start	11:11	End	12:31

	Impinger 1	Impinger 2	Impinger 3	Silica Gel
Pre Weight	735.5	735.2	572.1	880.0
Post Weight	762.8	746.7	577.0	893.3

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	283.23	.05	1.7		250	~~42~~ 48	78	78	5
A-2	2.7	00:02:43	284.66	.05	1.7		250	49	81	74	5
A-3	5.4	00:05:25	286.91	.05	1.7		250	49	82	75	8
A-4	8.1	00:08:07	288.85	.03	1.7		250	49	82	75	8
A-5	10.8	00:10:50	290.87	.05	1.7		250	59	82	76	8
A-6	13.5	00:13:33	292.32	.04	1.7		250	60	82	75	8
A-7	16.3	00:16:15	294.13	.04	1.7		250	51	82	75	8
A-8	19.0	00:18:58	296.58	.02	1.7		250	52	83	75	8
A-9	21.7	00:21:40	298.17	.02	1.7		250	52	83	75	8
A-10	24.4	00:24:22	300.62	.03	1.7		250	54	84	76	8
A-11	27.1	00:27:05	302.12	.01	1.7		250	54	84	76	8
A-12	29.8	00:29:47	304.18	.01	1.7		250	54	84	76	8
B-1	32.5	00:32:30	306.45	.10	1.7		250	53	84	76	8
B-2	35.2	00:35:12	308.05	.16	1.7		250	53	84	76	8
B-3	37.9	00:37:55	310.96	.19	1.7		250	55	84	77	8
B-4	40.6	00:40:37	312.92	.13	1.7		250	55	84	78	8
B-5	43.3	00:43:20	314.61	.13	1.7		250	55	84	78	8
B-6	46.0	00:46:03	316.98	.13	1.7		250	56	84	78	8
B-7	48.8	00:48:45	318.560	.09	1.7		250	57	86	78	8
B-8	51.5	00:51:28	320.960	.09	1.7		250	57	86	78	8
B-9	54.2	00:54:10	322.810	.18	1.7		250	57	86	78	8
B-10	56.9	00:56:53	324.970	.20	1.7		250	58	86	78	8
B-11	59.6	00:59:35	326.560	.13	1.7		250	59	86	85	8
B-12	62.3	01:02:18	328.910	.13	1.7		250	59	86	85	8
Last Pt	65.0	01:05:00									
Final Val	65.0	01:05:00								Max Vac	
Average Values											

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

Plant Name	Elk City Facility
Sampling Location	SCD-48 Ports
Project #	sfi-elkcity.ok-comp#1

Date	9-13-16
Operator	DA
Run Number	11

Leak Checks					
Train	Pre	0	ft³/min@	15	in Hg
	Post	0	ft³/min@	15	in Hg
Pitot	Pre (+)	.25	in H_2O for	30	sec
	Pre (-)	.25	in H_2O for	30	sec
	Post (+)	.25	in H_2O for	30	sec
	Post (-)	.25	in H_2O for	30	sec

Sampling Equipment		
Meter Box Number	SAMP-CP-0007	
Orifice Meter Coefficient	1.744	in H_2O

Pressures			
Barometric Pressure	(P_b)	30.08	in Hg

Run Time			
Start	12:50	End	14:00

	Impinger 1	Impinger 2	Impinger 3	Silica Gel
Pre Weight	762.8	746.7	577.0	893.3
Post Weight	790.4	757.0	580.8	904.2

Traverse Point #	Sampling Time (θ)	Timer Time	Dry Gas Meter Reading (V_m)	Velocity Head (Δp)	Actual Orifice ΔH ($\Delta H_@$)	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	332.51	.02	1.7	1427	250	63	84	77	8
A-2	2.7	00:02:43	334.28	.02	1.7	1472	250	63	84	77	8
A-3	5.4	00:05:25	336.25	.07	1.7	1506	250	63	84	77	8
A-4	8.1	00:08:07	338.20	.03	1.7	1556	250	63	84	77	8
A-5	10.8	00:10:50	340.62	.13	1.7	1632	250	55	84	77	8
A-6	13.5	00:13:33	342.96	.13	1.7	1677	250	55	86	77	8
A-7	16.3	00:16:15	344.19	.08	1.7	1680	250	57	86	79	8
A-8	19.0	00:18:58	346.21	.05	1.7	1699	250	58	86	79	8
A-9	21.7	00:21:40	348.31	.06	1.7	1688	250	58	86	79	8
A-10	24.4	00:24:22	350.61	.03	1.7	1552	250	58	87	78	8
A-11	27.1	00:27:05	352.65	.06	1.7	1411	250	58	87	78	8
A-12	29.8	00:29:47	354.23	.07	1.7	1398	250	58	87	78	8
B-1	32.5	00:32:30	356.92	.04	1.7	1499	250	60	84	80	8
B-2	35.2	00:35:12	358.22	.09	1.7	1551	250	56	89	80	8
B-3	37.9	00:37:55	360.50	.10	1.7	1548	250	56	91	80	8
B-4	40.6	00:40:37	362.80	.01	1.7	1599	250	56	93	81	8
B-5	43.3	00:43:20	364.41	.09	1.7	1684	250	57	93	81	8
B-6	46.0	00:46:03	366.52	.05	1.7	1744	250	58	93	81	8
B-7	48.8	00:48:45	368.17	.13	1.7	1963	250	57	94	82	8
B-8	51.5	00:51:28	370.59	.08	1.7	1476	250	58	94	83	8
B-9	54.2	00:54:10	372.91	.05	1.7	1310	250	58	94	84	8
B-10	56.9	00:56:53	374.65	.02	1.7	1221	256	58	94	84	8
B-11	59.6	00:59:35	376.63	.01	1.7	1281	250	58	94	84	8
B-12	62.3	01:02:18	378.96	.01	1.7	1307	250	58	94	84	8
Last Pt	65.0	01:05:00	380.36								
Final Val	65.0	01:05:00								Max Vac	
Average Values											

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

Plant Name	Elk City Facility
Sampling Location	SCD-48 Ports
Project #	sfi-elkcity.ok-comp#1

Date	9/13/16
Operator	DA
Run Number	12

Leak Checks					
Train	Pre	0	ft³/min@	15	in Hg
	Post	0	ft³/min@	15	in Hg
Pitot	Pre (+)	.25	in H_2O for	30	sec
	Pre (-)	.25	in H_2O for	30	sec
	Post (+)	.25	in H_2O for	30	sec
	Post (-)	.25	in H_2O for	30	sec

Sampling Equipment		
Meter Box Number	SAMP-CP-0007	
Orifice Meter Coefficient	1.744	in H_2O

Pressures			
Barometric Pressure	(P_b)	30.05	in Hg

Run Time			
Start	14:14	End	15:20

	Impinger 1	Impinger 2	Impinger 3	Silica Gel
Pre Weight	790.4	757.0	580.0	904.2
Post Weight	~~762.8~~ 830.1	~~746.7~~ 768.8	~~5~~ 584.4	916.3

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	382.10	.08	1.7	1418	250	55	97	86	8
A-2	2.7	00:02:43	384.63	.08	1.7	1418	250	55	97	86	8
A-3	5.4	00:05:25	386.67	.10	1.7	1438	250	56	96	86	8
A-4	8.1	00:08:07	388.34	.12	1.7	1495	250	56	96	86	8
A-5	10.8	00:10:50	390.58	.09	1.7	1495	250	56	96	86	8
A-6	13.5	00:13:33	392.59	.07	1.7	1638	250	56	97	86	8
A-7	16.3	00:16:15	394.78	.01	1.7	1791	250	58	96	88	8
A-8	19.0	00:18:58	396.91	.01	1.7	1794	250	59	96	88	8
A-9	21.7	00:21:40	398.11	.03	1.7	1680	250	59	96	88	8
A-10	24.4	00:24:22	400.33	.03	1.7	1153	250	59	97	88	8
A-11	27.1	00:27:05	402.46	.01	1.7	1049	250	59	97	88	8
A-12	29.8	00:29:47	404.48	.01	1.7	1031	250	59	97	88	8
B-1	32.5	00:32:30	406.190	.06	1.7	1733	250	59	93	87	8
B-2	35.2	00:35:12	408.94	.12	1.7	1734	256	59	93	87	8
B-3	37.9	00:37:55	410.65	.17	1.7	1716	256	59	93	87	8
B-4	40.6	00:40:37	412.91	.15	1.7	1719	250	59	93	87	8
B-5	43.3	00:43:20	414.86	.10	1.7	1722	250	60	93	87	8
B-6	46.0	00:46:03	416.230	.08	1.7	1718	250	60	93	87	8
B-7	48.8	00:48:45	418.33	.05	1.7	1726	250	62	93	86	8
B-8	51.5	00:51:28	420.96	.03	1.7	1726	250	62	93	86	8
B-9	54.2	00:54:10	422.10	.01	1.7	1723	250	64	93	86	8
B-10	56.9	00:56:53	424.89	.01	1.7	1730	250	64	91	85	8
B-11	59.6	00:59:35	426.54	.01	1.7	1740	250	64	91	85	8
B-12	62.3	01:02:18	428.62	.01	1.7	1723	250	64	91	85	8
Last Pt	65.0	01:05:00	430.12								
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"; Garwood, Gerri; "Jason Huckaby"
Subject:	RE: Superior Fabrication Inc. SCD-48 OOOO Performance Test Results
Date:	Monday, February 27, 2017 9:30:06 AM
Attachments:	Superior Fabrication Cover Letter-EPA response-SCD-48.pdf True-Lite with Overview.pdf

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Marcia,

Please see answers below and attachments regarding the SCD-48.

Let me know if you have any questions.

Thanks,

From: Mia, Marcia [mailto:Mia.Marcia@epa.gov]
Sent: Tuesday, February 21, 2017 10:25 AM
To: 'Adam Yow'
Cc: Mark Axtell; 'Tim Rickel'; mlee@airhygiene.com; 'Randy Morse'; Garwood, Gerri; 'Jason Huckaby'
Subject: RE: Superior Fabrication Inc. SCD-48 OOOO Performance Test Results

Adam
We have completed our initial review of the SCD-48 OOOO Performance Test. We need you to follow up on the following items:

1. 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"
2. Section 60.5413(d)(2) requires three 1-hr test runs at each of four conditions for the named model – Page 18 of the test report indicates that a model named EC48-2S was tested for one of the fixed gas test runs, which does not match the model for which the test report was submitted (SCD-48). Please explain or correct if a typo. ***[Adam Yow]*** Please see attached document for corrected report
3. Section 60.5413(d)(6)(i)(A) requires that the outlet sample be located (min) 4 diameters downstream and (min) 1 diameter upstream of any flow disturbance - The unit tested is a 48" unit, but the summary in section 3.2 (on page 11) of the test report indicates a stack diameter of 33 inches. Please explain, confirm the 4/1 requirements were met for the 48" model, or correct if a typo. (Note: The calculation on page 24 indicates stack diameters using a 45" stack at 4.4/1.9)***[Adam Yow]*** Please see attached document for corrected report

Thank you in advance for your follow-up.
Marcia B Mia
Office of Compliance/Air Branch
2227A WJCS
U.S. Environmental Protection Agency
202-564-7042

From: Adam Yow [mailto:adamyow@superiorfab.com]
Sent: Thursday, November 03, 2016 9:58 AM
To: Oil_and_Gas_PT <Oil_and_Gas_PT@epa.gov>
Cc: Mark Axtell <markaxtell@superiorfab.com>; 'Tim Rickel' <timrickel@superiorfab.com>; mlee@airhygiene.com; 'Randy Morse' <randymorse@superiorfabcom>
Subject: RE: Superior Fabrication Inc. SCD-48 OOOO Performance Test Results

Please use the following link to update the submitted reports: SCD-48 Results R1

The file "sfi-elkcity ok-comp#1-SCD-48-Superior Report-V2" has been updated to include the P&ID and unit schematic. It is now named "sfi-elkcity ok-comp#1-SCD-48-Superior Report-V2-R1"

Thank You,

Adam Yow
Engineering
| Superior Fabrication Inc. | 801 S. Eastern | Elk City, OK 73644 |
| Office (580) 243-5693 | Direct (580) 243-7012 | Fax (580) 243-5507 |
| adamyow@superiorfab.com |

From: Adam Yow [mailto:adamyow@superiorfab.com]
Sent: Tuesday, November 01, 2016 11:35 AM
To: 'Oil_and_Gas_PT@EPA.GOV'
Cc: Mark Axtell; 'Tim Rickel'; mlee@airhygiene.com; 'Randy Morse'
Subject: Superior Fabrication Inc. SCD-48 OOOO Performance Test Results

I would like to submit the performance test results of Superior Fabrication's model SCD-48 combustion device for OOOO listing. Please use the following link to download the file from Dropbox: SCD-48 Results

Thank You,

Adam Yow
Engineering
| Superior Fabrication Inc. | 801 S. Eastern | Elk City, OK 73644 |
| Office (580) 243-5693 | Direct (580) 243-7012 | Fax (580) 243-5507 |
| adamyow@superiorfab.com |

February 24, 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 February 21st, 2017 email request.

SCD-48
Item #2
Section 60.5413(d)(2) requires three 1-hr test runs at each of four conditions for the named model – Page 18 of the test report indicates that a model named EC48-2S was tested for one of the fixed gas test runs, which does not match the model for which the test report was submitted (SCD-48). Please explain or correct if a typo

- There was a typo in Table A-1, please find the corrected table in the attachment

Item #3
Section 60.5413(d)(6)(i)(A) requires that the outlet sample be located (min) 4 diameters downstream and (min) 1 diameter upstream of any flow disturbance - The unit tested is a 48" unit, but the summary in section 3.2 (on page 11) of the test report indicates a stack diameter of 33 inches. Please explain, confirm the 4/1 requirements were met for the 48" model, or correct if a typo. (Note: The calculation on page 24 indicates stack diameters using a 45" stack at 4.4/1.9)

- The correct stack diameter is 45 inches, typo have been corrected and can be found 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

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 19.5 feet above grade level on the exhaust system. The stack had a 45 inches inner diameter and was equipped with four, 3 inch ports oriented at 90 degrees. The ports were 4.4 duct diameters downstream from the flare tip and 1.9 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-48 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 September 13-15, 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

TABLE A.1:
EMISSIONS TESTING SCHEDULE

Unit	Load	Test Type	Run	Date	Start	Stop	Time Sync
SCD-48	90-100	CO,THC & Fuel Sampling	SCD-48 R10	09/13/16	11:11:26	12:21:26	CST
SCD-48	90-100	CO,THC & Fuel Sampling	SCD-48 R11	09/13/16	12:50:26	14:00:26	CST
SCD-48	90-100	CO,THC & Fuel Sampling	SCD-48 R12	09/13/16	14:14:26	15:24:26	CST
SCD-48	70-100-70	CO,THC & Fuel Sampling	SCD-48 R7	09/14/16	8:13:29	9:23:29	CST
SCD-48	70-100-70	CO,THC & Fuel Sampling	SCD-48 R8	09/14/16	9:43:29	10:53:29	CST
SCD-48	70-100-70	CO,THC & Fuel Sampling	SCD-48 R9	09/14/16	11:13:29	12:23:29	CST
SCD-48	0-30-0	CO,THC & Fuel Sampling	SCD-48 R1	09/14/16	16:47:29	17:57:29	CST
SCD-48	0-30-0	CO,THC & Fuel Sampling	SCD-48 R2	09/14/16	18:08:29	19:18:29	CST
SCD-48	0-30-0	CO,THC & Fuel Sampling	SCD-48 R3	09/15/16	11:37:00	12:47:00	CST
SCD-48	30-70-30	CO,THC & Fuel Sampling	SCD-48 R4	09/15/16	14:39:00	15:49:00	CST
SCD-48	30-70-30	CO,THC & Fuel Sampling	SCD-48 R5	09/15/16	16:01:00	17:11:00	CST
SCD-48	30-70-30	CO,THC & Fuel Sampling	SCD-48 R6	09/15/16	17:22:00	18:32:00	CST
SCD-48	90-100	Fixed Gas & Moisture	90-100%-1	09/13/16	11:11	12:31	CST
SCD-48	90-100	Fixed Gas & Moisture	90-100%-2	09/13/16	12:50	14:00	CST
SCD-48	90-100	Fixed Gas & Moisture	90-100%-3	09/13/16	14:14	15:20	CST
SCD-48	70-100-70	Fixed Gas & Moisture	70-100-70%-1	09/14/16	8:13	9:23	CST
SCD-48	70-100-70	Fixed Gas & Moisture	70-100-70%-2	09/14/16	9:43	10:53	CST
SCD-48	70-100-70	Fixed Gas & Moisture	70-100-70%-3	09/14/16	11:13	12:23	CST
SCD-48	0-30-0	Fixed Gas & Moisture	0-30-0%-1	09/14/16	16:47	17:57	CST
SCD-48	0-30-0	Fixed Gas & Moisture	0-30-0%-2	09/14/16	18:08	19:18	CST
SCD-48	0-30-0	Fixed Gas & Moisture	0-30-0%-3	09/15/16	11:37	12:47	CST
SCD-48	30-70-30	Fixed Gas & Moisture	30-70-30%-1	09/15/16	14:39	15:49	CST
SCD-48	30-70-30	Fixed Gas & Moisture	30-70-30%-2	09/15/16	16:01	17:11	CST
SCD-48	30-70-30	Fixed Gas & Moisture	30-70-30%-3	09/15/16	17:22	18:32	CST

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.

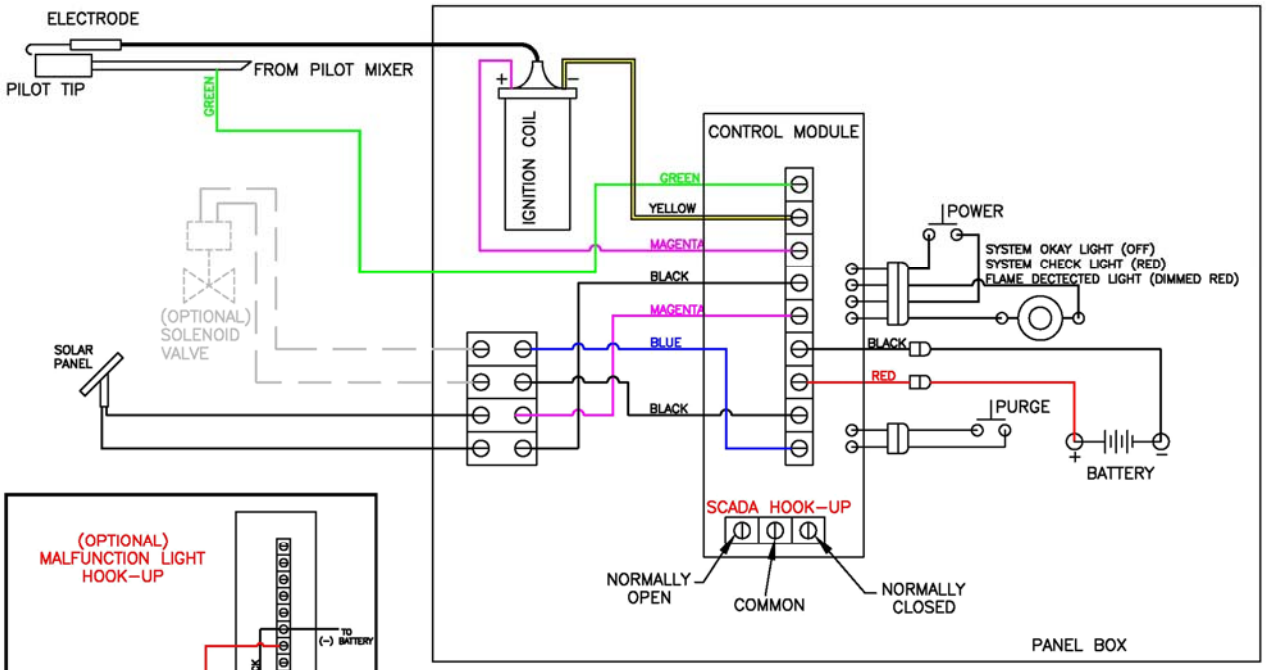
1.) Make sure the battery has a full charge and all the terminal connections are tight with no loose wiring. Keep the manual valves that control the pilot and main burner gas lines closed until ready to ignite.
2.) Open the valve and press the ignition button. A red LED indicator light will flash bright 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

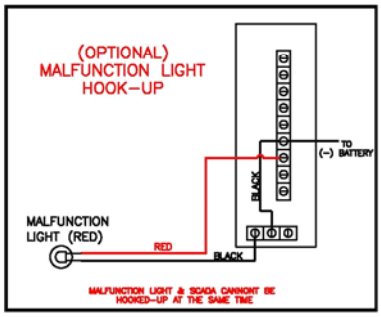
1.) Close the manual gas valves for the pilot and main burner. The unit will attempt to relight and will time out in 15 seconds, shutting down the system.

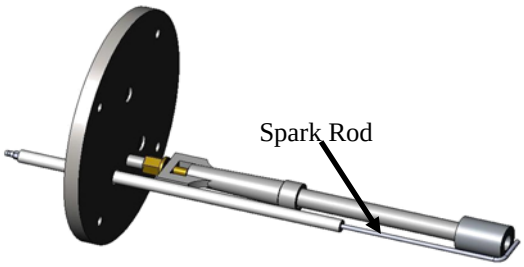
If in need of any further technical help, please contact:

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.