

Toxic Pollutants Impact Analysis

API Industries Inc., Aluf Plastics Division, Orangeburg, NY

Prepared For:

API Industries Inc.
Aluf Plastics Division
2 Glenshaw Street
Orangeburg, NY 10962

Prepared By:

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Aspen Outlook, LLC
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September 2017

Executive Summary

Aluf Plastics Division of API Industries Inc. (Aluf Plastics) operates a plastic bag manufacturing facility in Orangeburg, NY. The facility is located at 2 Glenshaw Road, Orangeburg, NY 10962, Rockland County. The Aluf Plastics facility currently operates under New York State Department of Environmental Conservation's (NYSDEC) Air State Facility Permit ID 3-3924-00190/00006.

Aluf Plastics, in response to community concern regarding odors in the vicinity, conducted stack test evaluation runs for toxic organic pollutants on two of the on-site stack outlets on June 28 and 29, 2017. The stack testing procedures and laboratory analytical protocols were developed with the direction and approval of NYSDEC. Aluf Plastics and NYSDEC have requested that the data from the stack assessments be used to determine whether facility emissions had the potential to impact nearby receptors. Aspen Outlook, LLC (Aspen Outlook) presents the following analysis of the data using U.S. Environmental Protection Agency (EPA) and NYSDEC approved air dispersion modeling techniques to evaluate the potential impacts from the emitted pollutants at the Aluf Plastics site.

This report provides a summary of the modeling procedures and results. This report summarizes the methodology and results of the air dispersion modeling analysis conducted to estimate worst-case impacts of 1-hour and annual averaged toxic pollutants, in comparison to the NYSDEC short term and annual guideline concentrations (SGCs and AGCs).¹ In addition, modeled concentrations have been compared to Odor Thresholds identified in a June 6, 2016 Memorandum from Donald Brenner, P.E., L.L.B. The modeling analysis was prepared in accordance with Appendix W of the Guideline on Air Quality Models (Revised) and NYSDEC Guidelines on Dispersion Modeling Procedures for Air Quality Impact Analysis (DAR-10).^{2,3}

Toxic air pollutant emissions from sources at the Aluf Plastics Facility were modeled to determine the maximum short-term and annual ground-level concentrations (1-hour and annual averaging period). The resulting maximum ground-level concentration values associated with as-measured in-stack concentrations do not exceed the corresponding SGCs or AGCs or the Odor Thresholds for any of the pollutants measured.

¹ DAR-1 Guidelines for the Evaluation and Control of Ambient Air Contaminants under Part 212, DAR-1 AGC/SGC Tables; NYSDEC Program Policy, August 10, 2016.

² Code of Federal Regulations, Title 40–Protection of Environment, Part 51, Appendix W, November 9, 2005.

³ DAR-10 NYSDEC Guidelines on Dispersion Modeling Procedures for Air Quality Impact Analysis; NYSDEC Program Policy, May 9, 2006.

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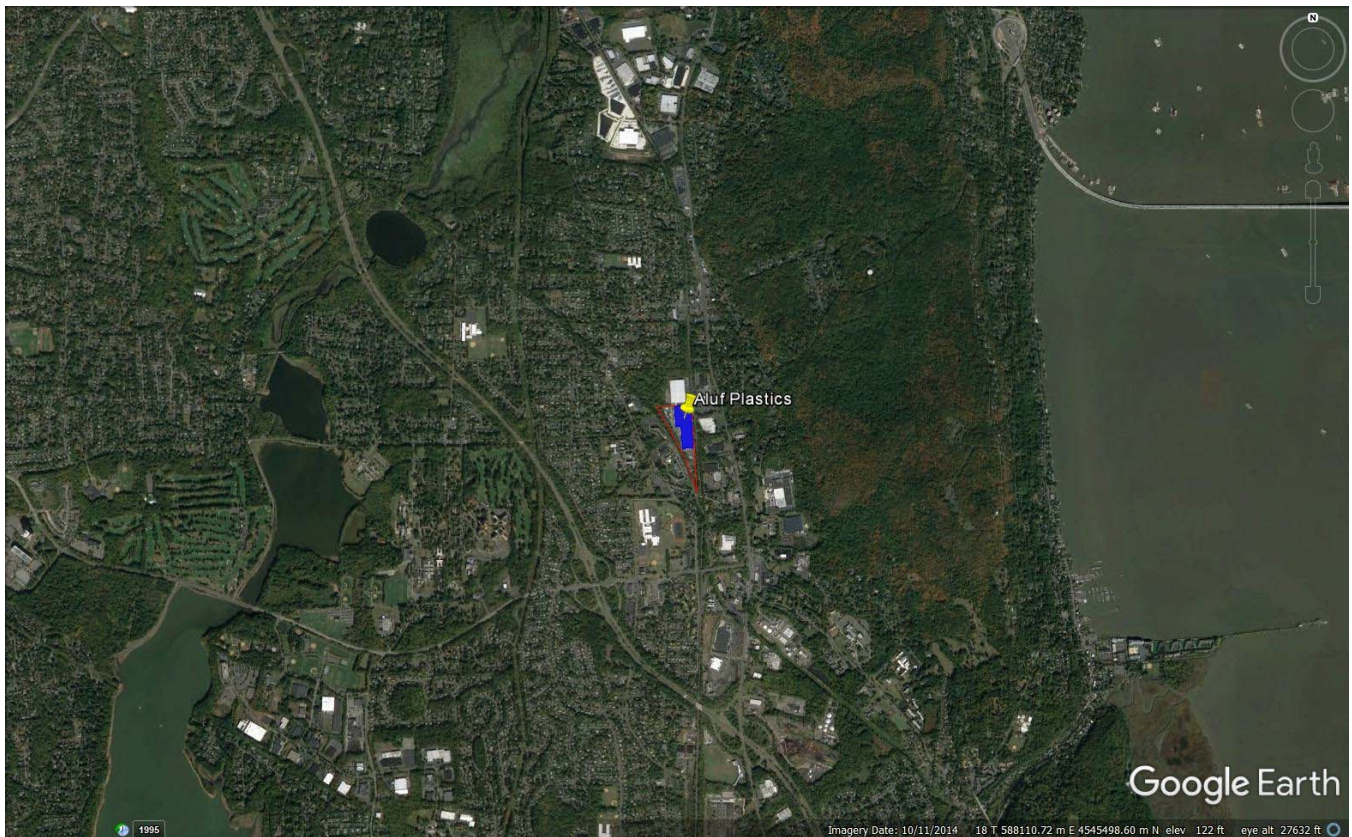
Attachment 3 – Modeled Concentration Plots

Evaluation Background and Approach

Aluf Plastics conducted stack test evaluations for toxic organic pollutants on the Internal Bubble Cooling (IBC) Retail and the Reprocessing Process stack outlets on June 28 and 29, 2017 in response to community concern regarding odors in the vicinity. In an effort to ensure emissions from all stacks were represented in the modeled calculations, the emissions measured at the IBC Retail stack were assumed to be equivalent to the emissions from the other 3 IBC stacks. Therefore, the model incorporates emissions from all four IBC stacks predicated on the measurements from the Retail Stack. The data from the stack assessments has been used to determine whether facility emissions have the potential to impact nearby receptors.

The Aluf Plastics Facility is located near Orangeburg in Rockland County, New York. As shown in Figure 1, below, the facility is in a mixed, commercial/industrial and residential area.

Figure 1: Aluf Plastics Facility Location and Surrounding Properties



Locations of the site-wide toxic pollutant emission sources at the Aluf Plastics Facility are illustrated in Figure 2. The locations of sources and receptors are represented in the North America Datum of 1983 (NAD83) coordinate system, in Universal Transverse Mercator (UTM) Zone 18. In this figure, the red line around the site represents the property boundary. The on-site stack sources are represented by red lines, on top of the building.

Figure 2: Aluf Plastics Facility Source and Site Boundary Locations as Represented in the Model



Modeling Methodology

The following sections describe the modeling methodology and options used for the toxic pollutant model evaluation.

Model Selection

In accordance with NYSDEC modeling requirements,⁴ the most current version of the U.S. EPA approved American Meteorological Society/Environmental Protection Agency Regulatory Model Improvement Committee Dispersion Model (AERMOD, version 16216r) was used for the toxic pollutant dispersion modeling analysis.

AERMOD is a steady-state, Gaussian plume dispersion model that is based on planetary boundary layer turbulence structure and scaling concepts, including treatment of both surface and elevated sources, and both simple and complex terrain for characterizing atmospheric stability. AERMOD

⁴ DAR-1 Guidelines for the Evaluation and Control of Ambient Air Contaminants under Part 212, DAR-1 AGC/SGC Tables; NYSDEC Program Policy, August 10, 2016.

is a modeling system with three components: AERMAP is the terrain preprocessor program, AERMET is the meteorological data preprocessor and AERMOD includes the dispersion modeling algorithms.

All default model options have been selected, as recommended in Appendix W of the Guideline on Air Quality Models (Revised).⁵

Meteorology

The dispersion modeling analysis was completed using the five most-recent years of available hourly meteorological surface data for the New York LaGuardia Airport monitoring site (station number 14732) for the years 1988 – 1992. The airport surface data was processed through the AERMET program (AERMET, version 15181) along with upper air data from the Atlantic City, New Jersey monitoring site (station number 93755) which was determined to be most representative of the subject site.⁶ As part of the meteorological data processing, the most recent version of the AERSURFACE program (AERSURFACE, version 13016) was run, which incorporates the characteristics of land use surrounding the site. The AERSURFACE run was made using National Land Cover Data (NLCD) for New York. All meteorological processing files are included as an attachment to this report. A wind rose depicting predominant wind directions over the years 1988 – 1992 is provided in Attachment 1.

Terrain

The base elevation of the Facility sources is approximately 38 meters above mean sea level. Terrain in the area around the Facility varies very little with elevation changes rising to a maximum of 200 meters and decreasing to a minimum of sea level.

The receptor and source elevations in the model were processed using the most recent version of the AERMAP program (AERMAP, version 11103) and USGS National Elevation Data (NED) data obtained from the United States Geological Survey. USGS NED GeoTIFF terrain data files are digital representations of cartographic information consisting of ground surface elevation data for the United States, Canada and Mexico. Terrain processing files are included as an attachment to this report.

Building Wake Effects

The AERMOD model inputs include building dimensions for the large on-site building for the assessment of downwash effects on emissions from the building. Direction-specific downwash parameters have been calculated using facility plot-plan maps and the BPIPPRM software. BPIPPRM is the building downwash program associated with the AERMOD model. Output from

⁵ Code of Federal Regulations, Title 40–Protection of Environment, Part 51, Appendix W, November 9, 2005.

⁶ This data is made publicly available through the U.S. EPA Support Center for Atmospheric Regulatory Modeling (SCRAM) website: <https://www.epa.gov/scram/air-quality-modeling-surface-and-upper-air-databases>

BPIPPRM have been incorporated into the AERMOD modeling input files. Building wake effect model files are included as an attachment to this report.

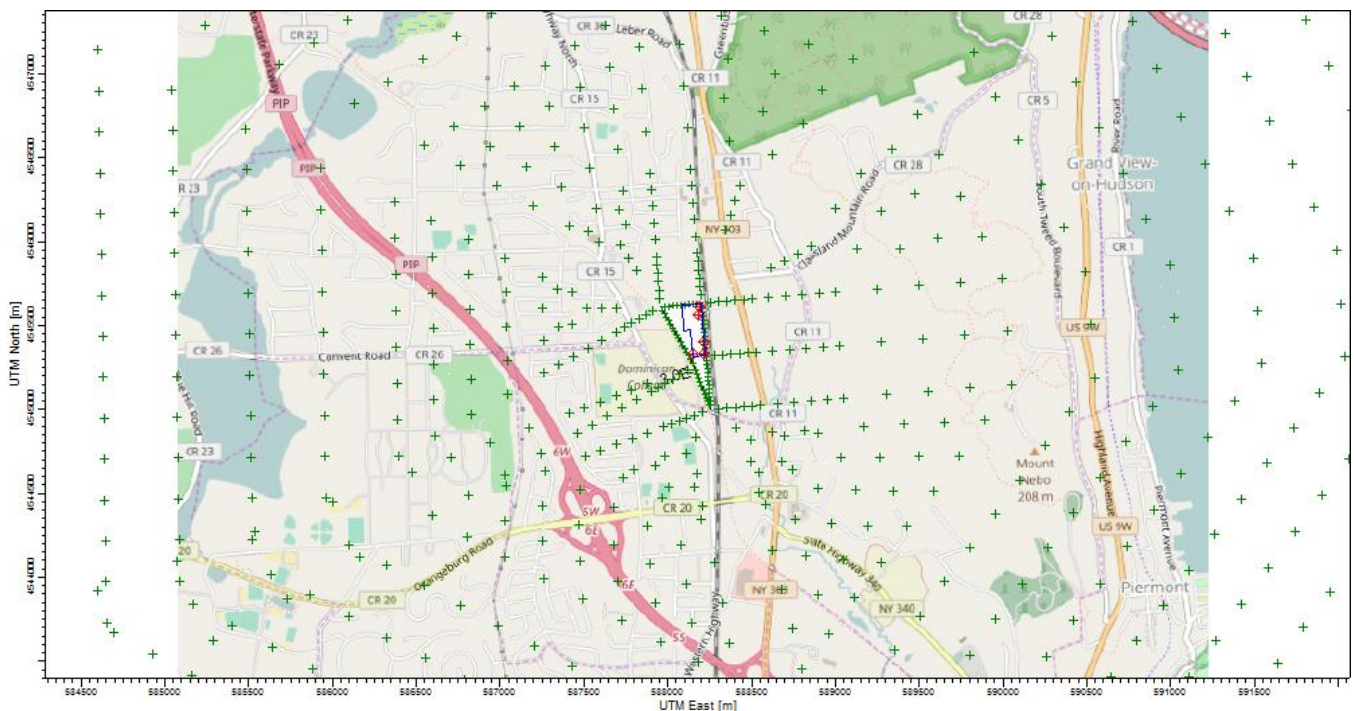
Receptors

Ground-level concentrations were calculated at receptors on different polar grids, surrounding the facility at various intervals. The grids cover a region extending more than 4.5 km from all edges of the Aluf Plastics Facility fence line. The receptor grids are defined as follows:

- The "fenceline grid" is a discrete receptor grid with the receptors spaced at 25-m intervals along the fence line.
- The "tight grid" contains 50-m spaced receptors extending 300 m from the fence line, excluding the receptors within the fence line.
- The "fine grid" contains 100-m spaced receptors extending at least 800 m from the fence line, excluding the receptors within the fence line and tight grids.
- The "medium grid" contains 250-m spaced receptors extending 1.8 km from the fence line, excluding the receptors within the fence line, tight, and fine grids.
- The "course grid" contains 500-m spaced receptors extending 4.8 km from the fence line, excluding the receptors within the fence line, tight, fine and medium grids.

Figure 3 illustrates the locations of the receptors in relation to the Facility sources. Receptors are represented by green "+" signs.

Figure 3: Aluf Plastics Facility Receptor Locations as Represented in the Model



Emission Input

Aluf Plastics conducted stack test evaluations for toxic organic pollutants on the Internal Bubble Cooling (IBC) Retail and the Reprocessing Process stack outlets on June 28 and 29, 2017. Table 1 shows a summary of average emissions measured during the stack testing events, used in the dispersion model evaluation. The average emission rates are the average of three or four stack measurements, depending on the stack. A copy of the stack assessment report is included as Attachment 2. Some pollutants tested were not detected, but were represented in the model at the emission rates provided in the stack test report as the laboratory detection limit. A full list of tested pollutants is included in Appendix IX to the stack test report.

Table 1. Measured Stack Outlet Emission Rate (lb/hr)

Constituent	IBC Retail Stack	Repro Stack
Acrolein	1.97E-02	3.70E-02
Pentane	2.80E-02	3.60E-02
Ethanol	1.83E-01	2.73E-01
MEK	1.80E-02	NA
Formaldehyde	NA	1.78E-02
Acetaldehyde	NA	3.31E-02
Acetone	4.52E-03	1.29E-02
Propionaldehyde	NA	8.79E-03
Butyraldehyde	NA	1.74E-02
Isovaleraldehyde	NA	9.65E-03
Valeraldehyde	NA	8.82E-03
Hexanaldehyde	NA	9.12E-03

In an effort to ensure emissions from all stacks were represented in the model, the emissions measured at the IBC Retail stack were assumed to be equivalent to the emissions from the other 3 IBC stacks. Short term emission rates were converted to gram/second (g/s) emission rates for input into the model, using the following conversion rates.

Emission Rate (grams/second) = Emission Rate (pounds/hour) * 453. grams/pound / 3600 seconds/hour

Per guidance provided in DAR-10 Table 2 for existing sources, annual emission rates were calculated based on an annualized emission rate (average of total actual annual hours of operation for the last 2 years).^{7,8}

Tables 2 and 3 present a summary of emission rates as modeled.

Table 2. Modeled Short Term Emission Rates (g/s)

Constituent	IBC LD#1	IBC LD#2	IBC LD#3	IBC Retail Stack	Repro Stack
Acrolein	2.48E-03	2.48E-03	2.48E-03	2.48E-03	4.66E-03
Pentane	3.53E-03	3.53E-03	3.53E-03	3.53E-03	4.54E-03
Ethanol	2.31E-02	2.31E-02	2.31E-02	2.31E-02	3.44E-02
MEK	2.27E-03	2.27E-03	2.27E-03	2.27E-03	NA
Formaldehyde	NA	NA	NA	NA	2.24E-03
Acetaldehyde	NA	NA	NA	NA	4.17E-03
Acetone	5.69E-04	5.69E-04	5.69E-04	5.69E-04	1.63E-03
Propionaldehyde	NA	NA	NA	NA	1.11E-03
Butyraldehyde	NA	NA	NA	NA	2.20E-03
Isovaleraldehyde	NA	NA	NA	NA	1.22E-03
Valeraldehyde	NA	NA	NA	NA	1.11E-03
Hexanaldehyde	NA	NA	NA	NA	1.15E-03

⁷DAR-10 NYSDEC Guidelines on Dispersion Modeling Procedures for Air Quality Impact Analysis, Table 2 Model Emission Input Data for Point Sources, May 9, 2006.

⁸ Actual annual hours of operation based on estimates of downtime for 2016 and 2017 provided by Aluf Plastics on September 11, 2017.

Table 3. Modeled Annual Emission Rates¹ (g/s)

Constituent	IBC LD#1	IBC LD#2	IBC LD#3	IBC Retail Stack	Repro Stack
Acrolein	1.90E-03	1.90E-03	1.90E-03	1.90E-03	3.58E-03
Pentane	2.71E-03	2.71E-03	2.71E-03	2.71E-03	3.49E-03
Ethanol	1.77E-02	1.77E-02	1.77E-02	1.77E-02	2.64E-02
MEK	1.74E-03	1.74E-03	1.74E-03	1.74E-03	NA
Formaldehyde	NA	NA	NA	NA	1.72E-03
Acetaldehyde	NA	NA	NA	NA	3.21E-03
Acetone	4.37E-04	4.37E-04	4.37E-04	4.37E-04	1.25E-03
Propionaldehyde	NA	NA	NA	NA	8.51E-04
Butyraldehyde	NA	NA	NA	NA	1.69E-03
Isovaleraldehyde	NA	NA	NA	NA	9.34E-04
Valeraldehyde	NA	NA	NA	NA	8.54E-04
Hexanaldehyde	NA	NA	NA	NA	8.83E-04

1 - Annual emission rate = average of total annual hours of operation for the last 2 years = 6732 hours/year, subtracting hours of holiday and Saturday shutdowns from total number of hours in a year. Per DAR-10 Table 2.

Emission release parameters for all modeled sources, as modeled, are shown in Table 4.

Table 4: Point Source Modeled Emission Release Parameters

Source Description	Source ID	UTM X (m)	UTM Y (m)	Release Height (m)	Gas Exit Temperature (K)	Stack Inside Diameter (m)	Gas Exit Velocity (m/s)	Gas Exit Flow Rate (m ³ /s)
IBC LD#1	IBCLD1	588147.6	4545332	19.812	313.15	0.584	18.41	4.94
IBC LD#2	IBCLD2	588214	4545334	19.812	320.93	0.584	22.98	6.16
IBC LD#3	IBCLD3	588215.1	4545402	21.6408	312.41	0.572	21.73	5.57
IBC Retail Stack	IBCRET	588190.8	4545610	7.9248	308.71	0.584	18.87	5.06
Repro Stack	REPO	588185.9	4545567	19.812	311.48	0.584	25.46	6.83

Model Results

The model results represent toxic pollutant emissions from all sources of toxic pollutants at the Aluf Plastics Facility. As shown in Table 5, maximum ground level concentrations estimated over five years of meteorological data are below the NYSDEC short term and annual guideline concentrations (SGCs and AGCs) for all pollutants.⁹

Table 5: Maximum Modeled Concentrations ($\mu\text{g}/\text{m}^3$)

	Modeled Maximum 1-Hour Concentration	NYSDEC SGC	Modeled Maximum Annual Concentration Averaged Over 5 Years	NYSDEC AGC
Acrolein	2.067	2.5	0.143	0.35
Pentane	2.525	NA	0.154	70250.0
Ethanol	17.459	NA	1.117	45000.0
MEK	1.042	13000.0	0.074	5000.0
Formaldehyde	0.494	30.0	0.052	0.06
Acetaldehyde	0.920	470.0	0.098	0.45
Acetone	0.586	180000.0	0.046	30000.0
Propionaldehyde	0.245	NA	0.026	8.0
Butyraldehyde	0.485	NA	0.052	NA
Isovaleraldehyde	0.269	NA	0.029	NA
Valeraldehyde	0.245	NA	0.026	420.0
Hexanaldehyde	0.254	NA	0.027	NA

Notes:

NA – Not Applicable (no guideline concentration)

$\mu\text{g}/\text{m}^3$ = microgram per meter cubed

Resultant concentration plots are provided in Attachment 3. Please note that concentration contours were created in relation to a limit if one existed for that pollutant and averaging time. If a limit did not exist for a pollutant or averaging time, no limitation was placed on the contours.

In addition, maximum ground level concentrations estimated over five years of meteorological data were compared to odor thresholds presented in a June 6, 2016 Memorandum from Donald Brenner, P.E., L.L.B. As shown in Table 6, maximum predicted ground level concentrations estimated over five years of meteorological data are well below the odor thresholds for all pollutants. Modeled concentrations were converted from $\mu\text{g}/\text{m}^3$ to part per billion by volume (ppbV) using the following equation:

$$\text{ppbV} = \text{Concentration (mg of pollutant)} / 1000000 \text{ mg/g} / \text{MW (g/mol)} * 8.3144 [(L * \text{kPa}) / (\text{mol} * \text{K})] * 298.15 \text{ K} / 101.325 \text{ kPa} * 1000 \text{ mL/L} / 1 \text{ m}^3 \text{ (sample volume)} * 1000 \text{ ppbV/ppmV}$$

⁹ DAR-1 Guidelines for the Evaluation and Control of Ambient Air Contaminants under Part 212, DAR-1 AGC/SGC Tables; NYSDEC Program Policy, August 10, 2016.

Table 6: Maximum Predicted Odor Concentrations (ppbV)

	Calculated Maximum Modeled Hourly Concentration	Orangeburg Township Odor Threshold Limit	Other Odor Threshold Limits +	Notes
Acrolein	0.902	1,800.0	1,800	<i>E</i>
Pentane	0.856	NA	31,600	<i>3M</i>
Ethanol	9.272	1,900.0	10,000	<i>JAPCA</i>
MEK	0.354	NA	17,000	<i>E</i>
Formaldehyde	0.402	NA	871	<i>3M</i>
Acetaldehyde	0.511	6.7	67	<i>E, R</i>
Acetone	0.247	1,600.0	4,500	<i>3M, R</i>
Propionaldehyde	0.103	1,000.0	40	<i>E, R</i>
Butyraldehyde	0.165	NA	NA	
Isovaleraldehyde	0.076	NA	NA	
Valeraldehyde	0.070	NA	28	<i>N</i>
Hexanaldehyde	0.062	NA	NA	

Notes:

NA - Threshold Limit Value Not Available

+ - As identified in Table 1, Aluf Plastics Inc., Exhaust Concentrations vs. Odor Thresholds for Known or Potential Emissions

E - Geometric mean by detection, USEPA*R* - Most Restrictive Odor Threshold Limit Value*3M* - Odor Threshold Limit Value determined by 3M*JAPCA* - Odor Threshold Limit Value determined by Journal of Air Pollution Control Associates (JAPCA)*N* - Odor Threshold Limit Value determined by National Institute of Health

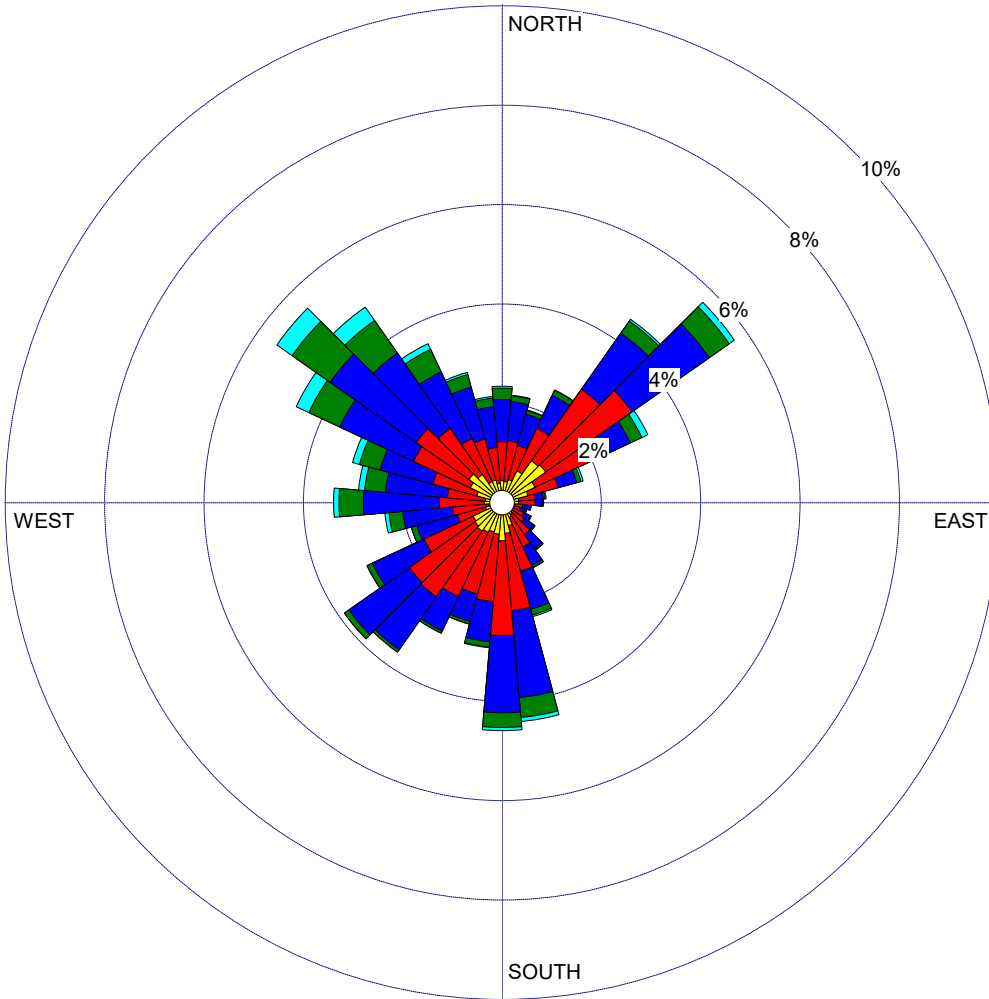
Attachment 1
New York, LaGuardia Wind Rose
(1988 – 1992)

WIND ROSE PLOT:

Station #14732 - NEW YORK/LAGUARDIA ARPT, NY

DISPLAY:

**Wind Speed
Direction (blowing from)**



WIND SPEED
(m/s)

- >= 11.10
- 8.80 - 11.10
- 5.70 - 8.80
- 3.60 - 5.70
- 2.10 - 3.60
- 0.50 - 2.10

Calms: 1.88%

COMMENTS:

DATA PERIOD:

**Start Date: 1/1/1988 - 00:00
End Date: 12/31/1992 - 23:59**

COMPANY NAME:

Aspen Outlook, LLC

MODELER:

Miriam Hacker

CALM WINDS:

1.88%

TOTAL COUNT:

43848 hrs.

AVG. WIND SPEED:

5.34 m/s

DATE:

1/13/2017

PROJECT NO.:

Attachment 2

Stack Test Report

Mr. Karl Monninger

September 19, 2017

KEMS LLC

368 Hollow Road
Skillman, NJ 08558

**Subject: Emissions Inventory Test Report; Internal Bubble Cooling (IBC) Retail and Reprocessing Processes;
Aluf Plastics; Orangeburg, New York;
MAQS - Easton Project No. 016-AQS-149228**

Dear Mr. Monninger:

Enclosed please find three copies of the compliance emissions test report for the above-referenced facility and sources. The report documents the results of the testing performed by MAQS - Easton at Aluf Plastics on June 28-29, 2017.

It is our understanding that you will submit the results to Aluf Plastics to be shared with NYSDEC. According to our records, the report should be submitted to NYSDEC by September 16, 2017 for review and approval.

We are pleased to have provided emissions testing services, and we look forward to assisting you in future projects.

If you have any questions, please call me at 610-559-8776 x 11606.

Sincerely,



Tyson Houchin, QSTI
District Manager

F:\Company\KEMS, LLC\Jobs\2017 projects\016-AQS-149228 Aluf Plastics\Report\Draft Report - Aluf Plastics (016-AQS-149228) for client review.doc

**EMISSIONS INVENTORY TEST REPORT
FOR THE IBC RETAIL AND REPROCESSING PROCESSES**

**ALUF PLASTICS
ORANGEBURG, NEW YORK**

Prepared for:

KEMS LLC

368 Hollow Road

Skillman, NJ 08558

Attn: Mr. Karl Monninger

Prepared by:

MAQS – EASTON

An affiliate of Montrose Air Quality Services, LLC (Montrose)

1350 Sullivan Trail, Suite A

Easton, PA 18040

Attn: Mr. Tyson Houchin

**MAQS - Easton Project No. 016-AQS-149228
(f.k.a. Avogadro Environmental Corporation)**

Test Date(s): June 28-29, 2017

Report Date: September 19, 2017

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1.0 INTRODUCTION

1.1 PROJECT SUMMARY

An emissions inventory test program was performed on the Internal Bubble Cooling (IBC) Retail carbon adsorber outlet location and the Reprocessing (Repro) process carbon adsorber inlet and outlet locations at **ALUF PLASTICS (Aluf)**, located in Orangeburg, New York. The purpose of this test program was to measure emissions of total non-methane hydrocarbons (TNMHC), various volatile organic compounds (VOC), aldehydes and ketones, acrolein and pentane. The scope and methodology of the emissions sampling and laboratory analytical protocols were developed in concert with, and approved by, the New York State Department of Environmental Conservation's (NYSDEC).

MAQS – EASTON, an affiliate of MONTROSE AIR QUALITY SERVICES, LLC (Montrose), was retained by **KEMS LLC (KEMS)** to prepare the test protocol, to conduct the emissions inventory evaluation and to submit a test report.

This report is organized as follows: Section 3.0 describes the test procedures, Section 4.0 describes the process and Section 5.0 presents test results along with test dates and times.

1.2 PROGRAM RESPONSIBLE PARTIES

Client:

Aluf Plastics
2 Glenshaw Street
Orangeburg, NY 10962

Contact:

Mr. Anthony Lawson
Telephone: 845-365-2200 x 179
Fax: 845-365-2294
Email: Anthony.L@AlufPlastics.com

Consultant Firms:

WSP USA Corp.
200 Cottontail Lane
Somerset, NJ 08873

Contact:

Mr. Mark Foley
Telephone: 732-564-0888
Email: Mark.Foley@WSPGroup.com

KEMS LLC
368 Hollow Road
Skillman, NJ 08558

Mr. Karl Monninger
Telephone: 609-309-5640
Email: KMonninger@KEMS.us

Test Firm:

MAQS - Easton
1350 Sullivan Trail, Suite A
Easton, PA 18040

Contact:

Mr. Tyson Houchin
Telephone: 610-559-8776 x 11606
Fax: 610-559-8913
Email: thouchin@montrose-env.com

Laboratory:

Enthalpy Analytical
800 Capitola Drive, Suite 1
Durham, NC 27713

Contact:

Ms. Ashley Miller
Telephone: 919-850-4392
Email: Ashley.miller@enthalpy.com

2.0 PERSONNEL AND CERTIFICATIONS

SAMPLING ON THIS PROJECT WAS PERFORMED BY:

Tyson Houchin	MAQS – Easton
Thomas Weber	MAQS – Easton
Sean Martorelli	MAQS – Easton
Zach Addis	MAQS – Easton

CALCULATIONS AND REPORT PREPARATION WERE PERFORMED BY:

Laurie Snyder	MAQS - Easton
---------------	---------------

THE TESTING WAS OBSERVED BY:

Bradley Miller	NYSDEC
Maria Antoniou, P.E.	NYSDEC
Karl Monninger	KEMS
Anthony Lawson	Aluf Plastics


REPORT PREPARED BY:



Tyson E. Houchin, QSTI
District Manager

REPORT REVIEWED AND CERTIFIED BY:

I certify that I have personally examined and am familiar with the information developed or received by MAQS - Easton personnel in this report and, to the best of my knowledge, this information is true, accurate, and complete and conforms to ASTM D7036-04.



Tyson E. Houchin, QSTI
District Manager

3.0 TECHNICAL APPROACH / METHODOLOGY

3.1 SAMPLING PROCEDURES

Testing was performed in accordance with the revised test protocol presented in Appendix II. All test methods utilized for this evaluation conform to Title 40, Code of Federal Regulations, Part 60 (40 CFR 60), Appendix A test procedures. Three valid test runs were conducted on the IBC retail outlet. Additionally, four valid test runs were conducted while sampling the inlet and outlet of the Repro process simultaneously.

Since the processes emit essentially ambient air, a molecular weight of 29.0 was utilized in volumetric flow rate calculations per USEPA Method 2.

TABLE 1: SUMMARY OF TEST METHODS

Parameters	USEPA Test Method	Location	Duration (minutes)
Velocity / Volumetric Flow Rate	USEPA Methods 1 & 2, "Determination of stack gas velocity and volumetric flow rate (Type S pitot tube)"	Repro Inlet, Repro Outlet, IBC Retail	---
Moisture	USEPA Method 4, "Determination of moisture content in stack gases"	Repro Outlet, IBC Retail	60
Moisture	USEPA Method 4, "Determination of moisture content in stack gases" (wet bulb / dry bulb technique)	Repro Inlet	---
Various VOCs	Compendium Method TO-15, "Determination of Volatile Organic Compounds (VOCs) in air collected in specially-prepared canisters and analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)"	Repro Outlet, IBC Retail	45-61
Aldehydes & Ketones	SW-846 Test Method 0011, "Sampling for selected Aldehyde and Ketone emissions from stationary sources"	Repro Outlet, IBC Retail	60
Acrolein & Pentane	USEPA Method 18, "Measurement of gaseous organic compound emissions by gas chromatography"	Repro Outlet, IBC Retail	60
Total Hydrocarbons	USEPA Method 25A, "Determination of total gaseous organic concentration using a flame ionization analyzer"	Repro Inlet, Repro Outlet	60-62
Methane	USEPA Method 18, "Measurement of gaseous organic compound emissions by gas chromatography"	Repro Inlet, Repro Outlet	60
Total Non-Methane Hydrocarbons	USEPA Methods 25A/18 (By Difference)	Repro Inlet, Repro Outlet	---
VOC Destruction Efficiency as Methane	USEPA Methods 25A/18 (By Difference)	---	---

3.2 TECHNICAL DISCUSSION

IBC Retail

During the port change of run 1, it was discovered that the glass nozzle utilized for the SW846 sample train was broken. As a result, run 1 was voided and three additional sample runs were completed.

Repro

During run 2, it was discovered by Aluf personnel that a damper controlling the emissions collection system was inadvertently set incorrectly for run 1 and a portion of run 2. This damper was re-adjusted during run 2 and run 2 was voided. Three additional test runs (runs 3-5) were performed after the damper adjustment. Since run 1 was completed and passed all the necessary quality assurance checks, the results of run 1 are included in this test report for informational purposes only. However, the averages for this test location include the data for only runs 3, 4, and 5.

In the Enthalpy Analytical laboratory report, a J flag is present for all methane results. The J flag indicates that the value is between the Minimum Detection Limit (MDL) and the Limit of Quantification (LOQ). In order to present the most conservative (worst-case) results, the methane values were not subtracted from the total hydrocarbons values for emissions calculations. In this case, total non-methane hydrocarbons (VOC) are equivalent to total hydrocarbons (THC).

As stated in the approved test protocol, only results that were detectable as a part of the SW846 Method 0011 analysis are included in the test results tables for this method. A full list of the analytes and their individual results for this analysis are included in Appendix IX.

3.3 QUALITY ASSURANCE INFORMATION

Calibration of the equipment employed to measure the parameters of interest is required per the USEPA test methods. All calibration data for this test program is contained in Appendix VI of this report. All quality assurance data for this test program is contained in Appendix VII of this report. The following equipment calibration and quality assurance checks warrant individual discussion.

Field Data: Appendix IV contains copies of the field data sheets.

Span Gas Certifications: Span gas certifications were provided by the supplier, and copies are presented in Appendix VII.

Dry Gas Meters: Dry gas meters were calibrated prior to use in accordance with USEPA Method 5, Section 10.3 using a dry gas meter as described in Section 16.1. Dry gas meter gamma values were verified in accordance with USEPA Alternative Method 5 (ALT-009).

Pitot Tubes/Probes: Pitot tubes and probes are calibrated in accordance with USEPA Method 2. All new pitot tubes/probes or those meeting the dimensions of USEPA Method 2, Section 6.1, are assigned a baseline coefficient of 0.84, per Section 10.1 of this method.

Thermocouples: The thermocouples used during the test program were post-calibrated using the procedures of USEPA Alternate Method 2 (ALT-011).

Method 4 Daily Balance Audit: Once daily, the balance used for Method 4 impinger weight measurements was audited with an NIST traceable weight between 500 grams and one kilogram.

Response Time Checks: Per USEPA Method 25A, a response time check was conducted on the THC analyzer for the zero gas and the span gas prior to and after each test run.

Nozzles: Appendix VI contains copies of the calibration data for the nozzles used during the testing program.

Reagent Blanks: Applicable blanks were submitted to Enthalpy Analytical for analysis. Appendix IX presents the laboratory analytical reports.

Uncertainty Statement: Both qualitative and quantitative factors contribute to field measurement uncertainty and should be taken into consideration when interpreting the results contained within this report. Whenever possible, MAQS - Easton personnel reduce the impact of these uncertainty factors through the use of approved and validated test methods. In addition, MAQS - Easton personnel perform routine instrument and equipment calibrations and ensure that the calibration standards, instruments, and equipment used during test events meet, at a minimum, test method specifications as well as the specifications of our Quality Manual and ASTM D 7036-04.

The limitations of the various methods, instruments, equipment, and materials utilized during this test have been reasonably considered, but the ultimate impact of the cumulative uncertainty of this project is not fully identified within the results of this report. Performance data is available upon request.

4.0 SOURCE INFORMATION

4.1 PROCESS DESCRIPTION

Aluf Plastics specializes in the making of plastic products, specifically bags for various clientele. Aluf Plastics utilizes two different types of processes to make their products. The first is an internal bubble cooling (IBC) operation that utilizes raw materials to produce their final product. The second is a reprocessing process that utilizes recycled materials to generate additional raw materials for input into the first product. The emissions from both process types are captured and then controlled by cyclones, HEPA filters, and carbon media prior to being emitted to atmosphere.

4.2 PROCESS OPERATING DATA

The following production information was provided by Anthony Lawson, Engineering Project Manager for API Industries, Inc:

IBC RETAIL PRODUCTION	
June 28, 2017	
Source ID	Production Rate (lbs/hr)
300	560
301	560
302	680
303	0
304	0
401	280
402	280
403	360
404	380
405	<u>380</u>
Retail Total	3,480

**REPROCESSING
 PRODUCTION**

June 29, 2017

Source ID	Production Rate (lbs/hr)
1	0
2	2,000
3	2,000
4	<u>2,000</u>
Repro Total	6,000

4.3 SAMPLING LOCATION INFORMATION

Sample locations were verified in the field to conform to USEPA Method 1. Acceptable cyclonic flow conditions were confirmed at the IBC retail and Repro outlet locations prior to testing using USEPA Method 1, Section 11.4. Appendix IV contains cyclonic flow data.

TABLE 2: SUMMARY OF SAMPLING LOCATIONS

Sampling Location	Stack ID	Distance from nearest flow disturbance		Number of Traverse Points
		Downstream EPA "B"	Upstream EPA "A"	
IBC Retail Outlet	23 inches	52 inches (2.26 duct diameters)	468 inches (20.35 duct diameters)	24 (12 per port)
Repro Inlet	20 inches	172 inches (8.60 duct diameters)	36 inches (1.80 duct diameters)	12 (6 per port)
Repro Outlet	23 inches	52 inches (2.26 duct diameters)	468 inches (20.35 duct diameters)	24 (12 per port)

5.0 RESULTS / SUMMARY

The emission test results are summarized in Tables 3 through 11. For TO-15 and SW846-0011, emissions were calculated for each compound detected at or above the analytical detection limit. Detailed emission calculations are presented in Appendix V.

TABLE 3: SUMMARY OF ACROLEIN AND PENTANE EMISSIONS – IBC RETAIL OUTLET*

Run	2	3	4	Average
Date	6/28/2017	6/28/2017	6/28/2017	---
Time	10:45-11:56	12:35-13:45	14:15-15:25	---
Stack Gas Velocity (fps)	54.04	53.10	54.11	---
Stack Gas Moisture (%)	0.30	1.01	1.07	---
Volumetric Flow Rate (dscfm)	8,743	8,501	8,623	---
Acrolein				
ppmv, dry	<0.262	<0.262	<0.262	<0.262
pounds/hour	<0.020	<0.019	<0.020	<0.020
pounds/year	<135.8	<132.1	<134.0	<133.9
Pentane				
ppmv, dry	<0.290	<0.290	<0.290	<0.290
pounds/hour	<0.028	<0.028	<0.028	<0.028

* "<" symbol denotes that a portion of the analysis resulted in a non-detectable result.

ppmv, dry = parts per million by volume, dry basis
 pounds/hour = pounds per hour
 pounds/year = pounds per year

**TABLE 4: SUMMARY OF ACROLEIN AND PENTANE EMISSIONS – REPRO
 OUTLET****

Run	1	3	4	5	Average*
Date	6/29/2017	6/29/2017	6/29/2017	6/29/2017	---
Time	10:20-11:30	14:15-15:25	16:05-17:15	17:45-18:55	---
Stack Gas Velocity (fps)	53.05	95.66	95.76	95.59	---
Stack Gas Moisture (%)	1.61	1.47	1.57	1.55	---
Volumetric Flow Rate (dscfm)	8,293	15,136	15,110	15,132	---
Acrolein					
ppmv, dry	<0.282	<0.282	<0.282	<0.282	<0.282
pounds/hour	<0.020	<0.037	<0.037	<0.037	<0.037
pounds/year	<136.7	<249.5	<249.1	<249.4	<249.3
Pentane					
ppmv, dry	<0.214	<0.214	<0.214	<0.214	<0.214
pounds/hour	<0.020	<0.036	<0.036	<0.036	<0.036

* Average is of runs 3, 4 and 5

** “<” symbol denotes that a portion of the analysis resulted in a non-detectable result.

ppmv, dry = parts per million by volume, dry basis
 pounds/hour = pounds per hour
 pounds/year = pounds per year

TABLE 5: SUMMARY OF TO-15 VOC EMISSIONS – IBC RETAIL OUTLET

Run	2	3	4	Average
Date	6/28/2017	6/28/2017	6/28/2017	---
Time	10:45-11:46	12:35-13:35	14:15-15:15	---
Stack Gas Velocity (fps)	54.04	53.10	54.11	---
Stack Gas Moisture (%)	0.30	1.01	1.07	---
Volumetric Flow Rate (dscfm)	8,743	8,501	8,623	---
Ethanol				
ppbv, dry	3,821	2,512	2,537	2,957
pounds/hour	0.239	0.153	0.157	0.183
Methyl Ethyl Ketone (2-Butanone)				
ppbv, dry	202	167	191	187
pounds/hour	0.020	0.016	0.018	0.018

ppbv, dry = parts per billion by volume, dry basis
 pounds/hour = pounds per hour

TABLE 6: SUMMARY OF TO-15 VOC EMISSIONS – REPRO OUTLET

Run	1	3	4	5	Average*
Date	6/29/2017	6/29/2017	6/29/2017	6/29/2017	---
Time	10:20-11:20	14:15-15:00	16:05-17:00	17:45-18:40	---
Stack Gas Velocity (fps)	53.05	95.66	95.76	95.59	---
Stack Gas Moisture (%)	1.61	1.47	1.57	1.55	---
Volumetric Flow Rate (dscfm)	8,293	15,136	15,110	15,132	---
Ethanol					
ppbv, dry	3,372	2,362	2,963	2,223	2,516
pounds/hour	0.200	0.256	0.321	0.241	0.273

* Average is of runs 3, 4 and 5
 ppbv, dry = parts per billion by volume, dry basis
 pounds/hour = pounds per hour

**TABLE 7: SUMMARY OF ALDEHYDE AND KETONE EMISSIONS – IBC RETAIL
 OUTLET***

Run	2	3	4	Average
Date	6/28/2017	6/28/2017	6/28/2017	---
Time	10:45-11:56	12:35-13:45	14:15-15:25	---
Stack Gas Velocity (fps)	54.04	53.10	54.11	---
Stack Gas Moisture (%)	0.30	1.01	1.07	---
Volumetric Flow Rate (dscfm)	8,743	8,501	8,623	---
Acetone				
micrograms (ug)	192	<193	<178	<188
pounds/hour	4.66E-03	<4.62E-03	<4.27E-03	<4.52E-03

* “<” symbol denotes that a portion of the analysis resulted in a non-detectable result.

pounds/hour = pounds per hour

**TABLE 8: SUMMARY OF ALDEHYDE AND KETONE EMISSIONS – REPRO
 OUTLET****

Run	1	3	4	5	Average*
Date	6/29/2017	6/29/2017	6/29/2017	6/29/2017	---
Time	10:20-11:30	14:15-15:25	16:05-17:15	17:45-18:55	---
Stack Gas Velocity (fps)	53.05	95.66	95.76	95.59	---
Stack Gas Moisture (%)	1.61	1.47	1.57	1.55	---
Volumetric Flow Rate (dscfm)	8,293	15,136	15,110	15,132	---
Formaldehyde					
micrograms (ug)	842	345	376	380	367
pounds/hour	2.05E-02	1.68E-02	1.82E-02	1.84E-02	1.78E-02
pounds/year	137.3	112.3	122.0	123.2	119.2
Acetaldehyde					
micrograms (ug)	1,616	598	795	655	683
pounds/hour	3.93E-02	2.91E-02	3.85E-02	3.17E-02	3.31E-02
pounds/year	263.2	194.6	257.9	212.4	221.6
Acetone					
micrograms (ug)	425	261	231	307	266
pounds/hour	1.03E-02	1.27E-02	1.12E-02	1.49E-02	1.29E-02
Propionaldehyde					
micrograms (ug)	359	153	170	<221	<181
pounds/hour	8.72E-03	7.43E-03	8.24E-03	<1.07E-02	<8.79E-03
Butyraldehyde					
micrograms (ug)	703	321	525	233	360
pounds/hour	1.71E-02	1.56E-02	2.54E-02	1.13E-02	1.74E-02
Isovaleraldehyde					
micrograms (ug)	<288	184	192	<221	<199
pounds/hour	<7.00E-03	8.94E-03	9.30E-03	<1.07E-02	<9.65E-03
Valeraldehyde					
micrograms (ug)	633	<149	<149	247	<182
pounds/hour	1.54E-02	<7.24E-03	<7.22E-03	1.20E-02	<8.81E-03
Hexanaldehyde					
micrograms (ug)	381	170	171	<224	<188
pounds/hour	9.26E-03	8.26E-03	8.29E-03	<1.08E-02	<9.13E-03

* Average is of runs 3, 4 and 5 pounds/hour = pounds per hour pounds/year = pounds per year

** "<" symbol denotes that a portion of the analysis resulted in a non-detectable result.

**TABLE 9: SUMMARY OF VOC EMISSIONS AND DESTRUCTION EFFICIENCY –
 REPRO INLET AND OUTLET**

Run	1	3	4	5	Average
Date	6/29/2017	6/29/2017	6/29/2017	6/29/2017	---
Time	10:20-11:30	14:15-15:27	16:05-17:18	17:45-18:55	---
REPRO INLET					
Stack Gas Velocity (fps)	66.93	63.66	66.51	66.28	---
Stack Gas Moisture (%)	3.76	4.44	4.57	3.61	---
Volumetric Flow Rate (dscfm)	7,833	7,298	7,588	7,627	---
Total Hydrocarbons (as Methane) [VOC]					
ppmv, dry	31.82	35.73	42.84	35.84	38.14
pounds/hour	0.622	0.651	0.812	0.683	0.715
REPRO OUTLET					
Stack Gas Velocity (fps)	53.05	95.66	95.76	95.59	---
Stack Gas Moisture (%)	1.61	1.47	1.57	1.55	---
Volumetric Flow Rate (dscfm)	8,293	15,136	15,110	15,132	---
Total Hydrocarbons (as Methane) [VOC]					
ppmv, dry	32.79	24.52	20.74	14.12	19.79
pounds/hour	0.679	0.927	0.783	0.534	0.748
VOC Removal Efficiency					
Percent (%), as Methane (from pounds/hour)	-9.1%	-42.3%	3.6%	21.9%	-5.6%

ppmv, dry = parts per million by volume, dry basis
 pounds/hour = pounds per hour

APPENDIX I:

ASTM D7036 ACCREDITATION CERTIFICATE



American Association for Laboratory Accreditation

Accredited Air Emission Testing Body

A2LA has accredited

MONTROSE AIR QUALITY SERVICES

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



Presented this 2nd day of February 2016

Senior Director of Quality and Communications
Certificate Number 3925.01
Valid to February 28, 2018

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

APPENDIX II:

EMISSIONS INVENTORY TEST PROTOCOL

July 10, 2017

Karl Monninger
KEMS LLC
368 Hollow Rd.
Skillman, New Jersey 08558
Phone No.: 609-309-5640

**Subject: Emissions Inventory Test Protocol; Internal Bubble Cooling (IBC) Retail and Reprocessing Processes
Aluf Plastics; Orangeburg, New York
MAQS-Easton Project No. 016-AQS-149228 – v1.3**

Dear Mr. Monninger:

Enclosed please find two copies of the emissions inventory test protocol for the proposed testing on the IBC Retail and Reprocessing processes at the **Aluf Plastics** facility in Orangeburg, NY.

MAQS-Easton looks forward to working with you during this informational project. Please feel free to contact me at 610-559-8776, ext. 11606 if there are any questions or comments.

Sincerely,



Tyson Houchin, QSTI
District Manager

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**EMISSIONS INVENTORY TEST PROTOCOL
FOR
EVALUATION OF THE IBC RETAIL AND REPROCESSING
PROCESSES**

**ALUF PLASTICS
ORANGEBURG, NEW YORK**

Prepared for:
KEMS LLC
368 Hollow Rd
Skillman, New Jersey 08558
Attn: Mr. Karl Monninger

Prepared by:
MAQS-EASTON
1350 Sullivan Trail, Suite A
Easton, PA 18040
Attn: Mr. Tyson Houchin

**MAQS-Easton Project No. 016-AQS-149228
(f.k.a Avogadro Environmental Corporation)**

July 10, 2017

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1.0 PROJECT OVERVIEW / BACKGROUND INFORMATION

1.1 INTRODUCTION

An emissions inventory test program (stack testing) will be performed on the Internal Bubble Cooling (IBC) Retail carbon adsorber outlet location and the Reprocessing (Repro) process carbon adsorber inlet and outlet locations at the Aluf Plastics (Aluf) facility in Orangeburg, New York. The purpose of this test program is to provide emissions information to aid in developing a response to the New York State Department of Environmental Conservation's (NYSDEC) request.

This protocol describes the sources, the sampling locations, the technical approach and test methods, and all other details pertaining to the compliance evaluation.

MAQS-EASTON (Montrose) has been retained by KEMS LLC to perform the emissions inventory testing for Aluf's IBC Retail and Repro processes. Montrose has prepared this test protocol and will perform the emissions inventory testing program in accordance with this document. This protocol describes the sources, the sampling locations, the technical approach and test methods, and all other details pertaining to the compliance evaluation.

1.2 PROGRAM RESPONSIBLE PARTIES

Client:

Aluf Plastics

2 Glenshaw Street
Orangeburg, NY 10962

Contact:

Mr. Anthony Lawson

Telephone: 845-365-2200 x 179

Fax: 845-365-2294

Email: Anthony.l@alufplastics.com

Consultant Firms:

WSP USA Corp.

200 Cottontail Lane
Somerset, New Jersey 08873

Contact:

Mr. Mark Foley

Telephone: 732-564-0888

Email: Mark.Foley@WSPGroup.com

KEMS LLC
368 Hollow Rd.
Skillman, New Jersey 08558

Mr. Karl Monninger
Telephone: 609-309-5640
Email: KMonninger@KEMS.us

Test Firm:

MAQS-Easton
1350 Sullivan Trail, Suite A
Easton, PA 18040

Contact:

Mr. Tyson Houchin
Telephone: 610.559.8776, ext. 11606
Fax: 610-559-8913
Email: thouchin@montrose-env.com

Laboratory Information:

Enthalpy Analytical, Inc.
800 Capitola Drive, Suite 1
Durham, NC 27713

Contact:

Ms. Ashley Miller
Telephone: 919.850.4392
Email: ashley.miller@enthalpy.com

1.3 HEALTH AND SAFETY INFORMATION

WSP and its subcontractors hold the health and safety of its employees and clients as the highest priority. WSP and its subcontractor personnel undergo safety training upon hire and periodically during their employment, with the goal of providing the individual with the knowledge and skills they need in order to work in accordance with applicable OSHA regulations and/or client safety requirements.

At Aluf Plastics, there are no specific air-quality related health and safety concerns, and Level D personal protective equipment (PPE) is appropriate. This includes steel-toe boots, safety glasses and hard hats.

2.0 SOURCE INFORMATION

2.1 FACILITY AND PROCESS DESCRIPTION

Aluf Plastics specializes in the making of plastic products, specifically bags for various clientele. Aluf Plastics utilizes two different types of processes to make their products. The first is an internal bubble cooling (IBC) operation that utilizes raw materials to produce their final product. The second is a reprocessing process that utilizes recycled materials to generate additional raw materials for input into the first product. The emissions from both process types are captured and then controlled by cyclones, HEPA filters, and carbon media prior to being emitted to atmosphere.

2.2 PROCESS DATA

During each test run, facility personnel will record any pertinent process or control equipment data for inclusion in the final test report. This data will help determine the operating conditions of the processes and control equipment during the testing.

3.0 SAMPLING LOCATIONS

Sample locations have been previously verified to conform to the measurement requirements of USEPA Method 1. Acceptable cyclonic flow conditions will be confirmed prior to testing using USEPA Method 1, Section 11.4 on the outlet locations. Table 1 presents the anticipated stack measurements and traverse points for the sampling locations listed. Actual stack measurements, number of traverse points, and location of traverse points will be re-evaluated in the field as part of the test program. Attachment 1 contains diagrams of the proposed sampling locations.

Please note the following issues associated with potential sampling locations for inlet (i.e. pre-emission control) ducts for these emission units:

- The inlet ductwork associated with IBC Retail does not have adequate straight runs of ductwork to meet EPA method 1 criteria. This location also does not have adequate sampling clearances due to surrounding equipment.
- The Repro Inlet duct is located at an angled orientation and the materials of construction are such that the stack can't support the source sampling equipment. Due to these issues, a superstructure surrounding the sample location would need to be constructed in order to provide safe access for the sampling equipment needed to perform isokinetic sampling. The costs associated with this construction make it cost prohibitive to sample [not sampling] at this location utilizing an isokinetic sampling approach. Also, due to the angled orientation, cyclonic flow will not be verified and laminar flow will be assumed during this test event.

Due to the issues associated with potential inlet sampling locations, some of the test methods included in this protocol cannot be performed at the inlets without significant modification of the standard USEPA test methods. These modifications will result in significant biases to the data that would result from the inlet testing bringing the validity

of the test results into question. Therefore, inlet testing (other than EPA Methods 18 and 25A testing at the Repro Inlet) is not included in this test program.

Please see Attachment 3 of this protocol (Aluf site plan) schematically illustrating the location of the five outlet stacks (please note that these proposed modifications included in this schematic have not been installed as of the date of this protocol).

TABLE 1: SUMMARY OF ANTICIPATED SAMPLING LOCATIONS

Sampling Locations	Stack ID	Distance from nearest flow disturbance		Proposed Number of Traverse Points
		Upstream EPA "A"	Downstream EPA "B"	
IBC Retail Outlet	23 inches	468 inches (20.35 duct diameters)	52 inches (2.26 duct diameters)	Twenty-four (twelve per port) maximum
Repro Inlet	20 inches	36 inches (1.80 duct diameters)	172 inches (8.60 duct diameters)	Twelve (Six per port) maximum
Repro Outlet	23 inches	468 inches (20.35 duct diameters)	52 inches (2.26 duct diameters)	Twenty-four (twelve per port) maximum

4.0 TEST PROGRAM AND METHODS

4.1 SUMMARY

The proposed emissions inventory test program will be performed for the parameters negotiated between Aluf Plastics representatives and NYSDEC personnel. Three, sixty (60) minute test runs will be performed at all of the outlet locations as well as the Repro Inlet location for THC / CH₄ / TNMHC. All test methods proposed for this compliance program conform to those promulgated by USEPA or those specified by the NYSDEC. Table 2 summarizes the pollutants and methodologies that will be utilized for this test program.

TABLE 2: TEST PARAMETERS AND METHODS

Sampling Locations	Parameters	USEPA Test Method	Duration (minutes)	Minimum Analytical Detection Limit	Reporting Units
Repro Inlet Outlet Duct	Velocity / Volumetric Flow Rate*	EPA Methods 1 & 2	---	---	acfm, scfm, dscfm
	Moisture	EPA Method 4 (wet bulb / dry bulb)	60 minutes	---	%
	Methane	EPA Method 18	60 minutes	~1.5 ppmv	ppmvw
	THC (Total Hydrocarbons)	EPA Method 25A	60 minutes	1.0 ppmv	ppmvw, lb/hr
	TNMHC (Total Non-Methane Hydrocarbons)	EPA Method 18 & 25A (via difference)	60 minutes	---	lb/hr
IBC Retail and Repro Outlet Stacks (two total)	Velocity / Volumetric Flow Rate*	USEPA Methods 1 & 2	---	---	acfm, scfm, dscfm
	Moisture	USEPA Method 4	60 minutes	---	%
	Various VOCs	EPA Method TO-15	~60 minutes	~100 ppbv	lb/hr for detectable compounds
	Aldehydes and Ketones (see Table 4 for analytes)	SW846 Method 0011	60 minutes	~1 ppbv	lb/hr for detectable compounds
	Acrolein (Bag) Pentane (Bag)	EPA Method 18	60 minutes	~1 ppbv	lb/hr
	Methane (Bag) (Repro only)	EPA Method 18	60 minutes	~1.5 ppmv	ppmvw
	THC (Repro only)	EPA Method 25A	60 minutes	1.0 ppmv	ppmvw, lb/hr
	TNMHC (Repro only)	EPA Method 18 & 25A (via difference)	60 minutes	---	lb/hr

* Since the processes emits essentially ambient air, per section 8.6 of EPA Method 2 a dry molecular weight of 29.0 will be utilized in the volumetric flow rate calculations.

acfm: actual cubic feet per minute

scfm: standard cubic feet per minute

ppbv: parts per billion

dscfm: dry standard cubic feet per minute

ppmv: parts per million by volume

lb/hr: pounds per hour

TABLE 3: TO-15 ANALYTE LIST

Method	Pollutant	CAS #
TO-15	Acetonitrile	75-05-8
	Acrylonitrile	107-13-1
	Allyl chloride	107-05-1
	Benzene	71-43-2
	Benzyl chloride	100-44-7
	Bromodichloromethane	75-27-4
	Bromoethene	593-60-2
	Bromoform	75-25-2
	Bromomethane	74-83-9
	1,3-Butadiene	106-99-0
	Carbon tetrachloride	56-23-5
	Chlorobenzene	108-90-7
	Chloroethane	75-00-3
	Chloroethene	75-01-4
	Chloroform	67-66-3
	Chloromethane	74-87-3
	2-Chlorotoluene	95-49-8
	Cyclohexane	110-82-7
	Dibromochloromethane	124-48-1
	1,2-Dibromoethane	106-93-4
	1,2-Dichlorobenzene	95-50-1
	1,3-Dichlorobenzene	541-73-1
	1,4-Dichlorobenzene	106-46-7
	1,1-Dichloroethane	75-34-3
	1,2-Dichloroethane	107-06-2
	1,1-Dichloroethene	75-35-4
	cis-1,2-Dichloroethylene	156-59-2
	trans-1,2-Dichloroethylene	156-60-5
	1,2-Dichloropropane	78-87-5
	cis-1,3-Dichloropropene	542-75-6
	trans-1,3-Dichloropropene	10061-02-6
	1,4-Dioxane	123-91-1
	Ethanol	64-17-5
Ethyl acetate	141-78-6	
Methyl Ethyl Ketone	78-93-3	

TABLE 4: ALDEHYDES AND KETONES ANALYTE LIST

Method	Pollutant	CAS #
SW846 Method 0011	2-Butenal - Crotonaldehyde	4170-30-3
	2-pentanone**	107-87-9
	3-heptanone**	106-35-4
	Acetaldehyde	75-07-0
	Acetone	67-64-1
	Benzaldehyde	100-52-7
	Benzaldehyde, 2-methyl**	529-20-4
	Benzaldehyde, 3□and/or 4□ methyl**	104-87-0
	Butanal - Butyraldehyde	123-72-8
	Butanal, 3-methyl**	590-86-3
	Butyraldehyde, 3□methyl (Butanal, 3□methyl; Isovaleraldehyde)	590-86-3
	Crotonaldehyde	4170-30-3
	Decanal - Isovaleraldehyde	112-31-2
	Formaldehyde	50-00-0
	Hexanaldehyde	66-25-1
	n-Butyraldehyde (Butanal)**	123-72-8
	Pentanal - Valeraldehyde	110-62-3
Propionaldehyde	123-38-6	
Valeraldehyde	110-62-3	

** These analytes are not a part of the standard analytical suite for this methodology. Therefore, standards for some of these compounds are not commercially available and analytic procedures will have to be developed / modified in the laboratory. An attempt will be made to generate the necessary standards, but the resultant analysis may be more qualitative rather than quantitative (i.e. concentrations will be estimated for these compounds rather than accurately determined).

4.2 VELOCITY AND VOLUMETRIC FLOW RATE MEASUREMENT

SUMMARY: The volumetric flow rate for each test run conducted on the ducts associated with the IBC outlet and Repro outlet will be determined in accordance with USEPA Methods 1 and 2. The moisture content of the applicable gas streams will be determined in conjunction with the SW846 Method 0011 and the OTM-29 tests as described in USEPA Method 4.

The volumetric flow rate for each test run conducted on the Repro Inlet duct will be determined in accordance with USEPA Methods 1 and 2. The moisture content of the applicable gas streams will be determined using the wet bulb / dry bulb technique as described in USEPA Method 4.

Since all of these test locations are comprised mostly of ambient air, a molecular weight of 29.0 will be utilized per USEPA Method 2.

CALIBRATION: Pitot tubes will be calibrated in accordance with USEPA Method 2. All new pitot tubes or those meeting the dimensions of USEPA Method 2, section 6.1, will be assigned a baseline coefficient of 0.84, per section 10.1 of this method. A pitot tube coefficient of 0.99 will be assigned to each standard pitot tube.

DETECTION LIMITS: The lower detection limit for the pitot tube/manometer measurement system is 0.01 inches of water for a standard water manometer and 0.005 inches of water for a low-flow water manometer. In lieu of the inclined water manometer, per USEPA Method 2, an electronic micro-manometer or equivalent may be used in conjunction with an S-type pitot tube if the average of velocity pressure readings is less than 0.05 inches water.

OPERATING RANGE: The standard water manometer has a range up to 10 inches with 0.01 increments. The low-flow water manometer has a range up to 0.25 inches with 0.005 increments. The electronic micro-manometer has a range up to 50 inches with 0.0001 increments.

PRINCIPLE OF OPERATION: The total stack or duct pressure will be a combination of the static and the velocity pressure. The velocity pressure, also referred to as the delta P, will be equal to the total pressure minus the static pressure.

A type S-pitot tube will be connected to a water manometer, the total pressure and the static pressure will be measured to yield the velocity pressure. The volumetric gas flow in a stack or duct will be equal to the area times the velocity.

4.3 VOC MEASUREMENT VIA TO-15

SUMMARY: Sampling of VOC will be conducted using an evacuated stainless steel canister according to Method TO-15. This method is designed for use in determining VOC in air. The sampling system consists of a subatmospheric canister, temperature indicator, timer, and a flow controller.

Emissions will be calculated for each compound detected at or above the analytical detection or reporting limit.

CALIBRATION: To verify correct sample flow, an evacuated canister is used in the sampling system. A flow controller equipped with a critical orifice is attached to the inlet line of the manifold, just in front of the filter. The critical orifice will be setup to ensure

that the proper sample volume is obtained over the course of the test duration.

PRINCIPLE OF OPERATION: In preparation for subatmospheric sample collection in a canister, the canister is evacuated to 0.05 mm Hg. When opened to the atmosphere containing the VOC to be sampled, the differential pressure causes the sample to flow into the canister.

SAMPLE RECOVERY: Canister samples will be transported from the test site to MAQS-Easton's office for transfer to Enthalpy Analytical for analysis by gas chromatography/mass spectrometry. During analysis, water vapor is reduced in the gas stream by a dryer, and the VOC are then concentrated by collection in a cryogenically-cooled trap. The cryogen is then removed, and the temperature of the trap is raised. The VOC originally collected in the trap are revolatilized, separated on a GC column, and then detected by one or more detectors for identification and quantitation.

4.4 ALDEHYDES, KETONES AND MOISTURE MEASUREMENT

SUMMARY: Emissions for acetaldehyde, ketones and those compounds listed in Table 4 will be measured in accordance with SW846-0011. Each test run will be sixty minutes in duration. Gaseous and particulate pollutants are isokinetically withdrawn from the stack and are collected in aqueous acidic 2,4-dinitrophenylhydrazine (DNPH). Aldehydes, ketones and other compounds in Table 4 present in the emissions react with the DNPH and are analyzed by high performance liquid chromatography (HPLC) according to Method 8315 or other appropriate technique at Enthalpy Analytical.

PREPARATION OF COLLECTION TRAIN: The entire sampling train is washed with detergent, rinsed with tap water, methanol and finally rinsed with methylene chloride and allowed to air dry.

Two hundred milliliters (ml) of purified DNPH reagent is placed in the first impinger, and 100 ml of reagent is placed in the second and third impingers. The fourth impinger is left empty. The fifth impinger is loaded with approximately 200 grams of silica gel. All of the impingers will be weighed before assembling and after the test to determine the stack gas moisture. Glass crossovers will be used to connect the impingers.

LEAK-CHECK PROCEDURES: A leak-check of the entire sample train will be performed prior to and after each test run. Leak checking is performed by plugging the nozzle and pulling a controlled vacuum in the sample train equal to or greater than the

highest sample vacuum obtained during the test run. If the leakage rate is measured to be less than 0.02 cubic feet per minute (cfm), then it is acceptable. If the leak rate is higher, the tester shall, at the discretion of the regulatory personnel, either record the leakage rate and correct the sample volume, or void the test run.

SAMPLE TRAIN OPERATION: A single train traversing the cross-sectional area of the stack shall be used for the entire test. The sampling system will consist of a heated quartz probe liner and a stainless steel or borosilicate glass nozzle using a S-type pitot tube. The impinger train will consist of five impingers immersed in an ice bath and connected in series with glass crossovers.

SAMPLE TRAIN OPERATION: During testing, a sample rate is maintained such that it is within 10 percent of the true isokinetic. First, the manometer is leveled and zeroed. The sample train is assembled and leak checked. The initial dry gas meter volume is recorded, and the sampling train is placed at the first sampling point in the stack. At this point, the stack gas velocity, the stack temperature and initial gas meter volume are all recorded in order to establish the proper sample rate.

At each subsequent traverse point in the stack, the following data are recorded:

- the temperature of the stack gas;
- the meter system temperature(s);
- the probe temperature;
- the exit impinger temperature;
- the sampling rate.

This procedure is repeated until the end of the test run. The impinger temperatures are maintained to allow proper condensation to occur. At no time will the last (exit) impinger temperature exceed 68°F. Accordingly, ice and/or cold water is added, as necessary.

SAMPLE RECOVERY: Sample recovery is performed on-site in the mobile lab or in a clean location protected from wind, particulate or debris. The probe nozzle and liner is washed and brushed with methylene chloride into Container #1 until the rinse shows no visible particles. The impingers are disassembled and wiped free of any water or ice, and the volume is weighed to the nearest 0.1 gram for moisture determination.

The contents of the first three impingers will be transferred to Container #1. The connecting glassware and the impingers will be rinsed three times with methylene

chloride and water into Container #1. When the rinse is completed, the jar will be sealed, labeled, and the fluid level will be marked for each test run.

A separate sample blank of DNPH and methylene chloride (Container #2) will be collected for analyses. Samples will be transported from the test site to MAQS-Easton's office for assignment of chain-of-custody and transfer to Enthalpy Analytical for analysis.

4.5 TOTAL HYDROCARBONS MEASUREMENT

SUMMARY: Stack concentrations of total hydrocarbons (THC as methane) will be continuously sampled and analyzed with MAQS - Easton's real-time monitoring system (RTMS).

SAMPLE SYSTEM DESCRIPTION: The RTMS is fully extractive, conforms to USEPA Method 25A and consists of a sampling interface system (SIS), an instrument control panel, and instruments. The SIS consists of a stainless steel probe with a calibration tee, a heated sampling line, a calibration gas line, a heated sample pump/filter and a thermoelectric sample conditioner.

The SIS will be used to transport sample gas through heated sample passages directly to the analytical instrument for continuous analysis. All sampling components leading to the analyzer will be heated to ≥ 110 °C (230 °F).

Average instrument output signals will be recorded every 15-30 seconds with a personal computer. Each data point logged will be date/time stamped.

The instruments, the operating ranges and calibration gas concentrations that will be used for this test program for THC are summarized in Table 5. All monitors conform to the design and performance criteria outlined in 40 CFR 60 Appendix A. USEPA Protocol methane gases will be used.

TABLE 5: REAL-TIME INSTRUMENTATION SUMMARY

Parameter	Analyzer	Operating Principle	Approximate Span	Calibration gases (% of span)
THC	JUM 3-500	Flame ionization-detection	100 ppmv	0, 25-35, 45-55, 80-90

CALIBRATION PROCEDURES: Table 6 summarizes the quality assurance procedures to which the RTMS will be subjected in the field.

Excluding the sample probe, calibration gas will be introduced to the entire sample system during the bias check and the calibration/linearity error check of the total hydrocarbon analyzer. Per USEPA Method 25A, this eliminates the need for a separate bias check for total hydrocarbons. Whenever possible, the upscale gas used for the bias check and the calibration/zero drift checks will be the one closest to the measured average stack concentration. A post-test zero/calibration drift check may also serve as the bias check for the next test run.

Instrument response to each calibration gas challenge will be documented on the data acquisition system. Final THC averages will not be adjusted for bias.

TABLE 6: REAL-TIME INSTRUMENTATION FIELD QA PROCEDURES SUMMARY

Check	Frequency	Limit
Instrument calibration/linearity error	<ul style="list-style-type: none"> • Beginning of each test day • Range change • After excessive calibration drift 	± 5% of gas value (THC)*
Calibration/zero drift	After each test run	± 3% of span (THC)*

* In cases where the calculated THC span is less than 15 ppmv as methane, an alternate criteria of ± 0.5 ppmv is proposed.

VOC DETERMINATION: Total non-methane hydrocarbons as methane (VOC) will be determined by subtracting methane (determined by USEPA Method 18) from total hydrocarbons. During each total hydrocarbon test run, a portion of the conditioned sample will be collected at a constant rate from the RTMS in a Tedlar gas bag. Each gas bag will then be analyzed via USEPA Method 18 by Enthalpy Analytical for methane. Methane analysis (samples and standards) will be conducted in triplicate.

If the gas bags are not analyzed within 48 hours of sampling time, one sample will be spiked for the recovery study after analysis. The spiked bag will be stored for the same period of time as the samples before analysis.

VOC emissions will be reported on a dry basis.

4.6 ACROLEIN, PENTANE, AND METHANE MEASUREMENT

SUMMARY: Emissions of acrolein, pentane, and methane will be measured in accordance with USEPA Method 18 (bag). Each test run will be one hour in duration. Emission samples from each location will be withdrawn from the stack using Tedlar gas bag. The VOC concentrations in the gas bags will be determined using a gas chromatography/flame ionization detection (GC/FID) or other required detector.

In order to report mass-emissions, volumetric flow will be determined as part of a concurrent isokinetic sampling.

PREPARATION OF COLLECTION TRAIN: The Tedlar bags will be nitrogen purged and leak checked prior to use.

SAMPLE TRAIN OPERATION: The Tedlar bag sampling system will consist of a Teflon probe and Teflon tubing to connect the components. The sorbent tubes will be vertically orientated.

The Teflon sample probe will be connected to a lung sampler, in which a Tedlar bag with attached Teflon tubing is placed in an air-tight chamber with the tubing protruding from the chamber. The sealed chamber will then be evacuated via a pump, causing the bag to expand which draws the sample from the stack and into the bag. The lung sampler will be connected to a VOST type metering system.

A pre-sampling leak check from the probe tip to the pump outlet will be performed by closing off the inlet to the probe and observing the leak rate. The leak rate will be less

than two percent of the sampling rate of 0.5 liter per minute (lpm) or <0.01 lpm.

During testing, the pump flow rate will be set and maintained at approximately 0.5 lpm throughout the duration of the one-hour test run. At each data point, the following will be recorded:

- dry gas meter volume
- vacuum
- meter pressure
- rotameter flow rate
- metering system temperature

Following each test run, a post-test leak check will be performed on the sampling train. The leak rate will be less than two percent of the sampling rate of 0.5 lpm or <0.01 lpm. If the leak rate is higher, the run will be voided.

SAMPLE RECOVERY: Sample recovery will be performed on-site in one of MAQS - Easton's mobile laboratories or in a clean location protected from wind, particulate or debris.

ANALYSIS: Tedlar gas bag and sorbent tube samples will be transferred from the test site to the laboratory (Enthalpy Analytical) for analysis using GC/FID, or other approved approach in accordance with USEPA Method 18.

LABORATORY SPIKES:

Bag Sampling (except for methane): After the completion of analysis, one Tedlar gas bag sample from each source will be spiked with a known mixture of the target pollutant. Prior to analysis, the spiked sample bag will be stored for the same period of time as the samples collected in the field. The percent recovery of the spike will be reported in the final laboratory report.

DATA ANALYSIS AND CALCULATIONS: Data analysis and calculations will be performed per Method 18, Sections 12.7 – 12.9.

5.0 QUALITY ASSURANCE / QUALITY CONTROL INFORMATION

All sampling equipment and instrumentation to be used for this test program are calibrated per the applicable test method. Copies of all pre-test and post-test calibration data will be included in the final test report. The information presented below addresses quality assurance items not mentioned in the sections above. Additional calibration information may include but is not limited to the following:

- **Dry Gas Meters:** Dry gas meters are calibrated prior to use in accordance with USEPA Method 5, section 10.3 using a dry gas meter as described in section 16.1. Dry gas meter calibrations will be verified in the field in accordance with Alternate Method 009, unless data is not available, then post-test calibration checks will be performed as per section 10.3.2 of USEPA Method 5.
- **Pitot Tubes/Probes:** Pitot tubes and probes are calibrated in accordance with USEPA Method 2. All new pitot tubes/probes or those meeting the dimensions of USEPA Method 2, Section 6.1, are assigned a baseline coefficient of 0.84, per Section 10.1 of this method.
- **Thermocouples:** Stack temperature (pitot) thermocouple calibrations are checked after each field use in accordance USEPA Alternative Method 2 (ALT-011) by comparing the thermocouple to an ASTM mercury-in-glass thermometer at a single, convenient temperature. The thermocouple reading must agree within $\pm 2^{\circ}$ F of the thermometer reading. Stack temperature thermocouple measurement system continuity will be checked in the field prior to sampling in accordance with ALT-011 by observing that the temperature reading changes as expected upon insertion or withdrawal of the thermocouple from the stack.
- **Nozzles:** Copies of calibration data for all glass and/or stainless steel nozzles used during the test program will be included in the final report.
- **Method 4 Daily Balance Audit:** Once daily, the balance used for Method 4 impinger weight measurements will be audited with an NIST traceable weight between 500 grams and one kilogram.
- **Response Time Check:** Per USEPA Method 25A, a response time check will be conducted on each THC analyzer measurement systems for the zero gas and the span gas prior to and after each test run.

6.0 TEST REPORT

The raw field data will be combined into spreadsheets to calculate the applicable test results. All field data sheets, emissions calculation spreadsheets, analytical data, calibration data and analyzer data summaries will be included in the final report. Test results will be presented in the reporting units as listed in Table 2.

Montrose will issue the emissions inventory test report within 60 days of the completion of testing. The final report will be signed by the both the composer and reviewer. It will document all results of the testing program, and it will include all of the support data to independently calculate the test results. The results section will present emissions and summarize the results. Other than the title and certification pages, the main components of the report will be as follows:

1. Introduction, which includes an overview and a summary of purpose and scope;
2. A summary and discussion of results, as well as a summary of test dates and times;
3. Summary of sampling locations;
4. Sampling / analysis procedures as well as any departures from USEPA test methods;
5. Appendices.

The appendices may include but are not limited to raw field data, notes, process/production data, laboratory reports and chains of custody, calibration certificates, results summaries, calculations and spreadsheets, quality assurance data, diagrams, cyclonic flow data and a copy of the approved test protocol and related correspondence.

Protocol prepared by:

Protocol reviewed by:



Tyson Houchin, QSTI
District Manager



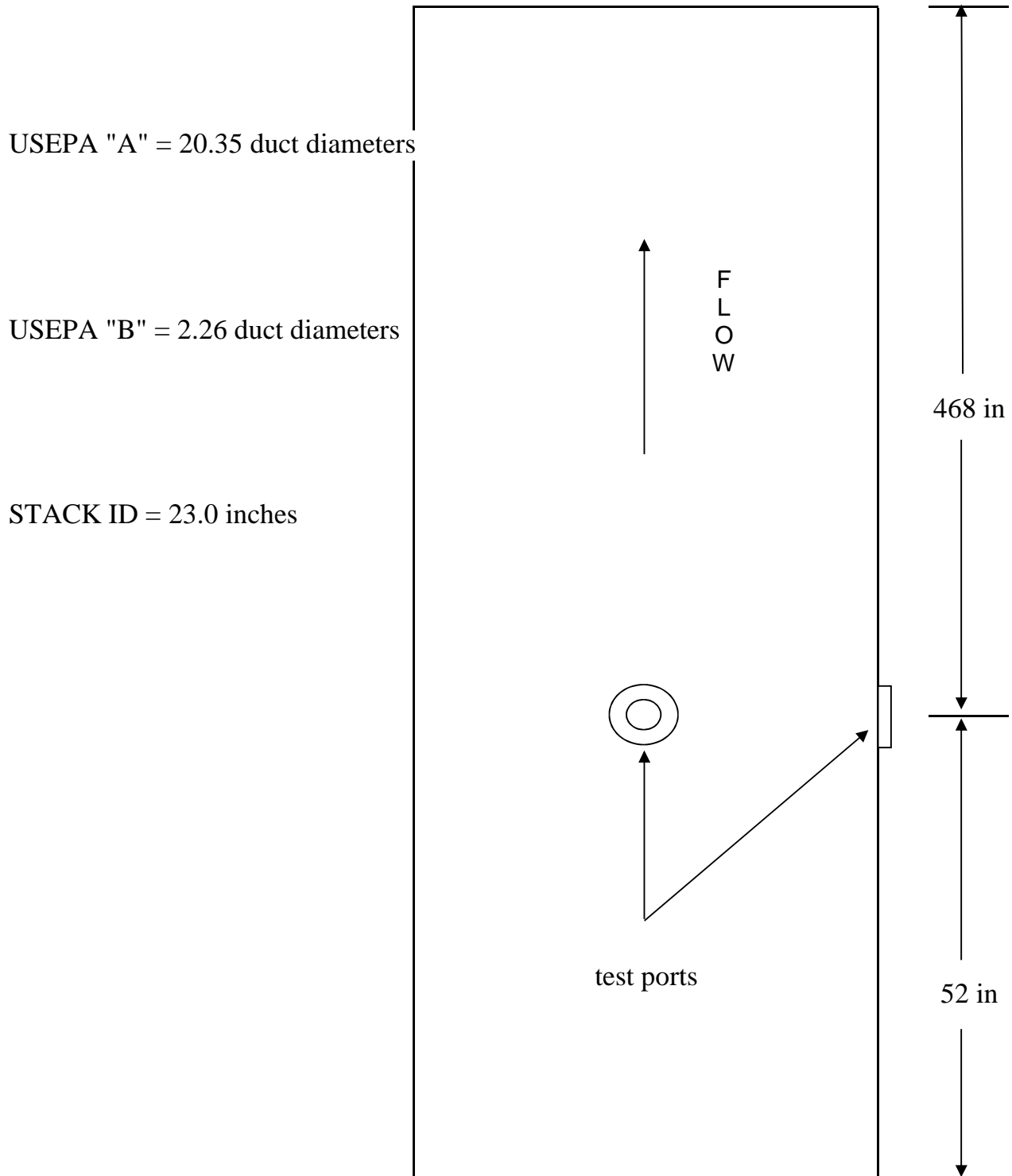
Thomas Weber, QSTI
Client Project Manager

F:\Company\KEMS, LLC\Jobs\ABE-16-0098A Aluf Plastics TO-15 TO-3 Sampling\ABE-16-0098A Aluf Plastics Test Protocol.doc

ATTACHMENT 1:

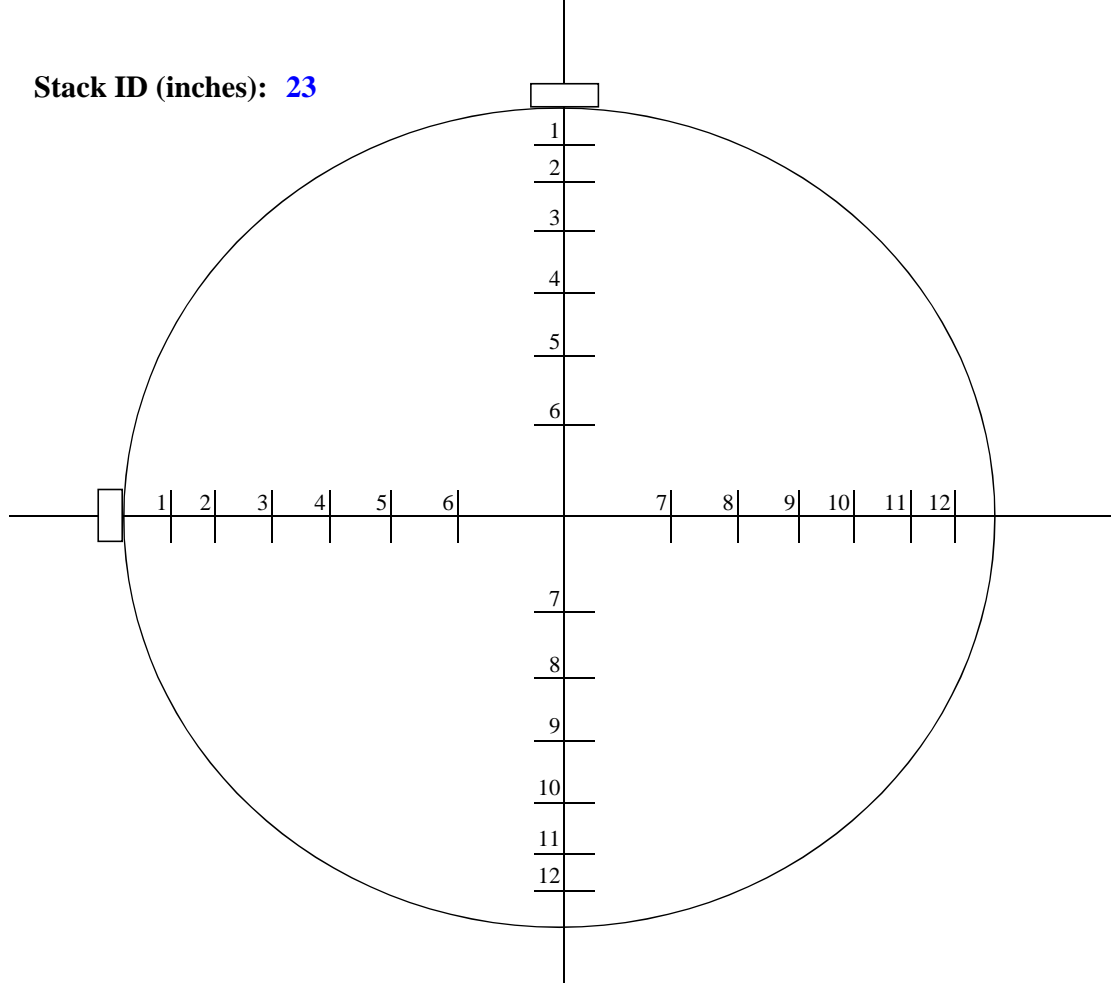
SAMPLE LOCATION SCHEMATICS

Aluf Plastics (016-AQS-149228)
Orangeburg, NY
IBC Retail Outlet



Not drawn to scale

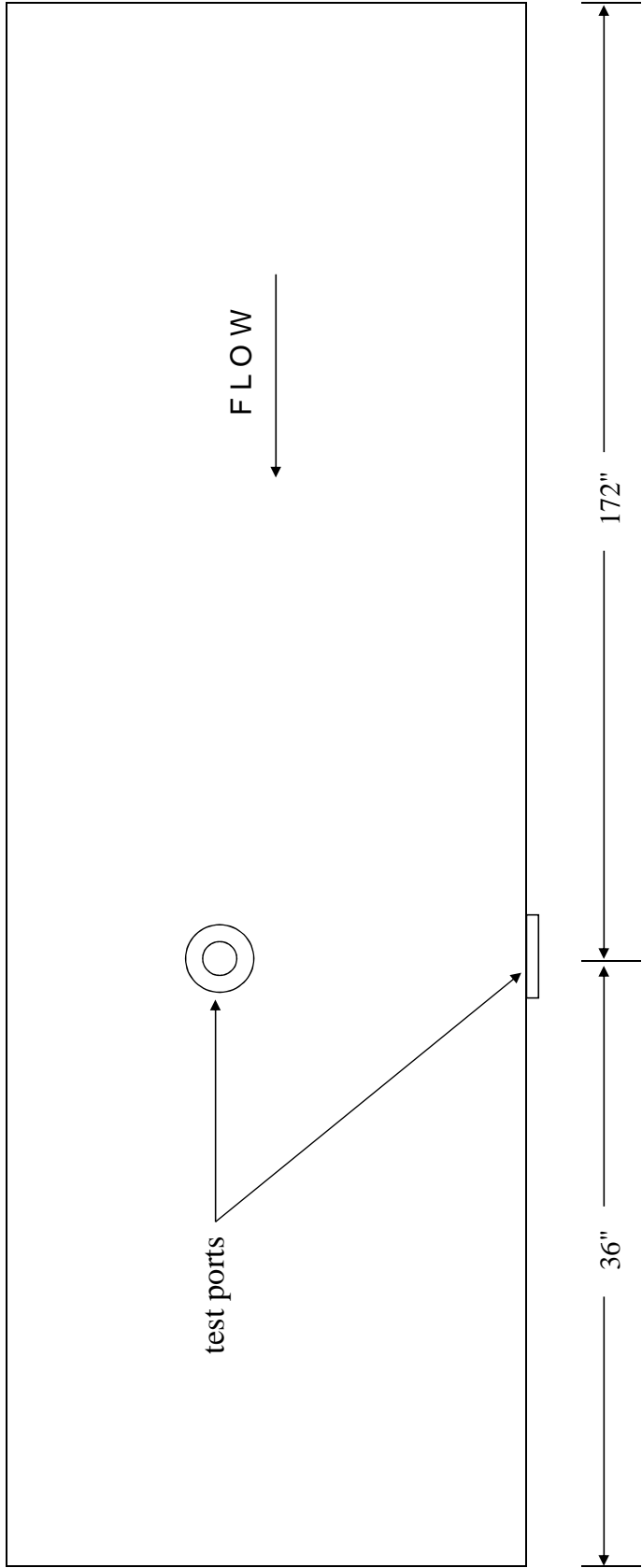
Location of Traverse Points
Aluf Plastics (016-AQS-149228)
IBC Retail Outlet



Drawings not to scale.

Traverse Point	Percent of Stack ID	Distance from Stack Wall (inches)
1	2.1%	2/4
2	6.7%	1 2/4
3	11.8%	2 3/4
4	17.7%	4
5	25.0%	5 3/4
6	35.6%	8 1/4
7	64.4%	14 3/4
8	75.0%	17 1/4
9	82.3%	19
10	88.2%	20 1/4
11	93.3%	21 2/4
12	97.9%	22 2/4

Aluf Plastics (016-AQS-149228)
Orangeburg, NY
Repro Inlet



USEPA "A" = 1.80 duct diameters

USEPA "B" = 8.60 duct diameters

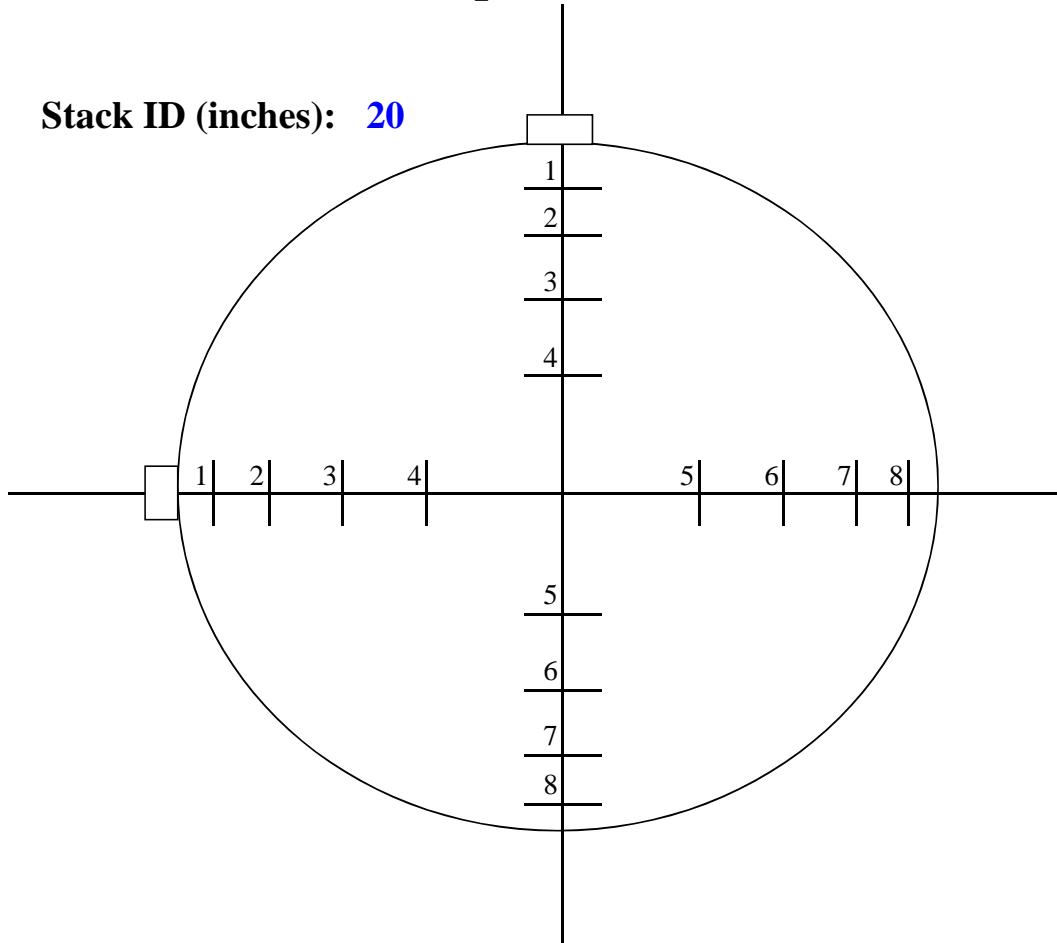
STACK ID = 20 inches

Not drawn to scale

Aluf Plastics (016-AQS-149228)

Orangeburg, NY

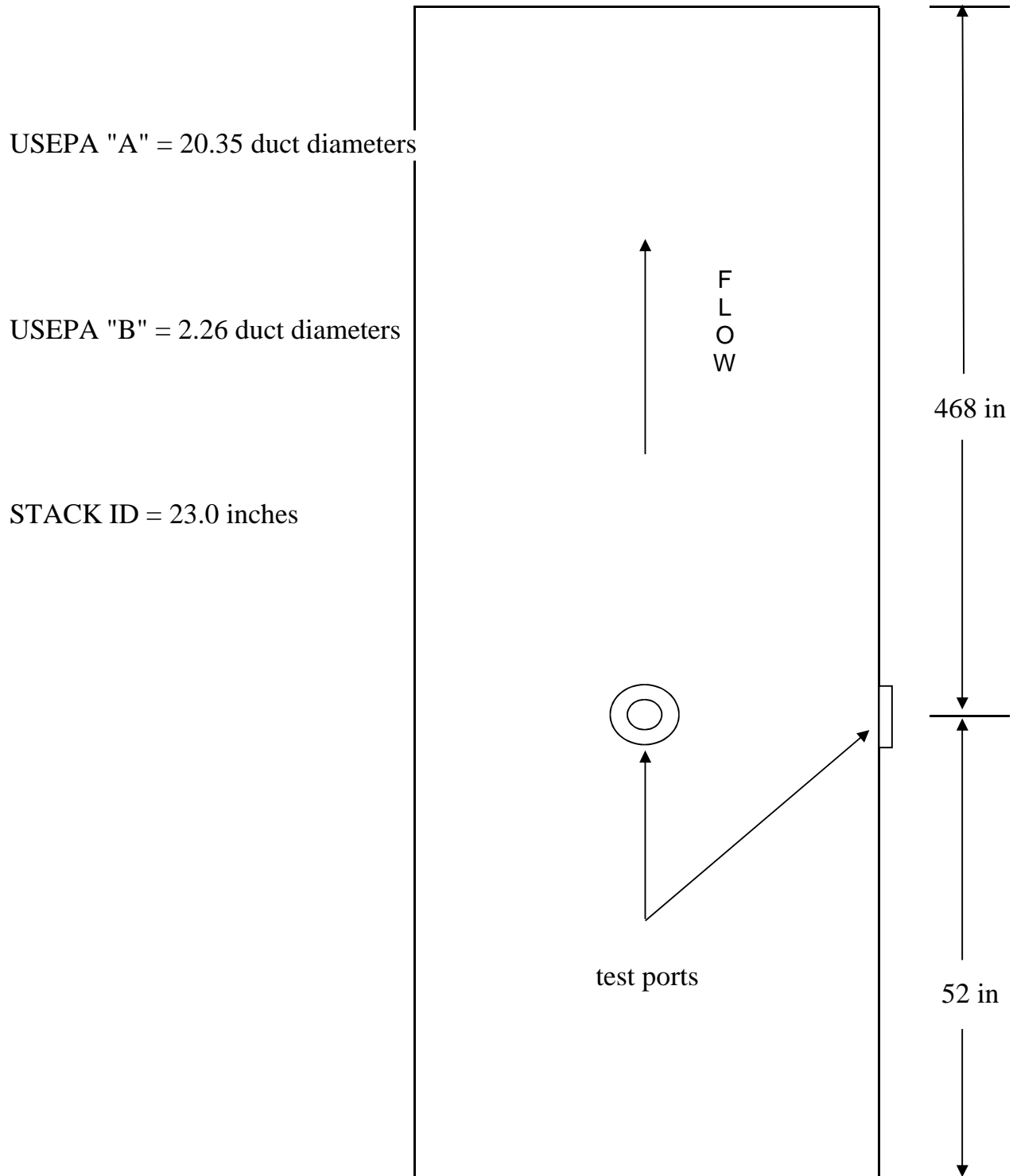
Repro Inlet



Drawings not to scale.

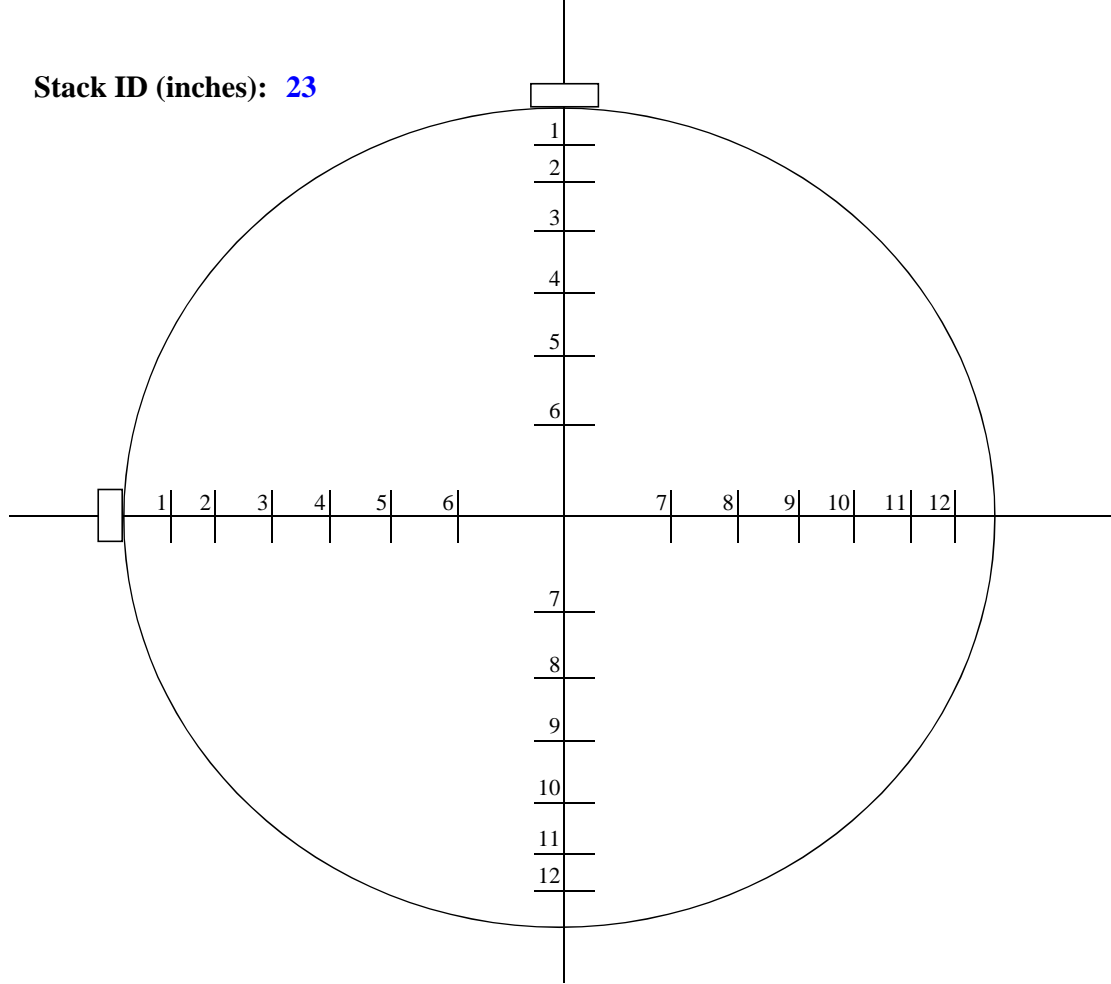
Traverse Point	Percent of Stack ID	Distance from Stack Wall (inches)
1	3.2%	2/4
2	10.5%	2
3	19.4%	3 3/4
4	32.3%	6 1/4
5	67.7%	13 1/4
6	80.6%	15 3/4
7	89.5%	17 2/4
8	96.8%	19

Aluf Plastics (016-AQS-149228)
Orangeburg, NY
Repro Outlet



Not drawn to scale

Location of Traverse Points
Aluf Plastics (016-AQS-149228)
Repro Outlet



Drawings not to scale.

Traverse Point	Percent of Stack ID	Distance from Stack Wall (inches)
1	2.1%	2/4
2	6.7%	1 2/4
3	11.8%	2 3/4
4	17.7%	4
5	25.0%	5 3/4
6	35.6%	8 1/4
7	64.4%	14 3/4
8	75.0%	17 1/4
9	82.3%	19
10	88.2%	20 1/4
11	93.3%	21 2/4
12	97.9%	22 2/4

ATTACHMENT 2:

ADDITIONAL COMPOUNDS FROM NYSDEC

(Mr. Syed Mehdi dated April 3, 2017)

List of Odorous Compounds:

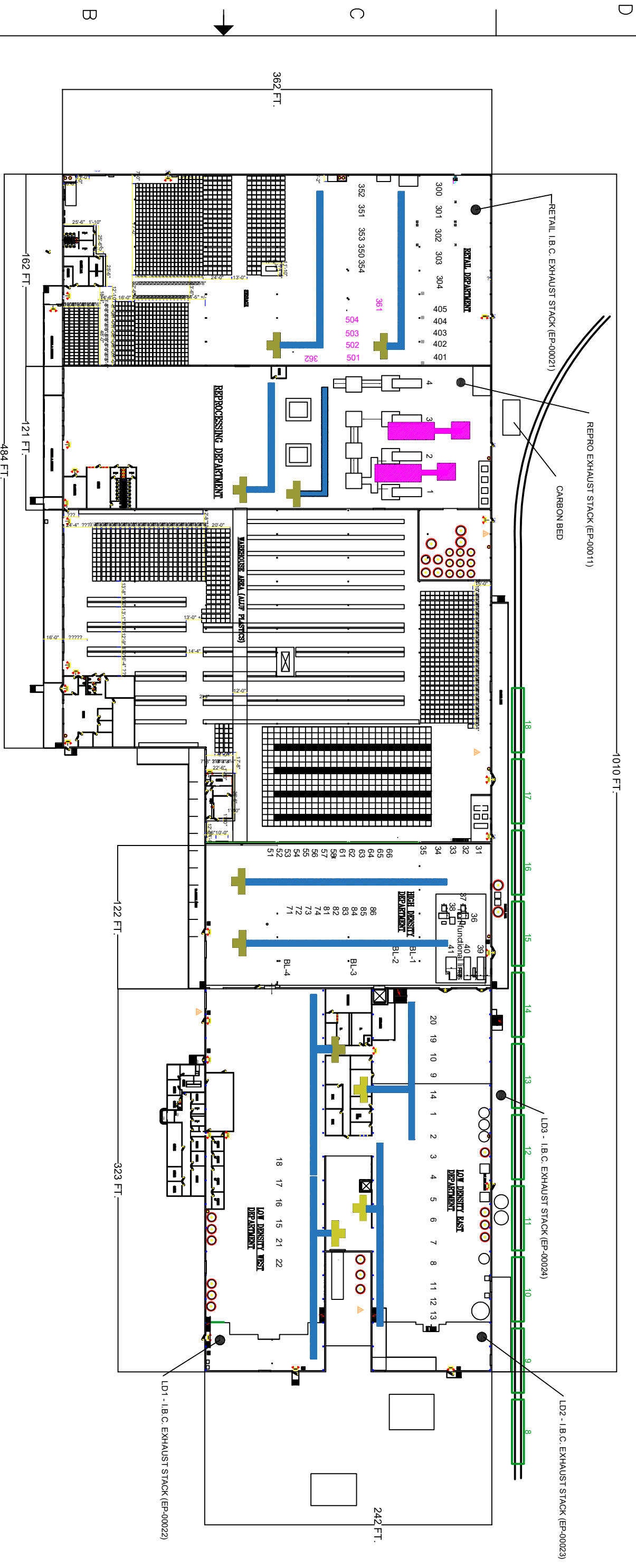
CAS #	Chemical
4170-30-3	2-Butenal
75-07-0	Acetaldehyde
100-52-7	Benzaldehyde
529-20-4	Benzaldehyde, 2-methyl
620-23-5	Benzaldehyde, 3-methyl
104-87-0	Benzaldehyde, 4-methyl
123-72-8	Butanal
590-86-3	Butanal, 3-methyl
50-00-0	Formaldehyde
66-25-1	Hexanal
110-62-3	Pentanal
123-38-6	Propanal
124-13-0	Octanal
124-19-6	Nonanal
2463-53-8	2-Nonenal
39770-04-2	8-Nonenal
112-31-2	Decanal
589-38-8	3-hexanone
107-87-9	2-pentanone
106-35-4	3-heptanone

ATTACHMENT 3:

ALUF PLASTICS BUILDING VENTILATION SCHEMATIC

(Proposed Modifications Have Yet To Be Installed)

ZONE	REV	DESCRIPTION	REVISIONS	DATE	APPROVED



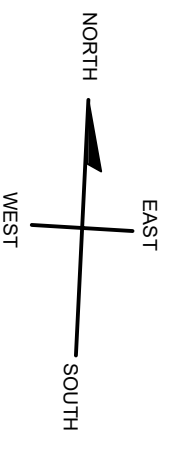
- LEGEND**
- 300 = EXTRUSION LINE OR BAG LINE I.D. NUMBER
 - [Pink Box] = BUILDING FILTERED EXHAUST
 - [Green Box] = BUILDING FILTERED MAKE-UP AIR HANDLER
 - [Blue Box] = BUILDING MAKE-UP AIR DUCT
 - [Magenta Box] = BUILDING EXHAUST AIR DUCT
 - [Black Circle] = PROCESS FILTERED EXHAUST STACK LOCATION

BUILDING DIMENSIONS:

TOTAL FLOOR SPACE = 377,760 SQ. FT.
 MAIN FLOOR SPACE = 300,720 SQ. FT.
 BASEMENT FLOOR SPACE = 77,040 SQ. FT.

INTERIOR VOLUMES:

RETAIL ROOM = 1,440,000 CU. FT.
 REPROCESSING ROOM = 1,080,000 CU. FT.
 MAIN WAREHOUSE = 2,296,000 CU. FT.
 HIGH DENSITY ROOM = 726,000 CU. FT.
 LOW DENSITY ROOMS = 2,688,000 CU. FT.
 BASEMENT = 770,400 CU. FT.



BUILDING VENTILATION PROPOSAL



2 Genshaw Street
 Orangeburg, NY 10962
 1-(845) 365-2200
 www.alufplastics.com

DRAWN BY: A. LAWSON		SCALE: 1" = 12'-0"		SHEET: 0	
DATE: 02/14/2017		DATE: 02/14/2017		DATE: 02/14/2017	

****This is the last page of the protocol****

APPENDIX III:

FIELD DATA SHEETS

IBC RETAIL

SAMPLE LOCATION PROFILE

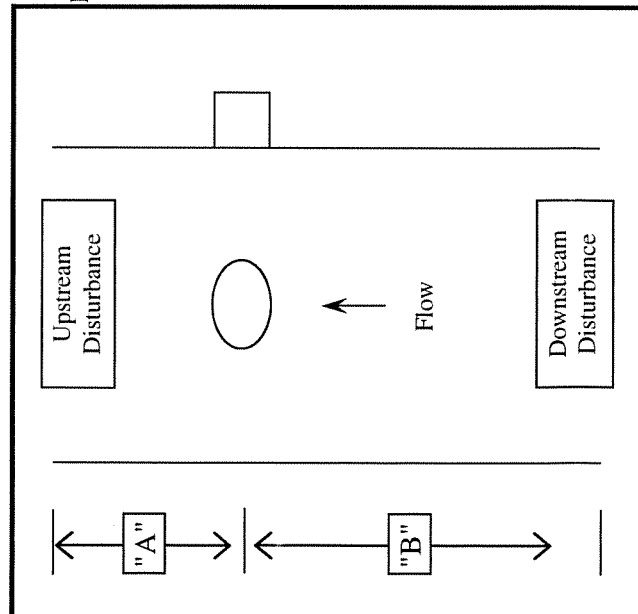
Issued by: District Manager - Effective: 11/01/2016

Project No. 016-MAQS-149228 Project Name Keys at Ash Unit/Loc I-BC Retail Source Outlet + Date 6/27/17
 Stack ID (circular stack) 23" inches
 Duct Dimensions (non-circular) x inches
 Equivalent Diameter (rectangular)¹ inches
 Stack Cross Sectional Area² sq.ft. 2.8852
 Distance "A" (inches) 468
 Distance "A" (Duct Diam) 20.35
 Distance "B" (inches) 52"
 Distance "B" (Duct Diam) 2.26
 Number of Test Ports 2
 Length of Test Port 6"
 Diameter of Test Port 3.75"
 # of Traverse Points/ Port (isokinetic) 24
 # of Traverse Points/ Port (non-iso) 10
 Distance from Barometer to Ports: **+** or - 0 ft
 Distance from Barometer to Meter Box: **+** or - 0 ft

Duct Measured By: SJM
 Measurement Verified By: ZMA
 Horizontal or Vertical? Horizontal to Vertical
 Circ, Rect, Elliptical? Circular
 Downstream Disturbance Description Roof
 Upstream Disturbance Description Circular

CALCULATIONS:

¹ Equivalent Diameter (Rect. Ducts) = $(2LW / (L+W))$
² CSA: Circ. = $((ID/24)^2 \times \pi)$
 Rect. = $(LW/144)$
 Ellip. = $((D1 \times D2 \times 0.7854) / 144)$



Traverse Point #	(iso) Traverse Point Location, Inches		(non-iso) Traverse Point Location, Inches		Cyclonic Angle θ°			Equipment Considerations For Future Programs
	with ext.	without ext.	with ext.	without ext.	A	B	E	
1	6.50	0.50	6.75	0.75	+7	0	0	+2
2	7.50	1.50	8.50	2.50	+7	-4	+2	+0
3	8.75	2.75	10.50	4.50	+4	-2	+4	+4
4	10.00	4.00	13.50	7.50	0	-4	0	-2
5	11.75	5.75	21.50	15.50	-4	+4	-2	0
6	14.25	8.25	24.50	18.50	-6	+0	-4	0
7	20.75	14.75	26.50	20.50	-8	+4	-4	-4
8	23.25	17.25	28.25	22.25	0	+4	-6	-2
9	25.00	19.00					0	+2
10	26.25	20.25					+2	0
11	27.50	21.50					0	+2
12	28.50	22.50					+2	+4

List equipment needs; pitot, umbilical, extension cord, sample line lengths, unistrut, additional trailer power cable etc. :

Issued by: District Manager - Effective: 11/01/2016

VOID

Manometer ID # MB 13
 Probe / Pitot # PR 4-3
 Filter / Trap # N/A
 Filter Tare N/A grams
 (circle one)
 Aux = M23 Condensor / M202 exit / N/A

Isokinetic Sample Data Sheet

Parameter SWB76-0011 Meter Box # MB 13
 Start Time 0935 Delta Y @ 0.995
 Stop Time Delta H @ 1.832
 Nozzle Diam. 0.187 inches MB Pump # 14
 Nozzle # 23 Stack ID
 Nozzle Kit # N/A #2 K Factor 1.23

Project No. 016-405-14920B
 Proj. Name KEMS/Aluf
 Date 6/28/17
 Site Loc. Orangeburg, NY
 Unit/Loc. IBC Retail
 RUN # 1

Port #	Train Leak Check	
	CFM@	VAC
	PRE 6.667	@ 14"
	POST @	@
	PRE @	@
	POST @	@
	PRE @	@
	POST @	@
	PRE @	@
	POST @	@
	PRE @	@
	POST @	@

Traverse Point	Real Time	Sample Time	DGM Volume (cfm)	Delta P	Delta H	Vacuum ("Hg)	Probe	Stack	Temperatures (°F)		Filter	Imp. Exit (<68F)	Aux
									Meter Box In	Out			
A 1	0935	0	389.670	0.92	1.13	1.0"	250	102	N/A	88	N/A	66	N/A
A 2		2.5	340.7	0.93	1.14	1.0"	251	101		88		65	
A 3		5	392.2	1.00	1.23	1.0"	256	101		88		65	
A 4		7.5	393.7	1.00	1.23	1.0"	249	101		88		64	
A 5		10	395.3	0.93	1.14	1.0"	248	101		89		64	
A 6		12.5	396.9	0.84	1.03	1.0"	249	101		90		63	
A 7		15	398.3	0.82	1.01	1.0"	248	101		90		67	
A 8		17.5	399.8	0.85	1.05	1.0"	249	101		91		64	
A 9		20	401.0	0.85	1.05	1.0"	249	101		91		65	
A 10		22.5	402.4	0.77	0.91	1.0"	248	107		92		63	
A 11		25	403.8	0.59	0.73	1.0"	247	100		93		61	
A 12		27.5	405.0	0.53	0.65	1.0"	249	106		93		60	
B 1	*1005	30	406.1										
B 2		32.5											
B 3		35											
B 4		37.5											
B 5		40											
B 6		42.5											
B 7		45											
B 8		47.5											
B 9		50											
B 10		52.5											
B 11		55											
B 12		57.5											
		60											

#	Moisture	
	Initial	Final
1	885.9	
2	716.4	
3	784.8	
4	654.6	
5	918.5	
6		
7		
8		
9		
T		

Pitot Leak Check PRE POST

Balance ID ED-15

► IMPINGERS ICED?

Notes: #10A Change: 1005-

Isokinetic Sample Data Sheet

Project No. 10-A-425-149 ZL8 Parameter SW876-0011 Meter Box # MBS 13
 Proj. Name KEMS/ALC Start Time 1045 Probe / Pitot # PR 4-3
 Date 6/28/14 Stop Time 1156 Filter / Trap # N/A
 Site Loc. Orangeburg, NY Nozzle Diam. 0.2281 inches $\frac{0.2281}{16}$ Filter Tare N/A grams
 Unit/Loc. ISC Retail Outlet Nozzle # D008 Stack ID 23
 RUN # 2 Nozzle Kit # NV42 K Factor 2.45 (circle one)
 Aux = M23 Condensor / M202 exit / N/A

Port #	Train Leak Check	
	CFM@	VAC
	PRE 0.001 @ 13"	
	POST 0.001 @ 4"	
	PRE @	
	POST @	
	PRE @	
	POST @	
	PRE @	
	POST @	
	PRE @	
	POST @	
	PRE @	
	POST @	

Traverse Point	Real Time	Sample Time	DGM Volume (cfm)	Delta P	Delta H	Vacuum ("Hg)	Probe	Stack	Temperatures (°F)		Imp. Exit (<68F)	Aux
									In	Out		
A 1	1045	0	406.231	0.96	2.33	2.0"	248	103	N/A	98	65	N/A
2		2.5	407.9	0.77	2.38	2.0"	250	103		98	64	
3		5	410.7	1.00	2.45	2.0"	254	103		99	62	
4		7.5	412.9	0.98	2.40	2.0"	249	104		99	62	
5		10	415.2	0.93	2.28	2.0"	250	104		100	60	
6		12.5	417.2	0.91	2.23	2.0"	246	104		100	59	
7		15	419.5	0.87	2.13	2.0"	247	104		100	58	
8		17.5	421.5	0.90	2.21	2.0"	248	104		100	58	
9		20	423.7	0.89	2.18	2.0"	245	104		101	58	
10		22.5	425.8	0.75	1.84	2.0"	247	104		101	58	
11		25	428.2	0.73	1.79	2.0"	248	104		101	58	
12		27.5	430.0	0.60	1.47	2.0"	249	104		101	59	
1	* 1115	30	431.9	0.99	2.43	2.0"	251	105		102	62	
2		32.5	433.9	1.00	2.45	2.0"	248	105		102	57	
3		35	436.2	0.99	2.43	2.0"	245	105		102	54	
4		37.5	438.4	0.99	2.43	2.0"	244	105		102	55	
5		40	440.7	1.00	2.45	2.0"	244	105		102	56	
6		42.5	442.8	0.85	2.28	2.0"	245	105		102	56	
7		45	445.0	0.85	2.08	2.0"	248	105		102	56	
8		47.5	447.0	0.83	2.03	2.0"	249	104		102	57	
9		50	449.0	0.84	2.06	2.0"	252	104		102	58	
10		52.5	451.0	0.73	1.79	1.5"	250	104		103	59	
11		55	453.0	0.70	1.72	1.5"	247	104		103	60	
12		57.5	455.0	0.68	1.67	1.5"	245	105		103	61	
		60	456.825									

#	Moisture		Diff.
	Initial	Final	
1	867.1	862.5	-4.6
2	792.0	792.7	0.7
3	761.5	759.4	-2.1
4	609.8	610.0	0.2
5	960.0	968.8	8.8
6			
7			
8			
9			
T			3.0

Balance ID EB-15
 ▶ IMPINGERS ICED?

MAQS - Easton
 1350 Sullivan Trail, Suite A, Easton, PA 18040

Notes: First Change 1115 - 1126

Isokinetic Sample Data Sheet

Project No. 016-405-149228 Parameter SWB46-0011 Meter Box # M3 13
 Proj. Name Kens/Alaf Start Time 1235 Delta Y @ 0995 Probe / Pitot # PR 4-2
 Date 6/28/14 Stop Time 1345 Delta H @ 1.832 Filter / Trap # N/A
 Site Loc. Orangeburg, NY Nozzle Diam. 0.2281 inches MB Pump # 14 Filter Type N/A grams
 Unit/Loc. ESC Petrol Outlet Nozzle # 000B Stack ID 23 (circle one)
 RUN # 3 Nozzle Kit # NV#2 K Factor 2.45 Aux = M23 Condensor / M202 exit (N/A)

Traverse Point	Real Time	Sample Time	DGM Volume (cfm)	Delta P	Delta H	Vacuum (Hg)	Probe	Stack	Temperatures (F)		Filter	Imp. Exit (<68F)	Aux
									Meter Box In	Meter Box Out			
A1	1235	0	456.95	0.75	1.84	1.5"	240	106	N/A	100	N/A	67	N/A
2		25	459.0	6.77	1.89	1.8"	242	107		100		66	
3		5	461.0	0.96	2.35	1.5"	242	107		100		66	
4		75	463.3	1.00	2.45	1.5"	241	106		100		65	
5		10	465.4	0.99	2.43	1.5"	240	106		100		65	
6		125	467.6	0.90	2.21	1.5"	240	106		100		59	
7		15	469.9	0.82	2.01	1.5"	241	106		100		55	
8		175	472.0	0.80	1.96	1.5"	240	106		100		55	
9		20	474.0	0.80	1.96	1.5"	242	106		100		54	
10		225	476.0	0.77	1.89	1.5"	241	106		100		53	
11		25	477.9	0.76	1.86	1.5"	243	106		100		53	
12		275	479.8	0.70	1.72	1.0"	242	106		100		52	
1	1305	30	481.7	0.93	2.28	1.5"	250	106		99		60	
2		325	483.9	0.94	2.30	1.5"	248	106		100		55	
3		35	486.1	0.97	2.38	1.5"	250	107		100		48	
4		375	488.3	0.98	2.40	1.5"	249	107		100		48	
5		40	490.5	0.91	2.23	1.5"	248	107		99		48	
6		425	492.7	0.86	2.11	1.5"	249	106		99		51	
7		45	494.8	0.81	1.98	1.0"	249	106		99		52	
8		475	496.8	0.81	1.96	1.0"	249	106		98		52	
9		50	498.8	0.80	1.96	1.0"	245	106		98		51	
10		525	500.7	0.75	1.84	1.0"	246	106		98		51	
11		55	502.8	0.73	1.79	1.0"	244	106		98		52	
12		575	504.7	0.63	1.57	1.0"	245	106		98		52	
		60	506.592	-	-	-	-	-		-		-	

Port #	Train Leak Check	
	CFM@	VAC
	PRE 0.002 @ 14"	
	POST 0.002 @ 4"	
	PRE @	
	POST @	
	PRE @	
	POST @	
	PRE @	
	POST @	
	PRE @	
	POST @	
	PRE @	
	POST @	

#	Moisture		
	Initial	Final	
1	869.0	866.6	-2.4
2	761.3	764.5	3.2
3	787.6	787.3	-0.3
4	690.7	691.3	0.6
5	961.5	970.6	9.1
6			
7			
8			
9			
T			10.2

Balance ID EB-15

▶ IMPINGERS ICED?

MAQS - Easton
1350 Sullivan Trail, Suite A, Easton, PA 18040

Notes: * Data Average = 1305 - 1315

Isokinetic Sample Data Sheet

Issued by: District Manager - Effective: 11/01/2016

Project No. 04-A05-149 228
 Proj. Name CEMS/Amf
 Date 6/28/17
 Site Loc. Orangeburg, NY
 Unit/Loc. EBC Exhaust Outlet
 RUN # 4

Parameter SWB46 - 0011 Meter Box # MR 13
 Start Time 1415 Delta Y @ 0.995
 Stop Time 1525 Delta H @ 1.832
 Nozzle Diam. 0.220 inches ^{1.5 2/17}
 Nozzle # D008 MB Pump # 14
 Nozzle Kit # TK# 2 Stack ID 25
 K Factor 2.11

Manometer ID # MS 13
 Probe / Pilot # PR Y-3
 Filter / Trap # N/A
 Filter Tare N/A grams
 Aux = M23 Condensor / M202 exit / (N/A)
 (circle one)

Traverse Point	Real Time	Sample Time	DGM Volume (cfm)	Delta P	Delta H	Vacuum (Hg)	Probe	Stack	Temperatures (F)		Filter	Imp. Exit (<68F)	Aux
									Meter Box In	Meter Box Out			
A 1	1415	0	506.824	0.93	2.24	2.0"	239	107	N/A	94	N/A	83	N/A
2		2.5	508.9	0.93	2.24	2.0"	240	107		94		60	
3		5	511.0	1.00	2.41	2.0"	242	108		94		59	
4		7.5	513.2	1.00	2.41	2.0"	250	108		94		57	
5		10	515.7	0.99	2.39	2.0"	251	108		93		56	
6		12.5	517.5	0.92	2.22	2.0"	246	108		93		55	
7		15	519.6	0.87	2.10	1.5"	246	108		93		55	
8		17.5	521.9	0.82	1.98	1.5"	251	108		93		55	
9		20	524.0	0.82	1.98	1.5"	253	108		93		55	
10		22.5	526.0	0.80	1.93	1.5"	249	108		93		55	
11		25	528.0	0.74	1.78	1.5"	249	108		93		54	
12		27.5	530.0	0.70	1.69	1.5"	250	108		93		54	
1	* 1445	30	531.8	0.92	2.22	2.0"	240	108		92		61	
2		32.5	533.9	0.93	2.24	2.0"	239	108		92		54	
3		35	536.2	0.97	2.34	2.0"	240	109		92		55	
4		37.5	538.3	1.00	2.41	2.0"	239	109		92		55	
5		40	540.5	1.00	2.41	2.0"	240	109		92		55	
6		42.5	542.6	0.95	2.29	2.0"	240	109		92		55	
7		45	544.9	0.81	1.95	1.5"	241	109		92		57	
8		47.5	546.9	0.81	1.95	1.5"	240	109		92		57	
9		50	549.0	0.79	1.90	1.5"	242	109		92		57	
10		52.5	550.9	0.75	1.81	1.5"	242	109		92		58	
11		55	552.9	0.71	1.71	1.5"	239	109		92		59	
12		57.5	554.7	0.67	1.61	1.5"	241	109		92		60	
		60	556.490	-	-	-	-	-		-		-	

Notes: Port Change: 1445 - 1455

Pilot Leak Check PRE POST

Port #	Train Leak Check	
	CFM@	VAC
	PRE 0.001 @ 13"	
	POST 0.001 @ 4"	
	PRE @	
	POST @	
	PRE @	
	POST @	
	PRE @	
	POST @	
	PRE @	
	POST @	
	PRE @	
	POST @	

#	Moisture	
	Initial	Final
1	869.9	869.1
2	765.7	766.8
3	746.9	746.6
4	610.0	611.1
5	968.8	978.2
6		
7		
8		
9		
T		10.9

Balance ID EP-15
 ▶ IMPINGERS ICED?

MAQS - Easton
 1350 Sullivan Trail, Suite A, Easton, PA 18040

Evacuated Cannister Worksheet

Methods ~~36~~ and 256 ~~TO-15~~ TO-15 TA 6/30/17

Issued by: District Manager - Effective: 11/01/2016

Project No. D16-AOS-149228
 Project Name ALUF PLASTICS
 Date 6-28-17

Site Location Orangeburg NY Operator(s) ZMA
 Unit/Location IBC Retail Barometer ID BR-08
 Parameter TO 15

VOID US 711117

Run#	Start Time	Stop Time	Baro Press
1	0935	1035	29.97
Cannister #	1012	Controller #	L1701896
Sampling Time	Cannister Pressure ("Hg)	Flow Rate (cc/min)	
0	26"	94.0 cc/min ↓	
5	24"		
10	22"		
15	20"		
20	18"		
25	15"		
30	13"		
35			
40			
45			
50			
55			
60			

Run#	Start Time	Stop Time	Baro Press
2	1045	1146	29.96
Cannister #	1043	Controller #	L1701896
Sampling Time	Cannister Pressure ("Hg)	Flow Rate (cc/min)	
0	27"	94.0 cc/min ↓	
5	25"		
10	22"		
15	20"		
20	18"		
25	15"		
30	12"		
35	10"		
40	8"		
45	6"		
50	4"		
55	End 1146		
60	-		

Run#	Start Time	Stop Time	Baro Press
3	1235	1335	29.97
Cannister #	1011	Controller #	L1701896
Sampling Time	Cannister Pressure ("Hg)	Flow Rate (cc/min)	
0	27"	94.0 cc/min ↓	
5	25"		
10	23"		
15	20"		
20	18"		
25	15"		
30	13"		
35	11"		
40	8"		
45	6"		
50	4"		
55	End 1335		
60	-		

Run#	Start Time	Stop Time	Baro Press
4	1415	1515	29.96
Cannister #	1059	Controller #	L1701896
Sampling Time	Cannister Pressure ("Hg)	Flow Rate (cc/min)	
0	27"	94.0 cc/min ↓	
5	25"		
10	23"		
15	20"		
20	17"		
25	15"		
30	13"		
35	11"		
40	8"		
45	6"		
50	4"		
55	End 1515		
60	-		

MAQS - Easton, PA 18040. Tel 610-559-8776. Fax 610-559-8913.

* Run 1
 Pause @ 1005
 Resume @

* Run 2
 Pause @ 1115
 Resume @ 1126

* Run 3
 Pause @ 1305
 Resume @ 1315

* Run 4
 Pause @ 1445
 Resume @ 1455

Method 18

ASTM D5504 Lung Sampling Data Sheet

Project No.: 016-AQS-149228
Site: ALUF PLASTICS
Date: 6-28-17
Site Loc.: Orange Burg, NY
Unit/Loc.: IBC Retail

Operator(s): ZMA
Source ID: IBC Retail
Barometer ID: BR-08
Pump ID: AEL HCP-A

Run: 1 Baro Press: 29.97
Leak Check (Pre): 0.00
Leak Check (Post): 0.00

Run: 2 Baro Press: 29.96
Leak Check (Pre): 0.00
Leak Check (Post): 0.00

0935 start

VOID
LTS 6/3/17

Time	Flow Rate (L/min)
0	≈ 0.2
5	
10	
15	
20	
25	
30	
35	
40	
45	
50	
55	
60	↓

Time	Flow Rate (L/min)
1045	0
5	
10	
15	
20	
25	
30	
35	
40	
45	
50	
55	
1156	60

stop

Run: 3 Baro Press: 29.97
Leak Check (Pre): 0.00
Leak Check (Post): 0.00

Run: 4 Baro Press: 29.96
Leak Check (Pre): 0.00
Leak Check (Post): 0.00

start

Time	Flow Rate (L/min)
1235	0
5	
10	
15	
20	
25	
30	
35	
40	
45	
50	
55	
1345	60

Time	Flow Rate (L/min)
1415	0
5	
10	
15	
20	
25	
30	
35	
40	
45	
50	
55	
1525	60

stop

* Run 4 Pause @ 1445
Resume 1455

Notes:

Run 2 Pause @ 1115 → Resume 1126 (PORT CHANGES)
Run 3 Pause @ 1305 → Resume 1315 (PORT CHANGES)

Issued by: District Manager - Effective: 11/01/2016

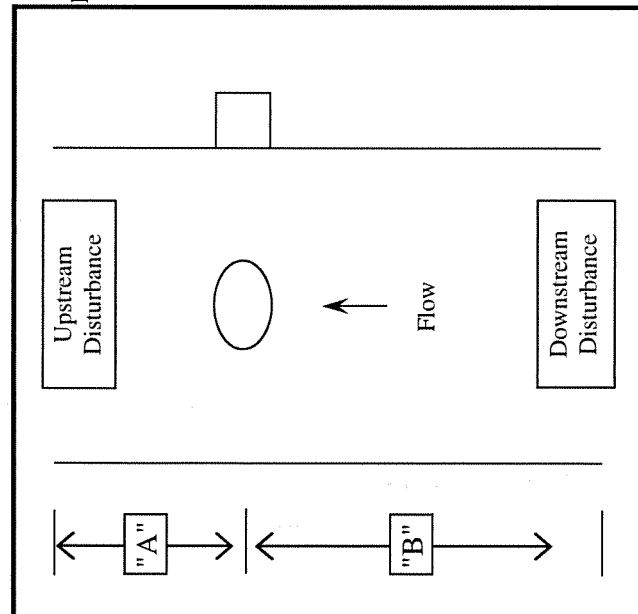
REPRO

INLET

SAMPLE LOCATION PROFILE

Project No. 016-AQS-149228 Project Name KEMS/Aluf Plastis Stack ID (circular stack) Repro Inlet Unit/Loc 20" inches
 Source REPRO Date 6-29-07
 Duct Measured By: TJW Measurement Verified By: TEH
 Horizontal or Vertical? horizontal
 Circ, Rect, Elliptical? Circular
 Downstream Disturbance Description Bend
 Upstream Disturbance Description Bend

Equivalent Diameter (rectangular)¹ _____ inches
 Stack Cross Sectional Area² 2.1817 sq. ft.
 Distance "A" (inches) 36
 Distance "A" (Duct Diam) 1.8
 Distance "B" (inches) 172
 Distance "B" (Duct Diam) 8.60
 Number of Test Ports 2
 Length of Test Port 0"
 Diameter of Test Port 1.5"
 # of Traverse Points/ Port (isokinetic) N/A
 # of Traverse Points/ Port (non-iso) 6/Port = 12
 Distance from Barometer to Ports: + or - 0 ft
 Distance from Barometer to Meter Box: + or - 0 ft
 (circle either + or -)



CALCULATIONS:

¹ Equivalent Diameter (Rect. Ducts) = $(2LW / (L+W))$
² CSA: $Circ. = ((ID/24)^2 \times \pi)$
 $Rect. = (LW/144)$
 $Ellip. = ((D1 \times D2 \times 0.7854) / 144)$

Traverse Point #	(iso) Traverse Point Location, Inches		(non-iso) Traverse Point Location, Inches		Test Port				Equipment Considerations For Future Programs	
	with ext.	without ext.	with ext.	without ext.	A	B	C	D		E
1			1.0	1.0						List equipment needs; pitot, umbilical, extension cord, sample line lengths, unistrut, additional trailer power cable etc. : THC Only on Repro Inlet + Outlets, stratification not needed
2			3.0	3.0						
3			6.0	6.0						
4			14.0	14.0						
5			17.0	17.0						
6			19.0	19.0						
7										
8										
9										
10										
11										
12										

Method 2 FLOW DATA SHEET

Issued by: District Manager - Effective: 11/01/2016

Project No. 016-AQS-149228
 Proj. Name KEMS (Aluf)

Site Location Orangeburg, NY
 Unit/Location Repro Inlet
 Stack ID 20.0

MB / Manometer # AEC /
 Pitot Tube / Probe ID # AEC 2-8
 (office one)

Operator(s) TEH TIW
 Barometer ID BRD8

Start Time	9:30	Stop Time	9:44	Barometric Pressure	Temp. (°F)
Date	6/29/17			30.00	
Leak Check	PRE ✓				
Leak Check	POST ✓				
STATIC		90		114	
WB					
DB					
Stack					
Run #	Pre 1				
Delta P		1.3		119	
1		1.3		119	
2		1.4		119	
3		1.4		119	
4		1.2		119	
5		1.8		119	
6		1.2		119	
1		1.3		119	
2		1.3		119	
3		1.4		119	
4		1.4		119	
5		1.4		119	
6		1.3		119	
9:44					

Start Time	12:08	Stop Time	12:14	Barometric Pressure	Temp. (°F)
Date	6/29/17			29.95	
Leak Check	PRE ✓				
Leak Check	POST ✓				
STATIC		94.8		118	
WB					
DB					
Stack					
Run #	2				
Delta P		0.84		124	
1		1.0		124	
2		1.2		124	
3		1.3		124	
4		1.3		124	
5		1.3		124	
6		1.3		124	
1		1.0		124	
2		1.3		124	
3		1.2		124	
4		1.4		124	
5		1.3		124	
6		1.4		124	
12:14					
VOID					
US 6/2/17					

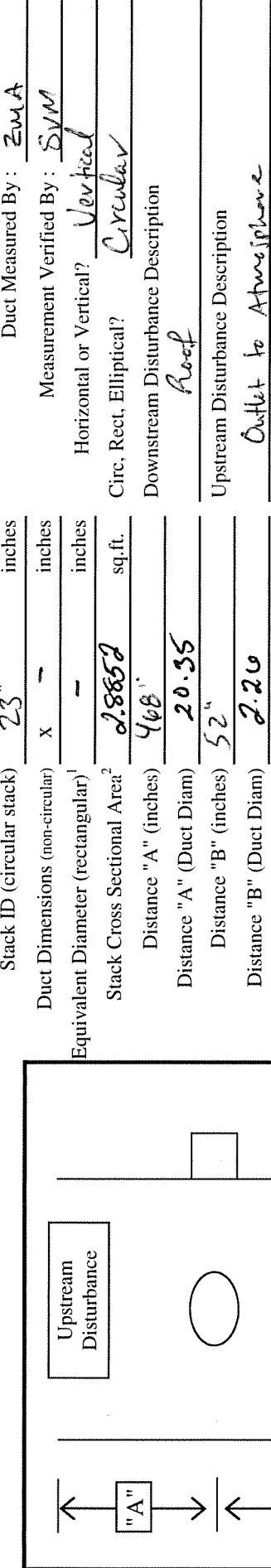
Start Time	14/4	Stop Time	14:23	Barometric Pressure	Temp. (°F)
Date	6/29/17			29.91	
Leak Check	PRE ✓				
Leak Check	POST ✓				
STATIC		94.6		118.8	
WB					
DB					
Stack					
Run #	3				
Delta P		1.0		125	
1		1.0		125	
2		1.1		120	
3		1.3		120	
4		1.3		120	
5		1.2		120	
6		1.0		125	
1		1.3		125	
2		1.2		120	
3		1.3		120	
4		1.2		120	
5		1.2		120	
6		1.1		120	
14:23					

Start Time	17:01	Stop Time	17:00	Barometric Pressure	Temp. (°F)
Date	6/29/17			29.88	
Leak Check	PRE ✓				
Leak Check	POST ✓				
STATIC		94.2		114.4	
WB					
DB					
Stack					
Run #	4				
Delta P		1.86		125	
1		1.2		127	
2		1.2		127	
3		1.4		127	
4		1.4		127	
5		1.3		127	
6		1.0		120	
1		1.3		120	
2		1.4		127	
3		1.4		127	
4		1.4		127	
5		1.4		127	
6		1.7		127	
17:00					

OUTLET

SAMPLE LOCATION PROFILE

Project No. 016-AQS-149228 Project Name KEMS/Alf Plastics Unit/Loc REPRO Outlet Source REPRO Date 8/29/17
 Stack ID (circular stack) 23" inches
 Duct Dimensions (non-circular) - inches
 Equivalent Diameter (rectangular)¹ - inches
 Stack Cross Sectional Area² 2.8852 sq. ft.
 Distance "A" (inches) 468"
 Distance "A" (Duct Diam) 20.35
 Distance "B" (inches) 52"
 Distance "B" (Duct Diam) 2.20
 Number of Test Ports 2
 Length of Test Port 5.75"
 Diameter of Test Port 3.75"
 # of Traverse Points/ Port (isokinetic) 24
 # of Traverse Points/ Port (non-iso) 16
 Distance from Barometer to Ports: (+) or - 20 ft
 Distance from Barometer to Meter Box: (+) or - 20 ft
 (circle either + or -)



CALCULATIONS:
¹ Equivalent Diameter (Rect. Ducts) = $(2LW / (L+W))$
² CSA: Circ. = $((ID/24)^2 \times \pi)$
 Rect. = $(LW/144)$
 Ellip. = $((D1 \times D2 \times 0.7854) / 144)$

Traverse Point #	(iso) Traverse Point Location, Inches		(non-iso) Traverse Point Location, Inches		Test Port				Equipment Considerations For Future Programs	
	with ext.	without ext.	with ext.	without ext.	A	B	C	D		E
1	6.25	0.50	6.50	0.75	+6	+2				List equipment needs; pitot, umbilical, extension cord, sample line lengths, unistrut, additional trailer power cable etc. :
2	7.25	1.50	8.25	2.50	+8	0				
3	8.50	2.75	10.25	4.50	+4	+2				
4	9.75	4.00	13.25	7.50	0	+6				
5	11.25	5.75	21.25	15.50	0	+8				
6	14.00	8.25	24.25	18.50	+2	+8				
7	20.50	14.75	26.25	24.50	0	+6				
8	23.00	17.25	28.00	22.25	-2	+2				
9	24.75	19.00			-2	0				
10	24.00	20.25			+2	+6				
11	27.25	21.50			+6	+4				
12	28.25	22.50			+8	+4				

Isokinetic Sample Data Sheet

Operator(s) SUM
 Baro. Press. 30.00
 Barometer ID BR-08
 Static Press. +0.1

Manometer ID # M.B.13
 Probe/Pitot # PR 4-2
 Filter/Trap # N/A
 Filter Type N/A grams
 (circle one)
 Aux = M23 Condensor / M202 exit (N/A)

Meter Box # M.B.13
 Delta Y @ 0.945
 Delta H @ 1.832
 MB Pump # 14
 Stack ID 23
 K Factor 2.52

Parameter SW 846-0011
 Start Time 1020
 Stop Time 1130
 Nozzle Diam. 0.2201 inches
 Nozzle # D 000
 Nozzle Kit # NE #2

Port #	Train Leak Check	
	CFM@	VAC
PRE	0.603	@ 13"
POST	0.602	@ 5"
PRE	@	@
POST	@	@
PRE	@	@
POST	@	@
PRE	@	@
POST	@	@
PRE	@	@
POST	@	@

Traverse Point	Real Time	Sample Time	DGM Volume (cfm)	Delta P	Delta H	Vacuum ("Hg)	Probe	Stack	Temperatures (°F)		Filter	Imp. Exit (<68°F)	Aux
									In	Out			
A 1	1020	0	556.614	0.95	2.20	1.5"	244	114	N/A	82	N/A	67	N/A
2		2.5	558.7	0.94	2.18	1.5"	244	116		82		66	
3		5	560.8	0.90	2.09	1.5"	245	116		83		66	
4		7.5	562.6	0.82	1.90	1.5"	247	116		83		65	
5		10	564.4	0.79	1.83	1.5"	247	116		84		64	
6		12.5	566.3	0.73	1.69	1.5"	246	116		84		65	
7		15	568.2	0.71	1.65	1.5"	244	116		85		64	
8		17.5	570.0	0.80	1.86	1.5"	245	116		86		64	
9		20	571.9	0.81	1.88	1.5"	243	116		86		62	
10		22.5	573.8	0.82	1.90	1.5"	241	116		87		61	
11		25	575.7	0.83	1.93	1.5"	242	115		87		61	
12		27.5	577.7	0.83	1.93	1.5"	242	115		87		62	
B 1	1050	30	579.6	0.82	1.90	1.5"	243	117		88		64	
2		32.5	581.6	0.84	1.95	1.5"	242	117		89		59	
3		35	583.6	0.84	1.95	1.5"	240	117		89		55	
4		37.5	585.6	0.85	1.77	1.5"	239	117		90		53	
5		40	587.6	0.80	1.86	1.5"	241	118		90		52	
6		42.5	589.6	0.76	1.76	1.5"	240	118		91		52	
7		45	591.6	0.75	1.79	1.5"	237	118		91		53	
8		47.5	593.5	0.85	1.97	1.5"	238	117		92		54	
9		50	595.3	0.86	2.00	1.5"	238	118		92		54	
10		52.5	597.4	0.86	2.00	1.5"	237	117		92		54	
11		55	599.5	0.80	1.80	1.5"	239	117		93		55	
12		57.5	601.4	0.70	1.62	1.5"	240	117		93		55	
		60	603.378										
		1130											

Moisture		
#	Initial	Final
1	866.5	867.2
2	797.1	799.6
3	788.5	729.6
4	618.7	612.4
5	978.1	967.8
6		
7		
8		
9		
T		15.7

Balance ID EPB-15
 ▲ IMPINGERS ICED?

MAQS - Easton
 1350 Sullivan Trail, Suite A, Easton, PA 18040

Notes: # Part Checked: 1050-1100

Isokinetic Sample Data Sheet

VOID
US 7/11/17

Issued by: District Manager - Effective: 11/01/2016
Operator(s) SNM
Baro. Press. 29.95
Barometer ID SP-00
Static Press. 1.01

Manometer ID # MB 13
Probe / Pitot # PE-4-3
Filter / Trap # N/A
Filter Type N/A grams
(circle one)

Parameter SNB46-0011 Meter Box # MB 13
Start Time 1205 Delta Y @ 0.995
Stop Time 1205 Delta H @ 1.852
Nozzle Diam. 0.2201 inches US 6/21/17
Nozzle # 0008 MB Pump # 14
Nozzle Kit # NK02 Stack ID 23
K Factor 2.38

Project No. 06-405-14922E
Proj. Name KEMS/Abut
Date 6/29/17
Site Loc. Changestown, NJ
Unit/Loc. Road Overcut
RUN # 2

Pitot Leak Check PRE POST

Aux = M23 Condensor / M202 exit N/A

Traverse Point	Real Time	Sample Time	DGM Volume (cfm)	Delta P	Delta H	Vacuum ("Hg)	Probe	Stack	Temperatures (°F)		Filter	Imp. Exit (<68°F)	Aux
									Meter Box In	Meter Box Out			
1	1205	0	603.472	0.90	2.14	8.5"	236	119	N/A	95	N/A	63	N/A
2	*1205	2.5	605.5	0.91	2.17	8.5"	238	119	N/A	95	N/A	53	N/A
3	*1205	5	607.6	0.88	2.09	8.5"	237	120	N/A	95	N/A	53	N/A
4		7.5	609.7	0.87	2.07	8.5"	235	120	N/A	95	N/A	54	N/A
5		10	611.8	0.85	2.02	8.0"	240	120	N/A	95	N/A	53	N/A
6		12.5	615.8	0.80	1.90	7.5"	239	120	N/A	96	N/A	52	N/A
7		15	615.8	0.82	1.95	7.5"	239	120	N/A	96	N/A	52	N/A
8		17.5	617.8	0.93	2.21	8.0"	239	120	N/A	96	N/A	52	N/A
9		20	619.9	0.95	2.26	8.5"	236	120	N/A	96	N/A	52	N/A
10		22.5	622.0	0.91	2.17	8.0"	237	119	N/A	97	N/A	52	N/A
11		25	624.2	0.86	2.05	8.0"	236	120	N/A	97	N/A	53	N/A
12		27.5	626.3	0.74	1.76	7.5"	235	120	N/A	97	N/A	53	N/A
13	*1235	30	628.2	0.97	2.31	8.5"	241	113	N/A	98	N/A	59	N/A
14	*1240	32.5	630.3										
15		35											
16		37.5											
17		40											
18		42.5											
19		45											
20		47.5											
21		50											
22		52.5											
23		55											
24		57.5											
25		60											

Port #	Train Leak Check	
	CFM@	VAC
1	PRE 0.004 @	13"
2	POST @	
3	PRE @	
4	POST @	
5	PRE @	
6	POST @	
7	PRE @	
8	POST @	
9	PRE @	
10	POST @	
11	PRE @	
12	POST @	
13	PRE @	
14	POST @	

#	Moisture	
	Initial	Final
1		
2		
3		
4		
5		
6		
7		
8		
9		
T		

Balance ID _____
 ▲ IMPINGERS ICED?
 MAQS - Easton
 1350 Sullivan Trail, Suite A, Easton, PA 18040

Notes: * Port Change
 * 1240: pause

Isokinetic Sample Data Sheet

Issued by: District Manager - Effective: 11/01/2016

Operator(s) SNM
 Baro. Press. 29.91
 Barometer ID BR-08
 Static Press. +0.15

Manometer ID # M013
 Probe / Pitot # PR 4-2
 Filter / Trap # N/A
 Filter Tare N/A grams

Meter Box # M013
 Delta Y @ 0.975
 Delta H @ 1.832
 MB Pump # 14
 Stack ID 25
 K Factor 0.60

Parameter SWB46-0411
 Start Time 1415
 Stop Time 1525
 Nozzle Diam. 0.155 inches
 Nozzle # 0004
 Nozzle Kit # NX #2

Project No. 016-AOS-179228
 Proj. Name LEMSIAW
 Date 6/29/17
 Site Loc. Orangeburg, NY
 Unit/Loc. Lepru outlet

Pitot Leak Check PRE POST

Aux = M23 Condensor / M202 exit (N/A)

Traverse Point	Real Time	Sample Time	DGM Volume (cfm)	Delta P	Delta H	Vacuum ("Hg)	Probe	Stack	Temperatures (°F)		Filter	Imp. Exit (<68°F)	Aux
									Meter Box In	Meter Box Out			
A1	1415	0	631.420	1.70	1.02	1.0"	PR-236	110	N/A	98	N/A	66	N/A
2		2.5	632.9	2.10	1.26	1.0"	238	100		98		63	
3		5	634.5	3.00	1.80	1.5"	237	109		98		64	
4		7.5	636.4	3.50	2.10	1.5"	238	105		98		64	
5		10	638.5	4.80	2.88	2.0"	240	102		99		63	
6		12.5	640.4	6.10	3.64	2.5"	243	99		99		62	
7		15	643.1	7.30	2.58	2.0"	243	104		100		63	
8		17.5	646.0	2.70	1.62	1.5"	242	109		100		64	
9		20	648.0	2.70	1.32	1.0"	244	110		100		64	
10		22.5	649.4	2.00	1.20	1.0"	245	112		101		65	
11		25	651.2	1.90	1.14	1.0"	246	113		101		65	
12		27.5	652.7	1.70	1.02	1.0"	245	113		101		63	
B1	1445	30	654.1	1.60	0.96	1.0"	242	112		102		60	
2		32.5	655.5	1.70	1.02	1.0"	242	112		103		59	
3		35	656.9	1.80	1.08	1.0"	243	111		103		58	
4		37.5	658.4	2.60	1.50	1.5"	241	108		103		59	
5		40	660.1	2.70	2.22	1.5"	240	105		103		56	
6		42.5	662.3	5.10	3.06	2.0"	240	102		103		57	
7		45	664.9	5.10	3.04	2.0"	241	104		103		57	
8		47.5	667.3	3.30	1.98	1.5"	239	108		103		57	
9		50	669.4	2.40	1.44	1.0"	241	112		104		59	
10		52.5	671.2	1.70	1.02	1.0"	241	113		104		60	
11		55	672.6	1.60	0.96	1.0"	240	114		104		61	
12		57.5	674.0	1.40	0.84	1.0"	240	114		104		-	
f	1525	60	675.303	-	-	-	-	-		-		-	

Port #	Train Leak Check	
	CFM@	VAC
	PRE 0.001 @ 15"	
	POST 0.001 @ 4"	
	PRE @	
	POST @	
	PRE @	
	POST @	
	PRE @	
	POST @	
	PRE @	
	POST @	

#	Moisture		Diff.
	Initial	Final	
1	869.3	872.8	3.5
2	755.6	757.0	1.2
3	784.5	783.6	-0.9
4	651.4	652.4	1.0
5	883.2	891.5	8.3
6			
7			
8			
9			
T			13.1

Balance ID EB-15
 ▶ IMPINGERS ICED?

MAQS - Easton
 1350 Sullivan Trail, Suite A, Easton, PA 18040

Notes: PA Change: 1445-1455

Isokinetic Sample Data Sheet

Issued by: District Manager - Effective: 11/01/2016

Operator(s) SM
 Baro. Press. 29.88
 Barometer ID B22-02
 Static Press. +0.15

Manometer ID # M313
 Probe / Pitot # PE 4-3
 Filter / Trap # N/A
 Filter Tare N/A grams
 (circle one)
 Aux = M23 Condensor / M202 exit / ~~M20~~

Meter Box # M313
 Delta Y @ 0.995
 Delta H @ 1.832
 MB Pump # 14
 Stack ID 23
 K Factor 0.61

Parameter SW 266-00 il
 Start Time 1605
 Stop Time 1715
 Nozzle Diam 0.156 inches
 Nozzle # 663
 Nozzle Kit # N202

Project No. 016-AQS-114226
 Proj. Name KEMS/Aluf
 Date 4/24/17
 Site Loc. Orangeburg, NY
 Unit/Loc. Repro Outlet
 RUN # 1

Pitot Leak Check PRE POST

Traverse Point	Real Time	Sample Time	DGM Volume (cfm)	Delta P	Delta H	Vacuum ("Hg)	Probe	Stack	Temperatures (°F)		Imp. Exit (<68°F)	Aux
									In	Out		
A 1	1605	0	675.415	1.60	0.98	1.5"	239	113	N/A	102	67	N/A
2		2.5	676.8	1.70	1.01	1.5"	238	114		102	68	
3		5	678.2	1.76	1.01	1.5"	239	113		102	66	
4		7.5	679.4	2.40	1.46	1.5"	244	110		101	65	
5		10	681.3	3.50	2.14	2.0"	248	104		101	65	
6		12.5	683.4	5.30	3.23	3.0"	246	102		101	64	
7		15	685.9	5.50	3.36	3.0"	242	102		101	65	
8		17.5	688.6	3.70	2.26	2.0"	239	105		101	65	
9		20	690.8	2.60	1.57	1.5"	240	109		101	64	
10		22.5	692.7	1.70	1.01	1.5"	240	111		107	65	
11		25	694.1	1.60	0.98	1.0"	243	114		101	64	
12		27.5	695.5	1.50	0.92	1.0"	244	113		102	66	
1		30	696.6	1.60	0.98	1.0"	236	112		102	67	
2		32.5	698.2	2.20	1.34	1.5"	237	112		102	66	
3		35	699.7	3.00	1.83	2.0"	236	112		102	65	
4		37.5	701.7	3.60	2.81	2.5"	234	108		102	64	
5		40	703.8	4.60	3.78	3.5"	230	104		102	64	
6		42.5	706.4	6.20	5.78	4.5"	240	104		102	65	
7		45	707.2	4.00	2.44	2.5"	238	104		102	65	
8		47.5	711.4	3.30	2.01	2.0"	240	105		102	65	
9		50	713.6	2.40	1.46	1.5"	241	109		102	65	
10		52.5	715.2	1.60	0.98	1.0"	242	117		102	64	
11		55	716.7	1.50	0.92	1.0"	240	117		102	66	
12		57.5	718.0	1.50	0.92	1.0"	242	113		102	66	
		60	719.418	-	-	-	-	-		-	-	

Port #	Train Leak Check	
	CFM@	VAC
	PRE 0.003 @ 13"	
	POST 0.003 @ 5"	
	PRE @	
	POST @	
	PRE @	
	POST @	
	PRE @	
	POST @	
	PRE @	
	POST @	
	PRE @	
	POST @	

#	Moisture	
	Initial	Final
1	867.7	867.5
2	762.5	764.5
3	747.3	745.6
4	644.6	646.1
5	914.6	922.0
6		
7		
8		
9		
T		14.0

Balance ID ED-15
 ▶ IMPINGERS ICED?

MAQS - Easton
 1350 Sullivan Trail, Suite A, Easton, PA 18040

Notes: *Port Change: 1635-1645

Isokinetic Sample Data Sheet

Project No. 06-ACS-149 Parameter SW846-0011 Meter Box # MB13 Manometer ID # MB13
 Proj. Name KEM/Alut Start Time 1745 Delta Y @ D995 Probe / Pitot # PR 4-3
 Date 6/29/17 Stop Time 1855 Delta H @ 1.852 Filter / Trap # N/A
 Site Loc. Orangeburg, NY Nozzle Diam 0.165 inches MB Pump # 14 Filter Type N/A grams
 Unit/Loc. Repro Outlet Nozzle # 6006 Stack ID 23 (circle one)
 RUN # 5 Nozzle Kit # NK#2 K Factor 0.60 Aux = M23 Condensor / M202 exit / N/A

Pitot Leak Check

PRE	<input checked="" type="checkbox"/>
POST	<input checked="" type="checkbox"/>

Traverse Point	Real Time	Sample Time	DGM Volunge Sum (ft³/min)	Delta P	Delta H	Vacuum ("Hg)	Probe	Stack	Temperatures (°F)		Filter	Imp. Exit (<68F)	Aux
									Meter Box In	Out			
1	1745	0	719.546	1.70	1.02	1.0"	234	107	N/A	98	N/A	66	N/A
2		2.6	721.0	2.10	1.24	1.0"	234	108		98		65	
3		5	722.4	3.00	1.80	1.0"	237	107		98		60	
4		7.5	724.5	3.60	2.16	1.5"	235	101		98		59	
5		10	726.5	4.80	2.88	1.5"	238	99		97		56	
6		12.5	729.0	6.0	3.60	2.0"	240	95		97		56	
7		15	731.8	4.50	2.70	1.5"	245	102		97		54	
8		17.5	734.2	2.70	1.62	1.0"	246	106		97		54	
9		20	736.0	2.20	1.32	1.0"	247	112		97		55	
10		22.5	737.7	1.80	1.08	1.0"	247	113		97		56	
11		25	739.1	1.80	1.08	1.0"	246	113		97		58	
12		27.5	740.6	1.70	1.02	1.0"	248	113		97		58	
13		30	742.0	1.50	0.90	1.0"	244	111		96		61	
14		32.5	743.4	2.00	1.20	1.0"	245	110		96		60	
15		35	745.0	2.00	1.20	1.0"	241	108		96		55	
16		37.5	746.8	2.50	1.50	1.0"	241	108		96		55	
17		40	748.3	3.20	1.92	1.5"	242	103		96		56	
18		42.5	750.6	5.00	3.00	1.5"	243	99		96		56	
19		45	752.7	5.20	3.12	1.5"	242	102		97		56	
20		47.5	755.3	3.30	1.98	1.5"	244	107		96		57	
21		50	757.3	2.40	1.44	1.0"	243	110		96		57	
22		52.5	759.1	1.80	1.08	1.0"	242	112		96		58	
23		55	760.6	1.60	0.96	1.0"	243	113		96		60	
24		57.5	762.0	1.40	0.84	1.0"	244	113		97		61	
25		60	763.275	-	-	-	-	-		-		-	

Port #	Train Leak Check	
	CFM@	VAC
PRE	6.002	@ 14"
POST		@
PRE		@
POST		@
PRE		@
POST		@
PRE		@
POST		@
PRE		@
POST		@
PRE		@
POST		@

#	Moisture		Diff.
	Initial	Final	
1	871.3	825.5	4.2
2	761.3	743.2	1.9
3	791.9	791.3	-0.6
4	691.3	691.8	0.5
5	970.6	978.4	7.8
6			
7			
8			
9			
T			13.8

Balance ID EB-15

▶ IMPINGERS ICED?

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1350 Sullivan Trail, Suite A, Easton, PA 18040

Notes: Port Change: 1815-1825

Evacuated Cannister Worksheet

Methods ~~3C~~ and 25C TOVS

Issued by: District Manager - Effective: 11/01/2016

Project No. 016-AQS-14928
 Project Name ALUF Plastics
 Date 6-29-17

Site Location Orange Burg NY Operator(s) ZMA
 Unit/Location Repro Outlet Barometer ID BA-08
 Parameter TO 15

Run#	Start Time	Stop Time	Baro Press
1	1020	1120	30.00
Cannister #	1180		Controller # L1701896
Sampling Time	Cannister Pressure ("Hg)	Flow Rate (cc/min)	
0	27"	94.0 cc/min ↓	
5	24"		
10	22"		
15	19"		
20	17"		
25	15"		
30	13"		
35	11"		
40	9"		
45	7"		
50	4"		
55	End 1120		
60	-		

Run#	Start Time	Stop Time	Baro Press
2	1205		29.95
Cannister #	1169		Controller # L1701896
Sampling Time	Cannister Pressure ("Hg)	Flow Rate (cc/min)	
0	27"	94.0 cc/min ↓	
5	25"		
10	22"		
15	20"		
20	18"		
25	16"		
30	14"		
35			
40			
45	VOID		
50	vs 6/3/17		
55			
60			

Run#	Start Time	Stop Time	Baro Press
Cannister #			Controller #
Sampling Time	Cannister Pressure ("Hg)	Flow Rate (cc/min)	

Run#	Start Time	Stop Time	Baro Press
Cannister #			Controller #
Sampling Time	Cannister Pressure ("Hg)	Flow Rate (cc/min)	

* Run 1
 Pause @ 1050
 Resume @ 1100

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* Run 2
 Pause @ 1235
 Resume @ 1245

Run 2
 Pause @ 1248
 Resume @ 1245

Evacuated Cannister Worksheet

Methods ~~3C~~ and 25G To 15

Issued by: District Manager - Effective: 11/01/2016

Project No. 016-ARQ-14928
 Project Name ALUF Plastics
 Date 0-29-17

Site Location Orangeburg NY Operator(s) ZMA
 Unit/Location Repo outlet Barometer ID BR-08
 Parameter TO 15

Run#	Start Time	Stop Time	Baro Press
3	1415	1500	29.91
Cannister #	1359	Controller #	T1700117
Sampling Time	Cannister Pressure ("Hg)	Flow Rate (cc/min)	
0	26"	88.8 ↓	
5	24"		
10	21"		
15	18"		
20	14"		
25	10"		
30	7"		
35	4"		
40	End 1500		
45	-		
50	-		
55	-		
60	-		

Run#	Start Time	Stop Time	Baro Press
4	1605	1700	29.88
Cannister #	1343	Controller #	T1700117
Sampling Time	Cannister Pressure ("Hg)	Flow Rate (cc/min)	
0	26"	88.8 ↓	
5	23"		
10	20"		
15	18"		
20	15"		
25	12"		
30	10"		
35	8"		
40	6"		
45	4"		
50	End 1700		
55	-		
60	-		

Run#	Start Time	Stop Time	Baro Press
5	1745	1840	29.86
Cannister #	1335	Controller #	T1700117
Sampling Time	Cannister Pressure ("Hg)	Flow Rate (cc/min)	
0	26"	88.8 ↓	
5	24"		
10	22"		
15	20"		
20	17"		
25	14"		
30	12"		
35	10"		
40	7"		
45	4"		
50	End 1840		
55	-		
60	-		

Run#	Start Time	Stop Time	Baro Press
Cannister #		Controller #	
Sampling Time	Cannister Pressure ("Hg)	Flow Rate (cc/min)	

*Run 3
 Pause @ 1445
 Resume @ 1455

*Run 4
 Pause @ 1635
 Resume @ 1645

*Run 5
 Pause @ 1815
 Resume @ 1825

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Method 18 ^(TW)

ASTM D5504 Lung Sampling Data Sheet

Project No.: Oil-AQS-149228
 Site: ALUF Plastics
 Date: 6-29-17
 Site Loc.: Orange Burg NY
 Unit/Loc.: Repr outlet

Operator(s): ZMA
 Source ID: 23
 Barometer ID: BR-08
 Pump ID: AEC HCP-A

Run: 1 Baro Press: 30.00
 Leak Check (Pre): 0.00
 Leak Check (Post): 0.00

Time	Flow Rate L/min
1020 / ϕ	≈ 0.2
5	
10	
15	
20	
25	
30	
35	
40	
45	
50	
55	
stop 1130 / ϕ	✓

start

stop

Run: _____ Baro Press: _____
 Leak Check (Pre): _____
 Leak Check (Post): _____

Time	Flow Rate
stop	

start

stop

Run: 2 Baro Press: 29.95
 Leak Check (Pre): 0.00
 Leak Check (Post): 0.00

Time	Flow Rate L/min
1205 / ϕ	≈ 0.2
5	
10	
15	
20	
25	
30	
35	
40	
45	
50	
55	
60	✓

start

stop

VOID
 us 8/3/17

Run: _____ Baro Press: _____
 Leak Check (Pre): _____
 Leak Check (Post): _____

Time	Flow Rate
stop	

start

stop

Notes:
 * Run 1 Pause @ 1050 Resume @ 1100
 * Run 2 Pause @ 1235 Resume @ 1245
 Issued by: District Manager - Effective: 11/01/2016
 MAC 080741658 PA
 Run 2 Pause @ 1248 Resume @

Method 18 (TW)
 ASTM D5504 Lung Sampling Data Sheet

Project No.: 016-ADS-149228
 Site: ALUF PLASTICS
 Date: 6-29-17
 Site Loc.: Orangeburg, NY
 Unit/Loc.: Repro outlet

Operator(s): ZMA
 Source ID: 23⁴
 Barometer ID: BR-08
 Pump ID: AEC HCP-A

Run: 3 Baro Press: 29.91
 Leak Check (Pre): 0.00
 Leak Check (Post): 0.00

	Time	Flow Rate L/min
start	<u>1415 / 0</u>	<u>~ 0.2</u>
	<u>5</u>	
	<u>10</u>	
	<u>15</u>	
	<u>20</u>	
	<u>25</u>	
	<u>30</u>	
	<u>35</u>	
	<u>40</u>	
	<u>45</u>	
	<u>50</u>	
	<u>55</u>	
stop	<u>1525 / 60</u>	<u>✓</u>

Run: 4 Baro Press: 29.88
 Leak Check (Pre): 0.00
 Leak Check (Post): 0.00

	Time	Flow Rate L/min
	<u>1605 / 0</u>	<u>~ 0.2</u>
	<u>5</u>	
	<u>10</u>	
	<u>15</u>	
	<u>20</u>	
	<u>25</u>	
	<u>30</u>	
	<u>35</u>	
	<u>40</u>	
	<u>45</u>	
	<u>50</u>	
	<u>55</u>	
stop	<u>1715 / 60</u>	<u>✓</u>

Run: 5 Baro Press: 29.86
 Leak Check (Pre): 0.00
 Leak Check (Post):

	Time	Flow Rate L/min
start	<u>1745 / 0</u>	<u>~ 0.2</u>
	<u>5</u>	
	<u>10</u>	
	<u>15</u>	
	<u>20</u>	
	<u>25</u>	
	<u>30</u>	
	<u>35</u>	
	<u>40</u>	
	<u>45</u>	
	<u>50</u>	
	<u>55</u>	
stop	<u>1855 / 60</u>	<u>✓</u>

Run: Baro Press: _____
 Leak Check (Pre): _____
 Leak Check (Post):

	Time	Flow Rate

Notes:

* Run 5
 Pause @ 1815
 Resume @ 1825

* Run 3 Pause @ 1445 Resume @ 1455
 * Run 4 Pause @ 1635 Resume @ 1645

Issued by: District Manager - Effective: 11/01/2016

APPENDIX IV:

EMISSION CALCULATION SPREADSHEETS

IBC RETAIL

Method 18 - Acrolein and Pentane Emissions Calculator

A

Company Name:	Aluf Plastics		Emission Unit:	IBC Retail Carbon Adsorber	
Project No.:	016-AQS-149228		Test Location:	Outlet	
RUN:	2	3	4	AVERAGE	
Measured Stack Flow Rate (DSCFM):	8743	8501	8623	8622	
Corresponding Flow Rate Run:	SW846-0011 R2	SW846-0011 R3	SW846-0011 R4	---	
Acrolein via USEPA Method 18	Molar Mass = 56.06				
ppmv, dry:	<0.262	<0.262	<0.262	<0.262	
pounds/hour:	<0.020	<0.019	<0.020	<0.020	
Pentane via USEPA Method 18	Molar Mass = 72.15				
ppmv, dry:	<0.290	<0.290	<0.290	<0.290	
pounds/hour:	<0.028	<0.028	<0.028	<0.028	

TO-15 - VOC Emissions Calculator

11

Project Name:	Aluf Plastics
Jobsite:	Orangeburg, NY
Sample Location:	IBC Retail Carbon Adsorber Outlet
MAQS -Easton Project Number:	016-AQS-149228

Run Number	Run 2		Run 3		Run 4		Average	
	Sample Amt (ppb, wet)	Sample Amt (ppb, dry)	Sample Amt (ppb, wet)	Sample Amt (ppb, dry)	Sample Amt (ppb, wet)	Sample Amt (ppb, dry)	Sample Amt (ppb, wet)	Sample Amt (ppb, dry)
Stack Flow Rate (DSCFM)	8743	8501	8623	8622				
Corresponding Flow Rate Run:	SW846-0011 R2	SW846-0011 R3	SW846-0011 R4	---				
Stack Moisture (%)	0.30	1.01	1.07	0.79				
ANALYTE	Sample Amt (ppb, wet)	Sample Amt (ppb, dry)	Sample Amt (ppb, wet)	Sample Amt (ppb, dry)	Sample Amt (ppb, wet)	Sample Amt (ppb, dry)	Sample Amt (ppb, wet)	Sample Amt (ppb, dry)
Ethanol	3810	2487	2510	2936	2936	2957	2936	2957
Methyl Ethyl Ketone (2-Butanone)	201	165	189	185	185	186	185	186
	MW	LBS/HR	LBS/HR	LBS/HR	LBS/HR	LBS/HR	LBS/HR	LBS/HR
	46	0.239	0.153	0.157	0.157	0.183	0.157	0.183
	72	0.020	0.016	0.018	0.018	0.018	0.018	0.018

SW846-0011 - Aldehydes and Ketones Emissions Calculator



Project Name:	Aluf Plastics
Jobsite:	Orangeburg, NY
Sample Location:	IBC Retail Carbon Adsorber Outlet
MAQS -Easton Project Number:	016-AQS-149228

	Run 2	Run 3	Run 4	Average
Run Number				
Stack Flowrate (DSCFM):	8743	8501	8623	8622
Meter Volume (DSCF):	47.689	46.932	47.518	47.380
ANALYTE	Sample Amt (ug)	Sample Amt (ug)	Sample Amt (ug)	Sample Amt (ug)
Acetone	192	<193	<178	<188
	LBS/HR	LBS/HR	LBS/HR	LBS/HR
	4.66E-03	<4.62E-03	<4.27E-03	<4.52E-03

Company Emission Unit	Aluf Plastics IBC Retail Carbon Adsorber	Test Location Project No.:	Outlet 016-AQS-149228
Run Start Time	Two (2) 10:45	Date Stop Time	6/28/17 11:56
INPUT DATA			
Initial Meter Volume (cubic feet) [Vmi]			406.231
Final Meter Volume (cubic feet) (Vmf)			456.825
Manually Entered Moisture Content (%)			0.1
Stack Static Pressure ("H2O) [Ps]			29.96
Measured Barometric Pressure ("Hg): Carbon dioxide (%) [CO2]			---
Oxygen (%) [O2]			---
Methane (%) [CH4]			---
Nozzle Diameter (inches) [Dn]:			0.221
Pitot Tube Factor [Cp]			0.84
Meter Correction Factor [Y]			0.995
Total Sample Time (minutes)			60
Gas Volume Correction Temperature ("F)(Tc)			68
OUTPUT DATA			
Barometric Pressure at Ports ("Hg)			29.96
Barometric Pressure at Meter Box ("Hg) [Pb]			29.96
Stack Cross-Section (square feet)[CSA]			2.885
Meter Volume (cubic feet) [Vm]			50.594
Meter Volume (dry cubic feet @stp)[Vms]			47.689
Water Caught (grams) [Wc]			3.0
Moisture Volume (cubic feet @stp) [Vws]			0.141
Measured Moisture (%) [Bws]			0.30
Saturated Moisture (%) [Bws]:			7.31
Dry Molecular Weight (lb/lb-mol) [MWd]			29.0
Wet Molecular Weight (lb/lb-mol) [MWw]			28.97
Absolute Stack Pressure ("Hg) [Pa]			29.97
Stack Velocity (feet/second) [Vsa]			54.04
Stack Flow Rate (cubic feet/minute) Actual [ACFM]			9355
Standard [SCFM]			8769
Dry Standard [DSCFM]			8743
Sample Isokinetics (%) [I]:			98.47

Stack Flow Rate Calculator

point	Delta P ("H ₂ O)	Delta-H ("H ₂ O)	Temperatures (degrees F)		ΔAP
			Stack	Meter out	
1	0.95	2.33	103	98	0.975
2	0.97	2.38	103	98	0.985
3	1.00	2.45	103	99	1.000
4	0.98	2.40	104	99	0.990
5	0.93	2.28	104	100	0.964
6	0.91	2.23	104	100	0.954
7	0.87	2.13	104	100	0.933
8	0.90	2.21	104	100	0.949
9	0.89	2.18	104	101	0.943
10	0.75	1.84	104	101	0.866
11	0.73	1.79	104	101	0.854
12	0.60	1.47	104	101	0.775
13	0.99	2.43	105	102	0.995
14	1.00	2.45	105	102	1.000
15	0.99	2.43	105	102	0.995
16	0.99	2.43	105	102	0.995
17	1.00	2.45	105	102	1.000
18	0.93	2.28	105	102	0.964
19	0.85	2.08	105	102	0.922
20	0.83	2.03	104	102	0.911
21	0.84	2.06	104	102	0.917
22	0.73	1.79	104	103	0.854
23	0.70	1.72	104	103	0.837
24	0.68	1.67	105	103	0.825
25					
AVG.	0.88	2.14	104.2	101.0	0.933
			[Ts]	[Tm]	[dP]

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Company Emission Unit	Aluf Plastics IBC Retail Carbon Adsorber	Test Location Project No.:	Outlet 016-AQS-149228
Run Start Time	Three (3) 12:35	Date Stop Time	6/28/17 13:45
INPUT DATA			
Initial Meter Volume (cubic feet) [Vmi]			456.951
Final Meter Volume (cubic feet) [Vmf]			506.592
Manually Entered Moisture Content (%)			
Stack Static Pressure ("H2O) [Ps]			0.1
Measured Barometric Pressure ("Hg):			29.97
Carbon dioxide (%) [CO2]			---
Oxygen (%) [O2]			---
Methane (%) [CH4]			---
Nozzle Diameter (inches) [Dn]:			0.221
Pitot Tube Factor [Cp]			0.84
Meter Correction Factor [Y]			0.995
Total Sample Time (minutes)			60
Gas Volume Correction Temperature (°F)(Tc)			68
OUTPUT DATA			
Barometric Pressure at Ports ("Hg)			29.97
Barometric Pressure at Meter Box ("Hg) [Pb]			29.97
Stack Cross-Section (square feet)[CSA]			2.885
Meter Volume (cubic feet) [Vm]			49.641
Meter Volume (dry cubic feet @stp) [Vms]			46.932
Moisture Volume (cubic feet @stp) [Vws]			0.480
Water Caught (grams) [Wc]			10.2
Measured Moisture (%) [Bws]			1.01
Saturated Moisture (%) [Bws]:			7.75
Dry Molecular Weight (lb/lb-mol) [MWd]			29.0
Wet Molecular Weight (lb/lb-mol) [MWw]			28.89
Absolute Stack Pressure ("Hg) [Pa]			29.98
Stack Velocity (feet/second) [Vsa]			53.10
Stack Flow Rate (cubic feet/minute)			
Actual [ACFM]			9192
Standard [SCFM]			8588
Dry Standard [DSCFM]			8501
Sample Isokinetics (%) [I]:			99.66

Stack Flow Rate Calculator

point	Delta P ("H ₂ O)	Delta-H ("H ₂ O)	Temperatures (degrees F)		ΔP
			Stack	Meter out	
1	0.75	1.84	106	100	0.866
2	0.77	1.89	107	100	0.877
3	0.96	2.35	107	100	0.980
4	1.00	2.45	106	100	1.000
5	0.99	2.43	106	100	0.995
6	0.90	2.21	106	100	0.949
7	0.82	2.01	106	100	0.906
8	0.80	1.96	106	100	0.894
9	0.80	1.96	106	100	0.894
10	0.77	1.89	106	100	0.877
11	0.76	1.86	106	100	0.872
12	0.70	1.72	106	100	0.837
13	0.93	2.28	106	99	0.964
14	0.94	2.30	106	100	0.970
15	0.97	2.38	107	100	0.985
16	0.98	2.40	107	100	0.990
17	0.91	2.23	107	99	0.954
18	0.86	2.11	106	99	0.927
19	0.81	1.98	106	99	0.900
20	0.81	1.98	106	98	0.900
21	0.80	1.96	106	98	0.894
22	0.75	1.84	106	98	0.866
23	0.73	1.79	106	98	0.854
24	0.63	1.54	106	98	0.794
25					
AVG.	0.84	2.06	106.2	99.4	0.914
			[Ts]	[Tm]	[dP]

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Company Emission Unit	Aluf Plastics IBC Retail Carbon Adsorber	Test Location Project No.:	Outlet 016-AQS-149228
Run Start Time	Four (4) 14:15	Date Stop Time	6/28/17 15:25
INPUT DATA Initial Meter Volume (cubic feet) [Vmi] 506.824 Final Meter Volume (cubic feet) (Vmf) 556.490 Manually Entered Moisture Content (%) 0.1 Stack Static Pressure ("H2O) [Ps] 29.96 Measured Barometric Pressure ("Hg): Carbon dioxide (%) [CO2] --- Oxygen (%) [O2] --- Methane (%) [CH4] --- Nozzle Diameter (inches) [Dn]: 0.221 Pitot Tube Factor [Cp] 0.84 Meter Correction Factor [Y] 0.995 Total Sample Time (minutes) 60 Gas Volume Correction Temperature ("F)(Tc) 68 OUTPUT DATA Barometric Pressure at Ports ("Hg) 29.96 Barometric Pressure at Meter Box ("Hg) [Pb] 29.96 Stack Cross-Section (square feet)[CSA] 2.885 Meter Volume (dry cubic feet @stp)[Vms] 49.666 Water Caught (grams) [Wc] 47.518 Moisture Volume (cubic feet @stp) [Vws] 10.9 Measured Moisture (%) [Bws] 0.513 Saturated Moisture (%) [Bws]: 1.07 Dry Molecular Weight (lb/lb-mol) [MWd] 8.25 Wet Molecular Weight (lb/lb-mol) [MWw] 29.0 Absolute Stack Pressure ("Hg) [Pa] 28.883 Stack Velocity (feet/second) [Vsa] 29.97 Stack Flow Rate (cubic feet/minute) 54.11 Actual [ACFM] 9367 Standard [SCFM] 8716 Dry Standard [DSCFM] 8623 Sample Isokinetics (%) [I]: 99.47			

Stack Flow Rate Calculator

point	Delta P ("H ₂ O)	Delta-H ("H ₂ O)	Temperatures (degrees F)		ΔP
			Stack	Meter out	
1	0.93	2.24	107	94	0.964
2	0.93	2.24	107	94	0.964
3	1.00	2.41	108	94	1.000
4	1.00	2.41	108	94	1.000
5	0.99	2.39	108	93	0.995
6	0.92	2.22	108	93	0.959
7	0.87	2.10	108	93	0.933
8	0.82	1.98	108	93	0.906
9	0.82	1.98	108	93	0.906
10	0.80	1.93	108	93	0.894
11	0.74	1.78	108	93	0.860
12	0.70	1.69	108	93	0.837
13	0.92	2.22	108	92	0.959
14	0.93	2.24	108	92	0.964
15	0.97	2.34	109	92	0.985
16	1.00	2.41	109	92	1.000
17	1.00	2.41	109	92	1.000
18	0.95	2.29	109	92	0.975
19	0.81	1.95	109	92	0.900
20	0.81	1.95	109	92	0.900
21	0.79	1.90	109	92	0.889
22	0.75	1.81	109	92	0.866
23	0.71	1.71	109	92	0.843
24	0.67	1.61	109	92	0.819
25					
AVG.	0.87	2.09	108.3	92.7	0.930
			Ts	Tm	[dP]

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REPRO

Method 18 - Acrolein and Pentane Emissions Calculator

A

Company Name: Project No.:		Aluf Plastics 016-AQS-149228		Emission Unit: Test Location:		Repro Carbon Adsorber Outlet	
RUN:		1	3	4	5	AVERAGE ⁽¹⁾	
Measured Stack Flow Rate (DSCFM):		8293	15136	15110	15132	15126	
Corresponding Flow Rate Run:		SW846-0011 R1	SW846-0011 R3	SW846-0011 R4	SW846-0011 R5	---	
Acrolein via USEPA Method 18							
Molar Mass = 56.06							
ppmv, dry:		<0.282	<0.282	<0.282	<0.282	<0.282	
pounds/hour:		<0.020	<0.037	<0.037	<0.037	<0.037	
Pentane via USEPA Method 18							
Molar Mass = 72.15							
ppmv, dry:		<0.214	<0.214	<0.214	<0.214	<0.214	
pounds/hour:		<0.020	<0.036	<0.036	<0.036	<0.036	

⁽¹⁾ Average is of runs 3, 4 and 5

TO-15 - VOC Emissions Calculator

11

Project Name:	Aluf Plastics
Jobsite:	Orangeburg, NY
Sample Location:	Repro Carbon Adsorber Outlet
MAQS - Easton Project Number:	016-AQS-149228

Run Number	Run 1	Run 3	Run 4	Run 5	Average ⁽¹⁾
Stack Flow Rate (DSCFM)	8293	15136	15110	15132	15126
Corresponding Flow Rate Run	SW846-0011 R1	SW846-0011 R3	SW846-0011 R4	SW846-0011 R5	
Stack Moisture (%)	1.61	1.47	1.57	1.55	1.53
ANALYTE	Sample Amt (ppb, wet)	Sample Amt (ppb, dry)	Sample Amt (ppb, wet)	Sample Amt (ppb, dry)	Sample Amt (ppb, dry)
Ethanol	3318	2327	2916	2189	2477
	MW	LBS/HR	LBS/HR	LBS/HR	LBS/HR
	46	0.200	0.256	0.321	0.241
		2362	2963	2223	2516
		0.256	0.321	0.241	0.273

⁽¹⁾ Average is of runs 3, 4 and 5

SW846-0011 - Aldehydes and Ketones Emissions Calculator

11

Project Name:	Aluf Plastics
Jobsite:	Orangeburg, NY
Sample Location:	Repro Carbon Adsorber Outlet
MAQS-Easton Project Number:	016-AQS-149228

Run Number	Run 1		Run 3		Run 4		Run 5		Average ⁽¹⁾	
	Stack Flowrate (DSCFM):	Meter Volume (DSCF):	Sample Amt (ug)	LBS/HR	Sample Amt (ug)	LBS/HR	Sample Amt (ug)	LBS/HR	Sample Amt (ug)	LBS/HR
ANALYTE										
Formaldehyde	8293	45.152	842	2.05E-02	345	1.68E-02	376	1.82E-02	367	1.78E-02
Acetaldehyde			1616	3.93E-02	598	2.91E-02	795	3.85E-02	683	3.31E-02
Acetone			425	1.03E-02	261	1.27E-02	231	1.12E-02	266	1.29E-02
Propionaldehyde			359	8.72E-03	153	7.43E-03	170	8.24E-03	<181	<8.79E-03
Butyraldehyde			703	1.71E-02	321	1.56E-02	525	2.54E-02	360	1.74E-02
Isovaleraldehyde			<288	<7.00E-03	184	8.94E-03	192	9.30E-03	<199	<9.65E-03
Valeraldehyde			633	1.54E-02	<149	<7.24E-03	<149	<7.22E-03	<182	<8.81E-03
Hexaldehyde			381	9.26E-03	170	8.26E-03	171	8.29E-03	<224	<1.08E-02

⁽¹⁾ Average is of runs 3, 4 and 5

Real Time Emissions Calculator

Company Name:	Aluf Plastics		Repro Carbon Adsorber		
Project No.:	016-AQS-149228		Inlet & Outlet		AVERAGE ⁽¹⁾
RUN:	1	3	4	5	
Measured Stack Flow Rate (DSCFM):	7833	7298	7588	7627	7504
Measured Stack Moisture (%):	3.76	4.44	4.57	3.61	4.21
Total Hydrocarbons (as Methane) via EPA Method 25A					
Molar Mass = 16.04	Check here if cutter was used ==>>>				
ppmv, wet:	30.62	34.15	40.88	34.55	36.52
ppmv, dry:	31.82	35.73	42.84	35.84	38.14
Adjusted Methane (via Method 18), ppmv, dry	2.55 J	2.23 J	2.32 J	2.26 J	2.27
Total Non-Methane Hydrocarbons (as Methane) [VOC] by difference					
ppmv, dry:	31.82	35.73	42.84	35.84	38.14
pounds/hour:	0.622	0.651	0.812	0.683	0.715
<hr/>					
RUN:	1	3	4	5	AVERAGE ⁽¹⁾
Measured Stack Flow Rate (DSCFM):	8293	15136	15110	15132	15126
Measured Stack Moisture (%):	1.61	1.47	1.57	1.55	1.53
Total Hydrocarbons (as Methane) via EPA Method 25A					
Molar Mass = 16.04	Check here if cutter was used ==>>>				
ppmv, wet:	32.27	24.16	20.42	13.90	19.49
ppmv, dry:	32.79	24.52	20.74	14.12	19.79
Adjusted Methane (via Method 18), ppmv, dry	1.93 J	1.77 J	1.85 J	1.66 J	1.76
Total Non-Methane Hydrocarbons (as Methane) [VOC] by difference					
ppmv, dry:	32.79	24.52	20.74	14.12	19.79
pounds/hour:	0.679	0.927	0.783	0.534	0.748
Destruction Efficiency, percent from ppmv, dry as methane	-3.1%	31.4%	51.6%	60.6%	41.5%
Destruction Efficiency, percent from pounds/hour as methane	-9.1%	-42.3%	3.6%	21.9%	-5.6%

⁽¹⁾ Average is of runs 3, 4 and 5

* J flag indicates the value is between the Minimum Detection Limit and the Limit of Quantification. See Section 3.2, *Technical Discussion*

Company: Aluf Plastics	Location: Repro Inlet
Unit: Repro Carbon Adsorber	

Stack Flow Rate Calculator

Run:	One (1)	Date:	6/29/2017
Start Time:	10:20	Stop Time:	11:30

INPUT DATA

Manually Entered Moisture Content (%)	3.76
Stack Static Pressure ("H2O) [Ps]:	6.5
Measured Barometric Pressure ("Hg):	30.00
Distance from Barometer to Ports (feet):	0
Carbon dioxide (%) [CO2]:	---
Oxygen (%) [O2]:	---
Methane (%) [CH4]:	---
Pitot Tube Factor [Cp]:	0.84
Stack Inner Diameter or Depth (inches)	20
Stack Width (Rectangular only) (inches)	
Gas Volume Correction Temperature (°F)(Tc):	68

OUTPUT DATA

Barometric Pressure at Ports ("Hg) [Pb]:	30.00
Stack Cross-Section (square feet)[CSA]:	2.182
Measured Moisture (%) [Bws]:	3.76
Saturated Moisture (%) [Bws]:	10.99
Dry Molecular Weight (lb/lb-mol) [MWd]:	29.0
Wet Molecular Weight (lb/lb-mol) [MWw]:	28.587
Absolute Stack Pressure ("Hg) [Pa]:	30.48
Average ΔP ("H2O):	1.308
Average Stack Temperature (°F) [Ts]:	119.0
Average √ ΔP [dP]:	1.143
Stack Velocity (feet/second) [Vsa]:	66.932
Stack Flow Rate (cubic feet/minute):	
Actual [ACFM]:	8761
Standard [SCFM]:	8139
Dry Standard [DSCFM]:	7833

Moisture
Calculation
Based On
Manual Input

Point	ΔP ("H2O)	Stack Temp (°F)	√ ΔP
1	1.3	119	1.140
2	1.3	119	1.140
3	1.4	119	1.183
4	1.4	119	1.183
5	1.2	119	1.095
6	1.2	119	1.095
7	1.2	119	1.095
8	1.3	119	1.140
9	1.3	119	1.140
10	1.4	119	1.183
11	1.4	119	1.183
12	1.3	119	1.140
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			

Run:	Three (3)	Date:	6/29/2017
Start Time:	14:15	Stop Time:	15:25

INPUT DATA

Manually Entered Moisture Content (%)	4.44
Stack Static Pressure ("H2O) [Ps]:	6.9
Measured Barometric Pressure ("Hg):	29.91
Carbon dioxide (%) [CO2]:	---
Oxygen (%) [O2]:	---
Methane (%) [CH4]:	---
Pitot Tube Factor [Cp]:	0.84
Gas Volume Correction Temperature (°F)(Tc):	68

OUTPUT DATA

Barometric Pressure at Ports ("Hg) [Pb]:	29.91
Stack Cross-Section (square feet)[CSA]:	2.182
Measured Moisture (%) [Bws]:	4.44
Saturated Moisture (%) [Bws]:	13.22
Dry Molecular Weight (lb/lb-mol) [MWd]:	29.0
Wet Molecular Weight (lb/lb-mol) [MWw]:	28.512
Absolute Stack Pressure ("Hg) [Pa]:	30.42
Average ΔP ("H2O):	1.167
Average Stack Temperature (°F) [Ts]:	125.7
Average √ ΔP [dP]:	1.079
Stack Velocity (feet/second) [Vsa]:	63.659
Stack Flow Rate (cubic feet/minute):	
Actual [ACFM]:	8333
Standard [SCFM]:	7637
Dry Standard [DSCFM]:	7298

Moisture
Calculation
Based On
Manual Input

Point	ΔP ("H2O)	Stack Temp (°F)	√ ΔP
1	1.0	125	1.000
2	1.0	125	1.000
3	1.1	126	1.049
4	1.3	126	1.140
5	1.3	126	1.140
6	1.2	126	1.095
7	1.0	125	1.000
8	1.3	125	1.140
9	1.2	126	1.095
10	1.3	126	1.140
11	1.2	126	1.095
12	1.1	126	1.049
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			

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Company: Aluf Plastics	Location: Repro Inlet
Unit: Repro Carbon Adsorber	

Stack Flow Rate Calculator

Run: Four (4)	Date: 6/29/2017
Start Time: 16:05	Stop Time: 17:15

INPUT DATA

Manually Entered Moisture Content (%)	4.57
Stack Static Pressure ("H2O) [Ps]:	6.6
Measured Barometric Pressure ("Hg):	29.88
Carbon dioxide (%) [CO2]:	---
Oxygen (%) [O2]:	---
Methane (%) [CH4]:	---
Pitot Tube Factor [Cp]:	0.84
Gas Volume Correction Temperature (°F)(Tc):	68

OUTPUT DATA

Barometric Pressure at Ports ("Hg) [Pb]:	29.88
Stack Cross-Section (square feet)[CSA]:	2.182
Measured Moisture (%) [Bws]:	4.57
Saturated Moisture (%) [Bws]:	13.61
Dry Molecular Weight (lb/lb-mol) [MWd]:	29.0
Wet Molecular Weight (lb/lb-mol) [MWw]:	28.497
Absolute Stack Pressure ("Hg) [Pa]:	30.37
Average ΔP ("H2O):	1.272
Average Stack Temperature (°F) [Ts]:	126.7
Average √ ΔP [dP]:	1.125
Stack Velocity (feet/second) [Vsa]:	66.510
Stack Flow Rate (cubic feet/minute):	
Actual [ACFM]:	8706
Standard [SCFM]:	7952
Dry Standard [DSCFM]:	7588

Moisture
Calculation
Based On
Manual Input

Point	ΔP ("H2O)	Stack Temp (°F)	√ ΔP
1	0.86	125	0.927
2	1.2	127	1.095
3	1.2	127	1.095
4	1.4	127	1.183
5	1.4	127	1.183
6	1.3	127	1.140
7	1.0	126	1.000
8	1.3	126	1.140
9	1.4	127	1.183
10	1.4	127	1.183
11	1.4	127	1.183
12	1.4	127	1.183
13			
14			
15			
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21			
22			
23			
24			
25			

Run: Five (5)	Date: 6/29/2017
Start Time: 17:45	Stop Time: 18:55

INPUT DATA

Manually Entered Moisture Content (%)	3.61
Stack Static Pressure ("H2O) [Ps]:	6.9
Measured Barometric Pressure ("Hg):	29.86
Carbon dioxide (%) [CO2]:	---
Oxygen (%) [O2]:	---
Methane (%) [CH4]:	---
Pitot Tube Factor [Cp]:	0.84
Gas Volume Correction Temperature (°F)(Tc):	68

OUTPUT DATA

Barometric Pressure at Ports ("Hg) [Pb]:	29.86
Stack Cross-Section (square feet)[CSA]:	2.182
Measured Moisture (%) [Bws]:	3.61
Saturated Moisture (%) [Bws]:	13.95
Dry Molecular Weight (lb/lb-mol) [MWd]:	29.0
Wet Molecular Weight (lb/lb-mol) [MWw]:	28.603
Absolute Stack Pressure ("Hg) [Pa]:	30.37
Average ΔP ("H2O):	1.263
Average Stack Temperature (°F) [Ts]:	127.6
Average √ ΔP [dP]:	1.122
Stack Velocity (feet/second) [Vsa]:	66.275
Stack Flow Rate (cubic feet/minute):	
Actual [ACFM]:	8675
Standard [SCFM]:	7912
Dry Standard [DSCFM]:	7627

Moisture
Calculation
Based On
Manual Input

Point	ΔP ("H2O)	Stack Temp (°F)	√ ΔP
1	1.1	127	1.049
2	1.2	127	1.095
3	1.2	128	1.095
4	1.3	128	1.140
5	1.2	128	1.095
6	1.2	128	1.095
7	0.96	127	0.980
8	1.3	127	1.140
9	1.5	127	1.225
10	1.4	128	1.183
11	1.4	128	1.183
12	1.4	128	1.183
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			

LAS 8/10/2017

Moisture Determination via Wet-Bulb/Dry-Bulb Technique

Company Name: Aluf Plastics
 Project No.: 016-AQS-149228
 Emission Unit: Repro Carbon Adsorber
 Test Location: Inlet

Run Sample Location Date	One Repro Inlet 6/29/2017	Run Sample Location Date	Three Repro Inlet 6/29/2017	Run Sample Location Date	Four Repro Inlet 6/29/2017	Run Sample Location Date	Five Repro Inlet 6/29/2017
Measured Barometric Pressure ("Hg):	30.00	Measured Barometric Pressure ("Hg):	29.91	Measured Barometric Pressure ("Hg):	29.88	Measured Barometric Pressure ("Hg):	29.86
Sample Location Elevation (feet):	0	Sample Location Elevation (feet):	0	Sample Location Elevation (feet):	0	Sample Location Elevation (feet):	0
Corrected Barometric Pressure ("Hg) [Pb]:	30.00	Corrected Barometric Pressure ("Hg) [Pb]:	29.91	Corrected Barometric Pressure ("Hg) [Pb]:	29.88	Corrected Barometric Pressure ("Hg) [Pb]:	29.86
Static Pressure ("H ₂ O) [P _{static}]	6.5	Static Pressure ("H ₂ O) [P _{static}]	6.9	Static Pressure ("H ₂ O) [P _{static}]	6.6	Static Pressure ("H ₂ O) [P _{static}]	6.9
Stack Pressure ("Hg) [P _{stack}]	30.48	Stack Pressure ("Hg) [P _{stack}]	30.42	Stack Pressure ("Hg) [P _{stack}]	30.37	Stack Pressure ("Hg) [P _{stack}]	30.37
Wet-Bulb Temperature (°F)	90	Wet-Bulb Temperature (°F)	94.6	Wet-Bulb Temperature (°F)	94.2	Wet-Bulb Temperature (°F)	89.6
Dry-Bulb Temperature (°F)	114	Dry-Bulb Temperature (°F)	119.8	Dry-Bulb Temperature (°F)	114.4	Dry-Bulb Temperature (°F)	116.4
Wet-Bulb Temperature (°C) [T _{wet}]	32	Wet-Bulb Temperature (°C) [T _{wet}]	35	Wet-Bulb Temperature (°C) [T _{wet}]	35	Wet-Bulb Temperature (°C) [T _{wet}]	32
Dry-Bulb Temperature (°C) [T _{dry}]	46	Dry-Bulb Temperature (°C) [T _{dry}]	49	Dry-Bulb Temperature (°C) [T _{dry}]	46	Dry-Bulb Temperature (°C) [T _{dry}]	47
Saturated Vapor Pressure ("Hg) [e _w]	1.4234	Saturated Vapor Pressure ("Hg) [e _w]	1.6427	Saturated Vapor Pressure ("Hg) [e _w]	1.6225	Saturated Vapor Pressure ("Hg) [e _w]	1.4056
Actual Vapor Pressure ("Hg) [e]	1.145	Actual Vapor Pressure ("Hg) [e]	1.350	Actual Vapor Pressure ("Hg) [e]	1.389	Actual Vapor Pressure ("Hg) [e]	1.096
Stack Moisture (% v/v)	3.76	Stack Moisture (% v/v)	4.44	Stack Moisture (% v/v)	4.57	Stack Moisture (% v/v)	3.61

$$e_w \text{ (millibars)} = 6.112 \times e^{-\Lambda((17.67 \times T_{wet}) / (T_{wet} + 243.5))}$$

$$e = e_w - P_{stack} \times (T_{dry} - T_{wet}) \times 0.00066 \times (1 + (0.00115 \times T_{wet}))$$

Calculations obtained from the NOAA.

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Company Emission Unit	Aluf Plastics Repro Carbon Adsorber	Test Location Project No.:	Repro Outlet 016-AQS-149228
Run Start Time:	One (1) 10:20	Date Stop Time:	6/29/2017 11:30
INPUT DATA Initial Meter Volume (cubic feet) [Vmi] 556.614 Final Meter Volume (cubic feet) (Vmf) 603.378 Manually Entered Moisture Content (%) 0.1 Stack Static Pressure ("H2O) [Ps] 30.00 Measured Barometric Pressure ("Hg): 20 Distance from Barometer to Ports (feet): 20 Distance from Barometer to Meter Box (feet): 23 Stack Inner Diameter or Depth (inches) --- Stack Width (Rectangular only) (inches) --- Carbon dioxide (%) [CO2] --- Oxygen (%) [O2] --- Methane (%) [CH4] --- Pitot Tube Factor [Cp] 0.84 Nozzle Diameter (inches) [Dn]: 0.221 Meter Correction Factor [Y] 0.995 Total Sample Time (minutes) 60 Gas Volume Correction Temperature (°F)(Tc) 68			
OUTPUT DATA Barometric Pressure at Ports ("Hg) 29.98 Barometric Pressure at Meter Box ("Hg) [Pb] 29.98 Stack Cross-Section (square feet)[CSA] 2.885 Meter Volume (cubic feet) [V m] 46.764 Meter Volume (dry cubic feet @stp)[V ms] 45.152 Water Caught (grams) [Wc] 15.7 Moisture Volume (cubic feet @stp) [V ws] 0.739 Measured Moisture (%) [Bws] 1.61 Saturated Moisture (%) [Bws]: 10.44 Dry Molecular Weight (lb/lb-mol) [MWd] 29.0 Wet Molecular Weight (lb/lb-mol) [MWw] 28.82 Absolute Stack Pressure ("Hg) [Pa] 29.99 Stack Velocity (feet/second) [V sa] 53.05 Stack Flow Rate (cubic feet/minute) Actual [ACFM] 9183 Standard [SCFM] 8429 Dry Standard [DSCFM] 8293 Sample Isokinetics (%) [I]: 98.28			

Stack Flow Rate Calculator

point	Delta P ("H ₂ O)	Delta-H ("H ₂ O)	Temperatures (degrees F)		ΔP
			Stack	Meter out	
1	0.95	2.20	116	82	0.975
2	0.94	2.18	116	82	0.970
3	0.90	2.09	116	83	0.949
4	0.82	1.90	116	83	0.906
5	0.79	1.83	116	84	0.889
6	0.73	1.69	116	84	0.854
7	0.71	1.65	116	85	0.843
8	0.80	1.86	116	86	0.894
9	0.81	1.88	116	86	0.900
10	0.82	1.90	116	87	0.906
11	0.83	1.93	115	87	0.911
12	0.83	1.93	115	87	0.911
13	0.82	1.90	117	88	0.906
14	0.84	1.95	117	89	0.917
15	0.84	1.95	117	89	0.917
16	0.85	1.97	117	90	0.922
17	0.80	1.86	118	90	0.894
18	0.76	1.76	118	91	0.872
19	0.75	1.74	118	91	0.866
20	0.85	1.97	117	92	0.922
21	0.86	2.00	118	92	0.927
22	0.86	2.00	117	92	0.927
23	0.80	1.86	117	93	0.894
24	0.70	1.62	117	93	0.837
25					
AVG.	0.82	1.90	116.6	87.8	0.904
			Ts	Tm	[dP]

ISOs ARE GOOD

LAS 8/10/2017

Company Emission Unit	Aluf Plastics Repro Carbon Adsorber	Test Location Project No.:	Repro Outlet 016-AQS-149228
Run Start Time	Three (3) 1:4:15	Date Stop Time	6/29/2017 15:25
INPUT DATA			
Initial Meter Volume (cubic feet) [Vmi]	631.420		
Final Meter Volume (cubic feet) (Vmf)	675.303		
Manually Entered Moisture Content (%)	0.15		
Stack Static Pressure ("H2O) [Ps]	29.91		
Measured Barometric Pressure ("Hg): Carbon dioxide (%) [CO2]	---		
Oxygen (%) [O2]	---		
Methane (%) [CH4]	---		
Nozzle Diameter (inches) [Dn]:	0.155		
Pitot Tube Factor [Cp]	0.84		
Meter Correction Factor [Y]	0.995		
Total Sample Time (minutes)	60		
Gas Volume Correction Temperature (°F)(Tc)	68		
OUTPUT DATA			
Barometric Pressure at Ports ("Hg)	29.89		
Barometric Pressure at Meter Box ("Hg) [Pb]	29.89		
Stack Cross-Section (square feet)[CSA]	2.885		
Meter Volume (cubic feet) [Vm]	43,883		
Meter Volume (dry cubic feet @stp)[Vms]	41.201		
Water Caught (grams) [Wc]	13.1		
Moisture Volume (cubic feet @stp) [Vws]	0.616		
Measured Moisture (%) [Bws]	1.47		
Saturated Moisture (%) [Bws]:	8.38		
Dry Molecular Weight (lb/lb-mol) [MWd]	29.0		
Wet Molecular Weight (lb/lb-mol) [MWw]	28.84		
Absolute Stack Pressure ("Hg) [Pa]	29.90		
Stack Velocity (feet/second) [Vsa]	95.66		
Stack Flow Rate (cubic feet/minute) Actual [ACFM]	16560		
Standard [SCFM]	15362		
Dry Standard [DSCFM]	15136		
Sample Isokinetics (%) [I]:	99.89		

Stack Flow Rate Calculator

point	Delta P ("H ₂ O)	Delta-H ("H ₂ O)	Temperatures (degrees F)			ΔP
			Stack	Meter in	Meter out	
1	1.70	1.02	110	98	98	1.304
2	2.10	1.26	110	98	98	1.449
3	3.00	1.80	109	98	98	1.732
4	3.50	2.10	105	98	98	1.871
5	4.80	2.88	102	99	99	2.191
6	6.10	3.66	99	99	99	2.470
7	4.30	2.58	104	100	100	2.074
8	2.70	1.62	109	100	100	1.643
9	2.20	1.32	110	100	100	1.483
10	2.00	1.20	112	101	101	1.414
11	1.90	1.14	113	101	101	1.378
12	1.70	1.02	113	101	101	1.304
13	1.60	0.96	112	102	102	1.265
14	1.70	1.02	112	103	103	1.304
15	1.80	1.08	111	103	103	1.342
16	2.50	1.50	108	103	103	1.581
17	3.70	2.22	105	103	103	1.924
18	5.10	3.06	102	103	103	2.258
19	5.10	3.06	104	103	103	2.258
20	3.30	1.98	108	103	103	1.817
21	2.40	1.44	112	104	104	1.549
22	1.70	1.02	113	104	104	1.304
23	1.60	0.96	114	104	104	1.265
24	1.40	0.84	114	104	104	1.183
25						
AVG.	2.83	1.70	108.8	101.3	101.3	1.640
			[Ts]	[Tm]	[Tm]	[dP]

ISOs ARE GOOD

LAS 8/10/2017

Company Emission Unit	Aluf Plastics Repro Carbon Adsorber	Test Location Project No.:	Repro Outlet 016-AQS-149228
Run Start Time	Four (4) 16:05	Date Stop Time	6/29/2017 17:15
INPUT DATA Initial Meter Volume (cubic feet) [Vmi] 675.415 Final Meter Volume (cubic feet) [Vmf] 719.418 Manually Entered Moisture Content (%) Stack Static Pressure ("H2O) [Ps] 0.15 Measured Barometric Pressure ("Hg): 29.88 Carbon dioxide (%) [CO2] --- Oxygen (%) [O2] --- Methane (%) [CH4] --- Nozzle Diameter (inches) [Dn]: --- Pitot Tube Factor [Cp] 0.156 Meter Correction Factor [Y] 0.84 Total Sample Time (minutes) 0.995 60 Gas Volume Correction Temperature (°F)(Tc) 68 OUTPUT DATA Barometric Pressure at Ports ("Hg) 29.86 Barometric Pressure at Meter Box ("Hg) [Pb] 29.86 Stack Cross-Section (square feet)[CSA] 2.885 Meter Volume (cubic feet) [Vm] 44.003 Meter Volume (dry cubic feet @stp)[Vms] 41.252 Moisture Volume (cubic feet @stp) [Vws] 0.659 Water Caught (grams) [Wc] 14.0 Measured Moisture (%) [Bws] 1.57 Saturated Moisture (%) [Bws]: 8.49 Dry Molecular Weight (lb/lb-mol) [MWd] 29.0 Wet Molecular Weight (lb/lb-mol) [MWw] 28.83 Absolute Stack Pressure ("Hg) [Pa] 29.87 Stack Velocity (feet/second) [Vsa] 95.76 Stack Flow Rate (cubic feet/minute) Actual [ACFM] 16577 Standard [SCFM] 15352 Dry Standard [DSCFM] 15110 Sample Isokinetics (%) [I]: 98.90			

Stack Flow Rate Calculator

point	Delta P ("H ₂ O)	Delta-H ("H ₂ O)	Temperatures (degrees F)		ΔP
			Stack	Meter out	
1	1.60	0.98	113	102	1.265
2	1.70	1.04	114	102	1.304
3	1.70	1.04	113	102	1.304
4	2.40	1.46	110	101	1.549
5	3.50	2.14	106	101	1.871
6	5.30	3.23	102	101	2.302
7	5.50	3.36	102	101	2.345
8	3.70	2.26	105	101	1.924
9	2.60	1.59	109	101	1.612
10	1.70	1.04	111	101	1.304
11	1.60	0.98	114	101	1.265
12	1.50	0.92	113	102	1.225
13	1.60	0.98	112	102	1.265
14	2.20	1.34	112	102	1.483
15	3.00	1.83	112	102	1.732
16	3.60	2.20	108	102	1.897
17	4.60	2.81	104	102	2.145
18	6.20	3.78	104	102	2.490
19	4.00	2.44	104	102	2.000
20	3.30	2.01	105	102	1.817
21	2.40	1.46	109	102	1.549
22	1.60	0.98	112	102	1.265
23	1.50	0.92	114	102	1.225
24	1.50	0.92	113	102	1.225
25					
AVG.	2.85	1.74	109.2	101.7	1.640
			[Ts]	[Tm]	[dP]

ISOs ARE GOOD

LAS 8/10/2017

Company Emission Unit	Aluf Plastics Repro Carbon Adsorber	Test Location Project No.:	Repro Outlet 016-AQS-149228
Run Start Time	Five (5) 17:45	Date Stop Time	6/29/2017 18:55
INPUT DATA Initial Meter Volume (cubic feet) [Vmi] 719.546 Final Meter Volume (cubic feet) (Vmf) 763.275 Manually Entered Moisture Content (%) 0.15 Stack Static Pressure ("H2O) [Ps] 29.86 Measured Barometric Pressure ("Hg): Carbon dioxide (%) [CO2] --- Oxygen (%) [O2] --- Methane (%) [CH4] --- Nozzle Diameter (inches) [Dn]: 0.155 Pitot Tube Factor [Cp] 0.84 Meter Correction Factor [Y] 0.995 Total Sample Time (minutes) 60 Gas Volume Correction Temperature ("F)(Tc) 68 OUTPUT DATA Barometric Pressure at Ports ("Hg) 29.84 Barometric Pressure at Meter Box ("Hg) [Pb] 29.84 Stack Cross-Section (square feet)[CSA] 2.885 Meter Volume (cubic feet) [Vm] 43.729 Meter Volume (dry cubic feet @stp)[Vms] 41.325 Water Caught (grams) [Wc] 13.8 Moisture Volume (cubic feet @stp) [Vws] 0.649 Measured Moisture (%) [Bws] 1.55 Saturated Moisture (%) [Bws]: 8.00 Dry Molecular Weight (lb/lb-mol) [MWd] 29.0 Wet Molecular Weight (lb/lb-mol) [MWw] 28.830 Absolute Stack Pressure ("Hg) [Pa] 29.85 Stack Velocity (feet/second) [Vsa] 95.59 Stack Flow Rate (cubic feet/minute) Actual [ACFM] 16548 Standard [SCFM] 15370 Dry Standard [DSCFM] 15132 Sample Isokinetics (%) [I]: 100.22			

Stack Flow Rate Calculator

point	Delta P ("H ₂ O)	Delta-H ("H ₂ O)	Temperatures (degrees F)		ΔP
			Stack	Meter out	
1	1.70	1.02	107	98	1.304
2	2.10	1.26	108	98	1.449
3	3.00	1.80	107	98	1.732
4	3.60	2.16	101	98	1.897
5	4.80	2.88	99	97	2.191
6	6.00	3.60	95	97	2.449
7	4.50	2.70	102	97	2.121
8	2.70	1.62	106	97	1.643
9	2.20	1.32	112	97	1.483
10	1.80	1.08	113	97	1.342
11	1.80	1.08	113	97	1.342
12	1.70	1.02	113	97	1.304
13	1.50	0.90	111	96	1.225
14	2.00	1.20	110	96	1.414
15	2.00	1.20	108	96	1.414
16	2.50	1.50	108	96	1.581
17	3.20	1.92	103	96	1.789
18	5.00	3.00	99	96	2.236
19	5.20	3.12	102	97	2.280
20	3.30	1.98	107	96	1.817
21	2.40	1.44	110	96	1.549
22	1.80	1.08	112	96	1.342
23	1.60	0.96	113	96	1.265
24	1.40	0.84	113	97	1.183
25					
AVG.	2.83	1.70	107.2	96.8	1.640
			Ts	Tm	ΔP

ISOs ARE GOOD

LAS 8/10/2017

APPENDIX V:
EQUIPMENT CALIBRATION DATA

**METER BOX ANNUAL CALIBRATION
5 SETTINGS, SINGLE REPLICATE**

SYSTEM ID NO: MB 13
 FIELD METER S/N: 978434
 BAROMETRIC PRESSURE: 29.99 in. Hg
 LEAK CHECK: 0.000 cfm @ 15 in. Hg
 BAROMETER ID: BR-10
 STD. METER S/N: 16787477

DATE: 01/16/17
 BY: BVM
 VACUUM: 5 in. Hg
 PRESSURE CHECK: **PASS**
 STD. METER Y: 0.992

ORIFICE MANOMETER dH ("H ₂ O)	Std. Dry Gas Meter V _s , Ft ³	Field Dry Gas Meter V _f , Ft ³	Std Meter T _s , °F	Field Meter			Time Min. Ø	DGM Cal. Factor, Yd **	Orifice Calib. Factor, dH@ ***
				In T _i , °F	Out T _o , °F	Avg T _f , °F			
0.5	653.112	394.253	65		67	66.5	15.00	0.993	1.951
	647.400	388.539	64		66				
	5.712	5.714	65						
1.0	661.564	402.693	65		68	67.5	14.00	0.995	1.885
	653.900	395.036	65		67				
	7.664	7.657	65						
2.0	638.468	379.713	64		63	62.5	7.00	0.995	1.796
	632.900	374.203	63		62				
	5.568	5.510	64						
3.0	672.284	413.373	65		70	69	10.00	0.997	1.765
	662.500	403.631	65		68				
	9.784	9.742	65						
4.0	646.759	387.897	64		65	64.5	6.50	0.997	1.766
	639.400	380.637	64		64				
	7.359	7.260	64						
AVERAGE								0.995	1.832

*** Individual values may vary ±0.02 from average

*** Individual values may vary ±0.20 from average

Total volume sampled at each dH must be greater than 5.0 cfm (cells will be red if condition is not met)

DRY GAS METER REAL-TIME CALIBRATION CHECK

Company Name: Aluf Plastics	Date: 6/28/2017
Project No.: 016-AQS-149228	

Meter Box No. 13	$\Delta Y@$ 0.995	Passing Range	
		Low 0.94525	High 1.04475

Retail Outlet

	Run 2	Run 3	Run 4
Barometric Pressure at Meter Box ("Hg) [Pb]:	29.96	29.97	29.96
Total Sample Time (minutes) [min]:	60	60	60
Total Metered Volume (dry cubic feet)[Vm]:	50.594	49.641	49.666
Dry Molecular Weight (lb/lb-mol) [MW _d]:	29.00	29.00	29.00
Meter Calibration Coefficient [$\Delta H@$]:	1.832	1.832	1.832
Average Meter ΔH [ΔH_{avg}]:	2.145	2.056	2.092
Average of Square Root of Meter ΔH [$(\sqrt{\Delta H})_{avg}$]:	1.461	1.431	1.444
Average Meter Temperature [T _m]:	101.04	99.42	92.67
$Y_{qa} =$	0.987	0.984	0.986
PASS	Avg Y_{qa}:	0.985	

$$Y_{qa} = (\text{min} / V_m) \times \sqrt{((0.0319 \times (T_m + 460) \times 29) / (\Delta H@ \times (P_b + (\Delta H_{avg} / 13.6) \times MW_d)) \times (\sqrt{\Delta H})_{avg}}$$

LAS 8/10/2017

DRY GAS METER REAL-TIME CALIBRATION CHECK

Company Name: Aluf Plastics	Date: 6/29/2017
Project No.: 016-AQS-149228	

Meter Box No. 13	$\Delta Y@$ 0.995	Passing Range	
		Low 0.94525	High 1.04475

<u>Repro Outlet</u>	Run 1	Run 3	Run 4	Run 5
Barometric Pressure at Meter Box ("Hg) [Pb]:	29.98	29.89	29.86	29.84
Total Sample Time (minutes) [min]:	60	60	60	60
Total Metered Volume (dry cubic feet)[Vm]:	46.764	43.883	44.003	43.729
Dry Molecular Weight (lb/lb-mol) [MW _d]:	29.00	29.00	29.00	29.00
Meter Calibration Coefficient [$\Delta H@$]:	1.832	1.832	1.832	1.832
Average Meter ΔH [ΔH_{avg}]:	1.900	1.698	1.736	1.695
Average of Square Root of Meter ΔH [$(\sqrt{\Delta H})_{avg}$]:	1.378	1.270	1.281	1.270
Average Meter Temperature [T _m]:	87.75	101.33	101.67	96.75
$Y_{qa} =$	0.995	0.991	0.997	0.991
PASS		<i>Avg Y_{qa}:</i>	0.994	

$$Y_{qa} = (\text{min} / V_m) \times \sqrt{((0.0319 \times (T_m + 460) \times 29) / (\Delta H@ \times (P_b + (\Delta H_{avg} / 13.6) \times MW_d)) \times (\sqrt{\Delta H})_{avg}}$$

LAS 8/10/2017

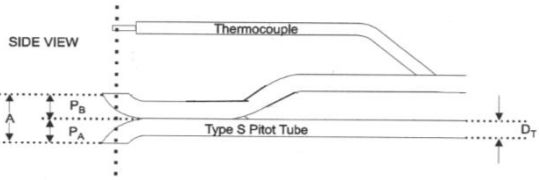
Physical Pitot Tube Calibration

(Pitot Tube Assembly)

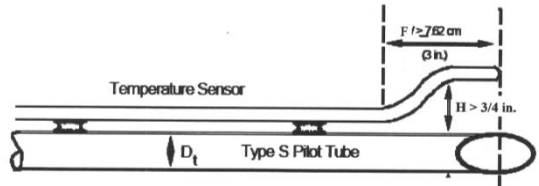
Pitot Tube ID #: **PT 2-8**
 Tip ID #: **----**
 Calibrated By: **AJB**

Date: **1/11/2017**

Is the Pitot Tube Free of Damage?
 (type in yes or no) **yes**



Pitot Thermocouple Style
 (type in offset or set-back) **offset (pictured) offset**



		Allowable	Allowable
		3/8" Tips	1/4" Tips
0.405	=P _B	0.39375" < P _B < 0.5625"	0.2625" < P _B < 0.375"
0.408	=P _A	0.39375" < P _B < 0.5625"	0.2625" < P _A < 0.375"
0.813	=A	0.788" < A < 1.125"	0.526" < A < 0.750"
0.003	=P _A - P _B	-0.063" to 0.063"	
0.375	=D _t	3/8" tips = .375"	1/4" tips = .250"
3	=F	F ≥ 3" (offset style) OR F ≥ 2" (set-back style)	Note: set-back style not pictured
0.75	=H	H > 3/4 in. (offset style) OR N/A for set-back	
0	=α ₁	-10° ≤ α ₁ ≤ +10°	
1	=α ₂	-10° ≤ α ₂ ≤ +10°	
1	=β ₁	-5° ≤ β ₁ ≤ +5°	
1	=β ₂	-5° ≤ β ₂ ≤ +5°	
1	=θ		
0.01419	=W	W ≤ 0.03125"	
1	=γ		
0.014190968	=Z	Z ≤ 0.125"	

Physical Dimension Results

Are the physical dimensions criteria met? (Yes or No)

Yes

Coefficient: **0.84**

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Offset Style Physical Probe w/ Pitot Tube Calibration

(M-5 Probe Assembly)

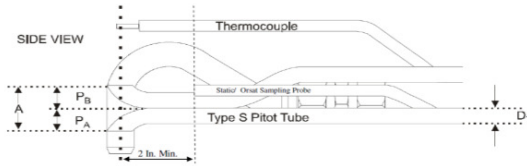
Probe ID #: PR 4-2

Date: 5/18/2017

Tip ID #: e-6

Calibrated By: ELA

Is the Pitot Tube Free of Damage?
 (yes / no) **YES**



Allowable

0.455	=P _B	0.39375" < P _B < 0.5625"
0.460	=P _A	0.39375" < P _B < 0.5625"
0.915	=A	0.788" < A < 1.125"
0.005	=P _A - P _B	-0.063" to 0.063"

Interference Check: (type yes or no)

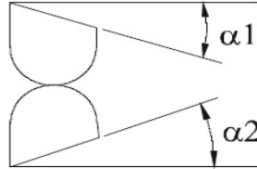
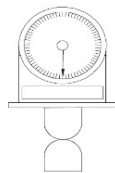
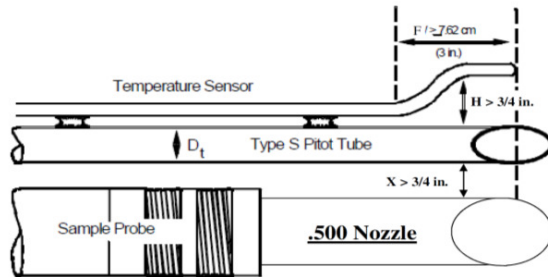
- Nozzle center line and pitot tip center line align? **Yes**
- Static/ orsat sampling probe off set from nozzle & pitot tips a minimum of 2" from the centerline of the pitot tips opening. **Yes**

0.376 =Dt 3/8" tips = .375"

5.5 =F F ≥ 3"

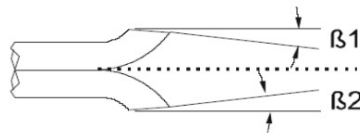
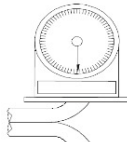
0.75 =H H > 3/4 in.

1.25 =X X ≥ 3/4 in.



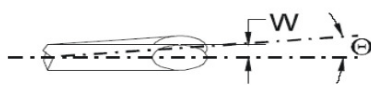
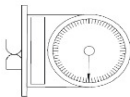
3 =a1 -10° ≤ a1 ≤ +10°

4 =a2 -10° ≤ a2 ≤ +10°



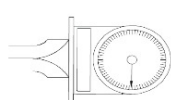
2 =B1 -5° ≤ a2 ≤ +5°

1 =B2 -5° ≤ a2 ≤ +5°

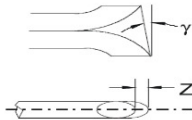


1 =θ

0.01597 =W W ≤ 0.03125"



DEGREE INDICATING LEVEL POSITION FOR DETERMINING γ THEN CALCULATING Z.



1 =γ

0.01597138 =Z Z ≤ 0.125"

Physical Dimension Results

Are the physical dimensions criteria met? (Yes or No)

YES

Coefficient: **0.84**

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Offset Style Physical Probe w/ Pitot Tube Calibration

(M-5 Probe Assembly)

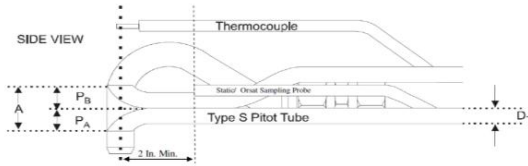
Probe ID #: PR 4-3

Date: 6/12/2017

Tip ID #: E-56

Calibrated By: AJB

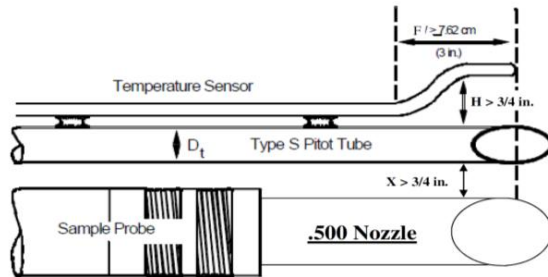
Is the Pitot Tube Free of Damage?
 (yes / no) Yes



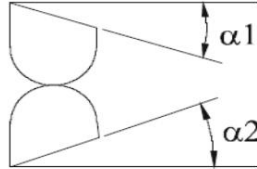
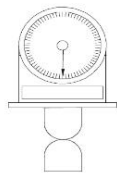
Allowable		
0.442	=P _B	0.39375" < P _B < 0.5625"
0.429	=P _A	0.39375" < P _B < 0.5625"
0.871	=A	0.788" < A < 1.125"
-0.013	=P _A - P _B	-0.063" to 0.063"

Interference Check: (type yes or no)

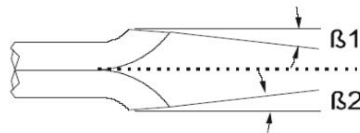
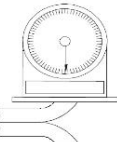
- Nozzle center line and pitot tip center line align?
- Static/ orsat sampling probe off set from nozzle & pitot tips a minimum of 2" from the centerline of the pitot tips opening.



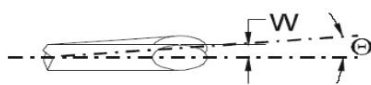
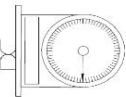
0.375	=Dt	3/8" tips = .375"
7	=F	F ≥ 3"
0.75	=H	H > 3/4 in.
1.5	=X	X ≥ 3/4 in.



2 = a1 -10° ≤ a1 ≤ +10°



1 = a2 -10° ≤ a2 ≤ +10°

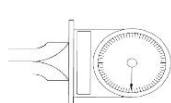


1 = B1 -5° ≤ a2 ≤ +5°

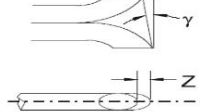
1 = B2 -5° ≤ a2 ≤ +5°

1 = theta

0.01520 = W W ≤ 0.03125"



DEGREE INDICATING LEVEL POSITION FOR DETERMINING gamma THEN CALCULATING Z.



1 = gamma

0.01520336 = Z Z ≤ 0.125"

Physical Dimension Results

Are the physical dimensions criteria met? (Yes or No)

YES

Coefficient: 0.84

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EPA ALT-011 (Method 2 Alternative) Thermocouple Calibration Check

Date: 7/20/2017

Calibrator Name: ZBB

Reference Thermometer: BR-8

Project Name: KEMS/ALUF

Project Number: 016-AQS-149228

Pitot/Probe/TC ID	Console/Readout ID	TC Reading, °F	Reference Reading, °F	Difference (≤ 2 °F)
PR 4-2	MB 13	73	74.4	1.4
PR 4-3	MB 13	73	73.8	0.8

Barometer Calibration

Hygrometer ID:	BR-11	Reference Thermometer ID:	BR-11	
Ambient Temperature (°F):	76.1	Date:	3/31/17	
Relative Humidity (%):	24.8	Initials:	LAS	
Barometer Tolerance:	± 0.07 in. Hg	Reference BAR Pressure (in. Hg)	29.37	As Found BAR Pressure (in Hg)
Reference Barometer ID:	BR-11	Tolerance (Pass/Fail)	PASS	Adjustment (Yes/No)
BAR ID:	BR-08	As Left BAR Pressure (in. Hg)		SAME
NOTES:				



MICRO PRECISION CALIBRATION
 22835 INDUSTRIAL PLACE
 GRASS VALLEY CA 95949
 530-268-1860

Certificate of Calibration

Date: Mar 27, 2017

Cert No. 512200812773040

Customer:

AVOGADRO ENVIRONMENTAL CORP.
 1350 SULLIVAN TRAIL, STE A
 EASTON PA 18040

MPC Control #:	CE4041	Work Order #:	SAC-70085934
Asset ID:	01621693	Purchase Order #:	1007558
Gage Type:	MICROMANOMETER	Serial Number:	M01843
Manufacturer:	SHORTRIDGE INSTRUMENTS, INC.	Department:	N/A
Model Number:	ADM-860	Performed By:	GLENN HIGGINS
Size:	N/A	Received Condition:	IN TOLERANCE
Temp/RH:	68.0°F / 40.0%	Returned Condition:	IN TOLERANCE
Location:	Calibration performed at MPC facility	Cal. Date:	March 27, 2017
		Cal. Interval:	12 MONTHS
		Cal. Due Date:	March 27, 2018

Calibration Notes:

Test Points

Seq.	Description	Standard	Tolerance -	Tolerance +	As Found	As Left	UOM	Result
1	Absolute Pressure Tested:	5.00	4.90	5.10	5.02	5.02	Hg	Passed
2		10.00	9.80	10.20	10.01	10.01	Hg	Passed
3		15.00	14.70	15.30	15.01	15.01	Hg	Passed
4		20.00	19.60	20.40	20.00	20.00	Hg	Passed
5	Differential Pressure:	0.0500	0.0490	0.0510	0.0503	0.0503	in H20	Passed
6		0.2500	0.2450	0.2550	0.2502	0.2502	in H20	Passed
7		5.0000	4.9000	5.1000	5.0003	5.0003	in H20	Passed
8		25.0000	24.5000	25.5000	25.0014	25.0014	in H20	Passed
9		50.0000	49.0000	51.0000	50.0163	50.0163	in H20	Passed
10	Velocity Tested:	75.0	72.8	77.3	75.0	75.0	fpm	Passed
11		150.0	145.5	154.5	150.2	150.2	fpm	Passed
12		250.0	242.5	257.5	252.8	252.8	fpm	Passed

Calibrating Technician:



GLENN HIGGINS

QC Approval:



BRIAN GOLD

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with EA's Publication and NIST Technical Note 1297, 1994 Edition. Services rendered conform with ISO/IEC 17025:2005, ANSI/NCSL Z540-1-1994, ANSI/NCSL Z540.3-2006, MPC Quality Manual, MPC CSD and with customer purchase order instructions.

Calibration cycles and resulting due dates were submitted/approved by the customer. Any number of factors may cause an instrument to drift out of tolerance before the next scheduled calibration. Recalibration cycles should be based on frequency of use, environmental conditions and customer's established systematic accuracy. The information on this report, pertains only to the instrument identified.

All standards are traceable to SI through the National Institute of Standards and Technology (NIST) and/or recognized national or international standards laboratories. Services rendered include proper manufacturer's service instruction and are warranted for no less than thirty (30) days. This report may not be reproduced in part or in a whole without the prior written approval of the issuing MPC lab.



MICRO PRECISION CALIBRATION
 22835 INDUSTRIAL PLACE
 GRASS VALLEY CA 95949
 530-268-1860

Certificate of Calibration

Date: Mar 27, 2017

Cert No. 512200812773040

Standards Used to Calibrate Equipment

I.D.	Description.	Model	Serial	Manufacturer	Cal. Due Date	Traceability #
N1700	CALIBRATOR	DPI-603	603809808	DRUCK	Oct 30, 2017	222008122716969
AW4419	MULTI-FUNCTION PRESSURE INDICATOR	DPI 145	14501283	DRUCK	Mar 18, 2018	222008122754295
CR6447	PRECISION PRESSURE INDICATOR	DPI 740	74002329	DRUCK	Jan 30, 2018	512200812721700

Procedures Used in this Event

Procedure Name	Description
MANUFACTURER	MANUAL REV CONTROL

Calibrating Technician:



GLENN HIGGINS

QC Approval:



BRIAN GOLD

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k=2$, which for normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with EA's Publication and NIST Technical Note 1297, 1994 Edition. Services rendered conform with ISO/IEC 17025:2005, ANSI/NCSL Z540-1-1994, ANSI/NCSL Z540.3-2006, MPC Quality Manual, MPC CSD and with customer purchase order instructions.

Calibration cycles and resulting due dates were submitted/approved by the customer. Any number of factors may cause an instrument to drift out of tolerance before the next scheduled calibration. Recalibration cycles should be based on frequency of use, environmental conditions and customer's established systematic accuracy. The information on this report, pertains only to the instrument identified.

All standards are traceable to SI through the National Institute of Standards and Technology (NIST) and/or recognized national or international standards laboratories. Services rendered include proper manufacturer's service instruction and are warranted for no less than thirty (30) days. This report may not be reproduced in part or in a whole without the prior written approval of the issuing MPC lab.

NOZZLE CALIBRATION SUMMARY

Glass Nozzle Kit Calibration List									
Updated On (Date):		1/3/2017			Updated By (Initials):		AJB		
Nozzle Kit ID:		NK-2			Nozzle Diameter ^a			ΔD ^b (inches)	D _{avg} ^c (inches)
Nozzle Identification Number:	Date Calibrated:	Name of Calibrator:	Current Kit Location:	Condition:	D ₁ (inches)	D ₂ (inches)	D ₃ (inches)		
123	1/3/2017	AJB	NK-2	Good	0.125	0.126	0.125	0.001	0.125
126	1/3/2017	AJB	NK-2	Good	0.121	0.122	0.121	0.001	0.121
B003	1/3/2017	AJB	NK-2	Good	0.155	0.156	0.156	0.001	0.156
B006	1/3/2017	AJB	NK-2	Good	0.154	0.155	0.155	0.001	0.155
C002	1/3/2017	AJB	NK-2	Good	0.187	0.186	0.187	0.001	0.187
C008	1/3/2017	AJB	NK- 2	Good	0.184	0.185	0.184	0.001	0.184
D007	1/3/2017	AJB	NK-2	Good	0.220	0.221	0.220	0.001	0.220
D008	1/3/2017	AJB	NK-2	Good	0.221	0.222	0.221	0.001	0.221
E009	1/3/2017	AJB	NK-2	Good	0.252	0.253	0.252	0.001	0.252
753	1/3/2017	AJB	NK-2	Good	0.253	0.254	0.253	0.001	0.253
F003	1/3/2017	AJB	NK-2	Good	0.281	0.280	0.280	0.001	0.280
F008	1/3/2017	AJB	NK-2	Good	0.282	0.283	0.282	0.001	0.282
G001	1/3/2017	AJB	NK-2	Good	0.313	0.312	0.313	0.001	0.313
G006	1/3/2017	AJB	NK-2	Good	0.311	0.312	0.311	0.001	0.311
H006	1/3/2017	AJB	NK-2	Good	0.344	0.344	0.344	0.000	0.344
H007	1/3/2017	AJB	NK-2	Good	0.345	0.344	0.345	0.001	0.345
I001	1/3/2017	AJB	NK-2	Good	0.375	0.376	0.375	0.001	0.375
I005	1/3/2017	AJB	NK-2	Good	0.382	0.382	0.383	0.001	0.382
J003	1/3/2017	AJB	NK-2	Good	0.408	0.409	0.408	0.001	0.408
J004	1/3/2017	AJB	NK-2	Good	0.412	0.413	0.412	0.001	0.412
436	1/3/2017	AJB	NK-2	Good	0.432	0.432	0.431	0.001	0.432
K009	1/3/2017	AJB	NK-2	Good	0.430	0.431	0.430	0.001	0.430
L003	1/3/2017	AJB	NK-2	Good	0.465	0.466	0.465	0.001	0.465
L005	1/3/2017	AJB	NK-2	Good	0.466	0.465	0.465	0.001	0.465
M004	1/3/2017	AJB	NK-2	Good	0.499	0.500	0.500	0.001	0.500
M008	1/3/2017	AJB	NK-2	Good	0.504	0.505	0.505	0.001	0.505

Notes:

- ^a D_{1,2,3} = three different nozzle diameters, inches. Each diameter must be measured within 0.001 inches (0.025 mm).
- ^b ΔD = maximum difference between any two diameters, inches. Maximum difference must not exceed 0.004 inches (0.1 mm).
- ^c D_{avg} = average of D₁, D₂ and D₃

APPENDIX VI:

QUALITY ASSURANCE DATA



CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE

PROCEDURE # : G1

PGVP ID#:	112013	GAS CODE:	APPVD
CUSTOMER:	AVOGADRO ENVIRONMENTAL CORP	CYLINDER # :	CC-99021
SALES#:	110659851	CYLINDER PRES:	2000 PSIG
PROD#:	1266134	CYLINDER VALVE:	CGA 590
P.O.# :	7710	CYLINDER SIZE:	2A
MATERIAL#:	24086346	CYLINDER MATERIAL:	Aluminum
CERTIFICATION DATE:	12-Aug-2013	GAS VOLUME:	4000 Liter
EXPIRATION DATE:	13-Aug-2021	BLEND TOLERANCE:	5% Relative

PAGE: 1 of 1

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	UNCERTAINTY AT 95% CONFIDENCE
Methane	12-Aug-2013	27.38 ppm	27.38 ppm	± 0.33 ppm

BALANCE Air
PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION	EXPIRATION DATE
Methane	GMIS-964407 SRM 2751 212-C-23	cc-53279	99.10 ± 0.66 ppm	19-Apr-2014
		ff-23130	98.23 ± 0.52 ppm	01-Jun-2016

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Methane	Horiba Via-510	57141706	NDIR	18-Jul-2013

THIS STANDARD IS **NIST TRACEABLE**. IT WAS CERTIFIED ACCORDING TO THE 2012 EPA PROTOCOL PROCEDURES. DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 100 PSIG.

ANALYST: 
MATTHEW JACKSON

DATE: 12-Aug-2013

Linde Gas North America LLC



CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE

PROCEDURE # : G1

PGVP ID#: 112014
CUSTOMER: Avogadro Env. Corp.
SALES#: 111190883
PROD#: 1282233
P.O.# : 7844
MATERIAL#: 24086346
CERTIFICATION DATE: 22-Jan-2014
EXPIRATION DATE: 23-Jan-2022

GAS CODE: APPVD
CYLINDER # : CC-143552
CYLINDER PRES: 2000 PSIG
CYLINDER VALVE: CGA 590
CYLINDER SIZE: 2A
CYLINDER MATERIAL: Aluminum
GAS VOLUME: 4000 Liter
BLEND TOLERANCE: 5% Relative
PAGE: 1 of 1

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	UNCERTAINTY AT 95% CONFIDENCE
Methane	22-Jan-2014	48.59 ppm	48.59 ppm	± 0.35 ppm

BALANCE Air
PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION	EXPIRATION DATE
Methane	GMIS-269497 SRM 2751 212-C-23	cc-128487	101.10 ± 0.55 ppm	09-Oct-2015
		ff-23130	98.23 ± 0.52 ppm	01-Jun-2016

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Methane	Horiba Via-510	57141706	NDIR	14-Jan-2014

THIS STANDARD IS **NIST TRACEABLE**. IT WAS CERTIFIED ACCORDING TO THE 2012 EPA PROTOCOL PROCEDURES. DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 100 PSIG.

ANALYST: 
MATTHEW JACKSON

DATE: 22-Jan-2014

Linde Gas North America LLC

THE LINDE GROUP



CERTIFICATE OF ANALYSIS

EPA PROTOCOL MIXTURE

PROCEDURE # : G1

PGVP ID#: I12014
 CUSTOMER: Avogadro Env. Corp.
 SALES#: 111466678
 PROD#: 1291502
 P.O.# : 7932
 MATERIAL#: 24086346
 CERTIFICATION DATE: 16-Apr-2014
 EXPIRATION DATE: 17-Apr-2022

GAS CODE: APPVD
 CYLINDER # : CC-128083
 CYLINDER PRES: 2000 PSIG
 CYLINDER VALVE: CGA 590
 CYLINDER SIZE: 2A
 CYLINDER MATERIAL: Aluminum
 GAS VOLUME: 4000 Liters
 BLEND TOLERANCE: 5% Relative
 PAGE: 1 of 1

CERTIFICATION HISTORY

COMPONENT	DATE OF ASSAY	MEAN CONCENTRATION	CERTIFIED CONCENTRATION	UNCERTAINTY AT 95% CONFIDENCE
Methane	16-Apr-2014	87.77 ppm	87.77 ppm	± 0.65 ppm

BALANCE Air

PREVIOUS CERTIFICATION DATES: None

REFERENCE STANDARDS

COMPONENT	SRM/NTRM#	CYLINDER#	CONCENTRATION	EXPIRATION DATE
Methane	GMIS-269497	cc-128487	101.10 ± 0.55 ppm	09-Oct-2015
	SRM 2751 212-C-23	ff-23130	98.23 ± 0.52 ppm	01-Jun-2016

INSTRUMENTATION

COMPONENT	MAKE/MODEL	SERIAL #	DETECTOR	CALIBRATION DATE(S)
Methane	Horiba Via-510	57141706	NDIR	14-Apr-2014

THIS STANDARD IS NIST TRACEABLE. IT WAS CERTIFIED ACCORDING TO THE 2012 EPA PROTOCOL PROCEDURES. DO NOT USE THIS STANDARD IF THE CYLINDER PRESSURE IS LESS THAN 100 PSIG.

ANALYST: MATTHEW JACKSON

Linde Gas North America LLC

DATE: 16-Apr-2014

Method 4 Daily Balance Audit

Effective Date: 11/22/16
Issued by: District Manager

Project Name: KEMS (ALUF Plastics)
Project No.: 016-AGS-149228

Field Balance ID: EB-15
Reference Weight ID: 4552

DAY 1	Date: <u>6/28/17</u>	Completed By: <u>TElt</u>
Balance Audit	(Tolerance \pm 0.5 g)	Trial 1 (1,000 g) <u>1000.0</u>
DAY 2	Date: <u>6/29/17</u>	Completed By: <u>TJW</u>
Balance Audit	(Tolerance \pm 0.5 g)	Trial 1 (1,000 g) <u>999.8</u>
DAY 3	Date: _____	Completed By: _____
Balance Audit	(Tolerance \pm 0.5 g)	Trial 1 (1,000 g) _____
DAY 4	Date: _____	Completed By: _____
Balance Audit	(Tolerance \pm 0.5 g)	Trial 1 (1,000 g) _____
DAY 5	Date: _____	Completed By: _____
Balance Audit	(Tolerance \pm 0.5 g)	Trial 1 (1,000 g) _____

MAQS-Easton

Q:\Spreadsheets and Datasheets\Approved\Data Sheets 03092017.xls
(Data Sheets 03092017.xls-DAILY BALANCE AUDIT) 6/21/2017

1 of 1

Method 25A Response Time Log Sheet

Project No.: 016-AQS-149228	Operator(s): T.W
Project Name: KEMS/Aluf Plastics	Trailer: T8
Site Loc.: Dringeburg, NY	

Location / Source: REPRO Inlet Date: 6-29-17

Pre-Run Response		Response Time (Seconds)				
Zero	Span	Run 1	Run 2	Run 3	Run 4	Run 5
45	45	45	45	45	45	45

Location / Source: REPRO Outlet Date: 6-29-17

Pre-Run Response		Response Time (Seconds)				
Zero	Span	Run 1	Run 2	Run 3	Run 4	Run 5
45	45	45	45	45	45	45

MAQS - Easton, PA 18040. Tel 610-559-8776. Fax 610-559-8913.

Issued by: District Manager - Effective: 11/01/2016

Heated Line Temperature Log Sheet

Project No.: 016-AQS-149228	Site Loc.: Orangeburg, NY	Operator(s): TJW
Project Name: KEMJ/Alf	Unit/Loc.: REPRO Inlet	Trailer No.: T8
Date: 6-29-17	Prefilter No.: AEC-PRE-10	

Test Run # One (1) 1020-1130						
Time	Elapsed Time	Heated Line #1 Temperature (°F)	Heated Line #2 Temperature (°F)	Prefilter Temperature (°F)	Conditioner/Chiller Temperature (°F)	Comments
1020	0	298	N/A	299.3	36.8	
1030	10	298		300.6	37.1	
1040	20	302		306	37.3	
1050	30	303		316	37.2	
1100	40	302		324	38.1	
1110	50	302		318	38.0	
1120	60	301		314	38.1	
1130		302		312	38.2	

Test Run # Two (2) 1205-1248 (VOID)						
Time	Elapsed Time	Heated Line #1 Temperature (°F)	Heated Line #2 Temperature (°F)	Prefilter Temperature (°F)	Conditioner/Chiller Temperature (°F)	Comments
1205	0	301	N/A	315	38.4	
1215	10	301		312	38.4	
1225	20	301		313	38.5	
1235	30	301		330	38.8	
1245	40	301		326	38.4	
1255	50	-		-	-	
1305	60	-		-	-	

Test Run # Three (3) 1415-1525						
Time	Elapsed Time	Heated Line #1 Temperature (°F)	Heated Line #2 Temperature (°F)	Prefilter Temperature (°F)	Conditioner/Chiller Temperature (°F)	Comments
1415	0	300	N/A	319	38.6	
1425	10	301		328	38.5	
1435	20	300		326	38.3	
1445	30	302		324	38.7	
1455	40	301		320	38.3	
1505	50	300		316	38.0	
1515	60	300		318	-	
1525	70	301		314	38.1	

Heated Line Temperature Log Sheet

Project No.: 016-ADJ-149228	Site Loc.: Orangetown, NY	Operator(s): TJW
Project Name: KEMO/Aluf	Unit/Loc.: REPRO Inlet	Trailer No.: T8
Date: 6-29-17	Prefilter No.: AEC-PRE-10	

Test Run # Four (4) 1605-1715						
Time	Elapsed Time	Heated Line #1 Temperature (°F)	Heated Line #2 Temperature (°F)	Prefilter Temperature (°F)	Conditioner/Chiller Temperature (°F)	Comments
1605	0	331	N/A	301	39.0	
1615	10	330		311	39.1	
1625	20	330		314	39.0	
1635	30	331		318	38.7	
1645	40	330		330	38.5	
1655	50	330		316	39.0	
1705	60	329		312	38.2	
1715	70	314		311	38.0	

Test Run # Five (5) 1745-1855						
Time	Elapsed Time	Heated Line #1 Temperature (°F)	Heated Line #2 Temperature (°F)	Prefilter Temperature (°F)	Conditioner/Chiller Temperature (°F)	Comments
1745	0	302	N/A	312	39.9	
1755	10	301		314	39.8	
1805	20	301		320	39.7	
1815	30	302		331	39.6	
1825	40	303		326	39.8	
1835	50	302		320	39.9	
1845	60	300		319	38.7	
1855	70	301		314	39.5	

Test Run #						
Time	Elapsed Time	Heated Line #1 Temperature (°F)	Heated Line #2 Temperature (°F)	Prefilter Temperature (°F)	Conditioner/Chiller Temperature (°F)	Comments
	0					
	10					
	20					
	30					
	40					
	50					
	60					

Heated Line Temperature Log Sheet

Project No.: 016-ARJ-149228		Site Loc.: Owanneburg, NY		Operator(s): TJW		
Project Name: KEMS/Aluf		Unit/Loc.: PERRO Outlet		Trailer No.: T8		
Date: 6-29-17		Prefilter No.: AEC-PRE-7				
Test Run # One (1) 1020 - 1130						
Time	Elapsed Time	Heated Line #1 Temperature (°F)	Heated Line #2 Temperature (°F)	Prefilter Temperature (°F)	Conditioner/Chiller Temperature (°F)	Comments
1020	0	302	N/A	309	37.5	
1030	10	301		309	37.7	
1040	20	298		302	37.2	
1050	30	301		309	37.2	
1100	40	300		306	37.7	
1110	50	300		302	37.4	
1120	60	301		304	37.8	
1130		302		306	37.7	
Test Run # Two (2) 1205 - 1248 (VOID)						
Time	Elapsed Time	Heated Line #1 Temperature (°F)	Heated Line #2 Temperature (°F)	Prefilter Temperature (°F)	Conditioner/Chiller Temperature (°F)	Comments
1205	0	302	N/A	299	38.6	
1215	10	300		300	38.1	
1225	20	301		301	37.7	
1235	30	300		300	38.1	
1245	40	302		300	37.8	
1255	50	-		-	-	
1305	60	-		-	-	
Test Run # Three (3) 1415 - 1525						
Time	Elapsed Time	Heated Line #1 Temperature (°F)	Heated Line #2 Temperature (°F)	Prefilter Temperature (°F)	Conditioner/Chiller Temperature (°F)	Comments
1415	0	301	N/A	300	38.3	
1425	10	301		300	38.4	
1435	20	302		301	37.9	
1445	30	300		300	37.7	
1455	40	300		302	37.8	
1505	50	300		301	37.7	
1515	60	300		300	37.5	
1525	70	301		301	38.0	

Heated Line Temperature Log Sheet

Project No. <u>016-AQS-144228</u>	Site Loc.: <u>Orangeburg, NY</u>	Operator(s): <u>TJW</u>
Project Name: <u>KEMU/AWF</u>	Unit/Loc.: <u>REPRO outlet</u>	Trailer No.: <u>T8</u>
Date: <u>6-29-17</u>	Prefilter No.: <u>AEC-PRE-7</u>	

Test Run # <u>Four (4)</u> <u>1605-1715</u>						
<u>Time</u>	<u>Elapsed Time</u>	<u>Heated Line #1 Temperature (°F)</u>	<u>Heated Line #2 Temperature (°F)</u>	<u>Prefilter Temperature (°F)</u>	<u>Conditioner/Chiller Temperature (°F)</u>	<u>Comments</u>
1605	0	301	N/A	299	39.1	
1615	10	302		299	39.2	
1625	20	302		299	38.7	
1635	30	300		301	38.6	
1645	40	301		300	38.5	
1655	50	303		299	38.0	
1705	60	301		299	37.9	
1715	70	300		299	37.8	

Test Run # <u>Five (5)</u> <u>1745-1855</u>						
<u>Time</u>	<u>Elapsed Time</u>	<u>Heated Line #1 Temperature (°F)</u>	<u>Heated Line #2 Temperature (°F)</u>	<u>Prefilter Temperature (°F)</u>	<u>Conditioner/Chiller Temperature (°F)</u>	<u>Comments</u>
1745	0	300	N/A	299 294	39.3	
1755	10	301		299	39.3	
1805	20	300		299	39.3	
1815	30	300		300	39.5	
1825	40	303		300	39.3	
1835	50	302		299	39.4	
1845	60	301		299	39.5	
1855	70	301		298	39.1	

Test Run #						
<u>Time</u>	<u>Elapsed Time</u>	<u>Heated Line #1 Temperature (°F)</u>	<u>Heated Line #2 Temperature (°F)</u>	<u>Prefilter Temperature (°F)</u>	<u>Conditioner/Chiller Temperature (°F)</u>	<u>Comments</u>
	0					
	10					
	20					
	30					
	40					
	50					
	60					

APPENDIX VII:

REFERENCE METHOD DATA SUMMARIES

REAL-TIME INSTRUMENT/SAMPLING SYSTEM CALIBRATION RESPONSE LOG

Project No.: 016-AQS-149228		Unit / location: REPRO Inlet + Outlet		Date: 6/29/17	Operator(s): TDW	Trailer: 78
File Name	Re-cal	ALM 6-24	ALM 6-29 new			
Start Time	0754	1020	1415	1605	1745	
Stop Time	0827	1130	1527	1718	1855	
Gas Value	Flack Cal	Bias Check	Run 1	Run 2	Run 3	Run 4
N/A						
THC In	8.22	8.04	8.14	8.28	8.21	8.28
Id.	27.38	26.82	26.64	26.33	-	-
Ch.	48.54	48.55	47.09	47.60	47.19	47.28
Span	87.77	87.22	-	-	-	47.53
THC Out	8.03	8.12	8.28	8.41	8.17	8.07
Id.	27.07	27.08	27.44	27.06	26.75	27.64
Ch.	48.45	48.09	48.96	48.45	48.10	48.34
Span	87.77	87.59	-	-	-	-
Id.						
Ch.						
Span						
Id.						
Ch.						
Span						

Company Name: Aluf Plastics
Emission Unit: Repro Carbon Adsorber
Test Location: Inlet & Outlet
Project Number: 016-AQS-149228

Reference Method Data Summary

Run 1

	Inlet THC (ppmvw)	Outlet THC (ppmvw)
Average concentration	30.62	32.27
<i>Minimum concentration</i>	25.49	29.43
<i>Maximum concentration</i>	39.65	37.38

Bias Correction

zero initial (Zi)	0.04	0.12
zero final (Zf)	0.14	0.28
upscale initial (Si)	48.55	48.67
upscale final (Sf)	47.09	48.96
upscale value (SV)	48.59	48.59
span value	100	100

LAS
8/4/2017

Run 1

Date	Time	Inlet THC	Outlet THC
6/29/2017	10:20:23	27.95	30.93
6/29/2017	10:20:38	28.1	30.89
6/29/2017	10:20:53	28.5	31.11
6/29/2017	10:21:08	28.66	31.35
6/29/2017	10:21:23	28.21	31.37
6/29/2017	10:21:38	28.31	31.23
6/29/2017	10:21:53	28.21	31.19
6/29/2017	10:22:08	28.14	30.91
6/29/2017	10:22:23	28.18	30.91
6/29/2017	10:22:38	28.22	30.76
6/29/2017	10:22:53	28.13	30.83
6/29/2017	10:23:08	27.91	30.9
6/29/2017	10:23:23	27.25	30.75
6/29/2017	10:23:38	27.67	30.65
6/29/2017	10:23:53	27.99	30.83
6/29/2017	10:24:08	28.45	31.09
6/29/2017	10:24:23	28.36	31.11
6/29/2017	10:24:38	28.14	31.02
6/29/2017	10:24:53	28.26	30.86
6/29/2017	10:25:08	28.75	31.02
6/29/2017	10:25:23	28.67	31.25
6/29/2017	10:25:38	28.58	31.27
6/29/2017	10:25:53	27.87	31.22
6/29/2017	10:26:08	28.55	31.09
6/29/2017	10:26:23	28.55	31.39
6/29/2017	10:26:38	28.36	31.26
6/29/2017	10:26:53	28.42	31.12
6/29/2017	10:27:08	28.65	31.01
6/29/2017	10:27:23	29.45	31.2

Run 1

Date	Time	Inlet THC	Outlet THC
6/29/2017	10:27:38	29.33	31.53
6/29/2017	10:27:53	28.34	31.39
6/29/2017	10:28:08	27.65	31.05
6/29/2017	10:28:23	27.37	30.72
6/29/2017	10:28:38	27.6	30.8
6/29/2017	10:28:53	28.04	30.98
6/29/2017	10:29:08	28.21	31.04
6/29/2017	10:29:23	28.96	31.23
6/29/2017	10:29:38	29	31.3
6/29/2017	10:29:53	28.63	31.06
6/29/2017	10:30:08	28.68	30.95
6/29/2017	10:30:23	28.64	31
6/29/2017	10:30:38	28.77	31.23
6/29/2017	10:30:53	28.33	31.29
6/29/2017	10:31:08	27.95	31.16
6/29/2017	10:31:23	27.85	31.06
6/29/2017	10:31:38	28.04	31.05
6/29/2017	10:31:53	27.95	30.98
6/29/2017	10:32:08	27.87	30.71
6/29/2017	10:32:23	27.94	30.63
6/29/2017	10:32:38	28.15	30.61
6/29/2017	10:32:53	28.38	30.77
6/29/2017	10:33:08	27.97	30.96
6/29/2017	10:33:23	27.76	30.85
6/29/2017	10:33:38	27.14	30.73
6/29/2017	10:33:53	26.93	30.52
6/29/2017	10:34:08	26.88	30.27
6/29/2017	10:34:23	27.31	30.19
6/29/2017	10:34:38	26.88	30.15
6/29/2017	10:34:53	26.56	29.84
6/29/2017	10:35:08	26.08	29.78
6/29/2017	10:35:23	25.93	29.73
6/29/2017	10:35:38	25.96	29.66
6/29/2017	10:35:53	27.05	29.87
6/29/2017	10:36:08	28.18	30.57
6/29/2017	10:36:23	27.74	30.72
6/29/2017	10:36:38	27.35	30.38
6/29/2017	10:36:53	27.43	30.19
6/29/2017	10:37:08	27.48	30.39
6/29/2017	10:37:23	27.79	30.63
6/29/2017	10:37:38	27.22	30.57
6/29/2017	10:37:53	27.16	30.4
6/29/2017	10:38:08	27.01	30.39
6/29/2017	10:38:23	26.94	30.27
6/29/2017	10:38:38	26.93	30.14
6/29/2017	10:38:53	26.96	30.05
6/29/2017	10:39:08	26.82	30
6/29/2017	10:39:23	26.66	30.03
6/29/2017	10:39:38	26.44	30.07
6/29/2017	10:39:53	26.48	30
6/29/2017	10:40:08	26.73	29.99
6/29/2017	10:40:23	26.59	30.16
6/29/2017	10:40:38	26.3	29.97
6/29/2017	10:40:53	26.09	29.66

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Run 1

Date	Time	Inlet THC	Outlet THC
6/29/2017	10:41:08	26.14	29.54
6/29/2017	10:41:23	26.48	29.7
6/29/2017	10:41:38	26.85	29.99
6/29/2017	10:41:53	26.87	30.07
6/29/2017	10:42:08	27.05	30.16
6/29/2017	10:42:23	27.11	30.16
6/29/2017	10:42:38	26.76	30.13
6/29/2017	10:42:53	27	29.96
6/29/2017	10:43:08	27.44	30.04
6/29/2017	10:43:23	27.4	30.15
6/29/2017	10:43:38	27.26	30.18
6/29/2017	10:43:53	26.79	30.2
6/29/2017	10:44:08	26.24	30.07
6/29/2017	10:44:23	25.69	29.83
6/29/2017	10:44:38	25.49	29.6
6/29/2017	10:44:53	25.58	29.43
6/29/2017	10:45:08	26.97	29.54
6/29/2017	10:45:23	26.92	30.01
6/29/2017	10:45:38	26.96	29.82
6/29/2017	10:45:53	27.79	30.12
6/29/2017	10:46:08	27.61	30.25
6/29/2017	10:46:23	27.59	30.41
6/29/2017	10:46:38	27.1	30.27
6/29/2017	10:46:53	26.69	30.26
6/29/2017	10:47:08	26.65	30.32
6/29/2017	10:47:23	27.19	30.61
6/29/2017	10:47:38	26.92	30.84
6/29/2017	10:47:53	26.41	30.42
6/29/2017	10:48:08	26.18	30.07
6/29/2017	10:48:23	26.31	29.8
6/29/2017	10:48:38	26.46	29.72
6/29/2017	10:48:53	27.17	30.08
6/29/2017	10:49:08	27.51	30.41
6/29/2017	10:49:23	28.11	30.51
6/29/2017	10:49:38	28.66	31.04
6/29/2017	10:49:53	28.29	31.16
6/29/2017	11:00:08	28.39	30.45
6/29/2017	11:00:23	28.58	30.74
6/29/2017	11:00:38	28.74	30.82
6/29/2017	11:00:53	28.86	30.99
6/29/2017	11:01:08	29.09	31.17
6/29/2017	11:01:23	29	31.01
6/29/2017	11:01:38	28.97	30.78
6/29/2017	11:01:53	29.24	30.82
6/29/2017	11:02:08	29.49	31.07
6/29/2017	11:02:23	29.17	31.01
6/29/2017	11:02:38	28.92	31.08
6/29/2017	11:02:53	28.65	30.92
6/29/2017	11:03:08	28.72	30.88
6/29/2017	11:03:23	28.63	30.93
6/29/2017	11:03:38	28.63	30.84
6/29/2017	11:03:53	28.55	30.69
6/29/2017	11:04:08	28.85	30.63
6/29/2017	11:04:23	29.13	30.84

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Run 1

Date	Time	Inlet THC	Outlet THC
6/29/2017	11:04:38	29.37	31.18
6/29/2017	11:04:53	29.84	31.38
6/29/2017	11:05:08	29.9	31.59
6/29/2017	11:05:23	29.81	31.56
6/29/2017	11:05:38	29.31	31.48
6/29/2017	11:05:53	29.27	31.43
6/29/2017	11:06:08	29.37	31.37
6/29/2017	11:06:23	29.46	31.21
6/29/2017	11:06:38	29.64	31.21
6/29/2017	11:06:53	29.91	31.2
6/29/2017	11:07:08	30.22	31.53
6/29/2017	11:07:23	30.7	31.88
6/29/2017	11:07:38	31.03	32.11
6/29/2017	11:07:53	31.65	32.6
6/29/2017	11:08:08	32.16	32.85
6/29/2017	11:08:23	32.63	33.1
6/29/2017	11:08:38	33.23	33.37
6/29/2017	11:08:53	33.42	33.33
6/29/2017	11:09:08	33.77	33.46
6/29/2017	11:09:23	33.84	33.57
6/29/2017	11:09:38	34.26	33.81
6/29/2017	11:09:53	34.37	34.22
6/29/2017	11:10:08	34.07	34.2
6/29/2017	11:10:23	33.51	33.99
6/29/2017	11:10:38	33.07	33.6
6/29/2017	11:10:53	32.48	33.25
6/29/2017	11:11:08	32.43	32.99
6/29/2017	11:11:23	32.2	33.1
6/29/2017	11:11:38	32.18	33.1
6/29/2017	11:11:53	32.23	33.2
6/29/2017	11:12:08	32.33	33.07
6/29/2017	11:12:23	32.21	33.02
6/29/2017	11:12:38	32.34	32.82
6/29/2017	11:12:53	32.49	32.92
6/29/2017	11:13:08	32.74	33.01
6/29/2017	11:13:23	33.11	33.18
6/29/2017	11:13:38	33.35	33.4
6/29/2017	11:13:53	33.67	33.64
6/29/2017	11:14:08	33.3	33.59
6/29/2017	11:14:23	33.58	33.33
6/29/2017	11:14:38	33.65	33.22
6/29/2017	11:14:53	33.52	33.31
6/29/2017	11:15:08	33.36	33.47
6/29/2017	11:15:23	33.89	33.71
6/29/2017	11:15:38	34.32	34.05
6/29/2017	11:15:53	34.85	34.42
6/29/2017	11:16:08	35.15	34.73
6/29/2017	11:16:23	35.12	34.79
6/29/2017	11:16:38	35.19	34.82
6/29/2017	11:16:53	35.38	34.83
6/29/2017	11:17:08	35.36	34.75
6/29/2017	11:17:23	35.33	34.87
6/29/2017	11:17:38	36.15	35.02
6/29/2017	11:17:53	37.05	35.62

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Run 1

Date	Time	Inlet THC	Outlet THC
6/29/2017	11:18:08	37.67	36.18
6/29/2017	11:18:23	37.82	36.33
6/29/2017	11:18:38	39.06	36.75
6/29/2017	11:18:53	39.65	37.26
6/29/2017	11:19:08	39.51	37.38
6/29/2017	11:19:23	38.9	37.18
6/29/2017	11:19:38	38.32	37.06
6/29/2017	11:19:53	38.11	36.85
6/29/2017	11:20:08	37.51	36.78
6/29/2017	11:20:23	37	36.47
6/29/2017	11:20:38	37.07	36.63
6/29/2017	11:20:53	36.98	36.55
6/29/2017	11:21:08	36.64	36.36
6/29/2017	11:21:23	36.42	36.18
6/29/2017	11:21:38	36.23	35.91
6/29/2017	11:21:53	36.36	35.84
6/29/2017	11:22:08	36.33	36.04
6/29/2017	11:22:23	36.03	36
6/29/2017	11:22:38	35.62	35.99
6/29/2017	11:22:53	35.26	35.71
6/29/2017	11:23:08	35.49	35.55
6/29/2017	11:23:23	35.69	35.56
6/29/2017	11:23:38	35.44	35.46
6/29/2017	11:23:53	35.42	35.29
6/29/2017	11:24:08	35.33	35.28
6/29/2017	11:24:23	35.45	35.35
6/29/2017	11:24:38	35.53	35.5
6/29/2017	11:24:53	35.69	35.6
6/29/2017	11:25:08	35.8	35.74
6/29/2017	11:25:23	36.05	35.69
6/29/2017	11:25:38	36.3	35.81
6/29/2017	11:25:53	36.72	35.79
6/29/2017	11:26:08	36.95	35.83
6/29/2017	11:26:23	36.73	35.99
6/29/2017	11:26:38	36.58	36.09
6/29/2017	11:26:53	36.3	36.08
6/29/2017	11:27:08	35.85	35.99
6/29/2017	11:27:23	35.79	35.74
6/29/2017	11:27:38	35.72	35.85
6/29/2017	11:27:53	35.64	35.66
6/29/2017	11:28:08	36	35.65
6/29/2017	11:28:23	36.27	35.56
6/29/2017	11:28:38	36.44	35.74
6/29/2017	11:28:53	36.71	35.64
6/29/2017	11:29:08	36.98	35.91
6/29/2017	11:29:23	36.85	36.09
6/29/2017	11:29:38	36.63	36.22
6/29/2017	11:29:53	36.51	36.09

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Note: Time removed for port change from 10:50-11:00

Company Name: Aluf Plastics
Emission Unit: Repro Carbon Adsorber
Test Location: Inlet & Outlet
Project Number: 016-AQS-149228

Reference Method Data Summary

Run 3

	THC (ppmvw)	THC (ppmvw)
Average concentration	34.15	24.16
<i>Minimum concentration</i>	31.32	10.82
<i>Maximum concentration</i>	37.42	49.27

Bias Correction

zero initial (Zi)	0.14	0.41
zero final (Zf)	0.28	0.17
upscale initial (Si)	47.60	48.45
upscale final (Sf)	47.19	48.10
upscale value (SV)	48.59	48.59
span value	100	100

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Run 3

Date	Time	Inlet THC	Outlet THC
6/29/2017	14:15:00	37.25	29.54
6/29/2017	14:15:15	37.42	29.63
6/29/2017	14:15:30	36.99	29.79
6/29/2017	14:15:45	36.37	29.34
6/29/2017	14:16:00	35.69	29.23
6/29/2017	14:16:15	35.52	29.19
6/29/2017	14:16:30	35.42	29.15
6/29/2017	14:16:45	35.51	29.05
6/29/2017	14:17:00	35.41	29.02
6/29/2017	14:17:15	35.23	28.69
6/29/2017	14:17:30	34.95	28.76
6/29/2017	14:17:45	34.82	28.7
6/29/2017	14:18:00	34.44	28.96
6/29/2017	14:18:15	34.47	28.55
6/29/2017	14:18:30	34.41	29.29
6/29/2017	14:18:45	34.19	29.83
6/29/2017	14:19:00	34.08	29.69
6/29/2017	14:19:15	34.33	29.6
6/29/2017	14:19:30	34.76	29.83
6/29/2017	14:19:45	35.17	30.1
6/29/2017	14:20:00	35.2	30.4
6/29/2017	14:20:15	35.13	30.42
6/29/2017	14:20:30	34.75	30.62
6/29/2017	14:20:45	34.59	30.93
6/29/2017	14:21:00	34.65	30.81
6/29/2017	14:21:15	35.17	31.04
6/29/2017	14:21:30	35.63	31.59
6/29/2017	14:21:45	35.7	31.75
6/29/2017	14:22:00	35.71	32.04
6/29/2017	14:22:15	35.59	31.89
6/29/2017	14:22:30	35.55	32.05

Run 3

Date	Time	Inlet THC	Outlet THC
6/29/2017	14:22:45	35.56	32.16
6/29/2017	14:23:00	35.64	32.17
6/29/2017	14:23:15	35.69	32.09
6/29/2017	14:23:30	35.58	32.08
6/29/2017	14:23:45	35.47	32.04
6/29/2017	14:24:00	35.38	33.1
6/29/2017	14:24:15	35.4	33.86
6/29/2017	14:24:30	35.41	34.01
6/29/2017	14:24:45	34.89	33.86
6/29/2017	14:25:00	34.42	33.83
6/29/2017	14:25:15	34.1	33.56
6/29/2017	14:25:30	33.74	33.3
6/29/2017	14:25:45	33.83	33.22
6/29/2017	14:26:00	34.23	33.25
6/29/2017	14:26:15	33.99	33.13
6/29/2017	14:26:30	34.06	33.14
6/29/2017	14:26:45	33.9	33.16
6/29/2017	14:27:00	34.06	33.43
6/29/2017	14:27:15	34.24	34.44
6/29/2017	14:27:30	34.79	34.94
6/29/2017	14:27:45	35.39	35.23
6/29/2017	14:28:00	35.99	35.26
6/29/2017	14:28:15	36.49	35.37
6/29/2017	14:28:30	36.86	35.42
6/29/2017	14:28:45	36.94	35.78
6/29/2017	14:29:00	36.81	35.99
6/29/2017	14:29:15	35.85	35.91
6/29/2017	14:29:30	35.48	35.62
6/29/2017	14:29:45	35.97	35.54
6/29/2017	14:30:00	36.22	35.57
6/29/2017	14:30:15	36.03	35.65
6/29/2017	14:30:30	35.86	35.19
6/29/2017	14:30:45	35.5	34.97
6/29/2017	14:31:00	34.99	35.01
6/29/2017	14:31:15	35.09	35.02
6/29/2017	14:31:30	34.72	34.74
6/29/2017	14:31:45	34.53	34.52
6/29/2017	14:32:00	34.55	34.78
6/29/2017	14:32:15	34.62	34.89
6/29/2017	14:32:30	34.49	34.85
6/29/2017	14:32:45	34.25	34.83
6/29/2017	14:33:00	34.18	34.8
6/29/2017	14:33:15	34.4	35.02
6/29/2017	14:33:30	34.47	35.28
6/29/2017	14:33:45	34.41	35.15
6/29/2017	14:34:00	34.22	32.77
6/29/2017	14:34:15	34.05	31.79
6/29/2017	14:34:30	33.93	31.36
6/29/2017	14:34:45	34.13	31.1
6/29/2017	14:35:00	34.1	31.08
6/29/2017	14:35:15	33.83	31.05
6/29/2017	14:35:30	33.66	30.91
6/29/2017	14:35:45	33.72	30.9
6/29/2017	14:36:00	33.71	30.87
6/29/2017	14:36:15	33.43	30.93
6/29/2017	14:36:30	33.2	31.05

LAS
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Run 3

Date	Time	Inlet THC	Outlet THC
6/29/2017	14:36:45	33.09	30.95
6/29/2017	14:37:00	33.05	30.56
6/29/2017	14:37:15	32.93	30.37
6/29/2017	14:37:30	33.01	30.23
6/29/2017	14:37:45	33.23	30.07
6/29/2017	14:38:00	33.17	30.18
6/29/2017	14:38:15	33.09	30.13
6/29/2017	14:38:30	33.03	30.14
6/29/2017	14:38:45	32.81	30.23
6/29/2017	14:39:00	32.63	30.24
6/29/2017	14:39:15	32.58	30.34
6/29/2017	14:39:30	32.52	30.1
6/29/2017	14:39:45	32.68	29.93
6/29/2017	14:40:00	32.7	29.91
6/29/2017	14:40:15	32.4	30.01
6/29/2017	14:40:30	32.24	30.03
6/29/2017	14:40:45	32.13	29.96
6/29/2017	14:41:00	31.95	29.96
6/29/2017	14:41:15	31.77	29.89
6/29/2017	14:41:30	31.6	30.1
6/29/2017	14:41:45	31.58	29.92
6/29/2017	14:42:00	31.45	29.74
6/29/2017	14:42:15	31.54	29.33
6/29/2017	14:42:30	31.48	29.31
6/29/2017	14:42:45	31.38	29.36
6/29/2017	14:43:00	31.32	29.23
6/29/2017	14:43:15	31.49	29.48
6/29/2017	14:43:30	31.53	29.43
6/29/2017	14:43:45	31.85	29.67
6/29/2017	14:44:00	31.89	29.88
6/29/2017	14:44:15	31.77	29.75
6/29/2017	14:44:30	31.81	29.7
6/29/2017	14:44:45	31.81	29.45
6/29/2017	14:55:00	33.28	19.67
6/29/2017	14:55:15	33.17	19.48
6/29/2017	14:55:30	33.06	42.05
6/29/2017	14:55:45	32.81	49.27
6/29/2017	14:56:00	32.73	48.85
6/29/2017	14:56:15	32.63	36.01
6/29/2017	14:56:30	32.45	17.02
6/29/2017	14:56:45	32.49	18
6/29/2017	14:57:00	32.72	18.39
6/29/2017	14:57:15	32.92	18.6
6/29/2017	14:57:30	32.9	18.79
6/29/2017	14:57:45	32.89	18.59
6/29/2017	14:58:00	32.85	18.6
6/29/2017	14:58:15	32.77	18.7
6/29/2017	14:58:30	32.8	18.04
6/29/2017	14:58:45	33.02	17.78
6/29/2017	14:59:00	33.3	17.67
6/29/2017	14:59:15	33.42	17.85
6/29/2017	14:59:30	33.5	17.87
6/29/2017	14:59:45	33.7	17.72
6/29/2017	15:00:00	33.76	17.66
6/29/2017	15:00:15	33.98	17.6
6/29/2017	15:00:30	34.13	17.61

LAS
8/4/2017

Run 3

Date	Time	Inlet THC	Outlet THC
6/29/2017	15:00:45	34.26	17.62
6/29/2017	15:01:00	34.38	17.8
6/29/2017	15:01:15	34.62	17.78
6/29/2017	15:01:30	34.77	17.59
6/29/2017	15:01:45	34.91	17.75
6/29/2017	15:02:00	35.21	17.77
6/29/2017	15:02:15	35.43	17.68
6/29/2017	15:02:30	35.45	16.92
6/29/2017	15:02:45	35.22	15.04
6/29/2017	15:03:00	35.15	14.7
6/29/2017	15:03:15	35.28	14.25
6/29/2017	15:03:30	35.21	13.96
6/29/2017	15:03:45	35.37	13.83
6/29/2017	15:04:00	35.5	13.57
6/29/2017	15:04:15	35.55	12.33
6/29/2017	15:04:30	35.64	11.66
6/29/2017	15:04:45	35.63	11.5
6/29/2017	15:05:00	35.39	11.27
6/29/2017	15:05:15	35.22	11.06
6/29/2017	15:05:30	35.29	10.95
6/29/2017	15:05:45	35.46	10.99
6/29/2017	15:06:00	35.32	10.82
6/29/2017	15:06:15	35.21	10.89
6/29/2017	15:06:30	34.97	10.87
6/29/2017	15:06:45	34.84	10.84
6/29/2017	15:07:00	34.74	10.93
6/29/2017	15:07:15	34.65	11.27
6/29/2017	15:07:30	34.64	11.16
6/29/2017	15:07:45	34.58	10.92
6/29/2017	15:08:00	34.42	11.1
6/29/2017	15:08:15	34.6	11.04
6/29/2017	15:08:30	34.69	11.1
6/29/2017	15:08:45	34.67	11.13
6/29/2017	15:09:00	34.65	11.04
6/29/2017	15:09:15	34.69	11.07
6/29/2017	15:09:30	34.68	11.31
6/29/2017	15:09:45	34.43	15.17
6/29/2017	15:10:00	34.25	15.81
6/29/2017	15:10:15	33.85	16.07
6/29/2017	15:10:30	33.8	16.12
6/29/2017	15:10:45	33.99	16.3
6/29/2017	15:11:00	33.97	16.39
6/29/2017	15:11:15	33.92	16.55
6/29/2017	15:11:30	34.18	16.76
6/29/2017	15:11:45	34.1	16.7
6/29/2017	15:12:00	34.01	16.63
6/29/2017	15:12:15	33.45	16.57
6/29/2017	15:12:30	32.97	16.57
6/29/2017	15:12:45	32.63	16.75
6/29/2017	15:13:00	32.6	19.16
6/29/2017	15:13:15	32.56	20.79
6/29/2017	15:13:30	32.55	21.24
6/29/2017	15:13:45	32.59	21.3
6/29/2017	15:14:00	32.45	21.64
6/29/2017	15:14:15	32.97	21.69
6/29/2017	15:14:30	32.62	21.63

LAS
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Run 3

Date	Time	Inlet THC	Outlet THC
6/29/2017	15:14:45	32.34	21.39
6/29/2017	15:15:00	32.14	20.26
6/29/2017	15:15:15	32.07	17.49
6/29/2017	15:15:30	31.87	17.22
6/29/2017	15:15:45	32.17	16.99
6/29/2017	15:16:00	32.4	16.99
6/29/2017	15:16:15	32.66	16.83
6/29/2017	15:16:30	32.85	16.98
6/29/2017	15:16:45	33	16.84
6/29/2017	15:17:00	33.49	16.92
6/29/2017	15:17:15	33.65	16.74
6/29/2017	15:17:30	33.78	16.84
6/29/2017	15:17:45	33.84	16.87
6/29/2017	15:18:00	33.72	16.97
6/29/2017	15:18:15	33.76	17.06
6/29/2017	15:18:30	33.9	16.85
6/29/2017	15:18:45	33.86	16.58
6/29/2017	15:19:00	34.42	16.74
6/29/2017	15:19:15	35.14	16.68
6/29/2017	15:19:30	35.82	17.16
6/29/2017	15:19:45	35.64	16.86
6/29/2017	15:20:00	35.82	17.11
6/29/2017	15:20:15	35.5	17.24
6/29/2017	15:20:30	35.06	17.06
6/29/2017	15:20:45	34.84	17
6/29/2017	15:21:00	34.65	16.69
6/29/2017	15:21:15	34.54	16.81
6/29/2017	15:21:30	34.7	17
6/29/2017	15:21:45	34.95	16.95
6/29/2017	15:22:00	35	16.84
6/29/2017	15:22:15	35.03	16.9
6/29/2017	15:22:30	34.8	16.89
6/29/2017	15:22:45	34.64	16.92
6/29/2017	15:23:00	34.38	17.04
6/29/2017	15:23:15	34.62	17.18
6/29/2017	15:23:30	34.54	16.89
6/29/2017	15:23:45	34.33	16.56
6/29/2017	15:24:00	34.47	16.65
6/29/2017	15:24:15	34.38	16.98
6/29/2017	15:24:30	34.18	16.75
6/29/2017	15:24:45	34.07	16.58
6/29/2017	15:25:00	33.85	16.34
6/29/2017	15:25:15	34.08	16.36
6/29/2017	15:25:30	34.28	16.57
6/29/2017	15:25:45	34.16	16.64
6/29/2017	15:26:00	34.04	16.3
6/29/2017	15:26:15	34.22	16.51
6/29/2017	15:26:30	34.33	16.34
6/29/2017	15:26:45	34.88	16.54

LAS
8/4/2017

Note: Time removed for port change from 14:45-14:55

Company Name: Aluf Plastics
Emission Unit: Repro Carbon Adsorber
Test Location: Inlet & Outlet
Project Number: 016-AQS-149228

Reference Method Data Summary

Run 4

	THC (ppmvw)	THC (ppmvw)
Average concentration	40.88	20.42
<i>Minimum concentration</i>	34.53	12.44
<i>Maximum concentration</i>	47.72	43.56

Bias Correction

zero initial (Zi)	0.28	0.17
zero final (Zf)	0.21	0.07
upscale initial (Si)	47.19	48.10
upscale final (Sf)	47.28	48.34
upscale value (SV)	48.59	48.59
span value	100	100

LAS
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Run 4

Date	Time	Inlet THC	Outlet THC
6/29/2017	16:05:00	41.47	17.36
6/29/2017	16:05:15	41.18	17.51
6/29/2017	16:05:30	40.88	17.44
6/29/2017	16:05:45	40.71	17.43
6/29/2017	16:06:00	40.47	17.72
6/29/2017	16:06:15	40.4	17.59
6/29/2017	16:06:30	40.63	17.84
6/29/2017	16:06:45	40.87	17.78
6/29/2017	16:07:00	41.14	17.61
6/29/2017	16:07:15	41.32	17.61
6/29/2017	16:07:30	41.59	17.76
6/29/2017	16:07:45	41.47	17.86
6/29/2017	16:08:00	41.34	17.89
6/29/2017	16:08:15	41.92	17.9
6/29/2017	16:08:30	41.59	17.85
6/29/2017	16:08:45	41.08	17.9
6/29/2017	16:09:00	40.71	17.83
6/29/2017	16:09:15	40.44	17.72
6/29/2017	16:09:30	40.45	17.68
6/29/2017	16:09:45	40.48	17.78
6/29/2017	16:10:00	40.1	17.49
6/29/2017	16:10:15	39.7	17.33
6/29/2017	16:10:30	39.32	17.4
6/29/2017	16:10:45	38.89	17.07
6/29/2017	16:11:00	38.67	17.1
6/29/2017	16:11:15	38.3	16.89
6/29/2017	16:11:30	38.72	16.96
6/29/2017	16:11:45	38.6	16.99
6/29/2017	16:12:00	38.27	17.09
6/29/2017	16:12:15	37.92	16.99
6/29/2017	16:12:30	37.41	16.76

Run 4

Date	Time	Inlet THC	Outlet THC
6/29/2017	16:12:45	36.91	16.84
6/29/2017	16:13:00	36.95	16.75
6/29/2017	16:13:15	36.71	16.46
6/29/2017	16:13:30	35.94	16.24
6/29/2017	16:13:45	35.72	16.07
6/29/2017	16:14:00	36.18	16.22
6/29/2017	16:14:15	36.86	16.31
6/29/2017	16:14:30	37.51	16.49
6/29/2017	16:14:45	37.52	16.44
6/29/2017	16:15:00	36.72	16.41
6/29/2017	16:15:15	36.41	16.14
6/29/2017	16:15:30	36.05	16.03
6/29/2017	16:15:45	35.93	16.11
6/29/2017	16:16:00	36.4	16.2
6/29/2017	16:16:15	36.25	16.6
6/29/2017	16:16:30	35.83	16.41
6/29/2017	16:16:45	35.42	16.21
6/29/2017	16:17:00	35.06	16.56
6/29/2017	16:17:15	34.74	16.82
6/29/2017	16:17:30	34.53	16.5
6/29/2017	16:17:45	34.63	16.45
6/29/2017	16:18:00	34.69	16.62
6/29/2017	16:18:15	34.84	16.64
6/29/2017	16:18:30	34.99	16.65
6/29/2017	16:18:45	35.1	16.38
6/29/2017	16:19:00	35.08	16.35
6/29/2017	16:19:15	35.21	16.63
6/29/2017	16:19:30	35.3	16.52
6/29/2017	16:19:45	35.56	16.37
6/29/2017	16:20:00	35.68	16.45
6/29/2017	16:20:15	35.69	16.52
6/29/2017	16:20:30	35.86	16.62
6/29/2017	16:20:45	36.32	16.55
6/29/2017	16:21:00	36.46	16.41
6/29/2017	16:21:15	36.28	16.53
6/29/2017	16:21:30	36.12	16.54
6/29/2017	16:21:45	36.03	16.52
6/29/2017	16:22:00	36.09	16.36
6/29/2017	16:22:15	36.47	16.86
6/29/2017	16:22:30	36.85	17.08
6/29/2017	16:22:45	37.77	17.2
6/29/2017	16:23:00	38.56	17.3
6/29/2017	16:23:15	38.99	17.59
6/29/2017	16:23:30	38.84	17.6
6/29/2017	16:23:45	38.96	17.69
6/29/2017	16:24:00	39.05	17.9
6/29/2017	16:24:15	39.12	17.59
6/29/2017	16:24:30	39.25	17.65
6/29/2017	16:24:45	39.32	17.79
6/29/2017	16:25:00	39.43	17.71
6/29/2017	16:25:15	39.19	17.63
6/29/2017	16:25:30	39.4	17.8
6/29/2017	16:25:45	39.47	17.71
6/29/2017	16:26:00	40.38	17.83
6/29/2017	16:26:15	42.08	17.9
6/29/2017	16:26:30	43.05	17.84

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Run 4

Date	Time	Inlet THC	Outlet THC
6/29/2017	16:26:45	42.53	18.12
6/29/2017	16:27:00	41.9	18.28
6/29/2017	16:27:15	40.91	17.8
6/29/2017	16:27:30	40.84	17.68
6/29/2017	16:27:45	41.05	17.78
6/29/2017	16:28:00	40.7	17.97
6/29/2017	16:28:15	40.47	18.18
6/29/2017	16:28:30	39.93	17.93
6/29/2017	16:28:45	39.68	17.69
6/29/2017	16:29:00	39.14	17.43
6/29/2017	16:29:15	38.97	17.38
6/29/2017	16:29:30	38.95	17.43
6/29/2017	16:29:45	38.88	17.61
6/29/2017	16:30:00	38.55	17.65
6/29/2017	16:30:15	38.56	17.55
6/29/2017	16:30:30	38.35	17.3
6/29/2017	16:30:45	38.55	17.49
6/29/2017	16:31:00	38.7	17.43
6/29/2017	16:31:15	38.69	17.42
6/29/2017	16:31:30	38.34	17.38
6/29/2017	16:31:45	38.09	17.52
6/29/2017	16:32:00	37.52	17.35
6/29/2017	16:32:15	37.17	17.32
6/29/2017	16:32:30	36.81	17.4
6/29/2017	16:32:45	36.62	17.57
6/29/2017	16:33:00	36.4	17.17
6/29/2017	16:33:15	36.37	17.1
6/29/2017	16:33:30	37.03	17.02
6/29/2017	16:33:45	37.41	17.11
6/29/2017	16:34:00	37.17	17.39
6/29/2017	16:34:15	37.28	17.46
6/29/2017	16:34:30	37.17	17.56
6/29/2017	16:34:45	37.25	17.54
6/29/2017	16:45:00	43.84	38.78
6/29/2017	16:45:15	43.96	38.82
6/29/2017	16:45:30	44.4	39.56
6/29/2017	16:45:45	44.65	40.01
6/29/2017	16:46:00	44.88	39.85
6/29/2017	16:46:15	45.76	40.23
6/29/2017	16:46:30	46.35	40.69
6/29/2017	16:46:45	47.32	41.01
6/29/2017	16:47:00	47.72	41.29
6/29/2017	16:47:15	47.47	41.74
6/29/2017	16:47:30	45.94	41.64
6/29/2017	16:47:45	44.94	41.01
6/29/2017	16:48:00	43.81	40.92
6/29/2017	16:48:15	43.28	40.77
6/29/2017	16:48:30	44.1	40.73
6/29/2017	16:48:45	44.66	41.07
6/29/2017	16:49:00	45.06	41.16
6/29/2017	16:49:15	45.25	41.29
6/29/2017	16:49:30	44.91	41.66
6/29/2017	16:49:45	45.07	41.76
6/29/2017	16:50:00	45.26	41.77
6/29/2017	16:50:15	45.23	41.99
6/29/2017	16:50:30	45.23	42.05

LAS
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Run 4

Date	Time	Inlet THC	Outlet THC
6/29/2017	16:50:45	45.43	42.01
6/29/2017	16:51:00	46.17	42.11
6/29/2017	16:51:15	46.68	42.47
6/29/2017	16:51:30	46.69	42.91
6/29/2017	16:51:45	46.68	43.32
6/29/2017	16:52:00	46.41	43.47
6/29/2017	16:52:15	46	43.56
6/29/2017	16:52:30	46.14	43.45
6/29/2017	16:52:45	45.92	43.04
6/29/2017	16:53:00	45.95	42.92
6/29/2017	16:53:15	45.51	42.86
6/29/2017	16:53:30	44.85	42.71
6/29/2017	16:53:45	44.37	42.48
6/29/2017	16:54:00	43.83	42.15
6/29/2017	16:54:15	43.6	42.18
6/29/2017	16:54:30	43.34	42.07
6/29/2017	16:54:45	42.87	41.2
6/29/2017	16:55:00	42.68	40.77
6/29/2017	16:55:15	42.41	40.69
6/29/2017	16:55:30	42.11	40.31
6/29/2017	16:55:45	42.16	40.49
6/29/2017	16:59:00	41.92	12.58
6/29/2017	16:59:15	41.9	12.44
6/29/2017	16:59:30	42.42	13.13
6/29/2017	16:59:45	42.98	13.85
6/29/2017	17:00:00	43.06	13.73
6/29/2017	17:00:15	43.07	13.79
6/29/2017	17:00:30	43.38	13.76
6/29/2017	17:00:45	43.71	13.76
6/29/2017	17:01:00	44.56	13.84
6/29/2017	17:01:15	44.56	13.84
6/29/2017	17:01:30	44.04	13.89
6/29/2017	17:01:45	43.73	13.75
6/29/2017	17:02:00	44.11	13.77
6/29/2017	17:02:15	44.69	14.02
6/29/2017	17:02:30	44.41	14.08
6/29/2017	17:02:45	43.91	13.93
6/29/2017	17:03:00	43.62	13.81
6/29/2017	17:03:15	42.95	13.55
6/29/2017	17:03:30	42.36	13.65
6/29/2017	17:03:45	42.26	13.36
6/29/2017	17:04:00	42.86	13.33
6/29/2017	17:04:15	43.17	13.44
6/29/2017	17:04:30	43.13	13.58
6/29/2017	17:04:45	43.17	13.48
6/29/2017	17:05:00	42.96	13.56
6/29/2017	17:05:15	42.23	13.61
6/29/2017	17:05:30	41.84	13.43
6/29/2017	17:05:45	41.77	13.5
6/29/2017	17:06:00	42.76	13.44
6/29/2017	17:06:15	43.81	13.6
6/29/2017	17:06:30	44.43	13.76
6/29/2017	17:06:45	45.43	13.71
6/29/2017	17:07:00	46.33	14.06
6/29/2017	17:07:15	46.37	14.14
6/29/2017	17:07:30	46.08	13.96

LAS
8/4/2017

Run 4

Date	Time	Inlet THC	Outlet THC
6/29/2017	17:07:45	45.18	13.73
6/29/2017	17:08:00	44.12	13.34
6/29/2017	17:08:15	43.39	13.11
6/29/2017	17:08:30	42.65	13
6/29/2017	17:08:45	42.05	12.83
6/29/2017	17:09:00	41.96	12.82
6/29/2017	17:09:15	42.15	12.81
6/29/2017	17:09:30	42.73	13.05
6/29/2017	17:09:45	43.25	13.22
6/29/2017	17:10:00	43.52	13.3
6/29/2017	17:10:15	43.14	13.24
6/29/2017	17:10:30	43.6	13.12
6/29/2017	17:10:45	43.56	13.21
6/29/2017	17:11:00	43.09	13.11
6/29/2017	17:11:15	42.37	12.92
6/29/2017	17:11:30	41.99	12.88
6/29/2017	17:11:45	41.64	13.17
6/29/2017	17:12:00	42.38	13.2
6/29/2017	17:12:15	40.41	12.99
6/29/2017	17:12:30	40.53	12.74
6/29/2017	17:12:45	39.84	12.72
6/29/2017	17:13:00	39.54	12.54
6/29/2017	17:13:15	39.39	12.68
6/29/2017	17:13:30	38.73	12.77
6/29/2017	17:13:45	38.39	12.8
6/29/2017	17:14:00	38.78	12.98
6/29/2017	17:14:15	39.03	12.98
6/29/2017	17:14:30	39.43	13.08
6/29/2017	17:14:45	39.2	12.91
6/29/2017	17:15:00	39.28	12.71
6/29/2017	17:15:15	39.49	12.81
6/29/2017	17:15:30	39.75	13.03
6/29/2017	17:15:45	39.78	12.82
6/29/2017	17:16:00	39.85	12.84
6/29/2017	17:16:15	41.38	12.99
6/29/2017	17:16:30	42.71	13.01
6/29/2017	17:16:45	44.71	13.25
6/29/2017	17:17:00	46.18	13.3
6/29/2017	17:17:15	45.84	13.31
6/29/2017	17:17:30	45.62	13.03
6/29/2017	17:17:45	45.89	13.1

LAS
8/4/2017

Note: Time removed for port change from 16:35-16:45

Company Name: Aluf Plastics
Emission Unit: Repro Carbon Adsorber
Test Location: Inlet & Outlet
Project Number: 016-AQS-149228

Reference Method Data Summary

Run 5

	THC (ppmvw)	THC (ppmvw)
Average concentration	34.55	13.90
<i>Minimum concentration</i>	29.28	10.82
<i>Maximum concentration</i>	49.87	16.47

Bias Correction

zero initial (Zi)	0.21	0.07
zero final (Zf)	0.28	0.09
upscale initial (Si)	47.28	48.34
upscale final (Sf)	47.53	49.24
upscale value (SV)	48.59	48.59
span value	100	100

LAS
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Run 5

Date	Time	Inlet THC	Outlet THC
6/29/2017	17:45:00	47.76	12.76
6/29/2017	17:45:15	48.8	12.95
6/29/2017	17:45:30	49.65	13.27
6/29/2017	17:45:45	49.87	13.4
6/29/2017	17:46:00	48.84	13.41
6/29/2017	17:46:15	48.29	13.19
6/29/2017	17:46:30	47.77	13.26
6/29/2017	17:46:45	47.49	13.11
6/29/2017	17:47:00	46.8	12.91
6/29/2017	17:47:15	46.08	12.91
6/29/2017	17:47:30	45.82	13.03
6/29/2017	17:47:45	46.18	12.98
6/29/2017	17:48:00	46.48	12.98
6/29/2017	17:48:15	46.86	13.2
6/29/2017	17:48:30	46.29	13.04
6/29/2017	17:48:45	45.32	12.96
6/29/2017	17:49:00	44.26	12.88
6/29/2017	17:49:15	43.29	12.76
6/29/2017	17:49:30	42.46	12.6
6/29/2017	17:49:45	41.52	12.54
6/29/2017	17:50:00	40.81	12.65
6/29/2017	17:50:15	40.29	12.42
6/29/2017	17:50:30	39.64	12.25
6/29/2017	17:50:45	38.97	12.17
6/29/2017	17:51:00	38.56	12.18
6/29/2017	17:51:15	38.03	11.93
6/29/2017	17:51:30	37.89	11.94
6/29/2017	17:51:45	37.65	11.97
6/29/2017	17:52:00	37.28	11.88
6/29/2017	17:52:15	37.35	11.91
6/29/2017	17:52:30	37.28	11.69

Run 5

Date	Time	Inlet THC	Outlet THC
6/29/2017	17:52:45	37.46	11.53
6/29/2017	17:53:00	37.73	11.6
6/29/2017	17:53:15	38.21	11.8
6/29/2017	17:53:30	38.05	11.75
6/29/2017	17:53:45	37.66	11.9
6/29/2017	17:54:00	37.07	11.8
6/29/2017	17:54:15	36.48	11.58
6/29/2017	17:54:30	35.99	11.67
6/29/2017	17:54:45	35.46	11.33
6/29/2017	17:55:00	35.04	11.24
6/29/2017	17:55:15	34.71	11.22
6/29/2017	17:55:30	34.46	11.31
6/29/2017	17:55:45	34.22	11.25
6/29/2017	17:56:00	34.05	11.38
6/29/2017	17:56:15	34.13	11.4
6/29/2017	17:56:30	34.39	11.31
6/29/2017	17:56:45	35	11.37
6/29/2017	17:57:00	35.13	11.31
6/29/2017	17:57:15	35.11	11.25
6/29/2017	17:57:30	34.84	11.24
6/29/2017	17:57:45	34.51	11.25
6/29/2017	17:58:00	34.14	11.14
6/29/2017	17:58:15	33.7	11.19
6/29/2017	17:58:30	33.39	11.13
6/29/2017	17:58:45	32.87	10.94
6/29/2017	17:59:00	32.67	10.87
6/29/2017	17:59:15	32.67	10.91
6/29/2017	17:59:30	32.88	10.82
6/29/2017	17:59:45	32.77	10.99
6/29/2017	18:00:00	32.68	11.69
6/29/2017	18:00:15	32.59	11.83
6/29/2017	18:00:30	32.56	11.76
6/29/2017	18:00:45	32.64	11.8
6/29/2017	18:01:00	32.73	11.91
6/29/2017	18:01:15	32.94	11.95
6/29/2017	18:01:30	32.88	12.02
6/29/2017	18:01:45	32.76	11.98
6/29/2017	18:02:00	32.77	12.07
6/29/2017	18:02:15	32.83	12.13
6/29/2017	18:02:30	33	12.25
6/29/2017	18:02:45	32.96	12.16
6/29/2017	18:03:00	32.76	12.24
6/29/2017	18:03:15	32.51	12.22
6/29/2017	18:03:30	32.96	12.01
6/29/2017	18:03:45	33.12	12.12
6/29/2017	18:04:00	32.92	12.22
6/29/2017	18:04:15	32.76	12.18
6/29/2017	18:04:30	32.5	12.24
6/29/2017	18:04:45	32.69	12.04
6/29/2017	18:05:00	33.19	12.16
6/29/2017	18:05:15	33.98	12.15
6/29/2017	18:05:30	34.51	12.31
6/29/2017	18:05:45	34.67	12.25
6/29/2017	18:06:00	35.06	12.12
6/29/2017	18:06:15	35.56	12.45
6/29/2017	18:06:30	35.89	12.53

LAS
8/4/2017

Run 5

Date	Time	Inlet THC	Outlet THC
6/29/2017	18:06:45	36.26	12.51
6/29/2017	18:07:00	36.51	12.63
6/29/2017	18:07:15	36.28	12.51
6/29/2017	18:07:30	36.1	12.4
6/29/2017	18:07:45	35.82	12.39
6/29/2017	18:08:00	35.59	12.38
6/29/2017	18:08:15	35.31	12.4
6/29/2017	18:08:30	35.17	12.49
6/29/2017	18:08:45	34.76	12.33
6/29/2017	18:09:00	34.74	12.31
6/29/2017	18:09:15	34.43	12.35
6/29/2017	18:09:30	34.2	12.22
6/29/2017	18:09:45	34.09	12.45
6/29/2017	18:10:00	33.74	12.21
6/29/2017	18:10:15	33.44	12.19
6/29/2017	18:10:30	33.19	12.24
6/29/2017	18:10:45	33.04	12.2
6/29/2017	18:11:00	33.06	12.14
6/29/2017	18:11:15	33.11	12.27
6/29/2017	18:11:30	33.09	12.4
6/29/2017	18:11:45	33.09	12.4
6/29/2017	18:12:00	33.15	12.25
6/29/2017	18:12:15	33.24	12.27
6/29/2017	18:12:30	33.19	12.19
6/29/2017	18:12:45	32.91	12.14
6/29/2017	18:13:00	32.76	12.13
6/29/2017	18:13:15	32.65	12.16
6/29/2017	18:13:30	32.5	12.01
6/29/2017	18:13:45	32.5	12.11
6/29/2017	18:14:00	32.56	12
6/29/2017	18:14:15	32.76	11.94
6/29/2017	18:14:30	32.75	12
6/29/2017	18:14:45	32.88	12.29
6/29/2017	18:25:00	33.7	15.03
6/29/2017	18:25:15	33.78	15.03
6/29/2017	18:25:30	34.26	15.3
6/29/2017	18:25:45	34.67	15.55
6/29/2017	18:26:00	34.6	15.48
6/29/2017	18:26:15	34.54	15.2
6/29/2017	18:26:30	34.65	15.19
6/29/2017	18:26:45	34.8	15.23
6/29/2017	18:27:00	34.64	15.62
6/29/2017	18:27:15	34.36	15.57
6/29/2017	18:27:30	34.4	15.54
6/29/2017	18:27:45	34.57	15.45
6/29/2017	18:28:00	34.68	15.56
6/29/2017	18:28:15	34.84	15.45
6/29/2017	18:28:30	34.58	15.35
6/29/2017	18:28:45	34.91	15.52
6/29/2017	18:29:00	35.55	15.61
6/29/2017	18:29:15	36.24	15.69
6/29/2017	18:29:30	37.11	15.9
6/29/2017	18:29:45	37.47	15.89
6/29/2017	18:30:00	36.82	16.01
6/29/2017	18:30:15	35.96	15.8
6/29/2017	18:30:30	34.73	15.46

LAS
8/4/2017

Run 5

Date	Time	Inlet THC	Outlet THC
6/29/2017	18:30:45	33.68	15.23
6/29/2017	18:31:00	33.94	15.02
6/29/2017	18:31:15	33.37	14.85
6/29/2017	18:31:30	33.01	14.83
6/29/2017	18:31:45	32.72	15
6/29/2017	18:32:00	32.37	14.72
6/29/2017	18:32:15	32.15	14.72
6/29/2017	18:32:30	31.92	14.78
6/29/2017	18:32:45	31.83	14.78
6/29/2017	18:33:00	32.19	14.79
6/29/2017	18:33:15	32.54	14.98
6/29/2017	18:33:30	32.62	15.19
6/29/2017	18:33:45	32.52	15.1
6/29/2017	18:34:00	32.45	15.15
6/29/2017	18:34:15	32.55	15.16
6/29/2017	18:34:30	32.76	15.22
6/29/2017	18:34:45	32.99	15.13
6/29/2017	18:35:00	33.03	15.1
6/29/2017	18:35:15	33.33	15.29
6/29/2017	18:35:30	33.65	15.2
6/29/2017	18:35:45	34.02	15.26
6/29/2017	18:36:00	33.98	15.25
6/29/2017	18:36:15	34.08	15.41
6/29/2017	18:36:30	34.31	15.44
6/29/2017	18:36:45	34.57	15.42
6/29/2017	18:37:00	34.82	15.52
6/29/2017	18:37:15	34.88	15.47
6/29/2017	18:37:30	35.31	15.59
6/29/2017	18:37:45	36.51	15.85
6/29/2017	18:38:00	37.04	16.03
6/29/2017	18:38:15	37.08	16.19
6/29/2017	18:38:30	36.42	16.28
6/29/2017	18:38:45	35.77	16.05
6/29/2017	18:39:00	35.35	16
6/29/2017	18:39:15	34.85	16.02
6/29/2017	18:39:30	34.51	15.87
6/29/2017	18:39:45	34.03	16.47
6/29/2017	18:40:00	33.7	16.36
6/29/2017	18:40:15	33.54	16.32
6/29/2017	18:40:30	33.46	16.14
6/29/2017	18:40:45	33.41	16.26
6/29/2017	18:41:00	33.24	16.21
6/29/2017	18:41:15	33.13	16.26
6/29/2017	18:41:30	33.13	16.26
6/29/2017	18:41:45	33.2	16.33
6/29/2017	18:42:00	32.92	16.38
6/29/2017	18:42:15	31.65	16.28
6/29/2017	18:42:30	31.52	16.15
6/29/2017	18:42:45	31.6	16.17
6/29/2017	18:43:00	31.56	16.2
6/29/2017	18:43:15	31.83	16.18
6/29/2017	18:43:30	31.95	15.99
6/29/2017	18:43:45	31.93	15.82
6/29/2017	18:44:00	31.79	15.96
6/29/2017	18:44:15	31.77	16.02
6/29/2017	18:44:30	31.7	15.99

LAS
8/4/2017

Run 5

Date	Time	Inlet THC	Outlet THC
6/29/2017	18:44:45	31.86	16.29
6/29/2017	18:45:00	31.49	16.33
6/29/2017	18:45:15	31.21	16.38
6/29/2017	18:45:30	30.73	16.25
6/29/2017	18:45:45	31.03	16.1
6/29/2017	18:46:00	31.65	16.2
6/29/2017	18:46:15	31.36	15.95
6/29/2017	18:46:30	31	15.93
6/29/2017	18:46:45	30.6	15.93
6/29/2017	18:47:00	30.2	15.83
6/29/2017	18:47:15	29.86	15.93
6/29/2017	18:47:30	29.62	15.81
6/29/2017	18:47:45	29.47	15.68
6/29/2017	18:48:00	29.42	15.72
6/29/2017	18:48:15	29.35	15.67
6/29/2017	18:48:30	29.32	15.63
6/29/2017	18:48:45	29.35	15.51
6/29/2017	18:49:00	29.28	15.5
6/29/2017	18:49:15	29.29	15.58
6/29/2017	18:49:30	29.34	15.57
6/29/2017	18:49:45	29.39	15.73
6/29/2017	18:50:00	29.37	15.74
6/29/2017	18:50:15	29.39	15.96
6/29/2017	18:50:30	29.4	15.88
6/29/2017	18:50:45	29.46	15.68
6/29/2017	18:51:00	29.53	15.63
6/29/2017	18:51:15	29.63	15.79
6/29/2017	18:51:30	29.7	15.9
6/29/2017	18:51:45	29.67	15.81
6/29/2017	18:52:00	29.37	15.89
6/29/2017	18:52:15	29.37	16
6/29/2017	18:52:30	29.67	16
6/29/2017	18:52:45	29.65	15.92
6/29/2017	18:53:00	29.61	15.67
6/29/2017	18:53:15	29.56	15.79
6/29/2017	18:53:30	29.58	15.7
6/29/2017	18:53:45	29.83	15.82
6/29/2017	18:54:00	30.07	15.84
6/29/2017	18:54:15	30.33	15.77
6/29/2017	18:54:30	30.85	15.82
6/29/2017	18:54:45	30.69	16.06

LAS
8/4/2017

Note: Time removed for port change from 18:15-18:25

APPENDIX VIII:

LABORATORY ANALYTICAL RESULTS

Montrose Air Quality Services, LLC – Easton

1350 Sullivan Trail # A
Easton, PA 18040

KEMS/Aluf Plastics
Orangeburg, NY
Client Project #016-AQS-149228

Analytical Report
(0617-110)

EPA Method TO-15

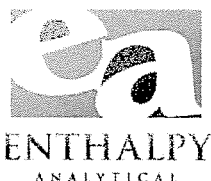
TO-15 Target Compound List

EPA Method 18

Acrolein, Methane, Pentane

EPA SW-846 Method 0011

2-Butenal, 2-Pentanone, 3-Heptanone, Acetaldehyde, Acetone, Benzaldehyde,
2-Methyl benzaldehyde, 3/4-Methyl benzaldehyde, Butanal, 3-Methyl butanal,
Decanal, Formaldehyde, Hexanaldehyde, Pentanal, Propionaldehyde



Enthalpy Analytical, LLC

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

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

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

This analytical report was prepared in Portable Document Format (.PDF) and contains 441 pages.

Kristen H Bounds

QA Reviewed by – Kristen H. Bounds

Report Issued: 08/04/2017



Summary of Results



Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Easton

Job No.: 0617-110 - EPA Method 18

Client No.: 016-AQS-149228

Summary Table

Results Adjusted Using Recovery Efficiency

<u>Compound</u>	Acrolein	Pentane
<u>Sample ID</u>	<u>Adjusted Concentration (ppm)</u>	
<i>IBC Retail Outlet Run 2</i>	0.262 ND	0.290 ND
<i>IBC Retail Outlet Run 3</i>	0.262 ND	0.290 ND
<i>IBC Retail Outlet Run 4</i>	0.262 ND	0.290 ND

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Easton

Job No.: 0617-110 - EPA Method 18

Client No.: 016-AQS-149228

Summary Table - Methane (Bags)

Results Adjusted Using Recovery Efficiency

<u>Sample ID</u>	<u>Adjusted Concentration (ppm)</u>
<i>Repro Inlet Primary Run 1</i>	2.55 J
<i>Repro Inlet Primary Run 3</i>	2.23 J
<i>Repro Inlet Primary Run 4</i>	2.32 J
<i>Repro Inlet Primary Run 5</i>	2.26 J

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Easton

Job No.: 0617-110 - EPA Method 18

Client No.: 016-AQS-149228

Summary Table

Results Adjusted Using Recovery Efficiency

<u>Compound</u>	Methane	Acrolein	Pentane
<u>Sample ID</u>	<u>Adjusted Concentration (ppm)</u>		
<i>Repro Outlet BU Run 3</i>	1.77 J	0.282 ND	0.214 ND
<i>Repro Outlet Primary Run 1</i>	1.93 J	0.282 ND	0.214 ND
<i>Repro Outlet Primary Run 4</i>	1.85 J	0.282 ND	0.214 ND
<i>Repro Outlet Primary Run 5</i>	1.66 J	0.282 ND	0.214 ND

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Easton

Job No.: 0617-110 - EPA SW-846 Method 0011

Client No.: 016-AQS-149228

Summary Table

Compound	Sample ID / Catch Weight (ug)		
	Repro Out R1	Repro Out R5	Repro Out R3
Formaldehyde	842	380	345
Acetaldehyde	1,616	655	598
Acetone	425	307	261
Propionaldehyde	359	221 ND	153
Crotonaldehyde	290 ND	223 ND	150 ND
Butyraldehyde	703	233	321
Benzaldehyde	290 ND	223 ND	150 ND
3-Heptanone (peaks 1 & 2)	290 ND	223 ND	150 ND
Isovaleraldehyde	288 ND	221 ND	184
Valeraldehyde	633	247	149 ND
o-Tolualdehyde	290 ND	223 ND	150 ND
m,p-Tolualdehyde	582 ND	447 ND	301 ND
Hexaldehyde	381	224 ND	170
2-Pentanone	316 ND	243 ND	163 ND
Decanal	356 ND	274 ND	184 ND
	Repro Out R4	IBC Out R2	IBC Out R3
Formaldehyde	376	189 ND	193 ND
Acetaldehyde	795	189 ND	193 ND
Acetone	231	192	193 ND
Propionaldehyde	170	188 ND	192 ND
Crotonaldehyde	150 ND	189 ND	193 ND
Butyraldehyde	525	188 ND	192 ND
Benzaldehyde	150 ND	189 ND	193 ND
3-Heptanone (peaks 1 & 2)	150 ND	189 ND	193 ND
Isovaleraldehyde	192	188 ND	192 ND
Valeraldehyde	149 ND	188 ND	192 ND
o-Tolualdehyde	150 ND	189 ND	193 ND
m,p-Tolualdehyde	301 ND	379 ND	388 ND
Hexaldehyde	171	190 ND	194 ND
2-Pentanone	163 ND	206 ND	210 ND
Decanal	184 ND	232 ND	237 ND

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Easton

Job No.: 0617-110 - EPA SW-846 Method 0011

Client No.: 016-AQS-149228

Summary Table

Compound	Sample ID / Catch Weight (ug)	
	IBC Out R4	Sample Blank
Formaldehyde	178 ND	188 ND
Acetaldehyde	178 ND	188 ND
Acetone	178 ND	188 ND
Propionaldehyde	177 ND	187 ND
Crotonaldehyde	178 ND	188 ND
Butyraldehyde	177 ND	187 ND
Benzaldehyde	178 ND	188 ND
3-Heptanone (peaks 1 & 2)	178 ND	188 ND
Isovaleraldehyde	177 ND	187 ND
Valeraldehyde	177 ND	187 ND
o-Tolualdehyde	178 ND	188 ND
m,p-Tolualdehyde	358 ND	378 ND
Hexaldehyde	180 ND	190 ND
2-Pentanone	194 ND	205 ND
Decanal	219 ND	231 ND

Results



Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Easton
 Job No.: 0617-110 - EPA Method 18
 Client No.: 016-AQS-149228

Acrolein

Sample ID	Filename #1	Filename #2	Filename #3	Analysis Method	Curve Min	Curve Max	MDL	Ret Time (min)	Ret Time (min)	%dif RT	Conc #1	Conc #2	Conc #3	%dif conc	DF	Avg Conc ppm	Spike Recovery	Adj. Conc ppm	Flag
IBC Retail Outlet Run 2	003F0101.D	003F0102.D	003F0103.D	GUMMOP1039F_AA.M	2.50	250	0.225	NA	NA	NA	0.225	0.225	0.225	NA	1	0.225	85.8%	0.262	ND
IBC Retail Outlet Run 3	007F0201.D	007F0202.D	007F0203.D	GUMMOP1039F_AA.M	2.50	250	0.225	NA	NA	NA	0.225	0.225	0.225	NA	1	0.225	85.8%	0.262	ND
IBC Retail Outlet Run 3 BL	013F0401.D	013F0402.D	013F0403.D	GUMMOP1075F_AA.M	2.18	242	0.225	NA	NA	NA	0.225	0.225	0.225	NA	1	0.225	85.8%	0.262	ND
IBC Retail Outlet Run 3 BL SP	013F1501.D	013F1502.D	013F1503.D	GUMMOP1075F_AA.M	2.18	242	0.225	3.46	3.46	0.01	11.4	12.2	11.8	3.6	1	11.8			
IBC Retail Outlet Run 4	013F0301.D	013F0302.D	013F0303.D	GUMMOP1039F_AA.M	2.50	250	0.225	NA	NA	NA	0.225	0.225	0.225	NA	1	0.225	85.8%	0.262	ND

Pentane

Sample ID	Filename #1	Filename #2	Filename #3	Analysis Method	Curve Min	Curve Max	MDL	Ret Time (min)	Ret Time (min)	%dif RT	Conc #1	Conc #2	Conc #3	%dif conc	DF	Avg Conc ppm	Spike Recovery	Adj. Conc ppm	Flag
IBC Retail Outlet Run 2	019B0101.D	019B0102.D	019B0103.D	GUMMOP987R_C1-C7.M	5.00	5,200	0.250	NA	NA	NA	0.250	0.250	0.250	NA	1	0.250	86.4%	0.290	ND
IBC Retail Outlet Run 3	023B0201.D	023B0202.D	023B0203.D	GUMMOP987R_C1-C7.M	5.00	5,200	0.250	NA	NA	NA	0.250	0.250	0.250	NA	1	0.250	86.4%	0.290	ND
IBC Retail Outlet Run 3 BL	029B0401.D	029B0402.D	029B0403.D	GUMMOP987R_C1-C7.M	5.00	5,200	0.250	NA	NA	NA	0.250	0.250	0.250	NA	1	0.250	86.4%	0.290	ND
IBC Retail Outlet Run 3 BL SP	029B1501.D	029B1502.D	029B1503.D	GUMMOP987R_C1-C7.M	5.00	5,200	0.250	4.24	4.24	0.0	12.4	12.4	12.1	1.4	1	12.3			
IBC Retail Outlet Run 4	029B0301.D	029B0302.D	029B0303.D	GUMMOP987R_C1-C7.M	5.00	5,200	0.250	NA	NA	NA	0.250	0.250	0.250	NA	1	0.250	86.4%	0.290	ND

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Easton

Job No.: 0617-110 EPA Method 18

Client No.: 016-AQS-149228

Spiked Bag

<i>IBC Retail Out Run3 BL SP</i>			Acrolein	Pentane
Before Spiking	Inj1 (ppmv)		0.00	0.00
	Inj2 (ppmv)		0.00	0.00
	Inj3 (ppmv)		0.00	0.00
	Avg ppmv		0.00	0.00
	Bag vol L NTP	1.384		
Gas Spike	Cylinder	CC20849		
	Expires	7/12/19		
	Press/Temp	750.6 / 70.5		
	Vol (mL)	250		
	Cyl Conc (ppmv)			100
	Cyl Dil Factor			1
	Vol (mL NTP)	246		
Gas Spike	Cylinder	CC341723		
	Expires	5/30/18		
	Press/Temp	750.6 / 70.5		
	Vol (mL)	100		
	Cyl Conc (ppmv)		242	
	Cyl Dil Factor		1	
	Vol (mL NTP)	98.3		
Totals	Sp Bag Vol L NTP	1.728		
	Corrected Initial (ppmv)		0.00	0.00
	Spike Amount (mL NTP)		0.0238	0.0246
	Spike Amount (ppmv)		13.8	14.2
	Expected (ppmv)		13.8	14.2
Result	Inj1 (ppmv)		11.4	12.4
	Inj2 (ppmv)		12.2	12.4
	Inj3 (ppmv)		11.8	12.1
	Avg (ppmv)		11.8	12.3
Recovery			85.8%	86.4%

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Easton
 Job No.: 0617-110 - EPA Method 18
 Client No.: 016-AQS-149228

Methane

Sample ID	Filename #1	Filename #2	Filename #3	Analysis Method	Curve Min	Curve Max	MDL	Ret Time (min)	Ret Time (min)	%dif RT	Conc #1	Conc #2	Conc #3	%dif conc	DF	Avg Conc ppm	Spike Recovery	Adj. Conc ppm	Flag
<i>Repro Inlet Primary Run 1</i>	029B2102.D	029B2103.D	028B2201.D	GUMMOP987 R_C1-C7.M	5.00	51,200	0.287	1.48	1.48	0.0	2.13	2.28	2.26	4.5	1	2.22	87.1%	2.55	J
<i>Repro Inlet Primary Run 1 SP</i>	029B0501.D	029B0502.D	029B0503.D	GUMMOP987 R_C1-C7.M	5.00	51,200	0.287	1.47	1.47	0.0	16.7	16.7	16.3	1.8	1	16.5			
<i>Repro Inlet Primary Run 3</i>	018B2301.D	018B2302.D	018B2303.D	GUMMOP987 R_C1-C7.M	5.00	51,200	0.287	1.46	1.46	0.0	1.99	1.90	1.94	2.3	1	1.95	87.1%	2.23	J
<i>Repro Inlet Primary Run 4</i>	029B2401.D	029B2402.D	029B2403.D	GUMMOP987 R_C1-C7.M	5.00	51,200	0.287	1.46	1.47	0.0	2.09	1.99	1.98	3.4	1	2.02	87.1%	2.32	J
<i>Repro Inlet Primary Run 5</i>	030B2501.D	030B2502.D	030B2503.D	GUMMOP987 R_C1-C7.M	5.00	51,200	0.287	1.47	1.46	0.4	1.91	1.98	2.03	3.0	1	1.97	87.1%	2.26	J

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Easton

Job No.: 0617-110 - EPA Method 18

Client No.: 016-AQS-149228

Spiked Bag

<i>Repro Inlet Primary Run 1 - S/R</i>		Methane
Before Spiking	Inj1 (ppmv)	2.13
	Inj2 (ppmv)	2.28
	Inj3 (ppmv)	2.26
	Avg ppmv	2.22
	Bag vol L NTP	1.95
Gas Spike	Cylinder	CC105348
	Expires	5/16/19
	Press/Temp	755.9 / 70.0
	Vol (mL)	400
	Cyl Conc (ppmv)	100
	Cyl Dil Factor	1
	Vol (mL NTP)	396
Totals	Sp Bag Vol L NTP	2.35
	Corrected Initial (ppmv)	1.85
	Spike Amount (mL NTP)	0.0396
	Spike Amount (ppmv)	16.9
	Expected (ppmv)	18.7
Result	Inj1 (ppmv)	16.7
	Inj2 (ppmv)	16.7
	Inj3 (ppmv)	16.3
	Avg (ppmv)	16.5
Recovery		87.1%

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Easton
 Job No.: 0617-110 - EPA Method 18
 Client No.: 016-AQS-149228

Methane

Sample ID	Filename #1	Filename #2	Filename #3	Analysis Method	Curve Min	Curve Max	MDL	Ret Time (min)	Ret Time (min)	%dif RT	Conc #1	Conc #2	Conc #3	%dif conc	DF	Avg Conc ppm	Spike Recovery	Adj. Conc ppm	Flag
Repro Outlet BU Run 3	018B0101.D	018B0102.D	018B0103.D	GUMMOP987R_C1-C7.M	5.00	51,200	0.287	1.47	1.47	0.4	2.12	1.96	2.07	4.3	1	2.05	116%	1.77	J
Repro Outlet Primary Run 1	029B1801.D	029B1802.D	029B1803.D	GUMMOP987R_C1-C7.M	5.00	51,200	0.287	1.47	1.47	0.0	2.10	2.37	2.22	6.3	1	2.23	116%	1.93	J
Repro Outlet Primary Run 4	018B1901.D	018B1902.D	018B1903.D	GUMMOP987R_C1-C7.M	5.00	51,200	0.287	1.46	1.46	0.1	2.10	2.09	2.22	4.0	1	2.14	116%	1.85	J
Repro Outlet PR Run4 BL	029B0901.D	029B0902.D	029B0903.D	GUMMOP987R_C1-C7.M	5.00	51,200	0.287	1.47	1.47	0.1	1.99	1.95	1.84	4.4	1	1.93	116%	1.67	J
Repro Outlet PR Run4 BL SP	029B0801.D	029B0802.D	029B0803.D	GUMMOP987R_C1-C7.M	5.00	51,200	0.287	1.47	1.47	0.0	17.1	17.6	17.5	1.6	1	17.4			
Repro Outlet Primary Run 5	030B2001.D	030B2002.D	030B2003.D	GUMMOP987R_C1-C7.M	5.00	51,200	0.287	1.46	1.46	0.1	1.65	1.94	2.18	14.2	1	1.93	116%	1.66	J

Acrolein

Sample ID	Filename #1	Filename #2	Filename #3	Analysis Method	Curve Min	Curve Max	MDL	Ret Time (min)	Ret Time (min)	%dif RT	Conc #1	Conc #2	Conc #3	%dif conc	DF	Avg Conc ppm	Spike Recovery	Adj. Conc ppm	Flag
Repro Outlet BU Run 3	002F0101.D	002F0102.D	002F0103.D	GUMMOP1039F_AA.M	2.50	250.00	0.225	NA	NA	NA	0.225	0.225	0.225	0.0	1	0.225	79.8%	0.282	ND
Repro Outlet Primary Run 1	013F1801.D	013F1802.D	013F1803.D	GUMMOP1039F_AA.M	2.50	250.00	0.225	NA	NA	NA	0.225	0.225	0.225	0.0	1	0.225	79.8%	0.282	ND
Repro Outlet Primary Run 4	002F1901.D	002F1902.D	002F1903.D	GUMMOP1039F_AA.M	2.50	250.00	0.225	NA	NA	NA	0.225	0.225	0.225	0.0	1	0.225	79.8%	0.282	ND
Repro Outlet PR Run4 BL	013F0901.D	013F0902.D	013F0903.D	GUMMOP1075F_AA.M	2.18	242.00	0.225	NA	NA	NA	0.225	0.225	0.225	0.0	1	0.22	79.8%	0.282	ND
Repro Outlet PR Run4 BL SP	013F0801.D	013F0802.D	013F0803.D	GUMMOP1075F_AA.M	2.18	242.00	0.225	3.46	3.46	0.0	10.7	11.2	11.1	2.7	1	11.0			
Repro Outlet Primary Run 5	014F2001.D	014F2002.D	014F2003.D	GUMMOP1039F_AA.M	2.50	250.00	0.225	NA	NA	NA	0.225	0.225	0.225	0.0	1	0.225	79.8%	0.282	ND

Pentane

Sample ID	Filename #1	Filename #2	Filename #3	Analysis Method	Curve Min	Curve Max	MDL	Ret Time (min)	Ret Time (min)	%dif RT	Conc #1	Conc #2	Conc #3	%dif conc	DF	Avg Conc ppm	Spike Recovery	Adj. Conc ppm	Flag
Repro Outlet BU Run 3	018B0101.D	018B0102.D	018B0103.D	GUMMOP987R_C1-C7.M	5.00	5,200	0.250	NA	NA	NA	0.250	0.250	0.250	0.0	1	0.250	117%	0.214	ND
Repro Outlet Primary Run 1	029B1801.D	029B1802.D	029B1803.D	GUMMOP987R_C1-C7.M	5.00	5,200	0.250	NA	NA	NA	0.250	0.250	0.250	0.0	1	0.250	117%	0.214	ND
Repro Outlet Primary Run 4	018B1901.D	018B1902.D	018B1903.D	GUMMOP987R_C1-C7.M	5.00	5,200	0.250	NA	NA	NA	0.250	0.250	0.250	0.0	1	0.250	117%	0.214	ND
Repro Outlet PR Run4 BL	029B0901.D	029B0902.D	029B0903.D	GUMMOP987R_C1-C7.M	5.00	5,200	0.250	NA	NA	NA	0.250	0.250	0.250	0.0	1	0.25	117%	0.214	ND
Repro Outlet PR Run4 BL SP	029B0801.D	029B0802.D	029B0803.D	GUMMOP987R_C1-C7.M	5.00	5,200	0.250	4.23	4.23	0.0	16.0	16.1	15.9	0.7	1	16.0			
Repro Outlet Primary Run 5	030B2001.D	030B2002.D	030B2003.D	GUMMOP987R_C1-C7.M	5.00	5,200	0.250	NA	NA	NA	0.250	0.250	0.250	0.0	1	0.250	117%	0.214	ND

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Easton

Job No.: 0617-110 - EPA Method 18

Client No.: 016-AQS-149228

Spiked Bag

<i>Repro Outlet Pr Run4 BL SP</i>		Methane	Acrolein	Pentane
Before Spiking	Inj1 (ppmv)	1.99	0.00	0.00
	Inj2 (ppmv)	1.95	0.00	0.00
	Inj3 (ppmv)	1.84	0.00	0.00
	Avg ppmv	1.93	0.00	0.00
	Bag vol L NTP	3.456		
Gas Spike	Cylinder	CC20849		
	Expires	7/12/19		
	Press/Temp	748.3 / 71.0		
	Vol (mL)	600		
	Cyl Conc (ppmv)	100		100
	Cyl Dil Factor	1		1
	Vol (mL NTP)	587		
Gas Spike	Cylinder	CC341723		
	Expires	5/30/18		
	Press/Temp	748.3 / 71.0		
	Vol (mL)	250		
	Cyl Conc (ppmv)		242	
	Cyl Dil Factor		1	
	Vol (mL NTP)	245		
Totals	Sp Bag Vol L NTP	4.288		
	Corrected Initial (ppmv)	1.55	0.00	0.00
	Spike Amount (mL NTP)	0.0587	0.0592	0.0587
	Spike Amount (ppmv)	13.7	13.8	13.7
	Expected (ppmv)	15.3	13.8	13.7
Result	Inj1 (ppmv)	17.1	10.7	16.0
	Inj2 (ppmv)	17.6	11.2	16.1
	Inj3 (ppmv)	17.5	11.1	15.9
	Avg (ppmv)	17.4	11.0	16.0
Recovery		116%	79.8%	117%

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Easton

Job No.: 0617-110 - EPA SW-846 Method 0011

Client No.: 016-AQS-149228

MDL 0.882 (ug/mL)
 LOQ 0.882 (ug/mL)
 Compound Formaldehyde

Lower Curve Limit 0.882 (ug/mL)
 Upper Curve Limit 15.0 (ug/mL)

Sample ID	Lab ID	Analysis Method	Ret Time (min)	Conc (ug/mL)	DF* AF	Vol (mL)	Catch Weight (ug)	Qual
Repro Out R1	011-0401.D	Bart407.M	3.64	2.56	2	164	842	
Dup/Repro Out R1	012-0501.D	Bart407.M	3.65	2.36	2	162	762	
							difference	9.5%
Repro Out R5	013-0601.D	Bart407.M	3.68	1.50	2	126	380	
Repro Out R3	016-0901.D	Bart407.M	3.72	2.04	1	170	345	
Repro Out R4	017-1001.D	Bart407.M	3.70	2.21	1	170	376	
IBC Out R2	018-1101.D	Bart407.M	NA	0.882	1	214	189	ND
IBC Out R3	019-0401.D	Bart407.M	NA	0.882	1	219	193	ND
IBC Out R4	020-0501.D	Bart407.M	NA	0.882	1	202	178	ND
Sample Blank	021-0601.D	Bart407.M	NA	0.882	1	214	188	ND
LCS-2 (comparison)	031-0901.D	Bart407.M	3.67	1.21	1	143	172	
							Spike Amount (ug)	203
							Spike Recovery (%)	85.1%
MB-1	023-0801.D	Bart407.M	NA	0.882	1	143	126	ND

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Easton

Job No.: 0617-110 - EPA SW-846 Method 0011

Client No.: 016-AQS-149228

MDL 0.882 (ug/mL)
 LOQ 0.882 (ug/mL)
 Compound Acetaldehyde

Lower Curve Limit 0.882 (ug/mL)
 Upper Curve Limit 15.0 (ug/mL)

Sample ID	Lab ID	Analysis Method	Ret Time (min)	Conc (ug/mL)	DF	Vol (mL)	Catch Weight (ug)	Qual
Repro Out R1	011-0401.D	Bart407.M	5.08	4.91	2	164	1,616	
Dup/Repro Out R1	012-0501.D	Bart407.M	5.11	4.43	2	162	1,431	
							difference	11.4%
Repro Out R5	013-0601.D	Bart407.M	5.16	2.59	2	126	655	
MS/Repro Out R5	014-0701.D	Bart407.M	5.13	2.25	1	105	238	
							Spike Amount (ug)	198
							Native Amount (ug)	109
							Spike Recovery (%)	65.0%
MSD/Repro Out R5	015-0801.D	Bart407.M	5.16	2.25	1	105	235	
							Spike Amount (ug)	198
							Native Amount (ug)	109
							Spike Recovery (%)	63.8%
Repro Out R3	016-0901.D	Bart407.M	5.20	3.52	1	170	598	
Repro Out R4	017-1001.D	Bart407.M	5.17	4.67	1	170	795	
IBC Out R2	018-1101.D	Bart407.M	NA	0.882	1	214	189	ND
IBC Out R3	019-0401.D	Bart407.M	NA	0.882	1	219	193	ND
IBC Out R4	020-0501.D	Bart407.M	NA	0.882	1	202	178	ND
Sample Blank	021-0601.D	Bart407.M	NA	0.882	1	214	188	ND
LCS-1	022-0701.D	Bart407.M	5.14	1.04	1	144	149	
							Spike Amount (ug)	198
							Spike Recovery (%)	75.6%
LCS-2 (comparison)	031-0901.D	Bart407.M	NA	0.882	1	143	126	ND
							Spike Amount (ug)	198
							Spike Recovery (%)	63.8%
MB-1	023-0801.D	Bart407.M	NA	0.882	1	143	126	ND

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Easton

Job No.: 0617-110 - EPA SW-846 Method 0011

Client No.: 016-AQS-149228

MDL 0.882 (ug/mL)
 LOQ 0.882 (ug/mL)
 Compound Acetone

Lower Curve Limit 0.882 (ug/mL)
 Upper Curve Limit 15.0 (ug/mL)

Sample ID	Lab ID	Analysis Method	Ret Time (min)	Conc (ug/mL)	DF	Vol (mL)	Catch Weight (ug)	Qual
Repro Out R1	011-0401.D	Bart407.M	7.05	1.29	2	164	425	
Dup/Repro Out R1	012-0501.D	Bart407.M	7.08	1.16	2	162	376	
							difference	11.6%
Repro Out R5	013-0601.D	Bart407.M	7.13	1.21	2	126	307	
MS/Repro Out R5	014-0701.D	Bart407.M	7.10	1.06	1	105	112	
							Spike Amount (ug)	198
							Native Amount (ug)	51.1
							Spike Recovery (%)	30.6%
MSD/Repro Out R5	015-0801.D	Bart407.M	7.13	1.08	1	105	114	
							Spike Amount (ug)	198
							Native Amount (ug)	51.1
							Spike Recovery (%)	31.7%
Repro Out R3	016-0901.D	Bart407.M	7.21	1.54	1	170	261	
Repro Out R4	017-1001.D	Bart407.M	7.15	1.36	1	170	231	
IBC Out R2	018-1101.D	Bart407.M	7.21	0.899	1	214	192	
IBC Out R3	019-0401.D	Bart407.M	NA	0.882	1	219	193	ND
IBC Out R4	020-0501.D	Bart407.M	NA	0.882	1	202	178	ND
Sample Blank	021-0601.D	Bart407.M	NA	0.882	1	214	188	ND
LCS-1	022-0701.D	Bart407.M	NA	0.882	1	144	127	ND
							Spike Amount (ug)	198
							Spike Recovery (%)	64.3%
LCS-2 (comparison)	031-0901.D	Bart407.M	NA	0.882	1	143	126	ND
							Spike Amount (ug)	198
							Spike Recovery (%)	63.8%
MB-1	023-0801.D	Bart407.M	NA	0.882	1	143	126	ND

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Easton

Job No.: 0617-110 - EPA SW-846 Method 0011

Client No.: 016-AQS-149228

MDL 0.877 (ug/mL)
 LOQ 0.877 (ug/mL)
 Compound Propionaldehyde

Lower Curve Limit 0.877 (ug/mL)
 Upper Curve Limit 14.9 (ug/mL)

Sample ID	Lab ID	Analysis Method	Ret Time (min)	Conc (ug/mL)	DF	Vol (mL)	Catch Weight (ug)	Qual
Repro Out R1	011-0401.D	Bart407.M	8.56	1.09	2	164	359	
Dup/Repro Out R1	012-0501.D	Bart407.M	8.59	0.976	2	162	315	
							difference	12.3%
Repro Out R5	013-0601.D	Bart407.M	NA	0.877	2	126	221	ND
MS/Repro Out R5	014-0701.D	Bart407.M	8.61	1.26	1	105	133	
							Spike Amount (ug)	200
							Native Amount (ug)	36.9
							Spike Recovery (%)	47.9%
MSD/Repro Out R5	015-0801.D	Bart407.M	8.64	1.30	1	105	136	
							Spike Amount (ug)	200
							Native Amount (ug)	36.9
							Spike Recovery (%)	49.6%
Repro Out R3	016-0901.D	Bart407.M	8.75	0.903	1	170	153	
Repro Out R4	017-1001.D	Bart407.M	8.66	1.00	1	170	170	
IBC Out R2	018-1101.D	Bart407.M	NA	0.877	1	214	188	ND
IBC Out R3	019-0401.D	Bart407.M	NA	0.877	1	219	192	ND
IBC Out R4	020-0501.D	Bart407.M	NA	0.877	1	202	177	ND
Sample Blank	021-0601.D	Bart407.M	NA	0.877	1	214	187	ND
LCS-1	022-0701.D	Bart407.M	8.64	0.908	1	144	131	
							Spike Amount (ug)	200
							Spike Recovery (%)	65.2%
LCS-2 (comparison)	031-0901.D	Bart407.M	8.61	0.889	1	143	127	
							Spike Amount (ug)	200
							Spike Recovery (%)	63.4%
MB-1	023-0801.D	Bart407.M	NA	0.877	1	143	125	ND

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Easton

Job No.: 0617-110 - EPA SW-846 Method 0011

Client No.: 016-AQS-149228

MDL 0.882 (ug/mL)
 LOQ 0.882 (ug/mL)
 Compound Crotonaldehyde

Lower Curve Limit 0.882 (ug/mL)
 Upper Curve Limit 15.0 (ug/mL)

Sample ID	Lab ID	Analysis Method	Ret Time (min)	Conc (ug/mL)	DF	Vol (mL)	Catch Weight (ug)	Qual
Repro Out R1	011-0401.D	Bart407.M	NA	0.882	2	164	290	ND
Dup/Repro Out R1	012-0501.D	Bart407.M	NA	0.882	2	162	285	ND
						difference	NA	
Repro Out R5	013-0601.D	Bart407.M	NA	0.882	2	126	223	ND
MS/Repro Out R5	014-0701.D	Bart407.M	11.17	1.18	1	105	125	
						Spike Amount (ug)	211	
						Native Amount (ug)	37.2	
						Spike Recovery (%)	41.5%	
MSD/Repro Out R5	015-0801.D	Bart407.M	11.21	1.32	1	105	138	
						Spike Amount (ug)	211	
						Native Amount (ug)	37.2	
						Spike Recovery (%)	48.0%	
Repro Out R3	016-0901.D	Bart407.M	NA	0.882	1	170	150	ND
Repro Out R4	017-1001.D	Bart407.M	NA	0.882	1	170	150	ND
IBC Out R2	018-1101.D	Bart407.M	NA	0.882	1	214	189	ND
IBC Out R3	019-0401.D	Bart407.M	NA	0.882	1	219	193	ND
IBC Out R4	020-0501.D	Bart407.M	NA	0.882	1	202	178	ND
Sample Blank	021-0601.D	Bart407.M	NA	0.882	1	214	188	ND
LCS-1	022-0701.D	Bart407.M	11.27	1.04	1	144	150	
						Spike Amount (ug)	211	
						Spike Recovery (%)	70.9%	
LCS-2 (comparison)	031-0901.D	Bart407.M	11.18	1.09	1	143	156	
						Spike Amount (ug)	211	
						Spike Recovery (%)	73.9%	
MB-1	023-0801.D	Bart407.M	NA	0.882	1	143	126	ND

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Easton

Job No.: 0617-110 - EPA SW-846 Method 0011

Client No.: 016-AQS-149228

MDL 0.877 (ug/mL)
 LOQ 0.877 (ug/mL)
 Compound Butyraldehyde

Lower Curve Limit 0.877 (ug/mL)
 Upper Curve Limit 14.9 (ug/mL)

Sample ID	Lab ID	Analysis Method	Ret Time (min)	Conc (ug/mL)	DF	Vol (mL)	Catch Weight (ug)	Qual
Repro Out R1	011-0401.D	Bart407.M	13.18	2.14	2	164	703	
Dup/Repro Out R1	012-0501.D	Bart407.M	13.18	1.95	2	162	629	
							difference	10.6%
Repro Out R5	013-0601.D	Bart407.M	13.24	0.923	2	126	233	
MS/Repro Out R5	014-0701.D	Bart407.M	13.20	1.34	1	105	141	
							Spike Amount (ug)	201
							Native Amount (ug)	38.9
							Spike Recovery (%)	51.0%
MSD/Repro Out R5	015-0801.D	Bart407.M	13.23	1.44	1	105	151	
							Spike Amount (ug)	201
							Native Amount (ug)	38.9
							Spike Recovery (%)	55.6%
Repro Out R3	016-0901.D	Bart407.M	13.39	1.89	1	170	321	
Repro Out R4	017-1001.D	Bart407.M	13.25	3.09	1	170	525	
IBC Out R2	018-1101.D	Bart407.M	NA	0.877	1	214	188	ND
IBC Out R3	019-0401.D	Bart407.M	NA	0.877	1	219	192	ND
IBC Out R4	020-0501.D	Bart407.M	NA	0.877	1	202	177	ND
Sample Blank	021-0601.D	Bart407.M	NA	0.877	1	214	187	ND
LCS-1	022-0701.D	Bart407.M	13.29	0.952	1	144	137	
							Spike Amount (ug)	201
							Spike Recovery (%)	68.1%
LCS-2 (comparison)	031-0901.D	Bart407.M	NA	0.877	1	143	125	ND
							Spike Amount (ug)	201
							Spike Recovery (%)	62.3%
MB-1	023-0801.D	Bart407.M	NA	0.877	1	143	125	ND

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Easton

Job No.: 0617-110 - EPA SW-846 Method 0011

Client No.: 016-AQS-149228

MDL 0.882 (ug/mL)
 LOQ 0.882 (ug/mL)
 Compound Benzaldehyde

Lower Curve Limit 0.882 (ug/mL)
 Upper Curve Limit 15.0 (ug/mL)

Sample ID	Lab ID	Analysis Method	Ret Time (min)	Conc (ug/mL)	DF	Vol (mL)	Catch Weight (ug)	Qual
Repro Out R1	011-0401.D	Bart407.M	NA	0.882	2	164	290	ND
Dup/Repro Out R1	012-0501.D	Bart407.M	NA	0.882	2	162	285	ND
						difference	NA	
Repro Out R5	013-0601.D	Bart407.M	NA	0.882	2	126	223	ND
Repro Out R3	016-0901.D	Bart407.M	NA	0.882	1	170	150	ND
Repro Out R4	017-1001.D	Bart407.M	NA	0.882	1	170	150	ND
IBC Out R2	018-1101.D	Bart407.M	NA	0.882	1	214	189	ND
IBC Out R3	019-0401.D	Bart407.M	NA	0.882	1	219	193	ND
IBC Out R4	020-0501.D	Bart407.M	NA	0.882	1	202	178	ND
Sample Blank	021-0601.D	Bart407.M	NA	0.882	1	214	188	ND
MB-1	023-0801.D	Bart407.M	NA	0.882	1	143	126	ND

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Easton

Job No.: 0617-110 - EPA SW-846 Method 0011

Client No.: 016-AQS-149228

MDL 0.882 (ug/mL)
 LOQ 0.882 (ug/mL)
 Compound 3-Heptanone (peaks 1 & 2)

Lower Curve Limit 0.882 (ug/mL)
 Upper Curve Limit 15.0 (ug/mL)

Sample ID	Lab ID	Analysis Method	Ret Time (min)	Conc (ug/mL)	DF	Vol (mL)	Catch Weight (ug)	Qual
Repro Out R1	011-0401.D	Bart407.M	NA	0.882	2	164	290	ND
Dup/Repro Out R1	012-0501.D	Bart407.M	NA	0.882	2	162	285	ND
						difference	NA	
Repro Out R5	013-0601.D	Bart407.M	NA	0.882	2	126	223	ND
MS/Repro Out R5	014-0701.D	Bart407.M	NA	0.882	1	105	93.0	ND
MSD/Repro Out R5	015-0801.D	Bart407.M	NA	0.882	1	105	92.5	ND
Repro Out R3	016-0901.D	Bart407.M	NA	0.882	1	170	150	ND
Repro Out R4	017-1001.D	Bart407.M	NA	0.882	1	170	150	ND
IBC Out R2	018-1101.D	Bart407.M	NA	0.882	1	214	189	ND
IBC Out R3	019-0401.D	Bart407.M	NA	0.882	1	219	193	ND
IBC Out R4	020-0501.D	Bart407.M	NA	0.882	1	202	178	ND
Sample Blank	021-0601.D	Bart407.M	NA	0.882	1	214	188	ND
LCS-1	022-0701.D	Bart407.M	NA	0.882	1	144	127	ND
LCS-2 (comparison)	031-0901.D	Bart407.M	NA	0.882	1	143	126	ND
MB-1	023-0801.D	Bart407.M	NA	0.882	1	143	126	ND

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Easton

Job No.: 0617-110 - EPA SW-846 Method 0011

Client No.: 016-AQS-149228

MDL 0.877 (ug/mL)
 LOQ 0.877 (ug/mL)
 Compound Isovaleraldehyde

Lower Curve Limit 0.877 (ug/mL)
 Upper Curve Limit 14.9 (ug/mL)

Sample ID	Lab ID	Analysis Method	Ret Time (min)	Conc (ug/mL)	DF	Vol (mL)	Catch Weight (ug)	Qual
Repro Out R1	011-0401.D	Bart407.M	NA	0.877	2	164	288	ND
Dup/Repro Out R1	012-0501.D	Bart407.M	NA	0.877	2	162	283	ND
						difference	NA	
Repro Out R5	013-0601.D	Bart407.M	NA	0.877	2	126	221	ND
Repro Out R3	016-0901.D	Bart407.M	18.03	1.08	1	170	184	
Repro Out R4	017-1001.D	Bart407.M	17.90	1.13	1	170	192	
IBC Out R2	018-1101.D	Bart407.M	NA	0.877	1	214	188	ND
IBC Out R3	019-0401.D	Bart407.M	NA	0.877	1	219	192	ND
IBC Out R4	020-0501.D	Bart407.M	NA	0.877	1	202	177	ND
Sample Blank	021-0601.D	Bart407.M	NA	0.877	1	214	187	ND
MB-1	023-0801.D	Bart407.M	NA	0.877	1	143	125	ND

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Easton

Job No.: 0617-110 - EPA SW-846 Method 0011

Client No.: 016-AQS-149228

MDL 0.877 (ug/mL)
 LOQ 0.877 (ug/mL)
 Compound Valeraldehyde

Lower Curve Limit 0.877 (ug/mL)
 Upper Curve Limit 14.9 (ug/mL)

Sample ID	Lab ID	Analysis Method	Ret Time (min)	Conc (ug/mL)	DF	Vol (mL)	Catch Weight (ug)	Qual
Repro Out R1	011-0401.D	Bart407.M	19.21	1.92	2	164	633	
Dup/Repro Out R1	012-0501.D	Bart407.M	19.18	1.74	2	162	563	
							difference	11.1%
Repro Out R5	013-0601.D	Bart407.M	19.26	0.978	2	126	247	
Repro Out R3	016-0901.D	Bart407.M	NA	0.877	1	170	149	ND
Repro Out R4	017-1001.D	Bart407.M	NA	0.877	1	170	149	ND
IBC Out R2	018-1101.D	Bart407.M	NA	0.877	1	214	188	ND
IBC Out R3	019-0401.D	Bart407.M	NA	0.877	1	219	192	ND
IBC Out R4	020-0501.D	Bart407.M	NA	0.877	1	202	177	ND
Sample Blank	021-0601.D	Bart407.M	NA	0.877	1	214	187	ND
MB-1	023-0801.D	Bart407.M	NA	0.877	1	143	125	ND

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Easton

Job No.: 0617-110 - EPA SW-846 Method 0011

Client No.: 016-AQS-149228

MDL 0.882 (ug/mL)
 LOQ 0.882 (ug/mL)
 Compound o-Tolualdehyde

Lower Curve Limit 0.882 (ug/mL)
 Upper Curve Limit 15.0 (ug/mL)

Sample ID	Lab ID	Analysis Method	Ret Time (min)	Conc (ug/mL)	DF	Vol (mL)	Catch Weight (ug)	Qual
Repro Out R1	011-0401.D	Bart407.M	NA	0.882	2	164	290	ND
Dup/Repro Out R1	012-0501.D	Bart407.M	NA	0.882	2	162	285	ND
						difference	NA	
Repro Out R5	013-0601.D	Bart407.M	NA	0.882	2	126	223	ND
Repro Out R3	016-0901.D	Bart407.M	NA	0.882	1	170	150	ND
Repro Out R4	017-1001.D	Bart407.M	NA	0.882	1	170	150	ND
IBC Out R2	018-1101.D	Bart407.M	NA	0.882	1	214	189	ND
IBC Out R3	019-0401.D	Bart407.M	NA	0.882	1	219	193	ND
IBC Out R4	020-0501.D	Bart407.M	NA	0.882	1	202	178	ND
Sample Blank	021-0601.D	Bart407.M	NA	0.882	1	214	188	ND
MB-1	023-0801.D	Bart407.M	NA	0.882	1	143	126	ND

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Easton

Job No.: 0617-110 - EPA SW-846 Method 0011

Client No.: 016-AQS-149228

MDL 1.77 (ug/mL)
 LOQ 1.77 (ug/mL)
 Compound m,p-Tolualdehyde

Lower Curve Limit 1.77 (ug/mL)
 Upper Curve Limit 30.1 (ug/mL)

Sample ID	Lab ID	Analysis Method	Ret Time (min)	Conc (ug/mL)	DF	Vol (mL)	Catch Weight (ug)	Qual
Repro Out R1	011-0401.D	Bart407.M	NA	1.771	2	164	582	ND
Dup/Repro Out R1	012-0501.D	Bart407.M	NA	1.771	2	162	572	ND
						difference	NA	
Repro Out R5	013-0601.D	Bart407.M	NA	1.771	2	126	447	ND
Repro Out R3	016-0901.D	Bart407.M	NA	1.771	1	170	301	ND
Repro Out R4	017-1001.D	Bart407.M	NA	1.771	1	170	301	ND
IBC Out R2	018-1101.D	Bart407.M	NA	1.771	1	214	379	ND
IBC Out R3	019-0401.D	Bart407.M	NA	1.771	1	219	388	ND
IBC Out R4	020-0501.D	Bart407.M	NA	1.771	1	202	358	ND
Sample Blank	021-0601.D	Bart407.M	NA	1.771	1	214	378	ND
MB-1	023-0801.D	Bart407.M	NA	1.771	1	143	253	ND

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Easton

Job No.: 0617-110 - EPA SW-846 Method 0011

Client No.: 016-AQS-149228

MDL 0.888 (ug/mL)
 LOQ 0.888 (ug/mL)
 Compound Hexaldehyde

Lower Curve Limit 0.888 (ug/mL)
 Upper Curve Limit 15.1 (ug/mL)

Sample ID	Lab ID	Analysis Method	Ret Time (min)	Conc (ug/mL)	DF	Vol (mL)	Catch Weight (ug)	Qual
Repro Out R1	011-0401.D	Bart407.M	28.00	1.16	2	164	381	
Dup/Repro Out R1	012-0501.D	Bart407.M	28.07	1.09	2	162	353	
							difference	7.3%
Repro Out R5	013-0601.D	Bart407.M	NA	0.888	2	126	224	ND
Repro Out R3	016-0901.D	Bart407.M	28.33	1.00	1	170	170	
Repro Out R4	017-1001.D	Bart407.M	28.16	1.00	1	170	171	
IBC Out R2	018-1101.D	Bart407.M	NA	0.888	1	214	190	ND
IBC Out R3	019-0401.D	Bart407.M	NA	0.888	1	219	194	ND
IBC Out R4	020-0501.D	Bart407.M	NA	0.888	1	202	180	ND
Sample Blank	021-0601.D	Bart407.M	NA	0.888	1	214	190	ND
MB-1	023-0801.D	Bart407.M	NA	0.888	1	143	127	ND

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Easton

Job No.: 0617-110 - EPA SW-846 Method 0011

Client No.: 016-AQS-149228

MDL 0.960 (ug/mL)
 LOQ 0.960 (ug/mL)
 Compound 2-Pentanone

Lower Curve Limit 0.960 (ug/mL)
 Upper Curve Limit 14.4 (ug/mL)

Sample ID	Lab ID	Analysis Method	Ret Time (min)	Conc (ug/mL)	DF	Vol (mL)	Catch Weight (ug)	Qual
Repro Out R1	011-0401.D	Bart407.M	NA	0.960	2	164	316	ND
Dup/Repro Out R1	012-0501.D	Bart407.M	NA	0.960	2	162	310	ND
							difference	NA
Repro Out R5	013-0601.D	Bart407.M	NA	0.960	2	126	243	ND
Repro Out R3	016-0901.D	Bart407.M	NA	0.960	1	170	163	ND
Repro Out R4	017-1001.D	Bart407.M	NA	0.960	1	170	163	ND
IBC Out R2	018-1101.D	Bart407.M	NA	0.960	1	214	206	ND
IBC Out R3	019-0401.D	Bart407.M	NA	0.960	1	219	210	ND
IBC Out R4	020-0501.D	Bart407.M	NA	0.960	1	202	194	ND
Sample Blank	021-0601.D	Bart407.M	NA	0.960	1	214	205	ND
MB-1	023-0801.D	Bart407.M	NA	0.960	1	143	137	ND

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Easton

Job No.: 0617-110 - EPA SW-846 Method 0011

Client No.: 016-AQS-149228

MDL 1.083 (ug/mL)
 LOQ 1.083 (ug/mL)
 Compound Decanal

Lower Curve Limit 1.08 (ug/mL)
 Upper Curve Limit 15.2 (ug/mL)

Sample ID	Lab ID	Analysis Method	Ret Time (min)	Conc (ug/mL)	DF	Vol (mL)	Catch Weight (ug)	Qual
Repro Out R1	011-0401.D	Bart407.M	NA	1.083	2	164	356	ND
Dup/Repro Out R1	012-0501.D	Bart407.M	NA	1.083	2	162	350	ND
						difference	NA	
Repro Out R5	013-0601.D	Bart407.M	NA	1.083	2	126	274	ND
Repro Out R3	016-0901.D	Bart407.M	NA	1.083	1	170	184	ND
Repro Out R4	017-1001.D	Bart407.M	NA	1.083	1	170	184	ND
IBC Out R2	018-1101.D	Bart407.M	NA	1.083	1	214	232	ND
IBC Out R3	019-0401.D	Bart407.M	NA	1.083	1	219	237	ND
IBC Out R4	020-0501.D	Bart407.M	NA	1.083	1	202	219	ND
Sample Blank	021-0601.D	Bart407.M	NA	1.083	1	214	231	ND
MB-1	023-0801.D	Bart407.M	NA	1.083	1	143	155	ND

Sample Name : 016-AQS-149228-TO15-002
 Sample Info : 0617-110; Can #1043; *1000=0.5mL loop load
 Data File : L1703475.D
 Dilution : 1000
 Pressurization Factor : 2.508
 Acquisition Date : 2017-07-17 13:30:00
 Instrument Method : MM624-L
 Matrix : AIR

Target Compound	Concentration (PPBV)	RL (PPBV)	MDL (PPBV)	Concentration (ug/m3)	RL (ug/m3)	MDL (ug/m3)	Flag *
Propylene	ND	108	87.8	ND	190	154	
Freon 12 (CCl2F2)	ND	98.3	87.8	ND	494	441	
Freon 114 (C2Cl2F4)	ND	96.3	87.8	ND	684	624	
Chloromethane	ND	100	87.8	ND	211	184	
Chloroethene (Vinyl chloride)	ND	100	87.8	ND	261	228	
1,3-Butadiene	ND	103	87.8	ND	232	197	
Bromomethane	ND	91.3	87.8	ND	360	346	
Chloroethane	ND	90.3	87.8	ND	242	235	
Bromoethene (Vinyl bromide)	ND	104	87.8	ND	464	390	
Freon 11 (CCl3F)	ND	106	87.8	ND	607	501	
Ethanol	3,810	105	87.8	7,297	202	168	m
Acrolein	ND	102	87.8	ND	238	205	
Freon 113 (C2Cl3F3)	ND	108	87.8	ND	844	684	
1,1-Dichloroethene	ND	108	87.8	ND	437	354	
Acetone	ND	112	87.8	ND	271	212	
Carbon disulfide	ND	105	87.8	ND	333	278	
Isopropyl alcohol	ND	110	87.8	ND	276	219	
Allyl chloride (3-chloropropene)	ND	110	87.8	ND	351	279	
Acetonitrile	ND	105	87.8	ND	180	150	
Methylene chloride	ND	268	268	ND	947	947	
trans-1,2-Dichloroethene	ND	104	87.8	ND	420	354	
Methyl tert-butyl ether	ND	106	87.8	ND	390	322	
Acrylonitrile	ND	110	87.8	ND	243	194	
Hexane	ND	104	87.8	ND	374	314	
1,1-Dichloroethane	ND	104	87.8	ND	429	361	
Vinyl acetate	ND	106	87.8	ND	381	314	
cis-1,2-Dichloroethylene	ND	103	87.8	ND	416	354	
Methyl ethyl ketone (2-Butanone)	201	104	87.8	602	313	263	m
Ethyl acetate	ND	107	87.8	ND	393	321	
Chloroform	ND	104	87.8	ND	518	436	
Tetrahydrofuran	ND	105	87.8	ND	316	263	
1,1,1-Trichloroethane	ND	105	87.8	ND	584	487	
Cyclohexane	ND	104	87.8	ND	365	307	
Carbon tetrachloride	ND	103	87.8	ND	661	561	
Benzene	ND	105	87.8	ND	342	285	
2,2,4-trimethylpentane	ND	105	87.8	ND	500	417	
1,2-Dichloroethane	ND	104	87.8	ND	429	361	
Heptane	ND	102	87.8	ND	426	366	
Trichloroethene	ND	105	87.8	ND	575	479	
1,2-Dichloropropane	ND	105	87.8	ND	495	412	
Methyl methacrylate	ND	105	87.8	ND	438	365	
1,4-Dioxane	ND	102	87.8	ND	375	321	
Bromodichloromethane	ND	105	87.8	ND	717	598	
cis-1,3-Dichloropropene	ND	102	87.8	ND	472	405	
Methyl isobutyl ketone	ND	99.3	87.8	ND	414	365	
Toluene	ND	109	87.8	ND	419	336	
trans-1,3-Dichloropropene	ND	104	87.8	ND	481	405	
1,1,2-Trichloroethane	ND	106	87.8	ND	590	487	
Tetrachloroethene	ND	107	87.8	ND	740	605	
2-Hexanone (Methyl butyl ketone)	ND	105	87.8	ND	439	365	

Sample Name : 016-AQS-149228-TO15-002
 Sample Info : 0617-110; Can #1043; *1000=0.5mL loop load
 Data File : L1703475.D
 Dilution : 1000
 Pressurization Factor : 2.508
 Acquisition Date : 2017-07-17 13:30:00
 Instrument Method : MM624-L
 Matrix : AIR

Target Compound	Concentration (PPBV)	RL (PPBV)	MDL (PPBV)	Concentration (ug/m3)	RL (ug/m3)	MDL (ug/m3)	Flag *
Dibromochloromethane	ND	105	87.8	ND	912	760	
1,2-Dibromoethane	ND	104	87.8	ND	815	686	
Chlorobenzene	ND	106	87.8	ND	498	411	
Ethylbenzene	ND	102	87.8	ND	452	387	
1,1,1,2-Tetrachloroethane	ND	107	87.8	ND	749	612	
m-/p-Xylenes	ND	205	87.8	ND	903	387	
o-Xylene	ND	104	87.8	ND	460	387	
Styrene	ND	103	87.8	ND	447	380	
Bromoform	ND	102	87.8	ND	1,075	922	
1,1,1,2-Tetrachloroethane	ND	104	87.8	ND	728	612	
4-Ethyltoluene	ND	101	87.8	ND	506	439	
2-Chlorotoluene	ND	105	87.8	ND	554	462	
1,3,5-Trimethylbenzene	ND	101	87.8	ND	506	439	
1,2,4-Trimethylbenzene	ND	101	87.8	ND	506	439	
1,3-Dichlorobenzene	ND	104	87.8	ND	638	536	
1,4-Dichlorobenzene	ND	101	87.8	ND	619	536	
Benzyl chloride	ND	104	87.8	ND	549	462	
1,2-Dichlorobenzene	ND	101	87.8	ND	619	536	
1,2,4-Trichlorobenzene	ND	98.3	87.8	ND	742	662	
Hexachlorobutadiene	ND	102	87.8	ND	1,109	952	
Naphthalene	ND	108	87.8	ND	577	468	

Internal Standards	Response	Retention Time (min)	Concentration (PPBV)	Flag *
Bromochloromethane (IS)	898,400	11.59	9.50	PASS
1,4-Difluorobenzene (IS)	3,097,229	13.64	9.90	PASS
Chlorobenzene-d5 (IS)	2,647,425	18.23	9.70	PASS

(ND) = Not Detected

* (J) = Below Calibration Range, (E) = Above Calibration Range, (m) = Manual Integration

IS Acceptance Criteria: RT +/- 20 sec, Response +/- 40%

Sample Name : 016-AQS-149228-TO15-003
 Sample Info : 0617-110; Can #1011; *1000=0.5mL loop load
 Data File : L1703477.D
 Dilution : 1000
 Pressurization Factor : 2.531
 Acquisition Date : 2017-07-17 14:42:00
 Instrument Method : MM624-L
 Matrix : AIR

Target Compound	Concentration (PPBV)	RL (PPBV)	MDL (PPBV)	Concentration (ug/m3)	RL (ug/m3)	MDL (ug/m3)	Flag *
Propylene	101	109	88.6	176	191	155	J
Freon 12 (CCl2F2)	ND	99.2	88.6	ND	499	445	
Freon 114 (C2Cl2F4)	ND	97.2	88.6	ND	691	629	
Chloromethane	ND	101	88.6	ND	212	186	
Chloroethene (Vinyl chloride)	ND	101	88.6	ND	263	230	
1,3-Butadiene	ND	104	88.6	ND	234	199	
Bromomethane	ND	92.1	88.6	ND	364	350	
Chloroethane	ND	91.1	88.6	ND	244	238	
Bromoethene (Vinyl bromide)	ND	105	88.6	ND	468	394	
Freon 11 (CCl3F)	ND	107	88.6	ND	613	506	
Ethanol	2,487	106	88.6	4,762	204	170	
Acrolein	ND	103	88.6	ND	241	206	
Freon 113 (C2Cl3F3)	ND	109	88.6	ND	852	690	
1,1-Dichloroethene	ND	109	88.6	ND	441	357	
Acetone	ND	113	88.6	ND	274	214	
Carbon disulfide	ND	106	88.6	ND	336	280	
Isopropyl alcohol	ND	111	88.6	ND	278	221	
Allyl chloride (3-chloropropene)	ND	111	88.6	ND	354	282	
Acetonitrile	ND	106	88.6	ND	181	151	
Methylene chloride	ND	271	271	ND	956	956	
trans-1,2-Dichloroethene	ND	105	88.6	ND	424	357	
Methyl tert-butyl ether	ND	107	88.6	ND	393	325	
Acrylonitrile	ND	111	88.6	ND	246	195	
Hexane	ND	105	88.6	ND	377	317	
1,1-Dichloroethane	ND	105	88.6	ND	433	364	
Vinyl acetate	ND	107	88.6	ND	384	317	
cis-1,2-Dichloroethylene	ND	104	88.6	ND	420	357	
Methyl ethyl ketone (2-Butanone)	165	105	88.6	495	316	266	m
Ethyl acetate	ND	108	88.6	ND	397	324	
Chloroform	ND	105	88.6	ND	522	440	
Tetrahydrofuran	ND	106	88.6	ND	319	266	
1,1,1-Trichloroethane	ND	106	88.6	ND	590	491	
Cyclohexane	ND	105	88.6	ND	368	310	
Carbon tetrachloride	ND	104	88.6	ND	667	566	
Benzene	ND	106	88.6	ND	345	288	
2,2,4-trimethylpentane	ND	106	88.6	ND	505	421	
1,2-Dichloroethane	ND	105	88.6	ND	433	364	
Heptane	ND	103	88.6	ND	430	369	
Trichloroethene	ND	106	88.6	ND	581	484	
1,2-Dichloropropane	ND	106	88.6	ND	499	416	
Methyl methacrylate	ND	106	88.6	ND	442	369	
1,4-Dioxane	ND	103	88.6	ND	378	324	
Bromodichloromethane	ND	106	88.6	ND	724	603	
cis-1,3-Dichloropropene	ND	103	88.6	ND	476	409	
Methyl isobutyl ketone	ND	100	88.6	ND	417	369	
Toluene	ND	110	88.6	ND	423	339	
trans-1,3-Dichloropropene	ND	105	88.6	ND	486	409	
1,1,2-Trichloroethane	ND	107	88.6	ND	595	491	
Tetrachloroethene	ND	108	88.6	ND	747	611	
2-Hexanone (Methyl butyl ketone)	ND	106	88.6	ND	443	369	

Sample Name : 016-AQS-149228-TO15-003
 Sample Info : 0617-110; Can #1011; *1000=0.5mL loop load
 Data File : L1703477.D
 Dilution : 1000
 Pressurization Factor : 2.531
 Acquisition Date : 2017-07-17 14:42:00
 Instrument Method : MM624-L
 Matrix : AIR

Target Compound	Concentration (PPBV)	RL (PPBV)	MDL (PPBV)	Concentration (ug/m3)	RL (ug/m3)	MDL (ug/m3)	Flag *
Dibromochloromethane	ND	106	88.6	ND	920	767	
1,2-Dibromoethane	ND	105	88.6	ND	822	692	
Chlorobenzene	ND	107	88.6	ND	502	414	
Ethylbenzene	ND	103	88.6	ND	456	391	
1,1,1,2-Tetrachloroethane	ND	108	88.6	ND	756	618	
m-/p-Xylenes	ND	207	88.6	ND	911	391	
o-Xylene	ND	105	88.6	ND	465	391	
Styrene	ND	104	88.6	ND	451	384	
Bromoform	ND	103	88.6	ND	1,085	931	
1,1,2,2-Tetrachloroethane	ND	105	88.6	ND	735	618	
4-Ethyltoluene	ND	102	88.6	ND	511	443	
2-Chlorotoluene	ND	106	88.6	ND	559	466	
1,3,5-Trimethylbenzene	ND	102	88.6	ND	511	443	
1,2,4-Trimethylbenzene	ND	102	88.6	ND	511	443	
1,3-Dichlorobenzene	ND	105	88.6	ND	643	541	
1,4-Dichlorobenzene	ND	102	88.6	ND	625	541	
Benzyl chloride	ND	105	88.6	ND	554	466	
1,2-Dichlorobenzene	ND	102	88.6	ND	625	541	
1,2,4-Trichlorobenzene	ND	99.2	88.6	ND	748	668	
Hexachlorobutadiene	ND	103	88.6	ND	1,119	960	
Naphthalene	ND	109	88.6	ND	583	472	

Internal Standards	Response	Retention Time (min)	Concentration (PPBV)	Flag *
Bromochloromethane (IS)	900,107	11.59	9.50	PASS
1,4-Difluorobenzene (IS)	3,098,326	13.65	9.90	PASS
Chlorobenzene-d5 (IS)	2,681,163	18.22	9.70	PASS

(ND) = Not Detected

* (J) = Below Calibration Range, (E) = Above Calibration Range, (m) = Manual Integration

IS Acceptance Criteria: RT +/- 20 sec, Response +/- 40%

Sample Name : 016-AQS-149228-TO15-004
 Sample Info : 0617-110; Can #1659; *1000=0.5mL loop load
 Data File : L1703478.D
 Dilution : 1000
 Pressurization Factor : 2.589
 Acquisition Date : 2017-07-17 15:19:00
 Instrument Method : MM624-L
 Matrix : AIR

Target Compound	Concentration (PPBV)	RL (PPBV)	MDL (PPBV)	Concentration (ug/m3)	RL (ug/m3)	MDL (ug/m3)	Flag *
Propylene	ND	112	90.6	ND	196	159	
Freon 12 (CCl2F2)	ND	101	90.6	ND	510	455	
Freon 114 (C2Cl2F4)	ND	99.4	90.6	ND	706	644	
Chloromethane	ND	104	90.6	ND	217	190	
Chloroethene (Vinyl chloride)	ND	104	90.6	ND	269	235	
1,3-Butadiene	ND	107	90.6	ND	240	204	
Bromomethane	ND	94.2	90.6	ND	372	358	
Chloroethane	ND	93.2	90.6	ND	250	243	
Bromoethene (Vinyl bromide)	ND	108	90.6	ND	479	403	
Freon 11 (CCl3F)	ND	110	90.6	ND	627	517	
Ethanol	2,510	109	90.6	4,807	208	174	
Acrolein	ND	106	90.6	ND	246	211	
Freon 113 (C2Cl3F3)	ND	112	90.6	ND	871	706	
1,1-Dichloroethene	ND	112	90.6	ND	451	365	
Acetone	ND	116	90.6	ND	280	219	
Carbon disulfide	ND	109	90.6	ND	344	287	
Isopropyl alcohol	ND	114	90.6	ND	285	226	
Allyl chloride (3-chloropropene)	ND	114	90.6	ND	362	288	
Acetonitrile	ND	109	90.6	ND	186	155	
Methylene chloride	ND	277	277	ND	978	978	
trans-1,2-Dichloroethene	ND	108	90.6	ND	434	365	
Methyl tert-butyl ether	ND	110	90.6	ND	402	332	
Acrylonitrile	ND	114	90.6	ND	251	200	
Hexane	ND	108	90.6	ND	386	325	
1,1-Dichloroethane	ND	108	90.6	ND	443	373	
Vinyl acetate	ND	110	90.6	ND	393	324	
cis-1,2-Dichloroethylene	ND	107	90.6	ND	430	365	
Methyl ethyl ketone (2-Butanone)	189	108	90.6	567	323	272	m
Ethyl acetate	ND	111	90.6	ND	406	332	
Chloroform	ND	108	90.6	ND	534	450	
Tetrahydrofuran	ND	109	90.6	ND	326	272	
1,1,1-Trichloroethane	ND	109	90.6	ND	603	503	
Cyclohexane	ND	108	90.6	ND	377	317	
Carbon tetrachloride	ND	107	90.6	ND	682	579	
Benzene	ND	109	90.6	ND	353	294	
2,2,4-trimethylpentane	ND	109	90.6	ND	516	430	
1,2-Dichloroethane	ND	108	90.6	ND	443	373	
Heptane	ND	106	90.6	ND	440	377	
Trichloroethene	ND	109	90.6	ND	594	495	
1,2-Dichloropropane	ND	109	90.6	ND	511	426	
Methyl methacrylate	ND	109	90.6	ND	453	377	
1,4-Dioxane	ND	106	90.6	ND	387	332	
Bromodichloromethane	ND	109	90.6	ND	741	617	
cis-1,3-Dichloropropene	ND	106	90.6	ND	487	418	
Methyl isobutyl ketone	ND	103	90.6	ND	427	377	
Toluene	ND	113	90.6	ND	432	347	
trans-1,3-Dichloropropene	ND	108	90.6	ND	497	418	
1,1,2-Trichloroethane	ND	110	90.6	ND	609	503	
Tetrachloroethene	ND	111	90.6	ND	764	625	
2-Hexanone (Methyl butyl ketone)	ND	109	90.6	ND	453	377	

Sample Name : 016-AQS-149228-TO15-004
 Sample Info : 0617-110; Can #1659; *1000=0.5mL loop load
 Data File : L1703478.D
 Dilution : 1000
 Pressurization Factor : 2.589
 Acquisition Date : 2017-07-17 15:19:00
 Instrument Method : MM624-L
 Matrix : AIR

Target Compound	Concentration (PPBV)	RL (PPBV)	MDL (PPBV)	Concentration (ug/m3)	RL (ug/m3)	MDL (ug/m3)	Flag *
Dibromochloromethane	ND	109	90.6	ND	941	785	
1,2-Dibromoethane	ND	108	90.6	ND	841	708	
Chlorobenzene	ND	110	90.6	ND	514	424	
Ethylbenzene	ND	106	90.6	ND	466	400	
1,1,1,2-Tetrachloroethane	ND	111	90.6	ND	773	632	
m-/p-Xylenes	ND	211	90.6	ND	932	400	
o-Xylene	ND	108	90.6	ND	475	400	
Styrene	ND	107	90.6	ND	462	392	
Bromoform	ND	106	90.6	ND	1,110	952	
1,1,2,2-Tetrachloroethane	ND	108	90.6	ND	751	632	
4-Ethyltoluene	ND	105	90.6	ND	523	453	
2-Chlorotoluene	ND	109	90.6	ND	572	477	
1,3,5-Trimethylbenzene	ND	105	90.6	ND	523	453	
1,2,4-Trimethylbenzene	ND	105	90.6	ND	523	453	
1,3-Dichlorobenzene	ND	108	90.6	ND	658	554	
1,4-Dichlorobenzene	ND	105	90.6	ND	639	554	
Benzyl chloride	ND	108	90.6	ND	567	477	
1,2-Dichlorobenzene	ND	105	90.6	ND	639	554	
1,2,4-Trichlorobenzene	ND	101	90.6	ND	765	683	
Hexachlorobutadiene	ND	106	90.6	ND	1,145	982	
Naphthalene	ND	112	90.6	ND	596	483	

Internal Standards	Response	Retention Time (min)	Concentration (PPBV)	Flag *
Bromochloromethane (IS)	884,716	11.58	9.50	PASS
1,4-Difluorobenzene (IS)	3,048,656	13.65	9.90	PASS
Chlorobenzene-d5 (IS)	2,655,982	18.22	9.70	PASS

(ND) = Not Detected

* (J) = Below Calibration Range, (E) = Above Calibration Range, (m) = Manual Integration

IS Acceptance Criteria: RT +/- 20 sec, Response +/- 40%

Sample Name : 016-AQS-149228-TO15-005
 Sample Info : 0617-110; Can #1188; *1000=0.5mL loop load
 Data File : L1703479.D
 Dilution : 1000
 Pressurization Factor : 2.582
 Acquisition Date : 2017-07-17 15:58:00
 Instrument Method : MM624-L
 Matrix : AIR

Target Compound	Concentration (PPBV)	RL (PPBV)	MDL (PPBV)	Concentration (ug/m3)	RL (ug/m3)	MDL (ug/m3)	Flag *
Propylene	117	112	90.4	205	195	158	
Freon 12 (CCl2F2)	ND	101	90.4	ND	509	454	
Freon 114 (C2Cl2F4)	ND	99.1	90.4	ND	704	642	
Chloromethane	ND	103	90.4	ND	217	190	
Chloroethene (Vinyl chloride)	ND	103	90.4	ND	268	235	
1,3-Butadiene	ND	106	90.4	ND	239	203	
Bromomethane	ND	94.0	90.4	ND	371	357	
Chloroethane	ND	93.0	90.4	ND	249	242	
Bromoethene (Vinyl bromide)	ND	107	90.4	ND	478	402	
Freon 11 (CCl3F)	ND	109	90.4	ND	625	516	
Ethanol	3,318	108	90.4	6,354	208	173	
Acrolein	ND	105	90.4	ND	246	211	
Freon 113 (C2Cl3F3)	ND	112	90.4	ND	869	704	
1,1-Dichloroethene	ND	112	90.4	ND	450	364	
Acetone	170	116	90.4	411	279	218	m
Carbon disulfide	ND	108	90.4	ND	343	286	
Isopropyl alcohol	ND	114	90.4	ND	284	226	
Allyl chloride (3-chloropropene)	ND	114	90.4	ND	361	287	
Acetonitrile	ND	108	90.4	ND	185	154	
Methylene chloride	ND	276	276	ND	975	975	
trans-1,2-Dichloroethene	ND	107	90.4	ND	433	364	
Methyl tert-butyl ether	ND	109	90.4	ND	401	331	
Acrylonitrile	ND	114	90.4	ND	251	199	
Hexane	ND	107	90.4	ND	385	324	
1,1-Dichloroethane	ND	107	90.4	ND	442	372	
Vinyl acetate	ND	109	90.4	ND	392	323	
cis-1,2-Dichloroethylene	ND	106	90.4	ND	429	364	
Methyl ethyl ketone (2-Butanone)	ND	107	90.4	ND	322	271	
Ethyl acetate	ND	111	90.4	ND	405	331	
Chloroform	ND	107	90.4	ND	533	448	
Tetrahydrofuran	ND	108	90.4	ND	325	271	
1,1,1-Trichloroethane	ND	108	90.4	ND	601	501	
Cyclohexane	ND	107	90.4	ND	376	316	
Carbon tetrachloride	ND	106	90.4	ND	680	578	
Benzene	ND	108	90.4	ND	352	293	
2,2,4-trimethylpentane	ND	108	90.4	ND	515	429	
1,2-Dichloroethane	ND	107	90.4	ND	442	372	
Heptane	ND	105	90.4	ND	439	376	
Trichloroethene	ND	108	90.4	ND	592	494	
1,2-Dichloropropane	ND	108	90.4	ND	509	424	
Methyl methacrylate	ND	108	90.4	ND	451	376	
1,4-Dioxane	ND	105	90.4	ND	386	331	
Bromodichloromethane	ND	108	90.4	ND	739	615	
cis-1,3-Dichloropropene	ND	105	90.4	ND	486	417	
Methyl isobutyl ketone	ND	102	90.4	ND	426	376	
Toluene	ND	113	90.4	ND	431	346	
trans-1,3-Dichloropropene	ND	107	90.4	ND	495	417	
1,1,2-Trichloroethane	ND	109	90.4	ND	607	501	
Tetrachloroethene	ND	111	90.4	ND	762	623	
2-Hexanone (Methyl butyl ketone)	ND	108	90.4	ND	452	376	

Sample Name : 016-AQS-149228-TO15-005
 Sample Info : 0617-110; Can #1188; *1000=0.5mL loop load
 Data File : L1703479.D
 Dilution : 1000
 Pressurization Factor : 2.582
 Acquisition Date : 2017-07-17 15:58:00
 Instrument Method : MM624-L
 Matrix : AIR

Target Compound	Concentration (PPBV)	RL (PPBV)	MDL (PPBV)	Concentration (ug/m3)	RL (ug/m3)	MDL (ug/m3)	Flag *
Dibromochloromethane	ND	108	90.4	ND	939	782	
1,2-Dibromoethane	ND	107	90.4	ND	839	706	
Chlorobenzene	ND	109	90.4	ND	512	423	
Ethylbenzene	ND	105	90.4	ND	465	399	
1,1,1,2-Tetrachloroethane	ND	111	90.4	ND	771	631	
m-/p-Xylenes	ND	211	90.4	ND	930	399	
o-Xylene	ND	107	90.4	ND	474	399	
Styrene	ND	106	90.4	ND	461	391	
Bromoform	ND	105	90.4	ND	1,107	949	
1,1,2,2-Tetrachloroethane	ND	107	90.4	ND	749	631	
4-Ethyltoluene	ND	104	90.4	ND	521	452	
2-Chlorotoluene	ND	108	90.4	ND	571	476	
1,3,5-Trimethylbenzene	ND	104	90.4	ND	521	452	
1,2,4-Trimethylbenzene	ND	104	90.4	ND	521	452	
1,3-Dichlorobenzene	ND	107	90.4	ND	656	552	
1,4-Dichlorobenzene	ND	104	90.4	ND	637	552	
Benzyl chloride	ND	107	90.4	ND	565	476	
1,2-Dichlorobenzene	ND	104	90.4	ND	637	552	
1,2,4-Trichlorobenzene	ND	101	90.4	ND	763	682	
Hexachlorobutadiene	ND	105	90.4	ND	1,142	980	
Naphthalene	ND	112	90.4	ND	594	481	

Internal Standards	Response	Retention Time (min)	Concentration (PPBV)	Flag *
Bromochloromethane (IS)	883,461	11.59	9.50	PASS
1,4-Difluorobenzene (IS)	3,109,307	13.64	9.90	PASS
Chlorobenzene-d5 (IS)	2,650,168	18.22	9.70	PASS

(ND) = Not Detected
 * (J) = Below Calibration Range, (E) = Above Calibration Range, (m) = Manual Integration
 IS Acceptance Criteria: RT +/- 20 sec, Response +/- 40%

Sample Name : 016-AQS-149228-TO15-006
 Sample Info : 0617-110; Can #1343; *1000=0.5mL loop load
 Data File : L1703480.D
 Dilution : 1000
 Pressurization Factor : 2.479
 Acquisition Date : 2017-07-17 16:40:00
 Instrument Method : MM624-L
 Matrix : AIR

Target Compound	Concentration (PPBV)	RL (PPBV)	MDL (PPBV)	Concentration (ug/m3)	RL (ug/m3)	MDL (ug/m3)	Flag *
Propylene	146	107	86.8	256	187	152	
Freon 12 (CCl2F2)	ND	97.2	86.8	ND	488	436	
Freon 114 (C2Cl2F4)	ND	95.2	86.8	ND	676	616	
Chloromethane	ND	99.2	86.8	ND	208	182	
Chloroethene (Vinyl chloride)	ND	99.2	86.8	ND	258	225	
1,3-Butadiene	ND	102	86.8	ND	230	195	
Bromomethane	ND	90.2	86.8	ND	356	342	
Chloroethane	ND	89.2	86.8	ND	239	233	
Bromoethene (Vinyl bromide)	ND	103	86.8	ND	458	386	
Freon 11 (CCl3F)	ND	105	86.8	ND	600	495	
Ethanol	2,916	104	86.8	5,584	199	166	
Acrolein	ND	101	86.8	ND	236	202	
Freon 113 (C2Cl3F3)	ND	107	86.8	ND	834	676	
1,1-Dichloroethene	ND	107	86.8	ND	432	350	
Acetone	168	111	86.8	407	268	209	m
Carbon disulfide	ND	104	86.8	ND	330	275	
Isopropyl alcohol	ND	109	86.8	ND	272	217	
Allyl chloride (3-chloropropene)	ND	109	86.8	ND	347	276	
Acetonitrile	ND	104	86.8	ND	178	148	
Methylene chloride	ND	265	265	ND	937	937	
trans-1,2-Dichloroethene	ND	103	86.8	ND	416	350	
Methyl tert-butyl ether	ND	105	86.8	ND	385	318	
Acrylonitrile	ND	109	86.8	ND	241	191	
Hexane	ND	103	86.8	ND	369	311	
1,1-Dichloroethane	ND	103	86.8	ND	424	357	
Vinyl acetate	ND	105	86.8	ND	376	311	
cis-1,2-Dichloroethylene	ND	102	86.8	ND	412	350	
Methyl ethyl ketone (2-Butanone)	ND	103	86.8	ND	309	260	
Ethyl acetate	ND	106	86.8	ND	389	318	
Chloroform	ND	103	86.8	ND	512	431	
Tetrahydrofuran	ND	104	86.8	ND	312	260	
1,1,1-Trichloroethane	ND	104	86.8	ND	577	481	
Cyclohexane	ND	103	86.8	ND	361	304	
Carbon tetrachloride	ND	102	86.8	ND	653	555	
Benzene	ND	104	86.8	ND	338	282	
2,2,4-trimethylpentane	ND	104	86.8	ND	494	412	
1,2-Dichloroethane	ND	103	86.8	ND	424	357	
Heptane	ND	101	86.8	ND	421	361	
Trichloroethene	ND	104	86.8	ND	569	474	
1,2-Dichloropropane	ND	104	86.8	ND	489	408	
Methyl methacrylate	ND	104	86.8	ND	433	361	
1,4-Dioxane	ND	101	86.8	ND	370	318	
Bromodichloromethane	ND	104	86.8	ND	709	591	
cis-1,3-Dichloropropene	ND	101	86.8	ND	467	400	
Methyl isobutyl ketone	ND	98.2	86.8	ND	409	361	
Toluene	ND	108	86.8	ND	414	332	
trans-1,3-Dichloropropene	ND	103	86.8	ND	476	400	
1,1,2-Trichloroethane	ND	105	86.8	ND	583	481	
Tetrachloroethene	ND	106	86.8	ND	731	598	
2-Hexanone (Methyl butyl ketone)	ND	104	86.8	ND	434	361	

Sample Name : 016-AQS-149228-TO15-006
 Sample Info : 0617-110; Can #1343; *1000=0.5mL loop load
 Data File : L1703480.D
 Dilution : 1000
 Pressurization Factor : 2.479
 Acquisition Date : 2017-07-17 16:40:00
 Instrument Method : MM624-L
 Matrix : AIR

Target Compound	Concentration (PPBV)	RL (PPBV)	MDL (PPBV)	Concentration (ug/m3)	RL (ug/m3)	MDL (ug/m3)	Flag *
Dibromochloromethane	ND	104	86.8	ND	901	751	
1,2-Dibromoethane	ND	103	86.8	ND	805	678	
Chlorobenzene	ND	105	86.8	ND	492	406	
Ethylbenzene	ND	101	86.8	ND	446	383	
1,1,1,2-Tetrachloroethane	ND	106	86.8	ND	740	605	
m-/p-Xylenes	ND	202	86.8	ND	893	383	
o-Xylene	ND	103	86.8	ND	455	383	
Styrene	ND	102	86.8	ND	442	376	
Bromoform	ND	101	86.8	ND	1,063	912	
1,1,1,2-Tetrachloroethane	ND	103	86.8	ND	720	605	
4-Ethyltoluene	ND	100	86.8	ND	500	434	
2-Chlorotoluene	ND	104	86.8	ND	548	457	
1,3,5-Trimethylbenzene	ND	100	86.8	ND	500	434	
1,2,4-Trimethylbenzene	ND	100	86.8	ND	500	434	
1,3-Dichlorobenzene	ND	103	86.8	ND	630	530	
1,4-Dichlorobenzene	ND	100	86.8	ND	612	530	
Benzyl chloride	ND	103	86.8	ND	543	457	
1,2-Dichlorobenzene	ND	100	86.8	ND	612	530	
1,2,4-Trichlorobenzene	ND	97.2	86.8	ND	733	654	
Hexachlorobutadiene	ND	101	86.8	ND	1,096	941	
Naphthalene	ND	107	86.8	ND	571	462	

Internal Standards	Response	Retention Time (min)	Concentration (PPBV)	Flag *
Bromochloromethane (IS)	879,656	11.59	9.50	PASS
1,4-Difluorobenzene (IS)	3,074,275	13.65	9.90	PASS
Chlorobenzene-d5 (IS)	2,615,629	18.22	9.70	PASS

(ND) = Not Detected

* (J) = Below Calibration Range, (E) = Above Calibration Range, (m) = Manual Integration

IS Acceptance Criteria: RT +/- 20 sec, Response +/- 40%

Sample Name : 016-AQS-149228-TO15-007
 Sample Info : 0617-110; Can #1359; *1000=0.5mL loop load
 Data File : L1703481.D
 Dilution : 1000
 Pressurization Factor : 2.507
 Acquisition Date : 2017-07-17 17:22:00
 Instrument Method : MM624-L
 Matrix : AIR

Target Compound	Concentration (PPBV)	RL (PPBV)	MDL (PPBV)	Concentration (ug/m3)	RL (ug/m3)	MDL (ug/m3)	Flag *
Propylene	92.0	108	87.7	161	189	153	J
Freon 12 (CCl2F2)	ND	98.3	87.7	ND	494	441	
Freon 114 (C2Cl2F4)	ND	96.3	87.7	ND	684	623	
Chloromethane	ND	100	87.7	ND	210	184	
Chloroethene (Vinyl chloride)	ND	100	87.7	ND	261	228	
1,3-Butadiene	ND	103	87.7	ND	232	197	
Bromomethane	ND	91.3	87.7	ND	360	346	
Chloroethane	ND	90.3	87.7	ND	242	235	
Bromoethene (Vinyl bromide)	ND	104	87.7	ND	464	390	
Freon 11 (CCl3F)	ND	106	87.7	ND	607	501	
Ethanol	2,327	105	87.7	4,456	202	168	
Acrolein	ND	102	87.7	ND	238	204	
Freon 113 (C2Cl3F3)	ND	108	87.7	ND	844	683	
1,1-Dichloroethene	ND	108	87.7	ND	436	354	
Acetone	94.1	112	87.7	227	271	212	m J
Carbon disulfide	ND	105	87.7	ND	333	278	
Isopropyl alcohol	ND	110	87.7	ND	276	219	
Allyl chloride (3-chloropropene)	ND	110	87.7	ND	351	279	
Acetonitrile	ND	105	87.7	ND	180	150	
Methylene chloride	ND	268	268	ND	947	947	
trans-1,2-Dichloroethene	ND	104	87.7	ND	420	354	
Methyl tert-butyl ether	ND	106	87.7	ND	390	322	
Acrylonitrile	ND	110	87.7	ND	243	194	
Hexane	ND	104	87.7	ND	374	314	
1,1-Dichloroethane	ND	104	87.7	ND	429	361	
Vinyl acetate	ND	106	87.7	ND	380	314	
cis-1,2-Dichloroethylene	ND	103	87.7	ND	416	354	
Methyl ethyl ketone (2-Butanone)	ND	104	87.7	ND	313	263	
Ethyl acetate	ND	107	87.7	ND	393	321	
Chloroform	ND	104	87.7	ND	518	435	
Tetrahydrofuran	ND	105	87.7	ND	316	263	
1,1,1-Trichloroethane	ND	105	87.7	ND	584	487	
Cyclohexane	ND	104	87.7	ND	365	307	
Carbon tetrachloride	ND	103	87.7	ND	660	561	
Benzene	ND	105	87.7	ND	342	285	
2,2,4-trimethylpentane	ND	105	87.7	ND	500	417	
1,2-Dichloroethane	ND	104	87.7	ND	429	361	
Heptane	ND	102	87.7	ND	426	365	
Trichloroethene	ND	105	87.7	ND	575	479	
1,2-Dichloropropane	ND	105	87.7	ND	495	412	
Methyl methacrylate	ND	105	87.7	ND	438	365	
1,4-Dioxane	ND	102	87.7	ND	375	321	
Bromodichloromethane	ND	105	87.7	ND	717	598	
cis-1,3-Dichloropropene	ND	102	87.7	ND	472	405	
Methyl isobutyl ketone	ND	99.3	87.7	ND	413	365	
Toluene	ND	109	87.7	ND	419	336	
trans-1,3-Dichloropropene	ND	104	87.7	ND	481	405	
1,1,2-Trichloroethane	ND	106	87.7	ND	589	487	
Tetrachloroethene	ND	107	87.7	ND	740	605	
2-Hexanone (Methyl butyl ketone)	ND	105	87.7	ND	438	365	

Sample Name : 016-AQS-149228-TO15-007
 Sample Info : 0617-110; Can #1359; *1000=0.5mL loop load
 Data File : L1703481.D
 Dilution : 1000
 Pressurization Factor : 2.507
 Acquisition Date : 2017-07-17 17:22:00
 Instrument Method : MM624-L
 Matrix : AIR

Target Compound	Concentration (PPBV)	RL (PPBV)	MDL (PPBV)	Concentration (ug/m3)	RL (ug/m3)	MDL (ug/m3)	Flag *
Dibromochloromethane	ND	105	87.7	ND	912	760	
1,2-Dibromoethane	ND	104	87.7	ND	814	685	
Chlorobenzene	ND	106	87.7	ND	497	411	
Ethylbenzene	ND	102	87.7	ND	451	387	
1,1,1,2-Tetrachloroethane	ND	107	87.7	ND	749	612	
m-/p-Xylenes	ND	205	87.7	ND	903	387	
o-Xylene	ND	104	87.7	ND	460	387	
Styrene	ND	103	87.7	ND	447	380	
Bromoform	ND	102	87.7	ND	1,075	922	
1,1,2,2-Tetrachloroethane	ND	104	87.7	ND	728	612	
4-Ethyltoluene	ND	101	87.7	ND	506	438	
2-Chlorotoluene	ND	105	87.7	ND	554	462	
1,3,5-Trimethylbenzene	ND	101	87.7	ND	506	438	
1,2,4-Trimethylbenzene	ND	101	87.7	ND	506	438	
1,3-Dichlorobenzene	ND	104	87.7	ND	637	536	
1,4-Dichlorobenzene	ND	101	87.7	ND	619	536	
Benzyl chloride	ND	104	87.7	ND	549	462	
1,2-Dichlorobenzene	ND	101	87.7	ND	619	536	
1,2,4-Trichlorobenzene	ND	98.3	87.7	ND	741	662	
Hexachlorobutadiene	ND	102	87.7	ND	1,109	951	
Naphthalene	ND	108	87.7	ND	577	468	

Internal Standards	Response	Retention Time (min)	Concentration (PPBV)	Flag *
Bromochloromethane (IS)	877,444	11.58	9.50	PASS
1,4-Difluorobenzene (IS)	3,051,623	13.64	9.90	PASS
Chlorobenzene-d5 (IS)	2,662,391	18.22	9.70	PASS

(ND) = Not Detected
 * (J) = Below Calibration Range, (E) = Above Calibration Range, (m) = Manual Integration
 IS Acceptance Criteria: RT +/- 20 sec, Response +/- 40%

Sample Name : 016-AQS-149228-TO15-008
 Sample Info : 0617-110; Can #1335; *1000=0.5mL loop load
 Data File : L1703482.D
 Dilution : 1000
 Pressurization Factor : 2.504
 Acquisition Date : 2017-07-17 18:01:00
 Instrument Method : MM624-L
 Matrix : AIR

Target Compound	Concentration (PPBV)	RL (PPBV)	MDL (PPBV)	Concentration (ug/m3)	RL (ug/m3)	MDL (ug/m3)	Flag *
Propylene	107	108	87.6	187	189	153	J
Freon 12 (CCl2F2)	ND	98.2	87.6	ND	493	441	
Freon 114 (C2Cl2F4)	ND	96.2	87.6	ND	683	623	
Chloromethane	ND	100	87.6	ND	210	184	
Chloroethene (Vinyl chloride)	ND	100	87.6	ND	260	228	
1,3-Butadiene	ND	103	87.6	ND	232	197	
Bromomethane	ND	91.1	87.6	ND	360	346	
Chloroethane	ND	90.1	87.6	ND	242	235	
Bromoethene (Vinyl bromide)	ND	104	87.6	ND	463	390	
Freon 11 (CCl3F)	ND	106	87.6	ND	606	500	
Ethanol	2,189	105	87.6	4,193	201	168	
Acrolein	ND	102	87.6	ND	238	204	
Freon 113 (C2Cl3F3)	ND	108	87.6	ND	843	683	
1,1-Dichloroethene	ND	108	87.6	ND	436	353	
Acetone	123	112	87.6	296	271	212	
Carbon disulfide	ND	105	87.6	ND	333	277	
Isopropyl alcohol	ND	110	87.6	ND	275	219	
Allyl chloride (3-chloropropene)	ND	110	87.6	ND	350	279	
Acetonitrile	ND	105	87.6	ND	179	150	
Methylene chloride	ND	268	268	ND	946	946	
trans-1,2-Dichloroethene	ND	104	87.6	ND	420	353	
Methyl tert-butyl ether	ND	106	87.6	ND	389	321	
Acrylonitrile	ND	110	87.6	ND	243	193	
Hexane	ND	104	87.6	ND	373	314	
1,1-Dichloroethane	ND	104	87.6	ND	429	361	
Vinyl acetate	ND	106	87.6	ND	380	314	
cis-1,2-Dichloroethylene	ND	103	87.6	ND	416	353	
Methyl ethyl ketone (2-Butanone)	ND	104	87.6	ND	312	263	
Ethyl acetate	ND	107	87.6	ND	393	321	
Chloroform	ND	104	87.6	ND	517	435	
Tetrahydrofuran	ND	105	87.6	ND	315	263	
1,1,1-Trichloroethane	ND	105	87.6	ND	583	486	
Cyclohexane	ND	104	87.6	ND	364	307	
Carbon tetrachloride	ND	103	87.6	ND	660	560	
Benzene	ND	105	87.6	ND	341	285	
2,2,4-trimethylpentane	ND	105	87.6	ND	499	416	
1,2-Dichloroethane	ND	104	87.6	ND	429	361	
Heptane	ND	102	87.6	ND	426	365	
Trichloroethene	ND	105	87.6	ND	574	479	
1,2-Dichloropropane	ND	105	87.6	ND	494	412	
Methyl methacrylate	ND	105	87.6	ND	438	365	
1,4-Dioxane	ND	102	87.6	ND	374	321	
Bromodichloromethane	ND	105	87.6	ND	716	597	
cis-1,3-Dichloropropene	ND	102	87.6	ND	471	404	
Methyl isobutyl ketone	ND	99.2	87.6	ND	413	365	
Toluene	ND	109	87.6	ND	418	336	
trans-1,3-Dichloropropene	ND	104	87.6	ND	481	404	
1,1,2-Trichloroethane	ND	106	87.6	ND	589	486	
Tetrachloroethene	ND	107	87.6	ND	739	604	
2-Hexanone (Methyl butyl ketone)	ND	105	87.6	ND	438	365	

Sample Name : 016-AQS-149228-TO15-008
 Sample Info : 0617-110; Can #1335; *1000=0.5mL loop load
 Data File : L1703482.D
 Dilution : 1000
 Pressurization Factor : 2.504
 Acquisition Date : 2017-07-17 18:01:00
 Instrument Method : MM624-L
 Matrix : AIR

Target Compound	Concentration (PPBV)	RL (PPBV)	MDL (PPBV)	Concentration (ug/m3)	RL (ug/m3)	MDL (ug/m3)	Flag *
Dibromochloromethane	ND	105	87.6	ND	911	759	
1,2-Dibromoethane	ND	104	87.6	ND	813	684	
Chlorobenzene	ND	106	87.6	ND	497	410	
Ethylbenzene	ND	102	87.6	ND	451	387	
1,1,1,2-Tetrachloroethane	ND	107	87.6	ND	748	612	
m-/p-Xylenes	ND	204	87.6	ND	902	387	
o-Xylene	ND	104	87.6	ND	460	387	
Styrene	ND	103	87.6	ND	447	379	
Bromoform	ND	102	87.6	ND	1,073	921	
1,1,1,2-Tetrachloroethane	ND	104	87.6	ND	727	611	
4-Ethyltoluene	ND	101	87.6	ND	505	438	
2-Chlorotoluene	ND	105	87.6	ND	553	461	
1,3,5-Trimethylbenzene	ND	101	87.6	ND	505	438	
1,2,4-Trimethylbenzene	ND	101	87.6	ND	505	438	
1,3-Dichlorobenzene	ND	104	87.6	ND	637	536	
1,4-Dichlorobenzene	ND	101	87.6	ND	618	536	
Benzyl chloride	ND	104	87.6	ND	548	461	
1,2-Dichlorobenzene	ND	101	87.6	ND	618	536	
1,2,4-Trichlorobenzene	ND	98.2	87.6	ND	740	661	
Hexachlorobutadiene	ND	102	87.6	ND	1,107	950	
Naphthalene	ND	108	87.6	ND	576	467	

Internal Standards	Response	Retention Time (min)	Concentration (PPBV)	Flag *
Bromochloromethane (IS)	873,933	11.59	9.50	PASS
1,4-Difluorobenzene (IS)	3,050,074	13.65	9.90	PASS
Chlorobenzene-d5 (IS)	2,608,154	18.21	9.70	PASS

(ND) = Not Detected

* (J) = Below Calibration Range, (E) = Above Calibration Range, (m) = Manual Integration

IS Acceptance Criteria: RT +/- 20 sec, Response +/- 40%

Lab QC



Sample Name : 016-AQS-149228-TO15-002 LD
 Sample Info : 0617-110; Can #1043; *1000=0.5mL loop load
 Data File : L1703476.D
 Dilution : 1000
 Pressurization Factor : 2.508
 Acquisition Date : 2017-07-17 14:06:00
 Instrument Method : MM624-L
 Matrix : AIR

Target Compound	Concentration (PPBV)	RL (PPBV)	MDL (PPBV)	Concentration (ug/m3)	RL (ug/m3)	MDL (ug/m3)	% Diff	Flag *
Propylene	ND	108	87.8	ND	190	154		
Freon 12 (CCl2F2)	ND	98.3	87.8	ND	494	441		
Freon 114 (C2Cl2F4)	ND	96.3	87.8	ND	684	624		
Chloromethane	ND	100	87.8	ND	211	184		
Chloroethene (Vinyl chloride)	ND	100	87.8	ND	261	228		
1,3-Butadiene	ND	103	87.8	ND	232	197		
Bromomethane	ND	91.3	87.8	ND	360	346		
Chloroethane	ND	90.3	87.8	ND	242	235		
Bromoethene (Vinyl bromide)	ND	104	87.8	ND	464	390		
Freon 11 (CCl3F)	ND	106	87.8	ND	607	501		
Ethanol	3,027	105	87.8	5,797	202	168	23	
Acrolein	ND	102	87.8	ND	238	205		
Freon 113 (C2Cl3F3)	ND	108	87.8	ND	844	684		
1,1-Dichloroethene	ND	108	87.8	ND	437	354		
Acetone	ND	112	87.8	ND	271	212		
Carbon disulfide	ND	105	87.8	ND	333	278		
Isopropyl alcohol	ND	110	87.8	ND	276	219		
Allyl chloride (3-chloropropene)	ND	110	87.8	ND	351	279		
Acetonitrile	ND	105	87.8	ND	180	150		
Methylene chloride	ND	268	268	ND	947	947		
trans-1,2-Dichloroethene	ND	104	87.8	ND	420	354		
Methyl tert-butyl ether	ND	106	87.8	ND	390	322		
Acrylonitrile	ND	110	87.8	ND	243	194		
Hexane	ND	104	87.8	ND	374	314		
1,1-Dichloroethane	ND	104	87.8	ND	429	361		
Vinyl acetate	ND	106	87.8	ND	381	314		
cis-1,2-Dichloroethylene	ND	103	87.8	ND	416	354		
Methyl ethyl ketone (2-Butanone)	178	104	87.8	532	313	263	12	m
Ethyl acetate	ND	107	87.8	ND	393	321		
Chloroform	ND	104	87.8	ND	518	436		
Tetrahydrofuran	ND	105	87.8	ND	316	263		
1,1,1-Trichloroethane	ND	105	87.8	ND	584	487		
Cyclohexane	ND	104	87.8	ND	365	307		
Carbon tetrachloride	ND	103	87.8	ND	661	561		
Benzene	ND	105	87.8	ND	342	285		
2,2,4-trimethylpentane	ND	105	87.8	ND	500	417		
1,2-Dichloroethane	ND	104	87.8	ND	429	361		
Heptane	ND	102	87.8	ND	426	366		
Trichloroethene	ND	105	87.8	ND	575	479		
1,2-Dichloropropane	ND	105	87.8	ND	495	412		
Methyl methacrylate	ND	105	87.8	ND	438	365		
1,4-Dioxane	ND	102	87.8	ND	375	321		
Bromodichloromethane	ND	105	87.8	ND	717	598		
cis-1,3-Dichloropropene	ND	102	87.8	ND	472	405		
Methyl isobutyl ketone	ND	99.3	87.8	ND	414	365		
Toluene	ND	109	87.8	ND	419	336		
trans-1,3-Dichloropropene	ND	104	87.8	ND	481	405		
1,1,2-Trichloroethane	ND	106	87.8	ND	590	487		
Tetrachloroethene	ND	107	87.8	ND	740	605		
2-Hexanone (Methyl butyl ketone)	ND	105	87.8	ND	439	365		
Dibromochloromethane	ND	105	87.8	ND	912	760		
1,2-Dibromoethane	ND	104	87.8	ND	815	686		
Chlorobenzene	ND	106	87.8	ND	498	411		
Ethylbenzene	ND	102	87.8	ND	452	387		
1,1,1,2-Tetrachloroethane	ND	107	87.8	ND	749	612		
m-/p-Xylenes	ND	205	87.8	ND	903	387		
o-Xylene	ND	104	87.8	ND	460	387		

Sample Name : 016-AQS-149228-TO15-002 LD
 Sample Info : 0617-110; Can #1043; *1000=0.5mL loop load
 Data File : L1703476.D
 Dilution : 1000
 Pressurization Factor : 2.508
 Acquisition Date : 2017-07-17 14:06:00
 Instrument Method : MM624-L
 Matrix : AIR

Target Compound	Concentration (PPBV)	RL (PPBV)	MDL (PPBV)	Concentration (ug/m3)	RL (ug/m3)	MDL (ug/m3)	% Diff	Flag *
Styrene	ND	103	87.8	ND	447	380		
Bromoform	ND	102	87.8	ND	1,075	922		
1,1,2,2-Tetrachloroethane	ND	104	87.8	ND	728	612		
4-Ethyltoluene	ND	101	87.8	ND	506	439		
2-Chlorotoluene	ND	105	87.8	ND	554	462		
1,3,5-Trimethylbenzene	ND	101	87.8	ND	506	439		
1,2,4-Trimethylbenzene	ND	101	87.8	ND	506	439		
1,3-Dichlorobenzene	ND	104	87.8	ND	638	536		
1,4-Dichlorobenzene	ND	101	87.8	ND	619	536		
Benzyl chloride	ND	104	87.8	ND	549	462		
1,2-Dichlorobenzene	ND	101	87.8	ND	619	536		
1,2,4-Trichlorobenzene	ND	98.3	87.8	ND	742	662		
Hexachlorobutadiene	ND	102	87.8	ND	1,109	952		
Naphthalene	ND	108	87.8	ND	577	468		

Internal Standards	Response	Retention Time (min)	Concentration (PPBV)	Flag *
Bromochloromethane (IS)	896,732	11.59	9.50	PASS
1,4-Difluorobenzene (IS)	3,105,793	13.65	9.90	PASS
Chlorobenzene-d5 (IS)	2,684,885	18.22	9.70	PASS

(ND) = Not Detected

* (J) = Below Calibration Range, (E) = Above Calibration Range, (m) = Manual Integration

IS Acceptance Criteria: RT +/- 20 sec, Response +/- 40%

Sample Name : Humid Blank #10893
 Sample Info : 500mL load
 Data File : L1703472.D
 Dilution : 1
 Pressurization Factor : 1.000
 Acquisition Date : 2017-07-17 10:22:00
 Instrument Method : MM624-L
 Matrix : AIR

Target Compound	Concentration (PPBV)	RL (PPBV)	MDL (PPBV)	Concentration (ug/m3)	RL (ug/m3)	MDL (ug/m3)	Flag *
Propylene	ND	0.0432	0.0350	ND	0.0756	0.0612	
Freon 12 (CCl2F2)	ND	0.0392	0.0350	ND	0.197	0.176	
Freon 114 (C2Cl2F4)	ND	0.0384	0.0350	ND	0.273	0.249	
Chloromethane	ND	0.0400	0.0350	ND	0.0839	0.0735	
Chloroethene (Vinyl chloride)	ND	0.0400	0.0350	ND	0.104	0.0909	
1,3-Butadiene	ND	0.0412	0.0350	ND	0.0926	0.0787	
Bromomethane	ND	0.0364	0.0350	ND	0.144	0.138	
Chloroethane	ND	0.0360	0.0350	ND	0.0965	0.0939	
Bromoethene (Vinyl bromide)	ND	0.0416	0.0350	ND	0.185	0.156	
Freon 11 (CCl3F)	ND	0.0424	0.0350	ND	0.242	0.200	
Ethanol	0.197	0.0420	0.0350	0.377	0.0804	0.0670	
Acrolein	ND	0.0408	0.0350	ND	0.0951	0.0816	
Freon 113 (C2Cl3F3)	ND	0.0432	0.0350	ND	0.336	0.273	
1,1-Dichloroethene	ND	0.0432	0.0350	ND	0.174	0.141	
Acetone	ND	0.0448	0.0350	ND	0.108	0.0845	
Carbon disulfide	ND	0.0420	0.0350	ND	0.133	0.111	
Isopropyl alcohol	ND	0.0440	0.0350	ND	0.110	0.0874	
Allyl chloride (3-chloropropene)	ND	0.0440	0.0350	ND	0.140	0.111	
Acetonitrile	ND	0.0420	0.0350	ND	0.0717	0.0597	
Methylene chloride	ND	0.107	0.107	ND	0.378	0.378	
trans-1,2-Dichloroethene	ND	0.0416	0.0350	ND	0.168	0.141	
Methyl tert-butyl ether	ND	0.0424	0.0350	ND	0.155	0.128	
Acrylonitrile	ND	0.0440	0.0350	ND	0.0971	0.0772	
Hexane	ND	0.0416	0.0350	ND	0.149	0.125	
1,1-Dichloroethane	ND	0.0416	0.0350	ND	0.171	0.144	
Vinyl acetate	ND	0.0424	0.0350	ND	0.152	0.125	
cis-1,2-Dichloroethylene	ND	0.0412	0.0350	ND	0.166	0.141	
Methyl ethyl ketone (2-Butanone)	ND	0.0416	0.0350	ND	0.125	0.105	
Ethyl acetate	ND	0.0428	0.0350	ND	0.157	0.128	
Chloroform	ND	0.0416	0.0350	ND	0.206	0.174	
Tetrahydrofuran	ND	0.0420	0.0350	ND	0.126	0.105	
1,1,1-Trichloroethane	ND	0.0420	0.0350	ND	0.233	0.194	
Cyclohexane	ND	0.0416	0.0350	ND	0.146	0.122	
Carbon tetrachloride	ND	0.0412	0.0350	ND	0.263	0.224	
Benzene	ND	0.0420	0.0350	ND	0.136	0.114	
2,2,4-trimethylpentane	ND	0.0420	0.0350	ND	0.199	0.166	
1,2-Dichloroethane	ND	0.0416	0.0350	ND	0.171	0.144	
Heptane	ND	0.0408	0.0350	ND	0.170	0.146	
Trichloroethene	ND	0.0420	0.0350	ND	0.229	0.191	
1,2-Dichloropropane	ND	0.0420	0.0350	ND	0.197	0.164	
Methyl methacrylate	ND	0.0420	0.0350	ND	0.175	0.146	
1,4-Dioxane	ND	0.0408	0.0350	ND	0.149	0.128	
Bromodichloromethane	ND	0.0420	0.0350	ND	0.286	0.238	
cis-1,3-Dichloropropene	ND	0.0408	0.0350	ND	0.188	0.161	
Methyl isobutyl ketone	ND	0.0396	0.0350	ND	0.165	0.146	
Toluene	ND	0.0436	0.0350	ND	0.167	0.134	
trans-1,3-Dichloropropene	ND	0.0416	0.0350	ND	0.192	0.161	
1,1,2-Trichloroethane	ND	0.0424	0.0350	ND	0.235	0.194	
Tetrachloroethene	ND	0.0428	0.0350	ND	0.295	0.241	
2-Hexanone (Methyl butyl ketone)	ND	0.0420	0.0350	ND	0.175	0.146	

Sample Name : Humid Blank #10893
 Sample Info : 500mL load
 Data File : L1703472.D
 Dilution : 1
 Pressurization Factor : 1.000
 Acquisition Date : 2017-07-17 10:22:00
 Instrument Method : MM624-L
 Matrix : AIR

Target Compound	Concentration (PPBV)	RL (PPBV)	MDL (PPBV)	Concentration (ug/m3)	RL (ug/m3)	MDL (ug/m3)	Flag *
Dibromochloromethane	ND	0.0420	0.0350	ND	0.364	0.303	
1,2-Dibromoethane	ND	0.0416	0.0350	ND	0.325	0.273	
Chlorobenzene	ND	0.0424	0.0350	ND	0.198	0.164	
Ethylbenzene	ND	0.0408	0.0350	ND	0.180	0.154	
1,1,1,2-Tetrachloroethane	ND	0.0428	0.0350	ND	0.299	0.244	
m-/p-Xylenes	ND	0.0816	0.0350	ND	0.360	0.154	
o-Xylene	ND	0.0416	0.0350	ND	0.184	0.154	
Styrene	ND	0.0412	0.0350	ND	0.178	0.152	
Bromoform	ND	0.0408	0.0350	ND	0.429	0.368	
1,1,2,2-Tetrachloroethane	ND	0.0416	0.0350	ND	0.290	0.244	
4-Ethyltoluene	ND	0.0404	0.0350	ND	0.202	0.175	
2-Chlorotoluene	ND	0.0420	0.0350	ND	0.221	0.184	
1,3,5-Trimethylbenzene	ND	0.0404	0.0350	ND	0.202	0.175	
1,2,4-Trimethylbenzene	ND	0.0404	0.0350	ND	0.202	0.175	
1,3-Dichlorobenzene	ND	0.0416	0.0350	ND	0.254	0.214	
1,4-Dichlorobenzene	ND	0.0404	0.0350	ND	0.247	0.214	
Benzyl chloride	ND	0.0416	0.0350	ND	0.219	0.184	
1,2-Dichlorobenzene	ND	0.0404	0.0350	ND	0.247	0.214	
1,2,4-Trichlorobenzene	ND	0.0392	0.0350	ND	0.296	0.264	
Hexachlorobutadiene	ND	0.0408	0.0350	ND	0.442	0.379	
Naphthalene	ND	0.0432	0.0350	ND	0.230	0.186	

Internal Standards	Response	Retention Time (min)	Concentration (PPBV)	Flag *
Bromochloromethane (IS)	873,064	11.59	9.50	PASS
1,4-Difluorobenzene (IS)	3,009,990	13.64	9.90	PASS
Chlorobenzene-d5 (IS)	2,566,505	18.23	9.70	PASS

(ND) = Not Detected

* (J) = Below Calibration Range, (E) = Above Calibration Range, (m) = Manual Integration

IS Acceptance Criteria: RT +/- 20 sec, Response +/- 40%

Sample Name : 5ppbv TO15 LCS #24091
 Sample Info : 125mL load; GCMSPrepPg295
 Data File : L1703470.D
 Dilution : 1
 Pressurization Factor : 1.000
 Acquisition Date : 2017-07-17 08:50:00
 Instrument Method : MM624-L
 Matrix : AIR

Target Compound	Response	Concentration (PPBV)	Tag Value (PPBV)	% Recovery	Flag
Propylene	439,151	4.88	5.45	89.5	PASS
Freon 12 (CCl2F2)	929,153	4.88	4.95	98.5	PASS
Freon 114 (C2Cl2F4)	1,015,331	4.67	4.75	98.4	PASS
Chloromethane	438,032	4.64	5.00	92.7	PASS
Chloroethene (Vinyl chloride)	348,157	4.83	5.05	95.5	PASS
1,3-Butadiene	325,832	4.75	5.15	92.2	PASS
Bromomethane	265,114	4.34	4.55	95.3	PASS
Chloroethane	153,382	4.01	4.45	90.2	PASS
Bromoethene (Vinyl bromide)	259,434	4.59	5.20	88.3	PASS
Freon 11 (CCl3F)	555,265	4.46	5.25	84.9	PASS
Ethanol	207,373	5.04	5.25	96.0	PASS
Acrolein	164,705	5.09	5.15	98.9	PASS
Freon 113 (C2Cl3F3)	440,893	5.53	5.35	103.3	PASS
1,1-Dichloroethene	724,578	5.35	5.40	99.1	PASS
Acetone	832,945	5.26	5.60	93.9	PASS
Carbon disulfide	1,155,789	5.06	5.25	96.4	PASS
Isopropyl alcohol	925,446	5.51	5.55	99.3	PASS
Allyl chloride (3-chloropropene)	186,082	5.42	5.50	98.5	PASS
Acetonitrile	397,949	5.51	5.30	104.0	PASS
Methylene chloride	620,107	4.42	5.35	82.7	PASS
trans-1,2-Dichloroethene	613,533	4.90	5.00	98.0	PASS
Methyl tert-butyl ether	1,008,375	5.29	5.25	100.8	PASS
Acrylonitrile	342,082	5.76	5.60	102.8	PASS
Hexane	603,945	4.95	5.10	97.0	PASS
1,1-Dichloroethane	786,454	5.04	5.20	96.9	PASS
Vinyl acetate	1,453,238	5.33	5.30	100.6	PASS
cis-1,2-Dichloroethylene	602,959	5.23	5.30	98.6	PASS
Methyl ethyl ketone (2-Butanone)	190,059	5.31	5.25	101.2	PASS
Ethyl acetate	166,847	5.11	5.25	97.2	PASS
Chloroform	802,639	5.19	5.25	98.8	PASS
Tetrahydrofuran	186,203	5.22	5.35	97.5	PASS
1,1,1-Trichloroethane	660,466	5.16	5.20	99.3	PASS
Cyclohexane	644,481	5.01	5.15	97.2	PASS
Carbon tetrachloride	640,500	5.37	5.25	102.4	PASS
Benzene	1,118,630	5.24	5.25	99.8	PASS
2,2,4-trimethylpentane	2,009,825	5.23	5.25	99.6	PASS
1,2-Dichloroethane	543,766	5.03	5.25	95.7	PASS
Heptane	378,946	5.08	5.25	96.8	PASS
Trichloroethene	427,272	5.31	5.25	101.2	PASS
1,2-Dichloropropane	479,227	5.21	5.20	100.2	PASS
Methyl methacrylate	424,795	5.26	5.05	104.1	PASS
1,4-Dioxane	233,508	5.06	5.25	96.4	PASS

Sample Name : 5ppbv TO15 LCS #24091
 Sample Info : 125mL load; GCMSPrepPg295
 Data File : L1703470.D
 Dilution : 1
 Pressurization Factor : 1.000
 Acquisition Date : 2017-07-17 08:50:00
 Instrument Method : MM624-L
 Matrix : AIR

Target Compound	Response	Concentration (PPBV)	Tag Value (PPBV)	% Recovery	Flag
Bromodichloromethane	860,052	5.32	5.25	101.4	PASS
cis-1,3-Dichloropropene	712,955	5.13	5.05	101.5	PASS
Methyl isobutyl ketone	1,345,826	5.06	5.15	98.3	PASS
Toluene	1,115,243	5.24	5.25	99.8	PASS
trans-1,3-Dichloropropene	636,391	5.04	5.00	100.8	PASS
1,1,2-Trichloroethane	427,901	5.01	5.20	96.4	PASS
Tetrachloroethene	518,886	5.17	5.15	100.5	PASS
2-Hexanone (Methyl butyl ketone)	1,237,969	5.25	5.40	97.2	PASS
Dibromochloromethane	749,603	5.62	5.35	105.0	PASS
1,2-Dibromoethane	726,383	5.20	5.25	99.1	PASS
Chlorobenzene	877,504	5.09	5.30	96.1	PASS
Ethylbenzene	1,412,977	5.17	5.30	97.6	PASS
1,1,1,2-Tetrachloroethane	460,036	5.48	5.30	103.3	PASS
m-/p-Xylenes	2,133,068	10.1	10.2	98.7	PASS
o-Xylene	1,104,237	5.06	5.15	98.2	PASS
Styrene	860,471	5.10	5.15	99.0	PASS
Bromoform	721,312	5.61	5.10	110.0	PASS
1,1,2,2-Tetrachloroethane	1,117,870	4.99	5.15	96.9	PASS
4-Ethyltoluene	1,471,392	4.87	5.05	96.5	PASS
2-Chlorotoluene	1,252,881	5.24	5.25	99.9	PASS
1,3,5-Trimethylbenzene	1,161,612	4.95	5.05	98.1	PASS
1,2,4-Trimethylbenzene	1,197,622	4.90	5.05	97.1	PASS
1,3-Dichlorobenzene	800,442	4.90	5.15	95.2	PASS
1,4-Dichlorobenzene	789,236	4.73	5.10	92.7	PASS
Benzyl chloride	1,238,020	4.82	5.15	93.6	PASS
1,2-Dichlorobenzene	784,837	4.79	5.05	94.8	PASS
1,2,4-Trichlorobenzene	602,522	4.58	4.85	94.4	PASS
Hexachlorobutadiene	473,246	4.77	5.05	94.4	PASS
Naphthalene	1,362,803	4.61	5.40	85.4	PASS

Sample Name : 5ppbv TO15 LCS #24091
 Sample Info : 125mL load; GCMSPrepPg295
 Data File : L1703470.D
 Dilution : 1
 Pressurization Factor : 1.000
 Acquisition Date : 2017-07-17 08:50:00
 Instrument Method : MM624-L
 Matrix : AIR

Target Compound	Concentration (PPBV)	RL (PPBV)	MDL (PPBV)	Concentration (ug/m3)	RL (ug/m3)	MDL (ug/m3)	Flag *
Propylene	4.88	0.0432	0.0350	8.53	0.0756	0.0612	
Freon 12 (CCl2F2)	4.88	0.0392	0.0350	24.5	0.197	0.176	
Freon 114 (C2Cl2F4)	4.67	0.0384	0.0350	33.2	0.273	0.249	
Chloromethane	4.64	0.0400	0.0350	9.73	0.0839	0.0735	
Chloroethene (Vinyl chloride)	4.83	0.0400	0.0350	12.5	0.104	0.0909	
1,3-Butadiene	4.75	0.0412	0.0350	10.7	0.0926	0.0787	
Bromomethane	4.34	0.0364	0.0350	17.1	0.144	0.138	
Chloroethane	4.01	0.0360	0.0350	10.8	0.0965	0.0939	
Bromoethene (Vinyl bromide)	4.59	0.0416	0.0350	20.4	0.185	0.156	
Freon 11 (CCl3F)	4.46	0.0424	0.0350	25.4	0.242	0.200	
Ethanol	5.04	0.0420	0.0350	9.66	0.0804	0.0670	
Acrolein	5.09	0.0408	0.0350	11.9	0.0951	0.0816	
Freon 113 (C2Cl3F3)	5.53	0.0432	0.0350	43.0	0.336	0.273	
1,1-Dichloroethene	5.35	0.0432	0.0350	21.6	0.174	0.141	
Acetone	5.26	0.0448	0.0350	12.7	0.108	0.0845	
Carbon disulfide	5.06	0.0420	0.0350	16.0	0.133	0.111	
Isopropyl alcohol	5.51	0.0440	0.0350	13.8	0.110	0.0874	
Allyl chloride (3-chloropropene)	5.42	0.0440	0.0350	17.2	0.140	0.111	
Acetonitrile	5.51	0.0420	0.0350	9.41	0.0717	0.0597	
Methylene chloride	4.42	0.107	0.107	15.6	0.378	0.378	
trans-1,2-Dichloroethene	4.90	0.0416	0.0350	19.7	0.168	0.141	
Methyl tert-butyl ether	5.29	0.0424	0.0350	19.4	0.155	0.128	
Acrylonitrile	5.76	0.0440	0.0350	12.7	0.0971	0.0772	
Hexane	4.95	0.0416	0.0350	17.7	0.149	0.125	
1,1-Dichloroethane	5.04	0.0416	0.0350	20.7	0.171	0.144	
Vinyl acetate	5.33	0.0424	0.0350	19.1	0.152	0.125	
cis-1,2-Dichloroethylene	5.23	0.0412	0.0350	21.1	0.166	0.141	
Methyl ethyl ketone (2-Butanone)	5.31	0.0416	0.0350	15.9	0.125	0.105	
Ethyl acetate	5.11	0.0428	0.0350	18.7	0.157	0.128	
Chloroform	5.19	0.0416	0.0350	25.8	0.206	0.174	
Tetrahydrofuran	5.22	0.0420	0.0350	15.6	0.126	0.105	
1,1,1-Trichloroethane	5.16	0.0420	0.0350	28.6	0.233	0.194	
Cyclohexane	5.01	0.0416	0.0350	17.5	0.146	0.122	
Carbon tetrachloride	5.37	0.0412	0.0350	34.4	0.263	0.224	
Benzene	5.24	0.0420	0.0350	17.0	0.136	0.114	
2,2,4-trimethylpentane	5.23	0.0420	0.0350	24.8	0.199	0.166	
1,2-Dichloroethane	5.03	0.0416	0.0350	20.7	0.171	0.144	
Heptane	5.08	0.0408	0.0350	21.2	0.170	0.146	
Trichloroethene	5.31	0.0420	0.0350	29.0	0.229	0.191	
1,2-Dichloropropane	5.21	0.0420	0.0350	24.5	0.197	0.164	
Methyl methacrylate	5.26	0.0420	0.0350	21.9	0.175	0.146	
1,4-Dioxane	5.06	0.0408	0.0350	18.5	0.149	0.128	
Bromodichloromethane	5.32	0.0420	0.0350	36.3	0.286	0.238	
cis-1,3-Dichloropropene	5.13	0.0408	0.0350	23.6	0.188	0.161	
Methyl isobutyl ketone	5.06	0.0396	0.0350	21.1	0.165	0.146	
Toluene	5.24	0.0436	0.0350	20.1	0.167	0.134	
trans-1,3-Dichloropropene	5.04	0.0416	0.0350	23.3	0.192	0.161	
1,1,2-Trichloroethane	5.01	0.0424	0.0350	27.8	0.235	0.194	
Tetrachloroethene	5.17	0.0428	0.0350	35.7	0.295	0.241	
2-Hexanone (Methyl butyl ketone)	5.25	0.0420	0.0350	21.9	0.175	0.146	

Sample Name : 5ppbv TO15 LCS #24091
 Sample Info : 125mL load; GCMSPrepPg295
 Data File : L1703470.D
 Dilution : 1
 Pressurization Factor : 1.000
 Acquisition Date : 2017-07-17 08:50:00
 Instrument Method : MM624-L
 Matrix : AIR

Target Compound	Concentration (PPBV)	RL (PPBV)	MDL (PPBV)	Concentration (ug/m3)	RL (ug/m3)	MDL (ug/m3)	Flag *
Dibromochloromethane	5.62	0.0420	0.0350	48.7	0.364	0.303	
1,2-Dibromoethane	5.20	0.0416	0.0350	40.6	0.325	0.273	
Chlorobenzene	5.09	0.0424	0.0350	23.8	0.198	0.164	
Ethylbenzene	5.17	0.0408	0.0350	22.8	0.180	0.154	
1,1,1,2-Tetrachloroethane	5.48	0.0428	0.0350	38.2	0.299	0.244	
m-/p-Xylenes	10.1	0.0816	0.0350	44.4	0.360	0.154	
o-Xylene	5.06	0.0416	0.0350	22.3	0.184	0.154	
Styrene	5.10	0.0412	0.0350	22.1	0.178	0.152	
Bromoform	5.61	0.0408	0.0350	58.9	0.429	0.368	
1,1,2,2-Tetrachloroethane	4.99	0.0416	0.0350	34.8	0.290	0.244	
4-Ethyltoluene	4.87	0.0404	0.0350	24.3	0.202	0.175	
2-Chlorotoluene	5.24	0.0420	0.0350	27.6	0.221	0.184	
1,3,5-Trimethylbenzene	4.95	0.0404	0.0350	24.7	0.202	0.175	
1,2,4-Trimethylbenzene	4.90	0.0404	0.0350	24.5	0.202	0.175	
1,3-Dichlorobenzene	4.90	0.0416	0.0350	30.0	0.254	0.214	m
1,4-Dichlorobenzene	4.73	0.0404	0.0350	28.9	0.247	0.214	
Benzyl chloride	4.82	0.0416	0.0350	25.4	0.219	0.184	
1,2-Dichlorobenzene	4.79	0.0404	0.0350	29.2	0.247	0.214	
1,2,4-Trichlorobenzene	4.58	0.0392	0.0350	34.6	0.296	0.264	
Hexachlorobutadiene	4.77	0.0408	0.0350	51.7	0.442	0.379	
Naphthalene	4.61	0.0432	0.0350	24.6	0.230	0.186	

Internal Standards	Response	Retention Time (min)	Concentration (PPBV)	Flag *
Bromochloromethane (IS)	827,993	11.59	9.50	PASS
1,4-Difluorobenzene (IS)	2,843,238	13.64	9.90	PASS
Chlorobenzene-d5 (IS)	2,508,052	18.22	9.70	PASS

(ND) = Not Detected

* (J) = Below Calibration Range, (E) = Above Calibration Range, (m) = Manual Integration

IS Acceptance Criteria: RT +/- 20 sec, Response +/- 40%

Company Analyst Parameters	MAQS, LLC - Easton DOO Canister Pressurizations
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Client # Job # # Samples	016-AQS-149228 0617-110 7 (6L) Canisters
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Sample ID	Can #	Press. Factor	Canister Size	Sample Vol (L) at STP	Pre-sample			Post-sample			Final		
					Temp Field (°F)	P _{bar} Field (mmHg)	Gauge Field (mmHg)	Temp Lab/Field (°F)	P _{bar} Lab/Field (mmHg)	Gauge Lab/Field (mmHg)	Temp Lab (°F)	P _{bar} Lab (mmHg)	Gauge Lab (mmHg)
016-AQS-149228-TO15-002	1043	2.508	6.00	4.63	65.5	762	-762	68.0	765	-178	68.0	765	707
016-AQS-149228-TO15-003	1011	2.531	6.00	4.57	65.5	762	-762	68.0	765	-186	68.0	765	700
016-AQS-149228-TO15-004	1659	2.589	6.00	4.47	65.5	762	-762	68.0	765	-199	68.0	765	700
016-AQS-149228-TO15-005	1188	2.582	6.00	4.48	65.5	762	-762	68.0	765	-197	68.0	765	701
016-AQS-149228-TO15-006	1343	2.479	6.00	4.66	65.5	762	-762	68.0	765	-174	68.0	765	700
016-AQS-149228-TO15-007	1359	2.507	6.00	4.62	65.5	762	-762	68.0	765	-180	68.0	765	701
016-AQS-149228-TO15-008	1335	2.504	6.00	4.64	65.5	762	-762	68.0	765	-177	68.0	765	707

$$\frac{\text{GaugeLab} + \text{PbarLab}}{\text{TempLab} + 460}$$

$$\frac{\text{GaugeLab} / \text{Field} + \text{PbarLab} / \text{Field}}{\text{TempLab} / \text{Field} + 460}$$

The canister pressurization factors are calculated using the following formula:

Narrative Summary



Enthalpy Analytical Narrative Summary

Company	Montrose Air Quality Services, LLC - Easton
Job #	0617-110 – EPA Method 18
Client #	016-AQS-149228

Custody

Matthew Hill of Enthalpy Analytical, LLC received the **IBC Retail Outlet** bag samples on 6/29/17 and Justin Guenzler received the **Repro Inlet** and **Outlet** samples on 7/1/17. The samples were received in good condition with one exception. Sample bag **Repro Outlet Primary Run 3** was noted as torn in transit. Matthew Hill received the replacement sample on 7/5/17 in good condition. All samples were received at ambient temperature after being relinquished by Montrose Air Quality Services, LLC - Easton. Prior to, during, and after analysis, the samples were kept under lock with access only to authorized personnel by Enthalpy Analytical, LLC.

Analysis

The samples were analyzed for methane, acrolein, and pentane using the analytical procedures in EPA Method 18, Measurement of Gaseous Organic Compound Emissions by Gas Chromatography (40 CFR Part 60, Appendix A).

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

The analyses were performed using the Agilent Technologies Model 6890, Gas Chromatograph "Gummo" (S/N US00028451) equipped with a Flame Ionization Detector.

Calibration

The calibration curves are included in the Raw Data section of this report. The data analysis methods are referenced in the Analysis Method column on the Detailed Results page.

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

Chromatographic Conditions

The acquisition methods AQ_GUMMOP987_AA.M and AQ_GUMMOP987.M are included in the Raw Data section of this report.



Enthalpy Analytical Narrative Summary (continued)

QC Notes

As required by the method, a recovery study was performed on a bag sample from each source. The bag sample **IBC Retail Outlet Run 3** was spiked at 12:07 on 7/28/17 after a baseline analysis to confirm the analyte concentrations. The bag sample **Repro Inlet Primary Run 1** was spiked at 13:13 on 7/1/17. The bag sample **Repro Outlet Primary Run 4** was spiked at 15:56 on 7/28/17 after a baseline analysis to confirm the analyte concentrations. The recovery efficiency values met the method-required limits of 70 to 130%. The recovery efficiency values were used to adjust the results following equation 18-7 of Method 18.

The analysis of the laboratory zero air blank did not show any of the analytes of interest at concentrations greater than the LOQ.

Reporting Notes

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

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

Enthalpy Analytical Narrative Summary

Company	Montrose Air Quality Services, LLC - Easton
Job #	0617-110 - EPA SW-846 Method 0011 Extended List
Client #	016-AQS-149228

Custody

Matthew Hill of Enthalpy Analytical, LLC received the samples on 7/5/17 at 6.1 °C after being relinquished by Montrose Air Quality Services, LLC of Easton, PA. The samples were received in good condition. Prior to, during, and after analysis, the samples were kept under lock with access only to authorized personnel by Enthalpy Analytical, LLC.

Analysis

The samples were analyzed for 2-butenal (crotonaldehyde), 2-pentanone, 3-heptanone, acetaldehyde, acetone, benzaldehyde, 2-methyl benzaldehyde (o-tolualdehyde), 3/4-methyl benzaldehyde (m/p-tolualdehyde), butanal (butyraldehyde), 3-methyl butanal (isovaleraldehyde), decanal, formaldehyde, hexanaldehyde (hexaldehyde), pentanal (valeraldehyde), and propionaldehyde using the analytical procedures in EPA SW-846 Method 0011, Sampling for Selected Aldehyde and Ketone Emissions from Stationary Sources.

The Agilent Model 1100, High Performance Liquid Chromatograph "Bart" was used for these analyses.

Calibration

The calibration curves are located in the Raw Data section of this report and referenced in the Analysis Method column on the Detailed Results page.

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

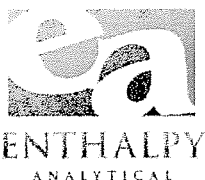
Chromatographic Conditions

The acquisition method 8315_TO11_Waters_restek_45_Min_EXT.M is included in the Raw Data section of this report.

QC Notes

Laboratory Control Samples (LCS) were analyzed for some of the compounds and exhibited recovery values between 62.3% and 85.1%.

The analyses of the field and laboratory reagent blanks did not contain the analytes of interest at concentrations greater than the detection limit.



Enthalpy Analytical Narrative Summary (continued)

QC Notes (continued)

During sample preparation, **Repro Out R1** was split into equal halves. The first half was extracted and analyzed as **Repro Out R1** and the second half was extracted and analyzed as **Dup/ Repro Out R1**. The initial and duplicate analyses differed by 9.5% for formaldehyde, 11.4% for acetaldehyde, 11.6% for acetone, 12.3% for propionaldehyde, 10.6% for butyraldehyde, 11.1% for valeraldehyde, and 7.3% for hexaldehyde. The remaining compounds were below the detection limit.

Sample **Repro Out R5** was also split in half. The first half was analyzed as the sample, and has an aliquot factor of two. The remaining half was split in thirds for use as a Matrix Spike (MS), Matrix Spike Duplicate (MSD), and an archived fraction. The matrix spikes were analyzed in the same manner as the samples and reported as **MS/ Repro Out R5** and **MSD/ Repro Out R5**. The MS and MSD exhibited recovery values ranging from 30.6% to 65.0% for acetaldehyde, acetone, propionaldehyde, crotonaldehyde, and butyraldehyde.

Reporting Notes

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

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

Enthalpy Analytical Narrative Summary

Company	Montrose Air Quality Services, LLC – Easton
Job #	0617-110 - EPA Method TO-15
Client #	016-AQS-149228

Custody

Matthew Hill of Enthalpy Analytical, LLC received the samples on 7/5/17 at ambient temperature after being relinquished by Montrose Air Quality Services, LLC of Easton, PA. The samples were received in good condition. Prior to, during, and after analysis, the samples were kept under lock with access only to authorized personnel by Enthalpy Analytical, LLC.

Analysis

The samples were analyzed for the TO-15 target compound list using the analytical procedures in EPA Method TO-15, *Determination of Volatile Organic Compounds (VOCs) In Air Collected In Specially-Prepared Canisters And Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)*.

Upon receipt, the canister pressures were measured and recorded. The canisters were then pressurized with UHP nitrogen and a dilution ratio was calculated for each canister. Refer to the Canister and Controller Data Sheet in this report.

The Hewlett Packard Model 5890, Gas Chromatograph "Lurch" (S/N 2750A15233) was equipped with a 5971A Mass Selective Detector and a Restek Rxi-624 Sil MS, 60 m x 0.32 mm x 1.8 µm (S/N 1035491) capillary column for these analyses. The samples and standards were introduced directly to the analyzer using an Entech 7100A Preconcentrator.

Calibration

The BFB tune analyses associated with the initial and continuing calibrations met method acceptance criteria. The initial calibration (**L07127A-TO15**) met the 30% RSD criteria. The initial calibration verification met the 30% recovery criteria. The continuing calibration met the 30% difference criteria. Calibration data has not been included in this Level 2 report but is available upon request.

Chromatographic Conditions

A copy of the acquisition method (MM624-L.M) has not been included in this report but is available upon request.

QC Notes

All internal standard area responses and retention time criteria were met for these analyses.



Enthalpy Analytical Narrative Summary (continued)

QC Notes (continued)

The Laboratory Duplicate associated with this sample met the 25% difference criteria.

The laboratory humid blank associated with the analysis of these samples did not contain the compounds of interest at concentrations greater than 3 times the MDL value, with the exception of ethanol.

The Laboratory Control Sample (LCS) met the 70-130% Recovery criteria for all analytes of interest.

The samples were analyzed within the 30-day holding time required by the method.

Reporting Notes

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

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

The GC/MS data presented in this report was analyzed at 2202 Ellis Road, Durham, NC 27703.

General Reporting Notes

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

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



General Reporting Notes

(continued)

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



Sample Custody



Method 18 (M18) Record of Custody

Project Name: KEMS / Aluf Plastics
 Project Number: 016-AQS-149228

City / State: Orangeburg, NY
 Sample ID Format: Project #-Method-Sequential

Sample ID	Sample Description	S	Signature	Date	Time	Notes
016-AQS-149228-M18-001	IBC Retail Outlet , M18, Run 1, Primary	S				wet or dry basis (circle one)
		B				
016-AQS-149228-M18-002	IBC Retail Outlet , M18, Run 1, Backup	S				wet or dry basis (circle one) hold at montrose
		B				
016-AQS-149228-M18-003	IBC Retail Outlet , M18, Run 2, Primary	S	<i>[Signature]</i>	6/28/17	1534	<input checked="" type="radio"/> wet or dry basis (circle one)
		B				
016-AQS-149228-M18-004	IBC Retail Outlet , M18, Run 2, Backup	S	<i>[Signature]</i>	6/28/17	1534	<input checked="" type="radio"/> wet or dry basis (circle one) hold at montrose
		B				
016-AQS-149228-M18-005	IBC Retail Outlet , M18, Run 3, Primary	S	<i>[Signature]</i>	6/28/17	1534	<input checked="" type="radio"/> wet or dry basis (circle one)
		B				
016-AQS-149228-M18-006	IBC Retail Outlet , M18, Run 3, Backup	S	<i>[Signature]</i>	6/28/17	1534	<input checked="" type="radio"/> wet or dry basis (circle one) hold at montrose
		B				
016-AQS-149228-M18-007	IBC Retail Outlet , M18, Run 4, Primary	S	<i>[Signature]</i>	6/28/17	1534	<input checked="" type="radio"/> wet or dry basis (circle one)
		B				
016-AQS-149228-M18-008	IBC Retail Outlet , M18, Run 4, Backup	S	<i>[Signature]</i>	6/28/17	1534	<input checked="" type="radio"/> wet or dry basis (circle one) hold at montrose
		B				

S= Sealed, B= Broken

Submitted by: <i>[Signature]</i>	Date: 6-28-17	Received by:	Date:
Relinquished by:	Date:	Received by:	Date:
Relinquished by:	Date:	Received by:	Date:
Relinquished by:	Date:	Received by:	Date:
Relinquished by:	Date:	Received by:	Date:

Lab Instructions: Analyze samples per the method

Were all seals intact?	Yes / No	(Describe seal & reasoning in Remarks)	Remarks:
Were all liquids at marked levels	Yes / No	(Estimate loss in Remarks)	
Received by Sample Custodian:			
<i>[Signature]</i>	6/29/17	0830	
(Full Signature)	(Date)	(Time)	

Montrose Environmental Air Quality Services - Avogadro Environmental Corporation - (MAQS - Easton)

- Only received primary bags - no backup bags.
 Good condition. Ambient temp mwh
 6/29/17

Method 18 (M18) Record of Custody

Project Name: KEMS / Aluf Plastics
 Project Number: 016-AQS-149228

City / State: Orangeburg, NY
 Sample ID Format: Project #-Method-Sequential

Sample ID	Sample Description	Signature	Date	Time	Notes
016-AQS-149228-M18-009	Repro Inlet, M18, Run 1, Primary	S	6/29/17	1531	(wet) or dry basis (circle one)
		B			
016-AQS-149228-M18-010	Repro Inlet, M18, Run 1, Backup	S	6/29/17	1531	(wet) or dry basis (circle one) hold at montrose
		B			
016-AQS-149228-M18-011	Repro Inlet, M18, Run 5 2, Primary	S	6/29/17	1850	wet or dry basis (circle one)
		B			
016-AQS-149228-M18-012 016 TH	Repro Inlet, M18, Run 5 2, Backup	S	6/29/17	1855	wet or dry basis (circle one) hold at montrose
		B			
016-AQS-149228-M18-013	Repro Inlet, M18, Run 3, Primary	S	6/29/17	1531	(wet) or dry basis (circle one)
		B			
016-AQS-149228-M18-014	Repro Inlet, M18, Run 3, Backup	S	6/29/17	1531	(wet) or dry basis (circle one) hold at montrose
		B			
016-AQS-149228-M18-015	Repro Inlet, M18, Run 4, Primary	S	6/29/17	1850	(wet) or dry basis (circle one)
		B			
016-AQS-149228-M18-016	Repro Inlet, M18, Run 4, Backup	S	6/29/17	1850	(wet) or dry basis (circle one) hold at montrose
		B			

S= Sealed, B= Broken

Submitted by:	Date: 6/30/17	Received by:	Date: 6/30/17
Relinquished by:	Date: 6/30/17	Received by:	Date: 7/1/17
Relinquished by:	Date:	Received by:	Date:
Relinquished by:	Date:	Received by:	Date:

Inlet Primary only

Lab Instructions: Analyze samples per the method

Were all seals intact? <input checked="" type="checkbox"/> Yes / No	(Describe seal & reasoning in Remarks)	Remarks: good
Were all liquids at marked levels <input checked="" type="checkbox"/> Yes / No	(Estimate loss in Remarks) <u>MT</u>	
Received by Sample Custodian:	Date: 7/3/17	
(Full Signature)	(Date)	(Time) <u>900</u>

Montrose Environmental Air Quality Services - Avogadro Environmental Corporation - (MAQS - Easton)

Method 18 (M18) Record of Custody

Project Name: KEMS / Aluf Plastics
 Project Number: 016-AQS-149228

City / State: Orangeburg, NY
 Sample ID Format: Project #-Method-Sequential

Sample ID	Sample Description	S/B	Signature	Date	Time	Notes
016-AQS-149228-M18-017	Repro Outlet , M18, Run 1, Primary	S		6/29/17	1531	<input checked="" type="radio"/> wet or dry basis (circle one)
		B				
016-AQS-149228-M18-018	Repro Outlet , M18, Run 1, Backup	S		6/29/17	1531	<input checked="" type="radio"/> wet or dry basis (circle one) hold at montrose
		B				
016-AQS-149228-M18-019	Repro Outlet , M18, Run 2 Primary ② 5	S		6/29/17	1948	<input checked="" type="radio"/> wet or dry basis (circle one)
		B				
016-AQS-149228-M18-020	Repro Outlet , M18, Run 2 Backup 5	S		6/29/17	1948	<input checked="" type="radio"/> wet or dry basis (circle one) hold at montrose
		B				
016-AQS-149228-M18-021	Repro Outlet , M18, Run 3, Primary Bag torn	S		6/29/17	1737	<input checked="" type="radio"/> wet or dry basis (circle one)
		B				
016-AQS-149228-M18-022	Repro Outlet , M18, Run 3, Backup	S		6/29/17	1737	<input checked="" type="radio"/> wet or dry basis (circle one) hold at montrose
		B				
016-AQS-149228-M18-023	Repro Outlet , M18, Run 4, Primary	S		6/29/17	1850	<input checked="" type="radio"/> wet or dry basis (circle one)
		B				
016-AQS-149228-M18-024	Repro Outlet , M18, Run 4, Backup	S		6/29/17	1850	<input checked="" type="radio"/> wet or dry basis (circle one) hold at montrose
		B				

S= Sealed, B= Broken

Submitted by:	Date: 6/30/17	Received by:	Date: 6/30/17
Relinquished by:	Date: 6/30/17	Received by:	Date: 7/1/17 Primaries Only
Relinquished by:	Date:	Received by:	Date:
Relinquished by:	Date:	Received by:	Date:

Lab Instructions: Analyze samples per the method

Were all seals intact? <input checked="" type="radio"/> Yes / No	(Describe seal & reasoning in Remarks) NA	Remarks: P3 1 st vial torn by package
Were all liquids at marked levels Yes / No	(Estimate loss in Remarks) NA	
Received by Sample Custodian:	Date: 7/3/17	
(Full Signature)	(Date)	(Time) 906

Montrose Environmental Air Quality Services - Avogadro Environmental Corporation - (MAQS - Easton)

Method 18 (M18) Record of Custody

Project Name: KEMS / Aluf Plastics
 Project Number: 016-AQS-149228

City / State: Orangeburg, NY
 Sample ID Format: Project #-Method-Sequential

Sample ID	Sample Description	Signature	Date	Time	Notes
		S			wet or dry basis (circle one)
		B			
		S			wet or dry basis (circle one) hold at montrose
		B			
		S			wet or dry basis (circle one)
		B			
		S			wet or dry basis (circle one) hold at montrose
		B			
016-AQS-149228-M18-021A	Repro Outlet, M18, Run 3, Primary	<i>[Signature]</i>	7/3/17	0900	wet or dry basis (circle one)
		S			wet or dry basis (circle one) hold at montrose
		B			
		S			wet or dry basis (circle one)
		B			
		S			wet or dry basis (circle one) hold at montrose
		B			

S= Sealed, B= Broken

Submitted by: <i>[Signature]</i>	Date: 7/3/17	Received by: <i>[Signature]</i>	Date: 7/3/17 9:03
Relinquished by:	Date:	Received by:	Date:
Relinquished by:	Date:	Received by:	Date:
Relinquished by:	Date:	Received by:	Date:
Relinquished by:	Date:	Received by:	Date:

Lab Instructions: Analyze samples per the method

Were all seals intact? Yes / No (Describe seal & reasoning in Remarks)	Remarks: Good condition Ambient T° MWH 7/5/17
Were all liquids at marked levels Yes / No (Estimate loss in Remarks)	
Received by Sample Custodian: <i>[Signature]</i> 7/5/17 0830	
(Full Signature) (Date) (Time)	

Montrose Environmental Air Quality Services - Avogadro Environmental Corporation - (MAQS - Easton)

TO-15 (HAPS) Record of Custody

Project Name: KEMS / Aluf Plastics
 Project Number: 016-AQS-149228

City / State: Orangeburg, NY
 Sample ID Format: Project #-Method-Sequential

Sample ID	Sample Description	Signature	Date	Time	Notes
016-AQS-149228-TO-15-001	IBC Retail Outlet , TO-15, Run 1, Tank # —	S			VOID
		B			
016-AQS-149228-TO-15-002	IBC Retail Outlet , TO-15, Run 2, Tank # 1043	S	6/28/17	1527	10:45 - 11:46
		B			
016-AQS-149228-TO-15-003	IBC Retail Outlet , TO-15, Run 3, Tank # 1011	S	6/28/17	1527	12:35 - 13:35
		B			
016-AQS-149228-TO-15-004	IBC Retail Outlet , TO-15, Run 4, Tank # 1059	S	6/28/17	1527	14:15 - 15:15
		B			

S= Sealed, B= Broken

Submitted by:	Date: 6-28-17	Received by:	Date: 6/30/17
Relinquished by:	Date: 7/3/17	Received by:	Date: 7/3/17 903
Relinquished by:	Date:	Received by:	Date:
Relinquished by:	Date:	Received by:	Date:
Relinquished by:	Date:	Received by:	Date:

Lab Instructions: Analyze samples per the method			
Were all seals intact? Yes / No (Describe seal & reasoning in Remarks)			Remarks: Good condition Ambient to MWT 7/5/17
Were all liquids at marked levels Yes / No (Estimate loss in Remarks)			
Received by Sample Custodian: 	Date: 7/5/17	Time: 0830	
(Full Signature)	(Date)	(Time)	

Montrose Environmental Air Quality Services - Avogadro Environmental Corporation - (MAQS - Easton)

TO-15 (HAPS) Record of Custody

Project Name: KEMS / Aluf Plastics
 Project Number: 016-AQS-149228

City / State: Orangeburg, NY
 Sample ID Format: Project #-Method-Sequential

Sample ID	Sample Description	Signature	Date	Time	Notes
016-AQS-149228-TO-15-005	Repro Outlet, TO-15, Run 1, Tank # 1198	S	6/29/17	1237	1020-1120
		B			
016-AQS-149228-TO-15-006	Repro Outlet, TO-15, Run 3 Tank # 1343 Run 4	S	6/29/17	1830	16:05-17:00
		B			
016-AQS-149228-TO-15-007	Repro Outlet, TO-15, Run 3, Tank # 1343 1359	S	6/29/17	1830	14:15-15:00
		B			
016-AQS-149228-TO-15-008	Repro Outlet, TO-15, Run 3 Tank # 1335	S	6/29/17	1920	17:45- 18:40
		B			

S= Sealed, B= Broken

Submitted by: <i>JW</i>	Date: 6/30/17	Received by: <i>[Signature]</i>	Date: 6/30/17
Relinquished by: <i>[Signature]</i>	Date: 7/3/17	Received by: <i>[Signature]</i>	Date: 7/3/17 903
Relinquished by:	Date:	Received by:	Date:
Relinquished by:	Date:	Received by:	Date:
Relinquished by:	Date:	Received by:	Date:

Lab Instructions: Analyze samples per the method

Were all seals intact? Yes / No (Describe seal & reasoning in Remarks)	Remarks: Good condition. Ambient TO MWH 7/5/17	
Were all liquids at marked levels Yes / No (Estimate loss in Remarks)		
Received by Sample Custodian: <i>Matthew Hill</i>		
(Full Signature)	Date: 7/5/17	Time: 0830

Montrose Environmental Air Quality Services - Avogadro Environmental Corporation - (MAQS - Easton)

* Run 2 Do Not Analyze - VOID Tank # 1169 *APP*

SW846-0011 (Aldehydes/Ketones) Record of Custody

Project Name: KEMS / Aluf Plastics
 Project Number: 016-AQS-149228

City / State: Orangeburg, NY
 Sample ID Format: Project #-Method-Sequential

Sample ID	Sample Description	S	Signature	Date	Time	Notes
016-AQS-149228-SW846-0011-001	IBC Retail Outlet, SW846-0011, Run 1	S	<i>[Signature]</i>	6/28/17	14:02	Run was voided
		B				
016-AQS-149228-SW846-0011-002	IBC Retail Outlet, SW846-0011, Run 2	S	<i>[Signature]</i>	6/28/17	14:02	950 mL (G)
		B				
016-AQS-149228-SW846-0011-003	IBC Retail Outlet, SW846-0011, Run 3	S	<i>[Signature]</i>	6/28/17	1546	950 mL (G)
		B				
016-AQS-149228-SW846-0011-004	IBC Retail Outlet, SW846-0011, Run 4	S	<i>[Signature]</i>	6/28/17	1635	950 mL (G)
		B				

S= Sealed, B= Broken

Submitted by: <i>[Signature]</i>	Date: 6/30/17	Received by: <i>[Signature]</i>	Date: 6/30/17
Relinquished by: <i>[Signature]</i>	Date: 7/3/17	Received by: <i>[Signature]</i>	Date: 7/3/17 503
Relinquished by:	Date:	Received by:	Date:
Relinquished by:	Date:	Received by:	Date:
Relinquished by:	Date:	Received by:	Date:

Lab Instructions: Analyze samples per the method			
Were all seals intact?	Yes / No	(Describe seal & reasoning in Remarks)	Remarks: Good condition. 6.10C (G) MMH 6/27/17 MMH 7/5/17
Were all liquids at marked levels	Yes / No	(Estimate loss in Remarks)	
Received by Sample Custodian:	<i>[Signature]</i>	7/5/17 0830	
	(Full Signature)	(Date)	(Time)

Montrose Environmental Air Quality Services - Avogadro Environmental Corporation - (MAQS - Easton)

SW846-0011 (Aldehydes/Ketones) [↑] Record of Custody

Project Name: KEMS / Aluf Plastics
 Project Number: 016-AQS-149228

City / State: Orangeburg, NY
 Sample ID Format: Project #-Method-Sequential

Sample ID	Sample Description		Signature	Date	Time	Notes
016-AQS-149228-SW846-0011-005	Repro Outlet, SW846-0011, Run 1	S		6/20/17	1315	950 mL (G)
		B				
016-AQS-149228-SW846-0011-006	Repro Outlet, SW846-0011, Run 2 ^{1/3}	S		6/20/17	1541	950 mL (G)
		B				
016-AQS-149228-SW846-0011-007	Repro Outlet, SW846-0011, Run 3	S		6/29/17	1810	950 mL (G)
		B				
016-AQS-149228-SW846-0011-008	Repro Outlet, SW846-0011, Run 4	S		6/29/17	1842	950 mL (G)
		B				

S= Sealed, B= Broken

Submitted by:	Date: 6/30/17	Received by:	Date: 6/30/17
Relinquished by:	Date: 7/3/17	Received by:	Date: 7/3/17 503
Relinquished by:	Date:	Received by:	Date:
Relinquished by:	Date:	Received by:	Date:
Relinquished by:	Date:	Received by:	Date:

Lab Instructions: Analyze samples per the method

Were all seals intact? Yes / No (Describe seal & reasoning in Remarks)	Remarks: Good condition. 6.1°C (G) MWH 7/5/17
Were all liquids at marked levels Yes / No (Estimate loss in Remarks)	
Received by Sample Custodian: 7/5/17 0830	
(Full Signature) (Date) (Time)	

Montrose Environmental Air Quality Services - Avogadro Environmental Corporation - (MAQS - Easton)

SW846-0011 (Aldehydes/Ketones) Record of Custody

Project Name: KEMS / Aluf Plastics
 Project Number: 016-AQS-149228

City / State: Orangeburg, NY
 Sample ID Format: Project #-Method-Sequential

Sample ID	Sample Description	Signature	Date	Time	Notes
016-AQS-149228- SW846-0011-009	SW846-0011, SAMPLE BLANK (DNPH / MeCl)	S	6/29/17	1849	98 mL (G)
		B			
016-AQS-149228 SW846-0011-010 (TW)	SW846-0011 Repro Outlet - Run 5 (TW)	S			
		B			
		S			
		B			
		S			
		B			

S= Sealed, B= Broken

Submitted by: <u>Tsw</u>	Date: <u>6/30/17</u>	Received by: <u>JP</u>	Date: <u>6/30/17</u>
Relinquished by: <u>JP</u>	Date: <u>7/3/17</u>	Received by: <u>Shawn S. Egan</u>	Date: <u>7/3/17 903</u>
Relinquished by:	Date:	Received by:	Date:
Relinquished by:	Date:	Received by:	Date:
Relinquished by:	Date:	Received by:	Date:

Lab Instructions: Analyze samples per the method			
Were all seals intact?	Yes / No	(Describe seal & reasoning in Remarks)	
Were all liquids at marked levels?	Yes / No	(Estimate loss in Remarks)	
Received by Sample Custodian:	<u>Walter Hill</u>	<u>7/5/17</u>	<u>0830</u>
	(Full Signature)	(Date)	(Time)
			Remarks: <u>Good condition</u> <u>6.1°C (G)</u> <u>mwh</u> <u>7/5/17</u>

Montrose Environmental Air Quality Services - Avogadro Environmental Corporation - (MAQS - Easton)

Raw Data

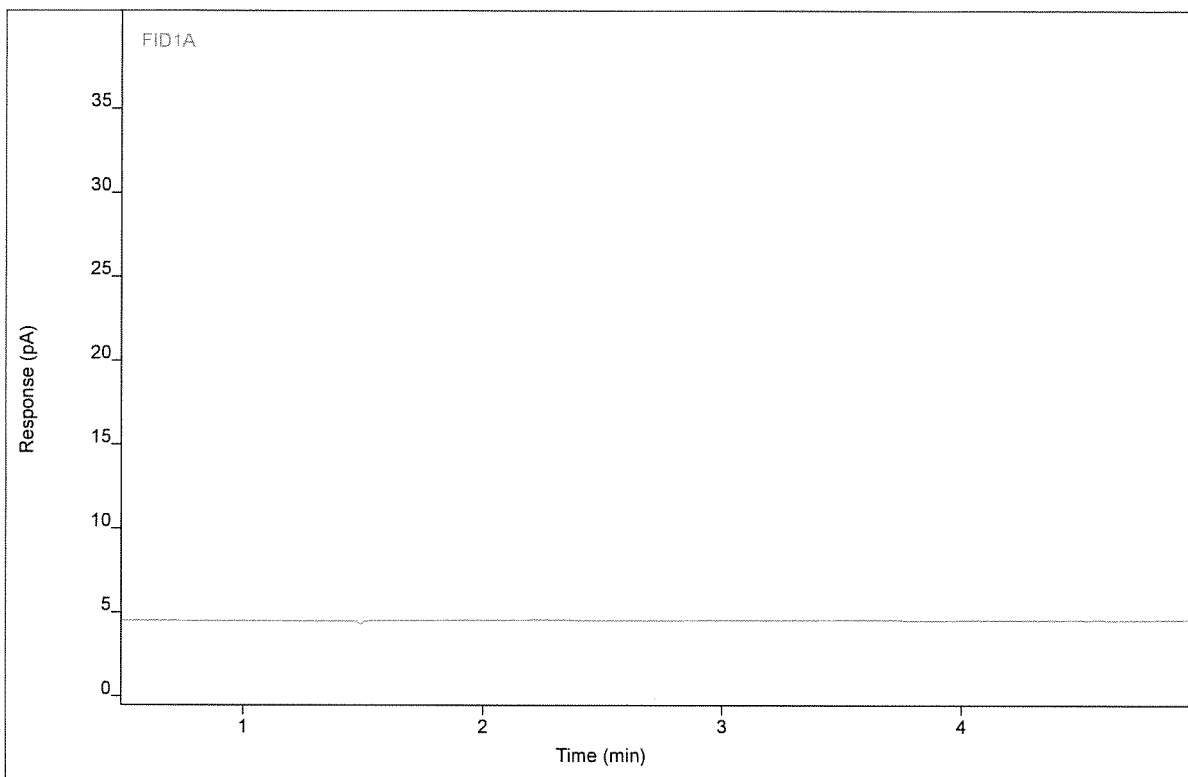


Chromatogram Report

Enthalpy Analytical

Sample Name zero air blank #LB
Sequence Name GUMMOP1047 ver.1
Inj Data File 008F1501.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/29/2017 2:02 AM
File Modified 6/30/2017 3:39 PM
Instrument
Operator Ben Prothe

Sample Type Control
Vial Number Vial 8
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/6/2017 2:03 PM



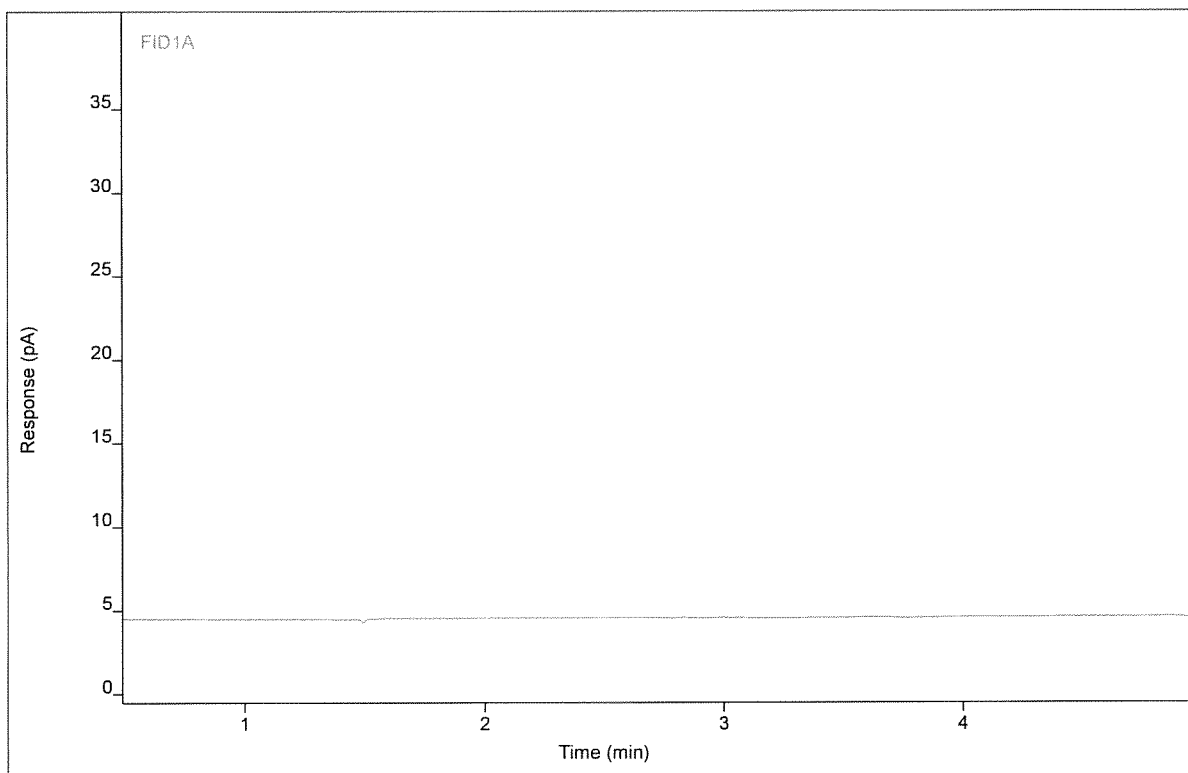
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein		(3.45)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name zero air blank #LB
Sequence Name GUMMOP1047 ver.1
Inj Data File 008F1502.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/29/2017 2:18 AM
File Modified 6/30/2017 3:39 PM
Instrument
Operator Ben Prothe

Sample Type Control
Vial Number Vial 8
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/6/2017 2:03 PM



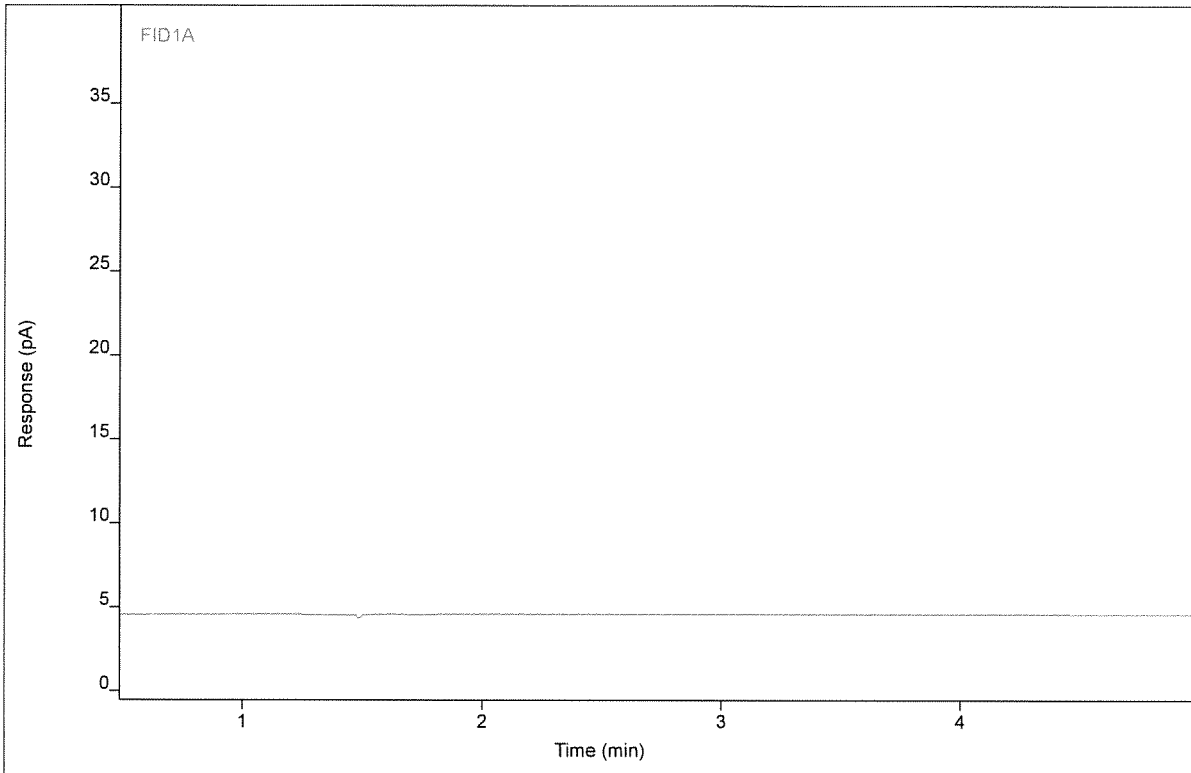
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein		(3.45)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name zero air blank #LB
Sequence Name GUMMOP1047 ver.1
Inj Data File 008F1503.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/29/2017 2:34 AM
File Modified 6/30/2017 3:39 PM
Instrument
Operator Ben Prothe

Sample Type Control
Vial Number Vial 8
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/6/2017 2:03 PM



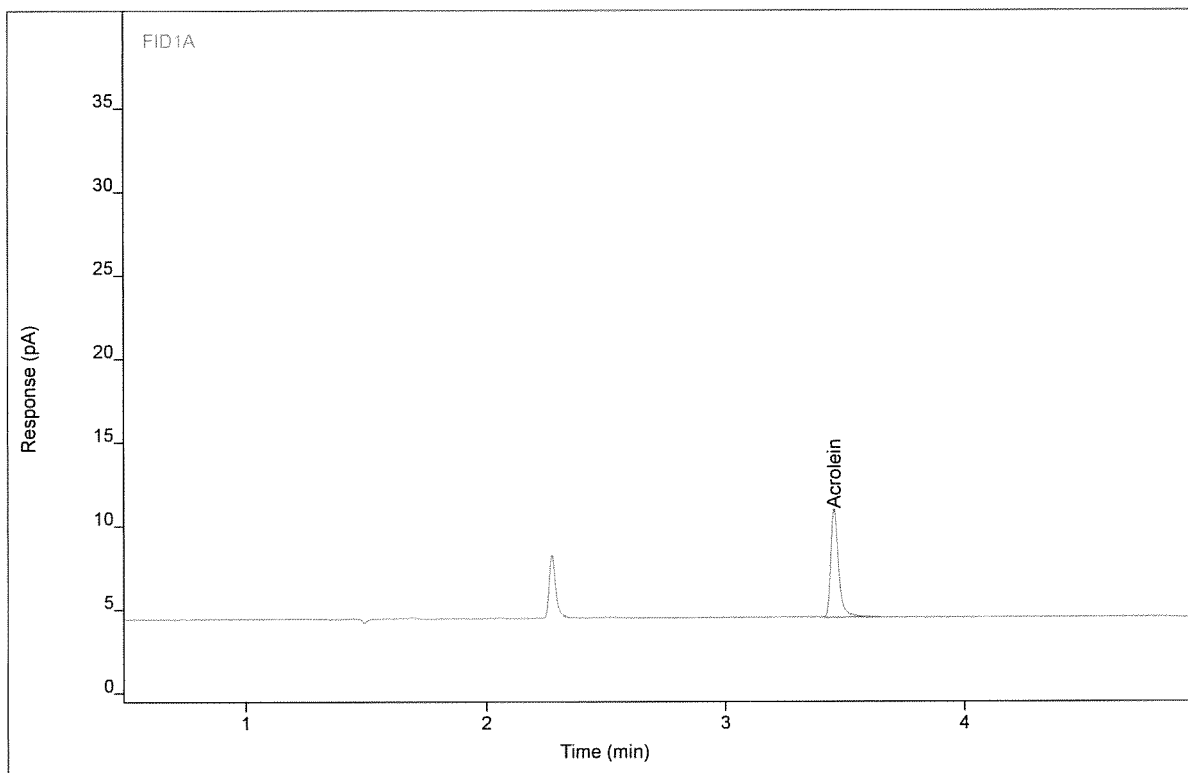
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein		(3.45)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop980 #AA2 ENV(1=800,4=200)
Sequence Name GUMMOP1047 ver.1
Inj Data File 016F1702.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/29/2017 7:53 AM
File Modified 6/30/2017 3:39 PM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 2 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/6/2017 2:03 PM



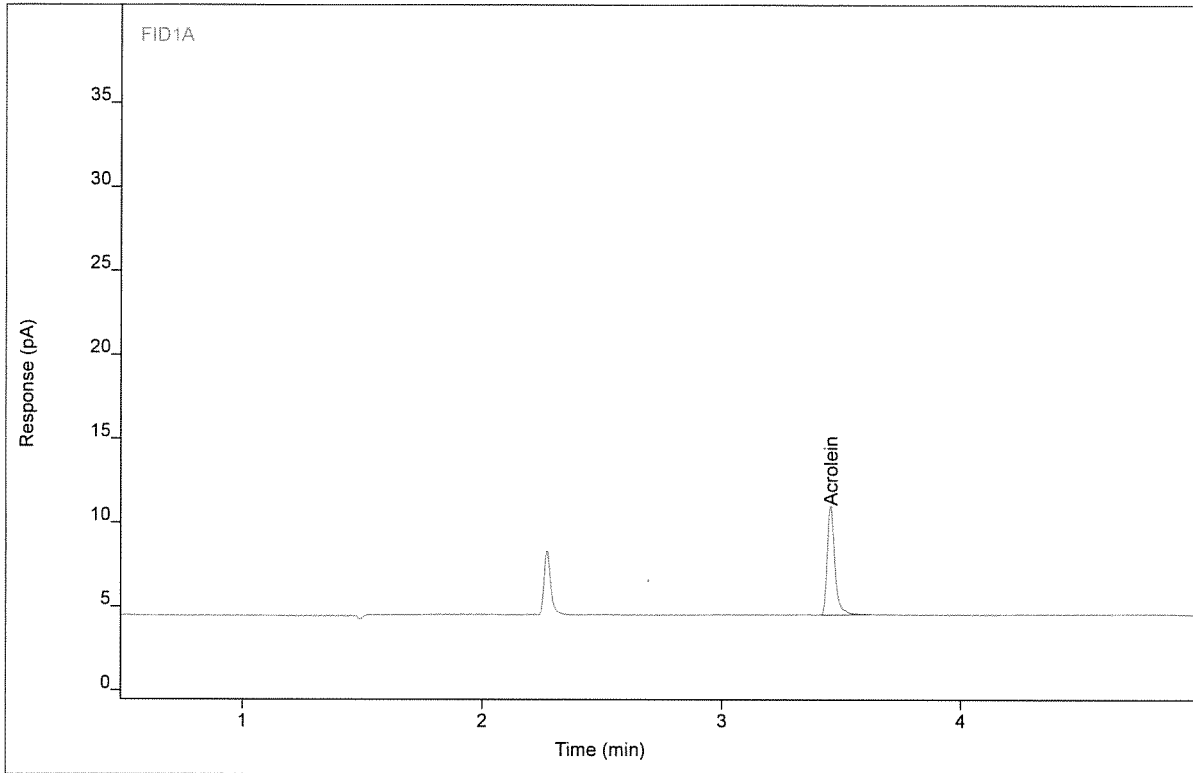
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	BB	3.46	14.8428	6.51280	50.0773	1	50.0773	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop980 #AA2 ENV(1=800,4=200)
Sequence Name GUMMOP1047 ver.1
Inj Data File 016F1703.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/29/2017 8:11 AM
File Modified 6/30/2017 3:40 PM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 3 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/6/2017 2:03 PM



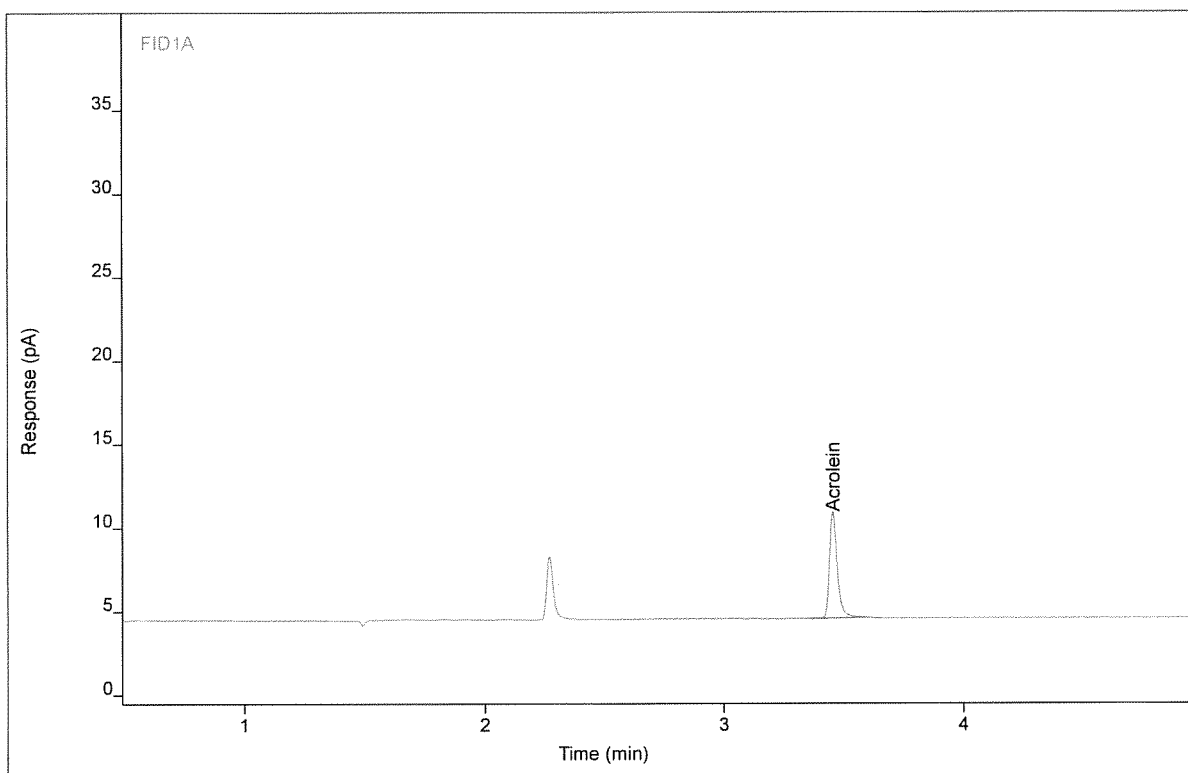
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	BB	3.46	14.7380	6.52424	49.7291	1	49.7291	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop980 #AA2 ENV(1=800,4=200)
Sequence Name GUMMOP1047 ver.1
Inj Data File 016F1704.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/29/2017 8:29 AM
File Modified 6/30/2017 3:40 PM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 4 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/6/2017 2:03 PM



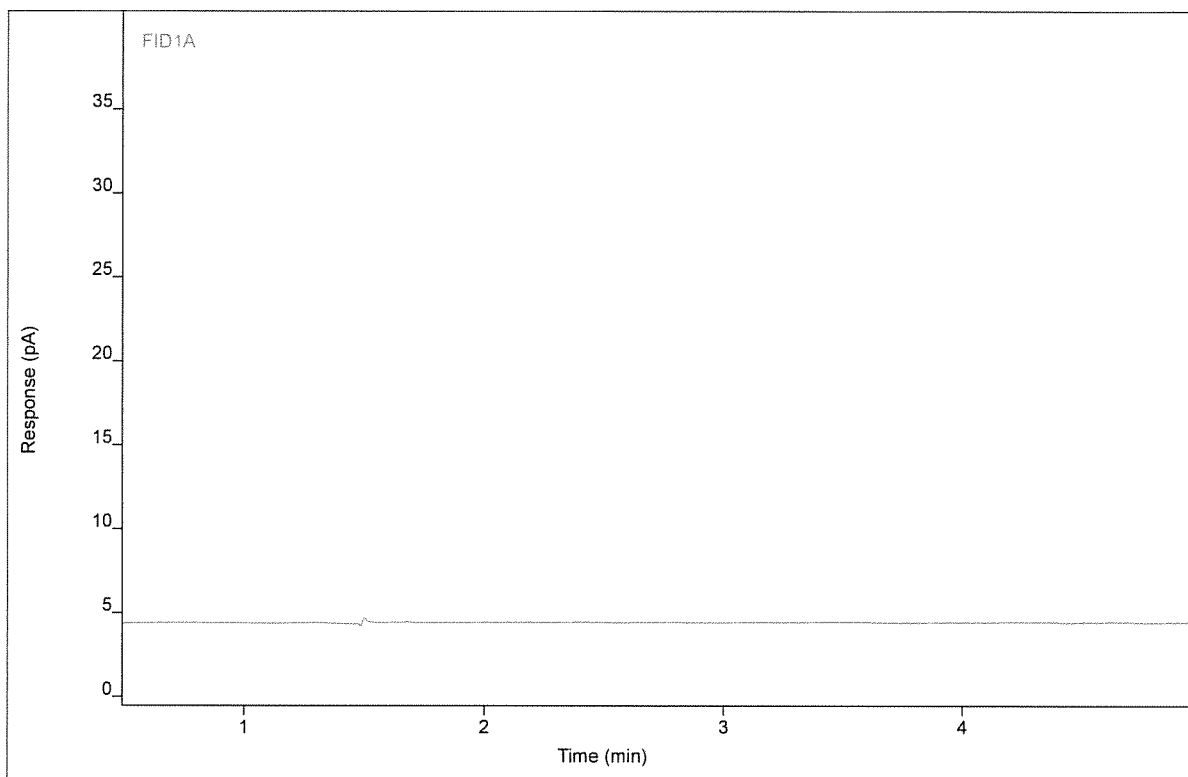
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	VB	3.46	14.3074	6.36600	48.2977	1	48.2977	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.IBC Retail Outlet Run 2.Bag
Sequence Name GUMMOP1048 ver.2
Inj Data File 003F0101.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/29/2017 9:03 AM
File Modified 7/6/2017 10:27 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 3
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/6/2017 2:03 PM



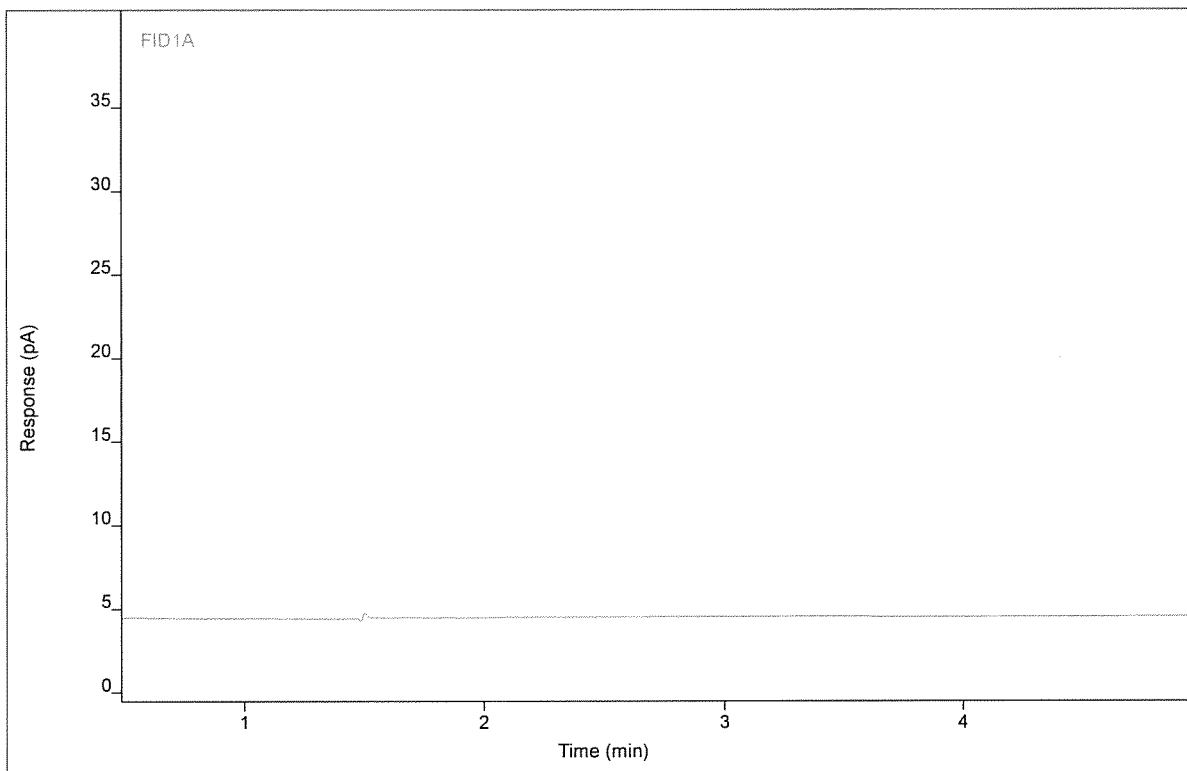
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein		(3.45)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.IBC Retail Outlet Run 2.Bag
Sequence Name GUMMOP1048 ver.2
Inj Data File 003F0102.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/29/2017 9:19 AM
File Modified 7/6/2017 10:27 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 3
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/6/2017 2:03 PM



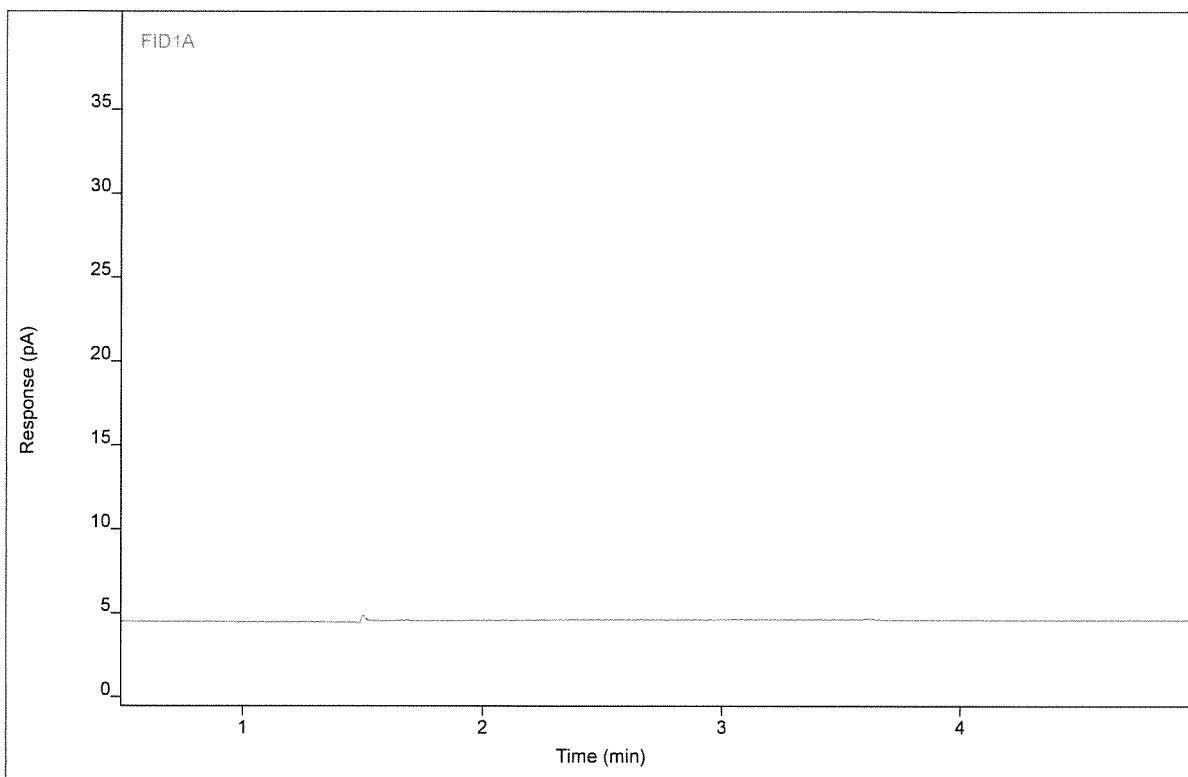
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein		(3.45)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.IBC Retail Outlet Run 2.Bag
Sequence Name GUMMOP1048 ver.2
Inj Data File 003F0103.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/29/2017 9:35 AM
File Modified 7/6/2017 10:27 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 3
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/6/2017 2:03 PM



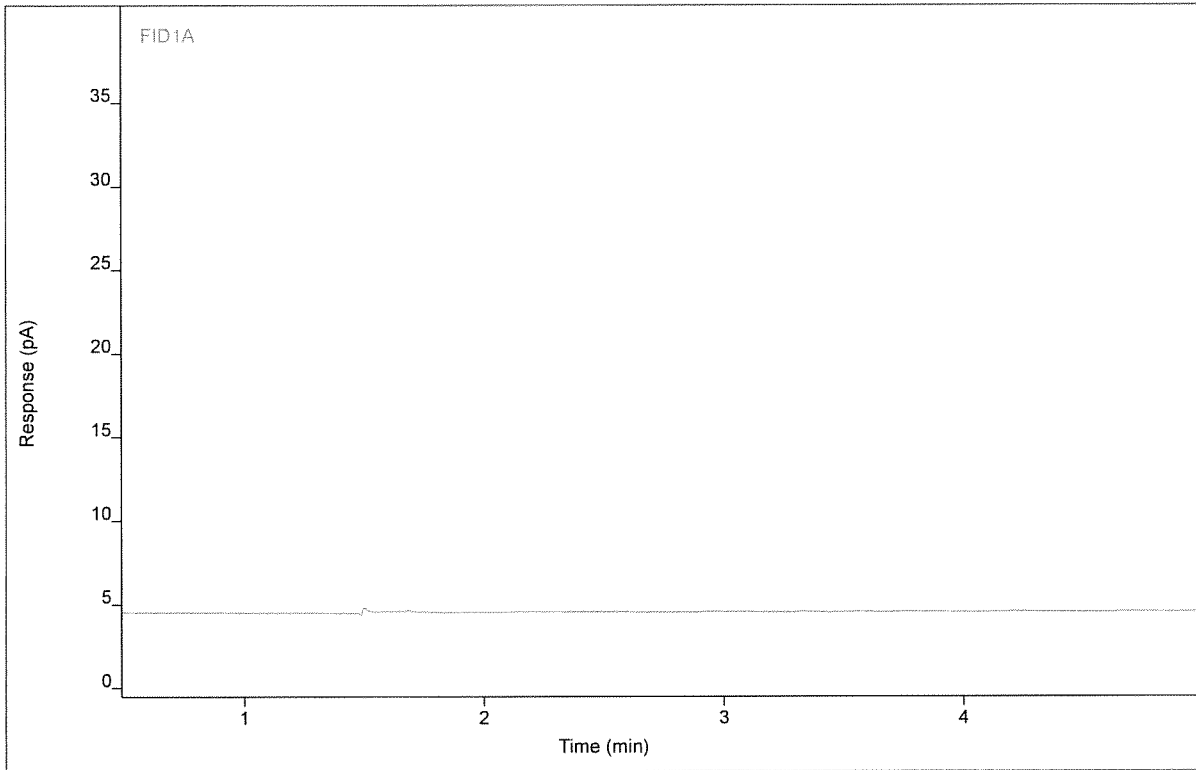
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein		(3.45)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.IBC Retail Outlet Run 3.Bag
Sequence Name GUMMOP1048 ver.2
Inj Data File 007F0201.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/29/2017 9:51 AM
File Modified 7/6/2017 10:27 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 7
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/6/2017 2:03 PM



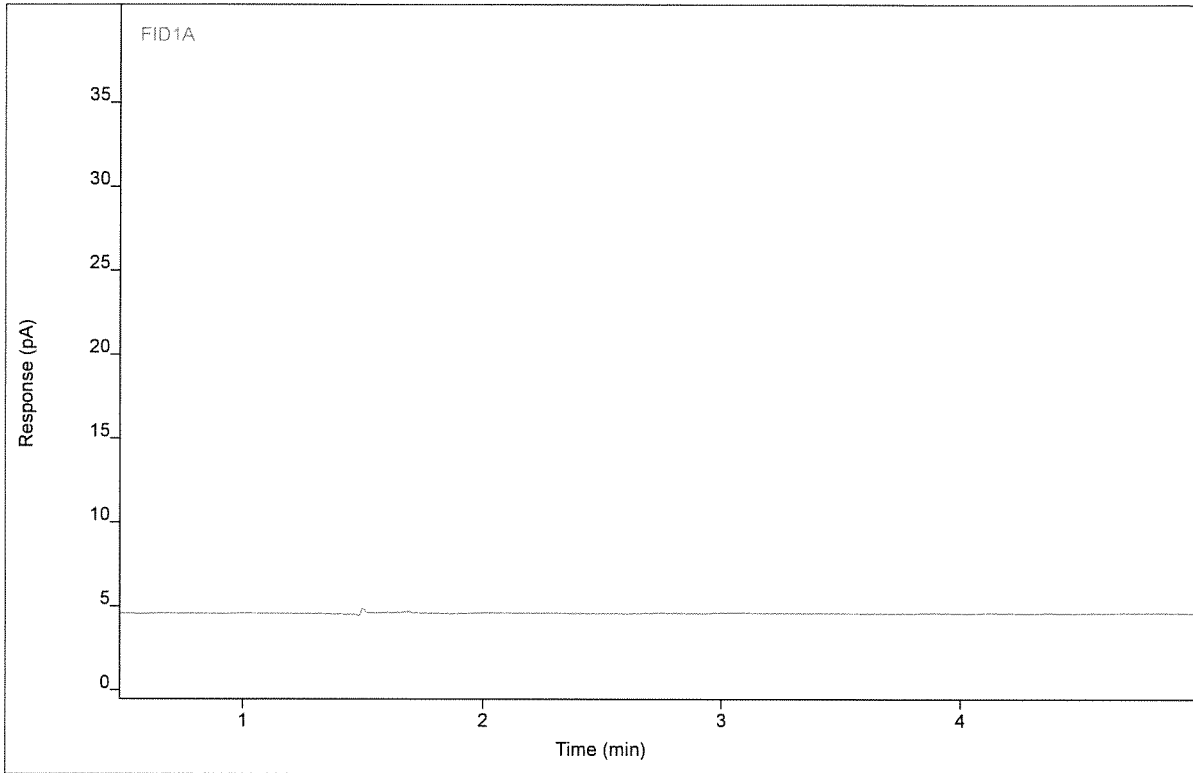
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein		(3.45)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.IBC Retail Outlet Run 3.Bag
Sequence Name GUMMOP1048 ver.2
Inj Data File 007F0202.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/29/2017 10:07 AM
File Modified 7/6/2017 10:27 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 7
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/6/2017 2:03 PM



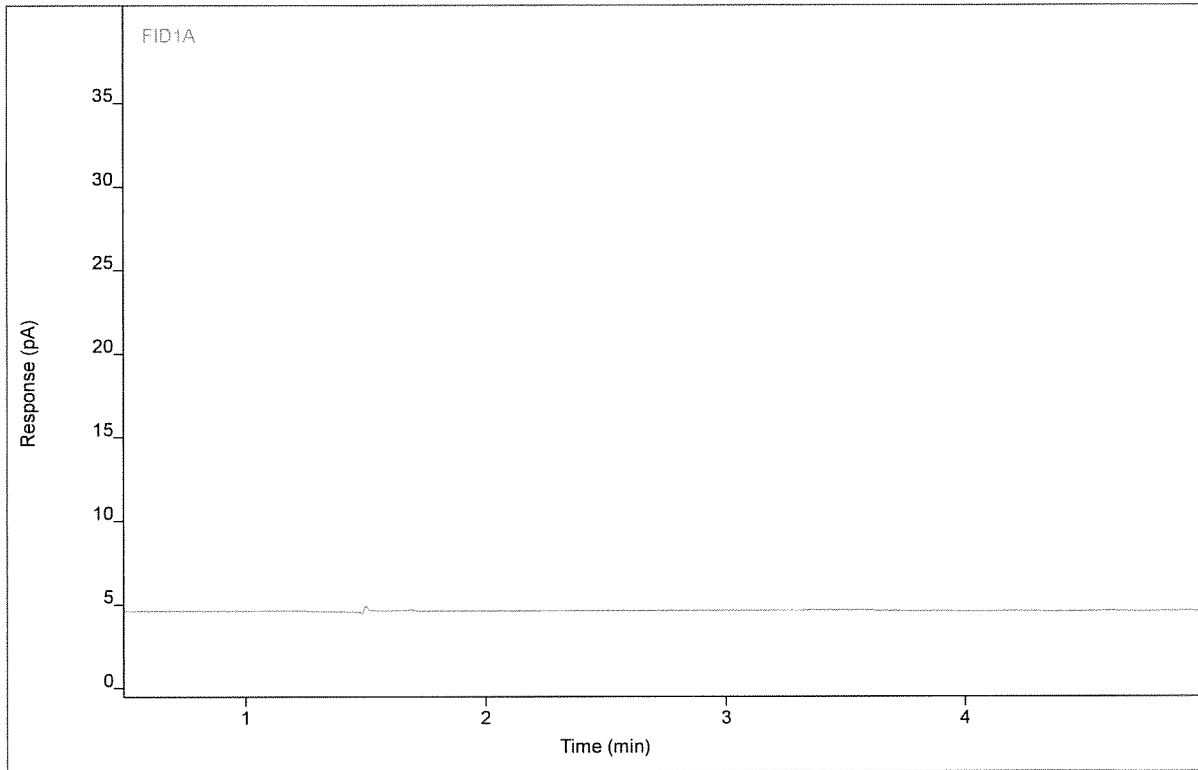
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein		(3.45)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.IBC Retail Outlet Run 3.Bag
Sequence Name GUMMOP1048 ver.2
Inj Data File 007F0203.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/29/2017 10:23 AM
File Modified 7/6/2017 10:27 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 7
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/6/2017 2:03 PM



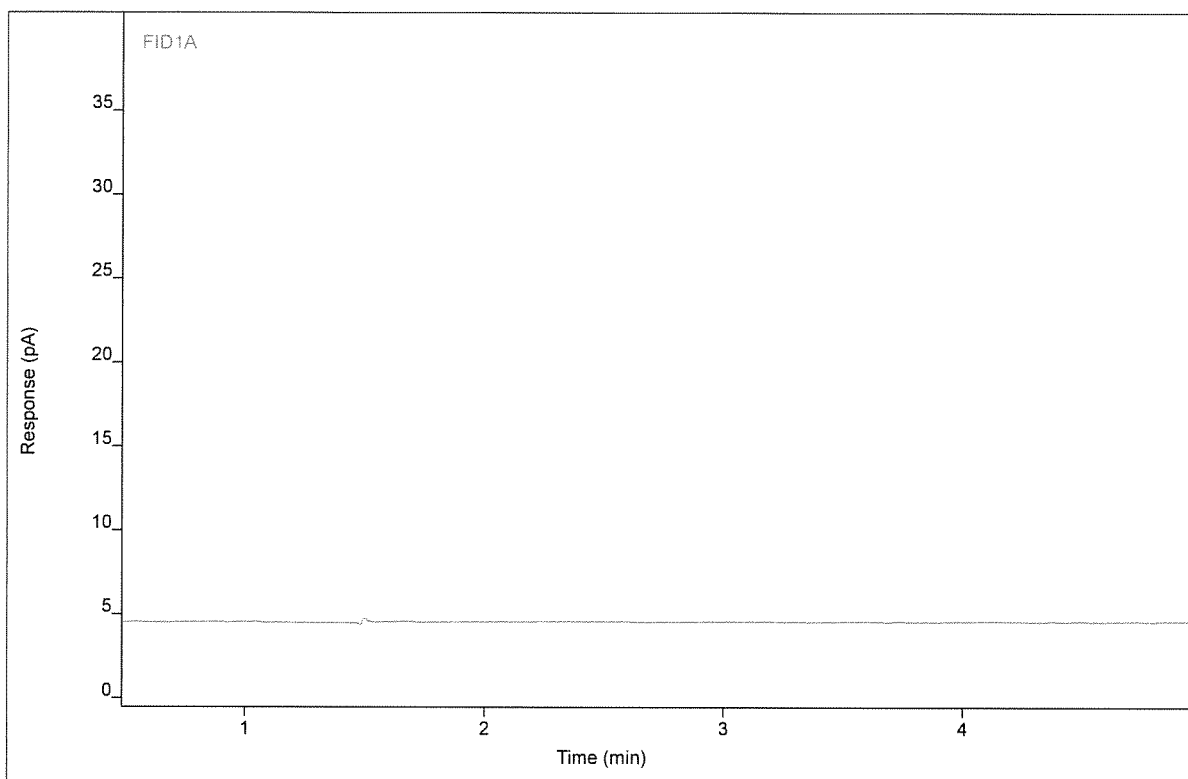
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein		(3.45)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.IBC Retail Outlet Run 4.Bag
Sequence Name GUMMOP1048 ver.2
Inj Data File 013F0301.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/29/2017 10:39 AM
File Modified 7/6/2017 10:27 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 13
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/6/2017 2:03 PM



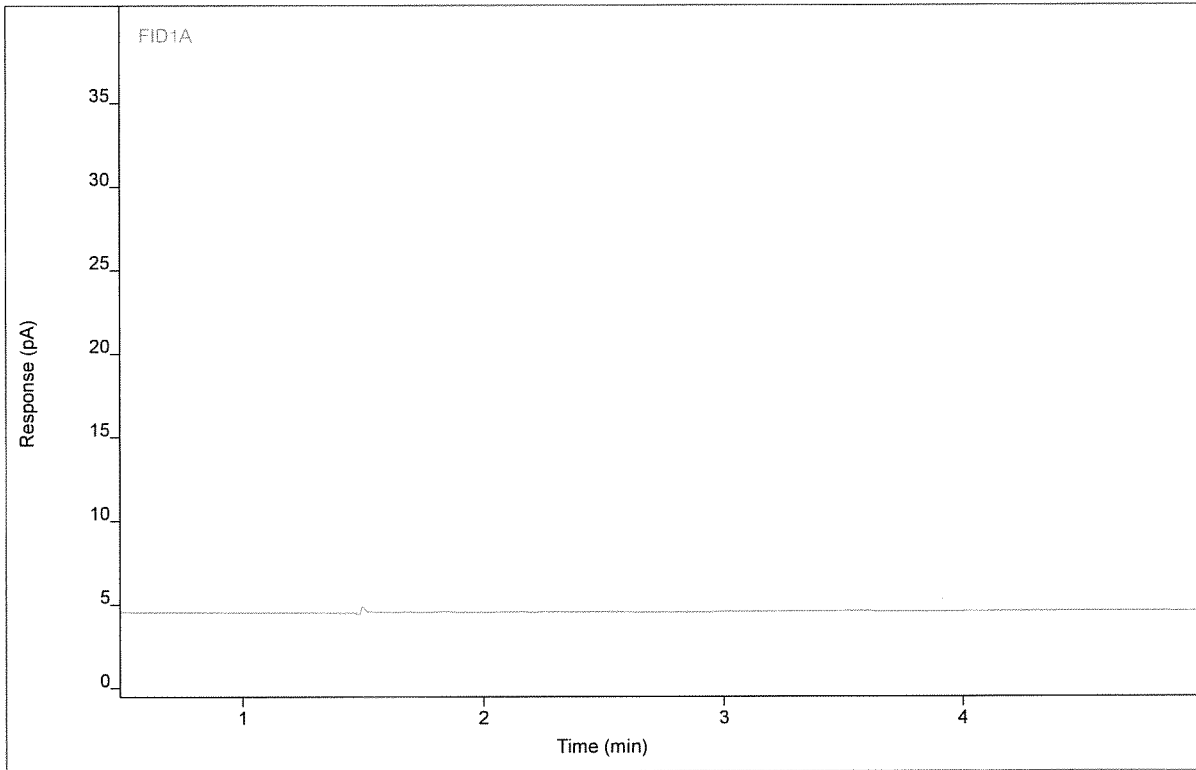
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein		(3.45)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.IBC Retail Outlet Run 4.Bag
Sequence Name GUMMOP1048 ver.2
Inj Data File 013F0302.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/29/2017 10:55 AM
File Modified 7/6/2017 10:27 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 13
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/6/2017 2:03 PM



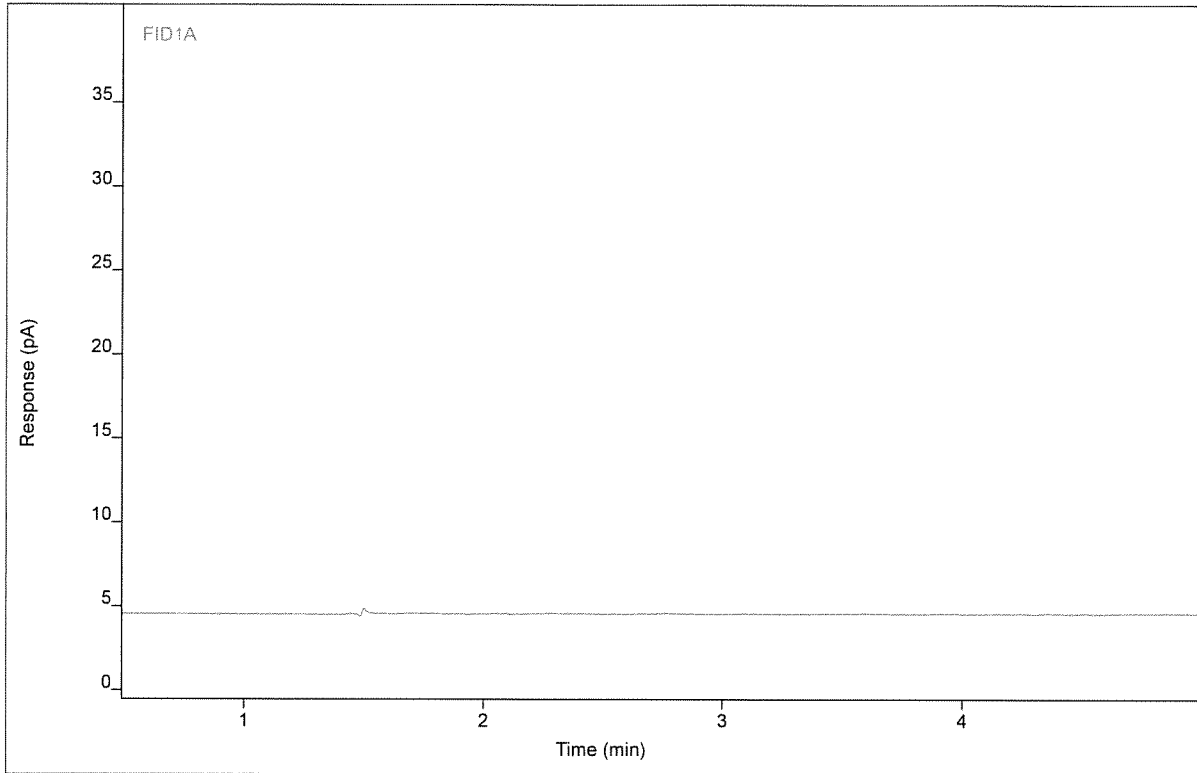
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein		(3.45)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.IBC Retail Outlet Run 4.Bag
Sequence Name GUMMOP1048 ver.2
Inj Data File 013F0303.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/29/2017 11:11 AM
File Modified 7/6/2017 10:27 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 13
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/6/2017 2:03 PM



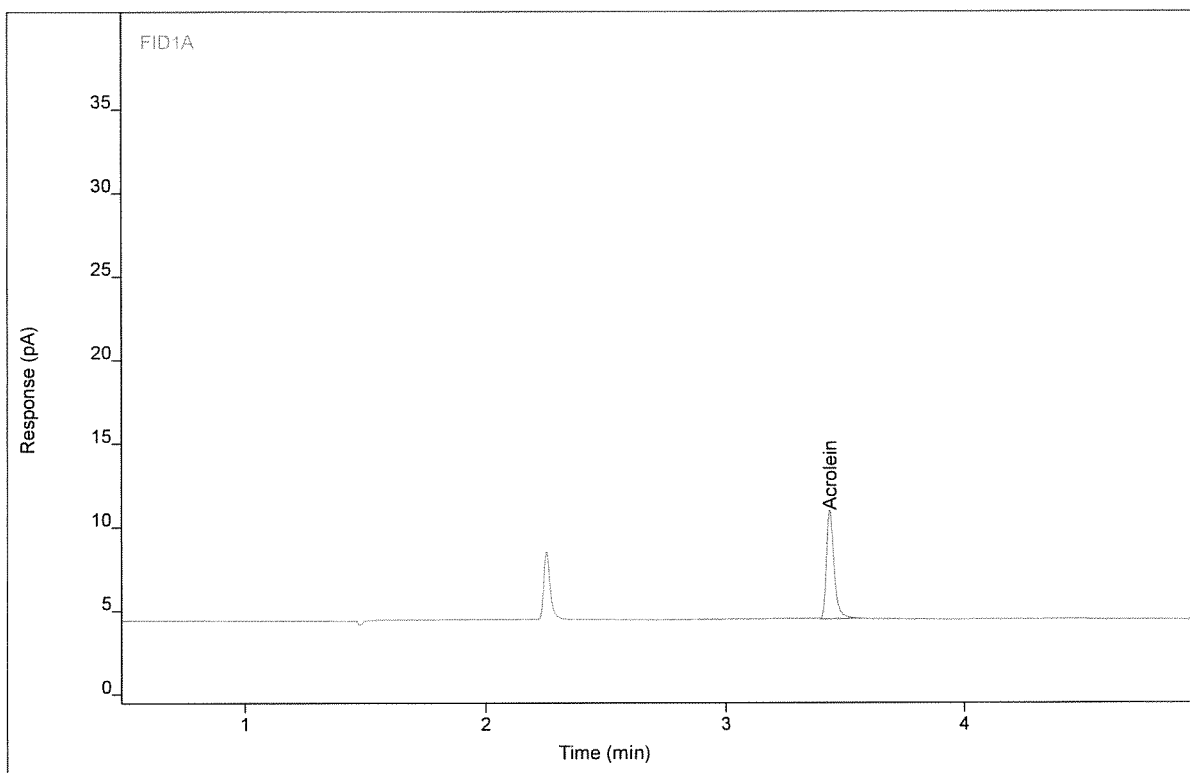
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein		(3.45)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop980 #AA2 ENV(1=800,4=200)
Sequence Name GUMMOP1048 ver.2
Inj Data File 016F1402.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/29/2017 3:39 PM
File Modified 7/6/2017 10:28 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 2 of 4
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/6/2017 2:03 PM



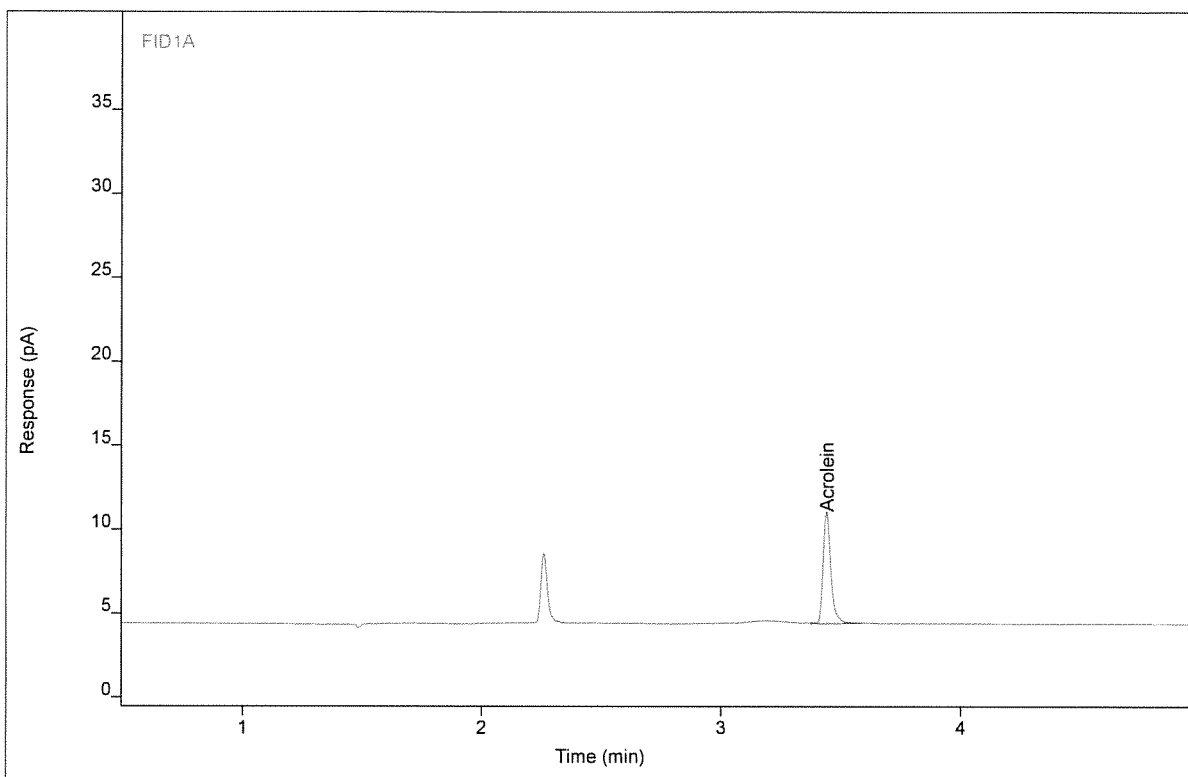
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	BB	3.44	14.5288	6.52513	49.0338	1	49.0338	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop980 #AA2 ENV(1=800,4=200)
Sequence Name GUMMOP1048 ver.2
Inj Data File 016F1403.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/29/2017 3:49 PM
File Modified 7/6/2017 10:28 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 3 of 4
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/6/2017 2:03 PM



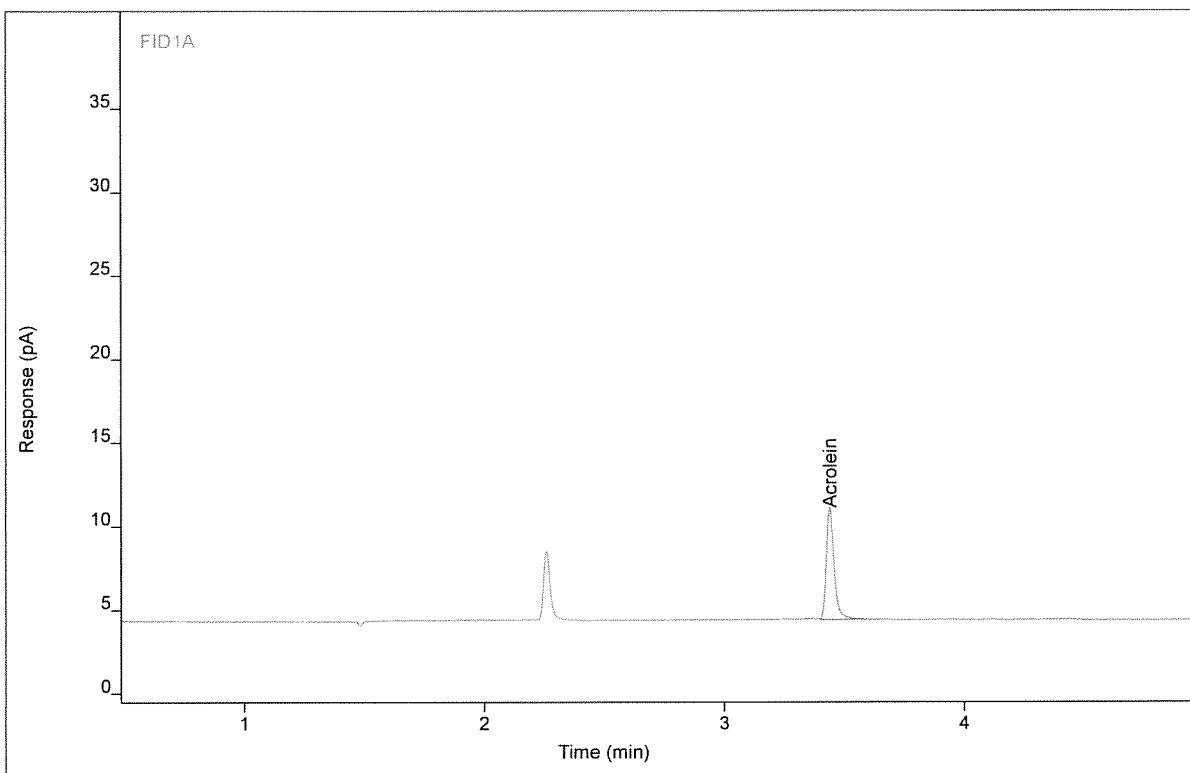
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	VB	3.44	14.9459	6.67067	50.4202	1	50.4202	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop980 #AA2 ENV(1=800,4=200)
Sequence Name GUMMOP1048 ver.2
Inj Data File 016F1404.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/29/2017 3:58 PM
File Modified 7/6/2017 10:29 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 4 of 4
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/6/2017 2:03 PM



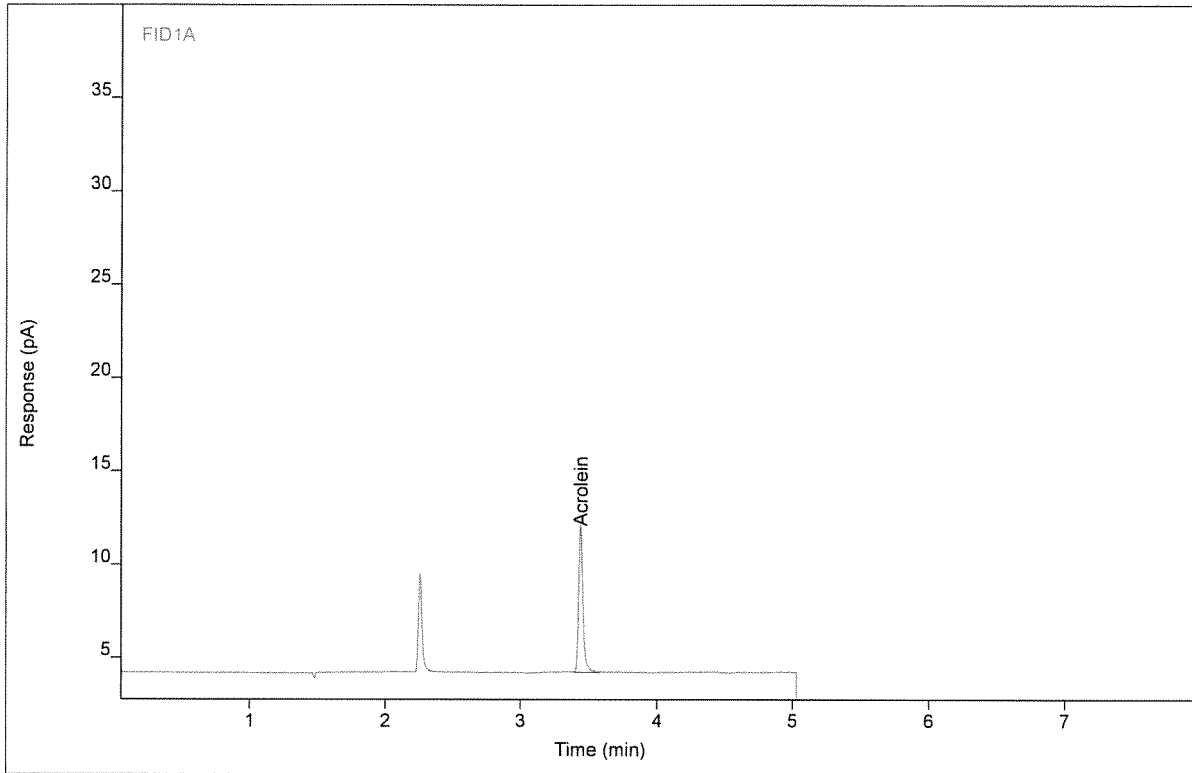
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	BB	3.44	14.9522	6.69630	50.4409	1	50.4409	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop1075 #AA2 ENV(1=800,5=200)
Sequence Name GUMMOP1079 ver.3
Inj Data File 016F0902.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/28/2017 2:31 AM
File Modified 8/1/2017 7:36 AM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 2 of 4
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP1075F_AA.M
Method Modified 7/31/2017 10:07 AM
Printed 8/2/2017 2:53 PM



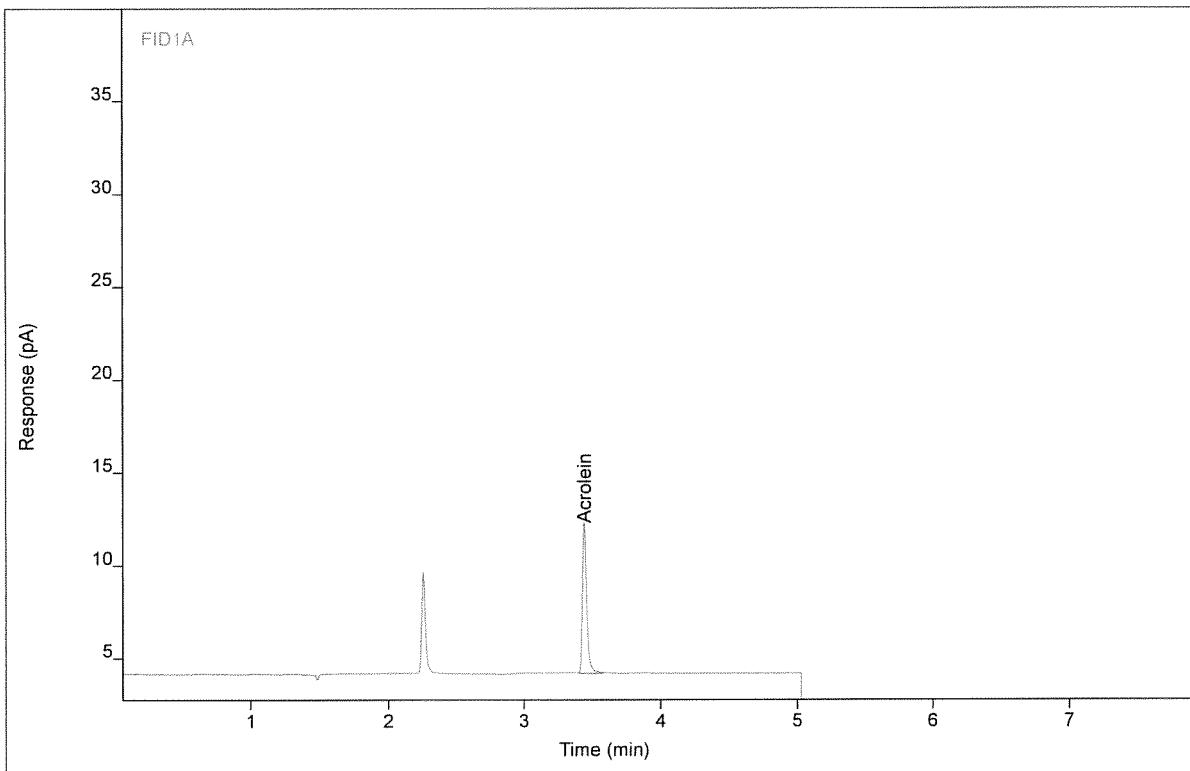
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	BB	3.44	17.3200	7.86282	45.0623	1	45.0623	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop1075 #AA2 ENV(1=800,5=200)
Sequence Name GUMMOP1079 ver.3
Inj Data File 016F0903.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/28/2017 2:40 AM
File Modified 8/1/2017 7:36 AM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 3 of 4
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP1075F_AA.M
Method Modified 7/31/2017 10:07 AM
Printed 8/2/2017 2:53 PM



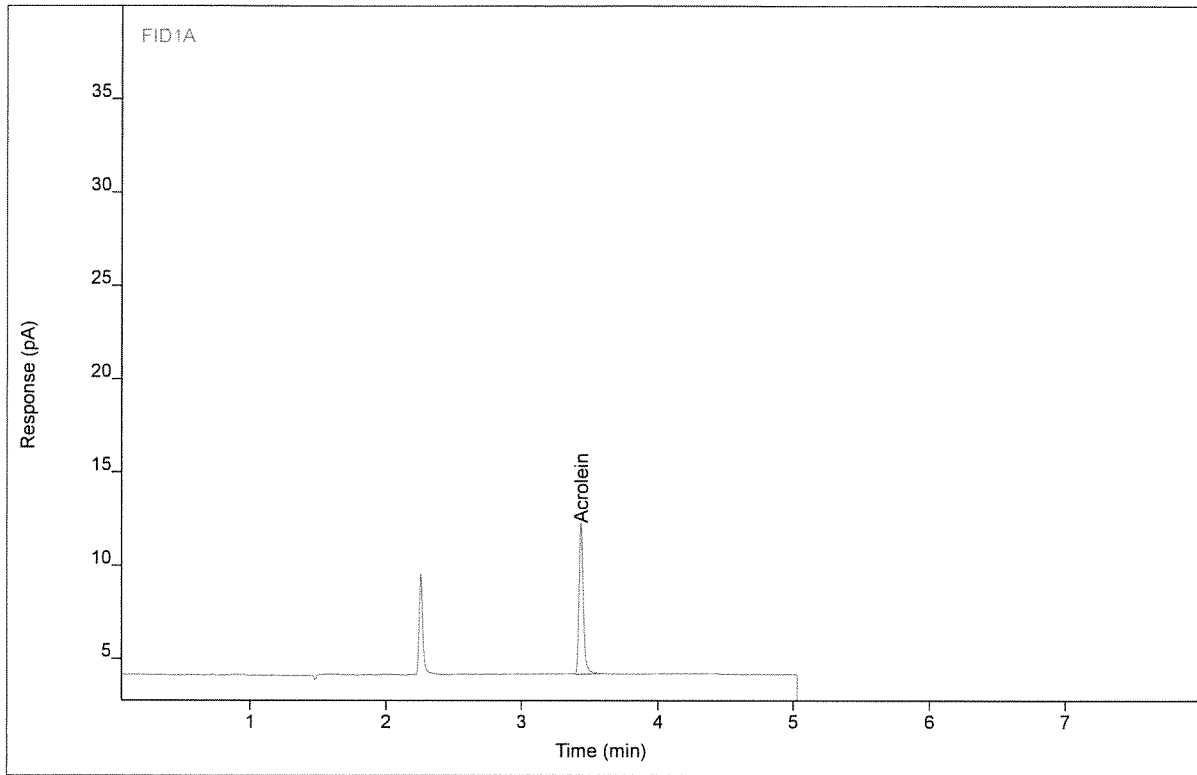
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	BV	3.44	17.9998	8.12455	46.8360	1	46.8360	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop1075 #AA2 ENV(1=800,5=200)
Sequence Name GUMMOP1079 ver.3
Inj Data File 016F0904.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/28/2017 2:50 AM
File Modified 8/1/2017 7:36 AM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 4 of 4
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP1075F_AA.M
Method Modified 7/31/2017 10:07 AM
Printed 8/2/2017 2:53 PM



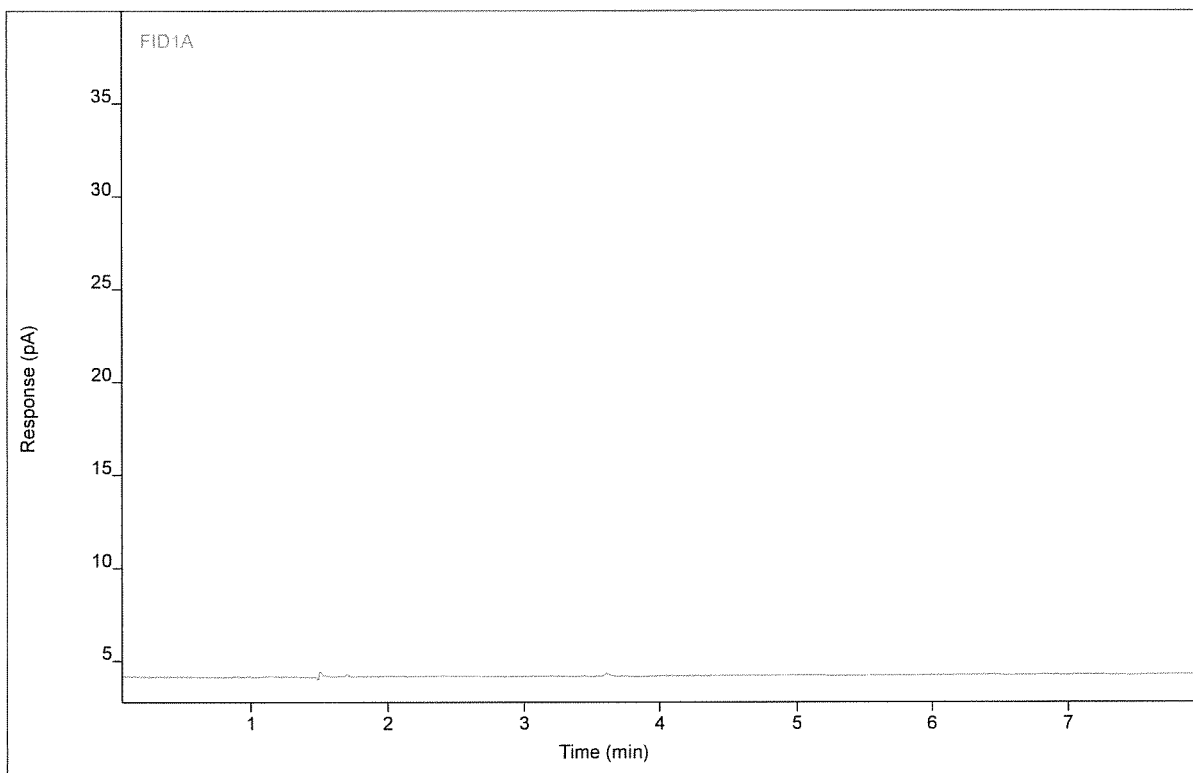
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	BB	3.44	17.6263	8.10806	45.8615	1	45.8615	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.IBC Retail Outlet Run 3 BL.Bag
Sequence Name GUMMOP1080 ver.6
Inj Data File 013F0401.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/28/2017 10:32 AM
File Modified 7/29/2017 9:51 AM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 13
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1075F_AA.M
Method Modified 7/26/2017 12:22 PM
Printed 8/2/2017 2:53 PM



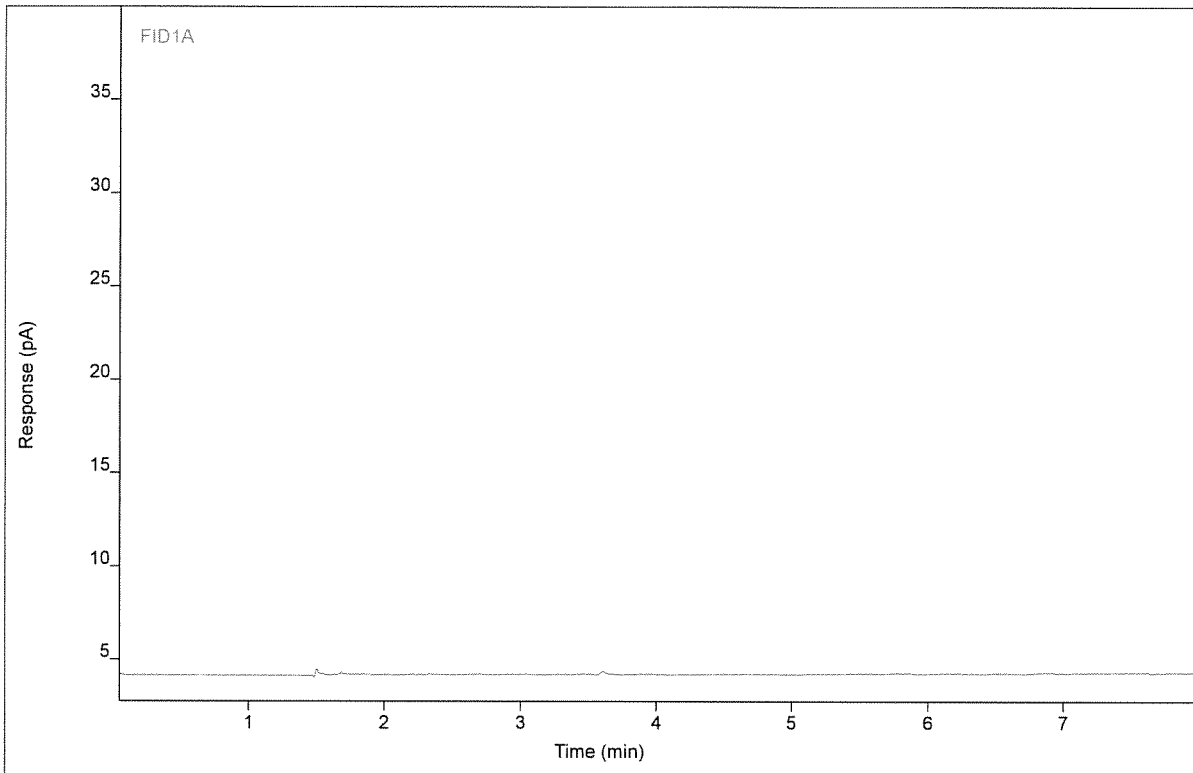
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein		(3.44)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.IBC Retail Outlet Run 3 BL.Bag
Sequence Name GUMMOP1080 ver.6
Inj Data File 013F0402.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/28/2017 10:48 AM
File Modified 7/29/2017 9:51 AM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 13
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1075F_AA.M
Method Modified 7/26/2017 12:22 PM
Printed 8/2/2017 2:53 PM



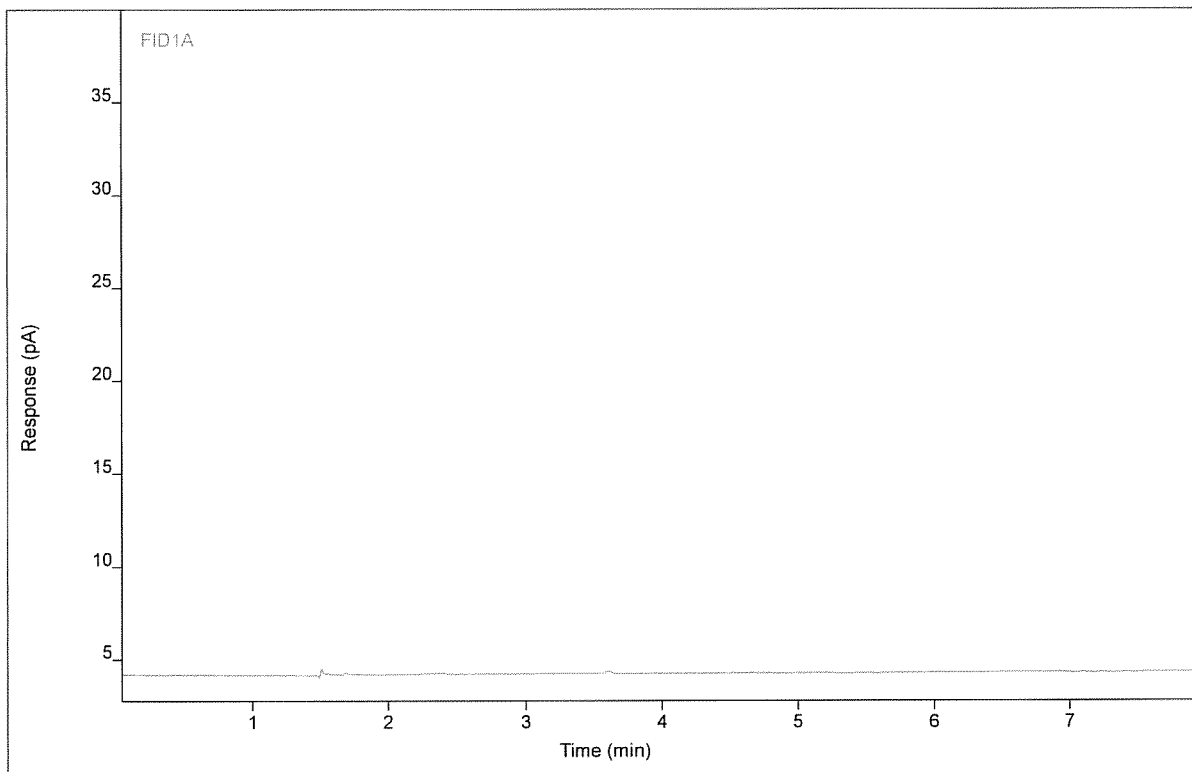
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein		(3.44)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.IBC Retail Outlet Run 3 BL.Bag
Sequence Name GUMMOP1080 ver.6
Inj Data File 013F0403.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/28/2017 11:05 AM
File Modified 7/29/2017 9:52 AM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 13
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1075F_AA.M
Method Modified 7/26/2017 12:22 PM
Printed 8/2/2017 2:53 PM



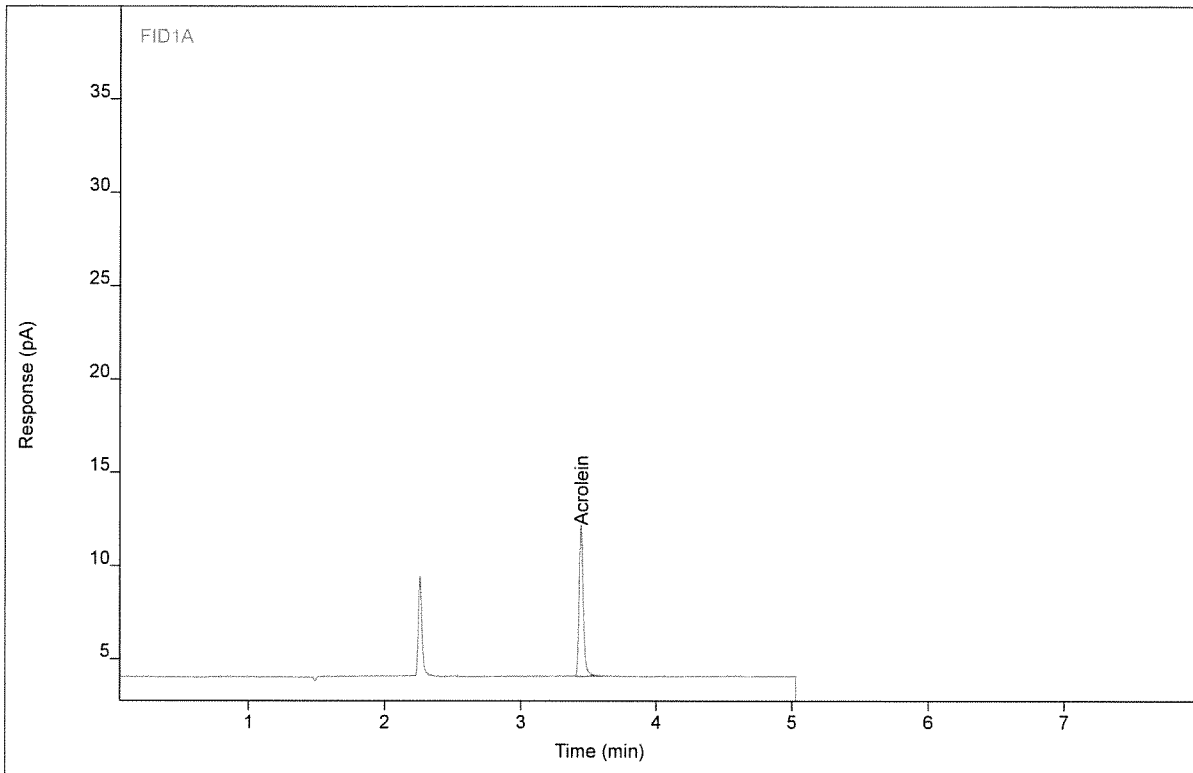
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein		(3.44)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name gummop980 #AA2 ENV(1=800,5=200)
Sequence Name GUMMOP1080 ver.6
Inj Data File 016F1502.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/29/2017 2:01 AM
File Modified 7/29/2017 9:53 AM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 2 of 4
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP1075F_AA.M
Method Modified 7/26/2017 12:22 PM
Printed 8/2/2017 2:53 PM



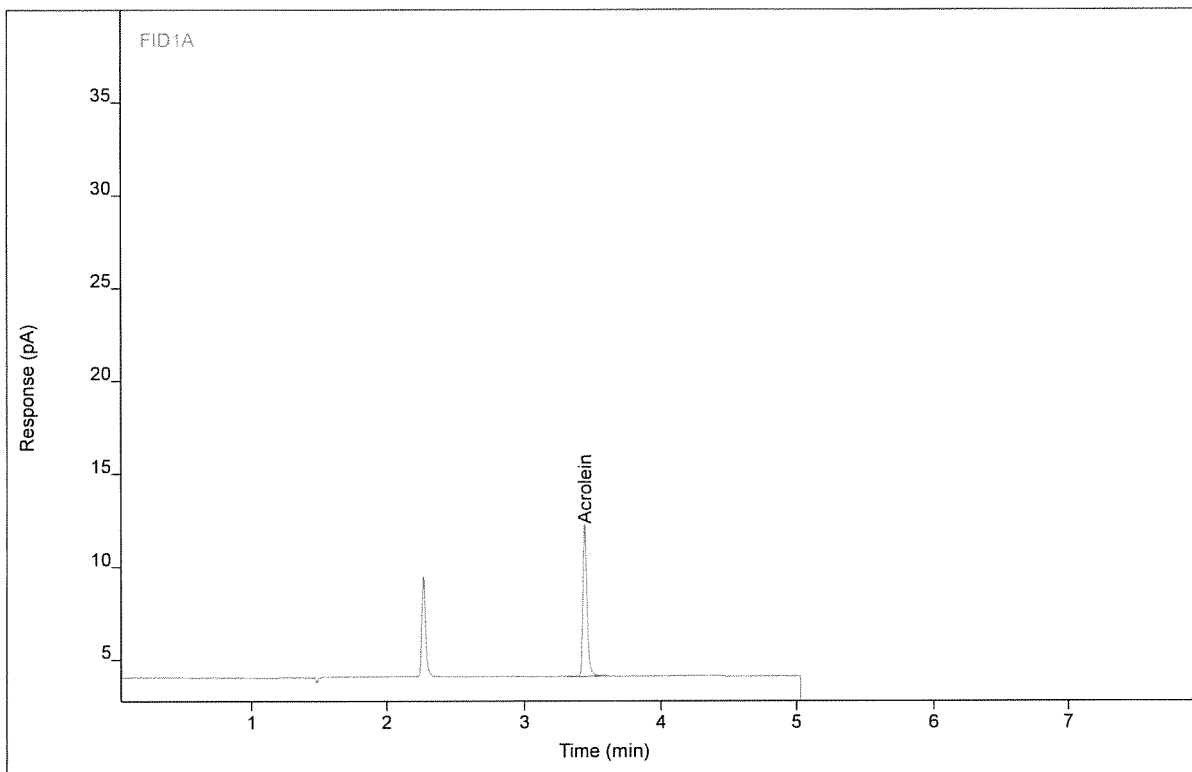
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	BB	3.45	17.4594	8.08217	45.3704	1	45.3704	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop980 #AA2 ENV(1=800,5=200)
Sequence Name GUMMOP1080 ver.6
Inj Data File 016F1503.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/29/2017 2:10 AM
File Modified 7/29/2017 9:53 AM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 3 of 4
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP1075F_AA.M
Method Modified 7/26/2017 12:22 PM
Printed 8/2/2017 2:53 PM



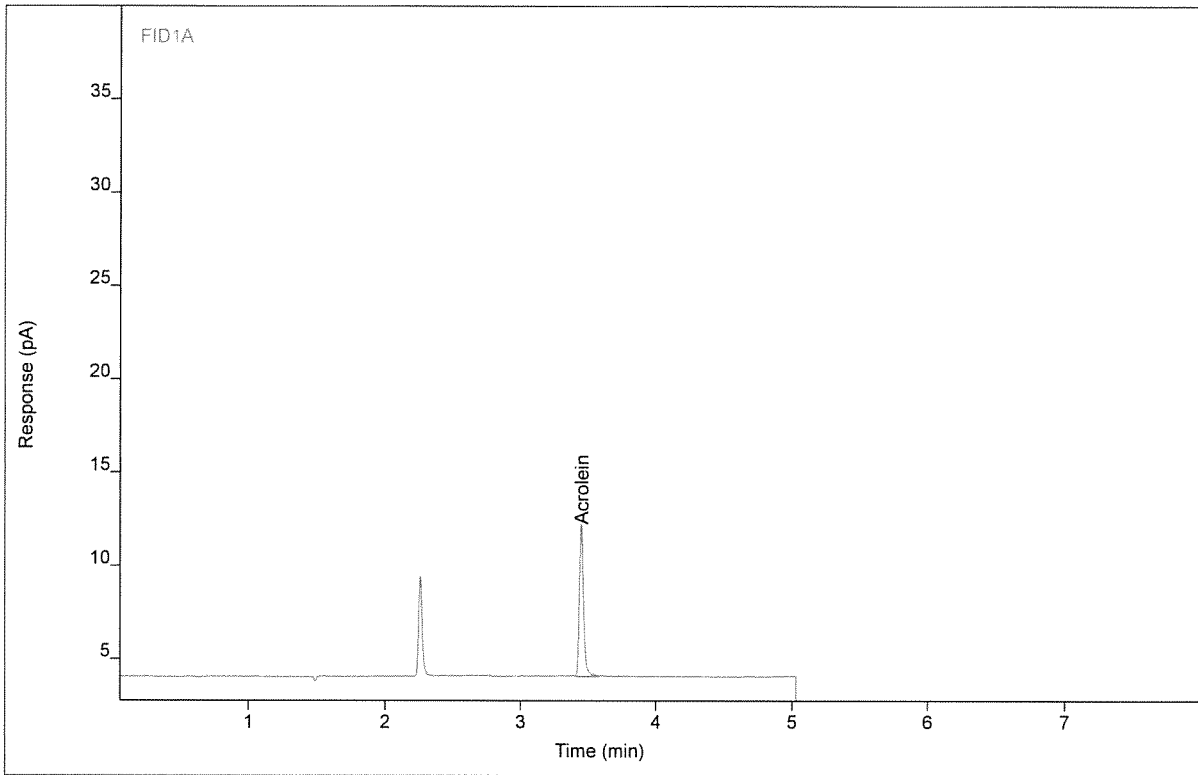
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	VB	3.45	17.8052	8.21194	46.2716	1	46.2716	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop980 #AA2 ENV(1=800,5=200)
Sequence Name GUMMOP1080 ver.6
Inj Data File 016F1504.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/29/2017 2:22 AM
File Modified 7/29/2017 9:53 AM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 4 of 4
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP1075F_AA.M
Method Modified 7/26/2017 12:22 PM
Printed 8/2/2017 2:53 PM



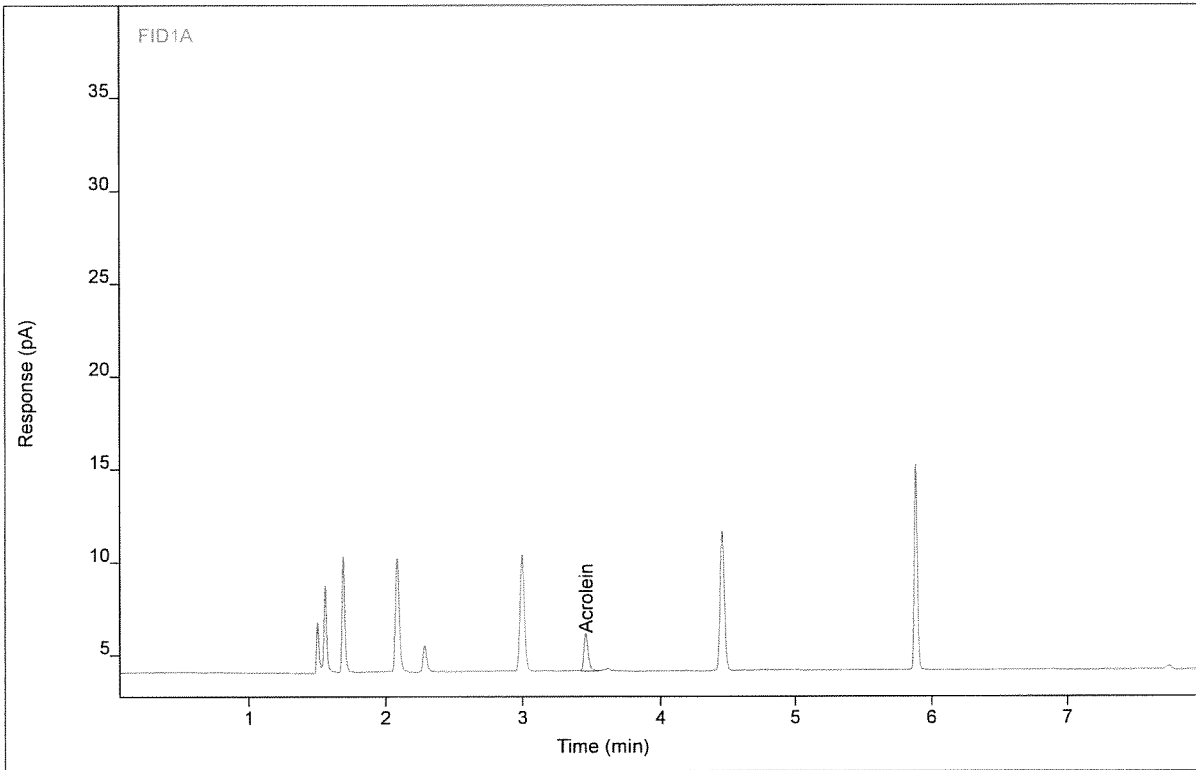
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	BV	3.45	17.7540	8.17030	46.1382	1	46.1382	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.IBC Retail Out Run3 BL SP.Bag
Sequence Name GUMMOP1081 ver.2
Inj Data File 013F1501.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/29/2017 2:14 PM
File Modified 7/31/2017 7:23 AM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 13
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1075F_AA.M
Method Modified 7/26/2017 12:22 PM
Printed 8/2/2017 2:53 PM



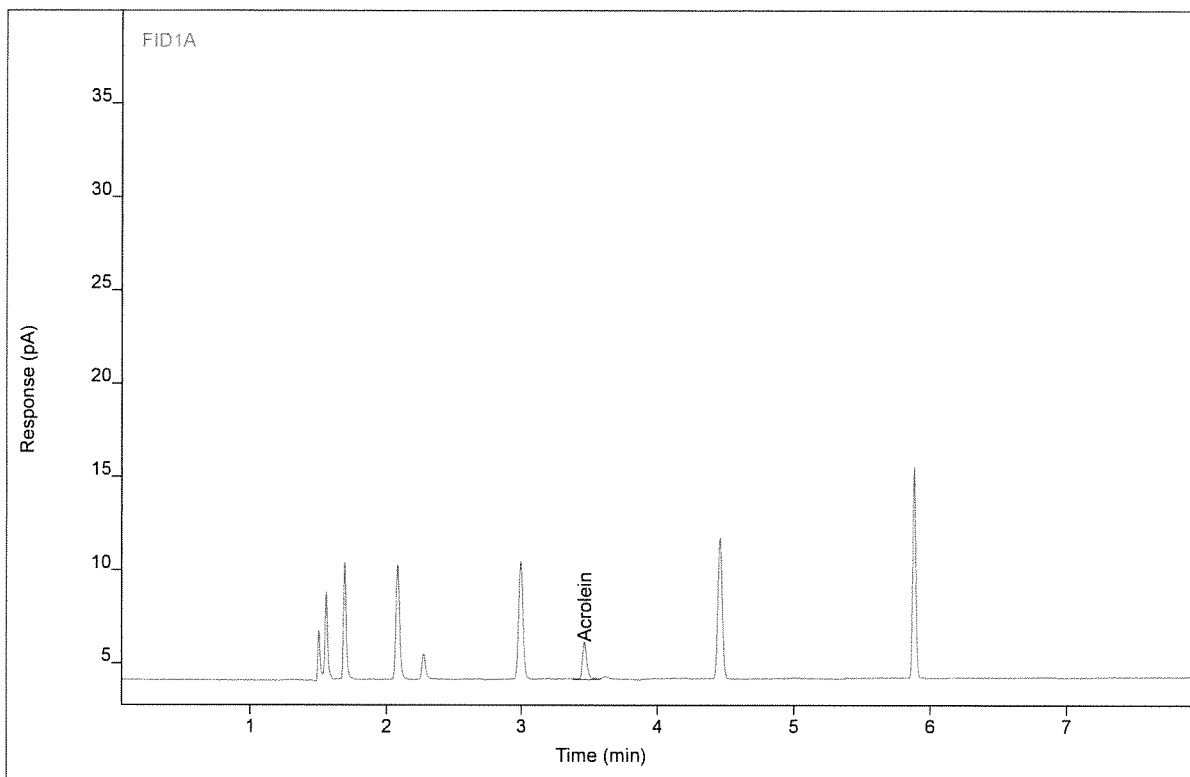
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	BV	3.46	4.43353	2.04377	11.4278	1	11.4278	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.IBC Retail Out Run3 BL SP.Bag
Sequence Name GUMMOP1081 ver.2
Inj Data File 013F1502.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/29/2017 2:30 PM
File Modified 7/31/2017 7:23 AM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 13
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1075F_AA.M
Method Modified 7/26/2017 12:22 PM
Printed 8/2/2017 2:53 PM



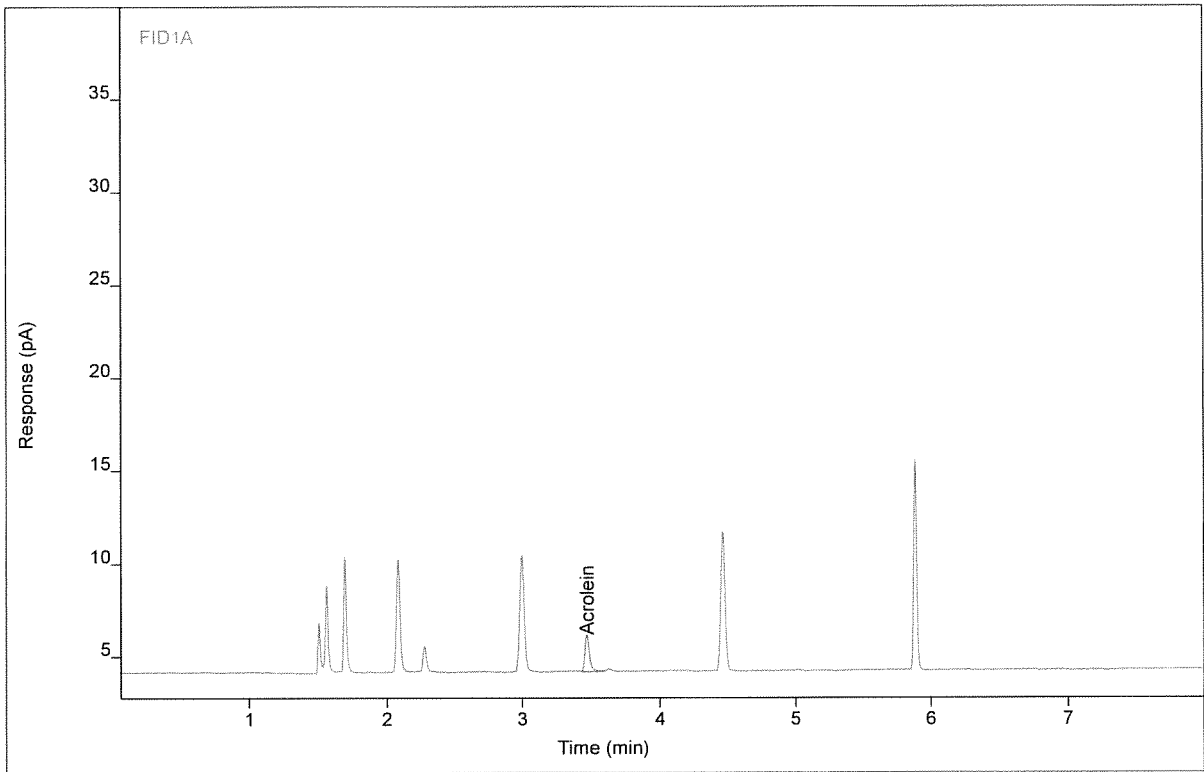
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	BB	3.46	4.74732	2.03446	12.2455	1	12.2455	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.IBC Retail Out Run3 BL SP.Bag
Sequence Name GUMMOP1081 ver.2
Inj Data File 013F1503.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/29/2017 2:46 PM
File Modified 7/31/2017 7:23 AM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 13
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1075F_AA.M
Method Modified 7/26/2017 12:22 PM
Printed 8/2/2017 2:53 PM



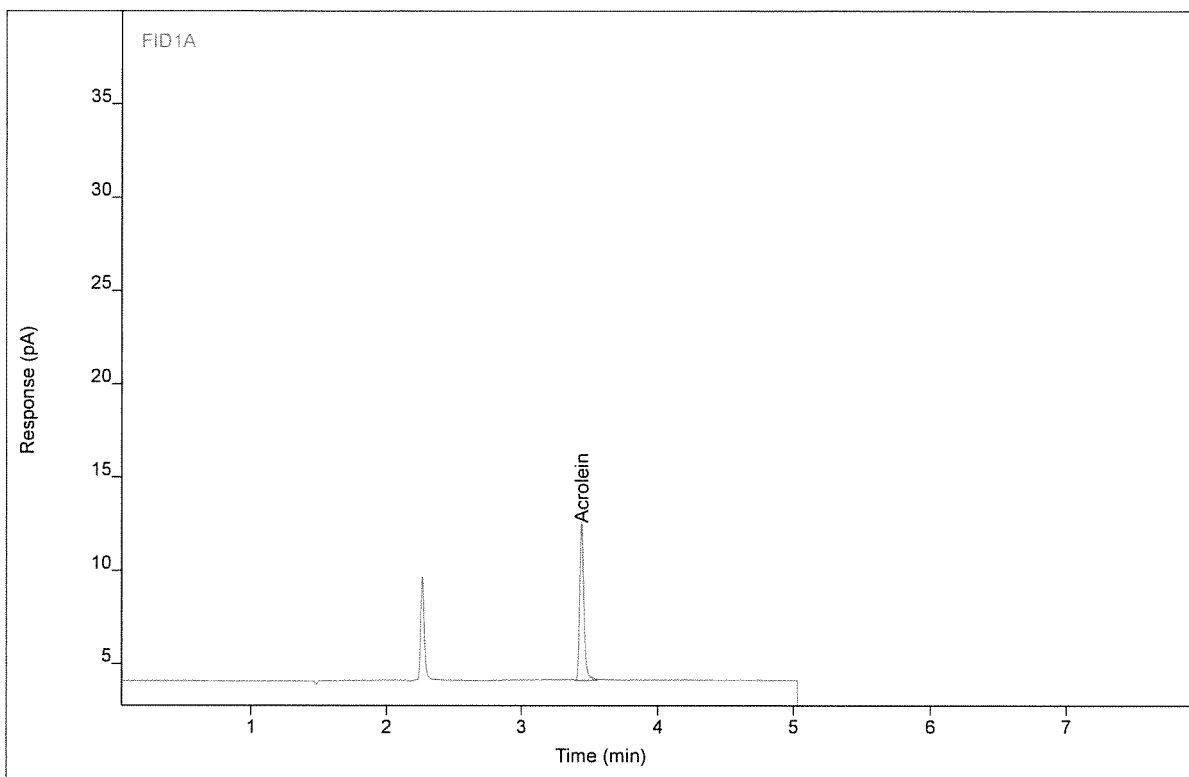
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	BB	3.46	4.56600	2.00032	11.7730	1	11.7730	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop980 #AA2 ENV(1=800,5=200)
Sequence Name GUMMOP1081 ver.2
Inj Data File 016F2102.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/30/2017 1:20 AM
File Modified 7/31/2017 7:24 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 2 of 4
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP1075F_AA.M
Method Modified 7/26/2017 12:22 PM
Printed 8/2/2017 2:53 PM



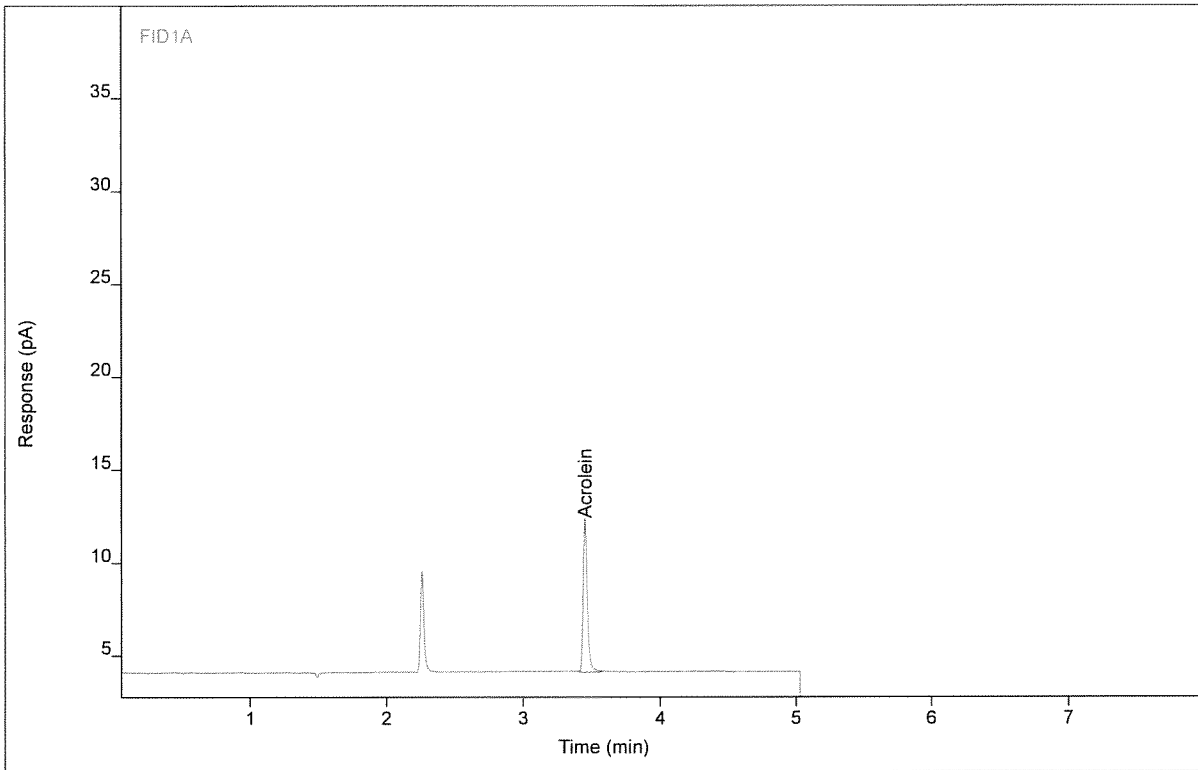
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	BV	3.45	18.3213	8.44122	47.6164	1	47.6164	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop980 #AA2 ENV(1=800,5=200)
Sequence Name GUMMOP1081 ver.2
Inj Data File 016F2103.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/30/2017 1:30 AM
File Modified 7/31/2017 7:24 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 3 of 4
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP1075F_AA.M
Method Modified 7/26/2017 12:22 PM
Printed 8/2/2017 2:53 PM



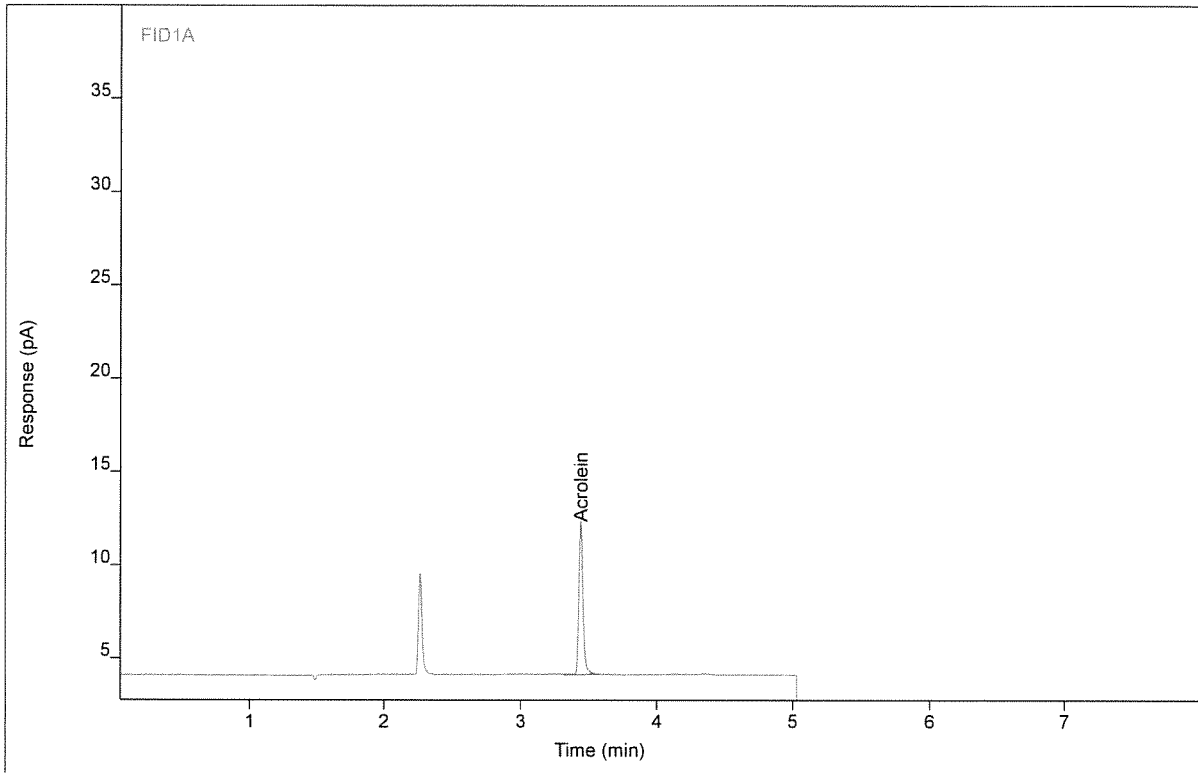
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	BB	3.45	18.0890	8.28762	47.0111	1	47.0111	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop980 #AA2 ENV(1=800,5=200)
Sequence Name GUMMOP1081 ver.2
Inj Data File 016F2104.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/30/2017 1:39 AM
File Modified 7/31/2017 7:24 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 4 of 4
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP1075F_AA.M
Method Modified 7/26/2017 12:22 PM
Printed 8/2/2017 2:53 PM



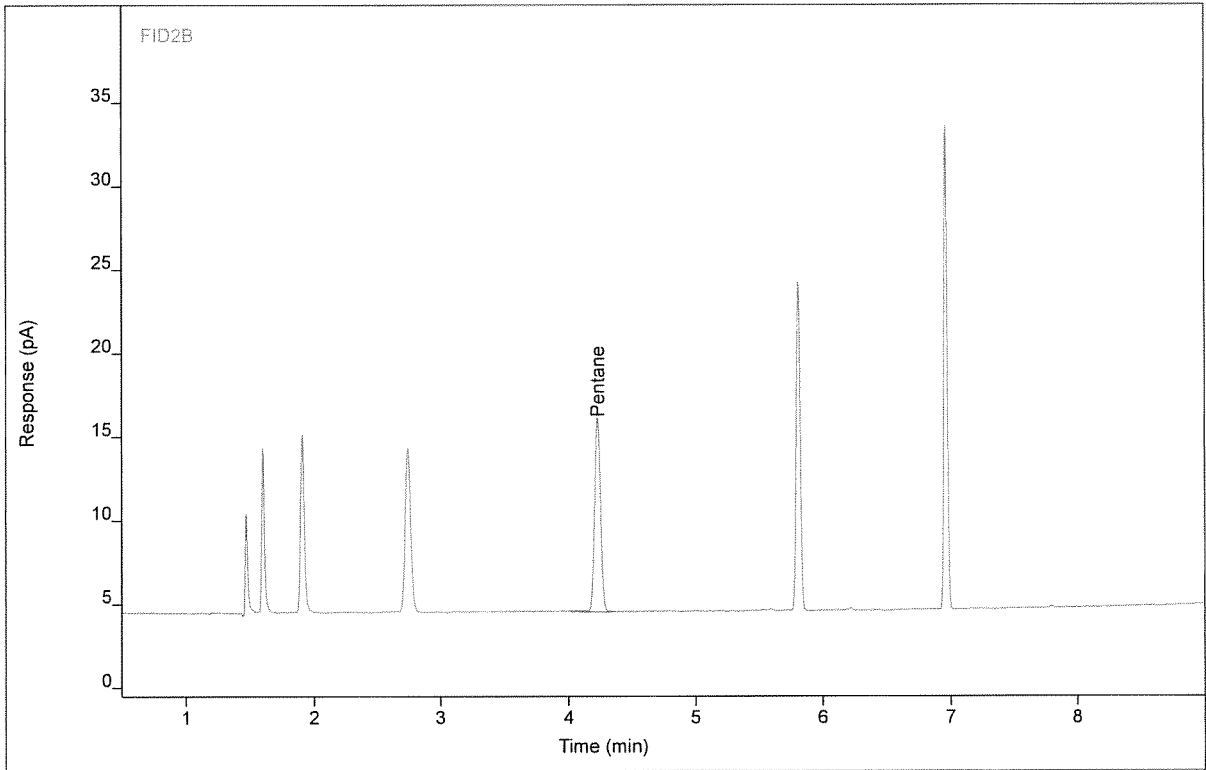
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	BB	3.45	17.6170	8.19114	45.7812	1	45.7812	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop903 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1047 ver.1
Inj Data File 032B1401.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/29/2017 1:09 AM
File Modified 6/30/2017 3:39 PM
Instrument
Operator Ben Prothe

Sample Type
Vial Number
Injection Volume
Injection
Acquisition Method
Analysis Method
Method Modified
Printed
Calibration
Vial 32
1000
1 of 3
AQ_GUMMOP987.M
GUMMOP987R_C1-C7.M
6/7/2017 3:10 PM
7/6/2017 11:12 AM



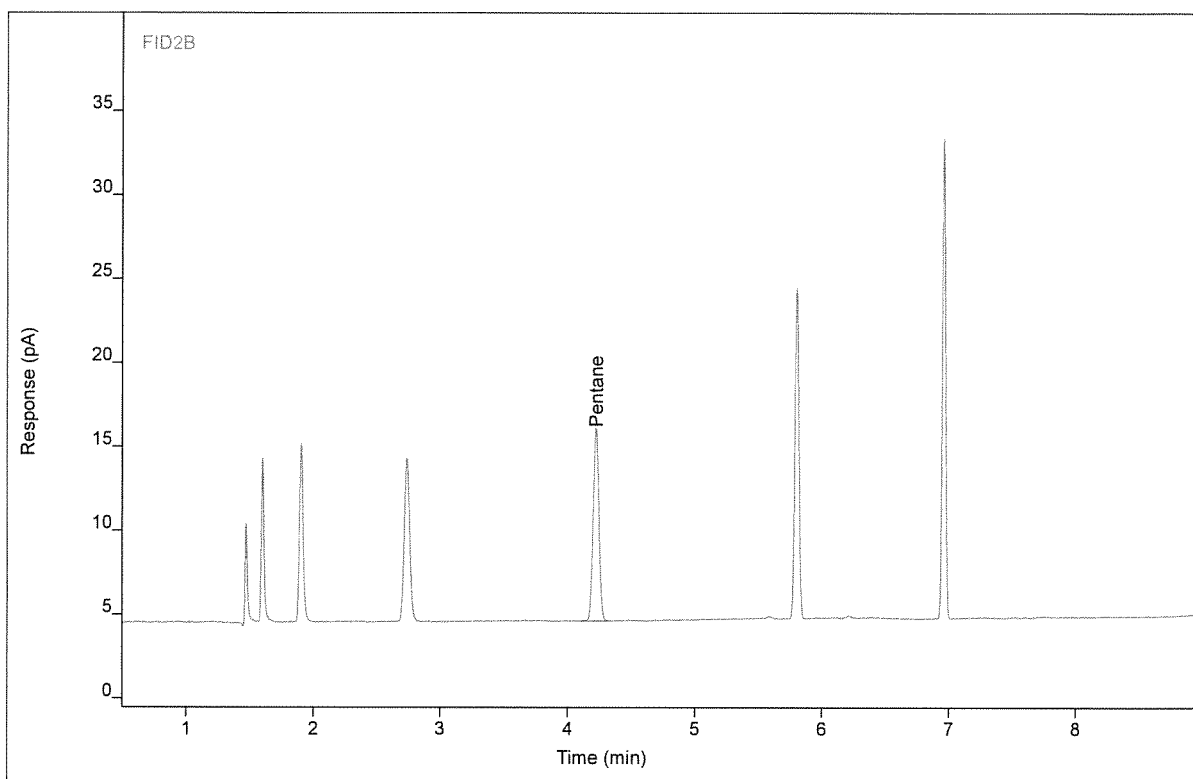
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Pentane	BB	4.23	37.1027	11.6116	40.4738	1	40.4738	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop903 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1047 ver.1
Inj Data File 032B1402.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/29/2017 1:27 AM
File Modified 6/30/2017 3:39 PM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/6/2017 11:12 AM



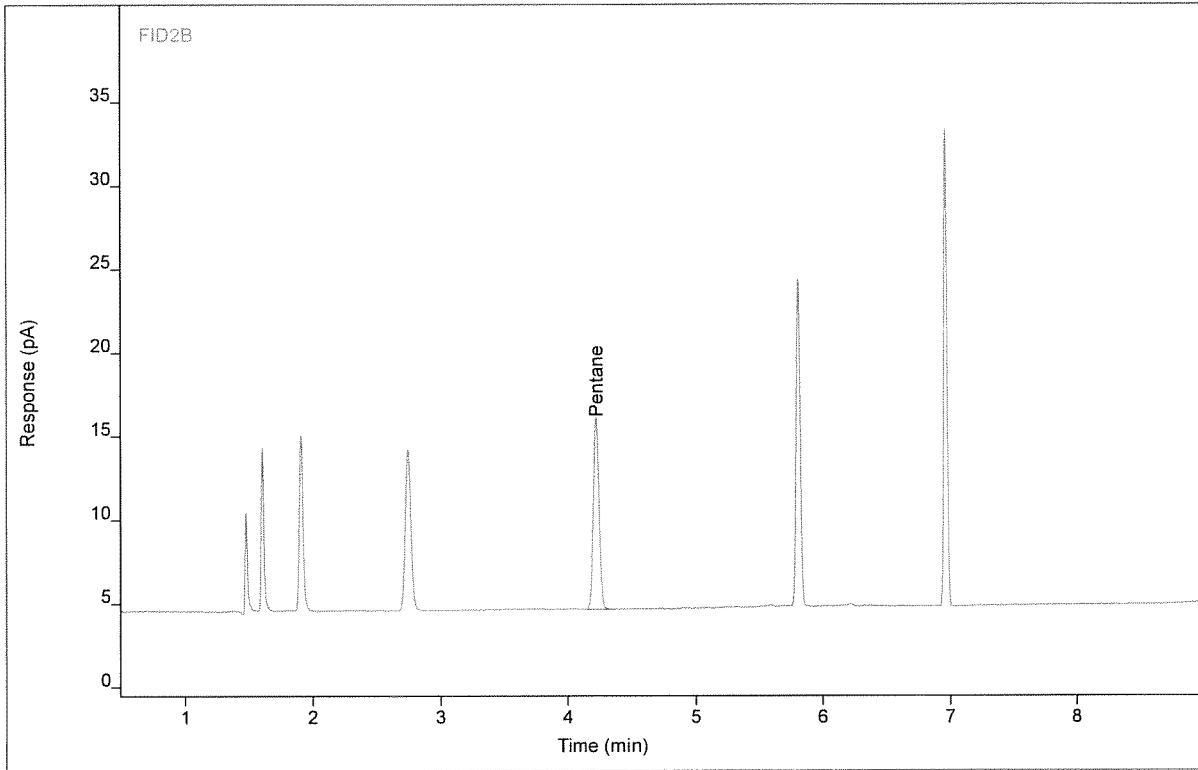
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Pentane	BB	4.23	36.8819	11.5465	40.2331	1	40.2331	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop903 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1047 ver.1
Inj Data File 032B1403.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/29/2017 1:45 AM
File Modified 6/30/2017 3:39 PM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/6/2017 11:12 AM



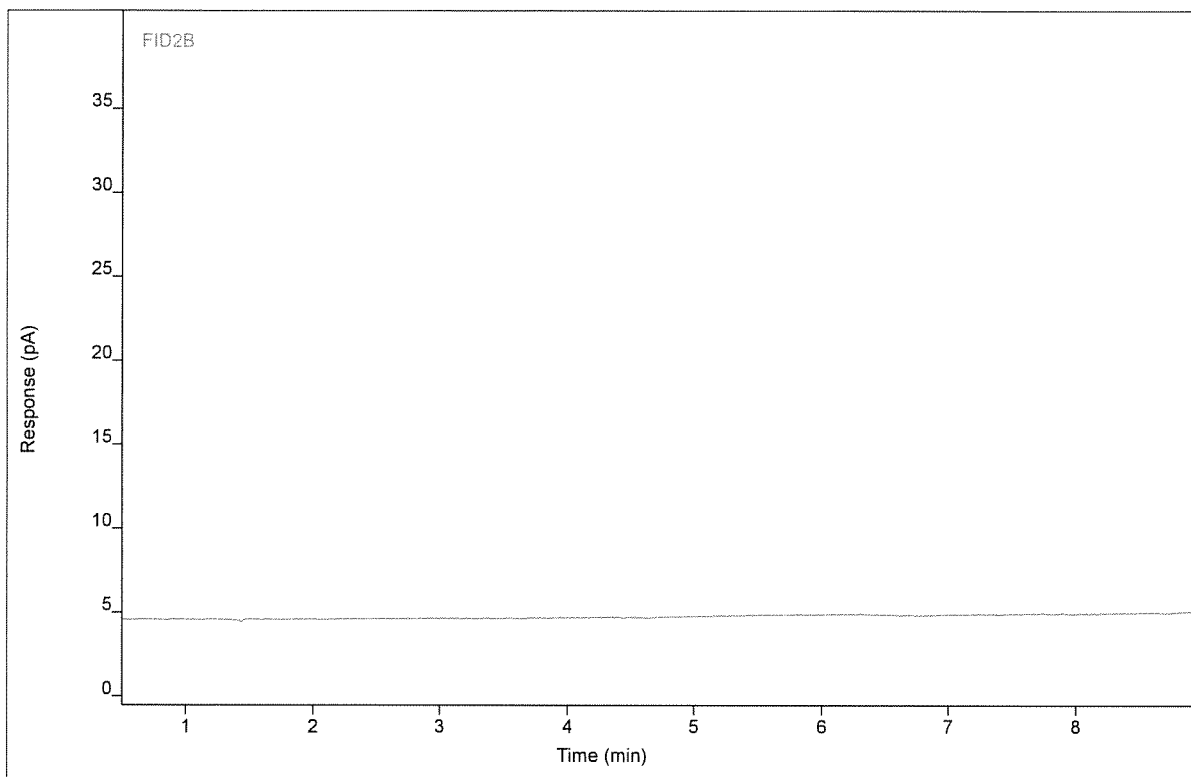
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Pentane	BB	4.23	36.6911	11.4981	40.0252	1	40.0252	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name zero air blank #LB
Sequence Name GUMMOP1047 ver.1
Inj Data File 024B1501.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/29/2017 2:02 AM
File Modified 6/30/2017 3:39 PM
Instrument
Operator Ben Prothe

Sample Type Control
Vial Number Vial 24
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/6/2017 11:12 AM



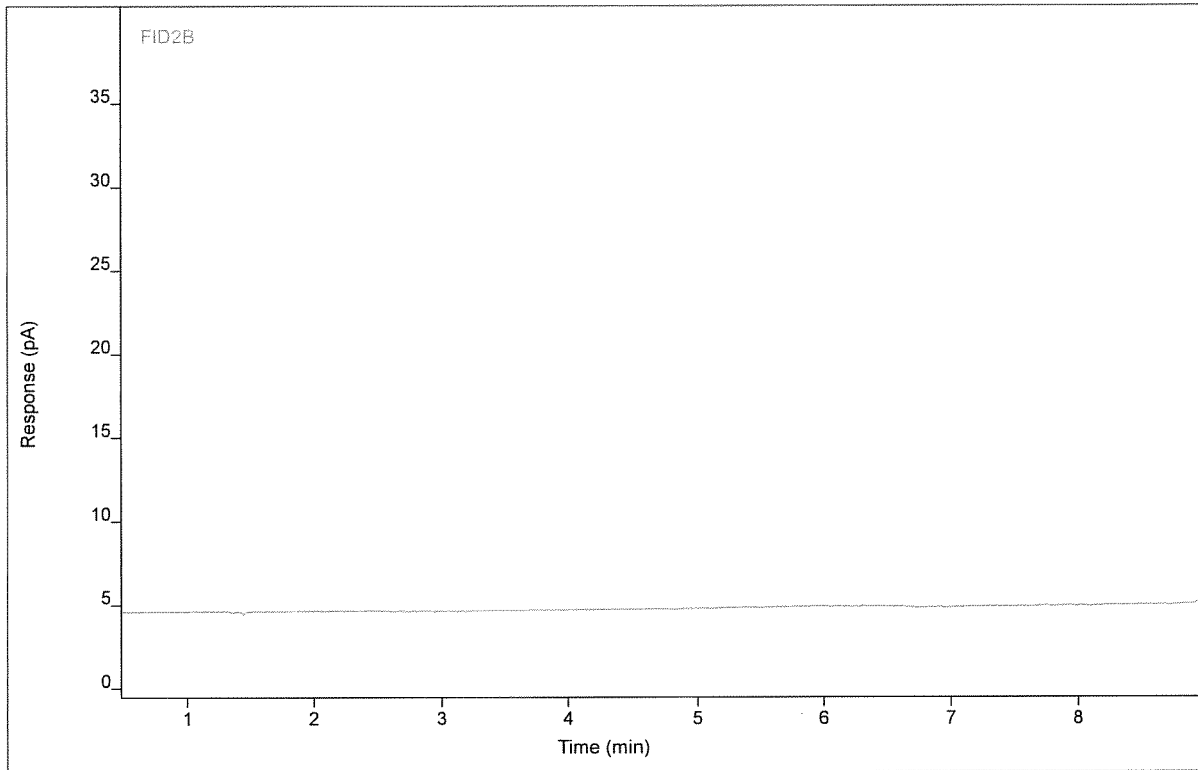
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Pentane		(4.21)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name zero air blank #LB
Sequence Name GUMMOP1047 ver.1
Inj Data File 024B1502.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/29/2017 2:18 AM
File Modified 6/30/2017 3:39 PM
Instrument
Operator Ben Prothe

Sample Type Control
Vial Number Vial 24
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/6/2017 11:12 AM



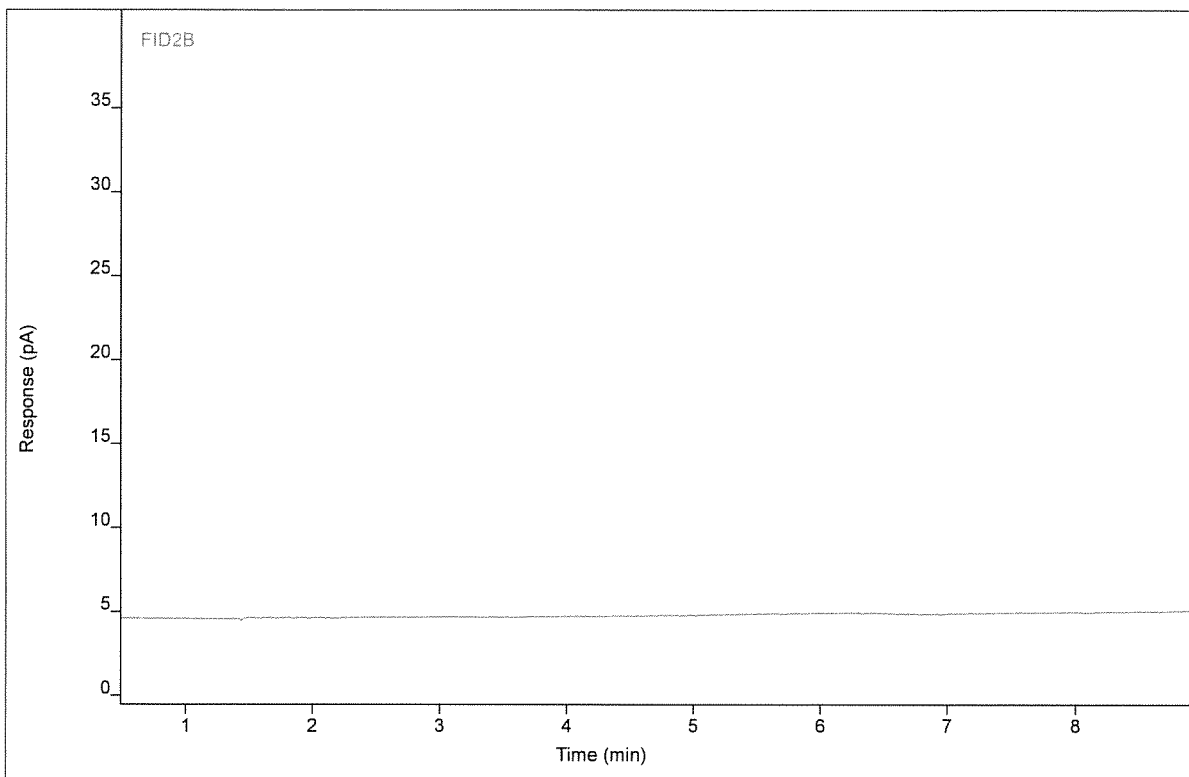
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Pentane		(4.21)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name zero air blank #LB
Sequence Name GUMMOP1047 ver.1
Inj Data File 024B1503.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/29/2017 2:34 AM
File Modified 6/30/2017 3:39 PM
Instrument
Operator Ben Prothe

Sample Type Control
Vial Number Vial 24
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/6/2017 11:12 AM



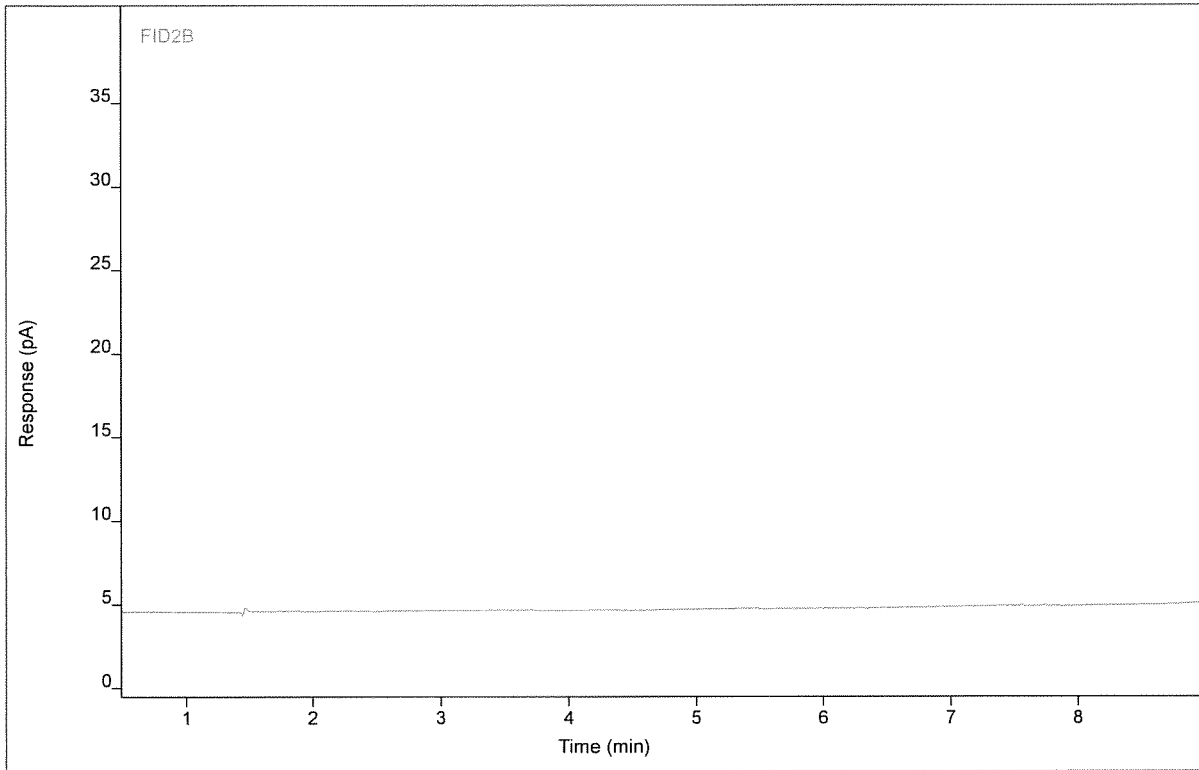
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Pentane		(4.21)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.IBC Retail Outlet Run 2.Bag
Sequence Name GUMMOP1048 ver.2
Inj Data File 019B0101.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/29/2017 9:03 AM
File Modified 7/6/2017 10:27 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 19
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/6/2017 11:12 AM



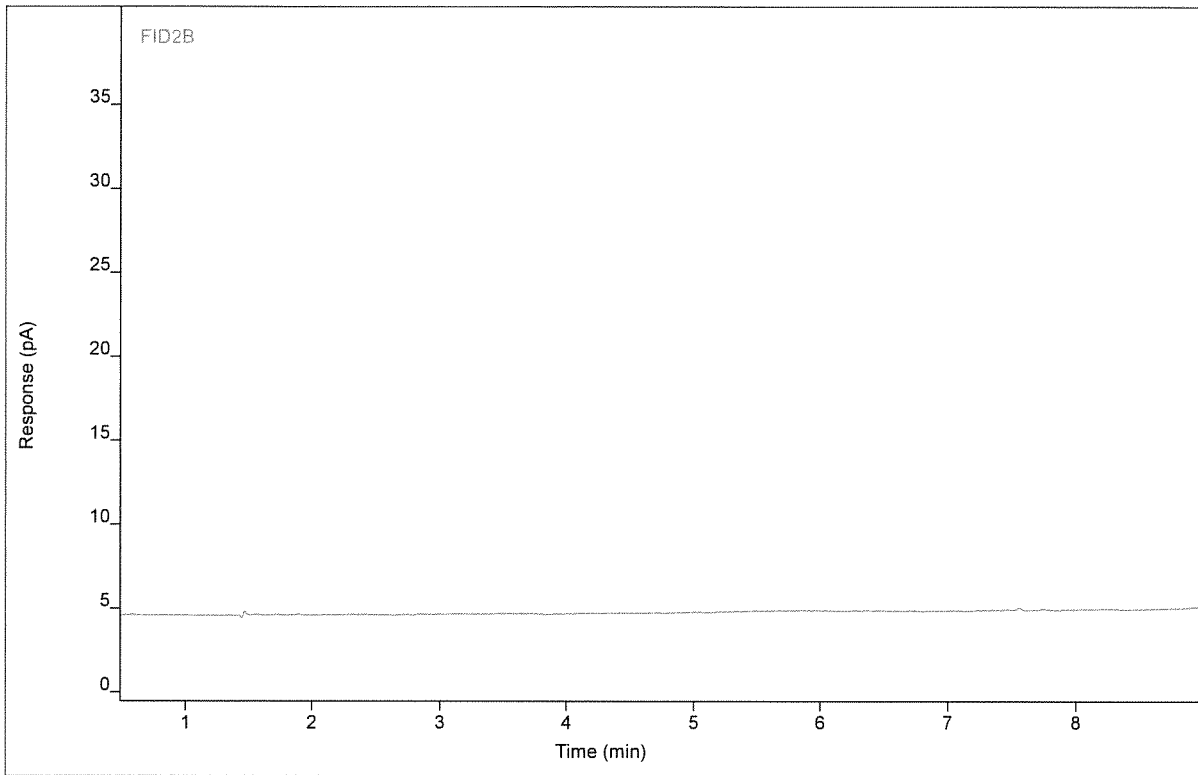
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Pentane		(4.21)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.IBC Retail Outlet Run 2.Bag
Sequence Name GUMMOP1048 ver.2
Inj Data File 019B0102.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/29/2017 9:19 AM
File Modified 7/6/2017 10:27 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 19
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/6/2017 11:12 AM



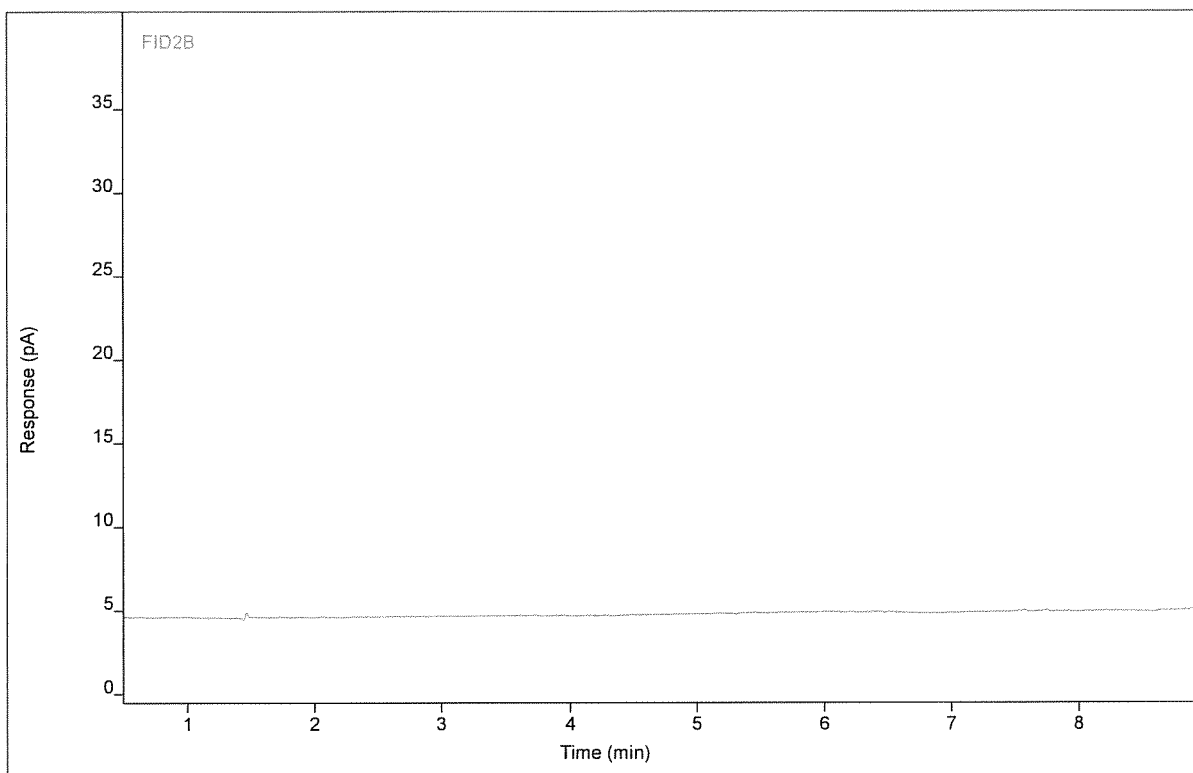
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Pentane		(4.21)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.IBC Retail Outlet Run 2.Bag
Sequence Name GUMMOP1048 ver.2
Inj Data File 019B0103.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/29/2017 9:35 AM
File Modified 7/6/2017 10:27 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 19
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/6/2017 11:12 AM



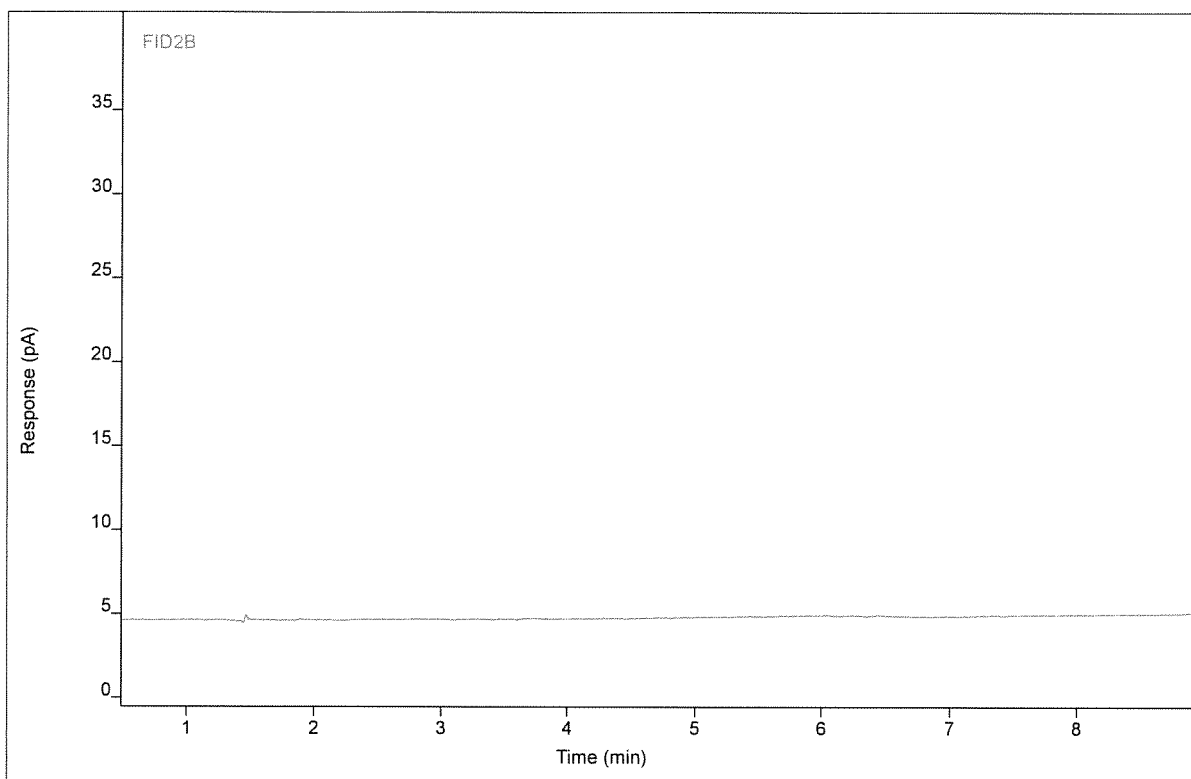
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Pentane		(4.21)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.IBC Retail Outlet Run 3.Bag
Sequence Name GUMMOP1048 ver.2
Inj Data File 023B0201.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/29/2017 9:51 AM
File Modified 7/6/2017 10:27 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 23
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/6/2017 11:12 AM



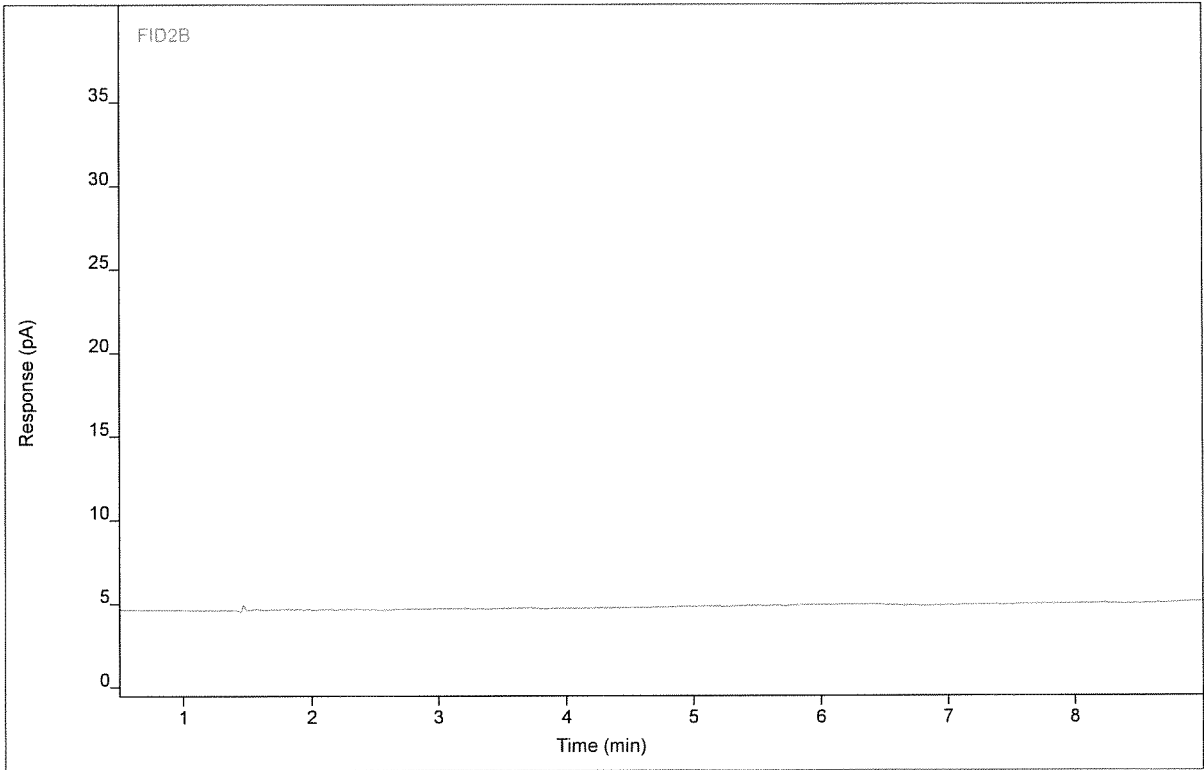
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Pentane		(4.21)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.IBC Retail Outlet Run 3.Bag
Sequence Name GUMMOP1048 ver.2
Inj Data File 023B0202.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/29/2017 10:07 AM
File Modified 7/6/2017 10:27 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 23
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/6/2017 11:12 AM



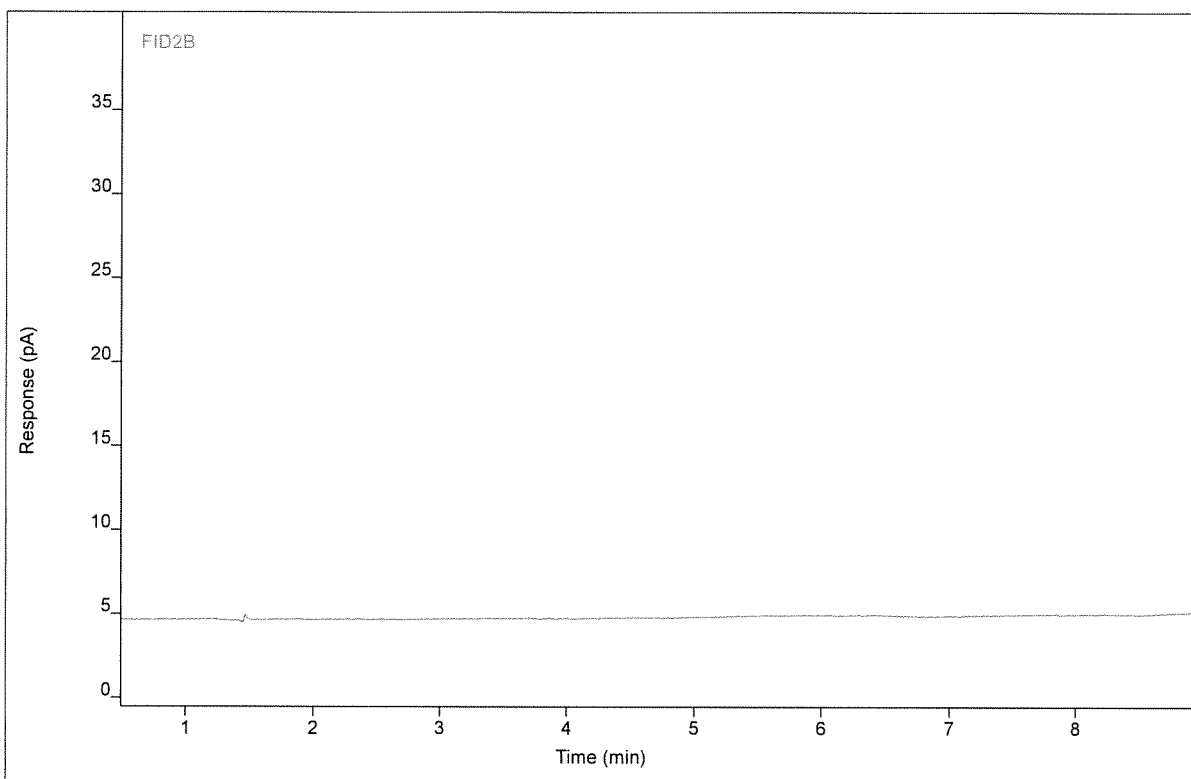
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Pentane		(4.21)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.IBC Retail Outlet Run 3.Bag
Sequence Name GUMMOP1048 ver.2
Inj Data File 023B0203.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/29/2017 10:23 AM
File Modified 7/6/2017 10:27 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 23
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/6/2017 11:12 AM



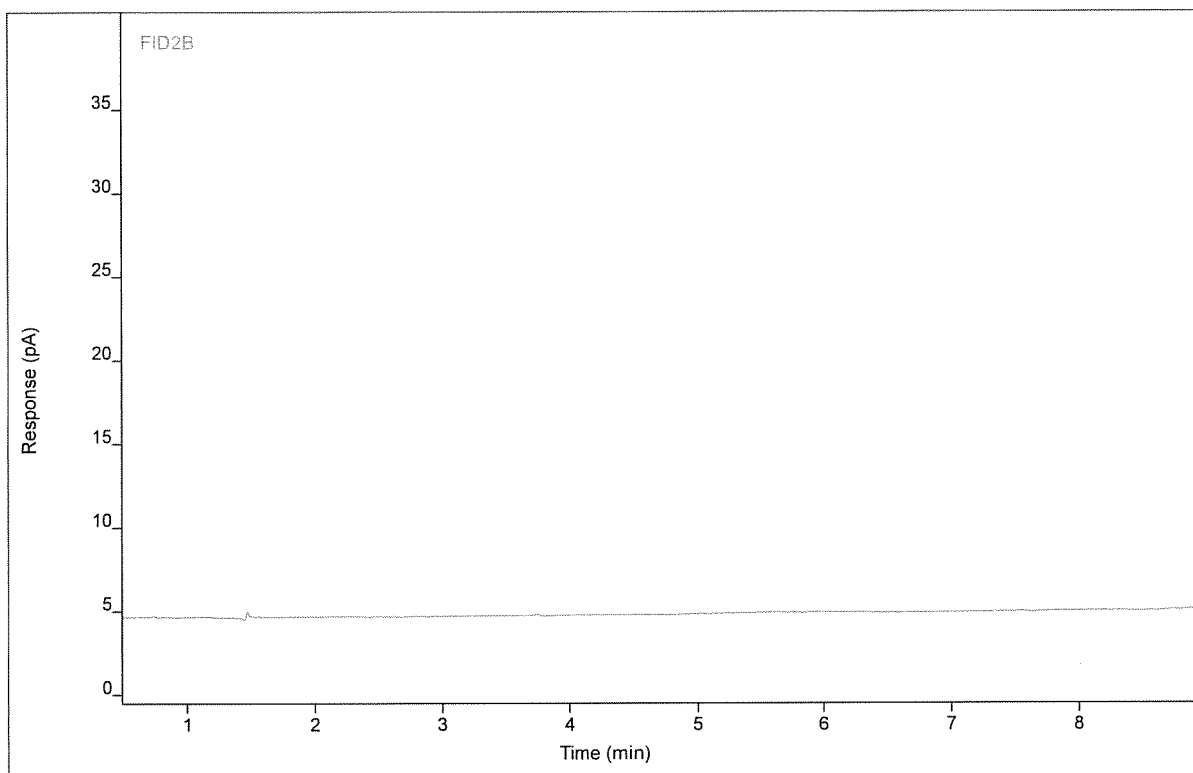
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Pentane		(4.21)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.IBC Retail Outlet Run 4.Bag
Sequence Name GUMMOP1048 ver.2
Inj Data File 029B0301.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/29/2017 10:39 AM
File Modified 7/6/2017 10:27 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 29
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/6/2017 11:12 AM



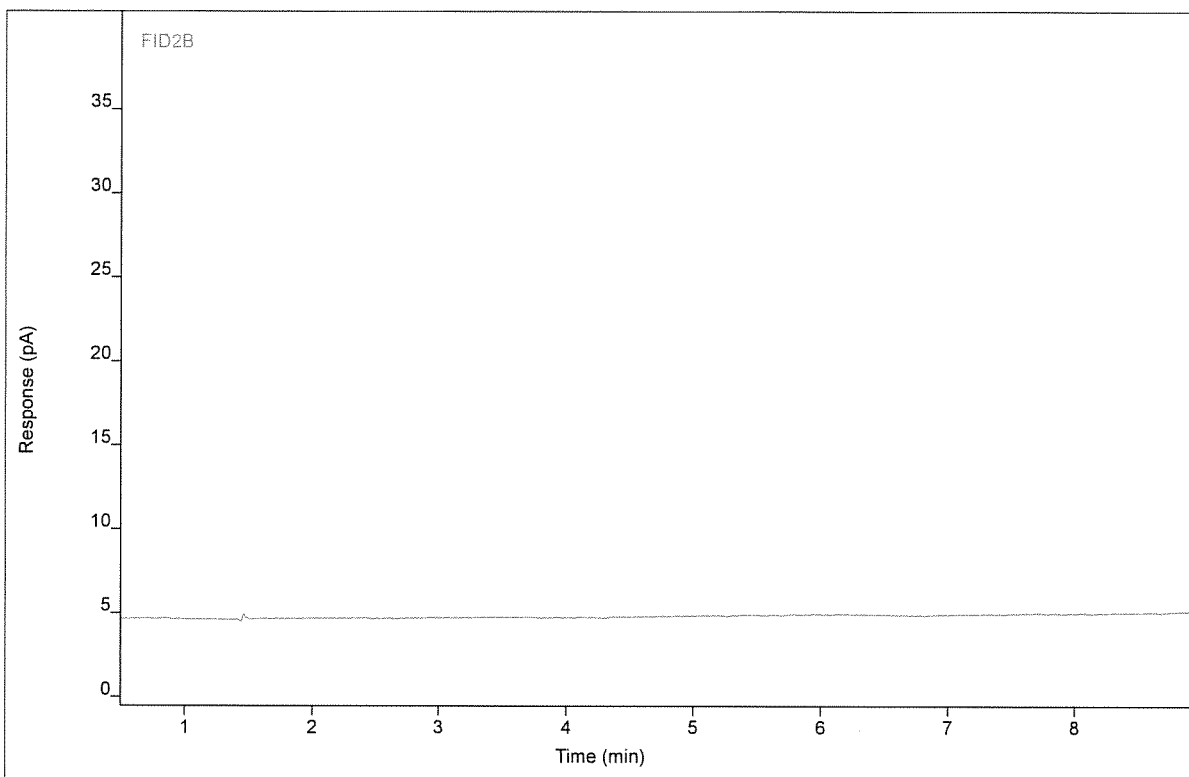
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Pentane		(4.21)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.IBC Retail Outlet Run 4.Bag
Sequence Name GUMMOP1048 ver.2
Inj Data File 029B0302.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/29/2017 10:55 AM
File Modified 7/6/2017 10:27 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 29
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/6/2017 11:12 AM



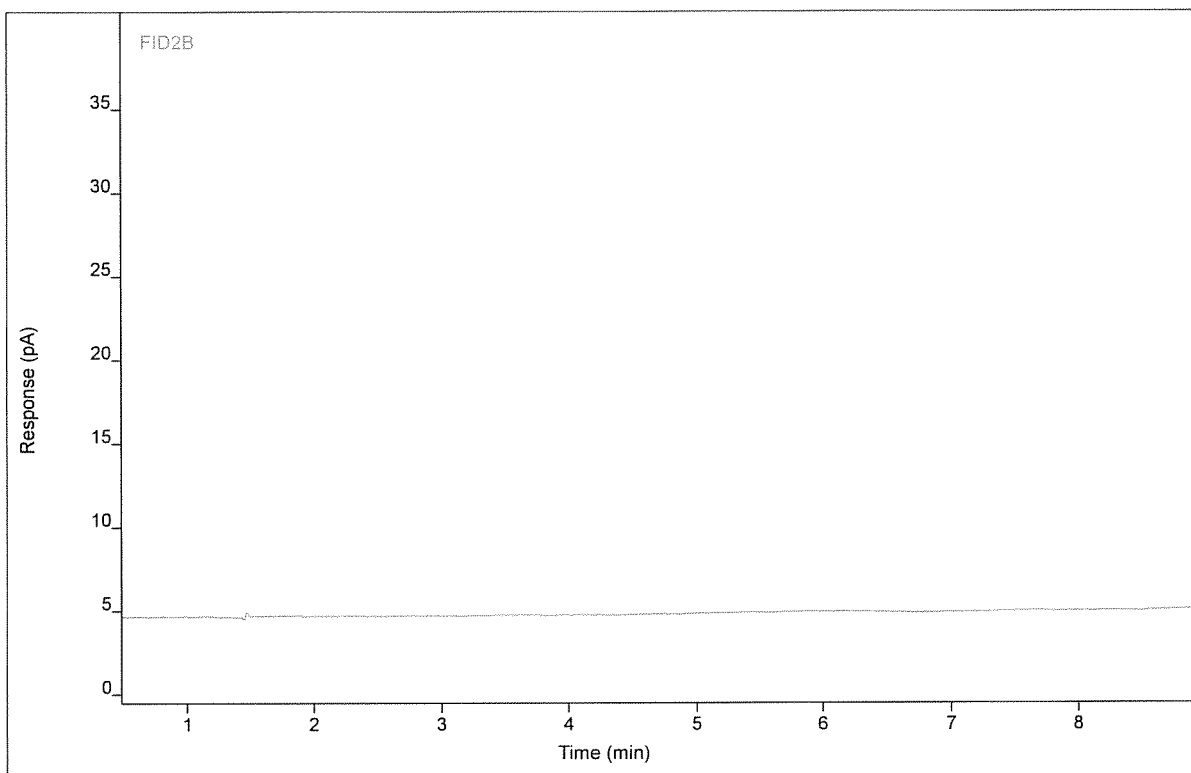
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Pentane		(4.21)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.IBC Retail Outlet Run 4.Bag
Sequence Name GUMMOP1048 ver.2
Inj Data File 029B0303.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/29/2017 11:11 AM
File Modified 7/6/2017 10:27 AM
Instrument
Operator Nicholas Traversa

Sample Type Sample
Vial Number Vial 29
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/6/2017 11:12 AM



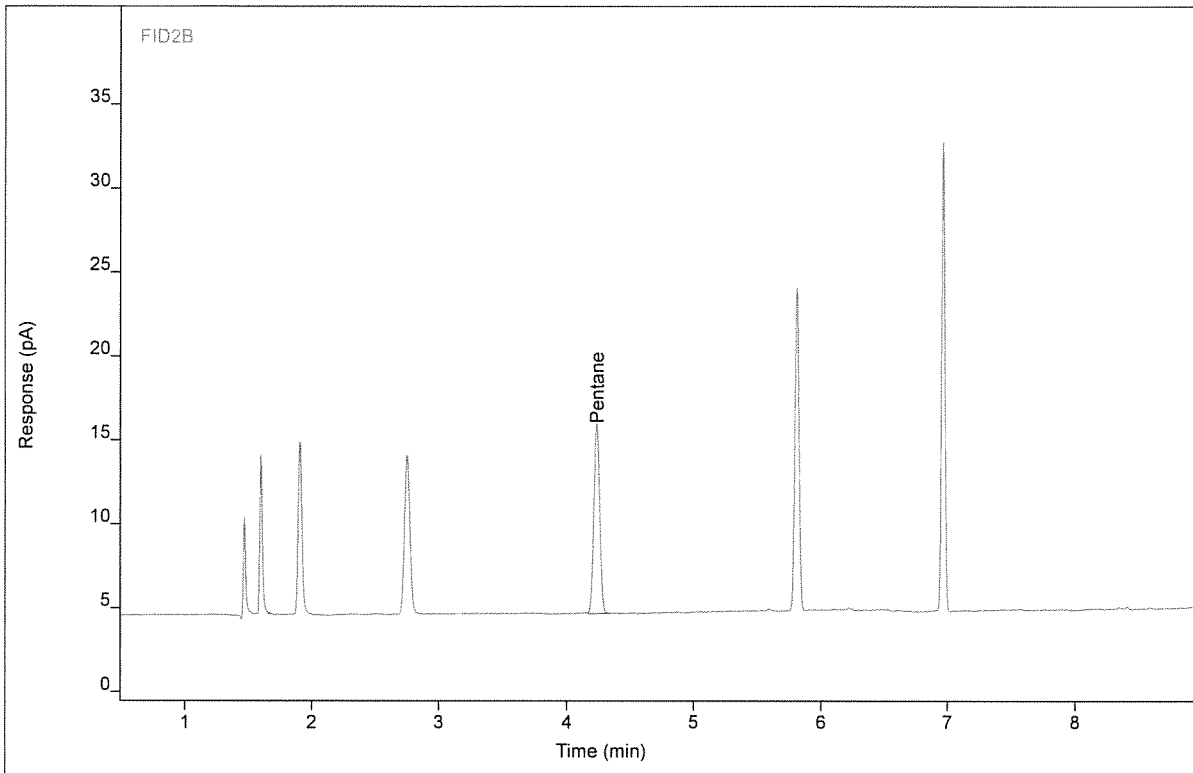
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Pentane		(4.21)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop903 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1048 ver.2
Inj Data File 032B2201.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/30/2017 2:22 AM
File Modified 7/6/2017 10:29 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/6/2017 11:12 AM



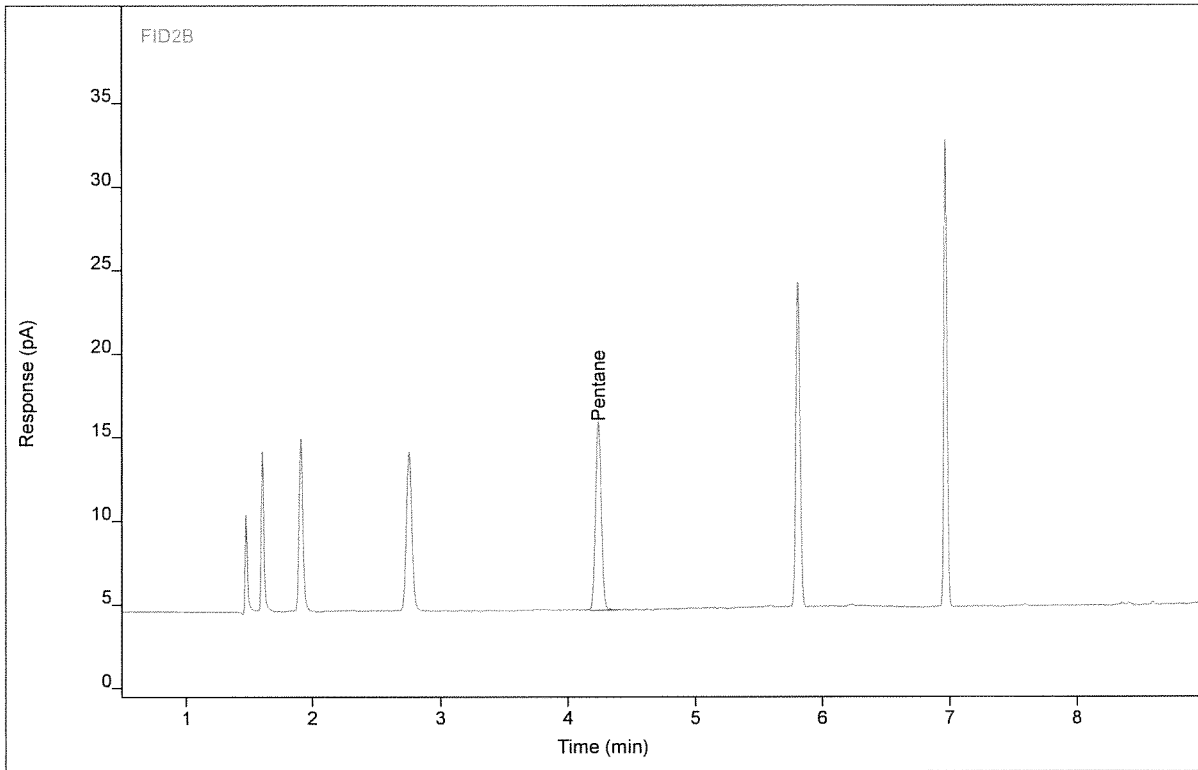
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Pentane	BB	4.24	36.0210	11.3058	39.2947	1	39.2947	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop903 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1048 ver.2
Inj Data File 032B2202.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/30/2017 2:40 AM
File Modified 7/6/2017 10:29 AM
Instrument
Operator Nicholas Traversa

Sample Type
Vial Number
Injection Volume
Injection
Acquisition Method
Analysis Method
Method Modified
Printed
Calibration
Vial 32
1000
2 of 3
AQ_GUMMOP987.M
GUMMOP987R_C1-C7.M
6/7/2017 3:10 PM
7/6/2017 11:12 AM



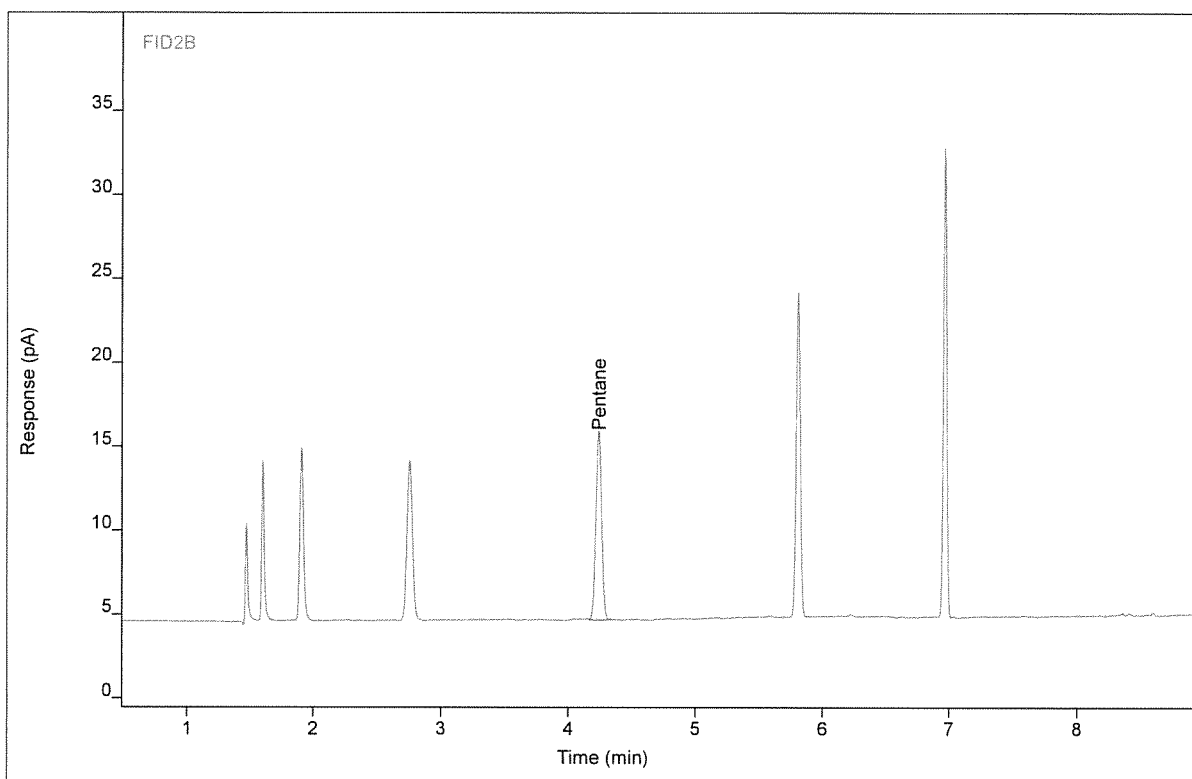
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Pentane	BB	4.24	36.2453	11.2922	39.5393	1	39.5393	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop903 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1048 ver.2
Inj Data File 032B2203.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/30/2017 2:58 AM
File Modified 7/6/2017 10:29 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/6/2017 11:12 AM



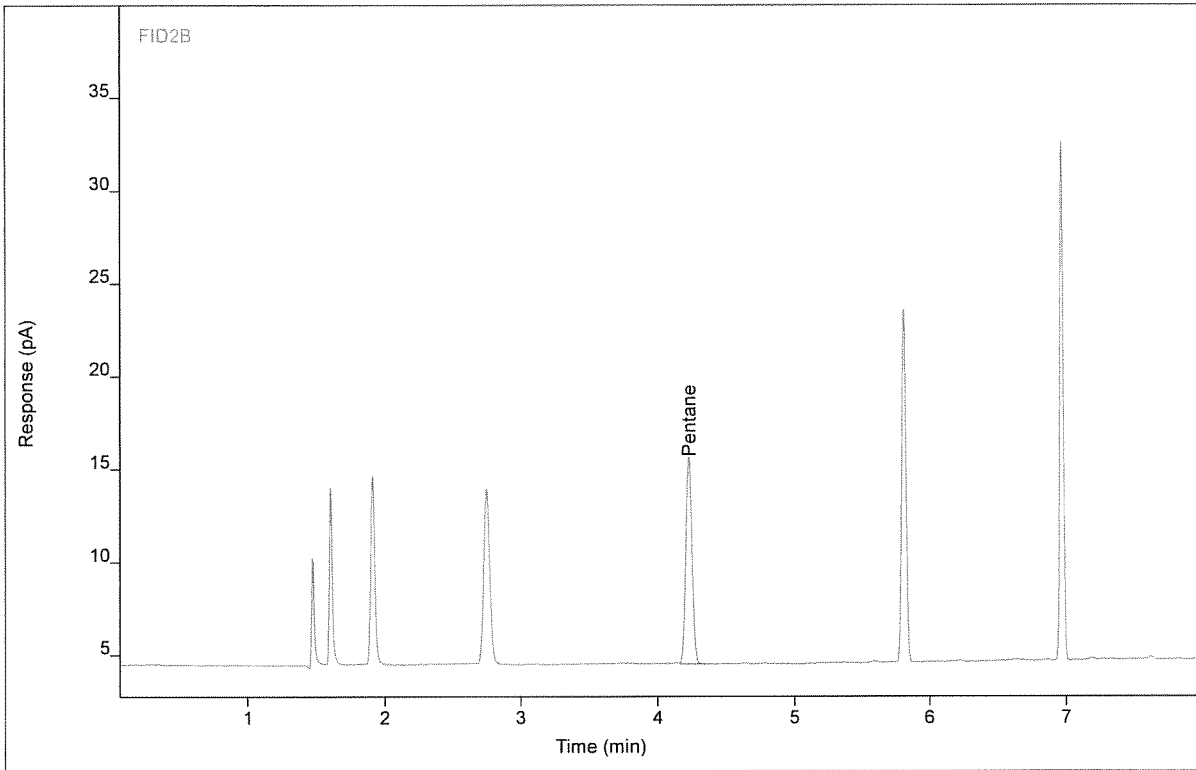
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Pentane	BB	4.24	36.0170	11.2831	39.2905	1	39.2905	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop1054 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1079 ver.3
Inj Data File 032B1001.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/28/2017 3:00 AM
File Modified 8/1/2017 7:31 AM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 7/5/2017 2:48 PM
Printed 8/2/2017 2:53 PM



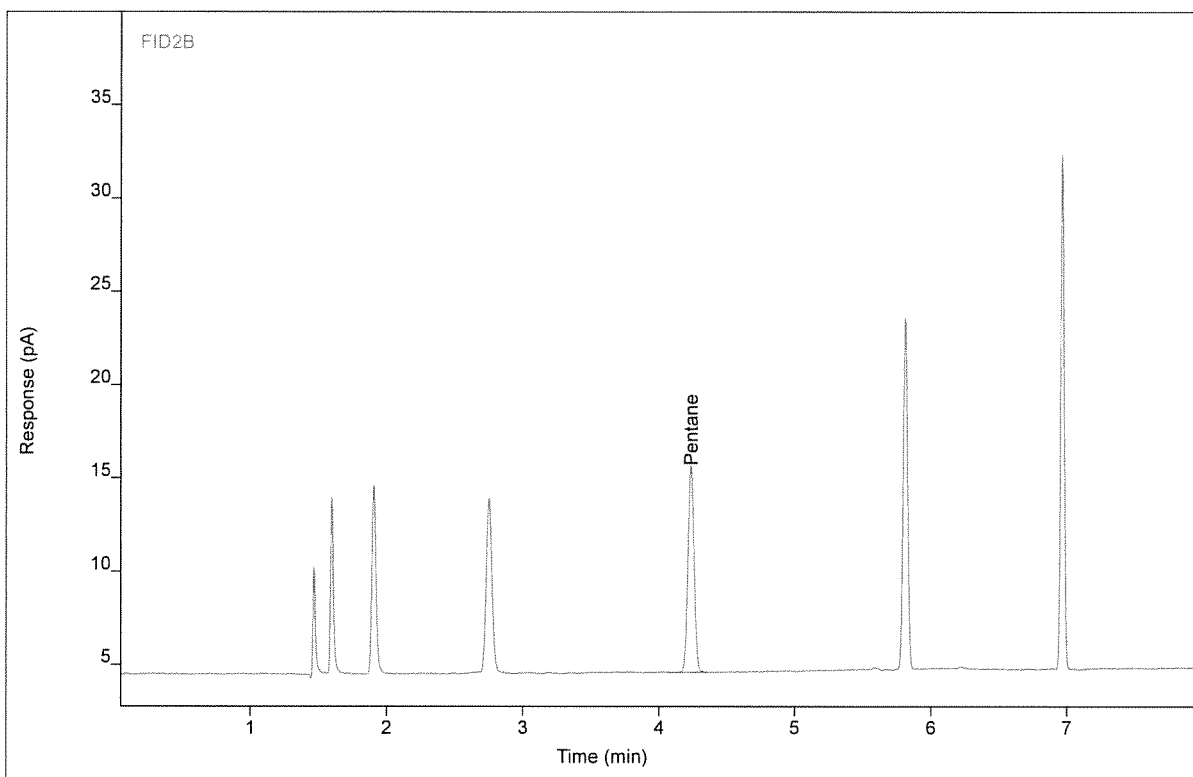
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Pentane	BB	4.24	35.5279	11.1564	38.7573	1	38.7573	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop1054 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1079 ver.3
Inj Data File 032B1002.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/28/2017 3:18 AM
File Modified 8/1/2017 7:31 AM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 7/5/2017 2:48 PM
Printed 8/2/2017 2:53 PM



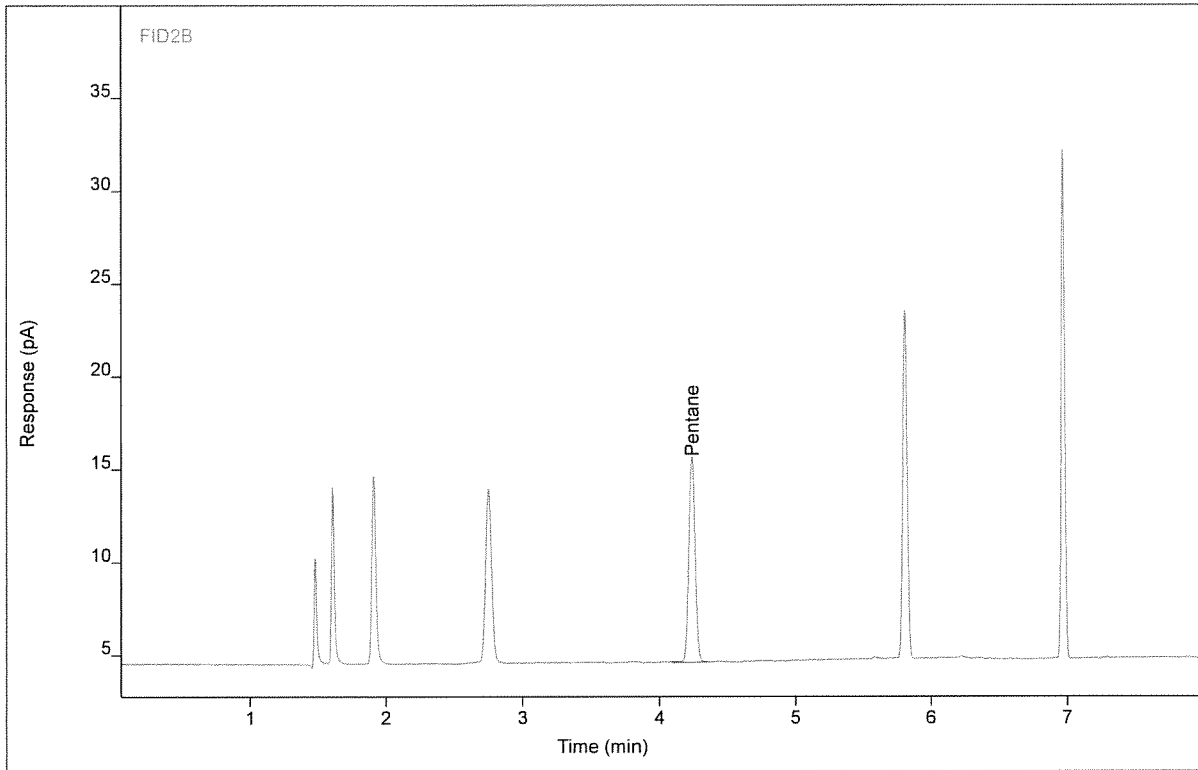
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Pentane	BB	4.24	35.3182	11.0649	38.5288	1	38.5288	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop1054 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1079 ver.3
Inj Data File 032B1003.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/28/2017 3:37 AM
File Modified 8/1/2017 7:31 AM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 7/5/2017 2:48 PM
Printed 8/2/2017 2:53 PM



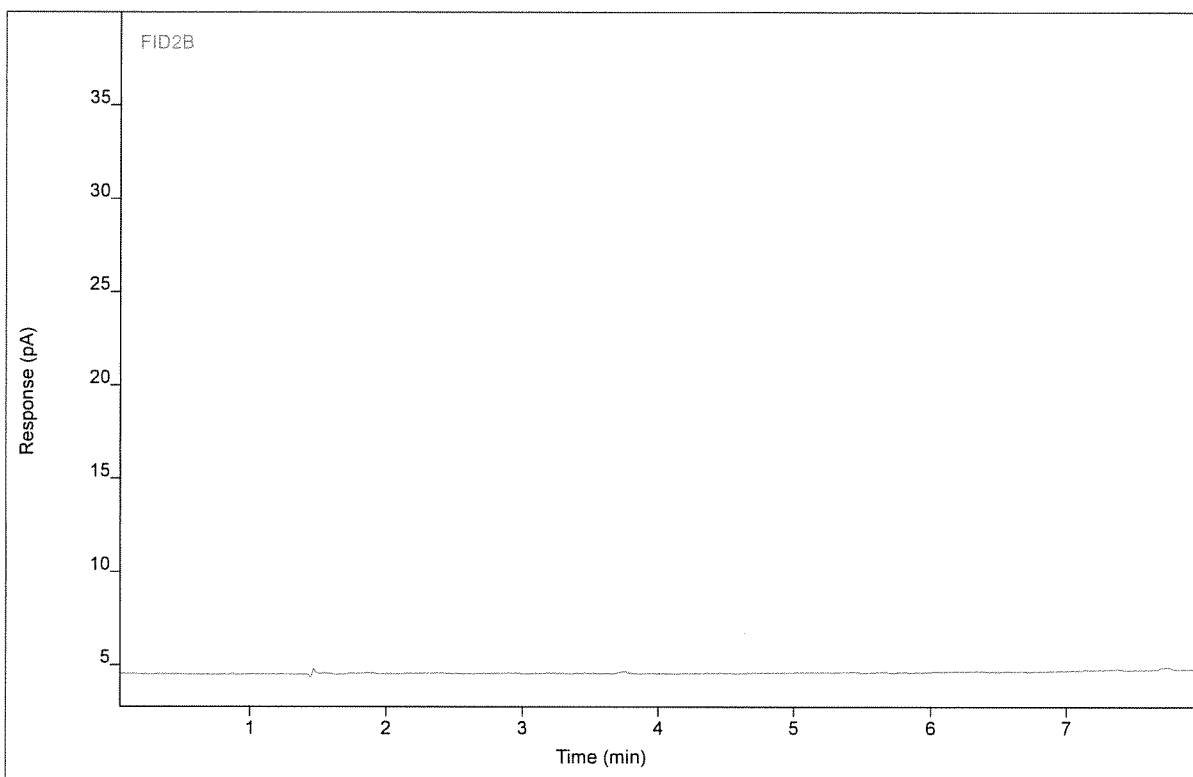
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Pentane	VB	4.24	35.5719	11.0596	38.8053	1	38.8053	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.IBC Retail Outlet Run 3 BL.Bag
Sequence Name GUMMOP1080 ver.6
Inj Data File 029B0401.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/28/2017 10:32 AM
File Modified 7/29/2017 9:51 AM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 29
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 7/29/2017 9:50 AM
Printed 8/2/2017 2:53 PM



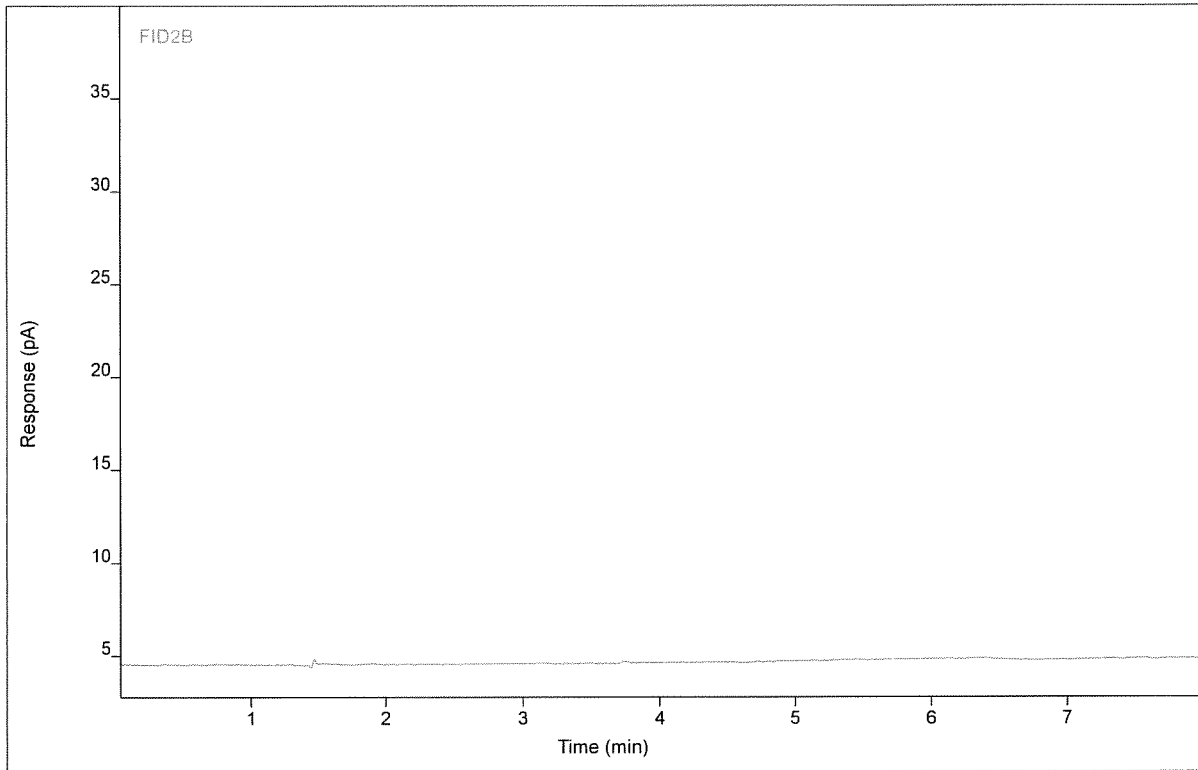
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Pentane		(4.25)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.IBC Retail Outlet Run 3 BL.Bag
Sequence Name GUMMOP1080 ver.6
Inj Data File 029B0402.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/28/2017 10:48 AM
File Modified 7/29/2017 9:51 AM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 29
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 7/29/2017 9:50 AM
Printed 8/2/2017 2:53 PM



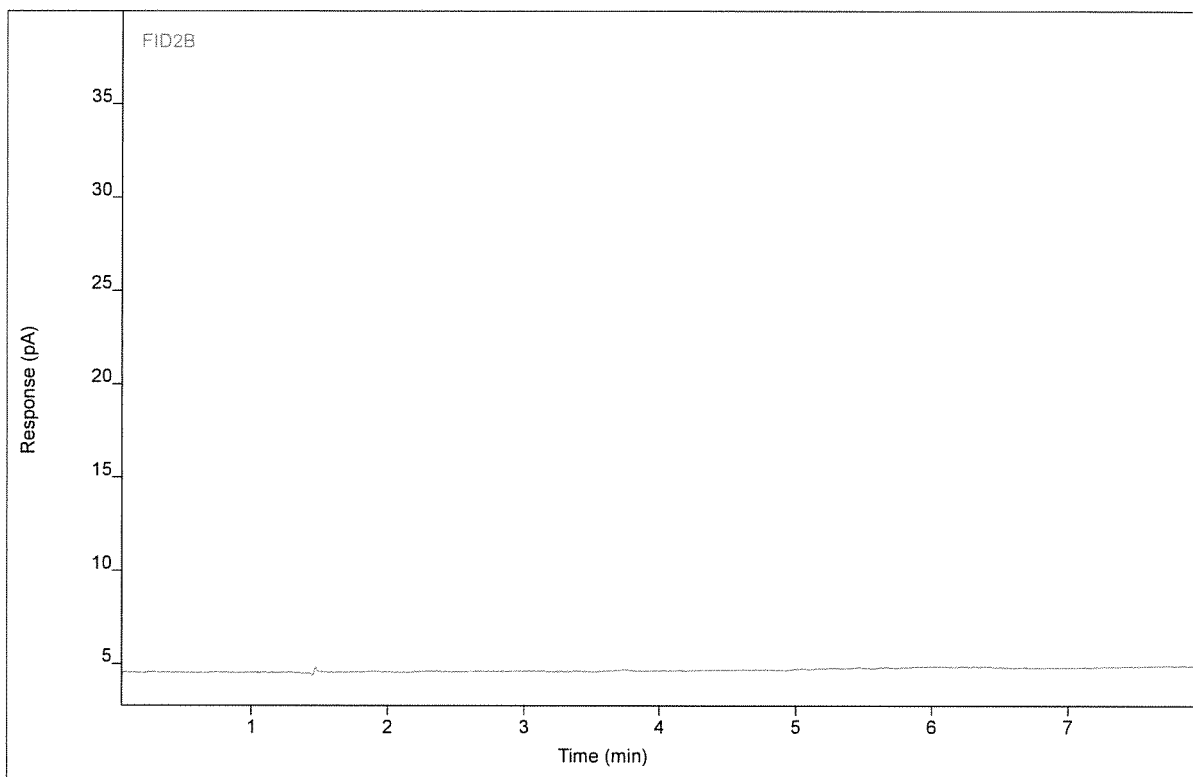
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Pentane		(4.25)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.IBC Retail Outlet Run 3 BL.Bag
Sequence Name GUMMOP1080 ver.6
Inj Data File 029B0403.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/28/2017 11:05 AM
File Modified 7/29/2017 9:52 AM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 29
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 7/29/2017 9:50 AM
Printed 8/2/2017 2:53 PM



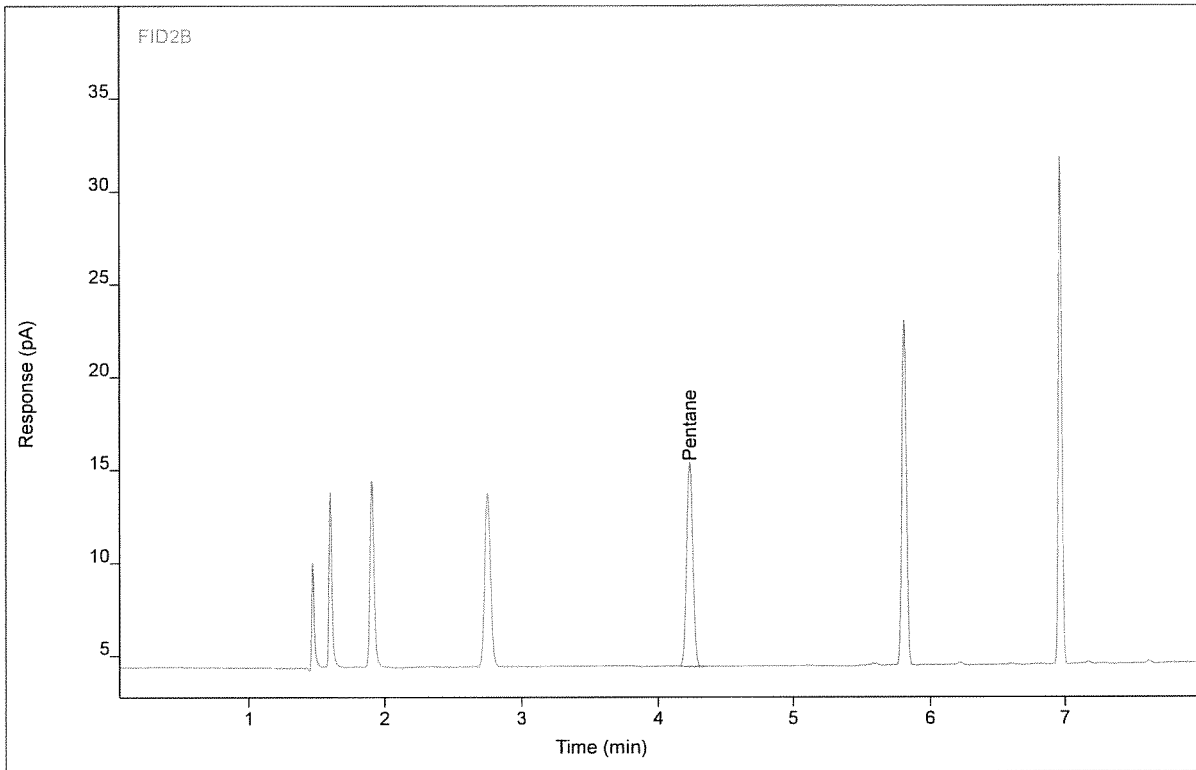
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Pentane		(4.25)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name gummop1054 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1080 ver.6
Inj Data File 032B1601.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/29/2017 2:31 AM
File Modified 7/29/2017 9:53 AM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 7/29/2017 9:50 AM
Printed 8/2/2017 2:53 PM



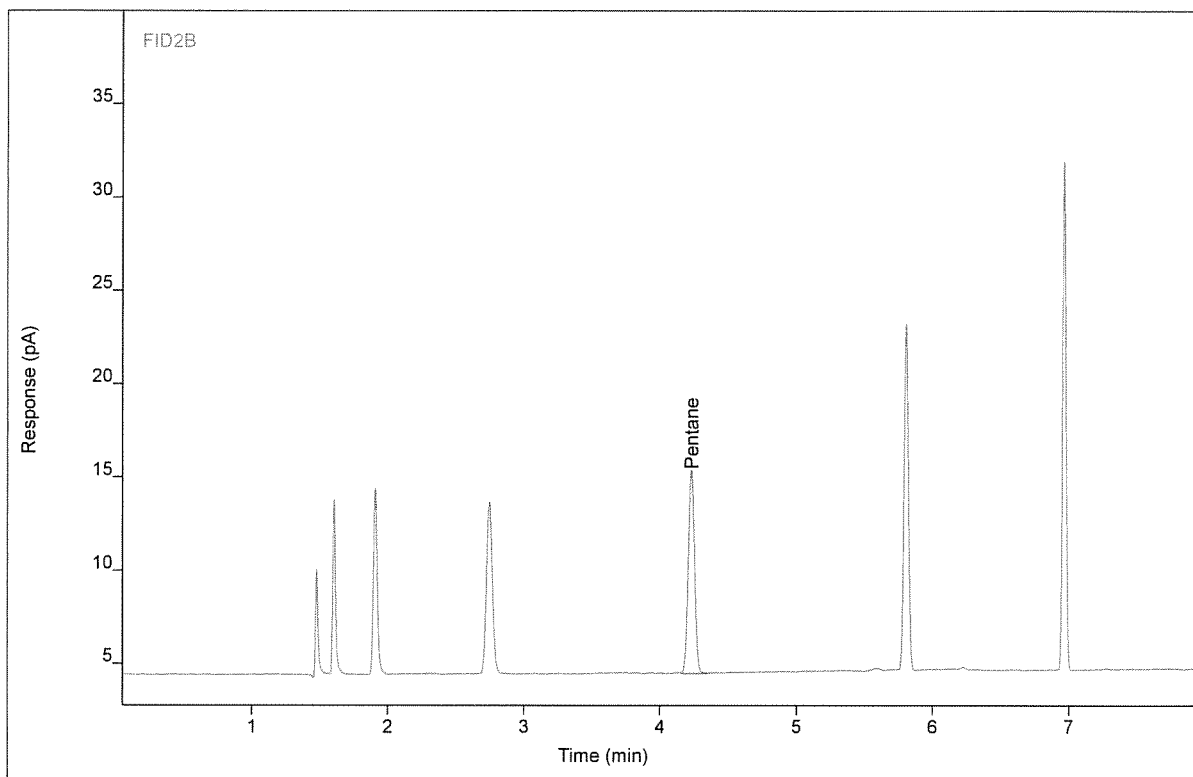
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Pentane	BB	4.23	35.1358	11.0389	38.3299	1	38.3299	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop1054 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1080 ver.6
Inj Data File 032B1602.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/29/2017 2:49 AM
File Modified 7/29/2017 9:53 AM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 7/29/2017 9:50 AM
Printed 8/2/2017 2:53 PM



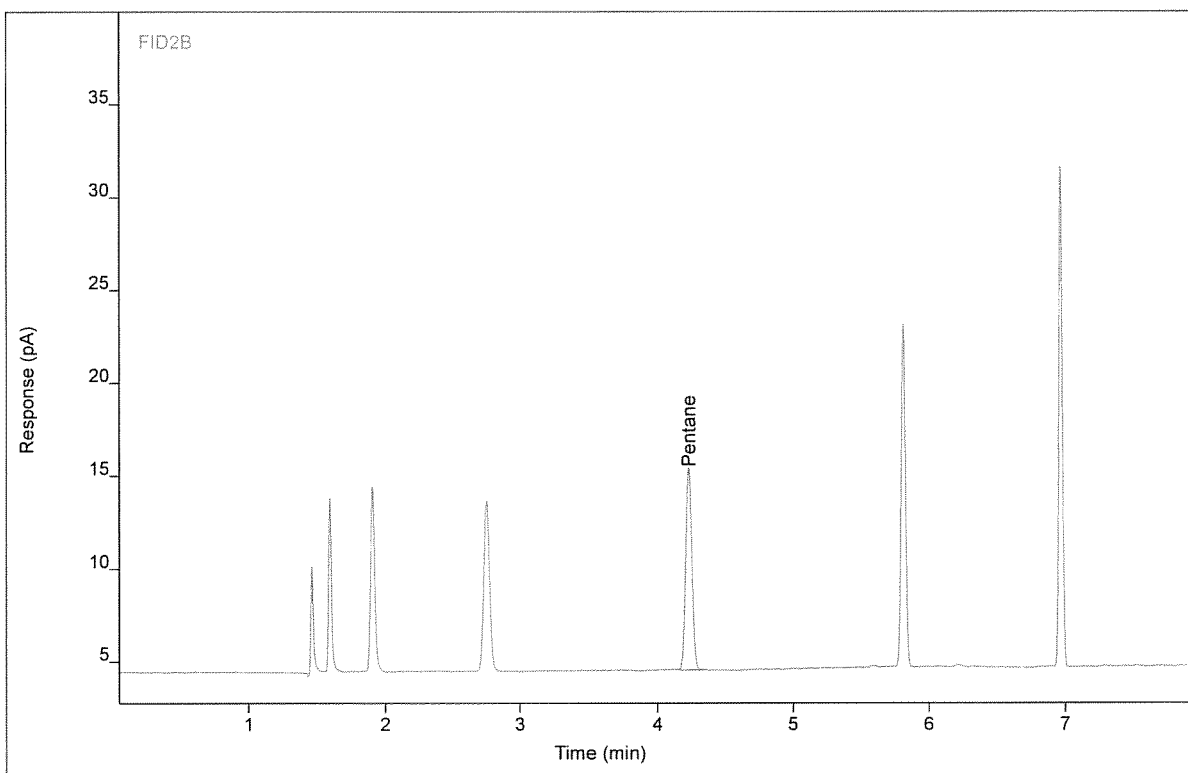
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Pentane	BB	4.23	34.9946	10.9335	38.1760	1	38.1760	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop1054 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1080 ver.6
Inj Data File 032B1603.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/29/2017 3:08 AM
File Modified 7/29/2017 9:53 AM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 7/29/2017 9:50 AM
Printed 8/2/2017 2:53 PM



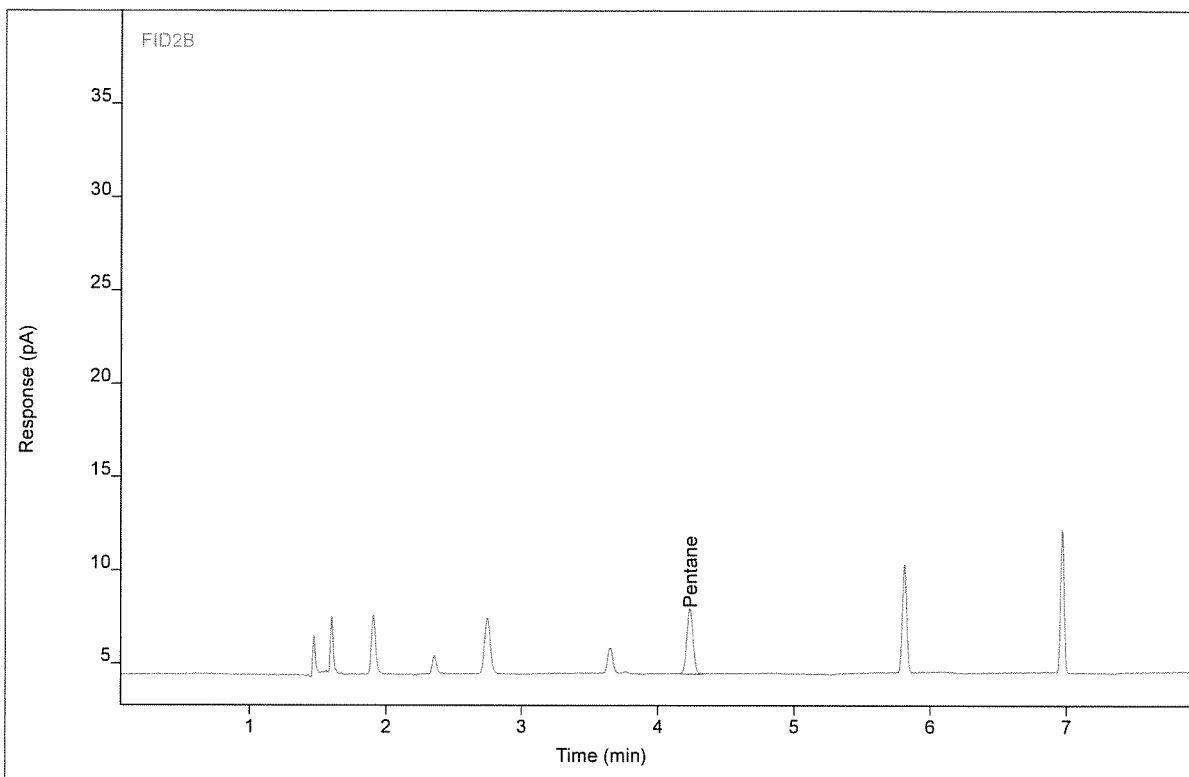
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Pentane	BB	4.23	34.6438	10.9229	37.7937	1	37.7937	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.IBC Retail Out Run3 BL SP.Bag
Sequence Name GUMMOP1081 ver.2
Inj Data File 029B1501.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/29/2017 2:14 PM
File Modified 7/31/2017 7:23 AM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 29
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 7/29/2017 9:50 AM
Printed 8/2/2017 2:53 PM



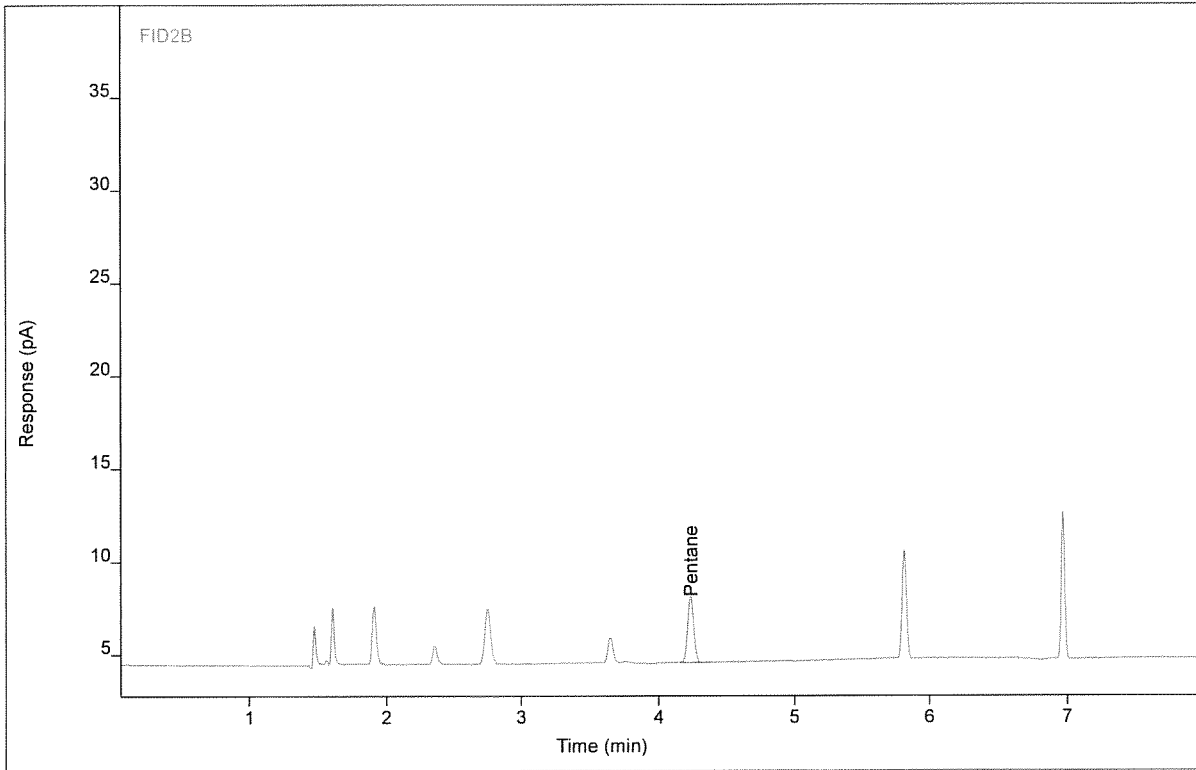
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Pentane	BB	4.24	11.3122	3.55264	12.3636	1	12.3636	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.IBC Retail Out Run3 BL SP.Bag
Sequence Name GUMMOP1081 ver.2
Inj Data File 029B1502.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/29/2017 2:30 PM
File Modified 7/31/2017 7:23 AM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 29
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 7/29/2017 9:50 AM
Printed 8/2/2017 2:53 PM



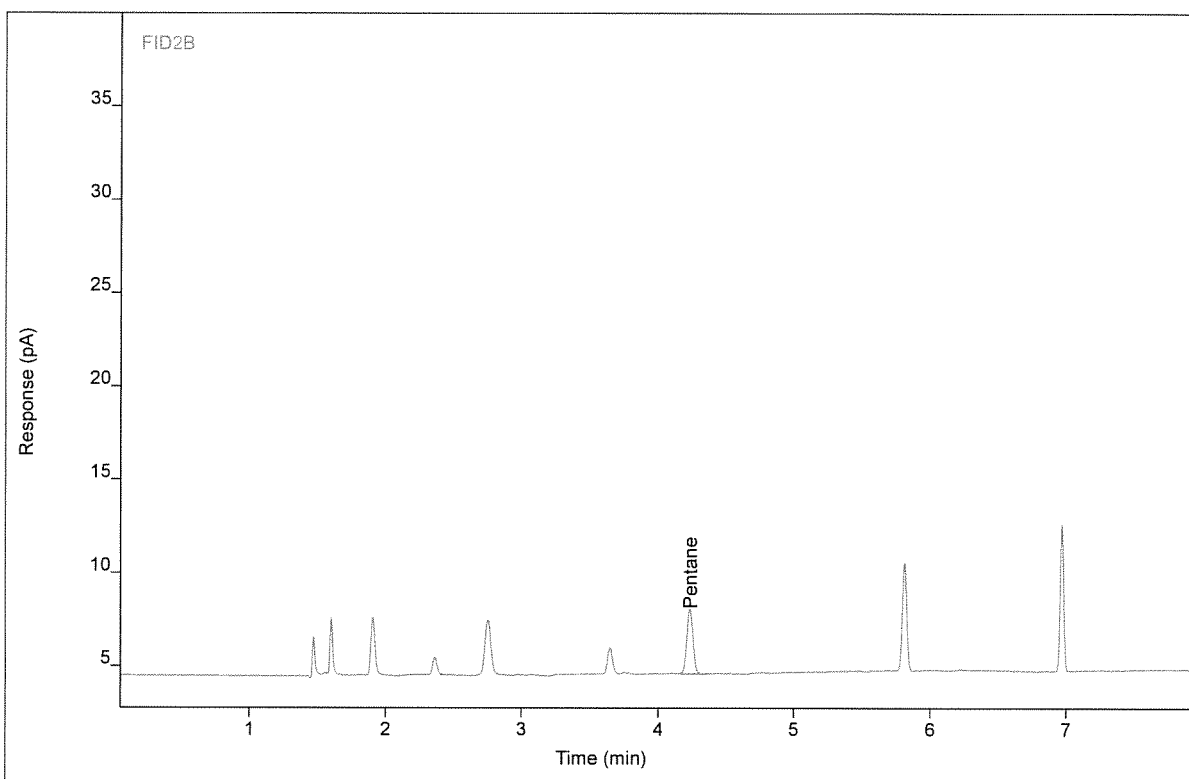
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Pentane	BB	4.24	11.3144	3.54336	12.3659	1	12.3659	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.IBC Retail Out Run3 BL SP.Bag
Sequence Name GUMMOP1081 ver.2
Inj Data File 029B1503.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/29/2017 2:46 PM
File Modified 7/31/2017 7:23 AM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 29
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 7/29/2017 9:50 AM
Printed 8/2/2017 2:53 PM



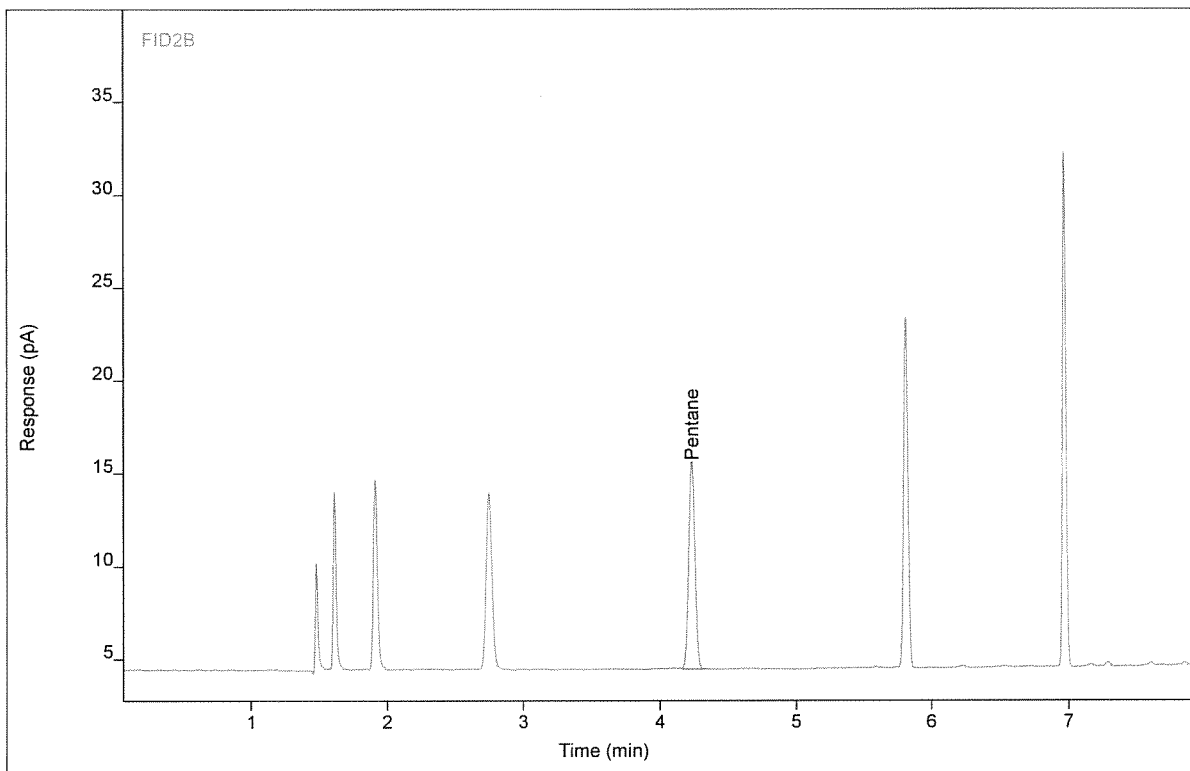
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Pentane	BB	4.24	11.0849	3.48768	12.1158	1	12.1158	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop1054 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1081 ver.2
Inj Data File 032B2201.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/30/2017 1:51 AM
File Modified 7/31/2017 7:24 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 7/29/2017 9:50 AM
Printed 8/2/2017 2:53 PM



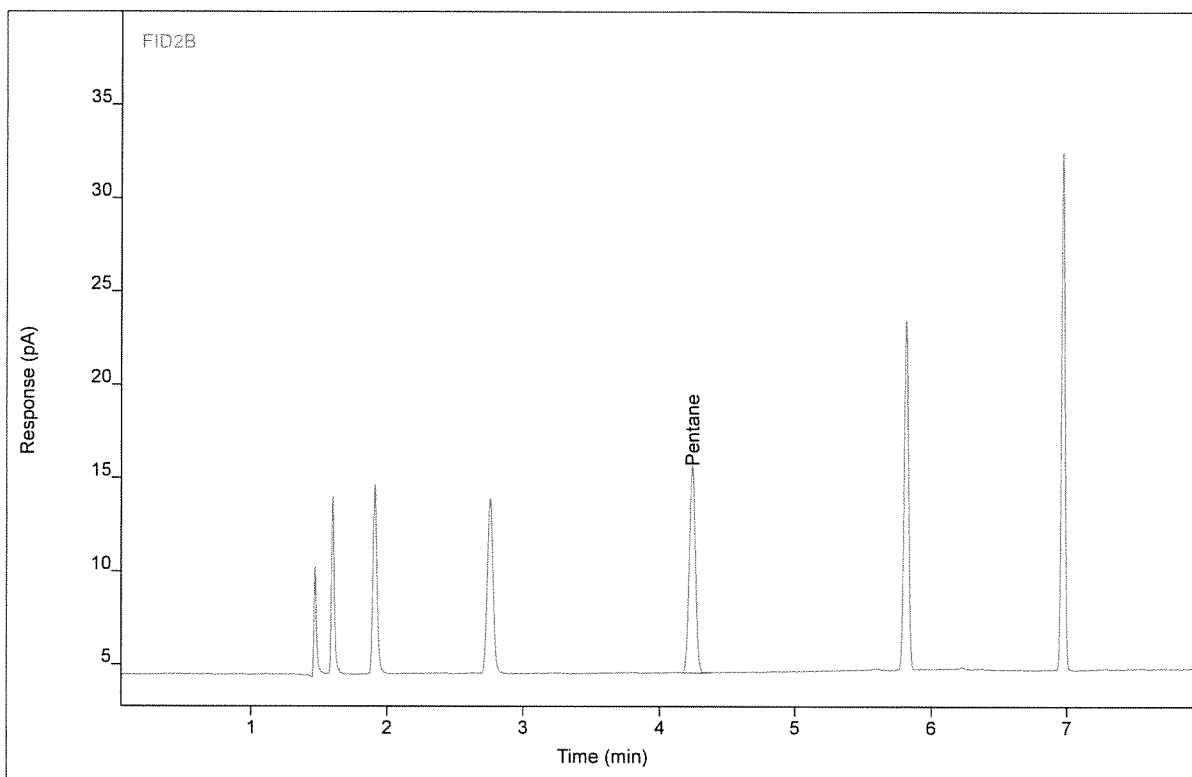
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Pentane	BB	4.24	35.6707	11.2200	38.9130	1	38.9130	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop1054 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1081 ver.2
Inj Data File 032B2202.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/30/2017 2:09 AM
File Modified 7/31/2017 7:24 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 7/29/2017 9:50 AM
Printed 8/2/2017 2:53 PM



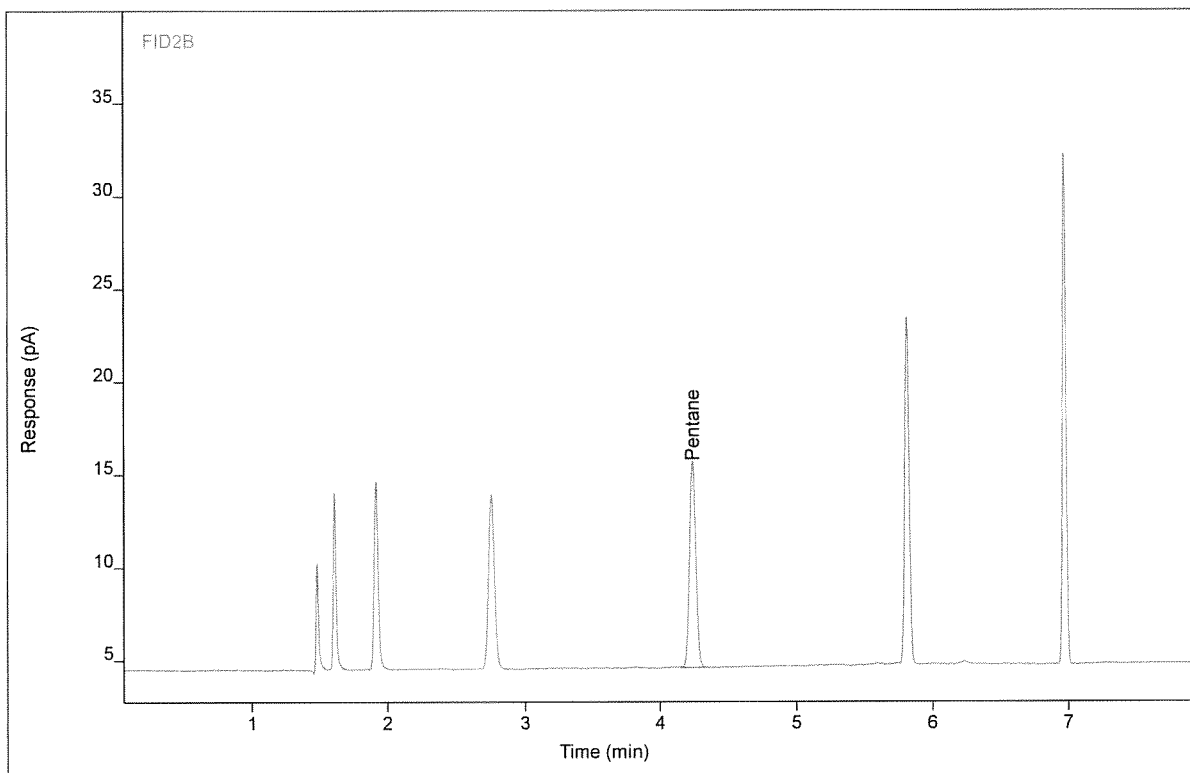
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Pentane	BB	4.24	35.5013	11.0888	38.7284	1	38.7284	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop1054 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1081 ver.2
Inj Data File 032B2203.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/30/2017 2:27 AM
File Modified 7/31/2017 7:24 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 7/29/2017 9:50 AM
Printed 8/2/2017 2:53 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Pentane	BB	4.24	35.1788	11.0968	38.3768	1	38.3768	ppm

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Easton
 Job No.: 0617-110 - EPA Method 18
 Client No.: 016-AQS-149228

Acrolein -- Calibration Standards

Sample ID	Filename #1	Filename #2	Filename #3	Analysis Method	Ret Time (min)	Ret Time (min)	Ret Time (min)	%dif RT	Conc #1	Conc #2	Conc #3	%dif conc	Avg Conc ppm	Standard Tag ppm	% Tag
<i>zero air blank #LB</i>	008F1501.D	008F1502.D	008F1503.D	GUMMOP1039F_AA.M	NA	NA	NA	NA	ND	ND	ND	NA	ND	NA	NA
<i>gummop980 #AA2 ENV(1=800,4=200)</i>	016F1702.D	016F1703.D	016F1704.D	GUMMOP1039F_AA.M	3.46	3.46	3.46	0.0	50.1	49.7	48.3	2.2	49.4	50.0	98.7
<i>gummop980 #AA2 ENV(1=800,4=200)</i>	016F1402.D	016F1403.D	016F1404.D	GUMMOP1039F_AA.M	3.44	3.44	3.44	0.0	49.0	50.4	50.4	1.9	50.0	50.0	99.9
<i>gummop1075 #AA2 ENV(1=800,5=200)</i>	016F0902.D	016F0903.D	016F0904.D	GUMMOP1075F_AA.M	3.44	3.44	3.44	0.0	45.1	46.8	45.9	2.0	45.9	48.4	94.9
<i>gummop980 #AA2 ENV(1=800,5=200)</i>	016F1502.D	016F1503.D	016F1504.D	GUMMOP1075F_AA.M	3.45	3.45	3.45	0.0	45.4	46.3	46.1	1.2	45.9	50.0	91.9
<i>gummop980 #AA2 ENV(1=800,5=200)</i>	016F2102.D	016F2103.D	016F2104.D	GUMMOP1075F_AA.M	3.45	3.45	3.45	0.0	47.6	47.0	45.8	2.2	46.8	50.0	93.6

Pentane -- Calibration Standards

Sample ID	Filename #1	Filename #2	Filename #3	Analysis Method	Ret Time (min)	Ret Time (min)	Ret Time (min)	%dif RT	Conc #1	Conc #2	Conc #3	%dif conc	Avg Conc ppm	Standard Tag ppm	% Tag
<i>gummop903 #C3 ENV(1=600,2=400)</i>	032B1401.D	032B1402.D	032B1403.D	GUMMOP987R_C1-C7.M	4.23	4.23	4.23	0.0	40.5	40.2	40.0	0.6	40.2	40.0	101
<i>zero air blank #LB</i>	024B1501.D	024B1502.D	024B1503.D	GUMMOP987R_C1-C7.M	NA	NA	NA	NA	ND	ND	ND	NA	ND	NA	NA
<i>gummop903 #C3 ENV(1=600,2=400)</i>	032B2201.D	032B2202.D	032B2203.D	GUMMOP987R_C1-C7.M	4.24	4.24	4.24	0.0	39.3	39.5	39.3	0.4	39.4	40.0	98.4
<i>gummop1054 #C3 ENV(1=600,2=400)</i>	032B1001.D	032B1002.D	032B1003.D	GUMMOP987R_C1-C7.M	4.24	4.24	4.24	0.0	38.8	38.5	38.8	0.4	38.7	40.0	96.7
<i>gummop1054 #C3 ENV(1=600,2=400)</i>	032B1601.D	032B1602.D	032B1603.D	GUMMOP987R_C1-C7.M	4.23	4.23	4.23	0.0	38.3	38.2	37.8	0.8	38.1	40.0	95.2
<i>gummop1054 #C3 ENV(1=600,2=400)</i>	032B2201.D	032B2202.D	032B2203.D	GUMMOP987R_C1-C7.M	4.24	4.24	4.24	0.1	38.9	38.7	38.4	0.8	38.7	40.0	96.7
<i>gummop903 #C3 ENV(1=600,2=400)</i>	032B1501.D	032B1502.D	032B1503.D	GUMMOP987R_C1-C7.M	4.24	4.23	4.23	0.0	39.1	39.0	38.9	0.2	39.0	40.0	97.5

=====
 Calibration Table
 =====

Calib. Data Modified : Thursday, June 15, 2017 7:01:13 AM

Rel. Reference Window : 0.000 %
 Abs. Reference Window : 0.100 min
 Rel. Non-ref. Window : 0.000 %
 Abs. Non-ref. Window : 0.050 min
 Uncalibrated Peaks : not reported
 Partial Calibration : Yes, identified peaks are recalibrated
 Correct All Ret. Times: No, only for identified peaks

Curve Type : Linear
 Origin : Connected
 Weight : Quadratic (Amnt)

Recalibration Settings:
 Average Response : Average all calibrations
 Average Retention Time: Floating Average New 75%

Calibration Report Options :
 Printout of recalibrations within a sequence:
 Calibration Table after Recalibration
 Normal Report after Recalibration
 If the sequence is done with bracketing:
 Results of first cycle (ending previous bracket)

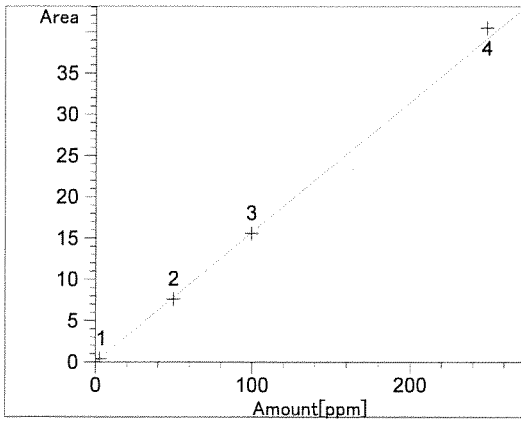
Signal 1: FID1 A,
 Signal 2: FID2 B,

RetTime [min]	Lvl Sig	Amount [ppm]	Area	Amt/Area	Ref Grp Name
2.264	1 1	2.49000	3.83248e-1	6.49710	Acetaldehyde
	2	49.80000	7.60253	6.55045	
	3	99.60000	15.59834	6.38529	
	4	249.00000	40.51589	6.14574	
3.452	1 1	2.50000	5.31030e-1	4.70783	Acrolein
	2	50.00000	13.70652	3.64790	
	3	100.00000	29.43284	3.39756	
	4	250.00000	81.38973	3.07164	

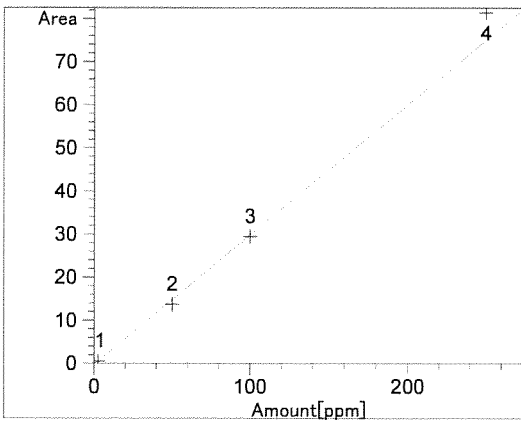
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 Peak Sum Table
 =====

No Entries in table
 =====

=====
Calibration Curves
=====



Acetaldehyde at exp. RT: 2.264
FID1 A,
Correlation: 0.99964
Residual Std. Dev.: 0.94041
Formula: $y = mx + b$
m: 1.57503e-1
b: -9.43159e-3
x: Amount
y: Area
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.0025
Level 3 : 0.000625
Level 4 : 0.0001



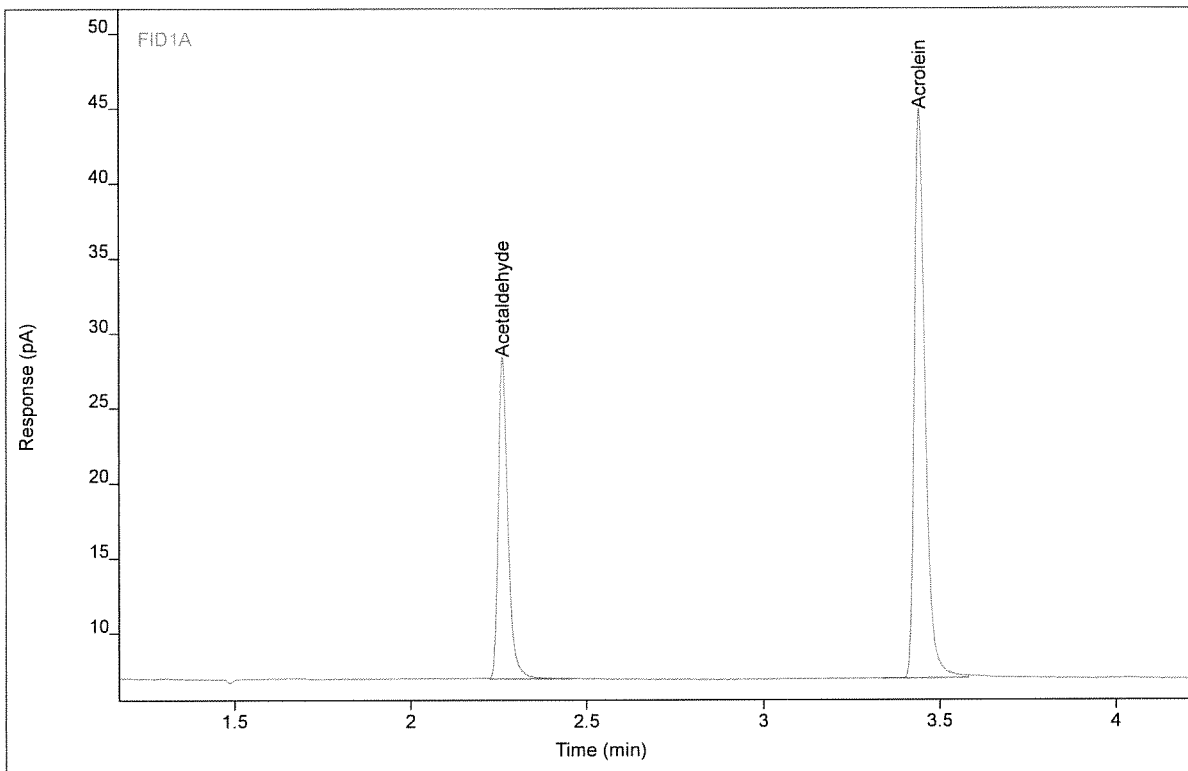
Acrolein at exp. RT: 3.452
FID1 A,
Correlation: 0.99772
Residual Std. Dev.: 4.60211
Formula: $y = mx + b$
m: 3.00861e-1
b: -2.23533e-1
x: Amount
y: Area
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.0025
Level 3 : 0.000625
Level 4 : 0.0001

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop980 #AA4 ENV(1=0,6=400)
Sequence Name GUMMOP1039A ver. 1
Inj Data File 016F0704.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/14/2017 4:52 PM
File Modified 6/22/2017 10:55 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 4 of 6
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 6/30/2017 8:47 AM



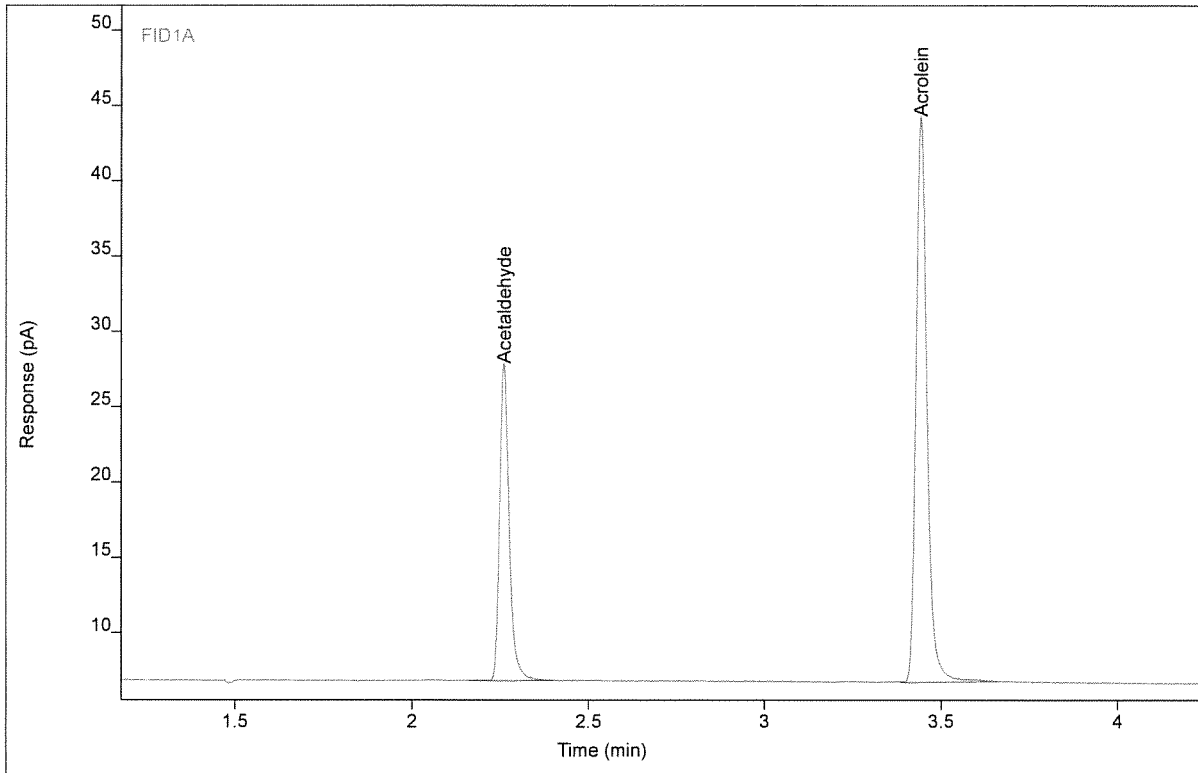
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	BB	2.26	40.9044	21.4237	259.766	1	259.766	ppm
Acrolein	BV	3.44	81.4762	37.8766	271.553	1	271.553	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop980 #AA4 ENV(1=0,6=400)
Sequence Name GUMMOP1039A ver.1
Inj Data File 016F0705.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/14/2017 5:10 PM
File Modified 6/22/2017 10:55 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 5 of 6
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 6/30/2017 8:47 AM



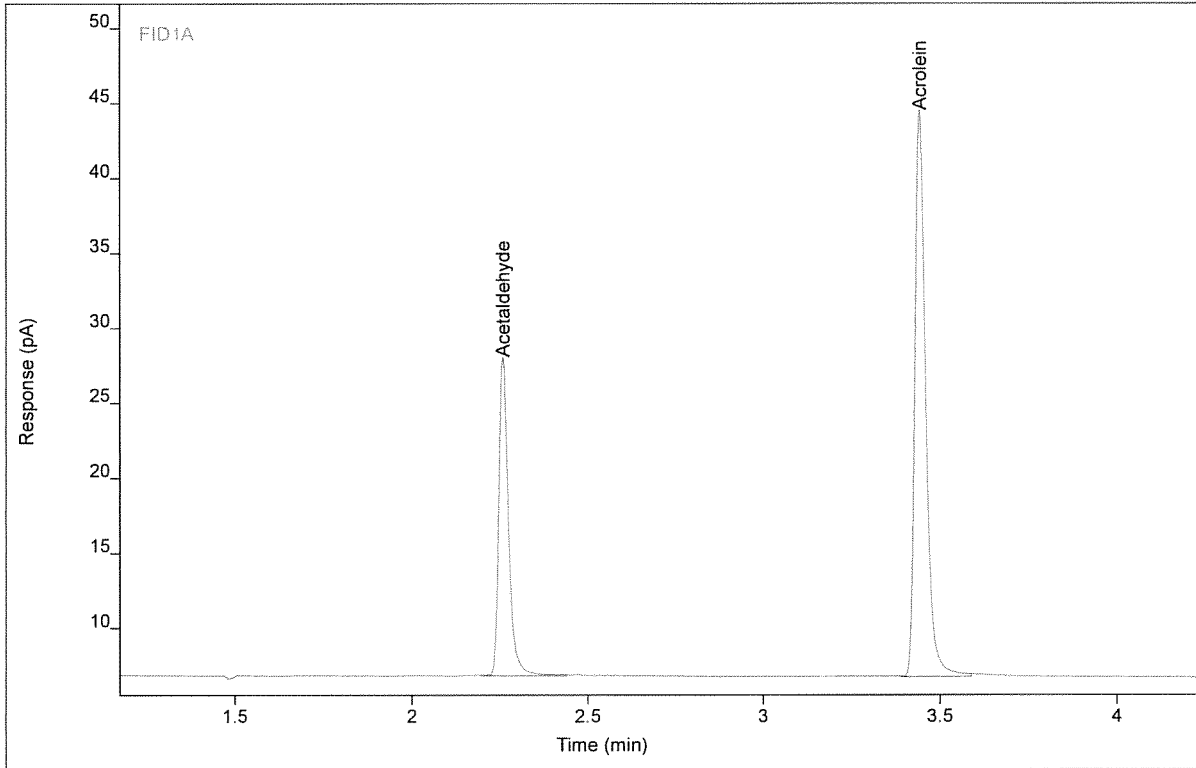
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	BB	2.26	39.8302	21.0224	252.946	1	252.946	ppm
Acrolein	VB	3.44	81.3170	37.5051	271.024	1	271.024	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop980 #AA4 ENV(1=0,6=400)
Sequence Name GUMMOP1039A ver.1
Inj Data File 016F0706.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/14/2017 5:28 PM
File Modified 6/22/2017 10:55 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 6 of 6
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 6/30/2017 8:47 AM



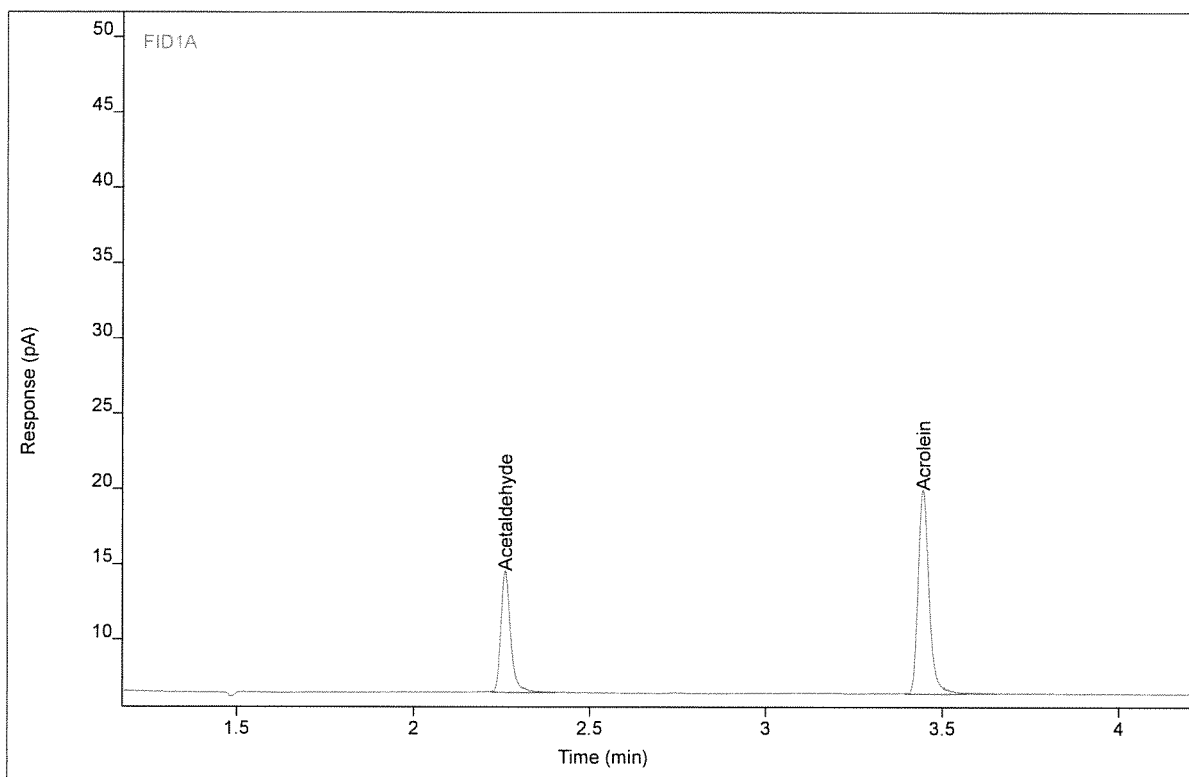
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	VB	2.26	40.8131	21.2119	259.187	1	259.187	ppm
Acrolein	VV	3.44	81.3761	37.7219	271.220	1	271.220	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop980 #AA3 ENV(1=600,6=400)
Sequence Name GUMMOP1039A ver.1
Inj Data File 016F0802.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/14/2017 6:05 PM
File Modified 6/22/2017 10:55 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 2 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 6/30/2017 8:47 AM



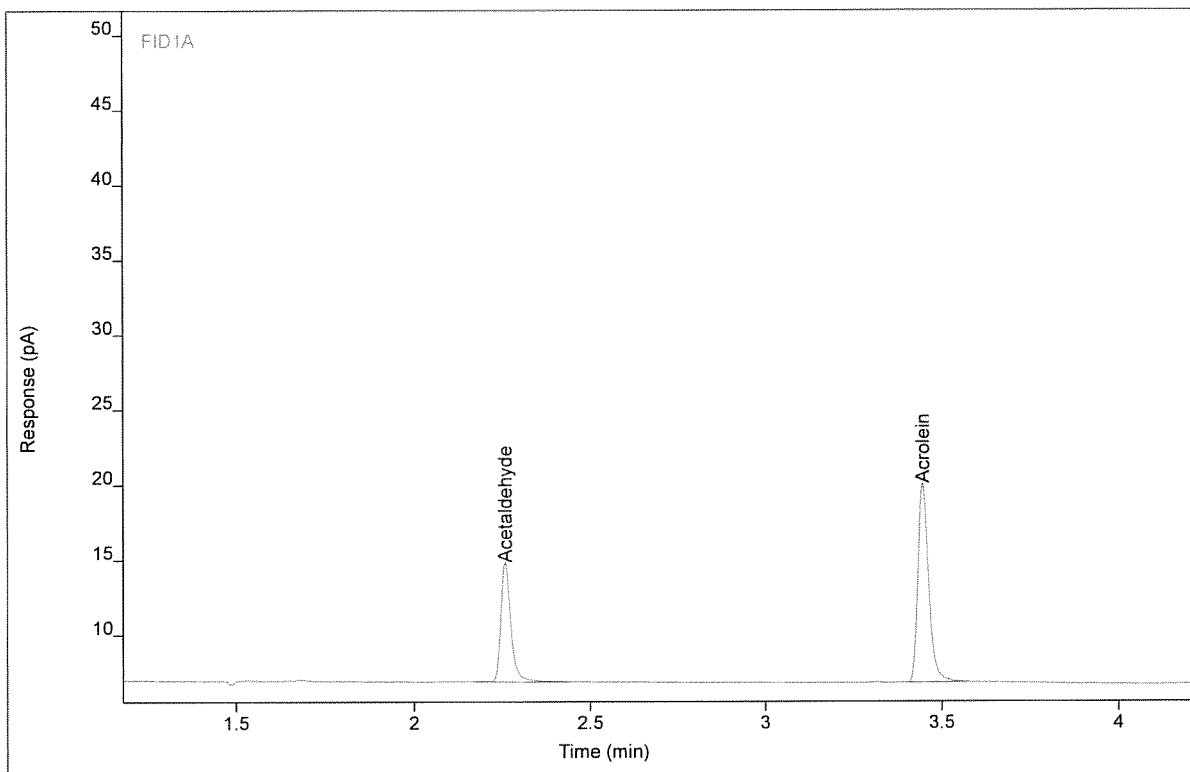
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	BV	2.26	15.7659	8.07783	100.159	1	100.159	ppm
Acrolein	VB	3.45	29.8364	13.5229	99.9130	1	99.9130	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop980 #AA3 ENV(1=600,6=400)
Sequence Name GUMMOP1039A ver.1
Inj Data File 016F0803.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/14/2017 6:23 PM
File Modified 6/22/2017 10:55 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 3 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 6/30/2017 8:47 AM



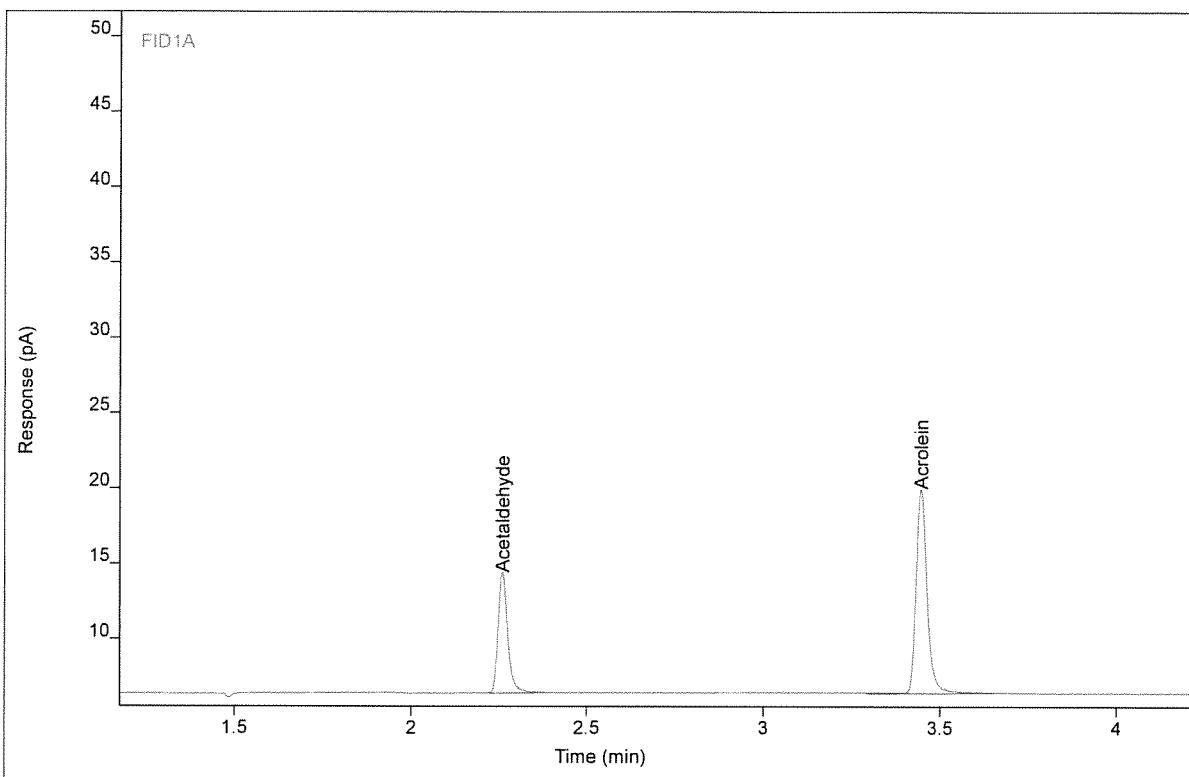
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	BB	2.26	15.6503	7.96744	99.4255	1	99.4255	ppm
Acrolein	BB	3.45	28.5465	13.2499	95.6259	1	95.6259	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop980 #AA3 ENV(1=600,6=400)
Sequence Name GUMMOP1039A ver.1
Inj Data File 016F0804.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/14/2017 6:41 PM
File Modified 6/22/2017 10:55 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 4 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 6/30/2017 8:47 AM



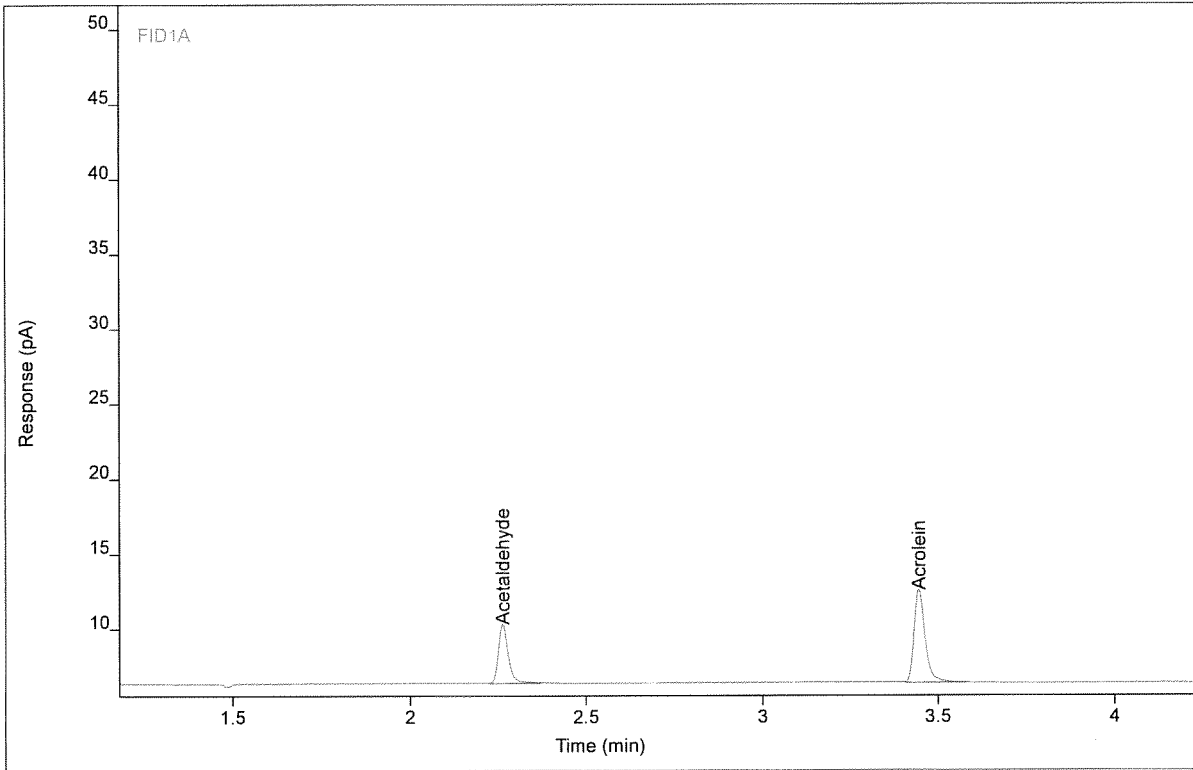
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	BB	2.26	15.3787	8.00094	97.7012	1	97.7012	ppm
Acrolein	VB	3.45	29.9156	13.5537	100.176	1	100.176	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop980 #AA2 ENV(1=800,6=200)
Sequence Name GUMMOP1039A ver.1
Inj Data File 016F0902.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/14/2017 7:18 PM
File Modified 6/22/2017 10:55 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 2 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 6/30/2017 8:47 AM



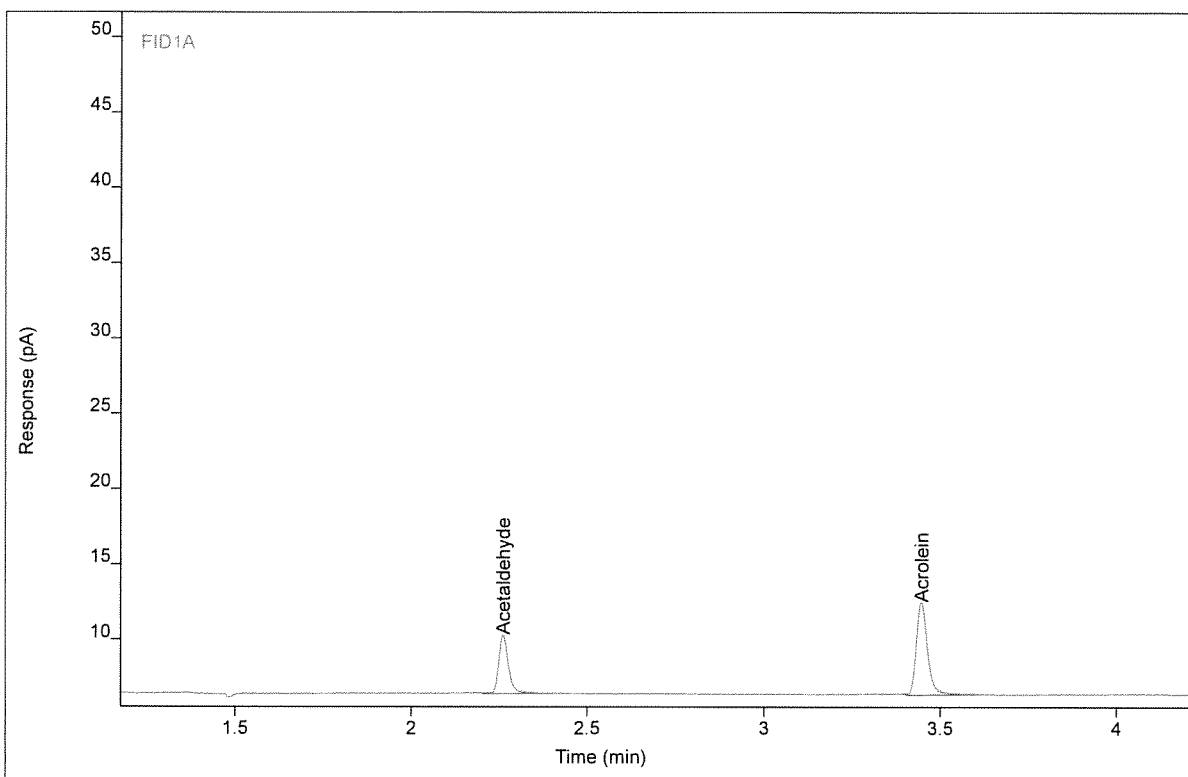
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	BB	2.26	7.70970	3.94120	49.0096	1	49.0096	ppm
Acrolein	BV	3.45	13.7294	6.17531	46.3767	1	46.3767	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop980 #AA2 ENV(1=800,6=200)
Sequence Name GUMMOP1039A ver.1
Inj Data File 016F0903.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/14/2017 7:36 PM
File Modified 6/22/2017 10:55 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 3 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 6/30/2017 8:47 AM



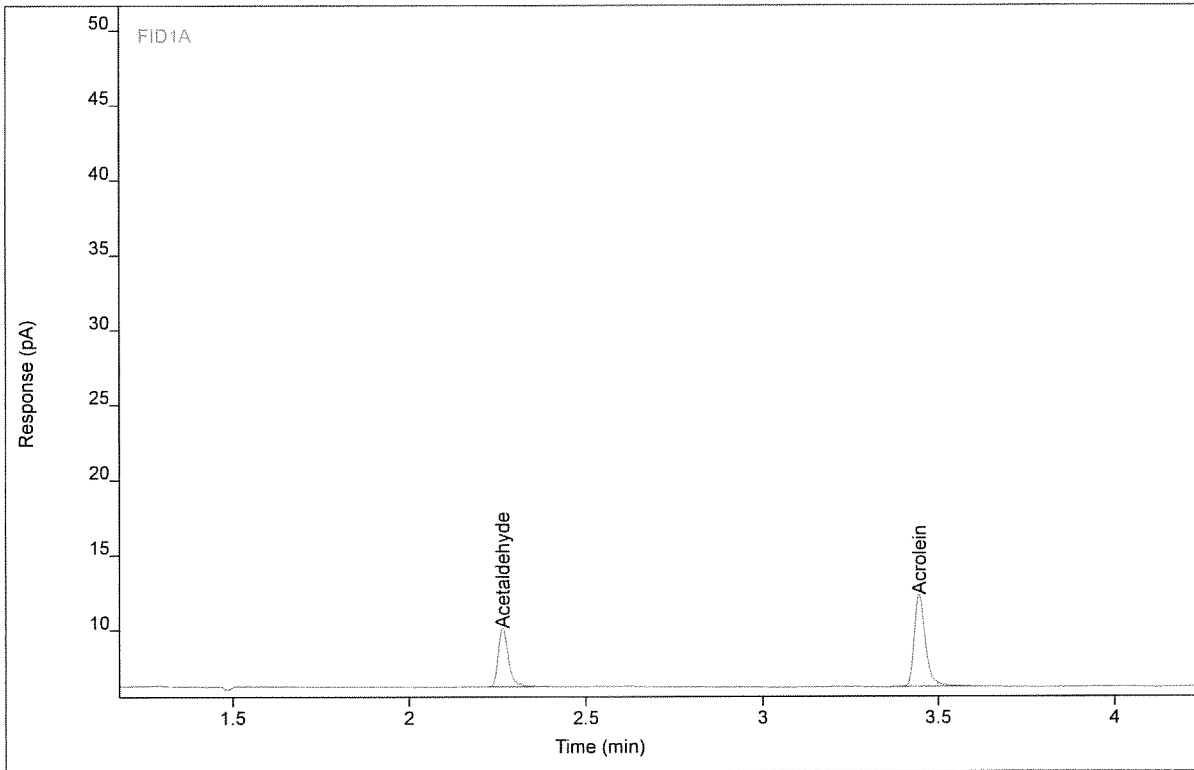
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	VB	2.26	7.45687	3.90894	47.4043	1	47.4043	ppm
Acrolein	BB	3.45	13.6794	6.17549	46.2105	1	46.2105	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop980 #AA2 ENV(1=800,6=200)
Sequence Name GUMMOP1039A ver.1
Inj Data File 016F0904.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/14/2017 7:54 PM
File Modified 6/22/2017 10:55 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 4 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 6/30/2017 8:47 AM



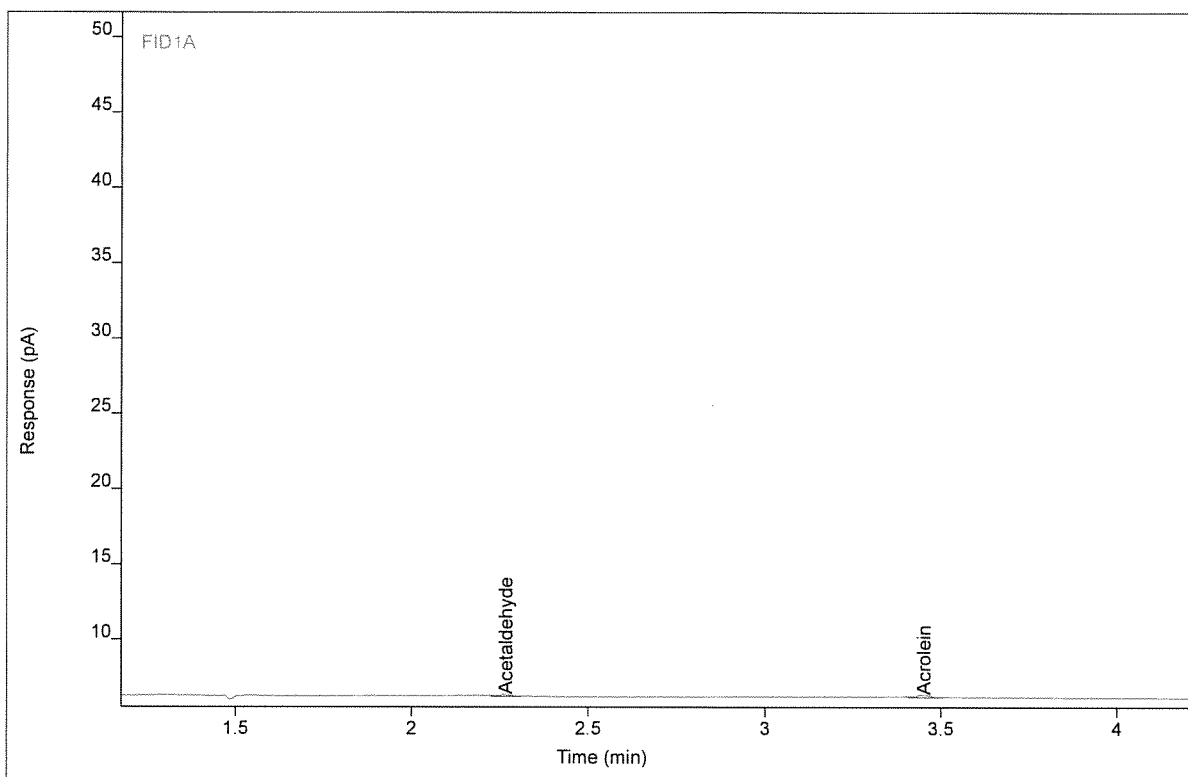
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	BB	2.26	7.64103	3.91594	48.5736	1	48.5736	ppm
Acrolein	BB	3.45	13.7108	6.14277	46.3148	1	46.3148	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop980 #AA1 ENV(1=3960,6=40)
Sequence Name GUMMOP1039A ver.1
Inj Data File 016F1004.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/14/2017 9:07 PM
File Modified 6/22/2017 10:56 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 4 of 10
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 6/30/2017 8:47 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	MM	2.27	0.39851	0.18983	2.59007	1	2.59007	ppm
Acrolein	MM	3.45	0.53667	0.22981	2.52678	1	2.52678	ppm

Analyst Peak Integration Comments

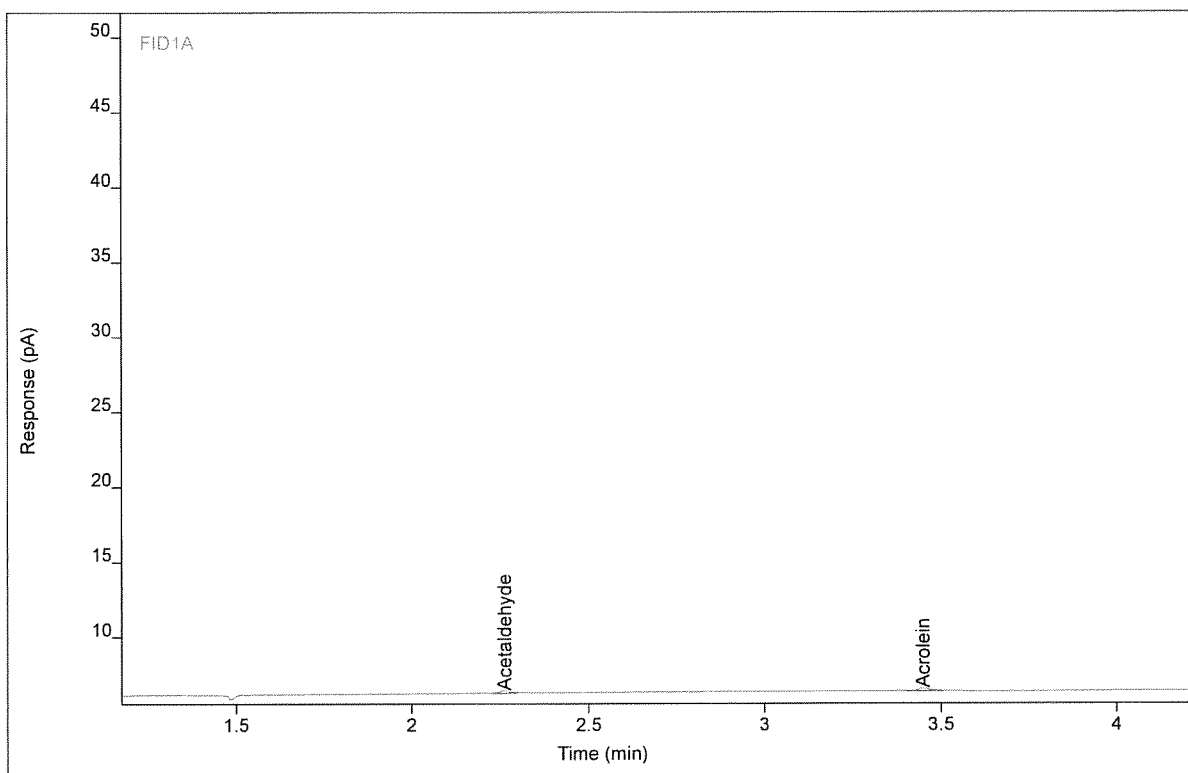
06:58:44 06/15/17 Justin Guenzler II
07:01:01 06/15/17 Justin Guenzler II

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop980 #AA1 ENV(1=3960,6=40)
Sequence Name GUMMOP1039A ver.1
Inj Data File 016F1005.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/14/2017 9:25 PM
File Modified 6/22/2017 10:56 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 5 of 10
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 6/30/2017 8:47 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	MM	2.26	0.37549	0.20704	2.44276	1	2.44276	ppm
Acrolein	MM	3.45	0.52886	0.25164	2.50079	1	2.50079	ppm

Analyst Peak Integration Comments

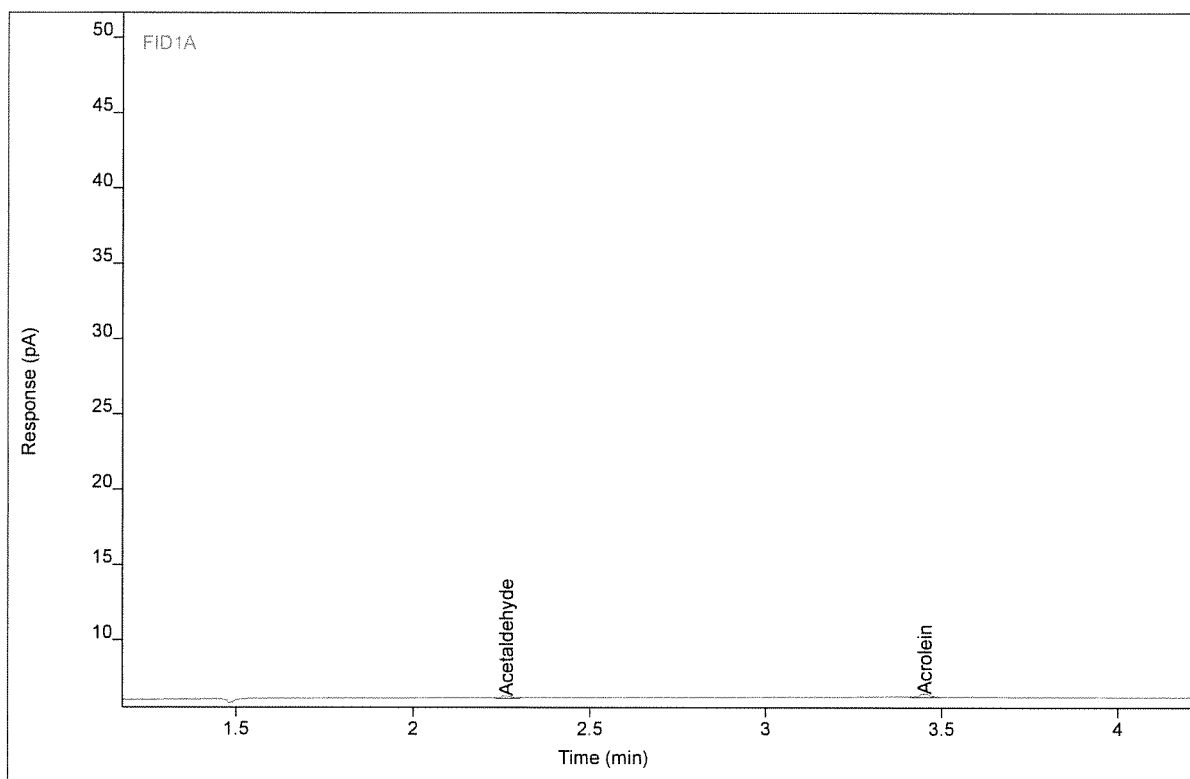
06:59:43 06/15/17 Justin Guenzler II
06:59:52 06/15/17 Justin Guenzler II

Chromatogram Report

Enthalpy Analytical

Sample Name gummop980 #AA1 ENV(1=3960,6=40)
Sequence Name GUMMOP1039A ver.1
Inj Data File 016F1006.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/14/2017 9:44 PM
File Modified 6/22/2017 10:56 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 6 of 10
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 6/30/2017 8:48 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	MM	2.26	0.37574	0.18862	2.44443	1	2.44443	ppm
Acrolein	MM	3.45	0.52756	0.25081	2.49499	1	2.49499	ppm

Analyst Peak Integration Comments

07:00:19 06/15/17 Justin Guenzler II

CERTIFICATE OF ANALYSIS

Grade of Product: CERTIFIED STANDARD-SPEC

Customer:	MONTROSE ENVIRONMENTAL GROUP	Reference Number:	126-400748455-1
Part Number:	X03NI99C15A00J2	Cylinder Volume:	48 CF
Cylinder Number:	CC424461	Cylinder Pressure:	700 PSIG
Laboratory:	ASG - LaPorte Mix (SAP) - TX	Valve Outlet:	350
Analysis Date:	Jul 19, 2016		
Lot Number:	126-400748455-1		

Expiration Date: Jul 19, 2017

Product composition verified by direct comparison to calibration standards traceable to N.I.S.T. weights and/or N.I.S.T. Gas Mixture reference materials.

ANALYTICAL RESULTS

Component	Req Conc	Actual Concentration (Mole %)	Analytical Uncertainty
ACETALDEHYDE	250.0 PPM	249.0 PPM	+/- 5%
ACROLEIN	250.0 PPM	250.0 PPM	+/- 5%
NITROGEN	Balance		

Permanent Notes:-NA-

Notes:PO 06201605




Approved for Release

=====
6890 GC METHOD
=====

OVEN

Initial temp: 35 C (On) Maximum temp: 250 C
Initial time: 2.20 min Equilibration time: 0.20 min
Ramps:
Rate Final temp Final time
1 15.00 70 0.07
2 30.00 250 1.00
3 0 (Off)
Post temp: 50 C
Post time: 0.00 min
Run time: 11.60 min

FRONT INLET (SPLIT/SPLITLESS)

Mode: Split
Initial temp: 160 C (On)
Pressure: 4.7 psi (On)
Split ratio: 5:1
Split flow: 9.9 mL/min
Total flow: 17.9 mL/min
Gas saver: Off
Gas type: Hydrogen

BACK INLET (SPLIT/SPLITLESS)

Mode: Split
Initial temp: 160 C (On)
Pressure: 4.9 psi (On)
Split ratio: 2:1
Split flow: 3.9 mL/min
Total flow: 12.1 mL/min
Gas saver: Off
Gas type: Hydrogen

COLUMN 1

Capillary Column
Model Number: 10970
Description: Rtx-624 S/N 926827
Max temperature: 240 C
Nominal length: 30.0 m
Nominal diameter: 320.00 um
Nominal film thickness: 1.80 um
Mode: constant flow
Initial flow: 2.0 mL/min
Nominal init pressure: 4.7 psi
Average velocity: 37 cm/sec
Inlet: Front Inlet
Outlet: Front Detector
Outlet pressure: ambient

COLUMN 2

Capillary Column
Model Number: 10198
Description: Rtx-1 S/N 869999
Max temperature: 280 C
Nominal length: 30.0 m
Nominal diameter: 320.00 um
Nominal film thickness: 4.00 um
Mode: constant flow
Initial flow: 2.0 mL/min
Nominal init pressure: 4.9 psi
Average velocity: 38 cm/sec
Inlet: Back Inlet
Outlet: Back Detector
Outlet pressure: ambient

FRONT DETECTOR (FID)

Temperature: 250 C (On)
Hydrogen flow: 40.0 mL/min (On)
Air flow: 450.0 mL/min (On)
Mode: Constant makeup flow
Makeup flow: 45.0 mL/min (On)
Makeup Gas Type: Nitrogen
Flame: On
Electrometer: On
Lit offset: 2.0

BACK DETECTOR (FID)

Temperature: 250 C (On)
Hydrogen flow: 40.0 mL/min (On)
Air flow: 450.0 mL/min (On)
Mode: Constant makeup flow
Makeup flow: 45.0 mL/min (On)
Makeup Gas Type: Nitrogen
Flame: On
Electrometer: On
Lit offset: 2.0

SIGNAL 1

Data rate: 20 Hz
Type: front detector
Save Data: On

SIGNAL 2

Data rate: 20 Hz
Type: back detector
Save Data: On

THERMAL AUX 1

Use: Valve Box Heater
Initial temp: 120 C (On)

VALVES

Valve 1 Gas Sampling

POST RUN

Post Time: 0.00 min
EA# 0617-118 Page 157 of 441

method: C:\GC\2017\GUMMO\METHODS\AQ_GUMMOP987.M

Modified on: 4/3/2017 at 2:58:41 PM

Loop Volume: 1.000 mL

Load Time: 0.70 min

Inject Time: 0.50 min

Inlet: Front Inlet

Valve 2 Gas Sampling

Loop Volume: 1.000 mL

Load Time: 0.70 min

Inject Time: 0.50 min

Inlet: Back Inlet

Valve 7 Multiposition 7

BCD input: inverted

Switch Time: 1.0 sec

TIME TABLE

Time (min)	Parameter & Setpoint	
0.10	Multi-Valve Position:	1

=====
6890 GC METHOD
=====

OVEN

Initial temp: 35 C (On) Maximum temp: 250 C
Initial time: 2.20 min Equilibration time: 0.20 min
Ramps:
Rate Final temp Final time
1 15.00 70 0.50
2 0 (Off)
Post temp: 50 C
Post time: 0.00 min
Run time: 5.03 min

FRONT INLET (SPLIT/SPLITLESS)

Mode: Split
Initial temp: 160 C (On)
Pressure: 4.7 psi (On)
Split ratio: 5:1
Split flow: 9.9 mL/min
Total flow: 17.9 mL/min
Gas saver: Off
Gas type: Hydrogen

BACK INLET (SPLIT/SPLITLESS)

Mode: Split
Initial temp: 160 C (On)
Pressure: 4.9 psi (On)
Split ratio: 2:1
Split flow: 3.9 mL/min
Total flow: 12.1 mL/min
Gas saver: Off
Gas type: Hydrogen

COLUMN 1

Capillary Column
Model Number: 10970
Description: Rtx-624 S/N 926827
Max temperature: 240 C
Nominal length: 30.0 m
Nominal diameter: 320.00 um
Nominal film thickness: 1.80 um
Mode: constant flow
Initial flow: 2.0 mL/min
Nominal init pressure: 4.7 psi
Average velocity: 37 cm/sec
Inlet: Front Inlet
Outlet: Front Detector
Outlet pressure: ambient

COLUMN 2

Capillary Column
Model Number: 10198
Description: Rtx-1 S/N 869999
Max temperature: 280 C
Nominal length: 30.0 m
Nominal diameter: 320.00 um
Nominal film thickness: 4.00 um
Mode: constant flow
Initial flow: 2.0 mL/min
Nominal init pressure: 4.9 psi
Average velocity: 38 cm/sec
Inlet: Back Inlet
Outlet: Back Detector
Outlet pressure: ambient

FRONT DETECTOR (FID)

Temperature: 250 C (On)
Hydrogen flow: 40.0 mL/min (On)
Air flow: 450.0 mL/min (On)
Mode: Constant makeup flow
Makeup flow: 45.0 mL/min (On)
Makeup Gas Type: Nitrogen
Flame: On
Electrometer: On
Lit offset: 2.0

BACK DETECTOR (FID)

Temperature: 250 C (On)
Hydrogen flow: 40.0 mL/min (On)
Air flow: 450.0 mL/min (On)
Mode: Constant makeup flow
Makeup flow: 45.0 mL/min (On)
Makeup Gas Type: Nitrogen
Flame: On
Electrometer: On
Lit offset: 2.0

SIGNAL 1

Data rate: 20 Hz
Type: front detector
Save Data: On

SIGNAL 2

Data rate: 20 Hz
Type: back detector
Save Data: On

THERMAL AUX 1

Use: Valve Box Heater
Initial temp: 120 C (On)

VALVES

Valve 1 Gas Sampling
Loop Volume: 1.000 mL

POST RUN

Post Time: 0.00 min

EA# 0617-110 Page 159 of 441

method: C:\GC\2017\GUMMO\METHODS\AQ_GUMMOP987_AA.M

Modified on: 3/31/2017 at 3:11:51 PM

Load Time: 0.70 min

Inject Time: 0.50 min

Inlet: Front Inlet

Valve 2 Gas Sampling

Loop Volume: 1.000 mL

Load Time: 0.70 min

Inject Time: 0.50 min

Inlet: Back Inlet

Valve 7 Multiposition 16

BCD input: inverted

Switch Time: 1.0 sec

TIME TABLE

Time (min)	Parameter & Setpoint	
0.10	Multi-Valve Position:	1

=====
 Calibration Table
 =====

Calib. Data Modified : 6/2/2017 1:00:07 PM

Rel. Reference Window : 0.000 %
 Abs. Reference Window : 0.100 min
 Rel. Non-ref. Window : 0.000 %
 Abs. Non-ref. Window : 0.050 min
 Uncalibrated Peaks : using compound Propane
 Partial Calibration : Yes, identified peaks are recalibrated
 Correct All Ret. Times: No, only for identified peaks

Curve Type : Linear
 Origin : Connected
 Weight : Quadratic (Amnt)

Recalibration Settings:
 Average Response : Average all calibrations
 Average Retention Time: Floating Average New 75%

Calibration Report Options :
 Printout of recalibrations within a sequence:
 Calibration Table after Recalibration
 Normal Report after Recalibration
 If the sequence is done with bracketing:
 Results of first cycle (ending previous bracket)

Signal 1: FID2 B,

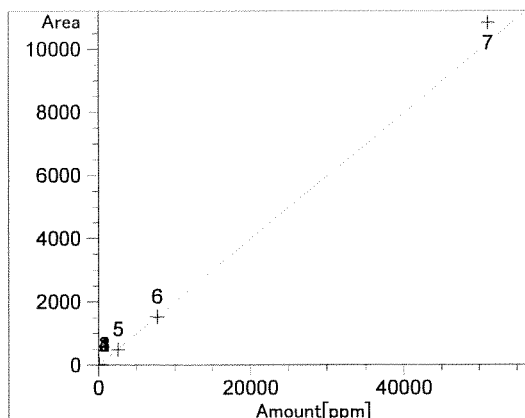
RetTime [min]	Lvl Sig	Amount [ppm]	Area	Amt/Area	Ref Grp Name
1.460	1 1	5.00000	8.94839e-1	5.58760	Methane
	2	20.00000	3.81518	5.24222	
	3	40.00000	7.76556	5.15095	
	4	100.00000	19.79446	5.05192	
	5	2560.00000	491.04012	5.21342	
	6	7680.00000	1521.34090	5.04818	
	7	5.12000e4	1.08310e4	4.72718	
1.589	1 1	5.00000	1.78026	2.80858	Ethane
	2	20.00000	7.16795	2.79020	
	3	40.00000	14.58640	2.74228	
	4	100.00000	36.98041	2.70413	
	5	2570.00000	925.02356	2.77831	
	6	7710.00000	2864.66195	2.69142	
	7	5.14000e4	2.03727e4	2.52299	
1.889	1 1	5.00000	2.74131	1.82395	Propane
	2	20.00000	10.85070	1.84320	
	3	40.00000	21.99791	1.81835	
	4	100.00000	55.83058	1.79113	
	5	2580.00000	1378.12638	1.87211	
	6	7740.00000	4267.62028	1.81366	
	7	5.16000e4	3.03773e4	1.69864	
2.731	1 1	5.00000	3.59427	1.39110	Butane
	2	20.00000	14.32752	1.39591	
	3	40.00000	29.31376	1.36455	
	4	100.00000	74.02824	1.35084	
	5	515.00000	370.36104	1.39054	
	6	1545.00000	1152.95959	1.34003	
	7	1.03000e4	8200.93636	1.25595	

RetTime [min]	Lvl Sig	Amount [ppm]	Area	Amt/Area	Ref Grp Name
4.214	1	5.00000	4.56781	1.09462	Pentane
		20.00000	18.11116	1.10429	
		40.00000	36.82834	1.08612	
		100.00000	92.96211	1.07571	
		260.00000	227.69511	1.14188	
		780.00000	707.14616	1.10303	
		5200.00000	4999.93148	1.04001	
5.793	1	5.00000	5.48927	9.10868e-1	Hexane
		20.00000	21.81503	9.16799e-1	
		40.00000	44.50176	8.98841e-1	
		100.00000	112.19947	8.91270e-1	
		205.00000	222.82971	9.19985e-1	
		615.00000	693.84558	8.86364e-1	
		4100.00000	4807.27311	8.52874e-1	
6.953	1	4.99000	6.29413	7.92802e-1	Heptane
		20.00000	25.17615	7.94403e-1	
		40.00000	51.23785	7.80673e-1	
		100.00000	129.55815	7.71854e-1	
		257.00000	333.11783	7.71499e-1	

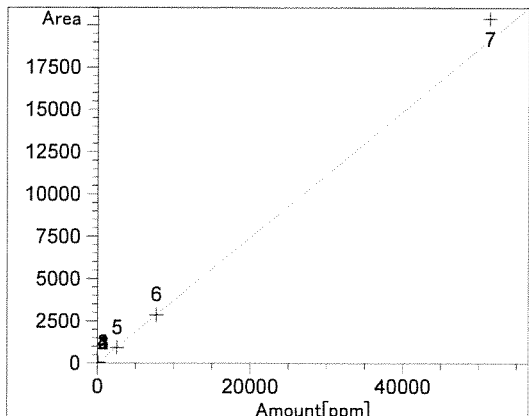
Peak Sum Table

Name	StartTime [min]	EndTime [min]	Use Reference	Response factor	Multiplier	ISTD Peak
as Ethane	1.491	1.742	None	2.7196	2.7196	None
as Propane	1.742	2.313	None	1.8087	1.8087	None
as Butane	2.313	3.472	None	1.3557	1.3557	None
as Pentane	3.472	5.003	None	1.0923	1.0923	None
as Hexane	5.003	6.372	None	8.9671e-1	0.8967	None
as Heptane	6.372	11.650	None	7.8224e-1	0.7822	None

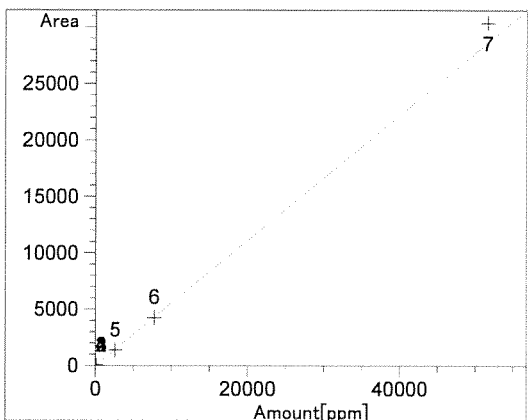
Calibration Curves



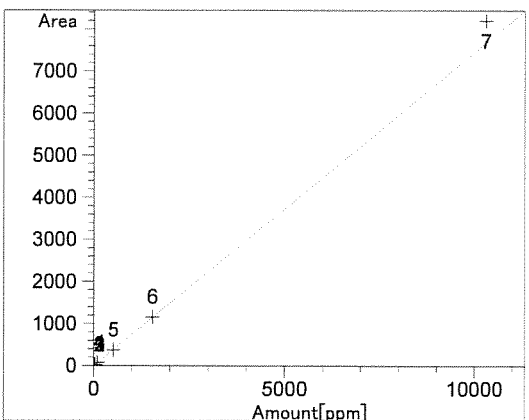
Methane at exp. RT: 1.460
 FID2 B,
 Correlation: 0.99945
 Residual Std. Dev.: 285.87928
 Formula: $y = mx + b$
 m: 1.99066e-1
 b: -1.05771e-1
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.0625
 Level 3 : 0.015625
 Level 4 : 0.0025
 Level 5 : 3.8147e-006
 Level 6 : 4.23855e-007
 Level 7 : 9.53674e-009



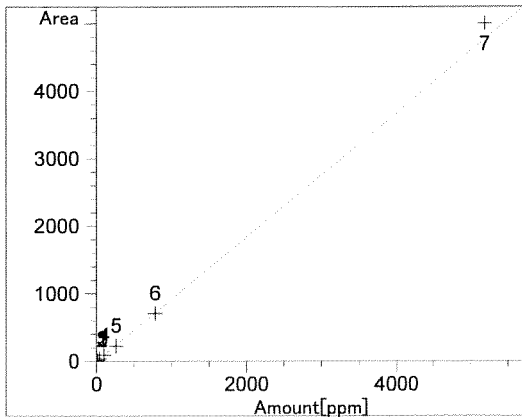
Ethane at exp. RT: 1.589
 FID2 B,
 Correlation: 0.99940
 Residual Std. Dev.: 561.41914
 Formula: $y = mx + b$
 m: $3.71941e-1$
 b: $-9.39939e-2$
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.0625
 Level 3 : 0.015625
 Level 4 : 0.0025
 Level 5 : $3.78507e-006$
 Level 6 : $4.20563e-007$
 Level 7 : $9.46267e-009$



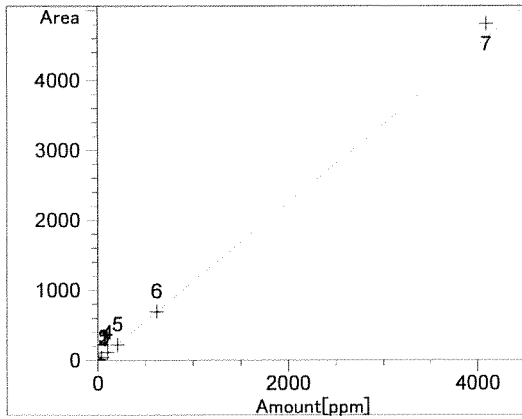
Propane at exp. RT: 1.889
 FID2 B,
 Correlation: 0.99945
 Residual Std. Dev.: 769.45765
 Formula: $y = mx + b$
 m: $5.55386e-1$
 b: $-5.04875e-2$
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.0625
 Level 3 : 0.015625
 Level 4 : 0.0025
 Level 5 : $3.75578e-006$
 Level 6 : $4.17309e-007$
 Level 7 : $9.38946e-009$



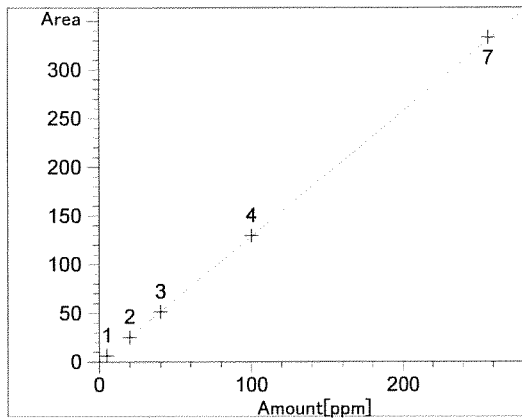
Butane at exp. RT: 2.731
 FID2 B,
 Correlation: 0.99933
 Residual Std. Dev.: 234.28902
 Formula: $y = mx + b$
 m: $7.45378e-1$
 b: $-1.65733e-1$
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.0625
 Level 3 : 0.015625
 Level 4 : 0.0025
 Level 5 : 0.000094
 Level 6 : 0.00001
 Level 7 : $2.35649e-007$



Pentane at exp. RT: 4.214
 FID2 B,
 Correlation: 0.99952
 Residual Std. Dev.: 102.63462
 Formula: $y = mx + b$
 m: $9.17477e-1$
 b: $-3.10514e-2$
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.0625
 Level 3 : 0.015625
 Level 4 : 0.0025
 Level 5 : 0.00037
 Level 6 : 0.000041
 Level 7 : $9.24556e-007$



Hexane at exp. RT: 5.793
 FID2 B,
 Correlation: 0.99965
 Residual Std. Dev.: 91.82272
 Formula: $y = mx + b$
 m: 1.12250
 b: $-1.60081e-1$
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.0625
 Level 3 : 0.015625
 Level 4 : 0.0025
 Level 5 : 0.000595
 Level 6 : 0.000066
 Level 7 : $1.48721e-006$



Heptane at exp. RT: 6.953
 FID2 B,
 Correlation: 0.99994
 Residual Std. Dev.: 1.49698
 Formula: $y = mx + b$
 m: 1.28756
 b: $-1.55346e-1$
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.06225
 Level 3 : 0.015563
 Level 4 : 0.00249
 Level 7 : 0.000377

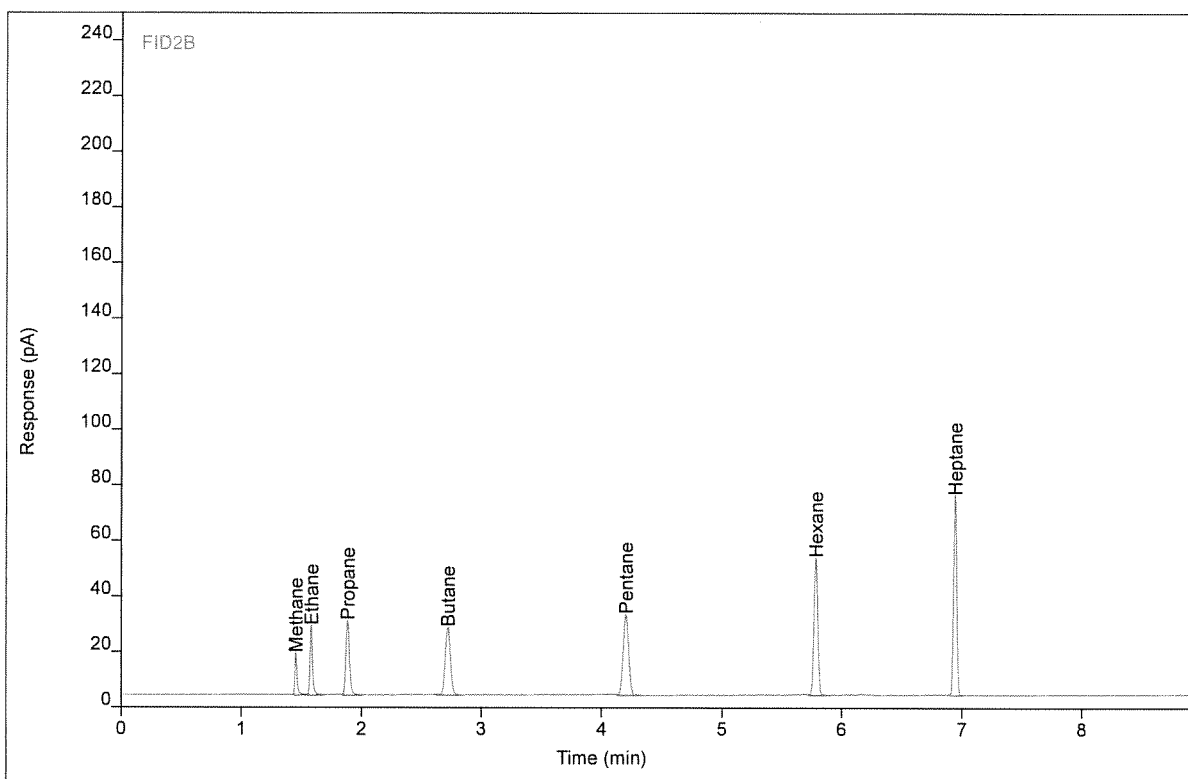
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Chromatogram Report

Enthalpy Analytical

Sample Name gummop903 #C4 ENV(1=0,2=400.67)
Sequence Name GUMMOP987 ver.1
Inj Data File 032B0102.D
File Location GC/2017/Gummo/Quarter 1
Injection Date 3/31/2017 3:37 PM
File Modified 4/3/2017 1:22 PM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 2 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 4/3/2017 12:52 PM
Printed 4/3/2017 2:05 PM



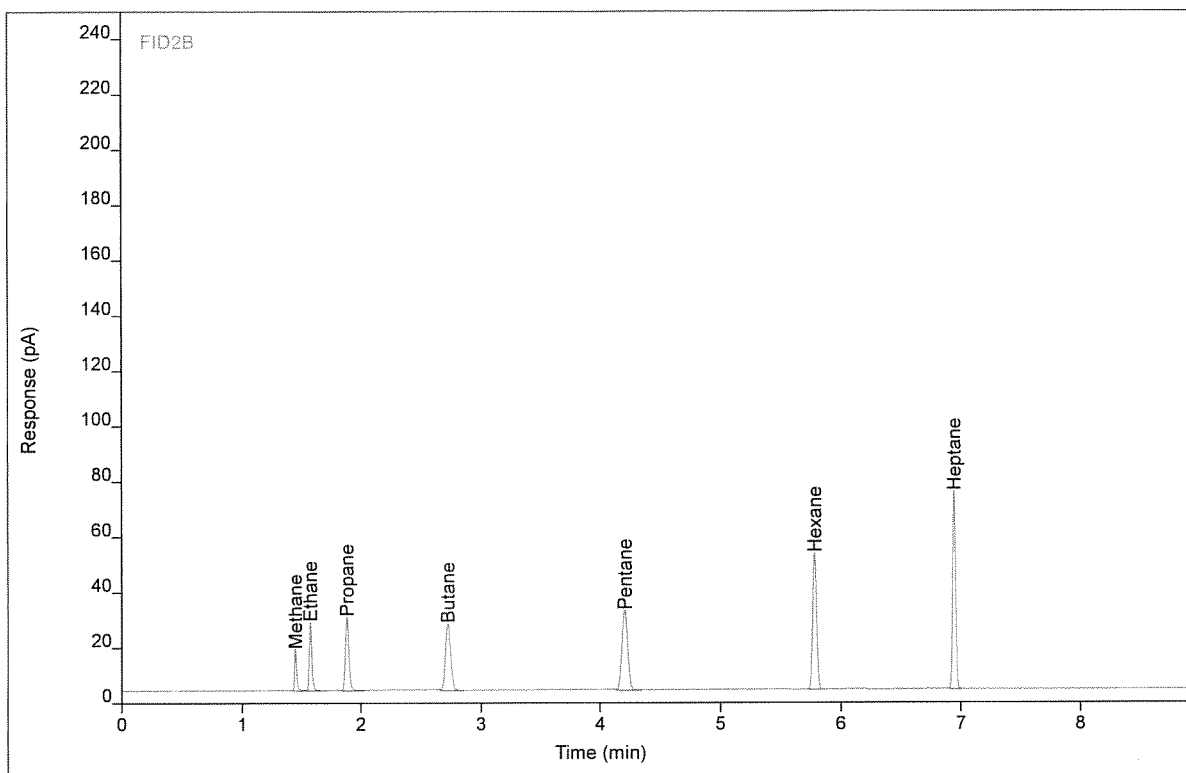
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PV	1.45	19.8510	15.2100	100.252	1	100.252	ppm
Ethane	VB	1.58	37.0899	24.9196	99.9724	1	99.9724	ppm
Propane	BB	1.89	56.0575	26.9366	101.025	1	101.025	ppm
Butane	BB	2.72	74.4253	24.6158	100.071	1	100.071	ppm
Pentane	BV	4.20	93.4960	29.2908	101.939	1	101.939	ppm
Hexane	BB	5.78	112.815	49.4369	100.645	1	100.645	ppm
Heptane	BB	6.95	130.170	71.8437	101.219	1	101.219	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop903 #C4 ENV(1=0,2=400.67)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B0103.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 3/31/2017 3:55 PM
 File Modified 4/3/2017 1:22 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 3 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
 Printed 4/3/2017 2:05 PM



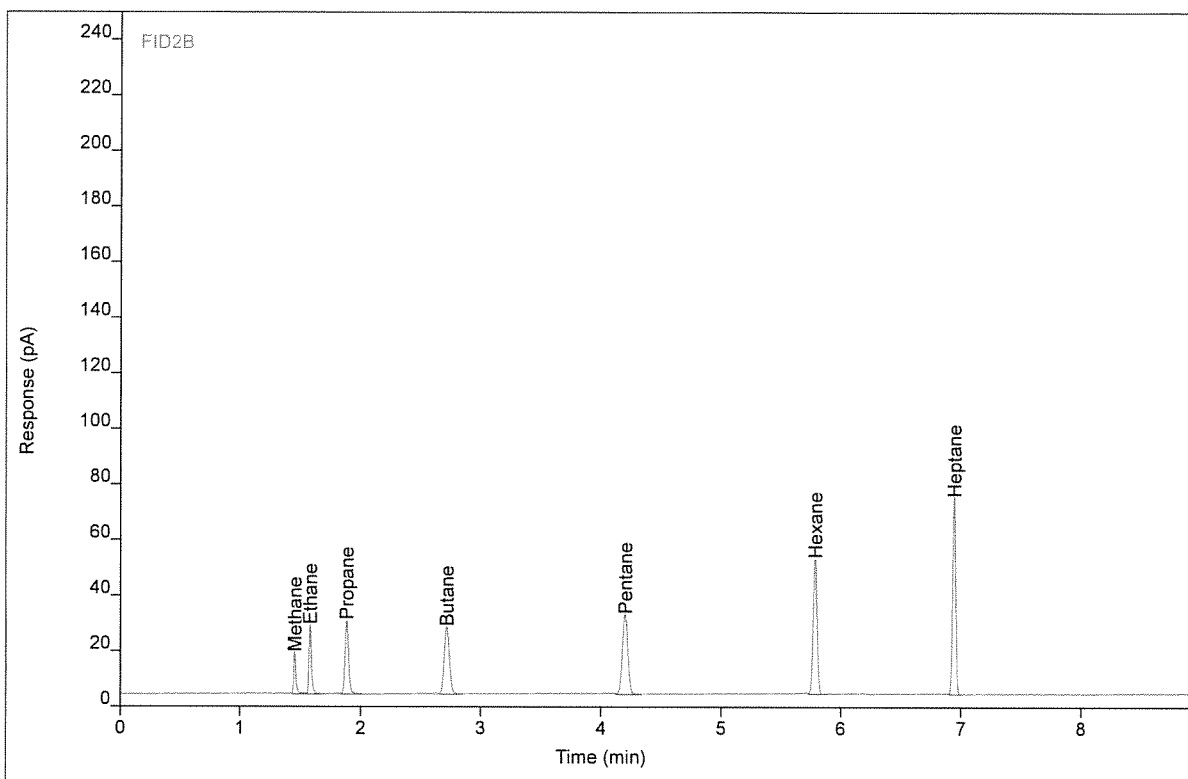
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PV	1.45	19.8068	15.2211	100.030	1	100.030	ppm
Ethane	VB	1.58	37.0373	24.8791	99.8309	1	99.8309	ppm
Propane	BB	1.89	55.8510	26.8497	100.653	1	100.653	ppm
Butane	BB	2.72	73.9048	24.4855	99.3731	1	99.3731	ppm
Pentane	BB	4.20	92.7903	28.9998	101.170	1	101.170	ppm
Hexane	BB	5.78	112.104	49.3570	100.012	1	100.012	ppm
Heptane	BB	6.95	129.556	71.3591	100.742	1	100.742	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop903 #C4 ENV(1=0,2=400.67)
Sequence Name GUMMOP987 ver.1
Inj Data File 032B0104.D
File Location GC/2017/Gummo/Quarter 1
Injection Date 3/31/2017 4:13 PM
File Modified 4/3/2017 1:22 PM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 4 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 4/3/2017 12:52 PM
Printed 4/3/2017 2:05 PM



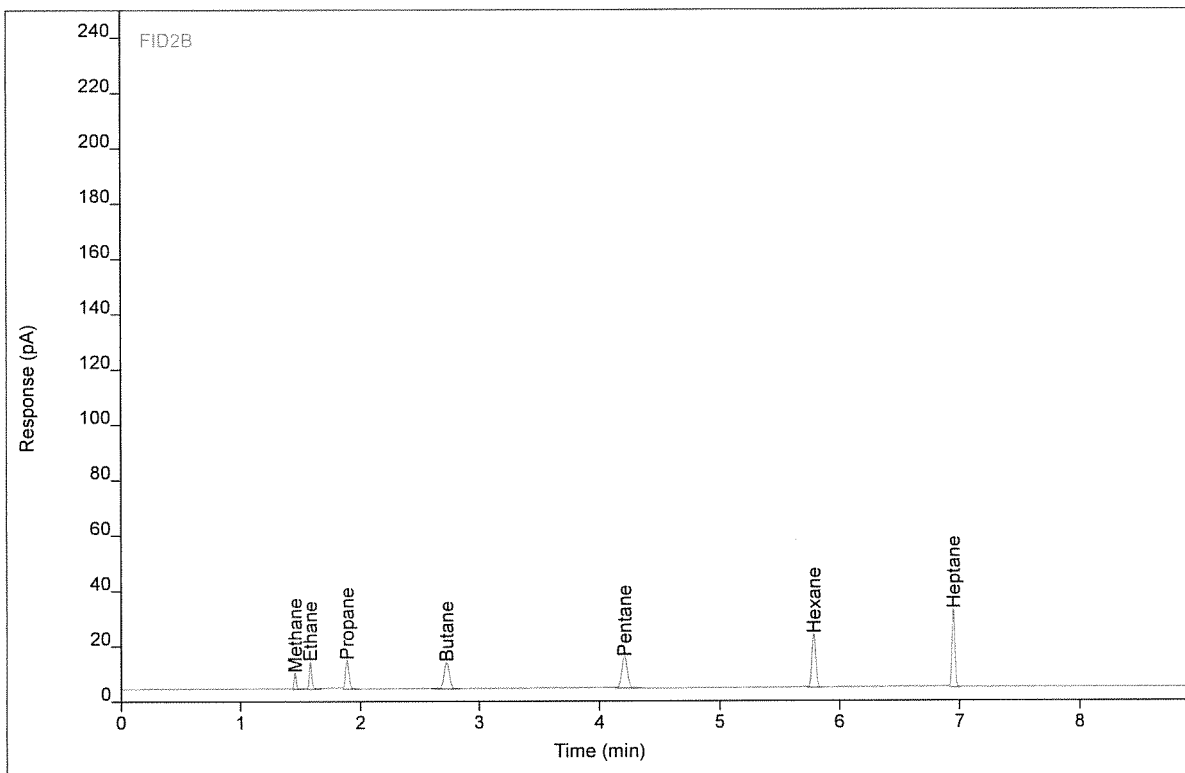
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PV	1.45	19.7255	15.1491	99.6221	1	99.6221	ppm
Ethane	VB	1.58	36.8141	24.8091	99.2308	1	99.2308	ppm
Propane	BB	1.89	55.5832	26.7446	100.171	1	100.171	ppm
Butane	BB	2.72	73.7546	24.3789	99.1717	1	99.1717	ppm
Pentane	BB	4.20	92.6000	28.9184	100.963	1	100.963	ppm
Hexane	BB	5.78	111.680	48.8825	99.6345	1	99.6345	ppm
Heptane	BB	6.95	128.948	70.7974	100.270	1	100.270	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop903 #C3 ENV(1=600,2=400.67)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B0202.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 3/31/2017 4:50 PM
 File Modified 4/3/2017 1:22 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 2 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
 Printed 4/3/2017 2:05 PM



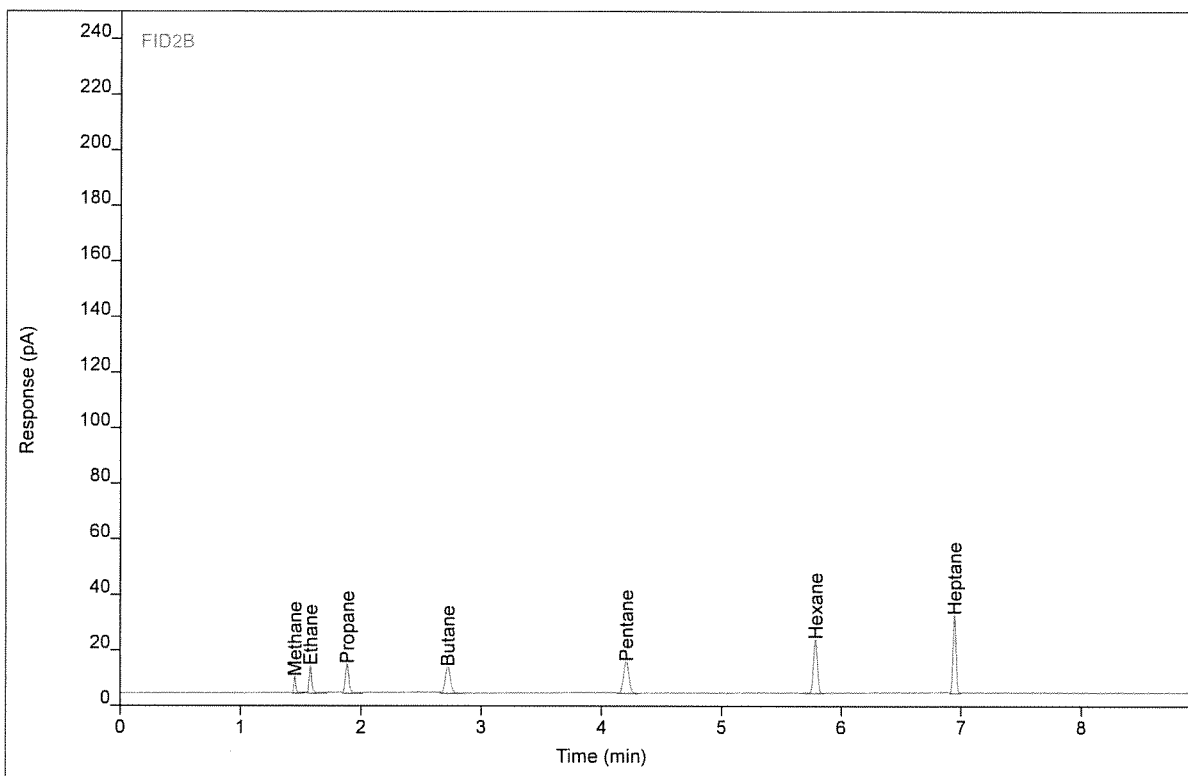
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.46	7.65955	5.96997	39.0089	1	39.0089	ppm
Ethane	BB	1.58	14.5411	9.88644	39.3477	1	39.3477	ppm
Propane	BB	1.89	21.9552	10.6120	39.6223	1	39.6223	ppm
Butane	BB	2.72	29.3235	9.69691	39.5628	1	39.5628	ppm
Pentane	BB	4.21	36.7586	11.5072	40.0988	1	40.0988	ppm
Hexane	VV	5.79	44.4680	19.4504	39.7576	1	39.7576	ppm
Heptane	BB	6.95	51.2778	28.3037	39.9462	1	39.9462	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop903 #C3 ENV(1=600,2=400.67)
Sequence Name GUMMOP987 ver.1
Inj Data File 032B0203.D
File Location GC/2017/Gummo/Quarter 1
Injection Date 3/31/2017 5:08 PM
File Modified 4/3/2017 1:22 PM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 3 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 4/3/2017 12:52 PM
Printed 4/3/2017 2:05 PM



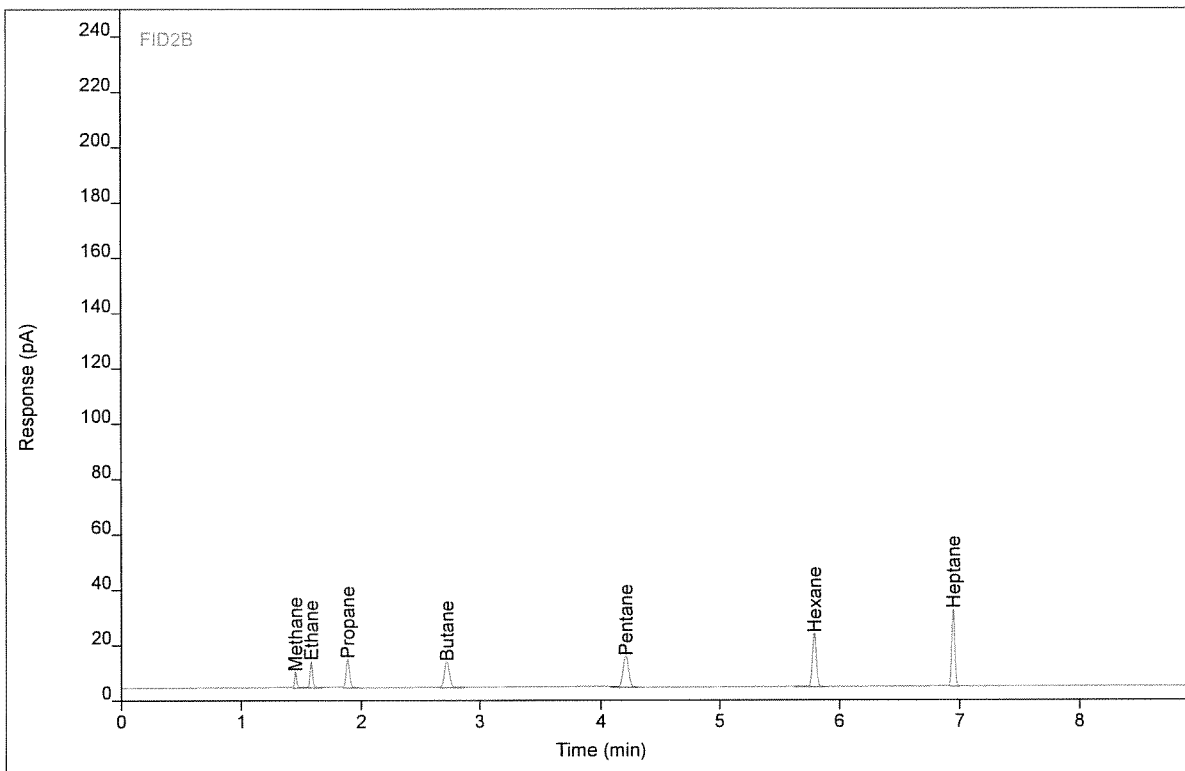
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.46	7.86068	6.03738	40.0192	1	40.0192	ppm
Ethane	BB	1.58	14.7399	9.90713	39.8823	1	39.8823	ppm
Propane	BB	1.89	22.1005	10.6144	39.8840	1	39.8840	ppm
Butane	BV	2.72	29.4259	9.66182	39.7002	1	39.7002	ppm
Pentane	BV	4.21	36.9119	11.4926	40.2659	1	40.2659	ppm
Hexane	BB	5.79	44.3644	19.4729	39.6653	1	39.6653	ppm
Heptane	BB	6.95	51.2965	28.1939	39.9607	1	39.9607	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop903 #C3 ENV(1=600,2=400.67)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B0204.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 3/31/2017 5:27 PM
 File Modified 4/3/2017 1:22 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 4 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
 Printed 4/3/2017 2:05 PM



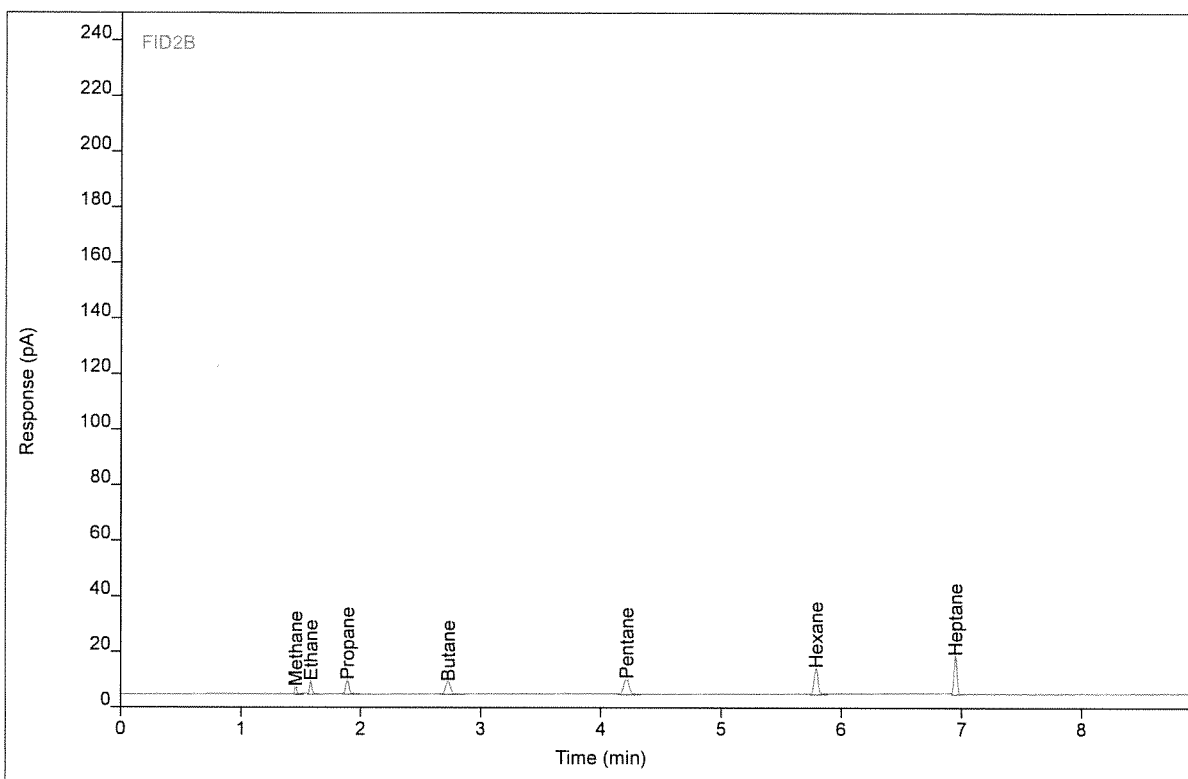
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PV	1.46	7.77644	6.02142	39.5960	1	39.5960	ppm
Ethane	VB	1.58	14.4783	9.83879	39.1789	1	39.1789	ppm
Propane	BB	1.89	21.9380	10.5822	39.5914	1	39.5914	ppm
Butane	BB	2.72	29.1919	9.59717	39.3862	1	39.3862	ppm
Pentane	VB	4.21	36.8144	11.4226	40.1596	1	40.1596	ppm
Hexane	VB	5.79	44.6729	19.4443	39.9401	1	39.9401	ppm
Heptane	BB	6.95	51.1393	28.1652	39.8386	1	39.8386	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop903 #C2 ENV(1=800,2=200.34)
Sequence Name GUMMOP987 ver.1
Inj Data File 032B0302.D
File Location GC/2017/Gummo/Quarter 1
Injection Date 3/31/2017 6:05 PM
File Modified 4/3/2017 1:22 PM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 2 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 4/3/2017 12:52 PM
Printed 4/3/2017 2:05 PM



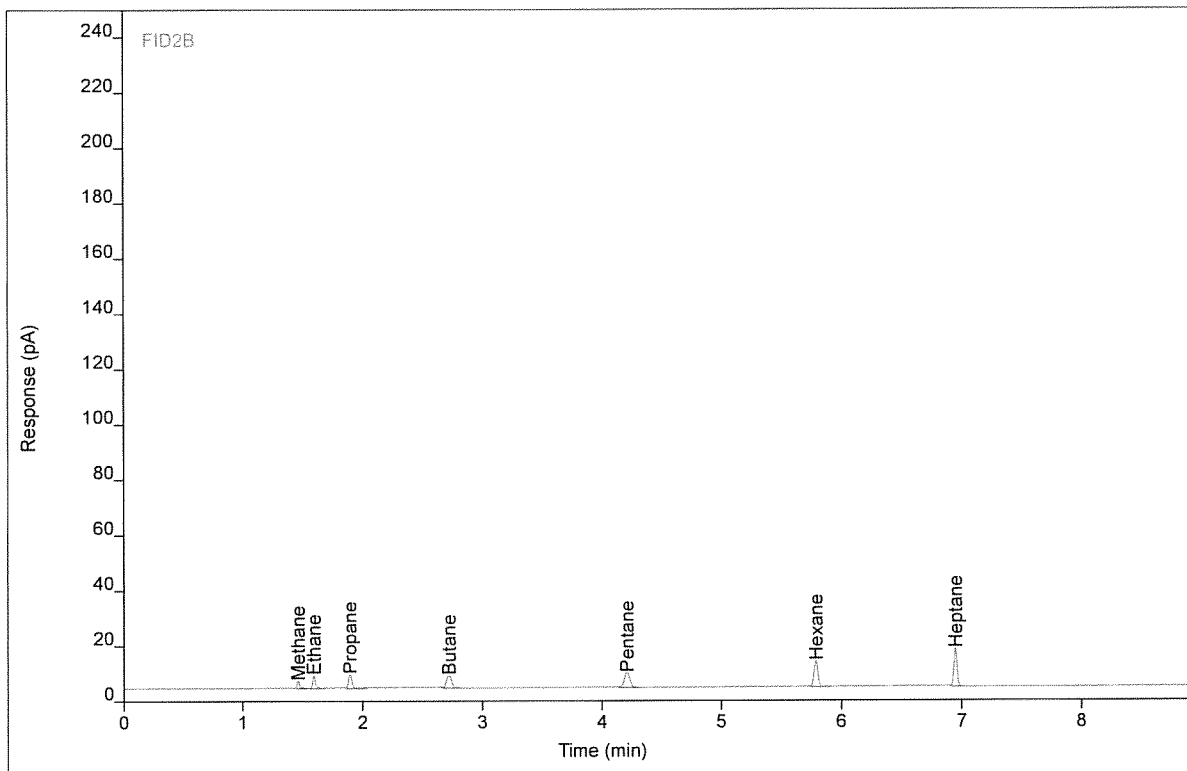
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.46	3.79229	2.94915	19.5818	1	19.5818	ppm
Ethane	BB	1.59	7.11105	4.80891	19.3714	1	19.3714	ppm
Propane	BB	1.89	10.7626	5.16456	19.4696	1	19.4696	ppm
Butane	BB	2.73	14.2620	4.69256	19.3563	1	19.3563	ppm
Pentane	BB	4.21	18.1716	5.60225	19.8399	1	19.8399	ppm
Hexane	BB	5.79	21.8024	9.52308	19.5656	1	19.5656	ppm
Heptane	BB	6.95	25.1606	13.9630	19.6619	1	19.6619	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop903 #C2 ENV(1=800,2=200.34)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B0303.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 3/31/2017 6:24 PM
 File Modified 4/3/2017 1:22 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 3 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
 Printed 4/3/2017 2:05 PM



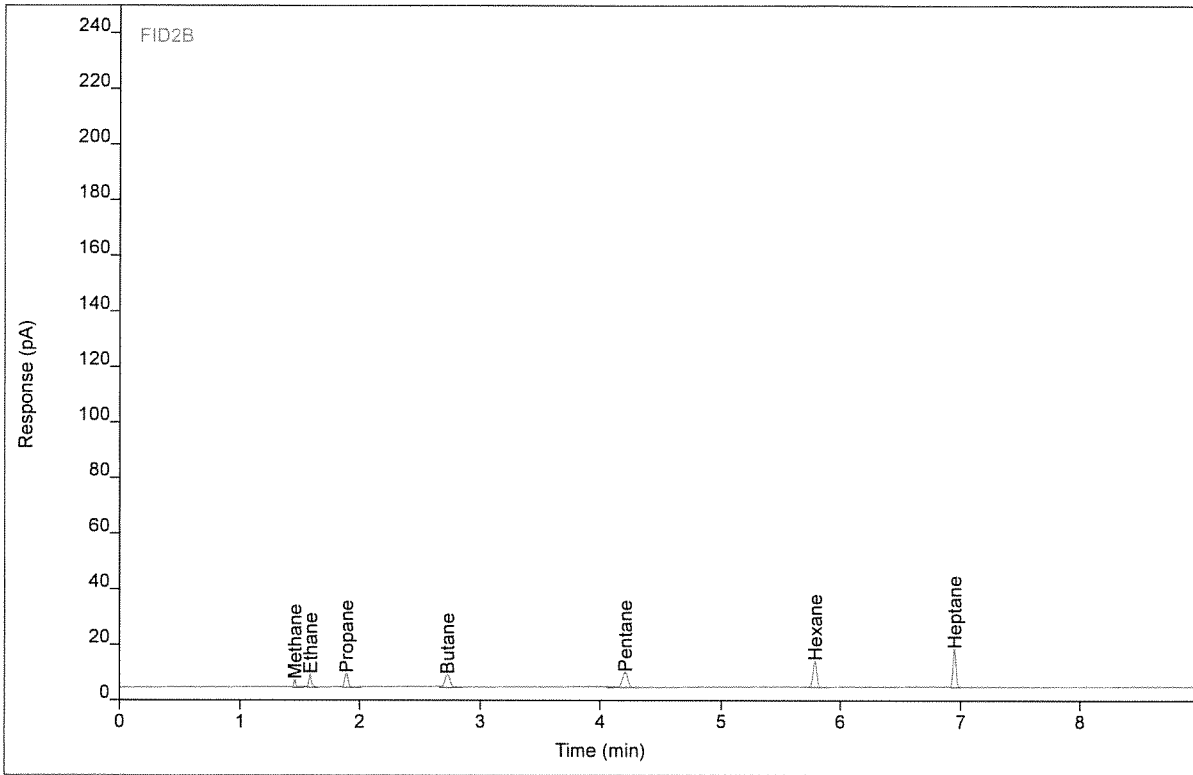
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.46	3.86380	2.97565	19.9410	1	19.9410	ppm
Ethane	BB	1.59	7.26483	4.85221	19.7849	1	19.7849	ppm
Propane	BB	1.89	10.9727	5.18551	19.8478	1	19.8478	ppm
Butane	BB	2.73	14.2714	4.72133	19.3689	1	19.3689	ppm
Pentane	BB	4.21	17.9859	5.61594	19.6375	1	19.6375	ppm
Hexane	BB	5.79	21.7955	9.51396	19.5595	1	19.5595	ppm
Heptane	BB	6.95	25.0888	13.8418	19.6062	1	19.6062	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop903 #C2 ENV(1=800,2=200.34)
Sequence Name GUMMOP987 ver.1
Inj Data File 032B0304.D
File Location GC/2017/Gummo/Quarter 1
Injection Date 3/31/2017 6:42 PM
File Modified 4/3/2017 1:22 PM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 4 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 4/3/2017 12:52 PM
Printed 4/3/2017 2:05 PM



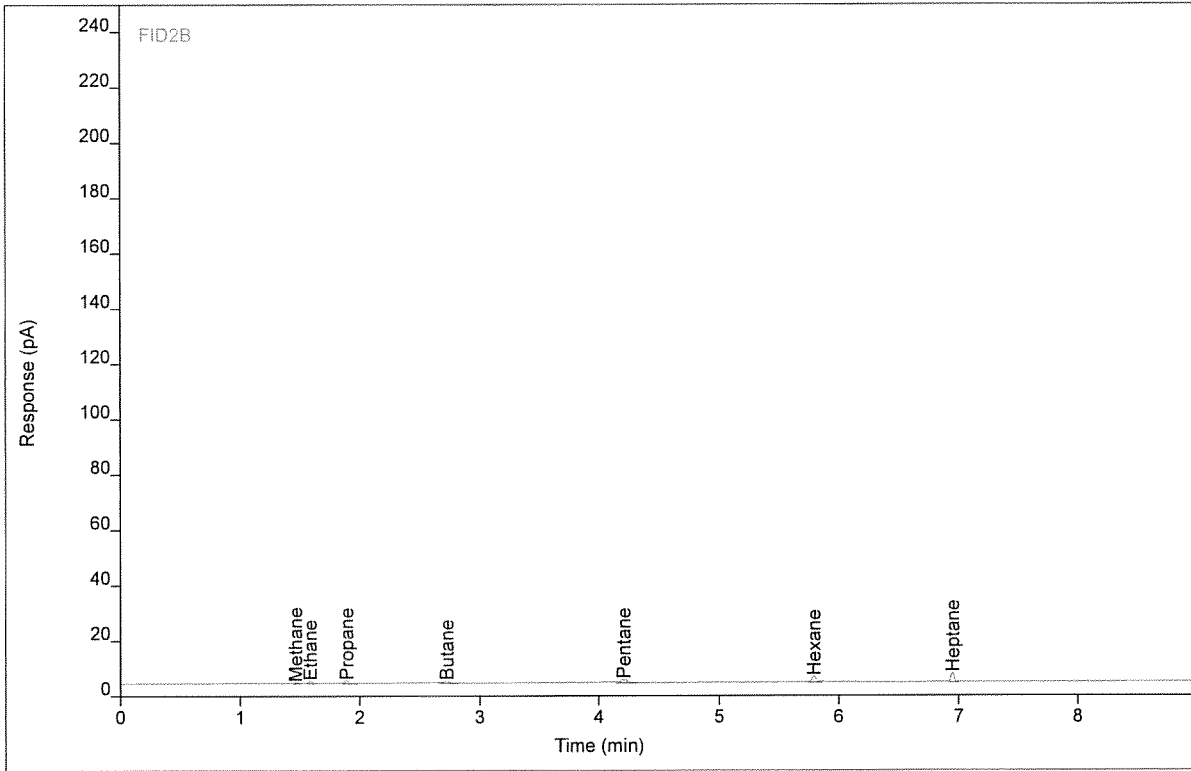
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.46	3.78945	2.96765	19.5675	1	19.5675	ppm
Ethane	BB	1.59	7.12797	4.84314	19.4169	1	19.4169	ppm
Propane	BB	1.89	10.8167	5.20749	19.5670	1	19.5670	ppm
Butane	BV	2.73	14.4492	4.74702	19.6074	1	19.6074	ppm
Pentane	BB	4.21	18.1760	5.64580	19.8447	1	19.8447	ppm
Hexane	BB	5.79	21.8472	9.58530	19.6055	1	19.6055	ppm
Heptane	BB	6.95	25.2791	13.9516	19.7540	1	19.7540	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop903 #C1 ENV(1=3800,2=200.34)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B0402.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 3/31/2017 7:18 PM
 File Modified 4/3/2017 1:23 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 2 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
 Printed 4/3/2017 2:05 PM



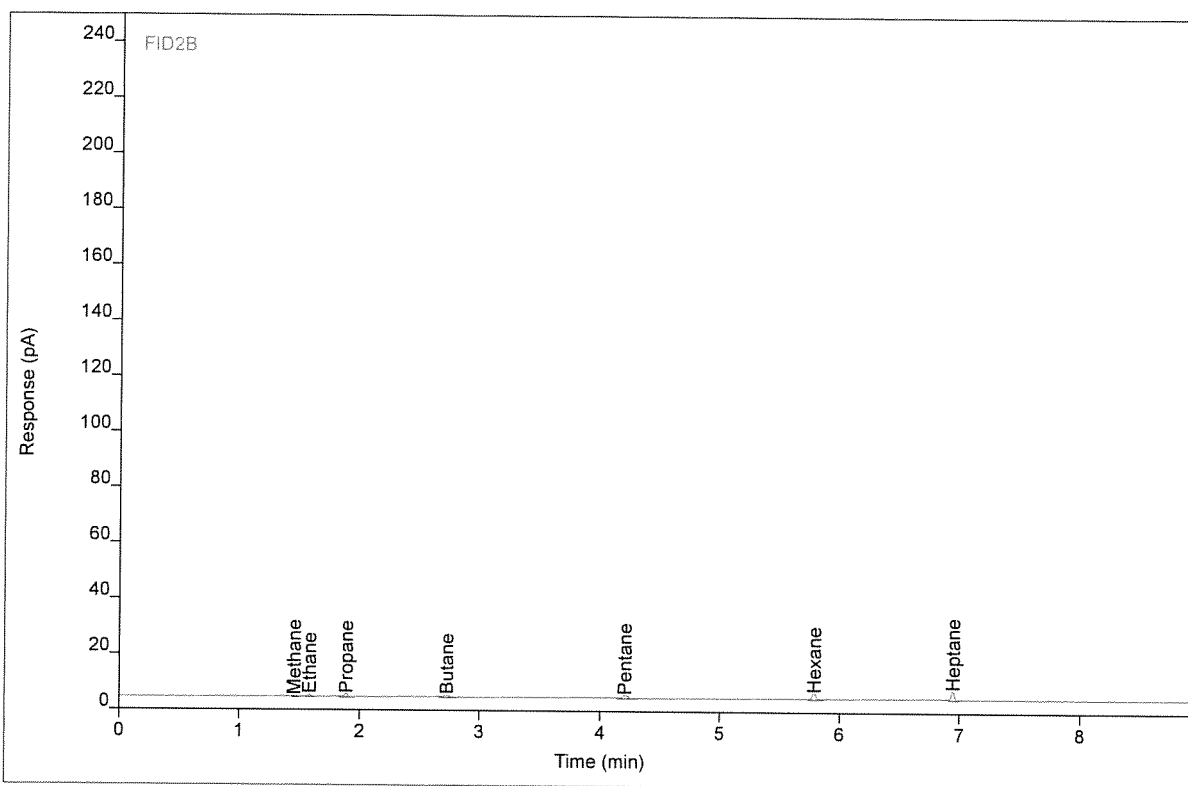
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.46	0.89235	0.73455	5.01403	1	5.01403	ppm
Ethane	BB	1.59	1.75921	1.19158	4.98159	1	4.98159	ppm
Propane	BB	1.89	2.76432	1.31725	5.06820	1	5.06820	ppm
Butane	BB	2.73	3.53968	1.17843	4.96985	1	4.96985	ppm
Pentane	BB	4.21	4.53159	1.43603	4.97285	1	4.97285	ppm
Hexane	BB	5.79	5.40473	2.37005	4.95625	1	4.95625	ppm
Heptane	BB	6.95	6.29727	3.45771	5.01151	1	5.01151	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop903 #C1 ENV(1=3800,2=200.34)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B0403.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 3/31/2017 7:37 PM
 File Modified 4/3/2017 1:23 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 3 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
 Printed 4/3/2017 2:05 PM



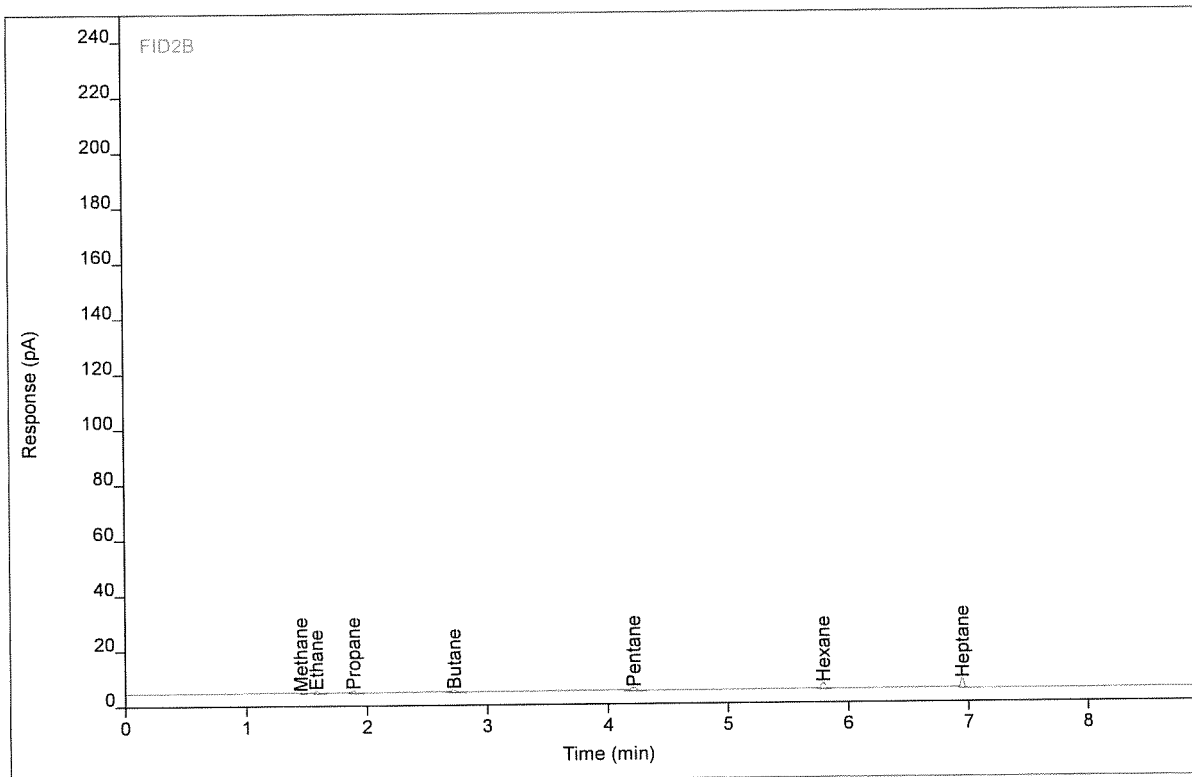
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.46	0.86009	0.72887	4.83438	1	4.83438	ppm
Ethane	BB	1.59	1.71149	1.20123	4.84646	1	4.84646	ppm
Propane	BB	1.89	2.74168	1.33047	5.02743	1	5.02743	ppm
Butane	BB	2.73	3.58111	1.19614	5.02677	1	5.02677	ppm
Pentane	BB	4.21	4.60116	1.40732	5.04886	1	5.04886	ppm
Hexane	BB	5.79	5.50365	2.41669	5.04562	1	5.04562	ppm
Heptane	BB	6.95	6.28548	3.46751	5.00235	1	5.00235	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop903 #C1 ENV(1=3800,2=200.34)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B0404.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 3/31/2017 7:55 PM
 File Modified 4/3/2017 1:23 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 4 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
 Printed 4/3/2017 2:05 PM



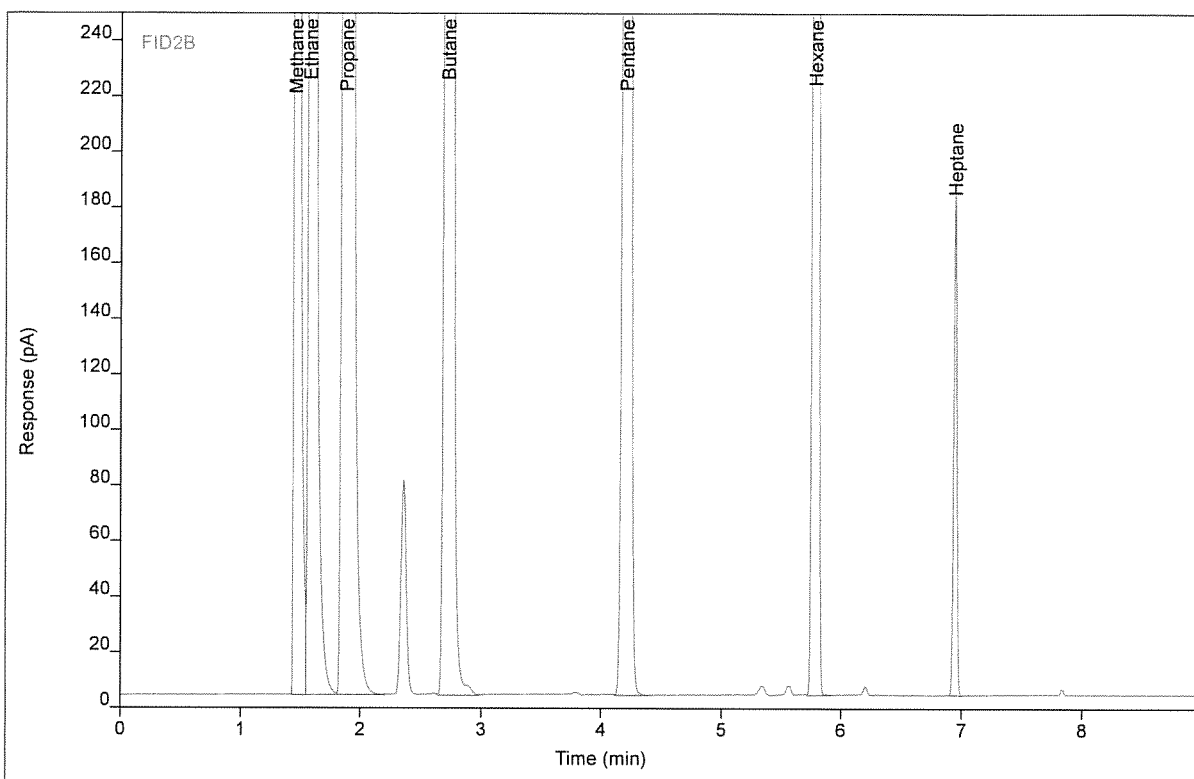
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.46	0.93208	0.73321	5.21360	1	5.21360	ppm
Ethane	BB	1.59	1.87006	1.23029	5.28056	1	5.28056	ppm
Propane	BB	1.89	2.71793	1.30496	4.98438	1	4.98438	ppm
Butane	BB	2.72	3.66202	1.21718	5.13532	1	5.13532	ppm
Pentane	BB	4.21	4.57066	1.42846	5.01562	1	5.01562	ppm
Hexane	BB	5.79	5.55943	2.40434	5.09531	1	5.09531	ppm
Heptane	BB	6.95	6.29964	3.48580	5.01335	1	5.01335	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop987 #C7 ENV(1=0,4=437.69)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B1702.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 4/3/2017 8:38 AM
 File Modified 4/3/2017 1:24 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 2 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
 Printed 4/3/2017 2:05 PM



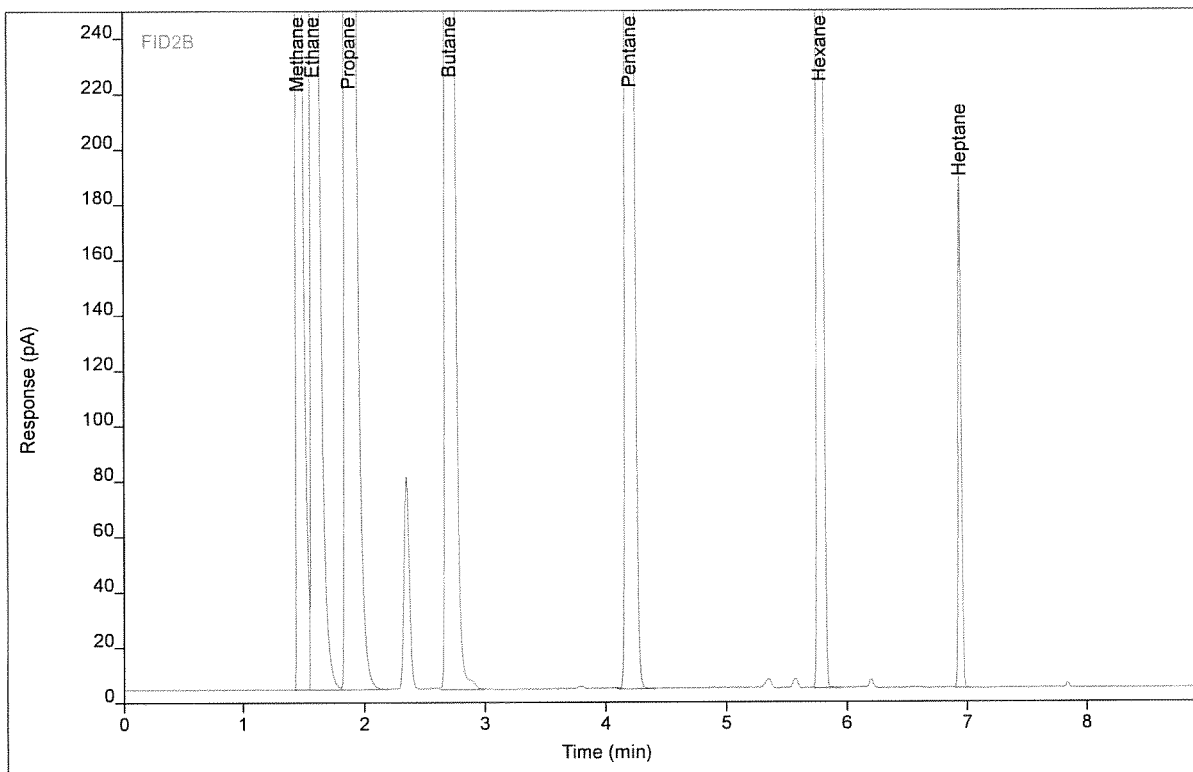
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
as Butane					252.152	1	252.152	
Methane	BV	1.46	10906.3	8443.26	54787.9	1	54787.9	ppm
Ethane	VV S	1.58	20513.1	13851.0	55151.6	1	55151.6	ppm
Propane	VB S	1.88	30581.5	13965.8	55063.5	1	55063.5	ppm
Butane	VV	2.72	8247.66	2705.45	11065.3	1	11065.3	ppm
Pentane	BB	4.21	5013.67	1570.88	5464.66	1	5464.66	ppm
Hexane	BB	5.79	4777.88	2093.85	4256.59	1	4256.59	ppm
Heptane	BB	6.95	323.208	179.393	251.144	1	251.144	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop987 #C7 ENV(1=0,4=437.69)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B1703.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 4/3/2017 8:57 AM
 File Modified 4/3/2017 1:24 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 3 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
 Printed 4/3/2017 2:05 PM



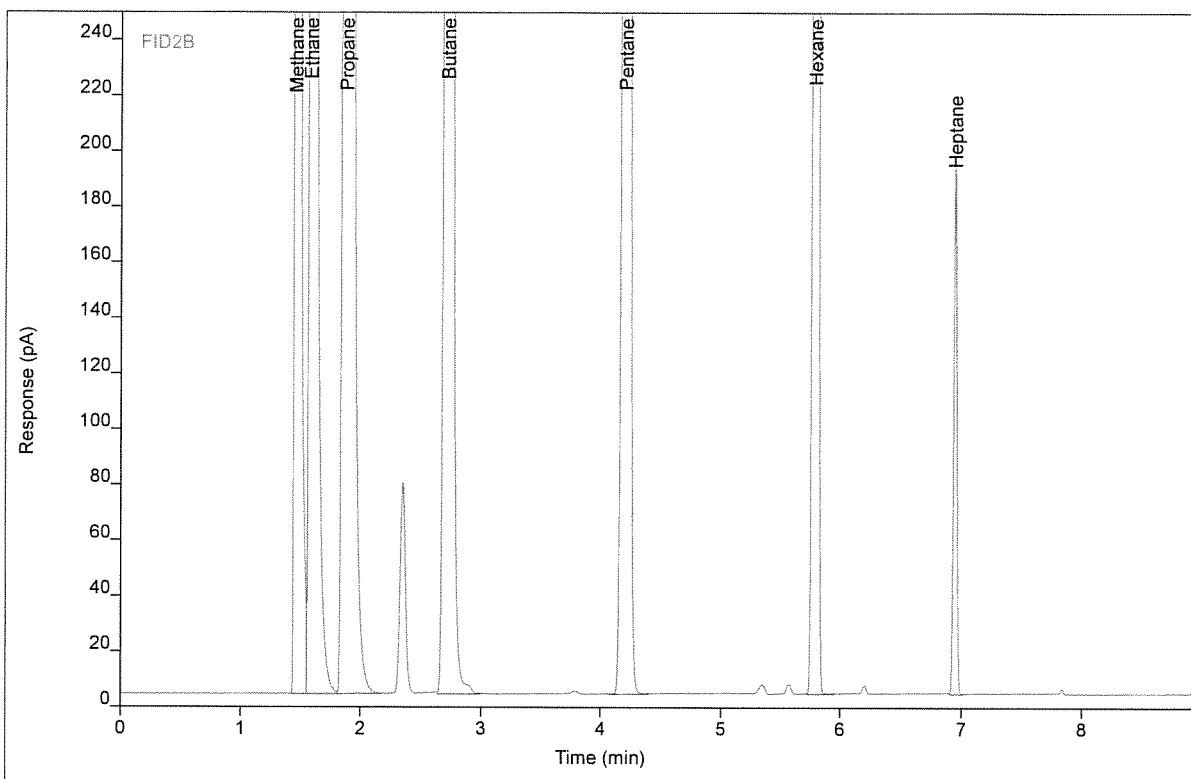
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
as Butane					250.476	1	250.476	
Methane	VV	1.45	10849.4	8530.86	54502.1	1	54502.1	ppm
Ethane	VV S	1.58	20404.2	13702.7	54859.0	1	54859.0	ppm
Propane	VB S	1.88	30427.7	13848.1	54786.7	1	54786.7	ppm
Butane	VV	2.72	8215.52	2688.72	11022.2	1	11022.2	ppm
Pentane	BB	4.21	5007.91	1568.47	5458.38	1	5458.38	ppm
Hexane	BB	5.79	4813.19	2115.64	4288.05	1	4288.05	ppm
Heptane	BB	6.95	333.262	184.005	258.953	1	258.953	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop987 #C7 ENV(1=0,4=437.69)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B1704.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 4/3/2017 9:15 AM
 File Modified 4/3/2017 1:25 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 4 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
 Printed 4/3/2017 2:05 PM



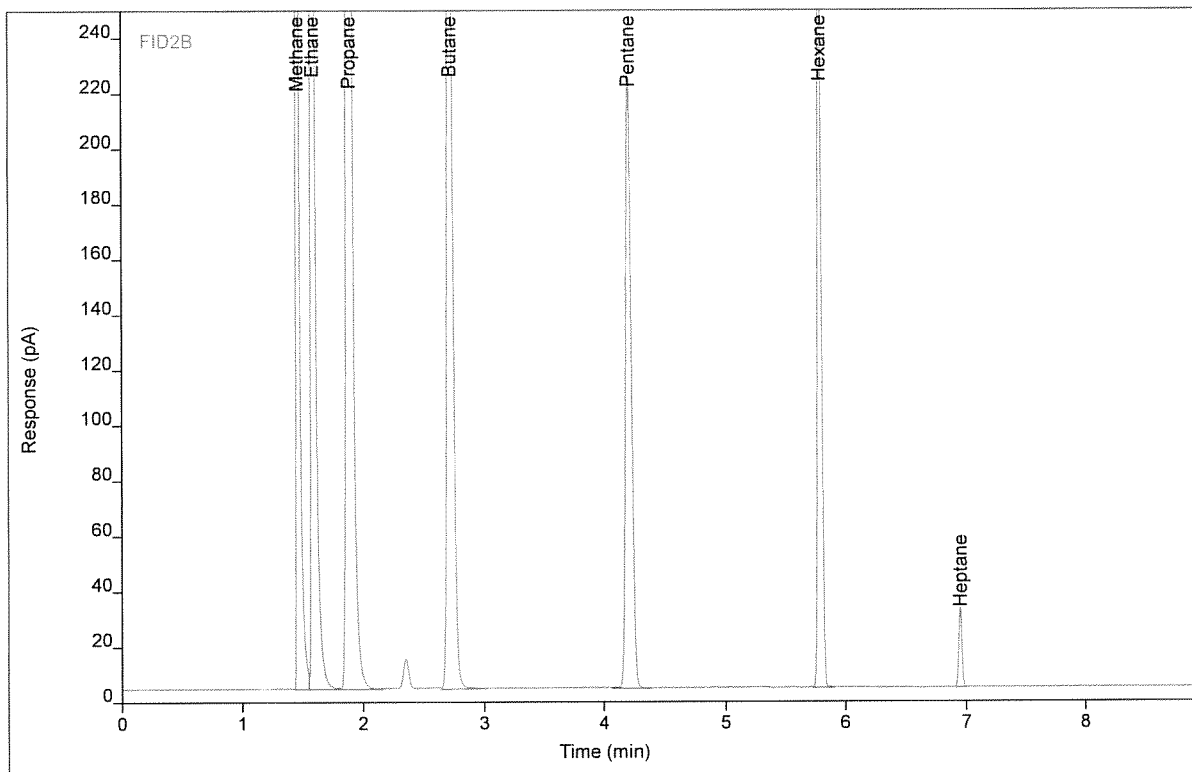
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
as Butane					248.039	1	248.039	
Methane	PV	1.46	10737.3	8330.53	53939.0	1	53939.0	ppm
Ethane	VV S	1.58	20200.8	13666.7	54311.9	1	54311.9	ppm
Propane	VB S	1.88	30122.7	13760.2	54237.4	1	54237.4	ppm
Butane	VV	2.72	8139.63	2662.74	10920.4	1	10920.4	ppm
Pentane	BB	4.21	4978.21	1559.70	5426.02	1	5426.02	ppm
Hexane	BB	5.79	4830.75	2133.91	4303.69	1	4303.69	ppm
Heptane	BB	6.95	342.883	189.005	266.425	1	266.425	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop987 #C6 ENV(1=1700,4=364.74)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B1802.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 4/3/2017 9:52 AM
 File Modified 4/3/2017 1:25 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 2 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
 Printed 4/3/2017 2:05 PM



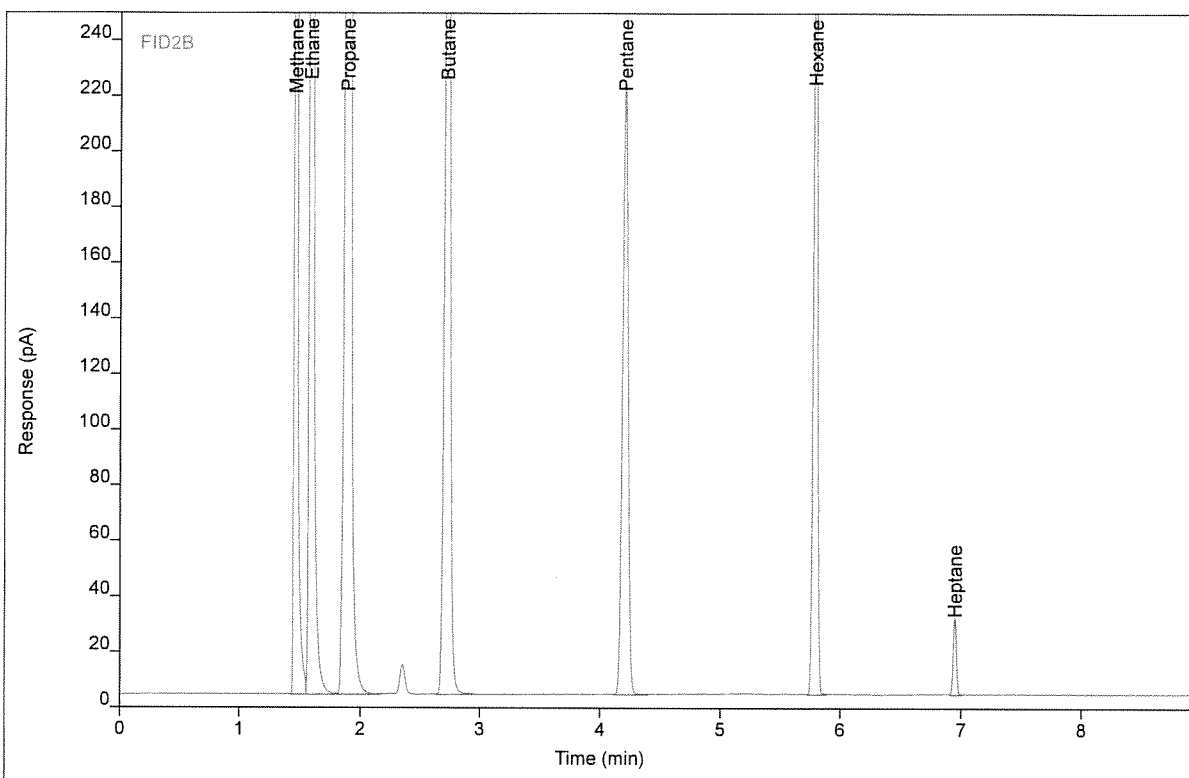
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
as Butane					34.9137	1	34.9137	
Methane	PV	1.46	1526.01	1176.08	7666.41	1	7666.41	ppm
Ethane	VB	1.59	2873.53	1931.30	7726.02	1	7726.02	ppm
Propane	BB	1.89	4282.26	1999.03	7710.51	1	7710.51	ppm
Butane	VB	2.73	1157.41	379.603	1553.00	1	1553.00	ppm
Pentane	BB	4.21	711.302	222.463	775.314	1	775.314	ppm
Hexane	BB	5.79	701.467	307.613	625.055	1	625.055	ppm
Heptane	BB	6.95	51.8335	28.7410	40.3778	1	40.3778	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummp987 #C6 ENV(1=1700,4=364.74)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B1803.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 4/3/2017 10:11 AM
 File Modified 4/3/2017 1:25 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 3 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
 Printed 4/3/2017 2:05 PM



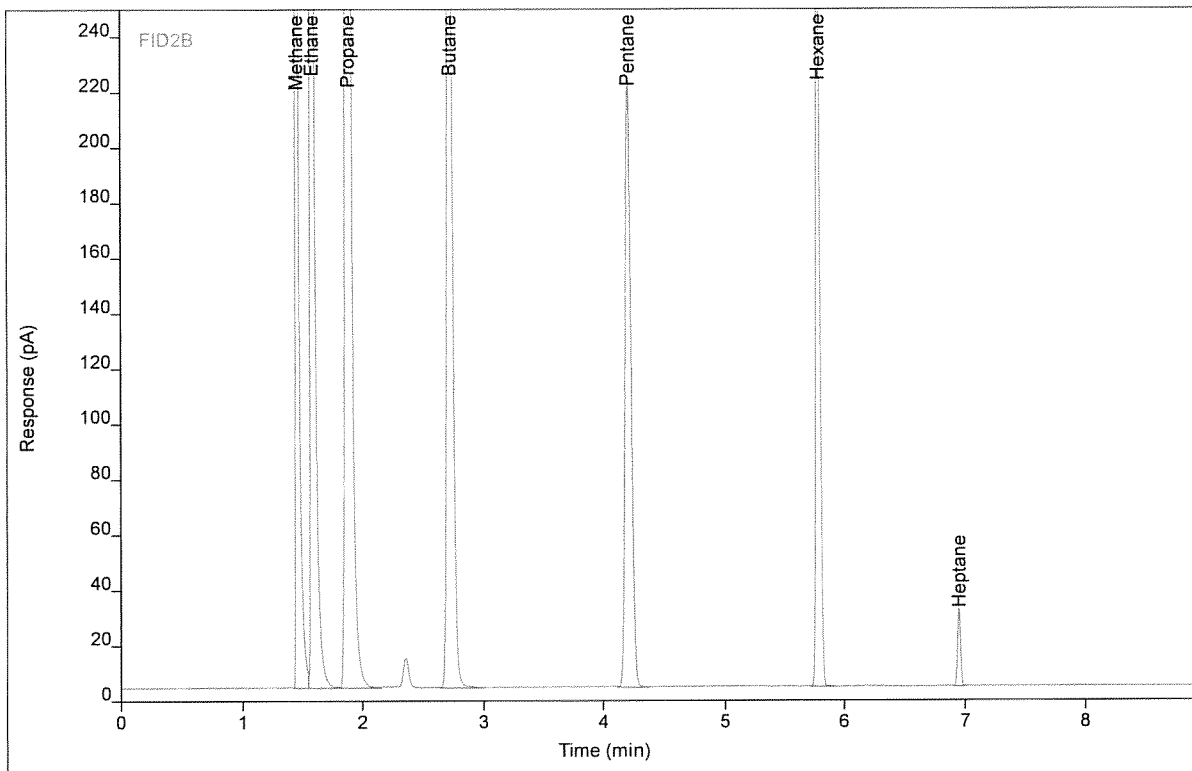
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
as Butane					34.7286	1	34.7286	
Methane	PV	1.46	1517.99	1173.47	7626.11	1	7626.11	ppm
Ethane	VV	1.59	2857.98	1923.80	7684.20	1	7684.20	ppm
Propane	VB	1.89	4257.29	1987.56	7665.56	1	7665.56	ppm
Butane	VB	2.73	1149.13	377.917	1541.90	1	1541.90	ppm
Pentane	BB	4.21	703.805	220.134	767.143	1	767.143	ppm
Hexane	BB	5.79	687.801	303.861	612.880	1	612.880	ppm
Heptane	BB	6.95	50.4157	27.8372	39.2766	1	39.2766	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop987 #C6 ENV(1=1700,4=364.74)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B1804.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 4/3/2017 10:29 AM
 File Modified 4/3/2017 1:25 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 4 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
 Printed 4/3/2017 2:05 PM



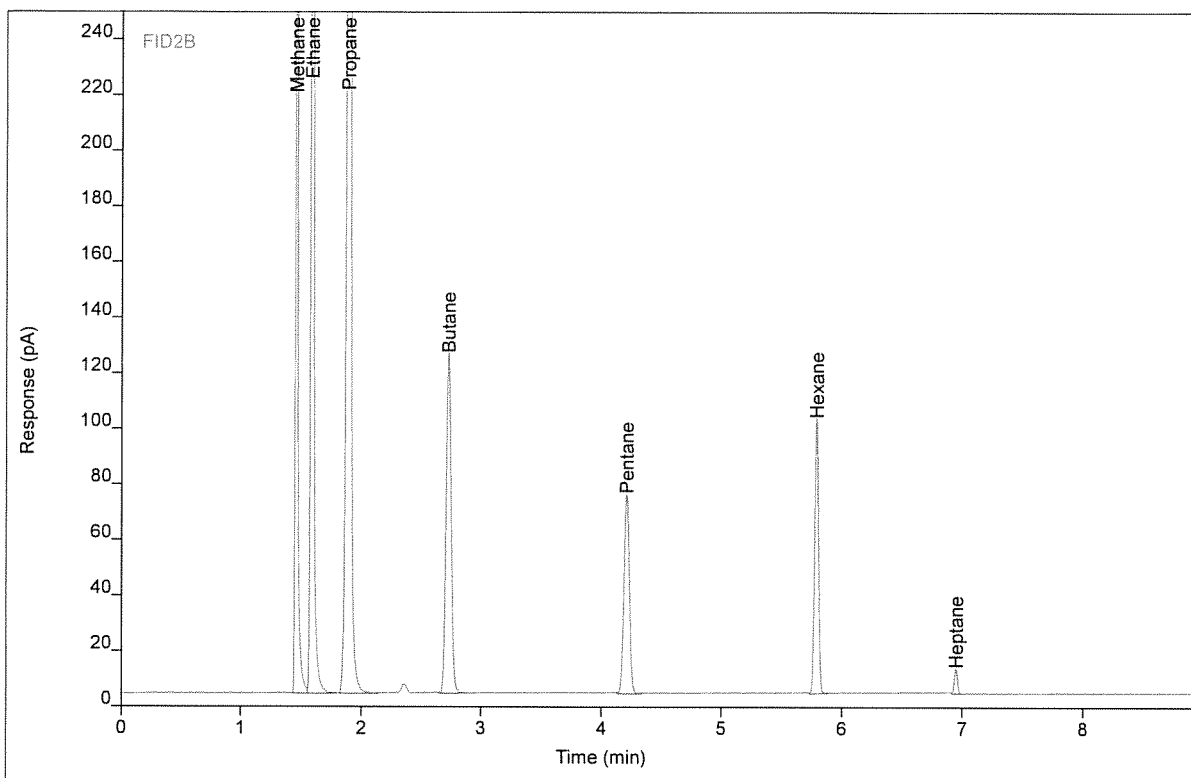
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
as Butane					35.1829	1	35.1829	
Methane	PV	1.46	1520.02	1171.26	7636.31	1	7636.31	ppm
Ethane	VV	1.59	2862.47	1922.06	7696.29	1	7696.29	ppm
Propane	VB	1.89	4263.31	1990.81	7676.39	1	7676.39	ppm
Butane	VV	2.73	1152.34	378.190	1546.20	1	1546.20	ppm
Pentane	BB	4.21	706.332	220.582	769.897	1	769.897	ppm
Hexane	BB	5.79	692.269	303.722	616.861	1	616.861	ppm
Heptane	BB	6.95	50.7182	28.1451	39.5115	1	39.5115	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop987 #C5 ENV(1=3800,4=243.16)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B1902.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 4/3/2017 11:06 AM
 File Modified 4/3/2017 1:25 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 2 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
 Printed 4/3/2017 2:05 PM



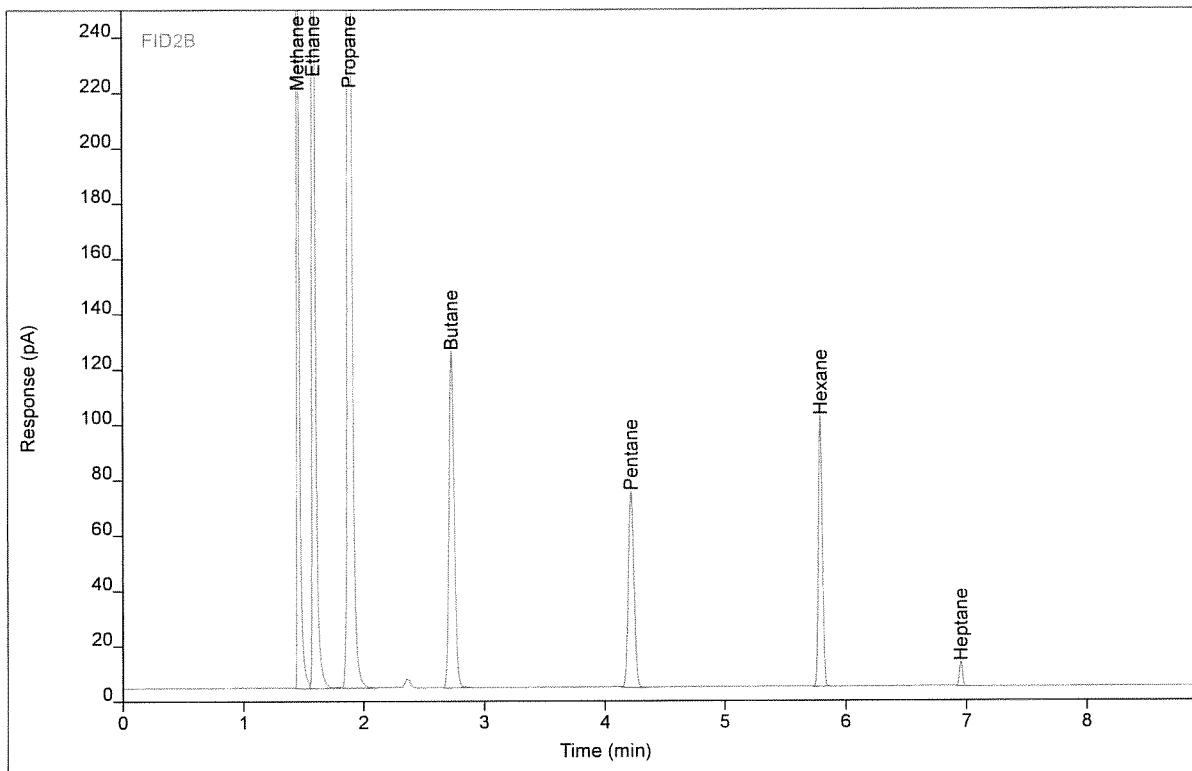
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
as Butane					11.2935	1	11.2935	
Methane	PV	1.46	493.207	379.077	2478.14	1	2478.14	ppm
Ethane	VB	1.59	929.194	625.979	2498.48	1	2498.48	ppm
Propane	BB	1.89	1384.86	646.984	2493.60	1	2493.60	ppm
Butane	BB	2.73	372.451	122.363	499.903	1	499.903	ppm
Pentane	BB	4.21	229.075	71.8840	249.713	1	249.713	ppm
Hexane	BB	5.79	224.840	98.8594	200.445	1	200.445	ppm
Heptane	BB	6.95	16.4871	9.12448	12.9256	1	12.9256	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop987 #C5 ENV(1=3800,4=243.16)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B1903.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 4/3/2017 11:25 AM
 File Modified 4/3/2017 1:25 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 3 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
 Printed 4/3/2017 2:05 PM



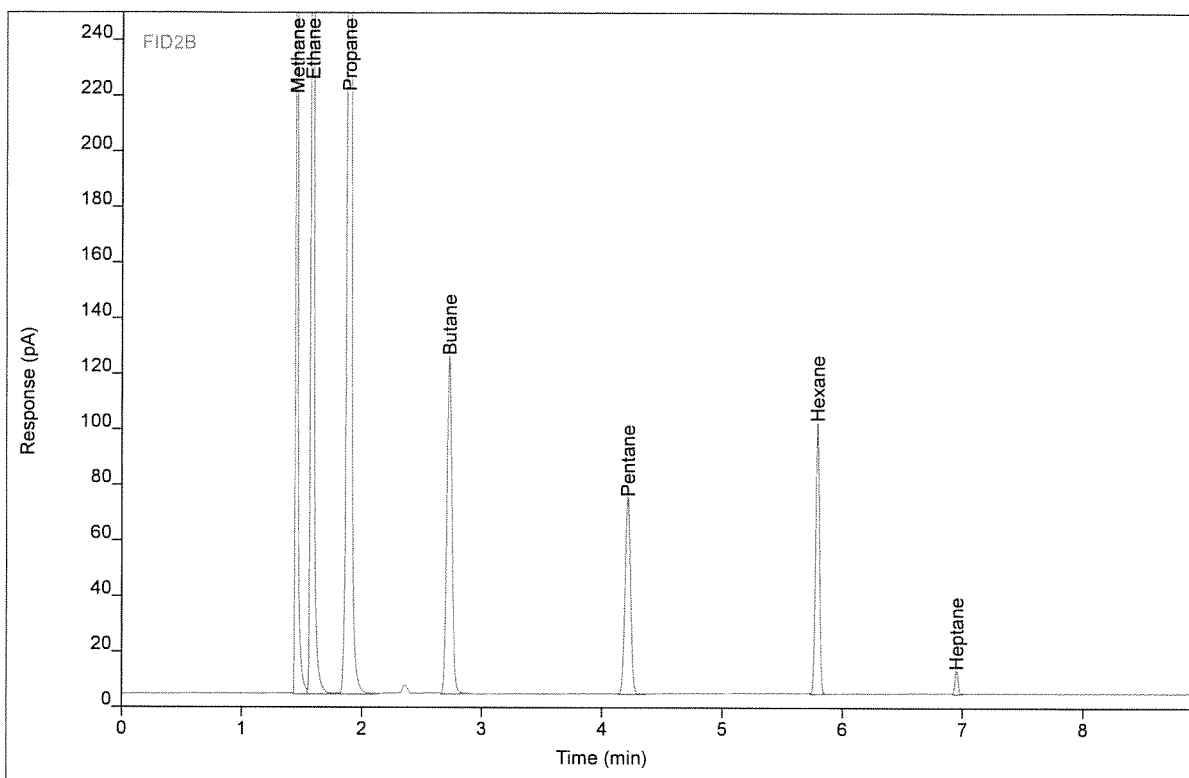
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
as Butane		1.46	490.075	374.345	11.0940	1	11.0940	
Methane	PV	1.59	923.156	623.936	2462.41	1	2462.41	ppm
Ethane	VB	1.89	1374.90	642.931	2475.67	1	2475.67	ppm
Propane	BB	1.89	1374.90	642.931	2475.67	1	2475.67	ppm
Butane	BB	2.73	369.432	121.735	495.853	1	495.853	ppm
Pentane	BB	4.21	227.080	70.9978	247.539	1	247.539	ppm
Hexane	BB	5.79	222.562	97.6587	198.416	1	198.416	ppm
Heptane	BB	6.95	16.3241	9.02969	12.7990	1	12.7990	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop987 #C5 ENV(1=3800,4=243.16)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B1904.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 4/3/2017 11:44 AM
 File Modified 4/3/2017 1:25 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 4 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
 Printed 4/3/2017 2:05 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
as Butane					11.1002	1	11.1002	
Methane	PV	1.46	489.838	375.543	2461.22	1	2461.22	ppm
Ethane	VV	1.59	922.721	622.521	2481.08	1	2481.08	ppm
Propane	VB	1.89	1374.62	642.570	2475.16	1	2475.16	ppm
Butane	BB	2.73	369.200	121.743	495.542	1	495.542	ppm
Pentane	BB	4.21	226.930	71.0351	247.375	1	247.375	ppm
Hexane	BB	5.79	221.087	97.7542	197.101	1	197.101	ppm
Heptane	BB	6.95	16.0309	8.83125	12.5712	1	12.5712	ppm



THE LINDE GROUP

SHIPPED TO: Enthalpy Analytical Inc.
800 Capitola Dr. Ste. 1
Durham, NC 27713-4385

PAGE: 1 of 1

CERTIFICATE OF ANALYSIS

Sales#:	114378357	Cylinder Size:	152 (8" X 47.5")
Production#:	1389409	Cylinder # :	CC-127546
Certification Date:	Sep-20-2016	Cylinder Pressure:	575 psig
P.O.# :	08191601	Cylinder Valve:	CGA 350 Brass
Blend Type:	CERTIFIED	Cylinder Volume:	29.5 Liter
Material#:	24102488	Cylinder Material:	Aluminum
Traceability:	NIST by weight	Gas Volume:	1150 Liters
Expiration Date:	Sep-20-2017	Blend Tolerance:	5% Relative
Do NOT use under:	150 psig	Analytical Accuracy:	2% Relative

COMPONENT	CAS NUMBER	REQUESTED CONC	CERTIFIED CONC
Methane	74-82-8	5.00 %	5.12 %
Ethane	74-84-0	5.00 %	5.14 %
Propane	74-98-6	5.00 %	5.16 %
Butane	106-97-8	1.00 %	1.03 %
Pentane	109-66-0	0.500 %	0.520 %
Hexane	110-54-3	0.400 %	0.410 %
Heptane	142-82-5	250 ppm	257 ppm
Nitrogen	7727-37-9	Balance	Balance

ANALYST: *Lou Lorenzetti*
Lou Lorenzetti

DATE: Sep-20-2016

CERTIFICATE OF ANALYSIS

Grade of Product: CERTIFIED STANDARD-SPEC

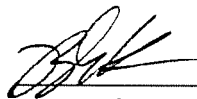
Part Number: X08NI99C15A0079 Reference Number: 141-124555464-1
Cylinder Number: CC105348 Cylinder Volume: 144.4 CF
Laboratory: ASG - Conley Stryker - OH Cylinder Pressure: 2015 PSIG
Analysis Date: May 16, 2016 Valve Outlet: 350
Lot Number: 141-124555464-1

Expiration Date: May 16, 2019

Product composition verified by direct comparison to calibration standards traceable to N.I.S.T. weights and/or N.I.S.T. Gas Mixture reference materials.

ANALYTICAL RESULTS

Component	Req Conc	Actual Concentration (Mole %)	Analytical Uncertainty
ETHANE	100.0 PPM	100.0 PPM	+/- 2%
HEXANE	100.0 PPM	100.0 PPM	+/- 2%
METHANE	100.0 PPM	100.0 PPM	+/- 2%
N BUTANE	100.0 PPM	100.0 PPM	+/- 2%
N HEPTANE	100.0 PPM	100.0 PPM	+/- 2%
N PENTANE	100.0 PPM	100.0 PPM	+/- 2%
PROPANE	100.0 PPM	100.0 PPM	+/- 2%
NITROGEN	Balance		



Approved for Release

=====
6890 GC METHOD
=====

OVEN

Initial temp: 35 C (On) Maximum temp: 250 C
Initial time: 2.20 min Equilibration time: 0.20 min
Ramps:
Rate Final temp Final time
1 15.00 70 0.07
2 30.00 250 1.00
3 0 (Off)
Post temp: 50 C
Post time: 0.00 min
Run time: 11.60 min

FRONT INLET (SPLIT/SPLITLESS)

Mode: Split
Initial temp: 160 C (On)
Pressure: 4.7 psi (On)
Split ratio: 5:1
Split flow: 9.9 mL/min
Total flow: 17.9 mL/min
Gas saver: Off
Gas type: Hydrogen

BACK INLET (SPLIT/SPLITLESS)

Mode: Split
Initial temp: 160 C (On)
Pressure: 4.9 psi (On)
Split ratio: 2:1
Split flow: 3.9 mL/min
Total flow: 12.1 mL/min
Gas saver: Off
Gas type: Hydrogen

COLUMN 1

Capillary Column
Model Number: 10970
Description: Rtx-624 S/N 926827
Max temperature: 240 C
Nominal length: 30.0 m
Nominal diameter: 320.00 um
Nominal film thickness: 1.80 um
Mode: constant flow
Initial flow: 2.0 mL/min
Nominal init pressure: 4.7 psi
Average velocity: 37 cm/sec
Inlet: Front Inlet
Outlet: Front Detector
Outlet pressure: ambient

COLUMN 2

Capillary Column
Model Number: 10198
Description: Rtx-1 S/N 869999
Max temperature: 280 C
Nominal length: 30.0 m
Nominal diameter: 320.00 um
Nominal film thickness: 4.00 um
Mode: constant flow
Initial flow: 2.0 mL/min
Nominal init pressure: 4.9 psi
Average velocity: 38 cm/sec
Inlet: Back Inlet
Outlet: Back Detector
Outlet pressure: ambient

FRONT DETECTOR (FID)

Temperature: 250 C (On)
Hydrogen flow: 40.0 mL/min (On)
Air flow: 450.0 mL/min (On)
Mode: Constant makeup flow
Makeup flow: 45.0 mL/min (On)
Makeup Gas Type: Nitrogen
Flame: On
Electrometer: On
Lit offset: 2.0

BACK DETECTOR (FID)

Temperature: 250 C (On)
Hydrogen flow: 40.0 mL/min (On)
Air flow: 450.0 mL/min (On)
Mode: Constant makeup flow
Makeup flow: 45.0 mL/min (On)
Makeup Gas Type: Nitrogen
Flame: On
Electrometer: On
Lit offset: 2.0

SIGNAL 1

Data rate: 20 Hz
Type: front detector
Save Data: On

SIGNAL 2

Data rate: 20 Hz
Type: back detector
Save Data: On

THERMAL AUX 1

Use: Valve Box Heater
Initial temp: 120 C (On)

VALVES

Valve 1 Gas Sampling

POST RUN

Post Time: 0.00 min
EA# 0617-110 Page 188 of 441

method: C:\GC\2017\GUMMO\METHODS\AQ_GUMMOP987.M

Modified on: 3/31/2017 at 3:12:16 PM

Loop Volume: 1.000 mL

Load Time: 0.70 min

Inject Time: 0.50 min

Inlet: Front Inlet

Valve 2 Gas Sampling

Loop Volume: 1.000 mL

Load Time: 0.70 min

Inject Time: 0.50 min

Inlet: Back Inlet

Valve 7 Multiposition 16

BCD input: inverted

Switch Time: 1.0 sec

TIME TABLE

Time (min)	Parameter & Setpoint	
0.10	Multi-Valve Position:	1

Raw Data

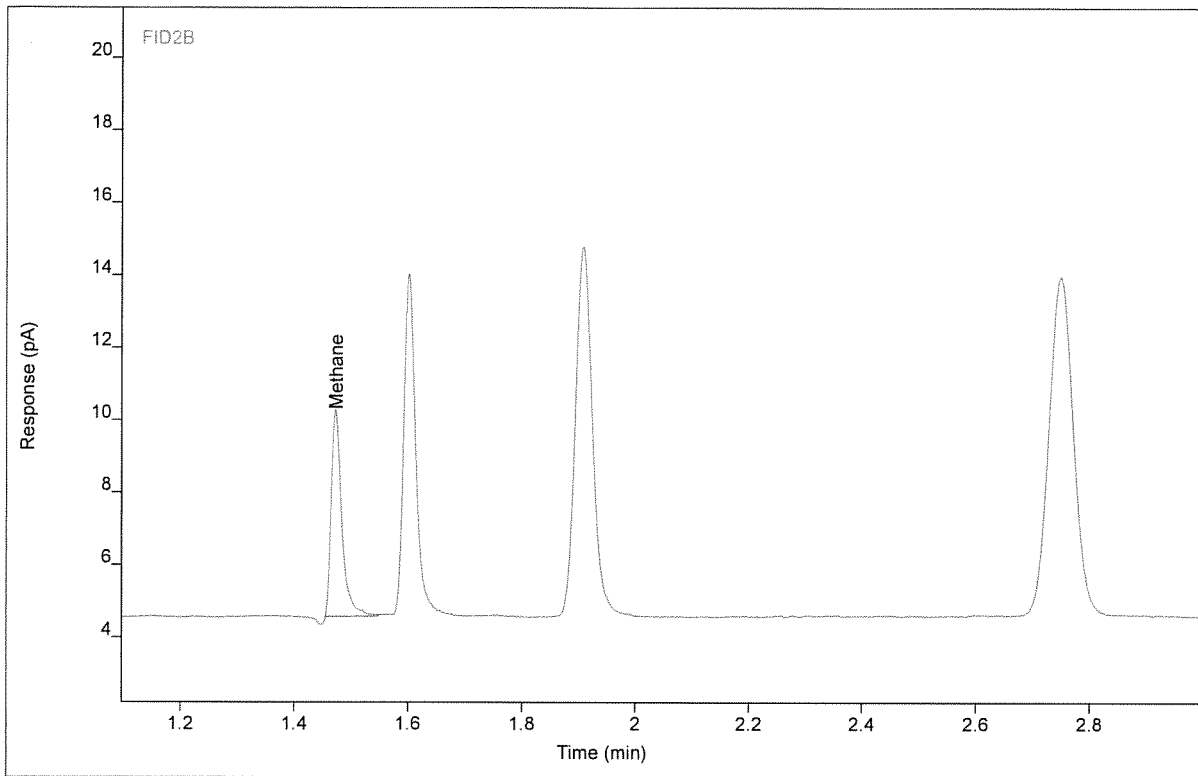


Chromatogram Report

Enthalpy Analytical

Sample Name gummop903 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1049 ver.9
Inj Data File 032B1501.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 3:35 AM
File Modified 7/6/2017 4:24 PM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/7/2017 1:37 PM



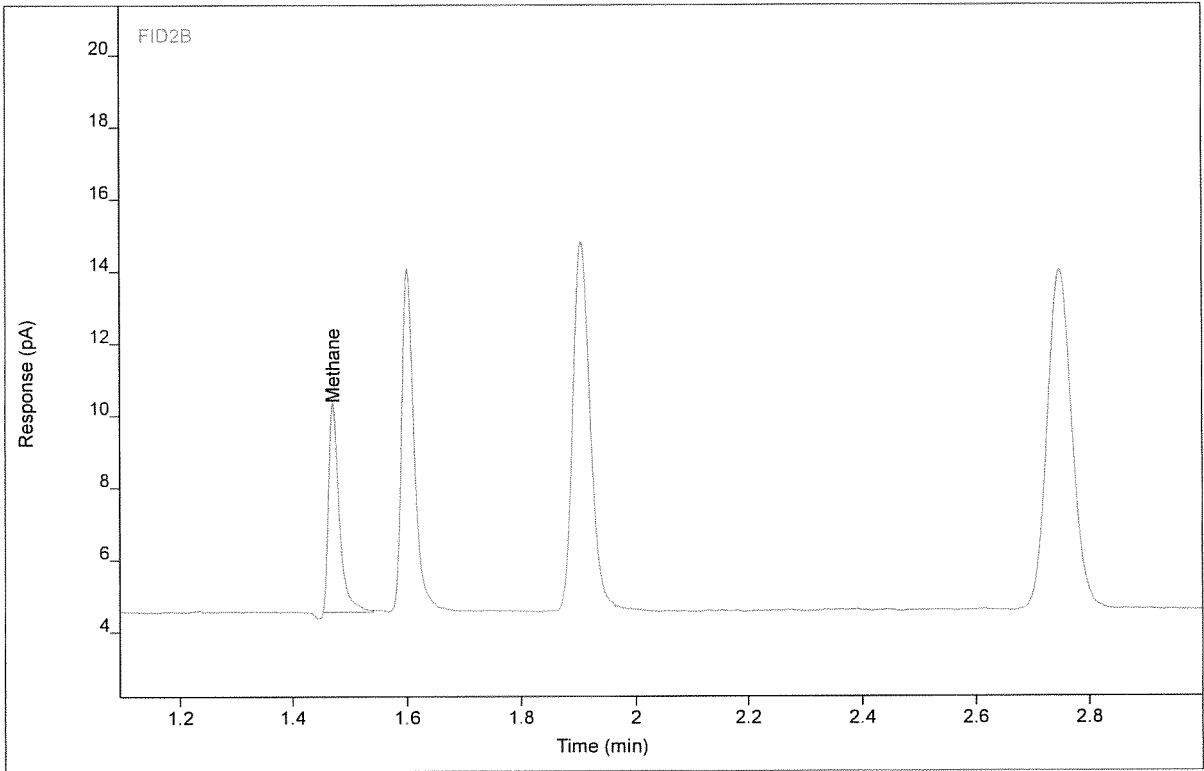
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.47	7.50362	5.69937	38.2256	1	38.2256	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop903 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1049 ver.9
Inj Data File 032B1502.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 3:53 AM
File Modified 7/6/2017 4:24 PM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/7/2017 1:37 PM



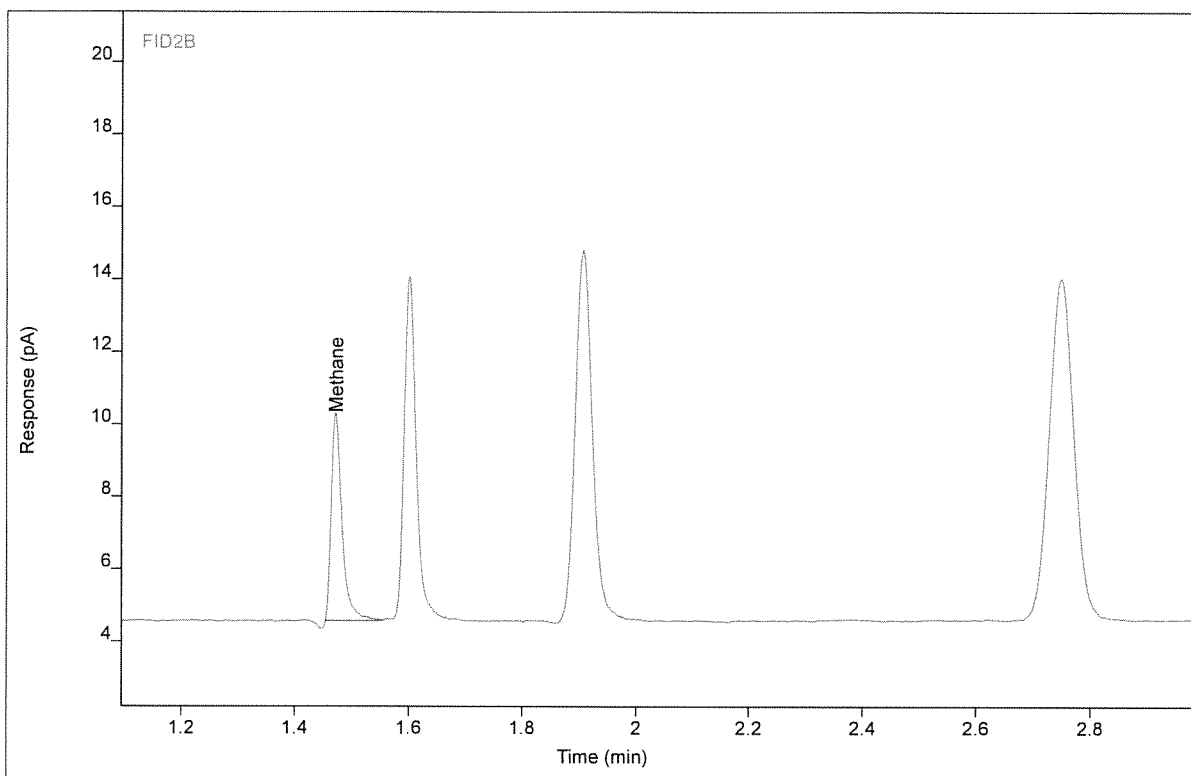
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.47	7.54063	5.76083	38.4115	1	38.4115	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop903 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1049 ver.9
Inj Data File 032B1503.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 4:11 AM
File Modified 7/6/2017 4:24 PM
Instrument
Operator Nicholas Traversa

Sample Type
Vial Number Vial 32
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/7/2017 1:37 PM



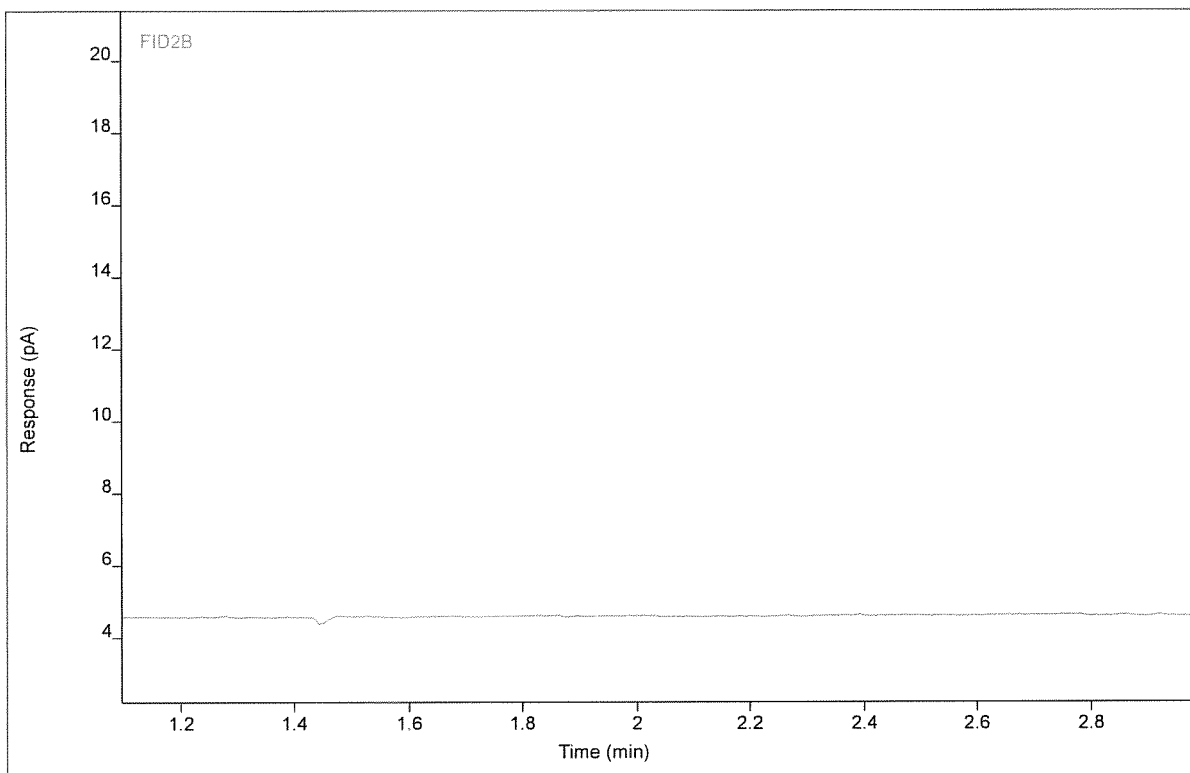
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PV	1.47	7.50061	5.72133	38.2105	1	38.2105	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name zero air blank #LB
Sequence Name GUMMOP1049 ver.9
Inj Data File 024B1601.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 4:27 AM
File Modified 7/7/2017 1:16 PM
Instrument
Operator Nicholas Traversa

Sample Type Control
Vial Number Vial 24
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/7/2017 1:37 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane		(1.48)				1		

Analyst Peak Integration Comments

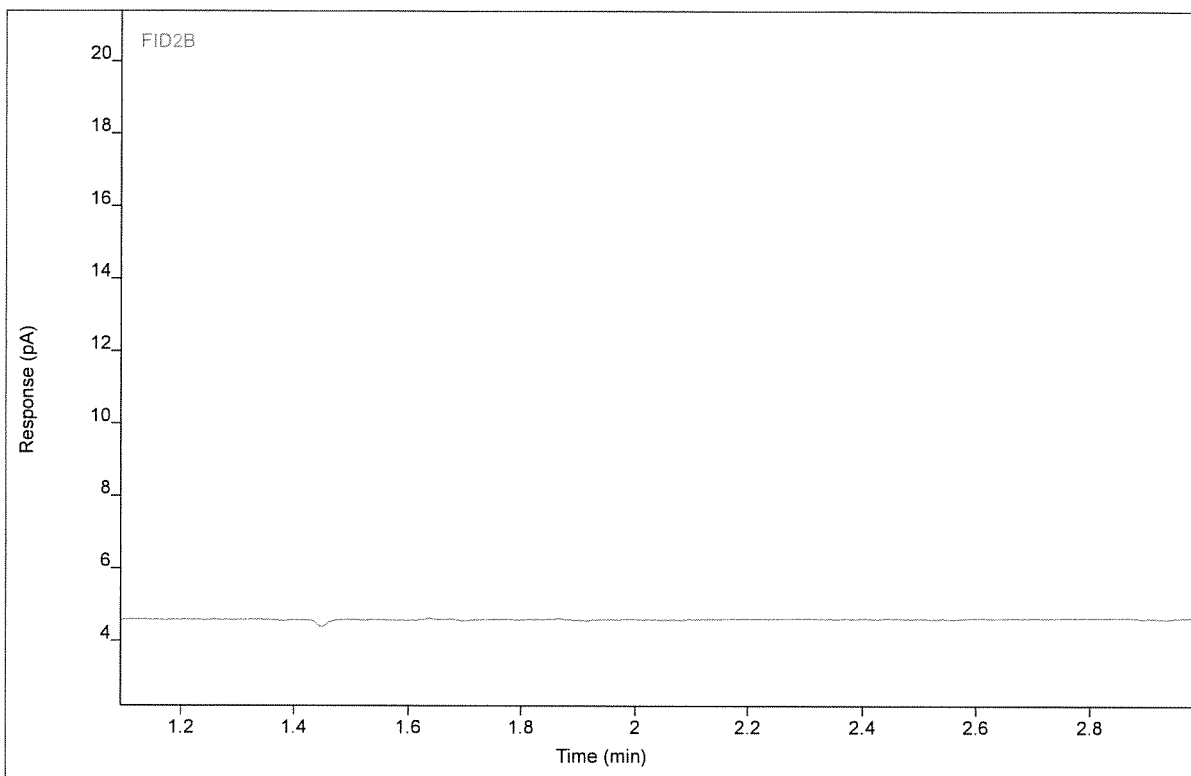
13:15:36 07/07/17 Ben Prothe II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name zero air blank #LB
Sequence Name GUMMOP1049 ver.9
Inj Data File 024B1602.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 4:44 AM
File Modified 7/7/2017 1:16 PM
Instrument
Operator Nicholas Traversa

Sample Type Control
Vial Number Vial 24
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/7/2017 1:37 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane		(1.48)				1		

Analyst Peak Integration Comments

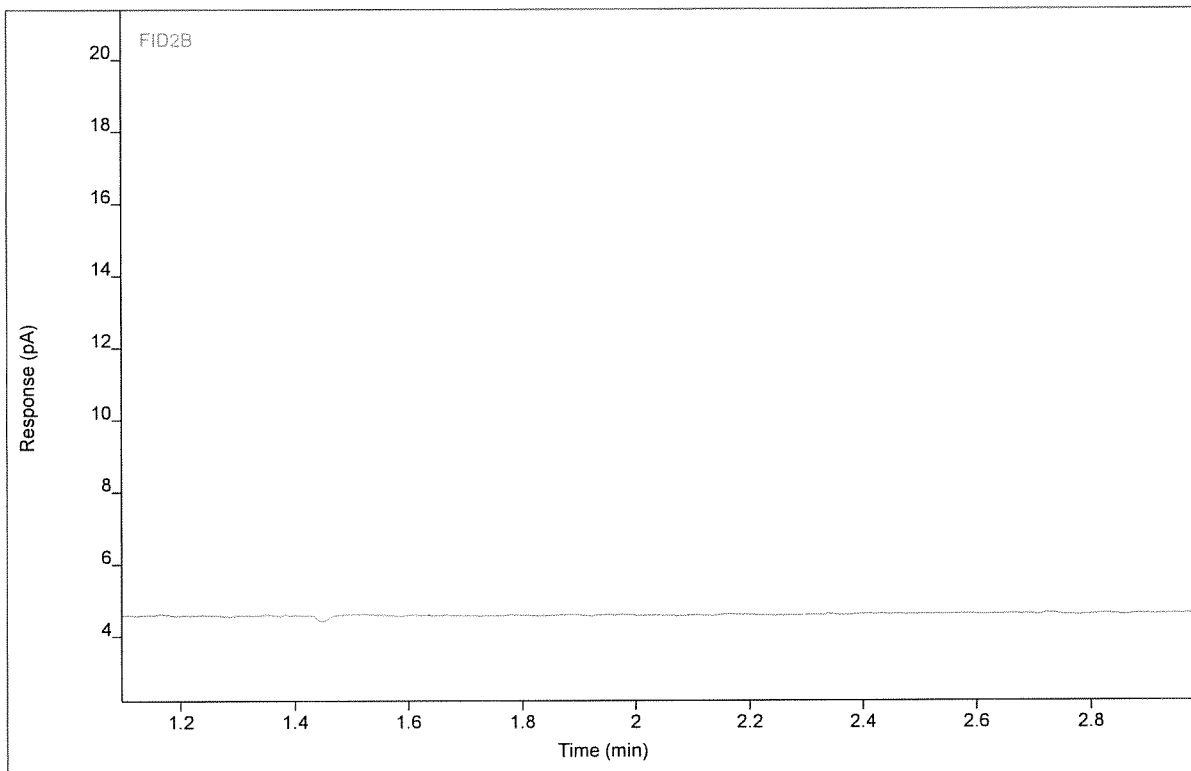
13:15:46 07/07/17 Ben Prothe II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name zero air blank #LB
Sequence Name GUMMOP1049 ver.9
Inj Data File 024B1603.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 5:00 AM
File Modified 7/7/2017 1:16 PM
Instrument
Operator Nicholas Traversa

Sample Type Control
Vial Number Vial 24
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/7/2017 1:37 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane		(1.48)				1		

Analyst Peak Integration Comments

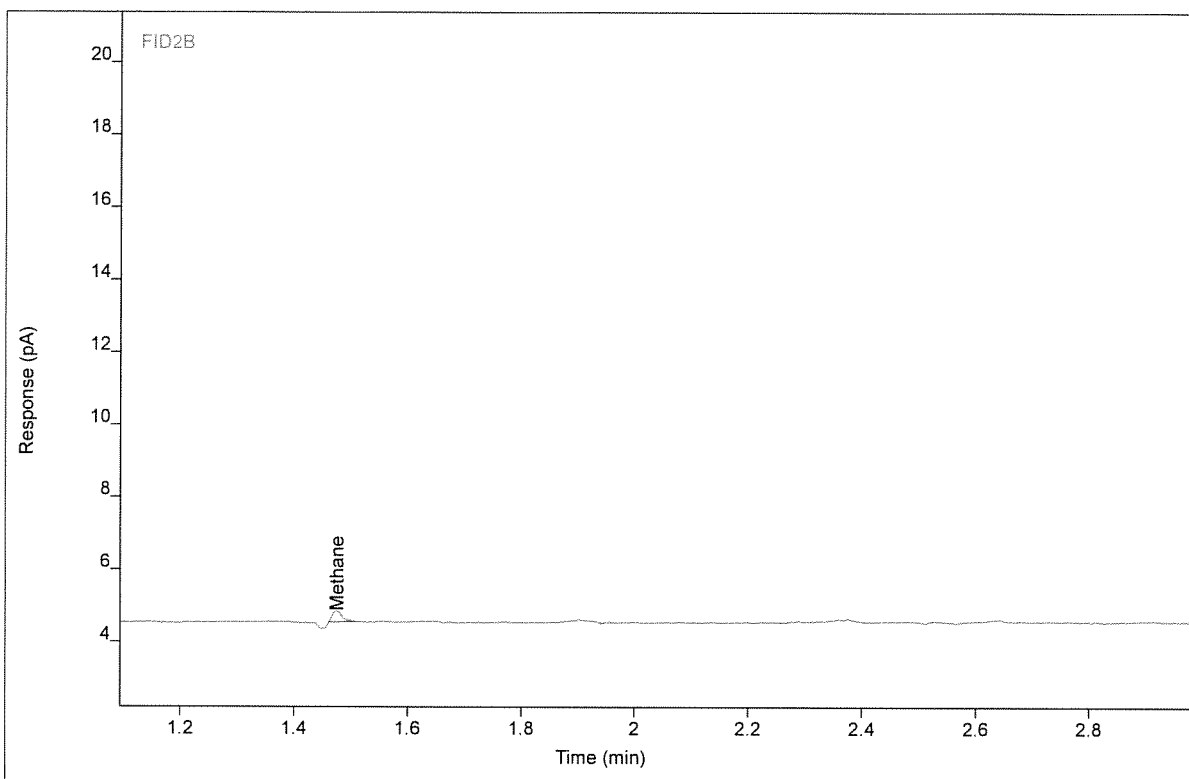
13:15:56 07/07/17 Ben Prothe II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Inlet Primary Run 1.Bag
Sequence Name GUMMOP1049 ver.9
Inj Data File 029B2102.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 12:43 PM
File Modified 7/6/2017 4:25 PM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 29
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/7/2017 1:37 PM



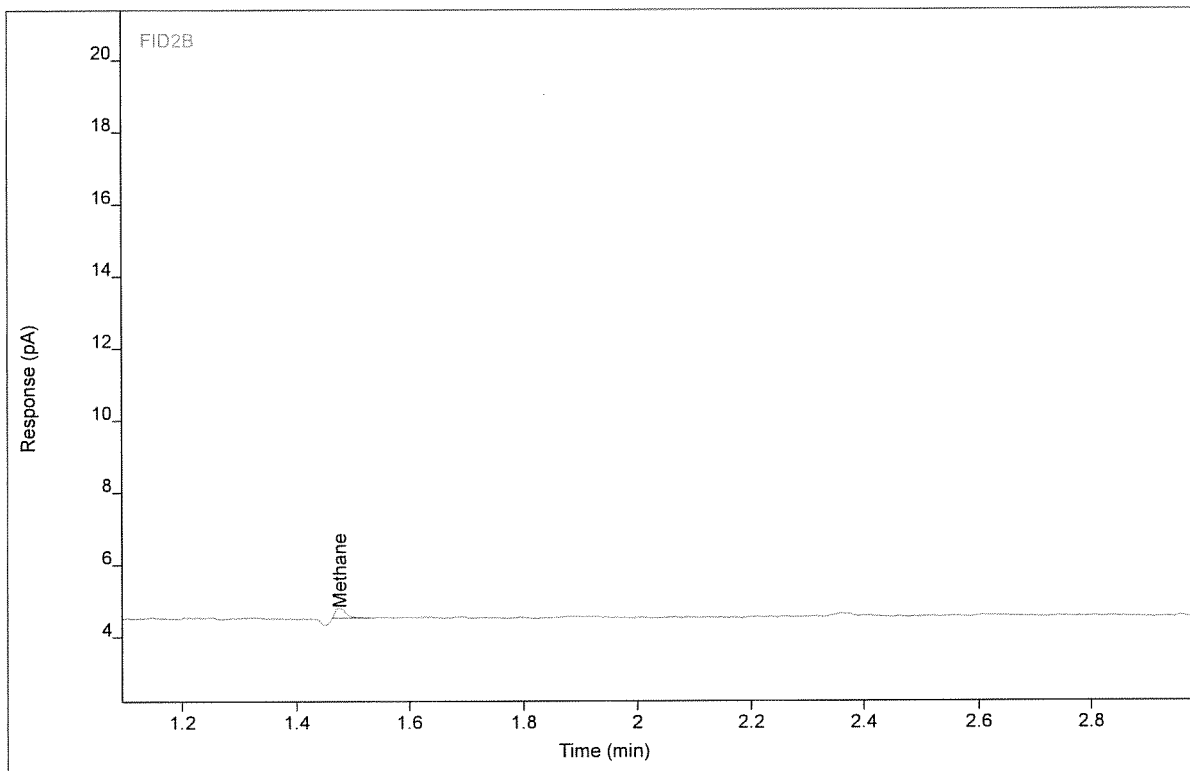
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.48	0.37810	0.30196	2.12519	1	2.12519	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Inlet Primary Run 1.Bag
Sequence Name GUMMOP1049 ver.9
Inj Data File 029B2103.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 12:51 PM
File Modified 7/6/2017 4:25 PM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 29
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/7/2017 1:37 PM



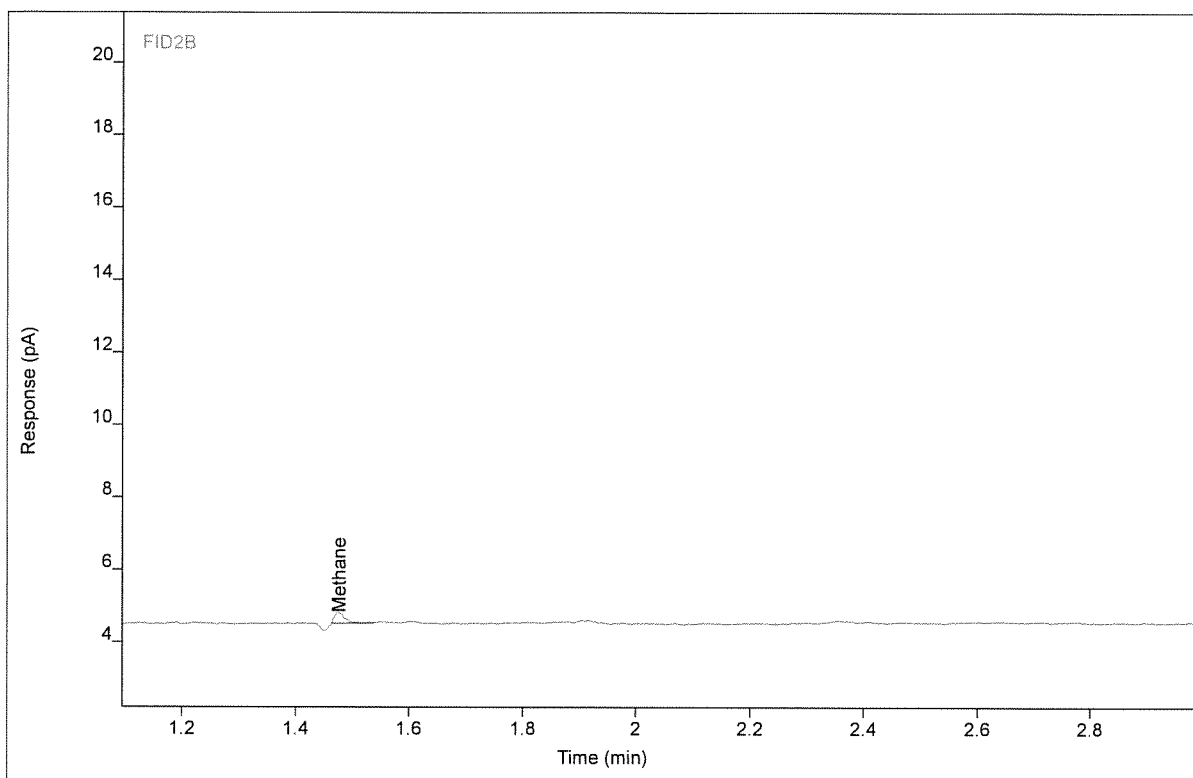
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PV	1.48	0.40651	0.29473	2.28488	1	2.28488	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Inlet Primary Run 1.Bag
Sequence Name GUMMOP1049 ver.9
Inj Data File 028B2201.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 12:57 PM
File Modified 7/6/2017 4:25 PM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 28
Injection Volume 1000
Injection 1 of 1
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/7/2017 1:37 PM



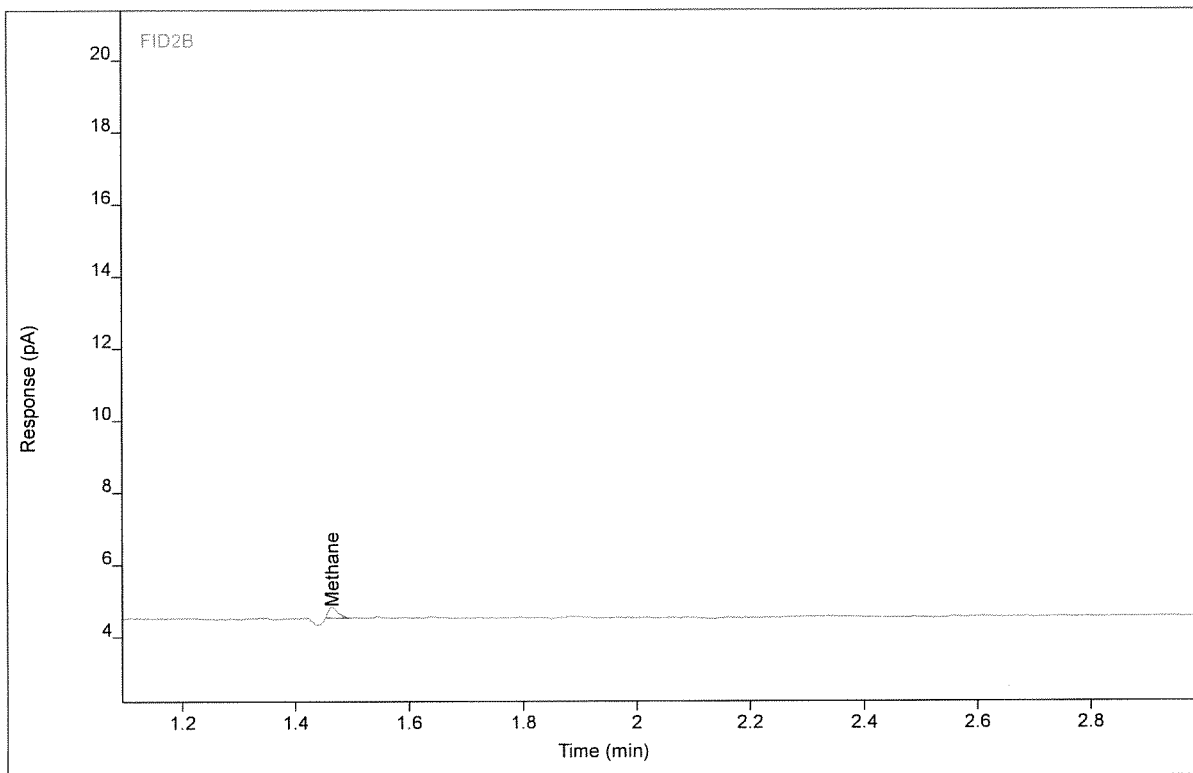
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.48	0.40279	0.29676	2.26401	1	2.26401	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Inlet Primary Run 3.Bag
Sequence Name GUMMOP1049 ver.9
Inj Data File 018B2301.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 1:05 PM
File Modified 7/7/2017 11:28 AM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 18
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/7/2017 1:37 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	MM	1.46	0.35409	0.32277	1.99028	1	1.99028	ppm

Analyst Peak Integration Comments

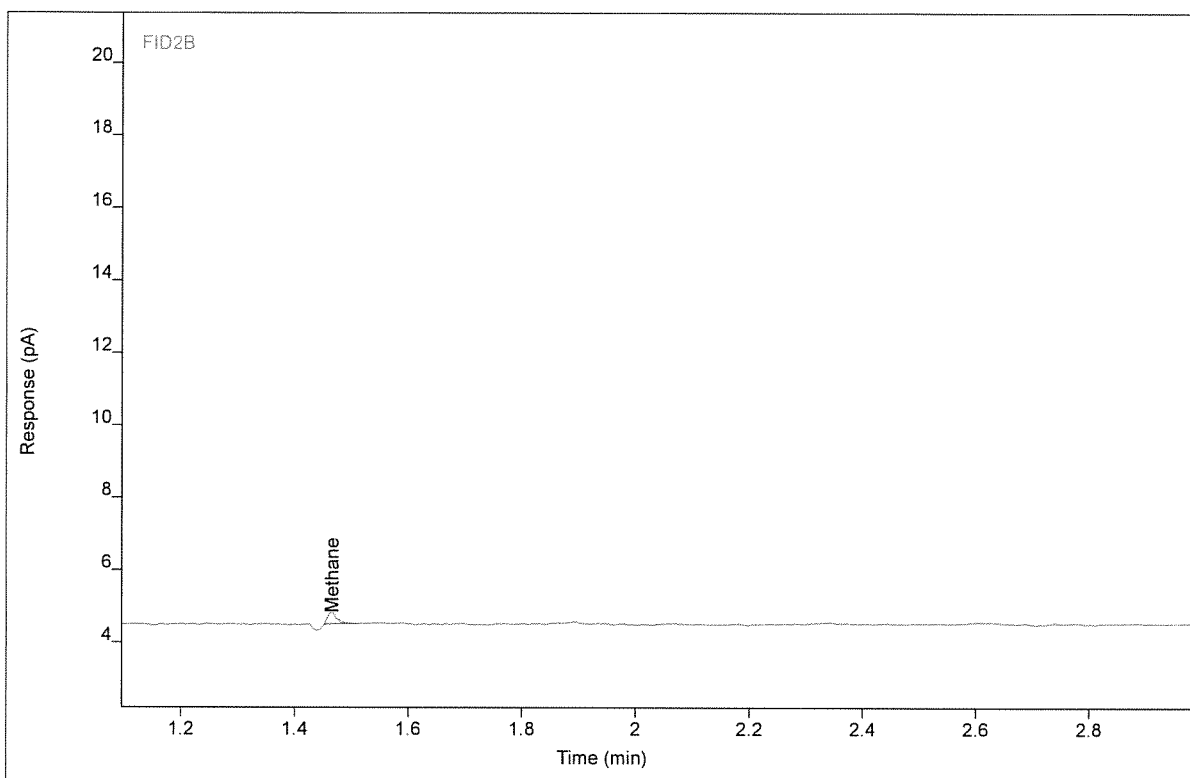
11:27:23 07/07/17 Nicholas Traversa II
11:28:27 07/07/17 Nicholas Traversa II-BL

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Inlet Primary Run 3.Bag
Sequence Name GUMMOP1049 ver.9
Inj Data File 018B2302.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 1:12 PM
File Modified 7/6/2017 4:25 PM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 18
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/7/2017 1:37 PM



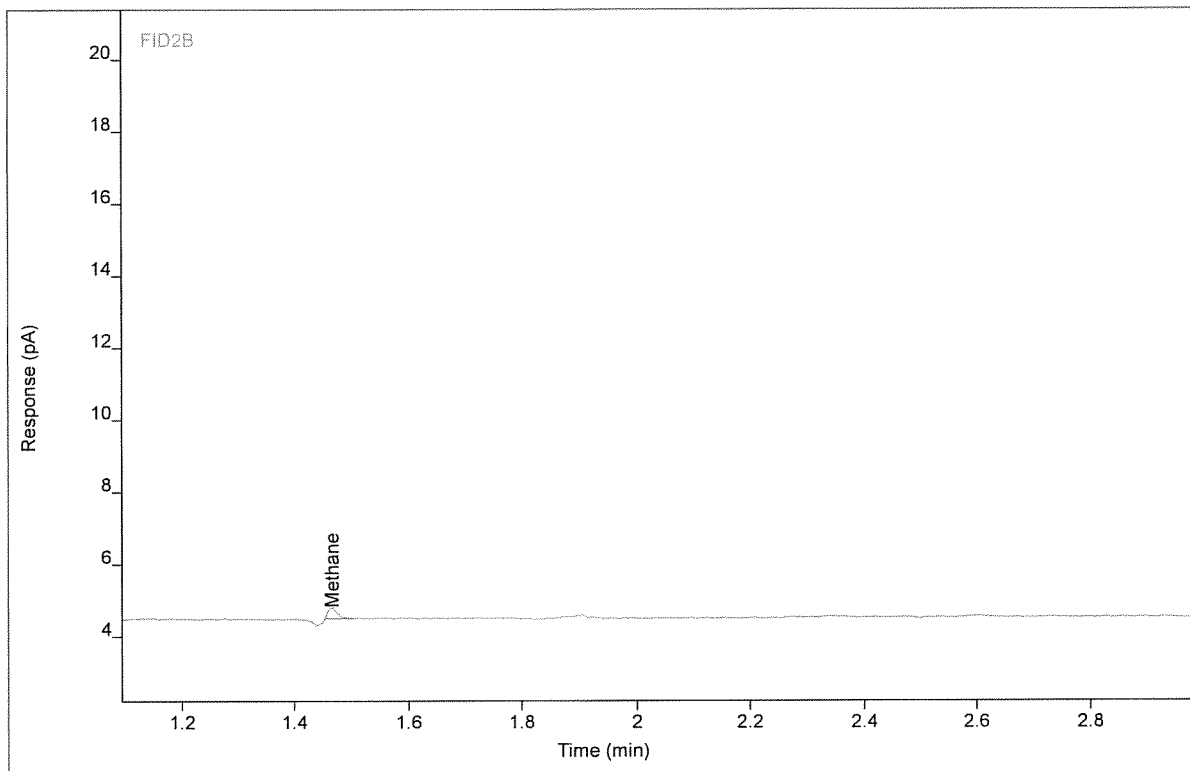
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.46	0.33882	0.30449	1.90441	1	1.90441	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Inlet Primary Run 3.Bag
Sequence Name GUMMOP1049 ver.9
Inj Data File 018B2303.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 1:20 PM
File Modified 7/6/2017 4:25 PM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 18
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/7/2017 1:37 PM



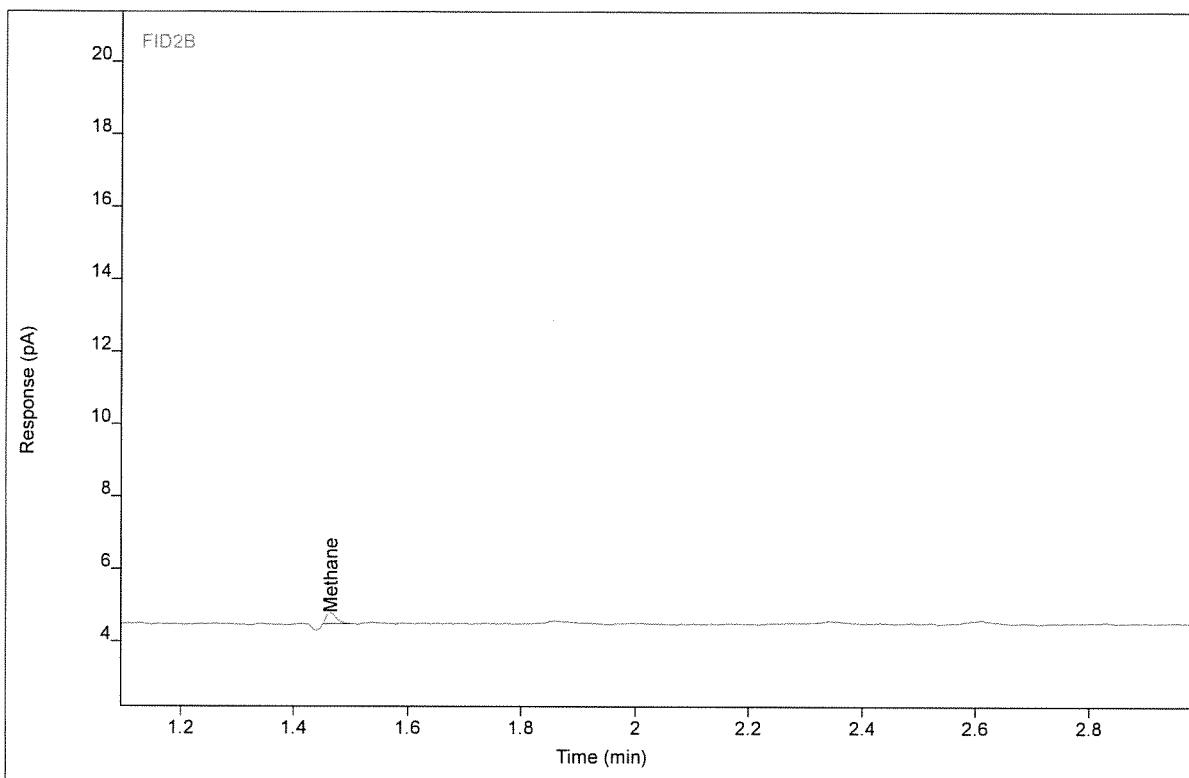
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PV	1.47	0.34551	0.31080	1.94201	1	1.94201	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Inlet Primary Run 4.Bag
Sequence Name GUMMOP1049 ver.9
Inj Data File 029B2401.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 1:28 PM
File Modified 7/6/2017 4:25 PM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 29
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/7/2017 1:37 PM



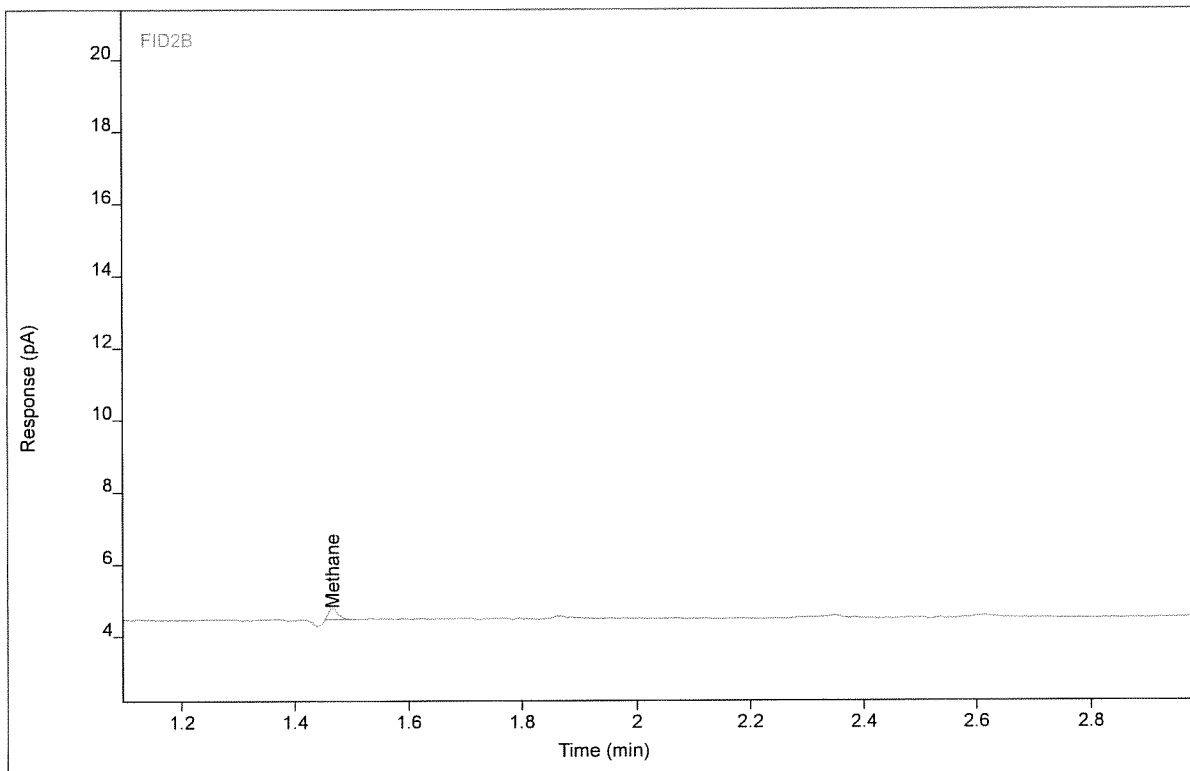
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.46	0.37139	0.30727	2.08751	1	2.08751	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Inlet Primary Run 4.Bag
Sequence Name GUMMOP1049 ver.9
Inj Data File 029B2402.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 1:35 PM
File Modified 7/6/2017 4:26 PM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 29
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/7/2017 1:37 PM



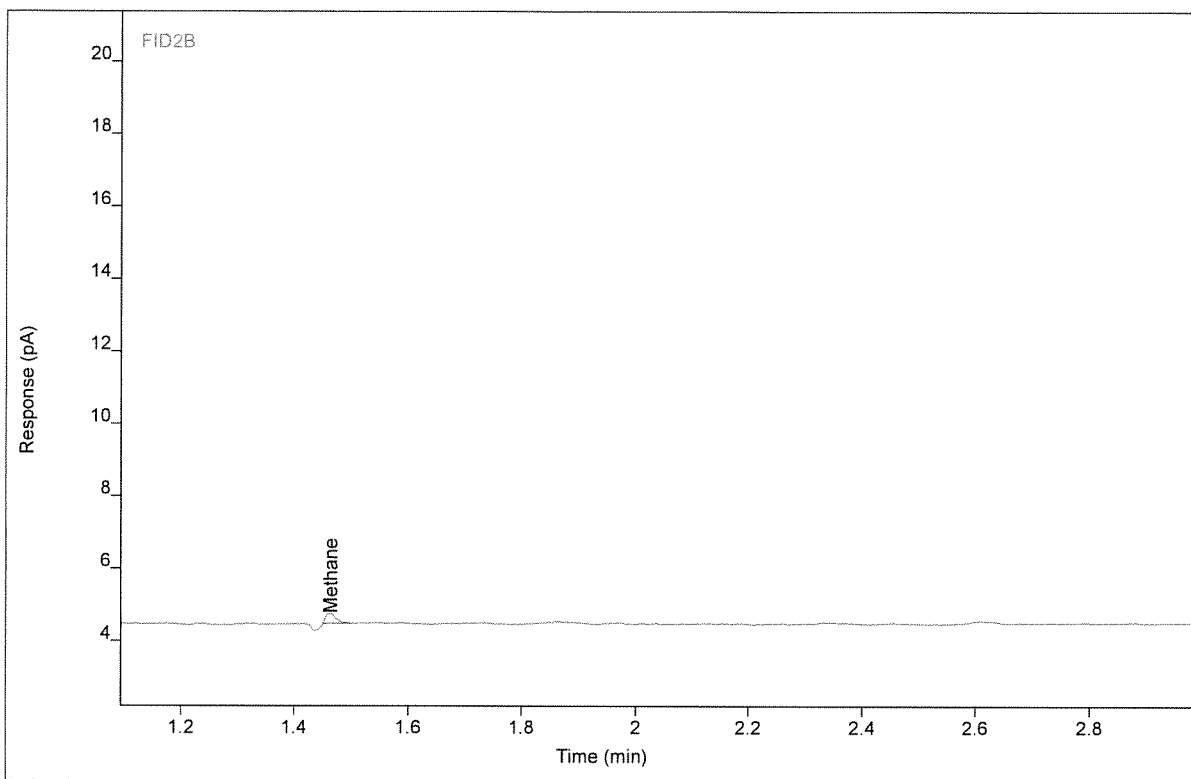
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.47	0.35372	0.31416	1.98820	1	1.98820	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Inlet Primary Run 4.Bag
Sequence Name GUMMOP1049 ver.9
Inj Data File 029B2403.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 1:43 PM
File Modified 7/6/2017 4:26 PM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 29
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/7/2017 1:37 PM



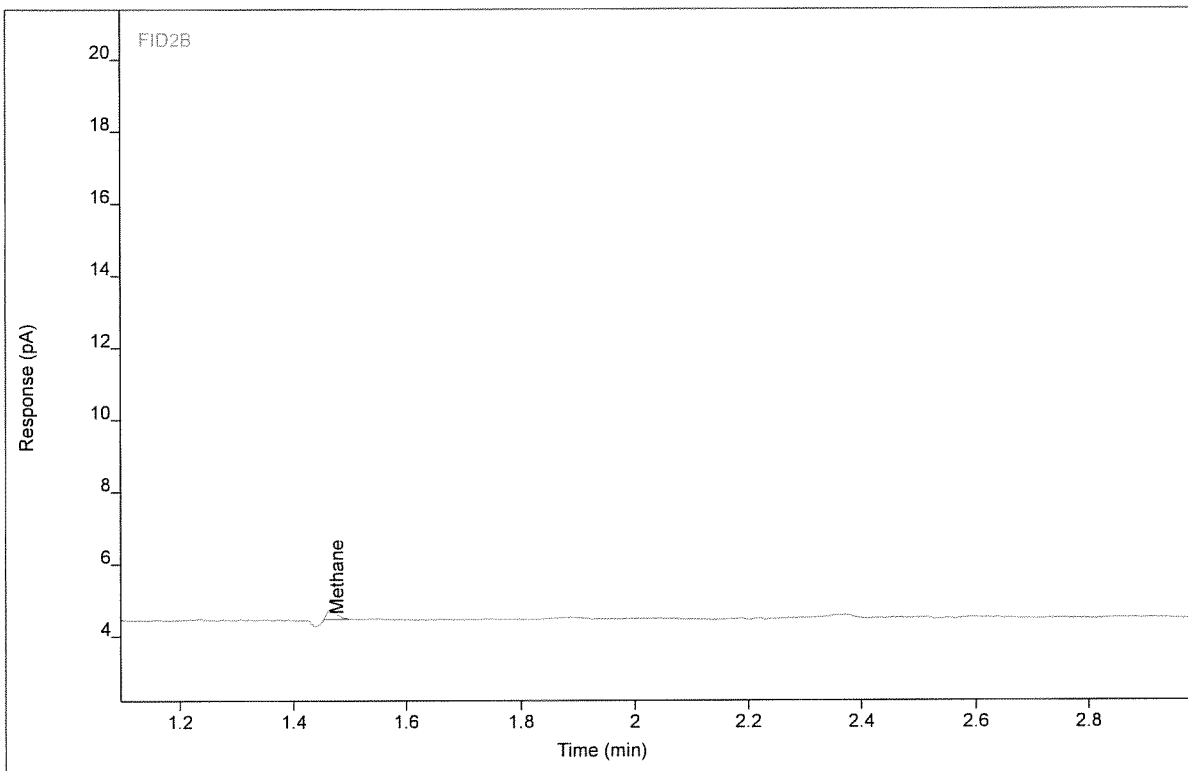
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.46	0.35281	0.28882	1.98308	1	1.98308	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Inlet Primary Run 5.Bag
Sequence Name GUMMOP1049 ver.9
Inj Data File 030B2501.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 1:50 PM
File Modified 7/7/2017 11:29 AM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 30
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/7/2017 1:37 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	MF	1.47	0.34055	0.28107	1.91418	1	1.91418	ppm

Analyst Peak Integration Comments

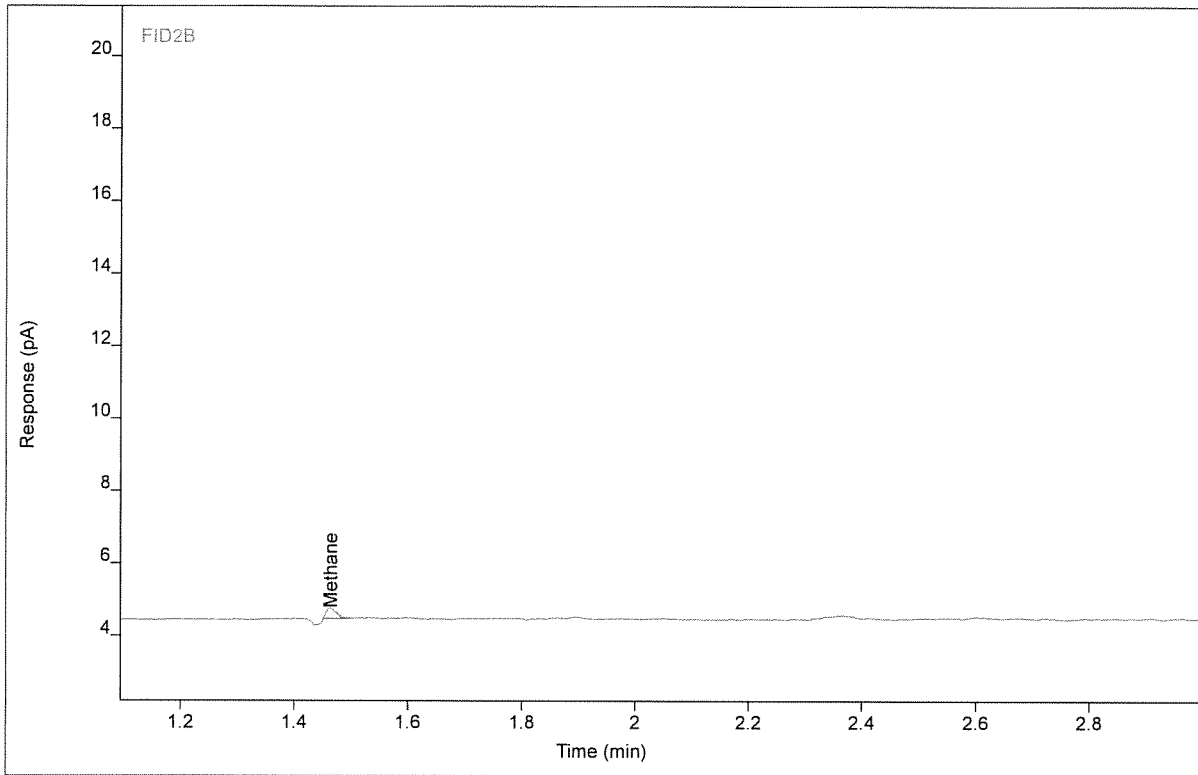
11:29:37 07/07/17 Nicholas Traversa II

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Inlet Primary Run 5.Bag
Sequence Name GUMMOP1049 ver.9
Inj Data File 030B2502.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 1:58 PM
File Modified 7/7/2017 11:30 AM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 30
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/7/2017 1:37 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	MM	1.46	0.35172	0.29473	1.97697	1	1.97697	ppm

Analyst Peak Integration Comments

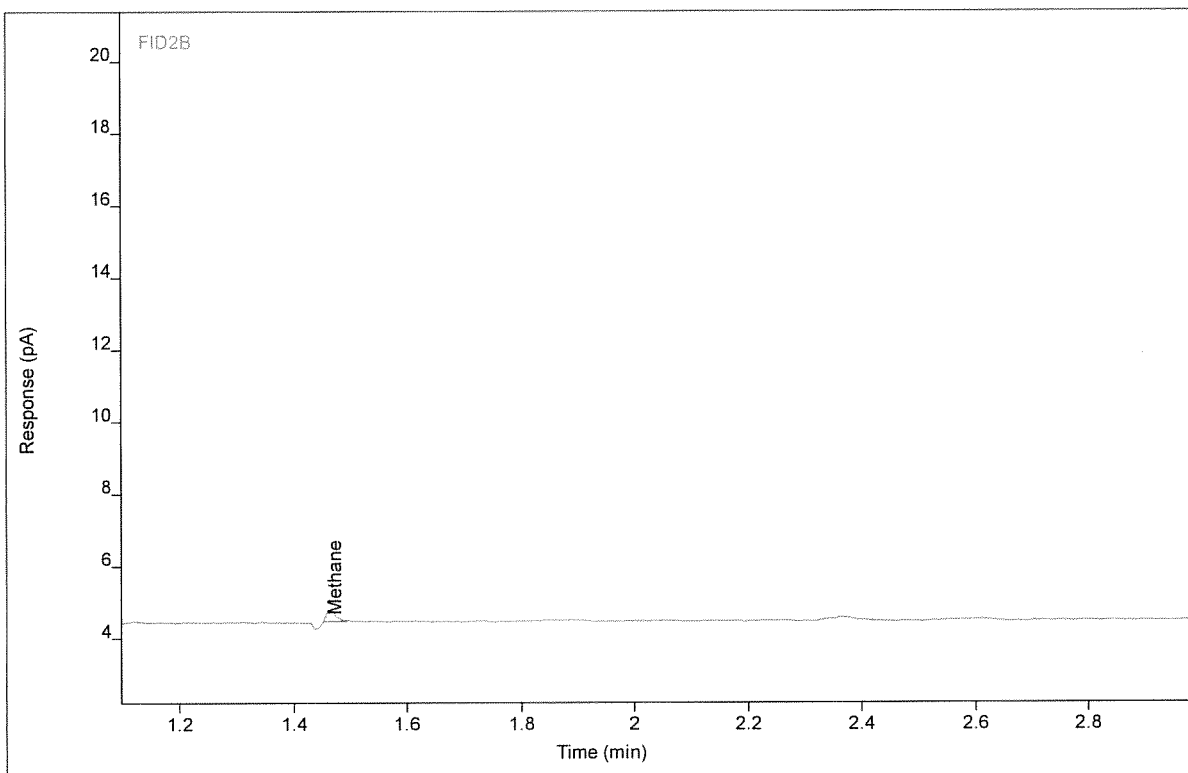
11:29:56 07/07/17 Nicholas Traversa II

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Inlet Primary Run 5.Bag
Sequence Name GUMMOP1049 ver.9
Inj Data File 030B2503.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 2:06 PM
File Modified 7/7/2017 11:30 AM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 30
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/7/2017 1:37 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	MF	1.47	0.36070	0.29429	2.02743	1	2.02743	ppm

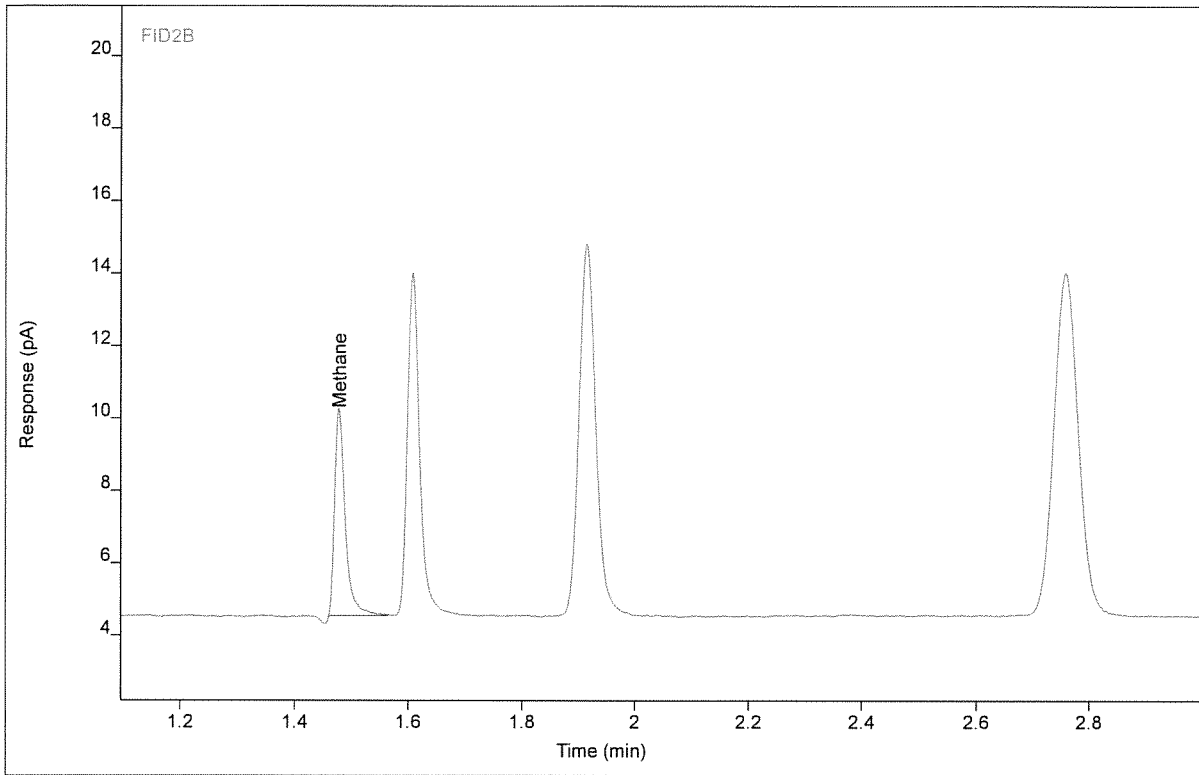
Analyst Peak Integration Comments
11:29:45 07/07/17 Nicholas Traversa II

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop903 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1049 ver.9
Inj Data File 032B3601.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/3/2017 7:28 AM
File Modified 7/7/2017 1:11 PM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/7/2017 1:37 PM



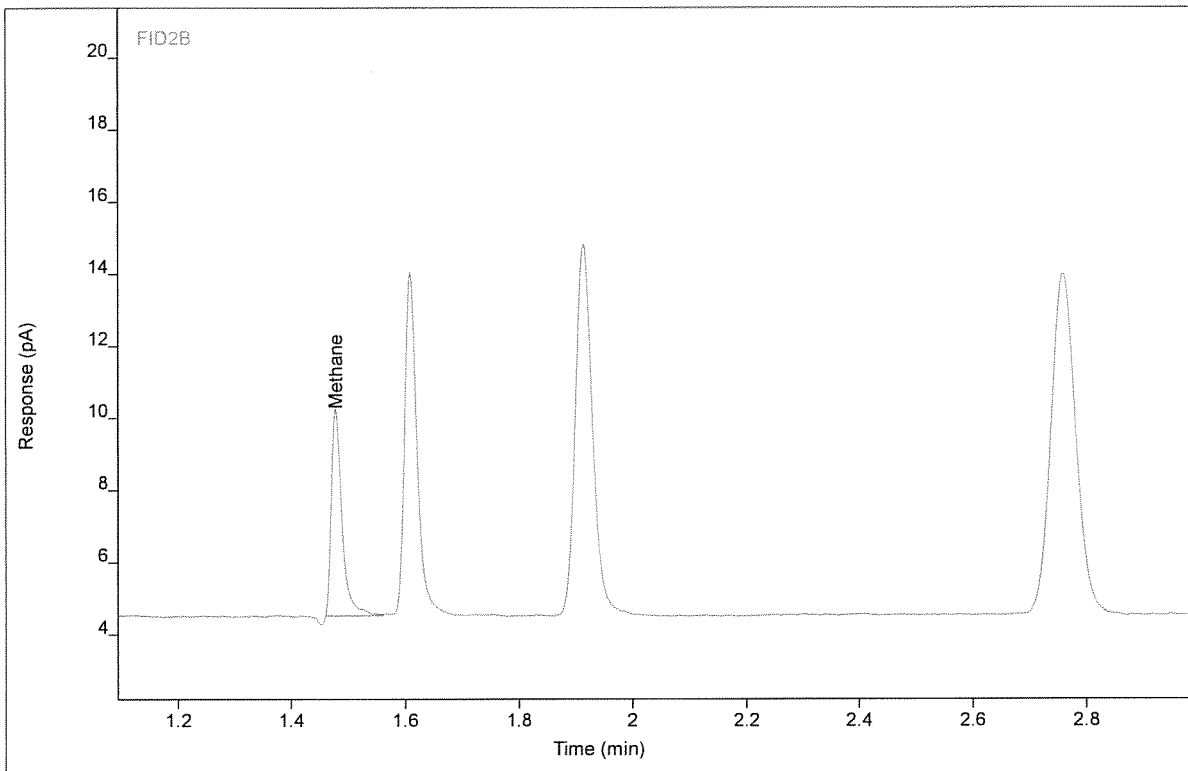
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.48	7.54752	5.71139	38.4461	1	38.4461	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop903 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1049 ver.9
Inj Data File 032B3602.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/3/2017 7:42 AM
File Modified 7/7/2017 1:11 PM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/7/2017 1:37 PM



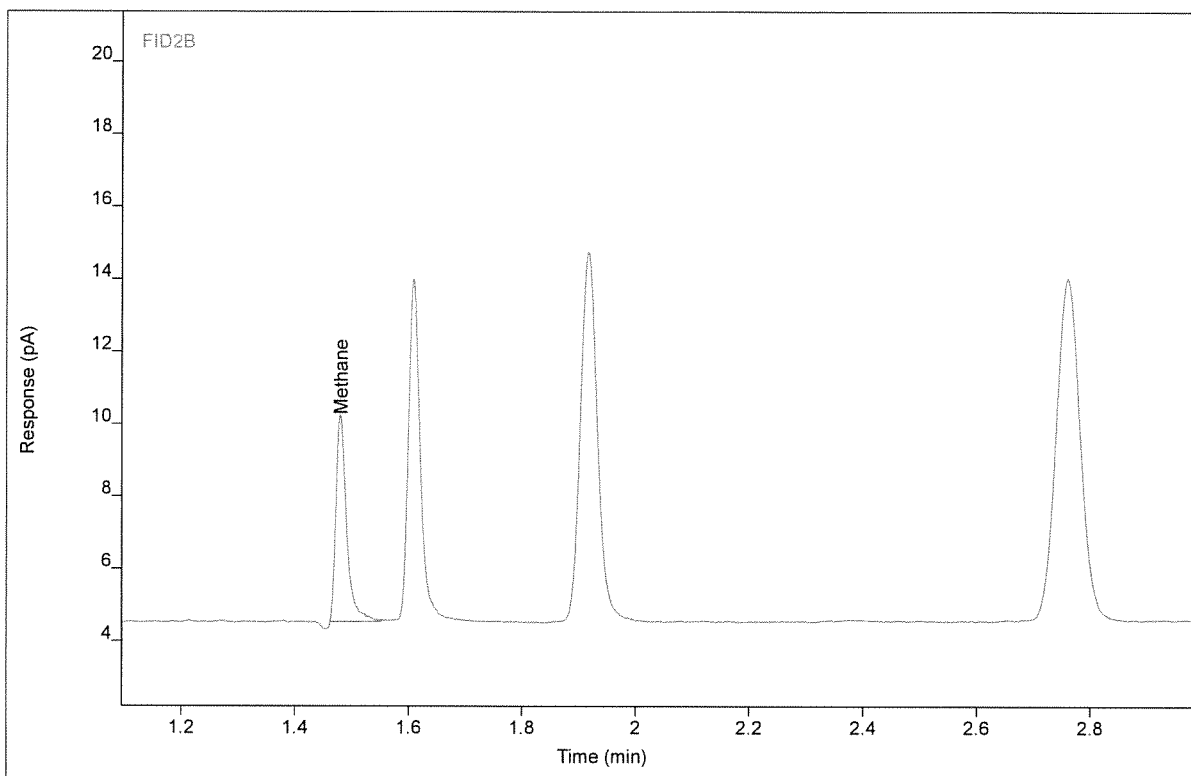
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.48	7.53603	5.71217	38.3884	1	38.3884	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop903 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1049 ver.9
Inj Data File 032B3603.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/3/2017 8:01 AM
File Modified 7/7/2017 1:11 PM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/7/2017 1:37 PM



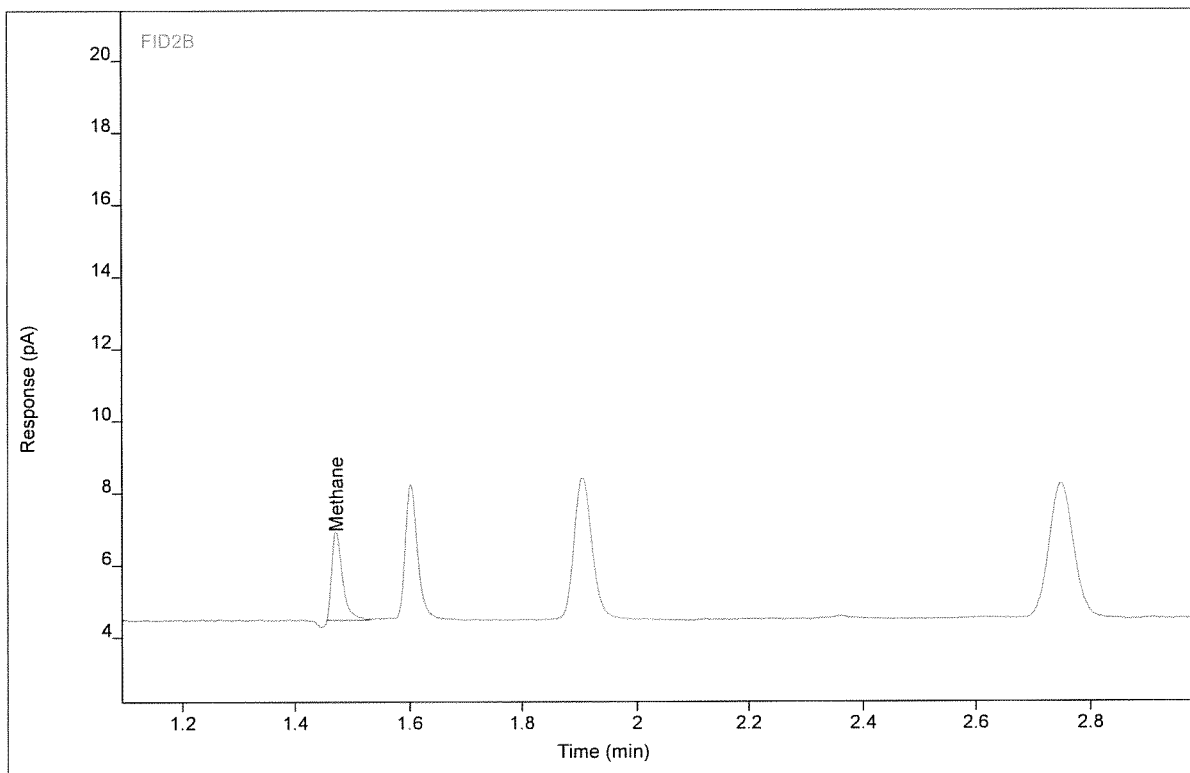
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.48	7.46458	5.69618	38.0294	1	38.0294	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Inlet Pr Run 1 SP.Bag
Sequence Name GUMMOP1052 ver.5
Inj Data File 029B0501.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/3/2017 4:26 PM
File Modified 7/7/2017 12:24 PM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 29
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/7/2017 1:37 PM



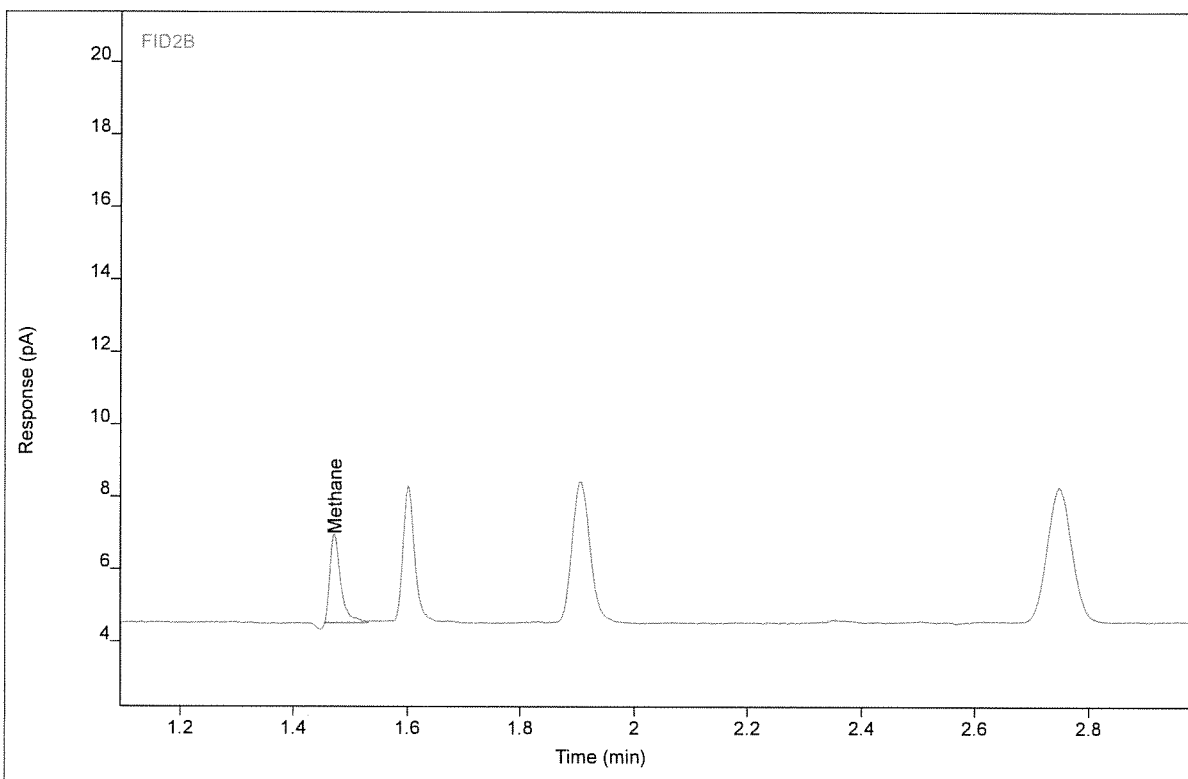
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.47	3.21883	2.46380	16.7010	1	16.7010	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Inlet Pr Run 1 SP.Bag
Sequence Name GUMMOP1052 ver.5
Inj Data File 029B0502.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/3/2017 4:42 PM
File Modified 7/7/2017 12:24 PM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 29
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/7/2017 1:37 PM



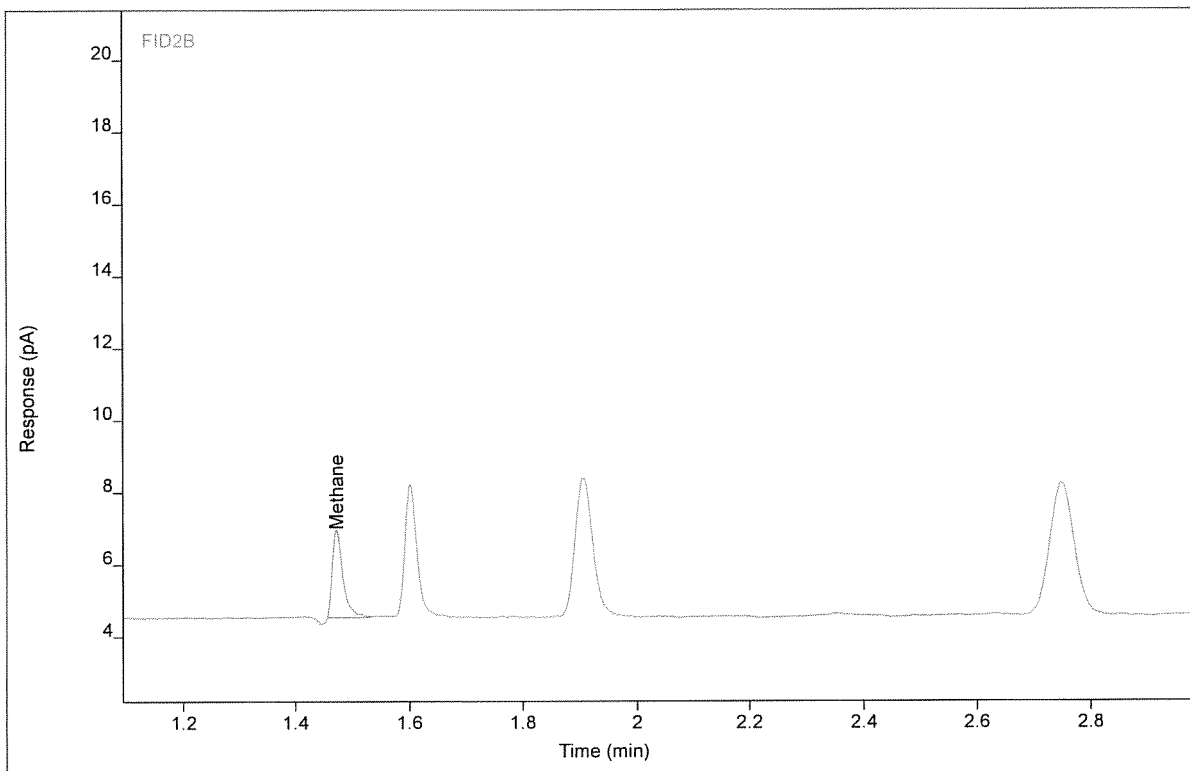
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.47	3.21652	2.44566	16.6894	1	16.6894	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Inlet Pr Run 1 SP.Bag
Sequence Name GUMMOP1052 ver.5
Inj Data File 029B0503.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/3/2017 4:59 PM
File Modified 7/7/2017 12:24 PM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 29
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/7/2017 1:37 PM



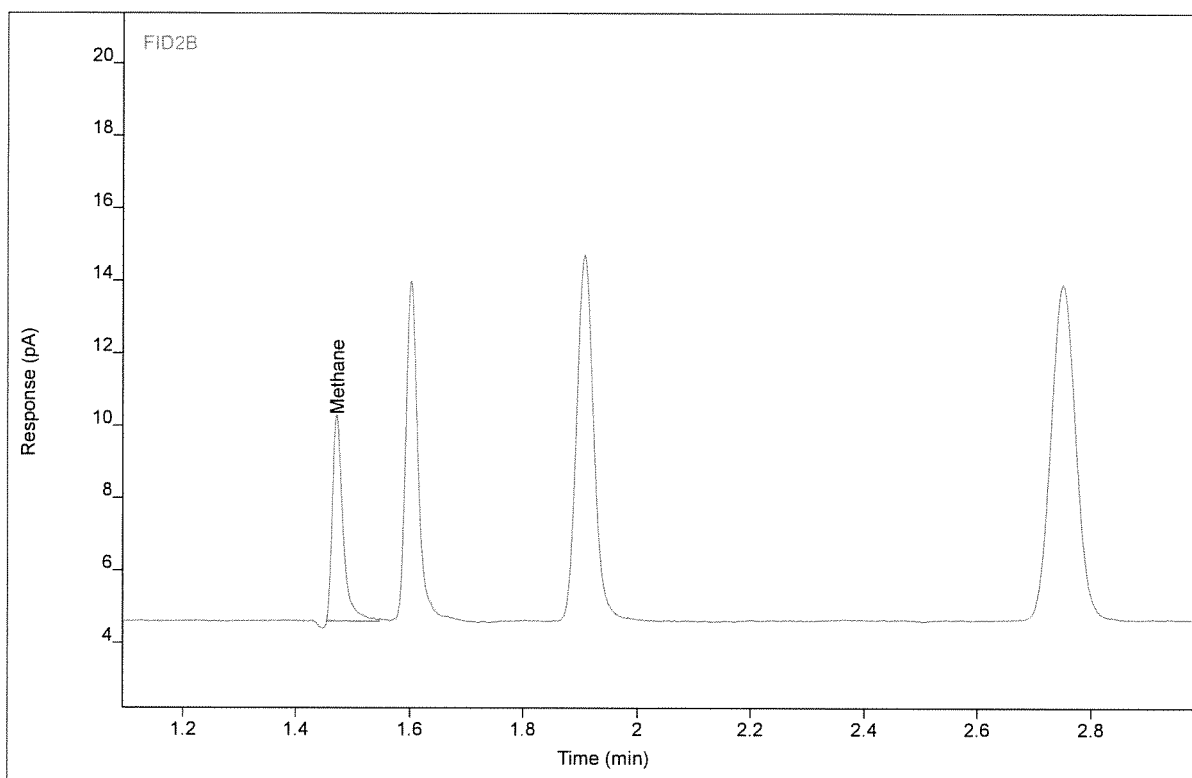
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.47	3.13066	2.42867	16.2581	1	16.2581	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop903 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1052 ver.5
Inj Data File 032B0702.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/3/2017 6:48 PM
File Modified 7/7/2017 12:24 PM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 2 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/7/2017 1:37 PM



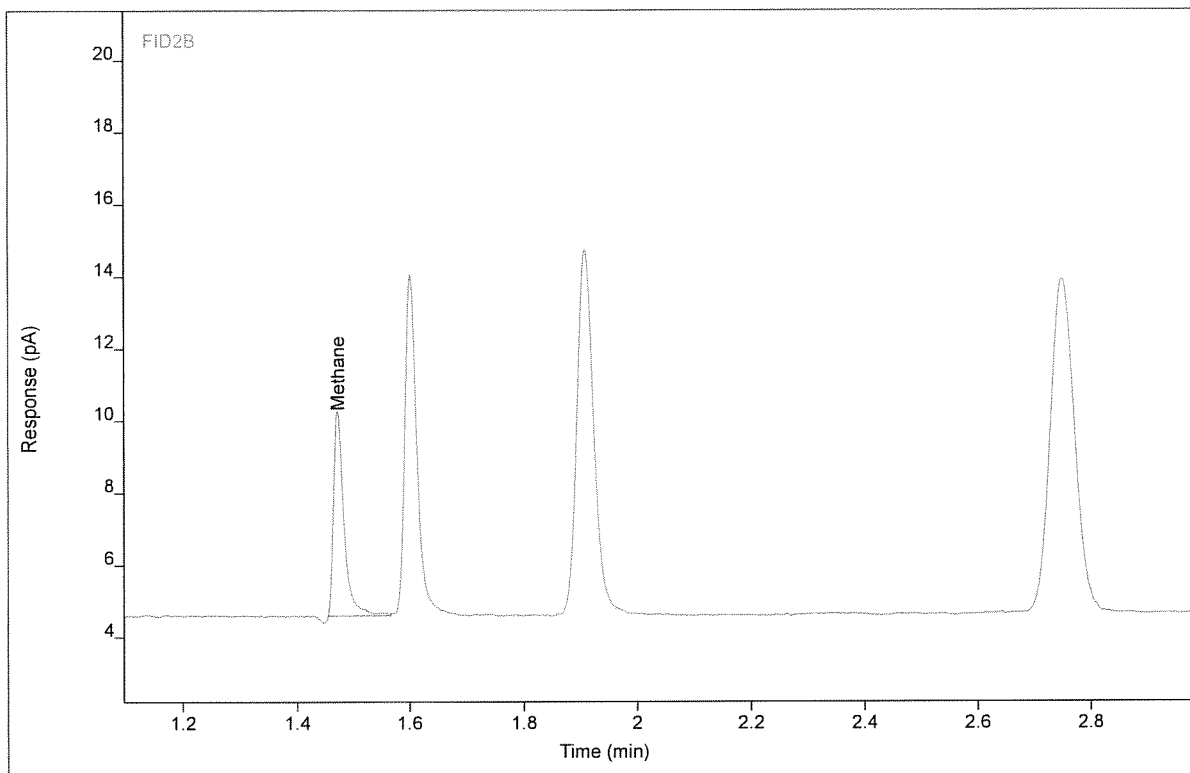
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.47	7.41782	5.61375	37.7945	1	37.7945	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop903 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1052 ver.5
Inj Data File 032B0703.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/3/2017 7:06 PM
File Modified 7/7/2017 12:24 PM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 3 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/7/2017 1:37 PM



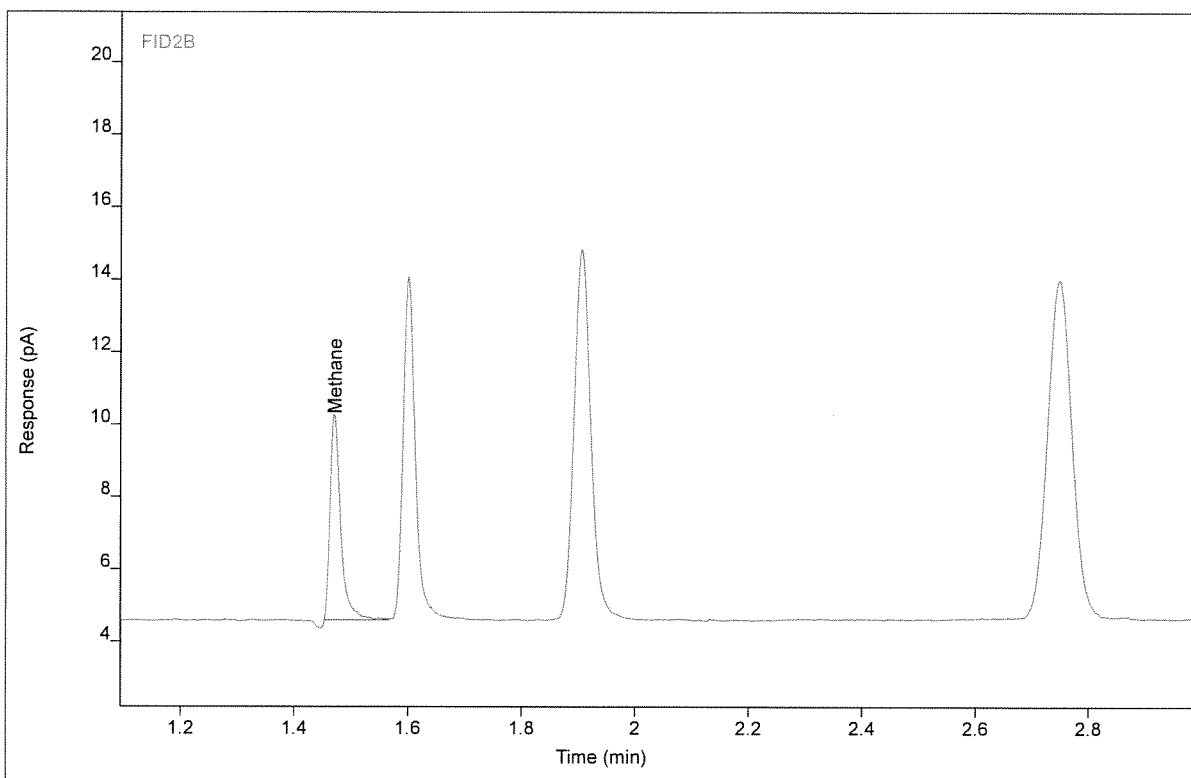
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PV	1.47	7.52636	5.67091	38.3398	1	38.3398	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop903 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1052 ver.5
Inj Data File 032B0704.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/3/2017 7:24 PM
File Modified 7/7/2017 12:24 PM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 4 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/7/2017 1:37 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PV	1.47	7.47307	5.67831	38.0721	1	38.0721	ppm

=====
 Calibration Table
 =====

Calib. Data Modified : 6/2/2017 1:00:07 PM

Rel. Reference Window : 0.000 %
 Abs. Reference Window : 0.100 min
 Rel. Non-ref. Window : 0.000 %
 Abs. Non-ref. Window : 0.050 min
 Uncalibrated Peaks : using compound Propane
 Partial Calibration : Yes, identified peaks are recalibrated
 Correct All Ret. Times: No, only for identified peaks

Curve Type : Linear
 Origin : Connected
 Weight : Quadratic (Amnt)

Recalibration Settings:
 Average Response : Average all calibrations
 Average Retention Time: Floating Average New 75%

Calibration Report Options :
 Printout of recalibrations within a sequence:
 Calibration Table after Recalibration
 Normal Report after Recalibration
 If the sequence is done with bracketing:
 Results of first cycle (ending previous bracket)

Signal 1: FID2 B,

RetTime [min]	Lvl Sig	Amount [ppm]	Area	Amt/Area	Ref Grp Name
1.460	1	5.00000	8.94839e-1	5.58760	Methane
	2	20.00000	3.81518	5.24222	
	3	40.00000	7.76556	5.15095	
	4	100.00000	19.79446	5.05192	
	5	2560.00000	491.04012	5.21342	
	6	7680.00000	1521.34090	5.04818	
	7	5.12000e4	1.08310e4	4.72718	
1.589	1	5.00000	1.78026	2.80858	Ethane
	2	20.00000	7.16795	2.79020	
	3	40.00000	14.58640	2.74228	
	4	100.00000	36.98041	2.70413	
	5	2570.00000	925.02356	2.77831	
	6	7710.00000	2864.66195	2.69142	
	7	5.14000e4	2.03727e4	2.52299	
1.889	1	5.00000	2.74131	1.82395	Propane
	2	20.00000	10.85070	1.84320	
	3	40.00000	21.99791	1.81835	
	4	100.00000	55.83058	1.79113	
	5	2580.00000	1378.12638	1.87211	
	6	7740.00000	4267.62028	1.81366	
	7	5.16000e4	3.03773e4	1.69864	
2.731	1	5.00000	3.59427	1.39110	Butane
	2	20.00000	14.32752	1.39591	
	3	40.00000	29.31376	1.36455	
	4	100.00000	74.02824	1.35084	
	5	515.00000	370.36104	1.39054	
	6	1545.00000	1152.95959	1.34003	
	7	1.03000e4	8200.93636	1.25505	

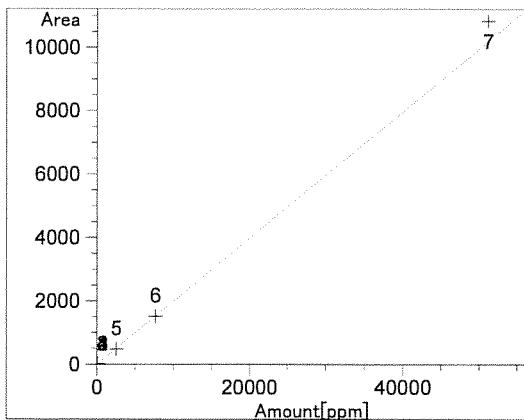
EA# 0617-110 Page 218 of 441

RetTime [min]	Lvl Sig	Amount [ppm]	Area	Amt/Area	Ref Grp Name	
4.214	1	1	5.00000	4.56781	1.09462	Pentane
		2	20.00000	18.11116	1.10429	
		3	40.00000	36.82834	1.08612	
		4	100.00000	92.96211	1.07571	
		5	260.00000	227.69511	1.14188	
		6	780.00000	707.14616	1.10303	
		7	5200.00000	4999.93148	1.04001	
5.793	1	1	5.00000	5.48927	9.10868e-1	Hexane
		2	20.00000	21.81503	9.16799e-1	
		3	40.00000	44.50176	8.98841e-1	
		4	100.00000	112.19947	8.91270e-1	
		5	205.00000	222.82971	9.19985e-1	
		6	615.00000	693.84558	8.86364e-1	
		7	4100.00000	4807.27311	8.52874e-1	
6.953	1	1	4.99000	6.29413	7.92802e-1	Heptane
		2	20.00000	25.17615	7.94403e-1	
		3	40.00000	51.23785	7.80673e-1	
		4	100.00000	129.55815	7.71854e-1	
		7	257.00000	333.11783	7.71499e-1	

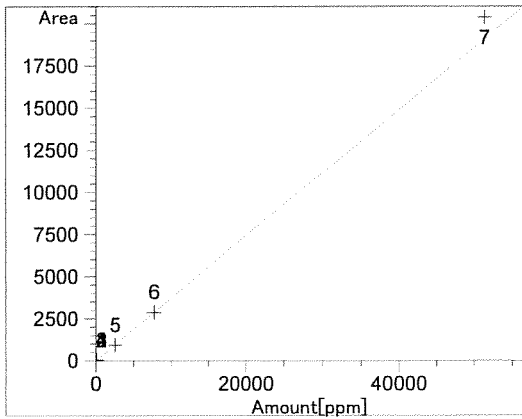
Peak Sum Table

Name	StartTime [min]	EndTime [min]	Use Reference	Response factor	Multiplier	ISTD Peak
as Ethane	1.491	1.742	None	2.7196	2.7196	None
as Propane	1.742	2.313	None	1.8087	1.8087	None
as Butane	2.313	3.472	None	1.3557	1.3557	None
as Pentane	3.472	5.003	None	1.0923	1.0923	None
as Hexane	5.003	6.372	None	8.9671e-1	0.8967	None
as Heptane	6.372	11.650	None	7.8224e-1	0.7822	None

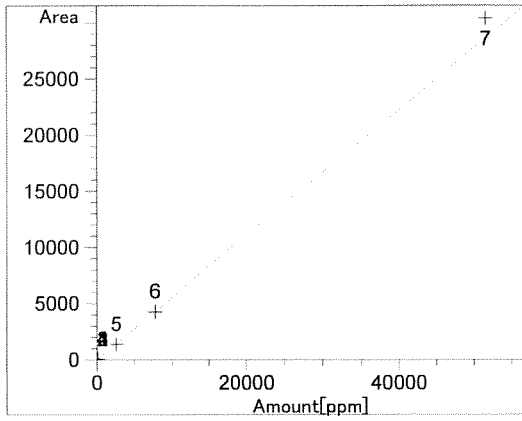
Calibration Curves



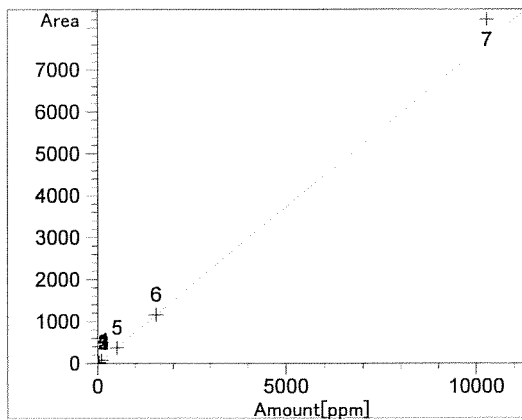
Methane at exp. RT: 1.460
 FID2 B,
 Correlation: 0.99945
 Residual Std. Dev.: 285.87928
 Formula: $y = mx + b$
 m: 1.99066e-1
 b: -1.05771e-1
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.0625
 Level 3 : 0.015625
 Level 4 : 0.0025
 Level 5 : 3.8147e-006
 Level 6 : 4.23855e-007
 Level 7 : 9.53674e-009



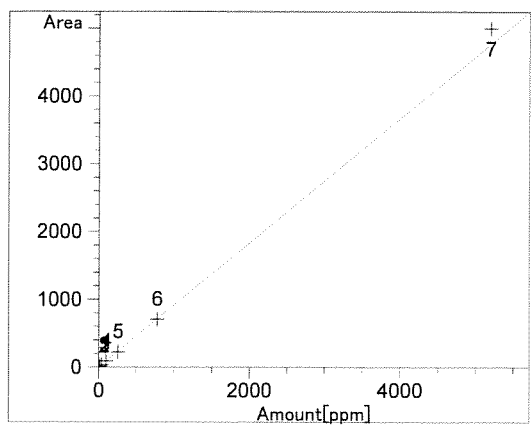
Ethane at exp. RT: 1.589
 FID2 B,
 Correlation: 0.99940
 Residual Std. Dev.: 561.41914
 Formula: $y = mx + b$
 m: 3.71941e-1
 b: -9.39939e-2
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.0625
 Level 3 : 0.015625
 Level 4 : 0.0025
 Level 5 : 3.78507e-006
 Level 6 : 4.20563e-007
 Level 7 : 9.46267e-009



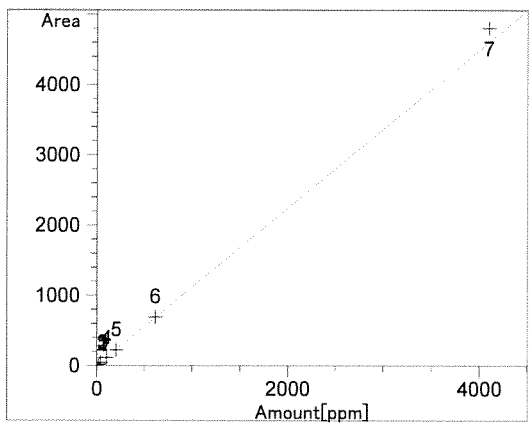
Propane at exp. RT: 1.889
 FID2 B,
 Correlation: 0.99945
 Residual Std. Dev.: 769.45765
 Formula: $y = mx + b$
 m: 5.55386e-1
 b: -5.04875e-2
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.0625
 Level 3 : 0.015625
 Level 4 : 0.0025
 Level 5 : 3.75578e-006
 Level 6 : 4.17309e-007
 Level 7 : 9.38946e-009



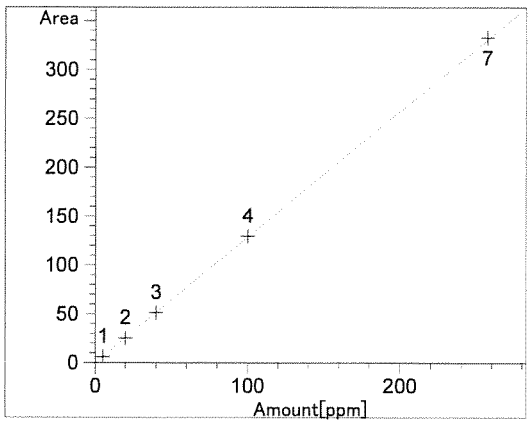
Butane at exp. RT: 2.731
 FID2 B,
 Correlation: 0.99933
 Residual Std. Dev.: 234.28902
 Formula: $y = mx + b$
 m: 7.45378e-1
 b: -1.65733e-1
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.0625
 Level 3 : 0.015625
 Level 4 : 0.0025
 Level 5 : 0.000094
 Level 6 : 0.00001
 Level 7 : 2.35649e-007



Pentane at exp. RT: 4.214
FID2 B,
Correlation: 0.99952
Residual Std. Dev.: 102.63462
Formula: $y = mx + b$
m: $9.17477e-1$
b: $-3.10514e-2$
x: Amount
y: Area
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.0625
Level 3 : 0.015625
Level 4 : 0.0025
Level 5 : 0.00037
Level 6 : 0.000041
Level 7 : $9.24556e-007$



Hexane at exp. RT: 5.793
FID2 B,
Correlation: 0.99965
Residual Std. Dev.: 91.82272
Formula: $y = mx + b$
m: 1.12250
b: $-1.60081e-1$
x: Amount
y: Area
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.0625
Level 3 : 0.015625
Level 4 : 0.0025
Level 5 : 0.000595
Level 6 : 0.000066
Level 7 : $1.48721e-006$



Heptane at exp. RT: 6.953
FID2 B,
Correlation: 0.99994
Residual Std. Dev.: 1.49698
Formula: $y = mx + b$
m: 1.28756
b: $-1.55346e-1$
x: Amount
y: Area
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.06225
Level 3 : 0.015563
Level 4 : 0.00249
Level 7 : 0.000377

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Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Easton
 Job No.: 0617-110 - EPA Method 18
 Client No.: 016-AQS-149228

Methane -- Calibration Standards

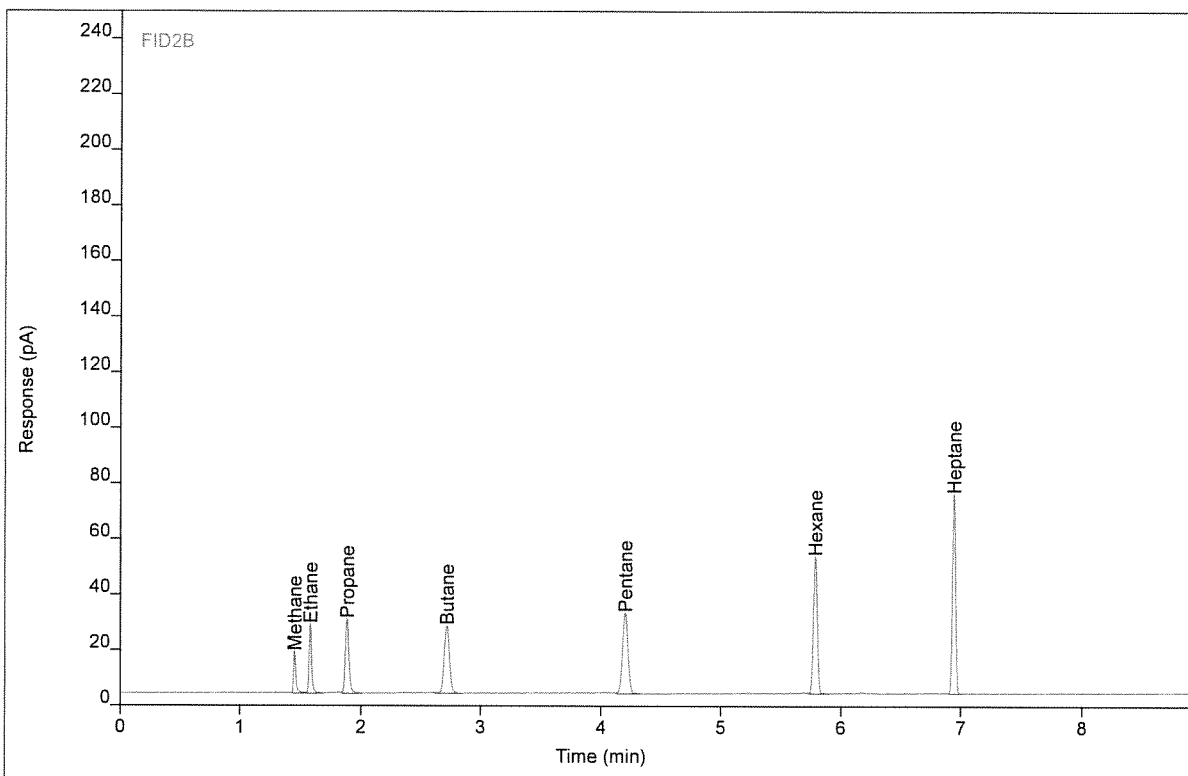
Sample Name	Filename #1	Filename #2	Filename #3	Analysis Method	Ret Time (min)	Ret Time (min)	Ret Time (min)	%dif RT	Conc #1	Conc #2	Conc #3	%dif conc	Avg Conc ppm	Standard Tag ppm	% Tag
<i>gummop903 #C3 ENV(1=600,2=400)</i>	032B1501.D	032B1502.D	032B1503.D	GUMMOP987 R_C1-C7.M	1.47	1.47	1.47	0.0	38.2	38.4	38.2	0.3	38.3	40.00	95.7
<i>zero air blank #LB</i>	024B1601.D	024B1602.D	024B1603.D	GUMMOP987 R_C1-C7.M	NA	NA	NA	NA	0.287	0.287	0.287	0.0	0.287	NA	NA
<i>gummop903 #C3 ENV(1=600,2=400)</i>	032B3601.D	032B3602.D	032B3603.D	GUMMOP987 R_C1-C7.M	1.48	1.48	1.48	0.0	38.4	38.4	38.0	0.7	38.3	40.00	95.7
<i>gummop903 #C3 ENV(1=600,2=400)</i>	032B0702.D	032B0703.D	032B0704.D	GUMMOP987 R_C1-C7.M	1.47	1.47	1.47	0.0	37.8	38.3	38.1	0.7	38.1	40.00	95.2

Chromatogram Report

Enthalpy Analytical

Sample Name gummop903 #C4 ENV(1=0,2=400.67)
Sequence Name GUMMOP987 ver.1
Inj Data File 032B0102.D
File Location GC/2017/Gummo/Quarter 1
Injection Date 3/31/2017 3:37 PM
File Modified 4/3/2017 1:22 PM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 2 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 4/3/2017 12:52 PM
Printed 4/3/2017 2:05 PM



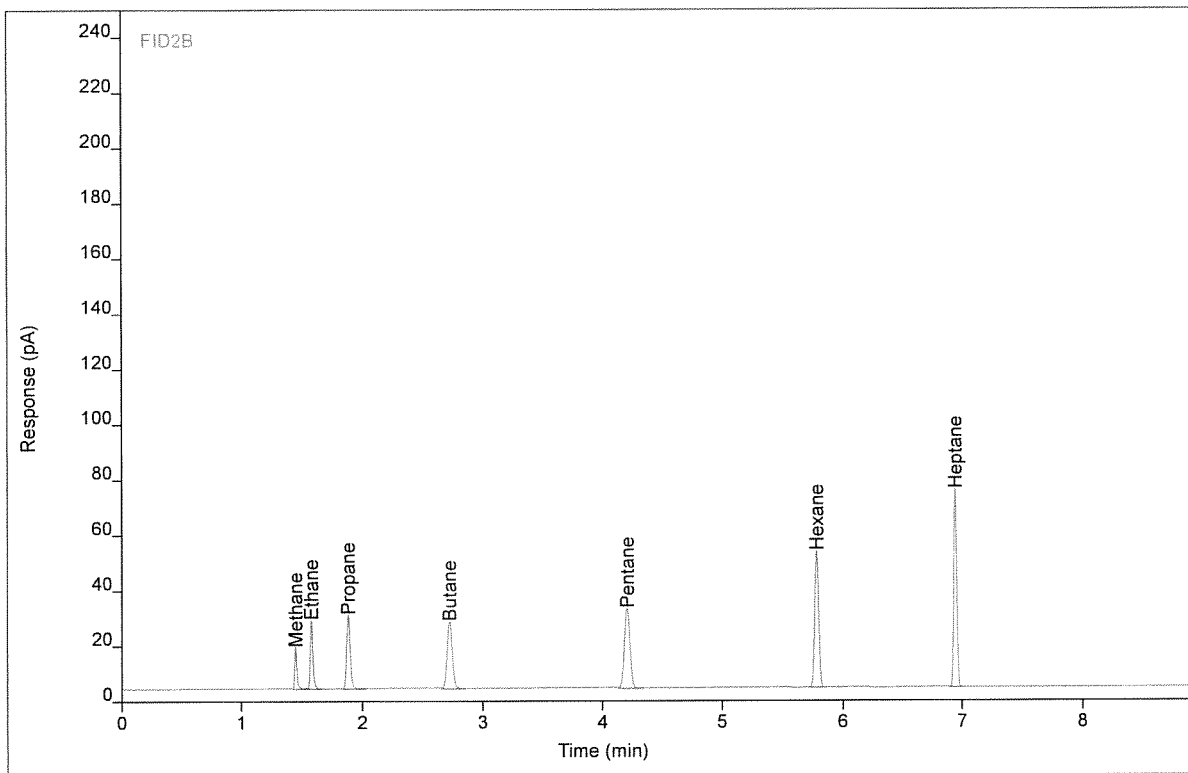
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PV	1.45	19.8510	15.2100	100.252	1	100.252	ppm
Ethane	VB	1.58	37.0899	24.9196	99.9724	1	99.9724	ppm
Propane	BB	1.89	56.0575	26.9366	101.025	1	101.025	ppm
Butane	BB	2.72	74.4253	24.6158	100.071	1	100.071	ppm
Pentane	BV	4.20	93.4960	29.2908	101.939	1	101.939	ppm
Hexane	BB	5.78	112.815	49.4369	100.645	1	100.645	ppm
Heptane	BB	6.95	130.170	71.8437	101.219	1	101.219	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop903 #C4 ENV(1=0,2=400.67)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B0103.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 3/31/2017 3:55 PM
 File Modified 4/3/2017 1:22 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 3 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
 Printed 4/3/2017 2:05 PM



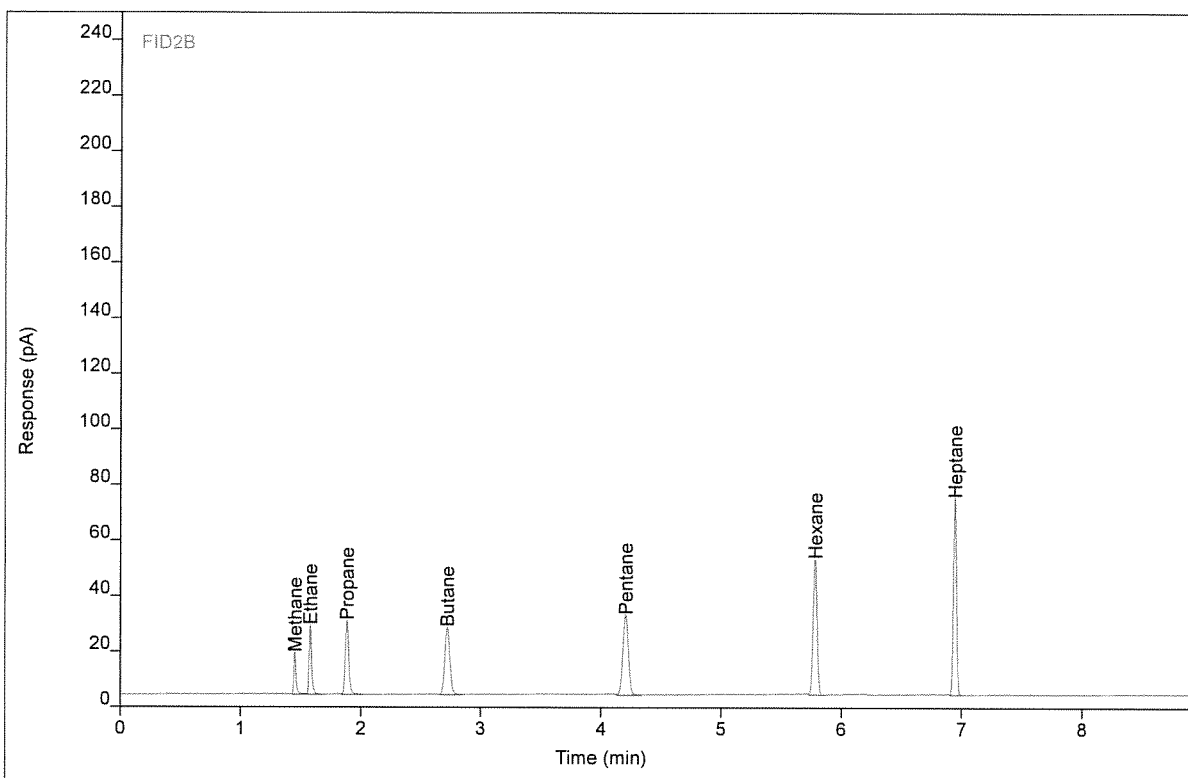
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PV	1.45	19.8068	15.2211	100.030	1	100.030	ppm
Ethane	VB	1.58	37.0373	24.8791	99.8309	1	99.8309	ppm
Propane	BB	1.89	55.8510	26.8497	100.653	1	100.653	ppm
Butane	BB	2.72	73.9048	24.4855	99.3731	1	99.3731	ppm
Pentane	BB	4.20	92.7903	28.9998	101.170	1	101.170	ppm
Hexane	BB	5.78	112.104	49.3570	100.012	1	100.012	ppm
Heptane	BB	6.95	129.556	71.3591	100.742	1	100.742	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop903 #C4 ENV(1=0,2=400.67)
Sequence Name GUMMOP987 ver.1
Inj Data File 032B0104.D
File Location GC/2017/Gummo/Quarter 1
Injection Date 3/31/2017 4:13 PM
File Modified 4/3/2017 1:22 PM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 4 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 4/3/2017 12:52 PM
Printed 4/3/2017 2:05 PM



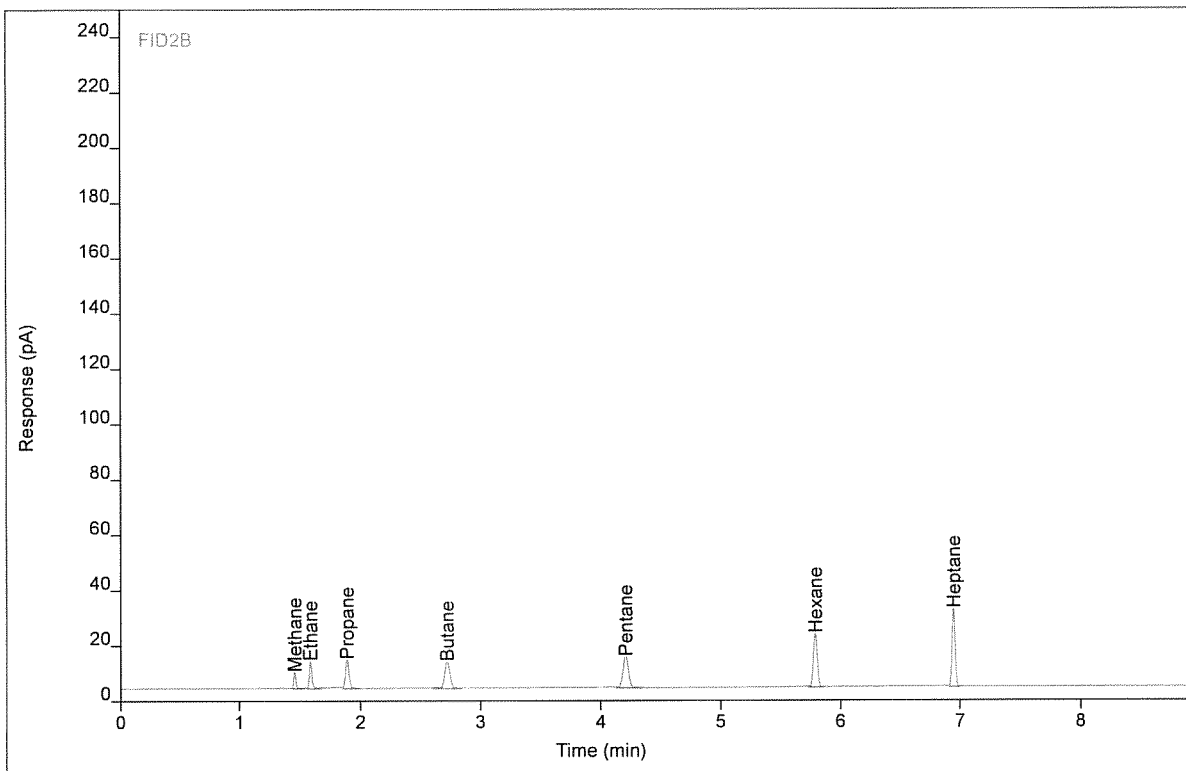
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PV	1.45	19.7255	15.1491	99.6221	1	99.6221	ppm
Ethane	VB	1.58	36.8141	24.8091	99.2308	1	99.2308	ppm
Propane	BB	1.89	55.5832	26.7446	100.171	1	100.171	ppm
Butane	BB	2.72	73.7546	24.3789	99.1717	1	99.1717	ppm
Pentane	BB	4.20	92.6000	28.9184	100.963	1	100.963	ppm
Hexane	BB	5.78	111.680	48.8825	99.6345	1	99.6345	ppm
Heptane	BB	6.95	128.948	70.7974	100.270	1	100.270	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop903 #C3 ENV(1=600,2=400.67)
Sequence Name GUMMOP987 ver.1
Inj Data File 032B0202.D
File Location GC/2017/Gummo/Quarter 1
Injection Date 3/31/2017 4:50 PM
File Modified 4/3/2017 1:22 PM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 2 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 4/3/2017 12:52 PM
Printed 4/3/2017 2:05 PM



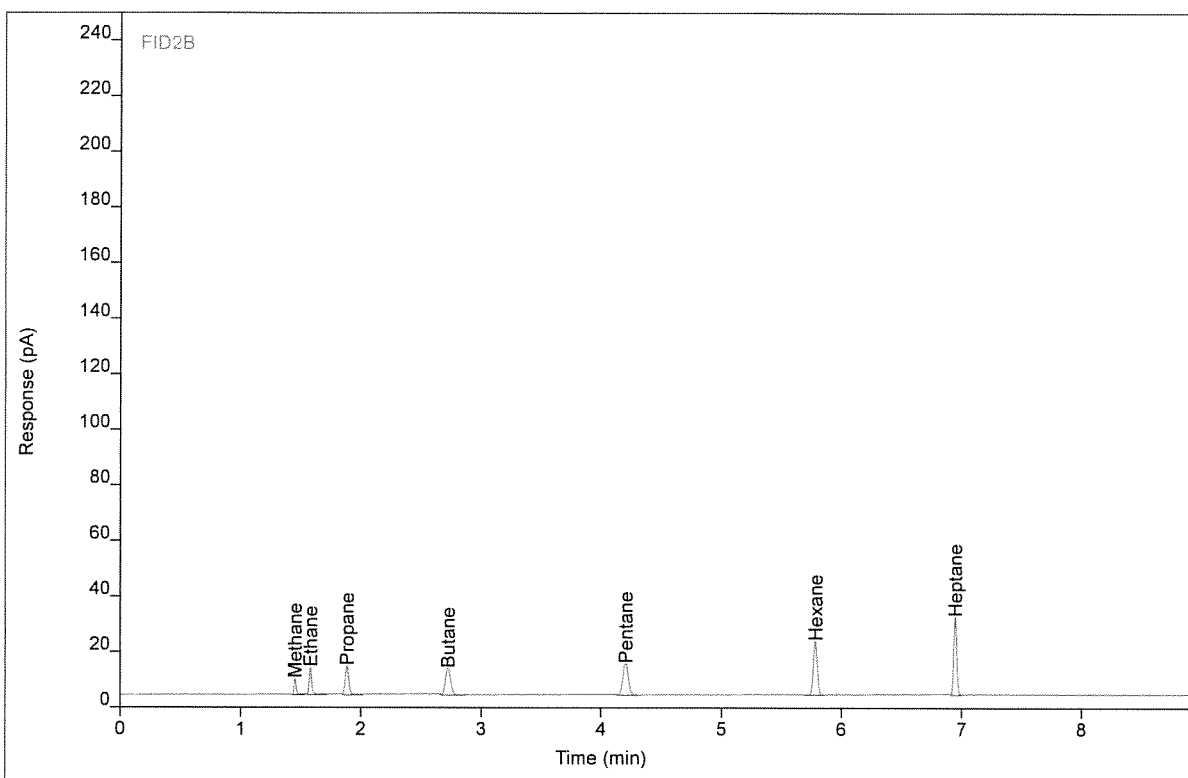
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.46	7.65955	5.96997	39.0089	1	39.0089	ppm
Ethane	BB	1.58	14.5411	9.88644	39.3477	1	39.3477	ppm
Propane	BB	1.89	21.9552	10.6120	39.6223	1	39.6223	ppm
Butane	BB	2.72	29.3235	9.69691	39.5628	1	39.5628	ppm
Pentane	BB	4.21	36.7586	11.5072	40.0988	1	40.0988	ppm
Hexane	VV	5.79	44.4680	19.4504	39.7576	1	39.7576	ppm
Heptane	BB	6.95	51.2778	28.3037	39.9462	1	39.9462	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop903 #C3 ENV(1=600,2=400.67)
Sequence Name GUMMOP987 ver.1
Inj Data File 032B0203.D
File Location GC/2017/Gummo/Quarter 1
Injection Date 3/31/2017 5:08 PM
File Modified 4/3/2017 1:22 PM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 3 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 4/3/2017 12:52 PM
Printed 4/3/2017 2:05 PM



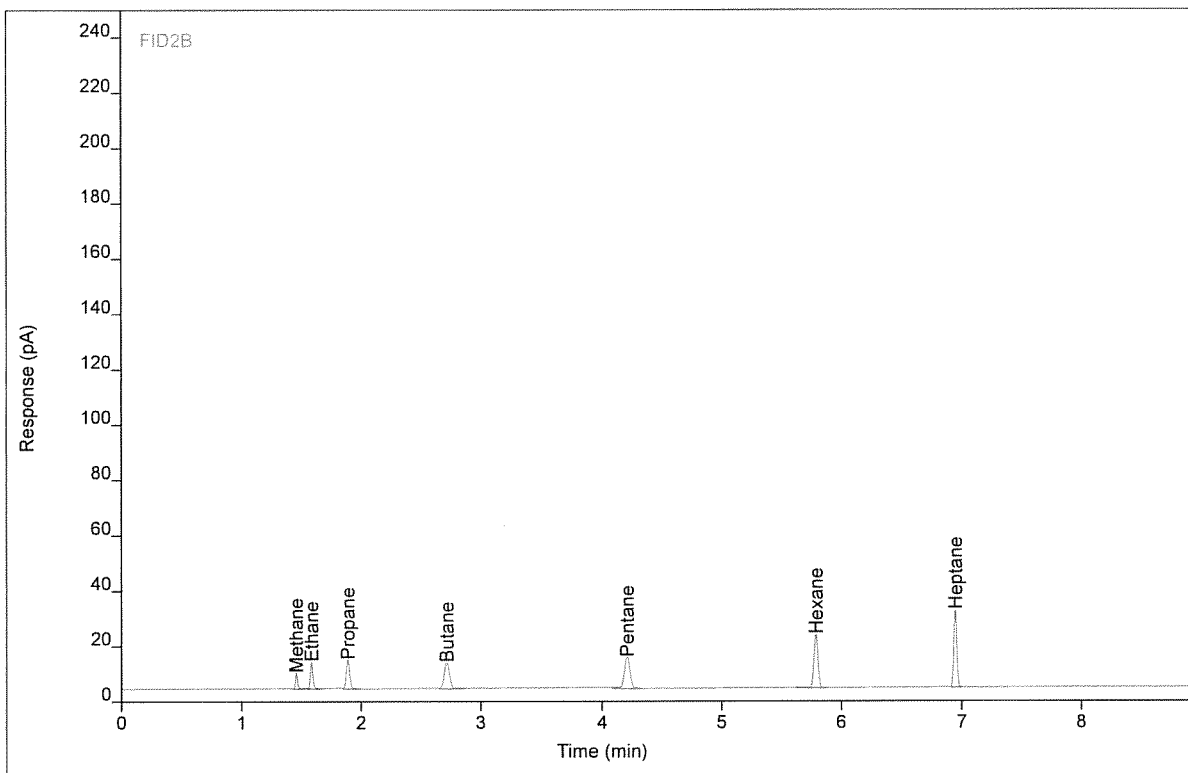
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.46	7.86068	6.03738	40.0192	1	40.0192	ppm
Ethane	BB	1.58	14.7399	9.90713	39.8823	1	39.8823	ppm
Propane	BB	1.89	22.1005	10.6144	39.8840	1	39.8840	ppm
Butane	BV	2.72	29.4259	9.66182	39.7002	1	39.7002	ppm
Pentane	BV	4.21	36.9119	11.4926	40.2659	1	40.2659	ppm
Hexane	BB	5.79	44.3644	19.4729	39.6653	1	39.6653	ppm
Heptane	BB	6.95	51.2965	28.1939	39.9607	1	39.9607	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop903 #C3 ENV(1=600,2=400.67)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B0204.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 3/31/2017 5:27 PM
 File Modified 4/3/2017 1:22 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 4 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
 Printed 4/3/2017 2:05 PM



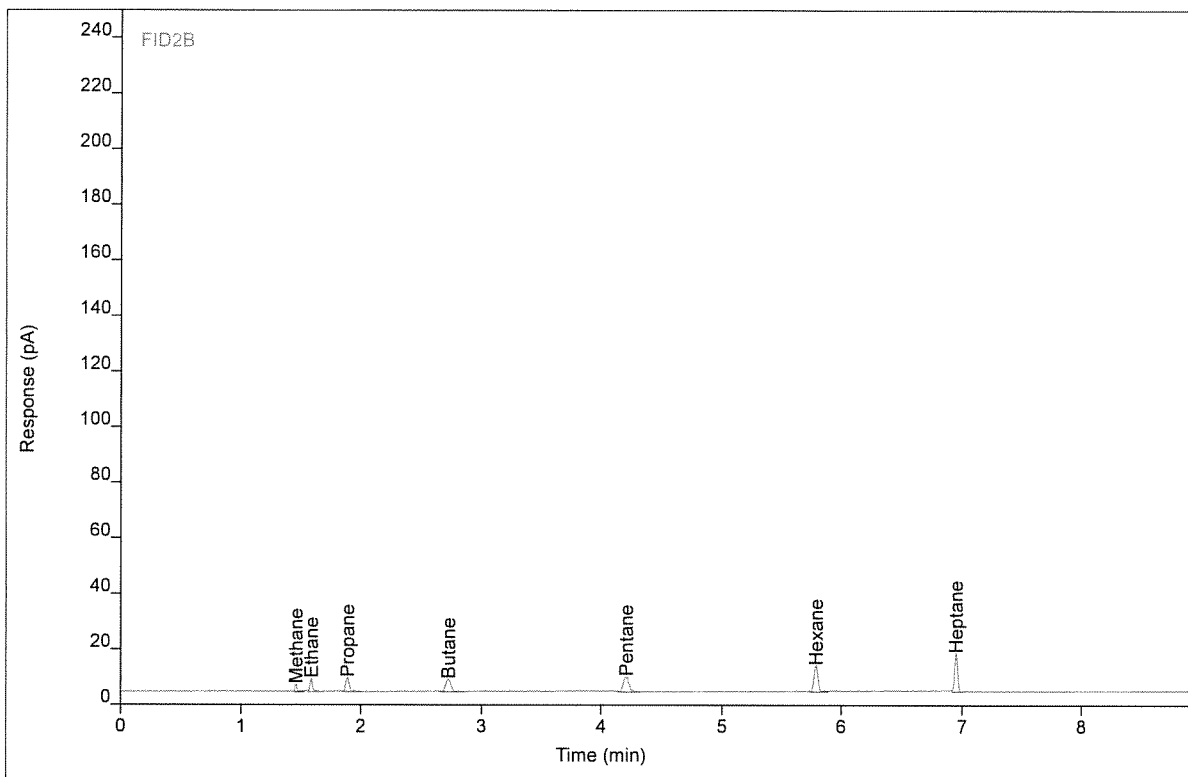
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PV	1.46	7.77644	6.02142	39.5960	1	39.5960	ppm
Ethane	VB	1.58	14.4783	9.83879	39.1789	1	39.1789	ppm
Propane	BB	1.89	21.9380	10.5822	39.5914	1	39.5914	ppm
Butane	BB	2.72	29.1919	9.59717	39.3862	1	39.3862	ppm
Pentane	VB	4.21	36.8144	11.4226	40.1596	1	40.1596	ppm
Hexane	VB	5.79	44.6729	19.4443	39.9401	1	39.9401	ppm
Heptane	BB	6.95	51.1393	28.1652	39.8386	1	39.8386	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop903 #C2 ENV(1=800,2=200.34)
Sequence Name GUMMOP987 ver.1
Inj Data File 032B0302.D
File Location GC/2017/Gummo/Quarter 1
Injection Date 3/31/2017 6:05 PM
File Modified 4/3/2017 1:22 PM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 2 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 4/3/2017 12:52 PM
Printed 4/3/2017 2:05 PM



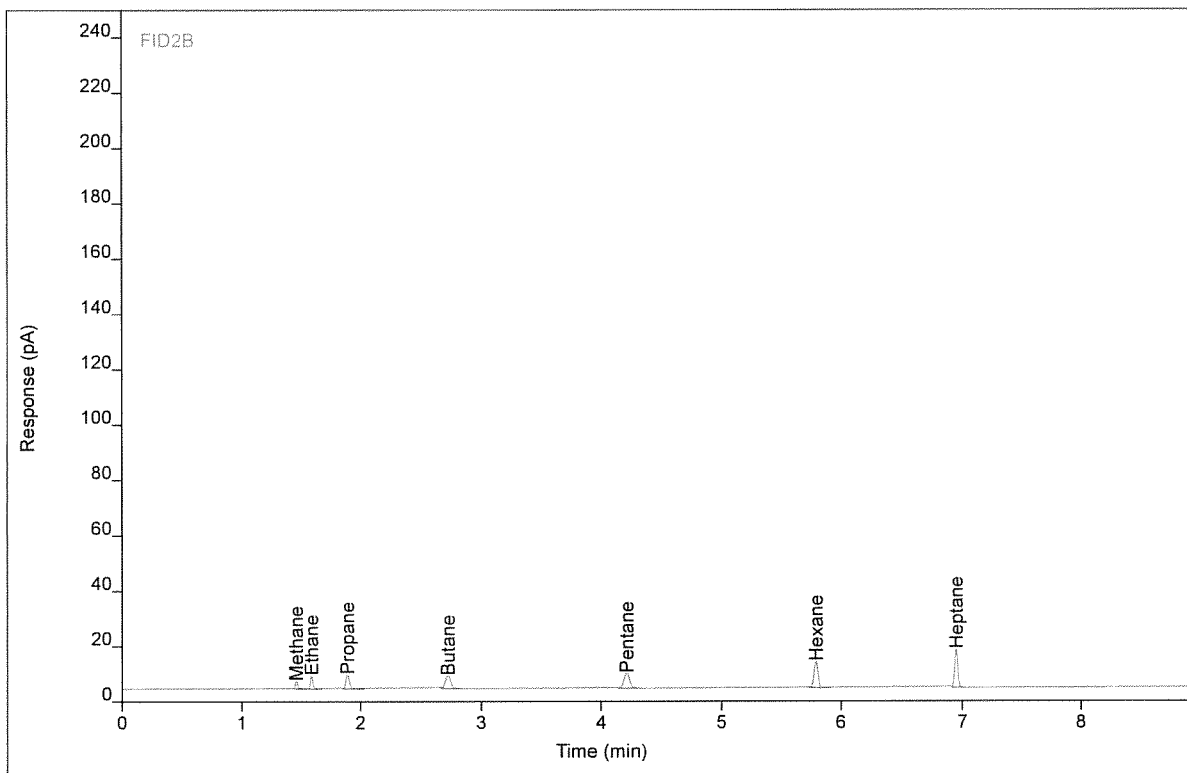
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.46	3.79229	2.94915	19.5818	1	19.5818	ppm
Ethane	BB	1.59	7.11105	4.80891	19.3714	1	19.3714	ppm
Propane	BB	1.89	10.7626	5.16456	19.4696	1	19.4696	ppm
Butane	BB	2.73	14.2620	4.69256	19.3563	1	19.3563	ppm
Pentane	BB	4.21	18.1716	5.60225	19.8399	1	19.8399	ppm
Hexane	BB	5.79	21.8024	9.52308	19.5656	1	19.5656	ppm
Heptane	BB	6.95	25.1606	13.9630	19.6619	1	19.6619	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop903 #C2 ENV(1=800,2=200.34)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B0303.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 3/31/2017 6:24 PM
 File Modified 4/3/2017 1:22 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 3 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
 Printed 4/3/2017 2:05 PM



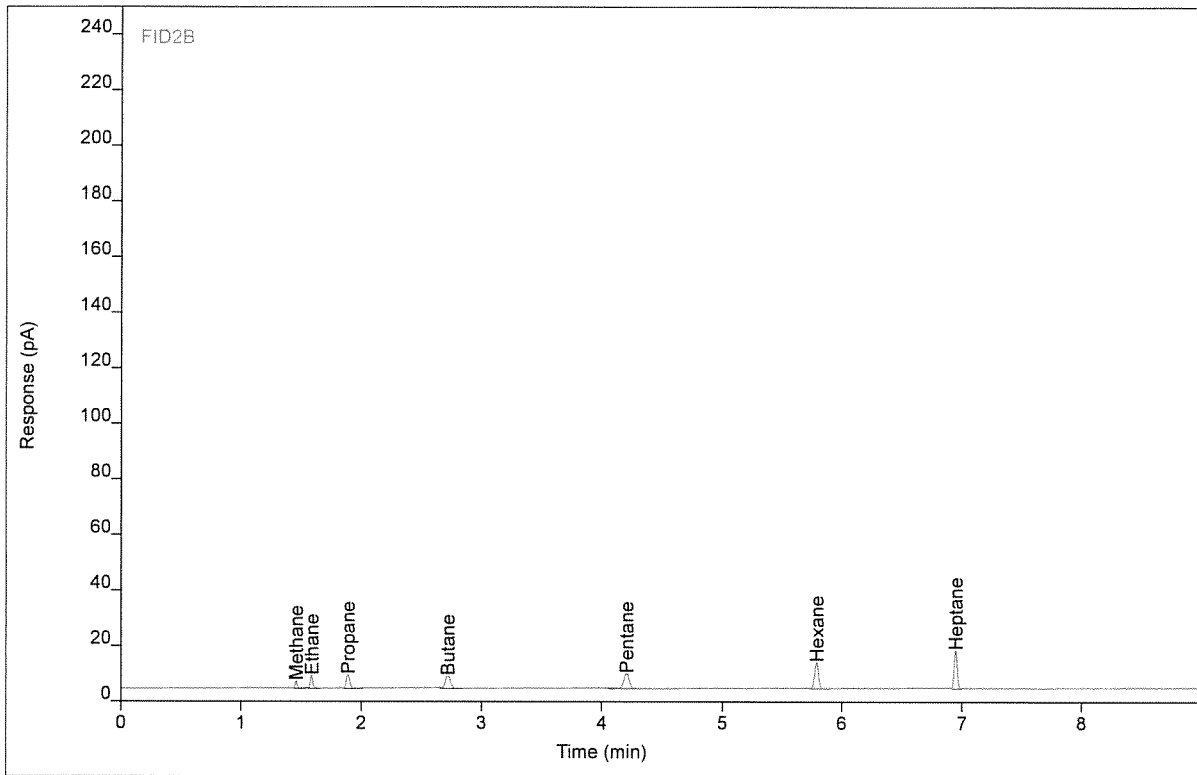
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.46	3.86380	2.97565	19.9410	1	19.9410	ppm
Ethane	BB	1.59	7.26483	4.85221	19.7849	1	19.7849	ppm
Propane	BB	1.89	10.9727	5.18551	19.8478	1	19.8478	ppm
Butane	BB	2.73	14.2714	4.72133	19.3689	1	19.3689	ppm
Pentane	BB	4.21	17.9859	5.61594	19.6375	1	19.6375	ppm
Hexane	BB	5.79	21.7955	9.51396	19.5595	1	19.5595	ppm
Heptane	BB	6.95	25.0888	13.8418	19.6062	1	19.6062	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop903 #C2 ENV(1=800,2=200.34)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B0304.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 3/31/2017 6:42 PM
 File Modified 4/3/2017 1:22 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 4 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
 Printed 4/3/2017 2:05 PM



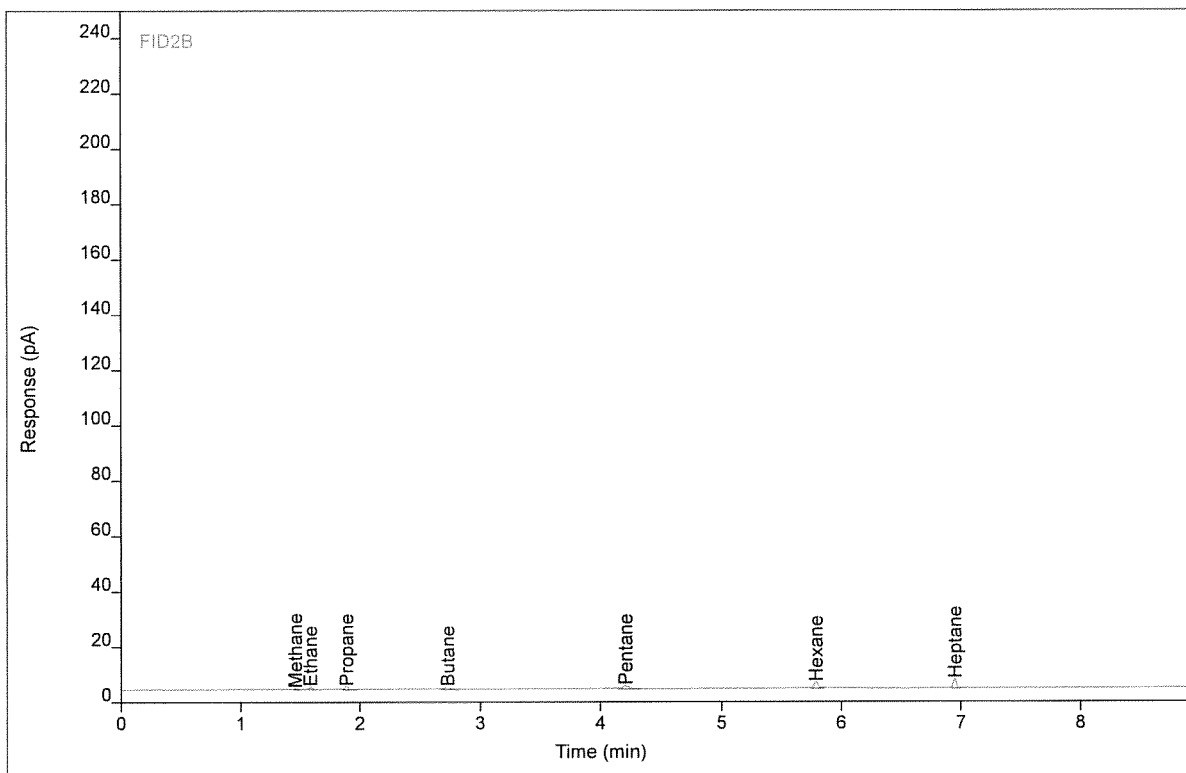
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.46	3.78945	2.96765	19.5675	1	19.5675	ppm
Ethane	BB	1.59	7.12797	4.84314	19.4169	1	19.4169	ppm
Propane	BB	1.89	10.8167	5.20749	19.5670	1	19.5670	ppm
Butane	BV	2.73	14.4492	4.74702	19.6074	1	19.6074	ppm
Pentane	BB	4.21	18.1760	5.64580	19.8447	1	19.8447	ppm
Hexane	BB	5.79	21.8472	9.58530	19.6055	1	19.6055	ppm
Heptane	BB	6.95	25.2791	13.9516	19.7540	1	19.7540	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop903 #C1 ENV(1=3800,2=200.34)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B0402.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 3/31/2017 7:18 PM
 File Modified 4/3/2017 1:23 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 2 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
 Printed 4/3/2017 2:05 PM



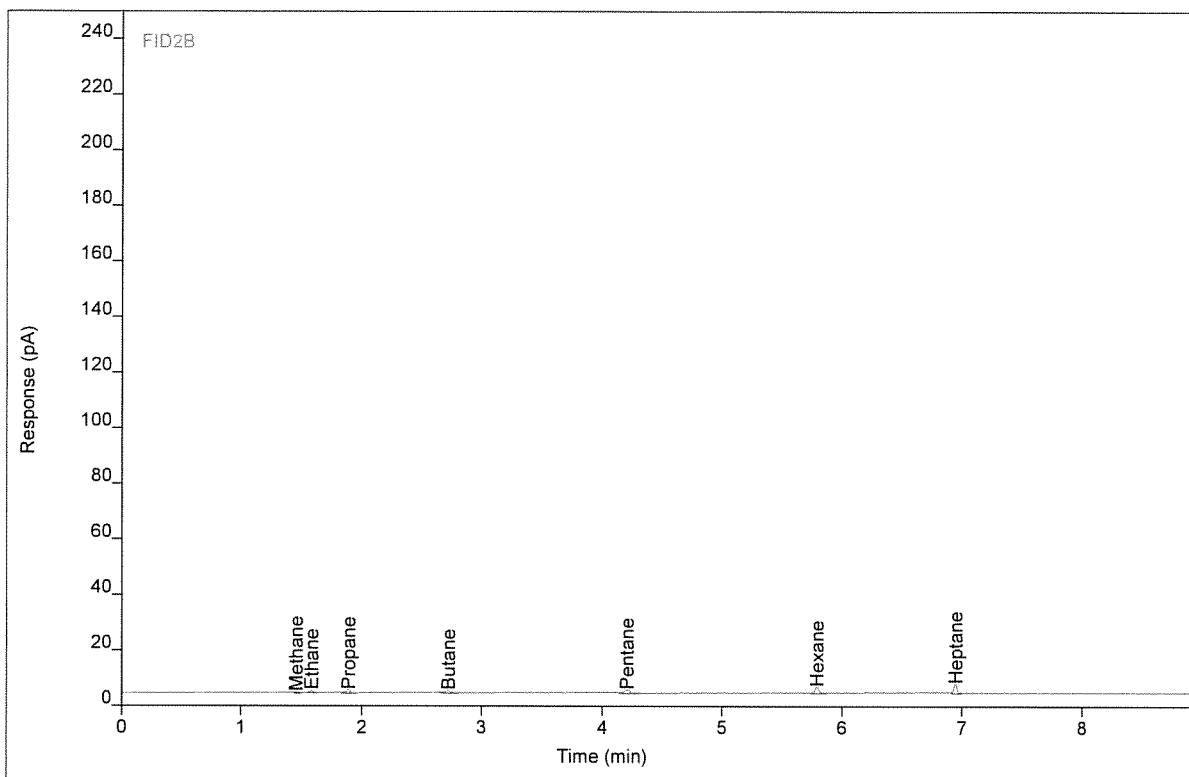
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.46	0.89235	0.73455	5.01403	1	5.01403	ppm
Ethane	BB	1.59	1.75921	1.19158	4.98159	1	4.98159	ppm
Propane	BB	1.89	2.76432	1.31725	5.06820	1	5.06820	ppm
Butane	BB	2.73	3.53968	1.17843	4.96985	1	4.96985	ppm
Pentane	BB	4.21	4.53159	1.43603	4.97285	1	4.97285	ppm
Hexane	BB	5.79	5.40473	2.37005	4.95625	1	4.95625	ppm
Heptane	BB	6.95	6.29727	3.45771	5.01151	1	5.01151	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop903 #C1 ENV(1=3800,2=200.34)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B0403.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 3/31/2017 7:37 PM
 File Modified 4/3/2017 1:23 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 3 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
 Printed 4/3/2017 2:05 PM



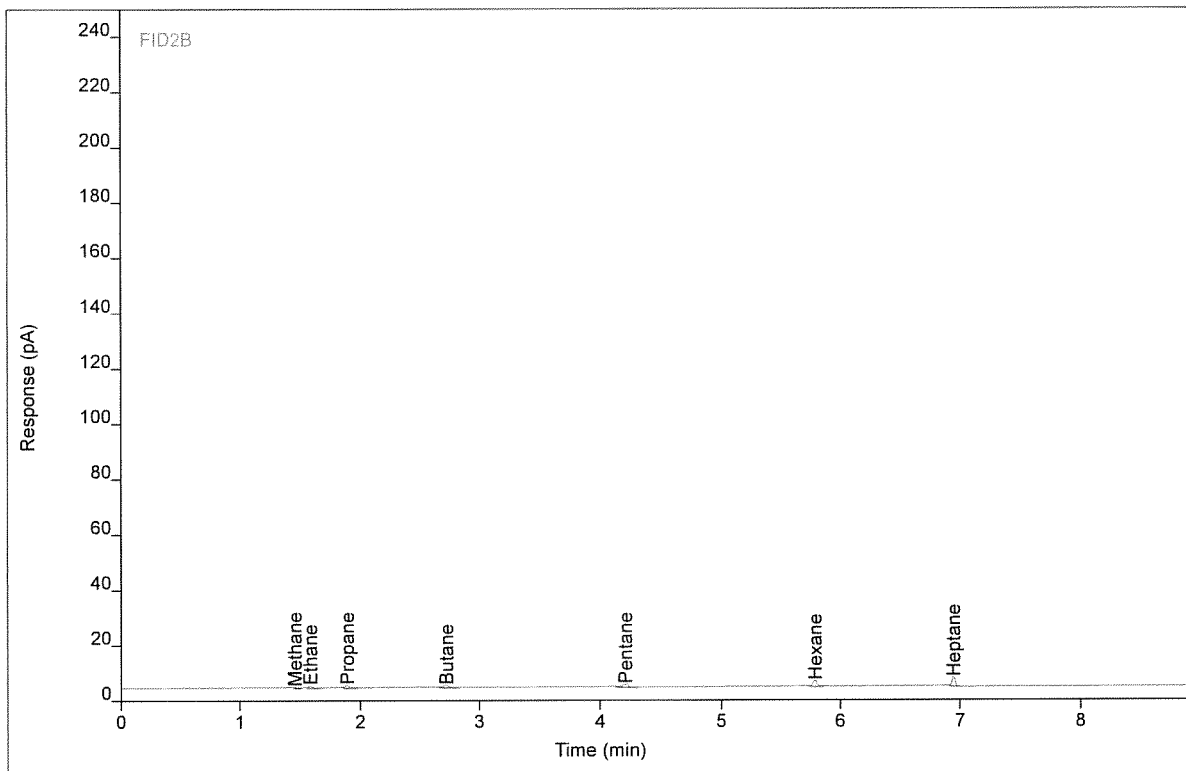
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.46	0.86009	0.72887	4.83438	1	4.83438	ppm
Ethane	BB	1.59	1.71149	1.20123	4.84646	1	4.84646	ppm
Propane	BB	1.89	2.74168	1.33047	5.02743	1	5.02743	ppm
Butane	BB	2.73	3.58111	1.19614	5.02677	1	5.02677	ppm
Pentane	BB	4.21	4.60116	1.40732	5.04886	1	5.04886	ppm
Hexane	BB	5.79	5.50365	2.41669	5.04562	1	5.04562	ppm
Heptane	BB	6.95	6.28548	3.46751	5.00235	1	5.00235	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop903 #C1 ENV(1=3800,2=200.34)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B0404.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 3/31/2017 7:55 PM
 File Modified 4/3/2017 1:23 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 4 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
 Printed 4/3/2017 2:05 PM



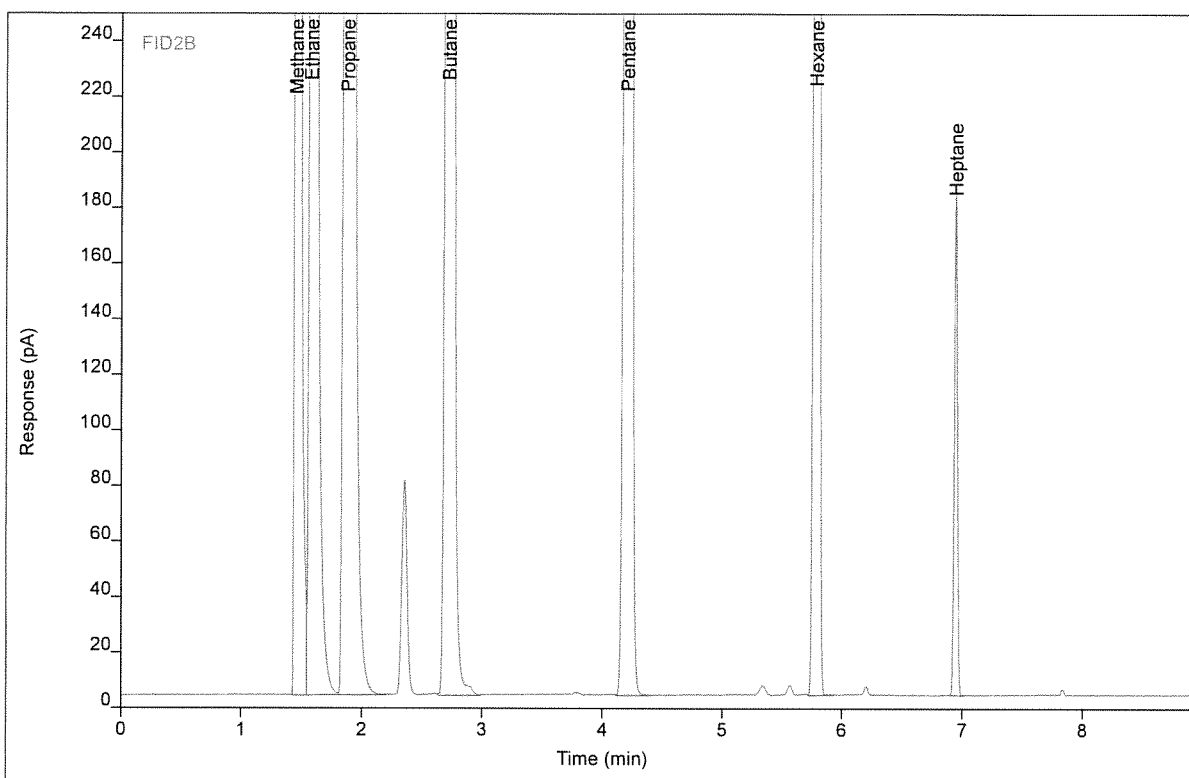
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.46	0.93208	0.73321	5.21360	1	5.21360	ppm
Ethane	BB	1.59	1.87006	1.23029	5.28056	1	5.28056	ppm
Propane	BB	1.89	2.71793	1.30496	4.98438	1	4.98438	ppm
Butane	BB	2.72	3.66202	1.21718	5.13532	1	5.13532	ppm
Pentane	BB	4.21	4.57066	1.42846	5.01562	1	5.01562	ppm
Hexane	BB	5.79	5.55943	2.40434	5.09531	1	5.09531	ppm
Heptane	BB	6.95	6.29964	3.48580	5.01335	1	5.01335	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop987 #C7 ENV(1=0,4=437.69)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B1702.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 4/3/2017 8:38 AM
 File Modified 4/3/2017 1:24 PM
 Instrument
 Operator Ben Prothe

Sample Type
 Vial Number Vial 32
 Injection Volume 1000
 Injection 2 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
 Printed 4/3/2017 2:05 PM



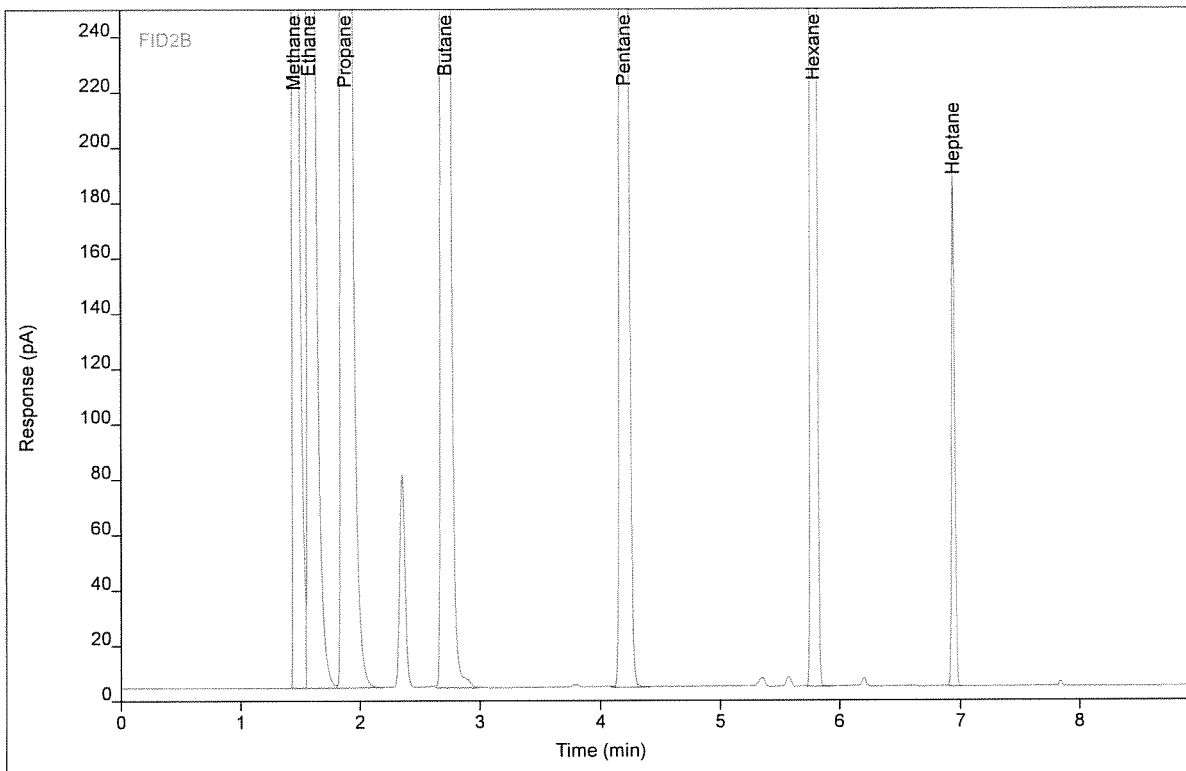
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
as Butane					252.152	1	252.152	
Methane	BV	1.46	10906.3	8443.26	54787.9	1	54787.9	ppm
Ethane	VV S	1.58	20513.1	13851.0	55151.6	1	55151.6	ppm
Propane	VB S	1.88	30581.5	13965.8	55063.5	1	55063.5	ppm
Butane	VV	2.72	8247.66	2705.45	11065.3	1	11065.3	ppm
Pentane	BB	4.21	5013.67	1570.88	5464.66	1	5464.66	ppm
Hexane	BB	5.79	4777.88	2093.85	4256.59	1	4256.59	ppm
Heptane	BB	6.95	323.208	179.393	251.144	1	251.144	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop987 #C7 ENV(1=0,4=437.69)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B1703.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 4/3/2017 8:57 AM
 File Modified 4/3/2017 1:24 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 3 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
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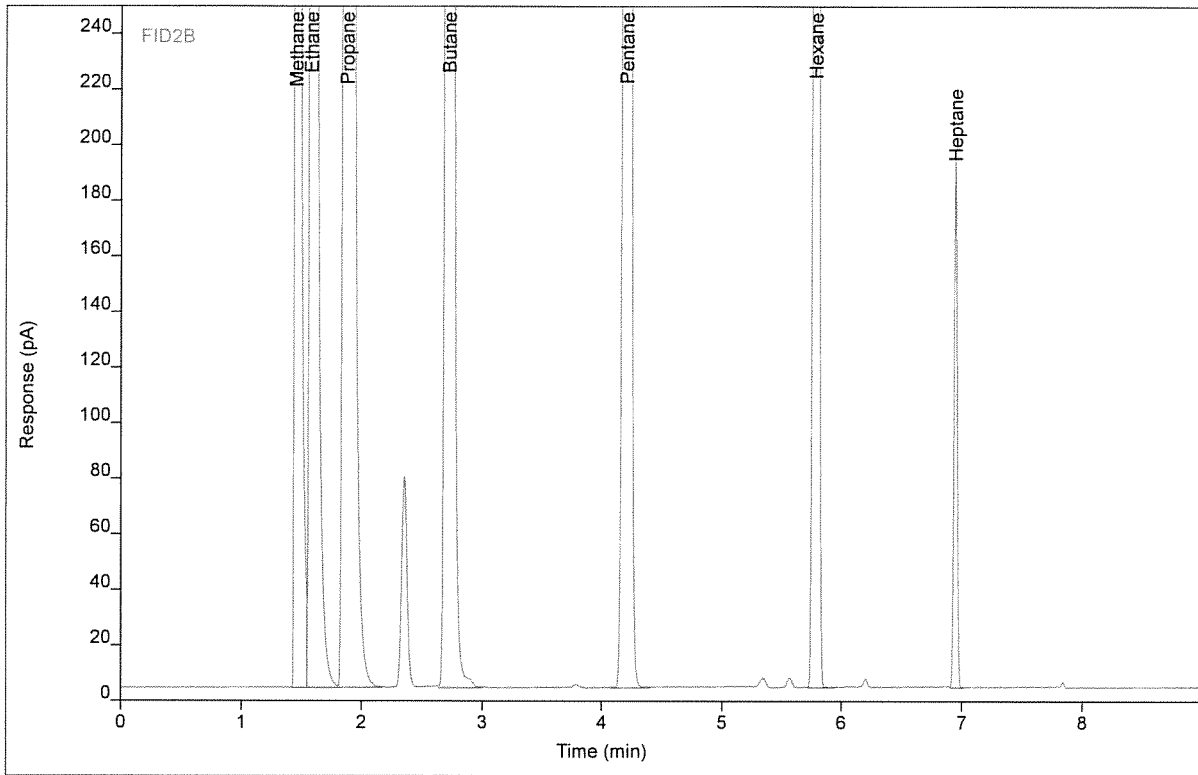
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
as Butane					250.476	1	250.476	
Methane	VV	1.45	10849.4	8530.86	54502.1	1	54502.1	ppm
Ethane	VV S	1.58	20404.2	13702.7	54859.0	1	54859.0	ppm
Propane	VB S	1.88	30427.7	13848.1	54786.7	1	54786.7	ppm
Butane	VV	2.72	8215.52	2688.72	11022.2	1	11022.2	ppm
Pentane	BB	4.21	5007.91	1568.47	5458.38	1	5458.38	ppm
Hexane	BB	5.79	4813.19	2115.64	4288.05	1	4288.05	ppm
Heptane	BB	6.95	333.262	184.005	258.953	1	258.953	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop987 #C7 ENV(1=0,4=437.69)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B1704.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 4/3/2017 9:15 AM
 File Modified 4/3/2017 1:25 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 4 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
 Printed 4/3/2017 2:05 PM



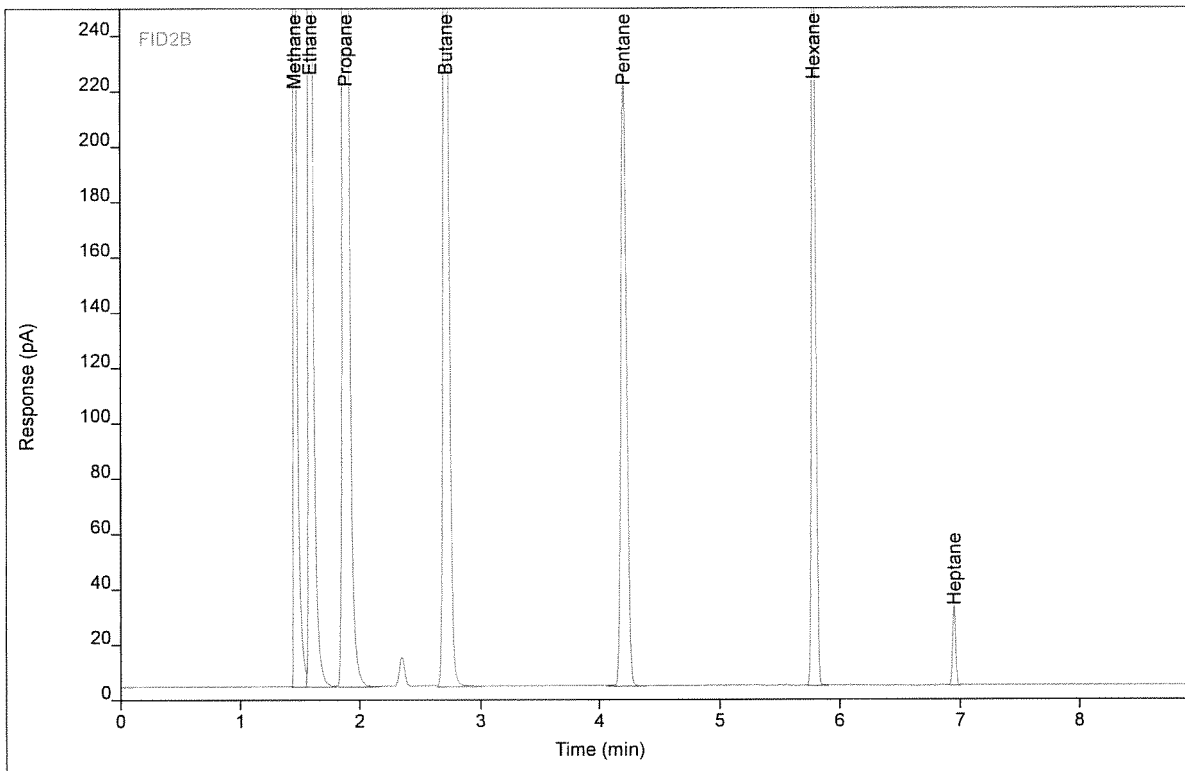
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
as Butane					248.039	1	248.039	
Methane	PV	1.46	10737.3	8330.53	53939.0	1	53939.0	ppm
Ethane	VV S	1.58	20200.8	13666.7	54311.9	1	54311.9	ppm
Propane	VB S	1.88	30122.7	13760.2	54237.4	1	54237.4	ppm
Butane	VV	2.72	8139.63	2662.74	10920.4	1	10920.4	ppm
Pentane	BB	4.21	4978.21	1559.70	5426.02	1	5426.02	ppm
Hexane	BB	5.79	4830.75	2133.91	4303.69	1	4303.69	ppm
Heptane	BB	6.95	342.883	189.005	266.425	1	266.425	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop987 #C6 ENV(1=1700,4=364.74)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B1802.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 4/3/2017 9:52 AM
 File Modified 4/3/2017 1:25 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 2 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
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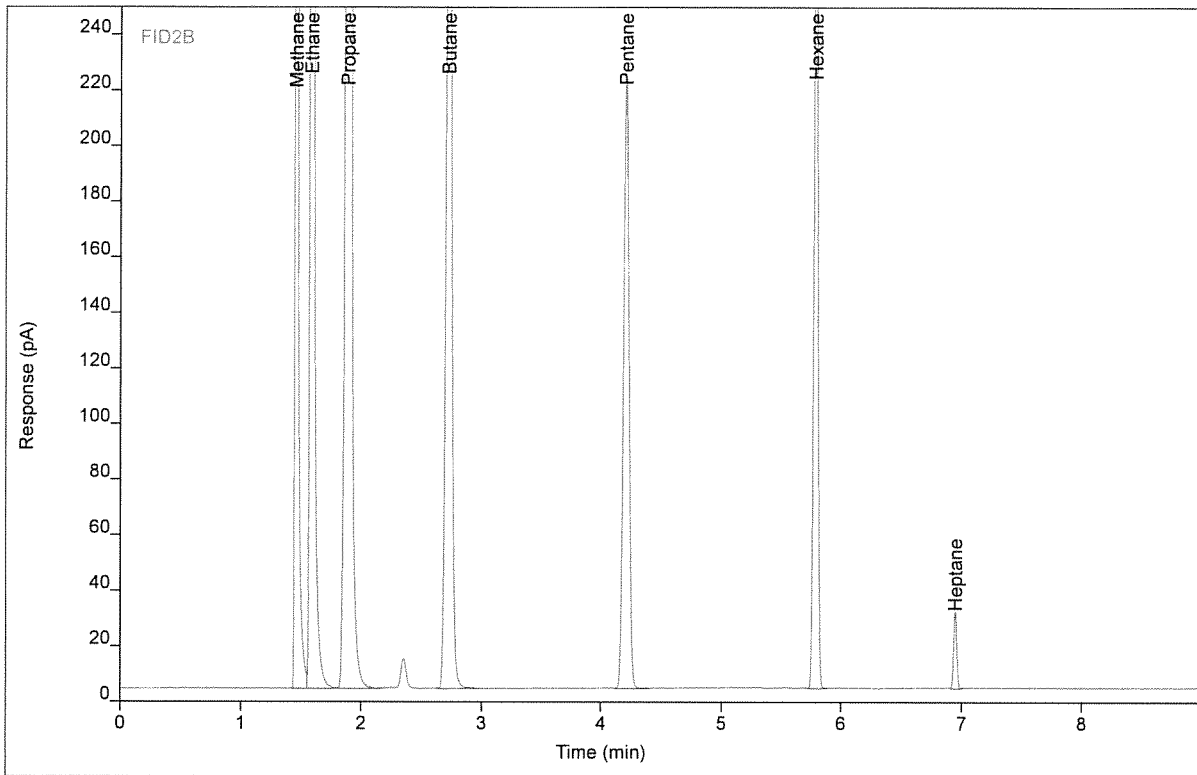
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
as Butane					34.9137	1	34.9137	
Methane	PV	1.46	1526.01	1176.08	7666.41	1	7666.41	ppm
Ethane	VB	1.59	2873.53	1931.30	7726.02	1	7726.02	ppm
Propane	BB	1.89	4282.26	1999.03	7710.51	1	7710.51	ppm
Butane	VB	2.73	1157.41	379.603	1553.00	1	1553.00	ppm
Pentane	BB	4.21	711.302	222.463	775.314	1	775.314	ppm
Hexane	BB	5.79	701.467	307.613	625.055	1	625.055	ppm
Heptane	BB	6.95	51.8335	28.7410	40.3778	1	40.3778	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop987 #C6 ENV(1=1700,4=364.74)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B1803.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 4/3/2017 10:11 AM
 File Modified 4/3/2017 1:25 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 3 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
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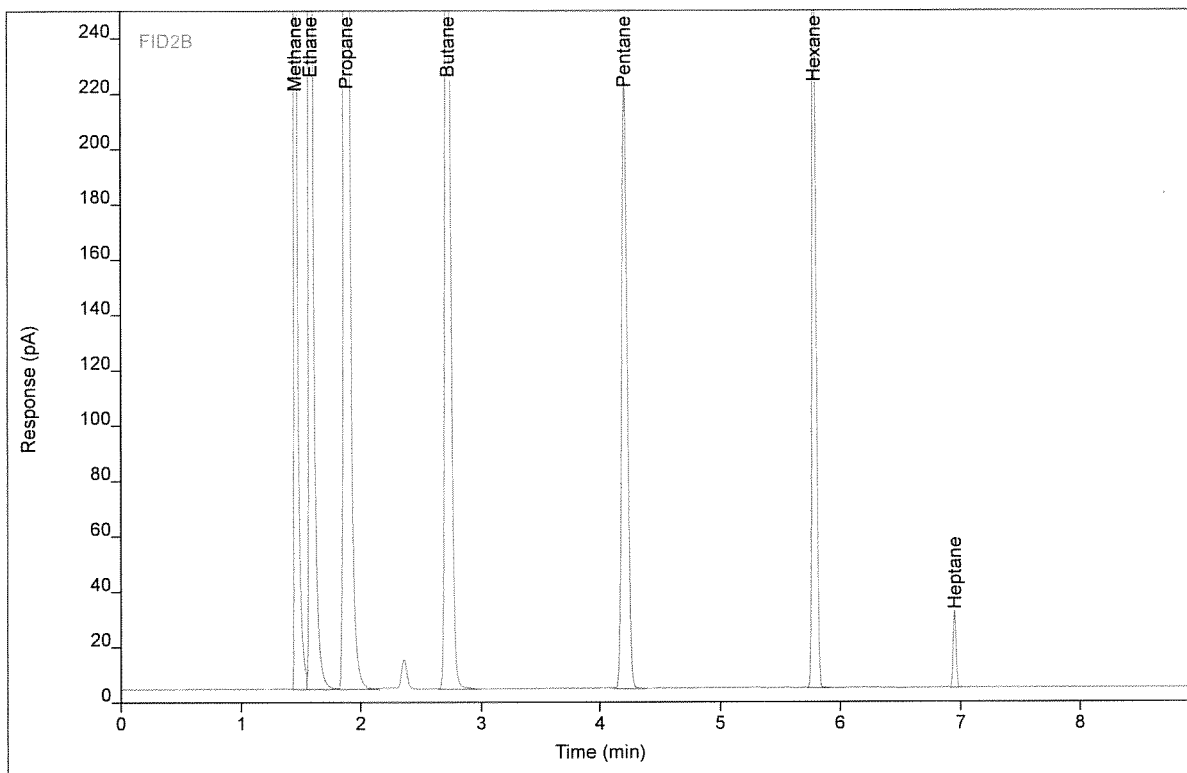
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
as Butane					34.7286	1	34.7286	
Methane	PV	1.46	1517.99	1173.47	7626.11	1	7626.11	ppm
Ethane	VV	1.59	2857.98	1923.80	7684.20	1	7684.20	ppm
Propane	VB	1.89	4257.29	1987.56	7665.56	1	7665.56	ppm
Butane	VB	2.73	1149.13	377.917	1541.90	1	1541.90	ppm
Pentane	BB	4.21	703.805	220.134	767.143	1	767.143	ppm
Hexane	BB	5.79	687.801	303.861	612.880	1	612.880	ppm
Heptane	BB	6.95	50.4157	27.8372	39.2766	1	39.2766	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop987 #C6 ENV(1=1700,4=364.74)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B1804.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 4/3/2017 10:29 AM
 File Modified 4/3/2017 1:25 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 4 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
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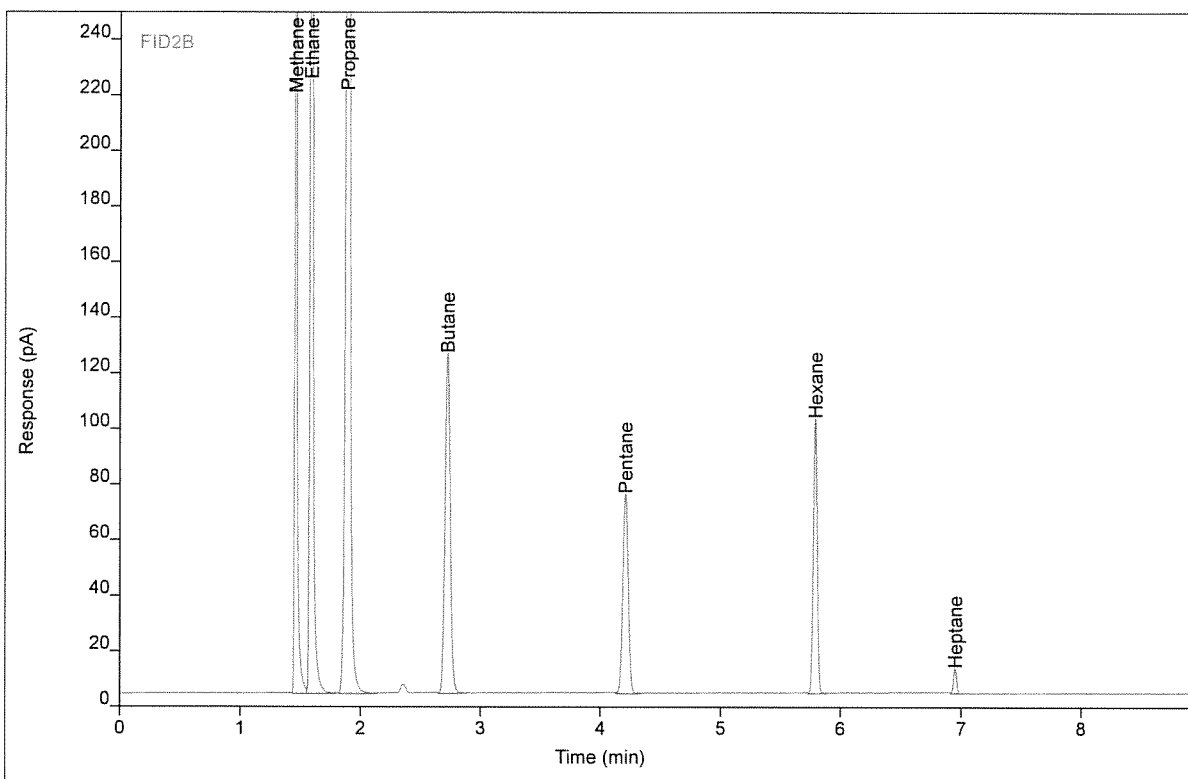
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
as Butane					35.1829	1	35.1829	
Methane	PV	1.46	1520.02	1171.26	7636.31	1	7636.31	ppm
Ethane	VV	1.59	2862.47	1922.06	7696.29	1	7696.29	ppm
Propane	VB	1.89	4263.31	1990.81	7676.39	1	7676.39	ppm
Butane	VV	2.73	1152.34	378.190	1546.20	1	1546.20	ppm
Pentane	BB	4.21	706.332	220.582	769.897	1	769.897	ppm
Hexane	BB	5.79	692.269	303.722	616.861	1	616.861	ppm
Heptane	BB	6.95	50.7182	28.1451	39.5115	1	39.5115	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop987 #C5 ENV(1=3800,4=243.16)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B1902.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 4/3/2017 11:06 AM
 File Modified 4/3/2017 1:25 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 2 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
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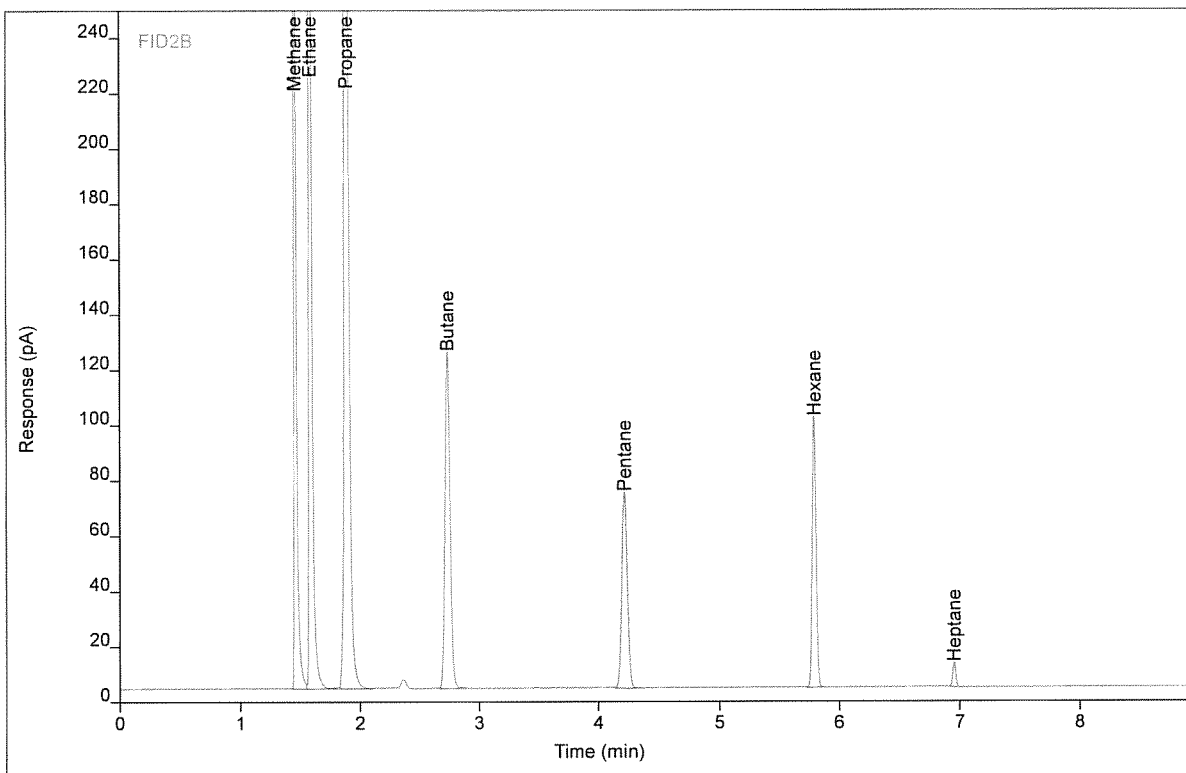
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
as Butane					11.2935	1	11.2935	
Methane	PV	1.46	493.207	379.077	2478.14	1	2478.14	ppm
Ethane	VB	1.59	929.194	625.979	2498.48	1	2498.48	ppm
Propane	BB	1.89	1384.86	646.984	2493.60	1	2493.60	ppm
Butane	BB	2.73	372.451	122.363	499.903	1	499.903	ppm
Pentane	BB	4.21	229.075	71.8840	249.713	1	249.713	ppm
Hexane	BB	5.79	224.840	98.8594	200.445	1	200.445	ppm
Heptane	BB	6.95	16.4871	9.12448	12.9256	1	12.9256	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop987 #C5 ENV(1=3800,4=243.16)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B1903.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 4/3/2017 11:25 AM
 File Modified 4/3/2017 1:25 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 3 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
 Printed 4/3/2017 2:05 PM



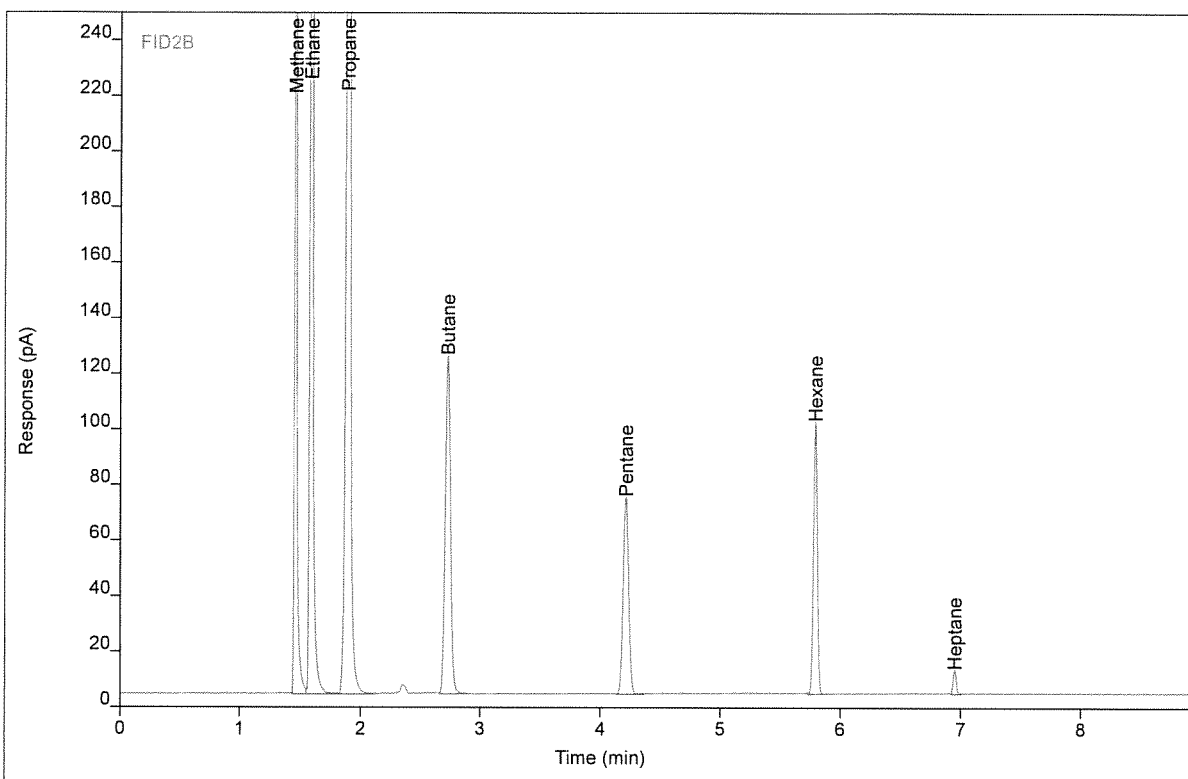
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
as Butane					11.0940	1	11.0940	
Methane	PV	1.46	490.075	374.345	2462.41	1	2462.41	ppm
Ethane	VB	1.59	923.156	623.936	2482.24	1	2482.24	ppm
Propane	BB	1.89	1374.90	642.931	2475.67	1	2475.67	ppm
Butane	BB	2.73	369.432	121.735	495.853	1	495.853	ppm
Pentane	BB	4.21	227.080	70.9978	247.539	1	247.539	ppm
Hexane	BB	5.79	222.562	97.6587	198.416	1	198.416	ppm
Heptane	BB	6.95	16.3241	9.02969	12.7990	1	12.7990	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop987 #C5 ENV(1=3800,4=243.16)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B1904.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 4/3/2017 11:44 AM
 File Modified 4/3/2017 1:25 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 4 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
 Printed 4/3/2017 2:05 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
as Butane					11.1002	1	11.1002	
Methane	PV	1.46	489.838	375.543	2461.22	1	2461.22	ppm
Ethane	VV	1.59	922.721	622.521	2481.08	1	2481.08	ppm
Propane	VB	1.89	1374.62	642.570	2475.16	1	2475.16	ppm
Butane	BB	2.73	369.200	121.743	495.542	1	495.542	ppm
Pentane	BB	4.21	226.930	71.0351	247.375	1	247.375	ppm
Hexane	BB	5.79	221.087	97.7542	197.101	1	197.101	ppm
Heptane	BB	6.95	16.0309	8.83125	12.5712	1	12.5712	ppm



THE LINDE GROUP

SHIPPED TO: Enthalpy Analytical Inc.
800 Capitola Dr. Ste. 1
Durham, NC 27713-4385

PAGE: 1 of 1

CERTIFICATE OF ANALYSIS

Sales#: 114378357
Production#: 1389409
Certification Date: Sep-20-2016
P.O.# : 03191601
Blend Type: CERTIFIED
Material#: 24102488
Traceability: NIST by weight
Expiration Date: Sep-20-2017
Do NOT use under: 150 psig

Cylinder Size: 152 (8" X 47.5")
Cylinder #: CC-127546
Cylinder Pressure: 575 psig
Cylinder Valve: CGA 350 Brass
Cylinder Volume: 29.5 Liter
Cylinder Material: Aluminum
Gas Volume: 1150 Liters
Blend Tolerance: 5% Relative
Analytical Accuracy: 2% Relative

COMPONENT	CAS NUMBER	REQUESTED CONC	CERTIFIED CONC
Methane	74-82-5	5.00 %	5.12 %
Ethane	74-84-0	5.00 %	5.14 %
Propane	74-98-6	5.00 %	5.16 %
Butane	106-97-8	1.00 %	1.03 %
Pentane	109-66-0	0.500 %	0.520 %
Hexane	110-54-3	0.400 %	0.410 %
Heptane	142-82-5	250 ppm	257 ppm
Nitrogen	7727-37-9	Balance	Balance

ANALYST: *Lou Lorenzetti*
Lou Lorenzetti

DATE: Sep-20-2016

CERTIFICATE OF ANALYSIS

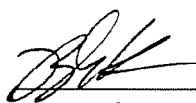
Grade of Product: CERTIFIED STANDARD-SPEC

Part Number: X08NI99C15A0079 Reference Number: 141-124555464-1
Cylinder Number: CC105348 Cylinder Volume: 144.4 CF
Laboratory: ASG - Conley Stryker - OH Cylinder Pressure: 2015 PSIG
Analysis Date: May 16, 2016 Valve Outlet: 350
Lot Number: 141-124555464-1
Expiration Date: May 16, 2019

Product composition verified by direct comparison to calibration standards traceable to N.I.S.T. weights and/or N.I.S.T. Gas Mixture reference materials.

ANALYTICAL RESULTS

Component	Req Conc	Actual Concentration (Mole %)	Analytical Uncertainty
ETHANE	100.0 PPM	100.0 PPM	+/- 2%
HEXANE	100.0 PPM	100.0 PPM	+/- 2%
METHANE	100.0 PPM	100.0 PPM	+/- 2%
N BUTANE	100.0 PPM	100.0 PPM	+/- 2%
N HEPTANE	100.0 PPM	100.0 PPM	+/- 2%
N PENTANE	100.0 PPM	100.0 PPM	+/- 2%
PROPANE	100.0 PPM	100.0 PPM	+/- 2%
NITROGEN	Balance		



Approved for Release

CERTIFICATE OF ANALYSIS

Grade of Product: CERTIFIED STANDARD-SPEC

Part Number:	X08NI99C15A0079	Reference Number:	141-124564924-5
Cylinder Number:	CC20849	Cylinder Volume:	144.4 CF
Laboratory:	ASG - Conley Stryker - OH	Cylinder Pressure:	2015 PSIG
Analysis Date:	Jul 12, 2016	Valve Outlet:	350
Lot Number:	141-124564924-5		

Expiration Date: Jul 12, 2019

Product composition verified by direct comparison to calibration standards traceable to N.I.S.T. weights and/or N.I.S.T. Gas Mixture reference materials.

ANALYTICAL RESULTS

Component	Req Conc	Actual Concentration (Mole %)	Analytical Uncertainty
ETHANE	100.0 PPM	101.0 PPM	+/- 2%
HEXANE	100.0 PPM	100.0 PPM	+/- 2%
METHANE	100.0 PPM	100.0 PPM	+/- 2%
N BUTANE	100.0 PPM	100.0 PPM	+/- 2%
N HEPTANE	100.0 PPM	100.0 PPM	+/- 2%
N PENTANE	100.0 PPM	100.0 PPM	+/- 2%
PROPANE	100.0 PPM	100.0 PPM	+/- 2%
NITROGEN	Balance		



Approved for Release

=====
6890 GC METHOD
=====

OVEN

Initial temp: 35 C (On) Maximum temp: 250 C
Initial time: 2.20 min Equilibration time: 0.20 min
Ramps:
Rate Final temp Final time
1 15.00 70 0.07
2 30.00 250 1.00
3 0 (Off)
Post temp: 50 C
Post time: 0.00 min
Run time: 11.60 min

FRONT INLET (SPLIT/SPLITLESS)

Mode: Split
Initial temp: 160 C (On)
Pressure: 4.7 psi (On)
Split ratio: 5:1
Split flow: 9.9 mL/min
Total flow: 17.9 mL/min
Gas saver: Off
Gas type: Hydrogen

BACK INLET (SPLIT/SPLITLESS)

Mode: Split
Initial temp: 160 C (On)
Pressure: 4.9 psi (On)
Split ratio: 2:1
Split flow: 3.9 mL/min
Total flow: 12.1 mL/min
Gas saver: Off
Gas type: Hydrogen

COLUMN 1

Capillary Column
Model Number: 10970
Description: Rtx-624 S/N 926827
Max temperature: 240 C
Nominal length: 30.0 m
Nominal diameter: 320.00 um
Nominal film thickness: 1.80 um
Mode: constant flow
Initial flow: 2.0 mL/min
Nominal init pressure: 4.7 psi
Average velocity: 37 cm/sec
Inlet: Front Inlet
Outlet: Front Detector
Outlet pressure: ambient

COLUMN 2

Capillary Column
Model Number: 10198
Description: Rtx-1 S/N 869999
Max temperature: 280 C
Nominal length: 30.0 m
Nominal diameter: 320.00 um
Nominal film thickness: 4.00 um
Mode: constant flow
Initial flow: 2.0 mL/min
Nominal init pressure: 4.9 psi
Average velocity: 38 cm/sec
Inlet: Back Inlet
Outlet: Back Detector
Outlet pressure: ambient

FRONT DETECTOR (FID)

Temperature: 250 C (On)
Hydrogen flow: 40.0 mL/min (On)
Air flow: 450.0 mL/min (On)
Mode: Constant makeup flow
Makeup flow: 45.0 mL/min (On)
Makeup Gas Type: Nitrogen
Flame: On
Electrometer: On
Lit offset: 2.0

BACK DETECTOR (FID)

Temperature: 250 C (On)
Hydrogen flow: 40.0 mL/min (On)
Air flow: 450.0 mL/min (On)
Mode: Constant makeup flow
Makeup flow: 45.0 mL/min (On)
Makeup Gas Type: Nitrogen
Flame: On
Electrometer: On
Lit offset: 2.0

SIGNAL 1

Data rate: 20 Hz
Type: front detector
Save Data: On

SIGNAL 2

Data rate: 20 Hz
Type: back detector
Save Data: On

THERMAL AUX 1

Use: Valve Box Heater
Initial temp: 120 C (On)

VALVES

Valve 1 Gas Sampling

POST RUN

Post Time: 0.00 min
EA# 0617-110 Page 247 of 441

method: C:\GC\2017\GUMMO\METHODS\AQ_GUMMOP987.M

Modified on: 3/31/2017 at 3:12:16 PM

Loop Volume: 1.000 mL

Load Time: 0.70 min

Inject Time: 0.50 min

Inlet: Front Inlet

Valve 2 Gas Sampling

Loop Volume: 1.000 mL

Load Time: 0.70 min

Inject Time: 0.50 min

Inlet: Back Inlet

Valve 7 Multiposition 16

BCD input: inverted

Switch Time: 1.0 sec

TIME TABLE

Time (min)	Parameter & Setpoint	
0.10	Multi-Valve Position:	1

=====
6890 GC METHOD
=====

OVEN

Initial temp: 35 C (On) Maximum temp: 250 C
Initial time: 2.20 min Equilibration time: 0.20 min
Ramps:
Rate Final temp Final time
1 15.00 70 0.50
2 0 (Off)
Post temp: 50 C
Post time: 0.00 min
Run time: 5.03 min

FRONT INLET (SPLIT/SPLITLESS)

Mode: Split
Initial temp: 160 C (On)
Pressure: 4.7 psi (On)
Split ratio: 5:1
Split flow: 9.9 mL/min
Total flow: 17.9 mL/min
Gas saver: Off
Gas type: Hydrogen

BACK INLET (SPLIT/SPLITLESS)

Mode: Split
Initial temp: 160 C (On)
Pressure: 4.9 psi (On)
Split ratio: 2:1
Split flow: 3.9 mL/min
Total flow: 12.1 mL/min
Gas saver: Off
Gas type: Hydrogen

COLUMN 1

Capillary Column
Model Number: 10970
Description: Rtx-624 S/N 926827
Max temperature: 240 C
Nominal length: 30.0 m
Nominal diameter: 320.00 um
Nominal film thickness: 1.80 um
Mode: constant flow
Initial flow: 2.0 mL/min
Nominal init pressure: 4.7 psi
Average velocity: 37 cm/sec
Inlet: Front Inlet
Outlet: Front Detector
Outlet pressure: ambient

COLUMN 2

Capillary Column
Model Number: 10198
Description: Rtx-1 S/N 869999
Max temperature: 280 C
Nominal length: 30.0 m
Nominal diameter: 320.00 um
Nominal film thickness: 4.00 um
Mode: constant flow
Initial flow: 2.0 mL/min
Nominal init pressure: 4.9 psi
Average velocity: 38 cm/sec
Inlet: Back Inlet
Outlet: Back Detector
Outlet pressure: ambient

FRONT DETECTOR (FID)

Temperature: 250 C (On)
Hydrogen flow: 40.0 mL/min (On)
Air flow: 450.0 mL/min (On)
Mode: Constant makeup flow
Makeup flow: 45.0 mL/min (On)
Makeup Gas Type: Nitrogen
Flame: On
Electrometer: On
Lit offset: 2.0

BACK DETECTOR (FID)

Temperature: 250 C (On)
Hydrogen flow: 40.0 mL/min (On)
Air flow: 450.0 mL/min (On)
Mode: Constant makeup flow
Makeup flow: 45.0 mL/min (On)
Makeup Gas Type: Nitrogen
Flame: On
Electrometer: On
Lit offset: 2.0

SIGNAL 1

Data rate: 20 Hz
Type: front detector
Save Data: On

SIGNAL 2

Data rate: 20 Hz
Type: back detector
Save Data: On

THERMAL AUX 1

Use: Valve Box Heater
Initial temp: 120 C (On)

VALVES

Valve 1 Gas Sampling
Loop Volume: 1.000 mL

POST RUN

Post Time: 0.00 min

method: C:\GC\2017\GUMMO\METHODS\AQ_GUMMOP987_AA.M

Modified on: 3/31/2017 at 3:11:51 PM

Load Time: 0.70 min

Inject Time: 0.50 min

Inlet: Front Inlet

Valve 2 Gas Sampling

Loop Volume: 1.000 mL

Load Time: 0.70 min

Inject Time: 0.50 min

Inlet: Back Inlet

Valve 7 Multiposition 16

BCD input: inverted

Switch Time: 1.0 sec

TIME TABLE

Time (min)	Parameter & Setpoint	
0.10	Multi-Valve Position:	1

Raw Data

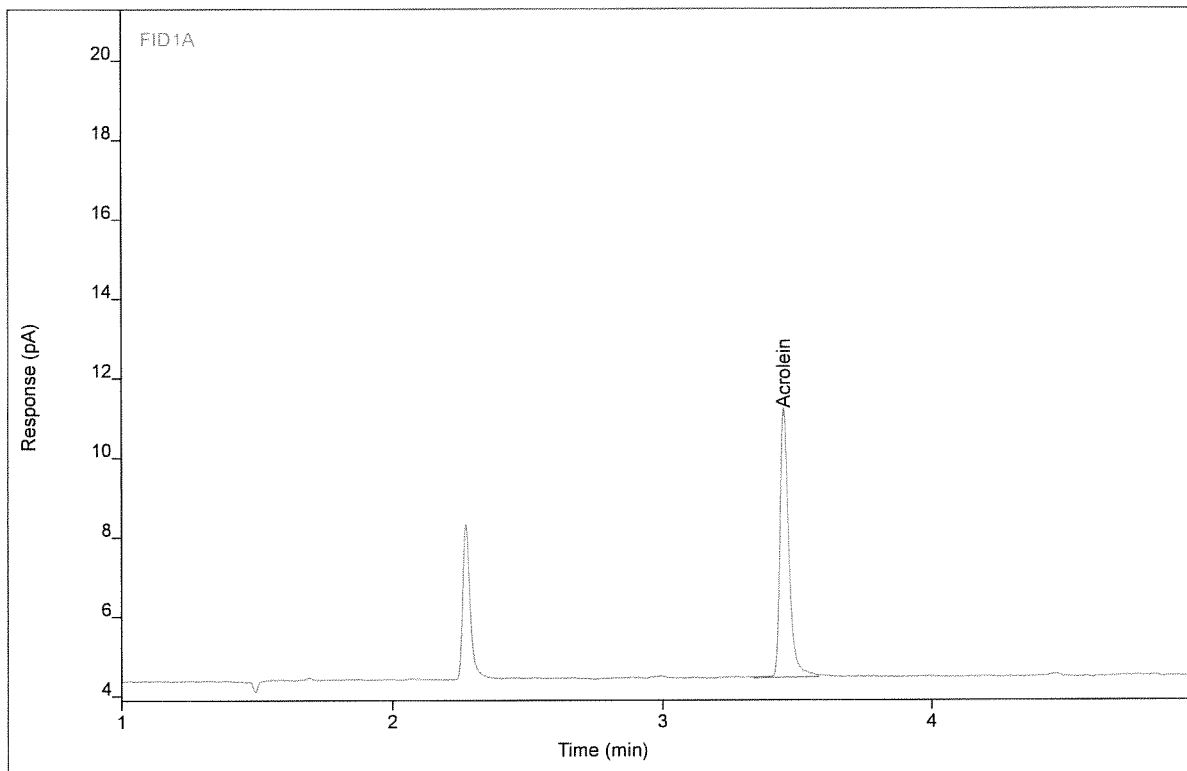


Chromatogram Report

Enthalpy Analytical

Sample Name gum mop980 #AA2 ENV(1=800,5=200)
Sequence Name GUMMOP1049 ver.12
Inj Data File 016F1302.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 1:27 AM
File Modified 7/10/2017 10:16 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 2 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/10/2017 12:09 PM



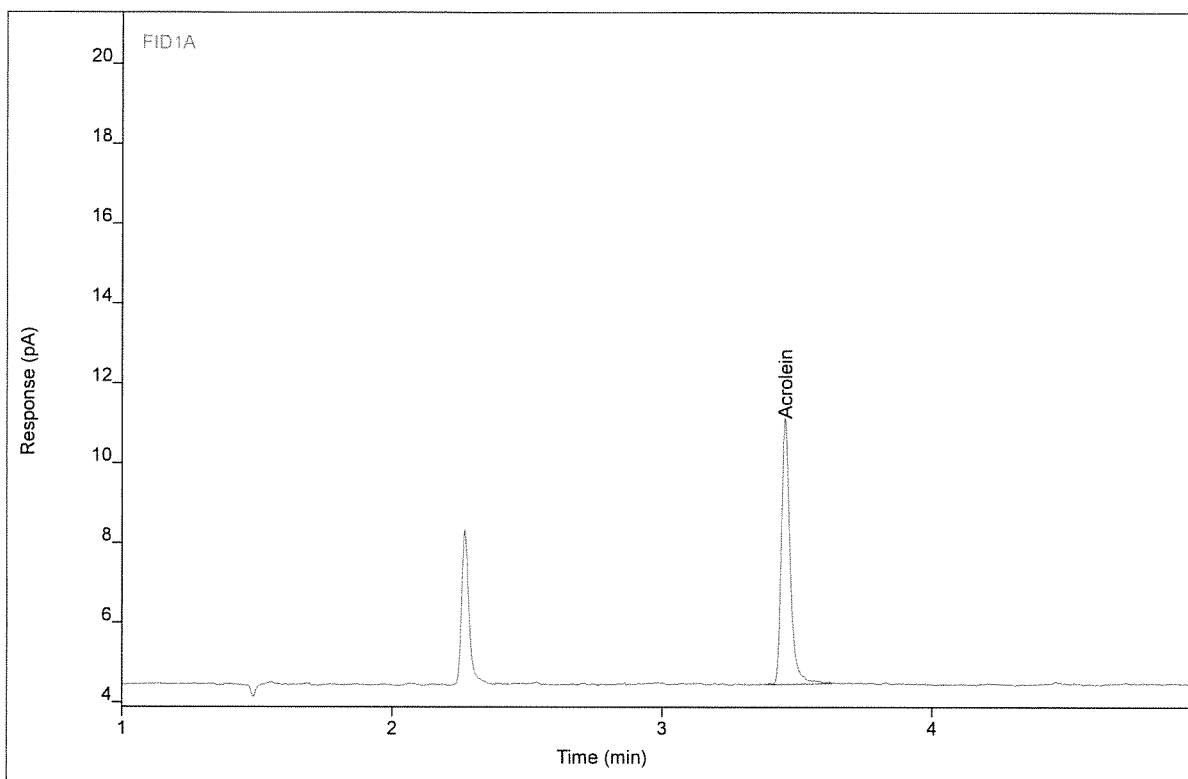
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	VV	3.46	15.3387	6.75185	51.7258	1	51.7258	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop980 #AA2 ENV(1=800,5=200)
Sequence Name GUMMOP1049 ver.12
Inj Data File 016F1303.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 1:46 AM
File Modified 7/10/2017 10:16 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 3 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/10/2017 12:09 PM



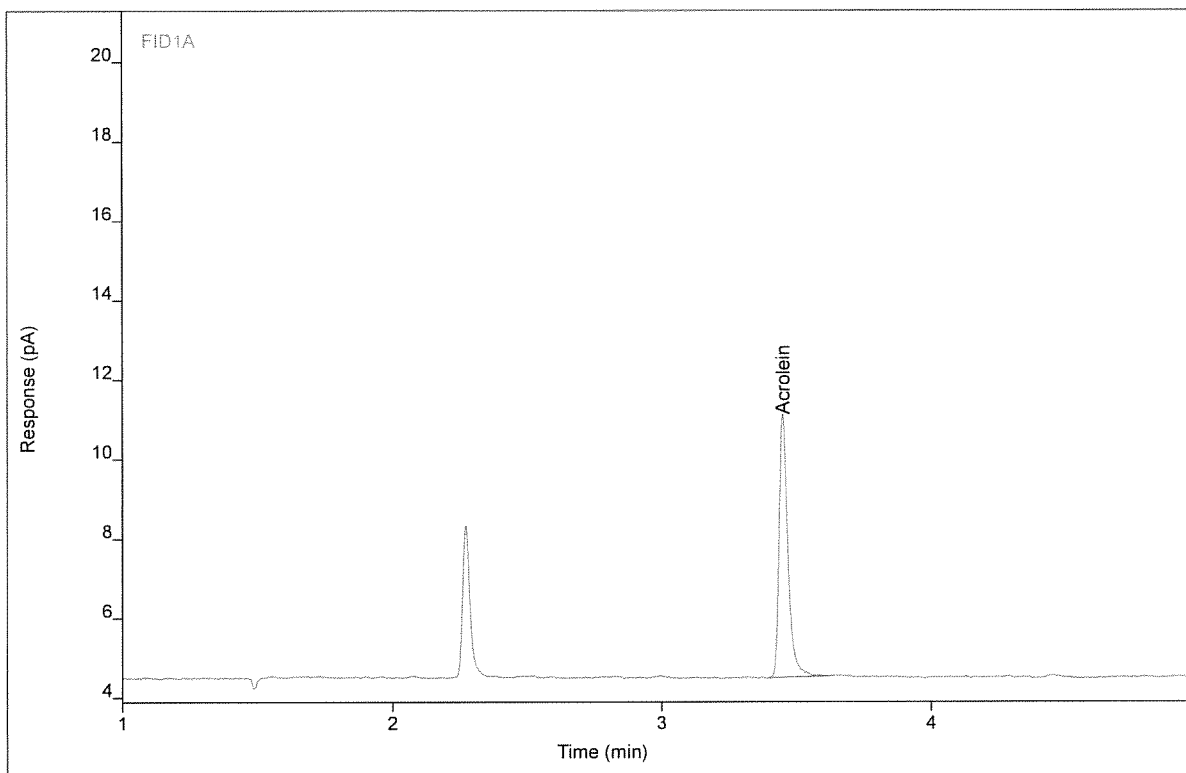
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	BB	3.46	15.1161	6.65072	50.9859	1	50.9859	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop980 #AA2 ENV(1=800,5=200)
Sequence Name GUMMOP1049 ver.12
Inj Data File 016F1304.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 2:04 AM
File Modified 7/10/2017 10:16 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 4 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/10/2017 12:09 PM



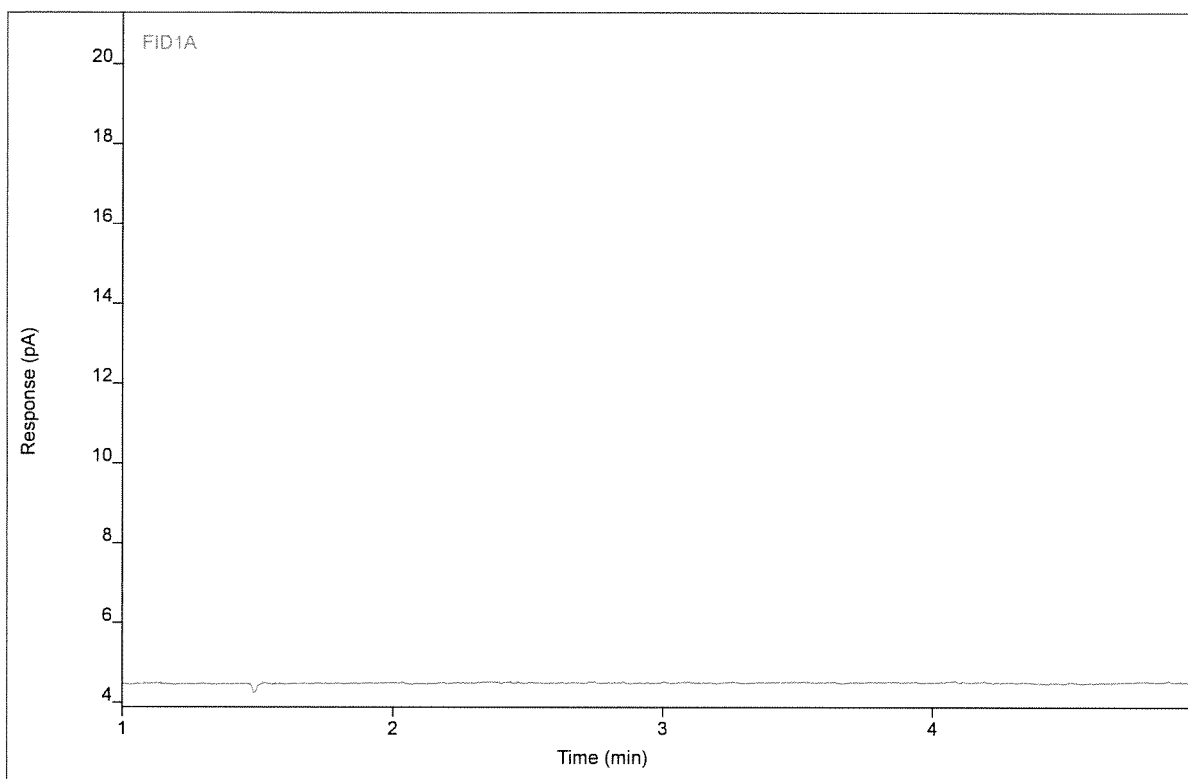
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	VB	3.46	14.8616	6.61073	50.1400	1	50.1400	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name zero air blank #LB
Sequence Name GUMMOP1049 ver. 12
Inj Data File 008F1601.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 4:27 AM
File Modified 7/10/2017 10:17 AM
Instrument
Operator Nicholas Traversa

Sample Type Control
Vial Number Vial 8
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/10/2017 12:09 PM



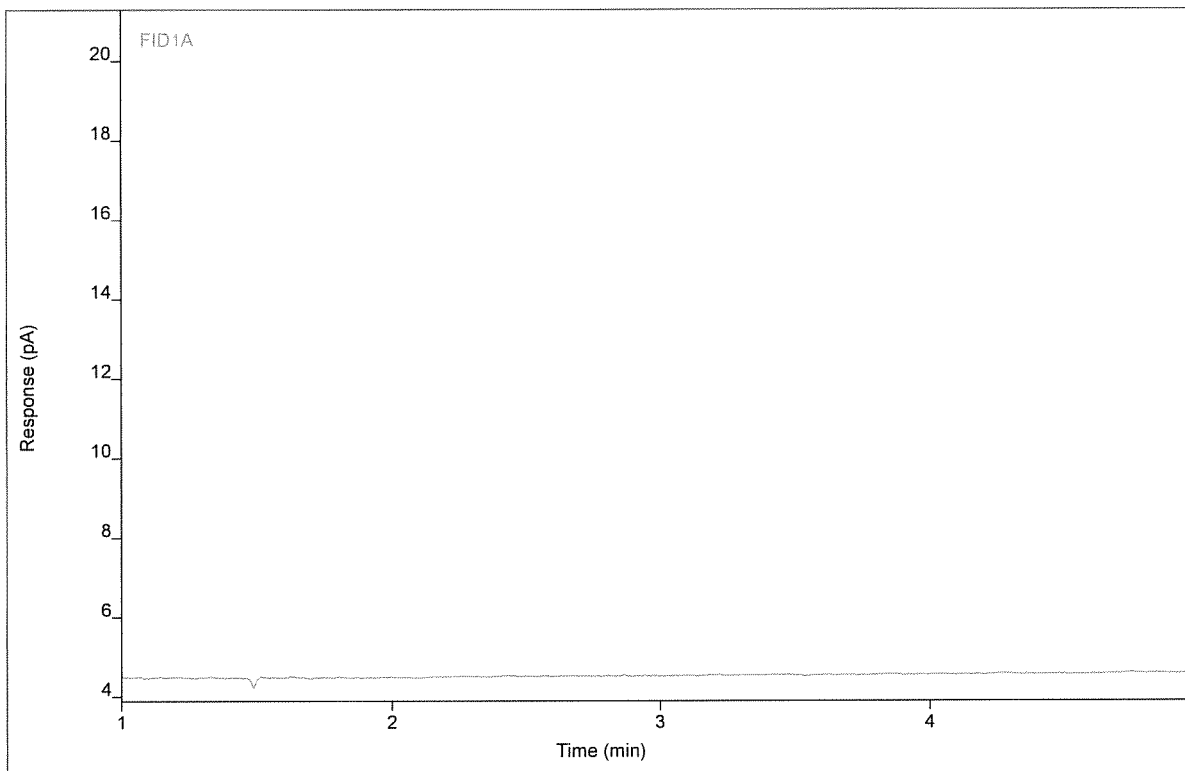
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein		(3.45)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name zero air blank #LB
Sequence Name GUMMOP1049 ver.12
Inj Data File 008F1602.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 4:44 AM
File Modified 7/10/2017 10:17 AM
Instrument
Operator Nicholas Traversa

Sample Type Control
Vial Number Vial 8
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/10/2017 12:09 PM



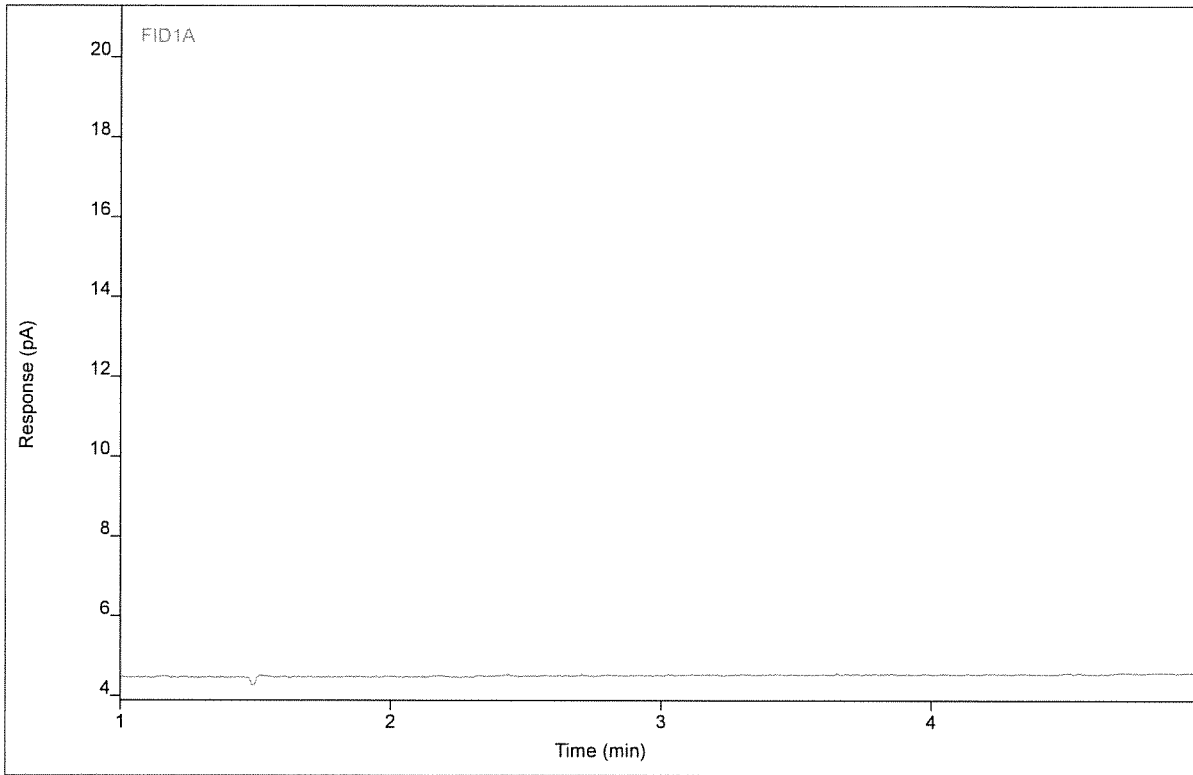
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein		(3.45)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name zero air blank #LB
Sequence Name GUMMOP1049 ver.12
Inj Data File 008F1603.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 5:00 AM
File Modified 7/10/2017 10:17 AM
Instrument
Operator Nicholas Traversa

Sample Type Control
Vial Number Vial 8
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/10/2017 12:09 PM



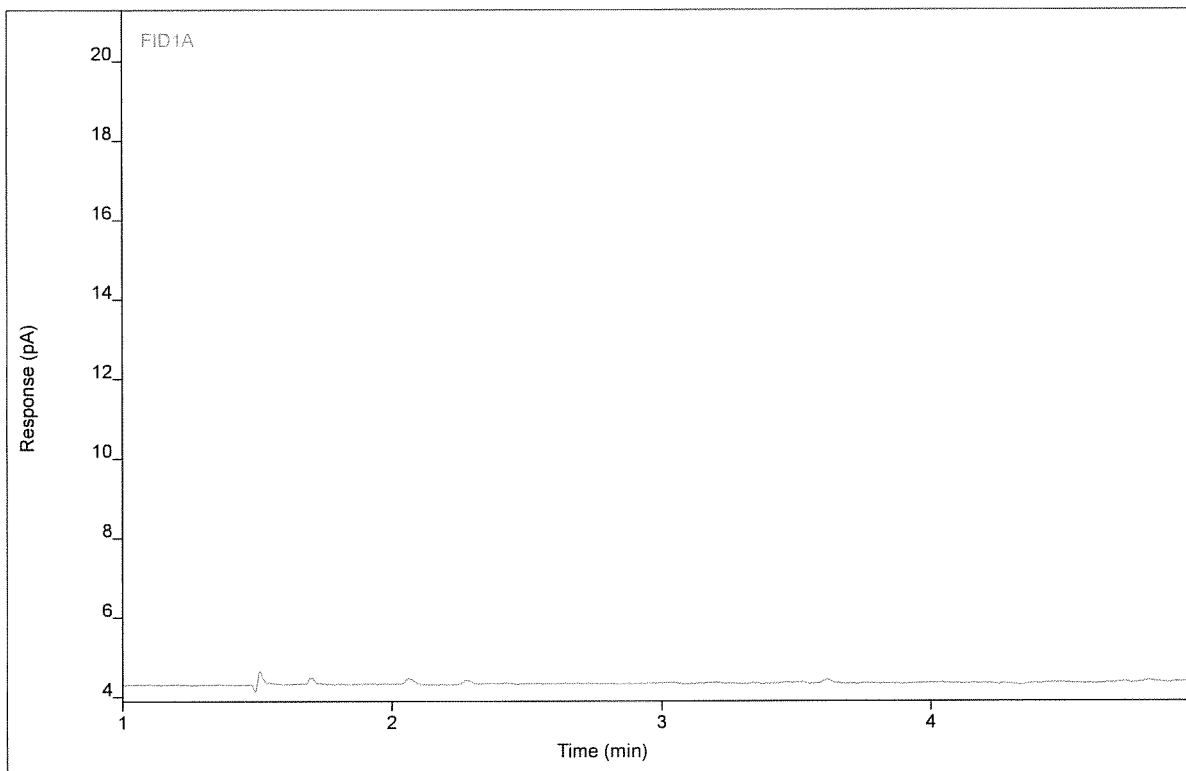
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein		(3.45)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Outlet Primary Run 1.Bag
Sequence Name GUMMOP1049 ver.12
Inj Data File 013F1801.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 11:06 AM
File Modified 7/10/2017 10:17 AM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 13
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/10/2017 12:09 PM



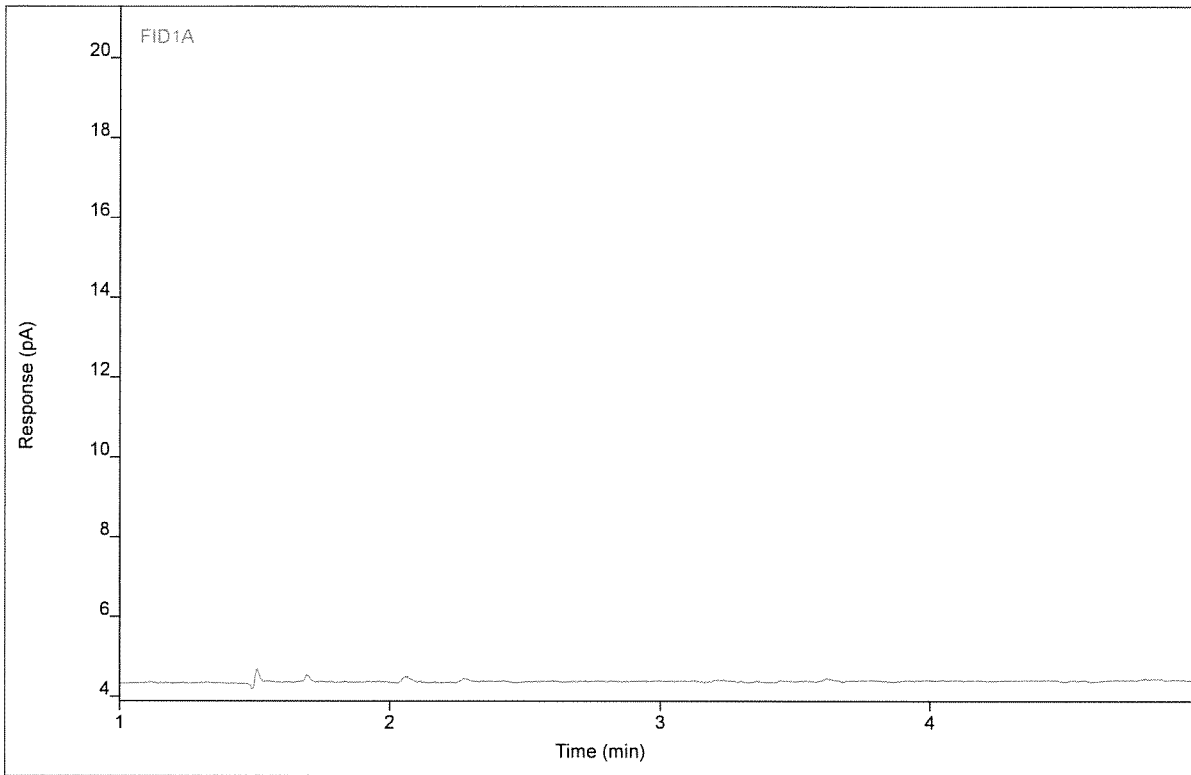
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein		(3.45)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Outlet Primary Run 1.Bag
Sequence Name GUMMOP1049 ver.12
Inj Data File 013F1802.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 11:22 AM
File Modified 7/10/2017 10:17 AM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 13
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/10/2017 12:09 PM



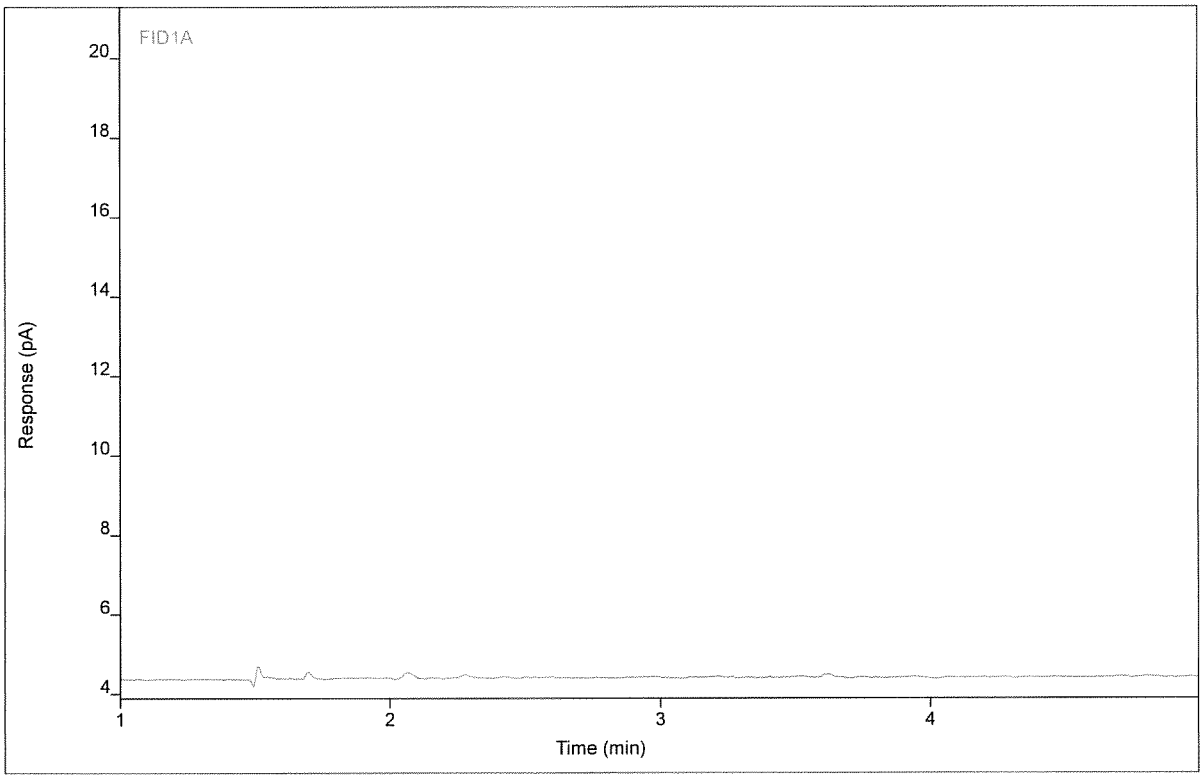
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein		(3.45)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Outlet Primary Run 1.Bag
Sequence Name GUMMOP1049 ver.12
Inj Data File 013F1803.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 11:34 AM
File Modified 7/10/2017 10:17 AM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 13
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/10/2017 12:09 PM



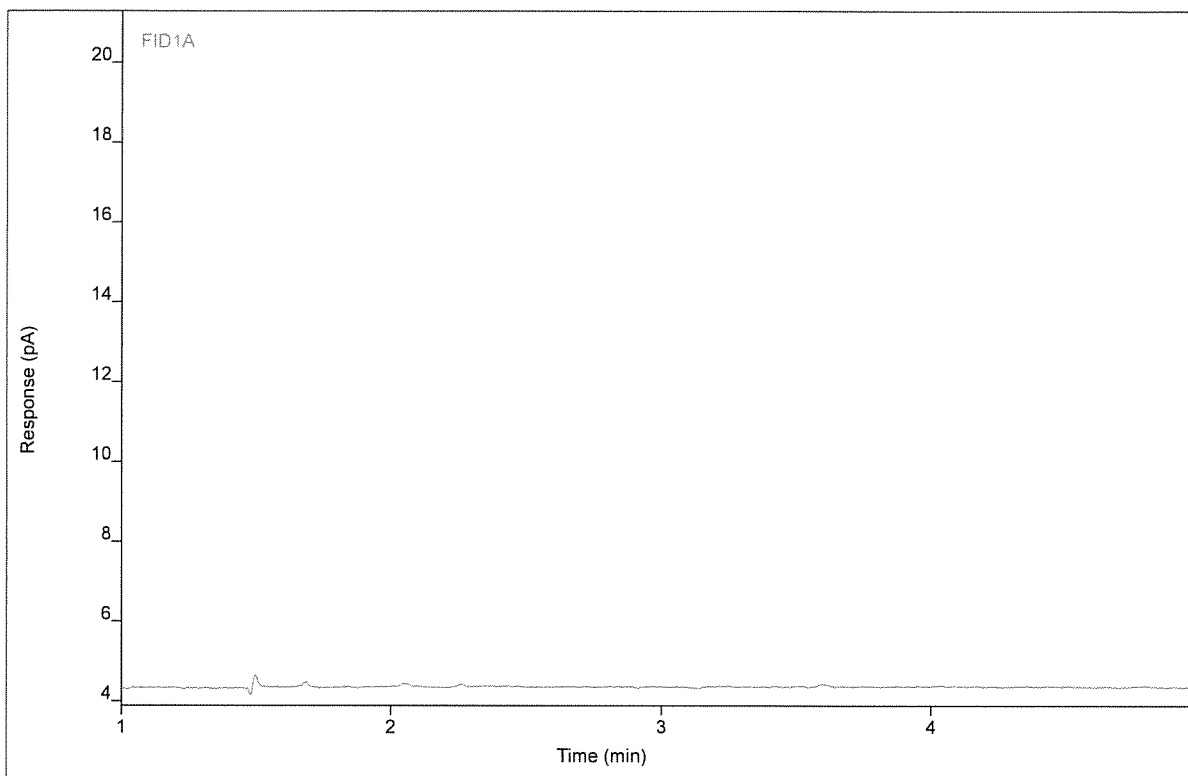
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein		(3.45)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Outlet Primary Run 4.Bag
Sequence Name GUMMOP1049 ver.12
Inj Data File 002F1901.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 11:43 AM
File Modified 7/10/2017 10:17 AM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 2
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/10/2017 12:09 PM



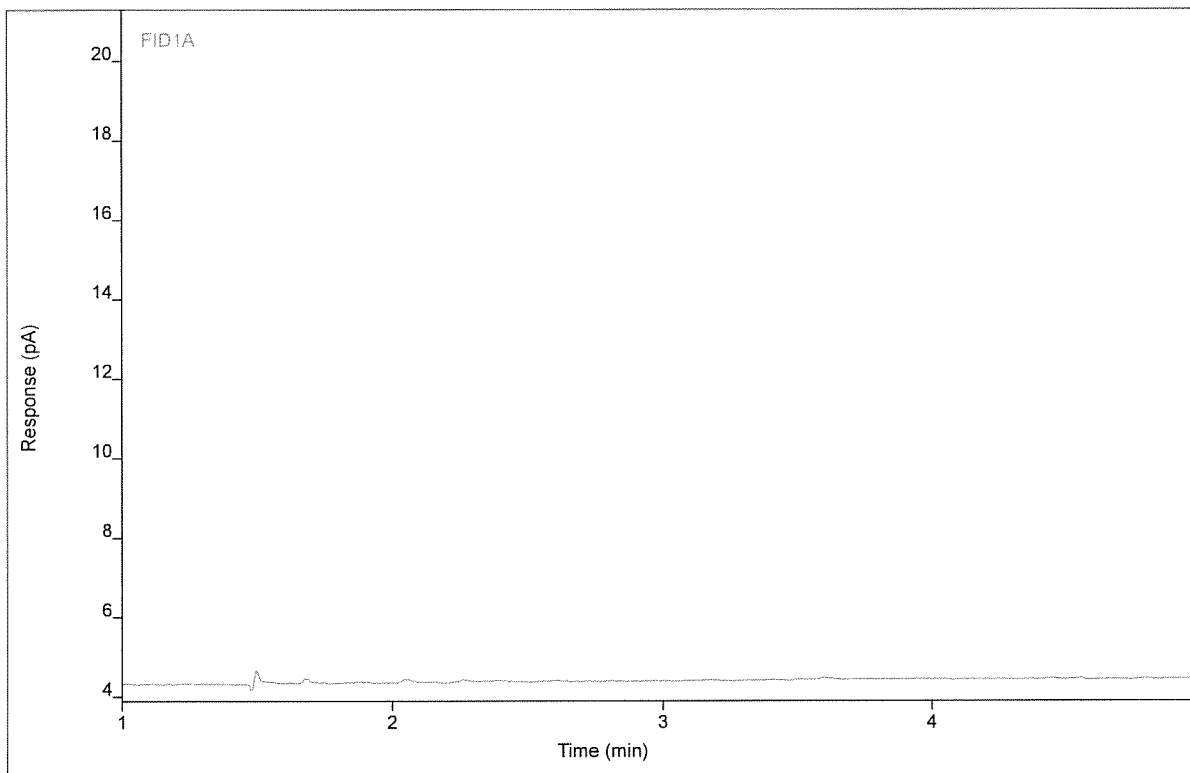
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein		(3.45)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Outlet Primary Run 4.Bag
Sequence Name GUMMOP1049 ver.12
Inj Data File 002F1902.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 11:50 AM
File Modified 7/10/2017 10:17 AM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 2
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/10/2017 12:09 PM



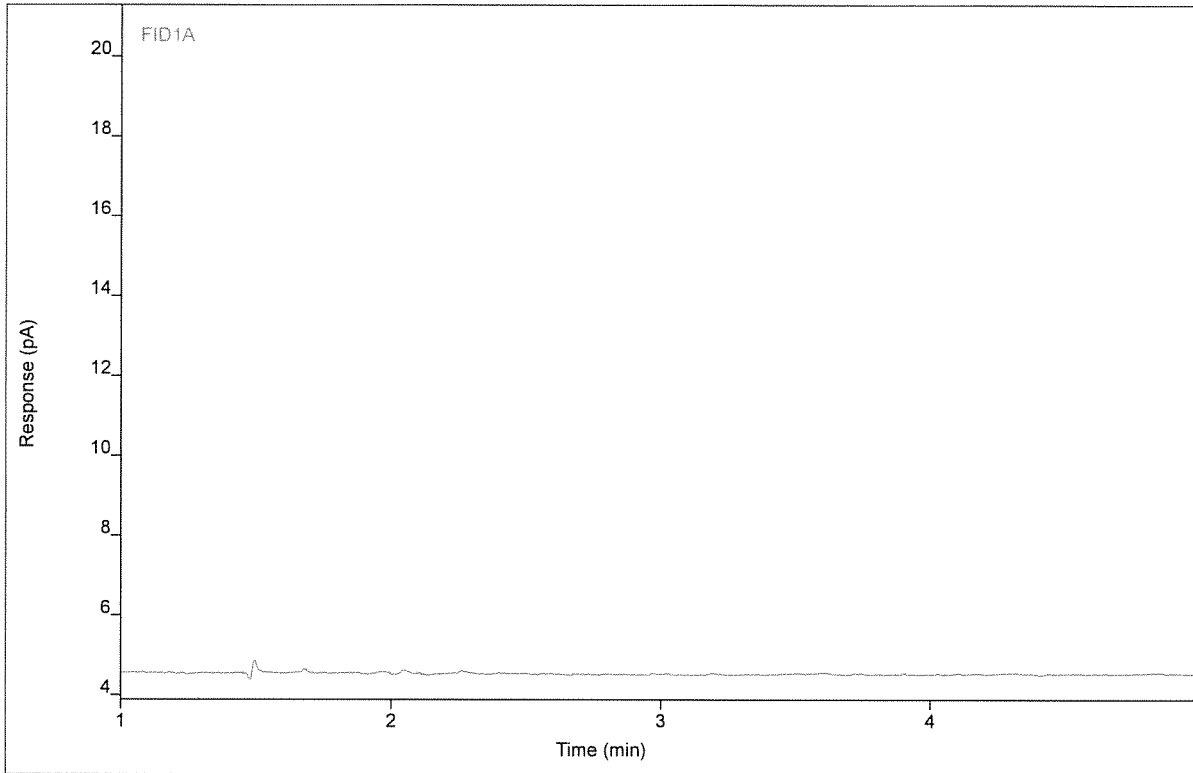
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein		(3.45)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Outlet Primary Run 4.Bag
Sequence Name GUMMOP1049 ver.12
Inj Data File 002F1903.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 11:58 AM
File Modified 7/10/2017 10:17 AM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 2
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/10/2017 12:09 PM



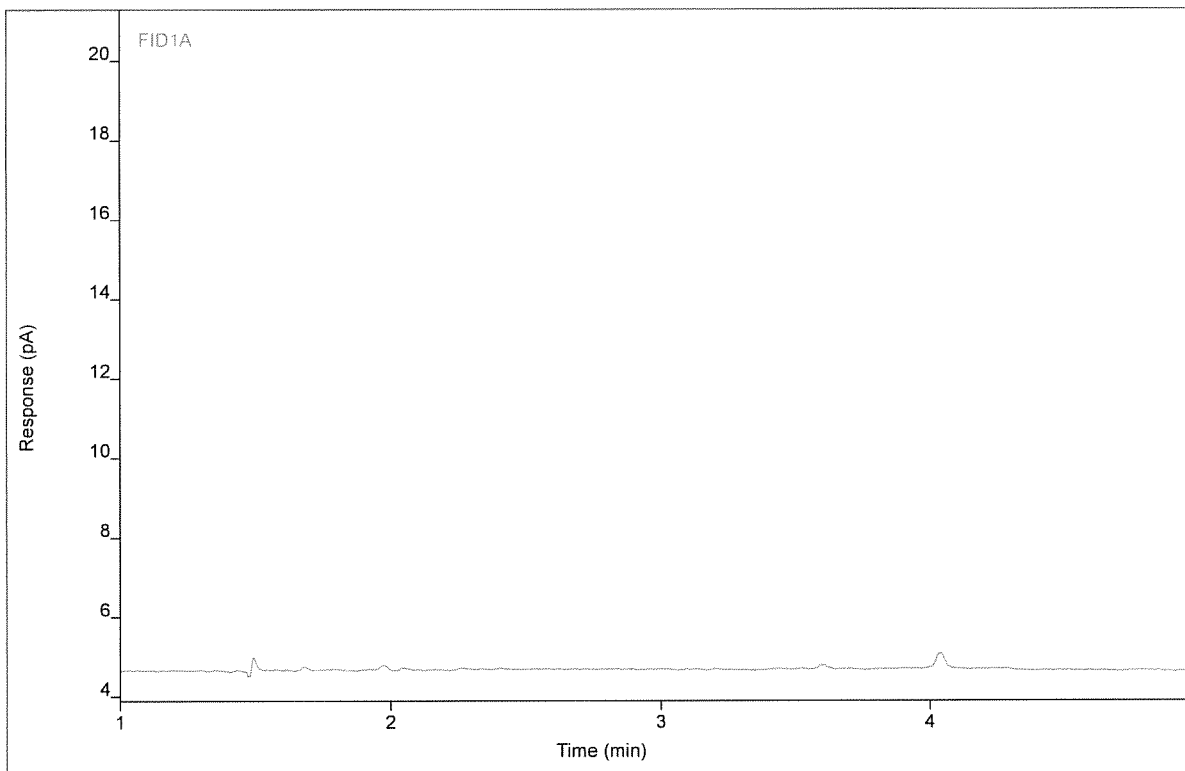
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein		(3.45)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Outlet Primary Run 5.Bag
Sequence Name GUMMOP1049 ver.12
Inj Data File 014F2001.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 12:05 PM
File Modified 7/10/2017 10:17 AM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 14
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/10/2017 12:09 PM



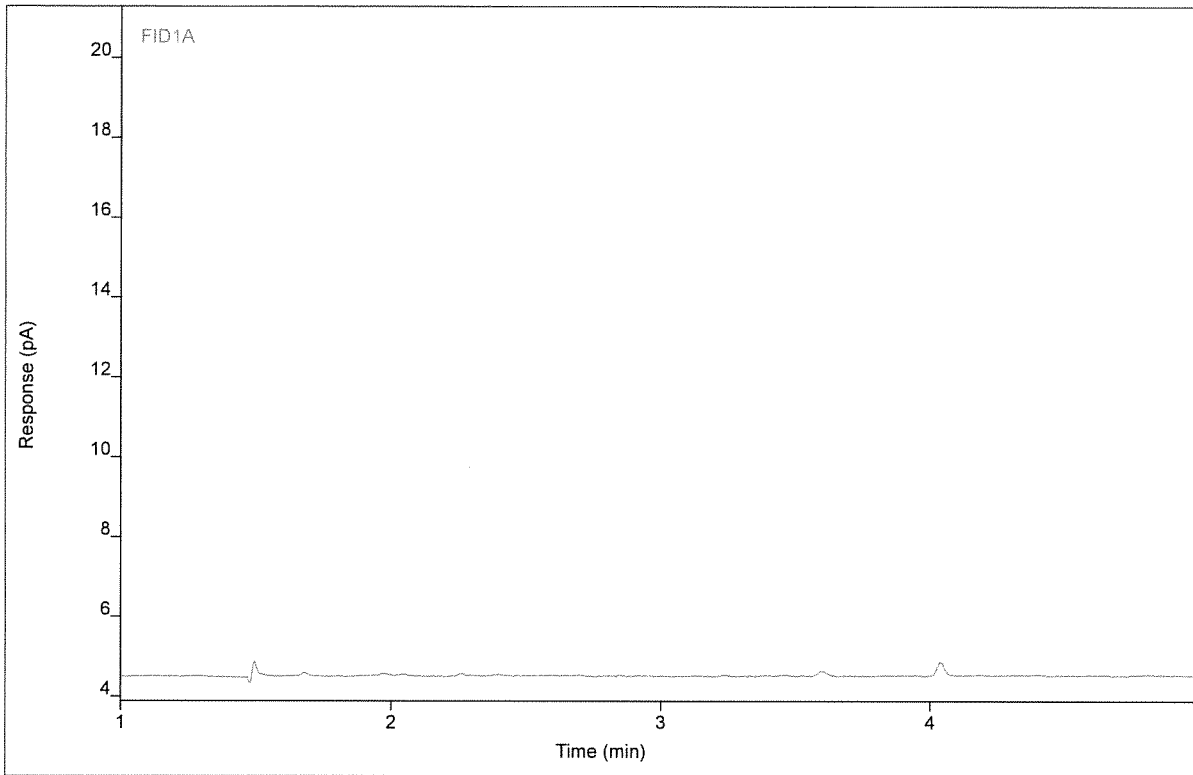
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein		(3.45)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Outlet Primary Run 5.Bag
Sequence Name GUMMOP1049 ver.12
Inj Data File 014F2002.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 12:13 PM
File Modified 7/10/2017 10:17 AM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 14
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/10/2017 12:09 PM



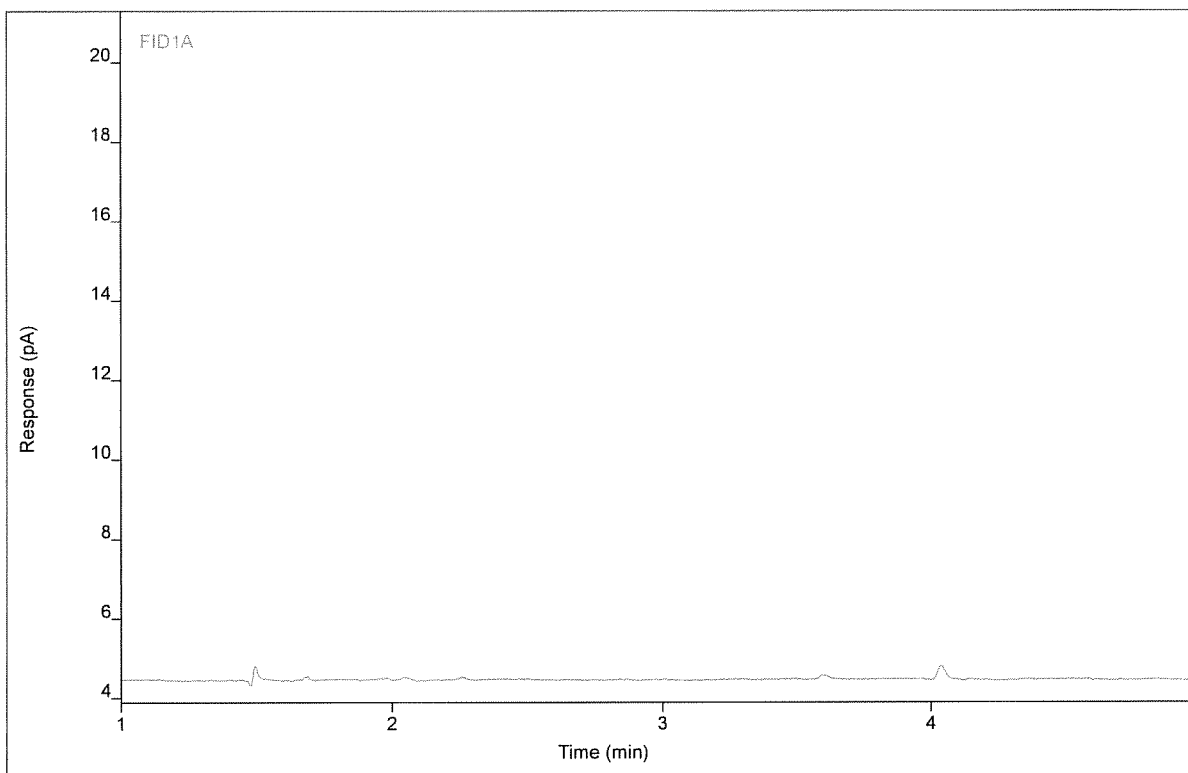
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein		(3.45)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Outlet Primary Run 5.Bag
Sequence Name GUMMOP1049 ver.12
Inj Data File 014F2003.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 12:20 PM
File Modified 7/10/2017 10:17 AM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 14
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/10/2017 12:09 PM



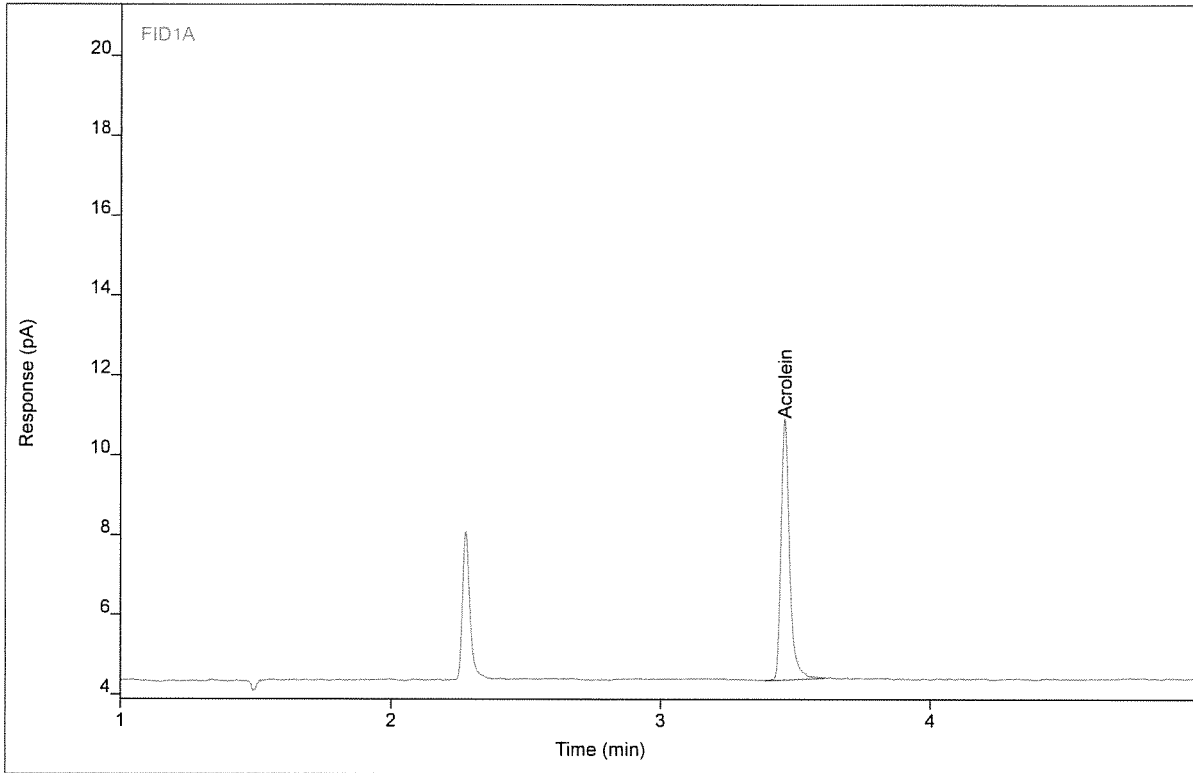
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein		(3.45)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name gummop980 #AA2 ENV(1=800,5=200)
Sequence Name GUMMOP1049 ver.12
Inj Data File 016F2602.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 2:34 PM
File Modified 7/10/2017 10:18 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 2 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/10/2017 12:09 PM



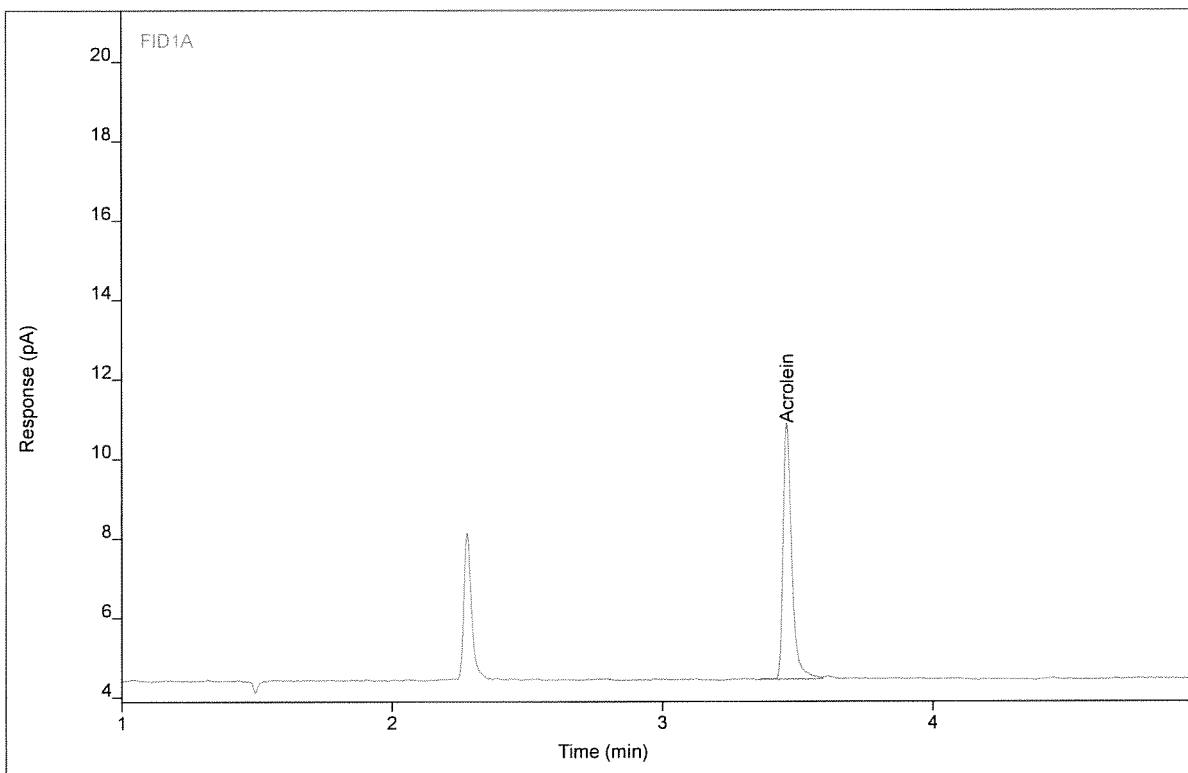
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	VB	3.46	14.7950	6.53296	49.9187	1	49.9187	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop980 #AA2 ENV(1=800,5=200)
Sequence Name GUMMOP1049 ver.12
Inj Data File 016F2603.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 2:52 PM
File Modified 7/10/2017 10:18 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 3 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/10/2017 12:09 PM



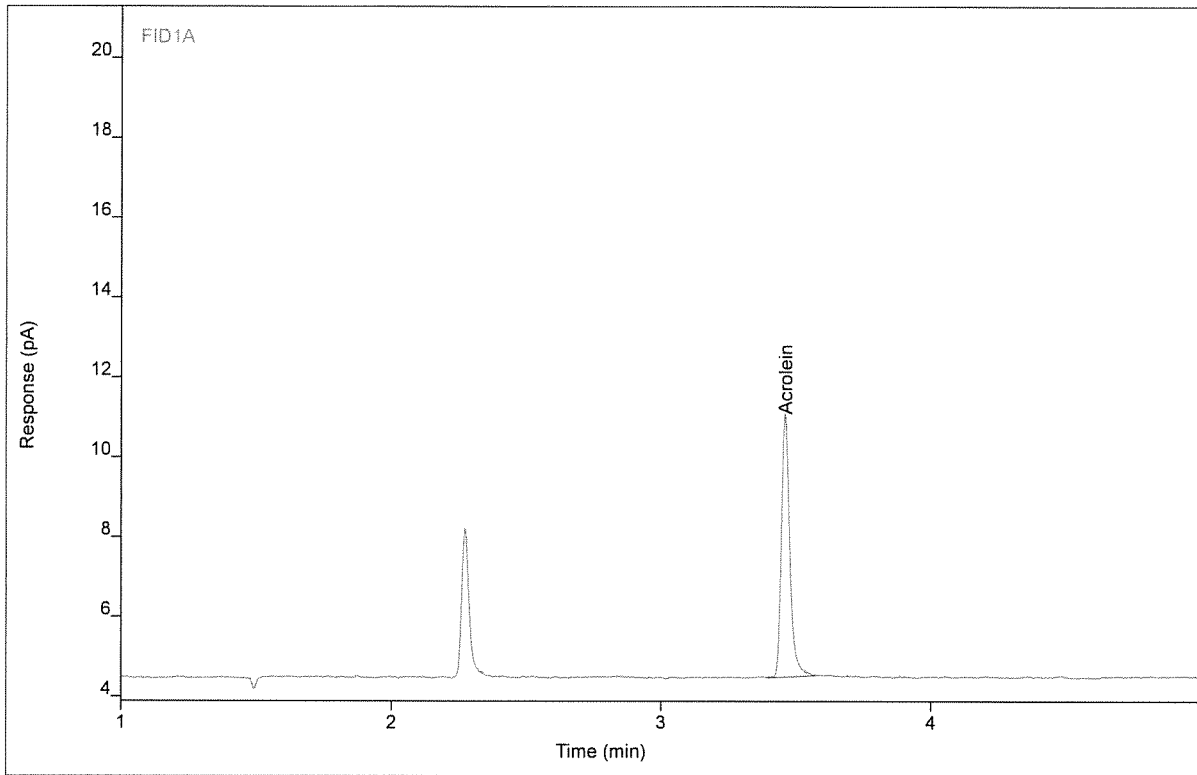
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	BV	3.46	14.5656	6.43699	49.1562	1	49.1562	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop980 #AA2 ENV(1=800,5=200)
Sequence Name GUMMOP1049 ver.12
Inj Data File 016F2604.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 3:10 PM
File Modified 7/10/2017 10:18 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 4 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/10/2017 12:09 PM



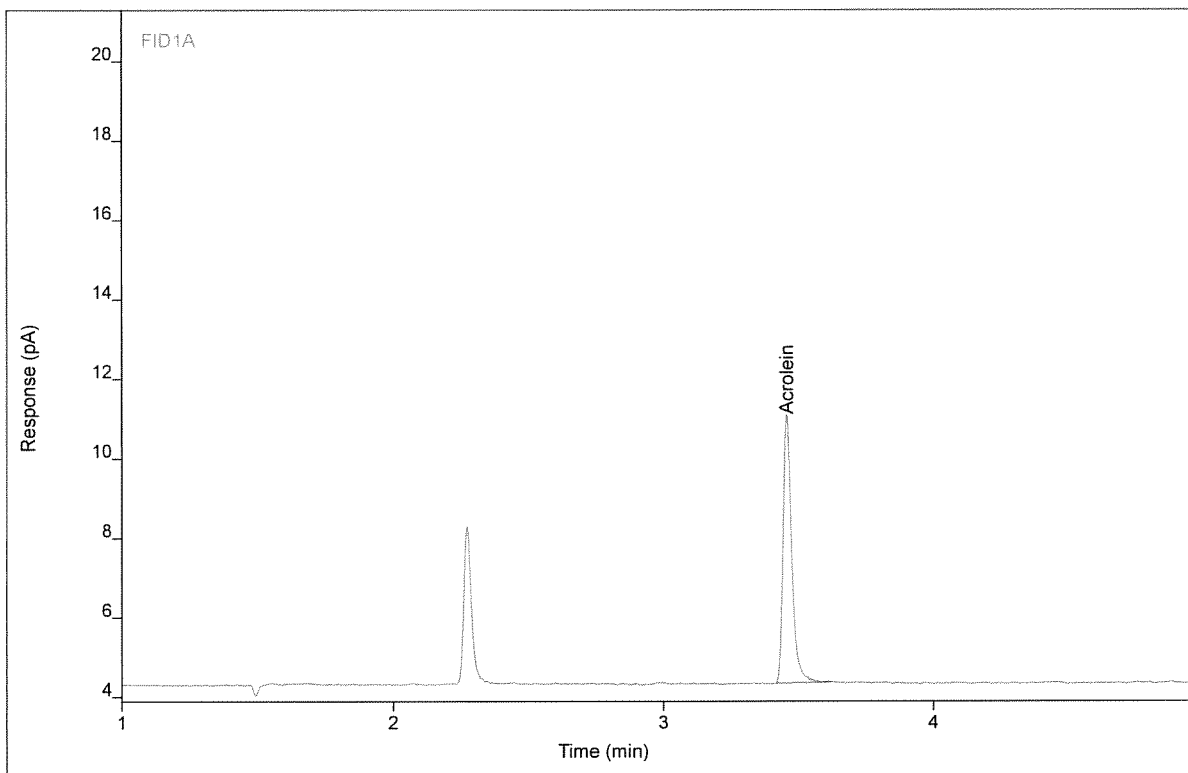
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	VB	3.46	14.5343	6.57804	49.0522	1	49.0522	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop980 #AA2 ENV(1=800,5=200)
Sequence Name GUMMOP1052 ver.5
Inj Data File 016F0902.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/5/2017 1:27 AM
File Modified 7/7/2017 12:24 PM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 2 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/10/2017 12:09 PM



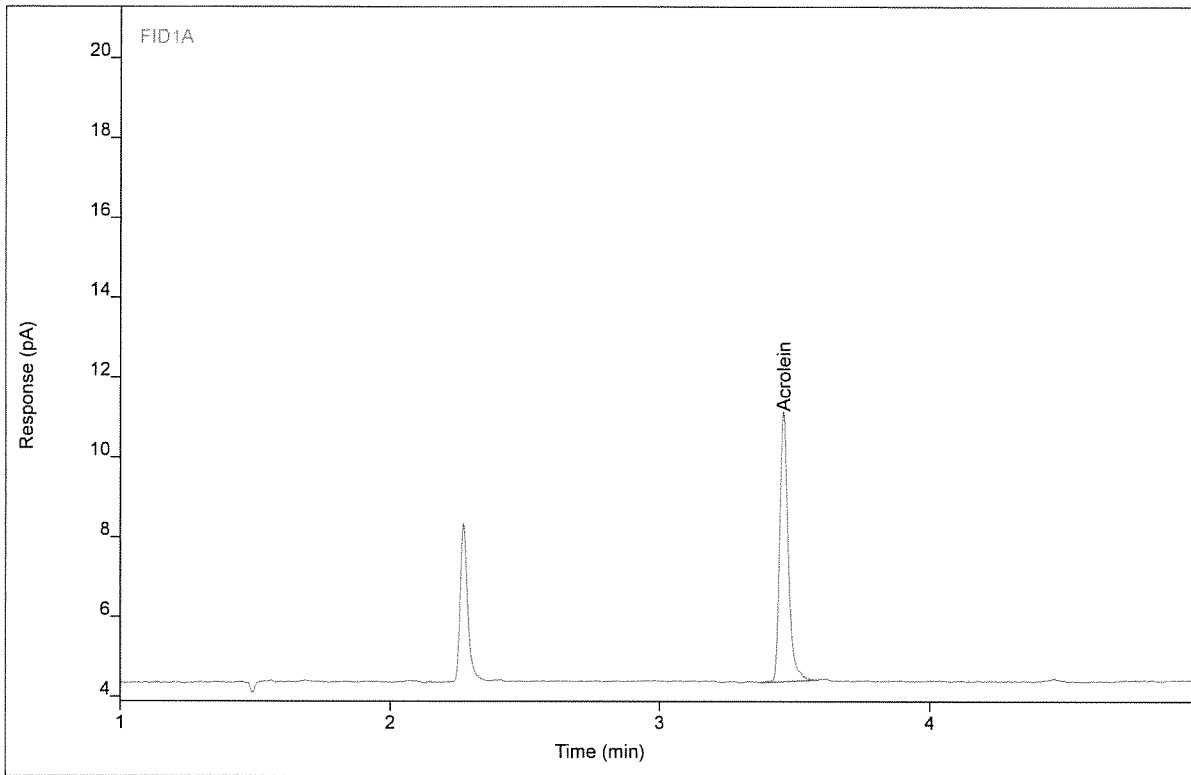
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	BB	3.46	15.0587	6.74937	50.7951	1	50.7951	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop980 #AA2 ENV(1=800,5=200)
Sequence Name GUMMOP1052 ver.5
Inj Data File 016F0903.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/5/2017 1:45 AM
File Modified 7/7/2017 12:24 PM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 3 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/10/2017 12:09 PM



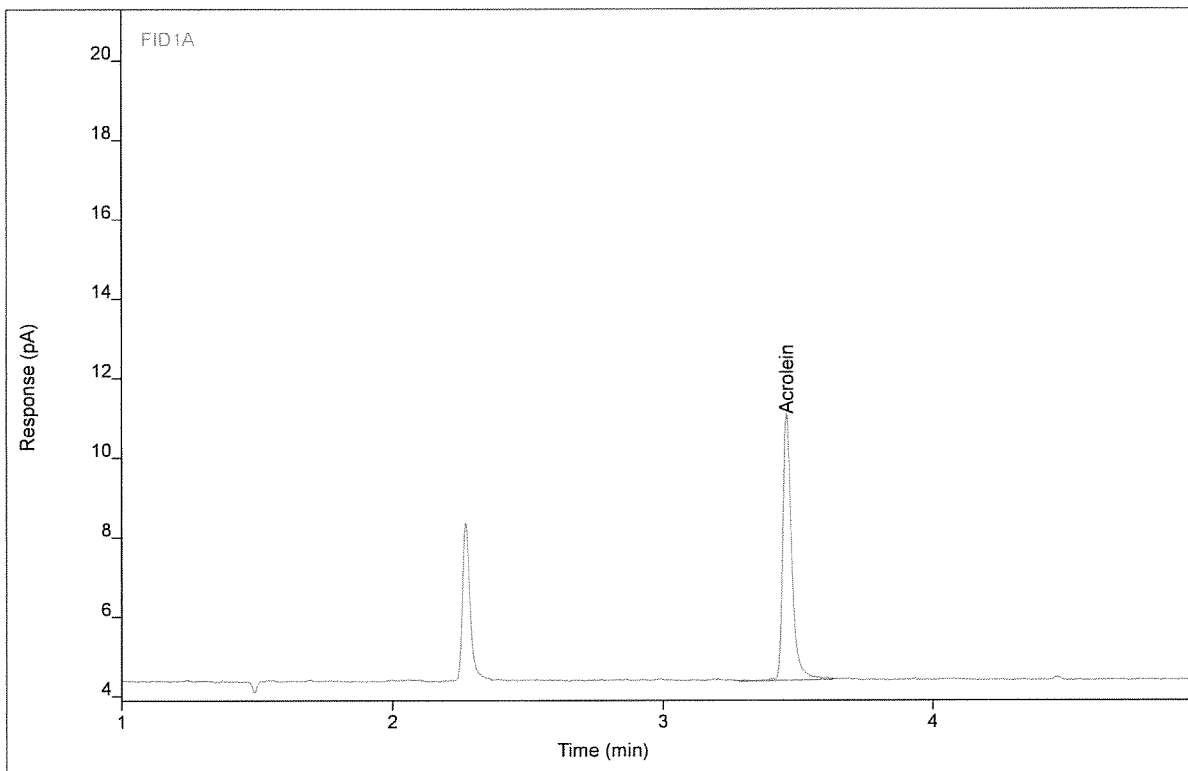
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	VB	3.46	14.9436	6.76442	50.4126	1	50.4126	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop980 #AA2 ENV(1=800,5=200)
Sequence Name GUMMOP1052 ver.5
Inj Data File 016F0904.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/5/2017 2:03 AM
File Modified 7/7/2017 12:24 PM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 4 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/10/2017 12:09 PM



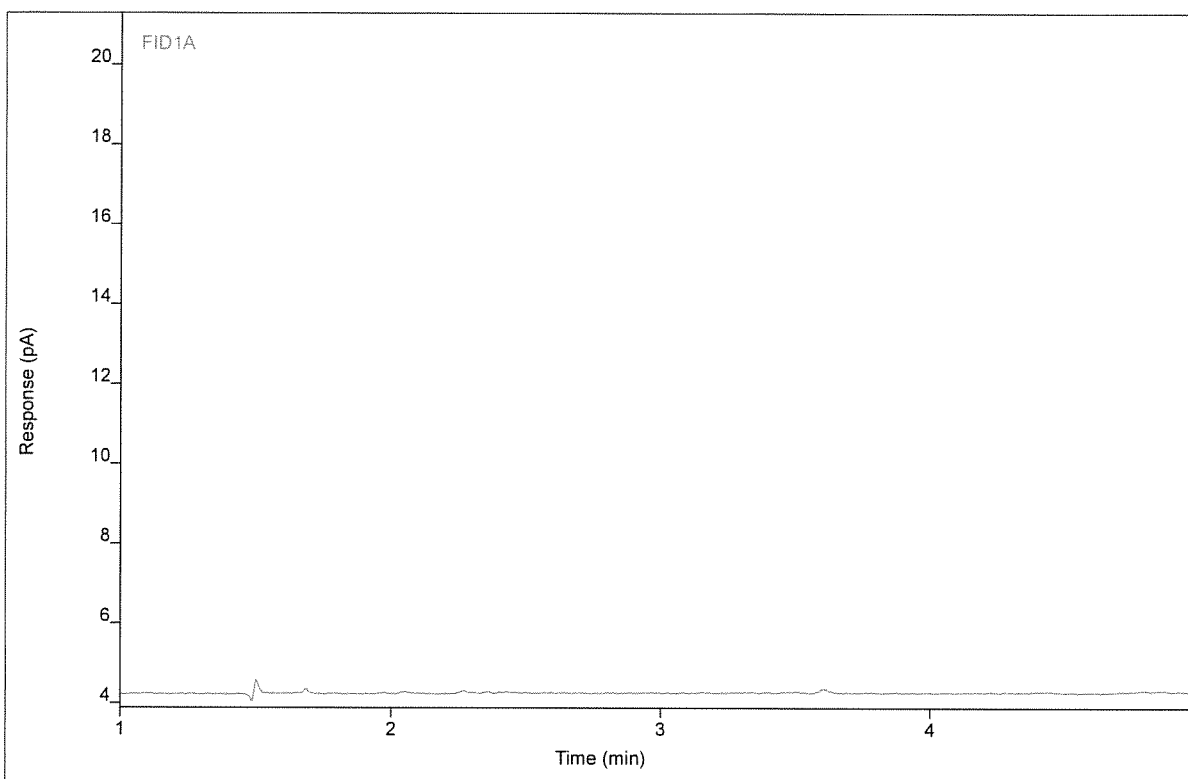
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	VB	3.46	15.3835	6.70231	51.8747	1	51.8747	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Outlet BU Run 3.Bag
Sequence Name GUMMOP1054 ver.3
Inj Data File 002F0101.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/5/2017 8:59 AM
File Modified 7/10/2017 9:16 AM
Instrument
Operator Ben Prothe

Sample Type Sample
Vial Number Vial 2
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/10/2017 12:09 PM



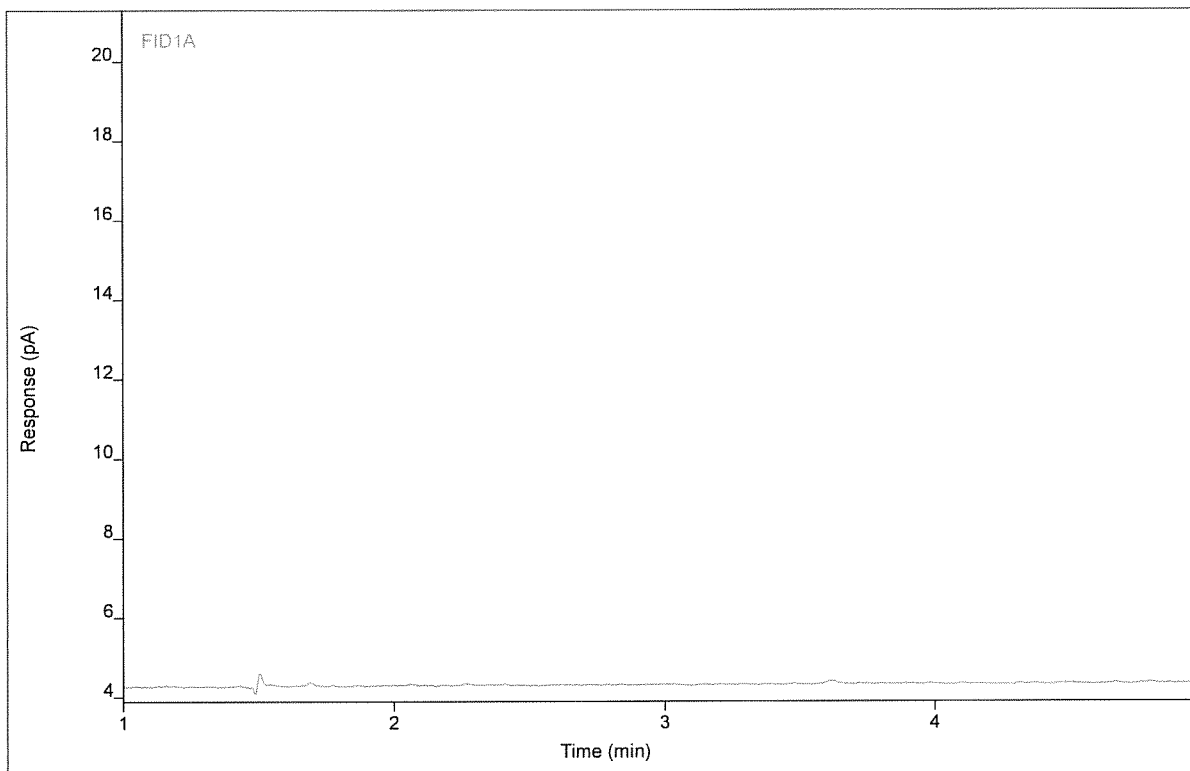
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein		(3.45)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Outlet BU Run 3.Bag
Sequence Name GUMMOP1054 ver.3
Inj Data File 002F0102.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/5/2017 9:15 AM
File Modified 7/10/2017 9:16 AM
Instrument
Operator Ben Prothe

Sample Type Sample
Vial Number Vial 2
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/10/2017 12:09 PM



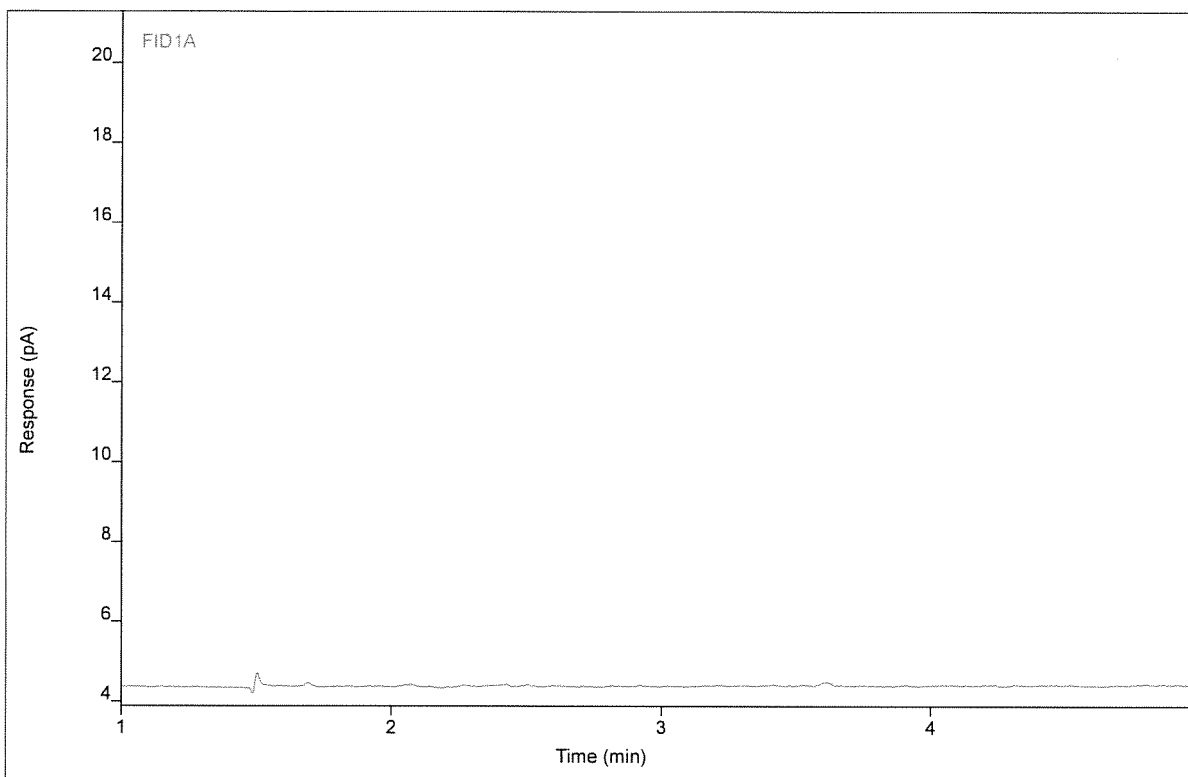
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein		(3.45)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Outlet BU Run 3.Bag
Sequence Name GUMMOP1054 ver.3
Inj Data File 002F0103.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/5/2017 9:31 AM
File Modified 7/10/2017 9:16 AM
Instrument
Operator Ben Prothe

Sample Type Sample
Vial Number Vial 2
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/10/2017 12:09 PM



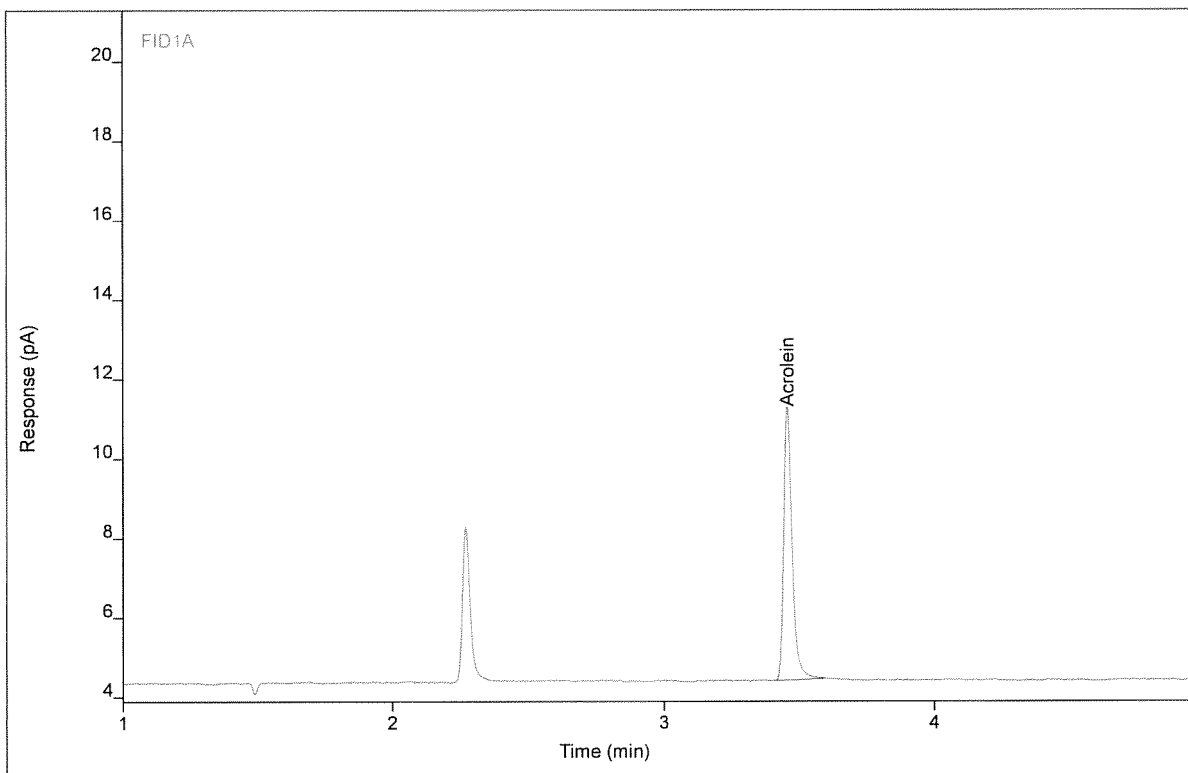
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein		(3.45)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop980 #AA2 ENV(1=800,5=200)
Sequence Name GUMMOP1054 ver.3
Inj Data File 016F1702.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/6/2017 1:29 AM
File Modified 7/10/2017 9:17 AM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 2 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/10/2017 12:09 PM



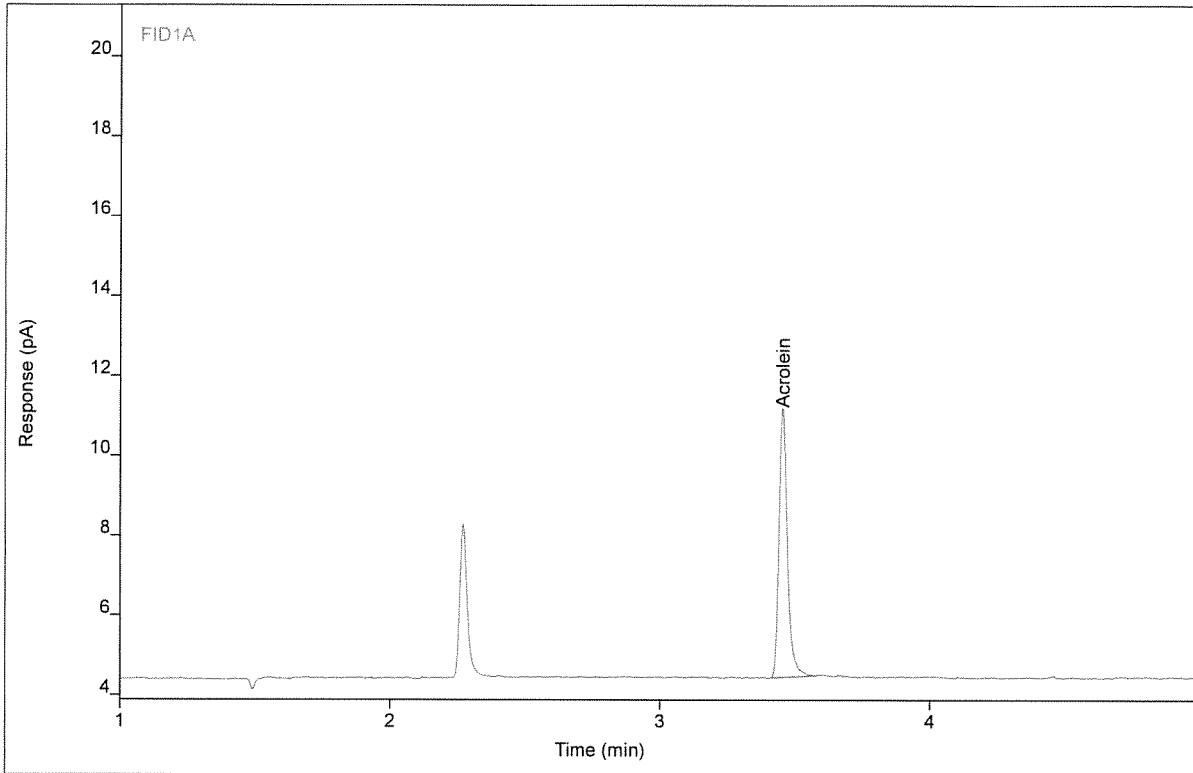
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	BB	3.46	15.2058	6.86471	51.2840	1	51.2840	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop980 #AA2 ENV(1=800,5=200)
Sequence Name GUMMOP1054 ver.3
Inj Data File 016F1703.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/6/2017 1:47 AM
File Modified 7/10/2017 9:17 AM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 3 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/10/2017 12:09 PM



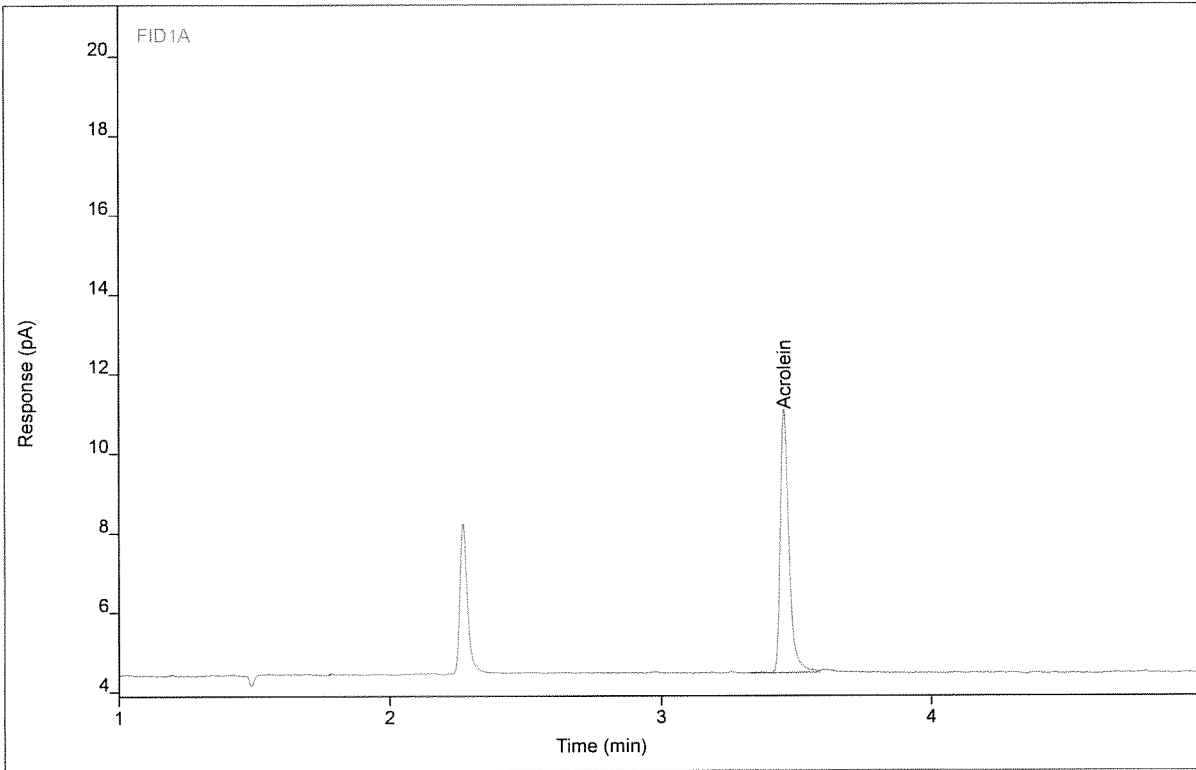
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	BB	3.46	14.8811	6.73838	50.2049	1	50.2049	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop980 #AA2 ENV(1=800,5=200)
Sequence Name GUMMOP1054 ver.3
Inj Data File 016F1704.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/6/2017 2:05 AM
File Modified 7/10/2017 9:18 AM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 4 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 7/10/2017 12:09 PM



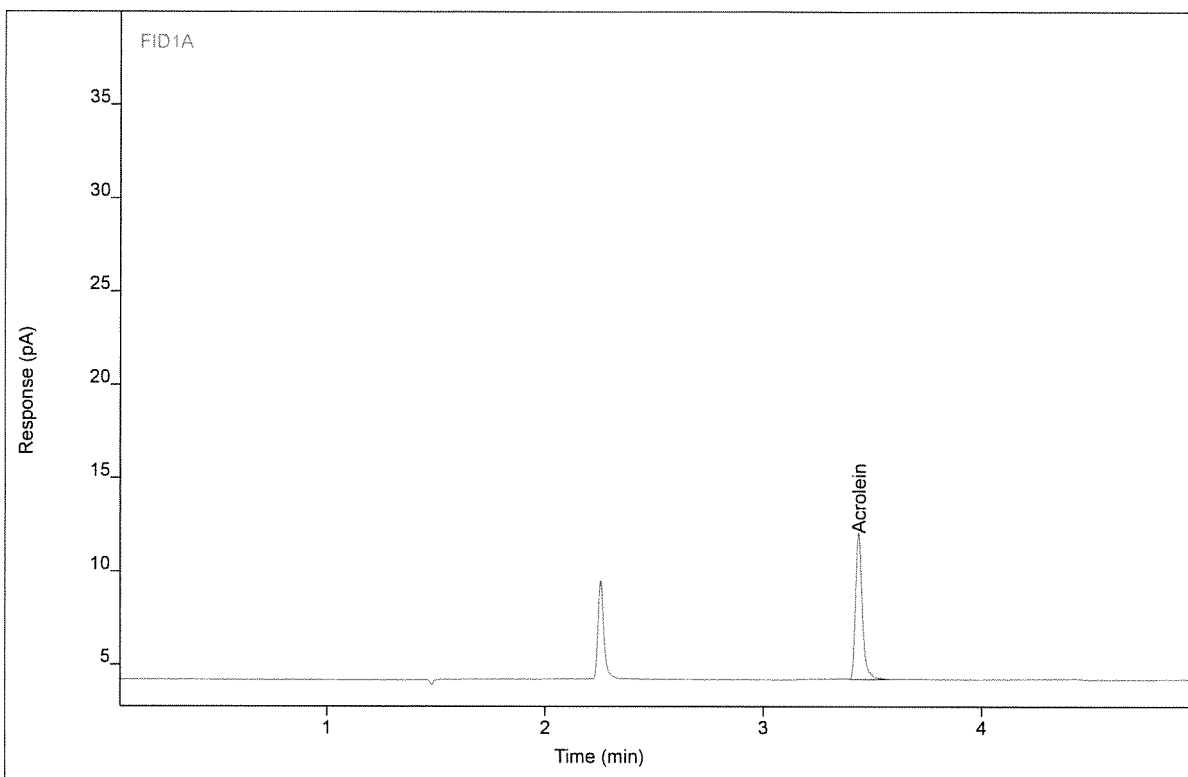
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	VV	3.45	14.9184	6.62437	50.3286	1	50.3286	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop1075 #AA2 ENV(1=800,5=200)
Sequence Name GUMMOP1079 ver.3
Inj Data File 016F0902.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/28/2017 2:31 AM
File Modified 8/1/2017 7:36 AM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 2 of 4
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP1075F_AA.M
Method Modified 7/31/2017 10:07 AM
Printed 8/4/2017 6:09 AM



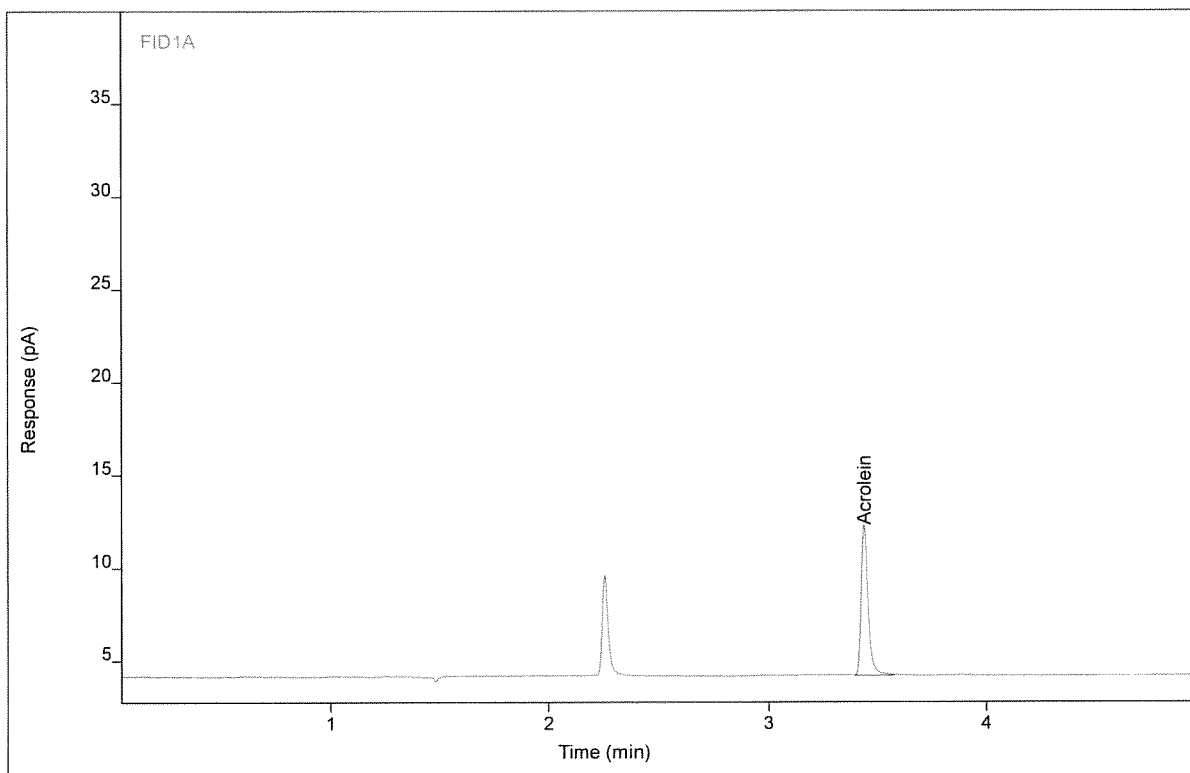
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	BB	3.44	17.3200	7.86282	45.0623	1	45.0623	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop1075 #AA2 ENV(1=800,5=200)
Sequence Name GUMMOP1079 ver.3
Inj Data File 016F0903.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/28/2017 2:40 AM
File Modified 8/1/2017 7:36 AM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 3 of 4
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP1075F_AA.M
Method Modified 7/31/2017 10:07 AM
Printed 8/4/2017 6:09 AM



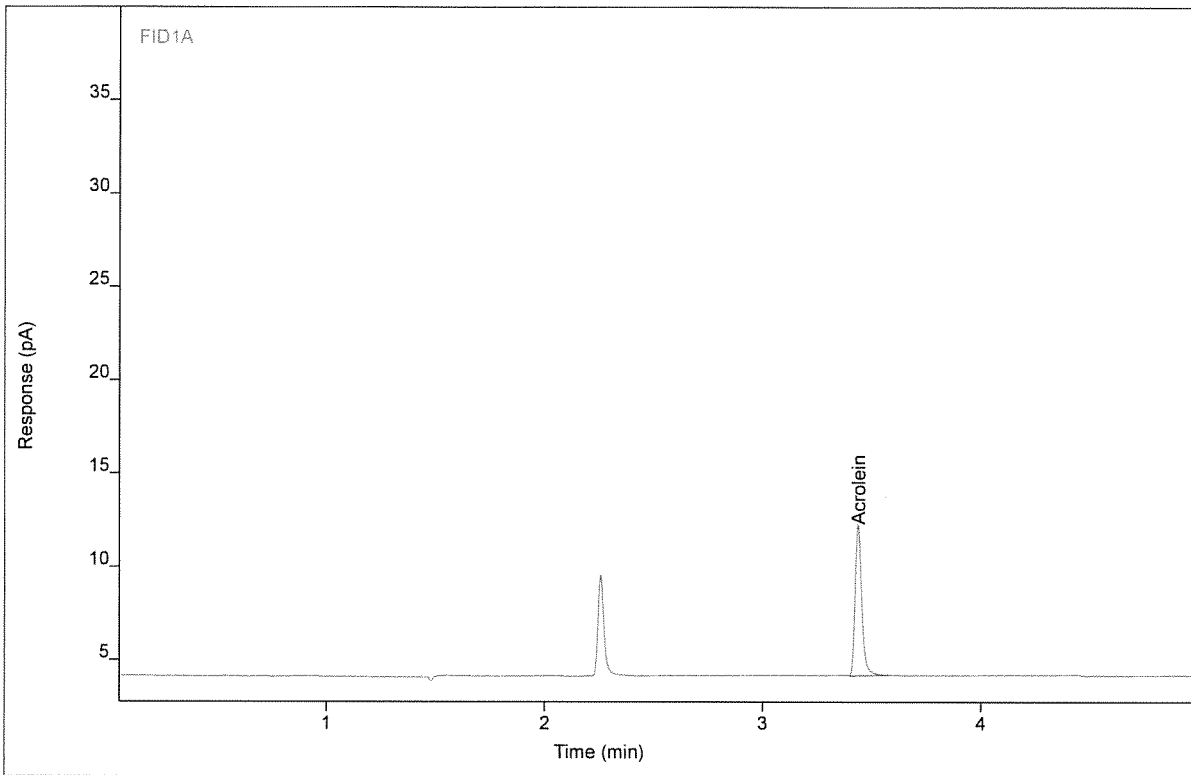
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	BV	3.44	17.9998	8.12455	46.8360	1	46.8360	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop1075 #AA2 ENV(1=800,5=200)
Sequence Name GUMMOP1079 ver.3
Inj Data File 016F0904.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/28/2017 2:50 AM
File Modified 8/1/2017 7:36 AM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 4 of 4
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP1075F_AA.M
Method Modified 7/31/2017 10:07 AM
Printed 8/4/2017 6:09 AM



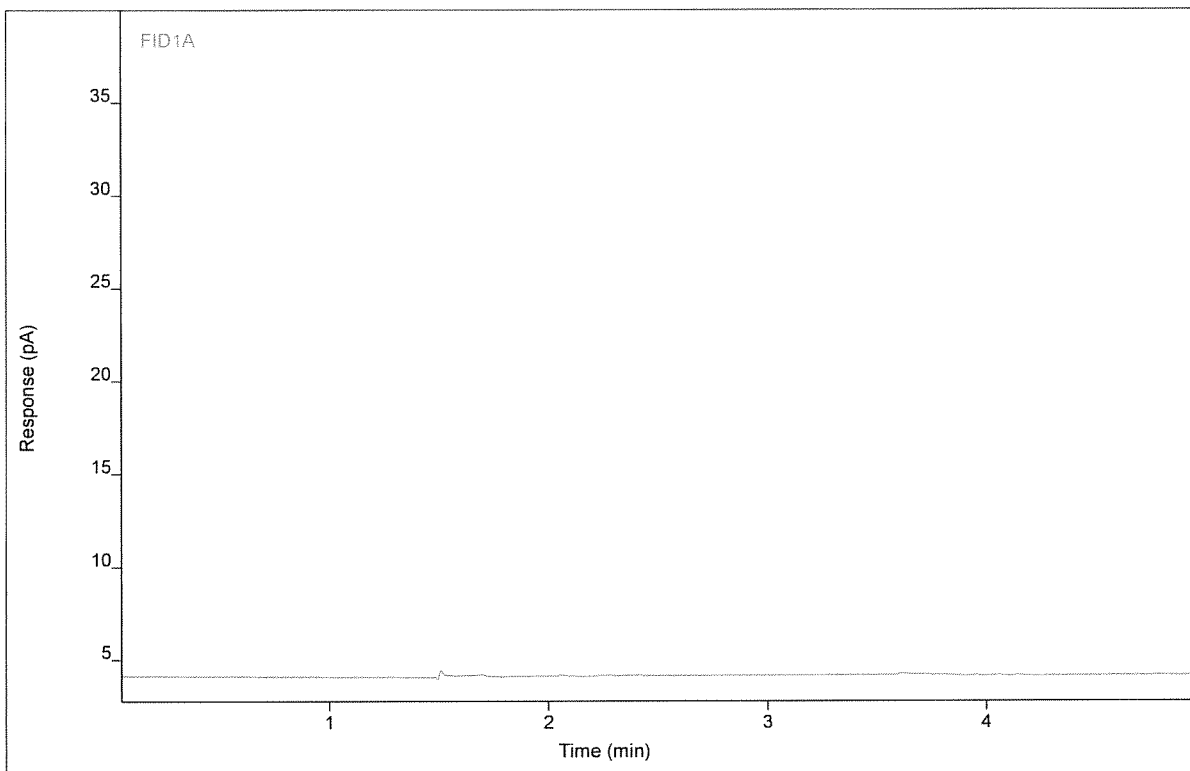
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	BB	3.44	17.6263	8.10806	45.8615	1	45.8615	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Outlet Pr Run4 BL.Bag
Sequence Name GUMMOP1080 ver.6
Inj Data File 013F0901.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/28/2017 1:43 PM
File Modified 7/29/2017 9:52 AM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 13
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1075F_AA.M
Method Modified 7/26/2017 12:22 PM
Printed 8/4/2017 6:09 AM



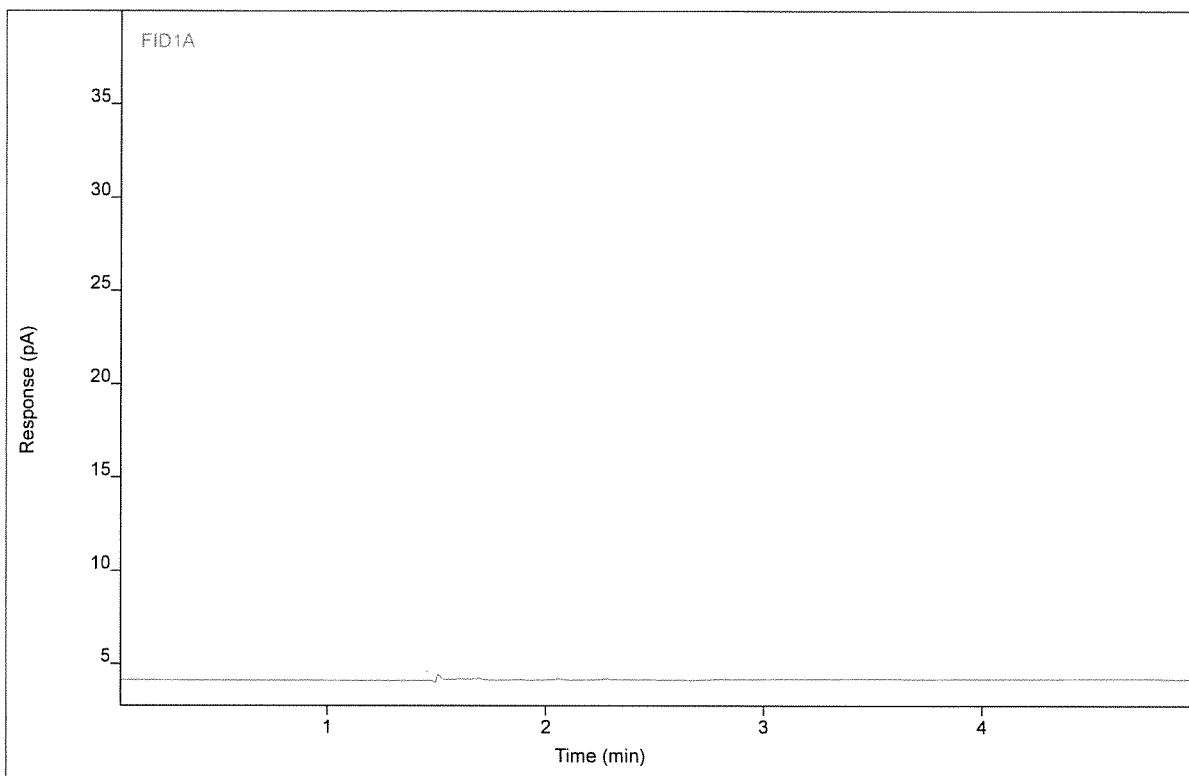
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein		(3.44)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Outlet Pr Run4 BL.Bag
Sequence Name GUMMOP1080 ver.6
Inj Data File 013F0902.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/28/2017 1:59 PM
File Modified 7/29/2017 9:52 AM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 13
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1075F_AA.M
Method Modified 7/26/2017 12:22 PM
Printed 8/4/2017 6:09 AM



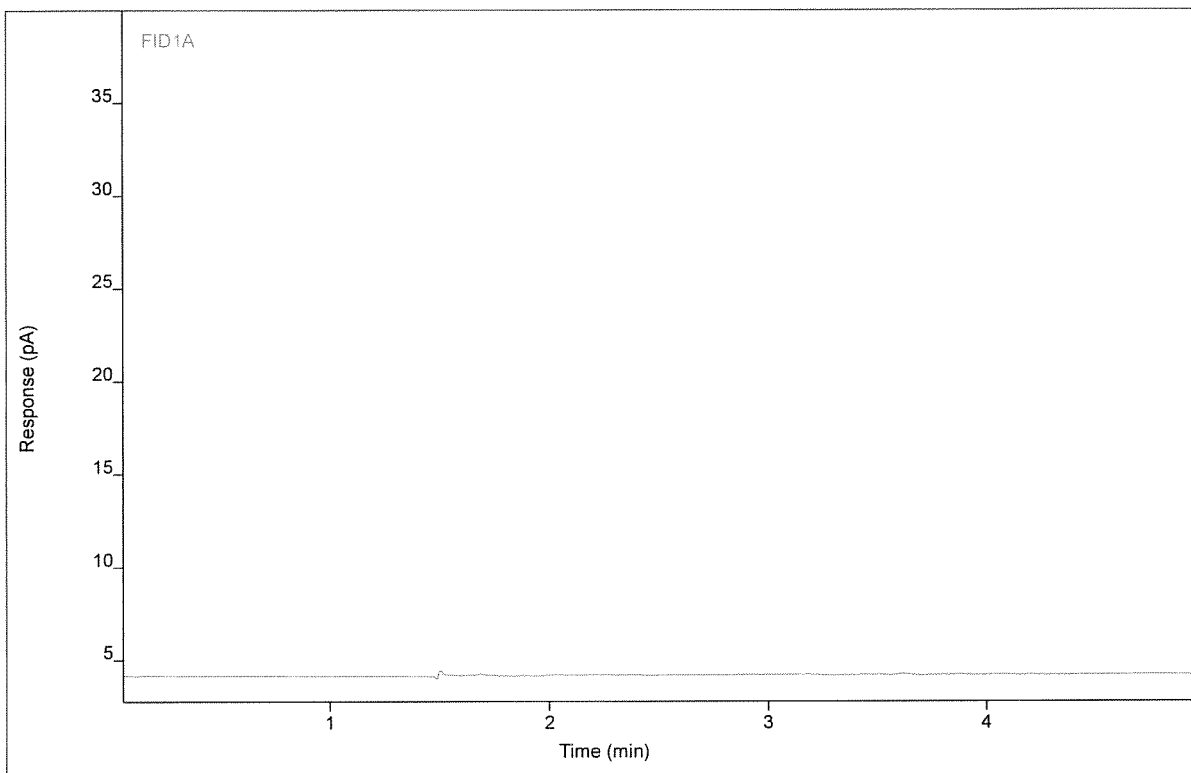
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein		(3.44)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Outlet Pr Run4 BL.Bag
Sequence Name GUMMOP1080 ver.6
Inj Data File 013F0903.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/28/2017 2:15 PM
File Modified 7/29/2017 9:52 AM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 13
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1075F_AA.M
Method Modified 7/26/2017 12:22 PM
Printed 8/4/2017 6:09 AM



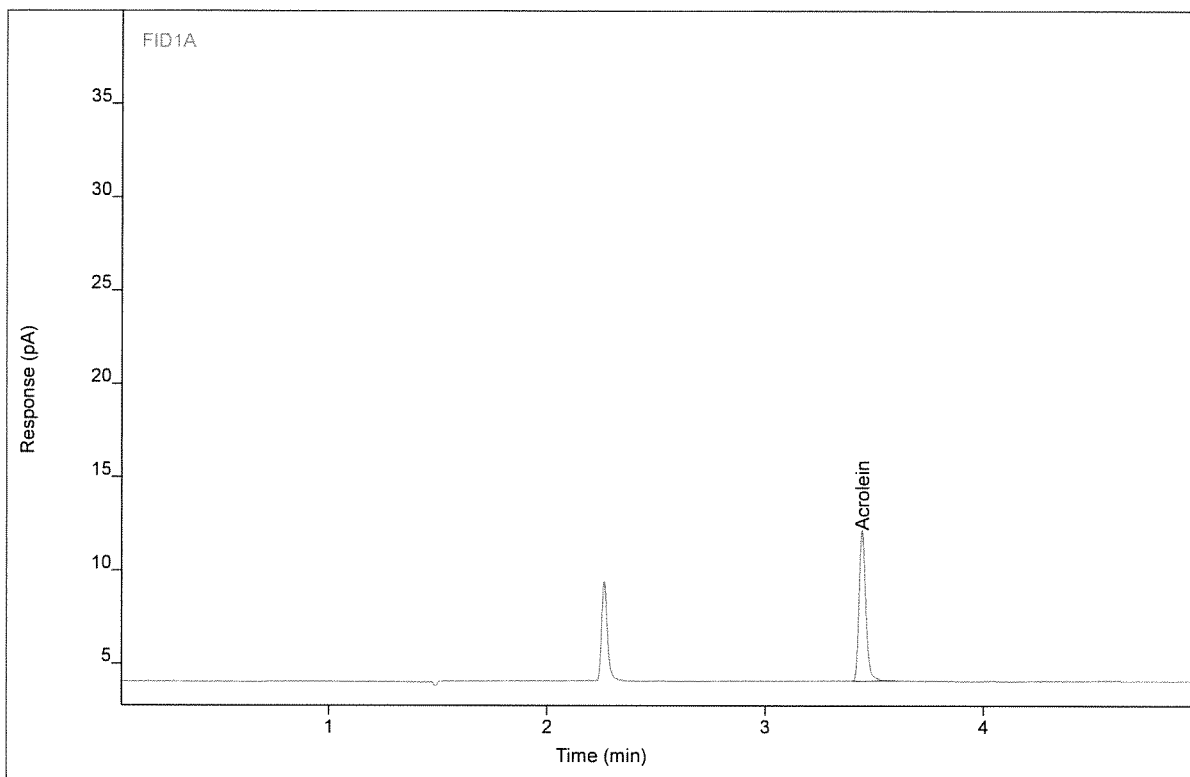
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein		(3.44)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name gummop980 #AA2 ENV(1=800,5=200)
Sequence Name GUMMOP1080 ver.6
Inj Data File 016F1502.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/29/2017 2:01 AM
File Modified 7/29/2017 9:53 AM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 2 of 4
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP1075F_AA.M
Method Modified 7/26/2017 12:22 PM
Printed 8/4/2017 6:09 AM



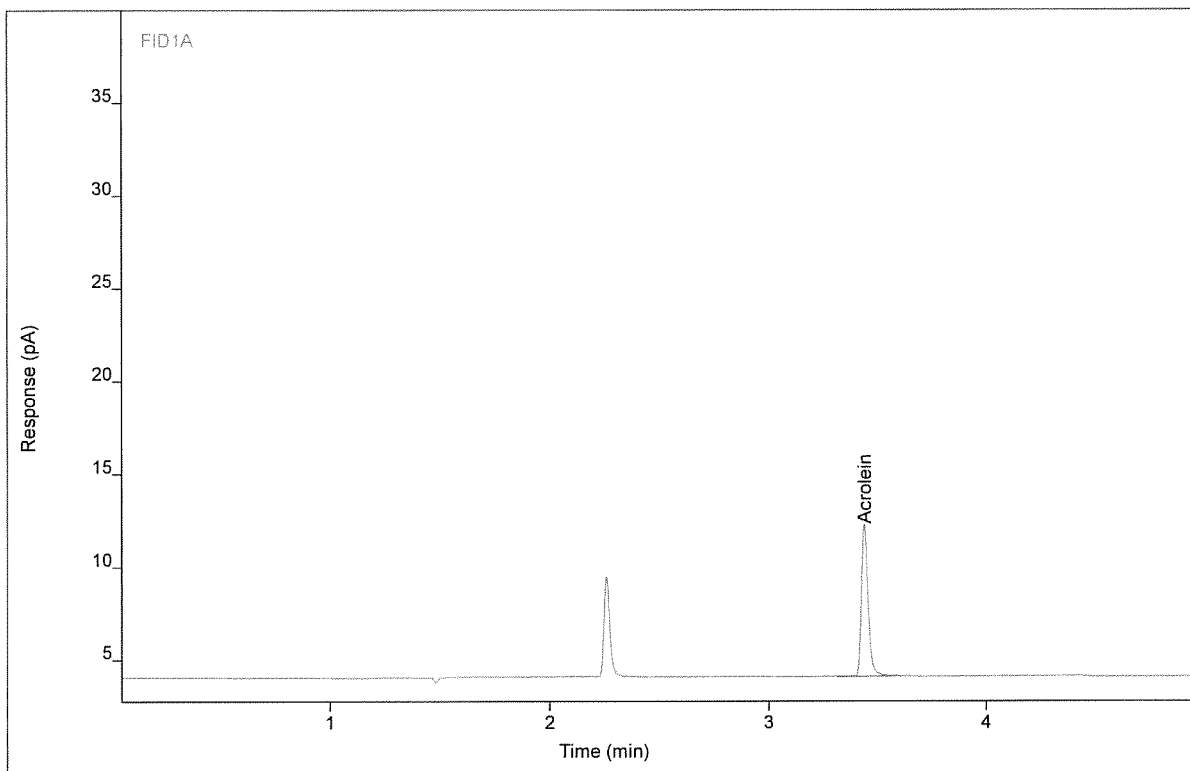
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	BB	3.45	17.4594	8.08217	45.3704	1	45.3704	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop980 #AA2 ENV(1=800,5=200)
Sequence Name GUMMOP1080 ver.6
Inj Data File 016F1503.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/29/2017 2:10 AM
File Modified 7/29/2017 9:53 AM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 3 of 4
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP1075F_AA.M
Method Modified 7/26/2017 12:22 PM
Printed 8/4/2017 6:09 AM



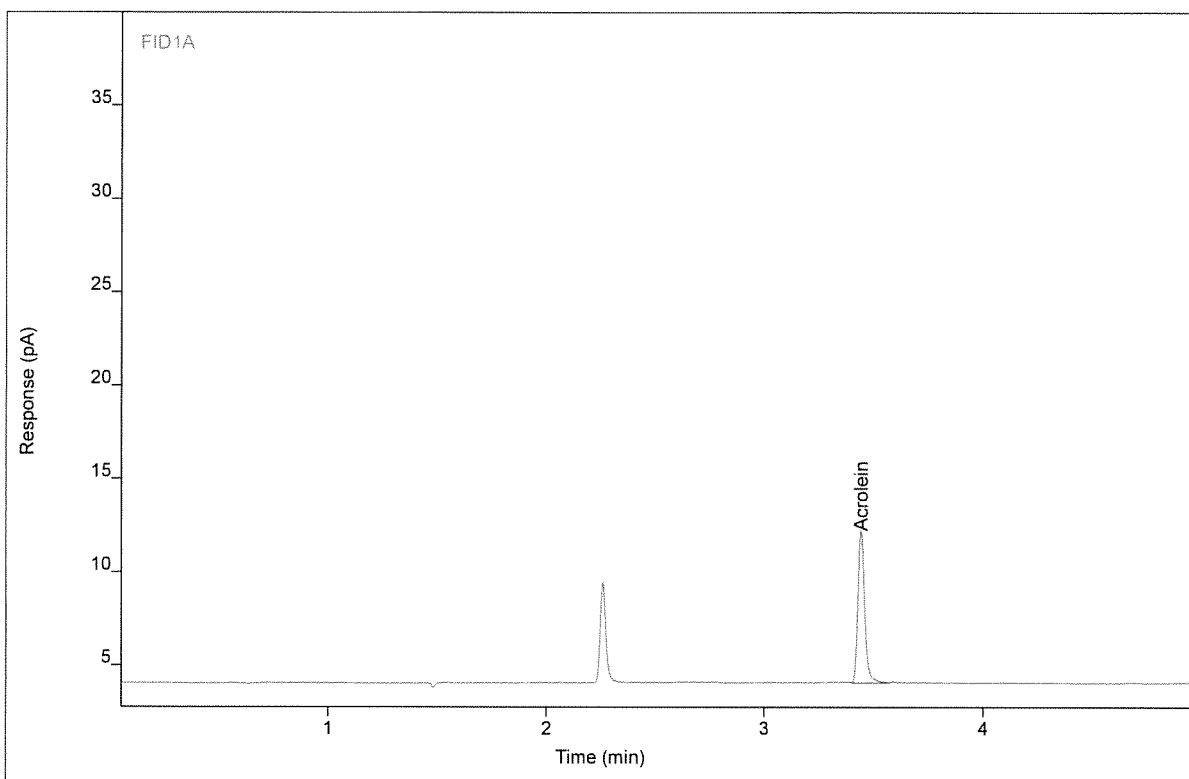
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	VB	3.45	17.8052	8.21194	46.2716	1	46.2716	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop980 #AA2 ENV(1=800,5=200)
Sequence Name GUMMOP1080 ver.6
Inj Data File 016F1504.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/29/2017 2:22 AM
File Modified 7/29/2017 9:53 AM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 4 of 4
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP1075F_AA.M
Method Modified 7/26/2017 12:22 PM
Printed 8/4/2017 6:09 AM



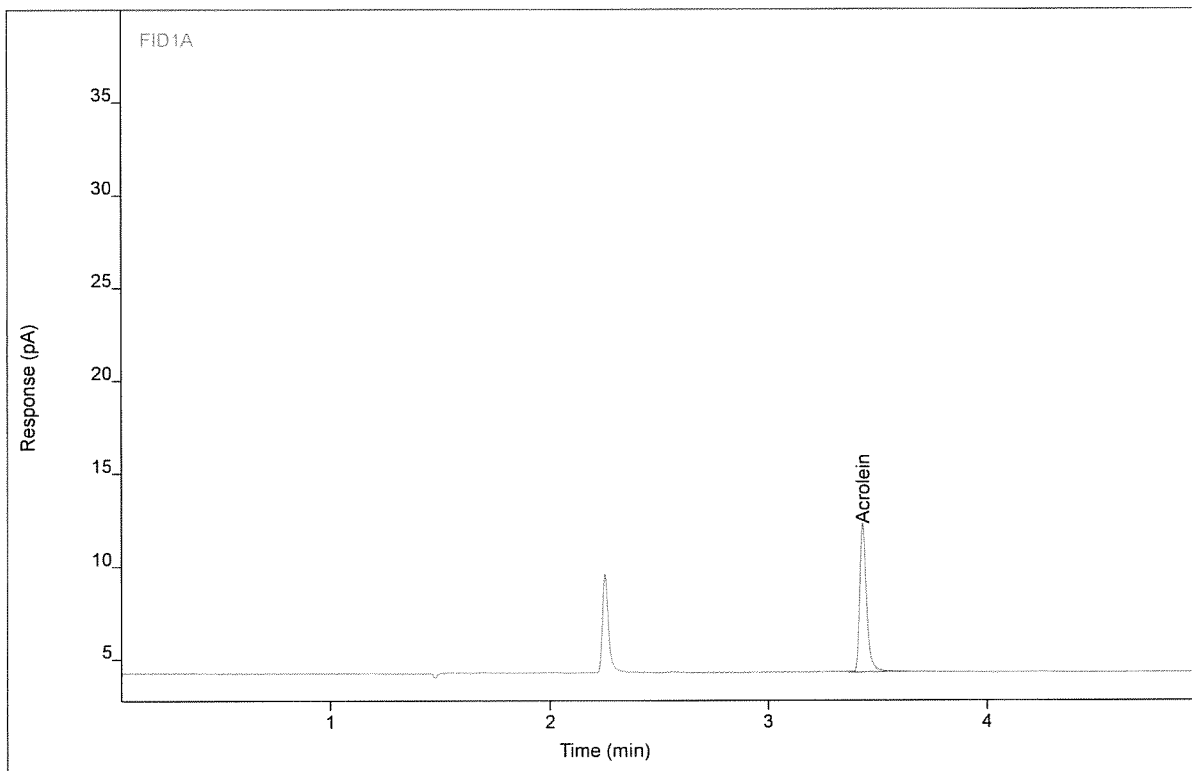
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	BV	3.45	17.7540	8.17030	46.1382	1	46.1382	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop1075 #AA2 ENV(1=800,5=200)
Sequence Name GUMMOP1089 ver.2
Inj Data File 016F0602.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 8/3/2017 10:29 AM
File Modified 8/3/2017 3:29 PM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 2 of 4
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP1075F_AA.M
Method Modified 8/1/2017 7:36 AM
Printed 8/4/2017 6:09 AM



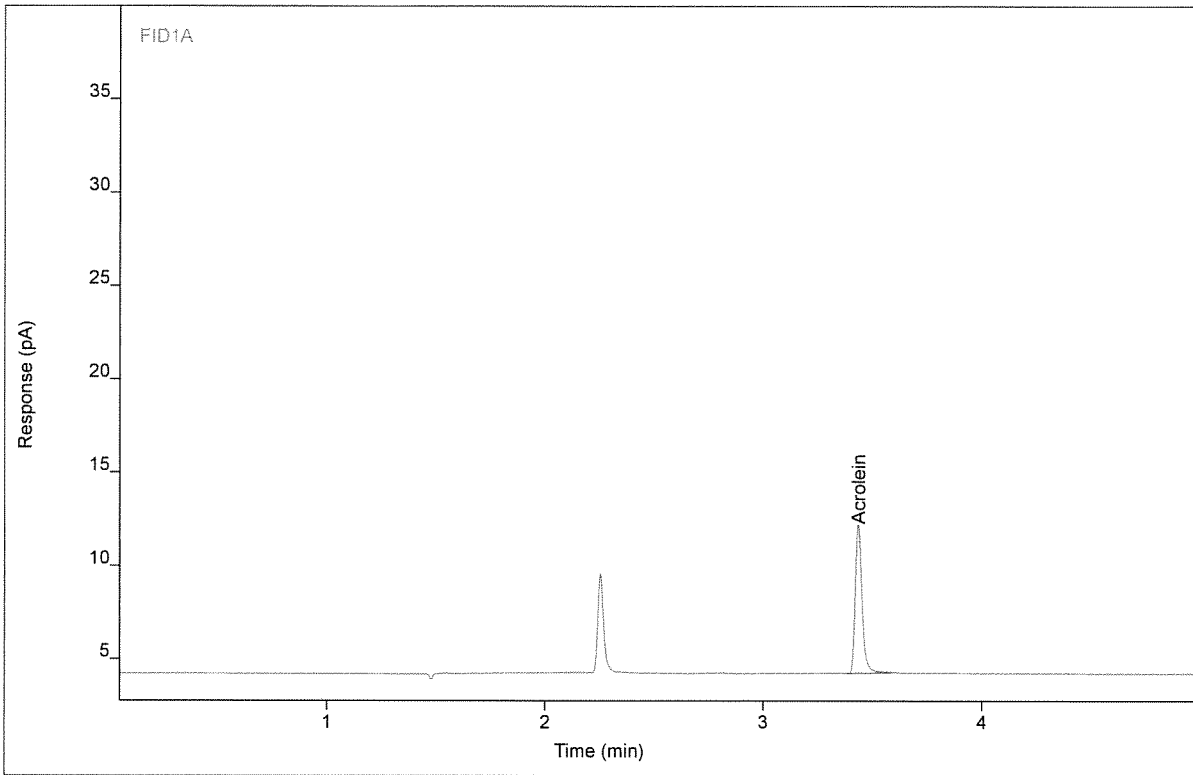
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	VB	3.44	17.6785	8.00184	45.9979	1	45.9979	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop1075 #AA2 ENV(1=800,5=200)
Sequence Name GUMMOP1089 ver.2
Inj Data File 016F0603.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 8/3/2017 10:39 AM
File Modified 8/3/2017 3:29 PM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 3 of 4
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP1075F_AA.M
Method Modified 8/1/2017 7:36 AM
Printed 8/4/2017 6:09 AM



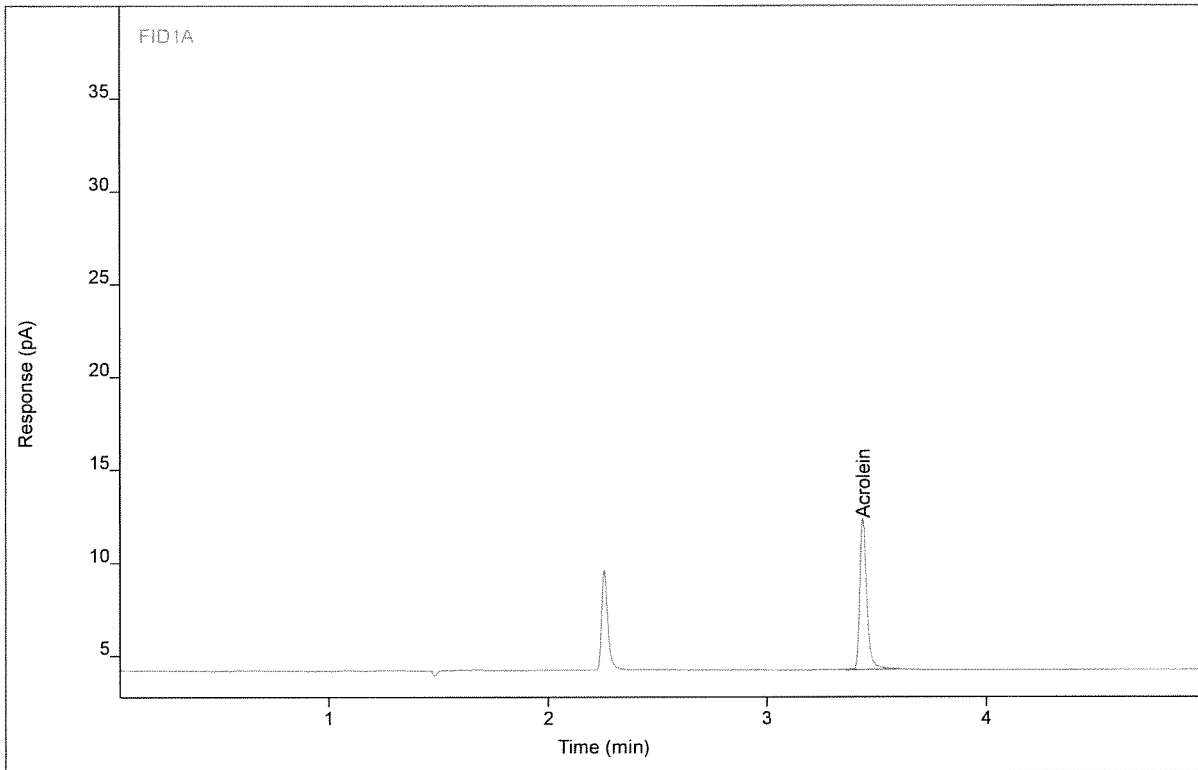
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	BB	3.44	17.5755	8.01379	45.7291	1	45.7291	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop1075 #AA2 ENV(1=800,5=200)
Sequence Name GUMMOP1089 ver.2
Inj Data File 016F0604.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 8/3/2017 10:49 AM
File Modified 8/3/2017 3:29 PM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 4 of 4
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP1075F_AA.M
Method Modified 8/1/2017 7:36 AM
Printed 8/4/2017 6:09 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	VB	3.44	17.9884	8.15197	46.8065	1	46.8065	ppm

Analyst Peak Integration Comments

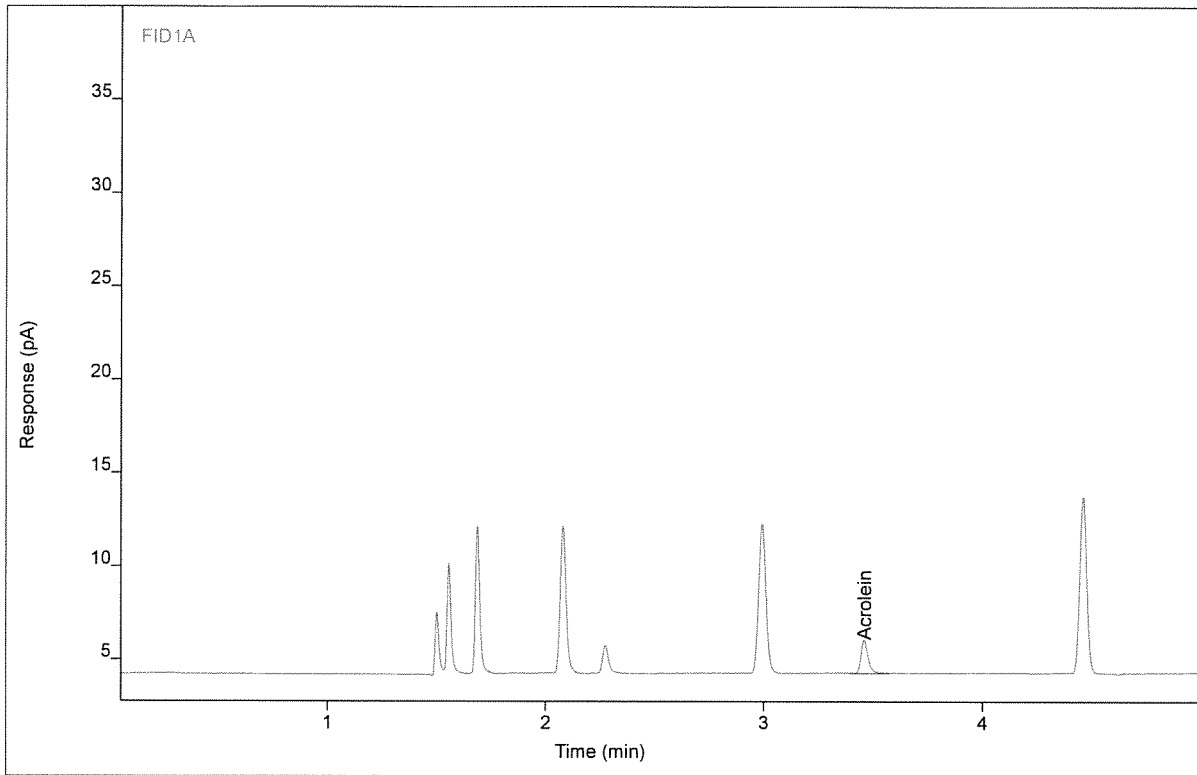
11:02:30 08/03/17 Justin Guenzler II

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Outlet Pr Run4 BL SP.Bag
Sequence Name GUMMOP1089 ver.2
Inj Data File 013F0801.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 8/3/2017 11:52 AM
File Modified 8/3/2017 3:30 PM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 13
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1075F_AA.M
Method Modified 8/1/2017 7:36 AM
Printed 8/4/2017 6:09 AM



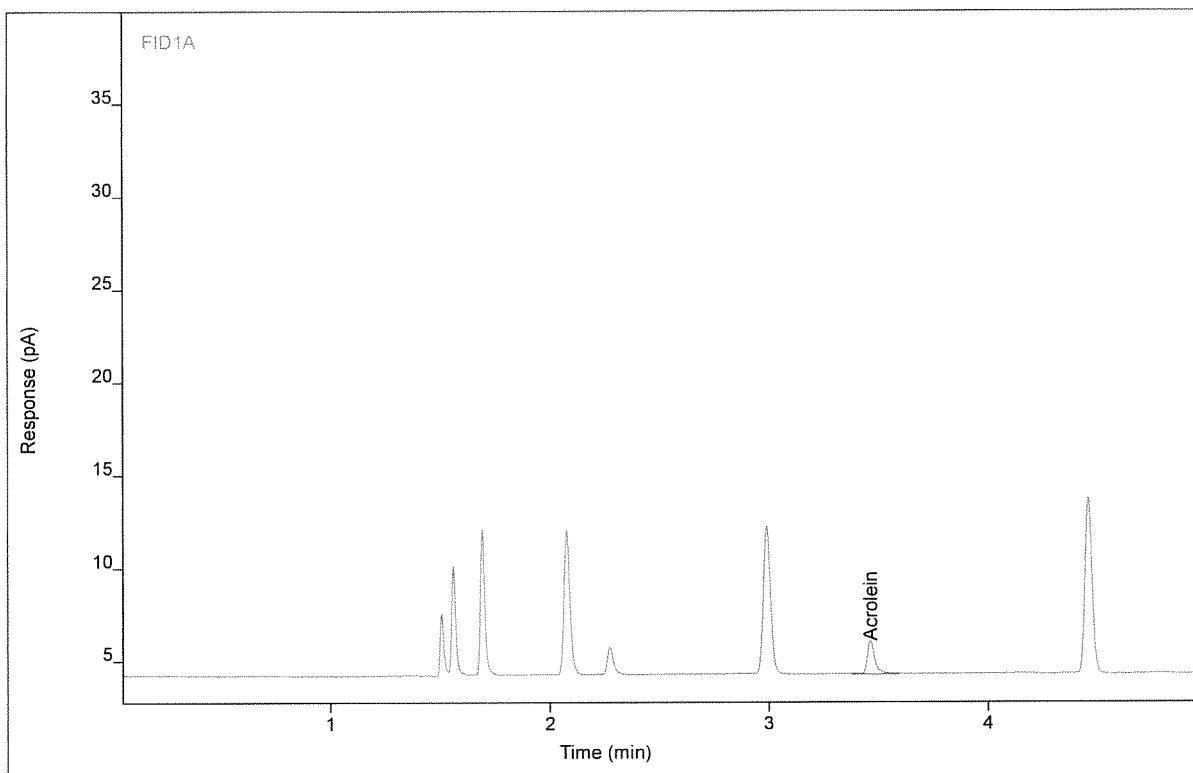
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	BB	3.46	4.16048	1.82099	10.7272	1	10.7272	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Outlet Pr Run4 BL SP.Bag
Sequence Name GUMMOP1089 ver.2
Inj Data File 013F0802.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 8/3/2017 12:08 PM
File Modified 8/3/2017 3:30 PM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 13
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1075F_AA.M
Method Modified 8/1/2017 7:36 AM
Printed 8/4/2017 6:09 AM



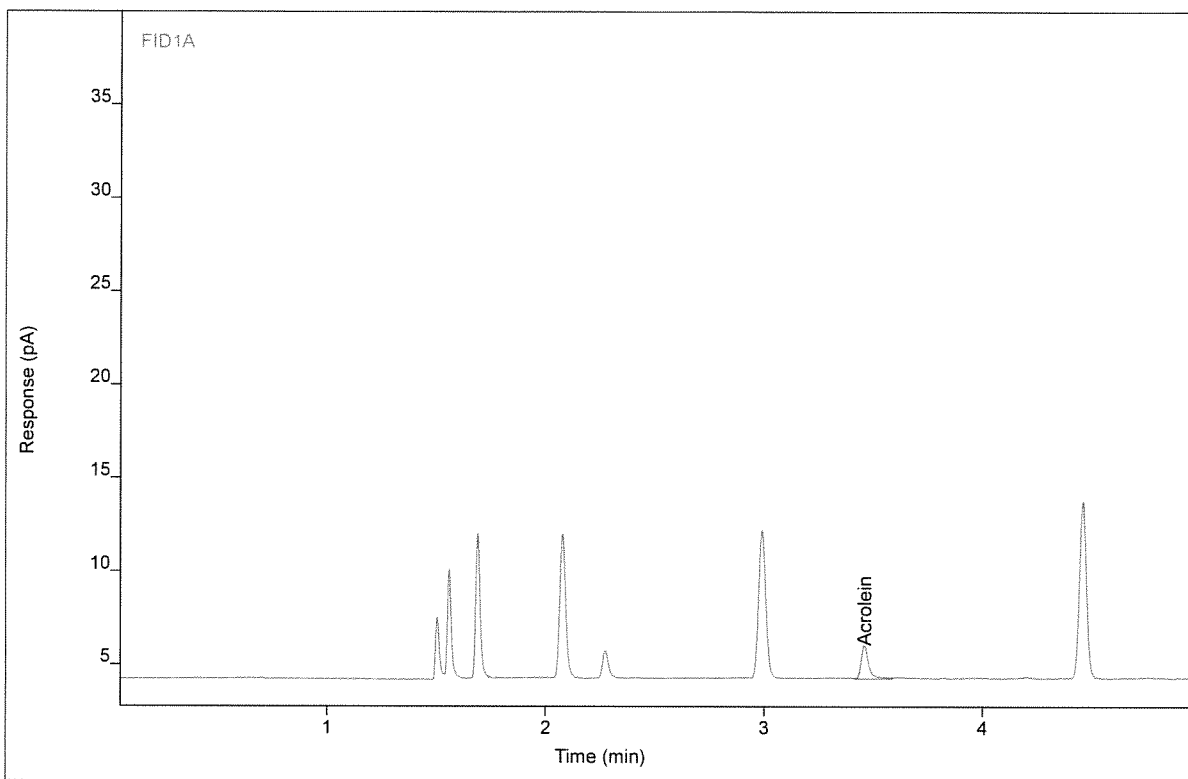
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	BB	3.46	4.34665	1.80879	11.2130	1	11.2130	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Outlet Pr Run4 BL SP.Bag
Sequence Name GUMMOP1089 ver.2
Inj Data File 013F0803.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 8/3/2017 12:24 PM
File Modified 8/3/2017 3:30 PM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 13
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1075F_AA.M
Method Modified 8/1/2017 7:36 AM
Printed 8/4/2017 6:09 AM



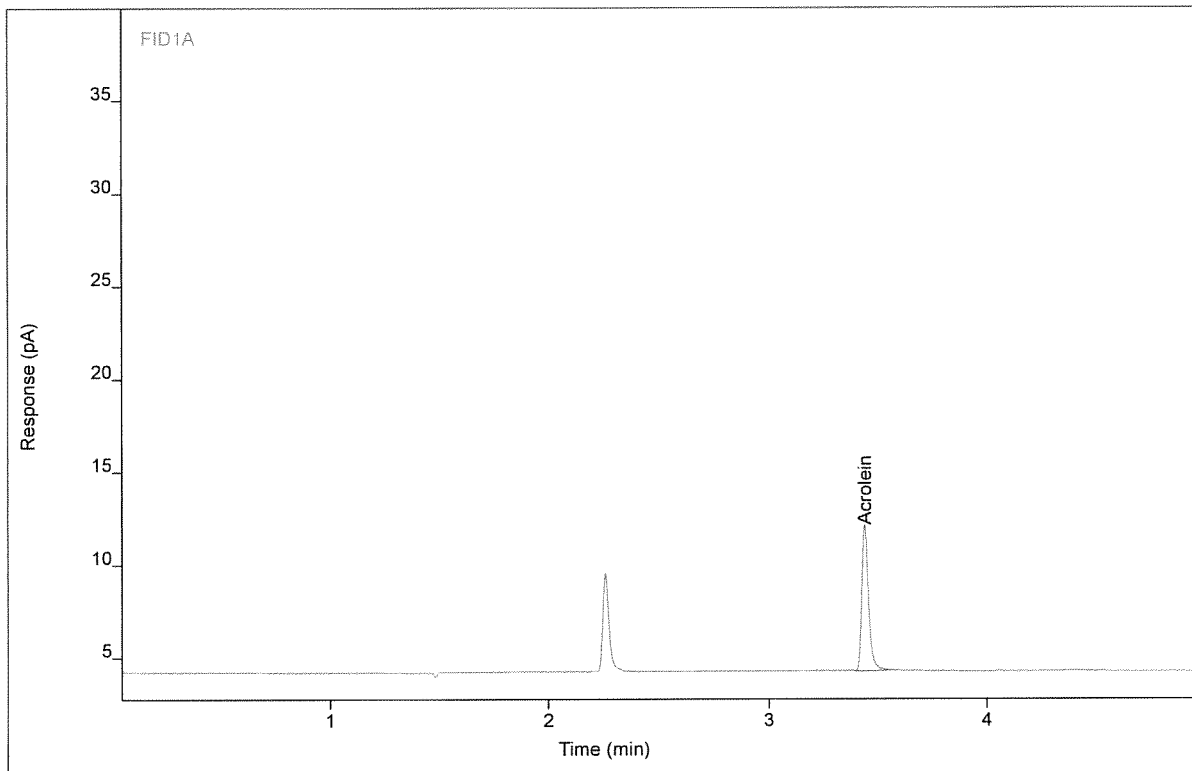
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	VV	3.46	4.31038	1.79852	11.1183	1	11.1183	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop1075 #AA2 ENV(1=800,5=200)
Sequence Name GUMMOP1089 ver.2
Inj Data File 016F1002.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 8/3/2017 1:37 PM
File Modified 8/3/2017 3:30 PM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 2 of 4
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP1075F_AA.M
Method Modified 8/1/2017 7:36 AM
Printed 8/4/2017 6:09 AM



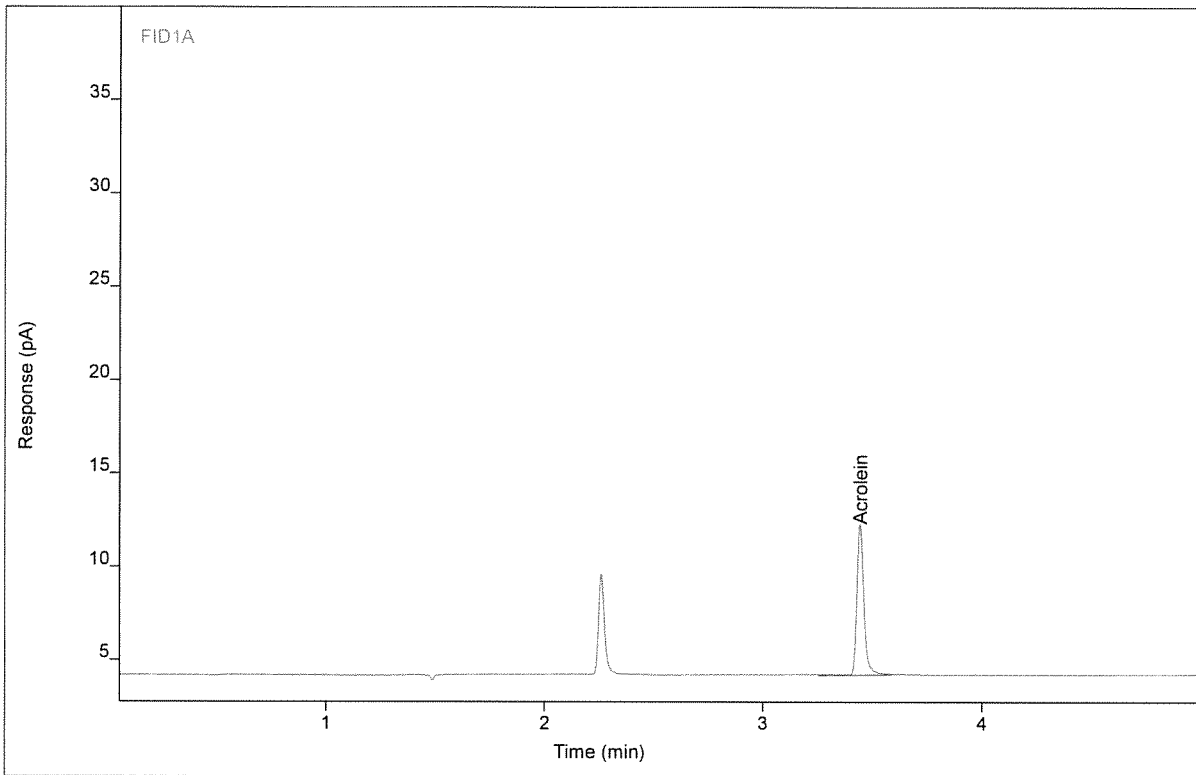
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	BB	3.44	17.1990	7.85839	44.7466	1	44.7466	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop1075 #AA2 ENV(1=800,5=200)
Sequence Name GUMMOP1089 ver.2
Inj Data File 016F1003.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 8/3/2017 1:47 PM
File Modified 8/3/2017 3:30 PM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 3 of 4
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP1075F_AA.M
Method Modified 8/1/2017 7:36 AM
Printed 8/4/2017 6:09 AM



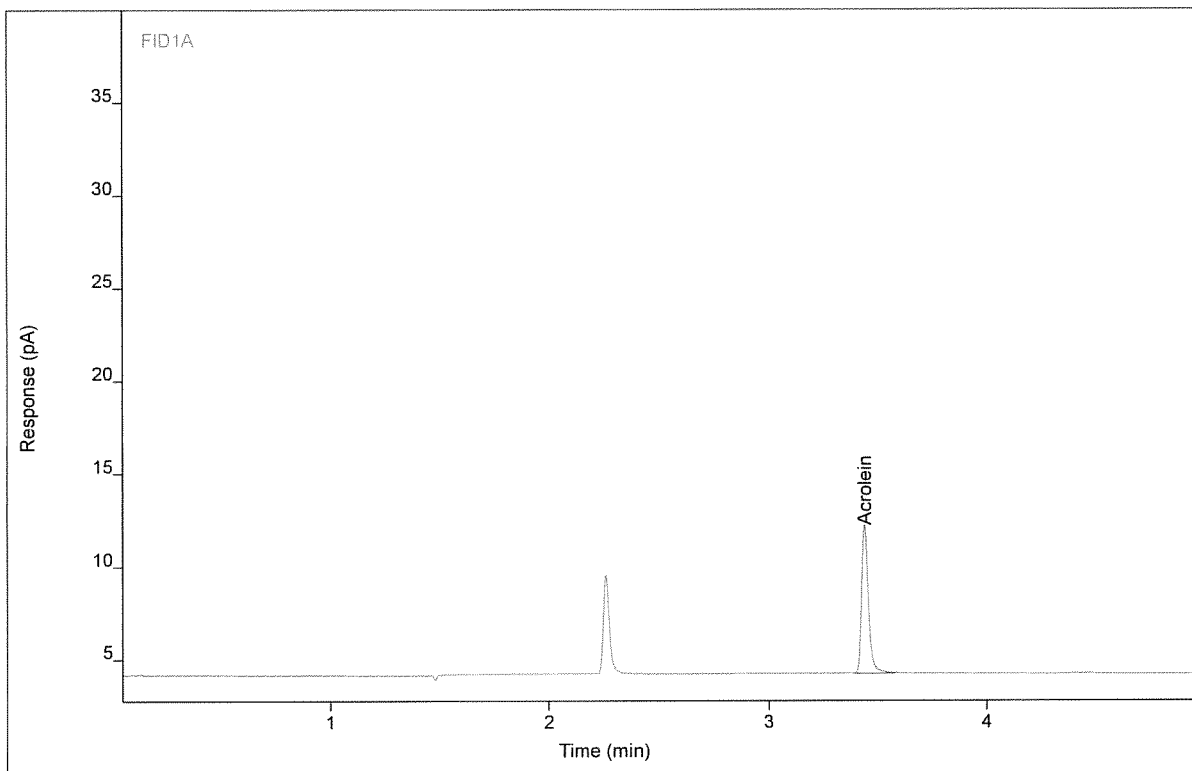
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	VV	3.44	18.0963	8.10531	47.0879	1	47.0879	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop1075 #AA2 ENV(1=800,5=200)
Sequence Name GUMMOP1089 ver.2
Inj Data File 016F1004.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 8/3/2017 1:57 PM
File Modified 8/3/2017 3:30 PM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 4 of 4
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP1075F_AA.M
Method Modified 8/1/2017 7:36 AM
Printed 8/4/2017 6:09 AM



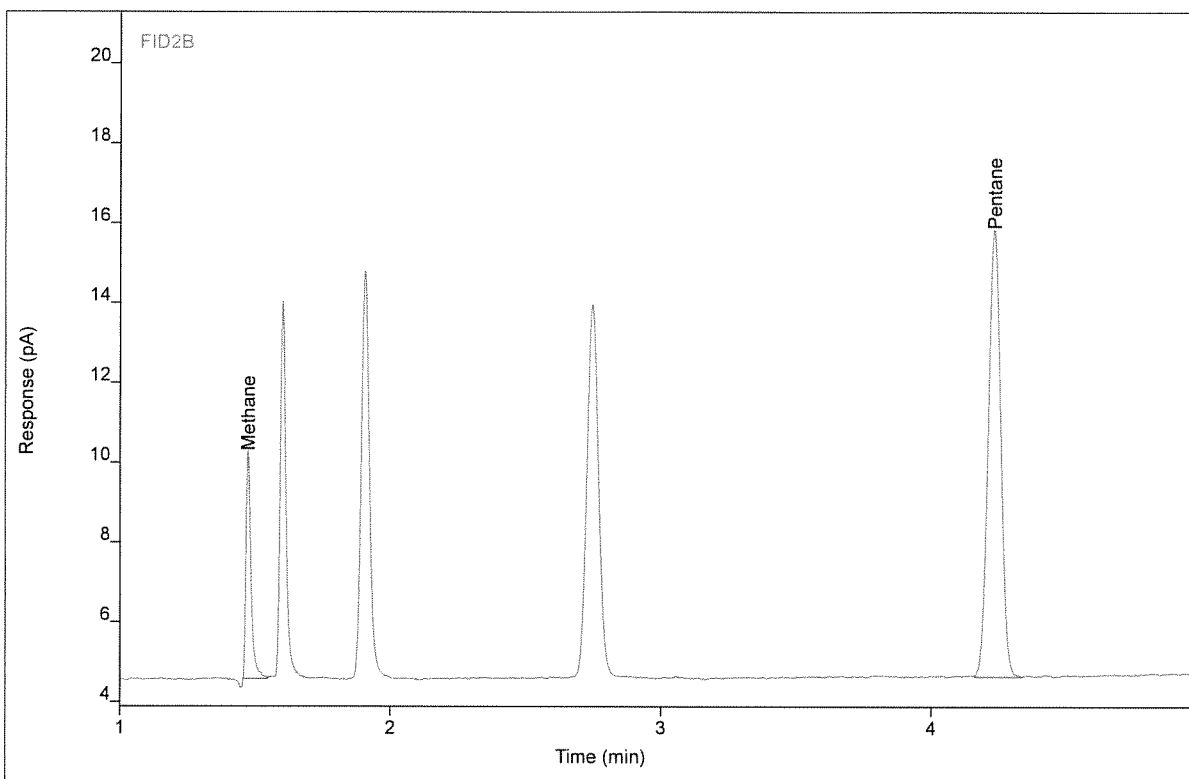
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acrolein	BV	3.44	17.7615	8.01427	46.2142	1	46.2142	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop903 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1049 ver.12
Inj Data File 032B1501.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 3:35 AM
File Modified 7/10/2017 10:16 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/10/2017 12:09 PM



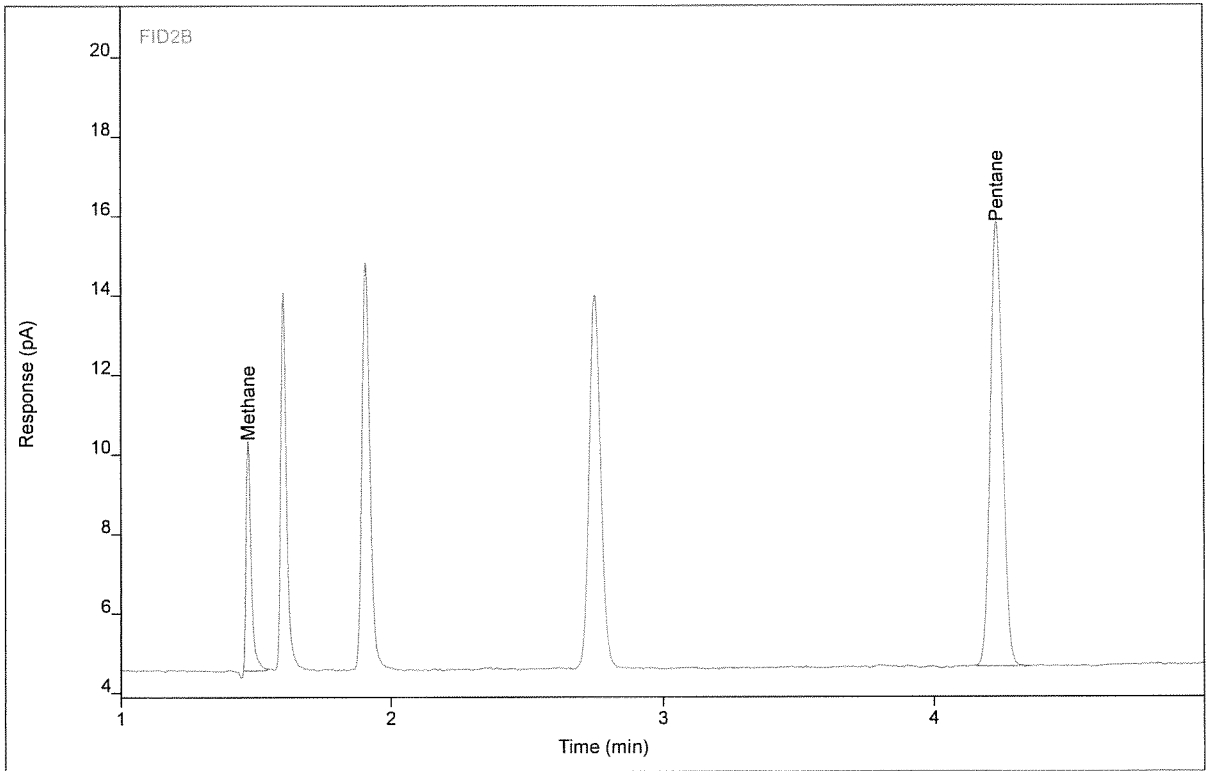
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.47	7.50362	5.69937	38.2256	1	38.2256	ppm
Pentane	BV	4.24	35.8065	11.2074	39.0610	1	39.0610	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop903 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1049 ver.12
Inj Data File 032B1502.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 3:53 AM
File Modified 7/10/2017 10:16 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/10/2017 12:09 PM



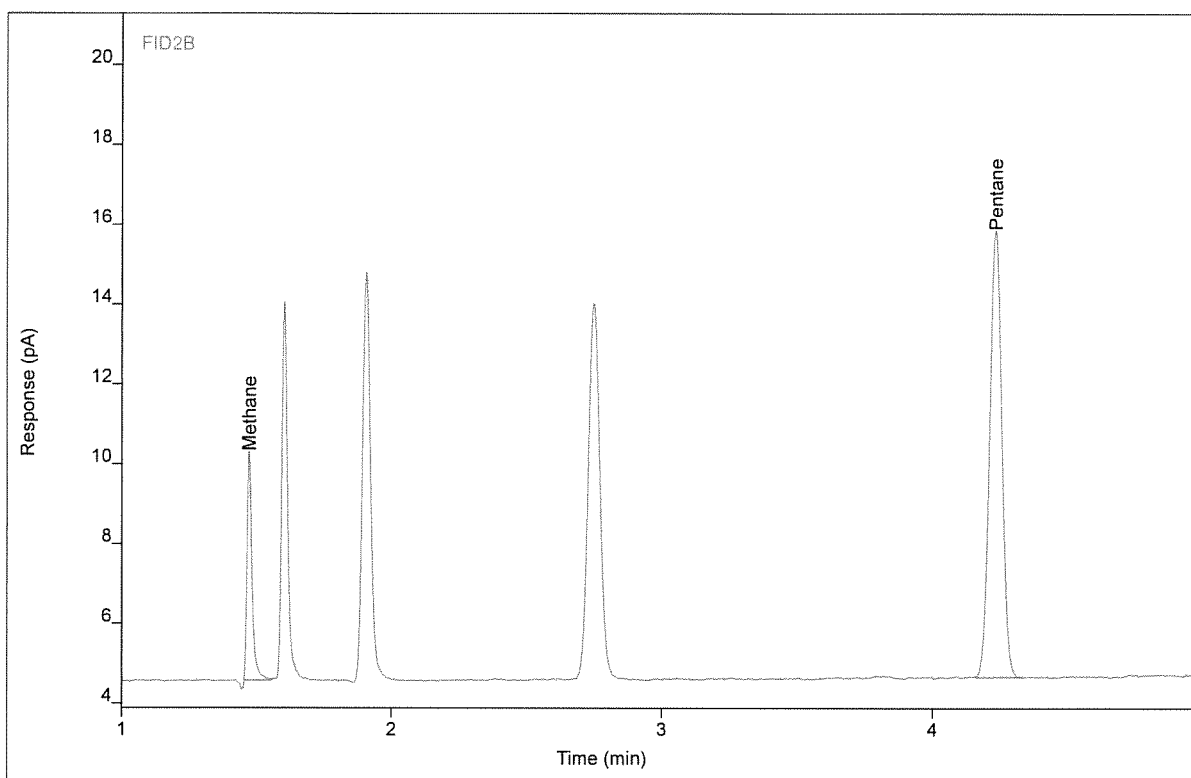
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.47	7.54063	5.76083	38.4115	1	38.4115	ppm
Pentane	BB	4.23	35.7948	11.1968	39.0482	1	39.0482	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop903 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1049 ver.12
Inj Data File 032B1503.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 4:11 AM
File Modified 7/10/2017 10:16 AM
Instrument
Operator Nicholas Traversa

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/10/2017 12:09 PM



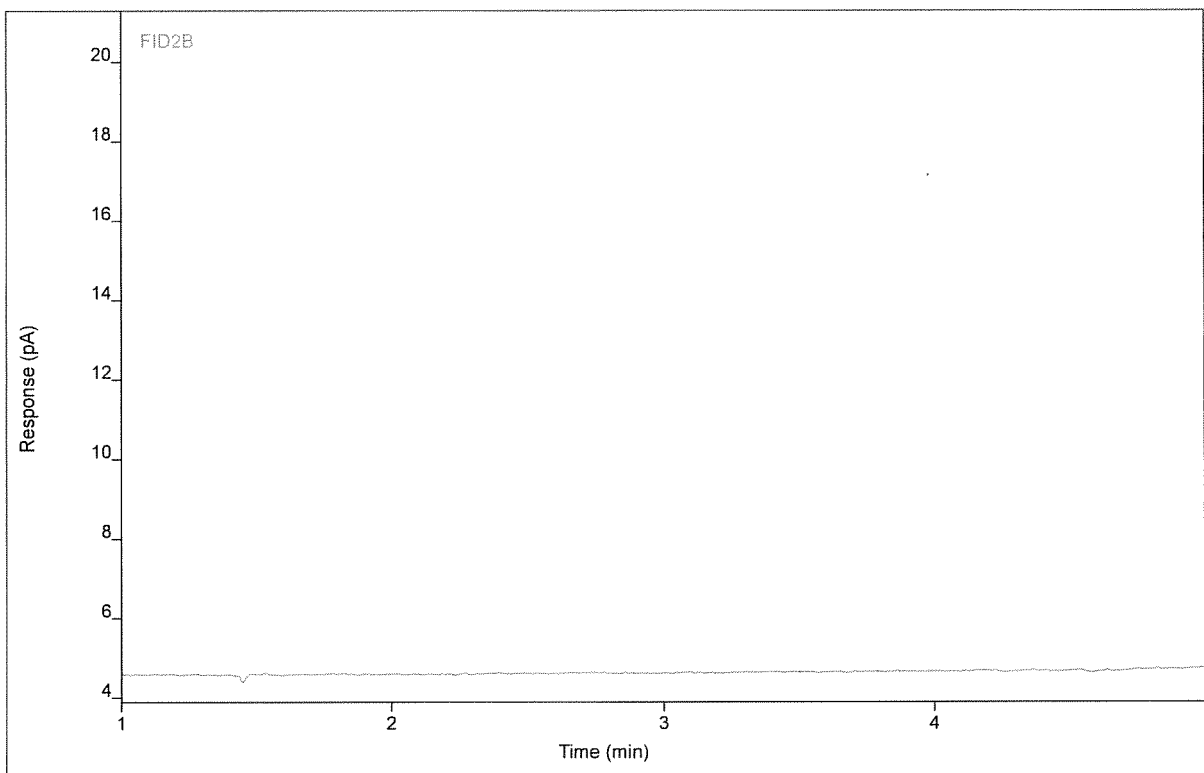
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PV	1.47	7.50061	5.72133	38.2105	1	38.2105	ppm
Pentane	BB	4.23	35.6936	11.2036	38.9379	1	38.9379	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name zero air blank #LB
Sequence Name GUMMOP1049 ver.12
Inj Data File 024B1601.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 4:27 AM
File Modified 7/10/2017 10:17 AM
Instrument
Operator Nicholas Traversa

Sample Type Control
Vial Number Vial 24
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/10/2017 12:09 PM



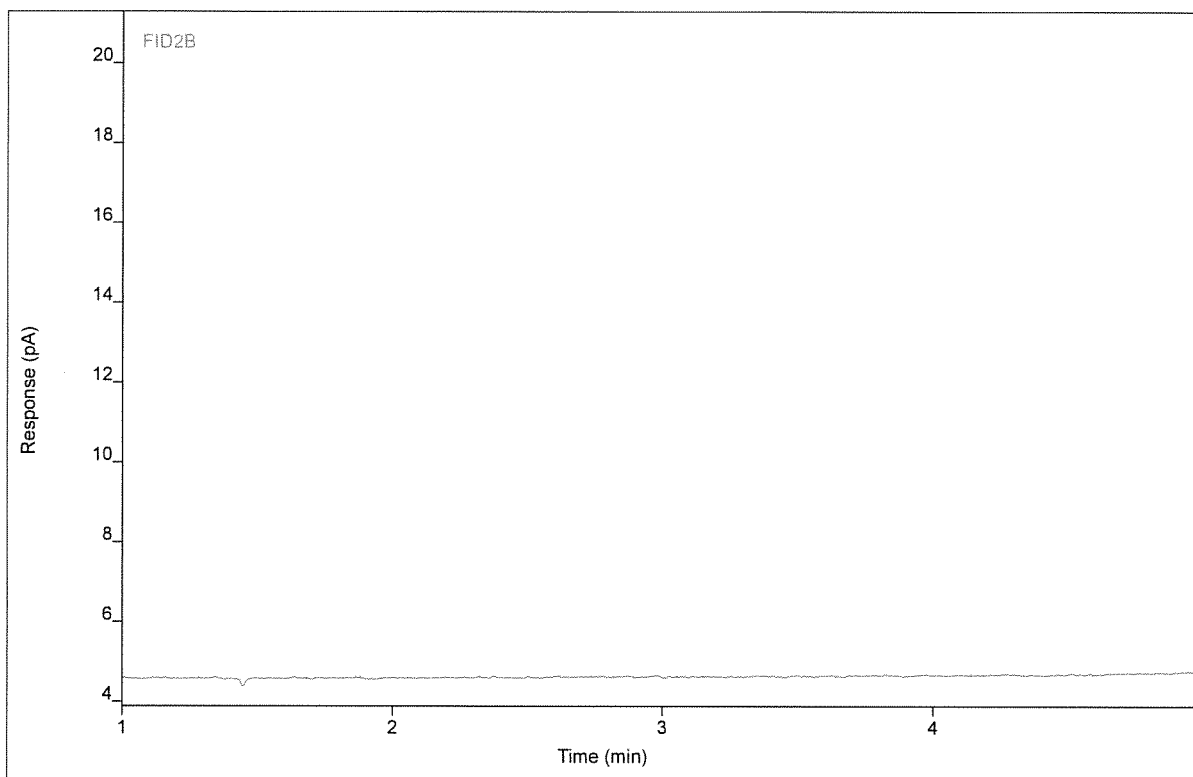
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane		(1.46)				1		
Pentane		(4.21)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name zero air blank #LB
Sequence Name GUMMOP1049 ver.12
Inj Data File 024B1602.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 4:44 AM
File Modified 7/10/2017 10:17 AM
Instrument
Operator Nicholas Traversa

Sample Type Control
Vial Number Vial 24
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/10/2017 12:09 PM



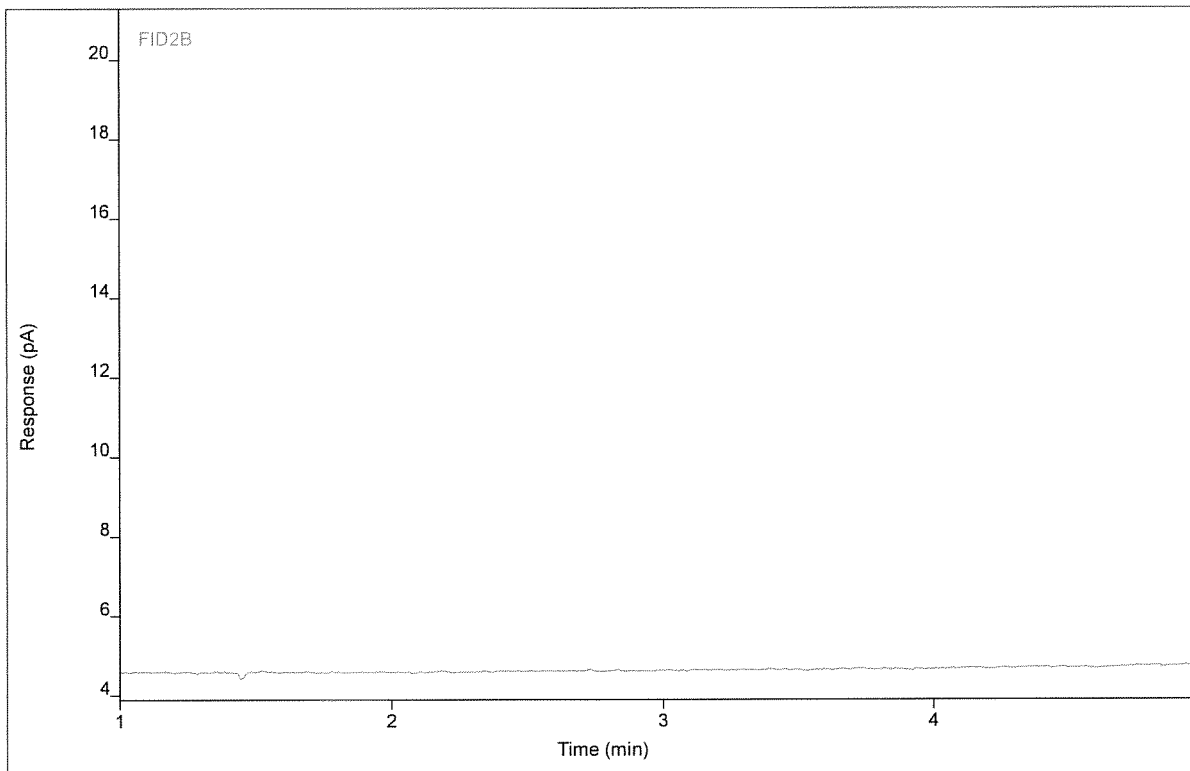
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane		(1.46)				1		
Pentane		(4.21)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name zero air blank #LB
Sequence Name GUMMOP1049 ver.12
Inj Data File 024B1603.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 5:00 AM
File Modified 7/10/2017 10:17 AM
Instrument
Operator Nicholas Traversa

Sample Type Control
Vial Number Vial 24
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/10/2017 12:09 PM



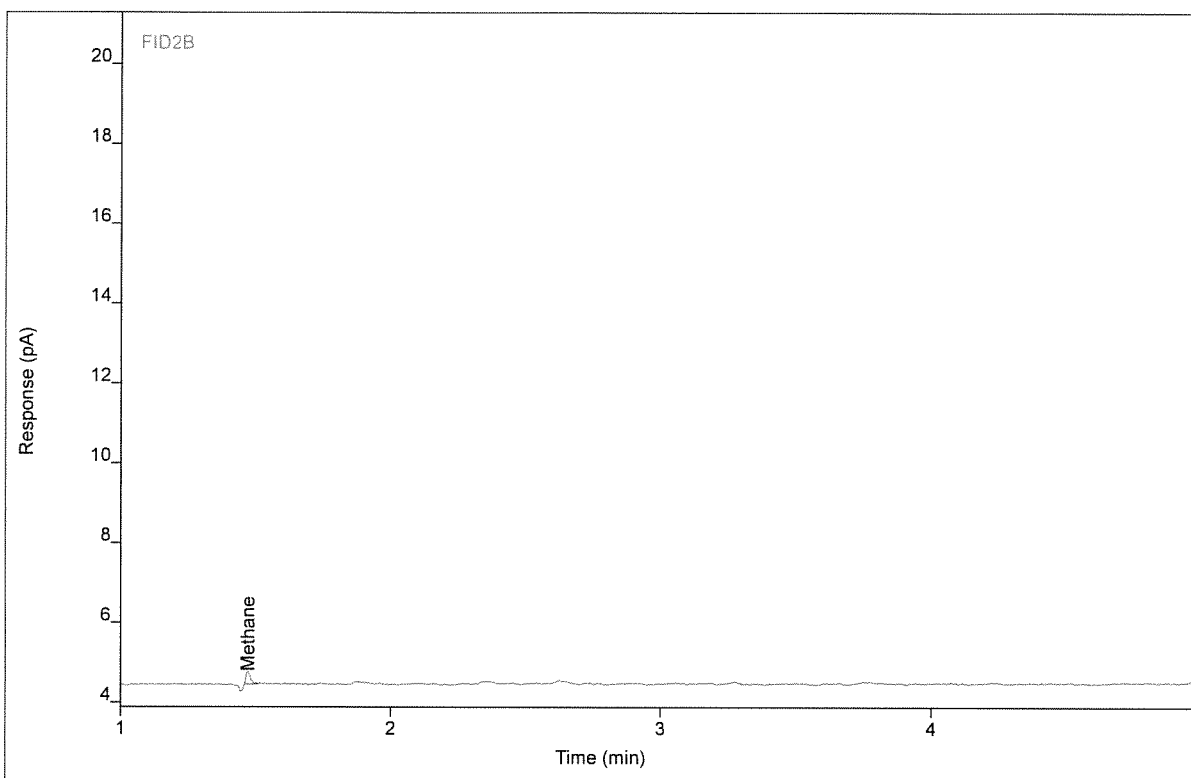
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane		(1.46)				1		
Pentane		(4.21)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Outlet Primary Run 1.Bag
Sequence Name GUMMOP1049 ver.12
Inj Data File 029B1801.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 11:06 AM
File Modified 7/10/2017 10:17 AM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 29
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/10/2017 12:09 PM



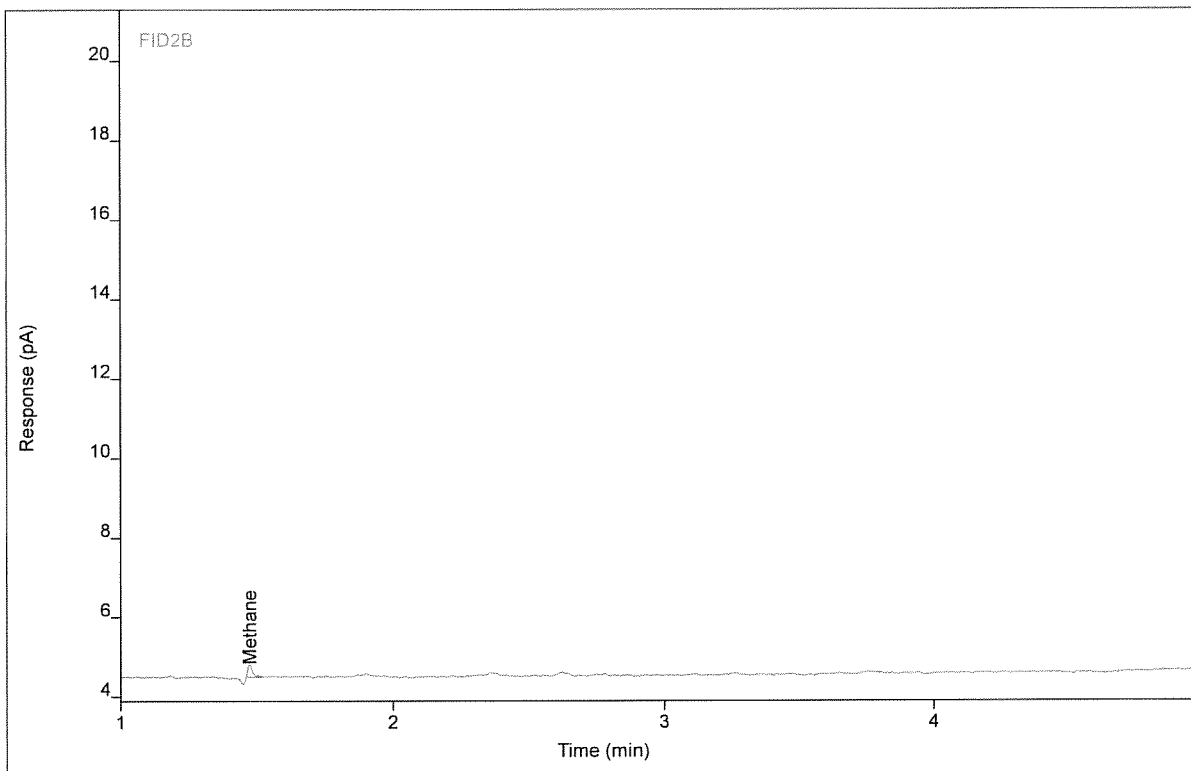
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	MM	1.47	0.37361	0.32576	2.09997	1	2.09997	ppm
Pentane		(4.21)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Outlet Primary Run 1.Bag
Sequence Name GUMMOP1049 ver.12
Inj Data File 029B1802.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 11:22 AM
File Modified 7/10/2017 10:17 AM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 29
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/10/2017 12:09 PM



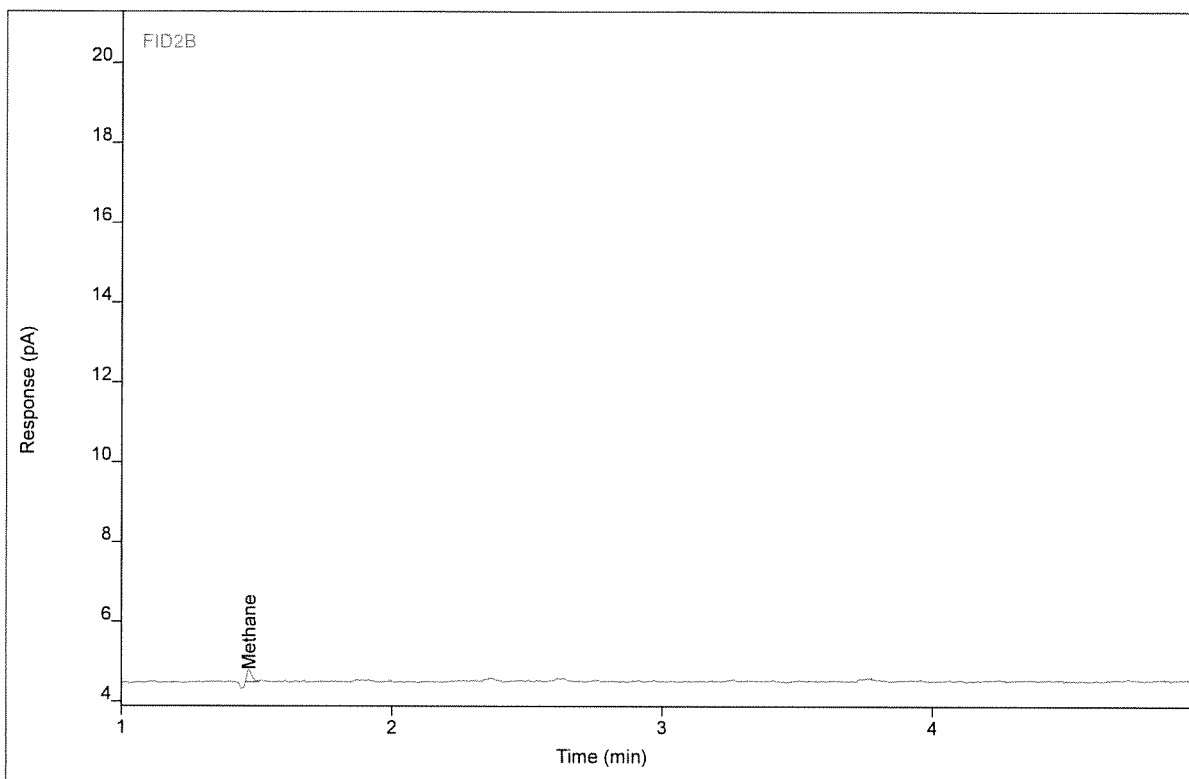
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	MM	1.47	0.42220	0.32526	2.37308	1	2.37308	ppm
Pentane		(4.21)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Outlet Primary Run 1.Bag
Sequence Name GUMMOP1049 ver.12
Inj Data File 029B1803.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 11:34 AM
File Modified 7/10/2017 10:17 AM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 29
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/10/2017 12:09 PM



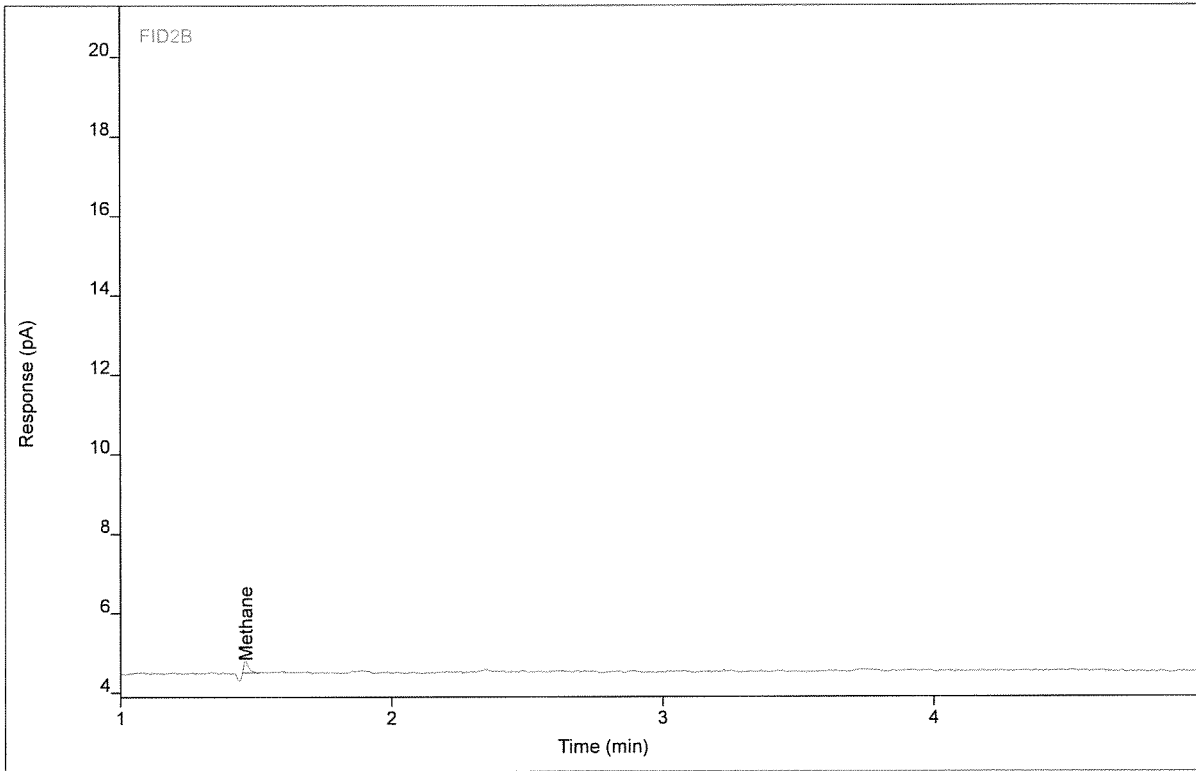
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PV	1.47	0.39543	0.30413	2.22262	1	2.22262	ppm
Pentane		(4.21)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Outlet Primary Run 4.Bag
Sequence Name GUMMOP1049 ver.12
Inj Data File 018B1901.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 11:43 AM
File Modified 7/10/2017 10:17 AM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 18
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/10/2017 12:09 PM



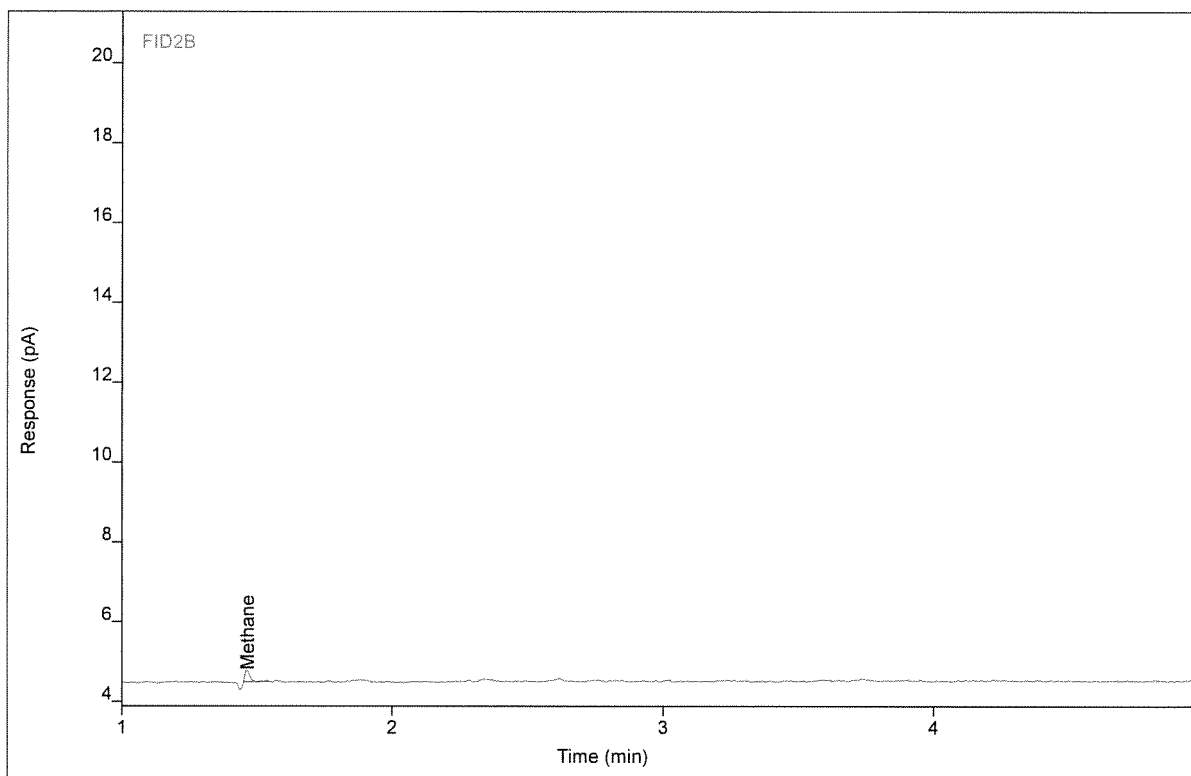
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.46	0.37292	0.31059	2.09607	1	2.09607	ppm
Pentane		(4.21)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Outlet Primary Run 4.Bag
Sequence Name GUMMOP1049 ver.12
Inj Data File 018B1902.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 11:50 AM
File Modified 7/10/2017 10:17 AM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 18
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/10/2017 12:09 PM



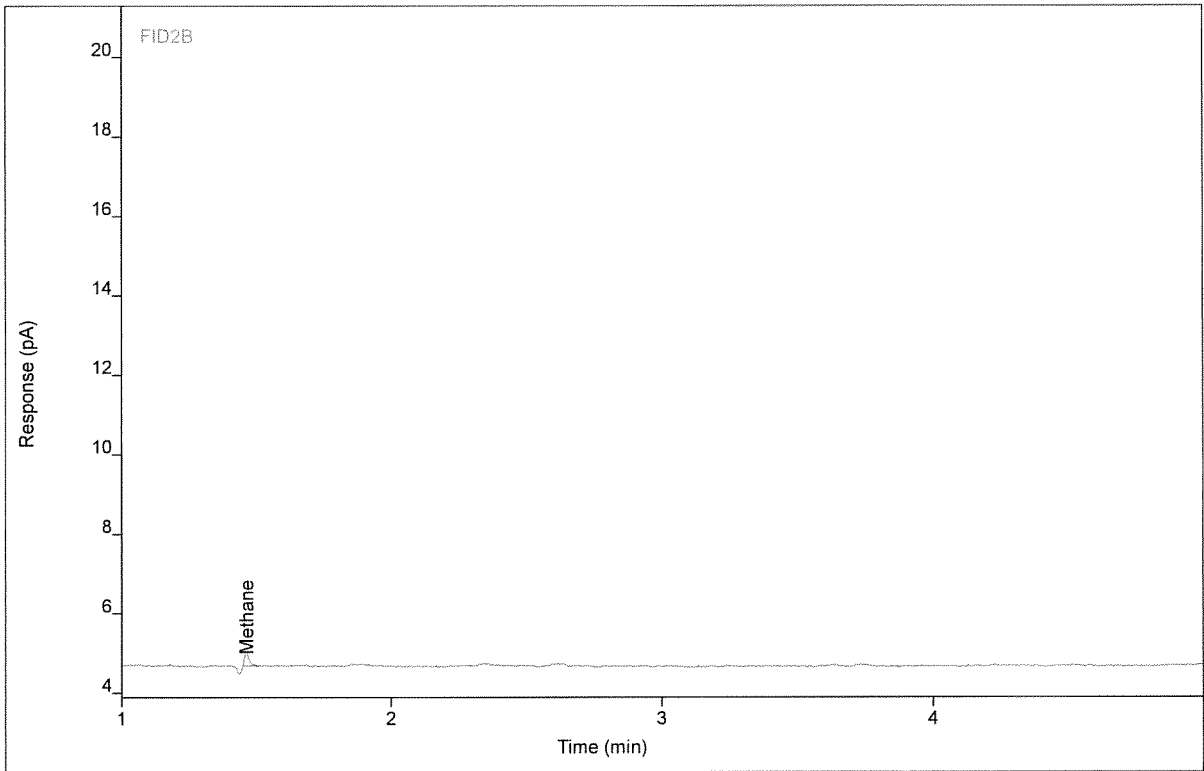
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.46	0.37178	0.29076	2.08969	1	2.08969	ppm
Pentane		(4.21)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Outlet Primary Run 4.Bag
Sequence Name GUMMOP1049 ver.12
Inj Data File 018B1903.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 11:58 AM
File Modified 7/10/2017 10:17 AM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 18
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/10/2017 12:09 PM



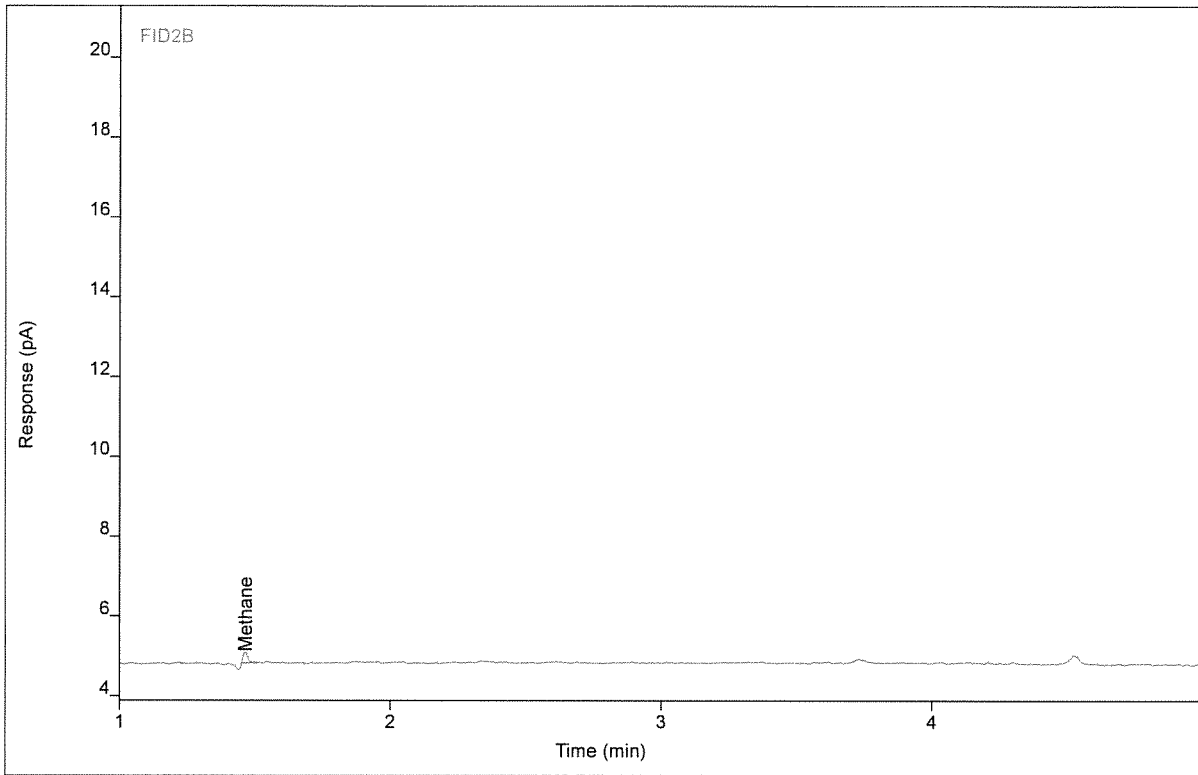
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.46	0.39535	0.29223	2.22219	1	2.22219	ppm
Pentane		(4.21)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Outlet Primary Run 5.Bag
Sequence Name GUMMOP1049 ver.12
Inj Data File 030B2001.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 12:05 PM
File Modified 7/10/2017 10:17 AM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 30
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/10/2017 12:09 PM



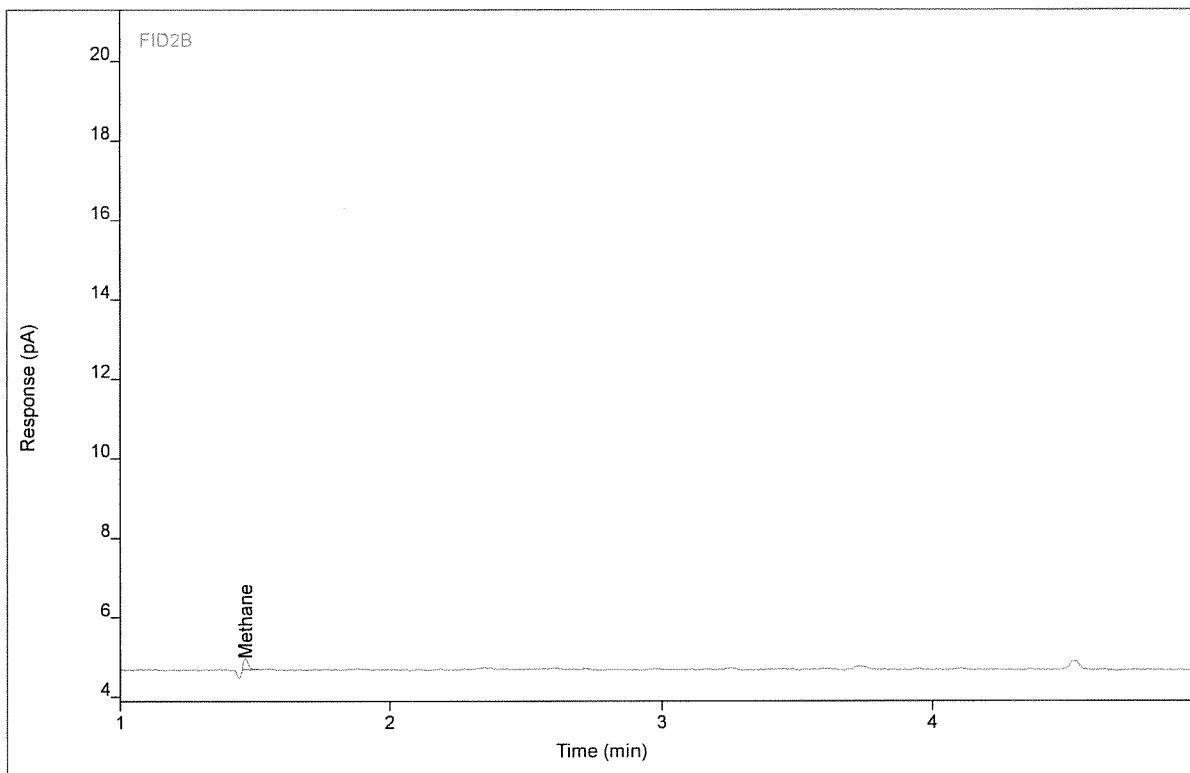
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.46	0.29411	0.27195	1.65313	1	1.65313	ppm
Pentane		(4.21)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Outlet Primary Run 5.Bag
 Sequence Name GUMMOP1049 ver.12
 Inj Data File 030B2002.D
 File Location GC/2017/Gummo/Quarter 2
 Injection Date 7/1/2017 12:13 PM
 File Modified 7/10/2017 10:17 AM
 Instrument
 Operator Justin Guenzler

Sample Type Sample
 Vial Number Vial 30
 Injection Volume 1000
 Injection 2 of 3
 Acquisition Method AQ_GUMMOP987_AA.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 6/7/2017 3:10 PM
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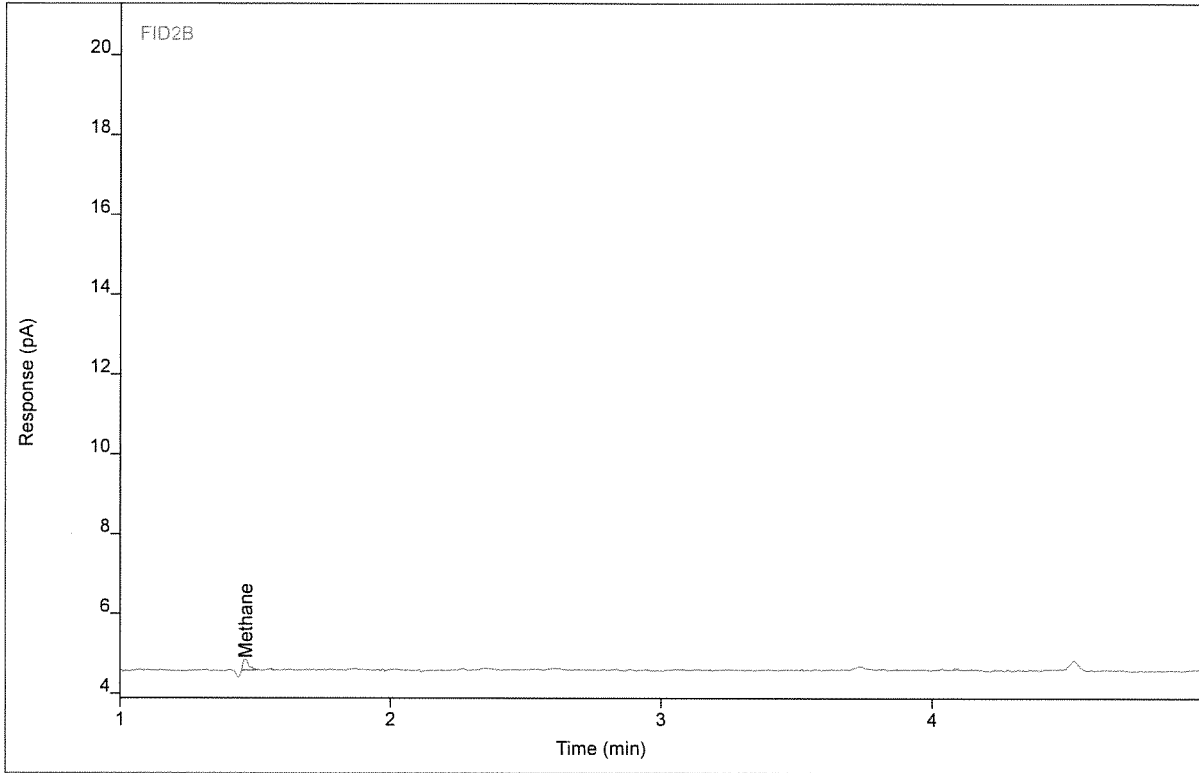
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.46	0.34543	0.28187	1.94159	1	1.94159	ppm
Pentane		(4.21)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Outlet Primary Run 5.Bag
Sequence Name GUMMOP1049 ver.12
Inj Data File 030B2003.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/1/2017 12:20 PM
File Modified 7/10/2017 10:17 AM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 30
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987_AA.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/10/2017 12:09 PM



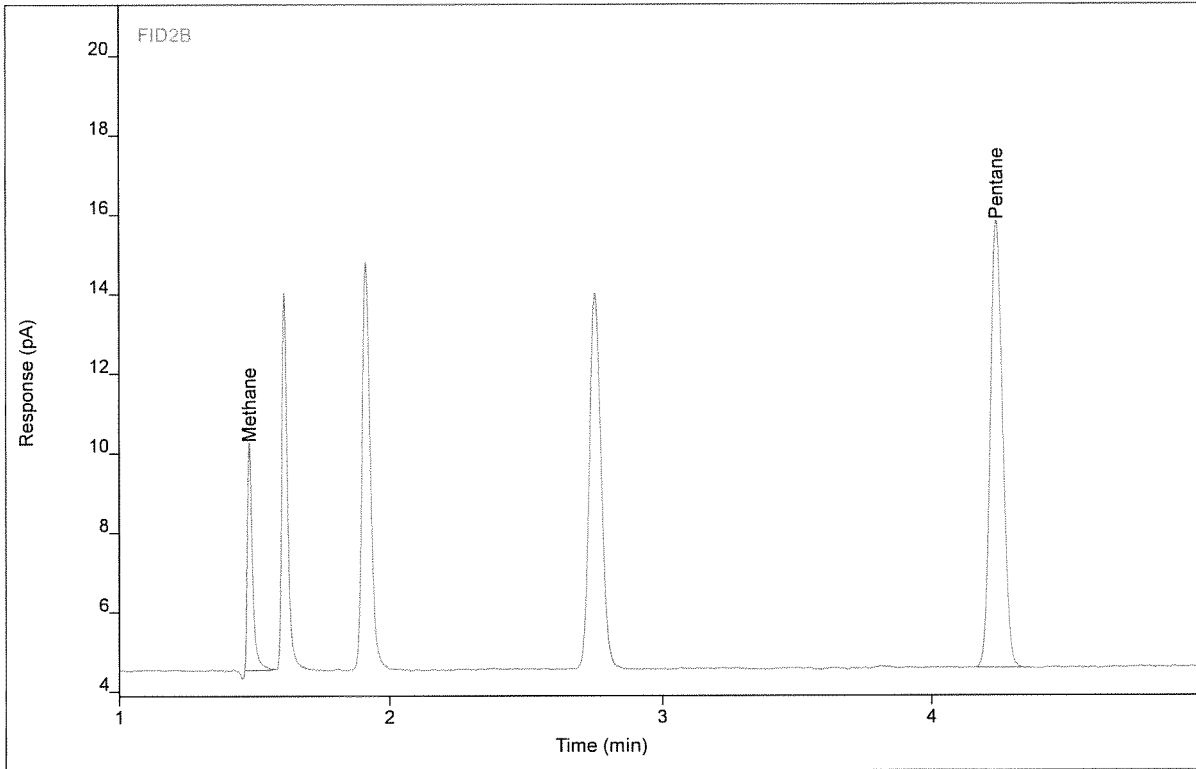
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.46	0.38862	0.29039	2.18432	1	2.18432	ppm
Pentane		(4.21)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop903 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1049 ver. 12
Inj Data File 032B3601.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/3/2017 7:28 AM
File Modified 7/10/2017 10:28 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/10/2017 12:09 PM



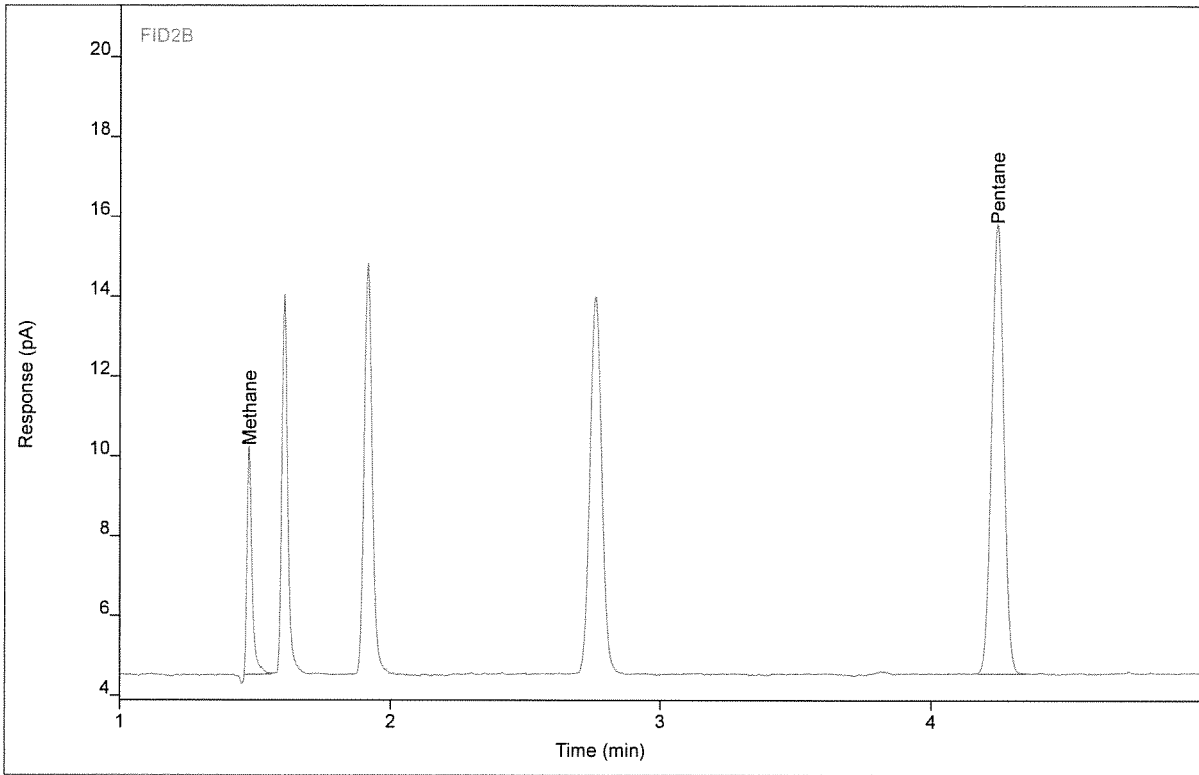
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.48	7.54752	5.71139	38.4461	1	38.4461	ppm
Pentane	BB	4.24	35.8389	11.2663	39.0963	1	39.0963	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop903 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1049 ver.12
Inj Data File 032B3602.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/3/2017 7:42 AM
File Modified 7/10/2017 10:28 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/10/2017 12:09 PM



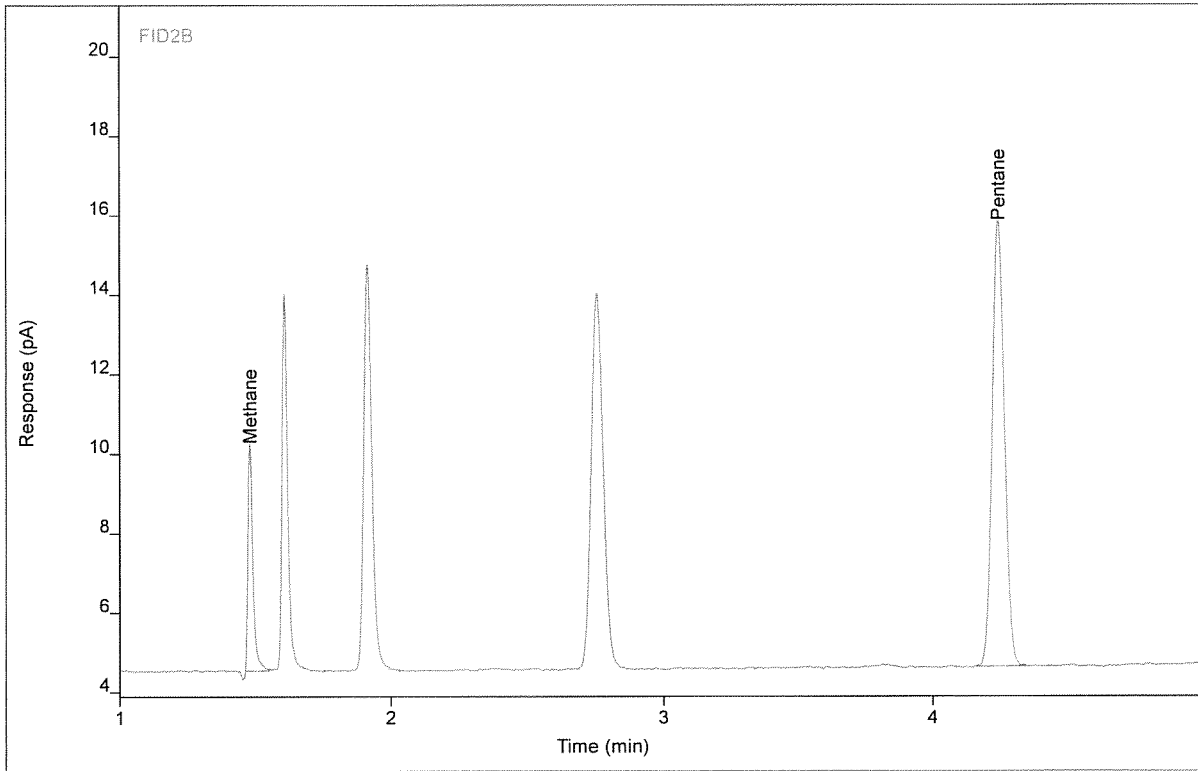
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.48	7.53603	5.71217	38.3884	1	38.3884	ppm
Pentane	BB	4.25	35.7746	11.2648	39.0262	1	39.0262	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop903 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1049 ver.12
Inj Data File 032B3603.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/3/2017 8:01 AM
File Modified 7/10/2017 10:28 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/10/2017 12:09 PM



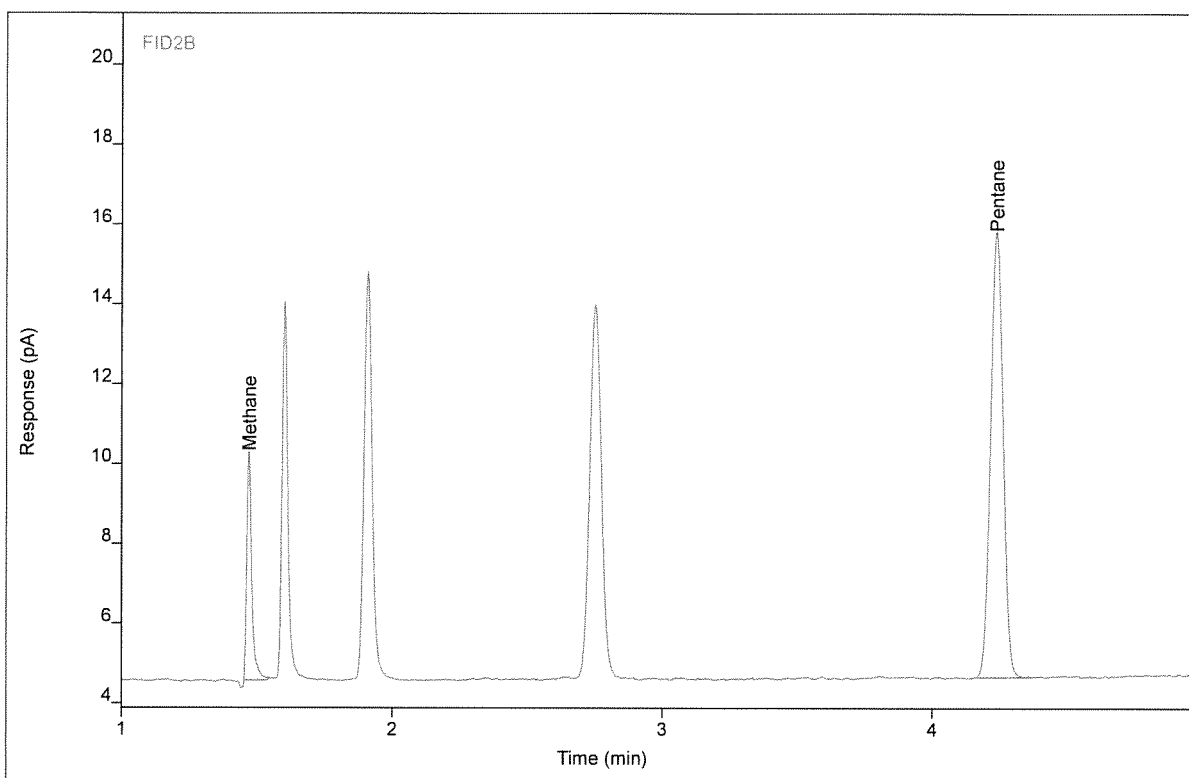
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.48	7.46458	5.69618	38.0294	1	38.0294	ppm
Pentane	BB	4.25	35.6308	11.2280	38.8695	1	38.8695	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop903 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1052 ver.5
Inj Data File 032B1101.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/5/2017 3:34 AM
File Modified 7/7/2017 12:25 PM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/10/2017 12:09 PM



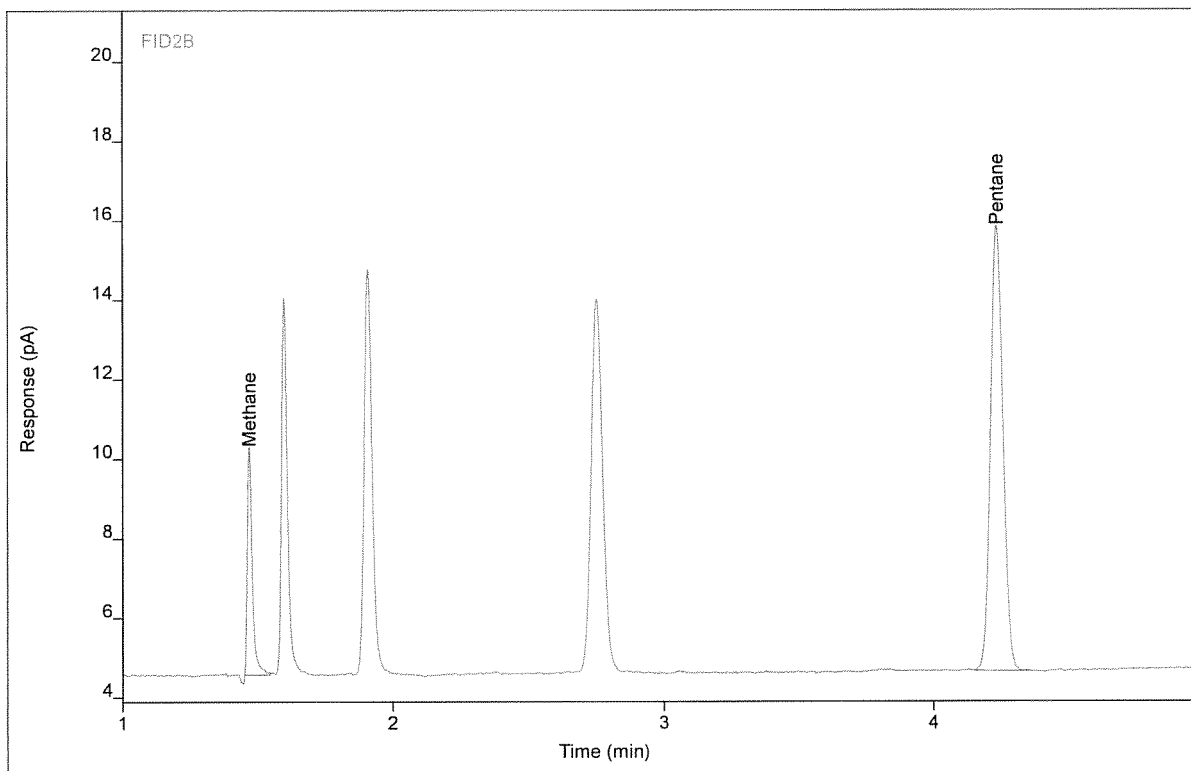
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.47	7.51118	5.68877	38.2635	1	38.2635	ppm
Pentane	BB	4.24	35.5155	11.1684	38.7438	1	38.7438	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop903 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1052 ver.5
Inj Data File 032B1102.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/5/2017 3:52 AM
File Modified 7/7/2017 12:25 PM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/10/2017 12:09 PM



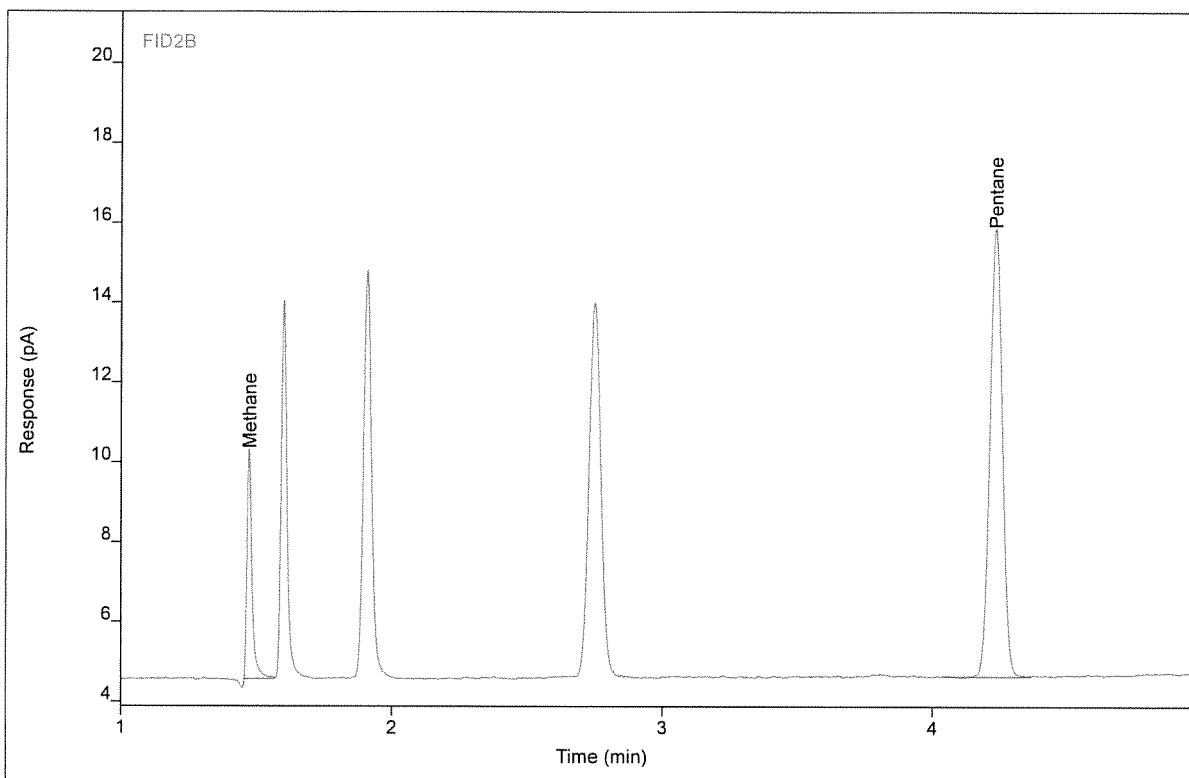
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.47	7.58299	5.68409	38.6243	1	38.6243	ppm
Pentane	BB	4.24	35.7245	11.1886	38.9717	1	38.9717	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop903 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1052 ver.5
Inj Data File 032B1103.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/5/2017 4:10 AM
File Modified 7/7/2017 12:25 PM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 6/7/2017 3:10 PM
Printed 7/10/2017 12:09 PM



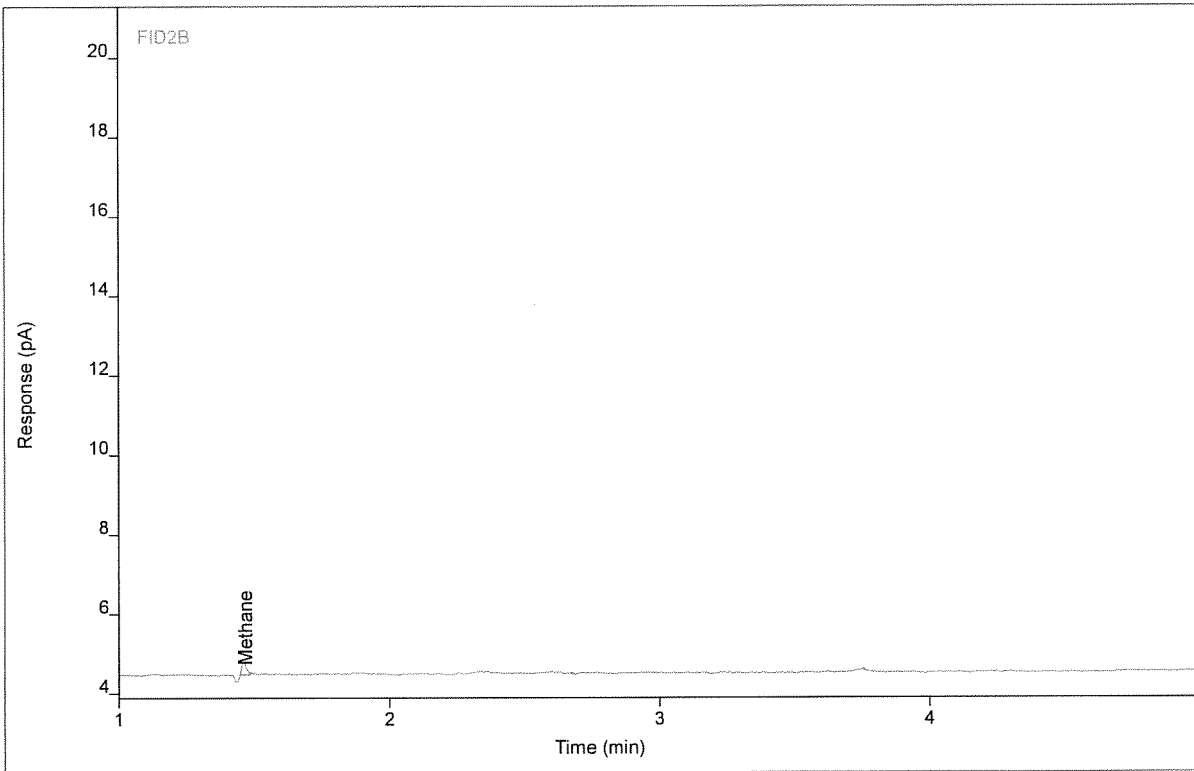
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PV	1.47	7.60214	5.66815	38.7205	1	38.7205	ppm
Pentane	BB	4.24	35.9462	11.2343	39.2133	1	39.2133	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Outlet BU Run 3.Bag
Sequence Name GUMMOP1054 ver.3
Inj Data File 018B0101.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/5/2017 8:59 AM
File Modified 7/10/2017 9:16 AM
Instrument
Operator Ben Prothe

Sample Type Sample
Vial Number Vial 18
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 7/5/2017 2:48 PM
Printed 7/10/2017 12:09 PM



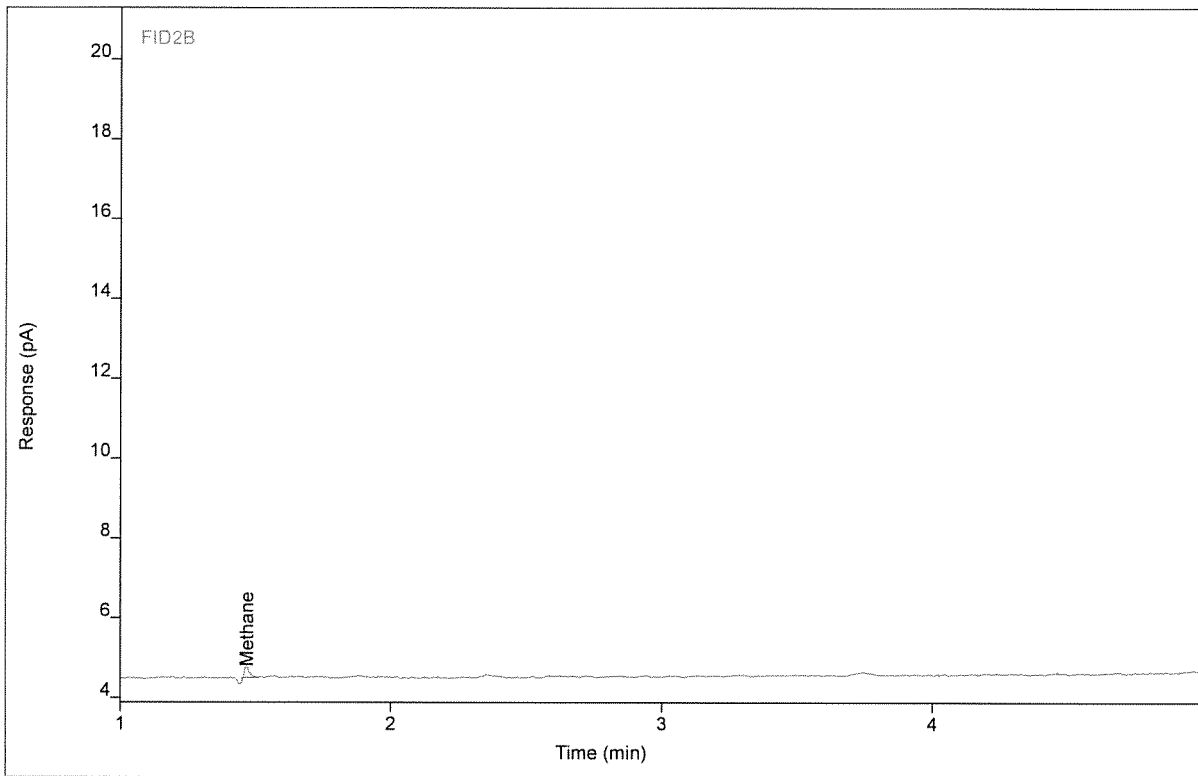
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	MF	1.47	0.37671	0.32684	2.11742	1	2.11742	ppm
Pentane		(4.25)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Outlet BU Run 3.Bag
Sequence Name GUMMOP1054 ver.3
Inj Data File 018B0102.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/5/2017 9:15 AM
File Modified 7/10/2017 9:16 AM
Instrument
Operator Ben Prothe

Sample Type Sample
Vial Number Vial 18
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 7/5/2017 2:48 PM
Printed 7/10/2017 12:09 PM



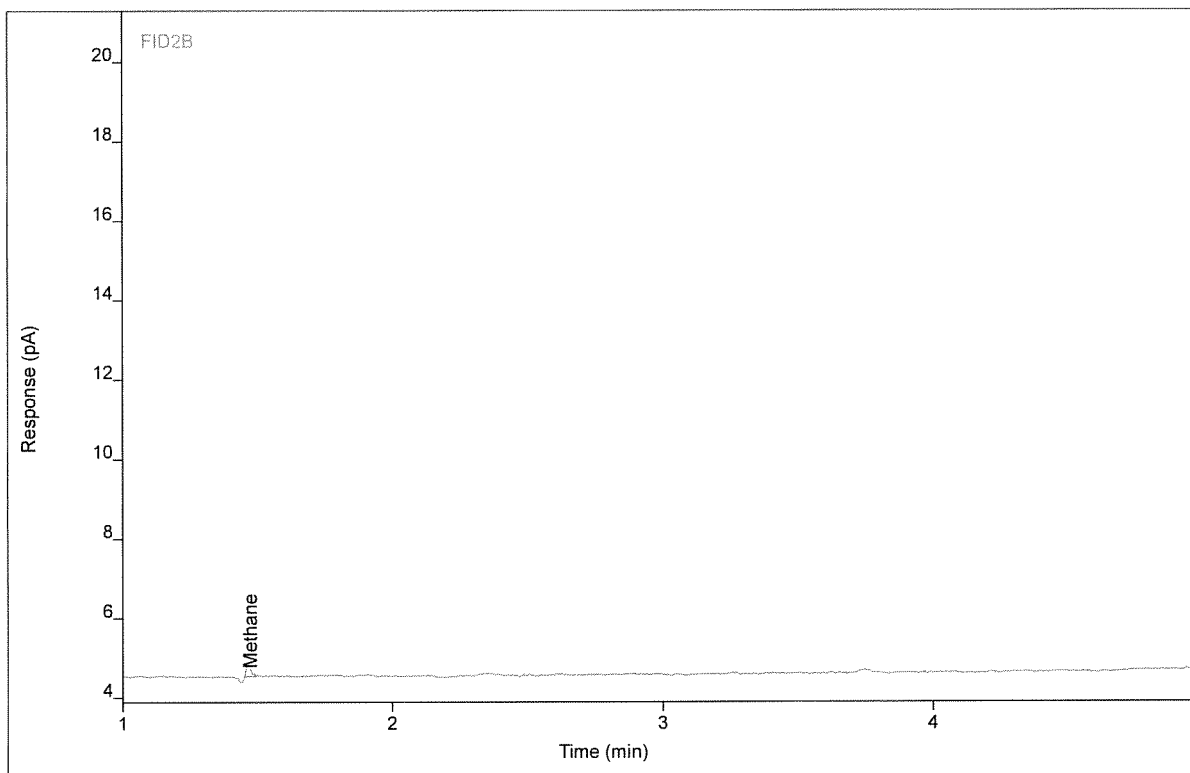
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	MM	1.47	0.34899	0.27982	1.96158	1	1.96158	ppm
Pentane		(4.25)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Outlet BU Run 3.Bag
Sequence Name GUMMOP1054 ver.3
Inj Data File 018B0103.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/5/2017 9:31 AM
File Modified 7/10/2017 9:16 AM
Instrument
Operator Ben Prothe

Sample Type Sample
Vial Number Vial 18
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 7/5/2017 2:48 PM
Printed 7/10/2017 12:09 PM



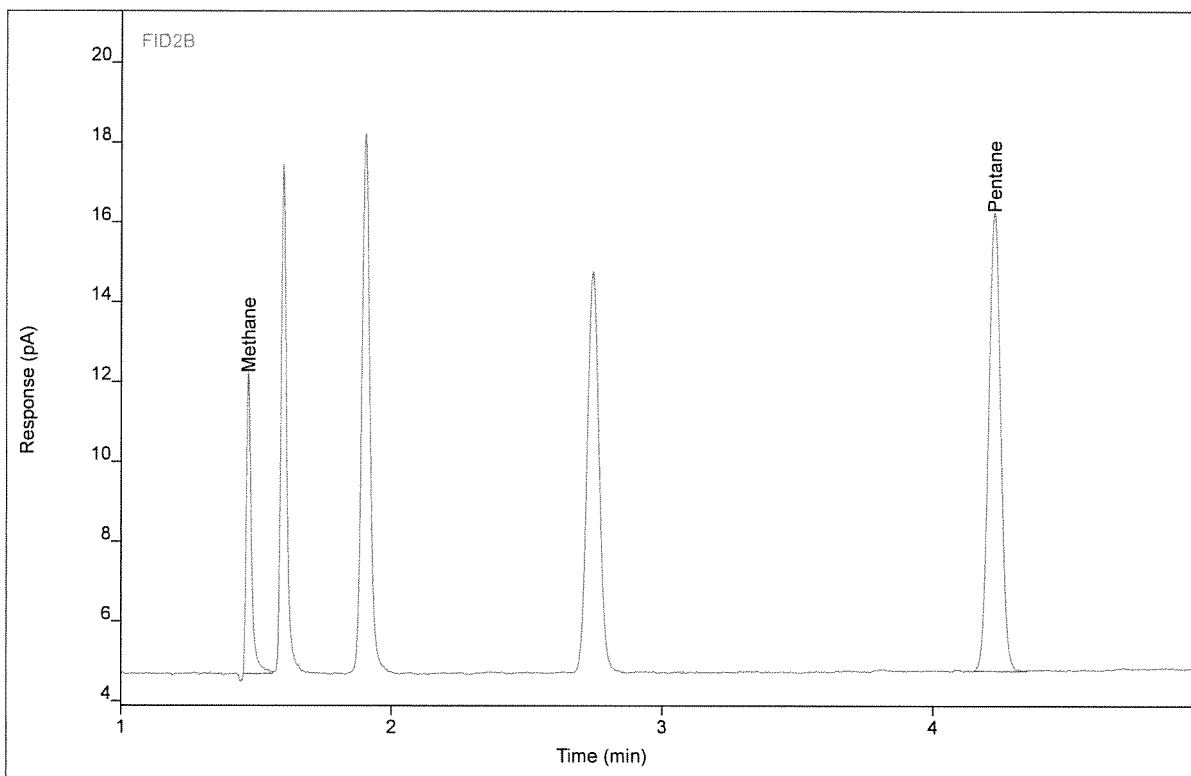
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	MF	1.47	0.36867	0.29471	2.07223	1	2.07223	ppm
Pentane		(4.25)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name gummop1054 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1054 ver.3
Inj Data File 032B1102.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/5/2017 4:50 PM
File Modified 7/10/2017 9:17 AM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 7/5/2017 2:48 PM
Printed 7/10/2017 12:09 PM



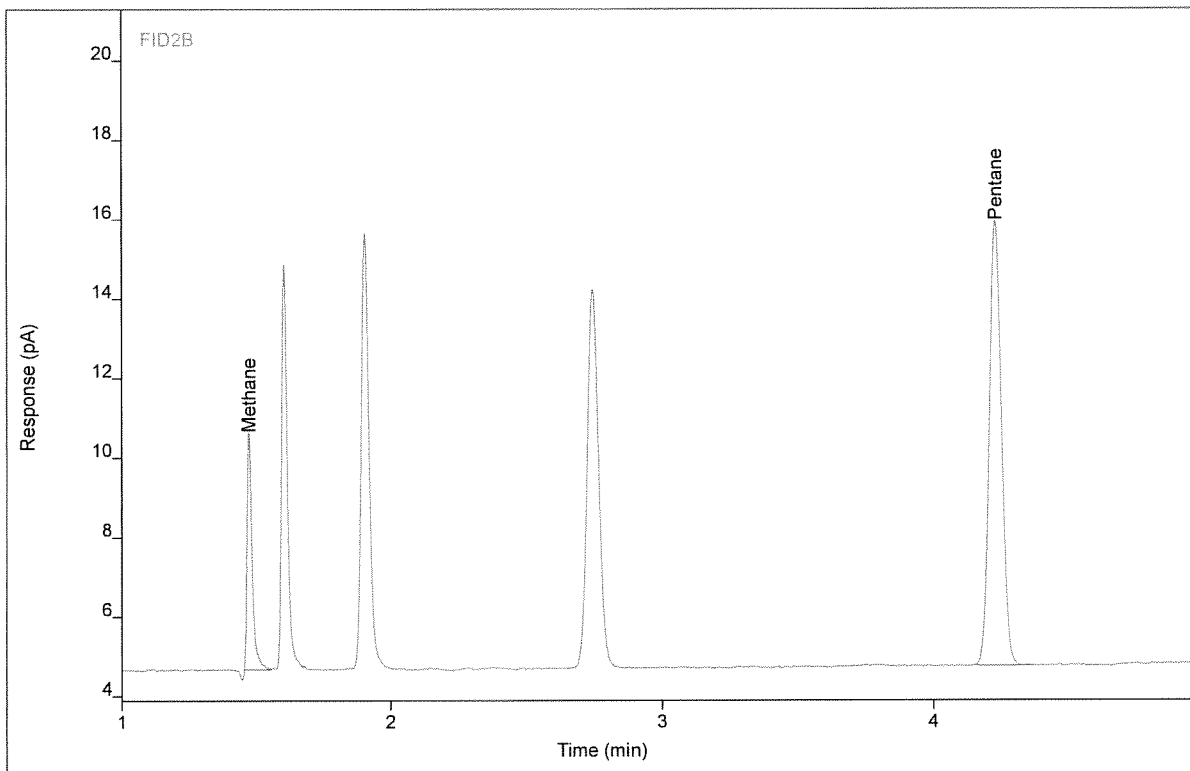
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.47	9.93646	7.45411	50.4468	1	50.4468	ppm
Pentane	BB	4.23	36.6358	11.4893	39.9649	1	39.9649	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop1054 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1054 ver.3
Inj Data File 032B1103.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/5/2017 5:08 PM
File Modified 7/10/2017 9:17 AM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 7/5/2017 2:48 PM
Printed 7/10/2017 12:09 PM



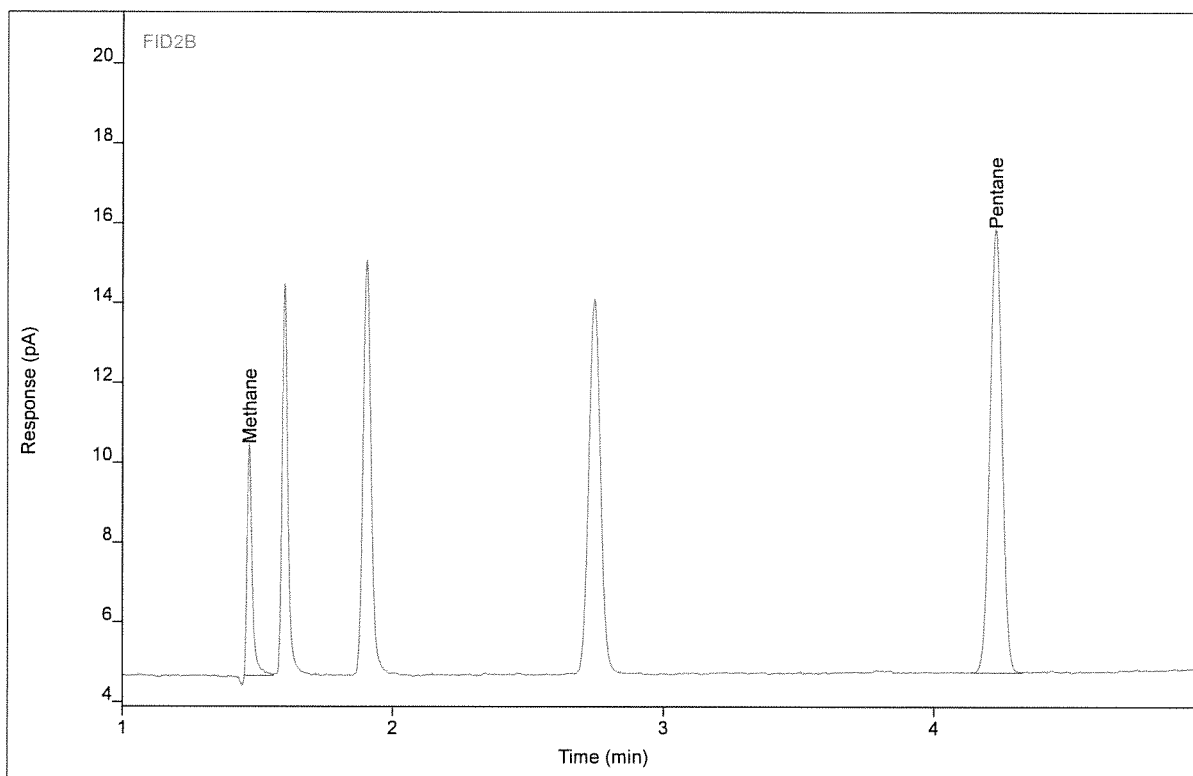
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.47	7.76029	5.89762	39.5149	1	39.5149	ppm
Pentane	BB	4.23	35.6732	11.1819	38.9157	1	38.9157	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop1054 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1054 ver.3
Inj Data File 032B1201.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/5/2017 5:26 PM
File Modified 7/10/2017 9:17 AM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 1 of 1
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 7/5/2017 2:48 PM
Printed 7/10/2017 12:09 PM



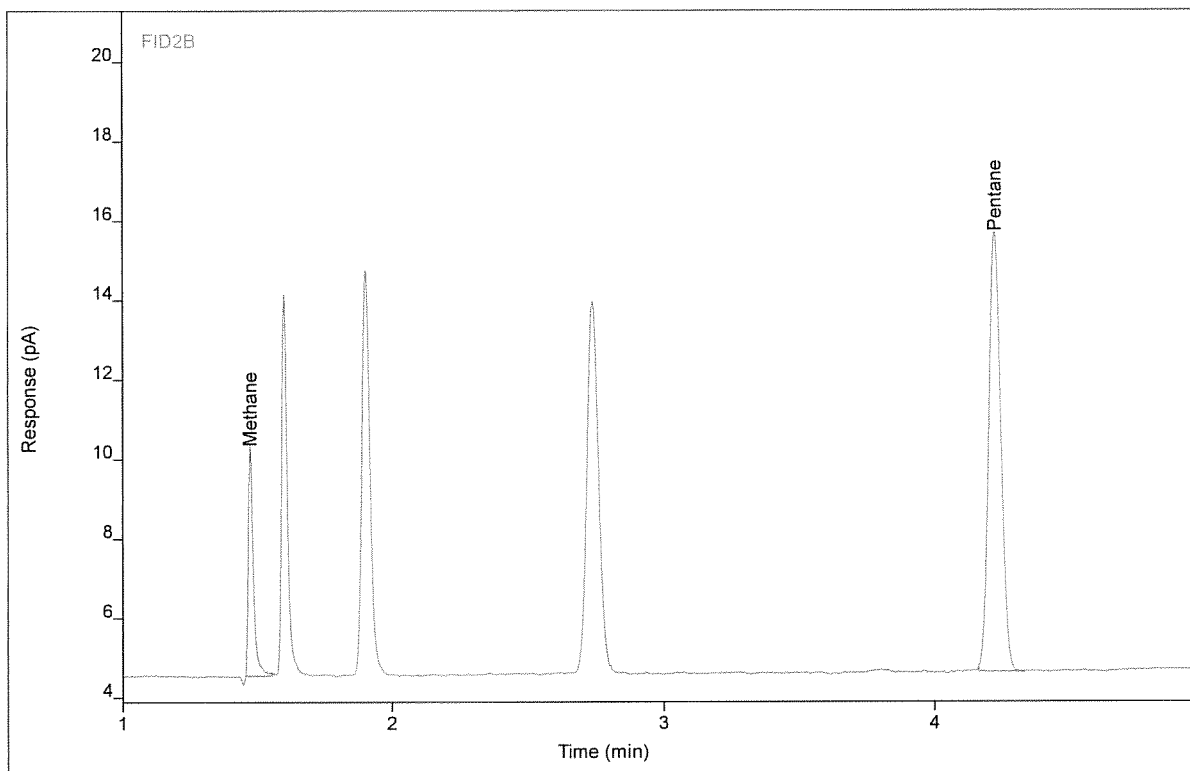
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.47	7.59468	5.72041	38.6830	1	38.6830	ppm
Pentane	BV	4.23	35.5107	11.1062	38.7385	1	38.7385	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop1054 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1056 ver.2
Inj Data File 032B0701.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/7/2017 3:22 AM
File Modified 7/10/2017 9:20 AM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 7/5/2017 2:48 PM
Printed 7/10/2017 12:09 PM



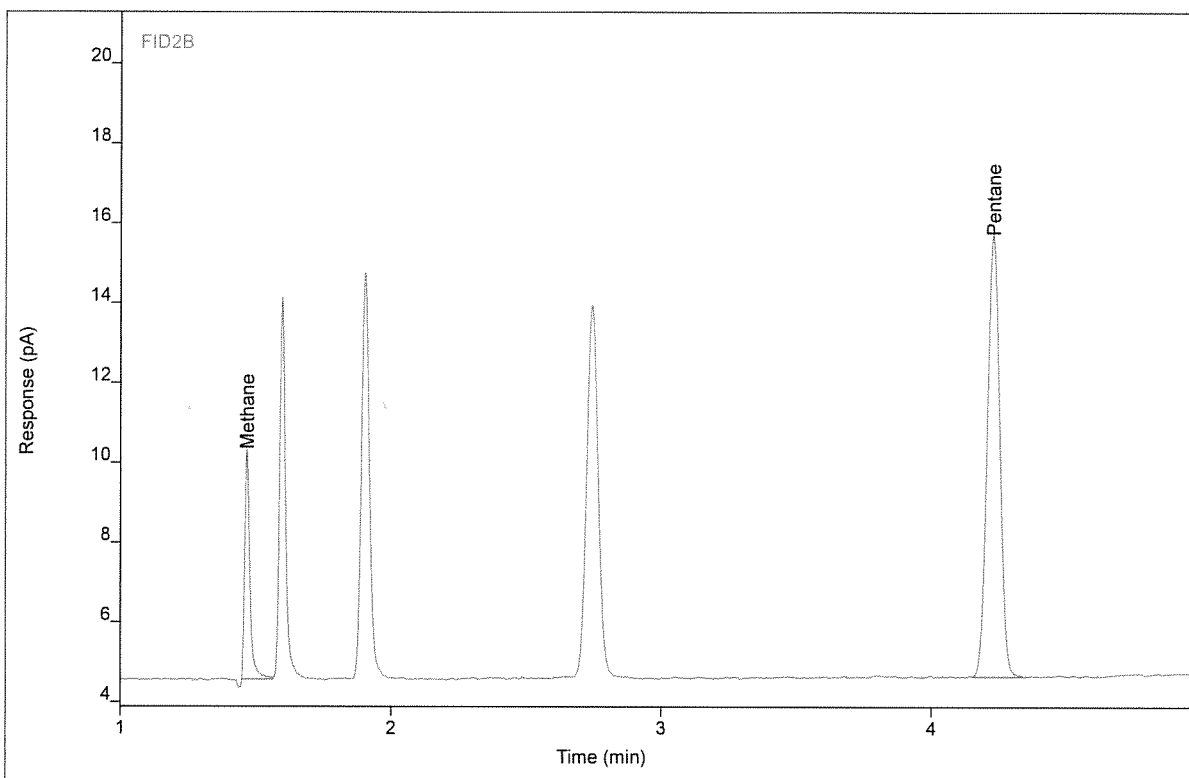
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.47	7.64640	5.76014	38.9428	1	38.9428	ppm
Pentane	BB	4.23	35.1954	11.0595	38.3950	1	38.3950	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop1054 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1056 ver.2
Inj Data File 032B0702.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/7/2017 3:40 AM
File Modified 7/10/2017 9:20 AM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 7/5/2017 2:48 PM
Printed 7/10/2017 12:09 PM



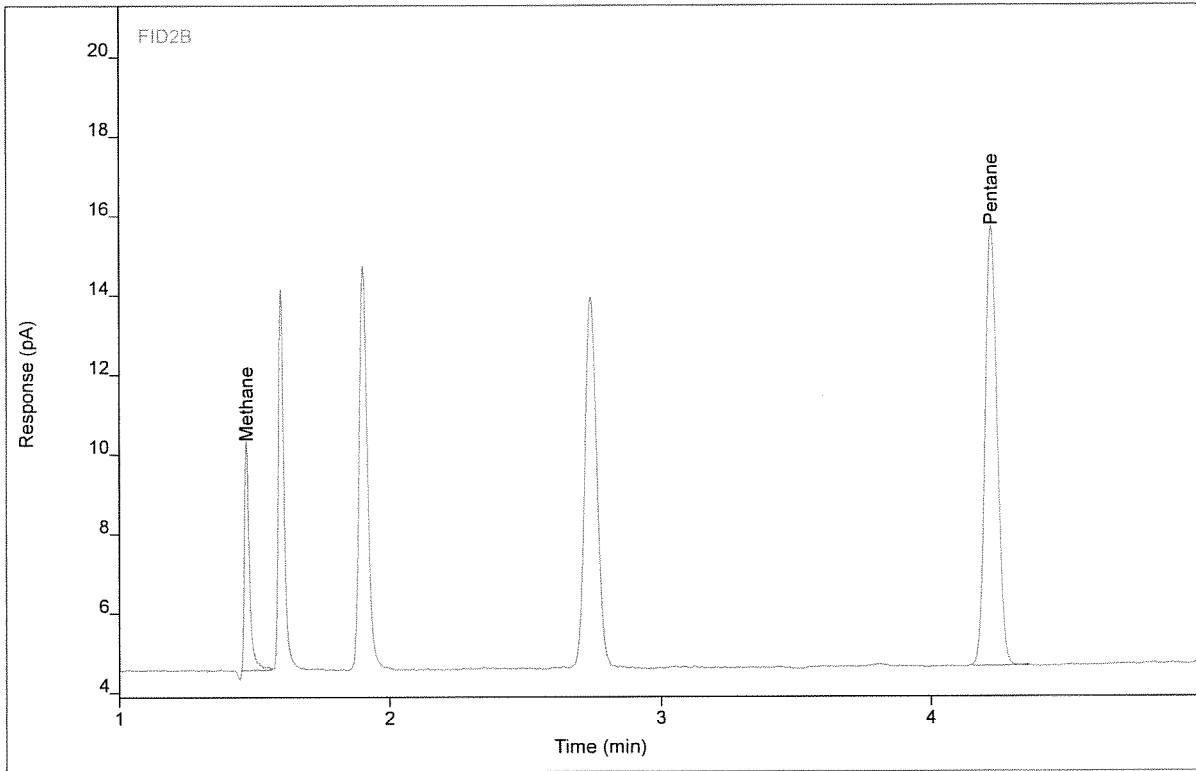
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PV	1.47	7.61969	5.74268	38.8086	1	38.8086	ppm
Pentane	BB	4.23	35.2379	11.0664	38.4413	1	38.4413	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop1054 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1056 ver.2
Inj Data File 032B0703.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 7/7/2017 3:59 AM
File Modified 7/10/2017 9:20 AM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 7/5/2017 2:48 PM
Printed 7/10/2017 12:09 PM



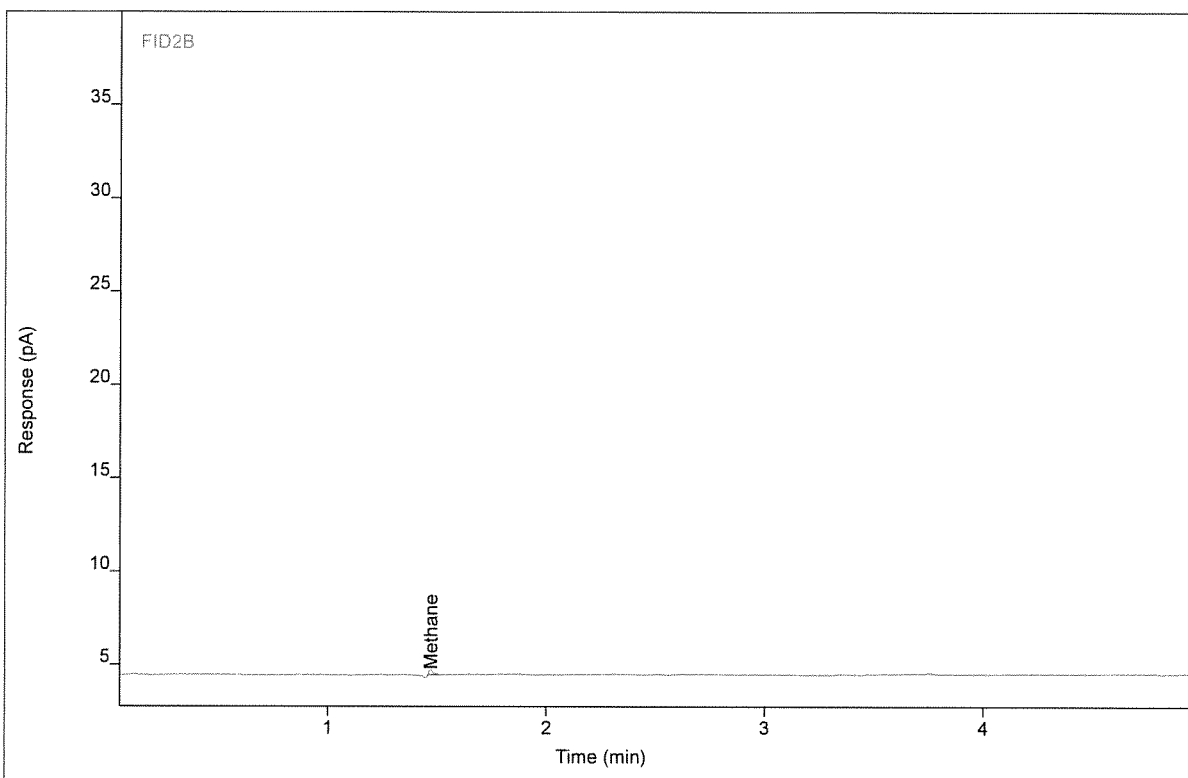
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PV	1.47	7.59267	5.66371	38.6729	1	38.6729	ppm
Pentane	BB	4.23	35.2335	11.0559	38.4365	1	38.4365	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Outlet Pr Run4 BL.Bag
Sequence Name GUMMOP1080 ver.6
Inj Data File 029B0901.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/28/2017 1:43 PM
File Modified 7/29/2017 9:52 AM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 29
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 7/29/2017 9:50 AM
Printed 8/4/2017 6:09 AM



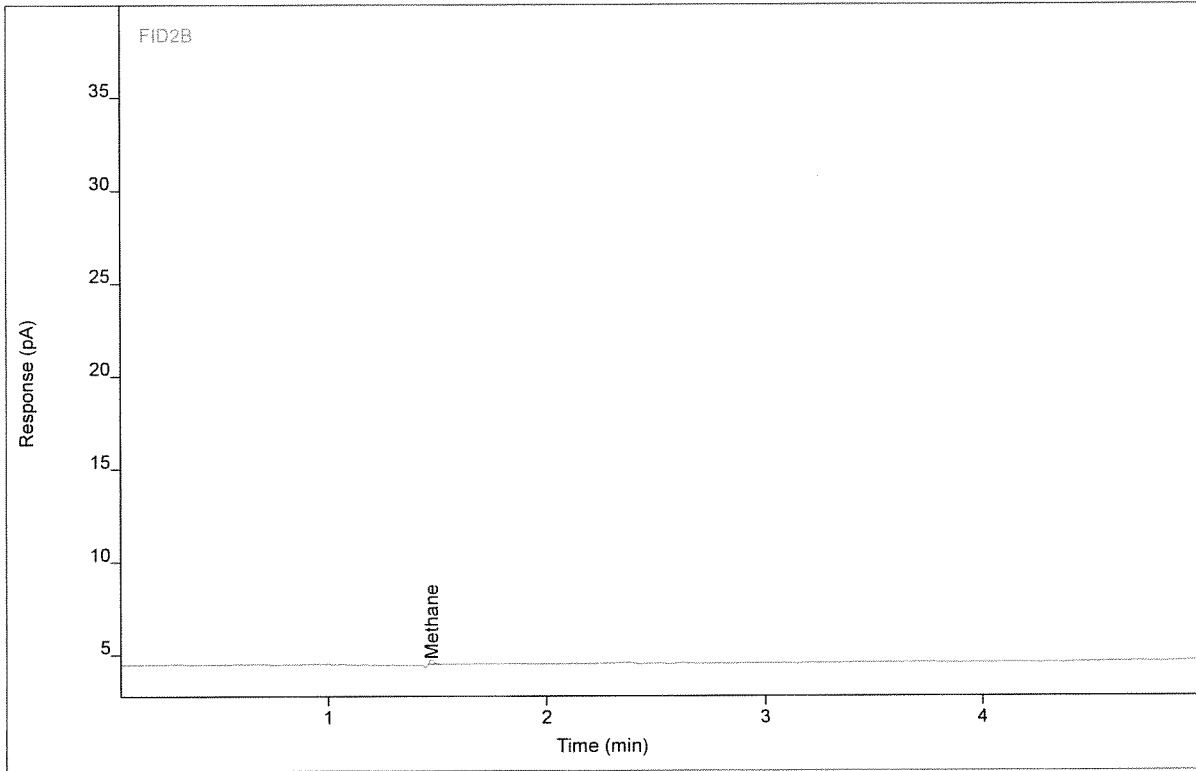
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.47	0.35454	0.29194	1.99277	1	1.99277	ppm
Pentane		(4.25)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Outlet Pr Run4 BL.Bag
Sequence Name GUMMOP1080 ver.6
Inj Data File 029B0902.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/28/2017 1:59 PM
File Modified 7/29/2017 9:52 AM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 29
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 7/29/2017 9:50 AM
Printed 8/4/2017 6:09 AM



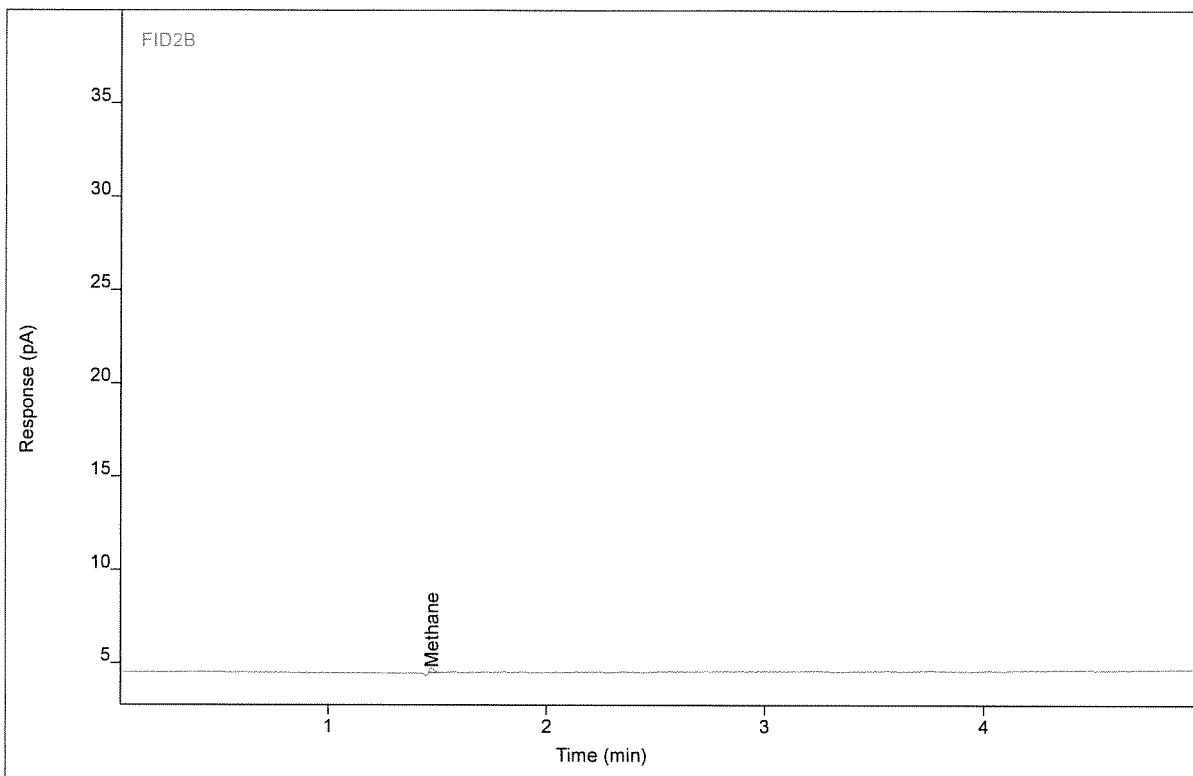
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.47	0.34691	0.28588	1.94988	1	1.94988	ppm
Pentane		(4.25)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Outlet Pr Run4 BL.Bag
Sequence Name GUMMOP1080 ver.6
Inj Data File 029B0903.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/28/2017 2:15 PM
File Modified 7/29/2017 9:52 AM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 29
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 7/29/2017 9:50 AM
Printed 8/4/2017 6:09 AM



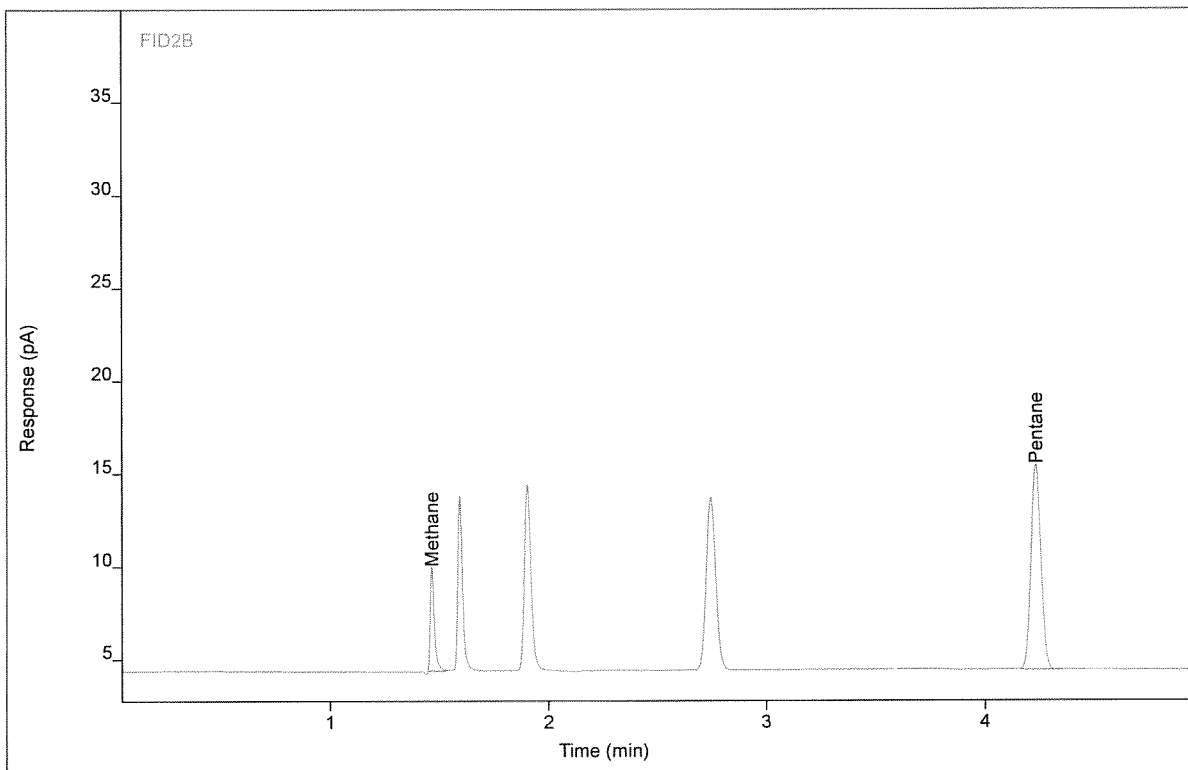
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	MM	1.47	0.32783	0.29044	1.84264	1	1.84264	ppm
Pentane		(4.25)				1		

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop1054 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1080 ver.6
Inj Data File 032B1601.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/29/2017 2:31 AM
File Modified 7/29/2017 9:53 AM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 7/29/2017 9:50 AM
Printed 8/4/2017 6:09 AM



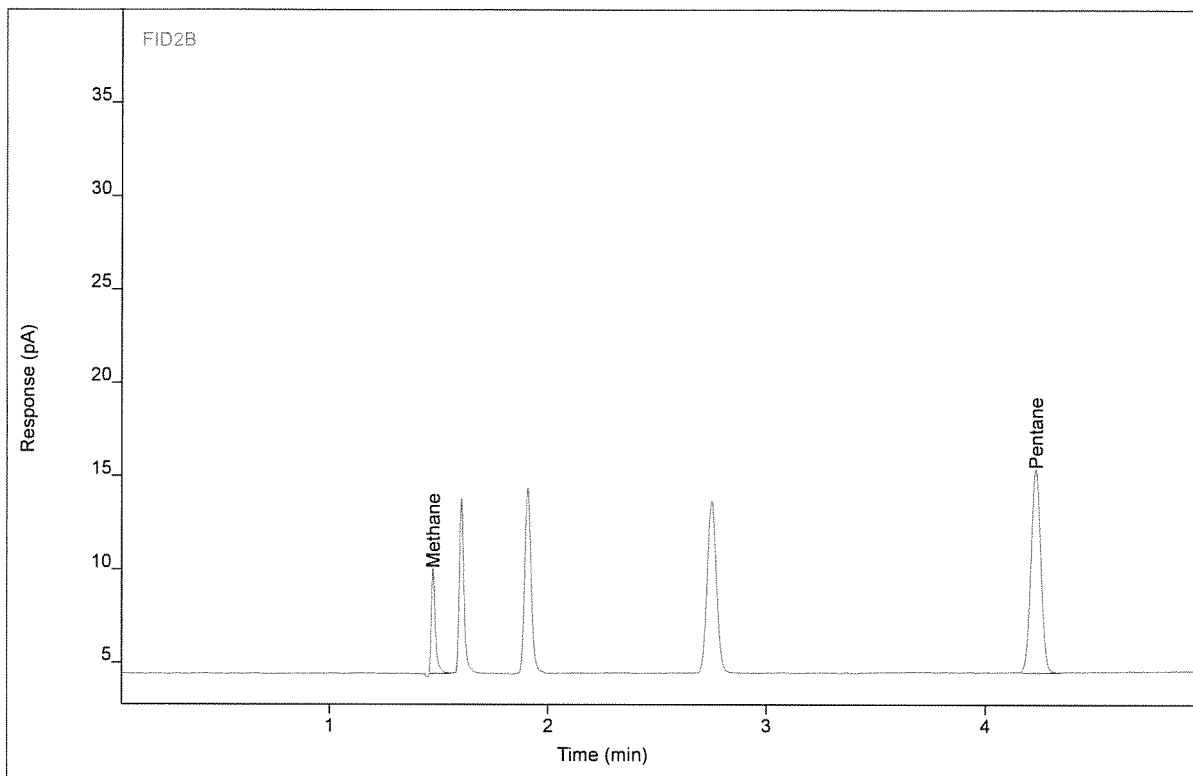
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.47	7.44616	5.59959	37.9369	1	37.9369	ppm
Pentane	BB	4.23	35.1358	11.0389	38.3299	1	38.3299	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop1054 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1080 ver.6
Inj Data File 032B1602.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/29/2017 2:49 AM
File Modified 7/29/2017 9:53 AM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 7/29/2017 9:50 AM
Printed 8/4/2017 6:09 AM



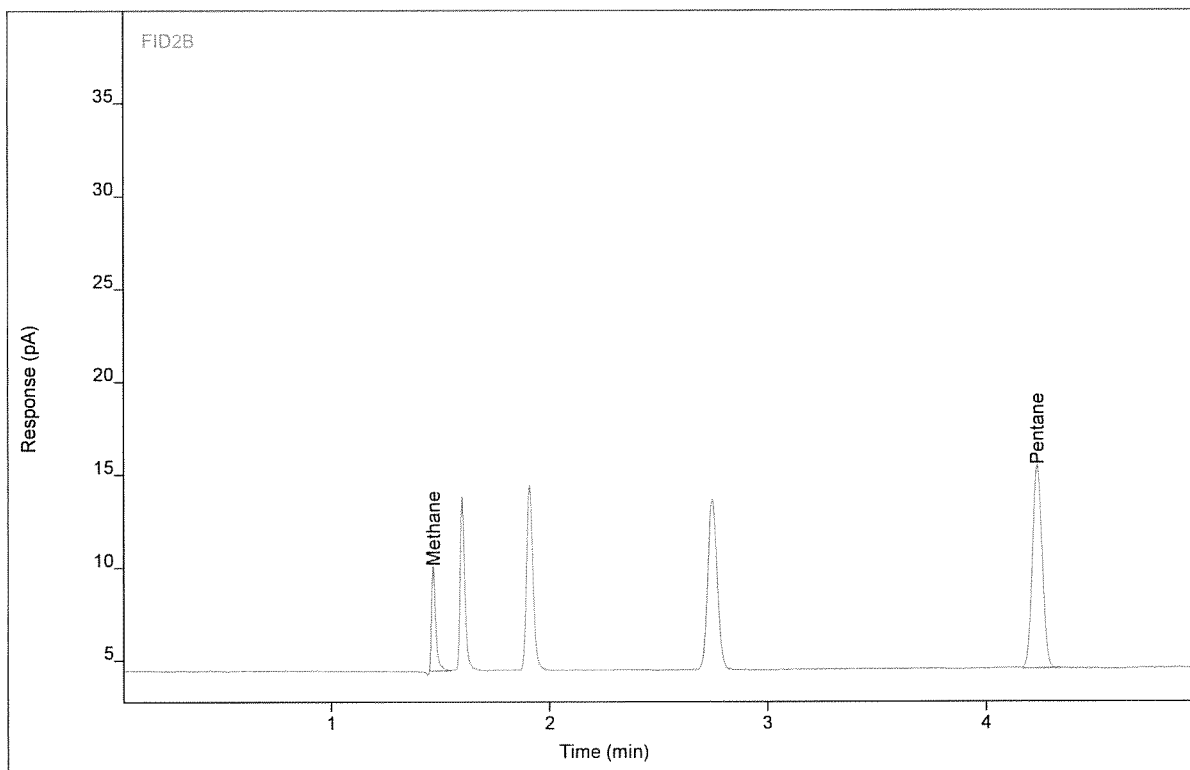
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.47	7.47283	5.62551	38.0709	1	38.0709	ppm
Pentane	BB	4.23	34.9946	10.9335	38.1760	1	38.1760	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop1054 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1080 ver.6
Inj Data File 032B1603.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 7/29/2017 3:08 AM
File Modified 7/29/2017 9:53 AM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 7/29/2017 9:50 AM
Printed 8/4/2017 6:09 AM



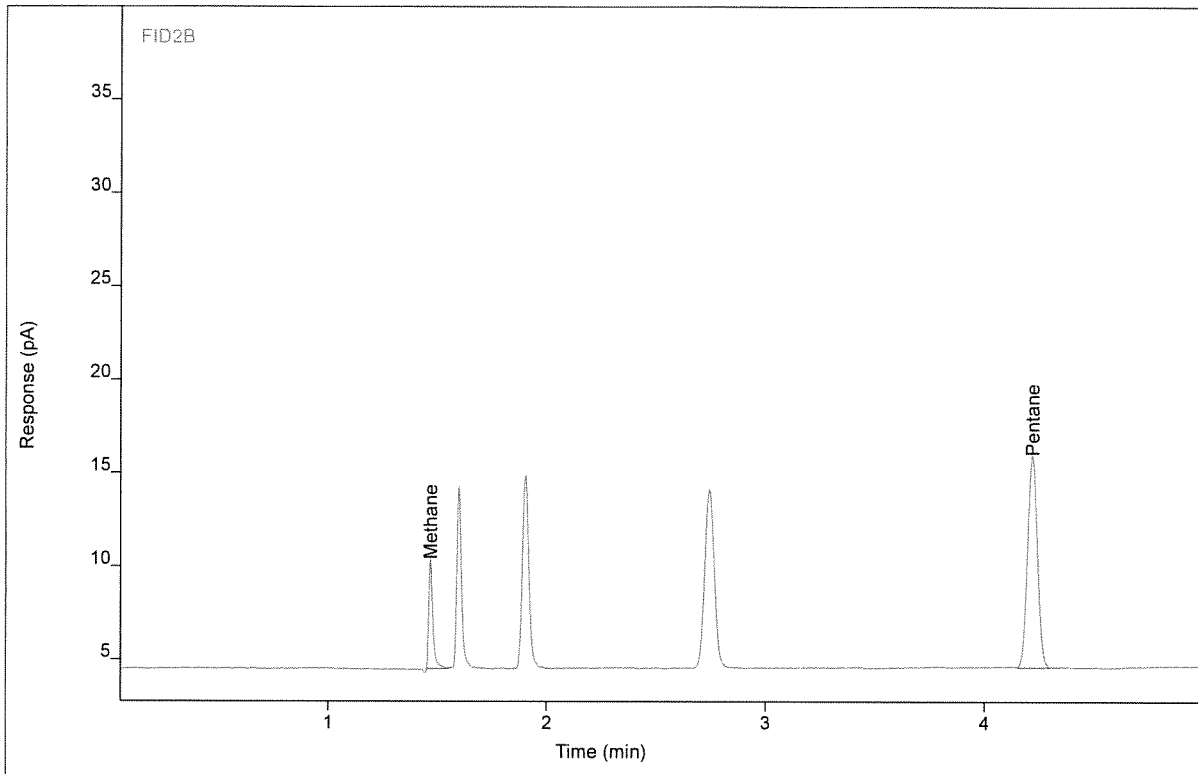
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.47	7.46214	5.63246	38.0172	1	38.0172	ppm
Pentane	BB	4.23	34.6438	10.9229	37.7937	1	37.7937	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop1054 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1089 ver.2
Inj Data File 032B0102.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 8/3/2017 7:08 AM
File Modified 8/3/2017 3:29 PM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 7/29/2017 9:50 AM
Printed 8/4/2017 6:09 AM



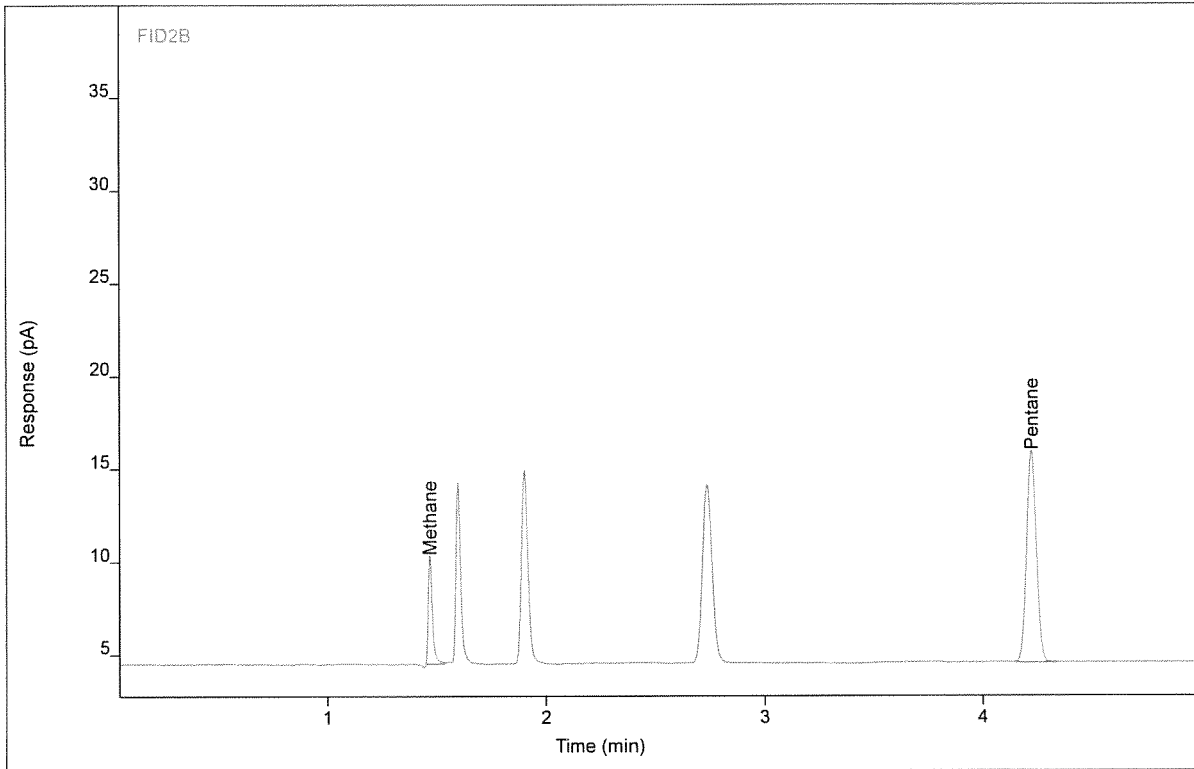
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.47	7.74452	5.83379	39.4357	1	39.4357	ppm
Pentane	BB	4.23	36.0530	11.3573	39.3297	1	39.3297	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop1054 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1089 ver.2
Inj Data File 032B0103.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 8/3/2017 7:21 AM
File Modified 8/3/2017 3:29 PM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 7/29/2017 9:50 AM
Printed 8/4/2017 6:09 AM



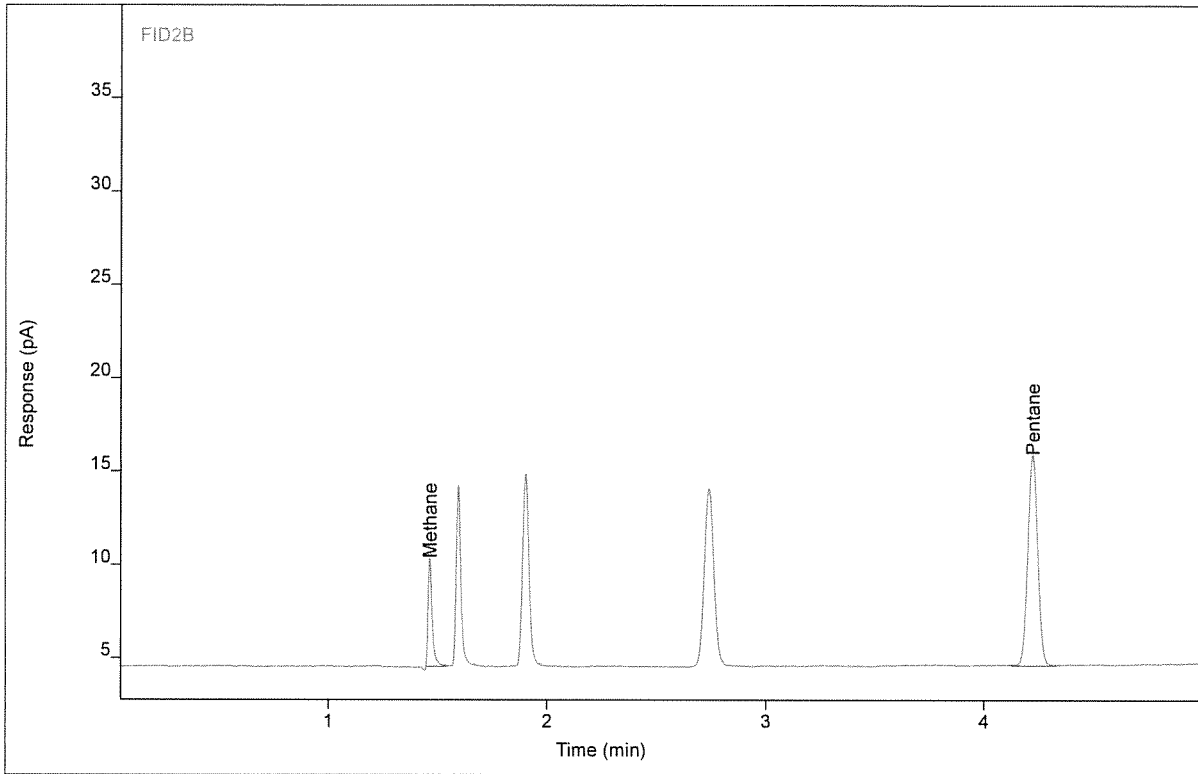
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.47	7.68559	5.82112	39.1397	1	39.1397	ppm
Pentane	BB	4.22	36.1743	11.3927	39.4618	1	39.4618	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop1054 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1089 ver.2
Inj Data File 032B0201.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 8/3/2017 7:40 AM
File Modified 8/3/2017 3:29 PM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 1 of 1
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 7/29/2017 9:50 AM
Printed 8/4/2017 6:09 AM



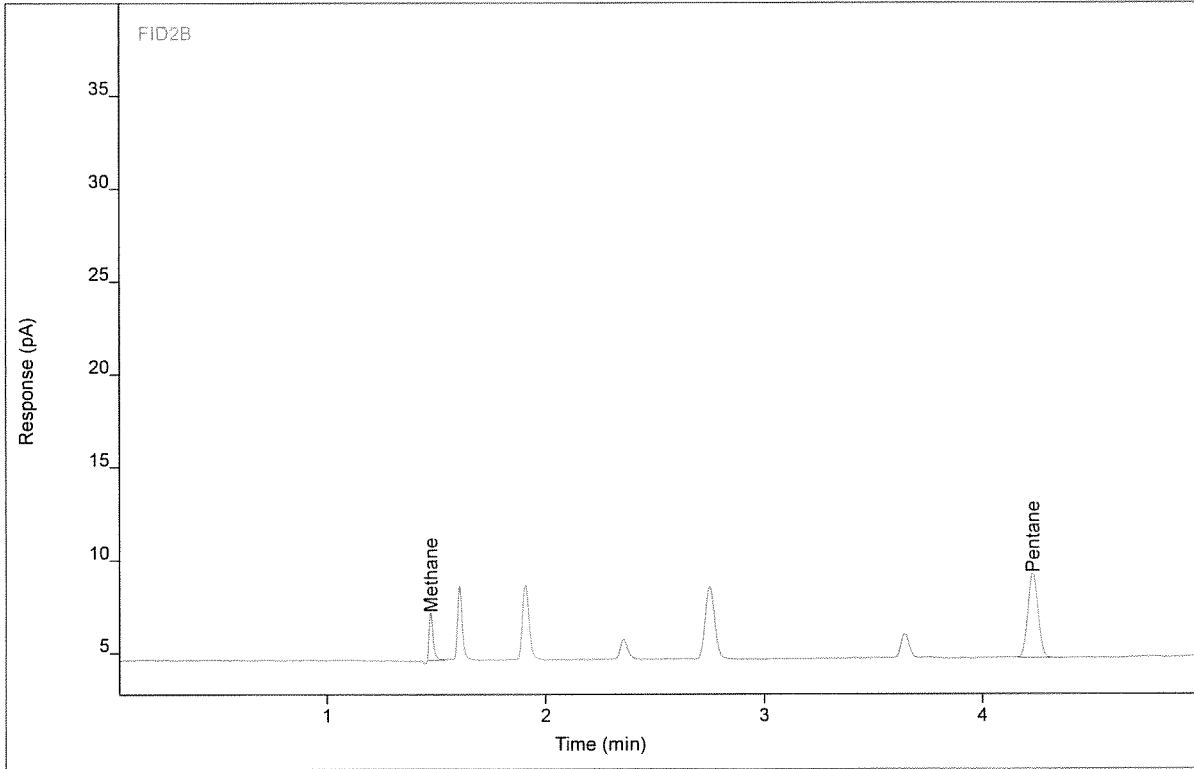
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.47	7.71129	5.79103	39.2688	1	39.2688	ppm
Pentane	BV	4.23	36.1117	11.2855	39.3937	1	39.3937	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Outlet Pr Run4 BL SP.Bag
Sequence Name GUMMOP1089 ver.2
Inj Data File 029B0801.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 8/3/2017 11:52 AM
File Modified 8/3/2017 3:30 PM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 29
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 7/29/2017 9:50 AM
Printed 8/4/2017 6:09 AM



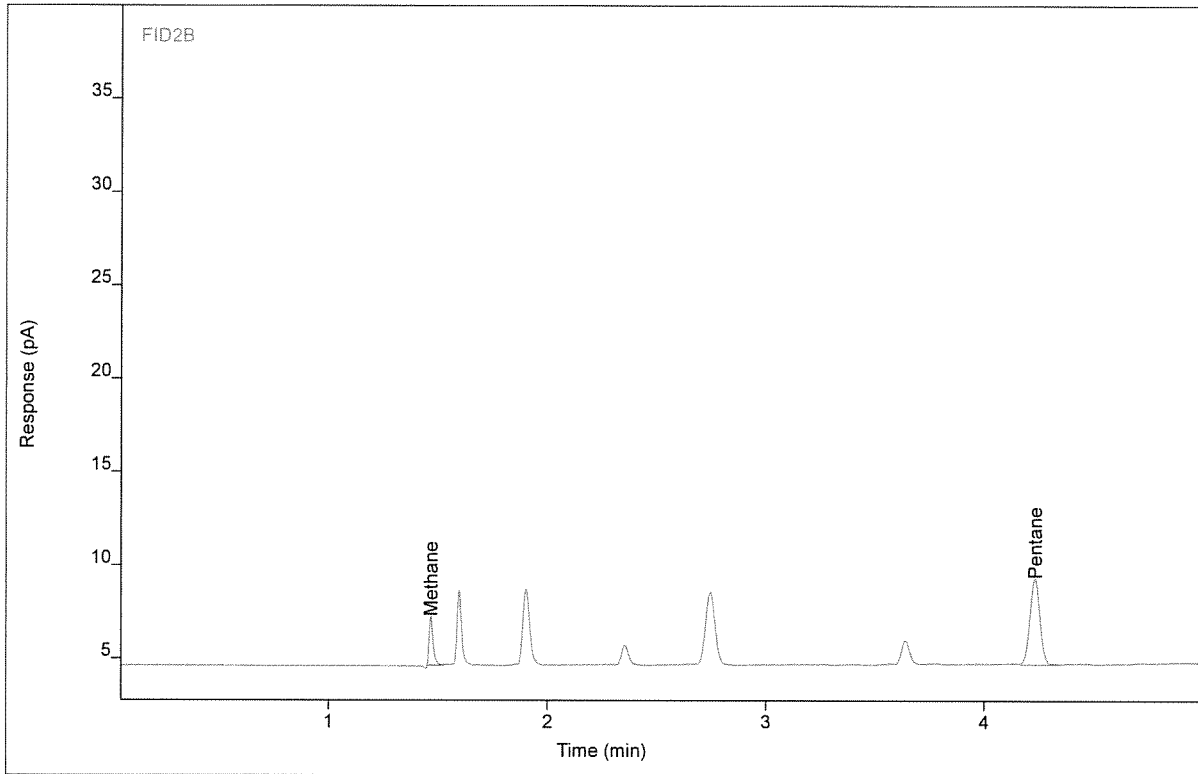
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.47	3.30333	2.58651	17.1255	1	17.1255	ppm
Pentane	BB	4.23	14.6387	4.56579	15.9892	1	15.9892	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Outlet Pr Run4 BL SP.Bag
Sequence Name GUMMOP1089 ver.2
Inj Data File 029B0802.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 8/3/2017 12:08 PM
File Modified 8/3/2017 3:30 PM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 29
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 7/29/2017 9:50 AM
Printed 8/4/2017 6:09 AM



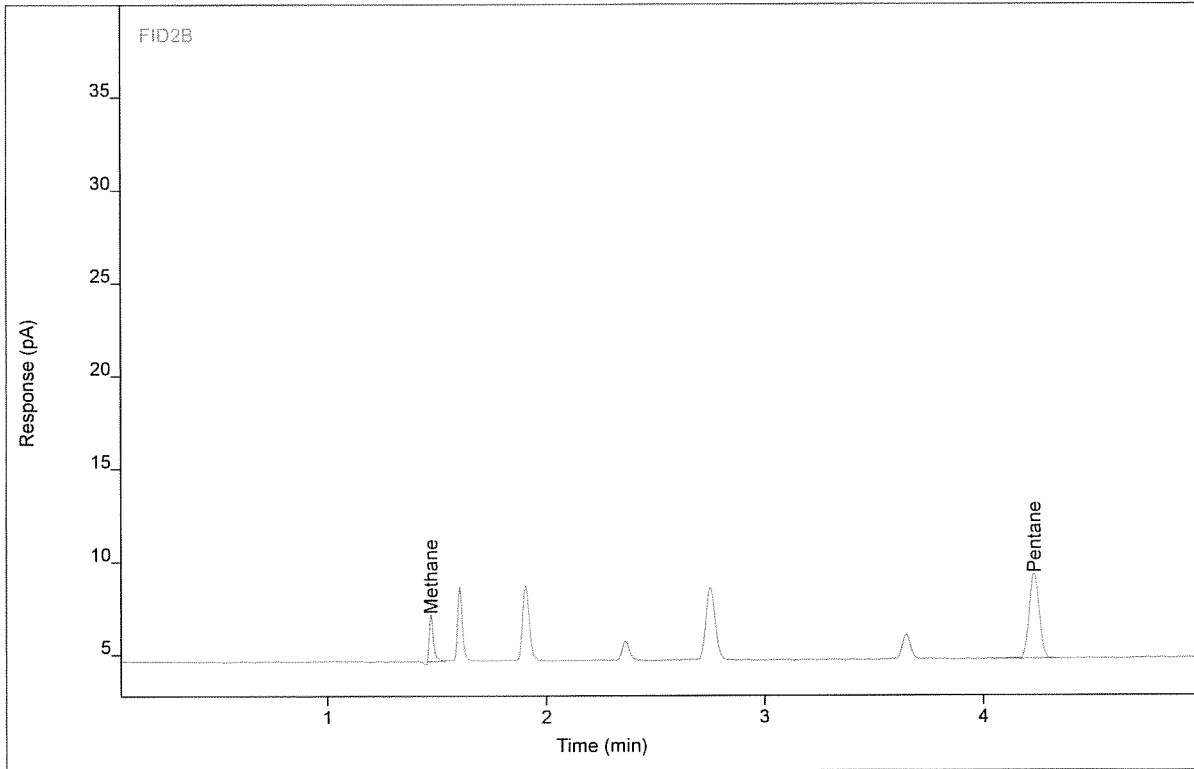
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.47	3.39782	2.61487	17.6002	1	17.6002	ppm
Pentane	BB	4.23	14.7354	4.61151	16.0947	1	16.0947	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name 0617-110.Repro Outlet Pr Run4 BL SP.Bag
Sequence Name GUMMOP1089 ver.2
Inj Data File 029B0803.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 8/3/2017 12:24 PM
File Modified 8/3/2017 3:30 PM
Instrument
Operator Justin Guenzler

Sample Type Sample
Vial Number Vial 29
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 7/29/2017 9:50 AM
Printed 8/4/2017 6:09 AM



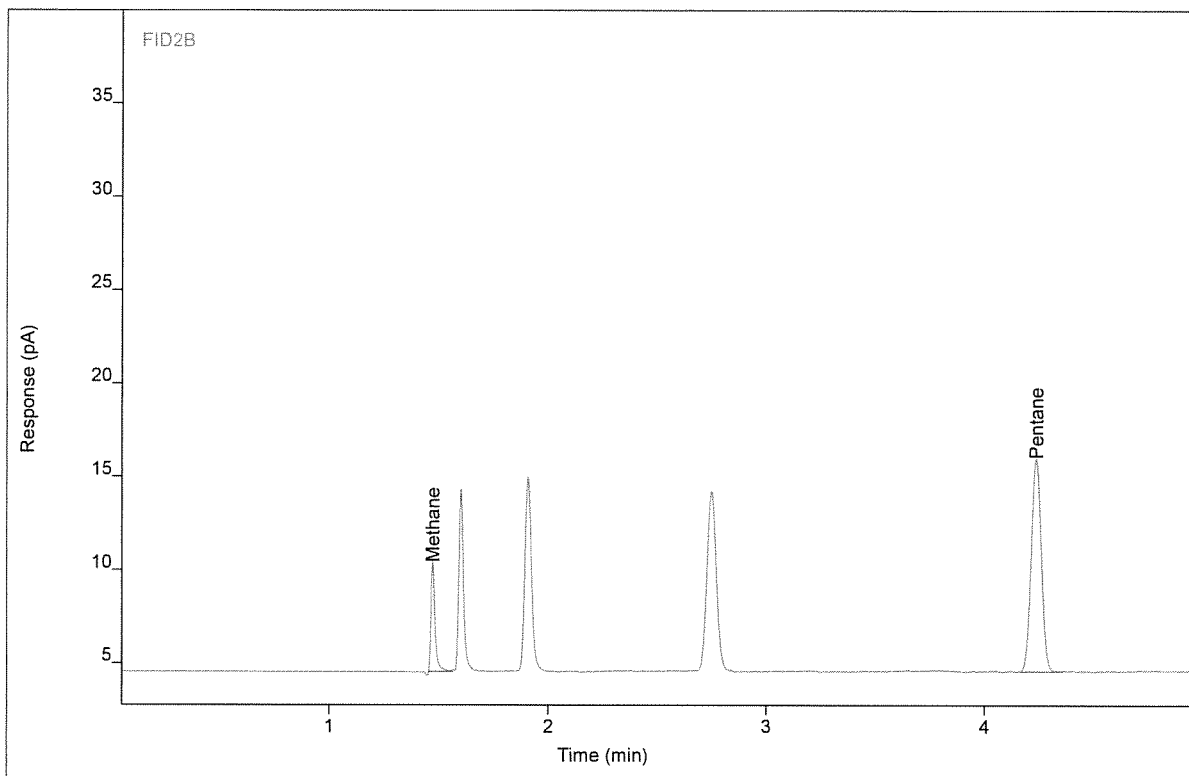
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.47	3.37946	2.55674	17.5079	1	17.5079	ppm
Pentane	BB	4.23	14.5311	4.57709	15.8720	1	15.8720	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop1054 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1089 ver.2
Inj Data File 032B1101.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 8/3/2017 2:06 PM
File Modified 8/3/2017 3:30 PM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 1 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 7/29/2017 9:50 AM
Printed 8/4/2017 6:09 AM



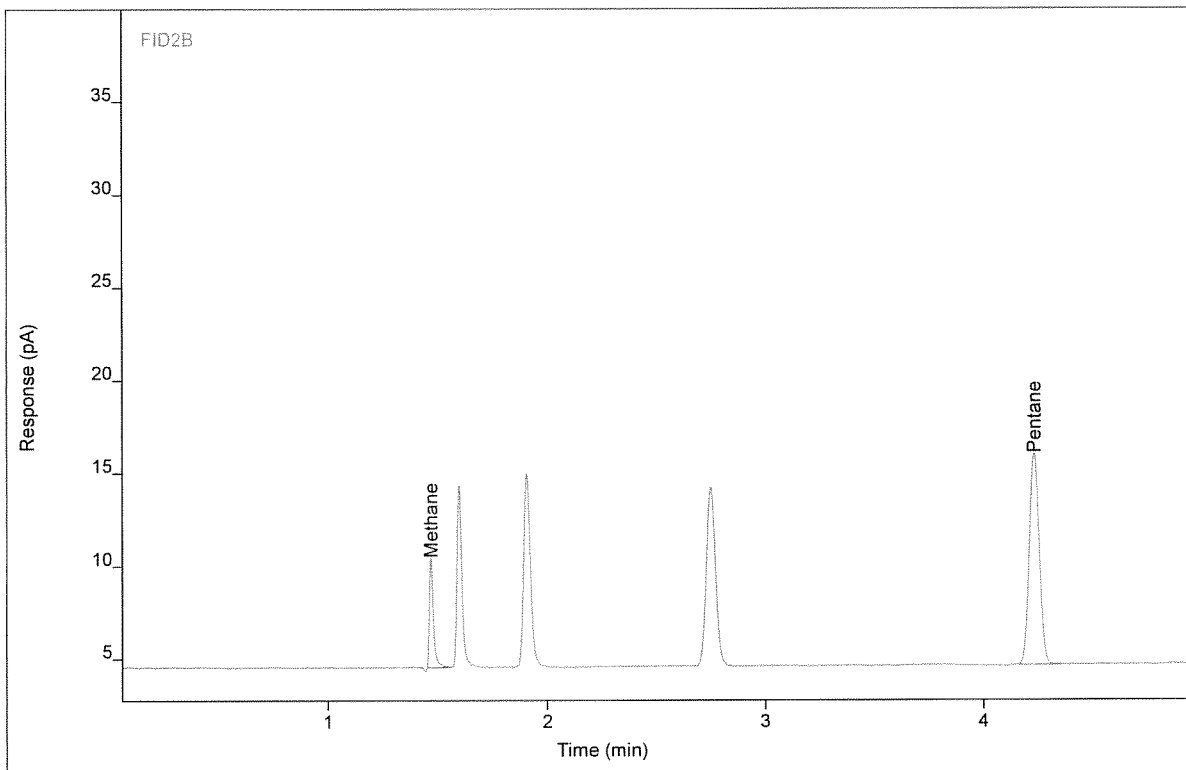
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PV	1.47	7.81456	5.82472	39.7876	1	39.7876	ppm
Pentane	BB	4.24	36.2806	11.4111	39.5777	1	39.5777	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop1054 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1089 ver.2
Inj Data File 032B1102.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 8/3/2017 2:24 PM
File Modified 8/3/2017 3:30 PM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 2 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 7/29/2017 9:50 AM
Printed 8/4/2017 6:09 AM



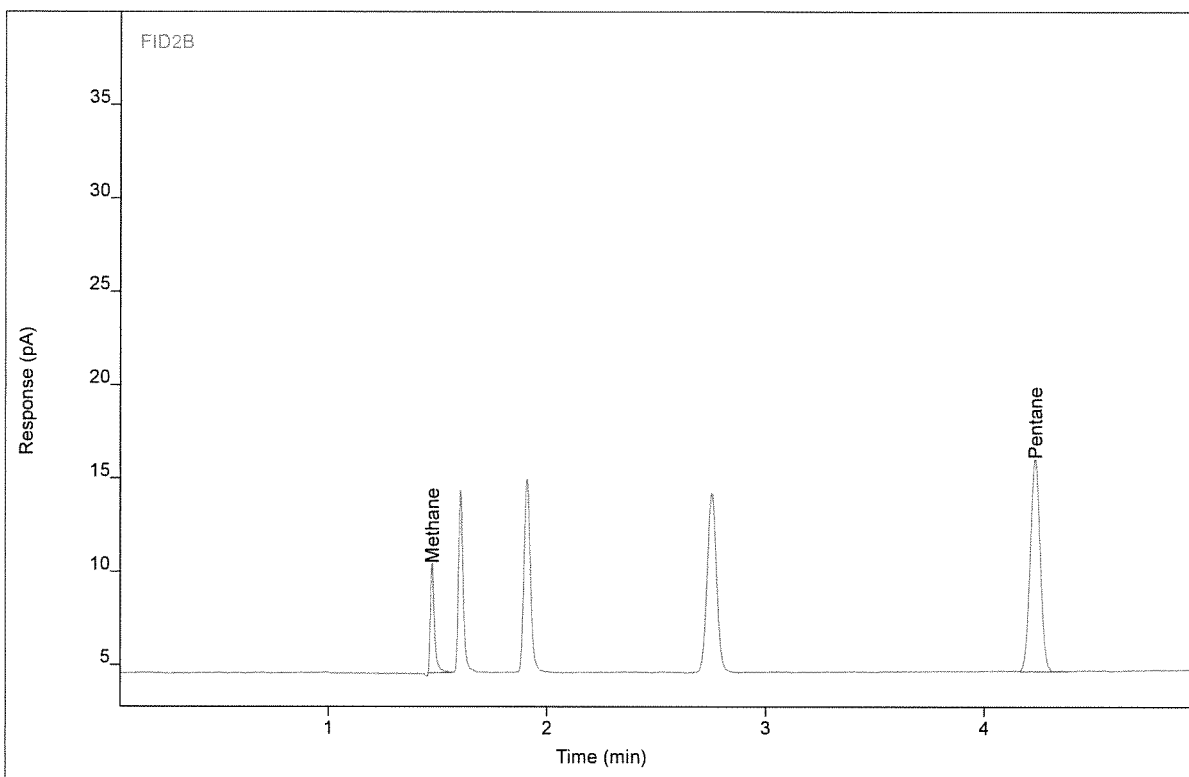
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.47	7.76672	5.90234	39.5472	1	39.5472	ppm
Pentane	BB	4.23	36.3011	11.3676	39.6001	1	39.6001	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop1054 #C3 ENV(1=600,2=400)
Sequence Name GUMMOP1089 ver.2
Inj Data File 032B1103.D
File Location GC/2017/Gummo/Quarter 3
Injection Date 8/3/2017 2:43 PM
File Modified 8/3/2017 3:30 PM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 3 of 3
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 7/29/2017 9:50 AM
Printed 8/4/2017 6:09 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.47	7.78363	5.81426	39.6322	1	39.6322	ppm
Pentane	BB	4.24	36.4371	11.4014	39.7483	1	39.7483	ppm

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Easton
 Job No.: 0617-110 - EPA Method 18
 Client No.: 016-AQS-149228

Methane -- Calibration Standards

Sample ID	Filename #1	Filename #2	Filename #3	Analysis Method	Ret Time (min)	Ret Time (min)	Ret Time (min)	%dif RT	Conc #1	Conc #2	Conc #3	%dif conc	Avg Conc ppm	Standard Tag ppm	% Tag
<i>gummop903 #C3 ENV(1=600,2=400)</i>	032B1501.D	032B1502.D	032B1503.D	GUMMOP987R_C1-C7.M	1.47	1.47	1.47	0.0	38.2	38.4	38.2	0.3	38.3	40.0	95.7
<i>zero air blank #LB</i>	024B1601.D	024B1602.D	024B1603.D	GUMMOP987R_C1-C7.M	NA	NA	NA	NA	0.287	0.287	0.287	0.0	0.287	NA	NA
<i>gummop903 #C3 ENV(1=600,2=400)</i>	032B3601.D	032B3602.D	032B3603.D	GUMMOP987R_C1-C7.M	1.48	1.48	1.48	0.0	38.4	38.4	38.0	0.7	38.3	40.0	95.7
<i>gummop903 #C3 ENV(1=600,2=400)</i>	032B1101.D	032B1102.D	032B1103.D	GUMMOP987R_C1-C7.M	1.47	1.47	1.47	0.0	38.3	38.6	38.7	0.7	38.5	40.0	96.3
<i>gummop1054 #C3 ENV(1=600,2=400)</i>	032B1102.D	032B1103.D	032B1201.D	GUMMOP987R_C1-C7.M	1.47	1.47	1.47	0.0	50.4	39.5	38.7	17.6	42.9	40.0	107
<i>gummop1054 #C3 ENV(1=600,2=400)</i>	032B1001.D	032B1002.D	032B1003.D	GUMMOP987R_C1-C7.M	1.47	1.47	1.47	0.0	38.9	38.0	38.1	1.4	38.3	40.0	95.8
<i>gummop1054 #C3 ENV(1=600,2=400)</i>	032B1601.D	032B1602.D	032B1603.D	GUMMOP987R_C1-C7.M	1.47	1.47	1.47	0.0	37.9	38.1	38.0	0.2	38.0	40.0	95.0
<i>gummop1054 #C3 ENV(1=600,2=400)</i>	032B0102.D	032B0103.D	032B0201.D	GUMMOP987R_C1-C7.M	1.47	1.47	1.47	0.0	39.4	39.1	39.3	0.4	39.3	40.0	98.2
<i>gummop1054 #C3 ENV(1=600,2=400)</i>	032B1101.D	032B1102.D	032B1103.D	GUMMOP987R_C1-C7.M	1.47	1.47	1.47	0.0	39.8	39.5	39.6	0.3	39.7	40.0	99.1

Acrolein -- Calibration Standards

Sample ID	Filename #1	Filename #2	Filename #3	Analysis Method	Ret Time (min)	Ret Time (min)	Ret Time (min)	%dif RT	Conc #1	Conc #2	Conc #3	%dif conc	Avg Conc ppm	Standard Tag ppm	% Tag
<i>gummop980 #AA2 ENV(1=800,5=200)</i>	016F1302.D	016F1303.D	016F1304.D	GUMMOP1039F_AA.M	3.46	3.46	3.46	0.0	51.7	51.0	50.1	1.6	51.0	50.0	102
<i>zero air blank #LB</i>	008F1601.D	008F1602.D	008F1603.D	GUMMOP1039F_AA.M	NA	NA	NA	NA	0.225	0.225	0.225	0.0	0.225	NA	NA
<i>gummop980 #AA2 ENV(1=800,5=200)</i>	016F2602.D	016F2603.D	016F2604.D	GUMMOP1039F_AA.M	3.46	3.46	3.46	0.0	49.9	49.2	49.1	1.1	49.4	50.0	98.8
<i>gummop980 #AA2 ENV(1=800,5=200)</i>	016F0902.D	016F0903.D	016F0904.D	GUMMOP1039F_AA.M	3.46	3.46	3.46	0.0	50.8	50.4	51.9	1.7	51.0	50.0	102
<i>gummop980 #AA2 ENV(1=800,5=200)</i>	016F1702.D	016F1703.D	016F1704.D	GUMMOP1039F_AA.M	3.46	3.46	3.46	0.0	51.3	50.2	50.3	1.3	50.6	50.0	101
<i>gummop1075 #AA2 ENV(1=800,5=200)</i>	016F0902.D	016F0903.D	016F0904.D	GUMMOP1075F_AA.M	3.44	3.44	3.44	0.0	45.1	46.8	45.9	2.0	45.9	48.4	94.9
<i>gummop980 #AA2 ENV(1=800,5=200)</i>	016F1502.D	016F1503.D	016F1504.D	GUMMOP1075F_AA.M	3.45	3.45	3.45	0.0	45.4	46.3	46.1	1.2	45.9	50.0	91.9
<i>gummop1075 #AA2 ENV(1=800,5=200)</i>	016F0602.D	016F0603.D	016F0604.D	GUMMOP1075F_AA.M	3.44	3.44	3.44	0.0	46.0	45.7	46.8	1.4	46.2	48.4	95.4
<i>gummop1075 #AA2 ENV(1=800,5=200)</i>	016F1002.D	016F1003.D	016F1004.D	GUMMOP1075F_AA.M	3.44	3.44	3.44	0.0	44.7	47.1	46.2	2.8	46.0	48.4	95.1

Enthalpy Analytical

Company: Montrose Air Quality Services, LLC - Easton
 Job No.: 0617-110 - EPA Method 18
 Client No.: 016-AQS-149228

Pentane -- Calibration Standards

Sample ID	Filename #1	Filename #2	Filename #3	Analysis Method	Ret Time (min)	Ret Time (min)	%dif RT	Conc #1	Conc #2	Conc #3	%dif conc	Avg Conc ppm	Standard Tag ppm	% Tag
<i>gummop903 #C3 ENV(1=600,2=400)</i>	032B1501.D	032B1502.D	032B1503.D	GUMMOP987R_C1-C7.M	4.24	4.23	0.0	39.1	39.0	38.9	0.2	39.0	40.0	97.5
<i>zero air blank #LB</i>	024B1601.D	024B1602.D	024B1603.D	GUMMOP987R_C1-C7.M	NA	NA	NA	0.250	0.250	0.250	0.0	0.250	NA	NA
<i>gummop903 #C3 ENV(1=600,2=400)</i>	032B3601.D	032B3602.D	032B3603.D	GUMMOP987R_C1-C7.M	4.24	4.25	0.0	39.1	39.0	38.9	0.3	39.0	40.0	97.5
<i>gummop903 #C3 ENV(1=600,2=400)</i>	032B1101.D	032B1102.D	032B1103.D	GUMMOP987R_C1-C7.M	4.24	4.24	0.0	38.7	39.0	39.2	0.6	39.0	40.0	97.4
<i>gummop1054 #C3 ENV(1=600,2=400)</i>	032B1102.D	032B1103.D	032B1201.D	GUMMOP987R_C1-C7.M	4.23	4.23	0.0	40.0	38.9	38.7	1.9	39.2	40.0	98.0
<i>gummop1054 #C3 ENV(1=600,2=400)</i>	032B1001.D	032B1002.D	032B1003.D	GUMMOP987R_C1-C7.M	4.24	4.24	0.0	38.8	38.5	38.8	0.4	38.7	40.0	96.7
<i>gummop1054 #C3 ENV(1=600,2=400)</i>	032B1601.D	032B1602.D	032B1603.D	GUMMOP987R_C1-C7.M	4.23	4.23	0.0	38.3	38.2	37.8	0.8	38.1	40.0	95.2
<i>gummop1054 #C3 ENV(1=600,2=400)</i>	032B0102.D	032B0103.D	032B0201.D	GUMMOP987R_C1-C7.M	4.23	4.22	0.0	39.3	39.5	39.4	0.2	39.4	40.0	98.5
<i>gummop1054 #C3 ENV(1=600,2=400)</i>	032B1101.D	032B1102.D	032B1103.D	GUMMOP987R_C1-C7.M	4.24	4.23	0.0	39.6	39.6	39.7	0.3	39.6	40.0	99.1

=====
 Calibration Table
 =====

Calib. Data Modified : Thursday, June 15, 2017 7:01:13 AM

Rel. Reference Window : 0.000 %
 Abs. Reference Window : 0.100 min
 Rel. Non-ref. Window : 0.000 %
 Abs. Non-ref. Window : 0.050 min
 Uncalibrated Peaks : not reported
 Partial Calibration : Yes, identified peaks are recalibrated
 Correct All Ret. Times: No, only for identified peaks

Curve Type : Linear
 Origin : Connected
 Weight : Quadratic (Amnt)

Recalibration Settings:
 Average Response : Average all calibrations
 Average Retention Time: Floating Average New 75%

Calibration Report Options :
 Printout of recalibrations within a sequence:
 Calibration Table after Recalibration
 Normal Report after Recalibration
 If the sequence is done with bracketing:
 Results of first cycle (ending previous bracket)

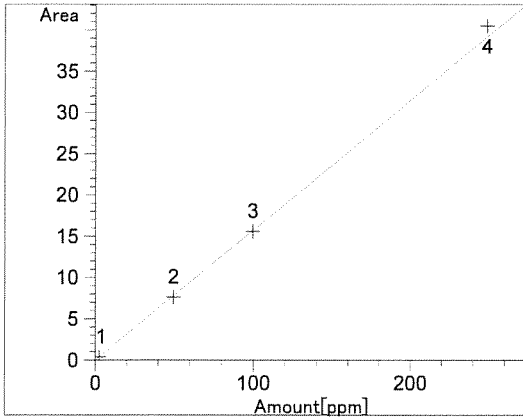
Signal 1: FID1 A,
 Signal 2: FID2 B,

RetTime [min]	Lvl Sig	Amount [ppm]	Area	Amt/Area	Ref Grp Name
2.264	1 1	2.49000	3.83248e-1	6.49710	Acetaldehyde
	2	49.80000	7.60253	6.55045	
	3	99.60000	15.59834	6.38529	
	4	249.00000	40.51589	6.14574	
3.452	1 1	2.50000	5.31030e-1	4.70783	Acrolein
	2	50.00000	13.70652	3.64790	
	3	100.00000	29.43284	3.39756	
	4	250.00000	81.38973	3.07164	

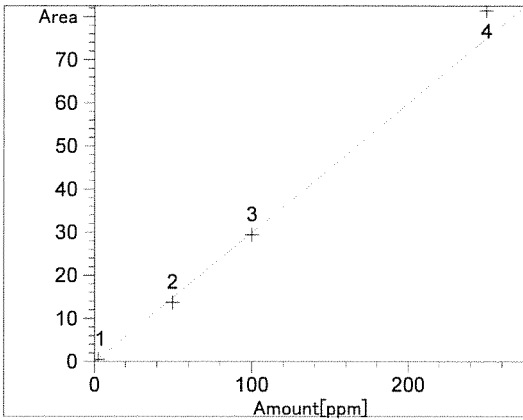
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 Peak Sum Table
 =====

No Entries in table
 =====

=====
Calibration Curves
=====



Acetaldehyde at exp. RT: 2.264
FID1 A,
Correlation: 0.99964
Residual Std. Dev.: 0.94041
Formula: $y = mx + b$
m: 1.57503e-1
b: -9.43159e-3
x: Amount
y: Area
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.0025
Level 3 : 0.000625
Level 4 : 0.0001



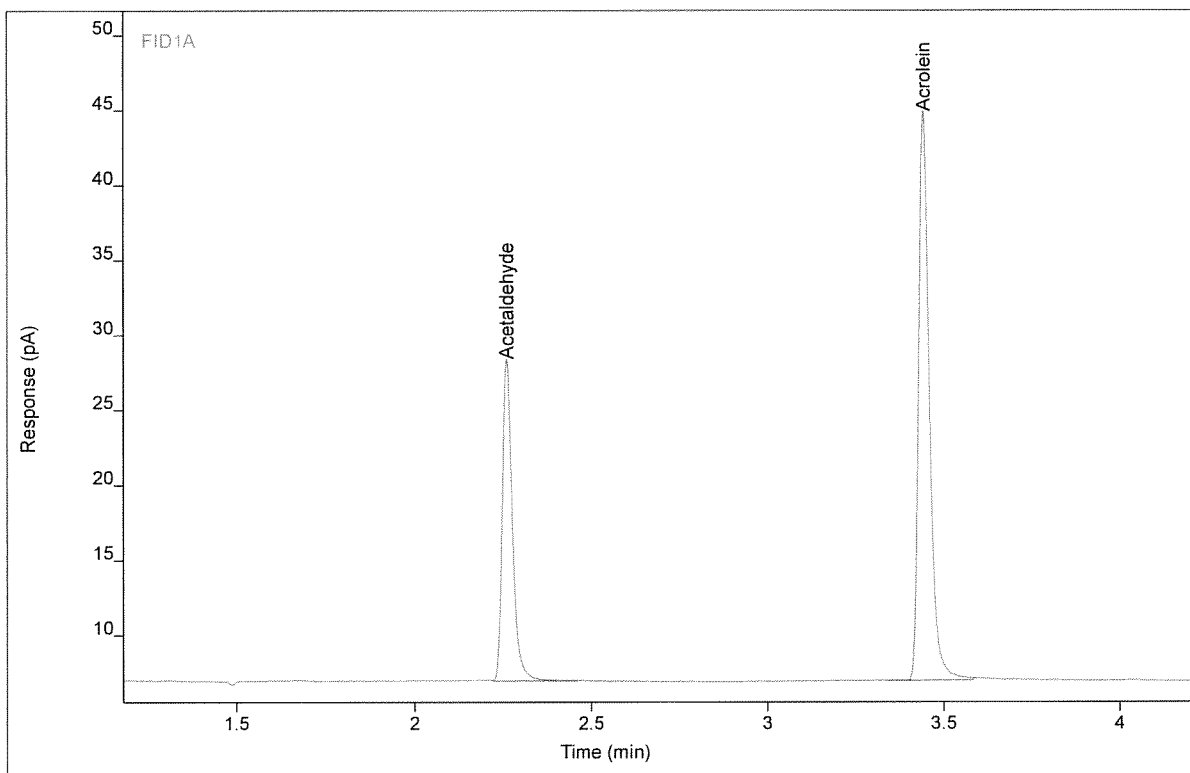
Acrolein at exp. RT: 3.452
FID1 A,
Correlation: 0.99772
Residual Std. Dev.: 4.60211
Formula: $y = mx + b$
m: 3.00861e-1
b: -2.23533e-1
x: Amount
y: Area
Calibration Level Weights:
Level 1 : 1
Level 2 : 0.0025
Level 3 : 0.000625
Level 4 : 0.0001

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop980 #AA4 ENV(1=0,6=400)
Sequence Name GUMMOP1039A ver.1
Inj Data File 016F0704.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/14/2017 4:52 PM
File Modified 6/22/2017 10:55 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 4 of 6
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 6/30/2017 8:47 AM



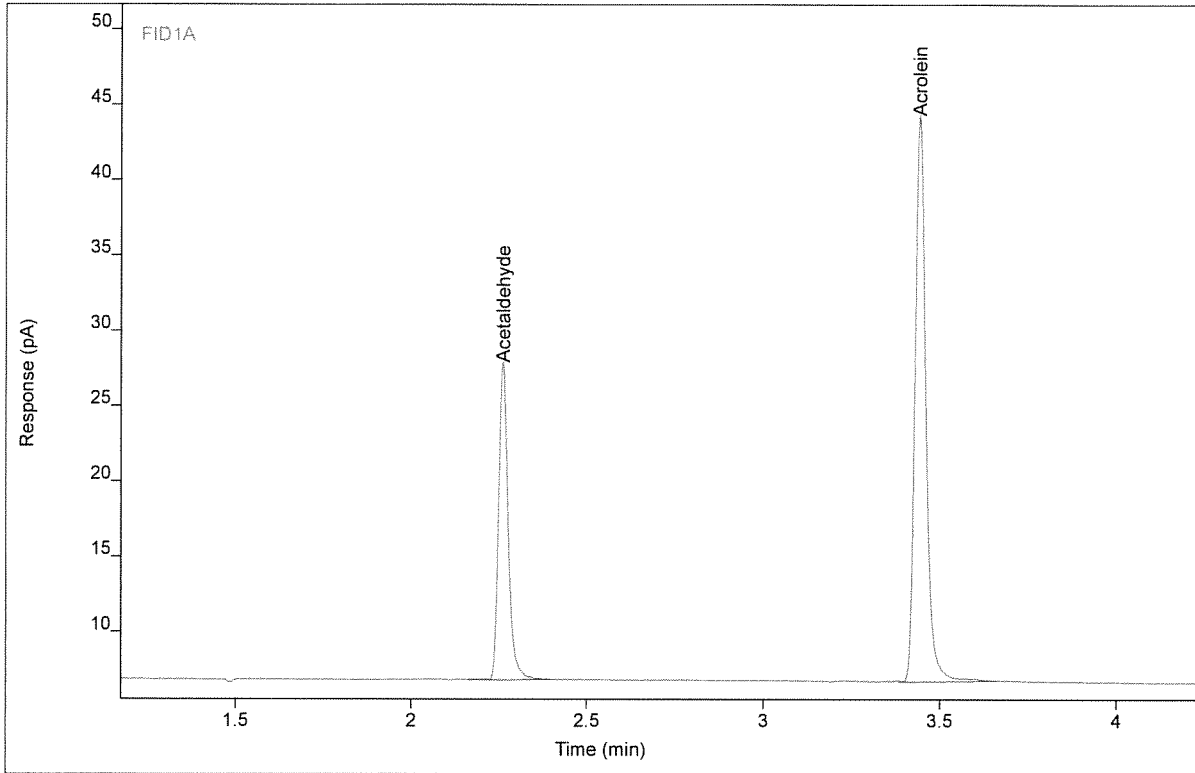
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	BB	2.26	40.9044	21.4237	259.766	1	259.766	ppm
Acrolein	BV	3.44	81.4762	37.8766	271.553	1	271.553	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop980 #AA4 ENV(1=0,6=400)
Sequence Name GUMMOP1039A ver. 1
Inj Data File 016F0705.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/14/2017 5:10 PM
File Modified 6/22/2017 10:55 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 5 of 6
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 6/30/2017 8:47 AM



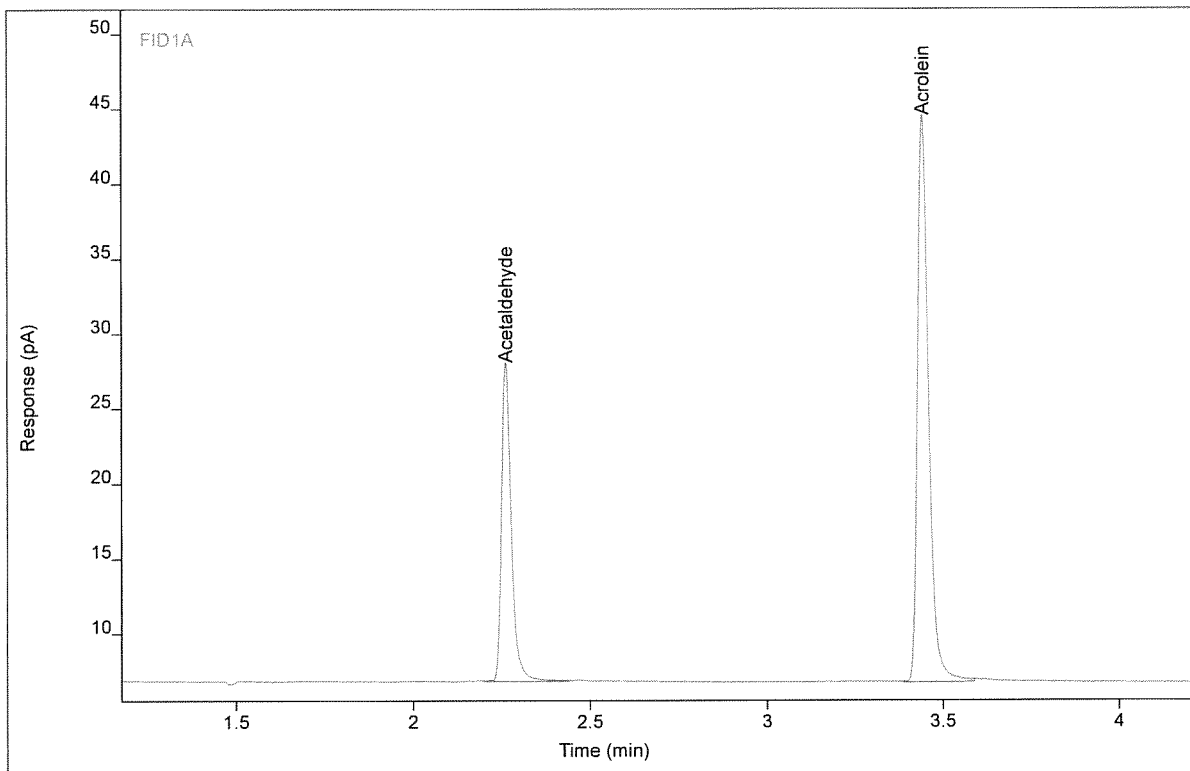
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	BB	2.26	39.8302	21.0224	252.946	1	252.946	ppm
Acrolein	VB	3.44	81.3170	37.5051	271.024	1	271.024	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop980 #AA4 ENV(1=0,6=400)
Sequence Name GUMMOP1039A ver. 1
Inj Data File 016F0706.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/14/2017 5:28 PM
File Modified 6/22/2017 10:55 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 6 of 6
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 6/30/2017 8:47 AM



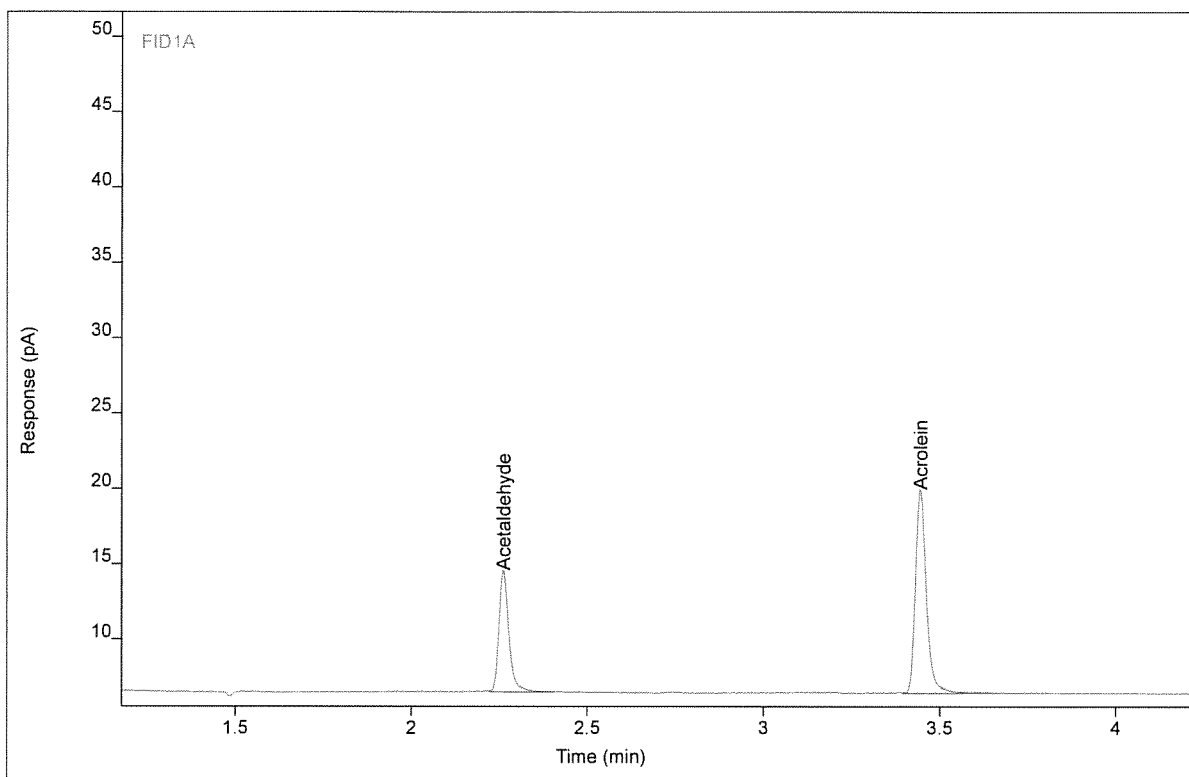
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	VB	2.26	40.8131	21.2119	259.187	1	259.187	ppm
Acrolein	VV	3.44	81.3761	37.7219	271.220	1	271.220	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop980 #AA3 ENV(1=600,6=400)
Sequence Name GUMMOP1039A ver.1
Inj Data File 016F0802.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/14/2017 6:05 PM
File Modified 6/22/2017 10:55 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 2 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 6/30/2017 8:47 AM



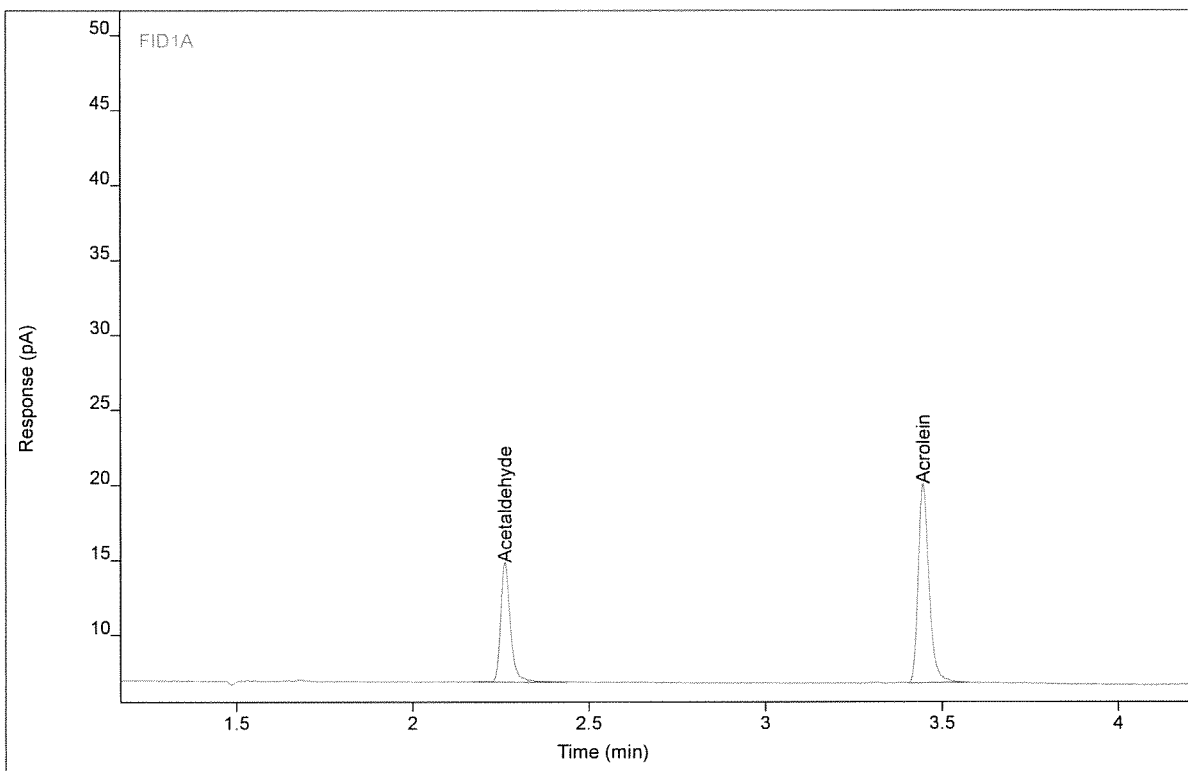
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	BV	2.26	15.7659	8.07783	100.159	1	100.159	ppm
Acrolein	VB	3.45	29.8364	13.5229	99.9130	1	99.9130	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop980 #AA3 ENV(1=600,6=400)
Sequence Name GUMMOP1039A ver.1
Inj Data File 016F0803.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/14/2017 6:23 PM
File Modified 6/22/2017 10:55 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 3 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 6/30/2017 8:47 AM



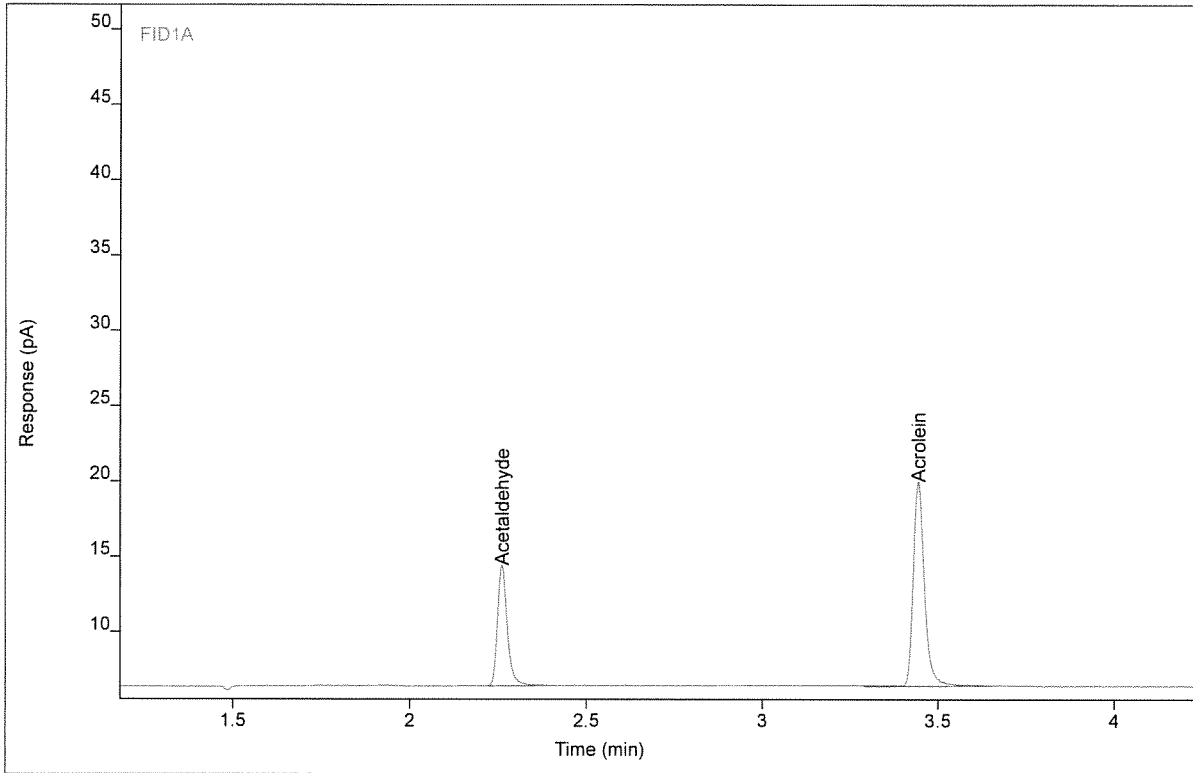
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	BB	2.26	15.6503	7.96744	99.4255	1	99.4255	ppm
Acrolein	BB	3.45	28.5465	13.2499	95.6259	1	95.6259	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop980 #AA3 ENV(1=600,6=400)
Sequence Name GUMMOP1039A ver.1
Inj Data File 016F0804.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/14/2017 6:41 PM
File Modified 6/22/2017 10:55 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 4 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 6/30/2017 8:47 AM



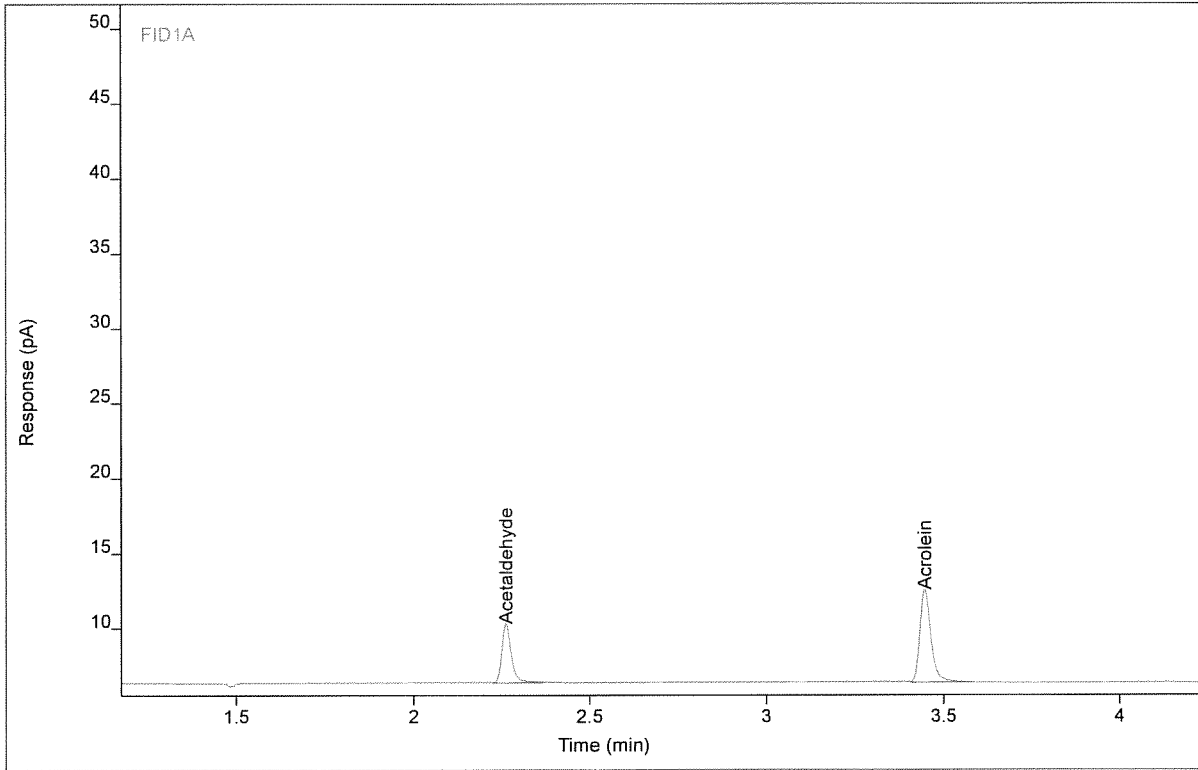
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	BB	2.26	15.3787	8.00094	97.7012	1	97.7012	ppm
Acrolein	VB	3.45	29.9156	13.5537	100.176	1	100.176	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop980 #AA2 ENV(1=800,6=200)
Sequence Name GUMMOP1039A ver.1
Inj Data File 016F0902.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/14/2017 7:18 PM
File Modified 6/22/2017 10:55 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 2 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 6/30/2017 8:47 AM



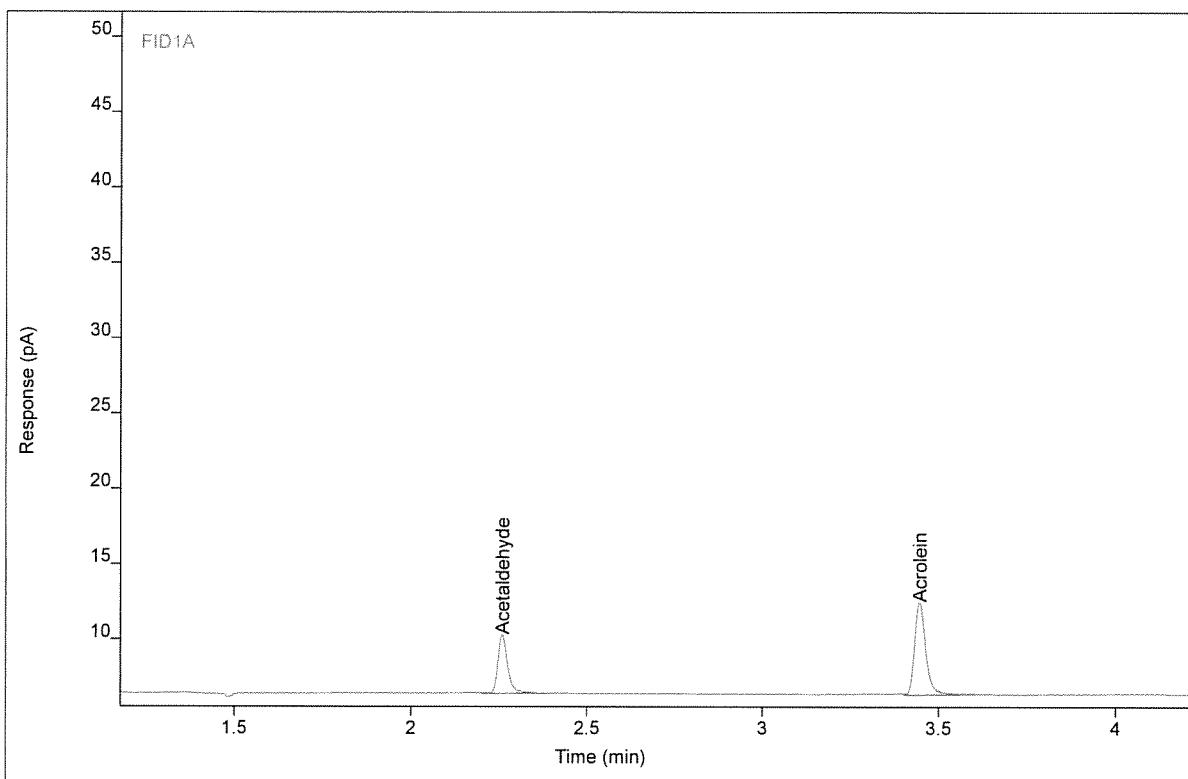
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	BB	2.26	7.70970	3.94120	49.0096	1	49.0096	ppm
Acrolein	BV	3.45	13.7294	6.17531	46.3767	1	46.3767	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop980 #AA2 ENV(1=800,6=200)
Sequence Name GUMMOP1039A ver. 1
Inj Data File 016F0903.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/14/2017 7:36 PM
File Modified 6/22/2017 10:55 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 3 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 6/30/2017 8:47 AM



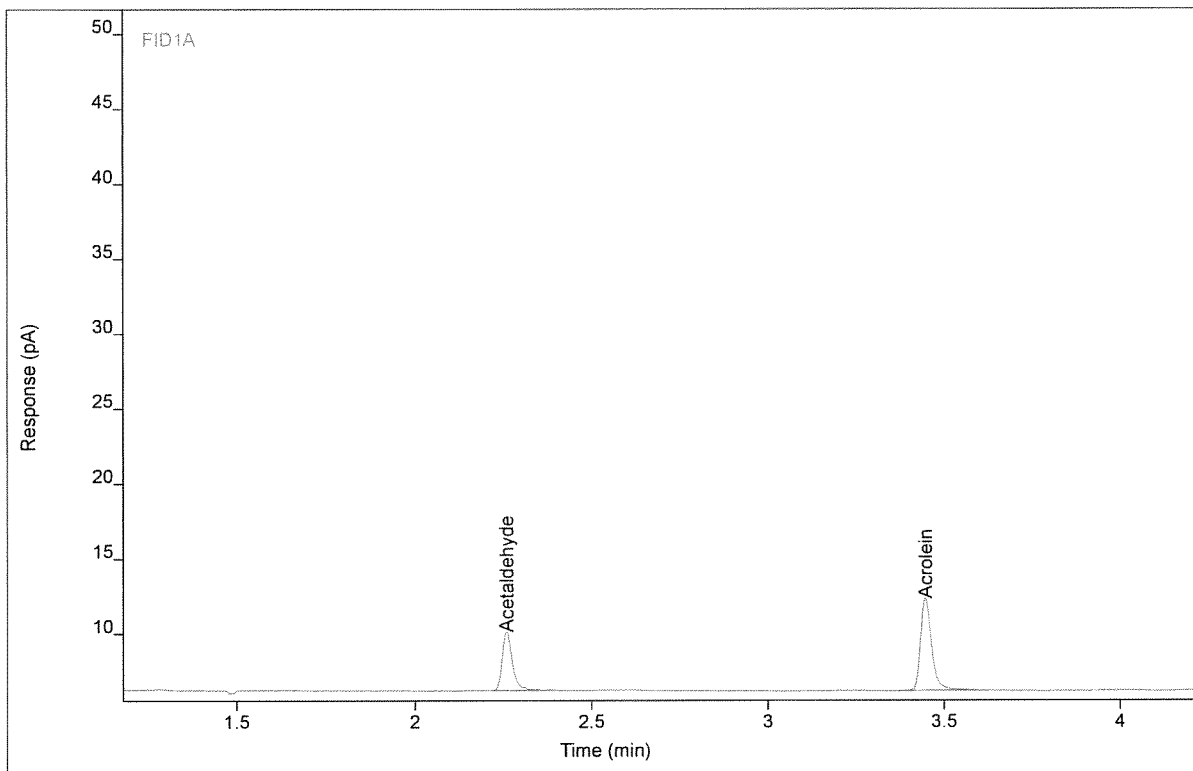
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	VB	2.26	7.45687	3.90894	47.4043	1	47.4043	ppm
Acrolein	BB	3.45	13.6794	6.17549	46.2105	1	46.2105	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop980 #AA2 ENV(1=800,6=200)
Sequence Name GUMMOP1039A ver.1
Inj Data File 016F0904.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/14/2017 7:54 PM
File Modified 6/22/2017 10:55 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 4 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 6/30/2017 8:47 AM



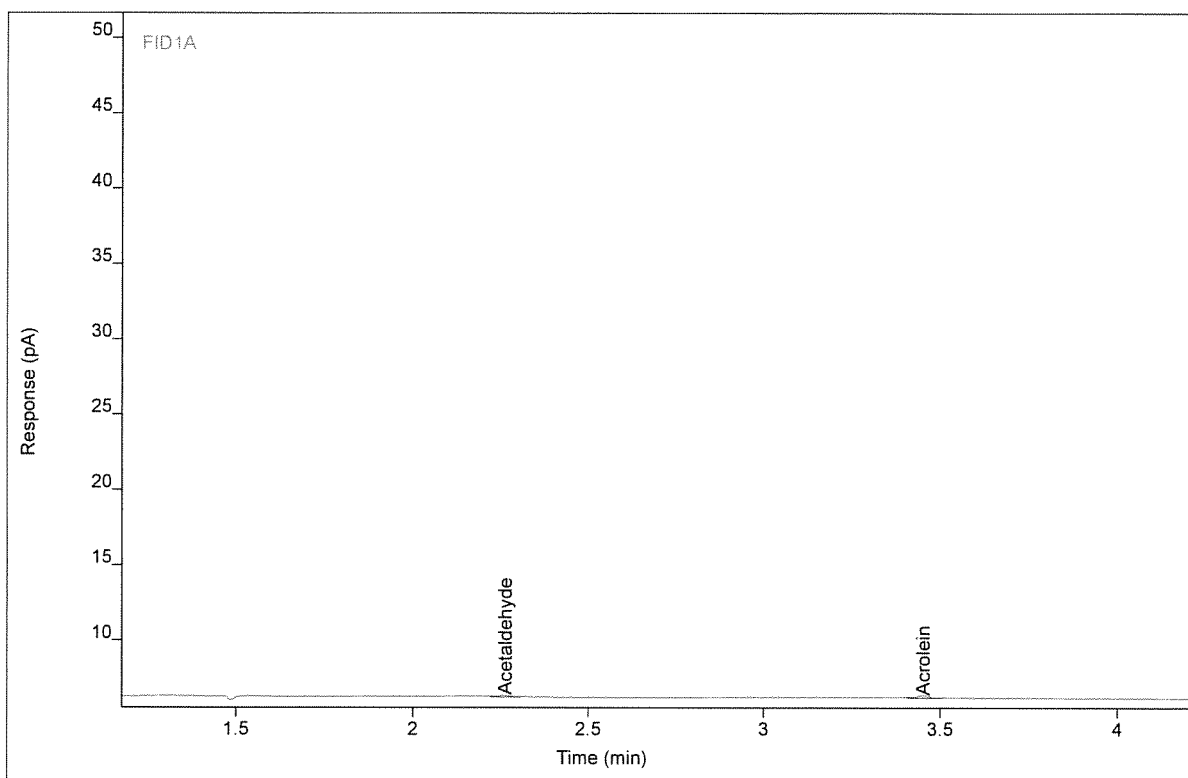
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	BB	2.26	7.64103	3.91594	48.5736	1	48.5736	ppm
Acrolein	BB	3.45	13.7108	6.14277	46.3148	1	46.3148	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop980 #AA1 ENV(1=3960,6=40)
Sequence Name GUMMOP1039A ver.1
Inj Data File 016F1004.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/14/2017 9:07 PM
File Modified 6/22/2017 10:56 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 4 of 10
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 6/30/2017 8:47 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	MM	2.27	0.39851	0.18983	2.59007	1	2.59007	ppm
Acrolein	MM	3.45	0.53667	0.22981	2.52678	1	2.52678	ppm

Analyst Peak Integration Comments

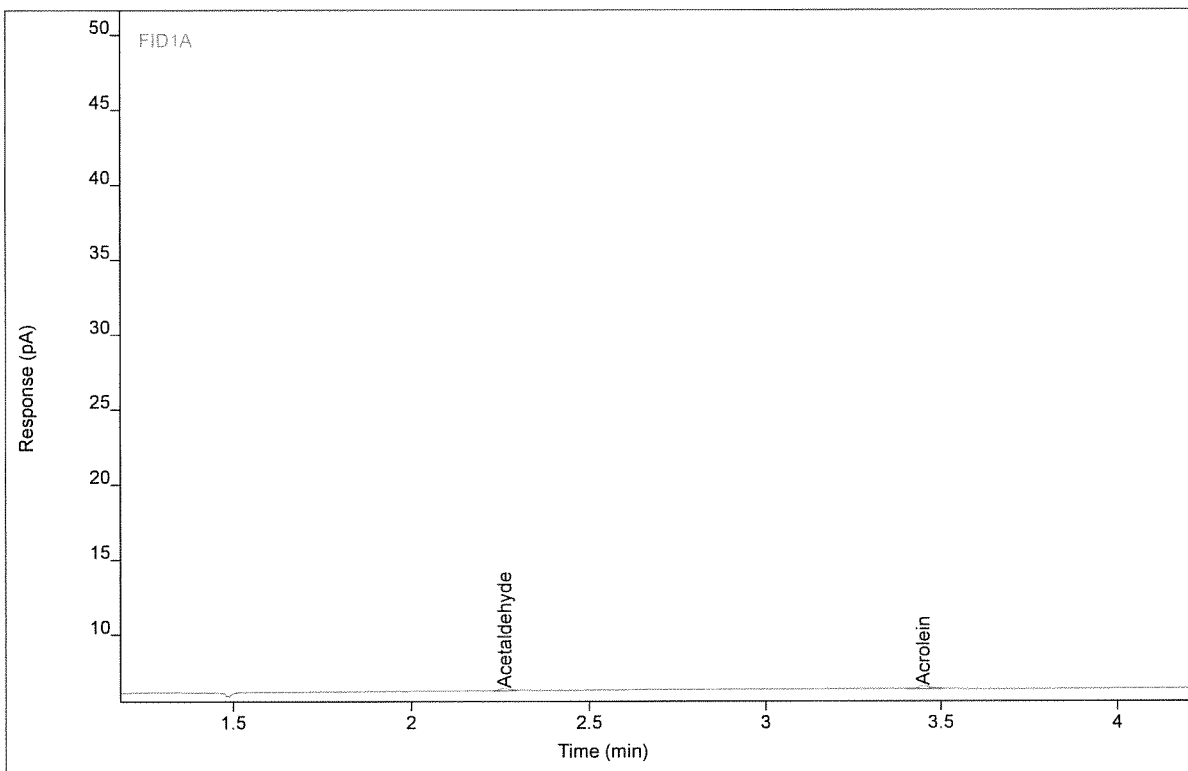
06:58:44 06/15/17 Justin Guenzler II
07:01:01 06/15/17 Justin Guenzler II

Chromatogram Report

Enthalpy Analytical

Sample Name gummop980 #AA1 ENV(1=3960,6=40)
Sequence Name GUMMOP1039A ver.1
Inj Data File 016F1005.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/14/2017 9:25 PM
File Modified 6/22/2017 10:56 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 5 of 10
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 6/30/2017 8:47 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	MM	2.26	0.37549	0.20704	2.44276	1	2.44276	ppm
Acrolein	MM	3.45	0.52886	0.25164	2.50079	1	2.50079	ppm

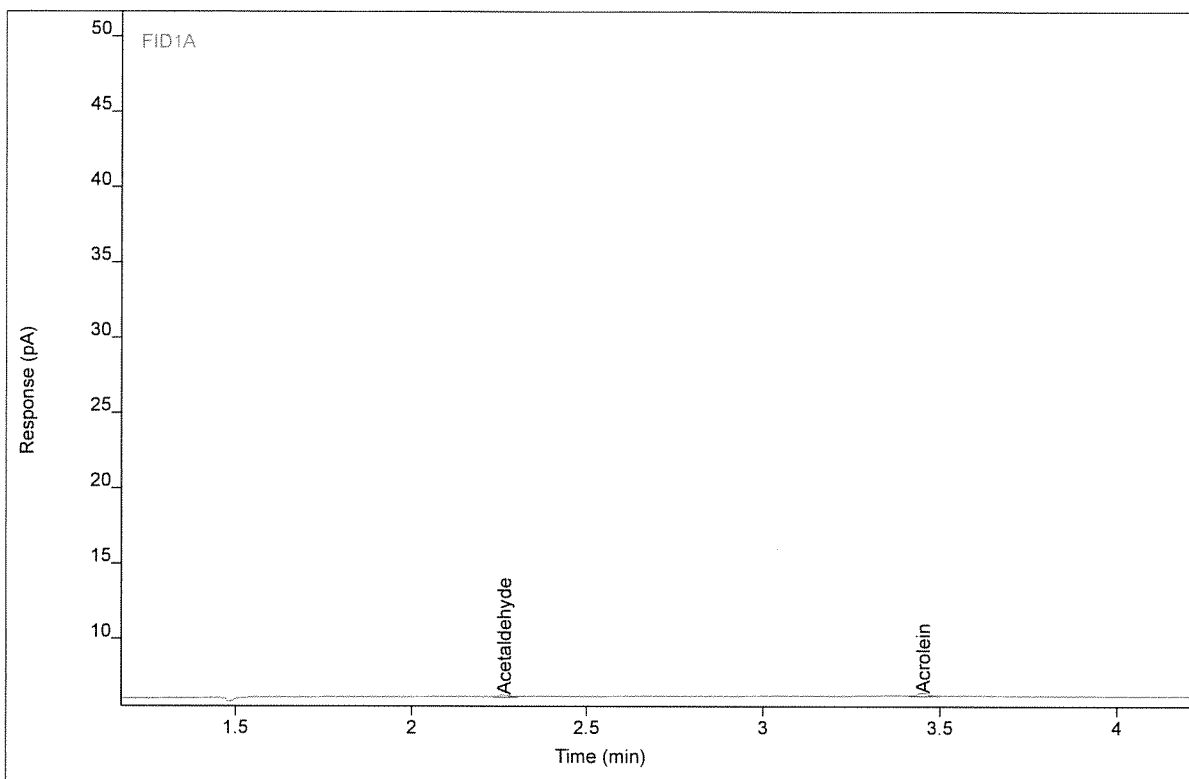
Analyst Peak Integration Comments
06:59:43 06/15/17 Justin Guenzler II
06:59:52 06/15/17 Justin Guenzler II

Chromatogram Report

Enthalpy Analytical

Sample Name gummop980 #AA1 ENV(1=3960,6=40)
Sequence Name GUMMOP1039A ver.1
Inj Data File 016F1006.D
File Location GC/2017/Gummo/Quarter 2
Injection Date 6/14/2017 9:44 PM
File Modified 6/22/2017 10:56 AM
Instrument
Operator Justin Guenzler

Sample Type Calibration
Vial Number Vial 16
Injection Volume 1000
Injection 6 of 10
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP1039F_AA.M
Method Modified 6/15/2017 8:02 AM
Printed 6/30/2017 8:48 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Acetaldehyde	MM	2.26	0.37574	0.18862	2.44443	1	2.44443	ppm
Acrolein	MM	3.45	0.52756	0.25081	2.49499	1	2.49499	ppm

Analyst Peak Integration Comments

07:00:19 06/15/17 Justin Guenzler II

CERTIFICATE OF ANALYSIS

Grade of Product: CERTIFIED STANDARD-SPEC

Customer:	MONTROSE ENVIRONMENTAL GROUP	Reference Number:	126-400748455-1
Part Number:	X03NI99C15A00J2	Cylinder Volume:	48 CF
Cylinder Number:	CC424461	Cylinder Pressure:	700 PSIG
Laboratory:	ASG - LaPorte Mix (SAP) - TX	Valve Outlet:	350
Analysis Date:	Jul 19, 2016		
Lot Number:	126-400748455-1		

Expiration Date: Jul 19, 2017

Product composition verified by direct comparison to calibration standards traceable to N.I.S.T. weights and/or N.I.S.T. Gas Mixture reference materials.

ANALYTICAL RESULTS

Component	Req Conc	Actual Concentration (Mole %)	Analytical Uncertainty
ACETALDEHYDE	250.0 PPM	249.0 PPM	+/- 5%
ACROLEIN	250.0 PPM	250.0 PPM	+/- 5%
NITROGEN	Balance		

Permanent Notes:-NA-

Notes:PO 06201605




Approved for Release

=====
 Calibration Table
 =====

Calib. Data Modified : 6/2/2017 1:00:07 PM

Rel. Reference Window : 0.000 %
 Abs. Reference Window : 0.100 min
 Rel. Non-ref. Window : 0.000 %
 Abs. Non-ref. Window : 0.050 min
 Uncalibrated Peaks : using compound Propane
 Partial Calibration : Yes, identified peaks are recalibrated
 Correct All Ret. Times: No, only for identified peaks

Curve Type : Linear
 Origin : Connected
 Weight : Quadratic (Amnt)

Recalibration Settings:
 Average Response : Average all calibrations
 Average Retention Time: Floating Average New 75%

Calibration Report Options :
 Printout of recalibrations within a sequence:
 Calibration Table after Recalibration
 Normal Report after Recalibration
 If the sequence is done with bracketing:
 Results of first cycle (ending previous bracket)

Signal 1: FID2 B,

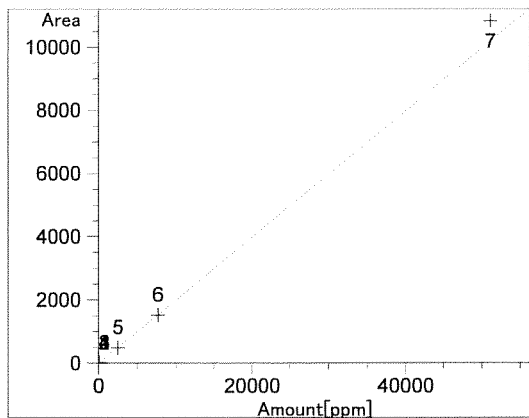
RetTime [min]	Lvl Sig	Amount [ppm]	Area	Amt/Area	Ref Grp Name	
1.460	1	1	5.00000	8.94839e-1	5.58760	Methane
		2	20.00000	3.81518	5.24222	
		3	40.00000	7.76556	5.15095	
		4	100.00000	19.79446	5.05192	
		5	2560.00000	491.04012	5.21342	
		6	7680.00000	1521.34090	5.04818	
		7	5.12000e4	1.08310e4	4.72718	
1.589	1	1	5.00000	1.78026	2.80858	Ethane
		2	20.00000	7.16795	2.79020	
		3	40.00000	14.58640	2.74228	
		4	100.00000	36.98041	2.70413	
		5	2570.00000	925.02356	2.77831	
		6	7710.00000	2864.66195	2.69142	
		7	5.14000e4	2.03727e4	2.52299	
1.889	1	1	5.00000	2.74131	1.82395	Propane
		2	20.00000	10.85070	1.84320	
		3	40.00000	21.99791	1.81835	
		4	100.00000	55.83058	1.79113	
		5	2580.00000	1378.12638	1.87211	
		6	7740.00000	4267.62028	1.81366	
		7	5.16000e4	3.03773e4	1.69864	
2.731	1	1	5.00000	3.59427	1.39110	Butane
		2	20.00000	14.32752	1.39591	
		3	40.00000	29.31376	1.36455	
		4	100.00000	74.02824	1.35084	
		5	515.00000	370.36104	1.39054	
		6	1545.00000	1152.95959	1.34003	
		7	1.03000e4	8200.93636	1.25595	

RetTime [min]	Lvl Sig	Amount [ppm]	Area	Amt/Area	Ref Grp Name
4.214	1	5.00000	4.56781	1.09462	Pentane
		20.00000	18.11116	1.10429	
		40.00000	36.82834	1.08612	
		100.00000	92.96211	1.07571	
		260.00000	227.69511	1.14188	
		780.00000	707.14616	1.10303	
		5200.00000	4999.93148	1.04001	
5.793	1	5.00000	5.48927	9.10868e-1	Hexane
		20.00000	21.81503	9.16799e-1	
		40.00000	44.50176	8.98841e-1	
		100.00000	112.19947	8.91270e-1	
		205.00000	222.82971	9.19985e-1	
		615.00000	693.84558	8.86364e-1	
		4100.00000	4807.27311	8.52874e-1	
6.953	1	4.99000	6.29413	7.92802e-1	Heptane
		20.00000	25.17615	7.94403e-1	
		40.00000	51.23785	7.80673e-1	
		100.00000	129.55815	7.71854e-1	
		257.00000	333.11783	7.71499e-1	

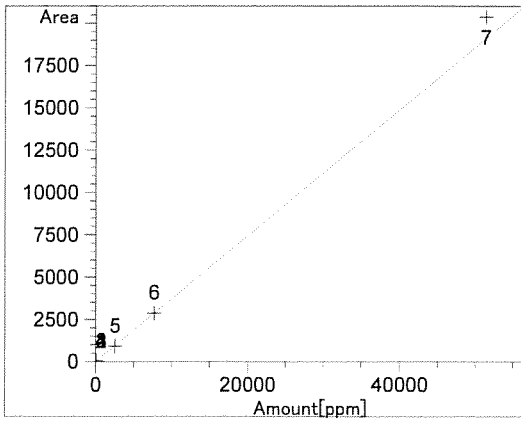
Peak Sum Table

Name	StartTime [min]	EndTime [min]	Use Reference	Response factor	Multiplier	ISTD Peak
as Ethane	1.491	1.742	None	2.7196	2.7196	None
as Propane	1.742	2.313	None	1.8087	1.8087	None
as Butane	2.313	3.472	None	1.3557	1.3557	None
as Pentane	3.472	5.003	None	1.0923	1.0923	None
as Hexane	5.003	6.372	None	8.9671e-1	0.8967	None
as Heptane	6.372	11.650	None	7.8224e-1	0.7822	None

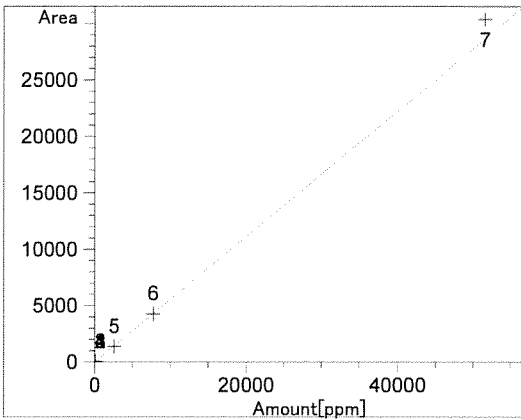
Calibration Curves



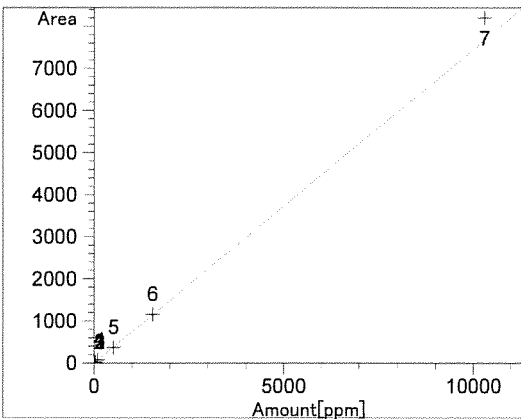
Methane at exp. RT: 1.460
 FID2 B,
 Correlation: 0.99945
 Residual Std. Dev.: 285.87928
 Formula: $y = mx + b$
 m: 1.99066e-1
 b: -1.05771e-1
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.0625
 Level 3 : 0.015625
 Level 4 : 0.0025
 Level 5 : 3.8147e-006
 Level 6 : 4.23855e-007
 Level 7 : 9.53674e-009



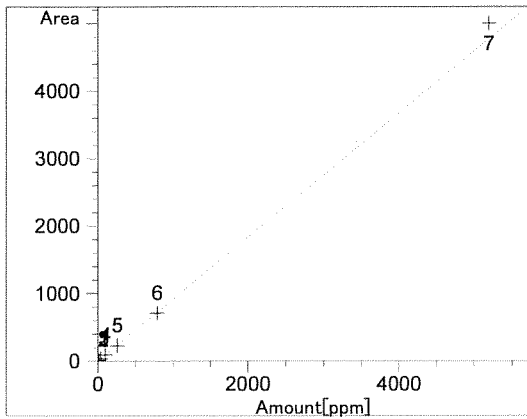
Ethane at exp. RT: 1.589
 FID2 B,
 Correlation: 0.99940
 Residual Std. Dev.: 561.41914
 Formula: $y = mx + b$
 m: 3.71941e-1
 b: -9.39939e-2
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.0625
 Level 3 : 0.015625
 Level 4 : 0.0025
 Level 5 : 3.78507e-006
 Level 6 : 4.20563e-007
 Level 7 : 9.46267e-009



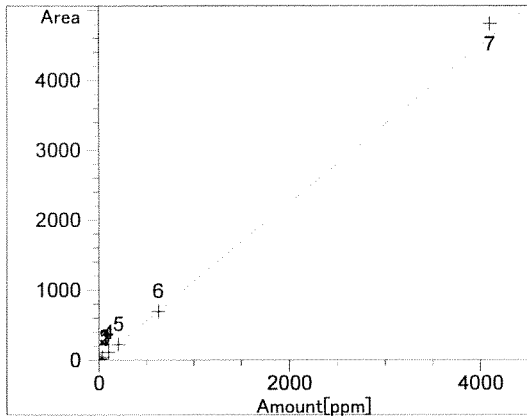
Propane at exp. RT: 1.889
 FID2 B,
 Correlation: 0.99945
 Residual Std. Dev.: 769.45765
 Formula: $y = mx + b$
 m: 5.55386e-1
 b: -5.04875e-2
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.0625
 Level 3 : 0.015625
 Level 4 : 0.0025
 Level 5 : 3.75578e-006
 Level 6 : 4.17309e-007
 Level 7 : 9.38946e-009



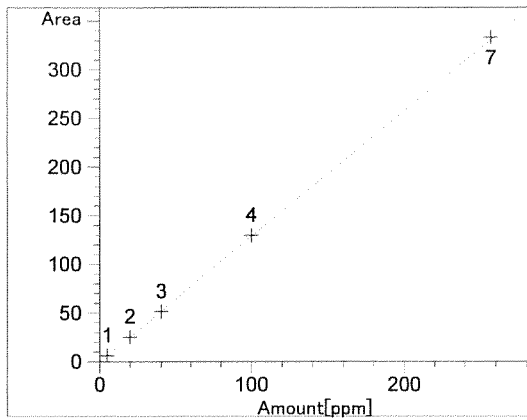
Butane at exp. RT: 2.731
 FID2 B,
 Correlation: 0.99933
 Residual Std. Dev.: 234.28902
 Formula: $y = mx + b$
 m: 7.45378e-1
 b: -1.65733e-1
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.0625
 Level 3 : 0.015625
 Level 4 : 0.0025
 Level 5 : 0.000094
 Level 6 : 0.00001
 Level 7 : 2.35649e-007



Pentane at exp. RT: 4.214
 FID2 B,
 Correlation: 0.99952
 Residual Std. Dev.: 102.63462
 Formula: $y = mx + b$
 m: $9.17477e-1$
 b: $-3.10514e-2$
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.0625
 Level 3 : 0.015625
 Level 4 : 0.0025
 Level 5 : 0.00037
 Level 6 : 0.000041
 Level 7 : $9.24556e-007$



Hexane at exp. RT: 5.793
 FID2 B,
 Correlation: 0.99965
 Residual Std. Dev.: 91.82272
 Formula: $y = mx + b$
 m: 1.12250
 b: $-1.60081e-1$
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.0625
 Level 3 : 0.015625
 Level 4 : 0.0025
 Level 5 : 0.000595
 Level 6 : 0.000066
 Level 7 : $1.48721e-006$



Heptane at exp. RT: 6.953
 FID2 B,
 Correlation: 0.99994
 Residual Std. Dev.: 1.49698
 Formula: $y = mx + b$
 m: 1.28756
 b: $-1.55346e-1$
 x: Amount
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.06225
 Level 3 : 0.015563
 Level 4 : 0.00249
 Level 7 : 0.000377

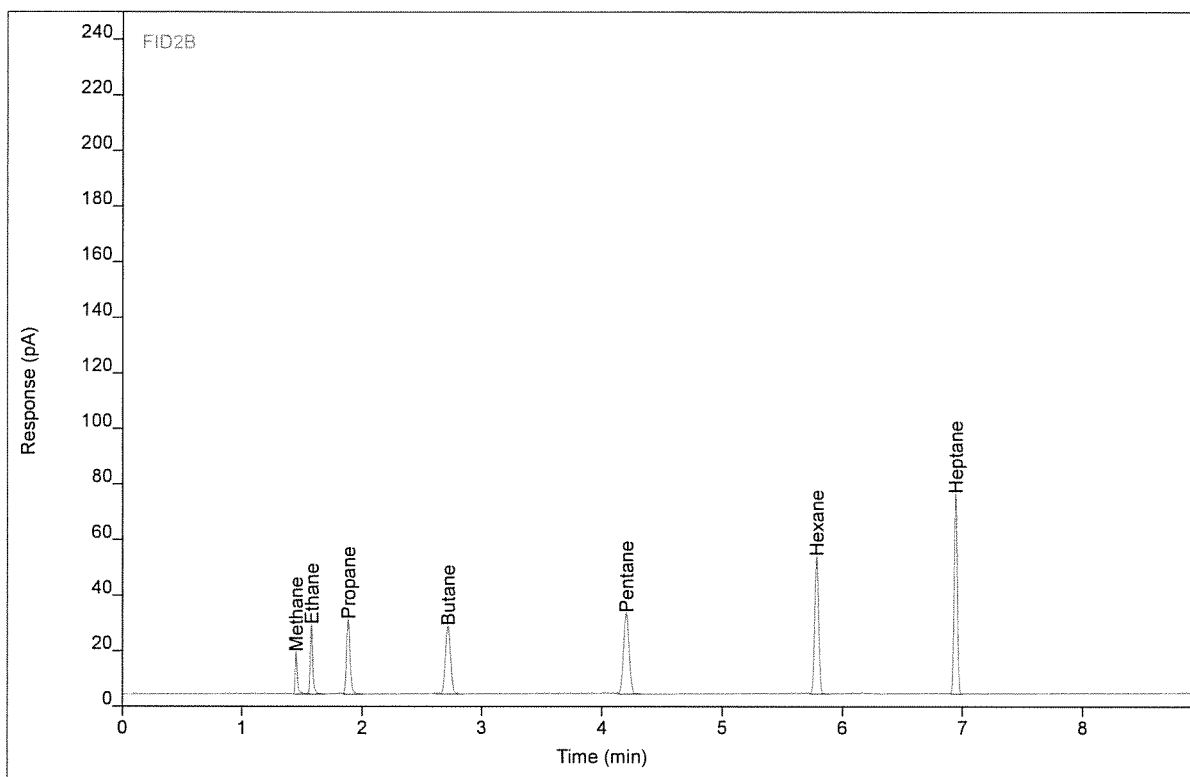
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Chromatogram Report

Enthalpy Analytical

Sample Name gum mop903 #C4 ENV(1=0,2=400.67)
Sequence Name GUMMOP987 ver.1
Inj Data File 032B0102.D
File Location GC/2017/Gummo/Quarter 1
Injection Date 3/31/2017 3:37 PM
File Modified 4/3/2017 1:22 PM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 2 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 4/3/2017 12:52 PM
Printed 4/3/2017 2:05 PM



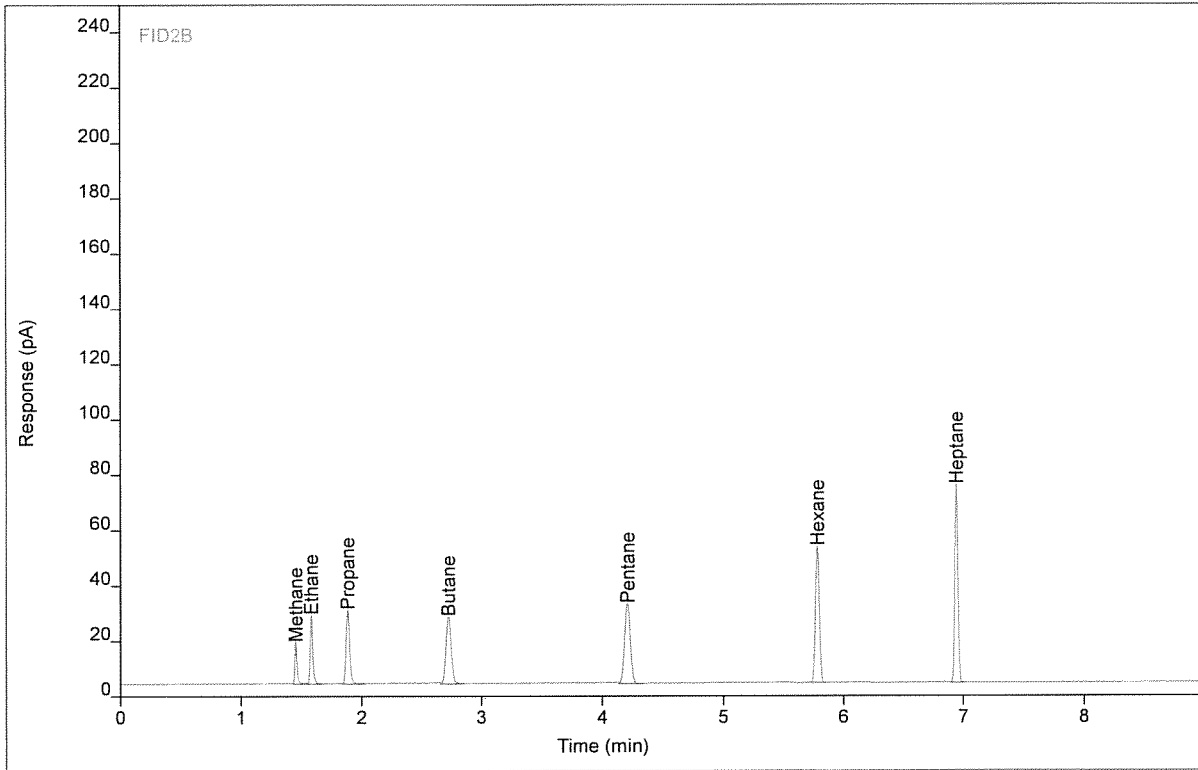
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PV	1.45	19.8510	15.2100	100.252	1	100.252	ppm
Ethane	VB	1.58	37.0899	24.9196	99.9724	1	99.9724	ppm
Propane	BB	1.89	56.0575	26.9366	101.025	1	101.025	ppm
Butane	BB	2.72	74.4253	24.6158	100.071	1	100.071	ppm
Pentane	BV	4.20	93.4960	29.2908	101.939	1	101.939	ppm
Hexane	BB	5.78	112.815	49.4369	100.645	1	100.645	ppm
Heptane	BB	6.95	130.170	71.8437	101.219	1	101.219	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop903 #C4 ENV(1=0,2=400.67)
Sequence Name GUMMOP987 ver.1
Inj Data File 032B0103.D
File Location GC/2017/Gummo/Quarter 1
Injection Date 3/31/2017 3:55 PM
File Modified 4/3/2017 1:22 PM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 3 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 4/3/2017 12:52 PM
Printed 4/3/2017 2:05 PM



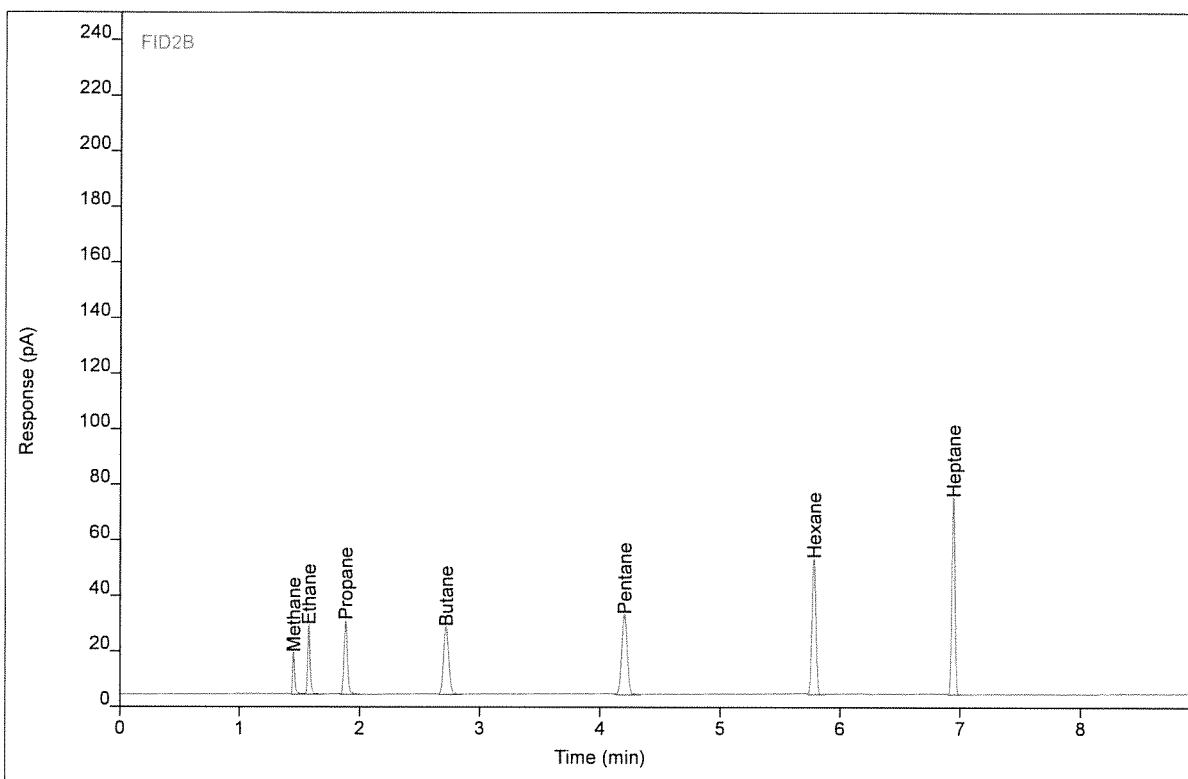
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PV	1.45	19.8068	15.2211	100.030	1	100.030	ppm
Ethane	VB	1.58	37.0373	24.8791	99.8309	1	99.8309	ppm
Propane	BB	1.89	55.8510	26.8497	100.653	1	100.653	ppm
Butane	BB	2.72	73.9048	24.4855	99.3731	1	99.3731	ppm
Pentane	BB	4.20	92.7903	28.9998	101.170	1	101.170	ppm
Hexane	BB	5.78	112.104	49.3570	100.012	1	100.012	ppm
Heptane	BB	6.95	129.556	71.3591	100.742	1	100.742	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop903 #C4 ENV(1=0,2=400.67)
Sequence Name GUMMOP987 ver.1
Inj Data File 032B0104.D
File Location GC/2017/Gummo/Quarter 1
Injection Date 3/31/2017 4:13 PM
File Modified 4/3/2017 1:22 PM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 4 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 4/3/2017 12:52 PM
Printed 4/3/2017 2:05 PM



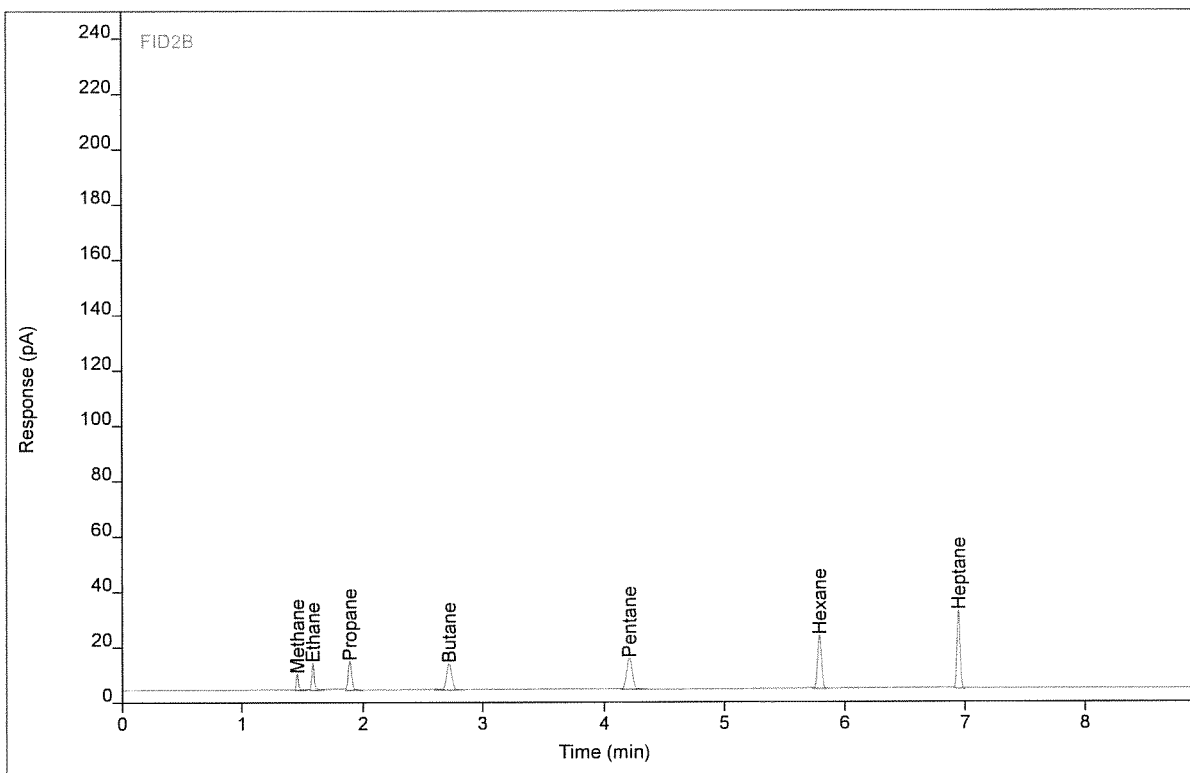
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PV	1.45	19.7255	15.1491	99.6221	1	99.6221	ppm
Ethane	VB	1.58	36.8141	24.8091	99.2308	1	99.2308	ppm
Propane	BB	1.89	55.5832	26.7446	100.171	1	100.171	ppm
Butane	BB	2.72	73.7546	24.3789	99.1717	1	99.1717	ppm
Pentane	BB	4.20	92.6000	28.9184	100.963	1	100.963	ppm
Hexane	BB	5.78	111.680	48.8825	99.6345	1	99.6345	ppm
Heptane	BB	6.95	128.948	70.7974	100.270	1	100.270	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop903 #C3 ENV(1=600,2=400.67)
Sequence Name GUMMOP987 ver.1
Inj Data File 032B0202.D
File Location GC/2017/Gummo/Quarter 1
Injection Date 3/31/2017 4:50 PM
File Modified 4/3/2017 1:22 PM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 2 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 4/3/2017 12:52 PM
Printed 4/3/2017 2:05 PM



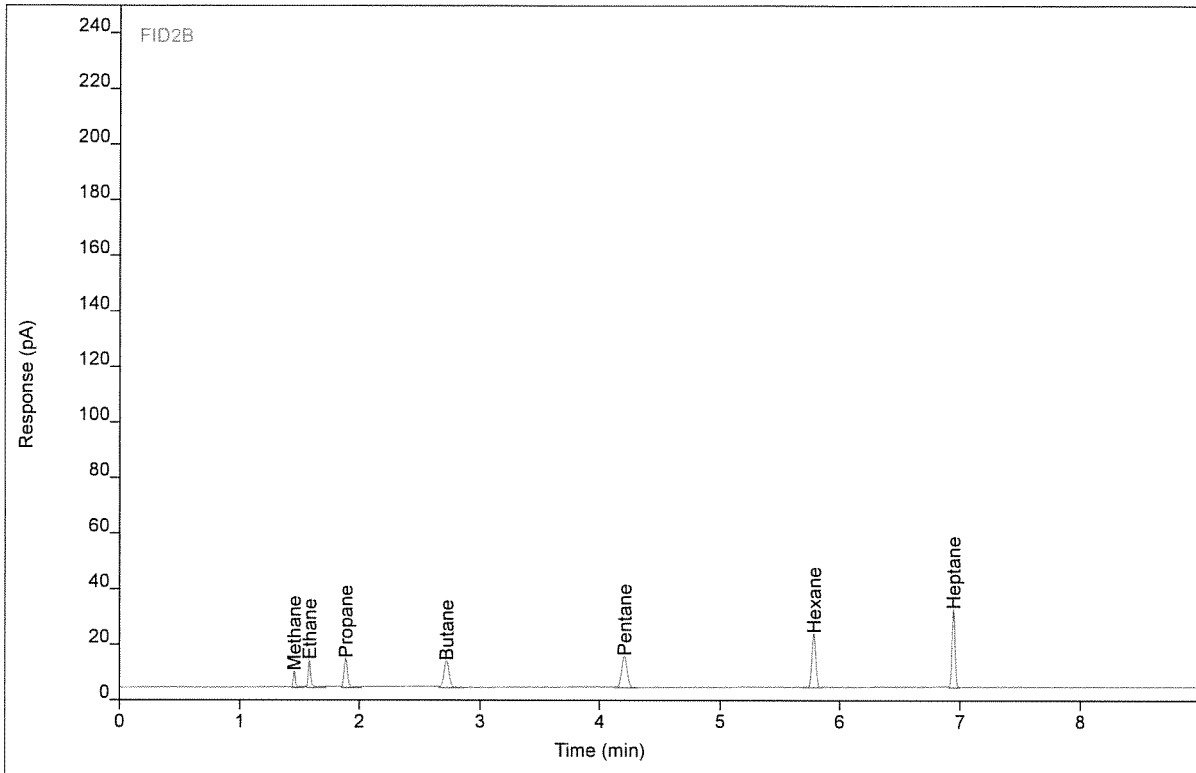
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.46	7.65955	5.96997	39.0089	1	39.0089	ppm
Ethane	BB	1.58	14.5411	9.88644	39.3477	1	39.3477	ppm
Propane	BB	1.89	21.9552	10.6120	39.6223	1	39.6223	ppm
Butane	BB	2.72	29.3235	9.69691	39.5628	1	39.5628	ppm
Pentane	BB	4.21	36.7586	11.5072	40.0988	1	40.0988	ppm
Hexane	VV	5.79	44.4680	19.4504	39.7576	1	39.7576	ppm
Heptane	BB	6.95	51.2778	28.3037	39.9462	1	39.9462	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop903 #C3 ENV(1=600,2=400.67)
Sequence Name GUMMOP987 ver.1
Inj Data File 032B0203.D
File Location GC/2017/Gummo/Quarter 1
Injection Date 3/31/2017 5:08 PM
File Modified 4/3/2017 1:22 PM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 3 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 4/3/2017 12:52 PM
Printed 4/3/2017 2:05 PM



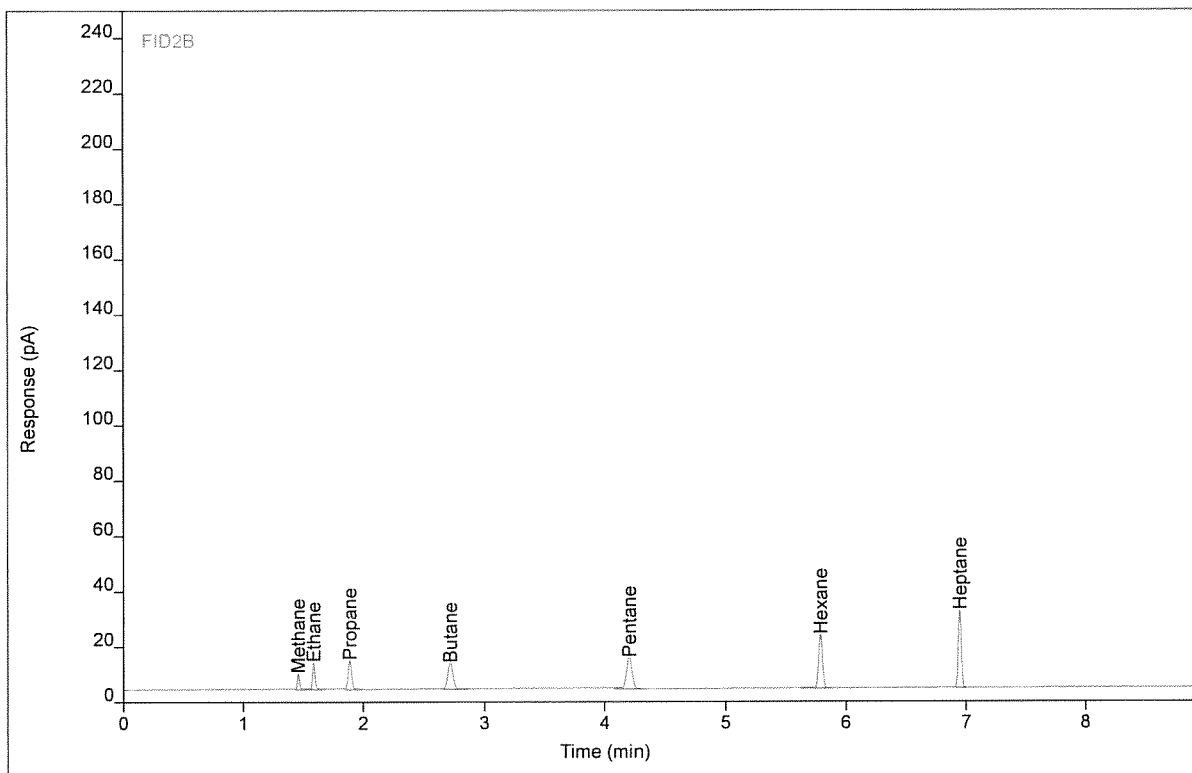
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.46	7.86068	6.03738	40.0192	1	40.0192	ppm
Ethane	BB	1.58	14.7399	9.90713	39.8823	1	39.8823	ppm
Propane	BB	1.89	22.1005	10.6144	39.8840	1	39.8840	ppm
Butane	BV	2.72	29.4259	9.66182	39.7002	1	39.7002	ppm
Pentane	BV	4.21	36.9119	11.4926	40.2659	1	40.2659	ppm
Hexane	BB	5.79	44.3644	19.4729	39.6653	1	39.6653	ppm
Heptane	BB	6.95	51.2965	28.1939	39.9607	1	39.9607	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop903 #C3 ENV(1=600,2=400.67)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B0204.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 3/31/2017 5:27 PM
 File Modified 4/3/2017 1:22 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 4 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
 Printed 4/3/2017 2:05 PM



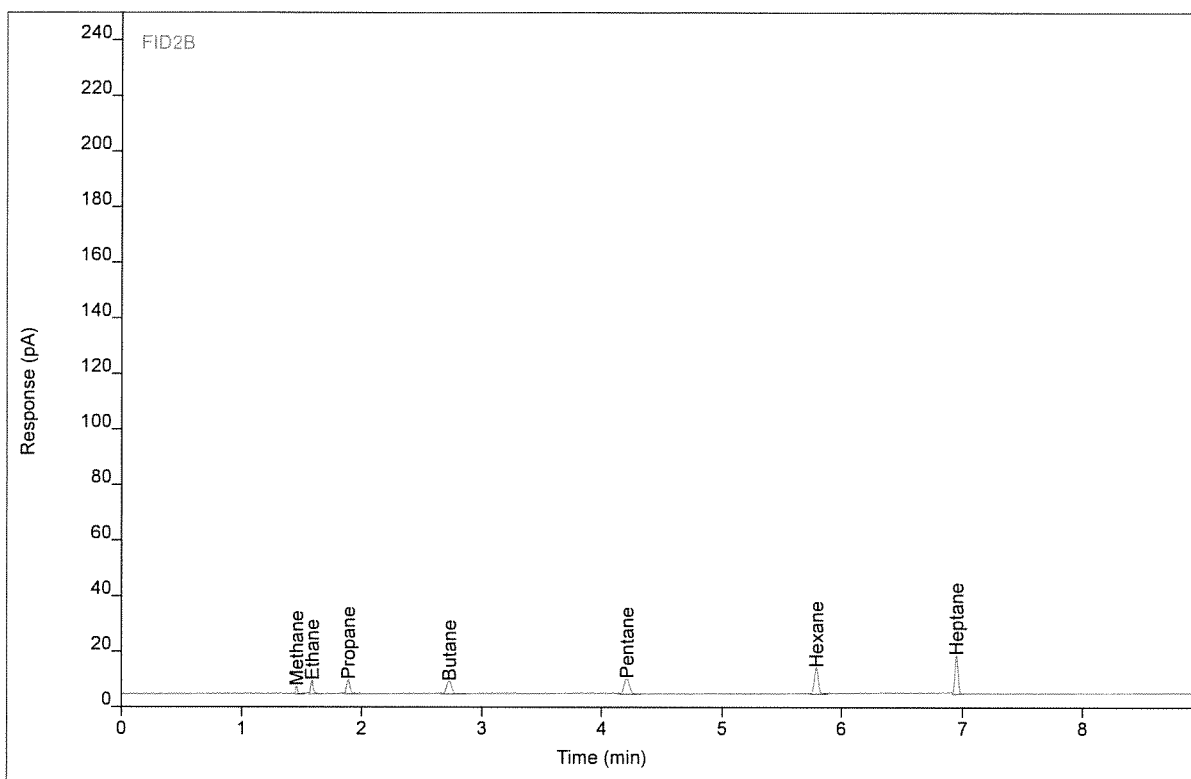
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PV	1.46	7.77644	6.02142	39.5960	1	39.5960	ppm
Ethane	VB	1.58	14.4783	9.83879	39.1789	1	39.1789	ppm
Propane	BB	1.89	21.9380	10.5822	39.5914	1	39.5914	ppm
Butane	BB	2.72	29.1919	9.59717	39.3862	1	39.3862	ppm
Pentane	VB	4.21	36.8144	11.4226	40.1596	1	40.1596	ppm
Hexane	VB	5.79	44.6729	19.4443	39.9401	1	39.9401	ppm
Heptane	BB	6.95	51.1393	28.1652	39.8386	1	39.8386	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop903 #C2 ENV(1=800,2=200.34)
Sequence Name GUMMOP987 ver.1
Inj Data File 032B0302.D
File Location GC/2017/Gummo/Quarter 1
Injection Date 3/31/2017 6:05 PM
File Modified 4/3/2017 1:22 PM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 2 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 4/3/2017 12:52 PM
Printed 4/3/2017 2:05 PM



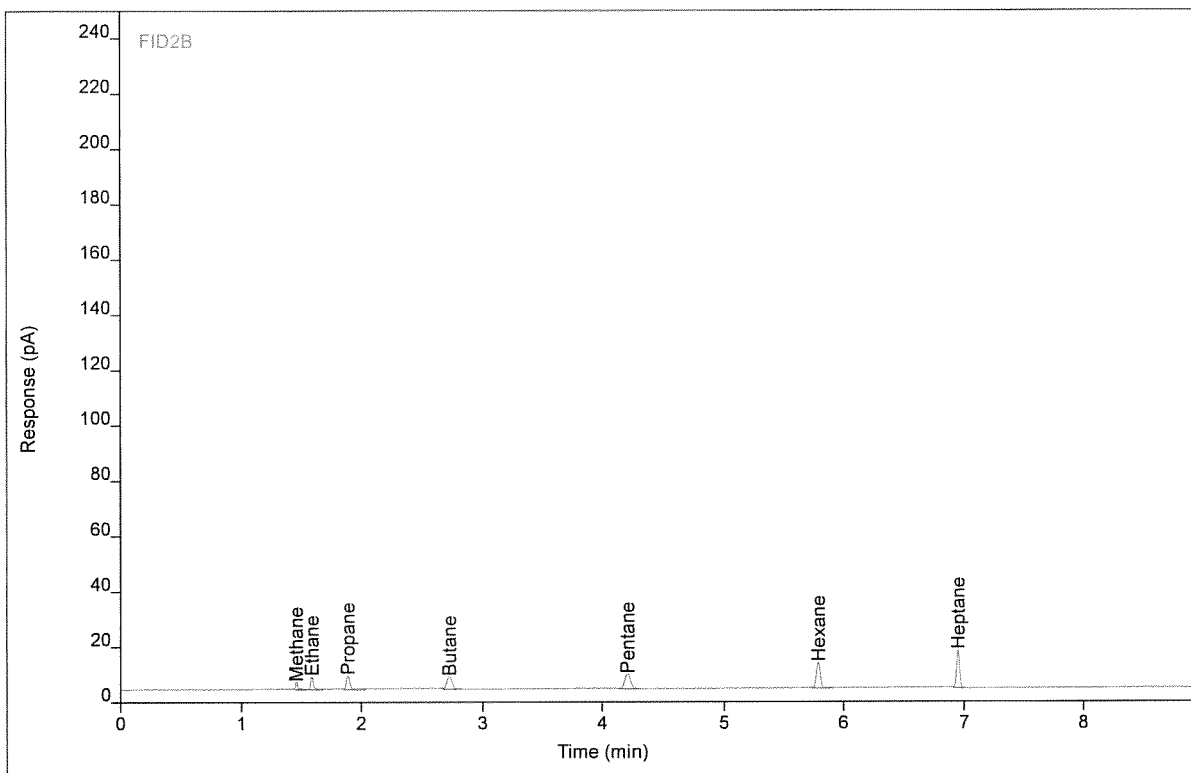
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.46	3.79229	2.94915	19.5818	1	19.5818	ppm
Ethane	BB	1.59	7.11105	4.80891	19.3714	1	19.3714	ppm
Propane	BB	1.89	10.7626	5.16456	19.4696	1	19.4696	ppm
Butane	BB	2.73	14.2620	4.69256	19.3563	1	19.3563	ppm
Pentane	BB	4.21	18.1716	5.60225	19.8399	1	19.8399	ppm
Hexane	BB	5.79	21.8024	9.52308	19.5656	1	19.5656	ppm
Heptane	BB	6.95	25.1606	13.9630	19.6619	1	19.6619	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop903 #C2 ENV(1=800,2=200.34)
Sequence Name GUMMOP987 ver.1
Inj Data File 032B0303.D
File Location GC/2017/Gummo/Quarter 1
Injection Date 3/31/2017 6:24 PM
File Modified 4/3/2017 1:22 PM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 3 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 4/3/2017 12:52 PM
Printed 4/3/2017 2:05 PM



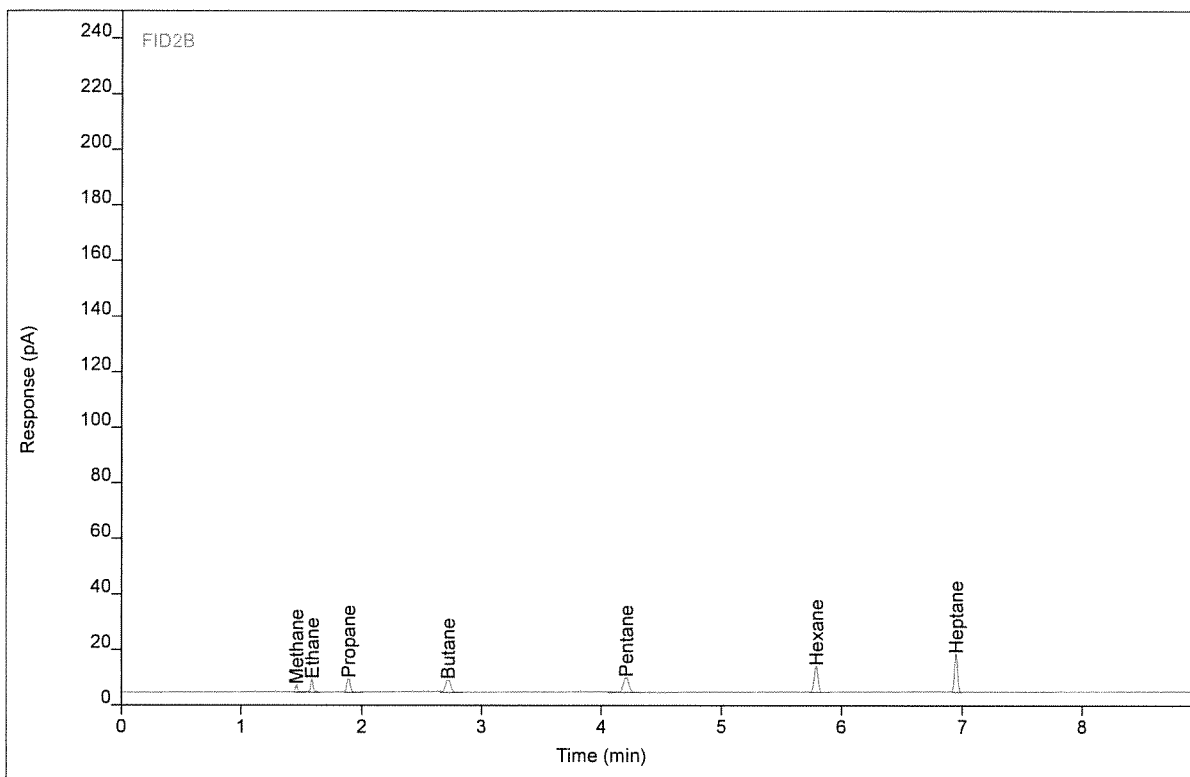
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.46	3.86380	2.97565	19.9410	1	19.9410	ppm
Ethane	BB	1.59	7.26483	4.85221	19.7849	1	19.7849	ppm
Propane	BB	1.89	10.9727	5.18551	19.8478	1	19.8478	ppm
Butane	BB	2.73	14.2714	4.72133	19.3689	1	19.3689	ppm
Pentane	BB	4.21	17.9859	5.61594	19.6375	1	19.6375	ppm
Hexane	BB	5.79	21.7955	9.51396	19.5595	1	19.5595	ppm
Heptane	BB	6.95	25.0888	13.8418	19.6062	1	19.6062	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop903 #C2 ENV(1=800,2=200.34)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B0304.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 3/31/2017 6:42 PM
 File Modified 4/3/2017 1:22 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 4 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
 Printed 4/3/2017 2:05 PM



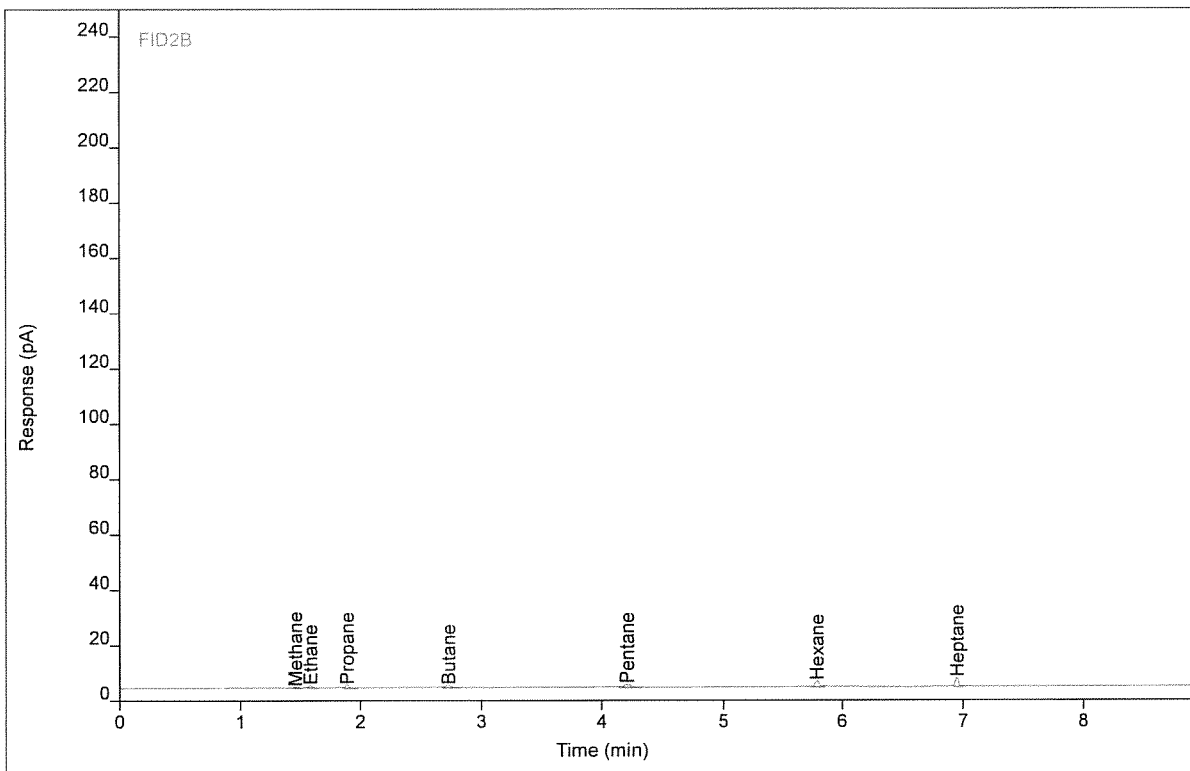
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.46	3.78945	2.96765	19.5675	1	19.5675	ppm
Ethane	BB	1.59	7.12797	4.84314	19.4169	1	19.4169	ppm
Propane	BB	1.89	10.8167	5.20749	19.5670	1	19.5670	ppm
Butane	BV	2.73	14.4492	4.74702	19.6074	1	19.6074	ppm
Pentane	BB	4.21	18.1760	5.64580	19.8447	1	19.8447	ppm
Hexane	BB	5.79	21.8472	9.58530	19.6055	1	19.6055	ppm
Heptane	BB	6.95	25.2791	13.9516	19.7540	1	19.7540	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop903 #C1 ENV(1=3800,2=200.34)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B0402.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 3/31/2017 7:18 PM
 File Modified 4/3/2017 1:23 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 2 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
 Printed 4/3/2017 2:05 PM



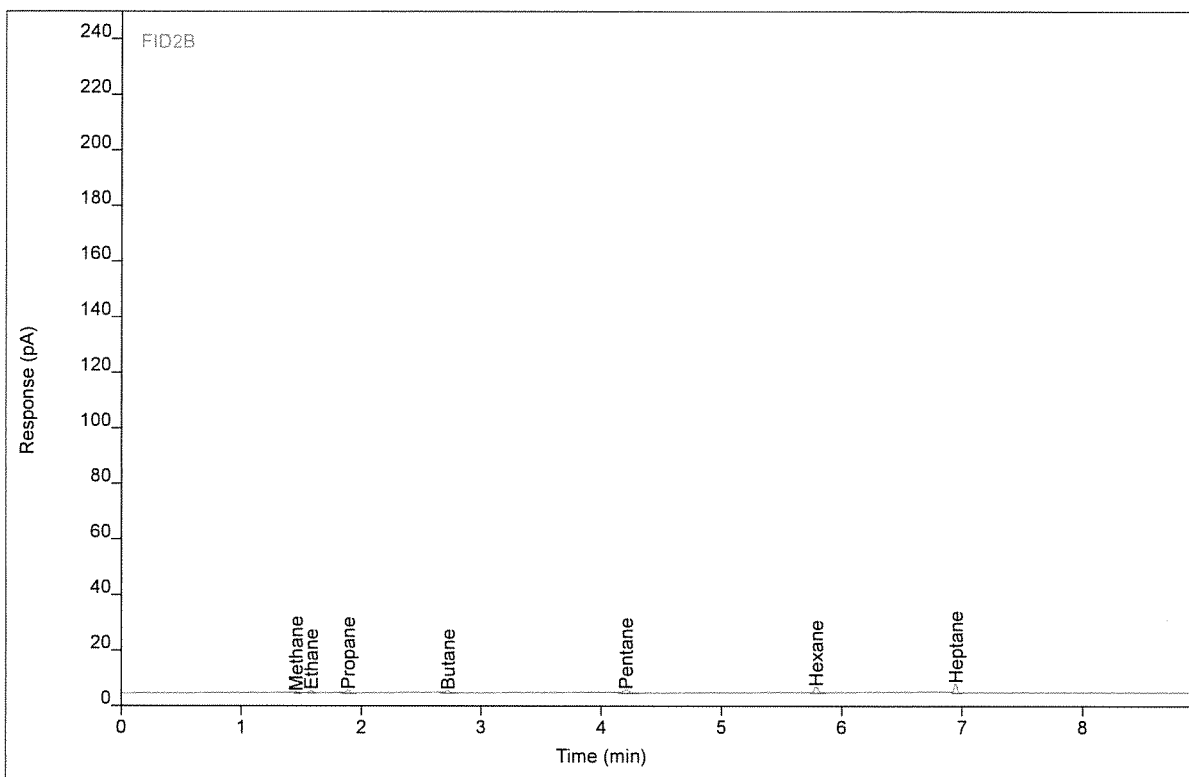
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.46	0.89235	0.73455	5.01403	1	5.01403	ppm
Ethane	BB	1.59	1.75921	1.19158	4.98159	1	4.98159	ppm
Propane	BB	1.89	2.76432	1.31725	5.06820	1	5.06820	ppm
Butane	BB	2.73	3.53968	1.17843	4.96985	1	4.96985	ppm
Pentane	BB	4.21	4.53159	1.43603	4.97285	1	4.97285	ppm
Hexane	BB	5.79	5.40473	2.37005	4.95625	1	4.95625	ppm
Heptane	BB	6.95	6.29727	3.45771	5.01151	1	5.01151	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop903 #C1 ENV(1=3800,2=200.34)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B0403.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 3/31/2017 7:37 PM
 File Modified 4/3/2017 1:23 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 3 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
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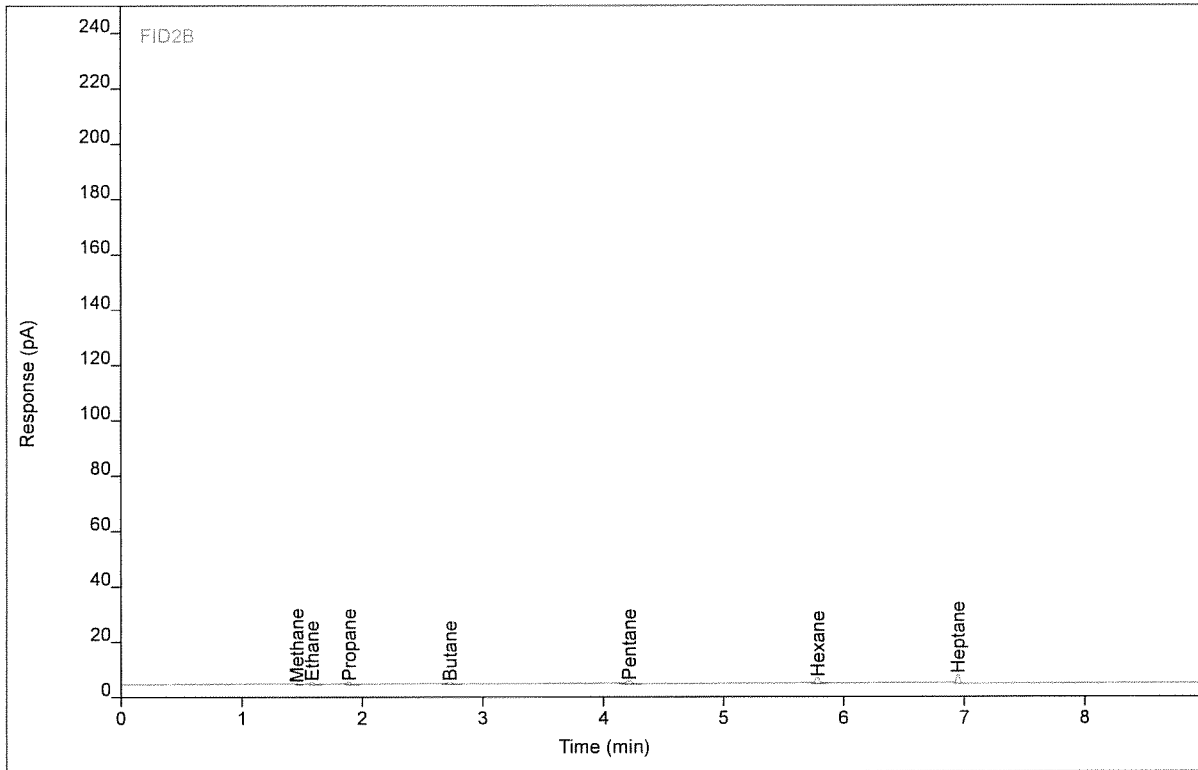
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.46	0.86009	0.72887	4.83438	1	4.83438	ppm
Ethane	BB	1.59	1.71149	1.20123	4.84646	1	4.84646	ppm
Propane	BB	1.89	2.74168	1.33047	5.02743	1	5.02743	ppm
Butane	BB	2.73	3.58111	1.19614	5.02677	1	5.02677	ppm
Pentane	BB	4.21	4.60116	1.40732	5.04886	1	5.04886	ppm
Hexane	BB	5.79	5.50365	2.41669	5.04562	1	5.04562	ppm
Heptane	BB	6.95	6.28548	3.46751	5.00235	1	5.00235	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop903 #C1 ENV(1=3800,2=200.34)
Sequence Name GUMMOP987 ver.1
Inj Data File 032B0404.D
File Location GC/2017/Gummo/Quarter 1
Injection Date 3/31/2017 7:55 PM
File Modified 4/3/2017 1:23 PM
Instrument
Operator Ben Prothe

Sample Type Calibration
Vial Number Vial 32
Injection Volume 1000
Injection 4 of 4
Acquisition Method AQ_GUMMOP987.M
Analysis Method GUMMOP987R_C1-C7.M
Method Modified 4/3/2017 12:52 PM
Printed 4/3/2017 2:05 PM



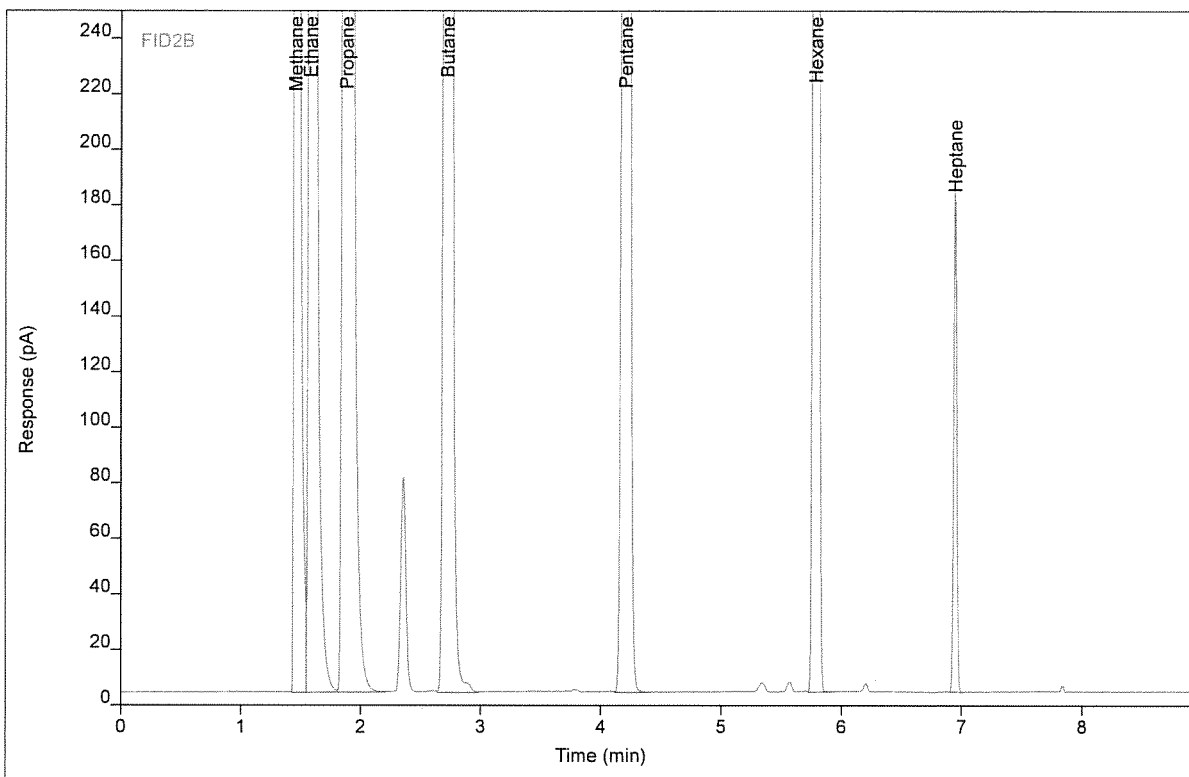
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Methane	PB	1.46	0.93208	0.73321	5.21360	1	5.21360	ppm
Ethane	BB	1.59	1.87006	1.23029	5.28056	1	5.28056	ppm
Propane	BB	1.89	2.71793	1.30496	4.98438	1	4.98438	ppm
Butane	BB	2.72	3.66202	1.21718	5.13532	1	5.13532	ppm
Pentane	BB	4.21	4.57066	1.42846	5.01562	1	5.01562	ppm
Hexane	BB	5.79	5.55943	2.40434	5.09531	1	5.09531	ppm
Heptane	BB	6.95	6.29964	3.48580	5.01335	1	5.01335	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop987 #C7 ENV(1=0,4=437.69)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B1702.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 4/3/2017 8:38 AM
 File Modified 4/3/2017 1:24 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 2 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
 Printed 4/3/2017 2:05 PM



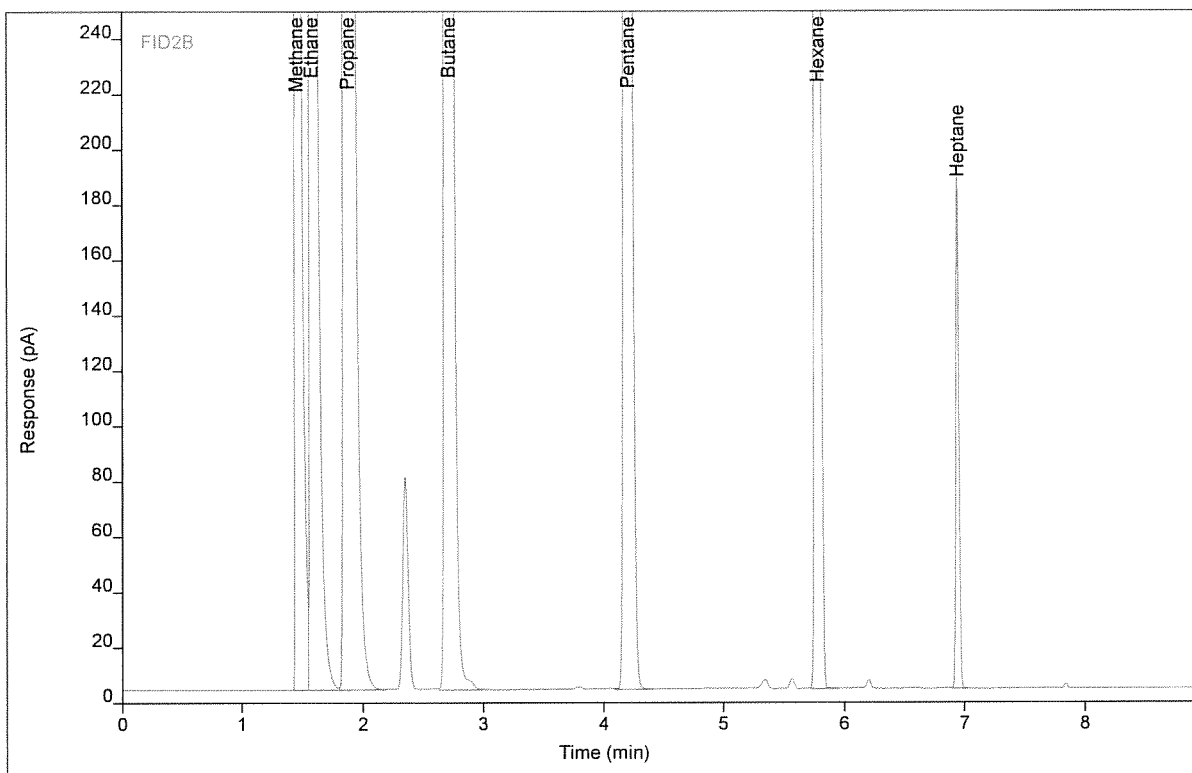
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
as Butane					252.152	1	252.152	
Methane	BV	1.46	10906.3	8443.26	54787.9	1	54787.9	ppm
Ethane	VV S	1.58	20513.1	13851.0	55151.6	1	55151.6	ppm
Propane	VB S	1.88	30581.5	13965.8	55063.5	1	55063.5	ppm
Butane	VV	2.72	8247.66	2705.45	11065.3	1	11065.3	ppm
Pentane	BB	4.21	5013.67	1570.88	5464.66	1	5464.66	ppm
Hexane	BB	5.79	4777.88	2093.85	4256.59	1	4256.59	ppm
Heptane	BB	6.95	323.208	179.393	251.144	1	251.144	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop987 #C7 ENV(1=0,4=437.69)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B1703.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 4/3/2017 8:57 AM
 File Modified 4/3/2017 1:24 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 3 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
 Printed 4/3/2017 2:05 PM



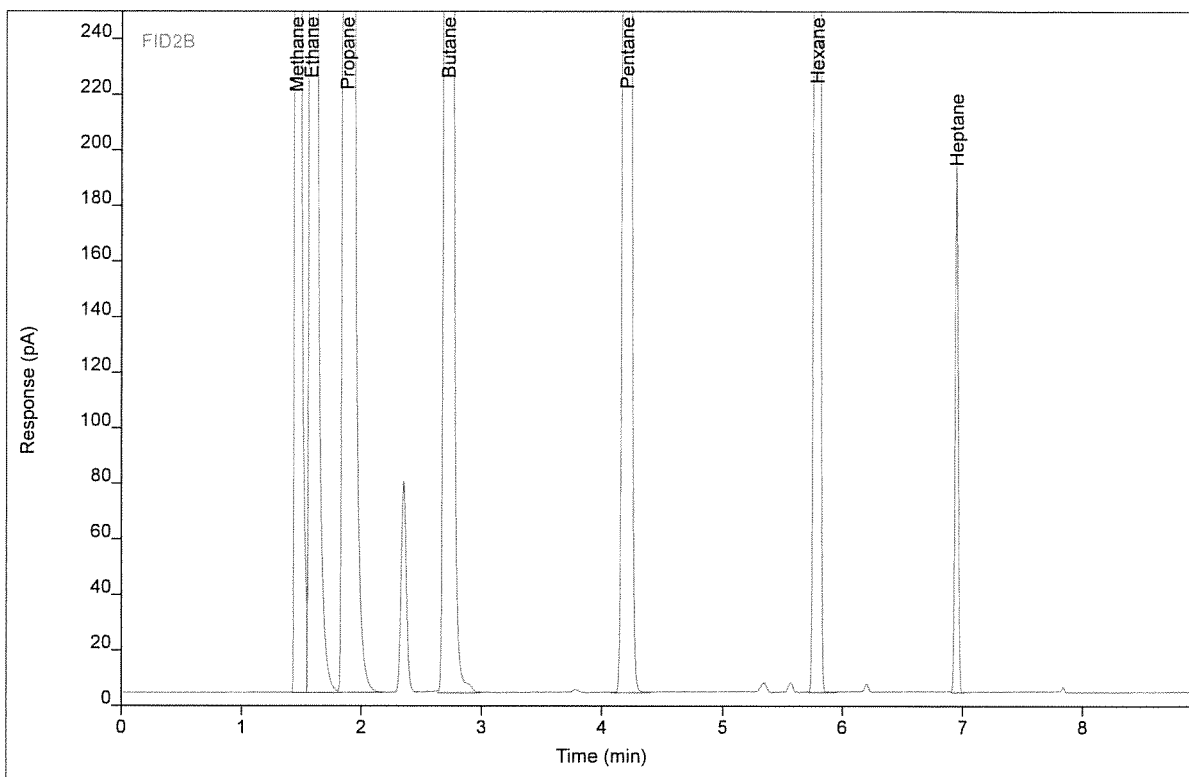
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
as Butane					250.476	1	250.476	
Methane	VV	1.45	10849.4	8530.86	54502.1	1	54502.1	ppm
Ethane	VV S	1.58	20404.2	13702.7	54859.0	1	54859.0	ppm
Propane	VB S	1.88	30427.7	13848.1	54786.7	1	54786.7	ppm
Butane	VV	2.72	8215.52	2688.72	11022.2	1	11022.2	ppm
Pentane	BB	4.21	5007.91	1568.47	5458.38	1	5458.38	ppm
Hexane	BB	5.79	4813.19	2115.64	4288.05	1	4288.05	ppm
Heptane	BB	6.95	333.262	184.005	258.953	1	258.953	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop987 #C7 ENV(1=0,4=437.69)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B1704.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 4/3/2017 9:15 AM
 File Modified 4/3/2017 1:25 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 4 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
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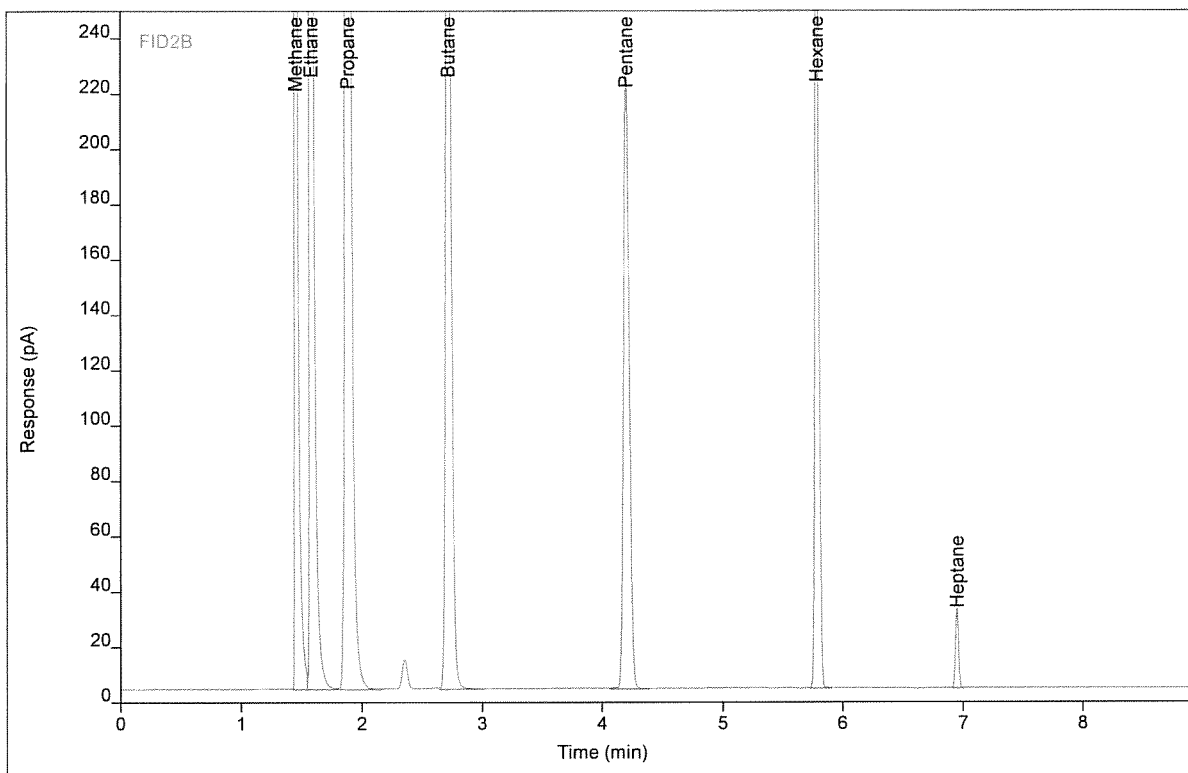
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
as Butane					248.039	1	248.039	
Methane	PV	1.46	10737.3	8330.53	53939.0	1	53939.0	ppm
Ethane	VV S	1.58	20200.8	13666.7	54311.9	1	54311.9	ppm
Propane	VB S	1.88	30122.7	13760.2	54237.4	1	54237.4	ppm
Butane	VV	2.72	8139.63	2662.74	10920.4	1	10920.4	ppm
Pentane	BB	4.21	4978.21	1559.70	5426.02	1	5426.02	ppm
Hexane	BB	5.79	4830.75	2133.91	4303.69	1	4303.69	ppm
Heptane	BB	6.95	342.883	189.005	266.425	1	266.425	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop987 #C6 ENV(1=1700,4=364.74)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B1802.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 4/3/2017 9:52 AM
 File Modified 4/3/2017 1:25 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 2 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
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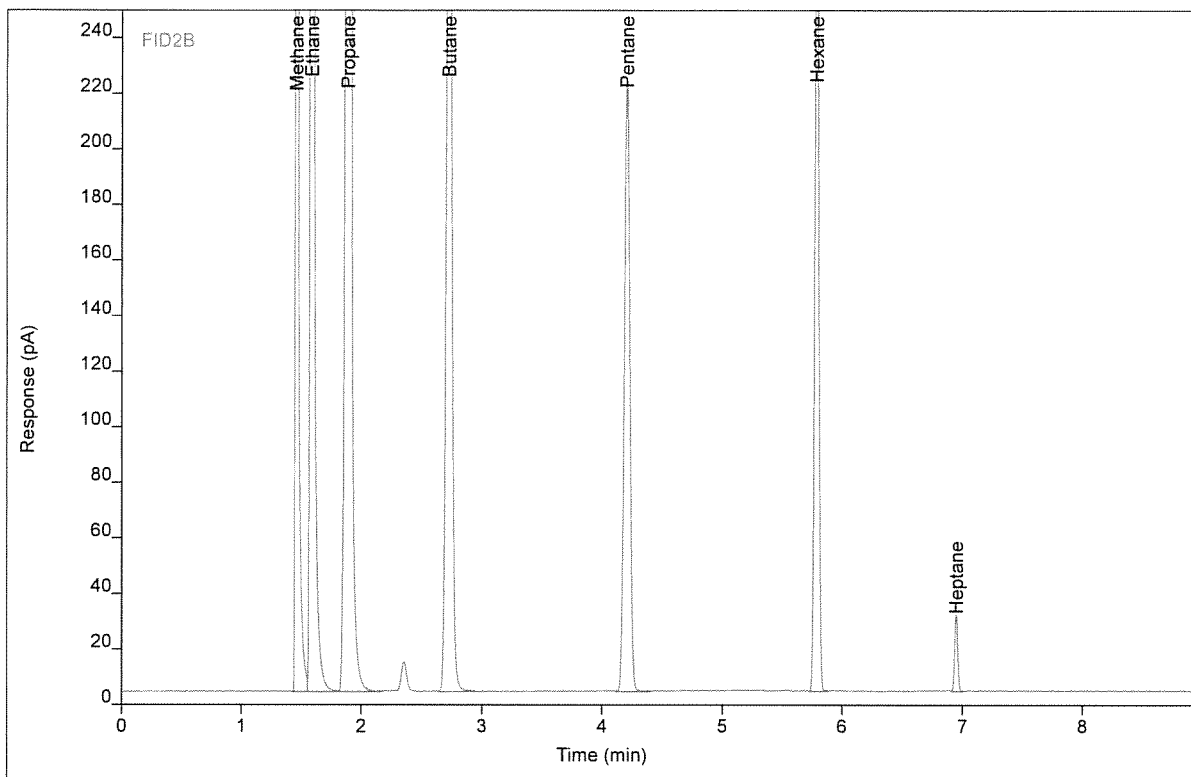
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
as Butane					34.9137	1	34.9137	
Methane	PV	1.46	1526.01	1176.08	7666.41	1	7666.41	ppm
Ethane	VB	1.59	2873.53	1931.30	7726.02	1	7726.02	ppm
Propane	BB	1.89	4282.26	1999.03	7710.51	1	7710.51	ppm
Butane	VB	2.73	1157.41	379.603	1553.00	1	1553.00	ppm
Pentane	BB	4.21	711.302	222.463	775.314	1	775.314	ppm
Hexane	BB	5.79	701.467	307.613	625.055	1	625.055	ppm
Heptane	BB	6.95	51.8335	28.7410	40.3778	1	40.3778	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop987 #C6 ENV(1=1700,4=364.74)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B1803.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 4/3/2017 10:11 AM
 File Modified 4/3/2017 1:25 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 3 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
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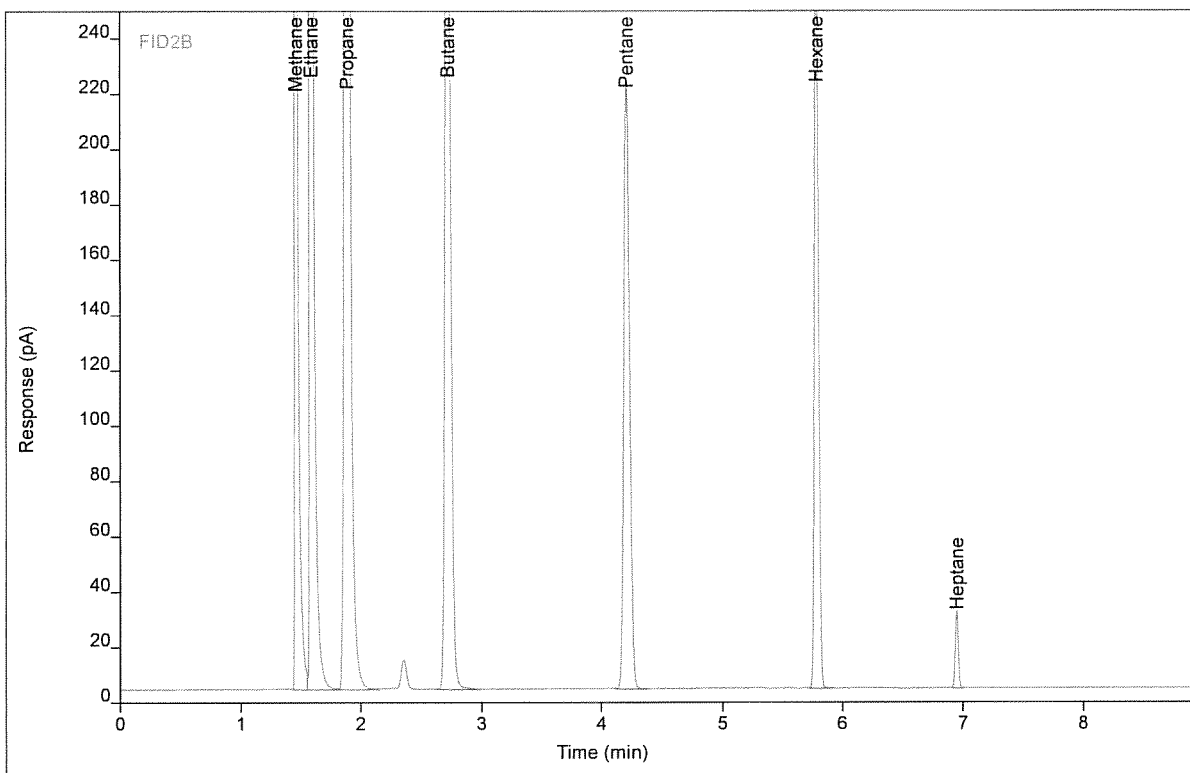
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
as Butane					34.7286	1	34.7286	
Methane	PV	1.46	1517.99	1173.47	7626.11	1	7626.11	ppm
Ethane	VV	1.59	2857.98	1923.80	7684.20	1	7684.20	ppm
Propane	VB	1.89	4257.29	1987.56	7665.56	1	7665.56	ppm
Butane	VB	2.73	1149.13	377.917	1541.90	1	1541.90	ppm
Pentane	BB	4.21	703.805	220.134	767.143	1	767.143	ppm
Hexane	BB	5.79	687.801	303.861	612.880	1	612.880	ppm
Heptane	BB	6.95	50.4157	27.8372	39.2766	1	39.2766	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop987 #C6 ENV(1=1700,4=364.74)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B1804.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 4/3/2017 10:29 AM
 File Modified 4/3/2017 1:25 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 4 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
 Printed 4/3/2017 2:05 PM



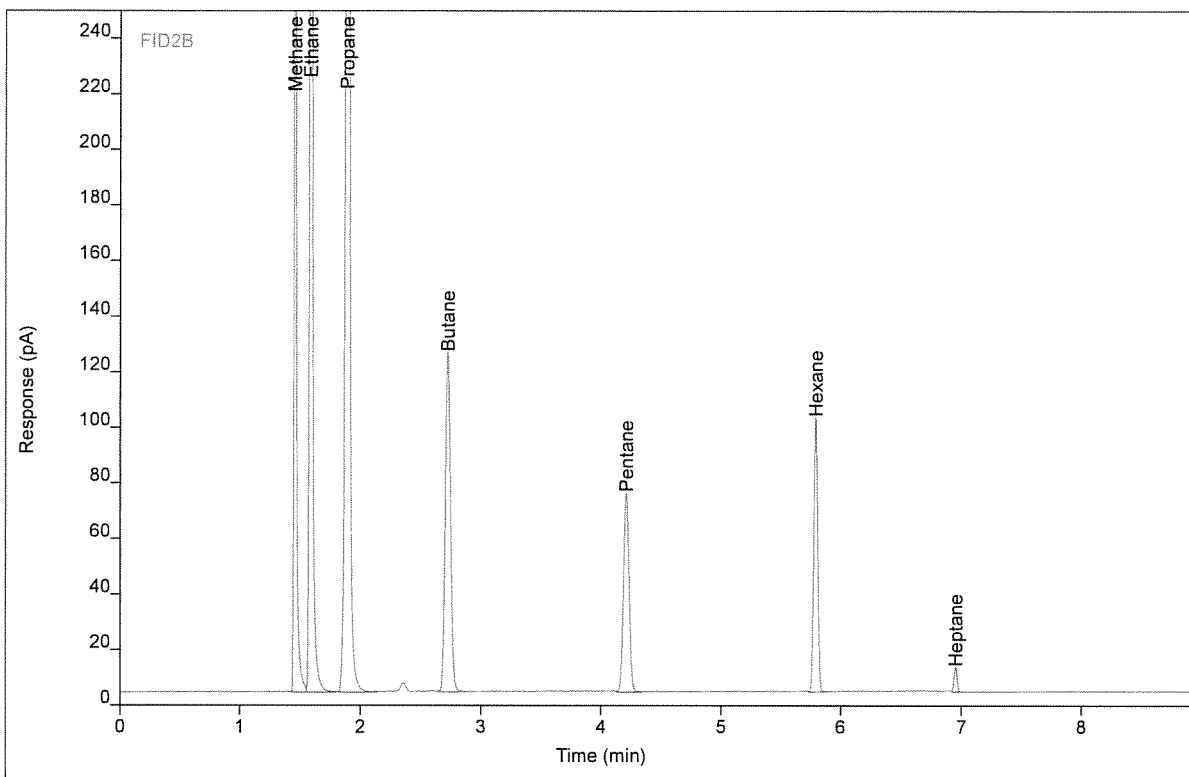
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
as Butane					35.1829	1	35.1829	
Methane	PV	1.46	1520.02	1171.26	7636.31	1	7636.31	ppm
Ethane	VV	1.59	2862.47	1922.06	7696.29	1	7696.29	ppm
Propane	VB	1.89	4263.31	1990.81	7676.39	1	7676.39	ppm
Butane	VV	2.73	1152.34	378.190	1546.20	1	1546.20	ppm
Pentane	BB	4.21	706.332	220.582	769.897	1	769.897	ppm
Hexane	BB	5.79	692.269	303.722	616.861	1	616.861	ppm
Heptane	BB	6.95	50.7182	28.1451	39.5115	1	39.5115	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop987 #C5 ENV(1=3800,4=243.16)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B1902.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 4/3/2017 11:06 AM
 File Modified 4/3/2017 1:25 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 2 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
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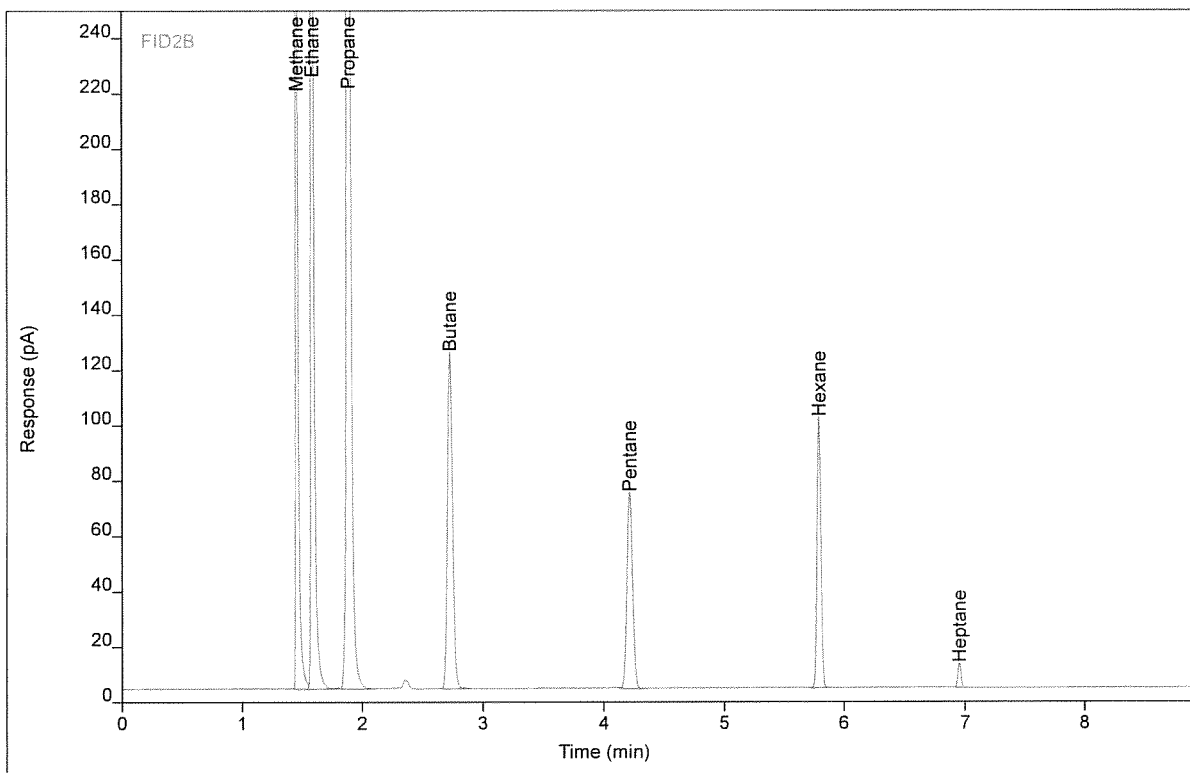
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
as Butane					11.2935	1	11.2935	
Methane	PV	1.46	493.207	379.077	2478.14	1	2478.14	ppm
Ethane	VB	1.59	929.194	625.979	2498.48	1	2498.48	ppm
Propane	BB	1.89	1384.86	646.984	2493.60	1	2493.60	ppm
Butane	BB	2.73	372.451	122.363	499.903	1	499.903	ppm
Pentane	BB	4.21	229.075	71.8840	249.713	1	249.713	ppm
Hexane	BB	5.79	224.840	98.8594	200.445	1	200.445	ppm
Heptane	BB	6.95	16.4871	9.12448	12.9256	1	12.9256	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gum mop987 #C5 ENV(1=3800,4=243.16)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B1903.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 4/3/2017 11:25 AM
 File Modified 4/3/2017 1:25 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 3 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
 Printed 4/3/2017 2:05 PM



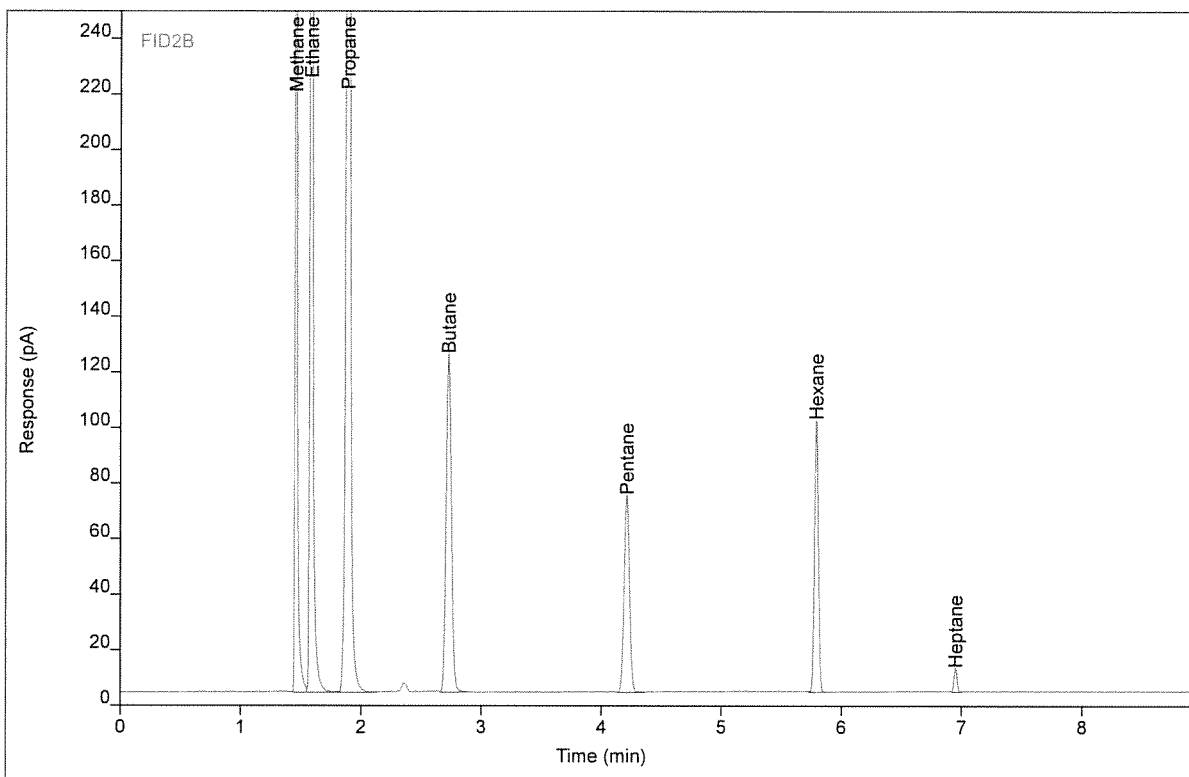
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
as Butane					11.0940	1	11.0940	
Methane	PV	1.46	490.075	374.345	2462.41	1	2462.41	ppm
Ethane	VB	1.59	923.156	623.936	2482.24	1	2482.24	ppm
Propane	BB	1.89	1374.90	642.931	2475.67	1	2475.67	ppm
Butane	BB	2.73	369.432	121.735	495.853	1	495.853	ppm
Pentane	BB	4.21	227.080	70.9978	247.539	1	247.539	ppm
Hexane	BB	5.79	222.562	97.6587	198.416	1	198.416	ppm
Heptane	BB	6.95	16.3241	9.02969	12.7990	1	12.7990	ppm

Chromatogram Report

Enthalpy Analytical

Sample Name gummop987 #C5 ENV(1=3800,4=243.16)
 Sequence Name GUMMOP987 ver.1
 Inj Data File 032B1904.D
 File Location GC/2017/Gummo/Quarter 1
 Injection Date 4/3/2017 11:44 AM
 File Modified 4/3/2017 1:25 PM
 Instrument
 Operator Ben Prothe

Sample Type Calibration
 Vial Number Vial 32
 Injection Volume 1000
 Injection 4 of 4
 Acquisition Method AQ_GUMMOP987.M
 Analysis Method GUMMOP987R_C1-C7.M
 Method Modified 4/3/2017 12:52 PM
 Printed 4/3/2017 2:05 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
as Butane					11.1002	1	11.1002	
Methane	PV	1.46	489.838	375.543	2461.22	1	2461.22	ppm
Ethane	VV	1.59	922.721	622.521	2481.08	1	2481.08	ppm
Propane	VB	1.89	1374.62	642.570	2475.16	1	2475.16	ppm
Butane	BB	2.73	369.200	121.743	495.542	1	495.542	ppm
Pentane	BB	4.21	226.930	71.0351	247.375	1	247.375	ppm
Hexane	BB	5.79	221.087	97.7542	197.101	1	197.101	ppm
Heptane	BB	6.95	16.0309	8.83125	12.5712	1	12.5712	ppm



THE LINDE GROUP

SHIPPED TO: Enthalpy Analytical Inc.
800 Capitola Dr. Ste. 1
Durham, NC 27713-4385

PAGE: 1 of 1

CERTIFICATE OF ANALYSIS

Sales#:	114378357	Cylinder Size:	152 (8" X 47.5")
Production#:	1389409	Cylinder #:	CC-127546
Certification Date:	Sep-20-2016	Cylinder Pressure:	575 psig
P.O.#:	08191601	Cylinder Valve:	CGA 350 Brass
Blend Type:	CERTIFIED	Cylinder Volume:	29.5 Liter
Material#:	24102466	Cylinder Material:	Aluminum
Traceability:	NIST by weight	Gas Volume:	1150 Liters
Expiration Date:	Sep-20-2017	Blend Tolerance:	5% Relative
Do NOT use under:	150 psig	Analytical Accuracy:	2% Relative

COMPONENT	CAS NUMBER	REQUESTED CONC	CERTIFIED CONC
Methane	74-82-8	5.00 %	5.12 %
Ethane	74-84-0	5.00 %	5.14 %
Propane	74-98-6	5.00 %	5.16 %
Butane	106-97-8	1.00 %	1.03 %
Pentane	109-66-0	0.500 %	0.520 %
Hexane	110-54-3	0.400 %	0.410 %
Heptane	142-82-5	250 ppm	257 ppm
Nitrogen	7727-37-9	Balance	Balance

ANALYST: *Lou Lorenzetti*
Lou Lorenzetti

DATE: Sep-20-2016

CERTIFICATE OF ANALYSIS

Grade of Product: CERTIFIED STANDARD-SPEC

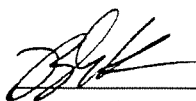
Part Number:	X08NI99C15A0079	Reference Number:	141-124555464-1
Cylinder Number:	CC105348	Cylinder Volume:	144.4 CF
Laboratory:	ASG - Conley Stryker - OH	Cylinder Pressure:	2015 PSIG
Analysis Date:	May 16, 2016	Valve Outlet:	350
Lot Number:	141-124555464-1		

Expiration Date: May 16, 2019

Product composition verified by direct comparison to calibration standards traceable to N.I.S.T. weights and/or N.I.S.T. Gas Mixture reference materials.

ANALYTICAL RESULTS

Component	Req Conc	Actual Concentration (Mole %)	Analytical Uncertainty
ETHANE	100.0 PPM	100.0 PPM	+/- 2%
HEXANE	100.0 PPM	100.0 PPM	+/- 2%
METHANE	100.0 PPM	100.0 PPM	+/- 2%
N BUTANE	100.0 PPM	100.0 PPM	+/- 2%
N HEPTANE	100.0 PPM	100.0 PPM	+/- 2%
N PENTANE	100.0 PPM	100.0 PPM	+/- 2%
PROPANE	100.0 PPM	100.0 PPM	+/- 2%
NITROGEN	Balance		



Approved for Release

CERTIFICATE OF ANALYSIS

Grade of Product: CERTIFIED STANDARD-SPEC

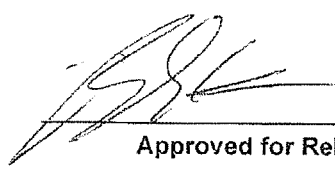
Part Number:	X08NI99C15A0079	Reference Number:	141-124564924-5
Cylinder Number:	CC20849	Cylinder Volume:	144.4 CF
Laboratory:	ASG - Conley Stryker - OH	Cylinder Pressure:	2015 PSIG
Analysis Date:	Jul 12, 2016	Valve Outlet:	350
Lot Number:	141-124564924-5		

Expiration Date: Jul 12, 2019

Product composition verified by direct comparison to calibration standards traceable to N.I.S.T. weights and/or N.I.S.T. Gas Mixture reference materials.

ANALYTICAL RESULTS

Component	Req Conc	Actual Concentration (Mole %)	Analytical Uncertainty
ETHANE	100.0 PPM	101.0 PPM	+/- 2%
HEXANE	100.0 PPM	100.0 PPM	+/- 2%
METHANE	100.0 PPM	100.0 PPM	+/- 2%
N BUTANE	100.0 PPM	100.0 PPM	+/- 2%
N HEPTANE	100.0 PPM	100.0 PPM	+/- 2%
N PENTANE	100.0 PPM	100.0 PPM	+/- 2%
PROPANE	100.0 PPM	100.0 PPM	+/- 2%
NITROGEN	Balance		



 Approved for Release

=====

6890 GC METHOD

=====

OVEN

Initial temp: 35 C (On) Maximum temp: 250 C
Initial time: 2.20 min Equilibration time: 0.20 min
Ramps:
Rate Final temp Final time
1 15.00 70 0.07
2 30.00 250 1.00
3 0 (Off)
Post temp: 50 C
Post time: 0.00 min
Run time: 11.60 min

FRONT INLET (SPLIT/SPLITLESS)

Mode: Split
Initial temp: 160 C (On)
Pressure: 4.7 psi (On)
Split ratio: 5:1
Split flow: 9.9 mL/min
Total flow: 17.9 mL/min
Gas saver: Off
Gas type: Hydrogen

BACK INLET (SPLIT/SPLITLESS)

Mode: Split
Initial temp: 160 C (On)
Pressure: 4.9 psi (On)
Split ratio: 2:1
Split flow: 3.9 mL/min
Total flow: 12.1 mL/min
Gas saver: Off
Gas type: Hydrogen

COLUMN 1

Capillary Column
Model Number: 10970
Description: Rtx-624 S/N 926827
Max temperature: 240 C
Nominal length: 30.0 m
Nominal diameter: 320.00 um
Nominal film thickness: 1.80 um
Mode: constant flow
Initial flow: 2.0 mL/min
Nominal init pressure: 4.7 psi
Average velocity: 37 cm/sec
Inlet: Front Inlet
Outlet: Front Detector
Outlet pressure: ambient

COLUMN 2

Capillary Column
Model Number: 10198
Description: Rtx-1 S/N 869999
Max temperature: 280 C
Nominal length: 30.0 m
Nominal diameter: 320.00 um
Nominal film thickness: 4.00 um
Mode: constant flow
Initial flow: 2.0 mL/min
Nominal init pressure: 4.9 psi
Average velocity: 38 cm/sec
Inlet: Back Inlet
Outlet: Back Detector
Outlet pressure: ambient

FRONT DETECTOR (FID)

Temperature: 250 C (On)
Hydrogen flow: 40.0 mL/min (On)
Air flow: 450.0 mL/min (On)
Mode: Constant makeup flow
Makeup flow: 45.0 mL/min (On)
Makeup Gas Type: Nitrogen
Flame: On
Electrometer: On
Lit offset: 2.0

BACK DETECTOR (FID)

Temperature: 250 C (On)
Hydrogen flow: 40.0 mL/min (On)
Air flow: 450.0 mL/min (On)
Mode: Constant makeup flow
Makeup flow: 45.0 mL/min (On)
Makeup Gas Type: Nitrogen
Flame: On
Electrometer: On
Lit offset: 2.0

SIGNAL 1

Data rate: 20 Hz
Type: front detector
Save Data: On

SIGNAL 2

Data rate: 20 Hz
Type: back detector
Save Data: On

THERMAL AUX 1

Use: Valve Box Heater
Initial temp: 120 C (On)

VALVES

Valve 1 Gas Sampling

POST RUN

Post Time: 0.00 min
EA# 0617-110 Page 387 of 441
Page 527 of 582

method: C:\GC\2017\GUMMO\METHODS\AQ_GUMMOP987.M

Modified on: 3/31/2017 at 3:12:16 PM

Loop Volume: 1.000 mL

Load Time: 0.70 min

Inject Time: 0.50 min

Inlet: Front Inlet

Valve 2 Gas Sampling

Loop Volume: 1.000 mL

Load Time: 0.70 min

Inject Time: 0.50 min

Inlet: Back Inlet

Valve 7 Multiposition 16

BCD input: inverted

Switch Time: 1.0 sec

TIME TABLE

Time(min)	Parameter & Setpoint	
0.10	Multi-Valve Position:	1

=====

6890 GC METHOD

=====

OVEN

Initial temp: 35 C (On) Maximum temp: 250 C
Initial time: 2.20 min Equilibration time: 0.20 min
Ramps:
Rate Final temp Final time
1 15.00 70 0.50
2 0 (Off)
Post temp: 50 C
Post time: 0.00 min
Run time: 5.03 min

FRONT INLET (SPLIT/SPLITLESS)

Mode: Split
Initial temp: 160 C (On)
Pressure: 4.7 psi (On)
Split ratio: 5:1
Split flow: 9.9 mL/min
Total flow: 17.9 mL/min
Gas saver: Off
Gas type: Hydrogen

BACK INLET (SPLIT/SPLITLESS)

Mode: Split
Initial temp: 160 C (On)
Pressure: 4.9 psi (On)
Split ratio: 2:1
Split flow: 3.9 mL/min
Total flow: 12.1 mL/min
Gas saver: Off
Gas type: Hydrogen

COLUMN 1

Capillary Column
Model Number: 10970
Description: Rtx-624 S/N 926827
Max temperature: 240 C
Nominal length: 30.0 m
Nominal diameter: 320.00 um
Nominal film thickness: 1.80 um
Mode: constant flow
Initial flow: 2.0 mL/min
Nominal init pressure: 4.7 psi
Average velocity: 37 cm/sec
Inlet: Front Inlet
Outlet: Front Detector
Outlet pressure: ambient

COLUMN 2

Capillary Column
Model Number: 10198
Description: Rtx-1 S/N 869999
Max temperature: 280 C
Nominal length: 30.0 m
Nominal diameter: 320.00 um
Nominal film thickness: 4.00 um
Mode: constant flow
Initial flow: 2.0 mL/min
Nominal init pressure: 4.9 psi
Average velocity: 38 cm/sec
Inlet: Back Inlet
Outlet: Back Detector
Outlet pressure: ambient

FRONT DETECTOR (FID)

Temperature: 250 C (On)
Hydrogen flow: 40.0 mL/min (On)
Air flow: 450.0 mL/min (On)
Mode: Constant makeup flow
Makeup flow: 45.0 mL/min (On)
Makeup Gas Type: Nitrogen
Flame: On
Electrometer: On
Lit offset: 2.0

BACK DETECTOR (FID)

Temperature: 250 C (On)
Hydrogen flow: 40.0 mL/min (On)
Air flow: 450.0 mL/min (On)
Mode: Constant makeup flow
Makeup flow: 45.0 mL/min (On)
Makeup Gas Type: Nitrogen
Flame: On
Electrometer: On
Lit offset: 2.0

SIGNAL 1

Data rate: 20 Hz
Type: front detector
Save Data: On

SIGNAL 2

Data rate: 20 Hz
Type: back detector
Save Data: On

THERMAL AUX 1

Use: Valve Box Heater
Initial temp: 120 C (On)

VALVES

Valve 1 Gas Sampling
Loop Volume: 1.000 mL

POST RUN

Post Time: 0.00 min

method: C:\GC\2017\GUMMO\METHODS\AQ_GUMMOP987_AA.M

Modified on: 3/31/2017 at 3:11:51 PM

Load Time: 0.70 min

Inject Time: 0.50 min

Inlet: Front Inlet

Valve 2 Gas Sampling

Loop Volume: 1.000 mL

Load Time: 0.70 min

Inject Time: 0.50 min

Inlet: Back Inlet

Valve 7 Multiposition 16

BCD input: inverted

Switch Time: 1.0 sec

TIME TABLE

Time(min)	Parameter & Setpoint	
0.10	Multi-Valve Position:	1

Raw Data

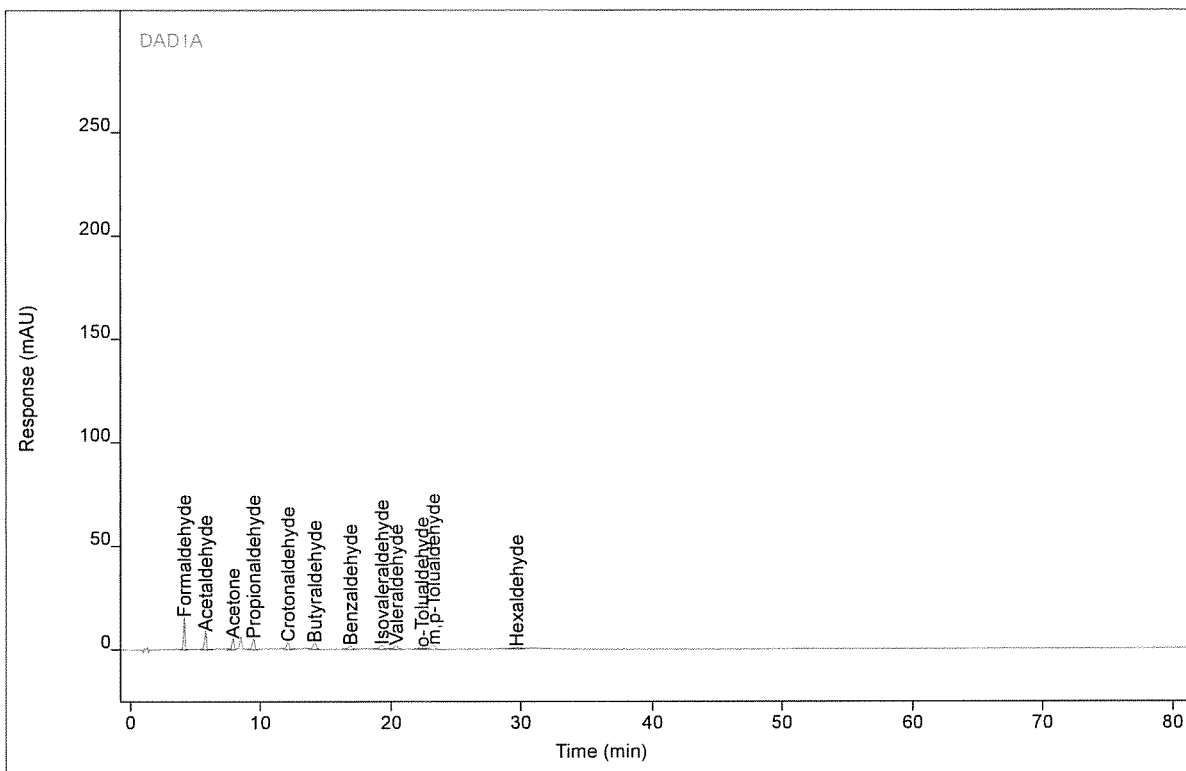


Chromatogram Report

Enthalpy Analytical

Sample Name HPLCSTDS465 #1
 Sequence Name Bart407. 2017-07-06 16-07-39 ver.7
 Inj Data File 001-0401.D
 File Location HPLC/2017/Bart/Quarter 3
 Injection Date 7/6/2017 8:37 PM
 File Modified 7/10/2017 2:55 PM
 Instrument Bart
 Operator Amelia Paolantonio

Sample Type Calibration
 Vial Number 1
 Injection Volume 5
 Injection 1 of 1
 Acquisition Method 8315_TO11_Waters_restek_45_Min_EXT.M
 Analysis Method Bart407.M
 Method Modified 7/10/2017 2:55 PM
 Printed 7/20/2017 11:36 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BB	4.12	132.074	15.9279	0.92354	1	0.92354	ug/ml
Acetaldehyde	BB	5.73	92.8965	8.99904	0.91928	1	0.91928	ug/ml
Acetone	MF	7.88	67.6898	5.65416	0.92979	1	0.92979	ug/ml
Propionaldehyde	FM	9.50	70.7596	5.29862	0.87661	1	0.87661	ug/ml
Crotonaldehyde	BB	12.14	54.9640	3.71642	0.91727	1	0.91727	ug/ml
Butyraldehyde	BB	14.20	53.5488	3.34941	0.91857	1	0.91857	ug/ml
Benzaldehyde	BB	16.93	38.2534	2.05429	0.93964	1	0.93964	ug/ml
Isovaleraldehyde	BB	19.28	47.9951	2.31854	0.91534	1	0.91534	ug/ml
Valeraldehyde	BB	20.38	43.5963	1.99296	0.92214	1	0.92214	ug/ml
o-Tolualdehyde	BV	22.30	30.1617	1.19607	0.91949	1	0.91949	ug/ml
m,p-Tolualdehyde	VB	23.20	59.9699	2.22546	1.84935	1	1.84935	ug/ml
Hexaldehyde	MF	29.69	42.6881	1.14319	0.93179	1	0.93179	ug/ml

Analyst Peak Integration Comments

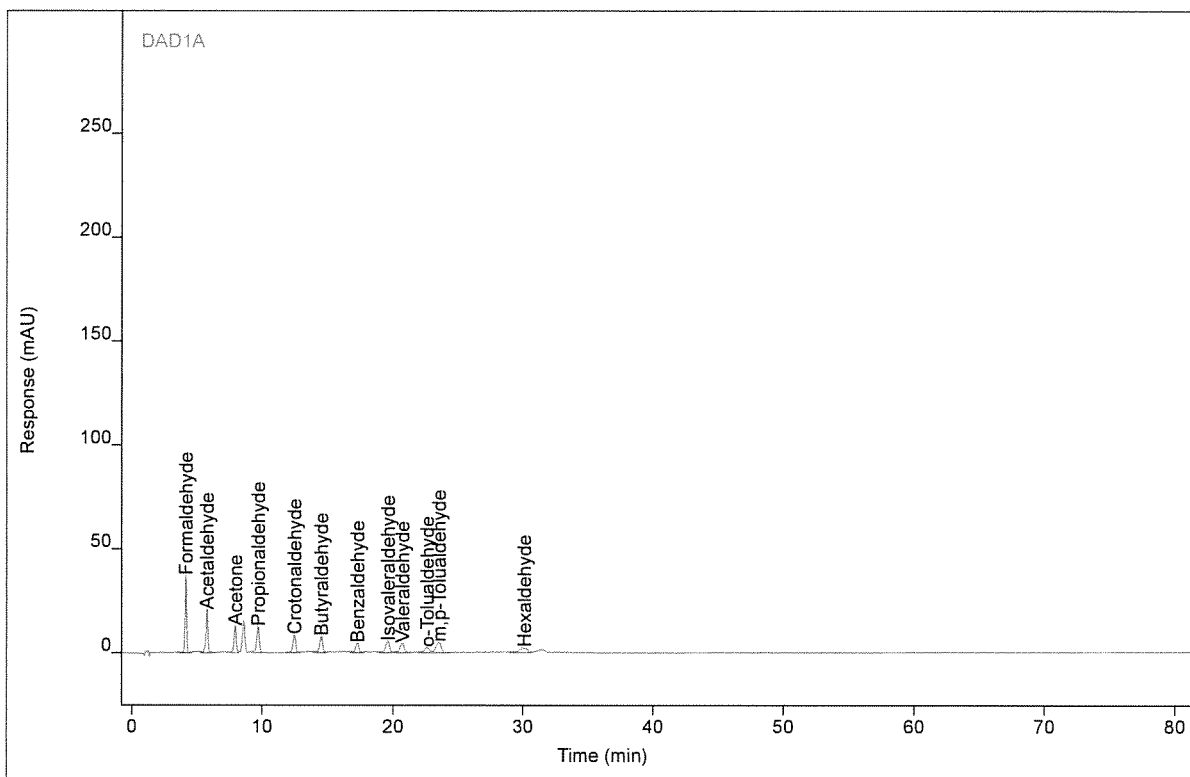
13:24:20 07/10/17 Amelia Paolantonio NI AMP

Chromatogram Report

Enthalpy Analytical

Sample Name HPLCSTDS465 #2
 Sequence Name Bart407. 2017-07-06 16-07-39 ver.7
 Inj Data File 002-0501.D
 File Location HPLC/2017/Bart/Quarter 3
 Injection Date 7/6/2017 10:07 PM
 File Modified 7/10/2017 2:54 PM
 Instrument Bart
 Operator Amelia Paolantonio

Sample Type Calibration
 Vial Number 2
 Injection Volume 5
 Injection 1 of 1
 Acquisition Method 8315_TO11_Waters_restek_45_Min_EXT.M
 Analysis Method Bart407.M
 Method Modified 7/10/2017 2:54 PM
 Printed 7/20/2017 11:36 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BB	4.16	313.211	37.4087	1.99176	1	1.99176	ug/ml
Acetaldehyde	BB	5.79	221.157	21.1669	2.00286	1	2.00286	ug/ml
Acetone	MF	7.95	157.257	13.2598	1.98354	1	1.98354	ug/ml
Propionaldehyde	FM	9.71	183.095	12.8171	2.12165	1	2.12165	ug/ml
Crotonaldehyde	BB	12.48	133.235	8.78686	2.01894	1	2.01894	ug/ml
Butyraldehyde	BB	14.54	129.161	8.04140	1.98938	1	1.98938	ug/ml
Benzaldehyde	BB	17.27	86.6716	4.88488	1.97076	1	1.97076	ug/ml
Isovaleraldehyde	BB	19.62	115.677	5.65696	1.97320	1	1.97320	ug/ml
Valeraldehyde	BB	20.72	102.939	4.76977	1.95079	1	1.95079	ug/ml
o-Tolualdehyde	BV	22.64	72.9981	2.86476	2.00451	1	2.00451	ug/ml
m,p-Tolualdehyde	VB	23.54	142.589	5.24023	4.05152	1	4.05152	ug/ml
Hexaldehyde	MF	30.11	97.6143	2.61301	2.01168	1	2.01168	ug/ml

Analyst Peak Integration Comments

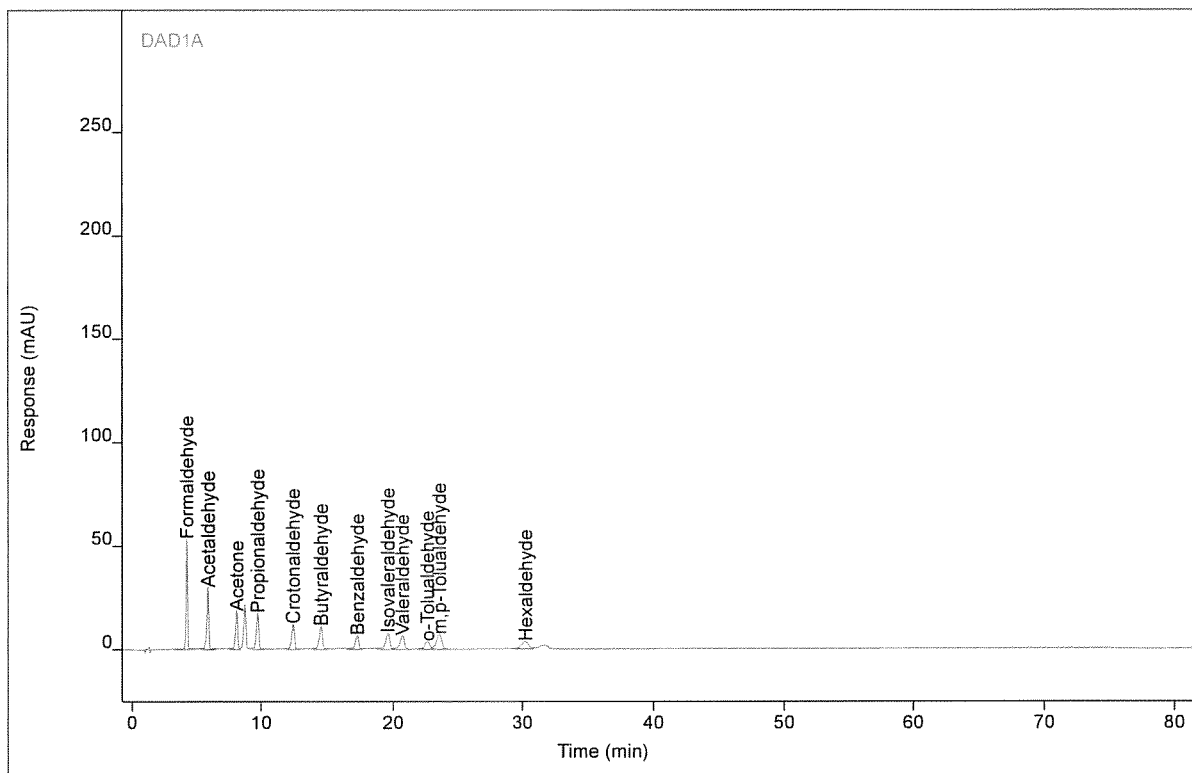
13:15:26 07/10/17 Amelia Paolantonio II AMP

Chromatogram Report

Enthalpy Analytical

Sample Name HPLCSTDS465 #3
 Sequence Name Bart407. 2017-07-06 16-07-39 ver.7
 Inj Data File 003-0601.D
 File Location HPLC/2017/Bart/Quarter 3
 Injection Date 7/6/2017 11:37 PM
 File Modified 7/10/2017 2:54 PM
 Instrument Bart
 Operator Amelia Paolantonio

Sample Type Calibration
 Vial Number 3
 Injection Volume 5
 Injection 1 of 1
 Acquisition Method 8315_TO11_Waters_restek_45_Min_EXT.M
 Analysis Method Bart407.M
 Method Modified 7/10/2017 2:54 PM
 Printed 7/20/2017 11:36 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BB	4.23	458.814	53.9012	2.85043	1	2.85043	ug/ml
Acetaldehyde	BB	5.89	321.494	30.2382	2.85053	1	2.85053	ug/ml
Acetone	MF	8.09	230.161	18.9728	2.84126	1	2.84126	ug/ml
Propionaldehyde	FM	9.74	242.501	17.7183	2.78007	1	2.78007	ug/ml
Crotonaldehyde	BB	12.44	191.374	12.4707	2.83726	1	2.83726	ug/ml
Butyraldehyde	BB	14.51	188.361	11.3236	2.82776	1	2.82776	ug/ml
Benzaldehyde	MM	17.27	126.389	6.88002	2.81658	1	2.81658	ug/ml
Isovaleraldehyde	MF	19.61	171.908	8.02118	2.85209	1	2.85209	ug/ml
Valeraldehyde	FM	20.73	154.925	6.79624	2.85191	1	2.85191	ug/ml
o-Tolualdehyde	BV	22.70	105.490	4.05089	2.82751	1	2.82751	ug/ml
m,p-Tolualdehyde	VB	23.60	201.681	7.30514	5.62657	1	5.62657	ug/ml
Hexaldehyde	MF	30.24	136.524	3.63605	2.77668	1	2.77668	ug/ml

Analyst Peak Integration Comments

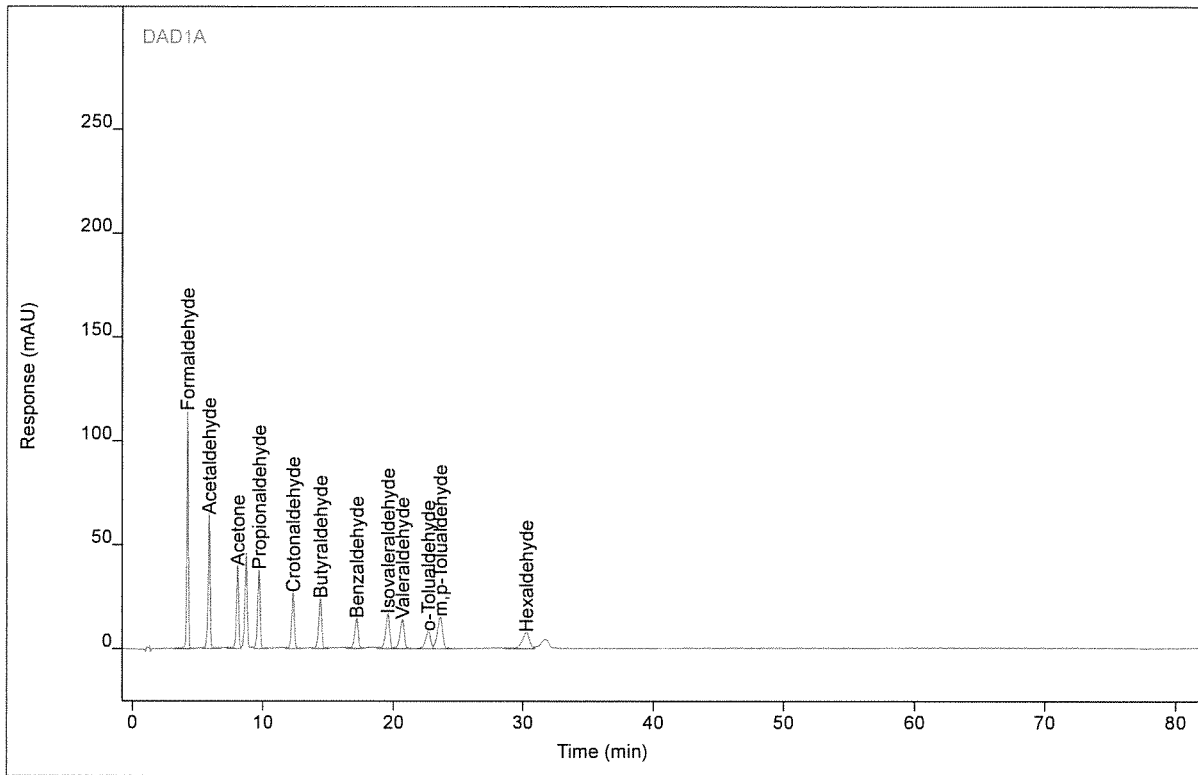
13:16:17 07/10/17 Amelia Paolantonio II AMP

Chromatogram Report

Enthalpy Analytical

Sample Name HPLCSTDS465 #4
 Sequence Name Bart407. 2017-07-06 16-07-39 ver.7
 Inj Data File 004-0701.D
 File Location HPLC/2017/Bart/Quarter 3
 Injection Date 7/7/2017 1:06 AM
 File Modified 7/10/2017 2:54 PM
 Instrument Bart
 Operator Amelia Paolantonio

Sample Type Calibration
 Vial Number 4
 Injection Volume 5
 Injection 1 of 1
 Acquisition Method 8315_TO11_Waters_restek_45_Min_EXT.M
 Analysis Method Bart407.M
 Method Modified 7/10/2017 2:54 PM
 Printed 7/20/2017 11:36 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BB	4.23	979.033	114.556	5.91833	1	5.91833	ug/ml
Acetaldehyde	BB	5.88	684.086	64.6738	5.91380	1	5.91380	ug/ml
Acetone	MF	8.07	491.137	40.4023	5.91163	1	5.91163	ug/ml
Propionaldehyde	FM	9.71	516.329	38.3533	5.81498	1	5.81498	ug/ml
Crotonaldehyde	BB	12.37	409.220	27.1236	5.90349	1	5.90349	ug/ml
Butyraldehyde	BB	14.43	400.333	24.1584	5.82966	1	5.82966	ug/ml
Benzaldehyde	BB	17.21	272.689	14.5951	5.93219	1	5.93219	ug/ml
Isovaleraldehyde	BV	19.58	365.100	16.8532	5.87166	1	5.87166	ug/ml
Valeraldehyde	VB	20.71	330.559	14.3012	5.89635	1	5.89635	ug/ml
o-Tolualdehyde	BV	22.69	229.680	8.58225	5.97318	1	5.97318	ug/ml
m,p-Tolualdehyde	VB	23.62	438.475	15.4185	11.9382	1	11.9382	ug/ml
Hexaldehyde	MF	30.28	305.977	7.86787	6.10827	1	6.10827	ug/ml

Analyst Peak Integration Comments

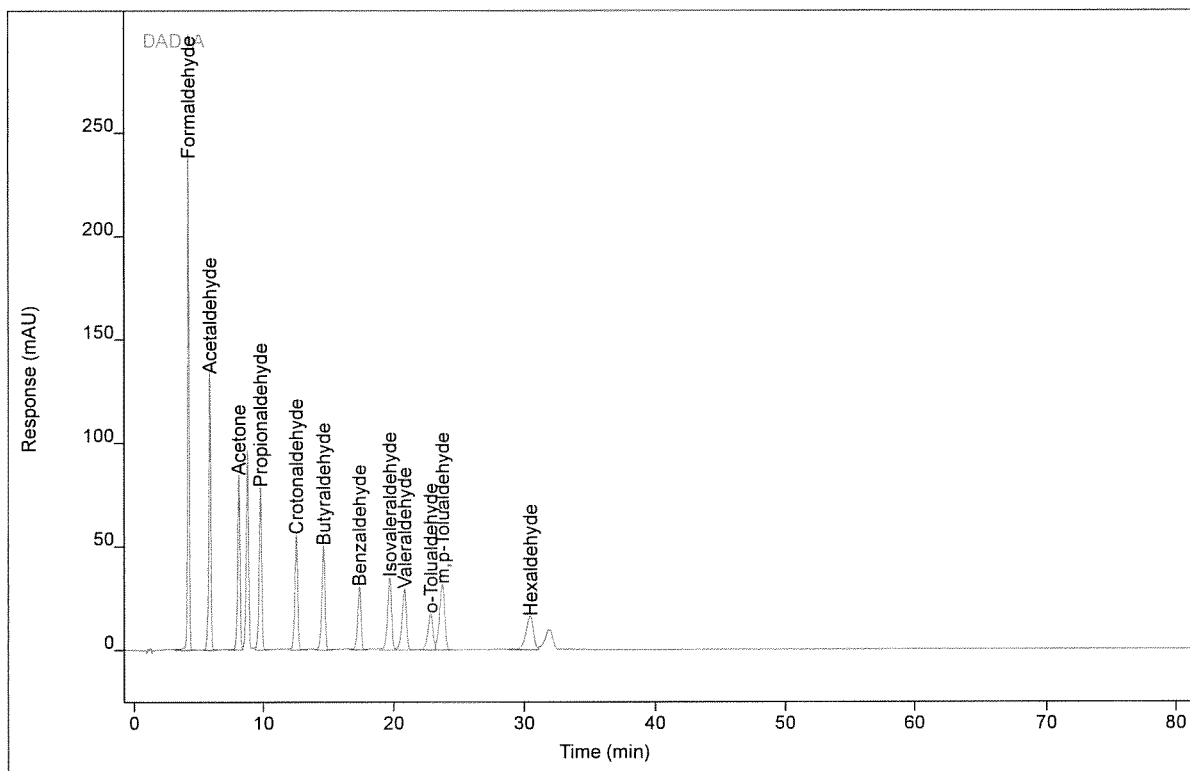
13:18:05 07/10/17 Amelia Paolantonio II AMP

Chromatogram Report

Enthalpy Analytical

Sample Name HPLCSTDS465 #5
Sequence Name Bart407. 2017-07-06 16-07-39 ver.7
Inj Data File 005-0801.D
File Location HPLC/2017/Bart/Quarter 3
Injection Date 7/7/2017 2:36 AM
File Modified 7/10/2017 2:54 PM
Instrument Bart
Operator Amelia Paolantonio

Sample Type Calibration
Vial Number 5
Injection Volume 5
Injection 1 of 1
Acquisition Method 8315_TO11_Waters_restek_45_Min_EXT.M
Analysis Method Bart407.M
Method Modified 7/10/2017 2:54 PM
Printed 7/20/2017 11:36 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BB	4.25	2060.33	240.068	12.2951	1	12.2951	ug/ml
Acetaldehyde	BB	5.92	1439.60	135.783	12.2966	1	12.2966	ug/ml
Acetone	MF	8.13	1034.10	84.8147	12.2995	1	12.2995	ug/ml
Propionaldehyde	FM	9.79	1091.67	79.3593	12.1916	1	12.1916	ug/ml
Crotonaldehyde	BB	12.49	861.375	56.1348	12.2676	1	12.2676	ug/ml
Butyraldehyde	VB	14.57	849.175	50.6017	12.1861	1	12.1861	ug/ml
Benzaldehyde	BB	17.34	571.116	30.8135	12.2875	1	12.2875	ug/ml
Isovaleraldehyde	VV	19.71	769.687	35.3151	12.1953	1	12.1953	ug/ml
Valeraldehyde	VB	20.84	695.366	29.7952	12.2199	1	12.2199	ug/ml
o-Tolualdehyde	BV	22.85	478.198	17.7599	12.2680	1	12.2680	ug/ml
m,p-Tolualdehyde	VB	23.78	914.944	32.0784	24.6382	1	24.6382	ug/ml
Hexaldehyde	BV	30.45	627.120	16.2827	12.4222	1	12.4222	ug/ml

Analyst Peak Integration Comments

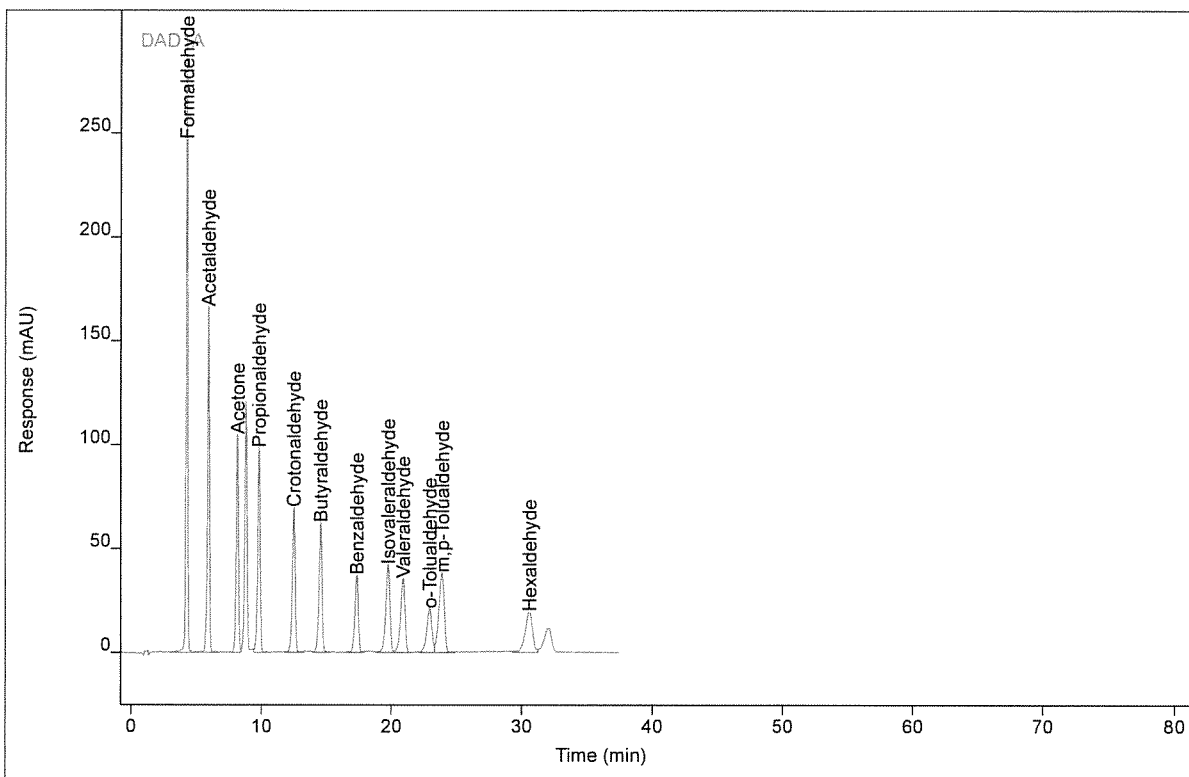
13:19:01 07/10/17 Amelia Paolantonio II AMP

Chromatogram Report

Enthalpy Analytical

Sample Name HPLCSTDS465 #6
 Sequence Name Bart407. 2017-07-06 16-07-39 ver.7
 Inj Data File 006-0901.D
 File Location HPLC/2017/Bart/Quarter 3
 Injection Date 7/7/2017 4:05 AM
 File Modified 7/10/2017 2:54 PM
 Instrument Bart
 Operator Amelia Paolantonio

Sample Type Calibration
 Vial Number 6
 Injection Volume 5
 Injection 1 of 1
 Acquisition Method 8315_TO11_Waters_retek_45_Min_EXT.M
 Analysis Method Bart407.M
 Method Modified 7/10/2017 2:54 PM
 Printed 7/20/2017 11:36 AM



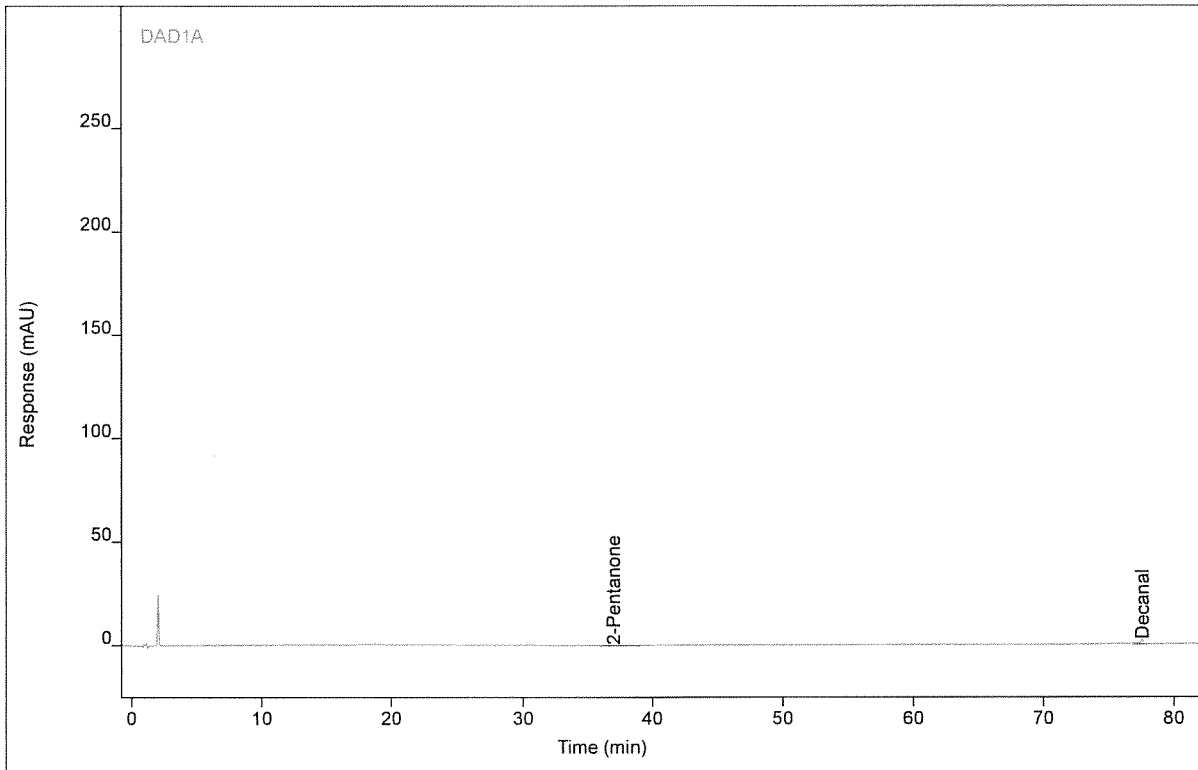
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BB	4.29	2525.15	293.262	15.0362	1	15.0362	ug/ml
Acetaldehyde	BB	5.96	1763.43	166.745	15.0324	1	15.0324	ug/ml
Acetone	BV	8.16	1267.85	105.408	15.0496	1	15.0496	ug/ml
Propionaldehyde	VB	9.82	1342.38	98.9027	14.9704	1	14.9704	ug/ml
Crotonaldehyde	BB	12.52	1060.53	70.0541	15.0708	1	15.0708	ug/ml
Butyraldehyde	VB	14.59	1048.14	62.6509	15.0038	1	15.0038	ug/ml
Benzaldehyde	BB	17.38	701.713	37.3394	15.0687	1	15.0687	ug/ml
Isovaleraldehyde	BV	19.78	945.784	42.4690	14.9477	1	14.9477	ug/ml
Valeraldehyde	VB	20.93	850.801	35.9119	14.9142	1	14.9142	ug/ml
o-Tolualdehyde	BV	22.96	586.953	21.3257	15.0227	1	15.0227	ug/ml
m,p-Tolualdehyde	VB	23.90	1123.22	38.5825	30.1898	1	30.1898	ug/ml
Hexaldehyde	BV	30.61	759.007	19.6258	15.0152	1	15.0152	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name HPLCSTDS458 #1
 Sequence Name Bart407b. 2017-07-11 17-18-13 ver.3
 Inj Data File 011-0101.D
 File Location HPLC/2017/Bart/Quarter 3
 Injection Date 7/11/2017 5:19 PM
 File Modified 7/12/2017 2:20 PM
 Instrument Bart
 Operator Amelia Paolantonio

Sample Type Calibration
 Vial Number 11
 Injection Volume 5
 Injection 1 of 1
 Acquisition Method 8315_TO11_Waters_restek_45_Min_EXT.M
 Analysis Method Bart407.M
 Method Modified 7/12/2017 2:20 PM
 Printed 7/20/2017 11:36 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde		(4.20)				1		ug/ml
Acetaldehyde		(5.70)				1		ug/ml
Acetone		(7.80)				1		ug/ml
Propionaldehyde		(9.74)				1		ug/ml
Crotonaldehyde		(12.44)				1		ug/ml
Butyraldehyde		(14.51)				1		ug/ml
Benzaldehyde		(17.00)				1		ug/ml
Isovaleraldehyde		(19.61)				1		ug/ml
Valeraldehyde		(20.73)				1		ug/ml
o-Tolualdehyde		(22.70)				1		ug/ml
m,p-Tolualdehyde		(23.60)				1		ug/ml
Hexaldehyde		(30.24)				1		ug/ml
2-Pentanone	MM	37.03	30.2758	0.36385	1.00975	1	1.00975	ug/ml
Decanal	MM	77.59	29.4793	2.45393	1.05389	1	1.05389	ug/ml

Analyst Peak Integration Comments

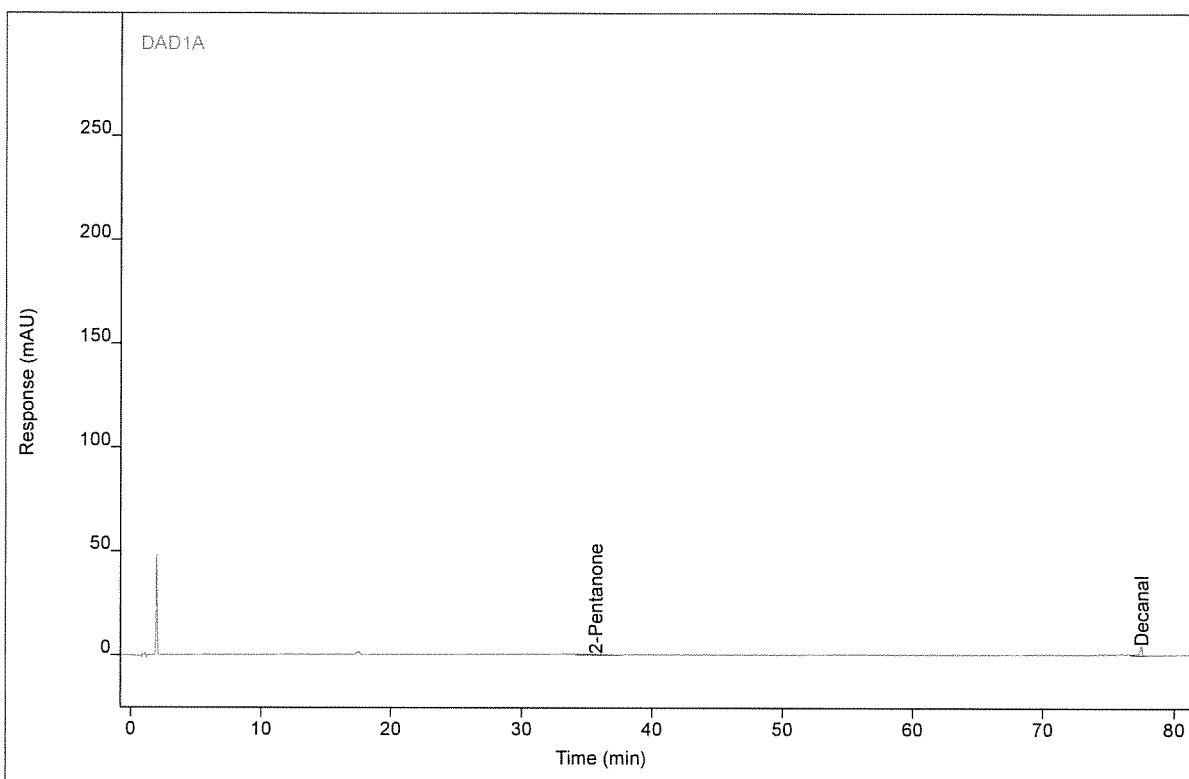
14:16:02 07/12/17 Amelia Paolantonio NI AMP

Chromatogram Report

Enthalpy Analytical

Sample Name HPLCSTDS458 #2
 Sequence Name Bart407b. 2017-07-11 17-18-13 ver.3
 Inj Data File 012-0201.D
 File Location HPLC/2017/Bart/Quarter 3
 Injection Date 7/11/2017 6:49 PM
 File Modified 7/12/2017 2:19 PM
 Instrument Bart
 Operator Amelia Paolantonio

Sample Type Calibration
 Vial Number 12
 Injection Volume 5
 Injection 1 of 1
 Acquisition Method 8315_TO11_Waters_retek_45_Min_EXT.M
 Analysis Method Bart407.M
 Method Modified 7/12/2017 2:19 PM
 Printed 7/20/2017 11:36 AM



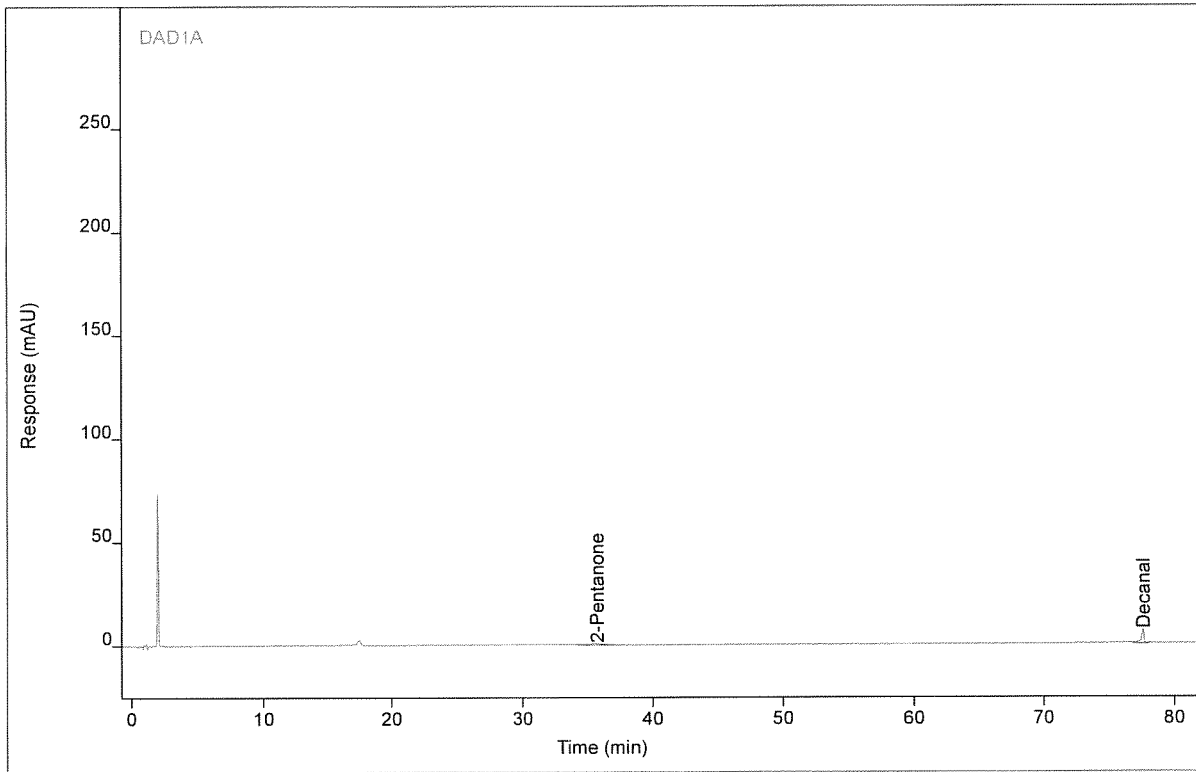
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde		(4.20)				1		ug/ml
Acetaldehyde		(5.70)				1		ug/ml
Acetone		(7.80)				1		ug/ml
Propionaldehyde		(9.74)				1		ug/ml
Crotonaldehyde		(12.44)				1		ug/ml
Butyraldehyde		(14.51)				1		ug/ml
Benzaldehyde		(17.00)				1		ug/ml
Isovaleraldehyde		(19.61)				1		ug/ml
Valeraldehyde		(20.73)				1		ug/ml
o-Tolualdehyde		(22.70)				1		ug/ml
m,p-Tolualdehyde		(23.60)				1		ug/ml
Hexaldehyde		(30.24)				1		ug/ml
2-Pentanone	MM	35.70	53.2353	0.72058	1.77692	1	1.77692	ug/ml
Decanal	MM	77.59	58.4534	4.81300	2.12632	1	2.12632	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name HPLCSTDS458 #3
 Sequence Name Bart407b. 2017-07-11 17-18-13 ver.3
 Inj Data File 013-0301.D
 File Location HPLC/2017/Bart/Quarter 3
 Injection Date 7/11/2017 8:18 PM
 File Modified 7/12/2017 2:19 PM
 Instrument Bart
 Operator Amelia Paolantonio

Sample Type Calibration
 Vial Number 13
 Injection Volume 5
 Injection 1 of 1
 Acquisition Method 8315_TO11_Waters_restek_45_Min_EXT.M
 Analysis Method Bart407.M
 Method Modified 7/12/2017 2:19 PM
 Printed 7/20/2017 11:36 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde		(4.20)				1		ug/ml
Acetaldehyde		(5.70)				1		ug/ml
Acetone		(7.80)				1		ug/ml
Propionaldehyde		(9.74)				1		ug/ml
Crotonaldehyde		(12.44)				1		ug/ml
Butyraldehyde		(14.51)				1		ug/ml
Benzaldehyde		(17.00)				1		ug/ml
Isovaleraldehyde		(19.61)				1		ug/ml
Valeraldehyde		(20.73)				1		ug/ml
o-Tolualdehyde		(22.70)				1		ug/ml
m,p-Tolualdehyde		(23.60)				1		ug/ml
Hexaldehyde		(30.24)				1		ug/ml
2-Pentanone	MM	35.74	88.6255	1.13974	2.95946	1	2.95946	ug/ml
Decanal	MM	77.60	92.3866	7.29992	3.38232	1	3.38232	ug/ml

Analyst Peak Integration Comments

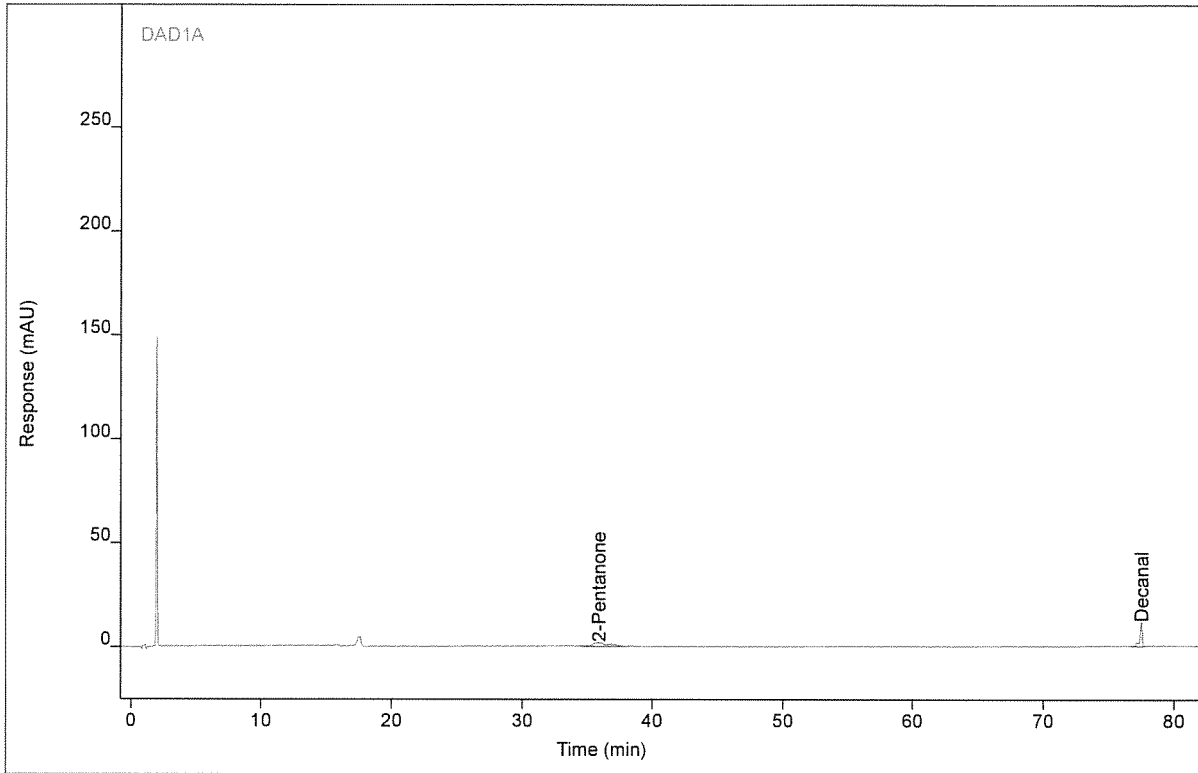
14:15:26 07/12/17 Amelia Paolantonio II AMP

Chromatogram Report

Enthalpy Analytical

Sample Name HPLCSTDS458 #4
 Sequence Name Bart407b. 2017-07-11 17-18-13 ver.3
 Inj Data File 014-0401.D
 File Location HPLC/2017/Bart/Quarter 3
 Injection Date 7/11/2017 9:48 PM
 File Modified 7/12/2017 2:19 PM
 Instrument Bart
 Operator Amelia Paolantonio

Sample Type Calibration
 Vial Number 14
 Injection Volume 5
 Injection 1 of 1
 Acquisition Method 8315_TO11_Waters_restek_45_Min_EXT.M
 Analysis Method Bart407.M
 Method Modified 7/12/2017 2:19 PM
 Printed 7/20/2017 11:36 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde		(4.20)				1		ug/ml
Acetaldehyde		(5.70)				1		ug/ml
Acetone		(7.80)				1		ug/ml
Propionaldehyde		(9.74)				1		ug/ml
Crotonaldehyde		(12.44)				1		ug/ml
Butyraldehyde		(14.51)				1		ug/ml
Benzaldehyde		(17.00)				1		ug/ml
Isovaleraldehyde		(19.61)				1		ug/ml
Valeraldehyde		(20.73)				1		ug/ml
o-Tolualdehyde		(22.70)				1		ug/ml
m,p-Tolualdehyde		(23.60)				1		ug/ml
Hexaldehyde		(30.24)				1		ug/ml
2-Pentanone	MM	35.88	171.152	2.19409	5.71703	1	5.71703	ug/ml
Decanal	MM	77.59	148.023	12.0007	5.44164	1	5.44164	ug/ml

Analyst Peak Integration Comments

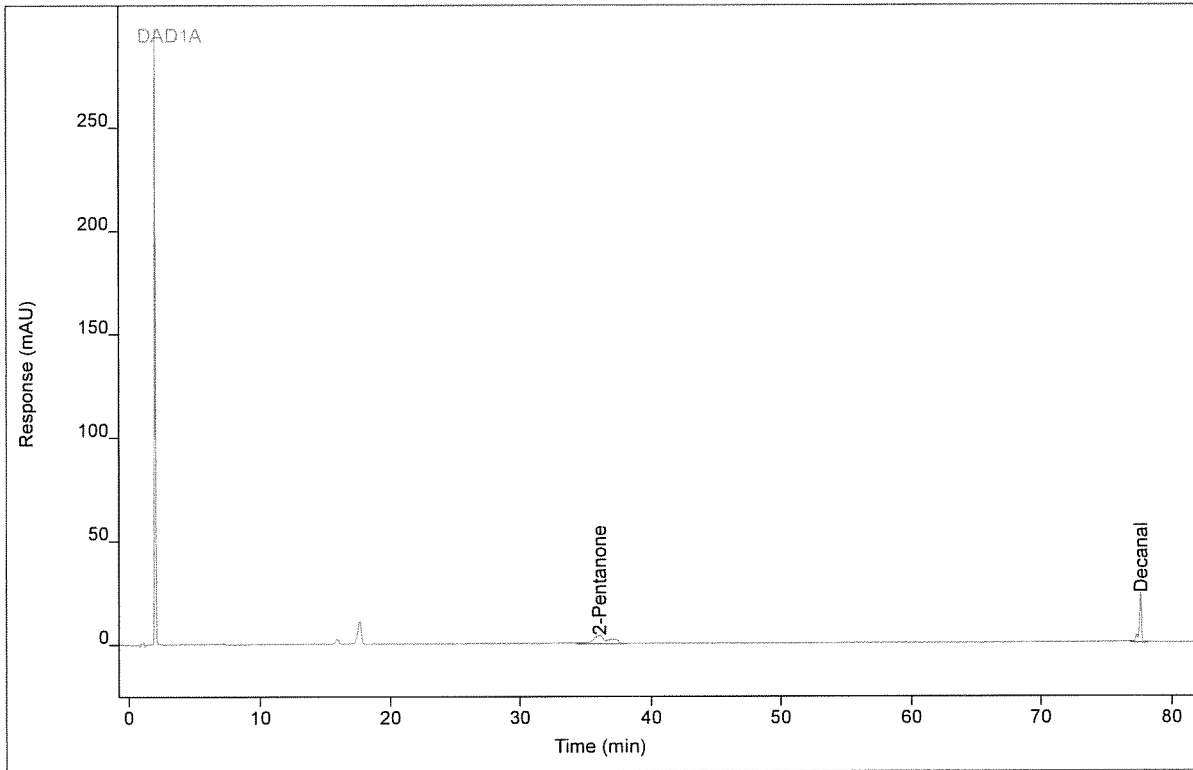
14:15:13 07/12/17 Amelia Paolantonio II AMP
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Chromatogram Report

Enthalpy Analytical

Sample Name HPLCSTDS458 #5
 Sequence Name Bart407b. 2017-07-11 17-18-13 ver.3
 Inj Data File 015-0501.D
 File Location HPLC/2017/Bart/Quarter 3
 Injection Date 7/11/2017 11:18 PM
 File Modified 7/12/2017 2:19 PM
 Instrument Bart
 Operator Amelia Paolantonio

Sample Type Calibration
 Vial Number 15
 Injection Volume 5
 Injection 1 of 1
 Acquisition Method 8315_TO11_Waters_restek_45_Min_EXT.M
 Analysis Method Bart407.M
 Method Modified 7/12/2017 2:19 PM
 Printed 7/20/2017 11:36 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde		(4.20)				1		ug/ml
Acetaldehyde		(5.70)				1		ug/ml
Acetone		(7.80)				1		ug/ml
Propionaldehyde		(9.74)				1		ug/ml
Crotonaldehyde		(12.44)				1		ug/ml
Butyraldehyde		(14.51)				1		ug/ml
Benzaldehyde		(17.00)				1		ug/ml
Isovaleraldehyde		(19.61)				1		ug/ml
Valeraldehyde		(20.73)				1		ug/ml
o-Tolualdehyde		(22.70)				1		ug/ml
m,p-Tolualdehyde		(23.60)				1		ug/ml
Hexaldehyde		(30.24)				1		ug/ml
2-Pentanone	MM	36.09	342.413	4.22983	11.4396	1	11.4396	ug/ml
Decanal	MM	77.59	298.988	24.5390	11.0294	1	11.0294	ug/ml

Analyst Peak Integration Comments

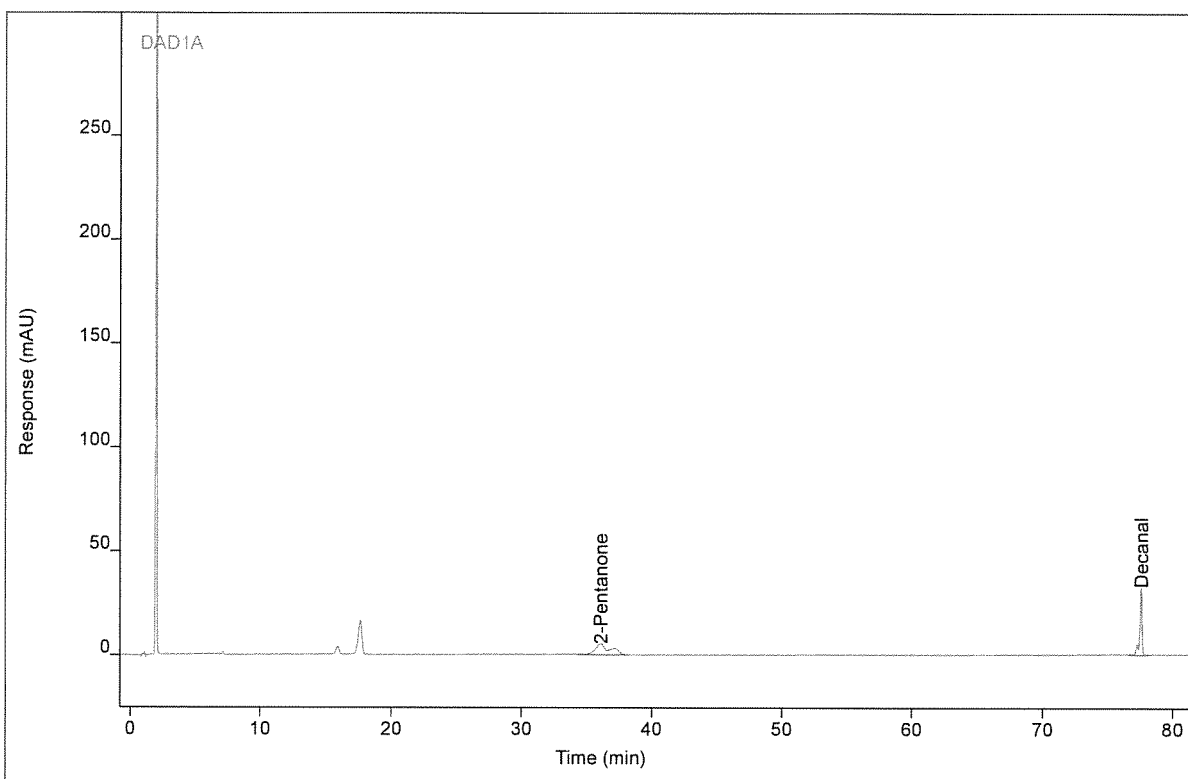
14:15:01 07/12/17 Amelia Paolantonio II AMP

Chromatogram Report

Enthalpy Analytical

Sample Name HPLCSTDS458 #6
Sequence Name Bart407b. 2017-07-11 17-18-13 ver.3
Inj Data File 016-0601.D
File Location HPLC/2017/Bart/Quarter 3
Injection Date 7/12/2017 12:47 AM
File Modified 7/12/2017 2:19 PM
Instrument Bart
Operator Amelia Paolantonio

Sample Type Calibration
Vial Number 16
Injection Volume 5
Injection 1 of 1
Acquisition Method 8315_TO11_Waters_restek_45_Min_EXT.M
Analysis Method Bart407.M
Method Modified 7/12/2017 2:19 PM
Printed 7/20/2017 11:36 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde		(4.20)				1		ug/ml
Acetaldehyde		(5.70)				1		ug/ml
Acetone		(7.80)				1		ug/ml
Propionaldehyde		(9.74)				1		ug/ml
Crotonaldehyde		(12.44)				1		ug/ml
Butyraldehyde		(14.51)				1		ug/ml
Benzaldehyde		(17.00)				1		ug/ml
Isovaleraldehyde		(19.61)				1		ug/ml
Valeraldehyde		(20.73)				1		ug/ml
o-Tolualdehyde		(22.70)				1		ug/ml
m,p-Tolualdehyde		(23.60)				1		ug/ml
Hexaldehyde		(30.24)				1		ug/ml
2-Pentanone	MM	36.09	435.060	5.35099	14.5353	1	14.5353	ug/ml
Decanal	MM	77.64	402.789	32.6677	14.8715	1	14.8715	ug/ml

Analyst Peak Integration Comments

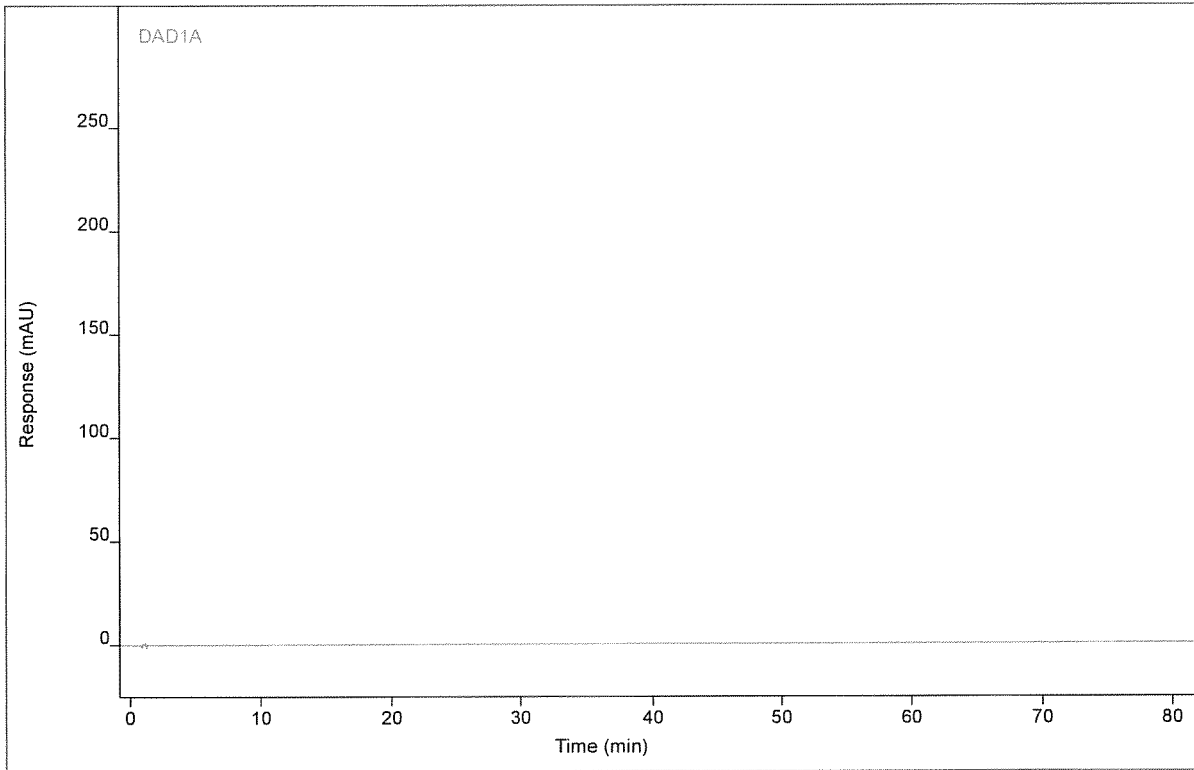
14:14:42 07/12/17 Amelia Paolantonio II AMP

Chromatogram Report

Enthalpy Analytical

Sample Name HPLCSTDS458 #RB
Sequence Name Bart407b. 2017-07-11 17-18-13 ver.3
Inj Data File 017-0701.D
File Location HPLC/2017/Bart/Quarter 3
Injection Date 7/12/2017 2:17 AM
File Modified 7/12/2017 2:19 PM
Instrument Bart
Operator Amelia Paolantonio

Sample Type Control
Vial Number 17
Injection Volume 5
Injection 1 of 1
Acquisition Method 8315_TO11_Waters_restek_45_Min_EXT.M
Analysis Method Bart407.M
Method Modified 7/12/2017 2:19 PM
Printed 7/20/2017 11:36 AM



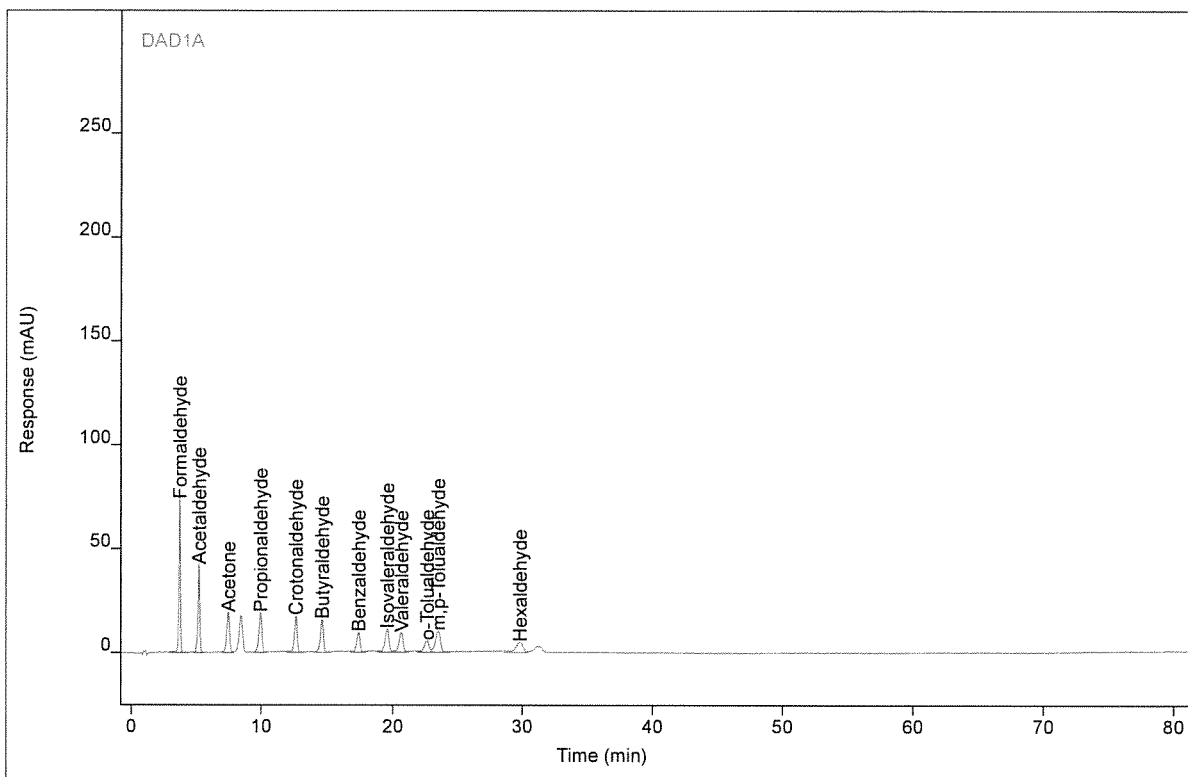
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde		(4.20)				1		ug/ml
Acetaldehyde		(5.70)				1		ug/ml
Acetone		(7.80)				1		ug/ml
Propionaldehyde		(9.74)				1		ug/ml
Crotonaldehyde		(12.44)				1		ug/ml
Butyraldehyde		(14.51)				1		ug/ml
Benzaldehyde		(17.00)				1		ug/ml
Isovaleraldehyde		(19.61)				1		ug/ml
Valeraldehyde		(20.73)				1		ug/ml
o-Tolualdehyde		(22.70)				1		ug/ml
m,p-Tolualdehyde		(23.60)				1		ug/ml
Hexaldehyde		(30.24)				1		ug/ml
2-Pentanone		(36.40)				1		ug/ml
Decanal		(77.59)				1		ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name HPLCSTDS471 #SS1
 Sequence Name Bart407b. 2017-07-13 14-34-05 ver.2
 Inj Data File 001-0101.D
 File Location HPLC/2017/Bart/Quarter 3
 Injection Date 7/13/2017 2:35 PM
 File Modified 7/14/2017 3:03 PM
 Instrument Bart
 Operator Amelia Paolantonio

Sample Type Control
 Vial Number 1
 Injection Volume 5
 Injection 1 of 1
 Acquisition Method 8315_TO11_Waters_restek_45_Min_EXT.M
 Analysis Method Bart407.M
 Method Modified 7/14/2017 3:00 PM
 Printed 7/20/2017 11:36 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BB	3.71	609.273	75.4219	3.73774	1	3.73774	ug/ml
Acetaldehyde	BB	5.21	425.689	42.6651	3.73080	1	3.73080	ug/ml
Acetone	BV	7.46	298.881	19.6483	3.64974	1	3.64974	ug/ml
Propionaldehyde	BB	9.97	312.457	19.3511	3.55541	1	3.55541	ug/ml
Crotonaldehyde	BB	12.67	261.730	17.9668	3.82754	1	3.82754	ug/ml
Butyraldehyde	BB	14.64	258.964	16.0527	3.82763	1	3.82763	ug/ml
Benzaldehyde	BB	17.39	175.795	9.85634	3.86874	1	3.86874	ug/ml
Isovaleraldehyde	BV	19.59	238.991	11.3688	3.90059	1	3.90059	ug/ml
Valeraldehyde	VB	20.68	215.372	9.69225	3.89970	1	3.89970	ug/ml
o-Tolualdehyde	BV	22.65	148.607	5.82832	3.91965	1	3.91965	ug/ml
m,p-Tolualdehyde	VB	23.52	283.075	10.5063	7.79608	1	7.79608	ug/ml
Hexaldehyde	MF	29.84	194.414	5.22488	3.91484	1	3.91484	ug/ml
2-Pentanone		(36.40)				1		ug/ml
Decanal		(77.59)				1		ug/ml

Analyst Peak Integration Comments

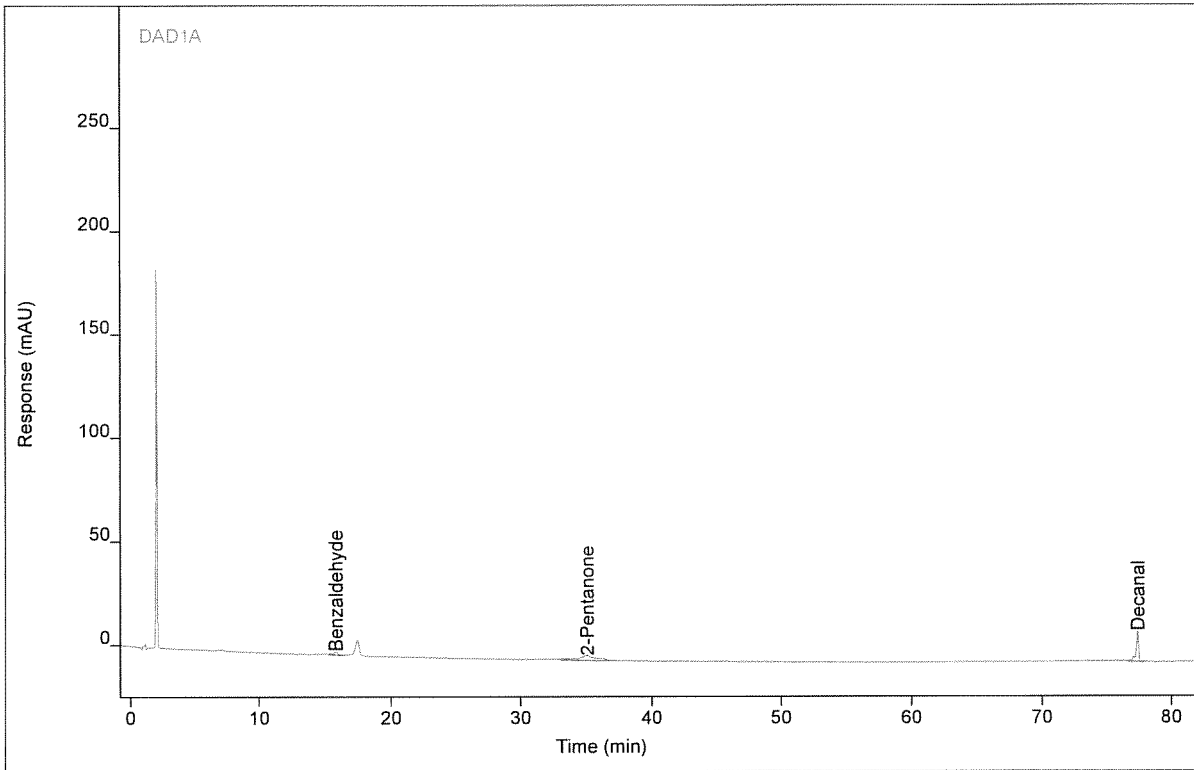
15:02:49 07/14/17 Amelia Paolantonio II AMP

Chromatogram Report

Enthalpy Analytical

Sample Name HPLCSTDS471 #SS2
 Sequence Name Bart407C. 2017-07-19 17-31-49 ver.4
 Inj Data File 002-0101.D
 File Location HPLC/2017/Bart/Quarter 3
 Injection Date 7/19/2017 5:33 PM
 File Modified 7/20/2017 11:09 AM
 Instrument Bart
 Operator Amelia Paolantonio

Sample Type Control
 Vial Number 2
 Injection Volume 5
 Injection 1 of 1
 Acquisition Method 8315_TO11_Waters_restek_45_Min_EXT.M
 Analysis Method Bart407.M
 Method Modified 7/20/2017 11:09 AM
 Printed 7/20/2017 12:02 PM



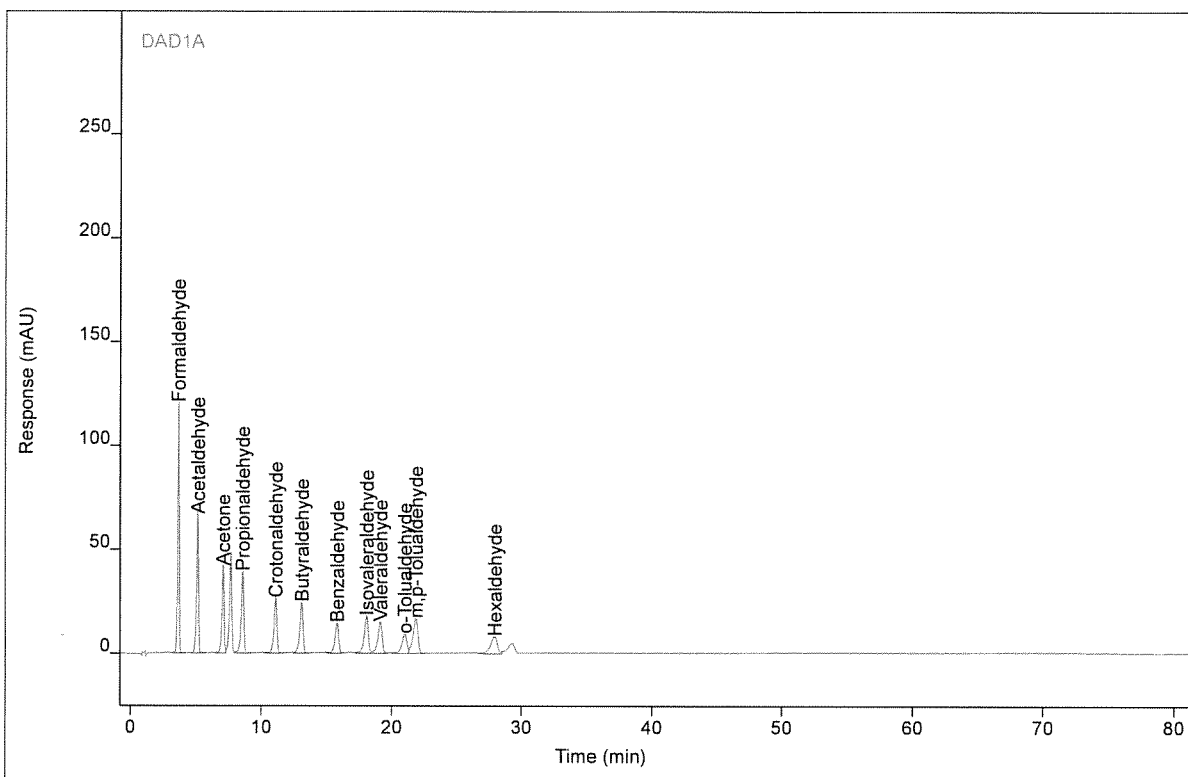
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde		(3.66)				1		ug/ml
Acetaldehyde		(5.13)				1		ug/ml
Acetone		(7.08)				1		ug/ml
Propionaldehyde		(8.57)				1		ug/ml
Crotonaldehyde		(11.14)				1		ug/ml
Butyraldehyde		(13.16)				1		ug/ml
Benzaldehyde	BB	15.82	35.6457	1.81912	0.88410	1	0.88410	ug/ml 3-heptanone
Isovaleraldehyde		(18.10)				1		ug/ml AMP 7.20.17
Valeraldehyde		(19.10)				1		ug/ml
o-Tolualdehyde		(21.03)				1		ug/ml
m,p-Tolualdehyde		(21.87)				1		ug/ml
Hexaldehyde		(27.95)				1		ug/ml
2-Pentanone	MM	35.01	210.045	2.42552	7.01661	1	7.01661	ug/ml
Decanal	MM	77.40	199.544	14.9267	7.34860	1	7.34860	ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name Bart408 #concal
 Sequence Name Bart408. 2017-07-14 17-32-38 ver.5
 Inj Data File 001-0201.D
 File Location HPLC/2017/Bart/Quarter 3
 Injection Date 7/14/2017 7:03 PM
 File Modified 7/19/2017 2:00 PM
 Instrument Bart
 Operator Amelia Paolantonio

Sample Type Calibration
 Vial Number 1
 Injection Volume 5
 Injection 1 of 1
 Acquisition Method 8315_TO11_Waters_restek_45_Min_EXT.M
 Analysis Method Bart407.M
 Method Modified 7/19/2017 1:59 PM
 Printed 7/20/2017 11:36 AM



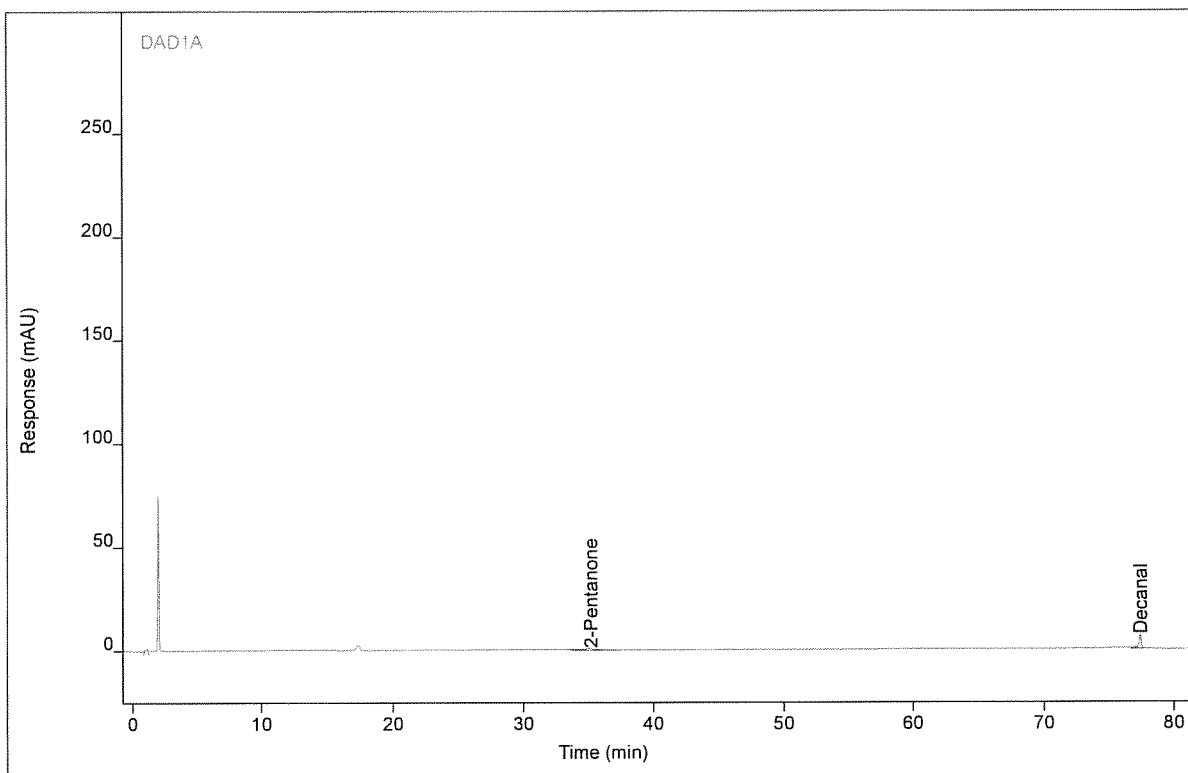
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	FM	3.66	979.055	121.152	5.91846	1	5.91846	ug/ml
Acetaldehyde	BB	5.12	694.469	68.0272	6.00152	1	6.00152	ug/ml
Acetone	BV	7.08	503.747	42.5570	6.05998	1	6.05998	ug/ml
Propionaldehyde	VB	8.57	541.444	39.6688	6.09334	1	6.09334	ug/ml
Crotonaldehyde	BB	11.13	428.450	26.8132	6.17414	1	6.17414	ug/ml
Butyraldehyde	VB	13.16	428.450	24.7951	6.22785	1	6.22785	ug/ml
Benzaldehyde	BB	15.86	288.177	14.8648	6.26204	1	6.26204	ug/ml
Isovaleraldehyde	BV	18.11	390.918	18.2214	6.27519	1	6.27519	ug/ml
Valeraldehyde	VB	19.16	354.154	15.4146	6.30533	1	6.30533	ug/ml
o-Tolualdehyde	BV	21.03	254.835	9.57165	6.61034	1	6.61034	ug/ml
m,p-Tolualdehyde	VB	21.87	458.207	17.0297	12.4641	1	12.4641	ug/ml
Hexaldehyde	BV	27.95	310.694	8.42023	6.20100	1	6.20100	ug/ml
2-Pentanone		(35.10)				1		ug/ml
Decanal		(77.44)				1		ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name HPLCSTDS458 #3
 Sequence Name Bart408. 2017-07-14 17-32-38 ver.5
 Inj Data File 002-0301.D
 File Location HPLC/2017/Bart/Quarter 3
 Injection Date 7/14/2017 8:33 PM
 File Modified 7/19/2017 2:00 PM
 Instrument Bart
 Operator Amelia Paolantonio

Sample Type Calibration
 Vial Number 2
 Injection Volume 5
 Injection 1 of 1
 Acquisition Method 8315_TO11_Waters_restek_45_Min_EXT.M
 Analysis Method Bart407.M
 Method Modified 7/19/2017 1:59 PM
 Printed 7/20/2017 11:36 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde		(3.66)				1		ug/ml
Acetaldehyde		(5.13)				1		ug/ml
Acetone		(7.08)				1		ug/ml
Propionaldehyde		(8.57)				1		ug/ml
Crotonaldehyde		(11.14)				1		ug/ml
Butyraldehyde		(13.16)				1		ug/ml
Benzaldehyde		(15.87)				1		ug/ml
Isovaleraldehyde		(18.10)				1		ug/ml
Valeraldehyde		(19.10)				1		ug/ml
o-Tolualdehyde		(21.03)				1		ug/ml
m,p-Tolualdehyde		(21.87)				1		ug/ml
Hexaldehyde		(27.95)				1		ug/ml
2-Pentanone	MM	35.15	90.1813	1.14535	3.01144	1	3.01144	ug/ml
Decanal	MM	77.44	87.8168	7.06957	3.21317	1	3.21317	ug/ml

Analyst Peak Integration Comments

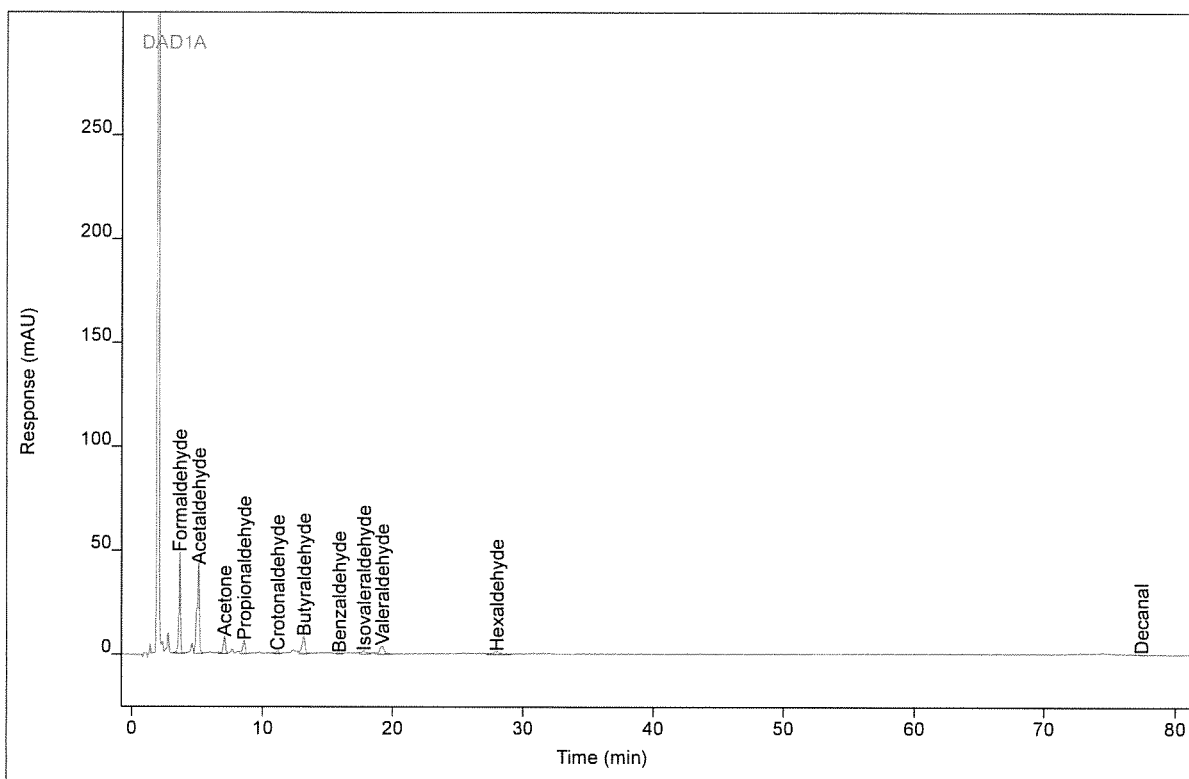
13:31:09 07/15/17 Amelia Paolantonio II AMP

Chromatogram Report

Enthalpy Analytical

Sample Name Repro Out R1 0617-110
 Sequence Name Bart408. 2017-07-14 17-32-38 ver.5
 Inj Data File 011-0401.D
 File Location HPLC/2017/Bart/Quarter 3
 Injection Date 7/14/2017 10:02 PM
 File Modified 7/19/2017 2:00 PM
 Instrument Bart
 Operator Amelia Paolantonio

Sample Type Sample
 Vial Number 11
 Injection Volume 5
 Injection 1 of 1
 Acquisition Method 8315_TO11_Waters_restek_45_Min_EXT.M
 Analysis Method Bart407.M
 Method Modified 7/19/2017 1:59 PM
 Printed 7/20/2017 11:36 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	MM	3.64	409.481	48.9841	2.55950	1	2.55950	ug/ml
Acetaldehyde	FM	5.08	565.775	43.6710	4.91428	1	4.91428	ug/ml
Acetone	BV	7.05	98.5460	8.46398	1.29281	1	1.29281	ug/ml
Propionaldehyde	VB	8.56	90.2126	6.55540	1.09221	1	1.09221	ug/ml
Crotonaldehyde	FM	11.15	22.4076	1.48558	0.37671	1	0.37671	ug/ml
Butyraldehyde	FM	13.18	139.675	8.52077	2.13827	1	2.13827	ug/ml
Benzaldehyde	FM	15.92	7.58693	0.45617	0.18824	1	0.18824	ug/ml
Isovaleraldehyde	FM	17.81	43.7922	1.60049	0.84342	1	0.84342	ug/ml
Valeraldehyde	FM	19.21	101.408	4.23511	1.92425	1	1.92425	ug/ml
o-Tolualdehyde		(21.03)				1		ug/ml
m,p-Tolualdehyde		(21.87)				1		ug/ml
Hexaldehyde	BB	28.00	54.2685	1.53451	1.15947	1	1.15947	ug/ml
2-Pentanone		(35.10)				1		ug/ml
Decanal	MM	77.47	5.17445	0.50277	0.18516	1	0.18516	ug/ml

Analyst Peak Integration Comments

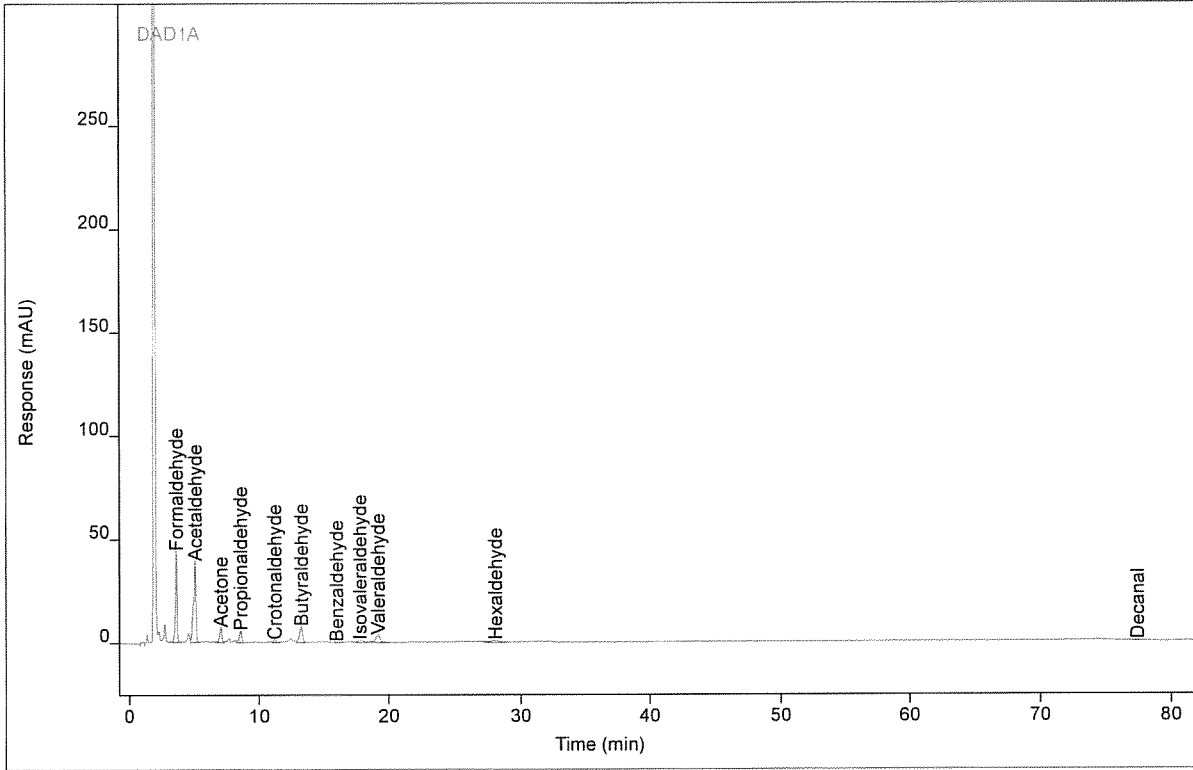
13:29:17 07/15/17 Amelia Paolantonio II AMP

Chromatogram Report

Enthalpy Analytical

Sample Name LD/Repro Out R1 0617-110
 Sequence Name Bart408. 2017-07-14 17-32-38 ver.5
 Inj Data File 012-0501.D
 File Location HPLC/2017/Bart/Quarter 3
 Injection Date 7/14/2017 11:32 PM
 File Modified 7/19/2017 2:00 PM
 Instrument Bart
 Operator Amelia Paolantonio

Sample Type Sample
 Vial Number 12
 Injection Volume 5
 Injection 1 of 1
 Acquisition Method 8315_TO11_Waters_restek_45_Min_EXT.M
 Analysis Method Bart407.M
 Method Modified 7/19/2017 1:59 PM
 Printed 7/20/2017 11:36 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	VB	3.65	375.413	44.9468	2.35859	1	2.35859	ug/ml
Acetaldehyde	FM	5.11	508.586	39.6440	4.43114	1	4.43114	ug/ml
Acetone	BV	7.08	87.5916	7.68559	1.16393	1	1.16393	ug/ml
Propionaldehyde	VB	8.59	79.6869	5.98560	0.97555	1	0.97555	ug/ml
Crotonaldehyde	FM	11.17	20.1910	1.42553	0.33945	1	0.33945	ug/ml
Butyraldehyde	VB	13.18	126.194	7.88560	1.94735	1	1.94735	ug/ml
Benzaldehyde	FM	15.90	7.97351	0.45527	0.19783	1	0.19783	ug/ml
Isovaleraldehyde	FM	17.78	37.1076	1.40160	0.71467	1	0.71467	ug/ml
Valeraldehyde	BB	19.18	90.8753	3.83849	1.74167	1	1.74167	ug/ml
o-Tolualdehyde		(21.03)				1		ug/ml
m,p-Tolualdehyde		(21.87)				1		ug/ml
Hexaldehyde	BB	28.07	50.9468	1.32370	1.09416	1	1.09416	ug/ml
2-Pentanone		(35.10)				1		ug/ml
Decanal	MM	77.45	4.97594	0.47753	0.17805	1	0.17805	ug/ml

Analyst Peak Integration Comments

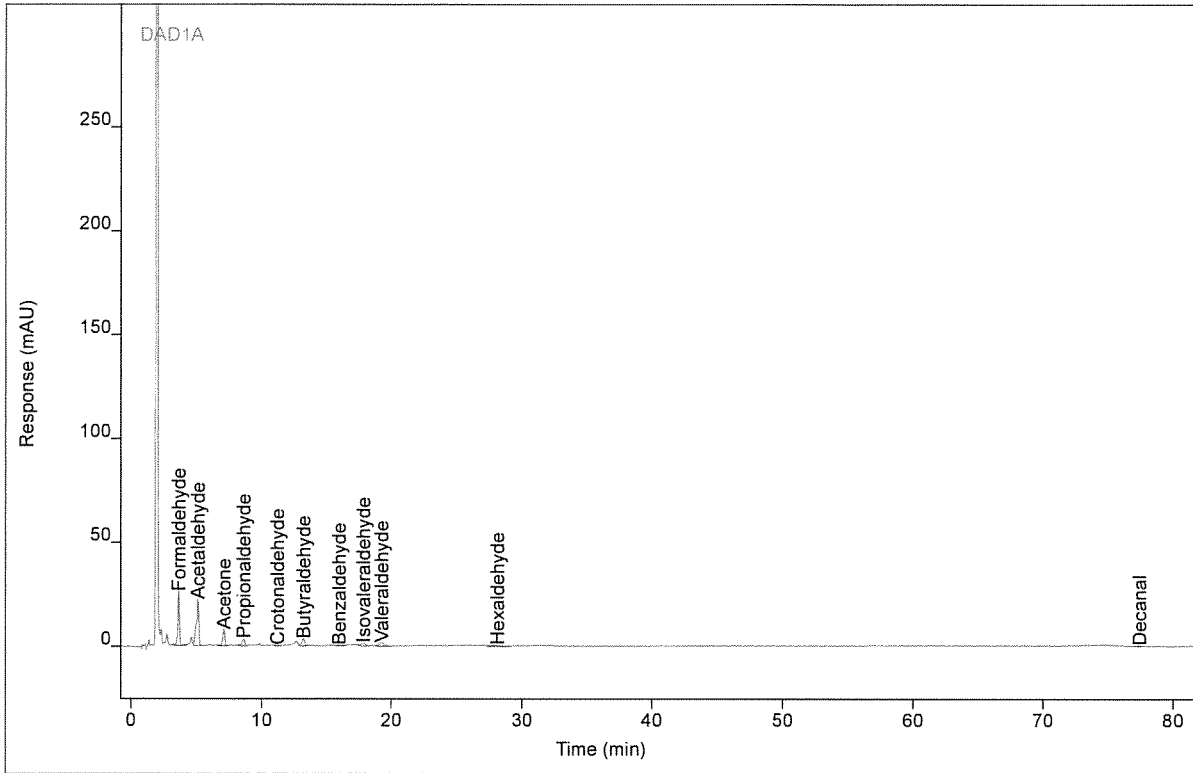
17:18:30 07/17/17 Amelia Paolantonio II MAP

Chromatogram Report

Enthalpy Analytical

Sample Name Repro Out R5 0617-110
 Sequence Name Bart408. 2017-07-14 17-32-38 ver.5
 Inj Data File 013-0601.D
 File Location HPLC/2017/Bart/Quarter 3
 Injection Date 7/15/2017 1:02 AM
 File Modified 7/19/2017 2:00 PM
 Instrument Bart
 Operator Amelia Paolantonio

Sample Type Sample
 Vial Number 13
 Injection Volume 5
 Injection 1 of 1
 Acquisition Method 8315_TO11_Waters_restek_45_Min_EXT.M
 Analysis Method Bart407.M
 Method Modified 7/19/2017 1:59 PM
 Printed 7/20/2017 11:36 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BB	3.68	230.295	26.9218	1.50278	1	1.50278	ug/ml
Acetaldehyde	FM	5.15	291.151	22.5358	2.59418	1	2.59418	ug/ml
Acetone	BB	7.13	91.8444	8.06219	1.21397	1	1.21397	ug/ml
Propionaldehyde	VB	8.65	50.5266	3.60436	0.62596	1	0.62596	ug/ml
Crotonaldehyde	FM	11.22	8.19525	0.58100	0.13778	1	0.13778	ug/ml
Butyraldehyde	VB	13.24	53.8962	3.40530	0.92349	1	0.92349	ug/ml
Benzaldehyde	FM	15.97	9.96767	0.53945	0.24730	1	0.24730	ug/ml
Isovaleraldehyde	MF	17.85	35.4381	1.61250	0.68252	1	0.68252	ug/ml
Valeraldehyde	FM	19.26	46.8094	1.80770	0.97783	1	0.97783	ug/ml
o-Tolualdehyde		(21.03)				1		ug/ml
m,p-Tolualdehyde		(21.87)				1		ug/ml
Hexaldehyde	FM	28.11	30.6166	0.83810	0.67193	1	0.67193	ug/ml
2-Pentanone		(35.10)				1		ug/ml
Decanal	MM	77.46	3.19538	0.33627	0.11434	1	0.11434	ug/ml

Analyst Peak Integration Comments

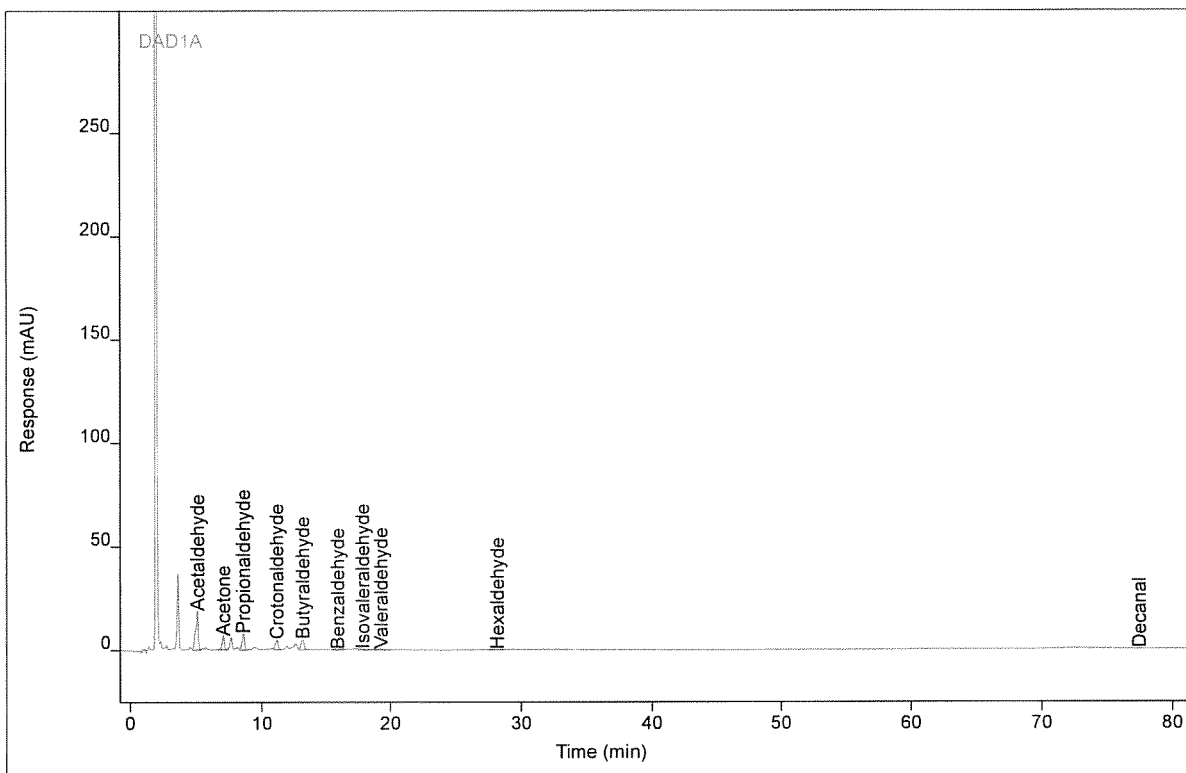
17:24:20 07/17/17 Amelia Paolantonio II AMP
 17:26:14 07/17/17 Amelia Paolantonio II AMP

Chromatogram Report

Enthalpy Analytical

Sample Name MS/Repro Out R5 0617-110
 Sequence Name Bart408. 2017-07-14 17-32-38 ver.5
 Inj Data File 014-0701.D
 File Location HPLC/2017/Bart/Quarter 3
 Injection Date 7/15/2017 2:31 AM
 File Modified 7/19/2017 2:00 PM
 Instrument Bart
 Operator Amelia Paolantonio

Sample Type Sample
 Vial Number 14
 Injection Volume 5
 Injection 1 of 1
 Acquisition Method 8315_TO11_Waters_restek_45_Min_EXT.M
 Analysis Method Bart407.M
 Method Modified 7/19/2017 1:59 PM
 Printed 7/20/2017 11:36 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde		(3.66)				1		ug/ml
Acetaldehyde	FM	5.13	250.841	19.1973	2.25363	1	2.25363	ug/ml
Acetone	BB	7.10	78.5806	6.88301	1.05792	1	1.05792	ug/ml
Propionaldehyde	VB	8.61	105.370	8.08656	1.26021	1	1.26021	ug/ml
Crotonaldehyde	FM	11.17	73.7942	5.13168	1.18230	1	1.18230	ug/ml
Butyraldehyde	FM	13.20	83.3694	5.23649	1.34089	1	1.34089	ug/ml
Benzaldehyde	MF	15.94	11.8074	0.31997	0.29295	1	0.29295	ug/ml
Isovaleraldehyde	FM	17.85	18.8526	0.69686	0.36309	1	0.36309	ug/ml
Valeraldehyde	FM	19.28	19.0069	0.70566	0.40669	1	0.40669	ug/ml
o-Tolualdehyde		(21.03)				1		ug/ml
m,p-Tolualdehyde		(21.87)				1		ug/ml
Hexaldehyde	MM	28.14	10.3331	0.32492	0.22678	1	0.22678	ug/ml
2-Pentanone		(35.10)				1		ug/ml
Decanal	MM	77.47	1.61124	0.14559	0.05765	1	0.05765	ug/ml

Analyst Peak Integration Comments

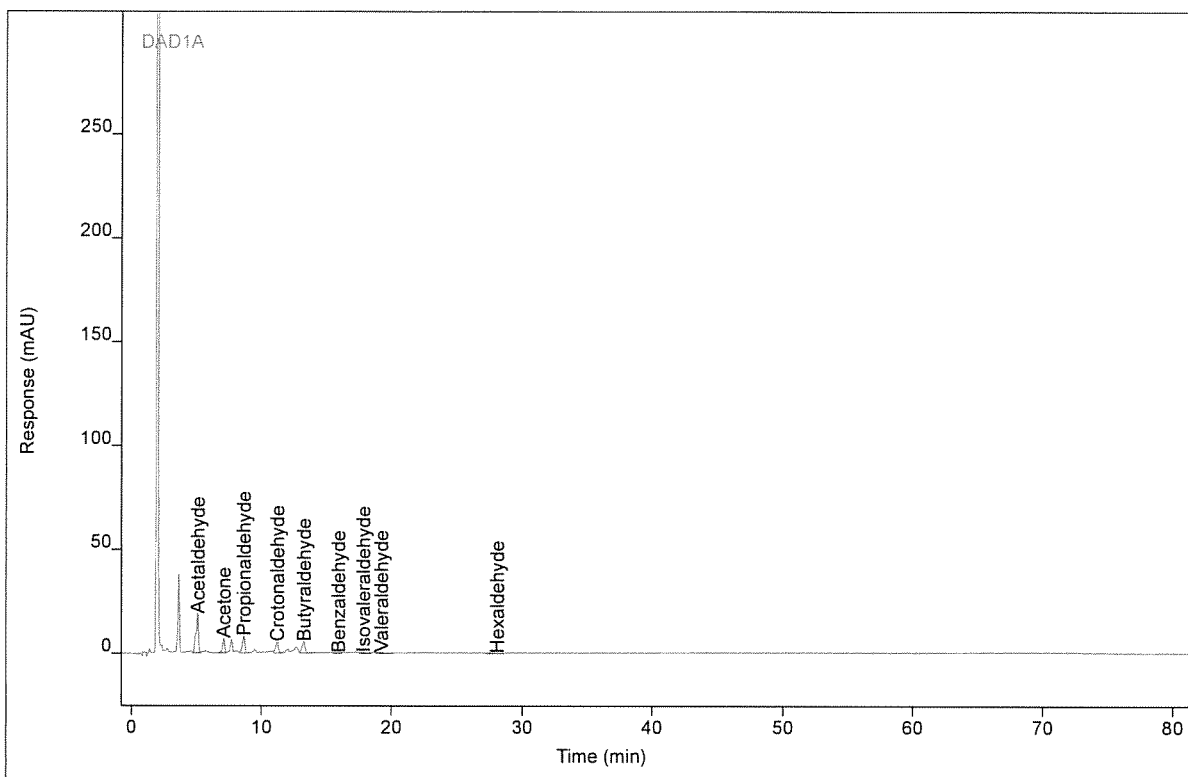
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Chromatogram Report

Enthalpy Analytical

Sample Name MSD/Repro Out R5 0617-110
 Sequence Name Bart408. 2017-07-14 17-32-38 ver.5
 Inj Data File 015-0801.D
 File Location HPLC/2017/Bart/Quarter 3
 Injection Date 7/15/2017 4:01 AM
 File Modified 7/19/2017 2:00 PM
 Instrument Bart
 Operator Amelia Paolantonio

Sample Type Sample
 Vial Number 15
 Injection Volume 5
 Injection 1 of 1
 Acquisition Method 8315_TO11_Waters_restek_45_Min_EXT.M
 Analysis Method Bart407.M
 Method Modified 7/19/2017 1:59 PM
 Printed 7/20/2017 11:36 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde		(3.66)				1		ug/ml
Acetaldehyde	FM	5.16	249.837	19.3551	2.24515	1	2.24515	ug/ml
Acetone	BB	7.13	80.8483	7.28745	1.08460	1	1.08460	ug/ml
Propionaldehyde	VB	8.64	108.988	8.40419	1.30031	1	1.30031	ug/ml
Crotonaldehyde	FM	11.21	83.5134	5.63832	1.31910	1	1.31910	ug/ml
Butyraldehyde	FM	13.23	90.1296	5.63957	1.43662	1	1.43662	ug/ml
Benzaldehyde	MF	15.92	8.06922	0.29815	0.20020	1	0.20020	ug/ml
Isovaleraldehyde	FM	17.84	17.0582	0.68852	0.32853	1	0.32853	ug/ml
Valeraldehyde	FM	19.25	19.3592	0.70670	0.41423	1	0.41423	ug/ml
o-Tolualdehyde		(21.03)				1		ug/ml
m,p-Tolualdehyde		(21.87)				1		ug/ml
Hexaldehyde	MM	28.09	10.1795	0.28788	0.22340	1	0.22340	ug/ml
2-Pentanone		(35.10)				1		ug/ml
Decanal		(77.44)				1		ug/ml

Analyst Peak Integration Comments

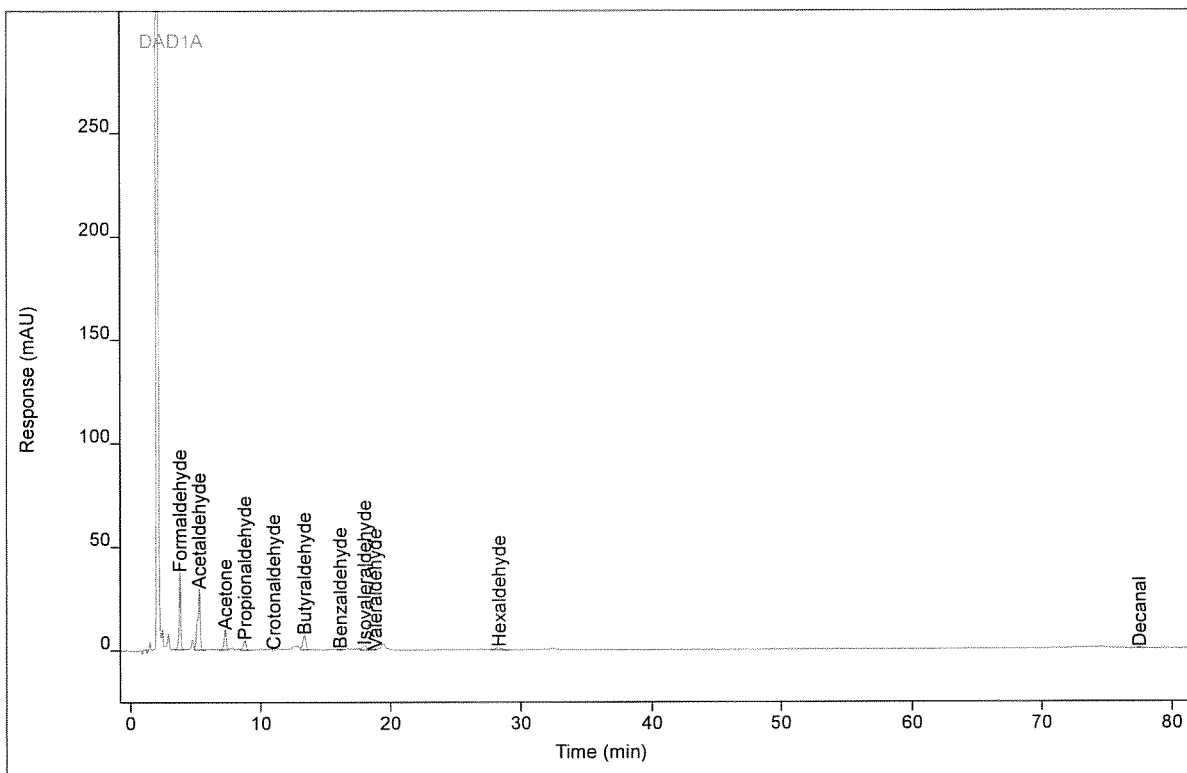
15:00:33 07/18/17 Amelia Paolantonio II AMP

Chromatogram Report

Enthalpy Analytical

Sample Name Repro Out R3 0617-110
 Sequence Name Bart408. 2017-07-14 17-32-38 ver.5
 Inj Data File 016-0901.D
 File Location HPLC/2017/Bart/Quarter 3
 Injection Date 7/15/2017 5:30 AM
 File Modified 7/19/2017 2:00 PM
 Instrument Bart
 Operator Amelia Paolantonio

Sample Type Sample
 Vial Number 16
 Injection Volume 5
 Injection 1 of 1
 Acquisition Method 8315_TO11_Waters_restek_45_Min_EXT.M
 Analysis Method Bart407.M
 Method Modified 7/19/2017 1:59 PM
 Printed 7/20/2017 11:36 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	VB	3.72	320.614	37.6821	2.03542	1	2.03542	ug/ml
Acetaldehyde	FM	5.20	401.165	29.7148	3.52361	1	3.52361	ug/ml
Acetone	BB	7.21	119.299	10.0643	1.53697	1	1.53697	ug/ml
Propionaldehyde	VB	8.75	73.1063	4.93840	0.90262	1	0.90262	ug/ml
Crotonaldehyde	MF	11.00	6.74199	0.41821	0.11334	1	0.11334	ug/ml
Butyraldehyde	VB	13.39	122.294	7.31795	1.89212	1	1.89212	ug/ml
Benzaldehyde	FM	16.14	10.8652	0.65334	0.26957	1	0.26957	ug/ml
Isovaleraldehyde	FM	18.03	58.7739	2.45563	1.08381	1	1.08381	ug/ml
Valeraldehyde	MF	18.83	4.87769	0.29247	0.10437	1	0.10437	ug/ml
o-Tolualdehyde		(21.03)				1		ug/ml
m,p-Tolualdehyde		(21.87)				1		ug/ml
Hexaldehyde	BB	28.33	46.2713	1.37877	1.00224	1	1.00224	ug/ml
2-Pentanone		(35.10)				1		ug/ml
Decanal	MM	77.48	4.96056	0.48957	0.17750	1	0.17750	ug/ml

Analyst Peak Integration Comments

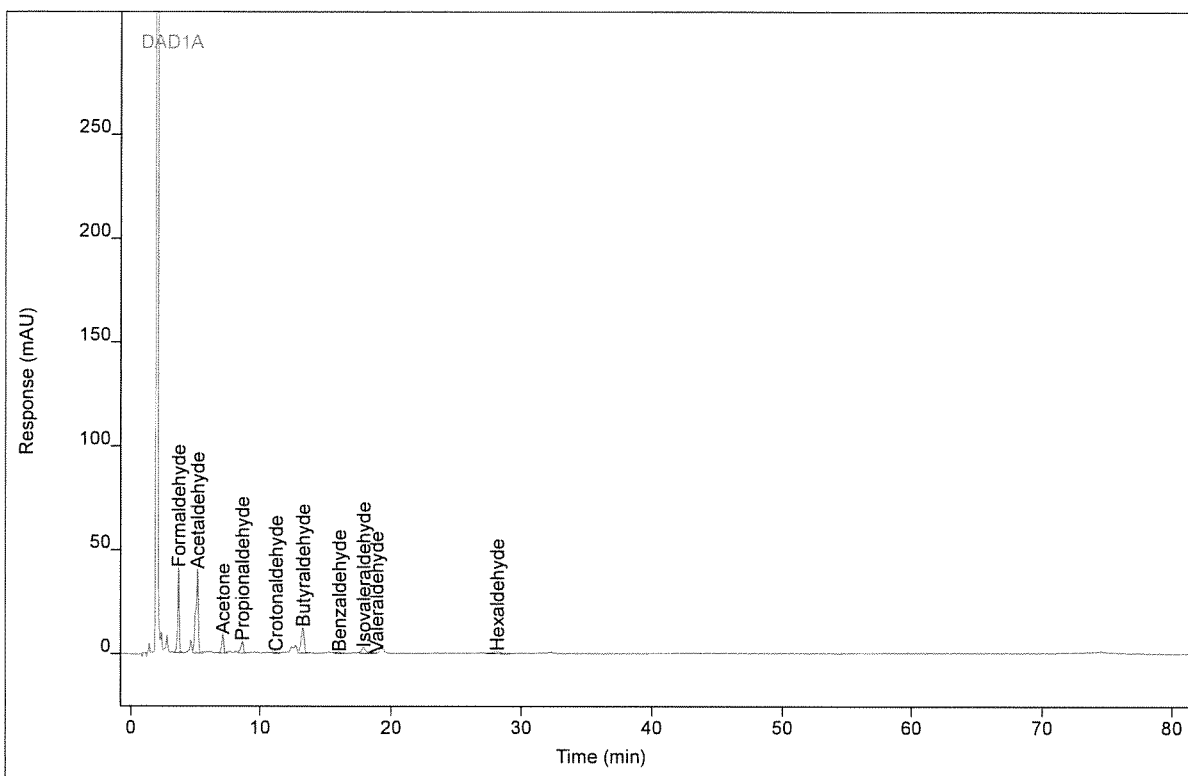
15:02:21 07/18/17 Amelia Paolantonio II AMP

Chromatogram Report

Enthalpy Analytical

Sample Name Repro Out R4 0617-110
 Sequence Name Bart408. 2017-07-14 17-32-38 ver.5
 Inj Data File 017-1001.D
 File Location HPLC/2017/Bart/Quarter 3
 Injection Date 7/15/2017 7:00 AM
 File Modified 7/19/2017 2:00 PM
 Instrument Bart
 Operator Amelia Paolantonio

Sample Type Sample
 Vial Number 17
 Injection Volume 5
 Injection 1 of 1
 Acquisition Method 8315_TO11_Waters_restek_45_Min_EXT.M
 Analysis Method Bart407.M
 Method Modified 7/19/2017 1:59 PM
 Printed 7/20/2017 11:36 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BB	3.70	350.694	41.1061	2.21281	1	2.21281	ug/ml
Acetaldehyde	FM	5.17	537.356	40.9179	4.67419	1	4.67419	ug/ml
Acetone	BV	7.14	104.305	9.25649	1.36057	1	1.36057	ug/ml
Propionaldehyde	VB	8.66	81.8210	5.94011	0.99921	1	0.99921	ug/ml
Crotonaldehyde	FM	11.22	13.5898	0.98331	0.22847	1	0.22847	ug/ml
Butyraldehyde	VB	13.25	206.703	12.6956	3.08751	1	3.08751	ug/ml
Benzaldehyde	MF	16.00	14.5018	0.79735	0.35980	1	0.35980	ug/ml
Isovaleraldehyde	FM	17.89	61.7453	2.88494	1.13026	1	1.13026	ug/ml
Valeraldehyde	MF	18.89	3.62049	0.20666	0.07747	1	0.07747	ug/ml
o-Tolualdehyde		(21.03)				1		ug/ml
m,p-Tolualdehyde		(21.87)				1		ug/ml
Hexaldehyde	BB	28.16	46.3108	1.27383	1.00301	1	1.00301	ug/ml
2-Pentanone		(35.10)				1		ug/ml
Decanal		(77.44)				1		ug/ml

Analyst Peak Integration Comments

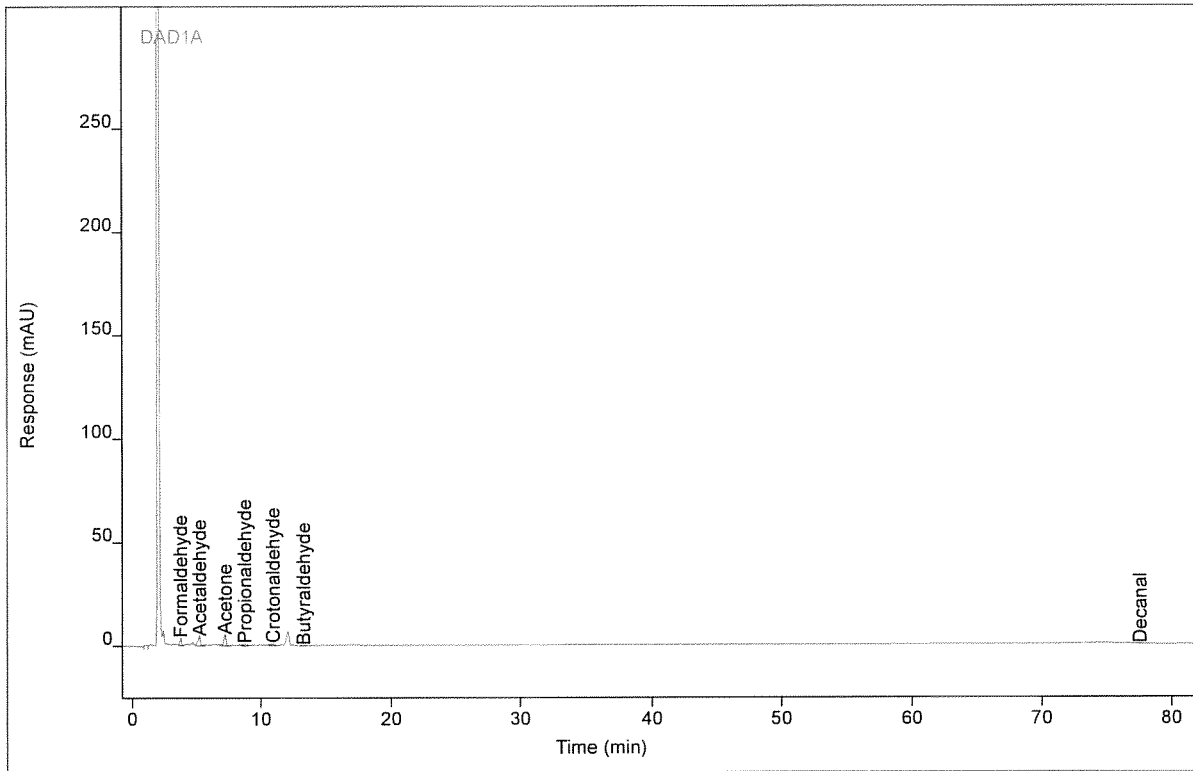
15:03:25 07/18/17 Amelia Paolantonio II AMP
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Chromatogram Report

Enthalpy Analytical

Sample Name IBC Out R2 0617-110
 Sequence Name Bart408. 2017-07-14 17-32-38 ver.5
 Inj Data File 018-1101.D
 File Location HPLC/2017/Bart/Quarter 3
 Injection Date 7/15/2017 8:29 AM
 File Modified 7/19/2017 2:00 PM
 Instrument Bart
 Operator Amelia Paolantonio

Sample Type Sample
 Vial Number 18
 Injection Volume 5
 Injection 1 of 1
 Acquisition Method 8315_TO11_Waters_restek_45_Min_EXT.M
 Analysis Method Bart407.M
 Method Modified 7/19/2017 1:59 PM
 Printed 7/20/2017 11:36 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	FM	3.73	31.4886	3.90805	0.22211	1	0.22211	ug/ml
Acetaldehyde	FM	5.22	64.5928	4.92709	0.64380	1	0.64380	ug/ml
Acetone	BB	7.21	65.0360	5.69851	0.89857	1	0.89857	ug/ml
Propionaldehyde	BB	8.73	14.1762	1.14415	0.17562	1	0.17562	ug/ml
Crotonaldehyde	BB	10.94	17.9708	1.28786	0.30212	1	0.30212	ug/ml
Butyraldehyde	MM	13.29	5.33604	0.31720	0.09247	1	0.09247	ug/ml
Benzaldehyde		(15.87)				1		ug/ml
Isovaleraldehyde		(18.10)				1		ug/ml
Valeraldehyde		(19.10)				1		ug/ml
o-Tolualdehyde		(21.03)				1		ug/ml
m,p-Tolualdehyde		(21.87)				1		ug/ml
Hexaldehyde		(27.95)				1		ug/ml
2-Pentanone		(35.10)				1		ug/ml
Decanal	MM	77.53	2.35326	0.16582	0.08421	1	0.08421	ug/ml

Analyst Peak Integration Comments

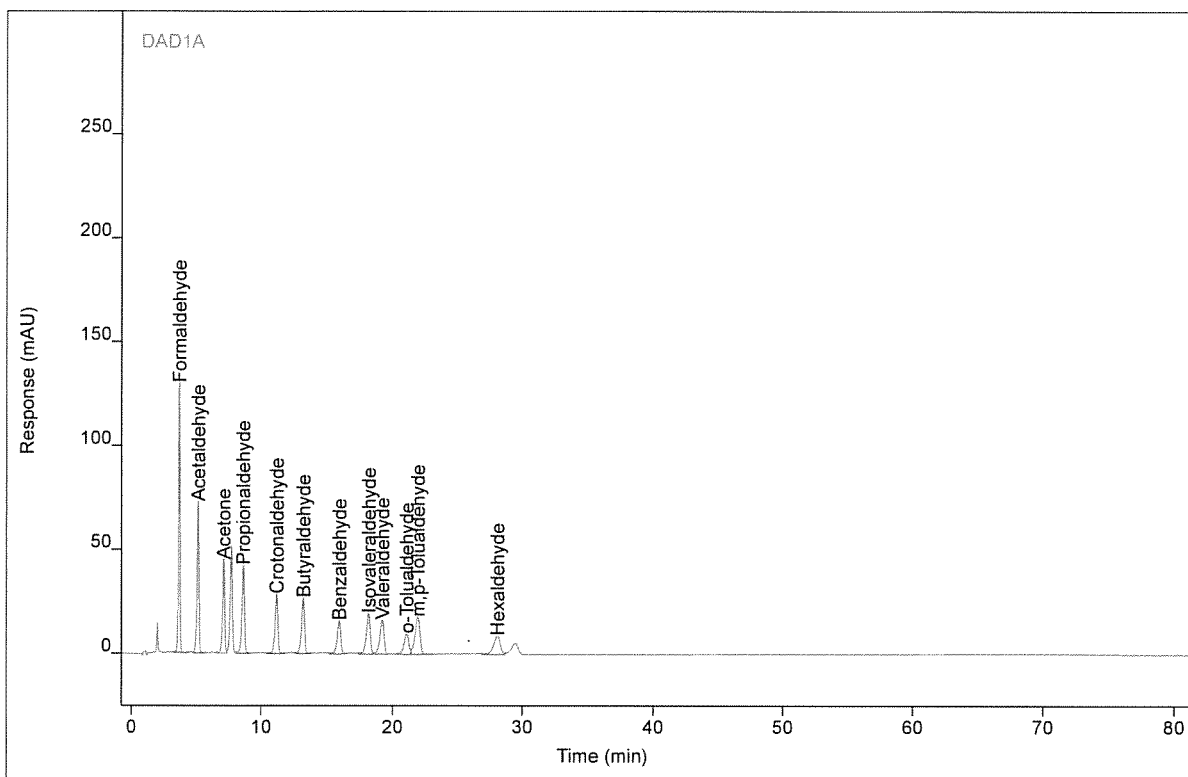
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Chromatogram Report

Enthalpy Analytical

Sample Name Bart408 #concal
 Sequence Name Bart408b. 2017-07-15 13-12-50 ver.4
 Inj Data File 001-0201.D
 File Location HPLC/2017/Bart/Quarter 3
 Injection Date 7/15/2017 1:53 PM
 File Modified 7/19/2017 2:01 PM
 Instrument Bart
 Operator Amelia Paolantonio

Sample Type Calibration
 Vial Number 1
 Injection Volume 5
 Injection 1 of 1
 Acquisition Method 8315_TO11_Waters_restek_45_Min_EXT.M
 Analysis Method Bart407.M
 Method Modified 7/17/2017 5:13 PM
 Printed 7/20/2017 11:36 AM



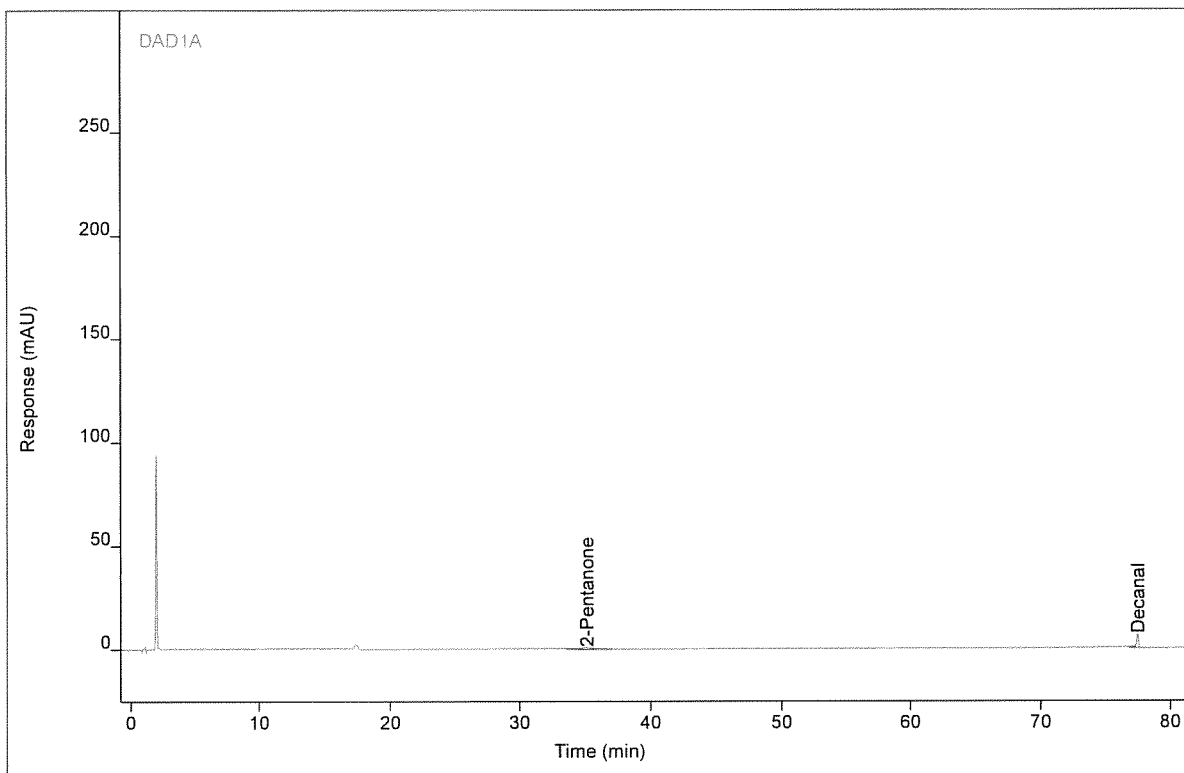
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BB	3.67	1029.41	129.910	6.21540	1	6.21540	ug/ml
Acetaldehyde	BB	5.14	733.323	73.0991	6.32977	1	6.32977	ug/ml
Acetone	BV	7.11	530.564	45.4325	6.37549	1	6.37549	ug/ml
Propionaldehyde	VB	8.63	572.634	42.6196	6.43903	1	6.43903	ug/ml
Crotonaldehyde	BB	11.21	449.262	29.0641	6.46708	1	6.46708	ug/ml
Butyraldehyde	VB	13.23	444.795	27.0796	6.45932	1	6.45932	ug/ml
Benzaldehyde	BB	15.95	299.887	16.1803	6.51140	1	6.51140	ug/ml
Isovaleraldehyde	BV	18.19	407.924	19.7095	6.54099	1	6.54099	ug/ml
Valeraldehyde	VB	19.24	369.000	16.8001	6.56269	1	6.56269	ug/ml
o-Tolualdehyde	BV	21.12	256.453	10.0853	6.65131	1	6.65131	ug/ml
m,p-Tolualdehyde	VB	21.98	484.518	18.2043	13.1654	1	13.1654	ug/ml
Hexaldehyde	BV	28.12	328.752	9.19361	6.55604	1	6.55604	ug/ml
2-Pentanone		(35.10)				1		ug/ml
Decanal		(77.44)				1		ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name HPLCSTDS458 #3
 Sequence Name Bart408b. 2017-07-15 13-12-50 ver.4
 Inj Data File 002-0301.D
 File Location HPLC/2017/Bart/Quarter 3
 Injection Date 7/15/2017 3:22 PM
 File Modified 7/19/2017 2:01 PM
 Instrument Bart
 Operator Amelia Paolantonio

Sample Type Calibration
 Vial Number 2
 Injection Volume 5
 Injection 1 of 1
 Acquisition Method 8315_TO11_Waters_restek_45_Min_EXT.M
 Analysis Method Bart407.M
 Method Modified 7/17/2017 5:13 PM
 Printed 7/20/2017 11:36 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde		(3.66)				1		ug/ml
Acetaldehyde		(5.13)				1		ug/ml
Acetone		(7.08)				1		ug/ml
Propionaldehyde		(8.57)				1		ug/ml
Crotonaldehyde		(11.14)				1		ug/ml
Butyraldehyde		(13.16)				1		ug/ml
Benzaldehyde		(15.87)				1		ug/ml
Isovaleraldehyde		(18.10)				1		ug/ml
Valeraldehyde		(19.10)				1		ug/ml
o-Tolualdehyde		(21.03)				1		ug/ml
m,p-Tolualdehyde		(21.87)				1		ug/ml
Hexaldehyde		(27.95)				1		ug/ml
2-Pentanone	MM	35.11	85.4937	1.18086	2.85481	1	2.85481	ug/ml
Decanal	MM	77.49	84.8658	6.89211	3.10394	1	3.10394	ug/ml

Analyst Peak Integration Comments

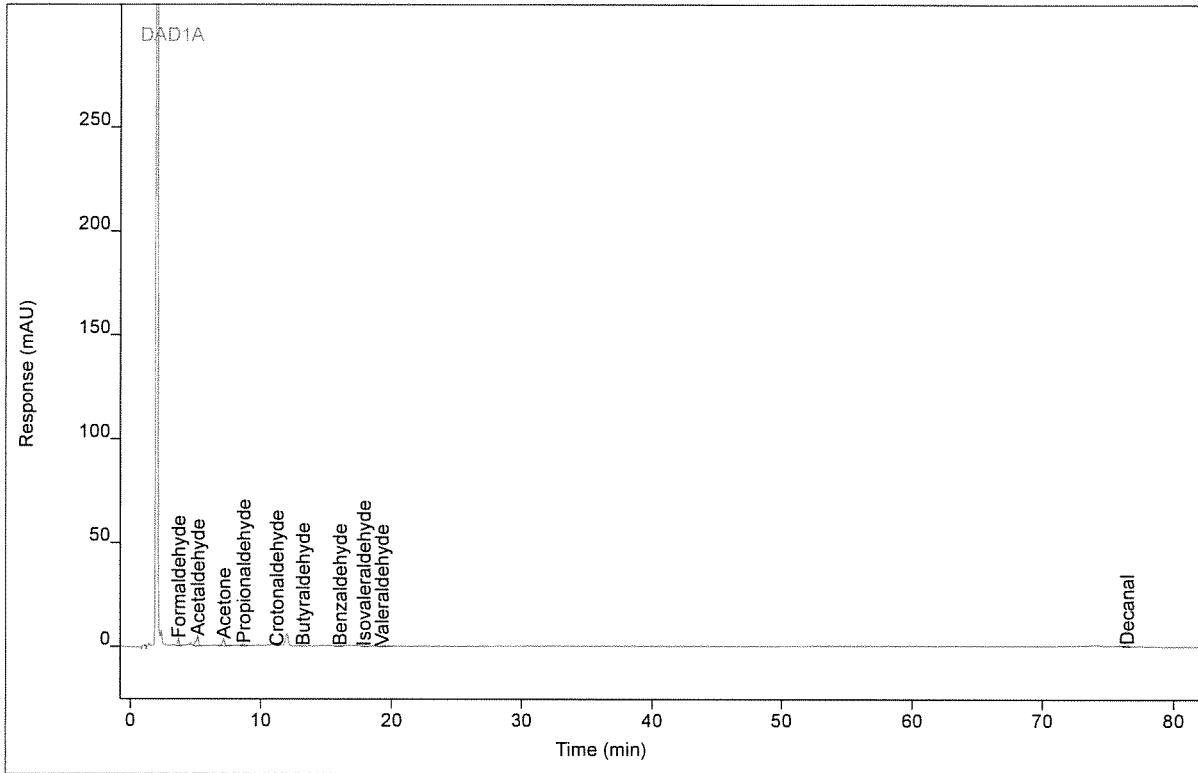
13:49:12 07/19/17 Amelia Paolantonio II AMP

Chromatogram Report

Enthalpy Analytical

Sample Name IBC Out R3 0617-110
 Sequence Name Bart408b. 2017-07-15 13-12-50 ver.4
 Inj Data File 019-0401.D
 File Location HPLC/2017/Bart/Quarter 3
 Injection Date 7/15/2017 4:52 PM
 File Modified 7/19/2017 2:01 PM
 Instrument Bart
 Operator Amelia Paolantonio

Sample Type Sample
 Vial Number 19
 Injection Volume 5
 Injection 1 of 1
 Acquisition Method 8315_TO11_Waters_restek_45_Min_EXT.M
 Analysis Method Bart407.M
 Method Modified 7/17/2017 5:13 PM
 Printed 7/20/2017 11:36 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	VV	3.67	30.6396	3.72012	0.21612	1	0.21612	ug/ml
Acetaldehyde	FM	5.14	65.4413	4.96286	0.65226	1	0.65226	ug/ml
Acetone	BB	7.16	43.8046	3.68767	0.60716	1	0.60716	ug/ml
Propionaldehyde	BB	8.69	17.1070	1.30050	0.21193	1	0.21193	ug/ml
Crotonaldehyde	FM	11.24	1.23482	0.10943	0.02076	1	0.02076	ug/ml
Butyraldehyde	MM	13.27	4.62420	0.27819	0.08014	1	0.08014	ug/ml
Benzaldehyde	MM	16.08	6.29580	0.27714	0.15620	1	0.15620	ug/ml
Isovaleraldehyde	FM	17.88	3.69481	0.20886	0.07116	1	0.07116	ug/ml
Valeraldehyde	MM	19.26	7.43659	0.26894	0.15912	1	0.15912	ug/ml
o-Tolualdehyde		(21.03)				1		ug/ml
m,p-Tolualdehyde		(21.87)				1		ug/ml
Hexaldehyde		(27.95)				1		ug/ml
2-Pentanone		(35.10)				1		ug/ml
Decanal	MM	76.44	11.6942	0.95821	0.41845	1	0.41845	ug/ml

Analyst Peak Integration Comments

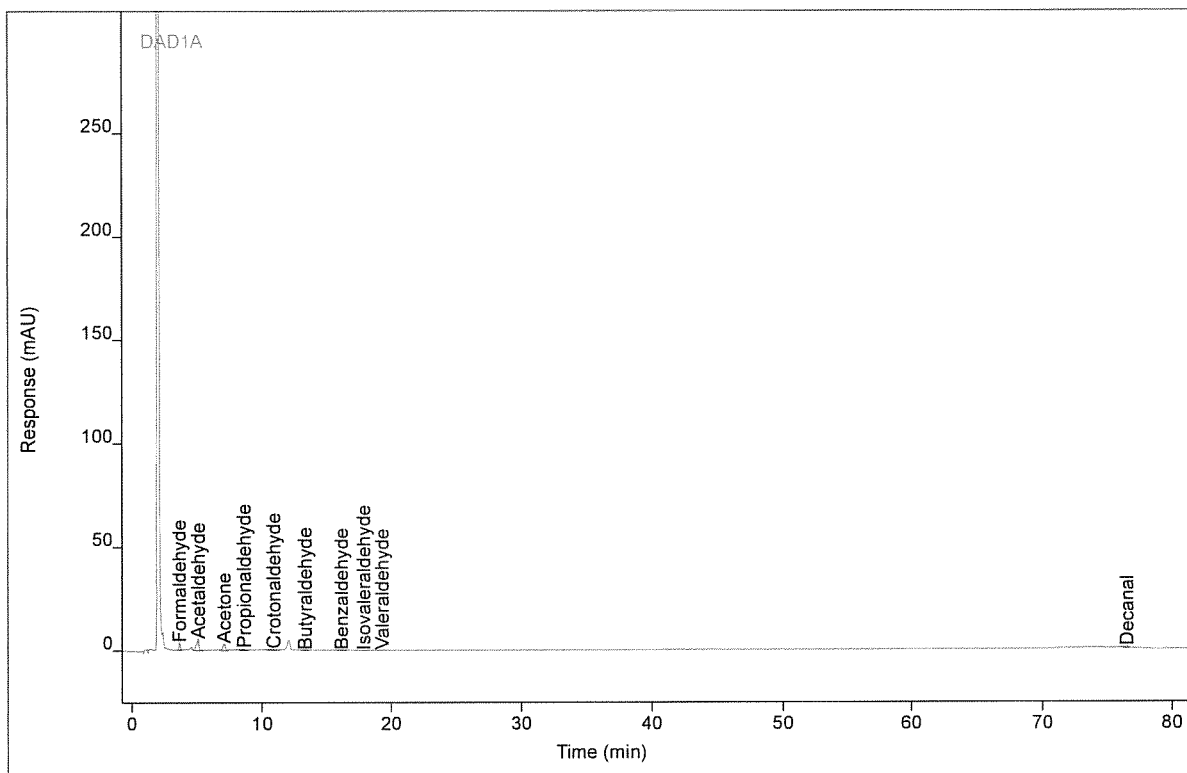
15:11:31 07/18/17 Amelia Paolantonio II AMP

Chromatogram Report

Enthalpy Analytical

Sample Name IBC Out R4 0617-110
 Sequence Name Bart408b. 2017-07-15 13-12-50 ver.4
 Inj Data File 020-0501.D
 File Location HPLC/2017/Bart/Quarter 3
 Injection Date 7/15/2017 6:21 PM
 File Modified 7/19/2017 2:01 PM
 Instrument Bart
 Operator Amelia Paolantonio

Sample Type Sample
 Vial Number 20
 Injection Volume 5
 Injection 1 of 1
 Acquisition Method 8315_TO11_Waters_restek_45_Min_EXT.M
 Analysis Method Bart407.M
 Method Modified 7/17/2017 5:13 PM
 Printed 7/20/2017 11:36 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	FM	3.69	31.4238	3.96337	0.22165	1	0.22165	ug/ml
Acetaldehyde	FM	5.14	75.2887	5.78129	0.75041	1	0.75041	ug/ml
Acetone	BB	7.13	43.4460	3.69416	0.60219	1	0.60219	ug/ml
Propionaldehyde	BB	8.66	15.2390	1.19219	0.18879	1	0.18879	ug/ml
Crotonaldehyde	MM	10.87	15.9682	0.93852	0.26845	1	0.26845	ug/ml
Butyraldehyde	MM	13.28	4.85817	0.29006	0.08419	1	0.08419	ug/ml
Benzaldehyde	MF	16.10	10.6305	0.35712	0.26375	1	0.26375	ug/ml
Isovaleraldehyde	MF	17.86	4.78772	0.24753	0.09221	1	0.09221	ug/ml
Valeraldehyde	FM	19.30	8.02812	0.34364	0.17178	1	0.17178	ug/ml
o-Tolualdehyde		(21.03)				1		ug/ml
m,p-Tolualdehyde		(21.87)				1		ug/ml
Hexaldehyde		(27.95)				1		ug/ml
2-Pentanone		(35.10)				1		ug/ml
Decanal	BB	76.54	12.2272	1.08362	0.43753	1	0.43753	ug/ml

Analyst Peak Integration Comments

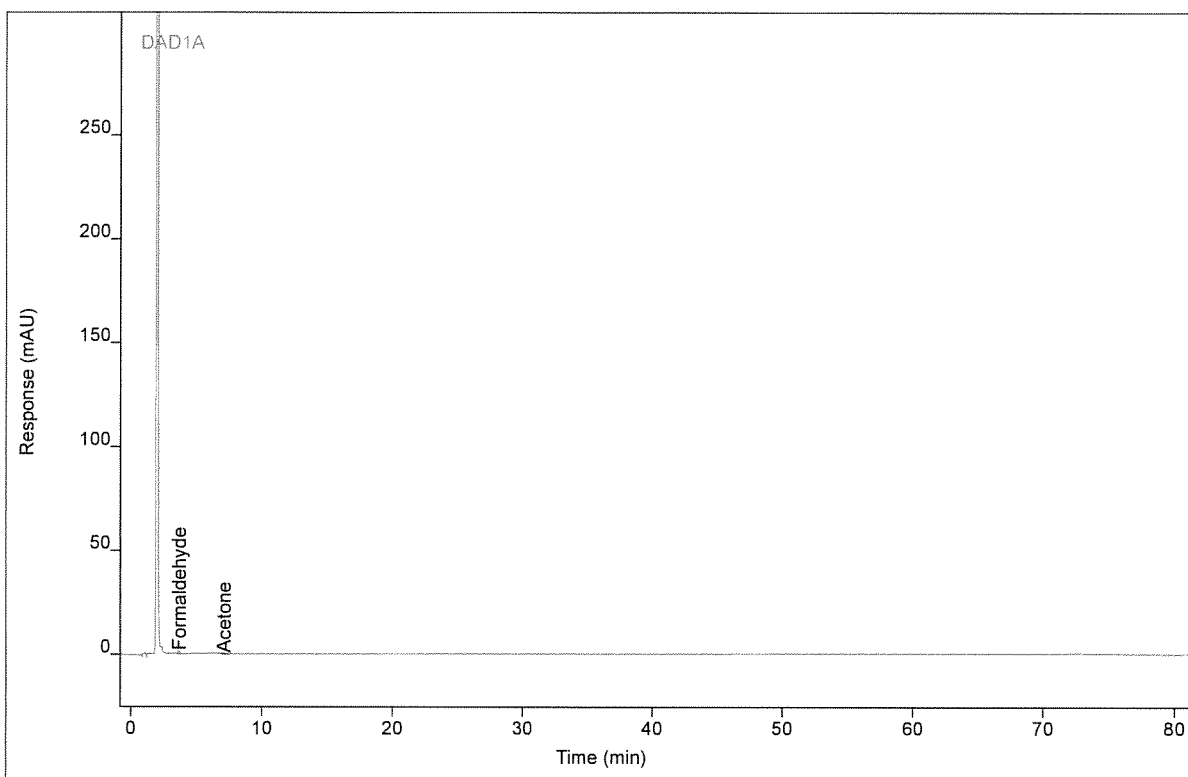
15:13:38 07/18/17 Amelia Paolantonio II AMP

Chromatogram Report

Enthalpy Analytical

Sample Name Sample Blank 0617-110
Sequence Name Bart408b. 2017-07-15 13-12-50 ver.4
Inj Data File 021-0601.D
File Location HPLC/2017/Bart/Quarter 3
Injection Date 7/15/2017 7:51 PM
File Modified 7/19/2017 2:01 PM
Instrument Bart
Operator Amelia Paolantonio

Sample Type Sample
Vial Number 21
Injection Volume 5
Injection 1 of 1
Acquisition Method 8315_TO11_Waters_retek_45_Min_EXT.M
Analysis Method Bart407.M
Method Modified 7/17/2017 5:13 PM
Printed 7/20/2017 11:36 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BB	3.67	13.7756	1.80302	0.09717	1	0.09717	ug/ml
Acetaldehyde		(5.13)				1		ug/ml
Acetone	MM	7.11	9.41019	0.82003	0.13043	1	0.13043	ug/ml
Propionaldehyde		(8.57)				1		ug/ml
Crotonaldehyde		(11.14)				1		ug/ml
Butyraldehyde		(13.16)				1		ug/ml
Benzaldehyde		(15.87)				1		ug/ml
Isovaleraldehyde		(18.10)				1		ug/ml
Valeraldehyde		(19.10)				1		ug/ml
o-Tolualdehyde		(21.03)				1		ug/ml
m,p-Tolualdehyde		(21.87)				1		ug/ml
Hexaldehyde		(27.95)				1		ug/ml
2-Pentanone		(35.10)				1		ug/ml
Decanal		(77.44)				1		ug/ml

Analyst Peak Integration Comments

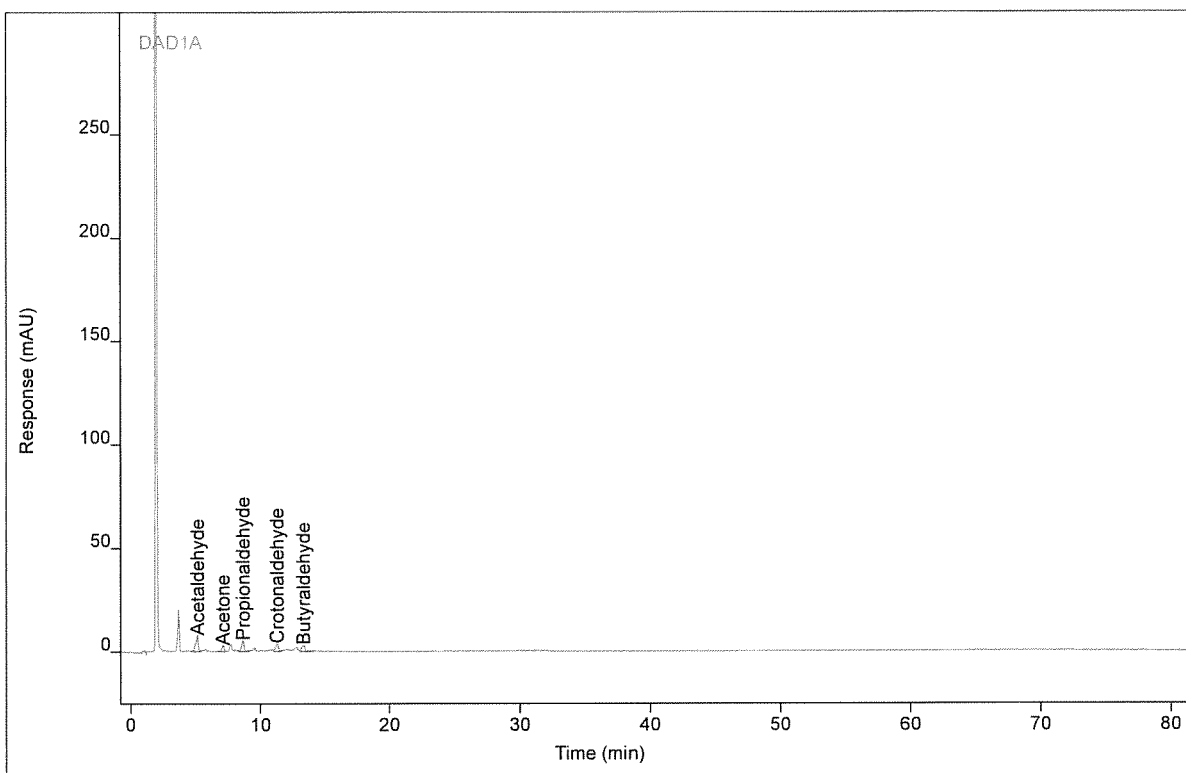
15:14:07 07/18/17 Amelia Paolantonio II AMP

Chromatogram Report

Enthalpy Analytical

Sample Name LCS-1 0617-110
 Sequence Name Bart408b. 2017-07-15 13-12-50 ver.4
 Inj Data File 022-0701.D
 File Location HPLC/2017/Bart/Quarter 3
 Injection Date 7/15/2017 9:21 PM
 File Modified 7/19/2017 2:02 PM
 Instrument Bart
 Operator Amelia Paolantonio

Sample Type Sample
 Vial Number 22
 Injection Volume 5
 Injection 1 of 1
 Acquisition Method 8315_TO11_Waters_restek_45_Min_EXT.M
 Analysis Method Bart407.M
 Method Modified 7/17/2017 5:13 PM
 Printed 7/20/2017 11:36 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde		(3.66)				1		ug/ml
Acetaldehyde	MM	5.14	106.941	8.15837	1.03792	1	1.03792	ug/ml
Acetone	MF	7.11	39.5136	3.29273	0.54769	1	0.54769	ug/ml
Propionaldehyde	FM	8.64	73.5919	5.35869	0.90800	1	0.90800	ug/ml
Crotonaldehyde	FM	11.27	63.6853	4.04641	1.04002	1	1.04002	ug/ml
Butyraldehyde	FM	13.29	55.8790	3.29250	0.95157	1	0.95157	ug/ml
Benzaldehyde		(15.87)				1		ug/ml
Isovaleraldehyde		(18.10)				1		ug/ml
Valeraldehyde		(19.10)				1		ug/ml
o-Tolualdehyde		(21.03)				1		ug/ml
m,p-Tolualdehyde		(21.87)				1		ug/ml
Hexaldehyde		(27.95)				1		ug/ml
2-Pentanone		(35.10)				1		ug/ml
Decanal		(77.44)				1		ug/ml

Analyst Peak Integration Comments

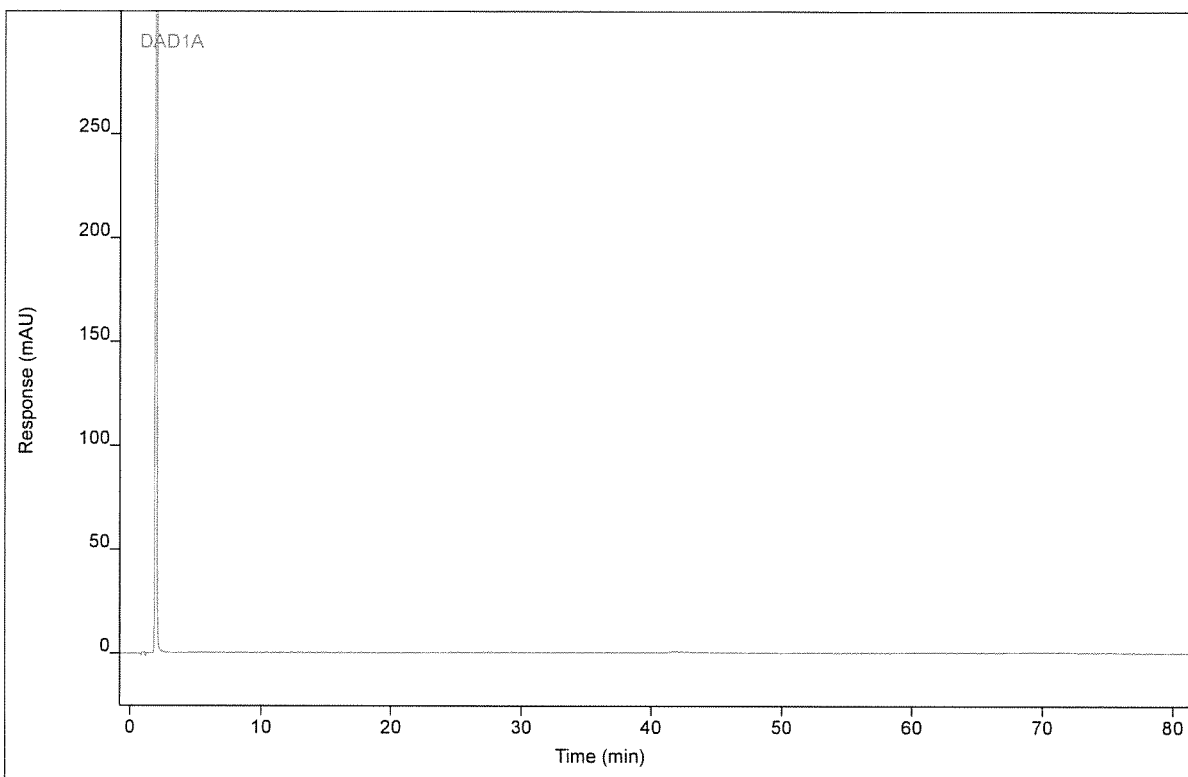
15:20:10 07/18/17 Amelia Paolantonio II AMP
 15:27:22 07/18/17 Amelia Paolantonio II AMP

Chromatogram Report

Enthalpy Analytical

Sample Name MB-1 0617-110
Sequence Name Bart408b. 2017-07-15 13-12-50 ver.4
Inj Data File 023-0801.D
File Location HPLC/2017/Bart/Quarter 3
Injection Date 7/15/2017 10:50 PM
File Modified 7/19/2017 2:02 PM
Instrument Bart
Operator Amelia Paolantonio

Sample Type Sample
Vial Number 23
Injection Volume 5
Injection 1 of 1
Acquisition Method 8315_TO11_Waters_restek_45_Min_EXT.M
Analysis Method Bart407.M
Method Modified 7/17/2017 5:13 PM
Printed 7/20/2017 11:36 AM



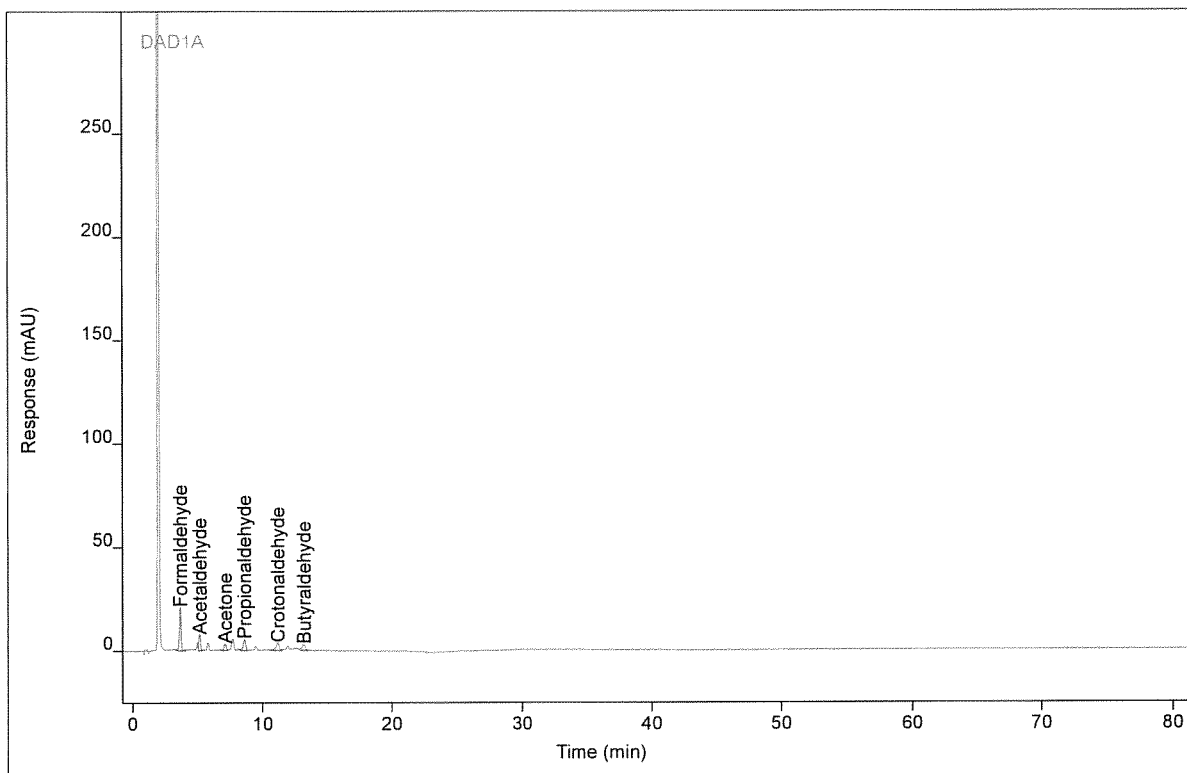
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde		(3.66)				1		ug/ml
Acetaldehyde		(5.13)				1		ug/ml
Acetone		(7.08)				1		ug/ml
Propionaldehyde		(8.57)				1		ug/ml
Crotonaldehyde		(11.14)				1		ug/ml
Butyraldehyde		(13.16)				1		ug/ml
Benzaldehyde		(15.87)				1		ug/ml
Isovaleraldehyde		(18.10)				1		ug/ml
Valeraldehyde		(19.10)				1		ug/ml
o-Tolualdehyde		(21.03)				1		ug/ml
m,p-Tolualdehyde		(21.87)				1		ug/ml
Hexaldehyde		(27.95)				1		ug/ml
2-Pentanone		(35.10)				1		ug/ml
Decanal		(77.44)				1		ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name LCS-2 (comparison) 0617-110
 Sequence Name Bart408b. 2017-07-15 13-12-50 ver.4
 Inj Data File 031-0901.D
 File Location HPLC/2017/Bart/Quarter 3
 Injection Date 7/16/2017 12:20 AM
 File Modified 7/19/2017 2:02 PM
 Instrument Bart
 Operator Amelia Paolantonio

Sample Type Sample
 Vial Number 31
 Injection Volume 5
 Injection 1 of 1
 Acquisition Method 8315_TO11_Waters_restek_45_Min_EXT.M
 Analysis Method Bart407.M
 Method Modified 7/17/2017 5:13 PM
 Printed 7/20/2017 11:36 AM



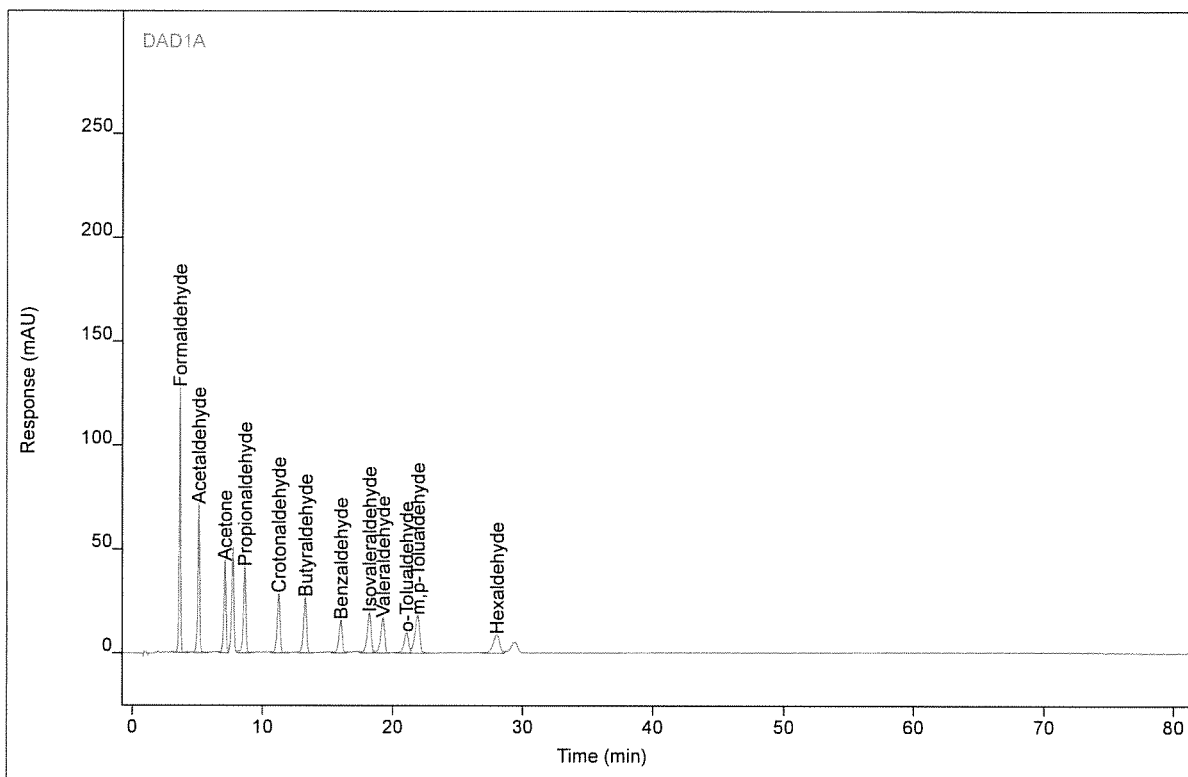
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BB	3.67	180.242	21.0269	1.20760	1	1.20760	ug/ml
Acetaldehyde	VV	5.13	77.6651	8.07833	0.77409	1	0.77409	ug/ml
Acetone	BB	7.10	41.7516	3.62939	0.57871	1	0.57871	ug/ml
Propionaldehyde	VB	8.61	71.8373	5.61104	0.88855	1	0.88855	ug/ml
Crotonaldehyde	BB	11.18	67.3183	4.07906	1.09115	1	1.09115	ug/ml
Butyraldehyde	VB	13.21	47.5953	3.13162	0.82481	1	0.82481	ug/ml
Benzaldehyde		(15.87)				1		ug/ml
Isovaleraldehyde		(18.10)				1		ug/ml
Valeraldehyde		(19.10)				1		ug/ml
o-Tolualdehyde		(21.03)				1		ug/ml
m,p-Tolualdehyde		(21.87)				1		ug/ml
Hexaldehyde		(27.95)				1		ug/ml
2-Pentanone		(35.10)				1		ug/ml
Decanal		(77.44)				1		ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name Bart408 #concal
 Sequence Name Bart408b. 2017-07-15 13-12-50 ver.4
 Inj Data File 001-1001.D
 File Location HPLC/2017/Bart/Quarter 3
 Injection Date 7/16/2017 1:49 AM
 File Modified 7/19/2017 2:02 PM
 Instrument Bart
 Operator Amelia Paolantonio

Sample Type Calibration
 Vial Number 1
 Injection Volume 5
 Injection 1 of 1
 Acquisition Method 8315_TO11_Waters_restek_45_Min_EXT.M
 Analysis Method Bart407.M
 Method Modified 7/17/2017 5:13 PM
 Printed 7/20/2017 11:36 AM



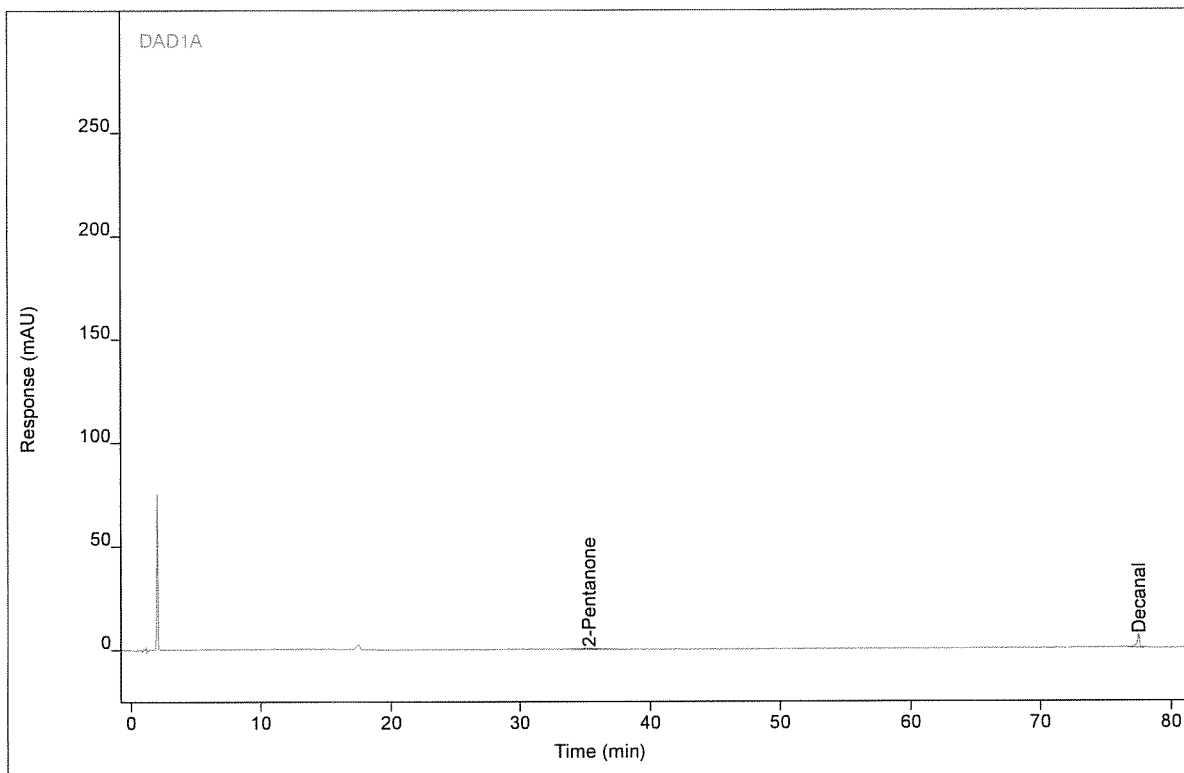
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde	BB	3.68	1018.98	127.790	6.15391	1	6.15391	ug/ml
Acetaldehyde	BB	5.15	724.732	71.8639	6.25719	1	6.25719	ug/ml
Acetone	BV	7.14	523.319	44.4075	6.29024	1	6.29024	ug/ml
Propionaldehyde	VB	8.66	563.439	41.6654	6.33712	1	6.33712	ug/ml
Crotonaldehyde	BB	11.24	442.249	28.8475	6.36837	1	6.36837	ug/ml
Butyraldehyde	VB	13.26	439.162	26.9100	6.37955	1	6.37955	ug/ml
Benzaldehyde	BB	15.97	294.176	16.1225	6.38979	1	6.38979	ug/ml
Isovaleraldehyde	BV	18.22	406.013	19.7712	6.51113	1	6.51113	ug/ml
Valeraldehyde	VB	19.26	363.918	17.0577	6.47459	1	6.47459	ug/ml
o-Tolualdehyde	BV	21.11	252.087	10.2229	6.54073	1	6.54073	ug/ml
m,p-Tolualdehyde	VB	21.96	475.015	18.4704	12.9122	1	12.9122	ug/ml
Hexaldehyde	BV	28.04	324.329	9.13712	6.46908	1	6.46908	ug/ml
2-Pentanone		(35.10)				1		ug/ml
Decanal		(77.44)				1		ug/ml

Chromatogram Report

Enthalpy Analytical

Sample Name HPLCSTDS458 #3
 Sequence Name Bart408b. 2017-07-15 13-12-50 ver.4
 Inj Data File 002-1101.D
 File Location HPLC/2017/Bart/Quarter 3
 Injection Date 7/16/2017 3:19 AM
 File Modified 7/19/2017 2:02 PM
 Instrument Bart
 Operator Amelia Paolantonio

Sample Type Calibration
 Vial Number 2
 Injection Volume 5
 Injection 1 of 1
 Acquisition Method 8315_TO11_Waters_restek_45_Min_EXT.M
 Analysis Method Bart407.M
 Method Modified 7/17/2017 5:13 PM
 Printed 7/20/2017 11:36 AM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Formaldehyde		(3.66)				1		ug/ml
Acetaldehyde		(5.13)				1		ug/ml
Acetone		(7.08)				1		ug/ml
Propionaldehyde		(8.57)				1		ug/ml
Crotonaldehyde		(11.14)				1		ug/ml
Butyraldehyde		(13.16)				1		ug/ml
Benzaldehyde		(15.87)				1		ug/ml
Isovaleraldehyde		(18.10)				1		ug/ml
Valeraldehyde		(19.10)				1		ug/ml
o-Tolualdehyde		(21.03)				1		ug/ml
m,p-Tolualdehyde		(21.87)				1		ug/ml
Hexaldehyde		(27.95)				1		ug/ml
2-Pentanone	MM	35.29	83.9291	1.12429	2.80253	1	2.80253	ug/ml
Decanal	MM	77.50	84.5973	6.80954	3.09401	1	3.09401	ug/ml

Analyst Peak Integration Comments

12:43:08 07/19/17 Amelia Paolantonio II AMP

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 Calibration Table
 =====

 General Calibration Setting

Calib. Data Modified : 7/13/2017 12:21:08 PM
 Signals calculated separately : Yes

Rel. Reference Window : 10.000 %
 Abs. Reference Window : 0.000 min
 Rel. Non-ref. Window : 5.000 %
 Abs. Non-ref. Window : 0.000 min
 Uncalibrated Peaks : not reported
 Partial Calibration : Yes, identified peaks are recalibrated
 Correct All Ret. Times: No, only for identified peaks

Curve Type : Linear (some peaks differ, see below)
 Origin : Ignored (some peaks differ, see below)
 Weight : Linear (Amnt)

Recalibration Settings:
 Average Response : Average all calibrations
 Average Retention Time: Floating Average New 75%

Calibration Report Options :
 Printout of recalibrations within a sequence:
 Calibration Table after Recalibration
 Normal Report after Recalibration
 If the sequence is done with bracketing:
 Results of first cycle (ending previous bracket)

 Signal Details

Signal 1: PMP1, Pressure
 Signal 2: DAD1 A, Sig=360,16 Ref=510,100

 Overview Table

RT	Sig	Lvl	Amount [ug/ml]	Area	Rsp.Factor	Ref	ISTD #	Compound
4.200	2	1	8.82400e-1	132.07378	6.68111e-3	No	No	Formaldehyde
		2	1.95650	313.21100	6.24659e-3			
		3	3.00000	458.81406	6.53860e-3			
		4	6.17650	979.03345	6.30877e-3			
		5	12.00000	2060.33179	5.82430e-3			
		6	15.00000	2525.14502	5.94025e-3			
5.700	2	1	8.82400e-1	92.89652	9.49874e-3	No	No	Acetaldehyde
		2	1.95650	221.15707	8.84665e-3			
		3	3.00000	321.49429	9.33143e-3			

RT	Sig	Lvl	Amount [ug/ml]	Area	Rsp.Factor	Ref	ISTD #	Compound	
			4	6.17650	684.08582	9.02884e-3			
			5	12.00000	1439.59668	8.33567e-3			
			6	15.00000	1763.42737	8.50616e-3			
7.800	2	1	8.82400e-1	67.68978	1.30359e-2	No	No	Acetone	
		2	1.95650	157.25690	1.24414e-2				
		3	3.00000	230.16129	1.30343e-2				
		4	6.17650	491.13705	1.25759e-2				
		5	12.00000	1034.09827	1.16043e-2				
		6	15.00000	1267.85144	1.18310e-2				
8.600	2	1	8.82400e-1	79.67430	1.10751e-2	No	No	Acrolein	
		2	1.95650	212.64064	9.20097e-3				
		3	3.00000	273.30795	1.09766e-2				
		4	6.17000	583.46368	1.05748e-2				
		5	12.00000	1230.51221	9.75204e-3				
		6	15.00000	1510.96130	9.92745e-3				
9.740	2	1	8.76500e-1	70.75960	1.23870e-2	No	No	Propionaldehyde	
		2	1.94350	183.09477	1.06147e-2				
		3	2.98000	242.50125	1.22886e-2				
		4	6.13530	516.32874	1.18825e-2				
		5	11.92000	1091.66626	1.09191e-2				
		6	14.90000	1342.38293	1.10997e-2				
12.444	2	1	8.82400e-1	54.96401	1.60541e-2	No	No	Crotonaldehyde	
		2	1.95650	133.23460	1.46846e-2				
		3	3.00000	191.37404	1.56761e-2				
		4	6.17650	409.22037	1.50933e-2				
		5	12.00000	861.37512	1.39312e-2				
		6	15.00000	1060.53174	1.41438e-2				
14.508	2	1	8.76500e-1	53.54881	1.63682e-2	No	No	Butyraldehyde	
		2	1.94350	129.16145	1.50471e-2				
		3	2.98000	188.36145	1.58206e-2				
		4	6.13530	400.33304	1.53255e-2				
		5	11.92000	849.17529	1.40371e-2				
		6	14.90000	1048.14490	1.42156e-2				
17.000	2	1	8.82400e-1	38.25340	2.30672e-2	No	No	Benzaldehyde	
		2	1.95650	86.67164	2.25737e-2				
		3	3.00000	126.38884	2.37363e-2				
		4	6.17650	272.68860	2.26504e-2				
		5	12.00000	571.11566	2.10115e-2				
		6	15.00000	701.71338	2.13762e-2				
17.800	2	1	9.74000e-1	18.50503	5.26343e-2	No	No	3-heptanone	Remade with both peaks
		2	1.94800	34.47876	5.64986e-2				as 3-Heptanone
		3	2.92300	49.92027	5.85534e-2				AMP 7/20/17
		4	5.84500	106.68869	5.47856e-2				
		5	11.69100	229.72031	5.08923e-2				
19.614	2	1	8.76500e-1	47.99509	1.82623e-2	No	No	Isovaleraldehyde	
		2	1.94350	115.67680	1.68011e-2				
		3	2.98000	171.90810	1.73348e-2				
		4	6.13530	365.09985	1.68044e-2				
		5	11.92000	769.68677	1.54868e-2				
		6	14.90000	945.78387	1.57541e-2				
20.733	2	1	8.76500e-1	43.59627	2.01049e-2	No	No	Valeraldehyde	
		2	1.94350	102.93922	1.88801e-2				
		3	2.98000	154.92505	1.92351e-2				
		4	6.13530	330.55939	1.85604e-2				
		5	11.92000	695.36609	1.71420e-2				
		6	14.90000	850.80084	1.75129e-2				
22.699	2	1	8.82400e-1	30.16171	2.92556e-2	No	No	o-Tolualdehyde	
		2	1.95650	72.99805	2.68021e-2				
		3	3.00000	105.49009	2.84387e-2				
		4	6.17650	229.68016	2.68917e-2				
		5	12.00000	478.19818	2.50942e-2				
		6	15.00000	586.95313	2.55557e-2				

RT	Sig	Lvl	Amount [ug/ml]	Area	Rsp.Factor	Ref	ISTD #	Compound
23.601	2	1	1.77059	59.96994	2.95246e-2	No	No	m,p-Tolualdehyde
		2	3.92609	142.58917	2.75343e-2			
		3	6.02300	201.68077	2.98640e-2			
		4	12.39401	438.47495	2.82662e-2			
		5	24.08000	914.94421	2.63185e-2			
		6	30.10000	1123.22278	2.67979e-2			
30.242	2	1	8.88200e-1	42.68812	2.08067e-2	No	No	Hexaldehyde
		2	1.96000	97.61429	2.00790e-2			
		3	3.02000	136.52419	2.21206e-2			
		4	6.21760	305.97745	2.03205e-2			
		5	12.08000	627.11987	1.92627e-2			
		6	15.10000	759.00726	1.98944e-2			
31.673	2	1	8.76500e-1	26.24054	3.34025e-2	No	No	2,5-Dimethylbenzaldehyde
		2	1.94350	63.10458	3.07981e-2			
		3	2.98000	88.34739	3.37305e-2			
		4	6.13530	204.18279	3.00481e-2			
		5	11.92000	396.36273	3.00735e-2			
		6	14.90000	485.65933	3.06799e-2			
36.400	2	1	9.60000e-1	30.27579	3.17085e-2	No	No	2-Pentanone
		2	1.92000	53.23531	3.60663e-2			
		3	2.88000	88.62553	3.24963e-2			
		4	5.76000	171.15227	3.36542e-2			
		5	11.51900	342.41260	3.36407e-2			
		6	14.39900	435.05981	3.30966e-2			
77.592	2	1	1.08300	29.47933	3.67376e-2	No	No	Decanal
		2	2.16600	58.45337	3.70552e-2			
		3	3.24900	92.38659	3.51674e-2			
		4	5.41500	148.02344	3.65820e-2			
		5	10.83000	298.98776	3.62222e-2			
		6	15.16200	402.78934	3.76425e-2			

More compound-specific settings

Compound: Formaldehyde

Curve Type : Linear
Origin : Connected

Compound: Acetaldehyde

Curve Type : Linear
Origin : Connected

Compound: Acetone

Curve Type : Linear
Origin : Connected

Compound: Acrolein

Curve Type : Linear
Origin : Connected

Compound: Propionaldehyde

Curve Type : Linear
Origin : Connected

Compound: Crotonaldehyde

Curve Type : Linear
Origin : Connected

Compound: Butyraldehyde
Curve Type : Linear
Origin : Connected

Compound: Benzaldehyde
Curve Type : Linear
Origin : Connected

Compound: 3-heptanone
Curve Type : Linear
Origin : Connected

Compound: Isovaleraldehyde
Curve Type : Linear
Origin : Connected

Compound: Valeraldehyde
Curve Type : Linear
Origin : Connected

Compound: o-Tolualdehyde
Curve Type : Linear
Origin : Connected

Compound: m,p-Tolualdehyde
Curve Type : Linear
Origin : Connected

Compound: Hexaldehyde
Curve Type : Linear
Origin : Connected

Compound: 2,5-Dimethylbenzaldehyde
Curve Type : Linear
Origin : Connected

Compound: 2-Pentanone
Curve Type : Linear
Origin : Connected

Compound: Decanal
Curve Type : Linear
Origin : Connected

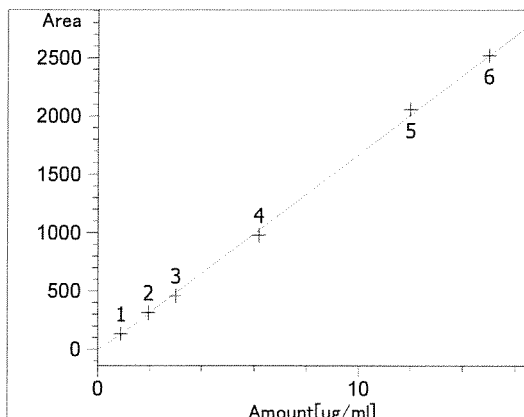
Peak Sum Table

No Entries in table

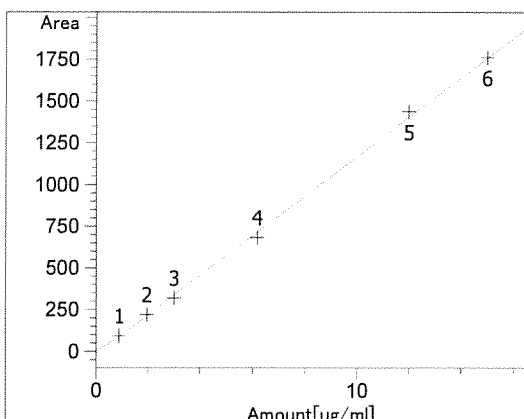
3 Warnings or Errors :

Warning : Overlapping peak time windows at 17 min, signal 2
Warning : Overlapping peak time windows at 22.699 min, signal 2
Warning : Overlapping peak time windows at 30.242 min, signal 2

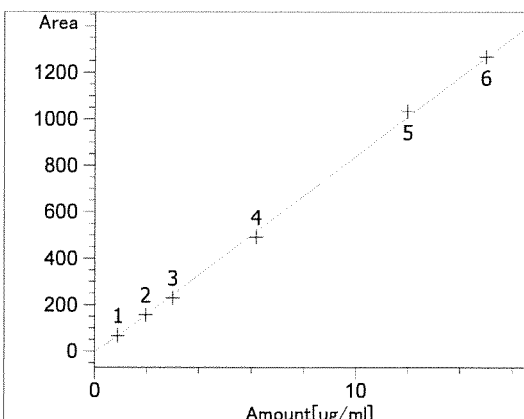
=====
 Calibration Curves
 =====



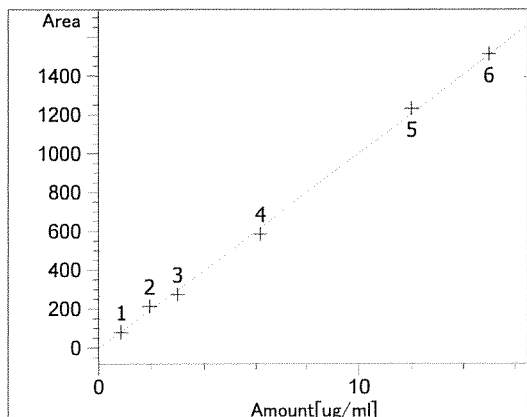
Formaldehyde at exp. RT: 4.200
 DAD1 A, Sig=360,16 Ref=510,100
 Correlation: 0.99940
 Residual Std. Dev.: 36.00589
 Formula: $y = mx + b$
 m: 169.56862
 b: -24.52972
 x: Amount[ug/ml]
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.451009
 Level 3 : 0.294133
 Level 4 : 0.142864
 Level 5 : 0.073533
 Level 6 : 0.058827



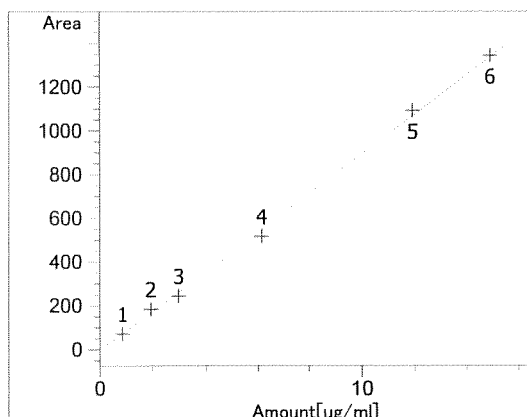
Acetaldehyde at exp. RT: 5.700
 DAD1 A, Sig=360,16 Ref=510,100
 Correlation: 0.99939
 Residual Std. Dev.: 25.37711
 Formula: $y = mx + b$
 m: 118.36742
 b: -15.91574
 x: Amount[ug/ml]
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.451009
 Level 3 : 0.294133
 Level 4 : 0.142864
 Level 5 : 0.073533
 Level 6 : 0.058827



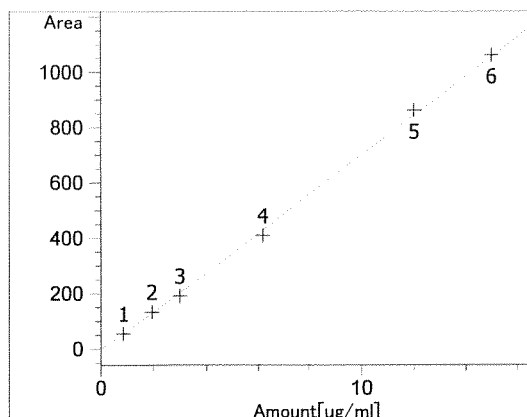
Acetone at exp. RT: 7.800
 DAD1 A, Sig=360,16 Ref=510,100
 Correlation: 0.99935
 Residual Std. Dev.: 18.55040
 Formula: $y = mx + b$
 m: 84.99819
 b: -11.34059
 x: Amount[ug/ml]
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.451009
 Level 3 : 0.294133
 Level 4 : 0.142864
 Level 5 : 0.073533
 Level 6 : 0.058827



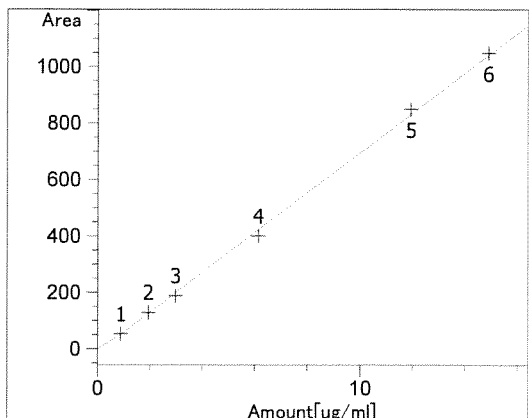
Acrolein at exp. RT: 8.600
 DAD1 A, Sig=360,16 Ref=510,100
 Correlation: 0.99863
 Residual Std. Dev.: 26.25092
 Formula: $y = mx + b$
 m: 100.91595
 b: -7.67669
 x: Amount[ug/ml]
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.451009
 Level 3 : 0.294133
 Level 4 : 0.143015
 Level 5 : 0.073533
 Level 6 : 0.058827



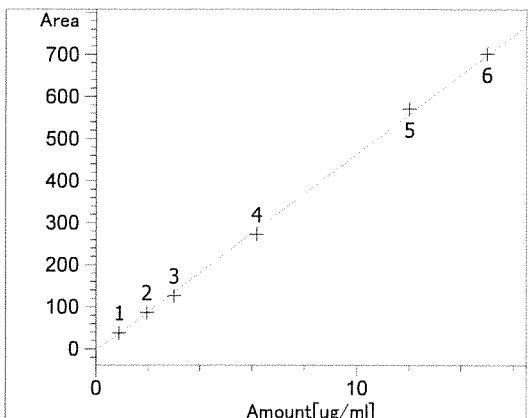
Propionaldehyde at exp. RT: 9.740
 DAD1 A, Sig=360,16 Ref=510,100
 Correlation: 0.99886
 Residual Std. Dev.: 22.69322
 Formula: $y = mx + b$
 m: 90.22594
 b: -8.33328
 x: Amount[ug/ml]
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.45099
 Level 3 : 0.294128
 Level 4 : 0.142862
 Level 5 : 0.073532
 Level 6 : 0.058826



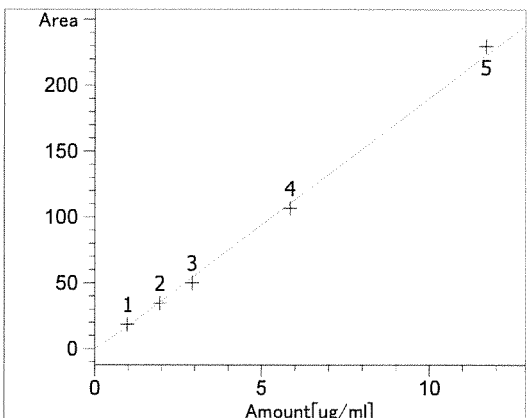
Crotonaldehyde at exp. RT: 12.444
 DAD1 A, Sig=360,16 Ref=510,100
 Correlation: 0.99934
 Residual Std. Dev.: 15.18737
 Formula: $y = mx + b$
 m: 71.04707
 b: -10.20499
 x: Amount[ug/ml]
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.451009
 Level 3 : 0.294133
 Level 4 : 0.142864
 Level 5 : 0.073533
 Level 6 : 0.058827



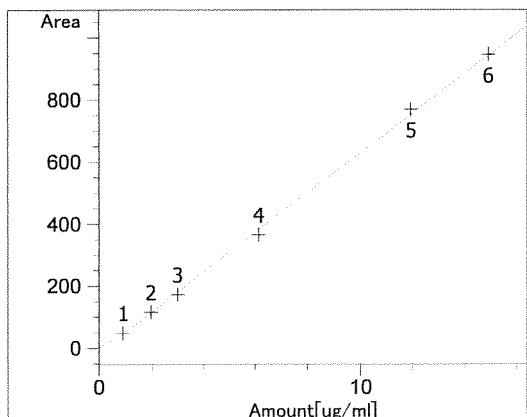
Butyraldehyde at exp. RT: 14.508
 DAD1 A, Sig=360,16 Ref=510,100
 Correlation: 0.99929
 Residual Std. Dev.: 15.86996
 Formula: $y = mx + b$
 m: 70.61251
 b: -11.31400
 x: Amount[ug/ml]
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.45099
 Level 3 : 0.294128
 Level 4 : 0.142862
 Level 5 : 0.073532
 Level 6 : 0.058826



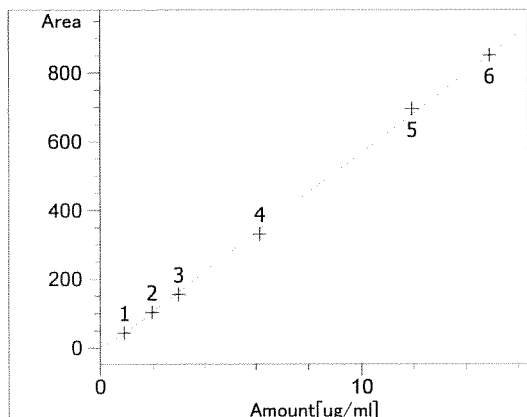
Benzaldehyde at exp. RT: 17.000
 DAD1 A, Sig=360,16 Ref=510,100
 Correlation: 0.99932
 Residual Std. Dev.: 10.07657
 Formula: $y = mx + b$
 m: 46.95702
 b: -5.86926
 x: Amount[ug/ml]
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.451009
 Level 3 : 0.294133
 Level 4 : 0.142864
 Level 5 : 0.073533
 Level 6 : 0.058827



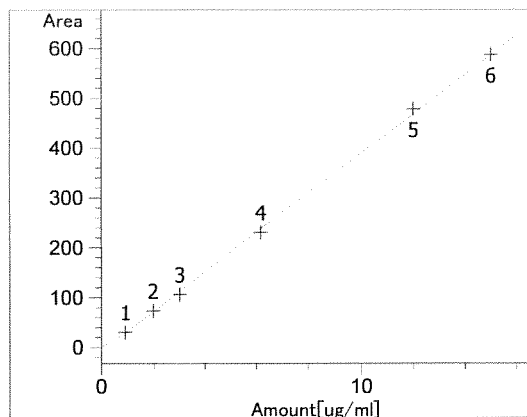
3-heptanone at exp. RT: 17.800
 DAD1 A, Sig=360,16 Ref=510,100
 Correlation: 0.99811
 Residual Std. Dev.: 5.25064
 Formula: $y = mx + b$
 m: 19.24265
 b: -2.11987
 x: Amount[ug/ml]
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.5
 Level 3 : 0.333219
 Level 4 : 0.166638
 Level 5 : 0.083312



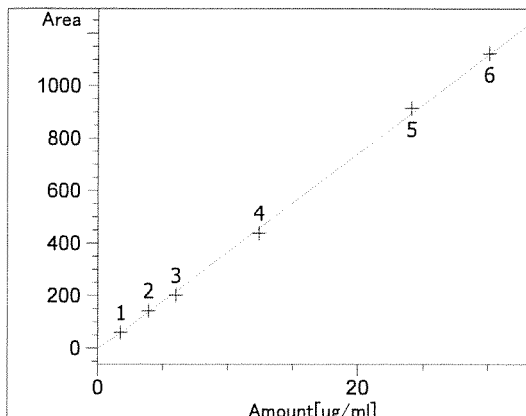
Isovaleraldehyde at exp. RT: 19.614
 DAD1 A, Sig=360,16 Ref=510,100
 Correlation: 0.99945
 Residual Std. Dev.: 13.04669
 Formula: $y = mx + b$
 m: 63.97991
 b: -10.56838
 x: Amount[ug/ml]
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.45099
 Level 3 : 0.294128
 Level 4 : 0.142862
 Level 5 : 0.073532
 Level 6 : 0.058826



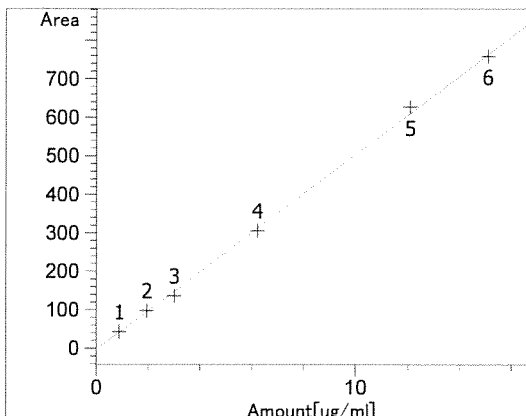
Valeraldehyde at exp. RT: 20.733
 DAD1 A, Sig=360,16 Ref=510,100
 Correlation: 0.99947
 Residual Std. Dev.: 11.74476
 Formula: $y = mx + b$
 m: 57.69013
 b: -9.60194
 x: Amount[ug/ml]
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.45099
 Level 3 : 0.294128
 Level 4 : 0.142862
 Level 5 : 0.073532
 Level 6 : 0.058826



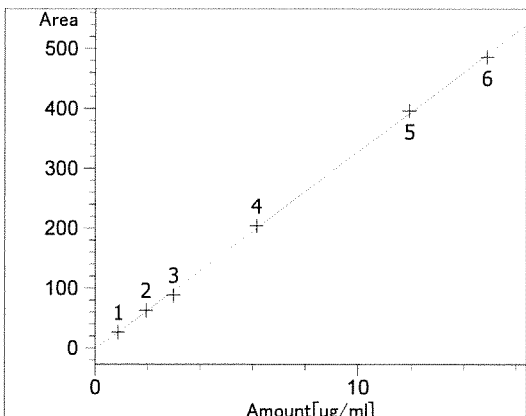
o-Tolualdehyde at exp. RT: 22.699
 DAD1 A, Sig=360,16 Ref=510,100
 Correlation: 0.99946
 Residual Std. Dev.: 7.57130
 Formula: $y = mx + b$
 m: 39.47973
 b: -6.13936
 x: Amount[ug/ml]
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.451009
 Level 3 : 0.294133
 Level 4 : 0.142864
 Level 5 : 0.073533
 Level 6 : 0.058827



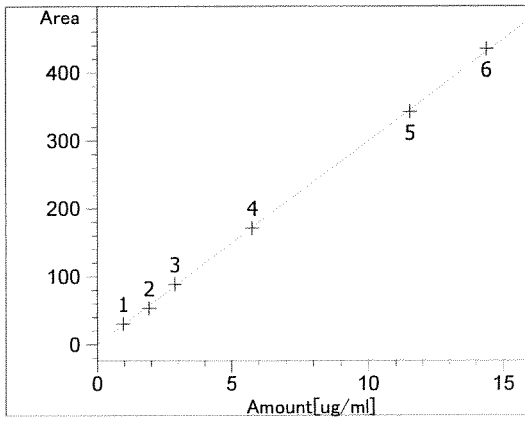
m,p-Tolualdehyde at exp. RT: 23.601
 DAD1 A, Sig=360,16 Ref=510,100
 Correlation: 0.99932
 Residual Std. Dev.: 15.76782
 Formula: $y = mx + b$
 m: 37.51714
 b: -9.41219
 x: Amount[ug/ml]
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.45098
 Level 3 : 0.293971
 Level 4 : 0.142858
 Level 5 : 0.073529
 Level 6 : 0.058824



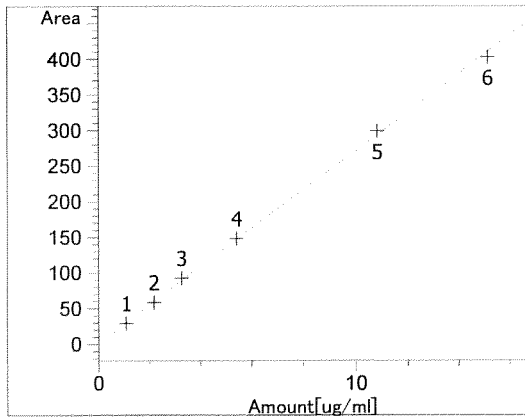
Hexaldehyde at exp. RT: 30.242
 DAD1 A, Sig=360,16 Ref=510,100
 Correlation: 0.99925
 Residual Std. Dev.: 11.37354
 Formula: $y = mx + b$
 m: 50.86263
 b: -4.70510
 x: Amount[ug/ml]
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.453163
 Level 3 : 0.294106
 Level 4 : 0.142853
 Level 5 : 0.073526
 Level 6 : 0.058821



2,5-Dimethylbenzaldehyde at exp. RT: 31.673
 DAD1 A, Sig=360,16 Ref=510,100
 Correlation: 0.99950
 Residual Std. Dev.: 5.40111
 Formula: $y = mx + b$
 m: 33.11770
 b: -3.26486
 x: Amount[ug/ml]
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.45099
 Level 3 : 0.294128
 Level 4 : 0.142862
 Level 5 : 0.073532
 Level 6 : 0.058826



2-Pentanone at exp. RT: 36.400
 DAD1 A, Sig=360,16 Ref=510,100
 Correlation: 0.99959
 Residual Std. Dev.: 3.54083
 Formula: $y = mx + b$
 m: 29.92738
 b: 5.66454e-2
 x: Amount[ug/ml]
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.5
 Level 3 : 0.333333
 Level 4 : 0.166667
 Level 5 : 0.083341
 Level 6 : 0.066671



Decanal at exp. RT: 77.592
 DAD1 A, Sig=360,16 Ref=510,100
 Correlation: 0.99960
 Residual Std. Dev.: 5.14518
 Formula: $y = mx + b$
 m: 27.01706
 b: 1.00639
 x: Amount[ug/ml]
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.5
 Level 3 : 0.333333
 Level 4 : 0.2
 Level 5 : 0.1
 Level 6 : 0.071429

=====

=====
 Calibration Table
 =====

 General Calibration Setting

Calib. Data Modified : 7/20/2017 3:32:34 PM
 Signals calculated separately : Yes

Rel. Reference Window : 10.000 %
 Abs. Reference Window : 0.000 min
 Rel. Non-ref. Window : 5.000 %
 Abs. Non-ref. Window : 0.000 min
 Uncalibrated Peaks : not reported
 Partial Calibration : Yes, identified peaks are recalibrated
 Correct All Ret. Times: No, only for identified peaks

Curve Type : Linear (some peaks differ, see below)
 Origin : Ignored (some peaks differ, see below)
 Weight : Linear (Amnt)

Recalibration Settings:
 Average Response : Average all calibrations
 Average Retention Time: Floating Average New 75%

Calibration Report Options :

Printout of recalibrations within a sequence:
 Calibration Table after Recalibration
 Normal Report after Recalibration
 If the sequence is done with bracketing:
 Results of first cycle (ending previous bracket)

 Signal Details

Signal 1: PMP1, Pressure
 Signal 2: DAD1 A, Sig=360,16 Ref=510,100

 Overview Table

RT	Sig	Lvl	Amount [ug/ml]	Area	Rsp.Factor	Ref	ISTD #	Compound
15.816	2	1	1.97642e-1	4.47562	4.41598e-2	No	No	3-heptanone Peak 1
		2	2.89691e-1	6.02312	4.80965e-2			
		3	5.39164e-1	11.29072	4.77529e-2			
		4	1.01500	22.42012	4.52719e-2			
		5	2.17248	52.43073	4.14353e-2			
17.454	2	1	7.76358e-1	17.58066	4.41598e-2	No	No	3-heptanone Peak 2
		2	1.65831	34.47876	4.80965e-2			
		3	2.38384	49.92027	4.77529e-2			
		4	4.83000	106.68869	4.52719e-2			

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RT	Sig	Lvl	Amount [ug/ml]	Area	Rsp.Factor	Ref	ISTD #	Compound
5			9.51852	229.72031	4.14353e-2			

More compound-specific settings

Compound: 3-heptanone Peak 2
 Curve Type : Linear
 Origin : Connected

Peak Sum Table

No Entries in table

Group summary

Group 1 (3-Heptanone) :

Group members:

3-heptanone Peak 1 with retention time 15.816 min

3-heptanone Peak 2 with retention time 17.454 min

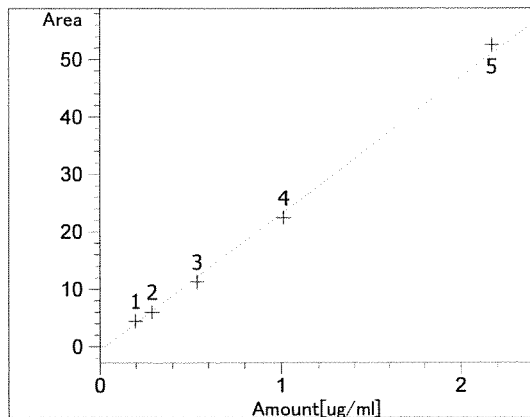
Group Amount Calculation:

- Level 1 with amount 0.97400 ug/ml
- Level 2 with amount 1.94800 ug/ml
- Level 3 with amount 2.92300 ug/ml
- Level 4 with amount 5.84500 ug/ml
- Level 5 with amount 11.69100 ug/ml

1 Warnings or Errors :

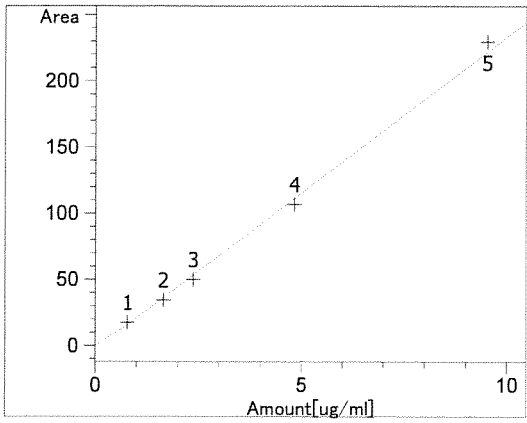
Warning : Cal. table open and changed while report was generated.

Calibration Curves



3-heptanone Peak 1 at exp. RT: 15.816
 DAD1 A, Sig=360,16 Ref=510,100
 Correlation: 0.99809
 Residual Std. Dev.: 1.18764
 Formula: $y = mx + b$
 m: 23.75381
 b: -6.91556e-1
 x: Amount [ug/ml]
 y: Area
 Calibration Level Weights:
 Level 1 : 1
 Level 2 : 0.682252
 Level 3 : 0.366572
 Level 4 : 0.194721
 Level 5 : 0.090975

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3-heptanone Peak 2 at exp. RT: 17.454

DAD1 A, Sig=360,16 Ref=510,100

Correlation: 0.99782

Residual Std. Dev.: 5.80888

Formula: $y = mx + b$

m: 23.61595

b: -2.85176

x: Amount[ug/ml]

y: Area

Calibration Level Weights:

Level 1 : 1

Level 2 : 0.468162

Level 3 : 0.325676

Level 4 : 0.160737

Level 5 : 0.081563

=====

Method Information

Method: C:\HPLC\2014\Bart\Methods\8315_T011_Waters_restek_45_Min_EXT.M
Modified: 7/6/2017 at 4:07:37 PM

Column: Waters XTerra C18 3.0 x 250mm
Mobile Phase: DIUF H2O, ACN, THF, and IPA on a gradient
Flow rate: 0.75 mL/min
UV Detection at 365 nm

Method Audit Trail

Operator : Amelia Paolantonio
Date : 6/26/2017 9:37:15 AM
Change Info: This method was created at 6/26/2017 9:37:15 AM and based on
method C:\HPLC\2014\Bart\Methods\8315_T011_Waters_restek_45_Min.M

Operator : Amelia Paolantonio
Date : 6/26/2017 9:37:17 AM
Change Info: Method saved. User comment: ""

Operator : Amelia Paolantonio
Date : 7/6/2017 4:07:37 PM
Change Info: Method saved. User comment: ""

Run Time Checklist

Pre-Run Cmd/Macro: off
Data Acquisition: on
Standard Data Analysis: off
Customized Data Analysis: off
Save GLP Data: off
Post-Run Cmd/Macro: on
Name: macro "postrund.mac",go
Save Method with Data: off

**This Is The Last Page
Of This Report.**



****This is the last page of the report****

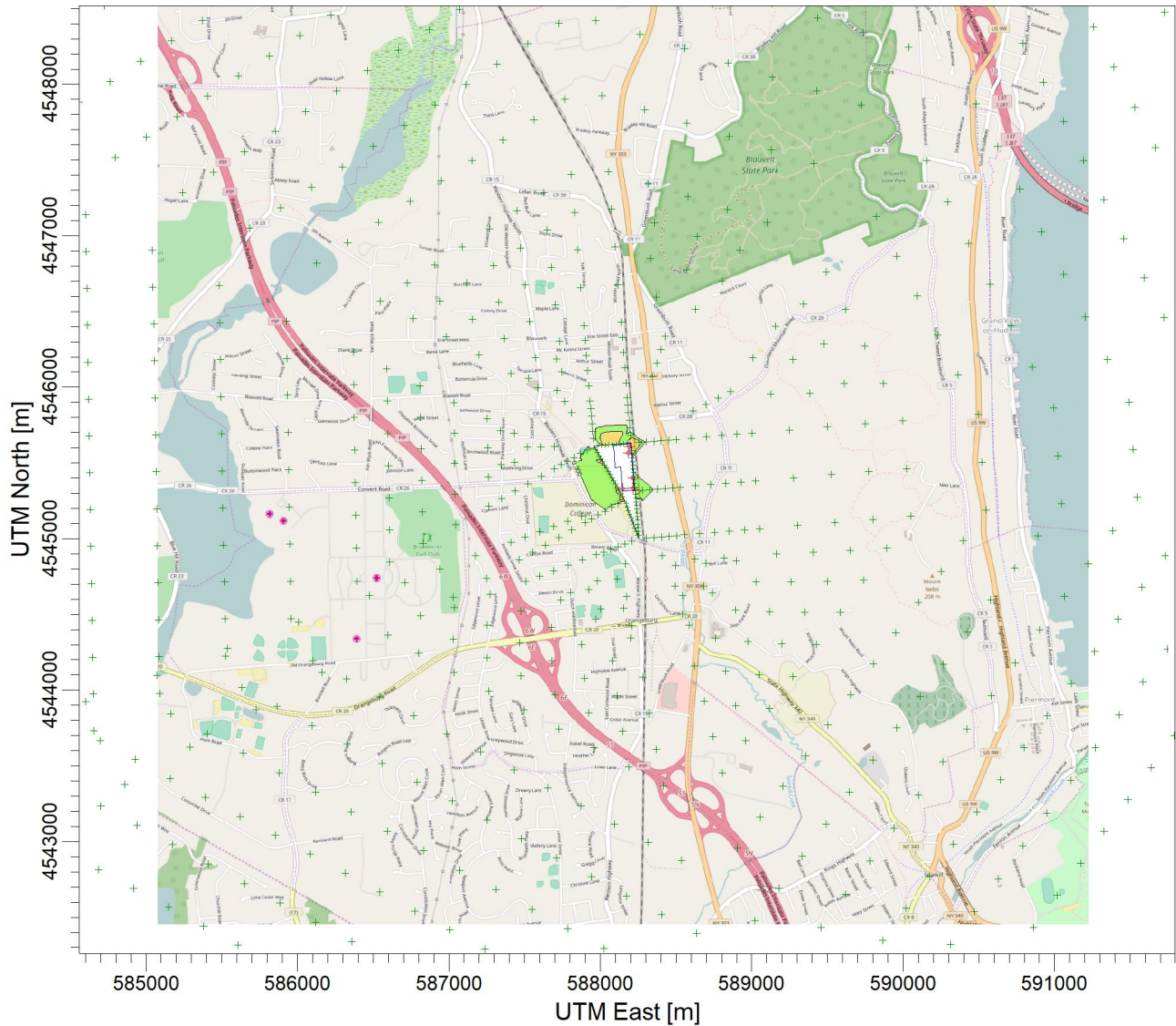
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Attachment 3

Modeled Concentration Plots

PROJECT TITLE:

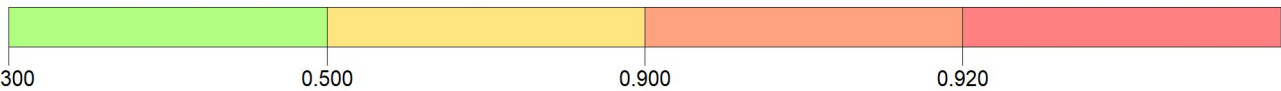
**Aluf Plastics
Acetaldehyde**



PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: ALL

ug/m³

Max: 0.920 [ug/m³] at (588080.36, 4545621.14)



COMMENTS:

SOURCES:

5

COMPANY NAME:

Aluf Plastics, Inc.

RECEPTORS:

869

MODELER:

Miriam Hacker

OUTPUT TYPE:

Concentration

SCALE:

1:45,518



MAX:

0.920 ug/m³

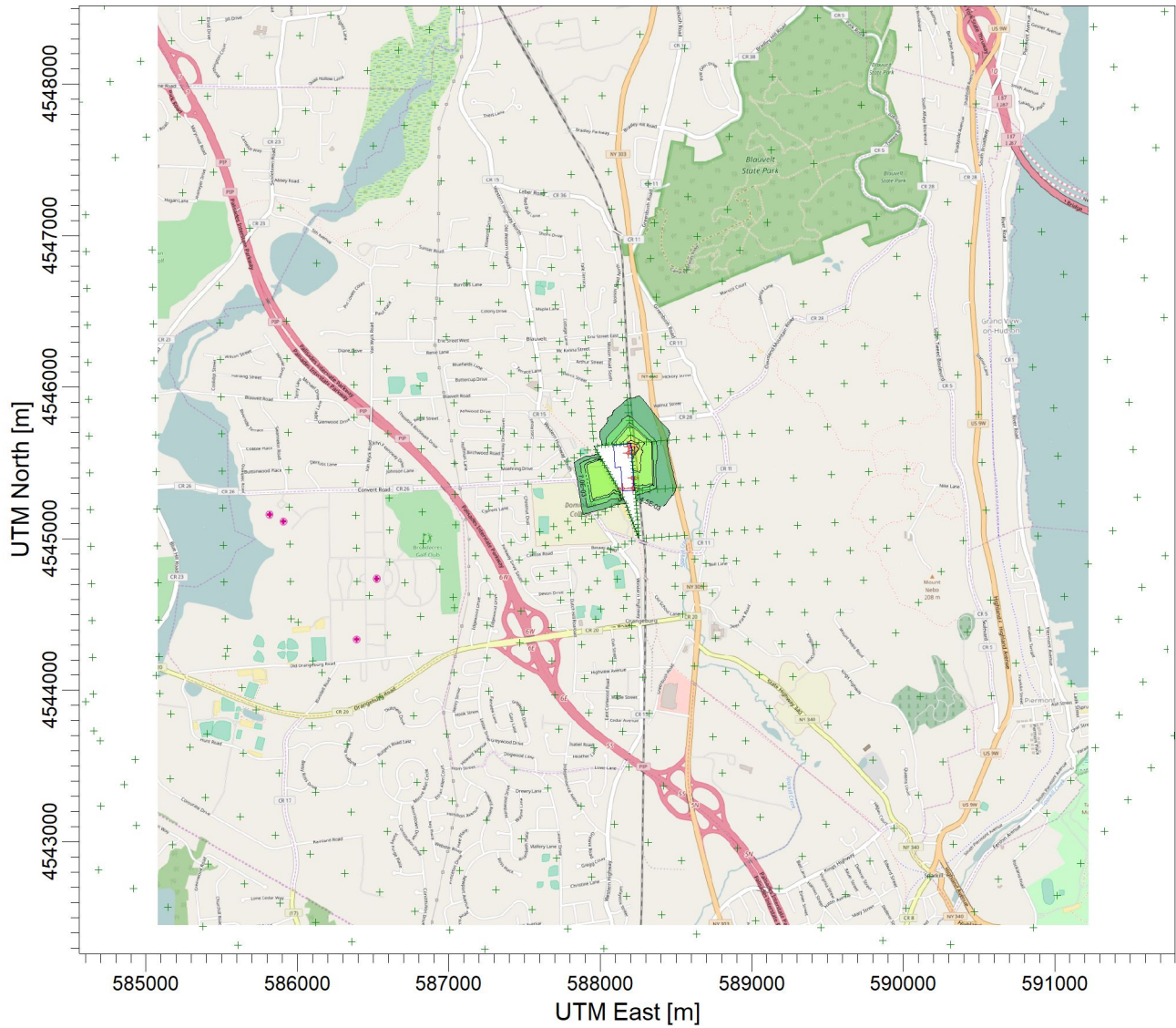
DATE:

9/8/2017

PROJECT NO.:

PROJECT TITLE:

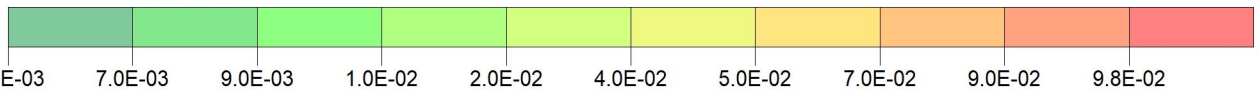
**Aluf Plastics
Acetaldehyde**




PLOT FILE OF ANNUAL VALUES AVERAGED ACROSS 5 YEARS FOR SOURCE GROUP: ALL

ug/m³

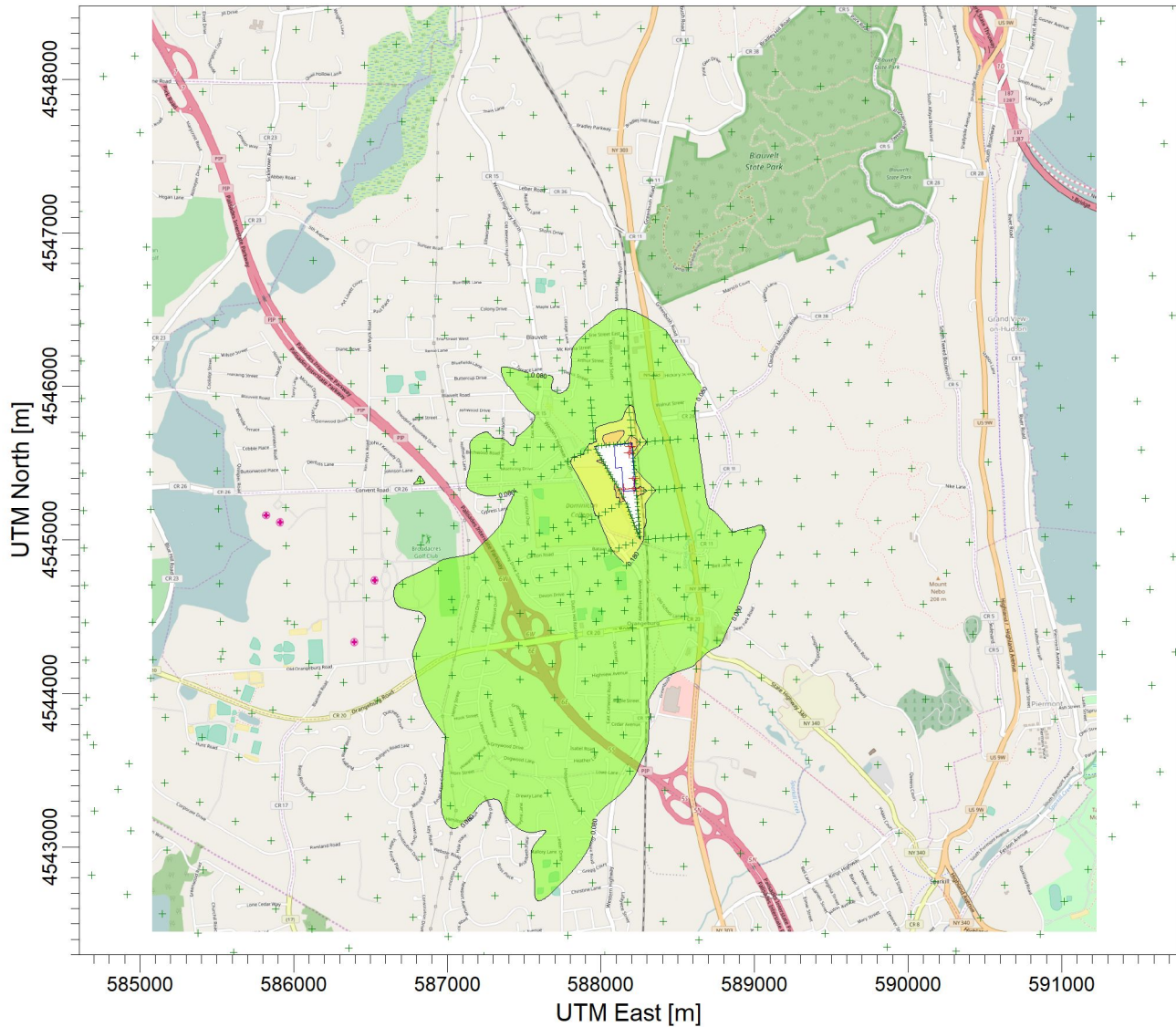
Max: 9.8E-02 [ug/m³] at (588207.30, 4545582.82)



COMMENTS:	SOURCES: 5	COMPANY NAME: Aluf Plastics, Inc.
	RECEPTORS: 869	MODELER: Miriam Hacker
	OUTPUT TYPE: Concentration	SCALE: 1:45,513 
	MAX: 9.8E-02 ug/m³	DATE: 9/12/2017 PROJECT NO.:

PROJECT TITLE:

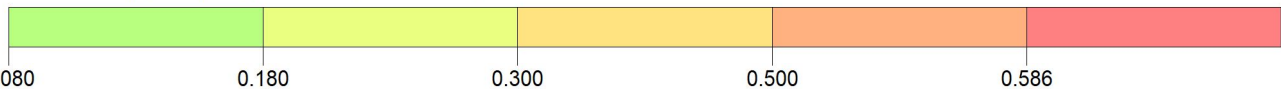
**Aluf Plastics
Acetone**



PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: ALL

ug/m³

Max: 0.586 [ug/m³] at (588147.63, 4545276.94)



COMMENTS:

SOURCES:

5

COMPANY NAME:

Aluf Plastics, Inc.

RECEPTORS:

869

MODELER:

Miriam Hacker

OUTPUT TYPE:

Concentration

SCALE:

1:44,938



MAX:

0.586 ug/m³

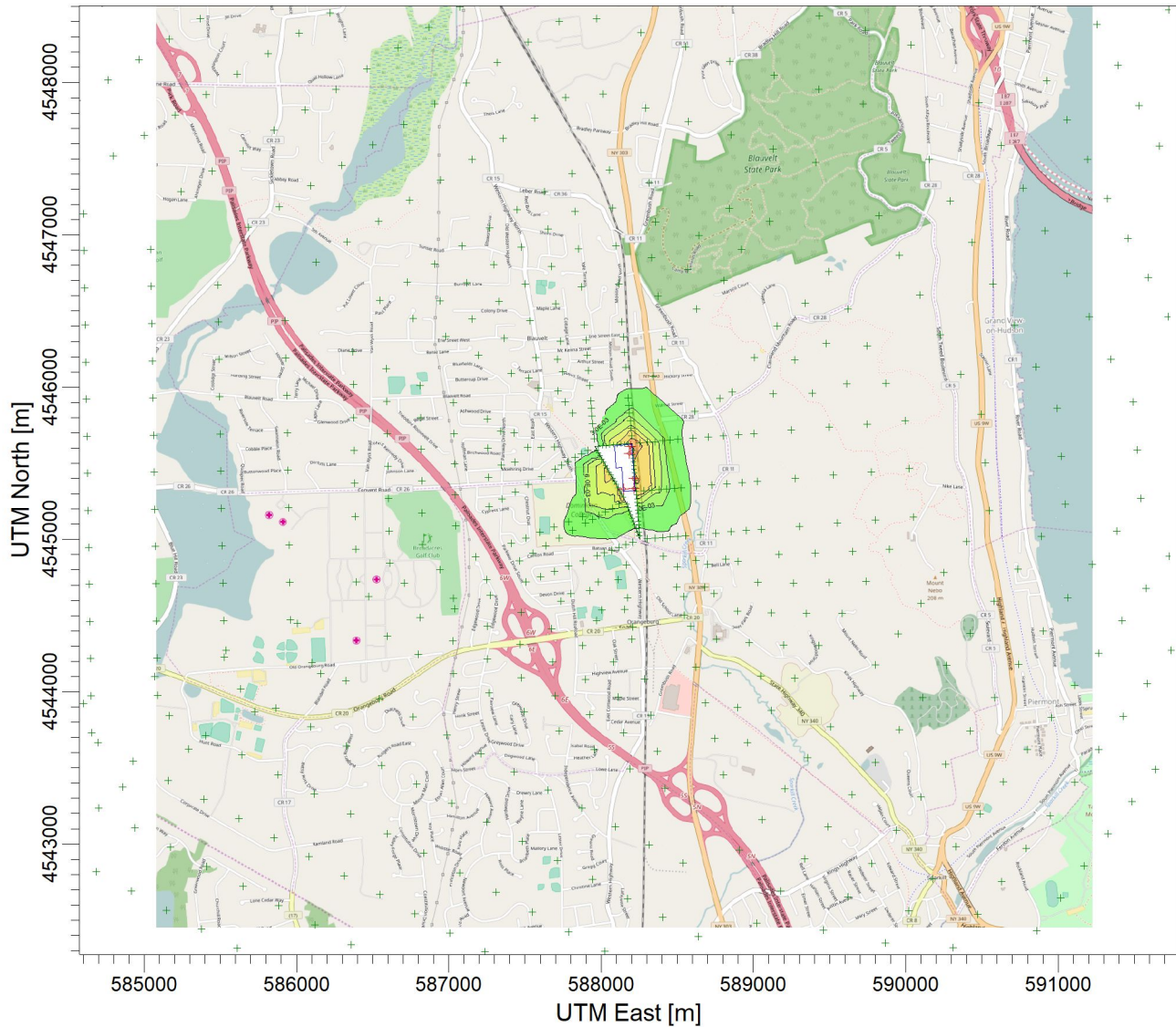
DATE:

9/8/2017

PROJECT NO.:

PROJECT TITLE:

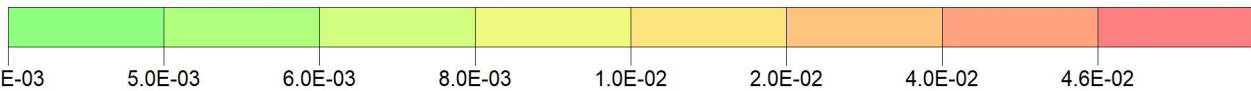
**Aluf Plastics
Acetone**



PLOT FILE OF ANNUAL VALUES AVERAGED ACROSS 5 YEARS FOR SOURCE GROUP: ALL

ug/m³

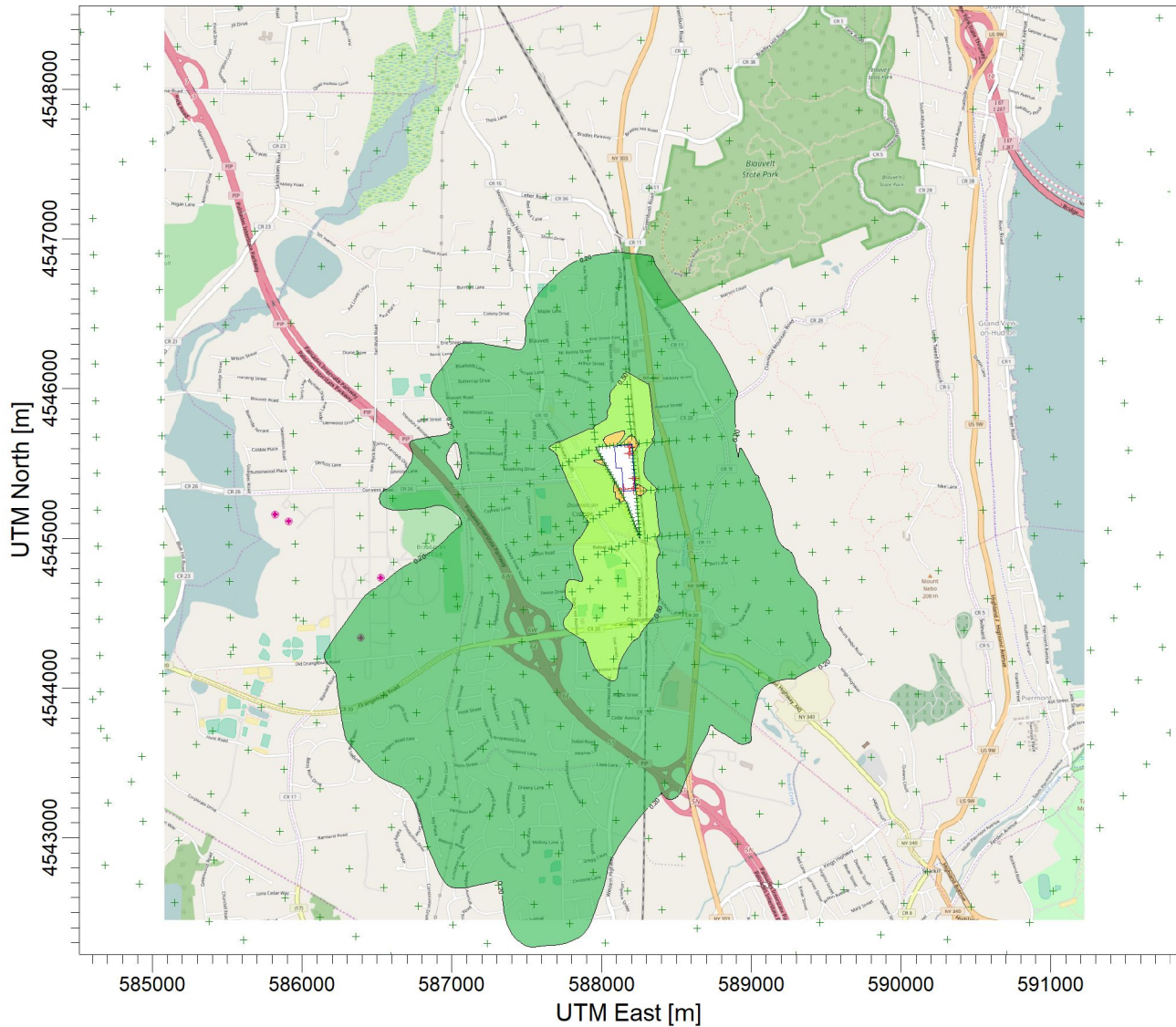
Max: 4.6E-02 [ug/m³] at (588207.30, 4545582.82)



COMMENTS:	SOURCES: 5	COMPANY NAME: Aluf Plastics, Inc.
	RECEPTORS: 869	MODELER: Miriam Hacker
	OUTPUT TYPE: Concentration	SCALE: 1:45,319 0 1 km
	MAX: 4.6E-02 ug/m³	DATE: 9/12/2017 PROJECT NO.:

PROJECT TITLE:

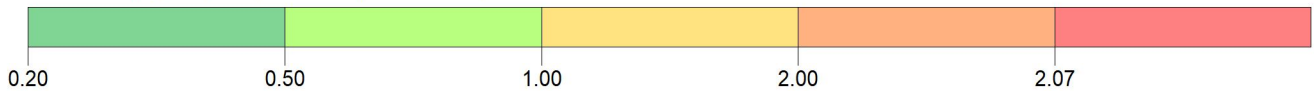
**Aluf Plastics
Acrolein**



PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: ALL

ug/m³

Max: 2.07 [ug/m³] at (588147.63, 4545276.94)



COMMENTS:

SOURCES:

5

COMPANY NAME:

Aluf Plastics, Inc.

RECEPTORS:

869

MODELER:

Miriam Hacker

OUTPUT TYPE:

Concentration

SCALE:

1:46,108



MAX:

2.07 ug/m³

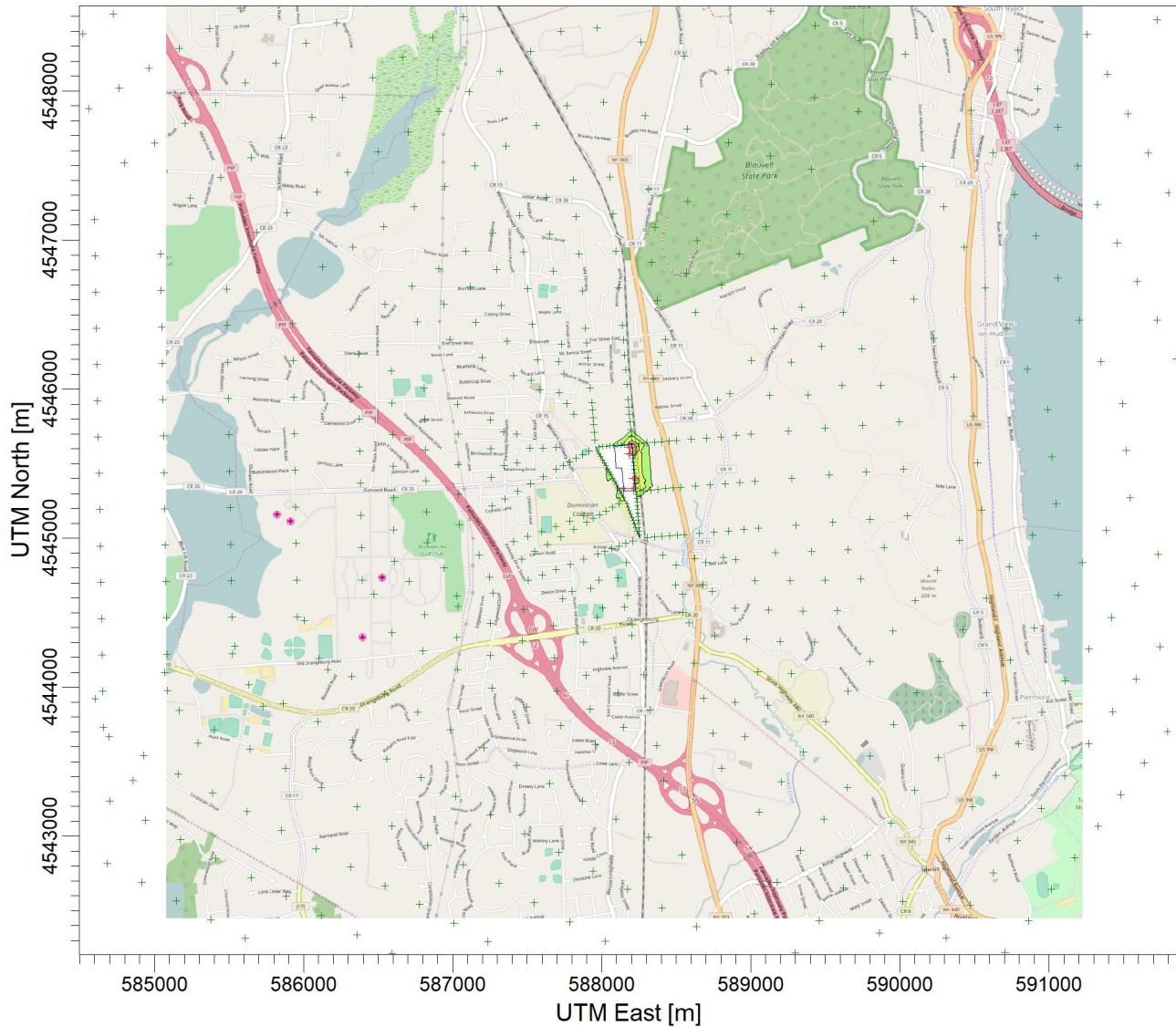
DATE:

9/8/2017

PROJECT NO.:

PROJECT TITLE:

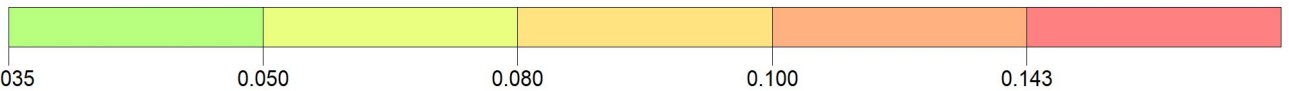
**Aluf Plastics
Acrolein**



PLOT FILE OF ANNUAL VALUES AVERAGED ACROSS 5 YEARS FOR SOURCE GROUP: ALL

ug/m³

Max: 0.143 [ug/m³] at (588207.30, 4545582.82)



COMMENTS:

SOURCES:

5

COMPANY NAME:

Aluf Plastics, Inc.

RECEPTORS:

869

MODELER:

Miriam Hacker

OUTPUT TYPE:

Concentration

SCALE:

1:46,302



MAX:

0.143 ug/m³

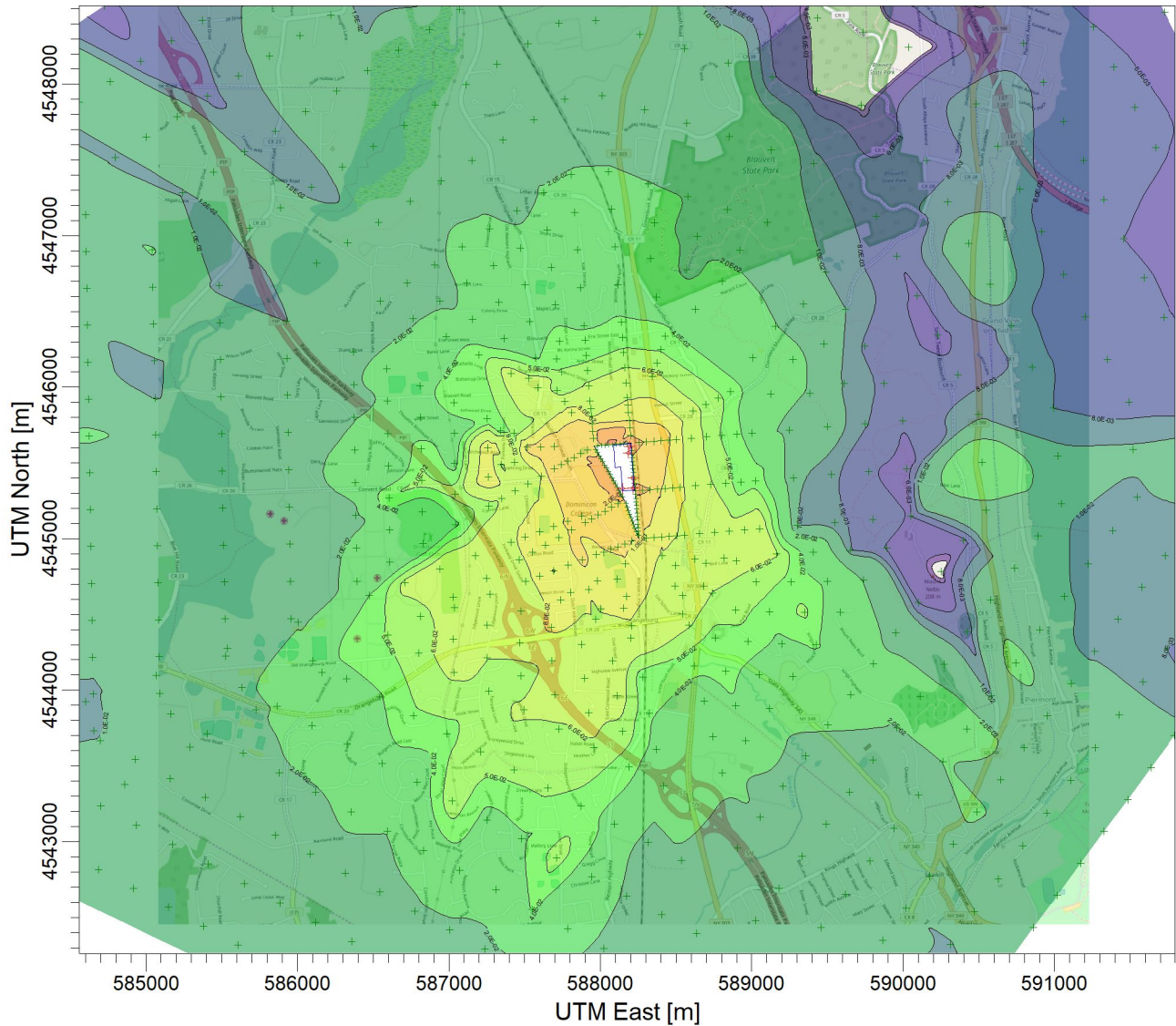
DATE:

9/12/2017

PROJECT NO.:

PROJECT TITLE:

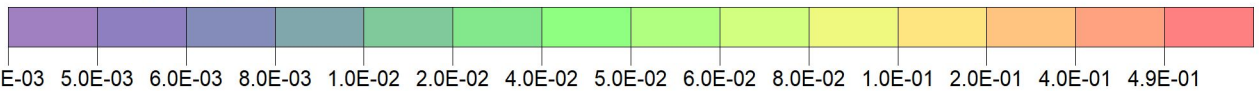
**Aluf Plastics
Butyraldehyde**




PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: ALL

ug/m³

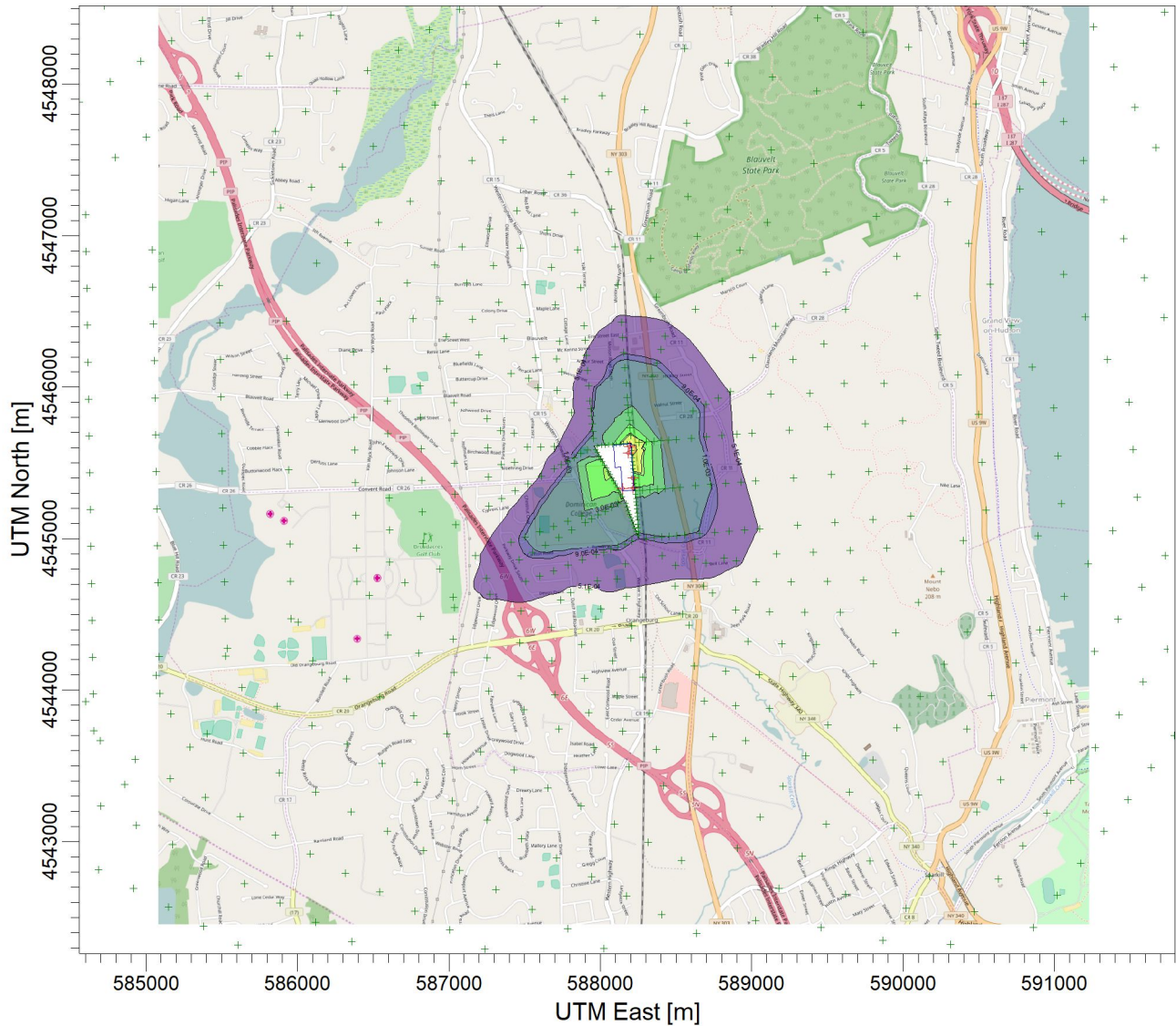
Max: 4.9E-01 [ug/m³] at (588080.36, 4545621.14)



COMMENTS:	SOURCES: 5	COMPANY NAME: Aluf Plastics, Inc.
	RECEPTORS: 869	MODELER: Miriam Hacker
	OUTPUT TYPE: Concentration	SCALE: 1:45,517 
	MAX: 4.9E-01 ug/m³	DATE: 9/12/2017
		PROJECT NO.:

PROJECT TITLE:

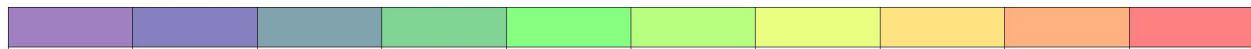
**Aluf Plastics
Butyraldehyde**



PLOT FILE OF ANNUAL VALUES AVERAGED ACROSS 5 YEARS FOR SOURCE GROUP: ALL

ug/m³

Max: 5.2E-02 [ug/m³] at (588207.30, 4545582.82)



5.1E-04 9.0E-04 1.0E-03 3.0E-03 5.0E-03 9.0E-03 1.0E-02 3.0E-02 5.0E-02 5.2E-02

COMMENTS:

SOURCES:

COMPANY NAME:

5

Aluf Plastics, Inc.

RECEPTORS:

MODELER:

869

Miriam Hacker

OUTPUT TYPE:

SCALE:

1:45,517

Concentration



MAX:

DATE:

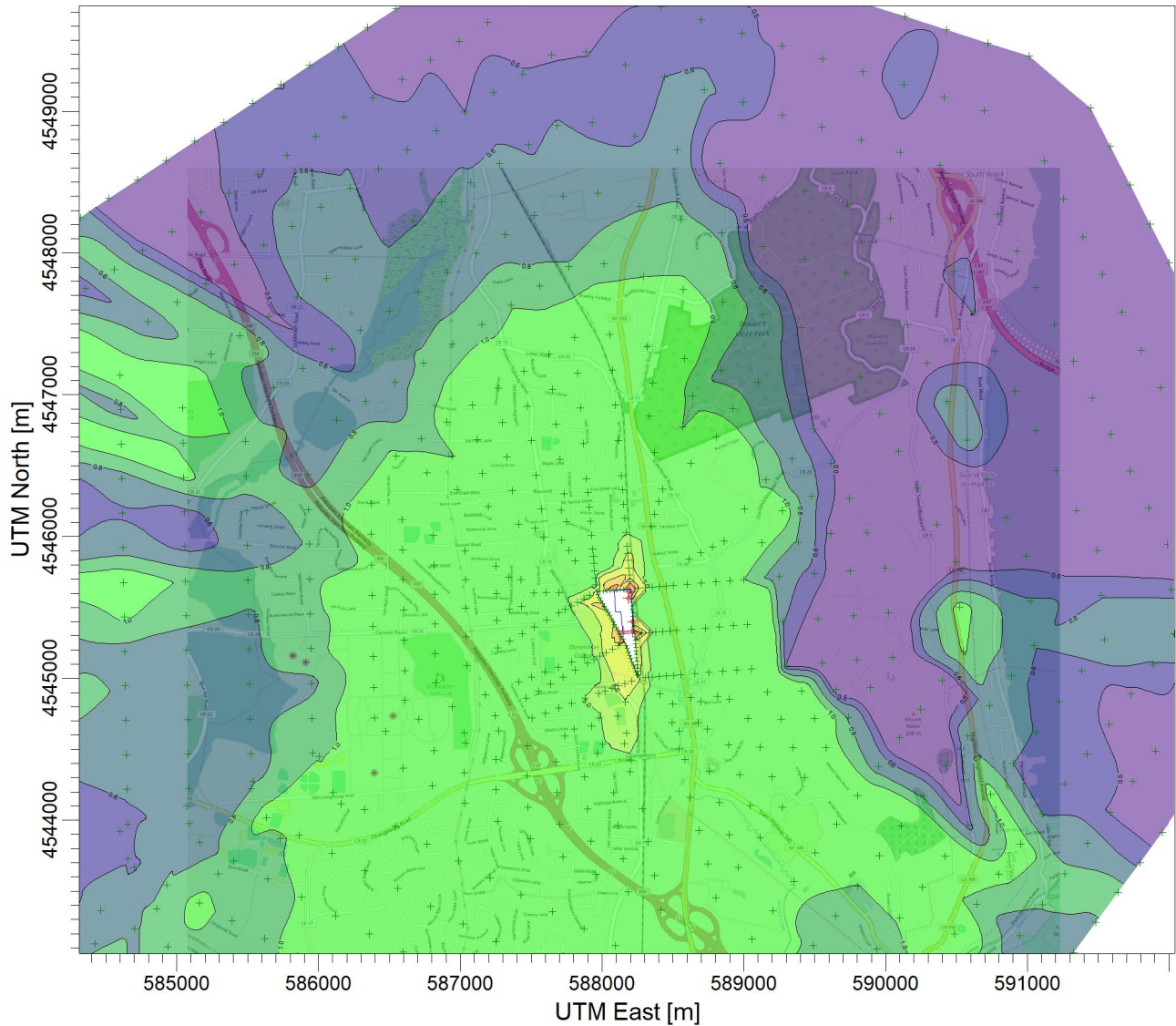
PROJECT NO.:

5.2E-02 ug/m³

9/12/2017

PROJECT TITLE:

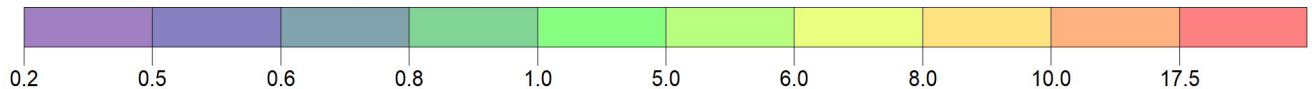
**Aluf Plastics
Ethanol**



PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: ALL

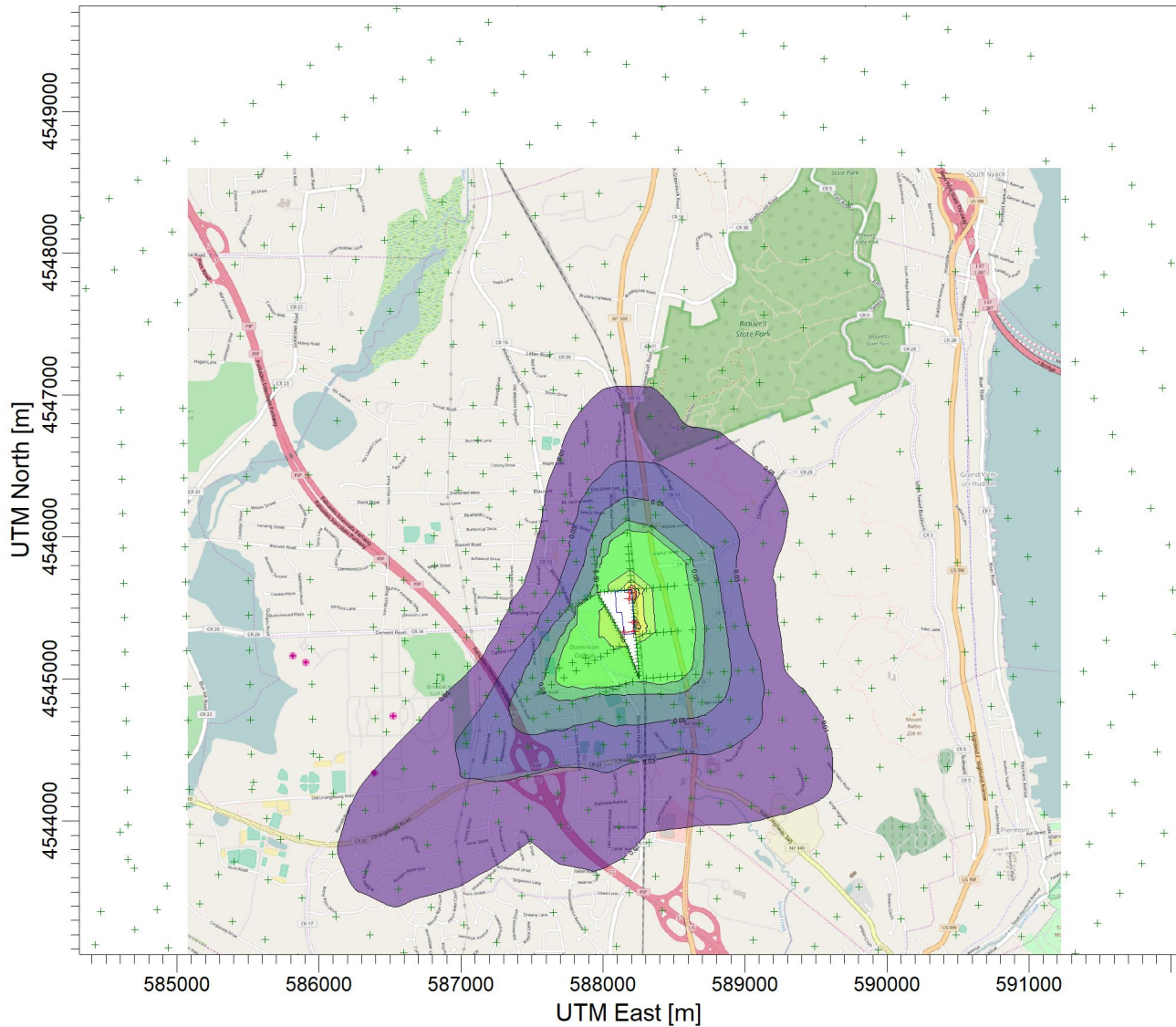
ug/m³

Max: 17.5 [ug/m³] at (588147.63, 4545276.94)



COMMENTS:	SOURCES: 5	COMPANY NAME: Aluf Plastics, Inc.	
	RECEPTORS: 869	MODELER: Miriam Hacker	
	OUTPUT TYPE: Concentration	SCALE: 1:48,620	
	MAX: 17.5 ug/m³	DATE: 9/19/2017	PROJECT NO.:

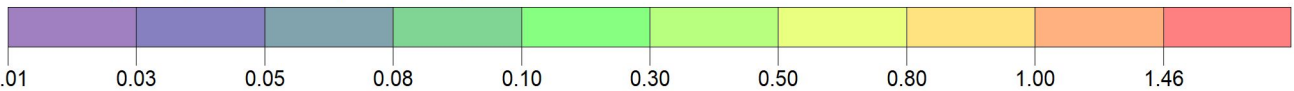
PROJECT TITLE:
Aluf Plastics
Ethanol




PLOT FILE OF ANNUAL VALUES AVERAGED ACROSS 5 YEARS FOR SOURCE GROUP: ALL

ug/m³

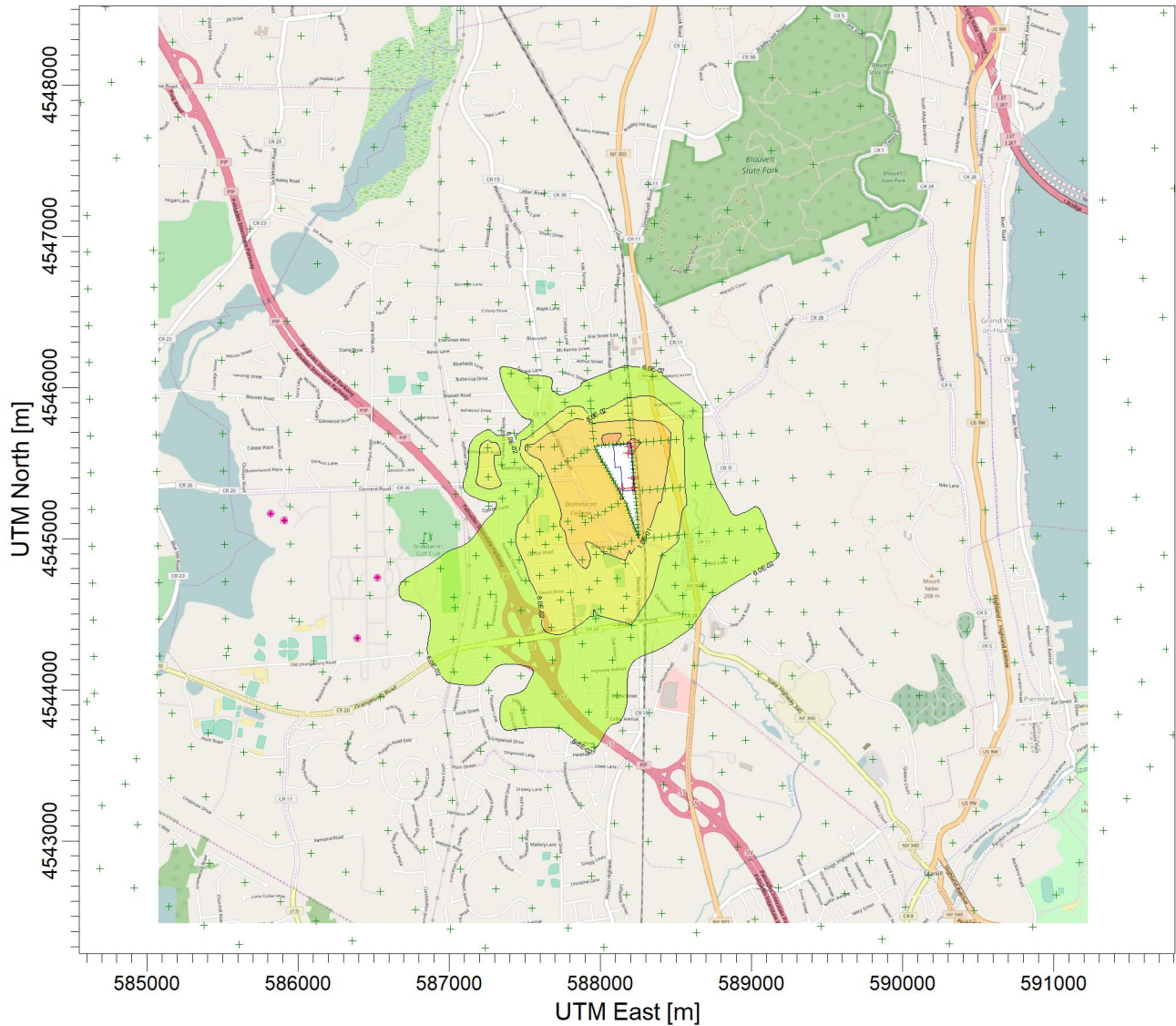
Max: 1.46 [ug/m³] at (588207.30, 4545582.82)



COMMENTS:	SOURCES: 5	COMPANY NAME: Aluf Plastics, Inc.
	RECEPTORS: 869	MODELER: Miriam Hacker
	OUTPUT TYPE: Concentration	SCALE: 1:48,619 0  1 km
	MAX: 1.46 ug/m³	DATE: 9/8/2017 PROJECT NO.:

PROJECT TITLE:

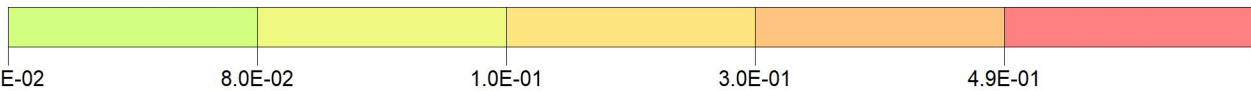
**Aluf Plastics
Formaldehyde**



PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: ALL

ug/m³

Max: 4.9E-01 [ug/m³] at (588080.36, 4545621.14)



COMMENTS:

SOURCES:

COMPANY NAME:

5

Aluf Plastics, Inc.

RECEPTORS:

MODELER:

869

Miriam Hacker

OUTPUT TYPE:

SCALE: 1:45,611

Concentration



MAX:

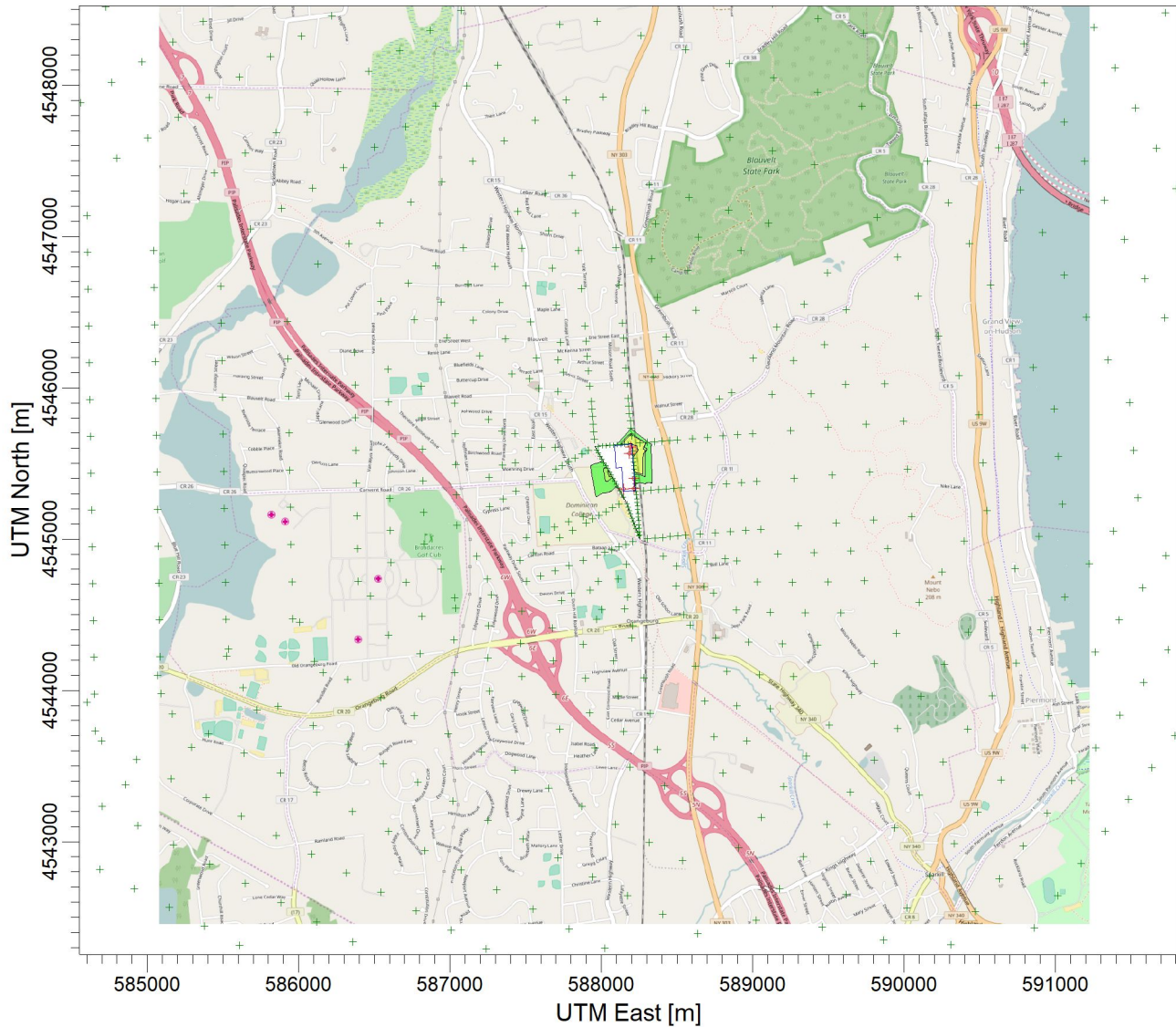
DATE:
9/8/2017

PROJECT NO.:

4.9E-01 ug/m³

PROJECT TITLE:

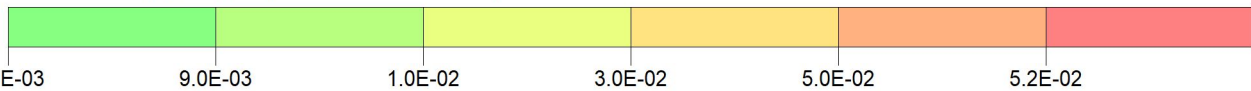
**Aluf Plastics
Formaldehyde**



PLOT FILE OF ANNUAL VALUES AVERAGED ACROSS 5 YEARS FOR SOURCE GROUP: ALL

ug/m³

Max: 5.2E-02 [ug/m³] at (588207.30, 4545582.82)



COMMENTS:

SOURCES:

COMPANY NAME:

5

Aluf Plastics, Inc.

RECEPTORS:

MODELER:

869

Miriam Hacker

OUTPUT TYPE:

SCALE: 1:45,612

Concentration



MAX:

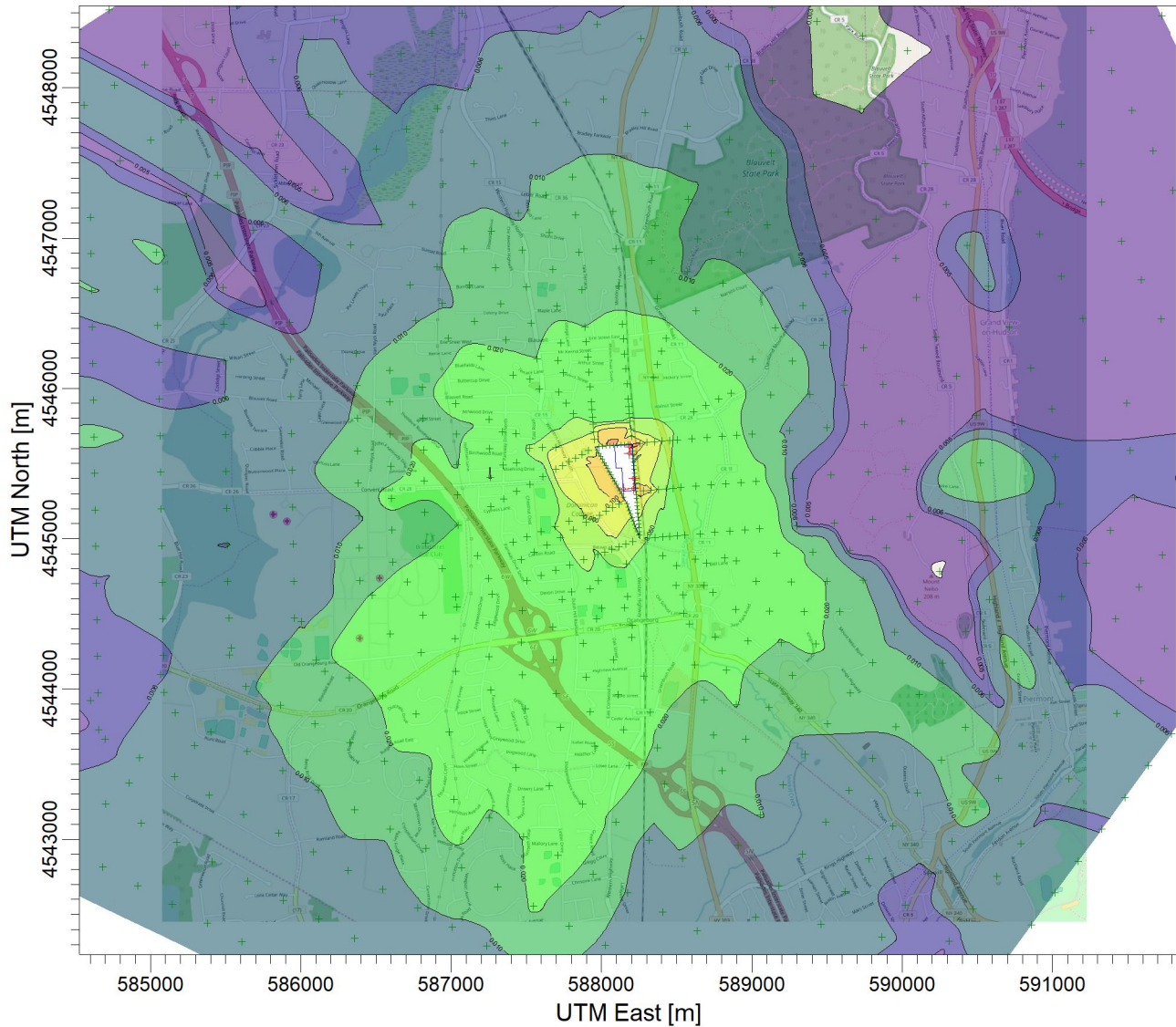
DATE:
9/12/2017

PROJECT NO.:

5.2E-02 ug/m³

PROJECT TITLE:

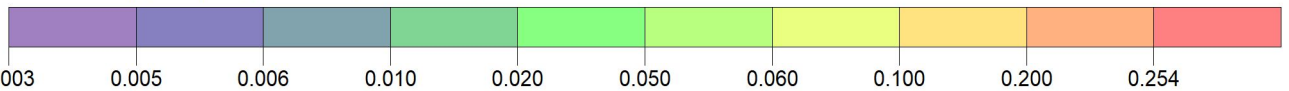
**Aluf Plastics
Hexanaldehyde**



PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: ALL

ug/m³

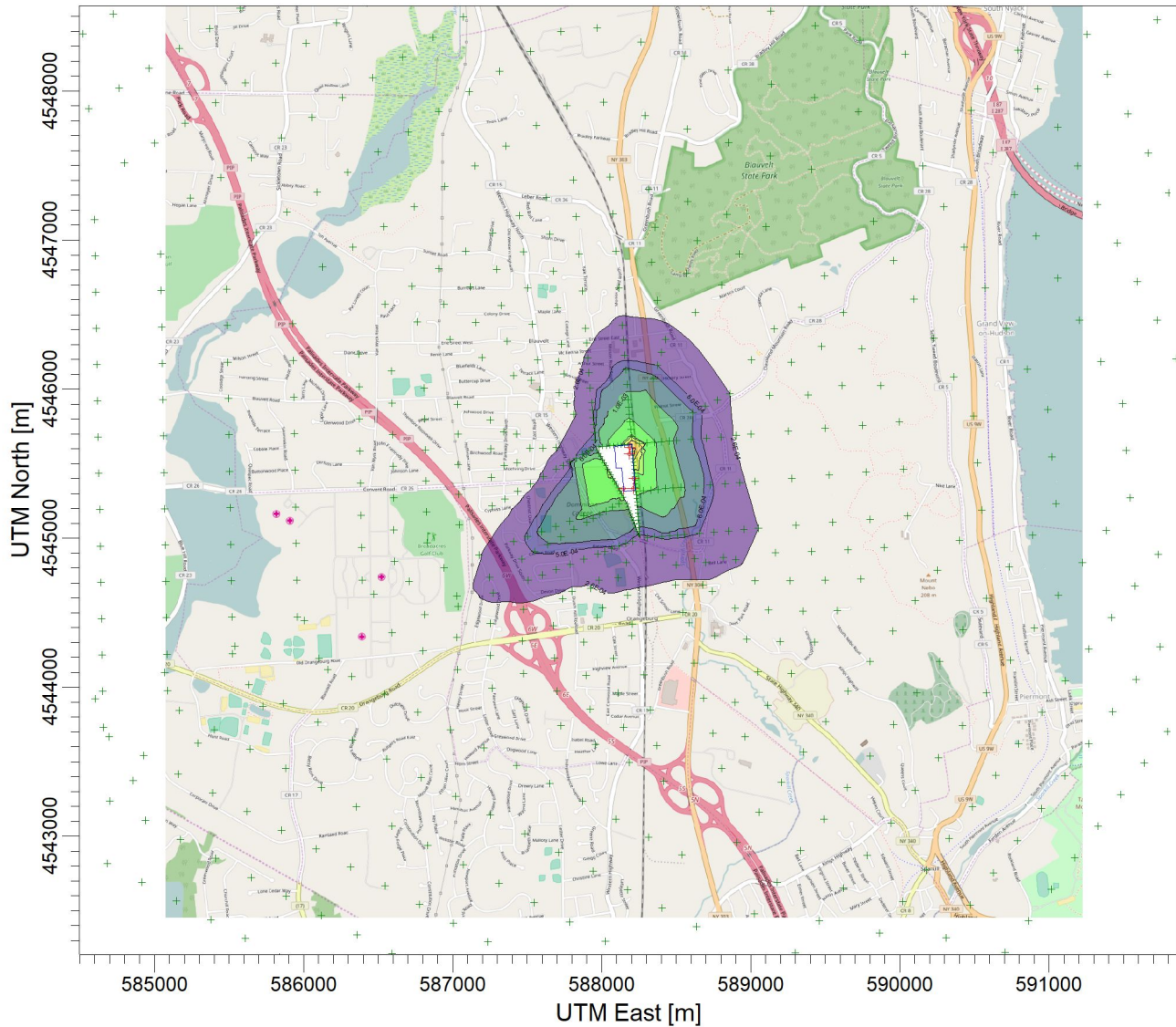
Max: 0.254 [ug/m³] at (588080.36, 4545621.14)



COMMENTS:	SOURCES: 5	COMPANY NAME: Aluf Plastics, Inc.	
	RECEPTORS: 869	MODELER: Miriam Hacker	
	OUTPUT TYPE: Concentration	SCALE: 1:45,912	
	MAX: 0.254 ug/m³	DATE: 9/8/2017	PROJECT NO.:

PROJECT TITLE:

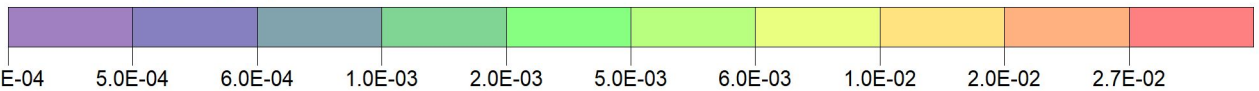
**Aluf Plastics
Hexanaldehyde**



PLOT FILE OF ANNUAL VALUES AVERAGED ACROSS 5 YEARS FOR SOURCE GROUP: ALL

ug/m³

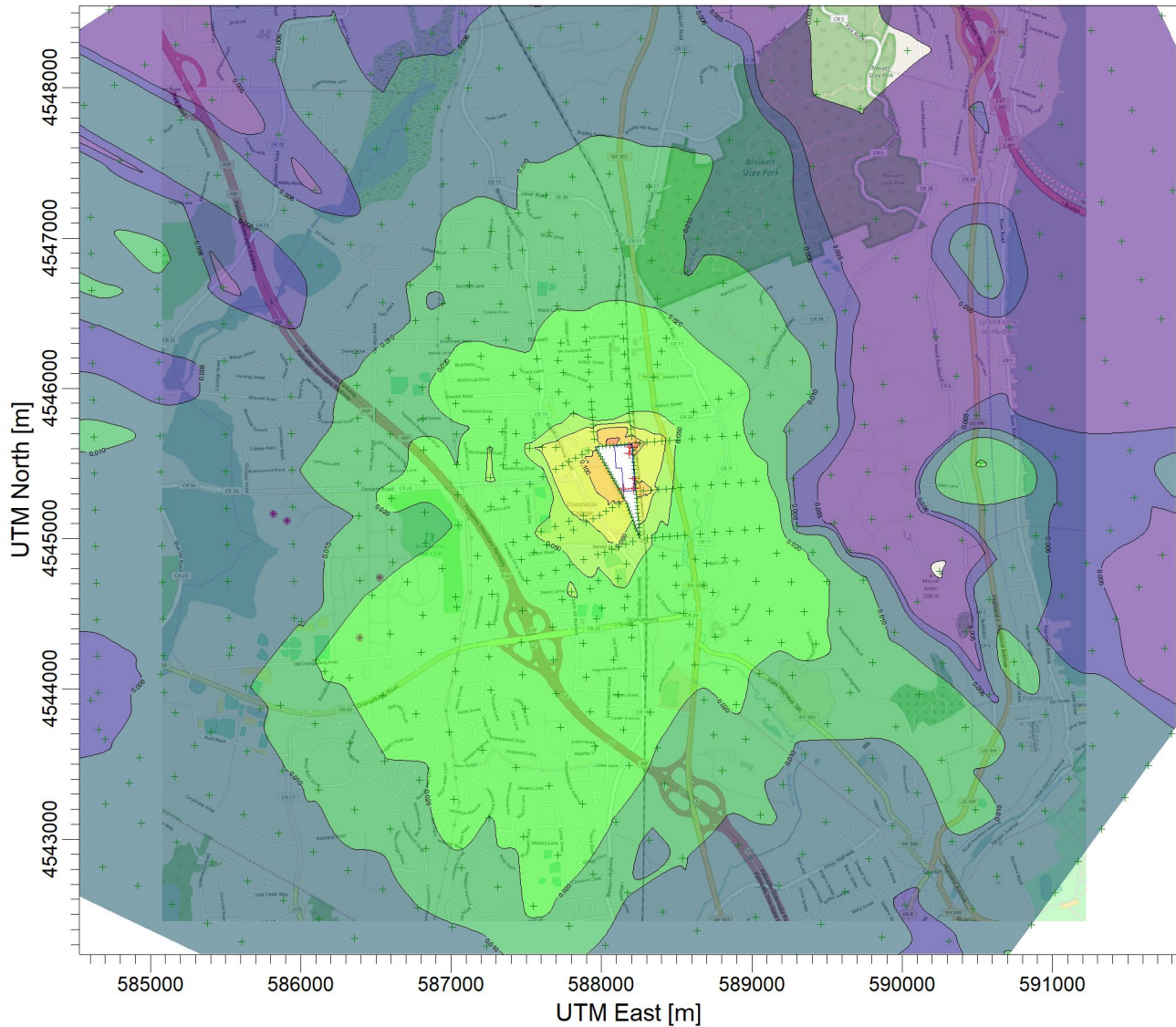
Max: 2.7E-02 [ug/m³] at (588207.30, 4545582.82)



COMMENTS:	SOURCES: 5	COMPANY NAME: Aluf Plastics, Inc.	
	RECEPTORS: 869	MODELER: Miriam Hacker	
	OUTPUT TYPE: Concentration	SCALE: 1:46,301	
	MAX: 2.7E-02 ug/m³	DATE: 9/12/2017	PROJECT NO.:

PROJECT TITLE:

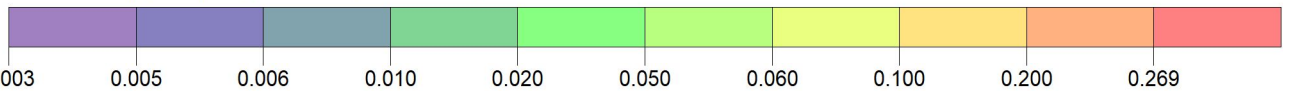
**Aluf Plastics
Isovaleraldehyde**



PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: ALL

ug/m³

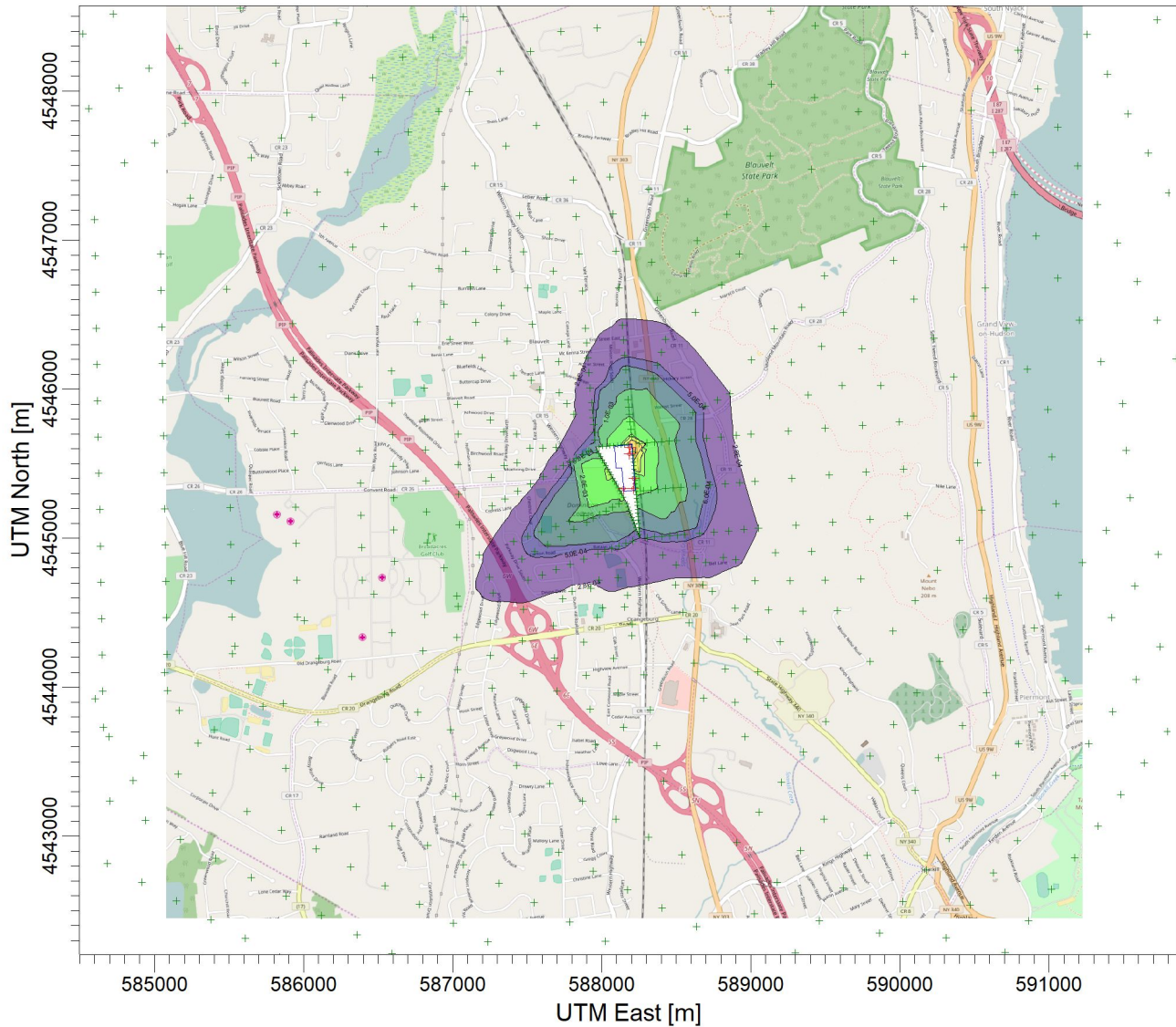
Max: 0.269 [ug/m³] at (588080.36, 4545621.14)



COMMENTS:	SOURCES: 5	COMPANY NAME: Aluf Plastics, Inc.	
	RECEPTORS: 869	MODELER: Miriam Hacker	
	OUTPUT TYPE: Concentration	SCALE: 1:45,912	
	MAX: 0.269 ug/m³	DATE: 9/8/2017	PROJECT NO.:

PROJECT TITLE:

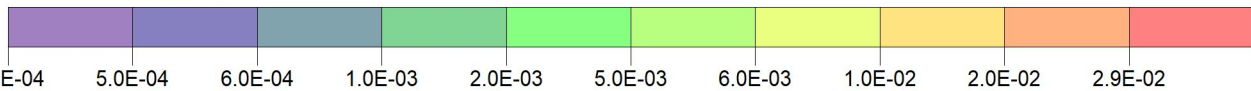
**Aluf Plastics
Isovaleraldehyde**



PLOT FILE OF ANNUAL VALUES AVERAGED ACROSS 5 YEARS FOR SOURCE GROUP: ALL

ug/m³

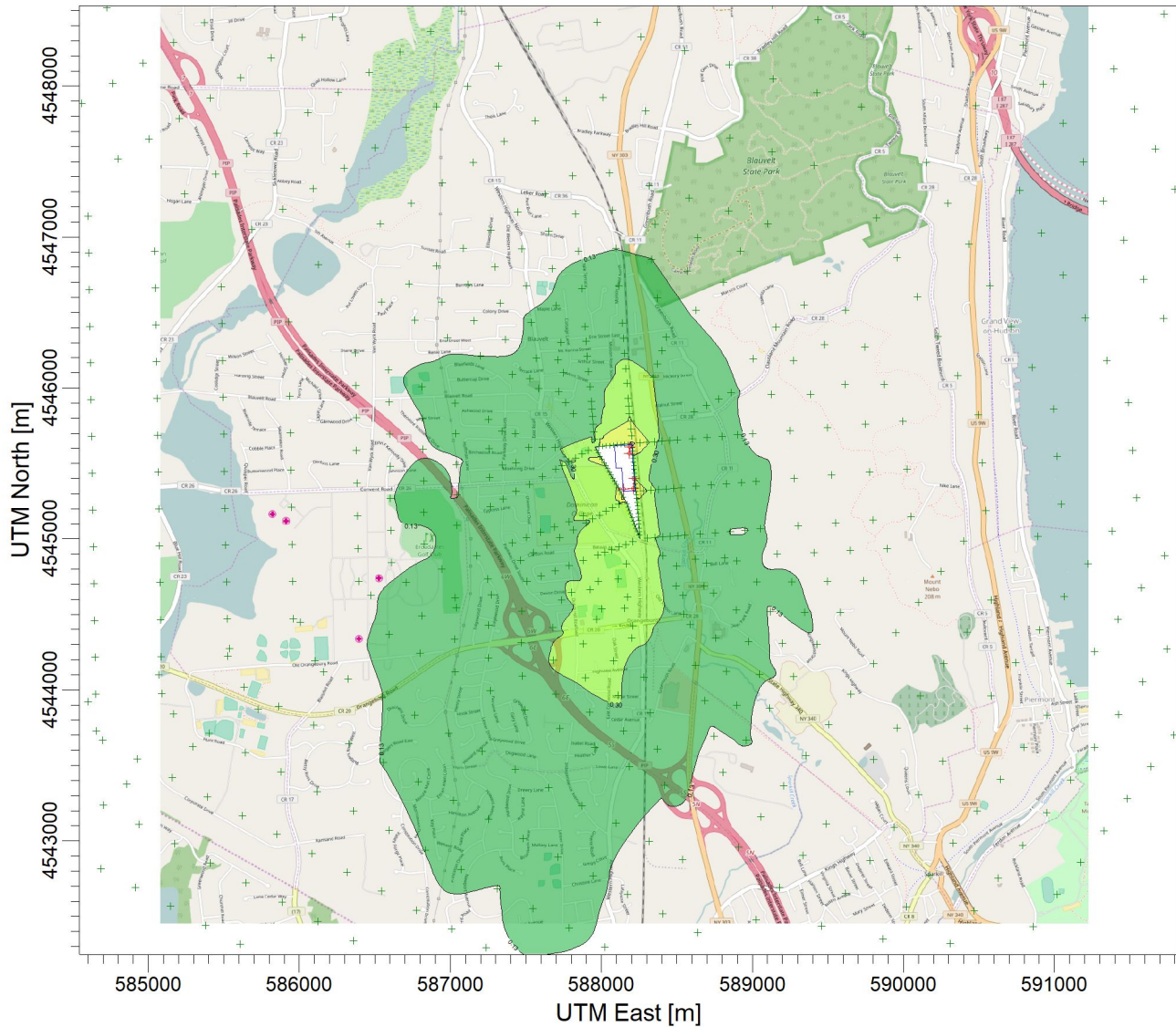
Max: 2.9E-02 [ug/m³] at (588207.30, 4545582.82)



COMMENTS:	SOURCES: 5	COMPANY NAME: Aluf Plastics, Inc.	
	RECEPTORS: 869	MODELER: Miriam Hacker	
	OUTPUT TYPE: Concentration	SCALE: 1:46,301	
	MAX: 2.9E-02 ug/m³	DATE: 9/12/2017	PROJECT NO.:

PROJECT TITLE:

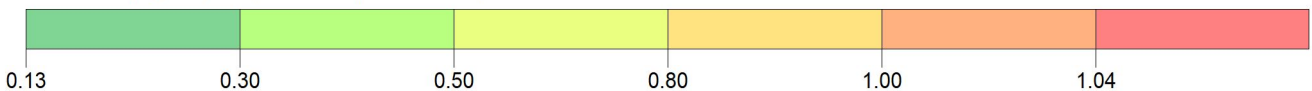
**Aluf Plastics
MethylEthylKetone**



PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: ALL

ug/m³

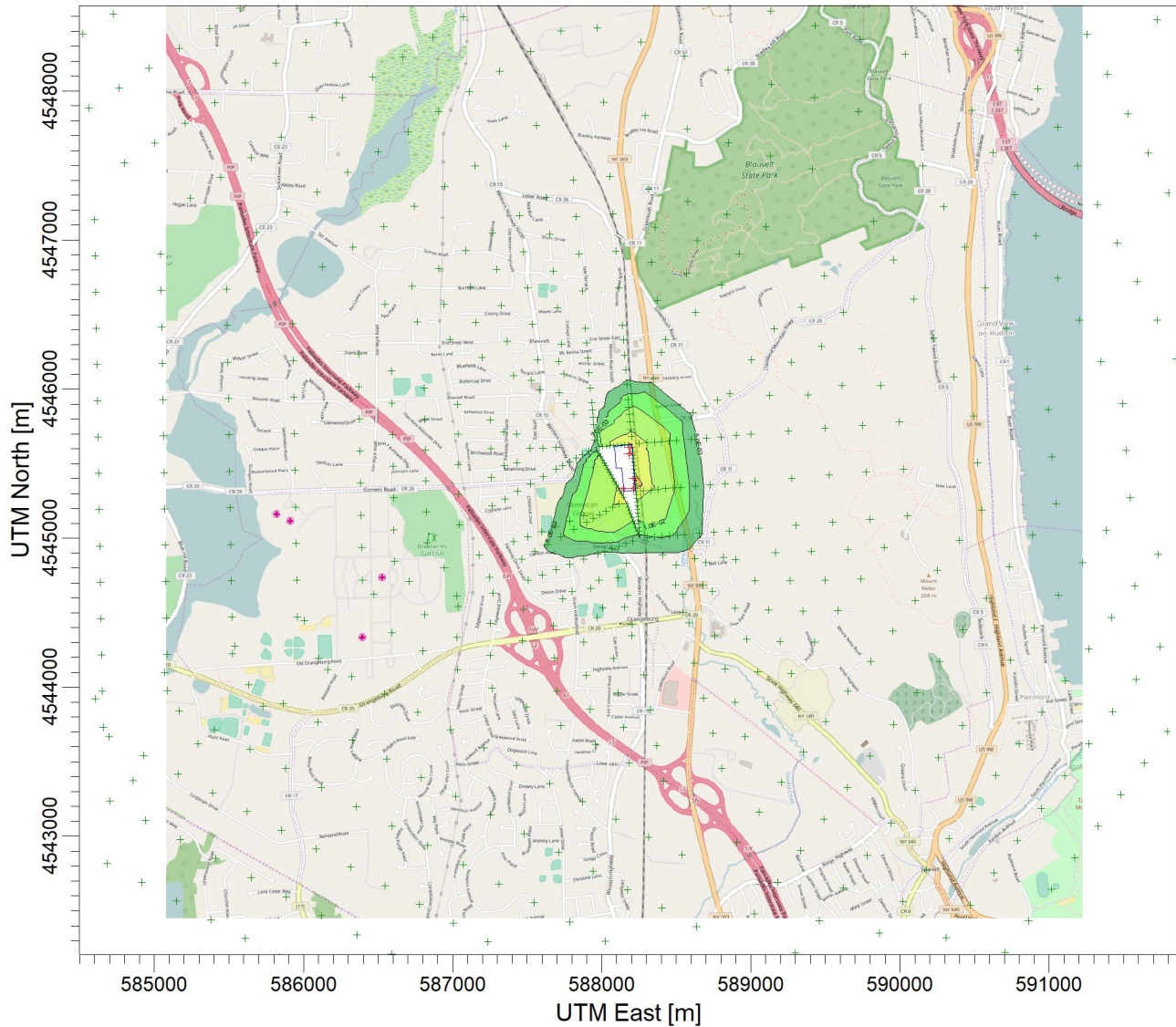
Max: 1.04 [ug/m³] at (588147.63, 4545276.94)



COMMENTS:	SOURCES: 5	COMPANY NAME: Aluf Plastics, Inc.	
	RECEPTORS: 869	MODELER: Miriam Hacker	
	OUTPUT TYPE: Concentration	SCALE: 1:45,715	
	MAX: 1.04 ug/m³	DATE: 9/8/2017	PROJECT NO.:

PROJECT TITLE:

**Aluf Plastics
MethylEthylKetone**




PLOT FILE OF ANNUAL VALUES AVERAGED ACROSS 5 YEARS FOR SOURCE GROUP: ALL

ug/m³

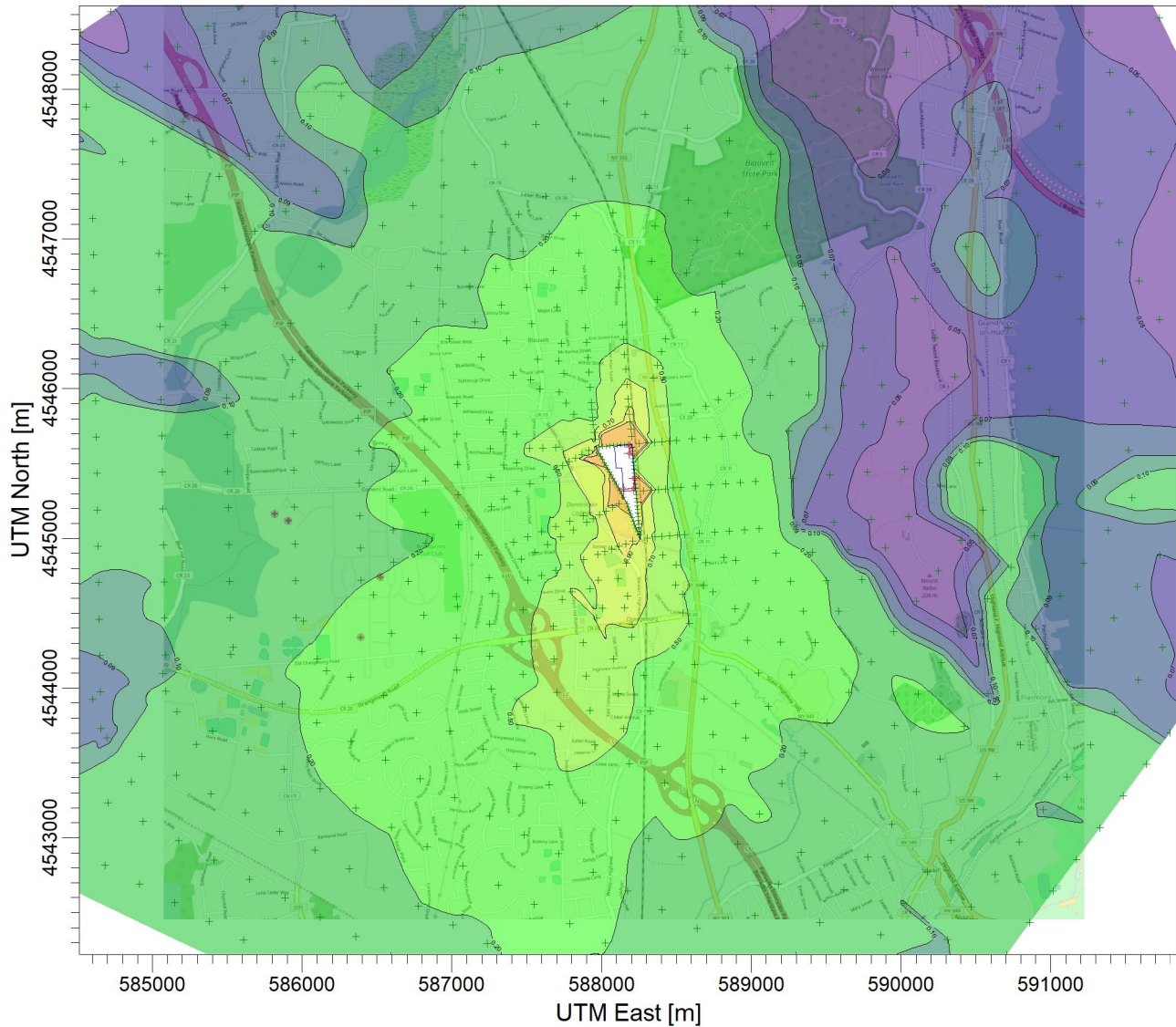
Max: 7.4E-02 [ug/m³] at (588223.35, 4545388.53)



COMMENTS:	SOURCES: 5	COMPANY NAME: Aluf Plastics, Inc.
	RECEPTORS: 869	MODELER: Miriam Hacker
	OUTPUT TYPE: Concentration	SCALE: 1:46,296 0  1 km
	MAX: 7.4E-02 ug/m³	DATE: 9/12/2017
		PROJECT NO.:

PROJECT TITLE:

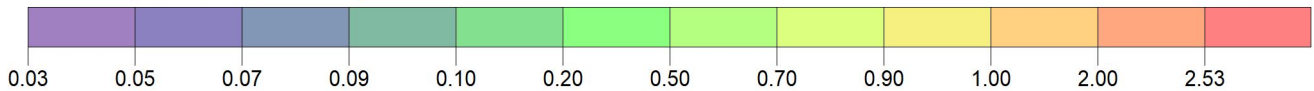
**Aluf Plastics
Pentane**



PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: ALL

ug/m³

Max: 2.53 [ug/m³] at (588147.63, 4545276.94)



COMMENTS:

SOURCES:

COMPANY NAME:

5

Aluf Plastics, Inc.

RECEPTORS:

MODELER:

869

Miriam Hacker

OUTPUT TYPE:

SCALE:

1:46,108

Concentration

0  1 km

MAX:

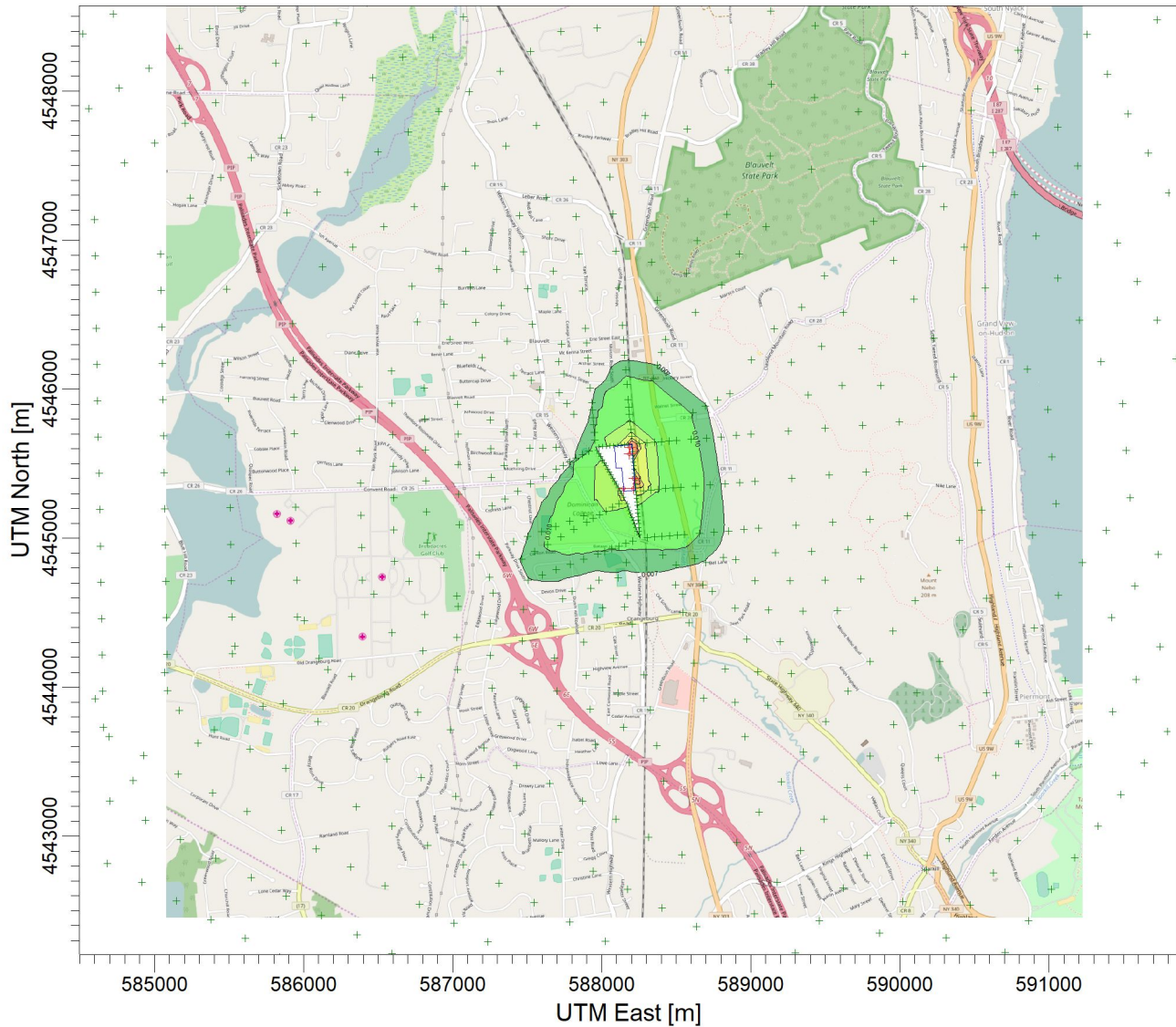
DATE:

PROJECT NO.:

2.53 ug/m³

9/8/2017

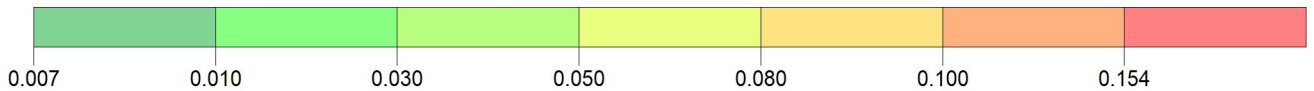
PROJECT TITLE:
Aluf Plastics
Pentane



PLOT FILE OF ANNUAL VALUES AVERAGED ACROSS 5 YEARS FOR SOURCE GROUP: ALL

ug/m³

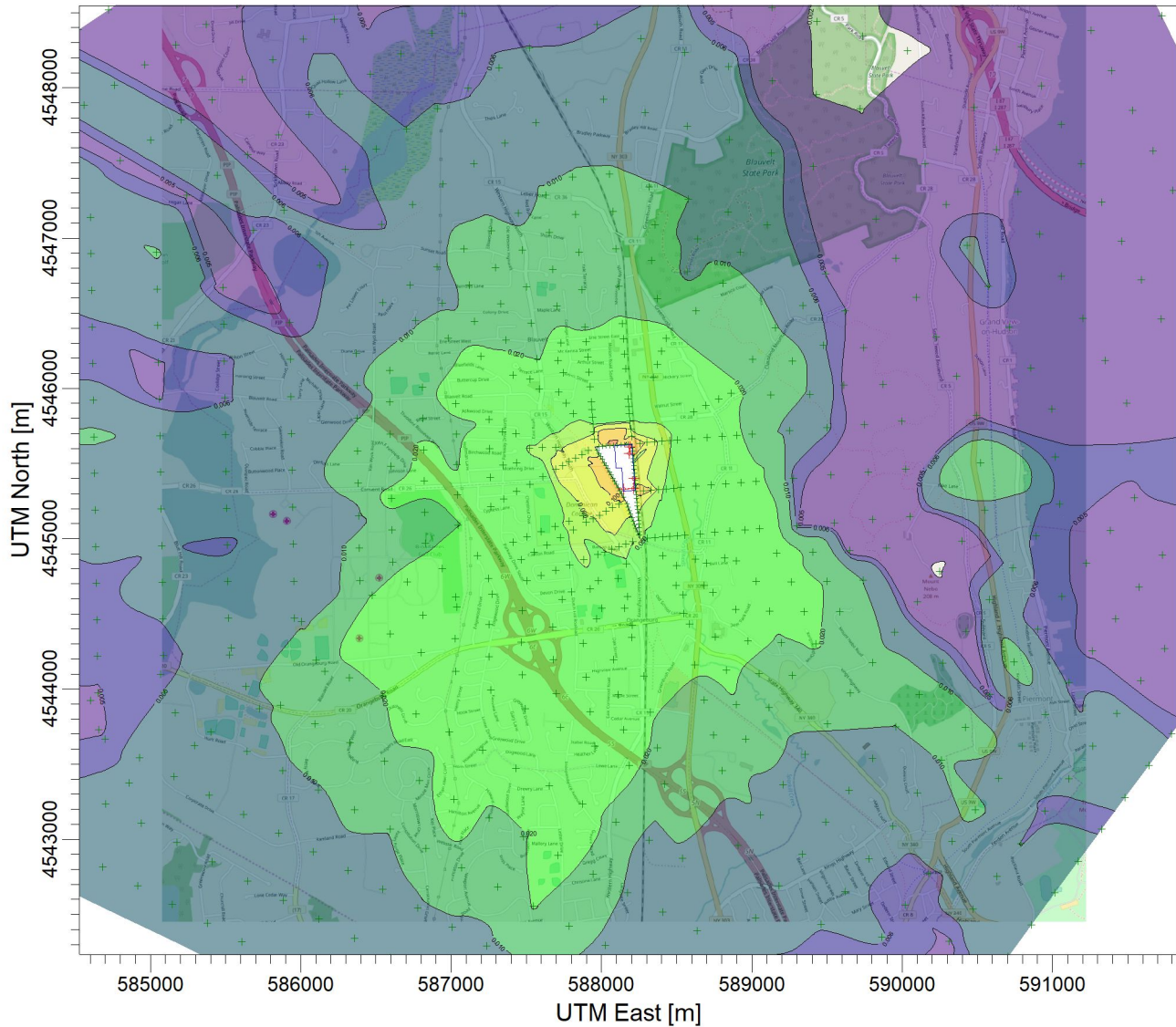
Max: 0.154 [ug/m³] at (588207.30, 4545582.82)



COMMENTS:	SOURCES: 5	COMPANY NAME: Aluf Plastics, Inc.	
	RECEPTORS: 869	MODELER: Miriam Hacker	
	OUTPUT TYPE: Concentration	SCALE: 1:46,302	
	MAX: 0.154 ug/m³	DATE: 9/12/2017	PROJECT NO.:

PROJECT TITLE:

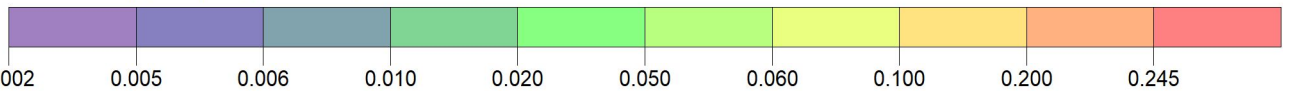
Aluf Plastics Propionaldehyde




PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: ALL

ug/m³

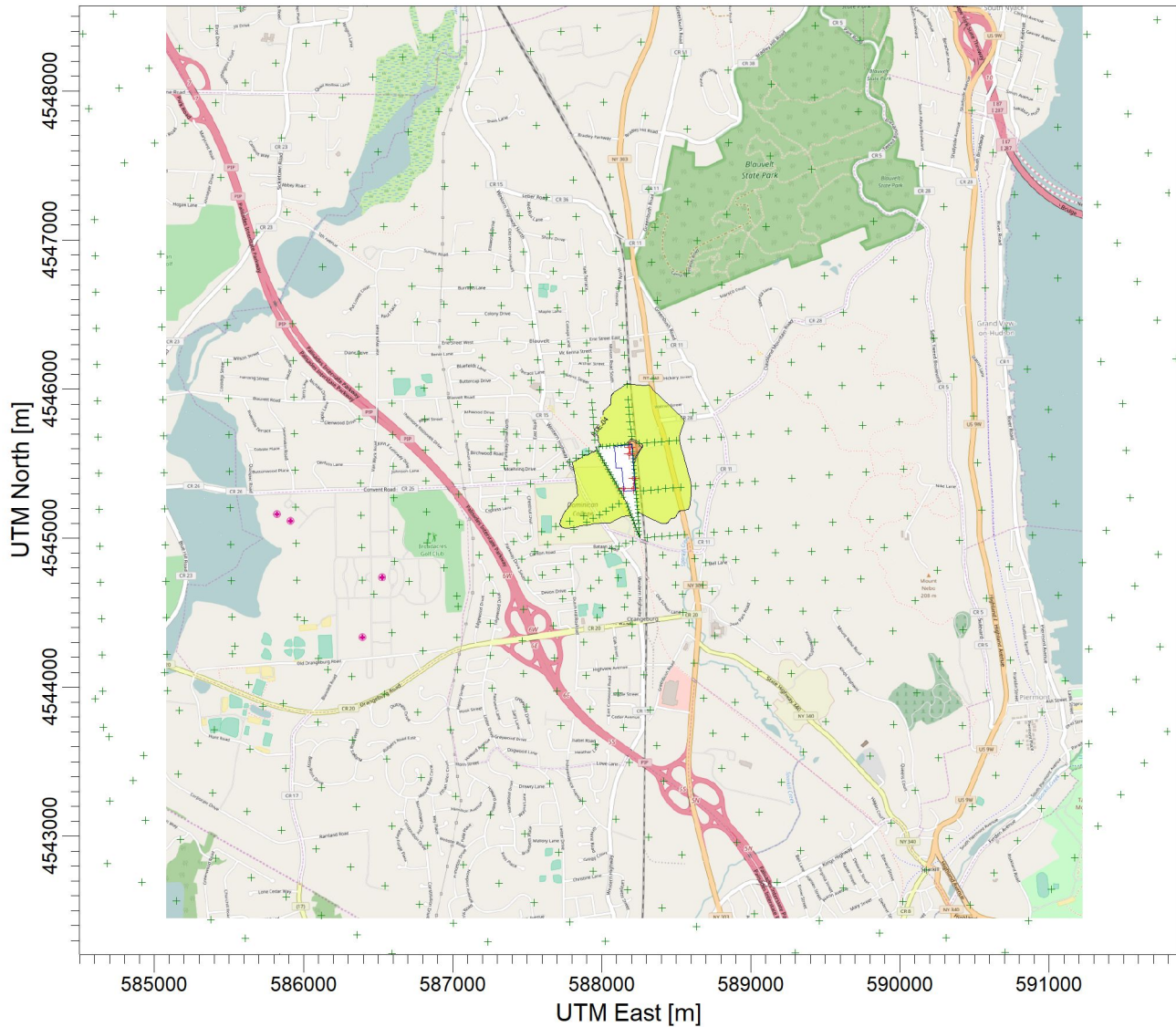
Max: 0.245 [ug/m³] at (588080.36, 4545621.14)



COMMENTS:	SOURCES: 5	COMPANY NAME: Aluf Plastics, Inc.
	RECEPTORS: 869	MODELER: Miriam Hacker
	OUTPUT TYPE: Concentration	SCALE: 1:45,910 0  1 km
	MAX: 0.245 ug/m³	DATE: 9/8/2017

PROJECT TITLE:

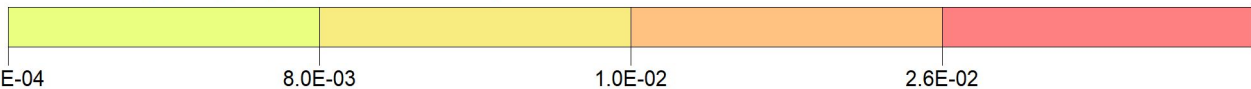
**Aluf Plastics
Propionaldehyde**



PLOT FILE OF ANNUAL VALUES AVERAGED ACROSS 5 YEARS FOR SOURCE GROUP: ALL

ug/m³

Max: 2.6E-02 [ug/m³] at (588207.30, 4545582.82)



COMMENTS:

SOURCES:

COMPANY NAME:

5

Aluf Plastics, Inc.

RECEPTORS:

MODELER:

869

Miriam Hacker

OUTPUT TYPE:

SCALE: 1:46,299

Concentration



MAX:

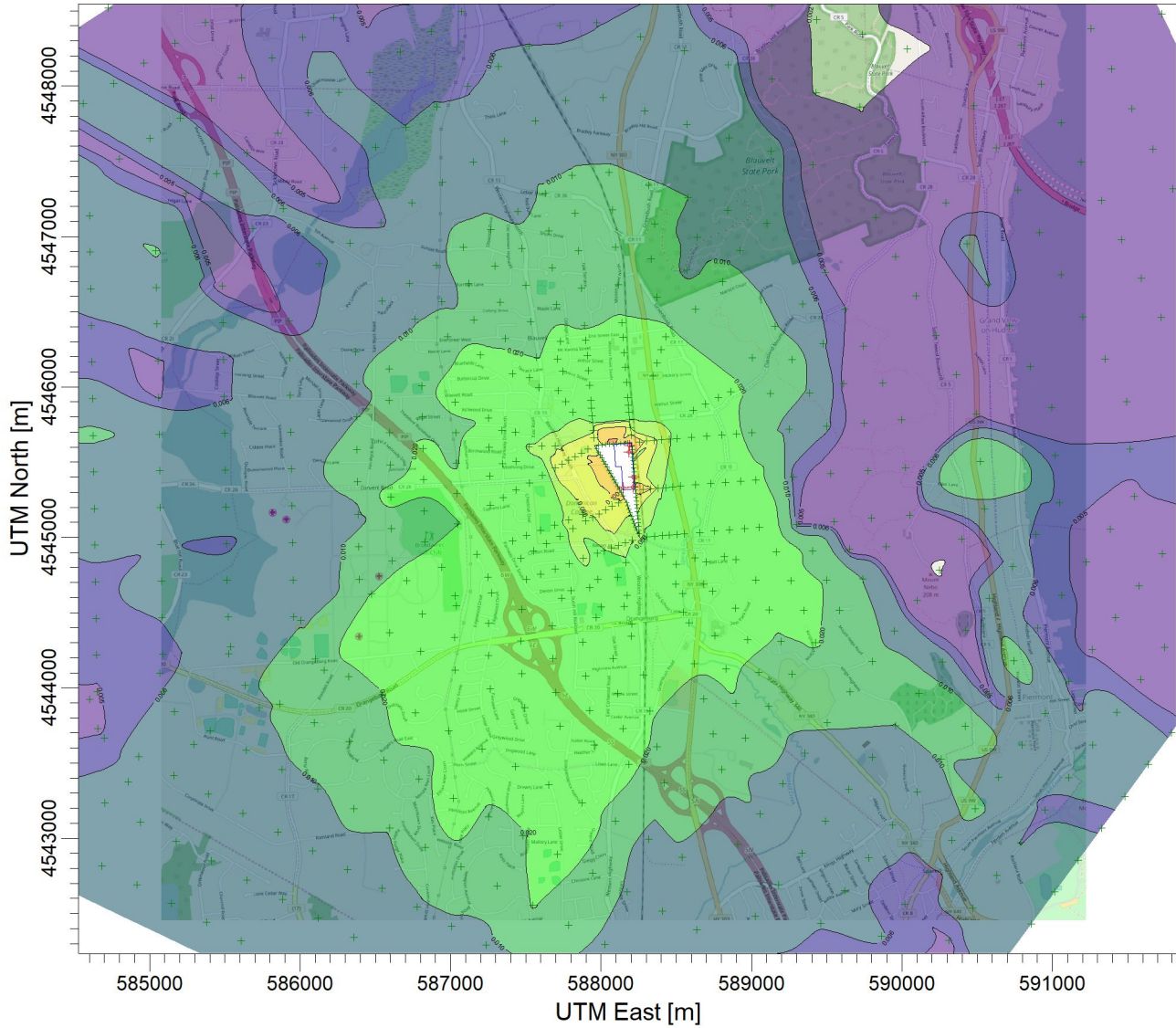
DATE:
9/12/2017

PROJECT NO.:

2.6E-02 ug/m³

PROJECT TITLE:

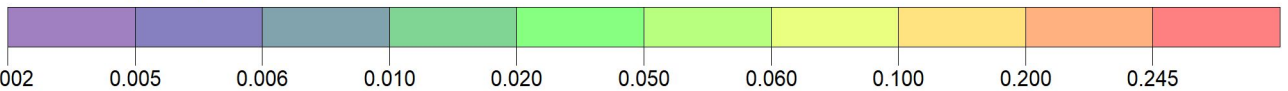
**Aluf Plastics
Valeraldehyde**



PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: ALL

ug/m³

Max: 0.245 [ug/m³] at (588080.36, 4545621.14)



COMMENTS:

SOURCES:

COMPANY NAME:

5

Aluf Plastics, Inc.

RECEPTORS:

MODELER:

869

Miriam Hacker

OUTPUT TYPE:

SCALE:

1:45,912

Concentration



MAX:

DATE:

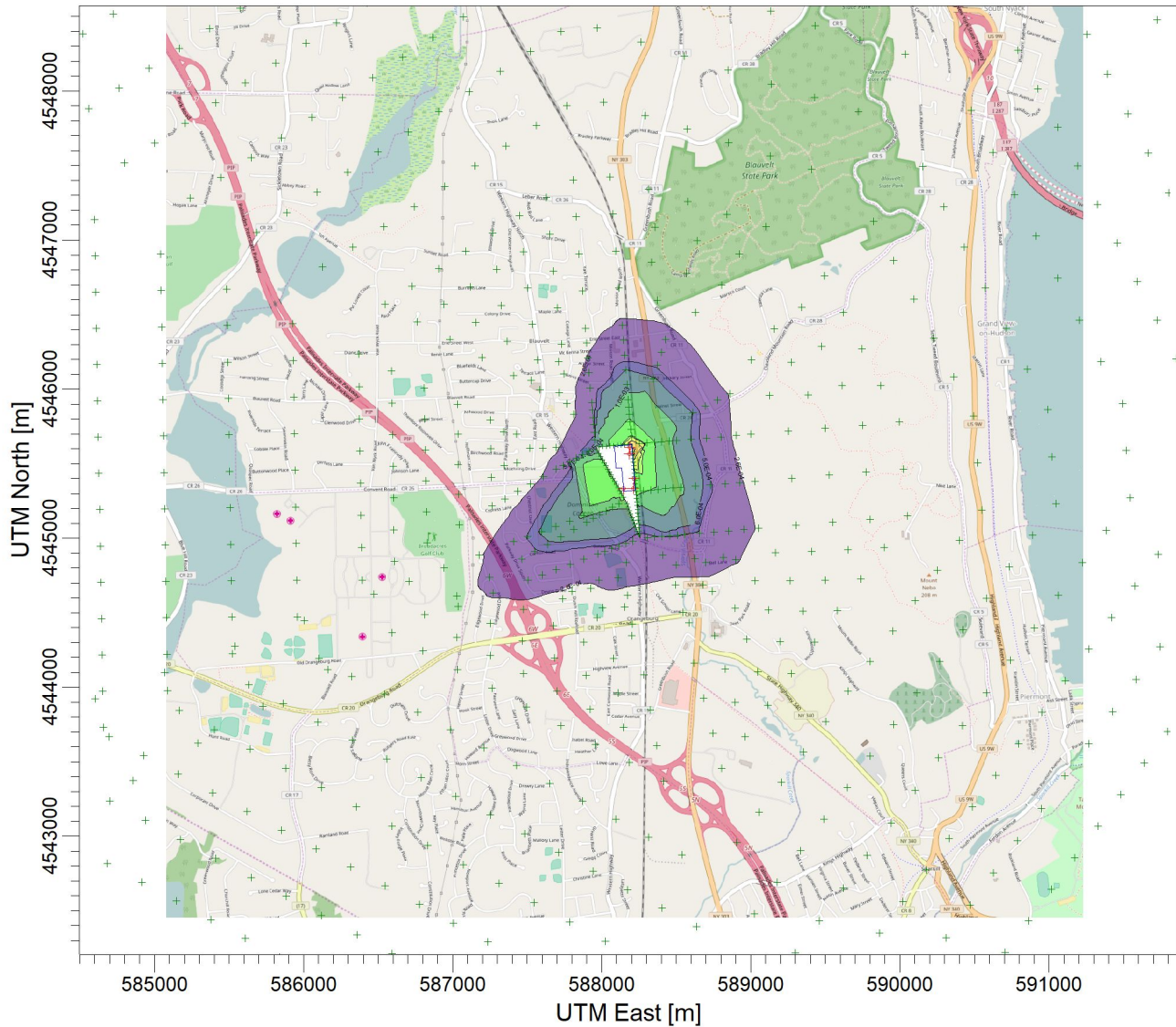
PROJECT NO.:

0.245 ug/m³

9/8/2017

PROJECT TITLE:

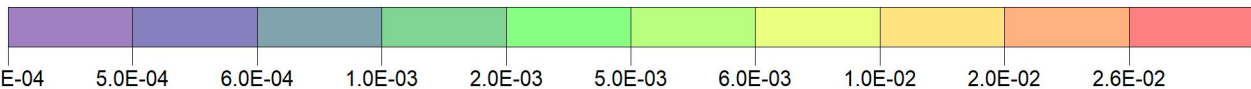
**Aluf Plastics
Valeraldehyde**



PLOT FILE OF ANNUAL VALUES AVERAGED ACROSS 5 YEARS FOR SOURCE GROUP: ALL

ug/m³

Max: 2.6E-02 [ug/m³] at (588207.30, 4545582.82)



COMMENTS:	SOURCES: 5	COMPANY NAME: Aluf Plastics, Inc.	
	RECEPTORS: 869	MODELER: Miriam Hacker	
	OUTPUT TYPE: Concentration	SCALE: 1:46,301	
	MAX: 2.6E-02 ug/m³	DATE: 9/12/2017	