



## ICR Report

ABC Coke  
900 Huntsville Ave  
Birmingham, AL 35217

Source Tested: Cooling Tower Inlet  
Test Dates: November 1 - 2, 2022

Project No. AST-2022-3417

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Prepared By  
Alliance Technical Group, LLC  
516 Galloway Circle  
Alabaster, AL 35007

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**Regulatory Information**

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*FRS No.* 110040890925  
*Permit No.* Jefferson County Department of Health (JCDH) Permit No. 4-07-0001-05

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**Source Information**

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<i>Source Name</i>	<i>Source ID</i>	<i>Target Parameters</i>
Coke By-Product Recovery Plant Cooling Tower Inlet	005	THC, BTEX, H <sub>2</sub> S, COS, CS <sub>2</sub>

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**Contact Information**

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<i>Test Location</i>	<i>Test Company</i>	<i>Analytical Laboratory</i>
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Alliance Technical Group, LLC (Alliance) has completed the source testing as described in this report. Results apply only to the source(s) tested and operating condition(s) for the specific test date(s) and time(s) identified within this report. All results are intended to be considered in their entirety, and Alliance is not responsible for use of less than the complete test report without written consent. This report shall not be reproduced in full or in part without written approval from the customer.

To the best of my knowledge and abilities, all information, facts and test data are correct. Data presented in this report has been checked for completeness and is accurate, error-free and legible. Onsite testing was conducted in accordance with approved internal Standard Operating Procedures. Any deviations or problems are detailed in the relevant sections in the test report.

This report is only considered valid once an authorized representative of Alliance has signed in the space provided below; any other version is considered draft. This document was prepared in portable document format (.pdf) and contains pages as identified in the bottom footer of this document.



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**Grant Singley**  
**Alliance Technical Group, LLC**

12/08/2022

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Date

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## Introduction

## 1.0 Introduction

Alliance Technical Group, LLC (Alliance) was retained by ABC Coke to conduct information collection request (ICR) testing at the Birmingham, Alabama facility. The facility operates under Jefferson County Department of Health (JCDH) Permit No. 4-07-0001-05. Testing was conducted to determine the concentrations of total hydrocarbons (THC), benzene, toluene, ethylbenzene, and xylenes (BTEX), hydrogen sulfide (H<sub>2</sub>S), carbonyl sulfide (COS), and carbon disulfide (CS<sub>2</sub>) at the inlet of the cooling tower associated with the coke by-product recovery plant.

## 1.1 Facility Descriptions & Emission Unit and Control Unit Descriptions

ABC Coke operates in Birmingham, Alabama. The coke by-product recovery plant is designed to separate and recover coal tar derivatives (by-products) evolved from coal during the coking process of a coke oven battery. The cooling tower is part of this process and used to cool the coke oven gases.

## 1.2 Project Team

Personnel involved in this project are identified in the following table.

**Table 1-1: Project Team**

<b>Facility Personnel</b>	Abigail Dolby John Stewart
<b>JCDH Personnel</b>	Kay Parker
<b>Alliance Personnel</b>	Grant Singley Lalan Kirby Edward Rudloff

## Summary of Results

## 2.0 Summary of Results

Alliance conducted testing at the ABC Coke facility in Birmingham, Alabama on November 1-2, 2022. Testing consisted of determining the emission rates of THC, BTEX, H<sub>2</sub>S, COS, and CS<sub>2</sub> at the inlet of the cooling tower associated with the coke by-product recovery plant.

Table 2-1 on the following page provides a summary of the emission testing results. Any difference between the summary results listed in the following table and the detailed results contained in appendices is due to rounding for presentation. The samples were collected from a dry air column associated with the process water flow on the cooling tower inlet. Therefore, the sample results are considered to be on a dry basis. Due to the lack of commercially available TO-15A analysis, both accredited and unaccredited, the approach of reporting VOHAP as BTEX determined by EPA Method 18, as described in the EPA Risk and Technology Review (RTR) text in reference to testing HRSG, HNR, and Oil Condenser stacks was used. The unavailability of laboratories to conduct further analysis deems this the most comprehensive available approach and concurrent MDL THC values, along with non-detect BTEX values, indicate the lack of strippable volatile organics from this source. There were no anomalies with respect to the data collected nor did the laboratory note any issues with regards to sample analysis and the required QA/QC targets were met. Taking all this into account, the data collected is to be considered representative of the concentrations for this source.

**Table 2-1: Summary of Results**

Emissions Data								
Run Number	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6	Run 7	Average
Date	11/1/22	11/2/22	11/2/22	11/2/22	11/2/22	11/2/22	11/2/22	--
Start Time	14:00	9:20	10:38	12:02	13:17	14:24	15:37	--
Stop Time	15:00	10:20	11:44	13:02	14:17	15:24	16:37	--
CT Water Flow, gpm	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Coke Pushed, tons	41.4	62.1	0.0	103.5	41.4	74.8	100.2	60.5
Pump, psi	15	15	15	15	15	15	15	15
Ambient Air Temp, °F	71	72	74	77	77	78	77	75
Barometric Pressure, in. Hg	29.57	29.62	29.62	29.62	29.62	29.62	29.62	29.61
<b>THC, H2S, COS, CS2 Data</b>								
Total Hydrocarbons Concentration, ppmv (as C <sub>3</sub> H <sub>8</sub> )	0.58	0.37	0.50	0.51	0.51	0.41	0.51	0.49
Carbon disulfide Concentration, ppmv	--	--	--	--	<u>0.0644</u>	<u>0.0644</u>	<u>0.0644</u>	<u>0.0644</u>
Hydrogen Sulfide Concentration, ppmv	--	--	--	--	<u>0.133</u>	<u>0.133</u>	<u>0.133</u>	<u>0.133</u>
Carbonyl Sulfide Concentration, ppmv	--	--	--	--	<u>0.133</u>	<u>0.133</u>	<u>0.133</u>	<u>0.133</u>
<b>BTEX Data</b>								
Benzene Concentration, ppmv	--	<u>0.388</u>	<u>0.388</u>	<u>0.388</u>	--	--	--	<u>0.388</u>
Toluene Concentration, ppmv	--	<u>0.400</u>	<u>0.400</u>	<u>0.400</u>	--	--	--	<u>0.400</u>
Ethylbenzene Concentration, ppmv	--	<u>0.431</u>	<u>0.431</u>	<u>0.431</u>	--	--	--	<u>0.431</u>
m/p-Xylene Concentration, ppmv	--	<u>0.434</u>	<u>0.434</u>	<u>0.434</u>	--	--	--	<u>0.434</u>
o-Xylene Concentration, ppmv	--	<u>0.446</u>	<u>0.446</u>	<u>0.446</u>	--	--	--	<u>0.446</u>

Underlined value denotes that the laboratory data was reported as below the detection limit; therefore, the reportable detection limit was reported.

## Testing Methodology

### 3.0 Testing Methodology

The emission testing program was conducted in accordance with the test methods listed in Table 3-1. Method descriptions are provided below while quality assurance/quality control data is provided in Appendix D.

**Table 3-1: Source Testing Methodology**

Parameter	U.S. EPA Reference Test Methods	Notes/Remarks
THC	TCEQ Appendix P	Instrumental Analysis
BTEX	TCEQ Appendix P & TO-15	Instrumental Analysis & Canister Sampling
H <sub>2</sub> S, COS, CS <sub>2</sub>	TCEQ Appendix P & 15 (mod)	Instrumental Analysis & Canister Sampling
Gas Dilution System Certification	205	---

#### 3.1 Appendix P to the TCEQ Sampling Procedures Manual – Total Hydrocarbons

The THC concentrations were determined in accordance with Appendix P to the TCEQ Sampling Procedures Manual (appended). The gas was withdrawn at a constant sampling rate through a Teflon sample line and analyzed in real time via flame ionization detector. A total of seven test runs were performed. Three of these test runs included canisters collection and were analyzed as discussed in Section 3.2. Another three of the test runs included canisters collection and were analyzed as discussed in Section 3.3. The initial test run included instrumental THC analysis only.

#### 3.2 Appendix P to the TCEQ Sampling Procedures Manual and EPA Method TO-15– BTEX

The BTEX concentrations were determined in accordance with Appendix P to the TCEQ Sampling Procedures Manual and EPA Method TO-15. The stripped air was sampled at a constant, orifice controlled, rate through a Teflon sample line and collected in a Tedlar bag. Bags were shipped to the identified laboratory for analysis. The samples were analyzed by gas chromatograph (GC)/FID analysis.

#### 3.3 Appendix P to the TCEQ Sampling Procedures Manual and EPA Method 15 (mod)– H<sub>2</sub>S, COS, CS<sub>2</sub>

The hydrogen sulfide, carbonyl sulfide and carbon disulfide (reduced sulfur) testing was conducted in accordance with Appendix P to the TCEQ Sampling Procedures Manual and EPA Method 15 modified. The stripped air was sampled at a constant, orifice controlled, rate through a Teflon sample line and collected in a Tedlar bag. Bags were shipped to the identified laboratory for analysis. Samples were analyzed with a GC equipped with a flame photometric detector (FPD).

#### 3.4 U.S. EPA Reference Test Method 205 – Gas Dilution System Certification

A calibration gas dilution system field check was conducted in accordance with U.S. EPA Reference Method 205. Multiple dilution rates and total gas flow rates were utilized to force the dilution system to perform two dilutions on each mass flow controller. The diluted calibration gases were sent directly to the analyzer, and the analyzer response recorded in an electronic field data sheet. The analyzer response agreed within 2% of the actual diluted gas concentration. A second Protocol 1 calibration gas, with a cylinder concentration within 10% of one of the gas divider settings described above, was introduced directly to the analyzer, and the analyzer response recorded in an electronic field data sheet. The cylinder concentration and the analyzer response agreed within 2%. These steps

were repeated three (3) times. Copies of the Method 205 data can be found in the Quality Assurance/Quality Control Appendix.

## Appendix A

**Location** ABC Coke-Tarrant, AL

**Source** Cooling Tower

**Project No.** 2022-3417

Run Number		Run 1	Run 2	Run 3	Run 4	Run 5	Run 6	Run 7	Average
Date		11/1/22	11/2/22	11/2/22	11/2/22	11/2/22	11/2/22	11/2/22	--
Start Time		14:00	9:20	10:38	12:02	13:17	14:24	15:37	--
Stop Time		15:00	10:20	11:44	13:02	14:17	15:24	16:37	--
<b>Source Data</b>									
Zero Air Background VOC, ppmvw	C <sub>THCw</sub>	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Zero Water Background VOC, ppmvw	C <sub>THCw</sub>	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7
Column Water Flow, ccm	WF	125	125	125	125	125	125	125	125
Column Air Flow, lpm	AF	2.5	2.5	2.5	2.5	2.5	2.5	2.5	3
Average Column Temperature, °F	T	74.56	71.64	75.80	79.43	78.35	78.34	77.57	76.53
<b>Calculated Data - Outlet</b>									
THC (as C3H8) Concentration, ppmv	C <sub>THCw</sub>	0.58	0.37	0.50	0.51	0.51	0.41	0.51	0.49

Location: ABC Coke-Tarrant, AL  
Source: Cooling Tower  
Project No.: 2022-3417  
Date: 11/1/22

Time Unit Status	THC - Outlet ppmv Valid
14:00	0.61
14:01	0.61
14:02	0.61
14:03	0.61
14:04	0.61
14:05	0.61
14:06	0.61
14:07	0.61
14:08	0.61
14:09	0.61
14:10	0.61
14:11	0.61
14:12	0.61
14:13	0.61
14:14	0.60
14:15	0.60
14:16	0.61
14:17	0.61
14:18	0.61
14:19	0.60
14:20	0.58
14:21	0.58
14:22	0.58
14:23	0.58
14:24	0.58
14:25	0.58
14:26	0.58
14:27	0.58
14:28	0.58
14:29	0.58
14:30	0.58
14:31	0.58
14:32	0.55
14:33	0.55
14:34	0.55
14:35	0.55
14:36	0.55
14:37	0.55
14:38	0.55
14:39	0.55
14:40	0.55
14:41	0.55
14:42	0.55
14:43	0.55
14:44	0.55
14:45	0.55
14:46	0.55
14:47	0.55
14:48	0.55
14:49	0.55
14:50	0.55
14:51	0.55
14:52	0.55
14:53	0.55
14:54	0.55
14:55	0.55
14:56	0.55
14:57	0.55
14:58	0.55
14:59	0.54

Parameter	THC - Outlet
Uncorrected Run Average ( $C_{obs}$ )	0.6
Cal Gas Concentration ( $C_{MA}$ )	10.0
Pretest System Zero Response	0.00
Posttest System Zero Response	0.00
Average Zero Response ( $C_0$ )	0.0
Pretest System Cal Response	10.00
Posttest System Cal Response	10.00
Average Cal Response ( $C_M$ )	10.0
Corrected Run Average (Corr)	NA

Location: ABC Coke-Tarrant, AL  
Source: Cooling Tower  
Project No.: 2022-3417  
Date: 11/2/22

Time Unit Status	THC - Outlet ppmv Valid
9:20	0.52
9:21	0.52
9:22	0.52
9:23	0.51
9:24	0.49
9:25	0.49
9:26	0.49
9:27	0.49
9:28	0.47
9:29	0.46
9:30	0.46
9:31	0.46
9:32	0.46
9:33	0.43
9:34	0.43
9:35	0.43
9:36	0.43
9:37	0.40
9:38	0.40
9:39	0.40
9:40	0.40
9:41	0.40
9:42	0.38
9:43	0.37
9:44	0.37
9:45	0.37
9:46	0.37
9:47	0.37
9:48	0.37
9:49	0.37
9:50	0.37
9:51	0.37
9:52	0.37
9:53	0.37
9:54	0.35
9:55	0.34
9:56	0.34
9:57	0.34
9:58	0.34
9:59	0.32
10:00	0.32
10:01	0.32
10:02	0.32
10:03	0.32
10:04	0.32
10:05	0.32
10:06	0.31
10:07	0.31
10:08	0.30
10:09	0.29
10:10	0.29
10:11	0.29
10:12	0.28
10:13	0.26
10:14	0.26
10:15	0.26
10:16	0.25
10:17	0.26
10:18	0.26
10:19	0.26

Parameter	THC - Outlet
Uncorrected Run Average ( $C_{obs}$ )	0.4
Cal Gas Concentration ( $C_{MA}$ )	10.0
Pretest System Zero Response	0.00
Posttest System Zero Response	-0.30
Average Zero Response ( $C_0$ )	-0.2
Pretest System Cal Response	10.00
Posttest System Cal Response	9.80
Average Cal Response ( $C_M$ )	9.9
Corrected Run Average (Corr)	NA

Location: ABC Coke-Tarrant, AL  
Source: Cooling Tower  
Project No.: 2022-3417  
Date: 11/2/22

Time Unit Status	THC - Outlet ppmv Valid
10:38	0.55
10:39	0.55
10:40	0.55
10:41	0.55
10:42	0.55
10:43	0.55
10:44	0.55
10:45	0.55
10:46	0.55
10:47	0.55
10:48	0.55
10:49	0.55
10:50	0.55
10:51	0.54
10:52	0.55
10:53	0.53
10:54	0.53
10:55	0.52
10:56	0.52
10:57	0.52
10:58	0.52
10:59	0.52
11:00	0.52
11:01	0.52
11:02	0.52
11:03	0.52
11:04	0.52
11:05	0.52
11:06	0.52
11:07	0.52
11:08	0.52
11:09	0.52
11:10	0.52
11:11	0.52
11:12	0.52
11:13	0.52
11:14	0.50
11:21	0.49
11:22	0.49
11:23	0.49
11:24	0.49
11:25	0.49
11:26	0.49
11:27	0.47
11:28	0.46
11:29	0.46
11:30	0.46
11:31	0.46
11:32	0.46
11:33	0.46
11:34	0.46
11:35	0.46
11:36	0.45
11:37	0.44
11:38	0.43
11:39	0.43
11:40	0.43
11:41	0.43
11:42	0.43
11:43	0.43

Parameter	THC - Outlet
Uncorrected Run Average ( $C_{obs}$ )	0.5
Cal Gas Concentration ( $C_{MA}$ )	10.0
Pretest System Zero Response	0.00
Posttest System Zero Response	-0.10
Average Zero Response ( $C_0$ )	-0.1
Pretest System Cal Response	10.00
Posttest System Cal Response	9.90
Average Cal Response ( $C_M$ )	10.0
Corrected Run Average (Corr)	NA

Location: ABC Coke-Tarrant, AL  
Source: Cooling Tower  
Project No.: 2022-3417  
Date: 11/2/22

Time Unit Status	THC - Outlet ppmv Valid
12:02	0.57
12:03	0.55
12:04	0.55
12:05	0.55
12:06	0.55
12:07	0.55
12:08	0.55
12:09	0.55
12:10	0.55
12:11	0.55
12:12	0.55
12:13	0.55
12:14	0.55
12:15	0.55
12:16	0.52
12:17	0.52
12:18	0.52
12:19	0.52
12:20	0.52
12:21	0.52
12:22	0.54
12:23	0.53
12:24	0.52
12:25	0.52
12:26	0.52
12:27	0.52
12:28	0.52
12:29	0.52
12:30	0.52
12:31	0.52
12:32	0.52
12:33	0.52
12:34	0.51
12:35	0.49
12:36	0.49
12:37	0.49
12:38	0.49
12:39	0.49
12:40	0.49
12:41	0.49
12:42	0.49
12:43	0.49
12:44	0.49
12:45	0.49
12:46	0.49
12:47	0.49
12:48	0.49
12:49	0.49
12:50	0.49
12:51	0.51
12:52	0.51
12:53	0.49
12:54	0.49
12:55	0.49
12:56	0.49
12:57	0.49
12:58	0.49
12:59	0.49
13:00	0.49
13:01	0.48

Parameter	THC - Outlet
Uncorrected Run Average ( $C_{obs}$ )	0.5
Cal Gas Concentration ( $C_{MA}$ )	10.0
Pretest System Zero Response	0.00
Posttest System Zero Response	-0.10
Average Zero Response ( $C_0$ )	-0.1
Pretest System Cal Response	10.00
Posttest System Cal Response	10.00
Average Cal Response ( $C_M$ )	10.0
Corrected Run Average (Corr)	NA

Location: ABC Coke-Tarrant, AL  
 Source: Cooling Tower  
 Project No.: 2022-3417  
 Date: 11/2/22

Time Unit Status	THC - Outlet ppmv Valid
13:17	0.55
13:18	0.55
13:19	0.55
13:20	0.55
13:21	0.55
13:22	0.55
13:23	0.55
13:24	0.55
13:25	0.55
13:26	0.55
13:27	0.53
13:28	0.52
13:29	0.52
13:30	0.52
13:31	0.52
13:32	0.52
13:33	0.52
13:34	0.53
13:35	0.52
13:36	0.52
13:37	0.52
13:38	0.52
13:39	0.52
13:40	0.52
13:41	0.52
13:42	0.52
13:43	0.52
13:44	0.52
13:45	0.52
13:46	0.52
13:47	0.52
13:48	0.52
13:49	0.51
13:50	0.49
13:51	0.51
13:52	0.50
13:53	0.49
13:54	0.49
13:55	0.49
13:56	0.49
13:57	0.49
13:58	0.49
13:59	0.49
14:00	0.49
14:01	0.49
14:02	0.49
14:03	0.49
14:04	0.49
14:05	0.49
14:06	0.49
14:07	0.47
14:08	0.47
14:09	0.46
14:10	0.46
14:11	0.46
14:12	0.46
14:13	0.46
14:14	0.46
14:15	0.46
14:16	0.46

Parameter	THC - Outlet
Uncorrected Run Average ( $C_{obs}$ )	0.5
Cal Gas Concentration ( $C_{MA}$ )	10.0
Pretest System Zero Response	0.00
Posttest System Zero Response	-0.10
Average Zero Response ( $C_0$ )	-0.1
Pretest System Cal Response	10.00
Posttest System Cal Response	10.00
Average Cal Response ( $C_M$ )	10.0
Corrected Run Average (Corr)	NA

Location: ABC Coke-Tarrant, AL  
Source: Cooling Tower  
Project No.: 2022-3417  
Date: 11/2/22

Time Unit Status	THC - Outlet ppmv Valid
14:24	0.46
14:25	0.45
14:26	0.43
14:27	0.43
14:28	0.43
14:29	0.43
14:30	0.43
14:31	0.43
14:32	0.43
14:33	0.43
14:34	0.43
14:35	0.43
14:36	0.43
14:37	0.43
14:38	0.43
14:39	0.43
14:40	0.43
14:41	0.43
14:42	0.43
14:43	0.43
14:44	0.43
14:45	0.43
14:46	0.43
14:47	0.43
14:48	0.43
14:49	0.43
14:50	0.43
14:51	0.41
14:52	0.40
14:53	0.40
14:54	0.40
14:55	0.40
14:56	0.40
14:57	0.40
14:58	0.40
14:59	0.40
15:00	0.40
15:01	0.41
15:02	0.40
15:03	0.40
15:04	0.40
15:05	0.40
15:06	0.40
15:07	0.40
15:08	0.40
15:09	0.40
15:10	0.40
15:11	0.40
15:12	0.40
15:13	0.40
15:14	0.40
15:15	0.40
15:16	0.40
15:17	0.40
15:18	0.40
15:19	0.40
15:20	0.40
15:21	0.40
15:22	0.39
15:23	0.37

Parameter	THC - Outlet
Uncorrected Run Average ( $C_{obs}$ )	0.4
Cal Gas Concentration ( $C_{MA}$ )	10.0
Pretest System Zero Response	-0.10
Posttest System Zero Response	-0.20
Average Zero Response ( $C_0$ )	-0.2
Pretest System Cal Response	10.00
Posttest System Cal Response	10.00
Average Cal Response ( $C_M$ )	10.0
Corrected Run Average (Corr)	NA

Location: ABC Coke-Tarrant, AL  
Source: Cooling Tower  
Project No.: 2022-3417  
Date: 11/2/22

Time Unit Status	THC - Outlet ppmv Valid
15:37	0.55
15:38	0.55
15:39	0.55
15:40	0.54
15:41	0.54
15:42	0.55
15:43	0.54
15:44	0.55
15:45	0.55
15:46	0.55
15:47	0.55
15:48	0.55
15:49	0.53
15:50	0.52
15:51	0.53
15:52	0.53
15:53	0.52
15:54	0.53
15:55	0.52
15:56	0.52
15:57	0.52
15:58	0.52
15:59	0.52
16:00	0.52
16:01	0.52
16:02	0.52
16:03	0.52
16:04	0.52
16:05	0.52
16:06	0.52
16:07	0.52
16:08	0.51
16:09	0.49
16:10	0.51
16:11	0.51
16:12	0.51
16:13	0.49
16:14	0.50
16:15	0.49
16:16	0.49
16:17	0.49
16:18	0.49
16:19	0.49
16:20	0.49
16:21	0.49
16:22	0.49
16:23	0.49
16:24	0.49
16:25	0.49
16:26	0.49
16:27	0.49
16:28	0.49
16:29	0.49
16:30	0.49
16:31	0.49
16:32	0.49
16:33	0.49
16:34	0.49
16:35	0.49
16:36	0.49

Parameter	THC - Outlet
Uncorrected Run Average ( $C_{obs}$ )	0.5
Cal Gas Concentration ( $C_{MA}$ )	10.0
Pretest System Zero Response	0.00
Posttest System Zero Response	0.00
Average Zero Response ( $C_0$ )	0.0
Pretest System Cal Response	10.00
Posttest System Cal Response	10.00
Average Cal Response ( $C_M$ )	10.0
Corrected Run Average (Corr)	NA

Location ABC Coke - Tarrant, AL  
Source Cooling Tower  
Project No. 2022-3417  
Parameter(s) VOHAPS, H2S, COS, CS2

Run Number	Run 1	Run 2	Run 3	Average
Date	11/2/2022	11/2/2022	11/2/2022	--
Start Time	13:17	14:24	15:37	--
Stop Time	14:17	15:24	16:37	--
<b>Emissions Calculations</b>				
Carbon disulfide Concentration, ppmv	C <sub>CS2</sub> <u>0.0644</u>	<u>0.0644</u>	<u>0.0644</u>	<u>0.0644</u>
Hydrogen Sulfide Concentration, ppmv	C <sub>H2S</sub> <u>0.133</u>	<u>0.133</u>	<u>0.133</u>	<u>0.133</u>
Carbonyl Sulfide Concentration, ppmv	C <sub>COS</sub> <u>0.133</u>	<u>0.133</u>	<u>0.133</u>	<u>0.133</u>

\*Laboratory data was reported as below detection limit; therefore, the reportable detection limit was used in emission calculations.

**Location:** ABC Coke-Tarrant, AL  
**Source:** Cooling Tower  
**Project No.:** 2022-3417

Run No.		1	2	3	Average
Date		11/2/22	11/2/22	11/2/22	--
Start Time		9:20	10:38	12:02	--
Stop Time		10:20	11:44	13:02	--
<b>Input Data</b>					
Process Water Flow, gpm	F	--	--	--	--
CWT Water Temperature, °C	T <sub>W</sub>	--	--	--	--
Ambient Air Temp, °F	T <sub>A</sub>	71.60	69.80	73.40	71.600
Barometric Pressure, in. Hg	P	30.20	30.31	30.29	30.267
<b>Calculated Data</b>					
Benzene Concentration, ppmvd	C <sub>C6H6</sub>	<u>0.388</u>	<u>0.388</u>	<u>0.388</u>	<u>0.388</u>
Toluene Concentration, ppmvd	C <sub>C7H8</sub>	<u>0.400</u>	<u>0.400</u>	<u>0.400</u>	<u>0.400</u>
Ethylbenzene Concentration, ppmvd	C <sub>C8H10</sub>	<u>0.431</u>	<u>0.431</u>	<u>0.431</u>	<u>0.431</u>
m/p-Xylene Concentration, ppmvd	C <sub>C8H10</sub>	<u>0.434</u>	<u>0.434</u>	<u>0.434</u>	<u>0.434</u>
o-Xylene Concentration, ppmvd	C <sub>C8H10</sub>	<u>0.446</u>	<u>0.446</u>	<u>0.446</u>	<u>0.446</u>

\*Laboratory data was reported as below detection limit; therefore, the reportable detection limit was used in emission calculations.

<b>Date:</b>	<b>11/1/2022</b>	<b>2022-3417 ABC Coke Cooling Tower Inlet Run 1</b>	
<b>Time:</b>	<b>Water Flow - CCM</b>	<b>Air Flow - LPM</b>	<b>Temperature - F</b>
1400	125	2.5	75.2
1402	125	2.5	74.6
1404	125	2.5	74.5
1406	125	2.5	74.5
1408	125	2.5	74.5
1410	125	2.5	74.6
1412	125	2.5	74.5
1414	125	2.5	74.5
1416	125	2.5	74.7
1418	125	2.5	74.7
1420	125	2.5	74.7
1422	125	2.5	74.6
1424	125	2.5	74.7
1426	125	2.5	74.7
1428	125	2.5	74.7
1430	125	2.5	75.0
1432	125	2.5	75.0
1434	125	2.5	74.7
1436	125	2.5	74.6
1438	125	2.5	74.4
1440	125	2.5	74.4
1442	125	2.5	74.4
1444	125	2.5	74.4
1446	125	2.5	74.5
1448	125	2.5	74.5
1450	125	2.5	74.5
1452	125	2.5	74.4
1454	125	2.5	74.2
1456	125	2.5	74.3
1458	125	2.5	74.3
1500	125	2.5	74.3

<b>Date:</b>	<b>11/2/2022</b>	<b>2022-3417 ABC Coke Cooling Tower Inlet Run 2</b>	
<b>Time:</b>	<b>Water Flow - CCM</b>	<b>Air Flow - LPM</b>	<b>Temperature - F</b>
920	125	2.5	70.2
922	125	2.5	70.2
924	125	2.5	70.2
926	125	2.5	70.5
928	125	2.5	70.5
930	125	2.5	70.6
932	125	2.5	70.6
934	125	2.5	70.7
936	125	2.5	70.7
938	125	2.5	70.8
940	125	2.5	70.8
942	125	2.5	71.4
944	125	2.5	71.5
946	125	2.5	71.6
948	125	2.5	71.7
950	125	2.5	71.8
952	125	2.5	71.9
954	125	2.5	72.1
956	125	2.5	72.1
958	125	2.5	72.1
1000	125	2.5	72.1
1002	125	2.5	72.2
1004	125	2.5	72.3
1006	125	2.5	72.3
1008	125	2.5	72.4
1010	125	2.5	72.5
1012	125	2.5	72.9
1014	125	2.5	73.2
1016	125	2.5	73.2
1018	125	2.5	73
1020	125	2.5	73

<b>Date:</b>	<b>11/2/2022</b>	<b>2022-3417 ABC Coke Cooling Tower Inlet Run 3</b>		
<b>Time:</b>	<b>Water Flow - CCM</b>	<b>Air Flow - LPM</b>	<b>Temperature - F</b>	
1038	125	2.5	73.5	
1040	125	2.5	73.7	
1042	125	2.5	73.8	
1044	125	2.5	74	
1046	125	2.5	74.1	
1048	125	2.5	74.3	
1050	125	2.5	74.3	
1052	125	2.5	74.5	
1054	125	2.5	74.7	
1056	125	2.5	75.3	
1058	125	2.5	75.4	
1100	125	2.5	75.3	
1102	125	2.5	75.3	
1104	125	2.5	75.7	
1106	125	2.5	75.9	
1108	125	2.5	75.9	
1110	125	2.5	76	
1112	125	2.5	76.2	
1114	125	2.5	76.4	
1116	125	2.5	76.4	
1118	125	2.5	76.3	Paused 1118
1120	125	2.5	77.3	Strart 1121
1122	125	2.5	77.3	
1124	125	2.5	77.4	
1126	125	2.5	77.3	
1128	125	2.5	77.2	
1130	125	2.5	77	
1132	125	2.5	77.3	
1134	125	2.5	77.3	
1136	125	2.5	77.4	
1138	125	2.5	77.5	

<b>Date:</b>	<b>11/2/2022</b>	<b>2022-3417 ABC Coke Cooling Tower Inlet Run 4</b>	
<b>Time:</b>	<b>Water Flow - CCM</b>	<b>Air Flow - LPM</b>	<b>Temperature - F</b>
1202	125	2.5	78.3
1204	125	2.5	78.3
1206	125	2.5	78.3
1208	125	2.5	78.4
1210	125	2.5	78.6
1212	125	2.5	78.8
1214	125	2.5	78.5
1216	125	2.5	78.9
1218	125	2.5	79
1220	125	2.5	79
1222	125	2.5	78.9
1224	125	2.5	78.9
1226	125	2.5	79
1228	125	2.5	79.1
1230	125	2.5	79.1
1232	125	2.5	79.4
1234	125	2.5	79.4
1236	125	2.5	79.6
1238	125	2.5	79.8
1240	125	2.5	80.2
1242	125	2.5	80.3
1244	125	2.5	80
1246	125	2.5	80
1248	125	2.5	80
1250	125	2.5	80.1
1252	125	2.5	80.4
1254	125	2.5	80.2
1256	125	2.5	80.4
1258	125	2.5	80.3
1300	125	2.5	80.4
1302	125	2.5	80.7

<b>Date:</b>	<b>11/2/2022</b>	<b>2022-3417 ABC Coke Cooling Tower Inlet Run 5</b>	
<b>Time:</b>	<b>Water Flow - CCM</b>	<b>Air Flow - LPM</b>	<b>Temperature - F</b>
1317	125	2.5	80.9
1319	125	2.5	80.9
1321	125	2.5	80.9
1323	125	2.5	80.9
1325	125	2.5	80.4
1327	125	2.5	80.4
1329	125	2.5	80.2
1331	125	2.5	79.8
1333	115	2.5	79.7
1335	125	2.5	79.4
1337	125	2.5	79.4
1339	125	2.5	79.1
1341	125	2.5	79.1
1343	125	2.5	78.6
1345	130	2.5	78.3
1347	125	2.5	78.2
1349	125	2.5	77.8
1351	125	2.5	77.6
1353	125	2.5	77.4
1355	125	2.5	77.4
1357	125	2.5	77.1
1359	125	2.5	77
1401	125	2.5	76.8
1403	125	2.5	76.7
1405	125	2.5	76.6
1407	125	2.5	76.4
1409	125	2.5	76.3
1411	125	2.5	76.4
1413	125	2.5	76.5
1415	125	2.5	76.4
1417	125	2.5	76.4

<b>Date:</b>	<b>11/2/2022</b>	<b>2022-3417 ABC Coke Cooling Tower Inlet Run 6</b>	
<b>Time:</b>	<b>Water Flow - CCM</b>	<b>Air Flow - LPM</b>	<b>Temperature - F</b>
14:24	125	2.5	77.1
14:26	125	2.5	77.1
14:28	125	2.5	77.1
14:30	125	2.5	77.4
14:32	125	2.5	77.6
14:34	125	2.5	77.9
14:36	125	2.5	78.2
14:38	125	2.5	78.4
14:40	125	2.5	78.5
14:42	125	2.5	78.5
14:44	125	2.5	78.7
14:46	125	2.5	78.6
14:48	125	2.5	78.8
14:50	125	2.5	78.8
14:52	125	2.5	78.8
14:54	125	2.5	78.8
14:56	125	2.5	78.9
14:58	125	2.5	78.9
15:00	125	2.5	78.8
15:02	125	2.5	78.7
15:04	125	2.5	78.6
15:06	125	2.5	78.6
15:08	125	2.5	78.6
15:10	125	2.5	78.6
15:12	125	2.5	78.5
15:14	125	2.5	78.4
15:16	125	2.5	78.4
15:18	125	2.5	78.3
15:20	125	2.5	78.3
15:22	125	2.5	78.2
15:24	125	2.5	78.4

<b>Date:</b>	<b>11/2/2022</b>	<b>2022-3417 ABC Coke Cooling Tower Inlet Run 7</b>	
<b>Time:</b>	<b>Water Flow - CCM</b>	<b>Air Flow - LPM</b>	<b>Temperature - F</b>
1537	125	2.5	78.2
1539	125	2.5	78.4
1541	125	2.5	78.3
1543	125	2.5	78.3
1545	125	2.5	78.8
1547	125	2.5	78.3
1549	125	2.5	78.3
1551	125	2.5	78.2
1553	125	2.5	78.2
1555	125	2.5	78.1
1557	125	2.5	78
1559	125	2.5	77.8
1601	125	2.5	77.7
1603	125	2.5	77.7
1605	125	2.5	77.8
1607	125	2.5	77.8
1609	125	2.5	77.7
1611	125	2.5	77.7
1613	125	2.5	77.8
1615	125	2.5	77.6
1617	125	2.5	77.7
1619	125	2.5	76.9
1621	125	2.5	76.8
1623	125	2.5	76.9
1625	125	2.5	76.9
1627	125	2.5	76.7
1629	125	2.5	76.6
1631	125	2.5	76.4
1633	125	2.5	76.4
1635	125	2.5	76.4
1637	125	2.5	76.4

## Appendix B

# Alliance Source Testing Birmingham, AL

516 Galloway Circle  
Alabaster, AL 35007

ABC Coke  
Birmingham, AL  
Client Project # 22-3417

Analytical Report  
(1122-024)

## ***EPA Method 18 (Tedlar Bags)***

Benzene, Toluene, Ethylbenzene, o-Xylene, m/p-Xylene

## ***EPA Method 15-Type***

Hydrogen sulfide, Carbonyl Sulfide, Carbon Disulfide



### **Enthalpy Analytical, LLC**

Phone: (919) 850 - 4392 / Fax: (919) 850 - 9012 / [www.enthalpy.com](http://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 ??? pages.

Report Issued: xx/xx/xxxx



# Summary of Results



## Enthalpy Analytical

Company: Alliance Source Testing, LLC- Birmingham

Job No.: 1122-024 EPA Method 18 Tedlar Bag Analysis

Client No.: 22-3417 Site: ABC Coke-Birmingham, AL - ICR

## Summary

Sample ID / Adjusted Concentration (ppmv)

Compound	M18 Primary R1		M18 Primary R2		M18 Primary R3	
Benzene	0.388	ND	0.388	ND	0.388	ND
Toluene	0.400	ND	0.400	ND	0.400	ND
Ethylbenzene	0.431	ND	0.431	ND	0.431	ND
m/p-Xylenes	0.434	ND	0.434	ND	0.434	ND
o-Xylene	0.446	ND	0.446	ND	0.446	ND

**Enthalpy Analytical**

Company: Alliance Source Testing, LLC- Birmingham

Job No.: 1122-024 EPA Method 15 Analysis

Client No.: 22-3417 Site: ABC Coke-Birmingham, AL - ICR

**Summary**

Sample ID / Average Concentration (ppmv)					
Compound	Run 1		Run 2		Run 3
Hydrogen sulfide	0.133	ND	0.133	ND	0.133 ND
Carbonyl sulfide	0.133	ND	0.133	ND	0.133 ND
Carbon disulfide	0.0644	ND	0.0644	ND	0.0644 ND

# Results

## Enthalpy Analytical

Company: Alliance Source Testing, LLC- Birmingham  
Job No.: 1122-024 EPA Method 18 Tedlar Bag Analysis  
Client No.: 22-3417 Site: ABC Coke-Birmingham, AL - ICR

Sample ID	Filename #1	Filename #2	Filename #3	MDL (ppmv)	Curve Min (ppmv)	Curve Max (ppmv)	Ret. Time (min.)	Ret. Time (min.)	%diff. RT	Conc 1 (ppmv)	Conc 2 (ppmv)	Conc 3 (ppmv)	%diff. conc.	DF	Avg Conc (ppmv)	Spike Recov. (%)	Adj Conc (ppmv)	Flag
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### Benzene

M18 Primary R1	_024_004F1001.D	_025_004F1002.D	_026_004F1003.D	0.379	3.70	101	NA	NA	NA	0.379	0.379	0.379	NA	1	0.379	97.6	0.388	ND
M18 Primary R2	_027_005F1101.D	_028_005F1102.D	_029_005F1103.D	0.379	3.70	101	NA	NA	NA	0.379	0.379	0.379	NA	1	0.379	97.6	0.388	ND
M18 Primary R3	_030_006F1201.D	_031_006F1202.D	_032_006F1203.D	0.379	3.70	101	NA	NA	NA	0.379	0.379	0.379	NA	1	0.379	97.6	0.388	ND
M18 Primary R1 SP	004F0101.D	004F0102.D	004F0103.D	0.379	3.70	101	6.76	6.76	0.0	8.62	8.66	8.63	0.2	1	8.64	97.6		

### Toluene

M18 Primary R1	_024_004F1001.D	_025_004F1002.D	_026_004F1003.D	0.372	3.65	99.9	NA	NA	NA	0.372	0.372	0.372	NA	1	0.372	93.0	0.400	ND
M18 Primary R2	_027_005F1101.D	_028_005F1102.D	_029_005F1103.D	0.372	3.65	99.9	NA	NA	NA	0.372	0.372	0.372	NA	1	0.372	93.0	0.400	ND
M18 Primary R3	_030_006F1201.D	_031_006F1202.D	_032_006F1203.D	0.372	3.65	99.9	NA	NA	NA	0.372	0.372	0.372	NA	1	0.372	93.0	0.400	ND
M18 Primary R1 SP	004F0101.D	004F0102.D	004F0103.D	0.372	3.65	99.9	7.83	7.83	0.0	7.58	7.58	7.56	0.1	1	7.58	93.0		

### Ethylbenzene

M18 Primary R1	_024_004F1001.D	_025_004F1002.D	_026_004F1003.D	0.372	3.60	98.4	NA	NA	NA	0.372	0.372	0.372	NA	1	0.372	86.3	0.431	ND
M18 Primary R2	_027_005F1101.D	_028_005F1102.D	_029_005F1103.D	0.372	3.60	98.4	NA	NA	NA	0.372	0.372	0.372	NA	1	0.372	86.3	0.431	ND
M18 Primary R3	_030_006F1201.D	_031_006F1202.D	_032_006F1203.D	0.372	3.60	98.4	NA	NA	NA	0.372	0.372	0.372	NA	1	0.372	86.3	0.431	ND
M18 Primary R1 SP	004F0101.D	004F0102.D	004F0103.D	0.372	3.60	98.4	8.64	8.64	0.0	7.10	7.16	7.13	0.4	1	7.13	86.3		

### m/p-Xylenes

M18 Primary R1	_024_004F1001.D	_025_004F1002.D	_026_004F1003.D	0.380	3.69	101	NA	NA	NA	0.380	0.380	0.380	NA	1	0.380	87.5	0.434	ND
M18 Primary R2	_027_005F1101.D	_028_005F1102.D	_029_005F1103.D	0.380	3.69	101	NA	NA	NA	0.380	0.380	0.380	NA	1	0.380	87.5	0.434	ND
M18 Primary R3	_030_006F1201.D	_031_006F1202.D	_032_006F1203.D	0.380	3.69	101	NA	NA	NA	0.380	0.380	0.380	NA	1	0.380	87.5	0.434	ND
M18 Primary R1 SP	004F0101.D	004F0102.D	004F0103.D	0.380	3.69	101	8.70	8.70	0.0	7.23	7.29	7.26	0.4	1	7.26	87.5		

### o-Xylene

M18 Primary R1	_024_004F1001.D	_025_004F1002.D	_026_004F1003.D	0.374	3.69	101	NA	NA	NA	0.374	0.374	0.374	NA	1	0.374	83.8	0.446	ND
M18 Primary R2	_027_005F1101.D	_028_005F1102.D	_029_005F1103.D	0.374	3.69	101	NA	NA	NA	0.374	0.374	0.374	NA	1	0.374	83.8	0.446	ND
M18 Primary R3	_030_006F1201.D	_031_006F1202.D	_032_006F1203.D	0.374	3.69	101	NA	NA	NA	0.374	0.374	0.374	NA	1	0.374	83.8	0.446	ND
M18 Primary R1 SP	004F0101.D	004F0102.D	004F0103.D	0.374	3.69	101	8.93	8.93	0.0	7.15	7.18	7.12	0.4	1	7.15	83.8		

1122-024 EPA Method 18

## Enthalpy Analytical

Company: Alliance Source Testing, LLC- Birmingham

Job No.: 1122-024 EPA Method 18 Tedlar Bag Analysis

Client No.: 22-3417 Site: ABC Coke-Birmingham, AL - ICR

### Spiked Bag

M18 Primary R1 SP			Benzene	Toluene	Ethylbenzene	m-p-Xylenes	o-Xylene
Before Spiking	Inj.1 (ppmv)		0.00	0.00	0.00	0.00	0.00
	Inj.2 (ppmv)		0.00	0.00	0.00	0.00	0.00
	Inj.3 (ppmv)		0.00	0.00	0.00	0.00	0.00
	Avg. ppmv		0.00	0.00	0.00	0.00	0.00
	Bag Vol. (L) NTP	3.11					
Gas Spike	Cylinder	ALM031541					
	Expires	4/8/23					
	Press./Temp.	764.5 / 67.9					
	Vol. (mL)	300					
	Cyl. Dil. Factor	1					
	Cyl. Conc. (ppmv)		100	92.1	93.4	93.8	96.4
	Vol. (mL NTP)	302	0.0302	0.0278	0.0282	0.0283	0.0291
Totals	Sp. Bag Vol. L NTP	3.41					
	Corrected Initial (ppmv)		0.00	0.00	0.00	0.00	0.00
	Spike Amount (mL NTP)		0.0302	0.0278	0.0282	0.0283	0.0291
	Spike Amount (ppmv)		8.85	8.15	8.26	8.30	8.53
	Expected (ppmv)		8.85	8.15	8.26	8.30	8.53
Result	Inj.1 (ppmv)		8.62	7.58	7.10	7.23	7.15
	Inj.2 (ppmv)		8.66	7.58	7.16	7.29	7.18
	Inj.3 (ppmv)		8.63	7.56	7.13	7.26	7.12
	Avg. (ppmv)		8.64	7.58	7.13	7.26	7.15
	<b>Recovery (%)</b>		<b>97.6</b>	<b>93.0</b>	<b>86.3</b>	<b>87.5</b>	<b>83.8</b>

Enthalpy Analytical

Company: Alliance Source Testing, LLC- Birmingham  
Job No.: 1122-024 EPA Method 18 Tedlar Bag Analysis  
Client No.: 22-3417 Site: ABC Coke-Birmingham, AL - ICR

Spike Hold Times

Spiked Bag	Bag Spiked (Date/Time)	Spike Analyzed (Date/Time)	Hold Time (Hours)	Related Bag	Related Bag Sampled Date (Date/Time)	Bag Analyzed (Date/Time)	Hold Time (Hours)
M18 Primary R1 SP	2022-11-03 12:15	2022-11-04 15:24	27.2	M18 Primary R1	2022-11-02 10:20	2022-11-03 09:54	23.6
				M18 Primary R2	2022-11-02 11:43	2022-11-03 10:36	22.9
				M18 Primary R3	2022-11-02 13:02	2022-11-03 11:17	22.3

## Enthalpy Analytical

Company: Alliance Source Testing, LLC- Birmingham

Job No.: 1122-024 EPA Method 15 Analysis

Client No.: 22-3417 Site: ABC Coke-Birmingham, AL - ICR

### Hydrogen sulfide

Sample ID	Filename #1	Filename #2	Filename #3	MDL (ppmvv)	Curve Min (ppmvv)	Curve Max (ppmvv)	Ret. Time (min.)	Ret. Time (min.)	Ret. Time (min.)	%diff. RT	Conc 1 (ppmvv)	Conc 2 (ppmvv)	Conc 3 (ppmvv)	%diff. conc.	Avg Conc (ppmvv)	DF	Adj Conc (ppmvv)	Flag
M15 Primary R1	_031_005B1101.D	_032_005B1102.D	_033_005B1103.D	0.133	1.27	11.8	NA	NA	NA	NA	0.133	0.133	0.133	0.0	0.133	1	0.133	ND
M15 Backup R1	_040_005B1401.D	_041_005B1402.D	_042_005B1403.D	0.133	1.27	11.8	NA	NA	NA	NA	0.133	0.133	0.133	0.0	0.133	1	0.133	ND

M15 Primary R2	_034_005B1201.D	_035_005B1202.D	_036_005B1203.D	0.133	1.27	11.8	NA	NA	NA	NA	0.133	0.133	0.133	0.0	0.133	1	0.133	ND
M15 Backup R2	_043_005B1501.D	_044_005B1502.D	_045_005B1503.D	0.133	1.27	11.8	NA	NA	NA	NA	0.133	0.133	0.133	0.0	0.133	1	0.133	ND

M15 Primary R3	_037_005B1301.D	_038_005B1302.D	_039_005B1303.D	0.133	1.27	11.8	NA	NA	NA	NA	0.133	0.133	0.133	0.0	0.133	1	0.133	ND
M15 Backup R3	_046_005B1601.D	_047_005B1602.D	_048_005B1603.D	0.133	1.27	11.8	NA	NA	NA	NA	0.133	0.133	0.133	0.0	0.133	1	0.133	ND

zeppoP0675 #LCS	_028_005B0901.D	_029_005B0902.D	_030_005B0903.D	0.133	1.27	11.8	1.89	1.89	1.88	0.2	5.92	6.11	6.18	2.4	6.07	1	6.07	
																	7.14	
																	85.0%	

### Carbonyl sulfide

Sample ID	Filename #1	Filename #2	Filename #3	MDL (ppmvv)	Curve Min (ppmvv)	Curve Max (ppmvv)	Ret. Time (min.)	Ret. Time (min.)	Ret. Time (min.)	%diff. RT	Conc 1 (ppmvv)	Conc 2 (ppmvv)	Conc 3 (ppmvv)	%diff. conc.	Avg Conc (ppmvv)	DF	Adj Conc (ppmvv)	Flag
M15 Primary R1	_031_005B1101.D	_032_005B1102.D	_033_005B1103.D	0.133	0.742	6.91	NA	NA	NA	NA	0.133	0.133	0.133	0.0	0.133	1	0.133	ND
M15 Backup R1	_040_005B1401.D	_041_005B1402.D	_042_005B1403.D	0.133	0.742	6.91	NA	NA	NA	NA	0.133	0.133	0.133	0.0	0.133	1	0.133	ND

M15 Primary R2	_034_005B1201.D	_035_005B1202.D	_036_005B1203.D	0.133	0.742	6.91	NA	NA	NA	NA	0.133	0.133	0.133	0.0	0.133	1	0.133	ND
M15 Backup R2	_043_005B1501.D	_044_005B1502.D	_045_005B1503.D	0.133	0.742	6.91	NA	NA	NA	NA	0.133	0.133	0.133	0.0	0.133	1	0.133	ND

M15 Primary R3	_037_005B1301.D	_038_005B1302.D	_039_005B1303.D	0.133	0.742	6.91	NA	NA	NA	NA	0.133	0.133	0.133	0.0	0.133	1	0.133	ND
M15 Backup R3	_046_005B1601.D	_047_005B1602.D	_048_005B1603.D	0.133	0.742	6.91	NA	NA	NA	NA	0.133	0.133	0.133	0.0	0.133	1	0.133	ND

## Enthalpy Analytical

Company: Alliance Source Testing, LLC- Birmingham

Job No.: 1122-024 EPA Method 15 Analysis

Client No.: 22-3417 Site: ABC Coke-Birmingham, AL - ICR

### Carbon disulfide

Sample ID	Filename #1	Filename #2	Filename #3	MDL (ppmv)	Curve Min (ppmv)	Curve Max (ppmv)	Ret. Time (min.)	Ret. Time (min.)	Ret. Time (min.)	%diff. RT	Conc 1 (ppmv)	Conc 2 (ppmv)	Conc 3 (ppmv)	%diff. conc.	Avg Conc (ppmv)	DF	Adj Conc (ppmv)	Flag
M15 Primary R1	_031_005B1101.D	_032_005B1102.D	_033_005B1103.D	0.0644	0.933	8.69	NA	NA	NA	NA	0.0644	0.0644	0.0644	0.0	0.0644	1	0.0644	ND
M15 Backup R1	_040_005B1401.D	_041_005B1402.D	_042_005B1403.D	0.0644	0.933	8.69	NA	NA	NA	NA	0.0644	0.0644	0.0644	0.0	0.0644	1	0.0644	ND
M15 Primary R2	_034_005B1201.D	_035_005B1202.D	_036_005B1203.D	0.0644	0.933	8.69	NA	NA	NA	NA	0.0644	0.0644	0.0644	0.0	0.0644	1	0.0644	ND
M15 Backup R2	_043_005B1501.D	_044_005B1502.D	_045_005B1503.D	0.0644	0.933	8.69	NA	NA	NA	NA	0.0644	0.0644	0.0644	0.0	0.0644	1	0.0644	ND
M15 Primary R3	_037_005B1301.D	_038_005B1302.D	_039_005B1303.D	0.0644	0.933	8.69	NA	NA	NA	NA	0.0644	0.0644	0.0644	0.0	0.0644	1	0.0644	ND
M15 Backup R3	_046_005B1601.D	_047_005B1602.D	_048_005B1603.D	0.0644	0.933	8.69	NA	NA	NA	NA	0.0644	0.0644	0.0644	0.0	0.0644	1	0.0644	ND

# Narrative Summary



## Enthalpy Analytical Narrative Summary

Company Job No. Client ID.	Alliance Source Testing, LLC - Birmingham 1122-024 EPA Method 18 Tedlar Bag Analysis 22-3417 Site: ABC Coke-Birmingham, AL - ICR
Custody	<p>Alyssa Miller received the samples on November 03, 2022 at ambient temperature after being relinquished by Alliance Source Testing, LLC-Birmingham. The samples were received in good condition.</p> <p>Prior to, during, and after analysis, the samples were kept under lock with access only to authorized personnel by Enthalpy Analytical, LLC</p>
Analysis	<p>The samples were analyzed for benzene, toluene, ethylbenzene, o-xylene, and m/p-xylene using the analytical procedures in EPA Method 18, Measurement of Gaseous Organic Compound Emissions by Gas Chromatography (40 CFR Part 60, Appendix A).</p> <p>All samples and standards were introduced directly to the column using an automated multi-port Valco gas sampling valve equipped with a stainless steel loop. The analytes of interest were referenced to certified gas phase standards.</p> <p>The Agilent Technologies Model 7890A, Gas Chromatograph Edith was used for these analyses. It was equipped with a Flame Ionization Detector.</p>
Calibration	The calibration curves and the data analysis method are included in the Raw Data section of this report. The calibration curves met all method-specified precision criteria.
Chrom. Conditions	The acquisition method AQ_EDITHP503_HRVOC.M may be made available upon request.
QC Notes	<p>The analytes of interest were not identified at concentrations greater than the detection limit in the analyses of the laboratory zero air blanks.</p> <p>A spike and recovery study was performed on the sample M18 Primary R1 with the bag spiked at 12:15 PM on 11-03-2022. The recovery efficiency values met the method-required limits of 70 to 130% for sample M18 Primary R1 for all target compounds. The recovery efficiency values were used to adjust the results for sample M18 Primary R1 and the other samples from its accompanying source following equation 18-7 of Method 18 for all target compounds.</p>
Reporting Notes	<p>The MDL was determined by performing an IDL study and performing calculations as described in Title 40 of the Code of Federal Regulations, Part 136, Appendix B, Revision 1.1.</p> <p>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.</p> <p>The results presented in this report are representative of the samples as provided to the laboratory.</p>

## Enthalpy Analytical Narrative Summary

Company Job No. Client ID.	Alliance Source Testing, LLC- Pittsburgh 1122-024 EPA Method 15-Type Analysis 22-3417 Site: ABC Coke-Birmingham, AL - ICR
Custody	<p>Alyssa Miller received the samples on November 3, 2022 at ambient temperature after being relinquished by Alliance Source Testing, LLC-Pittsburgh. The samples were received in good condition.</p> <p>Prior to, during, and after analysis, the samples were kept under lock with access only to authorized personnel by Enthalpy Analytical, LLC.</p>
Analysis	<p>The samples were analyzed for hydrogen sulfide, carbonyl sulfide, and carbon disulfide using the general analytical procedures in EPA Method 15, Determination of Hydrogen Sulfide, Carbonyl Sulfide, and Carbon Disulfide Emissions from Stationary Sources (40 CFR Part 60, Appendix A).</p> <p>The samples and standards were introduced directly to the column using an automated multi-port Valco gas sampling valve equipped with a stainless-steel loop. All target analytes were referenced to certified gas phase standards.</p> <p>The Gas Chromatograph "Zeppo" was equipped with a Flame Photometric Detector for these analyses.</p>
Calibration	<p>The calibration curve is included in the Raw Data section of this report. 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.</p>
Chrom. Conditions	<p>Copies of the acquisition methods (DUALFPD8.M and DUALFPD8_SHORT.M) may be made available upon request.</p>
QC Notes	<p>None of the compounds of interest were identified at a level greater than their detection limit in the analyses of the laboratory method blanks.</p> <p>A Laboratory Control Sample (LCS) bag was spiked with hydrogen sulfide and analyzed with the sample, yielding a spike recovery value of 85.0%.</p> <p>The reported results for Run A and Run B sample bags have been averaged per the client's instructions.</p>

## Enthalpy Analytical Narrative Summary

Company	Alliance Source Testing, LLC- Pittsburgh
Job No.	1122-024 EPA Method 15-Type Analysis
Client ID.	22-3417 Site: ABC Coke-Birmingham, AL - ICR

Reporting Notes	<p>The MDL was determined by performing an IDL study and performing calculations as described in Title 40 of the Code of Federal Regulations, Part 136, Appendix B, Revision 1.1.</p> <p>The results presented in this report are representative of the sample as provided to the laboratory.</p>
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# General Reporting Notes

The following are general reporting notes that are applicable to all Enthalpy Analytical, LLC 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.
- Sample results are presented ‘as measured’ for single injection methodologies, or an average value if multiple injections are made. If all injections are below the MDL, the sample is considered non-detect and the ND value is presented. If one, but not all, are below the MDL, the MDL value is used for any injections that are below the MDL. For example, if the MDL is 0.500 and LOQ is 1.00, and the instrument measures 0.355, 0.620, and 0.442 - the result reported is the average of 0.500, 0.620, and 0.500 - - - i.e. 0.540 with a J flag.
- When a spike recovery (Bag Spike, Collocated Spike Train, or liquid matrix spike) is being calculated, the native (unspiked) sample result is used in the calculations, as long as the value is above the MDL. If a sample is ND, then 0 is used as the native amount (not the MDL value).
- 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).



## General Reporting Notes

(continued)

- 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).
- 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. In the case of small numbers, generally 3 significant figures are presented, but still only 2 should be used with confidence. Many neat materials are only certified to 3 digits, and as the mathematically correct final result is always 1 digit less than all its pre-cursors - 2 significant figures are what are most defensible.
- **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





# Chain of Custody Record

Page 1 of 1

## Special Handling:

☒ Standard Turn Around Time (10 business days)

☐ Rush Turn Around Time -- Date Needed: \_\_\_\_\_

- All TATs Subject to Approval by Enthalpy Analytical, Inc.
- All Bag/Can Samples Disposed of 1 Month from Receipt.
- All Other Samples Disposed of 4 Months from Receipt.

Client Name: Alliance Source Testing (BHM)

Project Manager: Grant Singley

Report To: bhmreports@stacktest.com

Project Number: 22-3417

Site Name: ABC Coke

Location: Birmingham, AL

PO#: \_\_\_\_\_

Telephone#: 256-351-0121

Email: \_\_\_\_\_

For spiked or duplicate samples: please provide sample volumes for recovery calculations.  
For Particulates: please provide tare weights and/or condensed water volumes.

## Special Instructions:

A=Air 1=H2SO4 2=NaOH W=Water O=Other  
X=XAD C=Charcoal SG=Silica Gel

G=Grab C=Composite Q=Quality Control O=Other

Sample ID	Date	Time	Sample Volume	Type	Matrix
Cooling Tower Inlet - Primary Bag Run 1	11/02/22	10:20 AM		C	A
Cooling Tower Inlet - Primary Bag Run 2	11/02/22	11:43 AM		C	A
Cooling Tower Inlet - Primary Bag Run 3	11/02/22	1:02 PM		C	A

Ambient temp  
good condition  
from 11-03-22

## Sample Containers

# of VOA Vials

# of Glass

# of Plastic

# of Bags

# of Canisters

# of Tubes

# Other

M18

Hold

## Analyses:

Notes:

Benzene, Toluene, Ethylbenzene,  
o/m/p-xylenes

Relinquished By: Grant S. g.

Date: 11/2/22

Received By: *Grant Singley*

Date: 11-03-22

Time: 0930

Sample Condition Upon Receipt:

☐ Iced ☒ Ambient ☐ °C

☐ Iced ☐ Ambient ☐ °C

☐ Iced ☐ Ambient ☐ °C

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# Chain of Custody Record

Page 1 of 1

## Special Handling:

- ☒ Standard Turn Around Time (10 business days)
- ☐ Rush Turn Around Time -- Date Needed: \_\_\_\_\_
- All TATs Subject to Approval by Enthalpy Analytical, Inc.
- All Bag/Can Samples Disposed of 1 Month from Receipt
- All Other Samples Disposed of 4 Months from Receipt

For spiked or duplicate samples: please provide sample volumes for recovery calculations.  
For Particulates: please provide tare weights and/or condensed water volumes.

PO#: \_\_\_\_\_  
Telephone#: 256-351-0121  
Email: \_\_\_\_\_

Project Number: 22-3417  
Site Name: ABC Coke  
Location: Birmingham, AL

Client Name: Alliance Source Testing (BHM)  
Project Manager: Grant Singley  
Report To: bhmreports@stacktest.com

Special Instructions: Hold - Analyze if Primary Bag is received flat

A=Air 1=H2SO4 2=NaOH W=Water O=Other  
X=XAD C=Charcoal SG=Silica Gel

G=Grab C=Composite Q=Quality Control O=Other

Sample ID	Date	Time	Sample Volume	Type	Matrix
Cooling Tower Inlet - Backup Bag Run 1	11/02/22	10:20 AM		C	A
Cooling Tower Inlet - Backup Bag Run 2	11/02/22	11:43 AM		C	A
Cooling Tower Inlet - Backup Bag Run 3	11/02/22	1:02 PM		C	A

## Sample Containers

# of VOA Vials

# of Glass

# of Plastic

# of Bags

# of Canisters

# of Tubes

# Other

M18

Hold

## Analyses:

Notes:

Benzene, Toluene, Ethylbenzene, o/m/p-xylenes

"

"

"

"

"

"

"

"

"

"

"

"

Relinquished By: \_\_\_\_\_

Date: \_\_\_\_\_

Time: \_\_\_\_\_

Received By: \_\_\_\_\_

Date: \_\_\_\_\_

Time: \_\_\_\_\_

Sample Condition Upon Receipt:

☐ Iced ☒ Ambient ☐ °C \_\_\_\_\_

☐ Iced ☐ Ambient ☐ °C \_\_\_\_\_

☐ Iced ☐ Ambient ☐ °C \_\_\_\_\_





# Chain of Custody Record

Page 1 of 1

## Special Handling:

- ☒ Standard Turn Around Time (10 business days)  
☐ Rush Turn Around Time -- Date Needed: \_\_\_\_\_  
• All TATs Subject to Approval by Enthalpy Analytical, Inc.  
• All Bag/Can Samples Disposed of 1 Month from Receipt  
• All Other Samples Disposed of 4 Months from Receipt

Client Name: Alliance Source Testing (BHM)		Project Number: 22-3417		PO#: _____		For spiked or duplicate samples: please provide sample volumes for recovery calculations. For Particulates: please provide tare weights and/or condensed water volumes.	
Project Manager: Grant Singley		Site Name: ABC Coke		Telephone#: 256-351-0121			
Report To: bhmreports@stacktest.com		Location: Birmingham, AL		Email: _____			
Special Instructions: Analyze - the Calibond "B" bags. We took a 30 min. "A" sample and a 30-min "B" sample. Will need to average of both for the run average							
A=Air 1=H2SO4 2=NaOH W=Water O=Other X=XAD C=Charcoal SG=Silica Gel							
G=Grab C=Composite Q=Quality Control O=Other							
Sample ID	Date	Time	Sample Volume	Type	Matrix		
Cooling Tower Inlet - Bag Run 1B	11/02/22	2:17 PM		C	A		
Cooling Tower Inlet - Bag Run 2B	11/02/22	3:24 PM		C	A		
Cooling Tower Inlet - Bag Run 3B	11/02/22	4:37 PM		C	A		
Bryan M Miller 11-03-22							
Ambient temp							
good condition							
Bryan M 11-03-22							
Grant Singley 11/2/22 Bryan M Miller 11-03-22 0930							
Relinquished By: _____						Date: _____	
Received By: _____						Date: _____	
Time: _____						Sample Condition Upon Receipt:	
						<input type="checkbox"/> Iced <input checked="" type="checkbox"/> Ambient <input type="checkbox"/> °C _____	
						<input type="checkbox"/> Iced <input type="checkbox"/> Ambient <input type="checkbox"/> °C _____	
						<input type="checkbox"/> Iced <input type="checkbox"/> Ambient <input type="checkbox"/> °C _____	

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# Raw Data

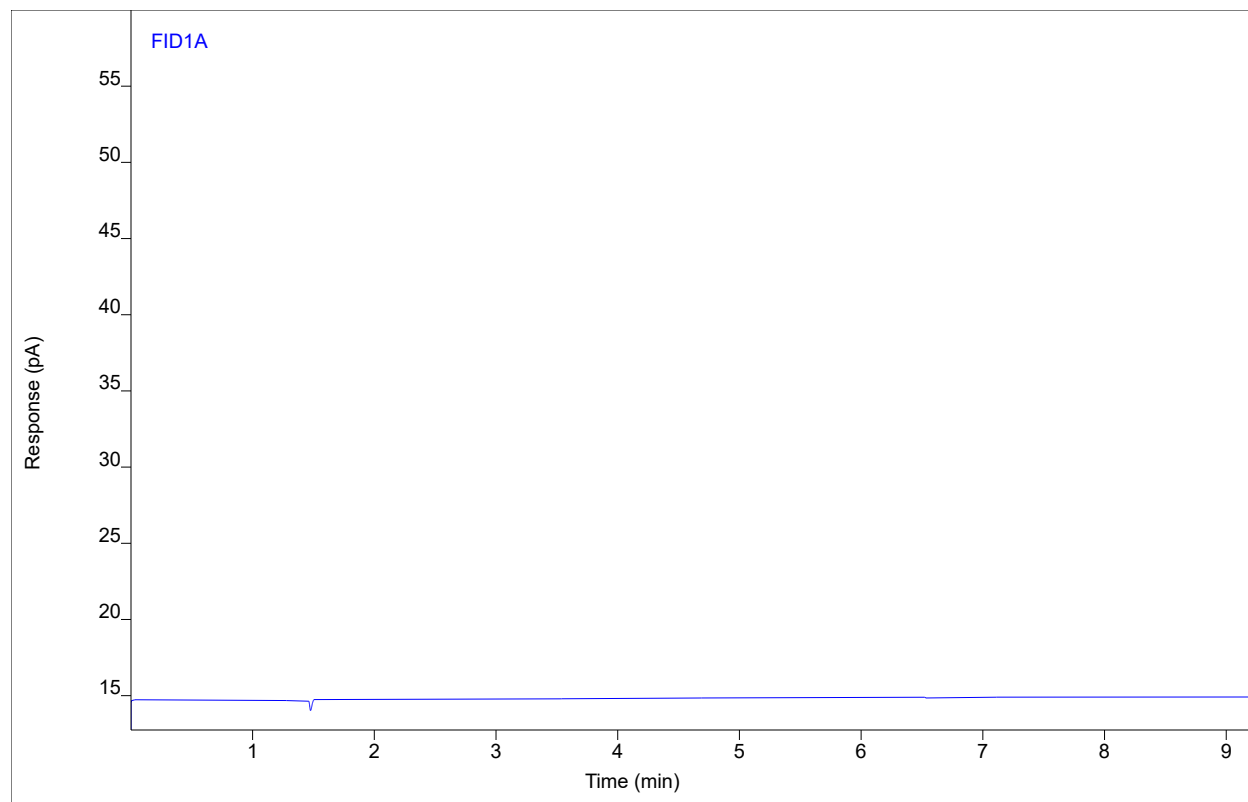


# Chromatogram Report

# Enthalpy Analytical

Sample Name Zero Air Blank  
Sequence Name Edithp3021\_R1 ver.2  
Inj Data File \_014\_001F0601.D  
File Location GC/2022/Edith/Quarter 4  
Injection Date 11/3/2022 2:17 AM  
File Modified 11/7/2022 4:19 PM  
Instrument Edith  
Operator Ivy Somocurcio

Sample Type Sample  
Vial Number Vial 1  
Injection Volume 250  
Injection 1 of 3  
Acquisition Method AQ\_EDITHP503\_HRVOC.M  
Analysis Method EDITHP2846F\_ABTEX.M  
Method Modified 2/12/2022 8:13 AM  
Printed 11/8/2022 1:52 PM



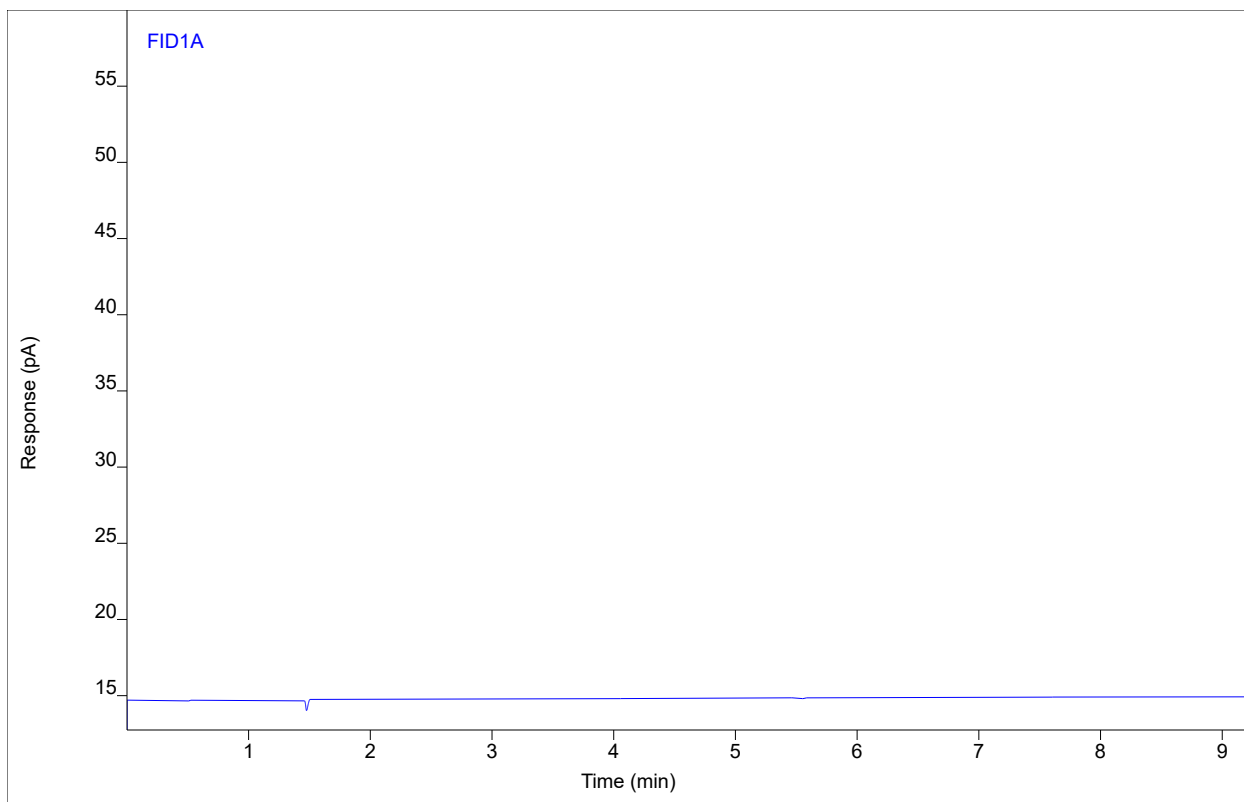
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Benzene		(6.77)				1		ppm
Toluene		(7.84)				1		ppm
Ethylbenzene		(8.64)				1		ppm
m-p-Xylenes		(8.71)				1		ppm
o-Xylene		(8.93)				1		ppm

# Chromatogram Report

Sample Name Zero Air Blank  
Sequence Name Edithp3021\_R1 ver.2  
Inj Data File \_015\_001F0602.D  
File Location GC/2022/Edith/Quarter 4  
Injection Date 11/3/2022 2:31 AM  
File Modified 11/7/2022 4:19 PM  
Instrument Edith  
Operator Ivy Somocurcio

# Enthalpy Analytical

Sample Type Sample  
Vial Number Vial 1  
Injection Volume 250  
Injection 2 of 3  
Acquisition Method AQ\_EDITHP503\_HRVOC.M  
Analysis Method EDITHP2846F\_ABTEX.M  
Method Modified 2/12/2022 8:13 AM  
Printed 11/8/2022 1:52 PM



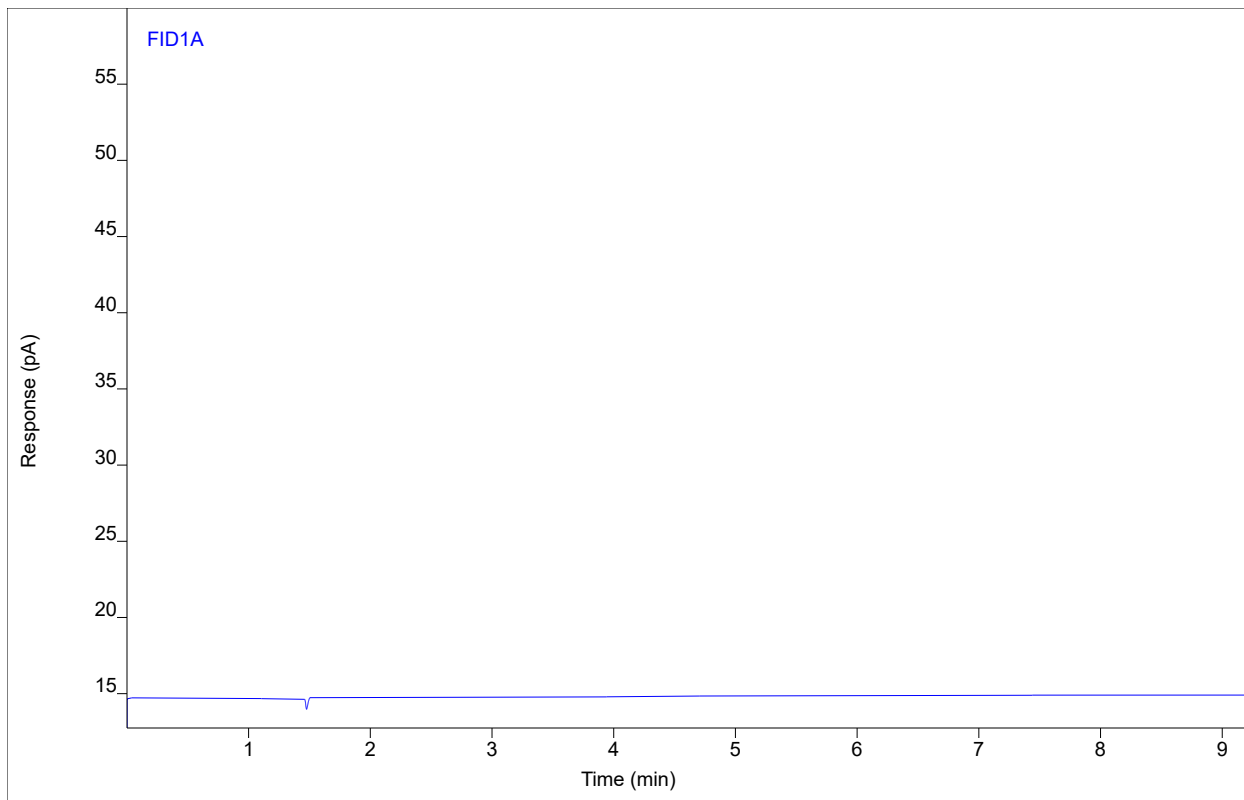
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Benzene		(6.77)				1		ppm
Toluene		(7.84)				1		ppm
Ethylbenzene		(8.64)				1		ppm
m-p-Xylenes		(8.71)				1		ppm
o-Xylene		(8.93)				1		ppm

# Chromatogram Report

Sample Name Zero Air Blank  
Sequence Name Edithp3021\_R1 ver.2  
Inj Data File \_016\_001F0603.D  
File Location GC/2022/Edith/Quarter 4  
Injection Date 11/3/2022 2:45 AM  
File Modified 11/7/2022 4:19 PM  
Instrument Edith  
Operator Ivy Somocurcio

# Enthalpy Analytical

Sample Type Sample  
Vial Number Vial 1  
Injection Volume 250  
Injection 3 of 3  
Acquisition Method AQ\_EDITHP503\_HRVOC.M  
Analysis Method EDITHP2846F\_ABTEX.M  
Method Modified 2/12/2022 8:13 AM  
Printed 11/8/2022 1:52 PM



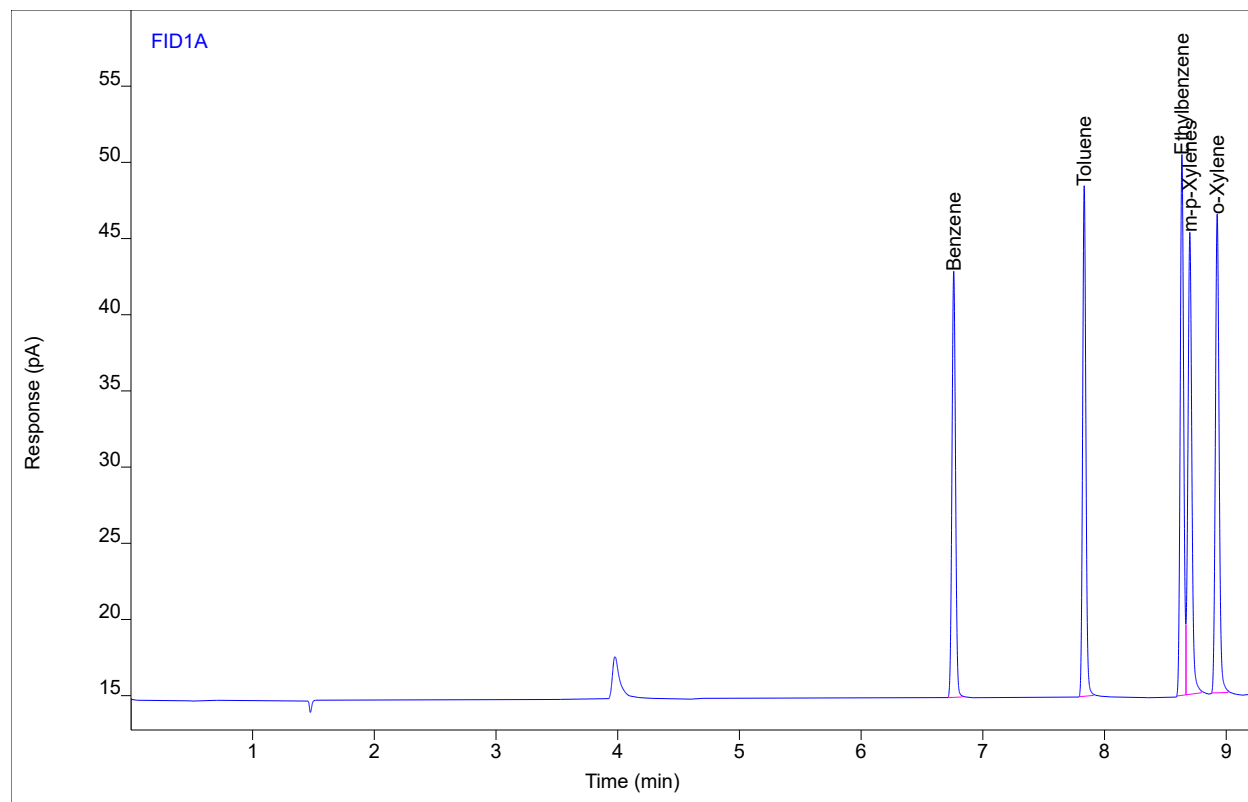
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Benzene		(6.77)				1		ppm
Toluene		(7.84)				1		ppm
Ethylbenzene		(8.64)				1		ppm
m-p-Xylenes		(8.71)				1		ppm
o-Xylene		(8.93)				1		ppm

# Chromatogram Report

# Enthalpy Analytical

Sample Name Edithp2924 #B3 ENV(1=600,5=400)  
Sequence Name Edithp3021\_R1 ver.2  
Inj Data File \_021\_003F0802.D  
File Location GC/2022/Edith/Quarter 4  
Injection Date 11/3/2022 4:24 AM  
File Modified 11/7/2022 4:20 PM  
Instrument Edith  
Operator Ivy Somocurcio

Sample Type  
Vial Number Vial 3  
Injection Volume 250  
Injection 2 of 4  
Acquisition Method AQ\_EDITHP503\_HRVOC.M  
Analysis Method EDITHP2846F\_ABTEX.M  
Method Modified 2/12/2022 8:13 AM  
Printed 11/8/2022 1:52 PM



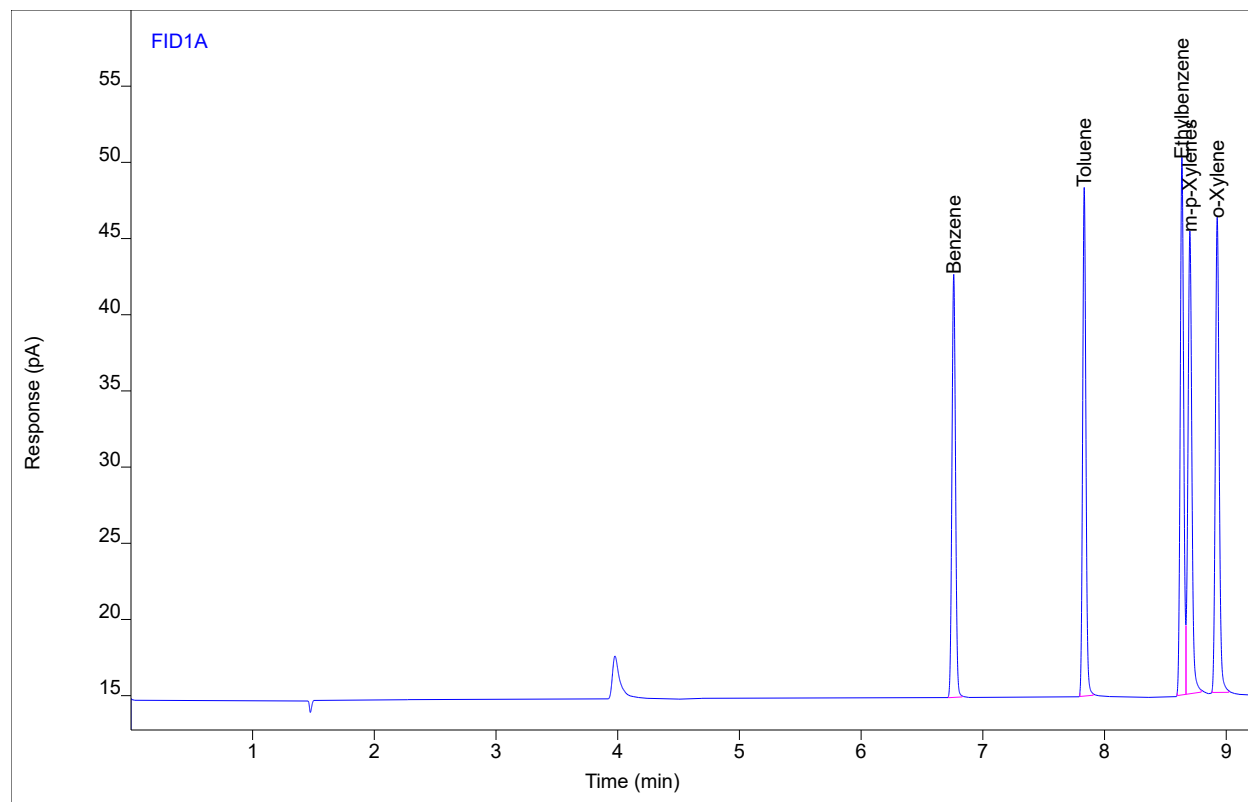
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Benzene	BB	6.76	56.9456	27.9069	39.9292	1	39.9292	ppm
Toluene	BB	7.83	62.1733	33.4118	37.4043	1	37.4043	ppm
Ethylbenzene	BV	8.64	69.6450	35.3906	37.4316	1	37.4316	ppm
m-p-Xylenes	VB	8.70	67.5041	30.2372	39.1080	1	39.1080	ppm
o-Xylene	BB	8.93	67.5232	31.3467	38.7802	1	38.7802	ppm

# Chromatogram Report

# Enthalpy Analytical

Sample Name Edithp2924 #B3 ENV(1=600,5=400)  
 Sequence Name Edithp3021\_R1 ver.2  
 Inj Data File \_022\_003F0803.D  
 File Location GC/2022/Edith/Quarter 4  
 Injection Date 11/3/2022 4:42 AM  
 File Modified 11/7/2022 4:20 PM  
 Instrument Edith  
 Operator Ivy Somocurcio

Sample Type  
 Vial Number Vial 3  
 Injection Volume 250  
 Injection 3 of 4  
 Acquisition Method AQ\_EDITHP503\_HRVOC.M  
 Analysis Method EDITHP2846F\_ABTEX.M  
 Method Modified 2/12/2022 8:13 AM  
 Printed 11/8/2022 1:52 PM



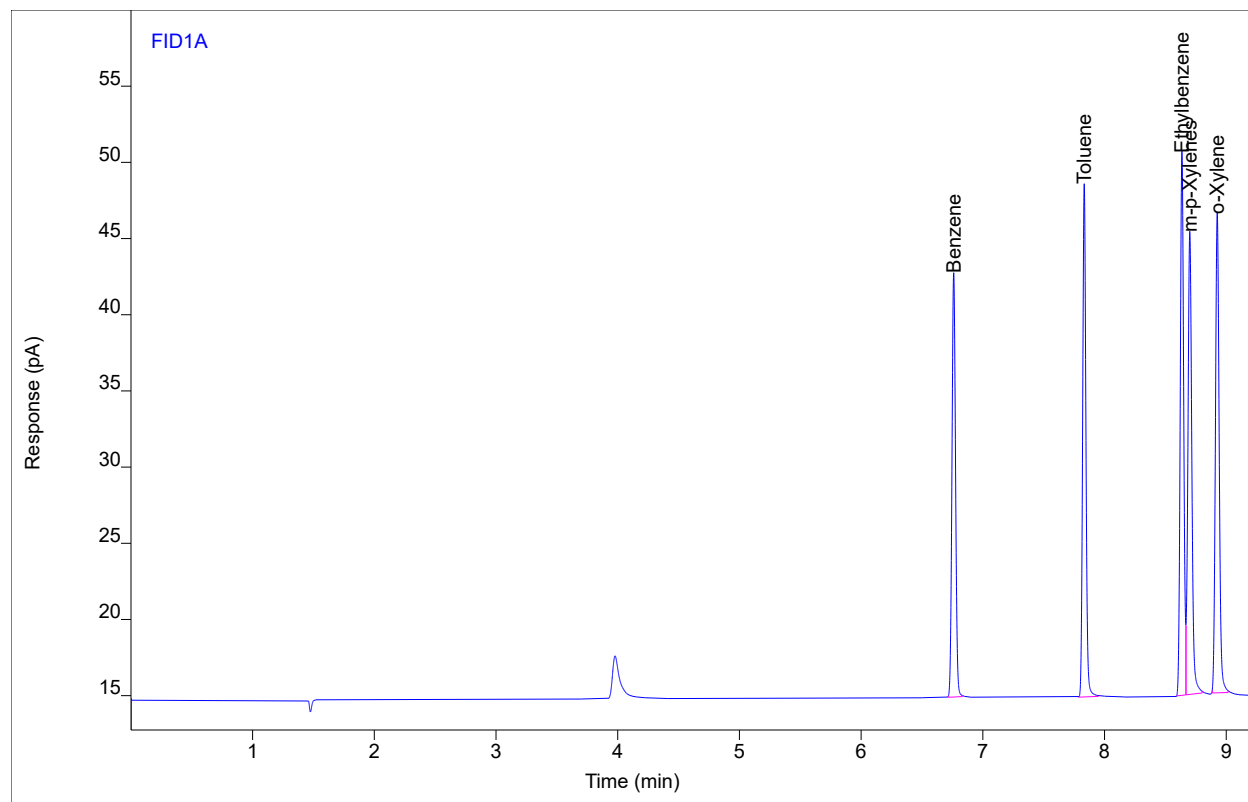
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Benzene	BB	6.76	56.6812	27.7027	39.7447	1	39.7447	ppm
Toluene	BB	7.83	61.9081	33.2769	37.2462	1	37.2462	ppm
Ethylbenzene	BV	8.64	69.2399	35.1676	37.2167	1	37.2167	ppm
m-p-Xylenes	VB	8.70	67.6215	30.3223	39.1751	1	39.1751	ppm
o-Xylene	BB	8.93	67.6812	31.1099	38.8696	1	38.8696	ppm

# Chromatogram Report

# Enthalpy Analytical

Sample Name Edithp2924 #B3 ENV(1=600,5=400)  
Sequence Name Edithp3021\_R1 ver.2  
Inj Data File \_023\_003F0804.D  
File Location GC/2022/Edith/Quarter 4  
Injection Date 11/3/2022 5:01 AM  
File Modified 11/7/2022 4:20 PM  
Instrument Edith  
Operator Ivy Somocurcio

Sample Type  
Vial Number Vial 3  
Injection Volume 250  
Injection 4 of 4  
Acquisition Method AQ\_EDITHP503\_HRVOC.M  
Analysis Method EDITHP2846F\_ABTEX.M  
Method Modified 2/12/2022 8:13 AM  
Printed 11/8/2022 1:52 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Benzene	BB	6.76	56.7831	27.7790	39.8158	1	39.8158	ppm
Toluene	MM	7.83	62.7758	33.7659	37.7634	1	37.7634	ppm
Ethylbenzene	BV	8.64	69.7449	35.5961	37.4846	1	37.4846	ppm
m-p-Xylenes	VB	8.70	67.8465	30.3173	39.3036	1	39.3036	ppm
o-Xylene	BB	8.93	67.7140	31.4150	38.8882	1	38.8882	ppm

## Analyst Peak Integration Comments

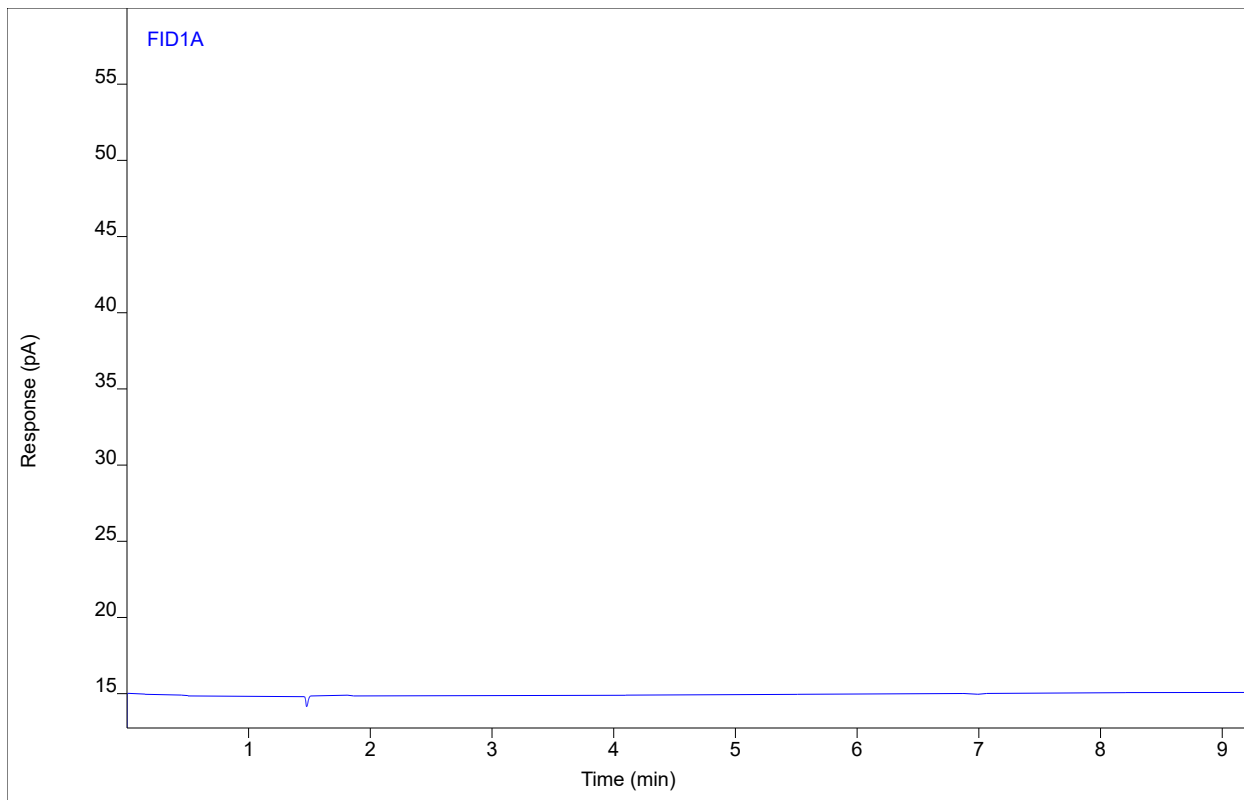
07:46:19 11/03/22 Ivy Somocurcio II BL

# Chromatogram Report

Sample Name 1122-024.M18 Primary R1.Bag  
Sequence Name Edithp3021\_R1 ver.2  
Inj Data File \_024\_004F1001.D  
File Location GC/2022/Edith/Quarter 4  
Injection Date 11/3/2022 9:54 AM  
File Modified 11/7/2022 4:20 PM  
Instrument Edith  
Operator Ivy Somocurcio

# Enthalpy Analytical

Sample Type Sample  
Vial Number Vial 4  
Injection Volume 250  
Injection 1 of 3  
Acquisition Method AQ\_EDITHP503\_HRVOC.M  
Analysis Method EDITHP2846F\_ABTEX.M  
Method Modified 2/12/2022 8:13 AM  
Printed 11/8/2022 1:52 PM



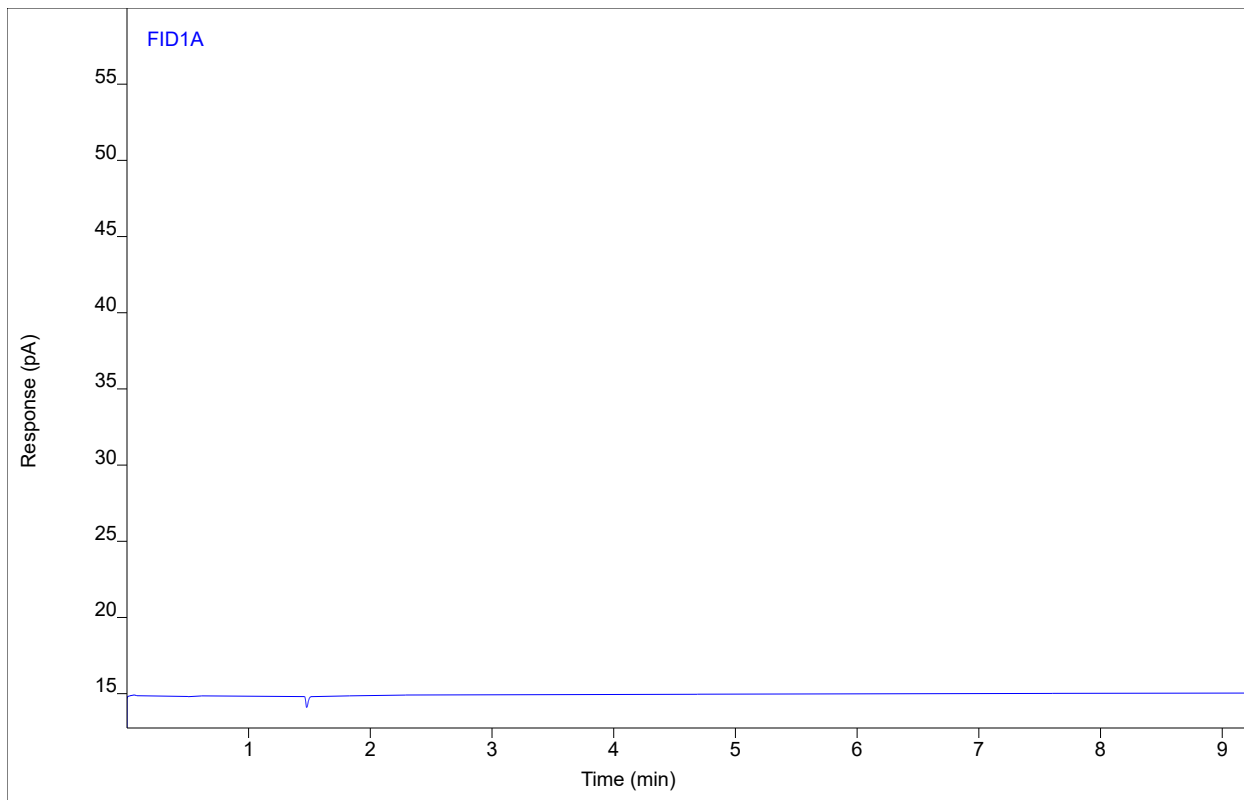
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Benzene		(6.77)				1		ppm
Toluene		(7.84)				1		ppm
Ethylbenzene		(8.64)				1		ppm
m-p-Xylenes		(8.71)				1		ppm
o-Xylene		(8.93)				1		ppm

# Chromatogram Report

Sample Name 1122-024.M18 Primary R1.Bag  
Sequence Name Edithp3021\_R1 ver.2  
Inj Data File \_025\_004F1002.D  
File Location GC/2022/Edith/Quarter 4  
Injection Date 11/3/2022 10:08 AM  
File Modified 11/7/2022 4:20 PM  
Instrument Edith  
Operator Ivy Somocurcio

# Enthalpy Analytical

Sample Type Sample  
Vial Number Vial 4  
Injection Volume 250  
Injection 2 of 3  
Acquisition Method AQ\_EDITHP503\_HRVOC.M  
Analysis Method EDITHP2846F\_ABTEX.M  
Method Modified 2/12/2022 8:13 AM  
Printed 11/8/2022 1:52 PM



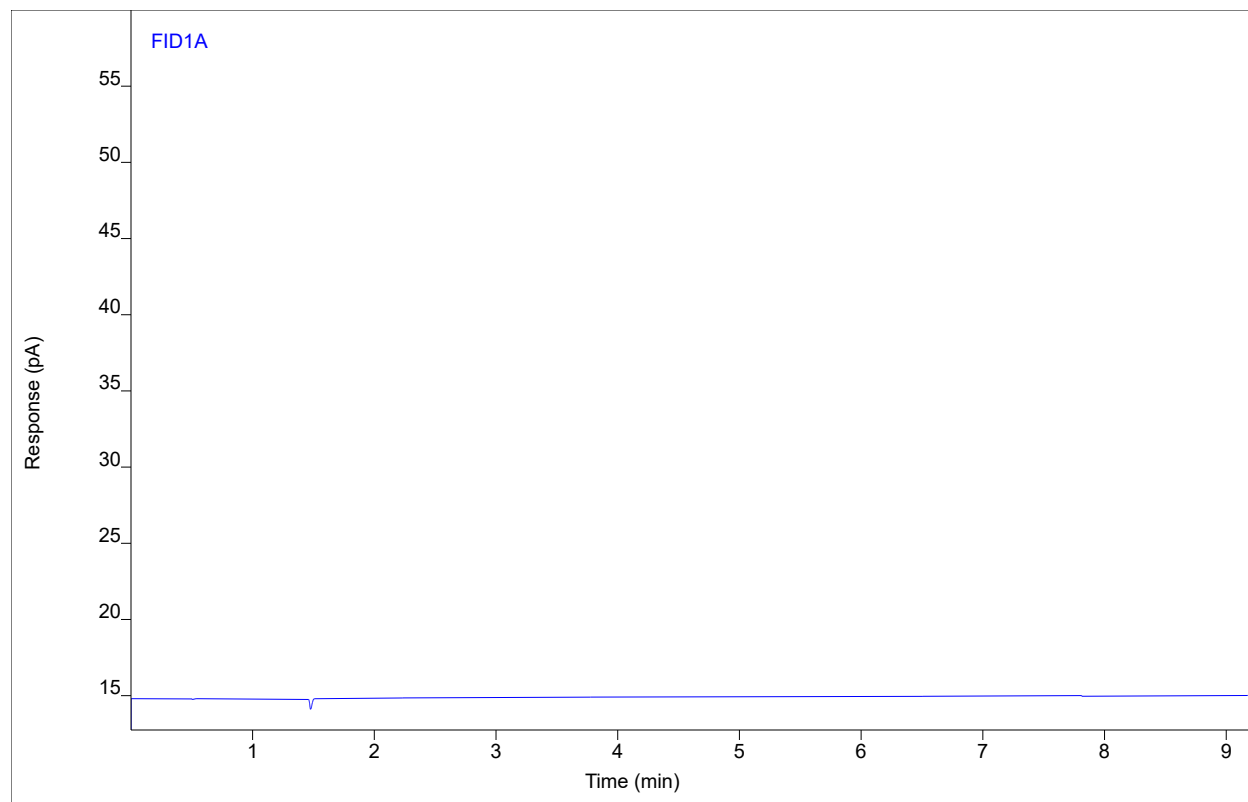
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Benzene		(6.77)				1		ppm
Toluene		(7.84)				1		ppm
Ethylbenzene		(8.64)				1		ppm
m-p-Xylenes		(8.71)				1		ppm
o-Xylene		(8.93)				1		ppm

# Chromatogram Report

Sample Name 1122-024.M18 Primary R1.Bag  
Sequence Name Edithp3021\_R1 ver.2  
Inj Data File \_026\_004F1003.D  
File Location GC/2022/Edith/Quarter 4  
Injection Date 11/3/2022 10:22 AM  
File Modified 11/7/2022 4:20 PM  
Instrument Edith  
Operator Ivy Somocurcio

# Enthalpy Analytical

Sample Type Sample  
Vial Number Vial 4  
Injection Volume 250  
Injection 3 of 3  
Acquisition Method AQ\_EDITHP503\_HRVOC.M  
Analysis Method EDITHP2846F\_ABTEX.M  
Method Modified 2/12/2022 8:13 AM  
Printed 11/8/2022 1:52 PM



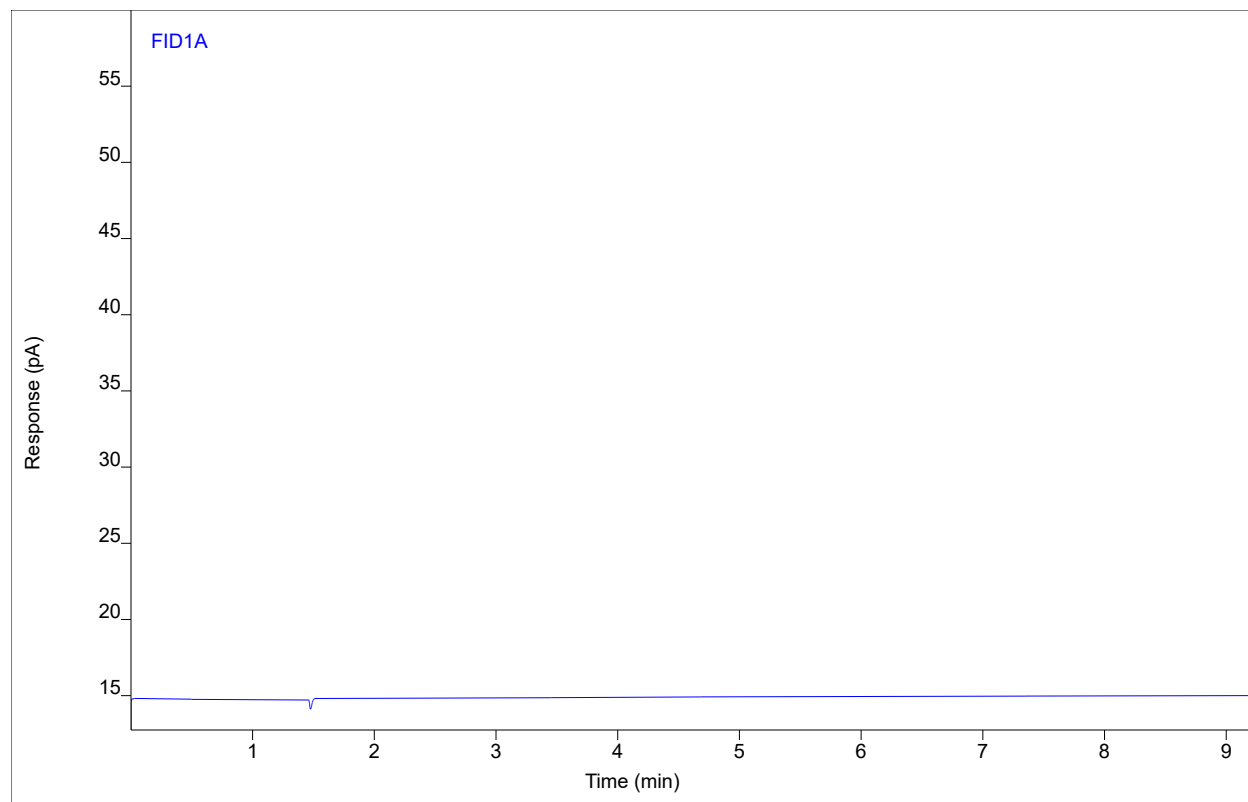
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Benzene		(6.77)				1		ppm
Toluene		(7.84)				1		ppm
Ethylbenzene		(8.64)				1		ppm
m-p-Xylenes		(8.71)				1		ppm
o-Xylene		(8.93)				1		ppm

# Chromatogram Report

Sample Name 1122-024.M18 Primary R2.Bag  
Sequence Name Edithp3021\_R1 ver.2  
Inj Data File \_027\_005F1101.D  
File Location GC/2022/Edith/Quarter 4  
Injection Date 11/3/2022 10:36 AM  
File Modified 11/7/2022 4:20 PM  
Instrument Edith  
Operator Ivy Somocurcio

# Enthalpy Analytical

Sample Type Sample  
Vial Number Vial 5  
Injection Volume 250  
Injection 1 of 3  
Acquisition Method AQ\_EDITHP503\_HRVOC.M  
Analysis Method EDITHP2846F\_ABTEX.M  
Method Modified 2/12/2022 8:13 AM  
Printed 11/8/2022 1:52 PM



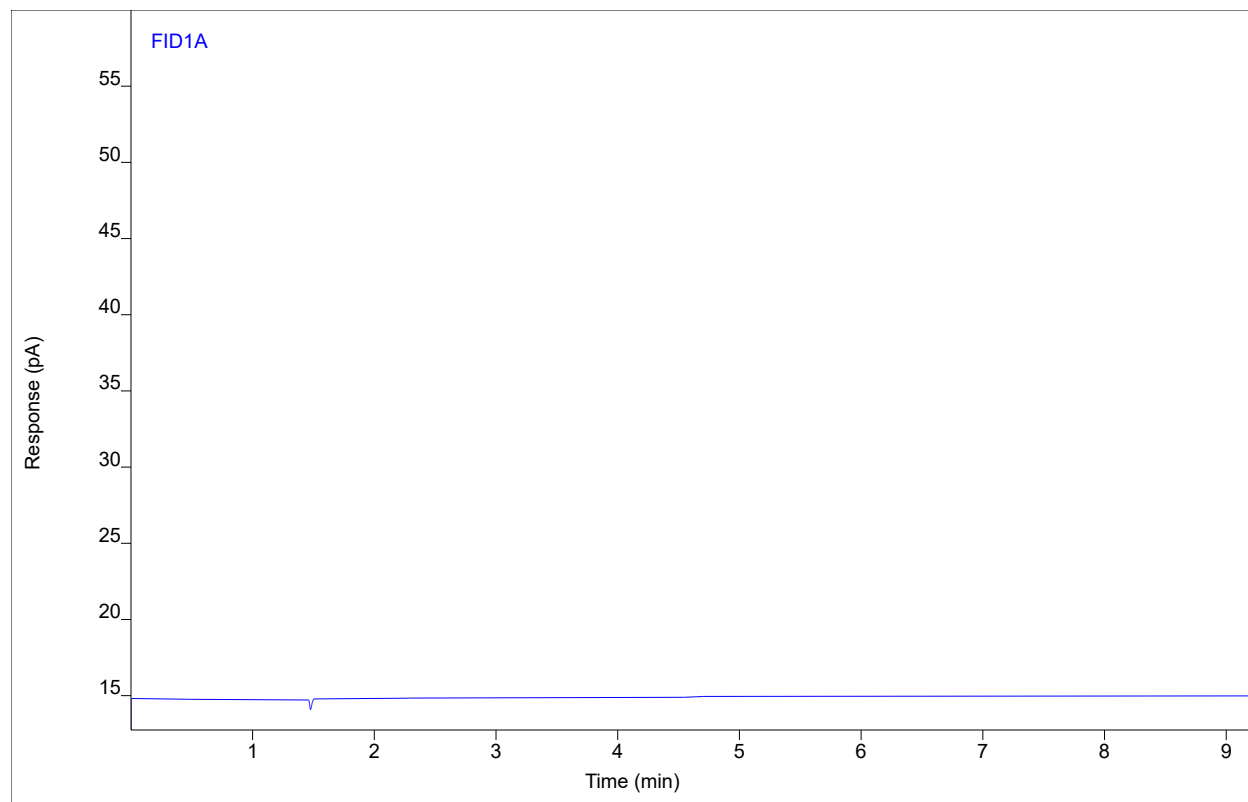
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Benzene		(6.77)				1		ppm
Toluene		(7.84)				1		ppm
Ethylbenzene		(8.64)				1		ppm
m-p-Xylenes		(8.71)				1		ppm
o-Xylene		(8.93)				1		ppm

# Chromatogram Report

Sample Name 1122-024.M18 Primary R2.Bag  
Sequence Name Edithp3021\_R1 ver.2  
Inj Data File \_028\_005F1102.D  
File Location GC/2022/Edith/Quarter 4  
Injection Date 11/3/2022 10:49 AM  
File Modified 11/7/2022 4:20 PM  
Instrument Edith  
Operator Ivy Somocurcio

# Enthalpy Analytical

Sample Type Sample  
Vial Number Vial 5  
Injection Volume 250  
Injection 2 of 3  
Acquisition Method AQ\_EDITHP503\_HRVOC.M  
Analysis Method EDITHP2846F\_ABTEX.M  
Method Modified 2/12/2022 8:13 AM  
Printed 11/8/2022 1:52 PM



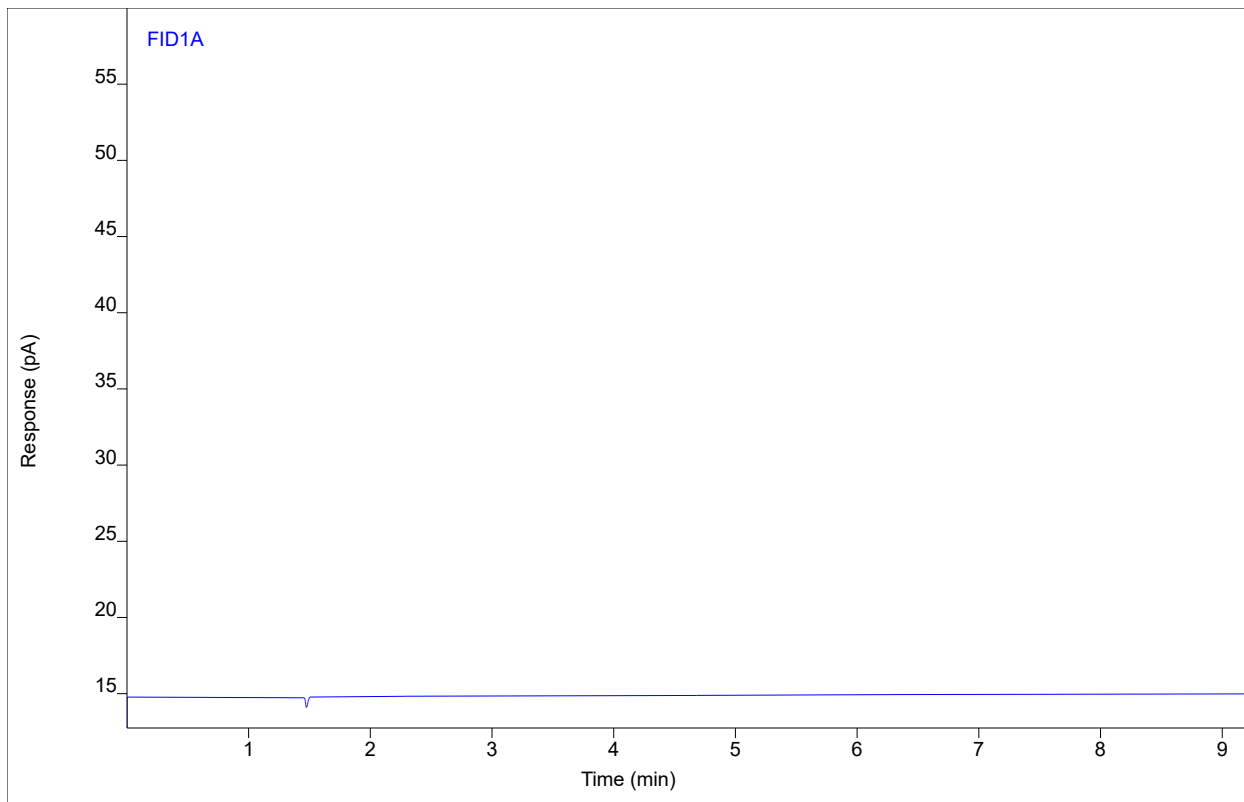
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Benzene		(6.77)				1		ppm
Toluene		(7.84)				1		ppm
Ethylbenzene		(8.64)				1		ppm
m-p-Xylenes		(8.71)				1		ppm
o-Xylene		(8.93)				1		ppm

# Chromatogram Report

Sample Name 1122-024.M18 Primary R2.Bag  
Sequence Name Edithp3021\_R1 ver.2  
Inj Data File \_029\_005F1103.D  
File Location GC/2022/Edith/Quarter 4  
Injection Date 11/3/2022 11:03 AM  
File Modified 11/7/2022 4:20 PM  
Instrument Edith  
Operator Ivy Somocurcio

# Enthalpy Analytical

Sample Type Sample  
Vial Number Vial 5  
Injection Volume 250  
Injection 3 of 3  
Acquisition Method AQ\_EDITHP503\_HRVOC.M  
Analysis Method EDITHP2846F\_ABTEX.M  
Method Modified 2/12/2022 8:13 AM  
Printed 11/8/2022 1:52 PM



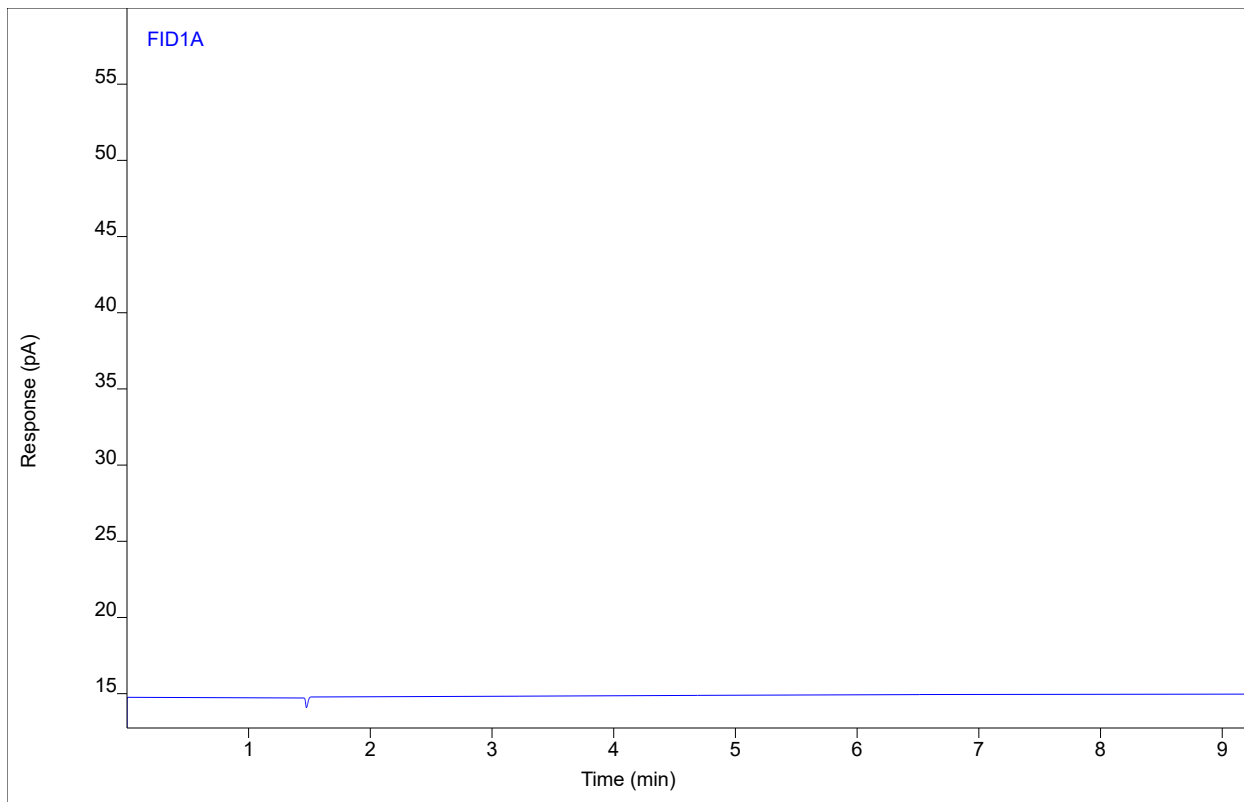
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Benzene		(6.77)				1		ppm
Toluene		(7.84)				1		ppm
Ethylbenzene		(8.64)				1		ppm
m-p-Xylenes		(8.71)				1		ppm
o-Xylene		(8.93)				1		ppm

# Chromatogram Report

# Enthalpy Analytical

Sample Name 1122-024.M18 Primary R3.Bag  
Sequence Name Edithp3021\_R1 ver.2  
Inj Data File \_030\_006F1201.D  
File Location GC/2022/Edith/Quarter 4  
Injection Date 11/3/2022 11:17 AM  
File Modified 11/7/2022 4:21 PM  
Instrument Edith  
Operator Ivy Somocurcio

Sample Type Sample  
Vial Number Vial 6  
Injection Volume 250  
Injection 1 of 3  
Acquisition Method AQ\_EDITHP503\_HRVOC.M  
Analysis Method EDITHP2846F\_ABTEX.M  
Method Modified 2/12/2022 8:13 AM  
Printed 11/8/2022 1:52 PM



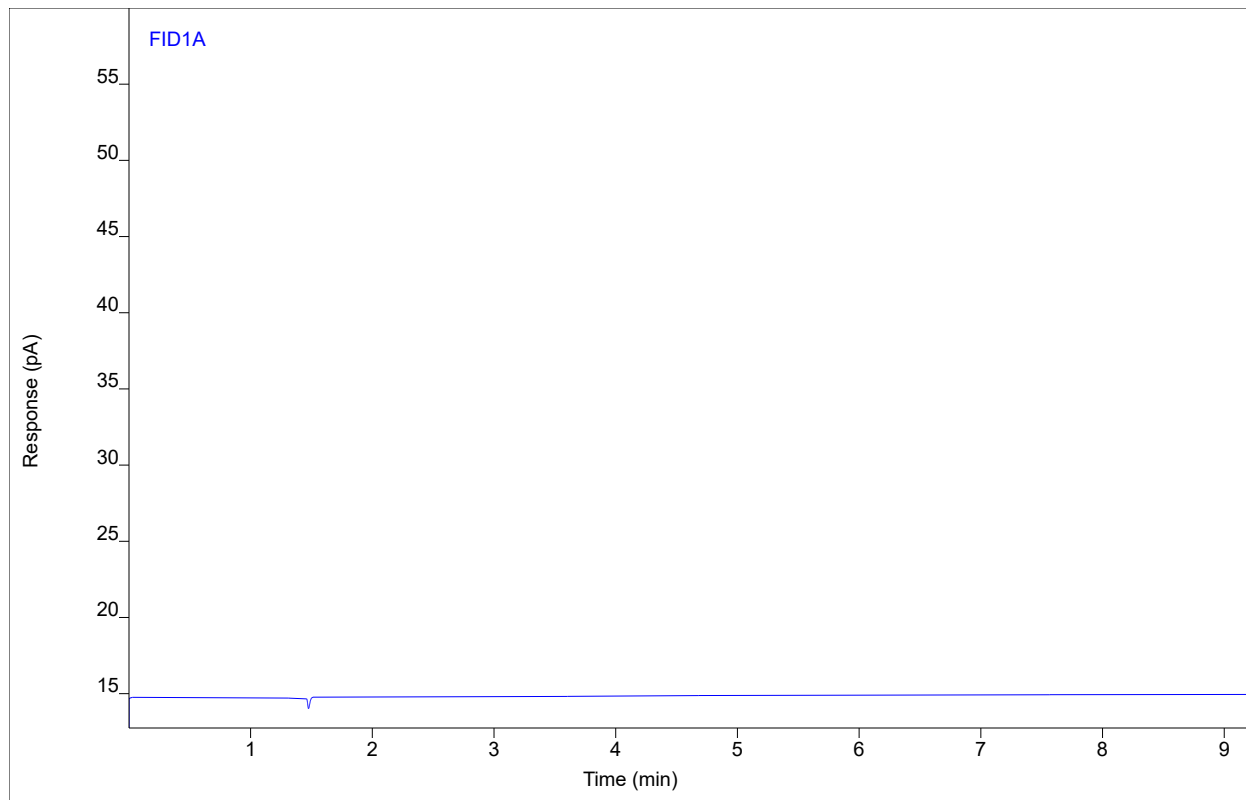
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Benzene		(6.77)				1		ppm
Toluene		(7.84)				1		ppm
Ethylbenzene		(8.64)				1		ppm
m-p-Xylenes		(8.71)				1		ppm
o-Xylene		(8.93)				1		ppm

# Chromatogram Report

Sample Name 1122-024.M18 Primary R3.Bag  
Sequence Name Edithp3021\_R1 ver.2  
Inj Data File \_031\_006F1202.D  
File Location GC/2022/Edith/Quarter 4  
Injection Date 11/3/2022 11:31 AM  
File Modified 11/7/2022 4:21 PM  
Instrument Edith  
Operator Ivy Somocurcio

# Enthalpy Analytical

Sample Type Sample  
Vial Number Vial 6  
Injection Volume 250  
Injection 2 of 3  
Acquisition Method AQ\_EDITHP503\_HRVOC.M  
Analysis Method EDITHP2846F\_ABTEX.M  
Method Modified 2/12/2022 8:13 AM  
Printed 11/8/2022 1:52 PM



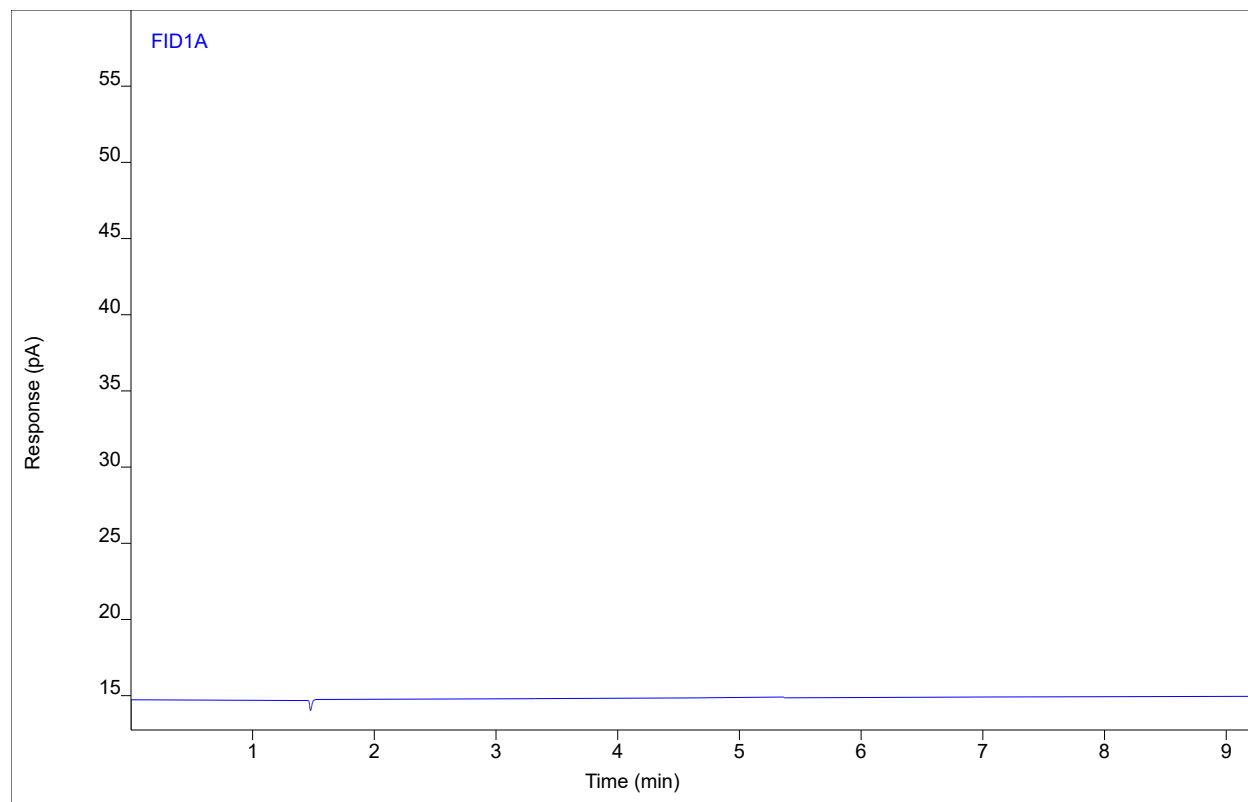
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Benzene		(6.77)				1		ppm
Toluene		(7.84)				1		ppm
Ethylbenzene		(8.64)				1		ppm
m-p-Xylenes		(8.71)				1		ppm
o-Xylene		(8.93)				1		ppm

# Chromatogram Report

Sample Name 1122-024.M18 Primary R3.Bag  
Sequence Name Edithp3021\_R1 ver.2  
Inj Data File \_032\_006F1203.D  
File Location GC/2022/Edith/Quarter 4  
Injection Date 11/3/2022 11:45 AM  
File Modified 11/7/2022 4:21 PM  
Instrument Edith  
Operator Ivy Somocurcio

# Enthalpy Analytical

Sample Type Sample  
Vial Number Vial 6  
Injection Volume 250  
Injection 3 of 3  
Acquisition Method AQ\_EDITHP503\_HRVOC.M  
Analysis Method EDITHP2846F\_ABTEX.M  
Method Modified 2/12/2022 8:13 AM  
Printed 11/8/2022 1:52 PM



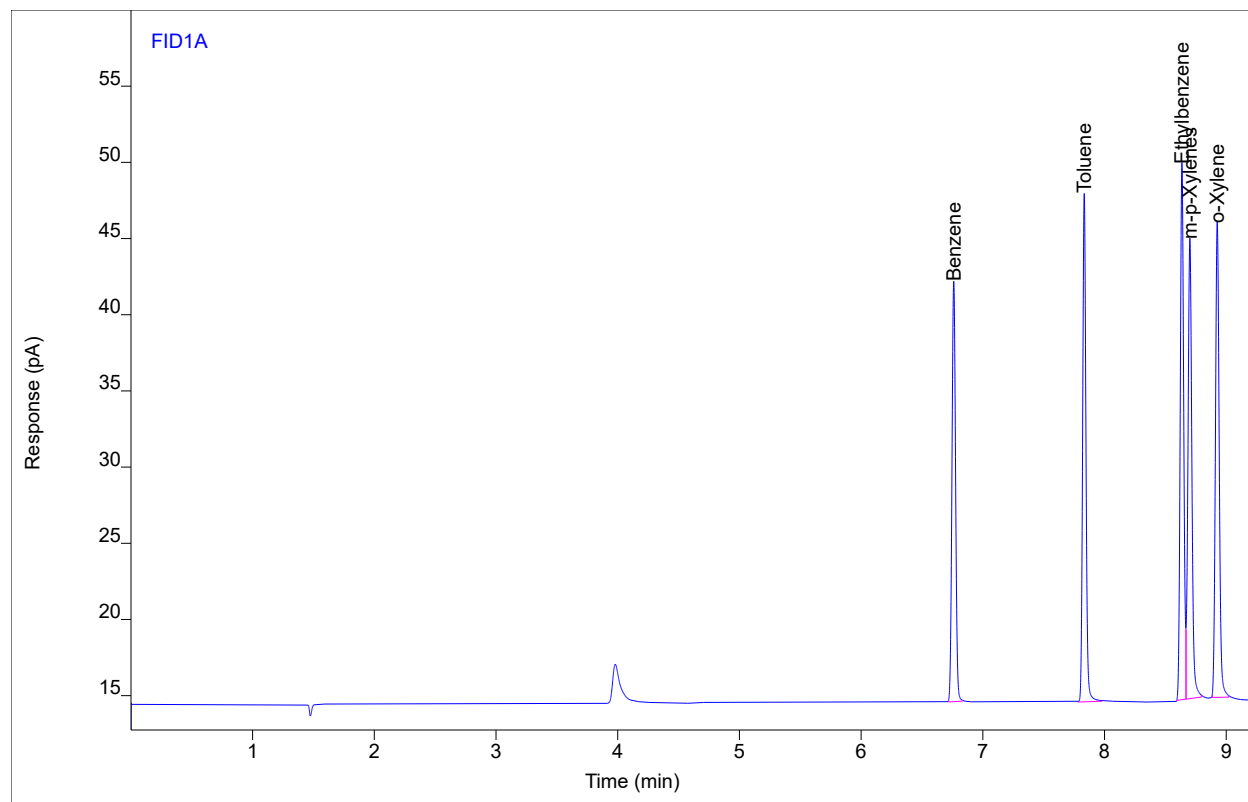
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Benzene		(6.77)				1		ppm
Toluene		(7.84)				1		ppm
Ethylbenzene		(8.64)				1		ppm
m-p-Xylenes		(8.71)				1		ppm
o-Xylene		(8.93)				1		ppm

# Chromatogram Report

# Enthalpy Analytical

Sample Name Edithp2924 #B3 ENV(1=600,5=400)  
Sequence Name EDITHP3021 ver.2  
Inj Data File 003F0701.D  
File Location GC/2022/Edith/Quarter 4  
Injection Date 11/4/2022 2:24 PM  
File Modified 11/7/2022 1:50 PM  
Instrument  
Operator Ivy Somocurcio

Sample Type  
Vial Number Vial 3  
Injection Volume 250  
Injection 1 of 3  
Acquisition Method AQ\_EDITHP503\_HRVOC.M  
Analysis Method EDITHP2846F\_ABTEX.M  
Method Modified 2/12/2022 8:13 AM  
Printed 11/8/2022 1:52 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Benzene	BB	6.76	56.7703	27.5398	39.8068	1	39.8068	ppm
Toluene	MM	7.83	62.9050	33.4708	37.8405	1	37.8405	ppm
Ethylbenzene	BV	8.64	69.0691	35.1699	37.1261	1	37.1261	ppm
m-p-Xylenes	VB	8.70	67.2469	30.1574	38.9611	1	38.9611	ppm
o-Xylene	BB	8.93	67.3697	31.1443	38.6933	1	38.6933	ppm

## Analyst Peak Integration Comments

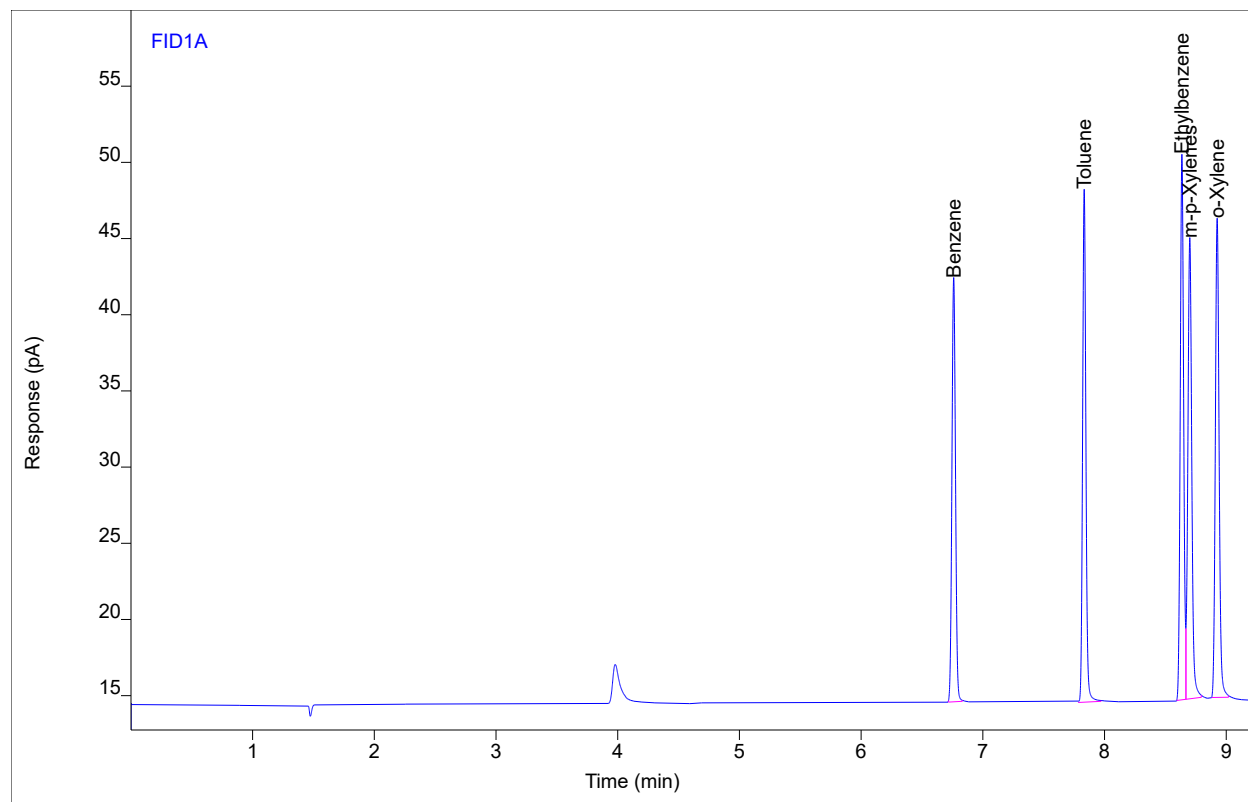
14:55:13 11/04/22 Ivy Somocurcio II BL

# Chromatogram Report

# Enthalpy Analytical

Sample Name Edithp2924 #B3 ENV(1=600,5=400)  
Sequence Name EDITHP3021 ver.2  
Inj Data File 003F0702.D  
File Location GC/2022/Edith/Quarter 4  
Injection Date 11/4/2022 2:43 PM  
File Modified 11/7/2022 1:50 PM  
Instrument  
Operator Ivy Somocurcio

Sample Type  
Vial Number Vial 3  
Injection Volume 250  
Injection 2 of 3  
Acquisition Method AQ\_EDITHP503\_HRVOC.M  
Analysis Method EDITHP2846F\_ABTEX.M  
Method Modified 2/12/2022 8:13 AM  
Printed 11/8/2022 1:52 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Benzene	BB	6.76	56.7482	27.7996	39.7914	1	39.7914	ppm
Toluene	MM	7.83	63.0920	33.7770	37.9519	1	37.9519	ppm
Ethylbenzene	BV	8.64	69.3862	35.7076	37.2943	1	37.2943	ppm
m-p-Xylenes	VB	8.70	67.5794	30.2151	39.1511	1	39.1511	ppm
o-Xylene	BB	8.93	67.7120	31.3958	38.8871	1	38.8871	ppm

## Analyst Peak Integration Comments

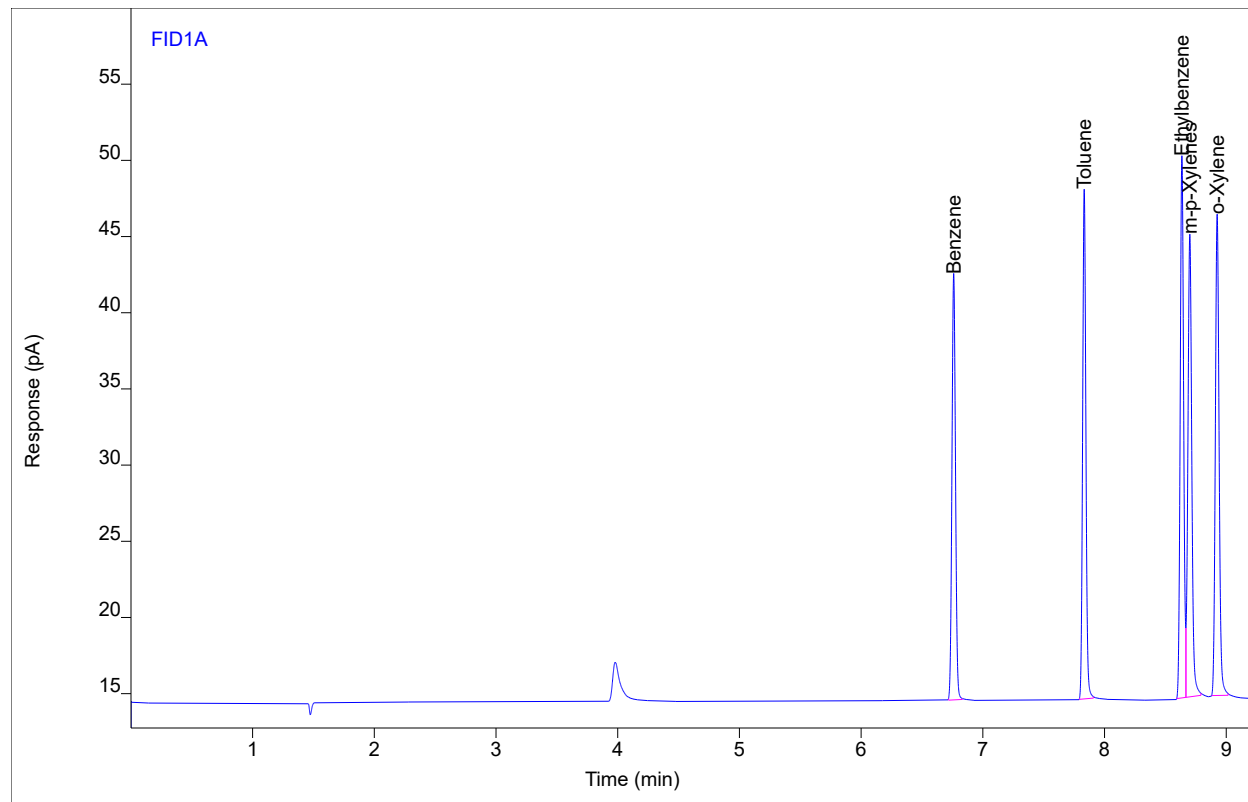
14:55:27 11/04/22 Ivy Somocurcio II BL

# Chromatogram Report

# Enthalpy Analytical

Sample Name Edithp2924 #B3 ENV(1=600,5=400)  
Sequence Name EDITHP3021 ver.2  
Inj Data File 003F0703.D  
File Location GC/2022/Edith/Quarter 4  
Injection Date 11/4/2022 3:02 PM  
File Modified 11/7/2022 1:50 PM  
Instrument  
Operator Ivy Somocurcio

Sample Type  
Vial Number Vial 3  
Injection Volume 250  
Injection 3 of 3  
Acquisition Method AQ\_EDITHP503\_HRVOC.M  
Analysis Method EDITHP2846F\_ABTEX.M  
Method Modified 2/12/2022 8:13 AM  
Printed 11/8/2022 1:52 PM



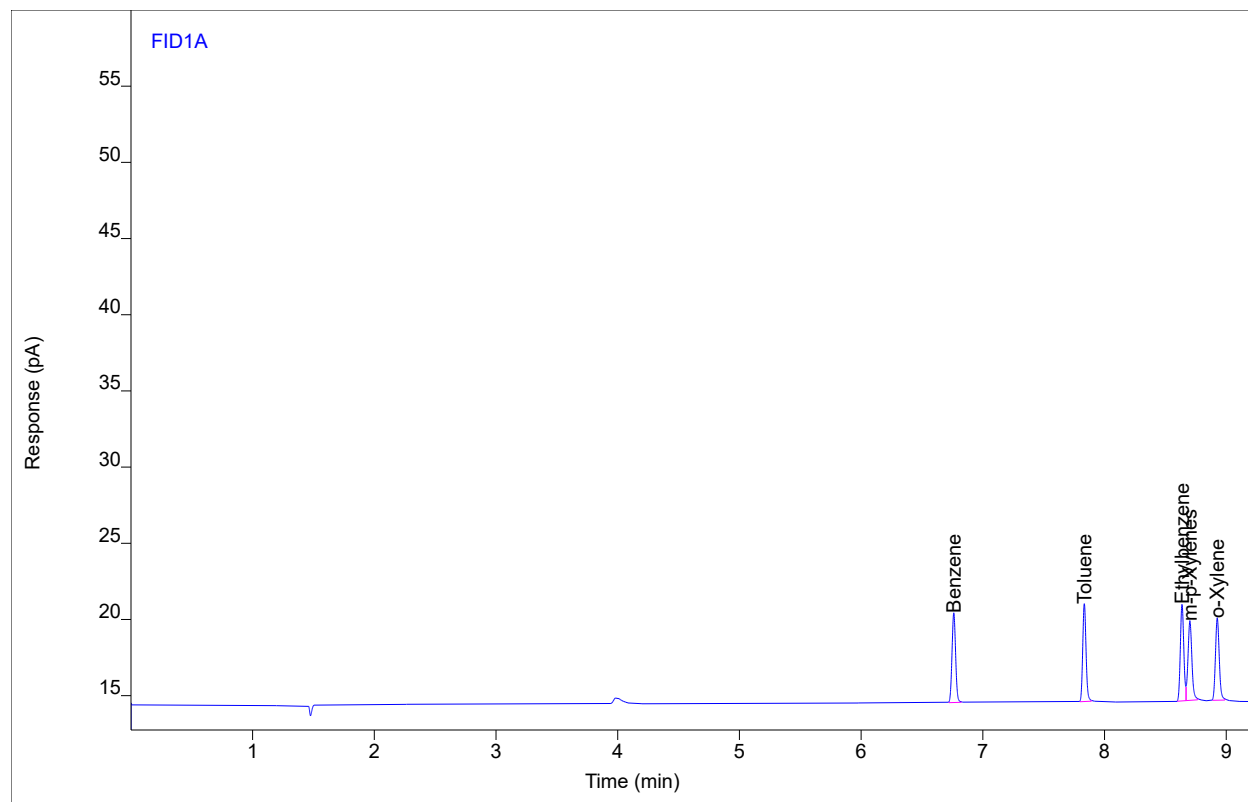
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Benzene	BB	6.76	56.7746	27.9100	39.8098	1	39.8098	ppm
Toluene	BB	7.83	62.0517	33.3183	37.3318	1	37.3318	ppm
Ethylbenzene	BV	8.64	69.4787	35.5105	37.3434	1	37.3434	ppm
m-p-Xylenes	VB	8.70	67.6873	30.3147	39.2127	1	39.2127	ppm
o-Xylene	BB	8.93	67.8493	31.5151	38.9648	1	38.9648	ppm

# Chromatogram Report

# Enthalpy Analytical

Sample Name 1122-024.M18 Primary R1 SP.Bag  
Sequence Name EDITHP3022 ver.1  
Inj Data File 004F0101.D  
File Location GC/2022/Edith/Quarter 4  
Injection Date 11/4/2022 3:24 PM  
File Modified 11/8/2022 10:50 AM  
Instrument Edith  
Operator Ivy Somocurcio

Sample Type Sample  
Vial Number Vial 4  
Injection Volume 250  
Injection 1 of 3  
Acquisition Method AQ\_EDITHP503\_HRVOC.M  
Analysis Method EDITHP2846F\_ABTEX.M  
Method Modified 2/12/2022 8:13 AM  
Printed 11/8/2022 1:52 PM



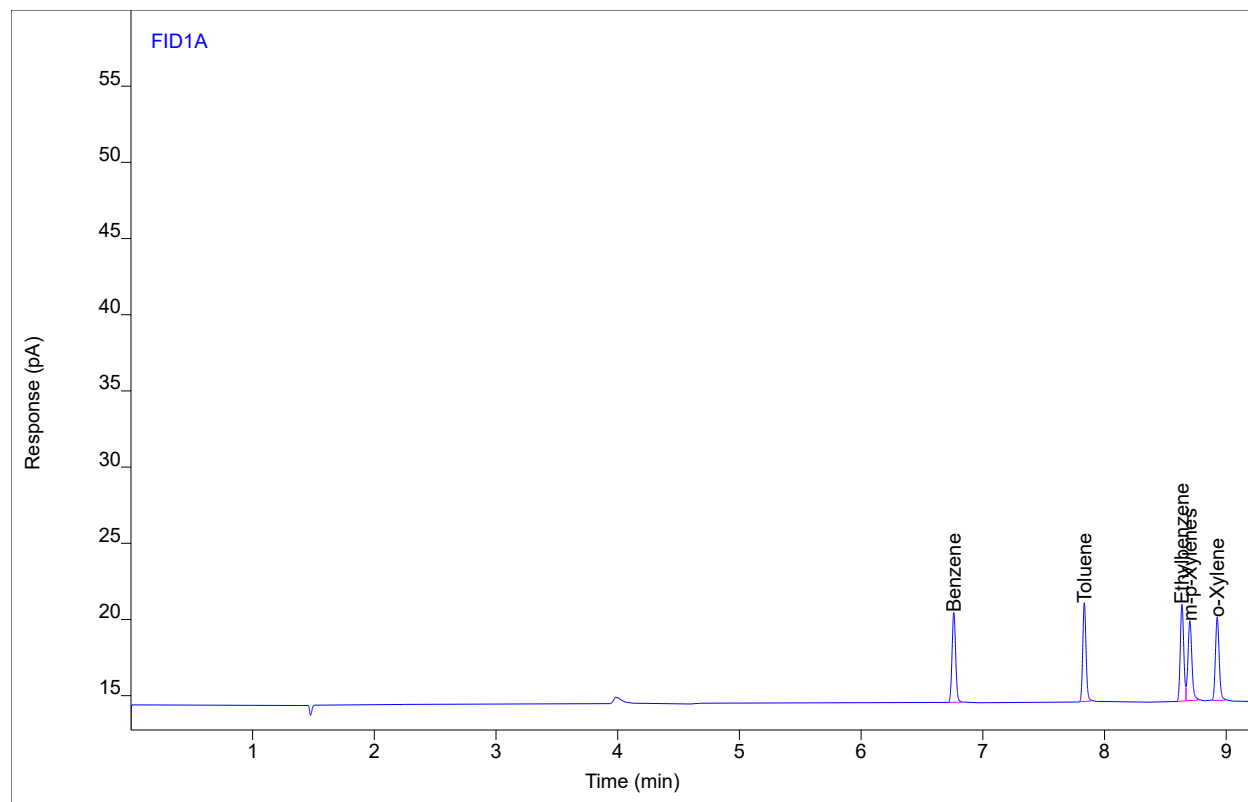
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Benzene	BB	6.76	12.0810	5.87768	8.62207	1	8.62207	ppm
Toluene	BB	7.83	12.1430	6.41088	7.58241	1	7.58241	ppm
Ethylbenzene	BV	8.64	12.4678	6.35503	7.09902	1	7.09902	ppm
m-p-Xylenes	VB	8.70	11.7102	5.22041	7.23393	1	7.23393	ppm
o-Xylene	BB	8.93	11.6494	5.39409	7.14724	1	7.14724	ppm

# Chromatogram Report

# Enthalpy Analytical

Sample Name 1122-024.M18 Primary R1 SP.Bag  
Sequence Name EDITHP3022 ver.1  
Inj Data File 004F0102.D  
File Location GC/2022/Edith/Quarter 4  
Injection Date 11/4/2022 3:37 PM  
File Modified 11/8/2022 10:50 AM  
Instrument Edith  
Operator Ivy Somocurcio

Sample Type Sample  
Vial Number Vial 4  
Injection Volume 250  
Injection 2 of 3  
Acquisition Method AQ\_EDITHP503\_HRVOC.M  
Analysis Method EDITHP2846F\_ABTEX.M  
Method Modified 2/12/2022 8:13 AM  
Printed 11/8/2022 1:52 PM



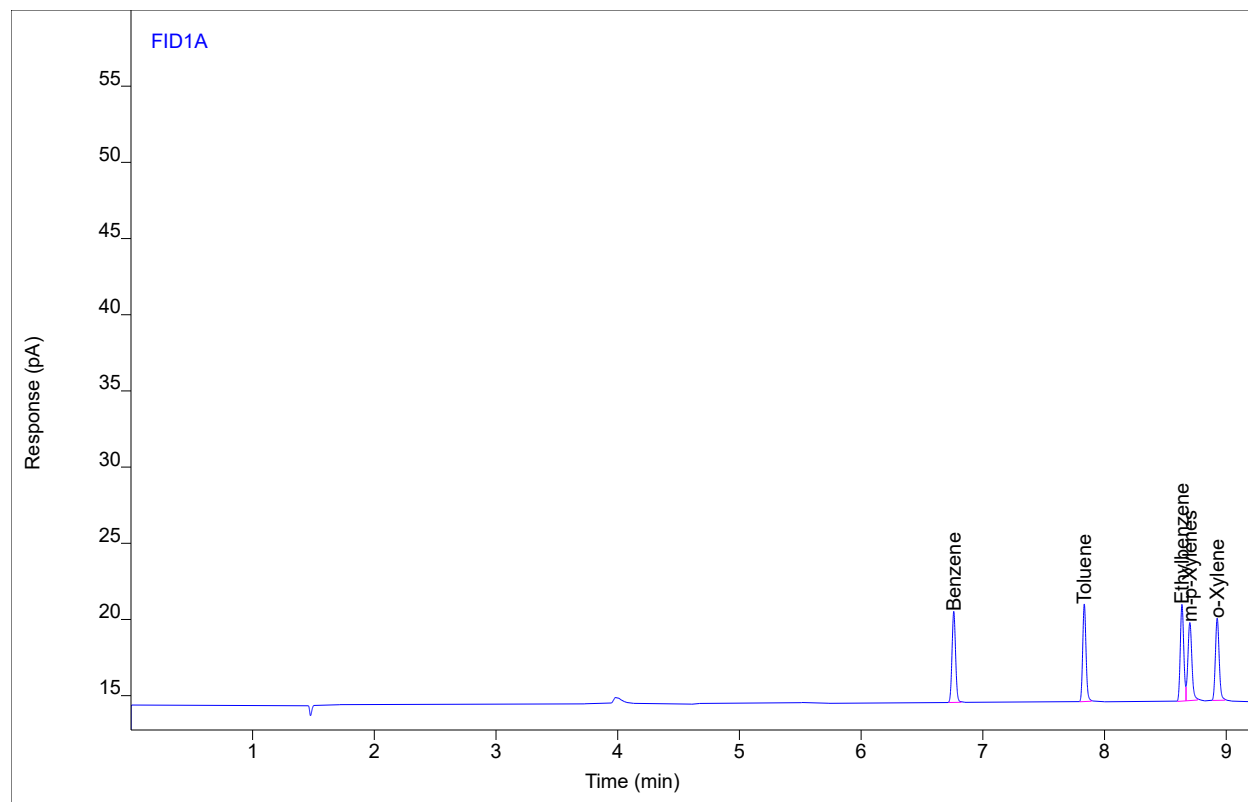
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Benzene	BB	6.76	12.1330	5.89532	8.65835	1	8.65835	ppm
Toluene	BB	7.83	12.1392	6.47164	7.58015	1	7.58015	ppm
Ethylbenzene	BV	8.64	12.5768	6.35200	7.15685	1	7.15685	ppm
m-p-Xylenes	VB	8.70	11.8112	5.24437	7.29162	1	7.29162	ppm
o-Xylene	BB	8.93	11.7025	5.46106	7.17732	1	7.17732	ppm

# Chromatogram Report

# Enthalpy Analytical

Sample Name 1122-024.M18 Primary R1 SP.Bag  
Sequence Name EDITHP3022 ver.1  
Inj Data File 004F0103.D  
File Location GC/2022/Edith/Quarter 4  
Injection Date 11/4/2022 3:51 PM  
File Modified 11/8/2022 10:50 AM  
Instrument Edith  
Operator Ivy Somocurcio

Sample Type  
Vial Number Vial 4  
Injection Volume 250  
Injection 3 of 3  
Acquisition Method AQ\_EDITHP503\_HRVOC.M  
Analysis Method EDITHP2846F\_ABTEX.M  
Method Modified 2/12/2022 8:13 AM  
Printed 11/8/2022 1:52 PM



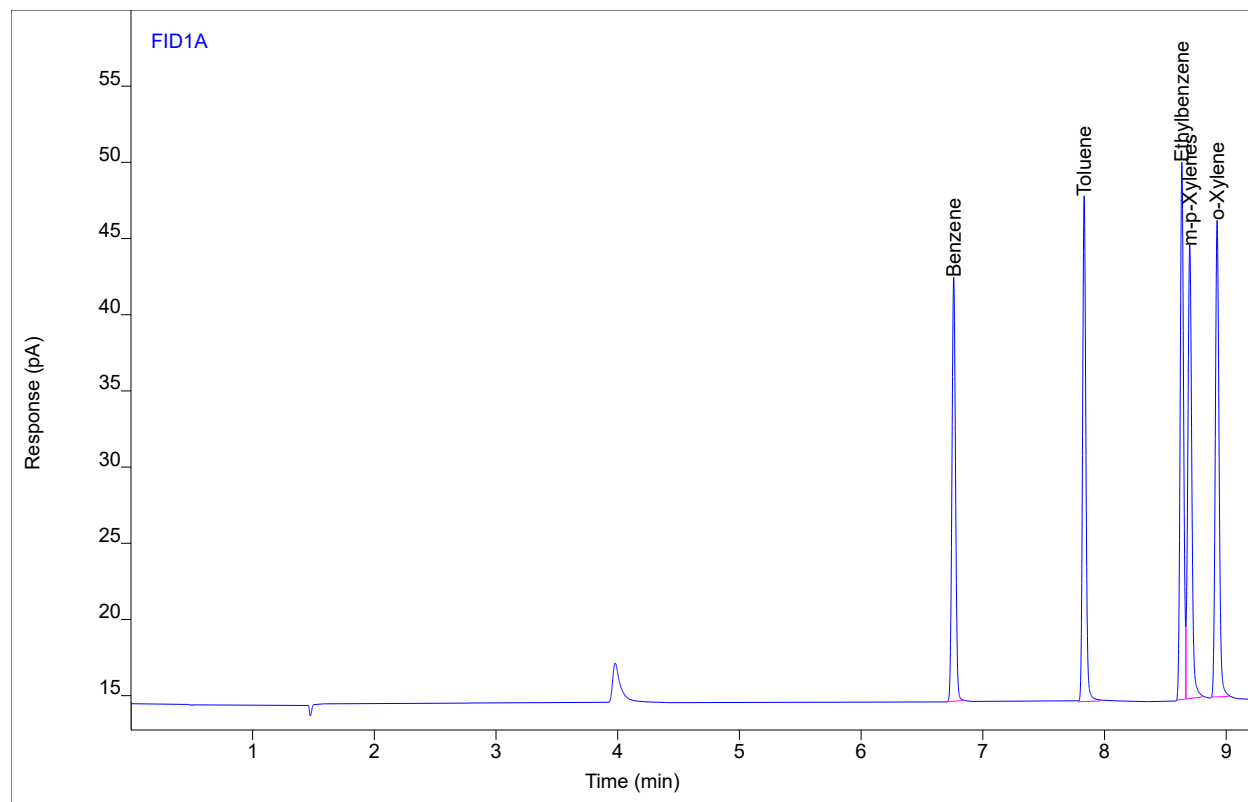
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Benzene	BB	6.76	12.0996	5.96552	8.63499	1	8.63499	ppm
Toluene	BB	7.83	12.1138	6.38698	7.56498	1	7.56498	ppm
Ethylbenzene	BV	8.64	12.5172	6.34895	7.12522	1	7.12522	ppm
m-p-Xylenes	VB	8.70	11.7574	5.15553	7.26086	1	7.26086	ppm
o-Xylene	BB	8.93	11.6085	5.39473	7.12410	1	7.12410	ppm

# Chromatogram Report

# Enthalpy Analytical

Sample Name Edithp2924 #B3 ENV(1=600,5=400)  
Sequence Name EDITHP3022 ver.1  
Inj Data File 003F1201.D  
File Location GC/2022/Edith/Quarter 4  
Injection Date 11/4/2022 11:03 PM  
File Modified 11/8/2022 10:52 AM  
Instrument Edith  
Operator Ivy Somocurcio

Sample Type  
Vial Number Vial 3  
Injection Volume 250  
Injection 1 of 3  
Acquisition Method AQ\_EDITHP503\_HRVOC.M  
Analysis Method EDITHP2846F\_ABTEX.M  
Method Modified 2/12/2022 8:13 AM  
Printed 11/8/2022 1:52 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Benzene	BB	6.76	56.6582	27.7601	39.7286	1	39.7286	ppm
Toluene	MM	7.83	62.8147	33.2647	37.7866	1	37.7866	ppm
Ethylbenzene	BV	8.64	68.8428	35.1642	37.0060	1	37.0060	ppm
m-p-Xylenes	VB	8.70	67.3371	29.6948	39.0126	1	39.0126	ppm
o-Xylene	BB	8.93	67.1227	31.1948	38.5534	1	38.5534	ppm

## Analyst Peak Integration Comments

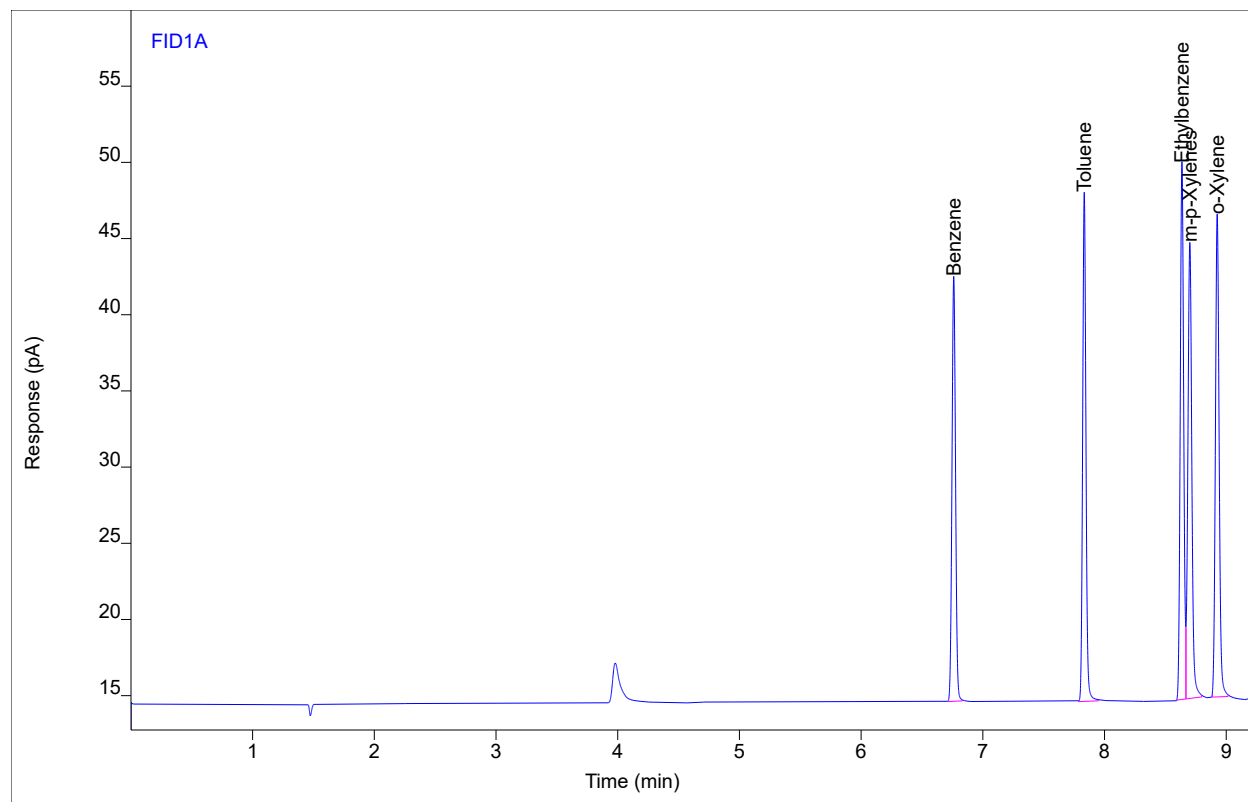
07:29:52 11/07/22 Ivy Somocurcio II BL

# Chromatogram Report

# Enthalpy Analytical

Sample Name Edithp2924 #B3 ENV(1=600,5=400)  
 Sequence Name EDITHP3022 ver.1  
 Inj Data File 003F1202.D  
 File Location GC/2022/Edith/Quarter 4  
 Injection Date 11/4/2022 11:22 PM  
 File Modified 11/8/2022 10:52 AM  
 Instrument Edith  
 Operator Ivy Somocurcio

Sample Type  
 Vial Number Vial 3  
 Injection Volume 250  
 Injection 2 of 3  
 Acquisition Method AQ\_EDITHP503\_HRVOC.M  
 Analysis Method EDITHP2846F\_ABTEX.M  
 Method Modified 2/12/2022 8:13 AM  
 Printed 11/8/2022 1:52 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Benzene	BB	6.76	56.5276	27.8113	39.6375	1	39.6375	ppm
Toluene	MM	7.83	62.5849	33.5165	37.6496	1	37.6496	ppm
Ethylbenzene	BV	8.64	69.0234	35.1686	37.1018	1	37.1018	ppm
m-p-Xylenes	VB	8.70	67.5855	29.9047	39.1545	1	39.1545	ppm
o-Xylene	BB	8.93	67.4633	31.6402	38.7463	1	38.7463	ppm

## Analyst Peak Integration Comments

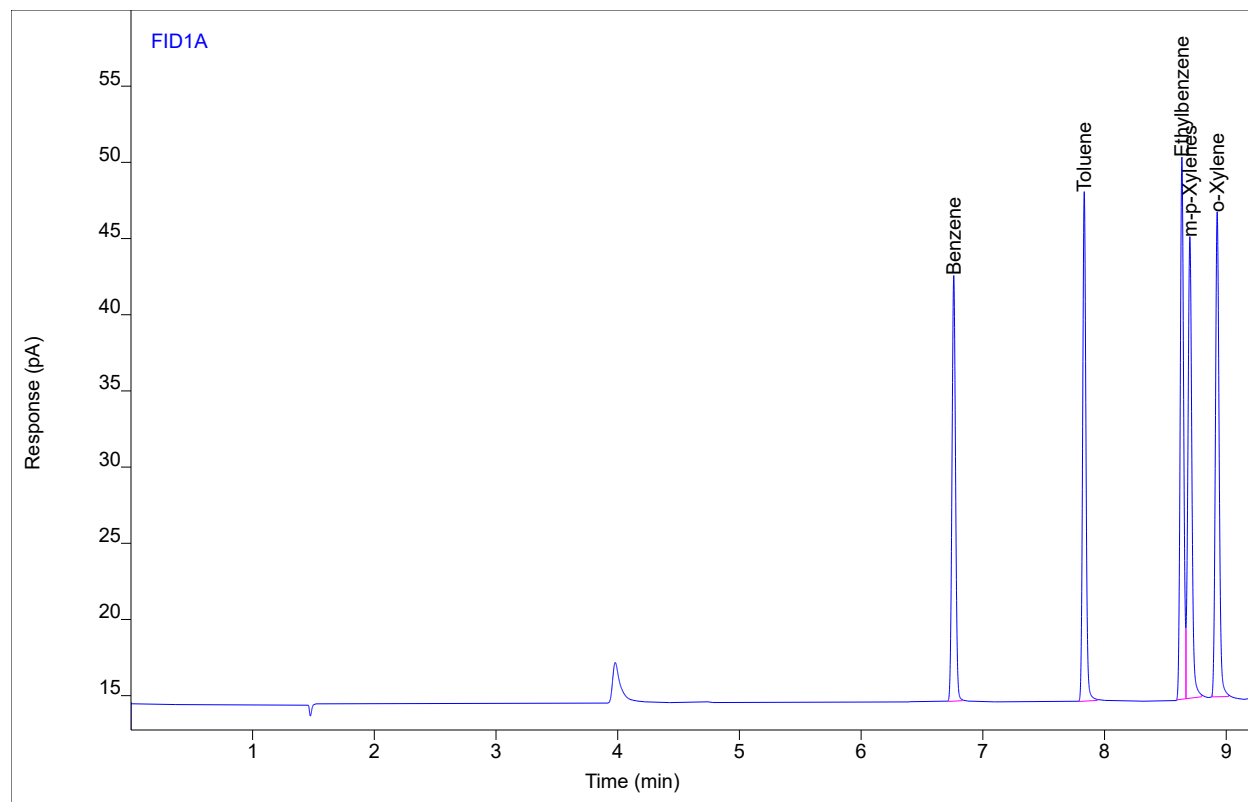
07:30:05 11/07/22 Ivy Somocurcio II BL

# Chromatogram Report

# Enthalpy Analytical

Sample Name Edithp2924 #B3 ENV(1=600,5=400)  
Sequence Name EDITHP3022 ver.1  
Inj Data File 003F1203.D  
File Location GC/2022/Edith/Quarter 4  
Injection Date 11/4/2022 11:41 PM  
File Modified 11/8/2022 10:52 AM  
Instrument Edith  
Operator Ivy Somocurcio

Sample Type  
Vial Number Vial 3  
Injection Volume 250  
Injection 3 of 3  
Acquisition Method AQ\_EDITHP503\_HRVOC.M  
Analysis Method EDITHP2846F\_ABTEX.M  
Method Modified 2/12/2022 8:13 AM  
Printed 11/8/2022 1:52 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Benzene	BB	6.76	56.7521	27.8522	39.7941	1	39.7941	ppm
Toluene	MM	7.83	62.7116	33.5389	37.7252	1	37.7252	ppm
Ethylbenzene	BV	8.64	69.2929	35.4868	37.2448	1	37.2448	ppm
m-p-Xylenes	VB	8.70	68.0244	30.2459	39.4053	1	39.4053	ppm
o-Xylene	BB	8.93	67.9935	31.7720	39.0464	1	39.0464	ppm

## Analyst Peak Integration Comments

07:30:17 11/07/22 Ivy Somocurcio II BL

=====

Calibration Table

=====

Calib. Data Modified : Saturday, February 12, 2022 8:11:08 AM

Rel. Reference Window : 0.000 %  
 Abs. Reference Window : 0.100 min  
 Rel. Non-ref. Window : 0.000 %  
 Abs. Non-ref. Window : 0.050 min  
 Uncalibrated Peaks : Separately calculated (see below)  
 Partial Calibration : Yes, identified peaks are recalibrated  
 Correct All Ret. Times: No, only for identified peaks

Curve Type : Linear  
 Origin : Connected  
 Weight : Quadratic (Amnt)

Recalibration Settings:  
 Average Response : Average all calibrations  
 Average Retention Time: Floating Average New 75%

Calibration Report Options :  
 Printout of recalibrations within a sequence:  
 Calibration Table after Recalibration  
 Normal Report after Recalibration  
 If the sequence is done with bracketing:  
 Results of first cycle (ending previous bracket)

Signal 1: FID1 A, Front Signal

Uncalibrated Peaks : compound name not specified

Signal 2: FID3 B, Back Signal

Uncalibrated Peaks : not reported

RetTime	Lvl	Amount	Area	Amt/Area	Ref Grp Name
[min]	Sig	[ppm]			
3.984	1 21	3.64000	5.71966e-1	6.36401	Acetone
	22	19.90000	4.37247	4.55120	
	23	39.80000	9.50873	4.18563	
	24	99.60000	26.80922	3.71514	
6.768	1 21	3.70000	5.03505	7.34848e-1	Benzene
	22	20.20000	28.44162	7.10227e-1	
	23	40.50000	57.54820	7.03758e-1	
	24	101.20000	146.23926	6.92017e-1	
7.839	1 21	3.65000	5.55869	6.56630e-1	Toluene
	22	20.00000	32.54202	6.14590e-1	
	23	40.00000	66.36354	6.02741e-1	
	24	99.90000	169.24173	5.90280e-1	
8.642	1 21	3.60000	5.88668	6.11551e-1	Ethylbenzene
	22	19.70000	35.68923	5.51987e-1	
	23	39.40000	73.38292	5.36910e-1	
	24	98.40000	186.75874	5.26883e-1	
8.707	1 21	3.69000	5.52648	6.67694e-1	m-p-Xylenes
	22	20.20000	33.66933	5.99953e-1	
	23	40.40000	69.90140	5.77957e-1	
	24	100.88000	178.43660	5.65355e-1	
8.933	1 21	3.69000	5.56491	6.63083e-1	o-Xylene
	22	20.20000	33.86403	5.96503e-1	
	23	40.30000	70.42869	5.72210e-1	
	24	100.80000	180.10786	5.59665e-1	

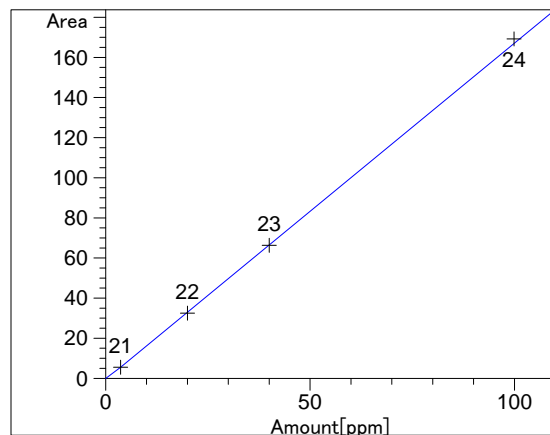
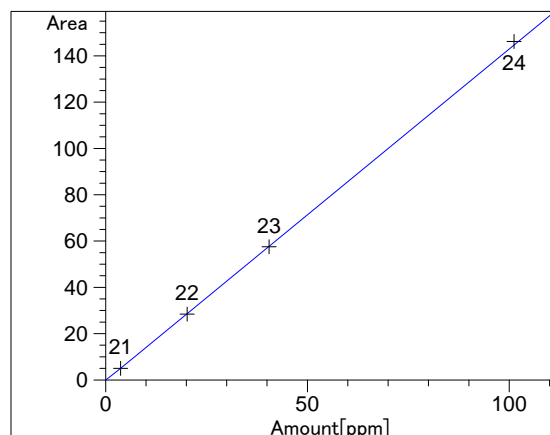
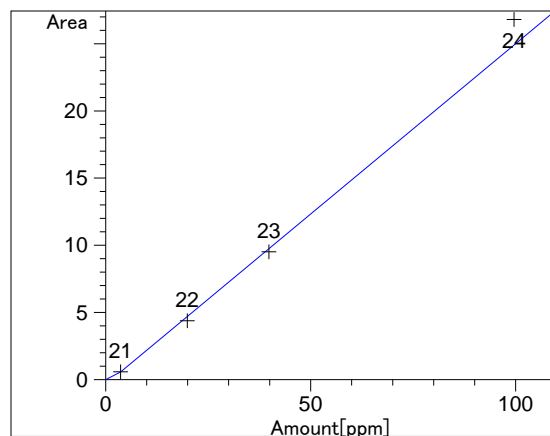
1 Warnings or Errors :

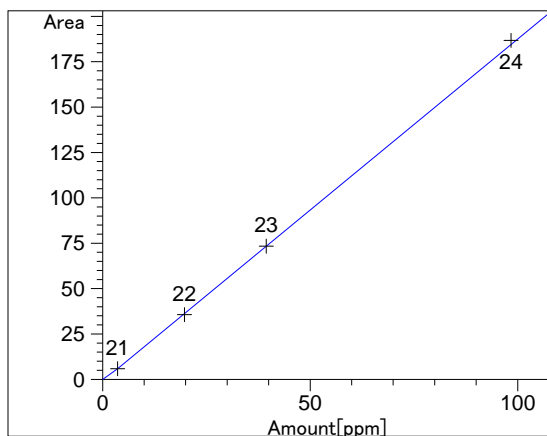
Warning : Cal. table open and changed while report was generated.

Peak Sum Table

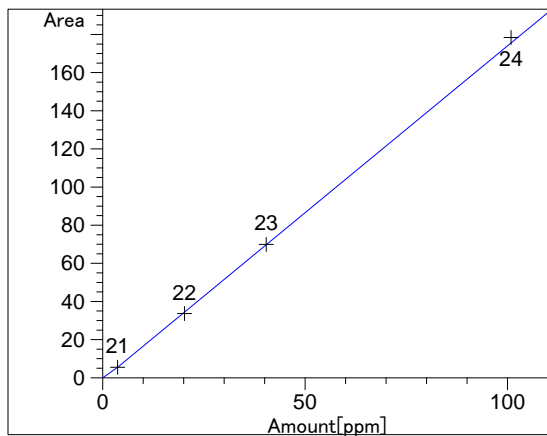
\*\*\*No Entries in table\*\*\*

Calibration Curves

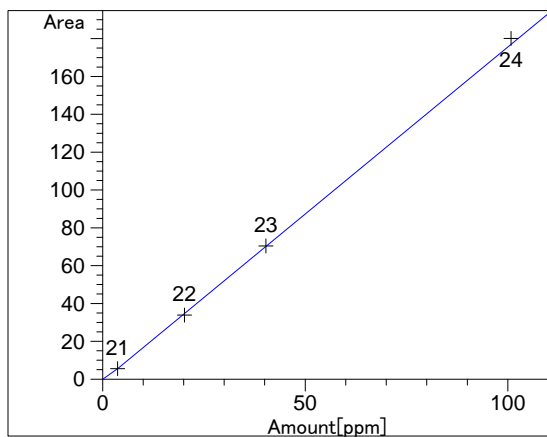




Ethylbenzene at exp. RT: 8.642  
FID1 A, Front Signal  
Correlation: 0.99993  
Residual Std. Dev.: 1.59201  
Formula:  $y = mx + b$   
m: 1.88501  
b:  $-9.13959e-1$   
x: Amount  
y: Area  
Calibration Level Weights:  
Level 21 : 1  
Level 22 : 0.033394  
Level 23 : 0.008349  
Level 24 : 0.001338

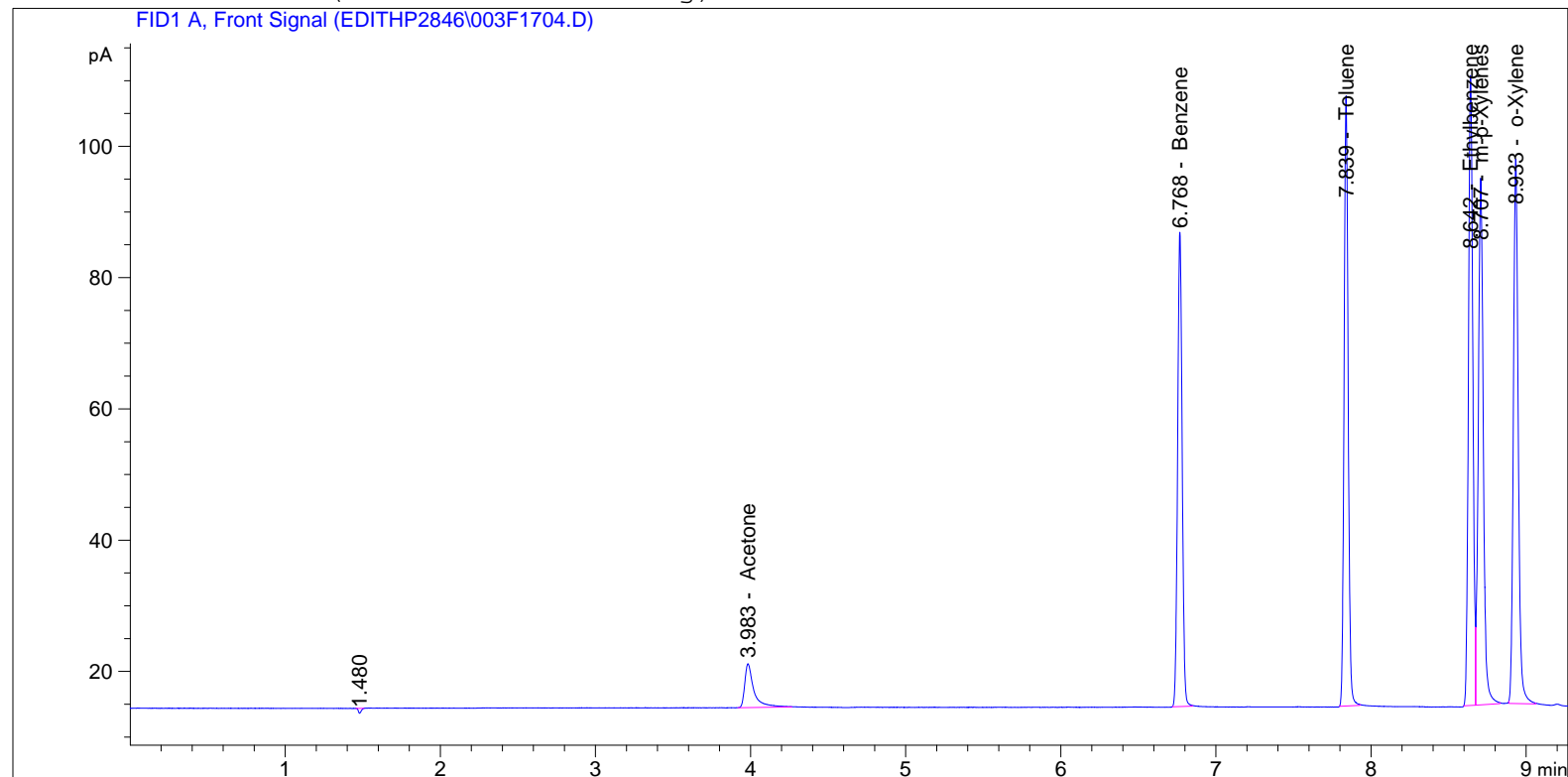


m-p-Xylenes at exp. RT: 8.707  
FID1 A, Front Signal  
Correlation: 0.99985  
Residual Std. Dev.: 2.05241  
Formula:  $y = mx + b$   
m: 1.75045  
b:  $-9.52382e-1$   
x: Amount  
y: Area  
Calibration Level Weights:  
Level 21 : 1  
Level 22 : 0.03337  
Level 23 : 0.008342  
Level 24 : 0.001338



o-Xylene at exp. RT: 8.933  
FID1 A, Front Signal  
Correlation: 0.99982  
Residual Std. Dev.: 2.23435  
Formula:  $y = mx + b$   
m: 1.76632  
b:  $-9.74936e-1$   
x: Amount  
y: Area  
Calibration Level Weights:  
Level 21 : 1  
Level 22 : 0.03337  
Level 23 : 0.008384  
Level 24 : 0.00134

```
=====
Acq. Operator   : Nicholas Traversa          Seq. Line :   17
Acq. Instrument : Edith                     Location  : Vial 3
Injection Date  : 2/11/2022 10:49:05 PM      Inj       :    4
                                           Inj Volume: 250 µl
Acq. Method     : C:\GC\2022\EDITH\QUARTER 1\EDITHP2846\AQ_EDITHP503_HRVOC.M
Last changed    : 8/14/2017 12:18:06 PM by Nicholas Traversa
Analysis Method : C:\GC\2022\EDITH\METHODS\EDITHP2846F_ABTEX.M
Last changed    : 2/12/2022 8:13:38 AM by Nicholas Traversa
ECM Server      : http://s022vas01/Enthalpy
ECM Operator    : Nicholas Traversa
ECM Path        : GC\2022\Edith\Quarter 1\EDITHP2846.SC.SSIzip
ECM Version     : 1 (modified after loading)
=====
```



External Standard Report

```
Sorted By           : Signal
Calib. Data Modified : Saturday, February 12, 2022 8:11:08 AM
Multiplier          : 1.0000
Dilution            : 1.0000
Use Multiplier & Dilution Factor with ISTDs
```

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
3.983	BB	27.12137	3.99233	108.27738		Acetone
6.768	BB	146.71381	6.99120e-1	102.57060		Benzene
7.839	BB	169.96719	5.98102e-1	101.65770		Toluene
8.642	BV	187.63574	5.33085e-1	100.02577		Ethylbenzene
8.707	VB	180.11488	5.74304e-1	103.44065		m-p-Xylenes
8.933	BB	181.34390	5.69193e-1	103.21966		o-Xylene

Totals : 619.19177

Uncalibrated Peaks : compound name not specified

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.480	BP N	9.29950e-1	0.00000	0.00000	?	

Uncalib. totals : 0.00000

1 Warnings or Errors :

Warning : Calibration warnings (see calibration table listing)

=====  
Summed Peaks Report  
=====

Signal 1: FID1 A, Front Signal

=====  
Final Summed Peaks Report  
=====

Signal 1: FID1 A, Front Signal

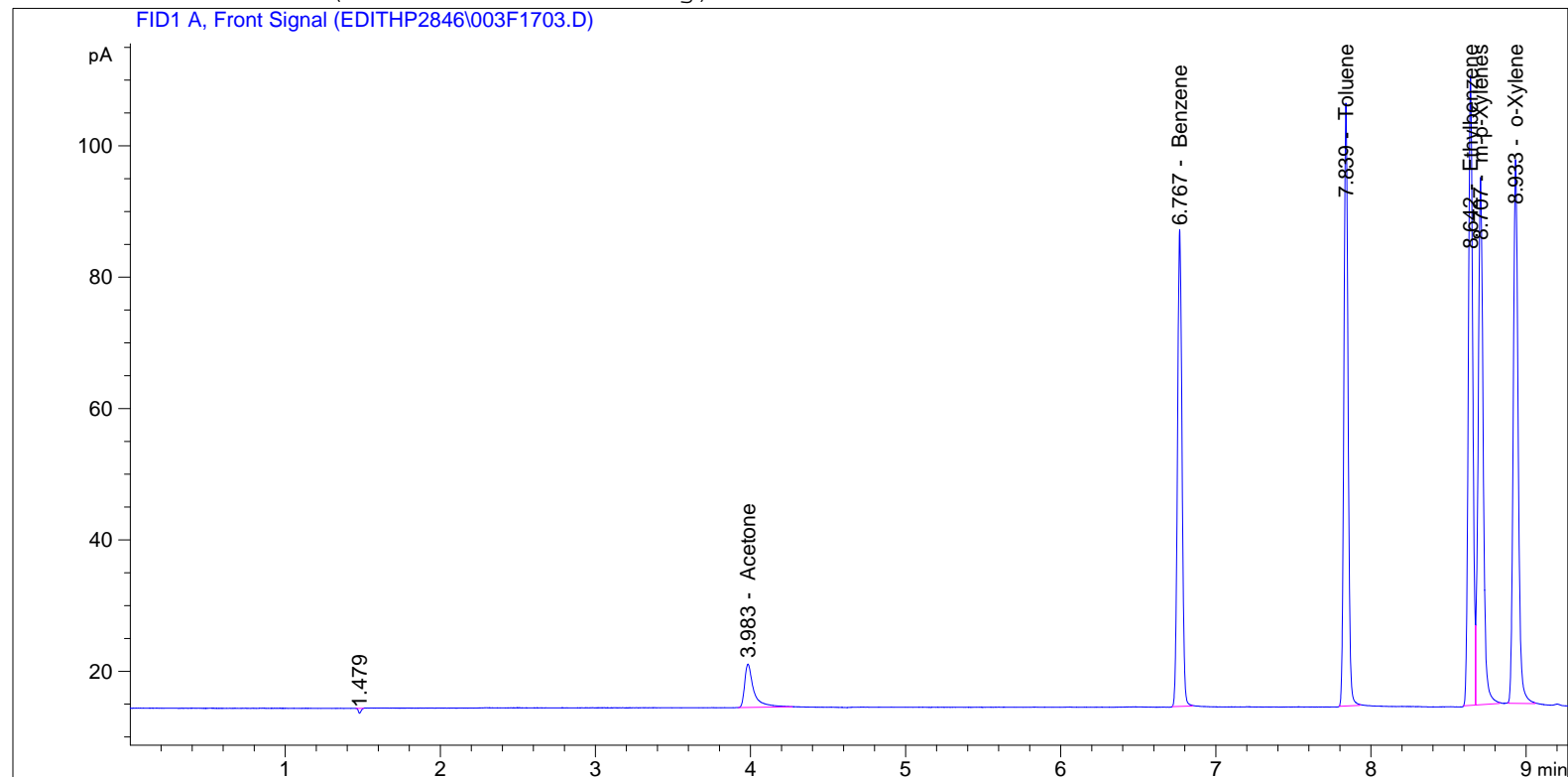
Name	Total Area [pA*s]	Amount [ppm]
Acetone	27.12137	108.2774
Benzene	146.71381	102.5706
Toluene	169.96719	101.6577
Ethylbenzene	187.63574	100.0258
m-p-Xylenes	180.11488	103.4406
o-Xylene	181.34390	103.2197

Totals : 619.1918

\*\*\* End of Report \*\*\*

=====

Acq. Operator	: Nicholas Traversa	Seq. Line	: 17
Acq. Instrument	: Edith	Location	: Vial 3
Injection Date	: 2/11/2022 10:33:56 PM	Inj	: 3
		Inj Volume	: 250 µl
Acq. Method	: C:\GC\2022\EDITH\QUARTER 1\EDITHP2846\AQ_EDITHP503_HRVOC.M		
Last changed	: 8/14/2017 12:18:06 PM by Nicholas Traversa		
Analysis Method	: C:\GC\2022\EDITH\METHODS\EDITHP2846F_ABTEX.M		
Last changed	: 2/12/2022 8:13:38 AM by Nicholas Traversa		
ECM Server	: http://s022vas01/Enthalpy		
ECM Operator	: Nicholas Traversa		
ECM Path	: GC\2022\Edith\Quarter 1\EDITHP2846.SC.SSIzip		
ECM Version	: 1 (modified after loading)		



External Standard Report

Sorted By : Signal  
Calib. Data Modified : Saturday, February 12, 2022 8:11:08 AM  
Multiplier : 1.0000  
Dilution : 1.0000  
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
3.983	BB	27.04018	3.99249	107.95754		Acetone
6.767	BB	146.71400	6.99120e-1	102.57074		Benzene
7.839	BB	170.07204	5.98101e-1	101.72020		Toluene
8.642	BV	188.00327	5.33080e-1	100.22074		Ethylbenzene
8.707	VB	180.17007	5.74303e-1	103.47218		m-p-Xylenes
8.933	BB	181.91898	5.69183e-1	103.54524		o-Xylene

Totals : 619.48664

Uncalibrated Peaks : compound name not specified

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.479	BP N	9.17730e-1	0.00000	0.00000	?	

Uncalib. totals : 0.00000

1 Warnings or Errors :

Warning : Calibration warnings (see calibration table listing)

=====  
Summed Peaks Report  
=====

Signal 1: FID1 A, Front Signal

=====  
Final Summed Peaks Report  
=====

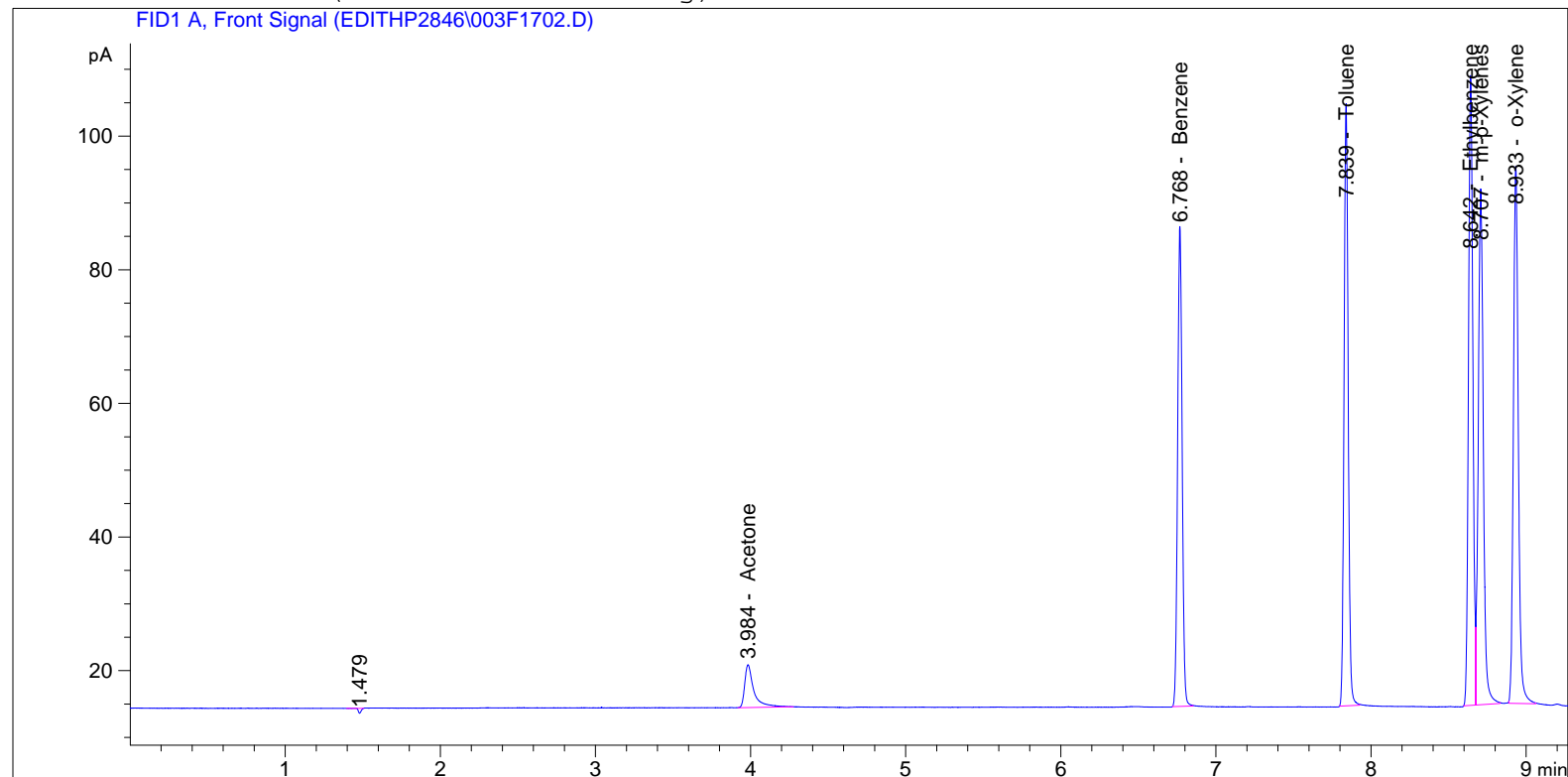
Signal 1: FID1 A, Front Signal

Name	Total Area [pA*s]	Amount [ppm]
Acetone	27.04018	107.9575
Benzene	146.71400	102.5707
Toluene	170.07204	101.7202
Ethylbenzene	188.00327	100.2207
m-p-Xylenes	180.17007	103.4722
o-Xylene	181.91898	103.5452

Totals : 619.4866

\*\*\* End of Report \*\*\*

```
=====
Acq. Operator   : Nicholas Traversa          Seq. Line :   17
Acq. Instrument : Edith                     Location  : Vial 3
Injection Date  : 2/11/2022 10:18:39 PM      Inj       :    2
                                           Inj Volume: 250 µl
Acq. Method     : C:\GC\2022\EDITH\QUARTER 1\EDITHP2846\AQ_EDITHP503_HRVOC.M
Last changed    : 8/14/2017 12:18:06 PM by Nicholas Traversa
Analysis Method : C:\GC\2022\EDITH\METHODS\EDITHP2846F_ABTEX.M
Last changed    : 2/12/2022 8:13:38 AM by Nicholas Traversa
ECM Server      : http://s022vas01/Enthalpy
ECM Operator    : Nicholas Traversa
ECM Path        : GC\2022\Edith\Quarter 1\EDITHP2846.SC.SSIzip
ECM Version     : 1 (modified after loading)
=====
```



External Standard Report

```
=====
Sorted By       : Signal
Calib. Data Modified : Saturday, February 12, 2022 8:11:08 AM
Multiplier      : 1.0000
Dilution        : 1.0000
Use Multiplier & Dilution Factor with ISTDs
=====
```

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
3.984	BB	26.26610	3.99404	104.90783		Acetone
6.768	BB	145.28996	6.99133e-1	101.57703		Benzene
7.839	BB	167.68596	5.98129e-1	100.29791		Toluene
8.642	BV	184.63721	5.33127e-1	98.43504		Ethylbenzene
8.707	VB	175.02484	5.74392e-1	100.53279		m-p-Xylenes
8.933	BB	177.06071	5.69267e-1	100.79474		o-Xylene

Totals : 606.54535

Uncalibrated Peaks : compound name not specified

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.479	BP N	9.62701e-1	0.00000	0.00000	?	

Uncalib. totals : 0.00000

1 Warnings or Errors :

Warning : Calibration warnings (see calibration table listing)

=====  
Summed Peaks Report  
=====

Signal 1: FID1 A, Front Signal

=====  
Final Summed Peaks Report  
=====

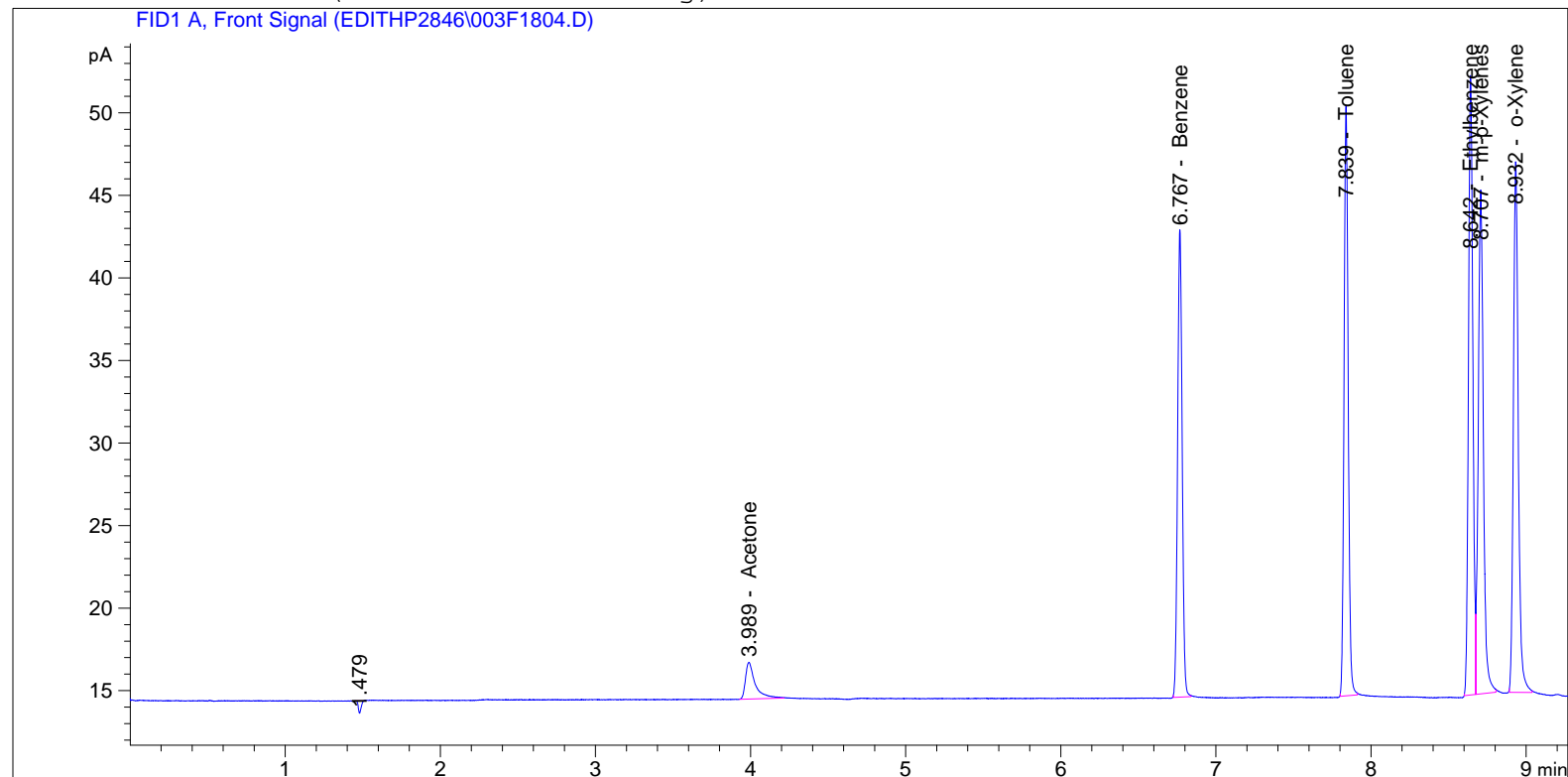
Signal 1: FID1 A, Front Signal

Name	Total Area [pA*s]	Amount [ppm]
Acetone	26.26610	104.9078
Benzene	145.28996	101.5770
Toluene	167.68596	100.2979
Ethylbenzene	184.63721	98.4350
m-p-Xylenes	175.02484	100.5328
o-Xylene	177.06071	100.7947

Totals : 606.5454

\*\*\* End of Report \*\*\*

```
=====
Acq. Operator   : Nicholas Traversa          Seq. Line :   18
Acq. Instrument : Edith                     Location  : Vial 3
Injection Date  : 2/11/2022 11:49:38 PM      Inj       :    4
                                           Inj Volume: 250 µl
Acq. Method     : C:\GC\2022\EDITH\QUARTER 1\EDITHP2846\AQ_EDITHP503_HRVOC.M
Last changed    : 8/14/2017 12:18:06 PM by Nicholas Traversa
Analysis Method : C:\GC\2022\EDITH\METHODS\EDITHP2846F_ABTEX.M
Last changed    : 2/12/2022 8:13:38 AM by Nicholas Traversa
ECM Server      : http://s022vas01/Enthalpy
ECM Operator    : Nicholas Traversa
ECM Path        : GC\2022\Edith\Quarter 1\EDITHP2846.SC.SSIzip
ECM Version     : 1 (modified after loading)
=====
```



External Standard Report

```
Sorted By           : Signal
Calib. Data Modified : Saturday, February 12, 2022 8:11:08 AM
Multiplier          : 1.0000
Dilution            : 1.0000
Use Multiplier & Dilution Factor with ISTDs
```

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
3.989	BB	9.61018	4.08813	39.28772		Acetone
6.767	BB	57.60721	7.01142e-1	40.39083		Benzene
7.839	BB	66.47327	6.01255e-1	39.96740		Toluene
8.642	BV	73.50793	5.37097e-1	39.48087		Ethylbenzene
8.707	VB	69.97326	5.79059e-1	40.51861		m-p-Xylenes
8.932	BB	70.59382	5.73968e-1	40.51859		o-Xylene

Totals : 240.16403

Uncalibrated Peaks : compound name not specified

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.479	VP N	9.22298e-1	0.00000	0.00000	?	

Uncalib. totals : 0.00000

1 Warnings or Errors :

Warning : Calibration warnings (see calibration table listing)

=====  
Summed Peaks Report  
=====

Signal 1: FID1 A, Front Signal

=====  
Final Summed Peaks Report  
=====

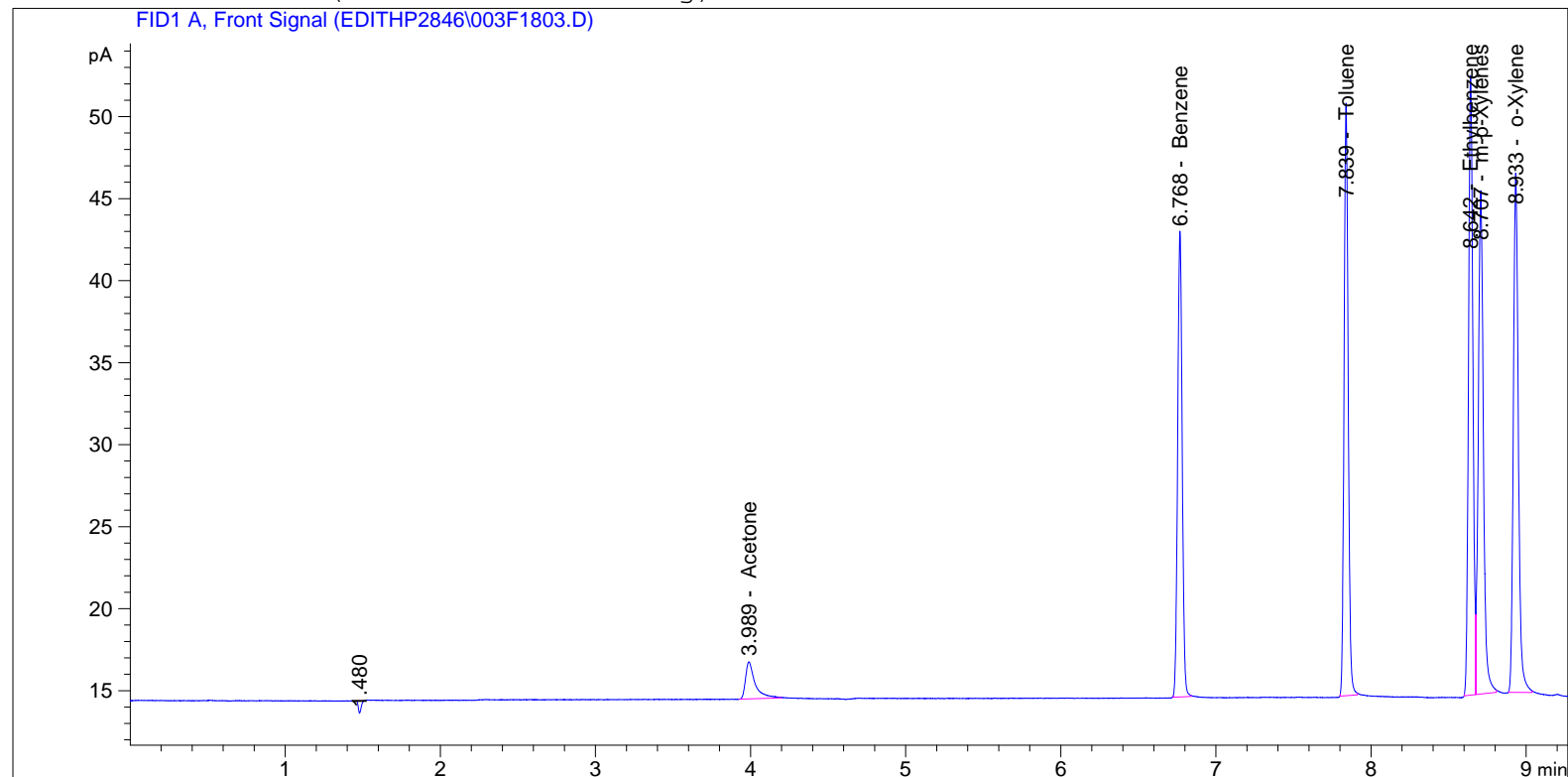
Signal 1: FID1 A, Front Signal

Name	Total Area [pA*s]	Amount [ppm]
Acetone	9.61018	39.2877
Benzene	57.60721	40.3908
Toluene	66.47327	39.9674
Ethylbenzene	73.50793	39.4809
m-p-Xylenes	69.97326	40.5186
o-Xylene	70.59382	40.5186

Totals : 240.1640

\*\*\* End of Report \*\*\*

```
=====
Acq. Operator   : Nicholas Traversa          Seq. Line :   18
Acq. Instrument : Edith                     Location  : Vial 3
Injection Date  : 2/11/2022 11:34:32 PM      Inj       :    3
                                           Inj Volume: 250 µl
Acq. Method     : C:\GC\2022\EDITH\QUARTER 1\EDITHP2846\AQ_EDITHP503_HRVOC.M
Last changed    : 8/14/2017 12:18:06 PM by Nicholas Traversa
Analysis Method : C:\GC\2022\EDITH\METHODS\EDITHP2846F_ABTEX.M
Last changed    : 2/12/2022 8:13:38 AM by Nicholas Traversa
ECM Server      : http://s022vas01/Enthalpy
ECM Operator    : Nicholas Traversa
ECM Path        : GC\2022\Edith\Quarter 1\EDITHP2846.SC.SSIzip
ECM Version     : 1 (modified after loading)
=====
```



```
=====
External Standard Report
=====
```

```
Sorted By           :      Signal
Calib. Data Modified :      Saturday, February 12, 2022 8:11:08 AM
Multiplier          :      1.0000
Dilution            :      1.0000
Use Multiplier & Dilution Factor with ISTDs
```

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
3.989	BB	9.58913	4.08846	39.20478		Acetone
6.768	BB	58.09200	7.01114e-1	40.72912		Benzene
7.839	BB	66.92036	6.01221e-1	40.23390		Toluene
8.642	BV	73.87671	5.37064e-1	39.67651		Ethylbenzene
8.707	VB	70.32369	5.79020e-1	40.71881		m-p-Xylenes
8.933	BB	70.79723	5.73946e-1	40.63376		o-Xylene

Totals : 241.19688

Uncalibrated Peaks : compound name not specified

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.480	BP N	9.28214e-1	0.00000	0.00000	--	?

Uncalib. totals : 0.00000

1 Warnings or Errors :

Warning : Calibration warnings (see calibration table listing)

=====  
Summed Peaks Report  
=====

Signal 1: FID1 A, Front Signal

=====  
Final Summed Peaks Report  
=====

Signal 1: FID1 A, Front Signal

Name	Total Area [pA*s]	Amount [ppm]
Acetone	9.58913	39.2048
Benzene	58.09200	40.7291
Toluene	66.92036	40.2339
Ethylbenzene	73.87671	39.6765
m-p-Xylenes	70.32369	40.7188
o-Xylene	70.79723	40.6338

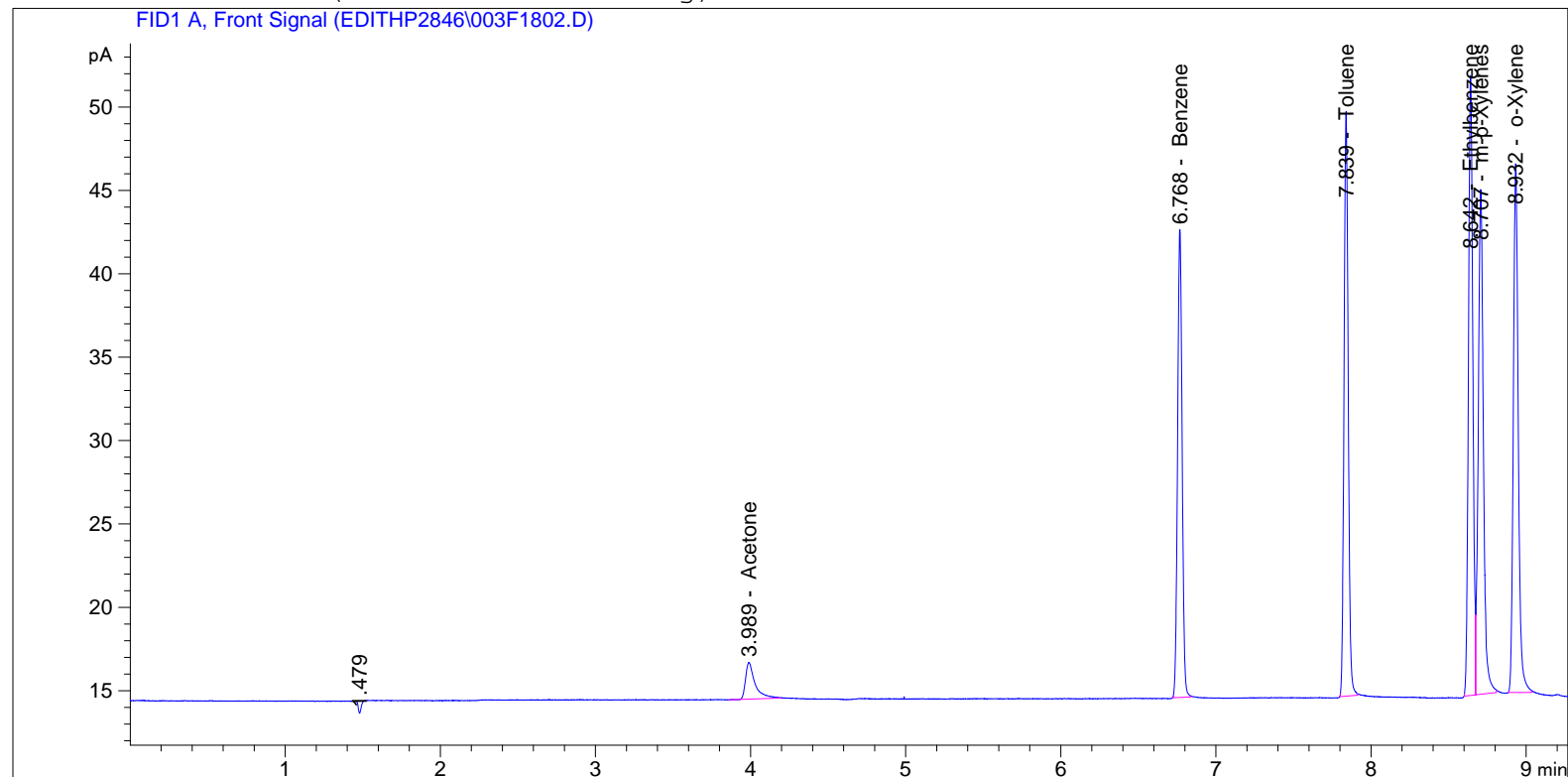
Totals : 241.1969

\*\*\* End of Report \*\*\*

```

=====
Acq. Operator   : Nicholas Traversa          Seq. Line :   18
Acq. Instrument : Edith                     Location  : Vial 3
Injection Date  : 2/11/2022 11:19:23 PM      Inj       :    2
                                           Inj Volume: 250 µl
Acq. Method     : C:\GC\2022\EDITH\QUARTER 1\EDITHP2846\AQ_EDITHP503_HRVOC.M
Last changed    : 8/14/2017 12:18:06 PM by Nicholas Traversa
Analysis Method : C:\GC\2022\EDITH\METHODS\EDITHP2846F_ABTEX.M
Last changed    : 2/12/2022 8:13:38 AM by Nicholas Traversa
ECM Server      : http://s022vas01/Enthalpy
ECM Operator    : Nicholas Traversa
ECM Path        : GC\2022\Edith\Quarter 1\EDITHP2846.SC.SSIzip
ECM Version     : 1 (modified after loading)
=====

```



External Standard Report

```

=====
Sorted By           :      Signal
Calib. Data Modified :      Saturday, February 12, 2022 8:11:08 AM
Multiplier          :      1.0000
Dilution            :      1.0000
Use Multiplier & Dilution Factor with ISTDs
=====

```

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
3.989	BB	9.32687	4.09264	38.17154		Acetone
6.768	BB	56.94540	7.01181e-1	39.92901		Benzene
7.839	BB	65.69698	6.01316e-1	39.50468		Toluene
8.642	BV	72.76412	5.37164e-1	39.08628		Ethylbenzene
8.707	VB	69.40724	5.79122e-1	40.19526		m-p-Xylenes
8.932	BB	69.89501	5.74046e-1	40.12296		o-Xylene

Totals : 237.00973

Uncalibrated Peaks : compound name not specified

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.479	BP N	9.02891e-1	0.00000	0.00000	?	

Uncalib. totals : 0.00000

1 Warnings or Errors :

Warning : Calibration warnings (see calibration table listing)

=====  
Summed Peaks Report  
=====

Signal 1: FID1 A, Front Signal

=====  
Final Summed Peaks Report  
=====

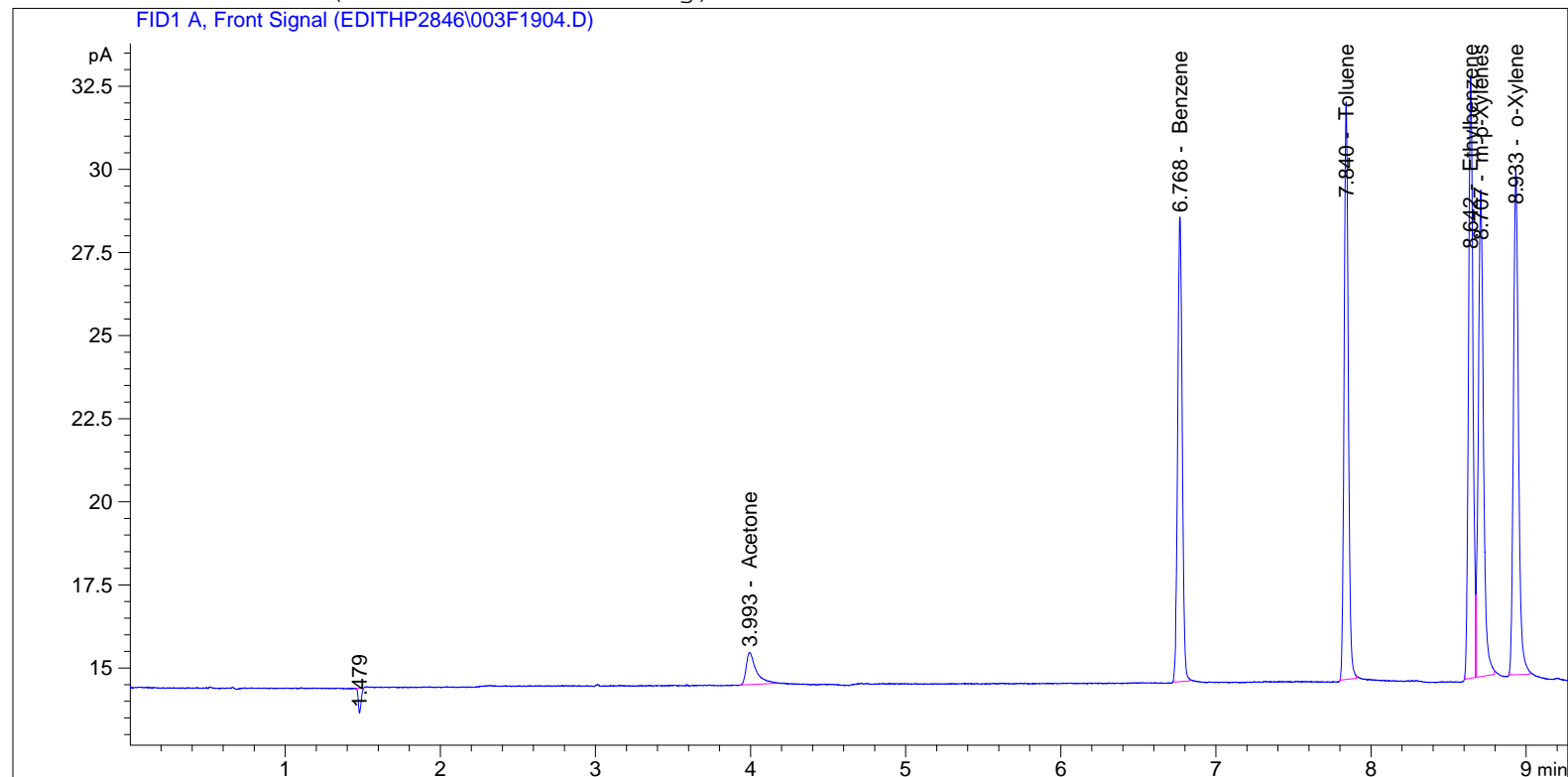
Signal 1: FID1 A, Front Signal

Name	Total Area [pA*s]	Amount [ppm]
Acetone	9.32687	38.1715
Benzene	56.94540	39.9290
Toluene	65.69698	39.5047
Ethylbenzene	72.76412	39.0863
m-p-Xylenes	69.40724	40.1953
o-Xylene	69.89501	40.1230

Totals : 237.0097

\*\*\* End of Report \*\*\*

```
=====
Acq. Operator   : Nicholas Traversa          Seq. Line :   19
Acq. Instrument : Edith                     Location  : Vial 3
Injection Date  : 2/12/2022 12:50:11 AM      Inj       :    4
                                           Inj Volume: 250 µl
Acq. Method     : C:\GC\2022\EDITH\QUARTER 1\EDITHP2846\AQ_EDITHP503_HRVOC.M
Last changed    : 8/14/2017 12:18:06 PM by Nicholas Traversa
Analysis Method : C:\GC\2022\EDITH\METHODS\EDITHP2846F_ABTEX.M
Last changed    : 2/12/2022 8:13:38 AM by Nicholas Traversa
ECM Server      : http://s022vas01/Enthalpy
ECM Operator    : Nicholas Traversa
ECM Path        : GC\2022\Edith\Quarter 1\EDITHP2846.SC.SSIzip
ECM Version     : 1 (modified after loading)
=====
```



External Standard Report

```
Sorted By           : Signal
Calib. Data Modified : Saturday, February 12, 2022 8:11:08 AM
Multiplier          : 1.0000
Dilution            : 1.0000
Use Multiplier & Dilution Factor with ISTDs
```

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
3.993	BB	4.28639	4.27243	18.31330		Acetone
6.768	BB	28.58117	7.04522e-1	20.13607		Benzene
7.840	BB	32.72217	6.06597e-1	19.84916		Toluene
8.642	BV	35.88250	5.44013e-1	19.52055		Ethylbenzene
8.707	VB	33.90421	5.87331e-1	19.91298		m-p-Xylenes
8.933	BB	34.04362	5.82362e-1	19.82573		o-Xylene

Totals : 117.55779

Uncalibrated Peaks : compound name not specified

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.479	BP N	9.17087e-1	0.00000	0.00000	?	

Uncalib. totals : 0.00000

1 Warnings or Errors :

Warning : Calibration warnings (see calibration table listing)

=====

Summed Peaks Report

=====

Signal 1: FID1 A, Front Signal

=====

Final Summed Peaks Report

=====

Signal 1: FID1 A, Front Signal

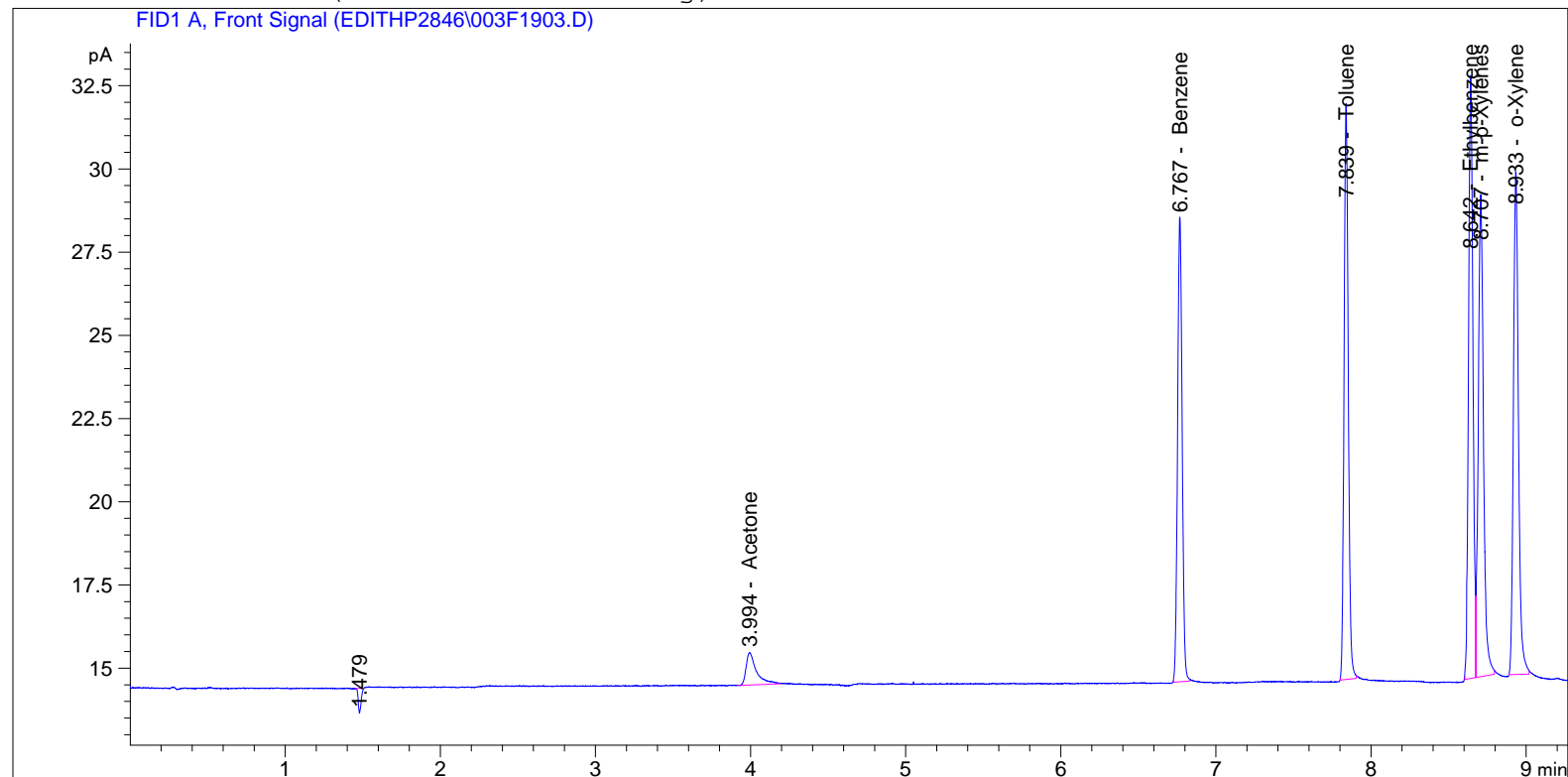
Name	Total Area [pA*s]	Amount [ppm]
Acetone	4.28639	18.3133
Benzene	28.58117	20.1361
Toluene	32.72217	19.8492
Ethylbenzene	35.88250	19.5206
m-p-Xylenes	33.90421	19.9130
o-Xylene	34.04362	19.8257

Totals : 117.5578

\*\*\* End of Report \*\*\*

=====

Acq. Operator	: Nicholas Traversa	Seq. Line	: 19
Acq. Instrument	: Edith	Location	: Vial 3
Injection Date	: 2/12/2022 12:35:03 AM	Inj	: 3
		Inj Volume	: 250 µl
Acq. Method	: C:\GC\2022\EDITH\QUARTER 1\EDITHP2846\AQ_EDITHP503_HRVOC.M		
Last changed	: 8/14/2017 12:18:06 PM by Nicholas Traversa		
Analysis Method	: C:\GC\2022\EDITH\METHODS\EDITHP2846F_ABTEX.M		
Last changed	: 2/12/2022 8:13:38 AM by Nicholas Traversa		
ECM Server	: http://s022vas01/Enthalpy		
ECM Operator	: Nicholas Traversa		
ECM Path	: GC\2022\Edith\Quarter 1\EDITHP2846.SC.SSIzip		
ECM Version	: 1 (modified after loading)		



=====

External Standard Report

=====

Sorted By : Signal  
Calib. Data Modified : Saturday, February 12, 2022 8:11:08 AM  
Multiplier : 1.0000  
Dilution : 1.0000  
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
3.994	BB	4.47057	4.25873	19.03895		Acetone
6.767	BB	28.53498	7.04533e-1	20.10384		Benzene
7.839	BB	32.61748	6.06631e-1	19.78676		Toluene
8.642	BV	35.79707	5.44045e-1	19.47523		Ethylbenzene
8.707	VB	33.83689	5.87362e-1	19.87452		m-p-Xylenes
8.933	BB	33.93857	5.82413e-1	19.76625		o-Xylene

Totals : 118.04555

Uncalibrated Peaks : compound name not specified

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.479	BP N	9.22555e-1	0.00000	0.00000	?	

Uncalib. totals : 0.00000

1 Warnings or Errors :

Warning : Calibration warnings (see calibration table listing)

=====  
Summed Peaks Report  
=====

Signal 1: FID1 A, Front Signal

=====  
Final Summed Peaks Report  
=====

Signal 1: FID1 A, Front Signal

Name	Total Area [pA*s]	Amount [ppm]
Acetone	4.47057	19.0389
Benzene	28.53498	20.1038
Toluene	32.61748	19.7868
Ethylbenzene	35.79707	19.4752
m-p-Xylenes	33.83689	19.8745
o-Xylene	33.93857	19.7663

Totals : 118.0456

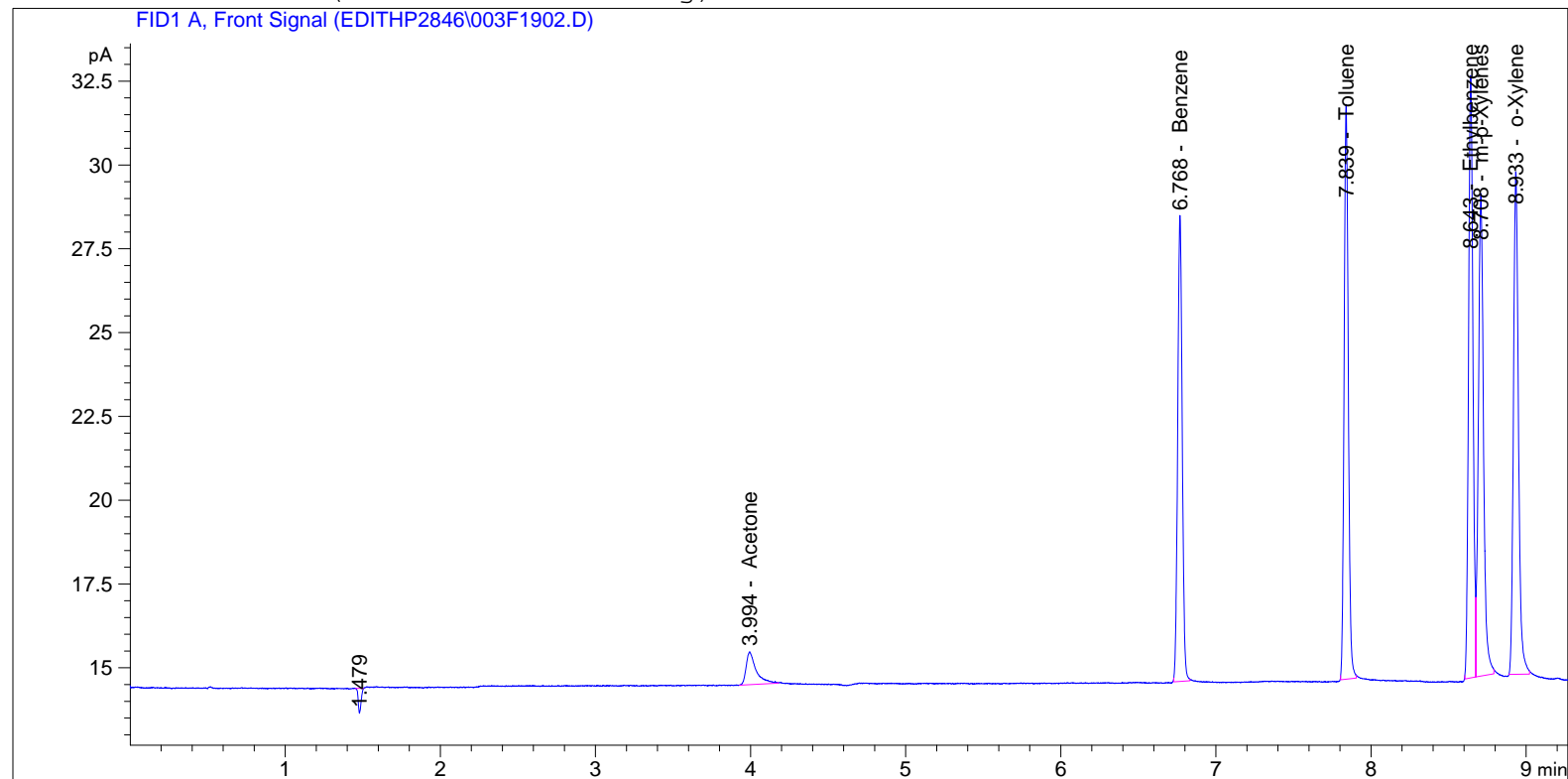
\*\*\* End of Report \*\*\*

Sample Name: Edithp2432 #B2 ENV(1=800,2=200)

```

=====
Acq. Operator   : Nicholas Traversa           Seq. Line :   19
Acq. Instrument : Edith                     Location  : Vial 3
Injection Date  : 2/12/2022 12:19:56 AM      Inj       :    2
                                           Inj Volume: 250 µl
Acq. Method     : C:\GC\2022\EDITH\QUARTER 1\EDITHP2846\AQ_EDITHP503_HRVOC.M
Last changed    : 8/14/2017 12:18:06 PM by Nicholas Traversa
Analysis Method : C:\GC\2022\EDITH\METHODS\EDITHP2846F_ABTEX.M
Last changed    : 2/12/2022 8:13:38 AM by Nicholas Traversa
ECM Server      : http://s022vas01/Enthalpy
ECM Operator    : Nicholas Traversa
ECM Path        : GC\2022\Edith\Quarter 1\EDITHP2846.SC.SSIzip
ECM Version     : 1 (modified after loading)
=====

```



External Standard Report

```

Sorted By           : Signal
Calib. Data Modified : Saturday, February 12, 2022 8:11:08 AM
Multiplier          : 1.0000
Dilution            : 1.0000
Use Multiplier & Dilution Factor with ISTDs

```

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
3.994	BB	4.36046	4.26678	18.60512		Acetone
6.768	BB	28.20872	7.04611e-1	19.87617		Benzene
7.839	BB	32.28642	6.06739e-1	19.58942		Toluene
8.643	BV	35.38812	5.44202e-1	19.25828		Ethylbenzene
8.708	VB	33.26689	5.87638e-1	19.54889		m-p-Xylenes
8.933	BB	33.60988	5.82572e-1	19.58017		o-Xylene

Totals : 116.45805

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Uncalibrated Peaks : compound name not specified

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.479	BP N	9.05485e-1	0.00000	0.00000	?	

Uncalib. totals : 0.00000

1 Warnings or Errors :

Warning : Calibration warnings (see calibration table listing)

=====

Summed Peaks Report

=====

Signal 1: FID1 A, Front Signal

=====

Final Summed Peaks Report

=====

Signal 1: FID1 A, Front Signal

Name	Total Area [pA*s]	Amount [ppm]
Acetone	4.36046	18.6051
Benzene	28.20872	19.8762
Toluene	32.28642	19.5894
Ethylbenzene	35.38812	19.2583
m-p-Xylenes	33.26689	19.5489
o-Xylene	33.60988	19.5802

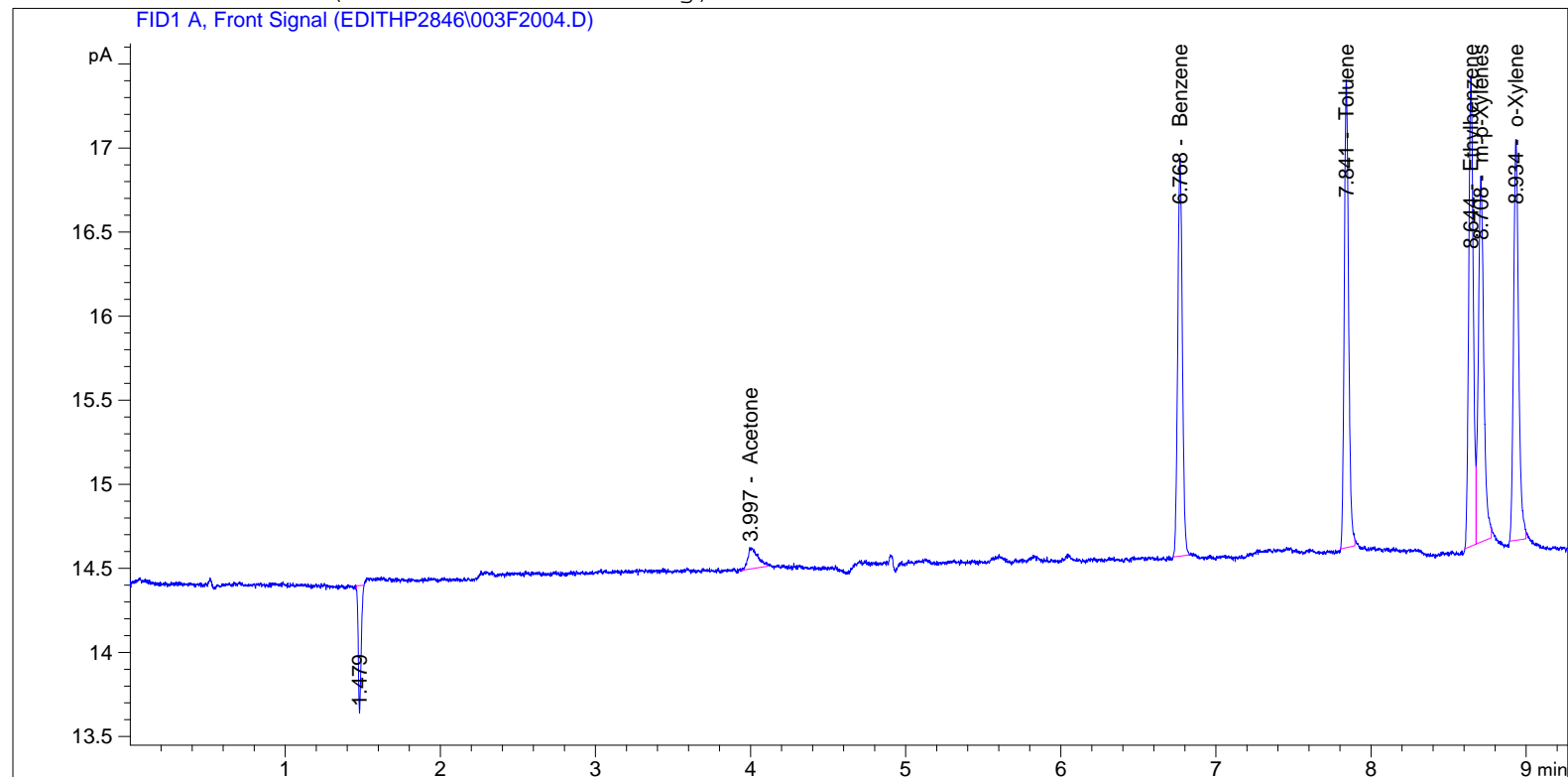
Totals : 116.4580

\*\*\* End of Report \*\*\*

=====

Acq. Operator	: Nicholas Traversa	Seq. Line	: 20
Acq. Instrument	: Edith	Location	: Vial 3
Injection Date	: 2/12/2022 1:50:28 AM	Inj	: 4
		Inj Volume	: 250 µl

Acq. Method : C:\GC\2022\EDITH\QUARTER 1\EDITHP2846\AQ\_EDITHP503\_HRVOC.M  
Last changed : 8/14/2017 12:18:06 PM by Nicholas Traversa  
Analysis Method : C:\GC\2022\EDITH\METHODS\EDITHP2846F\_ABTEX.M  
Last changed : 2/12/2022 8:13:38 AM by Nicholas Traversa  
ECM Server : http://s022vas01/Enthalpy  
ECM Operator : Nicholas Traversa  
ECM Path : GC\2022\Edith\Quarter 1\EDITHP2846.SC.SSIzip  
ECM Version : 1 (modified after loading)



=====

External Standard Report

=====

Sorted By : Signal  
Calib. Data Modified : Saturday, February 12, 2022 8:11:08 AM  
Multiplier : 1.0000  
Dilution : 1.0000  
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
3.997	BB	5.58718e-1	6.47733	3.61900		Acetone
6.768	BB	4.91240	7.35954e-1	3.61530		Benzene
7.841	BB	5.40811	6.58149e-1	3.55934		Toluene
8.644	BV	5.69192	6.13070e-1	3.48955		Ethylbenzene
8.708	VB	5.27442	6.70085e-1	3.53431		m-p-Xylenes
8.934	BB	5.34856	6.65731e-1	3.56070		o-Xylene

Totals : 21.37820

Uncalibrated Peaks : compound name not specified

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.479	BP N	9.32133e-1	0.00000	0.00000	?	

Uncalib. totals : 0.00000

1 Warnings or Errors :

Warning : Calibration warnings (see calibration table listing)

=====

Summed Peaks Report

=====

Signal 1: FID1 A, Front Signal

=====

Final Summed Peaks Report

=====

Signal 1: FID1 A, Front Signal

Name	Total Area [pA*s]	Amount [ppm]
Acetone	5.58718e-1	3.6190
Benzene	4.91240	3.6153
Toluene	5.40811	3.5593
Ethylbenzene	5.69192	3.4895
m-p-Xylenes	5.27442	3.5343
o-Xylene	5.34856	3.5607

Totals : 21.3782

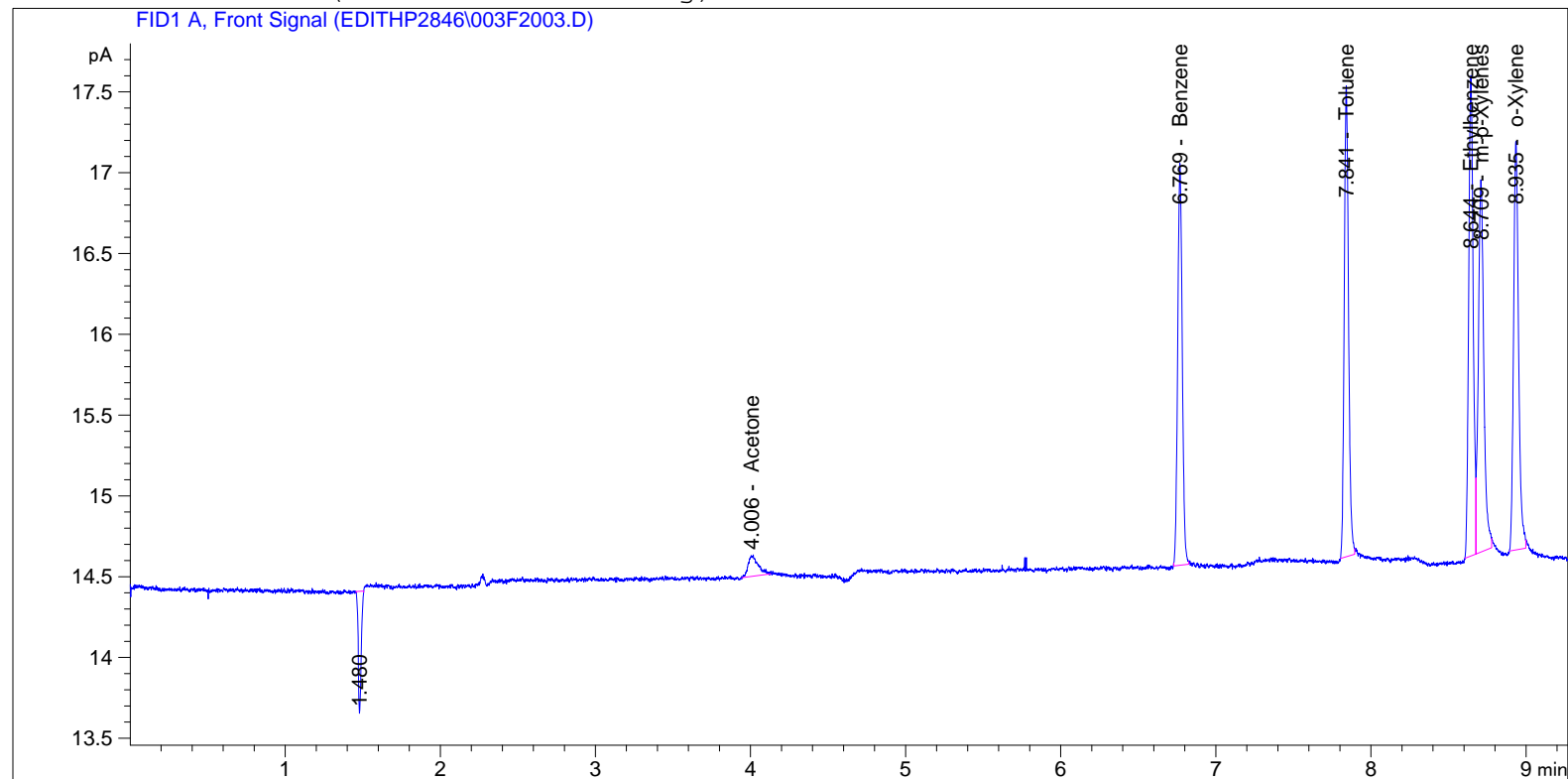
\*\*\* End of Report \*\*\*

Sample Name: Edithp2432 #B1 ENV(1=1975,2=75)

```

=====
Acq. Operator   : Nicholas Traversa          Seq. Line :   20
Acq. Instrument : Edith                     Location  : Vial 3
Injection Date  : 2/12/2022 1:35:28 AM      Inj       :    3
                                           Inj Volume: 250 µl
Acq. Method     : C:\GC\2022\EDITH\QUARTER 1\EDITHP2846\AQ_EDITHP503_HRVOC.M
Last changed    : 8/14/2017 12:18:06 PM by Nicholas Traversa
Analysis Method : C:\GC\2022\EDITH\METHODS\EDITHP2846F_ABTEX.M
Last changed    : 2/12/2022 8:13:38 AM by Nicholas Traversa
ECM Server      : http://s022vas01/Enthalpy
ECM Operator    : Nicholas Traversa
ECM Path        : GC\2022\Edith\Quarter 1\EDITHP2846.SC.SSIzip
ECM Version     : 1 (modified after loading)
=====

```



External Standard Report

```

Sorted By           :      Signal
Calib. Data Modified :      Saturday, February 12, 2022 8:11:08 AM
Multiplier          :      1.0000
Dilution            :      1.0000
Use Multiplier & Dilution Factor with ISTDs

```

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
4.006	BB	5.71677e-1	6.43419	3.67828		Acetone
6.769	BB	5.08403	7.35530e-1	3.73945		Benzene
7.841	BB	5.63189	6.57201e-1	3.70128		Toluene
8.644	BV	5.96260	6.11817e-1	3.64802		Ethylbenzene
8.709	VB	5.61830	6.68124e-1	3.75372		m-p-Xylenes
8.935	BB	5.64359	6.63952e-1	3.74708		o-Xylene

Totals : 22.26783

Uncalibrated Peaks : compound name not specified

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.480	BP N	9.49434e-1	0.00000	0.00000	--	?

Uncalib. totals : 0.00000

1 Warnings or Errors :

Warning : Calibration warnings (see calibration table listing)

=====  
Summed Peaks Report  
=====

Signal 1: FID1 A, Front Signal

=====  
Final Summed Peaks Report  
=====

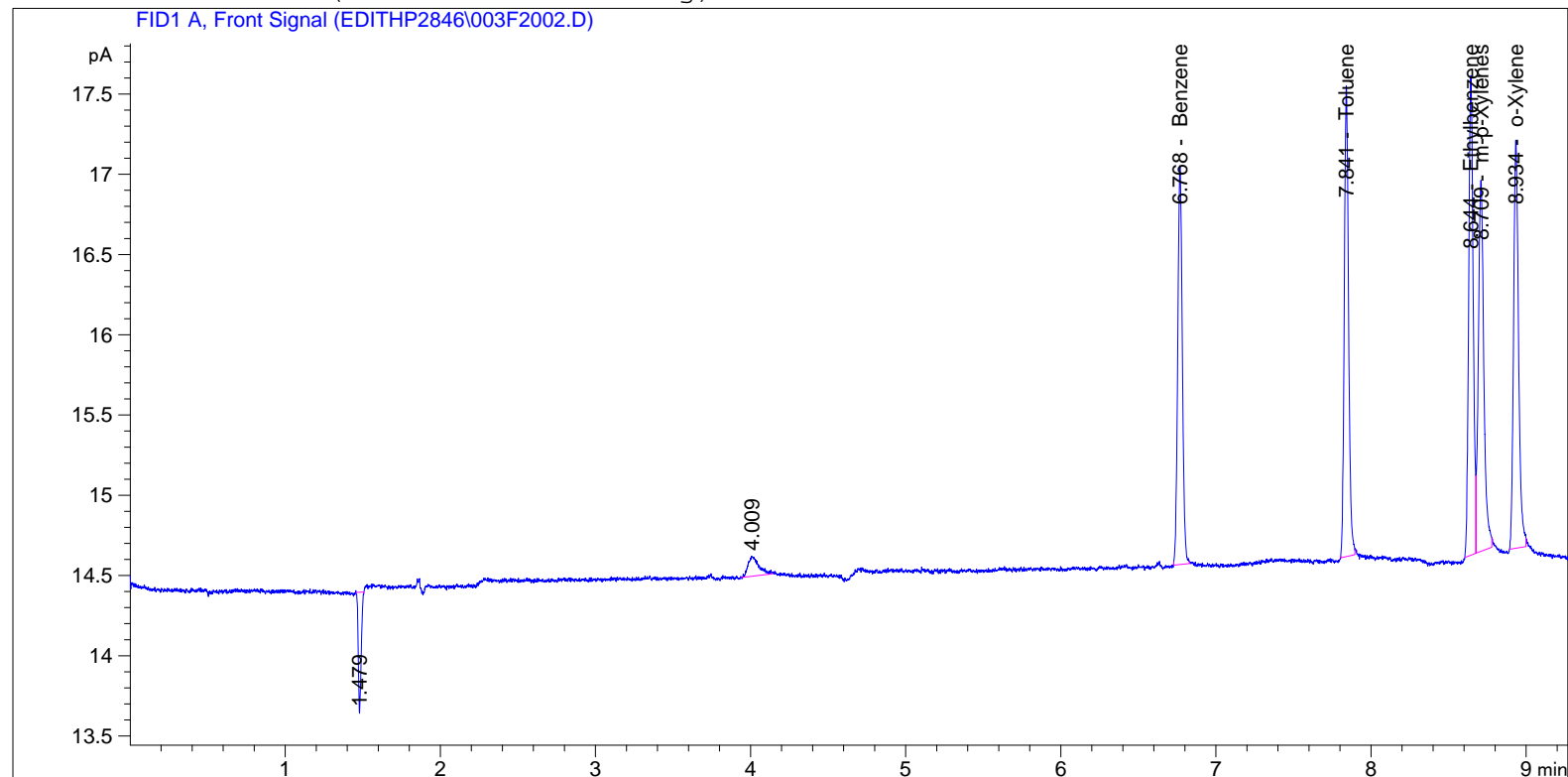
Signal 1: FID1 A, Front Signal

Name	Total Area [pA*s]	Amount [ppm]
Acetone	5.71677e-1	3.6783
Benzene	5.08403	3.7395
Toluene	5.63189	3.7013
Ethylbenzene	5.96260	3.6480
m-p-Xylenes	5.61830	3.7537
o-Xylene	5.64359	3.7471

Totals : 22.2678

\*\*\* End of Report \*\*\*

```
=====
Acq. Operator   : Nicholas Traversa          Seq. Line :   20
Acq. Instrument : Edith                     Location  : Vial 3
Injection Date  : 2/12/2022 1:20:21 AM      Inj       :    2
                                           Inj Volume: 250 µl
Acq. Method     : C:\GC\2022\EDITH\QUARTER 1\EDITHP2846\AQ_EDITHP503_HRVOC.M
Last changed    : 8/14/2017 12:18:06 PM by Nicholas Traversa
Analysis Method : C:\GC\2022\EDITH\METHODS\EDITHP2846F_ABTEX.M
Last changed    : 2/12/2022 8:13:38 AM by Nicholas Traversa
ECM Server      : http://s022vas01/Enthalpy
ECM Operator    : Nicholas Traversa
ECM Path        : GC\2022\Edith\Quarter 1\EDITHP2846.SC.SSIzip
ECM Version     : 1 (modified after loading)
=====
```



External Standard Report

```
Sorted By           : Signal
Calib. Data Modified : Saturday, February 12, 2022 8:11:08 AM
Multiplier          : 1.0000
Dilution            : 1.0000
Use Multiplier & Dilution Factor with ISTDs
```

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
3.984	-	-	-	-	-	Acetone
6.768	BB	5.10873	7.35347e-1	3.75669	-	Benzene
7.841	BB	5.63605	6.57156e-1	3.70376	-	Toluene
8.644	BV	6.00551	6.11236e-1	3.67078	-	Ethylbenzene
8.709	VB	5.68674	6.66958e-1	3.79282	-	m-p-Xylenes
8.934	BB	5.70258	6.62940e-1	3.78047	-	o-Xylene

Totals : 18.70452

Uncalibrated Peaks : compound name not specified

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.479	BP N	9.24858e-1	0.00000	0.00000	?	
4.009	BB	5.85504e-1	0.00000	0.00000	?	

Uncalib. totals : 0.00000

2 Warnings or Errors :

Warning : Calibration warnings (see calibration table listing)  
Warning : Calibrated compound(s) not found

Summed Peaks Report

Signal 1: FID1 A, Front Signal

Final Summed Peaks Report

Signal 1: FID1 A, Front Signal

Name	Total Area [pA*s]	Amount [ppm]
Acetone	0.00000	0.0000
Benzene	5.10873	3.7567
Toluene	5.63605	3.7038
Ethylbenzene	6.00551	3.6708
m-p-Xylenes	5.68674	3.7928
o-Xylene	5.70258	3.7805

Totals : 18.7045

\*\*\* End of Report \*\*\*

## CERTIFICATE OF ANALYSIS

### Grade of Product: CERTIFIED STANDARD-SPEC

Customer:	MONTROSE ENVIRONMENTAL GROUP	Reference Number:	163-402037604-1
Part Number:	X08NI99C15AC0N7	Cylinder Volume:	70.3 Cubic Feet
Cylinder Number:	ALM049224	Cylinder Pressure:	985 PSIG
Laboratory:	124 - Pasadena (SG06) - TX	Valve Outlet:	350SS
Analysis Date:	Mar 03, 2021		
Lot Number:	163-402037604-1		

Expiration Date: Mar 03, 2022

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
M XYLENE	50.00 PPM	49.80 PPM	+/- 2%
P XYLENE	50.00 PPM	51.08 PPM	+/- 2%
ACETONE	100.0 PPM	99.60 PPM	+/- 2%
BENZENE	100.0 PPM	101.2 PPM	+/- 2%
ETHYL BENZENE	100.0 PPM	98.40 PPM	+/- 2%
O XYLENE	100.0 PPM	100.8 PPM	+/- 2%
TOLUENE	100.0 PPM	99.90 PPM	+/- 2%
NITROGEN	99.94 %	99.939922 %	+/- 2%

**Permanent Notes:** CYLINDER STORAGE TEMPERATURE IS RECOMMENDED AT OR ABOVE 80F



Approved for Release

Page 1 of 163-402037604-1

## Calculation of MDL per SOP ENT-027

Enter values into the highlighted cells.

Date Analyzed 3/6/21  
 Analyst NMW  
 Date Reviewed 6/7/21  
 Reviewed By QLF

Instrument Edith  
 Logbook Page Edithp2432  
 Injector (F,R,NA) F  
 Column Rtx-1  
 Injector (F,R,NA)  
 Column

Job # (s)  
 Applicable Method(s)  
 Matrix  
 Solvent

Seven (or more) replicates of a low concentration preparation are made. The worst injection(s) (farthest from the mean area) may be removed assuming an appropriate Outlier Test calculation shows the value(s) to be an outlier. At least seven injections must remain.

MDL = Stdev \* Student's t-value

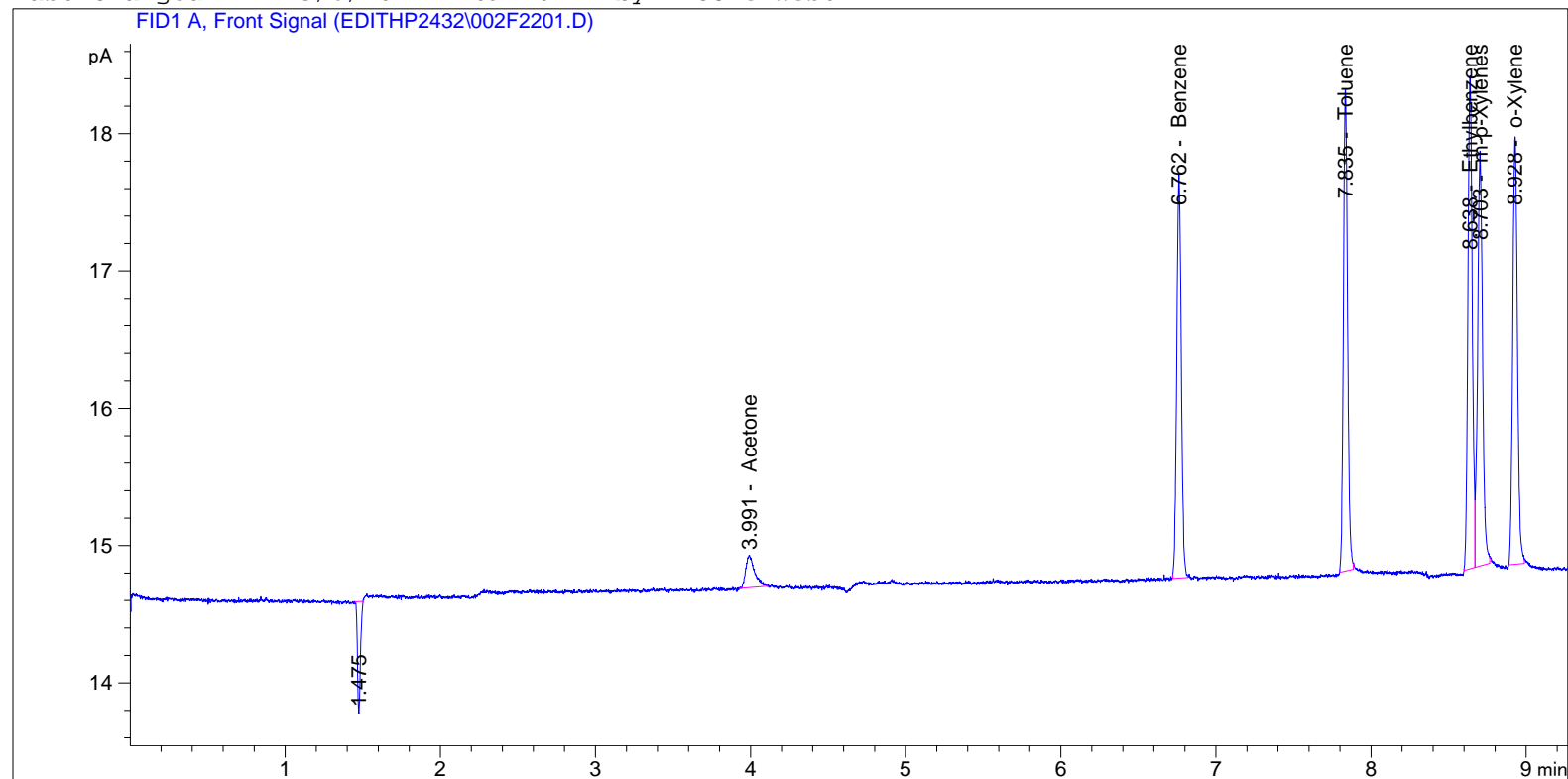
t-value = 3.143 N=7 Degrees of Freedom = 6  
 t-value = 2.998 N=8 Degrees of Freedom = 7  
 t-value = 2.896 N=9 Degrees of Freedom = 8  
 t-value = 2.821 N=10 Degrees of Freedom = 9

Compound #	1	2	3	4	5	6	7
Compound Name	Acetone	Benzene	Toluene	Ethylbenzene	m-p-Xylenes	o-Xylene	
Notes (if needed)							
Test Std Concentrations	ppm #1 3.74003 #2 3.77176 #3 3.61720 #4 3.82680 #5 3.69820 #6 3.76378 #7 3.71267 #8 3.68198 #9 3.73435 #10 3.89803	ppm #1 3.79436 #2 3.78480 #3 3.79332 #4 3.78350 #5 3.79155 #6 3.80153 #7 3.80417 #8 3.77101 #9 3.78877 #10 3.79450	ppm #1 3.75571 #2 3.75281 #3 3.73902 #4 3.75049 #5 3.73764 #6 3.74300 #7 3.74834 #8 3.71266 #9 3.71106 #10 3.72939	ppm #1 3.83404 #2 3.79549 #3 3.76524 #4 3.76238 #5 3.76288 #6 3.76533 #7 3.74132 #8 3.71297 #9 3.72156 #10 3.72571	ppm #1 3.89249 #2 3.86680 #3 3.84371 #4 3.83347 #5 3.82831 #6 3.82739 #7 3.83328 #8 3.78339 #9 3.80714 #10 3.80914	ppm #1 3.85553 #2 3.81298 #3 3.80281 #4 3.79127 #5 3.78606 #6 3.76920 #7 3.79000 #8 3.74594 #9 3.73430 #10 3.75235	ppm #1 0.00000 #2 0.00000 #3 0.00000 #4 0.00000 #5 0.00000 #6 0.00000 #7 0.00000 #8 0.00000 #9 0.00000 #10 0.00000
!! Remove extra zeros !!							
Standard Deviation	0.0781	0.0095	0.0159	0.0365	0.0308	0.0358	0.0000
Student's T factor	2.821	2.821	2.821	2.821	2.821	2.821	2.821
Calculated MDL = StDev * t	0.220	0.027	0.045	0.103	0.087	0.101	0.000
Slope of Cal Curve	0.31663	1.57603	1.82753	1.98032	1.85487	1.86151	0.00000
Integration Area Reject	0.1	0.1	0.1	0.1	0.1	0.1	0
Lowest Integratable Conc.	0.316	0.063	0.055	0.050	0.054	0.054	#DIV/0!
Concentration of Std	3.760	3.790	3.720	3.720	3.799	3.740	0.000
Lowest Part 136 App B value*	0.376	0.379	0.372	0.372	0.380	0.374	0.000
MDL value <1/10 Std Value?	<1/10 Conc of Std	<1/10 Conc of Std	<1/10 Conc of Std	<1/10 Conc of Std	<1/10 Conc of Std	<1/10 Conc of Std	#DIV/0!
MDL to Use	0.37600	0.37900	0.37200	0.37200	0.37990	0.37400	#DIV/0!

=====

Acq. Operator	: Nicole West	Seq. Line	: 22
Acq. Instrument	: Edith	Location	: Vial 2
Injection Date	: 3/6/2021 6:39:20 AM	Inj	: 1
		Inj Volume	: 250 µl

Acq. Method : C:\GC\2021\EDITH\QUARTER 1\EDITHP2432\AQ\_EDITHP503\_HRVOC.M  
Last changed : 8/14/2017 12:18:06 PM by Nicholas Traversa  
Analysis Method : C:\GC\2021\EDITH\METHODS\EDITHP2432F\_ABTEX.M  
Last changed : 3/6/2021 1:09:10 PM by Nicole West



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External Standard Report

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Sorted By : Signal  
Calib. Data Modified : Saturday, March 06, 2021 1:09:06 PM  
Multiplier : 1.0000  
Dilution : 1.0000  
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
3.991	BB	9.32887e-1	4.00910	3.74003		Acetone
6.762	BB	5.97417	6.35127e-1	3.79436		Benzene
7.835	BB	6.56260	5.72290e-1	3.75571		Toluene
8.638	BV	7.01656	5.46427e-1	3.83404		Ethylbenzene
8.703	VB	6.66585	5.83945e-1	3.89249		m-p-Xylenes
8.928	BB	6.57872	5.86060e-1	3.85553		o-Xylene

Totals : 22.87215

Uncalibrated Peaks : compound name not specified

Sample Name: Edithp2432 #B1 ENV(1=1925,2=75)

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.475	BP N	1.02740	0.00000	0.00000	?	

Uncalib. totals : 0.00000

## =====

## Summed Peaks Report

Signal 1: FID1 A, Front Signal

## =====

## Final Summed Peaks Report

Signal 1: FID1 A, Front Signal

Name	Total Area [pA*s]	Amount [ppm]
Acetone	9.32887e-1	3.7400
Benzene	5.97417	3.7944
Toluene	6.56260	3.7557
Ethylbenzene	7.01656	3.8340
m-p-Xylenes	6.66585	3.8925
o-Xylene	6.57872	3.8555

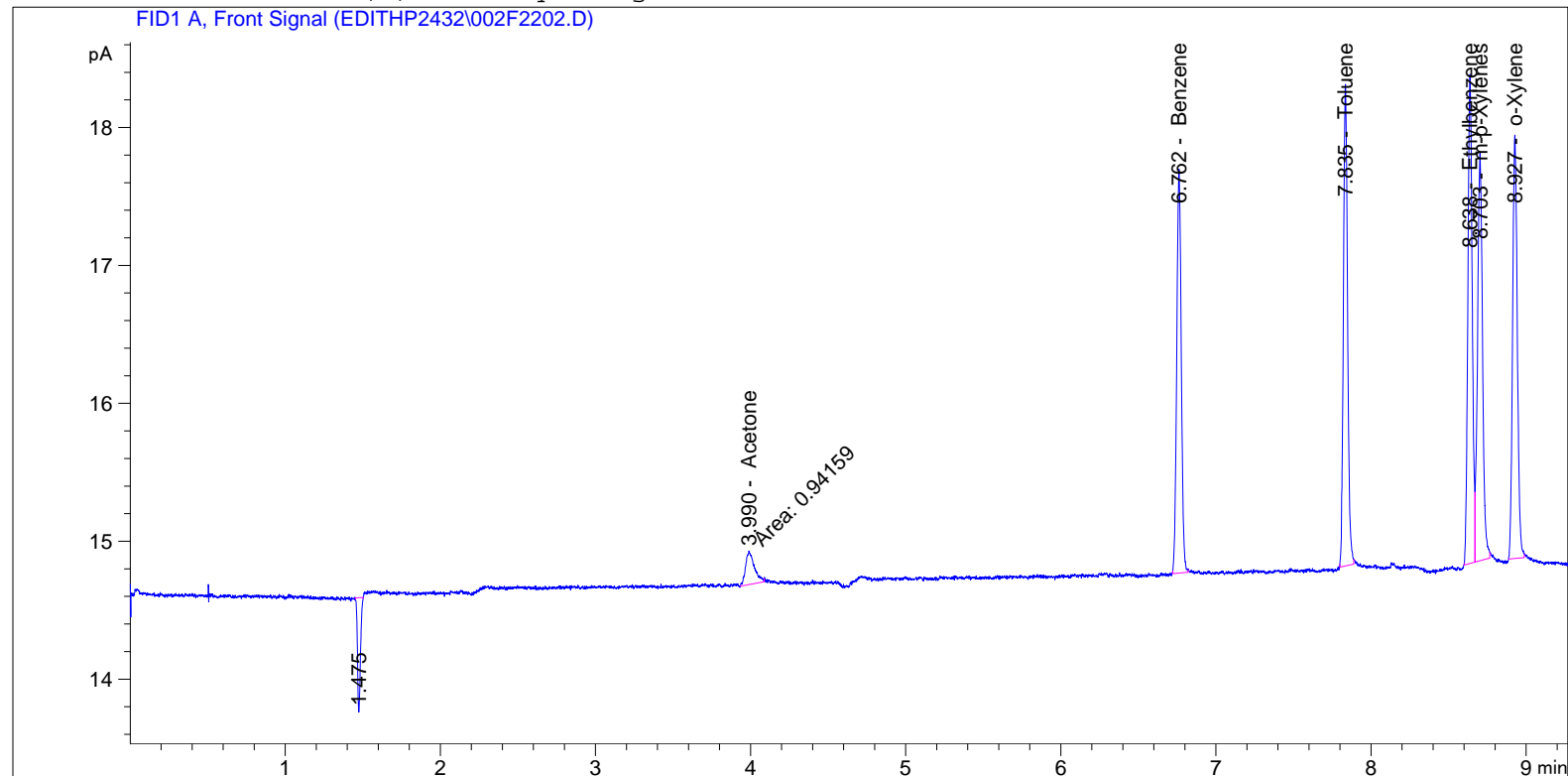
Totals : 22.8721

\*\*\* End of Report \*\*\*

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Acq. Operator	: Nicole West	Seq. Line	: 22
Acq. Instrument	: Edith	Location	: Vial 2
Injection Date	: 3/6/2021 6:54:35 AM	Inj	: 2
		Inj Volume	: 250 µl

Acq. Method : C:\GC\2021\EDITH\QUARTER 1\EDITHP2432\AQ\_EDITHP503\_HRVOC.M  
Last changed : 8/14/2017 12:18:06 PM by Nicholas Traversa  
Analysis Method : C:\GC\2021\EDITH\METHODS\EDITHP2432F\_ABTEX.M  
Last changed : 3/6/2021 1:09:10 PM by Nicole West  
Additional Info : Peak(s) manually integrated



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External Standard Report

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Sorted By : Signal  
Calib. Data Modified : Saturday, March 06, 2021 1:09:06 PM  
Multiplier : 1.0000  
Dilution : 1.0000  
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
3.990	MM	9.41590e-1	4.00573	3.77176		Acetone
6.762	BB	5.95911	6.35128e-1	3.78480		Benzene
7.835	BB	6.55731	5.72310e-1	3.75281		Toluene
8.638	BV	6.94023	5.46883e-1	3.79549		Ethylbenzene
8.703	VB	6.61819	5.84268e-1	3.86680		m-p-Xylenes
8.927	BB	6.49953	5.86655e-1	3.81298		o-Xylene

Totals : 22.78464

Uncalibrated Peaks : compound name not specified

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.475	BP N	1.03902	0.00000	0.00000	?	

Uncalib. totals : 0.00000

=====  
Summed Peaks Report  
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Signal 1: FID1 A, Front Signal

=====  
Final Summed Peaks Report  
=====

Signal 1: FID1 A, Front Signal

Name	Total Area [pA*s]	Amount [ppm]
Acetone	9.41590e-1	3.7718
Benzene	5.95911	3.7848
Toluene	6.55731	3.7528
Ethylbenzene	6.94023	3.7955
m-p-Xylenes	6.61819	3.8668
o-Xylene	6.49953	3.8130

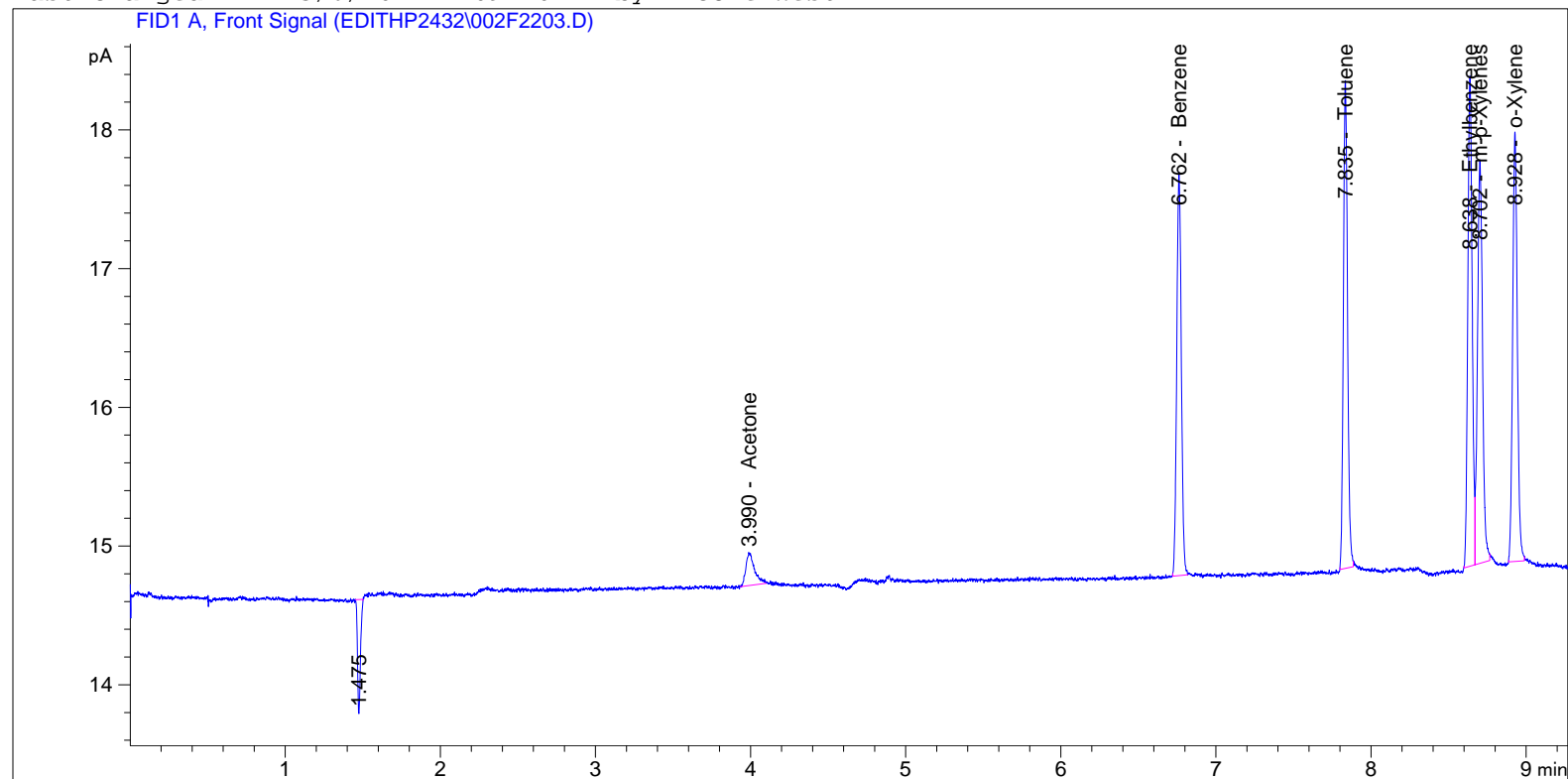
Totals : 22.7846

\*\*\* End of Report \*\*\*

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Acq. Operator	: Nicole West	Seq. Line	: 22
Acq. Instrument	: Edith	Location	: Vial 2
Injection Date	: 3/6/2021 7:09:47 AM	Inj	: 3
		Inj Volume	: 250 µl

Acq. Method : C:\GC\2021\EDITH\QUARTER 1\EDITHP2432\AQ\_EDITHP503\_HRVOC.M  
Last changed : 8/14/2017 12:18:06 PM by Nicholas Traversa  
Analysis Method : C:\GC\2021\EDITH\METHODS\EDITHP2432F\_ABTEX.M  
Last changed : 3/6/2021 1:09:10 PM by Nicole West



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External Standard Report

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Sorted By : Signal  
Calib. Data Modified : Saturday, March 06, 2021 1:09:06 PM  
Multiplier : 1.0000  
Dilution : 1.0000  
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
3.990	BB	9.02248e-1	4.00910	3.61720		Acetone
6.762	BB	5.97254	6.35127e-1	3.79332		Benzene
7.835	BB	6.53210	5.72407e-1	3.73902		Toluene
8.638	BV	6.88033	5.47248e-1	3.76524		Ethylbenzene
8.702	VB	6.57536	5.84562e-1	3.84371		m-p-Xylenes
8.928	BB	6.48059	5.86800e-1	3.80281		o-Xylene

Totals : 22.56131

Uncalibrated Peaks : compound name not specified

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.475	BP N	1.02548	0.00000	0.00000	?	

Uncalib. totals : 0.00000

Summed Peaks Report

Signal 1: FID1 A, Front Signal

Final Summed Peaks Report

Signal 1: FID1 A, Front Signal

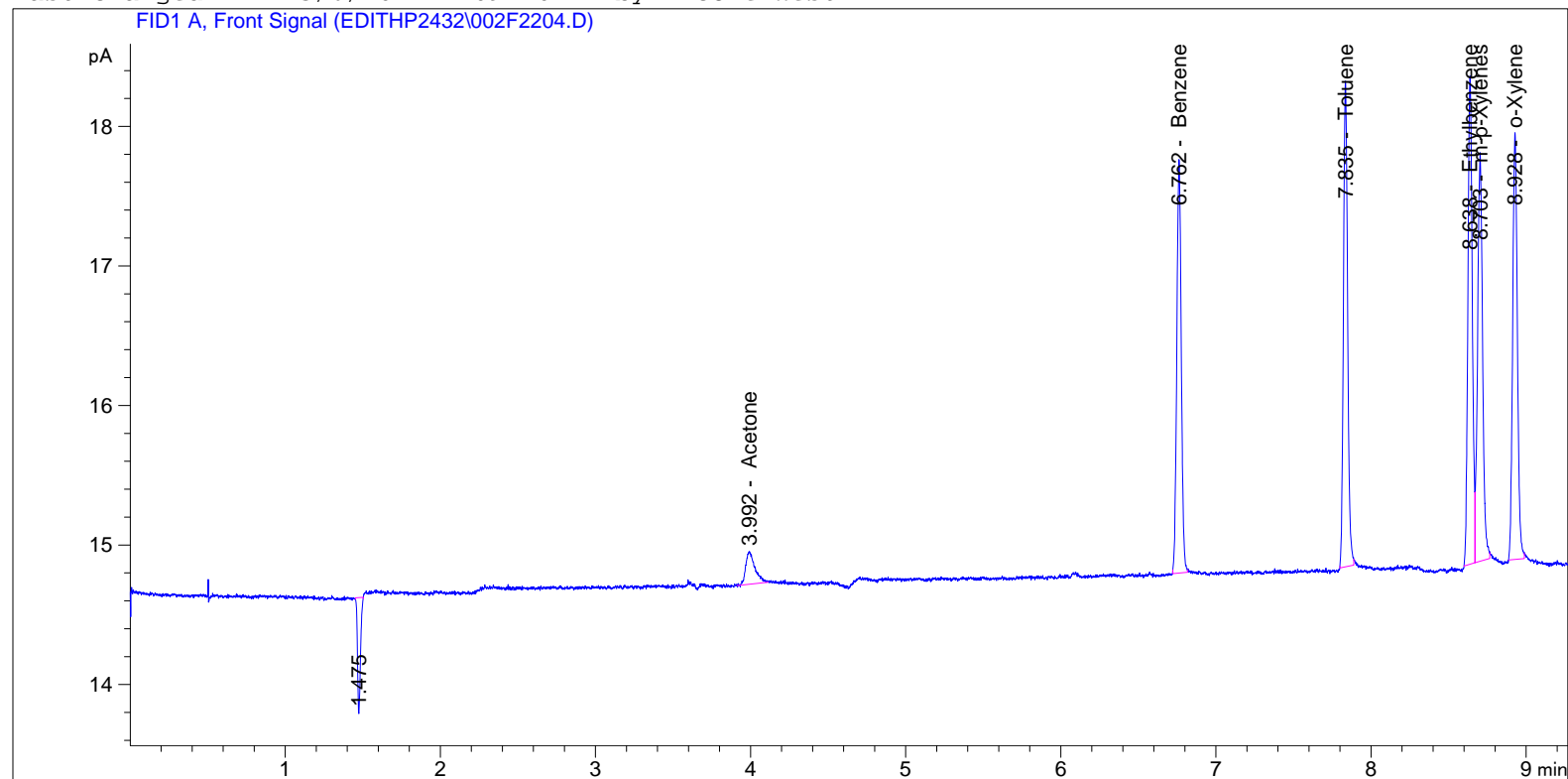
Name	Total Area [pA*s]	Amount [ppm]
Acetone	9.02248e-1	3.6172
Benzene	5.97254	3.7933
Toluene	6.53210	3.7390
Ethylbenzene	6.88033	3.7652
m-p-Xylenes	6.57536	3.8437
o-Xylene	6.48059	3.8028
Totals :	22.5613	

\*\*\* End of Report \*\*\*

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Acq. Operator	: Nicole West	Seq. Line	: 22
Acq. Instrument	: Edith	Location	: Vial 2
Injection Date	: 3/6/2021 7:24:58 AM	Inj	: 4
		Inj Volume	: 250 µl

Acq. Method : C:\GC\2021\EDITH\QUARTER 1\EDITHP2432\AQ\_EDITHP503\_HRVOC.M  
Last changed : 8/14/2017 12:18:06 PM by Nicholas Traversa  
Analysis Method : C:\GC\2021\EDITH\METHODS\EDITHP2432F\_ABTEX.M  
Last changed : 3/6/2021 1:09:10 PM by Nicole West



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External Standard Report

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Sorted By : Signal  
Calib. Data Modified : Saturday, March 06, 2021 1:09:06 PM  
Multiplier : 1.0000  
Dilution : 1.0000  
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
3.992	BB	9.59017e-1	3.99033	3.82680		Acetone
6.762	BB	5.95707	6.35128e-1	3.78350		Benzene
7.835	BB	6.55306	5.72326e-1	3.75049		Toluene
8.638	BV	6.87466	5.47283e-1	3.76238		Ethylbenzene
8.703	VB	6.55638	5.84694e-1	3.83347		m-p-Xylenes
8.928	BB	6.45911	5.86965e-1	3.79127		o-Xylene

Totals : 22.74791

Uncalibrated Peaks : compound name not specified

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.475	BP N	1.04577	0.00000	0.00000	?	

Uncalib. totals : 0.00000

Summed Peaks Report

Signal 1: FID1 A, Front Signal

Final Summed Peaks Report

Signal 1: FID1 A, Front Signal

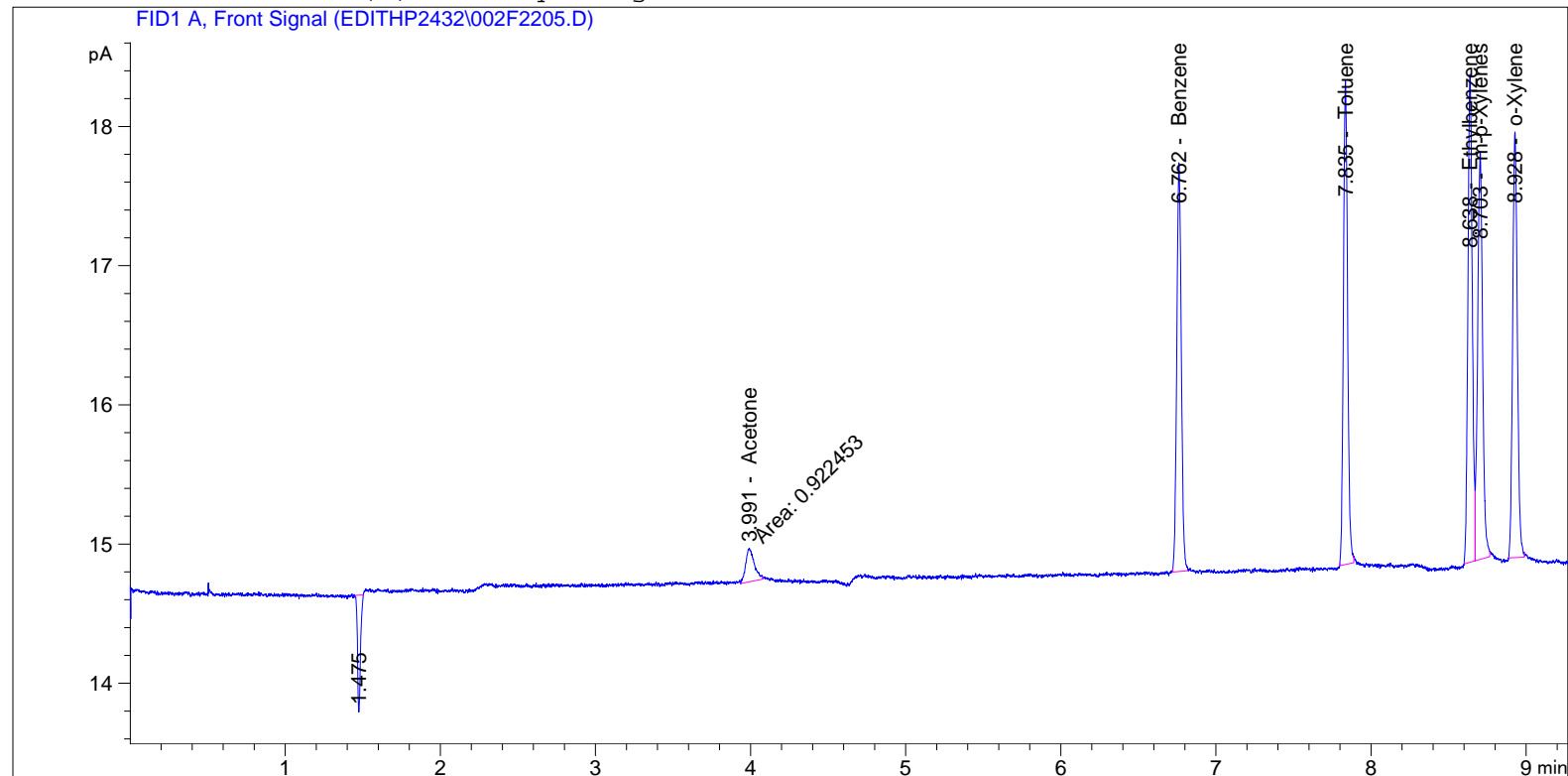
Name	Total Area [pA*s]	Amount [ppm]
Acetone	9.59017e-1	3.8268
Benzene	5.95707	3.7835
Toluene	6.55306	3.7505
Ethylbenzene	6.87466	3.7624
m-p-Xylenes	6.55638	3.8335
o-Xylene	6.45911	3.7913
Totals :	22.7479	

\*\*\* End of Report \*\*\*

=====

Acq. Operator	: Nicole West	Seq. Line	: 22
Acq. Instrument	: Edith	Location	: Vial 2
Injection Date	: 3/6/2021 7:40:11 AM	Inj	: 5
		Inj Volume	: 250 µl

Acq. Method : C:\GC\2021\EDITH\QUARTER 1\EDITHP2432\AQ\_EDITHP503\_HRVOC.M  
Last changed : 8/14/2017 12:18:06 PM by Nicholas Traversa  
Analysis Method : C:\GC\2021\EDITH\METHODS\EDITHP2432F\_ABTEX.M  
Last changed : 3/6/2021 1:09:10 PM by Nicole West  
Additional Info : Peak(s) manually integrated



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External Standard Report

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Sorted By : Signal  
Calib. Data Modified : Saturday, March 06, 2021 1:09:06 PM  
Multiplier : 1.0000  
Dilution : 1.0000  
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
3.991	MM	9.22453e-1	4.00910	3.69820		Acetone
6.762	BB	5.96974	6.35128e-1	3.79155		Benzene
7.835	BB	6.52958	5.72417e-1	3.73764		Toluene
8.638	BV	6.87564	5.47277e-1	3.76288		Ethylbenzene
8.703	VB	6.54681	5.84760e-1	3.82831		m-p-Xylenes
8.928	BB	6.44941	5.87040e-1	3.78606		o-Xylene

Totals : 22.60464

Uncalibrated Peaks : compound name not specified

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.475	BP N	1.04562	0.00000	0.00000	?	

Uncalib. totals : 0.00000

Summed Peaks Report

Signal 1: FID1 A, Front Signal

Final Summed Peaks Report

Signal 1: FID1 A, Front Signal

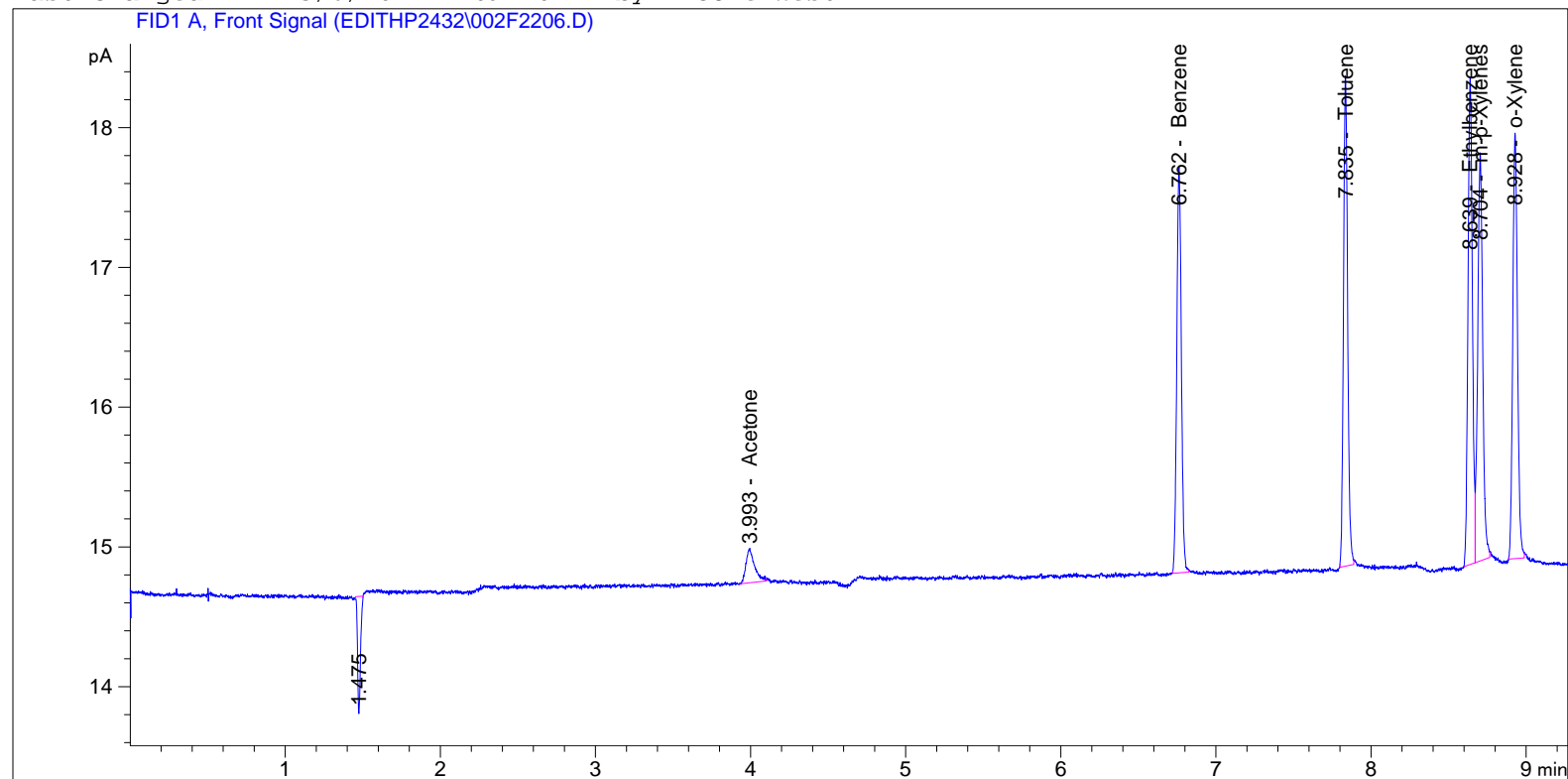
Name	Total Area [pA*s]	Amount [ppm]
Acetone	9.22453e-1	3.6982
Benzene	5.96974	3.7915
Toluene	6.52958	3.7376
Ethylbenzene	6.87564	3.7629
m-p-Xylenes	6.54681	3.8283
o-Xylene	6.44941	3.7861
Totals :	22.6046	

\*\*\* End of Report \*\*\*

=====

Acq. Operator	: Nicole West	Seq. Line	: 22
Acq. Instrument	: Edith	Location	: Vial 2
Injection Date	: 3/6/2021 7:55:20 AM	Inj	: 6
		Inj Volume	: 250 µl

Acq. Method : C:\GC\2021\EDITH\QUARTER 1\EDITHP2432\AQ\_EDITHP503\_HRVOC.M  
Last changed : 8/14/2017 12:18:06 PM by Nicholas Traversa  
Analysis Method : C:\GC\2021\EDITH\METHODS\EDITHP2432F\_ABTEX.M  
Last changed : 3/6/2021 1:09:10 PM by Nicole West



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External Standard Report

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Sorted By : Signal  
Calib. Data Modified : Saturday, March 06, 2021 1:09:06 PM  
Multiplier : 1.0000  
Dilution : 1.0000  
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
3.993	BB	9.39063e-1	4.00801	3.76378		Acetone
6.762	BB	5.98547	6.35126e-1	3.80153		Benzene
7.835	BB	6.53937	5.72379e-1	3.74300		Toluene
8.639	BV	6.88049	5.47247e-1	3.76533		Ethylbenzene
8.704	VB	6.54509	5.84772e-1	3.82739		m-p-Xylenes
8.928	BB	6.41802	5.87283e-1	3.76920		o-Xylene

Totals : 22.67021

Uncalibrated Peaks : compound name not specified

Sample Name: Edithp2432 #B1 ENV(1=1925,2=75)

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.475	BP N	1.03932	0.00000	0.00000	?	

Uncalib. totals : 0.00000

## =====

## Summed Peaks Report

Signal 1: FID1 A, Front Signal

## =====

## Final Summed Peaks Report

Signal 1: FID1 A, Front Signal

Name	Total Area [pA*s]	Amount [ppm]
Acetone	9.39063e-1	3.7638
Benzene	5.98547	3.8015
Toluene	6.53937	3.7430
Ethylbenzene	6.88049	3.7653
m-p-Xylenes	6.54509	3.8274
o-Xylene	6.41802	3.7692

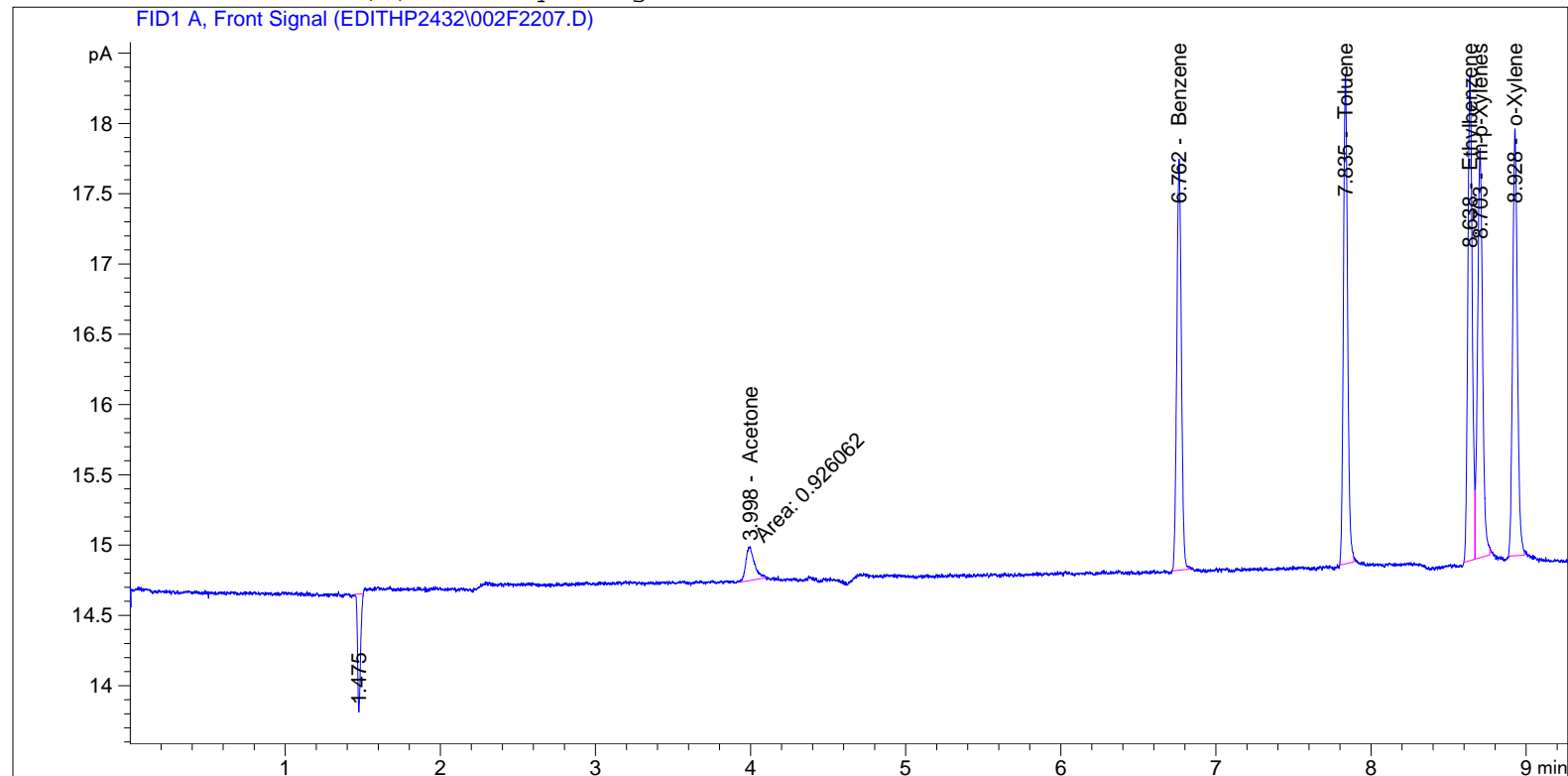
Totals : 22.6702

\*\*\* End of Report \*\*\*

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Acq. Operator	: Nicole West	Seq. Line	: 22
Acq. Instrument	: Edith	Location	: Vial 2
Injection Date	: 3/6/2021 8:10:36 AM	Inj	: 7
		Inj Volume	: 250 µl

Acq. Method : C:\GC\2021\EDITH\QUARTER 1\EDITHP2432\AQ\_EDITHP503\_HRVOC.M  
Last changed : 8/14/2017 12:18:06 PM by Nicholas Traversa  
Analysis Method : C:\GC\2021\EDITH\METHODS\EDITHP2432F\_ABTEX.M  
Last changed : 3/6/2021 1:09:10 PM by Nicole West  
Additional Info : Peak(s) manually integrated



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External Standard Report

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Sorted By : Signal  
Calib. Data Modified : Saturday, March 06, 2021 1:09:06 PM  
Multiplier : 1.0000  
Dilution : 1.0000  
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
3.998	MM	9.26062e-1	4.00910	3.71267		Acetone
6.762	BB	5.98963	6.35126e-1	3.80417		Benzene
7.835	BB	6.54914	5.72341e-1	3.74834		Toluene
8.638	BV	6.83295	5.47541e-1	3.74132		Ethylbenzene
8.703	VB	6.55602	5.84696e-1	3.83328		m-p-Xylenes
8.928	BB	6.45675	5.86983e-1	3.79000		o-Xylene

Totals : 22.62978

Uncalibrated Peaks : compound name not specified

Sample Name: Edithp2432 #B1 ENV(1=1925,2=75)

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.475	BP N	1.05228	0.00000	0.00000	--	?
Uncalib. totals :				0.00000		

## =====

## Summed Peaks Report

Signal 1: FID1 A, Front Signal

## =====

## Final Summed Peaks Report

Signal 1: FID1 A, Front Signal

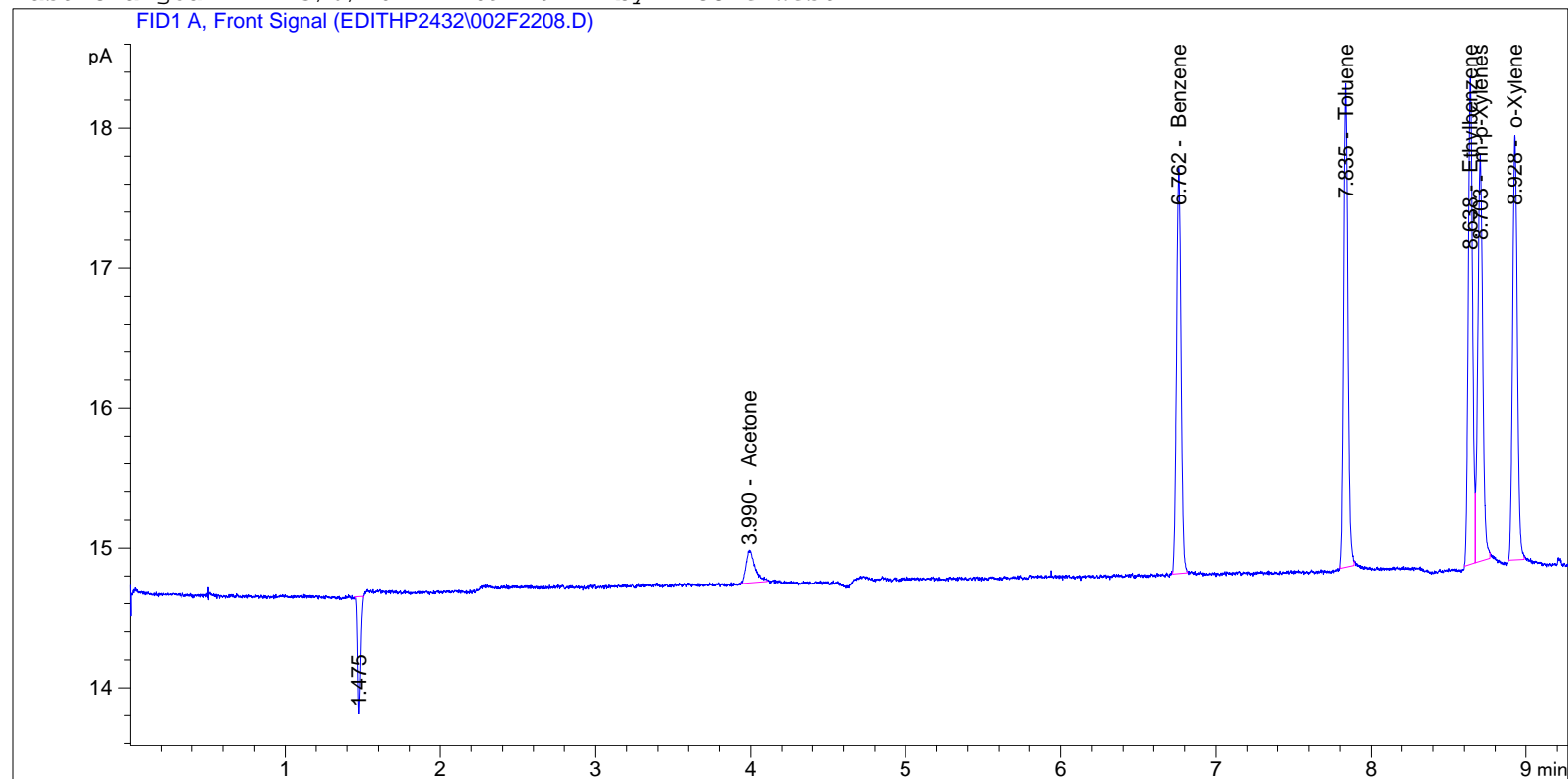
Name	Total Area [pA*s]	Amount [ppm]
Acetone	9.26062e-1	3.7127
Benzene	5.98963	3.8042
Toluene	6.54914	3.7483
Ethylbenzene	6.83295	3.7413
m-p-Xylenes	6.55602	3.8333
o-Xylene	6.45675	3.7900
Totals :	22.6298	

\*\*\* End of Report \*\*\*

=====

Acq. Operator	: Nicole West	Seq. Line	: 22
Acq. Instrument	: Edith	Location	: Vial 2
Injection Date	: 3/6/2021 8:25:43 AM	Inj	: 8
		Inj Volume	: 250 µl

Acq. Method : C:\GC\2021\EDITH\QUARTER 1\EDITHP2432\AQ\_EDITHP503\_HRVOC.M  
Last changed : 8/14/2017 12:18:06 PM by Nicholas Traversa  
Analysis Method : C:\GC\2021\EDITH\METHODS\EDITHP2432F\_ABTEX.M  
Last changed : 3/6/2021 1:09:10 PM by Nicole West



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External Standard Report

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Sorted By : Signal  
Calib. Data Modified : Saturday, March 06, 2021 1:09:06 PM  
Multiplier : 1.0000  
Dilution : 1.0000  
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
3.990	BB	9.18406e-1	4.00910	3.68198		Acetone
6.762	BB	5.93740	6.35128e-1	3.77101		Benzene
7.835	BB	6.48453	5.72542e-1	3.71266		Toluene
8.638	BV	6.77789	5.47806e-1	3.71297		Ethylbenzene
8.703	VB	6.46575	5.85143e-1	3.78339		m-p-Xylenes
8.928	BB	6.37473	5.87624e-1	3.74594		o-Xylene

Totals : 22.40794

Uncalibrated Peaks : compound name not specified

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.475	BP N	1.04847	0.00000	0.00000	?	

Uncalib. totals : 0.00000

Summed Peaks Report

Signal 1: FID1 A, Front Signal

Final Summed Peaks Report

Signal 1: FID1 A, Front Signal

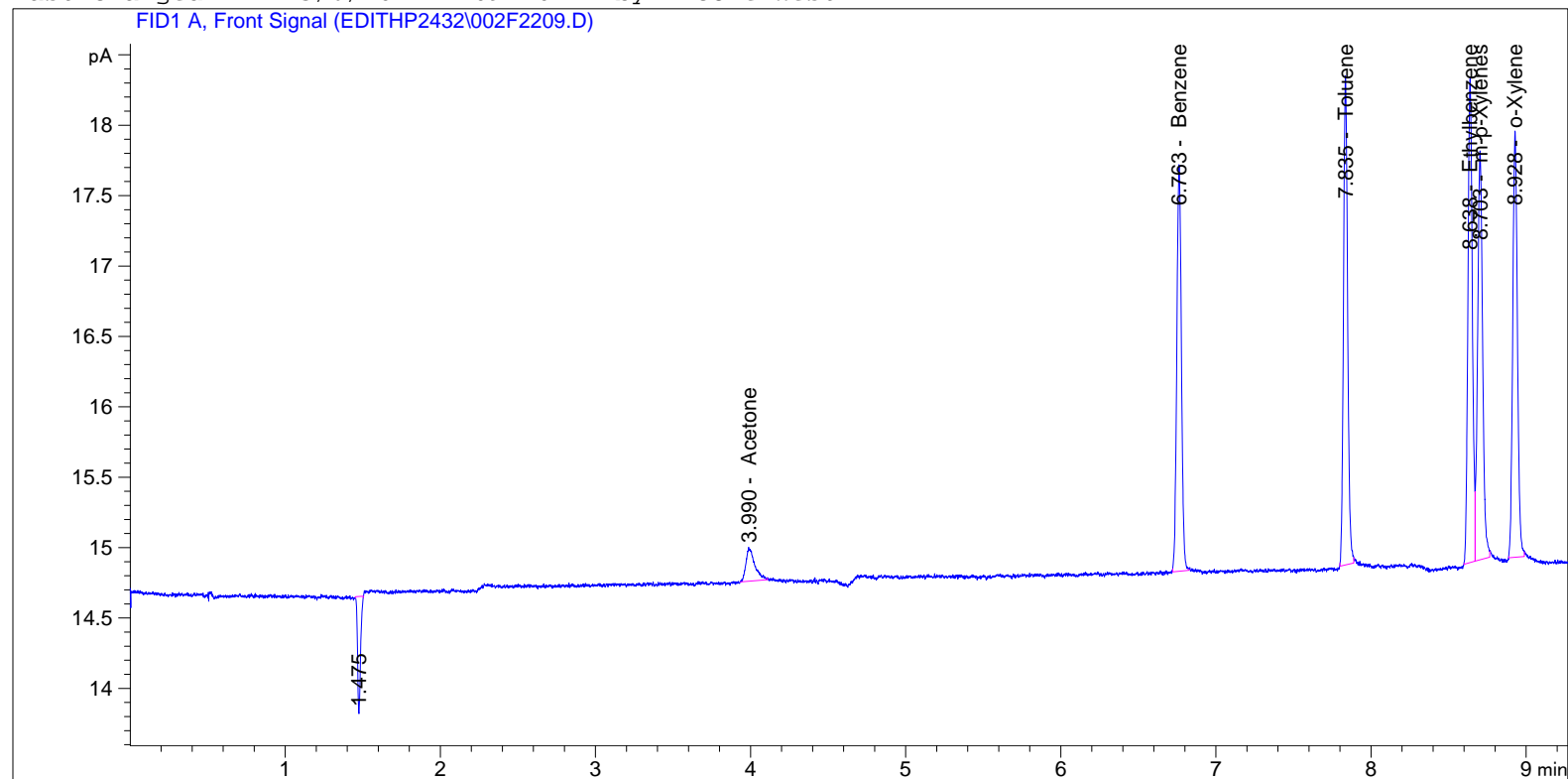
Name	Total Area [pA*s]	Amount [ppm]
Acetone	9.18406e-1	3.6820
Benzene	5.93740	3.7710
Toluene	6.48453	3.7127
Ethylbenzene	6.77789	3.7130
m-p-Xylenes	6.46575	3.7834
o-Xylene	6.37473	3.7459
Totals :	22.4079	

\*\*\* End of Report \*\*\*

=====

Acq. Operator	: Nicole West	Seq. Line	: 22
Acq. Instrument	: Edith	Location	: Vial 2
Injection Date	: 3/6/2021 8:40:52 AM	Inj	: 9
		Inj Volume	: 250 µl

Acq. Method : C:\GC\2021\EDITH\QUARTER 1\EDITHP2432\AQ\_EDITHP503\_HRVOC.M  
Last changed : 8/14/2017 12:18:06 PM by Nicholas Traversa  
Analysis Method : C:\GC\2021\EDITH\METHODS\EDITHP2432F\_ABTEX.M  
Last changed : 3/6/2021 1:09:10 PM by Nicole West



=====

External Standard Report

=====

Sorted By : Signal  
Calib. Data Modified : Saturday, March 06, 2021 1:09:06 PM  
Multiplier : 1.0000  
Dilution : 1.0000  
Use Multiplier & Dilution Factor with ISTDs

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
3.990	BB	9.31468e-1	4.00910	3.73435		Acetone
6.763	BB	5.96536	6.35128e-1	3.78877		Benzene
7.835	BB	6.48172	5.72542e-1	3.71106		Toluene
8.638	BV	6.79381	5.47786e-1	3.72156		Ethylbenzene
8.703	VB	6.50753	5.85036e-1	3.80714		m-p-Xylenes
8.928	BB	6.35397	5.87711e-1	3.73430		o-Xylene

Totals : 22.49716

Uncalibrated Peaks : compound name not specified

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.475	BP N	1.04057	0.00000	0.00000	?	

Uncalib. totals : 0.00000

Summed Peaks Report

Signal 1: FID1 A, Front Signal

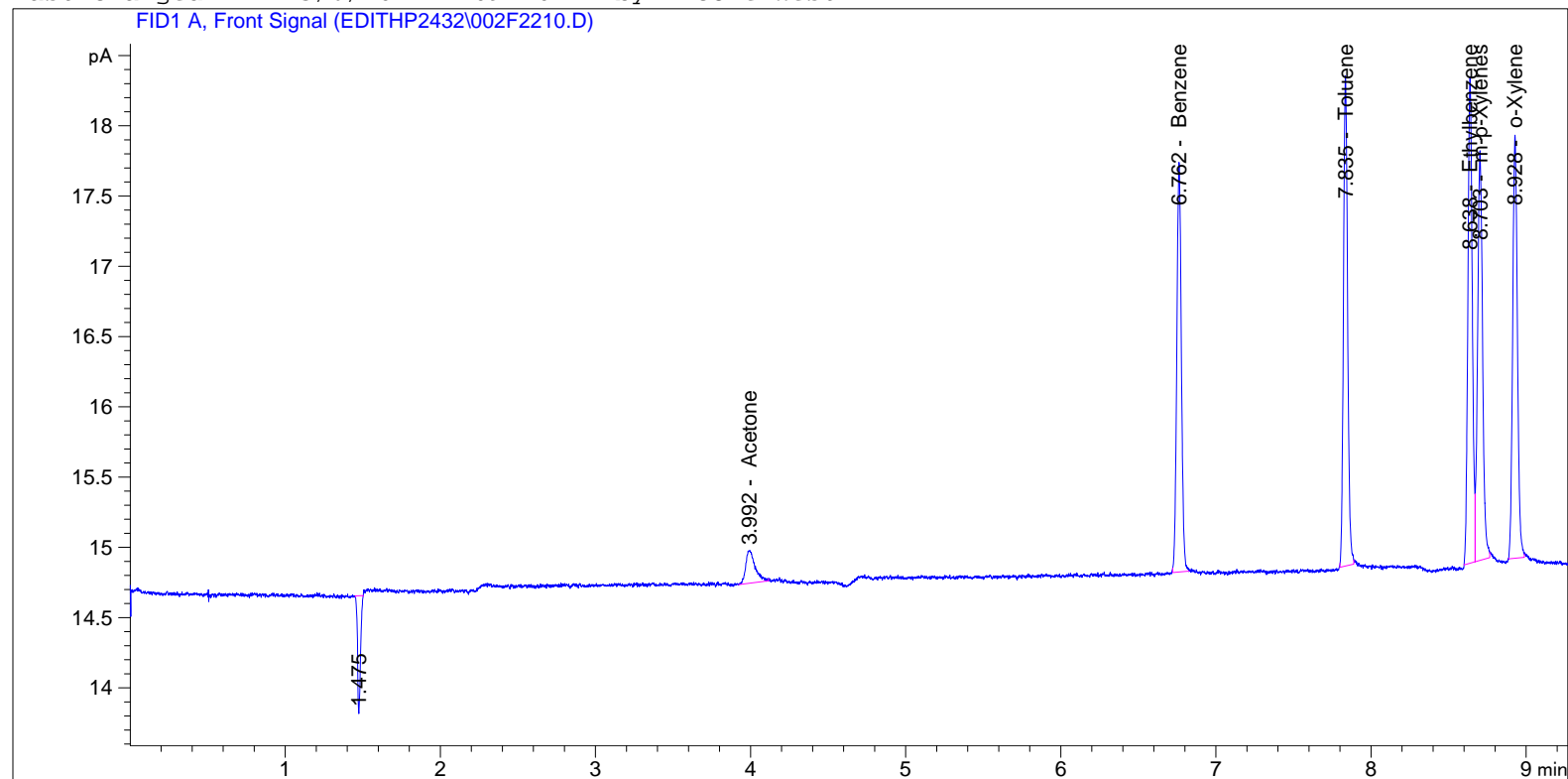
Final Summed Peaks Report

Signal 1: FID1 A, Front Signal

Name	Total Area [pA*s]	Amount [ppm]
Acetone	9.31468e-1	3.7343
Benzene	5.96536	3.7888
Toluene	6.48172	3.7111
Ethylbenzene	6.79381	3.7216
m-p-Xylenes	6.50753	3.8071
o-Xylene	6.35397	3.7343
Totals :	22.4972	

\*\*\* End of Report \*\*\*

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=====
Acq. Operator   : Nicole West                      Seq. Line :   22
Acq. Instrument : Edith                          Location  : Vial 2
Injection Date  : 3/6/2021 8:56:05 AM              Inj       :   10
                                                Inj Volume: 250 µl
Acq. Method     : C:\GC\2021\EDITH\QUARTER 1\EDITHP2432\AQ_EDITHP503_HRVOC.M
Last changed    : 8/14/2017 12:18:06 PM by Nicholas Traversa
Analysis Method : C:\GC\2021\EDITH\METHODS\EDITHP2432F_ABTEX.M
Last changed    : 3/6/2021 1:09:10 PM by Nicole West
=====
```



External Standard Report

```
=====
Sorted By      : Signal
Calib. Data Modified : Saturday, March 06, 2021 1:09:06 PM
Multiplier     : 1.0000
Dilution       : 1.0000
Use Multiplier & Dilution Factor with ISTDs
=====
```

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
3.992	BB	9.81572e-1	3.97121	3.89803		Acetone
6.762	BB	5.97439	6.35127e-1	3.79450		Benzene
7.835	BB	6.51450	5.72475e-1	3.72939		Toluene
8.638	BV	6.80204	5.47734e-1	3.72571		Ethylbenzene
8.703	VB	6.51125	5.85010e-1	3.80914		m-p-Xylenes
8.928	BB	6.38665	5.87529e-1	3.75235		o-Xylene

Totals : 22.70912

Uncalibrated Peaks : compound name not specified

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [ppm]	Grp	Name
1.475	BP N	1.05223	0.00000	0.00000	?	

Uncalib. totals : 0.00000

Summed Peaks Report

Signal 1: FID1 A, Front Signal

Final Summed Peaks Report

Signal 1: FID1 A, Front Signal

Name	Total Area [pA*s]	Amount [ppm]
Acetone	9.81572e-1	3.8980
Benzene	5.97439	3.7945
Toluene	6.51450	3.7294
Ethylbenzene	6.80204	3.7257
m-p-Xylenes	6.51125	3.8091
o-Xylene	6.38665	3.7523
Totals :	22.7091	

\*\*\* End of Report \*\*\*

Location: GC  
Cabinet: 102

Drawer: Edith  
Folder: Quarter 4

Analyst: IZS  
Date: 11-2-22

Job #s <u>1122-019</u> <u>1122-024</u> <u>1122-025</u>	Describe Work Documented on This Page <u>M18 Column info in AQM</u>
---	--

IZS 11-4-22

C:\GC12022\EDITH\QUARTER 4\EDITHP3021\EDITHP3021.S Front Inlet

Line	Vial	SampleName	Method	Inj	Dilution
1	vial 4	1122-019.Run 1.Bag	AQ_EDITHP503_HRVOC	3	
2	vial 5	1122-019.Run 2.Bag	AQ_EDITHP503_HRVOC	3	
3	vial 6	1122-019.Run 3.Bag	AQ_EDITHP503_HRVOC	3	
4	vial 2	Pause	PAUSE	1	
5	vial 3	Edithp2915 #C5 ENV(1=0,6=400)	AQ_EDITHP503_HRVOC	4	
6	vial 1	Zero Air Blank	AQ_EDITHP503_HRVOC	3	
7	vial 3	Edithp2970 #HR5 ENV(1=0,3=400)	AQ_EDITHP503_HRVOC	3	
8	vial 3	Edithp2924 #B3 ENV(1=600,5=400)	AQ_EDITHP503_HRVOC	4	
9	vial 2	Pause	PAUSE	1	
10	vial 4	1122-024.M18 Primary R1.Bag	AQ_EDITHP503_HRVOC	3	
11	vial 5	1122-024.M18 Primary R2.Bag	AQ_EDITHP503_HRVOC	3	
12	vial 6	1122-024.M18 Primary R3.Bag	AQ_EDITHP503_HRVOC	3	
13	vial 2	Pause	PAUSE	1	
14	vial 4	1122-025.Run 1.Bag	AQ_EDITHP503_HRVOC	3	
15	vial 7	1122-019.Run 1 SP.Bag	AQ_EDITHP503_HRVOC	3	
16	vial 5	1122-025.Run 2.Bag	AQ_EDITHP503_HRVOC	3	
17	vial 6	1122-025.Run 3.Bag	AQ_EDITHP503_HRVOC	3	
18	vial 7	1122-019.Run 2 BL.Bag	AQ_EDITHP503_HRVOC	3	
19	vial 18	Pause	PAUSE	1	
20	vial 3	Edithp2915 #C5 ENV(1=0,6=400)	AQ_EDITHP503_HRVOC	4	
21	vial 1	Zero Air Blank	AQ_EDITHP503_HRVOC	3	
22	vial 3	Edithp2970 #HR5 ENV(1=0,3=400)	AQ_EDITHP503_HRVOC	3	
23	vial 3	Edithp2924 #B3 ENV(1=600,5=400)	AQ_EDITHP503_HRVOC	4	
24	vial 2	Pause	PAUSE	1	

C:\GC12022\EDITH\QUARTER 4\EDITHP3021\EDITHP3021.S Back Inlet

Line	Vial	SampleName	Method	Inj	Dilution
1	vial 20	1122-019.Run 1.Bag	AQ_EDITHP503_HRVOC	3	
2	vial 21	1122-019.Run 2.Bag	AQ_EDITHP503_HRVOC	3	
3	vial 22	1122-019.Run 3.Bag	AQ_EDITHP503_HRVOC	3	
4	vial 18	Pause	PAUSE	1	
5	vial 19	Edithp2915 #C5 ENV(1=0,6=400)	AQ_EDITHP503_HRVOC	4	
6	vial 17	Zero Air Blank	AQ_EDITHP503_HRVOC	3	
7	vial 19	Edithp2970 #HR5 ENV(1=0,3=400)	AQ_EDITHP503_HRVOC	3	
8	vial 19	Edithp2924 #B3 ENV(1=600,5=400)	AQ_EDITHP503_HRVOC	4	
9	vial 18	Pause	PAUSE	1	
10	vial 20	1122-025.Run 1.Bag	AQ_EDITHP503_HRVOC	3	
11	vial 21	1122-024.M18 Primary R2.Bag	AQ_EDITHP503_HRVOC	3	
12	vial 22	1122-024.M18 Primary R3.Bag	AQ_EDITHP503_HRVOC	3	
13	vial 18	Pause	PAUSE	1	
14	vial 20	1122-025.Run 1.Bag	AQ_EDITHP503_HRVOC	3	
15	vial 23	1122-019.Run 1 SP.Bag	AQ_EDITHP503_HRVOC	3	
16	vial 21	1122-025.Run 2.Bag	AQ_EDITHP503_HRVOC	3	
17	vial 22	1122-025.Run 3.Bag	AQ_EDITHP503_HRVOC	3	
18	vial 23	1122-019.Run 2 BL.Bag	AQ_EDITHP503_HRVOC	3	
19	vial 18	Pause	PAUSE	1	
20	vial 19	Edithp2915 #C5 ENV(1=0,6=400)	AQ_EDITHP503_HRVOC	4	
21	vial 17	Zero Air Blank	AQ_EDITHP503_HRVOC	3	
22	vial 19	Edithp2970 #HR5 ENV(1=0,3=400)	AQ_EDITHP503_HRVOC	3	
23	vial 19	Edithp2924 #B3 ENV(1=600,5=400)	AQ_EDITHP503_HRVOC	4	
24	vial 18	Pause	PAUSE	1	

Supplies, Ancillary Equipment  
Serial #s, Lot #s, Etc

① Power outage.  
Did not run. D. not  
use. IZS 11-7-22

② Use 12T 3 injections  
IZS 11-4-22

③ Did not use  
NYB 11-4-22

④ Should be '024'.  
IZS 11-7-22

⑤ Should be '1122-025'.  
IZS 11-7-22

C:\GC12021\EDITH\QUARTER 4\EDITHP3021\EDITHP3021.S Front Inlet

Line	Vial	SampleName	Method	Inj	Dilution
1	vial 6	1022-025.Run 3.Bag	AQ_EDITHP503_HRVOC	3	
2	vial 6	1022-025.Run 3.Bag	AQ_EDITHP503_HRVOC	2	
3	vial 5	1122-019.Run 2 BL.Bag	AQ_EDITHP503_HRVOC	3	
4	vial 3	Edithp2915 #C5 ENV(1=0,6=400)	AQ_EDITHP503_HRVOC	3	
5	vial 3	Edithp2970 #HR5 ENV(1=0,3=400)	AQ_EDITHP503_HRVOC	3	
6	vial 3	Edithp2970 #HR5 ENV(1=0,3=400)	AQ_EDITHP503_HRVOC	1	
7	vial 3	Edithp2924 #B3 ENV(1=600,5=400)	AQ_EDITHP503_HRVOC	3	
8	vial 2	Pause	PAUSE	1	

C:\GC12021\EDITH\QUARTER 4\EDITHP3021\EDITHP3021.S Back Inlet

Line	Vial	SampleName	Method	Inj	Dilution
1	vial 22	1022-025.Run 3.Bag	AQ_EDITHP503_HRVOC	3	
2	vial 22	1022-025.Run 3.Bag	AQ_EDITHP503_HRVOC	2	
3	vial 21	1122-019.Run 2 BL.Bag	AQ_EDITHP503_HRVOC	3	
4	vial 19	Edithp2915 #C5 ENV(1=0,6=400)	AQ_EDITHP503_HRVOC	3	
5	vial 19	Edithp2970 #HR5 ENV(1=0,3=400)	AQ_EDITHP503_HRVOC	3	
6	vial 19	Edithp2970 #HR5 ENV(1=0,3=400)	AQ_EDITHP503_HRVOC	1	
7	vial 19	Edithp2924 #B3 ENV(1=600,5=400)	AQ_EDITHP503_HRVOC	3	
8	vial 18	Pause	PAUSE	1	

IZS 11-4-22

Reviewer's Initials & Date:

RES 11/8/22

EDITH  
page 3021



ENTHALPY  
ANALYTICAL

Job #s		Describe Work Documented on This Page	
1122-024 1022-180 1122-019		M18 Column info in AQM	
		ITZ 11-7-22	
		Supplies, Ancillary Equipment Serial #s, Lot #s, Etc	
		① Should be '1022-180.BTB-3-U3PA.Bag'	
		ITZ 11-7-22	
		② Should be '1122-024'. ITZ 11-7-22	

C:\GC\2022\EDITH\QUARTER 4\EDITHP3022\EDITHP3022.S Front Inlet

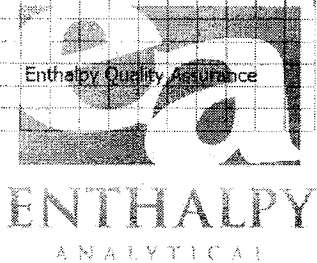
Line	Vial	SampleName	Method	Inj	Dilution
1	vial 4	1022-024.M18 Primary R1 SP.Bag ②	AQ_EDITHP503_HRVOC	3	
2	vial 2	Pause	PAUSE	1	
3	vial 4	1022-180.BTB-1-U3PA.Bag	AQ_EDITHP503_HRVOC	3	
4	vial 5	1022-180.BTB-2-U3PA.Bag	AQ_EDITHP503_HRVOC	3	
5	vial 6	1022-180.BTB-2-U3PA.Bag ①	AQ_EDITHP503_HRVOC	3	
6	vial 7	1022-180.BTB-1-U3VBC.Bag	AQ_EDITHP503_HRVOC	3	
7	vial 8	1022-180.BTB-2-U3VBC.Bag	AQ_EDITHP503_HRVOC	3	
8	vial 9	1022-180.BTB-3-U3VBC.Bag	AQ_EDITHP503_HRVOC	3	
9	vial 3	Edithp2915 #C5 ENV(1=0,6=400)	AQ_EDITHP503_HRVOC	3	
10	vial 1	Zero Air Blank	AQ_EDITHP503_HRVOC	3	
11	vial 3	Edithp2970 #HR5 ENV(1=0,3=400)	AQ_EDITHP503_HRVOC	3	
12	vial 3	Edithp2924 #B3 ENV(1=600,5=400)	AQ_EDITHP503_HRVOC	3	
13	vial 2	Pause	PAUSE	1	
14	vial 4	1122-019.Run 2 SP.Bag	AQ_EDITHP503_HRVOC	3	
15	vial 3	Edithp2915 #C5 ENV(1=0,6=400)	AQ_EDITHP503_HRVOC	3	
16	vial 2	Pause	PAUSE	1	
17	vial 3	Edithp2915 #C5 ENV(1=0,6=400)	AQ_EDITHP503_HRVOC	3	
18	vial 1	Zero Air Blank	AQ_EDITHP503_HRVOC	3	
19	vial 3	Edithp2970 #HR5 ENV(1=0,3=400)	AQ_EDITHP503_HRVOC	3	
20	vial 3	Edithp2924 #B3 ENV(1=600,5=400)	AQ_EDITHP503_HRVOC	3	
21	vial 2	Pause	PAUSE	1	

C:\GC\2022\EDITH\QUARTER 4\EDITHP3022\EDITHP3022.S Back Inlet

Line	Vial	SampleName	Method	Inj	Dilution
1	vial 20	1022-024.M18 Primary R1 SP.Bag ②	AQ_EDITHP503_HRVOC	3	
2	vial 18	Pause	PAUSE	1	
3	vial 20	1022-180.BTB-1-U3PA.Bag	AQ_EDITHP503_HRVOC	3	
4	vial 21	1022-180.BTB-2-U3PA.Bag	AQ_EDITHP503_HRVOC	3	
5	vial 22	1022-180.BTB-2-U3PA.Bag ①	AQ_EDITHP503_HRVOC	3	
6	vial 23	1022-180.BTB-1-U3VBC.Bag	AQ_EDITHP503_HRVOC	3	
7	vial 24	1022-180.BTB-2-U3VBC.Bag	AQ_EDITHP503_HRVOC	3	
8	vial 25	1022-180.BTB-3-U3VBC.Bag	AQ_EDITHP503_HRVOC	3	
9	vial 19	Edithp2915 #C5 ENV(1=0,6=400)	AQ_EDITHP503_HRVOC	3	
10	vial 17	Zero Air Blank	AQ_EDITHP503_HRVOC	3	
11	vial 19	Edithp2970 #HR5 ENV(1=0,3=400)	AQ_EDITHP503_HRVOC	3	
12	vial 19	Edithp2924 #B3 ENV(1=600,5=400)	AQ_EDITHP503_HRVOC	3	
13	vial 18	Pause	PAUSE	1	
14	vial 20	1122-019.Run 2 SP.Bag	AQ_EDITHP503_HRVOC	3	
15	vial 19	Edithp2915 #C5 ENV(1=0,6=400)	AQ_EDITHP503_HRVOC	3	
16	vial 18	Pause	PAUSE	1	
17	vial 19	Edithp2915 #C5 ENV(1=0,6=400)	AQ_EDITHP503_HRVOC	3	
18	vial 17	Zero Air Blank	AQ_EDITHP503_HRVOC	3	
19	vial 19	Edithp2970 #HR5 ENV(1=0,3=400)	AQ_EDITHP503_HRVOC	3	
20	vial 19	Edithp2924 #B3 ENV(1=600,5=400)	AQ_EDITHP503_HRVOC	3	
21	vial 18	Pause	PAUSE	1	

Reviewer's Initials & Date:  
MB 11-7-22

EDITH  
page 3022



Location: NADrawer: NAAnalyst: NJBCabinet: NAFolder: NADate: 11-7-22

Job #s <u>1122-019</u> <u>1122-024</u>	Describe Work Documented on This Page <u>M18 STR</u>
--	---

Job # 1122-019 NJB 11-7-22  
ID: Run 1  
Pbar Pre: 30.89 Bag dimensions 17 1/8 x 16 7/8  
Temp Pre: 68 WVD reading 5.5  
WVD vol of bag: 5.6384 Weather Station # 75  
Date/Time Spiked: 11/2/22 13:16 Init: NJB  
Date/Time to Rerun: 11-3-22 13:51  
Spike(s):  
Vol: 100 Unit: ml Source: CC 713912 Witness REB

Supplies, Ancillary Equipment  
Serial #s, Lot #s, Etc

Fail STR  
leaving  
NJB 11-7-22

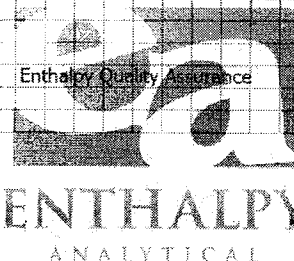
Job # 1122-019 NJB 11-7-22  
ID: Run 2 Vol Removed for analysis: 614 ml  
Pbar Pre: 30.11 Pbar Post: 30.02  
Temp Pre: 68 Temp Post: 72.3  
~vol of bag: 5.700 mmHg Pre: -536.3  
Date/Time Spiked: 11-4-22 12:25 mmHg Post: -321.7  
Date/Time to Rerun: 11-5-22 13:10 tank Vol: 21.58  
Spike(s):  
Vol: 100 Unit: ml Source: CC 713908 Witness KAC

PASS STR  
NJB 11-7-22

Job # 1122-024 NJB 11-7-22  
ID: M18 Primary R1  
Pbar Pre: 30.10 in. Hg Bag dimensions 11" x 10 3/4"  
Temp Pre: 67.9 F WVD reading 17 1/2  
WVD vol of bag: 3.1100 Weather Station # 75  
Date/Time Spiked: 11/3/22 12:15 Init: IZS  
Date/Time to Rerun: 11-4-22 11:49  
Spike(s):  
Vol: 300 Unit: ml Source: ALM031541 Witness KAC

PASS STR  
NJB 11-7-22

Reviewer's Initials &amp; Date:

REB 11/8/22EDITH  
page 3024

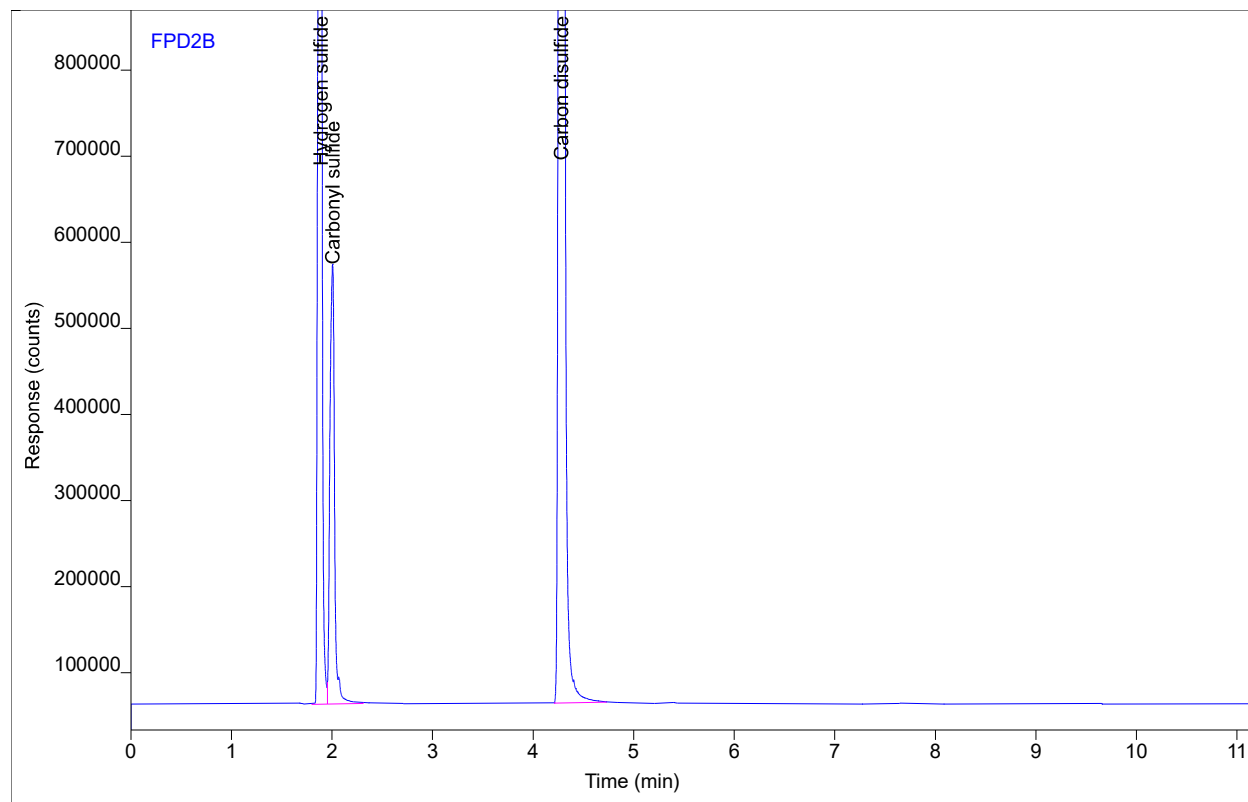
# Raw Data

# Chromatogram Report

# Enthalpy Analytical

Sample Name zeppoP0683 #5  
Sequence Name Zeppop0683\_R1 ver.2  
Inj Data File \_003\_005B0203.D  
File Location GC/2022/Edith/Quarter 3  
Injection Date 11/3/2022 1:37 AM  
File Modified 11/7/2022 12:43 PM  
Instrument Zeppo  
Operator Rhiannon Buchman

Sample Type  
Vial Number Vial 5  
Injection Volume NA  
Injection 3 of 5  
Acquisition Method DUALFPD8.M  
Analysis Method ZEPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



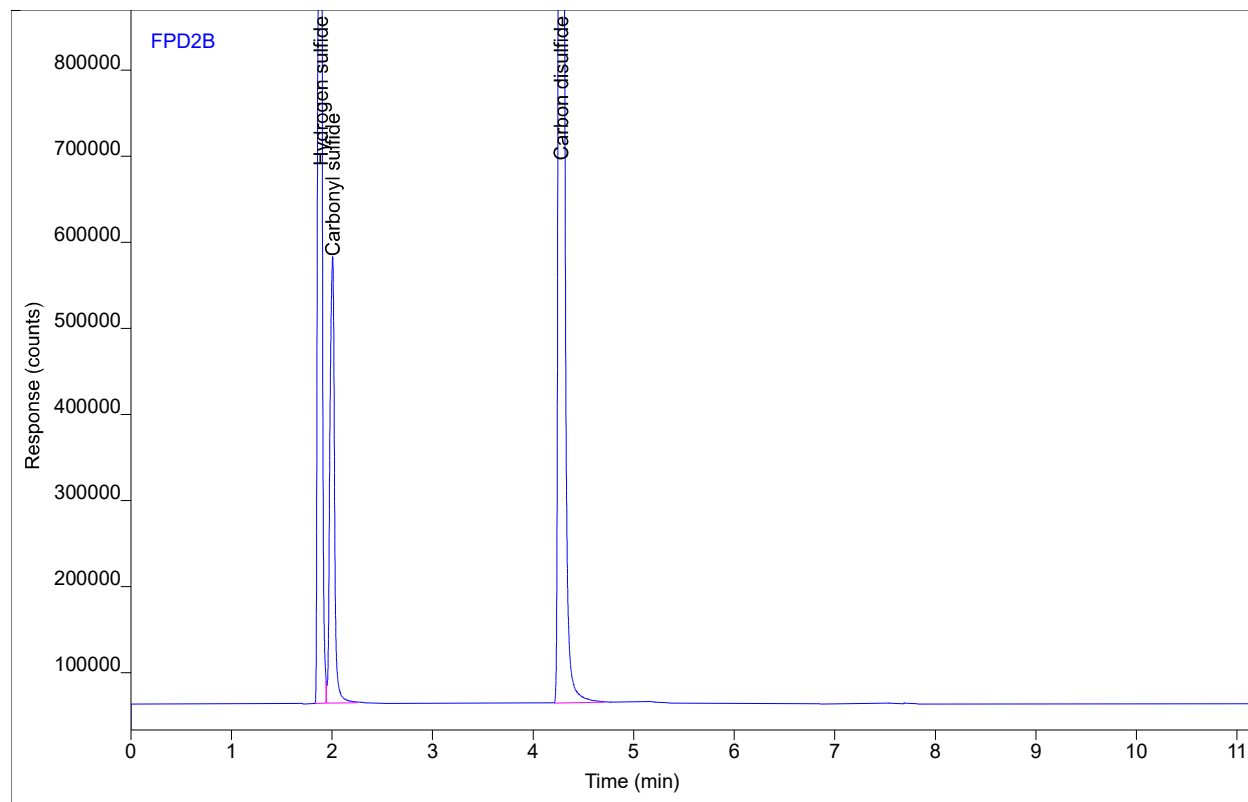
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide	MF	1.89	3629730	1324872	11.5151	1	11.5151	ppmv
Carbonyl sulfide	FM	2.01	1645837	512854	6.77825	1	6.77825	ppmv
Carbon disulfide	BB	4.28	1.32E+007	4331056	8.60018	1	8.60018	ppmv

# Chromatogram Report

# Enthalpy Analytical

Sample Name zeppoP0683 #5  
Sequence Name Zeppop0683\_R1 ver.2  
Inj Data File \_004\_005B0204.D  
File Location GC/2022/Edith/Quarter 3  
Injection Date 11/3/2022 1:55 AM  
File Modified 11/7/2022 12:43 PM  
Instrument Zeppo  
Operator Rhiannon Buchman

Sample Type  
Vial Number Vial 5  
Injection Volume NA  
Injection 4 of 5  
Acquisition Method DUALFPD8.M  
Analysis Method ZEPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



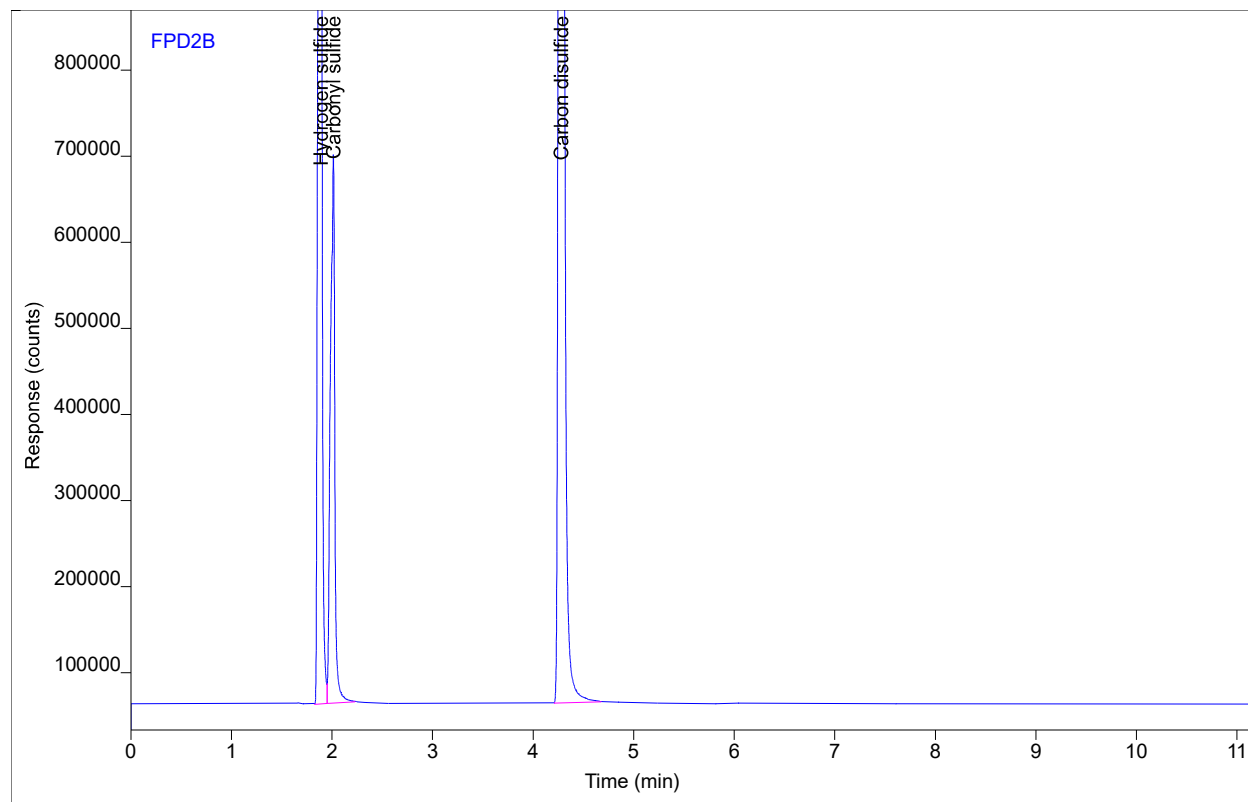
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide	MF	1.89	4248467	1703282	12.3953	1	12.3953	ppmv
Carbonyl sulfide	FM	2.01	1649489	523682	6.78502	1	6.78502	ppmv
Carbon disulfide	BB	4.28	1.22E+007	4387977	8.32395	1	8.32395	ppmv

# Chromatogram Report

# Enthalpy Analytical

Sample Name zeppoP0683 #5  
Sequence Name Zeppop0683\_R1 ver.2  
Inj Data File \_005\_005B0205.D  
File Location GC/2022/Edith/Quarter 3  
Injection Date 11/3/2022 2:12 AM  
File Modified 11/7/2022 12:43 PM  
Instrument Zeppo  
Operator Rhiannon Buchman

Sample Type  
Vial Number Vial 5  
Injection Volume NA  
Injection 5 of 5  
Acquisition Method DUALFPD8.M  
Analysis Method ZEPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



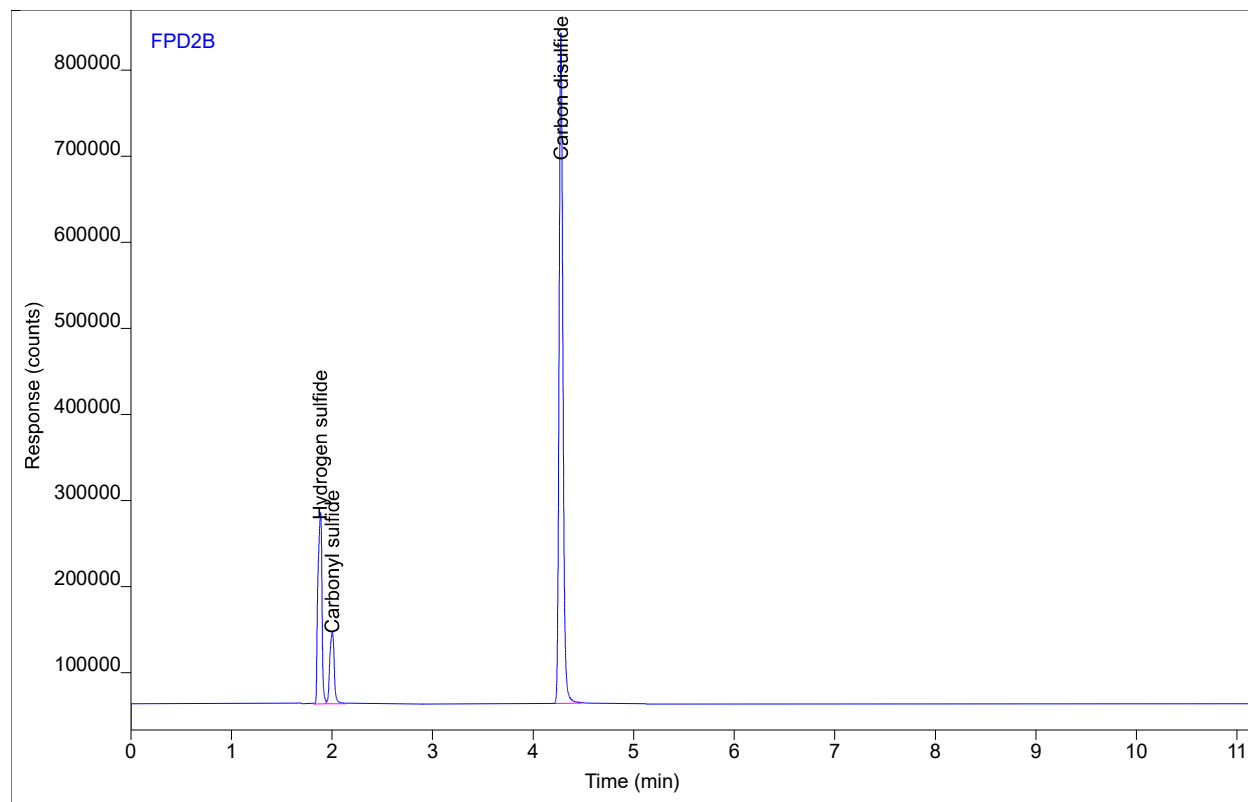
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide	MF	1.89	3692325	1324655	11.6076	1	11.6076	ppmv
Carbonyl sulfide	FM	2.01	1927293	645219	7.27713	1	7.27713	ppmv
Carbon disulfide	BB	4.28	1.48E+007	6123762	9.05725	1	9.05725	ppmv

# Chromatogram Report

# Enthalpy Analytical

Sample Name zeppoP0683 #4  
Sequence Name Zeppop0683\_R1 ver.2  
Inj Data File \_008\_004B0303.D  
File Location GC/2022/Edith/Quarter 3  
Injection Date 11/3/2022 3:04 AM  
File Modified 11/7/2022 12:43 PM  
Instrument Zeppo  
Operator Rhiannon Buchman

Sample Type  
Vial Number Vial 4  
Injection Volume NA  
Injection 3 of 5  
Acquisition Method DUALFPD8.M  
Analysis Method ZEPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



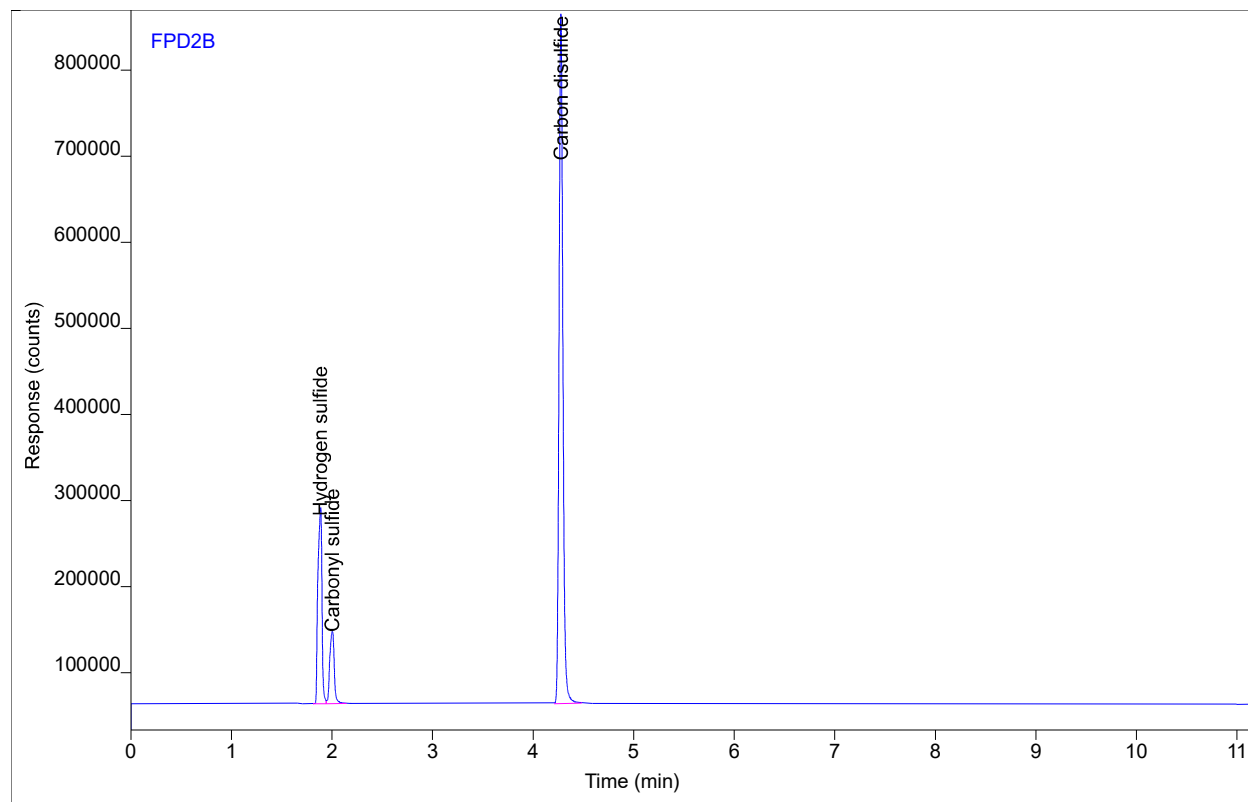
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide	BV	1.88	618530	218197	5.03065	1	5.03065	ppmv
Carbonyl sulfide	VB	2.00	255286	83179.2	2.93105	1	2.93105	ppmv
Carbon disulfide	BB	4.28	2057033	774389	3.71494	1	3.71494	ppmv

# Chromatogram Report

# Enthalpy Analytical

Sample Name zeppoP0683 #4  
Sequence Name Zeppop0683\_R1 ver.2  
Inj Data File \_009\_004B0304.D  
File Location GC/2022/Edith/Quarter 3  
Injection Date 11/3/2022 3:22 AM  
File Modified 11/7/2022 12:43 PM  
Instrument Zeppo  
Operator Rhiannon Buchman

Sample Type  
Vial Number Vial 4  
Injection Volume NA  
Injection 4 of 5  
Acquisition Method DUALFPD8.M  
Analysis Method ZEPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



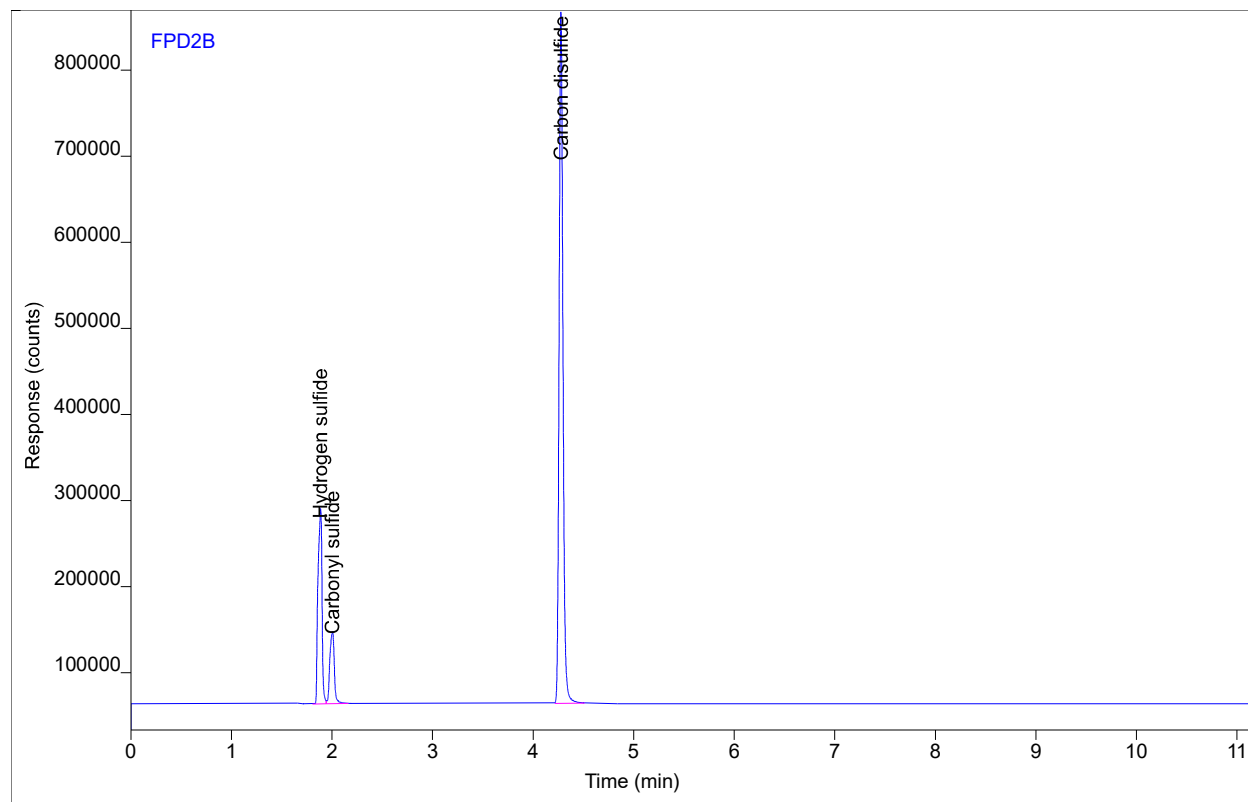
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide	BV	1.88	632680	222161	5.08418	1	5.08418	ppmv
Carbonyl sulfide	VB	2.00	259064	83931.8	2.95048	1	2.95048	ppmv
Carbon disulfide	BB	4.28	2131451	797750	3.77515	1	3.77515	ppmv

# Chromatogram Report

# Enthalpy Analytical

Sample Name zeppoP0683 #4  
Sequence Name Zeppop0683\_R1 ver.2  
Inj Data File \_010\_004B0305.D  
File Location GC/2022/Edith/Quarter 3  
Injection Date 11/3/2022 3:39 AM  
File Modified 11/7/2022 12:43 PM  
Instrument Zeppo  
Operator Rhiannon Buchman

Sample Type  
Vial Number Vial 4  
Injection Volume NA  
Injection 5 of 5  
Acquisition Method DUALFPD8.M  
Analysis Method ZEPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



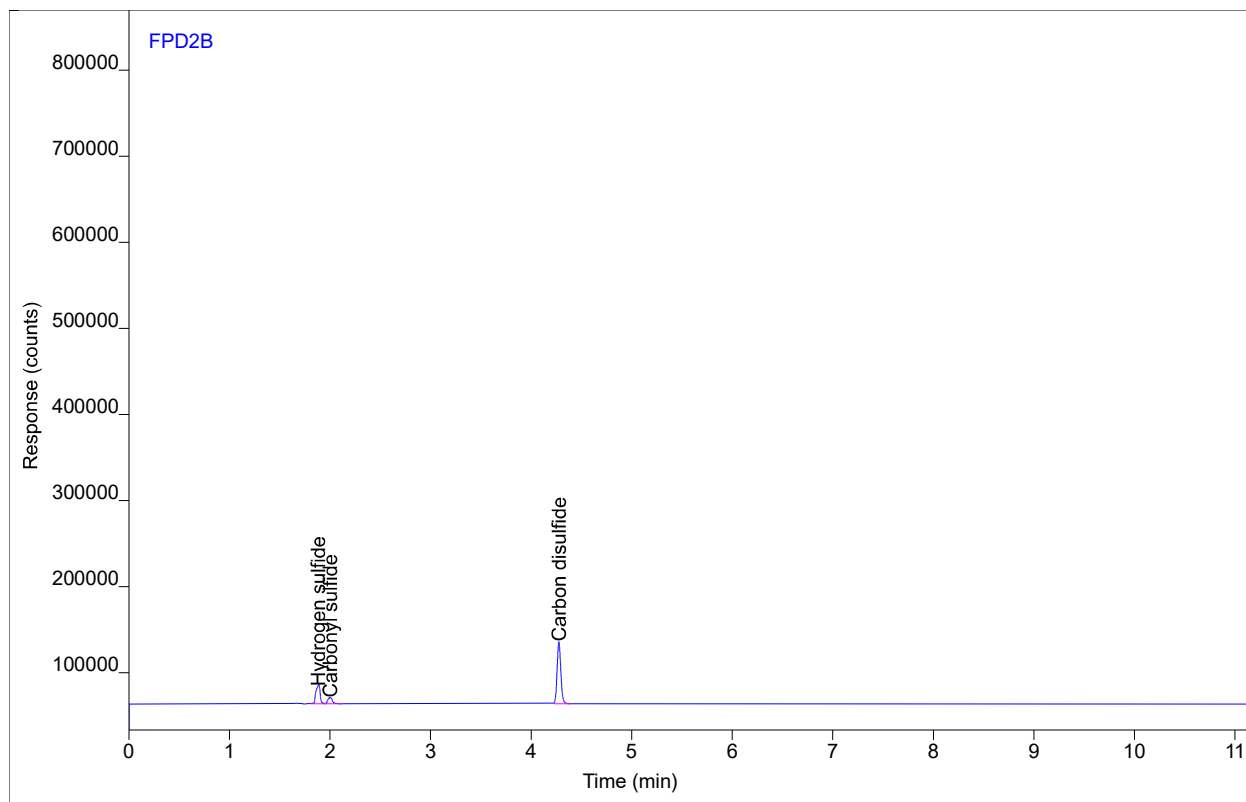
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide	BV	1.88	627047	218759	5.06295	1	5.06295	ppmv
Carbonyl sulfide	VB	2.00	258672	82495.2	2.94848	1	2.94848	ppmv
Carbon disulfide	BB	4.28	2145386	800266	3.78630	1	3.78630	ppmv

# Chromatogram Report

Sample Name zeppoP0683 #3  
Sequence Name Zeppop0683\_R1 ver.2  
Inj Data File \_013\_003B0403.D  
File Location GC/2022/Edith/Quarter 3  
Injection Date 11/3/2022 4:31 AM  
File Modified 11/7/2022 12:43 PM  
Instrument Zeppo  
Operator Rhiannon Buchman

# Enthalpy Analytical

Sample Type  
Vial Number Vial 3  
Injection Volume NA  
Injection 3 of 5  
Acquisition Method DUALFPD8.M  
Analysis Method ZEPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



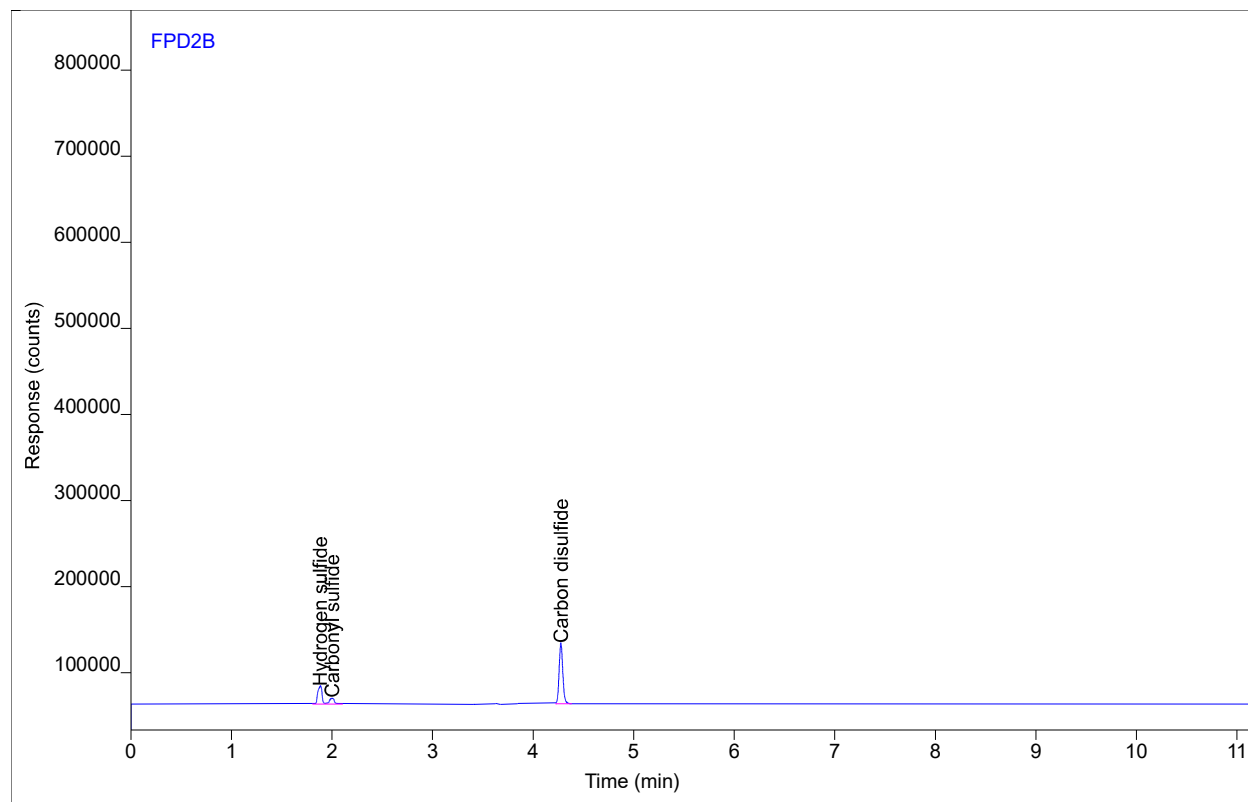
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide	BV	1.88	62876.1	21011.4	1.72578	1	1.72578	ppmv
Carbonyl sulfide	VB	2.00	24099.9	7339.97	1.01372	1	1.01372	ppmv
Carbon disulfide	BB	4.28	184467	71705.6	1.24783	1	1.24783	ppmv

# Chromatogram Report

Sample Name zeppoP0683 #3  
Sequence Name Zeppop0683\_R1 ver.2  
Inj Data File \_014\_003B0404.D  
File Location GC/2022/Edith/Quarter 3  
Injection Date 11/3/2022 4:49 AM  
File Modified 11/7/2022 12:43 PM  
Instrument Zeppo  
Operator Rhiannon Buchman

# Enthalpy Analytical

Sample Type  
Vial Number Vial 3  
Injection Volume NA  
Injection 4 of 5  
Acquisition Method DUALFPD8.M  
Analysis Method ZEPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



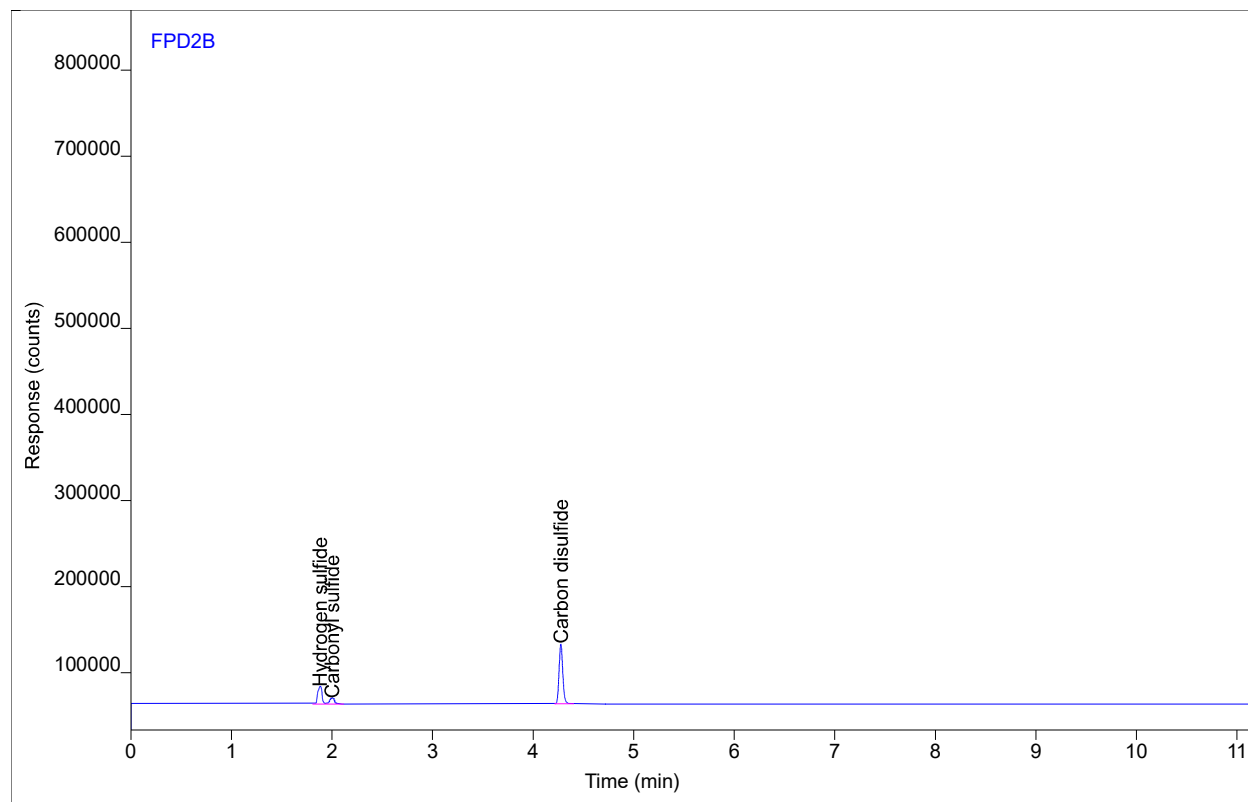
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide	BV	1.88	59460.3	20946.9	1.68125	1	1.68125	ppmv
Carbonyl sulfide	VB	2.00	22061.4	7265.25	0.97420	1	0.97420	ppmv
Carbon disulfide	BB	4.28	178893	70106.8	1.23063	1	1.23063	ppmv

# Chromatogram Report

Sample Name zeppoP0683 #3  
Sequence Name Zeppop0683\_R1 ver.2  
Inj Data File \_015\_003B0405.D  
File Location GC/2022/Edith/Quarter 3  
Injection Date 11/3/2022 5:06 AM  
File Modified 11/7/2022 12:43 PM  
Instrument Zeppo  
Operator Rhiannon Buchman

# Enthalpy Analytical

Sample Type  
Vial Number Vial 3  
Injection Volume NA  
Injection 5 of 5  
Acquisition Method DUALFPD8.M  
Analysis Method ZEPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



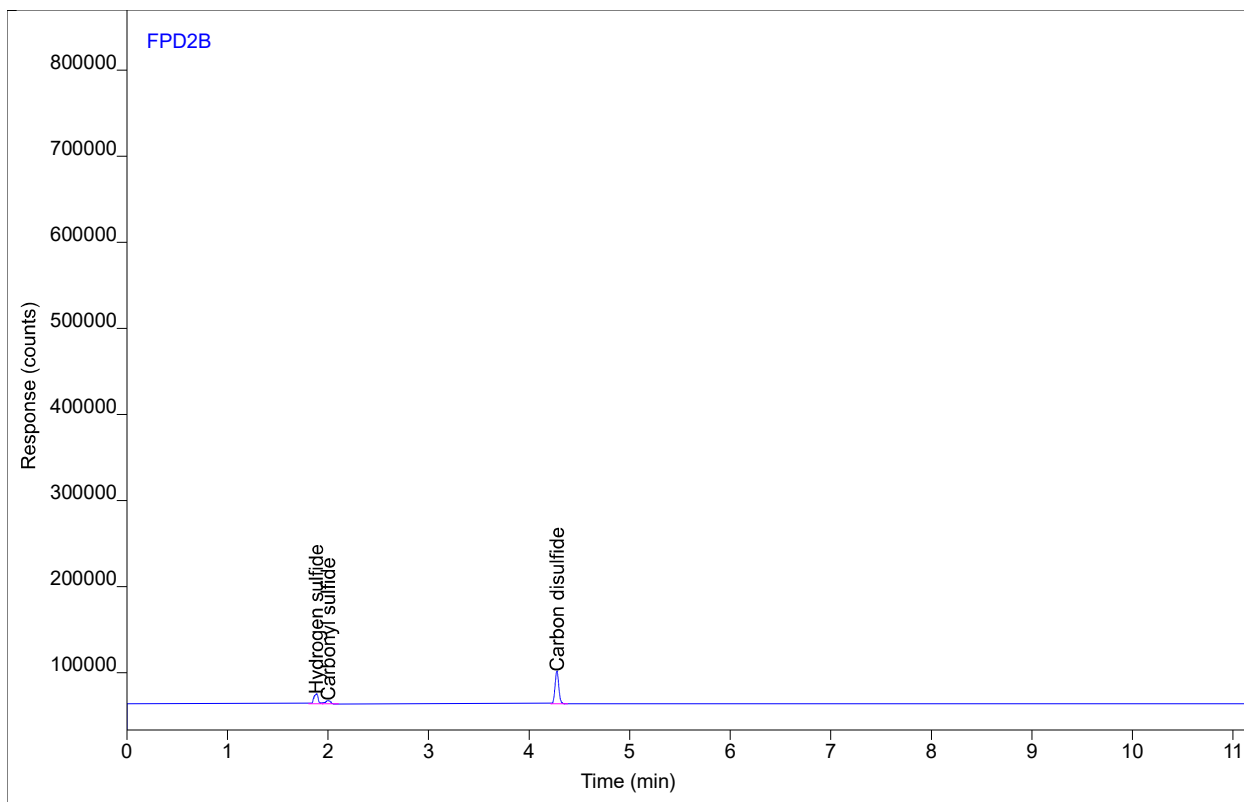
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide	BV	1.88	58875.6	20720.6	1.67349	1	1.67349	ppmv
Carbonyl sulfide	VB	2.00	22116.0	7039.88	0.97529	1	0.97529	ppmv
Carbon disulfide	BB	4.28	178528	69154.8	1.22949	1	1.22949	ppmv

# Chromatogram Report

Sample Name zeppoP0683 #2  
Sequence Name Zeppop0683\_R1 ver.2  
Inj Data File \_018\_002B0503.D  
File Location GC/2022/Edith/Quarter 3  
Injection Date 11/3/2022 5:58 AM  
File Modified 11/7/2022 12:43 PM  
Instrument Zeppo  
Operator Rhiannon Buchman

# Enthalpy Analytical

Sample Type  
Vial Number Vial 2  
Injection Volume NA  
Injection 3 of 5  
Acquisition Method DUALFPD8.M  
Analysis Method ZEPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



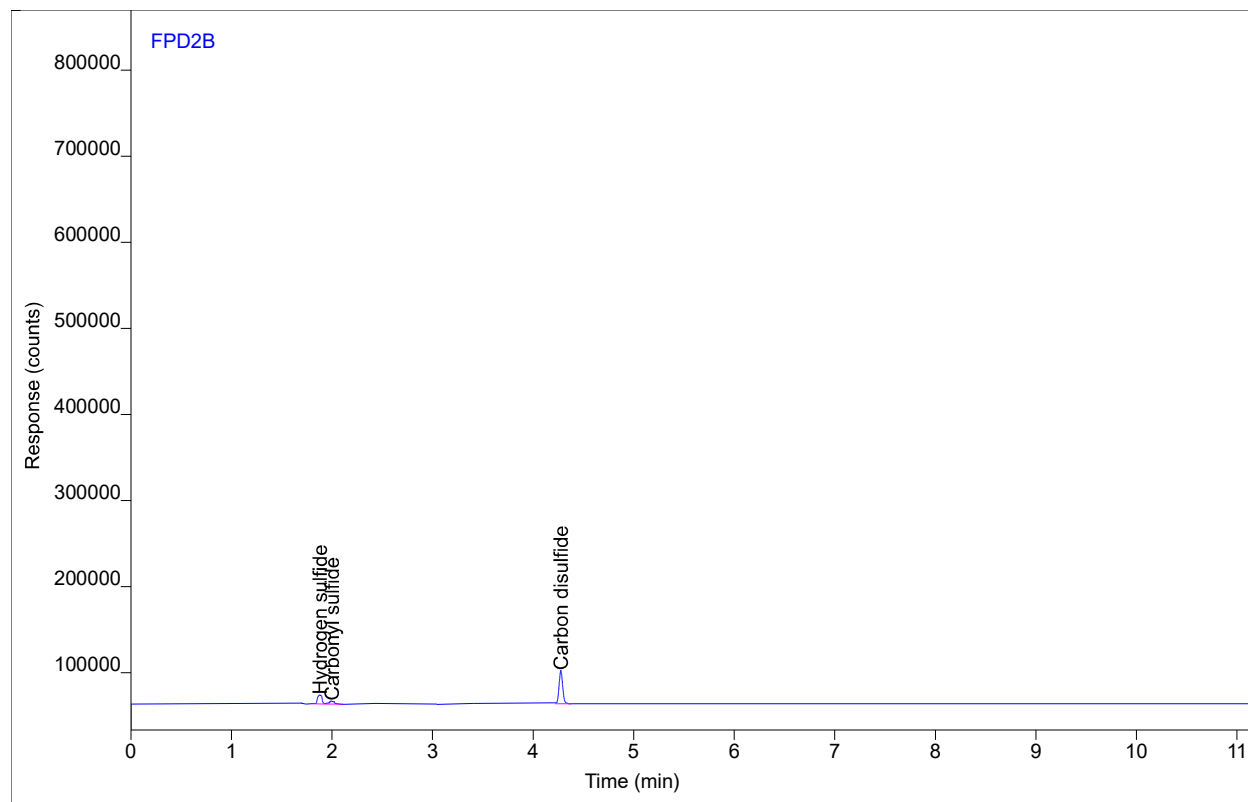
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide	BV	1.88	33387.5	10950.6	1.28333	1	1.28333	ppmv
Carbonyl sulfide	VB	2.00	12238.2	3741.87	0.74735	1	0.74735	ppmv
Carbon disulfide	BB	4.28	98401.6	37650.2	0.93906	1	0.93906	ppmv

# Chromatogram Report

Sample Name zeppoP0683 #2  
Sequence Name Zeppop0683\_R1 ver.2  
Inj Data File \_019\_002B0504.D  
File Location GC/2022/Edith/Quarter 3  
Injection Date 11/3/2022 6:16 AM  
File Modified 11/7/2022 12:44 PM  
Instrument Zeppo  
Operator Rhiannon Buchman

# Enthalpy Analytical

Sample Type  
Vial Number Vial 2  
Injection Volume NA  
Injection 4 of 5  
Acquisition Method DUALFPD8.M  
Analysis Method ZEPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



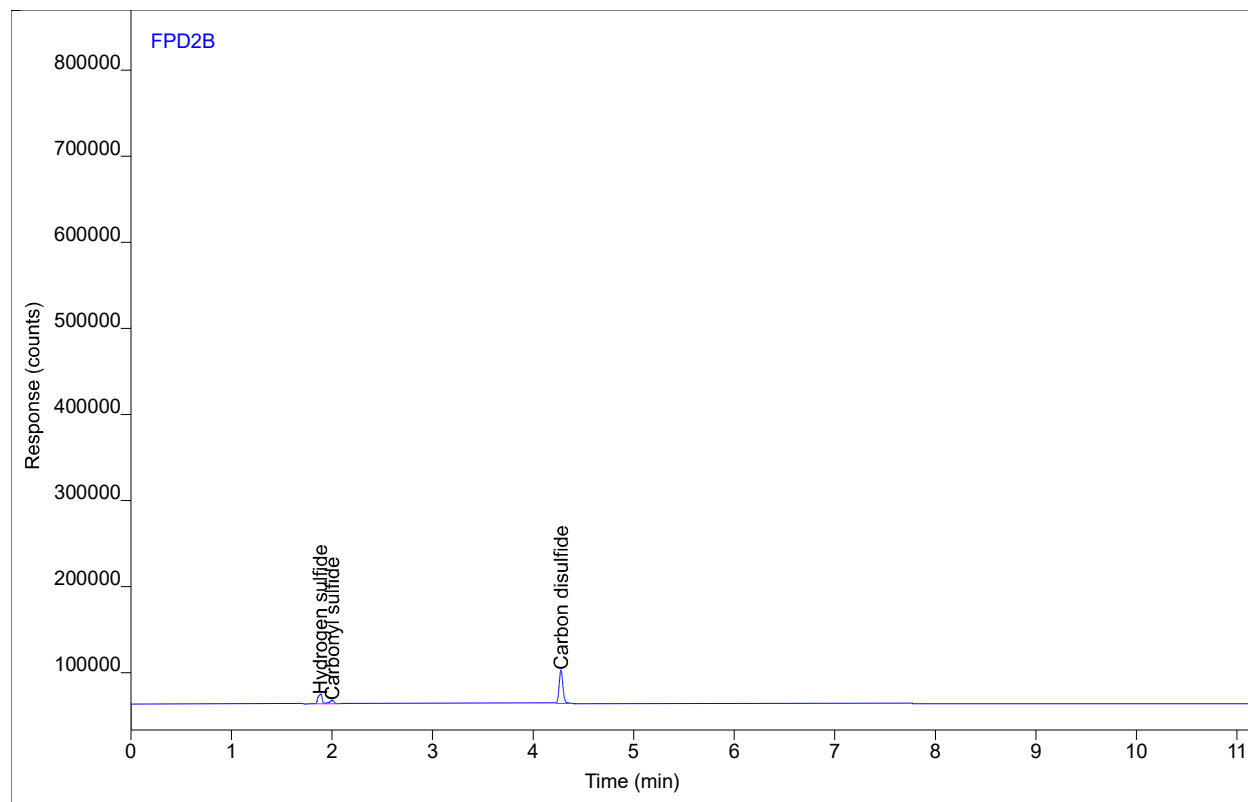
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide	BV	1.88	32434.1	10950.4	1.26605	1	1.26605	ppmv
Carbonyl sulfide	VB	2.00	11514.7	3949.01	0.72714	1	0.72714	ppmv
Carbon disulfide	BB	4.28	95961.5	38522.7	0.92845	1	0.92845	ppmv

# Chromatogram Report

Sample Name zeppoP0683 #2  
Sequence Name Zeppop0683\_R1 ver.2  
Inj Data File \_020\_002B0505.D  
File Location GC/2022/Edith/Quarter 3  
Injection Date 11/3/2022 6:33 AM  
File Modified 11/7/2022 12:44 PM  
Instrument Zeppo  
Operator Rhiannon Buchman

# Enthalpy Analytical

Sample Type  
Vial Number Vial 2  
Injection Volume NA  
Injection 5 of 5  
Acquisition Method DUALFPD8.M  
Analysis Method ZEPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



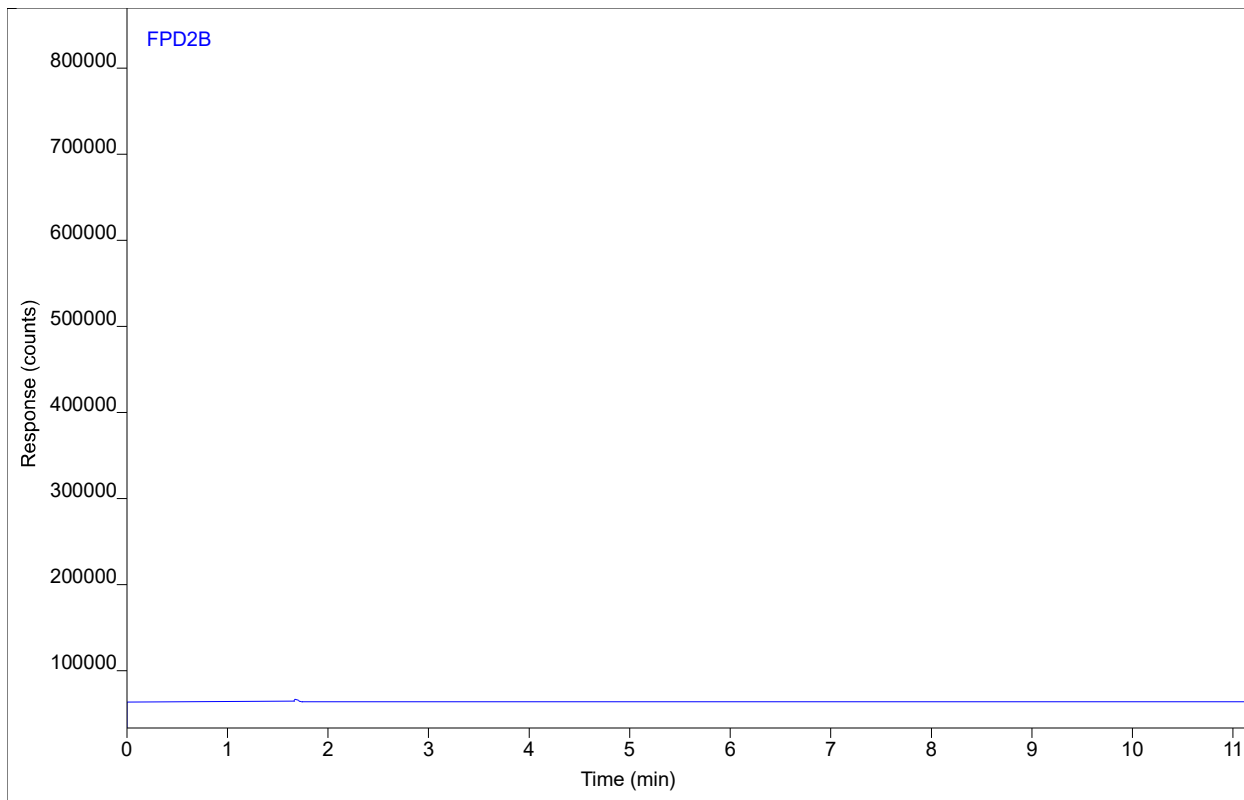
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide	BV	1.88	32521.6	10844.1	1.26765	1	1.26765	ppmv
Carbonyl sulfide	VB	2.00	12927.6	4256.29	0.76601	1	0.76601	ppmv
Carbon disulfide	BB	4.28	100463	38399.3	0.94790	1	0.94790	ppmv

## Chromatogram Report

Sample Name        zeppoP0551 #MB  
Sequence Name     Zeppop0683\_R1 ver.2  
Inj Data File      \_021\_005B0601.D  
File Location      GC/2022/Edith/Quarter 3  
Injection Date     11/3/2022 6:51 AM  
File Modified      11/7/2022 12:44 PM  
Instrument        Zeppo  
Operator           Rhiannon Buchman

## Enthalpy Analytical

Sample Type        Sample  
Vial Number        Vial 5  
Injection Volume    NA  
Injection           1 of 3  
Acquisition Method DUALFPD8.M  
Analysis Method    ZEPPOP0683\_1.M  
Method Modified    11/3/2022 8:44 AM  
Printed            11/7/2022 1:08 PM



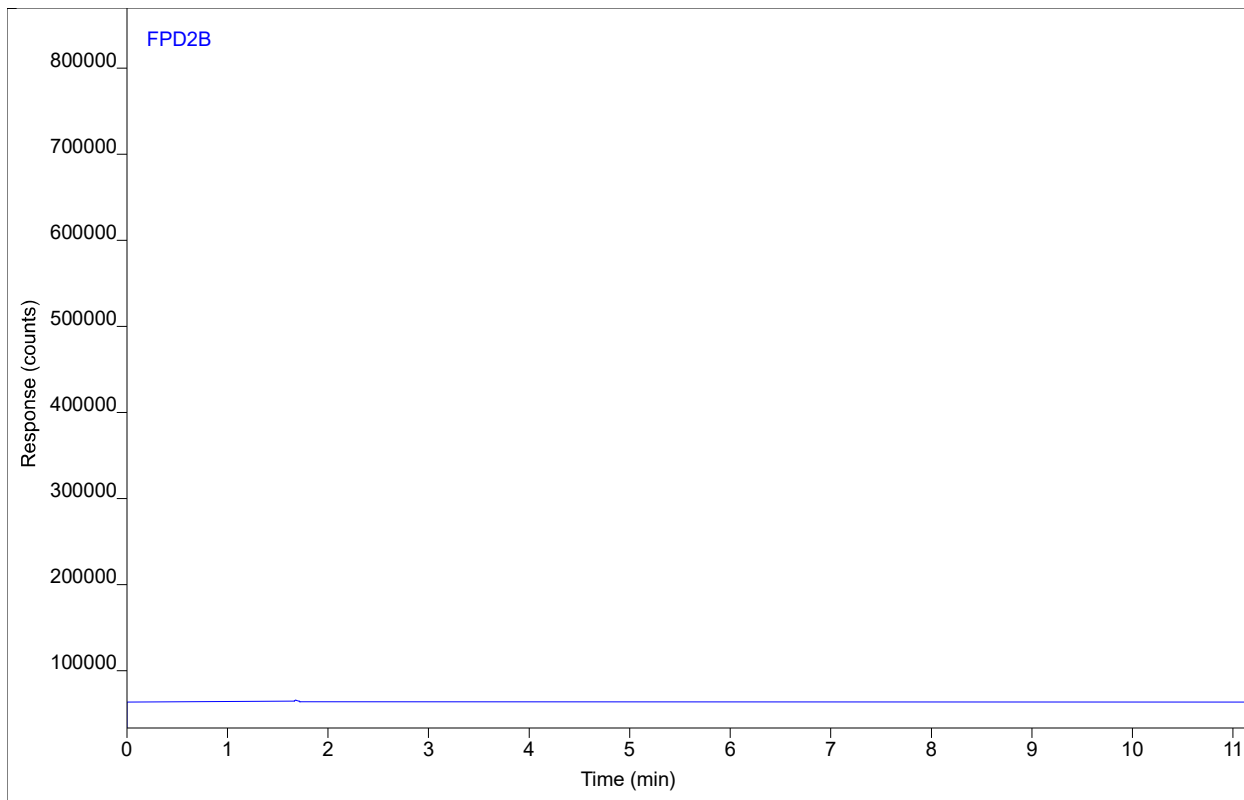
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide		(1.88)				1		ppmv
Carbonyl sulfide		(2.00)				1		ppmv
Carbon disulfide		(4.28)				1		ppmv

## Chromatogram Report

Sample Name        zeppoP0551 #MB  
Sequence Name     Zeppop0683\_R1 ver.2  
Inj Data File      \_022\_005B0602.D  
File Location      GC/2022/Edith/Quarter 3  
Injection Date     11/3/2022 7:08 AM  
File Modified      11/7/2022 12:44 PM  
Instrument        Zeppo  
Operator           Rhiannon Buchman

## Enthalpy Analytical

Sample Type        Sample  
Vial Number        Vial 5  
Injection Volume    NA  
Injection           2 of 3  
Acquisition Method DUALFPD8.M  
Analysis Method    ZEPPOP0683\_1.M  
Method Modified    11/3/2022 8:44 AM  
Printed            11/7/2022 1:08 PM



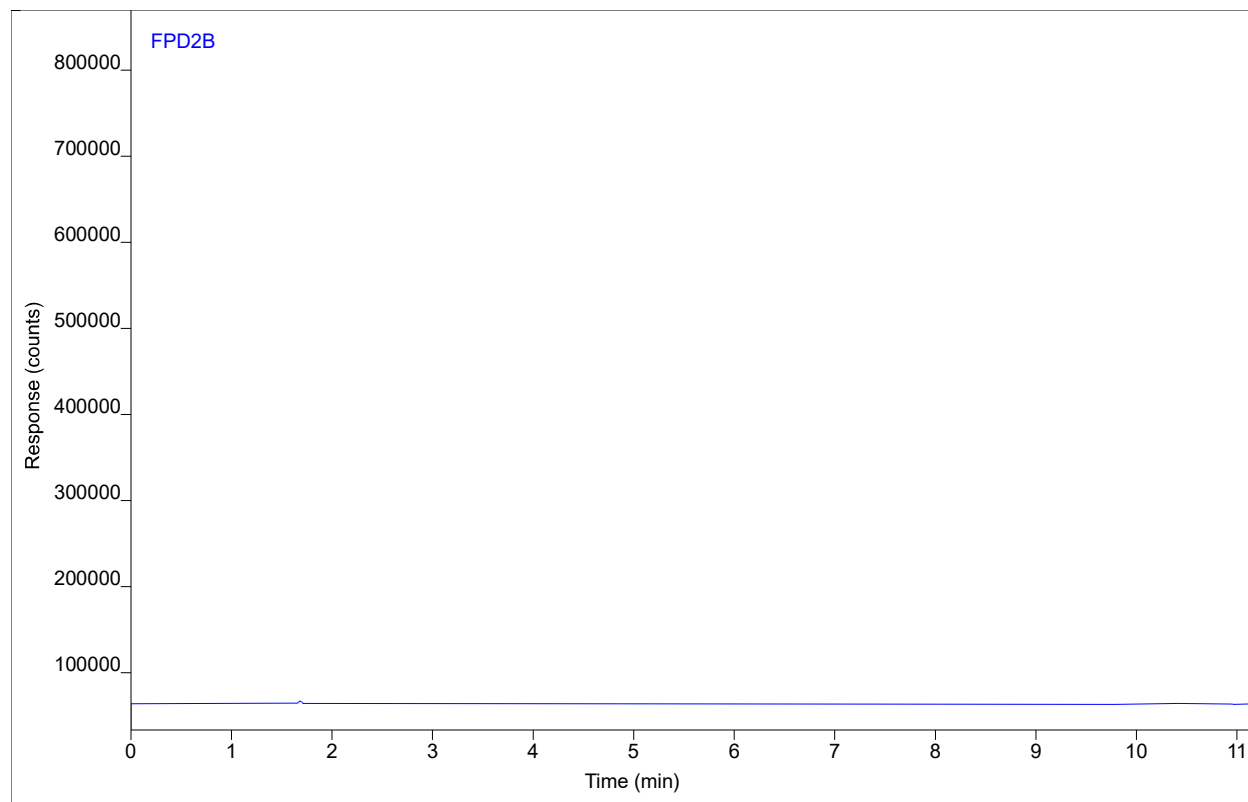
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide		(1.88)				1		ppmv
Carbonyl sulfide		(2.00)				1		ppmv
Carbon disulfide		(4.28)				1		ppmv

# Chromatogram Report

Sample Name        zeppoP0551 #MB  
Sequence Name     Zeppop0683\_R1 ver.2  
Inj Data File      \_023\_005B0603.D  
File Location      GC/2022/Edith/Quarter 3  
Injection Date     11/3/2022 7:25 AM  
File Modified      11/7/2022 12:44 PM  
Instrument         Zeppo  
Operator            Rhiannon Buchman

# Enthalpy Analytical

Sample Type        Sample  
Vial Number        Vial 5  
Injection Volume    NA  
Injection            3 of 3  
Acquisition Method DUALFPD8.M  
Analysis Method    ZEPPPOP0683\_1.M  
Method Modified    11/3/2022 8:44 AM  
Printed             11/7/2022 1:08 PM



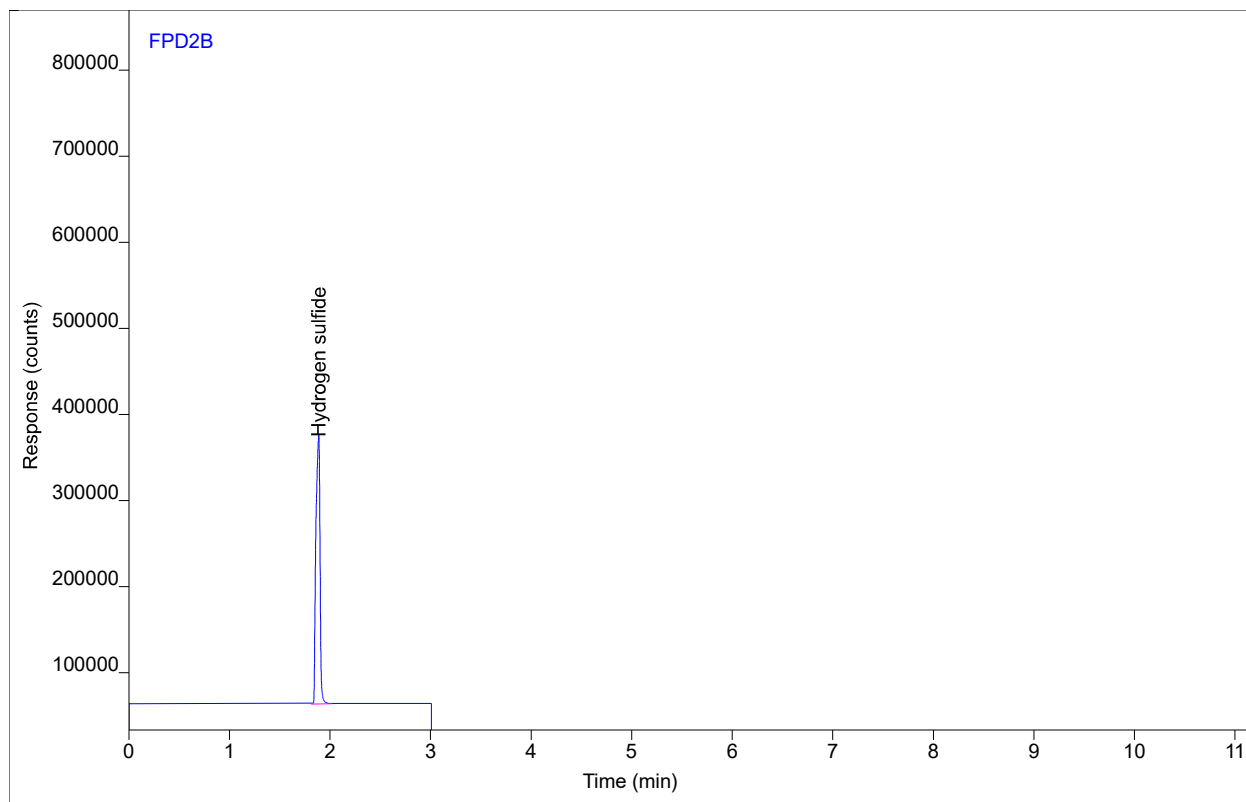
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide		(1.88)				1		ppmv
Carbonyl sulfide		(2.00)				1		ppmv
Carbon disulfide		(4.28)				1		ppmv

# Chromatogram Report

Sample Name zeppoP0675 #LCS  
Sequence Name Zeppop0683\_R1 ver.2  
Inj Data File \_028\_005B0901.D  
File Location GC/2022/Edith/Quarter 3  
Injection Date 11/3/2022 8:54 AM  
File Modified 11/7/2022 12:44 PM  
Instrument Zeppo  
Operator Rhiannon Buchman

# Enthalpy Analytical

Sample Type Sample  
Vial Number Vial 5  
Injection Volume NA  
Injection 5 of 7  
Acquisition Method DUALFPD8\_SHORT.M  
Analysis Method ZEPPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



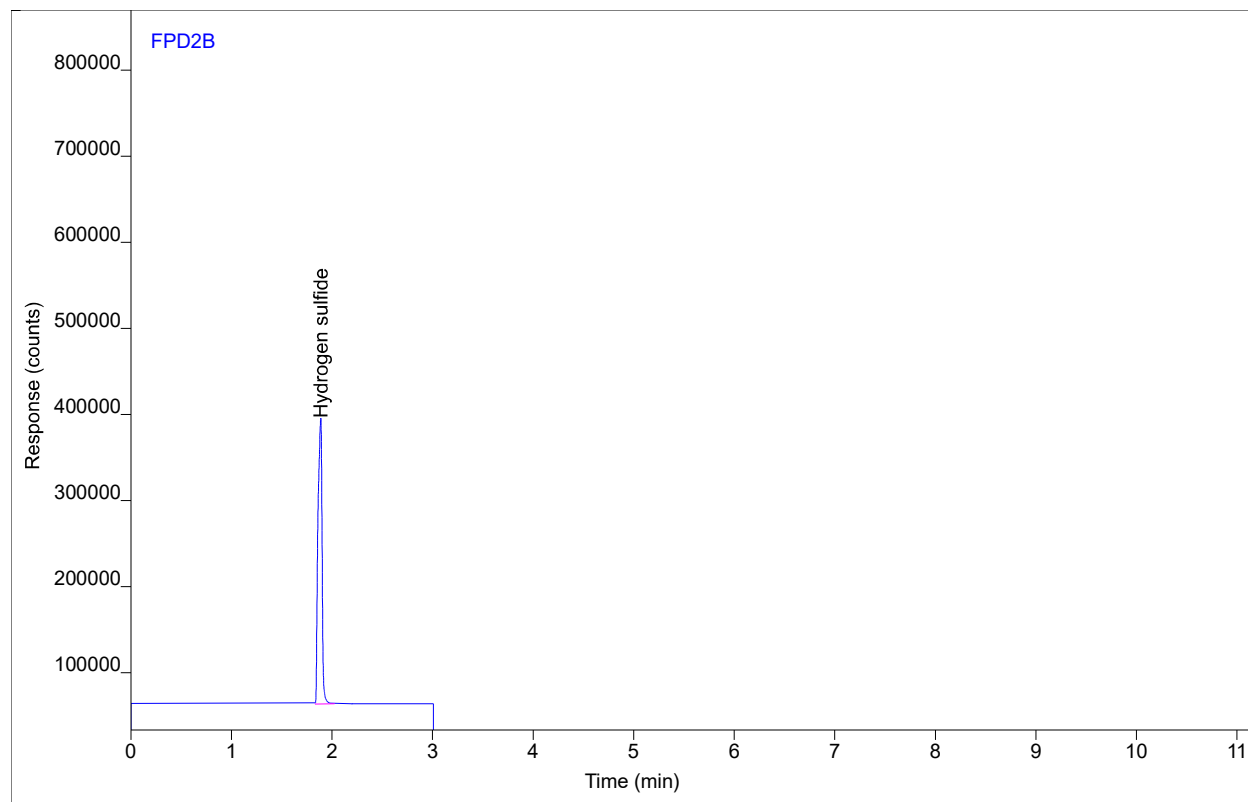
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide	MM	1.89	875502	314748	5.91888	1	5.91888	ppmv

# Chromatogram Report

Sample Name zeppoP0675 #LCS  
Sequence Name Zeppop0683\_R1 ver.2  
Inj Data File \_029\_005B0902.D  
File Location GC/2022/Edith/Quarter 3  
Injection Date 11/3/2022 9:00 AM  
File Modified 11/7/2022 12:44 PM  
Instrument Zeppo  
Operator Rhiannon Buchman

# Enthalpy Analytical

Sample Type Sample  
Vial Number Vial 5  
Injection Volume NA  
Injection 6 of 7  
Acquisition Method DUALFPD8\_SHORT.M  
Analysis Method ZEPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



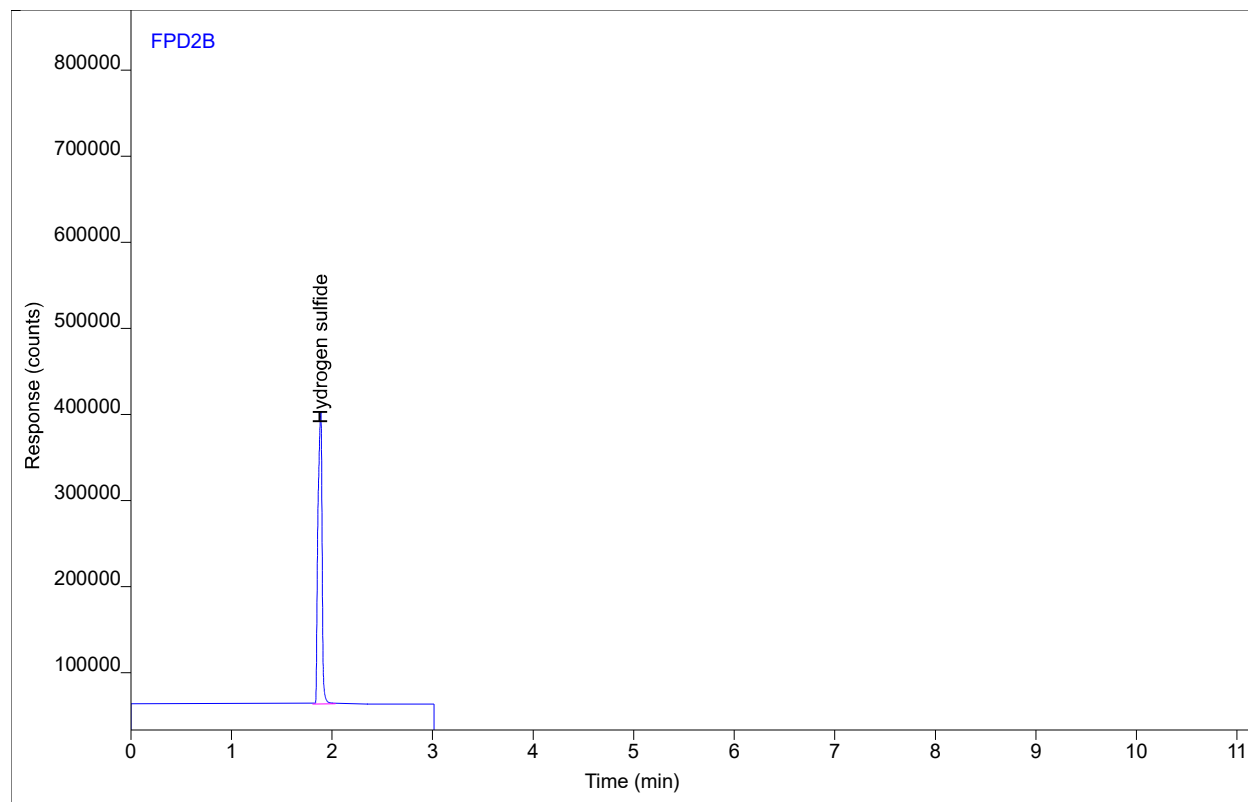
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide	MM	1.89	936558	337127	6.10859	1	6.10859	ppmv

# Chromatogram Report

Sample Name zeppoP0675 #LCS  
Sequence Name Zeppop0683\_R1 ver.2  
Inj Data File \_030\_005B0903.D  
File Location GC/2022/Edith/Quarter 3  
Injection Date 11/3/2022 9:06 AM  
File Modified 11/7/2022 12:44 PM  
Instrument Zeppo  
Operator Rhiannon Buchman

# Enthalpy Analytical

Sample Type Sample  
Vial Number Vial 5  
Injection Volume NA  
Injection 7 of 7  
Acquisition Method DUALFPD8\_SHORT.M  
Analysis Method ZEPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



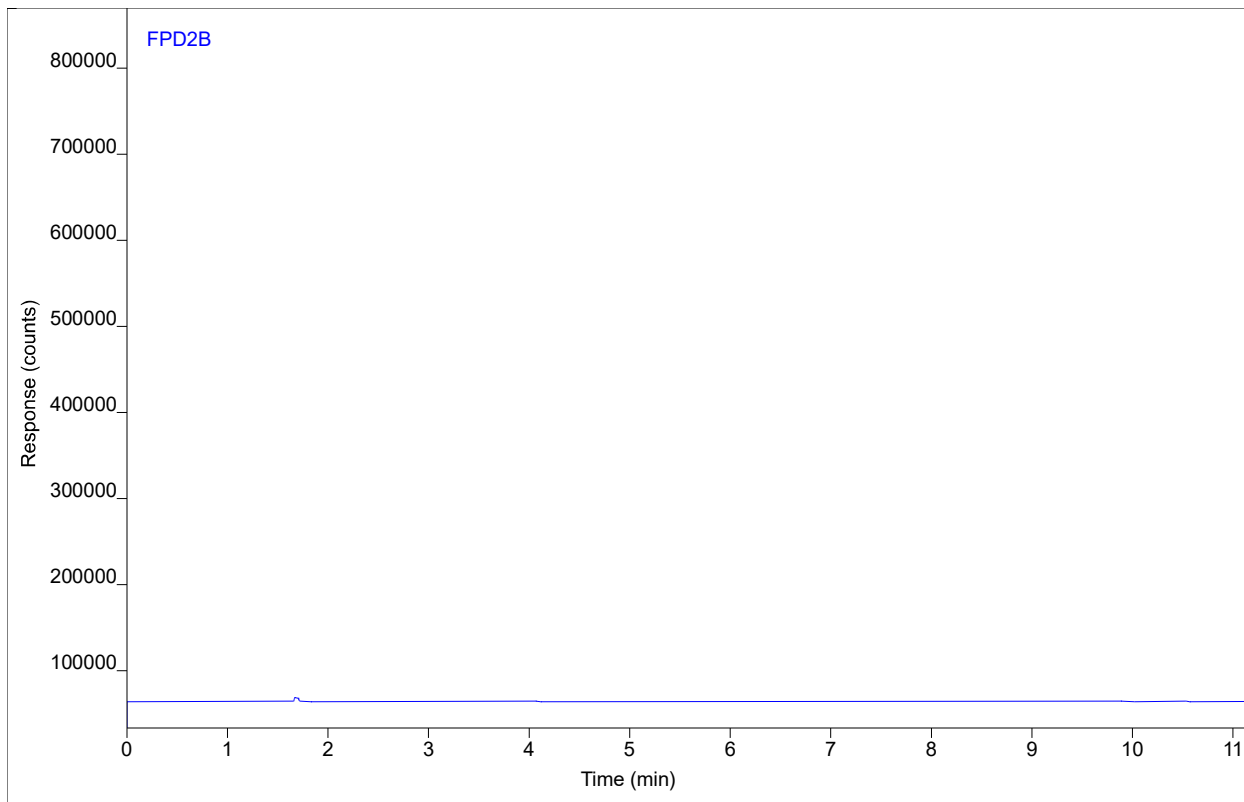
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide	BB	1.88	958479	326606	6.17509	1	6.17509	ppmv

## Chromatogram Report

Sample Name 1122-024.Run 1A.Bag  
Sequence Name Zeppop0683\_R1 ver.2  
Inj Data File \_031\_005B1101.D  
File Location GC/2022/Edith/Quarter 3  
Injection Date 11/3/2022 9:55 AM  
File Modified 11/7/2022 12:44 PM  
Instrument Zeppo  
Operator Rhiannon Buchman

## Enthalpy Analytical

Sample Type Sample  
Vial Number Vial 5  
Injection Volume NA  
Injection 1 of 3  
Acquisition Method DUALFPD8.M  
Analysis Method ZEPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



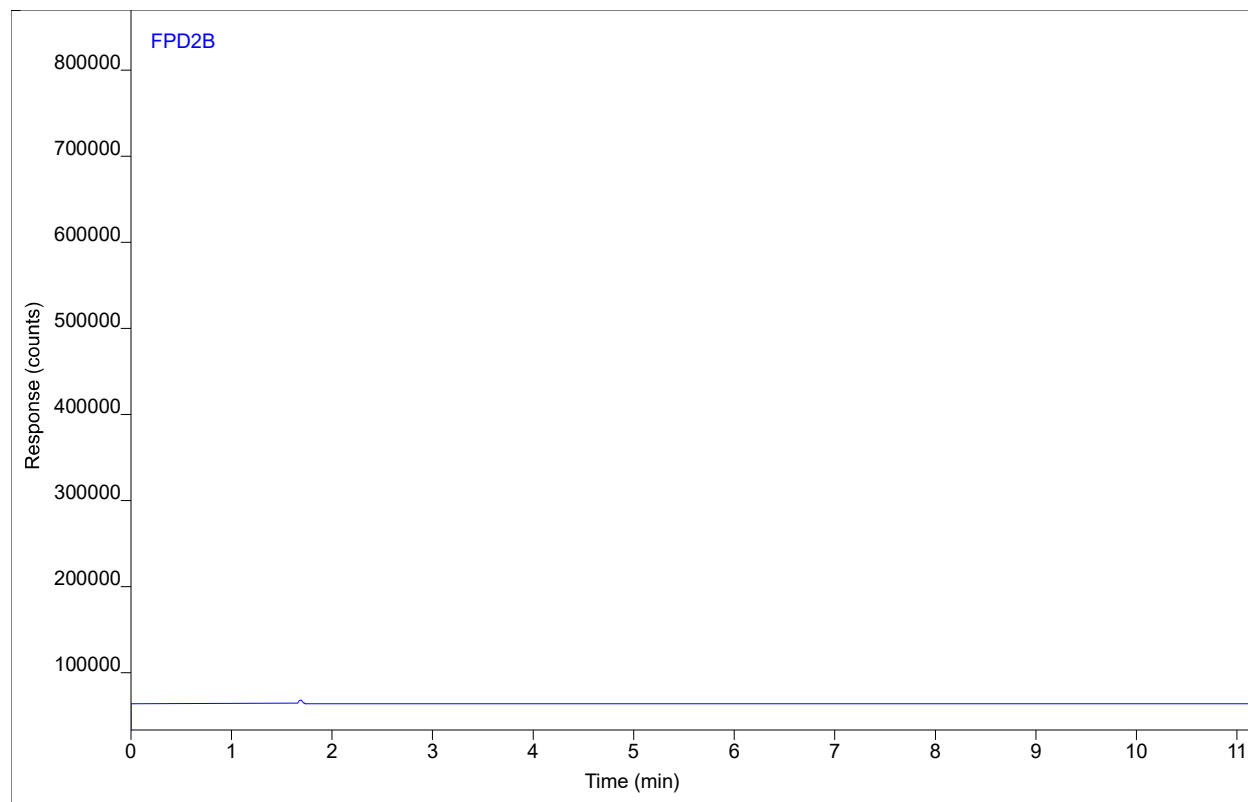
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide		(1.88)				1		ppmv
Carbonyl sulfide		(2.00)				1		ppmv
Carbon disulfide		(4.28)				1		ppmv

# Chromatogram Report

Sample Name 1122-024.Run 1A.Bag  
Sequence Name Zeppop0683\_R1 ver.2  
Inj Data File \_032\_005B1102.D  
File Location GC/2022/Edith/Quarter 3  
Injection Date 11/3/2022 10:12 AM  
File Modified 11/7/2022 12:44 PM  
Instrument Zeppo  
Operator Rhiannon Buchman

# Enthalpy Analytical

Sample Type Sample  
Vial Number Vial 5  
Injection Volume NA  
Injection 2 of 3  
Acquisition Method DUALFPD8.M  
Analysis Method ZEPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



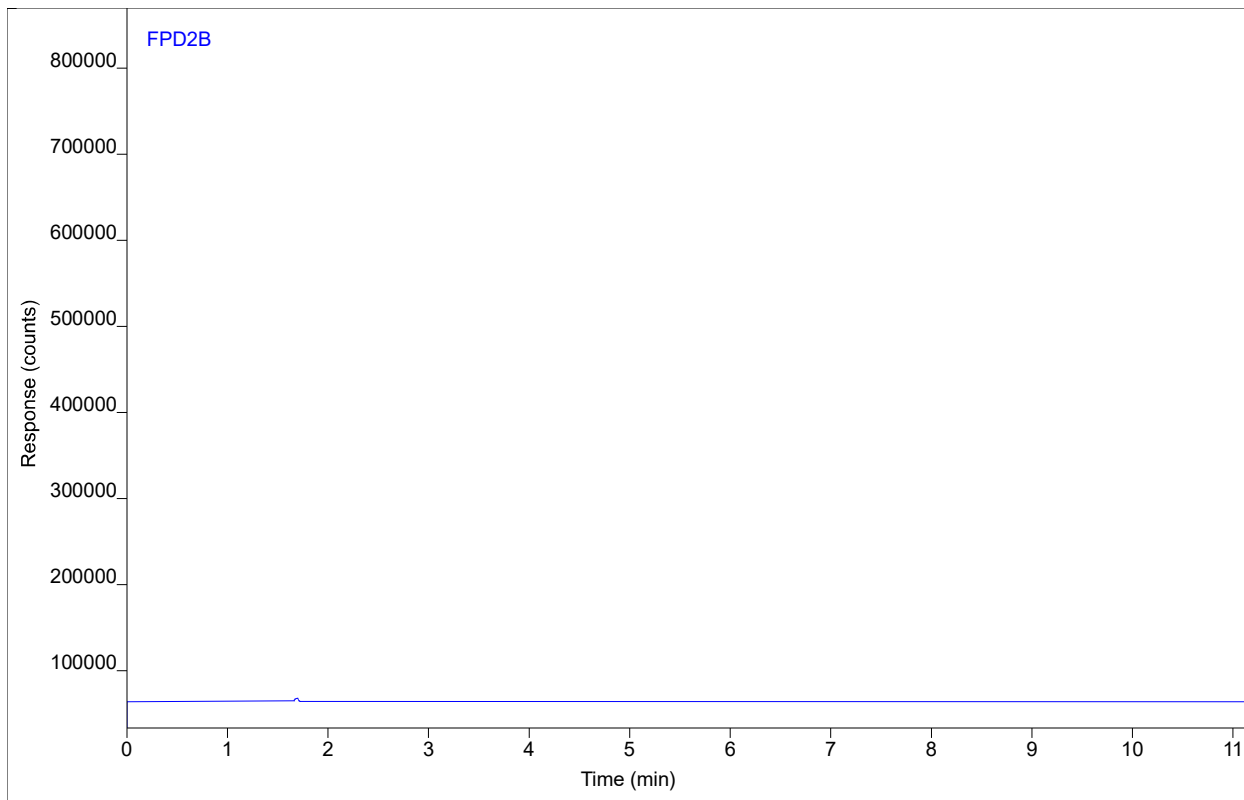
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide		(1.88)				1		ppmv
Carbonyl sulfide		(2.00)				1		ppmv
Carbon disulfide		(4.28)				1		ppmv

## Chromatogram Report

Sample Name 1122-024.Run 1A.Bag  
Sequence Name Zeppop0683\_R1 ver.2  
Inj Data File \_033\_005B1103.D  
File Location GC/2022/Edith/Quarter 3  
Injection Date 11/3/2022 10:30 AM  
File Modified 11/7/2022 12:44 PM  
Instrument Zeppo  
Operator Rhiannon Buchman

## Enthalpy Analytical

Sample Type Sample  
Vial Number Vial 5  
Injection Volume NA  
Injection 3 of 3  
Acquisition Method DUALFPD8.M  
Analysis Method ZEPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



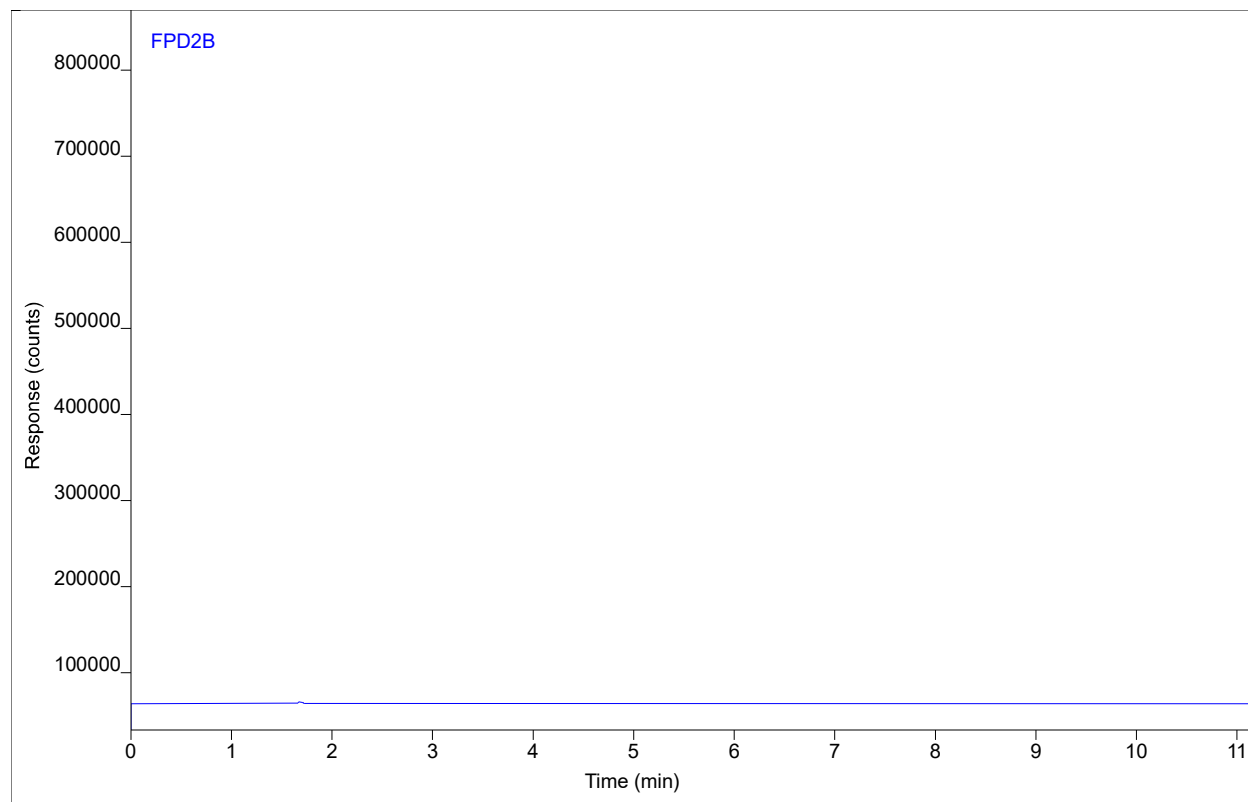
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide		(1.88)				1		ppmv
Carbonyl sulfide		(2.00)				1		ppmv
Carbon disulfide		(4.28)				1		ppmv

# Chromatogram Report

Sample Name 1122-024.Run 2A.Bag  
Sequence Name Zeppop0683\_R1 ver.2  
Inj Data File \_034\_005B1201.D  
File Location GC/2022/Edith/Quarter 3  
Injection Date 11/3/2022 10:47 AM  
File Modified 11/7/2022 12:44 PM  
Instrument Zeppo  
Operator Rhiannon Buchman

# Enthalpy Analytical

Sample Type Sample  
Vial Number Vial 5  
Injection Volume NA  
Injection 1 of 3  
Acquisition Method DUALFPD8.M  
Analysis Method ZEPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



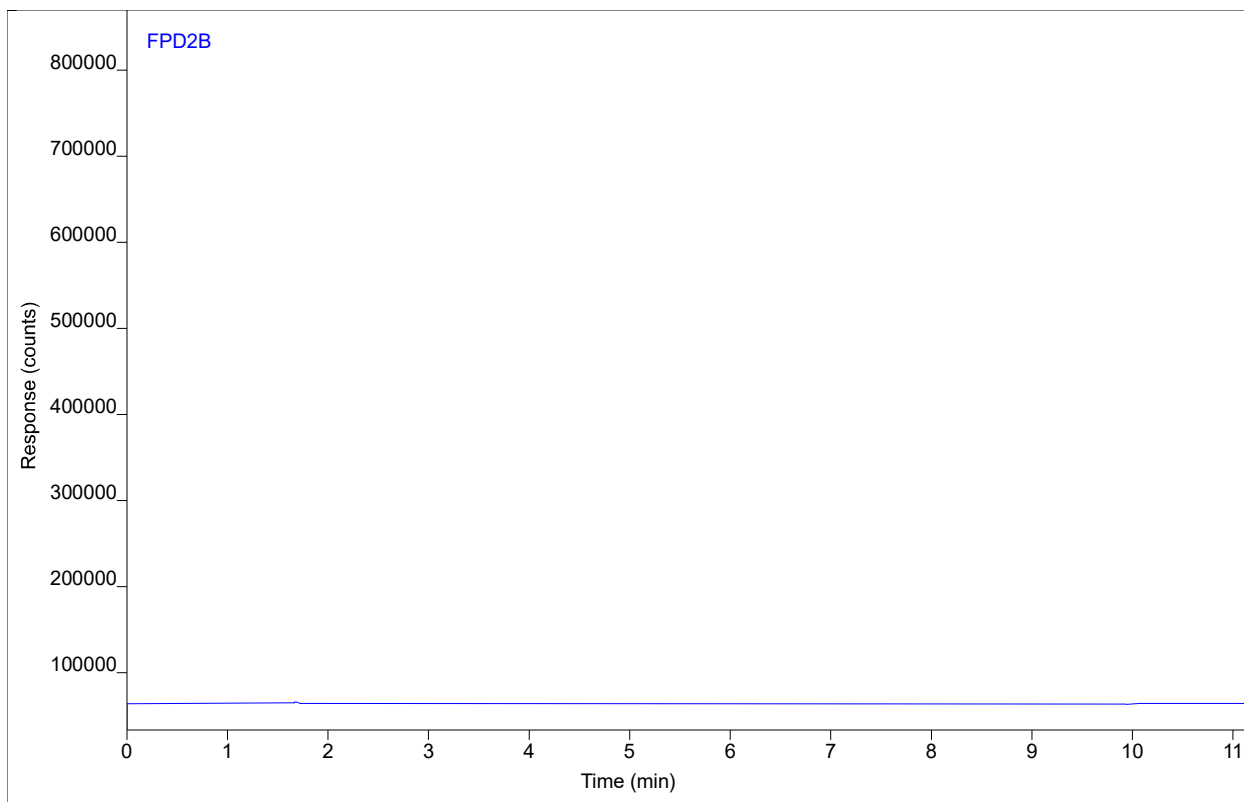
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide		(1.88)				1		ppmv
Carbonyl sulfide		(2.00)				1		ppmv
Carbon disulfide		(4.28)				1		ppmv

# Chromatogram Report

Sample Name 1122-024.Run 2A.Bag  
Sequence Name Zeppop0683\_R1 ver.2  
Inj Data File \_035\_005B1202.D  
File Location GC/2022/Edith/Quarter 3  
Injection Date 11/3/2022 11:04 AM  
File Modified 11/7/2022 12:44 PM  
Instrument Zeppo  
Operator Rhiannon Buchman

# Enthalpy Analytical

Sample Type Sample  
Vial Number Vial 5  
Injection Volume NA  
Injection 2 of 3  
Acquisition Method DUALFPD8.M  
Analysis Method ZEPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



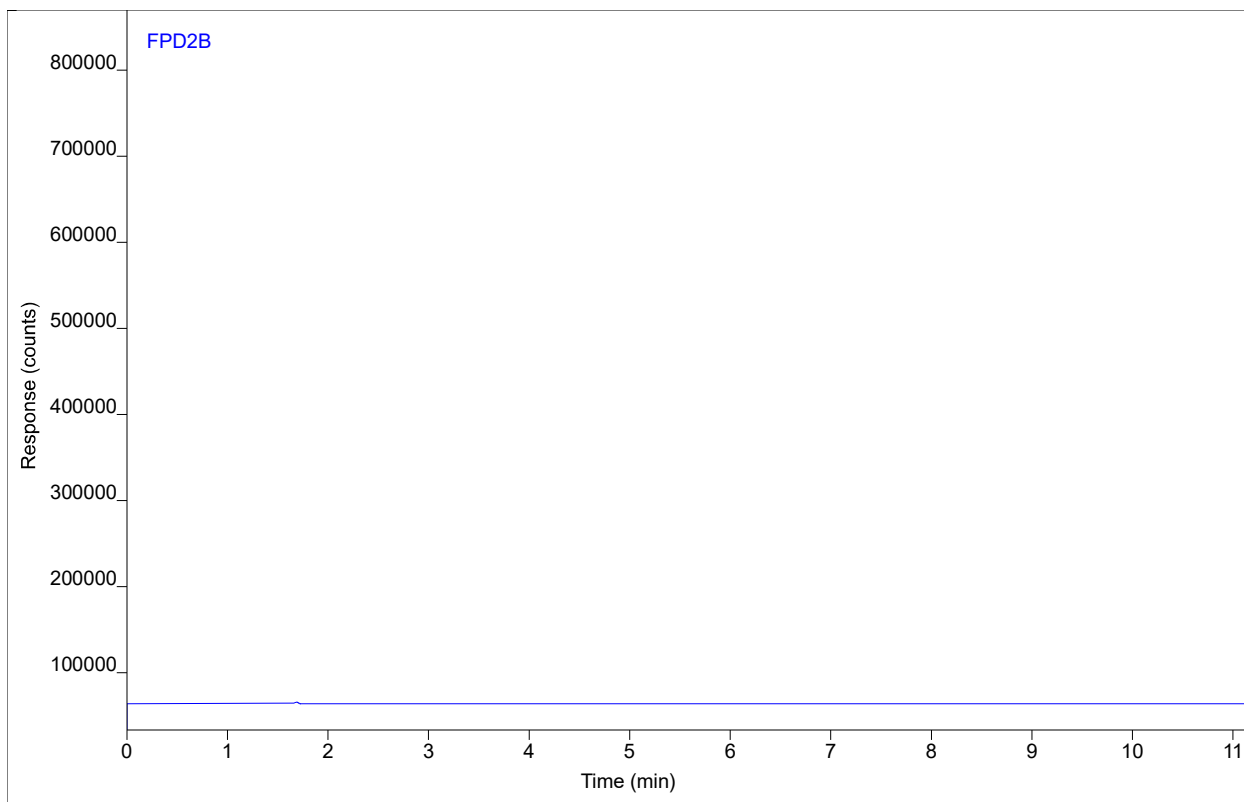
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide		(1.88)				1		ppmv
Carbonyl sulfide		(2.00)				1		ppmv
Carbon disulfide		(4.28)				1		ppmv

# Chromatogram Report

Sample Name 1122-024.Run 2A.Bag  
Sequence Name Zeppop0683\_R1 ver.2  
Inj Data File \_036\_005B1203.D  
File Location GC/2022/Edith/Quarter 3  
Injection Date 11/3/2022 11:22 AM  
File Modified 11/7/2022 12:44 PM  
Instrument Zeppo  
Operator Rhiannon Buchman

# Enthalpy Analytical

Sample Type Sample  
Vial Number Vial 5  
Injection Volume NA  
Injection 3 of 3  
Acquisition Method DUALFPD8.M  
Analysis Method ZEPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



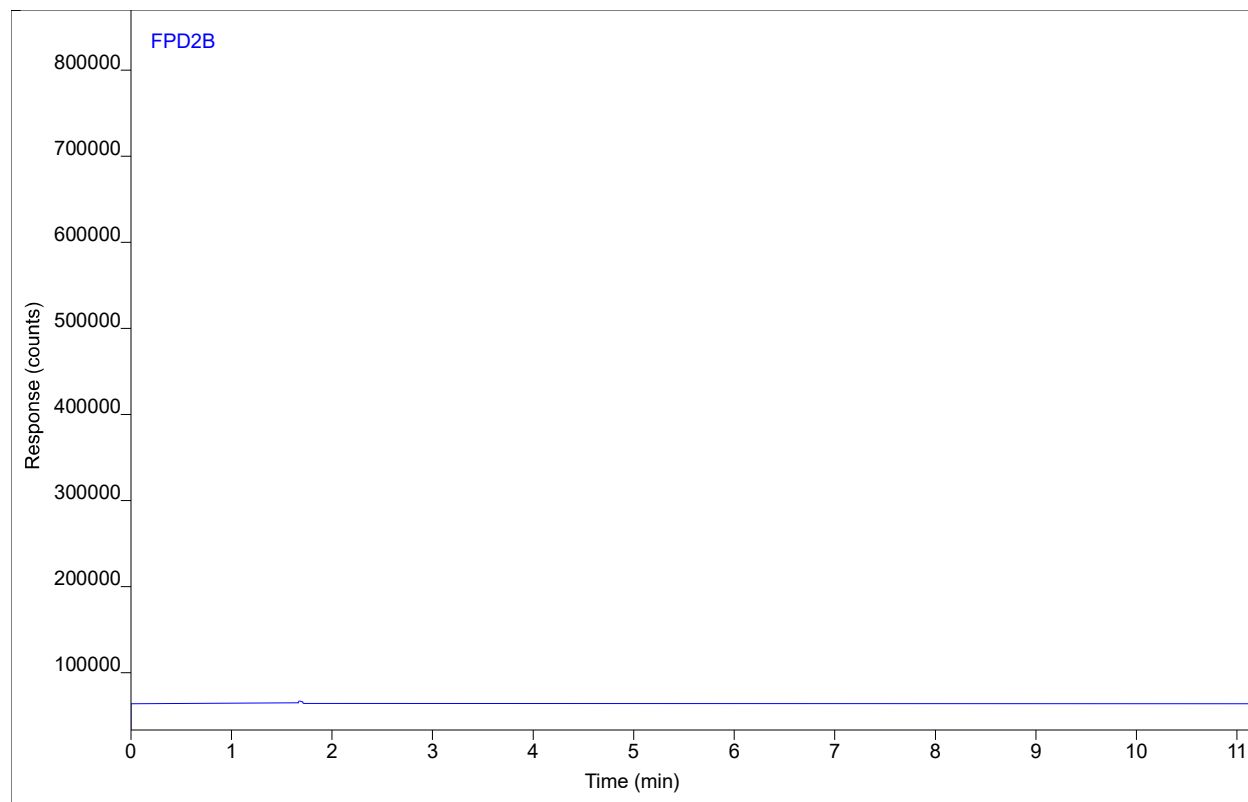
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide		(1.88)				1		ppmv
Carbonyl sulfide		(2.00)				1		ppmv
Carbon disulfide		(4.28)				1		ppmv

# Chromatogram Report

Sample Name 1122-024.Run 3A.Bag  
Sequence Name Zeppop0683\_R1 ver.2  
Inj Data File \_037\_005B1301.D  
File Location GC/2022/Edith/Quarter 3  
Injection Date 11/3/2022 11:39 AM  
File Modified 11/7/2022 12:44 PM  
Instrument Zeppo  
Operator Rhiannon Buchman

# Enthalpy Analytical

Sample Type Sample  
Vial Number Vial 5  
Injection Volume NA  
Injection 1 of 3  
Acquisition Method DUALFPD8.M  
Analysis Method ZEPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



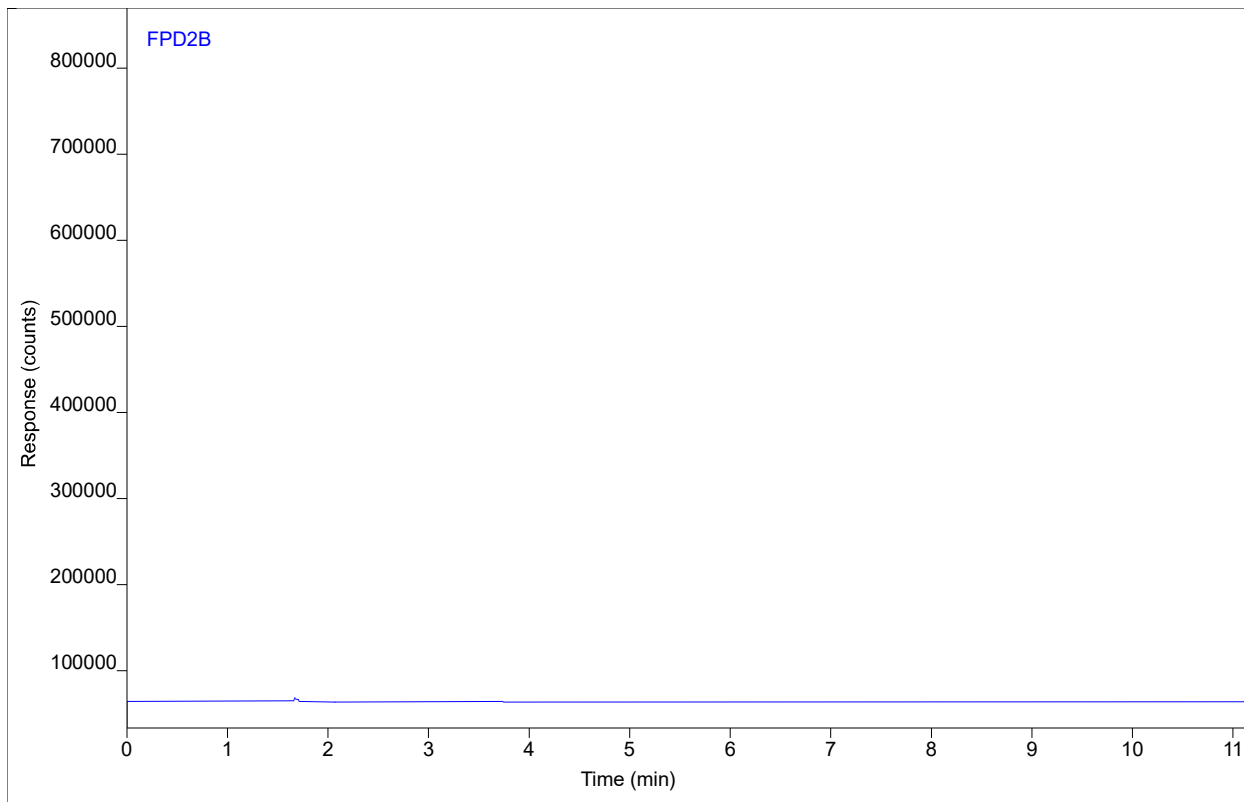
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide		(1.88)				1		ppmv
Carbonyl sulfide		(2.00)				1		ppmv
Carbon disulfide		(4.28)				1		ppmv

## Chromatogram Report

Sample Name 1122-024.Run 3A.Bag  
Sequence Name Zeppop0683\_R1 ver.2  
Inj Data File \_038\_005B1302.D  
File Location GC/2022/Edith/Quarter 3  
Injection Date 11/3/2022 11:57 AM  
File Modified 11/7/2022 12:44 PM  
Instrument Zeppo  
Operator Rhiannon Buchman

## Enthalpy Analytical

Sample Type Sample  
Vial Number Vial 5  
Injection Volume NA  
Injection 2 of 3  
Acquisition Method DUALFPD8.M  
Analysis Method ZEPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



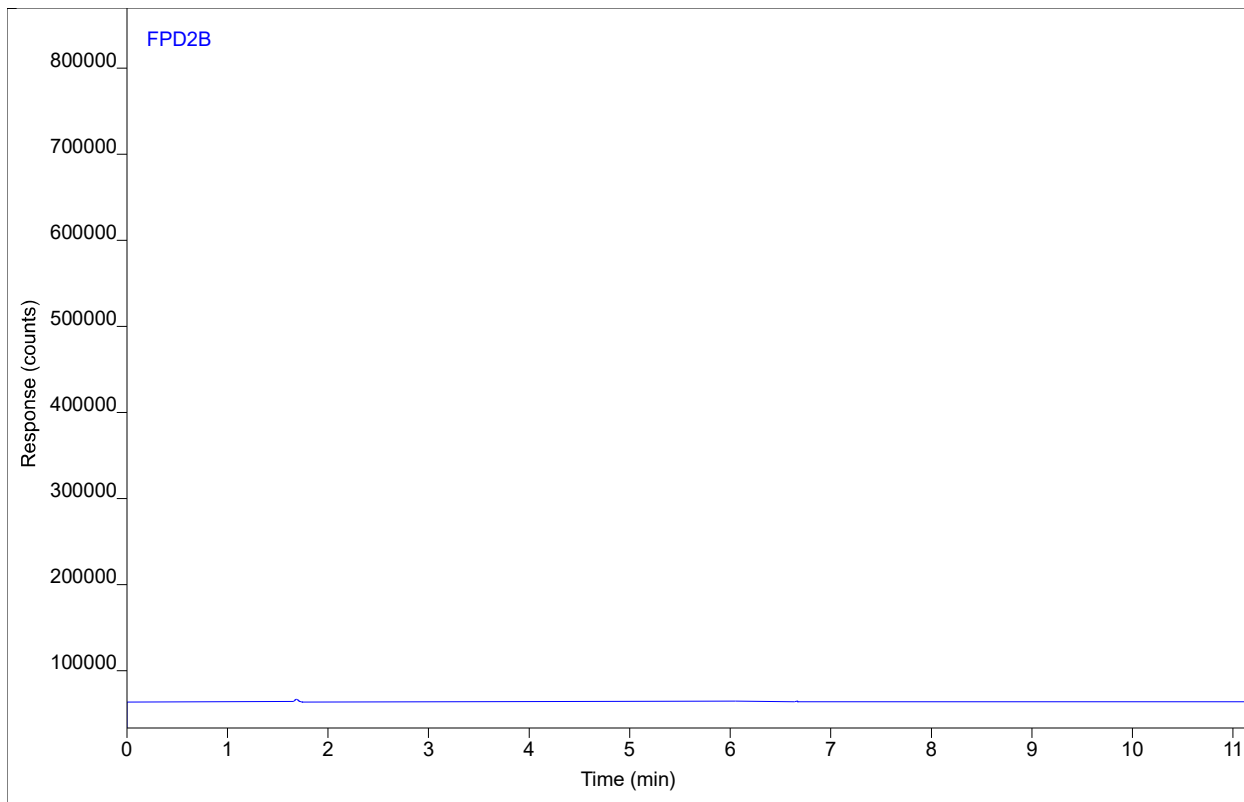
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide		(1.88)				1		ppmv
Carbonyl sulfide		(2.00)				1		ppmv
Carbon disulfide		(4.28)				1		ppmv

## Chromatogram Report

Sample Name 1122-024.Run 3A.Bag  
Sequence Name Zeppop0683\_R1 ver.2  
Inj Data File \_039\_005B1303.D  
File Location GC/2022/Edith/Quarter 3  
Injection Date 11/3/2022 12:14 PM  
File Modified 11/7/2022 12:45 PM  
Instrument Zeppo  
Operator Rhiannon Buchman

## Enthalpy Analytical

Sample Type Sample  
Vial Number Vial 5  
Injection Volume NA  
Injection 3 of 3  
Acquisition Method DUALFPD8.M  
Analysis Method ZEPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



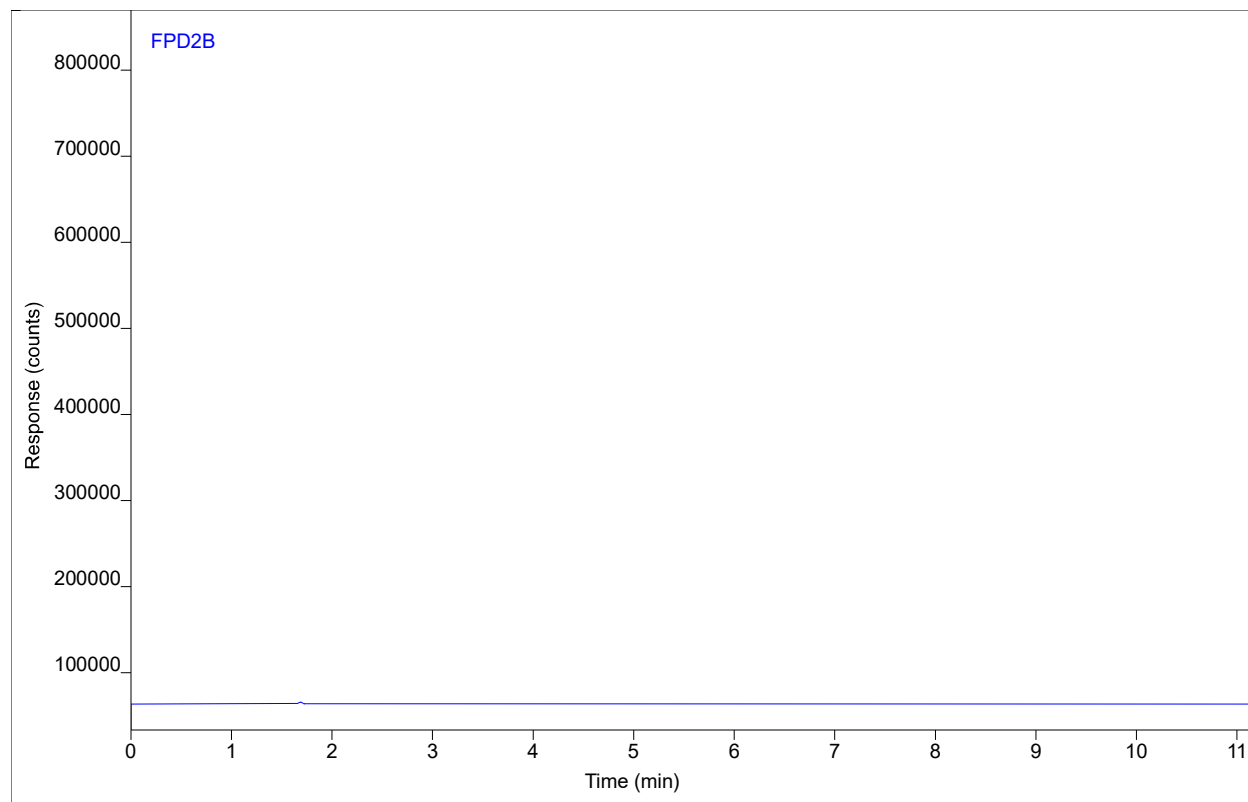
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide		(1.88)				1		ppmv
Carbonyl sulfide		(2.00)				1		ppmv
Carbon disulfide		(4.28)				1		ppmv

# Chromatogram Report

Sample Name 1122-024.Run 1B.Bag  
Sequence Name Zeppop0683\_R1 ver.2  
Inj Data File \_040\_005B1401.D  
File Location GC/2022/Edith/Quarter 3  
Injection Date 11/3/2022 12:32 PM  
File Modified 11/7/2022 12:45 PM  
Instrument Zeppo  
Operator Rhiannon Buchman

# Enthalpy Analytical

Sample Type Sample  
Vial Number Vial 5  
Injection Volume NA  
Injection 1 of 3  
Acquisition Method DUALFPD8.M  
Analysis Method ZEPPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



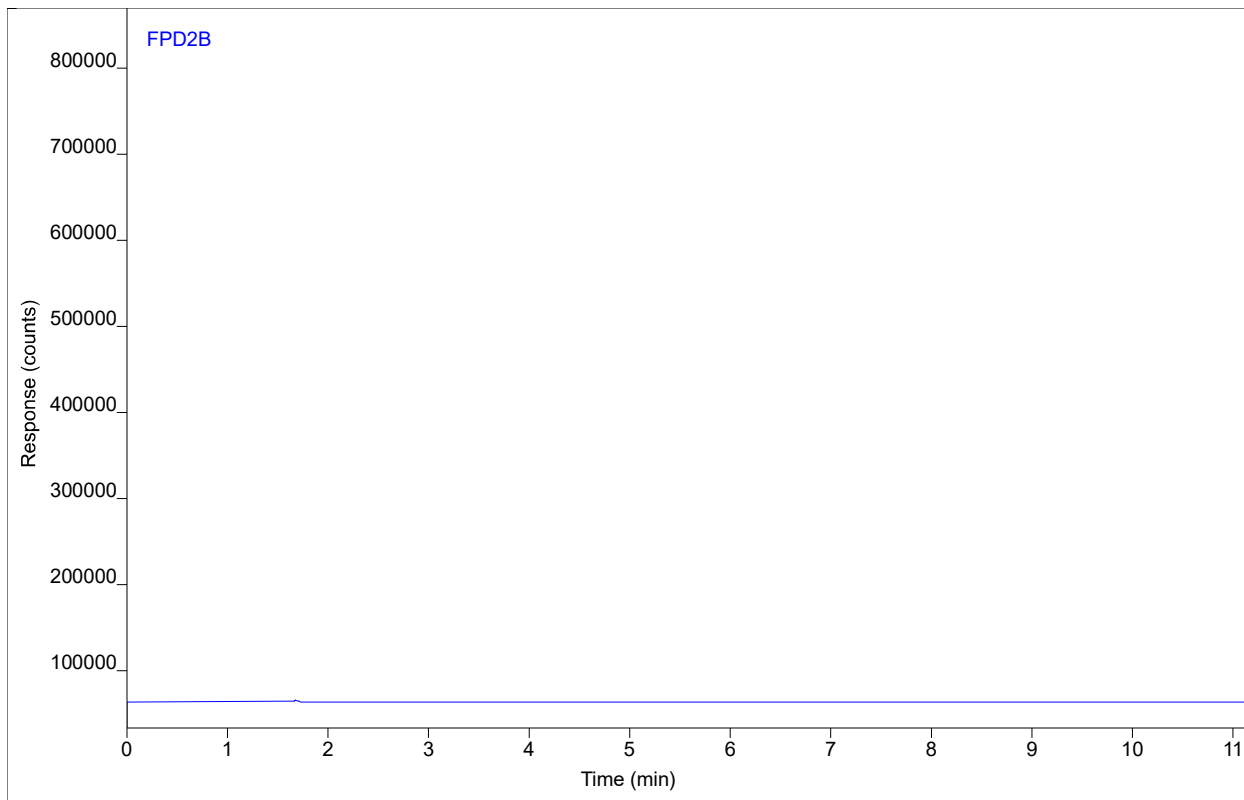
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide		(1.88)				1		ppmv
Carbonyl sulfide		(2.00)				1		ppmv
Carbon disulfide		(4.28)				1		ppmv

## Chromatogram Report

Sample Name 1122-024.Run 1B.Bag  
Sequence Name Zeppop0683\_R1 ver.2  
Inj Data File \_041\_005B1402.D  
File Location GC/2022/Edith/Quarter 3  
Injection Date 11/3/2022 12:49 PM  
File Modified 11/7/2022 12:45 PM  
Instrument Zeppo  
Operator Rhiannon Buchman

## Enthalpy Analytical

Sample Type Sample  
Vial Number Vial 5  
Injection Volume NA  
Injection 2 of 3  
Acquisition Method DUALFPD8.M  
Analysis Method ZEPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



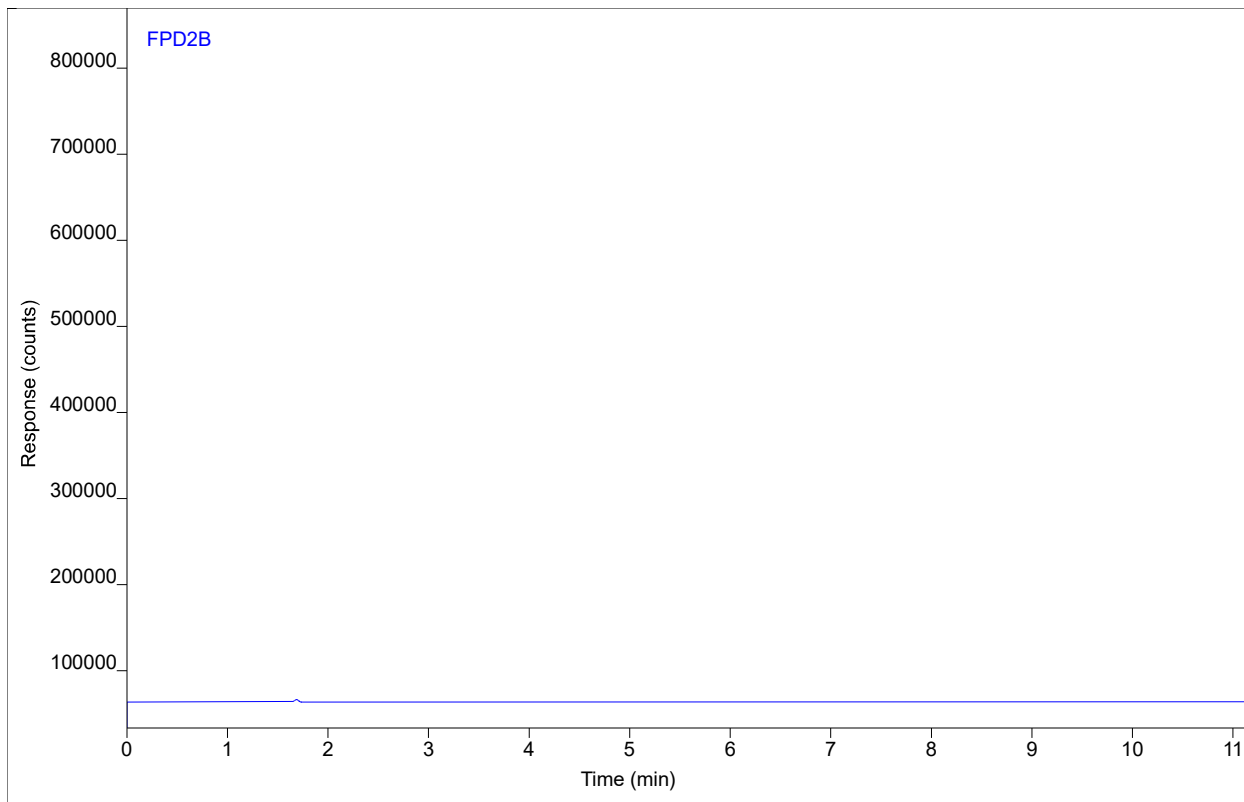
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide		(1.88)				1		ppmv
Carbonyl sulfide		(2.00)				1		ppmv
Carbon disulfide		(4.28)				1		ppmv

## Chromatogram Report

Sample Name 1122-024.Run 1B.Bag  
Sequence Name Zeppop0683\_R1 ver.2  
Inj Data File \_042\_005B1403.D  
File Location GC/2022/Edith/Quarter 3  
Injection Date 11/3/2022 1:07 PM  
File Modified 11/7/2022 12:45 PM  
Instrument Zeppo  
Operator Rhiannon Buchman

## Enthalpy Analytical

Sample Type Sample  
Vial Number Vial 5  
Injection Volume NA  
Injection 3 of 3  
Acquisition Method DUALFPD8.M  
Analysis Method ZEPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



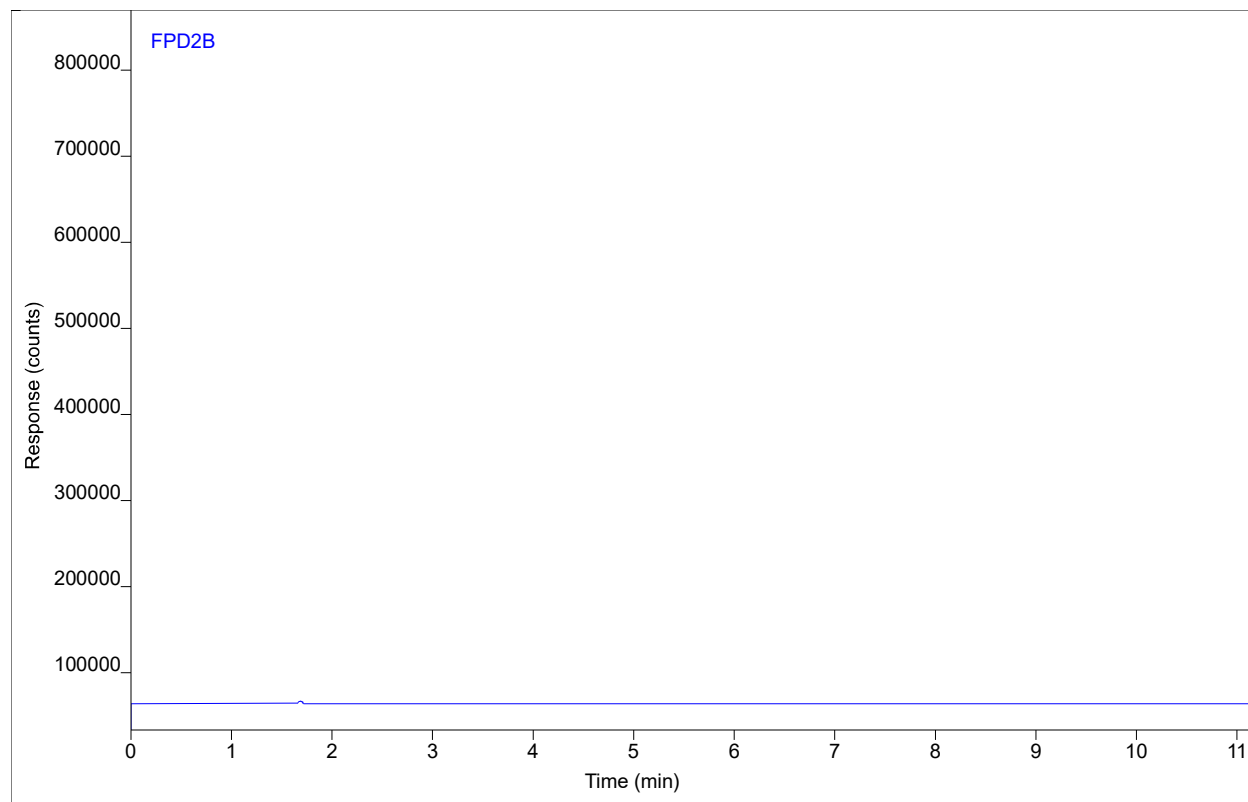
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide		(1.88)				1		ppmv
Carbonyl sulfide		(2.00)				1		ppmv
Carbon disulfide		(4.28)				1		ppmv

# Chromatogram Report

Sample Name 1122-024.Run 2B.Bag  
Sequence Name Zeppop0683\_R1 ver.2  
Inj Data File \_043\_005B1501.D  
File Location GC/2022/Edith/Quarter 3  
Injection Date 11/3/2022 1:24 PM  
File Modified 11/7/2022 12:45 PM  
Instrument Zeppo  
Operator Rhiannon Buchman

# Enthalpy Analytical

Sample Type Sample  
Vial Number Vial 5  
Injection Volume NA  
Injection 1 of 3  
Acquisition Method DUALFPD8.M  
Analysis Method ZEPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



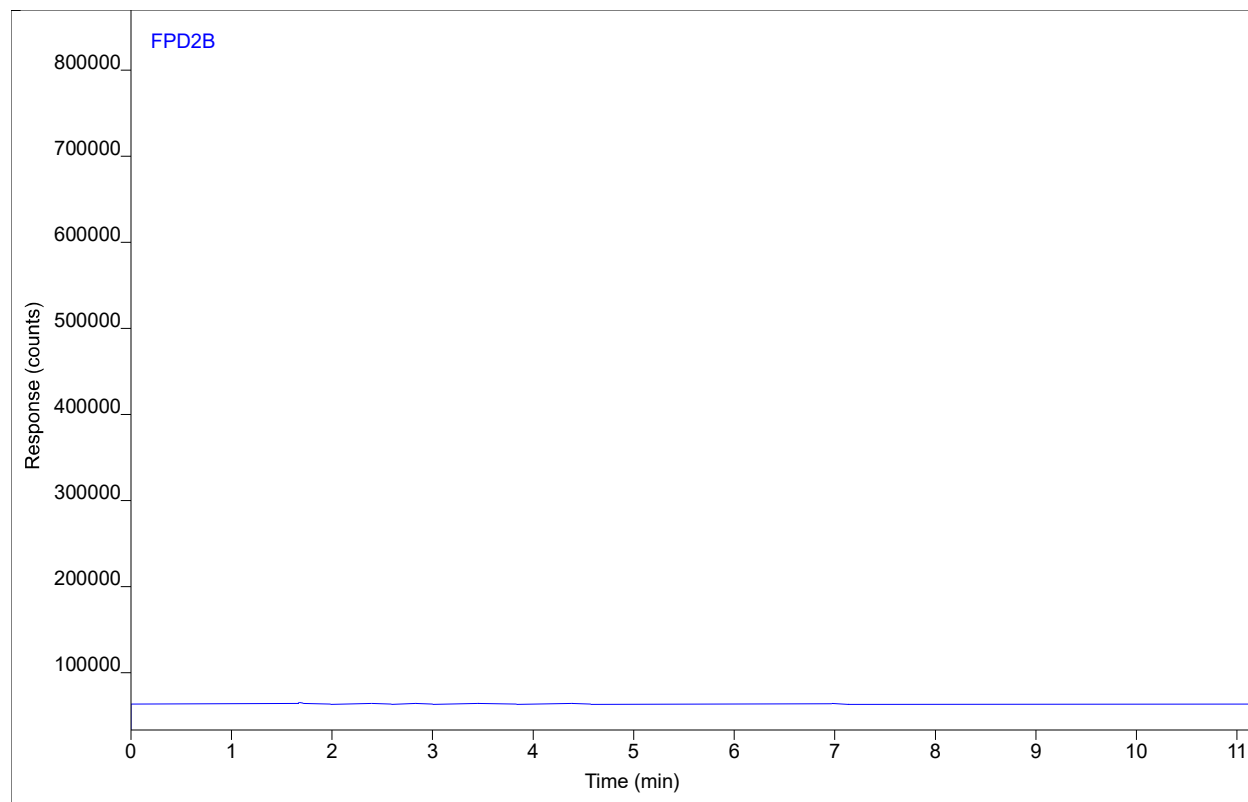
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide		(1.88)				1		ppmv
Carbonyl sulfide		(2.00)				1		ppmv
Carbon disulfide		(4.28)				1		ppmv

# Chromatogram Report

Sample Name 1122-024.Run 2B.Bag  
Sequence Name Zeppop0683\_R1 ver.2  
Inj Data File \_044\_005B1502.D  
File Location GC/2022/Edith/Quarter 3  
Injection Date 11/3/2022 1:41 PM  
File Modified 11/7/2022 12:45 PM  
Instrument Zeppo  
Operator Rhiannon Buchman

# Enthalpy Analytical

Sample Type Sample  
Vial Number Vial 5  
Injection Volume NA  
Injection 2 of 3  
Acquisition Method DUALFPD8.M  
Analysis Method ZEPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



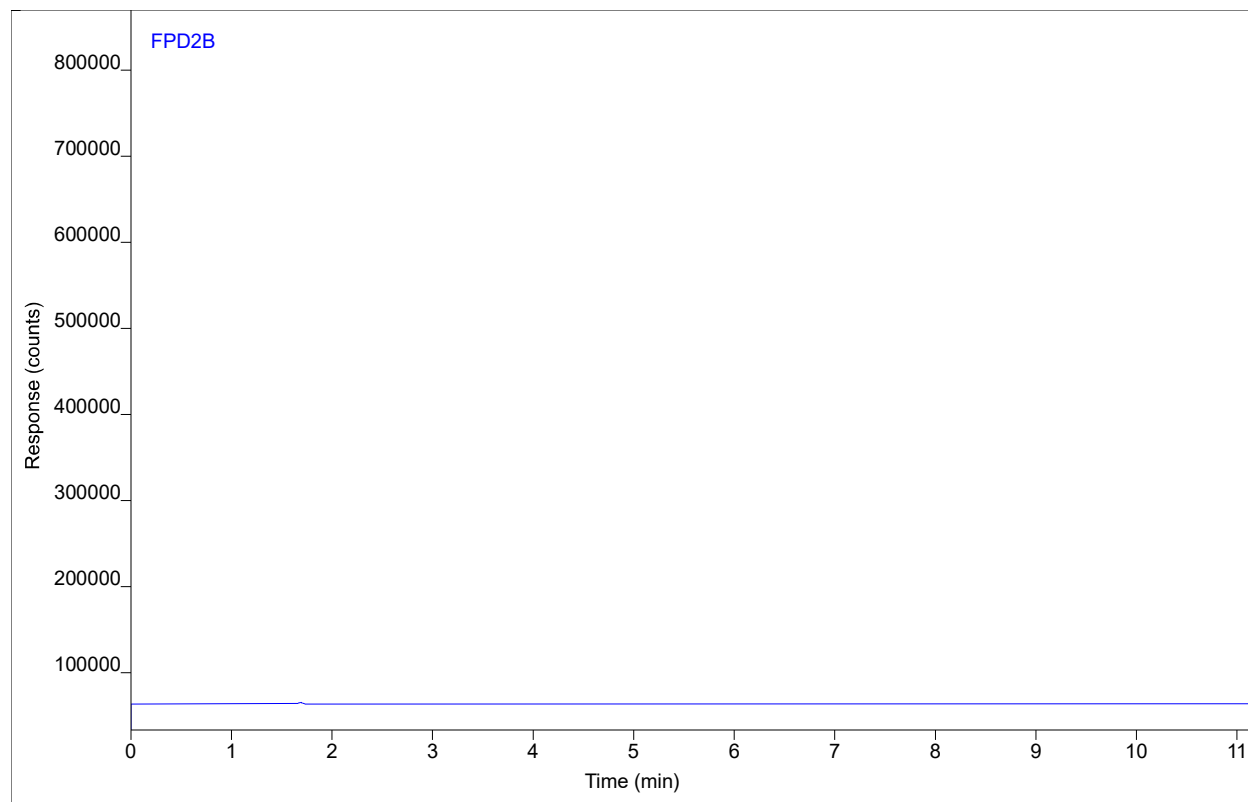
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide		(1.88)				1		ppmv
Carbonyl sulfide		(2.00)				1		ppmv
Carbon disulfide		(4.28)				1		ppmv

# Chromatogram Report

Sample Name 1122-024.Run 2B.Bag  
Sequence Name Zeppop0683\_R1 ver.2  
Inj Data File \_045\_005B1503.D  
File Location GC/2022/Edith/Quarter 3  
Injection Date 11/3/2022 1:59 PM  
File Modified 11/7/2022 12:45 PM  
Instrument Zeppo  
Operator Rhiannon Buchman

# Enthalpy Analytical

Sample Type Sample  
Vial Number Vial 5  
Injection Volume NA  
Injection 3 of 3  
Acquisition Method DUALFPD8.M  
Analysis Method ZEPPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



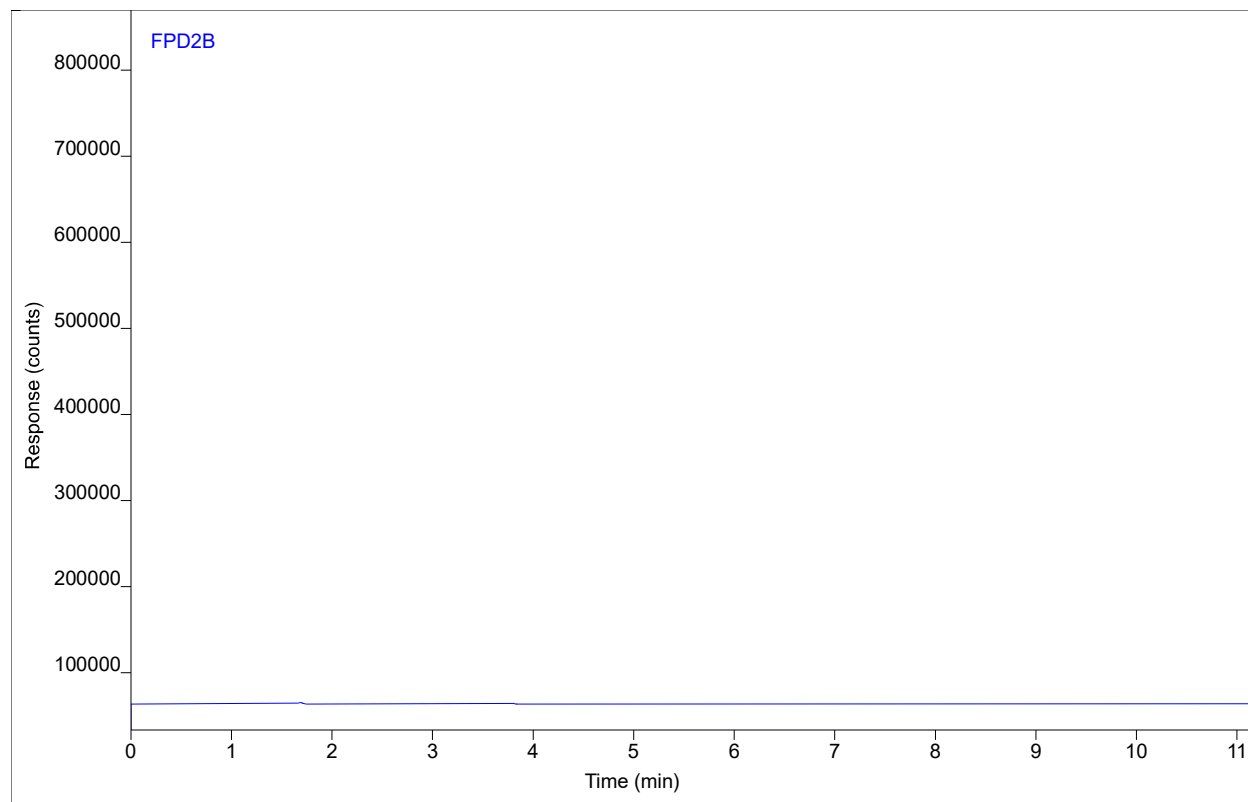
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide		(1.88)				1		ppmv
Carbonyl sulfide		(2.00)				1		ppmv
Carbon disulfide		(4.28)				1		ppmv

## Chromatogram Report

Sample Name 1122-024.Run 3B.Bag  
Sequence Name Zeppop0683\_R1 ver.2  
Inj Data File \_046\_005B1601.D  
File Location GC/2022/Edith/Quarter 3  
Injection Date 11/3/2022 2:16 PM  
File Modified 11/7/2022 12:45 PM  
Instrument Zeppo  
Operator Rhiannon Buchman

## Enthalpy Analytical

Sample Type Sample  
Vial Number Vial 5  
Injection Volume NA  
Injection 1 of 3  
Acquisition Method DUALFPD8.M  
Analysis Method ZEPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



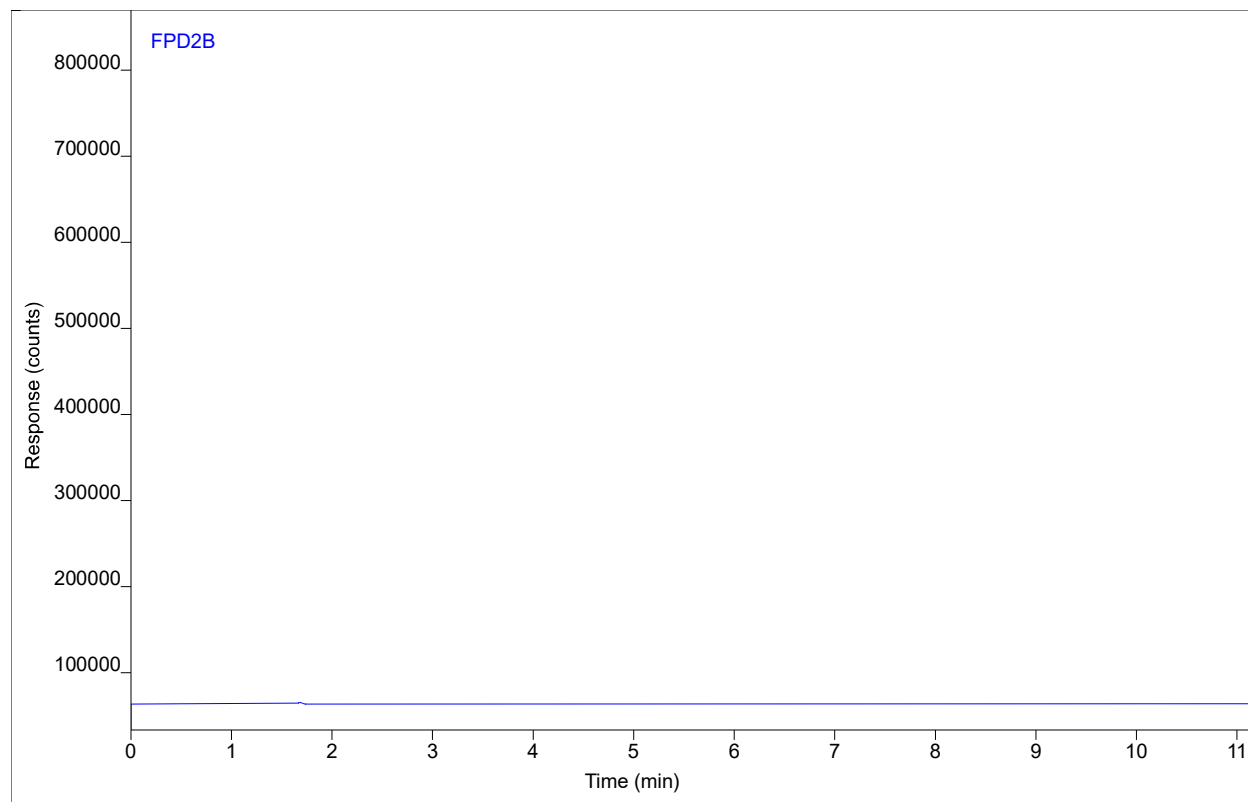
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide		(1.88)				1		ppmv
Carbonyl sulfide		(2.00)				1		ppmv
Carbon disulfide		(4.28)				1		ppmv

## Chromatogram Report

Sample Name 1122-024.Run 3B.Bag  
Sequence Name Zeppop0683\_R1 ver.2  
Inj Data File \_047\_005B1602.D  
File Location GC/2022/Edith/Quarter 3  
Injection Date 11/3/2022 2:34 PM  
File Modified 11/7/2022 12:45 PM  
Instrument Zeppo  
Operator Rhiannon Buchman

## Enthalpy Analytical

Sample Type Sample  
Vial Number Vial 5  
Injection Volume NA  
Injection 2 of 3  
Acquisition Method DUALFPD8.M  
Analysis Method ZEPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



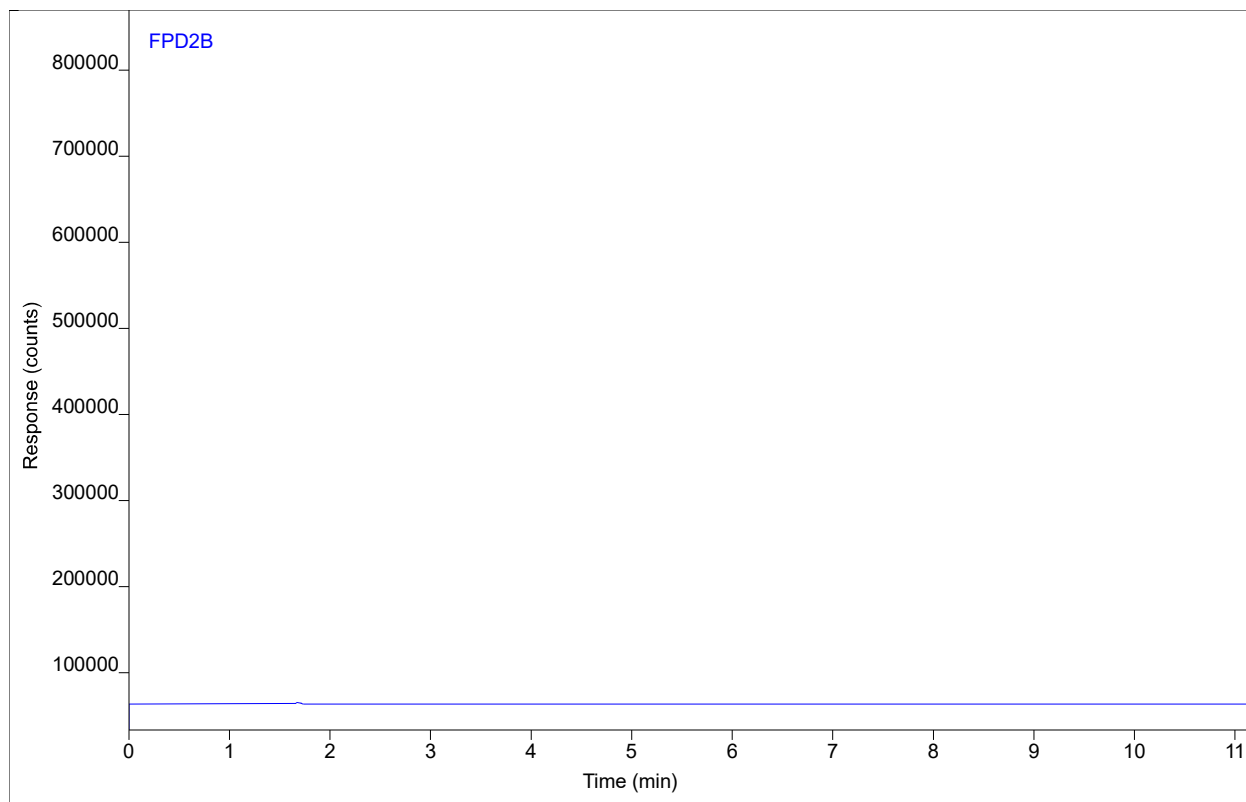
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide		(1.88)				1		ppmv
Carbonyl sulfide		(2.00)				1		ppmv
Carbon disulfide		(4.28)				1		ppmv

## Chromatogram Report

Sample Name 1122-024.Run 3B.Bag  
Sequence Name Zeppop0683\_R1 ver.2  
Inj Data File \_048\_005B1603.D  
File Location GC/2022/Edith/Quarter 3  
Injection Date 11/3/2022 2:51 PM  
File Modified 11/7/2022 12:45 PM  
Instrument Zeppo  
Operator Rhiannon Buchman

## Enthalpy Analytical

Sample Type Sample  
Vial Number Vial 5  
Injection Volume NA  
Injection 3 of 3  
Acquisition Method DUALFPD8.M  
Analysis Method ZEPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



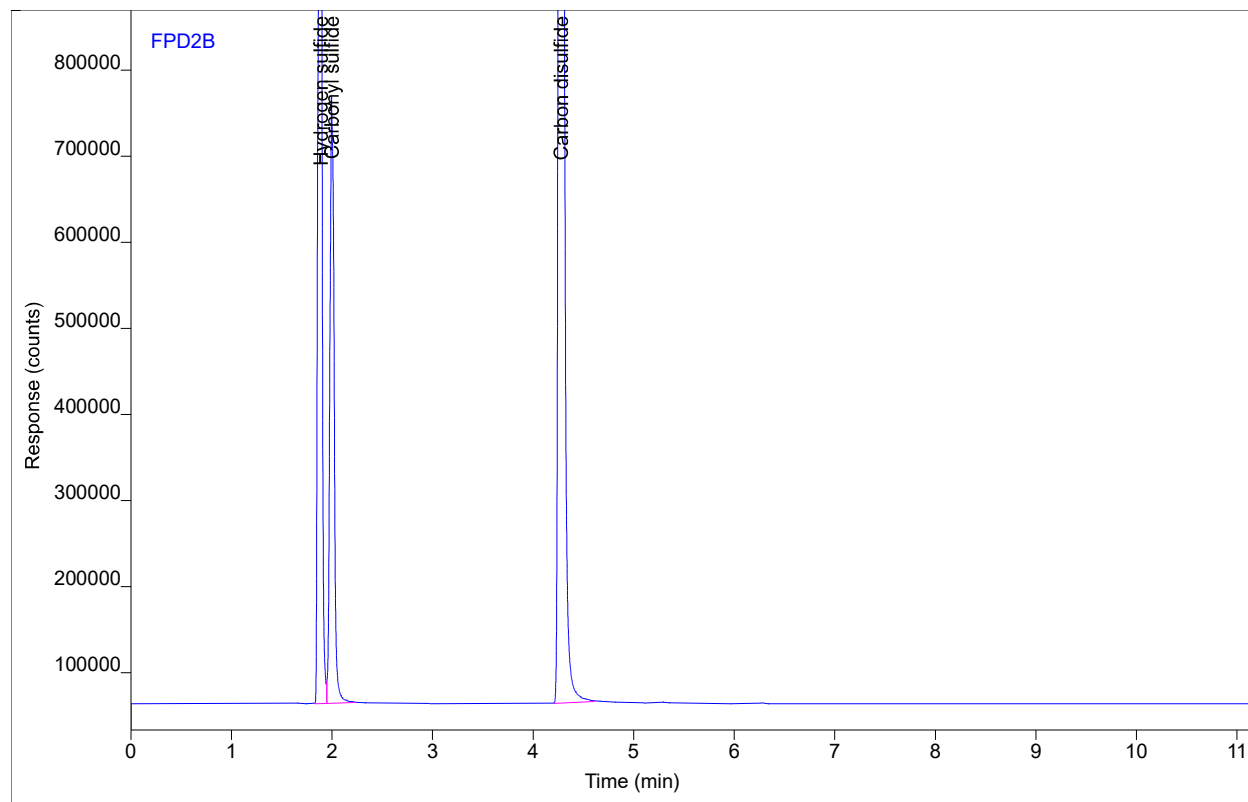
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide		(1.88)				1		ppmv
Carbonyl sulfide		(2.00)				1		ppmv
Carbon disulfide		(4.28)				1		ppmv

# Chromatogram Report

# Enthalpy Analytical

Sample Name zeppoP0683 #5  
Sequence Name ZEPPOP0683B ver.1  
Inj Data File 005B0102.D  
File Location GC/2022/Zepo/Quarter 4  
Injection Date 11/4/2022 9:43 AM  
File Modified 11/7/2022 10:52 AM  
Instrument Zeppo  
Operator Nicolas Benoit

Sample Type  
Vial Number Vial 5  
Injection Volume NA  
Injection 2 of 5  
Acquisition Method DUALFPD8.M  
Analysis Method ZEPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



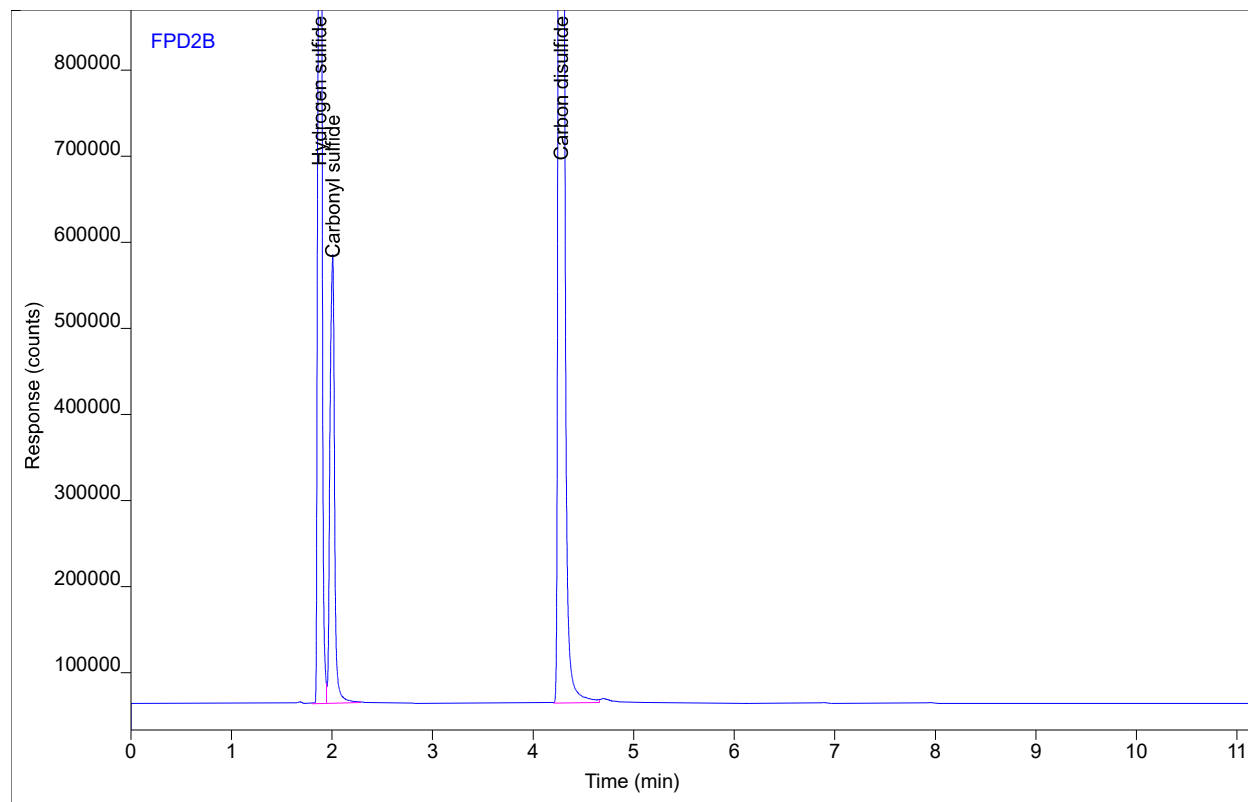
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide	MF	1.89	3230382	1174025	10.9038	1	10.9038	ppmv
Carbonyl sulfide	FM	2.00	2065680	709201	7.50772	1	7.50772	ppmv
Carbon disulfide	BB	4.28	1.21E+007	4354747	8.26634	1	8.26634	ppmv

# Chromatogram Report

# Enthalpy Analytical

Sample Name zeppoP0683 #5  
Sequence Name ZEPPOP0683B ver.1  
Inj Data File 005B0103.D  
File Location GC/2022/Zepo/Quarter 4  
Injection Date 11/4/2022 10:00 AM  
File Modified 11/7/2022 10:52 AM  
Instrument Zeppo  
Operator Nicolas Benoit

Sample Type  
Vial Number Vial 5  
Injection Volume NA  
Injection 3 of 5  
Acquisition Method DUALFPD8.M  
Analysis Method ZEPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



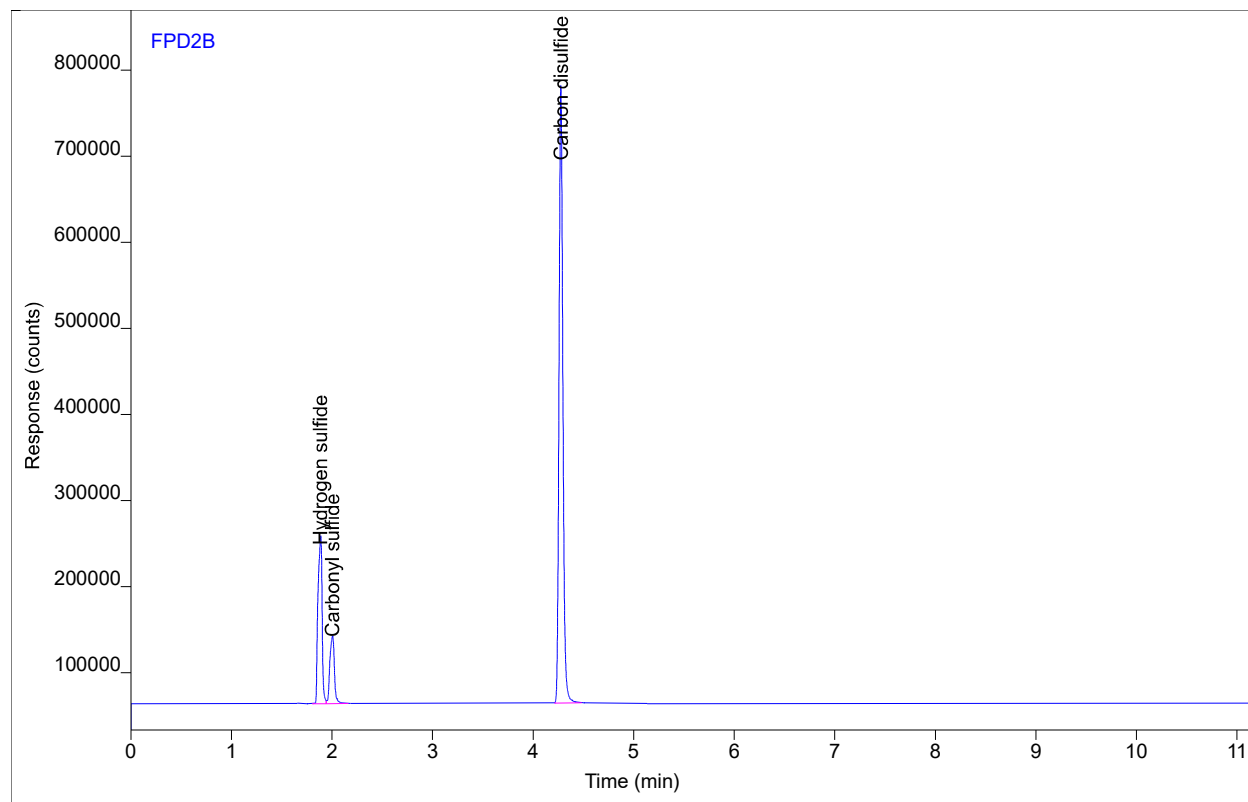
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide	MF	1.87	3322595	1181889	11.0484	1	11.0484	ppmv
Carbonyl sulfide	FM	2.01	1654413	523077	6.79412	1	6.79412	ppmv
Carbon disulfide	BV	4.28	1.20E+007	4265295	8.25974	1	8.25974	ppmv

# Chromatogram Report

# Enthalpy Analytical

Sample Name zeppoP0683 #4  
Sequence Name ZEPPOP0683B ver.1  
Inj Data File 004B0203.D  
File Location GC/2022/Zepo/Quarter 4  
Injection Date 11/4/2022 11:27 AM  
File Modified 11/7/2022 10:52 AM  
Instrument Zeppo  
Operator Nicolas Benoit

Sample Type  
Vial Number Vial 4  
Injection Volume NA  
Injection 3 of 5  
Acquisition Method DUALFPD8.M  
Analysis Method ZEPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



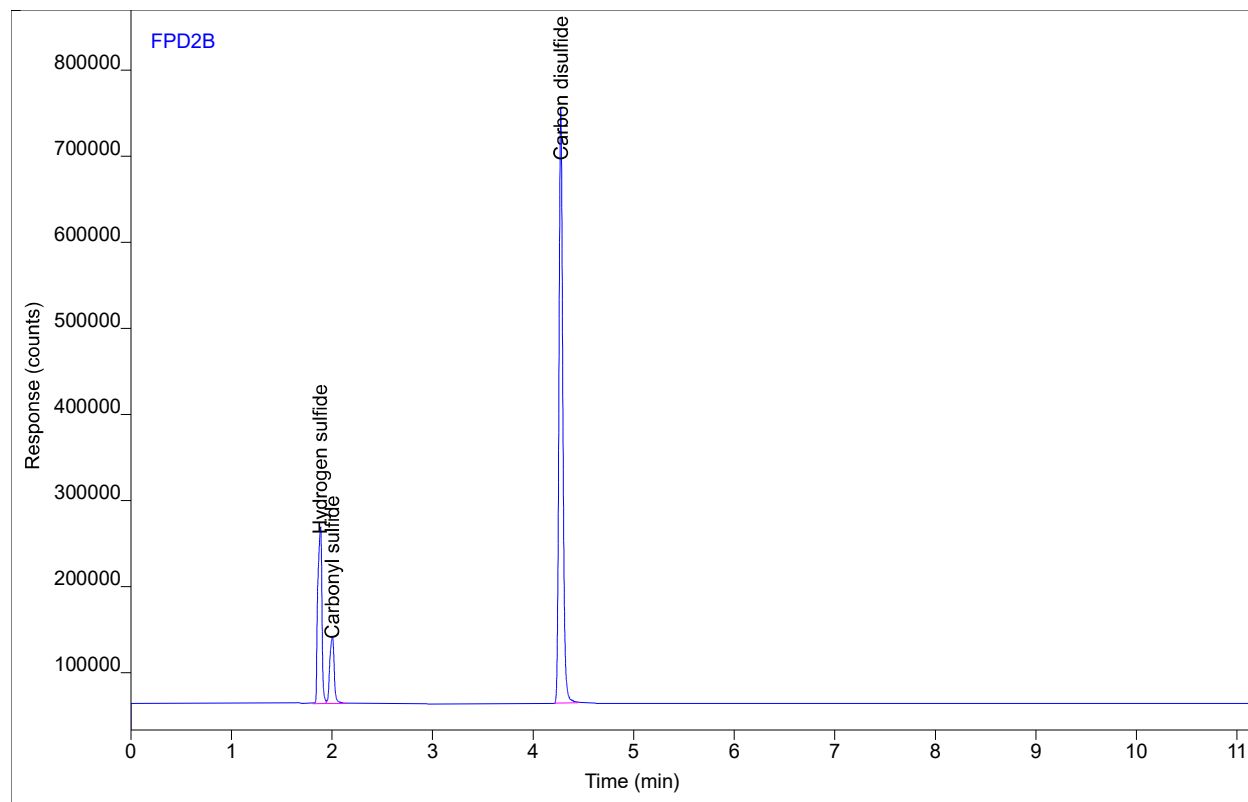
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide	BV	1.88	550600	187009	4.76409	1	4.76409	ppmv
Carbonyl sulfide	VB	2.00	246230	77492.1	2.88381	1	2.88381	ppmv
Carbon disulfide	BB	4.28	1909796	710525	3.59220	1	3.59220	ppmv

# Chromatogram Report

# Enthalpy Analytical

Sample Name zeppoP0683 #4  
Sequence Name ZEPPOP0683B ver.1  
Inj Data File 004B0204.D  
File Location GC/2022/Zepo/Quarter 4  
Injection Date 11/4/2022 11:45 AM  
File Modified 11/7/2022 10:52 AM  
Instrument Zeppo  
Operator Nicolas Benoit

Sample Type  
Vial Number Vial 4  
Injection Volume NA  
Injection 4 of 5  
Acquisition Method DUALFPD8.M  
Analysis Method ZEPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



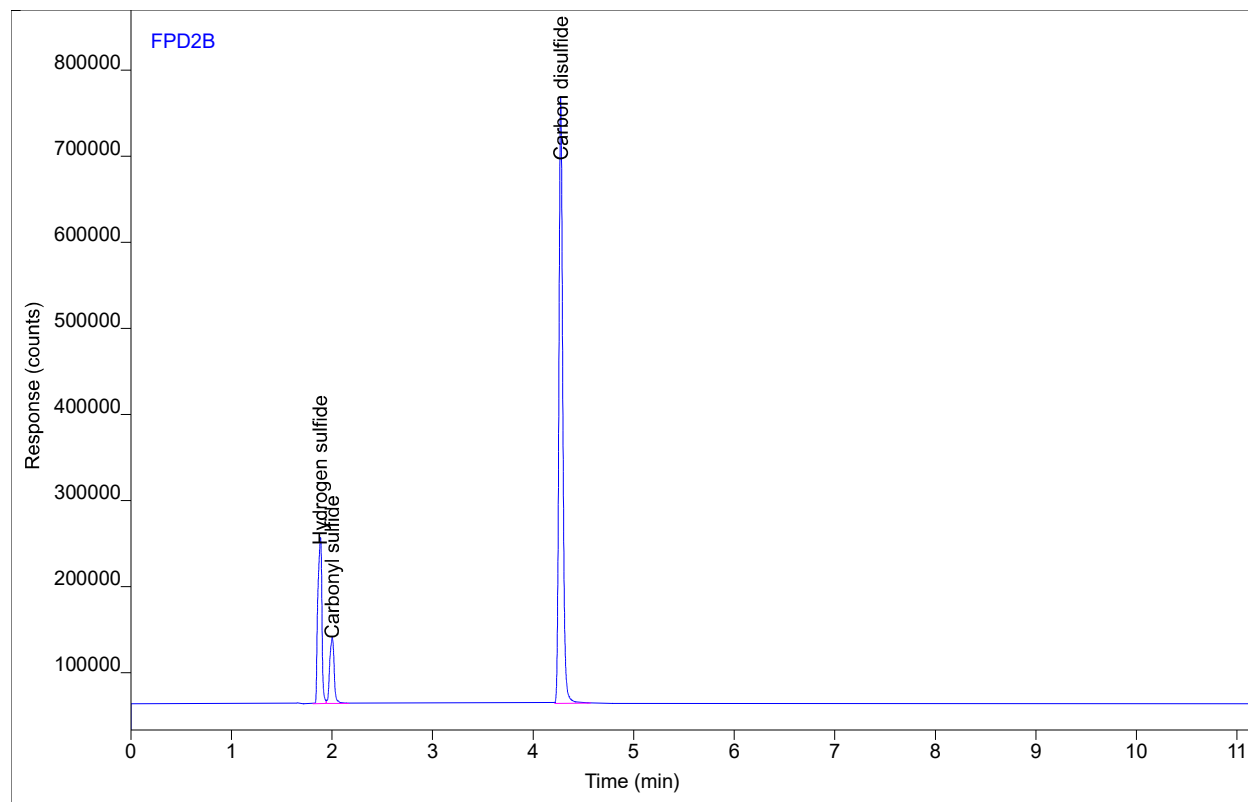
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide	BV	1.88	578772	201642	4.87665	1	4.87665	ppmv
Carbonyl sulfide	VB	2.00	236180	77492.4	2.83025	1	2.83025	ppmv
Carbon disulfide	BB	4.28	1842472	686224	3.53435	1	3.53435	ppmv

# Chromatogram Report

# Enthalpy Analytical

Sample Name zeppoP0683 #4  
Sequence Name ZEPPOP0683B ver.1  
Inj Data File 004B0205.D  
File Location GC/2022/Zepo/Quarter 4  
Injection Date 11/4/2022 12:02 PM  
File Modified 11/7/2022 10:52 AM  
Instrument Zeppo  
Operator Nicolas Benoit

Sample Type  
Vial Number Vial 4  
Injection Volume NA  
Injection 5 of 5  
Acquisition Method DUALFPD8.M  
Analysis Method ZEPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



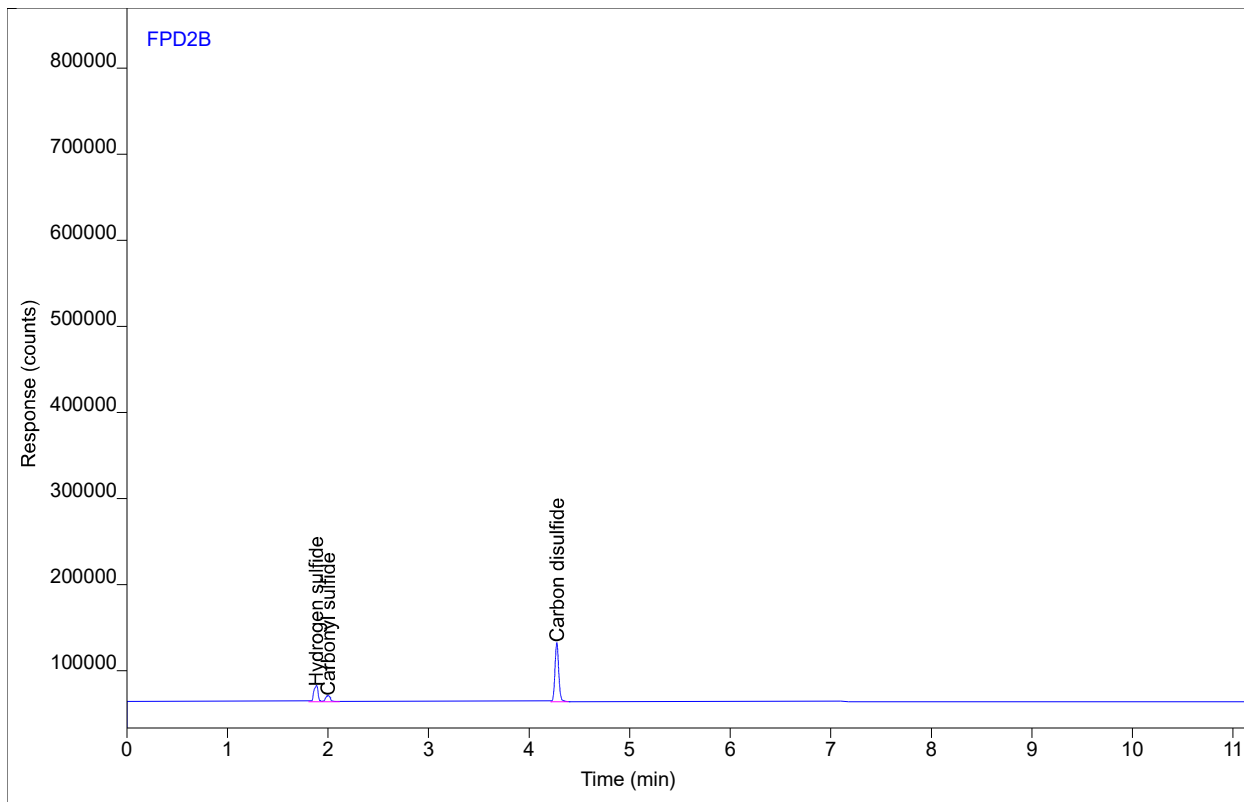
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide	BV	1.88	537568	190252	4.71099	1	4.71099	ppmv
Carbonyl sulfide	VB	2.00	233235	76629.4	2.81432	1	2.81432	ppmv
Carbon disulfide	BB	4.28	1885937	695820	3.57183	1	3.57183	ppmv

# Chromatogram Report

# Enthalpy Analytical

Sample Name zeppoP0683 #3  
Sequence Name ZEPPOP0683B ver.1  
Inj Data File 003B0303.D  
File Location GC/2022/Zepo/Quarter 4  
Injection Date 11/4/2022 12:55 PM  
File Modified 11/7/2022 10:52 AM  
Instrument Zeppo  
Operator Nicolas Benoit

Sample Type  
Vial Number Vial 3  
Injection Volume NA  
Injection 3 of 5  
Acquisition Method DUALFPD8.M  
Analysis Method ZEPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



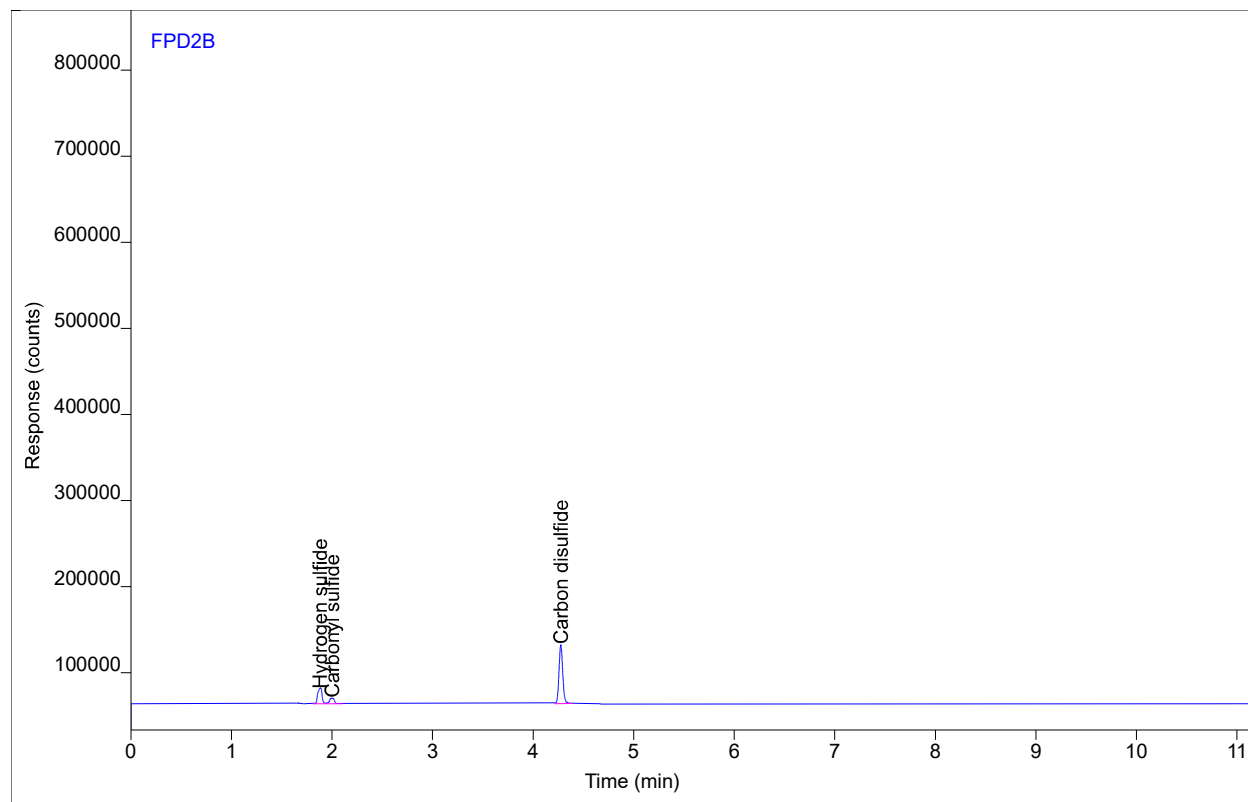
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide	BV	1.88	53758.8	18726.9	1.60378	1	1.60378	ppmv
Carbonyl sulfide	VB	2.00	22684.4	7110.17	0.98648	1	0.98648	ppmv
Carbon disulfide	BB	4.28	175795	68217.4	1.22094	1	1.22094	ppmv

# Chromatogram Report

Sample Name zeppoP0683 #3  
Sequence Name ZEPPOP0683B ver.1  
Inj Data File 003B0304.D  
File Location GC/2022/Zepo/Quarter 4  
Injection Date 11/4/2022 1:12 PM  
File Modified 11/7/2022 10:52 AM  
Instrument Zeppo  
Operator Nicolas Benoit

# Enthalpy Analytical

Sample Type  
Vial Number Vial 3  
Injection Volume NA  
Injection 4 of 5  
Acquisition Method DUALFPD8.M  
Analysis Method ZEPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



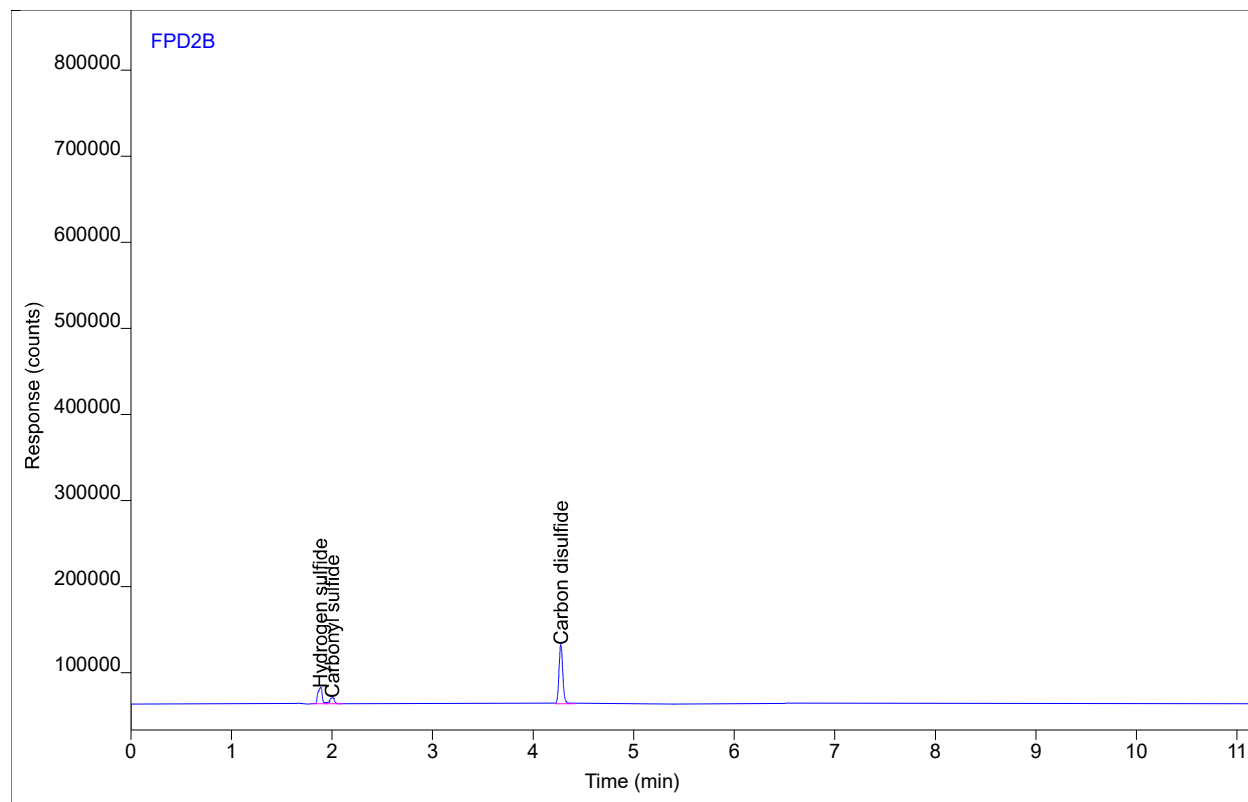
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide	BV	1.88	53364.0	18210.8	1.59826	1	1.59826	ppmv
Carbonyl sulfide	VB	2.00	22207.8	7171.58	0.97711	1	0.97711	ppmv
Carbon disulfide	BB	4.28	175843	67638.4	1.22109	1	1.22109	ppmv

# Chromatogram Report

# Enthalpy Analytical

Sample Name zeppoP0683 #3  
Sequence Name ZEPPOP0683B ver.1  
Inj Data File 003B0305.D  
File Location GC/2022/Zepo/Quarter 4  
Injection Date 11/4/2022 1:29 PM  
File Modified 11/7/2022 10:52 AM  
Instrument Zeppo  
Operator Nicolas Benoit

Sample Type  
Vial Number Vial 3  
Injection Volume NA  
Injection 5 of 5  
Acquisition Method DUALFPD8.M  
Analysis Method ZEPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



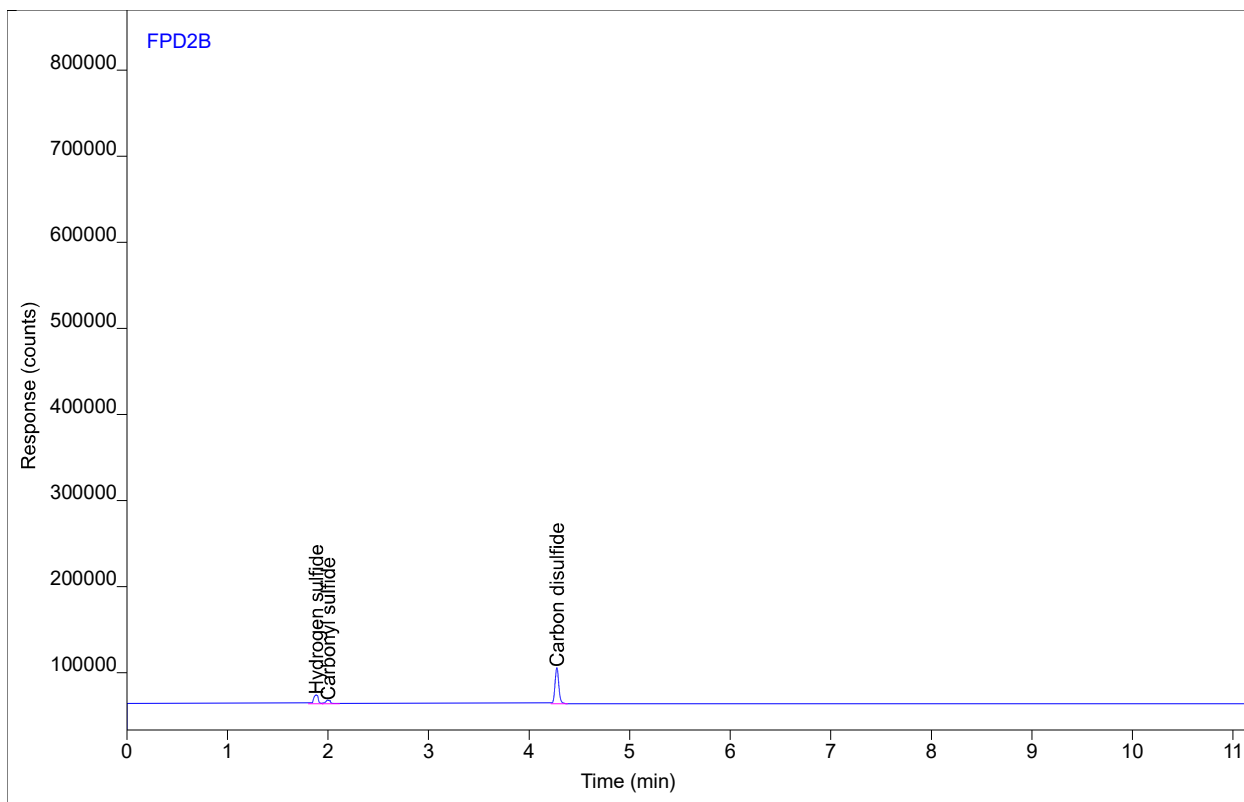
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide	BV	1.88	53884.4	18405.1	1.60554	1	1.60554	ppmv
Carbonyl sulfide	VB	2.00	21448.5	6864.43	0.96193	1	0.96193	ppmv
Carbon disulfide	BB	4.28	179455	67994.4	1.23238	1	1.23238	ppmv

# Chromatogram Report

# Enthalpy Analytical

Sample Name zeppoP0683 #2  
Sequence Name ZEPPOP0683B ver.1  
Inj Data File 002B0401.D  
File Location GC/2022/Zepo/Quarter 4  
Injection Date 11/4/2022 1:47 PM  
File Modified 11/7/2022 10:52 AM  
Instrument Zeppo  
Operator Nicolas Benoit

Sample Type  
Vial Number Vial 2  
Injection Volume NA  
Injection 1 of 5  
Acquisition Method DUALFPD8.M  
Analysis Method ZEPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



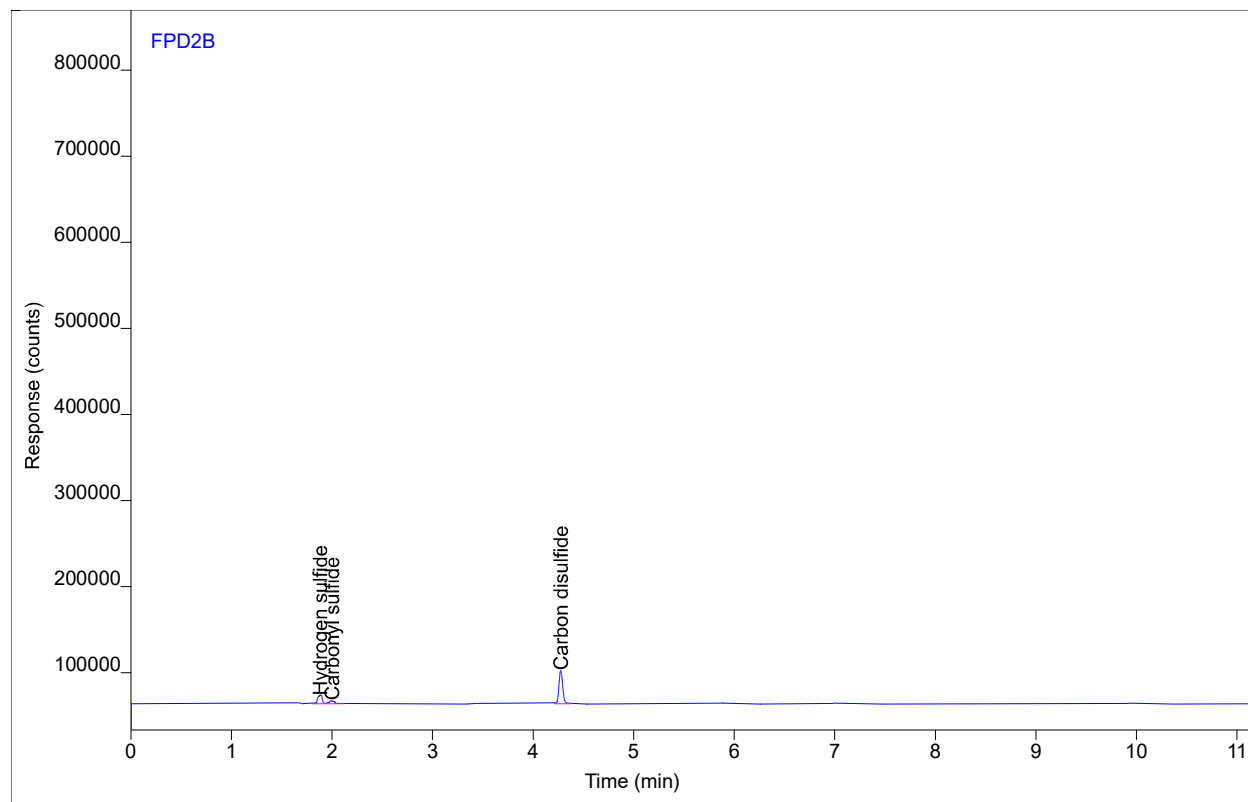
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide	BV	1.88	31271.0	10747.8	1.24460	1	1.24460	ppmv
Carbonyl sulfide	VB	2.00	13035.9	4121.73	0.76889	1	0.76889	ppmv
Carbon disulfide	BB	4.28	109057	41826.1	0.98377	1	0.98377	ppmv

# Chromatogram Report

# Enthalpy Analytical

Sample Name zeppoP0683 #2  
Sequence Name ZEPPOP0683B ver.1  
Inj Data File 002B0402.D  
File Location GC/2022/Zepo/Quarter 4  
Injection Date 11/4/2022 2:04 PM  
File Modified 11/7/2022 10:52 AM  
Instrument Zeppo  
Operator Nicolas Benoit

Sample Type  
Vial Number Vial 2  
Injection Volume NA  
Injection 2 of 5  
Acquisition Method DUALFPD8.M  
Analysis Method ZEPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



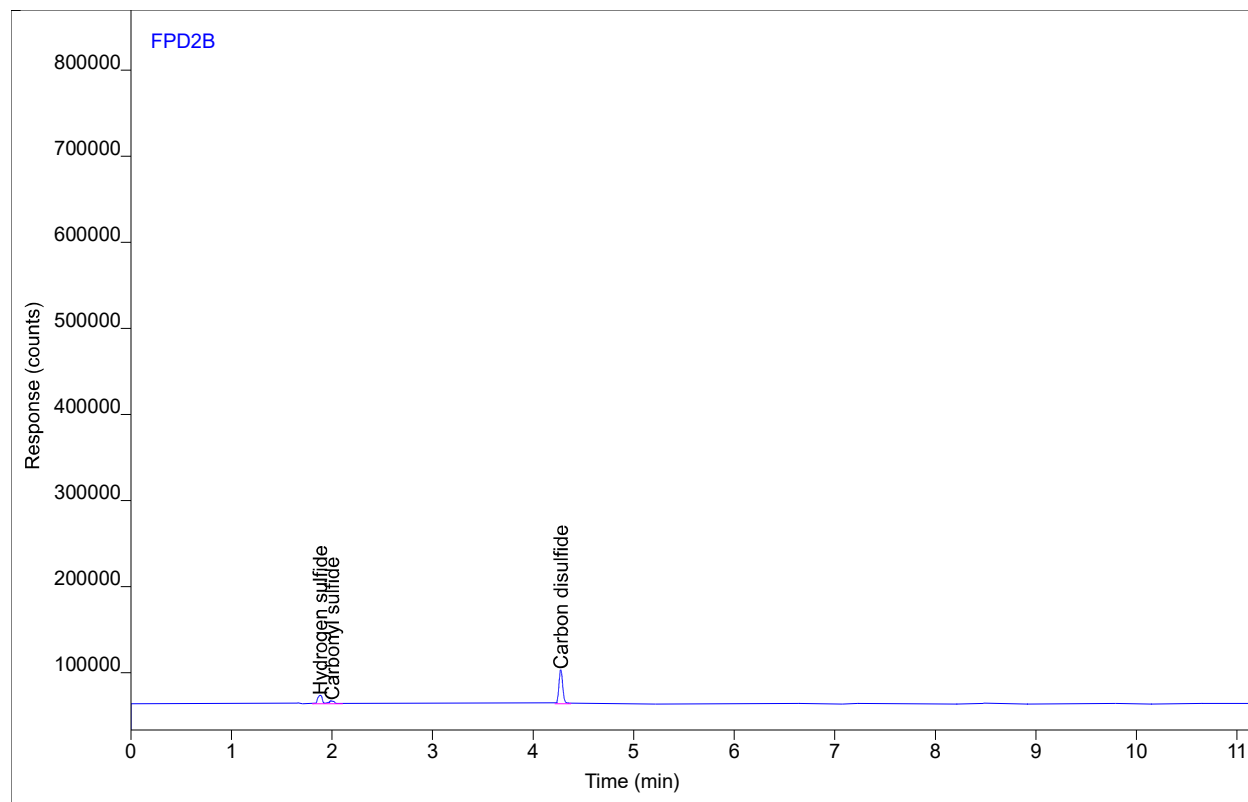
Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide	BV	1.88	31321.8	10074.2	1.24554	1	1.24554	ppmv
Carbonyl sulfide	VB	2.00	12999.3	4022.87	0.76791	1	0.76791	ppmv
Carbon disulfide	BB	4.28	100096	38425.0	0.94634	1	0.94634	ppmv

# Chromatogram Report

# Enthalpy Analytical

Sample Name zeppoP0683 #2  
Sequence Name ZEPPOP0683B ver.1  
Inj Data File 002B0403.D  
File Location GC/2022/Zepo/Quarter 4  
Injection Date 11/4/2022 2:22 PM  
File Modified 11/7/2022 10:52 AM  
Instrument Zeppo  
Operator Nicolas Benoit

Sample Type  
Vial Number Vial 2  
Injection Volume NA  
Injection 3 of 5  
Acquisition Method DUALFPD8.M  
Analysis Method ZEPPOP0683\_1.M  
Method Modified 11/3/2022 8:44 AM  
Printed 11/7/2022 1:08 PM



Compound	Type	RT	Area	Height	Amount	DF	SampAmt	Unit
Hydrogen sulfide	BV	1.88	31605.5	10327.9	1.25081	1	1.25081	ppmv
Carbonyl sulfide	VB	2.00	14326.0	4075.67	0.80223	1	0.80223	ppmv
Carbon disulfide	BB	4.28	103440	39495.5	0.96051	1	0.96051	ppmv

```
=====
                        Calibration Table
=====
```

Calib. Data Modified : Thursday, November 03, 2022 8:44:11 AM

Rel. Reference Window : 2.500 %  
 Abs. Reference Window : 0.000 min  
 Rel. Non-ref. Window : 5.000 %  
 Abs. Non-ref. Window : 0.100 min  
 Uncalibrated Peaks : using compound Hydrogen sulfide  
 Partial Calibration : Yes, identified peaks are recalibrated  
 Correct All Ret. Times: No, only for identified peaks

Curve Type : Power  
 Origin : Ignored  
 Weight : Equal

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: FPD2 B,

RetTime [min]	Lvl Sig	Amount [ppmv]	Area	Amt/Area	Ref Grp Name
1.882	1 2	1.26820	3.27811e4	3.86871e-5	Hydrogen sulfide
	3	1.69694	6.04040e4	2.80932e-5	
	4	5.08090	6.26086e5	8.11535e-6	
	5	11.81255	3.85684e6	3.06275e-6	
2.001	1 2	7.41575e-1	1.22268e4	6.06515e-5	Carbonyl sulfide
	3	9.92276e-1	2.27591e4	4.35991e-5	
	4	2.97103	2.57674e5	1.15302e-5	
	5	6.90732	1.74087e6	3.96773e-6	
4.277	1 2	9.32722e-1	9.82752e4	9.49091e-6	Carbon disulfide
	3	1.24804	1.80629e5	6.90943e-6	
	4	3.73684	2.11129e6	1.76993e-6	
	5	8.68774	1.33814e7	6.49241e-7	

More compound-specific settings:

Compound: Hydrogen sulfide  
 Time Window : From 1.764 min To 1.978 min

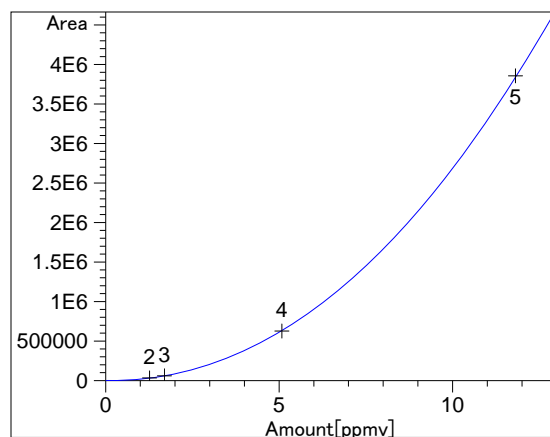
1 Warnings or Errors :

Warning : Overlapping peak time windows at 1.882 min, signal 1

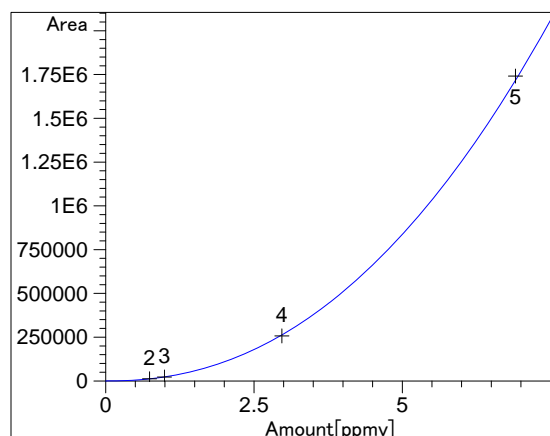
```
=====
                        Peak Sum Table
=====
```

Name	StartTime [min]	EndTime [min]	Use Reference	Response factor	Multiplier	ISTD Peak
Total Redu	2.700	12.000	Hydrogen S	0.0000	1.432e-6	None

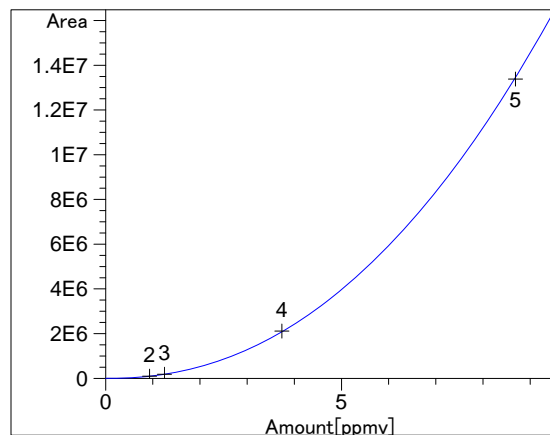
## Calibration Curves



Hydrogen sulfide at exp. RT: 1.882  
FPD2 B,  
Correlation: 1.00000  
Residual Std. Dev.: 17320.27680  
Formula:  $y = b * x^m$   
m: 2.13687  
b: 19591.97022  
x: Amount  
y: Area



Carbonyl sulfide at exp. RT: 2.001  
FPD2 B,  
Correlation: 0.99999  
Residual Std. Dev.: 17785.01875  
Formula:  $y = b * x^m$   
m: 2.22294  
b: 23381.00929  
x: Amount  
y: Area



Carbon disulfide at exp. RT: 4.277  
FPD2 B,  
Correlation: 1.00000  
Residual Std. Dev.: 54143.70752  
Formula:  $y = b * x^m$   
m: 2.21049  
b: 113075.17501  
x: Amount  
y: Area

# Trace Source™ Permeation Tube

## Certificate of Calibration

This tube was individually calibrated by gravimetric weight loss analysis at the temperature listed. The tube was held at a constant temperature (+/- 0.05°C traceable to N.I.S.T.), under an inert purge for an extended period of time and its weight loss per unit time recorded. This Certificate of Calibration certifies that the tube listed is traceable to the National Institute of Standards and Technology through an unbroken chain of standards for the duration listed below.

Customer: Enthalpy Analytical

Customer P.O. No.: PO-030050

KIN-TEK Order No.: 145327

Calibration Date: 7/21/2022

Certification Expires: 7/22/23

NIST Weight Set: 2001/01067908-1

Other: Per procedure 30260953 Rev1.31

Ship Date: 7-22-2022

Type: EL-SRT-2

Serial No.: 68464


KIN-TEK Part No.: EL-SRT-2 - 001.00 - 1002 /50

Permeating Fluid: Hydrogen sulfide

K<sub>0</sub>: 0.657 MW: 34.08

Emission Rate	ng / min	Temperature °C
2.703		50

Calibrated by:



Certification Specialist

KIN-TEK Analytical, Inc. 504 Laurel  
La Marque, Texas 77568  
Phone: (409) 938-3627  
Fax: (409) 938-3710

**KIN -TEK**   
**The Calibration Specialists**

# YNACAL® PERMEATION DEVICE CERTIFICATE




26295 Twelve Trees, Poulsbo, WA 98370, USA | tel: (360) 697-9199 | toll free: (877) 377-1887 | web: vicimetronics.com

The permeation rate of the DYNACAL® PERMEATION DEVICE below is certified traceable to N.I.S.T standards.

Serial Number: F-55888

Certification Date: Apr 1, 2022      Certificate Expires: Apr 1, 2023  
Chemical: Carbonyl Sulfide 463-58-1  
Part Number: 157-553-7600-VH-C50  
Device Type: Dynacal Wafer      Geometry: 30F3  
Permeation Rate: 2789.23 ng/min      Temperature: 50 C  
True Accuracy: +/- 0.28 %      Max Allowed Accuracy: +/- 5.00 %  
Certification Method: Gravimetric      Order No: 135425  
Customer: ENTHALPY ANALYTICAL  
Note: Empty weight 19.8 g.

Approved By:  \_\_\_\_\_

## INDIVIDUAL DEVICE CERTIFICATION

The gravimetric method measures the weight loss per unit of time at the certification temperature. Traceability is thus established by the use of temperature and weight standards traceable to N.I.S.T. standards. Individual certification is accomplished by: (1) maintaining the device in a constant temperature chamber with purge flow of dry nitrogen, and (2) weighing periodically on a semi-microanalytical balance, accurate to the nearest 0.01 mg, until a steady weight loss per unit has been achieved. Temperature control and accuracy are better than 0.05° C referenced against temperature standards traceable to the National Institute of Standards and Technology. The semi-microanalytical balances are routinely serviced and calibrated by an independent service organization using N.I.S.T. traceable weight standards. Gravimetric permeation rate determination is continued until the standard error of the permeation rate meets the required accuracy at the 95% confidence level.

# YNACAL<sup>®</sup> PERMEATION DEVICE CERTIFICATE



26295 Twelve Trees, Poulsbo, WA 98370, USA | tel: (360) 697-9199 | toll free: (877) 377-1887 | web: vicimetronics.com

The permeation rate of the DYNACAL<sup>®</sup> PERMEATION DEVICE below is certified traceable to N.I.S.T standards.

Serial Number: 89-57842

Certification Date: Apr 1, 2022      Certificate Expires: Apr 1, 2023  
Chemical: Carbon Disulfide CAS# 75-15-0  
Part Number: PD-6300-C50  
Device Type: Dynacal Tube      Length: 1.50  
Permeation Rate: 4443.69 ng/min      Temperature: 50 C  
True Accuracy: +/- 0.63 %      Max-Allowed Accuracy: +/- 2.00 %  
Certification Method: Gravimetric      Order No: 135425  
Customer: ENTHALPY ANALYTICAL  
Note: Empty weight 14.1 g.

Approved By: 

## INDIVIDUAL DEVICE CERTIFICATION

The gravimetric method measures the weight loss per unit of time at the certification temperature. Traceability is thus established by the use of temperature and weight standards traceable to N.I.S.T. standards. Individual certification is accomplished by: (1) maintaining the device in a constant temperature chamber with purge flow of dry nitrogen, and (2) weighing periodically on a semi-microanalytical balance, accurate to the nearest 0.01 mg, until a steady weight loss per unit has been achieved. Temperature control and accuracy are better than 0.05° C referenced against temperature standards traceable to the National Institute of Standards and Technology. The semi-microanalytical balances are routinely serviced and calibrated by an independent service organization using N.I.S.T. traceable weight standards. Gravimetric permeation rate determination is continued until the standard error of the permeation rate meets the required accuracy at the 95% confidence level.

**CERTIFICATE OF ANALYSIS**  
**Grade of Product: CERTIFIED STANDARD-SPEC**

Customer: MONTROSE ENVIRONMENTAL GROUP,  
Part Number: X02NI99C15AC3D4  
Cylinder Number: CC274930  
Laboratory: 124 - Durham (SAP) - NC  
Analysis Date: Jul 18, 2022  
Lot Number: 122-402492572-1

Reference Number: 122-402492572-1  
Cylinder Volume: 144.0 CF  
Cylinder Pressure: 2015 PSIG  
Valve Outlet: 330

Expiration Date: Jul 18, 2025

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
HYDROGEN SULFIDE	7.000 PPM	7.135 PPM	+/- 5%
NITROGEN	Balance		

Permanent Notes: MONTROSE ENV ENTHALPY ANALY

COPY



*[Signature]*  
Approved for Release

**MDL Calculator**

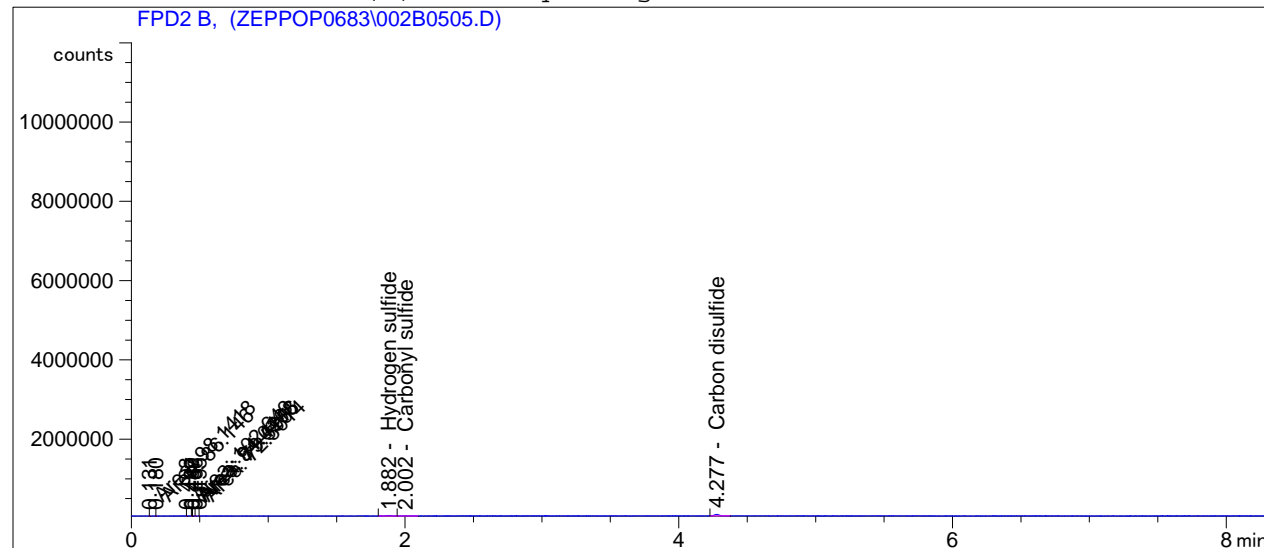
Noise Peak Areas	98	86	103	94	81	80	73	Average
Type in 7 noise peak areas above. The average is calculated, tripled, and placed into the MDL calculations.								

		(ppm)	MDL
H2S	m=	2.137	0.133097
	b=	19,592	
COS	m=	2.223	0.132904
	b=	23,381	
MeSH	m=	1.991	0.018180
	b=	769,971	
DMS	m=	1.991	0.018180
	b=	769,971	
CS2	m=	2.210	0.064408
	b=	113,075	
DMDS	m=	1.991	0.018180
	b=	769,971	

Sample Name: zeppo0683 #2

```

=====
Acq. Operator   : Rhiannon Buchman          Seq. Line :    5
Acq. Instrument : Zeppo                    Location  : Vial 2
Injection Date  : 11/3/2022 6:33:44 AM      Inj       :    5
                                           Inj Volume: External
Acq. Method     : C:\GC\2022\ZEPPO\QUARTER 4\ZEPPOP0683\DUALFPD8.M
Last changed    : 1/9/2020 7:33:38 AM by Justin Guenzler
Analysis Method : C:\GC\2022\ZEPPO\METHODS\ZEPPOP0683_1.M
Last changed    : 11/3/2022 8:44:24 AM by Rhiannon Buchman
Additional Info  : Peak(s) manually integrated
  
```



```

=====
                        External Standard Report
=====
  
```

```

Sorted By           :      Signal
Calib. Data Modified :      Thursday, November 03, 2022 8:44:11 AM
Multiplier          :      1.0000
Dilution            :      1.0000
Use Multiplier & Dilution Factor with ISTDs
  
```

Signal 1: FPD2 B,

RetTime [min]	Type	Area counts*s	Amt/Area	Amount [ppmv]	Grp	Name
1.882	BV	3.25216e4	3.89786e-5	1.26765		Hydrogen sulfide
2.002	VB	1.29276e4	5.92535e-5	7.66005e-1		Carbonyl sulfide
4.277	BB	1.00463e5	9.43539e-6	9.47903e-1		Carbon disulfide

Totals : 2.98155

Uncalibrated Peaks : using compound Hydrogen sulfide

RetTime [min]	Type	Area counts*s	Amt/Area	Amount [ppmv]	Grp	Name
0.131	MM	98.14180	8.54481e-4	8.38603e-2	?	
0.180	MM	86.14599	9.15852e-4	7.88970e-2	?	
0.403	MM	102.64864	8.34312e-4	8.56410e-2	?	
0.439	MM	94.04079	8.74108e-4	8.22018e-2	?	
0.447	MM	81.42162	9.43751e-4	7.68418e-2	?	
0.466	MM	79.59497	9.55213e-4	7.60302e-2	?	
0.495	MM	72.50141	1.00385e-3	7.27804e-2	?	

Uncalib. totals :

EA # 1122-024 Page 155 of 159

1 Warnings or Errors :

Warning : Calibration warnings (see calibration table listing)

=====

Summed Peaks Report

=====

Signal 1: FPD2 B,

2 Warnings or Errors :

Warning : Reference compound(s) not found

Warning : ISTD compound(s) not found

=====

Final Summed Peaks Report

=====

Signal 1: FPD2 B,

Name	Total Area counts*s	Amount [ppmv]
Hydrogen sulfid	3.25216e4	1.2676
Carbonyl sulfid	1.29276e4	0.7660
Carbon disulfid	1.00463e5	0.9479

Totals : 2.9816

\*\*\* End of Report \*\*\*

Location: GCDrawer: ZeppoAnalyst: REBCabinet: 2022Folder: Quarter 4Date: 11/3/22Job #s 1122-024

Describe Work Documented on This Page

M15/16 Column info in AQMDate= 11/3/22  
Perm Chamber Temp= 50.0 C  
Buckmeter S/N & cal. check due date= A55538 7/13/2023

Compound	Perm Tube #	Expiration	(Ng/min) Perm Rates	MW	Concentration (ppm)			
					2	3	4	5
H2S	68464	7/22/2023	2703.00	34	1.268	1.697	5.081	11.813
COS	F-55888	4/1/2023	2789.23	60	0.742	0.992	2.971	6.907
CS2	89-57842	4/1/2023	4443.69	76	0.933	1.248	3.737	8.688
Flow Rate=					1508	1127	376.4	161.9 mL/min

REB 11/7/22

C:\GC\2022\ZEPPQ\QUARTER 4\ZEPPPO0683\ZEPPPO0683.S Front Inlet

Line	Vial	SampleName	Method	Inj Dilution
1	vial 6	pause	PAUSE_FPD8	1
2	vial 10	zeppoP0683 #5	DUALFPD8	5
3	vial 10	zeppoP0683 #4	DUALFPD8	5
4	vial 10	zeppoP0683 #3	DUALFPD8	5
5	vial 10	zeppoP0683 #2	DUALFPD8	5
6	vial 14	zeppoP0551 #MB	DUALFPD8	3
7	vial 1	zeppoP0675 #LCS ①	DUALFPD8_SHORT	4
8	vial 6	pause	PAUSE_FPD8	1
9	vial 1	zeppoP0675 #LCS	DUALFPD8_SHORT	3
10	vial 6	pause	PAUSE_FPD8	1
11	vial 7	1122-024.Run 1A.Bag	DUALFPD8	3
12	vial 3	1122-024.Run 2A.Bag	DUALFPD8	3
13	vial 7	1122-024.Run 3A.Bag	DUALFPD8	3
14	vial 3	1122-024.Run 1B.Bag	DUALFPD8	3
15	vial 7	1122-024.Run 2B.Bag	DUALFPD8	3
16	vial 3	1122-024.Run 3B.Bag	DUALFPD8	3
17	vial 10	zeppoP0683 #5 ②	DUALFPD8	5

C:\GC\2022\ZEPPQ\QUARTER 4\ZEPPPO0683\ZEPPPO0683.S Back Inlet

Line	Vial	SampleName	Method	Inj Dilution
1	vial 5	pause	PAUSE_FPD8	1
2	vial 5	zeppoP0683 #5	DUALFPD8	5
3	vial 4	zeppoP0683 #4	DUALFPD8	5
4	vial 3	zeppoP0683 #3	DUALFPD8	5
5	vial 2	zeppoP0683 #2	DUALFPD8	5
6	vial 5	zeppoP0551 #MB	DUALFPD8	3
7	vial 5	zeppoP0675 #LCS ①	DUALFPD8_SHORT	4
8	vial 5	pause	PAUSE_FPD8	1
9	vial 5	zeppoP0675 #LCS	DUALFPD8_SHORT	3
10	vial 5	pause	PAUSE_FPD8	1
11	vial 5	1122-024.Run 1A.Bag	DUALFPD8	3
12	vial 5	1122-024.Run 2A.Bag	DUALFPD8	3
13	vial 5	1122-024.Run 3A.Bag	DUALFPD8	3
14	vial 5	1122-024.Run 1B.Bag	DUALFPD8	3
15	vial 5	1122-024.Run 2B.Bag	DUALFPD8	3
16	vial 5	1122-024.Run 3B.Bag	DUALFPD8	3
17	vial 5	zeppoP0683 #5 ②	DUALFPD8	5

① Do not use REB 11/7/22

② Use REB 11/7/22  
Use injections 2 and 3. Do not use REB 11/7/22

③ Power went out and ended sequence. Continued on ZeppoP0684. REB 11/7/22

Reviewer's Initials &amp; Date:

MB 11-7-22ZEPPQ  
page 683

Location: 6C  
Cabinet: 2022

Drawer: Zeppo  
Folder: Quarter 4

Analyst: REB  
Date: 11/7/22

Job #s <u>1122-024</u>	Describe Work Documented on This Page <u>M15/16 Column info in AQM</u>
---------------------------	---

C:\GC\2022\ZEPP0\QUARTER 4\ZEPP0P0683A\ZEPP0P0683A.S Front Inlet

Line	Vial	SampleName	Method	Inj Dilution
1	vial 10	zeppoP0683 #5	DUALFPD8	5

C:\GC\2022\ZEPP0\QUARTER 4\ZEPP0P0683A\ZEPP0P0683A.S Back Inlet

Line	Vial	SampleName	Method	Inj Dilution
1	vial 5	zeppoP0683 #5	DUALFPD8	5

REB 11/7/22

(3)

C:\GC\2022\ZEPP0\QUARTER 4\ZEPP0P0683B\ZEPP0P0683B.S Front Inlet

Line	Vial	SampleName	Method	Inj Dilution
1	vial 10	zeppoP0683 #5	DUALFPD8	5
2	vial 10	zeppoP0683 #4	DUALFPD8	5
3	vial 10	zeppoP0683 #3	DUALFPD8	5
4	vial 10	zeppoP0683 #2	DUALFPD8	5
5	vial 6	pause	PAUSE_FPD8	1

C:\GC\2022\ZEPP0\QUARTER 4\ZEPP0P0683B\ZEPP0P0683B.S Back Inlet

Line	Vial	SampleName	Method	Inj Dilution
1	vial 5	zeppoP0683 #5	DUALFPD8	5
2	vial 4	zeppoP0683 #4	DUALFPD8	5
3	vial 3	zeppoP0683 #3	DUALFPD8	5
4	vial 2	zeppoP0683 #2	DUALFPD8	5
5	vial 5	pause	PAUSE_FPD8	1

Supplies, Ancillary Equipment  
Serial #s, Lot #s, Etc

① Use first 3

injections. REB 11/7/22

② ~~Do not use. REB~~

~~11/7/22~~ Use injections  
2nd 3. REB 11/7/22

③ Power went out  
again. Started new  
Sequence. REB 11/7/22

④ Do not use. REB 11/7/22

REB 11/7/22

Enthalpy Quality Assurance

Reviewer's Initials & Date:

MPB 11-7-22

ZEPP0  
page 684

**This Is The Last Page  
Of This Report.**



## Appendix C

**Location** ABC Coke-Tarrant, AL  
**Source** Cooling Tower  
**Project No.** 2022-3417

Parameter	THC - Outlet
<b>Make</b>	CAI
<b>Model</b>	700
<b>S/N</b>	1810019
<b>Operating Range</b>	100
<b>Cylinder ID</b>	
<b>Zero</b>	NA
<b>Low</b>	CC194315
<b>Mid</b>	CC194315
<b>High</b>	CC194315
<b>Cylinder Certified Values</b>	
<b>Zero</b>	NA
<b>Low</b>	50.52
<b>Mid</b>	50.52
<b>High</b>	50.52
<b>Cylinder Expiration Date</b>	
<b>Zero</b>	NA
<b>Low</b>	5/27/30
<b>Mid</b>	5/27/30
<b>High</b>	5/27/30

## Calibration Data

**Location:** ABC Coke-Tarrant, AL  
**Source:** Cooling Tower  
**Project No.:** 2022-3417  
**Date:** 11/1/22

Parameter	THC - Outlet
<b>Expected Average Concentration</b>	5.00
<b>Span Between</b>	
Low	7.50
High	12.5
<b>Desired Span</b>	20.00
<b>Low Range Gas</b>	
Low	5.00
High	7.00
<b>Mid Range Gas</b>	
Low	9.00
High	11.00
<b>High Range Gas</b>	
Low	16.00
High	18.00
<b>Actual Concentration (% or ppm)</b>	
Zero	0.00
Low	6.00
Mid	10.00
High	17.00
<b>Upscale Calibration Gas (C<sub>MA</sub>)</b>	Mid
<b>Instrument Response (% or ppm)</b>	
Zero	0.00
Low	5.90
Mid	10.00
High	17.00
<b>Performance (% of Span or Cal. Gas Conc.)</b>	
Zero	0.00
Low	1.69
Mid	0.00
High	0.00
<b>Performance Criteria</b>	
Zero	5.00
Low	5.00
Mid	5.00
High	5.00
<b>Status</b>	
Zero	PASS
Low	PASS
Mid	PASS
High	PASS

**Location:** ABC Coke-Tarrant, AL  
**Source:** Cooling Tower  
**Project No.:** 2022-3417  
**Date:** 11/2/22

Parameter	THC - Outlet
<b>Expected Average Concentration</b>	0.58
<b>Span Between</b>	
Low	0.86
High	1.4
<b>Desired Span</b>	20.00
<b>Low Range Gas</b>	
Low	5.00
High	7.00
<b>Mid Range Gas</b>	
Low	9.00
High	11.00
<b>High Range Gas</b>	
Low	16.00
High	18.00
<b>Actual Concentration (% or ppm)</b>	
Zero	0.00
Low	6.00
Mid	10.00
High	17.00
<b>Upscale Calibration Gas (C<sub>MA</sub>)</b>	Mid
<b>Instrument Response (% or ppm)</b>	
Zero	0.00
Low	6.00
Mid	10.00
High	17.00
<b>Performance (% of Span or Cal. Gas Conc.)</b>	
Zero	0.00
Low	0.00
Mid	0.00
High	0.00
<b>Status</b>	
Zero	PASS
Low	PASS
Mid	PASS
High	PASS

## Bias/Drift Determinations

**Location:** ABC Coke-Tarrant, AL  
**Source:** Cooling Tower  
**Project No.:** 2022-3417

Parameter			THC - Outlet
Run 1	Date	11/1/22	
Span Value			20.0
Initial Instrument Zero Cal Response			0.0
Initial Instrument Upscale Cal Response			10.0
Pretest System Zero Response			0.0
Posttest System Zero Response			0.0
Pretest System Upscale Response			10.0
Posttest System Upscale Response			10.0
Bias (%)			
Pretest Zero			NA
Posttest Zero			NA
Pretest Span			NA
Posttest Span			NA
Drift (%)			
Zero			0.0
Mid			0.0
Run 2	Date	11/2/22	
Span Value			20.0
Instrument Zero Cal Response			0.0
Instrument Upscale Cal Response			10.0
Pretest System Zero Response			0.0
Posttest System Zero Response			-0.3
Pretest System Upscale Response			10.0
Posttest System Upscale Response			9.8
Bias (%)			
Pretest Zero			NA
Posttest Zero			NA
Pretest Span			NA
Posttest Span			NA
Drift (%)			
Zero			-1.5
Mid			-1.0
Run 3	Date	11/2/22	
Span Value			20.0
Instrument Zero Cal Response			0.0
Instrument Upscale Cal Response			10.0
Pretest System Zero Response			0.0
Posttest System Zero Response			-0.1
Pretest System Upscale Response			10.0
Posttest System Upscale Response			9.9
Bias (%)			
Pretest Zero			NA
Posttest Zero			NA
Pretest Span			NA
Posttest Span			NA
Drift (%)			
Zero			-0.5
Mid			-0.5

**Location:** ABC Coke-Tarrant, AL  
**Source:** Cooling Tower  
**Project No.:** 2022-3417

Parameter	THC - Outlet
<b>Run 4      Date      11/2/22</b>	
Span Value	20.0
Instrument Zero Cal Response	0.0
Instrument Upscale Cal Response	10.0
Pretest System Zero Response	0.0
Posttest System Zero Response	-0.1
Pretest System Upscale Response	10.0
Posttest System Upscale Response	10.0
Bias (%)	
Pretest Zero	NA
Posttest Zero	NA
Pretest Span	NA
Posttest Span	NA
Drift (%)	
Zero	-0.5
Mid	0.0
<b>Run 5      Date      11/2/22</b>	
Span Value	20.0
Instrument Zero Cal Response	0.0
Instrument Upscale Cal Response	10.0
Pretest System Zero Response	0.0
Posttest System Zero Response	-0.1
Pretest System Upscale Response	10.0
Posttest System Upscale Response	10.0
Bias (%)	
Pretest Zero	NA
Posttest Zero	NA
Pretest Span	NA
Posttest Span	NA
Drift (%)	
Zero	-0.5
Mid	0.0
<b>Run 6      Date      11/2/22</b>	
Span Value	20.0
Instrument Zero Cal Response	0.0
Instrument Upscale Cal Response	10.0
Pretest System Zero Response	-0.1
Posttest System Zero Response	-0.2
Pretest System Upscale Response	10.0
Posttest System Upscale Response	10.0
Bias (%)	
Pretest Zero	NA
Posttest Zero	NA
Pretest Span	NA
Posttest Span	NA
Drift (%)	
Zero	-0.5
Mid	0.0

## Calibration Data

**Location:** ABC Coke-Tarrant, AL  
**Source:** Cooling Tower  
**Project No.:** 2022-3417

Parameter			THC - Outlet
Run 7	Date	11/2/22	
Span Value			20.0
Instrument Zero Cal Response			0.0
Instrument Upscale Cal Response			10.0
Pretest System Zero Response			0.0
Posttest System Zero Response			0.0
Pretest System Upscale Response			10.0
Posttest System Upscale Response			10.0
Bias (%)			
Pretest Zero			NA
Posttest Zero			NA
Pretest Span			NA
Posttest Span			NA
Drift (%)			
Zero			0.0
Mid			0.0

## CERTIFICATE OF ANALYSIS

### Grade of Product: EPA PROTOCOL STANDARD

Part Number:	E02NI99E15A0931	Reference Number:	122-402450106-1
Cylinder Number:	CC194315	Cylinder Volume:	144.0 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22022	Valve Outlet:	350
Gas Code:	PPN,BALN	Certification Date:	May 27, 2022

Expiration Date: May 27, 2030

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

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

ANALYTICAL RESULTS					
Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
PROPANE	50.00 PPM	50.52 PPM	G1	+/- 1.2% NIST Traceable	05/27/2022
NITROGEN	Balance				

CALIBRATION STANDARDS					
Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	00010622	ALM028310	49.8 PPM PROPANE/AIR	+/- 1.2%	Apr 24, 2024

ANALYTICAL EQUIPMENT		
Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet iS50 AUP2110292 C3H8	FTIR	May 25, 2022

Triad Data Available Upon Request



  
Approved for Release

Location: ABC Coke-Tarrant, AL  
Source: Cooling Tower  
Project No.: 2022-3417  
Date 11/1/22

Analyzer Make: CAI  
Analyzer Model: 700  
Analyzer SN: 1810019  
Envionics ID: 5332  
Component/Balance Gas: C3H8/N2  
Cylinder Gas ID (Dilution): ALM056914  
Cylinder Gas Concentration (Dilution), ppm: 498.3  
Cylinder Gas ID (Mid-Level): CC194315  
Cylinder Gas Concentration (Mid-Level), ppm: 50.52

Target Mass Flow Contollers	Target Dilution (%)	Target Flow Rate lpm	Target Concentration (ppm)	Actual Concentration (ppm)	Injection 1 Analyzer Concentration (ppm)	Injection 2 Analyzer Concentration (ppm)	Injection 3 Analyzer Concentration (ppm)	Average Analyzer Concentration (ppm)	Difference (ppm)	Average Error ( ± 2 %)
10L/5L	80.0	5.0	398.6	400.0	399.9	399.8	399.5	399.73	-0.27	-0.1%
10L/5L	50.0	5.0	249.2	250.0	250.6	250.5	250.5	250.53	0.53	0.2%
10L/1L	20.0	4.0	99.7	100.0	100.3	100.1	100.3	100.23	0.23	0.2%
10L/1L	10.0	4.0	49.8	50.0	49.3	49.3	49.4	49.33	-0.67	-1.3%

\*Not all AST Envionics Units have 2-10L Mass Flow Controlllers. For these units the 90% @ 7lpm and 80% @ 7lpm injections will not be conducted.

Average Analyzer Concentration (ppm)	Injection 1 Error ( ± 2 %)	Injection 2 Error ( ± 2 %)	Injection 3 Error ( ± 2 %)
399.73	0.0%	0.0%	-0.1%
250.53	0.0%	0.0%	0.0%
100.23	0.1%	-0.1%	0.1%
49.33	-0.1%	-0.1%	0.1%

**Mid-Level Supply Gas Calibration Direct to Analyzer**

Calibration Gas Concentration (ppm)	Injection 1 Analyzer Concentration (ppm)	Injection 2 Analyzer Concentration (ppm)	Injection 3 Analyzer Concentration (ppm)	Average Analyzer Concentration (ppm)	Difference (ppm)	Average Error ( ± 2 %)
50.52	50.8	50.6	50.5	50.63	0.11	0.2%

## Mass Flow Controller Calibration

<b>Dilution System Make:</b>	Envionics
<b>Dilution System Model:</b>	4040
<b>Dilution System S/N:</b>	5332
<b>Calibration Equipment Make:</b>	Alicat Scientific
<b>Calibration Equipment Model:</b>	M-10SLPD/5MM-D/5M, M-1SLPM-D/5M
<b>Calibration Equipment S/N:</b>	
<b>Flow Cell S/N:</b>	272120
<b>Flow Cell S/N:</b>	272121
<b>Calibration Gas:</b>	Nitrogen
<b>Barometric Pressure, mmHg:</b>	768.43
<b>Ambient Temperature, °F:</b>	74

Mass Flow Controller ID	#1			# 2			# 3		
<b>Size, ccm:</b>	10,000			5,000			1,000		
<b>Make:</b>	Hasting			Hasting			Hasting		
<b>Model:</b>	EFC-202-10L			EFC-202-5L			EFC-202-1L		
<b>S/N:</b>	6413700001			6413800002			6415700001		
	Set Flow cc/min	True Flow cc/min	Difference	Set Flow cc/min	True Flow cc/min	Difference	Set Flow cc/min	True Flow cc/min	Difference
5%	500	478	4.4%	250	246	1.6%	50	48	4.0%
10%	1,000	1,002	0.2%	500	511	2.2%	100	100	0.0%
20%	2,000	2,035	1.8%	1,000	1,038	3.8%	200	202	1.0%
30%	3,000	3,050	1.7%	1,500	1,555	3.7%	300	304	1.3%
40%	4,000	4,066	1.7%	2,000	2,066	3.3%	400	405	1.3%
50%	5,000	5,078	1.6%	2,500	2,572	2.9%	500	505	1.0%
60%	6,000	6,090	1.5%	3,000	3,077	2.6%	600	607	1.2%
70%	7,000	7,100	1.4%	3,500	3,580	2.3%	700	709	1.3%
80%	8,000	8,125	1.6%	4,000	4,085	2.1%	800	812	1.5%
90%	9,000	9,150	1.7%	4,500	4,595	2.1%	900	917	1.9%
100%	10,000	10,203	2.0%	5,000	5,114	2.3%	1,000	1,025	2.5%

Note: The mass flow controller's calibration values are used by the dilution system's operating software to improve accuracy. These calibrations are not necessarily indicative of the systems overall performance. Performance is verified by conducting a Method 205 prior to each field use.

Calibration Performed By Lalan Kirby

Date 1/7/22

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

Part Number:	E02NI99E15A0932	Reference Number:	122-401761931-1
Cylinder Number:	ALM-056914	Cylinder Volume:	144.4 CF
Laboratory:	124 - Durham (SAP) - NC	Cylinder Pressure:	2015 PSIG
PGVP Number:	B22020	Valve Outlet:	350
Gas Code:	PPN,BALN	Certification Date:	Mar 18, 2020

**Expiration Date: Mar 18, 2028**

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

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

ANALYTICAL RESULTS					
Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
PROPANE	500.0 PPM	498.3 PPM	G1	+/- 0.9% NIST Traceable	03/18/2020
NITROGEN	Balance				

CALIBRATION STANDARDS					
Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	12010925	ND46385	487 PPM PROPANE/AIR	+/- 0.6%	Apr 24, 2024

ANALYTICAL EQUIPMENT		
Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet 6700 AHR0801333 C3H8	FTIR	Feb 27, 2020

Triad Data Available Upon Request



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Approved for Release

## Appendix D



## Site Specific Test Plan

ABC Coke  
900 Huntsville Ave  
Birmingham, AL 35217

Source to be Tested: Cooling Tower  
Proposed Test Dates: November 1 - 2, 2022

Project No. AST-2022-3417

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Prepared By  
Alliance Source Testing, LLC  
516 Galloway Circle  
Alabaster, AL 35007

### Regulatory Information

FRS No. 110040890925  
Permit No. Jefferson County Department of Health (JCDH) Permit No. 4-07-0001-05

### Source Information

<i>Source Name</i>	<i>Source ID</i>	<i>Target Parameters</i>
Coke By-Product Recovery Plant Cooling Tower Inlet	005	THC, VOHAPS, H <sub>2</sub> S, COS, CS <sub>2</sub>

### Contact Information

<i>Test Location</i>	<i>Test Company</i>	<i>Analytical Laboratories</i>
ABC Coke 900 Huntsville Ave Birmingham, AL 35217	Alliance Technical Group, LLC 516 Galloway Circle Alabaster, AL 35007	Alliance Technical Group, LLC 18828 Hwy 65 Bakersfield, CA 93308 Tim Brennan tim.brennan@stacktest.com (661) 391-0112
Plant Contacts Abigail Dolby adolby@abccoke.com (205) 849-1318	Project Manager Grant Singley grant.singley@stacktest.com (334) 233-0014	Eurofins TestAmerica 5815 Middlebrook Pike Knoxville, TN 37921 Kevin Woodcock kevin.woodcock@testamericainc.com (865) 291-3000
John Stewart jstewart@abccoke.com	QA/QC Manager Kathleen Shonk katie.shonk@alliancetechnicalgroup.com (812) 452-4785	
	Test Plan/Report Coordinator Kala Bradford kala.bradford@stacktest.com (256) 665-7078	

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Appendix A TO-15 Analyte List

## 1.0 Introduction

Alliance Technical Group, LLC (Alliance) was retained by ABC Coke to conduct information collection request (ICR) testing at the Birmingham, Alabama facility. The facility operates under Jefferson County Department of Health (JCDH) Permit No. 4-07-0001-05. Testing will be conducted to determine the concentrations of total hydrocarbons (THC), volatile organic hazardous air pollutants (VOHAPS), hydrogen sulfide (H<sub>2</sub>S), carbonyl sulfide (COS), and carbon disulfide (CS<sub>2</sub>) at the inlet of the cooling tower associated with the coke by-product recovery plant.

This site-specific test plan (SSTP) has been prepared to address the notification and testing requirements of the ICR.

### 1.1 Facility Descriptions & Emission Unit and Control Unit Descriptions

ABC Coke operates in Birmingham, Alabama. The coke by-product recovery plant is designed to separate and recover coal tar derivatives (by-products) evolved from coal during the coking process of a coke oven battery. The cooling tower is part of this process and used to cool the coke oven gases.

### 1.2 Project Team

Personnel planned to be involved in this project are identified in the following table.

**Table 1-1: Project Team**

<b>Facility Personnel</b>	Abigail Dolby John Stewart
<b>Regulatory Agency</b>	JCDH & EPA
<b>Alliance Personnel</b>	Grant Singley other field personnel assigned at time of testing event

### 1.3 Safety Requirements

Testing personnel will undergo site-specific safety training for all applicable areas upon arrival at the site. Alliance personnel will have current OSHA or MSHA safety training and be equipped with hard hats, safety glasses with side shields, steel-toed safety shoes, hearing protection, and fall protection (including shock corded lanyards and full-body harnesses), as required. Alliance personnel will conduct themselves in a manner consistent with Client and Alliance's safety policies.

A Job Safety Analysis (JSA) will be completed daily by the Alliance Field Team Leader.

## **2.0 Summary of Test Program**

To satisfy the requirements of the ICR, the facility will conduct a performance test program to determine the compliance status of the cooling tower.

### **2.1 General Description**

All testing will be performed in accordance with specifications stipulated in TCEQ Appendix P, TO-15, and TO-15 modified. Table 2-1 presents an outline and tentative schedule for the emissions testing program. The following is a summary of the test objectives.

- Testing will be performed to comply with the ICR.
- Testing will be conducted at the inlet of the cooling tower.
- Testing will be conducted at the maximum normal operation.
- Each of the test runs conducted on the cooling tower inlet will be 60 minutes in duration.
- Testing for THC will consist of seven (7) test runs performed using the TCEQ Appendix P. Three (3) of these test runs will be performed using TCEQ Appendix P with the TO-15 finish for VOHAP and 3 runs will have an EPA Method 15 finish for H<sub>2</sub>S, COS, and CS<sub>2</sub>.
- VOHAPS will consist of the list included in Table 1-1 of EPA Method TO-15A. The table is included in Appendix A.
- Emission test results will be reported as ppmvd as required by the ICR.

### **2.2 Process/Control System Parameters to be Monitored and Recorded**

Plant personnel will collect operational and parametric data at least once every 15 minutes during the testing. The following list identifies the measurements, observations and records that will be collected during the testing program:

- Coke Pushed, ton/push
- Cooling Tower Inlet Flow, GPM

### **2.3 Proposed Test Schedule**

Table 2-1 presents an outline and tentative schedule for the emissions testing program.

**Table 2-1: Program Outline and Tentative Test Schedule**

Testing Location	Parameter	Test Method	No. of Runs	Run Duration	Est. Onsite Time
DAY 1 – October 31, 2022					
Equipment Setup & Pretest QA/QC Checks					5 hr
DAYS 2-3 – November 1 - 2, 2022					
Cooling Tower Inlet	THC	TCEQ Appendix P	1	60 minutes	10 hr
	THC, VOHAPs	TCEQ Appendix P with TO-15	3		
	THC, H <sub>2</sub> S, COS, CS <sub>2</sub>	TCEQ Appendix P with 15 (mod)	3		
DAY 4 – November 3, 2022					
Contingency Day (if needed)					

## 2.4 Test Report

The final test report must be submitted within 60 days of the completion of the performance test and will include the following information.

- *Introduction* – Brief discussion of project scope of work and activities.
- *Results and Discussion* – A summary of test results and process/control system operational data with comparison to regulatory requirements or vendor guarantees along with a description of process conditions and/or testing deviations that may have affected the testing results.
- *Methodology* – A description of the sampling and analytical methodologies.
- *Sample Calculations* – Example calculations for each target parameter.
- *Field Data* – Copies of actual handwritten or electronic field data sheets.
- *Laboratory Data* – Copies of laboratory report(s) and chain of custody(s).
- *Quality Control Data* – Copies of all instrument calibration data and/or calibration gas certificates.
- *Process Operating/Control System Data* – Process operating and control system data (as provided by ABC Coke) to support the test results.

### 3.0 Testing Methodology

This section provides a description of the sampling and analytical procedures for each test method that will be employed during the test program. All equipment, procedures and quality assurance measures necessary for the completion of the test program meet or exceed the specifications of each relevant test method. The emission testing program will be conducted in accordance with the test methods listed in Table 3-1.

**Table 3-1: Source Testing Methodology**

Parameter	U.S. EPA Reference Test Methods	Notes/Remarks
THC	TCEQ Appendix P	Instrumental Analysis
VOHAPs	TCEQ Appendix P & TO-15	Instrumental Analysis & Canister Sampling
H <sub>2</sub> S, COS, CS <sub>2</sub>	TCEQ Appendix P & 15 (mod)	Instrumental Analysis & Canister Sampling

The applicable inlet sampling location dimensions will be measured on site with a verification measurement provided by the Field Team Leader.

#### 3.1 Appendix P to the TCEQ Sampling Procedures Manual – Total Hydrocarbons

The THC concentrations will be determined in accordance with Appendix P to the TCEQ Sampling Procedures Manual (appended). The gas will be withdrawn at a constant sampling rate through a Teflon sample line and analyzed in real time via flame ionization detector. A total of seven test runs will be performed. Three of these test runs will include canisters collected and analyzed as discussed in **Section 3.2**. Another three of the test runs will include canisters collected and analyzed as discussed in **Section 3.3**. The remaining test run will include instrumental THC analysis only.

#### 3.2 Appendix P to the TCEQ Sampling Procedures Manual and EPA Method TO-15– VOHAP

The VOHAP concentrations will be determined in accordance with Appendix P to the TCEQ Sampling Procedures Manual and EPA Method TO-15. The stripped air will be sampled at a constant, orifice controlled, rate through a Teflon sample line and collected in a 6L summa canister. Canisters will be shipped to the identified laboratory for analysis. The samples will be analyzed by GC analysis.

#### 3.3 Appendix P to the TCEQ Sampling Procedures Manual and EPA Method 15 (mod)– H<sub>2</sub>S, COS, CS<sub>2</sub>

The hydrogen sulfide, carbonyl sulfide and carbon disulfide (reduced sulfur) testing will be conducted in accordance with Appendix P to the TCEQ Sampling Procedures Manual and EPA Method 15 modified. The sampling system will consist of a heated Teflon sample line, gas conditioning system, and unheated Teflon sample line, to a canister. The gas conditioning system will consist of three (3) Teflon impingers. The first two impingers will contain 100 mL of citrate buffer (for SO<sub>2</sub> removal) and the last will be empty. Canisters will be shipped to the identified laboratory for analysis. Samples will be analyzed with a gas chromatograph (GC) equipped with a flame photometric detector (FPD).

#### 4.0 Quality Assurance Program

Alliance follows the procedures outlined in the Quality Assurance/Quality Control Management Plan to ensure the continuous production of useful and valid data throughout the course of this test program. The QC checks and procedures described in this section represent an integral part of the overall sampling and analytical scheme. Adherence to prescribed procedures is quite often the most applicable QC check.

##### 4.1 Equipment

Field test equipment is assigned a unique, permanent identification number. Prior to mobilizing for the test program, equipment is inspected before being packed to detect equipment problems prior to arriving on site. This minimizes lost time on the job site due to equipment failure. Occasional equipment failure in the field is unavoidable despite the most rigorous inspection and maintenance procedures. Therefore, replacements for critical equipment or components are brought to the job site. Equipment returning from the field is inspected before it is returned to storage. During the course of these inspections, items are cleaned, repaired, reconditioned and recalibrated where necessary.

Calibrations are conducted in a manner, and at a frequency, which meets or exceeds U.S. EPA specifications. The calibration procedures outlined in the U.S. EPA Methods, and those recommended within the Quality Assurance Handbook for Air Pollution Measurement Systems: Volume III (EPA-600/R-94/038c, September 1994) are utilized. When these methods are inapplicable, methods such as those prescribed by the American Society for Testing and Materials (ASTM) or other nationally recognized agency may be used. Data obtained during calibrations is checked for completeness and accuracy. Copies of calibration forms are included in the report.

- Temperature Measuring Devices. All thermocouple sensors mounted in Dry Gas Meter Consoles are calibrated semi-annually with a NIST-traceable thermocouple calibrator (temperature simulator) and verified during field use using a second NIST-traceable meter. NIST-traceable thermocouple calibrators are calibrated annually by an outside laboratory.
- Barometer. The barometric pressure is obtained from a nationally recognized agency or a calibrated barometer. Calibrated barometers are checked prior to each field trip against a mercury barometer. The barometer is acceptable if the values agree within  $\pm 2$  percent absolute. Barometers not meeting this requirement are adjusted or taken out of service.
- Balances and Weights. Balances are calibrated annually by an outside laboratory. A functional check is conducted on the balance each day it is used in the field using a calibration weight. Weights are re-certified every two (2) years by an outside laboratory or internally. If conducted internally, they are weighed on a NIST traceable balance. If the weight does not meet the expected criteria, they are replaced.
- Other Equipment. Other equipment such as probes, umbilical lines, cold boxes, etc. are routinely maintained and inspected to ensure that they are in good working order. They are repaired or replaced as needed.

##### 4.2 Field Sampling

Field sampling will be done in accordance with the Standard Operating Procedures (SOP) for the applicable test method(s). General QC measures for the test program include:

- Cleaned glassware and sample train components will be sealed until assembly.
- Sample trains will be leak checked before and after each test run.
- Appropriate probe, filter and impinger temperatures will be maintained.
- All raw data will be maintained in organized manner.
- All raw data will be reviewed on a daily basis for completeness and acceptability.

#### **4.3 Analytical Laboratory**

Analytical laboratory selection for sample analyses is based on the capabilities, certifications and accreditations that the laboratory possesses. An approved analytical laboratory subcontractor list is maintained with a copy of the certificate and analyte list as evidence of compliance. Alliance assumes responsibility to the client for the subcontractor's work. Alliance maintains a verifiable copy of the results with chain of custody documentation.

## Appendix A

# **Method TO-15A**

**Determination of Volatile Organic Compounds (VOCs) in Air  
Collected in Specially Prepared Canisters and Analyzed by  
Gas Chromatography–Mass Spectrometry (GC-MS)**

**U.S. Environmental Protection Agency**

**Office of Research and Development  
National Exposure Research Laboratory**

**Office of Air Quality Planning and Standards  
Air Quality Assessment Division**

# 1 Scope

**Table 1-1: Volatile Organic Compounds Quantifiable with EPA Method TO-15A**

VOC (Alternative Name) <sup>a</sup>	Empirical Formula	CAS <sup>b</sup> Number	Boiling Point (°C)	Vapor Pressure at 20 °C (mm Hg) <sup>c</sup>	Molecular Weight (g/mol)	Typical Ions Monitored
Propene (propylene)	C <sub>3</sub> H <sub>6</sub>	115-07-1	-48.0	<b>8686</b>	42.1	41/39
Dichlorodifluoromethane (Freon 12)	CCl <sub>2</sub> F <sub>2</sub>	75-71-8	-29.8	4260	120.9	85/87
Chloromethane (methyl chloride)	CH <sub>3</sub> Cl	74-87-3	-23.7	3672	50.5	50/52
Chloroethene (vinyl chloride)	C <sub>2</sub> H <sub>3</sub> Cl	75-01-4	-13.8	2505	62.5	62/64
1,3-Butadiene (butadiene)	C <sub>4</sub> H <sub>6</sub>	106-99-0	-4.0	1838	54.1	39/54
1,2-Dichlorotetrafluoroethane (Freon 114)	C <sub>2</sub> Cl <sub>2</sub> F <sub>4</sub>	76-14-2	4.1	1444	170.9	85/135
Bromomethane (methyl bromide)	CH <sub>3</sub> Br	74-83-9	3.5	1420	94.9	94/96
Ethylene oxide	C <sub>2</sub> H <sub>4</sub> O	75-21-8	10.6	1095	44.1	29/44/15
Chloroethane (ethyl chloride)	C <sub>2</sub> H <sub>5</sub> Cl	75-00-3	12.5	1000	64.5	64/66
Trichlorofluoromethane (Freon 11)	CFCl <sub>3</sub>	75-69-4	23.7	690	137.4	101/103
1,1-Dichloroethene (vinylidene chloride)	C <sub>2</sub> H <sub>2</sub> Cl <sub>2</sub>	75-35-4	31.7	500	96.9	61/96

VOC (Alternative Name) <sup>a</sup>	Empirical Formula	CAS <sup>b</sup> Number	Boiling Point (°C)	Vapor Pressure at 20 °C (mm Hg) <sup>c</sup>	Molecular Weight (g/mol)	Typical Ions Monitored
Dichloromethane (methylene chloride)	CH <sub>2</sub> Cl <sub>2</sub>	75-09-2	39.8	350	84.9	49/84
Carbon disulfide (methanedithione)	CS <sub>2</sub>	75-15-0	46.0	297	76.1	76/44
1,1,2-Trichlorotrifluoroethane (Freon 113)	C <sub>2</sub> Cl <sub>3</sub> F <sub>3</sub>	76-13-1	47.7	285	187.4	101/151
2-Propenal (acrolein)	C <sub>3</sub> H <sub>4</sub> O	107-02-8	52.3	217	56.1	56/55
2-Methoxy-2-methylpropane (methyl <i>tert</i> -butyl ether, MTBE)	C <sub>5</sub> H <sub>12</sub> O	1634-04-4	55.2	203	88.2	73/41
2-Chloro-1,3-butadiene (chloroprene)	C <sub>4</sub> H <sub>5</sub> Cl	126-99-8	59.4	188	88.5	88/53
1,1-Dichloroethane (ethylidene chloride)	C <sub>2</sub> H <sub>4</sub> Cl <sub>2</sub>	75-34-3	57.4	182	99.0	63/65
<i>cis</i> -1,2-Dichloroethene ( <i>cis</i> -1,2-dichloroethylene)	C <sub>2</sub> H <sub>2</sub> Cl <sub>2</sub>	156-59-2	55.0	180–265	96.9	61/96
<i>trans</i> -1,2-Dichloroethene ( <i>trans</i> -1,2-dichloroethylene)	C <sub>2</sub> H <sub>2</sub> Cl <sub>2</sub>	156-60-5	48.7	180–265	96.9	61/96
2-Propanone (acetone)	C <sub>3</sub> H <sub>6</sub> O	67-64-1	56.1	180	58.1	43/58
Trichloromethane (chloroform)	CHCl <sub>3</sub>	67-66-3	61.2	160	119.4	83/85
Tetrahydrofuran (oxolane)	C <sub>4</sub> H <sub>8</sub> O	109-99-9	66.0	132	72.1	42/41
Hexane	C <sub>6</sub> H <sub>14</sub>	110-54-3	68.7	120	86.2	57/43
Isopropyl ether (diisopropyl ether)	C <sub>6</sub> H <sub>14</sub> O	108-20-3	69.0	119	102.2	45/43
1,1,1-Trichloroethane (methyl chloroform)	C <sub>2</sub> H <sub>3</sub> Cl <sub>3</sub>	71-55-6	74.0	100	133.4	97/99
2-Ethoxy-2-methylpropane (ethyl <i>tert</i> -butyl ether, ETBE)	C <sub>6</sub> H <sub>14</sub> O	637-92-3	72.6	96	102.2	59/87
Methanol (methyl alcohol)	CH <sub>4</sub> O	67-56-1	64.7	92	32.0	31/29
Carbon tetrachloride (tetrachloromethane)	CCl <sub>4</sub>	56-23-5	76.5	91	153.8	117/119
Ethenyl acetate (vinyl acetate)	C <sub>4</sub> H <sub>6</sub> O <sub>2</sub>	108-05-4	72.7	83	86.1	43/86
2-Propenenitrile (acrylonitrile)	C <sub>3</sub> H <sub>3</sub> N	107-13-1	77.3	83	53.1	53/52
2-Butanone (methyl ethyl ketone, MEK)	C <sub>4</sub> H <sub>8</sub> O	78-93-3	79.6	78	72.1	43/72
Cyclohexane	C <sub>6</sub> H <sub>12</sub>	110-82-7	80.7	78	84.2	56/84
Benzene	C <sub>6</sub> H <sub>6</sub>	71-43-2	80.1	76	78.1	78/77
Acetonitrile (cyanomethane)	C <sub>2</sub> H <sub>3</sub> N	75-05-8	81.6	73	41.1	41/40
Ethyl acetate	C <sub>4</sub> H <sub>8</sub> O <sub>2</sub>	141-78-6	77.1	73	88.1	43/61
2-Methoxy-2-methylbutane ( <i>tert</i> -amyl methyl ether)	C <sub>6</sub> H <sub>14</sub> O	994-05-8	86.3	68	102.2	73/43
1,2-Dichloroethane (ethylene dichloride)	C <sub>2</sub> H <sub>4</sub> Cl <sub>2</sub>	107-06-2	83.5	64	99.0	62/64
1,1,2-Trichloroethene (trichloroethylene)	C <sub>2</sub> HCl <sub>3</sub>	79-01-6	87.2	58	131.4	130/132
Bromodichloromethane	CHBrCl <sub>2</sub>	75-27-4	90.0	50	163.8	83/85
Ethanol (ethyl alcohol)	C <sub>2</sub> H <sub>6</sub> O	64-17-5	78.3	44	46.1	31/45
1,2-Dichloropropane (propylene dichloride)	C <sub>3</sub> H <sub>6</sub> Cl <sub>2</sub>	78-87-5	96.0	42	113.0	63/62
Heptane	C <sub>7</sub> H <sub>16</sub>	142-82-5	98.4	35	100.2	43/41
2-Propanol (isopropanol)	C <sub>3</sub> H <sub>8</sub> O	67-63-0	82.3	33	60.1	45/43
2-Methyl-2-propanol ( <i>tert</i> -butyl alcohol, TBA)	C <sub>4</sub> H <sub>10</sub> O	75-65-0	82.3	31	74.1	59/31
1,4-Dioxane ( <i>p</i> -dioxane)	C <sub>4</sub> H <sub>8</sub> O <sub>2</sub>	123-91-1	101.2	29	88.1	88/58
Methyl methacrylate (methyl 2-methylprop-2-enoate)	C <sub>5</sub> H <sub>8</sub> O <sub>2</sub>	80-62-6	100.5	29	100.1	41/69
<i>trans</i> -1,3-Dichloropropene ( <i>trans</i> -1,3-dichloropropylene)	C <sub>3</sub> H <sub>4</sub> Cl <sub>2</sub>	10061-02-6	108.0	28	111.0	75/39
<i>cis</i> -1,3-Dichloropropene ( <i>cis</i> -1,3-dichloropropylene)	C <sub>3</sub> H <sub>4</sub> Cl <sub>2</sub>	10061-01-5	104.3	26	111.0	75/39
Toluene (methylbenzene)	C <sub>7</sub> H <sub>8</sub>	108-88-3	110.6	21	92.1	91/92
1,1,2-Trichloroethane	C <sub>2</sub> H <sub>3</sub> Cl <sub>3</sub>	79-00-5	114.0	19	133.4	97/83

VOC (Alternative Name) <sup>a</sup>	Empirical Formula	CAS <sup>b</sup> Number	Boiling Point (°C)	Vapor Pressure at 20 °C (mm Hg) <sup>c</sup>	Molecular Weight (g/mol)	Typical Ions Monitored
4-Methyl-2-pentanone (methyl isobutyl ketone, MIBK)	C <sub>6</sub> H <sub>12</sub> O	108-10-1	116.5	16	100.2	43/58
1,1,1,2-Tetrachloroethane	C <sub>2</sub> H <sub>2</sub> Cl <sub>4</sub>	630-20-6	130.5	<b>14</b>	167.8	133/131
Tetrachloroethene (perchloroethylene)	C <sub>2</sub> Cl <sub>4</sub>	127-18-4	121.3	14	165.8	166/164
1,2-Dibromoethane (ethylene dibromide)	C <sub>2</sub> H <sub>4</sub> Br <sub>2</sub>	106-93-4	131.0	11	187.9	107/109
Chlorobenzene	C <sub>6</sub> H <sub>5</sub> Cl	108-90-7	131.6	9	112.6	112/77
<i>m</i> -Xylene (1,3-xylene)	C <sub>8</sub> H <sub>10</sub>	108-38-3	139.1	9	106.2	91/106
<i>p</i> -Xylene (1,4-xylene)	C <sub>8</sub> H <sub>10</sub>	106-42-3	138.3	9	106.2	91/106
Isopropylbenzene (cumene)	C <sub>9</sub> H <sub>12</sub>	98-82-8	152.4	8	120.2	105/120
Ethylbenzene	C <sub>8</sub> H <sub>10</sub>	100-41-4	136.2	7	106.2	91/106
<i>o</i> -Xylene (1,2-xylene)	C <sub>8</sub> H <sub>10</sub>	95-47-6	144.5	7	106.2	91/106
Dibromochloromethane (chlorodibromomethane)	CHBr <sub>2</sub> Cl	124-48-1	122.0	<b>6</b>	208.3	129/127
Styrene (vinylbenzene)	C <sub>8</sub> H <sub>8</sub>	100-42-5	145.3	5	104.2	104/103
1,1,2,2-Tetrachloroethane (tetrachloroethane)	C <sub>2</sub> H <sub>2</sub> Cl <sub>4</sub>	79-34-5	146.0	5	167.9	83/85
Tribromomethane (bromoform)	CHBr <sub>3</sub>	75-25-2	149.5	5	252.8	173/171
2-Chlorotoluene (1-chloro-2-methylbenzene)	C <sub>7</sub> H <sub>7</sub> Cl	95-49-8	159.2	3	126.6	91/126
4-Ethyltoluene (1-ethyl-4-methylbenzene)	C <sub>9</sub> H <sub>12</sub>	622-96-8	162.0	<b>3<sup>d</sup></b>	120.2	105/120
<i>n</i> -Propylbenzene	C <sub>9</sub> H <sub>12</sub>	103-65-1	159.2	<b>3</b>	120.2	91/120
<i>sec</i> -Butylbenzene (2-phenylbutane)	C <sub>10</sub> H <sub>14</sub>	135-98-8	173.5	<b>2</b>	134.2	105/134
<i>tert</i> -Butylbenzene	C <sub>10</sub> H <sub>14</sub>	98-06-6	169.1	<b>2</b>	134.2	119/91
<i>m</i> -Dichlorobenzene (1,3-dichlorobenzene)	C <sub>6</sub> H <sub>4</sub> Cl <sub>2</sub>	541-73-1	173.0	<b>2</b>	147.0	146/148
Hexachlorobutadiene (hexachloro-1,3-butadiene)	C <sub>4</sub> Cl <sub>6</sub>	87-68-3	215.0	2	260.8	225/227
2-Hexanone (methyl butyl ketone, MBK)	C <sub>6</sub> H <sub>12</sub> O	591-78-6	127.2	2	100.2	43/58
2-Isopropyltoluene ( <i>o</i> -cymene)	C <sub>10</sub> H <sub>14</sub>	527-84-4	178.0	<b>2</b>	134.2	119/134
1,2,4-Trimethylbenzene (pseudocumene)	C <sub>9</sub> H <sub>12</sub>	95-63-6	169.0	<b>2</b>	120.2	105/120
1,3,5-Trimethylbenzene (mesitylene)	C <sub>9</sub> H <sub>12</sub>	108-67-8	165.0	2	120.2	105/120
<i>n</i> -Butylbenzene	C <sub>10</sub> H <sub>14</sub>	104-51-8	183.3	<b>1</b>	134.2	91/92
Chloromethylbenzene (benzyl chloride)	C <sub>7</sub> H <sub>7</sub> Cl	100-44-7	179.0	1	126.6	91/92
<i>o</i> -Dichlorobenzene (1,2-dichlorobenzene)	C <sub>6</sub> H <sub>4</sub> Cl <sub>2</sub>	95-50-1	180.1	1	147.0	146/148
<i>p</i> -Dichlorobenzene (1,4-dichlorobenzene)	C <sub>6</sub> H <sub>4</sub> Cl <sub>2</sub>	106-46-7	174.0	1	147.0	146/148
1,2,4-Trichlorobenzene	C <sub>6</sub> H <sub>3</sub> Cl <sub>3</sub>	120-82-1	213.0	1	181.4	180/182
Naphthalene (naphthene)	C <sub>10</sub> H <sub>8</sub>	91-20-3	218.0	<b>0.1</b>	128.2	128/127

<sup>a</sup>Compound information is derived from PubChem (<https://pubchem.ncbi.nlm.nih.gov/>), an open chemistry database from the National Institutes of Health, U.S. National Library of Medicine, National Center for Biotechnology Information.

<sup>b</sup>Chemical Abstracts Service.

<sup>c</sup>Vapor pressures shown in bold italics are values at 25 °C.

<sup>d</sup>ThermoFisher Scientific, 4-Ethyltoluene Safety Data Sheet, Revised January 26, 2018.