



# erthwrks

AIR EMISSIONS TESTING FOR INDUSTRY

## *Relative Accuracy Test Audit*

*for*

### **Marathon Petroleum Company LP**

*at the*

### **Detroit Refinery in Detroit, Michigan**

*on the*

### **East Plant Fuel Gas**

*subject to*

Permit No. MI-ROP-A9831-2012c

&

40 CFR Part 60, Appendix F



## **Marathon Petroleum Company LP**

Test Date: October 5, 2022  
Erthwrks Project No. 9049.1.D1



## Endorsement Page

This report was developed in accordance with the requirements designated in the applicable regulatory permit(s) and or regulatory rules. To the best of my knowledge the techniques, instrumentation, and calculations presented in this report will serve to accurately and efficiently detail the results of the test campaign requirements.

### Erthwrks, Inc.

Name: Jason Dunn

Title: QC Specialist


Signature: 

This report has been reviewed for accuracy and completeness. The actions presented in this report are, to the best of my knowledge, an accurate representation of the results and findings of the test campaign. Erthwrks, Inc. operates in conformance with the requirements on ASTM D7036-04 Standard Practice for Competence of Air Emission Testing Bodies and is accredited as such by the Stack Testing Accreditation Council (STAC) and the American Association for Laboratory Accreditation (A2LA).

### Erthwrks, Inc.

Name: Trey Chapman

Title: CEO

Signature: 



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- A. Detailed Results of Emissions Test
- B. Calibration, QAQC, and Raw Data
- C. Certificates
- D. Example Calculations
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## 1.0 INTRODUCTION

### 1.1 Identification, location and dates of tests

Erthwrks, Inc. was contracted to conduct a relative accuracy test audit (RATA) on the hydrogen sulfide (H<sub>2</sub>S) continuous emissions monitoring system (CEMS) associated with the East Plant Fuel Gas in operation at the Detroit Refinery, located in Detroit, Michigan. The RATA test was conducted on October 5, 2022.

### 1.2 Purpose of Testing

This RATA was conducted to demonstrate the accuracy and reliability of the CEMS monitor installed for the East Plant Fuel Gas used to demonstrate the continuous emission compliance of the unit. All testing and audit procedures were conducted in accordance with the requirements set forth in 40 CFR, Part 60, Appendix B and F, which defines the CEMS performance specifications and testing procedures.

### 1.3 Contact Information

#### **Marathon Petroleum Company LP**

Emily Mattson  
Environmental Professional  
Michigan Refining Division  
O: (313)236-1501  
EGMattson@marathonpetroleum.com

#### **Erthwrks, Inc.**

Jarrod Hoskinson  
Senior Project Manager  
P.O. Box 150549  
Austin, TX 78715  
512-994-7487 office  
jhoskinson@erthwrks.com

#### **Erthwrks, Inc.**

Jason Dunn  
QC Specialist  
P.O. Box 150549  
Austin, TX 78715  
614-565-9177 office  
jdunn@erthwrks.com

#### **Facility Location:**

1300 South Fort Street  
Detroit, MI 48217



## 2.0 SUMMARY OF RESULTS

**Table 2.1: GBR East Plant Fuel Gas RATA Results**

| Pollutant Measured | Performance Specification | Relative Accuracy            | Applicable Limit | Pass/Fail |
|--------------------|---------------------------|------------------------------|------------------|-----------|
| H <sub>2</sub> S   | Performance Spec. 7       | 0.04% <i>RA<sub>AS</sub></i> | <10%             | Pass      |

## 3.0 SOURCE DESCRIPTION

### 3.1 Description of the process

The fuel system is equipped with an H<sub>2</sub>S monitoring system as required by the refinery Title V Permit and associated State and Federal regulations.

**Table 3.1 GBR East Plant Fuel Gas CEMS Description**

| Pollutant Measured | Analyzer Manufacturer | Analyzer Model | Detection Principle | Serial Number       |
|--------------------|-----------------------|----------------|---------------------|---------------------|
| H <sub>2</sub> S   | Siemens               | Maxum II       | Gas Chromatography  | HOU 3008065259-0010 |

### 3.2 Applicable permit and source designation

The Detroit Refinery operates the East Plant Fuel Gas monitoring system under the Permit No. MI-ROP-A9831-2012c, 40 CFR Part 60 Subpart Ja, and the CEMS quality assurance procedures delineated in the 40 CFR Part 60, Appendix F. Under these regulations, the Detroit Refinery is required to conduct an annual RATA to demonstrate the relative accuracy of the CEMS associated with this unit.

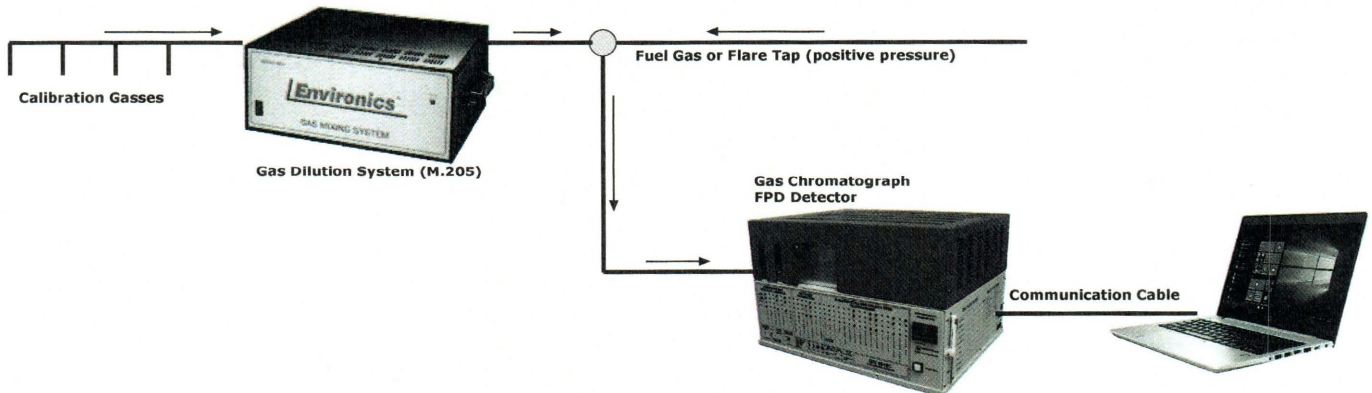
## 4.0 SAMPLING AND ANALYTICAL PROCEDURES

Erthwrks completed this CEMS audit project utilizing all applicable test methods specified in the USEPA Title 40 CFR Part 60, Appendix A and B. Specifically, this emission testing program entailed the execution of the 40 CFR Part 60, Appendix B, Performance Specifications 7. These documents define the specifications and test procedures for H<sub>2</sub>S CEMS. The RATA required by these regulations was conducted utilizing a mobile emission testing laboratory.

### 4.1 Gaseous Sampling – H<sub>2</sub>S

The analysis of the sample stream was conducted following all procedures as specified in USEPA Method 15. For this, Erthwrks utilized an SRI Model 8610 Gas Chromatograph (GC) equipped with an FPD detector. This instrumentation is able to separate and analyze separately each individual component. Three calibration gas concentrations, using a calibration gas dilution system, were sent to the GC and analyzed in triplicate. These triplicate values were recorded and averaged. A graphical plot of concentration versus the calibration area values was created and used to calculate the concentration of the sample. All data from this analysis and all raw gas chromatograph shots are found in Attachment B. Post-test analysis of the mid-calibration standard was performed and found to be within 5% of the original curve, therefore no additional quality assurance measurements were necessary. EPA Method 205 was utilized to dilute the H<sub>2</sub>S calibration gas.

The figure below summarizes the Erthwrks GC Sampling System:



### 4.2 RATA Procedures

The RATA test is a direct comparison of the CEMS monitoring data with that data collected from an independently operated EPA reference method tests for each pollutant, following all the quality assurance and quality control procedures as required in the particular method. As required by the RATA test procedures, a minimum of nine (9) EPA reference



method tests were conducted for each pollutant monitored by the CEMS system. Each of these test runs were conducted for minimum duration of thirty (30) minutes. The results of these reference method tests were compared to CEMS measurement data from the facility data acquisition and handling system (DAHS) from the same time periods to determine the relative accuracy of the CEMS. The results of the RATA test are considered acceptable if the calculated relative accuracy when compared directly to the reference method does not exceed 20.0%. Alternatively, for affected units where the average of the reference method measurements is less than 50 percent of the emission standard, as in this case, the relative accuracy should not exceed 10% with respect to the applicable standard.

#### **4.3 Discussion of sampling procedure or operational variances**

Erthwrks, Inc. conducted the emission testing with no sampling or procedural variances. The East Plant Fuel Gas operated with no operational variances.

**Attachment A**  
**Detailed Results of Emission Test**



## Erthwrks Relative Accuracy Test Audit--H<sub>2</sub>S RATA Performance Specification 7

East Plant Fuel Gas

H<sub>2</sub>S RATA--Performance Specification 7

| Test Run                      | Run 1       | Run 2       | Run 3       | Run 4       | Run 5       | Run 6       | Run 7       | Run 8       | Run 9       | Run 10      |
|-------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Date                          | 10/5/2022   | 10/5/2022   | 10/5/2022   | 10/5/2022   | 10/5/2022   | 10/5/2022   | 10/5/2022   | 10/5/2022   | 10/5/2022   | 10/5/2022   |
| Start Time                    | 13:27       | 13:57       | 14:27       | 14:57       | 15:27       | 15:57       | 16:27       | 16:57       | 17:27       | 17:58       |
| End Time                      | 13:57       | 14:27       | 14:57       | 15:27       | 15:57       | 16:27       | 16:57       | 17:27       | 17:57       | 18:27       |
| RM H <sub>2</sub> S (ppmvw)   | <b>0.21</b> | <b>0.21</b> | <b>0.21</b> | <b>0.21</b> | <b>0.21</b> | <b>0.21</b> | <b>0.21</b> | <b>0.21</b> | <b>0.21</b> | <b>0.21</b> |
| CEMS H <sub>2</sub> S (ppmvw) | <b>0.26</b> | <b>0.26</b> | <b>0.27</b> | <b>0.27</b> | <b>0.30</b> | <b>0.25</b> | <b>0.27</b> | <b>0.25</b> | <b>0.26</b> | <b>0.25</b> |
| Abs. Diff.                    | -0.05       | -0.05       | -0.06       | -0.06       | -0.09       | -0.04       | -0.06       | -0.04       | -0.05       | -0.25       |
| Accept or Reject              | Accept      | Accept      | Accept      | Accept      | Accept      | Accept      | Accept      | Accept      | Accept      | Reject      |

Applicable Standard (ppmv)

162

Mean of the Difference (d<sub>avg</sub>)

-0.06

Standard Deviation (S<sub>d</sub>)

0.02

Confidence Coefficient (CC)

0.01

**Relative Accuracy via AS, RA<sub>AS</sub>**

**0.04%**

← Pass

\*RA<sub>RM</sub> (Reference Method) must be less than 20%, or

†RA<sub>AS</sub> (Applicable Standard) must be less than 10%

**Attachment B**  
**Calibration, QAQC, and Raw Data**



# Erthwrks GC Calibration and Analysis Data

**Date:** 10/5/2022  
**Client:** Marathon Petroleum  
**Facility:** Detroit Refinery  
**Location:** Complex 2  
**Unit ID:** East Plant Fuel Gas  
**Erthwrks Tech:** JH, TC, AS

## Initial Calibration

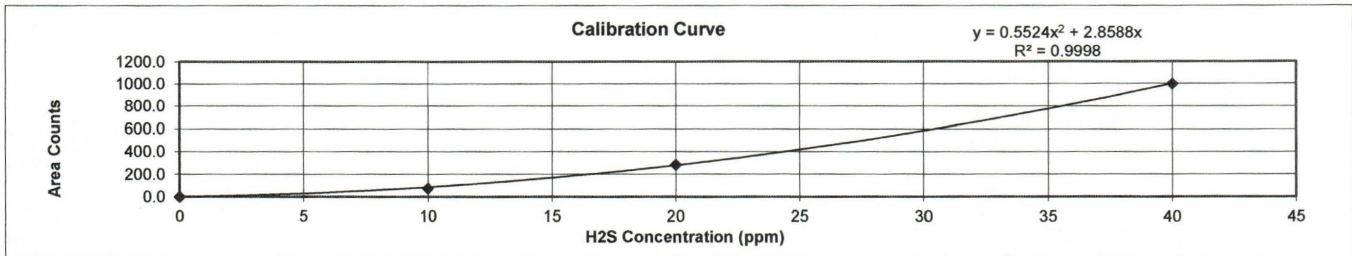
|                                  |      |     |     |     |
|----------------------------------|------|-----|-----|-----|
| H2S Concentration                | 0    |     |     |     |
| GC Results                       | 0.3  | 0.1 | 0.2 | 0.1 |
| Average Response                 | 0.16 |     |     |     |
| Standard Deviation               | 0.07 |     |     |     |
| MDL (3 times standard deviation) | 0.21 |     |     |     |

|                   |        |       |        |
|-------------------|--------|-------|--------|
| H2S Concentration | 40     |       |        |
| GC Results        | 986.2  | 996.0 | 1009.2 |
| % Diff            | 1.10%  | 0.11% | -1.21% |
| Average Response  | 997.13 |       |        |

|                   |        |        |        |
|-------------------|--------|--------|--------|
| H2S Concentration | 20     |        |        |
| GC Results        | 282.0  | 285.4  | 286.0  |
| % Diff            | 0.87%  | -0.33% | -0.54% |
| Average Response  | 284.47 |        |        |

|                   |        |       |        |
|-------------------|--------|-------|--------|
| H2S Concentration | 10     |       |        |
| GC Results        | 75.6   | 74.6  | 76.0   |
| % Diff            | -0.28% | 1.08% | -0.80% |
| Average Response  | 75.39  |       |        |

|                  |        |        |        |
|------------------|--------|--------|--------|
| Sample Line Loss | 20     |        |        |
| GC Results       | 291.0  | 295.0  | 294.0  |
| % Diff           | 0.80%  | -0.57% | -0.23% |
| Average Response | 293.33 |        |        |
| <20% of Direct   | -3.12% |        |        |



### Data from Calibration Curve

|                  |        |          |
|------------------|--------|----------|
| a:               | 0.5524 | 0.21 MDL |
| b:               | 2.8588 |          |
| R <sup>2</sup> : | 0.9998 |          |
| c:               | 0      |          |

## Test Runs

|                   |         |       |         |  |
|-------------------|---------|-------|---------|--|
| Run 1 Time        | START   | END   |         |  |
|                   | 13:27   | 13:57 |         |  |
| Run 1 GC Response | 0.4     | 0.1   | 0.5     |  |
| Average Response  | 0.3     |       |         |  |
| Run Result        | 0.1 ppm |       | 0.2 ppm |  |

|                   |         |       |         |  |
|-------------------|---------|-------|---------|--|
| Run 2 Time        | START   | END   |         |  |
|                   | 13:57   | 14:27 |         |  |
| Run 2 GC Response | 0.1     | 0.2   | 0.2     |  |
| Average Response  | 0.2     |       |         |  |
| Run Result        | 0.1 ppm |       | 0.2 ppm |  |

|                   |         |       |         |  |
|-------------------|---------|-------|---------|--|
| Run 3 Time        | START   | END   |         |  |
|                   | 14:27   | 14:57 |         |  |
| Run 3 GC Response | 0.8     | 0.1   | 0.2     |  |
| Average Response  | 0.4     |       |         |  |
| Run Result        | 0.1 ppm |       | 0.2 ppm |  |

## Erthwrks GC Calibration and Analysis Data

**Date:** 10/5/2022  
**Client:** Marathon Petroleum  
**Facility:** Detroit Refinery  
**Location:** Complex 2  
**Unit ID:** East Plant Fuel Gas  
**Erthwrks Tech:** JH, TC, AS

|                   | START          | END   |                |
|-------------------|----------------|-------|----------------|
| Run 4 Time        | 14:57          | 15:27 |                |
| Run 4 GC Response | 0.4            | 0.3   | 0.2            |
| Average Response  | 0.3            |       |                |
| <b>Run Result</b> | <b>0.1 ppm</b> |       | <b>0.2 ppm</b> |

|                   | START          | END   |                |
|-------------------|----------------|-------|----------------|
| Run 5 Time        | 15:27          | 15:57 |                |
| Run 5 GC Response | 0.1            | 0.1   | 0.1            |
| Average Response  | 0.1            |       |                |
| <b>Run Result</b> | <b>0.0 ppm</b> |       | <b>0.2 ppm</b> |

|                   | START          | END   |                |
|-------------------|----------------|-------|----------------|
| Run 6 Time        | 15:57          | 16:27 |                |
| Run 6 GC Response | 0.1            | 0.1   | 0.1            |
| Average Response  | 0.1            |       |                |
| <b>Run Result</b> | <b>0.0 ppm</b> |       | <b>0.2 ppm</b> |

|                   | START          | END   |                |
|-------------------|----------------|-------|----------------|
| Run 7 Time        | 16:27          | 16:57 |                |
| Run 7 GC Response | 0.1            | 0.1   | 0.1            |
| Average Response  | 0.1            |       |                |
| <b>Run Result</b> | <b>0.0 ppm</b> |       | <b>0.2 ppm</b> |

|                   | START          | END   |                |
|-------------------|----------------|-------|----------------|
| Run 8 Time        | 16:57          | 17:27 |                |
| Run 8 GC Response | 0.1            | 0.1   | 0.1            |
| Average Response  | 0.1            |       |                |
| <b>Run Result</b> | <b>0.0 ppm</b> |       | <b>0.2 ppm</b> |

|                   | START          | END   |                |
|-------------------|----------------|-------|----------------|
| Run 9 Time        | 17:27          | 17:57 |                |
| Run 9 GC Response | 0.1            | 0.2   | 0.2            |
| Average Response  | 0.2            |       |                |
| <b>Run Result</b> | <b>0.1 ppm</b> |       | <b>0.2 ppm</b> |

|                    | START          | END   |                |
|--------------------|----------------|-------|----------------|
| Run 10 Time        | 17:57          | 18:27 |                |
| Run 10 GC Response | 0.1            | 0.1   | 0.1            |
| Average Response   | 0.1            |       |                |
| <b>Run Result</b>  | <b>0.0 ppm</b> |       | <b>0.2 ppm</b> |

|                      |              |       |                                         |
|----------------------|--------------|-------|-----------------------------------------|
| Post Cal GC Response | 283.6        | 270.6 | 281.9                                   |
| Average Response     | 278.7        |       |                                         |
| <b>% Difference</b>  | <b>2.03%</b> |       | <b>PASS Post Test Calibration Check</b> |



# Erthwrks Gaseous Sample Collection and Quality Assurance Worksheet

Date: 10/5/2022  
 Client: Marathon Petroleum  
 Facility: Detroit Refinery  
 Location: Complex 2  
 Unit ID: East Plant Fuel Gas  
 Erthwrks Tech: JH, TC, AS

## Method 205 Field Evaluation for H2S Calibration Gas

| Dilution Calibrator Verification |       |                 |       |                 | Direct Cal. | Dilutor & Method 205 Gases |          |
|----------------------------------|-------|-----------------|-------|-----------------|-------------|----------------------------|----------|
| Pred. Conc.                      | 95.0  | %Diff from Avg. | 45.0  | %Diff from Avg. | 50.36       | Dilutor S/N:               | 9144     |
| Instrument Res 1                 | 96.18 | 0.18%           | 45.35 | -0.41%          | 50.17       | Root Gas Conc:             | 965.6    |
| Instrument Res 2                 | 96.02 | 0.35%           | 45.01 | 0.35%           | 50.02       | Root Gas Cyl. #:           | CC418906 |
| Instrument Res 3                 | 96.87 | -0.54%          | 45.14 | 0.06%           | 50.38       | Direct Gas Conc:           | 50.36    |
| Average Response                 | 96.36 | n/a             | 45.17 | n/a             | 50.19       | Direct Gas Cyl. #:         | CC429848 |
| %Diff from Pred.                 | 1.41% | n/a             | 0.37% | n/a             | -0.34%      |                            |          |

| TimeStamp      | Project Number | Client             | Facility         | Unit                | Test Period | CO     |
|----------------|----------------|--------------------|------------------|---------------------|-------------|--------|
| 10/5/2022 7:48 | 9049.1.D1      | Marathon Petroleum | Detroit Refinery | East Plant Fuel Gas |             | 90.751 |
| 10/5/2022 7:49 | 9049.1.D1      | Marathon Petroleum | Detroit Refinery | East Plant Fuel Gas | Dilution 1  | 96.183 |
| 10/5/2022 7:50 | 9049.1.D1      | Marathon Petroleum | Detroit Refinery | East Plant Fuel Gas |             | 86.167 |
| 10/5/2022 7:51 | 9049.1.D1      | Marathon Petroleum | Detroit Refinery | East Plant Fuel Gas |             | 47.775 |
| 10/5/2022 7:52 | 9049.1.D1      | Marathon Petroleum | Detroit Refinery | East Plant Fuel Gas | Dilution 2  | 45.354 |
| 10/5/2022 7:53 | 9049.1.D1      | Marathon Petroleum | Detroit Refinery | East Plant Fuel Gas |             | 46.435 |
| 10/5/2022 7:54 | 9049.1.D1      | Marathon Petroleum | Detroit Refinery | East Plant Fuel Gas |             | 49.301 |
| 10/5/2022 7:55 | 9049.1.D1      | Marathon Petroleum | Detroit Refinery | East Plant Fuel Gas | Direct Cal  | 50.171 |
| 10/5/2022 7:56 | 9049.1.D1      | Marathon Petroleum | Detroit Refinery | East Plant Fuel Gas |             | 37.942 |
| 10/5/2022 7:57 | 9049.1.D1      | Marathon Petroleum | Detroit Refinery | East Plant Fuel Gas |             | 77.923 |
| 10/5/2022 7:58 | 9049.1.D1      | Marathon Petroleum | Detroit Refinery | East Plant Fuel Gas |             | 94.353 |
| 10/5/2022 7:59 | 9049.1.D1      | Marathon Petroleum | Detroit Refinery | East Plant Fuel Gas | Dilution 1  | 96.018 |
| 10/5/2022 8:00 | 9049.1.D1      | Marathon Petroleum | Detroit Refinery | East Plant Fuel Gas |             | 96.282 |
| 10/5/2022 8:01 | 9049.1.D1      | Marathon Petroleum | Detroit Refinery | East Plant Fuel Gas |             | 56.533 |
| 10/5/2022 8:02 | 9049.1.D1      | Marathon Petroleum | Detroit Refinery | East Plant Fuel Gas |             | 44.924 |
| 10/5/2022 8:03 | 9049.1.D1      | Marathon Petroleum | Detroit Refinery | East Plant Fuel Gas | Dilution 2  | 45.012 |
| 10/5/2022 8:04 | 9049.1.D1      | Marathon Petroleum | Detroit Refinery | East Plant Fuel Gas |             | 32.267 |
| 10/5/2022 8:05 | 9049.1.D1      | Marathon Petroleum | Detroit Refinery | East Plant Fuel Gas |             | 11.798 |
| 10/5/2022 8:06 | 9049.1.D1      | Marathon Petroleum | Detroit Refinery | East Plant Fuel Gas |             | 15.77  |
| 10/5/2022 8:07 | 9049.1.D1      | Marathon Petroleum | Detroit Refinery | East Plant Fuel Gas |             | 45.621 |
| 10/5/2022 8:08 | 9049.1.D1      | Marathon Petroleum | Detroit Refinery | East Plant Fuel Gas | Direct Cal  | 50.02  |
| 10/5/2022 8:09 | 9049.1.D1      | Marathon Petroleum | Detroit Refinery | East Plant Fuel Gas |             | 32.574 |
| 10/5/2022 8:10 | 9049.1.D1      | Marathon Petroleum | Detroit Refinery | East Plant Fuel Gas |             | 84.465 |
| 10/5/2022 8:11 | 9049.1.D1      | Marathon Petroleum | Detroit Refinery | East Plant Fuel Gas |             | 96.608 |
| 10/5/2022 8:12 | 9049.1.D1      | Marathon Petroleum | Detroit Refinery | East Plant Fuel Gas | Dilution 1  | 96.874 |
| 10/5/2022 8:13 | 9049.1.D1      | Marathon Petroleum | Detroit Refinery | East Plant Fuel Gas |             | 68.878 |
| 10/5/2022 8:14 | 9049.1.D1      | Marathon Petroleum | Detroit Refinery | East Plant Fuel Gas |             | 45.139 |
| 10/5/2022 8:15 | 9049.1.D1      | Marathon Petroleum | Detroit Refinery | East Plant Fuel Gas | Dilution 2  | 45.14  |
| 10/5/2022 8:16 | 9049.1.D1      | Marathon Petroleum | Detroit Refinery | East Plant Fuel Gas |             | 42.847 |
| 10/5/2022 8:17 | 9049.1.D1      | Marathon Petroleum | Detroit Refinery | East Plant Fuel Gas |             | 47.936 |



## Erthwrks Raw Datalogs

| <u>Chromatogram #</u> | <u>Date</u> | <u>Time</u> | <u>Test Period</u> | <u>Pollutant</u> | <u>Retention</u> | <u>Area Count</u> |
|-----------------------|-------------|-------------|--------------------|------------------|------------------|-------------------|
| EP FG47.chr           | 10/5/2022   | 12:35:42    |                    | H2S              | 0.886            | 272.3             |
| EP FG48.chr           | 10/5/2022   | 12:37:19    |                    | H2S              | 0.876            | 309.4             |
| EP FG49.chr           | 10/5/2022   | 12:38:24    |                    | H2S              | 0.89             | 305.7             |
| EP FG50.chr           | 10/5/2022   | 12:39:31    |                    | H2S              | 0.883            | 272.1             |
| EP FG51.chr           | 10/5/2022   | 12:43:04    |                    | H2S              | 0.886            | 257.4             |
| EP FG52.chr           | 10/5/2022   | 12:44:24    |                    | H2S              | 0.883            | 275.5             |
| EP FG53.chr           | 10/5/2022   | 12:45:29    | 20 ppm Cal         | H2S              | 0.883            | 282.0             |
| EP FG54.chr           | 10/5/2022   | 12:46:40    | 20 ppm Cal         | H2S              | 0.873            | 285.4             |
| EP FG55.chr           | 10/5/2022   | 12:47:50    | 20 ppm Cal         | H2S              | 0.88             | 286.0             |
| EP FG56.chr           | 10/5/2022   | 12:50:04    |                    | H2S              | 0.873            | 268.8             |
| EP FG57.chr           | 10/5/2022   | 12:51:10    |                    | H2S              | 0.873            | 982.3             |
| EP FG58.chr           | 10/5/2022   | 12:52:17    | 40 ppm Cal         | H2S              | 0.87             | 986.2             |
| EP FG59.chr           | 10/5/2022   | 12:53:23    | 40 ppm Cal         | H2S              | 0.87             | 996.0             |
| EP FG60.chr           | 10/5/2022   | 12:54:29    | 40 ppm Cal         | H2S              | 0.883            | 1009.2            |
| EP FG61.chr           | 10/5/2022   | 12:55:35    |                    | H2S              | 0.883            | 105.3             |
| EP FG62.chr           | 10/5/2022   | 12:56:41    |                    | H2S              | 0.873            | 77.3              |
| EP FG63.chr           | 10/5/2022   | 12:57:47    | 10 ppm Cal         | H2S              | 0.876            | 75.6              |
| EP FG64.chr           | 10/5/2022   | 12:58:53    | 10 ppm Cal         | H2S              | 0.88             | 74.6              |
| EP FG65.chr           | 10/5/2022   | 12:59:59    | 10 ppm Cal         | H2S              | 0.873            | 76.0              |
| EP FG66.chr           | 10/5/2022   | 13:01:05    |                    | H2S              | 0.87             | 381.4             |
| EP FG67.chr           | 10/5/2022   | 13:02:11    | Zero Cal MDL       | H2S              | 0.913            | 0.3               |
| EP FG68.chr           | 10/5/2022   | 13:03:18    | Zero Cal MDL       | H2S              | 0.87             | 0.1               |
| EP FG69.chr           | 10/5/2022   | 13:04:24    | Zero Cal MDL       | H2S              | 0.926            | 0.2               |
| EP FG70.chr           | 10/5/2022   | 13:05:30    | Zero Cal MDL       | H2S              | 0.88             | 0.1               |
| EP FG71.chr           | 10/5/2022   | 13:06:57    |                    | H2S              | 0.886            | 269.3             |
| EP FG72.chr           | 10/5/2022   | 13:08:03    |                    | H2S              | 0.88             | 292.4             |
| EP FG73.chr           | 10/5/2022   | 13:09:09    | Sample Line Loss   | H2S              | 0.88             | 291.7             |
| EP FG74.chr           | 10/5/2022   | 13:10:15    | Sample Line Loss   | H2S              | 0.873            | 295.9             |
| EP FG75.chr           | 10/5/2022   | 13:11:21    | Sample Line Loss   | H2S              | 0.873            | 294.2             |
| EP FG76.chr           | 10/5/2022   | 13:27:51    | Run 1              | H2S              | 0.876            | 0.4               |
| EP FG77.chr           | 10/5/2022   | 13:37:51    | Run 1              | H2S              | 0.89             | 0.1               |
| EP FG78.chr           | 10/5/2022   | 13:47:51    | Run 1              | H2S              | 0.896            | 0.5               |
| EP FG79.chr           | 10/5/2022   | 13:57:51    | Run 2              | H2S              | 0.906            | 0.1               |
| EP FG80.chr           | 10/5/2022   | 14:07:51    | Run 2              | H2S              | 0.856            | 0.2               |
| EP FG81.chr           | 10/5/2022   | 14:17:51    | Run 2              | H2S              | 0.853            | 0.2               |
| EP FG82.chr           | 10/5/2022   | 14:27:51    | Run 3              | H2S              | 0.886            | 0.8               |
| EP FG83.chr           | 10/5/2022   | 14:37:52    | Run 3              | H2S              | 0.893            | 0.1               |
| EP FG84.chr           | 10/5/2022   | 14:47:52    | Run 3              | H2S              | 0.85             | 0.2               |
| EP FG85.chr           | 10/5/2022   | 14:57:52    | Run 4              | H2S              | 0.85             | 0.4               |
| EP FG86.chr           | 10/5/2022   | 15:07:52    | Run 4              | H2S              | 0.856            | 0.3               |
| EP FG87.chr           | 10/5/2022   | 15:17:52    | Run 4              | H2S              | 0.886            | 0.2               |
| EP FG88.chr           | 10/5/2022   | 15:27:53    | Run 5              | H2S              | 0.873            | 0.1               |
| EP FG89.chr           | 10/5/2022   | 15:37:53    | Run 5              | H2S              | 0.92             | 0.1               |
| EP FG90.chr           | 10/5/2022   | 15:47:53    | Run 5              | H2S              | 0.916            | 0.1               |
| EP FG91.chr           | 10/5/2022   | 15:57:53    | Run 6              | H2S              | 0.873            | 0.1               |
| EP FG92.chr           | 10/5/2022   | 16:07:53    | Run 6              | H2S              | 0.923            | 0.1               |
| EP FG93.chr           | 10/5/2022   | 16:17:53    | Run 6              | H2S              | 0.88             | 0.1               |
| EP FG94.chr           | 10/5/2022   | 16:27:53    | Run 7              | H2S              | 0.906            | 0.1               |
| EP FG95.chr           | 10/5/2022   | 16:37:54    | Run 7              | H2S              | 0.886            | 0.1               |
| EP FG96.chr           | 10/5/2022   | 16:47:54    | Run 7              | H2S              | 0.883            | 0.1               |
| EP FG97.chr           | 10/5/2022   | 16:57:54    | Run 8              | H2S              | 0.866            | 0.1               |
| EP FG98.chr           | 10/5/2022   | 17:07:54    | Run 8              | H2S              | 0.923            | 0.1               |
| EP FG99.chr           | 10/5/2022   | 17:17:54    | Run 8              | H2S              | 0.91             | 0.1               |

## Erthwrks Raw Datalogs

| <u>Chromatogram #</u> | <u>Date</u> | <u>Time</u> | <u>Test Period</u> | <u>Pollutant</u> | <u>Retention</u> | <u>Area Count</u> |
|-----------------------|-------------|-------------|--------------------|------------------|------------------|-------------------|
| EP FG100.chr          | 10/5/2022   | 17:27:54    | Run 9              | H2S              | 0.896            | 0.1               |
| EP FG101.chr          | 10/5/2022   | 17:37:54    | Run 9              | H2S              | 0.856            | 0.2               |
| EP FG102.chr          | 10/5/2022   | 17:47:55    | Run 9              | H2S              | 0.903            | 0.2               |
| EP FG103.chr          | 10/5/2022   | 17:57:55    | Run 10             | H2S              | 0.893            | 0.1               |
| EP FG103.chr          | 10/5/2022   | 18:07:55    | Run 10             | H2S              | 0.886            | 0.1               |
| EP FG104.chr          | 10/5/2022   | 18:17:55    | Run 10             | H2S              | 0.893            | 0.1               |
| EP FG105.chr          | 10/5/2022   | 18:28:00    |                    | H2S              | 0.853            | 32.4              |
| EP FG106.chr          | 10/5/2022   | 18:29:30    |                    | H2S              | 0.863            | 47.4              |
| EP FG107.chr          | 10/5/2022   | 18:31:00    |                    | H2S              | 0.86             | 163.3             |
| EP FG108.chr          | 10/5/2022   | 18:32:07    | Post Cal           | H2S              | 0.856            | 283.6             |
| EP FG109.chr          | 10/5/2022   | 18:33:19    | Post Cal           | H2S              | 0.863            | 270.6             |
| EP FG110.chr          | 10/5/2022   | 18:34:30    | Post Cal           | H2S              | 0.863            | 281.9             |



**Attachment C**  
**Certificates**

# *Accredited Air Emission Testing Body*


A2LA has accredited

**ERTHWRKS, INC.**

In recognition of the successful completion of the joint A2LA and Stack Testing Accreditation Council (STAC) evaluation process, this laboratory is accredited to perform testing activities in compliance with ASTM D7036:2004 - Standard Practice for Competence of Air Emission Testing Bodies.



Presented this 29<sup>th</sup> day of March 2021.



A handwritten signature in black ink, appearing to be "A. [unclear]".

Vice President, Accreditation Services  
For the Accreditation Council  
Certificate Number 6147.01  
Valid to March 31, 2023

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



69 Industrial Park Rd E, Tolland CT 06084  
 https://www.environics.com/service-request  
 (860) 872-1111 info@environics.com

**ENVIRONICS FLOW CONTROLLER CALIBRATION REPORT**

| Unit Summary |       | Std Conditions |              | MFC Summary  |            |
|--------------|-------|----------------|--------------|--------------|------------|
| Model #:     | S4040 | Temp:          | 32°F         | MFC #:       | 1          |
| Unit SN :    | 9144  | Pressure:      | 29.92 in. Hg | MFC FS Flow: | 10000      |
|              |       | Gas:           | NITROGEN     | MFC S/N:     | 0995030001 |

Flow Calibration Data is not performance data. This data is used by the system operating mode to improve the flow accuracy. The Flow Verification Data is performance data.

**Flow Calibration Data**

|      | Set Flow | True Flow |
|------|----------|-----------|
| 5%   | 500      | 535.942   |
| 10%  | 1000     | 1068.271  |
| 20%  | 2000     | 2140.081  |
| 30%  | 3000     | 3190.149  |
| 40%  | 4000     | 4216.403  |
| 50%  | 5000     | 5248.716  |
| 60%  | 6000     | 6260.214  |
| 70%  | 7000     | 7247.619  |
| 80%  | 8000     | 8247.958  |
| 90%  | 9000     | 9235.485  |
| 100% | 10000    | 10230.140 |

All values in SCCM

**Flow Verification Data**

|     | Set Flow | True Flow | % dev |
|-----|----------|-----------|-------|
| 99% | 9900     | 9929.928  | 0.30% |
| 85% | 8500     | 8520.603  | 0.24% |
| 55% | 5500     | 5500.753  | 0.01% |
| 25% | 2500     | 2507.681  | 0.31% |
| 10% | 1000     | 1001.440  | 0.14% |

All values in SCCM

This calibration complies with ISO 17025-2005 [non-accredited] and is traceable to the National Institute of Standards and Technology (NIST). Calibration and verification are accomplished exclusively by qualified personnel following controlled procedures under ISO 9001:2015. For questions or concerns, contact Customer Service via our website, email or by phone, weekdays from 8AM - 4PM.

Verified by: Ashley Johnson

Date: 8-16-22





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**ENVIRONICS FLOW CONTROLLER CALIBRATION REPORT**

| Unit Summary |       | Std Conditions |              | MFC Summary  |            |
|--------------|-------|----------------|--------------|--------------|------------|
| Model #:     | S4040 | Temp:          | 32°F         | MFC #:       | 2          |
| Unit SN :    | 9144  | Pressure:      | 29.92 in. Hg | MFC FS Flow: | 4000       |
|              |       | Gas:           | NITROGEN     | MFC S/N:     | 0995032001 |

Flow Calibration Data is not performance data. This data is used by the system operating mode to improve the flow accuracy. The Flow Verification Data is performance data.

**Flow Calibration Data**

|      | Set Flow | True Flow |
|------|----------|-----------|
| 5%   | 200      | 209.074   |
| 10%  | 400      | 420.913   |
| 20%  | 800      | 842.487   |
| 30%  | 1200     | 1265.189  |
| 40%  | 1600     | 1678.978  |
| 50%  | 2000     | 2082.343  |
| 60%  | 2400     | 2475.043  |
| 70%  | 2800     | 2884.917  |
| 80%  | 3200     | 3260.854  |
| 90%  | 3600     | 3651.022  |
| 100% | 4000     | 4051.684  |

All values in SCCM

**Flow Verification Data**

|     | Set Flow | True Flow | % dev  |
|-----|----------|-----------|--------|
| 99% | 3960     | 3976.419  | 0.41%  |
| 85% | 3400     | 3413.736  | 0.40%  |
| 55% | 2200     | 2210.047  | 0.46%  |
| 25% | 1000     | 1000.119  | 0.01%  |
| 10% | 400      | 399.975   | -0.01% |

All values in SCCM

This calibration complies with ISO 17025-2005 [non-accredited] and is traceable to the National Institute of Standards and Technology (NIST). Calibration and verification are accomplished exclusively by qualified personnel following controlled procedures under ISO 9001:2015. For questions or concerns, contact Customer Service via our website, email or by phone, weekdays from 8AM - 4PM.

Verified by: *Cash A. Starnes*

Date: 8-16-22



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### ENVIRONICS FLOW CONTROLLER CALIBRATION REPORT

| Unit Summary |       | Std Conditions |              | MFC Summary  |            |
|--------------|-------|----------------|--------------|--------------|------------|
| Model #:     | S4040 | Temp:          | 32°F         | MFC #:       | 4          |
| Unit SN :    | 9144  | Pressure:      | 29.92 in. Hg | MFC FS Flow: | 40         |
|              |       | Gas:           | NITROGEN     | MFC S/N:     | 0995036001 |

Flow Calibration Data is not performance data. This data is used by the system operating mode to improve the flow accuracy. The Flow Verification Data is performance data.

#### Flow Calibration Data

|      | Set Flow | True Flow |
|------|----------|-----------|
| 5%   | 2        | 1.817     |
| 10%  | 4        | 3.905     |
| 20%  | 8        | 8.055     |
| 30%  | 12       | 12.163    |
| 40%  | 16       | 16.314    |
| 50%  | 20       | 20.438    |
| 60%  | 24       | 24.557    |
| 70%  | 28       | 28.677    |
| 80%  | 32       | 32.799    |
| 90%  | 36       | 36.927    |
| 100% | 40       | 40.977    |

All values in SCCM

#### Flow Verification Data

|     | Set Flow | True Flow | % dev  |
|-----|----------|-----------|--------|
| 99% | 39.6     | 39.669    | 0.17%  |
| 85% | 34       | 33.973    | -0.08% |
| 55% | 22       | 21.989    | -0.05% |
| 25% | 10       | 10.003    | 0.03%  |
| 10% | 4        | 3.992     | -0.20% |

All values in SCCM

This calibration complies with ISO 17025-2005 [non-accredited] and is traceable to the National Institute of Standards and Technology (NIST). Calibration and verification are accomplished exclusively by qualified personnel following controlled procedures under ISO 9001:2015. For questions or concerns, contact Customer Service via our website, email or by phone, weekdays from 8AM - 4PM.

Verified by:

Date: 8-16-22



# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA PROTOCOL STANDARD

|                                       |                                   |
|---------------------------------------|-----------------------------------|
| Part Number: E02NI99E15A2110          | Reference Number: 160-402112379-1 |
| Cylinder Number: CC62329              | Cylinder Volume: 144.4 Cubic Feet |
| Laboratory: 124 - Plumsteadville - PA | Cylinder Pressure: 2015 PSIG      |
| PGVP Number: A12021                   | Valve Outlet: 330                 |
| Gas Code: H2S,BALN                    | Certification Date: May 25, 2021  |

**Expiration Date: May 25, 2024**

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            |
|------------------|-------------------------|----------------------|-----------------|----------------------------|------------------------|
| HYDROGEN SULFIDE | 1000 PPM                | 1007 PPM             | G2              | +/- 2%                     | 05/18/2021, 05/25/2021 |
| NITROGEN         | Balance                 |                      |                 |                            |                        |

### CALIBRATION STANDARDS

| Type | Lot ID       | Cylinder No | Concentration                       | Uncertainty | Expiration Date |
|------|--------------|-------------|-------------------------------------|-------------|-----------------|
| GMIS | 124156356102 | CC273734    | 953.7 PPM HYDROGEN SULFIDE/NITROGEN | +/- 0.50    | Mar 25, 2024    |
| PRM  | C1940510.06  | D887260     | 999 PPM HYDROGEN SULFIDE/NITROGEN   | +/- 0.50    | Jan 20, 2024    |

The SRM, PRM or RGM noted above is only in reference to the GMIS used in the assay and not part of the analysis.

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model       | Analytical Principle | Last Multipoint Calibration |
|-----------------------------|----------------------|-----------------------------|
| AMETEK 9000 ZZ-9000-10464-1 | NDUV                 | May 21, 2021                |

Triad Data Available Upon Request



\_\_\_\_\_  
Signature on file  
Approved for Release

# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

|                  |                            |                     |                 |
|------------------|----------------------------|---------------------|-----------------|
| Customer:        | ERTHWKRS                   | Reference Number:   | 163-402095745-1 |
| Part Number:     | E04NI99E15A7125            | Cylinder Volume:    | 144.4 CF        |
| Cylinder Number: | CC429848                   | Cylinder Pressure:  | 2015 PSIG       |
| Laboratory:      | 124 - Pasadena (SG06) - TX | Valve Outlet:       | 660             |
| PGVP Number:     | A32021                     | Certification Date: | May 04, 2021    |
| Gas Code:        | CO,NO,NOX,PPN,BALN         |                     |                 |

**Expiration Date: May 04, 2024**

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            |
|-----------------|-------------------------|----------------------|-----------------|----------------------------|------------------------|
| NOX             | 50.00 PPM               | 49.91 PPM            | G1              | +/- 1.2% NIST Traceable    | 04/27/2021, 05/04/2021 |
| CARBON MONOXIDE | 50.00 PPM               | 50.36 PPM            | G1              | +/- 0.8% NIST Traceable    | 04/27/2021             |
| NITRIC OXIDE    | 50.00 PPM               | 49.84 PPM            | G1              | +/- 1.2% NIST Traceable    | 04/27/2021, 05/04/2021 |
| PROPANE         | 50.00 PPM               | 50.68 PPM            | G1              | +/- 0.7% NIST Traceable    | 04/27/2021             |
| NITROGEN        | Balance                 |                      |                 |                            |                        |

### CALIBRATION STANDARDS

| Type | Lot ID       | Cylinder No | Concentration                       | Uncertainty | Expiration Date |
|------|--------------|-------------|-------------------------------------|-------------|-----------------|
| NTRM | 10010515     | AAL073265   | 25.54 PPM CARBON MONOXIDE/NITROGEN  | +/-0.7%     | Apr 13, 2022    |
| PRM  | 12377        | D562881     | 30.00 PPM NITROGEN DIOXIDE/NITROGEN | +/- 2.0%    | Sep 04, 2018    |
| NTRM | 200611-29    | CC733348    | 49.82 PPM NITRIC OXIDE/NITROGEN     | +/-1.0%     | Feb 02, 2025    |
| PRM  | 12386        | D685025     | 9.91 PPM NITROGEN DIOXIDE/AIR       | +/-2.0%     | Feb 20, 2020    |
| GMIS | 7292017105   | CC506724    | 30.4 PPM NITROGEN DIOXIDE/AIR       | +/-2.0%     | Sep 03, 2021    |
| GMIS | 401648677102 | CC506986    | 15.21 PPM NITROGEN DIOXIDE/NITROGEN | +/-2.1%     | Feb 10, 2023    |
| NTRM | 17061006     | ND61234     | 49.13 PPM PROPANE/AIR               | +/-0.4%     | Jul 24, 2023    |

The SRM, PRM or RGM noted above is only in reference to the GMIS used in the assay and not part of the analysis.

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model            | Analytical Principle | Last Multipoint Calibration |
|----------------------------------|----------------------|-----------------------------|
| CO-XL-NICOLET iS50 AUP2010248    | FTIR                 | Apr 15, 2021                |
| NO-XL-NICOLET iS50 AUP2010248    | FTIR                 | Apr 28, 2021                |
| NO2-NICOLET iS50 AUP2010248      | FTIR                 | Apr 28, 2021                |
| C3H8-XXL-NICOLET iS50 AUP2010248 | FTIR                 | Apr 22, 2021                |

Triad Data Available Upon Request



Signature on file

Approved for Release



# CERTIFICATE OF ANALYSIS

## Grade of Product: EPA Protocol

|                  |                            |                     |                 |
|------------------|----------------------------|---------------------|-----------------|
| Customer:        | ERTHWKRS                   | Reference Number:   | 163-401505767-1 |
| Part Number:     | E04NI99E15A7149            | Cylinder Volume:    | 144.4 CF        |
| Cylinder Number: | CC418906                   | Cylinder Pressure:  | 2015 PSIG       |
| Laboratory:      | 124 - Pasadena (SG06) - TX | Valve Outlet:       | 660             |
| PGVP Number:     | A32019                     | Certification Date: | Jun 04, 2019    |
| Gas Code:        | CO,NO,NOX,PPN,BALN         |                     |                 |

**Expiration Date: Jun 04, 2027**

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            |
|-----------------|-------------------------|----------------------|-----------------|----------------------------|------------------------|
| NOX             | 950.0 PPM               | 952.4 PPM            | G1              | +/- 0.8% NIST Traceable    | 05/28/2019, 06/04/2019 |
| CARBON MONOXIDE | 950.0 PPM               | 965.6 PPM            | G1              | +/- 0.5% NIST Traceable    | 05/28/2019             |
| NITRIC OXIDE    | 950.0 PPM               | 952.4 PPM            | G1              | +/- 0.8% NIST Traceable    | 05/28/2019, 06/04/2019 |
| PROPANE         | 950.0 PPM               | 960.9 PPM            | G1              | +/- 0.6% NIST Traceable    | 05/28/2019             |
| NITROGEN        | Balance                 |                      |                 |                            |                        |

### CALIBRATION STANDARDS

| Type | Lot ID     | Cylinder No | Concentration                       | Uncertainty | Expiration Date |
|------|------------|-------------|-------------------------------------|-------------|-----------------|
| NTRM | 09010306   | KAL004473   | 970.0 PPM CARBON MONOXIDE/NITROGEN  | +/-0.4%     | May 14, 2021    |
| PRM  | 12377      | D562881     | 30.00 PPM NITROGEN DIOXIDE/NITROGEN | +/- 2.0%    | Sep 04, 2018    |
| NTRM | 08011740   | KAL004072   | 970.9 PPM NITRIC OXIDE/NITROGEN     | +/-0.6%     | Apr 16, 2024    |
| GMIS | 7292017105 | CC506724    | 30.4 PPM NITROGEN DIOXIDE/AIR       | +/-2.0%     | Sep 03, 2021    |
| NTRM | 15060808   | CC462511    | 992.3 PPM PROPANE/NITROGEN          | +/-0.6%     | Jul 22, 2021    |

The SRM, PRM or RGM noted above is only in reference to the GMIS used in the assay and not part of the analysis.

### ANALYTICAL EQUIPMENT

| Instrument/Make/Model          | Analytical Principle | Last Multipoint Calibration |
|--------------------------------|----------------------|-----------------------------|
| CO-M - NICOLET 6700 AHR0600411 | FTIR                 | May 16, 2019                |
| NO-M - NICOLET 6700 AHR0600411 | FTIR                 | May 30, 2019                |
| NO2 - NICOLET 6700 AHR0600411  | FTIR                 | May 30, 2019                |
| C3H8-L-NICOLET 6700 AHR0600411 | FTIR                 | May 22, 2019                |

Triad Data Available Upon Request



Signature on file

Approved for Release

**Attachment D**  
**Example Calculations**

## Erthwrks RATA Example Calculations

### Example Calculations for H<sub>2</sub>S RATA

#### Arithmetic Mean--Mean of the Difference between reference method and client CEMS, $d_{avg}$

$$d_{avg} = \frac{1}{n} \sum_{i=1}^n d_i \quad \text{Eq. 2-3}$$

where:  $d$  = absolute difference between reference method and client CEMS  
 $i$  = run number

|               |               |               |              |
|---------------|---------------|---------------|--------------|
| $d_1 = -0.05$ | $d_4 = -0.06$ | $d_7 = -0.06$ | $d_{10} = 0$ |
| $d_2 = -0.05$ | $d_5 = -0.09$ | $d_8 = -0.04$ | $d_{11} = 0$ |
| $d_3 = -0.06$ | $d_6 = -0.04$ | $d_9 = -0.05$ | $d_{12} = 0$ |

$n$  = number of runs = **9**

$d_{avg} = -0.06$

#### Standard Deviation, $S_d$

$$S_d = \sqrt{\frac{\sum_{i=1}^n d_i^2 - \frac{[\sum_{i=1}^n d_i]^2}{n}}{n-1}} \quad \text{Eq. 2-4}$$

$$S_d = \left( \frac{2.96E-02 - \frac{2.50E-01}{9}}{8} \right)^{1/2}$$

$S_d = 0.02$

#### Confidence Coefficient, CC

$$CC = t_{0.975} \frac{S_d}{n^{1/2}} \quad \text{Eq. 2-5}$$

where:  $t_{0.975} = 2.306$

$$CC = 2.306 * \frac{1.51E-02}{3}$$

$CC = 0.01$

#### Relative Accuracy, $RA_{AS}$

$$RA_{AS} = \frac{|d_{avg}| + |CC|}{AS} \times 100 \quad \text{Eq. 2-6}$$

where:  $AS$  = the unit's permit limit or applicable standard  
 $AS = 162$

$$RA_{AS} = \frac{0.0556 + 1.16E-2}{162} * 100$$

$RA_{AS} = 0.04\%$



## Erthwrks Example Calculations

### Example Calcs : Fuel gas

Example Calcs for Pollutant : H<sub>2</sub>S

|                        |         |                                                             |
|------------------------|---------|-------------------------------------------------------------|
| <b>C<sub>V</sub></b>   | = 40.0  | = Low Level Target concentration of calibration gas, ppmv.  |
| <b>C<sub>Dir</sub></b> | = 20.0  | = Mid Level Target concentration of calibration gas, ppmv.  |
| <b>CS</b>              | = 10.0  | = High Level Target concentration of calibration gas, ppmv. |
| <b>C<sub>S</sub></b>   | = 997.1 | = Low Level Average GC Response                             |
| <b>SB<sub>i</sub></b>  | = 284.5 | = Mid Level Average GC Response                             |
| <b>SB<sub>f</sub></b>  | = 75.4  | = High Level Average GC Response                            |

### GC Calibration Curve (Polynomial Excel Generated)

$$y = ax^2 + bx + c$$

|        |     |        |
|--------|-----|--------|
| where: | a = | 0.5524 |
|        | b = | 2.8588 |
|        | c = | 0      |

### Run 1 Example Calculation

$$y = 0.333 \quad (\text{average response Run 1})$$

$$\text{solution} = x = \frac{-b + [b^2 - 4(a)(c-y)]^{1/2}}{2(a)}$$

|        |     |               |
|--------|-----|---------------|
| where: | a = | 0.5524        |
|        | b = | 2.8588        |
|        | c = | 0.000 (c - y) |

$$x = \frac{-2.8588 + [2.86^2 - 4(0.5524)(-0.33)]^{1/2}}{2(0.5524)}$$

$$x = 0.11 \text{ ppmv}$$

**Attachment E**  
**CEMS Data**

## CEMS Data

| Run #    | Date/Time          | H2S (ppm)   | EP FG          | EP FG          | EP FG       | EP FG          |
|----------|--------------------|-------------|----------------|----------------|-------------|----------------|
|          |                    | 07A106071   | 07fi0746       | 07fi0827       | 78fc0015    | Total (msdfd)  |
|          | 10/5/2022 13:28    | 0.25        | 3026           | 2918           | 0.00        | 5945           |
|          | 10/5/2022 13:29    | 0.25        | 3035           | 3021           | 0.00        | 6056           |
|          | 10/5/2022 13:30    | 0.25        | 3046           | 3076           | 0.00        | 6122           |
|          | 10/5/2022 13:31    | 0.26        | 3037           | 3114           | 0.00        | 6151           |
|          | 10/5/2022 13:32    | 0.26        | 3015           | 3112           | 0.00        | 6127           |
|          | 10/5/2022 13:33    | 0.26        | 3085           | 2861           | 0.00        | 5946           |
|          | 10/5/2022 13:34    | 0.25        | 3172           | 2408           | 0.00        | 5579           |
|          | 10/5/2022 13:35    | 0.26        | 3239           | 2135           | 0.00        | 5374           |
|          | 10/5/2022 13:36    | 0.26        | 3269           | 2154           | 0.00        | 5423           |
|          | 10/5/2022 13:37    | 0.26        | 3188           | 2390           | 0.00        | 5578           |
|          | 10/5/2022 13:38    | 0.25        | 3070           | 2662           | 0.00        | 5731           |
|          | 10/5/2022 13:39    | 0.26        | 3068           | 2848           | 0.00        | 5916           |
|          | 10/5/2022 13:40    | 0.26        | 3122           | 2988           | 0.00        | 6110           |
|          | 10/5/2022 13:41    | 0.26        | 3171           | 3106           | 0.00        | 6277           |
|          | 10/5/2022 13:42    | 0.26        | 3186           | 3187           | 0.00        | 6373           |
| <b>1</b> | 10/5/2022 13:43    | 0.25        | 3169           | 3049           | 0.00        | 6218           |
|          | 10/5/2022 13:44    | 0.25        | 3133           | 2563           | 0.00        | 5696           |
|          | 10/5/2022 13:45    | 0.26        | 3157           | 2104           | 0.00        | 5260           |
|          | 10/5/2022 13:46    | 0.26        | 3226           | 2052           | 0.00        | 5278           |
|          | 10/5/2022 13:47    | 0.25        | 3243           | 2088           | 0.00        | 5331           |
|          | 10/5/2022 13:48    | 0.26        | 3182           | 2391           | 0.00        | 5573           |
|          | 10/5/2022 13:49    | 0.26        | 3150           | 2723           | 0.00        | 5873           |
|          | 10/5/2022 13:50    | 0.26        | 3167           | 2886           | 0.00        | 6053           |
|          | 10/5/2022 13:51    | 0.26        | 3199           | 2933           | 0.00        | 6132           |
|          | 10/5/2022 13:52    | 0.25        | 3187           | 2936           | 0.00        | 6122           |
|          | 10/5/2022 13:53    | 0.26        | 3181           | 2875           | 0.00        | 6056           |
|          | 10/5/2022 13:54    | 0.26        | 3146           | 2707           | 0.00        | 5853           |
|          | 10/5/2022 13:55    | 0.26        | 3140           | 2448           | 0.00        | 5589           |
|          | 10/5/2022 13:56    | 0.26        | 3184           | 2316           | 0.00        | 5500           |
|          | 10/5/2022 13:57    | 0.26        | 3215           | 2350           | 0.00        | 5565           |
|          | 10/5/2022 13:58    |             |                |                |             |                |
|          | <b>Run average</b> | <b>0.26</b> | <b>3146.98</b> | <b>2680.01</b> | <b>0.00</b> | <b>5826.99</b> |



## CEMS Data

| Run # | Date/Time          | H2S (ppm)   | EP FG          | EP FG          | EP FG       | EP FG          |
|-------|--------------------|-------------|----------------|----------------|-------------|----------------|
|       |                    | 07AI0607I   | 07fi0746       | 07fi0827       | 78fc0015    | Total (msdfd)  |
|       | 10/5/2022 13:58    | 0.26        | 3211           | 2486           | 0.00        | 5698           |
|       | 10/5/2022 13:59    | 0.26        | 3206           | 2672           | 0.00        | 5878           |
|       | 10/5/2022 14:00    | 0.26        | 3211           | 2813           | 0.00        | 6023           |
|       | 10/5/2022 14:01    | 0.25        | 3233           | 2892           | 0.00        | 6125           |
|       | 10/5/2022 14:02    | 0.26        | 3211           | 2947           | 0.00        | 6158           |
|       | 10/5/2022 14:03    | 0.26        | 3176           | 3058           | 0.00        | 6233           |
|       | 10/5/2022 14:04    | 0.26        | 3131           | 3145           | 0.00        | 6276           |
|       | 10/5/2022 14:05    | 0.26        | 3088           | 3010           | 0.00        | 6099           |
|       | 10/5/2022 14:06    | 0.26        | 3036           | 2638           | 0.00        | 5675           |
|       | 10/5/2022 14:07    | 0.26        | 3024           | 2281           | 0.00        | 5305           |
|       | 10/5/2022 14:08    | 0.26        | 3134           | 2155           | 0.00        | 5289           |
|       | 10/5/2022 14:09    | 0.26        | 3207           | 2273           | 0.00        | 5480           |
|       | 10/5/2022 14:10    | 0.26        | 3191           | 2496           | 0.00        | 5687           |
|       | 10/5/2022 14:11    | 0.26        | 3113           | 2761           | 0.00        | 5874           |
|       | 10/5/2022 14:12    | 0.26        | 3067           | 2992           | 0.00        | 6058           |
| 2     | 10/5/2022 14:13    | 0.26        | 3036           | 3182           | 0.00        | 6218           |
|       | 10/5/2022 14:14    | 0.26        | 3074           | 3377           | 0.00        | 6452           |
|       | 10/5/2022 14:15    | 0.25        | 3113           | 3494           | 0.00        | 6607           |
|       | 10/5/2022 14:16    | 0.26        | 3130           | 3423           | 0.00        | 6553           |
|       | 10/5/2022 14:17    | 0.25        | 3117           | 3011           | 0.00        | 6128           |
|       | 10/5/2022 14:18    | 0.25        | 3112           | 2489           | 0.00        | 5601           |
|       | 10/5/2022 14:19    | 0.25        | 3141           | 2156           | 0.00        | 5298           |
|       | 10/5/2022 14:20    | 0.26        | 3205           | 2112           | 0.00        | 5317           |
|       | 10/5/2022 14:21    | 0.26        | 3215           | 2272           | 0.00        | 5487           |
|       | 10/5/2022 14:22    | 0.25        | 3230           | 2477           | 0.00        | 5708           |
|       | 10/5/2022 14:23    | 0.25        | 3215           | 2635           | 0.00        | 5849           |
|       | 10/5/2022 14:24    | 0.26        | 3193           | 2733           | 0.00        | 5926           |
|       | 10/5/2022 14:25    | 0.28        | 3263           | 2668           | 0.00        | 5930           |
|       | 10/5/2022 14:26    | 0.28        | 3490           | 2459           | 0.00        | 5949           |
|       | 10/5/2022 14:27    | 0.28        | 3415           | 2242           | 0.00        | 5656           |
|       | 10/5/2022 14:28    |             |                |                |             |                |
|       | <b>Run average</b> | <b>0.26</b> | <b>3172.90</b> | <b>2711.65</b> | <b>0.00</b> | <b>5884.55</b> |

## CEMS Data

| Run #    | Date/Time          | H2S (ppm)<br>07AI0607I | EP FG<br>07fi0746 | EP FG<br>07fi0827 | EP FG<br>78fc0015 | EP FG<br>Total (msdfd) |
|----------|--------------------|------------------------|-------------------|-------------------|-------------------|------------------------|
|          | 10/5/2022 14:28    | 0.27                   | 3289              | 2195              | 0.00              | 5485                   |
|          | 10/5/2022 14:29    | 0.26                   | 3181              | 2285              | 0.00              | 5466                   |
|          | 10/5/2022 14:30    | 0.25                   | 3135              | 2416              | 0.00              | 5551                   |
|          | 10/5/2022 14:31    | 0.25                   | 3153              | 2548              | 0.00              | 5702                   |
|          | 10/5/2022 14:32    | 0.25                   | 3208              | 2625              | 0.00              | 5833                   |
|          | 10/5/2022 14:33    | 0.25                   | 3208              | 2632              | 0.00              | 5839                   |
|          | 10/5/2022 14:34    | 0.25                   | 3219              | 2603              | 0.00              | 5822                   |
|          | 10/5/2022 14:35    | 0.26                   | 3223              | 2499              | 0.00              | 5722                   |
|          | 10/5/2022 14:36    | 0.25                   | 3237              | 2378              | 0.00              | 5615                   |
|          | 10/5/2022 14:37    | 0.25                   | 3216              | 2325              | 0.00              | 5542                   |
|          | 10/5/2022 14:38    | 0.25                   | 3169              | 2405              | 0.00              | 5574                   |
|          | 10/5/2022 14:39    | 0.25                   | 3194              | 2540              | 0.00              | 5735                   |
|          | 10/5/2022 14:40    | 0.25                   | 3219              | 2654              | 0.00              | 5872                   |
|          | 10/5/2022 14:41    | 0.25                   | 3210              | 2794              | 0.00              | 6004                   |
|          | 10/5/2022 14:42    | 0.26                   | 3142              | 2996              | 0.00              | 6137                   |
| <b>3</b> | 10/5/2022 14:43    | 0.25                   | 3115              | 3294              | 0.00              | 6409                   |
|          | 10/5/2022 14:44    | 0.28                   | 3293              | 3838              | 0.00              | 7132                   |
|          | 10/5/2022 14:45    | 0.39                   | 3308              | 4562              | 3.19              | 7873                   |
|          | 10/5/2022 14:46    | 0.40                   | 3178              | 5115              | 40.35             | 8333                   |
|          | 10/5/2022 14:47    | 0.40                   | 3022              | 5177              | 86.65             | 8286                   |
|          | 10/5/2022 14:48    | 0.37                   | 2924              | 4398              | 132.96            | 7455                   |
|          | 10/5/2022 14:49    | 0.25                   | 2956              | 2952              | 196.44            | 6104                   |
|          | 10/5/2022 14:50    | 0.25                   | 3193              | 2113              | 88.83             | 5395                   |
|          | 10/5/2022 14:51    | 0.25                   | 3335              | 2018              | 365.46            | 5719                   |
|          | 10/5/2022 14:52    | 0.26                   | 3315              | 2041              | 207.89            | 5564                   |
|          | 10/5/2022 14:53    | 0.25                   | 3199              | 2091              | 272.52            | 5563                   |
|          | 10/5/2022 14:54    | 0.25                   | 3128              | 2390              | 427.15            | 5945                   |
|          | 10/5/2022 14:55    | 0.26                   | 3157              | 2954              | 207.10            | 6318                   |
|          | 10/5/2022 14:56    | 0.26                   | 3257              | 3434              | 147.87            | 6839                   |
|          | 10/5/2022 14:57    | 0.26                   | 3219              | 3704              | 332.30            | 7256                   |
|          | 10/5/2022 14:58    |                        |                   |                   |                   |                        |
|          | <b>Run average</b> | <b>0.27</b>            | <b>3186.73</b>    | <b>2932.55</b>    | <b>83.62</b>      | <b>6202.90</b>         |

## CEMS Data

| Run # | Date/Time          | H2S (ppm)   | EP FG          | EP FG          | EP FG        | EP FG          |
|-------|--------------------|-------------|----------------|----------------|--------------|----------------|
|       |                    | 07A106071   | 07fi0746       | 07fi0827       | 78fc0015     | Total (msdfd)  |
|       | 10/5/2022 14:58    | 0.26        | 3158           | 3570           | 209.25       | 6937           |
|       | 10/5/2022 14:59    | 0.25        | 3081           | 3006           | 256.14       | 6343           |
|       | 10/5/2022 15:00    | 0.26        | 3085           | 2319           | 450.60       | 5854           |
|       | 10/5/2022 15:01    | 0.26        | 3266           | 2036           | 205.99       | 5508           |
|       | 10/5/2022 15:02    | 0.26        | 3412           | 2043           | 142.31       | 5597           |
|       | 10/5/2022 15:03    | 0.26        | 3408           | 2064           | 344.30       | 5816           |
|       | 10/5/2022 15:04    | 0.25        | 3324           | 2148           | 94.53        | 5566           |
|       | 10/5/2022 15:05    | 0.25        | 3157           | 2527           | 171.11       | 5855           |
|       | 10/5/2022 15:06    | 0.25        | 3054           | 2941           | 197.05       | 6192           |
|       | 10/5/2022 15:07    | 0.26        | 3077           | 3242           | 9.17         | 6328           |
|       | 10/5/2022 15:08    | 0.26        | 3130           | 3459           | 25.83        | 6615           |
|       | 10/5/2022 15:09    | 0.34        | 3159           | 3482           | 97.18        | 6739           |
|       | 10/5/2022 15:10    | 0.34        | 3107           | 3177           | 0.38         | 6284           |
|       | 10/5/2022 15:11    | 0.34        | 3060           | 2577           | 0.37         | 5637           |
|       | 10/5/2022 15:12    | 0.34        | 3170           | 2085           | 0.37         | 5256           |
| 4     | 10/5/2022 15:13    | 0.26        | 3305           | 2045           | 0.36         | 5351           |
|       | 10/5/2022 15:14    | 0.26        | 3249           | 2117           | 0.35         | 5366           |
|       | 10/5/2022 15:15    | 0.26        | 3142           | 2391           | 0.35         | 5533           |
|       | 10/5/2022 15:16    | 0.26        | 3069           | 2753           | 0.34         | 5823           |
|       | 10/5/2022 15:17    | 0.25        | 3065           | 2936           | 0.33         | 6001           |
|       | 10/5/2022 15:18    | 0.25        | 3120           | 2967           | 0.33         | 6088           |
|       | 10/5/2022 15:19    | 0.25        | 3170           | 2949           | 0.32         | 6119           |
|       | 10/5/2022 15:20    | 0.26        | 3155           | 2884           | 0.31         | 6039           |
|       | 10/5/2022 15:21    | 0.25        | 3093           | 2721           | 0.31         | 5814           |
|       | 10/5/2022 15:22    | 0.26        | 3042           | 2433           | 0.30         | 5476           |
|       | 10/5/2022 15:23    | 0.26        | 3082           | 2192           | 0.29         | 5274           |
|       | 10/5/2022 15:24    | 0.25        | 3120           | 2171           | 0.29         | 5291           |
|       | 10/5/2022 15:25    | 0.25        | 3121           | 2297           | 0.28         | 5418           |
|       | 10/5/2022 15:26    | 0.26        | 3168           | 2464           | 0.27         | 5632           |
|       | 10/5/2022 15:27    | 0.26        | 3158           | 2610           | 0.27         | 5768           |
|       | 10/5/2022 15:28    |             |                |                |              |                |
|       | <b>Run average</b> | <b>0.27</b> | <b>3156.81</b> | <b>2620.14</b> | <b>73.64</b> | <b>5850.60</b> |



## CEMS Data

| Run #    | Date/Time          | H2S (ppm)<br>07AI0607I | EP FG<br>07fi0746 | EP FG<br>07fi0827 | EP FG<br>78fc0015 | EP FG<br>Total (msdfd) |
|----------|--------------------|------------------------|-------------------|-------------------|-------------------|------------------------|
|          | 10/5/2022 15:28    | 0.26                   | 3139              | 2723              | 0.26              | 5862                   |
|          | 10/5/2022 15:29    | 0.26                   | 3099              | 2800              | 0.25              | 5900                   |
|          | 10/5/2022 15:30    | 0.25                   | 3090              | 2844              | 0.25              | 5934                   |
|          | 10/5/2022 15:31    | 0.25                   | 3120              | 2806              | 0.24              | 5926                   |
|          | 10/5/2022 15:32    | 0.25                   | 3289              | 2623              | 0.23              | 5912                   |
|          | 10/5/2022 15:33    | 0.27                   | 3340              | 2329              | 0.23              | 5669                   |
|          | 10/5/2022 15:34    | 0.27                   | 3299              | 2190              | 0.22              | 5488                   |
|          | 10/5/2022 15:35    | 0.28                   | 3250              | 2142              | 0.21              | 5392                   |
|          | 10/5/2022 15:36    | 0.28                   | 3141              | 2231              | 0.21              | 5372                   |
|          | 10/5/2022 15:37    | 0.27                   | 3116              | 2383              | 0.20              | 5500                   |
|          | 10/5/2022 15:38    | 0.27                   | 3194              | 2481              | 0.19              | 5675                   |
|          | 10/5/2022 15:39    | 0.27                   | 3357              | 2485              | 0.19              | 5842                   |
|          | 10/5/2022 15:40    | 0.27                   | 3389              | 2445              | 0.18              | 5834                   |
|          | 10/5/2022 15:41    | 0.26                   | 3328              | 2491              | 0.17              | 5819                   |
|          | 10/5/2022 15:42    | 0.25                   | 3214              | 2551              | 0.17              | 5765                   |
| <b>5</b> | 10/5/2022 15:43    | 0.25                   | 3121              | 2590              | 0.16              | 5712                   |
|          | 10/5/2022 15:44    | 0.25                   | 3143              | 2505              | 0.15              | 5648                   |
|          | 10/5/2022 15:45    | 0.35                   | 3229              | 2356              | 0.15              | 5586                   |
|          | 10/5/2022 15:46    | 0.39                   | 3374              | 2211              | 0.14              | 5586                   |
|          | 10/5/2022 15:47    | 0.39                   | 3380              | 2135              | 0.13              | 5515                   |
|          | 10/5/2022 15:48    | 0.39                   | 3349              | 2170              | 0.13              | 5519                   |
|          | 10/5/2022 15:49    | 0.28                   | 3301              | 2258              | 0.12              | 5559                   |
|          | 10/5/2022 15:50    | 0.25                   | 3254              | 2400              | 0.11              | 5654                   |
|          | 10/5/2022 15:51    | 0.25                   | 3264              | 2502              | 0.11              | 5765                   |
|          | 10/5/2022 15:52    | 0.25                   | 3293              | 2530              | 0.10              | 5823                   |
|          | 10/5/2022 15:53    | 0.34                   | 3347              | 2490              | 0.09              | 5836                   |
|          | 10/5/2022 15:54    | 0.40                   | 3461              | 2390              | 0.09              | 5851                   |
|          | 10/5/2022 15:55    | 0.40                   | 3389              | 2299              | 0.08              | 5688                   |
|          | 10/5/2022 15:56    | 0.40                   | 3333              | 2261              | 0.07              | 5593                   |
|          | 10/5/2022 15:57    | 0.31                   | 3279              | 2244              | 0.07              | 5523                   |
|          | 10/5/2022 15:58    |                        |                   |                   |                   |                        |
|          | <b>Run average</b> | <b>0.30</b>            | <b>3262.71</b>    | <b>2428.84</b>    | <b>0.16</b>       | <b>5691.72</b>         |

## CEMS Data

| Run #    | Date/Time          | H2S (ppm)<br>07A106071 | EP FG<br>07fi0746 | EP FG<br>07fi0827 | EP FG<br>78fc0015 | EP FG<br>Total (msdfd) |
|----------|--------------------|------------------------|-------------------|-------------------|-------------------|------------------------|
|          | 10/5/2022 15:58    | 0.25                   | 3237              | 2258              | 0.06              | 5495                   |
|          | 10/5/2022 15:59    | 0.25                   | 3202              | 2329              | 0.05              | 5532                   |
|          | 10/5/2022 16:00    | 0.26                   | 3194              | 2426              | 0.05              | 5619                   |
|          | 10/5/2022 16:01    | 0.26                   | 3185              | 2506              | 0.04              | 5691                   |
|          | 10/5/2022 16:02    | 0.25                   | 3192              | 2580              | 0.03              | 5772                   |
|          | 10/5/2022 16:03    | 0.25                   | 3186              | 2619              | 0.03              | 5805                   |
|          | 10/5/2022 16:04    | 0.26                   | 3198              | 2606              | 0.02              | 5804                   |
|          | 10/5/2022 16:05    | 0.25                   | 3184              | 2608              | 0.01              | 5792                   |
|          | 10/5/2022 16:06    | 0.25                   | 3182              | 2561              | 0.01              | 5743                   |
|          | 10/5/2022 16:07    | 0.24                   | 3302              | 2477              | 0.00              | 5779                   |
|          | 10/5/2022 16:08    | 0.25                   | 3298              | 2391              | 0.00              | 5689                   |
|          | 10/5/2022 16:09    | 0.26                   | 3218              | 2369              | 0.00              | 5587                   |
|          | 10/5/2022 16:10    | 0.25                   | 3106              | 2440              | 0.00              | 5546                   |
|          | 10/5/2022 16:11    | 0.25                   | 3048              | 2555              | 0.00              | 5603                   |
|          | 10/5/2022 16:12    | 0.25                   | 3062              | 2633              | 0.00              | 5695                   |
| <b>6</b> | 10/5/2022 16:13    | 0.25                   | 3093              | 2672              | 0.00              | 5765                   |
|          | 10/5/2022 16:14    | 0.26                   | 3117              | 2707              | 0.00              | 5824                   |
|          | 10/5/2022 16:15    | 0.25                   | 3084              | 2740              | 0.00              | 5824                   |
|          | 10/5/2022 16:16    | 0.26                   | 3069              | 2736              | 0.00              | 5806                   |
|          | 10/5/2022 16:17    | 0.25                   | 3112              | 2704              | 2.21              | 5818                   |
|          | 10/5/2022 16:18    | 0.25                   | 3134              | 2637              | 43.67             | 5815                   |
|          | 10/5/2022 16:19    | 0.25                   | 3143              | 2570              | 99.59             | 5812                   |
|          | 10/5/2022 16:20    | 0.25                   | 3145              | 2528              | 155.51            | 5828                   |
|          | 10/5/2022 16:21    | 0.25                   | 3161              | 2431              | 323.23            | 5915                   |
|          | 10/5/2022 16:22    | 0.25                   | 3248              | 2377              | 30.01             | 5655                   |
|          | 10/5/2022 16:23    | 0.25                   | 3189              | 2438              | 247.90            | 5874                   |
|          | 10/5/2022 16:24    | 0.25                   | 3154              | 2502              | 0.23              | 5657                   |
|          | 10/5/2022 16:25    | 0.25                   | 3121              | 2612              | 297.03            | 6030                   |
|          | 10/5/2022 16:26    | 0.25                   | 3106              | 2618              | 249.86            | 5974                   |
|          | 10/5/2022 16:27    | 0.25                   | 3097              | 2557              | 161.03            | 5815                   |
|          | 10/5/2022 16:28    |                        |                   |                   |                   |                        |
|          | <b>Run average</b> | <b>0.25</b>            | <b>3158.95</b>    | <b>2539.57</b>    | <b>53.69</b>      | <b>5752.20</b>         |

## CEMS Data

| Run # | Date/Time          | H2S (ppm)<br>07AI0607I | EP FG<br>07fi0746 | EP FG<br>07fi0827 | EP FG<br>78fc0015 | EP FG<br>Total (msdfd) |
|-------|--------------------|------------------------|-------------------|-------------------|-------------------|------------------------|
|       | 10/5/2022 16:28    | 0.26                   | 3090              | 2599              | 459.49            | 6148                   |
|       | 10/5/2022 16:29    | 0.25                   | 3140              | 2607              | 260.71            | 6008                   |
|       | 10/5/2022 16:30    | 0.25                   | 3116              | 2468              | 259.88            | 5844                   |
|       | 10/5/2022 16:31    | 0.26                   | 3104              | 2447              | 545.88            | 6097                   |
|       | 10/5/2022 16:32    | 0.25                   | 3166              | 2426              | 139.40            | 5731                   |
|       | 10/5/2022 16:33    | 0.26                   | 3156              | 2434              | 311.20            | 5902                   |
|       | 10/5/2022 16:34    | 0.25                   | 3176              | 2538              | 0.15              | 5714                   |
|       | 10/5/2022 16:35    | 0.26                   | 3152              | 2547              | 68.16             | 5767                   |
|       | 10/5/2022 16:36    | 0.25                   | 3162              | 2615              | 0.09              | 5777                   |
|       | 10/5/2022 16:37    | 0.26                   | 3132              | 2660              | 0.03              | 5792                   |
|       | 10/5/2022 16:38    | 0.25                   | 3058              | 2612              | 252.36            | 5922                   |
|       | 10/5/2022 16:39    | 0.25                   | 3076              | 2703              | 26.55             | 5806                   |
|       | 10/5/2022 16:40    | 0.26                   | 3098              | 2656              | 202.63            | 5957                   |
|       | 10/5/2022 16:41    | 0.26                   | 3158              | 2646              | 0.22              | 5804                   |
|       | 10/5/2022 16:42    | 0.25                   | 3129              | 2602              | 137.70            | 5868                   |
| 7     | 10/5/2022 16:43    | 0.26                   | 3101              | 2559              | 2.02              | 5662                   |
|       | 10/5/2022 16:44    | 0.25                   | 3084              | 2523              | 187.41            | 5794                   |
|       | 10/5/2022 16:45    | 0.26                   | 3092              | 2533              | 69.60             | 5694                   |
|       | 10/5/2022 16:46    | 0.25                   | 3101              | 2530              | 293.14            | 5924                   |
|       | 10/5/2022 16:47    | 0.26                   | 3145              | 2489              | 168.49            | 5803                   |
|       | 10/5/2022 16:48    | 0.26                   | 3159              | 2493              | 176.05            | 5829                   |
|       | 10/5/2022 16:49    | 0.27                   | 3155              | 2507              | 212.41            | 5875                   |
|       | 10/5/2022 16:50    | 0.39                   | 3162              | 2531              | 7.61              | 5701                   |
|       | 10/5/2022 16:51    | 0.39                   | 3147              | 2606              | 0.07              | 5753                   |
|       | 10/5/2022 16:52    | 0.39                   | 3136              | 2603              | 0.05              | 5740                   |
|       | 10/5/2022 16:53    | 0.38                   | 3142              | 2566              | 0.04              | 5708                   |
|       | 10/5/2022 16:54    | 0.25                   | 3161              | 2505              | 0.02              | 5666                   |
|       | 10/5/2022 16:55    | 0.25                   | 3153              | 2496              | 96.73             | 5745                   |
|       | 10/5/2022 16:56    | 0.25                   | 3123              | 2459              | 114.43            | 5696                   |
|       | 10/5/2022 16:57    | 0.25                   | 3101              | 2537              | 0.04              | 5638                   |
|       | 10/5/2022 16:58    |                        |                   |                   |                   |                        |
|       | <b>Run average</b> | <b>0.27</b>            | <b>3129.19</b>    | <b>2549.94</b>    | <b>133.09</b>     | <b>5812.22</b>         |



## CEMS Data

| Run # | Date/Time          | H2S (ppm)   | EP FG          | EP FG          | EP FG        | EP FG          |
|-------|--------------------|-------------|----------------|----------------|--------------|----------------|
|       |                    | 07AI0607I   | 07fi0746       | 07fi0827       | 78fc0015     | Total (msdfd)  |
|       | 10/5/2022 16:58    | 0.25        | 3093           | 2524           | 218.40       | 5835           |
|       | 10/5/2022 16:59    | 0.26        | 3147           | 2587           | 0.17         | 5735           |
|       | 10/5/2022 17:00    | 0.25        | 3137           | 2582           | 132.25       | 5852           |
|       | 10/5/2022 17:01    | 0.25        | 3138           | 2591           | 5.79         | 5734           |
|       | 10/5/2022 17:02    | 0.25        | 3098           | 2546           | 279.26       | 5924           |
|       | 10/5/2022 17:03    | 0.26        | 3080           | 2581           | 6.06         | 5667           |
|       | 10/5/2022 17:04    | 0.25        | 3072           | 2556           | 277.86       | 5906           |
|       | 10/5/2022 17:05    | 0.26        | 3142           | 2562           | 85.90        | 5791           |
|       | 10/5/2022 17:06    | 0.25        | 3175           | 2511           | 113.40       | 5800           |
|       | 10/5/2022 17:07    | 0.25        | 3157           | 2510           | 0.08         | 5667           |
|       | 10/5/2022 17:08    | 0.25        | 3126           | 2563           | 0.08         | 5689           |
|       | 10/5/2022 17:09    | 0.25        | 3127           | 2592           | 0.08         | 5719           |
|       | 10/5/2022 17:10    | 0.25        | 3123           | 2606           | 0.08         | 5729           |
|       | 10/5/2022 17:11    | 0.26        | 3147           | 2616           | 0.08         | 5763           |
|       | 10/5/2022 17:12    | 0.25        | 3161           | 2603           | 0.08         | 5764           |
| 8     | 10/5/2022 17:13    | 0.25        | 3163           | 2598           | 0.08         | 5761           |
|       | 10/5/2022 17:14    | 0.25        | 3164           | 2592           | 0.07         | 5756           |
|       | 10/5/2022 17:15    | 0.25        | 3219           | 2529           | 0.07         | 5748           |
|       | 10/5/2022 17:16    | 0.25        | 3231           | 2466           | 0.07         | 5697           |
|       | 10/5/2022 17:17    | 0.26        | 3227           | 2443           | 0.07         | 5669           |
|       | 10/5/2022 17:18    | 0.25        | 3201           | 2430           | 0.07         | 5631           |
|       | 10/5/2022 17:19    | 0.26        | 3172           | 2447           | 0.07         | 5619           |
|       | 10/5/2022 17:20    | 0.25        | 3144           | 2480           | 0.07         | 5624           |
|       | 10/5/2022 17:21    | 0.25        | 3120           | 2519           | 0.06         | 5638           |
|       | 10/5/2022 17:22    | 0.25        | 3121           | 2557           | 0.06         | 5678           |
|       | 10/5/2022 17:23    | 0.25        | 3119           | 2580           | 0.06         | 5699           |
|       | 10/5/2022 17:24    | 0.25        | 3140           | 2587           | 0.06         | 5727           |
|       | 10/5/2022 17:25    | 0.25        | 3168           | 2555           | 0.06         | 5723           |
|       | 10/5/2022 17:26    | 0.25        | 3187           | 2537           | 0.06         | 5724           |
|       | 10/5/2022 17:27    | 0.25        | 3180           | 2503           | 0.05         | 5682           |
|       | 10/5/2022 17:28    |             |                |                |              |                |
|       | <b>Run average</b> | <b>0.25</b> | <b>3149.29</b> | <b>2545.09</b> | <b>37.35</b> | <b>5731.73</b> |

## CEMS Data

| Run # | Date/Time          | H2S (ppm)<br>07AI0607I | EP FG<br>07fi0746 | EP FG<br>07fi0827 | EP FG<br>78fc0015 | EP FG<br>Total (msdfd) |
|-------|--------------------|------------------------|-------------------|-------------------|-------------------|------------------------|
|       | 10/5/2022 17:28    | 0.25                   | 3155              | 2485              | 0.05              | 5640                   |
|       | 10/5/2022 17:29    | 0.26                   | 3133              | 2469              | 0.05              | 5601                   |
|       | 10/5/2022 17:30    | 0.27                   | 3135              | 2453              | 0.05              | 5589                   |
|       | 10/5/2022 17:31    | 0.27                   | 3169              | 2461              | 0.05              | 5630                   |
|       | 10/5/2022 17:32    | 0.27                   | 3188              | 2481              | 0.05              | 5669                   |
|       | 10/5/2022 17:33    | 0.26                   | 3205              | 2486              | 0.05              | 5691                   |
|       | 10/5/2022 17:34    | 0.25                   | 3207              | 2508              | 0.04              | 5715                   |
|       | 10/5/2022 17:35    | 0.25                   | 3193              | 2522              | 0.04              | 5715                   |
|       | 10/5/2022 17:36    | 0.26                   | 3180              | 2538              | 0.04              | 5718                   |
|       | 10/5/2022 17:37    | 0.25                   | 3169              | 2532              | 0.04              | 5701                   |
|       | 10/5/2022 17:38    | 0.25                   | 3192              | 2519              | 0.04              | 5712                   |
|       | 10/5/2022 17:39    | 0.25                   | 3173              | 2506              | 0.04              | 5679                   |
|       | 10/5/2022 17:40    | 0.25                   | 3197              | 2480              | 0.04              | 5677                   |
|       | 10/5/2022 17:41    | 0.25                   | 3205              | 2440              | 0.03              | 5646                   |
|       | 10/5/2022 17:42    | 0.25                   | 3217              | 2428              | 0.03              | 5645                   |
| 9     | 10/5/2022 17:43    | 0.25                   | 3193              | 2464              | 0.03              | 5657                   |
|       | 10/5/2022 17:44    | 0.25                   | 3177              | 2513              | 0.03              | 5690                   |
|       | 10/5/2022 17:45    | 0.25                   | 3179              | 2539              | 0.03              | 5718                   |
|       | 10/5/2022 17:46    | 0.25                   | 3176              | 2558              | 0.03              | 5733                   |
|       | 10/5/2022 17:47    | 0.25                   | 3186              | 2562              | 0.03              | 5748                   |
|       | 10/5/2022 17:48    | 0.26                   | 3197              | 2533              | 0.02              | 5730                   |
|       | 10/5/2022 17:49    | 0.26                   | 3232              | 2511              | 0.02              | 5743                   |
|       | 10/5/2022 17:50    | 0.25                   | 3251              | 2489              | 0.02              | 5740                   |
|       | 10/5/2022 17:51    | 0.26                   | 3226              | 2461              | 0.02              | 5687                   |
|       | 10/5/2022 17:52    | 0.25                   | 3178              | 2472              | 0.02              | 5650                   |
|       | 10/5/2022 17:53    | 0.25                   | 3140              | 2498              | 0.02              | 5638                   |
|       | 10/5/2022 17:54    | 0.25                   | 3131              | 2528              | 0.02              | 5659                   |
|       | 10/5/2022 17:55    | 0.25                   | 3106              | 2569              | 0.01              | 5675                   |
|       | 10/5/2022 17:56    | 0.25                   | 3100              | 2612              | 0.01              | 5711                   |
|       | 10/5/2022 17:57    | 0.25                   | 3111              | 2636              | 0.01              | 5747                   |
|       | 10/5/2022 17:58    |                        |                   |                   |                   |                        |
|       | <b>Run average</b> | <b>0.26</b>            | <b>3176.68</b>    | <b>2508.49</b>    | <b>0.03</b>       | <b>5685.20</b>         |

## CEMS Data

| Run #     | Date/Time          | H2S (ppm)<br>07AI0607I | EP FG<br>07fi0746 | EP FG<br>07fi0827 | EP FG<br>78fc0015 | EP FG<br>Total (msdfd) |
|-----------|--------------------|------------------------|-------------------|-------------------|-------------------|------------------------|
|           | 10/5/2022 17:58    | 0.25                   | 3125              | 2651              | 0.01              | 5776                   |
|           | 10/5/2022 17:59    | 0.25                   | 3109              | 2661              | 0.01              | 5769                   |
|           | 10/5/2022 18:00    | 0.25                   | 3088              | 2663              | 0.01              | 5751                   |
|           | 10/5/2022 18:01    | 0.25                   | 3083              | 2655              | 0.00              | 5738                   |
|           | 10/5/2022 18:02    | 0.26                   | 3088              | 2630              | 0.00              | 5718                   |
|           | 10/5/2022 18:03    | 0.25                   | 3099              | 2577              | 0.00              | 5676                   |
|           | 10/5/2022 18:04    | 0.25                   | 3106              | 2551              | 0.00              | 5657                   |
|           | 10/5/2022 18:05    | 0.25                   | 3143              | 2537              | 0.00              | 5680                   |
|           | 10/5/2022 18:06    | 0.25                   | 3180              | 2532              | 0.00              | 5712                   |
|           | 10/5/2022 18:07    | 0.25                   | 3186              | 2546              | 0.00              | 5732                   |
|           | 10/5/2022 18:08    | 0.25                   | 3198              | 2573              | 0.00              | 5771                   |
|           | 10/5/2022 18:09    | 0.25                   | 3198              | 2605              | 0.00              | 5803                   |
|           | 10/5/2022 18:10    | 0.25                   | 3182              | 2662              | 0.00              | 5844                   |
|           | 10/5/2022 18:11    | 0.25                   | 3133              | 2707              | 0.00              | 5840                   |
|           | 10/5/2022 18:12    | 0.25                   | 3108              | 2727              | 0.00              | 5835                   |
| <b>10</b> | 10/5/2022 18:13    | 0.25                   | 3087              | 2737              | 0.00              | 5823                   |
|           | 10/5/2022 18:14    | 0.25                   | 3068              | 2721              | 0.00              | 5789                   |
|           | 10/5/2022 18:15    | 0.25                   | 3054              | 2678              | 0.00              | 5732                   |
|           | 10/5/2022 18:16    | 0.25                   | 3089              | 2627              | 0.00              | 5716                   |
|           | 10/5/2022 18:17    | 0.25                   | 3114              | 2583              | 0.00              | 5696                   |
|           | 10/5/2022 18:18    | 0.24                   | 3101              | 2592              | 0.00              | 5693                   |
|           | 10/5/2022 18:19    | 0.25                   | 3080              | 2627              | 0.00              | 5707                   |
|           | 10/5/2022 18:20    | 0.25                   | 3131              | 2653              | 0.00              | 5784                   |
|           | 10/5/2022 18:21    | 0.25                   | 3243              | 2613              | 0.00              | 5855                   |
|           | 10/5/2022 18:22    | 0.25                   | 3329              | 2542              | 0.00              | 5871                   |
|           | 10/5/2022 18:23    | 0.25                   | 3333              | 2500              | 0.00              | 5833                   |
|           | 10/5/2022 18:24    | 0.25                   | 3275              | 2514              | 0.00              | 5789                   |
|           | 10/5/2022 18:25    | 0.25                   | 3150              | 2585              | 0.00              | 5735                   |
|           | 10/5/2022 18:26    | 0.25                   | 3083              | 2640              | 0.00              | 5723                   |
|           | 10/5/2022 18:27    | 0.25                   | 3118              | 2611              | 0.00              | 5730                   |
|           | 10/5/2022 18:28    |                        |                   |                   |                   |                        |
|           | <b>Run average</b> | <b>0.25</b>            | <b>3142.70</b>    | <b>2616.67</b>    | <b>0.00</b>       | <b>5759.36</b>         |



