

# erthwrks

AIR EMISSIONS TESTING FOR INDUSTRY

## *Relative Accuracy Test Audit*

*for*

### **Marathon Petroleum Company LP**

*at the*

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

*on the*

### **Alky Flare**

*subject to*

Permit No. MI-ROP-A9831-2012c

&

40 CFR Part 60, Appendix F



## **Marathon Petroleum Company LP**

**Test Date: October 11, 2023**

**Erthwrks Project No. 9284.1.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: Luke Morrison

Title: Project Manager

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: Jason Dunn

Title: QA Specialist

Signature: 

# TABLE OF CONTENTS

|     |   |   |
|-----|---|---|
| 1.0 | INTRODUCTION .....  | 4 |
| 1.1 | Identification, location and dates of tests .....               | 4 |
| 1.2 | Purpose of Testing.....   | 4 |
| 1.3 | Contact Information .....                                       | 4 |
| 2.0 | SUMMARY OF RESULTS .....  | 5 |
| 3.0 | SOURCE DESCRIPTION.....   | 5 |
| 3.1 | Description of the process .....                                | 5 |
| 3.2 | Applicable permit and source designation .....                  | 5 |
| 4.0 | SAMPLING AND ANALYTICAL PROCEDURES.....                         | 6 |
| 4.1 | Gaseous Sampling – H <sub>2</sub> S.....                        | 6 |
| 4.2 | RATA Procedures .....   | 6 |
| 4.3 | Discussion of sampling procedure or operational variances ..... | 7 |

## List of Tables:

|            |                                   |   |
|------------|-----------------------------------|---|
| Table 2.1: | Alky Flare RATA Results .....     | 5 |
| Table 3.1: | Alky Flare CEMS Description ..... | 5 |

## ATTACHMENTS

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

## 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 Alky Flare in operation at the Detroit Refinery, located in Detroit, Michigan. The RATA test was conducted on October 11, 2023.

### 1.2 Purpose of Testing

This RATA was conducted to demonstrate the accuracy and reliability of the CEMS monitor installed for the Alky Flare 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**

Chase Every  
Environmental Engineer  
Michigan Refining Division  
O: (313)551-6961  
CREvery@marathonpetroleum.com

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

Luke Morrison  
Project Manager  
P.O. Box 150549  
Austin, TX 78715  
512-692-7661 office  
lmorrison@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: Alky Flare RATA Results**

| Pollutant Measured | Performance Specification | Relative Accuracy | Applicable Limit | Pass/Fail |
|--------------------|---------------------------|-------------------|------------------|-----------|
| H <sub>2</sub> S   | Performance Spec. 7       | 1.60% <i>RAAS</i> | <10%             | Pass      |

## 3.0 SOURCE DESCRIPTION

### 3.1 Description of the process

The flare (or torch) systems are open-flame control devices used for control of waste gas streams during both routine process and emergency or upset conditions. Flare vent gas is released to the flare as a result of relief valve leakage, process upsets, process sweep gas, equipment preparation for maintenance, and supplemental gas streams.

The flare 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 Alky Flare CEMS Description**

| Pollutant Measured | Analyzer Manufacturer | Analyzer Model | Detection Principle | Serial Number  |
|--------------------|-----------------------|----------------|---------------------|----------------|
| H <sub>2</sub> S   | Siemens               | Maxum II       | Gas Chromatography  | 30026731501310 |

### 3.2 Applicable permit and source designation

The Detroit Refinery operates the Alky Flare 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.

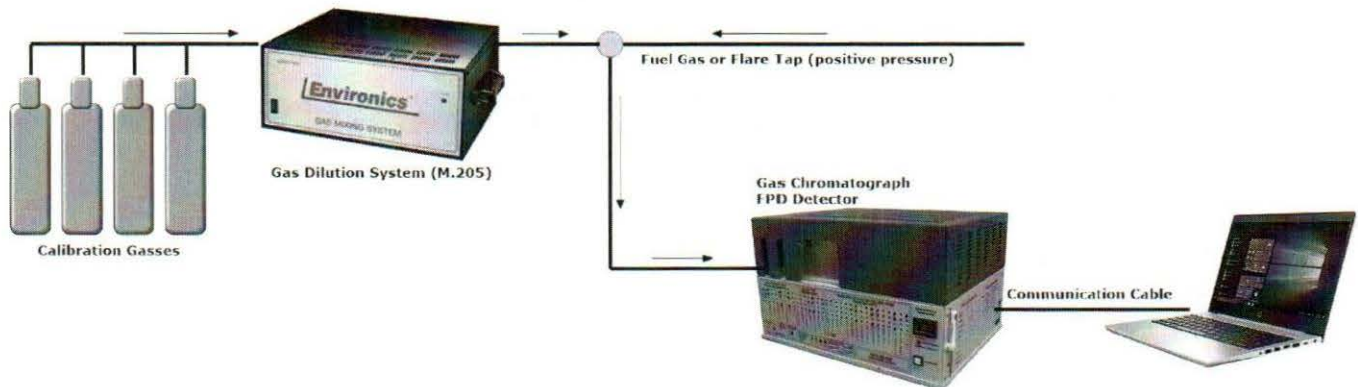
## 4.0 SAMPLING AND ANALYTICAL PROCEDURES

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 Alky Flare operated with no operational variances.

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