

DEPARTMENT OF ENVIRONMENTAL QUALITY  
AIR QUALITY DIVISION  
**ACTIVITY REPORT: On-site Inspection**

A983158849

<b>FACILITY:</b> MARATHON PETROLEUM COMPANY LP		<b>SRN / ID:</b> A9831
<b>LOCATION:</b> 1001 S Oakwood, DETROIT		<b>DISTRICT:</b> Detroit
<b>CITY:</b> DETROIT		<b>COUNTY:</b> WAYNE
<b>CONTACT:</b> Aamani Kura ,		<b>ACTIVITY DATE:</b> 05/04/2021
<b>STAFF:</b> Jorge Acevedo	<b>COMPLIANCE STATUS:</b> Compliance	<b>SOURCE CLASS:</b> MEGASITE
<b>SUBJECT:</b> Compliance Evaluation of FCCU Charge Heater.		
<b>RESOLVED COMPLAINTS:</b>		

**COMPANY NAME** :Marathon Petroleum Company-

**FACILITY ADDRESS** :1001 S. Oakwood, Detroit, MI 48217

**STATE REGISTRAT. NUMBER** :A9831

**SIC CODE** :2911

**EPA SOURCE CLASS** : A

**EPA POLLUTANT CLASS** : Mega Site

**LEVEL OF INSPECTION :** :PCE

**DATE OF INSPECTION** :05/04/2021

**TIME OF INSPECTION** : 10:00 AM

**DATE OF REPORT** :

**REASON FOR INSPECTION** : Annual Compliance Inspection.

**INSPECTED BY** : Jorge Acevedo

**PERSONNEL PRESENT** : Aamani Kura

**FACILITY PHONE NUMBER** :

**FACILITY FAX NUMBER** :

**INSPECTION NARRATIVE:**

**On April May 4, 2021, I conducted a partial compliance evaluation of the Marathon Petroleum Refinery. I arrived around 10:00AM. Mark Dziadosz, of the Technical Programs Unit, was also onsite as well observing the test. After getting our badges, we met with Aamani Kura, our point of contact with the Refinery. Ms. Kura drove us to into the facility so that I could observe the CEMS RATA and Particulate Matter (PM) compliance test.**

The focus of the inspection was the FCCU Charge Heater. Marathon Petroleum was conducting a CEMS Rata on the FCCU Charge Heater CO and NOx CEMS. They were also testing PM from the Charge Heater. The FCCU Charge Heater is fired on Refinery Fuel Gas and Natural Gas. The stack testing company, Earthwrks, was onsite at the FCCU Charge Heater to conduct the RATA. The charge rate for the FCCU was around 45024 barrels per day(BPD). The firing rate was 100.04 mmbtu/hr for the Charge Heater. Disulfide offgas represented 6.94 mmbtu/hr.

Run 1 started 8:53AM. I observed the stack and did not observe any opacity. Run 2 for the PM test began at 11:58PM. The filter from Run1 appeared clean the rinse appeared clear as well.

I left the facility at 1:34 PM.

I requested records from Marathon Petroleum and received them promptly. Compliance analysis was performed to determine the Refinery's compliance with applicable permit conditions and regulations.

## **FACILITY BACKGROUND**

The Detroit Marathon Petroleum Company Refinery (MPC), situated in the southwest of Detroit, processes approximately 115,000 barrels per day (B/D) of crude oil which is refined into a product mix of approximately 50% gasoline, 25% fuel oil, 18% Asphalt, and 7% other products. The makeup of this production will vary depending on the type of crude used as charge stock. The finished products leave the facility via truck, lake tanker, railroad car, or pipeline. The refinery operates 24 hours per day, 7 days per weeks, and 52 weeks per year. The refinery has been operating at this site for more than 50 years. MPC Detroit refinery is both a PSD and ROP major facility.

## **COMPLAINT/COMPLIANCE HISTORY**

The MPC refinery has been issued one violation notice(VN) over the past twelve months.

## **OUTSTANDING CONSENT ORDERS**

**Currently, MPC has one outstanding New Source Review Consent Decrees. One is with the Department of Justice and U.S. EPA (Civil No. 12-11544) lodged on April 5, 2012 and entered August 30, 2012.**

**Consent Decree 01-40119 was terminated by request on November 29, 2016.**

**MPC has three outstanding Consent Orders with the State of Michigan. AQD No. 2014-40 lodged on June 4, 2014, AQD No. 2016-32 lodged on November 3, 2016, and AQD No. 2020-12 lodged on February 1, 2021.**

### **OUTSTANDING LOVs**

**There are no outstanding Violation Notices.**

### **OPERATING SCHEDULE/PRODUCTION RATE**

**The MPC Detroit Refinery operates 24 hours per day, 7 days per week and 52 weeks per year, or 8760 hours per year. The crude unit raw crude oil capacity is nameplated at 115000 barrels per day; the actual crude oil throughput varies depending upon type.**

### **PROCESS DESCRIPTION**

**The FCCU Charge Heater is used to pre heat the feed before it enters the process unit(FCCU).**

### **EQUIPMENT AND PROCESS CONTROLS**

**The FCCU Charge Heater is equipped with Low NOx burners.**

### **APPLICABLE RULES/PERMIT CONDITIONS:**

**Marathon Petroleum Company is subject to the ROP because they are major for NSR and Title V. They are a major source for Hazardous Pollutants. ROP-MI-A9831-2012 was issued on September 27, 2012.**

**The FCCU Charge Heater is covered under MI-ROP-A9831-2012c.**

**Permit Conditions are evaluated below Appendix A:**

**FGHEATERS-S1**

## **FLEXIBLE GROUP CONDITIONS**

### **DESCRIPTION**

**All refinery heaters that burn refinery fuel gas (NSPS, 40 CFR 60, Subpart J and where applicable Ja).  
Permit: 63-08E**

**Emission Units: EU04-VACHTR-S1, EU04-VAC2HTR-S1, EU05-CRUDEHTR-S1, EU08-GOHTCHARHTR-S1, EU09-ALKYDIBREBHTR-S1, EU11-FCCUCHARHTR-S1, EU14-CCRPLCHARHTR-S1, EU14-CCRPLINTHTR-S1, EU16-NHTSTRIPREBOIL-S1, EU16-NHTCHARHTR-S1, EU19-KHTCHARHTR-S1, EU22-FUELOILHTR-S1, EU70-COKERHTR-S1, EU77-DHTHTR-S1**

### **POLLUTION CONTROL EQUIPMENT**

NA

#### **I. EMISSION LIMIT(S)**

<b>Pollutant</b>	<b>Limit</b>	<b>Time Period/ Operating Scenario</b>	<b>Equipment</b>	<b>Compliance Determination</b>
NOx	0.2 lb/MMBTU <sup>2</sup>	Based upon a 12 month rolling time period as	EU11- FCCUCHARHTR- S1	Compliance- Quarterly CEMS excess emission

Pollutant	Limit	Time Period/ Operating Scenario	Equipment	Compliance Determination
		determined at the end of each calendar month		reports show that the NOx emission rate has been met.
PM	0.0019 lb/MMBTU <sup>2</sup>	Three hour average	Each emission unit in FGHEATERS- S1  For EU11- FCCUCHARHTR- S1, this limit applies only to the primary fuel to the heater (refinery fuel gas).	Compliance- Compliance testing was conducted May 2017. Results were 0.0014 lb/MMBTU. Results from May 2021 Test have not been received.
PM10	0.0076 lb/MMBTU <sup>2</sup>	Three hour average	Each emission unit in FGHEATERS- S1.  For EU11- FCCUCHARHTR- S1, this limit applies only to the primary fuel to the heater (refinery fuel gas).	Compliance- Stack test in September 2017 conducted. Results were 0.0031 lb/mmbtu.
CO	0.02 lb/MMBTU <sup>3</sup>	Based on an annual rolling average, as determined at the end of each calendar month	EU11- FCCUCHARHTR- S1	Compliance- Records(4/20-4/21) received showed compliance with limit. Highest emission rate was 0.002.
VOC	0.0055 lb/MMBTU <sup>2</sup>	Three hour average	Each emission unit in FGHEATERS- S1	Compliance- Compliance testing was conducted in May 2017. Results were <0.00078 lb/mmbtu

**II. MATERIAL LIMIT(S)**

<b>Material</b>	<b>Limit</b>	<b>Time Period/ Operating Scenario</b>	<b>Equipment</b>	<b>Compliance Determination</b>
<b>Hydrogen sulfide content of the refinery fuel gas burned in any combustion device in FGHEATERS-S1</b>	<b>0.10 grain per dry standard cubic foot (230 milligrams per dry standard cubic meter or 160 ppmdv)<sup>2*</sup></b>	<b>Based upon a three hour average</b>	<b>FGHEATERS-S1</b>	<b>Compliance-Records were received for the period April 2020 through March 2021. Records show facility in compliance with 3 hour limit.</b>
<b>Hydrogen sulfide content of the refinery fuel gas burned in any combustion device in FGHEATERS-S1</b>	<b>60 ppmdv<sup>3</sup></b>	<b>Annual rolling average, as determined at the end of each calendar month</b>	<b>FGHEATERS-S1</b>	<b>Compliance-Records were received for the time period of April 2020 through March 2021. 12 hour rolling records indicate H2S concentration was well below 60 ppm.</b>
<b>*Compliance with this limit shall be considered compliance with the limits of R 336.1406(1) which have been subsumed under this streamlined requirement.</b>				

**III. PROCESS/OPERATIONAL RESTRICTION(S)**

**1. The heat input to EU11-FCCUCHARHTR-S1 shall not exceed 130 MMBTU/hr on a daily average.<sup>2</sup> (R 336.1205(1), R 336.1225, R 336.2802, 40 CFR 52.21)**

**Compliance- Records were received and indicated that heat input is below 130 MMBTU/hr on a daily average.**

**2. The permittee shall only fire refinery fuel gas and/or sweet natural gas in FGHEATERS-S1.<sup>2</sup> (R 336.1205, R 336.1225, R 336.2802, 40 CFR 52.21)**

Compliance- FCCU Charge heater is fired with refinery fuel gas.

3. The permittee shall not operate EU04-VACHTR-S1, EU05-CRUDEHTR-S1, EU08-GOHTHTR-S1, EU11-FCCUCHARHTR-S1, EU14-CCRPLCHARHTR-S1, or EU14-CCRPLINTHTR-S1 unless the unit's low NO<sub>x</sub> burners are installed, maintained, and operated in a satisfactory manner.<sup>2</sup> (R 336.1205, R 336.1910, R 336.2802, 40 CFR 52.21)

Compliance- FCCU Charge heater is equipped with low NO<sub>x</sub> burner.

#### IV. DESIGN/EQUIPMENT PARAMETER(S)

NA

#### V. TESTING/SAMPLING

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

1. Once during the five year term of this permit and every five years thereafter, the permittee shall verify emission rates from EU11-FCCUCHARHTR-S1, EU14-CCRPLCHARHTR-S1, and EU14-CCRPLINTHTR-S1 of the pollutants listed below by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. For tests conducted prior to commencement of trial operation of the heavy oil upgrade project, the test plan shall demonstrate that test conditions will be representative of post-startup conditions. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test. For verification of PM emissions, testing shall include both the filterable and condensable fractions.<sup>2</sup> (R 336.2001, R 336.2003, R 336.2004)

NO<sub>x</sub> This requirement does not apply for an emission unit listed in this condition if a NO<sub>x</sub> CEMS is installed, calibrated, maintained and operated in a satisfactory manner on that emission unit. (R 336.1205, R 336.2802, 40 CFR 52.21)

PM10 (R 336.1205, R 336.2802, 40 CFR 52.21)

PM (R 336.1205, R 336.2802, 40 CFR 52.21)

Sulfuric acid mist<sup>3</sup> (R 336.1201(3))

Compliance- Testing was conducted in accordance with permit deadline.

9. Within every three years of the most current stack test, and every three years thereafter, the permittee shall verify emission rates from EU11-FCCUCHARHTR-S1, EU14-CCRPLCHARHTR-S1, and EU14-CCRPLINTHTR-S1 of the pollutants listed below by testing at owner's expense, in accordance with Department requirements. No less than 30 days prior to testing, the permittee shall submit a complete test plan to the AQD. For tests conducted prior to commencement of trial operation of the heavy oil upgrade project, the test plan shall demonstrate that test conditions will be representative of post-startup conditions. The AQD must approve the final plan prior to testing. Verification of emission rates includes the submittal of a complete report of the test results to the AQD within 60 days following the last date of the test.<sup>3</sup> (R 336.2001, R 336.2003, R 336.2004)

PM (R 336.1201(3))

VOC (R 336.1201(3))

Compliance- Testing was conducted in accordance with permit deadline.

3. For tests required by SC V.1 through SC V.12, the following applies for valid, regularly scheduled tests, conducted during normal operations:<sup>3</sup> (R 336.1201(3))

If a test indicates non-compliance with a permitted emission rate, and the test is required to be conducted on either a three or five year cycle, the frequency of such tests shall be annual for two consecutive years. Following two consecutive years of compliance, the frequency of testing shall return to the original three or five year cycle.

Compliance- Testing was conducted in accordance with permit deadline.

4. For any emission unit required to conduct an emission test in SC V.1 through V.12 for a specific pollutant every three years and every five years, the requirement to conduct an emission test every five years for that pollutant does not apply; emission testing for that pollutant is required every three years.<sup>2</sup> (R 336.1201(3))

Compliance- Testing was conducted in accordance with permit deadline.

See Appendix 5-S1

## VI. MONITORING/RECORDKEEPING

Records shall be maintained on file for a period of five years. (R 336.1213(3)(b)(ii))

1. The permittee monitor and keep records of the concentration of hydrogen sulfide (H<sub>2</sub>S) in the refinery fuel gas burned in each heater in accordance with the Federal Standards of Performance as specified in 40 CFR Part 60, Subpart J and Ja, in a manner and with instrumentation acceptable to the Air Quality Division.<sup>2</sup> (R 336.1205, R 336.1226(d), R 336.2802, 40 CFR 52.21, 40 CFR 60.105(a)(4), 40 CFR 60.107a(a)(2))

Compliance- H<sub>2</sub>S concentration of refinery fuel gas is monitored continuously.

2. Fuel gas combustion devices having a common source of fuel gas may be monitored at only one location, if monitoring at this location accurately represents the concentration of H<sub>2</sub>S or TRS in the fuel gas being burned.<sup>2</sup> (40 CFR 60.105(a)(4)(ii))

Compliance- H<sub>2</sub>S concentration of refinery fuel gas is monitored continuously.

3. The permittee shall keep records of emissions and operating information to comply with the federal Standards of Performance for New Stationary Sources as specified in 40 CFR Part 60, Subparts A, J, and where applicable Ja.<sup>2</sup> (40 CFR Part 60 Subparts A and J/Ja)



**Compliance- Emission records are kept.**

4. The permittee shall install, calibrate, maintain and operate in a satisfactory manner devices to monitor and record on a continuous basis the CO and oxygen emissions from EU70-COKERHTR-S1, EU08-GOHTCHARHTR-S1, EU14-CCRPLCHARHTR-S1, EU14-CCRPLINTHTR-S1, EU11-FCCUCHARHTR-S1, EU04-VAC2HTR-S1, and EU77-DHTHTR-S1, and, in their shared stack, EU04-VACHTR-S1 and EU05-CRUDEHTR-S1. The permittee shall install and operate the CEMS in accordance with the requirements of 40 CFR 60.11, 40 CFR 60.13, and 40 CFR Part 60, Appendix A, the applicable performance specification test of 40 CFR Part 60, Appendices B and F. With respect to 40 CFR Part 60, Appendix F, in lieu of the requirements of 40 CFR Part 60 Appendix F(5.1.1, 5.1.3, and 5.1.4), the permittee shall conduct either a Relative Accuracy Audit (RAA) or a Relative Accuracy Test Audit (RATA) once every twelve (12) calendar quarters, provided that a Cylinder Gas Audit is conducted each calendar quarter. Within 30 days following the end of each calendar quarter, the permittee shall submit the results to the AQD in the format of the data assessment report.

**(R 336.1205, R 336.2802, 40 CFR 52.21)**

**Compliance. CO is monitored on a continuous basis.**

5. The permittee shall monitor, in a satisfactory manner, the heat input for each heater in FG-HEATERS-S1, in MMBTU/hr, on a daily, monthly, and rolling 12 month time period basis.<sup>2</sup> **(R 336.1205(1), R 336.1225, R 336.2802, 40 CFR 52.21)**

**Compliance- Heat input is monitored on a continuous basis.**

6. **The permittee shall keep daily records of the type and amount of fuel used in each heater/boiler in FGHEATERS-S1.<sup>2</sup> (R 336.1901, 45 FR 29270)**

**Compliance- Daily records of type and amount of fuel in each heater are kept.**

7. **The permittee shall keep, in a satisfactory manner, daily, monthly, and rolling 12 month time period records of the heat input for each heater in FG-HEATERS-S1, in MMBTU/hr.<sup>2</sup> (R 336.1205, R 336.1225, R 336.2802, 40 CFR 52.21)**

**Compliance- Records of heat input are kept for each heater on a continuous basis.**

See Appendix 3-S1

## **VII. REPORTING**

1. **Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A. (R 336.1213(3)(c)(ii))**

**Compliance- Deviations are reported promptly**

2. **Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30. (R 336.1213(3)(c)(i))**

**Compliance- Semiannual reporting is done timely.**

3. **Annual certification of compliance pursuant to General Conditions 19 and 20 of Part A. The report shall be postmarked or received by the appropriate AQD District Office by March 15 for the previous calendar year. (R 336.1213(4)(c))**

**Compliance- Annual certification is reported timely.**

The permittee shall submit the data on the concentration of hydrogen sulfide or total reduced sulfur in the refinery fuel gas burned in FGHEATERS-S1 to the Air Quality Division (AQD) District Supervisor in acceptable format within 30 days following the end of the quarter in which the data were collected.<sup>2</sup> (40 CFR 60.7)

Compliance- Quarterly reports are submitted showing H2S excess emissions.

See Appendix 8-S1

**VIII. STACK/VENT RESTRICTION(S)**

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

Stack & Vent ID	Maximum Exhaust Diameter/Dimensions (inches)	Minimum Height Above Ground (feet)	Underlying Applicable Requirements
1. SV11-H1 (EU11-FCCUCHARHTR-S1)	90 <sup>1</sup>	150 <sup>1</sup>	R 336.1225

Compliance assumed- Measurements were not taken but visual observations indicate that stack height and diameter are appropriate.

**IX. OTHER REQUIREMENT(S)**

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1. The permittee shall comply with all provision of the federal Standards of Performance of New Stationary Sources as specified in 40 CFR Part 60, Subparts A, J, and where applicable Ja, as they apply to FGHEATERS-S1.<sup>2</sup> (40 CFR Part 60, Subparts A and J/Ja)

Compliance-- Facility is keeping records to show compliance with NSPS.

2. The permittee shall not operate any emission unit in FG-HEATERS-S1 unless an approved Start-up, Shutdown and Malfunction Plan (SSMP), or an alternate plan approved by the AQD District Supervisor is implemented, maintained and followed. The plan shall describe how emissions will be minimized during all startups, shutdowns, and malfunctions. The plan shall incorporate procedures recommended by the equipment manufacturer as well as standard industry practices.<sup>2</sup> (R 336.1205, R 336.1911, R 336.1912, R 336.2802, 40 CFR 52.21)

Compliance- Facility operating under approved Startup Shutdown Malfunction plan.

**Footnotes:**

<sup>1</sup>This condition is state only enforceable and was established pursuant to Rule 201(1)(b).

<sup>2</sup>This condition is federally enforceable and was established pursuant to Rule 201(1)(a).

**APPLICABLE FUGITIVE DUST CONTROL PLAN CONDITIONS:**

**The Single Source does have a Fugitive Dust Control Plan. During the FCCU Charge Heater inspection, compliance with the Fugitive Dust rules and regulation was not evaluated.**

**MAERS REPORT REVIEW:**

<b>Pollutant</b>	<b>2020 Emissions(TPY)</b>
<b>CO</b>	<b>178</b>
<b>NOx</b>	<b>347</b>
<b>PM</b>	<b>68</b>
<b>Sox</b>	<b>134</b>
<b>VOC</b>	<b>281.6</b>

**FINAL COMPLIANCE DETERMINATION:**

**Based on the inspection and review of the records, it appears that the FCCU Charge Heater is in compliance with MI-ROP-A9831-2012c**

NAME Jesse Arls

DATE 6-30-21

SUPERVISOR Dr. April L. Wendling