



Michigan Refining Division
HESS Department



Marathon Petroleum Company LP

1001 S. Oakwood Ave.
Detroit, MI 48217
Tel: 313.843.9100

Via Federal Express

September 29, 2017

Mr. Jorge Acevedo
Michigan Department of Environmental Quality
Air Quality Division
3058 W. Grand Boulevard
Suite 2300
Detroit, MI 48202

**RE: Response to 9/8/2017 Violation Notice Regarding Crude/Vacuum Heater PM Compliance Testing;
Marathon Petroleum Company LP, Michigan Refining Division**

Dear Mr. Acevedo:

This letter is in response to the September 8, 2017 Violation Notice (VN) issued to Marathon Petroleum Company LP, Michigan Refining Division (MPC). In the VN, Michigan Department of Environmental Quality, Air Quality Division (AQD), alleged that the following violations occurred June 7, 2017.

Process Description	Rule/Permit Condition Violated	Comments
Crude/Vacuum Heater (EU05-CRUDEHTR-S1/EU04-VACHTR-S1)	MI-ROP-A9831-2012c, FGHEATERS-S1, Condition I.19 R 336.1205 R 336.2802 40 CFR 52.21	The Particulate Matter permit limit is 0.0019 lb/MMBTU. The stack test result was 0.0021 lb/MMBTU

The VN relates to the result of the stack test on the Crude/Vacuum Heater conducted June 7, 2017. MPC performed a retest on August 22-23, 2017. Although we do not yet have the final stack test report and results, preliminary results demonstrate Particulate Matter emissions below the 0.0019 lb/MMBTU permit limit. We are requesting an opportunity to meet with you and other appropriate AQD personnel to discuss the results from the retest once the report has been finalized.

The remainder of this letter provides information requested in the VN, including: (1) the date(s) the alleged violations occurred; (2) an explanation of the causes and duration of the alleged violations; (3) whether the violations are ongoing; (4) a summary of the actions that have been taken and are proposed to be taken to correct the alleged violations and the dates by which these actions will take place; and (5) what steps are being taken to prevent a reoccurrence. The VN also requested a copy of the fuel hydrogen sulfide and total reduced sulfur concentration that was fired during the stack test. That information is attached.

Date the Violation Occurred: The alleged violations are not on-going. Further, for reasons detailed below, MPC does not believe that the alleged violation occurred prior to the date of the June 7 stack test.

Explanation of the Causes and Duration of the Violation:

MRD has identified 3 contributing factors that led to the elevated PM result:

1. North Plant Amine Unit Upset –During the second run of the compliance testing on June 7, 2017, the North Plant Amine Unit experienced foaming conditions which reduced the efficiency of removing sulfur from refinery fuel gas. As a result of this incident, sulfur content was high in the West Plant fuel gas for a portion of the second PM run and the entire third PM run on that day. This high sulfur in fuel gas was reported as a Rule 912 excess emission event, as a deviation from our ROP, and was partially responsible for an EPCRA SO₂ exceedance of about 8,999 lbs on June 7, 2017. This excess sulfur in fuel gas would have contributed to additional sulfate/sulfuric acid mist in the Crude-Vac heater stack.
2. Reduced Heater Stack Outlet Temperature – The Crude-Vac heater system has an air pre-heat system that reduces heat in the stack. The air preheater has a rotating element which transfers heat from the hot gas to the rotating element media and then to the cold air. Due to the temperature ranges in this portion of the stack, there is potential for cold pockets of air within the hot stack gas sections. This can result in a cold film temperature at the interface of the hot air and cold metal. Because the heater fuel includes refinery fuel gas along with natural gas, these cold sections in the stack promote condensation of sulfuric acid mist as the temperature can drop below the acid dew point. Sulfuric acid that would be emitted as a gas at higher temperatures is emitted as a mist at lower temperatures. The condensed sulfuric acid is collected as a particulate in the USEPA Method 5 sampling train, due to stack conditions and train temperatures, and counted as a particulate rather than being excluded as a particulate and counted against the sulfuric acid mist limit. Similar to other combustion sources that use high sulfur fuels, these sulfate particles are heavier and larger than what is emitted during combustion of pipeline natural gas and should be excluded from comparison to the particulate limit. The site has a sulfuric acid mist (SAM) limit with which it complies.
3. Water on Filters – In reviewing the preliminary results from the August 22 – 23, 2017 PM retest event, the stack test contractor for the Detroit Refinery identified an increase in the weight of the Method 5 filters between the field and the post-desiccation weights obtained in the laboratory. This increase in weight was identified as water (ambient humidity) that hygroscopically absorbed to the sulfate/sulfuric acid particles that were captured on the filter which the desiccant cannot remove. On average, the added water resulted in a 15% increase in the reported PM emission rate. Given the sulfur-in-fuel content for this heater, and expected sulfate/sulfuric acid particles emitted, it is expected that this phenomenon occurs frequently.

Summary of the Actions Taken: Preliminary results indicate that MPC demonstrated compliance with the applicable emissions limitations during the testing conducted August 22 – 23, 2017.

Steps Taken to Prevent a Reoccurrence: While we believe that no actual violation occurred MPC does intend to implement the following long-term actions to ensure compliance with the permit-allowable limit:

Routine maintenance and cleaning will take place in the crude/vac equipment during the fall 2018 maintenance outage and turnaround. Following the turnaround, the Crude Vac heater stack should then contain more heat which should reduce the condensation of sulfuric acid mist.

The Detroit Refinery continues to investigate the creation of sulfate/sulfuric acid particles in the stack. The site's Filterable PM Limit is based on the AP-42 emission factor for natural gas combustion (Table 1.4-2, AP-42, Fifth Edition) which was derived from stack testing of external combustion units that used fuels which do not contain significant amounts of sulfur (i.e., the contribution of sulfate to filterable PM was not envisioned in the development of the emission factor). Note that MPC conducts separate sulfuric acid mist compliance stack testing in accordance with its ROP (Condition V.10, FGHEATERS-S1). MPC will soon be requesting a meeting with the AQD to further discuss the results of this investigation as well as appropriate compliance protocols for the heaters.

MPC appreciates this opportunity to respond to the VN. If you would like further information please do not hesitate to contact Greg Bennethum at 313-297-6310.

Sincerely,

Marathon Petroleum Company LP
By: MPC Investment LLC, its General Partner



Mr. David Roland, Deputy Assistant Secretary

cc: Ms. LaReina Wheeler, City of Detroit, BSEED
Ms. Lynn Fielder, DEQ
Ms. Mary Ann Dolehanty, DEQ
Mr. Chris Ethridge, DEQ
Mr. Thomas Hess, DEQ
Ms. Wilhemina McLemore, DEQ
Mr. Jeff Korniski, DEQ

Attachments: Renewable Operating Permit Report Certification
Hydrogen Sulfide and Total Reduced Sulfur Fuel Information

MICHIGAN DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENT
AIR QUALITY DIVISION

**RENEWABLE OPERATING PERMIT
REPORT CERTIFICATION**

Authorized by 1994 P.A. 451, as amended. Failure to provide this information may result in civil and/or criminal penalties.

Reports submitted pursuant to R 336.1213 (Rule 213), subrules (3)(c) and/or (4)(c), of Michigan's Renewable Operating Permit (ROP) program must be certified by a responsible official. Additional information regarding the reports and documentation listed below must be kept on file for at least 5 years, as specified in Rule 213(3)(b)(i), and be made available to the Department of Natural Resources and Environment, Air Quality Division upon request.

Source Name Marathon Petroleum Company LP County Wayne
Source Address 1300 South Fort Street City Detroit
AQD Source ID (SRN) A9831 ROP No. MI-ROP-A9831-2012c ROP Section No. 01

Please check the appropriate box(es):

Annual Compliance Certification (Pursuant to Rule 213(4)(c))
Reporting period (provide inclusive dates): From _____ To _____
 1. During the entire reporting period, this source was in compliance with ALL terms and conditions contained in the ROP, each term and condition of which is identified and included by this reference. The method(s) used to determine compliance is/are the method(s) specified in the ROP.
 2. During the entire reporting period this source was in compliance with all terms and conditions contained in the ROP, each term and condition of which is identified and included by this reference, EXCEPT for the deviations identified on the enclosed deviation report(s). The method used to determine compliance for each term and condition is the method specified in the ROP, unless otherwise indicated and described on the enclosed deviation report(s).

Semi-Annual (or More Frequent) Report Certification (Pursuant to Rule 213(3)(c))
Reporting period (provide inclusive dates): From _____ To _____
 1. During the entire reporting period, ALL monitoring and associated recordkeeping requirements in the ROP were met and no deviations from these requirements or any other terms or conditions occurred.
 2. During the entire reporting period, all monitoring and associated recordkeeping requirements in the ROP were met and no deviations from these requirements or any other terms or conditions occurred, EXCEPT for the deviations identified on the enclosed deviation report(s).

Other Report Certification
Reporting period (provide inclusive dates): From 09/29/2017 To 9/29/2017
Additional monitoring reports or other applicable documents required by the ROP are attached as described:
Response to September 8, 2017 Violation Notice Regarding Crude/Vacuum Heater Particulate
Matter (PM) Compliance Testing

I certify that, based on information and belief formed after reasonable inquiry, the statements and information in this report and the supporting enclosures are true, accurate and complete

**MPC Investment LLC,
its General Partner**

Deputy Assistant Secretary

David Roland

Name of Responsible Official (print or type)

Title

313-843-9100

Phone Number

Signature of Responsible Official

Date

9/29/2017

	CP Fuel Drum H2S 12AI0701 ppm	Estimated CP Fuel Drum H2S Conc Calculated ppm	West Plant Fuel Gas Analyzer - TRS 12AI0701D ppm	East Plant Fuel Gas H2S 07AI0607 ppm	East Plant Fuel Gas Analyzer - TRS 07AI0607D ppm	Avg. Hrly. CP Fuel Drum H2S ppm	Avg. Hrly. East Plant Fuel Gas H2S ppm
6/7/2017 7:45	20.2	20.2	51.2	10.9	13.1		
6/7/2017 8:00	20.5	20.5	51.5	10.8	13.0		
6/7/2017 8:15	20.7	20.7	52.6	11.1	13.1	19.7	11.0
6/7/2017 8:30	19.3	19.3	44.1	11.1	13.2		
6/7/2017 8:45	18.3	18.3	37.8	11.1	13.2		
6/7/2017 9:00	18.9	18.9	34.5	11.1	13.5		
6/7/2017 9:15	21.8	21.8	33.9	11.7	13.9	23.1	11.6
6/7/2017 9:30	25.1	25.1	35.6	11.7	13.7		
6/7/2017 9:45	26.4	26.4	36.3	11.8	13.7		
6/7/2017 10:00	25.8	25.8	35.3	11.8	14.0		
6/7/2017 10:15	24.6	24.6	35.6	11.9	12.7	24.3	11.9
6/7/2017 10:30	23.3	23.3	34.9	12.0	13.1		
6/7/2017 10:45	23.4	23.4	35.0	11.9	14.2		
6/7/2017 11:00	22.7	22.7	33.8	11.9	14.0		
6/7/2017 11:15	23.5	23.5	32.6	12.1	13.7	22.6	12.0
6/7/2017 11:30	22.1	22.1	30.3	12.0	13.3		
6/7/2017 11:45	22.0	22.0	31.5	11.9	14.0		
6/7/2017 12:00	21.5	21.5	31.1	11.8	13.9		
6/7/2017 12:15	22.8	22.8	33.3	11.9	14.1	63.1	11.8
6/7/2017 12:30	26.4	26.4	37.9	11.7	14.0		
6/7/2017 12:45	181.7	181.7	31.4	11.8	13.0		
6/7/2017 13:00	299.6	8208.3	8225.0	12.0	12.7		
6/7/2017 13:15	299.6	16455.7	16473.2	23.3	24.1	9278.1	24.3
6/7/2017 13:30	299.7	8201.4	8214.6	35.0	36.6		
6/7/2017 13:45	299.7	4246.8	4259.8	26.8	28.8		
6/7/2017 14:00	299.7	1673.1	1685.3	19.9	21.9		
6/7/2017 14:15	275.7	275.7	277.9	19.4	21.7	587.1	18.7
6/7/2017 14:30	228.0	228.0	239.8	17.8	20.0		
6/7/2017 14:45	171.6	171.6	182.9	17.5	19.7		
6/7/2017 15:00	127.0	127.0	138.0	18.0	20.1		
6/7/2017 15:15	86.3	86.3	97.3	16.9	18.6	77.3	16.4
6/7/2017 15:30	58.3	58.3	69.4	16.0	17.3		
6/7/2017 15:45	37.7	37.7	47.5	14.5	16.5		
6/7/2017 16:00	25.6	25.6	33.8	13.9	14.8		
6/7/2017 16:15	20.3	20.3	26.6	15.4	16.6	20.3	17.9
6/7/2017 16:30	18.3	18.3	22.6	22.3	24.3		
6/7/2017 16:45	17.0	17.0	20.8	19.8	22.2		
6/7/2017 17:00	15.2	15.2	18.3	17.3	20.0		
6/7/2017 17:15	15.1	15.1	18.0	15.0	17.3	16.2	14.6
6/7/2017 17:30	15.3	15.3	18.4	13.6	15.9		
6/7/2017 17:45	19.3	19.3	23.7	12.6	14.8		
6/7/2017 18:00	18.0	18.0	23.3	12.5	14.9		
6/7/2017 18:15	15.9	15.9	20.5	13.1	15.4	16.4	12.7
6/7/2017 18:30	16.1	16.1	20.6	12.8	15.0		
6/7/2017 18:45	15.8	15.8	20.7	12.6	14.9		
6/7/2017 19:00	15.2	15.2	20.2	12.9	15.3		
6/7/2017 19:15	14.9	14.9	20.1	12.5	15.0	14.5	12.7
6/7/2017 19:30	14.2	14.2	19.8	12.7	15.0		
6/7/2017 19:45	13.9	13.9	20.3	12.6	14.9		
6/7/2017 20:00	is not a string or cell	is not a string or cell	is not a string or cell	is not a string or cell	is not a string or cell	reference	

Fuel Drum H2S Average Leading up to Event	116.0	ppm
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Calculated Max Coker Fuel Gas Scrubber Gas H2S Conc	43000	ppm
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