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Air Quality Division
Detroit Office

Marathon Petroleum Company LP

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VIA FEDERAL EXPRESS

December 7, 2018

Ms. Regina Angellotti
Environmental Quality Analyst
Michigan Department of Environmental Quality
Air Quality Division
3058 W. Grand Boulevard
Suite 2300
Detroit, MI 48202

RE: Response to 11/8/2018 Violation Notice Regarding 3rd Quarter Extended Monitor Downtime for Unifiner Flare and Coker Flare; Marathon Petroleum Company, LP, Michigan Refining Division (SRN A9831)

Dear Ms. Angellotti:

This letter is in response to the November 8, 2018 Violation Notice (VN) issued to Marathon Petroleum Company LP (MPC), Michigan Refining Division (MRD). In the VN, Michigan Department of Environmental Quality, Air Quality Division, alleged that the following violations of permit conditions occurred.

Process Description	Rule/Permit Condition Violated	Comments
Unifiner Flare – Third Quarter 2018	MI-ROP-A9831-2012c, FGFLARES-S1, SC VI.1	Failure to continuously monitor.
Coker Flare – Third Quarter 2018	MI-ROP-A9831-2012c, FGFLARES-S1, SC VI.1	Failure to continuously monitor.

The VN requested a written response including: 1) the dates the violation occurred; 2) an explanation of the causes and duration of the violation; 3) whether the violation is ongoing; 4) a summary of the actions that have been taken and are proposed to be taken to correct the violation and the dates by which these actions will take place and 5) what steps are being taken to prevent reoccurrence. The VN specified a response date of November 28, 2018. MRD requested an extension to December 7, 2018 due to the Thanksgiving holiday shutdown and personnel unavailability. A voice mail from Mr. Jorge Acevedo, MDEQ, to Mr. Greg Bennethum, MRD, on November 20, 2018 granted the extension request.

Dates the Violation Occurred:

The attached tables detail dates and times that the alleged violations occurred, and corrective actions taken for each downtime period. As the alleged violation was for performance during Third Quarter 2018, the alleged violation is not ongoing.

Explanation of the Causes and Duration of the Violation:

MRD has identified two contributing factors that led to the extended monitor downtime.

- 1. Gas Chromatograph's on flare systems are intolerant to excess moisture** – During the Third Quarter 2018, the Detroit Refinery was shut down for maintenance. As discussed below, steam is used to degas and prepare equipment for safe entry. Most of the downtime hours on both the Unifiner and Coker Flare H₂S GC analyzers were caused by the GC's inability to properly operate during periods of heavy steam-out.

The gas chromatograph installed at the Detroit Refinery is intolerant of high moisture concentrations, such as experienced during the major turnaround at the Detroit Refinery discussed in detail below. Per the manufacturer, the system cannot provide reliable analytical data and component damage may occur if the system is operated when the sample dew point exceeds 55°C and 15 psig. Per the manufacturer specifications, the sample is assumed to be non-condensing at these conditions. During steam-out periods, the process stream to the analyzers is abnormal and the dew point is higher than specified by the manufacturer. Damage to the analyzer occurs when condensed liquid water enters the columns, making them inoperable. The required repair is to isolate the GC from the process and dry the columns out with warm nitrogen. Based upon MPC's experience, this process is lengthy, and if the columns can be dried out, the repair typically takes more than 3 days. In most cases, MPC has experienced significant damage to the analyzer at our sister refineries, such that all columns were replaced and the analyzer rebuilt, requiring 2 weeks of downtime to effect the repair.

To protect the analyzers from damage, the analyzers were isolated from the process prior to heavy steam-out to the flare. Steam-out occurs as part of the procedures necessary to prepare refinery equipment to be safely opened for planned maintenance. Liquid and vapor hydrocarbons are de-inventoried from equipment as much as practical while continuing to operate the system in a safe manner. Chemicals are also used to clean the equipment and capture as much hydrogen sulfide (H₂S) as possible before steaming the equipment to the flare. Once no more hydrocarbons can be safely de-inventoried and recovered, steam is used to purge the equipment to flare to remove residual hydrocarbon vapors. Purging equipment to the flare during this part of the shutdown process renders the equipment safe for employees who will be working in the equipment and reduces uncontrolled emissions to atmosphere when the equipment is opened.

Although the analyzers required isolation, the Detroit Refinery took steps to minimize analyzer downtime and estimate the impact to the environment during those periods when standard monitoring was not possible. To reduce downtime, a schedule based on the planned steam-out activities was developed for taking flare GCs out of service. During the course of the maintenance period, the flares were closely monitored. Once steam-outs were complete, emissions estimates were developed using conservative inputs to estimate sulfur dioxide (SO₂) emissions during periods of analyzer downtime. These estimates identified that the SO₂ emissions were well below limits and reporting requirements.

In summary, analyzers are isolated during equipment steam-out to prevent significant damage to the analyzers as a result of the steaming activity. Planning prior to the maintenance period allowed for minimum monitor downtime.

- 2. Majority of 3Q downtime due to GC isolation required for Turnaround (TAR) activities** – Third Quarter downtime that is not attributable to TAR is not excessive and is well within acceptable

levels of downtime. Per the table below, both the Unifiner and Coker Flare analyzers were below 5% when excluding downtime hours associated with turnaround. A summary of the downtime hours and percentage amounts is presented here:

	Operating Hours in Third Quarter	Total Hours of Downtime Reported	Total % Downtime Reported	Hours of Downtime due to isolation during steam-out	% of Downtime due to isolation during steam-out	Hours of Downtime not due to TAR	% of Downtime not due to TAR
Unifiner Flare Analyzer	2126	283	13.31	202	9.50	81	3.81
Coker Flare Analyzer	2019	256	12.68	246	12.18	10	0.50

Additionally, reduced operating hours increased the effect of downtime relative to percentage. When there are fewer operating hours, one-hour of downtime results in a higher percentage of downtime due to a reduction in total hours operated. The reported Third Quarter downtime was calculated by excluding the non-operating hours for each flare from the total number of hours in the Third Quarter. Steam-out time is considered operating hours. During the Fall 2018 TAR, the Unifiner Flare was not in operation for a total of 82 hours; the Coker Flare was not in operation for a total of 189 hours. Consequently, with a significant number of non-operating hours excluded, the quarterly downtime percentage is elevated.

Summary of the Actions Taken:

Analyzers were isolated during equipment steam-out to prevent damage to the analyzers. MRD developed and implemented plans to minimize analyzer downtime during the Fall 2018 TAR. Emissions estimates were completed and SO₂ emissions were well below limits and reporting requirements.

The attached tables include specific dates and times for each instance of H₂S analyzer downtime in Third Quarter 2018. It also includes details regarding the cause and corrective action for each downtime period. Since the end of the Third Quarter 2018, both the Unifiner and Coker Flare H₂S analyzers have experienced minimal downtime. Fourth Quarter 2018 downtime is currently below 5% for both flare analyzers.

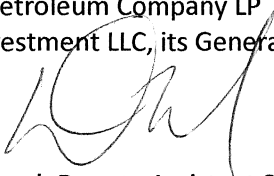
Steps Taken to Prevent a Reoccurrence:

MRD anticipates that analyzer downtime will be incurred during equipment shutdown and steam-out due to the need to protect the analyzers from damage. Equipment steam-out typically occurs once every three years during scheduled maintenance periods. Plans specific to future scheduled maintenance periods will be developed in advance of scheduled maintenance periods and will be implemented to minimize analyzer downtime and SO₂ emissions to the extent possible. MRD will also investigate the use of alternate options for flare monitoring during steam-out periods of planned maintenance shutdowns.

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

Sincerely,

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



David T. Roland, Deputy Assistant Secretary

Attachments

Tables

Renewable Operating Permit Report Certification

cc. Mr. Paul Max, City of Detroit, BSEED
Ms. Mary Ann Dolehanty, DEQ
Mr. Chris Ethridge, DEQ
Ms. Jenine Camilleri, DEQ
Ms. Karen Kajiya-Mills, DEQ
Ms. Wilhemina McLemore, DEQ
Mr. Jeff Korniski, DEQ
Mr. Jorge Acevedo, DEQ