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**From:** Brian Leahy  
**Sent:** Monday, February 14, 2022 10:11 AM  
**To:** Drury, Andrew (EGLE)  
**Cc:** Abshire, Christopher; Beasley, Jeremy W.  
**Subject:** Marathon SRU Optimization Project - Requested Information  
**Attachments:** [Attachment C\\_Modeling Tables\\_021122.pdf](#); [Attachment C\\_Modeling Tables\\_021122.xlsx](#)

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Hi Andy,

The following information is being submitted in response to your recent correspondence:

### **Compliance with the R 336.1225 Health-based Screening Level Requirement**

An air quality analysis demonstrating that potential toxic air contaminant (TAC) emissions from the North Plant SRU will not cause an exceedance of an applicable health-based screening level has been conducted. The North Plant SRU thermal oxidizer has the potential to emit limited amounts of sulfuric acid (already quantified in the PTI application) and TACs associated with the combustion of natural gas in the thermal oxidizer. Consistent with the original PTI application covering the North Plant SRU (DHOUP application), potential TAC emissions due to the combustion of natural gas have been estimated using the maximum heat input rating of the thermal oxidizer and emission factors published in Section 1.4 of the US EPA's Compilation of Air Pollutant Emission Factors (AP-42).

To evaluate compliance with the health-based screening level requirement, maximum potential hourly TAC emissions from the thermal oxidizer were input to the R 336.1227(1)(a) screening table developed by AQD. Potential TAC emission rates, applicable screening levels, and the results of the R 336.1227(1)(a) analysis are provided in a new table (Table C-4) that has been added to Attachment C of the PTI application (see attached). As shown in the table, the screening approach demonstrates compliance with the health-based screening level requirement for all but two potentially-emitted TACs (cadmium and sulfuric acid).

In accordance with R 336.1227(1)(c), compliance with the health-based screening level requirement for cadmium and sulfuric acid has been demonstrated by modeling the maximum hourly potential to emit using AERMOD. The modeling databases (e.g., receptor points, meteorological data, stack exhaust parameters, etc.) are consistent with the SO<sub>2</sub> modeling submitted in support of the PTI application. The results of the modeling analysis are provided in Table C-6. As shown in the table, modeled cadmium and sulfuric acid impacts are well under the applicable health-based screening levels.

Compliance with potential PAH emissions associated with natural gas combustion in the thermal oxidizer has been conducted using the PAH equivalent potency factor approach developed by AQD. The equivalent potency factor approach, which is summarized in Table C-5, results in a benzo(a)pyrene equivalent emission rate of 5.27E-05 lbs/hr. Inputting this emission rate to Table C-4 (refer to Row 55) shows compliance with the benzo(a)pyrene screening level.

### **Modeled SO<sub>2</sub> Impacts**

The SO<sub>2</sub> modeling that was submitted with the PTI application has been updated to correct a minor error in the projected hourly emission rate for the Unit 72 SRU thermal oxidizer. The corrected emission rate is provided in Table C-

2, while updated modeled impacts are provided in Table C-3. Note that the proposed project still results in a reduction in ambient SO<sub>2</sub> impacts under all applicable averaging periods.

### **Projected SO<sub>2</sub> Emission Rate for the North Plant SRU**

The North Plant SRU operates more efficiently than the East Plant SRU at converting sulfur compounds from sour water and acid gas streams to elemental sulfur. As a result, the North Plant SRU routinely achieves a higher level of SO<sub>2</sub> emissions control than can be achieved by the East Plant SRU. A review of historical emissions data for the two SRUs confirms that the North Plant SRU achieves better SO<sub>2</sub> emissions control.

As noted in the PTI application, the project emissions change was evaluated in accordance with the actual to projected actual emissions test specified in R 336.2802(4)(c). To reflect the shifting of sulfur removal from the East Plant SRU to the North Plant SRU, projected actual emissions (PAE) were estimated by multiplying the proposed 12-month rolling sulfur production rate of 390 LTPD by an SO<sub>2</sub> emission factor representative of anticipated future North Plant SRU operations (0.417 lbs/LT). The projected emission factor represents the average monthly emission from the North Plant SRU during the period January 2019 through August 2021 (excluding the month of February 2019 due to the Polar Vortex incident).

The recent operational efficiency of the North Plant SRU is anticipated to be representative of future operational efficiency for this emission unit. However, as a conservative measure, a 10% safety factor was added to the projected emission factor, resulting in a PAE of 0.4587 lbs/LT.

Please let us know if you have any further questions or need any additional information.

Regards,

Brian Leahy

Senior Meteorologist  
Grand Rapids, MI office: 616.512.7018  
BLEahy@barr.com  
www.barr.com



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