

FCA US LLC

September 30, 2021

Via U.S. Mail and E-mail

Mr. Adam Bognar
Michigan Department of Environment, Great Lakes, and Energy
Air Quality Division
27700 Donald Court
Warren, MI 48092
BognarA1@michigan.gov

**RE: FCA US LLC (FCA) – Technology Center SRN: 1436
Response to Violation Notice**

Dear Mr. Bognar:

This letter responds to AQD's September 9, 2021 Violation Notice ("VN"), which alleges noncompliance with the Renewable Operating Permit ("ROP") for FCA's Chrysler Technology Center ("CTC"). Specifically, the VN alleges a violation of Section 1 Special Conditions I.1 and I.3 for FG-B/UP-TURBINES (p.29 of 89), which limit the emissions of NOx to 89.29 pounds per hour ("pph") and CO to 16.23 pph for the back-up turbine generators. As described below, FCA investigated the history of the pph limitations and the specific operating data that are the basis for the alleged violations. FCA determined that it has been over reporting the amount of natural gas combusted by the turbines and has a plan to resolve this in the future. Therefore, the emissions from the turbines at CTC did not exceed the pph limits.

Background

In Section 1 of the CTC ROP, flexible group FG-B/UP-TURBINES contains conditions for two natural gas-fired back-up generator turbines used for peaking. The turbines were issued an initial permit to install ("PTI") in the mid 1990's. The PTI application included a manufacturer's specification that identified the design fuel consumption at peak load (or peak capacity), and the corresponding pph emission rate of various pollutants (including NOx and CO), which ultimately were used to calculate the potential emissions of the units. These turbine engine design values were ultimately used to calculate the associated fuel use limitation, the NOx and CO ton per year limits, and the hours of operation limitation. Consistent with these limits, these turbines were not subject to New Source Review ("NSR"). The NOx and CO pph emission rates/factors also became pph emission limitations for the units.

The Issue

The VN alleges an exceedance of the NOx and CO pph limitations based on total hours logged in a month and the amount of fuel used during each month. While the calculation appears to reveal an exceedance, it would not be mechanically possible for the turbines

to have exceeded the permit limit because that limit is based on the manufacturer's specifications and emissions at peak loading, as restricted by the design capacities for the units. Therefore, FCA pursued an investigation into each of the parameters used in the pph calculation (i.e., fuel consumed and hours of operation).

FCA's Investigation

Fuel Consumed

FCA's investigation revealed that the natural gas metering system did not solely measure the amount of natural gas combusted by the turbine. Instead, the metering system measured total natural gas used, which includes natural gas used for purposes other than combustion.

For example, the turbine engines require an auxiliary power source to initiate the turning of the turbine rotor, prior to the ignition of the fuel. The turbines at CTC use the injection of compressed natural gas into a separate starter motor to initiate the turbine rotor movement. After the rotor reaches the desired speed, the natural gas is routed to the turbine engine and ignited and, thereafter, combustion sustains the turbine engine's operation.

FCA incorrectly assumed that all natural gas tracked in this manner was combusted when, in fact, it was not. The emission factors (in ROP Appendix 7-1) used to calculate emissions are based on fuel burning, not unburned fuel used to initiate turbine startup. Therefore, the amount of natural gas tracked and reported in the log represents the total amount of natural gas used in the process, not all of which was combusted.¹

A few weeks ago, the control system and natural gas fuel line for Turbine 1 was upgraded to include a meter that measures the natural gas combusted (separate from that used for other purposes such as to mechanically start the turbine). FCA has initiated the process to purchase and install a similar meter for Turbine 2.

Hours of Operation

The turbine operating system relies on a computer-based system to monitor, control and record specific parameters. The system measures the time when natural gas combustion is initiated and sustained, and when it ends. Therefore, the hours of combustion-based operation tracked by the system capture the appropriate period for calculating compliance with the associated emission limits.

Corrective Action

As noted above, FCA has initiated the steps to accurately measure the natural gas combusted when the turbines are operating and, more specifically, when they are

¹ The hourly limits referenced in the VN appear to be short term limits incorporated into the permit to add an additional layer of "practical enforceability" to help reinforce the annual ton per year limits designed to confirm that NSR was not triggered. Notably, even if one were to incorrectly assume that all recorded fuel use was combusted, FCA would still not exceed its annual NOx and CO emission limits.

combusting fuel that implicates the associated NOx and CO emission factors and limits. A new gas meter was recently installed on Turbine 1, and a second meter is planned for Turbine 2.

Conclusion

FCA believes that the calculated emission rates cited in the VN are a product of over-reporting past natural gas combustion. Given the design parameters of the turbines, the NOx and CO emissions calculated based on total fuel usage (rather than fuel combustion) were overestimated. Therefore, the emissions from the turbines at CTC did not exceed the pph limits. Nevertheless, FCA recognizes the need to collect accurate information and, therefore, installed a new gas meter on Turbine 1 and will be installing a similar meter on Turbine 2.

Please feel free to contact me at 248-944-1027 or stuart.weiss@fcagroup.com with any questions.

Sincerely,



Stuart Weiss
Air Compliance Specialist

cc: Ms. Jenine Camilleri (camillerij@michigan.gov)
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