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

N339161554

FACILITY: DT Midstream - Washington 10 Compressor Station		**SRN / ID:** N3391
LOCATION: 12700 30 MILE ROAD, WASHINGTON		**DISTRICT:** Warren
CITY: WASHINGTON		**COUNTY:** MACOMB
CONTACT: Darrell Grassmyer , Director of Environmental Strategies		**ACTIVITY DATE:** 01/19/2022
STAFF: Kerry Kelly	**COMPLIANCE STATUS:** Non Compliance	**SOURCE CLASS:** MAJOR
SUBJECT: FY 2022 Full Compliance Evaluation.		
RESOLVED COMPLAINTS:		

On January 19, 2022, I (Kerry Kelly, AQD) conducted a scheduled inspection of Washington 10 Storage Facility (Washington 10), located at 12700 30 Mile Road in Washington Township, Michigan. The facility is owned by DT Midstream. The purpose of the inspection was to determine the facility's compliance with: the Federal Clean Air Act; Part 55, Air Pollution Control of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended; Renewable Operating Permit (ROP)/Source-wide PTI No. MI-ROP-N3391-2017a; 40 CFR Part 63 Subpart ZZZZ and 40 CFR Part 63 Subpart DDDDD.

FACILITY OVERVIEW

Washington 10 Compressor Station was owned and operated by DTE Gas Company until July 1, 2021. DTE Energy spun off its Gas Storage and pipeline business as a new entity (DT Midstream) and DT Midstream assumed responsibility for the Washington 10 Compressor Station effective July 1, 2021.

Washington 10 is a natural gas storage and compressor station located in western Macomb County approximately one-tenth of a mile east of M-53 on 30 Mile Road. The area surrounding Washington 10 is rural, sparsely populated with commercial, residential, and industrial properties. The nearest residence is approximately two-tenths of a mile north of Washington 10. There is another natural gas transmission facility, Vector Pipeline L.P. (SRN N7624), located about three-tenths of a mile south of Washington 10. Vector Pipeline's property is accessed through DT Midstream - Washington 10 Compressor Station.

The six reciprocating internal combustion engines (RICE) (EUENGINE1, EUENGINE2, EUENGINE3, EUENGINE4, EUENGINE5, and EUENGINE6) at Washington 10 are used to drive natural gas compressors. The compressors pressurize the natural gas to allow it to continue to flow to the pipeline or storage field. When natural gas is taken out of storage at a higher pressure than the pipeline pressure the water in the gas can freeze in the pipeline. Four natural gas-fired indirect heaters (EUINDHEATER1, EUINDHEATER2, EUINDHEATER3, EUINDHEATER4) are used to prevent the water in the gas from freezing.

Before natural gas is sent to the pipeline for customers, it goes through desiccant towers for the removal of moisture and heavy hydrocarbons that became entrained in the gas during storage. The desiccant towers typically operate December through April. There are five desiccant towers at Washington 10. A maximum of three towers can process gas at the same time with a maximum processing capacity of 30 mcf/hour. In the desiccant towers processing natural gas, desiccant beads adsorb water and hydrocarbons. Following a period of natural gas processing, the beads in the tower need to be regenerated to remove the liquids from the beads. The beads are regenerated by heating wet natural gas, using a direct heater (EUDIRECTHEATER), and then sending the hot gas through the tower. The heated gas absorbs the liquids on the beads. The wet natural gas is then sent through a compressor and then a 3-Phase Separator to separate brine, liquid hydrocarbons, and gasses. A water/oil separator is used to remove oil from the water. The water, oil, and liquid hydrocarbons are sent to separate storage tanks (EUHCTANK1, EUHCTANK2, EUHCTANK3, EUHCTANK4). Gas from the 3-Phase separator can be used as fuel for EUDIRECTHEATER, however, records indicate flash gas has not been used to fuel EUDIRECTHEATER in calendar year 2020 or 2021.

Seven gas-fired boilers (EUP1_BMBLR1, EUP1_BMBLR2, EUP1_BMBLR3, EUP1_BMBLR4, EUP2_BMBLR1, EUP2_BMBLR2, EUP2_BMBLR3) are used to heat fuel gas before it goes into the engines and to heat buildings in the winter.

REGULATORY ANALYSIS

Washington 10 Compressor Station is subject to the ROP program, because the potential to emit (PTE) of carbon monoxide (CO), nitrogen oxides (NOx), and volatile organic compounds (VOC) exceeds 100 tons per year and the PTE is greater than 10 tons for any single HAP and 25 tons for aggregate HAP. Renewable operating permit (MI-ROP-N3391-2017a) became effective on July 2, 2019. Equipment covered in MI-ROP-

N3391-2017a includes one direct heater, one emergency generator, six reciprocating RICE (three 4,000 horsepower (HP) and three 4,735 HP), four indirect heaters, four hydrocarbon storage tanks, seven gas-fired boilers, and two cold cleaners.

EUENGINE1, EUENGINE2, EUENGINE3, EUENGINE4, EUENGINE5, EUENGINE6, and EUGENERATOR are subject to the National Emission Standards for Reciprocating Internal Combustion Engines (RICE) promulgated in 40 CFR 63, Subpart ZZZZ. At this time, EUENGINE1, EUENGINE2, and EUENGINE3 do not have to meet the requirements of 40 CFR Part 63, Subparts A and ZZZZ per 40 CFR 63.6590(b)(3)(i) because construction of these RICE commenced prior to December 19, 2002, they each have a site rating greater than 500 HP, and they are located at a major source of HAP. EUGENERATOR does not have to meet the requirements of 40 CFR Part 63, Subparts A and ZZZZ per 40 CFR 63.6590(b)(3)(iii) because construction of EUGENERATOR commenced prior to December 12, 2002, it is an emergency stationary RICE with a site rating greater than 500 HP, and it is located at a major source of HAP. All engines are subject to New Source Review (NSR) permitting (Permit to Install). The terms and conditions in the ROP identified with a footnote 2 constitute a federally enforceable PTI. The PTI terms and conditions do not expire and remain in effect unless the criteria of Rule 201(6) are met.

EUDIRECTHEATER, EUINDIRECT1, EUINDIRECT2, EUINDIRECT3, EUINDHEATER4, EUP1_BMBLR1, EUP1_BMBLR2, EUP1_BMBLR3, EUP1_BMBLR4, EUP2_BMBLR1, EUP2_BMBLR2, EUP2_BMBLR3 at the stationary source are subject to the National Emission Standard for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines promulgated in 40 CFR Part 63, Subparts A and DDDDD. EUDIRECTHEATER, EUINDIRECT1, EUINDIRECT2, EUINDIRECT3, EUINDHEATER4 are subject NSR permitting. The terms and conditions in the ROP identified by footnote 2 constitute a federally enforceable PTI. The PTI terms and conditions do not expire and remain in effect unless the criteria of Rule 201(6) are met. EUP1_BMBLR1, EUP1_BMBLR2, EUP1_BMBLR3, EUP1_BMBLR4, EUP2_BMBLR1, EUP2_BMBLR2, and EUP2_BMBLR3 are exempt from NSR permitting per Rule 282(2)(b) because they are used for space heating or process heat, fire sweet natural gas, and have a heat input capacity less than 50,000,000 Btu/hr.

FGHCTANKS are subject to NSR permitting. The terms and conditions in the ROP identified by footnote 2 constitute a federally enforceable PTI. The PTI terms and conditions do not expire and remain in effect unless the criteria of Rule 201(6) are met. The tanks in FGHCTANKS do not appear to be subject to 40 CFR Part 63 Subpart Kb, per 40 CFR 60.110b (d)(4), because they are less than 1,589.874 m3 and are used for condensate storage prior to custody transfer.

The cold cleaners and natural gas venting activities at the source are exempt from NSR permitting per Rule 281(2)(h) and Rule 285(2)(mm) respectively.

COMPLIANCE EVALUATION

I arrived at Washington 10 Compressor Station at approximately 1:00 PM on January 19, 2022. I entered the office at Washington 10 and explained the purpose of the inspection to Darrell Grassmyer, Director of Environmental Strategies, DT Midstream, Mr. Joe Kotwicki, Supervisor, DT Midstream, and Mr. Nathan Wallace, Trinity Consulting. Mr. Grassmyer and Mr. Kotwicki answered questions and escorted me around the property during the inspection. Ms. Kimberly Walker, DT Midstream, provided records electronically but was not present during the inspection.

Washington 10 Compressor Station conducts central processing of natural gas. Natural gas is typically received at Washington 10 from April through September, via the E line, and stored in one of three storage fields. The total capacity of the three storage fields combined is approximately 90 billion cubic feet. Natural gas is typically withdrawn from the storage fields via the F line, and sent to customers October through March. At the time of the inspection, DTE was withdrawing using EUENGINE1, EUENGINE2, EUENGINE3, and EUENGINE4.

EUDIRECTHEATER

EUDIRECTHEATER is a Maxon Model 400, size 487 M, heater. MI-ROP-N3391-2017a permits the use of natural gas or flash gas from FGTANKS to fuel EUDIRECTHEATER. According to Maxon's Technical Catalog for the Model 400 burner (Attachment 1) size 487M has a maximum heat input capacity of 10,060 MBtu/hour. The EUDIRECTHEATER table in the ROP contains conditions applicable to the direct heater that were established pursuant to Rule 201(1)(a) and Rule 301. The table also contains conditions, established pursuant to Rule 213(3), necessary to ensure that monitoring and recordkeeping compliance evaluation activities will be conducted to determine the status of compliance of EUDIRECTHEATER with the emission limitations and standards.

EUDIRECTHEATER Special Conditions (SC) I. 1. and 2. in the ROP limit the 12-month rolling NOx and CO emissions from EUDIRECTHEATER to 3.2 tons and 3.9 tons respectively. Monthly and 12-month rolling records of NOx and CO emissions, required in SC VI. 2., are used to demonstrate compliance with the NOx and CO emission limits. Ms. Walker provided NOx and CO emissions calculations for EUDIRECTHEATER (Attachment 2). The emission factor used to calculate NOx emissions from EUDIRECTHEATER is 131.95 lb/MMCF. DT Midstream uses an emission factor of 76.13 lbs/MMCF to calculate CO emissions from EUDIRECTHEATER. The highest reported 12-month rolling NOx emissions for EUDIRECTHEATER during the period of February 2020 through December 2021 was 1.13 tons reported in six 12-month periods during 2021. The highest reported 12-month rolling CO emissions for EUDIRECTHEATER was 0.65 tons between February 2020 through December 2021 reported in seven 12-month periods during 2021. These records indicate DT Midstream has been operating below the NOx and CO emission limits set forth in EUDIRECTHEATER SC I.1. and 2.

The 12-month rolling total gas usage (natural gas or flash gas) for EUDIRECTHEATER is limited to 45 MMCF in EUDIRECTHEATER SC II. 1. Monthly and 12-month rolling records of the total natural gas and the flash gas used in EUDIRECTHEATER are required to be kept per EUDIRECTHEATER SC VI. 1. Ms. Walker provided 12-month rolling natural gas and flash gas usage records for February 2020 through December 2021 (Attachment 2). The highest reported 12-month rolling flash gas and natural gas fuel use combined for EUDIRECTHEATER was 17.115 MMCF reported in four 12-month periods in 2021. Based on these records it appears DT Midstream is in compliance with the permit limit of 45 MMCF per 12-month rolling time period.

EUDIRECTHEATER SC III. 1. restricts the fuel used in EUDIRECTHEATER to pipeline quality natural gas or flash gas from the liquid hydrocarbon tanks (FGTANKS). Mr. Kotwicki showed me the fuel gas lines for EUDIRECTHEATER which are gas lines. Records of the fuel used in EUDIRECTHEATER (Attachment 2) indicate DT Midstream only used natural gas in EUDIRECTHEATER between February 2020 through December 2021.

EUGENERATOR

An emergency generator (EUGENERATOR), located in the Aux 1 Services Building at Washington 10, is used to supply power during an outage. EUGENERATOR is a 1090 kW generator powered by a 1340 HP rated RICE manufactured by Caterpillar (CAT 3516). The EUGENERATOR table in the ROP contains conditions applicable to the generator that were established pursuant to Rule 201(1)(a) and Rule 301. The table also contains conditions, established pursuant to Rule 213(3), necessary to ensure that monitoring and recordkeeping compliance evaluation activities will be conducted to determine the status of compliance of EUGENERATOR with the emission limitations and standards.

EUGENERATOR SC I. 1. and 2. limit the 12-month rolling NOx and CO emissions from EUGENERATOR to 2.8 tons and 2.7 tons respectively. Monthly and 12-month rolling NOx and CO emissions calculations, required by EUGENERATOR SC VI.2, for the emergency generator were provided by Ms. Walker (Attachment 3). The NOx and CO emission factors for EUGENERATOR are 6.15 lbs/hour and 5.9 lbs/hour respectively and are based on manufacturer's data. The highest reported 12-month rolling NOx emissions for EUGENERATOR during the period of February 2020 through December 2021 was 0.29 tons reported in September and December 2021. The highest reported CO emissions for EUGENERATOR was 0.28 tons between February 2020 through December 2021, reported in September 2021. These records demonstrate that EUGENERATOR has been operating below the permit limits of 2.7 tons NOx per 12-month rolling time period and 2.7 tons of CO per 12-month rolling time period set forth in EUGENERATOR SC I. 1. and 2.

The 12-month rolling hours of operation of EUGENERATOR are limited to 876 hours in SC III. 1. Ms. Walker provided records of the monthly and 12-month rolling hours of operation of the emergency generator required per EUGENERATOR SC VI.1 (Attachment 3). The highest 12-month rolling hours of operation for EUGENERATOR between February 2020 through December 2021 was 94 hours. This demonstrates EUGENERATOR was in compliance with the 876 hours per 12-month rolling time period limit.

EUGENERATOR SC III. 2. limits the fuel used in EUGENERATOR to pipeline quality natural gas. Based on my observations, the generator appears to use only natural gas.

Compliance with all applicable provisions of the National Emission Standards for Hazardous Air Pollutants, as specified in 40 CFR Part 63, Subpart A and Subpart ZZZZ is required in EUGENERATOR SC IX.1. According to 40 CFR 63.6590(b)(3)(iii), located in 40 CFR 63 Subpart ZZZZ; existing RICE with a site rating of more than

500 brake HP located at a major source of HAP emissions do not have to meet the requirements of 40 CFR 63 Subpart A and ZZZZ. Based on the installation date (7/1/99), EUGENERATOR is an existing RICE. To be considered an emergency stationary RICE, the engine must not run for more than 100 hours per year for non-emergency purposes, including maintenance checks and readiness testing. The use in emergency situations is unlimited. Based on the run hours provided for EUGENERATOR (Attachment 3), EUGENERATOR was operated for readiness testing/maintenance purposes for 51 hours in 2020 and 57 hours in 2021. This information indicates EUGENERATOR was operated for less than 100 hours in calendar years 2020 and 2021 for non-emergency purposes (weekly testing/maintenance) and appears to demonstrate that the generator is operating as an emergency generator as described in 40 CFR 63.6640(f).

FGENGINES1
In the ROP, EUENGINE1, EUENGINE2, and EUENGINE3 are combined in the flexible group (FG) FGENGINES1. The engines in FGENGINES1 were installed in 1999. Each engine in FGENGINES1 is a 4,000 HP natural gas-fired RICE manufactured by Cooper with uncontrolled emissions. The FGENGINES1 table in the ROP contains conditions applicable to EUENGINE1, EUENGINE2, and EUENGINE3 that were established pursuant to Rule 201(1)(a) and Rule 301. The table also contains conditions, established pursuant to Rule 213(3), necessary to ensure that testing, monitoring and recordkeeping compliance evaluation activities will be conducted to determine the status of compliance of FGENGINES1 with the emission limitations and standards.

Emissions limits for NOx, CO, and VOC, set forth in FGENGINES1 SC I.1.a through 3.b, are listed in the table below:

Pollutant	Limit	Time Period/ Operating Scenario
NOx	1.3 grams	Per horsepower-hour at 100% torque and 100% speed, per engine
NOx	227.0 tons	12-month rolling, as determined at the end of each calendar month
CO	2.0 grams	Per horsepower-hour at 100% torque and 100% speed, per engine
CO	228.6 tons	12-month rolling, as determined at the end of each calendar month
VOC	0.90 gram	Per horsepower-hour at 100% torque and 100% speed, per engine
VOC	103.8 tons	12-month rolling, as determined at the end of each calendar month

FGENGINES1 SC V. 1. through 3. requires stack testing using Methods 2, 3A, 7E, 10, and 25A, or other acceptable reference methods approved by AQD within one year of issuance of the ROP and repeat stack testing within 180 days if the emission calculations show the 12-month rolling limit is within 25% of the limits in FGENGINES1 SC I. 1b, 2b, or 3b. These testing requirements are used to verify compliance with the emission limits in FGENGINES1 SC I. 1a, 2a, or 3a. According to the Source-wide PTI, the "Time Period/Operating Scenario" for the gram per horsepower-hour limit is 100% torque and 100% speed, per engine. The ROP (MI-ROP-N3391-2017) was issued to DTE Gas Company – Washington 10 Compressor Station on November 21, 2017. DTE most recently tested NOx, CO, and VOC emissions from EUENGINE1, EUENGINE2, and EUENGINE3 on May 22, 2018 and April 10 - 11, 2018 respectively, which is within one year of ROP issuance. NOx, CO, and VOC emissions for each engine, at 100% torque and 100% speed, were below the limits in FGENGINES1 SC I. 1a, 2a, and 3a based on the 2018 stack test report on file at the AQD Warren District office. The test report summary page can be viewed electronically at https://www.deq.state.mi.us/aps/downloads/SRN/N3391/N3391_TEST_20180410.pdf. The table below contains the information from the test report summary page:

Pollutant	2018 Stack Test Results (average of three 1 hour runs)		
	EUENGINE1	**EUENGINE2**	**EUENGINE3**
NOx	0.36 grams/bhp-hr	0.56 grams/bhp-hr	0.58 grams/bhp-hr
CO	1.66 grams/bhp-hr	1.25 grams/bhp-hr	1.46 grams/bhp-hr
VOC	Non-Detect	Non-Detect	Non-Detect

To show compliance FGENGINES1 SC I. 1b, 2b, and 3b, monthly and 12-month rolling records of the total NOx, CO and VOC emissions, in tons, for FGENGINES1 are required to be kept per FGENGINES1 SC VI. 1. Ms. Walker provided monthly and 12-month rolling NOx, CO, and VOC emission records and calculations for

FGENGINES1 (Attachment 4). These records indicate that DT Midstream is using hourly emission factors derived from the most recent stack tests conducted at 100% speed and torque. Records also indicate that the engines in FGENGINES1 have been operating below the NOx, CO, and VOC limits in FGENGINES1 SC I. 1b, 2b, and, 3b and are not within 25% of these limits. The highest reported 12-month rolling NOx, CO, and VOC emissions for February 2020 through December 2021 for FGENGINES1 were 29.28 tons, 83.37 tons, and 0 tons respectively.

Using NOx emission factors from stack testing conducted at 100% speed and torque does not reflect NOx emissions at partial load conditions. According to the initial PTI application (459-97) and the initial test protocol for the engines in FGENGINES1, emissions from engines change with variations in the torque, engine speed and to a lesser extent other parameters such as site elevation, ambient temperature and humidity, however, CO and NMHC emissions are relatively stable. NOx emissions, according to the application and protocol, are a different story. The test protocol, revised March 6, 1998, states “the highest NOx emissions occur at high-torque, low-speed operation. Emissions at this point are much higher than the design point of 100% torque and 100% speed (330 rpm).”

In the PTI application for the engines in FGENGINES1 (PTI 459-97), Washington 10 proposed a formula to calculate NOx emissions, at varying speeds and torque percentages, as a cost-effective method for showing compliance with the permit as the calculated emissions should correspond to a worst-case emission estimate. A condition (SC 3) was included in PTI 459-97 and 457-97A to enforce Washington 10’s method for calculating NOx emissions and determining compliance with the NOx emission limits for FGENGINES1.

The protocol, conditionally approved on April 6, 1998, states Washington 10 will calculate emissions based on percent speed and torque. The NOx emission calculation in the test protocol is:

$$E = 1.5 + \left(\frac{1.5 * \%torque}{\%speed - 15\%}\right)^{3.7}$$

In the protocol, Washington 10 didn't claim that the calculation represents actual emissions, however, they did claim that actual emissions will always be less than the calculated value. They indicated they will base both compliance status and emission fees on this calculation. According to documents in the permit file for Washington 10, AQD found this approach acceptable. Washington 10 claimed, in the test protocol, the engines in FGENGINES1 are identical. They planned to rigorously test one engine, at a range of speed and torque conditions, and demonstrate that the other engines have similar emissions. The application for the initial PTI, states Testing was conducted September 27, 1999 and appears to have met the requirements in the protocol.

SC 3 in PTI 459-97A was not included in the initial ROP/Source-wide PTI, nor renewals of the ROP, even though the terms and conditions from the original PTI for the engines do not expire and remain in effect unless the criteria of Rule 201(6). SC 3 should have been incorporated into the Source-wide PTI.

SC V.1-3 and VI. 1 – 7 were established pursuant to Rule 213(3), likely to reflect the hourly and monthly NOx emissions recordkeeping requirement from PTI 459-57A, SC 3 for these engines. It does not appear SC V.1-3 and VI. 1 – 7 accurately reflect the NOx emissions testing and monitoring for compliance that was evaluated and prescribed in PTI 459-97A.

Based on past AQD inspection reports, dating back to 2008, it appears AQD has not evaluated compliance with the 12-month rolling NOx emission limit using the calculation from PTI 459-97A nor ensuring the engines were operating at 100% speed and torque. For these reasons, and because SC 3 from PTI 459-97A was never included in the ROP/Source-wide PTI, I did not require Washington 10 to demonstrate compliance with the NOx emission limit based on the protocol for calculating emissions nor whether the engines were operated at 100% speed and torque. Using the torque and speed data provided by Washington 10 for this inspection, I calculated the 12-month rolling NOx emissions from FGENGINES1 using the formula from the March 6, 1998 protocol. My calculations indicate Washington 10 would still meet the 12-month rolling NOx emissions from February 2020 through December 2021 using the formula included in the March 6, 1998 protocol. The highest 12-month rolling NOx emissions using the calculation method was 42.77 tons calculated for November and December 2021. The highest calculated is approximately 13 tons/year more than the emissions reported using the emission factor from the stack test performed at 100% speed and torque.

FGENGINES1 SC III. 1 mandates that each engine in FGENGINES1 not operate unless a clean-burn combustion system is installed and operating properly. According to EPA's Compilation of Air Emissions

Factors (AP-42) for gas-fired ICE, the term “clean-burn” technology is a registered trademark of Cooper Energy Systems and refers to engines designed to reduce NOx by operating at high air-to-fuel ratios. Each of the engines in FGENGINES1 is equipped with a pre-combustion chamber according to the 2020 and 2021 inspection report for the inspection of each engine conducted by the engine manufacturer (Cooper) (Attachment 5). Each report provided indicates there were no pre-combustion chamber problems noted during the analysis of EUENGINE1, EUENGINE2, and EUENGINE3.

DT-Midstream is only permitted to use pipeline quality natural gas to fire the engines in FGENGINES1 (SC III.2). I observed only natural gas fuel lines to each engine in FGENGINES1 during the inspection.

FGENGINES1 SC VI. 2, 3, 6, and 7. require DTE to monitor engine operating parameters on a continuous basis to ensure that engine speed and torque are within ranges for which engine emission factors have been based, maintain on file records of the normal operating ranges, and record critical operating parameters for each engine every four hours of operation. During the inspection I observed that each of the engines in FGENGINES1 was equipped with a monitoring system that displays operating parameters such as torque, engine speed, fuel flow, and horsepower continuously and that each monitoring system was equipped with alarms and engine shut down set points to prevent the engine from being operated out of normal ranges. EUENGINE1, EUENGINE2, and EUENGINE3 were being operated during the inspection. I recorded the following parameters between about 1:15 PM and 1:30 PM for each engine during the inspection:

PARAMETER	EUENGINE1	EUENGINE2	EUENGINE3
Fuel Flow	21,600 scfh	21,338 scfh	21,065 scfh
Torque	94 - 95%	90%	77%
Speed	300 RPM	280 RPM	309 RPM
Air Pressure	Not recorded	24.8” Hg	19” Hg
Air Temperature	Not recorded	110 degrees Fahrenheit	111 degrees Fahrenheit
Horsepower	3450	3027	Not recorded

DT Midstream wrote, in document sent via email (Attachment 6), that the normal operating ranges for the engines in FGENGINES1 are: Engine Speed – 200 to 330 RPM – Shut down: 363 RPM, Torque – 50 to 100 % nominal – Torque Over 105 % for 1 minute or over 110 % for 5 seconds - Shutdown. Records of the engine speed, torque, air manifold temperature and pressure, and ignition timing for each engine in FGENGINES1 for February 2020 through December 2021 were provided as requested. Records of operating parameters recorded are available electronically at: S:\Air Quality Division\STAFF\Kerry Kelly\FY 2022 Inspections\N3391. DT Midstream indicated that the data provided includes periods of start-up and shut-down. In addition, it appears DT Midstream is taking one reading every hour or four hours if an engine is running and is not taking into consideration how long the engine was running before the reading was taken or whether and when the engine shut down during an hour or four-hour period. As a result, the hourly speed recorded ranged between approximate 0 and 331 rpm and the hourly percent torque recorded was between approximately 0 and 101%. The permit requires the hourly average be recorded, not one reading an hour. Hourly averages of torque and speed would more accurately demonstrate whether an engine is being operated within normal operating ranges than one reading taken at a random point each hour.

During the next renewal of the ROP, I will ensure all conditions from the Source-wide PTI are included. In addition, I will review the testing, monitoring, and recordkeeping conditions to ensure these conditions more accurately represent compliance with the emission limits, particularly for NOx. The ROP renewal application is due between May 21, 2021 and May 21, 2022.

If normal operating ranges specified by the manufacturer or established through stack testing are exceeded, DT Midstream is required to implement and record preventive maintenance activities necessary to ensure that system parameters are operated within normal operating ranges (SC VI.5). Each engine in FGENGINES1 is programmed to shut down before normal operating ranges are exceeded, preventing the engines from being operated outside of normal ranges. During stack testing of EUENGINE6 on May 11, 2021, I witnessed the engine shut down when one of the cylinders was too hot.

FGENGINES1 SC VI. 8. mandates that DT Midstream conduct preventive maintenance activities in accordance with Appendix 9 of the ROP. Appendix 9 states: The engines will be operated and maintained by qualified personnel. Annually, the engines will go through a basic inspection to ensure they are mechanically

sound and operating correctly. Each engine will undergo the appropriate maintenance, as per the Manufacturer's Commercial Engine Maintenance Schedule. The Maintenance recommendations and records shall be subject to the review and approval of the AQD District Supervisor. Ms. Walker provided a list of the maintenance activities performed on each engine between February 2020 and December 2021 (Attachment 7). Annual engine inspection reports for FGENGINES1, which describe the findings of the inspection and recommended repairs/maintenance, were also provided (Attachment 5). According to the annual inspection reports, there were no repairs/issues that were recommended to be addressed as soon as possible. The inspection reports do specify maintenance activities for each engine that should be performed during the next scheduled preventative maintenance. In an email dated February 28, 2022, Ms. Walker indicated that Operations addressed the items noted in the 8/20/2021 inspection reports during the preventative maintenance done in November 2021, though the items were not included in the maintenance records provided (Attachment 6).

FGENGINES1 SC VII.4. and 6. require the testing date and test plan for stack tests be submitting to AQD 30 days prior to the test. Stack tests were conducted on each engine in FGENGINES1 on May 22, 2018 and April 10 - 11, 2018. A stack test plan and report were received on time (February 15, 2018 and June 4, 2018 respectively). A copy of the test plan and report are on file at the Warren District office. DT Midstream is required to notify the AQD Technical Programs Unit Supervisor and the District Supervisor no less than 7 days prior to the anticipated test date. AQD received the anticipated test dates more than a month prior to the dates the engines in FGENGINES1 were tested in April 2018.

I inspected each of the stacks for the emission units in FGENGINES1. Each of the stacks associated with the emission units in FGENGINES1 appeared to meet the stack parameter limits set forth in FGENGINES1 SC VIII. 1. through 3, however, actual measurements were not taken. There were no visible emissions emanating from the stacks of EUENGINE1 nor EUENGINE2 during the inspection.

Compliance with all applicable provisions of the National Emission Standards for Hazardous Air Pollutants, as specified in 40 CFR Part 63, Subpart A and Subpart ZZZZ is required in FGENGINES1 SC IX.1. According to 40 CFR 63.6590(b)(3)(i), located in 40 CFR 63 Subpart ZZZZ; existing stationary 2-stroke lean burn RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions do not have to meet the requirements of 40 CFR 63 Subpart A and ZZZZ. FGENGINES1 are existing 2-stroke lean burn RICE and Washington 10 Compressor Station is a major source of HAP.

FGENGINES2
EUENGINE4, EUENGINE5, and EUENGINE6 are combined in the ROP and named FGENGINES2. Each engine in FGENGINES2 is a new 4,735 HP, 4-stroke lean burn RICE manufactured by Caterpillar. CO and VOC/HAP emissions from each engine in FGENGINES2 are controlled using a catalytic oxidizer. The FGENGINES2 table in the ROP contains conditions applicable to EUENGINE4, EUENGINE5, and EUENGINE6 that were established pursuant to Rule 201(1)(a) and 40 CFR Part 63, Subpart ZZZZ. The table also contains a condition established pursuant to Rule 213(3).

Emissions limits for NOx, CO, and VOC, set forth in FGENGINES2 SC I.1 through 7, are listed in the table below:

Pollutant	Limit
NOx	0.9 grams/hp-hour
NOx	130.4 tons/year
CO	2.5 grams/hp-hr
CO DESTRUCTION EFFICIENCY (DE)	93%
CO	25.4 tons/year
VOC	1.0 grams/hp-hr
VOC	144.8 tons

Compliance with the 0.9 gram/hp-hr NOx limit and 1.0 gram/hp-hr VOC limit is demonstrated through compliance with SC V. 1 in FGENGINES2. FGENGINES2 SC V. 1 requires stack testing to determine the NOx and VOC emissions within 5 years of the previous stack test. The NOx and VOC emissions from EUENGINE4, EUENGINE5, and EUENGINE6 were most recently tested by DTE on April 10 - 11, 2018. The previous stack test for NOx and VOC was conducted in February 2013. A copy of the summary table from the 2018 stack test can be viewed electronically at:

https://www.deq.state.mi.us/aps/downloads/SRN/N3391/N3391_TEST_20180410.pdf. The complete stack test report is on file at the AQD Warren District office. Based on the data in the stack test summary, the NOx and VOC emissions from each engine were below the limits in FGENGINES2 SC I. 1 and 6. The table below contains the information from the test report summary page:

Pollutant	2018 Stack Test Results (average of three 1 hour runs)		
	EUENGINE4	EUENGINE5	EUENGINE6
NOx	0.3 grams/bhp-hr	0.4 grams/bhp-hr	0.3 grams/bhp-hr
VOC (post-catalyst)	Non-Detect	Non-Detect	Non-Detect

According to the ROP, compliance with the 2.5 gram/hp-hr CO limit and the CO destruction efficiency (DE) of the catalytic system is shown through compliance with SC V. 2 in FGENGINES2. FGENGINES2 SC V. 2 requires stack testing to determine the CO emissions and the CO destruction efficiency within 180 days of the previous catalytic oxidation system performance test. After two consecutive passing events, the test plan can be changed to annually. Each engine in FGENGINES2 passed the previous two consecutive stack tests for CO. The most recent CO emissions test for EUENGINE4, EUENGINE5, and EUENGINE6 took place May 11 - 13, 2021. The previous stack test for CO was conducted May 5-7 and June 10, 2020. A copy of the results tables from the 2021 stack test report can be viewed at https://www.deq.state.mi.us/aps/downloads/SRN/N3391/N3391_TEST_20210511.pdf. The complete stack test report is on file at the AQD Warren District office. Based on the data in the stack test summary for 2021, the CO emissions from each engine in FGENGINES2 were below the limit in FGENGINES2 SC I.3 and 5. The table below contains the information from the test report:

Pollutant	2021 Stack Test Results (average of three 1 hour runs)		
	EUENGINE4	EUENGINE5	EUENGINE6
CO (pre-catalyst)	1.64 grams/bhp-hr	1.51 grams/bhp-hr	1.38 grams/bhp-hr
CO DE	98.8%	98.8%	99.9%

Compliance with the 12-month rolling NOx, CO, and VOC limits is demonstrated through compliance with SC VI. 4 and 5 in FGENGINES2, according to the ROP. FGENGINES2 SC VI. 4 and 5 require monthly and 12 month rolling records of the total NOx and VOC emissions from FGENGINES2, in tons, be kept. Ms. Walker provided monthly and 12-month rolling NOx, CO, and VOC emission records and calculations for FGENGINES2 (Attachment 4). These records indicate that the DT Midstream is using the emission factors derived from the most recent stack tests and that NOx, CO, and VOC emissions from all engines in FGENGINES2 are less than the NOx, CO, and VOC limits in FGENGINES2 SC I. 2, 4, and, 7. The highest reported 12-month rolling NOx, CO, and VOC emissions for February 2020 through December 2021 for FGENGINES2 were 18.25 tons, 2.34 tons, and 0.0 tons respectively.

As stated in the emissions discussion for FGENGINES1, using NOx emission factors from stack testing conducted at 100% speed and torque would not appear to reflect NOx emissions at partial load conditions. The ROP, original PTI (28-04) and subsequent revisions, however, require testing be conducted at 100 percent speed and load ±10 percent to verify NOx emission rates. Also noted in FGENGINES1 is that the highest NOx emissions occur at high-torque, low-speed operation. No conditions were added to the ROP to require testing be conducted at partial load conditions to verify NOx emissions or establish ranges of torque and speed that the engines in FGENGINES2 must operate within to be in compliance with the emission limits. During the next renewal of the ROP, I will review the testing, monitoring, and recordkeeping conditions to ensure these conditions more accurately represent compliance with the emission limits, particularly for NOx. The ROP renewal application is due between May 21, 2021 and May 21, 2022.

EUENGINE4 was the only engine in FGENGINES2 being operated during the inspection. As previously stated, CO and VOC/HAP emissions from the engines in FGENGINES2 are controlled by catalytic oxidizer. The 2.5 g/hp-hour CO, 1.0 g/hp-hour VOC, and the 144.8 tons/12-month rolling VOC limits in the ROP,

however, are pre-catalyst limits according to the original PTI application (28-04) and evaluation. During the inspection I observed the pre-catalyst sampling port for EUENGINE4 was open while the engine was running and took a photo (Attachment 8). The sampling port is typically used to insert a sampling probe into the stack to conduct emissions tests. The pre-catalyst port on EUENGINE4 is a hole that is about 1 inch in diameter and located about four feet up the stack from the ground on the side of the catalyst closest to the engine. I felt hot air coming from the sampling port when I was standing a few feet away from the port and when I put my hand in front of the port about one to two feet away. I pointed the open port out to Mr. Grassmyer and Mr. Kotwicki. Mr. Grassmyer found the plug for the port on the ground several feet away from the stack. About an hour after the inspection, Mr. Grassmyer sent me an email and photo indicating the plug for the sampling port was installed on EUENGINE4.

To determine whether the CO emissions would be within the limits in SC I.4 (25.4 tons/year) if EUENGINE4 was uncontrolled, I calculated the 12-month rolling CO emissions for January 2021 through December 2021 using the pre-control CO lb/hour emission rate from the 2021 test report for EUENGINE4. These calculations indicate the highest 12-month rolling emissions for FGENGINES2 would be 22.73 tons/year which is below the limit in SC I.4.

DT Midstream is limited to using only pipeline quality natural gas to fire the engines in FGENGINES2. I observed only natural gas fuel lines to each engine in FGENGINES2 during the inspection.

Operation of any engine in FGENGINES2 is prohibited unless a preventative maintenance plan (PMP), malfunction abatement plan (MAP), and plan for periods of start-up, shut-down, and malfunction (SSMP) are implemented and maintained (SC III.1,2, and 4). The PMP, MAP, and SSMP were submitted by DTE in June 2020. The plans state operating rounds are performed during each shift that the engines are in operation to check for leaks and look for any unusual operating conditions. The plans also state that routine engine maintenance is performed at manufacturer recommended intervals (2000/5000/10K/20K/50K) and typically covers bearings, powerheads, combustion, etc. FGENGINES2 operated between approximately 1,700 and 3,300 hours in calendar year 2020 and 2021. It appears, based on EUENGINE4 operating when the sampling port was open, that the stacks are not checked for leaks while the engines are running. Ms. Walker provided maintenance records for FGENGINES2 from January 2020 through December 2021, as required in FGENGINES2 SC VI. 6 (Attachment 7). The annual engine inspection reports from Cooper, which describe the findings of the inspection and recommended repairs/maintenance, were also provided (Attachment 9). According to the maintenance records, it appears the maintenance recommended in the Cooper inspection reports and the 2,000 hour maintenance activities noted in Appendix C of the PMP/MAP/SSMP were conducted.

The PMP, MAP, and SSMP also include maintenance and operating parameters for the oxidation catalysts for each engine. Proper operation of the oxidation catalyst is discussed in SC IV.1.

FGENGINES2 SC III. 2. requires FGENGINES2 operate within normal operating ranges specified by the manufacturer or established through stack testing. SC III.5 states that compliance with the applicable emission and operating limitations at all times except during periods of startup, shutdown and malfunction and as allowed in SC III.2. I observed that each of the engines in FGENGINES2 is equipped with a monitoring system that will sound alarms and shut the engine down before normal operating ranges are exceeded, preventing the engines from operating outside of normal ranges established by the manufacturer or through stack testing. During stack testing of EUENGINE6 on May 11, 2021, I witnessed the engine shut down when one of the cylinders was too hot.

The operating parameters for EUENGINE4 that I noted during the inspection are included in the table below. DT Midstream wrote, in a document sent via email, that the normal operating ranges for the engines in FGENGINES2 are: Engine Speed – 800 to 1,000 RPM – Shut down: 1,017 RPM, Torque – 50 to 100 % nominal – Torque Shutdown - 110 % (Attachment 6). The average speed during testing was between about 960 and 995 RPM and the average torque between about 93 and 95%. Records of the engine speed, torque, engines hours, and fuel consumption for each engine in FGENGINES2 for January 2020 through December 2021 were provided as requested and required in SC VI.10. The records are available electronically at: S:\Air Quality Division\STAFF\Kerry Kelly\Temp Records\N3391. These records indicate the 4-hour average speed for all engines ranged between 960 and 1015 RPM and the average torque between 6.2 and 110%. Though records indicate DT Midstream did not operate the engines within the torque range established through testing or stated as the normal torque range, it is likely the records do not represent 4-hour averages for periods

when the engines are operating other than start-up, shut-down, or malfunction. Normal/proper operation of the catalysts is discussed in SC IV.1.

PARAMETER	EUENGINE4
Fuel Flow	23,705 scfh
Torque	75 - 79%
Speed	945 - 961 RPM
Load	93 - 95%
Catalyst Inlet Temperature	835 degrees Fahrenheit
Catalyst Outlet Temperature	604 degrees Fahrenheit
Catalyst Pressure Drop	1.5 inches water column
Oil Pressure	69.4 PSI
Air Temperature	121.5 degrees Fahrenheit
Horsepower	3553

FGENGINES2 SC III.3. states the total break-in hours for each engine in FGENGINES2 shall not exceed 200 hours. The underlying applicable requirement (40 CFR 63.6640(d)) states: “For new, reconstructed, and rebuilt stationary RICE, deviations from the emission or operating limitations that occur during the first 200 hours of operation from engine startup (engine burn-in period) are not violations.” This exemption from receiving a violation notice for FGENGINES2 emissions and operating deviations does not appear to apply FGENGINES2 because the engines have passed the 200 hour “burn-in” period.

Operation and maintenance of any engine subject to 40 CFR 63 Subpart ZZZZ in a manner consistent with safety and good air pollution control practices for minimizing emissions, including associated air pollution control equipment and monitoring equipment, is required per FGENGINES SC III. 6. Operating EUENGINE4 while the pre-catalyst sampling port was open, and testing was not being conducted, is not a manner of operation that is consistent with safety and good air pollution control practices for minimizing emissions, which is a violation of SC III.6.

DT Midstream is prohibited from operating an engine in FGENGINES2 unless the engine’s respective catalytic oxidation system is installed, maintained, and operated in a satisfactory manner (SC IV.1). Satisfactory operation includes; a. replacing the catalyst based on the manufacturer’s recommended schedule, b. maintaining the temperature of each RICE exhaust so that the catalyst bed inlet temperature is greater than or equal to 450 °F and less than or equal to 1350 °F., and c. maintaining each RICE catalyst so that the pressure drop across the catalyst does not change by more than 2 inches of water from the pressure drop across the catalyst that was measured during the initial performance test (at 100 percent load plus or minus 10 percent). Operations/station repairmen maintain the catalysts. The catalysts are taken out, inspected, and cleaned approximately annually and replaced when necessary or recommended by the manufacturer. Manufacturer’s recommendations states the frequency of cleaning is dependent upon the amount of particles in the gas, diesel engines often require cleaning more often than gas-fired engines, and frequently an annual inspection is all that is needed. Testing is done annually on the catalysts to ensure CO destruction efficiency.

During the inspection, I observed that each catalyst was equipped with a device that monitors the catalyst inlet temperature. EUENGINE4 was the only engine in FGENGINES2 being operated during the inspection. The catalyst inlet temperature for EUENGINE4 during the inspection is noted earlier in this report. Continuous monitoring and recording of the inlet temperature of each catalytic oxidizer in FGENGINES2 is required per FGENGINES2 SC VI. 2. and 8. Ms. Walker provided records of the 4-hour rolling average catalyst inlet temperatures for EUENGINE4, EUENGINE5, and EUENGINE6 for January 2020 through December 2021 (File location: S:\Air Quality Division\STAFF\Kerry Kelly\Temp Records\N3391). These records indicate the 4-hour rolling average catalyst inlet temperature for EUENGINE4 was less than 450 °F on two occasions when the engine was being operated (April 8 and 9, 2020). The 4-hour rolling average catalyst inlet temperature for EUENGINE6 was less than 450 °F while the engine was running on nine occasions. I requested 2-minute temperature data for some of the dates with low catalyst temperature readings. Based on the 2-minute data provided, it appears DT Midstream is taking one reading every hour if an engine is running, not every 15

minutes, and is not taking into consideration how long the engine was running before the reading was taken or whether and when the engine shut down during an hour. In addition, the first three four-hour averages for the recordkeeping period did not include the previous three, two, and one hour readings, respectively, in the average. The permit states the applicable emission and operating limitations at all times except during periods of startup, shutdown and malfunction and that the hourly average, consisting of a minimum of one reading every 15 minutes, be used to calculate the 4 hour average. DT Midstream is not accurately calculating the four -hour average catalyst inlet temperature which is a violation of FGENGINES2 SC VI.2 and 8. A notice of violation will be issued.

Satisfactory installation, calibration, maintenance and operation of a device to monitor, by observation, the pressure drop across each catalytic oxidizer in FGENGINES2 once per month is required in FGENGINES2 SC VI. 3. I inspected and observed that each engine in FGENGINES2 was equipped with a monitoring system that continuously monitors and displays the pressure drop. Ms. Walker provided records of the monthly pressure drop readings for each catalytic oxidizer for February 2020 through December 2021 (S:\Air Quality Division\STAFF\Kerry Kelly\Temp Records\N3391). These records indicate the recorded pressure drop values were within 2 inches of water gauge pressure of the pressure drop established during testing. The largest measured difference was 1.1 inches water column recorded for the catalyst on EUENGINE5 on May 1, 2020.

FGENGINES2 SC IV. 2. requires a continuous parameter monitoring system be installed, operated, and maintained in a satisfactory manner according to the requirements in 40 CFR 63.6625(b)(1) through (6), which includes developing a site-specific monitoring plan addressing the design and data collection of the CPMS and testing the accuracy of the thermocouple annually. The temperature sensor must have a minimum tolerance of 2.8 degrees Celsius (5 degrees Fahrenheit) or 1 percent of the measurement range, whichever is larger. Ms. Walker provided the catalyst thermocouple calibration log for each catalyst in FGENGINES2 (Attachment 10), as required in SC VI.9. These records indicate the accuracy of the thermocouple for each catalyst was tested on March 17, 2020 and March 10, 2021. The previous accuracy checks were conducted September 4, 2019 and September 11, 2019. Each thermocouple's accuracy was within one percent or 4.0 degrees Fahrenheit. DT Midstream appears checking the accuracy of the thermocouples annually as required.

A copy of the site-specific monitoring plan for the CPMS was provided in June 2020 and is on file at the AQD Warren District office. SC IV.2.vii. requires the monitoring plan address data recording, calculations, and reporting.

DT Midstream provided the requested records required in SC VI.9 including CMS calibration checks; site-specific monitoring plan and SSM plan; and results of performance tests. Based on semi-annual reports received, there were no malfunctions of the air pollution control or monitoring equipment.

DT Midstream is required, in FGENGINES2 SC VII.4, to submit to the AQD District Supervisor, a semi-annual compliance report, as specified in 40 CFR 63.6650, which contains all deviations during the reporting period from any applicable emission limitation or operating limitation and all periods during which the CPMS or CEMS was out of control as defined in 40 CFR 63.8(c)(7). If there were no deviations from any applicable emission limitations or operating limitations or no periods that the CPMS or CEMS was out of control, the report shall contain a statement that there were no deviations and no periods during which the CPMS or CEMS was out of control during the reporting period. In the semi-annual and annual deviation reports submitted between January 2020 and December 2021, there were statements that there were no periods during which the CPMS was out of control.

SC VII. 6. states the permittee shall submit a startup, shutdown and malfunction report if actions addressing the startup, shutdown and malfunction were not consistent with the Startup/Shutdown/Malfunction Plan. There were no abnormal startup, shutdown or malfunction events recorded in 2020 or 2021.

Notifications in 40 CFR 63.7(b) and (c), 63.8 (e), (f)(4) and (f)(6), and 63.9(b) through (e), (g) and (h), 40 CFR 63.9(h)(2)(ii), and 63.10(d)(2), referenced in SC VII. 7 through 8, are required to be submitted on time. Records of 40 CFR 63 Subpart ZZZZ initial notifications are on file at the AQD office.

SC VIII requires that the exhaust gases from the stacks be discharged unobstructed vertically upwards to the ambient air. I inspected each of the stacks for the emission units in FGENGINES2. As previously noted, emissions from EUENGINE4 were being discharged through the sampling port, not vertically upwards through the stack. This is a violation of SC VIII.

FGENGINES2 SC IX. 1 requires compliance with all applicable provisions of National Emission Standards for Hazardous Air Pollutants specified in 40 CFR 63 Subpart A and ZZZZ. Compliance with these requirements were evaluated in FGENGINES2.

FGINDIRECTHEATERS1
The flexible group FGINDIRECTHEATERS1 consists of EUINDHEATER1, EUINDHEATER2, and EUINDHEATER3. I inspected EUINDHEATER1, EUINDHEATER2, EUINDHEATER3. EUINDHEATER1, EUINDHEATER2, and EUINDHEATER3, each have two, 5 MMBtu, Maxon 487M burners.
The FGINDIRECTHEATERS1 table in the ROP contains conditions applicable to EUINDHEATER1, EUINDHEATER2, and EUINDHEATER3 that were established pursuant to Rule 201(1)(a) and Rule 301. The table also contains conditions, established pursuant to Rule 213(3), necessary to ensure that testing, monitoring and recordkeeping compliance evaluation activities will be conducted to determine the status of compliance of FGINDIRECTHEATERS1 with the emission limitations and standards.

Monthly and 12-month rolling NOx and CO emissions records for FGINDHEATERS1, required in FGINDHEATERS1 SC VI.3., were provided by Ms. Walker (Attachment 11). DT Midstream is using emission factors of 140 lbs NOx/MMscf and 90 lb CO/MMscf. The records indicate EUINDHEATERS1 were operating below the 7.1 tons NOx per 12-month rolling time period limit specified in FGINDHEATERS1 SC I. 1. and the 4.4 tons of CO per 12-month rolling time period in FGINDHEATERS1 SC I. 2. from February 2020 to December 2021. The highest 12-month rolling NOx emissions reported was 3.52 tons reported in December 2020. The highest reported 12-month rolling CO emissions were 2.27 tons reported in December 2020.

FGINDIRECTHEATERS1 SC II. 1. limits the 12-month rolling natural gas throughput for FGINDIRECTHEATERS1 to 100 million standard cubic feet. Ms. Walker provided natural gas usage records for the indirect heaters required per FGINDIRECTHEATERS1 SC VI.2. (Attachment 11). The records indicate that DT Midstream is in compliance with the permit limit of 100 MMCF per 12-month rolling time period for FGINDIRECTHEATERS1. Note: the company only has one gas meter for all four line heaters at the facility. They calculate natural gas usage for FGINDHEATERS1 by multiplying the total gas usage by 0.75. The natural gas usage for FGINDHEATERS2 is calculated by multiplying the total gas usage by 0.25. Using one meter for all four line heaters is permitted as long as their records show the total usage is below the lower of the two usage limits (67 million standard cubic feet for FGINDIRECTHEATERS2). The highest fuel usage for EUINDHEATERS1 and EUINDHEATERS2 combined was 64.09 million standard cubic feet between February 2020 and December 2021, which is below the lesser of the fuel usage limits of 67 MMCF. DT Midstream appears to be in compliance with the permit material limits for both FGINDHEATERS1 and FGINDHEATERS2.

FGINDHEATERS1 SC III. 1 stipulates only natural gas shall be burned in FGINDHEATERS1 and FGINDHEATERS2. I observed only natural gas fuel lines to each heater in FGINDHEATERS1 during the inspection.

I inspected each of the stacks for the emission units in EUINDHEATERS1. Each of the stacks associated with the emission units in EUINDHEATERS1 appear to meet the stack parameters set forth in EUINDHEATERS1 SC VIII. 1. through 3.

FGINDIRECTHEATERS2
FGINDIRECTHEATERS2 consists of EUINDIRECTHEATER4. I inspected EUINDIRECTHEATER4. EUINDIRECTHEATER4 has two, 5 MMBtu, Maxon Model 487M burners. The FGINDIRECTHEATERS2 table in the ROP contains conditions applicable to EUINDHEATER4 that were established pursuant to Rule 201(1)(a) and Rule 301. The table also contains conditions, established pursuant to Rule 213(3), necessary to ensure that testing, monitoring and recordkeeping compliance evaluation activities will be conducted to determine the status of compliance of FGINDIRECTHEATERS2 with the emission limitations and standards.

Ms. Walker provided NOx and CO emission records for EUINDHEATERS2 (Attachment 11). These records demonstrate EUINDHEATERS2 has been operating below the 1.8 pounds per hour NOx limit specified in EUINDHEATERS2 SC I. 1. and the 1.1 pounds per hour of CO limit SC I. 2. from February 2020 and December 2021. The highest reported NOx emissions for EUINDHEATERS2 were 1.20 pounds/hr and the highest reported CO emissions was 0.77 pounds/hr both reported in December 2020.

The 12-month rolling natural gas throughput for FGINDIRECTHEATERS2 is limited to 67 million standard cubic feet in FGINDIRECTHEATERS2 SC II. 1. Ms. Walker provided natural gas usage records for the indirect

heaters required per FGINDIRECTHEATERS2 SC VI.2 (Attachment 11). The records indicate that DT Midstream is in compliance with the permit limits of 67 MMCF per 12 month rolling time period from FGINDHEATERS2. See discussion in FGINDIRECTHEATERS1 regarding fuel usage calculations.

FGINDHEATERS1 SC III. 1. stipulates only natural gas shall be burned in FGINDHEATERS1 and FGINDHEATERS2. I observed only natural gas fuel lines to the heater in FGINDHEATERS2 during the inspection.

I inspected the stack for EUINDHEATERS2. The stack appeared to meet the stack parameter set forth in FGINDHEATERS2 SC VIII.1.

FGHCTANKS
During the facility walk-through I observed four tanks on the south end of the property which Mr. Kotwicki said were EUHCTANK1, EUHCTANK2, EUHCTANK3, and EUHCTANK4 and are combined in the flexible group FGHCTANKS. The emissions from the tanks are controlled using an enclosed flare or the direct fired heater. The FGHCTANKS table in the ROP contains conditions applicable to EUHCTANK1, EUHCTANK2, EUHCTANK3, and EUHCTANK4 that were established pursuant to Rule 201(1)(a) and (b).

FGHCTANKS SC III. 1. requires that DT Midstream properly maintain and operate a flame sensor for the pilot flame on the enclosed flare. The flare used to control FGTANKS must be installed, and continuously operate a burning pilot flame during times of natural gas withdrawal, according to FGHCTANKS SC IV. 1. and 2. DT Midstream continuously monitors for presence of a pilot flame during periods of natural gas withdrawal using a UV Scanner – 5600-91 Eclipse Combustion. If the pilot flame were to go out, an alarm is triggered and the valve which allows the hydrocarbons to vent to the flare is shut-off. It appears the tanks are operating in compliance with FGHCTANKS SC III.1 and FGHCTANKS SC IV. 1. and 2.

DT Midstream is required to record the presence of a pilot flame on the flare associated with FGHCTANKS on a daily basis in a manner acceptable to the AQD District Supervisor according to FGTANKS SC VI. 2. The flare system is designed to ensure the presence of a pilot flame when gas is flowing to the flare. The flare operation begins when a blower turns on to remove any gas that may be left in the stack. Following the blower cycle, the ignitor will light the pilot flame. Once the pilot flame is ignited, the UV scanner will then check for presence of a flame. If a flame is detected by the UV scanner the gas will begin to flow. If a flame is not detected, the gas valve will not open and an alarm will notify the operator of the lack of flame. In addition, if the flame is not ignited, the gas does not need to be immediately vented to prevent pressure build up because the tanks have eight hours of pressure capacity. During the inspection I observed the flame in the flare through the viewing port near the base of the flare stack while the direct heater was being operated. In addition, I observed the flare temperature was being monitored in the office. I noted the flare temperature read 1541 F on the computer monitor during the inspection.

During the inspection I observed the flare height which appeared to meet the stack parameter set forth in FGTANKS SC VIII.1.

FGCOLD CLEANERS
There are 2 cold cleaners at Washington 10 Compressor Station. Both cold cleaners have an air/vapor interface of not more than ten square feet and are equipped with a device for draining parts as required by FGCOLDCLEANERS SC IV.1.a and 2. During the inspection the lids to the cold cleaners were closed as required by FGCOLDCLEANERS SC IV.3. The solvent in the cold cleaners does not appear to be heated or agitated. I inspected the cold cleaners and waste storage. The operating procedures for the cold cleaners were posted in a conspicuous area near the cold cleaner as required by FGCOLDCLEANERS SC VI. 3. The solvent waste drums I observed were covered as required by FGCOLDCLEANERS SC VI.4.

FGBOILERS
This flexible group includes EUDIRECTHEATER, EUINDHEATER1, EUINDHEATER2, EUINDHEATER3, EUINDHEATER4, and seven natural gas fired boilers used to heat fuel gas before it goes into the engines and to heat buildings in the winter. This flexible group contains applicable requirements from 40 CFR Part 63, Subpart DDDDD.

The seven gas-fired boilers (EUP1_BMBLR1, EUP1_BMBLR2, EUP1_BMBLR3, EUP1_KC_1000, EUP2_BMBLR1, EUP2_BMBLR2, EUP2_KC_1000) were replaced with new boilers in 2020 and 2021. The replacement boilers for EUP1_KC_1000 and EUP2_KC_1000 in the ROP were renamed EUP1_BMBLR4 and EUP2_BMBLR3 respectively. EUP1_BMBLR1, EUP1_BMBLR2, EUP1_BMBLR3, EUP2_BMBLR1,

EUP2_BMBLR2 have a heat input rating of 2 MMBtu/hour, EUP1_BMBLR4 is rated at 1MMBtu/hour, and EUP2_BMBLR3 is rated at 1.5 MMBtu/hour. During the inspection, I observed that the new boilers were installed and met the descriptions provided in the notifications. The notifications were received withing 15 days of start-up date listed in the notifications, as required.

The emission units in FGBOILERS are subject to the National Emissions Standards for Boilers and Process Heaters at major sources of Hazardous Air Pollutants (40 CFR 63 Subpart DDDDD). FGBOILERS contains requirements from 40 CFR 63 Subpart DDDDD for “units designed to burn gas 1 subcategory” and that only fire natural gas. A unit designed to burn gas 1 subcategory includes any boiler or process heater that burns only natural gas, refinery gas, and/or other gas 1 fuels.

FGBOILERS requires a one-time energy assessment be performed on the line heaters and boilers no later than January 31, 2016. On January 27, 2016 AQD received an Initial Notification of Compliance Status, including statements that an initial tune-up and a one-time energy assessment were conducted, as required by 40 CFR 63 Subpart DDDDD. A tune-up is required every 13 months for the direct heater and line heaters and every 61 months for the boilers. Records provided by Ms. Walker (S:\Air Quality Division\STAFF\Kerry Kelly\FY 2022 Inspections\N3391\Boiler Tune-ups), indicate tune-ups were conducted on the direct heater and line heaters on January 14, 2021, which was 12 months after the previous tune-up (January 16, 2020). Initial tune-ups on EUP1_BMBLR1, EUP1_BMBLR2, EUP1_BMBLR3, EUP1_BMBLR4, EUP2_BMBLR1, EUP2_BMBLR2, EUP2_BMBLR3 are due 61 months after start-up (calendar year 2026).

FGRULE285(mm)
FGRULE285(mm) pertains to routine and emergency venting of natural gas from transmission and distribution systems or field gas from gathering lines. For safety purposes each engine, each pipeline, and the dehydration unit has an emergency shut-down vent. For emergency venting of natural gas in amounts greater than 1,000,000 standard cubic feet per event, DT Midstream is required to notify the pollution emergency alert system (PEAS) within 24 hours of an emergency pipeline venting. AQD has not received notifications of emergency natural gas venting greater than 1,000,000 scf in 2020 or 2021. I received notifications, via email, of routine venting events, less than 1,000,000 scf on March 11, 2021 and October 27, 2021. These notifications were received prior to scheduled venting.

SEMI-ANNUAL AND ANNUAL REPORTING
The following requirements are applicable to each emission unit and flexible group in the ROP:

- Prompt reporting of deviations pursuant to General Conditions 21 and 22 of Part A.
- Semiannual reporting of monitoring and deviations pursuant to General Condition 23 of Part A.

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 reporting period July 1 to December 31 and September 15 for reporting period January 1 to June 30.
Certified semi-annual and annual deviation reports were received by AQD on September 16, 2020, March 15, 2021, and September 16, 2021. No deviations were reported for the reporting periods January 1, 2020 through June 30, 2021.

MICHIGAN AIR EMISSIONS REPORTING SYSTEM (MAERS) REPORTING
The 2020 criteria pollutant emissions from Washington 10 to MAERS were submitted to MAERS on time. Source-wide CO emissions reported to MAERS for calendar year 2020 are about 9 tons higher than the source-wide CO emissions in records received. For the compressor engines, MAERS emission factors are in lb/MMBtu while the emission factors in the reports received for this inspection are in lb/hour.

CONCLUSION
Based on the information I gathered during the inspection, I determined that DT Midstream - Washington 10 Compressor Station appears to be in violation of FGENGINES2 SC III.6, SC VI.2, SC VI.8, and SC VIII of MI-ROP-N3391-2017a.

NAME K. Kelly DATE 3/11/2022 SUPERVISOR Joyce