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

B833766652

FACILITY: ANR Pipeline Co.-Muttonville Compressor Station		**SRN / ID:** B8337
LOCATION: 36555 29 MILE RD., MUTTONVILLE		**DISTRICT:** Warren
CITY: MUTTONVILLE		**COUNTY:** MACOMB
CONTACT: Lisa Fishbeck ,		**ACTIVITY DATE:** 03/13/2023
STAFF: Kerry Kelly	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MAJOR
SUBJECT: Fiscal Year 2023 Targeted Inspection		
RESOLVED COMPLAINTS:		

On March 13, 2023 I (Kerry Kelly, EGLE-AQD) conducted a targeted inspection at ANR Pipeline Company-Muttonville Compressor Station located at 36555 29 Mile Rd. in Lenox Twp., Michigan. ANR Pipeline Company - Muttonville Compressor Station is owned by TC Energy. 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) No. MI-ROP-B8337-2020; 40 CFR 63, Subpart HHH, 40 CFR Part 63, Subpart ZZZZ and 40 CFR Part 63, Subpart DDDDD.

I arrived at the site at about 9:15 AM. At the facility I met Lisa Fishbeck, Environmental Analyst, TC Energy, TC Energy, Nick Rudolph, Area Manager, TC Energy, Mark Ogden, Operator, TC Energy and Brian Baumstark, Mechanic. I stated the purpose of the inspection and showed my photo credentials to Lisa, Nick, and Mark. Lisa, Nick, Mark, and Brian answered questions and escorted me during the facility walk through. Chris McFarlane, Senior Environmental Specialist with TC Energy provided records following the inspection but was not present at the facility during the on-site inspection.

FACILITY OVERVIEW

The Muttonville Compressor Station is a natural gas storage and transmission facility located in eastern Macomb County Michigan. The area surrounding Muttonville Compressor Station is rural and the nearest residence is located approximately a half of a mile south of the station. The facility has two 3,200 HP, 2 stroke lean burn natural gas-fired reciprocating internal combustion engines which drive compressors to inject and withdraw natural gas into and out of the underground rock formations. Natural gas typically is injected into the storage field during the spring and summer months and is ready for withdraw starting approximately November 1st each year. Natural gas will free flow early in the withdrawal season when the storage field pressure is greater than the pipeline pressure. The gas needs to be pumped out, using compressors powered by two natural gas-fired internal combustion engines, later in the season as the pressure decreases within the storage field.

During the storage period, the natural gas absorbs hydrocarbons and moisture from the storage field. Muttonville compressor station has a glycol dehydration system with two dehydration contactor towers to remove moisture and hydrocarbons from the gas before sending it to the pipeline system.

In the glycol dehydration process, water and hydrocarbons are removed from the natural gas and glycol is regenerated. The process starts when natural gas enters the contactor towers where it crosses a series of glycol trays. The glycol in these trays absorb the moisture and hydrocarbons in the natural gas and the dry gas is then sent to a pipeline for distribution to customers. The rich glycol, containing moisture and hydrocarbons, accumulates at the bottom of each contactor tower and is sent to a 3-Phase separator (aka flash tank) which separates liquid hydrocarbons and gases from the glycol. Gases from the flash tank can be routed to the reboiler burner for fuel or to the thermal oxidizer. Liquid hydrocarbons from the flash tank are sent to the condensate tank, also called the BTEX tank, for storage. At the time of the inspection, flash gas being used as fuel for the reboiler burner.

Glycol from the flash tank is sent through a particulate filter, a charcoal filter, and another particulate filter before being sent to a reboiler unit. The reboiler drives off moisture from the glycol at 375 to 385 degrees Fahrenheit to regenerate it for reuse. The resulting lean glycol is recirculated back to a surge tank and then to the contactor towers. The steam from the reboiler goes through the still column. From the still, vapors go through a series of tubes, condense, and are collected in the BTEX tank. The system is designed so that all vapors from the reboiler still column pass through the condenser.

Condensate is pumped out of the BTEX tank and into one of two brine tanks when necessary. Vapors from the still column are sent to the thermal oxidizer. In the event of a thermal oxidizer malfunction, the vapors are

released from the “condenser stack”. The “condenser stack” is a two inch diameter stack located on the top of the condensate tank. The ROP for the facility requires the installation and proper operation of a thermal oxidizer to control volatile organic compound (VOC) and hazardous air pollutant (HAP) emissions from the dehydration unit process vents. Either the thermal oxidizer or the condenser is required to be in operation when the glycol dehydration system is processing natural gas. Control of VOC emissions are discussed in detail in the Compliance Determination section of this report.

On 3/15/21, I received a call from Chris Waltman, TC Energy, regarding a project planned for ANR Muttonville Compressor Station and permitting requirements for the project. During the call, Chris Waltman stated that the company plans on replacing the condenser, BTEX tank, and glycol trays in the contactor towers. Chris Waltman also stated the natural gas throughput would increase from 400 MMscf/day to 450 MMscf/day and there would be no change in the glycol recirculation rate. According to Chris Waltman, he ran GRI-GlyCalc with 450 MMscf/day throughput and other changes proposed using the worst case gas sample (2013), and the GRI-GLYCalc report indicated a decrease in emissions compared to using 400 MMscf/day throughput. Janette Trowhill, AQD Permit Engineer, reviewed the proposed changes to evaluate whether the project would require a PTI application. Janelle sent me an email on 3/29/2021 stating: [the original PTI (198-14) for EU-GLYCDEHYDE] "did use 400 MMscf/day, but this was not a requirement in the PTI. The only requirements in the PTI are for VOC emissions and benzene. The proposed emissions appear to be below these current PTI limits. There are a few increases and decreases in some TACs. I double checked the TACs against the screening levels and all were below their respective screening levels. It looks like what the company is proposing is correct and the increase in throughput and the other changes would not trigger a PTI application."

REGULATORY ANALYSIS

The stationary source is subject to Title 40 of the Code of Federal Regulations (CFR) Part 70 because the potential to emit of carbon monoxide (CO) and nitrogen oxides (NOx) exceed 100 tons per year and the potential to emit of any single HAP regulated by Section 112 of the federal Clean Air Act, is equal to or more than 10 tons per year and/or the potential to emit of all HAPs combined is equal to or more than 25 tons per year.

The two identical 3200 HP, 2 stroke lean burn reciprocating internal combustion engines (EU-COMPENGINE1 and EU-COMPENGINE2) at the site are subject to 40 CFR 63, Subpart ZZZZ for Reciprocating Internal Combustion Engines (RICE) promulgated on February 24, 2004, by the EPA, and revised on April 12, 2010. The final rule in 40 CFR 63.6590(b)(3)(i) states existing spark ignition 2 stroke lean burn (2SLB) stationary 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 this subpart and of subpart A of this part, including initial notification requirements. For 40 CFR 63, Subpart ZZZZ, a stationary RICE is “existing” if construction or reconstruction of that RICE commenced prior to December 19, 2002. The two RICE at Muttonville Compressor Station were installed in 1975 and 1976 according to documentation provided Chris McFarlane. Based on this information, pursuant to 40 CFR 63.6590(b)(3), these engines are not required to comply with any of the requirements of 40 CFR 63, Subpart ZZZZ or Subpart A including initial notification requirements. In 1975 and 1976, when these engines were installed, all internal combustion engines were exempt from the requirements to obtain an approved Air Use Permit to Install under Rule 36(c). Therefore, these engines appear to be exempt from the permit to install requirement in Rule 201.

EUMVGENERATOR, at the facility, is a 300kW (approximately 402 HP) emergency generator. Since EUMVGENERATOR has a horsepower rating less than 500, it subject to work practice standards and other requirements in 40 CFR Part 63, Subpart ZZZZ. 40 CFR Part 63, Subpart ZZZZ requirements for emergency engines less than 500 located at a major source of HAPs are included in MI-ROP-B8337-2020.

The glycol dehydration system (EU-GLYCDEHYDE) was subject to New Source Review (NSR) permitting and is currently subject to 40 CFR 63, Subpart HHH for Natural Gas Transmission and Storage Facilities. Based on the review by AQD Permit Section, the changes to EU-GLYCDEHYDE noted in the FACILITY OVERVIEW section appear to not require a PTI because they do not meet the definition of modification. Modification is defined as a physical change in, or change in the method of operation of, existing process or process equipment which increases the amount of any air contaminant emitted into the outer air which is not already allowed to be emitted under the conditions of a permit or order or which results in the emission of any toxic air contaminant into the outer air not previously emitted. An increase in the hours of operation or an increase in the production rate up to the maximum capacity of the process or process equipment shall not be considered to be a change in the method of operation unless the process or process equipment is subject to enforceable

permit conditions or enforceable orders which limit the production rate or the hours of operation, or both, to a level below the proposed increase.

Regarding 40 CFR 63, Subpart HHH, the system was previously operating under 40 CFR 63.1274(d)(2) which exempted affected sources emitting less than 0.9 megagrams of benzene per year from the requirements in 40 CFR 63.1274(c). 40 CFR 63.1274(c) requires pollution control devices to be installed on a glycol dehydration system's process vents and establishes other monitoring, recordkeeping, and reporting requirements. In 2012, 40 CFR 63.1274(d)(2) was rescinded and appeared to be moved to 40 CFR 63.1275 (b)(1)(ii). The language in 40 CFR 63.(b)(1)(ii) reads "the owner or operator of a large glycol dehydration unit shall connect the process vent to a control device or a combination of control devices through a closed-vent system and the outlet benzene emissions from the control device(s) shall be less than 0.90 megagrams per year. The closed-vent system shall be designed and operated in accordance with the requirements of §63.1281(c). The control device(s) shall be designed and operated in accordance with the requirements of §63.1281(d), except that the performance requirements specified in 40 CFR 63.1281(d)(1)(i) and (ii) do not apply. The definition of large glycol dehydration unit includes "a glycol dehydration unit complying with the 0.9 Mg/yr control option under 63.1275(b)(1)(ii)". An issue with using 40 CFR 63.1275 (b)(1)(ii) is 40 CFR 63.1275 (b)(1) does not give the option to use 40 CFR 63.1275(b)(1)(ii). 40 CFR 63.1275(b)(1) states "for each glycol dehydration unit process vent, the owner or operator shall control air emissions by either paragraph (b)(1)(i) or (iii) of this section." This appears to be a typo and was brought to the attention of the USEPA by the AQD. The EPA responded that they were aware of the issue in the regulatory text and are working on addressing it. In addition, the Federal Register for the final rule states "Our proposed amendment to remove the 0.9 Mg/yr compliance option does not affect the risk driver, which is fugitive emissions. As a result, we are retaining the 0.9 Mg/yr compliance option in the final rule. During the ROP renewal in 2015 and 2019, TC Energy chose to comply with the BTEX (benzene, toluene, ethylbenzene, and xylene) limit in 40 CFR 63.1275(b)(1)(iii) and also keep the 0.9 benzene limit previously established to comply with 40 CFR 63.1274(d)(2).

The facility has several storage tanks, a boiler, three natural gas-fired heaters, and a process heater that appear to be exempt from permit-to-install requirements:

The storage tanks associated with the RICEs include a 1,000 gallon waste oil tank, an 11,300 gallon lubricating oil tank, a 1,000 gallon maintenance oil tank, and a 4,700 gallon coolant tank. These tanks appear to be exempt from the requirement to permitted as stated in Rule 201 pursuant to Rule 284(2)(c).

The storage tanks associated with the glycol dehydrator include a 9,000 gallon triethylene glycol storage tank, a 3,700 gallon glycol maintenance storage tank, and a 1,100 gallon condensate storage tank. The facility also has two 8,820 gallon brine storage tanks which are used to store excess condensate from the glycol dehydration condensate tank. These glycol storage tanks appear to be exempt from the requirement to be permitted as stated in Rule 201 pursuant to Rule 284(2)(c).The brine and condensate tanks appear to be exempt from the requirement to permitted as stated in Rule 201 pursuant to Rule 284(2)(e).

All of the tanks containing petroleum liquids are less than 40,000 gallons in volume, and, therefore, not subject to NSPS Subpart K for Petroleum Liquid Storage Tanks.

The 4.2 MMBtu/hour boiler at the facility is used for space heating and is subject to 40 CFR 63, Subpart DDDDD. This boiler appears to be exempt from the requirement to permitted as stated in Rule 201 pursuant to Rule 282(2)(b)(i).

The three 6.5 MMBtu/hour natural gas-fired heaters are used to prevent the moisture in the gas from freezing during the withdrawal season and are subject to 40 CFR 63, Subpart DDDDD. These heaters appear to be exempt from the requirement to be permitted as stated in Rule 201 pursuant to Rule 282(2)(b)(i).

The 1.5 MMBtu/hour process heater (EU-MVREBOILER) used to heat the glycol in the reboiler is subject to 40 CFR 63, Subpart DDDDD. EU-MVREBOILER appears to be exempt from the requirement to be permitted as stated in Rule 201 per Rule 282(2)(b)(i).

COMPLIANCE EVALUATION
The inspection indicated the following with respect to the facility's compliance with ROP Number MI-ROP-B8337-2020, 40 CFR 63, Subparts HHH, ZZZZ, and DDDDD.

EU-GLYCDEHYDE
The EU-GLYCDEHYDE table in the ROP contains conditions applicable to the glycol dehydration unit that were established pursuant to Rule 201(1)(b).

The following emission limits are set forth in MI-ROP-B8337-2020:

- VOC emission limit of 65 pounds per day
- 12-month rolling VOC emission limit of 12 tons per year
- 12-month rolling benzene emission limit of 0.9 Mega grams (1 ton) per year

Chris McFarlane provided daily, monthly, and 12-month rolling VOC and benzene emission records for January 2022 through February 2023 (Attachment 1) as required in EU-GLYCDEHYDE SC VI.8 and 9. The emission records also include the total hours of operation of the glycol dehydration system, thermal oxidizer (TO), and condenser on a daily basis and the natural gas throughput on a daily and annual basis as required in the ROP. Emission calculations are based on the amount of natural gas processed through EU-GLYCDEHYDE. Emissions from the TO and the condenser are calculated separately, using control-specific emission factors, and then added together. Based on the records, the highest daily VOC emissions between January 2022 were February 2023 were 10.6 lbs reported on March 31, 2022, which is less than the daily limit of 65 lbs listed in EU-GLYCDEHYDE SC I.1. The highest 12-month rolling VOC and benzene emissions between January 2022 and February 2023 were 0.021 tons and 0 tons respectively which are less than the limits in EU-GLYCDEHYDE SC I.2 and 3. The highest 12-month rolling VOC and benzene emissions occurred during the 12 month period ending March 2022.

EU-GLYCDEHYDE SC III.1 and 2 require a properly operating thermal oxidizer (TO) or condenser be installed. A properly operating TO or condenser is considered Best Achievable Control Technology (BACT) for the control of VOC emissions from the glycol dehydration unit. Proper operation of the TO, according to EU-GLYCDEHYDE SC III.1, includes maintaining a minimum temperature of 1400°F with a minimum residence time of 0.5 seconds and with a VOC destruction efficiency of 95%. Proper operation of the condenser, according to EU-GLYCDEHYDE SC III.2, includes maintaining the condenser exhaust temperature less than 140°F. The residence time and destruction efficiency requirements for the thermal oxidizer are met per manufacturer's specifications acquired during NSR permitting.

Chris McFarlane provided records of the daily TO and condenser temperature (Attachment 1) as required in EU-GLYCDEHYDE SC VI. 2 and 3. The temperature records indicate that the TO temperature was greater than 1400°F and the condenser temperature was less than 140°F for all days while the dehydration unit was operating between January 1, 2022 and February 28, 2023. The lowest TO temperature recorded while the TO was the only control operating was 1496.2 recorded on December 25, 2022 and the highest condenser temperature recorded was 63.8 degrees Fahrenheit on July 22, 2022.

EU-GLYCDEHYDE IV.1 and 2 require the glycol dehydration unit be equipped with a properly operating flash tank which volatilizes organic compounds out of the rich glycol stream and routes them to the glycol dehydration reboiler and that the regenerator still be equipped with a properly installed and operating TO. The flash tank and TO must be operating at all times when the glycol dehydration unit is processing natural gas. Operation of the glycol dehydration unit is permitted when the TO is not operating properly if a condenser is installed and operating properly.

I inspected the glycol dehydration system at Muttonville Compressor Station. At the time of the inspection, EU -GLYCDEHYDE was not operating. I observed that the new condenser, ductwork, and BTEX tank were installed. During my inspection in November 2021, I was told by Nick Rudolph that the new glycol trays were installed in the contactor towers.

In addition, I saw that the system is equipped with a flash tank which separates heavy hydrocarbons from the glycol. Gases from the flash tank vent are routed to either the thermal oxidizer or to the reboiler burner for fuel. During the inspection, flash gas was being used to fire the reboiler burner. When I arrived at the facility, I detected mercaptan/sulfur-like odor near the office entrance. I asked Lisa if gas odorizing was done at the facility. Lisa stated that Muttonville does not odorize the gas. I detected the same mercaptan-like odor near the reboiler heating element. I have smelled a similar odor at other facilities near flash tanks and hydrocarbon storage tanks. The mercaptan/sulfur-like odors are likely from the use of flash gas in the reboiler heater.

From the flash tank I saw pipes routing the glycol to the reboiler. On the reboiler I observed that the still column had piping on the top routing steam to the condenser and TO. There is a column on top of the condensate tank with a temperature gauge. The condenser stack is connected to the column. On the side of the column, there is piping leading to the TO. The condenser stack is approximately 2 inches in diameter.

EU-GLYCDEHYDE VI.1 and 2 require TC Energy to equip and maintain a temperature monitoring device on the thermal oxidizer and condenser. I observed a temperature sensor on both the TO and condenser stack during the inspection. The temperature sensor on the TO was located on the top quarter of the stack. The temperature sensor on the condenser is located on the bottom quarter of the stack.

The TO and condenser temperature is monitored continuously via computer when the dehydration unit is operated, and a daily average recorded, as required in EU-GLYCDEHYDE VI.3 and 4. TC Energy also monitors and records the total hours of operation of EU-GLYCDEHYDE, the TO, and condenser and the quantity of natural gas processed by the glycol dehydration system on daily basis, as required in EU-GLYCDEHYDE VI. 5 - 7 (Attachment 1).

Semi-annual and annual deviation reports were received by AQD on time. As a result of the AQD inspection on November 19, 2021, a violation notice was issued for EU-GLYCDEHYDE SC VII.1 and 2 for failure to report the temperature exceedance in the semi-annual report submitted September 10, 2021. The company submitted a revised semi-annual and annual report on March 14, 2022 that included the temperature deviation and failure to report the deviation. The reporting violation stated in the violation notice dated January 24, 2022 is resolved.

FG-COMPENGINES
I observed the two engines at Muttonville Compressor Station. The engines are the same engines I previously verified to be 3,200 HP, Clark TLAD-8 reciprocating internal combustion engines. Neither engine was being operated during the inspection.

To demonstrate compliance with recordkeeping requirements in MI-ROP-B8337-2020, Chris McFarlane provided records of the size and installation date of the reciprocating internal combustion engines (Attachment 2), the natural gas usage from March 2022 - January 2023 (Attachment 3), and the maintenance conducted on the engines. These records indicate the engines are Clark model TLAD8, 2-stroke lean burn engines rated at 3,200 hp and installed in 1975 and 1976. The total reported fuel usage for March 2022 through January 2023 is 27,573,780 cubic feet.

Semi-annual and annual deviation reports, required in Conditions VII. 2. and 3, were received by AQD on time. No deviations were reported for FGCOMPENGINES in the semi-annual and annual deviation reports submitted between March 2022 and March 2023.

FG-MACTHHH
FG-MACTHHH SC I.1 limits the annual BTEX emissions from FG-MACTHHH to the unit-specific limit calculated using the equation in Appendix 7 of the ROP. TC Energy has chosen to comply with the BTEX limit by connecting each process vent to a combination of control devices through a closed-vent system. The closed vent system must be designed and operated in accordance with the requirements of 40 CFR 63.1281 (c) and the control device(s) shall be designed and operated in accordance with the requirements of 40 CFR 63.1281(f).

40 CFR 63.1281(c) (FG-MACTHHH SC IV.1) requires all gases, vapors, and fumes emitted from the material in an emission unit be routed to a control device through a closed-vent system and the closed vent system be designed and operated with no detectable emissions. According to 40 CFR 63, Subpart HHH, a closed-vent system means a system that is not open to the atmosphere and is composed of piping, ductwork, connections and, if necessary, flow inducing devices that transport gas or vapor from an emission point to one or more control devices. If gas or vapor from regulated equipment is routed to a process (e.g., to a fuel gas system), the conveyance system shall not be considered a closed-vent system and is not subject to closed-vent system standards.

I inspected the glycol dehydration system at Muttonville Compressor Station. Other than an approximately two -foot-long, 2 inch diameter pipe on the top of the flash tank that is capable of venting directly to the atmosphere, all gases, vapors, and fumes emitted from the material in EU-GLYCDEHYDE were routed to a control device. The pipe on the flash tank is a safety device and designed such that nothing would escape through this valve unless the pressure relief pressure was exceeded causing the valve to open. Per 40 CFR 63.1281(c)(3)(ii) safety devices are not subject to the requirements to have a flow indicator on the bypass or to be locked in the non-diverting position.

The piping, ductwork, connections and, possible flow inducing devices that transport the gas or vapor from the flash tank vent to the reboiler burner, per 40 CFR 63, Subpart HHH, is not part of the closed vent system and not subject to the closed vent system standards.

FG-MACTHHH SC V.1 requires "no detectable emissions", also known as Leak Detection and Repair (LDAR), testing of the closed vent system be conducted annually using the methods and procedures in 40 CFR 63.1282(b). An initial “no detectable emissions” test was done on EU-GLYCDEHYDE on March 4, 2015. This initial LDAR report is on file at the AQD Warren District office. According to the report, 30 locations were

inspected and no leaks were detected. Of the 30 locations inspected, 26 were tagged as difficult to inspect. A description of why the areas are difficult to inspect (components require inspecting personnel being elevated more than two meters above a support surface) was included. According to LDAR inspection reports for inspections conducted at Muttonville on January 12, 2022 and January 11, 2023 provided by Chris McFarlane, no emissions were found during the assessments. According to the MACT HHH report submitted by Chris McFarlane (Attachment 4), 27 points were inspected during the January 12, 2022 LDAR test and zero readings were above 500 ppm. The highest reported reading during the January 12, 2022 LDAR test was 59 ppm for the plug on the top of the heat exchanger.

40 CFR 63.1281(f) (FG-MACTHHH SC IV.2) specifies requirements for control devices used to meet the BTEX limit. TC Energy is using a TO that has been demonstrated, through performance testing, to reduce the BTEX in the gas vented to the device to the levels in 40 CFR 63.1275(b)(1)(iii) (FG-MACTHHH SC I.1). In addition, TC Energy is also using a condenser that has been demonstrated, using the procedures in GRI-GLYCalc, Version 3.0 or higher to generate a performance curve, to reduce the BTEX in the gas vented to the device to the levels in 40 CFR 63.1275(b)(1)(iii) (FG-MACTHHH SC I.1).

FG-MACTHHH SC VI.5 and 6 require TC Energy to establish a minimum or maximum operating parameter for the TO and condenser, monitor each parameter continuously, and calculate the parameter daily average to determine continuous compliance with the BTEX limit in 40 CFR 63.1275(b)(1)(iii) (FG-MACTHHH SC I.1).

On March 4, 2015, TC Energy conducted a stack test on the TO to verify compliance with the BTEX limit in 40 CFR 63.1275(b)(1)(iii) (FG-MACTHHH SC I.1) and to establish a minimum operating parameter for the TO. The limit in 40 CFR 63.1275(b)(1)(iii) is calculated using an emission factor (3.10×10^{-4} grams BTEX/standard cubic meter-ppmv), the dehy daily average natural gas throughput, and the concentration of BTEX in the wet natural gas processed. 40 CFR 63.1282(a)(1)(i) states that the owner or operator shall convert the annual natural gas flowrate to a daily average by dividing the annual flowrate by the number of days per year the glycol dehydration unit processed natural gas. The BTEX limit can vary by an order of magnitude based on how the daily average throughput is calculated and on the concentration of the BTEX in the wet natural gas.

The calculated BTEX emission limit included in the stack test report is 9.41 Mg/year, I calculated the BTEX limit to be 0.62 Mg/year for calendar year 2020.

The limit in the test report was calculated using the wet gas analysis performed in early 2015 (BTEX = 21 ppmv) and throughput values measured at the custody transfer meter and based on annual average daily throughput rates from 2009 through 2013.

I used the wet gas analysis data from January 2020 (BTEX = 5 ppmv) and the calendar year 2020 dehy natural gas throughput (1,801 MMscf) divided by the number of days the dehy processed natural gas in 2020 (48), provided by Chris McFarlane, to calculate the daily average natural gas flow rate.

Though the BTEX limit is an annual limit, the stack testing requirements in 40 CFR 63, Subpart HHH require the mass rate of BTEX, in kilograms per hour, on a dry basis, at the outlet of the control device be calculated to demonstrate compliance with the annual BTEX limit. The BTEX emission rate reported in the stack test report was less than 0.0029 lbs/hour (0.00000132 Mg/hour). Calculating the annual BTEX emissions using the stack test results and the maximum hours in a year (8,760), the annual emissions for the dehy at Muttonville Compressor Station would be 0.012 Mg/year, which is less than both of the calculated emission limits (9.41 Mg/year and 0.62 Mg/year). The stack testing conducted in March 2015 indicates the three hour average TO temperature was 1487.8°F and the lowest one hour average was 1484°F.

The uncontrolled potential annual BTEX emissions from the dehy (8.6 Mg), using the 2020 wet gas analysis as GRI-GLYCalc inputs, are less than the emission limit in the stack test report (9.41 Mg/year) indicating the condenser must have a minimum BTEX removal efficiency of zero percent. The condenser efficiency necessary to meet the 0.62 Mg/year limit I calculated would be 92.8%

Chris McFarlane provided daily temperature records for the TO (Attachment 1), the performance curve for the condenser (Attachment 5), and the daily and 30-day rolling average BTEX removal efficiency for the condenser (Attachment 6) between January 2022 and February 2023. These records indicate the lowest daily average TO temperature while the TO was the only control operating was 1496.2 recorded on December 25, 2022. The lowest reported BTEX removal efficiency for the condenser was 98.56 percent.

TC Energy is required to install, calibrate, operate, and maintain a temperature monitoring device, equipped with a continuous recorder, on the thermal oxidizer and condenser and prepare a site-specific monitoring plan that addresses the monitoring system design, data collection, and QA/QC elements (FG-MACTHHH SC IV.3 - 5, and VI.3). The monitoring device shall have a minimum accuracy of ±2 percent of the temperature being monitored in °C, or ±2.5 °C, whichever value is greater. TC Energy is required to perform an accuracy audit of the temperature sensors at least annually. For the thermal oxidizer, the temperature sensor is required to be installed at a location representative of the combustion zone temperature and for the condenser, the temperature sensor shall be installed at a location in the exhaust vent stream from the condenser.

Chris McFarlane provided the accuracy audits performed in 2022 on the CPMS (Attachment 7). The 2022 accuracy audits, performed 10/18/2022, suggest the temperature sensor for the TO and condenser are within tolerance and that accuracy audits are performed at least annually. The previous accuracy audits were performed on 9/17/2020, 10/5/2020, 10/21/2021, and 12/22/2021.

I observed a temperature sensor on both the TO and condenser stack during the inspection. The temperature sensor on the TO was located on the top quarter of the stack. The temperature sensor on the condenser on the bottom quarter of the stack.

MI-ROP-B8337-2020 requires records specified in 40 CFR 63.10(b)(2) be kept. Recordkeeping addressed in 40 CFR 63.10 pertains to maintenance, startup, shutdown, and malfunctions with regards to air pollution control and monitoring equipment. According to the MACT HHH semi-annual reports received March 14, 2022, September 15, 2022, and March 14, 2023 there were no excursions and there were no periods when the CPMS was inoperative, out of control, repaired, or adjusted.

Other FG-MACTHHH Requirements
TC Energy is required to determine the chemical composition of the natural gas processed by the glycol dehydration system at least once every five years and the actual flow rate of natural gas to FG-MACTHHH. TC Energy had a wet gas analysis conducted in February 2015 and January 2020. The chemical analytical results for gas sampled in January 2020 (Attachment 8) and the annual natural gas flowrate through EUGLYCDEHY are attached (Attachment 1). The natural gas sample collected in January 2020 contained 5 ppm BTEX (0.0029% by weight). The combined methane and ethane concentration of the gas sample was 983,612 ppm (96.4% by weight). During the inspection, Mark Ogden showed me the gas flow meters for the dehy system.

Semi-annual and annual deviation reports were received by AQD on time. No deviations were noted for FG-MACTHHH in the reports.

FG-MACTDDDDD
The emission units in FGMACTDDDDD include EUMVBOILER1, EUMVHEATERS, EUMVREBOILER. I inspected EUMVBOILER1 and verified it is a Kewanee, 4.2 MMBtu/hr natural gas-fired boiler. During the inspection I observed the nameplate on each heater in EUMVHEATERS and noted each has 2 Natco, 3.25 MMBtu/hr (total 6.5 MMBtu/hr) natural gas-fired burners. EUMVREBOILER, I observed, is a 1.5 MMBtu/hour process heater used to heat the glycol in the reboiler.

An initial performance tune-up is required no later than January 31, 2016 for the boilers/process heaters at Muttonville according to 40 CFR 63.7540(a)(11). Subsequent biennial tune-ups must be conducted on EUMVHEATERS no more than 25 months after the previous tune-up. Subsequent 5-year tune-ups must be conducted on EUMVBOILER1 and EUMVREBOILER no more than 61 months after the previous tune-up.

A one-time energy assessment is required no later than January 31, 2016 for EUMVBOILER1 and EUMVHEATERS and December 12, 2020 for EUMVREBOILER. According to 40 CFR 63.7575, an energy assessment for facilities with affected boilers and process heaters with a combined heat input capacity of less than 0.3 trillion Btu (TBtu) per year will be 8 on-site technical labor hours in length maximum, but may be longer at the discretion of the owner or operator of the affected source. The boiler system(s), process heater (s), and any on-site energy use system(s) accounting for at least 50 percent of the affected boiler(s) energy (e.g., steam, hot water, process heat, or electricity) production, as applicable, will be evaluated to identify energy savings opportunities, within the limit of performing an 8-hour on-site energy assessment. According to records provided by TC Energy, a one-time energy assessment was performed at Muttonville Compressor Station on April 27, 2015. This assessment, according to the report, included a total of 8 hours on-site and a physical evaluation of potential energy savings for FGMVHEATERS and EUMVBOILER1. FGMVHEATERS and EUMVBOILER1 account for 94 percent of the affected boilers/process heaters production.

An initial performance tune-up was conducted on each burner in EU-MVHEATERS on March 19, 2015 and on EU-MVBOILER1 on November 12, 2015. An initial tune-up was conducted on EU-MVREBOILER November 12, 2020, prior to the date required in SC III.1.

Chris McFarlane provided records of the bi-annual and 5 year tune-ups conducted in 2020 and 2023 for all EUs in FG-MACTDDDDD (Attachment 9). The tune-ups and inspections were conducted in accordance with the timeline in FG-MACTDDDDD SC III.2 and 3.

A copy of each notification and report submitted to comply with 40 CFR, Part 63, Subpart DDDDD including all documentation supporting any Initial Notification or Notification of Compliance Status or Semiannual Compliance report that was submitted, according to the requirements in 40 CFR 63.10(b)(2)(xiv) and any records of performance tests, fuel analyses, or other compliance demonstrations and performance evaluations as required in 40 CFR 63.10(b)(2)(viii) must be maintained according to MI-ROP-B8337-2020. TC Energy keeps these records in an electronic database.

Initial, semi-annual, and annual compliance/deviation reports were received by AQD on time in 2022. No deviations were noted for FGMACTDDDDD reports.

FG-MACTZZZZ EMERGENCY
40 CFR Part 63, Subpart ZZZZ is a 402 HP, natural gas-fired, Waukesha L1616GSIU engine used for emergency backup power in the event of purchased power failure. The nameplate on EUMVGENERATOR indicates it is natural gas-fired Waukesha Model L1616GSIU engine, but does not state the rated HP. The kW rating on the attached generator is 300. TC Energy provided records indicating that they have been operating EUMVGENERATOR in compliance with the requirements in 40 CFR Part 63, Subpart ZZZZ for existing emergency engines less than 500 horsepower located at major sources of HAPs.

EUMVGENERATOR's hoses and belts must be inspected and it's oil and filter must be changed every 500 hours of operation or annually, whichever comes first, except as allowed in 40 CFR 63.6625(j) per 40 CFR 63 Subpart ZZZZ. 40 CFR 63.6625(j) allows for the use of an oil analysis program in order to extend the oil change requirement. The oil analysis must be performed at the same frequency as the oil changes are required. 40 CFR Part 63, Subpart ZZZZ also requires the spark plugs be inspected every 1,000 hours of operation or annually, whichever comes first, and replaced as necessary. Records of the oil analysis, hose and belt inspections, and spark plug inspections are attached (Attachment 10). These records indicate the oil in EUMVGENERATOR has been analyzed every September between 2016 and 2022. The 2022 oil analysis results indicate "all tests performed were within RICE MACT specification." The maintenance and inspection records provided indicate the hoses, belts, and spark plugs on EUMVGENERATOR was inspected on September 6, 2022. The previous RICE MACT inspection was conducted in September 2021.

40 CFR Part 63, Subpart ZZZZ requires EUMVGENERATOR be equipped with a non-resettable hour meter. During the inspection the emergency engine was locked out and the non-resettable hours meter was not visible. I observed a non-resettable hours meter on EUMVGENERATOR during previous inspections. I noted the hours meter read 1016.7 hours during my inspection on 11/19/2021.

There is no limit on the number of hours TC Energy operates EUMVGENERATROR in emergency situations according to 40 CFR 63, Subpart ZZZZ. TC Energy may not operate EUMVGENERATOR for more than 100 hours per calendar year for the purpose of necessary maintenance checks and readiness testing. The tests must be recommended by Federal, State, or local government, the manufacturer, the vendor, the regional transmission organization or equivalent balancing authority and transmission operator, or the insurance company associated with the engine.

Chris McFarlane provided records of the total hours of operation per calendar year, recorded through the non-resettable hours meter including; the number of hours spent for emergency operation including what classified the operation as emergency and the number of hours spent for non-emergency operation (Attachment 11). These records indicate EUMVGENERATOR operated for 8.7 hours in calendar year 2022 for the purposes of necessary maintenance checks and readiness testing. Based on the information in the records, EUMVGENERATOR was not operated in November 2022, December 2022, January 2023, nor February 2023.

Semi-annual and annual deviation reports were received by AQD on time in 2022 and 2023 for EUMVGENERATOR. No deviations were reported for EUMVGENERATOR in the semi-annual and annual deviation reports submitted.

FG-RULE285(2)(mm)
MI-ROP-B8337-2020 requires notification when venting natural gas, for routine maintenance or relocation of transmission and distribution systems, or for venting of field gas, for routine maintenance or relocation of gathering pipelines, each in amounts greater than 1,000,000 standard cubic feet or an emergency venting of natural gas or field gas in amounts greater than 1,000,000 standard cubic feet per event. No natural gas venting events were reported during the compliance period.

EXEMPT EMISSION UNITS
There were 4 heaters and 10 storage tanks included in the ROP Application as exempt devices under Rule 212(4). These processes are not subject to any process-specific emission limits or standards in any applicable requirement. I observed the storage tanks during this inspection. The descriptions and sizes of the storage tanks match the descriptions in the ROP application and Staff Report and appear to be exempt from the requirement to have a PTI per the exemptions stated in the Staff Report.

MICHIGAN AIR EMISSIONS REPORTING SYSTEM (MAERS) REPORTING
TC Energy submitted the 2022 criteria pollutant emissions from Muttonville Compressor Station to MAERS on time. The emissions and throughput values reported to MAERS are consistent with records collected during this inspection.

CONCLUSION
Based on the field inspection and the records provided, ANR Pipeline - Muttonville Compressor Station is in compliance with the applicable requirements evaluated.

NAME K. Kelly DATE 03/21/2023 SUPERVISOR Joyce