

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

N601567386

FACILITY: PARTELLO COMPRESSOR STATION		SRN / ID: N6015
LOCATION: 21663 24 MILE RD, PARTELLO		DISTRICT: Kalamazoo
CITY: PARTELLO		COUNTY: CALHOUN
CONTACT: James Jensen , Senior Engineer – Environmental		
STAFF: Amanda Cross		ACTIVITY DATE: 05/08/2023
COMPLIANCE STATUS: Compliance		SOURCE CLASS: SM OPT OUT
SUBJECT:		
RESOLVED COMPLAINTS:		

On May 8, 2023, EGLE Air Quality Division's (AQD) Amanda Cross arrived at Michigan Gas Utilities – Partello Compressor Station (State Registration Number (SRN): N6015) located at 21663 24 Mile Road, Olivet, Michigan, at 2:00pm to conduct a scheduled inspection. Since the station is not continuously manned, an inspection was scheduled instead of unannounced. The purpose of the inspection was to determine compliance with the Federal Clean Air Act, Article II, Part 55, Air Pollution Control Rules, of the Natural Resources and Environmental Protection Act, 1995 PA 451, as amended (Act 451); AQD administrative rules; and Permit to Install (PTI) No. 527-97F.

Staff emailed the facility to request operations and emission records that are required to be maintained under PTI No. 527-97F for the glycol dehydrators, compressor engines and overall operations. Records were received on May 4, 2023 from Mr. James Jensen, Senior Engineer. These records were reviewed off-site as part of the compliance evaluation. PTI No. 527-97F was issued on December 20, 2022 to replace EUENGINE05 with EUENGINE07.

Initial Notification of Construction for EUENGINE07 located at Partello Gas Storage (N6015) in Olivet, Michigan was received by the Department on February 2, 2023 with the issuance of a purchase contract for EUENGINE07. According to MGU staff, EUENGINE07 has been contracted for purchase but the lead time for receipt of the engine is about 12 months. EUENGINE05 has been disconnected and taken out of service as of May 2023. It will be disassembled and removed from site. This location is where EUENGINE07 will be placed once it's received by the company. For this reason, no compliance determination was made for any conditions related to EUENGINE07.

The last inspection was completed on November 9, 2018 and was determined to be in compliance at the time. The facility is a synthetic minor source for nitrogen oxides (NOx), carbon monoxide (CO), volatile organic compounds (VOCs) and hazardous air pollutants (HAPs).

According to the previous inspection report and re-confirmed on site, the facility was constructed in 1974. Panhandle Energy, Vector Pipeline, and ANR Pipeline feed gas through an 8-inch pipeline to the Facility where it is compressed further by one of two engines prior to injection into one of thirteen on-site producing wells serving two storage field reservoirs, Cortright-Lee and Partello-Anderson. These wells are depleted oil and gas wells. Gas from Panhandle Energy and Vector pipeline are odorized at this compressor station.

The facility odorizes all gas being injected into the field and upon re-injection into the pipeline with methyl mercaptan with an injection rate approximately 0.75 pounds/MMCF gas. The Cortright-Lee and the Partello-Anderson storage fields have a total capacity of 2.1 billion cubic feet and 1.7 billion cubic feet, respectively. Natural gas injection pressure range for the Cortright-Lee field is 1350 – 1380 psia and 700 – 900 psia for the Partello-Anderson storage field.

Typical natural gas injection season is April to October and the typical withdrawal season is November through March each year. Natural gas withdrawn from the Cortright-Lee storage field and the Partello-Anderson storage field is routed through a dedicated glycol dehydrator, EU-DEHY02 and EU-DEHY03, respectively, to remove excess moisture from the stored natural gas prior to being re-injected back into the pipeline. During the inspection, the facility was injecting during the inspection and EUENGINE06 was running.

PTI No. 527-97F

EUDEHY02

The Cortright-Lee dehydration system consists of a contactor tower, glycol pump, flash tank (emissions are routed to the reboiler burner), glycol regeneration still (emissions are controlled by condensation), and gas fired glycol reboiler.

Pollutant	Limit	Time Period	Records
VOC	5.9 tpy	12-month rolling	0.71 tpy – December 2022
Benzene	0.99 tpy	12-month rolling	0.035 tpy – December 2022
Process	Limit	Time Period	
Hours of operation	8,232	12-month rolling	3021 – December 2022

Still vent exhaust temperature for EUDEHY03 and EUDEHY02 is required to be maintained at or below 90 degrees F to process natural gas through the glycol dehydrators. The temperature thermocouple is mounted a few inches below the top of each still vent exit point and temperature readout is monitored and tracked inside the building using the DEMAXX software program.

The DEMAXX software tracks the temperature, continuously and is programmed to alarm and notify plant personnel if the still vent exhaust temperature exceeds 85 degrees F during gas dehydration operations. The still vent thermocouple for each dehydrator is calibrated on an annual basis. Based on the provided records, the thermocouple for EUDEHY02 and EUDEHY03 was most recently calibrated on November 1, 2022.

During the onsite tour, Benjamin Hazel, Partello Operations Supervisor explained how the DEMAXX and alarm works. The downcomer temperature is not temperature controlled and is driven by the ambient temperature. There are times when the temperature rises above 90 degrees and the system alarms. There is no way to lower the temperature of the downcomer as

it's directly correlated to the ambient temperature. There are also spikes which are associated with washing and drying the charcoal filters. If the temperature exceeds 90 degrees, the system trips off and does not allow for the processing of natural gas.

The flash tank is installed and operating properly on both glycol dehydration units and tank exhaust is routed to the reboiler burner.

Once a year, permittee shall obtain sampling and analysis of wet gas stream for each dehydrator. Analysis should include nitrogen, CO, H₂S, C₁ through C₆ series hydrocarbon, benzene, toluene, xylene, ethylbenzene, and heptanes+. The records for 2021 and 2022 records provided via email. The most recent test was done on December 27, 2022 and will be done again in 2023.

Stack height was also verified during the inspection.

Stack ID	Permitted Minimum Height	On-Site Verification
SV-DEHY02 still vent	33 feet	33 feet
In-Line Heater on DEHY02	No permitted limit	29.5 feet

EUDEHY02 and EUDEHY03 are not subject to 40 CFR Part 63, Subpart HHH because this regulation only applies at storage facilities that are a major source of HAPs. The Facility is a synthetic minor source of HAPs per PTI No. 527-97F. These HAP limits are applicable to the entire facility, including the installation of EUENGINE07.

EUDEHY03

The Partello-Anderson dehydration system consists of a contactor tower, glycol pump, flash tank (emissions are routed to the reboiler burner), glycol regeneration still (emissions are controlled by condensation), and gas fired glycol reboiler.

Pollutant	Limit	Time Period	Records
VOC	5.7 tpy	12-month rolling	0.14 tpy – January 2022
Benzene	0.90 tpy	12-month rolling	0.009 tpy – December 2021

According to Mr. Hazel, there was no flow or withdrawals from the Partello-Anderson field during the 2022-2023 season.

The operation of EUDEHY03 is identical to EUDEHY02. Once a year, permittee shall obtain sampling and analysis of wet gas stream for each dehydrator. Analysis should include nitrogen, CO, H₂S, C1 through C6 series hydrocarbon, benzene, toluene, xylene, ethylbenzene, and heptanes+. The records for 2021 and 2022 records provided via email. The most recent test was done on January 28, 2022 and will be done again in 2023.

Stack height was also verified during the inspection.

Stack ID	Permitted Minimum Height	On-Site Verification
SV-DEHY03 still vent	33 feet	33 feet
In-Line Heater on DEHY03	No permitted limit	22.5 feet

FGENGINES

This flexible group consists of three natural gas fired reciprocating compressor engines; EUENGINE05, EUENGINE06, and EUENGINE07. EUENGINE05 and EUENGINE06 are uncontrolled. EUENGINE07 will have a catalytic converter. As noted above, EUENGINE05 has been disconnected and EUENGINE07 is on order but not currently on site.

EUENGINE05 was a Waukesha 750 horsepower rich-burn natural gas fired reciprocating engine that was installed in 1982. During the inspection, the process of the removal of the engine was observed.

EUENGINE06 is a Caterpillar 1,085 horsepower lean-burn natural gas fired reciprocating engine that was installed in 2005. EU-ENGINE06 had a top end overhaul at about 23,000 hours in 2014 and went through a major overhaul in 2019 at 38,256 hours. Engine maintenance and overhauls are generally done in- house but may be contracted out.

EUENGINE07 will be a Caterpillar engine and based on size, will be subject to 40 CFR Part 60 Subpart JJJJ.

Pollutant	Limit	Time Period	Records
NO _x	45.5 tpy	12-month rolling – EUENGINE05	0.33 tpy – December 2022
NO _x	19.8 tpy	12-month rolling – EUENGINE06	4.3 tpy – December 2022
NO _x	6.66 tpy	12-month rolling – EUENGINE07	Not evaluated

NOx	1.0 g/hp-hr or 82 ppmvd @ 15% O2	Hourly – EUENGINE07	Not evaluated
CO	2.0 g/hp-hr or 270 ppmvd @ 15% O2	Hourly – EUENGINE07	Not evaluated
VOC	0.7 g/hp-hr or 60 ppmvd@15% O2	Hourly – EUENGINE07	Not evaluated

The engines are only run on natural gas. We attempted to locate the plate identifying the capacity of EUENGINE06 during the inspection, but we were unable to locate it. Mr. Hazel provided the manufacturer operation manual for EUENGINE06 for review after the site walkthrough during the records review on site. Nameplate capacity on EUENGINE06 is not to exceed 809 kW or 1085 bhp. Maintenance logs were provided during the inspection for Unit 6.

A maintenance plan and malfunction abatement plan (MAP) will be developed for EUENGINE07 before the engine is started on site. According to emails from James Jensen, EUENGINE07 will be uncertified and stack testing will be necessary to show compliance with the emission limits. The facility is not permitted to operate EUENGINE07 until EUENGINE05 is permanently removed from service. EUENGINE05 has been permanently removed from service and EUENGINE07 will go in its place, once EUENGINE05 is removed.

In January 2013, the RICE MACT was amended to allow owners and operators of existing stationary 4-stroke spark ignition engines above 500 HP that are area sources of HAP emissions and where the engines are “remote” from human activity to use established management practices for these sources rather than having to meet numeric emission limits and conduct associated testing and monitoring. A remote area is defined as either a DOT Class 1 pipeline location, or, if the engine is not on a pipeline, if within a 0.25-mile radius of the facility there are 5 or fewer buildings intended for human occupancy and the remote area determination is required to be completed on an annual basis.

Staff reviewed the Facility’s remote area aerial map during the inspection for the past several years. Between the 2014 and 2018 AQD inspection, the facility has purchased an additional 61 acres to bring the facility total acreage around the compressor station to 71 acres, surrounding the main operations, and there is now only one domicile within a 0.25-mile radius. The last remote area determination was completed on September 5, 2022.

FGFACILITY

Pollutant	Limit	Time Period	Records
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CO	89.9 tpy	12-month rolling	5.6 tpy – January 2021
VOC	20 tpy	12-month rolling	1.90 tpy – February 2021
NOx	80 tpy	12-month rolling	5.6 tpy – January 2021
Individual HAP	9.0 tpy	12-month rolling	0.046 – Toluene April 2022
Total HAP	20 tpy	12-month rolling	0.1 tpy – April 2022

Records are being kept for FGFACILITY as required by PTI No. 527-97F.

PTI Exempt Equipment

The facility has a 500-gallon methyl mercaptan horizontal above ground storage tank (AST) located inside a small maintenance building on the property. This was observed during the inspection. The process equipment is used to odorize natural gas and is exempt from PTI requirements pursuant to Rule 288(2)(a). This is refilled every fall and according to records, the last withdrawal season used 34 pounds of methyl mercaptan.

The facility has two large storage tanks observed during the inspection and located toward the back of the property. There is a 210-barrel (8,820 gallon) methanol AST exempt from permitting under Rule 284(2)(n) and a 400-barrel (16,800 gallon) natural gas condensate AST exempt from permitting under Rule 284(2)(e). EU-METHANOL, the methanol AST was previously included in PTI No. 527-97E since it was not exempt upon its installation date, August 2008, but is now be exempt under Rule 284(2)(n) based on tank capacity. EU-METHANOL is not included in this most recent PTI.

There is a re-heater for gas withdrawn from wells in the Cortright portion of the Cortright-Lee exempt under Rule 282(2)(b)(i).

The natural gas fired emergency generator installed in 1992 was also observed while on site. Readiness testing occurs once a month for about 10-15 minutes. Maintenance is done in house as needed and yearly, as required by 40 CFR Part 63, Subpart ZZZZ. The non-resettable hours meter read 489 hours. Based on the date of the oil filter, it was last changed on 12/21/21 and the hours meter read 461.3 hours. The emergency generator is exempt under Rule 285(2)(g).

At the time of the inspection, it appears that Michigan Gas Utilities – Partello Compressor Station is in compliance with the Federal Clean Air Act, Article II, Part 55, Air Pollution Control Rules, of the Natural Resources and Environmental Protection Act, 1995 PA 451, as amended (Act 451); AQD administrative rules; and Permit to Install (PTI) No. 527-97F.

NAME Annelle Cross

DATE 5/15/23

SUPERVISOR RL 5/15/23