

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

N334171162

FACILITY: DTE Gas Company - Kalkaska Compressor Station		SRN / ID: N3341
LOCATION: 1250 MichCon Lane, KALKASKA		DISTRICT: Cadillac
CITY: KALKASKA		COUNTY: KALKASKA
CONTACT: Karla Shawhan-Bonnee, Manager, Transmission Storage and Operations		ACTIVITY DATE: 02/16/2024
STAFF: Caryn Owens	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: On-Site Activities & Records Review		
RESOLVED COMPLAINTS:		

On Friday, February 16, 2024, Caryn Owens of the Department of Environment, Great Lakes and Energy (EGLE) – Air Quality Division (AQD) conducted an on-site field inspection of DTE Gas Company (N3341) located at 250 MichCon Lane in Kalkaska Township, Kalkaska County, Michigan. More specifically, the site is located on the south side of MichCon Lane, approximately ¼ mile east of US-131. The purpose of this inspection was to determine the facility's compliance with Renewable Operating Permit (ROP) MI-ROP-N3341-2022. This facility is considered a major source due to the potential to emit of nitrogen oxides (NOx) and carbon monoxide (CO) each exceed 100 tons per year, and the potential to emit of any single hazardous air pollutant (HAP) is more than 10 tons per year. The site has is a major source for National Emission Standards for Hazardous Air Pollutants (NESHAP) for Stationary Reciprocating Internal Combustion Engines (40 CFR, Part 63, Subpart ZZZZ – RICE MACT), but there are no applicable Conditions associated with the RICE MACT. Additionally, the equipment at the site is subject to NESHAP for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters (40 CFR, Part 63, Subpart DDDDD – Boiler MACT).

Evaluation Summary:

The activities covered during this full compliance evaluation (FCE) appear to be in compliance with MI-ROP-N3341-2022. Review of the records for the facility indicates the facility was in compliance with emission limits in accordance with the ROP. No further actions are necessary at this time. Specific permit conditions that were reviewed are discussed below.

Source Description:

The compressor station transmits pipeline quality natural gas to other communities around the area through pipelines. The facility is not involved in the production of natural gas or oil, nor is it involved in the storage or processing of natural gas.

The station operates three natural gas-fired engine/compressor units. All three units are Cooper 2,700 HP two-stroke, lean burn engines that were installed in 1992. Each engine exhausts out a vertical stack with no add-on controls. The engines are shaft coupled to a compressor where natural gas is fed through from an initial "suction" state to a more compressed "discharge" state at higher pressure.

Pollutants emitted from the combustion process of the engines include NOx, CO, volatile organic compounds (VOCs), and particulate matter (PM). Sulfur oxides emissions are very low since sulfur compounds are removed from natural gas at processing plants. The formation of NOx is related to the combustion temperature in the engine cylinder, and CO and VOC emissions are primarily a result of incomplete combustion. PM emissions can include trace amounts of metals and condensables, semi-volatile organics which result from incomplete combustion, volatilized lubricating oil, and engine wear. Emissions vary according to the air-to-fuel ratio, ignition timing, torque, speed, ambient temperature, humidity, and other factors.

Additionally, that facility has a natural gas engine and generator set are used as backup electrical power in the event power is lost from the primary grid to the site. The facility also contains many furnaces and heaters for building heat, hot water heaters, and small storage tanks for hydrocarbon liquids, glycol, wastewater, and lubricating oil.

The facility is located in a remote area with an electrical transmission facility to the east, the Kalkaska Gas Plant to the North, and wooded land south and west of the site. The facility is located approximately 3 miles southwest of the City of Kalkaska.

On-site Inspection:

During the field inspection it was cloudy with snow flurries, wind speeds approximately 8 to 10 miles per hour out of the west-northwest, and approximately 25 degrees Fahrenheit. The facility was covered in snow, and consisted of: numerous transmission lines; a main compressor building in the central portion of the site; a control room on the northern portion of the site; small utility buildings on the southeastern portion of the site; and the tank battery area containing five above ground storage tanks ranging from 1,000-gallons to approximately 6,000 gallons on the eastern portion of the site. The

southwestern portion of the site contains three condensers that cool the pipeline gas prior to sending the natural gas to consumers, and a blow-down stack for pipeline maintenance. The facility was surrounded by fencing.

EGLE observed no visible emissions from the lean burn engine stacks, or the condenser systems associated with the stacks. EGLE observed a heat shimmer off engine 3 (EUGMVH3) stack and condenser. During the inspection, only EUGMVH3 was operating. No other visible emissions were observed during the field inspection.

EUGMVH3 was operating at 270.3 revolutions per minute (RPMs), 75.1 percent torque, 27.2 pounds per square inch (psi) pressure, and 170.0 degrees Fahrenheit (J. W. Out temperature). The hour meter on the engine was at 144,131 hours.

Even though Engines 1 and 2 were not operating during the inspection, I observed the total hours operated for each engine. EUGMVH1 (Engine 1) had 167,102 hours of operation and EUGMVH2 (Engine 2) had 155,260 hours of operation.

The facility is claiming the following exemptions at the facility:

- Approximately 9 natural gas forced air small furnaces that range between 50,000 BTU/hr to 165,000 BTU/hr meets exemption Rule 336.1282(2)(b)(i),
- Approximately 15 unit heaters, 2 water heaters, and a radiant heater that range between 2,500 BTU/hr to 110,000 BTU/hr, meets exemption Rule 336.1282(2)(b)(i),
- A 880 hp 4-stroke, lean-burn backup/emergency generator in case of power failure 336.1285(2)(g), and
- The above ground storage tanks in the tank battery area meet exemption Rules 336.1284(2)(e) and 336.1284(2)(g).

Records Review:

FGGMVHS: Three Cooper 2,700 HP two-stroke lean burn natural gas-fired reciprocating engines using lean combustion systems that are intrinsically installed to each engine for emission control. Only one engine (EUGMVH3) was operating during the field inspection.

- **Emission Limits:** The highest reported emissions from each engine are in the right-hand column in the table below.

Pollutant	Permit Limit	Time Period	Highest Reported Emissions From 2/1/23 – 1/31/24 Or Test Results
1. CO	28.68 tpy	12-month rolling time period determined end of each calendar month	8.02 tpy – EUGMVH1 8.46 tpy – EUGMVH2 8.61 tpy – EUGMVH3
2. CO	7.7 pph	Hourly	7.0 pph – EUGMVH1 5.8 pph – EUGMVH2 6.6 pph – EUGMVH3
3. NOx	52.12 tpy	12-month rolling time period determined end of each calendar month	6.37 tpy – EUGMVH1 5.89 tpy – EUGMVH2 6.23 tpy – EUGMVH3
4. NOx	64.2 pph	Hourly	6.7 pph – EUGMVH1 7.3 pph – EUGMVH2 10.9 pph – EUGMVH3
5. VOC	26.1 tpy	12-month rolling time period determined end of each calendar month	1.99 tpy – EUGMVH1 2.29 tpy – EUGMVH2 2.37 tpy – EUGMVH3
6. VOC	6.0 pph	Hourly	0.7 pph – EUGMVH1 0.6 pph – EUGMVH2 0.6 pph – EUGMVH3

Based on the records reviewed, the facility was within the permitted emission limits.

- **Material Limits:** There are no applicable material limits for FGGMVHS.

- **Process/Operational Parameters:** According to DTE Energy, only sweet natural gas is burned at the facility. Additionally, the engines have not been modified since the previous inspection, and the lean burn combustion system appears to be operating properly.
- **Design/Equipment Parameters:** As previously stated, EUGMVH3 was the only engine operating during the inspection. AQD observed that the hours are tracked, and EUGMVH3 was at 144,131 hours. As previously stated, even though Engines 1 and 2 were not operating during the inspection, I was able to record the hours from the engines. EUGMVH1 (Engine 1) had 167,102 hours of operation and EUGMVH2 (Engine 2) had 155,260 hours of operation.
- **Testing:** Performance testing is completed at least once every five years to verify the emission rates of NO_x, CO, and VOCs from each engine. The latest stack test was completed September 26 through 28, 2023. Based on the results of the most recent performance test, the facility was in compliance with the emission limits.
- **Monitoring/Recordkeeping:** The facility completes the required calculations for each engine and records the amount of hours each engine operated on a daily basis. The NO_x, CO, and VOC emissions are calculated on a monthly basis and are discussed above under emission limits.
- **Reporting:** During the reporting period the permittee verified all monitoring and associated recordkeeping requirements of the ROP were met and there were no deviations. The semi-annual and annual reports were submitted to EGLE on a timely basis.

During the September 2023 stack testing, AQD performance test protocol and reporting requirements were followed.

- **Stack/Vent Restrictions:** Based on visible observations during the field inspection, the stacks EUGMVH1, EUGMVH2, and EUGMVH3 appeared to be in compliance with permitted limits.
- **Other Requirements:** There are no "Other Requirements" applicable with FGGMVHS.

FGBOILERS: This incorporates requirements for an existing boiler and process heater with a heat input capacity of <10 MMBTU/hr for major sources of HAP emissions per 40 CFR Part 63, Subpart DDDDD (Boiler MACT). These boilers or process heaters are designed to burn solid, liquid, or gaseous fuels. The current equipment includes a 2.93 MMBTU per hour boiler for engine jacket and space heating (EUBOILER1) and a 0.5 MMBTU per hour fuel gas heater (EUHEX). There is no pollution control equipment associated with the boilers at the facility covered under FGBOILERS.

- **Emission Limits:** There are no applicable emission limits for FGBOILERS.
- **Material Limits:** According to DTE Energy, only sweet natural gas is burned at the facility.
- **Process/Operational Parameters:** The boilers associated with FGBOILERS appear to be operated safely and with good air pollution control practices. A tune-up of the Cleaver Brooks Boiler (2.93 MMBTU) and the heat exchanger (0.5 MMBTU) had their most recent tune-ups on January 12, 2021. The tune-ups are required to be completed every five years.
- **Design/Equipment Parameters:** There are no applicable design/equipment parameters for FGBOILERS.
- **Testing:** There are no applicable testing requirements for FGBOILERS.
- **Monitoring/Recordkeeping:** The facility keeps the records of the notifications and reports on file in the main office.
- **Reporting:** During the reporting period the permittee reported all monitoring and associated recordkeeping requirements of the ROP were met and there were no deviations. The semi-annual and annual reports were submitted to EGLE on a timely basis. Additionally, the boilers tune-ups were completed within the 5-year compliance period. Updated boiler tune-ups and associated compliance reports should be submitted to AQD by the end of 2026.
- **Stack/Vent Restrictions:** There are no applicable stack/vent restrictions were associated with FGBOILERS.
- **Other Requirements:** The facility is subject to NESHAP for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters (40 CFR, Part 63, Subpart DDDDD – Boiler MACT), and the requirements of this subpart have been addressed in the Conditions above.

NAME

DATE 4-29-24

SUPERVISOR

