

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

N742163567

FACILITY: DTE Gas Company - Willow Run Compressor Station		SRN / ID: N7421
LOCATION: 3020 East Michigan Avenue, YPSILANTI		DISTRICT: Jackson
CITY: YPSILANTI		COUNTY: WASHTENAW
CONTACT: John Leonard , Senior Environmental Specialist		ACTIVITY DATE: 06/29/2022
STAFF: Mike Kovalchick	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Announced compliance inspection along with methane survey. One small methane leak detected but otherwise no compliance issues.		
RESOLVED COMPLAINTS:		

Major / ROP Subject Source. Full Compliance Evaluation (FCE) and Partial Compliance Inspections (PCEs) SRN N7421

Contact

John Leonard-Environmental Specialist

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Purpose

On June 29, 2022, AQD conducted an announced compliance inspection of the Willow Compressor facility owned and operated by DTE Energy (Company) located at 3020 East Michigan Ave in Ypsilanti, Michigan. I was accompanied by Adam Silberg, a summer intern working for EGLE. The purpose of this inspection was to determine if this facility was in compliance with the requirements of the federal Clean Air Act; Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451); the conditions of Renewable Operating Permit (ROP) MI-ROP-N7421-2022; the federal National Emission Standards for Hazardous Air Pollutants (NESHAP): Stationary Reciprocating Internal Combustion Engines 40 CFR Subpart ZZZZ; NESHAP Industrial, Commercial, and Institutional Boilers and Process Heaters (Gas 1 Fuel Subcategory) 40 CFR Subpart DDDDD(Boiler MACT); federal New Source Performance Standard (NSPS): Stationary Spark Ignition Internal Combustion Engines 40 CFR Subpart JJJJ and NSPS Stationary Combustion Turbines 40 CFR Subpart KKKK.

Background

This facility has become subject to Title V of the Clean Air Act (CAA) for Hazardous Air Pollutants (HAP). Per Rule 210(4) DTE was required to apply for a Renewable Operating Permit (ROP) not more than 12 months after commencing operation as a major source. A Title V application was received by AQD on March 20, 2019. The ROP was issued on April 6, 2022.

The mostly recently installed equipment is a part of a larger project that handles natural gas moving operations in conjunction with the relatively new Nexus pipeline. The equipment previously on site was projected to not be sufficient to handle the increased volume of natural gas.

Compliance Evaluation

Inspection Observations/Comments:

Inspection consisted of conducting a survey of the facility yard looking for methane leaks using a SEM5000 Methane detector and visiting the control room to real time for any engines/turbines that were active. The methane survey was conducted for informational purposes only and was not used as a compliance tool during the inspection.

Upwind reading was determined to be around 2.5 ppm methane (natural methane background). Little to no difference was noted downwind. See attached graphic which shows the basic path followed while surveying the facility. We stayed outside the buildings during the survey. Overall, everything was tight as would be expected with relatively new piping etc. Any type of pipe fitting generally had about 20 ppm or less leakage with some exceptions. We did find one small leak of 4000 ppm while doing the survey on a valve associated with the turbine filter/separation tank which is used to clean natural gas prior to entering the turbine. (See attached photos.) Another area of the facility had readings as high as 60 ppm. We were unable to determine the source of the methane as it appeared to be coming from an area out of reach of the instrument. (See attached photo.)

A visit to control room confirmed that one engine and a turbine were operating. (The engine was probably EURICE3 rated at 5000 HP.) The turbine is EUTURBINE1 rated at 770 HP. The fuel flow into the turbine was 37.95 MSCFM and was processing 17.01 MMSCFM of natural gas through the pipeline. The compressor station is only operating at a fraction of capacity. The recent large increase in pumping capacity is mostly not being utilized. To date, the Nexus pipeline has not generated the level of gas pressure that was expected and also not expected to further increase in the future. Therefore, the gas pressure from the ANR/Panhandle lines that go through the facility do not have to be significantly increased to match the Nexus pipeline to be added into that piping system. Only small increases in engine usage have occurred since the Nexus pipeline went online.

Review of MAERS 2021: Included on only emission units with emissions greater than 1 ton of pollutant:

EUILHTR1 5 tons NOx, 1 ton CO

EUILHTR2 7 tons NOx, 1.5 tons CO

EUILHTR3 7 tons NOx, 1.5 tons CO

EUILHTR4 1.5 tons NOx

EURICE1 1 ton NOx

RGOBLR_HTS 1.5 tons NOx, 1 ton CO

Source Totals: 23 Tons of NOx, 6 Tons of CO, 2 Tons of VOC which were very similar to previous year totals.

Review of required records:

Required records by the ROP for 2022 were requested by AQD prior to the inspection. The Company provided the records electronically on July 11, 2022. The following is a list of the records requested, response received with any added AQD comments in brackets. []

EUTURBINE1 (Compliance)

VI. MONITORING/RECORDKEEPING Conditions 1, 2. All required records for 2022. (Ending May 31).

“ See excel sheet for monthly readings

2. Below is the emission testing performed at Willow since 2020. [All show compliance.]

2020

EUTURBINE1 – 6/20 NOx (40 CFR Part 60 Subpart KKKK)

EUENGINE1 – 6/20 CO-DE (40 CFR Part 63 Subpart ZZZZ)

EURICE1-3 – 6/20 CO-DE (40 CFR Part 63 Subpart ZZZZ)

2021

EUENGINE1 – 10/21 CO-DE (40 CFR Part 63 Subpart ZZZZ)

EURICE1-3 – 8/21 CO-DE (40 CFR Part 60 Subpart JJJJ and 40 CFR Part 63 Subpart ZZZZ)

2022 (Reports not completed, Due Aug 2022)

EUTURBINE1 – 6/22 NOx (40 CFR Part 60 Subpart KKKK)

EUENGINE1 – 6/22 CO-DE (40 CFR Part 63 Subpart ZZZZ)

EURICE1-3 – 6/22 CO-DE (40 CFR Part 60 Subpart JJJJ and 40 CFR Part 63 Subpart ZZZZ)

See attached Sulfur Content letter. [Below 8 ppm]

See EUTURBINE1 Spec sheet attached. [7628 HP at 100 % load.]

See various initial startup letters from 2016-2018”

EUEMGRICE1 (Compliance)

VI. MONITORING/RECORDKEEPING Conditions 1, 2, 3. All required records for 2022.

“1., 2. Willow Run is operating EUEMGRICE1 in a certified manner and following all manufacturer recommendations. No maintenance required until 1,000 run hours, engines have not exceeded 1,000 run hours.

3. See monthly run hours” [Currently 12 month rolling average only 22.5 hours.]

FGENGINES (Compliance)

VI. MONITORING/RECORDKEEPING Conditions 1, 2. All required records for 2022.

"1., 2. Willow Run is operating FGENGINES in a certified manner and following all manufacturer recommendations. No maintenance required until 1,000 run hours, engines have not exceeded 1,000 run hours."

FGENGMACT4Z-EURICE1-3 (Compliance)

VI. MONITORING/RECORDKEEPING Conditions 3, 4, 5. All required records for 2022.

"3. See attached startups and notification documents.

Willow Run has not experienced any malfunction occurrences.

See stack test information on page 1.

4. CMS has not had any out of control periods.

5. See attached Willow Run catalyst data on Excel sheets."

FGNOX (Compliance)

VI. MONITORING/RECORDKEEPING Conditions 1, 2. All required records for 2022.

"1., 2. See monthly reads attached" [Showed zero fuel usage.]

FGBLRMACT-SM (Compliance)

VI. MONITORING/RECORDKEEPING Conditions 1, 3, 4. All required records for 2022.

"1. See initial notification documents from Willow Run.

3., 4. See IB MACT report submitted March 2022 (40 CFR 63 Subpart DDDDD NESHAP)"

FGBLRMACT-LG (Compliance)

VI. MONITORING/RECORDKEEPING Conditions 1, 3, 4. All required records for 2022.

"1. See initial notification documents from Willow Run.

3.,4. See IB MACT report submitted March 2022 (40 CFR 63 Subpart DDDDD NESHAP)"

EUENGINE1 (Compliance)

VI. MONITORING/RECORDKEEPING Conditions 3, 4, 5, 6, 7, 8. All required records for 2022.

"3. See attached monthly reads.

4. Willow Run is operating EUENGINE1 in a certified manner and following all manufacturer recommendations. No maintenance required until 1,000 run hours, engines have not exceeded 1,000 run hours.

5. Engines at Willow Run Compressor Station have not been operated without catalyst in 2022.

6., 7. See attached fuel use and monthly emission tracking data.

8. See attached maintenance logs and manufacturer's recommendations."

FGENGMACT4Z-ENGINE1 (Compliance)

VI. MONITORING/RECORDKEEPING Conditions 3, 4, 5. All required records for 2022.

"3. There have been no malfunctions of operations at Willow Run Compressor.

See Stack Test information on page 1.

There have been no out of control emissions at Willow Run Compressor.

4. Malfunction of the catalyst inlet temperature on unit 2300 was present from January to March 2022. A lightning strike caused the malfunction to the inlet temperature, while not affecting the post catalyst temperature reading. The thermocouple was fixed in March 2022.

5. See Willow Run Compressor catalyst data Excel sheet."

Compliance Determination

After onsite inspection and review of requested records, AQD has determined that this facility is in compliance with State of Michigan and Federal air quality rules and regulations and ROP MI-ROP-N7421-2022.



Image 1(Methane survey map) : Results of methane survey show one leak and one area of concern.



Image 2(Leak Location) : Leak location on top of tank.



Image 3(Area of Concern) : Looking towards area of concern where elevated methane levels were found.

NAME Mike Kovalchik

DATE 6/29/22

SUPERVISOR 