

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

B280563582

FACILITY: DTE Electric Company - Hancock Peaking Facility		SRN / ID: B2805
LOCATION: 1781 HAGGERTY ROAD, COMMERCE TWP		DISTRICT: Warren
CITY: COMMERCE TWP		COUNTY: OAKLAND
CONTACT: Marie Reid , Temp. Assoc. Environmental Engineer		ACTIVITY DATE: 06/16/2022
STAFF: Robert Elmouchi	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Scheduled inspection.		
RESOLVED COMPLAINTS:		

On June 16, 2022, I conducted an inspection at the DTE Electric Company Hancock Peaking Facility located at 1781 Haggerty Road, Commerce Township. The purpose of this inspection was to determine the facility's compliance with the requirements of the Federal Clean Air Act; Article II, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451); the administrative rules; and the conditions of Renewable Operating Permit (ROP) No. MI -ROP-B2805-2022.

The Hancock Peaking Facility is designed to generate electricity for sale under conditions of peak demand. Generators are activated by staff on-site although remote generator start-up may be asked by MISO (Midwest Independent System Operator).

All the turbine generators were installed prior to state requirements to obtain a permit to install and are considered "grandfathered" units with respect to R 336.1201.

I met with Ms. Marie Reid, DTE Temporary Associate Environmental Engineer; Mr. Felix Fesili, DTE Combustion Turbine Specialist; and Mr. Milton Collins, AA Substation Operator.

The Hancock Peaking Station previously consisted of four (4) natural gas-fired combustion turbine electric generators (CTG), and two (2) natural gas-fired jet engine turbine generator sets (JTG). Two (2) of the four (4) natural gas-fired combustion turbine electric generators, EGCTG11-2 and EGCTG11-4 were dismantled on December 22, 2019. I observed the pipes that are used to supply natural gas to EGCTG11-2 and EGCTG11-4 were both cut and capped. The CTG were manufactured by Westinghouse. The JTG were manufactured by Pratt & Whitney. Each of the two (2) JTG (EGJTG 12-1 and EGJTG 12-2) have coaxial "A" and "B" jet engines on either side of the generator. Each jet engine can be individually decoupled as needed, which is why the A and B engine operating hours (see below) are not identical.

The combustion turbo generators are single engine-single turbine setups. The jet turbo generators consist of paired jet engines. Each jet turbo generator consists of an A and B engine connected to a single electric generator. Usually, the A and B engines run simultaneously but they can be decoupled to run separately if needed.

In a jet turbo generator, the high-pressure exhaust of a jet engine spins the turbine connected to the electrical generator. The jet engine generators are capable of a black start, which means that utility-supplied electricity is not needed to start up the jet turbine generators. A battery bank (DC source) supplies emergency to power up essential equipment.

In a combustion turbo generator, fuel is added to the high-pressure combustion air and gets ignited in the combustor. The heated gas expands and moves at high velocity, which spins the turbine connected to the electrical generator. The combustion turbo generators are not capable of a black start. A 480-volt motor powered by electricity from the grid is needed to spin up the turbine.

The facility-wide natural gas meter is located outside at the southwest corner of the property. The engines are only fired with pipeline-quality natural gas. I noted a reading of 561,139 thousand cubic feet (MCF).

In general, the amount of natural gas consumed at the site is generally low. The renewable operating permit requires DTE to record the natural gas consumption rate for each calendar month.

Because these are grandfathered emission units, MI-ROP-B2805-2022 FGPEAKING contains only one recordkeeping special condition. Special Condition VI.1 states, "The permittee shall record the source-wide natural gas consumption for each calendar month." I requested Facility-wide natural gas use records from May 2020 through April 2022, which were provided. During these 24 months, the monthly facility-wide natural gas use rate ranged from zero (0) MCF (9 of the 24 months), to 103,150 MCF during February 2021. These records indicate the permittee complies with this special condition.

I noted the following readings from each turbine's run-hours meter:

CTG

EGCTG 11-1: 448.0 hours

EGCTG 11-2: retired

EGCTG 11-3: 274.9 hours

EGCTG 11-4: retired

JTG

EGJTG 12-1A: 19522.9 hours

EGJTG 12-1B: 19737.7 hours

EGJTG 12-2A: 20562.3 hours

EGJTG 12-2B: 20758.6 hours

Unit JTG 12-1 and JTG 12-2 meet the definition of an electric generating unit (a unit with a nameplate capacity of more than 25 megawatts and which produces electricity for sale) and therefore are subject to the Cross-State Air Pollution Rule (CSAPR). The two units are subject to the transport rule NOx Annual Trading Program, NOx Ozone Season Trading Program, and SO2 Group 1 Trading Program. Instead of CEMS, low mass emissions (LME) excepted methodology may be used to report emissions (40 CFR 75.19). To estimate emissions reported to the EPA Clean Air Markets Program, a default NOx emission rate of 0.7 lb./MM BTU is used. Heat input is calculated by using the Long-Term Fuel Flow (LTFF) feature in the ECMPS LME Emissions Data Utility. To estimate SO2 emissions the default SO2 emission rate for pipeline-quality natural gas is used.

The turbine generators are not subject to Part 8 (NOx) of the AQD administrative rules. In accordance with Rule 801(14)(c), peaking units and units that are subject to a federal regulation that is equally stringent or more stringent are not subject to Part 8 rules.

The Hancock Peaking engines are not equipped with low-NOx burners. To reduce NOx, the following steps/modes are taken in the DTE combustion turbines: normal startup, lean-lean mode, secondary mode, and pre mode.

EGCTG 11-1, EGCTG 11-3, EGJTG 12-1, and EGJTG 12-2 were operating during this inspection. As typical for natural gas-fire turbines, I observed zero visible emissions in compliance with Part 3 visible emission limits.

Per the 2021 MAERS report, DTE Electric Company Hancock Peaking Facility emitted 62.02 tons of NOx, zero tons of Hydrogen Chloride, 0.67 tons of PM10, 0.15 tons of SO2, and 0.21 tons of VOC. As stated above, because these engines are grandfathered, this permit does not contain emission limits.

CONCLUSION

The DTE Electric Company Hancock Peaking Facility appears to comply with the permit conditions and the air pollution control rules.

NAME *Robert Elmarche*

DATE 7/14/2022

SUPERVISOR *Joyce*