

M4854

MANILA

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

M485459256

FACILITY: Sumpter Generating Plant		SRN / ID: M4854
LOCATION: 8509 RAWSONVILLE RD, BELLEVILLE		DISTRICT: Detroit
CITY: BELLEVILLE		COUNTY: WAYNE
CONTACT: Ken Soward , Chief Operator		ACTIVITY DATE: 07/21/2021
STAFF: Samuel Liveson	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Scheduled inspection.		
RESOLVED COMPLAINTS:		

On July 21, 2021, AQD staff Sam Liveson and Jeff Korniski conducted an announced, scheduled inspection of Wolverine Power Cooperative – Sumpter Generating Plant (Sumpter) located at 8509 Rawsonville Road in Belleville, Michigan. The purpose of this inspection was to determine the facility's compliance with the federal Clean Air Act; Part 55, Air Pollution Control, of the Michigan Natural Resources and Environmental Protection Act, 1994 PA 451, as amended; the Michigan Air Pollution Control Rules; and the conditions of Renewable Operating Permit (ROP) No. MI-ROP-M4854-2021.

The temperature was 75 °F. Wind was easterly (headed west) at 5 miles an hour according to wunderground.com in Willis, Michigan.

Announced Inspection

Due to health concerns associated with the ongoing COVID-19 pandemic, on-site AQD inspections are announced. AQD scheduled today's inspection by talking with Mr. Joe Hazewinkel, Environmental Policy Coordinator.

Opening Meeting

AQD arrived around 1 PM. After pulling up to the phone to the left of the entrance gate, AQD passed through the entrance gate and parked in front of the main office building to the right. We walked in and met with Mr. Ken Sowards, Chief Operator; Mr. Joe Hazewinkel, Environmental Policy Coordinator; and Ms. Stephanie Jarrett, Senior Environmental Engineer with Fishbeck. AQD provided their contact information and explained the purpose of their visit. Today, unit 1 is being started around 1:30 PM, and the others are starting around 2:00 PM.

Facility Overview

Sumpter operates four natural gas turbines that provide peaking power to the electrical grid. Natural gas is received underground from a fenced-off section of the facility operated by DTE Energy. Natural gas is preheated and pressure is reduced from 500 pounds per square inch (psi) to 375 psi before being used in the turbines. The four turbines each have a nominal 83 MW power. Typically, when running, all four units are running.

Note: The four turbines on site are referred to as peaking units because they supplement the power grid, for example on warmer days where extra power is needed to run air conditioning throughout the Midwest. However the turbines are not defined as "peaking units" under 40 CFR Part 72.2. AQD did not request the capacity factor that would indicate whether units were considered peaking units.

Facility Walkthrough

Dew Point Heaters/Pre-Heaters

AQD visited the two facility dew point heaters (also referred to as pre-heaters) on site (north and south). These heat the natural gas coming into the facility from DTE to 175 degrees Fahrenheit (°F) using propylene glycol. This preheating helps remove moisture from natural gas before it's used in the turbines.

Each pre-heater has a fuel meter which measures a running total of the amount of natural gas used by each dew point heater. Ryan at the facility clarified that this value is measured at the beginning and end of the month to determine the dew point heater fuel usage per month per Source-Wide special condition (SC) VI.3. These fuel meters aren't calibrated annually, unlike the flow meters for the turbines, since the amount of natural gas they measure is a small fraction of that going to the turbines.

AQD observed the following instantaneous readings from the dew point heater meters during the inspection.

Meter	Natural gas reading (Hundred cubic feet)
1	71412
2	59569

The two 3.7 million British thermal unit per hour (MMBtu/hr) natural gas fired dew point heaters appear to be exempt from PTI requirements under Rule 282(2)(b)(i), for natural gas fuel-burning equipment used for processing and equipment has a rated heat input capacity of not more than 50 MMBtu/hr.

The dew point heaters are not subject to 40 CFR Part 63, Subpart DDDDD as the facility is not a major source of hazardous air pollutants (HAPs) per §63.7485.

The dew point heaters are not subject to 40 CFR Part 63, Subpart JJJJJ as the heaters do not meet the definition of an industrial, commercial, or institutional boiler, as defined in §63.11237.

Source-Wide Special Conditions and Compliance Status

SC(s)	Brief Condition Summary	Determination	Explanation
I.1, VI.2	Emission limit of 249 tons CO per 12-month rolling time period; keep emission calculation records	Compliance	During the inspection, Ms. Jarrett provided the facility emissions records for January of 2020 through June of 2021. The highest emissions were 54.3 tons CO for the 12-month time period completed in July of 2020. This is below the facility limit of 249 tons CO per 12-month rolling time period.
I.2, VI.2	Emission limit of 249 tons NOx per 12-month rolling time period; keep emission calculation records	Compliance	Facility records provided during the inspection for January of 2020 through June of 2021 provide that the highest emissions were 80.3 tons NOx for the 12-month time period completed in July of 2020. This is below the facility limit of 249 tons NOx per 12-month rolling time period.
II.1, VI.3	Pre-heaters shall not use more than 60.12 MMCF natural gas per 12-month rolling time period; record fuel usage	Compliance	Pre-heater records provided during the inspection for January of 2020 through June of 2021 provide that the preheaters used a maximum of 4.3 million cubic feet (MMCF) natural gas for 12-month time period completed in July of 2020 and August of 2020. This is below the facility limit of 60.12 MMCF natural gas.

FG-TURBINES – MI-ROP-M4854-2021

Turbines are dual fuel, but they are not hooked up for diesel. Turbines only burn natural gas. Each turbine has a fuel flow meter that is calibrated in the first quarter of each year.

FG-TURBINES have a continuous emissions monitoring system (CEMS) to determine turbine NOx emissions and O₂ percentage. According to the facility staff, NOx analyzers appear to be calibrated daily, and upon startup of the turbine.

AQD visited EU-UNIT2 and its CEMS trailer. The following parameters were observed.

Value	Unit
8740.7	HSCFH

73.41	MW
15%	O2
7.22	PPM NOx

FG-TURBINES Conditions and Compliance Status

SC(s)	Brief Condition Summary	Determination	Explanation
I.1, VI.9	Startup and shutdown emission limit; track startup and shutdown events for each emission unit in FG-TURBINES	Compliance	The facility uses this limit of 63.8 pounds CO per hour as an estimate of startup and shutdown emissions when calculating annual emissions. Startup and shutdown are estimated to take one hour.
I.2, V.1	Hourly CO emission limit of 0.057 lb CO/MMBtu heat input	Compliance	Stack test results received July 27, 2021, for the CO testing on EU-UNIT 4 conducted June 25, 2021, calculated emissions of 0.027 lbs CO/MMBtu heat input. This is below the emission limit of 0.057 lbs CO/MMBtu.
I.3, VI.8	Emission limit of 246.1 tons CO per 12-month rolling time period	Compliance	The facility provided CO emission records for the period of January of 2020 through June of 2021. The highest 12-month rolling CO emissions occurred during July of 2020 at 54.3 tpy CO.
I.4	NOx limit of 75 ppmv, dry basis and at 15% oxygen.	Compliance	Initial performance testing conducted in 2002 demonstrated the highest value was 7.5 ppmv NOx. During RATA testing on June 22 to 25, 2021, the highest emissions were 9.7 ppmvd NOx at 15% oxygen on unit #3.
I.5, VI.2, VI.3, VI.4, VI.7	NOx limit of 244.4 tons per year; including startups and shutdowns	Compliance	The facility provided turbine NOx emission records for the period of January of 2020 through June of 2021. The highest 12-month rolling NOx emissions occurred during July of 2020 at 80.0 tpy NOx.
II.1, VI.5, VI.6	Material limit of 20 grains sulfur per 100 scf; monitor sulfur content in the fuel.	Compliance	A monthly laboratory analysis provided to the facility by DTE Energy for the time period of January of 2020 to June of 2021 indicates that the highest sulfur content during this time period was 0.161 gr/100 cf in January of 2020.
II.2	Only burn natural gas in FG-TURBINES	Compliance	From facility discussions, turbines are dual fuel, but they are not hooked up for diesel. They only burn natural gas. Records also indicate only natural gas is burned in turbines.
II.3	Limit natural gas 12-month usage to 8,449 million cubic feet (MMCF) based on 0.057 pounds per MMBtu heat input	Compliance	The facility provided turbine fuel usage records for the period of January of 2020 through June of 2021. The highest 12-month rolling usage occurred during July of 2020 at 4,521 MMCF of natural gas.
III.1, 2, VI.11	Operate turbines in accordance with startup, shutdown, and	Compliance	The SSM plan was provided to AQD on August 9, 2018 (last updated July 2015) as

SC(s)	Brief Condition Summary	Determination	Explanation
	malfunction abatement (SSM) plan		part of the facility ROP application. The plan is acceptable to the AQD.
V.2, V.3, VII.4, VII.5, VII.6, Appendix 3	Perform quality assurance/quality control (QA/QC) procedures for the NOx and O ₂ continuous emission monitoring system (CEMS).	Compliance	The facility follows the schedule in Part 75 for NOx audits. The facility conducted relative accuracy test audits (RATA) on Units 1 through 4 from June 22-25, 2021. The facility has submitted quarterly excess emission reports for the final quarter of 2020 and the first three quarters of 2021.
VI.1	Complete calculations by the 30 th day of the month for the previous month.	Compliance	Records provided during the inspection on July 21, 2021 included emissions calculations for May of 2021, as well as for June of 2021.
VI.10	Maintain documentation confirming the installation of dry low NOx burners	Compliance	Documentation of low-NOx burners is in the original permit application (247-00) and was provided in the form of the operations manual during the previous facility inspection on June 18, 2020.
VIII.1-4	Stack dimensions	Compliance	From visible observation, stacks appeared to have a maximum exhaust diameter of 180 inches and a minimum height of 60 feet.
IX.1	Comply with NSPS Subpart A and GG.	Compliance	See discussion below.
IX.2, IX.3, IX.4	Comply with the Acid Rain Program; comply with the Phase II, Acid Rain Permit issued by AQD (incorporated into this ROP as Appendix 9).	Compliance	A detailed review of these permits was not conducted as part of the compliance determination. A review of EPA Clean Air Markets division website did not indicate any emissions exceedances for any of the programs for the facility.
IX.5, IX.6, IX.7	Comply with Cross-State Air Pollution Rules 40 CFR Part 97, Subparts AAAAA (NOx Annual Trading), EEEEE (NOx Ozone Season Group 2 Trading), and CCCCC (SO ₂ Group 1 Trading Program)	Compliance	A detailed review of these permits was not conducted as part of the compliance determination. EPA Clean Air Markets Division information indicates compliance with these programs.

40 CFR Part 60 Subpart GG – Standards of Performance for Stationary Gas Turbines - Discussion

Applicable to all turbines with heat input at peak load equal to or greater than 10 MMBtu/hr. Each turbine at Sumpter has a heat input of 863.9 MMBtu/hr.

60.8 – COMPLIANCE - Performance testing conducted in 2002 concurrent with RATA testing for Part 75.

60.332(a) - COMPLIANCE - A limit of 75 ppmv for initial performance testing which is covered in FGTURBINES SC I. 2. Testing conducted in 2002 resulted in 7.5 ppmv as the highest NOx ppmv detected. In addition, the facility monitors emissions continuously using a CEMS.

60.333(b) – COMPLIANCE - Shall not burn any fuel which contains total sulfur in excess of 0.8 percent by weight. None of the values submitted in the DTE Energy gas analysis exceed this limit.

60.334(h)(3)(i) – COMPLIANCE - Discussed in FG-TURBINES SC VI. 4 and 5 above.

Federal Acid Rain - Part 72 and 75 – COMPLIANCE

Turbines are subject to Part 72 based on the applicability definition in 72.6(3); a utility unit that is a new unit. Each turbine is equipped with a CEMS as required by 72.9(b), 75.2(a) and 75.10(a)(2) and NOx recordkeeping applies per 72.9(f). Facility is not required to install a SO2 CEMS under 75.11(d)(2) and Appendix D to Part 75 as facility is a gas fired unit and monitors sulfur in fuel with an approved contract with DTE Energy and is equipped with fuel flow meter.

40 CFR Part 64 - Compliance Assurance Monitoring (CAM)

Potential precontrol emissions are above major source thresholds per emission unit for NOx and CO. However, the emissions units do not have an add on control device for CO emissions. Low NOx burners do not meet the definition of control device in 64.1. Additionally, there is an exemption from CAM for facilities that use CEMS for continuous compliance determination, 64.2(b)(vi). Therefore, CAM requirements do not apply to this facility.

EU-FWP

AQD visited the facility's two fire water pumps. The main pump is electrically powered. The second (EU-FWP) is diesel powered for use in case the electric fire water pump is unavailable. EU-FWP is tested weekly for 15 minutes, and once a year during a half hour test for output. AQD observed that the non-resettable hours meter read 187 hours. This corresponds with facility records. The pump has an associated 300 gallon above-ground diesel storage tank. A truck comes to the site to deliver fuel as needed.

EU-FWP Conditions and Compliance Status

SC(s)	Brief Condition Summary	Determination	Explanation
II.1, VI.3	Only burn diesel, and have a sulfur content not exceeding 0.05 % by weight.	Compliance	Sumpter provided the receipt for the latest delivery of diesel fuel on June 16, 2021. Analytical results from a diesel sample provided on June 17, 2021 indicates a sulfur content of 2 ppm or 0.0002 % by weight.
III.1, 6, 7, VI.1, VI.2, VI.8	Keep a record of operating hours, and do not operate for more than 500 hours per 12-month rolling time period; don't exceed 100 hours for maintenance testing; don't operate for more than 50 hours for non-emergency situations.	Compliance	Records provided during the facility inspection indicate that EU-FWP operated for 17.3 hours in 2020, and 6.5 hours through June of 2021.
III.2, 4, VI.7, IX.1	Operate and maintain the engine in a manner consistent with safety and to minimize emissions.	Compliance	Based on records provided, Sumpter appears to operate EU-FWP in a safe manner to minimize emissions, and in accordance with Subpart ZZZZ requirements. There does not appear to be an after-treatment control device associated with EU-FWP.
III.3, VI.8	Change oil every 500 hours or annually; inspect air cleaner every 1000 hours; inspect belts every 500 hours.	Compliance	From facility discussions, oil in the fire pump is changed annually. The facility provided records of the oil change/analysis log, and the air cleaner/hose and belt inspections. Oil is changed annually and was last changed on 11/20/2020. The air cleaner is inspected annually and was last inspected 11/20/2020.

SC(s)	Brief Condition Summary	Determination	Explanation
			The hose and belt is inspected annually and was last inspected 11/20/2020.
III.5, V.1	Facility may use oil analysis program to extend oil change requirements.	Not applicable	The facility does not implement this program.
III.8	Minimize the engine's time spent at idle during startup, not to exceed 30 minutes.	Compliance	Records of engine operating time indicate that this condition is met.
IV.1	Equip and maintain the engine with a non-resettable hours meter.	Compliance	AQD observed the non-resettable hours meter during the facility inspection. The meter read 187 hours.
VI.4, 6	Maintain records of malfunction and actions taken to minimize emissions during malfunction.	Not evaluated	The facility does not appear to have had engine malfunctions.
VI.5	Keep records of maintenance on air pollution control and monitoring equipment.	Not applicable	The fire pump is not equipped with emission control.

Control Room

AQD visited the control room. AQD was able to see that a calibration for EU-UNIT1 NOx analyzers occurred at about 1:30 PM, while the other unit NOx calibrations occurred around 2:00 PM. Additionally, the following parameters were observed.

Unit	MW	Flow (HSCFH)
1	74	8716.3
2	74	8742.3
3	74	8984.4
4	74	8739.3

Miscellaneous Exempt Equipment

The facility has a shop area with machining equipment for maintenance such as saws and drill presses. The equipment appears to be exempt from obtaining a permit to install per R 285(2)(l)(vi)(B) for machining equipment that has emissions related into the general in-plant environment.

Conclusion

Based on the AQD inspection and records review, it appears that Sumpter is in compliance with the federal Clean Air Act; Part 55, Air Pollution Control, of the Michigan Natural Resources and Environmental Protection Act, 1994 PA 451, as amended; the Michigan Air Pollution Control Rules; and the conditions of ROP No. MI-ROP-M4854-2021.

NAME *Jan L*

DATE 11/17/21

SUPERVISOR *JK*