

M4854
MAWILK

**DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Scheduled Inspection**

M485453968

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: 06/18/2020
STAFF: Todd Zynda	COMPLIANCE STATUS: Compliance
SUBJECT: June 18, 2020 Stack Test Observation (Unit 3) and Facility Inspection	
RESOLVED COMPLAINTS:	

REASON FOR INSPECTION: Scheduled Inspection

INSPECTED BY: Todd Zynda, AQD; Sam Liveson, AQD

PERSONNEL PRESENT: Ken Sowards, Chief Operator; Michael Wood, Generation Manager

FACILITY PHONE NUMBER: 231-775-5700

FACILITY WEBSITE: www.wpsci.com

FACILITY BACKGROUND

Sumpter Generation Plant (Sumpter) is an electricity generating facility located in the city of Belleville, Michigan. The facility grounds are located east of Rawsonville Road between Bemis Road and Willis Road. This facility is owned by Wolverine Power Supply Cooperative, Inc. (Wolverine) located in Cadillac, Michigan. The nearest residential property is approximately 0.5 miles west southwest of the facility.

Currently the facility has five full time employees. Hours of operation are based on market demand, and employees are "on call".

The site is a Title V major source permitted to emit over 100 tons per year of carbon monoxide (CO) and nitrogen oxides (NOx). The source is a synthetic minor in regards to Prevention of Significant Deterioration (PSD) requirements, as the facility accepted legally enforceable conditions to limit CO and NOx emissions to less than 250 tons per year. Each turbine is subject to New Source Performance Standard (NSPS) Subpart GG, Federal Acid Rain, and sulfur dioxide (SO₂), annual NOx, and Ozone NOx Budget Clean Air Interstate Rule (CAIR) requirements. All equipment was installed in 2002. The site was formerly owned by First Energy Corporation but was purchased by Wolverine on March 31, 2010.

PROCESS OVERVIEW

The facility's primary emissions sources are four 83 MW (nominal) electrical output General Electric PG7121 simple cycle combustion turbines fueled by pipeline quality natural gas. Each turbine is equipped with dry low oxides of nitrogen control burners; none of the combustion turbines are equipped with add-on pollution control devices. Turbine exhaust gases are emitted to the ambient air through stacks dedicated for each turbine; nitrogen oxides emissions concentrations are measured through continuous emissions monitoring systems (CEMS) on each stack.

The facility also operates two 3.7 million British thermal unit per hour (MMBtu/hr) natural gas fired dew point heaters (moisture removal), a 1.48 MMBtu/hr diesel fired fire water pump engine, small welding area, and a machining area (drill press, sanders, grinders, saws, etc.).

COMPLAINT/COMPLIANCE HISTORY

There are no complaints for this facility on file.

During recent inspections on July 29, 2014, December 1, 2015, and January 3, 2018, the facility was determined to be in compliance with applicable permit conditions and regulations.

OUTSTANDING CONSENT ORDERS

None

OUTSTANDING VNs

None

INSPECTION NARRATIVE

On June 18, 2020, the Michigan Department of Environment, Great Lakes, and Energy (EGLE) Air Quality Division (AQD) inspectors, Mr. Todd Zynda and Mr. Sam Liveson, conducted an inspection of Sumpster. This inspection was also conducted during the carbon dioxide (CO) stack test and oxides of nitrogen (NOx) relative accuracy test audit (RATA). During the inspection, Mr. Ken Sowards, Chief Operator, Mr. Michael Wood, Generation Manager, provided information and a tour of facility operations relating to air quality permits and regulations. The inspection was conducted to determine the facility's compliance with the Clean Air Act (CAA), Natural Resources and Environmental Protection Act (NREPA), Act 451, Part 55 and MI-ROP-M4854-2014c.

At approximately 9:10 AM, AQD staff, Mr. Zynda and Mr. Liveson, arrived onsite and were greeted by Mr. Sowards and Mr. Wood. During the opening meeting, the facility operations and permit requirements were discussed. At this time, the facility provided records required per MI-ROP-M4854-2014c. A brief discussion was held regarding the facility's ROP renewal. Following review of records, a tour of the facility was provided.

The tour began with observation of the control room. During this time, Mr. Sowards provided a demonstration of the control room CEMS interface. During the inspection, Units 1, 2, and 4 were in operation at approximately 62 megawatts (MW) electrical output per each unit. Unit 3 was also in operation at approximately 73 MW and was the unit being stack tested for CO a NOx RATA. The CEMS interface printout is attached to report.

Following observation of the control room the small maintenance building was observed. The maintenance building houses a small welding area and machining area (drill press, sawing, cutting, etc.). The small welding area and machining area is used on an as needed basis for necessary repairs. Emissions from the welding area are controlled by Trion Air Boss and are released to the general in-plant environment. Sawing, cutting, drilling, grinding, sanding emissions are released to the general in-plant environment.

Following observation of the maintenance building, Mr. Sowards provided a tour of Unit 4 (observation of the turbine and associated equipment).

Following observation of Unit 4, the Unit 3 CEMS trailer was observed. At that time, the analyzers indicated the following.

O2: 14.9 %
NOx HI – 9.939 ppm
NOx LO – 9.854 ppm
Gas – 8,598 hundred standard cubic feet per hour (HSCFH)
Load – 73.05 MW

Following observation of Unit 3 CEMS trailer, the two dew point heaters were observed. According to Mr. Sowards, both heaters operate to remove moisture from the pipeline natural gas prior to combustion in the one of the four turbines. During the inspection, both dew point heaters were in operation.

The tour concluded with observation of diesel fired fire pump engine. The engine is equipped with an hour meter and read 170 hours. The diesel fire pump is the back up to the electric fire pump that is also located in the same building.

Following a tour of the facility, the stack test trailer was visited. For the Run 1 of the CO test the following preliminary results were recorded.

CO – 2.44 ppm
O2 – 14.98 %
CO – 0.005 lb/MMBtu

APPLICABLE RULES/PERMIT CONDITIONS

The ROP was renewed with an effective date of March 7, 2014. The ROP was revised on June 16, 2016, May 25, 2017, and March 12, 2018. The ROP expiration date was March 7, 2019 with an application due date of September 7, 2018. The ROP renewal application was received on August 10, 2018. The ROP application shield was issued on August 10, 2018. The administratively complete letter was sent on August 23, 2018. The Special Conditions (SC) are listed as appropriate. For brevity, permit conditions and the language of federal and state rules have been paraphrased.

EU-FWP

1.48 MMBtu/hr heat input diesel fired compression ignition (CI) reciprocating internal combustion engine (RICE) for an emergency fire water pump.

S.C II. 1 and 2, and SC VI. 3. **COMPLIANCE.** Shall only burn diesel fuel and sulfur content shall not exceed 0.05% by weight. Fuel shipment data for latest shipment received on August 3, 2018 from Crystal Flash. Analytical analysis of the diesel fuel (Paragon Laboratories) indicate a sulfur content of 10.5 ppm or 0.00105%.

SC III.1, 3, and 5, SC VI. 7, and SC IX. 1. **COMPLIANCE.** Shall comply with 40 CFR Part 63, Subpart ZZZZ emission limitations and operating limitations. Shall operate and maintain CI RICE in a manner with safety and good air pollution control. Shall operate and maintain according to manufacturer's instructions. Based on records provided, Sumpter appears operate EU-FWP in compliance with Subpart ZZZZ requirements.

S.C III. 2, 7, and 8, and SC VI. 1, 2, and 8. **COMPLIANCE.** Shall not operate EU-FWP more than 500 hours per 12-month rolling time period as determined at the end of each calendar month. Maintenance and readiness checks shall not exceed 100 hours per year. Non-emergency operation shall not exceed 50 hours per year. Records shall indicate what time of operation were conducted (emergency, non-emergency). Records are maintained and were provided. The highest 12-month rolling hours since January 2019 was 15.7 hours (March 2020).

SC III. 4. **COMPLIANCE.** Shall change oil every 500 hours, inspect air cleaner every 1000 hours, and inspect hoses and belts every 500 hours. The facility maintains records indicating the above requirements were met on November 20, 2019. Records also indicate time and hours between next oil change and testing. Records indicate the above requirements are conducted annually.

SC III. 6, SC V.1, and SC IX. 2. **NOT APPLICABLE.** Facility may use an oil analysis program to extend oil change requirements. The facility does implement this program.

SC III. 9. **COMPLIANCE.** Must minimize the engine's time spent at idle during start up, not to exceed 30 minutes. Records indicate that this condition is met.

SC IV. 1. **COMPLIANCE.** A non-resettable hour meter shall be installed. During the inspection EU-FWP was equipped with a non-resettable hour meter that read 170 hours.

SC IV. 4 and 6. **UNKNOWN.** Shall maintain records of malfunction and actions taken to minimize emissions during malfunction. The facility does not report any malfunctions. The function of the engine is for emergency use and maintenance checks are conducted for less than 24 hours per year. Therefore, the engine has not had much of an opportunity to malfunction.

SC VI. 5. **NOT APPLICABLE.** Shall maintain records of maintenance performed on air pollution control equipment. The fire pump is not equipped with emission control.

FG-TURBINES

Four simple cycle combustion turbines each with a nominal 83 MW electrical output, each fueled by pipeline quality natural gas, and each equipped with dry low oxides of nitrogen control burners.

SC I. 1, SC VI. 9, Appendix 1. **COMPLIANCE.** CO emissions shall not exceed 63.8 pound per hour (individually for each unit during startup and shutdown). Shall keep records of the number of startup and shutdown events for each emission unit and calculate emissions as specified in Appendix 1. The facility calculates CO emissions startup and shutdown per Appendix 3. Records of the hours of startup and shutdown for each unit are maintained. CO emissions during startup and shutdown are calculated using the hours of startup/shutdown and the emission limit of 63.8 pound per hour.

SC I. 2 and SC V.1. **COMPLIANCE.** CO emissions shall not exceed 0.057 lb/MMBtu on an hourly basis (individually for each unit). Testing to be conducted annually. The turbine tested shall be rotated so that no turbine is tested twice before another turbine is tested once. On June 26, 2019, the facility tested Unit 2. The CO test report indicates an average CO emission rate of 0.005 lb/MMBtu demonstrating compliance with the CO emission limit.

SC I. 3 and SC VI. 8. **COMPLIANCE.** CO emissions shall not exceed 246.1 tons per year on a 12-month rolling basis (applies collectively to all emission units). Records to be maintained. Calculation shall be performed as specified in Appendix 3. The highest reported 12 month rolling CO emissions from January 2019 through May 2020 occurred at the end of March 2019 at 61.5 tons per year.

SC I. 4. **COMPLIANCE.** NOx limit of 75 parts per million by volume (ppmv) on a 4-hour rolling average, dry basis and 15% oxygen which does not apply to periods of startup and shut down. Initial performance testing required by 40 CFR 60.8 and 40 CFR 60.335 was conducted in 2002 and indicated a NOx emission limit under this standard; highest value was 7.5 ppmv. See facility file for test results. Facility has the "exceedance alarm" set at 9 ppm on a one minute average. The facility provided hourly NOx emission data for Units 1 through 4 for May 13, 2020 through June 16, 2020. The maximum reported emissions occurred on June 15, 2020 at Unit 3 with 33.7 ppm.

Based on the Part 75 schedule (which the facility has been authorized to apply to all CEMS), if a unit operates less than 168 unit operating hours per calendar quarter, a RATA does not have to be performed. However, eight quarters cannot be exceeded between tests as specified in Part 75 Appendix B Section 2.3.1.1(a) – Standard RATA frequencies. The most recent RATA for all four Units was conducted during the week of June 24, 2019.

SC I. 5 and SC VI.7. **COMPLIANCE.** NOx emissions not to exceed 244.4 tons on a 12-month rolling average as determined at the end of each calendar month. According to 12-month rolling NOx emission records for January 2019 through May 2020 the highest NOx 12-month rolling emissions occurred during August 2019 at 71.3 tons.

SC II. 1, 2, and 3, SC VI. 2. **COMPLIANCE.** Shall only burn pipeline quality natural gas in FG-TURBINES with a sulfur content limit of 20 grains sulfur per 100 standard cubic foot (gr/100 scf). Natural gas usage not to exceed 8,449 MMCF on a 12-month rolling time period basis. Shall install, calibrate, maintain, and operate in a satisfactory manner a device to monitor fuel usage and operating load for each turbine on a continuous basis. Monthly and 12-month rolling fuel usage records shall be maintained. The facility monitors fuel usage and operating load in a satisfactory manner.

According to the natural gas analysis conducted by DTE Energy and reported to Sumpter on a monthly basis, from January 2018 through May 2020, the highest total sulfur content in gr/100 scf reported was 0.224 (January 2018, February 2018, and December 2018). The definition of natural gas in 40 CFR Part 60, Subpart GG is 20 grains or less of sulfur per 100 standard cubic feet. Natural gas must also have a gross calorific value of between 950 and 1100 BTU's. The BTU value is within this range as shown in the DTE Energy gas analysis report. The facility provided 12-month rolling natural gas usage for January 2019 through May 2020. The highest 12-month rolling value was 4,702 MMCF (March 2019).

SC III. 1 and 2, and SC VI. 11. **COMPLIANCE.** Shall not operate turbines unless AQD has approved a plan that describes how emissions will be minimized during startup, shutdown, and malfunctions. The updated plan was provided to the AQD on December 4, 2015 (last updated July 2015). The plan is acceptable to the AQD.

SC VI. 1. **COMPLIANCE.** Shall keep all required calculations in an acceptable format. The facility meets this requirement.

SC VI. 3. **COMPLIANCE.** Shall install, calibrate, and maintain device to monitor and record NOx concentrations and emissions on a continuous basis and according to procedures outlined in Appendix 2 and 40 CFR Part 75. A CEMS is installed for each turbine and all passed the most recent RATA in June 2017. CEMS maintenance records were provided during the inspection. Appendix 2 conditions are evaluated below.

SC VI. 4. **COMPLIANCE.** For each emission unit of FG-TURBINES, the permittee shall monitor and record the nitrogen oxides concentrations, carbon dioxide or oxygen concentrations, and exhaust gas flow on a continuous basis according to the monitoring requirements of 40 CFR Part 75. The facility records the above items on a continuous basis as required. The facility provided hourly CEMS data for Units 1 through 4 for May 13, 2020 through June 16, 2020.

SC VI. 5 and 6. **COMPLIANCE.** Shall monitor and keep record of sulfur content in fuel in accordance with 40 CFR 60.334(h). Since the fuel meets the definition of natural gas in 60.331(u), then 60.334(h)(3)(l) applies which requires a record of the gas quality characteristics in current, valid purchase contract, tariff sheet, or transportation contract. DTE Energy provides gas analysis parameters to Sumpter on a monthly basis.

SC VI. 10. **COMPLIANCE.** Shall maintain documentation acceptable to AQD confirming the installation of dry low NOx natural gas burners. Documentation submitted during original permit application (247-00) and there is no evidence that indicates low NOx burners are not present. Additionally, during the inspection, the facility provided the operations manual that indicate dry low NOx natural gas burners.

SC VII. 4 and 5. Appendix 3.4 and 3.5 (MI-ROP-M4854-2014b). **COMPLIANCE.** These conditions detail the quality assurance/quality control (QA/QC) Procedures for NOx and O₂ CEMS. The facility is following the schedule in Part 75 for NOx audits. Part 75 allows audits to be suspended if a unit has operated less than 168 hours in a calendar quarter (Figure 2 of Appendix B of Part 75, Footnote W). The most recent RATA was performed on Units 1 through Unit 4 in June 2017. The facility has submitted quarterly excess emission reports for the first three quarters of 2017. Data assessment reports in accordance with Figure 1, Appendix F of 40 CFR Part 60 are also submitted (see facility file).

SC VIII. 1, 2, 3, and 4. **COMPLIANCE.** Stack dimensions 60 feet above ground level minimum and maximum cross section discharge area 180 square feet. Stacks appeared to be in compliance upon visible observation.

SC IX. 1. **COMPLIANCE.** Shall comply with all provisions of NSPS Subpart A and GG. See discussion below.

SC IX. 2. **COMPLIANCE.** Shall comply with all applicable requirements of the federal Acid Rain Program. See discussion below.

SC IX. 3. **COMPLIANCE.** Shall comply with acid rain permitting provisions of 40 CFR 72.1 to 72.94 as outlined in Phase II Acid Rain Permit MI-AR-7972-2014. See discussion for Appendix 9.

SC IX. 4. **COMPLIANCE.** The permittee shall not allow the emission of an air pollutant to exceed the amount of any emission allowances that an affected source lawfully holds as of the allowance transfer deadline pursuant to Rule 299(d) and 40 CFR Part 72.9(c)(1)(i). See discussion for Appendix 9.

SC IX. 5, 6, 7, 8, 9 and 10 - **COMPLIANCE.** For each emission unit of FG-TURBINES, the permittee shall comply with CAIR SO₂, CAIR NO_x annual trading, and CAIR Ozone NO_x trading and hold allowances for compliance deductions for each of these in an amount not less than the total emissions for the control period. EPA Clean Air Markets Division information indicates compliance with these programs. See discussion for Appendix 9, 10, 11.

Appendix 2.1 and 2.2 (PTI 159-16A). **COMPLIANCE.** Shall maintain a copy of Monitoring Plan onsite. The monitoring plan is maintained onsite and a copy was provided during the inspection. Span value shall be 2.0 times the lowest emission standard or as specified in federal regulations. During the inspection, the facility demonstrated that the span value meets this requirement.

Appendix 9 Phase II Acid Rain (ORIS Code 7972), Appendix 10 CAIR SO₂ Budget Permit, Appendix 11 CAIR Annual NO_x Budget Permit, Appendix 12 CAIR Ozone NO_x Budget Permit

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 above programs in 2019 for the facility. The CAIR program ended in 2014.

FGFACILITY (PTI 159-16A)

SC I. 1 and 2, SC VI. 2. **COMPLIANCE.** CO emissions shall be less than 249 tons per year. NO_x emissions shall be less than 249 tons per year. The facility provided 12-month rolling CO emissions for June 2019 through May 2020. The highest 12-monthly rolling CO emissions occurred during March 2019 at 61.6 tons. The facility provided 12-month rolling NO_x emissions for January 2019 through May 2020. The highest 12-monthly rolling NO_x emissions occurred during March 2019 at 85.4 tons.

SC II. 1 and SC VI 3. **COMPLIANCE.** Natural gas usage for the facility preheaters shall not exceed 60.12 MMCF on a 12-month rolling basis. The facility provided natural gas usage records for September through December 2017. The highest 12-month rolling natural gas usage occurred during February and March 2019 at 4.1 MMCF.

SC VI. 1. **COMPLIANCE.** Shall keep all required calculations in an acceptable format. The facility meets this requirement.

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

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) – NOT APPLICABLE

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.

PERMIT TO INSTALL EXEMPT EQUIPMENT

Machining area

The machining equipment (saws, drill presses, grinders, sanders, etc.) appear to be exempt from PTI requirements under the following rule.

R336.1285(2)(l)(vi)(B): "Equipment for carving, cutting, routing, turning, drilling, machining, etc. which has emissions that are released only into the general in-plant environment."

Welding area

The welding area appears to be exempt from PTI requirements under the following rule.

R336.1285(2)(i): "The requirement to obtain a PTI does not apply to brazing, soldering, welding, or plasma coating equipment."

Dew Point Heaters

The two 3.7 million British thermal unit per hour (MMBtu/hr) natural gas fired dew point heaters (moisture removal) appear to be exempt from PTI requirements under the following rule.

R336.1282(2)(b)(i): "The requirement to obtain a PTI does not apply to fuel burning equipment which is used for ...processing... and burns natural gas... 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) as defined in §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.

APPLICABLE FUGITIVE DUST CONTROL PLAN CONDITIONS

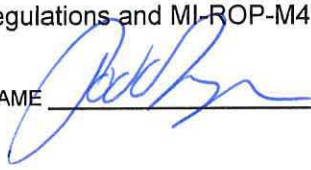
Not applicable.

MAERS REPORT REVIEW

MAERS submittal for 2019 was submitted on time and was complete.

FINAL COMPLIANCE DETERMINATION

At the time of the inspection, this facility appears to be in compliance with applicable state and federal regulations and MI-ROP-M4854-2014c.

NAME 

DATE 8/26/20

SUPERVISOR JK