

M4854

MANILA FILE

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

M485442945

<b>FACILITY:</b> Sumpter Generating Plant		<b>SRN / ID:</b> M4854
<b>LOCATION:</b> 8509 RAWSONVILLE RD, BELLEVILLE		<b>DISTRICT:</b> Detroit
<b>CITY:</b> BELLEVILLE		<b>COUNTY:</b> WAYNE
<b>CONTACT:</b> Michael "Mick" Raschke , Chief Operator		<b>ACTIVITY DATE:</b> 01/03/2018
<b>STAFF:</b> Todd Zynda	<b>COMPLIANCE STATUS:</b> Compliance	<b>SOURCE CLASS:</b> MAJOR
<b>SUBJECT:</b> Scheduled Inspection		
<b>RESOLVED COMPLAINTS:</b>		

**REASON FOR INSPECTION:** Scheduled Inspection

**INSPECTED BY:** Todd Zynda, AQD

**PERSONNEL PRESENT:** Ryan Robertson, Operator; Ken Sowards, CT Operator; Mick Raschke, Chief Operator

**FACILITY PHONE NUMBER:** 231-775-5700

**FACILITY FAX NUMBER:** 734-461-9288

**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 (SO<sub>2</sub>), 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, and small welding area.

### **COMPLAINT/COMPLIANCE HISTORY**

There are no complaints for this facility on file.

During recent inspections on August 25, 2010, August 29, 2012, July 29, 2014, and December 1, 2015 the facility was determined to be in compliance with applicable permit conditions and regulations.

### **OUTSTANDING CONSENT ORDERS**

None

## OUTSTANDING VNs

None

## INSPECTION NARRATIVE

On January 3, 2018 the Michigan Department of Environmental Quality (MDEQ) Air Quality Division (AQD) inspector, Mr. Todd Zynda, conducted an inspection of Sumpter. During the inspection, Mr. Ken Sowards, CT Operator, Mr. Ryan Robertson, Sumpter Operator, and Mr. Mick Raschke, Chief Operator, 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-M4854-2014b and Permit to Install (PTI) 159-16A.

At approximately 11:00 AM, AQD staff, Mr. Todd Zynda, arrived onsite and was greeted by Mr. Robertson and Mr. Sowards. During the opening meeting the facility operations and permit requirements were discussed. At this time, the facility provided records required per MI-ROP-M4854-2014b and PTI 159-16A. Following review of records, a tour of the facility was provided.

The tour began with observation of the control room. During this time, Mr. Robertson provided a demonstration of the control room CEMS interface. During the inspection the Units 1, 3, and 4 were in operation at approximately 55 megawatts (MW) electrical output per each unit. Unit 2 was down due a breaker failure that occurred on December 28, 2017.

Following observation of the control room the small maintenance building was observed. The maintenance building houses a diesel fired fire water pump engine and small welding area. The fire pump engine was equipped with an hour meter and read 136.3 hours. The small welding 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.

Following observation of the maintenance building, 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 the turbines and CEMS trailers. Analyzers in each CEMS trailer indicated the following.

Unit 1 – NOx:10.32 ppm, O2:15.1%  
Unit 3 – NOx: 13.36 ppm, O2: 15.0%  
Unit 4 – NOx:12.04 ppm, O2: 14.7%

## APPLICABLE RULES/PERMIT CONDITIONS

The ROP was renewed with an effective date of March 7, 2014. The ROP was revised on June 16, 2016 and May 25, 2017. The ROP expiration date is March 7, 2019 with an application due date of September 7, 2018. PTI 159-16A was issued on September 7, 2017. 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 (MI-ROP-M4854-2014b)

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 October 14, 2015 from Crystal Flash. Purchase records indicate fuel is ultra-low sulfur #2 dyed with sulfur content of 15 parts per million (0.0015%).

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 2015 was 23.7 hours (December 2017).

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 28, 2017. 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 136.3 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 (PTI 159-16A)

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 1. 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 9, 2017 the facility tested Unit 3 (test report received July 24, 2017). The CO test report indicates an average CO emission rate of 0.0089 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 1. The highest reported 12 month rolling CO emissions occurred at the end of November 2017 at 29.2 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. On January 3, 2018 the facility provided hourly NOx emission data for Units 1

through 4 for December 2017. The maximum reported emissions for December 2017 occurred on December 28, 2017 at Unit 1 with 38.6 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 5, 2017.

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 2016 through November 2017, the highest NOx 12-month rolling emissions occurred during September 2016 at 75.3 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 2017 through December 2017, the highest total sulfur content in gr/100 scf reported was 0.17 (June 2017). 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 2016 through November 2017. The highest 12-month rolling value was 4,468 MMCF (August 2016).

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. 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. On January 3, 2018 the facility provided hourly CEMS data for Units 1 through 4 for December 2017.

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. The cover page of that document was included during the previous inspection.

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 O<sub>2</sub> 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 (MI-ROP-M4854-2014b). **COMPLIANCE.** Shall comply with all applicable requirements of the federal Acid Rain Program. See discussion below.

SC IX. 3 (MI-ROP-M4854-2014b). **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 (MI-ROP-M4854-2014b). **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 (MI-ROP-M4854-2014b) - **COMPLIANCE.** For each emission unit of FG-TURBINES, the permittee shall comply with CAIR SO<sub>2</sub>, CAIR NO<sub>x</sub> annual trading, and CAIR Ozone NO<sub>x</sub> 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 SO<sub>2</sub> Budget Permit, Appendix 11 CAIR Annual NO<sub>x</sub> Budget Permit, Appendix 12 CAIR Ozone NO<sub>x</sub> 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 2016 for the facility.

#### FGFACILITY (PTI 159-16A)

SC I. 1 and 2, SC VI. 2. **COMPLIANCE.** CO emissions shall be less than 249 tons per year. NO<sub>x</sub> emissions shall be less than 249 tons per year. The facility provided 12-month rolling CO emissions for March through December 2017. The highest 12-monthly rolling CO emissions occurred during December 2017 at 31.1 tons.

The facility provided 12-month rolling NO<sub>x</sub> emissions for September through December 2017. The highest 12-monthly rolling NO<sub>x</sub> emissions occurred during October 2017 at 39.7 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 October 2017 at 2.16 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 SO<sub>2</sub> 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

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 JJJJJJ 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 2016 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-M4854-2014b and PTI 159-16A.

NAME  DATE 1/30/18 SUPERVISOR JK