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

M485432341

FACILITY: Sumpter Generating Plant		SRN / ID: M4854
LOCATION: 8509 RAWSONVILLE RD, BELLEVILLE		DISTRICT: Detroit
CITY: BELLEVILLE		COUNTY: WAYNE
CONTACT: Brian Warner , V. P. of Environmental Strategy		ACTIVITY DATE: 12/01/2015
STAFF: Todd Zynda	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Scheduled Inspection and RATA Observation		
RESOLVED COMPLAINTS:		

REASON FOR INSPECTION: Scheduled Inspection

INSPECTED BY: Todd Zynda, AQD

PERSONNEL PRESENT: Laura Hoisington, Environmental Services Specialist; Ryan Robertson, Operator; Stephanie Jarrett, FTC&H; Nathan Vineyard, Grace Consulting Inc.

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 to 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 and carbon monoxide 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, and July 29, 2014, the facility was determined to be in compliance with applicable permit conditions and regulations.

### OUTSTANDING CONSENT ORDERS

None

**OUTSTANDING VNs**

None

**INSPECTION NARRATIVE**

On December 1, 2015 the Michigan Department of Environmental Quality (MDEQ) Air Quality Division (AQD) inspector, Mr. Todd Zynda, conducted an inspection of Sumpter. During the inspection, Ms. Laura Hoisington, Wolverine Power Environmental Services Specialist, Mr. Ryan Robertson, Sumpter Operator, and Ms. Stephanie Jarrett, FTCH (consultant), 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 Natural Resources and Environmental Protection Act (NREPA), Act 451, Part 55 and MI-ROP-M4854-2014. The inspection was conducted during the same day as the Unit 4 relative accuracy testing audit (RATA).

At 12:00 PM, AQD staff, Mr. Todd Zynda, arrived onsite and was greeted by Ms. Hoisington and Ms. Jarrett. During the opening meeting the facility operations and permit requirements were discussed. At this time, the facility provided records required per MI-ROP-M4854-2014. 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 RATA Unit 4 was operating at 81 megawatts (MW) electrical output.

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 96.2 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. Robertson, both heaters operate to remove moisture from the pipeline natural gas prior to combustion in the one of the four turbines. During the inspection, one dew point heater was in operation.

The tour concluded with observation of the turbines and RATA. Mr. Robertson provided a tour of the Unit 3, which was not in operation. Unit 4 was observed in operation and a RATA was being performed. The CEMS trailer for Unit 4 was observed. Analyzers in the trailer indicated oxygen at 14.8% and nitrogen oxide (NOx) at 8.77 parts per million (ppm).

At this time, the AQD observed the Grace Consulting trailer and obtained information regarding the RATA. According to Mr. Nathan Vineyard, the following quality assurance was passed for the RATA: calibration error, drift standard, and biased test. Mr. Vineyard stated that stratification was conducted during the 1<sup>st</sup> run of the RATA which began at 9:30 AM. Stratification included the use of 4 ports (there are 7 in total) with 3 points per port. According to Mr. Vineyard, the relative accuracy for the first eight runs was less than 7.5%. While in the test trailer, AQD noted the following test times and results.

Start Time	Stop Time	Run	RM	CEMS
9:30	10:07	1	9.258	9.5
10:15	10:35	2	8.739	9.3
10:45	11:05	3	8.716	9.2
11:15	11:35	4	8.716	9.1
11:43	12:03	5	8.797	9.1

**APPLICABLE RULES/PERMIT CONDITIONS**

The ROP was renewed with an effective date of March 7, 2014. The ROP expiration date is March 7, 2019 with an application due date of September 7, 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 October 15, 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 2014 was 18.1 hours.

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 18, 2015. 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 96.2 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 20 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 V. 1 and 2, and SC VI.7. **COMPLIANCE.** CO emissions shall not exceed 63.8 pound per hour (individually for each unit). The most recent CO test was conducted on July 28, 2015 on Unit 2. At that time, the average measured emissions were 2.53 pounds per hour. The facility also calculates CO pounds per hour as required under SC VI.7. This calculation is done for each individual turbine. The highest reported hourly rate (based upon natural gas usage per calendar month prorated to an hourly rate) occurred at Unit 1 during February 2015 at 11.4 pounds per hour.

SC I. 2. **COMPLIANCE.** NOx limit of 75 parts per million by volume (ppmv), 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 December 10, 2015 the facility submitted hourly NOx emission data for Units 1 through 4. The maximum reported emissions occurred on December 2, 2015 at Unit 3 with 24.3 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 previous RATA was performed on July 29, 2014 and a RATA was in the process of being performed during the inspection on December 1, 2015.

SC I. 3 and SC VI.6. **COMPLIANCE.** NO<sub>x</sub> emissions not to exceed 219 tons on a 12-month rolling average as determined at the end of each calendar month. According to 12-month rolling NO<sub>x</sub> emission records for January 2014 through October 2015, the highest NO<sub>x</sub> 12-month rolling emissions occurred during October 2015 at 40.3 tons.

SC II. 1 and 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). According to the natural gas analysis conducted by DTE Energy and reported to Sumpter on a monthly basis, from January 2014 through October 2015, the highest total sulfur content in gr/100 scf reported was 0.236. 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.

SC III. 1 and SC VI. 9. **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 III.2. **COMPLIANCE.** Shall not operate FG-TURBINES for more than a collective 6,865 hours per 12-month rolling time period. According to 12-month rolling hours records for January 2014 through October 2015, the highest 12-month rolling hours occurred during October 2015 at 2,776.3 hours.

SC VI. 1. **COMPLIANCE.** Shall install, calibrate, maintain and operate in a satisfactory manner a device to monitor fuel usage for each turbine on a continuous basis. Monthly and 12-month rolling fuel usage records shall be maintained. Fuel usage records were submitted for January 2014 through October 2015. The highest 12-month rolling fuel usage occurred during October 2015 at 2,363,741,000 cubic feet.

SC VI. 2. **COMPLIANCE.** Shall install, calibrate, and maintain device to monitor and record NO<sub>x</sub> concentrations and emissions on a continuous basis and according to procedures outlined in Appendix 3 and 40 CFR Part 75. A CEMS is installed for each turbine and all passed most recent RATA in 2014. CEMS maintenance records were provided during the inspection. Appendix 3 conditions are evaluated below.

SC VI. 3. **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 December 10, 2015 the facility submitted hourly CEMS data for November 1, 2015 through December 10, 2015.

SC VI. 4 and 5. **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)(I) 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. 8. **COMPLIANCE.** Shall maintain documentation acceptable to AQD confirming the installation of dry low NO<sub>x</sub> natural gas burners. Documentation submitted during original permit application (247-00) and there is no evidence that indicates low NO<sub>x</sub> burners are not present. Additionally, during the inspection, the facility provided the operations manual that indicate dry low NO<sub>x</sub> natural gas burners. The cover page of that document was included in the facility submittal.

SC VI. 10. **COMPLIANCE.** Shall keep monthly log of the hours of operation of each turbine in FG-TURBINES. The facility maintains hours of operation for each unit as required.

SC VII. 4 and 5. Appendix 3.4 and 3.5. **COMPLIANCE.**

These conditions detail the quality assurance/quality control (QA/QC) Procedures for NO<sub>x</sub> 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 Unit 4, during the time of inspection on December 1, 2015. The facility has submitted quarterly excess emission reports for the first three quarters of 2015. Data assessment reports in accordance with Figure 1, Appendix F of 40 CFR Part 60 are also submitted. For Unit 1, one hour of CEMs down time was reported for the second quarter of 2015. For Unit 2, one hour of CEMs down time was reported for the first and second quarter of 2015. For Unit 3, three hours of downtime was reported for the second quarter of 2015. For Unit 4, one hour of downtime was reported for the second quarter, and four hours of downtime for the first quarter. Excess emissions were not reported during the first three quarters of 2015.

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 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 3.1 and 3.2. **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. A copy of the gas certificates report was provided.

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 2014 for the facility.

#### 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 conducting 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 NO<sub>x</sub> 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 NO<sub>x</sub> 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 NO<sub>x</sub> and CO. However, the emissions units do not have an add on control device for CO emissions. Low NO<sub>x</sub> 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(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(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 2014 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-M4854-2014.

NAME 

DATE 12/15/15 SUPERVISOR 