

CO COMPLIANCE  
TEST REPORT  
FOR  
WOLVERINE POWER COOPERATIVE  
SUMPTER GENERATING STATION  
EU-UNIT 1  
BELLEVILLE, MI  
July 29, 2014

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Job # 14-291

Test Report Date: 08-18-14



August 18, 2014

I, Josh Nichols, hereby certify that the data obtained for Wolverine Power Cooperative at the Sumpter Generating Station, EU-Unit 1 in Belleville, Michigan is in accordance with procedures set forth by the USEPA. This report accurately represents the data obtained from the testing procedures and analysis of this data.

A handwritten signature in black ink that reads 'Josh Nichols/rs'.

Josh Nichols, QSTI  
Crew Chief

I, Carl Vineyard, hereby certify that I have reviewed this report and to the best of my knowledge, the data presented herein is complete and accurate.

A handwritten signature in black ink that reads 'Carl Vineyard'.

Carl Vineyard, P.E., QSTI  
Test Engineer

Grace Consulting, Inc.  
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## INTRODUCTION

This report presents the results of the Emissions tests performed for Wolverine Power Cooperative at the Sumpter Generating Station on EU-Unit 1.

The purpose of the tests was to determine the Emissions of the unit for compliance. The results can be found in the Summary of Test Results section of this report.

The testing was performed by Grace Consulting, Inc., 440-647-6672, located at 510 Dickson Street, Wellington, OH 44090. Present during the testing were Josh Nichols and Dustin Griggs from Grace Consulting, Inc. Stephanie Jarrett with FTC&H was present during testing. Also present to observe the testing was Mark Dziadosz with the Michigan Department of Environmental Quality.

The tests were performed on July 29, 2014. The testing was completed in accordance with USEPA test methods as published in the July 1, 2014 Federal Register, - "Standards of Performance for New Stationary Sources" and subsequent revisions.

The sampling and analytical procedures can be found in the Sampling and Analytical Procedures section of this report. The raw field data and the equations used to determine the final results are presented in the Appendix section.

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## SUMMARY OF TEST RESULTS

The following presents the results of the Compliance tests performed for Wolverine Power Cooperative at the Sumpter Generating Station on EU-Unit 1.

### GASEOUS EMISSIONS METHOD 10

<u>Run</u>	<u>CO ppm</u>	<u>CO lb/mmBtu</u>	<u>CO lb/hr</u>	<u>CO lb/MMcf fuel</u>	<u>O2 %</u>
1	7.60	0.017	15.67	14.17	15.10
2	8.10	0.018	16.69	15.09	15.10
3	7.10	0.016	14.68	13.33	15.10
<b>Avg.</b>	<b>7.60</b>	<b>0.017</b>	<b>15.68</b>	<b>14.20</b>	<b>15.10</b>
4	6.90	0.016	14.21	12.85	15.10
5	7.80	0.018	16.37	14.82	15.20
6	4.90	0.011	10.11	9.15	15.10
<b>Avg.</b>	<b>6.53</b>	<b>0.015</b>	<b>13.56</b>	<b>12.27</b>	<b>15.13</b>
7	4.60	0.010	9.48	8.57	15.10
8	4.20	0.010	8.66	7.83	15.10
9	3.90	0.009	8.08	7.34	15.10
<b>Avg.</b>	<b>4.23</b>	<b>0.010</b>	<b>8.74</b>	<b>7.91</b>	<b>15.10</b>
<b>Average</b>	<b>6.12</b>	<b>0.014</b>	<b>12.66</b>	<b>11.46</b>	<b>15.11</b>

### STRATIFICATION

<u>Date</u>	<u>Monitor</u>	<u>Point 1</u>	<u>Point 2</u>	<u>Point 3</u>	<u>Average</u>	<u>Greatest Deviation</u>
07-29-14	CO	7.75	7.67	7.66	7.70	0.75%
07-29-14	O <sub>2</sub>	14.98	14.98	14.97	14.98	0.05%

Permit number: MI-ROP-M4854-2014

SRN: M4854

Based on the results of the testing, the emissions limit of 63.8 lb/hr was met.

The complete results can be found on the computer printouts following.

Grace Consulting, Inc.

Sampling System Bias Check and Measured Value Correction

Wolverine Power  
Sumpter - Unit 1

Date: 7/29/2014  
Pollutant: O2  
Monitor Span: 22.07

Run Number	Average Measured Percent	Initial Zero Gas Bias	Final Zero Gas Bias	Zero Gas Drift	Initial Upscale Gas Bias	Final Upscale Gas Bias	Upscale Gas Drift	Calibration Gas	Corrected Percent, Dry Basis
1	14.98	0.10	0.11	0.05	11.13	11.08	-0.23	11.15	15.10
2	14.96	0.11	0.09	-0.09	11.08	11.08	0.00	11.15	15.10
3	14.96	0.09	0.07	-0.09	11.08	11.12	0.18	11.15	15.10
4	14.98	0.07	0.07	0.00	11.12	11.06	-0.27	11.15	15.10
5	14.95	0.07	-0.03	-0.45	11.06	10.95	-0.50	11.15	15.20
6	14.91	-0.03	-0.17	-0.63	10.95	11.00	0.23	11.15	15.10
7	14.88	-0.17	-0.17	0.00	11.00	10.95	-0.23	11.15	15.10
8	14.87	-0.17	-0.11	0.27	10.95	10.96	0.05	11.15	15.10
9	14.87	-0.11	-0.13	-0.09	10.96	10.97	0.05	11.15	15.10

$$C_{gas} = (C_{avg} - C_o) * C_{ma} / (C_m - C_o) \quad \text{Eq. 6C-1}$$

where:

- C<sub>gas</sub> = Effluent gas concentration, dry basis, percent
- C<sub>avg</sub> = Average gas concentration indicated by gas analyzer, dry basis, percent
- C<sub>o</sub> = Average of initial and final system calibration bias check responses for the zero gas, percent
- C<sub>m</sub> = Average of initial and final system calibration bias check responses for the upscale calibration gas, percent
- C<sub>ma</sub> = Actual concentration of the upscale calibration gas, percent

**DESCRIPTION OF FACILITY PRODUCTION OPERATIONS:**

Sumpter Generating Facility operates four nominal 83 MW electrical output General Electric PG7121 (EA) simple cycle combustion turbines, fueled by pipeline quality natural gas, equipped with dry low oxides of nitrogen control. The facility renewable operating permit number is MI-ROP-M4854-2014.

**POLLUTANTS MEASURED:**

O<sub>2</sub>, and CO (Method 3A, and 10)

**MONITORING DATA COLLECTED:**

The Sumpter Generating Facility operates a Data Acquisition and Handling System (DAHS), which monitored and recorded the following information during the Compliance testing:

Fuel Flow (HSCF)

Heat Input (mmBtu/hr)

## **Test Methods used at Wolverine Power Cooperative – Sumpter Generating Station, Unit 1**

### **Method 3A**

Testing for emissions of O<sub>2</sub> was performed in accordance with EPA Method 3A. The sampling train consisted of a stainless steel probe, a condenser with peristaltic pumps, Teflon sample lines, a manifold with flow controllers and control valves, a sample pump and Servomex O<sub>2</sub> analyzer. The O<sub>2</sub> analyzer was calibrated using USEPA Protocol one gases. The analyzer was connected to a STRATA data acquisition system, which recorded all calibrations, bias checks and test data in one-minute averages. A 0-22.07 percent scale for the O<sub>2</sub> analyzer was used for the O<sub>2</sub> testing.

### **Method 10**

Testing for emissions of CO was performed in accordance with EPA Method 10. The sampling train consisted of a stainless steel probe, a condenser with peristaltic pumps, Teflon sample lines, a manifold with flow controllers and control valves, a sample pump and Thermal Electron Model 48 Gas Filter Correlation CO analyzer. The CO analyzer was calibrated using USEPA Protocol one gases. The analyzer was connected to a STRATA data acquisition system, which recorded all calibrations, bias checks and test data in one-minute averages. A 0-25.44 ppm scale CO analyzer was used for the CO testing. Data was reported in CO lb/mmBtu, lb/hr and lb/MMCF.

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