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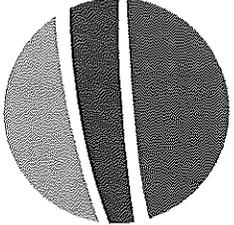
SEP 11 2017

AIR QUALITY DIVISION

**Mercury and Air Toxics  
Standards Particulate  
Matter and Hydrogen  
Chloride Emissions  
Test Report**

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We Energies  
Presque Isle Power Plant  
Flue 8 Stack  
Marquette, Michigan  
Project No. M173103A  
August 1, 2017

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**mostardi**  
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**Mercury and Air Toxics Standards Particulate Matter and  
Hydrogen Chloride Emissions Test Report**

**We Energies  
Presque Isle Power Plant  
Flue 8 Stack  
Marquette, Michigan  
August 1, 2017**

**Report Submittal Date  
August 30, 2017**

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**Project No. M173103A**

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## 1.0 EXECUTIVE SUMMARY

MOSTARDI PLATT conducted a Mercury and Air Toxics Standards (MATS) Filterable Particulate Matter and Hydrogen Chloride emissions test program for the We Energies at the Presque Isle Power Plant on the Flue 8 Stack in Marquette, Michigan on August 1, 2017. This report summarizes the results of the test program and test methods used.

The test location, test date, and test parameters are summarized below.

TEST INFORMATION		
Test Location	Test Date	Test Parameters
Flue 8 Stack	August 1, 2017	Filterable Particulate Matter (FPM) and Hydrogen Chloride (HCl)

The purpose of the test program was to document the FPM and HCl emissions to qualify for the LEE designation as required by 40 CFR Part 63, Subpart UUUUU. Selected results of the test program are summarized below. A complete summary of emission test results follows the narrative portion of this report.

TEST RESULTS			
Test Location	Test Parameter	Emission Limit	Emission Rate
Flue 8 Stack	FPM	≤0.030 lb/mmBtu	0.0021 lb/mmBtu
	HCl	≤0.002 lb/mmBtu	0.0005 lb/mmBtu

Emissions on lb/mmBtu basis were determined using a standard  $F_d$ -Factor of 9,820 dscf/mmBtu for sub-bituminous coal. Plant operating data as provided by We Energies is included in Appendix A. Run #1 was excluded from the run average due to expected contamination. The average emission rates are determined from Runs 2 through 4.

The Stationary Source Audit Sample Program audit sample was obtained from ERA and analyzed by Mostardi Platt. The results of the audit sample was compared to the assigned value by ERA and found to be acceptable. The audit sample result and evaluation are appended to this report.

The identifications of individuals associated with the test program are summarized below.

TEST PERSONNEL INFORMATION		
Location	Address	Contact
Test Coordinator	We Energies 333 West Everett Street Environmental Department A231 Milwaukee, Wisconsin 53203	Mr. Rob Bregger (414) 221-2772 (phone) rob.bregger@we-energies.com
Test Facility	We Energies Presque Isle Power Plant 2701 Lakeshore Boulevard, North Marquette, Michigan 49885	Ms. Cindy Brandt, P.E. (920) 433-1830 (phone) chbrandt@integrysgroup.com
Testing Company Representative	Mostardi Platt 888 Industrial Drive Elmhurst, Illinois 60126	Mr. Martin Platt Project Manager (630) 993-2100 (phone) mplatt@mp-mail.com

The test crew consisted of Messrs. J. Aksamitowski, J. Gross, S. McGough, S. Saiz, and M. Platt of Mostardi Platt.

## 2.0 TEST METHODOLOGY

Emissions testing was conducted following the methods specified in 40CFR60, Appendix A. A schematic of the test section diagram is found in Appendix B and schematics of the sampling trains used are included in Appendix C. Calculation nomenclature and sample calculations are included in Appendix D. Laboratory analysis data are found in Appendix E. Copies of analyzer print-outs for each test run are included in Appendix F and field data sheets are found in Appendix G.

The following methodologies were used during the test program:

### Method 1 Traverse Point Determination

Test measurement points were selected in accordance with Method 1. The characteristics of the measurement location are summarized below.

TEST POINT INFORMATION				
Location	Upstream Diameters	Downstream Diameters	Test Parameter	Number of Sampling Points
Flue 8 Stack	>2.0	>8.0	FPM	24
	>2.0	>8.0	HCl	1

### Method 2 Volumetric Flowrate Determination

Gas velocity was measured following Method 2, for purposes of calculating stack gas volumetric flow rate. An S-type pitot tube, differential pressure gauge, thermocouple and temperature readout were used to determine gas velocity at each sample point. All of the equipment used was calibrated in accordance with the specifications of the Method. Calibration data are presented in Appendix H.

### Method 3A Oxygen (O<sub>2</sub>)/Carbon Dioxide (CO<sub>2</sub>) Determination

Stack gas molecular weight was determined in accordance with Method 3A. An ECOM analyzer was used to determine stack gas oxygen and carbon dioxide content and, by difference, nitrogen content. All of the equipment used was calibrated in accordance with the specifications of the Method. Calibration data are presented in Appendix H and copies of the gas cylinder certifications are found in Appendix I.

### Method 5 Filterable Particulate Matter (FPM) Determination

Stack gas FPM concentrations and emission rates were determined in accordance with USEPA Method 5, 40CFR60, Appendix A. An Environmental Supply Company, Inc. sampling train was used to sample stack gas at an isokinetic rate, as specified in the Method. Filter and probe temperatures were set to temperatures between 248 and 273° Fahrenheit in accordance with the USEPA letter which is appended. Particulate matter in the sample probe was recovered using an acetone rinse. The probe wash and filter catch were analyzed by Mostardi Platt in accordance with the Method in the Elmhurst, Illinois laboratory. Sample analysis data are found in Appendix E. All of the equipment used was calibrated in accordance with the specifications of the Method. Calibration data are presented in Appendix H.

## **Method 26A Hydrogen Chloride (HCl) Determination**

Stack gas HCl concentrations and emission rates were determined in accordance with Method 26A, 40CFR60, Appendix A in conjunction with the USEPA Method 5 sampling. An Environmental Supply Company sampling train was used to sample stack gas, in the manner specified in the Method utilizing Pallflex TX40HI45 filters. Analyses of the samples collected were conducted by Mostardi Platt in the Elmhurst laboratory. Sample analysis data are found in Appendix E. All of the equipment used was calibrated in accordance with the specifications of the Method. Calibration data are presented in Appendix H.

### 3.0 TEST RESULT SUMMARIES

**Client:** We Energies  
**Facility:** Presque Isle Power Plant  
**Test Location:** Flue 8 Stack  
**Test Method:** 5/26A

	High	High	High	High	
Source Condition	High	High	High	High	
Date	8/1/17	8/1/17	8/1/17	8/1/17	
Start Time	6:55	9:50	12:35	15:08	
End Time	9:12	12:05	14:50	17:22	
	Run 1	Run 2	Run 3	Run 4	Average*
<b>Stack Conditions</b>					
Average Gas Temperature, °F	318.5	332.7	332.0	331.7	332.1
Flue Gas Moisture, percent by volume	12.0%	13.0%	15.2%	12.5%	13.6%
Average Flue Pressure, in. Hg	29.29	29.29	29.29	29.29	29.29
Gas Sample Volume, dscf	110.034	109.009	108.422	108.824	108.752
Average Gas Velocity, ft/sec	76.393	77.135	77.101	76.889	77.042
Gas Volumetric Flow Rate, acfm	324,894	328,051	327,904	327,004	327,653
Gas Volumetric Flow Rate, dscfm	189,763	186,178	181,570	186,741	184,830
Gas Volumetric Flow Rate, scfm	215,732	213,923	213,996	213,510	213,810
Average %CO <sub>2</sub> by volume, dry basis	14.5	14.5	14.5	14.7	14.6
Average %O <sub>2</sub> by volume, dry basis	5.5	5.7	5.5	5.5	5.6
Isokinetic Variance	102.2	103.2	105.2	102.7	103.7
Standard Fuel Factor Fd, dscf/mmBtu	9,820.0	9,820.0	9,820.0	9,820.0	9,820.0
<b>Filterable Particulate Matter (Method 5)</b>					
grams collected	0.0331	0.0112	0.0054	0.0063	0.0076
mg/dscm	10.614	3.625	1.765	2.038	2.476
grains/acf	0.0027	0.0009	0.0004	0.0005	0.0006
grains/dscf	0.0046	0.0016	0.0008	0.0009	0.0011
lb/hr	7.543	2.528	1.200	1.425	1.718
lb/mmBtu (Standard Fd Factor)	0.0088	0.0031	0.0015	0.0017	0.0021

\* Average of Runs 2-4 due to suspensive contamination in Run 1

Client: We Energies  
 Facility: Presque Isle Power Plant  
 Test Location: Flue 8 Stack  
 Test Method: 5/26A

	High	High	High	High	
Source Condition	High	High	High	High	
Date	8/1/17	8/1/17	8/1/17	8/1/17	
Start Time	6:55	9:50	12:35	15:08	
End Time	9:12	12:05	14:50	17:22	
	Run 1	Run 2	Run 3	Run 4	Average*
<b>Stack Conditions</b>					
Average Gas Temperature, °F	318.5	332.7	332.0	331.7	332.1
Flue Gas Moisture, percent by volume	12.0%	13.0%	15.2%	12.5%	13.6%
Average Flue Pressure, in. Hg	29.29	29.29	29.29	29.29	29.29
Gas Sample Volume, dscf	110.034	109.009	108.422	108.824	108.752
Average Gas Velocity, ft/sec	76.393	77.135	77.101	76.889	77.042
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Gas Volumetric Flow Rate, scfm	215,732	213,923	213,996	213,510	213,810
Average %CO <sub>2</sub> by volume, dry basis	14.5	14.5	14.5	14.7	14.6
Average %O <sub>2</sub> by volume, dry basis	5.5	5.7	5.5	5.5	5.6
Isokinetic Variance	102.2	103.2	105.2	102.7	103.7
Standard Fuel Factor Fd, dscf/mmBtu	9,820.0	9,820.0	9,820.0	9,820.0	9,820.0
<b>Hydrogen Chloride (HCl) Emissions</b>					
ug of sample collected	4361.00	2310.00	1549.00	1425.00	1761.33
ppm	0.92	0.49	0.33	0.31	0.38
mg/dscm	1.40	0.75	0.50	0.46	0.57
lb/hr	0.9948	0.5219	0.3431	0.3235	0.3962
lb/mmBtu (Standard Fd Factor)	0.0012	0.0006	0.0004	0.0004	0.0005

\* Average of Runs 2-4 due to suspect contamination in Run 1

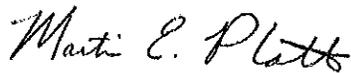
## 4.0 CERTIFICATION

MOSTARDI PLATT is pleased to have been of service to We Energies. If you have any questions regarding this test report, please do not hesitate to contact us at 630-993-2100.

### CERTIFICATION

As project manager, I hereby certify that this test report represents a true and accurate summary of emissions test results and the methodologies employed to obtain those results, and the test program was performed in accordance with the methods specified in this test report.

MOSTARDI PLATT



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Martin Platt

Program Manager



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Scott W. Banach

Quality Assurance

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## APPENDICES