

**RECEIVED**

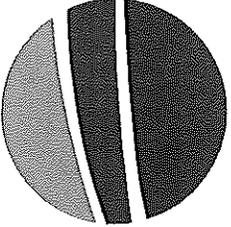
APR 26 2017

AIR QUALITY DIV.

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

---

We Energies  
Presque Isle Power Plant  
Flue 5 Stack  
Marquette, Michigan  
Project No. M171002D  
March 14, 2017

**mostardi**  **platt**



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

**We Energies  
Presque Isle Power Plant  
Flue 5 Stack  
Marquette, Michigan  
March 14, 2017**

**Report Submittal Date  
April 13, 2017**

© Copyright 2017  
All rights reserved in  
Mostardi Platt

**Project No. M171002D**

888 Industrial Drive  
Elmhurst, Illinois 60126  
630-993-2100

## 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 5 Stack in Marquette, Michigan on March 14, 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 5 Stack	March 14, 2017	Filterable Particulate Matter (FPM) and Hydrogen Chloride (HCl)

The purpose of the test program was to document 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 Limits	Emission Rates
Flue 5 Stack	FPM	≤0.030 lb/mmBtu	0.0005 lb/mmBtu
	HCl	≤0.002 lb/mmBtu	0.0003 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.

One of the test ports was obstructed and Mostardi Platt sampled at two ports, six points each instead of the four ports, three points as outlined in the test protocol. Mostardi Platt does not believe that this impacted the data that was collected.

The Stationary Source Audit Sample Program audit sample was obtained from ERA and submitted for analysis to Maxxam Analytical. 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. Brenda Bergemann (414) 221-2453 (phone) brenda.bergemann@we-energies.com
Testing Company Representative	Mostardi Platt 888 Industrial Drive Elmhurst, Illinois 60126	Mr. Sean Cronin Project Manager (630) 993-2100 (phone) scronin@mp-mail.com

The test crew consisted of Messrs. J. Konrad, T. Russ, and S. Cronin 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 5 Stack	>2.0	>8.0	FPM, HCl	12

### 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 filterable particulate concentrations and emission rates were determined in accordance with Method 5 with filter and probe temperatures between 248 and 273 degrees Fahrenheit in accordance with the USEPA letter which is appended. An Environmental Supply Company, Inc. sampling train was used to sample stack gas at an isokinetic rate, as specified in the Method utilizing Pallflex TX40HI45 filters. Particulate matter in the sample probe was recovered using an acetone wash. The probe wash and filter catch were analyzed by Mostardi Platt personnel. Laboratory analysis data are found in Appendix E. 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 Maxxam Analytics, Inc. of Mississauga, Ontario. 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 5 Stack  
**Test Method:** 5

	Source Condition	Normal	Normal	Normal	
	Date	3/14/17	3/14/17	3/14/17	
	Start Time	9:00	11:30	14:00	
	End Time	11:03	13:33	16:04	
	Run 1	Run 2	Run 3	Average	
<b>Stack Conditions</b>					
Average Gas Temperature, °F	332.8	335.0	339.6	335.8	
Flue Gas Moisture, percent by volume	11.4%	10.6%	12.0%	11.3%	
Average Flue Pressure, in. Hg	29.38	29.38	29.38	29.38	
Gas Sample Volume, dscf	110.665	110.651	112.808	111.375	
Average Gas Velocity, ft/sec	64.664	63.207	64.608	64.160	
Gas Volumetric Flow Rate, acfm	246,824	241,262	246,610	244,899	
Gas Volumetric Flow Rate, dscfm	142,940	140,662	140,663	141,422	
Gas Volumetric Flow Rate, scfm	161,422	157,355	159,921	159,566	
Average %CO <sub>2</sub> by volume, dry basis	13.6	13.9	13.7	13.7	
Average %O <sub>2</sub> by volume, dry basis	5.6	5.6	5.8	5.7	
Isokinetic Variance	99.6	101.2	103.1	101.3	
Standard Fuel Factor Fd, dscf/mmBtu	9,820.0	9,820.0	9,820.0	9,820.0	
<b>Filterable Particulate Matter (Method 5)</b>					
grams collected	0.0030	0.0016	0.0014	0.0020	
mg/dscm	0.951	0.523	0.448	0.6407	
grains/acf	0.0002	0.0001	0.0001	0.0001	
grains/dscf	0.0004	0.0002	0.0002	0.0003	
lb/hr	0.509	0.276	0.236	0.340	
lb/mmBtu (Standard Fd Factor)	0.0008	0.0004	0.0004	0.0005	

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

	Source Condition	Normal	Normal	Normal	
	Date	3/14/17	3/14/17	3/14/17	
	Start Time	9:00	11:30	14:00	
	End Time	11:03	13:33	16:04	
	Run 1	Run 2	Run 3	Average	
<b>Stack Conditions</b>					
Average Gas Temperature, °F	332.8	335.0	339.6	335.8	
Flue Gas Moisture, percent by volume	11.4%	10.6%	12.0%	11.3%	
Average Flue Pressure, in. Hg	29.38	29.38	29.38	29.38	
Gas Sample Volume, dscf	110.665	110.651	112.808	111.375	
Average Gas Velocity, ft/sec	64.664	63.207	64.608	64.160	
Gas Volumetric Flow Rate, acfm	246,824	241,262	246,610	244,899	
Gas Volumetric Flow Rate, dscfm	142,940	140,662	140,663	141,422	
Gas Volumetric Flow Rate, scfm	161,422	157,355	159,921	159,566	
Average %CO <sub>2</sub> by volume, dry basis	13.6	13.9	13.7	13.7	
Average %O <sub>2</sub> by volume, dry basis	5.6	5.6	5.8	5.7	
Isokinetic Variance	99.6	101.2	103.1	101.3	
Standard Fuel Factor Fd, dscf/mmBtu	9,820.0	9,820.0	9,820.0	9,820.0	
<b>Hydrogen Chloride (HCl) Emissions</b>					
ug of sample collected	1200.00	1300.00	1000.00	1166.67	
ppm	0.25	0.27	0.21	0.24	
mg/dscm	0.38	0.41	0.31	0.37	
lb/hr	0.205	0.219	0.165	0.196	
lb/mmBtu (Standard Fd Factor)	0.0003	0.0003	0.0003	0.0003	

**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



\_\_\_\_\_  
Sean Cronin Program Manager



\_\_\_\_\_  
Scott W. Banach Quality Assurance