mostardi platt

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

---

We Energies
Presque Isle Power Plant
Flue 9 Stack
Marquette, Michigan
Project No. M173103B
August 1, 2017

mostardi platt

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

We Energies
Presque Isle Power Plant
Flue 9 Stack
Marquette, Michigan
August 1, 2017

Report Submittal Date
August 30, 2017

Project No. M173103B

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

TABLE OF CONTENTS

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 9 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 9 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 9 Stack	FPM	≤0.030 lb/mmBtu	0.0013 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.

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 9 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_2)/Carbon Dioxide (CO_2) 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 9 Stack
Test Method: 5/26A

Source Condition	Normal	Normal	Normal	
Date	8/1/17	8/1/17	8/1/17	
Start Time	6:55	9:50	12:35	
End Time	9:10	12:05	14:50	
	Run 1	Run 2	Run 3	Average
Stack Conditions				
Average Gas Temperature, °F	322.3	338.6	332.8	331.2
Flue Gas Moisture, percent by volume	11.8%	13.9%	13.9%	13.2%
Average Flue Pressure, in. Hg	29.25	29.25	29.25	29.25
Gas Sample Volume, dscf	113.964	111.706	112.616	112.762
Average Gas Velocity, ft/sec	79.396	80.227	80.290	79.971
Gas Volumetric Flow Rate, acfm	337,667	341,200	341,470	340,112
Gas Volumetric Flow Rate, dscfm	196,616	189,967	191,472	192,685
Gas Volumetric Flow Rate, scfm	222,822	220,572	222,359	221,918
Average $\%CO_2$ by volume, dry basis	14.5	14.5	14.5	14.5
Average $\%O_2$ by volume, dry basis	5.5	5.7	5.5	5.6
Isokinetic Variance	103.0	104.4	104.5	104.0
Standard Fuel Factor Fd, dscf/mmBtu	9,820.0	9,820.0	9,820.0	9,820.0
Filterable Particulate Matter (Method 5)				
grams collected	0.00462	0.00450	0.00623	0.00512
mg/dscm	1.432	1.423	1.954	1.603
grains/acf	0.0004	0.0003	0.0005	0.0004
grains/dscf	0.0006	0.0006	0.0009	0.0007
lb/hr	1.054	1.012	1.401	1.156
lb/mmBtu (Standard Fd Factor)	0.0012	0.0012	0.0016	0.0013

Client:	**We Energies**
Facility:	**Presque Isle Power Plant**
Test Location:	**Flue 9 Stack**
Test Method:	**5/26A**

Source Condition	Normal	Normal	Normal	
Date	8/1/17	8/1/17	8/1/17	
Start Time	6:55	9:50	12:35	
End Time	9:10	12:05	14:50	
	Run 1	Run 2	Run 3	Average
Stack Conditions				
Average Gas Temperature, °F	322.3	338.6	332.8	331.2
Flue Gas Moisture, percent by volume	11.8%	13.9%	13.9%	13.2%
Average Flue Pressure, in. Hg	29.25	29.25	29.25	29.25
Gas Sample Volume, dscf	113.964	111.706	112.616	112.762
Average Gas Velocity, ft/sec	79.396	80.227	80.290	79.971
Gas Volumetric Flow Rate, acfm	337,667	341,200	341,470	340,112
Gas Volumetric Flow Rate, dscfm	196,616	189,967	191,472	192,685
Gas Volumetric Flow Rate, scfm	222,822	220,572	222,359	221,918
Average $\%CO_2$ by volume, dry basis	14.5	14.5	14.5	14.5
Average $\%O_2$ by volume, dry basis	5.5	5.7	5.5	5.6
Isokinetic Variance	103.0	104.4	104.5	104.0
Standard Fuel Factor Fd, dscf/mmBtu	9,820.0	9,820.0	9,820.0	9,820.0
Hydrogen Chloride (HCl) Emissions				
ug of sample collected	1354.80	1141.20	1150.70	1215.57
ppm	0.28	0.24	0.24	0.25
mg/dscm	0.42	0.36	0.36	0.38
lb/hr	0.309	0.257	0.259	0.275
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

Martin E. Platt

_____ Program Manager

Martin Platt

Scott W. Banach

_____ Quality Assurance

Scott W. Banach

APPENDICES