

Mercury and Air Toxics Standard Filterable Particulate Matter Emissions Test Report

> We Energies Presque Isle Power Plant TOXECON Outlet Duct Marquette, Michigan September 7, 2016

Report Submittal Date September 22, 2016

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Project No. M160301B

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

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MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY AIR QUALITY DIVISION

RENEWABLE OPERATING PERMIT AIR QUALITY DIV.

REPORT CERTIFICATION

Authorized by 1994 P.A. 451, as amended. Failure to provide this information may result in civil and/or criminal penalties.

Reports submitted pursuant to R 336.1213 (Rule 213), subrules (3)(c) and/or (4)(c), of Michigan's Renewable Operating Permit (ROP) program must be certified by a responsible official. Additional information regarding the reports and documentation listed below must be kept on file for at least 5 years, as specified in Rule 213(3)(b)(ii), and be made available to the Department of Environmental Quality, Air Quality Division upon request.

Source Name Presque Isle Power Plant				County Marquette			
Source Address _ 2701 N. Lakeshore Blvd.			City	Cily Marguette			
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I certify that, based on information and belief formed after reasonable inquiry, the statements and information in this report and the supporting enclosures are true, accurate and complete

Leslie D. Kowalski	Asset Manager - PIPP	(906) 226-5757
Name of Responsible Official (print or type)	Title	Phone Number

Feshi J. Humbi

Signature of Responsible Official

* Photocopy this form as needed.

EQP 5736 (Rev 11-04)

09/26/20/6 Date

1.0 EXECUTIVE SUMMARY

MOSTARDI PLATT conducted a Mercury and Air Toxics Standards (MATS) Filterable Particulate Matter emissions test program for We Energies at the Presque Isle Power Plant on the TOXECON Outlet Duct in Marquette, Michigan on September 7, 2016. This report summarizes the results of the test program and test methods used.

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

TEST INFORMATION					
Test Location	Test Parameter				
TOXECON Outlet Duct	September 7, 2016	Filterable Particulate Matter (FPM)			

The purpose of the test program was to document the FPM 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					
TOXECON Outlet Duct	FPM	≤0.030 lb/mmBtu	0.0047 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 identifications of individuals associated with the test program are summarized below.

TEST PERSONNEL INFORMATION					
Location	Address	Contact			
Test Facility	We Energies Presque Isle Power Plant 2701 Lakeshore Boulevard, North Marquette, Michigan 49885	Mr. Rob Bregger (414) 221-4772 (phone) rob.bregger@we-energies.com			
Testing Company Representative	Mostardi Platt 888 Industrial Drive Elmhurst, Illinois 60126	Mr. Timothy E. Russ Senior Project Manager (630) 993-2100 (phone) truss@mp-mail.com			

The test crew consisted of Messrs. P. Lyons, S. Muskovits, S. Cronin, and T. Russ of Mostardi Platt.

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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 Sample and Velocity Traverse Determination

TEST POINT INFORMATION						
Location	Upstream Diameters	Downstream Diameters	Test Parameter	Number of Sampling Points		
	>05	>20	DM	30		

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

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 (O₂)/Carbon Dioxide (CO₂) 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 elevated to 320° Fahrenheit as described in 40CFR63, Subpart UUUUU. 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.

3.0 TEST RESULT SUMMARY

Client:	We Energies
Facility:	Presque Isle Power Plant
Test Location:	TOXECON Outlet Duct
Test Method:	5 MATS

Source Condition	Normal	Normal	Normal			
Date	9/7/16	9/7/16	9/7/16			
Start Time	8:15	10:12	12:37			
End Time	9:31	11:25	13:49			
	Run 1	Run 2	<u>Run 3</u>	Average		
Stack Cond	litions					
Average Gas Temperature, °F	341.0	351.9	346.1	346.3		
Flue Gas Moisture, percent by volume	10.6%	11.6%	13.3%	11.8%		
Average Flue Pressure, in. Hg	29.34	29.34	29.34	29.34		
Gas Sample Volume, dscf	65.822	41.804	41.488	49.705		
Average Gas Velocity, ft/sec	56.776	57.636	56.859	57.090		
Gas Volumetric Flow Rate, acfm	1,148,049	1,165,421	1,149,716	1,154,395		
Gas Volumetric Flow Rate, dscfm	663,477	656,736	640,126	653,446		
Gas Volumetric Flow Rate, scfm	742,002	743,087	738,378	741,156		
Average %CO ₂ by volume, dry basis	14.4	14.3	14.3	14.3		
Average %O ₂ by volume, dry basis	5.4	5.3	5.3	5.3		
Isokinetic Variance	102.4	102.5	104.3	103.1		
Standard Fuel Factor Fd, dscf/mmBtu	9,820.0	9,820.0	9 <u>,820</u> .0	9,820.0		
Filterable Particulate Mat	Filterable Particulate Matter (Method 5 MATS)					
grams collected	0.0044	0.0065	0.0108	0.0072		
mg/dscm	2.361	5.491	9.193	5.682		
mg/wscm	2.110	4.854	7.970	4.978		
mg/acm at stack conditions	1.364	3.096	5.119	3.193		
grains/acf	0.0006	0.0014	0.0022	0.0014		
grains/dscf	0.0010	0.0024	0.0040	0.0025		
lb/hr	5.866	13.505	22.039	13.803		
lb/mmBtu (Standard Fd Factor)	0.0020	0.0045	0.0075	0.0047		

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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Program Manager

Timothy E. Russ

Acottor Barace

Quality Assurance

Scott W. Banach