



Particulate Emission Compliance Test Report

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

**Report Submittal Date:
July 27, 2017**

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Mostardi Platt

Project No. M172202L

1.0 EXECUTIVE SUMMARY

MOSTARDI PLATT conducted a particulate emissions compliance test program for We Energies at the Presque Isle Power Plant on the Flue 5 Stack in Marquette, Michigan on June 5, 2017. 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 Date	Test Parameter
Flue 5 Stack	June 5, 2017	Filterable Particulate Matter (PM) (Method 5)

The purpose of this test program was to evaluate the particulate emissions on the Flue 5 Stack during normal operating conditions to satisfy compliance requirements of the operating permit. 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 Date	Parameter	Emission Rates
Flue 5 Stack	6/5/17	lb/hr	1.124
		lb/mmBtu	0.0016
		lbs/1000 lbs wet @50% excess air	0.00150
		lbs/1000 lbs dry @50% excess air	0.00162

Method 26A sampling was performed in conjunction with Method 5 for other testing purposes. Emissions on lb/mmBtu basis were determined using a standard F_d -Factor of 9,820 dscf/mmBtu for sub-bituminous coal. Sootblowing was performed during the second test run. 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.

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AIR QUALITY DIVISION

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. Rich Sollars Project Manager (630) 993-2100 (phone) rsollars@mp-mail.com

The test crew consisted of Messrs. B. Schuler, E. Charatz, J. Biggins, J. Nestor, M. Lipinski, S. Cronin, and R. Sollars of Mostardi Platt.

2.0 TEST METHODOLOGY

Emissions testing was conducted following the methods specified in 40 CFR, Part 60, Appendix A. A drawing depicting the sampling ports and test point locations is found in Appendix B, drawings depicting sampling trains are found in Appendix C, explanations of nomenclature and calculations are found in Appendix D, sample analysis data are found in Appendix E, reference method data are found in Appendix F, field data sheets are found in Appendix G and calibration data are found in Appendix H. Operating data are found in Appendix A.

The following methodologies were used during the test program:

Method 1 Sample and Velocity Traverse 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	PM	12

Method 2 Volumetric Flow Rate Determination

Gas velocity was measured following Method 2, for purposes of calculating the gas volumetric flow rate. An S-type pitot tube, incline manometer, thermocouple and temperature readout were used to determine gas velocity at each sample point at the Flue 6 Stack test location. All of the equipment used was calibrated in accordance with the specifications of the Method. Calibration data are presented in Appendix H.

Method 3A Carbon Dioxide (CO₂) and Oxygen (O₂) Determination

Stack gas carbon dioxide (CO₂) and oxygen (O₂) content was determined in accordance with Method 3A. An ECOM analyzer was used to determine flue gas CO₂ and O₂. 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 Particulate Determination

Stack gas particulate concentrations and emission rates were determined in accordance with Method 5, 40 CFR, Part 60, Appendix A. An Environmental Supply Company, Inc. sampling train was used to sample stack gas at an isokinetic rate, as specified in the Method. 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. Laboratory 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: Flue 5 Stack
Test Method: 5/26A

	Source Condition	High Load	Sootblowing	High Load	
	Date	6/5/17	6/5/17	6/5/17	
	Start Time	7:26	10:08	12:55	
	End Time	9:30	12:25	15:00	
	Run 1	Run 2	Run 3	Average	
Stack Conditions					
Average Gas Temperature, °F	329.8	331.5	325.4	328.9	
Flue Gas Moisture, percent by volume	11.2%	12.6%	12.2%	12.0%	
Average Flue Pressure, in. Hg	28.97	28.97	28.97	28.97	
Gas Sample Volume, dscf	99.542	99.550	96.568	98.553	
Average Gas Velocity, ft/sec	73.647	74.212	71.290	73.050	
Gas Volumetric Flow Rate, acfm	281,114	283,269	272,115	278,833	
Gas Volumetric Flow Rate, dscfm	161,576	159,955	155,551	159,027	
Gas Volumetric Flow Rate, scfm	181,989	182,969	177,135	180,698	
Average %CO ₂ by volume, dry basis	14.0	14.1	14.2	14.1	
Average %O ₂ by volume, dry basis	6.0	5.5	5.5	5.7	
Isokinetic Variance	104.0	105.1	104.8	104.6	
Fd Factor, dscf/mmBtu	9,820.0	9,820.0	9,820.0	9,820.0	
Particulate Matter (Method 5)					
grams collected	0.00264	0.00742	0.00577	0.0053	
mg/dscm	0.937	2.632	2.110	1.8930	
grains/acf	0.0002	0.0006	0.0005	0.0004	
grains/dscf	0.0004	0.0012	0.0009	0.0008	
lb/hr	0.567	1.577	1.229	1.124	
lb/mmBtu (Standard Fd Factor)	0.0008	0.0022	0.0018	0.0016	
lbs/1000 lbs wet	0.00069	0.00192	0.00154	0.00139	
lbs/1000 lbs dry	0.00074	0.00209	0.00167	0.00150	
lbs/1000 lbs wet at 50% excess air	0.00074	0.00209	0.00167	0.00150	
lbs/1000 lbs dry at 50% excess air	0.00080	0.00226	0.00181	0.00162	