

**RECEIVED**

AUG 29 2016

AIR QUALITY DIV.

# **Mercury Low Emitting Electrical Generating Unit Demonstration Test Report**

---

We Energies  
Presque Isle Power Plant  
Flue 5 Stack  
Marquette, Michigan  
Project No. M162008B  
May 17 through July 14, 2016

**mostardi**  **platt**



**Mercury Low Emitting Electrical Generating Unit  
Demonstration Test Report**

**We Energies  
Presque Isle Power Plant  
Flue 5 Stack  
Marquette, Michigan  
May 17 through July 14, 2016**

**Report Submittal Date  
August 16, 2016**

© Copyright 2016  
All rights reserved in  
Mostardi Platt

**Project No. M162008B**

## 1.0 EXECUTIVE SUMMARY

MOSTARDI PLATT conducted a mercury (Hg) low emitting electrical generating unit (LEE) test program for We Energies at the Presque Isle Power Plant in Marquette, Michigan. This report summarizes the results of the test program and test methods used.

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

| TEST INFORMATION |                              |                |
|------------------|------------------------------|----------------|
| Test Location    | Test Dates                   | Test Parameter |
| Flue 5 Stack     | May 17 through July 14, 2016 | Mercury (Hg)   |

The purpose of this test program was to demonstrate the LEE status per 40CFR63, UUUUU (Utility MATS Rule) Section 63.10005 (h)(1)(ii)(A or B) of the Flue 5 Stack. The test consisted of seven paired Method 30B Hg sampling runs. Each trap pair was sampled for a time frame of between 66-170 total hours. Note that due to the size of each trap set data file, the files are only included in the electronic copy of this test report. The hard copy report includes a separate CD which contains the minute data for each trap set. A standard  $F_c$  factor of 1,840 scf/mmBtu for sub-bituminous coal was utilized to calculate emissions on a lb/TBtu basis. Carbon dioxide (CO<sub>2</sub>) data was taken from CEM hourly data and corrected from a wet basis to dry basis utilizing a default factor of 8%. Pounds per hour emissions were calculated using the wet concentration, the volumetric flow from the installed certified CEM flow monitor and 8760 hrs/yr of operation. Selected results of the test program are summarized below.

| Parameter | Dates           | LEE Demonstration                | LEE Demonstration Requirement    | Pass/Fail |
|-----------|-----------------|----------------------------------|----------------------------------|-----------|
| Hg        | 5/17/16-7/14/16 | 0.302 lb/TBtu and<br>1.367 lb/yr | ≤ 1.200 lb/TBtu and<br>29 lbs/yr | Pass      |

The test results from this test program indicate that the Presque Isle Power Plant Flue 5 Stack demonstrated the level to achieve Hg LEE status per 40CFR63, UUUUU Section 63.10005 (h)(1)(ii)(B).

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

| TEST PERSONNEL INFORMATION     |   |  |
|--------------------------------|---|--|
| Location                       | Address   | Contact  |
| Test Coordinator               | We Energies<br>333 West Everett Street<br>Environmental Department A231<br>Milwaukee, Wisconsin 53203   | Mr. Rob Bregger<br>(414) 221-2772 (phone)<br>rob.bregger@we-energies.com           |
| Test Facility                  | We Energies<br>Presque Isle Power Plant<br>2701 Lakeshore Boulevard, North<br>Marquette, Michigan 49885 | Ms. Brenda Bergemann<br>(414) 221-2453 (phone)<br>brenda.bergemann@we-energies.com |
| Testing Company Representative | Mostardi Platt<br>888 Industrial Drive<br>Elmhurst, Illinois 60126                                      | Mr. Pat Lyons<br>Project Manager<br>(630) 993-2100 (phone)<br>plyons@mp-mail.com   |

## 2.0 TEST METHODOLOGY

Emission testing was conducted following the methods specified in 40 CFR, Part 60, Appendices A and B, USEPA Method 30B. A drawing depicting the sampling port and test point location is found in Appendix A of this test report, drawings depicting the sampling train is found in Appendix B of this test report, calculation and nomenclature explanations are found in Appendix C of this test report, sample analysis data are found in Appendix D of this test report, mercury sampling QA/QC data are found in Appendix E of this test report, reference method test data are found in Appendix F of this test report, CEMs data are found in Appendix G of this test report, and field data sheets are found in Appendix H of this test report.

The following methodology was used during the test program:

### **Mercury Determination by Method 30B (Sorbent Trap Method)**

Paired trains were utilized sampling one test point at the Flue 5 Stack test location.

Per Method 30B sampling, each sample was collected on the paired in-situ sorbent traps. A tube of silica was used to capture remaining moisture prior to the sample reaching the gas metering system. Expected concentrations for the test runs were calculated based on previous Method 30B test data to total approximately 2000 ng of Hg collected on each trap during sampling.

The sample train used for this test program was designed by APEX, Inc. and meets all requirements for Method 30B sampling. Each sample was extracted at one sample point, within 10% of the centroid of the stack.

Runs 4 through 6, which were performed from June 9 through June 30, did not meet the QA requirements of Method 30B due to high breakthrough and low spike recoveries. These runs were not included in the test data averages.

The mercury traps were analyzed offsite utilizing an Ohio Lumex analyzer. A complete summary of emission test results follows the narrative portion of this report.

# 3.0 TEST RESULTS SUMMARY

## Method 30B (Sorbent Trap) Mercury Test Results Summary

We Energias

Presque Isle Power Plant

Flue 5 Stack

| Test No.             | Boiler Operating Days | Total Hours Sampled | Start Date                     | Start Time | End Date  | End Time | V <sub>m</sub> (standard L) | ng detected | ug/dscm | lb/hr  | lb/yr | lb/Tbtu (Fc Factor) | MATS Limit                |
|----------------------|-----------------------|---------------------|--------------------------------|------------|-----------|----------|-----------------------------|-------------|---------|--------|-------|---------------------|---------------------------|
| 1A                   | 3                     | 79                  | 5/17/2016                      | 13:23      | 5/25/2016 | 8:53     | 1,145.104                   | 382.3       | 0.334   | 0.0001 | 1.278 | 0.312               |                           |
| 1B                   |                       |                     |                                |            |           |          | 1,171.434                   | 226.1       | 0.193   | 0.0001 | 0.739 | 0.181               |                           |
| Average              |                       |                     |                                |            |           |          |                             | 304.2       | 0.263   | 0.0001 | 1.008 | 0.246               | 1.2 lb/Tbtu and 29 lbs/yr |
| 2A                   | 7                     | 170                 | 5/25/2016                      | 9:51       | 6/1/2016  | 11:15    | 2,606.140                   | 1,352.3     | 0.519   | 0.0002 | 1.966 | 0.442               |                           |
| 2B                   |                       |                     |                                |            |           |          | 2,666.245                   | 1,439.4     | 0.540   | 0.0002 | 2.046 | 0.460               |                           |
| Average              |                       |                     |                                |            |           |          |                             | 1,395.9     | 0.529   | 0.0002 | 2.006 | 0.451               | 1.2 lb/Tbtu and 29 lbs/yr |
| 3A                   | 7                     | 168                 | 6/1/2016                       | 12:03      | 6/8/2016  | 12:22    | 2596.370                    | 1,007.3     | 0.388   | 0.0002 | 1.458 | 0.333               |                           |
| 3B                   |                       |                     |                                |            |           |          | 2656.211                    | 829.8       | 0.312   | 0.0001 | 1.174 | 0.268               |                           |
| Average              |                       |                     |                                |            |           |          |                             | 918.6       | 0.350   | 0.0002 | 1.316 | 0.301               | 1.2 lb/Tbtu and 29 lbs/yr |
| 7A                   | 5                     | 116                 | 6/30/2016                      | 12:53      | 7/5/2016  | 9:33     | 1782.855                    | 418.1       | 0.235   | 0.0001 | 0.876 | 0.200               |                           |
| 7B                   |                       |                     |                                |            |           |          | 1816.711                    | 299.0       | 0.165   | 0.0001 | 0.602 | 0.140               |                           |
| Average              |                       |                     |                                |            |           |          |                             | 358.6       | 0.200   | 0.0001 | 0.739 | 0.170               | 1.2 lb/Tbtu and 29 lbs/yr |
| 8A                   | 3                     | 66                  | 7/5/2016                       | 14:38      | 7/8/2016  | 8:45     | 996.939                     | 395.6       | 0.397   | 0.0002 | 1.643 | 0.338               |                           |
| 8B                   |                       |                     |                                |            |           |          | 1038.296                    | 283.1       | 0.273   | 0.0001 | 1.150 | 0.232               |                           |
| Average              |                       |                     |                                |            |           |          |                             | 339.4       | 0.335   | 0.0002 | 1.396 | 0.285               | 1.2 lb/Tbtu and 29 lbs/yr |
| 9A                   | 3                     | 74                  | 7/8/2016                       | 9:14       | 7/11/2016 | 11:10    | 1117.667                    | 324.0       | 0.290   | 0.0001 | 1.205 | 0.247               |                           |
| 9B                   |                       |                     |                                |            |           |          | 1166.251                    | 288.6       | 0.246   | 0.0001 | 1.040 | 0.209               |                           |
| Average              |                       |                     |                                |            |           |          |                             | 305.3       | 0.268   | 0.0001 | 1.122 | 0.228               | 1.2 lb/Tbtu and 29 lbs/yr |
| 10A                  | 3                     | 69                  | 7/11/2016                      | 11:42      | 7/14/2016 | 8:54     | 1037.732                    | 443.1       | 0.427   | 0.0002 | 1.862 | 0.367               |                           |
| 10B                  |                       |                     |                                |            |           |          | 1081.612                    | 329.1       | 0.304   | 0.0002 | 1.369 | 0.261               |                           |
| Average              |                       |                     |                                |            |           |          |                             | 386.1       | 0.368   | 0.0002 | 1.815 | 0.314               | 1.2 lb/Tbtu and 29 lbs/yr |
| Total Operating Days | 31                    | 742                 | Overall Total Weighted Average |            |           |          |                             |             | 0.350   | 0.0002 | 1.367 | 0.302               |                           |

## 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



---

Pat Lyons

Program Manager



---

Scott W. Banach

Quality Assurance