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COMPLIANCE TEST REPORT

for

QUARTERLY HYDROGEN CHLORIDE (HCL) EMISSIONS

EU-BOILER1-BR (UNIT 1)

(SRN: B2796)

3rd Quarter 2020

Belle River Power Plant
China Township, Michigan

September 17, 2020

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EXECUTIVE SUMMARY

DTE Energy's Environmental Management & Safety (EM&S) Field Services Group performed 3rd Quarter – 2020 Hydrogen Chloride (HCl) emissions testing on the exhaust of Unit 1 at the Belle River Power Plant, located in China Township, Michigan. The testing was required by the 40 CFR Part 63, Subpart UUUUU (Mercury and Air Toxics Standards - MATS) to document quarterly HCl stack emissions. The testing was conducted on September 17, 2020.

A summary of the emission test results are shown below:

Emissions Testing Summary
Belle River Power Plant
Unit 1

Source	Date	Load (GMW)	HCl (lbs/MmBtu)[1]
Unit 1	9-17-20	229	<0.0004

(1) MATS Limit 0.002 lbs/MMBtu

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1.0 INTRODUCTION

DTE Energy's Environmental Management & Safety (EM&S) Field Services Group performed 3rd Quarter – 2020 Hydrogen Chloride (HCl) emissions testing on the exhaust of Unit 1 at the Belle River Power Plant, located in China Township, Michigan. The testing was required by the 40 CFR Part 63, Subpart UUUUU (Mercury and Air Toxics Standards - MATS) to document quarterly HCl stack emissions. The testing was conducted on September 17, 2020.

Testing was performed pursuant to ASTM Method D6348.

The fieldwork was performed in accordance with EPA Reference Methods and DTE Energy Intent to Test[1], which was approved in a letter by Mr. Mark Dziadosz from the Michigan Department of Environment, Great Lakes & Energy (EGLE), dated January 30, 2017[2]. The following DTE Energy personnel participated in the testing program: Mr. Thomas Snyder, Environmental Specialist, and Mr. Fred Meinecke, Senior Engineering Technician. Mr. Snyder was the project leader. Mr. Jason Roggenbuck, Senior Engineer at the plant provided process coordination for the testing program.

2.0 SOURCE DESCRIPTION

The Belle River Power Plant (BRPP) located at 4505 King Road in St Clair, Michigan, employs the use of two (2) Babcock and Wilcox coal-fired boilers (Unit 1 & 2) each capable of producing 4,550,000 pounds per hour of steam. Each Unit has a Siemens Power Corporation boiler generator with a nominally rated capability of 635 (Unit 1) and 645 (Unit 2) gross megawatts (GMW). See Figure 1 for a diagram of the units' sampling locations and stack dimensions.

The air pollution control equipment consists of Wheelebrator Frye cold gas electrostatic precipitators on each unit that have design collection efficiencies greater than 99%. Each exhaust Stack is 665 feet tall with an internal diameter of 25.5 feet. Testing occurred while operating the unit at greater than 80% of normal full load capability while burning coal.

Each boiler is equipped with a Dry Sorbent Injection (DSI) and Activated Carbon Injection (ACI) air quality control system. The DSI system is used to control acid gas, PM, PM10, PM2.5, and NOx emissions from each unit. Trona is received at the plant where inline mills further refine the Trona. The ACI system is used to control Mercury emissions from each unit.

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[1] EGLE, Test Plan, Submitted January 5, 2017. (Attached-Appendix A)

[2] EGLE, Approval Letter, dated January 30, 2017. (Attached-Appendix A)

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Testing was performed on Unit 1 while operating at normal load conditions, per Subpart UUUUU.

3.0 SAMPLING AND ANALYTICAL PROCEDURES

DTE Energy obtained emissions measurements in accordance with procedures specified in the USEPA *Standards of Performance for New Stationary Sources* or listed as an approved "*Other Test Method*". The sampling and analytical methods used in the testing program are indicated in the table below:

Sampling Method	Parameter	Analysis
ASTM Method D6348	HCl, CO_2, and, Moisture Content	FTIR
USEPA Method 19	Emission Rate Calculations	Stoichiometric Calculations

3.1 MOISTURE (ASTM D6348)

3.1.1 Sampling Method

Moisture content in the exhaust was evaluated using ASTM D6348, "Measurement of Vapor Phase Organic Emissions by Extractive Fourier Transform Infrared (FTIR)".

3.2 CARBON DIOXIDE (ASTM D6348)

3.2.1 Sampling Method

Carbon dioxide (CO_2) emissions were evaluated using ASTM D6348, "Measurement of Vapor Phase Organic Emissions by Extractive Fourier Transform Infrared (FTIR)".

3.2.2 Sampling Train Calibration

The CO_2 analyzer was calibrated according to procedures outlined in USEPA Methods 3A and 7E. Zero, span, and mid range calibration gases were introduced directly into the analyzer to verify the instruments linearity, prior to sampling, and again at the completion of each test run. The CO_2 emissions were corrected for bias according to USEPA Method 7E.

3.3.4 Data Reduction

Each spectrum was derived from the coaddition of 64 scans, with a new data point generated approximately every one minute. The emissions were recorded in parts per million (ppm) wet volume basis. The CO_2 emissions were recorded in percent (%) wet volume basis. The moisture content was recorded in percent (%).

4.0 OPERATING PARAMETERS

The test program included the collection of boiler load and stack emissions CEMs data during each test run. Parameters recorded included gross Megawatts (GMW) and CEMs data (SO_2, NO_x, CO_2, and opacity). Additionally, dry sorbent injection rates (DSI) and activated carbon injection rates (ACI), in pounds per hour (lb/hr), are reported. Operational Data collected during the testing is presented in Appendix D.

During each day of emissions sampling, a representative coal sample was collected from the unit and analyzed for ultimate and proximate analysis, including % Sulfur, % Ash, and heat content. The results of the coal analysis was used to calculate an Fc value for each day of testing and used in the lb/MMBtu calculations. Results of the fuel analysis can be referred to in Appendix F. HCl emissions testing was performed at maximum normal operating load and representative of site specific normal operating conditions per 40 CFR part 63.10007.

5.0 DISCUSSION OF RESULTS

Table 1 presents the HCl emission testing results from Unit 1. HCl emissions are presented in parts per million on a wet basis (ppm_w) and pounds per million BTU (lbs/MMBtu). During the testing, the HCl emissions averaged below the minimum detectable concentration of 0.23ppm. Unit 1 demonstrated average HCl emissions below the Subpart UUUUU limit of 0.002 lb/MMBtu.

The auxiliary test data presented in the results table for each test includes the unit load in gross megawatts (GMW), DSI injection rate (lb/hr), ACI injection rate (lb/hr), and CO_2 concentration ($\%_{wet}$).

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6.0 CERTIFICATION STATEMENT

"I certify that I believe the information provided in this document is true, accurate, and complete. Results of testing are based on the good faith application of sound professional judgment, using techniques, factors, or standards approved by the Local, State, or Federal Governing body, or generally accepted in the trade."

Mr. Thomas Snyder, QSTI

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RESULTS TABLES

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TABLE NO. 1
HYDROGEN CHLORIDE EMISSIONS TESTING RESULTS
Belle River Power Plant - Unit 1
September 17, 2020

Test	Test Date	Test Time (EST Time)	Unit Load (GMW)	DSI Injection Rate (lb/hr)	ACI Injection Rate (lb/hr)	CO_2 Concentration ($\%_{wet,\ corrected}$)	HCl Concentration ($ppmv_{wet}$)	HCl Emissions (lbs/MMBtu)[1][2]
HCl-1	**17-Sep-20**	8:38-9:38	234	2	125	9.9	<0.23	<0.0004
HCl-2		9:54-10:54	229	0	121	9.9	<0.23	<0.0004
HCl-3		11:03-12:03	225	0	109	10.0	<0.23	<0.0004
	Average:		***229***	***1***	***118***	***9.9***	***<0.23***	***<0.0004***

(1) Corrected to (%R)
(2) MATS Limit = 0.002 lb/MMBtu

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FIGURES

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Figure 1 – Sampling Location
Belle River Power Plant – Unit 1
September 17, 2020

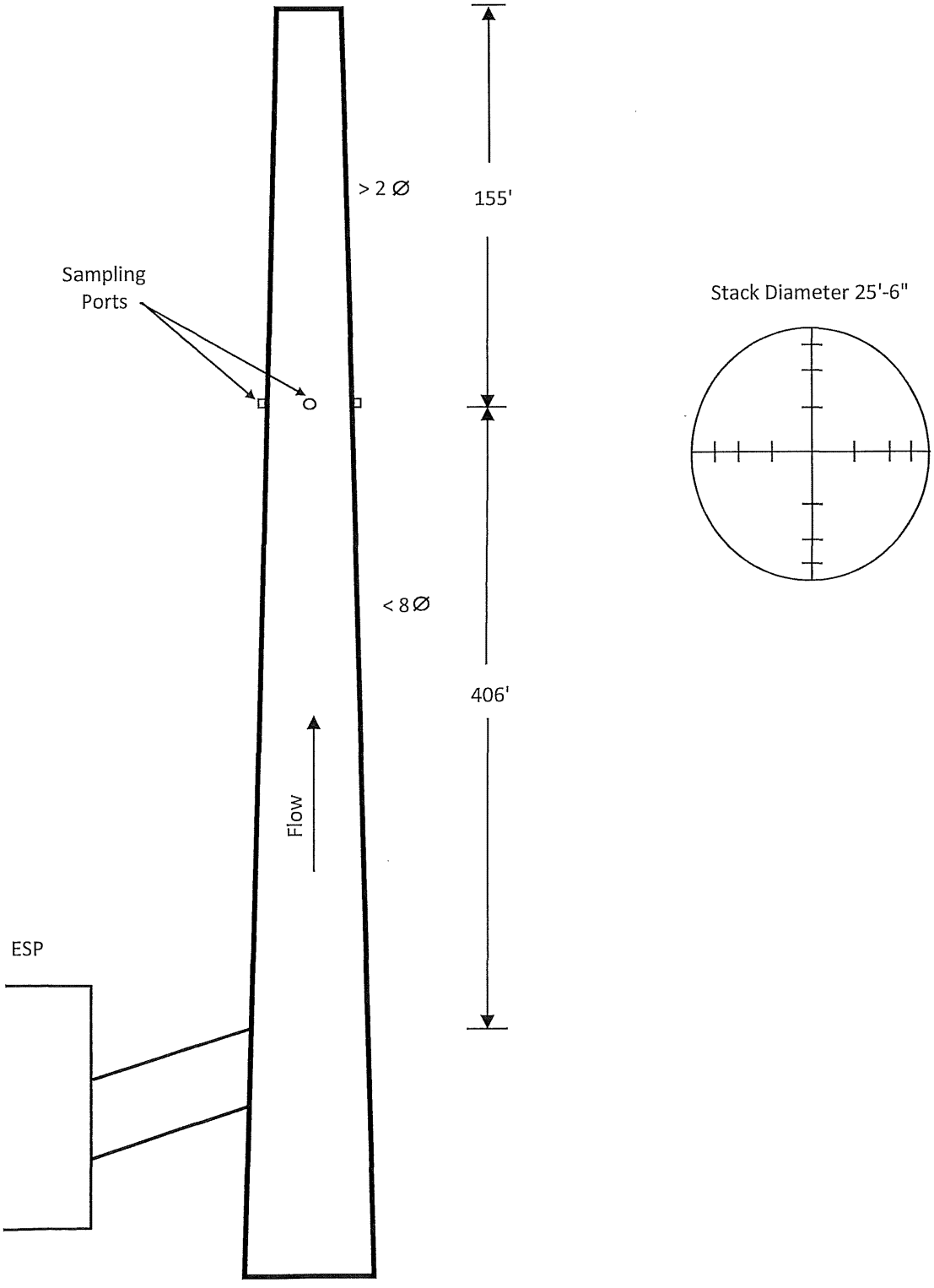

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Figure 2 – ASTM D6348
Belle River Power Plant
September 17, 2020