



COMPLIANCE TEST REPORT

for

QUARTERLY HYDROGEN CHLORIDE (HCL) EMISSIONS

EU-BOILER#3

(SRN: B2810)

4th Quarter 2019

**River Rouge Power Plant
River Rouge, Michigan**

November 14, 2019

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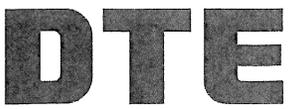
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EXECUTIVE SUMMARY

DTE Energy’s Environmental Management and Resources (EM&R) Field Services Group performed 4th Quarter – 2019 Hydrogen Chloride (HCl) emissions testing on the exhaust of EU-Boiler#3 at the River Rouge Power Plant, located in River Rouge, Michigan. The testing was required by 40 CFR Part 63, Subpart UUUUU (Mercury and Air Toxics Standards - MATS) to document quarterly HCl stack emissions. The testing was conducted on November 14, 2019.

A summary of the emission test results are shown below:

**Emissions Testing Summary
River Rouge Power Plant
EU-Boiler#3**

Source	Date	Load (GMW)	HCl (lbs/MmBtu) ⁽¹⁾
EU-Boiler#3	11-14-19	142	<0.0003

(1) MATS Limit 0.002 lbs/MMBtu



1.0 INTRODUCTION

DTE Energy's Environmental Management and Resources (EM&R) Field Services Group performed 4th Quarter – 2019 Hydrogen Chloride (HCl) emissions testing on the exhaust of EU-Boiler#3 at the River Rouge Power Plant, located in River Rouge, 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 November 14, 2019.

Testing was performed pursuant to ASTM Method D6348.

The fieldwork was performed in accordance with EPA Reference Methods and DTE Energy Intent to Test¹, which was approved in a letter by Mr. Tom Maza from the Michigan Department of Environment, Great Lakes & Energy (EGLE), dated January 20, 2017². 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. Ms. Tanecia Wilson, Associate Environmental Engineer at the plant, provided process coordination for the testing program.

2.0 SOURCE DESCRIPTION

The River Rouge Power Plant (RRPP), located at 1 Belanger Park Dr. River Rouge, Michigan, employs the use of one coal-fired boiler. EU-Boiler#3 is a Foster-Wheeler Boiler, nominally rated at 278 GMW. Particulate emissions from EU-Boiler#3 are controlled via a Wheelabrator-Fry electrostatic precipitator (ESP). The air pollution control equipment has a designed collection efficiency of 99.9%.

The 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 the unit. Trona is received at the plant where inline mills further refine the Trona. The ACI system is used to control Mercury emissions.

Testing was performed on EU-Boiler#3 while operating at normal load conditions, per Subpart UUUUU.

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

² EGLE, Approval Letter, dated January 20, 2017. (Attached-Appendix A)

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 (CO₂) 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 CO₂ 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 CO₂ emissions were corrected for bias according to USEPA Method 7E.

3.3 HYDROGEN CHLORIDE (ASTM D6348)

3.3.1 Sampling Method

Hydrogen chloride and carbon dioxide emissions were evaluated using ASTM D6348, “Measurement of Vapor Phase Organic Emissions by Extractive Fourier Transform Infrared (FTIR)”. Single point sampling was performed. Triplicate 60-minute test runs

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 (SO₂, NO_x, CO₂, 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 according to 40 CFR part 63.10007.

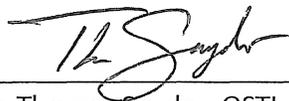
5.0 DISCUSSION OF RESULTS

Table 1 presents the HCl emission testing results from EU-Boiler#3. HCl emissions are presented in parts per million on a wet basis (ppm_w) and pounds per million BTU (lbs/MMBtu). The EU-Boiler#3 HCl emissions averaged below the minimum detectable concentration of 0.1ppm. EU-Boiler#3 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 CO₂ concentration (%_{wet}).

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."



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RESULTS TABLES



TABLE NO. 1
HYDROGEN CHLORIDE EMISSIONS TESTING RESULTS
River Rouge Power Plant - EU-BOILER#3
November 14, 2019

Test	Test Date	Test Time (DAHS)	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	14-Nov-19	8:10-9:10	143	724	80	6.5	<0.10	<0.0003
HCl-2		9:21-10:21	142	1209	80	6.6	<0.10	<0.0003
HCl-3		10:29-11:29	<u>141</u>	<u>860</u>	<u>80</u>	<u>6.4</u>	<u><0.10</u>	<u><0.0003</u>
Average:			142	931	80	6.5	<0.10	<0.0003

(1) Corrected to (%R)

(2) MATS Limit = 0.002 lb/MMBtu

* DSI and ASI injection rates were not recorded due an auxillary bus cleaning causing a temporary power outage to the DSI/ACI PI interface.

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FIGURES

Figure 1 – Sampling Location
River Rouge Power Plant – EU-BOILER#3
November 14, 2019

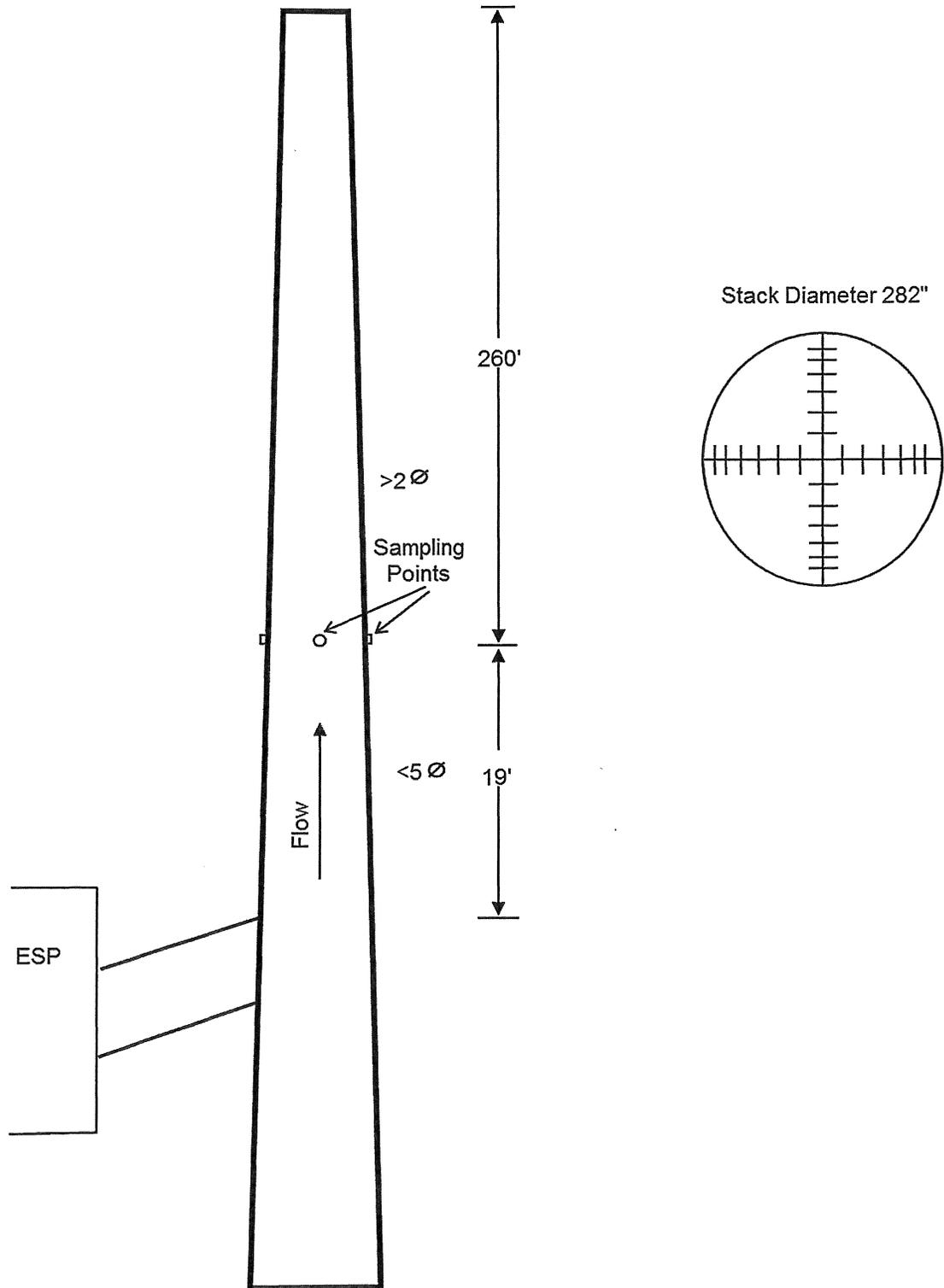


Figure 2 – ASTM D6348
River Rouge Power Plant
November 14, 2019

