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COMPLIANCE TEST REPORT

for

QUARTERLY HYDROGEN CHLORIDE (HCL) EMISSIONS

EU-BOILER_9A

(SRN: B2811)

1st Quarter 2021

Trenton Channel Power Plant
Trenton, Michigan

March 11, 2021

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EXECUTIVE SUMMARY

DTE Energy's Environmental Management and Safety (EM&S) Ecology, Monitoring, and Remediation Group performed 1st Quarter – 2021 Hydrogen Chloride (HCl) emissions testing on the exhaust of EU-BOILER_9A at the Trenton Channel Power Plant, located in Trenton, Michigan. Testing is required by 40 CFR Part 63, Subpart UUUUU (Mercury and Air Toxics Standards - MATS) to document quarterly HCl stack emissions. Testing was conducted on March 11, 2021.

A summary of the emission test results is shown below:

Emissions Testing Summary
Trenton Channel Power Plant
EU-BOILER_9A

Source	Date	Load (GMW)	HCl (lbs/MmBtu)[1]
EU-BOILER_9A	3-11-21	269.9	0.0006

(1) MATS Limit 0.0020 lbs/MMBtu

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1.0 INTRODUCTION

DTE Energy's Environmental Management and Safety (EM&S) Ecology, Monitoring, and Remediation Group performed 1st Quarter – 2021 Hydrogen Chloride (HCl) emissions testing on the exhaust of EU-BOILER_9A at the Trenton Channel Power Plant, located in Trenton, 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 March 11, 2021.

The fieldwork was performed in accordance with EPA Reference Methods and DTE Energy Intent to Test[1], which was approved in a letter by Mrs. Regina Angellotti from the Michigan Department of Environment, Great Lakes, and Energy (EGLE), dated November 10, 2020[2]. The following DTE Energy personnel participated in the testing program: Mr. Mark Grigereit, Principal Engineer. Mr. Jason Logan, Environmental Specialist, was the project leader. Mr. Austin Sash, Environmental Engineer, provided process coordination for the testing program.

2.0 SOURCE DESCRIPTION

The Trenton Channel Power Plant (TCPP) located at 4695 W. Jefferson Avenue, Trenton, Michigan, employs the use of one coal-fired boiler. Boiler 9A is a Combustion Engineering Boiler that has a nameplate capacity of 520 gross megawatts (GMW) and produces 3,915 klb/hr of steam at full load. However, current operating conditions normally limits operations to below 250 GMW and 2,085 klb/hr steam production. See Figure 1 for a diagram of the units' sampling locations and stack dimensions.

Particulate emissions from Boiler 9A are controlled via American Standard electrostatic precipitators.

Boiler 9A 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.

Testing was performed on EU-BOILER_9A while operating at normal load conditions, per Subpart UUUUU.

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[1] Test Plan, Submitted October 2, 2020. (Attached-Appendix A)

[2] Approval Letter, dated November 10, 2020. (Attached-Appendix A)

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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
USEPA Method 4	Moisture Content	Field data analysis and reduction
USEPA Method 26A	Hydrogen Chloride	Ion Chromatography
USEPA Method 19	Emission Rate Calculations	Stoichiometric Calculations

3.1 MOISTURE DETERMINATION (USEPA Method 4)

3.1.1 Sampling Method

Determination of the moisture content of the exhaust gas was performed using the method described in USEPA Method 4, "Determination of Moisture Content in Stack Gases". The exhaust gas condensate was collected in glass impingers and the percentage of moisture was derived from calculations outlined in USEPA Method 4 as a component of the HCl sampling train.

3.2 HYDROGEN CHLORIDE (USEPA Method 26A)

3.2.1 HCl Sampling Method

USEPA Method 26A, "Determination of Hydrogen Halide and Halogen Emissions" was used to measure the Hydrochloric Acid (HCl) emissions (see Figure 2 for a schematic of the sampling train). Method 26A uses impingers containing 0.1N H_2SO_4 to capture the HCl. Triplicate, 60-minute test runs were conducted. Method 26A sampling was performed as a single point sample per Method 26 procedures.

The Method 26A stack sampling system (Figure 2) consisted of the following:

(1) Heated glass-lined probe (Maintained 248 °F < T < 273 °F)
(2) Heated 3" glass filter holder with a PTFE filter (maintained at a temperature of 248 °F < T < 273 °F)
(3) Set of impingers for the collection HCl and condensate for moisture determination (Impingers containing 0.1N H_2SO_4)
(4) Length of sample line

(5) Environmental Supply® control case equipped with a pump, dry gas meter, and calibrated orifice.

After completion of each run, a leak test was conducted. All the impingers were measured for moisture gain. The contents of impingers 1 and 2 were collected in a designated sample container. Impingers 1 and 2, the back half of the filter holder, the Z-fitting connecting the filter holder to the first impinger, and the U-tube between the first and second impingers were then rinsed with DI water and collected in the same sample container. Each container was labeled with the test number, test location, test date, and the level of liquid marked on the outside of the container. Immediately after recovery, the sample containers were placed in a cooler for storage.

Collected field blanks consisted of a 0.1N H_2SO_4 solution blank. 200ml of 0.1N H_2SO_4 was collected and diluted with DI water, from the same bottle used in sample recovery, to the liquid level of the three test runs. The blank was collected and analyzed following the same procedures used to recover and analyze the field samples.

Analysis of the Method 26A samples and blanks were conducted by Enthalpy Analytical. All analysis followed the procedures listed in USEPA Method 26A. A complete laboratory report is in Appendix E.

Field data sheets for the Method 26A sampling are in Appendix B.

3.2.2 Quality Control and Assurance

All sampling and analytical equipment was calibrated per the guidelines referenced in EPA Method 5 and 26A.

3.2.3 Data Reduction

HCl emissions data collected during the testing were calculated and reported as parts per million (ppm) and pounds per million Btu (lb/MMBtu). A coal sample was collected on the day of testing and was analyzed by DTE's internal laboratory for proximate and ultimate fuel analysis. An Fc factor was calculated based on this data. Equation 19-7 in Method 19 was used in conjunction with the Fc factor and CO2 from the CEMS to calculate lb/MMbtu.

Analysis of the Method 26A samples and blanks were conducted by Enthalpy Analytical. All analyses followed the procedures listed in USEPA Method 26A. A complete laboratory report is in Appendix E.

Field data sheets for the Method 26A sampling are in Appendix B.

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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. Jason Logan, QSTI

This report prepared by: _____

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This report reviewed by: _____ for:

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Principal Engineer, Ecology, Monitoring, and Remediation
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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), CO_2 (%), steamload (klb/hr), and HCl (ppm). 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 C.

HCl emissions testing was performed at 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_9A. HCl emissions are presented in parts per million on a wet basis (ppm_w) and pounds per million BTU (lbs/MMBtu). The EU-BOILER_9A HCl emissions during the testing demonstrated an average HCl concentration of 0.37 ppm and 0.0006 lb/MMBtu. The average EU-BOILER_9A HCl emissions were within the Subpart UUUUU limit of 0.0020 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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RESULTS TABLES

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TABLE NO. 1
HYDROGEN CHLORIDE EMISSIONS TESTING RESULTS
Trenton Channel Power Plant - EU-BOILER_9A
March 11, 2021

Test	Test Date	Test Time	Unit Load (GMW)	DSI Injection Rate (lb/hr)	ACI Injection Rate (lb/hr)	CO_2 Concentration ($\%_{wet}$)	HCl Concentration ($ppmv_{wet}$)	HCl Emissions (lbs/MMBtu)[1]
HCl-1	**11-Mar-21**	7:56-8:56	267	263	227	11.1	0.37	0.0006
HCl-2		9:10:10:10	265	258	265	11.1	0.36	0.0006
HCl-3		10:23-11:23	277	257	321	11.3	0.37	0.0006
	Average:		***270***	***259***	***271***	***11.2***	***0.37***	***0.0006***

(1) MATS Limit = 0.002 lb/MMBtu

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FIGURES

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Figure 1 – Sampling Location
Trenton Channel Power Plant – Boiler 9A

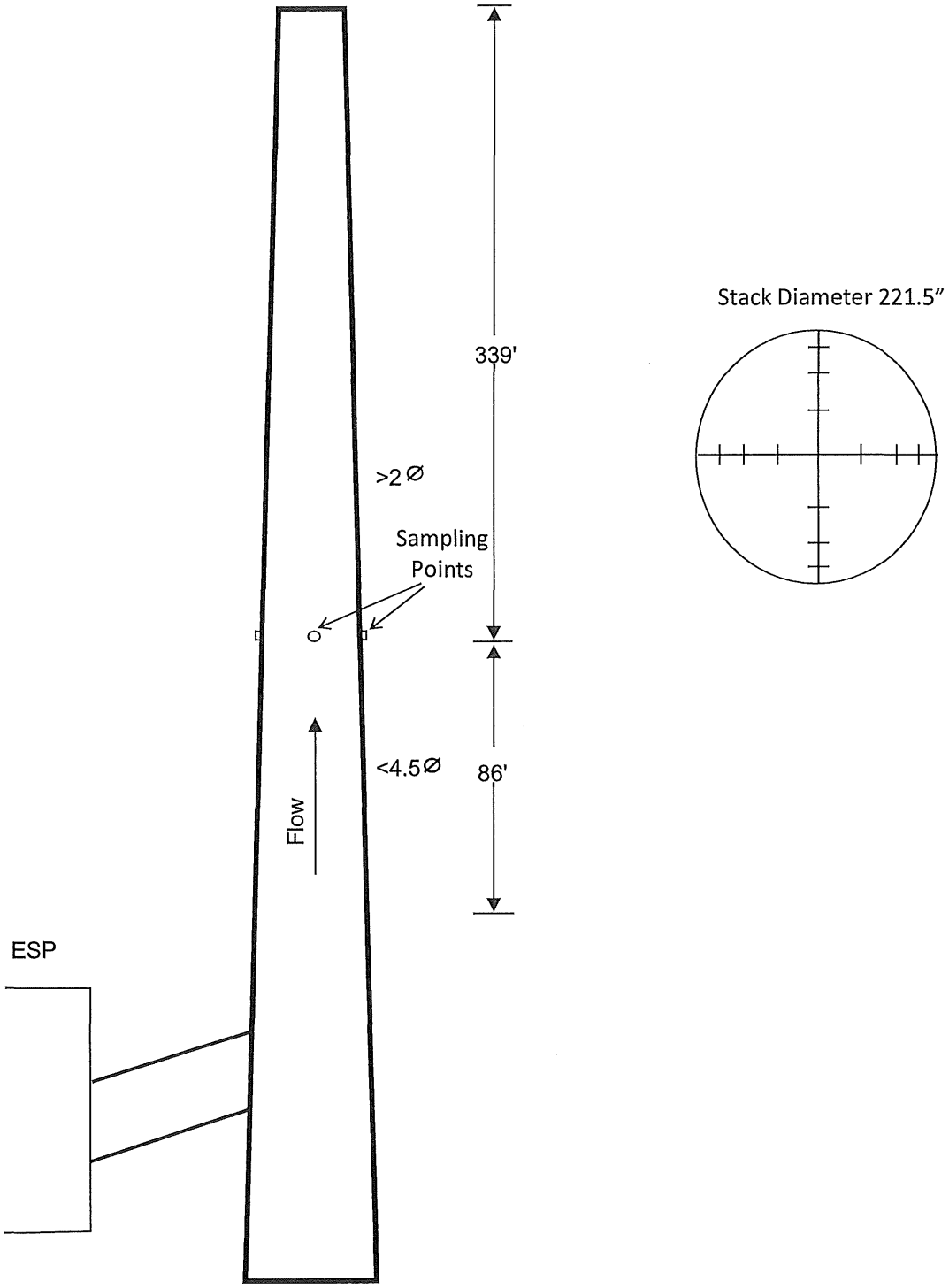

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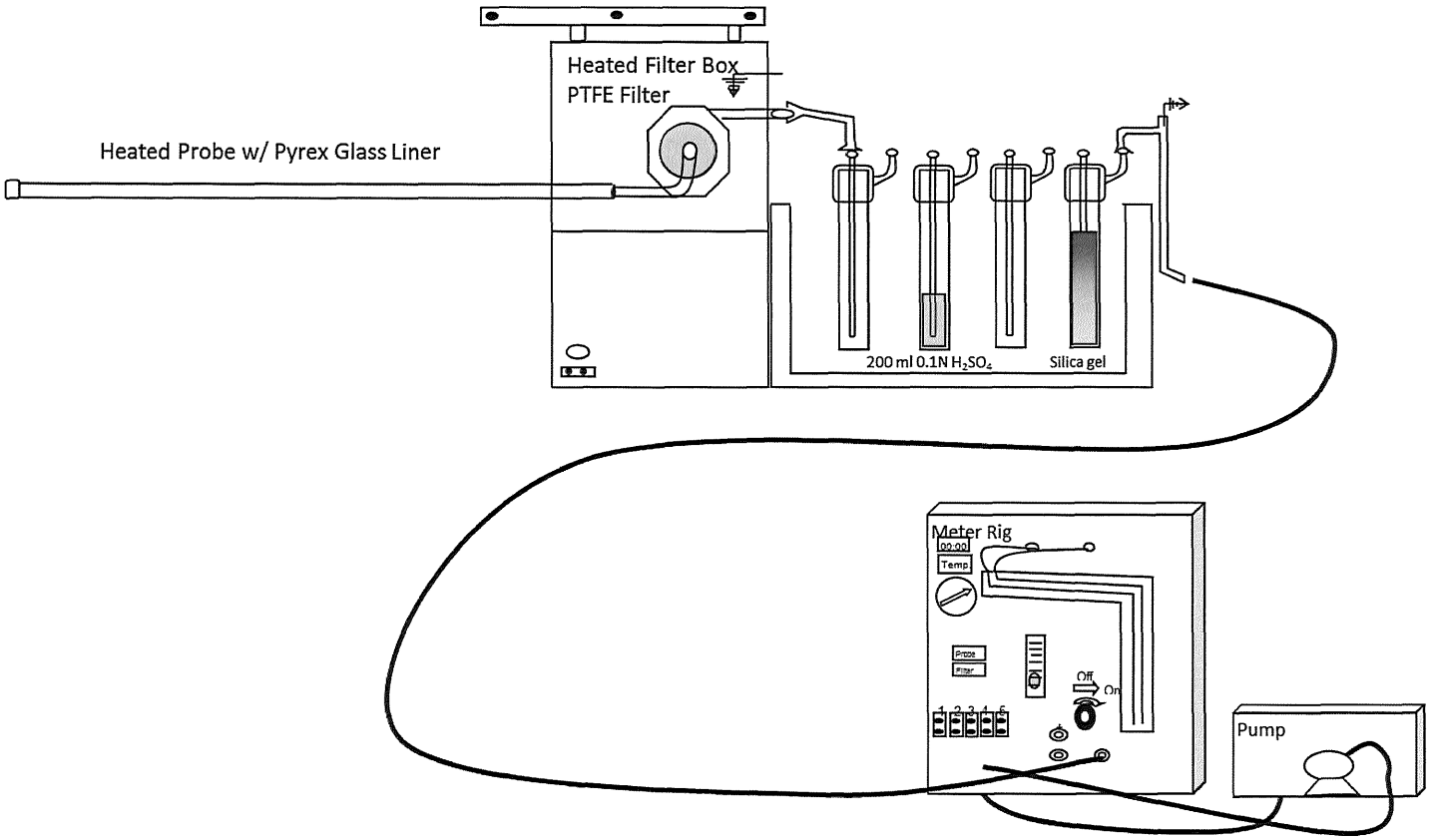
Figure 2 – USEPA Method 26A (Modified)

Trenton Channel Power Plant



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APPENDIX A

TEST PLAN AND APPROVAL LETTER