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**Mercury and Air Toxics Standard  
Hydrogen Chloride Emissions Test Report**

**Lansing Board of Water and Light  
Erickson Station  
Unit 1 Stack  
Lansing, Michigan  
May 24, 2022**

**Report Submittal Date  
June 27, 2022**

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Mostardi Platt

**Project No. M222105**



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## TABLE OF CONTENTS

1.0 EXECUTIVE SUMMARY .....	1
2.0 TEST METHODOLOGY .....	2
Method 1 Traverse Point Determination .....	2
Method 2 Volumetric Flowrate Determination .....	2
Method 3A Oxygen (O <sub>2</sub> )/Carbon Dioxide (CO <sub>2</sub> ) Determination .....	2
Method 26A Hydrogen Chloride (HCl) Determination .....	2
3.0 TEST RESULT SUMMARIES .....	3
4.0 CERTIFICATION .....	4
APPENDICES	
Appendix A - Plant Operating Data .....	6
Appendix B - Test Section Diagram .....	8
Appendix C - Sample Train Diagrams .....	10
Appendix D - Calculation Nomenclature and Formulas .....	14
Appendix E - Laboratory Sample Analysis .....	25
Appendix F - Reference Method Test Data (Computerized Sheets) .....	29
Appendix G - Field Data Sheets .....	40
Appendix H - Calibration Data .....	48
Appendix I - Gas Cylinder Certifications .....	61



## 1.0 EXECUTIVE SUMMARY

Mostardi Platt conducted a Mercury and Air Toxics Standards (MATS) hydrogen chloride emissions test program for the Lansing Board of Water and Light at the Erickson Station on the Unit 1 Stack in Lansing, Michigan on May 24, 2022. 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
Unit 1 Stack	May 24, 2022	Hydrogen Chloride (HCl)

The purpose of the test program was to document HCl emissions to qualify for the LEE designation as required by 40 CFR Part 63, Subpart UUUUU. 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 Parameter	Emission Limits	LEE Emission Limits	Emission Rates
Unit 1 Stack	HCl	≤0.002 lb/mmBtu	≤0.001 lb/mmBtu	0.0009 lb/mmBtu

Emissions on lb/mmBtu basis were determined using a standard  $F_d$ -Factor of 9,820 dscf/mmBtu for sub-bituminous coal. Plant operating data as provided by Lansing Board of Water and Light is included in Appendix A.

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

TEST PERSONNEL INFORMATION		
Location	Address	Contact
Test Coordinator	Lansing Board of Water and Light 1232 Haco Drive P.O. Box 13007 Lansing, Michigan 48912	Mr. Nathan Hude Environmental Regulatory Compliance (517) 702-6170 nathan.hude@lbwl.com
Test Facility	Lansing Board of Water and Light Erickson Station 1201 S. Washington Ave. Lansing, Michigan 48910	
Testing Company Representative	Mostardi Platt 888 Industrial Drive Elmhurst, Illinois 60126	Mr. Stuart L. Burton Project Supervisor (630) 993-2100 (phone) sburton@mp-mail.com

The test crew consisted of J. Carsello, K. Beckham, S. McGough, and S. Burton, of Mostardi Platt.

## 2.0 TEST METHODOLOGY

Emissions testing was conducted following the methods specified in 40CFR60, Appendix A. A schematic of the test section diagram is found in Appendix B and schematics of the sampling trains used are included in Appendix C. Calculation nomenclature and sample calculations are included in Appendix D. Laboratory analysis data are found in Appendix E. Copies of analyzer print-outs for each test run are included in Appendix F and field data sheets are found in Appendix G.

The following methodologies were used during the test program:

### Method 1 Traverse Point 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
Unit 1 Stack	7.9	11.3	HCl	12

### Method 2 Volumetric Flowrate Determination

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

### Method 3A Oxygen (O<sub>2</sub>)/Carbon Dioxide (CO<sub>2</sub>) Determination

Stack gas molecular weight was determined in accordance with Method 3A. An ECOM analyzer was used to determine stack gas oxygen and carbon dioxide content and, by difference, nitrogen content. 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 26A Hydrogen Chloride (HCl) Determination

Stack gas HCl concentrations and emission rates were determined in accordance with Method 26A, 40CFR60, Appendix A. An Environmental Supply Company sampling train was used to sample stack gas, in the manner specified in the Method. Analyses of the samples collected were conducted at the Elmhurst, Illinois laboratory of Mostardi Platt. Sample analysis 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 SUMMARIES

**Client:** Lansing Board of Water and Light  
**Facility:** Erickson Station  
**Test Location:** Unit 1 Stack  
**Test Method:** 26A MATS

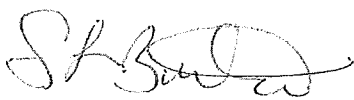
	Source Condition	Normal	Normal	Normal	
	Date	5/24/22	5/24/22	5/24/22	
	Start Time	7:50	10:28	12:30	
	End Time	9:39	12:17	14:19	
	Run 1	Run 2	Run 3	Average	
<b>Stack Conditions</b>					
Average Gas Temperature, °F	321.2	324.7	325.5	323.8	
Flue Gas Moisture, percent by volume	10.7%	11.1%	10.8%	10.9%	
Average Flue Pressure, in. Hg	29.13	29.13	29.13	29.13	
Gas Sample Volume, dscf	80.150	81.149	80.664	80.654	
Average Gas Velocity, ft/sec	44.957	45.726	45.461	45.381	
Gas Volumetric Flow Rate, acfm	612,266	622,734	619,130	618,043	
Gas Volumetric Flow Rate, dscfm	359,849	362,496	361,405	361,250	
Gas Volumetric Flow Rate, scfm	402,839	407,900	405,109	405,283	
Average %CO <sub>2</sub> by volume, dry basis	14.4	14.5	14.4	14.4	
Average %O <sub>2</sub> by volume, dry basis	5.0	5.1	5.2	5.1	
Isokinetic Variance	99.9	100.4	100.1	100.1	
Standard Fuel Factor Fd, dscf/mmBtu	9,820.0	9,820.0	9,820.0	9,820.0	
<b>Hydrogen Chloride (HCl) Emissions</b>					
ug of sample collected	2376.00	2889.00	2559.00	2608.00	
ppm	0.69	0.83	0.74	0.75	
mg/dscm	1.05	1.26	1.12	1.14	
lb/hr	1.4111	1.7071	1.5166	1.5449	
lb/mmBtu (Standard Fd Factor)	0.0008	0.0010	0.0009	0.0009	

## 4.0 CERTIFICATION

Mostardi Platt is pleased to have been of service to Lansing Board of Water and Light. If you have any questions regarding this test report, please do not hesitate to contact us at 630-993-2100.

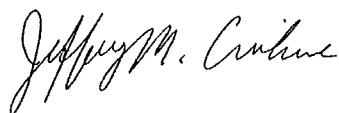
As project manager, I hereby certify that this test report represents a true and accurate summary of emissions test results and the methodologies employed to obtain those results, and the test program was performed in accordance with the methods specified in this test report.

MOSTARDI PLATT



Stuart L. Burton

Program Manager



Jeffrey M. Crivlare

Quality Assurance



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APPENDICES

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Crestar Plant

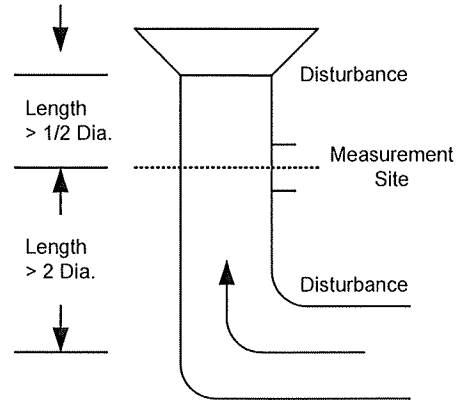
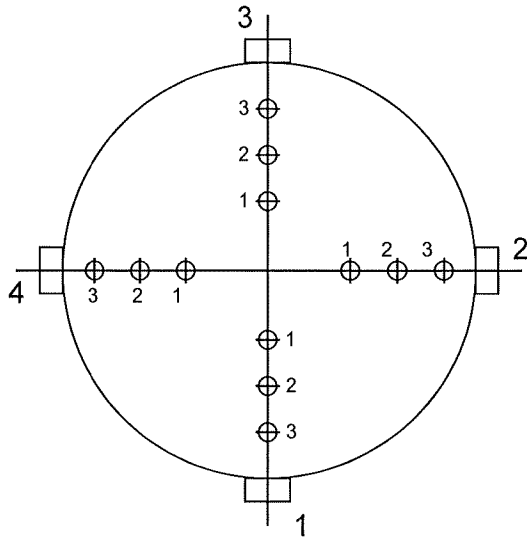
## Appendix A - Plant Operating Data

## Erickson Station Operating Load 2022 MATS Q2

Date/Time	UNIT01 MW Value
05/24/2022 06:45	164
05/24/2022 07:00	164
05/24/2022 07:15	164
05/24/2022 07:30	164
05/24/2022 07:45	164
05/24/2022 08:00	164
05/24/2022 08:15	164
05/24/2022 08:30	164
05/24/2022 08:45	164
05/24/2022 09:00	164
05/24/2022 09:15	164
05/24/2022 09:30	164
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05/24/2022 12:45	164
05/24/2022 13:00	164
05/24/2022 13:15	164
05/24/2022 13:30	164
05/24/2022 13:45	164
05/24/2022 14:00	164
05/24/2022 14:15	164
05/24/2022 14:30	164

## Appendix B - Test Section Diagram

# EQUAL AREA TRAVERSE FOR ROUND DUCTS



Job: Lansing Board of Water and Light

Date: May 24, 2022

Test Location: Unit 1 Stack

Stack Diameter: 17.0 feet

Stack Area: 226.980 square feet

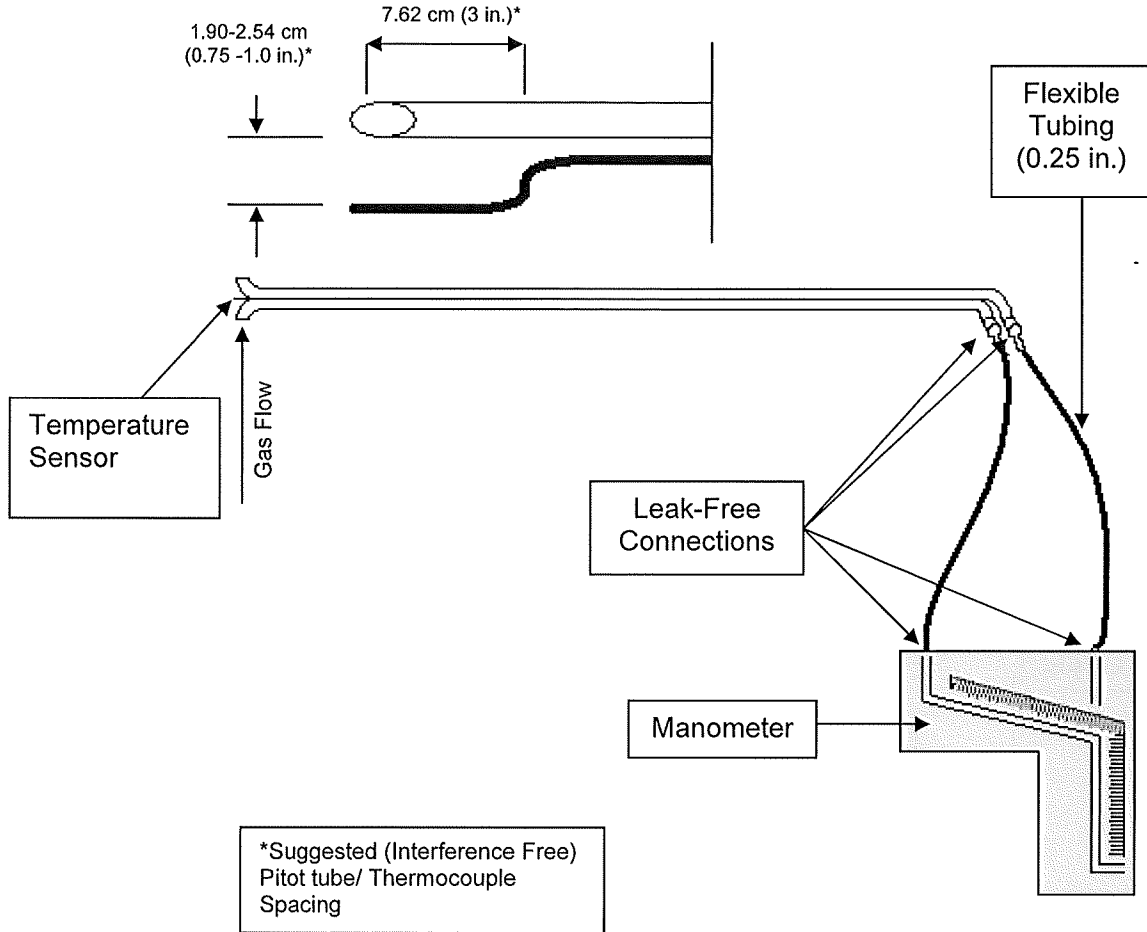
No. Points Across Diameter: 6

No. of Ports: 4

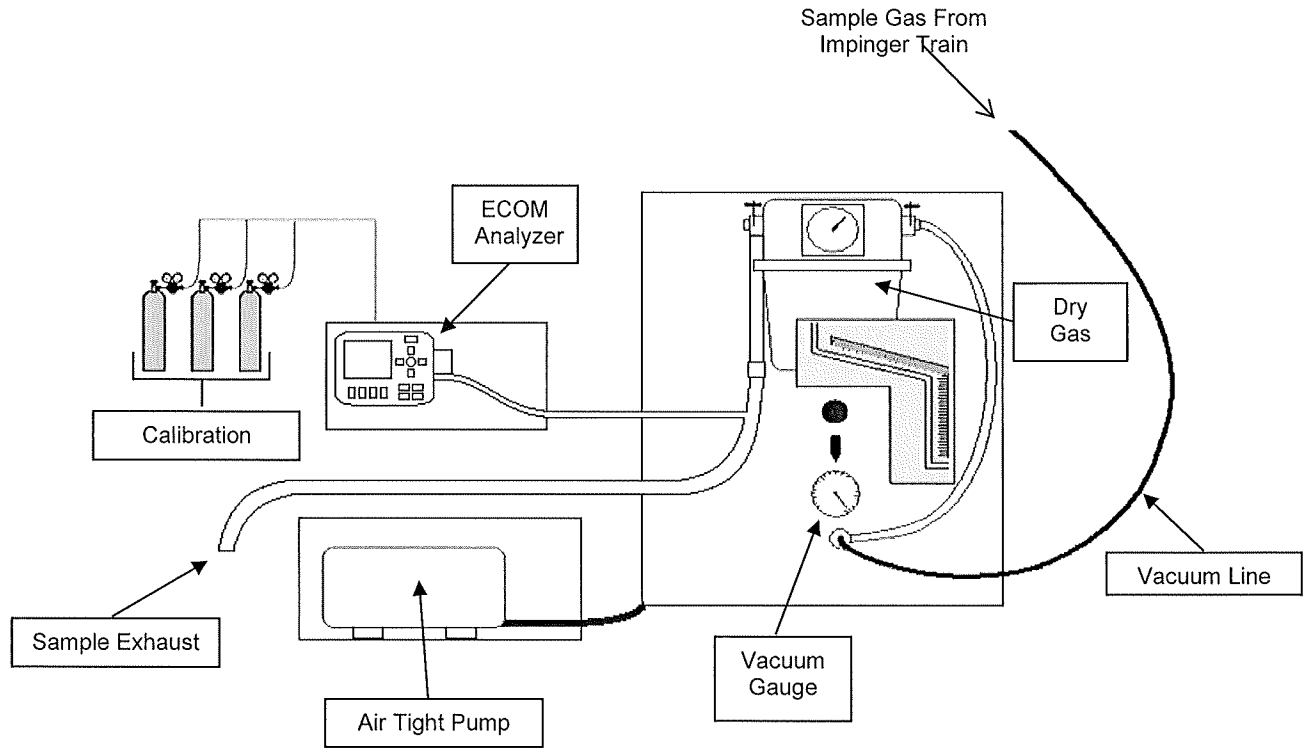
Port Length: 78 inches

## Appendix C - Sample Train Diagrams

# USEPA Method 2 – Type S Pitot Tube Manometer Assembly

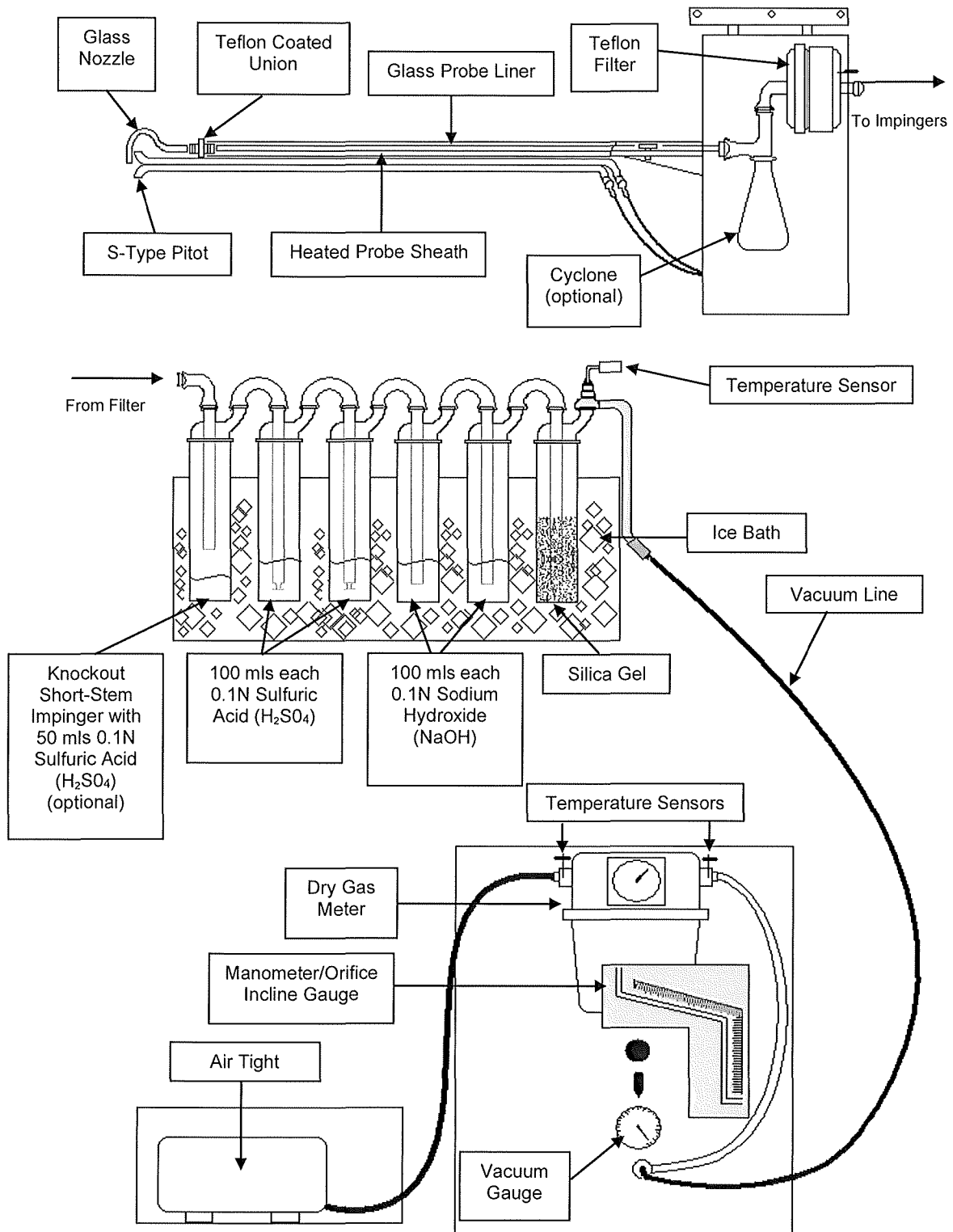


# USEPA Method 3A - Integrated Oxygen/Carbon Dioxide Sample Train Diagram Utilizing ECOM To Measure from Sample Exhaust





# USEPA Method 26A – HCl Sample Train Diagram



## Appendix D - Calculation Nomenclature and Formulas