



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

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

**Report Submittal Date
November 28, 2022**

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Project No. M224003

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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 November 1, 2022. This report summarizes the results of the test program and test methods used.

The test location, test date, and test parameters are summarized below.

TEST INFORMATION		
Test Location	Test Dates	Test Parameters
Unit 1 Stack	November 1, 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	0.0010 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 1201 S. Washington Ave. Lansing, Michigan 48910	Nathan Hude Environmental Regulatory Compliance – Air (517) 705-6170 (phone) Nathan.hude@lbwl.com
Test Facility	Lansing Board of Water and Light Erickson Station 3725 S. Canal Road Lansing, Michigan 48917	
Testing Company Representative	Mostardi Platt 888 Industrial Drive Elmhurst, Illinois 60126	Timothy Russ Project Manager 630-993-2100 (phone) truss@mp-mail.com

The test crew consisted of C. Buglio, J. Kolodziejczyk, and T. Russ 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	11.8	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 (O₂)/Carbon Dioxide (CO₂) 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

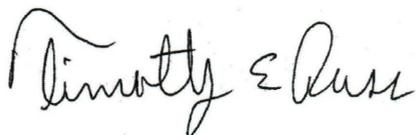
	Source Condition	Normal	Normal	Normal	
	Date	11/1/22	11/1/22	11/1/22	
	Start Time	8:35	10:48	13:05	
	End Time	10:30	12:42	14:59	
	Run 1	Run 2	Run 3	Average	
Stack Conditions					
Average Gas Temperature, °F	299.6	301.1	299.8	300.2	
Flue Gas Moisture, percent by volume	10.9%	10.1%	10.9%	10.6%	
Average Flue Pressure, in. Hg	28.89	28.89	28.89	28.89	
Gas Sample Volume, dscf	65.734	63.218	65.814	64.922	
Average Gas Velocity, ft/sec	36.765	35.403	36.829	36.332	
Gas Volumetric Flow Rate, acfm	500,693	482,147	501,565	494,802	
Gas Volumetric Flow Rate, dscfm	299,474	290,333	300,005	296,604	
Gas Volumetric Flow Rate, scfm	336,061	322,975	336,590	331,875	
Average %CO ₂ by volume, dry basis	12.2	12.1	12.2	12.2	
Average %O ₂ by volume, dry basis	7.3	7.2	7.3	7.3	
Isokinetic Variance	100.4	99.6	100.3	100.1	
Standard Fuel Factor Fd, dscf/mmBtu	9,820.0	9,820.0	9,820.0	9,820.0	
Hydrogen Chloride (HCl) Emissions					
ug of sample collected	3073.00	1784.00	816.00	1891.00	
ppm	1.09	0.66	0.29	0.68	
mg/dscm	1.65	1.00	0.44	1.03	
lb/hr	1.852	1.084	0.492	1.143	
lb/mmBtu (Standard Fd Factor)	0.0016	0.0009	0.0004	0.0010	

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



Timothy E. Russ

Program Manager



Scott W. Banach

Quality Assurance

APPENDICES

Appendix A - Plant Operating Data

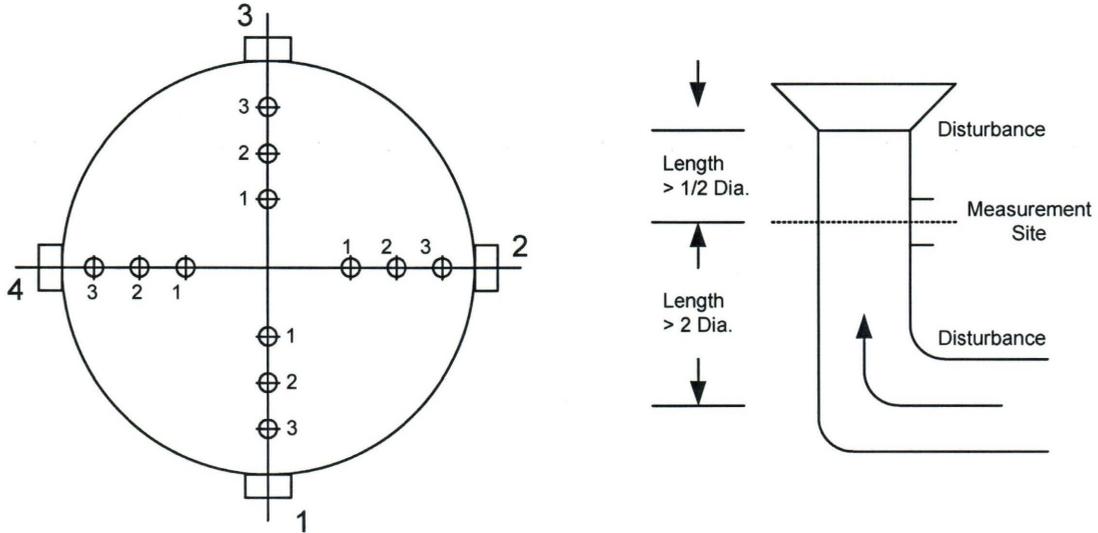
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AIR QUALITY DIVISION

**B4001- Erickson Station
Operations Data
2022 Q4 MATS**

Date/Time	UNIT01 HEATIN Value	UNIT01 MW Value
RUN 1		
11/01/2022 08:30	1225.3	99
11/01/2022 08:45	1229.1	99
11/01/2022 09:00	1213.6	99
11/01/2022 09:15	1223.1	99
11/01/2022 09:30	1220.5	99
11/01/2022 09:45	1222.6	99
11/01/2022 10:00	1217.4	99
11/01/2022 10:15	1223.8	99
11/01/2022 10:30	1236.3	99
Average	1223.5	99.0
RUN 2		
11/01/2022 10:45	1226.5	99
11/01/2022 11:00	1233.7	99
11/01/2022 11:15	1227.7	99
11/01/2022 11:30	1224.6	99
11/01/2022 11:45	1228.2	99
11/01/2022 12:00	1245.6	99
11/01/2022 12:15	1239.1	99
11/01/2022 12:30	1245	99
11/01/2022 12:45	1231	99
Average	1233.5	99.0
RUN 3		
11/01/2022 13:00	1234.7	99
11/01/2022 13:15	1224.8	99
11/01/2022 13:30	1230	99
11/01/2022 13:45	1237.5	99
11/01/2022 14:00	1230.7	99
11/01/2022 14:15	1227.1	99
11/01/2022 14:30	1227.7	99
11/01/2022 14:45	1225.1	99
11/01/2022 15:00	1220.7	99
Average	1228.7	99.0

Appendix B - Test Section Diagram

EQUAL AREA TRAVERSE FOR ROUND DUCTS



Job: Lansing Board of Water and Light
Erickson Station
Lansing, Michigan

Date: November 1, 2022

Test Location: Unit 1 Stack

Stack Diameter: 17.0 feet

Stack Area: 226.980 feet squared

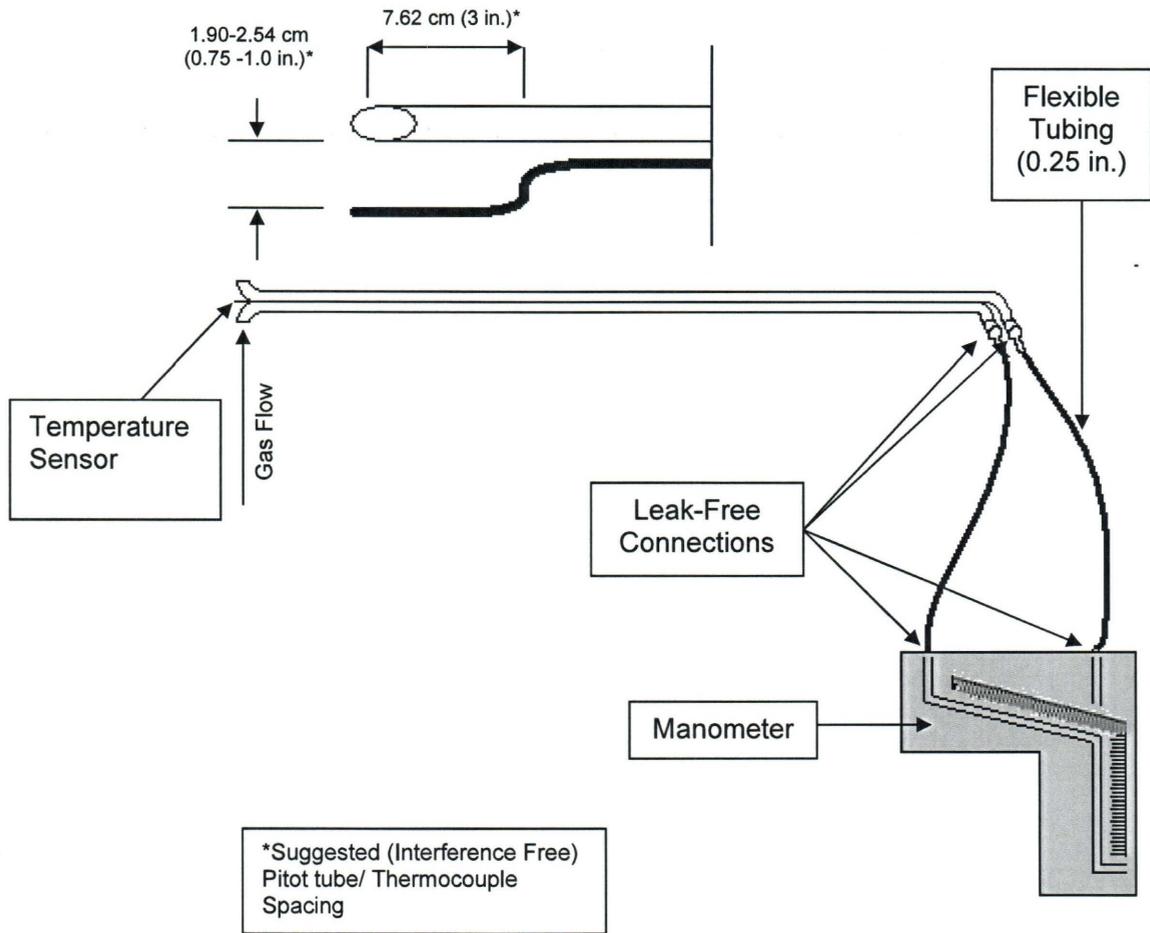
No. Points Across Diameter: 3

No. of Ports: 4

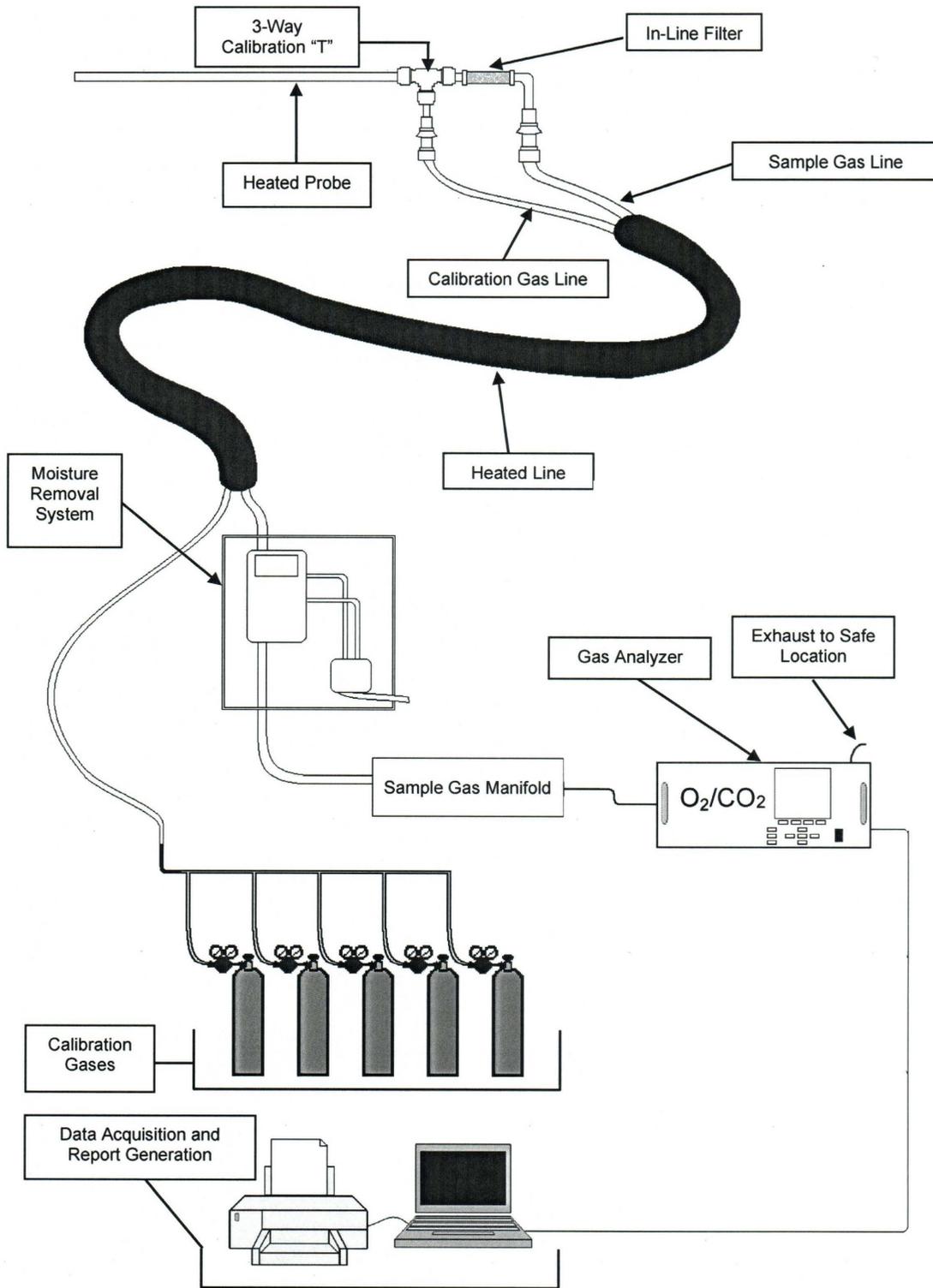
Port Length: 78 inches

Appendix C - Sample Train Diagrams

USEPA Method 2 – Type S Pitot Tube Manometer Assembly



USEPA Method 3A Extractive Gaseous Sampling Diagram



USEPA Method 26A – HCl Sample Train Diagram

