



## **Compliance Emissions Test Report**

**Lansing Board of Water and Light  
REO Town Facility  
Auxiliary Boiler Stack  
Lansing, Michigan  
January 23, 2024**

**Report Submittal Date  
February 14, 2024**

© Copyright 2024  
All rights reserved in  
Mostardi Platt

**Project No. M240601B**



---

## TABLE OF CONTENTS

1.0 EXECUTIVE SUMMARY .....	1
2.0 TEST METHODOLOGY .....	2
Method 1 Traverse Point Determination .....	2
Gaseous Stratification Test .....	2
Method 2 Volumetric Flowrate Determination .....	2
Method 3A Oxygen (O <sub>2</sub> )/Carbon Dioxide (CO <sub>2</sub> ) Determination .....	2
Method 5 Filterable Particulate Matter (FPM) Determination .....	2
Method 202 Condensable Particulate Matter (CPM) Determination .....	3
Method 10 Carbon Monoxide (CO) Determination .....	3
3.0 TEST RESULT SUMMARIES .....	4
4.0 CERTIFICATION .....	6
APPENDICES	
Appendix A - Plant Operating Data .....	8
Appendix B - Test Section Diagrams .....	17
Appendix C - Sample Train Diagrams .....	21
Appendix D - Calculation Nomenclature and Formulas .....	26
Appendix E - Laboratory Sample Analysis .....	37
Appendix F - Reference Method Test Data (Computerized Sheets) .....	41
Appendix G - Field Data Sheets .....	53
Appendix H - Calibration Data .....	61
Appendix I - Gas Cylinder Certifications .....	80



## 1.0 EXECUTIVE SUMMARY

MOSTARDI PLATT conducted a compliance emissions test program for Lansing Board of Water and Light on January 23, 2024 at the REO Town Facility in Lansing, Michigan on the Auxiliary Boiler Stack. 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 Date	Test Parameters
Auxiliary Boiler Stack	January 23, 2024	Filterable Particulate Matter (FPM), Condensable Particulate Matter (CPM), Total Particulate Matter (TPM), and Carbon Monoxide (CO)

The purpose of the test program was to demonstrate the above test parameter emissions during normal operating conditions to satisfy the regulatory permit limits. 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	Emission Rate
Auxiliary Boiler Stack	FPM	0.5 lb/hr	0.056 lb/hr
	TPM (PM <sub>2.5</sub> , PM <sub>10</sub> )	1.8 lb/hr	0.208 lb/hr
	CO	0.04 lb/mmBtu	0.011 lb/mmBtu

All of the filterable and condensable particulate matter were considered to be PM<sub>2.5</sub> and PM<sub>10</sub> in the TPM evaluation. Operating data as provided by Lansing Board of Water and Light are included in Appendix A.

The identifications of 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 (cell phone) nathan.hude@lbwl.com
Test Facility	Lansing Board of Water and Light REO Town Facility 1201 S. Washington Ave. Lansing, Michigan 48917	
Testing Company Representative	Mostardi Platt 888 Industrial Drive Elmhurst, Illinois 60126	Mr. Timothy E. Russ Project Manager (630) 993-2100 (phone) truss@mp-mail.com

The test crew consisted of Messrs. H. Schell, J. Dockins, J. Jimenez, and T. Russ of Mostardi Platt.

## 2.0 TEST METHODOLOGY

Emissions testing was conducted following the methods specified in 40CFR60, Appendix A, and 40CFR51, Appendix M. 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	Stack Diameter	Stack Area	Upstream Diameters	Downstream Diameters	Test Parameter	Number of Sampling Points
Auxiliary Boiler Stack	4.75 feet	17.72 sq. ft.	9.5 feet	11.2 feet	FPM, TPM	24

### Gaseous Stratification Test

A twelve-point stratification test was performed during Run 1 of the test program. Based on the stratification test results, three test point used for Runs 2 and 3.

### Method 2 Volumetric Flowrate Determination

Gas velocity was measured following Method 2, for purposes of calculating stack gas volumetric flow rate and FPM/TPM emissions on a lb/hr basis. 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. A Servomex 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 5 Filterable Particulate Matter (FPM) Determination

Stack gas filterable particulate concentrations and emission rates were determined in accordance with Method 5. An Environmental Supply Company, Inc. sampling train was used to sample stack gas at an isokinetic rate, as specified in the Method. Particulate matter in the sample probe was recovered using an acetone wash. The probe wash and filter catch were analyzed by Mostardi Platt personnel. Laboratory analysis data are found in Appendix E. Calibration data are presented in Appendix H.

## **Method 202 Condensable Particulate Matter (CPM) Determination**

Stack gas CPM concentrations and emission rates were determined in accordance with the Method 202, 40CFR51, Appendix M, in conjunction with Method 5 filterable particulate sampling. Condensable particulate matter was collected in the impinger portion of the Method 202 sampling train.

The condensable particulate matter (CPM) was collected in impingers after filterable particulate material was collected using Method 5. The organic and aqueous fractions were then taken to dryness and weighed. The total of all fractions represents the CPM. Compared to the December 17, 1991 promulgated Method 202, this Method includes the addition of a condenser, followed by a water dropout impinger immediately after the final heated filter. One modified Greenburg Smith impinger and an ambient temperature filter follow the water dropout impinger. A schematic of the sampling train configured with these updates is found in the Appendix.

CPM was collected in the water dropout, modified Greenburg Smith impinger and ambient filter portion of the sampling train as described in this Method. The impinger contents were purged with nitrogen (N<sub>2</sub>) immediately after sample collection to remove dissolved sulfur dioxide (SO<sub>2</sub>) gases from the impingers. The impinger solution was then extracted with DI water, acetone, and hexane. The organic and aqueous fractions were dried and the residues weighed. The total of the aqueous, organic, and ambient filter fractions represents the CPM. Laboratory 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.

## **Method 10 Carbon Monoxide (CO) Determination**

Stack gas carbon monoxide concentrations and emission rates were determined in accordance with Method 10. A TECO 48i carbon monoxide analyzer was used to determine carbon monoxide concentrations, in the manner specified in the Method.

Stack gas was delivered to the analyzer via a Teflon® sampling line, heated to a minimum temperature of 250°F. Excess moisture in the stack gas was removed using a refrigerated condenser. The entire system was calibrated in accordance with the Method, using certified calibration gases introduced at the probe, before and after each test run.

A list of calibration gases used and the results of all calibration and other required quality assurance checks can be found in Appendix H. Copies of calibration gas certifications can be found in Appendix I.

### 3.0 TEST RESULT SUMMARIES

Client: Lansing Board of Water and Light  
 Facility: REO Town Facility  
 Test Location: Auxiliary Boiler Stack  
 Test Method: 5/202

Source Condition	Full Load	Full Load	Full Load	
Date	1/23/24	1/23/24	1/23/24	
Start Time	7:35	9:58	12:35	
End Time	9:45	12:00	14:37	
	Run 1	Run 2	Run 3	Average
<b>Stack Conditions</b>				
Average Gas Temperature, °F	295.7	291.3	293.0	293.3
Flue Gas Moisture, percent by volume	18.9%	20.3%	18.4%	19.2%
Average Flue Pressure, in. Hg	29.36	29.36	29.36	29.36
Gas Sample Volume, dscf	79.901	77.78	77.218	78.300
Average Gas Velocity, ft/sec	63.227	61.459	60.858	61.848
Gas Volumetric Flow Rate, acfm	67,225	65,345	64,706	65,759
Gas Volumetric Flow Rate, dscfm	37,375	35,932	36,348	36,552
Gas Volumetric Flow Rate, scfm	46,095	45,069	44,524	45,229
Average %CO <sub>2</sub> by volume, dry basis	9.8	9.7	9.7	9.7
Average %O <sub>2</sub> by volume, dry basis	3.8	4.1	4.2	4.0
Isokinetic Variance	104.9	106.2	104.2	105.1
<b>Filterable Particulate Matter (Method 5)</b>				
grams collected	0.00069	0.00113	0.00092	0.00091
grains/acf	0.0001	0.0001	0.0001	0.0001
grains/dscf	0.0001	0.0002	0.0002	0.0002
lb/hr	0.043	0.069	0.057	0.056
lb/mmBtu (Standard Fd Factor)	0.0002	0.0003	0.0003	0.0003
<b>Condensable Particulate Matter (Method 202)</b>				
grams collected	0.00282	0.00266	0.00191	0.00246
grains/acf	0.0003	0.0003	0.0002	0.0003
grains/dscf	0.0005	0.0005	0.0004	0.0005
lb/hr	0.174	0.163	0.119	0.152
lb/mmBtu (Standard Fd Factor)	0.0008	0.0008	0.0006	0.0007
<b>Total Particulate Matter (5/202)</b>				
grams collected	0.00351	0.00379	0.00283	0.00338
grains/acf	0.0004	0.0004	0.0003	0.0004
grains/dscf	0.0006	0.0007	0.0006	0.0006
lb/hr	0.217	0.232	0.176	0.208
lb/mmBtu (Standard Fd Factor)	0.0010	0.0011	0.0009	0.0010



Lansing Board of Water and Light

REO Town Facility

Auxiliary Boiler Stack

CO Compliance Summary

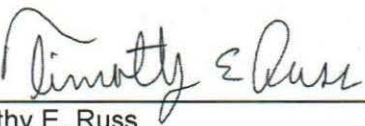
Test No.	Date	Start Time	End Time	CO ppmvd	O <sub>2</sub> % (dry)	Fd Factor, dscf/MMBtu	O <sub>2</sub> based CO lb/MMBtu
1	01/23/24	08:20	09:53	17.8	3.8	8,710.0	0.014
2	01/23/24	10:09	11:41	12.2	4.0	8,710.0	0.010
3	01/23/24	12:00	13:31	11.5	4.1	8,710.0	0.009
<b>Average</b>				13.7	4.0	8,710.0	0.011

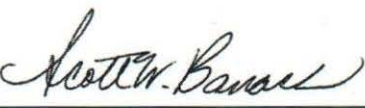
## 4.0 CERTIFICATION

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

## Run 1 Data

Date/Time	AUXBOILR GASFLOW (HSCFH) Value	AUXBOILR HEATIN (MMBTU/HR) Value	AUXBOILR STEAMFLW (LB/HR) Value	AUXBOILR NOX#MM60 (LB/MMBTU) Value	AUXBOILR NOX#HR60 (LB/HR) Value	AUXBOILR NOXPPMC (PPMVD) Value	AUXBOILR O2 (PERCENT) Value
01/23/2024 07:35	1643.4	142.1	151156.1	0.024	3.4	19.7	3.8
01/23/2024 07:36	1638.5	141.7	150819.7	0.024	3.4	19.7	3.9
01/23/2024 07:37	1635.9	141.5	150487.4	0.024	3.4	19.8	3.9
01/23/2024 07:38	1635.7	141.5	150298.1	0.024	3.4	19.8	3.9
01/23/2024 07:39	1635.6	141.5	150271.6	0.024	3.4	19.8	3.9
01/23/2024 07:40	1637.6	141.7	150157	0.024	3.4	19.8	3.9
01/23/2024 07:41	1639	141.8	150085.7	0.024	3.4	19.8	3.9
01/23/2024 07:42	1633.6	141.3	150310.6	0.024	3.4	19.8	3.9
01/23/2024 07:43	1632.7	141.3	150063.5	0.024	3.4	20	4
01/23/2024 07:44	1634.7	141.4	150158.7	0.024	3.4	19.9	3.9
01/23/2024 07:45	1632.5	141.2	150082.2	0.024	3.4	19.8	3.9
01/23/2024 07:46	1633.5	141.3	150106.5	0.024	3.4	19.8	3.9
01/23/2024 07:47	1633.3	141.3	150182.5	0.024	3.4	19.8	3.9
01/23/2024 07:48	1633.9	141.3	149903	0.024	3.4	19.8	4
01/23/2024 07:49	1633.8	141.3	149622.3	0.024	3.4	19.8	4
01/23/2024 07:50	1628.7	140.9	149891.1	0.024	3.4	19.8	3.9
01/23/2024 07:51	1624.5	140.5	149631.2	0.024	3.4	19.8	4
01/23/2024 07:52	1622.6	140.4	149293.6	0.024	3.4	19.7	3.9
01/23/2024 07:53	1622.2	140.3	149206.8	0.024	3.4	19.7	3.9
01/23/2024 07:54	1618.4	140	148992.1	0.024	3.4	19.8	3.9
01/23/2024 07:55	1615.5	139.8	148670.1	0.024	3.4	19.7	3.9
01/23/2024 07:56	1616.9	139.9	148713.1	0.024	3.4	19.7	3.9
01/23/2024 07:57	1617.4	139.9	148735.4	0.024	3.4	19.7	3.9
01/23/2024 07:58	1616.8	139.9	148715.5	0.024	3.4	19.7	4
01/23/2024 07:59	1619.4	140.1	148977.1	0.024	3.4	19.7	4
01/23/2024 08:00	1625.8	140.7	149098.6	0.024	3.4	19.7	3.9
01/23/2024 08:01	1627.5	140.8	149228.9	0.024	3.4	19.7	3.9
01/23/2024 08:02	1629.6	141	149598.1	0.024	3.4	19.7	3.9
01/23/2024 08:03	1625.3	140.6	149600.6	0.024	3.4	19.7	3.9
01/23/2024 08:04	1627	140.8	149408.2	0.024	3.4	19.8	4
01/23/2024 08:05	1630.3	141.1	149830.2	0.024	3.4	19.7	3.9
01/23/2024 08:06	1625.6	140.7	149663.5	0.024	3.4	19.7	3.9
01/23/2024 08:07	1621.6	140.3	149370.9	0.024	3.4	19.8	4
01/23/2024 08:08	1625.3	140.7	149329.3	0.024	3.4	19.8	3.9
01/23/2024 08:09	1626.9	140.8	149345.7	0.024	3.4	19.8	3.9
01/23/2024 08:10	1625	140.6	149372.4	0.024	3.4	19.8	3.9
01/23/2024 08:11	1625.3	140.7	149513.6	0.024	3.4	19.8	3.9
01/23/2024 08:12	1625	140.6	149373.3	0.024	3.4	19.7	3.9
01/23/2024 08:13	1625	140.6	149550	0.024	3.4	19.7	3.9
01/23/2024 08:14	1621.8	140.3	149378.9	0.024	3.4	19.7	3.9
01/23/2024 08:15	1620.7	140.2	149089.5	0.024	3.4	19.7	4
01/23/2024 08:16	1621.4	140.3	149200.4	0.024	3.4	19.8	4
01/23/2024 08:17	1621.6	140.3	149094	0.024	3.4	19.7	3.9
01/23/2024 08:18	1621.7	140.4	149061.7	0.024	3.4	19.7	3.9
01/23/2024 08:19	1624.2	140.6	148998.5	0.024	3.4	19.6	3.9
01/23/2024 08:20	1623.6	140.5	149160.5	0.024	3.4	19.6	3.9
01/23/2024 08:21	1618.9	140.1	149078.4	0.024	3.4	19.7	3.9
01/23/2024 08:22	1617.7	140	148782.8	0.024	3.4	19.7	3.9
01/23/2024 08:23	1615.7	139.9	148828.8	0.024	3.4	19.7	3.9
01/23/2024 08:24	1610.9	139.4	148641.4	0.024	3.3	19.7	4
01/23/2024 08:25	1617.5	140	148850.3	0.024	3.4	19.7	3.9
01/23/2024 08:26	1619.2	140.2	149064	0.024	3.4	19.7	4
01/23/2024 08:27	1623	140.5	148884.9	0.024	3.4	19.7	3.9
01/23/2024 08:28	1624.2	140.6	148825.5	0.024	3.4	19.7	3.9
01/23/2024 08:29	1624.1	140.6	149129.3	0.024	3.4	19.8	3.9
01/23/2024 08:30	1621.3	140.4	148907.2	0.024	3.4	19.8	3.9
01/23/2024 08:31	1615.5	139.9	148617.1	0.024	3.4	19.7	3.9
01/23/2024 08:32	1611.3	139.5	148628.3	0.024	3.3	19.7	4
01/23/2024 08:33	1607	139.1	148216.5	0.024	3.3	19.6	4
01/23/2024 08:34	1606	139	147868.6	0.024	3.3	19.8	4
01/23/2024 08:35	1610.6	139.4	147763.4	0.024	3.3	19.8	4
01/23/2024 08:36	1608.2	139.2	147740.9	0.024	3.3	19.6	3.9
01/23/2024 08:37	1603.8	138.8	147646.9	0.024	3.3	19.5	4
01/23/2024 08:38	1603.9	138.8	147667.5	0.024	3.3	19.7	4.1
01/23/2024 08:39	1609.8	139.3	147507.3	0.024	3.3	19.7	4
01/23/2024 08:40	1609.9	139.3	147507.3	0.024	3.3	19.7	4

### Run 1 cont. Data

Date/Time	AUXBOILR GASFLOW (HSCFH) Value	AUXBOILR HEATIN (MMBTU/HR) Value	AUXBOILR STEAMFLW (LB/HR) Value	AUXBOILR NOX#MM60 (LB/MMBTU) Value	AUXBOILR NOX#HR60 (LB/HR) Value	AUXBOILR NOXPPMC (PPMVD) Value	AUXBOILR O2 (PERCENT) Value
01/23/2024 08:41	1608.9	139.2	147558.5	0.024	3.3	19.7	4
01/23/2024 08:42	1610	139.3	147749.3	0.024	3.3	19.7	4
01/23/2024 08:43	1610.7	139.4	147874.1	0.024	3.3	19.6	4
01/23/2024 08:44	1608.4	139.2	147672.9	0.024	3.3	19.6	4
01/23/2024 08:45	1604.2	138.8	147615.1	0.024	3.3	19.5	4
01/23/2024 08:46	1602.4	138.7	147451.1	0.024	3.3	19.5	4
01/23/2024 08:47	1599.2	138.4	147142	0.024	3.3	19.6	4
01/23/2024 08:48	1598.7	138.3	147000.4	0.024	3.3	19.4	4
01/23/2024 08:49	1596.1	138.1	147176.1	0.024	3.3	19.6	4.1
01/23/2024 08:50	1601.8	138.6	146904.9	0.024	3.3	19.7	4.1
01/23/2024 08:51	1606.1	139	147228.1	0.024	3.3	19.6	4
01/23/2024 08:52	1605.3	138.9	147276.5	0.024	3.3	19.6	4
01/23/2024 08:53	1606.9	139	147226.7	0.024	3.3	19.6	4
01/23/2024 08:54	1605.1	138.9	147693.6	0.024	3.3	19.4	3.9
01/23/2024 08:55	1600.7	138.5	147600	0.024	3.3	19.3	3.9
01/23/2024 08:56	1601.6	138.6	147213.3	0.024	3.3	19.4	4
01/23/2024 08:57	1604.3	138.8	147224.6	0.024	3.3	19.6	4
01/23/2024 08:58	1606.3	139	147320.4	0.024	3.3	19.6	4
01/23/2024 08:59	1604	138.8	147246.2	0.024	3.3	19.6	4
01/23/2024 09:00	1603.1	138.7	147240.9	0.024	3.3	19.6	4
01/23/2024 09:01	1603.1	138.7	147367.2	0.024	3.3	19.6	4
01/23/2024 09:02	1602.4	138.6	147162.9	0.024	3.3	19.6	4
01/23/2024 09:03	1603.2	138.7	147276.5	0.024	3.3	19.7	4
01/23/2024 09:04	1603.1	138.7	147312.4	0.024	3.3	19.7	4
01/23/2024 09:05	1603.6	138.8	147239.5	0.024	3.3	19.7	4
01/23/2024 09:06	1603.9	138.8	147418.1	0.024	3.3	19.6	4
01/23/2024 09:07	1603.5	138.7	147072.4	0.024	3.3	19.6	4
01/23/2024 09:08	1599.9	138.4	147078.7	0.024	3.3	19.6	4
01/23/2024 09:09	1599.3	138.4	147083.3	0.024	3.3	19.6	4
01/23/2024 09:10	1599.6	138.4	147154.7	0.024	3.3	19.6	4
01/23/2024 09:11	1598.4	138.3	146989.6	0.024	3.3	19.6	4
01/23/2024 09:12	1600.5	138.5	147070.6	0.024	3.3	19.6	4
01/23/2024 09:13	1601.4	138.6	146974.2	0.024	3.3	19.6	4
01/23/2024 09:14	1601.2	138.6	147081.5	0.024	3.3	19.6	4
01/23/2024 09:15	1601.1	138.5	147068.6	0.024	3.3	19.6	4
01/23/2024 09:16	1599.3	138.4	146890.7	0.024	3.3	19.4	3.9
01/23/2024 09:17	1598.4	138.3	147127.2	0.024	3.3	19.4	3.9
01/23/2024 09:18	1596.5	138.2	146991.6	0.024	3.3	19.6	4
01/23/2024 09:19	1599.5	138.4	147045.7	0.024	3.3	19.6	4
01/23/2024 09:20	1599.5	138.4	146717.3	0.024	3.3	19.6	4
01/23/2024 09:21	1599.1	138.4	146719.8	0.024	3.3	19.6	4
01/23/2024 09:22	1596.5	138.2	146491.7	0.024	3.3	19.6	4
01/23/2024 09:23	1593.2	137.9	146474.4	0.024	3.3	19.6	4
01/23/2024 09:24	1592.4	137.8	146251.5	0.024	3.3	19.6	4
01/23/2024 09:25	1589.6	137.6	146262.9	0.024	3.3	19.5	4
01/23/2024 09:26	1586.3	137.3	146117.9	0.024	3.3	19.5	4
01/23/2024 09:27	1585	137.2	146083	0.024	3.3	19.5	4
01/23/2024 09:28	1584.8	137.1	145589.7	0.024	3.3	19.5	4.1
01/23/2024 09:29	1587.9	137.4	145734.7	0.024	3.3	19.5	4
01/23/2024 09:30	1585.9	137.2	145704	0.024	3.3	19.4	4
01/23/2024 09:31	1581.6	136.9	145863.3	0.024	3.3	19.5	4
01/23/2024 09:32	1584.9	137.1	145623.2	0.024	3.3	19.5	4.1
01/23/2024 09:33	1591	137.7	145596.7	0.024	3.3	19.6	4.1
01/23/2024 09:34	1592.8	137.9	146276.6	0.024	3.3	19.6	4
01/23/2024 09:35	1592.9	137.8	146163.9	0.024	3.3	19.7	4.1
01/23/2024 09:36	1597.7	138.3	146378.6	0.024	3.3	19.7	4.1
01/23/2024 09:37	1598.3	138.3	146701.1	0.024	3.3	19.6	4
01/23/2024 09:38	1593.3	137.9	146444.5	0.024	3.3	19.6	4
01/23/2024 09:39	1591	137.7	146241.2	0.024	3.3	19.6	4

### Run 1 cont. Data

Date/Time	AUXBOILR GASFLOW (HSCFH) Value	AUXBOILR HEATIN (MMBTU/HR) Value	AUXBOILR STEAMFLW (LB/HR) Value	AUXBOILR NOX#MM60 (LB/MMBTU) Value	AUXBOILR NOX#HR60 (LB/HR) Value	AUXBOILR NOXPPMC (PPMVD) Value	AUXBOILR O2 (PERCENT) Value
01/23/2024 09:40	1587.8	137.4	145992.3	0.024	3.3	19.5	4
01/23/2024 09:41	1581.9	136.9	145697	0.024	3.3	19.5	4
01/23/2024 09:42	1581.2	136.9	145485.7	0.024	3.3	19.5	4.1
01/23/2024 09:43	1582.3	136.9	145372.4	0.024	3.3	19.5	4.1
01/23/2024 09:44	1582.1	136.9	145379.7	0.024	3.3	19.5	4.1
01/23/2024 09:45	1581.8	136.9	145451.3	0.024	3.3	19.6	4.1
01/23/2024 09:46	1583.3	137	145224.5	0.024	3.3	19.6	4.1
01/23/2024 09:47	1584.1	137.1	145358.6	0.024	3.3	19.6	4.1
01/23/2024 09:48	1584.6	137.1	145107.8	0.024	3.3	19.6	4.1
01/23/2024 09:49	1583	137	145382.3	0.024	3.3	19.6	4.1
01/23/2024 09:50	1580.3	136.8	145618.4	0.024	3.3	19.5	4.1
01/23/2024 09:51	1580.7	136.8	145399.8	0.024	3.3	19.5	4.1
01/23/2024 09:52	1582.5	137	145283.6	0.024	3.3	19.5	4.1
01/23/2024 09:53	1583.6	137	145285.6	0.024	3.3	19.5	4.1
Grand Summaries							
Avg: 1608.8	Avg: 139.2	Avg: 147852.6	Avg: 0.024	Avg: 3.3	Avg: 19.6	Avg: 4.0	
Min: 1580.3	Min: 136.8	Min: 145107.8	Min: 0.024	Min: 3.3	Min: 19.3	Min: 3.8	
Max: 1643.4	Max: 142.1	Max: 151156.1	Max: 0.024	Max: 3.4	Max: 20.0	Max: 4.1	

## Run2 Data

Date/Time	AUXBOILR GASFLOW (HSCFH) Value	AUXBOILR HEATIN (MMBTU/HR) Value	AUXBOILR STEAMFLW (LB/HR) Value	AUXBOILR NOX#MM60 (LB/MMBTU) Value	AUXBOILR NOX#HR60 (LB/HR) Value	AUXBOILR NOXPPMC (PPMVD) Value	AUXBOILR O2 (PERCENT) Value
01/23/2024 09:58	1573.3	136.2	144978.7	0.024	3.3	19.4	4.1
01/23/2024 09:59	1575.2	136.3	144942.8	0.024	3.3	19.5	4.2
01/23/2024 10:00	1579.6	136.7	145100.8	0.024	3.3	19.6	4.1
01/23/2024 10:01	1585.4	137.2	145399	0.024	3.3	19.7	4.1
01/23/2024 10:02	1589.4	137.5	145393.8	0.024	3.3	19.6	4.1
01/23/2024 10:03	1591.7	137.7	146059	0.024	3.3	19.5	4
01/23/2024 10:04	1593.5	137.9	146376.5	0.024	3.3	19.5	4
01/23/2024 10:05	1594.9	138	146580.3	0.024	3.3	19.5	4
01/23/2024 10:06	1598.6	138.3	146774.3	0.024	3.3	19.6	4
01/23/2024 10:07	1602.6	138.7	146982.8	0.024	3.3	19.5	4
01/23/2024 10:08	1603.1	138.7	147162.3	0.024	3.3	19.6	4
01/23/2024 10:09	1604.3	138.8	147122	0.024	3.3	19.5	4
01/23/2024 10:10	1602	138.6	146865.3	0.024	3.3	19.6	4
01/23/2024 10:11	1597.3	138.2	147044.7	0.024	3.3	19.7	4.1
01/23/2024 10:12	1595.5	138.1	146881.7	0.024	3.3	19.7	4.1
01/23/2024 10:13	1596	138.1	146528.9	0.024	3.3	19.7	4.1
01/23/2024 10:14	1599.3	138.4	146418.8	0.024	3.3	19.7	4.1
01/23/2024 10:15	1599.6	138.4	146497.3	0.024	3.3	19.6	4
01/23/2024 10:16	1596.6	138.1	146279.5	0.024	3.3	19.5	4
01/23/2024 10:17	1590.6	137.6	145852.8	0.024	3.3	19.4	4
01/23/2024 10:18	1584.7	137.1	145689.7	0.024	3.3	19.4	4
01/23/2024 10:19	1582.1	136.9	145522.3	0.024	3.3	19.4	4.1
01/23/2024 10:20	1581.2	136.8	145247.8	0.023	3.1	19.4	4
01/23/2024 10:21	1581.4	136.8	145178.8	0.024	3.3	19.4	4.1
01/23/2024 10:22	1578	136.5	144659.9	0.024	3.3	19.4	4.1
01/23/2024 10:23	1578.7	136.5	144450.1	0.024	3.3	19.5	4.1
01/23/2024 10:24	1574.2	136.2	144223.7	0.024	3.3	19.5	4.1
01/23/2024 10:25	1566.6	135.5	143690.7	0.024	3.3	19.4	4.1
01/23/2024 10:26	1558.9	134.8	143085.7	0.024	3.2	19.4	4.2
01/23/2024 10:27	1554.8	134.5	142809.9	0.024	3.2	19.4	4.2
01/23/2024 10:28	1551.1	134.1	143066.3	0.024	3.2	19.5	4.3
01/23/2024 10:29	1559.1	134.8	142379.7	0.024	3.2	19.6	4.3
01/23/2024 10:30	1565.3	135.3	142734.9	0.024	3.2	19.6	4.3
01/23/2024 10:31	1564.9	135.3	142905.2	0.024	3.2	19.5	4.2
01/23/2024 10:32	1563.3	135.1	143052.7	0.024	3.2	19.3	4.2
01/23/2024 10:33	1560.8	134.9	142960.5	0.024	3.2	19.3	4.2
01/23/2024 10:34	1556.8	134.6	142722.1	0.023	3.1	19.3	4.2
01/23/2024 10:35	1554.5	134.3	142791.1	0.024	3.2	19.3	4.2
01/23/2024 10:36	1551.3	134.1	142359.4	0.024	3.2	19.4	4.3
01/23/2024 10:37	1554.9	134.4	142287	0.024	3.2	19.4	4.2
01/23/2024 10:38	1555	134.4	142425.5	0.024	3.2	19.4	4.2
01/23/2024 10:39	1553.2	134.2	142071.9	0.024	3.2	19.6	4.3
01/23/2024 10:40	1550.7	134	141910.9	0.024	3.2	19.5	4.2
01/23/2024 10:41	1547	133.7	142225.6	0.024	3.2	19.4	4.3
01/23/2024 10:42	1547.4	133.7	141656.5	0.024	3.2	19.5	4.3
01/23/2024 10:43	1552.5	134.1	141862	0.024	3.2	19.5	4.3
01/23/2024 10:44	1552.6	134.1	142223.1	0.024	3.2	19.4	4.3
01/23/2024 10:45	1550.2	133.9	142109.4	0.024	3.2	19.4	4.3
01/23/2024 10:46	1553.1	134.2	141917.3	0.024	3.2	19.5	4.3
01/23/2024 10:47	1556	134.4	142052.3	0.024	3.2	19.5	4.3
01/23/2024 10:48	1555.8	134.4	142277.1	0.024	3.2	19.4	4.2
01/23/2024 10:49	1550.5	133.9	142227.2	0.023	3.1	19.4	4.2
01/23/2024 10:50	1549	133.8	142183.4	0.023	3.1	19.4	4.2
01/23/2024 10:51	1546.7	133.6	141863.9	0.024	3.2	19.4	4.3
01/23/2024 10:52	1548.7	133.8	141631.8	0.024	3.2	19.5	4.3
01/23/2024 10:53	1551.4	134	141969	0.024	3.2	19.4	4.2
01/23/2024 10:54	1549.5	133.8	142020.6	0.023	3.1	19.3	4.2
01/23/2024 10:55	1546	133.6	141875.7	0.024	3.2	19.4	4.3
01/23/2024 10:56	1546.9	133.6	141639.8	0.024	3.2	19.5	4.3
01/23/2024 10:57	1548.2	133.7	141690.9	0.024	3.2	19.4	4.3
01/23/2024 10:58	1550	133.9	141655.9	0.024	3.2	19.4	4.3
01/23/2024 10:59	1554.5	134.3	141991.2	0.023	3.1	19.3	4.2
01/23/2024 11:00	1554.3	134.3	142164.1	0.023	3.1	19.3	4.2
01/23/2024	1557.6	134.6	142199	0.023	3.1	19.3	4.2



## Run2 cont. Data

Date/Time	AUXBOILR GASFLOW (HSCFH) Value	AUXBOILR HEATIN (MMBTU/HR) Value	AUXBOILR STEAMFLW (LB/HR) Value	AUXBOILR NOX#MM60 (LB/MMBTU) Value	AUXBOILR NOX#HR60 (LB/HR) Value	AUXBOILR NOXPPMC (PPMVD) Value	AUXBOILR O2 (PERCENT) Value
01/23/2024 11:02	1560.5	134.8	142472.8	0.023	3.1	19.3	4.2
01/23/2024 11:03	1561.5	134.9	142626.8	0.024	3.2	19.3	4.2
01/23/2024 11:04	1558.9	134.7	142904.5	0.024	3.2	19.3	4.2
01/23/2024 11:05	1554.8	134.3	143048.6	0.023	3.1	19.4	4.2
01/23/2024 11:06	1555.2	134.4	142824.1	0.024	3.2	19.6	4.3
01/23/2024 11:07	1565.3	135.2	142919.5	0.024	3.2	19.6	4.3
01/23/2024 11:08	1567.6	135.4	143537.9	0.024	3.2	19.5	4.2
01/23/2024 11:09	1570.7	135.7	143359.4	0.024	3.3	19.5	4.2
01/23/2024 11:10	1574.7	136	143986.2	0.024	3.3	19.4	4.1
01/23/2024 11:11	1574.6	136	144181.1	0.023	3.1	19.3	4.1
01/23/2024 11:12	1574.5	136	144127.3	0.024	3.3	19.4	4.2
01/23/2024 11:13	1574.6	136	144032.9	0.024	3.3	19.5	4.1
01/23/2024 11:14	1573.9	136	144057.2	0.024	3.3	19.5	4.2
01/23/2024 11:15	1572.5	135.9	144155.5	0.024	3.3	19.4	4.1
01/23/2024 11:16	1574.3	136	143942.1	0.024	3.3	19.4	4.1
01/23/2024 11:17	1575.1	136.1	143974.8	0.024	3.3	19.5	4.1
01/23/2024 11:18	1573.9	136	144251.8	0.024	3.3	19.4	4.1
01/23/2024 11:19	1569.8	135.6	143869.4	0.024	3.3	19.4	4.2
01/23/2024 11:20	1570.8	135.7	143725.4	0.024	3.3	19.4	4.2
01/23/2024 11:21	1570.5	135.7	143863.6	0.024	3.3	19.4	4.2
01/23/2024 11:22	1565.5	135.3	143850.8	0.024	3.2	19.5	4.2
01/23/2024 11:23	1568.7	135.5	143681.2	0.024	3.3	19.6	4.2
01/23/2024 11:24	1574.8	136.1	143728.2	0.024	3.3	19.5	4.2
01/23/2024 11:25	1576.3	136.2	143938.7	0.024	3.3	19.4	4.2
01/23/2024 11:26	1575.3	136.1	143905.7	0.024	3.3	19.4	4.1
01/23/2024 11:27	1570.7	135.7	144152.3	0.023	3.1	19.4	4.1
01/23/2024 11:28	1570.9	135.7	144157.6	0.023	3.1	19.3	4.1
01/23/2024 11:29	1575.8	136.1	144134.6	0.024	3.3	19.5	4.2
01/23/2024 11:30	1575.6	136.1	144123.7	0.024	3.3	19.5	4.2
01/23/2024 11:31	1576.3	136.2	144053.3	0.024	3.3	19.5	4.2
01/23/2024 11:32	1575.6	136.1	144072	0.024	3.3	19.5	4.2
01/23/2024 11:33	1567.3	135.4	143327.4	0.024	3.2	19.5	4.2
01/23/2024 11:34	1557.2	134.6	142742.4	0.024	3.2	19.4	4.2
01/23/2024 11:35	1546.8	133.7	142145	0.023	3.1	19.4	4.2
01/23/2024 11:36	1540.9	133.1	141631.5	0.024	3.2	19.4	4.3
01/23/2024 11:37	1536.2	132.7	141292.5	0.024	3.2	19.4	4.3
01/23/2024 11:38	1540	133.1	141415	0.024	3.2	19.4	4.3
01/23/2024 11:39	1548.1	133.8	141678.2	0.024	3.2	19.4	4.3
01/23/2024 11:40	1552.2	134.1	142074.2	0.024	3.2	19.4	4.2
01/23/2024 11:41	1556.9	134.5	142175	0.024	3.2	19.5	4.2
01/23/2024 11:42	1559.3	134.7	142576.5	0.024	3.2	19.4	4.2
01/23/2024 11:43	1558	134.6	142699.9	0.024	3.2	19.4	4.2
01/23/2024 11:44	1554.9	134.4	142689.8	0.024	3.2	19.5	4.2
01/23/2024 11:45	1551.9	134.1	142308.2	0.024	3.2	19.5	4.3
01/23/2024 11:46	1547	133.7	142010.1	0.024	3.2	19.4	4.3
01/23/2024 11:47	1546.3	133.6	141725.9	0.024	3.2	19.6	4.3
01/23/2024 11:48	1545.7	133.6	141618.4	0.024	3.2	19.5	4.3
01/23/2024 11:49	1542.3	133.3	141427.6	0.023	3.1	19.3	4.2
01/23/2024 11:50	1540.6	133.1	141596.8	0.023	3.1	19.3	4.3
01/23/2024 11:51	1542.2	133.3	141542.6	0.023	3.1	19.3	4.3
01/23/2024 11:52	1547.4	133.7	141602.2	0.024	3.2	19.5	4.3
01/23/2024 11:53	1553	134.2	142015	0.024	3.2	19.6	4.3
01/23/2024 11:54	1556.1	134.5	142034.2	0.024	3.2	19.6	4.3
01/23/2024 11:55	1558.8	134.7	142222.4	0.024	3.2	19.4	4.2
01/23/2024 11:56	1555.1	134.4	141989.7	0.024	3.2	19.5	4.2
01/23/2024 11:57	1547.7	133.8	141632.1	0.024	3.2	19.4	4.3
01/23/2024 11:58	1542.4	133.3	141238.4	0.024	3.2	19.4	4.3
01/23/2024 11:59	1536.3	132.7	140969.5	0.024	3.2	19.4	4.3
01/23/2024 12:00	1530.9	132.3	140687.3	0.024	3.2	19.5	4.4

Grand Summaries

Avg: 1564.7	Avg: 135.2	Avg: 143362.7	Avg: 0.024	Avg: 3.2	Avg: 19.5	Avg: 4.2
Min: 1530.9	Min: 132.3	Min: 140687.3	Min: 0.023	Min: 3.1	Min: 19.3	Min: 4.0
Max: 1604.3	Max: 138.8	Max: 147162.3	Max: 0.024	Max: 3.3	Max: 19.7	Max: 4.4

## Run3 Data

Date/Time	AUXBOILER GASFLOW (HSCFH) Value	AUXBOILER HEATIN (MMBTU/HR) Value	AUXBOILER STEAMFLW (LB/HR) Value	AUXBOILER NOX#MM60 (LB/MMBTU) Value	AUXBOILER NOX#HR60 (LB/HR) Value	AUXBOILER NOXPPMC (PPMVD) Value	AUXBOILER O2 (PERCENT) Value
01/23/2024 12:00	1530.9	132.3	140687.3	0.024	3.2	19.5	4.4
01/23/2024 12:01	1530	132.2	140334	0.024	3.2	19.4	4.4
01/23/2024 12:02	1530.2	132.2	140229	0.023	3	19.3	4.3
01/23/2024 12:03	1529.3	132.1	139874.7	0.024	3.2	19.4	4.4
01/23/2024 12:04	1528.9	132.1	139848.1	0.024	3.2	19.4	4.4
01/23/2024 12:05	1527.7	132	139746.6	0.024	3.2	19.3	4.4
01/23/2024 12:06	1523.9	131.6	139322.4	0.023	3	19.2	4.3
01/23/2024 12:07	1518.9	131.2	139543.2	0.023	3	19.3	4.3
01/23/2024 12:08	1518.5	131.2	139990.4	0.023	3	19.3	4.4
01/23/2024 12:09	1527.3	131.9	140119.5	0.023	3	19.3	4.4
01/23/2024 12:10	1537.9	132.8	140344.5	0.024	3.2	19.5	4.4
01/23/2024 12:11	1547.9	133.7	141057.4	0.024	3.2	19.6	4.3
01/23/2024 12:12	1555.7	134.4	141505.5	0.024	3.2	19.6	4.3
01/23/2024 12:13	1558.9	134.6	141811.4	0.024	3.2	19.7	4.3
01/23/2024 12:14	1557.3	134.5	142064.4	0.024	3.2	19.6	4.3
01/23/2024 12:15	1554.3	134.2	142204.1	0.024	3.2	19.6	4.3
01/23/2024 12:16	1550.4	133.9	141954.2	0.024	3.2	19.5	4.3
01/23/2024 12:17	1543.6	133.3	141786.7	0.024	3.2	19.4	4.3
01/23/2024 12:18	1544.8	133.4	141901.2	0.024	3.2	19.4	4.3
01/23/2024 12:19	1549.8	133.8	141989.6	0.024	3.2	19.4	4.3
01/23/2024 12:20	1554.6	134.2	142070.8	0.024	3.2	19.5	4.3
01/23/2024 12:21	1558.4	134.6	142009.2	0.024	3.2	19.6	4.3
01/23/2024 12:22	1560	134.7	142269.6	0.024	3.2	19.5	4.3
01/23/2024 12:23	1558.8	134.6	142303.9	0.024	3.2	19.6	4.3
01/23/2024 12:24	1557.1	134.5	142295	0.024	3.2	19.5	4.2
01/23/2024 12:25	1555.9	134.3	142365	0.024	3.2	19.4	4.3
01/23/2024 12:26	1555.6	134.3	142303	0.024	3.2	19.4	4.3
01/23/2024 12:27	1556.3	134.4	142175.4	0.024	3.2	19.6	4.3
01/23/2024 12:28	1559.6	134.7	142685.7	0.024	3.2	19.6	4.3
01/23/2024 12:29	1562.6	134.9	143017.2	0.024	3.2	19.5	4.3
01/23/2024 12:30	1567	135.3	142842.5	0.024	3.2	19.6	4.3
01/23/2024 12:31	1567.4	135.3	143001.5	0.024	3.2	19.5	4.2
01/23/2024 12:32	1565.2	135.1	143114.5	0.024	3.2	19.4	4.2
01/23/2024 12:33	1561.2	134.8	143173	0.024	3.2	19.4	4.2
01/23/2024 12:34	1564.7	135.1	142895.7	0.024	3.2	19.5	4.3
01/23/2024 12:35	1565.2	135.1	142798.7	0.024	3.2	19.5	4.3
01/23/2024 12:36	1562.5	134.9	143140.5	0.024	3.2	19.6	4.3
01/23/2024 12:37	1563	134.9	142996.3	0.024	3.2	19.6	4.3
01/23/2024 12:38	1565.6	135.2	142612.3	0.024	3.2	19.7	4.3
01/23/2024 12:39	1569.1	135.4	143071.2	0.024	3.2	19.6	4.3
01/23/2024 12:40	1568.7	135.4	143645.6	0.024	3.2	19.5	4.3
01/23/2024 12:41	1571.9	135.7	143613.5	0.024	3.3	19.6	4.3
01/23/2024 12:42	1579.6	136.4	143915.7	0.024	3.3	19.7	4.3
01/23/2024 12:43	1583.9	136.7	144273.5	0.024	3.3	19.6	4.2
01/23/2024 12:44	1582.8	136.6	144473.1	0.024	3.3	19.4	4.1
01/23/2024 12:45	1581.6	136.5	144926.2	0.024	3.3	19.4	4.1
01/23/2024 12:46	1580.5	136.4	144467.4	0.024	3.3	19.5	4.2
01/23/2024 12:47	1584.9	136.8	144520.9	0.024	3.3	19.7	4.2
01/23/2024 12:48	1589	137.2	145002.3	0.024	3.3	19.5	4.1
01/23/2024 12:49	1586.6	137	144965.8	0.024	3.3	19.6	4.2
01/23/2024 12:50	1588.1	137.1	144914	0.024	3.3	19.6	4.2
01/23/2024 12:51	1587.2	137	144931.6	0.024	3.3	19.5	4.1
01/23/2024 12:52	1586.8	137	144853.1	0.024	3.3	19.5	4.2
01/23/2024 12:53	1583.2	136.7	144602.5	0.024	3.3	19.6	4.2
01/23/2024 12:54	1580.3	136.4	144148.2	0.024	3.3	19.5	4.2
01/23/2024 12:55	1575.1	136	144187	0.024	3.3	19.5	4.2
01/23/2024 12:56	1574.3	135.9	144171.9	0.024	3.3	19.5	4.2
01/23/2024 12:57	1575	136	144064.2	0.024	3.3	19.6	4.2
01/23/2024 12:58	1579.1	136.3	143896.1	0.024	3.3	19.5	4.2
01/23/2024 12:59	1582.5	136.6	144173.5	0.024	3.3	19.4	4.1
01/23/2024 13:00	1580.1	136.4	144298.9	0.024	3.3	19.4	4.1
01/23/2024 13:01	1579.8	136.4	144457.1	0.024	3.3	19.4	4.2
01/23/2024 13:02	1581.3	136.5	144374.4	0.024	3.3	19.4	4.1
01/23/2024 13:03	1580.6	136.4	144196	0.024	3.3	19.4	4.2
01/23/2024 13:04	1582	136.6	144449.5	0.024	3.3	19.4	4.1
01/23/2024 13:05	1578.5	136.3	143955.8	0.024	3.3	19.6	4.2
01/23/2024 13:06	1580.1	135.9	143983.5	0.024	3.3	19.4	4.2

### Run3 cont. Data

Date/Time	AUXBOILER GASFLOW (HSCFH) Value	AUXBOILER HEATIN (MMBTU/HR) Value	AUXBOILER STEAMFLW (LB/HR) Value	AUXBOILER NOX#MM60 (LB/MMBTU) Value	AUXBOILER NOX#HR60 (LB/HR) Value	AUXBOILER NOXPPMC (PPMVD) Value	AUXBOILER O2 (PERCENT) Value
01/23/2024 13:07	1571.2	135.6	143789.3	0.024	3.3	19.6	4.2
01/23/2024 13:08	1569.1	135.4	143806.7	0.024	3.2	19.6	4.2
01/23/2024 13:09	1567.9	135.3	143582.7	0.024	3.2	19.6	4.3
01/23/2024 13:10	1573.7	135.8	143413.5	0.024	3.3	19.6	4.3
01/23/2024 13:11	1579	136.3	143933.1	0.024	3.3	19.5	4.2
01/23/2024 13:12	1580.2	136.4	144285.4	0.024	3.3	19.5	4.2
01/23/2024 13:13	1582.6	136.6	144456.3	0.024	3.3	19.5	4.2
01/23/2024 13:14	1582.7	136.6	144355.7	0.024	3.3	19.6	4.2
01/23/2024 13:15	1584.7	136.8	144402.6	0.024	3.3	19.6	4.1
01/23/2024 13:16	1584.6	136.8	144675.2	0.024	3.3	19.5	4.1
01/23/2024 13:17	1581.4	136.5	144520.5	0.024	3.3	19.7	4.2
01/23/2024 13:18	1580.4	136.4	144899.3	0.024	3.3	19.7	4.2
01/23/2024 13:19	1579.4	136.3	144352.9	0.024	3.3	19.8	4.3
01/23/2024 13:20	1582.4	136.6	144333.2	0.024	3.3	19.7	4.2
01/23/2024 13:21	1583.4	136.7	144428.4	0.024	3.3	19.7	4.2
01/23/2024 13:22	1582.9	136.6	144550.4	0.024	3.3	19.7	4.2
01/23/2024 13:23	1583.3	136.7	144590.4	0.024	3.3	19.6	4.2
01/23/2024 13:24	1582.2	136.6	144534.3	0.024	3.3	19.5	4.1
01/23/2024 13:25	1581.6	136.5	144470.4	0.024	3.3	19.5	4.2
01/23/2024 13:26	1581.8	136.5	144421.5	0.024	3.3	19.5	4.2
01/23/2024 13:27	1579.6	136.4	144420.5	0.024	3.3	19.6	4.2
01/23/2024 13:28	1581.5	136.5	144301.7	0.024	3.3	19.6	4.2
01/23/2024 13:29	1583.3	136.7	144502.5	0.024	3.3	19.6	4.2
01/23/2024 13:30	1583.2	136.7	144313.2	0.024	3.3	19.5	4.2
01/23/2024 13:31	1583.3	136.7	144212.2	0.024	3.3	19.5	4.2
01/23/2024 13:32	1579.7	136.4	144354.1	0.024	3.3	19.6	4.2
01/23/2024 13:33	1577.3	136.2	144399.8	0.024	3.3	19.5	4.2
01/23/2024 13:34	1574.7	135.9	144170.8	0.024	3.3	19.6	4.2
01/23/2024 13:35	1575.4	136	144147.8	0.024	3.3	19.6	4.2
01/23/2024 13:36	1580.1	136.4	143985.8	0.024	3.3	19.5	4.2
01/23/2024 13:37	1583.2	136.7	144094.5	0.023	3.1	19.3	4.1
01/23/2024 13:38	1579	136.3	144162.3	0.024	3.3	19.4	4.1
01/23/2024 13:39	1575.3	136	143973	0.023	3.1	19.4	4.1
01/23/2024 13:40	1570.8	135.6	143769	0.024	3.3	19.4	4.2
01/23/2024 13:41	1570.2	135.5	143677.6	0.024	3.3	19.5	4.2
01/23/2024 13:42	1568.2	135.4	143615.8	0.024	3.2	19.5	4.2
01/23/2024 13:43	1569.3	135.5	143598.4	0.024	3.3	19.6	4.3
01/23/2024 13:44	1573.3	135.8	143497.8	0.024	3.3	19.6	4.3
01/23/2024 13:45	1578.9	136.3	143507.5	0.024	3.3	19.5	4.2
01/23/2024 13:46	1576.8	136.1	143690.6	0.024	3.3	19.5	4.2
01/23/2024 13:47	1573.8	135.8	143865.5	0.023	3.1	19.3	4.1
01/23/2024 13:48	1570.3	135.5	143724.5	0.023	3.1	19.3	4.1
01/23/2024 13:49	1572	135.7	144019	0.023	3.1	19.3	4.2
01/23/2024 13:50	1577	136.1	144133.9	0.024	3.3	19.3	4.2
01/23/2024 13:51	1579.3	136.3	144464.3	0.024	3.3	19.5	4.2
01/23/2024 13:52	1585.2	136.8	144500.5	0.024	3.3	19.5	4.2
01/23/2024 13:53	1590.1	137.3	144304.8	0.024	3.3	19.6	4.2
01/23/2024 13:54	1586.9	137	144716.8	0.024	3.3	19.6	4.1
01/23/2024 13:55	1582.2	136.6	144652.1	0.024	3.3	19.4	4.2
01/23/2024 13:56	1578.9	136.3	144478.9	0.024	3.3	19.5	4.2
01/23/2024 13:57	1577.3	136.1	144365.6	0.024	3.3	19.5	4.2
01/23/2024 13:58	1576.7	136.1	144155.6	0.024	3.3	19.4	4.2
01/23/2024 13:59	1576.8	136.1	143933.2	0.024	3.3	19.4	4.2
01/23/2024 14:00	1573.6	135.8	143298.7	0.024	3.3	19.4	4.2
01/23/2024 14:01	1570.3	135.5	143203.7	0.024	3.3	19.4	4.2
01/23/2024 14:02	1559.2	134.6	142606.2	0.023	3.1	19.3	4.2
01/23/2024 14:03	1556.5	134.3	142658.6	0.024	3.2	19.3	4.3
01/23/2024 14:04	1554.2	134.1	142471.7	0.024	3.2	19.4	4.3
01/23/2024 14:05	1554.9	134.2	142436.2	0.024	3.2	19.5	4.3
01/23/2024 14:06	1563.8	135	142883.3	0.024	3.2	19.5	4.3
01/23/2024 14:07	1570.5	135.6	142975.7	0.024	3.3	19.6	4.2
01/23/2024 14:08	1576.1	136	143397.3	0.024	3.3	19.6	4.2
01/23/2024 14:09	1576.6	136.1	143635	0.024	3.3	19.5	4.2
01/23/2024 14:10	1575.8	136	144084.2	0.024	3.3	19.5	4.2
01/23/2024 14:11	1577.4	136.2	144009.4	0.024	3.3	19.5	4.2
01/23/2024 14:12	1580.1	136.4	144073.6	0.024	3.3	19.7	4.2
01/23/2024 14:13	1576.1	136.5	144114.2	0.024	3.3	19.6	4.2

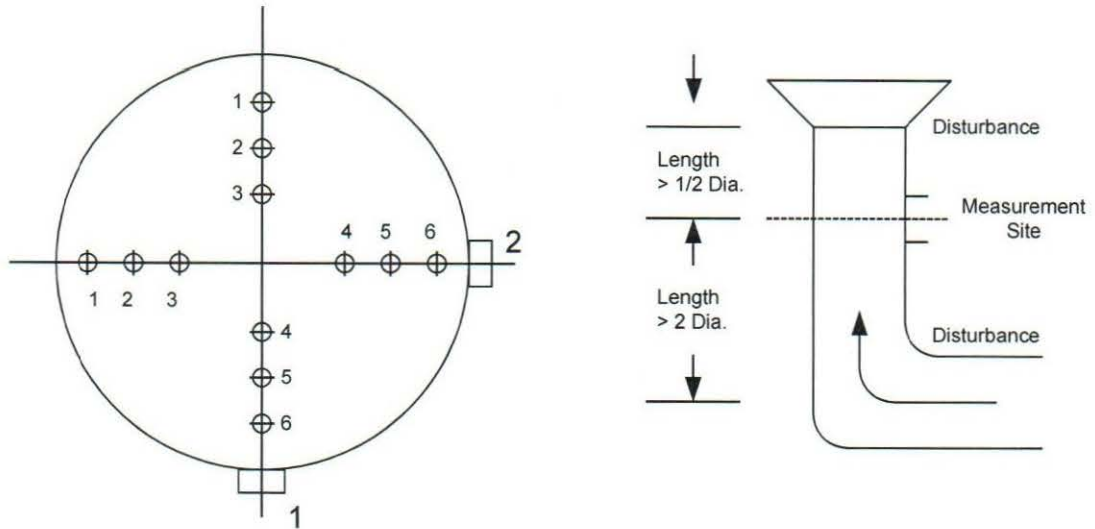
### Run3 cont. Data

Date/Time	AUXBOILER GASFLOW (HSCFH) Value	AUXBOILER HEATIN (MMBTU/HR) Value	AUXBOILER STEAMFLW (LB/HR) Value	AUXBOILER NOX#MM60 (LB/MMBTU) Value	AUXBOILER NOX#HR60 (LB/HR) Value	AUXBOILER NOXPPMC (PPMVD) Value	AUXBOILER O2 (PERCENT) Value
01/23/2024 14:14	1578.1	136.2	144075.1	0.024	3.3	19.5	4.2
01/23/2024 14:15	1575	135.9	143969.8	0.024	3.3	19.5	4.2
01/23/2024 14:16	1571.6	135.6	143669.6	0.024	3.3	19.7	4.3
01/23/2024 14:17	1571.2	135.6	143681.9	0.024	3.3	19.5	4.2
01/23/2024 14:18	1569.4	135.5	143581.5	0.024	3.3	19.4	4.2
01/23/2024 14:19	1568.9	135.4	143317.9	0.024	3.2	19.5	4.2
01/23/2024 14:20	1569.9	135.5	143137.2	0.024	3.3	19.6	4.2
01/23/2024 14:21	1569.1	135.4	143268.9	0.024	3.2	19.5	4.2
01/23/2024 14:22	1565.2	135.1	143484.6	0.024	3.2	19.4	4.2
01/23/2024 14:23	1570.9	135.6	143216.9	0.024	3.3	19.6	4.3
01/23/2024 14:24	1575.8	136	143393.6	0.024	3.3	19.7	4.2
01/23/2024 14:25	1575.2	136	143823.7	0.024	3.3	19.6	4.2
01/23/2024 14:26	1574.8	135.9	143634.4	0.024	3.3	19.5	4.2
01/23/2024 14:27	1575	135.9	143386.7	0.024	3.3	19.7	4.2
01/23/2024 14:28	1570.1	135.5	143389.7	0.024	3.3	19.6	4.2
01/23/2024 14:29	1565.5	135.1	143326.1	0.024	3.2	19.5	4.2
01/23/2024 14:30	1563.1	134.9	143354.2	0.024	3.2	19.5	4.2
01/23/2024 14:31	1565.8	135.1	143186.2	0.024	3.2	19.6	4.3
01/23/2024 14:32	1573.1	135.8	143108.7	0.024	3.3	19.6	4.2
01/23/2024 14:33	1575.3	135.9	143847.4	0.024	3.3	19.6	4.2
01/23/2024 14:34	1580.2	136.4	143729.1	0.024	3.3	19.6	4.2
01/23/2024 14:35	1581.1	136.4	143973.8	0.024	3.3	19.6	4.2
01/23/2024 14:36	1578.1	136.2	144263.8	0.024	3.3	19.6	4.2
01/23/2024 14:37	1577.3	136.1	144009.9	0.024	3.3	19.8	4.3
Grand Summaries							
	Avg: 1569.9	Avg: 135.5	Avg: 143418.4	Avg: 0.024	Avg: 3.3	Avg: 19.5	Avg: 4.2
	Min: 1518.5	Min: 131.2	Min: 139322.4	Min: 0.023	Min: 3.0	Min: 19.2	Min: 4.1
	Max: 1590.1	Max: 137.3	Max: 145002.3	Max: 0.024	Max: 3.3	Max: 19.8	Max: 4.4

## Appendix B - Test Section Diagrams

# EQUAL AREA TRAVERSE FOR ROUND DUCTS

(Gaseous Stratification)



Job: Lansing Board of Water & Light  
REO Town Facility  
Lansing, Michigan

Date: January 23, 2024

Test Location: Auxiliary Boiler

Duct Diameter: 4.75 feet

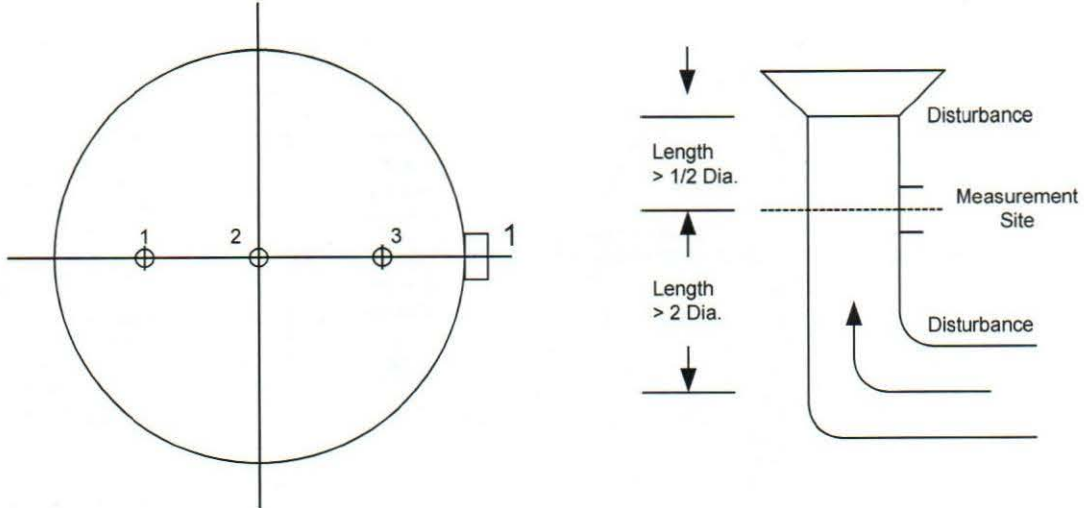
Duct Area: 17.72 square feet

No. Points Across Diameter: 6

No. of Ports: 2

Port Length: 6.5 inches

## GASEOUS TRAVERSE FOR ROUND DUCTS (Test Runs 2 and 3)



Job: Lansing Board of Water and Light  
REO Town Facility  
Lansing, Michigan

Distance from Inside Wall  
To Traverse Point:

Date: January 23, 2024

1. 83.3 % of diameter
2. 50.0 % of diameter
3. 16.7 % of diameter

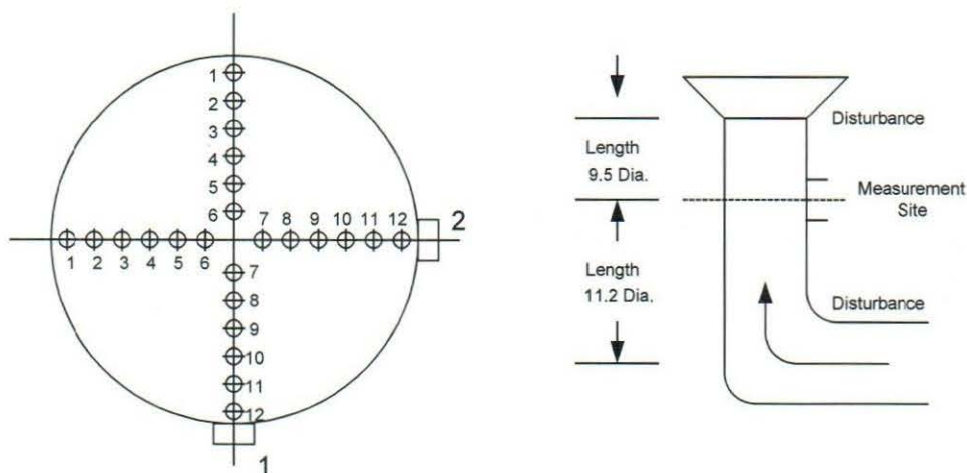
Test Location: Auxiliary Boiler Stack

Stack Diameter: 4.75 Feet

Stack Area: 17.72 Square Feet

No. Sample Points: 3

## EQUAL AREA TRAVERSE FOR ROUND DUCTS (Particulate Matter)



Job: Lansing Board of Water and Light  
REO Town Facility  
Lansing, Michigan

Date: January 23, 2024

Test Location: Auxiliary Boiler Stack

Stack Diameter: 4.75 feet

Stack Area: 17.72 square feet

No. Points Across Diameter: 12

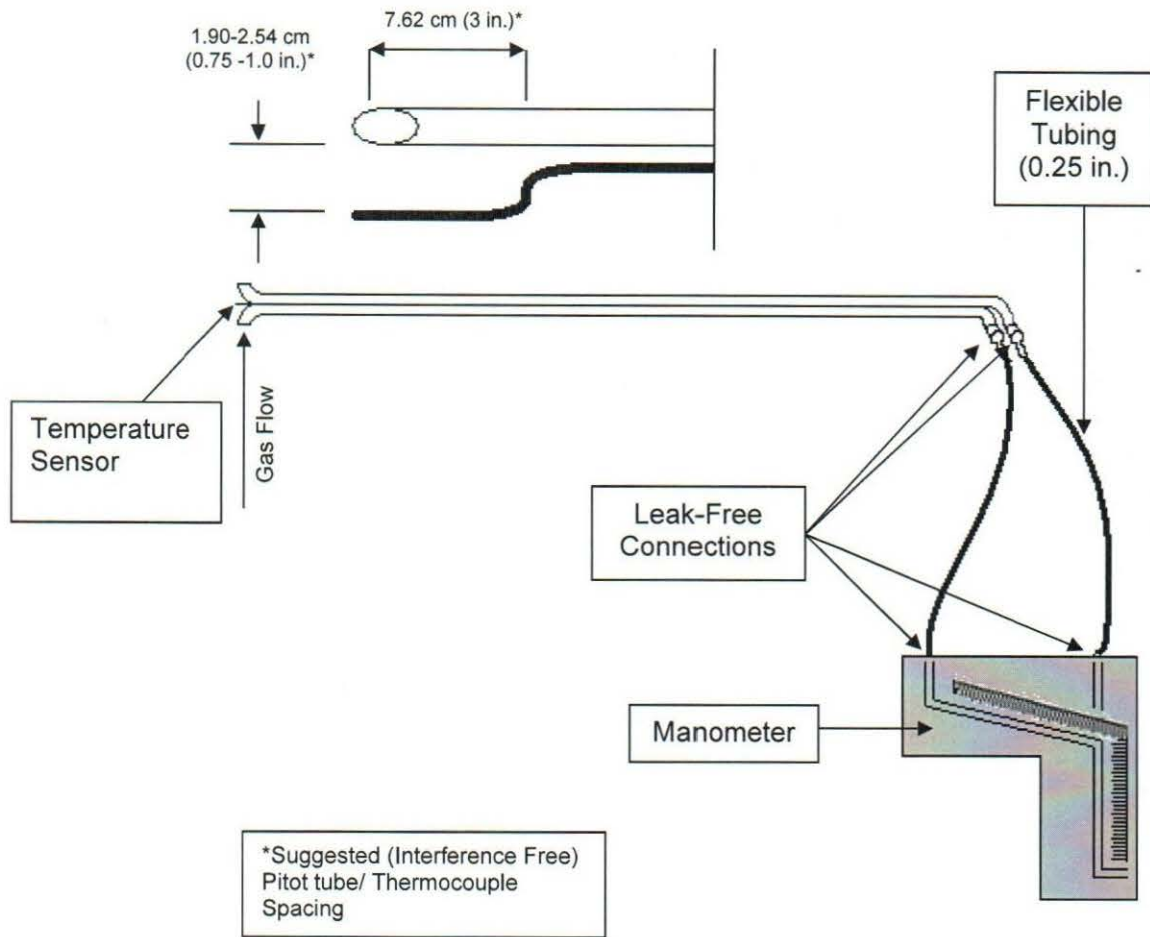
No. of Ports: 2

Port Length: 6.5 inches

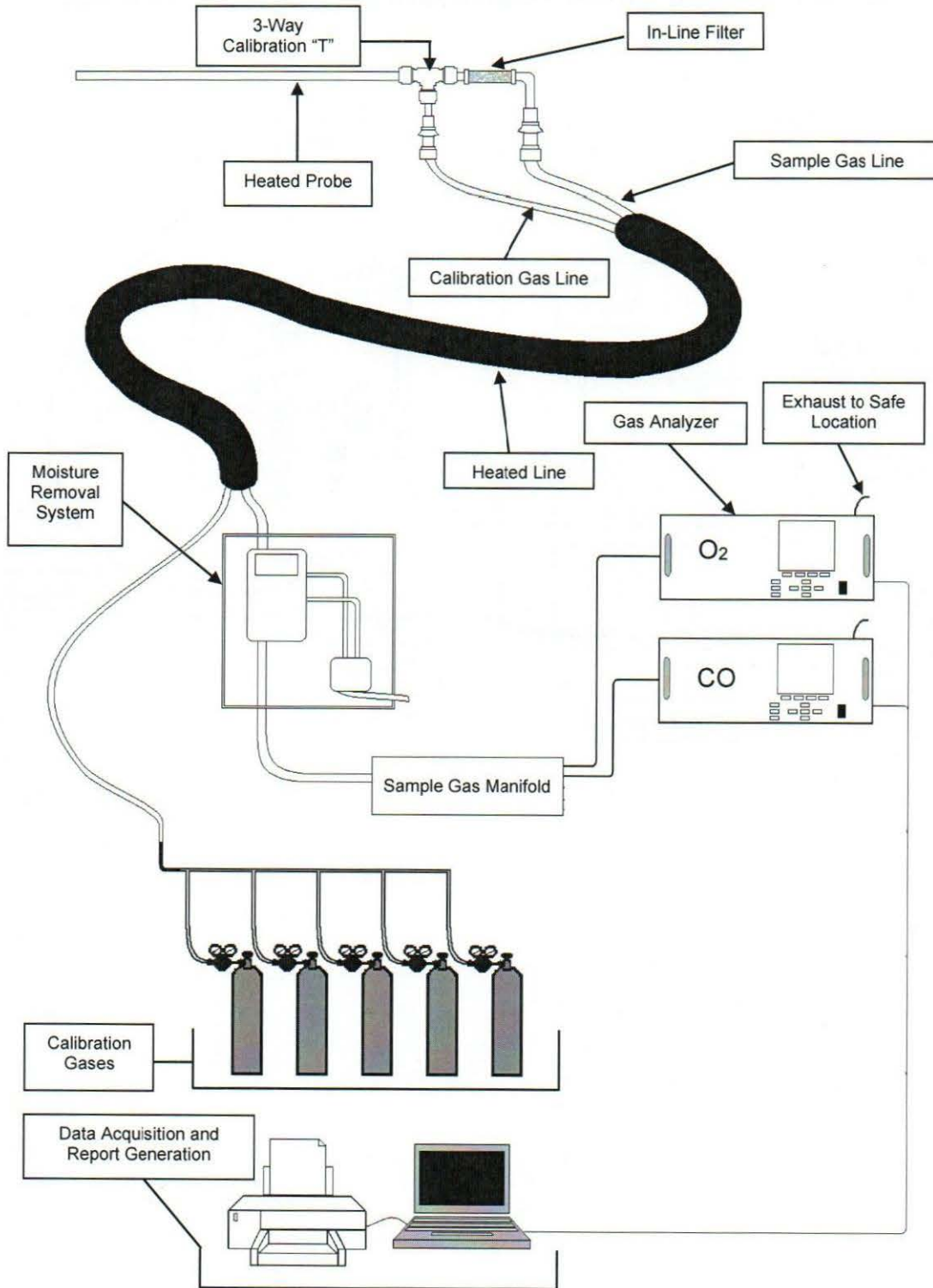


## Appendix C - Sample Train Diagrams

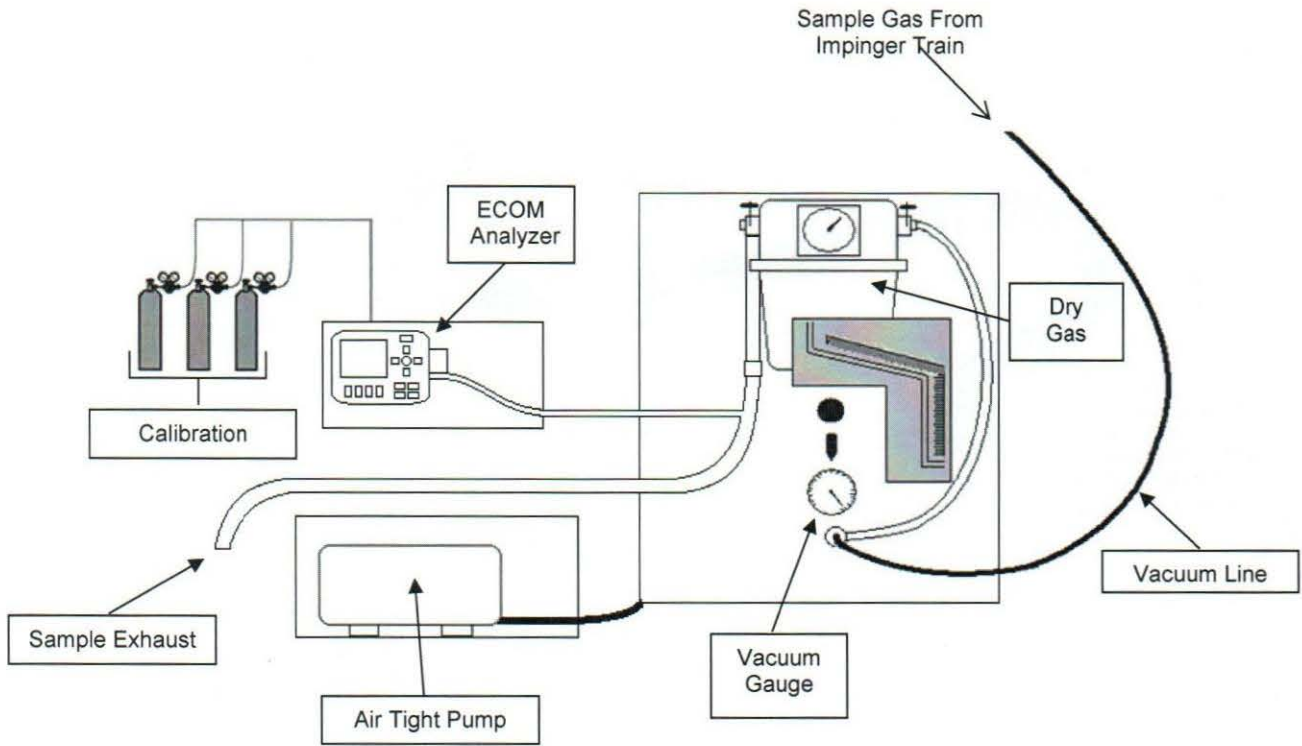
## USEPA Method 2 – Type S Pitot Tube Manometer Assembly



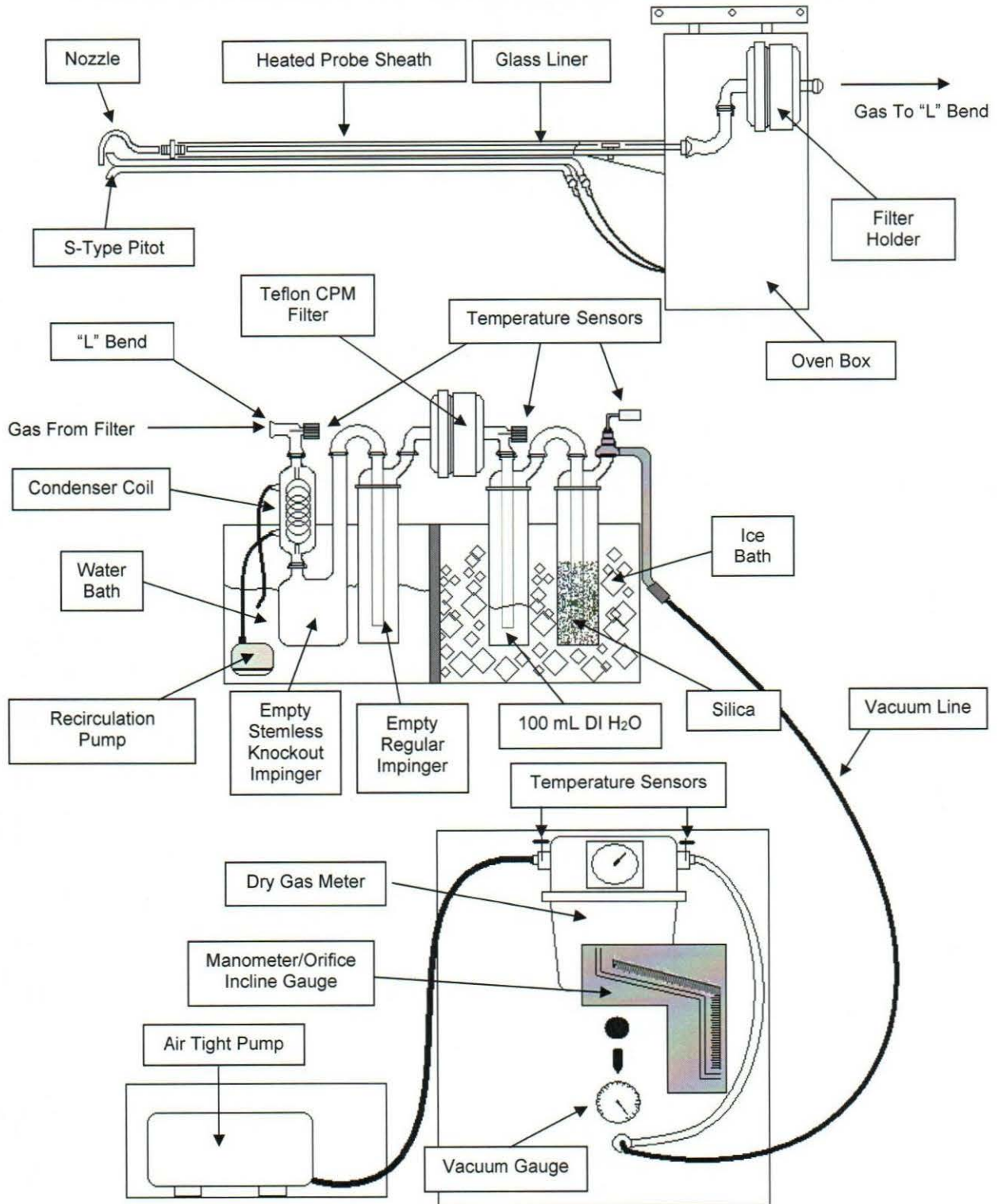
# USEPA Methods 3A and 10 Extractive Gaseous Sampling Diagram



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



# USEPA Method 5/202- Filterable/Condensable Particulate Matter



## Appendix D - Calculation Nomenclature and Formulas