

**Air Emission Test Report
for
EUBOILER#3
at
Decorative Panels International, Inc.
Alpena, Michigan**

**Renewable Operating Permit MI-ROP-B1476-2015
SRN: B1476**

Prepared for

**Decorative Panels International, Inc.
416 Ford Avenue
Alpena, Michigan**

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Bureau Veritas Project No. 11016-000071.00
August 26, 2016



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Executive Summary

Decorative Panels International, Inc. retained Bureau Veritas North America, Inc. to test air emissions from the EUBOILER#3 source at the Decorative Panels International facility in Alpena, Michigan. The EUBOILER#3 source supplies heat and process steam to the facility. The purpose of the testing was to:

- Measure hydrogen chloride (HCl), mercury (Hg), particulate matter (PM), and carbon monoxide (CO) concentrations and emission rates from the EUBOILER#3 source.
- Evaluate compliance with certain emission limits within (1) Michigan Department of Environmental Quality (MDEQ) Renewable Operating Permit (ROP) MI-ROP-B1476-2015, dated December 21, 2015, and (2) National Emissions Standards for hazardous Air pollutants (NESHAP): Industrial Boilers and Process Heaters, 40 CFR 63, Subpart DDDDD.

On July 13 and 14, 2016, compliance test runs were performed at the EUBOILER#3 source under maximum normal operating conditions following United States Environmental Protection Agency (USEPA) Methods 1, 2, 3A, 4, 5, 10, 26A, 29 and 205.

Detailed results are presented in Tables 1 through 3 after the Tables Tab of this report. The following tables summarize the results of the testing in comparison to permit limits.

EUBOILER#3 Hydrogen Chloride, Mercury, and Particulate Matter Results

Parameter	Units	Run 1	Run 2	Run 3	Average	Limit
Hydrogen chloride (HCl)	lb/MMBtu	1.4×10^{-4}	5.6×10^{-5}	1.2×10^{-4}	1.0×10^{-4}	2.2×10^{-2}
Mercury (Hg)	lb/MMBtu	2.0×10^{-7}	1.3×10^{-7}	1.7×10^{-7}	1.7×10^{-7}	5.7×10^{-6}
Particulate matter (PM)	lb/MMBtu	1.6×10^{-3}	2.8×10^{-3}	1.3×10^{-3}	1.9×10^{-3}	3.7×10^{-2}
	lb/1,000 lb@ 50% EA †	0.0015	0.0026	0.0012	0.0017	0.50

† Pound per 1,000 lb of exhaust gases, corrected to 50% excess air

The results of the emissions testing indicate the EUBOILER#3 source is operating in compliance with the applicable HCl, Hg, and PM permit limits.



Executive Summary

EUBOILER#3 Carbon Monoxide Results

Parameter	Units	Run 1 [†]	Run 2 [†]	Run 3	Run 4	Run 5	Average [‡]	Limit
Carbon Monoxide (CO)	ppmv, dry, at 3% oxygen	1,222	1,211	658	549	502	569	1,500

ppmv: part per million by volume, dry basis

[†] Test Runs 1 and 2 were void due to an analyzer calibration issue.

[‡] Average result is calculated based on the results of Test Runs 3, 4, and 5.

Note: emission limit for CO represents limit shown in ROP-B1476-2015 and Table 2 to Subpart DDDDD of Part 63.

The results of the emissions testing indicate the EUBOILER#3 source is operating in compliance with the applicable CO permit limit.



1.0 Introduction

1.1 Summary of Test Program

Decorative Panels International, Inc. retained Bureau Veritas North America, Inc. to test air emissions from the EUBOILER#3 source at the Decorative Panels International facility in Alpena, Michigan. The EUBOILER#3 source supplies heat and process steam to the facility. The purpose of the testing was to:

- Measure hydrogen chloride (HCl), mercury (Hg), particulate matter (PM), and carbon monoxide (CO) concentrations and emission rates from the EUBOILER#3 source.
- Evaluate compliance with certain emission limits within (1) Michigan Department of Environmental Quality (MDEQ) Renewable Operating Permit (ROP) MI-ROP-B1476-2015, dated December 21, 2015, and (2) National Emissions Standards for hazardous Air pollutants (NESHAP): Industrial Boilers and Process Heaters, 40 CFR 63, Subpart DDDDD.

On July 13 and 14, 2016, compliance test runs were performed at the EUBOILER#3 source under normal operating conditions following United States Environmental Protection Agency (USEPA) Methods 1, 2, 3A, 4, 5, 10, 26A, 29 and 205.

1.2 Key Personnel

The key personnel involved in this test program are listed in Table 1-1. Mr. Brian Young, Senior Project Manager with Bureau Veritas, led the emission testing. Mr. Bob Budnik, Corporate Environmental Manager with Decorative Panels International, Inc., provided process coordination and recorded operating parameters. Mr. Jeremy Howe, Environmental Quality Analyst with MDEQ, witnessed the testing.



**Table 1-1
Key Personnel**

Facility Contact	Emission Testing Project Manager
Bob Budnik Corporate Environmental Manager Decorative Panels International, Inc. 416 Ford Avenue Alpena, Michigan 49707 Telephone: 989.356.8532 Bob.budnik@decpanels.com	Brian Young Senior Project Manager Bureau Veritas North America, Inc. 22345 Roethel Drive Novi, Michigan 48375 Telephone: 248.344.3020 Facsimile: 248.344.2656 brian.young@us.bureauveritas.com
Regulatory Agency	
Jeremy Howe Environmental Quality Analyst Michigan Department of Environmental Quality Air Quality Division Cadillac District Office 120 West Chapin Street Cadillac, Michigan 49601-2158 Telephone: 231.876.4416 Facsimile: 231.775.4050 howejl@michigan.gov	



2.0 Source and Sampling Locations

2.1 Process Description

Decorative Panels International, Inc. produces a variety of hardboard products including wall paneling, pegboard, and marker board. Hardwood chips, such as aspen, ash, maple, and beech, are purchased and stored in an outdoor raw material storage area and then reclaimed into silos. The wood chips are cooked and softened in one of four digesters using steam injection and ground into wood pulp fibers.

The pulp fibers are conveyed to a forming machine, which forms a mat of unpressed hardboard. The mats are processed through a Coe™ dryer and are cut using a trimmer and panel brush. The mats are conveyed to one of two hardboard lines, Line 1 or 3. Line 2 was historically operated but has since been decommissioned.

On the hardboard lines, the mats enter a predryer, a press, cooler, and tempering area. The predryer ensures the mat has the desired moisture content before the mat enters presses that heat and form hardboard. The hardboard is coated with linseed or Oxi-Cure® oil in the tempering area. The oil tempers the board thereby increasing its strength and “paintability.” Once the board has been tempered, it is superheated to cure the binding resins in the bake ovens (No. 3 Press only). The hardboard is humidified to approximate atmospheric conditions to limit warping. The boards are inspected, graded, cut, and packed for shipping.

The EUBOILER#3 source supplies heat and process steam to the facility. The boiler is rated at 60,000 pounds of steam per hour and was constructed in 1961. The boiler use burners to combust natural gas or other fuels. The energy from combustion heats water wall tubes containing water to produce steam. The steam/water mixture flows into an upper steam drum that acts as a phase separator. The steam is directed to the facility and used in the hardboard production process. The water from the steam drum is returned to water wall tubes in the furnace where it is reheated to produce steam and continue the process.

2.2 Process Operating Parameters

EUBOILER#3 was tested under maximum normal operating conditions for this compliance test. The following operating parameters were recorded by Decorative Panels International, Inc.:

- EUBOILER#3: Boiler fuel type (i.e., natural gas) and quantity, steam load (lb/hr), flue gas oxygen concentration, and heat input (MMBtu/hr) during each test run.



Table 2-1 summarizes the steam load and oxygen concentrations that were measured during the test periods.

Refer to Appendix E for process data recorded during testing.

Table 2-1
Summary of EUBOILER#3 Production Data

Sample/Type of Pollutant	Test Date (2016)	Test Run	Average Steam Load (Klb/hr)	Average Oxygen Concentration (%)
Hg and PM	July 13	1	53.40	-
HCl	July 14	1	58.44	7.0
		2	55.86	7.4
CO	July 14	4	54.80	8.0
		5	55.89	7.6

Klb/hr: 1000s of pounds per hour

2.3 Control Equipment

The boilers (EUBOILER#1, EUBOILER#2, and EUBOILER#3) utilize multi-clone collectors and an electrostatic precipitator (ESP) to control emissions. The multi-clone collectors use cyclones and inertia to remove particles from the gas stream. As the flue enters the cyclones centrifugal force is applied using venturi's and a conical shaped chamber. The incoming gas is forced into a cyclonic motion, down, and along the walls of the chamber. As the air nears the bottom of the chamber it changes directions and flows up through the center of a cyclone tube. The inertial momentum of the entrained particles causes them to move along the side walls and collect at the bottom of the chamber where they accumulate in a hopper. The particle reduced air exists the cyclone tube and the either is ducted to another cyclone chamber or into the ESP for further pollution control.

The ESP uses voltage to generate an electrostatic charge on vertically hung collection plates, which attract particulate matter in the flue. By removing the charge from the collection plates and using a series of plate rappers, the particulate matter is released from the plates and collected at the bottom of the ESP in a hopper for removal. The air is then directed to the common SVBOIL123-STK58 stack where it is discharged to atmosphere.



2.4 Flue Gas Sampling Location

Figure 2-1 shows the sampling ports for the EUBOILER#3 sampling location. Appendix Figure 1 presents the EUBOILER#3 source sampling ports and traverse point locations.

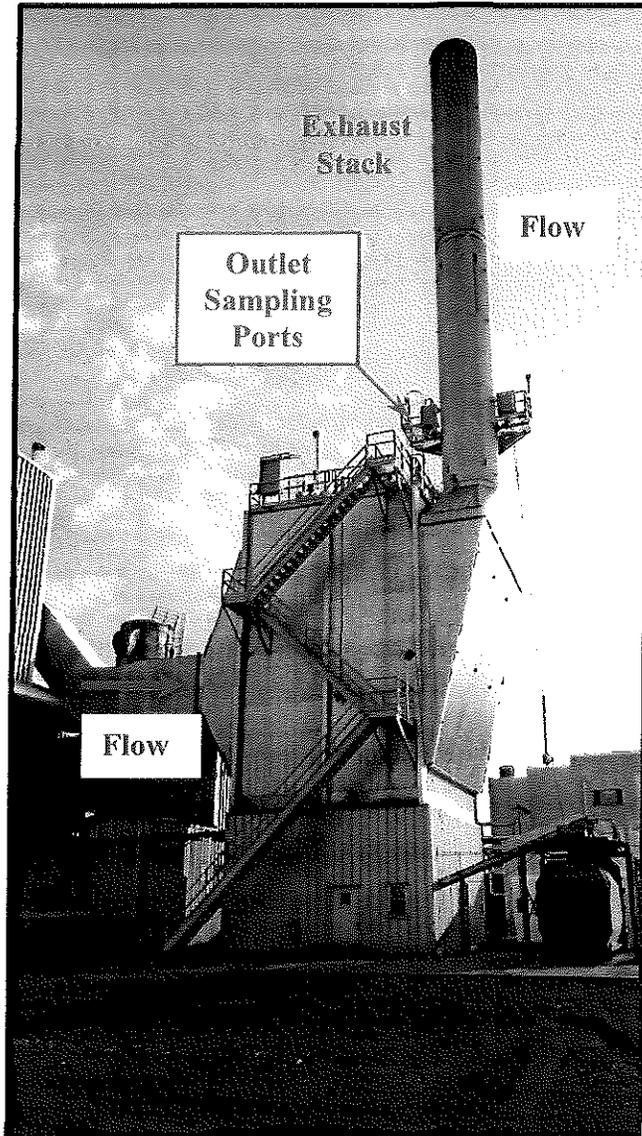
2.5 Process Sampling Locations

A process sample is a sample that is analyzed for operational parameters, such as calorific value of a fuel (e.g., natural gas, coal), organic compound content (e.g., paint coatings), or composition (e.g., polymers).

Decorative Panels International, Inc. collected samples of the fuel used during testing for laboratory analysis. The results of the fuel analysis are included in Appendix E.



Figure 2-1. EUBOILER#3 Source Sampling Location



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3.0 Summary and Discussion of Results

3.1 Objective

The objective of the testing was to test air emissions of the EUBOILER#3 source to:

- Measure HCl, Hg, PM, and CO concentrations and emission rates from the SVBOIL3-STK58 exhaust stack.
- Evaluate compliance with certain emission limits within (1) MDEQ ROP MI-ROP- B1476-2015, dated December 21, 2015, and (2) NESHAP: Industrial Boilers and Process Heaters, 40 CFR 63, Subpart DDDDD.

3.2 Test Matrix

The purpose of the emission test program was to satisfy certain requirements and evaluate compliance with the permit. Table 3-1 presents the test matrix.

3.3 Field Test Changes and Issues

The testing was performed in accordance with USEPA procedures, during maximum normal operating conditions, as outlined in the original Intent-to-Test Plan submitted to MDEQ on March 21, 2016, and approved on May 2, 2016.

No field test changes or issues were encountered during the test program, with the exception of the following:

- Methods 5 and 29 Test Run 1 was started on July 13, 2016; however, due to a gap in production, it was necessary to seal the sampling train and complete Test Run 1 on July 14, 2016.
- Method 10 Test Runs 1 and 2 were void due to spikes in CO levels exceeding the calibration range of the analyzer. The measured gas concentration exceeded the analyzer system span. Bureau Veritas increased the calibration range of the instrument at the conclusion of Test Run 2 and then Test Runs 3, 4, and 5 were completed. The average CO result is based on results from Test Runs 3, 4, and 5 as agreed upon with MDEQ's onsite representative.
- Based on simultaneous testing, flowrates from the Method 26A test runs were used for the Method 10 testing.



- The test duration for Method 26A Test Runs 1 and 2 was extended to 120 minutes.

**Table 3-1
Test Matrix**

Sampling Location	Sample/Type of Pollutant	Date 2016	Run	Start Time	End Time	USEPA Methods	
EUBOILER#3	Hg and PM	July 13	1	10:25	11:00	1, 2, 3A, 4, 5, 19, 29, and 205	
				11:20	11:30		
				11:37	11:52		
				15:27	16:07		
		July 14	7:50	8:10			
	July 14	2	10:00	12:40			
		3	14:05	16:43			
	HCl	July 14	1	10:00	12:40		1, 2, 3A, 4, 19, 26A, and 205
			2	14:05	16:33		
			3	17:35	18:40		
CO	July 14	1	10:00	12:40	1, 2, 3A, 4, 10, and 205		
		2	14:05	15:05			
		3	15:43	16:43			
		4	17:35	18:40			
		5	18:50	19:50			

3.4 Summary of Results

The results of the testing are presented in Tables 3-2 and 3-3. Detailed results are presented in the Appendix Tables 1 to 3 after the Tables Tab of this report. Graphs of the CO, O₂, and CO₂ concentrations are presented for the EUBOILER#3 after the Graphs Tab of this report. Sample calculations are presented in Appendix B.



Table 3-2
EUBOILER#3 Hydrogen Chloride, Mercury, and Particulate Matter Results

Parameter	Units	Run 1	Run 2	Run 3	Average	Limit
Hydrogen chloride (HCl)	lb/MMBtu	1.4×10^{-4}	5.6×10^{-5}	1.2×10^{-4}	1.0×10^{-4}	2.2×10^{-2}
Mercury (Hg)	lb/MMBtu	2.0×10^{-7}	1.3×10^{-7}	1.7×10^{-7}	1.7×10^{-7}	5.7×10^{-6}
Particulate matter (PM)	lb/MMBtu	1.6×10^{-3}	2.8×10^{-3}	1.3×10^{-3}	1.9×10^{-3}	3.7×10^{-2}
	lb/1,000 lb@ 50% EA †	0.0015	0.0026	0.0012	0.0017	0.50

† Pound per 1,000 lb of exhaust gases, corrected to 50% excess air

The results of the emissions testing indicate the EUBOILER#3 source is operating in compliance with the applicable HCl, Hg, and PM permit limits.

Table 3-3
EUBOILER#3 Carbon Monoxide Results

Parameter	Units	Run 1 †	Run 2 †	Run 3	Run 4	Run 5	Average ‡	Limit
Carbon Monoxide (CO)	ppmv, dry, at 3% oxygen	1,222	1,211	658	549	502	569	1,500

ppmv: part per million by volume, dry basis

† Test Runs 1 and 2 were void due to an analyzer calibration issue.

‡ Average result is calculated based on the results of Test Runs 3, 4, and 5.

Note: emission limit for CO represents limit shown in ROP-B1476-2015 and Table 2 to Subpart DDDDD of Part 63.

The results of the emissions testing indicate the EUBOILER#3 source is operating in compliance with the applicable CO permit limit.



4.0 Sampling and Analytical Procedures

Bureau Veritas measured emissions following the guidelines and procedures specified in 40 CFR 60, Appendix A, “Standards of Performance for New Stationary Sources,” 40 CFR 63, Appendix A, “Test Methods Pollutant Measurement Methods from Various Waste Media,” and State of Michigan Part 10 Rules, “Intermittent Testing and Sampling.” The sampling and analytical methods used are presented in Table 4-1.

**Table 4-1
Emission Test Methods**

Parameter	Source	USEPA Reference	
	EUBOILER#3	Method	Title
Sampling ports and traverse points	•	1	Sample and Velocity Traverses for Stationary Sources
Velocity and flowrate	•	2	Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube)
Oxygen (O ₂), carbon dioxide (CO ₂), molecular weight	•	3A	Determination of Oxygen and Carbon Dioxide Concentrations in Emissions from Stationary Sources (Instrument Analyzer Procedure)
Moisture content	•	4	Determination of Moisture Content in Stack Gases
Filterable PM	•	5	Determination of Particulate Matter Emissions from Stationary Sources
Carbon monoxide	•	10	Determination of Carbon Monoxide Emissions from Stationary Sources (Instrument Analyzer Procedure).
lb/MMBtu emission rates	•	19	Determination of Sulfur Dioxide Removal Efficiency, Particulate Matter, Sulfur Dioxide, and Nitrogen Oxide Emission Rates
Hydrogen chloride (HCl)	•	26A	Determination of Hydrogen Halide and Halogen Emissions from Stationary Sources Isokinetic Method
Mercury (Hg)	•	29	Determination of Metals Emissions from Stationary Sources
Gas dilution calibration	•	205	Verification of Gas Dilution Systems for Field Instrument Calibrations

4.1 Emission Test Methods

4.1.1 Volumetric Flowrate (USEPA Methods 1 and 2)

Method 1, “Sample and Velocity Traverses for Stationary Sources,” from the Code of Federal Regulations, Title 40, Part 60 (40 CFR 60), Appendix A, was used to evaluate the sampling location, the number of traverse points for sampling, and the measurement of velocity profiles.



Details of the sampling location and number of velocity traverse points are presented in Table 4-2.

**Table 4-2
Sampling Location and Number of Traverse Points**

Source	Sampling Location	Duct Diameter (inch)	Distance from Ports to Upstream Flow Disturbance (diameter)	Distance from Ports to Downstream Flow Disturbance (diameter)	Number of Ports Used	Traverse Points per Port	Total Traverse Points
EUBOILER#3	Outlet	84	2.1	10.7	2	12	24

Appendix Figure 1 presents the EUBOILER#3 sampling ports and traverse point locations.

Method 2, “Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube),” was used to measure flue gas velocity and calculate volumetric flowrate. S-type Pitot tubes and thermocouple assemblies, calibrated in accordance with Method 2, Section 10.0, were used during testing. Because the dimensions of the Pitot tubes met the requirements outlined in Method 2, Section 10.1, and were within the specified limits, the baseline Pitot tube coefficient of 0.84 (dimensionless) was assigned. Refer to Appendix A for the Pitot tube inspection sheets.

Cyclonic Flow Check. Bureau Veritas evaluated whether cyclonic flow was present at the sampling location on July 12, 2016. Cyclonic flow is defined as a flow condition with an average null angle greater than 20°. The direction of flow can be determined by aligning the Pitot tube to obtain zero (null) velocity head reading—the direction would be parallel to the Pitot tube face openings or perpendicular to the null position. By measuring the angle of the Pitot tube face openings in relation to the stack walls when a null angle is obtained, the direction of flow is measured. If the absolute average of the flow direction angles is greater than 20°, the flue gas is considered cyclonic at that sampling location and an alternative location should be found.

The average flue gas velocity null angles measured was:

- 2.5° from the direction of flow for the EUBOILER#3 exhaust

The measurements indicate the absence of cyclonic flow at this sampling location. Field data sheets are included in Appendix C. Computer-generated field data sheets are included in Appendix D.



4.1.2 Oxygen and Carbon Monoxide (USEPA Methods 3A and 10)

USEPA Method 3A, "Determination of Oxygen and Carbon Dioxide Concentrations in Emissions from Stationary Sources (Instrument Analyzer Procedure)," was used to measure the O₂ concentration of the flue gas. Carbon monoxide concentrations were measured using USEPA Method 10, "Determination of Carbon Monoxide Emissions from Stationary Sources." Figure 2 depicts the USEPA Methods 3A and 10 sampling train.

The sampling trains for USEPA Methods 3A and 10 are similar and the flue gas was extracted from the stack through:

- A stainless-steel probe.
- Heated Teflon® sample line to prevent condensation.
- A chilled Teflon condenser with peristaltic pump to remove moisture from the sampled gas stream prior to entering the analyzer.
- Paramagnetic (O₂) and infrared (CO) gas analyzers.

Data were recorded at 1-second intervals on a computer equipped with data acquisition software. Recorded O₂ and CO concentrations were averaged over the duration of each test run.

Prior to testing at the EUBOILER#3 source, a 3-point stratification test was conducted at 17, 50, and 83 percent of the stack diameter for at least twice the response time to determine the number of sampling traverse points. Because the gas stream was considered unstratified, a single sampling point, located near the centroid of the duct was used.

A calibration error check was performed by introducing zero-, mid-, and high-level calibration gases directly into the analyzer. The calibration error check was performed to evaluate the analyzer response is within $\pm 2\%$ of the calibration gas span. Prior to each test run, a system-bias test was performed in which known concentrations of calibration gases are introduced at the probe tip to measure if the analyzers response is within $\pm 5\%$ of the calibration span.

At the conclusion of the each test run, an additional system-bias check was performed to evaluate the drift from pre- and post-test system-bias checks. The system-bias checks evaluates if the analyzer drift is within the allowable criterion of $\pm 3\%$ from pre-test to post-test system bias checks. The analyzer drift data were used to correct the measured flue gas concentration.

Calibration data, along with the USEPA Protocol 1 certification sheets for the calibration gases used, are included in Appendix A.



4.1.3 Moisture Content (USEPA Method 4)

Prior to testing, the moisture content was estimated using measurements from previous testing, psychrometric charts and/or water saturation vapor pressure tables. These data were used in conjunction with preliminary velocity head pressure and temperature data to calculate flue gas velocity, nozzle size, and to establish the isokinetic sampling rate for the Methods 5, 26A, and 29 sampling. For each sampling run, moisture content of the flue gas was measured using the reference method outlined in Section 2 of USEPA Method 4, "Determination of Moisture Content in Stack Gases" in conjunction with the performance of USEPA Methods 5, 26A, and 29.

4.1.4 Particulate Matter and Mercury (USEPA Methods 5 and 29)

USEPA Method 5, "Determination of Particulate Matter Emissions from Stationary Sources," and Method 29, "Determination of Metals Emissions from Stationary Sources," were used to measure particulate matter and metals (arsenic, beryllium, cadmium, total chromium, lead, and mercury) emissions. Figure 3 depicts the USEPA Methods 5 and 29 sampling train.

Bureau Veritas' modular isokinetic stack sampling system consisted of:

- A borosilicate glass button-hook nozzle.
- A heated ($248 \pm 25^\circ\text{F}$) borosilicate glass-lined probe.
- A desiccated and pre-weighed 110- or 83-millimeter-diameter quartz fiber filter (manufactured to at least 99.95% efficiency ($<0.05\%$ penetration) for 0.3-micron dioctyl phthalate smoke particles) in a heated ($248 \pm 25^\circ\text{F}$) filter box.
- A set of six pre-cleaned impingers in an ice bath with the configuration shown in Table 4-3.
- A sampling line.
- An Environmental Supply® control case equipped with a pump, dry-gas meter, and calibrated orifice.



Table 4-3
Methods 5 and 29 Impinger Configuration

Impinger Order (Upstream to Downstream)	Impinger Type	Impinger Contents	Amount
1	Modified	5% HNO ₃ , 10% H ₂ O ₂	100 ml
2	Greenburg-Smith	5% HNO ₃ , 10% H ₂ O ₂	100 ml
3	Modified	Empty	0 ml
4	Modified	Acidified KMnO ₄	100 ml
5	Modified	Acidified KMnO ₄	100 ml
6	Modified	Silica gel desiccant	~200-300 g

Before testing, a preliminary velocity traverse was performed and an ideal nozzle size was calculated. The calculated nozzle size allowed isokinetic sampling at an average rate of 0.75 cfm. Bureau Veritas selected a pre-cleaned borosilicate glass nozzle with an inner diameter that approximates the calculated ideal value. The nozzle inside diameter was measured with calipers across three cross-sectional chords. The nozzle was rinsed and connected to the borosilicate glass-lined sample probe.

The impact and static pressure openings of the Pitot tube were leak-checked at or above a pressure of 3 inches of water for more than 15 seconds. The sampling train was leak-checked by capping the nozzle tip and applying a vacuum of approximately 15 inches of mercury to the sampling train. The dry-gas meter was monitored to measure whether the sample train leak rate was less than 0.02 cfm. If the pre-test leak had failed, the sampling train would have been adjusted until the leak rate was <0.02 cfm. Next, the sampling probe was inserted into the stack through the sampling port to begin sampling.

Ice and water was placed around the impingers and the probe and filter temperatures were allowed to stabilize at $\geq 248 \pm 25^\circ\text{F}$ before each test run. After the desired operating conditions were coordinated with the facility, testing was initiated.

Stack parameters (e.g., flue velocity, temperature) were monitored to establish the isokinetic sampling rate to within $\pm 10\%$ for the duration of the test.

At the conclusion of a test run and the post-test leak check, the sampling train was disassembled and the impingers and filter were transported to the recovery area. The filter was recovered using Teflon-lined tweezers and placed in a Petri dish. The Petri dish was labeled and sealed with Teflon tape. The nozzle, probe, and the front half of the filter holder assembly was brushed and, at a minimum, triple-rinsed with acetone to recover particulate matter. The acetone rinses were collected in pre-cleaned sample containers.



Next, the probe nozzle, fittings, probe liner, and front-half of the filter holder were washed and brushed (using a nylon bristle brush) three times with 100 ml of 0.1-N nitric acid (HNO₃). This rinsate was collected in a 500-ml glass sample container. Following the HNO₃ rinse, the probe nozzle, fittings, probe liner, and front-half of the filter holder were rinsed with high performance liquid chromatography (HPLC) water followed by acetone. The HPLC water and acetone rinses were discarded.

At the end of a test run, the liquid volume collected in each impinger was measured using a graduated cylinder to within ±0.5 milliliters; these volumes measurements were used to calculate the moisture content of the flue gas.

The contents of Impingers 1 and 2 were transferred to two glass sample containers. Impingers 1 and 2, the filter support, the back half of the filter housing, and connecting glassware were thoroughly rinsed with 100 ml of 0.1-N HNO₃, and the rinsates were added to the sample containers in which the contents of the first two impingers were stored.

The weight of the contents of Impinger 3 was measured and the contents transferred to a glass sample container. This impinger was rinsed with 100 ml of 0.1-N HNO₃, and the rinsate was added to the glass sample container.

The weight of liquid in Impingers 4 and 5 were measured and the contents transferred to a glass sample container. The impingers and connecting glassware were triple-rinsed with acidified KMnO₄ solution and the rinsate was added to the Impinger 4 and 5 sample containers. Subsequently, these impingers were rinsed with 100 ml of HPLC water, and the rinsate was added to the sample container. Because deposits may still be visible on the impinger surfaces after the water rinse, 25 ml of 8-N hydrochloric acid were used to wash these impingers and connecting glassware. This 8-N hydrochloric acid rinsate was collected in a separate sample container containing 200 ml of water.

The silica gel impinger was weighed as part of the measurement of the flue gas moisture content. All sample containers containing the acetone, 0.1-HNO₃, HPLC water, 5% HNO₃/10% H₂O₂, acidified KMnO₄, 8-N hydrochloric acid, and filter blanks were transported by courier to Maxxam Analytics, a Bureau Veritas laboratory, located in Mississauga, Ontario, Canada for analysis.

4.1.5 Emission Rates (USEPA Method 19)

USEPA Method 19, "Determination of Sulfur Dioxide Removal Efficiency and Particulate Matter, Sulfur Dioxide, and Nitrogen Oxide Emission Rates," was used to calculate an emission rate (lb/MMBtu). Oxygen concentrations and F factors (ratios of combustion gas volumes to heat inputs) were used to calculate emission rates using Equation 19-1 from the method:

$$E = C_d F_d \frac{20.9}{(20.9 - \%O_{2d})}$$



Where:

- E = Pollutant emission rate (lb/million Btu)
- C_d = Pollutant concentration, dry basis (lb/dscf)
- F_d = Volumes of combustion components per unit of heat content, (9,240 dscf/million Btu for wood)
- $\%O_{2d}$ = Concentration of oxygen on a dry basis (% , dry)

4.1.6 Hydrogen Chloride (USEPA Method 26A)

USEPA Method 26A, "Determination of Hydrogen Halide and Halogen Emissions from Stationary Sources," was used to measure hydrogen chloride emissions. Two 120-minute test runs and one 60-minute run were performed at the sampling location. Figure 4 depicts the USEPA Method 26A sampling train.

Bureau Veritas' modular isokinetic stack sampling system consists of:

- A borosilicate glass button-hook nozzle.
- A heated borosilicate glass-lined probe maintained at a temperature greater than 248°F.
- A desiccated and an untarred 83-millimeter-diameter filter in a filter box maintained at a temperature above 248°F.
- A set of five pre-cleaned impingers with the configuration shown in Table 4-4.
- A sampling line.
- An Environmental Supply® control case equipped with a pump, dry-gas meter, and calibrated orifice.

**Table 4-4
Method 26A Impinger Configuration**

Impinger Order (Upstream to Downstream)	Impinger Type	Impinger Contents	Amount (gram)
1	Greenburg-Smith	0.1N H ₂ SO ₄	100
2	Greenburg-Smith	0.1N H ₂ SO ₄	100
3	Modified	0.1N NaOH	100
4	Modified	0.1N NaOH	100
5	Modified	Silica gel desiccant	~200-300



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Before testing, a preliminary velocity traverse was performed and a nozzle size was calculated that would allow isokinetic sampling at an average rate of 0.75 cfm. Bureau Veritas selected a pre-cleaned borosilicate glass nozzle that had an inner diameter that approximated the calculated ideal value. The nozzle was measured with calipers across three cross-sectional chords to evaluate the inside diameter; rinsed and brushed with Type 3 deionized water and proof-rinsed with 0.1N H₂SO₄; and connected to the borosilicate glass-lined sample probe.

The impact and static pressure openings of the Pitot tube were leak-checked at or above a velocity head of 3.0 inches of water for more than 15 seconds. The sampling train was leak-checked by capping the nozzle tip and applying a vacuum of approximately 15 inches of mercury to the sampling train. The dry-gas meter was monitored for approximately 1 minute to measure that the sample train leakage rate was less than 0.02 cubic foot per minute (cfm). The sample probe was then inserted into the sampling port to begin sampling.

Ice was placed around the impingers and the probe, and filter temperatures were allowed to stabilize to a temperature above 248°F before sampling. After the desired operating conditions were coordinated with the facility, testing was initiated.

Stack parameters (e.g., flue velocity, temperature) were monitored to establish the isokinetic sampling rate within ±10% for the duration of the test. Each of the 12 traverse points were sampled at 2.5-minute intervals.

At the conclusion of a test run and the post-test leak check, the sampling train was disassembled and the impingers and filter housing were transported to the recovery trailer. The filter was removed from the filter housing and discarded. The nozzle and probe liner, and the front half of the filter housing were rinsed with deionized water to remove any existing particulate matter. The deionized water rinses were discarded.

At the end of a test run, the liquid volume collected in each impinger, including the silica gel impinger, was measured using an electronic scale; these volumes were used to calculate the moisture content of the flue gas. The contents of Impingers 1 and 2, back half of the filter housing and connecting glassware were placed in a 500-ml polyethylene bottle with a Teflon cap screw liner. The described glassware was rinsed three times with deionized water and the rinsate was placed in that same sample container. The sample container was labeled as 0.1N H₂SO₄/DI, marked at the liquid level, and sealed.

The volume of the contents of Impinger 4 and 5, and all connecting glassware were emptied into a polyethylene bottle with a Teflon screw cap liner. The described glassware was rinsed three times with deionized water and the rinsate was placed in the same polyethylene bottle. This sample container was labeled as 0.1N NaOH/DI, marked at the liquid level, and sealed.

All sample containers, including blanks of water, 0.1N H₂SO₄, and 0.1N NaOH were transported by courier to Maxxam Analytics, a Bureau Veritas laboratory, in Mississauga, Ontario, Canada for analysis.



4.1.7 Gas Dilution (USEPA Method 205)

A gas dilution system was used to introduce known values of calibration gases into the analyzers. The gas dilution system consists of calibrated orifices or mass flow controls and dilutes a high-level calibration gas to within $\pm 2\%$ of predicted values. The gas divider is capable of diluting gases at set increments and will be evaluated for accuracy in the field in accordance with USEPA Method 205, "Verification of Gas Dilution Systems for Field Instrument Calibrations."

Prior to testing, the gas divider dilutions were measured to evaluate that they are within $\pm 2\%$ of predicted values. Three sets of three dilutions of the high-level calibration gas were performed. In addition, a certified mid-level calibration gas was introduced into an analyzer; this calibration gas concentration was within $\pm 10\%$ of a gas divider dilution concentration.

4.2 Procedures for Obtaining Process Data

Process data were recorded by Decorative Panels International, Inc. personnel during testing. Refer to Section 2.1 and 2.2 for discussions of process and control device data and Appendix E for the operating parameters recorded during testing.

4.3 Sampling Identification and Custody

Sample identification and chain of custody procedures were applicable to the sampling methods used in this test program. Applicable Chain of Custody procedures followed guidelines outlined within ASTM D4840-99 (Reapproved 2010), "Standard Guide for Sample Chain-of-Custody Procedures." Detailed sampling and recovery procedures are described in Section 4.0. For each sample collected (i.e. filter) sample identification and custody procedures were completed as follows:

- Containers were sealed with Teflon tape to prevent contamination.
- Containers were labeled with test number, location, and test date.
- The level of fluid was marked on outside of sample containers to identify if leakage had occurred before delivery of the samples to the laboratory.
- Containers were placed in coolers for storage.
- Samples were logged using guidelines outlined in ASTM D4840-99 (Reapproved 2010), "Standard Guide for Sample Chain-of-Custody Procedures."
- Samples were delivered to the laboratory.

Chains of custody and laboratory analytical results are included in Appendix F.



5.0 QA/QC Activities

Equipment used in this emissions test program passed quality assurance/quality control (QA/QC) procedures. Refer to Appendix A for equipment calibration and inspection sheets. Field data sheets are presented in Appendix C. Computer-generated Data Sheets are presented within Appendix D.

5.1 Pretest QA/QC Activities

Before testing, the sampling equipment was cleaned, inspected, and calibrated according to procedures outlined in the applicable USEPA sampling method and USEPA's "Quality Assurance Handbook for Air Pollution Measurement Systems, Volume and Principles" and, Volume III, "Stationary Source Specific Methods." Refer to Appendix A for inspection and calibration sheets.

5.2 QA/QC Audits

The results of select sampling and equipment QA/QC audits and the acceptable USEPA tolerance are presented in the following sections.

5.2.1 Results of Audit Samples

Audit samples, supplied by Environmental Resource Association (ERA), were analyzed as part of the test program. The purpose of ERA's Stationary Source Audit Sample Program is to evaluate accuracy and data reliability. The audit samples were analyzed by Maxxam Analytics. The audit sample results were within the acceptance limits. The results of the audit samples are presented in Table 5-1. ERA's Audit Evaluation Report is included in Appendix F.



**Table 5-1
Stationary Source Audit Program QA/QC Audit Sample Results**

Sample Catalog Number	Analyte	Units	Maxxam Analytics Reported Value	ERA Assigned Value	Difference	Acceptable Limits	Performance Evaluation
1095	Mercury (filter)	µg/filter	3.28	3.40	0.12	2.55-4.25	Acceptable
1095	Mercury in impinger solution	ng/mL	2.19	2.43	0.24	1.83-3.04	Acceptable
1770	Hydrogen Chloride in impinger solution	mg/L	9.98	10.2	0.22	9.18-11.2	Acceptable

5.2.2 Sampling Train QA/QC Audits

The sampling trains described in Section 4.1 were audited for measurement accuracy and data reliability. Table 5-2 summarizes the QA/QC audits conducted on each sampling train.

**Table 5-2
Sampling Train QA/QC Audits**

Parameter	Run 1†	Run 2	Run 3	Method Requirement	Comment
Method 26A					
Sampling train leak check Post-test	0 ft ³ for 1 min at 4 in Hg	0 ft ³ for 1 min at 8 in Hg	0 ft ³ for 1 min at 5 in Hg	<0.020 ft ³ for 1 minute at ≥ sample vacuum recorded during test	Valid
Sampling vacuum (in Hg)	2 to 4	4 to 5	3 to 5		



**Table 5-2
Sampling Train QA/QC Audits**

Parameter	Run 1†	Run 2	Run 3	Method Requirement	Comment	
Methods 5 and 29						
Sampling train leak check Post-test	0.001 ft ³ for 1 min at 10 in Hg	0 ft ³ for 1 min at 10 in Hg	0.01 ft ³ for 1 min at 11 in Hg	0 ft ³ for 1 min at 12 in Hg	<0.020 ft ³ for 1 minute at ≥ sample vacuum recorded during test	Valid
Sampling vacuum (in Hg)	6 to 9	9	8 to 11	8 to 11		

†Methods 5 and 29, Test Run 1 was started on July 13, 2016, however, due to a gap in production, it was necessary to seal the sampling train and complete Test Run 1 on July 14, 2016.

5.2.3 Isokinetic Sampling

Isokinetic sampling, which means collecting flue gas into the sampling nozzle at the velocity equal to that of the flue gas velocity, is a requirement of USEPA Methods 5, 26A, and 29. Maintaining isokinetic sampling is important because under isokinetic conditions, sample concentrations may be biased depending on the inertial effects of the particles.

When flue gas containing small and large particles are collected isokinetically, the small and large particle concentrations are consistent with the flue gas composition. However, in over-isokinetic conditions (200% high sampling flowrate into nozzle) the particulate matter concentrations are biased low, because a greater number of smaller, lighter particles and fewer larger, heavier particles will be collected compared to isokinetic conditions. Under-isokinetic sampling (50% low sampling flowrate into nozzle) will bias the results high because a greater number of larger, heavy particles will be collected.

The USEPA Methods 5, 26A, and 29 isokinetic sampling rate for each test run is presented in Table 5-3. The isokinetic sampling rates were within the isokinetic requirement of 100±10% percent.



**Table 5-3
Summary of Isokinetic Sampling Rates**

Source	Run	Actual % Isokinetic Sampling Rate	Allowable % Isokinetic Sampling Rate
EUBOILERS#3	Method 26A		100±10%
	1	98	
	2	99	
	3	98	
	Methods 5 and 29		
	1	98	
	2	97	
3	100		

5.2.4 Instrument Analyzer QA/QC Audits

The instrument analyzer sampling trains described in Section 4.1 were audited for measurement accuracy and data reliability. The analyzers passed the applicable calibration criteria. Calibration gas selection, error, bias, and drift checks are included in Appendix A.

5.2.5 Dry-Gas Meter QA/QC Audits

Table 5-4 summarizes the dry-gas meter (DGM) calibration checks in comparison to the acceptable USEPA tolerance. Refer to Appendix A for DGM calibrations.

**Table 5-4
Dry-gas Meter Calibration QA/QC Audit**

Meter Box	Pre-test DGM Calibration Factor (Y) (dimensionless)	Post-Test DGM Calibration Check Value (Y _{qa}) (dimensionless)	Difference Between Pre- and Post-test DGM Calibrations	Acceptable Tolerance	Comment
2	0.971 (Feb 18, 2016)	0.938 (Jul 27, 2016)	0.033	≤0.05	Valid
6	0.954 (May 27, 2016)	0.960 (Jul 25, 2016)	0.006	≤0.05	Valid



5.2.6 Thermocouple QA/QC Audits

Temperature measured using thermocouples and digital pyrometers were compared to a reference temperature (i.e., ice water bath, boiling water) before and after testing to evaluate accuracy of the equipment. The thermocouples and pyrometers measured temperature within $\pm 1.5\%$ of the reference temperatures and were within USEPA acceptance criteria. Thermocouple calibration sheets are presented in Appendix A.

5.3 QA/QC Blanks

Field blanks were analyzed for the constituent of interest. The results of the blanks are presented in Table 5-5. The blank results do not indicate significant contamination occurred in the field. Blank corrections were not applied.

**Table 5-5
QA/QC Blanks**

Sample Identification	Result	Comment
M5/29 Filter Blank	1.5 mg	
M5/29 Acetone Blank	0.8 mg	Sample Volume 97 ml
M25/9 Blanks	Not detected	Hg not detected in Method 29 blank
M26A Blanks	Not detected	HCl and Cl not detected in Method 26A blanks

5.4 QA/QC Checks for Data Reduction and Validation

Bureau Veritas validated the computer spreadsheets onsite. The computer spreadsheets were used to evaluate the accuracy of field calculations. The field data sheets were reviewed to evaluate whether data had been recorded appropriately. The computer data sheets were checked against the field data sheets for accuracy. Sample calculations were performed to check computer spreadsheet computations.

5.5 QA/QC Problems

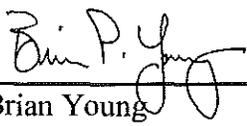
Equipment audits and QA/QC procedures demonstrate sample collection accuracy for the test runs.



Limitations

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Health, Safety, and Environmental Services

This report reviewed by:



Derek R. Wong, Ph.D., P.E.
Director and Vice President
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Table 1 - EUBOILER#3 Mercury and Particulate Matter Results

Facility	Decorative Panels International, Inc.				
Source Designation	EUBOILER#3				
Test Date	Jul 13, 2016	Jul 14, 2016	Jul 14, 2016		
Meter/Nozzle Information	Run 1 - M29	Run 2 - M29	Run 3 - M29	Average	
Meter Temperature, T_m	°F	88	86	93	89
Meter Pressure, P_m	in Hg	29.85	29.89	29.89	29.88
Measured Sample Volume, V_m	ft ³	137.62	148.24	149.62	145.16
Sample Volume, V_m	std ft ³	126.12	136.68	136.28	133.03
Sample Volume, V_m	std m ³	3.57	3.87	3.86	3.77
Condensate Volume, V_w	std ft ³	16.20	13.36	19.58	16.38
Gas Density, ρ	std lb/ft ³	0.0741	0.0748	0.0736	0.0742
Total weight of sampled gas	lb	10.540	11.221	10.318	10.693
Nozzle Size, A_n	ft ²	0.0013690	0.0013690	0.0013690	0.0013690
Isokinetic Variation, I	%	98	97	100	99
Stack Data					
Average Stack Temperature, T_s	°F	365	384	392	380
Molecular Weight Stack Gas-dry, M_d	lb/lb-mole	29.88	29.87	29.85	29.87
Molecular Weight Stack Gas-wet, M_w	lb/lb-mole	28.53	28.81	28.36	28.57
Stack Gas Specific Gravity, G_s		0.99	0.99	0.98	0.99
Percent Moisture, B_{ws}	%	11.38	8.90	12.56	10.95
Water Vapor Volume (fraction)		0.114	0.089	0.126	0.109
Pressure, P_s	in Hg	29.58	29.58	29.58	29.58
Average Stack Velocity, V_s	ft/sec	23.20	25.32	25.78	24.77
Area of Stack	ft ²	38.48	38.48	38.48	38.48
Exhaust Gas Flowrate					
Flowrate	ft ³ /min, actual	53,577	58,474	59,528	57,193
Flowrate	ft ³ /min, standard wet	33,899	36,179	36,476	35,518
Flowrate	ft ³ /min, standard dry	30,040	32,958	31,895	31,631
Flowrate	m ³ /min, standard dry	851	933	903	896
Mercury					
Collected Mass					
Mercury	mg	0.00070	0.00050	0.00061	0.00060
Concentration					
Mercury	mg/dscf	0.0000056	0.0000036	0.0000045	0.0000046
Mass Emission Rate					
Mercury	lb/MMBtu	0.00000020	0.00000013	0.00000017	0.00000017
Mercury	lb/hr	0.000022	0.000016	0.000019	0.000019
Particulate Matter					
Collected Mass					
Particulate Matter Acetone Wash	mg	4.8	9.5	3.7	6.0
Particulate Matter Filter	mg	0.80	1.20	1.10	1.03
Total Filterable Particulate Matter (FPM)	mg	5.6	10.7	4.8	7.0
Concentration					
Particulate Matter (FPM)	mg/dscf	0.044	0.078	0.035	0.053
Particulate Matter (FPM)	grain/dscf	0.00069	0.00121	0.00054	0.00081
Mass Emission Rate					
Particulate Matter (FPM)	lb/MMBtu	0.0016	0.0028	0.0013	0.0019
Particulate Matter (FPM)	lb/hr	0.18	0.34	0.15	0.22
PM lb/1000 lb @ 50% EA	lb/(1,000 lb,dry)	0.0015	0.0026	0.0012	0.0017

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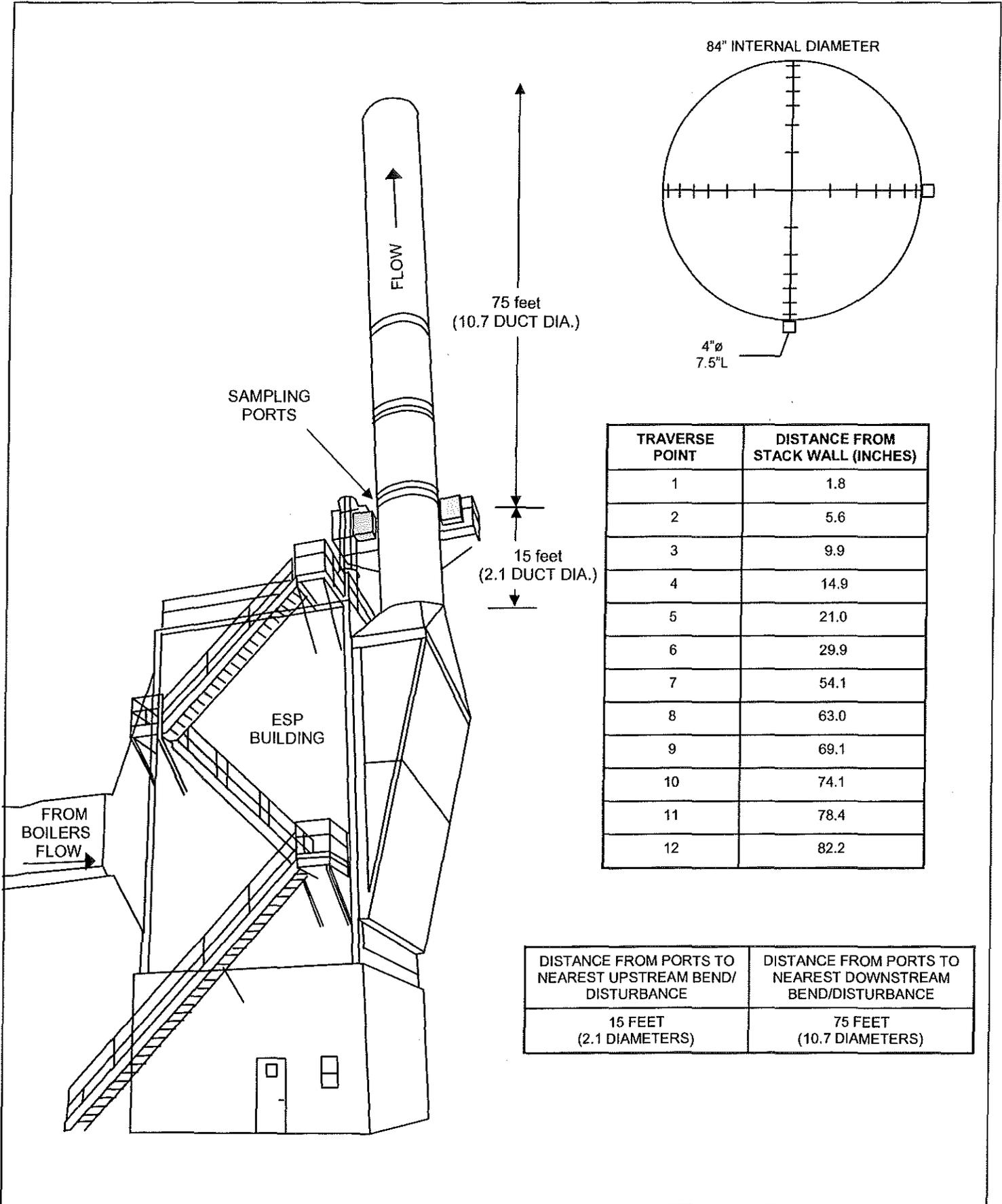
Table 2 - EUBOILER#3 Hydrogen Chloride Results

Facility		Decorative Panels International, Inc.			
Source Designation		EUBOILER#3			
Test Date		Jul 14, 2016	Jul 14, 2016	Jul 14, 2016	
Meter/Nozzle Information		Run 1 - M26A	Run 2 -M26A	Run 3 - M26A	Average
Meter Temperature, T _m	°F	80	87	89	86
Meter Pressure, P _m	in Hg	29.84	29.96	29.96	29.92
Measured Sample Volume, V _m	ft ³	110.77	142.50	71.43	108.23
Sample Volume, V _m	std ft ³	104.81	133.63	66.81	101.75
Sample Volume, V _m	std m ³	2.97	3.78	1.89	2.88
Condensate Volume, V _w	std ft ³	14.82	19.22	8.11	14.05
Gas Density, ρ _g	std lb/ft ³	0.0738	0.0736	0.0738	0.0737
Total weight of sampled gas	lb	8.823	11.253	5.072	8.383
Nozzle Size, A _n	ft ²	0.0013690	0.0013690	0.0013690	0.0013690
Isokinetic Variation, I	%	98	99	98	98
Stack Data					
Average Stack Temperature, T _s	°F	371	382	385	379
Molecular Weight Stack Gas-dry, M _d	lb/lb-mole	29.88	29.85	29.71	29.81
Molecular Weight Stack Gas-wet, M _w	lb/lb-mole	28.41	28.36	28.44	28.40
Stack Gas Specific Gravity, G _s		0.98	0.98	0.98	0.98
Percent Moisture, B _{ws}	%	12.39	12.57	10.82	11.93
Water Vapor Volume (fraction)		0.124	0.126	0.108	0.119
Pressure, P _s	in Hg	29.67	29.67	29.67	29.67
Average Stack Velocity, V _s	ft/sec	19.61	25.27	25.07	23.32
Area of Stack	ft ²	38.48	38.48	38.48	38.48
Exhaust Gas Flowrate					
Flowrate	ft ³ /min, actual	45,282	58,352	57,881	53,838
Flowrate	ft ³ /min, standard wet	28,529	36,294	35,872	33,565
Flowrate	ft ³ /min, standard dry	24,994	31,731	31,991	29,572
Flowrate	m ³ /min, standard dry	708	899	906	837
Hydrogen Chloride					
Collected Mass					
Hydrogen Chloride	mg	0.40	0.20	0.20	0.27
Concentration					
Hydrogen Chloride	mg/dscf	0.0038	0.0015	0.0030	0.0028
Mass Emission Rate					
Hydrogen Chloride	lb/MMBtu	0.00014	0.000056	0.00012	0.00010
Hydrogen Chloride	lb/hr	0.013	0.006	0.013	0.011



Table 3
EUBOILER#3 Carbon Monoxide Results
Decorative Panels International, Inc.
Alpena, Michigan
Bureau Veritas Project No. 11016-000071.00
Sampling Date: July 14, 2016

Parameter	Run 1 ‡	Run 2 ‡	Run 3	Run 4	Run 5	Average †
Test Time	10:00-12:40	14:05-15:05	15:43-16:43	17:35-18:40	18:50-19:50	
Test Duration (min)	120	60	60	60	60	
Exhaust Gas Stream Volumetric Flowrate (dscfm)*	24,994	31,731	31,731	31,991	31,991	31,904
O ₂ Concentration (C _{AVG} , %)	9.1	9.5	9.5	10.3	9.6	9.8
Average Corrected O ₂ Concentration (C _{GAS} , %)	9.1	9.6	9.6	10.3	9.6	9.8
CO ₂ Concentration (C _{AVG} , %)	9.4	9.3	9.1	8.1	8.4	8.6
Average Corrected CO ₂ Concentration (C _{GAS} , %)	9.6	9.3	9.0	8.2	8.5	8.5
CO Concentration (C _{AVG} , ppmvd)	806.9	761.2	409.2	328.4	317.1	351.6
Average Corrected CO Concentration (C _{GAS} , ppmvd)	807.6	765.8	414.4	325.6	315.8	351.9
Average Corrected CO Concentration (@ 3% O ₂ , ppmvd)	1222	1211	658	549	502	569
CO Mass Emission Rate (lb/hr)	88	106	57	45	44	49
CO Mass Emission Rate (@ 3% O ₂ , lb/hr)	133	168	91	77	70	79
‡: Test Runs 1 and 2 were void due to an analyzer calibration issue. †: Average result is calculated based on the results of Test Runs 3, 4 and 5. *: Based on simultaneous testing, flowrates from HCl test runs were used for CO testing. ppmvd: part per million by volume, dry basis lb/hr: pound per hour dscfm: dry standard cubic feet per minute						



TRAVERSE POINT	DISTANCE FROM STACK WALL (INCHES)
1	1.8
2	5.6
3	9.9
4	14.9
5	21.0
6	29.9
7	54.1
8	63.0
9	69.1
10	74.1
11	78.4
12	82.2

DISTANCE FROM PORTS TO NEAREST UPSTREAM BEND/DISTURBANCE	DISTANCE FROM PORTS TO NEAREST DOWNSTREAM BEND/DISTURBANCE
15 FEET (2.1 DIAMETERS)	75 FEET (10.7 DIAMETERS)

SCALE	NOT TO SCALE
DATE	JULY 19 2016
PRJ NO.	11016-000071.00

EUBOILER#3
SAMPLING PORTS AND TRAVERSE POINT LOCATIONS
 Decorative Panels International, Inc.
 Alpena, Michigan



FIGURE
1

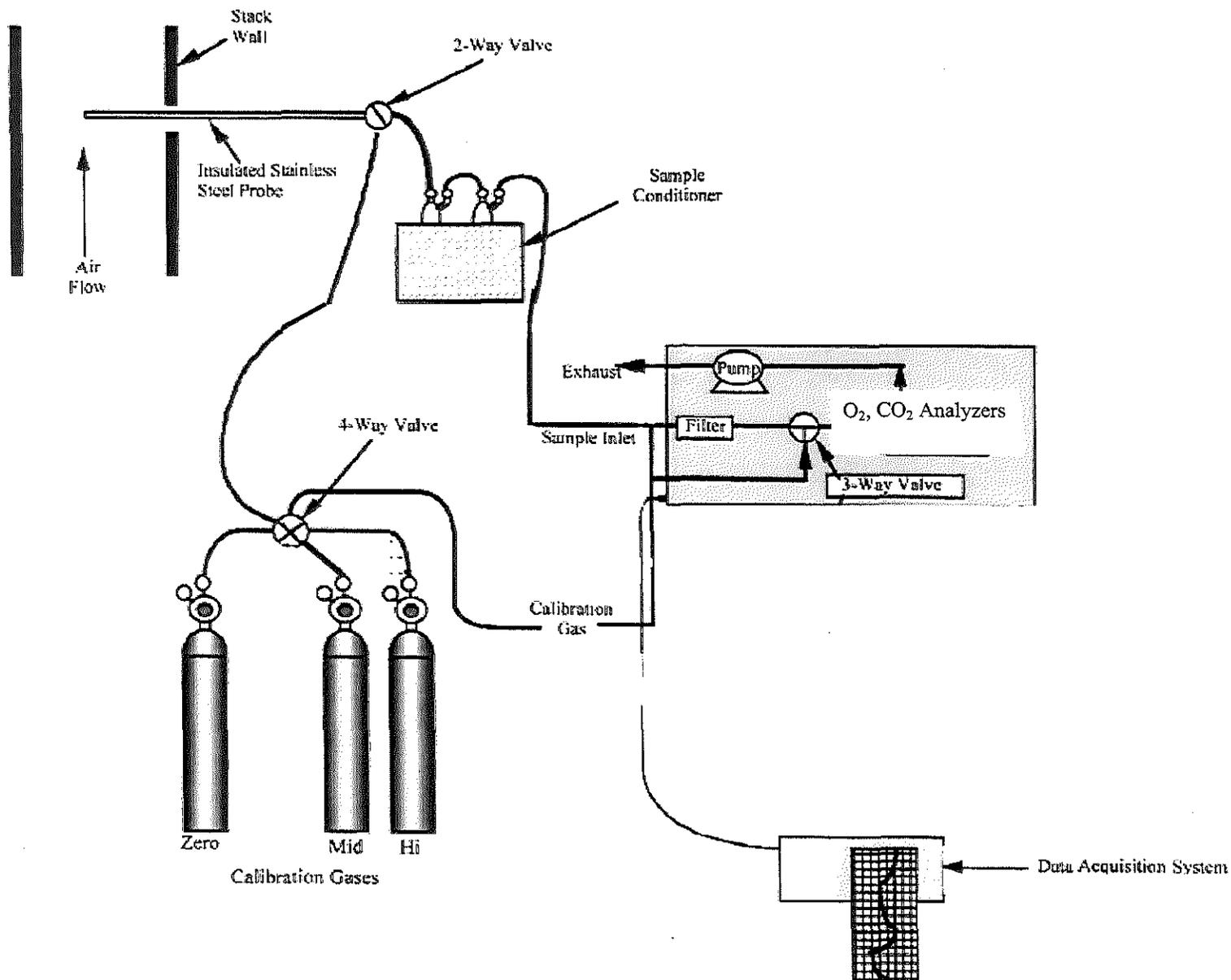


Figure 2
USEPA Methods 3A and 10 Sampling
Train



Decorative Panels International, Inc.
Alpena, Michigan

Project No. 11016-000071.00

Last Revision: July 29, 2016

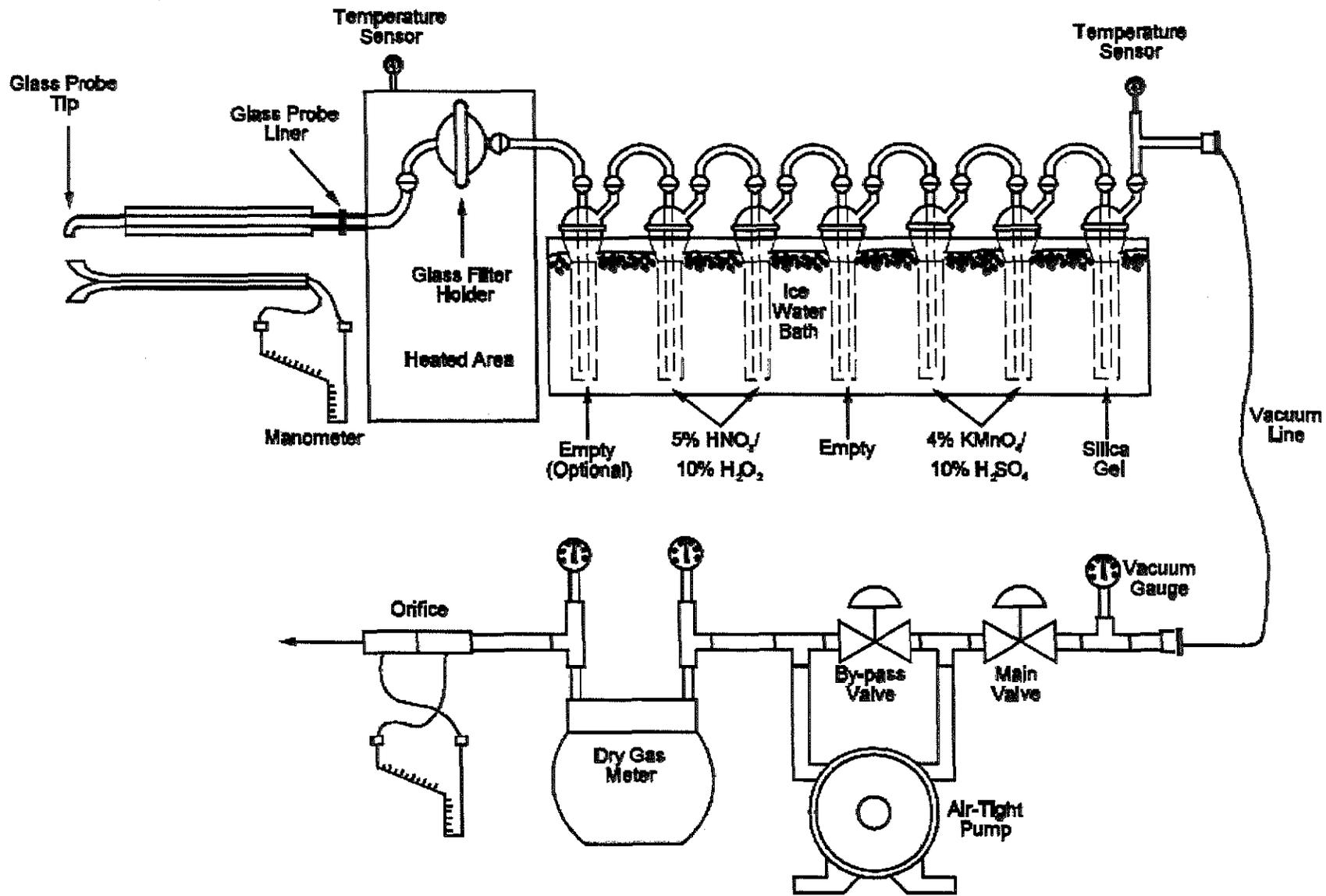


Figure 3
USEPA Methods 5 and 29 Sampling
Train



Decorative Panels International, Inc.
Alpena, Michigan

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Last Revision: July 29, 2016

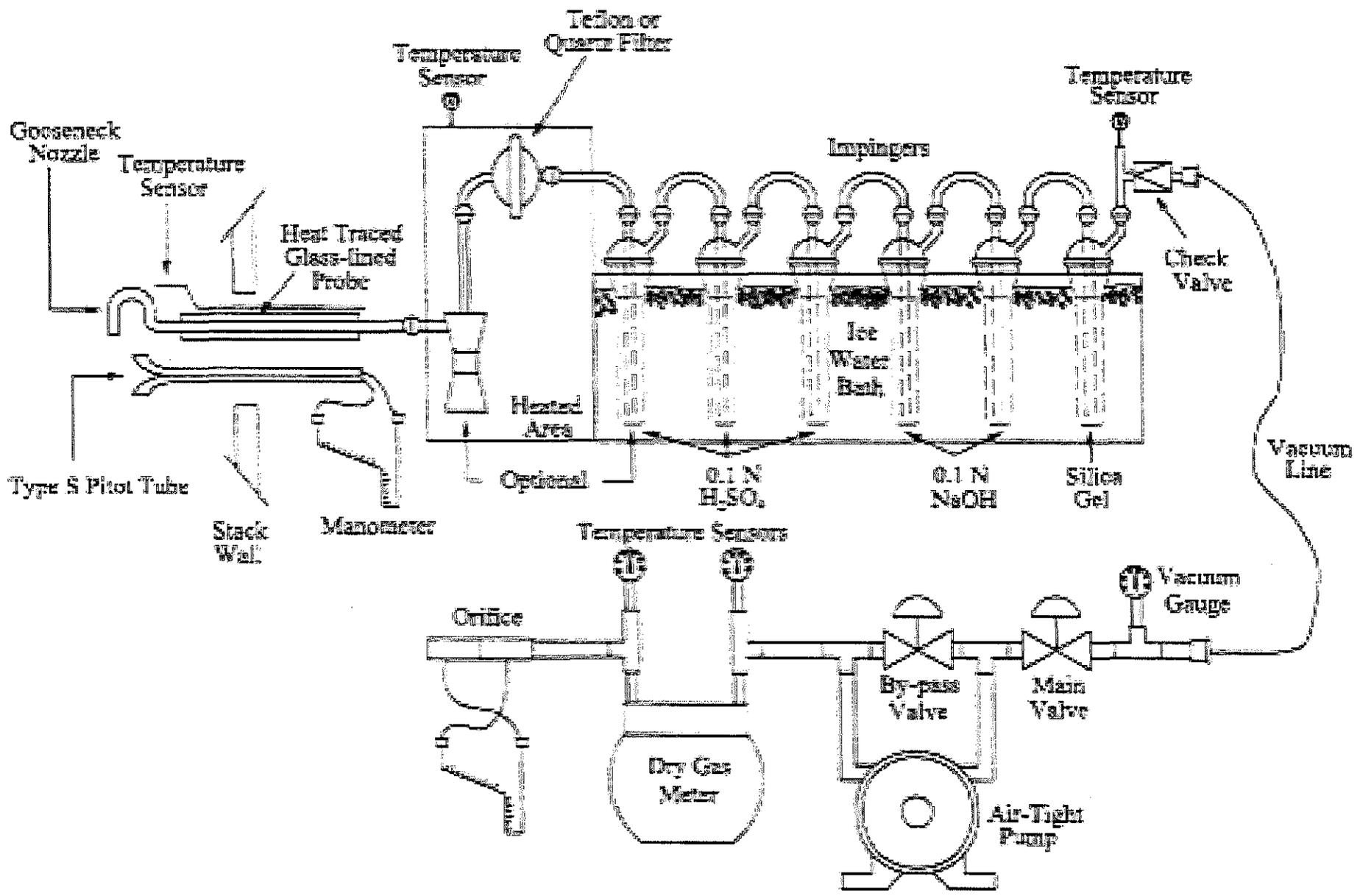


Figure 4
USEPA Method 26A Sampling
Train



Decorative Panels International, Inc.
Alpena, Michigan

Project No. 11016-000071.00

Last Revision: July 29, 2016

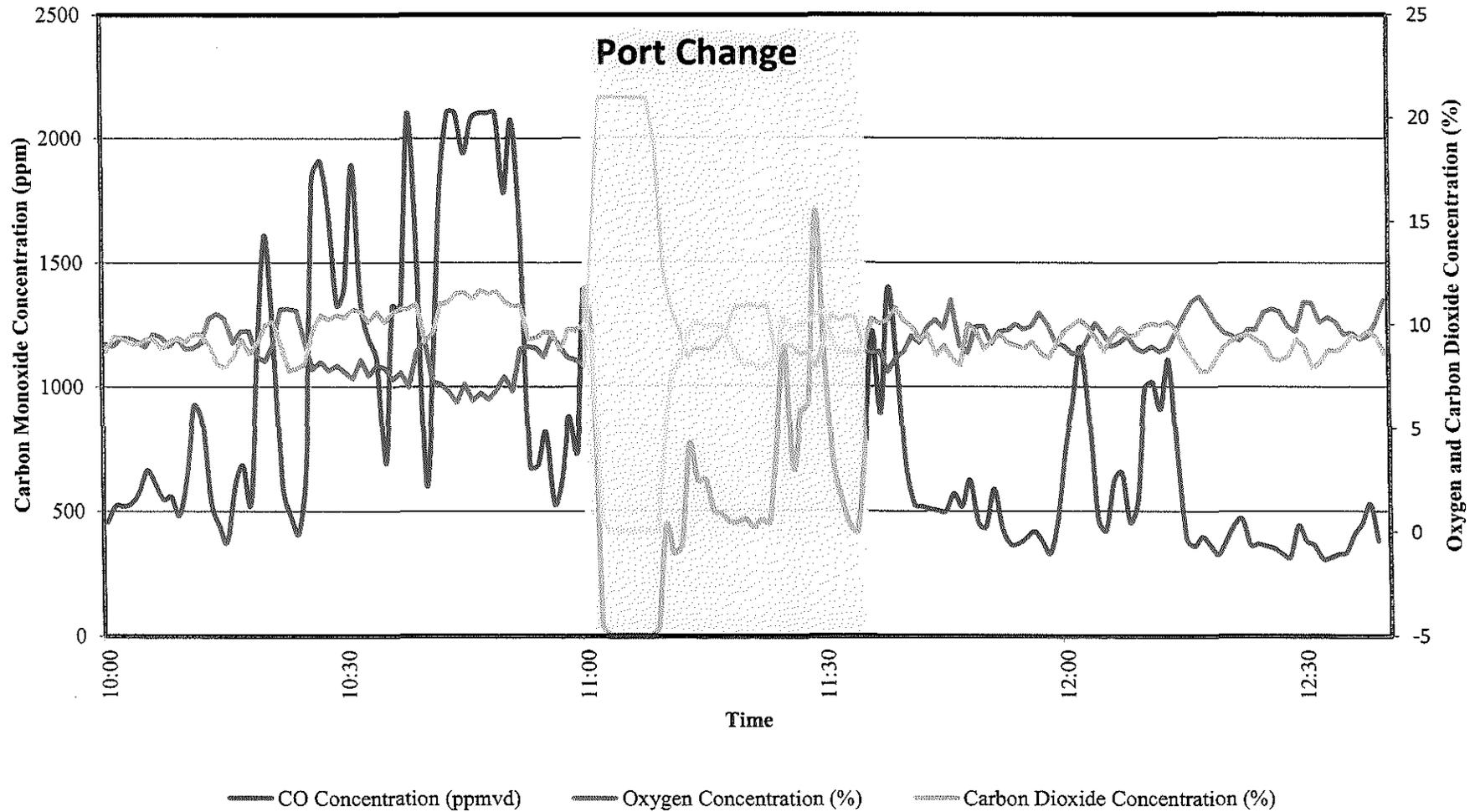
EUBOILER#3 CO, O₂, and CO₂ Concentrations - Run 1

Decorative Panels International, Inc.

Alpena, Michigan

Project No. 11016-000071.00

Sampling Date: July 14, 2016



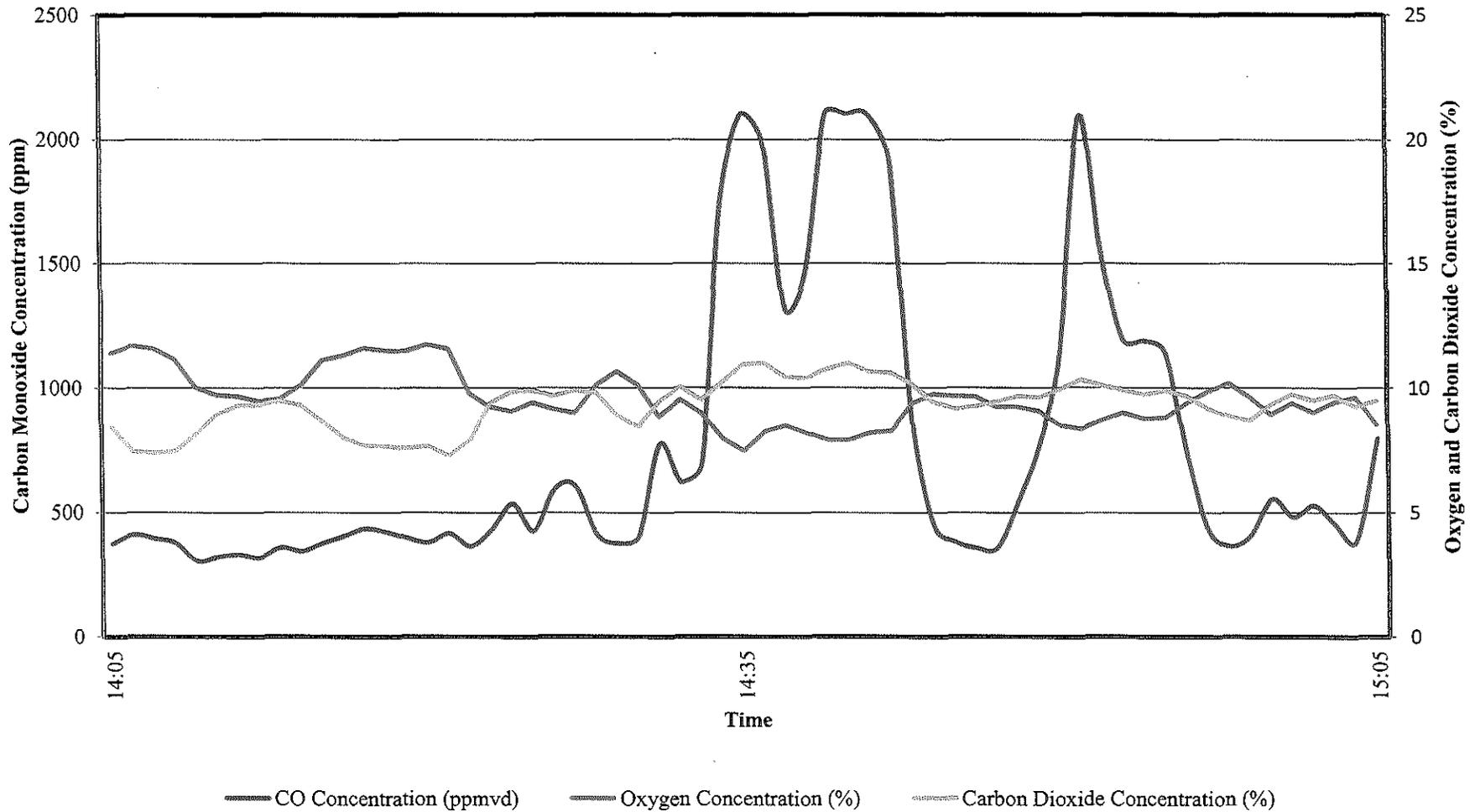
EUBOILER#3 CO, O₂, and CO₂ Concentrations - Run 2

Decorative Panels International, Inc.

Alpena, Michigan

Project No. 11016-000071.00

Sampling Date: July 14, 2016



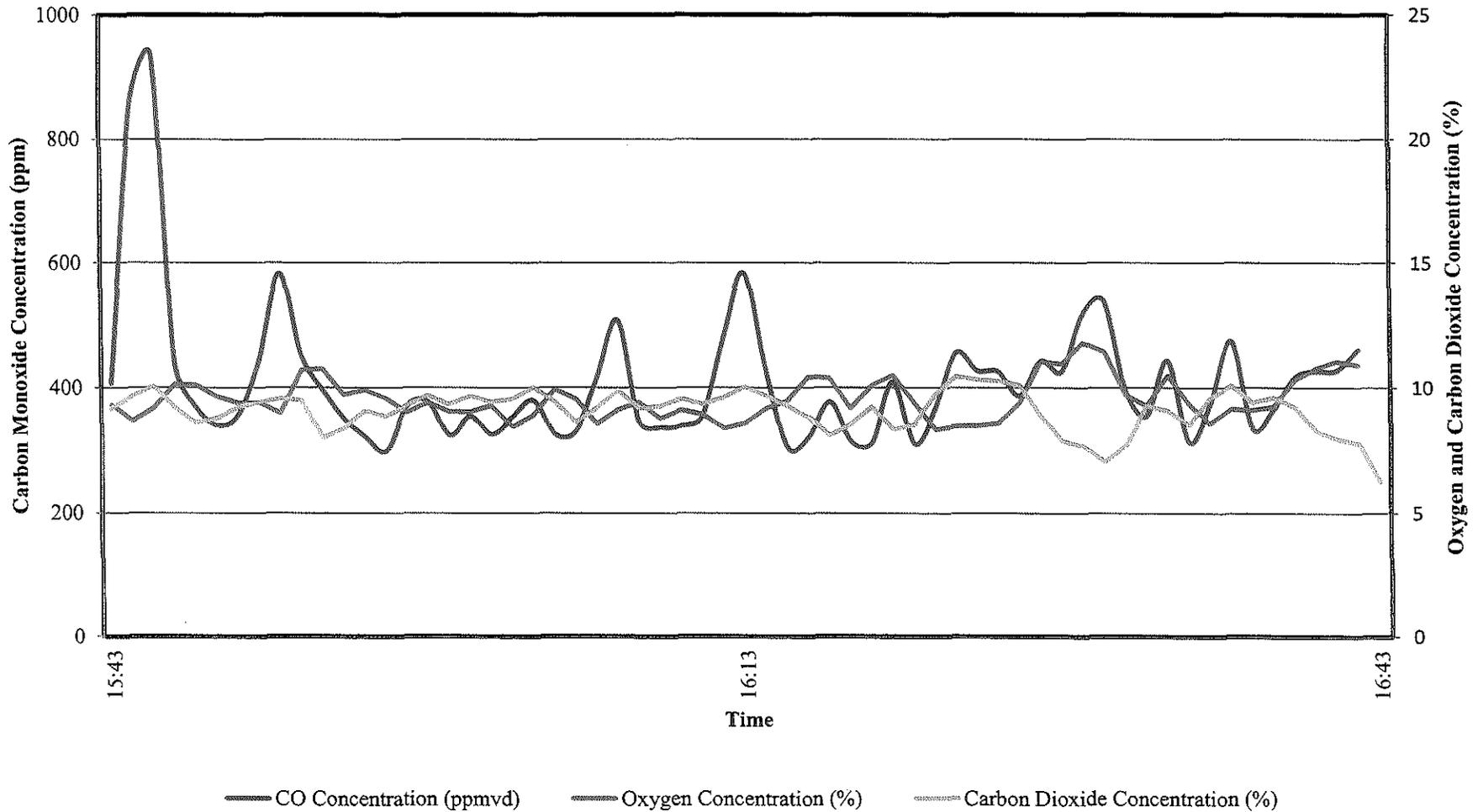
EUBOILER#3 CO, O₂, and CO₂ Concentrations - Run 3

Decorative Panels International, Inc.

Alpena, Michigan

Project No. 11016-000071.00

Sampling Date: July 14, 2016



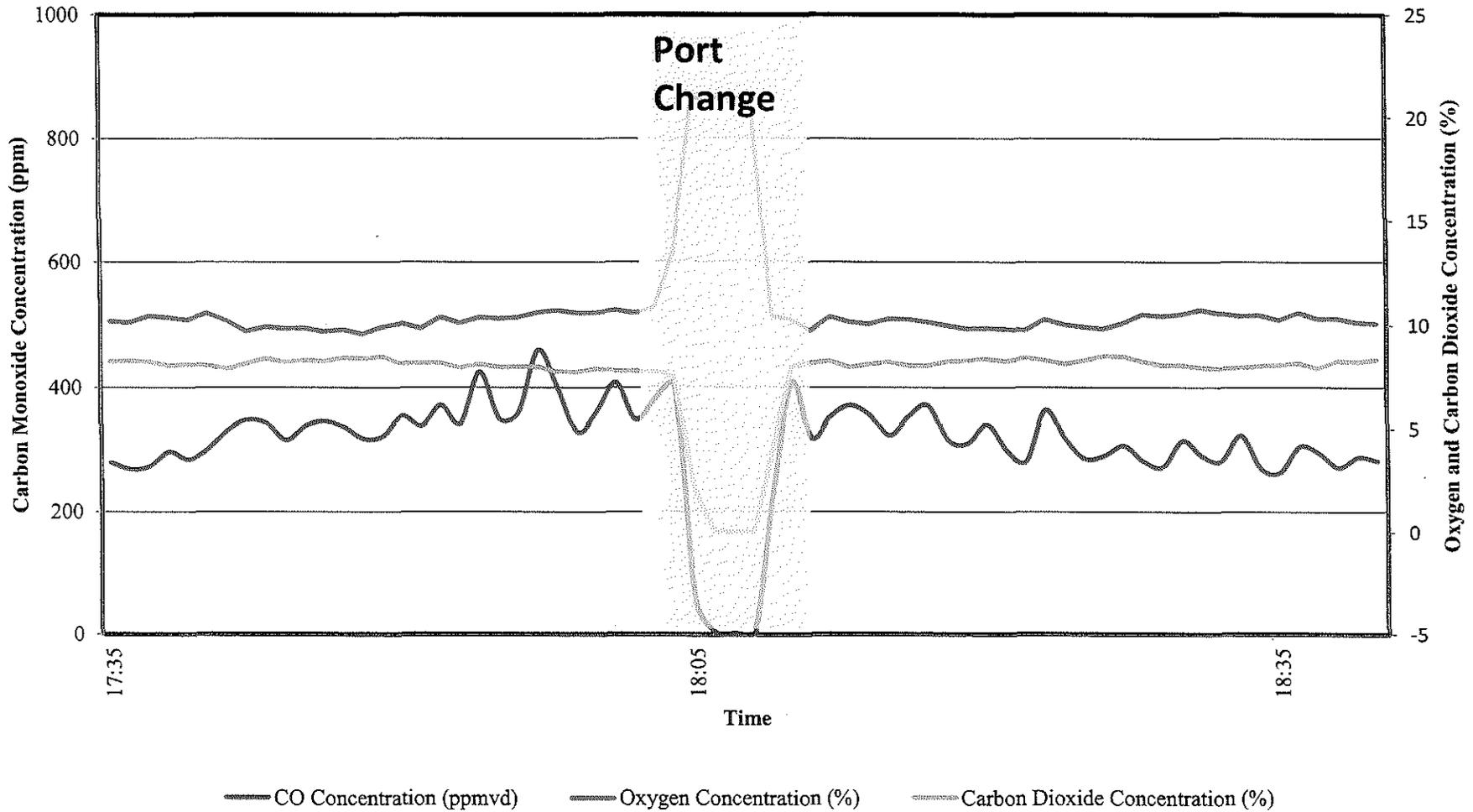
EUBOILER#3 CO, O₂, and CO₂ Concentrations - Run 4

Decorative Panels International, Inc.

Alpena, Michigan

Project No. 11016-000071.00

Sampling Date: July 14, 2016



EUBOILER#3 CO, O₂, and CO₂ Concentrations - Run 5

Decorative Panels International, Inc.

Alpena, Michigan

Project No. 11016-000071.00

Sampling Date: July 14, 2016

