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August 28, 2023
Project No. M8006.63.001

Julia DeGagné
Oregon Department of Environmental Quality
700 NE Multnomah Street, Suite 600
Portland, Oregon 97232

Re: Revised Main Foundry and Cooling Bunker Baghouse Emission Factor Determination and Main Foundry PTE Verification Test Report, Eagle Foundry Co.

Dear Julia:

On behalf of Eagle Foundry Company (Eagle Foundry), please find attached the revised Main Foundry and Cooling Bunker Baghouse Emission Factor Verification and Main Foundry PTE Verification test report. Emission testing was conducted at the Eagle Foundry facility by Bison Engineering on March 27-29, 2023, on both foundry baghouses to determine emission factors of metals from melting, pouring, and cooling activities in the foundry. At the same time, a US EPA Method 204 verification test was conducted on the foundry building to confirm it meets the requirements of a permanent total enclosure.

On July 27, 2023, Eagle Foundry received a letter from Thomas Rhodes, Department of Environmental Quality (DEQ), requesting corrections to the original source test report. Revisions have been made to emission factors in lbs/ton, blank corrections for barium, and diagrams and calculations to include the pouring area for the Method 204 analysis.

The attached report from Bison Engineering confirms that the main foundry building qualifies as a permanent total enclosure. With DEQ concurrence it will be assumed that 100 percent of the emissions from melting, pouring, and cooling activities in the building were directed to one of the two foundry baghouses where they were quantified during testing. All building improvements remain in place so it will also be assumed that there are no fugitive emissions from the building for the purposes of subsequent Cleaner Air Oregon analyses.

The results of the testing have confirmed that a number of metals were not detectable. The following metals were not detected at either baghouse in any test runs of the inlet or outlet (12 measurements for each metal type):

White Iron	Steel
Selenium	
Thallium	Thallium

If the DEQ concurs with the source test results, it is assumed that the emission rates of these metals will be zero, per Appendix G of The Recommended Procedures for Toxic Air Contaminant Health Risk Assessments, for the purposes of the Cleaner Air Oregon emissions inventory.

If you have any questions, please don't hesitate to call me at (503) 523-7142 or reach out to Jack Scott (Eagle Foundry) at (503) 637-3048.

Sincerely,

Maul Foster & Alongi, Inc.

Chad Darby
Principal Air Quality Consultant

Attachment

Revised Emissions Test Report: Main Foundry and Cooling Bunker Baghouses Emission Factor Determination and Main Foundry PTE Verification – Eagle Foundry Company

cc: Thomas Rhodes, DEQ

Jack Scott, Eagle Foundry

EMISSIONS TEST REPORT

EAGLE FOUNDRY COMPANY

MAIN FOUNDRY AND COOLING BUNKER BAGHOUSES EMISSION FACTOR DETERMINATION and MAIN FOUNDRY PTE VERIFICATION

Oregon Department of Environmental Quality
Air Contaminant Discharge Permit No. 03-2631-ST-01

Prepared for:

Eagle Foundry Co.
23123 SE Eagle Creek Rd.
Eagle Creek, OR 97022

Prepared by:

Bison Engineering, Inc.
3143 E Lyndale Ave.
Helena, MT 59601
(406) 442-5768
www.bison-eng.com

Project Number: EFC223119
Test Dates: March 24 & 27-29, 2023
Report Issued: June 15, 2023
Revision 01 Issued: August 25, 2023

STAC STACK TESTING ACCREDITATION COUNCIL
ACCREDITED TO ASTM D7036 ONLY CERT #4675.01
BISON ENGINEERING, INC.

EXECUTIVE SUMMARY

Eagle Foundry Company contracted Bison Engineering, Inc. to perform emissions testing at the Eagle Foundry facility in Eagle Creek, Oregon. Testing was performed on the Main Foundry and Cooling Bunker baghouses to determine emission factors. Permanent Total Enclosure verification was performed on the Main Foundry building to demonstrate that all suspended particulate in the work area is captured by the baghouses. The Eagle Foundry facility is subject to the provisions of Oregon Department of Environmental Quality (ODEQ) Standard Air Contaminant Discharge Permit Number 03-2631-ST-01. However, this testing was conducted to develop emission factors in support of the emissions inventory for the Cleaner Air Oregon program, rather than for permit compliance demonstration. This report presents emissions test data, describes the methods employed and details the quality assurance measures taken to ensure accurate data. Tables 1 through 5 summarize the test results.

Table 1 White Iron Results Summary (lb/ton melt)

Analyte	Main Foundry Baghouse		Cooling Bunker Baghouse	
	Inlet	Outlet	Inlet	Outlet
Aluminum	7.89E-03	2.01E-03	2.61E-02	1.73E-03
Antimony	< 1.79E-05	1.54E-05	< 8.74E-06	< 1.05E-05
Arsenic	< 3.57E-05	< 5.22E-05	< 3.57E-05	< 4.43E-05
Barium	7.17E-05	7.71E-05	1.44E-04	3.72E-05
Beryllium	< 1.02E-06	< 1.49E-06	< 1.13E-06	< 1.24E-06
Cadmium	< 7.05E-06	< 3.84E-06	< 1.23E-05	< 2.47E-06
Cobalt	3.56E-06	< 2.53E-06	4.29E-06	< 2.03E-06
Copper	3.43E-04	< 9.87E-05	2.98E-04	7.89E-05
Lead	< 5.75E-04	< 5.69E-05	< 2.81E-04	< 4.44E-05
Mercury	< 1.62E-07	< 2.06E-06	< 1.02E-06	< 1.53E-06
Nickel	< 1.22E-04	< 1.01E-04	1.01E-04	6.46E-05
Phosphorus	< 1.77E-04	< 1.72E-04	< 3.47E-04	< 4.20E-05
Selenium	< 7.65E-05	< 1.12E-04	< 7.65E-05	< 9.25E-05
Silver	< 3.37E-05	< 1.81E-05	< 1.88E-05	< 1.23E-05
Thallium	< 5.10E-05	< 7.46E-05	< 5.10E-05	< 6.17E-05
Vanadium	< 8.84E-06	< 7.46E-06	< 1.87E-05	< 6.17E-06
Zinc	6.49E-03	2.37E-04	2.92E-03	2.03E-04

lb/ton melt – pounds of given metal per ton of melt poured

Note: "<" indicates results which were calculated using the method detection limit (MDL) for front or back half results that were non-detect.

Table 2 White Iron Specific Emission Factors

Source		Analyte	Units	Result
Main Foundry Baghouse	Inlet	Chromium	lb Cr/ton Cr in melt	1.93E-03
		Manganese	lb Mn/ton Mn in melt	5.54E-01
	Outlet	Cr^{+6}	lb Cr^{+6}/ton Cr in melt	7.79E-07
		Chromium	lb Cr/ton Cr in melt	2.39E-04
		Manganese	lb Mn/ton Mn in melt	3.57E-02
Cooling Bunker Baghouse	Inlet	Chromium	lb Cr/ton Cr in melt	1.61E-03
		Manganese	lb Mn/ton Mn in melt	4.25E-01
	Outlet	Cr^{+6}	lb Cr^{+6}/ton Cr in melt	<1.17E-06
		Chromium	lb Cr/ton Cr in melt	9.28E-05
		Manganese	lb Mn/ton Mn in melt	1.22E-02

Cr^{+6} – hexavalent chromium

Table 3 Steel Alloy Results Summary (lb/ton melt)

Analyte	Main Foundry Baghouse		Cooling Bunker Baghouse	
	Inlet	Outlet	Inlet	Outlet
Aluminum	1.88E-02	1.90E-03	6.31E-02	1.45E-03
Antimony	< 3.42E-05	< 1.61E-05	< 2.49E-05	< 1.48E-05
Arsenic	< 1.29E-04	< 6.02E-05	< 1.80E-04	< 5.44E-05
Barium	1.58E-04	1.29E-04	3.36E-04	4.78E-05
Beryllium	< 1.10E-06	< 1.43E-06	< 1.60E-06	< 1.16E-06
Cadmium	2.39E-05	< 7.80E-06	2.81E-05	< 3.15E-06
Cobalt	5.42E-06	< 2.43E-06	6.45E-06	< 1.98E-06
Copper	< 7.57E-04	< 7.97E-05	< 5.75E-04	< 7.43E-05
Lead	< 1.81E-03	< 3.57E-05	< 5.73E-04	< 3.67E-05
Mercury	< 2.46E-06	< 4.17E-06	< 1.80E-06	< 2.92E-06
Phosphorus	< 5.17E-04	< 2.14E-04	< 7.51E-04	< 1.74E-04
Selenium	< 7.60E-05	< 1.07E-04	< 7.34E-05	< 8.67E-05
Silver	< 2.94E-05	< 1.50E-05	< 3.49E-05	< 1.16E-05
Thallium	< 5.03E-05	< 7.13E-05	< 4.90E-05	< 5.78E-05
Vanadium	< 8.21E-06	< 7.13E-06	< 2.37E-05	< 5.78E-06
Zinc	1.36E-02	2.17E-04	5.13E-03	2.17E-04

Table 4 Steel Alloy Specific Emission Factors

Source		Analyte	Units	Results
Main Foundry Baghouse	Inlet	Chromium	lb Cr/ton Cr in melt	7.48E-02
		Manganese	lb Mn/ton Mn in melt	1.16E+00
		Nickel	lb Ni/ton Ni in melt	<2.18E-02
	Outlet	Chromium	lb Cr ton Cr in melt	3.44E-03
		Cr^{+6}	lb Cr^{+6}/ton Cr in melt	1.48E-05
		Manganese	lb Mn/ton Mn in melt	4.12E-03
		Nickel	lb Ni/ton Ni in melt	<1.97E-02
Cooling Bunker Baghouse	Inlet	Chromium	lb Cr/ton Cr in melt	4.64E-02
		Manganese	lb Mn/ton Mn in melt	4.44E-01
		Nickel	lb Ni/ton Ni in melt	1.69E-02
	Outlet	Chromium	lb Cr/ton Cr in melt	9.40E-04
		Cr^{+6}	lb Cr^{+6}/ton Cr in melt	1.90E-05
		Manganese	lb Mn/ton Mn in melt	2.20E-03
		Nickel	lb Ni/ton Ni in melt	5.99E-03

Table 5 Main Foundry Building PTE Verification Results Summary

Parameter	Units	Test Result	Criteria	Criteria Status
NEAR	N/A	0.004	≤ 0.05	Pass
Facial velocity (via differential pressure measurement approach)	inH_2O	All readings were less than -0.007	All readings ≤ -0.007	Pass
Distance to any NDO from each emission point	Equivalent opening diameters	≥ 4 from each emission point to any NDO	≥ 4	Pass
Inward direction of air flow	N/A	Visually confirmed inward direction of flow at each NDO*	Continuous inward direction at each NDO	Pass

PTE – permanent total enclosure
NEAR – natural draft opening to enclosure area ratio
NDO – natural draft opening
N/A – not applicable
inH_2O – inches of water
ED – equivalent opening diameter
* Documented photographically

The results of the PTE verification on the Main Foundry building confirm that 100% of emissions in the building are being captured by emissions control systems. All captured emissions are directed to either the Main Foundry baghouse or Cooling Bunker baghouse.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

CERTIFICATION FROM RESPONSIBLE OFFICIAL

I have reviewed the information being submitted in its entirety. Based on information and belief formed after reasonable inquiry, I certify that the statements and information contained in this submittal are true, accurate, and complete.

Signature on behalf of

8/25/2023
Date

Jack Scott
Name (printed)

General Manager
Title

Eagle Foundry Company
Company

REVIEW AND CERTIFICATION

All work, calculations, other activities, and tasks performed and documented in this report were carried out under my direction and supervision. This test project conforms to the requirements of Bison Engineering, Inc.'s quality manual and American Society for Testing and Materials (ASTM) D7036-04.

Project Manager: Jacob Rankin, QSTI

Title: Helena Source Team Lead

Signature: Jacob Rankin

Date: 8/24/2023

I have reviewed all testing details, calculations, results, conclusions and other appropriate written material contained herein, and hereby certify that the presented material is authentic and accurate.

Reviewer: Lynn Dunnington

Title: Environmental Scientist/Reporting Lead

Signature: Lynn Dunnington

Date: 8/22/2023

1.0 INTRODUCTION

1.1 Project Summary and Objectives

Eagle Foundry Company (Eagle Foundry) contracted Bison Engineering, Inc. (Bison) to perform emissions testing and permanent total enclosure (PTE) verification at the Eagle Foundry facility in Eagle Creek, Oregon. While Eagle Foundry is subject to ODEQ Standard Air Contaminant Discharge Permit Number 03-2631-ST-01, this test campaign was conducted to develop emission factors in support of the emission inventory for the Cleaner Air Oregon program, rather than to satisfy permit requirements.

Emissions testing was performed on the inlet and outlet of both the Main Foundry baghouse and the Cooling Bunker baghouse. The Chester LabNet report identifies the Main Foundry baghouse as BH 1 and the Cooling Bunker baghouse as BH 2. Eagle Foundry performed two full melt cycles each day, the first melt was for white iron and the second was for steel alloy. PTE verification was performed on the Main Foundry building. Bison performed all testing in accordance with the pre-test protocol dated February 7, 2023, that was submitted to the Oregon Department of Environmental Quality (ODEQ). Bison employed U.S. Environmental Protection Agency (EPA) test methods as described in Title 40 Code of Federal Regulations (40 CFR). The pollutants measured include aluminum (Al), antimony (Sb), arsenic (As), barium (Ba), beryllium (Be), cadmium (Cd), chromium (Cr), cobalt (Co), copper (Cu), lead (Pb), manganese (Mn), mercury (Hg), nickel (Ni), phosphorus (P), selenium (Se), silver (Ag), thallium (Tl), vanadium (V), zinc (Zn) and hexavalent chromium (Cr^{+6}). Other parameters measured during testing include moisture, flow rate, oxygen (O_2), and carbon dioxide (CO_2).

Permanent Total Enclosure (PTE) verification was performed on the Main Foundry building following Method 204.

Tables 6 and 7 summarize the emissions test methods used during the test campaign. Each test run encompassed a full melt cycle, which included final cooling on the foundry floor. Method 3A for molecular weight determination was performed on the outlets only; the inlets were assumed to have the same O_2 and CO_2 concentrations as the corresponding outlet.

Table 6 Test Matrix – Main Foundry and Cooling Bunker Baghouses: White Iron Product

Source	EPA Method	Parameter	Details
Inlets – White Iron	1	Measurement locations	Determined once, prior to testing.
	2	Volumetric flow	Concurrent with Method 29 test runs.
	4	Moisture	Three, 240-minute test runs, concurrent with outlet test runs.
	29	Speciated metals	
Outlets – White Iron	1	Measurement locations	Determined once, prior to testing.
	2	Volumetric flow	Concurrent with Methods 29 and 0061 test runs.
	3A	O_2 and CO_2	Concurrent with Methods 29 and 0061 test runs.
	4	Moisture	Incorporated with Methods 29 and 0061.
	29	Speciated metals	Three, 240-minute test runs, concurrent with inlet test runs.
	0061	Cr^{+6}	

Table 7 Test Matrix – Main Foundry and Cooling Bunker Baghouses: Steel Alloy

Source	EPA Method	Parameter	Details
Inlets – Steel Alloy	1	Measurement locations	Determined once, prior to testing.
	2	Volumetric flow	Concurrent with Method 29 test runs.
	4	Moisture	Three, 250-minute test runs, concurrent with outlet test runs.
	29	Speciated metals	
Outlets – Steel Alloy	1	Measurement locations	Determined once, prior to testing.
	2	Volumetric flow	Concurrent with Methods 29 and 0061 test runs.
	3A	O_2 and CO_2	Concurrent with Methods 29 and 0061 test runs.
	4	Moisture	Incorporated with Methods 29 and 0061.
	29	Speciated metals	Three, 250-minute test runs, concurrent with inlet test runs.
	0061	Cr^{+6}	

1.2 Project Contacts

Facility:	**Eagle Foundry Company**
Address:	23123 SE Eagle Creek Rd. Eagle Creek, OR 97022
Contact:	Jack Scott
Phone:	(503) 637-3048
Email:	jacks@eaglefoundryco.com

Consultant:	**Bison Engineering, Inc.**
Address:	3143 E Lyndale Ave. Helena, MT 59601
Contact:	Jacob Rankin
Phone:	(208) 954-7138
Email:	jrankin@bison-eng.com

State Authority:	**Oregon Department of Environmental Quality** **Northwest Region**
Address:	700 NE Multnomah St., Suite 600 Portland, OR 97232
Contact:	Julia DeGagne
Phone:	(503) 866-9643
Email:	julia.degagne@deq.oregon.gov

Contract Laboratory:	**Chester LabNet**
Address:	12242 SW Garden Pl. Tigard, OR 97223
Contact:	Paul Duda
Phone:	(503) 624-2183 ext. 100
Website:	www.chesterlab.net

1.3 Testing Personnel

The Bison on-site testing team was led by Jacob Rankin, Qualified Source Testing Individual (QSTI), Helena Source Team Lead. Mr. Rankin was assisted during field testing by Adam Bender, Qualified Individual (QI), Project Scientist; Andrew Van Sickle, Environmental Scientist; Angel Medina, QSTI, Tucson Source Team Lead; Jeremy Clark, QI, Environmental Scientist; Nathan Wikstrom, Environmental Technician; Kyle DeVerna, QSTI, Environmental Engineer; and Jennifer Kessler, QI, Environmental Scientist/Quality Manager. Mr. Rankin served as project manager. Ms. Kessler processed the test data and authored this report. Lynn Dunnington, Environmental Scientist/Reporting Lead, performed a final quality assurance review of the data and test report.

Jack Scott, General Manager, was the primary contact for Eagle Foundry. Greg Lasslett, Project Manager, was on-site monitoring the process and collecting process data during testing.

Thomas Rhodes from ODEQ was on-site during the test campaign and observed a portion of the testing. Julia Degagne was on site to observe a portion of the PTE verification.

2.0 SOURCE DESCRIPTION

2.1 Facility Description

Eagle Foundry owns and operates a white iron and steel alloy casting facility in Eagle Creek, Oregon. The facility specializes in custom cast metal components for end users primarily in the aggregate industry, but also in the wood products and mining industries. The casting facility generally operates during normal business hours Monday through Friday and is capable of pouring up to 8,060 tons of metal per year.

2.2 Emission Source Description

Eagle Foundry operates four small induction furnaces. Two furnaces melt and hold the white iron and the other two furnaces melt and hold various steel alloys. For this emission factor verification test, the facility produced white iron and a combination of a chrome steel and manganese steel alloy. Eagle Foundry used two of their larger furnaces to complete the melting of the separate products. The two furnaces each have a 3,000-pound capacity and must operate in alternating fashion due to the limited power available to run the furnaces.

The white iron product represents a high chromium product and is the main alloy produced by Eagle Foundry. The combination steel product is the second most frequently produced metal alloy. The combination steel product was chosen to ensure a high manganese alloy was tested while also including an alloy that contains chromium and nickel. This will support the development of emission factors for all three metals.

The emissions from the melting and holding furnaces area and the pouring and casting area are ducted to the Main Foundry baghouse. The cooling bunker emissions are ducted to the Cooling Bunker baghouse. Both baghouses were manufactured by Donaldson and are rated for 50,000 cubic feet per minute (cfm).

The Main Foundry baghouse inlet is 48 inches inner diameter and was accessed from the roof. The Main Foundry baghouse exhaust stack inner diameter is 61 inches.

The Cooling Bunker baghouse inlet is 48 inches inner diameter and was also accessed from the roof. The Cooling Bunker baghouse exhaust stack inner diameter is 55.75 inches.

Purpose-built sampling ports on the outlets were approximately 50 feet above grade. Test ports were accessed via a manlift. Figure 1 presents a photo of the stack and sampling locations prior to testing. During testing, the Main Foundry sampling ports were rotated approximately 90° from what is shown in the photo. While on-site, Bison verified that each exhaust stack meets EPA Method 1 specifications; detailed Method 1 information is included in the appendices to this report.

Figure 1 Main Foundry and Cooling Bunker Baghouses

3.0 EMISSION TEST RESULTS

3.1 Emissions Test Results

Tables 8 through 19 summarize the Main Foundry and Cooling Bunker baghouses emission testing details. All runs for each operating scenario encompassed a full melt cycle for each product and were completed simultaneously, including inlet and outlet testing. Additional supporting material, including raw and processed test data, plant data, example calculations and calibration records, can be found in the appendices to this report. Average results were presented in the executive summary. Detailed run results are presented in the appendices.

3.1.1 White Iron Test Results

Table 8 Main Foundry BH Inlet – Metals Test Summary – White Iron

Parameter	Units	Run 1	Run 2	Run 3	Average
Date		3/27/2023	3/28/2023	3/29/2023	
Run start time		6:40	5:10	5:15	
Run end time		10:40	9:10	9:15	
Run duration	minutes	240	240	240	
Barometric pressure	inHg	29.98	29.41	29.41	29.60
Isokinetic average	%	97.0	99.8	100.4	99.1
Sample volume	dscf	316.575	297.402	353.897	322.625
CO_2	%vd	0.25	0.15	0.10	0.17
O_2	%vd	20.85	20.91	20.59	20.78
H_2O	%v	0.54	0.66	0.56	0.59
Velocity	fps	63.44	60.04	69.78	64.42
Flow rate	dscfm	49,692	45,376	53,648	49,572
Stack temperature	°F	45.4	53.2	45.0	47.9

BH – baghouse
inHg – inches of mercury
dscf – dry standard cubic feet
%vd – percent by volume on a dry basis
%v – percent by volume
fps – feet per second
dscfm – dry standard cubic feet per minute

Table 9 Main Foundry BH Outlet – Metals Test Summary – White Iron

Parameter	Units	Run 1	Run 2	Run 3	Average
Date		3/27/2023	3/28/2023	3/29/2023	
Run start time		6:40	5:10	5:15	
Run end time		10:40	9:10	9:15	
Run duration	minutes	240	240	240	
Barometric pressure	inHg	29.98	29.41	29.41	29.60
Isokinetic average	%	99.7	101.2	100.7	100.5
Sample volume	dscf	254.654	243.575	253.844	250.691
CO_2	%vd	0.25	0.15	0.10	0.17
O_2	%vd	20.85	20.91	20.59	20.78
H_2O	%v	0.50	0.99	0.69	0.73
Velocity	fps	45.22	44.32	45.58	45.04
Flow rate	dscfm	59,160	55,752	58,409	57,774
Stack temperature	°F	46.3	54.0	46.1	48.8

Table 10 Main Foundry BH Outlet – Cr^{+6} Test Summary – White Iron

Parameter	Units	Run 1	Run 2	Run 3	Average
Date		3/27/2023	3/28/2023	3/29/2023	
Run start time		6:40	5:10	5:15	
Run end time		10:40	9:10	9:15	
Run duration	minutes	240	240	240	
Barometric pressure	inHg	29.98	29.41	29.41	29.60
Isokinetic average	%	100.2	101.7	101.3	101.1
Sample volume	dscf	244.179	230.177	240.436	238.264
CO_2	%vd	0.25	0.15	0.10	0.17
O_2	%vd	20.85	20.91	20.59	20.78
H_2O	%v	0.49	1.28	1.30	1.02
Velocity	fps	45.67	44.25	45.70	45.21
Flow rate	dscfm	57,254	53,145	55,756	55,385
Stack temperature	°F	51.5	59.6	51.4	54.2

Note: A difference in stack temperatures measured via Methods 29 and 0061 on the same outlet source could be due to differences in orientation in the sampling ports and the weather at the time of testing (rain, wind, etc.). Some sampling equipment may have been more susceptible to cold weather conditions, resulting in lower field temperature readings. All post-test equipment calibrations were within acceptable tolerance. The difference in temperatures do not result in significant differences in isokinetic percentage or average volumetric flow rate.

Table 11 Cooling Bunker BH Inlet – Metals Test Summary – White Iron

Parameter	Units	Run 1	Run 2	Run 3	Average
Date		3/27/2023	3/28/2023	3/29/2023	
Run start time		6:40	5:10	5:15	
Run end time		10:40	9:10	9:15	
Run duration	minutes	240	240	240	
Barometric pressure	inHg	29.98	29.41	29.41	29.60
Isokinetic average	%	100.6	100.7	100.8	100.7
Sample volume	dscf	292.604	274.574	318.952	295.377
CO_2	%vd	0.07	0.06	0.07	0.07
O_2	%vd	20.79	20.73	20.92	20.81
H_2O	%v	0.51	0.28	0.25	0.35
Velocity	fps	56.73	55.11	62.92	58.25
Flow rate	dscfm	44,670	41,875	48,592	45,046
Stack temperature	°F	42.9	52.4	44.3	46.5

Table 12 Cooling Bunker BH Outlet – Metals Test Summary – White Iron

Parameter	Units	Run 1	Run 2	Run 3	Average
Date		3/27/2023	3/28/2023	3/29/2023	
Run start time		6:40	5:10	5:15	
Run end time		10:40	9:10	9:15	
Run duration	minutes	240	240	240	
Barometric pressure	inHg	29.88	29.41	29.41	29.57
Isokinetic average	%	98.0	100.0	99.0	99.0
Sample volume	dscf	250.081	233.696	236.686	240.154
CO_2	%vd	0.07	0.06	0.07	0.07
O_2	%vd	20.79	20.73	20.92	20.81
H_2O	%v	0.59	1.00	0.51	0.70
Velocity	fps	44.43	42.14	42.33	42.97
Flow rate	dscfm	46,710	42,771	43,736	44,406
Stack temperature	°F	48.4	56.2	49.6	51.4

Table 13 Cooling Bunker BH Outlet – Cr^{+6} Test Summary – White Iron

Parameter	Units	Run 1	Run 2	Run 3	Average
Date		3/27/2023	3/28/2023	3/29/2023	
Run start time		6:40	5:10	5:15	
Run end time		10:40	9:10	9:15	
Run duration	minutes	240	240	240	
Barometric pressure	inHg	29.88	29.41	29.41	29.57
Isokinetic average	%	97.5	98.6	99.3	98.5
Sample volume	dscf	239.679	227.989	223.862	230.510
CO_2	%vd	0.07	0.06	0.07	0.07
O_2	%vd	20.79	20.73	20.92	20.81
H_2O	%v	0.57	0.36	0.71	0.55
Velocity	fps	43.52	42.21	40.74	42.16
Flow rate	dscfm	46,053	43,329	42,224	43,869
Stack temperature	°F	45.2	53.7	47.0	48.6

3.1.2 Steel Alloy Test Summaries

Table 14 Main Foundry BH Inlet – Metals Test Summary – Steel Alloy

Parameter	Units	Run 1	Run 2	Run 3	Average
Date		3/27/2023	3/28/2023	3/29/2023	
Run start time		13:00	10:30	10:35	
Run end time		17:10	14:40	14:45	
Run duration	minutes	250	250	250	
Barometric pressure	inHg	29.79	29.38	29.45	29.54
Isokinetic average	%	96.9	100.4	100.0	99.1
Sample volume	dscf	299.332	305.505	333.168	312.668
CO_2	%vd	0.26	0.08	0.08	0.14
O_2	%vd	20.99	20.93	20.98	20.97
H_2O	%v	0.35	0.99	0.62	0.65
Velocity	fps	59.65	59.49	64.69	61.28
Flow rate	dscfm	45,139	44,453	48,664	46,085
Stack temperature	°F	60.8	56.8	56.5	58.0

Table 15 Main Foundry BH Outlet – Metals Test Summary – Steel Alloy

Parameter	Units	Run 1	Run 2	Run 3	Average
Date		3/27/2023	3/28/2023	3/29/2023	
Run start time		13:00	10:30	10:35	
Run end time		17:10	14:40	14:45	
Run duration	minutes	250	250	250	
Barometric pressure	inHg	29.79	29.38	29.45	29.54
Isokinetic average	%	99.9	100.2	100.8	100.3
Sample volume	dscf	254.576	256.756	250.481	253.938
CO_2	%vd	0.26	0.08	0.08	0.14
O_2	%vd	20.99	20.93	20.98	20.97
H_2O	%v	0.40	0.90	0.79	0.70
Velocity	fps	44.95	45.63	44.25	44.94
Flow rate	dscfm	54,854	55,159	53,482	54,498
Stack temperature	°F	62.6	57.7	59.6	60.0

Table 16 Main Foundry BH Outlet – Cr^{+6} Test Summary – Steel Alloy

Parameter	Units	Run 1	Run 2	Run 3	Average
Date		3/27/2023	3/28/2023	3/29/2023	
Run start time		13:00	10:30	10:35	
Run end time		17:10	14:40	14:45	
Run duration	minutes	250	250	250	
Barometric pressure	inHg	29.79	29.38	29.45	29.54
Isokinetic average	%	101.5	100.9	101.2	101.2
Sample volume	dscf	241.418	241.940	234.342	239.233
CO_2	%vd	0.26	0.08	0.08	0.14
O_2	%vd	20.99	20.93	20.98	20.97
H_2O	%v	0.27	0.76	0.63	0.55
Velocity	fps	44.85	45.64	43.94	44.81
Flow rate	dscfm	54,079	54,512	52,665	53,752
Stack temperature	°F	69.6	64.7	64.8	66.4

Table 17 Cooling Bunker BH Inlet – Metals Test Summary – Steel Alloy

Parameter	Units	Run 1	Run 2	Run 3	Average
Date		3/27/2023	3/28/2023	3/29/2023	
Run start time		13:00	10:30	10:35	
Run end time		17:10	14:40	14:45	
Run duration	minutes	250	250	250	
Barometric pressure	inHg	29.79	29.38	29.45	29.54
Isokinetic average	%	99.0	101.2	100.9	100.4
Sample volume	dscf	291.103	274.533	295.936	287.191
CO_2	%vd	0.09	0.09	0.06	0.08
O_2	%vd	20.64	20.84	20.90	20.79
H_2O	%v	0.28	0.69	0.69	0.55
Velocity	fps	57.67	53.76	57.96	56.46
Flow rate	dscfm	43,321	39,968	43,227	42,172
Stack temperature	°F	65.0	61.0	60.6	62.2

Table 18 Cooling Bunker BH Outlet – Metals Test Summary – Steel Alloy

Parameter	Units	Run 1	Run 2	Run 3	Average
Date		3/27/2023	3/28/2023	3/29/2023	
Run start time		13:00	10:30	10:35	
Run end time		17:10	14:40	14:45	
Run duration	minutes	250	250	250	
Barometric pressure	inHg	29.89	29.38	29.45	29.57
Isokinetic average	%	100.2	100.2	100.6	100.3
Sample volume	dscf	241.322	233.772	237.319	237.471
CO_2	%vd	0.09	0.09	0.06	0.08
O_2	%vd	20.64	20.84	20.90	20.79
H_2O	%v	0.55	0.94	1.30	0.93
Velocity	fps	41.84	41.11	41.69	41.55
Flow rate	dscfm	42,288	40,978	41,432	41,566
Stack temperature	°F	69.2	65.4	66.3	67.0

Table 19 Cooling Bunker BH Outlet – Cr^{+6} Test Summary – Steel Alloy

Parameter	Units	Run 1	Run 2	Run 3	Average
Date		3/27/2023	3/28/2023	3/29/2023	
Run start time		13:00	10:30	10:35	
Run end time		17:10	14:40	14:45	
Run duration	minutes	250	250	250	
Barometric pressure	inHg	29.89	29.38	29.45	29.57
Isokinetic average	%	98.7	98.9	98.6	98.7
Sample volume	dscf	235.731	239.568	224.172	233.157
CO_2	%vd	0.09	0.09	0.06	0.08
O_2	%vd	20.64	20.84	20.90	20.79
H_2O	%v	0.49	0.75	0.29	0.51
Velocity	fps	42.30	43.41	40.57	42.09
Flow rate	dscfm	42,966	43,586	40,903	42,485
Stack temperature	°F	66.9	62.6	64.1	64.5

3.2 Permanent Total Enclosure Verification Results

Bison followed EPA Method 204 to assess whether the Main Foundry Building can be considered a PTE, indicating 100% capture of emissions within the foundry building. Area measurements were taken for each natural draft opening (NDO) in an "as-found" condition. Supporting data and photographic evidence of inward flow are included in the appendices to this report. Bison measured differential pressure at each NDO in lieu of calculating facial velocity.

3.2.1 Natural Draft Opening to Enclosure Area Ratio

Bison field personnel calculated the total interior area (walls, floor, ceiling) of the Main Foundry building to be 48,219 square feet (ft^2). Using Method 204, Eq. 204-2 the NEAR was calculated as follows:

Eq. 204-2 NEAR = total area of all NDOs/total enclosure area
NEAR= 197 ft^2/48,219 ft^2 = 0.004

The NEAR for the Main Foundry building was calculated to be 0.004, which is less than the limit of 0.05 for a PTE as stipulated by Method 204, Section 8.2. All NDOs were measured as found for normal operating conditions.

Table 20 presents the NDO dimensions, which were measured as follows:

- The NW Loading opening (M-1) is primarily used for forklift traffic and is covered with freezer strips to provide building access without compromising visibility for forklift operators. The opening area measurements were taken from the cut-out of the freezer strips and not from the entire doorway opening because the freezer strips have good overlap across the width of the doorway.
- The Waste Sand Exit (M-2) is approximately the size of a man door with freezer strips covering the door down to the top of the mold sand bucket. Area measurements were taken between the ground and the bottom of the freezer strips because the freezer strips overlap on the top half of the doorway.
- The Mold Wash opening (M-3) has freezer strips covering the opening from top to bottom with a gap of approximately one inch at the bottom, The area of M-3 was measured as the width of the opening (93 inches) times the height of the bottom gap (one inch), since the freezer strips provide coverage across the opening.
- The NE Man Door (M-4) is occasionally used by Eagle Foundry personnel working in the mold preparation area and has a space between the door and the floor. This space varies in height but is about an inch at the tallest point; therefore, one inch was assumed for the height of the gap for area calculations. The SE Man Door (M-5) is identical to the NE Man Door.
- The East Loading opening (M-6) is covered with freezer strips from top to bottom but did not have good overlap across the width, so the opening area was determined by multiplying the full width by half of its height (84 inches was the point where the breaks in the freezer strips began).
- The Reclaim Loading opening (M-7) is another doorway primarily used for forklift traffic and is designed like the NW Loading opening with the freezer strips only coming down low enough to still provide adequate visibility for forklift operators. The area measurements were taken from the bottom of the freezer strips to the ground across the width of the opening.

Table 20 NDO Dimensions

NDO #	NDO Description	Length (in)	Width (in)	Area (in^2)
M-1	NW Loading	91	103	9,373
M-2	Waste Sand Exit	36	54	1,944
M-3	Mold Wash	1	93	93
M-4	NE Man Door	1	35	35
M-5	SE Man Door	1	35	35
M-6	East Loading	84	121	10,164
M-7	Reclaim Loading	91	74	6,734
Total area of all NDOs				**197 ft^2**

in – inches
in^2 – square inches

3.2.2 Equivalent Opening Diameters

Method 204, Section 5.1 requires each NDO to be at least four equivalent opening diameters (ED) from each emitting point. Using the dimensions from Table 20, Bison calculated the number of EDs from each NDO to their closest emitting point in the Main Foundry building. Emitting points (EP) in the Main Foundry building include the furnaces (EP-1), the cooling bunker rock pile (EP-2), the reclaim unit dump bin (EP-3), and the pouring area (EP-4). Each emitting point is labeled in the building diagram included in the appendices to this report. Table 21 presents the calculated distances as ED. ED calculations are included in the appendices to this report.

Table 21 Equivalent Opening Diameters

NDO #	NDO Description	ED (in)	Distance to Emitting Point (in)	Nearest Emitting Point	# of Diameters
M-1	NW Loading	96.63	426	EP-3	4.4
M-2	Waste Sand Exit	43.20	900	EP-3	20.8
M-3	Mold Wash	1.98	840	EP-3	424.5
M-4	NE Man Door	1.94	720	EP-1	370.3
M-5	SE Man Door	1.94	660	EP-1	339.4
M-6	East Loading	99.16	420	EP-4	4.2
M-7	Reclaim Loading	81.62	465	EP-2	5.7

3.2.3 Differential Pressure Measurements and Inward Flow

Bison conducted three rounds of five differential pressure measurements at each NDO. The five measurements were taken approximately one minute apart. After recording the five pressure measurements, field personnel moved to the next location and performed five measurements on that NDO. This procedure was repeated until three rounds of five measurements were complete. Table 22 presents averages of the differential pressure measurements. All direct measurements of differential pressure were made using a Shortridge micromanometer, serial number M22572, with a four decimal place display and current calibration certificate demonstrating instrument accuracy to differential pressures as low as 0.0100 inches of water (inH_2O).

Verification of inward flow was determined photographically. A photo montage presenting inward flow from each NDO is included in the appendices to this report.

Table 22 Differential Pressure Measurement Summary

NDO #	Measurement Location	Units	Round 1 Average	Round 2 Average	Round 3 Average
M-1	NW Loading	inH_2O	-0.0456	-0.0356	-0.0139
M-2	Waste Sand Exit	inH_2O	-0.0092	-0.0240	-0.0112
M-3	Mold Wash	inH_2O	-0.0167	-0.0218	-0.0246
M-4	NE Man Door	inH_2O	-0.0118	-0.0114	-0.0126
M-5	SE Man Door	inH_2O	-0.0099	-0.0189	-0.0088
M-6	East Loading	inH_2O	-0.0110	-0.0102	-0.0083
M-7	Reclaim Loading	inH_2O	-0.0086	-0.0097	-0.0093

3.3 Operating Conditions

Eagle Foundry personnel compiled the raw process data and details of plant operations during testing and provided them to Bison for use in this report. Process data is presented in the report appendices.

3.4 Field Observations

Testing was performed as outlined in the test protocol. No adverse or unusual environmental conditions were noted that are known to have influenced the outcome of these tests.

Bison would like to note the following:

- On Monday, March 27, the data logger for recording O_2 and CO_2 data for the Main Foundry baghouse malfunctioned and recorded data every six seconds instead of every 60 seconds. The issue was resolved for subsequent days of testing.

- Mid-run port changes were not completed during testing on the baghouse inlets. Despite Bison's best efforts to ensure adequate and safe access to both inlet sampling locations, weather conditions made port changes unsafe. Bison believes the data collected from the inlet sampling trains is adequate because it is used primarily as indication of target metal analytes and baghouse control efficiency.

- Port changes were not practical at the outlet sampling locations because two sampling trains were operating in the outlet stacks simultaneously and both had to be positioned via manlift. Bison decided that the port change process was prohibitive to collecting adequate sample volume in the limited sampling time available. In addition, mid-run port changes would have occurred when the furnaces were still firing, and continuous emissions sampling was crucial to this testing.

Sampling trains alternated ports each test run corresponding to their respective products to sample across both axes of the outlet stacks and obtain measurements that were as representative as possible. Bison believes that volumetric flow was accurately measured for every test run due to the following:

- Sampling ports were located >4 diameters downstream of any flow disturbance.
- Velocity profiles were consistent across both port traverses.
- An isokinetic sampling train was present and measuring velocity at each traverse point, in each port in both outlet stacks simultaneously for every test run, thus ensuring a complete velocity profile for each outlet.
- Baghouse operation was consistent during all test runs.

Bison discussed this with ODEQ personnel on-site. With the points discussed above, Bison believes the data collected for the Main Foundry and Cooling Bunker baghouses is defensible and adequately represents the true emissions of the two sources.

- The Container 5C sample for Run 3 on the Cooling Bunker BH Outlet – Steel Alloy (Lab ID 23-S728) was misplaced in transit to Chester LabNet. Because all Container 5C results were below the MDL for this source, and for all others tested during this campaign, it is reasonable to assume that the quantity of Hg in the missing sample would have also been below the MDL, and therefore had no contribution to the total Hg sample. Container 5C is a secondary rinse of the potassium permanganate impingers using 25 milliliters (ml) of 8 N hydrochloric acid (HCl), which is placed in a sample jar containing 200 ml of reagent grade high purity, low concentration (HPLC) water.

- Method 0061 trains were purged for approximately 30 minutes following the end of each run. Purge logs are included in the appendices to Revision 01 of this report.

- Several Method 0061 trains had negative gain in the first impinger. Bison believes this was due to a high vacuum rate during leak checks, which may have resulted in the transfer of contents from the first impinger to the second or third impingers. Because the overall volume of the impingers was not affected, Bison believes this occurrence did not affect the integrity of the test results.

4.0 EMISSION TEST METHODS AND PROCEDURES

4.1 Testing Methods and Procedures

Bison testing personnel performed the following EPA methods as described in 40 CFR. Instrumental analyzers used by Bison to measure pollutant and diluent concentrations in stack gas are purpose-built by reputable companies and have been subjected to comprehensive interference response test procedures by their respective manufacturers. Further documentation regarding interferences for individual analyzers can be provided upon request.

EPA Reference Method 1, "Sample and Velocity Traverses for Stationary Sources." The objective of Method 1 is to determine a suitable location for testing and to determine the velocity and/or sample points for the source. The results of Method 1 sampling location and sample or velocity point measurement locations are included in the appendices.

EPA Reference Method 2, "Determination of Stack Gas Velocity and Volumetric Flow Rate (Type-S Pitot Tube)." The objective of Method 2 is to determine volumetric flow. The average velocity, temperature, static pressure, and source area are used to calculate volumetric flow for the source.

EPA Reference Method 3A, "Determination of Oxygen and Carbon Dioxide Concentrations in Emissions from Stationary Sources (Instrumental Analyzer Procedure)." The objective of Method 3A is to determine the O_2 and CO_2 concentrations in the stack gas stream.

EPA Reference Method 4, "Determination of Moisture Content in the Stack Gases." The objective of Method 4 is to determine the moisture content of a gas stream. This method is incorporated within the performance of Method 29.

EPA Reference Method 29, "Determination of Metals Emissions from Stationary Sources" (Methods 2 & 4 Inclusive). The objective of Method 29 is to determine particulate matter and metals emissions from a source. Method 29 is an isokinetic sampling method. The exhaust gas stream is sampled along a cross-section of the stack and metal emissions are captured within the front-half and back-half of the sampling system. The front-half includes the nozzle, probe, filter-bell, and glass fiber filter. The back-half consists of the impinger solutions. The front-half and back-half samples are sent to a contract lab for analysis. Method 29 incorporates Method 2 “velocity measurements” and Method 4 “moisture measurements”.

EPA Method 0061, “Determination of Hexavalent Chromium Emission from Stationary Sources” (Methods 2 & 4 Inclusive). The objective of Method 0061 is to determine hexavalent chromium emission from a source. Method 0061 is an isokinetic sampling method. The exhaust gas stream is sampled along a cross-section of the stack and hexavalent chromium emissions are captured within the back half of the sampling system. The front half

includes the nozzle and probe. The back half consists of the impinger solution and an aspirating system. The back half samples are sent to a contract lab for analysis. Method 0061 incorporates Method 2 “velocity measurements” and Method 4 “moisture measurements”.

EPA Reference Method 204, “Criteria for and Verification of a Permanent or Temporary Total Enclosure.” The objective of Method 204 is to determine whether a permanent or temporary enclosure meets the criteria for being considered a total enclosure. If all the criteria are met, then the volatile organic compound capture efficiency (CE) is assumed to be 100 percent.

4.2 Sample Handling and Analytical Procedures

Sampling procedures are cited in the appropriate methods and there was no deviation from those methods.

Bison’s project manager retained custody of the samples and supervised their preparation and subsequent delivery to Chester LabNet. Copies of the chain of custody forms are included in the appendices.

4.3 Audit Samples

The stationary source audit program (SSAP) is effectively suspended as of March 2022 because there are currently no independent accredited audit sample providers (AASP).

APPENDIX A: WHITE IRON TEST DATA

BISON ENGINEERING, INC.

COMPANY	**Eagle Foundry Company**
FACILITY	**Eagle Foundry**
LOCATION	**Eagle Creek, OR**
SOURCE	**Main Foundry BH Inlet - White Iron**
DATE	**3/27/2023 - 3/29/2023**
METHOD	**29**
POLLUTANT	**Metals**

EPA Method 1
Stack Parameters and Traverse Points

Client: **Eagle Foundry Company**
Location: **Eagle Creek, OR**
Source: **Main Foundry BH Inlet - White Iron**
Facility: **Eagle Foundry**

Type of Testing: P (P for Particulate; V for Velocity/Nonparticulate)
Type of Duct: C (C for circular; R for rectangular)

Number of ports available:	2	
Number of ports to be used:	2	
Port diameter:	4	inches
Sampling location height (approx.):		feet
Stack height (approx.):		feet
Circular ID (Rectangular Depth):	48.00	inches
Port depth and/or wall thickness:	6.25	inches
Stack width (Rectangular only):		inches

Equivalent Diameter
If rectangular = $\frac{2*Depth*Width}{Depth + Width}$ = 48.00 inches (If circular = duct ID)

Stack/duct area = 12.566 sq.feet 1809.6 sq. inches

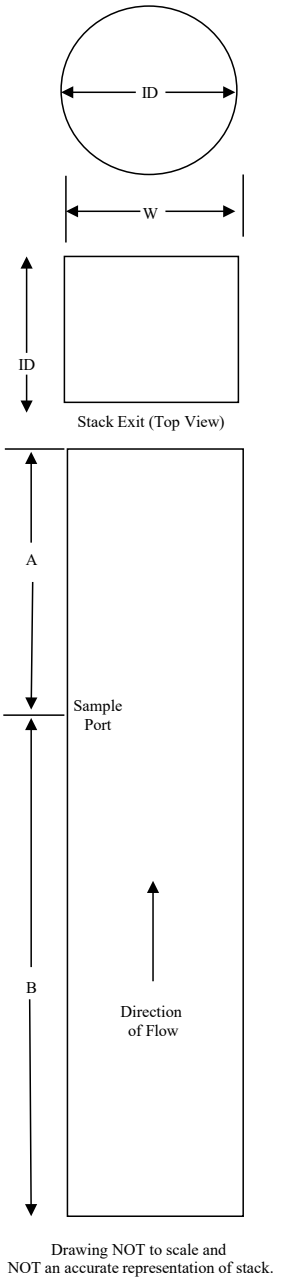
Sample Port Location:	Downstream flow disturbance from process B	Upstream flow disturbance toward exit A
Number of Inches:	444.00	53.00
Number of Diameters:	9.25	1.10

Minimum Number of Traverse Points: 24

Traverse points less than 1.0 inch from the stack wall are relocated to a distance of 1.0 inch.

Points	% of diameter	Distance from inside wall (in.)	Distance including port (in.)
1	2.1	1.01	7 1/4
2	6.7	3.22	9 1/2
3	11.8	5.66	11 7/8
4	17.7	8.50	14 3/4
5	25.0	12.00	18 1/4
6	35.6	17.09	23 3/8
7	64.4	30.91	37 1/8
8	75.0	36.00	42 1/4
9	82.3	39.50	45 3/4
10	88.2	42.34	48 5/8
11	93.3	44.78	51
12	97.9	46.99	53 1/4

Reference Diagram



Pre-Test Traverse

Client: **Eagle Foundry Company**
Location: **Eagle Creek, OR**
Source: **Main Foundry BH Inlet - White Iron**

Stack Temp: 60 °F

Traverse Point	Velocity ΔP ("H_2O)	Null Angle
1	0.91	0
2	1.08	0
3	1.00	0
4	1.00	5
5	1.15	0
6	1.00	5
7	1.10	5
8	1.15	5
9	1.20	0
10	1.10	0
11	1.10	0
12	1.00	0
13	1.00	0
14	1.00	0
15	1.10	0
16	1.10	0
17	1.15	5
18	1.15	5
19	1.20	0
20	1.50	5
21	1.00	0
22	1.00	5
23	0.90	0
24	0.90	0
Average:	1.08	2

Flow is found to be: Non-cyclonic

Isokinetic Field Data
Field Data Entry

Client:	**Eagle Foundry Company**	**Run:**	**1**
Location:	**Eagle Creek, OR**	**Start Time:**	**6:40**
Source:	**Main Foundry BH Inlet - White Iron**	**End Time:**	**10:40**
EPA Method:	**29**	**Environmental Conditions/Test Notes:**	**Date:** **3/27/2023**
Box Operator:	**AAM**	30-50 °F, Cloudy	
Technician(s):	**NEW**		

Stack Dimensional Data:

Circular		
Diameter	48.000	in
Rectangular		
Width		in
Length		in
Stack Area	12.566	sq.ft.

Equipment:

Meterbox ID	SB-2	Probe ID	5B	Liner type	Glass		
Y factor	1.0028	Nozzle ID	3P	Nozzle size	0.251	inches	
ΔH@	1.601	Hot box ID	HHB2	Nozzle area	0.000344	sq.ft.	
Bp ID	TS-1	Pitot Cp	0.84	Probe heat	250	°F	
Balance ID	HLN FB-1	Pitot ID	55	Filter heat	250	°F	
Weights ID	HLN FW-1	Probe Length, ft	6				

Source Information:

Barometric Pressure	29.98	"Hg	O_2	20.90	%
Static Pressure	-0.9	"H_2O	CO_2	0.00	%
Ave. ΔP	1.08	"H_2O	Rec. Nz.	0.206	inches
Stack Temperature	60	°F			
Assumed moisture	3.00	%			
Assumed meter temp.	40	°F			
Total number of points	24				
Time per point	10	min.			
Total run time	240	min.			

Leak Checks:

	Pre-test	Post-test
Pitot	x	x
Leak rate, dcf	0.000	0.000
Leak check vacuum, "Hg	15	10

Nozzle check for roundness:

1	2	3	
0.251	0.252	0.250	inches
	Caliper ID	WS-1	

Post Test Calculations:

Sample volume	300.534	dcf	Ave. ΔP	1.333	"H_2O
Wet mol. weight	28.78	M_s (actual)	Ave. √ΔP	1.154	"H_2O
Actual H_2O	0.54	%	Ave. ΔH	4.967	"H_2O
Std. meter vol.	316.575	dscf	Ave. T_s	45.4	°F
Isokinetic Average	96.9	%	Ave. T_m	49.8	°F

Moisture/Lab:

Filter, #	NA		
	Initial	Final	Gain
Impingers, g	3,709.4	3,702.9	-6.5
Silica gel, g	886.6	929.7	43.1
		Total water gain, g:	36.6

Traverse Point	Time (min.)	Meter Volume (dcf)	Velocity ΔP ("H_2O)	Stack Temp. (°F)	Meter Temp. (°F)	Calc. ΔH	Run ΔH	Vacuum ("Hg)	Filter Box (°F)	Condenser Temp (≤68°F)
		139.898								
1	10.0	151.700	1.30	41	34	4.73	4.70	2	250	33
2	20.0	163.735	1.30	41	35	4.74	4.75	2	250	39
3	30.0	175.800	1.30	40	37	4.77	4.80	2	255	45
4	40.0	187.930	1.30	40	40	4.80	4.80	2	252	50
5	50.0	200.100	1.30	40	42	4.82	4.80	2	254	56
6	60.0	212.860	1.40	39	53	5.31	5.30	3	250	53
7	70.0	225.670	1.40	40	45	5.22	5.20	3	249	50
8	80.0	238.430	1.40	41	46	5.22	5.20	3	252	50
9	90.0	251.410	1.45	41	47	5.42	5.40	4	251	49
10	100.0	264.170	1.40	42	48	5.23	5.25	3	251	50
11	110.0	276.980	1.40	45	49	5.21	5.20	3	250	52
12	120.0	289.800	1.40	45	50	5.22	5.20	3	256	54
13	130.0	302.720	1.40	46	51	5.22	5.25	3	256	55
14	140.0	315.740	1.40	46	52	5.23	5.25	3	255	54
15	150.0	328.480	1.35	47	53	5.04	5.05	3	254	48
16	160.0	341.390	1.40	48	54	5.23	5.25	3	255	46
17	170.0	354.090	1.35	50	55	5.03	5.05	3	250	46
18	180.0	366.850	1.35	49	55	5.04	5.05	3	255	47
19	190.0	379.320	1.30	49	55	4.86	4.85	3	252	48
20	200.0	391.800	1.30	50	57	4.87	4.85	3	256	48
21	210.0	404.000	1.20	52	58	4.48	4.50	3	251	50
22	220.0	416.130	1.20	53	59	4.48	4.50	3	249	51
23	230.0	428.410	1.20	52	60	4.50	4.50	3	250	53
24	240.0	440.432	1.20	52	61	4.51	4.50	3	249	54

Isokinetic Field Data
Field Data Entry

Client:	**Eagle Foundry Company**	**Run:**	**2**
Location:	**Eagle Creek, OR**	**Start Time:**	**5:10**
Source:	**Main Foundry BH Inlet - White Iron**	**End Time:**	**9:10**
EPA Method:	**29**	**Date:**	**3/28/2023**
Box Operator:	**AAM**		
Technician(s):	**NEW**		

Environmental Conditions/Test Notes:
40-65 °F, Rainy/cloudy

Stack Dimensional Data:

Circular		
Diameter	48.000	in
Rectangular		
Width		in
Length		in
Stack Area	12.566	sq.ft.

Equipment:

Meterbox ID	SB-2	Probe ID	5B	Liner type	Glass		
Y factor	1.0028	Nozzle ID	3P	Nozzle size	0.251	inches	
ΔH@	1.601	Hot box ID	HHB2	Nozzle area	0.000344	sq.ft.	
Bp ID	TS-1	Pitot Cp	0.84	Probe heat	250	°F	
Balance ID	HLN FB-1	Pitot ID	55	Filter heat	250	°F	
Weights ID	HLN FW-1	Probe Length, ft	6				

Source Information:

Barometric Pressure	29.41	"Hg	O_2	20.90	%
Static Pressure	-0.9	"H_2O	CO_2	0.00	%
Ave. ΔP	1.08	"H_2O	Rec. Nz.	0.201	inches
Stack Temperature	60	°F			
Assumed moisture	0.54	%			
Assumed meter temp.	49.8	°F			
Total number of points	24				
Time per point	10	min.			
Total run time	240	min.			

Leak Checks:

	Pre-test	Post-test
Pitot	x	x
Leak rate, dcf	0.010	0.005
Leak check vacuum, "Hg	16	10

Nozzle check for roundness:

1	2	3	
0.251	0.252	0.250	inches
	Caliper ID	WS-1	

Post Test Calculations:

Sample volume	291.421	dcf	Ave. ΔP	1.155	"H_2O
Wet mol. weight	28.77	M_s (actual)	Ave. √ΔP	1.073	"H_2O
Actual H_2O	0.66	%	Ave. ΔH	4.475	"H_2O
Std. meter vol.	297.402	dscf	Ave. T_s	53.2	°F
Isokinetic Average	99.7	%	Ave. T_m	55.7	°F

Moisture/Lab:

Filter, #	NA		
	Initial	Final	Gain
Impingers, g	3,719.4	3,718.4	-1.0
Silica gel, g	878.8	921.4	42.6
		Total water gain:	41.6

Traverse Point	Time (min.)	Meter Volume (dcf)	Velocity ΔP ("H_2O)	Stack Temp. (°F)	Meter Temp. (°F)	Calc. ΔH	Run ΔH	Vacuum ("Hg)	Filter Box (°F)	Condenser Temp (≤68°F)
		738.975								
1	10.0	749.320	0.90	52	47	3.43	3.45	1	255	44
2	20.0	759.980	0.90	51	48	3.44	3.45	1	248	48
3	30.0	770.240	0.90	51	50	3.45	3.45	1	256	51
4	40.0	781.090	0.92	51	52	3.54	3.55	1	255	53
5	50.0	793.600	1.20	51	53	4.63	4.65	3	254	55
6	60.0	806.000	1.30	52	54	5.02	5.00	3	251	55
7	70.0	818.900	1.30	53	55	5.02	5.05	3	257	56
8	80.0	831.930	1.30	52	55	5.03	5.05	3	248	55
9	90.0	844.470	1.20	53	55	4.63	4.65	3	253	54
10	100.0	857.100	1.20	53	55	4.63	4.65	3	253	54
11	110.0	869.750	1.20	55	55	4.61	4.60	3	250	53
12	120.0	881.800	1.15	55	56	4.43	4.45	3	256	54
13	130.0	894.050	1.15	57	56	4.41	4.40	3	254	54
14	140.0	906.200	1.20	54	57	4.64	4.65	3	249	55
15	150.0	918.630	1.20	54	57	4.64	4.65	3	254	56
16	160.0	931.520	1.30	55	58	5.03	5.05	4	249	57
17	170.0	944.470	1.30	55	59	5.04	5.05	4	250	56
18	180.0	957.930	1.40	54	59	5.44	5.45	4	256	56
19	190.0	970.390	1.20	54	60	4.67	4.65	3	253	56
20	200.0	982.440	1.10	54	60	4.28	4.30	3	251	56
21	210.0	994.490	1.10	54	60	4.28	4.30	3	254	54
22	220.0	1006.485	1.10	53	59	4.28	4.30	3	254	54
23	230.0	1018.500	1.10	52	59	4.29	4.30	3	252	54
24	240.0	1030.396	1.10	52	58	4.28	4.30	3	258	54

Isokinetic Field Data
Field Data Entry

Client:	**Eagle Foundry Company**	**Run:**	**3**
Location:	**Eagle Creek, OR**	**Start Time:**	**5:15**
Source:	**Main Foundry BH Inlet - White Iron**	**End Time:**	**9:15**
EPA Method:	**29**	**Date:**	**3/29/2023**
Box Operator:	**AAM**		
Technician(s):	**NEW**		

Environmental Conditions/Test Notes:
40-65 °F, Rainy/cloudy

Stack Dimensional Data:

Circular		
Diameter	48.000	in
Rectangular		
Width		in
Length		in
Stack Area	12.566	sq.ft.

Equipment:

Meterbox ID	SB-2	Probe ID	5B	Liner type	Glass		
Y factor	1.0028	Nozzle ID	3P	Nozzle size	0.251	inches	
ΔH@	1.601	Hot box ID	HHB2	Nozzle area	0.000344	sq.ft.	
Bp ID	TS-1	Pitot Cp	0.84	Probe heat	250	°F	
Balance ID	HLNFB1	Pitot ID	55	Filter heat	250	°F	
Weights ID	HLNFW1	Probe Length, ft	6				

Source Information:

Barometric Pressure	29.41	"Hg	O_2	20.90	%
Static Pressure	-0.9	"H_2O	CO_2	0.00	%
Ave. ΔP	1.08	"H_2O	Rec. Nz.	0.2	inches
Stack Temperature	60	°F			
Assumed moisture	0.66	%			
Assumed meter temp.	55.7	°F			
Total number of points	24				
Time per point	10	min.			
Total run time	240	min.			

Leak Checks:

	Pre-test	Post-test
Pitot	x	x
Leak rate, dcf	0.000	0.012
Leak check vacuum, "Hg	15	10

Nozzle check for roundness:

1	2	3	
0.251	0.252	0.250	inches
	Caliper ID	WS-1	

Post Test Calculations:

Sample volume	340.326	dcf	Ave. ΔP	1.592	"H_2O
Wet mol. weight	28.78	M_s (actual)	Ave. √ΔP	1.257	"H_2O
Actual H_2O	0.56	%	Ave. ΔH	6.146	"H_2O
Std. meter vol.	353.897	dscf	Ave. T_s	45.0	°F
Isokinetic Average	100.4	%	Ave. T_m	48.2	°F

Moisture/Lab:

Filter, #	NA		
	Initial	Final	Gain
Impingers, g	3,738.7	3,733.1	-5.6
Silica gel, g	899.5	947.4	47.9
		Total water gain:	42.3

Traverse Point	Time (min.)	Meter Volume (dcf) 333.976	Velocity ΔP ("H_2O)	Stack Temp. (°F)	Meter Temp. (°F)	Calc. ΔH	Run ΔH	Vacuum ("Hg)	Filter Box (°F)	Condenser Temp (≤68°F)
1	10.0	345.575	1.10	47	36	4.13	4.15	1	258	37
2	20.0	358.580	1.40	43	37	5.31	5.30	2	255	43
3	30.0	372.500	1.60	43	40	6.10	6.10	3	256	52
4	40.0	388.175	2.00	43	43	7.67	7.65	4.5	257	60
5	50.0	403.300	1.80	44	45	6.92	6.90	4	249	60
6	60.0	419.920	2.20	44	47	8.49	8.50	5	257	53
7	70.0	436.680	2.20	44	48	8.51	8.50	5	256	50
8	80.0	450.635	1.50	44	49	5.81	5.80	3	252	49
9	90.0	463.940	1.40	45	49	5.41	5.40	2	253	47
10	100.0	477.300	1.40	45	50	5.43	5.40	2	256	46
11	110.0	490.280	1.30	46	50	5.03	5.05	2	256	46
12	120.0	503.330	1.30	47	50	5.02	5.05	2	250	46
13	130.0	516.365	1.30	44	50	5.05	5.05	2	248	46
14	140.0	529.790	1.40	45	51	5.44	5.45	2.5	249	46
15	150.0	543.680	1.50	46	51	5.81	5.80	3	256	47
16	160.0	557.650	1.50	47	51	5.80	5.80	3	256	45
17	170.0	571.950	1.60	47	51	6.19	6.20	3	258	45
18	180.0	586.250	1.60	46	51	6.20	6.20	3	257	45
19	190.0	601.340	1.80	46	51	6.97	6.95	4	257	45
20	200.0	616.300	1.70	47	51	6.57	6.55	3	257	45
21	210.0	630.700	1.60	45	51	6.21	6.20	3	257	46
22	220.0	644.740	1.60	45	51	6.21	6.20	3	248	46
23	230.0	659.500	1.70	44	52	6.63	6.65	3.5	251	47
24	240.0	674.302	1.70	44	52	6.63	6.65	3.5	259	48

EPA Method 4
Impinger Weights Summary

Client: **Eagle Foundry Company**
Location: **Eagle Creek, OR**
Source: **Main Foundry BH Inlet - White Iron**
EPA Method: **29**
Box Operator: **AAM**
Technician(s): **NEW**

Run 1
Impinger gain by weight (g):

#	Initial	Final	Gain
1	742.6	655.8	-86.8
2	750.3	757.9	7.6
3	647.3	684.5	37.2
4	812.7	838.3	25.6
5	756.5	766.4	9.9
Totals:	3,709.4	3,702.9	-6.5

Run 2
Impinger gain by weight (g):

#	Initial	Final	Gain
1	741.2	657.4	-83.8
2	756.6	762.8	6.2
3	652.0	699.4	47.4
4	761.9	784.6	22.7
5	807.7	814.2	6.5
Totals:	3,719.4	3,718.4	-1.0

Run 3
Impinger gain by weight (g):

#	Initial	Final	Gain
1	747.0	650.9	-96.1
2	760.0	773.1	13.1
3	651.8	696.6	44.8
4	771.7	794.6	22.9
5	808.2	817.9	9.7
Totals:	3,738.7	3,733.1	-5.6

Isokinetic Field Data
Field Data and Calculations
Gas Stream Characteristics

Client:	**Eagle Foundry Company**	**Run:**	**1**
Location:	**Eagle Creek, OR**	**Start Time:**	**6:40**
Source:	**Main Foundry BH Inlet - White Iron**	**End Time:**	**10:40**
Method:	**29**	**Date:**	**3/27/2023**

Sampling Data				Traverse Data			
Time	**Meter**	**ΔH**	**Meter**	**Traverse**	**Dp**	**Stack**	
min.	**ft^3**	**"H_2O**	**T_m ^oF**	**Point**	**"H_2O**	**T_s ^oF**	**√Dp**
	139.898						
10.0	151.700	4.70	34	1	1.30	41	1.140
20.0	163.735	4.75	35	2	1.30	41	1.140
30.0	175.800	4.80	37	3	1.30	40	1.140
40.0	187.930	4.80	40	4	1.30	40	1.140
50.0	200.100	4.80	42	5	1.30	40	1.140
60.0	212.860	5.30	53	6	1.40	39	1.183
70.0	225.670	5.20	45	7	1.40	40	1.183
80.0	238.430	5.20	46	8	1.40	41	1.183
90.0	251.410	5.40	47	9	1.45	41	1.204
100.0	264.170	5.25	48	10	1.40	42	1.183
110.0	276.980	5.20	49	11	1.40	45	1.183
120.0	289.800	5.20	50	12	1.40	45	1.183
130.0	302.720	5.25	51	13	1.40	46	1.183
140.0	315.740	5.25	52	14	1.40	46	1.183
150.0	328.480	5.05	53	15	1.35	47	1.162
160.0	341.390	5.25	54	16	1.40	48	1.183
170.0	354.090	5.05	55	17	1.35	50	1.162
180.0	366.850	5.05	55	18	1.35	49	1.162
190.0	379.320	4.85	55	19	1.30	49	1.140
200.0	391.800	4.85	57	20	1.30	50	1.140
210.0	404.000	4.50	58	21	1.20	52	1.095
220.0	416.130	4.50	59	22	1.20	53	1.095
230.0	428.410	4.50	60	23	1.20	52	1.095
240.0	440.432	4.50	61	24	1.20	52	1.095

Client:	**Eagle Foundry Company**	**Run:**	**1**
Source:	**Main Foundry BH Inlet - White Iron**	**Date:**	**03/27/23**

Field Data Input Continued

Moisture Data			Stack Dimensional Data:		
Total Test Time	240.0	min	Circular		
Sample Time Interval	10.0	min	Diameter	48.000	in
Meter Volume, V_m	300.534	dcf	Rectangular		
Water Mass	36.6	g	Width		in
Nozzle Diameter, N_z	0.2510	in.	Length		in
Nozzle Area	0.000344	sq.ft.	Stack Area	12.566	sq.ft.
Traverse Data			Molecular Weight:		
Barometric Pressure, P_b	29.98	"Hg	CO_2 Average	0.25	%vd
Static Pressure	-0.90	"H_2O	O_2 Average	20.85	%vd
Pitot Factor, cp	0.84				
Meter Cal Factor	1.0028	Y			

Field Data Averages

Meter			Stack		
ΔH	4.967	"H_2O	√Dp	1.154	"H_2O
Temperature, T_m	49.8	^oF	Temperature, T_s	45.4	^oF
Temperature, T_m	509.5	^oA (^oR)	Temperature, T_s	505.1	^oA (^oR)
Pressure Meter, P_m	30.345	"Hg	Pressure Stack, P_s	29.914	"Hg

Field Data Calculations

Meter Box Capture			EPA Method 2 Stack Gas Flowrate:		
Standard Volume, $V_{m(std)}$	316.575	dscf	Velocity, V_s	63.44	fps
	8.964	dscm	Flow Rate (actual), Q_{aw}	47,831	acfm
Actual Volume, $V_{m(actual)}$	304.723	awcf		47,573	adcfm
Gas Stream Moisture			Flow Rate (standard), Q	2,997,688	wscf/hr
Moisture Vapor, $Vw_{(std)}$	1.726	scf		2,981,500	dscf/hr
Moisture, B_{ws}	0.0054			49,692	dscf/min
Moisture EPA M4	0.54	%v		49,961	wscf/min
Moisture @ Saturation	1.02	%v (for T_s < 212°F)			
EPA Method 3 Gas Density					
Dry, M_d	28.87	lb/lb-mole			
Wet, M_s	28.81	lb/lb-mole			
Percent Isokinetic	97.0	%			

Isokinetic Field Data
Field Data and Calculations
Gas Stream Characteristics

Client:	**Eagle Foundry Company**	**Run:**	**2**
Location:	**Eagle Creek, OR**	**Start Time:**	**5:10**
Source:	**Main Foundry BH Inlet - White Iron**	**End Time:**	**9:10**
Method:	**29**	**Date:**	**03/28/23**

Sampling Data				Traverse Data			
Time	**Meter**	**ΔH**	**Meter**	**Traverse**	**Dp**	**Stack**	
min.	**ft^3**	**"H_2O**	**T_m °F**	**Point**	**"H_2O**	**T_s °F**	**√Dp**
	738.975						
10.0	749.320	3.45	47	1	0.90	52	0.949
20.0	759.980	3.45	48	2	0.90	51	0.949
30.0	770.240	3.45	50	3	0.90	51	0.949
40.0	781.090	3.55	52	4	0.92	51	0.959
50.0	793.600	4.65	53	5	1.20	51	1.095
60.0	806.000	5.00	54	6	1.30	52	1.140
70.0	818.900	5.05	55	7	1.30	53	1.140
80.0	831.930	5.05	55	8	1.30	52	1.140
90.0	844.470	4.65	55	9	1.20	53	1.095
100.0	857.100	4.65	55	10	1.20	53	1.095
110.0	869.750	4.60	55	11	1.20	55	1.095
120.0	881.800	4.45	56	12	1.15	55	1.072
130.0	894.050	4.40	56	13	1.15	57	1.072
140.0	906.200	4.65	57	14	1.20	54	1.095
150.0	918.630	4.65	57	15	1.20	54	1.095
160.0	931.520	5.05	58	16	1.30	55	1.140
170.0	944.470	5.05	59	17	1.30	55	1.140
180.0	957.930	5.45	59	18	1.40	54	1.183
190.0	970.390	4.65	60	19	1.20	54	1.095
200.0	982.440	4.30	60	20	1.10	54	1.049
210.0	994.490	4.30	60	21	1.10	54	1.049
220.0	1006.485	4.30	59	22	1.10	53	1.049
230.0	1018.500	4.30	59	23	1.10	52	1.049
240.0	1030.396	4.30	58	24	1.10	52	1.049

Client:	**Eagle Foundry Company**	**Run:**	**2**
Source:	**Main Foundry BH Inlet - White Iron**	**Date:**	**03/28/23**

Field Data Input Continued

Moisture Data			Stack Dimensional Data:		
Total Test Time	240.0	min	Circular		
Sample Time Interval	10.0	min	Diameter	48.000	in
Meter Volume, V_m	291.421	dcf	Rectangular		
Water Mass	41.6	g	Width		in
Nozzle Diameter, N_z	0.2510	in.	Length		in
Nozzle Area	0.000344	sq.ft.	Stack Area	12.566	sq.ft.
Traverse Data			Molecular Weight:		
Barometric Pressure, P_b	29.41	"Hg	CO_2 Average	0.15	%vd
Static Pressure	-0.90	"H_2O	O_2 Average	20.91	%vd
Pitot Factor, cp	0.84				
Meter Cal Factor	1.0028	Y			

Field Data Averages

Meter			Stack		
ΔH	4.475	"H_2O	√Dp	1.073	"H_2O
Temperature, T_m	55.7	^oF	Temperature, T_s	53.2	^oF
Temperature, T_m	515.4	^oA (^oR)	Temperature, T_s	512.9	^oA (^oR)
Pressure Meter, P_m	29.739	"Hg	Pressure Stack, P_s	29.344	"Hg

Field Data Calculations

Meter Box Capture			EPA Method 2 Stack Gas Flowrate:		
Standard Volume, $V_{m(std)}$	297.402	dscf	Velocity, V_s	60.04	fps
	8.421	dscm	Flow Rate (actual), Q_{aw}	45,268	acfm
Actual Volume, $V_{m(actual)}$	296.692	awcf		44,969	adcfm
Gas Stream Moisture			Flow Rate (standard), Q	2,740,647	wscf/hr
Moisture Vapor, $Vw_{(std)}$	1.962	scf		2,722,559	dscf/hr
Moisture, B_{ws}	0.0066			45,376	dscf/min
Moisture EPA M4	0.66	%v		45,677	wscf/min
Moisture @ Saturation	1.39	%v (for T_s < 212°F)			
EPA Method 3 Gas Density					
Dry, M_d	28.86	lb/lb-mole			
Wet, M_s	28.79	lb/lb-mole			
Percent Isokinetic	99.8	%			

Isokinetic Field Data
Field Data and Calculations
Gas Stream Characteristics

Client:	**Eagle Foundry Company**	**Run:**	**3**
Location:	**Eagle Creek, OR**	**Start Time:**	**5:15**
Source:	**Main Foundry BH Inlet - White Iron**	**End Time:**	**9:15**
Method:	**29**	**Date:**	**03/29/23**

Sampling Data				Traverse Data			
Time	**Meter**	**ΔH**	**Meter**	**Traverse**	**Dp**	**Stack**	
min.	**ft^3**	**"H_2O**	**T_m ^oF**	**Point**	**"H_2O**	**T_s ^oF**	**√Dp**
	333.976						
10.0	345.575	4.15	36	1	1.10	47	1.049
20.0	358.580	5.30	37	2	1.40	43	1.183
30.0	372.500	6.10	40	3	1.60	43	1.265
40.0	388.175	7.65	43	4	2.00	43	1.414
50.0	403.300	6.90	45	5	1.80	44	1.342
60.0	419.920	8.50	47	6	2.20	44	1.483
70.0	436.680	8.50	48	7	2.20	44	1.483
80.0	450.635	5.80	49	8	1.50	44	1.225
90.0	463.940	5.40	49	9	1.40	45	1.183
100.0	477.300	5.40	50	10	1.40	45	1.183
110.0	490.280	5.05	50	11	1.30	46	1.140
120.0	503.330	5.05	50	12	1.30	47	1.140
130.0	516.365	5.05	50	13	1.30	44	1.140
140.0	529.790	5.45	51	14	1.40	45	1.183
150.0	543.680	5.80	51	15	1.50	46	1.225
160.0	557.650	5.80	51	16	1.50	47	1.225
170.0	571.950	6.20	51	17	1.60	47	1.265
180.0	586.250	6.20	51	18	1.60	46	1.265
190.0	601.340	6.95	51	19	1.80	46	1.342
200.0	616.300	6.55	51	20	1.70	47	1.304
210.0	630.700	6.20	51	21	1.60	45	1.265
220.0	644.740	6.20	51	22	1.60	45	1.265
230.0	659.500	6.65	52	23	1.70	44	1.304
240.0	674.302	6.65	52	24	1.70	44	1.304

Client:	**Eagle Foundry Company**	**Run:**	**3**
Source:	**Main Foundry BH Inlet - White Iron**	**Date:**	**03/29/23**

Field Data Input Continued

Moisture Data			Stack Dimensional Data:		
Total Test Time	240.0	min	Circular		
Sample Time Interval	10.0	min	Diameter	48.000	in
Meter Volume, V_m	340.326	dcf	Rectangular		
Water Mass	42.3	g	Width		in
Nozzle Diameter, N_z	0.2510	in.	Length		in
Nozzle Area	0.000344	sq.ft.	Stack Area	12.566	sq.ft.
Traverse Data			Molecular Weight:		
Barometric Pressure, P_b	29.41	"Hg	CO_2 Average	0.10	%vd
Static Pressure	-0.90	"H_2O	O_2 Average	20.59	%vd
Pitot Factor, cp	0.84				
Meter Cal Factor	1.0028	Y			

Field Data Averages

Meter			Stack		
ΔH	6.146	"H_2O	√Dp	1.257	"H_2O
Temperature, T_m	48.2	^oF	Temperature, T_s	45.0	^oF
Temperature, T_m	507.9	^oA (^oR)	Temperature, T_s	504.7	^oA (^oR)
Pressure Meter, P_m	29.862	"Hg	Pressure Stack, P_s	29.344	"Hg

Field Data Calculations

Meter Box Capture			EPA Method 2 Stack Gas Flowrate:		
Standard Volume, $V_{m(std)}$	353.897	dscf	Velocity, V_s	69.78	fps
	10.021	dscm	Flow Rate (actual), Q_{aw}	52,611	acfm
Actual Volume, $V_{m(actual)}$	347.059	awcf		52,316	adcfm
Gas Stream Moisture			Flow Rate (standard), Q	3,237,003	wscf/hr
Moisture Vapor, $Vw_{(std)}$	1.995	scf		3,218,876	dscf/hr
Moisture, B_{ws}	0.0056			53,648	dscf/min
Moisture EPA M4	0.56	%v		53,950	wscf/min
Moisture @ Saturation	1.02	%v (for T_s < 212°F)			
EPA Method 3 Gas Density					
Dry, M_d	28.84	lb/lb-mole			
Wet, M_s	28.78	lb/lb-mole			
Percent Isokinetic	100.4	%			

Eagle Foundry Company **Run: 1**
Main Foundry BH Inlet - White Iron **Sample Date: 03/27/23**
Method 29 Laboratory Results

Analyte	Filter + FH Rinse Cont. 1&3			BH Cap.Soln. + BH Rinse Cont. 4			Units
	<	Result	MDL	<	Result	MDL	
Aluminum		520	7.50		28.8	4.14	µg/sample
Antimony		3.57	1.25	<	MDL	0.690	µg/sample
Arsenic	<	MDL	1.75	<	MDL	0.966	µg/sample
Barium		5.38	0.125		2.06	0.069	µg/sample
Beryllium	<	MDL	0.050	<	MDL	0.028	µg/sample
Cadmium		0.488	0.100		0.182	0.055	µg/sample
Chromium		41.4	0.200		0.473	0.110	µg/sample
Cobalt		0.196	0.125		0.249	0.069	µg/sample
Copper		18.5	1.25		0.865	0.690	µg/sample
Lead		39.8	1.25		3.01	0.690	µg/sample
Manganese		284	0.075		1.59	0.041	µg/sample
Nickel		13.1	0.750	<	MDL	0.414	µg/sample
Phosphorus		21.2	5.00	<	MDL	2.76	µg/sample
Selenium	<	MDL	3.75	<	MDL	2.07	µg/sample
Silver		2.03	0.500	<	MDL	0.276	µg/sample
Thallium	<	MDL	2.50	<	MDL	1.38	µg/sample
Vanadium		0.638	0.250	<	MDL	0.138	µg/sample
Zinc		460	0.750		5.18	0.414	µg/sample

Lab ID:	23-S609	23-S610	
Sample Vol:	250	218	ml

Eagle Foundry Company **Run: 2**
Main Foundry BH Inlet - White Iron **Sample Date: 03/28/23**
Method 29 Laboratory Results

Analyte	Filter + FH Rinse Cont. 1&3			BH Cap.Soln. + BH Rinse Cont. 4			Units
	<	Result	FH MDL		Result	BH MDL	
Aluminum		746	7.50		33.9	3.66	µg/sample
Antimony		3.92	1.25		0.661	0.610	µg/sample
Arsenic	<	MDL	1.75	<	MDL	0.854	µg/sample
Barium		6.79	0.125		1.96	0.061	µg/sample
Beryllium	<	MDL	0.050	<	MDL	0.024	µg/sample
Cadmium		0.377	0.100	<	MDL	0.049	µg/sample
Chromium		41.5	0.200		0.511	0.098	µg/sample
Cobalt		0.287	0.125	<	MDL	0.061	µg/sample
Copper		24.9	1.25		1.49	0.610	µg/sample
Lead		41.2	1.25	<	MDL	0.610	µg/sample
Manganese		519	0.075		3.32	0.037	µg/sample
Nickel		10.1	0.750	<	MDL	0.366	µg/sample
Phosphorus		26.1	5.00	<	MDL	2.44	µg/sample
Selenium	<	MDL	3.75	<	MDL	1.83	µg/sample
Silver		2.22	0.500	<	MDL	0.244	µg/sample
Thallium	<	MDL	2.50	<	MDL	1.22	µg/sample
Vanadium		0.515	0.250	<	MDL	0.122	µg/sample
Zinc		397	0.750		2.61	0.366	µg/sample

Lab ID:	23-S614	23-S615	
Sample Vol:	250	224	ml

Eagle Foundry Company **Run: 3**
Main Foundry BH Inlet - White Iron **Sample Date: 03/29/23**
Method 29 Laboratory Results

Analyte	Filter + FH Rinse Cont. 1&3			BH Cap.Soln. + BH Rinse Cont. 4			Units
	<	Result	FH MDL	<	Result	BH MDL	
Aluminum		489	7.50		29.5	3.63	µg/sample
Antimony		3.10	1.25	<	MDL	0.605	µg/sample
Arsenic	<	MDL	1.75	<	MDL	0.847	µg/sample
Barium		5.02	0.125		1.58	0.060	µg/sample
Beryllium	<	MDL	0.050	<	MDL	0.024	µg/sample
Cadmium		0.327	0.100		0.135	0.048	µg/sample
Chromium		29.7	0.200		0.597	0.097	µg/sample
Cobalt		0.212	0.125		0.123	0.060	µg/sample
Copper		28.5	1.25		2.01	0.605	µg/sample
Lead		41.0	1.25		1.82	0.605	µg/sample
Manganese		464	0.075		2.43	0.036	µg/sample
Nickel		14.5	0.750	<	MDL	0.363	µg/sample
Phosphorus		19.3	5.00	<	MDL	2.42	µg/sample
Selenium	<	MDL	3.75	<	MDL	1.82	µg/sample
Silver		2.46	0.500	<	MDL	0.242	µg/sample
Thallium	<	MDL	2.50	<	MDL	1.21	µg/sample
Vanadium		0.422	0.250	<	MDL	0.121	µg/sample
Zinc		579	0.750		1.81	0.363	µg/sample

Lab ID:	23-S619	23-S620	
Sample Vol:	250	230	ml

Eagle Foundry Company **Sample Dates: 3/27/2023**
Main Foundry BH Inlet - White Iron **3/28/2023**
Method 29 Blank Results **3/29/2023**

Analyte	Filter Cont. 12 µg/filter			BH Cap.Soln. Cont. 9 5% HNO_3/ 10% H_2O_2 µg/sample			FH/BH Rinse Cont. 8A 0.1 N HNO_3 µg/sample		
	<	Result	MDL	<	Result	MDL	<	Result	MDL
Aluminum		58.8	7.50		16.3	3.78	<	MDL	7.50
Antimony		2.86	1.25	<	MDL	0.630	<	MDL	1.25
Arsenic	<	MDL	1.75	<	MDL	0.882	<	MDL	1.75
Barium		1.40	0.125		0.718	0.063		0.193	0.125
Beryllium	<	MDL	0.050	<	MDL	0.025	<	MDL	0.050
Cadmium	<	MDL	0.100	<	MDL	0.050	<	MDL	0.100
Chromium		1.03	0.200		0.306	0.101	<	MDL	0.200
Cobalt	<	MDL	0.125		0.153	0.063	<	MDL	0.125
Copper	<	MDL	1.25	<	MDL	0.630	<	MDL	1.25
Lead	<	MDL	1.25	<	MDL	0.630	<	MDL	1.25
Manganese		0.741	0.075		0.742	0.038	<	MDL	0.375
Nickel		3.96	0.750	<	MDL	0.378	<	MDL	0.750
Phosphorus		17.0	5.00	<	MDL	2.52	<	MDL	5.00
Selenium	<	MDL	3.75	<	MDL	1.89	<	MDL	3.75
Silver	<	MDL	0.500	<	MDL	0.252	<	MDL	0.500
Thallium	<	MDL	2.50	<	MDL	1.26	<	MDL	2.50
Vanadium	<	MDL	0.250	<	MDL	0.126	<	MDL	0.250
Zinc		1.52	0.750		0.415	0.378	<	MDL	0.750

Lab ID:	23-S729	23-S731	23-S730
Blank Vol, ml:	N/A	196	250

Eagle Foundry Company **Run: 1**
Main Foundry BH Inlet - White Iron **Test Date: 3/27/2023**
Method 29 Non-Hg Metals Blank Correction Calculations **Page: 1 of 3**

Analyte		I Sample FH Rinse+Filter µg	II Blank Correction FH Rinse µg	III Blank Correction Filter µg		IV Sample BH Cap.Soln. + BH Rinse µg	V Blank BH Cap.Soln. µg/ml	VI Blank Correction BH Cap.Soln. µg	VII Blank Correction BH Rinse µg	VIII Total BH Blank Correction µg	
Aluminum		520.000	0.000	58.800		28.800	0.083	16.633	0.000	16.633	Al
Antimony		3.570	0.000	2.860	<	0.690	0.000	0.000	0.000	0.000	Sb
Arsenic	<	1.750	0.000	0.000	<	0.966	0.000	0.000	0.000	0.000	As
Barium		5.380	0.077	1.400		2.060	0.004	0.733	0.077	0.810	Ba
Beryllium	<	0.050	0.000	0.000	<	0.028	0.000	0.000	0.000	0.000	Be
Cadmium		0.488	0.000	0.000		0.182	0.000	0.000	0.000	0.000	Cd
Chromium		41.400	0.000	1.030		0.473	0.002	0.312	0.000	0.312	Cr
Cobalt		0.196	0.000	0.000		0.249	0.001	0.156	0.000	0.156	Co
Copper		18.500	0.000	0.000		0.865	0.000	0.000	0.000	0.000	Cu
Lead		39.800	0.000	0.000		3.010	0.000	0.000	0.000	0.000	Pb
Manganese		284.000	0.000	0.741		1.590	0.004	0.757	0.000	0.757	Mn
Nickel		13.100	0.000	3.960	<	0.414	0.000	0.000	0.000	0.000	Ni
Phosphorus		21.200	0.000	17.000	<	2.760	0.000	0.000	0.000	0.000	P
Selenium	<	3.750	0.000	0.000	<	2.070	0.000	0.000	0.000	0.000	Se
Silver		2.030	0.000	0.000	<	0.276	0.000	0.000	0.000	0.000	Ag
Thallium	<	2.500	0.000	0.000	<	1.380	0.000	0.000	0.000	0.000	Tl
Vanadium		0.638	0.000	0.000	<	0.138	0.000	0.000	0.000	0.000	V
Zinc		460.000	0.000	1.520		5.180	0.002	0.423	0.000	0.423	Zn

Lab ID:	**23-S609**	**23-S730**	**23-S729**	**23-S610**	**23-S731**	**N/A**	**N/A**
Notes:	0.1N HNO_3	0.1N HNO_3		5% HNO_3/10% H_2O_2	5% HNO_3/	5%HNO_3/	0.1NHNO_3
	FH Filter & Probe Rinse			BH Imps 1-3	10% H_2O_2	10%H_2O_2	
	100ml 0.1N HNO_3 Rinse			100ml .1N HNO_3 Rinse			
				200ml 5% HNO_3/10% H_2O_2 Reagent			

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company | **Run:** 1
Main Foundry BH Inlet - White Iron | **Test Date:** 3/27/2023
Method 29 Non-Hg Metals Blank Correction Calculations | **Page:** 2 of 3

Analyte	X Allowable FH Blank Correction µg	XI Total FH Blank Correction µg		XII 5% of FH Sample µg	XIII Lessor of XI or XII µg	XIV Greater of A or XIII µg		XV FH Net Sample µg	
Aluminum	26.000	58.800		26.000	26.000	26.00		494.000	Al
Antimony	2.860	2.860		0.179	0.179	11.63		0.710	Sb
Arsenic	0.000	0.000	<	0.088	0.000	11.63	<	1.750	As
Barium	1.477	1.477		0.269	0.269	11.63		3.903	Ba
Beryllium	0.000	0.000	<	0.003	0.000	11.63	<	0.050	Be
Cadmium	0.000	0.000		0.024	0.000	11.63		0.488	Cd
Chromium	1.030	1.030		2.070	1.030	11.63		40.370	Cr
Cobalt	0.000	0.000		0.010	0.000	11.63		0.196	Co
Copper	0.000	0.000		0.925	0.000	11.63		18.500	Cu
Lead	0.000	0.000		1.990	0.000	11.63		39.800	Pb
Manganese	0.741	0.741		14.200	0.741	11.63		283.259	Mn
Nickel	3.960	3.960		0.655	0.655	11.63		9.140	Ni
Phosphorus	11.630	17.000		1.060	1.060	11.63		9.570	P
Selenium	0.000	0.000	<	0.188	0.000	11.63	<	3.750	Se
Silver	0.000	0.000		0.102	0.000	11.63		2.030	Ag
Thallium	0.000	0.000	<	0.125	0.000	11.63	<	2.500	Tl
Vanadium	0.000	0.000		0.032	0.000	11.63		0.638	V
Zinc	1.520	1.520		23.000	1.520	11.63		458.480	Zn

Note: Allowable FH Blank (A) = (area of filter)*(1.4 µg/in^2) = 11.63 µg
where area of filter = 8.306 in^2

If A > blank > 0, use blank-derived value, M_{fhb}.
If blank > A, use greater of A or [lessor of 5% of sample µg or FH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company **Run: 1**
Main Foundry BH Inlet - White Iron **Test Date: 3/27/2023**
Method 29 Non-Hg Metals Blank Correction Calculations **Page: 3 of 3**

Analyte	XVI Allowable BH Blank Correction µg	XVII Total BH Blank Correction µg		XVIII 5% of BH Sample µg	XIX Lessor of XVII or XVIII µg	XX Greater of 1 µg or XIX µg		XXI BH Net Sample µg		XXII FH Net Sample µg		XXIII FH+BH Total Net Sample µg	
Aluminum	1.440	16.633		1.440	1.440	1.440		**27.360**		**494.000**		**521.360**	Al
Antimony	0.000	0.000	<	0.035	0.000	1.000	<	**0.690**		**0.710**	<	**1.400**	Sb
Arsenic	0.000	0.000	<	0.048	0.000	1.000	<	**0.966**	<	**1.750**	<	**2.716**	As
Barium	0.810	0.810		0.103	0.103	1.000		**1.250**		**3.903**		**5.153**	Ba
Beryllium	0.000	0.000	<	0.001	0.000	1.000	<	**0.028**	<	**0.050**	<	**0.078**	Be
Cadmium	0.000	0.000		0.009	0.000	1.000		**0.182**		**0.488**		**0.670**	Cd
Chromium	0.312	0.312		0.024	0.024	1.000		**0.161**		**40.370**		**40.531**	Cr
Cobalt	0.156	0.156		0.012	0.012	1.000		**0.093**		**0.196**		**0.289**	Co
Copper	0.000	0.000		0.043	0.000	1.000		**0.865**		**18.500**		**19.365**	Cu
Lead	0.000	0.000		0.151	0.000	1.000		**3.010**		**39.800**		**42.810**	Pb
Manganese	0.757	0.757		0.080	0.080	1.000		**0.833**		**283.259**		**284.092**	Mn
Nickel	0.000	0.000	<	0.021	0.000	1.000	<	**0.414**		**9.140**	<	**9.554**	Ni
Phosphorus	0.000	0.000	<	0.138	0.000	1.000	<	**2.760**		**9.570**	<	**12.330**	P
Selenium	0.000	0.000	<	0.104	0.000	1.000	<	**2.070**	<	**3.750**	<	**5.820**	Se
Silver	0.000	0.000	<	0.014	0.000	1.000	<	**0.276**		**2.030**	<	**2.306**	Ag
Thallium	0.000	0.000	<	0.069	0.000	1.000	<	**1.380**	<	**2.500**	<	**3.880**	Tl
Vanadium	0.000	0.000	<	0.007	0.000	1.000	<	**0.138**		**0.638**	<	**0.776**	V
Zinc	0.423	0.423		0.259	0.259	1.000		**4.757**		**458.480**		**463.237**	Zn

Note: Allowable BH Blank rules:

If 1.00 µg > blank > 0 , use blank-derived value.
If blank > 1.00 µg, use greater of 1.00 µg or [lessor of 5% of sample µg or BH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company **Run: 2**
Main Foundry BH Inlet - White Iron **Test Date: 3/28/2023**
Method 29 Non-Hg Metals Blank Correction Calculations **Page: 1 of 3**

Analyte		I Sample FH Rinse+Filter µg	II Blank Correction FH Rinse µg	III Blank Correction Filter µg		IV Sample BH Cap.Soln. + BH Rinse µg	V Blank BH Cap.Soln. µg/ml	VI Blank Correction BH Cap.Soln. µg	VII Blank Correction BH Rinse µg	VIII Total BH Blank Correction µg	
Aluminum		746.000	0.000	58.800		33.900	0.083	16.633	0.000	16.633	Al
Antimony		3.920	0.000	2.860		0.661	0.000	0.000	0.000	0.000	Sb
Arsenic	<	1.750	0.000	0.000	<	0.854	0.000	0.000	0.000	0.000	As
Barium		6.790	0.077	1.400		1.960	0.004	0.733	0.077	0.810	Ba
Beryllium	<	0.050	0.000	0.000	<	0.024	0.000	0.000	0.000	0.000	Be
Cadmium		0.377	0.000	0.000	<	0.049	0.000	0.000	0.000	0.000	Cd
Chromium		41.500	0.000	1.030		0.511	0.002	0.312	0.000	0.312	Cr
Cobalt		0.287	0.000	0.000	<	0.061	0.001	0.156	0.000	0.156	Co
Copper		24.900	0.000	0.000		1.490	0.000	0.000	0.000	0.000	Cu
Lead		41.200	0.000	0.000	<	0.610	0.000	0.000	0.000	0.000	Pb
Manganese		519.000	0.000	0.741		3.320	0.004	0.757	0.000	0.757	Mn
Nickel		10.100	0.000	3.960	<	0.366	0.000	0.000	0.000	0.000	Ni
Phosphorus		26.100	0.000	17.000	<	2.440	0.000	0.000	0.000	0.000	P
Selenium	<	3.750	0.000	0.000	<	1.830	0.000	0.000	0.000	0.000	Se
Silver		2.220	0.000	0.000	<	0.244	0.000	0.000	0.000	0.000	Ag
Thallium	<	2.500	0.000	0.000	<	1.220	0.000	0.000	0.000	0.000	Tl
Vanadium		0.515	0.000	0.000	<	0.122	0.000	0.000	0.000	0.000	V
Zinc		397.000	0.000	1.520		2.610	0.002	0.423	0.000	0.423	Zn

Lab ID:	**23-S614**	**23-S730**	**23-S729**	**23-S615**	**23-S731**	**N/A**	**N/A**
Content:	0.1N HNO_3	0.1N HNO_3		5% HNO_3/10% H_2O_2	5% HNO_3/	5%HNO_3/	0.1NHNO_3
	FH Filter & Probe Rinse			BH Imps 1-3	10% H_2O_2	10%H_2O_2	
	100ml 0.1N HNO_3 Rinse			100ml .1N HNO_3 Rinse			
				200ml 5% HNO_3/10% H_2O_2 Reagent			

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company **Run: 2**
Main Foundry BH Inlet - White Iron **Test Date: 3/28/2023**
Method 29 Non-Hg Metals Blank Correction Calculations **Page: 2 of 3**

Analyte	X Allowable FH Blank Correction µg	XI Total FH Blank Correction µg		XII 5% of FH Sample µg	XIII Lessor of XI or XII µg	XIV Greater of A or XIII µg		XV FH Net Sample µg	
Aluminum	37.300	58.800		37.300	37.300	37.30		708.700	Al
Antimony	2.860	2.860		0.196	0.196	11.63		1.060	Sb
Arsenic	0.000	0.000	<	0.088	0.000	11.63	<	1.750	As
Barium	1.477	1.477		0.340	0.340	11.63		5.313	Ba
Beryllium	0.000	0.000	<	0.003	0.000	11.63	<	0.050	Be
Cadmium	0.000	0.000		0.019	0.000	11.63		0.377	Cd
Chromium	1.030	1.030		2.075	1.030	11.63		40.470	Cr
Cobalt	0.000	0.000		0.014	0.000	11.63		0.287	Co
Copper	0.000	0.000		1.245	0.000	11.63		24.900	Cu
Lead	0.000	0.000		2.060	0.000	11.63		41.200	Pb
Manganese	0.741	0.741		25.950	0.741	11.63		518.259	Mn
Nickel	3.960	3.960		0.505	0.505	11.63		6.140	Ni
Phosphorus	11.630	17.000		1.305	1.305	11.63		14.470	P
Selenium	0.000	0.000	<	0.188	0.000	11.63	<	3.750	Se
Silver	0.000	0.000		0.111	0.000	11.63		2.220	Ag
Thallium	0.000	0.000	<	0.125	0.000	11.63	<	2.500	Tl
Vanadium	0.000	0.000		0.026	0.000	11.63		0.515	V
Zinc	1.520	1.520		19.850	1.520	11.63		395.480	Zn

Note: Allowable FH Blank (A) = (area of filter)*(1.4 µg/in^2) = 11.63 µg
where area of filter = 8.306 in^2

If A > blank > 0, use blank-derived value.
If blank > A, use greater of A or [lessor of 5% of sample µg or FH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company **Run: 2**
Main Foundry BH Inlet - White Iron **Test Date: 3/28/2023**
Method 29 Non-Hg Metals Blank Correction Calculations **Page: 3 of 3**

Analyte	XVI Allowable BH Blank Correction µg	XVII Total BH Blank Correction µg		XVIII 5% of BH Sample µg	XIX Lessor of XVII or XVIII µg	XX Greater of 1 µg or XIX µg		XXI BH Net Sample µg		XXII FH Net Sample µg		XXIII FH+BH Total Net Sample µg	
Aluminum	1.695	16.633		1.695	1.695	1.695		**32.205**		**708.700**		**740.905**	Al
Antimony	0.000	0.000		0.033	0.000	1.000		**0.661**		**1.060**		**1.721**	Sb
Arsenic	0.000	0.000	<	0.043	0.000	1.000	<	**0.854**	<	**1.750**	<	**2.604**	As
Barium	0.810	0.810		0.098	0.098	1.000		**1.150**		**5.313**		**6.463**	Ba
Beryllium	0.000	0.000	<	0.001	0.000	1.000	<	**0.024**	<	**0.050**	<	**0.074**	Be
Cadmium	0.000	0.000	<	0.002	0.000	1.000	<	**0.049**		**0.377**	<	**0.426**	Cd
Chromium	0.312	0.312		0.026	0.026	1.000		**0.199**		**40.470**		**40.669**	Cr
Cobalt	0.156	0.156	<	0.003	0.156	1.000		**0.000**		**0.287**		**0.287**	Co
Copper	0.000	0.000		0.075	0.000	1.000		**1.490**		**24.900**		**26.390**	Cu
Lead	0.000	0.000	<	0.031	0.000	1.000	<	**0.610**		**41.200**	<	**41.810**	Pb
Manganese	0.757	0.757		0.166	0.166	1.000		**2.563**		**518.259**		**520.822**	Mn
Nickel	0.000	0.000	<	0.018	0.000	1.000	<	**0.366**		**6.140**	<	**6.506**	Ni
Phosphorus	0.000	0.000	<	0.122	0.000	1.000	<	**2.440**		**14.470**	<	**16.910**	P
Selenium	0.000	0.000	<	0.092	0.000	1.000	<	**1.830**	<	**3.750**	<	**5.580**	Se
Silver	0.000	0.000	<	0.012	0.000	1.000	<	**0.244**		**2.220**	<	**2.464**	Ag
Thallium	0.000	0.000	<	0.061	0.000	1.000	<	**1.220**	<	**2.500**	<	**3.720**	Tl
Vanadium	0.000	0.000	<	0.006	0.000	1.000	<	**0.122**		**0.515**	<	**0.637**	V
Zinc	0.423	0.423		0.131	0.131	1.000		**2.187**		**395.480**		**397.667**	Zn

Note: Allowable BH Blank rules:

If 1.00 µg > blank > 0 , use blank-derived value.
If blank > 1.00 µg, use greater of 1.00 µg or [lessor of 5% of sample µg or BH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company **Run: 3**
Main Foundry BH Inlet - White Iron **Test Date: 3/29/2023**
Method 29 Non-Hg Metals Blank Correction Calculations **Page: 1 of 3**

Analyte		I Sample FH Rinse+Filter µg	II Blank Correction FH Rinse µg	III Blank Correction Filter µg		IV Sample BH Cap.Soln. + BH Rinse µg	V Blank BH Cap.Soln. µg/ml	VI Blank Correction BH Cap.Soln. µg	VII Blank Correction BH Rinse µg	VIII Total BH Blank Correction µg	
Aluminum		489.000	0.000	58.800		29.500	0.083	16.633	0.000	16.633	Al
Antimony		3.100	0.000	2.860	<	0.605	0.000	0.000	0.000	0.000	Sb
Arsenic	<	1.750	0.000	0.000	<	0.847	0.000	0.000	0.000	0.000	As
Barium		5.020	0.077	1.400		1.580	0.004	0.733	0.077	0.810	Ba
Beryllium	<	0.050	0.000	0.000	<	0.024	0.000	0.000	0.000	0.000	Be
Cadmium		0.327	0.000	0.000		0.135	0.000	0.000	0.000	0.000	Cd
Chromium		29.700	0.000	1.030		0.597	0.002	0.312	0.000	0.312	Cr
Cobalt		0.212	0.000	0.000		0.123	0.001	0.156	0.000	0.156	Co
Copper		28.500	0.000	0.000		2.010	0.000	0.000	0.000	0.000	Cu
Lead		41.000	0.000	0.000		1.820	0.000	0.000	0.000	0.000	Pb
Manganese		464.000	0.000	0.741		2.430	0.004	0.757	0.000	0.757	Mn
Nickel		14.500	0.000	3.960	<	0.363	0.000	0.000	0.000	0.000	Ni
Phosphorus		19.300	0.000	17.000	<	2.420	0.000	0.000	0.000	0.000	P
Selenium	<	3.750	0.000	0.000	<	1.820	0.000	0.000	0.000	0.000	Se
Silver		2.460	0.000	0.000	<	0.242	0.000	0.000	0.000	0.000	Ag
Thallium	<	2.500	0.000	0.000	<	1.210	0.000	0.000	0.000	0.000	Tl
Vanadium		0.422	0.000	0.000	<	0.121	0.000	0.000	0.000	0.000	V
Zinc		579.000	0.000	1.520		1.810	0.002	0.423	0.000	0.423	Zn

Lab ID:	**23-S619**	**23-S730**	**23-S729**	**23-S620**	**23-S731**	**N/A**	**N/A**
Content:	0.1N HNO_3	0.1N HNO_3		5% HNO_3/10% H_2O_2	5% HNO_3/	5%HNO_3/	0.1NHNO_3
	FH Filter & Probe Rinse			BH Imps 1-3	10% H_2O_2	10%H_2O_2	
	100ml 0.1N HNO_3 Rinse			100ml .1N HNO_3 Rinse			
				200ml 5% HNO_3/10% H_2O_2 Reagent			

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company **Run: 3**
Main Foundry BH Inlet - White Iron **Test Date: 3/29/2023**
Method 29 Non-Hg Metals Blank Correction Calculations **Page: 2 of 3**

Analyte	X Allowable FH Blank Correction µg	XI Total FH Blank Correction µg		XII 5% of FH Sample µg	XIII Lessor of XI or XII µg	XIV Greater of A or XIII µg		XV FH Net Sample µg	
Aluminum	24.450	58.800		24.450	24.450	24.45		464.550	Al
Antimony	2.860	2.860		0.155	0.155	11.63		0.240	Sb
Arsenic	0.000	0.000	<	0.088	0.000	11.63	<	1.750	As
Barium	1.477	1.477		0.251	0.251	11.63		3.543	Ba
Beryllium	0.000	0.000	<	0.003	0.000	11.63	<	0.050	Be
Cadmium	0.000	0.000		0.016	0.000	11.63		0.327	Cd
Chromium	1.030	1.030		1.485	1.030	11.63		28.670	Cr
Cobalt	0.000	0.000		0.011	0.000	11.63		0.212	Co
Copper	0.000	0.000		1.425	0.000	11.63		28.500	Cu
Lead	0.000	0.000		2.050	0.000	11.63		41.000	Pb
Manganese	0.741	0.741		23.200	0.741	11.63		463.259	Mn
Nickel	3.960	3.960		0.725	0.725	11.63		10.540	Ni
Phosphorus	11.630	17.000		0.965	0.965	11.63		7.670	P
Selenium	0.000	0.000	<	0.188	0.000	11.63	<	3.750	Se
Silver	0.000	0.000		0.123	0.000	11.63		2.460	Ag
Thallium	0.000	0.000	<	0.125	0.000	11.63	<	2.500	Tl
Vanadium	0.000	0.000		0.021	0.000	11.63		0.422	V
Zinc	1.520	1.520		28.950	1.520	11.63		577.480	Zn

Note: Allowable FH Blank (A) = (area of filter)*(1.4 µg/in^2) = 11.63 µg
where area of filter = 8.306 in^2

If A > blank > 0, use blank-derived value.
If blank > A, use greater of A or [lessor of 5% of sample µg or FH blank].

Blank Rules: '<' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company **Run: 3**
Main Foundry BH Inlet - White Iron **Test Date: 3/29/2023**
Method 29 Non-Hg Metals Blank Correction Calculations **Page: 3 of 3**

Analyte	XVI Allowable BH Blank Correction µg	XVII Total BH Blank Correction µg		XVIII 5% of BH Sample µg	XIX Lessor of XVII or XVIII µg	XX Greater of 1 µg or XIX µg		XXI BH Net Sample µg		XXII FH Net Sample µg		XXIII FH+BH Total Net Sample µg	
Aluminum	1.475	16.633		1.475	1.475	1.475		**28.025**		**464.550**		**492.575**	Al
Antimony	0.000	0.000	<	0.030	0.000	1.000	<	**0.605**		**0.240**	<	**0.845**	Sb
Arsenic	0.000	0.000	<	0.042	0.000	1.000	<	**0.847**	<	**1.750**	<	**2.597**	As
Barium	0.810	0.810		0.079	0.079	1.000		**0.770**		**3.543**		**4.313**	Ba
Beryllium	0.000	0.000	<	0.001	0.000	1.000	<	**0.024**	<	**0.050**	<	**0.074**	Be
Cadmium	0.000	0.000		0.007	0.000	1.000		**0.135**		**0.327**		**0.462**	Cd
Chromium	0.312	0.312		0.030	0.030	1.000		**0.285**		**28.670**		**28.955**	Cr
Cobalt	0.156	0.156		0.006	0.006	1.000		**0.000**		**0.212**		**0.212**	Co
Copper	0.000	0.000		0.101	0.000	1.000		**2.010**		**28.500**		**30.510**	Cu
Lead	0.000	0.000		0.091	0.000	1.000		**1.820**		**41.000**		**42.820**	Pb
Manganese	0.757	0.757		0.122	0.122	1.000		**1.673**		**463.259**		**464.932**	Mn
Nickel	0.000	0.000	<	0.018	0.000	1.000	<	**0.363**		**10.540**	<	**10.903**	Ni
Phosphorus	0.000	0.000	<	0.121	0.000	1.000	<	**2.420**		**7.670**	<	**10.090**	P
Selenium	0.000	0.000	<	0.091	0.000	1.000	<	**1.820**	<	**3.750**	<	**5.570**	Se
Silver	0.000	0.000	<	0.012	0.000	1.000	<	**0.242**		**2.460**	<	**2.702**	Ag
Thallium	0.000	0.000	<	0.061	0.000	1.000	<	**1.210**	<	**2.500**	<	**3.710**	Tl
Vanadium	0.000	0.000	<	0.006	0.000	1.000	<	**0.121**		**0.422**	<	**0.543**	V
Zinc	0.423	0.423		0.091	0.091	1.000		**1.387**		**577.480**		**578.867**	Zn

Note: Allowable BH Blank rules:

If 1.00 µg > blank > 0 , use blank-derived value.
If blank > 1.00 µg, use greater of 1.00 µg or [lessor of 5% of sample µg or BH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company
Main Foundry BH Inlet - White Iron
Mercury Blank Correction Calculations

Blank Lab Values

	Filter Cont. 12 µg/filter		BH Imps. 2&3 Cap.Soln. Cont. 9 5% HNO_3/ 10% H_2O_2 µg/sample		FH/BH Rinse Cont. 8A 0.1 N HNO_3 µg/sample		BH Imps. 5&6 Rinse Cont. 8B H_2O µg/sample		BH Imps. 5&6 Cap.Soln. + Rinse Cont. 10 $KMnO_4$ µg/sample		BH Imps. 5&6 Rinse Cont. 11 HCl µg/sample	
Analyte	< **Result**	**MDL**	< **Result**	**MDL**	< **Result**	**MDL**	< **Result**	**MDL**	< **Result**	**MDL**	< **Result**	**MDL**
Mercury	0.0406	0.0219	0.118	0.0172	< MDL	0.0219	< MDL	0.0295	0.0628	0.0163	< MDL	0.0108
Lab ID:	23-S729		23-S731		23-S730		23-S732		23-S733		23-S734	
Blank Vol, ml:	NA		196		250		337		186		124	

Blank Correction Values

Analyte: Mercury	**Blank FH Rinse µg**	**Blank Filter µg**	**Blank BH Cap.Soln. µg**	**Blank BH HNO_3 Rinse µg**	**Blank BH H_2O Rinse µg**	**Blank BH KMnO4 Cap.Soln. + Rinse µg**	**Blank BH HCl Rinse µg**	**Total Blank Correction µg**	**Is Total Blank Correction ≥ 0 and ≤ 0.6?**
Run 1	0.00	0.0406	0.12	0.00	0.00	0.10	0.00	0.2623	Yes
Reagent vol, ml	100		200	200	100	300	225		
Run 2	0.00	0.0406	0.12	0.00	0.00	0.10	0.00	0.2623	Yes
Reagent vol, ml	100		200	200	100	300	225		
Run 3	0.00	0.0406	0.12	0.00	0.00	0.10	0.00	0.2623	Yes
Reagent vol, ml	100		200	200	100	300	225		
Notes:	0.1N HNO_3 FH Probe Rinse	FH Filter	5% HNO_3/ 10% H_2O_2 BH Imps 2&3	0.1N HNO_3	H_2O	H_2O BH Imps 5&6	4% $KMnO_4$/ 10% H_2SO_4 BH Imps 5&6	25 ml 8N HCl/ 200 ml H2O BH Imps 5&6	

Blank Corrected Results

Analyte: Mercury	**Sample FH Rinse + Filter Cont. 1&3 µg**	**Sample BH Cap.Soln. + HNO3 Rinse Cont. 4 µg**	**Sample BH Imp. 4 + Rinse Cont. 5A µg**	**Sample BH Imps. 5&6 + Rinses Cont. 5B µg**	**Sample BH HCl Rinse + Water Cont. 5C µg**	**Total Sample µg**	**Total Blank Correction µg**	**Total Net Sample µg**
Run 1	0.0406	0.0981	0.00928	0.126	< 0.0198	< 0.2938	0.2623	< 0.0315
Lab ID	23-S609	23-S610	23-S621	23-S612	23-S613			
Run 2	< 0.0219	0.0924	< 0.0121	0.120	< 0.0196	< 0.2660	0.2623	< 0.0037
Lab ID	23-S614	23-S615	23-S616	23-S617	23-S618			
Run 3	< 0.0219	0.112	0.00942	0.0914	< 0.0194	< 0.2541	0.2623	< 0.0000
Lab ID	23-S619	23-S620	23-S621	23-S622	23-S623			

Blank Rules: '<' indicates value is below the method detection limit (MDL)
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations but results are preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.
If the total blank correction value is less than or equal to 0.6 µg, subtract the total blank correction value from the total sample value to determine total net Hg. Otherwise, the value used for the blank correction shall be the greater of (1) 0.6 µg or (2) the lesser of [total FH blank + total BH blank] or 5% of the total sample valu

EPA Method 29
Gas Stream Characteristics
Test Summary

Client: **Eagle Foundry Company**
Source: **Main Foundry BH Inlet - White Iron**
Location: **Eagle Creek, OR**

Parameter	Units	Run 1	Run 2	Run 3	
Date		3/27/2023	3/28/2023	3/29/2023	
Run Start Time		6:40	5:10	5:15	
Run End Time		10:40	9:10	9:15	
Duration	minutes	240	240	240	**Average**
Barometric Pressure	inHg	29.98	29.41	29.41	**29.60**
Nozzle Diameter	inches	0.251	0.251	0.251	**0.251**
Isokinetic Average	%	97.0	99.8	100.4	**99.1**
Sample Volume	dscf	316.575	297.402	353.897	**322.625**
Sample Volume	dscm	8.964	8.421	10.021	**9.135**
Stack Diameter	inches	48.00	48.00	48.00	**48.00**
Stack Area	ft^2	12.566	12.566	12.566	**12.566**
CO_2	%vd	0.25	0.15	0.10	**0.17**
O_2	%vd	20.85	20.91	20.59	**20.78**
Static Pressure	inH_2O	-0.90	-0.90	-0.90	**-0.90**
H_2O	%v	0.54	0.66	0.56	**0.59**
Wet Molecular Weight	lb/lb-mole	28.81	28.79	28.78	**28.79**
Velocity	fps	63.44	60.04	69.78	**64.42**
Flow Rate	adcfm	47,573	44,969	52,316	**48,286**
	acfm	47,831	45,268	52,611	**48,570**
	dscfm	49,692	45,376	53,648	**49,572**
Stack Temperature	°F	45.4	53.2	45.0	**47.9**
Production Data	lb melt/pour	11,955.985	12,165.997	11,960.006	
	ton melt/pour	5.978	6.083	5.980	
	lb Cr/melt	3,106.941	3,124.611	3,071.140	
	ton Cr/melt	1.553	1.562	1.536	
	lb Mn/melt	120.685	126.908	122.799	
	ton Mn/melt	0.060	0.063	0.061	

Eagle Foundry Company **Test Dates:** 3/27/2023
Main Foundry BH Inlet - White Iron 3/28/2023
EPA Method 29 Results Summary 3/29/2023

Run 1													
	Total				FH Net			BH Net					
Analyte	µg	µg/dscm	lb/hr	lb/ton melt	µg	µg/dscm	lb/hr	µg	µg/dscm	lb/hr			
Aluminum	521.360	58.162	1.08E-02	7.24E-03	494.000	55.109	1.03E-02	27.360	3.052	5.68E-04	Al		
Antimony	< 1.400	< 0.156	< 2.91E-05	< 1.95E-05	0.710	0.079	1.47E-05	< 0.690	< 0.077	< 1.43E-05	Sb		
Arsenic	< 2.716	< 0.303	< 5.64E-05	< 3.77E-05	< 1.750	< 0.195	< 3.63E-05	< 0.966	< 0.108	< 2.01E-05	As		
Barium	5.153	0.575	1.07E-04	7.16E-05	3.903	0.435	8.10E-05	1.250	0.139	2.60E-05	Ba		
Beryllium	< 0.078	< 0.009	< 1.62E-06	< 1.08E-06	< 0.050	< 0.006	< 1.04E-06	< 0.028	< 0.003	< 5.81E-07	Be		
Cadmium	0.670	0.075	1.39E-05	9.31E-06	0.488	0.054	1.01E-05	0.182	0.020	3.78E-06	Cd		
Chromium	40.531	4.522	8.42E-04	[redacted]	40.370	4.504	8.38E-04	0.161	0.018	3.34E-06	Cr		
Cobalt	0.289	0.032	6.00E-06	4.02E-06	0.196	0.022	4.07E-06	0.093	0.010	1.93E-06	Co		
Copper	19.365	2.160	4.02E-04	2.69E-04	18.500	2.064	3.84E-04	0.865	0.096	1.80E-05	Cu		
Lead	42.810	4.776	8.89E-04	5.95E-04	39.800	4.440	8.26E-04	3.010	0.336	6.25E-05	Pb		
Manganese	284.092	31.693	5.90E-03	[redacted]	283.259	31.600	5.88E-03	0.833	0.093	1.73E-05	Mn		
Mercury	< 0.031	< 0.004	< 6.54E-07	< 4.38E-07							Hg		
Nickel	< 9.554	< 1.066	< 1.98E-04	< 1.33E-04	9.140	1.020	1.90E-04	< 0.414	< 0.046	< 8.60E-06	Ni		
Phosphorus	< 12.330	< 1.376	< 2.56E-04	< 1.71E-04	9.570	1.068	1.99E-04	< 2.760	< 0.308	< 5.73E-05	P		
Selenium	< 5.820	< 0.649	< 1.21E-04	< 8.09E-05	< 3.750	< 0.418	< 7.79E-05	< 2.070	< 0.231	< 4.30E-05	Se		
Silver	< 2.306	< 0.257	< 4.79E-05	< 3.20E-05	2.030	0.226	4.22E-05	< 0.276	< 0.031	< 5.73E-06	Ag		
Thallium	< 3.880	< 0.433	< 8.06E-05	< 5.39E-05	< 2.500	< 0.279	< 5.19E-05	< 1.380	< 0.154	< 2.87E-05	Tl		
Vanadium	< 0.776	< 0.087	< 1.61E-05	< 1.08E-05	0.638	0.071	1.32E-05	< 0.138	< 0.015	< 2.87E-06	V		
Zinc	463.237	51.677	9.62E-03	6.44E-03	458.480	51.147	9.52E-03	4.757	0.531	9.88E-05	Zn		

Chromium	lb Cr / ton Cr in melt =	2.17E-03
Manganese	lb Mn / ton Mn in melt =	3.91E-01

Run 1 Emission Factors

Run 2													
	Total				FH Net			BH Net					
Analyte	µg	µg/dscm	lb/hr	lb/ton melt	µg	µg/dscm	lb/hr	µg	µg/dscm	lb/hr			
Aluminum	740.905	87.983	1.50E-02	9.83E-03	708.700	84.159	1.43E-02	32.205	3.824	6.50E-04	Al		
Antimony	1.721	0.204	3.47E-05	2.28E-05	1.060	0.126	2.14E-05	0.661	0.078	1.33E-05	Sb		
Arsenic	< 2.604	< 0.309	< 5.26E-05	< 3.46E-05	< 1.750	< 0.208	< 3.53E-05	< 0.854	< 0.101	< 1.72E-05	As		
Barium	6.463	0.767	1.30E-04	8.58E-05	5.313	0.631	1.07E-04	1.150	0.137	2.32E-05	Ba		
Beryllium	< 0.074	< 0.009	< 1.49E-06	< 9.82E-07	< 0.050	< 0.006	< 1.01E-06	< 0.024	< 0.003	< 4.84E-07	Be		
Cadmium	< 0.426	< 0.051	< 8.60E-06	< 5.65E-06	0.377	0.045	7.61E-06	< 0.049	< 0.006	< 9.89E-07	Cd		
Chromium	40.669	4.829	8.21E-04	[redacted]	40.470	4.806	8.17E-04	0.199	0.024	4.02E-06	Cr		
Cobalt	0.287	0.034	5.79E-06	3.81E-06	0.287	0.034	5.79E-06	0.000	0.000	0.00E+00	Co		
Copper	26.390	3.134	5.33E-04	3.50E-04	24.900	2.957	5.03E-04	1.490	0.177	3.01E-05	Cu		
Lead	< 41.810	< 4.965	< 8.44E-04	< 5.55E-04	41.200	4.893	8.32E-04	< 0.610	< 0.072	< 1.23E-05	Pb		
Manganese	520.822	61.848	1.05E-02	[redacted]	518.259	61.544	1.05E-02	2.563	0.304	5.17E-05	Mn		
Mercury	< 0.004	< 0.000	< 7.50E-08	< 4.93E-08							Hg		
Nickel	< 6.506	< 0.773	< 1.31E-04	< 8.63E-05	6.140	0.729	1.24E-04	< 0.366	< 0.043	< 7.39E-06	Ni		
Phosphorus	< 16.910	< 2.008	< 3.41E-04	< 2.24E-04	14.470	1.718	2.92E-04	< 2.440	< 0.290	< 4.92E-05	P		
Selenium	< 5.580	< 0.663	< 1.13E-04	< 7.41E-05	< 3.750	< 0.445	< 7.57E-05	< 1.830	< 0.217	< 3.69E-05	Se		
Silver	< 2.464	< 0.293	< 4.97E-05	< 3.27E-05	2.220	0.264	4.48E-05	< 0.244	< 0.029	< 4.93E-06	Ag		
Thallium	< 3.720	< 0.442	< 7.51E-05	< 4.94E-05	< 2.500	< 0.297	< 5.05E-05	< 1.220	< 0.145	< 2.46E-05	Tl		
Vanadium	< 0.637	< 0.076	< 1.29E-05	< 8.45E-06	0.515	0.061	1.04E-05	< 0.122	< 0.014	< 2.46E-06	V		
Zinc	397.667	47.223	8.03E-03	5.28E-03	395.480	46.964	7.98E-03	2.187	0.260	4.41E-05	Zn		

Chromium	lb Cr / ton Cr in melt =	2.10E-03
Manganese	lb Mn / ton Mn in melt =	6.63E-01

Run 2 Emission Factors

Note: Results for Hg front half and back half fractions are not shown because these values are not blank-corrected. Per EPA Method 29, only the sum of Hg front and back half results is subject to blank correction.

'<' denotes results which were calculated using the method detection limit for front half or back half results that were non-detect.

Eagle Foundry Company **Test Dates:** 3/27/2023
Main Foundry BH Inlet - White Iron 3/28/2023
EPA Method 29 Results Summary 3/29/2023

Run 3													
	Total				FH Net			BH Net					
Analyte	µg	µg/dscm	lb/hr	lb/ton melt	µg	µg/dscm	lb/hr	µg	µg/dscm	lb/hr			
Aluminum	492.575	49.154	9.88E-03	6.61E-03	464.550	46.358	9.32E-03	28.025	2.797	5.62E-04	Al		
Antimony	< 0.845	< 0.084	< 1.69E-05	< 1.13E-05	0.240	0.024	4.81E-06	< 0.605	< 0.060	< 1.21E-05	Sb		
Arsenic	< 2.597	< 0.259	< 5.21E-05	< 3.48E-05	< 1.750	< 0.175	< 3.51E-05	< 0.847	< 0.085	< 1.70E-05	As		
Barium	4.313	0.430	8.65E-05	5.78E-05	3.543	0.354	7.10E-05	0.770	0.077	1.54E-05	Ba		
Beryllium	< 0.074	< 0.007	< 1.48E-06	< 9.93E-07	< 0.050	< 0.005	< 1.00E-06	< 0.024	< 0.002	< 4.81E-07	Be		
Cadmium	0.462	0.046	9.26E-06	6.20E-06	0.327	0.033	6.56E-06	0.135	0.013	2.71E-06	Cd		
Chromium	28.955	2.889	5.81E-04	[redacted]	28.670	2.861	5.75E-04	0.285	0.028	5.72E-06	Cr		
Cobalt	0.212	0.021	4.25E-06	2.84E-06	0.212	0.021	4.25E-06	0.000	0.000	0.00E+00	Co		
Copper	30.510	3.045	6.12E-04	4.09E-04	28.500	2.844	5.72E-04	2.010	0.201	4.03E-05	Cu		
Lead	42.820	4.273	8.59E-04	5.74E-04	41.000	4.091	8.22E-04	1.820	0.182	3.65E-05	Pb		
Manganese	464.932	46.396	9.32E-03	[redacted]	463.259	46.229	9.29E-03	1.673	0.167	3.35E-05	Mn		
Mercury	< 0.000	< 0.000	< 0.00E+00	< 0.00E+00							Hg		
Nickel	< 10.903	< 1.088	< 2.19E-04	< 1.46E-04	10.540	1.052	2.11E-04	< 0.363	< 0.036	< 7.28E-06	Ni		
Phosphorus	< 10.090	< 1.007	< 2.02E-04	< 1.35E-04	7.670	0.765	1.54E-04	< 2.420	< 0.241	< 4.85E-05	P		
Selenium	< 5.570	< 0.556	< 1.12E-04	< 7.47E-05	< 3.750	< 0.374	< 7.52E-05	< 1.820	< 0.182	< 3.65E-05	Se		
Silver	< 2.702	< 0.270	< 5.42E-05	< 3.62E-05	2.460	0.245	4.93E-05	< 0.242	< 0.024	< 4.85E-06	Ag		
Thallium	< 3.710	< 0.370	< 7.44E-05	< 4.98E-05	< 2.500	< 0.249	< 5.01E-05	< 1.210	< 0.121	< 2.43E-05	Tl		
Vanadium	< 0.543	< 0.054	< 1.09E-05	< 7.28E-06	0.422	0.042	8.46E-06	< 0.121	< 0.012	< 2.43E-06	V		
Zinc	578.867	57.765	1.16E-02	7.76E-03	577.480	57.627	1.16E-02	1.387	0.138	2.78E-05	Zn		

Chromium	lb Cr / ton Cr in melt =	1.51E-03
Manganese	lb Mn / ton Mn in melt =	6.07E-01

Run 3 Emission Factors

Mean Runs 1-3													
	Total				FH Net			BH Net					
Analyte	µg	µg/dscm	lb/hr	lb/ton melt	µg	µg/dscm	lb/hr	µg	µg/dscm	lb/hr			
Aluminum	584.947	65.100	1.19E-02	7.89E-03	555.750	61.875	1.13E-02	29.197	3.224	5.93E-04			
Antimony	< 1.322	< 0.148	< 2.69E-05	< 1.79E-05	0.670	0.076	1.36E-05	< 0.652	< 0.072	< 1.33E-05	Sb		
Arsenic	< 2.639	< 0.290	< 5.37E-05	< 3.57E-05	< 1.750	< 0.193	< 3.56E-05	< 0.889	< 0.098	< 1.81E-05	As		
Barium	5.309	0.591	1.08E-04	7.17E-05	4.253	0.473	8.64E-05	1.056	0.118	2.15E-05	Ba		
Beryllium	< 0.075	< 0.008	< 1.53E-06	< 1.02E-06	< 0.050	< 0.006	< 1.02E-06	< 0.025	< 0.003	< 5.15E-07	Be		
Cadmium	< 0.519	< 0.057	< 1.06E-05	< 7.05E-06	0.397	0.044	8.10E-06	< 0.122	< 0.013	< 2.49E-06	Cd		
Chromium	36.718	4.080	7.48E-04	[redacted]	36.503	4.057	7.43E-04	0.215	0.023	4.36E-06	Cr		
Cobalt	0.263	0.029	5.35E-06	3.56E-06	0.232	0.026	4.70E-06	0.031	0.003	6.44E-07	Co		
Copper	25.422	2.780	5.16E-04	3.43E-04	23.967	2.622	4.86E-04	1.455	0.158	2.94E-05	Cu		
Lead	< 42.480	< 4.671	< 8.64E-04	< 5.75E-04	40.667	4.475	8.27E-04	< 1.813	< 0.197	< 3.71E-05	Pb		
Manganese	423.282	46.645	8.58E-03	[redacted]	421.592	46.457	8.54E-03	1.690	0.188	3.42E-05	Mn		
Mercury	< 0.012	< 0.001	< 2.43E-07	< 1.62E-07							Hg		
Nickel	< 8.988	< 0.975	< 1.83E-04	< 1.22E-04	8.607	0.934	1.75E-04	< 0.381	< 0.042	< 7.75E-06	Ni		
Phosphorus	< 13.110	< 1.463	< 2.67E-04	< 1.77E-04	10.570	1.184	2.15E-04	< 2.540	< 0.280	< 5.17E-05	P		
Selenium	< 5.657	< 0.623	< 1.15E-04	< 7.65E-05	< 3.750	< 0.413	< 7.62E-05	< 1.907	< 0.210	< 3.88E-05	Se		
Silver	< 2.491	< 0.273	< 5.06E-05	< 3.37E-05	2.237	0.245	4.54E-05	< 0.254	< 0.028	< 5.17E-06	Ag		
Thallium	< 3.770	< 0.415	< 7.67E-05	< 5.10E-05	< 2.500	< 0.275	< 5.08E-05	< 1.270	< 0.140	< 2.58E-05	Tl		
Vanadium	< 0.652	< 0.072	< 1.33E-05	< 8.84E-06	0.525	0.058	1.07E-05	< 0.127	< 0.014	< 2.58E-06	V		
Zinc	479.924	52.222	9.75E-03	6.49E-03	477.147	51.912	9.69E-03	2.777	0.310	5.69E-05	Zn		

Chromium	lb Cr / ton Cr in melt =	1.93E-03
Manganese	lb Mn / ton Mn in melt =	5.54E-01

Mean Runs 1-3

Note: Results for Hg front half and back half fractions are not shown because these values are not blank-corrected. Per EPA Method 29, only the sum of Hg front and back half results is subject to blank correction.

'<' denotes results which were calculated using the method detection limit for front half or back half results that were non-detect.

EPA Methods 1-4, 29
Example Calculations

Client:	**Eagle Foundry Company**	**Run:**	**1**
Location:	**Eagle Creek, OR**	**Start Time:**	**6:40**
Source:	**Main Foundry BH Inlet - White Iron**	**End Time:**	**10:40**
Method:	**29**	**Date:**	**3/27/2023**

EPA Methods 1-4:

1) $P_m = Pb + (\Delta H/13.6) =$ 30.345 inHg

where P_b:	29.98	inHg
ΔH:	4.967	inH_2O

2) $Ps = Pb + (Static\ Press./13.6) =$ 29.914 inHg

where P_b:	29.98	inHg
Static Pressure:	-0.90	inH_2O

3) $V_m(std) = V_m(527.67/29.92)(Y)\left(\frac{Pm}{Tm}\right) =$ 316.575 dscf

where V_m:	300.534	dcf
Y:	1.0028	
P_m:	30.345	inHg
T_m:	509.5	°A

4) $V_{w(std)} = V_{H20}\left(\frac{\rho w * R * Tstd}{Pstd * Mw}\right) =$ 1.726 scf

where H_2O:	36.60	g
ρ_w:	2.2046E-03	lb/mol
R:	21.85	inHg ft3/lb-mol °R
T_{std}:	527.67	°R
P_{std}:	29.92	inHg
M_w:	18.015	lb/lb-mol

5) $Bws = \left(\frac{Vw(std)}{Vw(std)+Vm(std)}\right) =$ 0.0054

where $V_{w(std)}$:	1.726	scf
$V_{m(std)}$:	316.575	dscf

6) $\%\ H_2O = B_{ws} \times 100 =$ 0.54 %v

EPA Methods 1-4, 29
Example Calculations

7) $V_m(\text{actual}) = \left(\frac{Y \times Vm}{(1-Bws)}\right)\left(\frac{Ts}{Tm}\right)\left(\frac{Pm}{Ps}\right) =$ 304.723 awcf

where Y:	1.0028	
V_m:	300.5340	dcf
B_{ws}:	0.0054	
T_s:	505.1	°A
T_m:	509.5	°A
P_m:	30.345	inHg
P_s:	29.914	inHg

8) $M_d = 0.44(CO_2) + 0.32(O_2) + 0.28(N_2 + CO) =$ 28.87 lb/lb-mole

where CO_2:	0.25	%vd
O_2	20.85	%vd
N_2+CO= (100-(O_2+CO_2):	78.90	%vd

9) $M_s = M_d(1 - B_{ws}) + (18 \times B_{ws}) =$ 28.81 lb/lb-mole

where M_d:	28.87	lb/lb-mole
B_{ws}:	0.0054	

10) Stack Area(cir.) = π (stack diameter/24)^2 = 12.566 sq. ft.

where Stack ID:	48	inches

11) Velocity, $V_s = 85.49(Cp)(\text{Ave. Sqrt }\Delta P)\left(\sqrt{\frac{Ts}{(Ps \times Ms)}}\right) =$ 63.44 fps

where Cp:	0.84	
Ave. Sqrt ΔP:	1.154	
T_s:	505.1	°A
P_s:	29.914	inHg
M_s:	28.81	lb/lb-mole

12) acfm = (V_s)(stack area)(60 sec/min) = 47,831 acfm

where V_s:	63.44	ft/sec
Stack Area:	12.566	sq. ft

13) adcfm= (acfm)(1-B_{ws}) = 47,573 adcfm

where acfm:	47,831	
B_{ws}:	0.0054	

14) $Qsw = 3600(V_s)(\text{stack area})\left(\frac{527.67°R}{Ts}\right)\left(\frac{Ps}{29.92\ \text{"Hg}}\right)$ 2,997,688 wscf/hr

where V_s:	63.44	ft/sec
Stack Area:	12.5660	sq. ft.
T_s:	505.1	°A
P_s:	29.914	inHg

EPA Methods 1-4, 29
Example Calculations

15) Qsd = (wscf/hr)(1-B_{ws}) = 2,981,500 dscf/hr

where wscf/hr: 2,997,688
B_{ws} 0.0054

16) dscfm = (dscf/hr)/60 mins/hr = 49,692 dscfm

where dscf/hr: 2,981,500

17) Nozzle Area = 3.1416 (Nozzle Size/24)^2 = 0.000344 sq. ft.

where Nozzle Size: 0.251 inches

18) Isokinetic % = $\left(\frac{0.0945(Ts)(Vm(std))}{Ps(V_s)(nozzle\ area)(sampling\ time)(1-Bws)}\right)$ = 97.0 %

where T_s: 505.1 °A
$V_{m(Std)}$: 316.575 dscf
P_s: 29.914 inHg
V_s 63.44 ft/sec
Nozzle Area: 0.000344 sq. ft.
Sampling Time: 240 min.
B_{ws}: 0.0054

EPA Method 29:
Chromium

19) Cr Laboratory Results (blank corrected)

Front half (FH): 40.370 µg/sample
Back half (BH): 0.161 µg/sample
Total (FH + BH): 40.531 µg/sample

20) Cs = µg/Vm(std) = 4.522 µg/dscm

where Run 1 Total: 40.531 µg/sample
$V_{m(std)}$: 8.964 dscm

21) Emission Rate = (Cs)($\frac{0.0283168\ m^3}{ft^3}$)(stack flow)($\frac{2.2046E-9\ lb}{\mu g}$) 8.42E-04 lb/hr

where C_s: 4.522 µg/dscm
Stack Flow: 2,981,500 dscf/hr

22) lb Cr / ton Cr in melt = (lb/hr * run duration) / ton Cr = 2.17E-03 lb Cr/ton Cr in melt

where lb/hr: 8.42E-04 lb/hr
run duration: 4 hours
ton Cr in melt: 1.553 tons

EPA Methods 1-4, 29
Example Calculations

Hg Blank Correction:

23) Hg Total Net Results (blank corrected)

FH total + BH total - total blank = 0.031 µg

Where front half (FH): 0.0406 µg

Back half (BH): 0.2532 µg

Total Blank: 0.2623 µg

BISON ENGINEERING, INC.

COMPANY	**Eagle Foundry Company**
FACILITY	**Eagle Foundry**
LOCATION	**Eagle Creek, OR**
SOURCE	**Main Foundry BH Outlet - White Iron**
DATE	**3/27/2023 - 3/29/2023**
METHOD	**29**
POLLUTANT	**Metals**

EPA Method 1
Stack Parameters and Traverse Points

Client: **Eagle Foundry Company**
Location: **Eagle Creek, OR**
Source: **Main Foundry BH Outlet - White Iron**
Facility: **Eagle Foundry**

Type of Testing: P (P for Particulate; V for Velocity/Nonparticulate)
Type of Duct: C (C for circular; R for rectangular)

Number of ports available:	2	
Number of ports to be used:	2	
Port diameter:	3	inches
Sampling location height (approx.):		feet
Stack height (approx.):		feet
Circular ID (Rectangular Depth):	61.00	inches
Port depth and/or wall thickness:	6.00	inches
Stack width (Rectangular only):		inches

Equivalent Diameter
If rectangular = $\frac{2*Depth*Width}{Depth + Width}$ = 61.00 inches (If circular = duct ID)
Stack/duct area = 20.295 sq.feet 2922.5 sq. inches

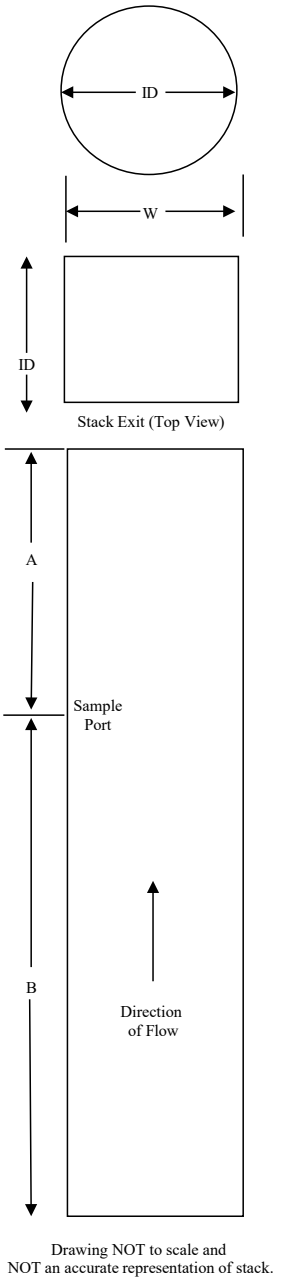
Sample Port Location:	Downstream flow disturbance from process B	Upstream flow disturbance toward exit A
Number of Inches:	264.00	44.00
Number of Diameters:	4.33	0.72

Minimum Number of Traverse Points: 24

Traverse points less than 1.0 inch from the stack wall are relocated to a distance of 1.0 inch.

Points	% of diameter	Distance from inside wall (in.)	Distance including port (in.)
1	2.1	1.28	7 1/4
2	6.7	4.09	10 1/8
3	11.8	7.20	13 1/4
4	17.7	10.80	16 3/4
5	25.0	15.25	21 1/4
6	35.6	21.72	27 3/4
7	64.4	39.28	45 1/4
8	75.0	45.75	51 3/4
9	82.3	50.20	56 1/4
10	88.2	53.80	59 3/4
11	93.3	56.91	62 7/8
12	97.9	59.72	65 3/4

Reference Diagram



Pre-Test Traverse

Client: **Eagle Foundry Company**
Location: **Eagle Creek, OR**
Source: **Main Foundry BH Outlet - White Iron**

Stack Temp: 63 °F

Traverse Point	Velocity ΔP ("H_2O)	Null Angle
1	0.64	0
2	0.65	5
3	0.64	0
4	0.62	5
5	0.61	5
6	0.62	0
7	0.66	5
8	0.62	0
9	0.52	5
10	0.59	0
11	0.58	5
12	0.55	5
Average:	0.61	3

Flow is found to be: Non-cyclonic

Isokinetic Field Data
Field Data Entry

Client:	**Eagle Foundry Company**	**Run:**	**1**
Location:	**Eagle Creek, OR**	**Start Time:**	**6:40**
Source:	**Main Foundry BH Outlet - White Iron**	**End Time:**	**10:40**
EPA Method:	**29**	**Environmental Conditions/Test Notes:**	**Date:** **3/27/2023**
Box Operator:	**JPC**	overcast, 30-50 °F	
Technician(s):	**KAD**		

Stack Dimensional Data:

Circular		
Diameter	62.000	in
Rectangular		
Width		in
Length		in
Stack Area	20.966	sq.ft.

Equipment:

Meterbox ID	15	Probe ID	7D	Liner type	glass		
Y factor	1.0057	Nozzle ID	0.25	Nozzle size	0.263	inches	
ΔH@	1.919	Hot box ID	HHB7	Nozzle area	0.000377	sq.ft.	
Bp ID	TS1	Pitot Cp	0.84	Probe heat	248	°F	
Balance ID	HLN FB-1	Pitot ID	7D	Filter heat	248	°F	
Weights ID	HLN FW-1	Probe Length, ft	7 Ft				

Source Information:

Barometric Pressure	29.98	"Hg	O_2	20.90	%
Static Pressure	0.1	"H_2O	CO_2	0.00	%
Ave. ΔP	0.61	"H_2O	Rec. Nz.	0.236	inches
Stack Temperature	60	°F			
Assumed moisture	2.00	%			
Assumed meter temp.	40	°F			
Total number of points	24				
Time per point	10	min.			
Total run time	240	min.			

Leak Checks:

	Pre-test	Post-test
Pitot	x	x
Leak rate, dcf	0.000	0.001
Leak check vacuum, "Hg	15	15

Nozzle check for roundness:

1	2	3	
0.263	0.263	0.263	inches
	Caliper ID	WS1	

Post Test Calculations:

Sample volume	253.684	dcf	Ave. ΔP	0.678	"H_2O
Wet mol. weight	28.79	M_s (actual)	Ave. √ΔP	0.823	"H_2O
Actual H_2O	0.50	%	Ave. ΔH	3.896	"H_2O
Std. meter vol.	254.654	dscf	Ave. T_s	46.3	°F
Isokinetic Average	99.7	%	Ave. T_m	75.1	°F

Moisture/Lab:

Filter, #	N/A		
	Initial	Final	Gain
Impingers, g	3,658.5	3,648.4	-10.1
Silica gel, g	898.0	935.0	37.0
	Total water gain, g:		26.9

Traverse Point	Time (min.)	Meter Volume (dcf) 0.000	Velocity ΔP ("H_2O)	Stack Temp. (°F)	Meter Temp. (°F)	Calc. ΔH	Run ΔH	Vacuum ("Hg)	Filter Box (°F)	Condenser Temp (≤68°F)
1	10.0	9.550	0.61	41	46	3.35	3.30	8	250	30
2	20.0	19.420	0.65	41	46	3.57	3.60	7	251	26
3	30.0	29.260	0.63	41	50	3.49	3.50	7	250	32
4	40.0	39.380	0.66	41	54	3.68	3.70	7	250	35
5	50.0	49.770	0.68	41	58	3.82	3.80	7	250	36
6	60.0	60.430	0.74	41	60	4.18	4.20	6	251	38
7	70.0	71.410	0.75	41	66	4.28	4.30	7	252	38
8	80.0	82.510	0.75	41	70	4.31	4.30	8	250	42
9	90.0	93.420	0.71	41	72	4.10	4.10	8	251	44
10	100.0	104.350	0.71	41	74	4.11	4.10	7	250	44
11	110.0	114.720	0.64	43	77	3.72	3.70	7	250	45
12	120.0	124.990	0.63	46	78	3.64	3.60	7	252	45
13	130.0	135.880	0.69	46	79	4.00	4.00	8	251	47
14	140.0	146.270	0.65	47	82	3.78	3.80	8	250	47
15	150.0	156.690	0.64	48	83	3.72	3.70	8	251	50
16	160.0	166.910	0.62	50	84	3.60	3.60	8	252	51
17	170.0	177.390	0.70	51	85	4.06	4.10	8	251	51
18	180.0	188.710	0.73	51	88	4.26	4.30	8	250	53
19	190.0	199.900	0.74	51	89	4.32	4.30	8	250	55
20	200.0	210.900	0.71	52	90	4.15	4.20	8	249	56
21	210.0	222.030	0.70	53	91	4.09	4.10	8	250	57
22	220.0	232.950	0.68	53	93	3.99	4.00	8	250	58
23	230.0	243.590	0.64	55	93	3.74	3.70	8	250	58
24	240.0	253.684	0.61	55	94	3.57	3.50	8	251	58

Isokinetic Field Data
Field Data Entry

Client:	**Eagle Foundry Company**	**Run:**	**2**
Location:	**Eagle Creek, OR**	**Start Time:**	**5:10**
Source:	**Main Foundry BH Outlet - White Iron**	**End Time:**	**9:10**
EPA Method:	**29**	**Date:**	**3/28/2023**
Box Operator:	**JPC**		
Technician(s):	**KAD**		

Environmental Conditions/Test Notes:
overcast, 30-50 °F

Stack Dimensional Data:

Circular		
Diameter	62.000	in
Rectangular		
Width		in
Length		in
Stack Area	20.966	sq.ft.

Equipment:

Meterbox ID	15	Probe ID	7D	Liner type	glass		
Y factor	1.0057	Nozzle ID	0.25	Nozzle size	0.263	inches	
ΔH@	1.919	Hot box ID	HHB7	Nozzle area	0.000377	sq.ft.	
Bp ID	TS1	Pitot Cp	0.84	Probe heat	248	°F	
Balance ID	HLN FB-1	Pitot ID	7D	Filter heat	248	°F	
Weights ID	HLN FW-1	Probe Length, ft	7 Ft				

Source Information:

Barometric Pressure	29.41	"Hg	O_2	20.90	%
Static Pressure	0.1	"H_2O	CO_2	0.00	%
Ave. ΔP	0.61	"H_2O	Rec. Nz.	0.226	inches
Stack Temperature	60	°F			
Assumed moisture	0.50	%			
Assumed meter temp.	75.1	°F			
Total number of points	24				
Time per point	10	min.			
Total run time	240	min.			

Leak Checks:

	Pre-test	Post-test
Pitot	x	x
Leak rate, dcf	0.000	0.000
Leak check vacuum, "Hg	15	9

Nozzle check for roundness:

1	2	3	
0.263	0.263	0.263	inches
	Caliper ID	WS1	

Post Test Calculations:

Sample volume	247.602	dcf	Ave. ΔP	0.627	"H_2O
Wet mol. weight	28.73	M_s (actual)	Ave. √ΔP	0.792	"H_2O
Actual H_2O	0.99	%	Ave. ΔH	3.633	"H_2O
Std. meter vol.	243.575	dscf	Ave. T_s	54.0	°F
Isokinetic Average	101.2	%	Ave. T_m	75.4	°F

Moisture/Lab:

Filter, #	N/A		
	Initial	Final	Gain
Impingers, g	3,693.6	3,709.2	15.6
Silica gel, g	859.3	895.3	36.0
		Total water gain:	51.6

Traverse Point	Time (min.)	Meter Volume (dcf)	Velocity ΔP ("H_2O)	Stack Temp. (°F)	Meter Temp. (°F)	Calc. ΔH	Run ΔH	Vacuum ("Hg)	Filter Box (°F)	Condenser Temp (≤68°F)
		0.000								
1	10.0	10.530	0.69	49	55	3.89	3.80	4	250	38
2	20.0	20.930	0.68	53	58	3.83	3.80	4	251	39
3	30.0	31.020	0.63	55	61	3.55	3.60	4	252	41
4	40.0	41.150	0.62	55	63	3.51	3.50	4	250	41
5	50.0	51.580	0.66	54	65	3.76	3.80	4	251	41
6	60.0	61.920	0.62	54	66	3.54	3.50	4	250	41
7	70.0	71.780	0.60	54	68	3.43	3.40	4	249	42
8	80.0	81.840	0.60	53	70	3.45	3.50	4	252	42
9	90.0	91.980	0.60	54	72	3.46	3.50	4	250	42
10	100.0	102.140	0.63	53	74	3.65	3.70	4	251	42
11	110.0	112.270	0.62	55	76	3.60	3.60	4	250	42
12	120.0	122.590	0.60	55	78	3.49	3.50	4	251	43
13	130.0	132.840	0.60	55	79	3.50	3.50	4	250	42
14	140.0	142.910	0.61	54	80	3.57	3.60	4	251	42
15	150.0	153.290	0.63	54	81	3.69	3.70	4	250	42
16	160.0	163.860	0.65	55	82	3.81	3.80	4	251	42
17	170.0	175.120	0.72	56	83	4.22	4.20	4	251	42
18	180.0	186.010	0.65	55	84	3.83	3.80	4	250	42
19	190.0	196.320	0.60	54	85	3.54	3.50	4	250	42
20	200.0	206.140	0.60	54	85	3.54	3.50	4	250	42
21	210.0	216.740	0.62	55	86	3.66	3.70	4	250	41
22	220.0	227.310	0.60	55	86	3.54	3.50	4	250	42
23	230.0	237.490	0.61	53	86	3.62	3.60	4	251	41
24	240.0	247.602	0.60	53	86	3.56	3.60	4	249	42

Isokinetic Field Data
Field Data Entry

Client:	**Eagle Foundry Company**	**Run:**	**3**
Location:	**Eagle Creek, OR**	**Start Time:**	**5:15**
Source:	**Main Foundry BH Outlet - White Iron**	**End Time:**	**9:15**
EPA Method:	**29**	**Date:**	**3/29/2023**
Box Operator:	**JPC**		
Technician(s):	**KAD**		

Environmental Conditions/Test Notes:
overcast, 30-50 °F

Stack Dimensional Data:

Circular		
Diameter	62.000	in
Rectangular		
Width		in
Length		in
Stack Area	20.966	sq.ft.

Equipment:

Meterbox ID	15	Probe ID	7D	Liner type	glass		
Y factor	1.0057	Nozzle ID	0.25	Nozzle size	0.263	inches	
ΔH@	1.919	Hot box ID	HHB7	Nozzle area	0.000377	sq.ft.	
Bp ID	TS1	Pitot Cp	0.84	Probe heat	248	°F	
Balance ID	HLN FB-1	Pitot ID	7D	Filter heat	248	°F	
Weights ID	HLN FW-1	Probe Length, ft	7 Ft				

Source Information:

Barometric Pressure	29.41	"Hg	O_2	20.90	%
Static Pressure	0.1	"H_2O	CO_2	0.00	%
Ave. ΔP	0.61	"H_2O	Rec. Nz.	0.226	inches
Stack Temperature	60	°F			
Assumed moisture	0.99	%			
Assumed meter temp.	75.4	°F			
Total number of points	24				
Time per point	10	min.			
Total run time	240	min.			

Leak Checks:

	Pre-test	Post-test
Pitot	x	x
Leak rate, dcf	0.000	0.000
Leak check vacuum, "Hg	15	12

Nozzle check for roundness:

1	2	3	
0.263	0.263	0.263	inches
	Caliper ID	WS1	

Post Test Calculations:

Sample volume	257.359	dcf	Ave. ΔP	0.674	"H_2O
Wet mol. weight	28.77	M_s (actual)	Ave. √ΔP	0.821	"H_2O
Actual H_2O	0.69	%	Ave. ΔH	3.942	"H_2O
Std. meter vol.	253.844	dscf	Ave. T_s	46.1	°F
Isokinetic Average	100.7	%	Ave. T_m	74.4	°F

Moisture/Lab:

Filter, #	N/A		
	Initial	Final	Gain
Impingers, g	3,687.2	3,688.9	1.7
Silica gel, g	915.2	950.7	35.5
		Total water gain:	37.2

Traverse Point	Time (min.)	Meter Volume (dcf) 0.000	Velocity ΔP ("H_2O)	Stack Temp. (°F)	Meter Temp. (°F)	Calc. ΔH	Run ΔH	Vacuum ("Hg)	Filter Box (°F)	Condenser Temp (≤68°F)
1	10.0	10.590	0.72	41	51	4.06	4.10	4	250	33
2	20.0	21.250	0.72	46	52	4.03	4.00	4	250	35
3	30.0	31.680	0.67	46	57	3.78	3.80	4	250	37
4	40.0	42.090	0.65	45	61	3.71	3.70	4	250	37
5	50.0	52.360	0.62	46	65	3.56	3.60	4	250	37
6	60.0	63.190	0.69	45	68	3.99	4.00	4	250	38
7	70.0	74.250	0.73	45	71	4.24	4.20	5	250	38
8	80.0	85.230	0.73	45	73	4.26	4.30	5	250	38
9	90.0	96.350	0.72	46	75	4.21	4.20	5	250	38
10	100.0	107.350	0.72	46	75	4.21	4.20	5	250	38
11	110.0	118.340	0.69	46	78	4.06	4.10	5	250	38
12	120.0	129.290	0.69	46	78	4.06	4.10	5	250	39
13	130.0	140.350	0.69	46	79	4.06	4.10	5	250	40
14	140.0	150.760	0.62	46	80	3.66	3.70	4	250	40
15	150.0	161.220	0.62	47	80	3.65	3.70	4	250	40
16	160.0	171.420	0.61	47	80	3.59	3.60	4	250	40
17	170.0	181.860	0.65	48	80	3.82	3.80	4	251	40
18	180.0	192.590	0.65	47	81	3.83	3.80	4	250	41
19	190.0	203.160	0.63	48	82	3.72	3.70	4	251	43
20	200.0	214.070	0.70	48	83	4.14	4.10	4	250	44
21	210.0	224.700	0.66	47	84	3.92	3.90	4	250	45
22	220.0	235.310	0.65	47	84	3.86	3.90	4	250	43
23	230.0	246.310	0.67	46	84	3.98	4.00	4	250	41
24	240.0	257.359	0.67	46	85	3.99	4.00	4	250	43

EPA Method 4
Impinger Weights Summary

Client: **Eagle Foundry Company**
Location: **Eagle Creek, OR**
Source: **Main Foundry BH Outlet - White Iron**
EPA Method: **29**
Box Operator: **JPC**
Technician(s): **KAD**

Run 1
Impinger gain by weight (g):

#	Initial	Final	Gain
1	747.9	668.8	-79.1
2	755.8	772.7	16.9
3	631.7	681.8	50.1
4	755.7	828.9	73.2
5	767.4	696.2	-71.2
Totals:	3,658.5	3,648.4	-10.1

Run 2
Impinger gain by weight (g):

#	Initial	Final	Gain
1	758.7	726.3	-32.4
2	760.4	791.7	31.3
3	635.7	642.8	7.1
4	755.4	762.3	6.9
5	783.4	786.1	2.7
Totals:	3,693.6	3,709.2	15.6

Run 3
Impinger gain by weight (g):

#	Initial	Final	Gain
1	756.8	714.1	-42.7
2	760.0	790.5	30.5
3	637.4	643.8	6.4
4	757.1	762.5	5.4
5	775.9	778.0	2.1
Totals:	3,687.2	3,688.9	1.7

Isokinetic Field Data
Field Data and Calculations
Gas Stream Characteristics

Client:	**Eagle Foundry Company**	**Run:**	**1**
Location:	**Eagle Creek, OR**	**Start Time:**	**6:40**
Source:	**Main Foundry BH Outlet - White Iron**	**End Time:**	**10:40**
Method:	**29**	**Date:**	**3/27/2023**

Sampling Data				Traverse Data			
Time	**Meter**	**ΔH**	**Meter**	**Traverse**	**Dp**	**Stack**	
min.	**ft^3**	**"H_2O**	**T_m ^oF**	**Point**	**"H_2O**	**T_s ^oF**	**√Dp**
	0.000						
10.0	9.550	3.30	46	1	0.61	41	0.781
20.0	19.420	3.60	46	2	0.65	41	0.806
30.0	29.260	3.50	50	3	0.63	41	0.794
40.0	39.380	3.70	54	4	0.66	41	0.812
50.0	49.770	3.80	58	5	0.68	41	0.825
60.0	60.430	4.20	60	6	0.74	41	0.860
70.0	71.410	4.30	66	7	0.75	41	0.866
80.0	82.510	4.30	70	8	0.75	41	0.866
90.0	93.420	4.10	72	9	0.71	41	0.843
100.0	104.350	4.10	74	10	0.71	41	0.843
110.0	114.720	3.70	77	11	0.64	43	0.800
120.0	124.990	3.60	78	12	0.63	46	0.794
130.0	135.880	4.00	79	13	0.69	46	0.831
140.0	146.270	3.80	82	14	0.65	47	0.806
150.0	156.690	3.70	83	15	0.64	48	0.800
160.0	166.910	3.60	84	16	0.62	50	0.787
170.0	177.390	4.10	85	17	0.70	51	0.837
180.0	188.710	4.30	88	18	0.73	51	0.854
190.0	199.900	4.30	89	19	0.74	51	0.860
200.0	210.900	4.20	90	20	0.71	52	0.843
210.0	222.030	4.10	91	21	0.70	53	0.837
220.0	232.950	4.00	93	22	0.68	53	0.825
230.0	243.590	3.70	93	23	0.64	55	0.800
240.0	253.684	3.50	94	24	0.61	55	0.781

Client:	**Eagle Foundry Company**	**Run:**	**1**
Source:	**Main Foundry BH Outlet - White Iron**	**Date:**	**03/27/23**

Field Data Input Continued

Moisture Data			Stack Dimensional Data:		
Total Test Time	240.0	min	Circular		
Sample Time Interval	10.0	min	Diameter	62.000	in
Meter Volume, V_m	253.684	dcf	Rectangular		
Water Mass	26.9	g	Width		in
Nozzle Diameter, N_z	0.2630	in.	Length		in
Nozzle Area	0.000377	sq.ft.	Stack Area	20.966	sq.ft.
Traverse Data			Molecular Weight:		
Barometric Pressure, P_b	29.98	"Hg	CO_2 Average	0.25	%vd
Static Pressure	0.10	"H_2O	O_2 Average	20.85	%vd
Pitot Factor, cp	0.84				
Meter Cal Factor	1.0057	Y			

Field Data Averages

Meter			Stack		
ΔH	3.896	"H_2O	√Dp	0.823	"H_2O
Temperature, T_m	75.1	^oF	Temperature, T_s	46.3	^oF
Temperature, T_m	534.8	^oA (^oR)	Temperature, T_s	506.0	^oA (^oR)
Pressure Meter, P_m	30.266	"Hg	Pressure Stack, P_s	29.987	"Hg

Field Data Calculations

Meter Box Capture			EPA Method 2 Stack Gas Flowrate:		
Standard Volume, $V_{m(std)}$	254.654	dscf	Velocity, V_s	45.22	fps
	7.211	dscm	Flow Rate (actual), Q_{aw}	56,885	acfm
Actual Volume, $V_{m(actual)}$	244.860	awcf		56,601	adcfm
Gas Stream Moisture			Flow Rate (standard), Q	3,567,448	wscf/hr
Moisture Vapor, $Vw_{(std)}$	1.269	scf		3,549,611	dscf/hr
Moisture, B_{ws}	0.0050			59,160	dscf/min
Moisture EPA M4	0.50	%v		59,457	wscf/min
Moisture @ Saturation	1.05	%v (for T_s < 212°F)			
EPA Method 3 Gas Density					
Dry, M_d	28.87	lb/lb-mole			
Wet, M_s	28.82	lb/lb-mole			
Percent Isokinetic	99.7	%			

Isokinetic Field Data
Field Data and Calculations
Gas Stream Characteristics

Client:	**Eagle Foundry Company**	**Run:**	**2**
Location:	**Eagle Creek, OR**	**Start Time:**	**5:10**
Source:	**Main Foundry BH Outlet - White Iron**	**End Time:**	**9:10**
Method:	**29**	**Date:**	**03/28/23**

Sampling Data				Traverse Data			
Time	**Meter**	**ΔH**	**Meter**	**Traverse**	**Dp**	**Stack**	
min.	**ft^3**	**"H_2O**	**T_m ^oF**	**Point**	**"H_2O**	**T_s ^oF**	**√Dp**
	0.000						
10.0	10.530	3.80	55	1	0.69	49	0.831
20.0	20.930	3.80	58	2	0.68	53	0.825
30.0	31.020	3.60	61	3	0.63	55	0.794
40.0	41.150	3.50	63	4	0.62	55	0.787
50.0	51.580	3.80	65	5	0.66	54	0.812
60.0	61.920	3.50	66	6	0.62	54	0.787
70.0	71.780	3.40	68	7	0.60	54	0.775
80.0	81.840	3.50	70	8	0.60	53	0.775
90.0	91.980	3.50	72	9	0.60	54	0.775
100.0	102.140	3.70	74	10	0.63	53	0.794
110.0	112.270	3.60	76	11	0.62	55	0.787
120.0	122.590	3.50	78	12	0.60	55	0.775
130.0	132.840	3.50	79	13	0.60	55	0.775
140.0	142.910	3.60	80	14	0.61	54	0.781
150.0	153.290	3.70	81	15	0.63	54	0.794
160.0	163.860	3.80	82	16	0.65	55	0.806
170.0	175.120	4.20	83	17	0.72	56	0.849
180.0	186.010	3.80	84	18	0.65	55	0.806
190.0	196.320	3.50	85	19	0.60	54	0.775
200.0	206.140	3.50	85	20	0.60	54	0.775
210.0	216.740	3.70	86	21	0.62	55	0.787
220.0	227.310	3.50	86	22	0.60	55	0.775
230.0	237.490	3.60	86	23	0.61	53	0.781
240.0	247.602	3.60	86	24	0.60	53	0.775

Client:	**Eagle Foundry Company**	**Run:**	**2**
Source:	**Main Foundry BH Outlet - White Iron**	**Date:**	**03/28/23**

Field Data Input Continued

Moisture Data			Stack Dimensional Data:		
Total Test Time	240.0	min	Circular		
Sample Time Interval	10.0	min	Diameter	62.000	in
Meter Volume, V_m	247.602	dcf	Rectangular		
Water Mass	51.6	g	Width		in
Nozzle Diameter, N_z	0.2630	in.	Length		in
Nozzle Area	0.000377	sq.ft.	Stack Area	20.966	sq.ft.
Traverse Data			Molecular Weight:		
Barometric Pressure, P_b	29.41	"Hg	CO_2 Average	0.15	%vd
Static Pressure	0.10	"H_2O	O_2 Average	20.91	%vd
Pitot Factor, cp	0.84				
Meter Cal Factor	1.0057	Y			

Field Data Averages

Meter			Stack		
ΔH	3.633	"H_2O	√Dp	0.792	"H_2O
Temperature, T_m	75.4	^oF	Temperature, T_s	54.0	^oF
Temperature, T_m	535.1	^oA (^oR)	Temperature, T_s	513.7	^oA (^oR)
Pressure Meter, P_m	29.677	"Hg	Pressure Stack, P_s	29.417	"Hg

Field Data Calculations

Meter Box Capture			EPA Method 2 Stack Gas Flowrate:		
Standard Volume, $V_{m(std)}$	243.575	dscf	Velocity, V_s	44.32	fps
	6.897	dscm	Flow Rate (actual), Q_{aw}	55,753	acfm
Actual Volume, $V_{m(actual)}$	243.578	awcf		55,201	adcfm
Gas Stream Moisture			Flow Rate (standard), Q	3,378,569	wscf/hr
Moisture Vapor, $Vw_{(std)}$	2.433	scf		3,345,121	dscf/hr
Moisture, B_{ws}	0.0099			55,752	dscf/min
Moisture EPA M4	0.99	%v		56,309	wscf/min
Moisture @ Saturation	1.43	%v (for T_s < 212°F)			
EPA Method 3 Gas Density					
Dry, M_d	28.86	lb/lb-mole			
Wet, M_s	28.75	lb/lb-mole			
Percent Isokinetic	101.2	%			

Isokinetic Field Data
Field Data and Calculations
Gas Stream Characteristics

Client:	**Eagle Foundry Company**	**Run:**	**3**
Location:	**Eagle Creek, OR**	**Start Time:**	**5:15**
Source:	**Main Foundry BH Outlet - White Iron**	**End Time:**	**9:15**
Method:	**29**	**Date:**	**03/29/23**

Sampling Data				Traverse Data			
Time	**Meter**	**ΔH**	**Meter**	**Traverse**	**Dp**	**Stack**	
min.	**ft^3**	**"H_2O**	**T_m ^oF**	**Point**	**"H_2O**	**T_s ^oF**	**√Dp**
	0.000						
10.0	10.590	4.10	51	1	0.72	41	0.849
20.0	21.250	4.00	52	2	0.72	46	0.849
30.0	31.680	3.80	57	3	0.67	46	0.819
40.0	42.090	3.70	61	4	0.65	45	0.806
50.0	52.360	3.60	65	5	0.62	46	0.787
60.0	63.190	4.00	68	6	0.69	45	0.831
70.0	74.250	4.20	71	7	0.73	45	0.854
80.0	85.230	4.30	73	8	0.73	45	0.854
90.0	96.350	4.20	75	9	0.72	46	0.849
100.0	107.350	4.20	75	10	0.72	46	0.849
110.0	118.340	4.10	78	11	0.69	46	0.831
120.0	129.290	4.10	78	12	0.69	46	0.831
130.0	140.350	4.10	79	13	0.69	46	0.831
140.0	150.760	3.70	80	14	0.62	46	0.787
150.0	161.220	3.70	80	15	0.62	47	0.787
160.0	171.420	3.60	80	16	0.61	47	0.781
170.0	181.860	3.80	80	17	0.65	48	0.806
180.0	192.590	3.80	81	18	0.65	47	0.806
190.0	203.160	3.70	82	19	0.63	48	0.794
200.0	214.070	4.10	83	20	0.70	48	0.837
210.0	224.700	3.90	84	21	0.66	47	0.812
220.0	235.310	3.90	84	22	0.65	47	0.806
230.0	246.310	4.00	84	23	0.67	46	0.819
240.0	257.359	4.00	85	24	0.67	46	0.819

Client:	**Eagle Foundry Company**	**Run:**	**3**
Source:	**Main Foundry BH Outlet - White Iron**	**Date:**	**03/29/23**

Field Data Input Continued

Moisture Data			Stack Dimensional Data:		
Total Test Time	240.0	min	Circular		
Sample Time Interval	10.0	min	Diameter	62.000	in
Meter Volume, V_m	257.359	dcf	Rectangular		
Water Mass	37.2	g	Width		in
Nozzle Diameter, N_z	0.2630	in.	Length		in
Nozzle Area	0.000377	sq.ft.	Stack Area	20.966	sq.ft.
Traverse Data			Molecular Weight:		
Barometric Pressure, P_b	29.41	"Hg	CO_2 Average	0.10	%vd
Static Pressure	0.10	"H_2O	O_2 Average	20.59	%vd
Pitot Factor, cp	0.84				
Meter Cal Factor	1.0057	Y			

Field Data Averages

Meter			Stack		
ΔH	3.942	"H_2O	√Dp	0.821	"H_2O
Temperature, T_m	74.4	^oF	Temperature, T_s	46.1	^oF
Temperature, T_m	534.1	^oA (^oR)	Temperature, T_s	505.8	^oA (^oR)
Pressure Meter, P_m	29.700	"Hg	Pressure Stack, P_s	29.417	"Hg

Field Data Calculations

Meter Box Capture			EPA Method 2 Stack Gas Flowrate:		
Standard Volume, $V_{m(std)}$	253.844	dscf	Velocity, V_s	45.58	fps
	7.188	dscm	Flow Rate (actual), Q_{aw}	57,338	acfm
Actual Volume, $V_{m(actual)}$	249.188	awcf		56,942	adcfm
Gas Stream Moisture			Flow Rate (standard), Q	3,528,893	wscf/hr
Moisture Vapor, $Vw_{(std)}$	1.754	scf		3,504,544	dscf/hr
Moisture, B_{ws}	0.0069			58,409	dscf/min
Moisture EPA M4	0.69	%v		58,815	wscf/min
Moisture @ Saturation	1.07	%v (for T_s < 212°F)			
EPA Method 3 Gas Density					
Dry, M_d	28.84	lb/lb-mole			
Wet, M_s	28.77	lb/lb-mole			
Percent Isokinetic	100.7	%			

Eagle Foundry Company **Run: 1**
Main Foundry BH Outlet - White Iron **Sample Date: 03/27/23**
Method 29 Laboratory Results

Analyte	Filter + FH Rinse Cont. 1&3			BH Cap.Soln. + BH Rinse Cont. 4			Units
	<	Result	MDL	<	Result	MDL	
Aluminum		78.7	7.50		22.9	3.72	µg/sample
Antimony		1.71	1.25		0.903	0.620	µg/sample
Arsenic	<	MDL	1.75	<	MDL	0.868	µg/sample
Barium		2.23	0.125		3.68	0.062	µg/sample
Beryllium	<	MDL	0.050	<	MDL	0.025	µg/sample
Cadmium	<	MDL	0.100		0.175	0.050	µg/sample
Chromium		3.35	0.200		0.615	0.099	µg/sample
Cobalt	<	MDL	0.125		0.134	0.062	µg/sample
Copper	<	MDL	1.25		3.03	0.620	µg/sample
Lead		2.20	1.25		2.53	0.620	µg/sample
Manganese		21.90	0.075		0.610	0.037	µg/sample
Nickel		4.58	0.750		0.460	0.372	µg/sample
Phosphorus		29.8	5.00	<	MDL	2.48	µg/sample
Selenium	<	MDL	3.75	<	MDL	1.86	µg/sample
Silver	<	MDL	0.500	<	MDL	0.248	µg/sample
Thallium	<	MDL	2.50	<	MDL	1.24	µg/sample
Vanadium	<	MDL	0.250	<	MDL	0.124	µg/sample
Zinc		18.3	0.750		3.55	0.372	µg/sample

Lab ID:	23-S639	23-S640	
Sample Vol:	250	208	ml

Eagle Foundry Company **Run: 2**
Main Foundry BH Outlet - White Iron **Sample Date: 03/28/23**
Method 29 Laboratory Results

Analyte	Filter + FH Rinse Cont. 1&3			BH Cap.Soln. + BH Rinse Cont. 4			Units
	<	Result	MDL		Result	MDL	
Aluminum		105	7.50		20.6	3.45	µg/sample
Antimony		1.77	1.25		0.743	0.575	µg/sample
Arsenic	<	MDL	1.75	<	MDL	0.805	µg/sample
Barium		6.18	0.125		1.97	0.058	µg/sample
Beryllium	<	MDL	0.050	<	MDL	0.023	µg/sample
Cadmium	<	MDL	0.100	<	MDL	0.046	µg/sample
Chromium		3.54	0.200		0.526	0.092	µg/sample
Cobalt	<	MDL	0.125		0.088	0.058	µg/sample
Copper		3.84	1.25		2.32	0.575	µg/sample
Lead	<	MDL	1.25	<	MDL	0.575	µg/sample
Manganese		5.92	0.075		8.57	0.034	µg/sample
Nickel		8.74	0.750		0.383	0.345	µg/sample
Phosphorus		9.34	5.00	<	MDL	2.30	µg/sample
Selenium	<	MDL	3.75	<	MDL	1.72	µg/sample
Silver	<	MDL	0.500	<	MDL	0.230	µg/sample
Thallium	<	MDL	2.50	<	MDL	1.15	µg/sample
Vanadium	<	MDL	0.250	<	MDL	0.115	µg/sample
Zinc		11.0	0.750		1.33	0.345	µg/sample

Lab ID:	23-S644	23-S645	
Sample Vol:	250	313	ml

Eagle Foundry Company **Run: 3**
Main Foundry BH Outlet - White Iron **Sample Date: 03/29/23**
Method 29 Laboratory Results

Analyte	Filter + FH Rinse Cont. 1&3			BH Cap.Soln. + BH Rinse Cont. 4			Units
	<	Result	MDL	<	Result	MDL	
Aluminum		81.5	7.50		27.8	3.42	µg/sample
Antimony		2.04	1.25		0.634	0.570	µg/sample
Arsenic	<	MDL	1.75	<	MDL	0.798	µg/sample
Barium		2.81	0.125		1.45	0.057	µg/sample
Beryllium	<	MDL	0.050	<	MDL	0.023	µg/sample
Cadmium	<	MDL	0.100	<	MDL	0.046	µg/sample
Chromium		4.66	0.200		0.455	0.091	µg/sample
Cobalt	<	MDL	0.125		0.112	0.057	µg/sample
Copper		3.28	1.25		0.923	0.570	µg/sample
Lead	<	MDL	1.25	<	MDL	0.570	µg/sample
Manganese		10.2	0.075		11.1	0.034	µg/sample
Nickel		12.4	0.750	<	MDL	0.342	µg/sample
Phosphorus		6.20	5.00	<	MDL	2.28	µg/sample
Selenium	<	MDL	3.75	<	MDL	1.71	µg/sample
Silver		0.974	0.500	<	MDL	0.228	µg/sample
Thallium	<	MDL	2.50	<	MDL	1.14	µg/sample
Vanadium	<	MDL	0.250	<	MDL	0.114	µg/sample
Zinc		5.84	0.750		0.737	0.342	µg/sample

Lab ID:	23-S649	23-S650	
Sample Vol:	250	324	ml

Eagle Foundry Company **Sample Dates: 3/27/2023**
Main Foundry BH Outlet - White Iron **3/28/2023**
Method 29 Blank Results **3/29/2023**

Analyte	Filter Cont. 12 µg/filter			BH Cap.Soln. Cont. 9 5% HNO_3/ 10% H_2O_2 µg/sample			FH/BH Rinse Cont. 8A 0.1 N HNO_3 µg/sample		
	<	Result	MDL	<	Result	MDL	<	Result	MDL
Aluminum		58.8	7.50		16.3	3.78	<	MDL	7.50
Antimony		2.86	1.25	<	MDL	0.630	<	MDL	1.25
Arsenic	<	MDL	1.75	<	MDL	0.882	<	MDL	1.75
Barium		1.40	0.125		0.718	0.063		0.193	0.125
Beryllium	<	MDL	0.050	<	MDL	0.025	<	MDL	0.050
Cadmium	<	MDL	0.100	<	MDL	0.050	<	MDL	0.100
Chromium		1.03	0.200		0.306	0.101	<	MDL	0.200
Cobalt	<	MDL	0.125		0.153	0.063	<	MDL	0.125
Copper	<	MDL	1.25	<	MDL	0.630	<	MDL	1.25
Lead	<	MDL	1.25	<	MDL	0.630	<	MDL	1.25
Manganese		0.741	0.075		0.742	0.038	<	MDL	0.375
Nickel		3.96	0.750	<	MDL	0.378	<	MDL	0.750
Phosphorus		17.0	5.00	<	MDL	2.52	<	MDL	5.00
Selenium	<	MDL	3.75	<	MDL	1.89	<	MDL	3.75
Silver	<	MDL	0.500	<	MDL	0.252	<	MDL	0.500
Thallium	<	MDL	2.50	<	MDL	1.26	<	MDL	2.50
Vanadium	<	MDL	0.250	<	MDL	0.126	<	MDL	0.250
Zinc		1.52	0.750		0.415	0.378	<	MDL	0.750

Lab ID:	23-S729	23-S731	23-S730
Blank Vol, ml:	N/A	196	250

Eagle Foundry Company **Run: 1**
Main Foundry BH Outlet - White Iron **Test Date: 3/27/2023**
Method 29 Non-Hg Metals Blank Correction Calculations **Page: 1 of 3**

Analyte		I Sample FH Rinse+Filter µg	II Blank Correction FH Rinse µg	III Blank Correction Filter µg		IV Sample BH Cap.Soln. + BH Rinse µg	V Blank BH Cap.Soln. µg/ml	VI Blank Correction BH Cap.Soln. µg	VII Blank Correction BH Rinse µg	VIII Total BH Blank Correction µg	
Aluminum		78.700	0.0000	58.800		22.900	0.0832	16.633	0.000	16.633	Al
Antimony		1.710	0.0000	2.860		0.903	0.0000	0.000	0.000	0.000	Sb
Arsenic	<	1.750	0.0000	0.000	<	0.868	0.0000	0.000	0.000	0.000	As
Barium		2.230	0.0772	1.400		3.680	0.0037	0.733	0.077	0.810	Ba
Beryllium	<	0.050	0.0000	0.000	<	0.025	0.0000	0.000	0.000	0.000	Be
Cadmium	<	0.100	0.0000	0.000		0.175	0.0000	0.000	0.000	0.000	Cd
Chromium		3.350	0.0000	1.030		0.615	0.0016	0.312	0.000	0.312	Cr
Cobalt	<	0.125	0.0000	0.000		0.134	0.0008	0.156	0.000	0.156	Co
Copper	<	1.250	0.0000	0.000		3.030	0.0000	0.000	0.000	0.000	Cu
Lead		2.200	0.0000	0.000		2.530	0.0000	0.000	0.000	0.000	Pb
Manganese		21.900	0.0000	0.741		0.610	0.0038	0.757	0.000	0.757	Mn
Nickel		4.580	0.0000	3.960		0.460	0.0000	0.000	0.000	0.000	Ni
Phosphorus		29.800	0.0000	17.000	<	2.480	0.0000	0.000	0.000	0.000	P
Selenium	<	3.750	0.0000	0.000	<	1.860	0.0000	0.000	0.000	0.000	Se
Silver	<	0.500	0.0000	0.000	<	0.248	0.0000	0.000	0.000	0.000	Ag
Thallium	<	2.500	0.0000	0.000	<	1.240	0.0000	0.000	0.000	0.000	Tl
Vanadium	<	0.250	0.0000	0.000	<	0.124	0.0000	0.000	0.000	0.000	V
Zinc		18.300	0.0000	1.520		3.550	0.0021	0.423	0.000	0.423	Zn

Lab ID:	**23-S639**	**23-S730**	**23-S729**	**23-S640**	**23-S731**	**N/A**	**N/A**
Notes:	0.1N HNO_3	0.1N HNO_3		5% HNO_3/ 10% H_2O_2	5% HNO_3/	5%HNO_3/	0.1NHNO_3
	FH Filter & Probe Rinse			BH Imps 1-3	10% H_2O_2	10%H_2O_2	
	100ml 0.1N HNO3 Rinse			100ml .1N HNO3 Rinse			
				200ml 5% HNO3/10% H2O2 Reagent			

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Analyte	X Allowable FH Blank Correction µg	XI Total FH Blank Correction (M_{fhb}) µg		XII 5% of FH Sample µg	XIII Lessor of XI or XII µg	XIV Greater of A or XIII µg		XV FH Net Sample µg	
Aluminum	11.630	58.800		3.935	3.935	11.63		67.070	Al
Antimony	2.860	2.860		0.086	0.086	11.63		-1.150	Sb
Arsenic	0.000	0.000	<	0.088	0.000	11.63	<	1.750	As
Barium	1.477	1.477		0.112	0.112	11.63		0.753	Ba
Beryllium	0.000	0.000	<	0.003	0.000	11.63	<	0.050	Be
Cadmium	0.000	0.000	<	0.005	0.000	11.63	<	0.100	Cd
Chromium	1.030	1.030		0.168	0.168	11.63		2.320	Cr
Cobalt	0.000	0.000	<	0.006	0.000	11.63	<	0.125	Co
Copper	0.000	0.000	<	0.063	0.000	11.63	<	1.250	Cu
Lead	0.000	0.000		0.110	0.000	11.63		2.200	Pb
Manganese	0.741	0.741		1.095	0.741	11.63		21.159	Mn
Nickel	3.960	3.960		0.229	0.229	11.63		0.620	Ni
Phosphorus	11.630	17.000		1.490	1.490	11.63		18.170	P
Selenium	0.000	0.000	<	0.188	0.000	11.63	<	3.750	Se
Silver	0.000	0.000	<	0.025	0.000	11.63	<	0.500	Ag
Thallium	0.000	0.000	<	0.125	0.000	11.63	<	2.500	Tl
Vanadium	0.000	0.000	<	0.013	0.000	11.63	<	0.250	V
Zinc	1.520	1.520		0.915	0.915	11.63		16.780	Zn

Note: Allowable FH Blank (A) = (area of filter)*(1.4 µg/in^2) = 11.63 µg
where area of filter = 8.306 in^2

If A > blank > 0, use blank-derived value, M_{fhb}.
If blank > A, use greater of A or [lessor of 5% of sample µg or FH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company **Run: 1**
Main Foundry BH Outlet - White Iron **Test Date: 3/27/2023**
Method 29 Non-Hg Metals Blank Correction Calculations **Page: 3 of 3**

Analyte	XVI Allowable BH Blank Correction µg	XVII Total BH (M_{bhb}) Blank Correction µg		XVIII 5% of BH Sample µg	XIX Lessor of XVII or XVIII µg	XX Greater of 1 µg or XIX µg		XXI BH Net Sample µg		XXII FH Net Sample µg		XXIII FH+BH Total Net Sample µg	
Aluminum	1.145	16.633		1.145	1.145	1.145		**21.755**		**67.070**		**88.825**	Al
Antimony	0.000	0.000		0.045	0.000	1.000		**0.903**		**0.000**		**0.903**	Sb
Arsenic	0.000	0.000	<	0.043	0.000	1.000	<	**0.868**	<	**1.750**	<	**2.618**	As
Barium	0.810	0.810		0.184	0.184	1.000		**2.870**		**0.753**		**3.623**	Ba
Beryllium	0.000	0.000	<	0.001	0.000	1.000	<	**0.025**	<	**0.050**	<	**0.075**	Be
Cadmium	0.000	0.000		0.009	0.000	1.000		**0.175**	<	**0.100**	<	**0.275**	Cd
Chromium	0.312	0.312		0.031	0.031	1.000		**0.303**		**2.320**		**2.623**	Cr
Cobalt	0.156	0.156		0.007	0.007	1.000		**0.000**	<	**0.125**	<	**0.125**	Co
Copper	0.000	0.000		0.152	0.000	1.000		**3.030**	<	**1.250**	<	**4.280**	Cu
Lead	0.000	0.000		0.127	0.000	1.000		**2.530**		**2.200**		**4.730**	Pb
Manganese	0.757	0.757		0.031	0.031	1.000		**0.000**		**21.159**		**21.159**	Mn
Nickel	0.000	0.000		0.023	0.000	1.000		**0.460**		**0.620**		**1.080**	Ni
Phosphorus	0.000	0.000	<	0.124	0.000	1.000	<	**2.480**		**18.170**	<	**20.650**	P
Selenium	0.000	0.000	<	0.093	0.000	1.000	<	**1.860**	<	**3.750**	<	**5.610**	Se
Silver	0.000	0.000	<	0.012	0.000	1.000	<	**0.248**	<	**0.500**	<	**0.748**	Ag
Thallium	0.000	0.000	<	0.062	0.000	1.000	<	**1.240**	<	**2.500**	<	**3.740**	Tl
Vanadium	0.000	0.000	<	0.006	0.000	1.000	<	**0.124**	<	**0.250**	<	**0.374**	V
Zinc	0.423	0.423		0.178	0.178	1.000		**3.127**		**16.780**		**19.907**	Zn

Note: Allowable BH Blank rules:

If 1.00 µg > blank > 0 , use blank-derived value.
If blank > 1.00 µg, use greater of 1.00 µg or [lessor of 5% of sample µg or BH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company **Run: 2**
Main Foundry BH Outlet - White Iron **Test Date: 3/28/2023**
Method 29 Non-Hg Metals Blank Correction Calculations **Page: 1 of 3**

Analyte		I Sample FH Rinse+Filter µg	II Blank Correction FH Rinse µg	III Blank Correction Filter µg		IV Sample BH Cap.Soln. + BH Rinse µg	V Blank BH Cap.Soln. µg/ml	VI Blank Correction BH Cap.Soln. µg	VII Blank Correction BH Rinse µg	VIII Total BH Blank Correction µg	
Aluminum		105.000	0.000	58.800		20.600	0.0832	16.633	0.000	16.633	Al
Antimony		1.770	0.000	2.860		0.743	0.0000	0.000	0.000	0.000	Sb
Arsenic	<	1.750	0.000	0.000	<	0.805	0.0000	0.000	0.000	0.000	As
Barium		6.180	0.077	1.400		1.970	0.0037	0.733	0.077	0.810	Ba
Beryllium	<	0.050	0.000	0.000	<	0.023	0.0000	0.000	0.000	0.000	Be
Cadmium	<	0.100	0.000	0.000	<	0.046	0.0000	0.000	0.000	0.000	Cd
Chromium		3.540	0.000	1.030		0.526	0.0016	0.312	0.000	0.312	Cr
Cobalt	<	0.125	0.000	0.000		0.088	0.0008	0.156	0.000	0.156	Co
Copper		3.840	0.000	0.000		2.320	0.0000	0.000	0.000	0.000	Cu
Lead	<	1.250	0.000	0.000	<	0.575	0.0000	0.000	0.000	0.000	Pb
Manganese		5.920	0.000	0.741		8.570	0.0038	0.757	0.000	0.757	Mn
Nickel		8.740	0.000	3.960		0.383	0.0000	0.000	0.000	0.000	Ni
Phosphorus		9.340	0.000	17.000	<	2.300	0.0000	0.000	0.000	0.000	P
Selenium	<	3.750	0.000	0.000	<	1.720	0.0000	0.000	0.000	0.000	Se
Silver	<	0.500	0.000	0.000	<	0.230	0.0000	0.000	0.000	0.000	Ag
Thallium	<	2.500	0.000	0.000	<	1.150	0.0000	0.000	0.000	0.000	Tl
Vanadium	<	0.250	0.000	0.000	<	0.115	0.0000	0.000	0.000	0.000	V
Zinc		11.000	0.000	1.520		1.330	0.0021	0.423	0.000	0.423	Zn

Lab ID:	**23-S644**	**23-S730**	**23-S729**	**23-S645**	**23-S731**	**N/A**	**N/A**
Content:	0.1N HNO_3	0.1N HNO_3		5% HNO_3/10% H_2O_2	5% HNO_3/	5%HNO_3/	0.1NHNO_3
	FH Filter & Probe Rinse			BH Imps 1-3	10% H_2O_2	10%H_2O_2	
	100ml 0.1N HNO_3 Rinse			100ml .1N HNO_3 Rinse			
				200ml 5% HNO_3/10% H_2O_2 Reagent			

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company **Run: 2**
Main Foundry BH Outlet - White Iron **Test Date: 3/28/2023**
Method 29 Non-Hg Metals Blank Correction Calculations **Page: 2 of 3**

Analyte	X Allowable FH Blank Correction µg	XI Total FH Blank Correction µg		XII 5% of FH Sample µg	XIII Lessor of XI or XII µg	XIV Greater of A or XIII µg		XV FH Net Sample µg	
Aluminum	11.630	58.800		5.250	5.250	11.63		93.370	Al
Antimony	2.860	2.860		0.089	0.089	11.63		-1.090	Sb
Arsenic	0.000	0.000	<	0.088	0.000	11.63	<	1.750	As
Barium	1.477	1.477		0.309	0.309	11.63		4.703	Ba
Beryllium	0.000	0.000	<	0.003	0.000	11.63	<	0.050	Be
Cadmium	0.000	0.000	<	0.005	0.000	11.63	<	0.100	Cd
Chromium	1.030	1.030		0.177	0.177	11.63		2.510	Cr
Cobalt	0.000	0.000	<	0.006	0.000	11.63	<	0.125	Co
Copper	0.000	0.000		0.192	0.000	11.63		3.840	Cu
Lead	0.000	0.000	<	0.063	0.000	11.63	<	1.250	Pb
Manganese	0.741	0.741		0.296	0.296	11.63		5.179	Mn
Nickel	3.960	3.960		0.437	0.437	11.63		4.780	Ni
Phosphorus	11.630	17.000		0.467	0.467	11.63		-2.290	P
Selenium	0.000	0.000	<	0.188	0.000	11.63	<	3.750	Se
Silver	0.000	0.000	<	0.025	0.000	11.63	<	0.500	Ag
Thallium	0.000	0.000	<	0.125	0.000	11.63	<	2.500	Tl
Vanadium	0.000	0.000	<	0.013	0.000	11.63	<	0.250	V
Zinc	1.520	1.520		0.550	0.550	11.63		9.480	Zn

Note: Allowable FH Blank (A) = (area of filter)*(1.4 µg/in^2) = 11.63 µg
where area of filter = 8.306 in^2

If A > blank > 0, use blank-derived value.
If blank > A, use greater of A or [lessor of 5% of sample µg or FH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company **Run: 2**
Main Foundry BH Outlet - White Iron **Test Date: 3/28/2023**
Method 29 Non-Hg Metals Blank Correction Calculations **Page: 3 of 3**

Analyte	XVI Allowable BH Blank Correction µg	XVII Total BH Blank Correction µg		XVIII 5% of BH Sample µg	XIX Lessor of XVII or XVIII µg	XX Greater of 1 µg or XIX µg		XXI BH Net Sample µg		XXII FH Net Sample µg		XXIII FH+BH Total Net Sample µg	
Aluminum	1.030	16.633		1.030	1.030	1.030		**19.570**		**93.370**		**112.940**	Al
Antimony	0.000	0.000		0.037	0.000	1.000		**0.743**		**0.000**		**0.743**	Sb
Arsenic	0.000	0.000	<	0.040	0.000	1.000	<	**0.805**	<	**1.750**	<	**2.555**	As
Barium	0.810	0.810		0.099	0.099	1.000		**1.160**		**4.703**		**5.863**	Ba
Beryllium	0.000	0.000	<	0.001	0.000	1.000	<	**0.023**	<	**0.050**	<	**0.073**	Be
Cadmium	0.000	0.000	<	0.002	0.000	1.000	<	**0.046**	<	**0.100**	<	**0.146**	Cd
Chromium	0.312	0.312		0.026	0.026	1.000		**0.214**		**2.510**		**2.724**	Cr
Cobalt	0.156	0.156		0.004	0.004	1.000		**0.000**	<	**0.125**	<	**0.125**	Co
Copper	0.000	0.000		0.116	0.000	1.000		**2.320**		**3.840**		**6.160**	Cu
Lead	0.000	0.000	<	0.029	0.000	1.000	<	**0.575**	<	**1.250**	<	**1.825**	Pb
Manganese	0.757	0.757		0.429	0.429	1.000		**7.813**		**5.179**		**12.992**	Mn
Nickel	0.000	0.000		0.019	0.000	1.000		**0.383**		**4.780**		**5.163**	Ni
Phosphorus	0.000	0.000	<	0.115	0.000	1.000	<	**2.300**		**0.000**	<	**2.300**	P
Selenium	0.000	0.000	<	0.086	0.000	1.000	<	**1.720**	<	**3.750**	<	**5.470**	Se
Silver	0.000	0.000	<	0.012	0.000	1.000	<	**0.230**	<	**0.500**	<	**0.730**	Ag
Thallium	0.000	0.000	<	0.058	0.000	1.000	<	**1.150**	<	**2.500**	<	**3.650**	Tl
Vanadium	0.000	0.000	<	0.006	0.000	1.000	<	**0.115**	<	**0.250**	<	**0.365**	V
Zinc	0.423	0.423		0.067	0.067	1.000		**0.907**		**9.480**		**10.387**	Zn

Note: Allowable BH Blank rules:

If 1.00 µg > blank > 0 , use blank-derived value.
If blank > 1.00 µg, use greater of 1.00 µg or [lessor of 5% of sample µg or BH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company **Run: 3**
Main Foundry BH Outlet - White Iron **Test Date: 3/29/2023**
Method 29 Non-Hg Metals Blank Correction Calculations **Page: 1 of 3**

Analyte		I Sample FH Rinse+Filter µg	II Blank Correction FH Rinse µg	III Blank Correction Filter µg		IV Sample BH Cap.Soln. + BH Rinse µg	V Blank BH Cap.Soln. µg/ml	VI Blank Correction BH Cap.Soln. µg	VII Blank Correction BH Rinse µg	VIII Total BH Blank Correction µg	
Aluminum		81.500	0.000	58.800		27.800	0.083	16.633	0.000	16.633	Al
Antimony		2.040	0.000	2.860		0.634	0.000	0.000	0.000	0.000	Sb
Arsenic	<	1.750	0.000	0.000	<	0.798	0.000	0.000	0.000	0.000	As
Barium		2.810	0.077	1.400		1.450	0.004	0.733	0.077	0.810	Ba
Beryllium	<	0.050	0.000	0.000	<	0.023	0.000	0.000	0.000	0.000	Be
Cadmium	<	0.100	0.000	0.000	<	0.046	0.000	0.000	0.000	0.000	Cd
Chromium		4.660	0.000	1.030		0.455	0.002	0.312	0.000	0.312	Cr
Cobalt	<	0.125	0.000	0.000		0.112	0.001	0.156	0.000	0.156	Co
Copper		3.280	0.000	0.000		0.923	0.000	0.000	0.000	0.000	Cu
Lead	<	1.250	0.000	0.000	<	0.570	0.000	0.000	0.000	0.000	Pb
Manganese		10.200	0.000	0.741		11.100	0.004	0.757	0.000	0.757	Mn
Nickel		12.400	0.000	3.960	<	0.342	0.000	0.000	0.000	0.000	Ni
Phosphorus		6.200	0.000	17.000	<	2.280	0.000	0.000	0.000	0.000	P
Selenium	<	3.750	0.000	0.000	<	1.710	0.000	0.000	0.000	0.000	Se
Silver		0.974	0.000	0.000	<	0.228	0.000	0.000	0.000	0.000	Ag
Thallium	<	2.500	0.000	0.000	<	1.140	0.000	0.000	0.000	0.000	Tl
Vanadium	<	0.250	0.000	0.000	<	0.114	0.000	0.000	0.000	0.000	V
Zinc		5.840	0.000	1.520		0.737	0.002	0.423	0.000	0.423	Zn

Lab ID:	**23-S649**	**23-S730**	**23-S729**	**23-S650**	**23-S731**	**N/A**	**N/A**
Content:	0.1N HNO_3	0.1N HNO_3		5% HNO_3/10% H_2O_2	5% HNO_3/	5%HNO_3/	0.1NHNO_3
	FH Filter & Probe Rinse			BH Imps 1-3	10% H_2O_2	10%H_2O_2	
	100ml 0.1N HNO_3 Rinse			100ml .1N HNO_3 Rinse			
				200ml 5% HNO_3/10% H_2O_2 Reagent			

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company **Run: 3**
Main Foundry BH Outlet - White Iron **Test Date: 3/29/2023**
Method 29 Non-Hg Metals Blank Correction Calculations **Page: 2 of 3**

Analyte	X Allowable FH Blank Correction µg	XI Total FH Blank Correction µg		XII 5% of FH Sample µg	XIII Lessor of XI or XII µg	XIV Greater of A or XIII µg		XV FH Net Sample µg	
Aluminum	11.630	58.800		4.075	4.075	11.63		69.870	Al
Antimony	2.860	2.860		0.102	0.102	11.63		-0.820	Sb
Arsenic	0.000	0.000	<	0.088	0.000	11.63	<	1.750	As
Barium	1.477	1.477		0.141	0.141	11.63		1.333	Ba
Beryllium	0.000	0.000	<	0.003	0.000	11.63	<	0.050	Be
Cadmium	0.000	0.000	<	0.005	0.000	11.63	<	0.100	Cd
Chromium	1.030	1.030		0.233	0.233	11.63		3.630	Cr
Cobalt	0.000	0.000	<	0.006	0.000	11.63	<	0.125	Co
Copper	0.000	0.000		0.164	0.000	11.63		3.280	Cu
Lead	0.000	0.000	<	0.063	0.000	11.63	<	1.250	Pb
Manganese	0.741	0.741		0.510	0.510	11.63		9.459	Mn
Nickel	3.960	3.960		0.620	0.620	11.63		8.440	Ni
Phosphorus	11.630	17.000		0.310	0.310	11.63		-5.430	P
Selenium	0.000	0.000	<	0.188	0.000	11.63	<	3.750	Se
Silver	0.000	0.000		0.049	0.000	11.63		0.974	Ag
Thallium	0.000	0.000	<	0.125	0.000	11.63	<	2.500	Tl
Vanadium	0.000	0.000	<	0.013	0.000	11.63	<	0.250	V
Zinc	1.520	1.520		0.292	0.292	11.63		4.320	Zn

Note: Allowable FH Blank (A) = (area of filter)*(1.4 µg/in^2) = 11.63 µg
where area of filter = 8.306 in^2

If A > blank > 0, use blank-derived value.
If blank > A, use greater of A or [lessor of 5% of sample µg or FH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company **Run: 3**
Main Foundry BH Outlet - White Iron **Test Date: 3/29/2023**
Method 29 Non-Hg Metals Blank Correction Calculations **Page: 3 of 3**

Analyte	XVI Allowable BH Blank Correction µg	XVII Total BH Blank Correction µg		XVIII 5% of BH Sample µg	XIX Lessor of XVII or XVIII µg	XX Greater of 1 µg or XIX µg		XXI BH Net Sample µg		XXII FH Net Sample µg		XXIII FH+BH Total Net Sample µg	
Aluminum	1.390	16.633		1.390	1.390	1.390		**26.410**		**69.870**		**96.280**	Al
Antimony	0.000	0.000		0.032	0.000	1.000		**0.634**		**0.000**		**0.634**	Sb
Arsenic	0.000	0.000	<	0.040	0.000	1.000	<	**0.798**	<	**1.750**	<	**2.548**	As
Barium	0.810	0.810		0.073	0.073	1.000		**0.640**		**1.333**		**1.973**	Ba
Beryllium	0.000	0.000	<	0.001	0.000	1.000	<	**0.023**	<	**0.050**	<	**0.073**	Be
Cadmium	0.000	0.000	<	0.002	0.000	1.000	<	**0.046**	<	**0.100**	<	**0.146**	Cd
Chromium	0.312	0.312		0.023	0.023	1.000		**0.143**		**3.630**		**3.773**	Cr
Cobalt	0.156	0.156		0.006	0.006	1.000		**0.000**	<	**0.125**	<	**0.125**	Co
Copper	0.000	0.000		0.046	0.000	1.000		**0.923**		**3.280**		**4.203**	Cu
Lead	0.000	0.000	<	0.029	0.000	1.000	<	**0.570**	<	**1.250**	<	**1.820**	Pb
Manganese	0.757	0.757		0.555	0.555	1.000		**10.343**		**9.459**		**19.802**	Mn
Nickel	0.000	0.000	<	0.017	0.000	1.000	<	**0.342**		**8.440**	<	**8.782**	Ni
Phosphorus	0.000	0.000	<	0.114	0.000	1.000	<	**2.280**		**0.000**	<	**2.280**	P
Selenium	0.000	0.000	<	0.086	0.000	1.000	<	**1.710**	<	**3.750**	<	**5.460**	Se
Silver	0.000	0.000	<	0.011	0.000	1.000	<	**0.228**		**0.974**	<	**1.202**	Ag
Thallium	0.000	0.000	<	0.057	0.000	1.000	<	**1.140**	<	**2.500**	<	**3.640**	Tl
Vanadium	0.000	0.000	<	0.006	0.000	1.000	<	**0.114**	<	**0.250**	<	**0.364**	V
Zinc	0.423	0.423		0.037	0.037	1.000		**0.314**		**4.320**		**4.634**	Zn

Note: Allowable BH Blank rules:

If 1.00 µg > blank > 0 , use blank-derived value.
If blank > 1.00 µg, use greater of 1.00 µg or [lessor of 5% of sample µg or BH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company
Main Foundry BH Outlet - White Iron
Mercury Blank Correction Calculations

Blank Lab Values

	Filter Cont. 12 µg/filter			BH Imps. 2&3 Cap.Soln. Cont. 9 5% HNO_3/ 10% H_2O_2 µg/sample			FH/BH Rinse Cont. 8A 0.1 N HNO_3 µg/sample			BH Imps. 5&6 Rinse Cont. 8B H_2O µg/sample			BH Imps. 5&6 Cap.Soln. + Rinse Cont. 10 $KMnO_4$ µg/sample			BH Imps. 5&6 Rinse Cont. 11 HCl µg/sample	
Analyte	<	**Result**	**MDL**	<	**Result**	**MDL**	<	**Result**	**MDL**	<	**Result**	**MDL**	<	**Result**	**MDL**	<	**Result**	**MDL**
Mercury		0.0406	0.0219		0.118	0.0172	<	MDL	0.0219	<	MDL	0.0295		0.0628	0.0163	<	MDL	0.0108
Lab ID:		23-S729			23-S731			23-S730			23-S732			23-S733			23-S734	
Blank vol, ml:		NA			196			250			337			186			124	

Blank Correction Values

Analyte: Mercury	**Blank FH HNO_3 Rinse µg**	**Blank Filter µg**	**Blank BH Cap.Soln. µg**	**Blank BH HNO_3 Rinse µg**	**Blank BH H_2O Rinse µg**	**Blank BH KMnO4 Cap.Soln. + Rinse µg**	**Blank BH HCl Rinse µg**	**Total Blank Correction µg**	**Is Total Blank Correction ≥ 0 and ≤ 0.6?**
Run 1	0.00	0.0406	0.12	0.00	0.00	0.10	0.00	0.2623	Yes
Reagent vol, ml	100.0		200.0	200.0	100.0	300.0	225.0		
Run 2	0.00	0.0406	0.12	0.00	0.00	0.10	0.00	0.2623	Yes
Reagent vol, ml	100.0		200.0	200.0	100.0	300.0	225.0		
Run 3	0.00	0.0406	0.12	0.00	0.00	0.10	0.00	0.2623	Yes
Reagent vol, ml	100.0		200.0	200.0	100.0	300.0	225.0		
Notes:	0.1N HNO_3 FH Probe Rinse	FH Filter	5% HNO_3/ 10% H_2O_2 BH Imps 2&3	0.1N HNO_3 BH Imps 1-4	H_2O BH Imps 5&6	4% $KMnO_4$/ 10% H_2SO_4 BH Imps 5&6	25 ml 8N HCl/ 200 ml H2O BH Imps 5&6		

Blank Corrected Results

Analyte: Mercury		**Sample FH Rinse + Filter Cont. 1&3 µg**	**Sample BH Cap.Soln. + HNO_3 Rinse Cont. 4 µg**		**Sample BH Imp. 4 + Rinse Cont. 5A µg**	**Sample BH Imps. 5&6 + Rinses Cont. 5B µg**		**Sample BH HCl Rinse + Water Cont. 5C µg**		**Total Sample µg**	**Total Blank Correction µg**		**Total Net Sample µg**
Run 1	<	0.0219	0.169		0.0242	0.121	<	0.0198	<	0.3559	0.2623	<	0.0936
Lab ID		23-S639	23-S640		23-S641*	23-S642		23-S643					
Run 2	<	0.0219	0.192	<	0.00586	0.146	<	0.0200	<	0.3858	0.2623	<	0.1235
Lab ID		23-S644	23-S645		23-S646	23-S647		23-S648					
Run 3	<	0.0219	0.186	<	0.00542	0.117	<	0.0196	<	0.3499	0.2623	<	0.0876
Lab ID		23-S649	23-S650		23-S651	23-S652		23-S653					

*This result is taken from a run that is invalid because there was not enough sample to redigest. This reported result is likely biased high based on the results for the other samples from the failed run that were redigested and reanalyzed.

Blank Rules: '<' indicates value is below the method detection limit (MDL)
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations but results are preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.
If the total blank correction value is less than or equal to 0.6 µg, subtract the total blank correction value from the total sample value to determine total net Hg. Otherwise, the value used for the blank correction shall be the greater of (1) 0.6 µg or (2) the lesser of [total FH blank + total BH blank] or 5% of the total sample valu

EPA Method 29
Gas Stream Characteristics
Test Summary

Client: **Eagle Foundry Company**
Source: **Main Foundry BH Outlet - White Iron**
Location: **Eagle Creek, OR**

Parameter	Units	Run 1	Run 2	Run 3	
Date		3/27/2023	3/28/2023	3/29/2023	
Run Start Time		6:40	5:10	5:15	
Run End Time		10:40	9:10	9:15	
Duration	minutes	240	240	240	**Average**
Barometric Pressure	inHg	29.98	29.41	29.41	**29.60**
Nozzle Diameter	inches	0.263	0.263	0.263	**0.263**
Isokinetic Average	%	99.7	101.2	100.7	**100.5**
Sample Volume	dscf	254.654	243.575	253.844	**250.691**
Sample Volume	dscm	7.211	6.897	7.188	**7.099**
Stack Diameter	inches	62.00	62.00	62.00	**62.00**
Stack Area	ft^2	20.966	20.966	20.966	**20.966**
CO_2	%vd	0.25	0.15	0.10	**0.17**
O_2	%vd	20.85	20.91	20.59	**20.78**
Static Pressure	inH_2O	0.10	0.10	0.10	**0.10**
H_2O	%v	0.50	0.99	0.69	**0.73**
Wet Molecular Weight	lb/lb-mole	28.82	28.75	28.77	**28.78**
Velocity	fps	45.22	44.32	45.58	**45.04**
Flow Rate	adcfm	56,601	55,201	56,942	**56,248**
	acfm	56,885	55,753	57,338	**56,659**
	dscfm	59,160	55,752	58,409	**57,774**
Stack Temperature	°F	46.3	54.0	46.1	**48.8**
Production Data	lb melt/pour	11,955.985	12,165.997	11,960.006	
	ton melt/pour	5.978	6.083	5.980	
	lb Cr/melt	3,106.941	3,124.611	3,071.140	
	ton Cr/melt	1.553	1.562	1.536	
	lb Mn/melt	120.685	126.908	122.799	
	ton Mn/melt	0.060	0.063	0.061	

Eagle Foundry Company **Test Dates:** 3/27/2023
Main Foundry BH Outlet - White Iron 3/28/2023
EPA Method 29 Results Summary 3/29/2023

Run 1													
Analyte	Total				FH Net			BH Net					
	µg	µg/dscm	lb/hr	lb/ton melt	µg	µg/dscm	lb/hr	µg	µg/dscm	lb/hr			
Aluminum	88.825	12.318	2.73E-03	1.83E-03	67.070	9.301	2.06E-03	21.755	3.017	6.69E-04	Al		
Antimony	0.903	0.125	2.77E-05	1.86E-05	0.000	0.000	0.00E+00	0.903	0.125	2.77E-05	Sb		
Arsenic	< 2.618	< 0.363	< 8.05E-05	< 5.38E-05	< 1.750	< 0.243	< 5.38E-05	< 0.868	< 0.120	< 2.67E-05	As		
Barium	3.623	0.502	1.11E-04	7.45E-05	0.753	0.104	2.31E-05	2.870	0.398	8.82E-05	Ba		
Beryllium	< 0.075	< 0.010	< 2.31E-06	< 1.54E-06	< 0.050	< 0.007	< 1.54E-06	< 0.025	< 0.003	< 7.68E-07	Be		
Cadmium	< 0.275	< 0.038	< 8.45E-06	< 5.65E-06	< 0.100	< 0.014	< 3.07E-06	0.175	0.024	5.38E-06	Cd		
Chromium	2.623	0.364	8.06E-05		2.320	0.322	7.13E-05	0.303	0.042	9.31E-06	Cr		
Cobalt	< 0.125	< 0.017	< 3.84E-06	< 2.57E-06	< 0.125	< 0.017	< 3.84E-06	0.000	0.000	0.00E+00	Co		
Copper	< 4.280	< 0.594	< 1.32E-04	< 8.80E-05	< 1.250	< 0.173	< 3.84E-05	3.030	0.420	9.31E-05	Cu		
Lead	4.730	0.656	1.45E-04	9.73E-05	2.200	0.305	6.76E-05	2.530	0.351	7.77E-05	Pb		
Manganese	21.159	2.934	6.50E-04		21.159	2.934	6.50E-04	0.000	0.000	0.00E+00	Mn		
Mercury	< 0.094	< 0.013	< 2.88E-06	< 1.92E-06							Hg		
Nickel	1.080	0.150	3.32E-05	2.22E-05	0.620	0.086	1.91E-05	0.460	0.064	1.41E-05	Ni		
Phosphorus	< 20.650	< 2.864	< 6.35E-04	< 4.25E-04	18.170	2.520	5.58E-04	< 2.480	< 0.344	< 7.62E-05	P		
Selenium	< 5.610	< 0.778	< 1.72E-04	< 1.15E-04	< 3.750	< 0.520	< 1.15E-04	< 1.860	< 0.258	< 5.72E-05	Se		
Silver	< 0.748	< 0.104	< 2.30E-05	< 1.54E-05	< 0.500	< 0.069	< 1.54E-05	< 0.248	< 0.034	< 7.62E-06	Ag		
Thallium	< 3.740	< 0.519	< 1.15E-04	< 7.69E-05	< 2.500	< 0.347	< 7.68E-05	< 1.240	< 0.172	< 3.81E-05	Tl		
Vanadium	< 0.374	< 0.052	< 1.15E-05	< 7.69E-06	< 0.250	< 0.035	< 7.68E-06	< 0.124	< 0.017	< 3.81E-06	V		
Zinc	19.907	2.761	6.12E-04	4.09E-04	16.780	2.327	5.16E-04	3.127	0.434	9.61E-05	Zn		

Chromium	lb Cr / ton Cr in melt =	2.08E-04	**Run 1 Emission Factors**
Manganese	lb Mn / ton Mn in melt =	4.31E-02	

Run 2													
Analyte	Total				FH Net			BH Net					
	µg	µg/dscm	lb/hr	lb/ton melt	µg	µg/dscm	lb/hr	µg	µg/dscm	lb/hr			
Aluminum	112.940	16.375	3.42E-03	2.25E-03	93.370	13.538	2.83E-03	19.570	2.837	5.93E-04	Al		
Antimony	0.743	0.108	2.25E-05	1.48E-05	0.000	0.000	0.00E+00	0.743	0.108	2.25E-05	Sb		
Arsenic	< 2.555	< 0.370	< 7.74E-05	< 5.09E-05	< 1.750	< 0.254	< 5.30E-05	< 0.805	< 0.117	< 2.44E-05	As		
Barium	5.863	0.850	1.78E-04	1.17E-04	4.703	0.682	1.42E-04	1.160	0.168	3.51E-05	Ba		
Beryllium	< 0.073	< 0.011	< 2.21E-06	< 1.45E-06	< 0.050	< 0.007	< 1.51E-06	< 0.023	< 0.003	< 6.96E-07	Be		
Cadmium	< 0.146	< 0.021	< 4.42E-06	< 2.91E-06	< 0.100	< 0.014	< 3.03E-06	< 0.046	< 0.007	< 1.39E-06	Cd		
Chromium	2.724	0.395	8.25E-05		2.510	0.364	7.60E-05	0.214	0.031	6.48E-06	Cr		
Cobalt	< 0.125	< 0.018	< 3.79E-06	< 2.49E-06	< 0.125	< 0.018	< 3.79E-06	0.000	0.000	0.00E+00	Co		
Copper	6.160	0.893	1.87E-04	1.23E-04	3.840	0.557	1.16E-04	2.320	0.336	7.02E-05	Cu		
Lead	< 1.825	< 0.265	< 5.53E-05	< 3.63E-05	< 1.250	< 0.181	< 3.78E-05	< 0.575	< 0.083	< 1.74E-05	Pb		
Manganese	12.992	1.884	3.93E-04		5.179	0.751	1.57E-04	7.813	1.133	2.37E-04	Mn		
Mercury	< 0.123	< 0.018	< 3.74E-06	< 2.46E-06							Hg		
Nickel	5.163	0.749	1.56E-04	1.03E-04	4.780	0.693	1.45E-04	0.383	0.056	1.16E-05	Ni		
Phosphorus	< 2.300	< 0.333	< 6.96E-05	< 4.58E-05	0.000	0.000	0.00E+00	< 2.300	< 0.333	< 6.96E-05	P		
Selenium	< 5.470	< 0.793	< 1.66E-04	< 1.09E-04	< 3.750	< 0.544	< 1.14E-04	< 1.720	< 0.249	< 5.21E-05	Se		
Silver	< 0.730	< 0.106	< 2.21E-05	< 1.45E-05	< 0.500	< 0.072	< 1.51E-05	< 0.230	< 0.033	< 6.96E-06	Ag		
Thallium	< 3.650	< 0.529	< 1.11E-04	< 7.27E-05	< 2.500	< 0.362	< 7.57E-05	< 1.150	< 0.167	< 3.48E-05	Tl		
Vanadium	< 0.365	< 0.053	< 1.11E-05	< 7.27E-06	< 0.250	< 0.036	< 7.57E-06	< 0.115	< 0.017	< 3.48E-06	V		
Zinc	10.387	1.506	3.14E-04	2.07E-04	9.480	1.375	2.87E-04	0.907	0.132	2.75E-05	Zn		

Chromium	lb Cr / ton Cr in melt =	2.11E-04	**Run 2 Emission Factors**
Manganese	lb Mn / ton Mn in melt =	2.48E-02	

Note: Results for Hg front half and back half fractions are not shown because these values are not blank-corrected. Per EPA Method 29, only the sum of Hg front and back half results is subject to blank correction.

'<' denotes results which were calculated using the method detection limit for front half or back half results that were non-detect.

Eagle Foundry Company **Test Dates:** 3/27/2023
Main Foundry BH Outlet - White Iron 3/28/2023
EPA Method 29 Results Summary 3/29/2023

Run 3													
Analyte	**Total**				**FH Net**			**BH Net**				
	µg	**µg/dscm**	**lb/hr**	**lb/ton melt**	**µg**	**µg/dscm**	**lb/hr**	**µg**	**µg/dscm**	**lb/hr**	
Aluminum	96.280	13.395	2.93E-03	1.96E-03	69.870	9.720	2.13E-03	26.410	3.674	8.04E-04	Al
Antimony	0.634	0.088	1.93E-05	1.29E-05	0.000	0.000	0.00E+00	0.634	0.088	1.93E-05	Sb
Arsenic	< 2.548	< 0.354	< 7.76E-05	< 5.19E-05	< 1.750	< 0.243	< 5.33E-05	< 0.798	< 0.111	< 2.43E-05	As
Barium	1.973	0.274	6.00E-05	4.02E-05	1.333	0.185	4.06E-05	0.640	0.089	1.95E-05	Ba
Beryllium	< 0.073	< 0.010	< 2.22E-06	< 1.49E-06	< 0.050	< 0.007	< 1.52E-06	< 0.023	< 0.003	< 7.00E-07	Be
Cadmium	< 0.146	< 0.020	< 4.44E-06	< 2.97E-06	< 0.100	< 0.014	< 3.04E-06	< 0.046	< 0.006	< 1.40E-06	Cd
Chromium	3.773	0.525	1.15E-04	[redacted]	3.630	0.505	1.10E-04	0.143	0.020	4.35E-06	Cr
Cobalt	< 0.125	< 0.017	< 3.81E-06	< 2.55E-06	< 0.125	< 0.017	< 3.81E-06	0.000	0.000	0.00E+00	Co
Copper	4.203	0.585	1.28E-04	8.56E-05	3.280	0.456	9.98E-05	0.923	0.128	2.81E-05	Cu
Lead	< 1.820	< 0.253	< 5.54E-05	< 3.71E-05	< 1.250	< 0.174	< 3.80E-05	< 0.570	< 0.079	< 1.73E-05	Pb
Manganese	19.802	2.755	6.03E-04	[redacted]	9.459	1.316	2.88E-04	10.343	1.439	3.15E-04	Mn
Mercury	< 0.088	< 0.012	< 2.67E-06	< 1.78E-06							Hg
Nickel	< 8.782	< 1.222	< 2.67E-04	< 1.79E-04	8.440	1.174	2.57E-04	< 0.342	< 0.048	< 1.04E-05	Ni
Phosphorus	< 2.280	< 0.317	< 6.94E-05	< 4.64E-05	0.000	0.000	0.00E+00	< 2.280	< 0.317	< 6.94E-05	P
Selenium	< 5.460	< 0.760	< 1.66E-04	< 1.11E-04	< 3.750	< 0.522	< 1.14E-04	< 1.710	< 0.238	< 5.20E-05	Se
Silver	< 1.202	< 0.167	< 3.66E-05	< 2.45E-05	0.974	0.136	2.96E-05	< 0.228	< 0.032	< 6.94E-06	Ag
Thallium	< 3.640	< 0.506	< 1.11E-04	< 7.41E-05	< 2.500	< 0.348	< 7.61E-05	< 1.140	< 0.159	< 3.47E-05	Tl
Vanadium	< 0.364	< 0.051	< 1.11E-05	< 7.41E-06	< 0.250	< 0.035	< 7.61E-06	< 0.114	< 0.016	< 3.47E-06	V
Zinc	4.634	0.645	1.41E-04	9.43E-05	4.320	0.601	1.31E-04	0.314	0.044	9.56E-06	Zn

Chromium	lb Cr / ton Cr in melt =	2.99E-04
Manganese	lb Mn / ton Mn in melt =	3.93E-02

Run 3 Emission Factors

Mean Runs 1-3													
Analyte	**Total**				**FH Net**			**BH Net**				
	µg	**µg/dscm**	**lb/hr**	**lb/ton melt**	**µg**	**µg/dscm**	**lb/hr**	**µg**	**µg/dscm**	**lb/hr**	
Aluminum	99.348	14.029	3.03E-03	2.01E-03	76.770	10.853	2.34E-03	22.578	3.176	6.88E-04	
Antimony	0.760	0.107	2.32E-05	1.54E-05	0.000	0.000	0.00E+00	0.760	0.107	2.32E-05	Sb
Arsenic	< 2.574	< 0.363	< 7.85E-05	< 5.22E-05	< 1.750	< 0.247	< 5.33E-05	< 0.824	< 0.116	< 2.51E-05	As
Barium	3.819	0.542	1.16E-04	7.71E-05	2.263	0.324	6.87E-05	1.556	0.218	4.76E-05	Ba
Beryllium	< 0.074	< 0.010	< 2.25E-06	< 1.49E-06	< 0.050	< 0.007	< 1.52E-06	< 0.024	< 0.003	< 7.21E-07	Be
Cadmium	< 0.189	< 0.027	< 5.77E-06	< 3.84E-06	< 0.100	< 0.014	< 3.05E-06	< 0.089	< 0.012	< 2.72E-06	Cd
Chromium	3.040	0.428	9.26E-05	[redacted]	2.820	0.397	8.59E-05	0.220	0.031	6.71E-06	Cr
Cobalt	< 0.125	< 0.018	< 3.81E-06	< 2.53E-06	< 0.125	< 0.018	< 3.81E-06	0.000	0.000	0.00E+00	Co
Copper	< 4.881	< 0.690	< 1.49E-04	< 9.87E-05	< 2.790	< 0.395	< 8.48E-05	2.091	0.295	6.38E-05	Cu
Lead	< 2.792	< 0.391	< 8.53E-05	< 5.69E-05	< 1.567	< 0.220	< 4.78E-05	< 1.225	< 0.171	< 3.75E-05	Pb
Manganese	17.984	2.524	5.49E-04	[redacted]	11.932	1.667	3.65E-04	6.052	0.857	1.84E-04	Mn
Mercury	< 0.102	< 0.014	< 3.09E-06	< 2.06E-06							Hg
Nickel	< 5.008	< 0.707	< 1.52E-04	< 1.01E-04	4.613	0.651	1.40E-04	< 0.395	< 0.056	< 1.20E-05	Ni
Phosphorus	< 8.410	< 1.171	< 2.58E-04	< 1.72E-04	6.057	0.840	1.86E-04	< 2.353	< 0.332	< 7.17E-05	P
Selenium	< 5.513	< 0.777	< 1.68E-04	< 1.12E-04	< 3.750	< 0.528	< 1.14E-04	< 1.763	< 0.248	< 5.38E-05	Se
Silver	< 0.893	< 0.126	< 2.72E-05	< 1.81E-05	< 0.658	< 0.092	< 2.01E-05	< 0.235	< 0.033	< 7.18E-06	Ag
Thallium	< 3.677	< 0.518	< 1.12E-04	< 7.46E-05	< 2.500	< 0.352	< 7.62E-05	< 1.177	< 0.166	< 3.59E-05	Tl
Vanadium	< 0.368	< 0.052	< 1.12E-05	< 7.46E-06	< 0.250	< 0.035	< 7.62E-06	< 0.118	< 0.017	< 3.59E-06	V
Zinc	11.643	1.637	3.56E-04	2.37E-04	10.193	1.434	3.11E-04	1.449	0.203	4.44E-05	Zn

Chromium	lb Cr / ton Cr in melt =	2.39E-04
Manganese	lb Mn / ton Mn in melt =	3.57E-02

Mean Runs 1-3

Note: Results for Hg front half and back half fractions are not shown because these values are not blank-corrected. Per EPA Method 29, only the sum of Hg front and back half results is subject to blank correction.

'<' denotes results which were calculated using the method detection limit for front half or back half results that were non-detect.

BISON ENGINEERING, INC.

COMPANY	**Eagle Foundry Company**
FACILITY	**Eagle Foundry**
LOCATION	**Eagle Creek, OR**
SOURCE	**Main Foundry BH Outlet - White Iron**
DATE	**3/27/2023 - 3/29/2023**
METHOD	**0061**
POLLUTANT	**Cr VI**

EPA Method 1
Stack Parameters and Traverse Points

Client: **Eagle Foundry Company**
Location: **Eagle Creek, OR**
Source: **Main Foundry BH Outlet - White Iron**
Facility: **Eagle Foundry**

Type of Testing: P (P for Particulate; V for Velocity/Nonparticulate)
Type of Duct: C (C for circular; R for rectangular)

Number of ports available:	2	
Number of ports to be used:	2	
Port diameter:		inches
Sampling location height (approx.):		feet
Stack height (approx.):		feet
Circular ID (Rectangular Depth):	61.00	inches
Port depth and/or wall thickness:	6.00	inches
Stack width (Rectangular only):		inches

Equivalent Diameter
If rectangular = $\frac{2*Depth*Width}{Depth + Width}$ = 61.00 inches (If circular = duct ID)

Stack/duct area = 20.295 sq.feet 2922.5 sq. inches

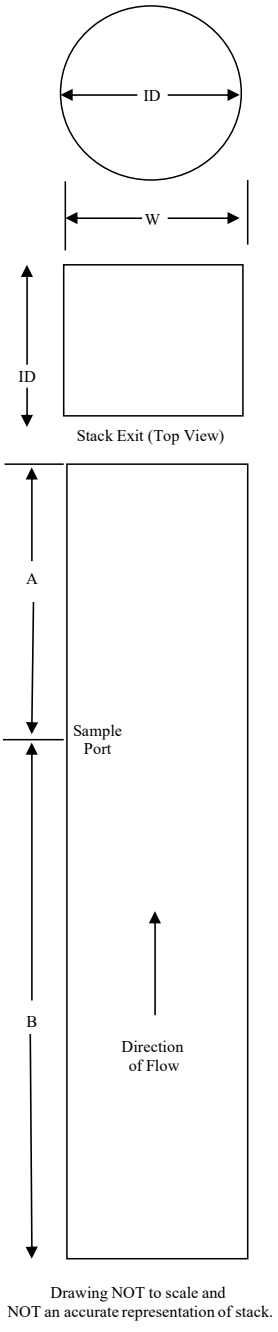
Sample Port Location:	Downstream flow disturbance from process B	Upstream flow disturbance toward exit A
Number of Inches:	264.00	44.00
Number of Diameters:	4.33	0.72

Minimum Number of Traverse Points: 24

Traverse points less than 1.0 inch from the stack wall are relocated to a distance of 1.0 inch.

Points	% of diameter	Distance from inside wall (in.)	Distance including port (in.)
1	2.1	1.28	7 1/4
2	6.7	4.09	10 1/8
3	11.8	7.20	13 1/4
4	17.7	10.80	16 3/4
5	25.0	15.25	21 1/4
6	35.6	21.72	27 3/4
7	64.4	39.28	45 1/4
8	75.0	45.75	51 3/4
9	82.3	50.20	56 1/4
10	88.2	53.80	59 3/4
11	93.3	56.91	62 7/8
12	97.9	59.72	65 3/4

Reference Diagram



Drawing NOT to scale and NOT an accurate representation of stack.

Isokinetic Field Data
Field Data Entry

Client:	**Eagle Foundry Company**	**Run:**	**1**
Location:	**Eagle Creek, OR**	**Start Time:**	**6:40**
Source:	**Main Foundry BH Outlet - White Iron**	**End Time:**	**10:40**
EPA Method:	**0061**	**Environmental Conditions/Test Notes:**	**Date:** **3/27/2023**
Box Operator:	**JMK**	overcast and 30-50 °F	
Technician(s):	**KAD**		

Stack Dimensional Data:

Circular		
Diameter	61.000	in
Rectangular		
Width		in
Length		in
Stack Area	20.295	sq.ft.

Equipment:

Meterbox ID	10	Probe ID	B5C	Liner type	Glass		
Y factor	0.9737	Nozzle ID	0.25	Nozzle size	0.257	inches	
ΔH@	1.720	Hot box ID	NA	Nozzle area	0.00036	sq.ft.	
Bp ID	TS1	Pitot Cp	0.84	Probe heat	250	°F	
Balance ID	HLNFB1	Pitot ID	B5C	Filter heat	N/A	°F	
Weights ID	HLNFW1	Probe Length, ft	5				

Source Information:

Barometric Pressure	29.98	"Hg	O_2	20.90	%
Static Pressure	0.1	"H_2O	CO_2	0.00	%
Ave. ΔP	0.61	"H_2O	Rec. Nz.	0.235	inches
Stack Temperature	60	°F			
Assumed moisture	2.00	%			
Assumed meter temp.	45	°F			
Total number of points	24				
Time per point	10	min.			
Total run time	240	min.			

Leak Checks:

	Pre-test	Post-test
Pitot	x	x
Leak rate, dcf	0.003	0.003
Leak check vacuum, "Hg	15	15

Nozzle check for roundness:

1	2	3	
0.257	0.257	0.256	inches
	Caliper ID	WS1	

Post Test Calculations:

Sample volume	251.590	dcf	Ave. ΔP	0.684	"H_2O
Wet mol. weight	28.79	M_s (actual)	Ave. √ΔP	0.827	"H_2O
Actual H_2O	0.49	%	Ave. ΔH	3.165	"H_2O
Std. meter vol.	244.179	dscf	Ave. T_s	51.5	°F
Isokinetic Average	100.1	%	Ave. T_m	74.9	°F

Moisture/Lab:

Filter, #	NA		
	Initial	Final	Gain
Impingers, g	1,730.8	1,656.3	-74.5
Silica gel, g	823.7	923.5	99.8
		Total water gain, g:	25.3

Traverse Point	Time (min.)	Meter Volume (dcf)	Velocity ΔP ("H_2O)	Stack Temp. (°F)	Meter Temp. (°F)	Calc. ΔH	Run ΔH	Vacuum ("Hg)	Filter Box (°F)	Condenser Temp (≤68°F)
		340.705								
1	10.0	350.700	0.67	44	50	3.01	3.00	3.5	NA	35
2	20.0	360.490	0.65	44	50	2.92	2.95	3.5	NA	36
3	30.0	370.740	0.69	44	59	3.16	3.20	4	NA	40
4	40.0	380.680	0.68	44	54	3.08	2.90	3.5	NA	49
5	50.0	391.120	0.71	45	60	3.25	3.20	5	NA	57
6	60.0	401.780	0.73	46	64	3.36	3.40	5	NA	58
7	70.0	412.790	0.75	46	66	3.46	3.50	5.5	NA	59
8	80.0	423.580	0.74	46	69	3.44	3.40	6	NA	56
9	90.0	434.330	0.73	46	69	3.39	3.40	7	NA	56
10	100.0	444.390	0.63	46	71	2.94	2.90	7	NA	56
11	110.0	454.910	0.69	48	74	3.22	3.20	8	NA	56
12	120.0	465.710	0.72	51	77	3.36	3.40	9	NA	58
13	130.0	476.680	0.71	52	78	3.32	3.30	9	NA	59
14	140.0	487.190	0.66	52	80	3.09	3.10	8.5	NA	62
15	150.0	497.240	0.62	54	81	2.90	2.90	8	NA	61
16	160.0	507.210	0.60	55	83	2.81	2.80	8	NA	59
17	170.0	517.790	0.69	57	84	3.23	3.20	9	NA	58
18	180.0	528.880	0.74	57	85	3.47	3.50	9.5	NA	58
19	190.0	540.010	0.75	57	87	3.53	3.50	9.5	NA	58
20	200.0	550.830	0.71	58	89	3.34	3.30	9	NA	58
21	210.0	561.610	0.69	59	89	3.24	3.20	9	NA	57
22	220.0	572.120	0.66	61	91	3.10	3.10	9	NA	56
23	230.0	582.310	0.62	62	93	2.92	2.90	8	NA	56
24	240.0	592.295	0.58	62	94	2.74	2.70	7.5	NA	53

Isokinetic Field Data
Field Data Entry

Client:	**Eagle Foundry Company**	**Run:**	**2**
Location:	**Eagle Creek, OR**	**Start Time:**	**5:10**
Source:	**Main Foundry BH Outlet - White Iron**	**End Time:**	**9:10**
EPA Method:	**0061**	**Environmental Conditions/Test Notes:**	**Date:** **3/28/2023**
Box Operator:	**JMK**	overcast and 30-50 °F	
Technician(s):	**KAD**		

Stack Dimensional Data:

Circular		
Diameter	61.000	in
Rectangular		
Width		in
Length		in
Stack Area	20.295	sq.ft.

Equipment:

Meterbox ID	10	Probe ID	B5C	Liner type	Glass		
Y factor	0.9737	Nozzle ID	0.25	Nozzle size	0.257	inches	
ΔH@	1.720	Hot box ID	NA	Nozzle area	0.00036	sq.ft.	
Bp ID	TS1	Pitot Cp	0.84	Probe heat	250	°F	
Balance ID	HLNFB1	Pitot ID	B5C	Filter heat	N/A	°F	
Weights ID	HLNFW1	Probe Length, ft	5				

Source Information:

Barometric Pressure	29.41	"Hg	O_2	20.90	%
Static Pressure	0.1	"H_2O	CO_2	0.00	%
Ave. ΔP	0.61	"H_2O	Rec. Nz.	0.226	inches
Stack Temperature	60	°F			
Assumed moisture	0.49	%			
Assumed meter temp.	74.9	°F			
Total number of points	24				
Time per point	10	min.			
Total run time	240	min.			

Leak Checks:

	Pre-test	Post-test
Pitot	x	x
Leak rate, dcf	0.000	0.000
Leak check vacuum, "Hg	15	17

Nozzle check for roundness:

1	2	3	
0.257	0.257	0.256	inches
	Caliper ID	WS1	

Post Test Calculations:

Sample volume	243.779	dcf	Ave. ΔP	0.618	"H_2O
Wet mol. weight	28.7	M_s (actual)	Ave. √ΔP	0.786	"H_2O
Actual H_2O	1.28	%	Ave. ΔH	2.908	"H_2O
Std. meter vol.	230.177	dscf	Ave. T_s	59.6	°F
Isokinetic Average	101.7	%	Ave. T_m	79.1	°F

Moisture/Lab:

Filter, #	NA		
	Initial	Final	Gain
Impingers, g	1,717.8	1,714.0	-3.8
Silica gel, g	856.6	923.5	66.9
		Total water gain:	63.1

Traverse Point	Time (min.)	Meter Volume (dcf) 849.960	Velocity ΔP ("H_2O)	Stack Temp. (°F)	Meter Temp. (°F)	Calc. ΔH	Run ΔH	Vacuum ("Hg)	Filter Box (°F)	Condenser Temp (≤68°F)
1	10.0	860.050	0.65	58	62	2.98	3.00	5	NA	42
2	20.0	870.010	0.62	58	63	2.85	2.90	5	NA	46
3	30.0	880.070	0.63	58	65	2.91	2.90	5	NA	49
4	40.0	889.910	0.59	58	66	2.73	2.70	5	NA	51
5	50.0	900.050	0.65	59	68	3.01	3.00	5	NA	51
6	60.0	909.890	0.60	58	70	2.80	2.80	5	NA	52
7	70.0	919.620	0.59	59	71	2.75	2.70	5	NA	52
8	80.0	929.510	0.60	59	71	2.80	2.80	5	NA	51
9	90.0	939.460	0.61	60	74	2.85	2.90	5	NA	51
10	100.0	949.430	0.63	60	74	2.95	2.90	5	NA	51
11	110.0	959.310	0.58	61	79	2.73	2.70	4.5	NA	51
12	120.0	969.340	0.59	61	81	2.79	2.80	4.5	NA	51
13	130.0	979.410	0.60	61	82	2.84	2.80	4.5	NA	51
14	140.0	989.310	0.59	61	84	2.81	2.80	4.5	NA	51
15	150.0	999.750	0.65	61	85	3.10	3.10	5	NA	51
16	160.0	1010.790	0.71	61	85	3.38	3.40	5.5	NA	51
17	170.0	1022.190	0.72	60	88	3.46	3.50	5.5	NA	51
18	180.0	1032.690	0.65	62	88	3.11	3.10	5	NA	58
19	190.0	1042.990	0.61	60	89	2.93	2.90	5	NA	58
20	200.0	1053.120	0.59	60	90	2.84	2.80	5	NA	58
21	210.0	1063.380	0.60	62	91	2.88	2.90	5	NA	61
22	220.0	1073.530	0.59	59	91	2.85	2.80	5	NA	61
23	230.0	1083.490	0.57	59	91	2.76	2.70	5	NA	56
24	240.0	1093.739	0.60	55	91	2.92	2.90	5	NA	54

Isokinetic Field Data
Field Data Entry

Client:	**Eagle Foundry Company**	**Run:**	**3**
Location:	**Eagle Creek, OR**	**Start Time:**	**5:15**
Source:	**Main Foundry BH Outlet - White Iron**	**End Time:**	**9:15**
EPA Method:	**0061**	**Environmental Conditions/Test Notes:**	**Date:** **3/29/2023**
Box Operator:	**JMK**	overcast and 30-50 °F	
Technician(s):	**KAD**		

Stack Dimensional Data:

Circular		
Diameter	61.000	in
Rectangular		
Width		in
Length		in
Stack Area	20.295	sq.ft.

Equipment:

Meterbox ID	10	Probe ID	B5C	Liner type	Glass		
Y factor	0.9737	Nozzle ID	0.25	Nozzle size	0.257	inches	
ΔH@	1.720	Hot box ID	NA	Nozzle area	0.00036	sq.ft.	
Bp ID	TS1	Pitot Cp	0.84	Probe heat	250	°F	
Balance ID	HLNFB1	Pitot ID	B5C	Filter heat	N/A	°F	
Weights ID	HLNFW1	Probe Length, ft	5				

Source Information:

Barometric Pressure	29.41	"Hg	O_2	20.90	%
Static Pressure	0.1	"H_2O	CO_2	0.00	%
Ave. ΔP	0.61	"H_2O	Rec. Nz.	0.226	inches
Stack Temperature	60	°F			
Assumed moisture	1.28	%			
Assumed meter temp.	79.1	°F			
Total number of points	24				
Time per point	10	min.			
Total run time	240	min.			

Leak Checks:

	Pre-test	Post-test
Pitot	x	x
Leak rate, dcf	0.001	0.001
Leak check vacuum, "Hg	15	16

Nozzle check for roundness:

1	2	3	
0.257	0.257	0.256	inches
	Caliper ID	WS1	

Post Test Calculations:

Sample volume	253.867	dcf	Ave. ΔP	0.670	"H_2O
Wet mol. weight	28.7	M_s (actual)	Ave. √ΔP	0.818	"H_2O
Actual H_2O	1.30	%	Ave. ΔH	3.163	"H_2O
Std. meter vol.	240.436	dscf	Ave. T_s	51.4	°F
Isokinetic Average	101.3	%	Ave. T_m	77.8	°F

Moisture/Lab:

Filter, #	NA		
	Initial	Final	Gain
Impingers, g	1,722.2	1,707.6	-14.6
Silica gel, g	509.1	929.9	420.8
		Total water gain:	406.2

Traverse Point	Time (min.)	Meter Volume (dcf)	Velocity ΔP ("H_2O)	Stack Temp. (°F)	Meter Temp. (°F)	Calc. ΔH	Run ΔH	Vacuum ("Hg)	Filter Box (°F)	Condenser Temp (≤68°F)
		355.455								
1	10.0	366.030	0.72	39	55	3.34	3.00	4	NA	36
2	20.0	376.080	0.65	51	55	2.95	3.30	5	NA	42
3	30.0	386.390	0.67	50	58	3.06	3.10	5	NA	45
4	40.0	396.490	0.64	50	62	2.95	2.90	4.5	NA	45
5	50.0	406.480	0.62	50	65	2.87	2.90	4.5	NA	44
6	60.0	417.070	0.68	50	69	3.17	3.20	5	NA	48
7	70.0	427.900	0.71	51	72	3.32	3.30	5	NA	49
8	80.0	438.740	0.70	50	75	3.30	3.30	5	NA	49
9	90.0	449.610	0.71	51	77	3.35	3.30	5	NA	49
10	100.0	460.470	0.69	51	77	3.26	3.30	5	NA	49
11	110.0	471.370	0.71	51	81	3.38	3.30	5	NA	49
12	120.0	482.120	0.69	52	82	3.28	3.30	5	NA	51
13	130.0	492.960	0.68	51	82	3.24	3.20	5	NA	51
14	140.0	503.410	0.64	52	83	3.05	3.10	4.5	NA	49
15	150.0	513.510	0.61	52	83	2.91	2.90	4.5	NA	48
16	160.0	523.790	0.62	53	85	2.96	3.00	4.5	NA	48
17	170.0	534.130	0.64	54	86	3.06	3.00	4.5	NA	47
18	180.0	544.580	0.64	54	86	3.06	3.10	4.5	NA	47
19	190.0	555.520	0.70	54	87	3.35	3.30	5	NA	47
20	200.0	566.360	0.69	54	88	3.31	3.30	5	NA	47
21	210.0	576.890	0.64	54	89	3.07	3.10	5	NA	48
22	220.0	587.610	0.66	54	89	3.17	3.20	5	NA	48
23	230.0	598.580	0.69	53	90	3.33	3.30	5	NA	48
24	240.0	609.322	0.67	52	91	3.24	3.20	5	NA	48

EPA Method 4
Impinger Weights Summary

Client: **Eagle Foundry Company**
Location: **Eagle Creek, OR**
Source: **Main Foundry BH Outlet - White Iron**
EPA Method: **0061**
Box Operator: **JMK**
Technician(s): **KAD**

Run 1
Impinger gain by weight (g):

#	Initial	Final	Gain
1	509.5	399.2	-110.3
2	441.0	440.5	-0.5
3	432.2	416.2	-16.0
4	348.1	400.4	52.3
Totals:	1,730.8	1,656.3	-74.5

Run 2
Impinger gain by weight (g):

#	Initial	Final	Gain
1	507.1	429.3	-77.8
2	429.6	457.8	28.2
3	433.0	437.2	4.2
4	348.1	389.7	41.6
Totals:	1,717.8	1,714.0	-3.8

Run 3
Impinger gain by weight (g):

#	Initial	Final	Gain
1	509.1	400.0	-109.1
2	433.8	452.0	18.2
3	430.6	441.3	10.7
4	348.7	414.3	65.6
Totals:	1,722.2	1,707.6	-14.6

Isokinetic Field Data
Field Data and Calculations
Emissions and Gas Stream Characteristics

Client:	**Eagle Foundry Company**	**Run:**	**1**
Location:	**Eagle Creek, OR**	**Start Time:**	**6:40**
Source:	**Main Foundry BH Outlet - White Iron**	**End Time:**	**10:40**
Method:	**0061**	**Date:**	**3/27/2023**

Sampling Data				Traverse Data			
Time	**Meter**	**ΔH**	**Meter**	**Traverse**	**Dp**	**Stack**	
min.	**ft^3**	**"H_2O**	**T_m °F**	**Point**	**"H_2O**	**T_s °F**	**√Dp**
	340.705						
10	350.700	3.00	50	1	0.67	44	0.819
20	360.490	2.95	50	2	0.65	44	0.806
30	370.740	3.20	59	3	0.69	44	0.831
40	380.680	2.90	54	4	0.68	44	0.825
50	391.120	3.20	60	5	0.71	45	0.843
60	401.780	3.40	64	6	0.73	46	0.854
70	412.790	3.50	66	7	0.75	46	0.866
80	423.580	3.40	69	8	0.74	46	0.860
90	434.330	3.40	69	9	0.73	46	0.854
100	444.390	2.90	71	10	0.63	46	0.794
110	454.910	3.20	74	11	0.69	48	0.831
120	465.710	3.40	77	12	0.72	51	0.849
130	476.680	3.30	78	13	0.71	52	0.843
140	487.190	3.10	80	14	0.66	52	0.812
150	497.240	2.90	81	15	0.62	54	0.787
160	507.210	2.80	83	16	0.60	55	0.775
170	517.790	3.20	84	17	0.69	57	0.831
180	528.880	3.50	85	18	0.74	57	0.860
190	540.010	3.50	87	19	0.75	57	0.866
200	550.830	3.30	89	20	0.71	58	0.843
210	561.610	3.20	89	21	0.69	59	0.831
220	572.120	3.10	91	22	0.66	61	0.812
230	582.310	2.90	93	23	0.62	62	0.787
240	592.295	2.70	94	24	0.58	62	0.762

Client:	**Eagle Foundry Company**	**Run:**	**1**
Source:	**Main Foundry BH Outlet - White Iron**	**Date:**	**03/27/23**

Field Data Input Continued

Moisture Data			Stack Dimensional Data:		
Total Test Time	240.0	min	Circular		
Sample Time Interval	10.0	min	Diameter	61.000	in
Meter Volume, V_m	251.590	dcf	Rectangular		
Water Volume	25.3	g	Width		in
Nozzle Diameter, N_z	0.2570	in.	Length		in
Nozzle Area	0.000360	sq.ft.	Stack Area	20.295	sq.ft.
Traverse Data			Molecular Weight:		
Barometric Pressure, P_b	29.98	"Hg	CO_2 Average	0.25	%vd
Static Pressure	0.10	"H_2O	O_2 Average	20.85	%vd
Pitot Factor, cp	0.84				
Meter Cal Factor	0.9737	Y			

Field Data Averages

Meter			Stack		
ΔH	3.165	"H_2O	√Dp	0.827	"H_2O
Temperature, T_m	74.9	^oF	Temperature, T_s	51.5	^oF
Temperature, T_m	534.6	^oA (^oR)	Temperature, T_s	511.2	^oA (R)
Pressure Meter, P_m	30.213	"Hg	Pressure Stack, P_s	29.987	"Hg

Field Data Calculations

Meter Box Capture			EPA Method 2 Stack Gas Flowrate:		
Standard Volume, $V_{m(std)}$	244.179	dscf	Velocity, V_s	45.67	fps
	6.914	dscm	Volume (actual)	55,612	acfm
Actual Volume, $V_{m(actual)}$	237.177	awcf		55,340	adcfm
Gas Stream Moisture			Volume (standard)	3,452,161	wscf/hr
Moisture Vapor, $Vw_{(std)}$	1.193	scf		3,435,245	dscf/hr
Moisture, B_{ws}	0.0049			57,254	dscf/min
Moisture EPA M4	0.49	%v		57,536	wscf/min
Moisture @ Saturation	1.28	%v (for T_s < 212°F)			
EPA Method 3 Gas Density			Volume/Mole, V/M	372.154	
Dry, M_d	28.87	lb/lb-mole			
Wet, M_s	28.82	lb/lb-mole			
Percent Isokinetic	100.2	%			

Laboratory Results

Cr VI	2.70E-03	µg/sample
Cr VI	2.70E-09	grams
Emissions:		
Concentration Cr VI, C_s	1.71E-10	gr/dscf
	3.91E-04	µg/dscm
Mass Emissions Cr VI	8.37E-08	lb/hr

"<" represents MDL value

Isokinetic Field Data
Field Data and Calculations
Emissions and Gas Stream Characteristics

Client:	**Eagle Foundry Company**	**Run:**	**2**
Location:	**Eagle Creek, OR**	**Start Time:**	**5:10**
Source:	**Main Foundry BH Outlet - White Iron**	**End Time:**	**9:10**
Method:	**0061**	**Date:**	**03/28/23**

Sampling Data				Traverse Data			
Time	**Meter**	**ΔH**	**Meter**	**Traverse**	**Dp**	**Stack**	
min.	**ft^3**	**"H_2O**	**T_m °F**	**Point**	**"H_2O**	**T_s °F**	**√Dp**
	849.960						
10	860.050	3.00	62	1	0.65	58	0.806
20	870.010	2.90	63	2	0.62	58	0.787
30	880.070	2.90	65	3	0.63	58	0.794
40	889.910	2.70	66	4	0.59	58	0.768
50	900.050	3.00	68	5	0.65	59	0.806
60	909.890	2.80	70	6	0.60	58	0.775
70	919.620	2.70	71	7	0.59	59	0.768
80	929.510	2.80	71	8	0.60	59	0.775
90	939.460	2.90	74	9	0.61	60	0.781
100	949.430	2.90	74	10	0.63	60	0.794
110	959.310	2.70	79	11	0.58	61	0.762
120	969.340	2.80	81	12	0.59	61	0.768
130	979.410	2.80	82	13	0.60	61	0.775
140	989.310	2.80	84	14	0.59	61	0.768
150	999.750	3.10	85	15	0.65	61	0.806
160	1010.790	3.40	85	16	0.71	61	0.843
170	1022.190	3.50	88	17	0.72	60	0.849
180	1032.690	3.10	88	18	0.65	62	0.806
190	1042.990	2.90	89	19	0.61	60	0.781
200	1053.120	2.80	90	20	0.59	60	0.768
210	1063.380	2.90	91	21	0.60	62	0.775
220	1073.530	2.80	91	22	0.59	59	0.768
230	1083.490	2.70	91	23	0.57	59	0.755
240	1093.739	2.90	91	24	0.60	55	0.775

Client:	**Eagle Foundry Company**	**Run:**	**2**
Source:	**Main Foundry BH Outlet - White Iron**	**Date:**	**03/28/23**

Field Data Input Continued

Moisture Data			Stack Dimensional Data:		
Total Test Time	240.0	min	Circular		
Sample Time Interval	10.0	min	Diameter	61.000	in
Meter Volume, V_m	243.779	dcf	Rectangular		
Water Volume	63.1	g	Width		in
Nozzle Diameter, N_z	0.2570	in.	Length		in
Nozzle Area	0.000360	sq.ft.	Stack Area	20.295	sq.ft.
Traverse Data			Molecular Weight:		
Barometric Pressure, P_b	29.41	"Hg	CO_2 Average	0.15	%vd
Static Pressure	0.10	"H_2O	O_2 Average	20.91	%vd
Pitot Factor, cp	0.84				
Meter Cal Factor	0.9737	Y			

Field Data Averages

Meter			Stack		
ΔH	2.908	"H_2O	√Dp	0.786	"H_2O
Temperature, T_m	79.1	^oF	Temperature, T_s	59.6	^oF
Temperature, T_m	538.8	^oA (^oR)	Temperature, T_s	519.3	^oA (R)
Pressure Meter, P_m	29.624	"Hg	Pressure Stack, P_s	29.417	"Hg

Field Data Calculations

Meter Box Capture			EPA Method 2 Stack Gas Flowrate:		
Standard Volume, $V_{m(std)}$	230.177	dscf	Velocity, V_s	44.25	fps
	6.518	dscm	Volume (actual)	53,883	acfm
Actual Volume, $V_{m(actual)}$	233.373	awcf		53,193	adcfm
Gas Stream Moisture			Volume (standard)	3,230,062	wscf/hr
Moisture Vapor, $Vw_{(std)}$	2.976	scf		3,188,717	dscf/hr
Moisture, B_{ws}	0.0128			53,145	dscf/min
Moisture EPA M4	1.28	%v		53,834	wscf/min
Moisture @ Saturation	1.75	%v (for T_s < 212°F)			
EPA Method 3 Gas Density			Volume/Mole, V/M	385.377	
Dry, M_d	28.86	lb/lb-mole			
Wet, M_s	28.72	lb/lb-mole			
Percent Isokinetic	101.7	%			

Laboratory Results

Cr VI	1.43E-02	µg/sample
Cr VI	1.43E-08	grams
Emissions:		
Concentration Cr VI, C_s	9.6E-10	gr/dscf
	2.20E-03	µg/dscm
Mass Emissions Cr VI	4.37E-07	lb/hr

"<" represents MDL value

Isokinetic Field Data
Field Data and Calculations
Emissions and Gas Stream Characteristics

Client:	**Eagle Foundry Company**	**Run:**	**3**
Location:	**Eagle Creek, OR**	**Start Time:**	**5:15**
Source:	**Main Foundry BH Outlet - White Iron**	**End Time:**	**9:15**
Method:	**0061**	**Date:**	**03/29/23**

Sampling Data				Traverse Data			
Time	**Meter**	**ΔH**	**Meter**	**Traverse**	**Dp**	**Stack**	
min.	**ft^3**	**"H_2O**	**T_m °F**	**Point**	**"H_2O**	**T_s °F**	**√Dp**
	355.455						
10	366.030	3.00	55	1	0.72	39	0.849
20	376.080	3.30	55	2	0.65	51	0.806
30	386.390	3.10	58	3	0.67	50	0.819
40	396.490	2.90	62	4	0.64	50	0.800
50	406.480	2.90	65	5	0.62	50	0.787
60	417.070	3.20	69	6	0.68	50	0.825
70	427.900	3.30	72	7	0.71	51	0.843
80	438.740	3.30	75	8	0.70	50	0.837
90	449.610	3.30	77	9	0.71	51	0.843
100	460.470	3.30	77	10	0.69	51	0.831
110	471.370	3.30	81	11	0.71	51	0.843
120	482.120	3.30	82	12	0.69	52	0.831
130	492.960	3.20	82	13	0.68	51	0.825
140	503.410	3.10	83	14	0.64	52	0.800
150	513.510	2.90	83	15	0.61	52	0.781
160	523.790	3.00	85	16	0.62	53	0.787
170	534.130	3.00	86	17	0.64	54	0.800
180	544.580	3.10	86	18	0.64	54	0.800
190	555.520	3.30	87	19	0.70	54	0.837
200	566.360	3.30	88	20	0.69	54	0.831
210	576.890	3.10	89	21	0.64	54	0.800
220	587.610	3.20	89	22	0.66	54	0.812
230	598.580	3.30	90	23	0.69	53	0.831
240	609.322	3.20	91	24	0.67	52	0.819

Client:	**Eagle Foundry Company**	**Run:**	**3**
Source:	**Main Foundry BH Outlet - White Iron**	**Date:**	**03/29/23**

Field Data Input Continued

Moisture Data			Stack Dimensional Data:		
Total Test Time	240.0	min	Circular		
Sample Time Interval	10.0	min	Diameter	61.000	in
Meter Volume, V_m	253.867	dcf	Rectangular		
Water Volume	406.2	g	Width		in
Nozzle Diameter, N_z	0.2570	in.	Length		in
Nozzle Area	0.000360	sq.ft.	Stack Area	20.295	sq.ft.
Traverse Data			Molecular Weight:		
Barometric Pressure, P_b	29.41	"Hg	CO_2 Average	0.10	%vd
Static Pressure	0.10	"H_2O	O_2 Average	20.59	%vd
Pitot Factor, cp	0.84				
Meter Cal Factor	0.9737	Y			

Field Data Averages

Meter			Stack		
ΔH	3.163	"H_2O	√Dp	0.818	"H_2O
Temperature, T_m	77.8	^oF	Temperature, T_s	51.4	^oF
Temperature, T_m	537.5	^oA (^oR)	Temperature, T_s	511.1	^oA (R)
Pressure Meter, P_m	29.643	"Hg	Pressure Stack, P_s	29.417	"Hg

Field Data Calculations

Meter Box Capture			EPA Method 2 Stack Gas Flowrate:		
Standard Volume, $V_{m(std)}$	240.436	dscf	Velocity, V_s	45.70	fps
	6.808	dscm	Volume (actual)	55,649	acfm
Actual Volume, $V_{m(actual)}$	239.974	awcf		54,926	adcfm
Gas Stream Moisture			Volume (standard)	3,389,429	wscf/hr
Moisture Vapor, $Vw_{(std)}$	19.155	scf		3,345,366	dscf/hr
Moisture, B_{ws}	0.0130			55,756	dscf/min
Moisture EPA M4	7.38	%v		56,490	wscf/min
Moisture @ Saturation	1.30	%v (for T_s < 212°F)			
EPA Method 3 Gas Density			Volume/Mole, V/M	379.291	
Dry, M_d	28.84	lb/lb-mole			
Wet, M_s	28.70	lb/lb-mole			
Percent Isokinetic	101.3	%			

Laboratory Results

Cr VI	1.25E-02	µg/sample
Cr VI	1.25E-08	grams
Emissions:		
Concentration Cr VI, C_s	8.05E-10	gr/dscf
	1.84E-03	µg/dscm
Mass Emissions Cr VI	3.85E-07	lb/hr

"<" represents MDL value

Method 0061
Laboratory Results
Cr VI

Client: **Eagle Foundry Company**
Location: **Eagle Creek, OR**
Source: **Main Foundry BH Outlet - White Iron**

Lab ID	Sample ID	Sample Date	<	Result (µg/sample)	MDL (µg/sample)	Sample Vol. (ml)	Blank Correction (ug)	Blank Corrected Results (µg/sample)
23-S595	Run 1	3/27/2023		0.0075	0.0050	500	4.80E-03	2.70E-03
23-S596	Run 2	3/28/2023		0.0178	0.0044	445	3.48E-03	1.43E-02
23-S597	Run 3	3/29/2023		0.0195	0.0059	590	6.96E-03	1.25E-02
23-S607	KOH Blank	3/29/2023	<	MDL	0.0030	300	0.00	µg/ml
23-S608	H_2O Blank	3/29/2023		0.0048	0.0020	200	2.40E-05	µg/ml

*A "<" sign designates a result less than the minimum detection limit (MDL). If sample results are below MDL, the MDL value is used for calculations.
If blank value(s) are below MDL, no blank correction is performed.

Method 0061
Results Summary

Client: **Eagle Foundry Company**
Location: **Eagle Creek, OR**
Source: **Main Foundry BH Outlet - White Iron**

Run			1	2	3	
Date			3/27/2023	3/28/2023	3/29/2023	
Start Time			6:40	5:10	5:15	
End Time			10:40	9:10	9:15	Average
Duration, min.			240	240	240	**240**
Barometric Pressure, "Hg			29.98	29.41	29.41	**29.60**
Nozzle Dia., in.			0.257	0.257	0.257	**0.257**
Isokinetic Average, %			100.2	101.7	101.3	**101.1**
Sample Volume, dscf			244.179	230.177	240.436	**238.264**
Sample Volume, dscm			6.914	6.518	6.808	**6.747**
Stack Diameter, in.			61.000	61.000	61.000	**61.000**
Stack Area, sq.ft.			20.295	20.295	20.295	**20.295**
CO_2 %vd			0.25	0.15	0.10	**0.17**
O_2 %vd			20.85	20.91	20.59	**20.78**
Static Pressure, "H_2O			0.10	0.10	0.10	**0.10**
H_2O %v			0.49	1.28	1.30	**1.02**
Wet Molecular Weight, lb/lb-mole			28.82	28.72	28.70	**28.75**
Velocity, FPS			45.67	44.25	45.70	**45.21**
ADCFM			55,340	53,193	54,926	**54,486**
ACFM			55,612	53,883	55,649	**55,048**
DSCFM			57,254	53,145	55,756	**55,385**
Stack Temperature, ^oF			51.5	59.6	51.4	**54.2**
Cr VI	Concentration, C_s	gr/dscf	1.71E-10	9.60E-10	8.05E-10	**6.45E-10**
		µg/dscm	3.91E-04	2.20E-03	1.84E-03	**1.48E-03**
	Mass	lb/hr	8.37E-08	4.37E-07	3.85E-07	**3.02E-07**
	lb Cr VI/ton Cr in melt		2.16E-07	1.12E-06	1.00E-06	**7.79E-07**
Process Data	Cr processed	lb/melt	3,106.941	3,124.611	3,071.140	
		ton/melt	1.553	1.562	1.536	

Methods 1-4, 0061
Example Calculations

Client:	**Eagle Foundry Company**	**Run:**	**1**
Location:	**Eagle Creek, OR**	**Start Time:**	**6:40**
Source:	**Main Foundry BH Outlet - White Iron**	**End Time:**	**10:40**
Method:	**0061**	**Date:**	**3/27/2023**

EPA Methods 1-4:

1) $P_m = Pb + (\Delta H/13.6)$ = 30.213 "Hg

where Pb: 29.98 "Hg
ΔH: 3.165 "H_2O

2) Ps = Pb + (Static Press./13.6) = 29.987 "Hg

where Pb: 29.98 "Hg
Static Press.: 0.10 "H_2O

3) $V_m(std) = V_m(527.67/29.92)(Y)\left(\frac{Pm}{Tm}\right)$ = 244.179 dscf

where Vm: 251.590 dcf
Y: 0.9737
Pm: 30.213 "Hg
Tm: 534.6 °A

4) $V_w(std) = (0.04716)(H_2O)$ = 1.193 scf

where H_2O: 25.30 g

5) $Bws = \left(\frac{Vw(std)}{Vw(std)+Vm(std)}\right)$ = 0.0049

where Vw(std): 1.193 scf
Vm(std): 244.179 dscf

6) % H_2O = Bws x 100 = 0.49 %v

7) $V_m(actual) = \left(\frac{Y \times Vm}{(1-Bws)}\right)\left(\frac{Ts}{Tm}\right)\left(\frac{Pm}{Ps}\right)$ = 237.177 awcf

where Y: 0.9737
Vm: 251.5900 dcf
Bws: 0.0049
Ts: 511.2 °A
Tm: 534.6 °A
Pm: 30.213 "Hg
Ps: 29.987 "Hg

8) $M_d = 0.44(CO_2) + 0.32(O_2) + 0.28(N_2 + CO)$ = 28.87 lb/lb-mole

where CO_2: 0.25 %vd
O_2 20.85 %vd
N_2+CO= (100-(O_2+CO_2): 78.90 %vd

9) $M_s = M_d(1 - Bws) + (18 \times Bws)$ = 28.82 lb/lb-mole
where M_d: 28.87 lb/lb-mole
Bws: 0.0049

10) Stack Area(cir.) = 3.1416 (stack diameter/24)^2 = 20.295 sq. ft.
where Stack ID: 61 inches

Stack Area(rect.) = stack width/12 x stack length/12 = NA sq. ft.
where Stack Width: 0.000 inches
Stack Length: 0.000 inches

11) Velocity, $V_s = 85.49(Cp)(\text{Ave. Sqrt } \Delta P)\left(\sqrt{\frac{Ts}{(Ps \times Ms)}}\right)$ = 45.67 fps
where Cp: 0.84
Ave. Sqrt ΔP: 0.827
Ts: 511.2 °A
Ps: 29.987 "Hg
Ms: 28.82 lb/lb-mole

12) ACFM = (V_s)(stack area)(60 sec/min) = 55,612 ACFM
where V_s: 45.67 ft/sec
Stack Area: 20.295 sq. ft

13) ADCFM = (ACFM)(1-Bws) = 55,340 ADCFM
where ACFM: 55,612
Bws: 0.0049

14) $Qsw = 3600(V_s)(\text{stack area})\left(\frac{527.67°R}{Ts}\right)\left(\frac{Ps}{29.92\ "Hg}\right)$ = 3,452,161 wscf/hr
where V_s: 45.67 ft/sec
Stack Area: 20.2950 sq. ft.
Ts: 511.2 °A
Ps: 29.987 "Hg

15) Qsd = (wscf/hr)(1-Bws) = 3,435,245 dscf/hr
where wscf/hr: 3,452,161
Bws: 0.0049

16) DSCFM= (dscf/hr)/60 mins/hr = 57,254 DSCFM
where dscf/hr: 3,435,245

17) Nozzle Area = 3.1416 (Nozzle Size/24)^2 = 0.000360 sq. ft.
where Nozzle Size: 0.257 inches

18) Isokinetic % = $\left(\frac{0.0945(Ts)(Vm(std))}{Ps(V_s)(nozzle\ area)(sampling\ time)(1-Bws)}\right)$ = 100.2 %

where Ts:	511.2	°A
Vm(Std):	244.179	dscf
Ps:	29.987	"Hg
Vs	45.67	ft/sec
Nozzle Area:	0.000360	sq. ft.
Sampling Time:	240	min.
Bws:	0.0049	

Method 0061:

19) Laboratory Result Cr VI 7.50E-03 µg/sample

20) Blank Correction

Blank concentration = Result (µg/sample)*Volume (ml) =

KOH blank concentration:	0.00E+00	µg/ml
H_2O blank concentration:	2.40E-05	µg/ml

Blank correction = [KOH blank (µg/ml)*300(ml)]+[H2O blank (µg/ml)*(sample vol.-300(ml)] =

where sample volume:	500	ml	4.80E-03 µg/sample

21) Blank corrected result = Lab result - blank correction = 2.70E-03 µg/sample

where lab result:	7.50E-03
blank correction:	4.80E-03

20) Cs = (Sample grams/Vm(Std))(15.43grains/gram) = 1.706E-10 gr/dscf

where sample:	2.70E-09	grams
Vm(std)	244.179	dscf

21) Cs = (Sample grams*1,000,000 µg/gram)/Vm(std) = 3.91E-04 µg/dscm

where sample:	2.70E-09	grams
Vm(std)	6.914	dscm

22) Mass Emission Rate = (Cs)(Stack flow)/7000gr/lb = 8.37E-08 lb/hr

where Cs:	1.71E-10	gr/dscf
Stack Flow:	3,435,245	dscf/hr

BISON ENGINEERING, INC.

COMPANY	**Eagle Foundry Company**
FACILITY	**Eagle Foundry**
LOCATION	**Eagle Creek, OR**
SOURCE	**Cooling Bunker BH Inlet - White Iron**
DATE	**3/27/2023 - 3/29/2023**
METHOD	**29**
POLLUTANT	**Metals**

EPA Method 1
Stack Parameters and Traverse Points

Client: **Eagle Foundry Company**
Location: **Eagle Creek, OR**
Source: **Cooling Bunker BH Inlet - White Iron**
Facility: **Eagle Foundry**

Type of Testing: P (P for Particulate; V for Velocity/Nonparticulate)
Type of Duct: C (C for circular; R for rectangular)

Number of ports available:	2	
Number of ports to be used:	2	
Port diameter:	4	inches
Sampling location height (approx.):		feet
Stack height (approx.):		feet
Circular ID (Rectangular Depth):	48.00	inches
Port depth and/or wall thickness:	6.25	inches
Stack width (Rectangular only):		inches

Equivalent Diameter
If rectangular = $\frac{2*Depth*Width}{Depth + Width}$ = 48.00 inches (If circular = duct ID)

Stack/duct area = 12.566 sq.feet 1809.6 sq. inches

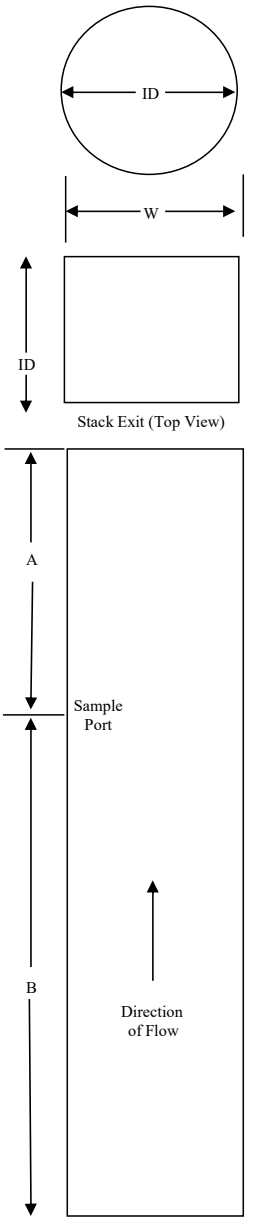
Sample Port Location:	Downstream flow disturbance from process B	Upstream flow disturbance toward exit A
Number of Inches:	990.00	114.00
Number of Diameters:	20.63	2.38

Minimum Number of Traverse Points: 12

Traverse points less than 1.0 inch from the stack wall are relocated to a distance of 1.0 inch.

Points	% of diameter	Distance from inside wall (in.)	Distance including port (in.)
1	4.4	2.11	8 3/8
2	14.6	7.01	13 1/4
3	29.6	14.21	20 1/2
4	70.4	33.79	40
5	85.4	40.99	47 1/4
6	95.6	45.89	52 1/8

Reference Diagram



Drawing NOT to scale and
NOT an accurate representation of stack.

Pre-Test Traverse

Client: **Eagle Foundry Company**
Location: **Eagle Creek, OR**
Source: **Cooling Bunker BH Inlet - White Iron**

Stack Temp: 53 °F

Traverse Point	Velocity ΔP ("H_2O)	Null Angle
1	0.78	0
2	1.10	5
3	1.10	0
4	1.10	5
5	1.20	5
6	1.20	0
7	1.20	5
8	1.10	0
9	1.00	5
10	0.90	0
11	0.80	5
12	0.80	5
Average:	1.02	3

Flow is found to be: Non-cyclonic

Isokinetic Field Data
Field Data Entry

Client:	**Eagle Foundry Company**	**Run:**	**1**
Location:	**Eagle Creek, OR**	**Start Time:**	**6:40**
Source:	**Cooling Bunker BH Inlet - White Iron**	**End Time:**	**10:40**
EPA Method:	**29**	**Environmental Conditions/Test Notes:**	**Date:** **3/27/2023**
Box Operator:	**AAM**	30-50 °F, Cloudy	
Technician(s):	**NEW**		

Stack Dimensional Data:

Circular		
Diameter	48.000	in
Rectangular		
Width		in
Length		in
Stack Area	12.566	sq.ft.

Equipment:

Meterbox ID	11	Probe ID	Bison 1	Liner type	Glass		
Y factor	0.9686	Nozzle ID	0.25	Nozzle size	0.250	inches	
ΔH@	1.865	Hot box ID	HHB-2	Nozzle area	0.000341	sq.ft.	
Bp ID	TS-1	Pitot Cp	0.84	Probe heat	250	°F	
Balance ID	HLN FB-1	Pitot ID	Bison 1	Filter heat	250	°F	
Weights ID	HLN FW-1	Probe Length, ft	6				

Source Information:

Barometric Pressure	29.98	"Hg	O_2	20.90	%
Static Pressure	-0.9	"H_2O	CO_2	0.00	%
Ave. ΔP	1.02	"H_2O	Rec. Nz.	0.208	inches
Stack Temperature	53	°F			
Assumed moisture	3.00	%			
Assumed meter temp.	40	°F			
Total number of points	12				
Time per point	20	min.			
Total run time	240	min.			

Leak Checks:

	Pre-test	Post-test
Pitot	X	X
Leak rate, dcf	0.016	0.018
Leak check vacuum, "Hg	15	18

Nozzle check for roundness:

1	2	3	
0.250	0.250	0.251	inches
	Caliper ID	WS-2	

Post Test Calculations:

Sample volume	284.809	dcf	Ave. ΔP	1.078	"H_2O
Wet mol. weight	28.78	M_s (actual)	Ave. √ΔP	1.034	"H_2O
Actual H_2O	0.51	%	Ave. ΔH	4.575	"H_2O
Std. meter vol.	292.604	dscf	Ave. T_s	42.9	°F
Isokinetic Average	100.6	%	Ave. T_m	44.4	°F

Moisture/Lab:

Filter, #	NA		
	Initial	Final	Gain
Impingers, g	3,850.5	3,839.9	-10.6
Silica gel, g	924.3	966.6	42.3
		Total water gain, g:	31.7

Traverse Point	Time (min.)	Meter Volume (dcf) 139.226	Velocity ΔP ("H_2O)	Stack Temp. (°F)	Meter Temp. (°F)	Calc. ΔH	Run ΔH	Vacuum ("Hg)	Filter Box (°F)	Condenser Temp (≤68°F)
1	20.0	159.190	0.75	35	32	3.16	3.15	7	257	30
2	40.0	182.100	1.05	33	34	4.45	4.45	10	256	39
3	60.0	205.810	1.05	39	38	4.44	4.45	10	261	45
4	80.0	230.880	1.20	39	41	5.10	5.10	12	261	51
5	100.0	255.890	1.20	40	42	5.10	5.10	12	249	48
6	120.0	281.590	1.30	42	44	5.52	5.50	13	250	46
7	140.0	306.800	1.20	44	46	5.10	5.10	12.5	259	49
8	160.0	332.100	1.20	45	48	5.11	5.10	12.5	258	54
9	180.0	358.350	1.30	47	49	5.52	5.50	14	257	46
10	200.0	382.610	1.10	48	51	4.68	4.70	11	257	46
11	220.0	403.280	0.80	50	53	3.41	3.40	9	253	45
12	240.0	424.035	0.79	53	55	3.36	3.35	8	252	45

Isokinetic Field Data
Field Data Entry

Client:	**Eagle Foundry Company**	**Run:**	**2**
Location:	**Eagle Creek, OR**	**Start Time:**	**5:10**
Source:	**Cooling Bunker BH Inlet - White Iron**	**End Time:**	**9:10**
EPA Method:	**29**	**Date:**	**3/28/2023**
Box Operator:	**AAM**		
Technician(s):	**NEW**		

Environmental Conditions/Test Notes:
40-65 °F, Rainy/cloudy

Stack Dimensional Data:

Circular		
Diameter	48.000	in
Rectangular		
Width		in
Length		in
Stack Area	12.566	sq.ft.

Equipment:

Meterbox ID	11	Probe ID	Bison 1	Liner type	Glass		
Y factor	0.9686	Nozzle ID	0.25	Nozzle size	0.250	inches	
ΔH@	1.865	Hot box ID	HHB-2	Nozzle area	0.000341	sq.ft.	
Bp ID	TS-1	Pitot Cp	0.84	Probe heat	250	°F	
Balance ID	HLN FB-1	Pitot ID	Bison 1	Filter heat	250	°F	
Weights ID	HLN FW-1	Probe Length, ft	6				

Source Information:

Barometric Pressure	29.41	"Hg	O_2	20.90	%
Static Pressure	-0.9	"H_2O	CO_2	0.00	%
Ave. ΔP	1.02	"H_2O	Rec. Nz.	0.204	inches
Stack Temperature	53	°F			
Assumed moisture	0.51	%			
Assumed meter temp.	44.4	°F			
Total number of points	12				
Time per point	20	min.			
Total run time	240	min.			

Leak Checks:

	Pre-test	Post-test
Pitot	x	x
Leak rate, dcf	0.000	0.000
Leak check vacuum, "Hg	15	12

Nozzle check for roundness:

1	2	3	
0.250	0.250	0.251	inches
	Caliper ID	WS-2	

Post Test Calculations:

Sample volume	276.672	dcf	Ave. ΔP	0.993	"H_2O
Wet mol. weight	28.81	M_s (actual)	Ave. √ΔP	0.986	"H_2O
Actual H_2O	0.28	%	Ave. ΔH	4.379	"H_2O
Std. meter vol.	274.574	dscf	Ave. T_s	52.4	°F
Isokinetic Average	100.7	%	Ave. T_m	52.1	°F

Moisture/Lab:

Filter, #	NA		
	Initial	Final	Gain
Impingers, g	3,850.5	3,859.0	8.5
Silica gel, g	924.3	932.2	7.9
		Total water gain:	16.4

Traverse Point	Time (min.)	Meter Volume (dcf)	Velocity ΔP ("H_2O)	Stack Temp. (°F)	Meter Temp. (°F)	Calc. ΔH	Run ΔH	Vacuum ("Hg)	Filter Box (°F)	Condenser Temp (≤68°F)
		724.396								
1	20.0	742.880	0.64	47	45	2.81	2.80	3	257	40
2	40.0	762.100	0.69	52	47	3.01	3.00	4	258	44
3	60.0	785.650	1.00	52	49	4.38	4.40	5	258	49
4	80.0	812.090	1.30	52	51	5.72	5.70	6	257	48
5	100.0	838.800	1.30	52	52	5.73	5.75	6	257	51
6	120.0	864.290	1.20	52	51	5.28	5.30	6	256	52
7	140.0	888.630	1.10	59	52	4.79	4.80	5	257	55
8	160.0	914.110	1.20	56	53	5.26	5.25	6	257	56
9	180.0	940.780	1.30	55	55	5.73	5.75	6	257	60
10	200.0	964.380	1.00	54	57	4.44	4.45	5	257	49
11	220.0	983.460	0.66	52	57	2.94	2.95	4	256	46
12	240.0	1001.068	0.53	46	56	2.38	2.40	3	258	47

Isokinetic Field Data
Field Data Entry

Client:	**Eagle Foundry Company**	**Run:**	**3**
Location:	**Eagle Creek, OR**	**Start Time:**	**5:15**
Source:	**Cooling Bunker BH Inlet - White Iron**	**End Time:**	**9:15**
EPA Method:	**29**	**Date:**	**3/29/2023**
Box Operator:	**AAM**		
Technician(s):	**NEW**		

Environmental Conditions/Test Notes:
40-65 °F, Rainy/cloudy

Stack Dimensional Data:

Circular		
Diameter	48.000	in
Rectangular		
Width		in
Length		in
Stack Area	12.566	sq.ft.

Equipment:

Meterbox ID	11	Probe ID	Bison 1	Liner type	Glass		
Y factor	0.9686	Nozzle ID	0.25	Nozzle size	0.250	inches	
ΔH@	1.865	Hot box ID	HHB-2	Nozzle area	0.000341	sq.ft.	
Bp ID	TS-1	Pitot Cp	0.84	Probe heat	250	°F	
Balance ID	HLN FB-1	Pitot ID	Bison 1	Filter heat	250	°F	
Weights ID	HLN FW-1	Probe Length, ft	6				

Source Information:

Barometric Pressure	29.41	"Hg	O_2	20.90	%
Static Pressure	-0.9	"H_2O	CO_2	0.00	%
Ave. ΔP	1.02	"H_2O	Rec. Nz.	0.202	inches
Stack Temperature	53	°F			
Assumed moisture	0.28	%			
Assumed meter temp.	52.1	°F			
Total number of points	12				
Time per point	20	min.			
Total run time	240	min.			

Leak Checks:

	Pre-test	Post-test
Pitot	x	x
Leak rate, dcf	0.000	0.000
Leak check vacuum, "Hg	15	20

Nozzle check for roundness:

1	2	3	
0.250	0.250	0.251	inches
	Caliper ID	WS-2	

Post Test Calculations:

Sample volume	316.368	dcf	Ave. ΔP	1.292	"H_2O
Wet mol. weight	28.81	M_s (actual)	Ave. √ΔP	1.135	"H_2O
Actual H_2O	0.25	%	Ave. ΔH	5.738	"H_2O
Std. meter vol.	318.952	dscf	Ave. T_s	44.3	°F
Isokinetic Average	100.8	%	Ave. T_m	45.8	°F

Moisture/Lab:

Filter, #	NA		
	Initial	Final	Gain
Impingers, g	3,877.1	3,844.9	-32.2
Silica gel, g	857.9	907.0	49.1
		Total water gain:	16.9

Traverse Point	Time (min.)	Meter Volume (dcf) 282.331	Velocity ΔP ("H_2O)	Stack Temp. (°F)	Meter Temp. (°F)	Calc. ΔH	Run ΔH	Vacuum ("Hg)	Filter Box (°F)	Condenser Temp (≤68°F)
1	20.0	306.140	1.10	36	35	4.86	4.85	5	255	36
2	40.0	333.475	1.40	41	37	6.15	6.15	6	257	54
3	60.0	359.990	1.30	46	41	5.70	5.70	5	256	58
4	80.0	385.480	1.20	45	45	5.31	5.30	5	255	59
5	100.0	410.960	1.20	45	47	5.33	5.35	5	240	57
6	120.0	437.640	1.30	45	48	5.79	5.80	5.5	258	53
7	140.0	464.235	1.30	45	49	5.80	5.80	5.5	257	54
8	160.0	489.660	1.20	50	49	5.30	5.30	5	256	51
9	180.0	515.040	1.20	49	49	5.31	5.30	5	257	51
10	200.0	541.450	1.30	49	49	5.75	5.75	5	257	49
11	220.0	568.080	1.30	43	50	5.83	5.85	5.5	256	49
12	240.0	598.699	1.70	37	50	7.72	7.70	7	257	48

EPA Method 4
Impinger Weights Summary

Client: **Eagle Foundry Company**
Location: **Eagle Creek, OR**
Source: **Cooling Bunker BH Inlet - White Iron**
EPA Method: **29**
Box Operator: **AAM**
Technician(s): **NEW**

Run 1
Impinger gain by weight (g):

#	Initial	Final	Gain
1	788.1	735.9	-52.2
2	753.8	770.7	16.9
3	689.6	698.3	8.7
4	809.1	819.9	10.8
5	809.9	815.1	5.2
Totals:	3,850.5	3,839.9	-10.6

Run 2
Impinger gain by weight (g):

#	Initial	Final	Gain
1	788.1	717.5	-70.6
2	753.8	781.1	27.3
3	689.6	711.7	22.1
4	809.1	829.4	20.3
5	809.9	819.3	9.4
Totals:	3,850.5	3,859.0	8.5

Run 3
Impinger gain by weight (g):

#	Initial	Final	Gain
1	796.6	697.3	-99.3
2	762.4	739.1	-23.3
3	694.3	735.1	40.8
4	812.1	846.4	34.3
5	811.7	827.0	15.3
Totals:	3,877.1	3,844.9	-32.2

Isokinetic Field Data
Field Data and Calculations
Gas Stream Characteristics

Client:	**Eagle Foundry Company**	**Run:**	**1**
Location:	**Eagle Creek, OR**	**Start Time:**	**6:40**
Source:	**Cooling Bunker BH Inlet - White Iron**	**End Time:**	**10:40**
Method:	**29**	**Date:**	**3/27/2023**

Sampling Data				Traverse Data			
Time	**Meter**	**ΔH**	**Meter**	**Traverse**	**Dp**	**Stack**	
min.	**ft^3**	**"H_2O**	**T_m °F**	**Point**	**"H_2O**	**T_s °F**	**√Dp**
	139.226						
20.0	159.190	3.15	32	1	0.75	35	0.866
40.0	182.100	4.45	34	2	1.05	33	1.025
60.0	205.810	4.45	38	3	1.05	39	1.025
80.0	230.880	5.10	41	4	1.20	39	1.095
100.0	255.890	5.10	42	5	1.20	40	1.095
120.0	281.590	5.50	44	6	1.30	42	1.140
140.0	306.800	5.10	46	7	1.20	44	1.095
160.0	332.100	5.10	48	8	1.20	45	1.095
180.0	358.350	5.50	49	9	1.30	47	1.140
200.0	382.610	4.70	51	10	1.10	48	1.049
220.0	403.280	3.40	53	11	0.80	50	0.894
240.0	424.035	3.35	55	12	0.79	53	0.889

Client:	**Eagle Foundry Company**	**Run:**	**1**
Source:	**Cooling Bunker BH Inlet - White Iron**	**Date:**	**03/27/23**

Field Data Input Continued

Moisture Data			Stack Dimensional Data:		
Total Test Time	240.0	min	Circular		
Sample Time Interval	20.0	min	Diameter	48.000	in
Meter Volume, V_m	284.809	dcf	Rectangular		
Water Mass	31.7	g	Width		in
Nozzle Diameter, N_z	0.2500	in.	Length		in
Nozzle Area	0.000341	sq.ft.	Stack Area	12.566	sq.ft.
Traverse Data			Molecular Weight:		
Barometric Pressure, P_b	29.98	"Hg	CO_2 Average	0.07	%vd
Static Pressure	-0.90	"H_2O	O_2 Average	20.79	%vd
Pitot Factor, cp	0.84				
Meter Cal Factor	0.9686	Y			

Field Data Averages

Meter			Stack		
ΔH	4.575	"H_2O	√Dp	1.034	"H_2O
Temperature, T_m	44.4	^oF	Temperature, T_s	42.9	^oF
Temperature, T_m	504.1	^oA (^oR)	Temperature, T_s	502.6	^oA (^oR)
Pressure Meter, P_m	30.316	"Hg	Pressure Stack, P_s	29.914	"Hg

Field Data Calculations

Meter Box Capture			EPA Method 2 Stack Gas Flowrate:		
Standard Volume, $V_{m(std)}$	292.604	dscf	Velocity, V_s	56.73	fps
	8.286	dscm	Flow Rate (actual), Q_{aw}	42,772	acfm
Actual Volume, $V_{m(actual)}$	280.170	awcf		42,554	adcfm
Gas Stream Moisture			Flow Rate (standard), Q	2,693,960	wscf/hr
Moisture Vapor, $Vw_{(std)}$	1.495	scf		2,680,221	dscf/hr
Moisture, B_{ws}	0.0051			44,670	dscf/min
Moisture EPA M4	0.51	%v		44,899	wscf/min
Moisture @ Saturation	0.93	%v (for T_s < 212°F)			
EPA Method 3 Gas Density					
Dry, M_d	28.84	lb/lb-mole			
Wet, M_s	28.78	lb/lb-mole			
Percent Isokinetic	100.6	%			

Isokinetic Field Data
Field Data and Calculations
Gas Stream Characteristics

Client:	**Eagle Foundry Company**	**Run:**	**2**
Location:	**Eagle Creek, OR**	**Start Time:**	**5:10**
Source:	**Cooling Bunker BH Inlet - White Iron**	**End Time:**	**9:10**
Method:	**29**	**Date:**	**03/28/23**

Sampling Data				Traverse Data			
Time	**Meter**	**ΔH**	**Meter**	**Traverse**	**Dp**	**Stack**	
min.	**ft^3**	**"H_2O**	**T_m ^oF**	**Point**	**"H_2O**	**T_s ^oF**	**√Dp**
	724.396						
20.0	742.880	2.80	45	1	0.64	47	0.800
40.0	762.100	3.00	47	2	0.69	52	0.831
60.0	785.650	4.40	49	3	1.00	52	1.000
80.0	812.090	5.70	51	4	1.30	52	1.140
100.0	838.800	5.75	52	5	1.30	52	1.140
120.0	864.290	5.30	51	6	1.20	52	1.095
140.0	888.630	4.80	52	7	1.10	59	1.049
160.0	914.110	5.25	53	8	1.20	56	1.095
180.0	940.780	5.75	55	9	1.30	55	1.140
200.0	964.380	4.45	57	10	1.00	54	1.000
220.0	983.460	2.95	57	11	0.66	52	0.812
240.0	1001.068	2.40	56	12	0.53	46	0.728

Client:	**Eagle Foundry Company**	**Run:**	**2**
Source:	**Cooling Bunker BH Inlet - White Iron**	**Date:**	**03/28/23**

Field Data Input Continued

Moisture Data			Stack Dimensional Data:		
Total Test Time	240.0	min	Circular		
Sample Time Interval	20.0	min	Diameter	48.000	in
Meter Volume, V_m	276.672	dcf	Rectangular		
Water Mass	16.4	g	Width		in
Nozzle Diameter, N_z	0.2500	in.	Length		in
Nozzle Area	0.000341	sq.ft.	Stack Area	12.566	sq.ft.
Traverse Data			Molecular Weight:		
Barometric Pressure, P_b	29.41	"Hg	CO_2 Average	0.06	%vd
Static Pressure	-0.90	"H_2O	O_2 Average	20.73	%vd
Pitot Factor, cp	0.84				
Meter Cal Factor	0.9686	Y			

Field Data Averages

Meter			Stack		
ΔH	4.379	"H_2O	√Dp	0.986	"H_2O
Temperature, T_m	52.1	^oF	Temperature, T_s	52.4	^oF
Temperature, T_m	511.8	^oA (^oR)	Temperature, T_s	512.1	^oA (^oR)
Pressure Meter, P_m	29.732	"Hg	Pressure Stack, P_s	29.344	"Hg

Field Data Calculations

Meter Box Capture			EPA Method 2 Stack Gas Flowrate:		
Standard Volume, $V_{m(std)}$	274.574	dscf	Velocity, V_s	55.11	fps
	7.775	dscm	Flow Rate (actual), Q_{aw}	41,551	acfm
Actual Volume, $V_{m(actual)}$	272.450	awcf		41,435	adcfm
Gas Stream Moisture			Flow Rate (standard), Q	2,519,537	wscf/hr
Moisture Vapor, $Vw_{(std)}$	0.773	scf		2,512,482	dscf/hr
Moisture, B_{ws}	0.0028			41,875	dscf/min
Moisture EPA M4	0.28	%v		41,992	wscf/min
Moisture @ Saturation	1.35	%v (for $T_s < 212°F$)			
EPA Method 3 Gas Density					
Dry, M_d	28.84	lb/lb-mole			
Wet, M_s	28.81	lb/lb-mole			
Percent Isokinetic	100.7	%			

Isokinetic Field Data
Field Data and Calculations
Gas Stream Characteristics

Client:	**Eagle Foundry Company**	**Run:**	**3**
Location:	**Eagle Creek, OR**	**Start Time:**	**5:15**
Source:	**Cooling Bunker BH Inlet - White Iron**	**End Time:**	**9:15**
Method:	**29**	**Date:**	**03/29/23**

Sampling Data				Traverse Data			
Time	**Meter**	**ΔH**	**Meter**	**Traverse**	**Dp**	**Stack**	
min.	**ft^3**	**"H_2O**	**T_m °F**	**Point**	**"H_2O**	**T_s °F**	**√Dp**
	282.331						
20.0	306.140	4.85	35	1	1.10	36	1.049
40.0	333.475	6.15	37	2	1.40	41	1.183
60.0	359.990	5.70	41	3	1.30	46	1.140
80.0	385.480	5.30	45	4	1.20	45	1.095
100.0	410.960	5.35	47	5	1.20	45	1.095
120.0	437.640	5.80	48	6	1.30	45	1.140
140.0	464.235	5.80	49	7	1.30	45	1.140
160.0	489.660	5.30	49	8	1.20	50	1.095
180.0	515.040	5.30	49	9	1.20	49	1.095
200.0	541.450	5.75	49	10	1.30	49	1.140
220.0	568.080	5.85	50	11	1.30	43	1.140
240.0	598.699	7.70	50	12	1.70	37	1.304

Client:	**Eagle Foundry Company**	**Run:**	**3**
Source:	**Cooling Bunker BH Inlet - White Iron**	**Date:**	**03/29/23**

Field Data Input Continued

Moisture Data			Stack Dimensional Data:		
Total Test Time	240.0	min	Circular		
Sample Time Interval	20.0	min	Diameter	48.000	in
Meter Volume, V_m	316.368	dcf	Rectangular		
Water Mass	16.9	g	Width		in
Nozzle Diameter, N_z	0.2500	in.	Length		in
Nozzle Area	0.000341	sq.ft.	Stack Area	12.566	sq.ft.
Traverse Data			Molecular Weight:		
Barometric Pressure, P_b	29.41	"Hg	CO_2 Average	0.07	%vd
Static Pressure	-0.90	"H_2O	O_2 Average	20.92	%vd
Pitot Factor, cp	0.84				
Meter Cal Factor	0.9686	Y			

Field Data Averages

Meter			Stack		
ΔH	5.738	"H_2O	√Dp	1.135	"H_2O
Temperature, T_m	45.8	^oF	Temperature, T_s	44.3	^oF
Temperature, T_m	505.5	^oA (^oR)	Temperature, T_s	504.0	^oA (^oR)
Pressure Meter, P_m	29.832	"Hg	Pressure Stack, P_s	29.344	"Hg

Field Data Calculations

Meter Box Capture			EPA Method 2 Stack Gas Flowrate:		
Standard Volume, $V_{m(std)}$	318.952	dscf	Velocity, V_s	62.92	fps
	9.032	dscm	Flow Rate (actual), Q_{aw}	47,439	acfm
Actual Volume, $V_{m(actual)}$	311.384	awcf		47,320	adcfm
Gas Stream Moisture			Flow Rate (standard), Q	2,922,831	wscf/hr
Moisture Vapor, $Vw_{(std)}$	0.797	scf		2,915,524	dscf/hr
Moisture, B_{ws}	0.0025			48,592	dscf/min
Moisture EPA M4	0.25	%v		48,714	wscf/min
Moisture @ Saturation	1.00	%v (for T_s < 212°F)			
EPA Method 3 Gas Density					
Dry, M_d	28.85	lb/lb-mole			
Wet, M_s	28.82	lb/lb-mole			
Percent Isokinetic	100.8	%			

Eagle Foundry Company **Run: 1**
Cooling Bunker BH Inlet - White Iron **Sample Date: 03/27/23**
Method 29 Laboratory Results

Analyte	Filter + FH Rinse Cont. 1&3			BH Cap.Soln. + BH Rinse Cont. 4			Units
	<	Result	MDL	<	Result	MDL	
Aluminum		584	7.50		34.5	3.57	µg/sample
Antimony		2.17	1.25	<	MDL	0.595	µg/sample
Arsenic	<	MDL	1.75	<	MDL	0.833	µg/sample
Barium		6.20	0.125		1.87	0.060	µg/sample
Beryllium	<	MDL	0.050	<	MDL	0.024	µg/sample
Cadmium		1.86	0.100		0.064	0.048	µg/sample
Chromium		28.5	0.200		2.59	0.095	µg/sample
Cobalt		0.212	0.125		0.120	0.060	µg/sample
Copper		12.5	1.25		1.79	0.595	µg/sample
Lead		24.0	1.25		0.680	0.595	µg/sample
Manganese		134	0.075		0.894	0.036	µg/sample
Nickel		6.85	0.750		1.70	0.357	µg/sample
Phosphorus		19.1	5.00	<	MDL	2.38	µg/sample
Selenium	<	MDL	3.75	<	MDL	1.78	µg/sample
Silver		1.16	0.500	<	MDL	0.238	µg/sample
Thallium	<	MDL	2.50	<	MDL	1.19	µg/sample
Vanadium		0.352	0.250	<	MDL	0.119	µg/sample
Zinc		189	0.750		5.33	0.357	µg/sample

Lab ID:	23-S624	23-S625	
Sample Vol:	250	250	ml

Eagle Foundry Company **Run: 3**
Cooling Bunker BH Inlet - White Iron **Sample Date: 03/29/23**
Method 29 Laboratory Results

Analyte	Filter + FH Rinse Cont. 1&3			BH Cap.Soln. + BH Rinse Cont. 4			Units
	<	Result	MDL	<	Result	MDL	
Aluminum		1,900	7.50		25.4	3.81	µg/sample
Antimony		2.36	1.25	<	MDL	0.635	µg/sample
Arsenic	<	MDL	1.75	<	MDL	0.889	µg/sample
Barium		11.6	0.125		1.26	0.064	µg/sample
Beryllium	<	MDL	0.050	<	MDL	0.025	µg/sample
Cadmium		0.359	0.100	<	MDL	0.051	µg/sample
Chromium		26.2	0.200		0.959	0.102	µg/sample
Cobalt		0.294	0.125	<	MDL	0.064	µg/sample
Copper		24.2	1.25		1.81	0.635	µg/sample
Lead		17.7	1.25	<	MDL	0.635	µg/sample
Manganese		414	0.075		4.13	0.038	µg/sample
Nickel		10.7	0.750		0.488	0.381	µg/sample
Phosphorus		38.0	5.00	<	MDL	2.54	µg/sample
Selenium	<	MDL	3.75	<	MDL	1.90	µg/sample
Silver		1.10	0.500	<	MDL	0.254	µg/sample
Thallium	<	MDL	2.50	<	MDL	1.27	µg/sample
Vanadium		1.37	0.250	<	MDL	0.127	µg/sample
Zinc		265	0.750		2.03	0.381	µg/sample

Lab ID:	23-S634	23-S635	
Sample Vol:	250	188	ml

Eagle Foundry Company **Run: 2**
Cooling Bunker BH Inlet - White Iron **Sample Date: 03/28/23**
Method 29 Laboratory Results

Analyte	Filter + FH Rinse Cont. 1&3			BH Cap.Soln. + BH Rinse Cont. 4			Units
	<	Result	MDL		Result	MDL	
Aluminum		3,460	7.50		19.4	4.35	µg/sample
Antimony		2.69	1.25	<	MDL	0.725	µg/sample
Arsenic	<	MDL	1.75	<	MDL	1.02	µg/sample
Barium		16.8	0.125		1.31	0.072	µg/sample
Beryllium		0.074	0.050	<	MDL	0.029	µg/sample
Cadmium		0.338	0.100	<	MDL	0.058	µg/sample
Chromium		37.4	0.200		1.31	0.116	µg/sample
Cobalt		0.455	0.125		0.084	0.072	µg/sample
Copper		25.6	1.25		0.836	0.725	µg/sample
Lead		19.1	1.25	<	MDL	0.725	µg/sample
Manganese		432	0.075		1.51	0.044	µg/sample
Nickel		14.3	0.750		0.563	0.435	µg/sample
Phosphorus		47.8	5.00	<	MDL	2.90	µg/sample
Selenium	<	MDL	3.75	<	MDL	2.18	µg/sample
Silver		1.02	0.500		0.433	0.290	µg/sample
Thallium	<	MDL	2.50	<	MDL	1.45	µg/sample
Vanadium		2.08	0.250	<	MDL	0.145	µg/sample
Zinc		194	0.750		2.05	0.435	µg/sample

Lab ID:	23-S629	23-S630	
Sample Vol:	250	256	ml

Eagle Foundry Company **Sample Dates: 3/27/2023**
Cooling Bunker BH Inlet - White Iron **3/28/2023**
Method 29 Blank Results **3/29/2023**

Analyte	Filter Cont. 12 µg/filter			BH Cap.Soln. Cont. 9 5% HNO_3/ 10% H_2O_2 µg/sample			FH/BH Rinse Cont. 8A 0.1 N HNO_3 µg/sample		
	<	Result	MDL	<	Result	MDL	<	Result	MDL
Aluminum		58.8	7.50		16.30	3.78	<	MDL	7.50
Antimony		2.86	1.25	<	MDL	0.630	<	MDL	1.25
Arsenic	<	MDL	1.75	<	MDL	0.882	<	MDL	1.75
Barium		1.40	0.125		0.718	0.063		0.193	0.125
Beryllium	<	MDL	0.050	<	MDL	0.025	<	MDL	0.050
Cadmium	<	MDL	0.100	<	MDL	0.050	<	MDL	0.100
Chromium		1.03	0.200		0.306	0.101	<	MDL	0.200
Cobalt	<	MDL	0.125		0.153	0.063	<	MDL	0.125
Copper	<	MDL	1.25	<	MDL	0.630	<	MDL	1.25
Lead	<	MDL	1.25	<	MDL	0.630	<	MDL	1.25
Manganese		0.74	0.08		0.742	0.038	<	MDL	0.375
Nickel		3.96	0.75	<	MDL	0.378	<	MDL	0.750
Phosphorus		17.0	5.00	<	MDL	2.52	<	MDL	5.00
Selenium	<	MDL	3.75	<	MDL	1.89	<	MDL	3.75
Silver	<	MDL	0.500	<	MDL	0.252	<	MDL	0.500
Thallium	<	MDL	2.50	<	MDL	1.26	<	MDL	2.50
Vanadium	<	MDL	0.250	<	MDL	0.126	<	MDL	0.250
Zinc		1.52	0.750		0.415	0.378	<	MDL	0.750

Lab ID:	23-S729	23-S731	23-S730
Blank Vol, ml:	N/A	196	250

Eagle Foundry Company **Run: 1**
Cooling Bunker BH Inlet - White Iron **Test Date: 3/27/2023**
Method 29 Non-Hg Metals Blank Correction Calculations **Page: 1 of 3**

Analyte	I Sample FH Rinse+Filter µg	II Blank Correction FH Rinse µg	III Blank Correction Filter µg	IV Sample BH Cap.Soln. + BH Rinse µg	V Blank BH Cap.Soln. µg/ml	VI Blank Correction BH Cap.Soln. µg	VII Blank Correction BH Rinse µg	VIII Total BH Blank Correction µg	
Aluminum	584.000	0.000	58.800	34.500	0.083	16.633	0.000	16.633	Al
Antimony	2.170	0.000	2.860	< 0.595	0.000	0.000	0.000	0.000	Sb
Arsenic	< 1.750	0.000	0.000	< 0.833	0.000	0.000	0.000	0.000	As
Barium	6.200	0.077	1.400	1.870	0.004	0.733	0.077	0.810	Ba
Beryllium	< 0.050	0.000	0.000	< 0.024	0.000	0.000	0.000	0.000	Be
Cadmium	1.860	0.000	0.000	0.064	0.000	0.000	0.000	0.000	Cd
Chromium	28.500	0.000	1.030	2.590	0.002	0.312	0.000	0.312	Cr
Cobalt	0.212	0.000	0.000	0.120	0.001	0.156	0.000	0.156	Co
Copper	12.500	0.000	0.000	1.790	0.000	0.000	0.000	0.000	Cu
Lead	24.000	0.000	0.000	0.680	0.000	0.000	0.000	0.000	Pb
Manganese	134.000	0.000	0.741	0.894	0.004	0.757	0.000	0.757	Mn
Nickel	6.850	0.000	3.960	1.700	0.000	0.000	0.000	0.000	Ni
Phosphorus	19.100	0.000	17.000	< 2.380	0.000	0.000	0.000	0.000	P
Selenium	< 3.750	0.000	0.000	< 1.780	0.000	0.000	0.000	0.000	Se
Silver	1.160	0.000	0.000	< 0.238	0.000	0.000	0.000	0.000	Ag
Thallium	< 2.500	0.000	0.000	< 1.190	0.000	0.000	0.000	0.000	Tl
Vanadium	0.352	0.000	0.000	< 0.119	0.000	0.000	0.000	0.000	V
Zinc	189.000	0.000	1.520	5.330	0.002	0.423	0.000	0.423	Zn

Lab ID:	**23-S624**	**23-S730**	**23-S729**	**23-S625**	**23-S731**	**N/A**	**N/A**
Notes:	0.1N HNO_3	0.1N HNO_3		5% HNO_3/10% H_2O_2	5% HNO_3/	5%HNO_3/	0.1NHNO_3
	FH Filter & Probe Rinse			BH Imps 1-3	10% H_2O_2	10%H_2O_2	
	100ml 0.1N HNO_3 Rinse			100ml .1N HNO3 Rinse			
				200ml 5% HNO3/10% H2O2 Reagent			

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Analyte	X Allowable FH Blank Correction µg	XI Total FH Blank Correction (M_{fhb}) µg		XII 5% of FH Sample µg	XIII Lessor of XI or XII µg	XIV Greater of A or XIII µg		XV FH Net Sample µg	
Aluminum	29.200	58.800		29.200	29.200	29.20		554.800	Al
Antimony	2.860	2.860		0.109	0.109	11.63		-0.690	Sb
Arsenic	0.000	0.000	<	0.088	0.000	11.63	<	1.750	As
Barium	1.477	1.477		0.310	0.310	11.63		4.723	Ba
Beryllium	0.000	0.000	<	0.003	0.000	11.63	<	0.050	Be
Cadmium	0.000	0.000		0.093	0.000	11.63		1.860	Cd
Chromium	1.030	1.030		1.425	1.030	11.63		27.470	Cr
Cobalt	0.000	0.000		0.011	0.000	11.63		0.212	Co
Copper	0.000	0.000		0.625	0.000	11.63		12.500	Cu
Lead	0.000	0.000		1.200	0.000	11.63		24.000	Pb
Manganese	0.741	0.741		6.700	0.741	11.63		133.259	Mn
Nickel	3.960	3.960		0.343	0.343	11.63		2.890	Ni
Phosphorus	11.630	17.000		0.955	0.955	11.63		7.470	P
Selenium	0.000	0.000	<	0.188	0.000	11.63	<	3.750	Se
Silver	0.000	0.000		0.058	0.000	11.63		1.160	Ag
Thallium	0.000	0.000	<	0.125	0.000	11.63	<	2.500	Tl
Vanadium	0.000	0.000		0.018	0.000	11.63		0.352	V
Zinc	1.520	1.520		9.450	1.520	11.63		187.480	Zn

Note: Allowable FH Blank (A) = (area of filter)*(1.4 µg/in^2) = 11.63 µg
where area of filter = 8.306 in^2

If A > blank > 0, use blank-derived value, M_{fhb}.
If blank > A, use greater of A or [lessor of 5% of sample µg or FH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company | **Run:** 1
Cooling Bunker BH Inlet - White Iron | **Test Date:** 3/27/2023
Method 29 Non-Hg Metals Blank Correction Calculations | **Page:** 3 of 3

Analyte	XVI Allowable BH Blank Correction µg	XVII Total BH (M_{bhb}) Blank Correction µg		XVIII 5% of BH Sample µg	XIX Lessor of XVII or XVIII µg	XX Greater of 1 µg or XIX µg		XXI BH Net Sample µg		XXII FH Net Sample µg		XXIII FH+BH Total Net Sample µg	
Aluminum	1.725	16.633		1.725	1.725	1.725		**32.775**		**554.800**		**587.575**	Al
Antimony	0.000	0.000	<	0.030	0.000	1.000	<	**0.595**		**0.000**	<	**0.595**	Sb
Arsenic	0.000	0.000	<	0.042	0.000	1.000	<	**0.833**	<	**1.750**	<	**2.583**	As
Barium	0.810	0.810		0.094	0.094	1.000		**1.060**		**4.723**		**5.783**	Ba
Beryllium	0.000	0.000	<	0.001	0.000	1.000	<	**0.024**	<	**0.050**	<	**0.074**	Be
Cadmium	0.000	0.000		0.003	0.000	1.000		**0.064**		**1.860**		**1.924**	Cd
Chromium	0.312	0.312		0.130	0.130	1.000		**2.278**		**27.470**		**29.748**	Cr
Cobalt	0.156	0.156		0.006	0.006	1.000		**0.000**		**0.212**		**0.212**	Co
Copper	0.000	0.000		0.090	0.000	1.000		**1.790**		**12.500**		**14.290**	Cu
Lead	0.000	0.000		0.034	0.000	1.000		**0.680**		**24.000**		**24.680**	Pb
Manganese	0.757	0.757		0.045	0.045	1.000		**0.137**		**133.259**		**133.396**	Mn
Nickel	0.000	0.000		0.085	0.000	1.000		**1.700**		**2.890**		**4.590**	Ni
Phosphorus	0.000	0.000	<	0.119	0.000	1.000	<	**2.380**		**7.470**	<	**9.850**	P
Selenium	0.000	0.000	<	0.089	0.000	1.000	<	**1.780**	<	**3.750**	<	**5.530**	Se
Silver	0.000	0.000	<	0.012	0.000	1.000	<	**0.238**		**1.160**	<	**1.398**	Ag
Thallium	0.000	0.000	<	0.060	0.000	1.000	<	**1.190**	<	**2.500**	<	**3.690**	Tl
Vanadium	0.000	0.000	<	0.006	0.000	1.000	<	**0.119**		**0.352**	<	**0.471**	V
Zinc	0.423	0.423		0.267	0.267	1.000		**4.907**		**187.480**		**192.387**	Zn

Note: Allowable BH Blank rules:

If 1.00 µg > blank > 0 , use blank-derived value.
If blank > 1.00 µg, use greater of 1.00 µg or [lessor of 5% of sample µg or BH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company **Run: 2**
Cooling Bunker BH Inlet - White Iron **Test Date: 3/28/2023**
Method 29 Non-Hg Metals Blank Correction Calculations **Page: 1 of 3**

Analyte		I Sample FH Rinse+Filter µg	II Blank Correction FH Rinse µg	III Blank Correction Filter µg		IV Sample BH Cap.Soln. + BH Rinse µg	V Blank BH Cap.Soln. µg/ml	VI Blank Correction BH Cap.Soln. µg	VII Blank Correction BH Rinse µg	VIII Total BH Blank Correction µg	
Aluminum		3460.000	0.000	58.800		19.400	0.083	16.633	0.000	16.633	Al
Antimony		2.690	0.000	2.860	<	0.725	0.000	0.000	0.000	0.000	Sb
Arsenic	<	1.750	0.000	0.000	<	1.020	0.000	0.000	0.000	0.000	As
Barium		16.800	0.077	1.400		1.310	0.004	0.733	0.077	0.810	Ba
Beryllium		0.074	0.000	0.000	<	0.029	0.000	0.000	0.000	0.000	Be
Cadmium		0.338	0.000	0.000	<	0.058	0.000	0.000	0.000	0.000	Cd
Chromium		37.400	0.000	1.030		1.310	0.002	0.312	0.000	0.312	Cr
Cobalt		0.455	0.000	0.000		0.084	0.001	0.156	0.000	0.156	Co
Copper		25.600	0.000	0.000		0.836	0.000	0.000	0.000	0.000	Cu
Lead		19.100	0.000	0.000	<	0.725	0.000	0.000	0.000	0.000	Pb
Manganese		432.000	0.000	0.741		1.510	0.004	0.757	0.000	0.757	Mn
Nickel		14.300	0.000	3.960		0.563	0.000	0.000	0.000	0.000	Ni
Phosphorus		47.800	0.000	17.000	<	2.900	0.000	0.000	0.000	0.000	P
Selenium	<	3.750	0.000	0.000	<	2.180	0.000	0.000	0.000	0.000	Se
Silver		1.020	0.000	0.000		0.433	0.000	0.000	0.000	0.000	Ag
Thallium	<	2.500	0.000	0.000	<	1.450	0.000	0.000	0.000	0.000	Tl
Vanadium		2.080	0.000	0.000	<	0.145	0.000	0.000	0.000	0.000	V
Zinc		194.000	0.000	1.520		2.050	0.002	0.423	0.000	0.423	Zn

Lab ID:	**23-S629**	**23-S730**	**23-S729**	**23-S630**	**23-S731**	**N/A**	**N/A**
Content:	0.1N HNO_3	0.1N HNO_3		5% HNO_3/10% H_2O_2	5% HNO_3/	5%HNO_3/	0.1NHNO_3
	FH Filter & Probe Rinse			BH Imps 1-3	10% H_2O_2	10%H_2O_2	
	100ml 0.1N HNO_3 Rinse			100ml .1N HNO3 Rinse			
				200ml 5% HNO3/10% H2O2 Reagent			

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Analyte	X Allowable FH Blank Correction µg	XI Total FH Blank Correction µg		XII 5% of FH Sample µg	XIII Lessor of XI or XII µg	XIV Greater of A or XIII µg		XV FH Net Sample µg	
Aluminum	58.800	58.800		173.000	58.800	58.80		3401.200	Al
Antimony	2.860	2.860		0.135	0.135	11.63		-0.170	Sb
Arsenic	0.000	0.000	<	0.088	0.000	11.63	<	1.750	As
Barium	1.477	1.477		0.840	0.840	11.63		15.323	Ba
Beryllium	0.000	0.000		0.004	0.000	11.63		0.074	Be
Cadmium	0.000	0.000		0.017	0.000	11.63		0.338	Cd
Chromium	1.030	1.030		1.870	1.030	11.63		36.370	Cr
Cobalt	0.000	0.000		0.023	0.000	11.63		0.455	Co
Copper	0.000	0.000		1.280	0.000	11.63		25.600	Cu
Lead	0.000	0.000		0.955	0.000	11.63		19.100	Pb
Manganese	0.741	0.741		21.600	0.741	11.63		431.259	Mn
Nickel	3.960	3.960		0.715	0.715	11.63		10.340	Ni
Phosphorus	11.630	17.000		2.390	2.390	11.63		36.170	P
Selenium	0.000	0.000	<	0.188	0.000	11.63	<	3.750	Se
Silver	0.000	0.000		0.051	0.000	11.63		1.020	Ag
Thallium	0.000	0.000	<	0.125	0.000	11.63	<	2.500	Tl
Vanadium	0.000	0.000		0.104	0.000	11.63		2.080	V
Zinc	1.520	1.520		9.700	1.520	11.63		192.480	Zn

Note: Allowable FH Blank (A) = (area of filter)*(1.4 µg/in^2) = 11.63 µg
where area of filter = 8.306 in^2

If A > blank > 0, use blank-derived value.
If blank > A, use greater of A or [lessor of 5% of sample µg or FH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company | **Run:** 2
Cooling Bunker BH Inlet - White Iron | **Test Date:** 3/28/2023
Method 29 Non-Hg Metals Blank Correction Calculations | **Page:** 3 of 3

Analyte	XVI Allowable BH Blank Correction µg	XVII Total BH Blank Correction µg		XVIII 5% of BH Sample µg	XIX Lessor of XVII or XVIII µg	XX Greater of 1 µg or XIX µg		XXI BH Net Sample µg		XXII FH Net Sample µg		XXIII FH+BH Total Net Sample µg	
Aluminum	1.000	16.633		0.970	0.970	1.000		**18.400**		**3401.200**		**3419.600**	Al
Antimony	0.000	0.000	<	0.036	0.000	1.000	<	**0.725**		**0.000**	<	**0.725**	Sb
Arsenic	0.000	0.000	<	0.051	0.000	1.000	<	**1.020**	<	**1.750**	<	**2.770**	As
Barium	0.810	0.810		0.066	0.066	1.000		**0.500**		**15.323**		**15.823**	Ba
Beryllium	0.000	0.000	<	0.001	0.000	1.000	<	**0.029**		**0.074**	<	**0.103**	Be
Cadmium	0.000	0.000	<	0.003	0.000	1.000	<	**0.058**		**0.338**	<	**0.396**	Cd
Chromium	0.312	0.312		0.066	0.066	1.000		**0.998**		**36.370**		**37.368**	Cr
Cobalt	0.156	0.156		0.004	0.004	1.000		**0.000**		**0.455**		**0.455**	Co
Copper	0.000	0.000		0.042	0.000	1.000		**0.836**		**25.600**		**26.436**	Cu
Lead	0.000	0.000	<	0.036	0.000	1.000	<	**0.725**		**19.100**	<	**19.825**	Pb
Manganese	0.757	0.757		0.076	0.076	1.000		**0.753**		**431.259**		**432.012**	Mn
Nickel	0.000	0.000		0.028	0.000	1.000		**0.563**		**10.340**		**10.903**	Ni
Phosphorus	0.000	0.000	<	0.145	0.000	1.000	<	**2.900**		**36.170**	<	**39.070**	P
Selenium	0.000	0.000	<	0.109	0.000	1.000	<	**2.180**	<	**3.750**	<	**5.930**	Se
Silver	0.000	0.000		0.022	0.000	1.000		**0.433**		**1.020**		**1.453**	Ag
Thallium	0.000	0.000	<	0.073	0.000	1.000	<	**1.450**	<	**2.500**	<	**3.950**	Tl
Vanadium	0.000	0.000	<	0.007	0.000	1.000	<	**0.145**		**2.080**	<	**2.225**	V
Zinc	0.423	0.423		0.103	0.103	1.000		**1.627**		**192.480**		**194.107**	Zn

Note: Allowable BH Blank rules:

If 1.00 µg > blank > 0 , use blank-derived value.
If blank > 1.00 µg, use greater of 1.00 µg or [lessor of 5% of sample µg or BH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company **Run: 3**
Cooling Bunker BH Inlet - White Iron **Test Date: 3/29/2023**
Method 29 Non-Hg Metals Blank Correction Calculations **Page: 1 of 3**

Analyte		I Sample FH Rinse+Filter µg	II Blank Correction FH Rinse µg	III Blank Correction Filter µg		IV Sample BH Cap.Soln. + BH Rinse µg	V Blank BH Cap.Soln. µg/ml	VI Blank Correction BH Cap.Soln. µg	VII Blank Correction BH Rinse µg	VIII Total BH Blank Correction µg	
Aluminum		1900.000	0.000	58.800		25.400	0.083	16.633	0.000	16.633	Al
Antimony		2.360	0.000	2.860	<	0.635	0.000	0.000	0.000	0.000	Sb
Arsenic	<	1.750	0.000	0.000	<	0.889	0.000	0.000	0.000	0.000	As
Barium		11.600	0.077	1.400		1.260	0.004	0.733	0.077	0.810	Ba
Beryllium	<	0.050	0.000	0.000	<	0.025	0.000	0.000	0.000	0.000	Be
Cadmium		0.359	0.000	0.000	<	0.051	0.000	0.000	0.000	0.000	Cd
Chromium		26.200	0.000	1.030		0.959	0.002	0.312	0.000	0.312	Cr
Cobalt		0.294	0.000	0.000	<	0.064	0.001	0.156	0.000	0.156	Co
Copper		24.200	0.000	0.000		1.810	0.000	0.000	0.000	0.000	Cu
Lead		17.700	0.000	0.000	<	0.635	0.000	0.000	0.000	0.000	Pb
Manganese		414.000	0.000	0.741		4.130	0.004	0.757	0.000	0.757	Mn
Nickel		10.700	0.000	3.960		0.488	0.000	0.000	0.000	0.000	Ni
Phosphorus		38.000	0.000	17.000	<	2.540	0.000	0.000	0.000	0.000	P
Selenium	<	3.750	0.000	0.000	<	1.900	0.000	0.000	0.000	0.000	Se
Silver		1.100	0.000	0.000	<	0.254	0.000	0.000	0.000	0.000	Ag
Thallium	<	2.500	0.000	0.000	<	1.270	0.000	0.000	0.000	0.000	Tl
Vanadium		1.370	0.000	0.000	<	0.127	0.000	0.000	0.000	0.000	V
Zinc		265.000	0.000	1.520		2.030	0.002	0.423	0.000	0.423	Zn

Lab ID:	**23-S634**	**23-S730**	**23-S729**	**23-S635**	**23-S731**	**N/A**	**N/A**
Content:	0.1N HNO_3	0.1N HNO_3		5% HNO_3/10% H_2O_2	5% HNO_3/	5%HNO_3/	0.1NHNO_3
	FH Filter & Probe Rinse			BH Imps 1-3	10% H_2O_2	10%H_2O_2	
	100ml 0.1N HNO_3 Rinse			100ml .1N HNO_3 Rinse			
				200ml 5% HNO_3/10% H_2O_2 Reagent			

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Analyte	X Allowable FH Blank Correction µg	XI Total FH Blank Correction µg		XII 5% of FH Sample µg	XIII Lessor of XI or XII µg	XIV Greater of A or XIII µg		XV FH Net Sample µg	
Aluminum	58.800	58.800		95.000	58.800	58.80		1841.200	Al
Antimony	2.860	2.860		0.118	0.118	11.63		-0.500	Sb
Arsenic	0.000	0.000	<	0.088	0.000	11.63	<	1.750	As
Barium	1.477	1.477		0.580	0.580	11.63		10.123	Ba
Beryllium	0.000	0.000	<	0.003	0.000	11.63	<	0.050	Be
Cadmium	0.000	0.000		0.018	0.000	11.63		0.359	Cd
Chromium	1.030	1.030		1.310	1.030	11.63		25.170	Cr
Cobalt	0.000	0.000		0.015	0.000	11.63		0.294	Co
Copper	0.000	0.000		1.210	0.000	11.63		24.200	Cu
Lead	0.000	0.000		0.885	0.000	11.63		17.700	Pb
Manganese	0.741	0.741		20.700	0.741	11.63		413.259	Mn
Nickel	3.960	3.960		0.535	0.535	11.63		6.740	Ni
Phosphorus	11.630	17.000		1.900	1.900	11.63		26.370	P
Selenium	0.000	0.000	<	0.188	0.000	11.63	<	3.750	Se
Silver	0.000	0.000		0.055	0.000	11.63		1.100	Ag
Thallium	0.000	0.000	<	0.125	0.000	11.63	<	2.500	Tl
Vanadium	0.000	0.000		0.069	0.000	11.63		1.370	V
Zinc	1.520	1.520		13.250	1.520	11.63		263.480	Zn

Note: Allowable FH Blank (A) = (area of filter)*(1.4 µg/in^2) = 11.63 µg
where area of filter = 8.306 in^2

If A > blank > 0, use blank-derived value.
If blank > A, use greater of A or [lessor of 5% of sample µg or FH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company | **Run:** | **3**
Cooling Bunker BH Inlet - White Iron | **Test Date:** | **3/29/2023**
Method 29 Non-Hg Metals Blank Correction Calculations | **Page:** | **3 of 3**

Analyte	XVI Allowable BH Blank Correction µg	XVII Total BH Blank Correction µg		XVIII 5% of BH Sample µg	XIX Lessor of XVII or XVIII µg	XX Greater of 1 µg or XIX µg		XXI BH Net Sample µg		XXII FH Net Sample µg		XXIII FH+BH Total Net Sample µg	
Aluminum	1.270	16.633		1.270	1.270	1.270		**24.130**		**1841.200**		**1865.330**	Al
Antimony	0.000	0.000	<	0.032	0.000	1.000	<	**0.635**		**0.000**	<	**0.635**	Sb
Arsenic	0.000	0.000	<	0.044	0.000	1.000	<	**0.889**	<	**1.750**	<	**2.639**	As
Barium	0.810	0.810		0.063	0.063	1.000		**0.450**		**10.123**		**10.573**	Ba
Beryllium	0.000	0.000	<	0.001	0.000	1.000	<	**0.025**	<	**0.050**	<	**0.075**	Be
Cadmium	0.000	0.000	<	0.003	0.000	1.000	<	**0.051**		**0.359**	<	**0.410**	Cd
Chromium	0.312	0.312		0.048	0.048	1.000		**0.647**		**25.170**		**25.817**	Cr
Cobalt	0.156	0.156	<	0.003	0.156	1.000		**0.000**		**0.294**		**0.294**	Co
Copper	0.000	0.000		0.091	0.000	1.000		**1.810**		**24.200**		**26.010**	Cu
Lead	0.000	0.000	<	0.032	0.000	1.000	<	**0.635**		**17.700**	<	**18.335**	Pb
Manganese	0.757	0.757		0.207	0.207	1.000		**3.373**		**413.259**		**416.632**	Mn
Nickel	0.000	0.000		0.024	0.000	1.000		**0.488**		**6.740**		**7.228**	Ni
Phosphorus	0.000	0.000	<	0.127	0.000	1.000	<	**2.540**		**26.370**	<	**28.910**	P
Selenium	0.000	0.000	<	0.095	0.000	1.000	<	**1.900**	<	**3.750**	<	**5.650**	Se
Silver	0.000	0.000	<	0.013	0.000	1.000	<	**0.254**		**1.100**	<	**1.354**	Ag
Thallium	0.000	0.000	<	0.064	0.000	1.000	<	**1.270**	<	**2.500**	<	**3.770**	Tl
Vanadium	0.000	0.000	<	0.006	0.000	1.000	<	**0.127**		**1.370**	<	**1.497**	V
Zinc	0.423	0.423		0.102	0.102	1.000		**1.607**		**263.480**		**265.087**	Zn

Note: Allowable BH Blank rules:

If 1.00 µg > blank > 0 , use blank-derived value.
If blank > 1.00 µg, use greater of 1.00 µg or [lessor of 5% of sample µg or BH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company
Cooling Bunker BH Inlet - White Iron
Mercury Blank Correction Calculations

Blank Lab Values

	Filter Cont. 12 µg/filter			BH Imps. 2&3 Cap.Soln. Cont. 9 5% HNO_3/ 10% H_2O_2 µg/sample			FH/BH Rinse Cont. 8A 0.1 N HNO_3 µg/sample			BH Imps. 5&6 Rinse Cont. 8B H_2O µg/sample			BH Imps. 5&6 Cap.Soln. + Rinse Cont. 10 $KMnO_4$ µg/sample			BH Imps. 5&6 Rinse Cont. 11 HCl µg/sample	
Analyte	<	**Result**	**MDL**	<	**Result**	**MDL**	<	**Result**	**MDL**	<	**Result**	**MDL**	<	**Result**	**MDL**	<	**Result**	**MDL**
Mercury		0.0406	0.0219		0.118	0.0172	<	MDL	0.0219	<	MDL	0.0295		0.0628	0.0163	<	MDL	0.0108
Lab ID:		23-S729			23-S731			23-S730			23-S732			23-S733			23-S734	
Blank vol, ml:		NA			196			250			337			186			124	

Blank Correction Values

Analyte: Mercury	**Blank FH HNO_3 Rinse µg**	**Blank Filter µg**	**Blank BH Cap.Soln. µg**	**Blank BH HNO_3 Rinse µg**	**Blank BH H_2O Rinse µg**	**Blank BH KMnO4 Cap.Soln. + Rinse µg**	**Blank BH HCl Rinse µg**	**Total Blank Correction µg**	**Is Total Blank Correction ≥ 0 and ≤ 0.6?**
Run 1	0.00	0.0406	0.12	0.00	0.00	0.10	0.00	0.2623	Yes
Reagent vol, ml	100.0		200.0	200.0	100.0	300.0	225.0		
Run 2	0.00	0.0406	0.12	0.00	0.00	0.10	0.00	0.2623	Yes
Reagent vol, ml	100.0		200.0	200.0	100.0	300.0	225.0		
Run 3	0.00	0.0406	0.12	0.00	0.00	0.10	0.00	0.2623	Yes
Reagent vol, ml	100.0		200.0	200.0	100.0	300.0	225.0		
Notes:	0.1N HNO_3 FH Probe Rinse	FH Filter	5% HNO_3/ 10% H_2O_2 BH Imps 2&3	0.1N HNO_3 BH Imps 1-4	H_2O BH Imps 5&6	4% $KMnO_4$/ 10% H_2SO_4 BH Imps 5&6	25 ml 8N HCl/ 200 ml H2O BH Imps 5&6		

Blank Corrected Results

Analyte: Mercury		**Sample FH Rinse + Filter Cont. 1&3 µg**	**Sample BH Cap.Soln. + HNO_3 Rinse Cont. 4 µg**	**Sample BH Imp. 4 + Rinse Cont. 5A µg**	**Sample BH Imps. 5&6 + Rinses Cont. 5B µg**		**Sample BH HCl Rinse + Water Cont. 5C µg**		**Total Sample µg**	**Total Blank Correction µg**		**Total Net Sample µg**
Run 1	<	0.0219	0.134	0.00664	0.141	<	0.0198	<	0.3233	0.2623	<	0.0610
Lab ID		23-S624	23-S625	23-S626	23-S627		23-S628					
Run 2	<	0.0219	0.176	0.00735	0.131	<	0.0198	<	0.3561	0.2623	<	0.0938
Lab ID		23-S629	23-S630	23-S631	23-S632		23-S633					
Run 3	<	0.0219	0.169	0.00910	0.117	<	0.0196	<	0.3366	0.2623	<	0.0743
Lab ID		23-S634	23-S635	23-S636	23-S637		23-S638					

Blank Rules: '<' indicates value is below the method detection limit (MDL)
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations but results are preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.
If the total blank correction value is less than or equal to 0.6 µg, subtract the total blank correction value from the total sample value to determine total net Hg. Otherwise, the value used for the blank correction shall be the greater of (1) 0.6 µg or (2) the lesser of [total FH blank + total BH blank] or 5% of the total sample valu

EPA Method 29
Gas Stream Characteristics
Test Summary

Client: **Eagle Foundry Company**
Source: **Cooling Bunker BH Inlet - White Iron**
Location: **Eagle Creek, OR**

Parameter	Units	Run 1	Run 2	Run 3	
Date		3/27/2023	3/28/2023	3/29/2023	
Run Start Time		6:40	5:10	5:15	
Run End Time		10:40	9:10	9:15	
Duration	minutes	240	240	240	**Average**
Barometric Pressure	inHg	29.98	29.41	29.41	**29.60**
Nozzle Diameter	inches	0.250	0.250	0.250	**0.250**
Isokinetic Average	%	100.6	100.7	100.8	**100.7**
Sample Volume	dscf	292.604	274.574	318.952	**295.377**
Sample Volume	dscm	8.286	7.775	9.032	**8.364**
Stack Diameter	inches	48.00	48.00	48.00	**48.00**
Stack Area	ft^2	12.566	12.566	12.566	**12.566**
CO_2	%vd	0.07	0.06	0.07	**0.07**
O_2	%vd	20.79	20.73	20.92	**20.81**
Static Pressure	inH_2O	-0.90	-0.90	-0.90	**-0.90**
H_2O	%v	0.51	0.28	0.25	**0.35**
Wet Molecular Weight	lb/lb-mole	28.78	28.81	28.82	**28.80**
Velocity	fps	56.73	55.11	62.92	**58.25**
Flow Rate	adcfm	42,554	41,435	47,320	**43,770**
	acfm	42,772	41,551	47,439	**43,921**
	dscfm	44,670	41,875	48,592	**45,046**
Stack Temperature	°F	42.9	52.4	44.3	**46.5**
Production Data	lb melt/pour	11,955.985	12,165.997	11,960.006	
	ton melt/pour	5.978	6.083	5.980	
	lb Cr/melt	3,106.941	3,124.611	3,071.140	
	ton Cr/melt	1.553	1.562	1.536	
	lb Mn/melt	120.685	126.908	122.799	
	ton Mn/melt	0.060	0.063	0.061	

Eagle Foundry Company **Test Dates:** 3/27/2023
Cooling Bunker BH Inlet - White Iron 3/28/2023
EPA Method 29 Results Summary 3/29/2023

Run 1

Analyte	Total				FH Net			BH Net			
	µg	µg/dscm	lb/hr	lb/ton melt	µg	µg/dscm	lb/hr	µg	µg/dscm	lb/hr	
Aluminum	587.575	70.912	1.19E-02	7.94E-03	554.800	66.956	1.12E-02	32.775	3.955	6.62E-04	Al
Antimony	< 0.595	< 0.072	< 1.20E-05	< 8.04E-06	0.000	0.000	0.00E+00	< 0.595	< 0.072	< 1.20E-05	Sb
Arsenic	< 2.583	< 0.312	< 5.22E-05	< 3.49E-05	< 1.750	< 0.211	< 3.53E-05	< 0.833	< 0.101	< 1.68E-05	As
Barium	5.783	0.698	1.17E-04	7.81E-05	4.723	0.570	9.54E-05	1.060	0.128	2.14E-05	Ba
Beryllium	< 0.074	< 0.009	< 1.49E-06	< 1.00E-06	< 0.050	< 0.006	< 1.01E-06	< 0.024	< 0.003	< 4.85E-07	Be
Cadmium	1.924	0.232	3.89E-05	2.60E-05	1.860	0.224	3.76E-05	0.064	0.008	1.29E-06	Cd
Chromium	29.748	3.590	6.01E-04		27.470	3.315	5.55E-04	2.278	0.275	4.60E-05	Cr
Cobalt	0.212	0.026	4.28E-06	2.86E-06	0.212	0.026	4.28E-06	0.000	0.000	0.00E+00	Co
Copper	14.290	1.725	2.89E-04	1.93E-04	12.500	1.509	2.52E-04	1.790	0.216	3.61E-05	Cu
Lead	24.680	2.979	4.98E-04	3.33E-04	24.000	2.896	4.85E-04	0.680	0.082	1.37E-05	Pb
Manganese	133.396	16.099	2.69E-03		133.259	16.082	2.69E-03	0.137	0.017	2.77E-06	Mn
Mercury	< 0.061	< 0.007	< 1.23E-06	< 8.25E-07							Hg
Nickel	4.590	0.554	9.27E-05	6.20E-05	2.890	0.349	5.84E-05	1.700	0.205	3.43E-05	Ni
Phosphorus	< 9.850	< 1.189	< 1.99E-04	< 1.33E-04	7.470	0.902	1.51E-04	< 2.380	< 0.287	< 4.81E-05	P
Selenium	< 5.530	< 0.667	< 1.12E-04	< 7.47E-05	< 3.750	< 0.453	< 7.57E-05	< 1.780	< 0.215	< 3.59E-05	Se
Silver	< 1.398	< 0.169	< 2.82E-05	< 1.89E-05	1.160	0.140	2.34E-05	< 0.238	< 0.029	< 4.81E-06	Ag
Thallium	< 3.690	< 0.445	< 7.45E-05	< 4.99E-05	< 2.500	< 0.302	< 5.05E-05	< 1.190	< 0.144	< 2.40E-05	Tl
Vanadium	< 0.471	< 0.057	< 9.51E-06	< 6.36E-06	0.352	0.042	7.11E-06	< 0.119	< 0.014	< 2.40E-06	V
Zinc	192.387	23.218	3.88E-03	2.60E-03	187.480	22.626	3.79E-03	4.907	0.592	9.91E-05	Zn

Chromium	lb Cr / ton Cr in melt =	1.55E-03
Manganese	lb Mn / ton Mn in melt =	1.79E-01

Run 1 Emission Factors

Run 2

Analyte	Total				FH Net			BH Net			
	µg	µg/dscm	lb/hr	lb/ton melt	µg	µg/dscm	lb/hr	µg	µg/dscm	lb/hr	
Aluminum	3419.600	439.820	6.90E-02	4.54E-02	3401.200	437.453	6.86E-02	18.400	2.367	3.71E-04	Al
Antimony	< 0.725	< 0.093	< 1.46E-05	< 9.62E-06	0.000	0.000	0.00E+00	< 0.725	< 0.093	< 1.46E-05	Sb
Arsenic	< 2.770	< 0.356	< 5.59E-05	< 3.67E-05	< 1.750	< 0.225	< 3.53E-05	< 1.020	< 0.131	< 2.06E-05	As
Barium	15.823	2.035	3.19E-04	2.10E-04	15.323	1.971	3.09E-04	0.500	0.064	1.01E-05	Ba
Beryllium	< 0.103	< 0.013	< 2.08E-06	< 1.37E-06	0.074	0.010	1.49E-06	< 0.029	< 0.004	< 5.85E-07	Be
Cadmium	< 0.396	< 0.051	< 7.99E-06	< 5.25E-06	0.338	0.043	6.82E-06	< 0.058	< 0.007	< 1.17E-06	Cd
Chromium	37.368	4.806	7.54E-04		36.370	4.678	7.34E-04	0.998	0.128	2.01E-05	Cr
Cobalt	0.455	0.059	9.18E-06	6.04E-06	0.455	0.059	9.18E-06	0.000	0.000	0.00E+00	Co
Copper	26.436	3.400	5.33E-04	3.51E-04	25.600	3.293	5.16E-04	0.836	0.108	1.69E-05	Cu
Lead	< 19.825	< 2.550	< 4.00E-04	< 2.63E-04	19.100	2.457	3.85E-04	< 0.725	< 0.093	< 1.46E-05	Pb
Manganese	432.012	55.564	8.72E-03		431.259	55.467	8.70E-03	0.753	0.097	1.52E-05	Mn
Mercury	< 0.094	< 0.012	< 1.89E-06	< 1.24E-06							Hg
Nickel	10.903	1.402	2.20E-04	1.45E-04	10.340	1.330	2.09E-04	0.563	0.072	1.14E-05	Ni
Phosphorus	< 39.070	< 5.025	< 7.88E-04	< 5.18E-04	36.170	4.652	7.30E-04	< 2.900	< 0.373	< 5.85E-05	P
Selenium	< 5.930	< 0.763	< 1.20E-04	< 7.87E-05	< 3.750	< 0.482	< 7.57E-05	< 2.180	< 0.280	< 4.40E-05	Se
Silver	1.453	0.187	2.93E-05	1.93E-05	1.020	0.131	2.06E-05	0.433	0.056	8.74E-06	Ag
Thallium	< 3.950	< 0.508	< 7.97E-05	< 5.24E-05	< 2.500	< 0.322	< 5.04E-05	< 1.450	< 0.186	< 2.93E-05	Tl
Vanadium	< 2.225	< 0.286	< 4.49E-05	< 2.95E-05	2.080	0.268	4.20E-05	< 0.145	< 0.019	< 2.93E-06	V
Zinc	194.107	24.966	3.92E-03	2.57E-03	192.480	24.756	3.88E-03	1.627	0.209	3.28E-05	Zn

Chromium	lb Cr / ton Cr in melt =	1.93E-03
Manganese	lb Mn / ton Mn in melt =	5.49E-01

Run 2 Emission Factors

Note: Results for Hg front half and back half fractions are not shown because these values are not blank-corrected. Per EPA Method 29, only the sum of Hg front and back half results is subject to blank correction.

'<' denotes results which were calculated using the method detection limit for front half or back half results that were non-detect.

Eagle Foundry Company **Test Dates:** 3/27/2023
Cooling Bunker BH Inlet - White Iron 3/28/2023
EPA Method 29 Results Summary 3/29/2023

Run 3													
Analyte	**Total**				**FH Net**			**BH Net**			
	µg	**µg/dscm**	**lb/hr**	**lb/ton melt**	**µg**	**µg/dscm**	**lb/hr**	**µg**	**µg/dscm**	**lb/hr**	
Aluminum	1865.330	206.525	3.76E-02	2.51E-02	1841.200	203.853	3.71E-02	24.130	2.672	4.86E-04	Al
Antimony	< 0.635	< 0.070	< 1.28E-05	< 8.56E-06	0.000	0.000	0.00E+00	< 0.635	< 0.070	< 1.28E-05	Sb
Arsenic	< 2.639	< 0.292	< 5.32E-05	< 3.56E-05	< 1.750	< 0.194	< 3.53E-05	< 0.889	< 0.098	< 1.79E-05	As
Barium	10.573	1.171	2.13E-04	1.43E-04	10.123	1.121	2.04E-04	0.450	0.050	9.06E-06	Ba
Beryllium	< 0.075	< 0.008	< 1.51E-06	< 1.01E-06	< 0.050	< 0.006	< 1.01E-06	< 0.025	< 0.003	< 5.04E-07	Be
Cadmium	< 0.410	< 0.045	< 8.26E-06	< 5.53E-06	0.359	0.040	7.23E-06	< 0.051	< 0.006	< 1.03E-06	Cd
Chromium	25.817	2.858	5.20E-04		25.170	2.787	5.07E-04	0.647	0.072	1.30E-05	Cr
Cobalt	0.294	0.033	5.93E-06	3.96E-06	0.294	0.033	5.93E-06	0.000	0.000	0.00E+00	Co
Copper	26.010	2.880	5.24E-04	3.51E-04	24.200	2.679	4.88E-04	1.810	0.200	3.65E-05	Cu
Lead	< 18.335	< 2.030	< 3.69E-04	< 2.47E-04	17.700	1.960	3.57E-04	< 0.635	< 0.070	< 1.28E-05	Pb
Manganese	416.632	46.128	8.40E-03		413.259	45.755	8.33E-03	3.373	0.373	6.80E-05	Mn
Mercury	< 0.074	< 0.008	< 1.50E-06	< 1.00E-06							Hg
Nickel	7.228	0.800	1.46E-04	9.74E-05	6.740	0.746	1.36E-04	0.488	0.054	9.83E-06	Ni
Phosphorus	< 28.910	< 3.201	< 5.83E-04	< 3.90E-04	26.370	2.920	5.31E-04	< 2.540	< 0.281	< 5.12E-05	P
Selenium	< 5.650	< 0.626	< 1.14E-04	< 7.62E-05	< 3.750	< 0.415	< 7.56E-05	< 1.900	< 0.210	< 3.83E-05	Se
Silver	< 1.354	< 0.150	< 2.73E-05	< 1.83E-05	1.100	0.122	2.22E-05	< 0.254	< 0.028	< 5.12E-06	Ag
Thallium	< 3.770	< 0.417	< 7.60E-05	< 5.08E-05	< 2.500	< 0.277	< 5.04E-05	< 1.270	< 0.141	< 2.56E-05	Tl
Vanadium	< 1.497	< 0.166	< 3.02E-05	< 2.02E-05	1.370	0.152	2.76E-05	< 0.127	< 0.014	< 2.56E-06	V
Zinc	265.087	29.350	5.34E-03	3.57E-03	263.480	29.172	5.31E-03	1.607	0.178	3.24E-05	Zn

Chromium	lb Cr / ton Cr in melt =	1.36E-03
Manganese	lb Mn / ton Mn in melt =	5.47E-01

Run 3 Emission Factors

Mean Runs 1-3													
Analyte	**Total**				**FH Net**			**BH Net**			
	µg	**µg/dscm**	**lb/hr**	**lb/ton melt**	**µg**	**µg/dscm**	**lb/hr**	**µg**	**µg/dscm**	**lb/hr**	
Aluminum	1957.502	239.085	3.95E-02	2.61E-02	1932.400	236.088	3.90E-02	25.102	2.998	5.06E-04	
Antimony	< 0.652	< 0.078	< 1.31E-05	< 8.74E-06	0.000	0.000	0.00E+00	< 0.652	< 0.078	< 1.31E-05	Sb
Arsenic	< 2.664	< 0.320	< 5.37E-05	< 3.57E-05	< 1.750	< 0.210	< 3.53E-05	< 0.914	< 0.110	< 1.84E-05	As
Barium	10.726	1.301	2.16E-04	1.44E-04	10.056	1.221	2.03E-04	0.670	0.081	1.35E-05	Ba
Beryllium	< 0.084	< 0.010	< 1.69E-06	< 1.13E-06	< 0.058	< 0.007	< 1.17E-06	< 0.026	< 0.003	< 5.25E-07	Be
Cadmium	< 0.910	< 0.110	< 1.84E-05	< 1.23E-05	0.852	0.103	1.72E-05	< 0.058	< 0.007	< 1.16E-06	Cd
Chromium	30.978	3.752	6.25E-04		29.670	3.593	5.99E-04	1.308	0.158	2.64E-05	Cr
Cobalt	0.320	0.039	6.46E-06	4.29E-06	0.320	0.039	6.46E-06	0.000	0.000	0.00E+00	Co
Copper	22.245	2.668	4.49E-04	2.98E-04	20.767	2.494	4.19E-04	1.479	0.175	2.98E-05	Cu
Lead	< 20.947	< 2.519	< 4.23E-04	< 2.81E-04	20.267	2.438	4.09E-04	< 0.680	< 0.082	< 1.37E-05	Pb
Manganese	327.347	39.264	6.60E-03		325.926	39.102	6.57E-03	1.421	0.162	2.86E-05	Mn
Mercury	< 0.076	< 0.009	< 1.54E-06	< 1.02E-06							Hg
Nickel	7.574	0.919	1.53E-04	1.01E-04	6.657	0.808	1.34E-04	0.917	0.111	1.85E-05	Ni
Phosphorus	< 25.943	< 3.138	< 5.23E-04	< 3.47E-04	23.337	2.824	4.71E-04	< 2.607	< 0.314	< 5.26E-05	P
Selenium	< 5.703	< 0.685	< 1.15E-04	< 7.65E-05	< 3.750	< 0.450	< 7.56E-05	< 1.953	< 0.235	< 3.94E-05	Se
Silver	< 1.402	< 0.169	< 2.83E-05	< 1.88E-05	1.093	0.131	2.21E-05	< 0.308	< 0.038	< 6.22E-06	Ag
Thallium	< 3.803	< 0.457	< 7.67E-05	< 5.10E-05	< 2.500	< 0.300	< 5.04E-05	< 1.303	< 0.157	< 2.63E-05	Tl
Vanadium	< 1.398	< 0.170	< 2.82E-05	< 1.87E-05	1.267	0.154	2.56E-05	< 0.130	< 0.016	< 2.63E-06	V
Zinc	217.194	25.845	4.38E-03	2.92E-03	214.480	25.518	4.33E-03	2.714	0.326	5.48E-05	Zn

Chromium	lb Cr / ton Cr in melt =	1.61E-03
Manganese	lb Mn / ton Mn in melt =	4.25E-01

Mean Runs 1-3

Note: Results for Hg front half and back half fractions are not shown because these values are not blank-corrected. Per EPA Method 29, only the sum of Hg front and back half results is subject to blank correction.

'<' denotes results which were calculated using the method detection limit for front half or back half results that were non-detect.

BISON ENGINEERING, INC.

COMPANY	**Eagle Foundry Company**
FACILITY	**Eagle Foundry**
LOCATION	**Eagle Creek, OR**
SOURCE	**Cooling Bunker BH Outlet - White Iron**
DATE	**3/27/2023 - 3/29/2023**
METHOD	**29**
POLLUTANT	**Metals**

EPA Method 1
Stack Parameters and Traverse Points

Client: **Eagle Foundry Company**
Location: **Eagle Creek, OR**
Source: **Cooling Bunker BH Outlet - White Iron**
Facility: **Eagle Foundry**

Type of Testing: P (P for Particulate; V for Velocity/Nonparticulate)
Type of Duct: C (C for circular; R for rectangular)

Number of ports available:	2	
Number of ports to be used:	2	
Port diameter:	4	inches
Sampling location height (approx.):		feet
Stack height (approx.):		feet
Circular ID (Rectangular Depth):	55.75	inches
Port depth and/or wall thickness:	6.50	inches
Stack width (Rectangular only):		inches

Equivalent Diameter
If rectangular = $\frac{2*Depth*Width}{Depth + Width}$ = 55.75 inches (If circular = duct ID)
Stack/duct area = 16.952 sq.feet 2441.1 sq. inches

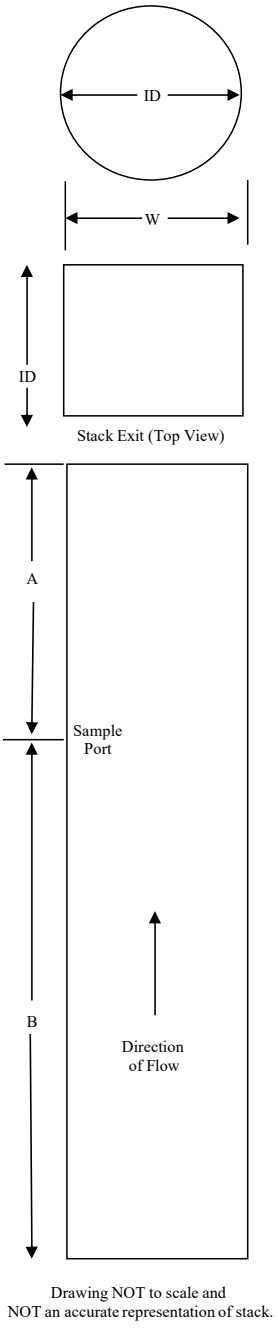
Sample Port Location:	Downstream flow disturbance from process B	Upstream flow disturbance toward exit A
Number of Inches:	246.00	45.00
Number of Diameters:	4.41	0.81

Minimum Number of Traverse Points: 24

Traverse points less than 1.0 inch from the stack wall are relocated to a distance of 1.0 inch.

Points	% of diameter	Distance from inside wall (in.)	Distance including port (in.)
1	2.1	1.17	7 5/8
2	6.7	3.74	10 1/4
3	11.8	6.58	13 1/8
4	17.7	9.87	16 3/8
5	25.0	13.94	20 1/2
6	35.6	19.85	26 3/8
7	64.4	35.90	42 3/8
8	75.0	41.81	48 3/8
9	82.3	45.88	52 3/8
10	88.2	49.17	55 5/8
11	93.3	52.01	58 1/2
12	97.9	54.58	61 1/8

Reference Diagram



Drawing NOT to scale and NOT an accurate representation of stack.

Pre-Test Traverse

Client: **Eagle Foundry Company**
Location: **Eagle Creek, OR**
Source: **Cooling Bunker BH Outlet - White Iron**

Stack Temp: 58 °F

Traverse Point	Velocity ΔP ("H_2O)	Null Angle
1	0.67	0
2	0.71	5
3	0.73	0
4	0.69	5
5	0.65	5
6	0.69	0
7	0.72	5
8	0.76	0
9	0.75	5
10	0.72	0
11	0.71	5
12	0.62	5
Average:	0.70	3

Flow is found to be: Non-cyclonic

Isokinetic Field Data
Field Data Entry

Client:	**Eagle Foundry Company**	**Run:**	**1**
Location:	**Eagle Creek, OR**	**Start Time:**	**6:40**
Source:	**Cooling Bunker BH Outlet - White Iron**	**End Time:**	**10:40**
EPA Method:	**29**	**Environmental Conditions/Test Notes:**	**Date:** **3/27/2023**
Box Operator:	**JCR**	mostly cloudy and 30s °F	
Technician(s):	**AJV**		

Stack Dimensional Data:

Circular		
Diameter	55.750	in
Rectangular		
Width		in
Length		in
Stack Area	16.952	sq.ft.

Equipment:

Meterbox ID	12	Probe ID	7C	Liner type	GLASS		
Y factor	1.0267	Nozzle ID	0.266	Nozzle size	0.266	inches	
ΔH@	1.800	Hot box ID	HHB4	Nozzle area	0.000386	sq.ft.	
Bp ID	TS1	Pitot Cp	0.84	Probe heat	250	°F	
Balance ID	HLN FB-1	Pitot ID	7C	Filter heat	250	°F	
Weights ID	HLN FW-1	Probe Length, ft	7				

Source Information:

Barometric Pressure	29.88	"Hg	O_2	20.90	%
Static Pressure	1	"H_2O	CO_2	0.00	%
Ave. ΔP	0.7	"H_2O	Rec. Nz.	0.223	inches
Stack Temperature	60	°F			
Assumed moisture	3.00	%			
Assumed meter temp.	65	°F			
Total number of points	24				
Time per point	10	min.			
Total run time	240	min.			

Leak Checks:

	Pre-test	Post-test
Pitot	X	X
Leak rate, dcf	0.000	0.000
Leak check vacuum, "Hg	10	11

Nozzle check for roundness:

1	2	3	
0.265	0.266	0.267	inches
	Caliper ID	WS1	

Post Test Calculations:

Sample volume	239.654	dcf	Ave. ΔP	0.651	"H_2O
Wet mol. weight	28.78	M_s (actual)	Ave. √ΔP	0.806	"H_2O
Actual H_2O	0.59	%	Ave. ΔH	3.527	"H_2O
Std. meter vol.	250.081	dscf	Ave. T_s	48.4	°F
Isokinetic Average	98.0	%	Ave. T_m	63.3	°F

Moisture/Lab:

Filter, #	N/A		
	Initial	Final	Gain
Impingers, g	3,707.0	3,700.9	-6.1
Silica gel, g	925.6	963.2	37.6
		Total water gain, g:	31.5

Traverse Point	Time (min.)	Meter Volume (dcf)	Velocity ΔP ("H_2O)	Stack Temp. (°F)	Meter Temp. (°F)	Calc. ΔH	Run ΔH	Vacuum ("Hg)	Filter Box (°F)	Condenser Temp (≤68°F)
		0.000								
1	10.0	10.710	0.80	41	54	4.32	4.30	7.5	255	35
2	20.0	21.520	0.80	43	54	4.30	4.30	7.5	252	40
3	30.0	32.240	0.80	43	55	4.31	4.30	7.5	252	45
4	40.0	41.960	0.60	43	56	3.24	3.25	6	252	45
5	50.0	52.080	0.69	43	57	3.73	3.75	6.5	252	43
6	60.0	61.510	0.57	43	58	3.09	3.10	6	246	42
7	70.0	71.050	0.59	43	58	3.20	3.20	6	253	43
8	80.0	81.130	0.65	44	59	3.52	3.50	6.5	259	42
9	90.0	90.520	0.58	44	59	3.14	3.15	6	259	46
10	100.0	100.090	0.55	44	60	2.98	3.00	5.5	252	46
11	110.0	110.030	0.71	45	62	3.86	3.85	7	254	47
12	120.0	120.650	0.71	47	65	3.87	3.85	7	256	51
13	130.0	131.440	0.78	48	67	4.26	4.25	7.5	250	52
14	140.0	141.910	0.68	48	68	3.72	3.75	7	251	54
15	150.0	152.170	0.65	49	70	3.56	3.55	6.5	253	57
16	160.0	161.880	0.59	50	71	3.23	3.25	6	256	59
17	170.0	171.860	0.62	51	71	3.39	3.40	6	252	57
18	180.0	181.860	0.65	52	70	3.54	3.55	6.5	253	56
19	190.0	191.670	0.59	53	69	3.20	3.20	6	251	55
20	200.0	201.540	0.64	55	68	3.45	3.45	6.5	254	57
21	210.0	210.820	0.56	56	67	3.01	3.00	5.5	258	58
22	220.0	220.200	0.57	57	67	3.06	3.05	5.5	256	58
23	230.0	230.160	0.63	59	67	3.36	3.35	6	256	58
24	240.0	239.654	0.62	61	67	3.30	3.30	6	253	55

Isokinetic Field Data
Field Data Entry

Client:	**Eagle Foundry Company**	**Run:**	**2**
Location:	**Eagle Creek, OR**	**Start Time:**	**5:10**
Source:	**Cooling Bunker BH Outlet - White Iron**	**End Time:**	**9:10**
EPA Method:	**29**	**Date:**	**3/28/2023**
Box Operator:	**JCR**		
Technician(s):	**AJV**		

Environmental Conditions/Test Notes:
mostly cloudy and 30s °F

Stack Dimensional Data:

Circular		
Diameter	55.750	in
Rectangular		
Width		in
Length		in
Stack Area	16.952	sq.ft.

Equipment:

Meterbox ID	12	Probe ID	7C	Liner type	GLASS		
Y factor	1.0267	Nozzle ID	0.266	Nozzle size	0.266	inches	
ΔH@	1.800	Hot box ID	HHB4	Nozzle area	0.000386	sq.ft.	
Bp ID	TS1	Pitot Cp	0.84	Probe heat	250	°F	
Balance ID	HLN FB-1	Pitot ID	7C	Filter heat	250	°F	
Weights ID	HLN FW-1	Probe Length, ft	7				

Source Information:

Barometric Pressure	29.41	"Hg	O_2	20.90	%
Static Pressure	1	"H_2O	CO_2	0.00	%
Ave. ΔP	0.7	"H_2O	Rec. Nz.	0.221	inches
Stack Temperature	60	°F			
Assumed moisture	0.59	%			
Assumed meter temp.	63.3	°F			
Total number of points	24				
Time per point	10	min.			
Total run time	240	min.			

Leak Checks:

	Pre-test	Post-test
Pitot	X	X
Leak rate, dcf	0.000	0.000
Leak check vacuum, "Hg	10	10

Nozzle check for roundness:

1	2	3	
0.265	0.266	0.267	inches
	Caliper ID	WS1	

Post Test Calculations:

Sample volume	229.338	dcf	Ave. ΔP	0.568	"H_2O
Wet mol. weight	28.73	M_s (actual)	Ave. √ΔP	0.752	"H_2O
Actual H_2O	1.00	%	Ave. ΔH	3.19	"H_2O
Std. meter vol.	233.696	dscf	Ave. T_s	56.2	°F
Isokinetic Average	100.0	%	Ave. T_m	67.1	°F

Moisture/Lab:

Filter, #	N/A		
	Initial	Final	Gain
Impingers, g	3,727.8	3,743.8	16.0
Silica gel, g	858.3	892.5	34.2
		Total water gain:	50.2

Traverse Point	Time (min.)	Meter Volume (dcf)	Velocity ΔP ("H_2O)	Stack Temp. (°F)	Meter Temp. (°F)	Calc. ΔH	Run ΔH	Vacuum ("Hg)	Filter Box (°F)	Condenser Temp (≤68°F)
		0.000								
1	10.0	10.290	0.67	52	65	3.76	3.80	4	251	39
2	20.0	20.290	0.62	55	66	3.47	3.50	4	251	42
3	30.0	30.160	0.62	55	66	3.47	3.50	4	251	43
4	40.0	39.400	0.50	55	65	2.79	2.80	3.5	254	43
5	50.0	47.950	0.47	54	65	2.63	2.65	3.5	257	43
6	60.0	56.390	0.45	54	65	2.52	2.50	3.5	256	43
7	70.0	64.800	0.45	54	65	2.52	2.50	3.5	254	43
8	80.0	73.860	0.49	54	65	2.74	2.75	3.5	256	42
9	90.0	82.400	0.47	54	65	2.63	2.65	3.5	262	43
10	100.0	92.190	0.60	55	65	3.35	3.35	4	252	43
11	110.0	102.470	0.66	57	66	3.68	3.70	4.5	247	44
12	120.0	112.840	0.66	57	66	3.68	3.70	4.5	265	44
13	130.0	123.100	0.64	61	67	3.54	3.55	4.5	258	45
14	140.0	133.270	0.63	61	67	3.49	3.50	4.5	255	45
15	150.0	142.970	0.65	59	68	3.62	3.60	4	250	44
16	160.0	153.260	0.65	58	68	3.63	3.65	4	250	44
17	170.0	163.590	0.65	58	69	3.63	3.65	4	252	44
18	180.0	173.900	0.64	57	69	3.58	3.60	4	257	44
19	190.0	184.110	0.64	57	69	3.58	3.60	4	256	43
20	200.0	194.100	0.60	57	70	3.37	3.40	4	255	44
21	210.0	203.030	0.48	56	70	2.70	2.70	3.5	258	44
22	220.0	211.990	0.48	56	70	2.70	2.70	3.5	256	45
23	230.0	220.620	0.47	56	69	2.64	2.65	3.5	255	45
24	240.0	229.338	0.45	56	70	2.53	2.55	3.5	254	45

Isokinetic Field Data
Field Data Entry

Client:	**Eagle Foundry Company**	**Run:**	**3**
Location:	**Eagle Creek, OR**	**Start Time:**	**5:15**
Source:	**Cooling Bunker BH Outlet - White Iron**	**End Time:**	**9:15**
EPA Method:	**29**	**Date:**	**3/29/2023**
Box Operator:	**JCR**		
Technician(s):	**AJV**		

Environmental Conditions/Test Notes:
mostly cloudy and 30s °F

Stack Dimensional Data:

Circular		
Diameter	55.750	in
Rectangular		
Width		in
Length		in
Stack Area	16.952	sq.ft.

Equipment:

Meterbox ID	12	Probe ID	7C	Liner type	GLASS		
Y factor	1.0267	Nozzle ID	0.266	Nozzle size	0.266	inches	
ΔH@	1.800	Hot box ID	HHB4	Nozzle area	0.000386	sq.ft.	
Bp ID	TS1	Pitot Cp	0.84	Probe heat	250	°F	
Balance ID	HLN FB-1	Pitot ID	7C	Filter heat	250	°F	
Weights ID	HLN FW-1	Probe Length, ft	7				

Source Information:

Barometric Pressure	29.41	"Hg	O_2	20.90	%
Static Pressure	1	"H_2O	CO_2	0.00	%
Ave. ΔP	0.7	"H_2O	Rec. Nz.	0.22	inches
Stack Temperature	60	°F			
Assumed moisture	1.00	%			
Assumed meter temp.	67.1	°F			
Total number of points	24				
Time per point	10	min.			
Total run time	240	min.			

Leak Checks:

	Pre-test	Post-test
Pitot	X	X
Leak rate, dcf	0.000	0.000
Leak check vacuum, "Hg	10	10

Nozzle check for roundness:

1	2	3	
0.265	0.266	0.267	inches
	Caliper ID	WS1	

Post Test Calculations:

Sample volume	230.265	dcf	Ave. ΔP	0.580	"H_2O
Wet mol. weight	28.78	M_s (actual)	Ave. √ΔP	0.761	"H_2O
Actual H_2O	0.51	%	Ave. ΔH	3.231	"H_2O
Std. meter vol.	236.686	dscf	Ave. T_s	49.6	°F
Isokinetic Average	99.0	%	Ave. T_m	62.6	°F

Moisture/Lab:

Filter, #	N/A		
	Initial	Final	Gain
Impingers, g	3,731.2	3,711.4	-19.8
Silica gel, g	929.4	974.9	45.5
		Total water gain:	25.7

Traverse Point	Time (min.)	Meter Volume (dcf) 0.000	Velocity ΔP ("H_2O)	Stack Temp. (°F)	Meter Temp. (°F)	Calc. ΔH	Run ΔH	Vacuum ("Hg)	Filter Box (°F)	Condenser Temp (≤68°F)
1	10.0	8.950	0.53	46	58	2.95	2.95	4	253	37
2	20.0	17.690	0.48	49	58	2.66	2.65	3.5	254	39
3	30.0	27.160	0.57	49	61	3.17	3.15	4	251	42
4	40.0	36.790	0.56	48	63	3.13	3.15	4	255	42
5	50.0	46.270	0.55	49	65	3.08	3.10	4	250	43
6	60.0	55.980	0.58	49	65	3.25	3.25	4	254	45
7	70.0	66.380	0.67	49	64	3.75	3.75	5	253	47
8	80.0	76.650	0.68	49	62	3.79	3.80	5	249	47
9	90.0	86.290	0.60	48	61	3.35	3.35	4	257	48
10	100.0	95.460	0.53	48	61	2.96	2.95	4	255	46
11	110.0	104.610	0.53	48	61	2.96	2.95	4	258	48
12	120.0	113.900	0.53	48	61	2.96	2.95	4	255	51
13	130.0	123.460	0.61	48	60	3.40	3.40	4.5	254	52
14	140.0	133.760	0.66	49	60	3.67	3.65	4.5	256	50
15	150.0	143.390	0.62	52	60	3.42	3.40	4.5	258	52
16	160.0	153.140	0.62	52	60	3.42	3.40	4.5	251	53
17	170.0	163.000	0.63	52	59	3.47	3.45	4.5	251	55
18	180.0	172.600	0.59	50	60	3.27	3.25	4	250	55
19	190.0	182.900	0.64	52	62	3.55	3.55	4.5	252	56
20	200.0	193.100	0.64	52	65	3.57	3.55	4.5	256	54
21	210.0	202.940	0.53	51	68	2.98	3.00	4	247	52
22	220.0	211.870	0.54	51	68	3.03	3.05	4	257	52
23	230.0	221.160	0.53	51	69	2.98	3.00	4	257	51
24	240.0	230.265	0.50	50	71	2.83	2.85	4	257	53

EPA Method 4
Impinger Weights Summary

Client: **Eagle Foundry Company**
Location: **Eagle Creek, OR**
Source: **Cooling Bunker BH Outlet - White Iron**
EPA Method: **29**
Box Operator: **JCR**
Technician(s): **AJV**

Run 1
Impinger gain by weight (g):

#	Initial	Final	Gain
1	751.2	674.4	-76.8
2	744.0	765.0	21.0
3	658.8	683.5	24.7
4	758.6	775.4	16.8
5	794.4	802.6	8.2
Totals:	3,707.0	3,700.9	-6.1

Run 2
Impinger gain by weight (g):

#	Initial	Final	Gain
1	758.4	726.9	-31.5
2	748.7	780.1	31.4
3	664.0	670.1	6.1
4	752.6	759.7	7.1
5	804.1	807.0	2.9
Totals:	3,727.8	3,743.8	16.0

Run 3
Impinger gain by weight (g):

#	Initial	Final	Gain
1	752.9	687.9	-65.0
2	745.1	774.8	29.7
3	664.4	675.5	11.1
4	759.9	765.8	5.9
5	808.9	807.4	-1.5
Totals:	3,731.2	3,711.4	-19.8

Isokinetic Field Data
Field Data and Calculations
Gas Stream Characteristics

Client:	**Eagle Foundry Company**	**Run:**	**1**
Location:	**Eagle Creek, OR**	**Start Time:**	**6:40**
Source:	**Cooling Bunker BH Outlet - White Iron**	**End Time:**	**10:40**
Method:	**29**	**Date:**	**3/27/2023**

Sampling Data				Traverse Data			
Time	**Meter**	**ΔH**	**Meter**	**Traverse**	**Dp**	**Stack**	
min.	**ft^3**	**"H_2O**	**T_m ^oF**	**Point**	**"H_2O**	**T_s ^oF**	**√Dp**
	0.000						
10.0	10.710	4.30	54	1	0.80	41	0.894
20.0	21.520	4.30	54	2	0.80	43	0.894
30.0	32.240	4.30	55	3	0.80	43	0.894
40.0	41.960	3.25	56	4	0.60	43	0.775
50.0	52.080	3.75	57	5	0.69	43	0.831
60.0	61.510	3.10	58	6	0.57	43	0.755
70.0	71.050	3.20	58	7	0.59	43	0.768
80.0	81.130	3.50	59	8	0.65	44	0.806
90.0	90.520	3.15	59	9	0.58	44	0.762
100.0	100.090	3.00	60	10	0.55	44	0.742
110.0	110.030	3.85	62	11	0.71	45	0.843
120.0	120.650	3.85	65	12	0.71	47	0.843
130.0	131.440	4.25	67	13	0.78	48	0.883
140.0	141.910	3.75	68	14	0.68	48	0.825
150.0	152.170	3.55	70	15	0.65	49	0.806
160.0	161.880	3.25	71	16	0.59	50	0.768
170.0	171.860	3.40	71	17	0.62	51	0.787
180.0	181.860	3.55	70	18	0.65	52	0.806
190.0	191.670	3.20	69	19	0.59	53	0.768
200.0	201.540	3.45	68	20	0.64	55	0.800
210.0	210.820	3.00	67	21	0.56	56	0.748
220.0	220.200	3.05	67	22	0.57	57	0.755
230.0	230.160	3.35	67	23	0.63	59	0.794
240.0	239.654	3.30	67	24	0.62	61	0.787

Client:	**Eagle Foundry Company**	**Run:**	**1**
Source:	**Cooling Bunker BH Outlet - White Iron**	**Date:**	**03/27/23**

Field Data Input Continued

Moisture Data			Stack Dimensional Data:		
Total Test Time	240.0	min	Circular		
Sample Time Interval	10.0	min	Diameter	55.750	in
Meter Volume, V_m	239.654	dcf	Rectangular		
Water Mass	31.5	g	Width		in
Nozzle Diameter, N_z	0.2660	in.	Length		in
Nozzle Area	0.000386	sq.ft.	Stack Area	16.952	sq.ft.
Traverse Data			Molecular Weight:		
Barometric Pressure, P_b	29.88	"Hg	CO_2 Average	0.07	%vd
Static Pressure	1.00	"H_2O	O_2 Average	20.79	%vd
Pitot Factor, cp	0.84				
Meter Cal Factor	1.0267	Y			

Field Data Averages

Meter			Stack		
ΔH	3.527	"H_2O	√Dp	0.806	"H_2O
Temperature, T_m	63.3	^oF	Temperature, T_s	48.4	^oF
Temperature, T_m	523.0	^oA (^oR)	Temperature, T_s	508.1	^oA (^oR)
Pressure Meter, P_m	30.139	"Hg	Pressure Stack, P_s	29.954	"Hg

Field Data Calculations

Meter Box Capture			EPA Method 2 Stack Gas Flowrate:		
Standard Volume, $V_{m(std)}$	250.081	dscf	Velocity, V_s	44.43	fps
	7.081	dscm	Flow Rate (actual), Q_{aw}	45,191	acfm
Actual Volume, $V_{m(actual)}$	241.946	awcf		44,924	adcfm
Gas Stream Moisture			Flow Rate (standard), Q	2,819,239	wscf/hr
Moisture Vapor, $Vw_{(std)}$	1.485	scf		2,802,605	dscf/hr
Moisture, B_{ws}	0.0059			46,710	dscf/min
Moisture EPA M4	0.59	%v		46,987	wscf/min
Moisture @ Saturation	1.14	%v (for T_s < 212°F)			
EPA Method 3 Gas Density					
Dry, M_d	28.84	lb/lb-mole			
Wet, M_s	28.78	lb/lb-mole			
Percent Isokinetic	98.0	%			

Isokinetic Field Data
Field Data and Calculations
Gas Stream Characteristics

Client:	**Eagle Foundry Company**	**Run:**	**2**
Location:	**Eagle Creek, OR**	**Start Time:**	**5:10**
Source:	**Cooling Bunker BH Outlet - White Iron**	**End Time:**	**9:10**
Method:	**29**	**Date:**	**03/28/23**

Sampling Data				Traverse Data			
Time	**Meter**	**ΔH**	**Meter**	**Traverse**	**Dp**	**Stack**	
min.	**ft^3**	**"H_2O**	**T_m ^oF**	**Point**	**"H_2O**	**T_s ^oF**	**√Dp**
	0.000						
10.0	10.290	3.80	65	1	0.67	52	0.819
20.0	20.290	3.50	66	2	0.62	55	0.787
30.0	30.160	3.50	66	3	0.62	55	0.787
40.0	39.400	2.80	65	4	0.50	55	0.707
50.0	47.950	2.65	65	5	0.47	54	0.686
60.0	56.390	2.50	65	6	0.45	54	0.671
70.0	64.800	2.50	65	7	0.45	54	0.671
80.0	73.860	2.75	65	8	0.49	54	0.700
90.0	82.400	2.65	65	9	0.47	54	0.686
100.0	92.190	3.35	65	10	0.60	55	0.775
110.0	102.470	3.70	66	11	0.66	57	0.812
120.0	112.840	3.70	66	12	0.66	57	0.812
130.0	123.100	3.55	67	13	0.64	61	0.800
140.0	133.270	3.50	67	14	0.63	61	0.794
150.0	142.970	3.60	68	15	0.65	59	0.806
160.0	153.260	3.65	68	16	0.65	58	0.806
170.0	163.590	3.65	69	17	0.65	58	0.806
180.0	173.900	3.60	69	18	0.64	57	0.800
190.0	184.110	3.60	69	19	0.64	57	0.800
200.0	194.100	3.40	70	20	0.60	57	0.775
210.0	203.030	2.70	70	21	0.48	56	0.693
220.0	211.990	2.70	70	22	0.48	56	0.693
230.0	220.620	2.65	69	23	0.47	56	0.686
240.0	229.338	2.55	70	24	0.45	56	0.671

Client:	**Eagle Foundry Company**	**Run:**	**2**
Source:	**Cooling Bunker BH Outlet - White Iron**	**Date:**	**03/28/23**

Field Data Input Continued

Moisture Data			Stack Dimensional Data:		
Total Test Time	240.0	min	Circular		
Sample Time Interval	10.0	min	Diameter	55.750	in
Meter Volume, V_m	229.338	dcf	Rectangular		
Water Mass	50.2	g	Width		in
Nozzle Diameter, N_z	0.2660	in.	Length		in
Nozzle Area	0.000386	sq.ft.	Stack Area	16.952	sq.ft.
Traverse Data			Molecular Weight:		
Barometric Pressure, P_b	29.41	"Hg	CO_2 Average	0.06	%vd
Static Pressure	1.00	"H_2O	O_2 Average	20.73	%vd
Pitot Factor, cp	0.84				
Meter Cal Factor	1.0267	Y			

Field Data Averages

Meter			Stack		
ΔH	3.190	"H_2O	√Dp	0.752	"H_2O
Temperature, T_m	67.1	^oF	Temperature, T_s	56.2	^oF
Temperature, T_m	526.8	^oA (^oR)	Temperature, T_s	515.9	^oA (^oR)
Pressure Meter, P_m	29.645	"Hg	Pressure Stack, P_s	29.484	"Hg

Field Data Calculations

Meter Box Capture			EPA Method 2 Stack Gas Flowrate:		
Standard Volume, $V_{m(std)}$	233.696	dscf	Velocity, V_s	42.14	fps
	6.618	dscm	Flow Rate (actual), Q_{aw}	42,861	acfm
Actual Volume, $V_{m(actual)}$	234.190	awcf		42,432	adcfm
Gas Stream Moisture			Flow Rate (standard), Q	2,592,179	wscf/hr
Moisture Vapor, $Vw_{(std)}$	2.367	scf		2,566,257	dscf/hr
Moisture, B_{ws}	0.0100			42,771	dscf/min
Moisture EPA M4	1.00	%v		43,203	wscf/min
Moisture @ Saturation	1.55	%v (for T_s < 212°F)			
EPA Method 3 Gas Density					
Dry, M_d	28.84	lb/lb-mole			
Wet, M_s	28.73	lb/lb-mole			
Percent Isokinetic	100.0	%			

Isokinetic Field Data
Field Data and Calculations
Gas Stream Characteristics

Client:	**Eagle Foundry Company**	**Run:**	**3**
Location:	**Eagle Creek, OR**	**Start Time:**	**5:15**
Source:	**Cooling Bunker BH Outlet - White Iron**	**End Time:**	**9:15**
Method:	**29**	**Date:**	**03/29/23**

Sampling Data				Traverse Data			
Time	**Meter**	**ΔH**	**Meter**	**Traverse**	**Dp**	**Stack**	
min.	**ft^3**	**"H_2O**	**T_m ^oF**	**Point**	**"H_2O**	**T_s ^oF**	**√Dp**
	0.000						
10.0	8.950	2.95	58	1	0.53	46	0.728
20.0	17.690	2.65	58	2	0.48	49	0.693
30.0	27.160	3.15	61	3	0.57	49	0.755
40.0	36.790	3.15	63	4	0.56	48	0.748
50.0	46.270	3.10	65	5	0.55	49	0.742
60.0	55.980	3.25	65	6	0.58	49	0.762
70.0	66.380	3.75	64	7	0.67	49	0.819
80.0	76.650	3.80	62	8	0.68	49	0.825
90.0	86.290	3.35	61	9	0.60	48	0.775
100.0	95.460	2.95	61	10	0.53	48	0.728
110.0	104.610	2.95	61	11	0.53	48	0.728
120.0	113.900	2.95	61	12	0.53	48	0.728
130.0	123.460	3.40	60	13	0.61	48	0.781
140.0	133.760	3.65	60	14	0.66	49	0.812
150.0	143.390	3.40	60	15	0.62	52	0.787
160.0	153.140	3.40	60	16	0.62	52	0.787
170.0	163.000	3.45	59	17	0.63	52	0.794
180.0	172.600	3.25	60	18	0.59	50	0.768
190.0	182.900	3.55	62	19	0.64	52	0.800
200.0	193.100	3.55	65	20	0.64	52	0.800
210.0	202.940	3.00	68	21	0.53	51	0.728
220.0	211.870	3.05	68	22	0.54	51	0.735
230.0	221.160	3.00	69	23	0.53	51	0.728
240.0	230.265	2.85	71	24	0.50	50	0.707

Client:	**Eagle Foundry Company**	**Run:**	**3**
Source:	**Cooling Bunker BH Outlet - White Iron**	**Date:**	**03/29/23**

Field Data Input Continued

Moisture Data			Stack Dimensional Data:		
Total Test Time	240.0	min	Circular		
Sample Time Interval	10.0	min	Diameter	55.750	in
Meter Volume, V_m	230.265	dcf	Rectangular		
Water Mass	25.7	g	Width		in
Nozzle Diameter, N_z	0.2660	in.	Length		in
Nozzle Area	0.000386	sq.ft.	Stack Area	16.952	sq.ft.
Traverse Data			Molecular Weight:		
Barometric Pressure, P_b	29.41	"Hg	CO_2 Average	0.07	%vd
Static Pressure	1.00	"H_2O	O_2 Average	20.92	%vd
Pitot Factor, cp	0.84				
Meter Cal Factor	1.0267	Y			

Field Data Averages

Meter			Stack		
ΔH	3.231	"H_2O	√Dp	0.761	"H_2O
Temperature, T_m	62.6	^oF	Temperature, T_s	49.6	^oF
Temperature, T_m	522.3	^oA (^oR)	Temperature, T_s	509.3	^oA (^oR)
Pressure Meter, P_m	29.648	"Hg	Pressure Stack, P_s	29.484	"Hg

Field Data Calculations

Meter Box Capture			EPA Method 2 Stack Gas Flowrate:		
Standard Volume, $V_{m(std)}$	236.686	dscf	Velocity, V_s	42.33	fps
	6.702	dscm	Flow Rate (actual), Q_{aw}	43,055	acfm
Actual Volume, $V_{m(actual)}$	232.999	awcf		42,835	adcfm
Gas Stream Moisture			Flow Rate (standard), Q	2,637,612	wscf/hr
Moisture Vapor, $Vw_{(std)}$	1.212	scf		2,624,160	dscf/hr
Moisture, B_{ws}	0.0051			43,736	dscf/min
Moisture EPA M4	0.51	%v		43,960	wscf/min
Moisture @ Saturation	1.21	%v (for T_s < 212°F)			
EPA Method 3 Gas Density					
Dry, M_d	28.85	lb/lb-mole			
Wet, M_s	28.79	lb/lb-mole			
Percent Isokinetic	99.0	%			

Eagle Foundry Company **Run: 1**
Cooling Bunker BH Outlet - White Iron **Sample Date: 03/27/23**
Method 29 Laboratory Results

Analyte	Filter + FH Rinse Cont. 1&3			BH Cap.Soln. + BH Rinse Cont. 4			Units
	<	Result	MDL	<	Result	MDL	
Aluminum		102	7.50		31.7	4.59	µg/sample
Antimony		2.00	1.25	<	MDL	0.765	µg/sample
Arsenic	<	MDL	1.75	<	MDL	1.07	µg/sample
Barium		3.87	0.125		0.902	0.076	µg/sample
Beryllium	<	MDL	0.050	<	MDL	0.031	µg/sample
Cadmium	<	MDL	0.100	<	MDL	0.061	µg/sample
Chromium		2.48	0.200		0.858	0.122	µg/sample
Cobalt	<	MDL	0.125		0.122	0.076	µg/sample
Copper		5.14	1.25		1.17	0.765	µg/sample
Lead		3.05	1.25	<	MDL	0.765	µg/sample
Manganese		5.96	0.075		0.665	0.046	µg/sample
Nickel		8.33	0.750		1.53	0.459	µg/sample
Phosphorus		10.4	5.00	<	MDL	3.06	µg/sample
Selenium	<	MDL	3.75	<	MDL	2.30	µg/sample
Silver	<	MDL	0.500	<	MDL	0.306	µg/sample
Thallium	<	MDL	2.50	<	MDL	1.53	µg/sample
Vanadium	<	MDL	0.250	<	MDL	0.153	µg/sample
Zinc		19.2	0.750		4.04	0.459	µg/sample

Lab ID:	23-S654	23-S655	
Sample Vol:	250	230	ml

Eagle Foundry Company **Run: 2**
Cooling Bunker BH Outlet - White Iron **Sample Date: 03/28/23**
Method 29 Laboratory Results

Analyte	Filter + FH Rinse Cont. 1&3			BH Cap.Soln. + BH Rinse Cont. 4			Units
	<	Result	MDL		Result	MDL	
Aluminum		96.2	7.50		17.8	3.45	µg/sample
Antimony		2.00	1.25	<	MDL	0.575	µg/sample
Arsenic		1.96	1.75	<	MDL	0.805	µg/sample
Barium		4.70	0.125		0.656	0.058	µg/sample
Beryllium	<	MDL	0.050	<	MDL	0.023	µg/sample
Cadmium	<	MDL	0.100	<	MDL	0.046	µg/sample
Chromium		2.20	0.200		1.03	0.092	µg/sample
Cobalt	<	MDL	0.125		0.072	0.058	µg/sample
Copper		4.76	1.25		0.674	0.575	µg/sample
Lead		1.93	1.25	<	MDL	0.575	µg/sample
Manganese		5.32	0.075		1.24	0.034	µg/sample
Nickel		7.70	0.750		0.921	0.345	µg/sample
Phosphorus		6.11	5.00	<	MDL	2.30	µg/sample
Selenium	<	MDL	3.75	<	MDL	1.72	µg/sample
Silver	<	MDL	0.500	<	MDL	0.230	µg/sample
Thallium	<	MDL	2.50	<	MDL	1.15	µg/sample
Vanadium	<	MDL	0.250	<	MDL	0.115	µg/sample
Zinc		12.6	0.750		1.57	0.345	µg/sample

Lab ID:	23-S659	23-S660	
Sample Vol:	250	250	ml

Eagle Foundry Company **Run: 3**
Cooling Bunker BH Outlet - White Iron **Sample Date: 03/29/23**
Method 29 Laboratory Results

Analyte	Filter + FH Rinse Cont. 1&3			BH Cap.Soln. + BH Rinse Cont. 4			Units
	<	Result	MDL	<	Result	MDL	
Aluminum		85.9	7.50		22.9	3.57	µg/sample
Antimony		1.76	1.25	<	MDL	0.595	µg/sample
Arsenic	<	MDL	1.75	<	MDL	0.833	µg/sample
Barium		2.65	0.125		0.742	0.060	µg/sample
Beryllium	<	MDL	0.050	<	MDL	0.024	µg/sample
Cadmium	<	MDL	0.100	<	MDL	0.048	µg/sample
Chromium		1.36	0.200		0.524	0.095	µg/sample
Cobalt	<	MDL	0.125	<	MDL	0.060	µg/sample
Copper		1.96	1.25		0.846	0.595	µg/sample
Lead	<	MDL	1.25	<	MDL	0.595	µg/sample
Manganese		2.70	0.075		11.6	0.036	µg/sample
Nickel		4.85	0.750		0.454	0.357	µg/sample
Phosphorus		6.98	5.00	<	MDL	2.38	µg/sample
Selenium	<	MDL	3.75	<	MDL	1.78	µg/sample
Silver	<	MDL	0.500	<	MDL	0.238	µg/sample
Thallium	<	MDL	2.50	<	MDL	1.19	µg/sample
Vanadium	<	MDL	0.250	<	MDL	0.119	µg/sample
Zinc		4.69	0.750		1.06	0.357	µg/sample

Lab ID:	23-S664	23-S665	
Sample Vol:	250	256	ml

Eagle Foundry Company **Sample Date: 3/27/2023**
Cooling Bunker BH Outlet - White Iron **3/28/2023**
Method 29 Blank Results **3/29/2023**

Analyte	Filter Cont. 12 µg/filter			BH Cap.Soln. Cont. 9 5% HNO_3/ 10% H_2O_2 µg/sample			FH/BH Rinse Cont. 8A 0.1 N HNO_3 µg/sample		
	<	Result	MDL	<	Result	MDL	<	Result	MDL
Aluminum		58.8	7.50		16.3	3.78	<	MDL	7.50
Antimony		2.86	1.25	<	MDL	0.630	<	MDL	1.25
Arsenic	<	MDL	1.75	<	MDL	0.882	<	MDL	1.75
Barium		1.40	0.125		0.718	0.063		0.193	0.125
Beryllium	<	MDL	0.050	<	MDL	0.025	<	MDL	0.050
Cadmium	<	MDL	0.100	<	MDL	0.050	<	MDL	0.100
Chromium		1.03	0.200		0.306	0.101	<	MDL	0.200
Cobalt	<	MDL	0.125		0.153	0.063	<	MDL	0.125
Copper	<	MDL	1.25	<	MDL	0.630	<	MDL	1.25
Lead	<	MDL	1.25	<	MDL	0.630	<	MDL	1.25
Manganese		0.741	0.075		0.742	0.038	<	MDL	0.375
Nickel		3.96	0.750	<	MDL	0.378	<	MDL	0.750
Phosphorus		17.0	5.00	<	MDL	2.52	<	MDL	5.00
Selenium	<	MDL	3.75	<	MDL	1.89	<	MDL	3.75
Silver	<	MDL	0.500	<	MDL	0.252	<	MDL	0.500
Thallium	<	MDL	2.50	<	MDL	1.26	<	MDL	2.50
Vanadium	<	MDL	0.250	<	MDL	0.126	<	MDL	0.250
Zinc		1.52	0.750		0.415	0.378	<	MDL	0.750

Lab ID:	23-S729	23-S731	23-S730
Blank Vol, ml:	N/A	196	250

Eagle Foundry Company **Run: 1**
Cooling Bunker BH Outlet - White Iron **Test Date: 3/27/2023**
Method 29 Non-Hg Metals Blank Correction Calculations **Page: 1 of 3**

Analyte		I Sample FH Rinse+Filter µg	II Blank Correction FH Rinse µg	III Blank Correction Filter µg		IV Sample BH Cap.Soln. + BH Rinse µg	V Blank BH Cap.Soln. µg/ml	VI Blank Correction BH Cap.Soln. µg	VII Blank Correction BH Rinse µg	VIII Total BH Blank Correction µg	
Aluminum		102.000	0.000	58.800		31.700	0.083	16.633	0.000	16.633	Al
Antimony		2.000	0.000	2.860	<	0.765	0.000	0.000	0.000	0.000	Sb
Arsenic	<	1.750	0.000	0.000	<	1.071	0.000	0.000	0.000	0.000	As
Barium		3.870	0.077	1.400		0.902	0.004	0.733	0.077	0.810	Ba
Beryllium	<	0.050	0.000	0.000	<	0.031	0.000	0.000	0.000	0.000	Be
Cadmium	<	0.100	0.000	0.000	<	0.061	0.000	0.000	0.000	0.000	Cd
Chromium		2.480	0.000	1.030		0.858	0.002	0.312	0.000	0.312	Cr
Cobalt	<	0.125	0.000	0.000		0.122	0.001	0.156	0.000	0.156	Co
Copper		5.140	0.000	0.000		1.170	0.000	0.000	0.000	0.000	Cu
Lead		3.050	0.000	0.000	<	0.765	0.000	0.000	0.000	0.000	Pb
Manganese		5.960	0.000	0.741		0.665	0.004	0.757	0.000	0.757	Mn
Nickel		8.330	0.000	3.960		1.530	0.000	0.000	0.000	0.000	Ni
Phosphorus		10.400	0.000	17.000	<	3.060	0.000	0.000	0.000	0.000	P
Selenium	<	3.750	0.000	0.000	<	2.300	0.000	0.000	0.000	0.000	Se
Silver	<	0.500	0.000	0.000	<	0.306	0.000	0.000	0.000	0.000	Ag
Thallium	<	2.500	0.000	0.000	<	1.530	0.000	0.000	0.000	0.000	Tl
Vanadium	<	0.250	0.000	0.000	<	0.153	0.000	0.000	0.000	0.000	V
Zinc		19.200	0.000	1.520		4.040	0.002	0.423	0.000	0.423	Zn

Lab ID:	**23-S654**	**23-S730**	**23-S729**	**23-S655**	**23-S731**	**N/A**	**N/A**
Notes:	0.1N HNO_3	0.1N HNO_3		5% HNO_3/10% H_2O_2	5% HNO_3/	5%HNO_3/	0.1NHNO_3
	FH Filter & Probe Rinse			BH Imps 1-3	10% H_2O_2	10%H_2O_2	
	100ml 0.1N HNO3 Rinse			100ml .1N HNO3 Rinse			
				200ml 5% HNO3/10% H2O2 Reagent			

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Analyte	X Allowable FH Blank Correction µg	XI Total FH Blank Correction µg		XII 5% of FH Sample µg	XIII Lessor of XI or XII µg	XIV Greater of A or XIII µg		XV FH Net Sample µg	
Aluminum	11.630	58.800		5.100	5.100	11.63		90.370	Al
Antimony	2.860	2.860		0.100	0.100	11.63		-0.860	Sb
Arsenic	0.000	0.000	<	0.088	0.000	11.63	<	1.750	As
Barium	1.477	1.477		0.194	0.194	11.63		2.393	Ba
Beryllium	0.000	0.000	<	0.003	0.000	11.63	<	0.050	Be
Cadmium	0.000	0.000	<	0.005	0.000	11.63	<	0.100	Cd
Chromium	1.030	1.030		0.124	0.124	11.63		1.450	Cr
Cobalt	0.000	0.000	<	0.006	0.000	11.63	<	0.125	Co
Copper	0.000	0.000		0.257	0.000	11.63		5.140	Cu
Lead	0.000	0.000		0.153	0.000	11.63		3.050	Pb
Manganese	0.741	0.741		0.298	0.298	11.63		5.219	Mn
Nickel	3.960	3.960		0.417	0.417	11.63		4.370	Ni
Phosphorus	11.630	17.000		0.520	0.520	11.63		-1.230	P
Selenium	0.000	0.000	<	0.188	0.000	11.63	<	3.750	Se
Silver	0.000	0.000	<	0.025	0.000	11.63	<	0.500	Ag
Thallium	0.000	0.000	<	0.125	0.000	11.63	<	2.500	Tl
Vanadium	0.000	0.000	<	0.013	0.000	11.63	<	0.250	V
Zinc	1.520	1.520		0.960	0.960	11.63		17.680	Zn

Note: Allowable FH Blank (A) = (area of filter)*(1.4 µg/in^2) = 11.63 µg
where area of filter = 8.306 in^2

If A > blank > 0, use blank-derived value, M_{fhb}.
If blank > A, use greater of A or [lessor of 5% of sample µg or FH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company | **Run:** 1
Cooling Bunker BH Outlet - White Iron | **Test Date:** 3/27/2023
Method 29 Non-Hg Metals Blank Correction Calculations | **Page:** 3 of 3

Analyte	XVI Allowable BH Blank Correction µg	XVII Total BH (M_{bhb}) Blank Correction µg		XVIII 5% of BH Sample µg	XIX Lessor of XVII or XVIII µg	XX Greater of 1 µg or XIX µg		XXI BH Net Sample µg		XXII FH Net Sample µg		XXIII FH+BH Total Net Sample µg	
Aluminum	1.585	16.633		1.585	1.585	1.585		**30.115**		**90.370**		**120.485**	Al
Antimony	0.000	0.000	<	0.038	0.000	1.000	<	**0.765**		**0.000**	<	**0.765**	Sb
Arsenic	0.000	0.000	<	0.054	0.000	1.000	<	**1.071**	<	**1.750**	<	**2.821**	As
Barium	0.810	0.810		0.045	0.045	1.000		**0.092**		**2.393**		**2.485**	Ba
Beryllium	0.000	0.000	<	0.002	0.000	1.000	<	**0.031**	<	**0.050**	<	**0.081**	Be
Cadmium	0.000	0.000	<	0.003	0.000	1.000	<	**0.061**	<	**0.100**	<	**0.161**	Cd
Chromium	0.312	0.312		0.043	0.043	1.000		**0.546**		**1.450**		**1.996**	Cr
Cobalt	0.156	0.156		0.006	0.006	1.000		**0.000**	<	**0.125**	<	**0.125**	Co
Copper	0.000	0.000		0.059	0.000	1.000		**1.170**		**5.140**		**6.310**	Cu
Lead	0.000	0.000	<	0.038	0.000	1.000	<	**0.765**		**3.050**	<	**3.815**	Pb
Manganese	0.757	0.757		0.033	0.033	1.000		**0.000**		**5.219**		**5.219**	Mn
Nickel	0.000	0.000		0.077	0.000	1.000		**1.530**		**4.370**		**5.900**	Ni
Phosphorus	0.000	0.000	<	0.153	0.000	1.000	<	**3.060**		**0.000**	<	**3.060**	P
Selenium	0.000	0.000	<	0.115	0.000	1.000	<	**2.300**	<	**3.750**	<	**6.050**	Se
Silver	0.000	0.000	<	0.015	0.000	1.000	<	**0.306**	<	**0.500**	<	**0.806**	Ag
Thallium	0.000	0.000	<	0.077	0.000	1.000	<	**1.530**	<	**2.500**	<	**4.030**	Tl
Vanadium	0.000	0.000	<	0.008	0.000	1.000	<	**0.153**	<	**0.250**	<	**0.403**	V
Zinc	0.423	0.423		0.202	0.202	1.000		**3.617**		**17.680**		**21.297**	Zn

Note: Allowable BH Blank rules:

If 1.00 µg > blank > 0 , use blank-derived value.
If blank > 1.00 µg, use greater of 1.00 µg or [lessor of 5% of sample µg or BH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company **Run: 2**
Cooling Bunker BH Outlet - White Iron **Test Date: 3/28/2023**
Method 29 Non-Hg Metals Blank Correction Calculations **Page: 1 of 3**

Analyte		I Sample FH Rinse+Filter µg	II Blank Correction FH Rinse µg	III Blank Correction Filter µg		IV Sample BH Cap.Soln. + BH Rinse µg	V Blank BH Cap.Soln. µg/ml	VI Blank Correction BH Cap.Soln. µg	VII Blank Correction BH Rinse µg	VIII Total BH Blank Correction µg	
Aluminum		96.200	0.000	58.800		17.800	0.083	16.633	0.000	16.633	Al
Antimony		2.000	0.000	2.860	<	0.575	0.000	0.000	0.000	0.000	Sb
Arsenic		1.960	0.000	0.000	<	0.805	0.000	0.000	0.000	0.000	As
Barium		4.700	0.077	1.400		0.656	0.004	0.733	0.077	0.810	Ba
Beryllium	<	0.050	0.000	0.000	<	0.023	0.000	0.000	0.000	0.000	Be
Cadmium	<	0.100	0.000	0.000	<	0.046	0.000	0.000	0.000	0.000	Cd
Chromium		2.200	0.000	1.030		1.030	0.002	0.312	0.000	0.312	Cr
Cobalt	<	0.125	0.000	0.000		0.072	0.001	0.156	0.000	0.156	Co
Copper		4.760	0.000	0.000		0.674	0.000	0.000	0.000	0.000	Cu
Lead		1.930	0.000	0.000	<	0.575	0.000	0.000	0.000	0.000	Pb
Manganese		5.320	0.000	0.741		1.240	0.004	0.757	0.000	0.757	Mn
Nickel		7.700	0.000	3.960		0.921	0.000	0.000	0.000	0.000	Ni
Phosphorus		6.110	0.000	17.000	<	2.300	0.000	0.000	0.000	0.000	P
Selenium	<	3.750	0.000	0.000	<	1.720	0.000	0.000	0.000	0.000	Se
Silver	<	0.500	0.000	0.000	<	0.230	0.000	0.000	0.000	0.000	Ag
Thallium	<	2.500	0.000	0.000	<	1.150	0.000	0.000	0.000	0.000	Tl
Vanadium	<	0.250	0.000	0.000	<	0.115	0.000	0.000	0.000	0.000	V
Zinc		12.600	0.000	1.520		1.570	0.002	0.423	0.000	0.423	Zn

Lab ID:	**23-S659**	**23-S730**	**23-S729**	**23-S660**	**23-S731**	**N/A**	**N/A**
Content:	0.1N HNO_3	0.1N HNO_3		5% HNO_3/10% H_2O_2	5% HNO_3/	5%HNO_3/	0.1NHNO_3
	FH Filter & Probe Rinse			BH Imps 1-3	10% H_2O_2	10%H_2O_2	
	100ml 0.1N HNO3 Rinse			100ml .1N HNO3 Rinse			
				200ml 5% HNO3/10% H2O2 Reagent			

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Analyte	X Allowable FH Blank Correction µg	XI Total FH Blank Correction µg		XII 5% of FH Sample µg	XIII Lessor of XI or XII µg	XIV Greater of A or XIII µg		XV FH Net Sample µg	
Aluminum	11.630	58.800		4.810	4.810	11.63		84.570	Al
Antimony	2.860	2.860		0.100	0.100	11.63		-0.860	Sb
Arsenic	0.000	0.000		0.098	0.000	11.63		1.960	As
Barium	1.477	1.477		0.235	0.235	11.63		3.223	Ba
Beryllium	0.000	0.000	<	0.003	0.000	11.63	<	0.050	Be
Cadmium	0.000	0.000	<	0.005	0.000	11.63	<	0.100	Cd
Chromium	1.030	1.030		0.110	0.110	11.63		1.170	Cr
Cobalt	0.000	0.000	<	0.006	0.000	11.63	<	0.125	Co
Copper	0.000	0.000		0.238	0.000	11.63		4.760	Cu
Lead	0.000	0.000		0.097	0.000	11.63		1.930	Pb
Manganese	0.741	0.741		0.266	0.266	11.63		4.579	Mn
Nickel	3.960	3.960		0.385	0.385	11.63		3.740	Ni
Phosphorus	11.630	17.000		0.306	0.306	11.63		-5.520	P
Selenium	0.000	0.000	<	0.188	0.000	11.63	<	3.750	Se
Silver	0.000	0.000	<	0.025	0.000	11.63	<	0.500	Ag
Thallium	0.000	0.000	<	0.125	0.000	11.63	<	2.500	Tl
Vanadium	0.000	0.000	<	0.013	0.000	11.63	<	0.250	V
Zinc	1.520	1.520		0.630	0.630	11.63		11.080	Zn

Note: Allowable FH Blank (A) = (area of filter)*(1.4 µg/in^2) = 11.63 µg
where area of filter = 8.306 in^2

If A > blank > 0, use blank-derived value.
If blank > A, use greater of A or [lessor of 5% of sample µg or FH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company | **Run:** | **2**
Cooling Bunker BH Outlet - White Iron | **Test Date:** | **3/28/2023**
Method 29 Non-Hg Metals Blank Correction Calculations | **Page:** | **3 of 3**

Analyte	XVI Allowable BH Blank Correction µg	XVII Total BH Blank Correction µg		XVIII 5% of BH Sample µg	XIX Lessor of XVII or XVIII µg	XX Greater of 1 µg or XIX µg		XXI BH Net Sample µg		XXII FH Net Sample µg		XXIII FH+BH Total Net Sample µg	
Aluminum	1.000	16.633		0.890	0.890	1.000		**16.800**		**84.570**		**101.370**	Al
Antimony	0.000	0.000	<	0.029	0.000	1.000	<	**0.575**		**0.000**	<	**0.575**	Sb
Arsenic	0.000	0.000	<	0.040	0.000	1.000	<	**0.805**		**1.960**	<	**2.765**	As
Barium	0.810	0.810		0.033	0.033	1.000		**0.000**		**3.223**		**3.223**	Ba
Beryllium	0.000	0.000	<	0.001	0.000	1.000	<	**0.023**	<	**0.050**	<	**0.073**	Be
Cadmium	0.000	0.000	<	0.002	0.000	1.000	<	**0.046**	<	**0.100**	<	**0.146**	Cd
Chromium	0.312	0.312		0.052	0.052	1.000		**0.718**		**1.170**		**1.888**	Cr
Cobalt	0.156	0.156		0.004	0.004	1.000		**0.000**	<	**0.125**	<	**0.125**	Co
Copper	0.000	0.000		0.034	0.000	1.000		**0.674**		**4.760**		**5.434**	Cu
Lead	0.000	0.000	<	0.029	0.000	1.000	<	**0.575**		**1.930**	<	**2.505**	Pb
Manganese	0.757	0.757		0.062	0.062	1.000		**0.483**		**4.579**		**5.062**	Mn
Nickel	0.000	0.000		0.046	0.000	1.000		**0.921**		**3.740**		**4.661**	Ni
Phosphorus	0.000	0.000	<	0.115	0.000	1.000	<	**2.300**		**0.000**	<	**2.300**	P
Selenium	0.000	0.000	<	0.086	0.000	1.000	<	**1.720**	<	**3.750**	<	**5.470**	Se
Silver	0.000	0.000	<	0.012	0.000	1.000	<	**0.230**	<	**0.500**	<	**0.730**	Ag
Thallium	0.000	0.000	<	0.058	0.000	1.000	<	**1.150**	<	**2.500**	<	**3.650**	Tl
Vanadium	0.000	0.000	<	0.006	0.000	1.000	<	**0.115**	<	**0.250**	<	**0.365**	V
Zinc	0.423	0.423		0.079	0.079	1.000		**1.147**		**11.080**		**12.227**	Zn

Note: Allowable BH Blank rules:

If 1.00 µg > blank > 0 , use blank-derived value.
If blank > 1.00 µg, use greater of 1.00 µg or [lessor of 5% of sample µg or BH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company **Run: 3**
Cooling Bunker BH Outlet - White Iron **Test Date: 3/29/2023**
Method 29 Non-Hg Metals Blank Correction Calculations **Page: 1 of 3**

Analyte		I Sample FH Rinse+Filter µg	II Blank Correction FH Rinse µg	III Blank Correction Filter µg		IV Sample BH Cap.Soln. + BH Rinse µg	V Blank BH Cap.Soln. µg/ml	VI Blank Correction BH Cap.Soln. µg	VII Blank Correction BH Rinse µg	VIII Total BH Blank Correction µg	
Aluminum		85.900	0.000	58.800		22.900	0.083	16.633	0.000	16.633	Al
Antimony		1.760	0.000	2.860	<	0.595	0.000	0.000	0.000	0.000	Sb
Arsenic	<	1.750	0.000	0.000	<	0.833	0.000	0.000	0.000	0.000	As
Barium		2.650	0.077	1.400		0.742	0.004	0.733	0.077	0.810	Ba
Beryllium	<	0.050	0.000	0.000	<	0.024	0.000	0.000	0.000	0.000	Be
Cadmium	<	0.100	0.000	0.000	<	0.048	0.000	0.000	0.000	0.000	Cd
Chromium		1.360	0.000	1.030		0.524	0.002	0.312	0.000	0.312	Cr
Cobalt	<	0.125	0.000	0.000	<	0.060	0.001	0.156	0.000	0.156	Co
Copper		1.960	0.000	0.000		0.846	0.000	0.000	0.000	0.000	Cu
Lead	<	1.250	0.000	0.000	<	0.595	0.000	0.000	0.000	0.000	Pb
Manganese		2.700	0.000	0.741		11.600	0.004	0.757	0.000	0.757	Mn
Nickel		4.850	0.000	3.960		0.454	0.000	0.000	0.000	0.000	Ni
Phosphorus		6.980	0.000	17.000	<	2.380	0.000	0.000	0.000	0.000	P
Selenium	<	3.750	0.000	0.000	<	1.780	0.000	0.000	0.000	0.000	Se
Silver	<	0.500	0.000	0.000	<	0.238	0.000	0.000	0.000	0.000	Ag
Thallium	<	2.500	0.000	0.000	<	1.190	0.000	0.000	0.000	0.000	Tl
Vanadium	<	0.250	0.000	0.000	<	0.119	0.000	0.000	0.000	0.000	V
Zinc		4.690	0.000	1.520		1.060	0.002	0.423	0.000	0.423	Zn

Lab ID:	**23-S664**	**23-S730**	**23-S729**	**23-S665**	**23-S731**	**N/A**	**N/A**
Content:	0.1N HNO_3	0.1N HNO_3		5% HNO_3/10% H_2O_2	5% HNO_3/	5%HNO_3/	0.1NHNO_3
	FH Filter & Probe Rinse			BH Imps 1-3	10% H_2O_2	10%H_2O_2	
	100ml 0.1N HNO3 Rinse			100ml .1N HNO_3 Rinse			
				200ml 5% HNO_3/10% H_2O_2 Reagent			

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company | **Run:** | **3**
Cooling Bunker BH Outlet - White Iron | **Test Date:** | **3/29/2023**
Method 29 Non-Hg Metals Blank Correction Calculations | **Page:** | **2 of 3**

Analyte	X Allowable FH Blank Correction µg	XI Total FH Blank Correction µg		XII 5% of FH Sample µg	XIII Lessor of XI or XII µg	XIV Greater of A or XIII µg		XV FH Net Sample µg	
Aluminum	11.630	58.800		4.295	4.295	11.63		74.270	Al
Antimony	2.860	2.860		0.088	0.088	11.63		-1.100	Sb
Arsenic	0.000	0.000	<	0.088	0.000	11.63	<	1.750	As
Barium	1.477	1.477		0.133	0.133	11.63		1.173	Ba
Beryllium	0.000	0.000	<	0.003	0.000	11.63	<	0.050	Be
Cadmium	0.000	0.000	<	0.005	0.000	11.63	<	0.100	Cd
Chromium	1.030	1.030		0.068	0.068	11.63		0.330	Cr
Cobalt	0.000	0.000	<	0.006	0.000	11.63	<	0.125	Co
Copper	0.000	0.000		0.098	0.000	11.63		1.960	Cu
Lead	0.000	0.000	<	0.063	0.000	11.63	<	1.250	Pb
Manganese	0.741	0.741		0.135	0.135	11.63		1.959	Mn
Nickel	3.960	3.960		0.243	0.243	11.63		0.890	Ni
Phosphorus	11.630	17.000		0.349	0.349	11.63		-4.650	P
Selenium	0.000	0.000	<	0.188	0.000	11.63	<	3.750	Se
Silver	0.000	0.000	<	0.025	0.000	11.63	<	0.500	Ag
Thallium	0.000	0.000	<	0.125	0.000	11.63	<	2.500	Tl
Vanadium	0.000	0.000	<	0.013	0.000	11.63	<	0.250	V
Zinc	1.520	1.520		0.235	0.235	11.63		3.170	Zn

Note: Allowable FH Blank (A) = (area of filter)*(1.4 µg/in^2) = 11.63 µg
where area of filter = 8.306 in^2

If A > blank > 0, use blank-derived value.
If blank > A, use greater of A or [lessor of 5% of sample µg or FH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company | **Run:** | **3**
Cooling Bunker BH Outlet - White Iron | **Test Date:** | **3/29/2023**
Method 29 Non-Hg Metals Blank Correction Calculations | **Page:** | **3 of 3**

Analyte	XVI Allowable BH Blank Correction µg	XVII Total BH Blank Correction µg		XVIII 5% of BH Sample µg	XIX Lessor of XVII or XVIII µg	XX Greater of 1 µg or XIX µg		XXI BH Net Sample µg		XXII FH Net Sample µg		XXIII FH+BH Total Net Sample µg	
Aluminum	1.145	16.633		1.145	1.145	1.145		**21.755**		**74.270**		**96.025**	Al
Antimony	0.000	0.000	<	0.030	0.000	1.000	<	**0.595**		**0.000**	<	**0.595**	Sb
Arsenic	0.000	0.000	<	0.042	0.000	1.000	<	**0.833**	<	**1.750**	<	**2.583**	As
Barium	0.810	0.810		0.037	0.037	1.000		**0.000**		**1.173**		**1.173**	Ba
Beryllium	0.000	0.000	<	0.001	0.000	1.000	<	**0.024**	<	**0.050**	<	**0.074**	Be
Cadmium	0.000	0.000	<	0.002	0.000	1.000	<	**0.048**	<	**0.100**	<	**0.148**	Cd
Chromium	0.312	0.312		0.026	0.026	1.000		**0.212**		**0.330**		**0.542**	Cr
Cobalt	0.156	0.156	<	0.003	0.156	1.000		**0.000**	<	**0.125**	<	**0.125**	Co
Copper	0.000	0.000		0.042	0.000	1.000		**0.846**		**1.960**		**2.806**	Cu
Lead	0.000	0.000	<	0.030	0.000	1.000	<	**0.595**	<	**1.250**	<	**1.845**	Pb
Manganese	0.757	0.757		0.580	0.580	1.000		**10.843**		**1.959**		**12.802**	Mn
Nickel	0.000	0.000		0.023	0.000	1.000		**0.454**		**0.890**		**1.344**	Ni
Phosphorus	0.000	0.000	<	0.119	0.000	1.000	<	**2.380**		**0.000**	<	**2.380**	P
Selenium	0.000	0.000	<	0.089	0.000	1.000	<	**1.780**	<	**3.750**	<	**5.530**	Se
Silver	0.000	0.000	<	0.012	0.000	1.000	<	**0.238**	<	**0.500**	<	**0.738**	Ag
Thallium	0.000	0.000	<	0.060	0.000	1.000	<	**1.190**	<	**2.500**	<	**3.690**	Tl
Vanadium	0.000	0.000	<	0.006	0.000	1.000	<	**0.119**	<	**0.250**	<	**0.369**	V
Zinc	0.423	0.423		0.053	0.053	1.000		**0.637**		**3.170**		**3.807**	Zn

Note: Allowable BH Blank rules:

If 1.00 µg > blank > 0 , use blank-derived value.
If blank > 1.00 µg, use greater of 1.00 µg or [lessor of 5% of sample µg or BH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company
Cooling Bunker BH Outlet - White Iron
Mercury Blank Correction Calculations

Blank Lab Values

	Filter Cont. 12 µg/filter			BH Imps. 2&3 Cap.Soln. Cont. 9 5% HNO_3/ 10% H_2O_2 µg/sample			FH/BH Rinse Cont. 8A 0.1 N HNO_3 µg/sample			BH Imps. 5&6 Rinse Cont. 8B H_2O µg/sample			BH Imps. 5&6 Cap.Soln. + Rinse Cont. 10 $KMnO_4$ µg/sample			BH Imps. 5&6 Rinse Cont. 11 HCl µg/sample	
Analyte	<	**Result**	**MDL**	<	**Result**	**MDL**	<	**Result**	**MDL**	<	**Result**	**MDL**	<	**Result**	**MDL**	<	**Result**	**MDL**
Mercury		0.0406	0.0219		0.118	0.0172	<	MDL	0.0219	<	MDL	0.0295		0.0628	0.0163	<	MDL	0.0108
Lab ID:		23-S729			23-S731			23-S730			23-S732			23-S733			23-S734	
Blank vol, ml:		NA			196			250			337			186			124	

Blank Correction Values

Analyte: Mercury	**Blank FH HNO_3 Rinse µg**	**Blank Filter µg**	**Blank BH Cap.Soln. µg**	**Blank BH HNO_3 Rinse µg**	**Blank BH H_2O Rinse µg**	**Blank BH KMnO4 Cap.Soln. + Rinse µg**	**Blank BH HCl Rinse µg**	**Total Blank Correction µg**	**Is Total Blank Correction ≥ 0 and ≤ 0.6?**
Run 1	0.00	0.04	0.12	0.00	0.00	0.10	0.00	0.2623	Yes
Reagent vol, ml	100.0		200.0	200.0	100.0	300.0	225.0		
Run 2	0.00	0.04	0.12	0.00	0.00	0.10	0.00	0.2623	Yes
Reagent vol, ml	100.0		200.0	200.0	100.0	300.0	225.0		
Run 3	0.00	0.04	0.12	0.00	0.00	0.10	0.00	0.2623	Yes
Reagent vol, ml	100.0		200.0	200.0	100.0	300.0	225.0		
Notes:	0.1N HNO_3 FH Probe Rinse	FH Filter	5% HNO_3/ 10% H_2O_2 BH Imps 2&3	0.1N HNO_3 BH Imps 1-4	H_2O BH Imps 5&6	4% $KMnO_4$/ 10% H_2SO_4 BH Imps 5&6	25 ml 8N HCl/ 200 ml H2O BH Imps 5&6		

Blank Corrected Results

Analyte: Mercury		**Sample FH Rinse + Filter Cont. 1&3 µg**	**Sample BH Cap.Soln. + HNO_3 Rinse Cont. 4 µg**		**Sample BH Imp. 4 + Rinse Cont. 5A µg**	**Sample BH Imps. 5&6 + Rinses Cont. 5B µg**		**Sample BH HCl Rinse + Water Cont. 5C µg**		**Total Sample µg**	**Total Blank Correction µg**		**Total Net Sample µg**
Run 1	<	0.0219	0.152	<	0.0103	0.150	<	0.0196	<	0.3538	0.2623	<	0.0915
Lab ID		23-S654	23-S655		23-S656	23-S657		23-S658					
Run 2	<	0.0219	0.162	<	0.00884	0.144	<	0.0194	<	0.3561	0.2623	<	0.0938
Lab ID		23-S659	23-S660		23-S661	23-S662		23-S663					
Run 3	<	0.0219	0.176	<	0.0137	0.127	<	0.0198	<	0.3584	0.2623	<	0.0961
Lab ID		23-S664	23-S665		23-S666	23-S667		23-S668					

Blank Rules: '<' indicates value is below the method detection limit (MDL)
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations but results are preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.
If the total blank correction value is less than or equal to 0.6 µg, subtract the total blank correction value from the total sample value to determine total net Hg. Otherwise, the value used for the blank correction shall be the greater of (1) 0.6 µg or (2) the lesser of [total FH blank + total BH blank] or 5% of the total sample valu

EPA Method 29
Gas Stream Characteristics
Test Summary

Client: **Eagle Foundry Company**
Source: **Cooling Bunker BH Outlet - White Iron**
Location: **Eagle Creek, OR**

Parameter	Units	Run 1	Run 2	Run 3	
Date		3/27/2023	3/28/2023	3/29/2023	
Run Start Time		6:40	5:10	5:15	
Run End Time		10:40	9:10	9:15	
Duration	minutes	240	240	240	**Average**
Barometric Pressure	inHg	29.88	29.41	29.41	**29.57**
Nozzle Diameter	inches	0.266	0.266	0.266	**0.266**
Isokinetic Average	%	98.0	100.0	99.0	**99.0**
Sample Volume	dscf	250.081	233.696	236.686	**240.154**
Sample Volume	dscm	7.081	6.618	6.702	**6.800**
Stack Diameter	inches	55.75	55.75	55.75	**55.75**
Stack Area	ft^2	16.952	16.952	16.952	**16.952**
CO_2	%vd	0.07	0.06	0.07	**0.07**
O_2	%vd	20.79	20.73	20.92	**20.81**
Static Pressure	inH_2O	1.00	1.00	1.00	**1.00**
H_2O	%v	0.59	1.00	0.51	**0.70**
Wet Molecular Weight	lb/lb-mole	28.78	28.73	28.79	**28.77**
Velocity	fps	44.43	42.14	42.33	**42.97**
Flow Rate	adcfm	44,924	42,432	42,835	**43,397**
	acfm	45,191	42,861	43,055	**43,702**
	dscfm	46,710	42,771	43,736	**44,406**
Stack Temperature	°F	48.4	56.2	49.6	**51.4**
Production Data	lb melt/pour	11,955.985	12,165.997	11,960.006	
	ton melt/pour	5.978	6.083	5.980	
	lb Cr/melt	3,106.941	3,124.611	3,071.140	
	ton Cr/melt	1.553	1.562	1.536	
	lb Mn/melt	120.685	126.908	122.799	
	ton Mn/melt	0.060	0.063	0.061	

Eagle Foundry Company **Test Dates:** 3/27/2023
Cooling Bunker BH Outlet - White Iron 3/28/2023
EPA Method 29 Results Summary 3/29/2023

Run 1													
Analyte	**Total**				**FH Net**			**BH Net**				
	µg	**µg/dscm**	**lb/hr**	**lb/ton melt**	**µg**	**µg/dscm**	**lb/hr**	**µg**	**µg/dscm**	**lb/hr**	
Aluminum	120.485	17.015	2.98E-03	1.99E-03	90.370	12.762	2.23E-03	30.115	4.253	7.44E-04	Al
Antimony	< 0.765	< 0.108	< 1.89E-05	< 1.26E-05	0.000	0.000	0.00E+00	< 0.765	< 0.108	< 1.89E-05	Sb
Arsenic	< 2.821	< 0.398	< 6.97E-05	< 4.66E-05	< 1.750	< 0.247	< 4.32E-05	< 1.071	< 0.151	< 2.65E-05	As
Barium	2.485	0.351	6.14E-05	4.11E-05	2.393	0.338	5.91E-05	0.092	0.013	2.27E-06	Ba
Beryllium	< 0.081	< 0.011	< 2.00E-06	< 1.34E-06	< 0.050	< 0.007	< 1.24E-06	< 0.031	< 0.004	< 7.66E-07	Be
Cadmium	< 0.161	< 0.023	< 3.98E-06	< 2.66E-06	< 0.100	< 0.014	< 2.47E-06	< 0.061	< 0.009	< 1.51E-06	Cd
Chromium	1.996	0.282	4.93E-05		1.450	0.205	3.58E-05	0.546	0.077	1.35E-05	Cr
Cobalt	< 0.125	< 0.018	< 3.09E-06	< 2.07E-06	< 0.125	< 0.018	< 3.09E-06	0.000	0.000	0.00E+00	Co
Copper	6.310	0.891	1.56E-04	1.04E-04	5.140	0.726	1.27E-04	1.170	0.165	2.89E-05	Cu
Lead	< 3.815	< 0.539	< 9.43E-05	< 6.31E-05	3.050	0.431	7.54E-05	< 0.765	< 0.108	< 1.89E-05	Pb
Manganese	5.219	0.737	1.29E-04		5.219	0.737	1.29E-04	0.000	0.000	0.00E+00	Mn
Mercury	< 0.092	< 0.013	< 2.26E-06	< 1.51E-06							Hg
Nickel	5.900	0.833	1.46E-04	9.75E-05	4.370	0.617	1.08E-04	1.530	0.216	3.78E-05	Ni
Phosphorus	< 3.060	< 0.432	< 7.56E-05	< 5.06E-05	0.000	0.000	0.00E+00	< 3.060	< 0.432	< 7.56E-05	P
Selenium	< 6.050	< 0.854	< 1.49E-04	< 1.00E-04	< 3.750	< 0.530	< 9.27E-05	< 2.300	< 0.325	< 5.68E-05	Se
Silver	< 0.806	< 0.114	< 1.99E-05	< 1.33E-05	< 0.500	< 0.071	< 1.24E-05	< 0.306	< 0.043	< 7.56E-06	Ag
Thallium	< 4.030	< 0.569	< 9.96E-05	< 6.66E-05	< 2.500	< 0.353	< 6.18E-05	< 1.530	< 0.216	< 3.78E-05	Tl
Vanadium	< 0.403	< 0.057	< 9.96E-06	< 6.66E-06	< 0.250	< 0.035	< 6.18E-06	< 0.153	< 0.022	< 3.78E-06	V
Zinc	21.297	3.008	5.26E-04	3.52E-04	17.680	2.497	4.37E-04	3.617	0.511	8.94E-05	Zn

Chromium	lb Cr / ton Cr in melt =	1.27E-04
Manganese	lb Mn / ton Mn in melt =	8.55E-03

Run 1 Emission Factors

Run 2													
Analyte	**Total**				**FH Net**			**BH Net**				
	µg	**µg/dscm**	**lb/hr**	**lb/ton melt**	**µg**	**µg/dscm**	**lb/hr**	**µg**	**µg/dscm**	**lb/hr**	
Aluminum	101.370	15.317	2.45E-03	1.61E-03	84.570	12.779	2.05E-03	16.800	2.539	4.07E-04	Al
Antimony	< 0.575	< 0.087	< 1.39E-05	< 9.15E-06	0.000	0.000	0.00E+00	< 0.575	< 0.087	< 1.39E-05	Sb
Arsenic	< 2.765	< 0.418	< 6.69E-05	< 4.40E-05	1.960	0.296	4.74E-05	< 0.805	< 0.122	< 1.95E-05	As
Barium	3.223	0.487	7.80E-05	5.13E-05	3.223	0.487	7.80E-05	0.000	0.000	0.00E+00	Ba
Beryllium	< 0.073	< 0.011	< 1.77E-06	< 1.16E-06	< 0.050	< 0.008	< 1.21E-06	< 0.023	< 0.003	< 5.57E-07	Be
Cadmium	< 0.146	< 0.022	< 3.53E-06	< 2.32E-06	< 0.100	< 0.015	< 2.42E-06	< 0.046	< 0.007	< 1.11E-06	Cd
Chromium	1.888	0.285	4.57E-05		1.170	0.177	2.83E-05	0.718	0.108	1.74E-05	Cr
Cobalt	< 0.125	< 0.019	< 3.03E-06	< 1.99E-06	< 0.125	< 0.019	< 3.03E-06	0.000	0.000	0.00E+00	Co
Copper	5.434	0.821	1.32E-04	8.65E-05	4.760	0.719	1.15E-04	0.674	0.102	1.63E-05	Cu
Lead	< 2.505	< 0.379	< 6.06E-05	< 3.99E-05	1.930	0.292	4.67E-05	< 0.575	< 0.087	< 1.39E-05	Pb
Manganese	5.062	0.765	1.23E-04		4.579	0.692	1.11E-04	0.483	0.073	1.17E-05	Mn
Mercury	< 0.094	< 0.014	< 2.27E-06	< 1.49E-06							Hg
Nickel	4.661	0.704	1.13E-04	7.42E-05	3.740	0.565	9.05E-05	0.921	0.139	2.23E-05	Ni
Phosphorus	< 2.300	< 0.348	< 5.57E-05	< 3.66E-05	0.000	0.000	0.00E+00	< 2.300	< 0.348	< 5.57E-05	P
Selenium	< 5.470	< 0.827	< 1.32E-04	< 8.71E-05	< 3.750	< 0.567	< 9.08E-05	< 1.720	< 0.260	< 4.16E-05	Se
Silver	< 0.730	< 0.110	< 1.77E-05	< 1.16E-05	< 0.500	< 0.076	< 1.21E-05	< 0.230	< 0.035	< 5.57E-06	Ag
Thallium	< 3.650	< 0.552	< 8.84E-05	< 5.81E-05	< 2.500	< 0.378	< 6.05E-05	< 1.150	< 0.174	< 2.78E-05	Tl
Vanadium	< 0.365	< 0.055	< 8.84E-06	< 5.81E-06	< 0.250	< 0.038	< 6.05E-06	< 0.115	< 0.017	< 2.78E-06	V
Zinc	12.227	1.848	2.96E-04	1.95E-04	11.080	1.674	2.68E-04	1.147	0.173	2.78E-05	Zn

Chromium	lb Cr / ton Cr in melt =	1.17E-04
Manganese	lb Mn / ton Mn in melt =	7.72E-03

Run 2 Emission Factors

Note: Results for Hg front half and back half fractions are not shown because these values are not blank-corrected. Per EPA Method 29, only the sum of Hg front and back half results is subject to blank correction.

'<' denotes results which were calculated using the method detection limit for front half or back half results that were non-detect.

Eagle Foundry Company **Test Dates:** 3/27/2023
Cooling Bunker BH Outlet - White Iron 3/28/2023
EPA Method 29 Results Summary 3/29/2023

Run 3													
Analyte	**Total**				**FH Net**			**BH Net**				
	µg	**µg/dscm**	**lb/hr**	**lb/ton melt**	**µg**	**µg/dscm**	**lb/hr**	**µg**	**µg/dscm**	**lb/hr**	
Aluminum	96.025	14.328	2.35E-03	1.57E-03	74.270	11.082	1.82E-03	21.755	3.246	5.32E-04	Al
Antimony	< 0.595	< 0.089	< 1.45E-05	< 9.73E-06	0.000	0.000	0.00E+00	< 0.595	< 0.089	< 1.45E-05	Sb
Arsenic	< 2.583	< 0.385	< 6.31E-05	< 4.22E-05	< 1.750	< 0.261	< 4.28E-05	< 0.833	< 0.124	< 2.04E-05	As
Barium	1.173	0.175	2.87E-05	1.92E-05	1.173	0.175	2.87E-05	0.000	0.000	0.00E+00	Ba
Beryllium	< 0.074	< 0.011	< 1.81E-06	< 1.21E-06	< 0.050	< 0.007	< 1.22E-06	< 0.024	< 0.004	< 5.87E-07	Be
Cadmium	< 0.148	< 0.022	< 3.62E-06	< 2.42E-06	< 0.100	< 0.015	< 2.44E-06	< 0.048	< 0.007	< 1.17E-06	Cd
Chromium	0.542	0.081	1.32E-05		0.330	0.049	8.07E-06	0.212	0.032	5.18E-06	Cr
Cobalt	< 0.125	< 0.019	< 3.06E-06	< 2.04E-06	< 0.125	< 0.019	< 3.06E-06	0.000	0.000	0.00E+00	Co
Copper	2.806	0.419	6.86E-05	4.59E-05	1.960	0.292	4.79E-05	0.846	0.126	2.07E-05	Cu
Lead	< 1.845	< 0.275	< 4.51E-05	< 3.02E-05	< 1.250	< 0.187	< 3.06E-05	< 0.595	< 0.089	< 1.45E-05	Pb
Manganese	12.802	1.910	3.13E-04		1.959	0.292	4.79E-05	10.843	1.618	2.65E-04	Mn
Mercury	< 0.096	< 0.014	< 2.35E-06	< 1.57E-06							Hg
Nickel	1.344	0.201	3.29E-05	2.20E-05	0.890	0.133	2.18E-05	0.454	0.068	1.11E-05	Ni
Phosphorus	< 2.380	< 0.355	< 5.82E-05	< 3.89E-05	0.000	0.000	0.00E+00	< 2.380	< 0.355	< 5.82E-05	P
Selenium	< 5.530	< 0.825	< 1.35E-04	< 9.04E-05	< 3.750	< 0.560	< 9.17E-05	< 1.780	< 0.266	< 4.35E-05	Se
Silver	< 0.738	< 0.110	< 1.80E-05	< 1.21E-05	< 0.500	< 0.075	< 1.22E-05	< 0.238	< 0.036	< 5.82E-06	Ag
Thallium	< 3.690	< 0.551	< 9.02E-05	< 6.03E-05	< 2.500	< 0.373	< 6.11E-05	< 1.190	< 0.178	< 2.91E-05	Tl
Vanadium	< 0.369	< 0.055	< 9.02E-06	< 6.03E-06	< 0.250	< 0.037	< 6.11E-06	< 0.119	< 0.018	< 2.91E-06	V
Zinc	3.807	0.568	9.31E-05	6.22E-05	3.170	0.473	7.75E-05	0.637	0.095	1.56E-05	Zn

Chromium	lb Cr / ton Cr in melt =	3.45E-05
Manganese	lb Mn / ton Mn in melt =	2.04E-02

Run 3 Emission Factors

Mean Runs 1-3													
Analyte	**Total**				**FH Net**			**BH Net**				
	µg	**µg/dscm**	**lb/hr**	**lb/ton melt**	**µg**	**µg/dscm**	**lb/hr**	**µg**	**µg/dscm**	**lb/hr**	
Aluminum	105.960	15.553	2.59E-03	1.73E-03	83.070	12.208	2.03E-03	22.890	3.346	5.61E-04	
Antimony	< 0.645	< 0.095	< 1.58E-05	< 1.05E-05	0.000	0.000	0.00E+00	< 0.645	< 0.095	< 1.58E-05	Sb
Arsenic	< 2.723	< 0.401	< 6.66E-05	< 4.43E-05	< 1.820	< 0.268	< 4.45E-05	< 0.903	< 0.132	< 2.21E-05	As
Barium	2.293	0.338	5.60E-05	3.72E-05	2.263	0.333	5.53E-05	0.031	0.004	7.56E-07	Ba
Beryllium	< 0.076	< 0.011	< 1.86E-06	< 1.24E-06	< 0.050	< 0.007	< 1.22E-06	< 0.026	< 0.004	< 6.37E-07	Be
Cadmium	< 0.152	< 0.022	< 3.71E-06	< 2.47E-06	< 0.100	< 0.015	< 2.45E-06	< 0.052	< 0.008	< 1.26E-06	Cd
Chromium	1.475	0.216	3.61E-05		0.983	0.144	2.41E-05	0.492	0.072	1.20E-05	Cr
Cobalt	< 0.125	< 0.018	< 3.06E-06	< 2.03E-06	< 0.125	< 0.018	< 3.06E-06	0.000	0.000	0.00E+00	Co
Copper	4.850	0.710	1.19E-04	7.89E-05	3.953	0.579	9.67E-05	0.897	0.131	2.20E-05	Cu
Lead	< 2.722	< 0.398	< 6.67E-05	< 4.44E-05	< 2.077	< 0.303	< 5.09E-05	< 0.645	< 0.095	< 1.58E-05	Pb
Manganese	7.694	1.137	1.88E-04		3.919	0.574	9.59E-05	3.775	0.564	9.22E-05	Mn
Mercury	< 0.094	< 0.014	< 2.29E-06	< 1.53E-06							Hg
Nickel	3.968	0.579	9.72E-05	6.46E-05	3.000	0.438	7.34E-05	0.968	0.141	2.37E-05	Ni
Phosphorus	< 2.580	< 0.378	< 6.32E-05	< 4.20E-05	0.000	0.000	0.00E+00	< 2.580	< 0.378	< 6.32E-05	P
Selenium	< 5.683	< 0.835	< 1.39E-04	< 9.25E-05	< 3.750	< 0.552	< 9.17E-05	< 1.933	< 0.283	< 4.73E-05	Se
Silver	< 0.758	< 0.111	< 1.85E-05	< 1.23E-05	< 0.500	< 0.074	< 1.22E-05	< 0.258	< 0.038	< 6.32E-06	Ag
Thallium	< 3.790	< 0.557	< 9.27E-05	< 6.17E-05	< 2.500	< 0.368	< 6.11E-05	< 1.290	< 0.189	< 3.16E-05	Tl
Vanadium	< 0.379	< 0.056	< 9.27E-06	< 6.17E-06	< 0.250	< 0.037	< 6.11E-06	< 0.129	< 0.019	< 3.16E-06	V
Zinc	12.444	1.808	3.05E-04	2.03E-04	10.643	1.548	2.61E-04	1.800	0.260	4.42E-05	Zn

Chromium	lb Cr / ton Cr in melt =	9.28E-05
Manganese	lb Mn / ton Mn in melt =	1.22E-02

Mean Runs 1-3

Note: Results for Hg front half and back half fractions are not shown because these values are not blank-corrected. Per EPA Method 29, only the sum of Hg front and back half results is subject to blank correction.

'<' denotes results which were calculated using the method detection limit for front half or back half results that were non-detect.

BISON ENGINEERING, INC.

COMPANY	**Eagle Foundry Company**
FACILITY	**Eagle Foundry**
LOCATION	**Eagle Creek, OR**
SOURCE	**Cooling Bunker BH Outlet - White Iron**
DATE	**3/27/2023 - 3/29/2023**
METHOD	**0061**
POLLUTANT	**Cr VI**

EPA Method 1
Stack Parameters and Traverse Points

Client: **Eagle Foundry Company**
Location: **Eagle Creek, OR**
Source: **Cooling Bunker BH Outlet - White Iron**
Facility: **Eagle Foundry**

Type of Testing: P (P for Particulate; V for Velocity/Nonparticulate)
Type of Duct: C (C for circular; R for rectangular)

Number of ports available:	2	
Number of ports to be used:	2	
Port diameter:	4	inches
Sampling location height (approx.):		feet
Stack height (approx.):		feet
Circular ID (Rectangular Depth):	55.75	inches
Port depth and/or wall thickness:	6.50	inches
Stack width (Rectangular only):		inches

Equivalent Diameter
If rectangular = $\frac{2*Depth*Width}{Depth + Width}$ = 55.75 inches (If circular = duct ID)

Stack/duct area = 16.952 sq.feet 2441.1 sq. inches

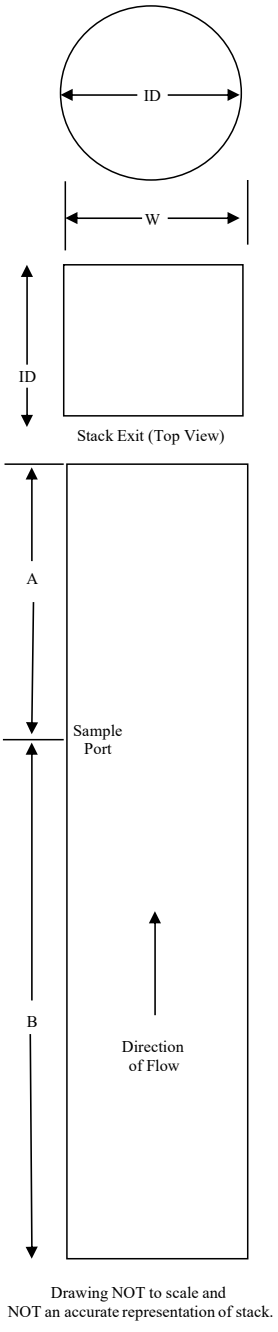
Sample Port Location:	Downstream flow disturbance from process B	Upstream flow disturbance toward exit A
Number of Inches:	246.00	45.00
Number of Diameters:	4.41	0.81

Minimum Number of Traverse Points: 24

Traverse points less than 1.0 inch from the stack wall are relocated to a distance of 1.0 inch.

Points	% of diameter	Distance from inside wall (in.)	Distance including port (in.)
1	2.1	1.17	7 5/8
2	6.7	3.74	10 1/4
3	11.8	6.58	13 1/8
4	17.7	9.87	16 3/8
5	25.0	13.94	20 1/2
6	35.6	19.85	26 3/8
7	64.4	35.90	42 3/8
8	75.0	41.81	48 3/8
9	82.3	45.88	52 3/8
10	88.2	49.17	55 5/8
11	93.3	52.01	58 1/2
12	97.9	54.58	61 1/8

Reference Diagram



Drawing NOT to scale and NOT an accurate representation of stack.

Pre-Test Traverse

Client: **Eagle Foundry Company**
Location: **Eagle Creek, OR**
Source: **Cooling Bunker BH Outlet - White Iron**

Stack Temp: 58 °F

Traverse Point	Velocity ΔP ("H_2O)	Null Angle
1	0.67	0
2	0.71	5
3	0.73	0
4	0.69	5
5	0.65	5
6	0.69	0
7	0.72	5
8	0.76	0
9	0.75	5
10	0.72	0
11	0.71	5
12	0.62	5
Average:	0.70	3

Flow is found to be: Non-cyclonic

Isokinetic Field Data
Field Data Entry

Client:	**Eagle Foundry Company**	**Run:**	**1**
Location:	**Eagle Creek, OR**	**Start Time:**	**6:40**
Source:	**Cooling Bunker BH Outlet - White Iron**	**End Time:**	**10:42**
EPA Method:	**0061**	**Environmental Conditions/Test Notes:**	**Date:** **3/27/2023**
Box Operator:	**JCR**	Mostly cloudy and 30s °F	
Technician(s):	**AJV**		

Stack Dimensional Data:

Circular		
Diameter	55.750	in
Rectangular		
Width		in
Length		in
Stack Area	16.952	sq.ft.

Equipment:

Meterbox ID	13	Probe ID	8A	Liner type	GLASS		
Y factor	1.0122	Nozzle ID	N/A	Nozzle size	0.263	inches	
ΔH@	1.743	Hot box ID	N/A	Nozzle area	0.000377	sq.ft.	
Bp ID	TS1	Pitot Cp	0.84	Probe heat	250	°F	
Balance ID	HLN FB1	Pitot ID	8A	Filter heat	N/A	°F	
Weights ID	HLN FW1	Probe Length, ft	8				

Source Information:

Barometric Pressure	29.88	"Hg	O_2	20.90	%
Static Pressure	1	"H_2O	CO_2	0.00	%
Ave. ΔP	0.7	"H_2O	Rec. Nz.	0.223	inches
Stack Temperature	60	°F			
Assumed moisture	3.00	%			
Assumed meter temp.	65	°F			
Total number of points	24				
Time per point	10	min.			
Total run time	240	min.			

Leak Checks:

	Pre-test	Post-test
Pitot	X	X
Leak rate, dcf	0.000	0.000
Leak check vacuum, "Hg	10	10

Nozzle check for roundness:

1	2	3	
0.262	0.263	0.263	inches
	Caliper ID	WS1	

Post Test Calculations:

Sample volume	232.999	dcf	Ave. ΔP	0.628	"H_2O
Wet mol. weight	28.78	M_s (actual)	Ave. √ΔP	0.792	"H_2O
Actual H_2O	0.57	%	Ave. ΔH	3.165	"H_2O
Std. meter vol.	239.679	dscf	Ave. T_s	45.2	°F
Isokinetic Average	97.5	%	Ave. T_m	62.9	°F

Moisture/Lab:

Filter, #	N/A		
	Initial	Final	Gain
Impingers, g	1,745.8	1,735.0	-10.8
Silica gel, g	914.0	954.2	40.2
		Total water gain, g:	29.4

Traverse Point	Time (min.)	Meter Volume (dcf)	Velocity ΔP ("H_2O)	Stack Temp. (°F)	Meter Temp. (°F)	Calc. ΔH	Run ΔH	Vacuum ("Hg)	Filter Box (°F)	Condenser Temp (≤68°F)
		0.000								
1	10.0	8.810	0.56	38	54	2.81	2.80	6	N/A	45
2	20.0	17.720	0.56	40	54	2.80	2.80	6	N/A	46
3	30.0	26.880	0.59	40	55	2.96	2.95	7	N/A	46
4	40.0	35.940	0.53	39	57	2.67	2.65	7	N/A	51
5	50.0	45.480	0.63	40	58	3.18	3.20	7.5	N/A	47
6	60.0	55.030	0.63	40	59	3.18	3.20	7.5	N/A	47
7	70.0	65.080	0.69	40	59	3.49	3.50	9	N/A	50
8	80.0	75.150	0.70	40	60	3.54	3.55	9.5	N/A	52
9	90.0	85.230	0.67	40	60	3.39	3.40	9	N/A	46
10	100.0	95.130	0.64	41	60	3.23	3.25	9	N/A	41
11	110.0	105.490	0.67	42	62	3.39	3.40	9	N/A	40
12	120.0	115.250	0.66	43	64	3.35	3.35	9	N/A	41
13	130.0	125.470	0.70	44	65	3.55	3.55	9	N/A	40
14	140.0	135.510	0.62	45	66	3.14	3.15	8.5	N/A	40
15	150.0	145.360	0.62	45	69	3.16	3.15	8.5	N/A	41
16	160.0	155.060	0.59	47	69	3.00	3.00	8	N/A	42
17	170.0	164.640	0.58	48	69	2.94	2.95	8	N/A	42
18	180.0	174.030	0.55	50	69	2.78	2.80	7.5	N/A	43
19	190.0	183.480	0.61	50	68	3.07	3.05	7.5	N/A	43
20	200.0	193.630	0.70	52	68	3.51	3.50	9	N/A	44
21	210.0	203.890	0.65	53	67	3.25	3.25	9	N/A	45
22	220.0	213.690	0.65	54	66	3.24	3.25	9	N/A	45
23	230.0	223.320	0.63	56	66	3.13	3.15	8.5	N/A	45
24	240.0	232.999	0.63	58	66	3.11	3.10	8	N/A	45

Isokinetic Field Data
Field Data Entry

Client:	**Eagle Foundry Company**	**Run:**	**2**
Location:	**Eagle Creek, OR**	**Start Time:**	**5:10**
Source:	**Cooling Bunker BH Outlet - White Iron**	**End Time:**	**9:11**
EPA Method:	**0061**	**Environmental Conditions/Test Notes:**	**Date:** **3/28/2023**
Box Operator:	**JCR**	Mostly cloudy and 30s °F	
Technician(s):	**AJV**		

Stack Dimensional Data:

Circular		
Diameter	55.750	in
Rectangular		
Width		in
Length		in
Stack Area	16.952	sq.ft.

Equipment:

Meterbox ID	13	Probe ID	8A	Liner type	GLASS		
Y factor	1.0122	Nozzle ID	N/A	Nozzle size	0.263	inches	
ΔH@	1.743	Hot box ID	N/A	Nozzle area	0.000377	sq.ft.	
Bp ID	TS1	Pitot Cp	0.84	Probe heat	250	°F	
Balance ID	HLN FB1	Pitot ID	8A	Filter heat	N/A	°F	
Weights ID	HLN FW1	Probe Length, ft	8				

Source Information:

Barometric Pressure	29.41	"Hg	O_2	20.90	%
Static Pressure	1	"H_2O	CO_2	0.00	%
Ave. ΔP	0.7	"H_2O	Rec. Nz.	0.221	inches
Stack Temperature	60	°F			
Assumed moisture	0.57	%			
Assumed meter temp.	62.9	°F			
Total number of points	24				
Time per point	10	min.			
Total run time	240	min.			

Leak Checks:

	Pre-test	Post-test
Pitot	X	X
Leak rate, dcf	0.000	0.000
Leak check vacuum, "Hg	10	11

Nozzle check for roundness:

1	2	3	
0.262	0.263	0.263	inches
	Caliper ID	WS1	

Post Test Calculations:

Sample volume	226.599	dcf	Ave. ΔP	0.571	"H_2O
Wet mol. weight	28.8	M_s (actual)	Ave. √ΔP	0.756	"H_2O
Actual H_2O	0.36	%	Ave. ΔH	2.965	"H_2O
Std. meter vol.	227.989	dscf	Ave. T_s	53.7	°F
Isokinetic Average	98.6	%	Ave. T_m	66.0	°F

Moisture/Lab:

Filter, #	N/A		
	Initial	Final	Gain
Impingers, g	1,728.0	1,712.8	-15.2
Silica gel, g	872.8	905.5	32.7
		Total water gain:	17.5

Traverse Point	Time (min.)	Meter Volume (dcf) 0.000	Velocity ΔP ("H_2O)	Stack Temp. (°F)	Meter Temp. (°F)	Calc. ΔH	Run ΔH	Vacuum ("Hg)	Filter Box (°F)	Condenser Temp (≤68°F)
1	10.0	9.480	0.59	50	64	3.07	3.10	6	N/A	34
2	20.0	18.600	0.56	52	65	2.91	2.90	6.5	N/A	41
3	30.0	28.130	0.55	52	66	2.86	2.85	7	N/A	41
4	40.0	37.260	0.56	52	65	2.91	2.90	7.5	N/A	41
5	50.0	46.920	0.60	52	65	3.12	3.10	8	N/A	42
6	60.0	56.390	0.57	52	65	2.96	2.95	7.5	N/A	41
7	70.0	65.860	0.57	52	64	2.96	2.95	7.5	N/A	41
8	80.0	75.420	0.60	52	64	3.11	3.10	7.5	N/A	40
9	90.0	84.940	0.58	52	64	3.01	3.00	7.5	N/A	40
10	100.0	94.540	0.57	52	64	2.96	2.95	7.5	N/A	40
11	110.0	103.730	0.54	55	65	2.79	2.80	7	N/A	40
12	120.0	113.310	0.59	55	65	3.05	3.05	7.5	N/A	41
13	130.0	122.720	0.57	59	66	2.93	2.95	7.5	N/A	40
14	140.0	132.180	0.55	58	66	2.83	2.85	7.5	N/A	40
15	150.0	141.480	0.57	57	66	2.94	2.95	7	N/A	40
16	160.0	150.910	0.57	55	67	2.96	2.95	7	N/A	40
17	170.0	160.400	0.58	55	67	3.01	3.00	7	N/A	40
18	180.0	169.820	0.56	54	68	2.91	2.90	7	N/A	40
19	190.0	179.260	0.57	54	68	2.97	3.00	7	N/A	40
20	200.0	189.000	0.57	54	68	2.97	3.00	7	N/A	40
21	210.0	198.500	0.55	54	68	2.86	2.85	7	N/A	39
22	220.0	207.530	0.58	54	68	3.02	3.00	7	N/A	39
23	230.0	217.080	0.57	53	68	2.97	2.95	7	N/A	39
24	240.0	226.599	0.59	53	68	3.08	3.10	7	N/A	39

Isokinetic Field Data
Field Data Entry

Client:	**Eagle Foundry Company**	**Run:**	**3**
Location:	**Eagle Creek, OR**	**Start Time:**	**5:15**
Source:	**Cooling Bunker BH Outlet - White Iron**	**End Time:**	**9:15**
EPA Method:	**0061**	**Environmental Conditions/Test Notes:**	**Date:** **3/29/2023**
Box Operator:	**JCR**	Mostly cloudy and 30s °F	
Technician(s):	**AJV**		

Stack Dimensional Data:

Circular		
Diameter	55.750	in
Rectangular		
Width		in
Length		in
Stack Area	16.952	sq.ft.

Equipment:

Meterbox ID	13	Probe ID	8A	Liner type	GLASS		
Y factor	1.0122	Nozzle ID	N/A	Nozzle size	0.263	inches	
ΔH@	1.743	Hot box ID	N/A	Nozzle area	0.000377	sq.ft.	
Bp ID	TS1	Pitot Cp	0.84	Probe heat	250	°F	
Balance ID	HLN FB1	Pitot ID	8A	Filter heat	N/A	°F	
Weights ID	HLN FW1	Probe Length, ft	8				

Source Information:

Barometric Pressure	29.41	"Hg	O_2	20.90	%
Static Pressure	1	"H_2O	CO_2	0.00	%
Ave. ΔP	0.7	"H_2O	Rec. Nz.	0.22	inches
Stack Temperature	60	°F			
Assumed moisture	0.36	%			
Assumed meter temp.	66	°F			
Total number of points	24				
Time per point	10	min.			
Total run time	240	min.			

Leak Checks:

	Pre-test	Post-test
Pitot	X	X
Leak rate, dcf	0.000	0.000
Leak check vacuum, "Hg	10	13

Nozzle check for roundness:

1	2	3	
0.262	0.263	0.263	inches
	Caliper ID	WS1	

Post Test Calculations:

Sample volume	220.582	dcf	Ave. ΔP	0.540	"H_2O
Wet mol. weight	28.76	M_s (actual)	Ave. √ΔP	0.734	"H_2O
Actual H_2O	0.71	%	Ave. ΔH	2.823	"H_2O
Std. meter vol.	223.862	dscf	Ave. T_s	47.0	°F
Isokinetic Average	99.3	%	Ave. T_m	61.3	°F

Moisture/Lab:

Filter, #	N/A		
	Initial	Final	Gain
Impingers, g	1,726.1	1,716.0	-10.1
Silica gel, g	1,040.7	1,084.6	43.9
		Total water gain:	33.8

Traverse Point	Time (min.)	Meter Volume (dcf)	Velocity ΔP ("H_2O)	Stack Temp. (°F)	Meter Temp. (°F)	Calc. ΔH	Run ΔH	Vacuum ("Hg)	Filter Box (°F)	Condenser Temp (≤68°F)
		0.000								
1	10.0	8.440	0.48	43	56	2.50	2.50	6.5	N/A	31
2	20.0	17.300	0.52	47	55	2.69	2.70	7.5	N/A	36
3	30.0	26.310	0.52	46	57	2.70	2.70	7.5	N/A	37
4	40.0	35.380	0.52	46	60	2.72	2.70	7.5	N/A	37
5	50.0	44.590	0.54	45	62	2.84	2.85	8	N/A	38
6	60.0	54.280	0.59	45	64	3.11	3.10	8.5	N/A	39
7	70.0	63.660	0.55	47	65	2.90	2.90	8.5	N/A	39
8	80.0	73.330	0.61	46	64	3.21	3.20	8.5	N/A	39
9	90.0	82.750	0.55	46	64	2.90	2.90	8.5	N/A	40
10	100.0	91.860	0.52	46	63	2.73	2.75	8	N/A	39
11	110.0	100.730	0.49	45	62	2.58	2.60	7.5	N/A	39
12	120.0	109.650	0.49	46	62	2.57	2.55	7.5	N/A	39
13	130.0	118.530	0.54	46	61	2.83	2.85	8	N/A	39
14	140.0	128.300	0.59	46	60	3.08	3.10	8.5	N/A	39
15	150.0	137.420	0.56	49	59	2.90	2.90	8.5	N/A	39
16	160.0	146.640	0.55	50	59	2.85	2.85	8.5	N/A	39
17	170.0	156.000	0.55	50	59	2.85	2.85	8.5	N/A	40
18	180.0	165.230	0.59	49	59	3.06	3.05	8.5	N/A	39
19	190.0	175.280	0.56	50	59	2.90	2.90	8.5	N/A	40
20	200.0	184.800	0.56	49	61	2.91	2.90	8.5	N/A	39
21	210.0	192.990	0.46	48	64	2.41	2.40	7	N/A	39
22	220.0	201.610	0.46	48	64	2.41	2.40	7	N/A	39
23	230.0	211.140	0.61	48	65	3.21	3.20	8.5	N/A	38
24	240.0	220.582	0.55	47	66	2.90	2.90	8.5	N/A	39

EPA Method 4
Impinger Weights Summary

Client: **Eagle Foundry Company**
Location: **Eagle Creek, OR**
Source: **Cooling Bunker BH Outlet - White Iron**
EPA Method: **0061**
Box Operator: **JCR**
Technician(s): **AJV**

Run 1
Impinger gain by weight (g):

#	Initial	Final	Gain
1	526.3	474.6	-51.7
2	433.7	425.6	-8.1
3	427.3	422.7	-4.6
4	358.5	412.1	53.6
Totals:	1,745.8	1,735.0	-10.8

Run 2
Impinger gain by weight (g):

#	Initial	Final	Gain
1	506.4	417.9	-88.5
2	431.4	451.4	20.0
3	430.8	429.3	-1.5
4	359.4	414.2	54.8
Totals:	1,728.0	1,712.8	-15.2

Run 3
Impinger gain by weight (g):

#	Initial	Final	Gain
1	505.6	420.3	-85.3
2	428.3	438.0	9.7
3	433.1	453.6	20.5
4	359.1	404.1	45.0
Totals:	1,726.1	1,716.0	-10.1

Isokinetic Field Data
Field Data and Calculations
Emissions and Gas Stream Characteristics

Client:	**Eagle Foundry Company**	**Run:**	**1**
Location:	**Eagle Creek, OR**	**Start Time:**	**6:40**
Source:	**Cooling Bunker BH Outlet - White Iron**	**End Time:**	**10:40**
Method:	**0061**	**Date:**	**3/27/2023**

Sampling Data				Traverse Data			
Time	**Meter**	**ΔH**	**Meter**	**Traverse**	**Dp**	**Stack**	
min.	**ft^3**	**"H_2O**	**T_m °F**	**Point**	**"H_2O**	**T_s °F**	**√Dp**
	0.000						
10	8.810	2.80	54	1	0.56	38	0.748
20	17.720	2.80	54	2	0.56	40	0.748
30	26.880	2.95	55	3	0.59	40	0.768
40	35.940	2.65	57	4	0.53	39	0.728
50	45.480	3.20	58	5	0.63	40	0.794
60	55.030	3.20	59	6	0.63	40	0.794
70	65.080	3.50	59	7	0.69	40	0.831
80	75.150	3.55	60	8	0.70	40	0.837
90	85.230	3.40	60	9	0.67	40	0.819
100	95.130	3.25	60	10	0.64	41	0.800
110	105.490	3.40	62	11	0.67	42	0.819
120	115.250	3.35	64	12	0.66	43	0.812
130	125.470	3.55	65	13	0.70	44	0.837
140	135.510	3.15	66	14	0.62	45	0.787
150	145.360	3.15	69	15	0.62	45	0.787
160	155.060	3.00	69	16	0.59	47	0.768
170	164.640	2.95	69	17	0.58	48	0.762
180	174.030	2.80	69	18	0.55	50	0.742
190	183.480	3.05	68	19	0.61	50	0.781
200	193.630	3.50	68	20	0.70	52	0.837
210	203.890	3.25	67	21	0.65	53	0.806
220	213.690	3.25	66	22	0.65	54	0.806
230	223.320	3.15	66	23	0.63	56	0.794
240	232.999	3.10	66	24	0.63	58	0.794

Client:	**Eagle Foundry Company**	**Run:**	**1**
Source:	**Cooling Bunker BH Outlet - White Iron**	**Date:**	**03/27/23**

Field Data Input Continued

Moisture Data			Stack Dimensional Data:		
Total Test Time	240.0	min	Circular		
Sample Time Interval	10.0	min	Diameter	55.750	in
Meter Volume, V_m	232.999	dcf	Rectangular		
Water Volume	29.4	g	Width		in
Nozzle Diameter, N_z	0.2630	in.	Length		in
Nozzle Area	0.000377	sq.ft.	Stack Area	16.952	sq.ft.
Traverse Data			Molecular Weight:		
Barometric Pressure, P_b	29.88	"Hg	CO_2 Average	0.07	%vd
Static Pressure	1.00	"H_2O	O_2 Average	20.79	%vd
Pitot Factor, cp	0.84				
Meter Cal Factor	1.0122	Y			

Field Data Averages

Meter			Stack		
ΔH	3.165	"H_2O	√Dp	0.792	"H_2O
Temperature, T_m	62.9	^oF	Temperature, T_s	45.2	^oF
Temperature, T_m	522.6	^oA (^oR)	Temperature, T_s	504.9	^oA (R)
Pressure Meter, P_m	30.113	"Hg	Pressure Stack, P_s	29.954	"Hg

Field Data Calculations

Meter Box Capture			EPA Method 2 Stack Gas Flowrate:		
Standard Volume, $V_{m(std)}$	239.679	dscf	Velocity, V_s	43.52	fps
	6.787	dscm	Volume (actual)	44,265	acfm
Actual Volume, $V_{m(actual)}$	230.376	awcf		44,013	adcfm
Gas Stream Moisture			Volume (standard)	2,778,999	wscf/hr
Moisture Vapor, $Vw_{(std)}$	1.386	scf		2,763,159	dscf/hr
Moisture, B_{ws}	0.0057			46,053	dscf/min
Moisture EPA M4	0.57	%v		46,317	wscf/min
Moisture @ Saturation	1.01	%v (for T_s < 212°F)			
EPA Method 3 Gas Density			Volume/Mole, V/M	367.973	
Dry, M_d	28.84	lb/lb-mole			
Wet, M_s	28.78	lb/lb-mole			
Percent Isokinetic	97.5	%			

Laboratory Results

Cr VI	< 5.60E-03	µg/sample
Cr VI	< 5.60E-09	grams
Emissions:		
Concentration Cr VI, C_s	< 3.61E-10	gr/dscf
	< 8.25E-04	µg/dscm
Mass Emissions Cr VI	< 1.42E-07	lb/hr

"<" represents MDL value

Isokinetic Field Data
Field Data and Calculations
Emissions and Gas Stream Characteristics

Client:	**Eagle Foundry Company**	**Run:**	**2**
Location:	**Eagle Creek, OR**	**Start Time:**	**5:10**
Source:	**Cooling Bunker BH Outlet - White Iron**	**End Time:**	**9:10**
Method:	**0061**	**Date:**	**03/28/23**

Sampling Data				Traverse Data			
Time	**Meter**	**ΔH**	**Meter**	**Traverse**	**Dp**	**Stack**	
min.	**ft^3**	**"H_2O**	**T_m °F**	**Point**	**"H_2O**	**T_s °F**	**√Dp**
	0.000						
10	9.480	3.10	64	1	0.59	50	0.768
20	18.600	2.90	65	2	0.56	52	0.748
30	28.130	2.85	66	3	0.55	52	0.742
40	37.260	2.90	65	4	0.56	52	0.748
50	46.920	3.10	65	5	0.60	52	0.775
60	56.390	2.95	65	6	0.57	52	0.755
70	65.860	2.95	64	7	0.57	52	0.755
80	75.420	3.10	64	8	0.60	52	0.775
90	84.940	3.00	64	9	0.58	52	0.762
100	94.540	2.95	64	10	0.57	52	0.755
110	103.730	2.80	65	11	0.54	55	0.735
120	113.310	3.05	65	12	0.59	55	0.768
130	122.720	2.95	66	13	0.57	59	0.755
140	132.180	2.85	66	14	0.55	58	0.742
150	141.480	2.95	66	15	0.57	57	0.755
160	150.910	2.95	67	16	0.57	55	0.755
170	160.400	3.00	67	17	0.58	55	0.762
180	169.820	2.90	68	18	0.56	54	0.748
190	179.260	3.00	68	19	0.57	54	0.755
200	189.000	3.00	68	20	0.57	54	0.755
210	198.500	2.85	68	21	0.55	54	0.742
220	207.530	3.00	68	22	0.58	54	0.762
230	217.080	2.95	68	23	0.57	53	0.755
240	226.599	3.10	68	24	0.59	53	0.768

Client:	**Eagle Foundry Company**	**Run:**	**2**
Source:	**Cooling Bunker BH Outlet - White Iron**	**Date:**	**03/28/23**

Field Data Input Continued

Moisture Data			Stack Dimensional Data:		
Total Test Time	240.0	min	Circular		
Sample Time Interval	10.0	min	Diameter	55.750	in
Meter Volume, V_m	226.599	dcf	Rectangular		
Water Volume	17.5	g	Width		in
Nozzle Diameter, N_z	0.2630	in.	Length		in
Nozzle Area	0.000377	sq.ft.	Stack Area	16.952	sq.ft.
Traverse Data			Molecular Weight:		
Barometric Pressure, P_b	29.41	"Hg	CO_2 Average	0.06	%vd
Static Pressure	1.00	"H_2O	O_2 Average	20.73	%vd
Pitot Factor, cp	0.84				
Meter Cal Factor	1.0122	Y			

Field Data Averages

Meter			Stack		
ΔH	2.965	"H_2O	√Dp	0.756	"H_2O
Temperature, T_m	66.0	^oF	Temperature, T_s	53.7	^oF
Temperature, T_m	525.7	^oA (^oR)	Temperature, T_s	513.4	^oA (R)
Pressure Meter, P_m	29.628	"Hg	Pressure Stack, P_s	29.484	"Hg

Field Data Calculations

Meter Box Capture			EPA Method 2 Stack Gas Flowrate:		
Standard Volume, $V_{m(std)}$	227.989	dscf	Velocity, V_s	42.21	fps
	6.456	dscm	Volume (actual)	42,933	acfm
Actual Volume, $V_{m(actual)}$	225.904	awcf		42,778	adcfm
Gas Stream Moisture			Volume (standard)	2,609,129	wscf/hr
Moisture Vapor, $Vw_{(std)}$	0.825	scf		2,599,736	dscf/hr
Moisture, B_{ws}	0.0036			43,329	dscf/min
Moisture EPA M4	0.36	%v		43,485	wscf/min
Moisture @ Saturation	1.41	%v (for T_s < 212°F)			
EPA Method 3 Gas Density			Volume/Mole, V/M	380.133	
Dry, M_d	28.84	lb/lb-mole			
Wet, M_s	28.80	lb/lb-mole			
Percent Isokinetic	98.6	%			

Laboratory Results

Cr VI	1.15E-02	µg/sample
Cr VI	1.15E-08	grams
Emissions:		
Concentration Cr VI, C_s	7.77E-10	gr/dscf
	1.78E-03	µg/dscm
Mass Emissions Cr VI	2.89E-07	lb/hr

"<" represents MDL value

Isokinetic Field Data
Field Data and Calculations
Emissions and Gas Stream Characteristics

Client:	**Eagle Foundry Company**	**Run:**	**3**
Location:	**Eagle Creek, OR**	**Start Time:**	**5:15**
Source:	**Cooling Bunker BH Outlet - White Iron**	**End Time:**	**9:15**
Method:	**0061**	**Date:**	**03/29/23**

Sampling Data				Traverse Data			
Time	**Meter**	**ΔH**	**Meter**	**Traverse**	**Dp**	**Stack**	
min.	**ft^3**	**"H_2O**	**T_m °F**	**Point**	**"H_2O**	**T_s °F**	**√Dp**
	0.000						
10	8.440	2.50	56	1	0.48	43	0.693
20	17.300	2.70	55	2	0.52	47	0.721
30	26.310	2.70	57	3	0.52	46	0.721
40	35.380	2.70	60	4	0.52	46	0.721
50	44.590	2.85	62	5	0.54	45	0.735
60	54.280	3.10	64	6	0.59	45	0.768
70	63.660	2.90	65	7	0.55	47	0.742
80	73.330	3.20	64	8	0.61	46	0.781
90	82.750	2.90	64	9	0.55	46	0.742
100	91.860	2.75	63	10	0.52	46	0.721
110	100.730	2.60	62	11	0.49	45	0.700
120	109.650	2.55	62	12	0.49	46	0.700
130	118.530	2.85	61	13	0.54	46	0.735
140	128.300	3.10	60	14	0.59	46	0.768
150	137.420	2.90	59	15	0.56	49	0.748
160	146.640	2.85	59	16	0.55	50	0.742
170	156.000	2.85	59	17	0.55	50	0.742
180	165.230	3.05	59	18	0.59	49	0.768
190	175.280	2.90	59	19	0.56	50	0.748
200	184.800	2.90	61	20	0.56	49	0.748
210	192.990	2.40	64	21	0.46	48	0.678
220	201.610	2.40	64	22	0.46	48	0.678
230	211.140	3.20	65	23	0.61	48	0.781
240	220.582	2.90	66	24	0.55	47	0.742

Client:	**Eagle Foundry Company**	**Run:**	**3**
Source:	**Cooling Bunker BH Outlet - White Iron**	**Date:**	**03/29/23**

Field Data Input Continued

Moisture Data			Stack Dimensional Data:		
Total Test Time	240.0	min	Circular		
Sample Time Interval	10.0	min	Diameter	55.750	in
Meter Volume, V_m	220.582	dcf	Rectangular		
Water Volume	33.8	g	Width		in
Nozzle Diameter, N_z	0.2630	in.	Length		in
Nozzle Area	0.000377	sq.ft.	Stack Area	16.952	sq.ft.
Traverse Data			Molecular Weight:		
Barometric Pressure, P_b	29.41	"Hg	CO_2 Average	0.07	%vd
Static Pressure	1.00	"H_2O	O_2 Average	20.92	%vd
Pitot Factor, cp	0.84				
Meter Cal Factor	1.0122	Y			

Field Data Averages

Meter			Stack		
ΔH	2.823	"H_2O	√Dp	0.734	"H_2O
Temperature, T_m	61.3	^oF	Temperature, T_s	47.0	^oF
Temperature, T_m	521.0	^oA (^oR)	Temperature, T_s	506.7	^oA (R)
Pressure Meter, P_m	29.618	"Hg	Pressure Stack, P_s	29.484	"Hg

Field Data Calculations

Meter Box Capture			EPA Method 2 Stack Gas Flowrate:		
Standard Volume, $V_{m(std)}$	223.862	dscf	Velocity, V_s	40.74	fps
	6.339	dscm	Volume (actual)	41,437	acfm
Actual Volume, $V_{m(actual)}$	219.691	awcf		41,143	adcfm
Gas Stream Moisture			Volume (standard)	2,551,564	wscf/hr
Moisture Vapor, $Vw_{(std)}$	1.594	scf		2,533,448	dscf/hr
Moisture, B_{ws}	0.0071			42,224	dscf/min
Moisture EPA M4	0.71	%v		42,526	wscf/min
Moisture @ Saturation	1.10	%v (for T_s < 212°F)			
EPA Method 3 Gas Density			Volume/Mole, V/M	375.171	
Dry, M_d	28.85	lb/lb-mole			
Wet, M_s	28.77	lb/lb-mole			
Percent Isokinetic	99.3	%			

Laboratory Results

Cr VI	3.72E-02	µg/sample
Cr VI	3.72E-08	grams
Emissions:		
Concentration Cr VI, C_s	2.56E-09	gr/dscf
	5.87E-03	µg/dscm
Mass Emissions Cr VI	9.28E-07	lb/hr

"<" represents MDL value

Method 0061
Laboratory Results
Cr VI

Client: **Eagle Foundry Company**
Location: **Eagle Creek, OR**
Source: **Cooling Bunker BH Outlet - White Iron**

Lab ID	Sample ID	Sample Date	<	Result (µg/sample)	MDL (µg/sample)	Sample Vol. (ml)	Blank Correction (ug)	Blank Corrected Results (µg/sample)
23-S598	Run 1	3/27/2023	<	MDL	0.0056	555	6.12E-03	5.60E-03
23-S599	Run 2	3/28/2023		0.0158	0.0048	480	4.32E-03	1.15E-02
23-S600	Run 3	3/29/2023		0.0444	0.0060	600	7.20E-03	3.72E-02
23-S607	KOH Blank	3/29/2023	<	MDL	0.0030	300	0.00	µg/ml
23-S608	H_2O Blank	3/29/2023		0.005	0.0020	200	2.40E-05	µg/ml

*A "<" sign designates a result less than the minimum detection limit (MDL). If sample results are below MDL, the MDL value is used for calculations.
If blank value(s) are below MDL, no blank correction is performed.

Method 0061
Results Summary

Client: **Eagle Foundry Company**
Location: **Eagle Creek, OR**
Source: **Cooling Bunker BH Outlet - White Iron**

Run			1	2	3	
Date			3/27/2023	3/28/2023	3/29/2023	
Start Time			6:40	5:10	5:15	
End Time			10:40	9:10	9:15	Average
Duration, min.			240	240	240	**240**
Barometric Pressure, "Hg			29.88	29.41	29.41	**29.57**
Nozzle Dia., in.			0.263	0.263	0.263	**0.263**
Isokinetic Average, %			97.5	98.6	99.3	**98.5**
Sample Volume, dscf			239.679	227.989	223.862	**230.510**
Sample Volume, dscm			6.787	6.456	6.339	**6.527**
Stack Diameter, in.			55.750	55.750	55.750	**55.750**
Stack Area, sq.ft.			16.952	16.952	16.952	**16.952**
CO_2 %vd			0.07	0.06	0.07	**0.07**
O_2 %vd			20.79	20.73	20.92	**20.81**
Static Pressure, "H_2O			1.00	1.00	1.00	**1.00**
H_2O %v			0.57	0.36	0.71	**0.55**
Wet Molecular Weight, lb/lb-mole			28.78	28.80	28.77	**28.78**
Velocity, FPS			43.52	42.21	40.74	**42.16**
ADCFM			44,013	42,778	41,143	**42,645**
ACFM			44,265	42,933	41,437	**42,878**
DSCFM			46,053	43,329	42,224	**43,869**
Stack Temperature, °F			45.2	53.7	47.0	**48.6**
Cr VI	Concentration, C_s	gr/dscf	< 3.61E-10	7.77E-10	2.56E-09	**< 1.23E-09**
		µg/dscm	< 8.25E-04	1.78E-03	5.87E-03	**< 2.82E-03**
	Mass	lb/hr	< 1.42E-07	2.89E-07	9.28E-07	**< 4.53E-07**
	lb Cr VI/ton Cr in melt		< 3.66E-07	7.39E-07	2.42E-06	**< 1.17E-06**
Process Data	Cr processed	lb/melt	3,106.941	3,124.611	3,071.140	
		ton/melt	1.553	1.562	1.536	

APPENDIX B: STEEL ALLOY TEST DATA

BISON ENGINEERING, INC.

COMPANY	**Eagle Foundry Company**
FACILITY	**Eagle Foundry**
LOCATION	**Eagle Creek, OR**
SOURCE	**Main Foundry BH Inlet - Steel Alloy**
DATE	**3/27/2023 - 3/29/2023**
METHOD	**29**
POLLUTANT	**Metals**

Pre-Test Traverse

Client: **Eagle Foundry Company**
Location: **Eagle Creek, OR**
Source: **Main Foundry BH Inlet - Steel Alloy**

Stack Temp: 60 °F

Traverse Point	Velocity ΔP ("H_2O)	Null Angle
1	0.91	0
2	1.08	0
3	1.00	0
4	1.00	5
5	1.15	0
6	1.00	5
7	1.10	5
8	1.15	5
9	1.20	0
10	1.10	0
11	1.10	0
12	1.00	0
13	1.00	0
14	1.00	0
15	1.10	0
16	1.10	0
17	1.15	5
18	1.15	5
19	1.20	0
20	1.50	5
21	1.00	0
22	1.00	5
23	0.90	0
24	0.90	0
Average:	1.08	2

Flow is found to be: Non-cyclonic

Isokinetic Field Data
Field Data Entry

Client:	**Eagle Foundry Company**	**Run:**	**1**
Location:	**Eagle Creek, OR**	**Start Time:**	**13:00**
Source:	**Main Foundry BH Inlet - Steel Alloy**	**End Time:**	**17:10**
EPA Method:	**29**	**Environmental Conditions/Test Notes:**	**Date:** **3/27/2023**
Box Operator:	**AAM**	40-60 °F	
Technician(s):	**NEW**		

Stack Dimensional Data:

Circular		
Diameter	48.000	in
Rectangular		
Width		in
Length		in
Stack Area	12.566	sq.ft.

Equipment:

Meterbox ID	SB-2	Probe ID	5B	Liner type	Glass		
Y factor	1.0028	Nozzle ID	3P	Nozzle size	0.251	inches	
ΔH@	1.601	Hot box ID	HHB2	Nozzle area	0.000344	sq.ft.	
Bp ID	TS-1	Pitot Cp	0.84	Probe heat	250	°F	
Balance ID	HLN FB-1	Pitot ID	55	Filter heat	250	°F	
Weights ID	HLN FW-1	Probe Length, ft	6				

Source Information:

Barometric Pressure	29.79	"Hg	O_2	20.90	%
Static Pressure	-0.9	"H_2O	CO_2	0.00	%
Ave. ΔP	1.08	"H_2O	Rec. Nz.	0.201	inches
Stack Temperature	60	°F			
Assumed moisture	3.00	%			
Assumed meter temp.	60	°F			
Total number of points	20				
Time per point	12.5	min.			
Total run time	250	min.			

Leak Checks:

	Pre-test	Post-test
Pitot	x	x
Leak rate, dcf	0.000	0.000
Leak check vacuum, "Hg	15	15

Nozzle check for roundness:

1	2	3	
0.251	0.252	0.250	inches
	Caliper ID	WS1	

Post Test Calculations:

Sample volume	297.684	dcf	Ave. ΔP	1.138	"H_2O
Wet mol. weight	28.8	M_s (actual)	Ave. √ΔP	1.066	"H_2O
Actual H_2O	0.35	%	Ave. ΔH	4.273	"H_2O
Std. meter vol.	299.332	dscf	Ave. T_s	60.8	°F
Isokinetic Average	96.8	%	Ave. T_m	69.8	°F

Moisture/Lab:

Filter, #	NA		
	Initial	Final	Gain
Impingers, g	3,611.5	3,587.8	-23.7
Silica gel, g	868.2	914.0	45.8
		Total water gain, g:	22.1

Traverse Point	Time (min.)	Meter Volume (dcf)	Velocity ΔP ("H_2O)	Stack Temp. (°F)	Meter Temp. (°F)	Calc. ΔH	Run ΔH	Vacuum ("Hg)	Filter Box (°F)	Condenser Temp (≤68°F)
		440.758								
1	12.5	455.000	1.10	57	61	4.09	4.10	2	250	50
2	25.0	469.750	1.15	58	63	4.29	4.30	2	254	60
3	37.5	484.600	1.15	58	66	4.31	4.30	2	250	60
4	50.0	499.270	1.10	59	68	4.13	4.15	2	250	59
5	62.5	514.400	1.20	59	70	4.52	4.50	2	253	57
6	75.0	529.675	1.20	60	71	4.52	4.50	2	253	57
7	87.5	545.590	1.30	61	72	4.90	4.90	3	252	57
8	100.0	561.100	1.20	61	72	4.52	4.50	2	247	55
9	112.5	576.680	1.20	64	73	4.51	4.50	2	253	54
10	125.0	591.000	1.10	61	73	4.15	4.15	2	252	53
11	137.5	605.790	1.10	62	72	4.14	4.15	2	249	53
12	150.0	620.680	1.10	62	72	4.14	4.15	2	253	53
13	162.5	635.540	1.10	62	71	4.13	4.15	2	255	53
14	175.0	650.500	1.10	62	71	4.13	4.15	2	254	53
15	187.5	665.000	1.10	64	71	4.12	4.10	2	246	53
16	200.0	679.530	1.10	63	71	4.12	4.10	2	250	54
17	212.5	694.200	1.10	61	70	4.13	4.15	2	256	54
18	225.0	709.000	1.10	61	70	4.13	4.15	2	246	54
19	237.5	723.550	1.10	60	69	4.13	4.15	2	258	55
20	250.0	738.442	1.15	60	69	4.32	4.30	2	252	55

Isokinetic Field Data
Field Data Entry

Client:	**Eagle Foundry Company**	**Run:**	**2**
Location:	**Eagle Creek, OR**	**Start Time:**	**10:30**
Source:	**Main Foundry BH Inlet - Steel Alloy**	**End Time:**	**14:40**
EPA Method:	**29**	**Environmental Conditions/Test Notes:**	**Date:** **3/28/2023**
Box Operator:	**AAM**	40-60 °F	
Technician(s):	**NEW**		

Stack Dimensional Data:

Circular		
Diameter	48.000	in
Rectangular		
Width		in
Length		in
Stack Area	12.566	sq.ft.

Equipment:

Meterbox ID	SB-2	Probe ID	5B	Liner type	Glass		
Y factor	1.0028	Nozzle ID	3P	Nozzle size	0.251	inches	
ΔH@	1.601	Hot box ID	HHB2	Nozzle area	0.000344	sq.ft.	
Bp ID	TS-1	Pitot Cp	0.84	Probe heat	250	°F	
Balance ID	HLN FB-1	Pitot ID	55	Filter heat	250	°F	
Weights ID	HLN FW-1	Probe Length, ft	6				

Source Information:

Barometric Pressure	29.38	"Hg	O_2	20.90 %
Static Pressure	-0.9	"H_2O	CO_2	0.00 %
Ave. ΔP	1.08	"H_2O	Rec. Nz.	0.197 inches
Stack Temperature	60	°F		
Assumed moisture	0.35	%		
Assumed meter temp.	69.8	°F		
Total number of points	20			
Time per point	12.5	min.		
Total run time	250	min.		

Leak Checks:

	Pre-test	Post-test
Pitot	x	x
Leak rate, dcf	0.000	0.000
Leak check vacuum, "Hg	15	8

Nozzle check for roundness:

1	2	3	
0.251	0.252	0.250	inches
	Caliper ID	WS1	

Post Test Calculations:

Sample volume	302.711	dcf	Ave. ΔP	1.124 "H_2O
Wet mol. weight	28.73	M_s (actual)	Ave. √ΔP	1.058 "H_2O
Actual H_2O	0.99	%	Ave. ΔH	4.365 "H_2O
Std. meter vol.	305.505	dscf	Ave. T_s	56.8 °F
Isokinetic Average	100.4	%	Ave. T_m	60.8 °F

Moisture/Lab:

Filter, #	NA		
	Initial	Final	Gain
Impingers, g	3,626.1	3,649.1	23.0
Silica gel, g	826.2	867.7	41.5
		Total water gain:	64.5

Traverse Point	Time (min.)	Meter Volume (dcf) 31.040	Velocity ΔP ("H_2O)	Stack Temp. (°F)	Meter Temp. (°F)	Calc. ΔH	Run ΔH	Vacuum ("Hg)	Filter Box (°F)	Condenser Temp (≤68°F)
1	12.5	44.240	0.90	52	50	3.46	3.45	1	249	43
2	25.0	57.480	0.88	53	51	3.38	3.40	1	253	47
3	37.5	71.290	0.95	54	54	3.66	3.65	1	253	50
4	50.0	85.180	0.94	55	56	3.63	3.65	1	254	52
5	62.5	100.020	1.10	54	57	4.27	4.25	1	252	53
6	75.0	115.740	1.20	54	59	4.67	4.65	1	250	54
7	87.5	132.000	1.30	57	60	5.04	5.05	1	249	54
8	100.0	147.700	1.20	55	61	4.68	4.70	1	255	54
9	112.5	163.410	1.20	59	61	4.65	4.65	1	251	55
10	125.0	179.110	1.20	56	62	4.68	4.70	1	255	54
11	137.5	194.830	1.20	56	62	4.68	4.70	1	249	55
12	150.0	210.440	1.20	57	62	4.67	4.65	1	248	55
13	162.5	226.110	1.20	57	63	4.68	4.65	1	256	56
14	175.0	241.850	1.20	60	64	4.66	4.65	1	255	56
15	187.5	257.600	1.20	60	64	4.66	4.65	1	250	57
16	200.0	273.420	1.20	62	65	4.65	4.65	1	255	57
17	212.5	288.920	1.20	60	66	4.68	4.70	1	250	56
18	225.0	304.060	1.10	59	66	4.30	4.30	1	254	56
19	237.5	319.260	1.10	58	66	4.31	4.30	1	254	55
20	250.0	333.751	1.00	57	66	3.92	3.90	1	252	55

Isokinetic Field Data
Field Data Entry

Client:	**Eagle Foundry Company**	**Run:**	**3**
Location:	**Eagle Creek, OR**	**Start Time:**	**10:35**
Source:	**Main Foundry BH Inlet - Steel Alloy**	**End Time:**	**14:45**
EPA Method:	**29**	**Environmental Conditions/Test Notes:**	**Date:** **3/29/2023**
Box Operator:	**AAM**	40-60 °F	
Technician(s):	**NEW**		

Stack Dimensional Data:

Circular		
Diameter	48.000	in
Rectangular		
Width		in
Length		in
Stack Area	12.566	sq.ft.

Equipment:

Meterbox ID	SB-2	Probe ID	5B	Liner type	Glass		
Y factor	1.0028	Nozzle ID	3P	Nozzle size	0.251	inches	
ΔH@	1.601	Hot box ID	HHB2	Nozzle area	0.000344	sq.ft.	
Bp ID	TS-1	Pitot Cp	0.84	Probe heat	250	°F	
Balance ID	HLN FB-1	Pitot ID	55	Filter heat	250	°F	
Weights ID	HLN FW-1	Probe Length, ft	6				

Source Information:

Barometric Pressure	29.45	"Hg	O_2	20.90	%
Static Pressure	-0.9	"H_2O	CO_2	0.00	%
Ave. ΔP	1.08	"H_2O	Rec. Nz.	0.199	inches
Stack Temperature	60	°F			
Assumed moisture	0.99	%			
Assumed meter temp.	60.8	°F			
Total number of points	20				
Time per point	12.5	min.			
Total run time	250	min.			

Leak Checks:

	Pre-test	Post-test
Pitot	x	x
Leak rate, dcf	0.000	0.000
Leak check vacuum, "Hg	15	10

Nozzle check for roundness:

1	2	3	
0.251	0.252	0.250	inches
	Caliper ID	WS1	

Post Test Calculations:

Sample volume	328.600	dcf	Ave. ΔP	1.335	"H_2O
Wet mol. weight	28.77	M_s (actual)	Ave. √ΔP	1.153	"H_2O
Actual H_2O	0.62	%	Ave. ΔH	5.13	"H_2O
Std. meter vol.	333.168	dscf	Ave. T_s	56.5	°F
Isokinetic Average	100.0	%	Ave. T_m	60.6	°F

Moisture/Lab:

Filter, #	NA		
	Initial	Final	Gain
Impingers, g	3,668.0	3,670.4	2.4
Silica gel, g	859.9	901.7	41.8
		Total water gain:	44.2

Traverse Point	Time (min.)	Meter Volume (dcf)	Velocity ΔP ("H_2O)	Stack Temp. (°F)	Meter Temp. (°F)	Calc. ΔH	Run ΔH	Vacuum ("Hg)	Filter Box (°F)	Condenser Temp (≤68°F)
		678.139								
1	12.5	692.220	1.10	48	44	4.17	4.15	1	230	41
2	25.0	707.510	1.20	49	47	4.56	4.55	1	251	51
3	37.5	723.555	1.30	50	51	4.97	4.95	1	249	53
4	50.0	739.770	1.30	51	54	4.99	5.00	1	253	53
5	62.5	756.490	1.40	52	56	5.39	5.40	1	256	55
6	75.0	772.840	1.30	54	58	5.00	5.00	1	253	54
7	87.5	791.415	1.70	53	59	6.56	6.55	2	254	55
8	100.0	808.460	1.40	55	61	5.41	5.40	2	250	55
9	112.5	822.850	1.00	57	62	3.85	3.85	1	248	53
10	125.0	837.050	1.00	55	61	3.86	3.85	1	249	52
11	137.5	854.910	1.60	56	60	6.15	6.15	2	254	53
12	150.0	871.930	1.40	58	62	5.38	5.40	2	250	54
13	162.5	889.550	1.50	59	64	5.78	5.80	2	250	55
14	175.0	904.635	1.10	60	65	4.24	4.25	2	252	56
15	187.5	921.430	1.40	63	65	5.36	5.35	2	255	57
16	200.0	938.280	1.40	63	66	5.37	5.35	2	251	58
17	212.5	954.230	1.20	63	67	4.62	4.60	2	255	58
18	225.0	971.790	1.50	63	67	5.77	5.75	2	250	56
19	237.5	989.415	1.50	61	70	5.82	5.80	2	247	56
20	250.0	1006.739	1.40	60	72	5.47	5.45	2	247	57

EPA Method 4
Impinger Weights Summary

Client: **Eagle Foundry Company**
Location: **Eagle Creek, OR**
Source: **Main Foundry BH Inlet - Steel Alloy**
EPA Method: **29**
Box Operator: **AAM**
Technician(s): **NEW**

Run 1
Impinger gain by weight (g):

#	Initial	Final	Gain
1	713.8	644.2	-69.6
2	742.8	763.1	20.3
3	663.9	680.5	16.6
4	748.6	755.9	7.3
5	742.4	744.1	1.7
Totals:	3,611.5	3,587.8	-23.7

Run 2
Impinger gain by weight (g):

#	Initial	Final	Gain
1	723.0	631.3	-91.7
2	744.9	740.6	-4.3
3	667.3	740.0	72.7
4	744.1	772.5	28.4
5	746.8	764.7	17.9
Totals:	3,626.1	3,649.1	23.0

Run 3
Impinger gain by weight (g):

#	Initial	Final	Gain
1	721.7	639.1	-82.6
2	746.9	774.7	27.8
3	669.0	698.1	29.1
4	758.2	778.4	20.2
5	772.2	780.1	7.9
Totals:	3,668.0	3,670.4	2.4

Isokinetic Field Data
Field Data and Calculations
Gas Stream Characteristics

Client:	**Eagle Foundry Company**	**Run:**	**1**
Location:	**Eagle Creek, OR**	**Start Time:**	**13:00**
Source:	**Main Foundry BH Inlet - Steel Alloy**	**End Time:**	**17:10**
Method:	**29**	**Date:**	**3/27/2023**

Sampling Data				Traverse Data			
Time	**Meter**	**ΔH**	**Meter**	**Traverse**	**Dp**	**Stack**	
min.	**ft^3**	**"H_2O**	**T_m ^oF**	**Point**	**"H_2O**	**T_s ^oF**	**√Dp**
	440.758						
12.5	455.000	4.10	61	1	1.10	57	1.049
25.0	469.750	4.30	63	2	1.15	58	1.072
37.5	484.600	4.30	66	3	1.15	58	1.072
50.0	499.270	4.15	68	4	1.10	59	1.049
62.5	514.400	4.50	70	5	1.20	59	1.095
75.0	529.675	4.50	71	6	1.20	60	1.095
87.5	545.590	4.90	72	7	1.30	61	1.140
100.0	561.100	4.50	72	8	1.20	61	1.095
112.5	576.680	4.50	73	9	1.20	64	1.095
125.0	591.000	4.15	73	10	1.10	61	1.049
137.5	605.790	4.15	72	11	1.10	62	1.049
150.0	620.680	4.15	72	12	1.10	62	1.049
162.5	635.540	4.15	71	13	1.10	62	1.049
175.0	650.500	4.15	71	14	1.10	62	1.049
187.5	665.000	4.10	71	15	1.10	64	1.049
200.0	679.530	4.10	71	16	1.10	63	1.049
212.5	694.200	4.15	70	17	1.10	61	1.049
225.0	709.000	4.15	70	18	1.10	61	1.049
237.5	723.550	4.15	69	19	1.10	60	1.049
250.0	738.442	4.30	69	20	1.15	60	1.072

Client:	**Eagle Foundry Company**	**Run:**	**1**
Source:	**Main Foundry BH Inlet - Steel Alloy**	**Date:**	**03/27/23**

Field Data Input Continued

Moisture Data			Stack Dimensional Data:		
Total Test Time	250.0	min	Circular		
Sample Time Interval	12.5	min	Diameter	48.000	in
Meter Volume, V_m	297.684	dcf	Rectangular		
Water Mass	22.1	g	Width		in
Nozzle Diameter, N_z	0.2510	in.	Length		in
Nozzle Area	0.000344	sq.ft.	Stack Area	12.566	sq.ft.
Traverse Data			Molecular Weight:		
Barometric Pressure, P_b	29.79	"Hg	CO_2 Average	0.26	%vd
Static Pressure	-0.90	"H_2O	O_2 Average	20.99	%vd
Pitot Factor, cp	0.84				
Meter Cal Factor	1.0028	Y			

Field Data Averages

Meter			Stack		
ΔH	4.273	"H_2O	√Dp	1.066	"H_2O
Temperature, T_m	69.8	^oF	Temperature, T_s	60.8	^oF
Temperature, T_m	529.5	^oA (^oR)	Temperature, T_s	520.5	^oA (^oR)
Pressure Meter, P_m	30.104	"Hg	Pressure Stack, P_s	29.724	"Hg

Field Data Calculations

Meter Box Capture			EPA Method 2 Stack Gas Flowrate:		
Standard Volume, $V_{m(std)}$	299.332	dscf	Velocity, V_s	59.65	fps
	8.476	dscm	Flow Rate (actual), Q_{aw}	44,974	acfm
Actual Volume, $V_{m(actual)}$	298.239	awcf		44,817	adcfm
Gas Stream Moisture			Flow Rate (standard), Q	2,717,831	wscf/hr
Moisture Vapor, $Vw_{(std)}$	1.042	scf		2,708,319	dscf/hr
Moisture, B_{ws}	0.0035			45,139	dscf/min
Moisture EPA M4	0.35	%v		45,297	wscf/min
Moisture @ Saturation	1.81	%v (for T_s < 212°F)			
EPA Method 3 Gas Density					
Dry, M_d	28.88	lb/lb-mole			
Wet, M_s	28.84	lb/lb-mole			
Percent Isokinetic	96.9	%			

Isokinetic Field Data
Field Data and Calculations
Gas Stream Characteristics

Client:	**Eagle Foundry Company**	**Run:**	**2**
Location:	**Eagle Creek, OR**	**Start Time:**	**10:30**
Source:	**Main Foundry BH Inlet - Steel Alloy**	**End Time:**	**14:40**
Method:	**29**	**Date:**	**03/28/23**

Sampling Data				Traverse Data			
Time	**Meter**	**ΔH**	**Meter**	**Traverse**	**Dp**	**Stack**	
min.	**ft^3**	**"H_2O**	**T_m ^oF**	**Point**	**"H_2O**	**T_s ^oF**	**√Dp**
	31.040						
12.5	44.240	3.45	50	1	0.90	52	0.949
25.0	57.480	3.40	51	2	0.88	53	0.938
37.5	71.290	3.65	54	3	0.95	54	0.975
50.0	85.180	3.65	56	4	0.94	55	0.970
62.5	100.020	4.25	57	5	1.10	54	1.049
75.0	115.740	4.65	59	6	1.20	54	1.095
87.5	132.000	5.05	60	7	1.30	57	1.140
100.0	147.700	4.70	61	8	1.20	55	1.095
112.5	163.410	4.65	61	9	1.20	59	1.095
125.0	179.110	4.70	62	10	1.20	56	1.095
137.5	194.830	4.70	62	11	1.20	56	1.095
150.0	210.440	4.65	62	12	1.20	57	1.095
162.5	226.110	4.65	63	13	1.20	57	1.095
175.0	241.850	4.65	64	14	1.20	60	1.095
187.5	257.600	4.65	64	15	1.20	60	1.095
200.0	273.420	4.65	65	16	1.20	62	1.095
212.5	288.920	4.70	66	17	1.20	60	1.095
225.0	304.060	4.30	66	18	1.10	59	1.049
237.5	319.260	4.30	66	19	1.10	58	1.049
250.0	333.751	3.90	66	20	1.00	57	1.000

Client:	**Eagle Foundry Company**	**Run:**	**2**
Source:	**Main Foundry BH Inlet - Steel Alloy**	**Date:**	**03/28/23**

Field Data Input Continued

Moisture Data			Stack Dimensional Data:		
Total Test Time	250.0	min	Circular		
Sample Time Interval	12.5	min	Diameter	48.000	in
Meter Volume, V_m	302.711	dcf	Rectangular		
Water Mass	64.5	g	Width		in
Nozzle Diameter, N_z	0.2510	in.	Length		in
Nozzle Area	0.000344	sq.ft.	Stack Area	12.566	sq.ft.
Traverse Data			Molecular Weight:		
Barometric Pressure, P_b	29.38	"Hg	CO_2 Average	0.08	%vd
Static Pressure	-0.90	"H_2O	O_2 Average	20.93	%vd
Pitot Factor, cp	0.84				
Meter Cal Factor	1.0028	Y			

Field Data Averages

Meter			Stack		
ΔH	4.365	"H_2O	√Dp	1.058	"H_2O
Temperature, T_m	60.8	^oF	Temperature, T_s	56.8	^oF
Temperature, T_m	520.5	^oA (^oR)	Temperature, T_s	516.5	^oA (^oR)
Pressure Meter, P_m	29.701	"Hg	Pressure Stack, P_s	29.314	"Hg

Field Data Calculations

Meter Box Capture			EPA Method 2 Stack Gas Flowrate:		
Standard Volume, $V_{m(std)}$	305.505	dscf	Velocity, V_s	59.49	fps
	8.651	dscm	Flow Rate (actual), Q_{aw}	44,853	acfm
Actual Volume, $V_{m(actual)}$	308.254	awcf		44,409	adcfm
Gas Stream Moisture			Flow Rate (standard), Q	2,693,856	wscf/hr
Moisture Vapor, $Vw_{(std)}$	3.042	scf		2,667,187	dscf/hr
Moisture, B_{ws}	0.0099			44,453	dscf/min
Moisture EPA M4	0.99	%v		44,898	wscf/min
Moisture @ Saturation	1.59	%v (for $T_s < 212°F$)			
EPA Method 3 Gas Density					
Dry, M_d	28.85	lb/lb-mole			
Wet, M_s	28.74	lb/lb-mole			
Percent Isokinetic	100.4	%			

Isokinetic Field Data
Field Data and Calculations
Gas Stream Characteristics

Client:	**Eagle Foundry Company**	**Run:**	**3**
Location:	**Eagle Creek, OR**	**Start Time:**	**10:35**
Source:	**Main Foundry BH Inlet - Steel Alloy**	**End Time:**	**14:45**
Method:	**29**	**Date:**	**03/29/23**

Sampling Data				Traverse Data			
Time	**Meter**	**ΔH**	**Meter**	**Traverse**	**Dp**	**Stack**	
min.	**ft^3**	**"H_2O**	**T_m ^oF**	**Point**	**"H_2O**	**T_s ^oF**	**√Dp**
	678.139						
12.5	692.220	4.15	44	1	1.10	48	1.049
25.0	707.510	4.55	47	2	1.20	49	1.095
37.5	723.555	4.95	51	3	1.30	50	1.140
50.0	739.770	5.00	54	4	1.30	51	1.140
62.5	756.490	5.40	56	5	1.40	52	1.183
75.0	772.840	5.00	58	6	1.30	54	1.140
87.5	791.415	6.55	59	7	1.70	53	1.304
100.0	808.460	5.40	61	8	1.40	55	1.183
112.5	822.850	3.85	62	9	1.00	57	1.000
125.0	837.050	3.85	61	10	1.00	55	1.000
137.5	854.910	6.15	60	11	1.60	56	1.265
150.0	871.930	5.40	62	12	1.40	58	1.183
162.5	889.550	5.80	64	13	1.50	59	1.225
175.0	904.635	4.25	65	14	1.10	60	1.049
187.5	921.430	5.35	65	15	1.40	63	1.183
200.0	938.280	5.35	66	16	1.40	63	1.183
212.5	954.230	4.60	67	17	1.20	63	1.095
225.0	971.790	5.75	67	18	1.50	63	1.225
237.5	989.415	5.80	70	19	1.50	61	1.225
250.0	1006.739	5.45	72	20	1.40	60	1.183

Client:	**Eagle Foundry Company**	**Run:**	**3**
Source:	**Main Foundry BH Inlet - Steel Alloy**	**Date:**	**03/29/23**

Field Data Input Continued

Moisture Data			Stack Dimensional Data:		
Total Test Time	250.0	min	Circular		
Sample Time Interval	12.5	min	Diameter	48.000	in
Meter Volume, V_m	328.600	dcf	Rectangular		
Water Mass	44.2	g	Width		in
Nozzle Diameter, N_z	0.2510	in.	Length		in
Nozzle Area	0.000344	sq.ft.	Stack Area	12.566	sq.ft.
Traverse Data			Molecular Weight:		
Barometric Pressure, P_b	29.45	"Hg	CO_2 Average	0.08	%vd
Static Pressure	-0.90	"H_2O	O_2 Average	20.98	%vd
Pitot Factor, cp	0.84				
Meter Cal Factor	1.0028	Y			

Field Data Averages

Meter			Stack		
ΔH	5.130	"H_2O	√Dp	1.153	"H_2O
Temperature, T_m	60.6	^oF	Temperature, T_s	56.5	^oF
Temperature, T_m	520.3	^oA (^oR)	Temperature, T_s	516.2	^oA (^oR)
Pressure Meter, P_m	29.827	"Hg	Pressure Stack, P_s	29.384	"Hg

Field Data Calculations

Meter Box Capture			EPA Method 2 Stack Gas Flowrate:		
Standard Volume, $V_{m(std)}$	333.168	dscf	Velocity, V_s	64.69	fps
	9.434	dscm	Flow Rate (actual), Q_{aw}	48,774	acfm
Actual Volume, $V_{m(actual)}$	333.922	awcf		48,472	adcfm
Gas Stream Moisture			Flow Rate (standard), Q	2,938,026	wscf/hr
Moisture Vapor, $Vw_{(std)}$	2.084	scf		2,919,810	dscf/hr
Moisture, B_{ws}	0.0062			48,664	dscf/min
Moisture EPA M4	0.62	%v		48,967	wscf/min
Moisture @ Saturation	1.57	%v (for T_s < 212°F)			
EPA Method 3 Gas Density					
Dry, M_d	28.85	lb/lb-mole			
Wet, M_s	28.78	lb/lb-mole			
Percent Isokinetic	100.0	%			

Eagle Foundry Company **Run: 1**
Main Foundry BH Inlet - Steel Alloy **Sample Date: 03/27/23**
Method 29 Laboratory Results

Analyte	Filter + FH Rinse Cont. 1&3			BH Cap.Soln. + BH Rinse Cont. 4			Units
	<	Result	MDL	<	Result	MDL	
Aluminum		1,680	7.50		51.5	4.08	µg/sample
Antimony		5.77	1.25	<	MDL	0.680	µg/sample
Arsenic	<	MDL	8.75	<	MDL	0.952	µg/sample
Barium		13.5	0.125		1.63	0.068	µg/sample
Beryllium		0.069	0.050	<	MDL	0.027	µg/sample
Cadmium		1.05	0.100		0.803	0.054	µg/sample
Chromium		109	0.200		0.689	0.109	µg/sample
Cobalt		0.440	0.125		0.127	0.068	µg/sample
Copper		59.4	1.25	<	MDL	0.680	µg/sample
Lead		135	1.25	<	MDL	0.680	µg/sample
Manganese		5,800	0.075		1.08	0.041	µg/sample
Nickel		11.7	0.750	<	MDL	0.408	µg/sample
Phosphorus		46.7	5.00	<	MDL	2.72	µg/sample
Selenium	<	MDL	3.75	<	MDL	2.04	µg/sample
Silver		2.43	0.50	<	MDL	0.272	µg/sample
Thallium	<	MDL	2.50	<	MDL	1.36	µg/sample
Vanadium		0.653	0.250	<	MDL	0.136	µg/sample
Zinc		1,120	0.750		7.24	0.408	µg/sample

Lab ID:	23-S669	23-S670	
Sample Vol:	250	229	ml

Eagle Foundry Company **Run: 2**
Main Foundry BH Inlet - Steel Alloy **Sample Date: 03/28/23**
Method 29 Laboratory Results

Analyte	Filter + FH Rinse Cont. 1&3			BH Cap.Soln. + BH Rinse Cont. 4			Units
	<	Result	MDL		Result	MDL	
Aluminum		1,320	7.50		24.7	3.72	µg/sample
Antimony		3.06	1.25	<	MDL	0.620	µg/sample
Arsenic	<	MDL	8.75	<	MDL	0.868	µg/sample
Barium		12.3	0.125		1.43	0.062	µg/sample
Beryllium		0.052	0.050	<	MDL	0.025	µg/sample
Cadmium		1.36	0.100		0.210	0.050	µg/sample
Chromium		92.6	0.200		0.429	0.099	µg/sample
Cobalt		0.355	0.125		0.071	0.062	µg/sample
Copper		51.9	1.25		0.815	0.620	µg/sample
Lead		145	1.25	<	MDL	0.620	µg/sample
Manganese		6,670	0.075		3.61	0.037	µg/sample
Nickel		13.1	0.750		0.501	0.372	µg/sample
Phosphorus		48.4	5.00	<	MDL	2.48	µg/sample
Selenium		3.88	3.75	<	MDL	1.86	µg/sample
Silver		1.57	0.500	<	MDL	0.248	µg/sample
Thallium	<	MDL	2.50	<	MDL	1.24	µg/sample
Vanadium		0.471	0.250	<	MDL	0.124	µg/sample
Zinc		1,040	0.750		3.40	0.372	µg/sample

Lab ID:	23-S674	23-S675	
Sample Vol:	250	206	ml

Eagle Foundry Company **Run: 3**
Main Foundry BH Inlet - Steel Alloy **Sample Date: 03/29/23**
Method 29 Laboratory Results

Analyte	Filter + FH Rinse Cont. 1&3			BH Cap.Soln. + BH Rinse Cont. 4			Units
	<	Result	MDL	<	Result	MDL	
Aluminum		1,300	7.50		20.6	3.54	µg/sample
Antimony		4.58	1.25		1.49	0.590	µg/sample
Arsenic	<	MDL	8.75	<	MDL	0.826	µg/sample
Barium		12.1	0.125		1.26	0.059	µg/sample
Beryllium	<	MDL	0.050	<	MDL	0.024	µg/sample
Cadmium		1.85	0.100		0.079	0.047	µg/sample
Chromium		83.0	0.200		0.357	0.094	µg/sample
Cobalt		0.420	0.125	<	MDL	0.059	µg/sample
Copper		56.3	1.25		0.681	0.590	µg/sample
Lead		125	1.25	<	MDL	0.590	µg/sample
Manganese		5,340	0.075		4.79	0.035	µg/sample
Nickel		14.4	0.750		0.509	0.354	µg/sample
Phosphorus		48.2	5.00	<	MDL	2.36	µg/sample
Selenium	<	MDL	3.75	<	MDL	1.77	µg/sample
Silver		1.82	0.500	<	MDL	0.236	µg/sample
Thallium	<	MDL	2.50	<	MDL	1.18	µg/sample
Vanadium		0.337	0.250	<	MDL	0.118	µg/sample
Zinc		879	0.750		2.06	0.354	µg/sample

Lab ID:	23-S679	23-S680	
Sample Vol:	250	260	ml

Eagle Foundry Company **Sample Dates: 3/27/2023**
Main Foundry BH Inlet - Steel Alloy **3/28/2023**
Method 29 Blank Results **3/29/2023**

Analyte	Filter Cont. 12 µg/filter		BH Cap.Soln. Cont. 9 5% HNO_3/ 10% H_2O_2 µg/sample		FH/BH Rinse Cont. 8A 0.1 N HNO_3 µg/sample	
	< Result	MDL	< Result	MDL	< Result	MDL
Aluminum	58.8	7.50	16.3	3.78	< MDL	7.50
Antimony	2.86	1.25	< MDL	0.630	< MDL	1.25
Arsenic	< MDL	1.75	< MDL	0.882	< MDL	1.75
Barium	1.40	0.125	0.718	0.063	0.193	0.125
Beryllium	< MDL	0.050	< MDL	0.025	< MDL	0.050
Cadmium	< MDL	0.100	< MDL	0.050	< MDL	0.100
Chromium	1.03	0.200	0.306	0.101	< MDL	0.200
Cobalt	< MDL	0.125	0.153	0.063	< MDL	0.125
Copper	< MDL	1.25	< MDL	0.630	< MDL	1.25
Lead	< MDL	1.25	< MDL	0.630	< MDL	1.25
Manganese	0.741	0.075	0.742	0.038	< MDL	0.375
Nickel	3.96	0.750	< MDL	0.378	< MDL	0.750
Phosphorus	17.0	5.00	< MDL	2.52	< MDL	5.00
Selenium	< MDL	3.75	< MDL	1.89	< MDL	3.75
Silver	< MDL	0.500	< MDL	0.252	< MDL	0.500
Thallium	< MDL	2.50	< MDL	1.26	< MDL	2.50
Vanadium	< MDL	0.250	< MDL	0.126	< MDL	0.250
Zinc	1.52	0.750	0.415	0.378	< MDL	0.750

Lab ID:	23-S729	23-S731	23-S730
Blank Vol, ml:	N/A	196	250

Eagle Foundry Company **Run: 1**
Main Foundry BH Inlet - Steel Alloy **Test Date: 3/27/2023**
Method 29 Non-Hg Metals Blank Correction Calculations **Page: 1 of 3**

Analyte		I Sample FH Rinse+Filter µg	II Blank Correction FH Rinse µg	III Blank Correction Filter µg		IV Sample BH Cap.Soln. + BH Rinse µg	V Blank BH Cap.Soln. µg/ml	VI Blank Correction BH Cap.Soln. µg	VII Blank Correction BH Rinse µg	VIII Total BH Blank Correction µg	
Aluminum		1680.000	0.000	58.800		51.500	0.0832	16.633	0.000	16.633	Al
Antimony		5.770	0.000	2.860	<	0.680	0.0000	0.000	0.000	0.000	Sb
Arsenic	<	8.750	0.000	0.000	<	0.952	0.0000	0.000	0.000	0.000	As
Barium		13.500	0.077	1.400		1.630	0.0037	0.733	0.077	0.810	Ba
Beryllium		0.069	0.000	0.000	<	0.027	0.0000	0.000	0.000	0.000	Be
Cadmium		1.050	0.000	0.000		0.803	0.0000	0.000	0.000	0.000	Cd
Chromium		109.000	0.000	1.030		0.689	0.0016	0.312	0.000	0.312	Cr
Cobalt		0.440	0.000	0.000		0.127	0.0008	0.156	0.000	0.156	Co
Copper		59.400	0.000	0.000	<	0.680	0.0000	0.000	0.000	0.000	Cu
Lead		135.000	0.000	0.000	<	0.680	0.0000	0.000	0.000	0.000	Pb
Manganese		5800.000	0.000	0.741		1.080	0.0038	0.757	0.000	0.757	Mn
Nickel		11.700	0.000	3.960	<	0.408	0.0000	0.000	0.000	0.000	Ni
Phosphorus		46.700	0.000	17.000	<	2.720	0.0000	0.000	0.000	0.000	P
Selenium	<	3.750	0.000	0.000	<	2.040	0.0000	0.000	0.000	0.000	Se
Silver		2.430	0.000	0.000	<	0.272	0.0000	0.000	0.000	0.000	Ag
Thallium	<	2.500	0.000	0.000	<	1.360	0.0000	0.000	0.000	0.000	Tl
Vanadium		0.653	0.000	0.000	<	0.136	0.0000	0.000	0.000	0.000	V
Zinc		1120.000	0.000	1.520		7.240	0.0021	0.423	0.000	0.423	Zn

Lab ID:	**23-S669**	**23-S730**	**23-S729**	**23-S670**	**23-S731**	**N/A**	**N/A**
Notes:	0.1N HNO_3	0.1N HNO_3		5% HNO_3/10% H_2O_2	5% HNO_3/	5%HNO_3/	0.1NHNO_3
	FH Filter & Probe Rinse			BH Imps 1-3	10% H_2O_2	10%H_2O_2	
	100ml 0.1N HNO_3 Rinse			100ml .1N HNO_3 Rinse			
				200ml 5% HNO_3/10% H_2O_2 Reagent			

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Analyte	X Allowable FH Blank Correction µg	XI Total FH Blank Correction µg		XII 5% of FH Sample µg	XIII Lessor of XI or XII µg	XIV Greater of A or XIII µg		XV FH Net Sample µg	
Aluminum	58.800	58.800		84.000	58.800	58.80		1621.200	Al
Antimony	2.860	2.860		0.289	0.289	11.63		2.910	Sb
Arsenic	0.000	0.000	<	0.438	0.000	11.63	<	8.750	As
Barium	1.477	1.477		0.675	0.675	11.63		12.023	Ba
Beryllium	0.000	0.000		0.003	0.000	11.63		0.069	Be
Cadmium	0.000	0.000		0.053	0.000	11.63		1.050	Cd
Chromium	1.030	1.030		5.450	1.030	11.63		107.970	Cr
Cobalt	0.000	0.000		0.022	0.000	11.63		0.440	Co
Copper	0.000	0.000		2.970	0.000	11.63		59.400	Cu
Lead	0.000	0.000		6.750	0.000	11.63		135.000	Pb
Manganese	0.741	0.741		290.000	0.741	11.63		5799.259	Mn
Nickel	3.960	3.960		0.585	0.585	11.63		7.740	Ni
Phosphorus	11.630	17.000		2.335	2.335	11.63		35.070	P
Selenium	0.000	0.000	<	0.188	0.000	11.63	<	3.750	Se
Silver	0.000	0.000		0.122	0.000	11.63		2.430	Ag
Thallium	0.000	0.000	<	0.125	0.000	11.63	<	2.500	Tl
Vanadium	0.000	0.000		0.033	0.000	11.63		0.653	V
Zinc	1.520	1.520		56.000	1.520	11.63		1118.480	Zn

Note: Allowable FH Blank (A) = (area of filter)*(1.4 µg/in^2) = 11.63 µg
where area of filter = 8.306 in^2

If A > blank > 0, use blank-derived value, M_{fhb}.
If blank > A, use greater of A or [lessor of 5% of sample µg or FH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company **Run: 1**
Main Foundry BH Inlet - Steel Alloy **Test Date: 3/27/2023**
Method 29 Non-Hg Metals Blank Correction Calculations **Page: 3 of 3**

Analyte	XVI Allowable BH Blank Correction µg	XVII Total BH (M_{bhb}) Blank Correction µg		XVIII 5% of BH Sample µg	XIX Lessor of XVII or XVIII µg	XX Greater of 1 µg or XIX µg		XXI BH Net Sample µg		XXII FH Net Sample µg		XXIII FH+BH Total Net Sample µg	
Aluminum	2.575	16.633		2.575	2.575	2.575		**48.925**		**1621.200**		**1670.125**	Al
Antimony	0.000	0.000	<	0.034	0.000	1.000	<	**0.680**		**2.910**	<	**3.590**	Sb
Arsenic	0.000	0.000	<	0.048	0.000	1.000	<	**0.952**	<	**8.750**	<	**9.702**	As
Barium	0.810	0.810		0.082	0.082	1.000		**0.820**		**12.023**		**12.843**	Ba
Beryllium	0.000	0.000	<	0.001	0.000	1.000	<	**0.027**		**0.069**	<	**0.096**	Be
Cadmium	0.000	0.000		0.040	0.000	1.000		**0.803**		**1.050**		**1.853**	Cd
Chromium	0.312	0.312		0.034	0.034	1.000		**0.377**		**107.970**		**108.347**	Cr
Cobalt	0.156	0.156		0.006	0.006	1.000		**0.000**		**0.440**		**0.440**	Co
Copper	0.000	0.000	<	0.034	0.000	1.000	<	**0.680**		**59.400**	<	**60.080**	Cu
Lead	0.000	0.000	<	0.034	0.000	1.000	<	**0.680**		**135.000**	<	**135.680**	Pb
Manganese	0.757	0.757		0.054	0.054	1.000		**0.323**		**5799.259**		**5799.582**	Mn
Nickel	0.000	0.000	<	0.020	0.000	1.000	<	**0.408**		**7.740**	<	**8.148**	Ni
Phosphorus	0.000	0.000	<	0.136	0.000	1.000	<	**2.720**		**35.070**	<	**37.790**	P
Selenium	0.000	0.000	<	0.102	0.000	1.000	<	**2.040**	<	**3.750**	<	**5.790**	Se
Silver	0.000	0.000	<	0.014	0.000	1.000	<	**0.272**		**2.430**	<	**2.702**	Ag
Thallium	0.000	0.000	<	0.068	0.000	1.000	<	**1.360**	<	**2.500**	<	**3.860**	Tl
Vanadium	0.000	0.000	<	0.007	0.000	1.000	<	**0.136**		**0.653**	<	**0.789**	V
Zinc	0.423	0.423		0.362	0.362	1.000		**6.817**		**1118.480**		**1125.297**	Zn

Note: Allowable BH Blank rules:

If 1.00 µg > blank > 0 , use blank-derived value.
If blank > 1.00 µg, use greater of 1.00 µg or [lessor of 5% of sample µg or BH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company **Run: 2**
Main Foundry BH Inlet - Steel Alloy **Test Date: 3/28/2023**
Method 29 Non-Hg Metals Blank Correction Calculations **Page: 1 of 3**

Analyte		I Sample FH Rinse+Filter µg	II Blank Correction FH Rinse µg	III Blank Correction Filter µg		IV Sample BH Cap.Soln. + BH Rinse µg	V Blank BH Cap.Soln. µg/ml	VI Blank Correction BH Cap.Soln. µg	VII Blank Correction BH Rinse µg	VIII Total BH Blank Correction µg	
Aluminum		1320.000	0.000	58.800		24.700	0.083	16.633	0.000	16.633	Al
Antimony		3.060	0.000	2.860	<	0.620	0.000	0.000	0.000	0.000	Sb
Arsenic	<	8.750	0.000	0.000	<	0.868	0.000	0.000	0.000	0.000	As
Barium		12.300	0.077	1.400		1.430	0.004	0.733	0.077	0.810	Ba
Beryllium		0.052	0.000	0.000	<	0.025	0.000	0.000	0.000	0.000	Be
Cadmium		1.360	0.000	0.000		0.210	0.000	0.000	0.000	0.000	Cd
Chromium		92.600	0.000	1.030		0.429	0.002	0.312	0.000	0.312	Cr
Cobalt		0.355	0.000	0.000		0.071	0.001	0.156	0.000	0.156	Co
Copper		51.900	0.000	0.000		0.815	0.000	0.000	0.000	0.000	Cu
Lead		145.000	0.000	0.000	<	0.620	0.000	0.000	0.000	0.000	Pb
Manganese		6670.000	0.000	0.741		3.610	0.004	0.757	0.000	0.757	Mn
Nickel		13.100	0.000	3.960		0.501	0.000	0.000	0.000	0.000	Ni
Phosphorus		48.400	0.000	17.000	<	2.480	0.000	0.000	0.000	0.000	P
Selenium		3.880	0.000	0.000	<	1.860	0.000	0.000	0.000	0.000	Se
Silver		1.570	0.000	0.000	<	0.248	0.000	0.000	0.000	0.000	Ag
Thallium	<	2.500	0.000	0.000	<	1.240	0.000	0.000	0.000	0.000	Tl
Vanadium		0.471	0.000	0.000	<	0.124	0.000	0.000	0.000	0.000	V
Zinc		1040.000	0.000	1.520		3.400	0.002	0.423	0.000	0.423	Zn

Lab ID:	**23-S674**	**23-S730**	**23-S729**	**23-S675**	**23-S731**	**N/A**	**N/A**
Content:	0.1N HNO_3	0.1N HNO_3		5% HNO_3/10% H_2O_2	5% HNO_3/	5%HNO_3/	0.1NHNO_3
	FH Filter & Probe Rinse			BH Imps 1-3	10% H_2O_2	10%H_2O_2	
	100ml 0.1N HNO_3 Rinse			100ml .1N HNO_3 Rinse			
				200ml 5% HNO_3/10% H_2O_2 Reagent			

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Analyte	X Allowable FH Blank Correction µg	XI Total FH Blank Correction µg		XII 5% of FH Sample µg	XIII Lessor of XI or XII µg	XIV Greater of A or XIII µg		XV FH Net Sample µg	
Aluminum	58.800	58.800		66.000	58.800	58.80		1261.200	Al
Antimony	2.860	2.860		0.153	0.153	11.63		0.200	Sb
Arsenic	0.000	0.000	<	0.438	0.000	11.63	<	8.750	As
Barium	1.477	1.477		0.615	0.615	11.63		10.823	Ba
Beryllium	0.000	0.000		0.003	0.000	11.63		0.052	Be
Cadmium	0.000	0.000		0.068	0.000	11.63		1.360	Cd
Chromium	1.030	1.030		4.630	1.030	11.63		91.570	Cr
Cobalt	0.000	0.000		0.018	0.000	11.63		0.355	Co
Copper	0.000	0.000		2.595	0.000	11.63		51.900	Cu
Lead	0.000	0.000		7.250	0.000	11.63		145.000	Pb
Manganese	0.741	0.741		333.500	0.741	11.63		6669.259	Mn
Nickel	3.960	3.960		0.655	0.655	11.63		9.140	Ni
Phosphorus	11.630	17.000		2.420	2.420	11.63		36.770	P
Selenium	0.000	0.000		0.194	0.000	11.63		3.880	Se
Silver	0.000	0.000		0.079	0.000	11.63		1.570	Ag
Thallium	0.000	0.000	<	0.125	0.000	11.63	<	2.500	Tl
Vanadium	0.000	0.000		0.024	0.000	11.63		0.471	V
Zinc	1.520	1.520		52.000	1.520	11.63		1038.480	Zn

Note: Allowable FH Blank (A) = (area of filter)*(1.4 µg/in^2) = 11.63 µg
where area of filter = 8.306 in^2

If A > blank > 0, use blank-derived value.
If blank > A, use greater of A or [lessor of 5% of sample µg or FH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company | **Run:** | **2**
Main Foundry BH Inlet - Steel Alloy | **Test Date:** | **3/28/2023**
Method 29 Non-Hg Metals Blank Correction Calculations | **Page:** | **3 of 3**

Analyte	XVI Allowable BH Blank Correction µg	XVII Total BH Blank Correction µg		XVIII 5% of BH Sample µg	XIX Lessor of XVII or XVIII µg	XX Greater of 1 µg or XIX µg		XXI BH Net Sample µg		XXII FH Net Sample µg		XXIII FH+BH Total Net Sample µg	
Aluminum	1.235	16.633		1.235	1.235	1.235		**23.465**		**1261.200**		**1284.665**	Al
Antimony	0.000	0.000	<	0.031	0.000	1.000	<	**0.620**		**0.200**	<	**0.820**	Sb
Arsenic	0.000	0.000	<	0.043	0.000	1.000	<	**0.868**	<	**8.750**	<	**9.618**	As
Barium	0.810	0.810		0.072	0.072	1.000		**0.620**		**10.823**		**11.443**	Ba
Beryllium	0.000	0.000	<	0.001	0.000	1.000	<	**0.025**		**0.052**	<	**0.077**	Be
Cadmium	0.000	0.000		0.011	0.000	1.000		**0.210**		**1.360**		**1.570**	Cd
Chromium	0.312	0.312		0.021	0.021	1.000		**0.117**		**91.570**		**91.687**	Cr
Cobalt	0.156	0.156		0.004	0.004	1.000		**0.000**		**0.355**		**0.355**	Co
Copper	0.000	0.000		0.041	0.000	1.000		**0.815**		**51.900**		**52.715**	Cu
Lead	0.000	0.000	<	0.031	0.000	1.000	<	**0.620**		**145.000**	<	**145.620**	Pb
Manganese	0.757	0.757		0.181	0.181	1.000		**2.853**		**6669.259**		**6672.112**	Mn
Nickel	0.000	0.000		0.025	0.000	1.000		**0.501**		**9.140**		**9.641**	Ni
Phosphorus	0.000	0.000	<	0.124	0.000	1.000	<	**2.480**		**36.770**	<	**39.250**	P
Selenium	0.000	0.000	<	0.093	0.000	1.000	<	**1.860**		**3.880**	<	**5.740**	Se
Silver	0.000	0.000	<	0.012	0.000	1.000	<	**0.248**		**1.570**	<	**1.818**	Ag
Thallium	0.000	0.000	<	0.062	0.000	1.000	<	**1.240**	<	**2.500**	<	**3.740**	Tl
Vanadium	0.000	0.000	<	0.006	0.000	1.000	<	**0.124**		**0.471**	<	**0.595**	V
Zinc	0.423	0.423		0.170	0.170	1.000		**2.977**		**1038.480**		**1041.457**	Zn

Note: Allowable BH Blank rules:

If 1.00 µg > blank > 0 , use blank-derived value.
If blank > 1.00 µg, use greater of 1.00 µg or [lessor of 5% of sample µg or BH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company **Run: 3**
Main Foundry BH Inlet - Steel Alloy **Test Date: 3/29/2023**
Method 29 Non-Hg Metals Blank Correction Calculations **Page: 1 of 3**

Analyte		I Sample FH Rinse+Filter µg	II Blank Correction FH Rinse µg	III Blank Correction Filter µg		IV Sample BH Cap.Soln. + BH Rinse µg	V Blank BH Cap.Soln. µg/ml	VI Blank Correction BH Cap.Soln. µg	VII Blank Correction BH Rinse µg	VIII Total BH Blank Correction µg	
Aluminum		1300.000	0.000	58.800		20.600	0.083	16.633	0.000	16.633	Al
Antimony		4.580	0.000	2.860		1.490	0.000	0.000	0.000	0.000	Sb
Arsenic	<	8.750	0.000	0.000	<	0.826	0.000	0.000	0.000	0.000	As
Barium		12.100	0.077	1.400		1.260	0.004	0.733	0.077	0.810	Ba
Beryllium	<	0.050	0.000	0.000	<	0.024	0.000	0.000	0.000	0.000	Be
Cadmium		1.850	0.000	0.000		0.079	0.000	0.000	0.000	0.000	Cd
Chromium		83.000	0.000	1.030		0.357	0.002	0.312	0.000	0.312	Cr
Cobalt		0.420	0.000	0.000	<	0.059	0.001	0.156	0.000	0.156	Co
Copper		56.300	0.000	0.000		0.681	0.000	0.000	0.000	0.000	Cu
Lead		125.000	0.000	0.000	<	0.590	0.000	0.000	0.000	0.000	Pb
Manganese		5340.000	0.000	0.741		4.790	0.004	0.757	0.000	0.757	Mn
Nickel		14.400	0.000	3.960		0.509	0.000	0.000	0.000	0.000	Ni
Phosphorus		48.200	0.000	17.000	<	2.360	0.000	0.000	0.000	0.000	P
Selenium	<	3.750	0.000	0.000	<	1.770	0.000	0.000	0.000	0.000	Se
Silver		1.820	0.000	0.000	<	0.236	0.000	0.000	0.000	0.000	Ag
Thallium	<	2.500	0.000	0.000	<	1.180	0.000	0.000	0.000	0.000	Tl
Vanadium		0.337	0.000	0.000	<	0.118	0.000	0.000	0.000	0.000	V
Zinc		879.000	0.000	1.520		2.060	0.002	0.423	0.000	0.423	Zn

Lab ID:	**23-S679**	**23-S730**	**23-S729**	**23-S680**	**23-S731**	**N/A**	**N/A**
Content:	0.1N HNO_3	0.1N HNO_3		5% HNO_3/10% H_2O_2	5% HNO_3/	5%HNO_3/	0.1NHNO_3
	FH Filter & Probe Rinse			BH Imps 1-3	10% H_2O_2	10%H_2O_2	
	100ml 0.1N HNO_3 Rinse			100ml .1N HNO_3 Rinse			
				200ml 5% HNO_3/10% H_2O_2 Reagent			

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company | **Run:** 3
Main Foundry BH Inlet - Steel Alloy | **Test Date:** 3/29/2023
Method 29 Non-Hg Metals Blank Correction Calculations | **Page:** 2 of 3

Analyte	X Allowable FH Blank Correction µg	XI Total FH Blank Correction µg		XII 5% of FH Sample µg	XIII Lessor of XI or XII µg	XIV Greater of A or XIII µg		XV FH Net Sample µg	
Aluminum	58.800	58.800		65.000	58.800	58.80		1241.200	Al
Antimony	2.860	2.860		0.229	0.229	11.63		1.720	Sb
Arsenic	0.000	0.000	<	0.438	0.000	11.63	<	8.750	As
Barium	1.477	1.477		0.605	0.605	11.63		10.623	Ba
Beryllium	0.000	0.000	<	0.003	0.000	11.63	<	0.050	Be
Cadmium	0.000	0.000		0.093	0.000	11.63		1.850	Cd
Chromium	1.030	1.030		4.150	1.030	11.63		81.970	Cr
Cobalt	0.000	0.000		0.021	0.000	11.63		0.420	Co
Copper	0.000	0.000		2.815	0.000	11.63		56.300	Cu
Lead	0.000	0.000		6.250	0.000	11.63		125.000	Pb
Manganese	0.741	0.741		267.000	0.741	11.63		5339.259	Mn
Nickel	3.960	3.960		0.720	0.720	11.63		10.440	Ni
Phosphorus	11.630	17.000		2.410	2.410	11.63		36.570	P
Selenium	0.000	0.000	<	0.188	0.000	11.63	<	3.750	Se
Silver	0.000	0.000		0.091	0.000	11.63		1.820	Ag
Thallium	0.000	0.000	<	0.125	0.000	11.63	<	2.500	Tl
Vanadium	0.000	0.000		0.017	0.000	11.63		0.337	V
Zinc	1.520	1.520		43.950	1.520	11.63		877.480	Zn

Note: Allowable FH Blank (A) = (area of filter)*(1.4 µg/in^2) = 11.63 µg
where area of filter = 8.306 in^2

If A > blank > 0, use blank-derived value.
If blank > A, use greater of A or [lessor of 5% of sample µg or FH blank].

Blank Rules: '<' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company **Run: 3**
Main Foundry BH Inlet - Steel Alloy **Test Date: 3/29/2023**
Method 29 Non-Hg Metals Blank Correction Calculations **Page: 3 of 3**

Analyte	XVI Allowable BH Blank Correction µg	XVII Total BH Blank Correction µg		XVIII 5% of BH Sample µg	XIX Lessor of XVII or XVIII µg	XX Greater of 1 µg or XIX µg		XXI BH Net Sample µg		XXII FH Net Sample µg		XXIII FH+BH Total Net Sample µg	
Aluminum	1.030	16.633		1.030	1.030	1.030		**19.570**		**1241.200**		**1260.770**	Al
Antimony	0.000	0.000		0.075	0.000	1.000		**1.490**		**1.720**		**3.210**	Sb
Arsenic	0.000	0.000	<	0.041	0.000	1.000	<	**0.826**	<	**8.750**	<	**9.576**	As
Barium	0.810	0.810		0.063	0.063	1.000		**0.450**		**10.623**		**11.073**	Ba
Beryllium	0.000	0.000	<	0.001	0.000	1.000	<	**0.024**	<	**0.050**	<	**0.074**	Be
Cadmium	0.000	0.000		0.004	0.000	1.000		**0.079**		**1.850**		**1.929**	Cd
Chromium	0.312	0.312		0.018	0.018	1.000		**0.045**		**81.970**		**82.015**	Cr
Cobalt	0.156	0.156	<	0.003	0.156	1.000		**0.000**		**0.420**		**0.420**	Co
Copper	0.000	0.000		0.034	0.000	1.000		**0.681**		**56.300**		**56.981**	Cu
Lead	0.000	0.000	<	0.030	0.000	1.000	<	**0.590**		**125.000**	<	**125.590**	Pb
Manganese	0.757	0.757		0.240	0.240	1.000		**4.033**		**5339.259**		**5343.292**	Mn
Nickel	0.000	0.000		0.025	0.000	1.000		**0.509**		**10.440**		**10.949**	Ni
Phosphorus	0.000	0.000	<	0.118	0.000	1.000	<	**2.360**		**36.570**	<	**38.930**	P
Selenium	0.000	0.000	<	0.089	0.000	1.000	<	**1.770**	<	**3.750**	<	**5.520**	Se
Silver	0.000	0.000	<	0.012	0.000	1.000	<	**0.236**		**1.820**	<	**2.056**	Ag
Thallium	0.000	0.000	<	0.059	0.000	1.000	<	**1.180**	<	**2.500**	<	**3.680**	Tl
Vanadium	0.000	0.000	<	0.006	0.000	1.000	<	**0.118**		**0.337**	<	**0.455**	V
Zinc	0.423	0.423		0.103	0.103	1.000		**1.637**		**877.480**		**879.117**	Zn

Note: Allowable BH Blank rules:

If 1.00 µg > blank > 0 , use blank-derived value.
If blank > 1.00 µg, use greater of 1.00 µg or [lessor of 5% of sample µg or BH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company
Main Foundry BH Inlet - Steel Alloy
Mercury Blank Correction Calculations

Blank Lab Values

	Filter Cont. 12 µg/filter		BH Imps. 2&3 Cap.Soln. Cont. 9 5% HNO_3/ 10% H_2O_2 µg/sample		FH/BH Rinse Cont. 8A 0.1 N HNO_3 µg/sample		BH Imps. 5&6 Rinse Cont. 8B H_2O µg/sample		BH Imps. 5&6 Cap.Soln. + Rinse Cont. 10 $KMnO_4$ µg/sample		BH Imps. 5&6 Rinse Cont. 11 HCl µg/sample	
Analyte	< **Result**	**MDL**	< **Result**	**MDL**	< **Result**	**MDL**	< **Result**	**MDL**	< **Result**	**MDL**	< **Result**	**MDL**
Mercury	0.0406	0.0219	0.118	0.0172	< MDL	0.0219	< MDL	0.0295	0.0628	0.0163	< MDL	0.0108
Lab ID:	23-S729		23-S731		23-S730		23-S732		23-S733		23-S734	
Blank vol, ml:	NA		196		250		337		186		124	

Blank Correction Values

Analyte: Mercury	**Blank FH HNO_3 Rinse µg**	**Blank Filter µg**	**Blank BH Cap.Soln. µg**	**Blank BH HNO_3 Rinse µg**	**Blank BH H_2O Rinse µg**	**Blank BH KMnO4 Cap.Soln. + Rinse µg**	**Blank BH HCl Rinse µg**	**Total Blank Correction µg**	**Is Total Blank Correction ≥ 0 and ≤ 0.6?**
Run 1	0.00	0.0406	0.12	0.00	0.00	0.10	0.00	0.2623	Yes
Reagent vol, ml	100.0		200.0	200.0	100.0	300.0	225.0		
Run 2	0.00	0.0406	0.12	0.00	0.00	0.10	0.00	0.2623	Yes
Reagent vol, ml	100.0		200.0	200.0	100.0	300.0	225.0		
Run 3	0.00	0.0406	0.12	0.00	0.00	0.10	0.00	0.2623	Yes
Reagent vol, ml	100.0		200.0	200.0	100.0	300.0	225.0		
Notes:	0.1N HNO_3 FH Probe Rinse	FH Filter	5% HNO_3/ 10% H_2O_2 BH Imps 2&3	0.1N HNO_3 BH Imps 1-4	H_2O BH Imps 5&6	4% $KMnO_4$/ 10% H_2SO_4 BH Imps 5&6	25 ml 8N HCl/ 200 ml H2O BH Imps 5&6		

Blank Corrected Results

Analyte: Mercury	**Sample FH Rinse + Filter Cont. 1&3 µg**	**Sample BH Cap.Soln. + HNO_3 Rinse Cont. 4 µg**	**Sample BH Imp. 4 + Rinse Cont. 5A µg**	**Sample BH Imps. 5&6 + Rinses Cont. 5B µg**	**Sample BH HCl Rinse + Water Cont. 5C µg**	**Total Sample µg**	**Total Blank Correction µg**	**Total Net Sample µg**
Run 1	0.0438	0.229	< 0.0268	0.195	< 0.0192	< 0.5138	0.2623	< 0.2515
Lab ID	23-S669	23-S670	23-S671	23-S672	23-S673			
Run 2	< 0.0219	0.173	< 0.0116	0.176	< 0.0159	< 0.3984	0.2623	< 0.1361
Lab ID	23-S674	23-S675	23-S676	23-S677	23-S678			
Run 3	< 0.0219	0.179	< 0.0108	0.194	< 0.0194	< 0.4251	0.2623	< 0.1628
Lab ID	23-S679	23-S680	23-S681	23-S682	23-S683			

Blank Rules: '<' indicates value is below the method detection limit (MDL)
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations but results are preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.
If the total blank correction value is less than or equal to 0.6 µg, subtract the total blank correction value from the total sample value to determine total net Hg. Otherwise, the value used for the blank correction shall be the greater of (1) 0.6 µg or (2) the lesser of [total FH blank + total BH blank] or 5% of the total sample valu

EPA Method 29
Gas Stream Characteristics
Test Summary

Client: **Eagle Foundry Company**
Source: **Main Foundry BH Inlet - Steel Alloy**
Location: **Eagle Creek, OR**

Parameter	Units	Run 1	Run 2	Run 3	
Date		3/27/2023	3/28/2023	3/29/2023	
Run Start Time		13:00	10:30	10:35	
Run End Time		17:10	14:40	14:45	
Duration	minutes	250	250	250	**Average**
Barometric Pressure	inHg	29.79	29.38	29.45	**29.54**
Nozzle Diameter	inches	0.251	0.251	0.251	**0.251**
Isokinetic Average	%	96.9	100.4	100.0	**99.1**
Sample Volume	dscf	299.332	305.505	333.168	**312.668**
Sample Volume	dscm	8.476	8.651	9.434	**8.854**
Stack Diameter	inches	48.00	48.00	48.00	**48.00**
Stack Area	ft^2	12.566	12.566	12.566	**12.566**
CO_2	%vd	0.26	0.08	0.08	**0.14**
O_2	%vd	20.99	20.93	20.98	**20.97**
Static Pressure	inH_2O	-0.90	-0.90	-0.90	**-0.90**
H_2O	%v	0.35	0.99	0.62	**0.65**
Wet Molecular Weight	lb/lb-mole	28.84	28.74	28.78	**28.79**
Velocity	fps	59.65	59.49	64.69	**61.28**
Flow Rate	adcfm	44,817	44,409	48,472	**45,899**
	acfm	44,974	44,853	48,774	**46,200**
	dscfm	45,139	44,453	48,664	**46,085**
Stack Temperature	°F	60.8	56.8	56.5	**58.0**
Production Data	lb melt/pour	12,201.579	12,201.119	12,077.535	
	ton melt/pour	6.101	6.101	6.039	
	lb Cr/melt	209.764	201.394	201.494	
	ton Cr/melt	0.105	0.101	0.101	
	lb Mn/melt	834.059	834.082	822.739	
	ton Mn/melt	0.417	0.417	0.411	
	lb Ni/melt	74.327	70.459	69.572	
	ton Ni/melt	0.037	0.035	0.035	

Eagle Foundry Company **Test Dates:** 3/27/2023
Main Foundry BH Inlet - Steel Alloy 3/28/2023
EPA Method 29 Results Summary 3/29/2023

Run 1

Analyte	Total				FH Net			BH Net			
	µg	µg/dscm	lb/hr	lb/ton melt	µg	µg/dscm	lb/hr	µg	µg/dscm	lb/hr	
Aluminum	1670.125	197.042	3.33E-02	2.28E-02	1621.200	191.269	3.23E-02	48.925	5.772	9.76E-04	Al
Antimony	< 3.590	< 0.424	< 7.16E-05	< 4.89E-05	2.910	0.343	5.80E-05	< 0.680	< 0.080	< 1.36E-05	Sb
Arsenic	< 9.702	< 1.145	< 1.94E-04	< 1.32E-04	< 8.750	< 1.032	< 1.75E-04	< 0.952	< 0.112	< 1.90E-05	As
Barium	12.843	1.515	2.56E-04	1.75E-04	12.023	1.418	2.40E-04	0.820	0.097	1.64E-05	Ba
Beryllium	< 0.096	< 0.011	< 1.92E-06	< 1.31E-06	0.069	0.008	1.38E-06	< 0.027	< 0.003	< 5.39E-07	Be
Cadmium	1.853	0.219	3.70E-05	2.52E-05	1.050	0.124	2.09E-05	0.803	0.095	1.60E-05	Cd
Chromium	108.347	12.783	2.16E-03		107.970	12.738	2.15E-03	0.377	0.044	7.52E-06	Cr
Cobalt	0.440	0.052	8.78E-06	5.99E-06	0.440	0.052	8.78E-06	0.000	0.000	0.00E+00	Co
Copper	< 60.080	< 7.088	< 1.20E-03	< 8.19E-04	59.400	7.008	1.18E-03	< 0.680	< 0.080	< 1.36E-05	Cu
Lead	< 135.680	< 16.008	< 2.71E-03	< 1.85E-03	135.000	15.927	2.69E-03	< 0.680	< 0.080	< 1.36E-05	Pb
Manganese	5799.582	684.236	1.16E-01		5799.259	684.198	1.16E-01	0.323	0.038	6.44E-06	Mn
Mercury	< 0.252	< 0.030	< 5.02E-06	< 3.43E-06							Hg
Nickel	< 8.148	< 0.961	< 1.63E-04		7.740	0.913	1.54E-04	< 0.408	< 0.048	< 8.14E-06	Ni
Phosphorus	< 37.790	< 4.458	< 7.54E-04	< 5.15E-04	35.070	4.138	7.00E-04	< 2.720	< 0.321	< 5.43E-05	P
Selenium	< 5.790	< 0.683	< 1.15E-04	< 7.89E-05	< 3.750	< 0.442	< 7.48E-05	< 2.040	< 0.241	< 4.07E-05	Se
Silver	< 2.702	< 0.319	< 5.39E-05	< 3.68E-05	2.430	0.287	4.85E-05	< 0.272	< 0.032	< 5.43E-06	Ag
Thallium	< 3.860	< 0.455	< 7.70E-05	< 5.26E-05	< 2.500	< 0.295	< 4.99E-05	< 1.360	< 0.160	< 2.71E-05	Tl
Vanadium	< 0.789	< 0.093	< 1.57E-05	< 1.07E-05	0.653	0.077	1.30E-05	< 0.136	< 0.016	< 2.71E-06	V
Zinc	1125.297	132.763	2.24E-02	1.53E-02	1118.480	131.958	2.23E-02	6.817	0.804	1.36E-04	Zn

Chromium	lb Cr / ton Cr in melt =	8.59E-02
Manganese	lb Mn / ton Mn in melt =	1.16E+00
Nickel	lb Ni / ton Ni in melt = <	1.82E-02

Run 1 Emission Factors

Run 2

Analyte	Total				FH Net			BH Net			
	µg	µg/dscm	lb/hr	lb/ton melt	µg	µg/dscm	lb/hr	µg	µg/dscm	lb/hr	
Aluminum	1284.665	148.499	2.47E-02	1.69E-02	1261.200	145.787	2.43E-02	23.465	2.712	4.52E-04	Al
Antimony	< 0.820	< 0.095	< 1.58E-05	< 1.08E-05	0.200	0.023	3.85E-06	< 0.620	< 0.072	< 1.19E-05	Sb
Arsenic	< 9.618	< 1.112	< 1.85E-04	< 1.26E-04	< 8.750	< 1.011	< 1.68E-04	< 0.868	< 0.100	< 1.67E-05	As
Barium	11.443	1.323	2.20E-04	1.50E-04	10.823	1.251	2.08E-04	0.620	0.072	1.19E-05	Ba
Beryllium	< 0.077	< 0.009	< 1.48E-06	< 1.01E-06	0.052	0.006	1.00E-06	< 0.025	< 0.003	< 4.81E-07	Be
Cadmium	1.570	0.181	3.02E-05	2.06E-05	1.360	0.157	2.62E-05	0.210	0.024	4.04E-06	Cd
Chromium	91.687	10.598	1.76E-03		91.570	10.585	1.76E-03	0.117	0.014	2.25E-06	Cr
Cobalt	0.355	0.041	6.83E-06	4.67E-06	0.355	0.041	6.83E-06	0.000	0.000	0.00E+00	Co
Copper	52.715	6.094	1.01E-03	6.93E-04	51.900	5.999	9.99E-04	0.815	0.094	1.57E-05	Cu
Lead	< 145.620	< 16.833	< 2.80E-03	< 1.91E-03	145.000	16.761	2.79E-03	< 0.620	< 0.072	< 1.19E-05	Pb
Manganese	6672.112	771.253	1.28E-01		6669.259	770.923	1.28E-01	2.853	0.330	5.49E-05	Mn
Mercury	< 0.136	< 0.016	< 2.62E-06	< 1.79E-06							Hg
Nickel	9.641	1.114	1.86E-04		9.140	1.057	1.76E-04	0.501	0.058	9.64E-06	Ni
Phosphorus	< 39.250	< 4.537	< 7.55E-04	< 5.16E-04	36.770	4.250	7.08E-04	< 2.480	< 0.287	< 4.77E-05	P
Selenium	< 5.740	< 0.664	< 1.10E-04	< 7.55E-05	3.880	0.449	7.47E-05	< 1.860	< 0.215	< 3.58E-05	Se
Silver	< 1.818	< 0.210	< 3.50E-05	< 2.39E-05	1.570	0.181	3.02E-05	< 0.248	< 0.029	< 4.77E-06	Ag
Thallium	< 3.740	< 0.432	< 7.20E-05	< 4.92E-05	< 2.500	< 0.289	< 4.81E-05	< 1.240	< 0.143	< 2.39E-05	Tl
Vanadium	< 0.595	< 0.069	< 1.15E-05	< 7.82E-06	0.471	0.054	9.07E-06	< 0.124	< 0.014	< 2.39E-06	V
Zinc	1041.457	120.386	2.00E-02	1.37E-02	1038.480	120.042	2.00E-02	2.977	0.344	5.73E-05	Zn

Chromium	lb Cr / ton Cr in melt =	7.30E-02
Manganese	lb Mn / ton Mn in melt =	1.28E+00
Nickel	lb Ni / ton Ni in melt =	2.19E-02

Run 2 Emission Factors

Note: Results for Hg front half and back half fractions are not shown because these values are not blank-corrected. Per EPA Method 29, only the sum of Hg front and back half results is subject to blank correction.

'<' denotes results which were calculated using the method detection limit for front half or back half results that were non-detect.

Eagle Foundry Company **Test Dates:** 3/27/2023
Main Foundry BH Inlet - Steel Alloy 3/28/2023
EPA Method 29 Results Summary 3/29/2023

Run 3													
Analyte	Total				FH Net			BH Net					
	µg	µg/dscm	lb/hr	lb/ton melt	µg	µg/dscm	lb/hr	µg	µg/dscm	lb/hr			
Aluminum	1260.770	133.641	2.44E-02	1.68E-02	1241.200	131.567	2.40E-02	19.570	2.074	3.78E-04	Al		
Antimony	3.210	0.340	6.20E-05	4.28E-05	1.720	0.182	3.32E-05	1.490	0.158	2.88E-05	Sb		
Arsenic	< 9.576	< 1.015	< 1.85E-04	< 1.28E-04	< 8.750	< 0.927	< 1.69E-04	< 0.826	< 0.088	< 1.60E-05	As		
Barium	11.073	1.174	2.14E-04	1.48E-04	10.623	1.126	2.05E-04	0.450	0.048	8.69E-06	Ba		
Beryllium	< 0.074	< 0.008	< 1.43E-06	< 9.87E-07	< 0.050	< 0.005	< 9.66E-07	< 0.024	< 0.003	< 4.64E-07	Be		
Cadmium	1.929	0.204	3.73E-05	2.57E-05	1.850	0.196	3.57E-05	0.079	0.008	1.53E-06	Cd		
Chromium	82.015	8.694	1.58E-03		81.970	8.689	1.58E-03	0.045	0.005	8.69E-07	Cr		
Cobalt	0.420	0.045	8.12E-06	5.60E-06	0.420	0.045	8.12E-06	0.000	0.000	0.00E+00	Co		
Copper	56.981	6.040	1.10E-03	7.60E-04	56.300	5.968	1.09E-03	0.681	0.072	1.32E-05	Cu		
Lead	< 125.590	< 13.312	< 2.43E-03	< 1.67E-03	125.000	13.250	2.42E-03	< 0.590	< 0.063	< 1.14E-05	Pb		
Manganese	5343.292	566.387	1.03E-01		5339.259	565.959	1.03E-01	4.033	0.427	7.79E-05	Mn		
Mercury	< 0.163	< 0.017	< 3.15E-06	< 2.17E-06							Hg		
Nickel	10.949	1.161	2.12E-04		10.440	1.107	2.02E-04	0.509	0.054	9.84E-06	Ni		
Phosphorus	< 38.930	< 4.127	< 7.52E-04	< 5.19E-04	36.570	3.876	7.07E-04	< 2.360	< 0.250	< 4.56E-05	P		
Selenium	< 5.520	< 0.585	< 1.07E-04	< 7.36E-05	< 3.750	< 0.397	< 7.25E-05	< 1.770	< 0.188	< 3.42E-05	Se		
Silver	< 2.056	< 0.218	< 3.97E-05	< 2.74E-05	1.820	0.193	3.52E-05	< 0.236	< 0.025	< 4.56E-06	Ag		
Thallium	< 3.680	< 0.390	< 7.11E-05	< 4.91E-05	< 2.500	< 0.265	< 4.83E-05	< 1.180	< 0.125	< 2.28E-05	Tl		
Vanadium	< 0.455	< 0.048	< 8.79E-06	< 6.07E-06	0.337	0.036	6.51E-06	< 0.118	< 0.013	< 2.28E-06	V		
Zinc	879.117	93.186	1.70E-02	1.17E-02	877.480	93.013	1.70E-02	1.637	0.174	3.16E-05	Zn		

Chromium	lb Cr / ton Cr in melt =	6.55E-02
Manganese	lb Mn / ton Mn in melt =	1.05E+00
Nickel	lb Ni / ton Ni in melt =	2.53E-02

Run 3 Emission Factors

Mean Runs 1-3													
Analyte	Total				FH Net			BH Net					
	µg	µg/dscm	lb/hr	lb/ton melt	µg	µg/dscm	lb/hr	µg	µg/dscm	lb/hr			
Aluminum	1405.187	159.727	2.75E-02	1.88E-02	1374.533	156.208	2.69E-02	30.653	3.520	6.02E-04			
Antimony	< 2.540	< 0.286	< 4.98E-05	< 3.42E-05	1.610	0.183	3.17E-05	< 0.930	< 0.103	< 1.81E-05	Sb		
Arsenic	< 9.632	< 1.090	< 1.88E-04	< 1.29E-04	< 8.750	< 0.990	< 1.71E-04	< 0.882	< 0.100	< 1.72E-05	As		
Barium	11.786	1.337	2.30E-04	1.58E-04	11.156	1.265	2.18E-04	0.630	0.072	1.23E-05	Ba		
Beryllium	< 0.082	< 0.009	< 1.61E-06	< 1.10E-06	< 0.057	< 0.006	< 1.11E-06	< 0.025	< 0.003	< 4.95E-07	Be		
Cadmium	1.784	0.202	3.48E-05	2.39E-05	1.420	0.159	2.76E-05	0.364	0.042	7.20E-06	Cd		
Chromium	94.016	10.692	1.84E-03		93.837	10.671	1.83E-03	0.180	0.021	3.55E-06	Cr		
Cobalt	0.405	0.046	7.91E-06	5.42E-06	0.405	0.046	7.91E-06	0.000	0.000	0.00E+00	Co		
Copper	< 56.592	< 6.407	< 1.10E-03	< 7.57E-04	55.867	6.325	1.09E-03	< 0.725	< 0.082	< 1.41E-05	Cu		
Lead	< 135.630	< 15.384	< 2.65E-03	< 1.81E-03	135.000	15.313	2.63E-03	< 0.630	< 0.071	< 1.23E-05	Pb		
Manganese	5938.329	673.959	1.16E-01		5935.926	673.693	1.16E-01	2.403	0.265	4.64E-05	Mn		
Mercury	< 0.183	< 0.021	< 3.59E-06	< 2.46E-06							Hg		
Nickel	< 9.579	< 1.079	< 1.87E-04		9.107	1.025	1.77E-04	< 0.473	< 0.053	< 9.21E-06	Ni		
Phosphorus	< 38.657	< 4.374	< 7.54E-04	< 5.17E-04	36.137	4.088	7.05E-04	< 2.520	< 0.286	< 4.92E-05	P		
Selenium	< 5.683	< 0.644	< 1.11E-04	< 7.60E-05	< 3.793	< 0.429	< 7.40E-05	< 1.890	< 0.214	< 3.69E-05	Se		
Silver	< 2.192	< 0.249	< 4.29E-05	< 2.94E-05	1.940	0.220	3.80E-05	< 0.252	< 0.029	< 4.92E-06	Ag		
Thallium	< 3.760	< 0.426	< 7.34E-05	< 5.03E-05	< 2.500	< 0.283	< 4.88E-05	< 1.260	< 0.143	< 2.46E-05	Tl		
Vanadium	< 0.613	< 0.070	< 1.20E-05	< 8.21E-06	0.487	0.056	9.53E-06	< 0.126	< 0.014	< 2.46E-06	V		
Zinc	1015.290	115.445	1.98E-02	1.36E-02	1011.480	115.004	1.98E-02	3.810	0.441	7.50E-05	Zn		

Chromium	lb Cr / ton Cr in melt =		7.48E-02
Manganese	lb Mn / ton Mn in melt =		1.16E+00
Nickel	lb Ni / ton Ni in melt =	<	2.18E-02

Mean Runs 1-3

Note: Results for Hg front half and back half fractions are not shown because these values are not blank-corrected. Per EPA Method 29, only the sum of Hg front and back half results is subject to blank correction.

'<' denotes results which were calculated using the method detection limit for front half or back half results that were non-detect.

BISON ENGINEERING, INC.

COMPANY	**Eagle Foundry Company**
FACILITY	**Eagle Foundry**
LOCATION	**Eagle Creek, OR**
SOURCE	**Main Foundry BH Outlet - Steel Alloy**
DATE	**3/27/2023 - 3/29/2023**
METHOD	**29**
POLLUTANT	**Metals**

EPA Method 1
Stack Parameters and Traverse Points

Client: **Eagle Foundry Company**
Location: **Eagle Creek, OR**
Source: **Main Foundry BH Outlet - Steel Alloy**
Facility: **Eagle Foundry**

Type of Testing: P (P for Particulate; V for Velocity/Nonparticulate)
Type of Duct: C (C for circular; R for rectangular)

Number of ports available:	2	
Number of ports to be used:	2	
Port diameter:	3	inches
Sampling location height (approx.):		feet
Stack height (approx.):		feet
Circular ID (Rectangular Depth):	61.00	inches
Port depth and/or wall thickness:	6.00	inches
Stack width (Rectangular only):		inches

Equivalent Diameter
If rectangular = $\frac{2*Depth*Width}{Depth + Width}$ = 61.00 inches (If circular = duct ID)
Stack/duct area = 20.295 sq.feet 2922.5 sq. inches

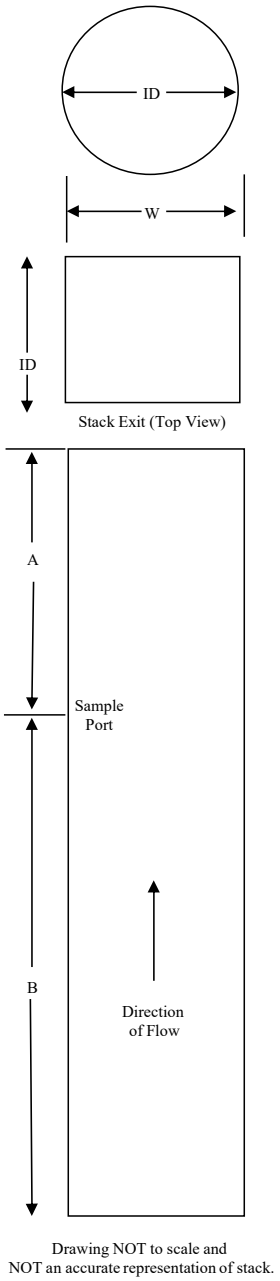
Sample Port Location:	Downstream flow disturbance from process B	Upstream flow disturbance toward exit A
Number of Inches:	264.00	44.00
Number of Diameters:	4.33	0.72

Minimum Number of Traverse Points: 24

Traverse points less than 1.0 inch from the stack wall are relocated to a distance of 1.0 inch.

Points	% of diameter	Distance from inside wall (in.)	Distance including port (in.)
1	2.1	1.28	7 1/4
2	6.7	4.09	10 1/8
3	11.8	7.20	13 1/4
4	17.7	10.80	16 3/4
5	25.0	15.25	21 1/4
6	35.6	21.72	27 3/4
7	64.4	39.28	45 1/4
8	75.0	45.75	51 3/4
9	82.3	50.20	56 1/4
10	88.2	53.80	59 3/4
11	93.3	56.91	62 7/8
12	97.9	59.72	65 3/4

Reference Diagram



Drawing NOT to scale and NOT an accurate representation of stack.

Pre-Test Traverse

Client: **Eagle Foundry Company**
Location: **Eagle Creek, OR**
Source: **Main Foundry BH Outlet - Steel Alloy**

Stack Temp: 60 °F

Traverse Point	Velocity ΔP ("H_2O)	Null Angle
1	0.64	0
2	0.65	5
3	0.64	0
4	0.62	5
5	0.61	5
6	0.62	0
7	0.66	5
8	0.62	0
9	0.52	5
10	0.59	0
11	0.58	5
12	0.55	5
Average:	0.61	3

Flow is found to be: Non-cyclonic

Isokinetic Field Data
Field Data Entry

Client:	**Eagle Foundry Company**	**Run:**	**1**
Location:	**Eagle Creek, OR**	**Start Time:**	**13:00**
Source:	**Main Foundry BH Outlet - Steel Alloy**	**End Time:**	**17:10**
EPA Method:	**29**	**Environmental Conditions/Test Notes:**	**Date:** **3/27/2023**
Box Operator:	**JPC**	Overcast and 40-60°F	
Technician(s):	**KAD**		

Stack Dimensional Data:

Circular		
Diameter	61.000	in
Rectangular		
Width		in
Length		in
Stack Area	20.295	sq.ft.

Equipment:

Meterbox ID	15	Probe ID	7D	Liner type	Glass		
Y factor	1.0057	Nozzle ID	0.25	Nozzle size	0.263	inches	
ΔH@	1.919	Hot box ID	HHB7	Nozzle area	0.000377	sq.ft.	
Bp ID	TS1	Pitot Cp	0.84	Probe heat	248	°F	
Balance ID	HLN FB-1	Pitot ID	7D	Filter heat	248	°F	
Weights ID	HLN FW-1	Probe Length, ft	7				

Source Information:

Barometric Pressure	29.79	"Hg	O_2	20.90	%
Static Pressure	0.1	"H_2O	CO_2	0.00	%
Ave. ΔP	0.61	"H_2O	Rec. Nz.	0.228	inches
Stack Temperature	60	°F			
Assumed moisture	2.00	%			
Assumed meter temp.	75	°F			
Total number of points	20				
Time per point	12.5	min.			
Total run time	250	min.			

Leak Checks:

	Pre-test	Post-test
Pitot	x	x
Leak rate, dcf	0.000	0.000
Leak check vacuum, "Hg	15	9

Nozzle check for roundness:

1	2	3	
0.263	0.263	0.263	inches
	Caliper ID	WS1	

Post Test Calculations:

Sample volume	262.394	dcf	Ave. ΔP	0.646	"H_2O
Wet mol. weight	28.8	M_s (actual)	Ave. √ΔP	0.803	"H_2O
Actual H_2O	0.40	%	Ave. ΔH	3.695	"H_2O
Std. meter vol.	254.576	dscf	Ave. T_s	62.6	°F
Isokinetic Average	99.8	%	Ave. T_m	89.9	°F

Moisture/Lab:

Filter, #	N/A		
	Initial	Final	Gain
Impingers, g	3,453.3	3,430.9	-22.4
Silica gel, g	940.1	984.1	44.0
		Total water gain, g:	21.6

Traverse Point	Time (min.)	Meter Volume (dcf) 0.000	Velocity ΔP ("H_2O)	Stack Temp. (°F)	Meter Temp. (°F)	Calc. ΔH	Run ΔH	Vacuum ("Hg)	Filter Box (°F)	Condenser Temp (≤68°F)
1	12.5	14.700	0.84	61	74	4.68	4.70	5	249	46
2	25.0	29.390	0.84	61	72	4.66	4.70	5	250	54
3	37.5	43.420	0.79	62	75	4.40	4.40	5	251	58
4	50.0	56.010	0.63	62	79	3.54	3.50	4	251	59
5	62.5	69.110	0.64	62	83	3.62	3.60	4	250	56
6	75.0	82.010	0.64	62	85	3.63	3.60	4	250	57
7	87.5	94.780	0.63	65	88	3.58	3.60	4	251	56
8	100.0	107.590	0.62	63	90	3.55	3.60	4	252	56
9	112.5	120.530	0.63	65	92	3.60	3.60	4	250	54
10	125.0	133.590	0.63	63	93	3.62	3.60	4	250	54
11	137.5	146.350	0.59	63	94	3.40	3.40	4	250	53
12	150.0	159.100	0.59	63	95	3.40	3.40	4	250	53
13	162.5	171.760	0.60	64	96	3.46	3.50	4	250	53
14	175.0	184.650	0.62	64	96	3.58	3.60	4	251	52
15	187.5	197.360	0.61	63	97	3.53	3.50	4	250	51
16	200.0	210.090	0.59	63	97	3.42	3.40	4	251	50
17	212.5	223.150	0.59	62	98	3.43	3.40	4	250	51
18	225.0	235.970	0.60	62	98	3.49	3.50	4	250	49
19	237.5	248.890	0.60	61	98	3.49	3.50	4	250	49
20	250.0	262.394	0.64	61	98	3.73	3.80	4	250	50

Isokinetic Field Data
Field Data Entry

Client:	**Eagle Foundry Company**	**Run:**	**2**
Location:	**Eagle Creek, OR**	**Start Time:**	**10:30**
Source:	**Main Foundry BH Outlet - Steel Alloy**	**End Time:**	**14:40**
EPA Method:	**29**	**Date:**	**3/28/2023**
Box Operator:	**JPC**		
Technician(s):	**KAD**		

Environmental Conditions/Test Notes:
Overcast and 40-60°F

Stack Dimensional Data:

Circular		
Diameter	61.000	in
Rectangular		
Width		in
Length		in
Stack Area	20.295	sq.ft.

Equipment:

Meterbox ID	15	Probe ID	7D	Liner type	Glass		
Y factor	1.0057	Nozzle ID	0.25	Nozzle size	0.263	inches	
ΔH@	1.919	Hot box ID	HHB7	Nozzle area	0.000377	sq.ft.	
Bp ID	TS1	Pitot Cp	0.84	Probe heat	248	°F	
Balance ID	HLN FB-1	Pitot ID	7D	Filter heat	248	°F	
Weights ID	HLN FW-1	Probe Length, ft	7				

Source Information:

Barometric Pressure	29.38	"Hg	O_2	20.90	%
Static Pressure	0.1	"H_2O	CO_2	0.00	%
Ave. ΔP	0.61	"H_2O	Rec. Nz.	0.223	inches
Stack Temperature	60	°F			
Assumed moisture	0.40	%			
Assumed meter temp.	89.9	°F			
Total number of points	20				
Time per point	12.5	min.			
Total run time	250	min.			

Leak Checks:

	Pre-test	Post-test
Pitot	x	x
Leak rate, dcf	0.000	0.000
Leak check vacuum, "Hg	15	11

Nozzle check for roundness:

1	2	3	
0.263	0.263	0.263	inches
	Caliper ID	WS1	

Post Test Calculations:

Sample volume	265.375	dcf	Ave. ΔP	0.660	"H_2O
Wet mol. weight	28.74	M_s (actual)	Ave. √ΔP	0.812	"H_2O
Actual H_2O	0.90	%	Ave. ΔH	3.765	"H_2O
Std. meter vol.	256.756	dscf	Ave. T_s	57.7	°F
Isokinetic Average	100.2	%	Ave. T_m	84.0	°F

Moisture/Lab:

Filter, #	N/A		
	Initial	Final	Gain
Impingers, g	3,471.3	3,484.9	13.6
Silica gel, g	901.3	937.1	35.8
		Total water gain:	49.4

Traverse Point	Time (min.)	Meter Volume (dcf) 0.000	Velocity ΔP ("H_2O)	Stack Temp. (°F)	Meter Temp. (°F)	Calc. ΔH	Run ΔH	Vacuum ("Hg)	Filter Box (°F)	Condenser Temp (≤68°F)
1	12.5	13.780	0.72	55	67	4.11	4.00	5	250	41
2	25.0	27.080	0.70	55	69	4.01	3.90	4	250	41
3	37.5	40.380	0.68	55	73	3.93	3.90	4	249	41
4	50.0	53.750	0.69	55	78	4.02	3.90	4	250	41
5	62.5	67.550	0.69	55	81	4.05	3.90	5	250	42
6	75.0	80.320	0.60	55	83	3.53	3.40	4	250	42
7	87.5	93.030	0.60	57	84	3.52	3.40	4	251	43
8	100.0	106.150	0.67	56	85	3.95	3.90	4	250	43
9	112.5	119.600	0.68	59	86	3.99	3.90	4	250	43
10	125.0	133.450	0.68	57	88	4.02	3.90	4	250	44
11	137.5	147.010	0.66	57	89	3.91	3.80	4	251	45
12	150.0	160.030	0.62	57	90	3.68	3.60	4	250	44
13	162.5	172.690	0.61	58	89	3.61	3.50	3	251	44
14	175.0	185.340	0.61	60	90	3.60	3.50	3	252	45
15	187.5	198.450	0.62	60	91	3.67	3.50	3	251	44
16	200.0	211.990	0.67	61	91	3.95	3.90	4	250	45
17	212.5	225.630	0.67	61	91	3.95	3.90	4	251	47
18	225.0	239.580	0.71	61	85	4.15	4.00	4	250	47
19	237.5	252.520	0.63	61	84	3.67	3.60	4	250	47
20	250.0	265.375	0.68	59	85	3.99	3.90	4	251	47

Isokinetic Field Data
Field Data Entry

Client:	**Eagle Foundry Company**	**Run:**	**3**
Location:	**Eagle Creek, OR**	**Start Time:**	**10:35**
Source:	**Main Foundry BH Outlet - Steel Alloy**	**End Time:**	**14:45**
EPA Method:	**29**	**Date:**	**3/29/2023**
Box Operator:	**JPC**		
Technician(s):	**KAD**		

Environmental Conditions/Test Notes:
Overcast and 40-60°F

Stack Dimensional Data:

Circular		
Diameter	61.000	in
Rectangular		
Width		in
Length		in
Stack Area	20.295	sq.ft.

Equipment:

Meterbox ID	15	Probe ID	7D	Liner type	Glass		
Y factor	1.0057	Nozzle ID	0.25	Nozzle size	0.263	inches	
ΔH@	1.919	Hot box ID	HHB7	Nozzle area	0.000377	sq.ft.	
Bp ID	TS1	Pitot Cp	0.84	Probe heat	248	°F	
Balance ID	HLN FB-1	Pitot ID	7D	Filter heat	248	°F	
Weights ID	HLN FW-1	Probe Length, ft	7				

Source Information:

Barometric Pressure	29.45	"Hg	O_2	20.90	%
Static Pressure	0.1	"H_2O	CO_2	0.00	%
Ave. ΔP	0.61	"H_2O	Rec. Nz.	0.224	inches
Stack Temperature	60	°F			
Assumed moisture	0.90	%			
Assumed meter temp.	84	°F			
Total number of points	20				
Time per point	12.5	min.			
Total run time	250	min.			

Leak Checks:

	Pre-test	Post-test
Pitot	x	x
Leak rate, dcf	0.006	0.004
Leak check vacuum, "Hg	15	9

Nozzle check for roundness:

1	2	3	
0.263	0.263	0.263	inches
	Caliper ID	WS1	

Post Test Calculations:

Sample volume	255.977	dcf	Ave. ΔP	0.620	"H_2O
Wet mol. weight	28.75	M_s (actual)	Ave. √ΔP	0.787	"H_2O
Actual H_2O	0.79	%	Ave. ΔH	3.57	"H_2O
Std. meter vol.	250.481	dscf	Ave. T_s	59.6	°F
Isokinetic Average	100.8	%	Ave. T_m	78.9	°F

Moisture/Lab:

Filter, #	N/A		
	Initial	Final	Gain
Impingers, g	3,493.3	3,498.6	5.3
Silica gel, g	935.0	971.8	36.8
		Total water gain:	42.1

Traverse Point	Time (min.)	Meter Volume (dcf) 0.000	Velocity ΔP ("H_2O)	Stack Temp. (°F)	Meter Temp. (°F)	Calc. ΔH	Run ΔH	Vacuum ("Hg)	Filter Box (°F)	Condenser Temp (≤68°F)
1	12.5	13.230	0.66	51	67	3.77	3.80	5	250	40
2	25.0	26.260	0.65	52	69	3.72	3.70	4	250	39
3	37.5	38.950	0.61	53	72	3.50	3.50	4	250	39
4	50.0	51.530	0.60	54	76	3.46	3.50	4	249	41
5	62.5	64.010	0.59	55	80	3.43	3.40	4	250	42
6	75.0	76.490	0.59	55	82	3.44	3.40	4	250	42
7	87.5	89.350	0.62	57	81	3.59	3.60	4	250	42
8	100.0	102.110	0.61	57	82	3.54	3.50	4	251	42
9	112.5	115.040	0.61	58	84	3.55	3.60	4	255	42
10	125.0	128.490	0.66	57	86	3.86	3.90	4	251	42
11	137.5	141.690	0.66	57	88	3.87	3.90	4	252	45
12	150.0	154.560	0.64	60	90	3.75	3.80	5	251	45
13	162.5	167.490	0.62	63	86	3.58	3.60	4	252	48
14	175.0	179.950	0.57	64	82	3.26	3.30	4	251	47
15	187.5	193.200	0.69	66	78	3.91	3.90	4	252	48
16	200.0	205.670	0.59	66	75	3.32	3.30	4	250	49
17	212.5	217.930	0.59	67	72	3.30	3.30	4	251	49
18	225.0	230.410	0.59	67	75	3.32	3.30	4	251	49
19	237.5	242.640	0.58	67	76	3.27	3.30	4	250	49
20	250.0	255.977	0.67	66	77	3.79	3.80	5	251	49

EPA Method 4
Impinger Weights Summary

Client: **Eagle Foundry Company**
Location: **Eagle Creek, OR**
Source: **Main Foundry BH Outlet - Steel Alloy**
EPA Method: **29**
Box Operator: **JPC**
Technician(s): **KAD**

Run 1
Impinger gain by weight (g):

#	Initial	Final	Gain
1	712.2	639.2	-73.0
2	716.4	735.6	19.2
3	542.8	552.1	9.3
4	741.6	754.8	13.2
5	740.3	749.2	8.9
Totals:	3,453.3	3,430.9	-22.4

Run 2
Impinger gain by weight (g):

#	Initial	Final	Gain
1	721.1	685.0	-36.1
2	727.0	760.3	33.3
3	547.1	553.6	6.5
4	735.2	741.4	6.2
5	740.9	744.6	3.7
Totals:	3,471.3	3,484.9	13.6

Run 3
Impinger gain by weight (g):

#	Initial	Final	Gain
1	716.1	688.6	-27.5
2	731.8	757.8	26.0
3	545.5	548.4	2.9
4	744.5	748.1	3.6
5	755.4	755.7	0.3
Totals:	3,493.3	3,498.6	5.3

Isokinetic Field Data
Field Data and Calculations
Gas Stream Characteristics

Client:	**Eagle Foundry Company**	**Run:**	**1**
Location:	**Eagle Creek, OR**	**Start Time:**	**13:00**
Source:	**Main Foundry BH Outlet - Steel Alloy**	**End Time:**	**17:10**
Method:	**29**	**Date:**	**3/27/2023**

Sampling Data				Traverse Data			
Time	**Meter**	**ΔH**	**Meter**	**Traverse**	**Dp**	**Stack**	
min.	**ft^3**	**"H_2O**	**T_m ^oF**	**Point**	**"H_2O**	**T_s ^oF**	**√Dp**
	0.000						
12.5	14.700	4.70	74	1	0.84	61	0.917
25.0	29.390	4.70	72	2	0.84	61	0.917
37.5	43.420	4.40	75	3	0.79	62	0.889
50.0	56.010	3.50	79	4	0.63	62	0.794
62.5	69.110	3.60	83	5	0.64	62	0.800
75.0	82.010	3.60	85	6	0.64	62	0.800
87.5	94.780	3.60	88	7	0.63	65	0.794
100.0	107.590	3.60	90	8	0.62	63	0.787
112.5	120.530	3.60	92	9	0.63	65	0.794
125.0	133.590	3.60	93	10	0.63	63	0.794
137.5	146.350	3.40	94	11	0.59	63	0.768
150.0	159.100	3.40	95	12	0.59	63	0.768
162.5	171.760	3.50	96	13	0.60	64	0.775
175.0	184.650	3.60	96	14	0.62	64	0.787
187.5	197.360	3.50	97	15	0.61	63	0.781
200.0	210.090	3.40	97	16	0.59	63	0.768
212.5	223.150	3.40	98	17	0.59	62	0.768
225.0	235.970	3.50	98	18	0.60	62	0.775
237.5	248.890	3.50	98	19	0.60	61	0.775
250.0	262.394	3.80	98	20	0.64	61	0.800

Client:	**Eagle Foundry Company**	**Run:**	**1**
Source:	**Main Foundry BH Outlet - Steel Alloy**	**Date:**	**03/27/23**

Field Data Input Continued

Moisture Data			Stack Dimensional Data:		
Total Test Time	250.0	min	Circular		
Sample Time Interval	12.5	min	Diameter	61.000	in
Meter Volume, V_m	262.394	dcf	Rectangular		
Water Mass	21.6	g	Width		in
Nozzle Diameter, N_z	0.2630	in.	Length		in
Nozzle Area	0.000377	sq.ft.	Stack Area	20.295	sq.ft.
Traverse Data			Molecular Weight:		
Barometric Pressure, P_b	29.79	"Hg	CO_2 Average	0.26	%vd
Static Pressure	0.10	"H_2O	O_2 Average	20.99	%vd
Pitot Factor, cp	0.84				
Meter Cal Factor	1.0057	Y			

Field Data Averages

Meter			Stack		
ΔH	3.695	"H_2O	√Dp	0.803	"H_2O
Temperature, T_m	89.9	^oF	Temperature, T_s	62.6	^oF
Temperature, T_m	549.6	^oA (^oR)	Temperature, T_s	522.3	^oA (^oR)
Pressure Meter, P_m	30.062	"Hg	Pressure Stack, P_s	29.797	"Hg

Field Data Calculations

Meter Box Capture			EPA Method 2 Stack Gas Flowrate:		
Standard Volume, $V_{m(std)}$	254.576	dscf	Velocity, V_s	44.95	fps
	7.209	dscm	Flow Rate (actual), Q_{aw}	54,736	acfm
Actual Volume, $V_{m(actual)}$	254.027	awcf		54,517	adcfm
Gas Stream Moisture			Flow Rate (standard), Q	3,304,453	wscf/hr
Moisture Vapor, $Vw_{(std)}$	1.019	scf		3,291,235	dscf/hr
Moisture, B_{ws}	0.0040			54,854	dscf/min
Moisture EPA M4	0.40	%v		55,074	wscf/min
Moisture @ Saturation	1.92	%v (for T_s < 212°F)			
EPA Method 3 Gas Density					
Dry, M_d	28.88	lb/lb-mole			
Wet, M_s	28.84	lb/lb-mole			
Percent Isokinetic	99.9	%			

Isokinetic Field Data
Field Data and Calculations
Gas Stream Characteristics

Client:	**Eagle Foundry Company**	**Run:**	**2**
Location:	**Eagle Creek, OR**	**Start Time:**	**10:30**
Source:	**Main Foundry BH Outlet - Steel Alloy**	**End Time:**	**14:40**
Method:	**29**	**Date:**	**03/28/23**

Sampling Data				Traverse Data			
Time	**Meter**	**ΔH**	**Meter**	**Traverse**	**Dp**	**Stack**	
min.	**ft^3**	**"H_2O**	**T_m °F**	**Point**	**"H_2O**	**T_s °F**	**√Dp**
	0.000						
12.5	13.780	4.00	67	1	0.72	55	0.849
25.0	27.080	3.90	69	2	0.70	55	0.837
37.5	40.380	3.90	73	3	0.68	55	0.825
50.0	53.750	3.90	78	4	0.69	55	0.831
62.5	67.550	3.90	81	5	0.69	55	0.831
75.0	80.320	3.40	83	6	0.60	55	0.775
87.5	93.030	3.40	84	7	0.60	57	0.775
100.0	106.150	3.90	85	8	0.67	56	0.819
112.5	119.600	3.90	86	9	0.68	59	0.825
125.0	133.450	3.90	88	10	0.68	57	0.825
137.5	147.010	3.80	89	11	0.66	57	0.812
150.0	160.030	3.60	90	12	0.62	57	0.787
162.5	172.690	3.50	89	13	0.61	58	0.781
175.0	185.340	3.50	90	14	0.61	60	0.781
187.5	198.450	3.50	91	15	0.62	60	0.787
200.0	211.990	3.90	91	16	0.67	61	0.819
212.5	225.630	3.90	91	17	0.67	61	0.819
225.0	239.580	4.00	85	18	0.71	61	0.843
237.5	252.520	3.60	84	19	0.63	61	0.794
250.0	265.375	3.90	85	20	0.68	59	0.825

Client:	**Eagle Foundry Company**	**Run:**	**2**
Source:	**Main Foundry BH Outlet - Steel Alloy**	**Date:**	**03/28/23**

Field Data Input Continued

Moisture Data			Stack Dimensional Data:		
Total Test Time	250.0	min	Circular		
Sample Time Interval	12.5	min	Diameter	61.000	in
Meter Volume, V_m	265.375	dcf	Rectangular		
Water Mass	49.4	g	Width		in
Nozzle Diameter, N_z	0.2630	in.	Length		in
Nozzle Area	0.000377	sq.ft.	Stack Area	20.295	sq.ft.
Traverse Data			Molecular Weight:		
Barometric Pressure, P_b	29.38	"Hg	CO_2 Average	0.08	%vd
Static Pressure	0.10	"H_2O	O_2 Average	20.93	%vd
Pitot Factor, cp	0.84				
Meter Cal Factor	1.0057	Y			

Field Data Averages

Meter			Stack		
ΔH	3.765	"H_2O	√Dp	0.812	"H_2O
Temperature, T_m	84.0	^oF	Temperature, T_s	57.7	^oF
Temperature, T_m	543.7	^oA (^oR)	Temperature, T_s	517.4	^oA (^oR)
Pressure Meter, P_m	29.657	"Hg	Pressure Stack, P_s	29.387	"Hg

Field Data Calculations

Meter Box Capture			EPA Method 2 Stack Gas Flowrate:		
Standard Volume, $V_{m(std)}$	256.756	dscf	Velocity, V_s	45.63	fps
	7.271	dscm	Flow Rate (actual), Q_{aw}	55,564	acfm
Actual Volume, $V_{m(actual)}$	258.638	awcf		55,064	adcfm
Gas Stream Moisture			Flow Rate (standard), Q	3,339,618	wscf/hr
Moisture Vapor, $Vw_{(std)}$	2.330	scf		3,309,561	dscf/hr
Moisture, B_{ws}	0.0090			55,159	dscf/min
Moisture EPA M4	0.90	%v		55,660	wscf/min
Moisture @ Saturation	1.64	%v (for $T_s < 212°F$)			
EPA Method 3 Gas Density					
Dry, M_d	28.85	lb/lb-mole			
Wet, M_s	28.75	lb/lb-mole			
Percent Isokinetic	100.2	%			

Isokinetic Field Data
Field Data and Calculations
Gas Stream Characteristics

Client:	**Eagle Foundry Company**	**Run:**	**3**
Location:	**Eagle Creek, OR**	**Start Time:**	**10:35**
Source:	**Main Foundry BH Outlet - Steel Alloy**	**End Time:**	**14:45**
Method:	**29**	**Date:**	**03/29/23**

Sampling Data				Traverse Data			
Time	**Meter**	**ΔH**	**Meter**	**Traverse**	**Dp**	**Stack**	
min.	**ft^3**	**"H_2O**	**T_m °F**	**Point**	**"H_2O**	**T_s °F**	**√Dp**
	0.000						
12.5	13.230	3.80	67	1	0.66	51	0.812
25.0	26.260	3.70	69	2	0.65	52	0.806
37.5	38.950	3.50	72	3	0.61	53	0.781
50.0	51.530	3.50	76	4	0.60	54	0.775
62.5	64.010	3.40	80	5	0.59	55	0.768
75.0	76.490	3.40	82	6	0.59	55	0.768
87.5	89.350	3.60	81	7	0.62	57	0.787
100.0	102.110	3.50	82	8	0.61	57	0.781
112.5	115.040	3.60	84	9	0.61	58	0.781
125.0	128.490	3.90	86	10	0.66	57	0.812
137.5	141.690	3.90	88	11	0.66	57	0.812
150.0	154.560	3.80	90	12	0.64	60	0.800
162.5	167.490	3.60	86	13	0.62	63	0.787
175.0	179.950	3.30	82	14	0.57	64	0.755
187.5	193.200	3.90	78	15	0.69	66	0.831
200.0	205.670	3.30	75	16	0.59	66	0.768
212.5	217.930	3.30	72	17	0.59	67	0.768
225.0	230.410	3.30	75	18	0.59	67	0.768
237.5	242.640	3.30	76	19	0.58	67	0.762
250.0	255.977	3.80	77	20	0.67	66	0.819

Client:	**Eagle Foundry Company**	**Run:**	**3**
Source:	**Main Foundry BH Outlet - Steel Alloy**	**Date:**	**03/29/23**

Field Data Input Continued

Moisture Data			Stack Dimensional Data:		
Total Test Time	250.0	min	Circular		
Sample Time Interval	12.5	min	Diameter	61.000	in
Meter Volume, V_m	255.977	dcf	Rectangular		
Water Mass	42.1	g	Width		in
Nozzle Diameter, N_z	0.2630	in.	Length		in
Nozzle Area	0.000377	sq.ft.	Stack Area	20.295	sq.ft.
Traverse Data			Molecular Weight:		
Barometric Pressure, P_b	29.45	"Hg	CO_2 Average	0.08	%vd
Static Pressure	0.10	"H_2O	O_2 Average	20.98	%vd
Pitot Factor, cp	0.84				
Meter Cal Factor	1.0057	Y			

Field Data Averages

Meter			Stack		
ΔH	3.570	"H_2O	√Dp	0.787	"H_2O
Temperature, T_m	78.9	^oF	Temperature, T_s	59.6	^oF
Temperature, T_m	538.6	^oA (^oR)	Temperature, T_s	519.3	^oA (^oR)
Pressure Meter, P_m	29.713	"Hg	Pressure Stack, P_s	29.457	"Hg

Field Data Calculations

Meter Box Capture			EPA Method 2 Stack Gas Flowrate:		
Standard Volume, $V_{m(std)}$	250.481	dscf	Velocity, V_s	44.25	fps
	7.093	dscm	Flow Rate (actual), Q_{aw}	53,883	acfm
Actual Volume, $V_{m(actual)}$	252.361	awcf		53,457	adcfm
Gas Stream Moisture			Flow Rate (standard), Q	3,234,454	wscf/hr
Moisture Vapor, $Vw_{(std)}$	1.985	scf		3,208,902	dscf/hr
Moisture, B_{ws}	0.0079			53,482	dscf/min
Moisture EPA M4	0.79	%v		53,908	wscf/min
Moisture @ Saturation	1.75	%v (for T_s < 212°F)			
EPA Method 3 Gas Density					
Dry, M_d	28.85	lb/lb-mole			
Wet, M_s	28.76	lb/lb-mole			
Percent Isokinetic	100.8	%			

Eagle Foundry Company **Run: 1**
Main Foundry BH Outlet - Steel Alloy **Sample Date: 03/27/23**
Method 29 Laboratory Results

Analyte	Filter + FH Rinse Cont. 1&3			BH Cap.Soln. + BH Rinse Cont. 4			Units
	<	Result	MDL	<	Result	MDL	
Aluminum		99.0	7.50		20.4	3.60	µg/sample
Antimony		2.91	1.25	<	MDL	0.600	µg/sample
Arsenic		2.29	1.75	<	MDL	0.840	µg/sample
Barium		6.75	0.125		2.37	0.060	µg/sample
Beryllium	<	MDL	0.050	<	MDL	0.024	µg/sample
Cadmium	<	MDL	0.100		0.514	0.048	µg/sample
Chromium		4.97	0.200		0.481	0.096	µg/sample
Cobalt	<	MDL	0.125		0.067	0.060	µg/sample
Copper		4.18	1.25	<	MDL	0.600	µg/sample
Lead	<	MDL	1.25	<	MDL	0.600	µg/sample
Manganese		13.4	0.075		1.73	0.036	µg/sample
Nickel		10.4	0.750	<	MDL	0.360	µg/sample
Phosphorus		22.1	5.00	<	MDL	2.40	µg/sample
Selenium	<	MDL	3.75	<	MDL	1.80	µg/sample
Silver		0.608	0.500	<	MDL	0.240	µg/sample
Thallium	<	MDL	2.50	<	MDL	1.20	µg/sample
Vanadium	<	MDL	0.250	<	MDL	0.120	µg/sample
Zinc		12.0	0.750		6.09	0.360	µg/sample

Lab ID:	23-S699	23-S700	
Sample Vol:	250	236	ml

Eagle Foundry Company **Run: 2**
Main Foundry BH Outlet - Steel Alloy **Sample Date: 03/28/23**
Method 29 Laboratory Results

Analyte	Filter + FH Rinse Cont. 1&3			BH Cap.Soln. + BH Rinse Cont. 4			Units
	<	Result	MDL		Result	MDL	
Aluminum		87.8	7.50		20.0	3.45	µg/sample
Antimony		3.24	1.25	<	MDL	0.575	µg/sample
Arsenic		2.04	1.75	<	MDL	0.805	µg/sample
Barium		6.14	0.125		2.62	0.058	µg/sample
Beryllium	<	MDL	0.050	<	MDL	0.023	µg/sample
Cadmium	<	MDL	0.100		0.298	0.046	µg/sample
Chromium		4.11	0.200		0.333	0.092	µg/sample
Cobalt	<	MDL	0.125	<	MDL	0.058	µg/sample
Copper		3.74	1.25		1.31	0.575	µg/sample
Lead	<	MDL	1.25	<	MDL	0.575	µg/sample
Manganese		15.5	0.075		3.26	0.034	µg/sample
Nickel		12.4	0.750		0.946	0.345	µg/sample
Phosphorus		18.2	5.00	<	MDL	2.30	µg/sample
Selenium	<	MDL	3.75	<	MDL	1.72	µg/sample
Silver	<	MDL	0.500	<	MDL	0.230	µg/sample
Thallium	<	MDL	2.50	<	MDL	1.15	µg/sample
Vanadium	<	MDL	0.250	<	MDL	0.115	µg/sample
Zinc		7.35	0.750		3.69	0.345	µg/sample

Lab ID:	23-S704	23-S705	
Sample Vol:	250	300	ml

Eagle Foundry Company **Run: 3**
Main Foundry BH Outlet - Steel Alloy **Sample Date: 03/29/23**
Method 29 Laboratory Results

Analyte	Filter + FH Rinse Cont. 1&3			BH Cap.Soln. + BH Rinse Cont. 4			Units
	<	Result	MDL	<	Result	MDL	
Aluminum		84.5	7.50		18.5	3.45	µg/sample
Antimony		3.16	1.25	<	MDL	0.575	µg/sample
Arsenic		2.51	1.75	<	MDL	0.805	µg/sample
Barium		7.06	0.125		1.83	0.058	µg/sample
Beryllium	<	MDL	0.050	<	MDL	0.023	µg/sample
Cadmium	<	MDL	0.100		0.091	0.046	µg/sample
Chromium		2.75	0.200		0.328	0.092	µg/sample
Cobalt	<	MDL	0.125	<	MDL	0.058	µg/sample
Copper	<	MDL	1.25		1.22	0.575	µg/sample
Lead	<	MDL	1.25	<	MDL	0.575	µg/sample
Manganese		12.5	0.075		1.50	0.034	µg/sample
Nickel		5.35	0.750	<	MDL	0.345	µg/sample
Phosphorus		20.6	5.00	<	MDL	2.30	µg/sample
Selenium	<	MDL	3.75	<	MDL	1.72	µg/sample
Silver	<	MDL	0.500	<	MDL	0.230	µg/sample
Thallium	<	MDL	2.50	<	MDL	1.15	µg/sample
Vanadium	<	MDL	0.250	<	MDL	0.115	µg/sample
Zinc		8.84	0.750		1.35	0.345	µg/sample

Lab ID:	23-S709	23-S710	
Sample Vol:	250	299	ml

Eagle Foundry Company **Sample Dates: 3/27/2023**
Main Foundry BH Outlet - Steel Alloy **3/28/2023**
Method 29 Blank Results **3/29/2023**

Analyte	Filter Cont. 12 µg/filter		BH Cap.Soln. Cont. 9 5% HNO_3/ 10% H_2O_2 µg/sample		FH/BH Rinse Cont. 8A 0.1 N HNO_3 µg/sample	
	< Result	MDL	< Result	MDL	< Result	MDL
Aluminum	58.8	7.50	16.30	3.78	< MDL	7.50
Antimony	2.86	1.25	< MDL	0.630	< MDL	1.25
Arsenic	< MDL	1.75	< MDL	0.882	< MDL	1.75
Barium	1.40	0.125	0.718	0.063	0.193	0.125
Beryllium	< MDL	0.050	< MDL	0.025	< MDL	0.050
Cadmium	< MDL	0.100	< MDL	0.050	< MDL	0.100
Chromium	1.03	0.200	0.306	0.101	< MDL	0.200
Cobalt	< MDL	0.125	0.153	0.063	< MDL	0.125
Copper	< MDL	1.25	< MDL	0.630	< MDL	1.25
Lead	< MDL	1.25	< MDL	0.630	< MDL	1.25
Manganese	0.74	0.08	0.742	0.038	< MDL	0.375
Nickel	3.96	0.75	< MDL	0.378	< MDL	0.750
Phosphorus	17.0	5.00	< MDL	2.52	< MDL	5.00
Selenium	< MDL	3.75	< MDL	1.89	< MDL	3.75
Silver	< MDL	0.500	< MDL	0.252	< MDL	0.500
Thallium	< MDL	2.50	< MDL	1.26	< MDL	2.50
Vanadium	< MDL	0.250	< MDL	0.126	< MDL	0.250
Zinc	1.52	0.750	0.415	0.378	< MDL	0.750

Lab ID:	23-S729	23-S731	23-S730
Blank Vol, ml:	N/A	196	250

Eagle Foundry Company **Run: 1**
Main Foundry BH Outlet - Steel Alloy **Test Date: 3/27/2023**
Method 29 Non-Hg Metals Blank Correction Calculations **Page: 1 of 3**

Analyte		I Sample FH Rinse+Filter µg	II Blank Correction FH Rinse µg	III Blank Correction Filter µg		IV Sample BH Cap.Soln. + BH Rinse µg	V Blank BH Cap.Soln. µg/ml	VI Blank Correction BH Cap.Soln. µg	VII Blank Correction BH Rinse µg	VIII Total BH Blank Correction µg	
Aluminum		99.000	0.000	58.800		20.400	0.0832	16.633	0.000	16.633	Al
Antimony		2.910	0.000	2.860	<	0.600	0.0000	0.000	0.000	0.000	Sb
Arsenic		2.290	0.000	0.000	<	0.840	0.0000	0.000	0.000	0.000	As
Barium		6.750	0.077	1.400		2.370	0.0037	0.733	0.077	0.810	Ba
Beryllium	<	0.050	0.000	0.000	<	0.024	0.0000	0.000	0.000	0.000	Be
Cadmium	<	0.100	0.000	0.000		0.514	0.0000	0.000	0.000	0.000	Cd
Chromium		4.970	0.000	1.030		0.481	0.0016	0.312	0.000	0.312	Cr
Cobalt	<	0.125	0.000	0.000		0.067	0.0008	0.156	0.000	0.156	Co
Copper		4.180	0.000	0.000	<	0.600	0.0000	0.000	0.000	0.000	Cu
Lead	<	1.250	0.000	0.000	<	0.600	0.0000	0.000	0.000	0.000	Pb
Manganese		13.400	0.000	0.741		1.730	0.0038	0.757	0.000	0.757	Mn
Nickel		10.400	0.000	3.960	<	0.360	0.0000	0.000	0.000	0.000	Ni
Phosphorus		22.100	0.000	17.000	<	2.400	0.0000	0.000	0.000	0.000	P
Selenium	<	3.750	0.000	0.000	<	1.800	0.0000	0.000	0.000	0.000	Se
Silver		0.608	0.000	0.000	<	0.240	0.0000	0.000	0.000	0.000	Ag
Thallium	<	2.500	0.000	0.000	<	1.200	0.0000	0.000	0.000	0.000	Tl
Vanadium	<	0.250	0.000	0.000	<	0.120	0.0000	0.000	0.000	0.000	V
Zinc		12.000	0.000	1.520		6.090	0.0021	0.423	0.000	0.423	Zn

Lab ID:	**23-S699**	**23-S730**	**23-S729**	**23-S700**	**23-S731**	**N/A**	**N/A**
Notes:	0.1N HNO_3	0.1N HNO_3		5% HNO_3/10% H_2O_2	5% HNO_3/	5%HNO_3/	0.1NHNO_3
	FH Filter & Probe Rinse			BH Imps 1-3	10% H_2O_2	10%H_2O_2	
	100ml 0.1N HNO_3 Rinse			100ml .1N HNO_3 Rinse			
				200ml 5% HNO_3/10% H_2O_2 Reagent			

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company | **Run:** 1
Main Foundry BH Outlet - Steel Alloy | **Test Date:** 3/27/2023
Method 29 Non-Hg Metals Blank Correction Calculations | **Page:** 2 of 3

Analyte	X Allowable FH Blank Correction µg	XI Total FH Blank Correction µg		XII 5% of FH Sample µg	XIII Lessor of XI or XII µg	XIV Greater of A or XIII µg		XV FH Net Sample µg	
Aluminum	11.630	58.800		4.950	4.950	11.63		87.370	Al
Antimony	2.860	2.860		0.146	0.146	11.63		0.050	Sb
Arsenic	0.000	0.000		0.115	0.000	11.63		2.290	As
Barium	1.477	1.477		0.338	0.338	11.63		5.273	Ba
Beryllium	0.000	0.000	<	0.003	0.000	11.63	<	0.050	Be
Cadmium	0.000	0.000	<	0.005	0.000	11.63	<	0.100	Cd
Chromium	1.030	1.030		0.249	0.249	11.63		3.940	Cr
Cobalt	0.000	0.000	<	0.006	0.000	11.63	<	0.125	Co
Copper	0.000	0.000		0.209	0.000	11.63		4.180	Cu
Lead	0.000	0.000	<	0.063	0.000	11.63	<	1.250	Pb
Manganese	0.741	0.741		0.670	0.670	11.63		12.659	Mn
Nickel	3.960	3.960		0.520	0.520	11.63		6.440	Ni
Phosphorus	11.630	17.000		1.105	1.105	11.63		10.470	P
Selenium	0.000	0.000	<	0.188	0.000	11.63	<	3.750	Se
Silver	0.000	0.000		0.030	0.000	11.63		0.608	Ag
Thallium	0.000	0.000	<	0.125	0.000	11.63	<	2.500	Tl
Vanadium	0.000	0.000	<	0.013	0.000	11.63	<	0.250	V
Zinc	1.520	1.520		0.600	0.600	11.63		10.480	Zn

Note: Allowable FH Blank (A) = (area of filter)*(1.4 µg/in^2) = 11.63 µg
where area of filter = 8.306 in^2

If A > blank > 0, use blank-derived value, M_{fhb}.
If blank > A, use greater of A or [lessor of 5% of sample µg or FH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company | **Run:** 1
Main Foundry BH Outlet - Steel Alloy | **Test Date:** 3/27/2023
Method 29 Non-Hg Metals Blank Correction Calculations | **Page:** 3 of 3

Analyte	XVI Allowable BH Blank Correction µg	XVII Total BH Blank Correction µg		XVIII 5% of BH Sample µg	XIX Lessor of XVII or XVIII µg	XX Greater of 1 µg or XIX µg		XXI BH Net Sample µg		XXII FH Net Sample µg		XXIII FH+BH Total Net Sample µg	
Aluminum	1.020	16.633		1.020	1.020	1.020		**19.380**		**87.370**		**106.750**	Al
Antimony	0.000	0.000	<	0.030	0.000	1.000	<	**0.600**		**0.050**	<	**0.650**	Sb
Arsenic	0.000	0.000	<	0.042	0.000	1.000	<	**0.840**		**2.290**	<	**3.130**	As
Barium	0.810	0.810		0.119	0.119	1.000		**1.560**		**5.273**		**6.833**	Ba
Beryllium	0.000	0.000	<	0.001	0.000	1.000	<	**0.024**	**<**	**0.050**	<	**0.074**	Be
Cadmium	0.000	0.000		0.026	0.000	1.000		**0.514**	**<**	**0.100**	<	**0.614**	Cd
Chromium	0.312	0.312		0.024	0.024	1.000		**0.169**		**3.940**		**4.109**	Cr
Cobalt	0.156	0.156		0.003	0.003	1.000		**0.000**	**<**	**0.125**	<	**0.125**	Co
Copper	0.000	0.000	<	0.030	0.000	1.000	<	**0.600**		**4.180**	<	**4.780**	Cu
Lead	0.000	0.000	<	0.030	0.000	1.000	<	**0.600**	**<**	**1.250**	<	**1.850**	Pb
Manganese	0.757	0.757		0.087	0.087	1.000		**0.973**		**12.659**		**13.632**	Mn
Nickel	0.000	0.000	<	0.018	0.000	1.000	<	**0.360**		**6.440**	<	**6.800**	Ni
Phosphorus	0.000	0.000	<	0.120	0.000	1.000	<	**2.400**		**10.470**	<	**12.870**	P
Selenium	0.000	0.000	<	0.090	0.000	1.000	<	**1.800**	**<**	**3.750**	<	**5.550**	Se
Silver	0.000	0.000	<	0.012	0.000	1.000	<	**0.240**		**0.608**	<	**0.848**	Ag
Thallium	0.000	0.000	<	0.060	0.000	1.000	<	**1.200**	**<**	**2.500**	<	**3.700**	Tl
Vanadium	0.000	0.000	<	0.006	0.000	1.000	<	**0.120**	**<**	**0.250**	<	**0.370**	V
Zinc	0.423	0.423		0.305	0.305	1.000		**5.667**		**10.480**		**16.147**	Zn

Note: Allowable BH Blank rules:

If 1.00 µg > blank > 0 , use blank-derived value.
If blank > 1.00 µg, use greater of 1.00 µg or [lessor of 5% of sample µg or BH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company **Run: 2**
Main Foundry BH Outlet - Steel Alloy **Test Date: 3/28/2023**
Method 29 Non-Hg Metals Blank Correction Calculations **Page: 1 of 3**

Analyte		I Sample FH Rinse+Filter µg	II Blank FH Rinse µg	III Blank Filter µg		IV Sample BH Cap.Soln. µg	V Blank BH Cap.Soln. µg/ml	VI Blank Correction BH Cap.Soln. µg	VII Blank Correction BH Rinse µg	VIII Total BH Blank Correction µg	
Aluminum		87.800	0.000	58.800		20.000	0.0832	16.633	0.000	16.633	Al
Antimony		3.240	0.000	2.860	<	0.575	0.0000	0.000	0.000	0.000	Sb
Arsenic		2.040	0.000	0.000	<	0.805	0.0000	0.000	0.000	0.000	As
Barium		6.140	0.077	1.400		2.620	0.0037	0.733	0.077	0.810	Ba
Beryllium	<	0.050	0.000	0.000	<	0.023	0.0000	0.000	0.000	0.000	Be
Cadmium	<	0.100	0.000	0.000		0.298	0.0000	0.000	0.000	0.000	Cd
Chromium		4.110	0.000	1.030		0.333	0.0016	0.312	0.000	0.312	Cr
Cobalt	<	0.125	0.000	0.000	<	0.058	0.0008	0.156	0.000	0.156	Co
Copper		3.740	0.000	0.000		1.310	0.0000	0.000	0.000	0.000	Cu
Lead	<	1.250	0.000	0.000	<	0.575	0.0000	0.000	0.000	0.000	Pb
Manganese		15.500	0.000	0.741		3.260	0.0038	0.757	0.000	0.757	Mn
Nickel		12.400	0.000	3.960		0.946	0.0000	0.000	0.000	0.000	Ni
Phosphorus		18.200	0.000	17.000	<	2.300	0.0000	0.000	0.000	0.000	P
Selenium	<	3.750	0.000	0.000	<	1.720	0.0000	0.000	0.000	0.000	Se
Silver	<	0.500	0.000	0.000	<	0.230	0.0000	0.000	0.000	0.000	Ag
Thallium	<	2.500	0.000	0.000	<	1.150	0.0000	0.000	0.000	0.000	Tl
Vanadium	<	0.250	0.000	0.000	<	0.115	0.0000	0.000	0.000	0.000	V
Zinc		7.350	0.000	1.520		3.690	0.0021	0.423	0.000	0.423	Zn

Lab ID:	**23-S704**	**23-S730**	**23-S729**	**23-S705**	**23-S731**	**N/A**	**N/A**
Content:	0.1N HNO_3	0.1N HNO_3		5% HNO_3/10% H_2O_2	5% HNO_3/	5%HNO_3/	0.1NHNO_3
	FH Filter & Probe Rinse			BH Imps 1-3	10% H_2O_2	10%H_2O_2	
	100ml 0.1N HNO_3 Rinse			100ml .1N HNO_3 Rinse			
				200ml 5% HNO_3/10% H_2O_2 Reagent			

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Analyte	X Allowable FH Blank Correction µg	XI Total FH Blank Correction µg		XII 5% of FH Sample µg	XIII Lessor of XI or XII µg	XIV Greater of A or XIII µg		XV FH Net Sample µg	
Aluminum	11.630	58.800		4.390	4.390	11.63		76.170	Al
Antimony	2.860	2.860		0.162	0.162	11.63		0.380	Sb
Arsenic	0.000	0.000		0.102	0.000	11.63		2.040	As
Barium	1.477	1.477		0.307	0.307	11.63		4.663	Ba
Beryllium	0.000	0.000	<	0.003	0.000	11.63	<	0.050	Be
Cadmium	0.000	0.000	<	0.005	0.000	11.63	<	0.100	Cd
Chromium	1.030	1.030		0.206	0.206	11.63		3.080	Cr
Cobalt	0.000	0.000	<	0.006	0.000	11.63	<	0.125	Co
Copper	0.000	0.000		0.187	0.000	11.63		3.740	Cu
Lead	0.000	0.000	<	0.063	0.000	11.63	<	1.250	Pb
Manganese	0.741	0.741		0.775	0.741	11.63		14.759	Mn
Nickel	3.960	3.960		0.620	0.620	11.63		8.440	Ni
Phosphorus	11.630	17.000		0.910	0.910	11.63		6.570	P
Selenium	0.000	0.000	<	0.188	0.000	11.63	<	3.750	Se
Silver	0.000	0.000	<	0.025	0.000	11.63	<	0.500	Ag
Thallium	0.000	0.000	<	0.125	0.000	11.63	<	2.500	Tl
Vanadium	0.000	0.000	<	0.013	0.000	11.63	<	0.250	V
Zinc	1.520	1.520		0.368	0.368	11.63		5.830	Zn

Note: Allowable FH Blank (A) = (area of filter)*(1.4 µg/in^2) = 11.63 µg
where area of filter = 8.306 in^2

If A > blank > 0, use blank-derived value.
If blank > A, use greater of A or [lessor of 5% of sample µg or FH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company | **Run:** **2**
Main Foundry BH Outlet - Steel Alloy | **Test Date:** **3/28/2023**
Method 29 Non-Hg Metals Blank Correction Calculations | **Page:** **3 of 3**

Analyte	XVI Allowable BH Blank Correction µg	XVII Total BH Blank Correction µg		XVIII 5% of BH Sample µg	XIX Lessor of XVII or XVIII µg	XX Greater of 1 µg or XIX µg		XXI BH Net Sample µg		XXII FH Net Sample µg		XXIII FH+BH Total Net Sample µg	
Aluminum	1.000	16.633		1.000	1.000	1.000		**19.000**		**76.170**		**95.170**	Al
Antimony	0.000	0.000	<	0.029	0.000	1.000	<	**0.575**		**0.380**	<	**0.955**	Sb
Arsenic	0.000	0.000	<	0.040	0.000	1.000	<	**0.805**		**2.040**	<	**2.845**	As
Barium	0.810	0.810		0.131	0.131	1.000		**1.810**		**4.663**		**6.473**	Ba
Beryllium	0.000	0.000	<	0.001	0.000	1.000	<	**0.023**	<	**0.050**	<	**0.073**	Be
Cadmium	0.000	0.000		0.015	0.000	1.000		**0.298**	<	**0.100**	<	**0.398**	Cd
Chromium	0.312	0.312		0.017	0.017	1.000		**0.021**		**3.080**		**3.101**	Cr
Cobalt	0.156	0.156	<	0.003	0.156	1.000		**0.000**	<	**0.125**	<	**0.125**	Co
Copper	0.000	0.000		0.066	0.000	1.000		**1.310**		**3.740**		**5.050**	Cu
Lead	0.000	0.000	<	0.029	0.000	1.000	<	**0.575**	<	**1.250**	<	**1.825**	Pb
Manganese	0.757	0.757		0.163	0.163	1.000		**2.503**		**14.759**		**17.262**	Mn
Nickel	0.000	0.000		0.047	0.000	1.000		**0.946**		**8.440**		**9.386**	Ni
Phosphorus	0.000	0.000	<	0.115	0.000	1.000	<	**2.300**		**6.570**	<	**8.870**	P
Selenium	0.000	0.000	<	0.086	0.000	1.000	<	**1.720**	<	**3.750**	<	**5.470**	Se
Silver	0.000	0.000	<	0.012	0.000	1.000	<	**0.230**	<	**0.500**	<	**0.730**	Ag
Thallium	0.000	0.000	<	0.058	0.000	1.000	<	**1.150**	<	**2.500**	<	**3.650**	Tl
Vanadium	0.000	0.000	<	0.006	0.000	1.000	<	**0.115**	<	**0.250**	<	**0.365**	V
Zinc	0.423	0.423		0.185	0.185	1.000		**3.267**		**5.830**		**9.097**	Zn

Note: Allowable BH Blank rules:

If 1.00 µg > blank > 0 , use blank-derived value.
If blank > 1.00 µg, use greater of 1.00 µg or [lessor of 5% of sample µg or BH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company **Run: 3**
Main Foundry BH Outlet - Steel Alloy **Test Date: 3/29/2023**
Method 29 Non-Hg Metals Blank Correction Calculations **Page: 1 of 3**

Analyte		I Sample FH Rinse+Filter µg	II Blank Correction FH Rinse µg	III Blank Correction Filter µg		IV Sample BH Cap.Soln. + BH Rinse µg	V Blank BH Cap.Soln. µg/ml	VI Blank Correction BH Cap.Soln. µg	VII Blank Correction BH Rinse µg	VIII Total BH Blank Correction µg	
Aluminum		84.500	0.000	58.800		18.500	0.0832	16.633	0.000	16.633	Al
Antimony		3.160	0.000	2.860	<	0.575	0.0000	0.000	0.000	0.000	Sb
Arsenic		2.510	0.000	0.000	<	0.805	0.0000	0.000	0.000	0.000	As
Barium		7.060	0.077	1.400		1.830	0.0037	0.733	0.077	0.810	Ba
Beryllium	<	0.050	0.000	0.000	<	0.023	0.0000	0.000	0.000	0.000	Be
Cadmium	<	0.100	0.000	0.000		0.091	0.0000	0.000	0.000	0.000	Cd
Chromium		2.750	0.000	1.030		0.328	0.0016	0.312	0.000	0.312	Cr
Cobalt	<	0.125	0.000	0.000	<	0.058	0.0008	0.156	0.000	0.156	Co
Copper	<	1.250	0.000	0.000		1.220	0.0000	0.000	0.000	0.000	Cu
Lead	<	1.250	0.000	0.000	<	0.575	0.0000	0.000	0.000	0.000	Pb
Manganese		12.500	0.000	0.741		1.500	0.0038	0.757	0.000	0.757	Mn
Nickel		5.350	0.000	3.960	<	0.345	0.0000	0.000	0.000	0.000	Ni
Phosphorus		20.600	0.000	17.000	<	2.300	0.0000	0.000	0.000	0.000	P
Selenium	<	3.750	0.000	0.000	<	1.720	0.0000	0.000	0.000	0.000	Se
Silver	<	0.500	0.000	0.000	<	0.230	0.0000	0.000	0.000	0.000	Ag
Thallium	<	2.500	0.000	0.000	<	1.150	0.0000	0.000	0.000	0.000	Tl
Vanadium	<	0.250	0.000	0.000	<	0.115	0.0000	0.000	0.000	0.000	V
Zinc		8.840	0.000	1.520		1.350	0.0021	0.423	0.000	0.423	Zn

Lab ID:	**23-S709**	**23-S730**	**23-S729**	**23-S710**	**23-S731**	**N/A**	**N/A**
Content:	0.1N HNO_3	0.1N HNO_3		5% HNO_3/10% H_2O_2	5% HNO_3/	5%HNO_3/	0.1NHNO_3
	FH Filter & Probe Rinse			BH Imps 1-3	10% H_2O_2	10%H_2O_2	
	100ml 0.1N HNO_3 Rinse			100ml .1N HNO_3 Rinse			
				200ml 5% HNO_3/10% H_2O_2 Reagent			

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Analyte	X Allowable FH Blank Correction µg	XI Total FH Blank Correction µg		XII 5% of FH Sample µg	XIII Lessor of XI or XII µg	XIV Greater of A or XIII µg		XV FH Net Sample µg	
Aluminum	11.630	58.800		4.225	4.225	11.63		72.870	Al
Antimony	2.860	2.860		0.158	0.158	11.63		0.300	Sb
Arsenic	0.000	0.000		0.126	0.000	11.63		2.510	As
Barium	1.477	1.477		0.353	0.353	11.63		5.583	Ba
Beryllium	0.000	0.000	<	0.003	0.000	11.63	<	0.050	Be
Cadmium	0.000	0.000	<	0.005	0.000	11.63	<	0.100	Cd
Chromium	1.030	1.030		0.138	0.138	11.63		1.720	Cr
Cobalt	0.000	0.000	<	0.006	0.000	11.63	<	0.125	Co
Copper	0.000	0.000	<	0.063	0.000	11.63	<	1.250	Cu
Lead	0.000	0.000	<	0.063	0.000	11.63	<	1.250	Pb
Manganese	0.741	0.741		0.625	0.625	11.63		11.759	Mn
Nickel	3.960	3.960		0.268	0.268	11.63		1.390	Ni
Phosphorus	11.630	17.000		1.030	1.030	11.63		8.970	P
Selenium	0.000	0.000	<	0.188	0.000	11.63	<	3.750	Se
Silver	0.000	0.000	<	0.025	0.000	11.63	<	0.500	Ag
Thallium	0.000	0.000	<	0.125	0.000	11.63	<	2.500	Tl
Vanadium	0.000	0.000	<	0.013	0.000	11.63	<	0.250	V
Zinc	1.520	1.520		0.442	0.442	11.63		7.320	Zn

Note: Allowable FH Blank (A) = (area of filter)*(1.4 µg/in^2) = 11.63 µg
where area of filter = 8.306 in^2

If A > blank > 0, use blank-derived value.
If blank > A, use greater of A or [lessor of 5% of sample µg or FH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company | **Run:** 3
Main Foundry BH Outlet - Steel Alloy | **Test Date:** 3/29/2023
Method 29 Non-Hg Metals Blank Correction Calculations | **Page:** 3 of 3

Analyte	XVI Allowable BH Blank Correction µg	XVII Total BH Blank Correction µg		XVIII 5% of BH Sample µg	XIX Lessor of XVII or XVIII µg	XX Greater of 1 µg or XIX µg		XXI BH Net Sample µg		XXII FH Net Sample µg		XXIII FH+BH Total Net Sample µg	
Aluminum	1.000	16.633		0.925	0.925	1.000		**17.500**		**72.870**		**90.370**	Al
Antimony	0.000	0.000	<	0.029	0.000	1.000	<	**0.575**		**0.300**	<	**0.875**	Sb
Arsenic	0.000	0.000	<	0.040	0.000	1.000	<	**0.805**		**2.510**	<	**3.315**	As
Barium	0.810	0.810		0.092	0.092	1.000		**1.020**		**5.583**		**6.603**	Ba
Beryllium	0.000	0.000	<	0.001	0.000	1.000	<	**0.023**	<	**0.050**	<	**0.073**	Be
Cadmium	0.000	0.000		0.005	0.000	1.000		**0.091**	<	**0.100**	<	**0.191**	Cd
Chromium	0.312	0.312		0.016	0.016	1.000		**0.016**		**1.720**		**1.736**	Cr
Cobalt	0.156	0.156	<	0.003	0.156	1.000		**0.000**	<	**0.125**	<	**0.125**	Co
Copper	0.000	0.000		0.061	0.000	1.000		**1.220**	<	**1.250**	<	**2.470**	Cu
Lead	0.000	0.000	<	0.029	0.000	1.000	<	**0.575**	<	**1.250**	<	**1.825**	Pb
Manganese	0.757	0.757		0.075	0.075	1.000		**0.743**		**11.759**		**12.502**	Mn
Nickel	0.000	0.000	<	0.017	0.000	1.000	<	**0.345**		**1.390**	<	**1.735**	Ni
Phosphorus	0.000	0.000	<	0.115	0.000	1.000	<	**2.300**		**8.970**	<	**11.270**	P
Selenium	0.000	0.000	<	0.086	0.000	1.000	<	**1.720**	<	**3.750**	<	**5.470**	Se
Silver	0.000	0.000	<	0.012	0.000	1.000	<	**0.230**	<	**0.500**	<	**0.730**	Ag
Thallium	0.000	0.000	<	0.058	0.000	1.000	<	**1.150**	<	**2.500**	<	**3.650**	Tl
Vanadium	0.000	0.000	<	0.006	0.000	1.000	<	**0.115**	<	**0.250**	<	**0.365**	V
Zinc	0.423	0.423		0.068	0.068	1.000		**0.927**		**7.320**		**8.247**	Zn

Note: Allowable BH Blank rules:

If 1.00 µg > blank > 0 , use blank-derived value.
If blank > 1.00 µg, use greater of 1.00 µg or [lessor of 5% of sample µg or BH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company
Main Foundry BH Outlet - Steel Alloy
Mercury Blank Correction Calculations

Blank Lab Values

	Filter Cont. 12 µg/filter		BH Imps. 2&3 Cap.Soln. Cont. 9 5% HNO_3/ 10% H_2O_2 µg/sample		FH/BH Rinse Cont. 8A 0.1 N HNO_3 µg/sample		BH Imps. 5&6 Rinse Cont. 8B H_2O µg/sample		BH Imps. 5&6 Cap.Soln. + Rinse Cont. 10 $KMnO_4$ µg/sample		BH Imps. 5&6 Rinse Cont. 11 HCl µg/sample	
Analyte	< **Result**	**MDL**	< **Result**	**MDL**	< **Result**	**MDL**	< **Result**	**MDL**	< **Result**	**MDL**	< **Result**	**MDL**
Mercury	0.0406	0.0219	0.118	0.0172	< MDL	0.0219	< MDL	0.0295	0.0628	0.0163	< MDL	0.0108
Lab ID:	23-S729		23-S731		23-S730		23-S732		23-S733		23-S734	
Blank vol, ml:	NA		196		250		337		186		124	

Blank Correction Values

Analyte: Mercury	**Blank FH HNO_3 Rinse µg**	**Blank Filter µg**	**Blank BH Cap.Soln. µg**	**Blank BH HNO_3 Rinse µg**	**Blank BH H_2O Rinse µg**	**Blank BH KMnO4 Cap.Soln. + Rinse µg**	**Blank BH HCl Rinse µg**	**Total Blank Correction µg**	**Is Total Blank Correction ≥ 0 and ≤ 0.6?**
Run 1	0.00	0.0406	0.12	0.00	0.00	0.10	0.00	0.2623	Yes
Reagent vol, ml	100.0		200.0	200.0	100.0	300.0	225.0		
Run 2	0.00	0.0406	0.12	0.00	0.00	0.10	0.00	0.2623	Yes
Reagent vol, ml	100.0		200.0	200.0	100.0	300.0	225.0		
Run 3	0.00	0.0406	0.12	0.00	0.00	0.10	0.00	0.2623	Yes
Reagent vol, ml	100.0		200.0	200.0	100.0	300.0	225.0		
Notes:	0.1N HNO_3 FH Probe Rinse	FH Filter	5% HNO_3/ 10% H_2O_2 BH Imps 2&3	0.1N HNO_3 BH Imps 1-4	H_2O BH Imps 5&6	4% $KMnO_4$/ 10% H_2SO_4 BH Imps 5&6	25 ml 8N HCl/ 200 ml H2O BH Imps 5&6		

Blank Corrected Results

Analyte: Mercury	**Sample FH Rinse + Filter Cont. 1&3 µg**	**Sample BH Cap.Soln. + HNO_3 Rinse Cont. 4 µg**	**Sample BH Imp. 4 + Rinse Cont. 5A µg**	**Sample BH Imps. 5&6 + Rinses Cont. 5B µg**	**Sample BH HCl Rinse + Water Cont. 5C µg**	**Total Sample µg**	**Total Blank Correction µg**	**Total Net Sample µg**
Run 1	< 0.0219	0.183	< 0.00910	0.215	< 0.0203	< 0.4493	0.2623	< 0.1870
Lab ID	23-S699	23-S700	23-S701	23-S702	23-S703			
Run 2	< 0.0219	0.244	< 0.00827	0.231	< 0.0201	< 0.5253	0.2623	< 0.2630
Lab ID	23-S704	23-S705	23-S706	23-S707	23-S708			
Run 3	< 0.0219	0.183	< 0.00838	0.223	< 0.0196	< 0.4559	0.2623	< 0.1936
Lab ID	23-S709	23-S710	23-S711	23-S712	23-S713			

Blank Rules: '<' indicates value is below the method detection limit (MDL)
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations but results are preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.
If the total blank correction value is less than or equal to 0.6 µg, subtract the total blank correction value from the total sample value to determine total net Hg. Otherwise, the value used for the blank correction shall be the greater of (1) 0.6 µg or (2) the lesser of [total FH blank + total BH blank] or 5% of the total sample valu

EPA Method 29
Gas Stream Characteristics
Test Summary

Client: **Eagle Foundry Company**
Source: **Main Foundry BH Outlet - Steel Alloy**
Location: **Eagle Creek, OR**

Parameter	Units	Run 1	Run 2	Run 3	
Date		3/27/2023	3/28/2023	3/29/2023	
Run Start Time		13:00	10:30	10:35	
Run End Time		17:10	14:40	14:45	
Duration	minutes	250	250	250	**Average**
Barometric Pressure	inHg	29.79	29.38	29.45	**29.54**
Nozzle Diameter	inches	0.263	0.263	0.263	**0.263**
Isokinetic Average	%	99.9	100.2	100.8	**100.3**
Sample Volume	dscf	254.576	256.756	250.481	**253.938**
Sample Volume	dscm	7.209	7.271	7.093	**7.191**
Stack Diameter	inches	61.00	61.00	61.00	**61.00**
Stack Area	ft^2	20.295	20.295	20.295	**20.295**
CO_2	%vd	0.26	0.08	0.08	**0.14**
O_2	%vd	20.99	20.93	20.98	**20.97**
Static Pressure	inH_2O	0.10	0.10	0.10	**0.10**
H_2O	%v	0.40	0.90	0.79	**0.70**
Wet Molecular Weight	lb/lb-mole	28.84	28.75	28.76	**28.78**
Velocity	fps	44.95	45.63	44.25	**44.94**
Flow Rate	adcfm	54,517	55,064	53,457	**54,346**
	acfm	54,736	55,564	53,883	**54,728**
	dscfm	54,854	55,159	53,482	**54,498**
Stack Temperature	°F	62.6	57.7	59.6	**60.0**
Production Data	lb melt/pour	12,201.579	12,201.119	12,077.535	
	ton melt/pour	6.101	6.101	6.039	
	lb Cr/melt	209.764	201.394	201.494	
	ton Cr/melt	0.105	0.101	0.101	
	lb Mn/melt	834.059	834.082	822.739	
	ton Mn/melt	0.417	0.417	0.411	
	lb Ni/melt	74.327	70.459	69.572	
	ton Ni/melt	0.037	0.035	0.035	

Eagle Foundry Company **Test Dates:** 3/27/2023
Main Foundry BH Outlet - Steel Alloy 3/28/2023
EPA Method 29 Results Summary 3/29/2023

Run 1

Analyte	Total				FH Net			BH Net			
	µg	µg/dscm	lb/hr	lb/ton melt	µg	µg/dscm	lb/hr	µg	µg/dscm	lb/hr	
Aluminum	106.750	14.808	3.04E-03	2.08E-03	87.370	12.120	2.49E-03	19.380	2.688	5.52E-04	Al
Antimony	< 0.650	< 0.090	< 1.85E-05	< 1.27E-05	0.050	0.007	1.43E-06	< 0.600	< 0.083	< 1.71E-05	Sb
Arsenic	< 3.130	< 0.434	< 8.92E-05	< 6.09E-05	2.290	0.318	6.53E-05	< 0.840	< 0.117	< 2.39E-05	As
Barium	6.833	0.948	1.95E-04	1.33E-04	5.273	0.731	1.50E-04	1.560	0.216	4.45E-05	Ba
Beryllium	< 0.074	< 0.010	< 2.11E-06	< 1.44E-06	< 0.050	< 0.007	< 1.43E-06	< 0.024	< 0.003	< 6.84E-07	Be
Cadmium	< 0.614	< 0.085	< 1.75E-05	< 1.20E-05	< 0.100	< 0.014	< 2.85E-06	0.514	0.071	1.47E-05	Cd
Chromium	4.109	0.570	1.17E-04		3.940	0.547	1.12E-04	0.169	0.023	4.82E-06	Cr
Cobalt	< 0.125	< 0.017	< 3.56E-06	< 2.43E-06	< 0.125	< 0.017	< 3.56E-06	0.000	0.000	0.00E+00	Co
Copper	< 4.780	< 0.663	< 1.36E-04	< 9.30E-05	4.180	0.580	1.19E-04	< 0.600	< 0.083	< 1.71E-05	Cu
Lead	< 1.850	< 0.257	< 5.27E-05	< 3.60E-05	< 1.250	< 0.173	< 3.56E-05	< 0.600	< 0.083	< 1.71E-05	Pb
Manganese	13.632	1.891	3.89E-04		12.659	1.756	3.61E-04	0.973	0.135	2.77E-05	Mn
Mercury	< 0.187	< 0.026	< 5.33E-06	< 3.64E-06							Hg
Nickel	< 6.800	< 0.943	< 1.94E-04		6.440	0.893	1.84E-04	< 0.360	< 0.050	< 1.03E-05	Ni
Phosphorus	< 12.870	< 1.785	< 3.67E-04	< 2.51E-04	10.470	1.452	2.98E-04	< 2.400	< 0.333	< 6.84E-05	P
Selenium	< 5.550	< 0.770	< 1.58E-04	< 1.08E-04	< 3.750	< 0.520	< 1.07E-04	< 1.800	< 0.250	< 5.13E-05	Se
Silver	< 0.848	< 0.118	< 2.42E-05	< 1.65E-05	0.608	0.084	1.73E-05	< 0.240	< 0.033	< 6.84E-06	Ag
Thallium	< 3.700	< 0.513	< 1.05E-04	< 7.20E-05	< 2.500	< 0.347	< 7.13E-05	< 1.200	< 0.166	< 3.42E-05	Tl
Vanadium	< 0.370	< 0.051	< 1.05E-05	< 7.20E-06	< 0.250	< 0.035	< 7.13E-06	< 0.120	< 0.017	< 3.42E-06	V
Zinc	16.147	2.240	4.60E-04	3.14E-04	10.480	1.454	2.99E-04	5.667	0.786	1.62E-04	Zn

Chromium	lb Cr / ton Cr in melt =		4.65E-03
Manganese	lb Mn / ton Mn in melt =		3.88E-03
Nickel	lb Ni / ton Ni in melt =	<	2.17E-02

Run 1 Emission Factors

Run 2

Analyte	Total				FH Net			BH Net			
	µg	µg/dscm	lb/hr	lb/ton melt	µg	µg/dscm	lb/hr	µg	µg/dscm	lb/hr	
Aluminum	95.170	13.089	2.70E-03	1.85E-03	76.170	10.476	2.16E-03	19.000	2.613	5.40E-04	Al
Antimony	< 0.955	< 0.131	< 2.71E-05	< 1.85E-05	0.380	0.052	1.08E-05	< 0.575	< 0.079	< 1.63E-05	Sb
Arsenic	< 2.845	< 0.391	< 8.08E-05	< 5.52E-05	2.040	0.281	5.80E-05	< 0.805	< 0.111	< 2.29E-05	As
Barium	6.473	0.890	1.84E-04	1.26E-04	4.663	0.641	1.32E-04	1.810	0.249	5.14E-05	Ba
Beryllium	< 0.073	< 0.010	< 2.07E-06	< 1.42E-06	< 0.050	< 0.007	< 1.42E-06	< 0.023	< 0.003	< 6.54E-07	Be
Cadmium	< 0.398	< 0.055	< 1.13E-05	< 7.72E-06	< 0.100	< 0.014	< 2.84E-06	0.298	0.041	8.47E-06	Cd
Chromium	3.101	0.426	8.81E-05		3.080	0.424	8.75E-05	0.021	0.003	5.97E-07	Cr
Cobalt	< 0.125	< 0.017	< 3.55E-06	< 2.43E-06	< 0.125	< 0.017	< 3.55E-06	0.000	0.000	0.00E+00	Co
Copper	5.050	0.695	1.43E-04	9.80E-05	3.740	0.514	1.06E-04	1.310	0.180	3.72E-05	Cu
Lead	< 1.825	< 0.251	< 5.19E-05	< 3.54E-05	< 1.250	< 0.172	< 3.55E-05	< 0.575	< 0.079	< 1.63E-05	Pb
Manganese	17.262	2.374	4.91E-04		14.759	2.030	4.19E-04	2.503	0.344	7.11E-05	Mn
Mercury	< 0.263	< 0.036	< 7.47E-06	< 5.10E-06							Hg
Nickel	9.386	1.291	2.67E-04		8.440	1.161	2.40E-04	0.946	0.130	2.69E-05	Ni
Phosphorus	< 8.870	< 1.220	< 2.52E-04	< 1.72E-04	6.570	0.904	1.87E-04	< 2.300	< 0.316	< 6.54E-05	P
Selenium	< 5.470	< 0.752	< 1.55E-04	< 1.06E-04	< 3.750	< 0.516	< 1.07E-04	< 1.720	< 0.237	< 4.89E-05	Se
Silver	< 0.730	< 0.100	< 2.07E-05	< 1.42E-05	< 0.500	< 0.069	< 1.42E-05	< 0.230	< 0.032	< 6.54E-06	Ag
Thallium	< 3.650	< 0.502	< 1.04E-04	< 7.08E-05	< 2.500	< 0.344	< 7.10E-05	< 1.150	< 0.158	< 3.27E-05	Tl
Vanadium	< 0.365	< 0.050	< 1.04E-05	< 7.08E-06	< 0.250	< 0.034	< 7.10E-06	< 0.115	< 0.016	< 3.27E-06	V
Zinc	9.097	1.251	2.58E-04	1.77E-04	5.830	0.802	1.66E-04	3.267	0.449	9.28E-05	Zn

Chromium	lb Cr / ton Cr in melt =		3.65E-03
Manganese	lb Mn / ton Mn in melt =		4.90E-03
Nickel	lb Ni / ton Ni in melt =		3.15E-02

Run 2 Emission Factors

Note: Results for Hg front half and back half fractions are not shown because these values are not blank-corrected. Per EPA Method 29, only the sum of Hg front and back half results is subject to blank correction.
'<' denotes results which were calculated using the method detection limit for front half or back half results that were non-detect.

Eagle Foundry Company
Main Foundry BH Outlet - Steel Alloy
EPA Method 29 Results Summary

Test Dates: 3/27/2023
3/28/2023
3/29/2023

Run 3													
Analyte	**Total**				**FH Net**			**BH Net**					
	µg	**µg/dscm**	**lb/hr**	**lb/ton melt**	**µg**	**µg/dscm**	**lb/hr**	**µg**	**µg/dscm**	**lb/hr**			
Aluminum	90.370	12.741	2.55E-03	1.76E-03	72.870	10.274	2.06E-03	17.500	2.467	4.94E-04	Al		
Antimony	< 0.875	< 0.123	< 2.47E-05	< 1.71E-05	0.300	0.042	8.47E-06	< 0.575	< 0.081	< 1.62E-05	Sb		
Arsenic	< 3.315	< 0.467	< 9.36E-05	< 6.46E-05	2.510	0.354	7.09E-05	< 0.805	< 0.113	< 2.27E-05	As		
Barium	6.603	0.931	1.86E-04	1.29E-04	5.583	0.787	1.58E-04	1.020	0.144	2.88E-05	Ba		
Beryllium	< 0.073	< 0.010	< 2.06E-06	< 1.42E-06	< 0.050	< 0.007	< 1.41E-06	< 0.023	< 0.003	< 6.50E-07	Be		
Cadmium	< 0.191	< 0.027	< 5.39E-06	< 3.72E-06	< 0.100	< 0.014	< 2.82E-06	0.091	0.013	2.57E-06	Cd		
Chromium	1.736	0.245	4.90E-05		1.720	0.242	4.86E-05	0.016	0.002	4.52E-07	Cr		
Cobalt	< 0.125	< 0.018	< 3.53E-06	< 2.44E-06	< 0.125	< 0.018	< 3.53E-06	0.000	0.000	0.00E+00	Co		
Copper	< 2.470	< 0.348	< 6.98E-05	< 4.81E-05	< 1.250	< 0.176	< 3.53E-05	1.220	0.172	3.45E-05	Cu		
Lead	< 1.825	< 0.257	< 5.15E-05	< 3.56E-05	< 1.250	< 0.176	< 3.53E-05	< 0.575	< 0.081	< 1.62E-05	Pb		
Manganese	12.502	1.763	3.53E-04		11.759	1.658	3.32E-04	0.743	0.105	2.10E-05	Mn		
Mercury	< 0.194	< 0.027	< 5.47E-06	< 3.77E-06							Hg		
Nickel	< 1.735	< 0.245	< 4.90E-05		1.390	0.196	3.93E-05	< 0.345	< 0.049	< 9.74E-06	Ni		
Phosphorus	< 11.270	< 1.589	< 3.18E-04	< 2.20E-04	8.970	1.265	2.53E-04	< 2.300	< 0.324	< 6.50E-05	P		
Selenium	< 5.470	< 0.771	< 1.54E-04	< 1.07E-04	< 3.750	< 0.529	< 1.06E-04	< 1.720	< 0.242	< 4.86E-05	Se		
Silver	< 0.730	< 0.103	< 2.06E-05	< 1.42E-05	< 0.500	< 0.070	< 1.41E-05	< 0.230	< 0.032	< 6.50E-06	Ag		
Thallium	< 3.650	< 0.515	< 1.03E-04	< 7.11E-05	< 2.500	< 0.352	< 7.06E-05	< 1.150	< 0.162	< 3.25E-05	Tl		
Vanadium	< 0.365	< 0.051	< 1.03E-05	< 7.11E-06	< 0.250	< 0.035	< 7.06E-06	< 0.115	< 0.016	< 3.25E-06	V		
Zinc	8.247	1.163	2.33E-04	1.61E-04	7.320	1.032	2.07E-04	0.927	0.131	2.62E-05	Zn		

Chromium	lb Cr / ton Cr in melt =	2.03E-03
Manganese	lb Mn / ton Mn in melt =	3.58E-03
Nickel	lb Ni / ton Ni in melt = <	5.87E-03

Run 3 Emission Factors

Mean Runs 1-3													
Analyte	**Total**				**FH Net**			**BH Net**					
	µg	**µg/dscm**	**lb/hr****	**lb/ton melt**	**µg**	**µg/dscm**	**lb/hr**	**µg**	**µg/dscm**	**lb/hr**			
Aluminum	97.430	13.546	2.77E-03	1.90E-03	78.803	10.956	2.24E-03	18.627	2.590	5.29E-04			
Antimony	< 0.827	< 0.115	< 2.35E-05	< 1.61E-05	0.243	0.034	6.90E-06	< 0.583	< 0.081	< 1.66E-05	Sb		
Arsenic	< 3.097	< 0.431	< 8.79E-05	< 6.02E-05	2.280	0.317	6.47E-05	< 0.817	< 0.114	< 2.32E-05	As		
Barium	6.636	0.923	1.88E-04	1.29E-04	5.173	0.720	1.47E-04	1.463	0.203	4.16E-05	Ba		
Beryllium	< 0.073	< 0.010	< 2.08E-06	< 1.43E-06	< 0.050	< 0.007	< 1.42E-06	< 0.023	< 0.003	< 6.63E-07	Be		
Cadmium	< 0.401	< 0.056	< 1.14E-05	< 7.80E-06	< 0.100	< 0.014	< 2.84E-06	0.301	0.042	8.56E-06	Cd		
Chromium	2.982	0.414	8.48E-05		2.913	0.404	8.28E-05	0.069	0.010	1.96E-06	Cr		
Cobalt	< 0.125	< 0.017	< 3.55E-06	< 2.43E-06	< 0.125	< 0.017	< 3.55E-06	0.000	0.000	0.00E+00	Co		
Copper	< 4.100	< 0.569	< 1.16E-04	< 7.97E-05	< 3.057	< 0.423	< 8.69E-05	< 1.043	< 0.145	< 2.96E-05	Cu		
Lead	< 1.833	< 0.255	< 5.20E-05	< 3.57E-05	< 1.250	< 0.174	< 3.55E-05	< 0.583	< 0.081	< 1.66E-05	Pb		
Manganese	14.465	2.009	4.11E-04		13.059	1.815	3.71E-04	1.406	0.195	3.99E-05	Mn		
Mercury	< 0.215	< 0.030	< 6.09E-06	< 4.17E-06							Hg		
Nickel	< 5.974	< 0.826	< 1.70E-04		5.423	0.750	1.54E-04	< 0.550	< 0.076	< 1.56E-05	Ni		
Phosphorus	< 11.003	< 1.531	< 3.12E-04	< 2.14E-04	8.670	1.207	2.46E-04	< 2.333	< 0.325	< 6.62E-05	P		
Selenium	< 5.497	< 0.764	< 1.56E-04	< 1.07E-04	< 3.750	< 0.522	< 1.06E-04	< 1.747	< 0.243	< 4.96E-05	Se		
Silver	< 0.769	< 0.107	< 2.18E-05	< 1.50E-05	< 0.536	< 0.075	< 1.52E-05	< 0.233	< 0.032	< 6.62E-06	Ag		
Thallium	< 3.667	< 0.510	< 1.04E-04	< 7.13E-05	< 2.500	< 0.348	< 7.10E-05	< 1.167	< 0.162	< 3.31E-05	Tl		
Vanadium	< 0.367	< 0.051	< 1.04E-05	< 7.13E-06	< 0.250	< 0.035	< 7.10E-06	< 0.117	< 0.016	< 3.31E-06	V		
Zinc	11.164	1.551	3.17E-04	2.17E-04	7.877	1.096	2.24E-04	3.287	0.455	9.35E-05	Zn		

Chromium	lb Cr / ton Cr in melt =	3.44E-03
Manganese	lb Mn / ton Mn in melt =	4.12E-03
Nickel	lb Ni / ton Ni in melt = <	1.97E-02

Mean Runs 1-3

Note: Results for Hg front half and back half fractions are not shown because these values are not blank-corrected. Per EPA Method 29, only the sum of Hg front and back half results is subject to blank correction.
'<' denotes results which were calculated using the method detection limit for front half or back half results that were non-detect.

EPA Methods 1-4, 29
Example Calculations

Client:	**Eagle Foundry Company**	**Run:**	**1**
Location:	**Eagle Creek, OR**	**Start Time:**	**13:00**
Source:	**Main Foundry BH Outlet - Steel Alloy**	**End Time:**	**17:10**
Method:	**29**	**Date:**	**3/27/2023**

EPA Methods 1-4:

1) $P_m = Pb + (\Delta H/13.6) =$ 30.062 "Hg

where P_b: 29.79 "Hg
ΔH: 3.695 "H_2O

2) $Ps = Pb + (Static\ Press./13.6) =$ 29.797 "Hg

where P_b: 29.79 "Hg
Static Pressure: 0.10 "H_2O

3) $V_m(std) = V_m(527.67/29.92)(Y)\left(\frac{Pm}{Tm}\right) =$ 254.576 dscf

where V_m: 262.394 dcf
Y: 1.0057
P_m: 30.062 "Hg
T_m: 549.6 °A

4) $V_{w(std)} = V_{H20}\left(\frac{\rho w * R * Tstd}{Pstd * Mw}\right) =$ 1.019 scf

where H_2O: 21.60 g
ρ_w: 2.2046E-03 lb/mol
R: 21.85 "Hg ft^3/lb-mol °R
T_{std}: 527.67 °R
P_{std}: 29.92 "Hg
M_w: 18.015 lb/lb-mol

5) $Bws = \left(\frac{Vw(std)}{Vw(std)+Vm(std)}\right) =$ 0.0040

where $V_{w(std)}$: 1.019 scf
$V_{m(std)}$: 254.576 dscf

6) % $H_2O = B_{ws}$ x 100 = 0.40 %v

(Y x Vm) (Ts) (Pm)

EPA Methods 1-4, 29
Example Calculations

7) $V_m(\text{actual}) = \left(\frac{Y \times Vm}{(1-Bws)}\right)\left(\frac{Ts}{Tm}\right)\left(\frac{Pm}{Ps}\right) =$ 254.027 awcf

where Y:	1.0057	
V_m:	262.3939	dcf
B_{ws}:	0.0040	
T_s:	522.3	°A
T_m:	549.6	°A
P_m:	30.062	"Hg
P_s:	29.797	"Hg

8) $M_d = 0.44(CO_2) + 0.32(O_2) + 0.28(N_2 + CO) =$ 28.88 lb/lb-mole

where CO_2:	0.26	%vd
O_2	20.99	%vd
N_2+CO= (100-(O_2+CO_2):	78.75	%vd

9) $M_s = M_d(1 - B_{ws}) + (18 \times B_{ws}) =$ 28.84 lb/lb-mole

where M_d:	28.88	lb/lb-mole
B_{ws}:	0.0040	

10) $\text{Stack Area(cir.)} = \pi\ (\text{stack diameter}/24)^2 =$ 20.295 sq. ft.

where Stack ID:	61	inches

11) $\text{Velocity, } V_s = 85.49(Cp)(\text{Ave. Sqrt } \Delta P)\left(\sqrt{\frac{Ts}{(Ps \times Ms)}}\right) =$ 44.95 fps

where Cp:	0.84	
Ave. Sqrt ΔP:	0.803	
T_s:	522.3	°A
P_s:	29.797	"Hg
M_s:	28.84	lb/lb-mole

12) $\text{acfm} = (V_s)(\text{stack area})(60\ \text{sec/min}) =$ 54,736 acfm

where V_s:	44.95	ft/sec
Stack Area:	20.295	sq. ft

EPA Methods 1-4, 29
Example Calculations

13) adcfm= (acfm)(1-B_{ws}) = 54,517 adcfm

where acfm: 54,736
B_{ws}: 0.0040

14) $Qsw = 3600(V_s)(\text{stack area})\left(\frac{527.67°R}{Ts}\right)\left(\frac{Ps}{29.92\ "Hg}\right)$ = 3,304,453 wscf/hr

where V_s: 44.95 ft/sec
Stack Area: 20.2950 sq. ft.
T_s: 522.3 °A
P_s: 29.797 "Hg

15) Qsd = (wscf/hr)(1-B_{ws}) = 3,291,235 dscf/hr

where wscf/hr: 3,304,453
B_{ws} 0.0040

16) dscfm = (dscf/hr)/60 mins/hr = 54,854 dscfm

where dscf/hr: 3,291,235

17) Nozzle Area = 3.1416 (Nozzle Size/24)^2 = 0.000377 sq. ft.

where Nozzle Size: 0.263 inches

18) Isokinetic % = $\left(\frac{0.0945(Ts)(Vm(std))}{Ps(V_s)(nozzle\ area)(sampling\ time)(1-Bws)}\right)$ = 99.9 %

where T_s: 522.3 °A
$V_{m(Std)}$: 254.576 dscf
P_s: 29.797 "Hg
V_s 44.95 ft/sec
Nozzle Area: 0.000377 sq. ft.
Sampling Time: 250 min.
B_{ws}: 0.0040

EPA Methods 1-4, 29
Example Calculations

EPA Method 29:
Chromium

19) Cr Laboratory Results (blank corrected)

Front half (FH):		3.940 µg/sample
Back half (BH):		0.169 µg/sample
Total (FH + BH):		4.109 µg/sample

20) Cs = µg/Vm(std) = 0.570 µg/dscm

where Run 1 Total:	4.109	µg/sample
$V_{m(std)}$:	7.209	dscm

21) Emission Rate = (Cs)($\frac{0.0283168\ m^3}{ft^3}$)(stack flow)($\frac{2.2046E{-}9\ lb}{\mu g}$)= 1.17E-04 lb/hr

where C_s:	0.570	µg/dscm
Stack Flow:	3,291,235	dscf/hr

22) lb Cr/ton Cr in melt = lb/hr * (run duration [min]/(60 min/hr)/ton Cr = 4.65E-03 lb Cr/ton Cr in melt

where :	1.17E-04	lb/hr
run duration:	250	minutes
ton Cr in melt:	0.105	ton

Hg Blank Correction:

24) Hg Laboratory Results (blank corrected)

FH total + BH total - total blank = 0.187 µg

Where front half (FH):	0.0219	µg
Back half (BH):	0.4274	µg
Total Blank:	0.2623	µg

BISON ENGINEERING, INC.

COMPANY	**Eagle Foundry Company**
FACILITY	**Eagle Foundry**
LOCATION	**Eagle Creek, OR**
SOURCE	**Main Foundry BH Outlet - Steel Alloy**
DATE	**3/27/2023 - 3/29/2023**
METHOD	**0061**
POLLUTANT	**Cr VI**

Isokinetic Field Data
Field Data Entry

Client:	**Eagle Foundry Company**	**Run:**	**1**
Location:	**Eagle Creek, OR**	**Start Time:**	**13:00**
Source:	**Main Foundry BH Outlet - Steel Alloy**	**End Time:**	**17:10**
EPA Method:	**0061**	**Environmental Conditions/Test Notes:**	**Date:** **3/27/2023**
Box Operator:	**JMK**	40-60°F	
Technician(s):	**KAD**		

Stack Dimensional Data:

Circular		
Diameter	61.000	in
Rectangular		
Width		in
Length		in
Stack Area	20.295	sq.ft.

Equipment:

Meterbox ID	10	Probe ID	B5C	Liner type	glass		
Y factor	0.9737	Nozzle ID	0.256	Nozzle size	0.256	inches	
ΔH@	1.72	Hot box ID	HHB	Nozzle area	0.000357	sq.ft.	
Bp ID	TS1	Pitot Cp	0.84	Probe heat	250	°F	
Balance ID	HLNFB1	Pitot ID	B5C	Filter heat	NA	°F	
Weights ID	HLNFW1	Probe Length, ft	5	Due to stack setup a 5' probe had to be us			

Source Information:

Barometric Pressure	29.79	"Hg	O_2	20.90	%
Static Pressure	0.1	"H_2O	CO_2	0.00	%
Ave. ΔP	0.6	"H_2O	Rec. Nz.	0.228	inches
Stack Temperature	65	°F			
Assumed moisture	0.50	%			
Assumed meter temp.	75	°F			
Total number of points	20				
Time per point	12.5	min.			
Total run time	250	min.			

Leak Checks:

	Pre-test	Post-test
Pitot	x	x
Leak rate, dcf	0.001	0.001
Leak check vacuum, "Hg	15	17

Nozzle check for roundness:

1	2	3	
0.256	0.256	0.256	inches
	Caliper ID	WS-2	

Post Test Calculations:

Sample volume	255.764	dcf	Ave. ΔP	0.635	"H_2O
Wet mol. weight	28.81	M_s (actual)	Ave. √ΔP	0.796	"H_2O
Actual H_2O	0.27	%	Ave. ΔH	2.92	"H_2O
Std. meter vol.	241.418	dscf	Ave. T_s	69.6	°F
Isokinetic Average	101.4	%	Ave. T_m	86.2	°F

Moisture/Lab:

Filter, #	NA		
	Initial	Final	Gain
Impingers, g	1,739.4	1,620.0	-119.4
Silica gel, g	900.5	1,033.9	133.4
		Total water gain, g:	14.0

Traverse Point	Time (min.)	Meter Volume (dcf)	Velocity ΔP ("H_2O)	Stack Temp. (°F)	Meter Temp. (°F)	Calc. ΔH	Run ΔH	Vacuum ("Hg)	Filter Box (°F)	Condenser Temp (≤68°F)
		593.410								
1	12.5	607.710	0.84	66	71	3.80	3.80	11	NA	48
2	25.0	621.920	0.83	66	72	3.76	3.80	11	NA	59
3	37.5	635.620	0.75	66	73	3.41	3.40	10.5	NA	58
4	50.0	647.980	0.62	67	75	2.82	2.80	9.5	NA	58
5	62.5	660.840	0.63	68	79	2.88	2.80	9.5	NA	62
6	75.0	673.980	0.65	69	82	2.99	3.00	10	NA	62
7	87.5	686.460	0.62	71	84	2.85	2.80	9	NA	62
8	100.0	699.540	0.63	70	85	2.90	2.90	9	NA	61
9	112.5	712.200	0.61	72	89	2.82	2.80	8.5	NA	61
10	125.0	724.850	0.62	70	90	2.88	2.90	9	NA	58
11	137.5	737.200	0.57	70	90	2.65	2.60	8.5	NA	58
12	150.0	749.870	0.60	70	91	2.80	2.80	9	NA	56
13	162.5	762.270	0.59	72	92	2.74	2.70	8	NA	55
14	175.0	774.610	0.59	71	92	2.75	2.70	8	NA	54
15	187.5	787.110	0.60	71	93	2.80	2.80	8	NA	53
16	200.0	799.320	0.57	73	93	2.65	2.60	8	NA	53
17	212.5	811.780	0.57	73	93	2.65	2.70	8	NA	53
18	225.0	823.940	0.59	69	93	2.77	2.80	8	NA	52
19	237.5	836.320	0.59	69	93	2.77	2.80	8.5	NA	52
20	250.0	849.174	0.63	69	93	2.95	2.90	9	NA	50

Isokinetic Field Data
Field Data Entry

Client:	**Eagle Foundry Company**	**Run:**	**2**
Location:	**Eagle Creek, OR**	**Start Time:**	**10:30**
Source:	**Main Foundry BH Outlet - Steel Alloy**	**End Time:**	**14:40**
EPA Method:	**0061**	**Environmental Conditions/Test Notes:**	**Date:** **3/28/2023**
Box Operator:	**JMK**	40-60°F	
Technician(s):	**KAD**		

Stack Dimensional Data:

Circular		
Diameter	61.000	in
Rectangular		
Width		in
Length		in
Stack Area	20.295	sq.ft.

Equipment:

Meterbox ID	10	Probe ID	B5C	Liner type	glass		
Y factor	0.9737	Nozzle ID	0.256	Nozzle size	0.256	inches	
ΔH@	1.72	Hot box ID	HHB	Nozzle area	0.000357	sq.ft.	
Bp ID	TS1	Pitot Cp	0.84	Probe heat	250	°F	
Balance ID	HLNFB1	Pitot ID	B5C	Filter heat	NA	°F	
Weights ID	HLNFW1	Probe Length, ft	5				

Source Information:

Barometric Pressure	29.38	"Hg	O_2	20.90	%
Static Pressure	0.1	"H_2O	CO_2	0.00	%
Ave. ΔP	0.6	"H_2O	Rec. Nz.	0.225	inches
Stack Temperature	65	°F			
Assumed moisture	0.27	%			
Assumed meter temp.	86.2	°F			
Total number of points	20				
Time per point	12.5	min.			
Total run time	250	min.			

Leak Checks:

	Pre-test	Post-test
Pitot	x	x
Leak rate, dcf	0.000	0.000
Leak check vacuum, "Hg	16	17

Nozzle check for roundness:

1	2	3	
0.256	0.256	0.256	inches
	Caliper ID	WS-2	

Post Test Calculations:

Sample volume	260.788	dcf	Ave. ΔP	0.652	"H_2O
Wet mol. weight	28.76	M_s (actual)	Ave. √ΔP	0.807	"H_2O
Actual H_2O	0.76	%	Ave. ΔH	3.04	"H_2O
Std. meter vol.	241.940	dscf	Ave. T_s	64.7	°F
Isokinetic Average	100.9	%	Ave. T_m	88.3	°F

Moisture/Lab:

Filter, #	NA		
	Initial	Final	Gain
Impingers, g	1,744.7	1,724.0	-20.7
Silica gel, g	933.6	993.7	60.1
		Total water gain:	39.4

Traverse Point	Time (min.)	Meter Volume (dcf) 94.084	Velocity ΔP ("H_2O)	Stack Temp. (°F)	Meter Temp. (°F)	Calc. ΔH	Run ΔH	Vacuum ("Hg)	Filter Box (°F)	Condenser Temp (≤68°F)
1	12.5	107.610	0.72	60	74	3.33	3.30	8	NA	44
2	25.0	121.250	0.74	60	74	3.42	3.40	8	NA	46
3	37.5	134.710	0.72	60	74	3.33	3.30	8	NA	49
4	50.0	147.550	0.65	62	79	3.02	3.00	7	NA	49
5	62.5	160.010	0.61	62	79	2.83	2.80	6.5	NA	49
6	75.0	172.340	0.59	63	82	2.75	2.70	6	NA	50
7	87.5	185.210	0.63	64	87	2.96	2.90	7	NA	51
8	100.0	198.370	0.67	64	89	3.16	3.10	7	NA	52
9	112.5	211.710	0.68	64	91	3.22	3.20	7	NA	53
10	125.0	225.110	0.69	64	92	3.27	3.20	7	NA	53
11	137.5	238.320	0.65	65	93	3.08	3.10	7	NA	53
12	150.0	251.090	0.60	65	94	2.85	2.80	6.5	NA	54
13	162.5	263.650	0.59	65	95	2.81	2.80	6.5	NA	54
14	175.0	276.490	0.62	67	95	2.94	2.90	6.5	NA	55
15	187.5	289.190	0.61	67	95	2.89	2.90	6.5	NA	56
16	200.0	302.490	0.66	69	96	3.12	3.10	7	NA	56
17	212.5	316.120	0.70	69	96	3.31	3.30	7.5	NA	56
18	225.0	328.740	0.61	68	95	2.89	2.90	6.5	NA	56
19	237.5	341.690	0.65	67	95	3.08	3.10	7.5	NA	56
20	250.0	354.872	0.64	68	90	3.00	3.00	7	NA	56

Isokinetic Field Data
Field Data Entry

Client:	**Eagle Foundry Company**	**Run:**	**3**
Location:	**Eagle Creek, OR**	**Start Time:**	**10:35**
Source:	**Main Foundry BH Outlet - Steel Alloy**	**End Time:**	**14:45**
EPA Method:	**0061**	**Environmental Conditions/Test Notes:**	**Date:** **3/29/2023**
Box Operator:	**JMK**	Chilly and foggy	
Technician(s):	**KAD**		

Stack Dimensional Data:

Circular		
Diameter	61.000	in
Rectangular		
Width		in
Length		in
Stack Area	20.295	sq.ft.

Equipment:

Meterbox ID	10	Probe ID	B5C	Liner type	glass		
Y factor	0.9737	Nozzle ID	0.256	Nozzle size	0.256	inches	
ΔH@	1.72	Hot box ID	HHB	Nozzle area	0.000357	sq.ft.	
Bp ID	TS1	Pitot Cp	0.84	Probe heat	250	°F	
Balance ID	HLNFB1	Pitot ID	B5C	Filter heat	NA	°F	
Weights ID	HLNFW1	Probe Length, ft	5				

Source Information:

Barometric Pressure	29.45	"Hg	O_2	20.90	%
Static Pressure	0.1	"H_2O	CO_2	0.00	%
Ave. ΔP	0.6	"H_2O	Rec. Nz.	0.225	inches
Stack Temperature	65	°F			
Assumed moisture	0.76	%			
Assumed meter temp.	88.3	°F			
Total number of points	20				
Time per point	12.5	min.			
Total run time	300	min.			

Leak Checks:

	Pre-test	Post-test
Pitot	x	x
Leak rate, dcf	0.000	0.000
Leak check vacuum, "Hg	15	17

Nozzle check for roundness:

1	2	3	
0.256	0.256	0.256	inches
	Caliper ID	WS-2	

Post Test Calculations:

Sample volume	250.490	dcf	Ave. ΔP	0.607	"H_2O
Wet mol. weight	28.77	M_s (actual)	Ave. √ΔP	0.778	"H_2O
Actual H_2O	0.63	%	Ave. ΔH	2.81	"H_2O
Std. meter vol.	234.342	dscf	Ave. T_s	64.8	°F
Isokinetic Average	84.3	%	Ave. T_m	84.7	°F

Moisture/Lab:

Filter, #	NA		
	Initial	Final	Gain
Impingers, g	1,753.7	1,724.4	-29.3
Silica gel, g	909.3	970.1	60.8
		Total water gain:	31.5

Traverse Point	Time (min.)	Meter Volume (dcf)	Velocity ΔP ("H_2O)	Stack Temp. (°F)	Meter Temp. (°F)	Calc. ΔH	Run ΔH	Vacuum ("Hg)	Filter Box (°F)	Condenser Temp (≤68°F)
		610.263								
1	12.5	623.190	0.65	55	74	3.01	3.00	7	NA	46
2	25.0	636.130	0.66	56	75	3.05	3.10	7	NA	46
3	37.5	648.790	0.60	58	76	2.77	2.80	7	NA	46
4	50.0	661.010	0.58	60	80	2.69	2.70	6.5	NA	46
5	62.5	673.280	0.59	61	82	2.74	2.70	6.5	NA	47
6	75.0	685.890	0.62	62	82	2.87	2.90	7	NA	47
7	87.5	698.770	0.64	62	86	2.99	3.00	7	NA	47
8	100.0	711.310	0.60	63	87	2.80	2.80	7	NA	48
9	112.5	724.130	0.63	65	89	2.94	2.90	7	NA	48
10	125.0	737.080	0.65	65	90	3.04	3.00	7	NA	48
11	137.5	750.310	0.66	66	92	3.09	3.10	7	NA	49
12	150.0	763.210	0.62	66	94	2.92	2.90	7	NA	50
13	162.5	775.680	0.59	66	93	2.77	2.80	7	NA	52
14	175.0	787.890	0.56	67	94	2.63	2.60	6	NA	50
15	187.5	800.090	0.57	68	89	2.65	2.70	6	NA	50
16	200.0	812.010	0.57	71	86	2.62	2.60	6	NA	50
17	212.5	824.210	0.59	71	81	2.68	2.70	7	NA	50
18	225.0	836.090	0.56	72	81	2.54	2.50	6.5	NA	51
19	237.5	848.120	0.57	71	81	2.59	2.60	6.5	NA	51
20	250.0	860.753	0.62	71	81	2.82	2.80	7	NA	52

EPA Method 4
Impinger Weights Summary

Client: **Eagle Foundry Company**
Location: **Eagle Creek, OR**
Source: **Main Foundry BH Outlet - Steel Alloy**
EPA Method: **0061**
Box Operator: **JMK**
Technician(s): **KAD**

Run 1
Impinger gain by weight (g):

#	Initial	Final	Gain
1	504.9	365.7	-139.2
2	428.7	420.3	-8.4
3	446.8	432.7	-14.1
4	359.0	401.3	42.3
Totals:	1,739.4	1,620.0	-119.4

Run 2
Impinger gain by weight (g):

#	Initial	Final	Gain
1	505.6	432.7	-72.9
2	428.9	455.4	26.5
3	449.1	427.8	-21.3
4	361.1	408.1	47.0
Totals:	1,744.7	1,724.0	-20.7

Run 3
Impinger gain by weight (g):

#	Initial	Final	Gain
1	509.4	411.2	-98.2
2	432.0	452.5	20.5
3	451.4	451.4	0.0
4	360.9	409.3	48.4
Totals:	1,753.7	1,724.4	-29.3

Isokinetic Field Data
Field Data and Calculations
Emissions and Gas Stream Characteristics

Client:	**Eagle Foundry Company**	**Run:**	**1**
Location:	**Eagle Creek, OR**	**Start Time:**	**13:00**
Source:	**Main Foundry BH Outlet - Steel Alloy**	**End Time:**	**17:10**
Method:	**0061**	**Date:**	**3/27/2023**

Sampling Data				Traverse Data			
Time	**Meter**	**ΔH**	**Meter**	**Traverse**	**Dp**	**Stack**	
min.	**ft^3**	**"H_2O**	**T_m ^oF**	**Point**	**"H_2O**	**T_s ^oF**	**√Dp**
	593.410						
13	607.710	3.80	71	1	0.84	66	0.917
25	621.920	3.80	72	2	0.83	66	0.911
38	635.620	3.40	73	3	0.75	66	0.866
50	647.980	2.80	75	4	0.62	67	0.787
63	660.840	2.80	79	5	0.63	68	0.794
75	673.980	3.00	82	6	0.65	69	0.806
88	686.460	2.80	84	7	0.62	71	0.787
100	699.540	2.90	85	8	0.63	70	0.794
113	712.200	2.80	89	9	0.61	72	0.781
125	724.850	2.90	90	10	0.62	70	0.787
138	737.200	2.60	90	11	0.57	70	0.755
150	749.870	2.80	91	12	0.60	70	0.775
163	762.270	2.70	92	13	0.59	72	0.768
175	774.610	2.70	92	14	0.59	71	0.768
188	787.110	2.80	93	15	0.60	71	0.775
200	799.320	2.60	93	16	0.57	73	0.755
213	811.780	2.70	93	17	0.57	73	0.755
225	823.940	2.80	93	18	0.59	69	0.768
238	836.320	2.80	93	19	0.59	69	0.768
250	849.174	2.90	93	20	0.63	69	0.794

Client:	**Eagle Foundry Company**	**Run:**	**1**
Source:	**Main Foundry BH Outlet - Steel Alloy**	**Date:**	**03/27/23**

Field Data Input Continued

Moisture Data			Stack Dimensional Data:		
Total Test Time	250.0	min	Circular		
Sample Time Interval	12.5	min	Diameter	61.000	in
Meter Volume, V_m	255.764	dcf	Rectangular		
Water Volume	14.0	g	Width		in
Nozzle Diameter, N_z	0.2560	in.	Length		in
Nozzle Area	0.000357	sq.ft.	Stack Area	20.295	sq.ft.
Traverse Data			Molecular Weight:		
Barometric Pressure, P_b	29.79	"Hg	CO_2 Average	0.26	%vd
Static Pressure	0.10	"H_2O	O_2 Average	20.99	%vd
Pitot Factor, cp	0.84				
Meter Cal Factor	0.9737	Y			

Field Data Averages

Meter			Stack		
ΔH	2.920	"H_2O	√Dp	0.796	"H_2O
Temperature, T_m	86.2	^oF	Temperature, T_s	69.6	^oF
Temperature, T_m	545.9	^oA (^oR)	Temperature, T_s	529.3	^oA (R)
Pressure Meter, P_m	30.005	"Hg	Pressure Stack, P_s	29.797	"Hg

Field Data Calculations

Meter Box Capture			EPA Method 2 Stack Gas Flowrate:		
Standard Volume, $V_{m(std)}$	241.418	dscf	Velocity, V_s	44.85	fps
	6.836	dscm	Volume (actual)	54,614	acfm
Actual Volume, $V_{m(actual)}$	243.808	awcf		54,467	adcfm
Gas Stream Moisture			Volume (standard)	3,253,495	wscf/hr
Moisture Vapor, $Vw_{(std)}$	0.660	scf		3,244,711	dscf/hr
Moisture, B_{ws}	0.0027			54,079	dscf/min
Moisture EPA M4	0.27	%v		54,225	wscf/min
Moisture @ Saturation	2.45	%v (for T_s < 212°F)			
EPA Method 3 Gas Density			Volume/Mole, V/M	387.789	
Dry, M_d	28.88	lb/lb-mole			
Wet, M_s	28.85	lb/lb-mole			
Percent Isokinetic	101.5	%			

Laboratory Results

Cr VI	1.51E-02	µg/sample
Cr VI	1.51E-08	grams
Emissions:		
Concentration Cr VI, C_s	9.68E-10	gr/dscf
	2.21E-03	µg/dscm
Mass Emissions Cr VI	4.49E-07	lb/hr

"<" represents MDL value

Isokinetic Field Data
Field Data and Calculations
Emissions and Gas Stream Characteristics

Client:	**Eagle Foundry Company**	**Run:**	**2**
Location:	**Eagle Creek, OR**	**Start Time:**	**10:30**
Source:	**Main Foundry BH Outlet - Steel Alloy**	**End Time:**	**14:40**
Method:	**0061**	**Date:**	**03/28/23**

Sampling Data				Traverse Data			
Time	**Meter**	**ΔH**	**Meter**	**Traverse**	**Dp**	**Stack**	
min.	**ft^3**	**"H_2O**	**T_m °F**	**Point**	**"H_2O**	**T_s °F**	**√Dp**
	94.084						
13	107.610	3.30	74	1	0.72	60	0.849
25	121.250	3.40	74	2	0.74	60	0.860
38	134.710	3.30	74	3	0.72	60	0.849
50	147.550	3.00	79	4	0.65	62	0.806
63	160.010	2.80	79	5	0.61	62	0.781
75	172.340	2.70	82	6	0.59	63	0.768
88	185.210	2.90	87	7	0.63	64	0.794
100	198.370	3.10	89	8	0.67	64	0.819
113	211.710	3.20	91	9	0.68	64	0.825
125	225.110	3.20	92	10	0.69	64	0.831
138	238.320	3.10	93	11	0.65	65	0.806
150	251.090	2.80	94	12	0.60	65	0.775
163	263.650	2.80	95	13	0.59	65	0.768
175	276.490	2.90	95	14	0.62	67	0.787
188	289.190	2.90	95	15	0.61	67	0.781
200	302.490	3.10	96	16	0.66	69	0.812
213	316.120	3.30	96	17	0.70	69	0.837
225	328.740	2.90	95	18	0.61	68	0.781
238	341.690	3.10	95	19	0.65	67	0.806
250	354.872	3.00	90	20	0.64	68	0.800

Client:	**Eagle Foundry Company**	**Run:**	**2**
Source:	**Main Foundry BH Outlet - Steel Alloy**	**Date:**	**03/28/23**

Field Data Input Continued

Moisture Data			Stack Dimensional Data:		
Total Test Time	250.0	min	Circular		
Sample Time Interval	12.5	min	Diameter	61.000	in
Meter Volume, V_m	260.788	dcf	Rectangular		
Water Volume	39.4	g	Width		in
Nozzle Diameter, N_z	0.2560	in.	Length		in
Nozzle Area	0.000357	sq.ft.	Stack Area	20.295	sq.ft.
Traverse Data			Molecular Weight:		
Barometric Pressure, P_b	29.38	"Hg	CO_2 Average	0.08	%vd
Static Pressure	0.10	"H_2O	O_2 Average	20.93	%vd
Pitot Factor, cp	0.84				
Meter Cal Factor	0.9737	Y			

Field Data Averages

Meter			Stack		
ΔH	3.040	"H_2O	√Dp	0.807	"H_2O
Temperature, T_m	88.3	^oF	Temperature, T_s	64.7	^oF
Temperature, T_m	548.0	^oA (^oR)	Temperature, T_s	524.4	^oA (R)
Pressure Meter, P_m	29.604	"Hg	Pressure Stack, P_s	29.387	"Hg

Field Data Calculations

Meter Box Capture			EPA Method 2 Stack Gas Flowrate:		
Standard Volume, $V_{m(std)}$	241.940	dscf	Velocity, V_s	45.64	fps
	6.851	dscm	Volume (actual)	55,576	acfm
Actual Volume, $V_{m(actual)}$	246.662	awcf		55,154	adcfm
Gas Stream Moisture			Volume (standard)	3,295,759	wscf/hr
Moisture Vapor, $Vw_{(std)}$	1.858	scf		3,270,711	dscf/hr
Moisture, B_{ws}	0.0076			54,512	dscf/min
Moisture EPA M4	0.76	%v		54,929	wscf/min
Moisture @ Saturation	2.10	%v (for T_s < 212°F)			
EPA Method 3 Gas Density			Volume/Mole, V/M	389.559	
Dry, M_d	28.85	lb/lb-mole			
Wet, M_s	28.77	lb/lb-mole			
Percent Isokinetic	100.9	%			

Laboratory Results

Cr VI	7.20E-03	µg/sample
Cr VI	7.20E-09	grams
Emissions:		
Concentration Cr VI, C_s	4.59E-10	gr/dscf
	1.05E-03	µg/dscm
Mass Emissions Cr VI	2.15E-07	lb/hr

"<" represents MDL value

Isokinetic Field Data
Field Data and Calculations
Emissions and Gas Stream Characteristics

Client:	**Eagle Foundry Company**	**Run:**	**3**
Location:	**Eagle Creek, OR**	**Start Time:**	**10:35**
Source:	**Main Foundry BH Outlet - Steel Alloy**	**End Time:**	**14:45**
Method:	**0061**	**Date:**	**03/29/23**

Sampling Data				Traverse Data			
Time	**Meter**	**ΔH**	**Meter**	**Traverse**	**Dp**	**Stack**	
min.	**ft^3**	**"H_2O**	**T_m °F**	**Point**	**"H_2O**	**T_s °F**	**√Dp**
	610.263						
13	623.190	3.00	74	1	0.65	55	0.806
25	636.130	3.10	75	2	0.66	56	0.812
38	648.790	2.80	76	3	0.60	58	0.775
50	661.010	2.70	80	4	0.58	60	0.762
63	673.280	2.70	82	5	0.59	61	0.768
75	685.890	2.90	82	6	0.62	62	0.787
88	698.770	3.00	86	7	0.64	62	0.800
100	711.310	2.80	87	8	0.60	63	0.775
113	724.130	2.90	89	9	0.63	65	0.794
125	737.080	3.00	90	10	0.65	65	0.806
138	750.310	3.10	92	11	0.66	66	0.812
150	763.210	2.90	94	12	0.62	66	0.787
163	775.680	2.80	93	13	0.59	66	0.768
175	787.890	2.60	94	14	0.56	67	0.748
188	800.090	2.70	89	15	0.57	68	0.755
200	812.010	2.60	86	16	0.57	71	0.755
213	824.210	2.70	81	17	0.59	71	0.768
225	836.090	2.50	81	18	0.56	72	0.748
238	848.120	2.60	81	19	0.57	71	0.755
250	860.753	2.80	81	20	0.62	71	0.787

Client:	**Eagle Foundry Company**	**Run:**	**3**
Source:	**Main Foundry BH Outlet - Steel Alloy**	**Date:**	**03/29/23**

Field Data Input Continued

Moisture Data			Stack Dimensional Data:		
Total Test Time	250.0	min	Circular		
Sample Time Interval	12.5	min	Diameter	61.000	in
Meter Volume, V_m	250.490	dcf	Rectangular		
Water Volume	31.5	g	Width		in
Nozzle Diameter, N_z	0.2560	in.	Length		in
Nozzle Area	0.000357	sq.ft.	Stack Area	20.295	sq.ft.
Traverse Data			Molecular Weight:		
Barometric Pressure, P_b	29.45	"Hg	CO_2 Average	0.08	%vd
Static Pressure	0.10	"H_2O	O_2 Average	20.98	%vd
Pitot Factor, cp	0.84				
Meter Cal Factor	0.9737	Y			

Field Data Averages

Meter			Stack		
ΔH	2.810	"H_2O	√Dp	0.778	"H_2O
Temperature, T_m	84.7	^oF	Temperature, T_s	64.8	^oF
Temperature, T_m	544.4	^oA (^oR)	Temperature, T_s	524.5	^oA (R)
Pressure Meter, P_m	29.657	"Hg	Pressure Stack, P_s	29.457	"Hg

Field Data Calculations

Meter Box Capture			EPA Method 2 Stack Gas Flowrate:		
Standard Volume, $V_{m(std)}$	234.342	dscf	Velocity, V_s	43.94	fps
	6.636	dscm	Volume (actual)	53,506	acfm
Actual Volume, $V_{m(actual)}$	238.081	awcf		53,169	adcfm
Gas Stream Moisture			Volume (standard)	3,179,950	wscf/hr
Moisture Vapor, $Vw_{(std)}$	1.486	scf		3,159,916	dscf/hr
Moisture, B_{ws}	0.0063			52,665	dscf/min
Moisture EPA M4	0.63	%v		52,999	wscf/min
Moisture @ Saturation	2.10	%v (for T_s < 212°F)			
EPA Method 3 Gas Density			Volume/Mole, V/M	388.708	
Dry, M_d	28.85	lb/lb-mole			
Wet, M_s	28.78	lb/lb-mole			
Percent Isokinetic	101.2	%			

Laboratory Results

Cr VI	1.44E-02	µg/sample
Cr VI	1.44E-08	grams
Emissions:		
Concentration Cr VI, C_s	9.46E-10	gr/dscf
	2.16E-03	µg/dscm
Mass Emissions Cr VI	4.27E-07	lb/hr

"<" represents MDL value

Method 0061
Laboratory Results
Cr VI

Client: **Eagle Foundry Company**
Location: **Eagle Creek, OR**
Source: **Main Foundry BH Outlet - Steel Alloy**

Lab ID	Sample ID	Sample Date	<	Result (µg/sample)	MDL (µg/sample)	Sample Vol. (ml)	Blank Correction (ug)	Blank Corrected Results (µg/sample)
23-S601	Run 1	3/27/2023		0.0185	0.0044	440	3.36E-03	1.51E-02
23-S602	Run 2	3/28/2023		0.0096	0.0040	400	2.40E-03	7.20E-03
23-S603	Run 3	3/29/2023		0.0194	0.0051	510	5.04E-03	1.44E-02
23-S607	KOH Blank	3/29/2023	<	MDL	0.0030	300	0.00	µg/ml
23-S608	H_2O Blank	3/29/2023		0.005	0.0020	200	2.40E-05	µg/ml

*A "<" sign designates a result less than the minimum detection limit (MDL). If sample results are below MDL, the MDL value is used for calculations.
If blank value(s) are below MDL, no blank correction is performed.

Method 0061
Results Summary

Client: **Eagle Foundry Company**
Location: **Eagle Creek, OR**
Source: **Main Foundry BH Outlet - Steel Alloy**

Run			1	2	3	
Date			3/27/2023	3/28/2023	3/29/2023	
Start Time			13:00	10:30	10:35	
End Time			17:10	14:40	14:45	Average
Duration, min.			250	250	250	**250**
Barometric Pressure, "Hg			29.79	29.38	29.45	**29.54**
Nozzle Dia., in.			0.256	0.256	0.256	**0.256**
Isokinetic Average, %			101.5	100.9	101.2	**101.2**
Sample Volume, dscf			241.418	241.940	234.342	**239.233**
Sample Volume, dscm			6.836	6.851	6.636	**6.774**
Stack Diameter, in.			61.000	61.000	61.000	**61.000**
Stack Area, sq.ft.			20.295	20.295	20.295	**20.295**
CO_2 %vd			0.26	0.08	0.08	**0.14**
O_2 %vd			20.99	20.93	20.98	**20.97**
Static Pressure, "H_2O			0.10	0.10	0.10	**0.10**
H_2O %v			0.27	0.76	0.63	**0.55**
Wet Molecular Weight, lb/lb-mole			28.85	28.77	28.78	**28.80**
Velocity, FPS			44.85	45.64	43.94	**44.81**
ADCFM			54,467	55,154	53,169	**54,263**
ACFM			54,614	55,576	53,506	**54,565**
DSCFM			54,079	54,512	52,665	**53,752**
Stack Temperature, ^oF			69.6	64.7	64.8	**66.4**
Cr VI	Concentration, C_s	gr/dscf	9.68E-10	4.59E-10	9.46E-10	**7.91E-10**
		µg/dscm	2.21E-03	1.05E-03	2.16E-03	**1.81E-03**
	Mass	lb/hr	4.49E-07	2.15E-07	4.27E-07	**3.63E-07**
	lb Cr VI/ton Cr in melt		1.78E-05	8.88E-06	1.77E-05	**1.48E-05**
Process Data	Cr processed	lb/melt	209.764	201.394	201.494	
		ton/melt	0.1049	0.1007	0.1007	

BISON ENGINEERING, INC.

COMPANY	**Eagle Foundry Company**
FACILITY	**Eagle Foundry**
LOCATION	**Eagle Creek, OR**
SOURCE	**Cooling Bunker BH Inlet - Steel Alloy**
DATE	**3/27/2023 - 3/29/2023**
METHOD	**29**
POLLUTANT	**Metals**

EPA Method 1
Stack Parameters and Traverse Points

Client: **Eagle Foundry Company**
Location: **Eagle Creek, OR**
Source: **Cooling Bunker BH Inlet - Steel Alloy**
Facility: **Eagle Foundry**

Type of Testing: P (P for Particulate; V for Velocity/Nonparticulate)
Type of Duct: C (C for circular; R for rectangular)

Number of ports available:	2	
Number of ports to be used:	2	
Port diameter:	4	inches
Sampling location height (approx.):		feet
Stack height (approx.):		feet
Circular ID (Rectangular Depth):	48.00	inches
Port depth and/or wall thickness:	6.25	inches
Stack width (Rectangular only):		inches

Equivalent Diameter
If rectangular = $\frac{2*Depth*Width}{Depth + Width}$ = 48.00 inches (If circular = duct ID)
Stack/duct area = 12.566 sq.feet 1809.6 sq. inches

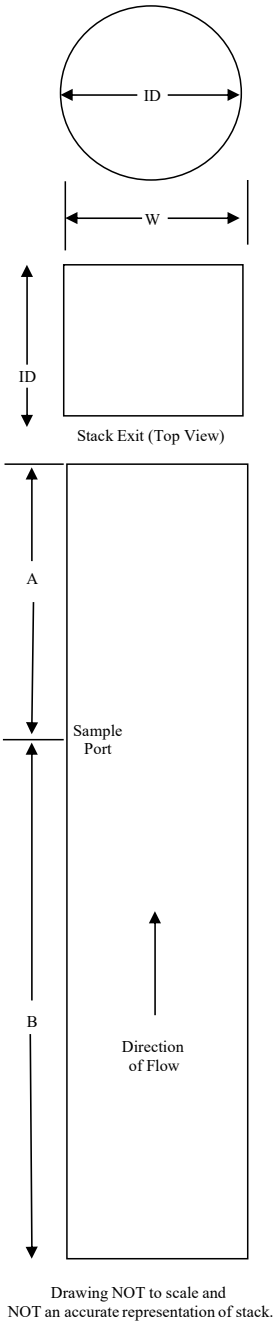
Sample Port Location:	Downstream flow disturbance from process B	Upstream flow disturbance toward exit A
Number of Inches:	990.00	114.00
Number of Diameters:	20.63	2.38

Minimum Number of Traverse Points: 12

Traverse points less than 1.0 inch from the stack wall are relocated to a distance of 1.0 inch.

Points	% of diameter	Distance from inside wall (in.)	Distance including port (in.)
1	4.4	2.11	8 3/8
2	14.6	7.01	13 1/4
3	29.6	14.21	20 1/2
4	70.4	33.79	40
5	85.4	40.99	47 1/4
6	95.6	45.89	52 1/8

Reference Diagram



Drawing NOT to scale and
NOT an accurate representation of stack.

Pre-Test Traverse

Client: **Eagle Foundry Company**
Location: **Eagle Creek, OR**
Source: **Cooling Bunker BH Inlet - Steel Alloy**

Stack Temp: 53 °F

Traverse Point	Velocity ΔP ("H_2O)	Null Angle
1	0.78	0
2	1.10	5
3	1.10	0
4	1.10	5
5	1.20	5
6	1.20	0
7	1.20	5
8	1.10	0
9	1.00	5
10	0.90	0
11	0.80	5
12	0.80	5
Average:	1.02	3

Flow is found to be: Non-cyclonic

Isokinetic Field Data
Field Data Entry

Client:	**Eagle Foundry Company**	**Run:**	**1**
Location:	**Eagle Creek, OR**	**Start Time:**	**13:00**
Source:	**Cooling Bunker BH Inlet - Steel Alloy**	**End Time:**	**17:10**
EPA Method:	**29**	**Environmental Conditions/Test Notes:**	**Date:** **3/27/2023**
Box Operator:	**AAM**	40-60 °F	
Technician(s):	**NEW**		

Stack Dimensional Data:

Circular		
Diameter	48.000	in
Rectangular		
Width		in
Length		in
Stack Area	12.566	sq.ft.

Equipment:

Meterbox ID	11	Probe ID	Bison 1	Liner type	Glass		
Y factor	0.9686	Nozzle ID	0.25	Nozzle size	0.250	inches	
ΔH@	1.865	Hot box ID	HHB-1	Nozzle area	0.000341	sq.ft.	
Bp ID	TS-1	Pitot Cp	0.84	Probe heat	250	°F	
Balance ID	HLNFB-1	Pitot ID	Bison 1	Filter heat	250	°F	
Weights ID	HLNFW-1	Probe Length, ft	6				

Source Information:

Barometric Pressure	29.79	"Hg	O_2	20.90	%
Static Pressure	-0.9	"H_2O	CO_2	0.00	%
Ave. ΔP	1.02	"H_2O	Rec. Nz.	0.204	inches
Stack Temperature	53	°F			
Assumed moisture	3.00	%			
Assumed meter temp.	60	°F			
Total number of points	10				
Time per point	25	min.			
Total run time	250	min.			

Leak Checks:

	Pre-test	Post-test
Pitot	x	x
Leak rate, dcf	0.000	0.000
Leak check vacuum, "Hg	15	10

Nozzle check for roundness:

1	2	3	
0.250	0.250	0.251	inches
	Caliper ID	WS1	

Post Test Calculations:

Sample volume	298.252	dcf	Ave. ΔP	1.060	"H_2O
Wet mol. weight	28.81	M_s (actual)	Ave. √ΔP	1.026	"H_2O
Actual H_2O	0.28	%	Ave. ΔH	4.5	"H_2O
Std. meter vol.	291.103	dscf	Ave. T_s	65.0	°F
Isokinetic Average	99.0	%	Ave. T_m	67.5	°F

Moisture/Lab:

Filter, #	NA		
	Initial	Final	Gain
Impingers, g	3,342.1	3,313.7	-28.4
Silica gel, g	883.2	929.1	45.9
		Total water gain, g:	17.5

Traverse Point	Time (min.)	Meter Volume (dcf) 425.831	Velocity ΔP ("H_2O)	Stack Temp. (°F)	Meter Temp. (°F)	Calc. ΔH	Run ΔH	Vacuum ("Hg)	Filter Box (°F)	Condenser Temp (≤68°F)
1	25.0	452.270	0.80	55	61	3.43	3.40	4	253	48
2	50.0	476.200	0.70	66	63	2.95	2.90	3	257	57
3	75.0	506.200	1.10	68	66	4.64	4.65	4.5	254	51
4	100.0	538.310	1.20	68	69	5.09	5.10	5	254	52
5	125.0	570.200	1.20	66	70	5.12	5.10	5	256	51
6	150.0	600.985	1.10	66	70	4.69	4.70	4.5	254	50
7	175.0	631.570	1.10	65	70	4.70	4.70	4.5	256	50
8	200.0	663.250	1.20	67	69	5.10	5.10	5	256	49
9	225.0	694.940	1.20	65	69	5.12	5.10	5	254	49
10	250.0	724.083	1.00	64	68	4.26	4.25	4.5	257	49

Isokinetic Field Data
Field Data Entry

Client:	**Eagle Foundry Company**	**Run:**	**2**
Location:	**Eagle Creek, OR**	**Start Time:**	**10:30**
Source:	**Cooling Bunker BH Inlet - Steel Alloy**	**End Time:**	**14:40**
EPA Method:	**29**	**Environmental Conditions/Test Notes:**	**Date:** **3/28/2023**
Box Operator:	**AAM**	40-60 °F	
Technician(s):	**NEW**		

Stack Dimensional Data:

Circular		
Diameter	48.000	in
Rectangular		
Width		in
Length		in
Stack Area	12.566	sq.ft.

Equipment:

Meterbox ID	11	Probe ID	Bison 1	Liner type	Glass		
Y factor	0.9686	Nozzle ID	0.25	Nozzle size	0.250	inches	
ΔH@	1.865	Hot box ID	HHB-1	Nozzle area	0.000341	sq.ft.	
Bp ID	TS-1	Pitot Cp	0.84	Probe heat	250	°F	
Balance ID	HLNFB-1	Pitot ID	Bison 1	Filter heat	250	°F	
Weights ID	HLNFW-1	Probe Length, ft	6				

Source Information:

Barometric Pressure	29.38	"Hg	O_2	20.90	%
Static Pressure	-0.9	"H_2O	CO_2	0.00	%
Ave. ΔP	1.02	"H_2O	Rec. Nz.	0.199	inches
Stack Temperature	53	°F			
Assumed moisture	0.28	%			
Assumed meter temp.	67.5	°F			
Total number of points	10				
Time per point	25	min.			
Total run time	250	min.			

Leak Checks:

	Pre-test	Post-test
Pitot	x	x
Leak rate, dcf	0.000	0.000
Leak check vacuum, "Hg	15	7

Nozzle check for roundness:

1	2	3	
0.250	0.250	0.251	inches
	Caliper ID	WS1	

Post Test Calculations:

Sample volume	280.284	dcf	Ave. ΔP	0.919	"H_2O
Wet mol. weight	28.77	M_s (actual)	Ave. √ΔP	0.953	"H_2O
Actual H_2O	0.69	%	Ave. ΔH	4.045	"H_2O
Std. meter vol.	274.533	dscf	Ave. T_s	61.0	°F
Isokinetic Average	101.2	%	Ave. T_m	57.9	°F

Moisture/Lab:

Filter, #	NA		
	Initial	Final	Gain
Impingers, g	3,349.7	3,346.3	-3.4
Silica gel, g	898.5	942.1	43.6
		Total water gain:	40.2

Traverse Point	Time (min.)	Meter Volume (dcf) 1.340	Velocity ΔP ("H_2O)	Stack Temp. (°F)	Meter Temp. (°F)	Calc. ΔH	Run ΔH	Vacuum ("Hg)	Filter Box (°F)	Condenser Temp (≤68°F)
1	25.0	24.090	0.60	43	49	2.69	2.70	2	248	41
2	50.0	48.750	0.70	53	51	3.09	3.10	4	258	47
3	75.0	77.280	0.95	62	54	4.14	4.15	4	255	53
4	100.0	107.970	1.10	63	56	4.80	4.80	5	257	58
5	125.0	138.940	1.10	62	59	4.84	4.85	5	258	50
6	150.0	168.350	1.00	62	60	4.41	4.40	4	258	47
7	175.0	199.120	1.10	62	61	4.86	4.85	5	256	49
8	200.0	230.010	1.10	64	62	4.85	4.85	5	256	50
9	225.0	258.080	0.91	68	63	3.99	4.00	4	258	51
10	250.0	281.624	0.63	71	64	2.75	2.75	3	257	50

Isokinetic Field Data
Field Data Entry

Client:	**Eagle Foundry Company**			**Run:**	**3**
Location:	**Eagle Creek, OR**			**Start Time:**	**10:35**
Source:	**Cooling Bunker BH Inlet - Steel Alloy**			**End Time:**	**14:45**
EPA Method:	**29**	**Environmental Conditions/Test Notes:**		**Date:**	**3/29/2023**
Box Operator:	**AAM**	40-60 °F			
Technician(s):	**NEW**				

Stack Dimensional Data:

Circular		
Diameter	48.000	in
Rectangular		
Width		in
Length		in
Stack Area	12.566	sq.ft.

Equipment:

Meterbox ID	11	Probe ID	Bison 1	Liner type	Glass		
Y factor	0.9686	Nozzle ID	0.25	Nozzle size	0.250	inches	
ΔH@	1.865	Hot box ID	HHB-1	Nozzle area	0.000341	sq.ft.	
Bp ID	TS-1	Pitot Cp	0.84	Probe heat	250	°F	
Balance ID	HLNFB-1	Pitot ID	Bison 1	Filter heat	250	°F	
Weights ID	HLNFW-1	Probe Length, ft	6				

Source Information:

Barometric Pressure	29.45	"Hg	O_2	20.90	%
Static Pressure	-0.9	"H_2O	CO_2	0.00	%
Ave. ΔP	1.02	"H_2O	Rec. Nz.	0.202	inches
Stack Temperature	53	°F			
Assumed moisture	0.69	%			
Assumed meter temp.	57.9	°F			
Total number of points	10				
Time per point	25	min.			
Total run time	250	min.			

Leak Checks:

	Pre-test	Post-test
Pitot	x	x
Leak rate, dcf	0.000	0.000
Leak check vacuum, "Hg	15	15

Nozzle check for roundness:

1	2	3	
0.250	0.250	0.251	inches
	Caliper ID	WS1	

Post Test Calculations:

Sample volume	300.532	dcf	Ave. ΔP	1.073	"H_2O
Wet mol. weight	28.77	M_s (actual)	Ave. √ΔP	1.029	"H_2O
Actual H_2O	0.69	%	Ave. ΔH	4.69	"H_2O
Std. meter vol.	295.936	dscf	Ave. T_s	60.6	°F
Isokinetic Average	100.9	%	Ave. T_m	57.2	°F

Moisture/Lab:

Filter, #	NA		
	Initial	Final	Gain
Impingers, g	3,373.9	3,373.7	-0.2
Silica gel, g	892.5	936.0	43.5
		Total water gain:	43.3

Traverse Point	Time (min.)	Meter Volume (dcf)	Velocity ΔP ("H_2O)	Stack Temp. (°F)	Meter Temp. (°F)	Calc. ΔH	Run ΔH	Vacuum ("Hg)	Filter Box (°F)	Condenser Temp (≤68°F)
		599.072								
1	25.0	622.780	0.65	42	46	2.88	2.90	3	256	41
2	50.0	646.520	0.68	55	49	2.95	2.95	3	258	49
3	75.0	675.580	1.00	60	52	4.33	4.35	4	257	46
4	100.0	708.800	1.30	60	55	5.66	5.65	5	256	50
5	125.0	742.150	1.30	60	58	5.69	5.70	5	256	50
6	150.0	774.280	1.20	60	58	5.26	5.25	5	257	50
7	175.0	804.900	1.10	64	61	4.81	4.80	5	256	52
8	200.0	837.000	1.20	64	62	5.26	5.25	5	258	51
9	225.0	870.230	1.30	72	64	5.63	5.65	5	256	54
10	250.0	899.604	1.00	69	67	4.38	4.40	4.5	257	50

EPA Method 4
Impinger Weights Summary

Client: **Eagle Foundry Company**
Location: **Eagle Creek, OR**
Source: **Cooling Bunker BH Inlet - Steel Alloy**
EPA Method: **29**
Box Operator: **AAM**
Technician(s): **NEW**

Run 1
Impinger gain by weight (g):

#	Initial	Final	Gain
1	723.1	646.9	-76.2
2	651.3	667.1	15.8
3	620.8	635.6	14.8
4	624.4	635.0	10.6
5	722.5	729.1	6.6
Totals:	3,342.1	3,313.7	-28.4

Run 2
Impinger gain by weight (g):

#	Initial	Final	Gain
1	725.6	656.9	-68.7
2	647.9	676.0	28.1
3	626.4	640.0	13.6
4	624.0	637.5	13.5
5	725.8	735.9	10.1
Totals:	3,349.7	3,346.3	-3.4

Run 3
Impinger gain by weight (g):

#	Initial	Final	Gain
1	734.5	659.0	-75.5
2	655.0	697.3	42.3
3	625.1	644.0	18.9
4	632.4	643.8	11.4
5	726.9	729.6	2.7
Totals:	3,373.9	3,373.7	-0.2

Isokinetic Field Data
Field Data and Calculations
Gas Stream Characteristics

Client:	**Eagle Foundry Company**	**Run:**	**1**
Location:	**Eagle Creek, OR**	**Start Time:**	**13:00**
Source:	**Cooling Bunker BH Inlet - Steel Alloy**	**End Time:**	**17:10**
Method:	**29**	**Date:**	**3/27/2023**

Sampling Data				Traverse Data			
Time	**Meter**	**ΔH**	**Meter**	**Traverse**	**Dp**	**Stack**	
min.	**ft^3**	**"H_2O**	**T_m °F**	**Point**	**"H_2O**	**T_s °F**	**√Dp**
	425.831						
25.0	452.270	3.40	61	1	0.80	55	0.894
50.0	476.200	2.90	63	2	0.70	66	0.837
75.0	506.200	4.65	66	3	1.10	68	1.049
100.0	538.310	5.10	69	4	1.20	68	1.095
125.0	570.200	5.10	70	5	1.20	66	1.095
150.0	600.985	4.70	70	6	1.10	66	1.049
175.0	631.570	4.70	70	7	1.10	65	1.049
200.0	663.250	5.10	69	8	1.20	67	1.095
225.0	694.940	5.10	69	9	1.20	65	1.095
250.0	724.083	4.25	68	10	1.00	64	1.000

Client:	**Eagle Foundry Company**	**Run:**	**1**
Source:	**Cooling Bunker BH Inlet - Steel Alloy**	**Date:**	**03/27/23**

Field Data Input Continued

Moisture Data			Stack Dimensional Data:		
Total Test Time	250.0	min	Circular		
Sample Time Interval	25.0	min	Diameter	48.000	in
Meter Volume, V_m	298.252	dcf	Rectangular		
Water Mass	17.5	g	Width		in
Nozzle Diameter, N_z	0.2500	in.	Length		in
Nozzle Area	0.000341	sq.ft.	Stack Area	12.566	sq.ft.
Traverse Data			Molecular Weight:		
Barometric Pressure, P_b	29.79	"Hg	CO_2 Average	0.09	%vd
Static Pressure	-0.90	"H_2O	O_2 Average	20.64	%vd
Pitot Factor, cp	0.84				
Meter Cal Factor	0.9686	Y			

Field Data Averages

Meter			Stack		
ΔH	4.500	"H_2O	√Dp	1.026	"H_2O
Temperature, T_m	67.5	^oF	Temperature, T_s	65.0	^oF
Temperature, T_m	527.2	^oA (^oR)	Temperature, T_s	524.7	^oA (^oR)
Pressure Meter, P_m	30.121	"Hg	Pressure Stack, P_s	29.724	"Hg

Field Data Calculations

Meter Box Capture			EPA Method 2 Stack Gas Flowrate:		
Standard Volume, $V_{m(std)}$	291.103	dscf	Velocity, V_s	57.67	fps
	8.243	dscm	Flow Rate (actual), Q_{aw}	43,481	acfm
Actual Volume, $V_{m(actual)}$	292.175	awcf		43,359	adcfm
Gas Stream Moisture			Flow Rate (standard), Q	2,606,582	wscf/hr
Moisture Vapor, $Vw_{(std)}$	0.825	scf		2,599,284	dscf/hr
Moisture, B_{ws}	0.0028			43,321	dscf/min
Moisture EPA M4	0.28	%v		43,443	wscf/min
Moisture @ Saturation	2.10	%v (for T_s < 212°F)			
EPA Method 3 Gas Density					
Dry, M_d	28.84	lb/lb-mole			
Wet, M_s	28.81	lb/lb-mole			
Percent Isokinetic	99.0	%			

Isokinetic Field Data
Field Data and Calculations
Gas Stream Characteristics

Client:	**Eagle Foundry Company**	**Run:**	**2**
Location:	**Eagle Creek, OR**	**Start Time:**	**10:30**
Source:	**Cooling Bunker BH Inlet - Steel Alloy**	**End Time:**	**14:40**
Method:	**29**	**Date:**	**03/28/23**

Sampling Data				Traverse Data			
Time	**Meter**	**ΔH**	**Meter**	**Traverse**	**Dp**	**Stack**	
min.	**ft^3**	**"H_2O**	**T_m °F**	**Point**	**"H_2O**	**T_s °F**	**√Dp**
	1.340						
25.0	24.090	2.70	49	1	0.60	43	0.775
50.0	48.750	3.10	51	2	0.70	53	0.837
75.0	77.280	4.15	54	3	0.95	62	0.975
100.0	107.970	4.80	56	4	1.10	63	1.049
125.0	138.940	4.85	59	5	1.10	62	1.049
150.0	168.350	4.40	60	6	1.00	62	1.000
175.0	199.120	4.85	61	7	1.10	62	1.049
200.0	230.010	4.85	62	8	1.10	64	1.049
225.0	258.080	4.00	63	9	0.91	68	0.954
250.0	281.624	2.75	64	10	0.63	71	0.794

Client:	**Eagle Foundry Company**	**Run:**	**2**
Source:	**Cooling Bunker BH Inlet - Steel Alloy**	**Date:**	**03/28/23**

Field Data Input Continued

Moisture Data			Stack Dimensional Data:		
Total Test Time	250.0	min	Circular		
Sample Time Interval	25.0	min	Diameter	48.000	in
Meter Volume, V_m	280.284	dcf	Rectangular		
Water Mass	40.2	g	Width		in
Nozzle Diameter, N_z	0.2500	in.	Length		in
Nozzle Area	0.000341	sq.ft.	Stack Area	12.566	sq.ft.
Traverse Data			Molecular Weight:		
Barometric Pressure, P_b	29.38	"Hg	CO_2 Average	0.09	%vd
Static Pressure	-0.90	"H_2O	O_2 Average	20.84	%vd
Pitot Factor, cp	0.84				
Meter Cal Factor	0.9686	Y			

Field Data Averages

Meter			Stack		
ΔH	4.045	"H_2O	√Dp	0.953	"H_2O
Temperature, T_m	57.9	^oF	Temperature, T_s	61.0	^oF
Temperature, T_m	517.6	^oA (^oR)	Temperature, T_s	520.7	^oA (^oR)
Pressure Meter, P_m	29.677	"Hg	Pressure Stack, P_s	29.314	"Hg

Field Data Calculations

Meter Box Capture			EPA Method 2 Stack Gas Flowrate:		
Standard Volume, $V_{m(std)}$	274.533	dscf	Velocity, V_s	53.76	fps
	7.774	dscm	Flow Rate (actual), Q_{aw}	40,533	acfm
Actual Volume, $V_{m(actual)}$	278.412	awcf		40,253	adcfm
Gas Stream Moisture			Flow Rate (standard), Q	2,414,750	wscf/hr
Moisture Vapor, $Vw_{(std)}$	1.896	scf		2,398,088	dscf/hr
Moisture, B_{ws}	0.0069			39,968	dscf/min
Moisture EPA M4	0.69	%v		40,246	wscf/min
Moisture @ Saturation	1.85	%v (for T_s < 212°F)			
EPA Method 3 Gas Density					
Dry, M_d	28.85	lb/lb-mole			
Wet, M_s	28.78	lb/lb-mole			
Percent Isokinetic	101.2	%			

Isokinetic Field Data
Field Data and Calculations
Gas Stream Characteristics

Client:	**Eagle Foundry Company**	**Run:**	**3**
Location:	**Eagle Creek, OR**	**Start Time:**	**10:35**
Source:	**Cooling Bunker BH Inlet - Steel Alloy**	**End Time:**	**14:45**
Method:	**29**	**Date:**	**03/29/23**

Sampling Data				Traverse Data			
Time	**Meter**	**ΔH**	**Meter**	**Traverse**	**Dp**	**Stack**	
min.	**ft^3**	**"H_2O**	**T_m ^oF**	**Point**	**"H_2O**	**T_s ^oF**	**√Dp**
	599.072						
25.0	622.780	2.90	46	1	0.65	42	0.806
50.0	646.520	2.95	49	2	0.68	55	0.825
75.0	675.580	4.35	52	3	1.00	60	1.000
100.0	708.800	5.65	55	4	1.30	60	1.140
125.0	742.150	5.70	58	5	1.30	60	1.140
150.0	774.280	5.25	58	6	1.20	60	1.095
175.0	804.900	4.80	61	7	1.10	64	1.049
200.0	837.000	5.25	62	8	1.20	64	1.095
225.0	870.230	5.65	64	9	1.30	72	1.140
250.0	899.604	4.40	67	10	1.00	69	1.000

Client:	**Eagle Foundry Company**	**Run:**	**3**
Source:	**Cooling Bunker BH Inlet - Steel Alloy**	**Date:**	**03/29/23**

Field Data Input Continued

Moisture Data			Stack Dimensional Data:		
Total Test Time	250.0	min	Circular		
Sample Time Interval	25.0	min	Diameter	48.000	in
Meter Volume, V_m	300.532	dcf	Rectangular		
Water Mass	43.3	g	Width		in
Nozzle Diameter, N_z	0.2500	in.	Length		in
Nozzle Area	0.000341	sq.ft.	Stack Area	12.566	sq.ft.
Traverse Data			Molecular Weight:		
Barometric Pressure, P_b	29.45	"Hg	CO_2 Average	0.06	%vd
Static Pressure	-0.90	"H_2O	O_2 Average	20.90	%vd
Pitot Factor, cp	0.84				
Meter Cal Factor	0.9686	Y			

Field Data Averages

Meter			Stack		
ΔH	4.690	"H_2O	√Dp	1.029	"H_2O
Temperature, T_m	57.2	^oF	Temperature, T_s	60.6	^oF
Temperature, T_m	516.9	^oA (^oR)	Temperature, T_s	520.3	^oA (^oR)
Pressure Meter, P_m	29.795	"Hg	Pressure Stack, P_s	29.384	"Hg

Field Data Calculations

Meter Box Capture			EPA Method 2 Stack Gas Flowrate:		
Standard Volume, $V_{m(std)}$	295.936	dscf	Velocity, V_s	57.96	fps
	8.380	dscm	Flow Rate (actual), Q_{aw}	43,700	acfm
Actual Volume, $V_{m(actual)}$	299.173	awcf		43,398	adcfm
Gas Stream Moisture			Flow Rate (standard), Q	2,611,625	wscf/hr
Moisture Vapor, $Vw_{(std)}$	2.042	scf		2,593,605	dscf/hr
Moisture, B_{ws}	0.0069			43,227	dscf/min
Moisture EPA M4	0.69	%v		43,527	wscf/min
Moisture @ Saturation	1.82	%v (for T_s < 212°F)			
EPA Method 3 Gas Density					
Dry, M_d	28.85	lb/lb-mole			
Wet, M_s	28.78	lb/lb-mole			
Percent Isokinetic	100.9	%			

Eagle Foundry Company **Run: 1**
Cooling Bunker BH Inlet - Steel Alloy **Sample Date: 03/27/23**
Method 29 Laboratory Results

Analyte	Filter + FH Rinse Cont. 1&3			BH Cap.Soln. + BH Rinse Cont. 4			Units
	<	Result	MDL	<	Result	MDL	
Aluminum		3,170	7.50		28.5	3.57	µg/sample
Antimony		3.28	1.25	<	MDL	0.595	µg/sample
Arsenic		9.26	8.75	<	MDL	0.833	µg/sample
Barium		17.9	0.125		1.54	0.060	µg/sample
Beryllium		0.074	0.050	<	MDL	0.024	µg/sample
Cadmium		0.339	0.100		3.35	0.048	µg/sample
Chromium		75.1	0.200		0.879	0.095	µg/sample
Cobalt		0.404	0.125		0.121	0.060	µg/sample
Copper		29.8	1.25		1.04	0.595	µg/sample
Lead		37.0	1.25		0.633	0.595	µg/sample
Manganese		2,580	0.075		1.66	0.036	µg/sample
Nickel		9.92	0.75		0.610	0.357	µg/sample
Phosphorus		49.5	5.00		4.26	2.38	µg/sample
Selenium	<	MDL	3.75	<	MDL	1.78	µg/sample
Silver		3.32	0.500	<	MDL	0.238	µg/sample
Thallium	<	MDL	2.50	<	MDL	1.19	µg/sample
Vanadium		1.12	0.250	<	MDL	0.119	µg/sample
Zinc		360	0.750		4.44	0.357	µg/sample

Lab ID:	23-S684	23-S685	
Sample Vol:	250	246	ml

Eagle Foundry Company **Run: 2**
Cooling Bunker BH Inlet - Steel Alloy **Sample Date: 03/28/23**
Method 29 Laboratory Results

Analyte	Filter + FH Rinse Cont. 1&3			BH Cap.Soln. + BH Rinse Cont. 4			Units
	<	Result	MDL		Result	MDL	
Aluminum		5,480	7.50		28.6	3.57	µg/sample
Antimony		4.52	1.25	<	MDL	0.595	µg/sample
Arsenic		12.7	8.75	<	MDL	0.833	µg/sample
Barium		27.8	0.125		4.69	0.0595	µg/sample
Beryllium		0.110	0.050	<	MDL	0.024	µg/sample
Cadmium		0.630	0.100		1.02	0.0476	µg/sample
Chromium		53.3	0.200		0.946	0.0952	µg/sample
Cobalt		0.571	0.125		0.123	0.0595	µg/sample
Copper		46.2	1.25		0.953	0.595	µg/sample
Lead		44.0	1.25	<	MDL	0.595	µg/sample
Manganese		2,150	0.075		3.96	0.0357	µg/sample
Nickel		10.8	0.750		1.22	0.357	µg/sample
Phosphorus		64.8	5.00	<	MDL	2.38	µg/sample
Selenium	<	MDL	3.75	<	MDL	1.785	µg/sample
Silver		2.01	0.500	<	MDL	0.238	µg/sample
Thallium	<	MDL	2.50	<	MDL	1.19	µg/sample
Vanadium		1.99	0.250	<	MDL	0.119	µg/sample
Zinc		364	0.750		3.90	0.357	µg/sample

Lab ID:	23-S689	23-S690	
Sample Vol:	250	253	ml

Eagle Foundry Company **Run: 3**
Cooling Bunker BH Inlet - Steel Alloy **Sample Date: 03/29/23**
Method 29 Laboratory Results

Analyte	Filter + FH Rinse Cont. 1&3			BH Cap.Soln. + BH Rinse Cont. 4			Units
	<	Result	MDL	<	Result	MDL	
Aluminum		5,680	7.50		30.6	3.48	µg/sample
Antimony		4.63	1.25	<	MDL	0.580	µg/sample
Arsenic		16.2	8.75	<	MDL	0.812	µg/sample
Barium		26.4	0.125		4.41	0.058	µg/sample
Beryllium		0.105	0.050	<	MDL	0.023	µg/sample
Cadmium		0.686	0.100		0.281	0.046	µg/sample
Chromium		49.1	0.200		0.504	0.093	µg/sample
Cobalt		0.481	0.125		0.071	0.058	µg/sample
Copper		51.1	1.25	<	MDL	0.580	µg/sample
Lead		46.0	1.25		0.905	0.580	µg/sample
Manganese		2,090	0.075		14.3	0.035	µg/sample
Nickel		11.1	0.750		0.552	0.348	µg/sample
Phosphorus		81.1	5.00	<	MDL	2.32	µg/sample
Selenium	<	MDL	3.75	<	MDL	1.74	µg/sample
Silver		1.81	0.500	<	MDL	0.232	µg/sample
Thallium	<	MDL	2.50	<	MDL	1.16	µg/sample
Vanadium		1.89	0.250	<	MDL	0.116	µg/sample
Zinc		428	0.750		1.75	0.348	µg/sample

Lab ID:	23-S694	23-S695	
Sample Vol:	250	287	ml

Eagle Foundry Company **Sample Dates: 3/27/2023**
Cooling Bunker BH Inlet - Steel Alloy **3/28/2023**
Method 29 Blank Results **3/29/2023**

Analyte	Filter Cont. 12 µg/filter			BH Cap.Soln. Cont. 9 5% HNO_3/ 10% H_2O_2 µg/sample			FH/BH Rinse Cont. 8A 0.1 N HNO_3 µg/sample		
	<	Result	MDL	<	Result	MDL	<	Result	MDL
Aluminum		58.8	7.50		16.3	3.78	<	MDL	7.50
Antimony		2.86	1.25	<	MDL	0.630	<	MDL	1.25
Arsenic	<	MDL	1.75	<	MDL	0.882	<	MDL	1.75
Barium		1.40	0.125		0.718	0.063		0.193	0.125
Beryllium	<	MDL	0.050	<	MDL	0.025	<	MDL	0.050
Cadmium	<	MDL	0.100	<	MDL	0.050	<	MDL	0.100
Chromium		1.03	0.200		0.306	0.101	<	MDL	0.200
Cobalt	<	MDL	0.125		0.153	0.063	<	MDL	0.125
Copper	<	MDL	1.25	<	MDL	0.630	<	MDL	1.25
Lead	<	MDL	1.25	<	MDL	0.630	<	MDL	1.25
Manganese		0.741	0.075		0.742	0.038	<	MDL	0.375
Nickel		3.96	0.750	<	MDL	0.378	<	MDL	0.750
Phosphorus		17.0	5.00	<	MDL	2.52	<	MDL	5.00
Selenium	<	MDL	3.75	<	MDL	1.89	<	MDL	3.75
Silver	<	MDL	0.500	<	MDL	0.252	<	MDL	0.500
Thallium	<	MDL	2.50	<	MDL	1.26	<	MDL	2.50
Vanadium	<	MDL	0.250	<	MDL	0.126	<	MDL	0.250
Zinc		1.52	0.750		0.415	0.378	<	MDL	0.750

Lab ID:	23-S729	23-S731	23-S730
Blank Vol, ml:	N/A	196	250

Eagle Foundry Company | **Run:** 1
Cooling Bunker BH Inlet - Steel Alloy | **Test Date:** 3/27/2023
Method 29 Non-Hg Metals Blank Correction Calculations | **Page:** 1 of 3

Analyte		I Sample FH Rinse+Filter µg	II Blank Correction FH Rinse µg	III Blank Correction Filter µg		IV Sample BH Cap.Soln. + BH Rinse µg	V Blank BH Cap.Soln. µg/ml	VI Blank Correction BH Cap.Soln. µg	VII Blank Correction BH Rinse µg	VIII Total BH Blank Correction µg	
Aluminum		3170.000	0.000	58.800		28.500	0.083	16.633	0.000	16.633	Al
Antimony		3.280	0.000	2.860	<	0.595	0.000	0.000	0.000	0.000	Sb
Arsenic		9.260	0.000	0.000	<	0.833	0.000	0.000	0.000	0.000	As
Barium		17.900	0.077	1.400		1.540	0.004	0.733	0.077	0.810	Ba
Beryllium		0.074	0.000	0.000	<	0.024	0.000	0.000	0.000	0.000	Be
Cadmium		0.339	0.000	0.000		3.350	0.000	0.000	0.000	0.000	Cd
Chromium		75.100	0.000	1.030		0.879	0.002	0.312	0.000	0.312	Cr
Cobalt		0.404	0.000	0.000		0.121	0.001	0.156	0.000	0.156	Co
Copper		29.800	0.000	0.000		1.040	0.000	0.000	0.000	0.000	Cu
Lead		37.000	0.000	0.000		0.633	0.000	0.000	0.000	0.000	Pb
Manganese		2580.000	0.000	0.741		1.660	0.004	0.757	0.000	0.757	Mn
Nickel		9.920	0.000	3.960		0.610	0.000	0.000	0.000	0.000	Ni
Phosphorus		49.500	0.000	17.000		4.260	0.000	0.000	0.000	0.000	P
Selenium	<	3.750	0.000	0.000	<	1.780	0.000	0.000	0.000	0.000	Se
Silver		3.320	0.000	0.000	<	0.238	0.000	0.000	0.000	0.000	Ag
Thallium	<	2.500	0.000	0.000	<	1.190	0.000	0.000	0.000	0.000	Tl
Vanadium		1.120	0.000	0.000	<	0.119	0.000	0.000	0.000	0.000	V
Zinc		360.000	0.000	1.520		4.440	0.002	0.423	0.000	0.423	Zn

	I	II	III	IV	V	VI	VII
Lab ID:	**23-S684**	**23-S730**	**23-S729**	**23-S685**	**23-S731**	**N/A**	**N/A**
Notes:	0.1N HNO_3	0.1N HNO_3		5% HNO_3/10% H_2O_2	5% HNO_3/	5%HNO_3/	0.1NHNO_3
	FH Filter & Probe Rinse			BH Imps 1-3	10% H_2O_2	10%H_2O_2	
	100ml 0.1N HNO_3 Rinse			100ml .1N HNO_3 Rinse			
				200ml 5% HNO_3/10% H_2O_2 Reagent			

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Analyte	X Allowable FH Blank Correction µg	XI Total FH Blank Correction (M_{fhb}) µg		XII 5% of FH Sample µg	XIII Lessor of XI or XII µg	XIV Greater of A or XIII µg		XV FH Net Sample µg	
Aluminum	58.800	58.800		158.500	58.800	58.80		3111.200	Al
Antimony	2.860	2.860		0.164	0.164	11.63		0.420	Sb
Arsenic	0.000	0.000		0.463	0.000	11.63		9.260	As
Barium	1.477	1.477		0.895	0.895	11.63		16.423	Ba
Beryllium	0.000	0.000		0.004	0.000	11.63		0.074	Be
Cadmium	0.000	0.000		0.017	0.000	11.63		0.339	Cd
Chromium	1.030	1.030		3.755	1.030	11.63		74.070	Cr
Cobalt	0.000	0.000		0.020	0.000	11.63		0.404	Co
Copper	0.000	0.000		1.490	0.000	11.63		29.800	Cu
Lead	0.000	0.000		1.850	0.000	11.63		37.000	Pb
Manganese	0.741	0.741		129.000	0.741	11.63		2579.259	Mn
Nickel	3.960	3.960		0.496	0.496	11.63		5.960	Ni
Phosphorus	11.630	17.000		2.475	2.475	11.63		37.870	P
Selenium	0.000	0.000	<	0.188	0.000	11.63	<	3.750	Se
Silver	0.000	0.000		0.166	0.000	11.63		3.320	Ag
Thallium	0.000	0.000	<	0.125	0.000	11.63	<	2.500	Tl
Vanadium	0.000	0.000		0.056	0.000	11.63		1.120	V
Zinc	1.520	1.520		18.000	1.520	11.63		358.480	Zn

Note: Allowable FH Blank (A) = (area of filter)*(1.4 µg/in^2) = 11.63 µg
where area of filter = 8.306 in^2

If A > blank > 0, use blank-derived value, M_{fhb}.
If blank > A, use greater of A or [lessor of 5% of sample µg or FH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company | **Run:** 1
Cooling Bunker BH Inlet - Steel Alloy | **Test Date:** 3/27/2023
Method 29 Non-Hg Metals Blank Correction Calculations | **Page:** 3 of 3

Analyte	XVI Allowable BH Blank Correction µg	XVII Total BH (M_{bhb}) Blank Correction µg		XVIII 5% of BH Sample µg	XIX Lessor of XVII or XVIII µg	XX Greater of 1 µg or XIX µg		XXI BH Net Sample µg		XXII FH Net Sample µg		XXIII FH+BH Total Net Sample µg	
Aluminum	1.425	16.633		1.425	1.425	1.425		**27.075**		**3111.200**		**3138.275**	Al
Antimony	0.000	0.000	<	0.030	0.000	1.000	<	**0.595**		**0.420**	<	**1.015**	Sb
Arsenic	0.000	0.000	<	0.042	0.000	1.000	<	**0.833**		**9.260**	<	**10.093**	As
Barium	0.810	0.810		0.077	0.077	1.000		**0.730**		**16.423**		**17.153**	Ba
Beryllium	0.000	0.000	<	0.001	0.000	1.000	<	**0.024**		**0.074**	<	**0.098**	Be
Cadmium	0.000	0.000		0.168	0.000	1.000		**3.350**		**0.339**		**3.689**	Cd
Chromium	0.312	0.312		0.044	0.044	1.000		**0.567**		**74.070**		**74.637**	Cr
Cobalt	0.156	0.156		0.006	0.006	1.000		**0.000**		**0.404**		**0.404**	Co
Copper	0.000	0.000		0.052	0.000	1.000		**1.040**		**29.800**		**30.840**	Cu
Lead	0.000	0.000		0.032	0.000	1.000		**0.633**		**37.000**		**37.633**	Pb
Manganese	0.757	0.757		0.083	0.083	1.000		**0.903**		**2579.259**		**2580.162**	Mn
Nickel	0.000	0.000		0.031	0.000	1.000		**0.610**		**5.960**		**6.570**	Ni
Phosphorus	0.000	0.000		0.213	0.000	1.000		**4.260**		**37.870**		**42.130**	P
Selenium	0.000	0.000	<	0.089	0.000	1.000	<	**1.780**	<	**3.750**	<	**5.530**	Se
Silver	0.000	0.000	<	0.012	0.000	1.000	<	**0.238**		**3.320**	<	**3.558**	Ag
Thallium	0.000	0.000	<	0.060	0.000	1.000	<	**1.190**	<	**2.500**	<	**3.690**	Tl
Vanadium	0.000	0.000	<	0.006	0.000	1.000	<	**0.119**		**1.120**	<	**1.239**	V
Zinc	0.423	0.423		0.222	0.222	1.000		**4.017**		**358.480**		**362.497**	Zn

Note: Allowable BH Blank rules:

If 1.00 µg > blank > 0 , use blank-derived value.
If blank > 1.00 µg, use greater of 1.00 µg or [lessor of 5% of sample µg or BH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company **Run: 2**
Cooling Bunker BH Inlet - Steel Alloy **Test Date: 3/28/2023**
Method 29 Non-Hg Metals Blank Correction Calculations **Page: 1 of 3**

Analyte		I Sample FH Rinse+Filter µg	II Blank Correction FH Rinse µg	III Blank Correction Filter µg		IV Sample BH Cap.Soln. + BH Rinse µg	V Blank BH Cap.Soln. µg/ml	VI Blank Correction BH Cap.Soln. µg	VII Blank Correction BH Rinse µg	VIII Total BH Blank Correction µg	
Aluminum		5480.000	0.000	58.800		28.600	0.083	16.633	0.000	16.633	Al
Antimony		4.520	0.000	2.860	<	0.595	0.000	0.000	0.000	0.000	Sb
Arsenic		12.700	0.000	0.000	<	0.833	0.000	0.000	0.000	0.000	As
Barium		27.800	0.077	1.400		4.690	0.004	0.733	0.077	0.810	Ba
Beryllium		0.110	0.000	0.000	<	0.024	0.000	0.000	0.000	0.000	Be
Cadmium		0.630	0.000	0.000		1.020	0.000	0.000	0.000	0.000	Cd
Chromium		53.300	0.000	1.030		0.946	0.002	0.312	0.000	0.312	Cr
Cobalt		0.571	0.000	0.000		0.123	0.001	0.156	0.000	0.156	Co
Copper		46.200	0.000	0.000		0.953	0.000	0.000	0.000	0.000	Cu
Lead		44.000	0.000	0.000	<	0.595	0.000	0.000	0.000	0.000	Pb
Manganese		2150.000	0.000	0.741		3.960	0.004	0.757	0.000	0.757	Mn
Nickel		10.800	0.000	3.960		1.220	0.000	0.000	0.000	0.000	Ni
Phosphorus		64.800	0.000	17.000	<	2.380	0.000	0.000	0.000	0.000	P
Selenium	<	3.750	0.000	0.000	<	1.785	0.000	0.000	0.000	0.000	Se
Silver		2.010	0.000	0.000	<	0.238	0.000	0.000	0.000	0.000	Ag
Thallium	<	2.500	0.000	0.000	<	1.190	0.000	0.000	0.000	0.000	Tl
Vanadium		1.990	0.000	0.000	<	0.119	0.000	0.000	0.000	0.000	V
Zinc		364.000	0.000	1.520		3.900	0.002	0.423	0.000	0.423	Zn

Lab ID:	**23-S689**	**23-S730**	**23-S729**	**23-S690**	**23-S731**	**N/A**	**N/A**
Content:	0.1N HNO_3	0.1N HNO_3		5% HNO_3/10% H_2O_2	5% HNO_3/	5%HNO_3/	0.1NHNO_3
	FH Filter & Probe Rinse			BH Imps 1-3	10% H_2O_2	10%H_2O_2	
	100ml 0.1N HNO_3 Rinse			100ml .1N HNO_3 Rinse			
				200ml 5% HNO_3/10% H_2O_2 Reagent			

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Analyte	X Allowable FH Blank Correction µg	XI Total FH Blank Correction µg		XII 5% of FH Sample µg	XIII Lessor of XI or XII µg	XIV Greater of A or XIII µg		XV FH Net Sample µg	
Aluminum	58.800	58.800		274.000	58.800	58.80		5421.200	Al
Antimony	2.860	2.860		0.226	0.226	11.63		1.660	Sb
Arsenic	0.000	0.000		0.635	0.000	11.63		12.700	As
Barium	1.477	1.477		1.390	1.390	11.63		26.323	Ba
Beryllium	0.000	0.000		0.006	0.000	11.63		0.110	Be
Cadmium	0.000	0.000		0.032	0.000	11.63		0.630	Cd
Chromium	1.030	1.030		2.665	1.030	11.63		52.270	Cr
Cobalt	0.000	0.000		0.029	0.000	11.63		0.571	Co
Copper	0.000	0.000		2.310	0.000	11.63		46.200	Cu
Lead	0.000	0.000		2.200	0.000	11.63		44.000	Pb
Manganese	0.741	0.741		107.500	0.741	11.63		2149.259	Mn
Nickel	3.960	3.960		0.540	0.540	11.63		6.840	Ni
Phosphorus	11.630	17.000		3.240	3.240	11.63		53.170	P
Selenium	0.000	0.000	<	0.188	0.000	11.63	<	3.750	Se
Silver	0.000	0.000		0.101	0.000	11.63		2.010	Ag
Thallium	0.000	0.000	<	0.125	0.000	11.63	<	2.500	Tl
Vanadium	0.000	0.000		0.100	0.000	11.63		1.990	V
Zinc	1.520	1.520		18.200	1.520	11.63		362.480	Zn

Note: Allowable FH Blank (A) = (area of filter)*(1.4 µg/in^2) = 11.63 µg
where area of filter = 8.306 in^2

If A > blank > 0, use blank-derived value.
If blank > A, use greater of A or [lessor of 5% of sample µg or FH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company **Run: 2**
Cooling Bunker BH Inlet - Steel Alloy **Test Date: 3/28/2023**
Method 29 Non-Hg Metals Blank Correction Calculations **Page: 3 of 3**

Analyte	XVI Allowable BH Blank Correction µg	XVII Total BH Blank Correction µg		XVIII 5% of BH Sample µg	XIX Lessor of XVII or XVIII µg	XX Greater of 1 µg or XIX µg		XXI BH Net Sample µg		XXII FH Net Sample µg		XXIII FH+BH Total Net Sample µg	
Aluminum	1.430	16.633		1.430	1.430	1.430		**27.170**		**5421.200**		**5448.370**	Al
Antimony	0.000	0.000	<	0.030	0.000	1.000	<	**0.595**		**1.660**	<	**2.255**	Sb
Arsenic	0.000	0.000	<	0.042	0.000	1.000	<	**0.833**		**12.700**	<	**13.533**	As
Barium	0.810	0.810		0.235	0.235	1.000		**3.880**		**26.323**		**30.203**	Ba
Beryllium	0.000	0.000	<	0.001	0.000	1.000	<	**0.024**		**0.110**	<	**0.134**	Be
Cadmium	0.000	0.000		0.051	0.000	1.000		**1.020**		**0.630**		**1.650**	Cd
Chromium	0.312	0.312		0.047	0.047	1.000		**0.634**		**52.270**		**52.904**	Cr
Cobalt	0.156	0.156		0.006	0.006	1.000		**0.000**		**0.571**		**0.571**	Co
Copper	0.000	0.000		0.048	0.000	1.000		**0.953**		**46.200**		**47.153**	Cu
Lead	0.000	0.000	<	0.030	0.000	1.000	<	**0.595**		**44.000**	<	**44.595**	Pb
Manganese	0.757	0.757		0.198	0.198	1.000		**3.203**		**2149.259**		**2152.462**	Mn
Nickel	0.000	0.000		0.061	0.000	1.000		**1.220**		**6.840**		**8.060**	Ni
Phosphorus	0.000	0.000	<	0.119	0.000	1.000	<	**2.380**		**53.170**	<	**55.550**	P
Selenium	0.000	0.000	<	0.089	0.000	1.000	<	**1.785**	<	**3.750**	<	**5.535**	Se
Silver	0.000	0.000	<	0.012	0.000	1.000	<	**0.238**		**2.010**	<	**2.248**	Ag
Thallium	0.000	0.000	<	0.060	0.000	1.000	<	**1.190**	<	**2.500**	<	**3.690**	Tl
Vanadium	0.000	0.000	<	0.006	0.000	1.000	<	**0.119**		**1.990**	<	**2.109**	V
Zinc	0.423	0.423		0.195	0.195	1.000		**3.477**		**362.480**		**365.957**	Zn

Note: Allowable BH Blank rules:

If 1.00 µg > blank > 0 , use blank-derived value.
If blank > 1.00 µg, use greater of 1.00 µg or [lessor of 5% of sample µg or BH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company **Run: 3**
Cooling Bunker BH Inlet - Steel Alloy **Test Date: 3/29/2023**
Method 29 Non-Hg Metals Blank Correction Calculations **Page: 1 of 3**

Analyte		I Sample FH Rinse+Filter µg	II Blank Correction FH Rinse µg	III Blank Correction Filter µg		IV Sample BH Cap.Soln. + BH Rinse µg	V Blank BH Cap.Soln. µg/ml	VI Blank Correction BH Cap.Soln. µg	VII Blank Correction BH Rinse µg	VIII Total BH Blank Correction µg	
Aluminum		5680.000	0.000	58.800		30.600	0.083	16.633	0.000	16.633	Al
Antimony		4.630	0.000	2.860	<	0.580	0.000	0.000	0.000	0.000	Sb
Arsenic		16.200	0.000	0.000	<	0.812	0.000	0.000	0.000	0.000	As
Barium		26.400	0.077	1.400		4.410	0.004	0.733	0.077	0.810	Ba
Beryllium		0.105	0.000	0.000	<	0.023	0.000	0.000	0.000	0.000	Be
Cadmium		0.686	0.000	0.000		0.281	0.000	0.000	0.000	0.000	Cd
Chromium		49.100	0.000	1.030		0.504	0.002	0.312	0.000	0.312	Cr
Cobalt		0.481	0.000	0.000		0.071	0.001	0.156	0.000	0.156	Co
Copper		51.100	0.000	0.000	<	0.580	0.000	0.000	0.000	0.000	Cu
Lead		46.000	0.000	0.000		0.905	0.000	0.000	0.000	0.000	Pb
Manganese		2090.000	0.000	0.741		14.300	0.004	0.757	0.000	0.757	Mn
Nickel		11.100	0.000	3.960		0.552	0.000	0.000	0.000	0.000	Ni
Phosphorus		81.100	0.000	17.000	<	2.320	0.000	0.000	0.000	0.000	P
Selenium	<	3.750	0.000	0.000	<	1.740	0.000	0.000	0.000	0.000	Se
Silver		1.810	0.000	0.000	<	0.232	0.000	0.000	0.000	0.000	Ag
Thallium	<	2.500	0.000	0.000	<	1.160	0.000	0.000	0.000	0.000	Tl
Vanadium		1.890	0.000	0.000	<	0.116	0.000	0.000	0.000	0.000	V
Zinc		428.000	0.000	1.520		1.750	0.002	0.423	0.000	0.423	Zn

Lab ID:	**23-S694**	**23-S730**	**23-S729**	**23-S695**	**23-S731**	**N/A**	**N/A**
Content:	0.1N HNO_3	0.1N HNO_3		5% HNO_3/10% H_2O_2	5% HNO_3/	5%HNO_3/	0.1NHNO_3
	FH Filter & Probe Rinse			BH Imps 1-3	10% H_2O_2	10%H_2O_2	
	100ml 0.1N HNO_3 Rinse			100ml .1N HNO_3 Rinse			
				200ml 5% HNO_3/10% H_2O_2 Reagent			

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Analyte	X Allowable FH Blank Correction µg	XI Total FH Blank Correction µg		XII 5% of FH Sample µg	XIII Lessor of XI or XII µg	XIV Greater of A or XIII µg		XV FH Net Sample µg	
Aluminum	58.800	58.800		284.000	58.800	58.80		5621.200	Al
Antimony	2.860	2.860		0.232	0.232	11.63		1.770	Sb
Arsenic	0.000	0.000		0.810	0.000	11.63		16.200	As
Barium	1.477	1.477		1.320	1.320	11.63		24.923	Ba
Beryllium	0.000	0.000		0.005	0.000	11.63		0.105	Be
Cadmium	0.000	0.000		0.034	0.000	11.63		0.686	Cd
Chromium	1.030	1.030		2.455	1.030	11.63		48.070	Cr
Cobalt	0.000	0.000		0.024	0.000	11.63		0.481	Co
Copper	0.000	0.000		2.555	0.000	11.63		51.100	Cu
Lead	0.000	0.000		2.300	0.000	11.63		46.000	Pb
Manganese	0.741	0.741		104.500	0.741	11.63		2089.259	Mn
Nickel	3.960	3.960		0.555	0.555	11.63		7.140	Ni
Phosphorus	11.630	17.000		4.055	4.055	11.63		69.470	P
Selenium	0.000	0.000	<	0.188	0.000	11.63	<	3.750	Se
Silver	0.000	0.000		0.091	0.000	11.63		1.810	Ag
Thallium	0.000	0.000	<	0.125	0.000	11.63	<	2.500	Tl
Vanadium	0.000	0.000		0.095	0.000	11.63		1.890	V
Zinc	1.520	1.520		21.400	1.520	11.63		426.480	Zn

Note: Allowable FH Blank (A) = (area of filter)*(1.4 µg/in^2) = 11.63 µg
where area of filter = 8.306 in^2

If A > blank > 0, use blank-derived value.
If blank > A, use greater of A or [lessor of 5% of sample µg or FH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company | **Run:** 3
Cooling Bunker BH Inlet - Steel Alloy | **Test Date:** 3/29/2023
Method 29 Non-Hg Metals Blank Correction Calculations | **Page:** 3 of 3

Analyte	XVI Allowable BH Blank Correction µg	XVII Total BH Blank Correction µg		XVIII 5% of BH Sample µg	XIX Lessor of XVII or XVIII µg	XX Greater of 1 µg or XIX µg		XXI BH Net Sample µg		XXII FH Net Sample µg		XXIII FH+BH Total Net Sample µg	
Aluminum	1.530	16.633		1.530	1.530	1.530		**29.070**		**5621.200**		**5650.270**	Al
Antimony	0.000	0.000	<	0.029	0.000	1.000	<	**0.580**		**1.770**	<	**2.350**	Sb
Arsenic	0.000	0.000	<	0.041	0.000	1.000	<	**0.812**		**16.200**	<	**17.012**	As
Barium	0.810	0.810		0.221	0.221	1.000		**3.600**		**24.923**		**28.523**	Ba
Beryllium	0.000	0.000	<	0.001	0.000	1.000	<	**0.023**		**0.105**	<	**0.128**	Be
Cadmium	0.000	0.000		0.014	0.000	1.000		**0.281**		**0.686**		**0.967**	Cd
Chromium	0.312	0.312		0.025	0.025	1.000		**0.192**		**48.070**		**48.262**	Cr
Cobalt	0.156	0.156		0.004	0.004	1.000		**0.000**		**0.481**		**0.481**	Co
Copper	0.000	0.000	<	0.029	0.000	1.000	<	**0.580**		**51.100**	<	**51.680**	Cu
Lead	0.000	0.000		0.045	0.000	1.000		**0.905**		**46.000**		**46.905**	Pb
Manganese	0.757	0.757		0.715	0.715	1.000		**13.543**		**2089.259**		**2102.802**	Mn
Nickel	0.000	0.000		0.028	0.000	1.000		**0.552**		**7.140**		**7.692**	Ni
Phosphorus	0.000	0.000	<	0.116	0.000	1.000	<	**2.320**		**69.470**	<	**71.790**	P
Selenium	0.000	0.000	<	0.087	0.000	1.000	<	**1.740**	<	**3.750**	<	**5.490**	Se
Silver	0.000	0.000	<	0.012	0.000	1.000	<	**0.232**		**1.810**	<	**2.042**	Ag
Thallium	0.000	0.000	<	0.058	0.000	1.000	<	**1.160**	<	**2.500**	<	**3.660**	Tl
Vanadium	0.000	0.000	<	0.006	0.000	1.000	<	**0.116**		**1.890**	<	**2.006**	V
Zinc	0.423	0.423		0.088	0.088	1.000		**1.327**		**426.480**		**427.807**	Zn

Note: Allowable BH Blank rules:

If 1.00 µg > blank > 0 , use blank-derived value.
If blank > 1.00 µg, use greater of 1.00 µg or [lessor of 5% of sample µg or BH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company
Cooling Bunker BH Inlet - Steel Alloy
Mercury Blank Correction Calculations

Blank Lab Values

	Filter Cont. 12 µg/filter		BH Imps. 2&3 Cap.Soln. Cont. 9 5% HNO_3/ 10% H_2O_2 µg/sample		FH/BH Rinse Cont. 8A 0.1 N HNO_3 µg/sample		BH Imps. 5&6 Rinse Cont. 8B H_2O µg/sample		BH Imps. 5&6 Cap.Soln. + Rinse Cont. 10 $KMnO_4$ µg/sample		BH Imps. 5&6 Rinse Cont. 11 HCl µg/sample	
Analyte	< **Result**	**MDL**	< **Result**	**MDL**	< **Result**	**MDL**	< **Result**	**MDL**	< **Result**	**MDL**	< **Result**	**MDL**
Mercury	0.0406	0.0219	0.118	0.0172	< MDL	0.0219	< MDL	0.0295	0.0628	0.0163	< MDL	0.0108
Lab ID:	23-S729		23-S731		23-S730		23-S732		23-S733		23-S734	
Blank vol, ml:	NA		196		250		337		186		124	

Blank Correction Values

Analyte: Mercury	**Blank FH HNO_3 Rinse µg**	**Blank Filter µg**	**Blank BH Cap.Soln. µg**	**Blank BH HNO_3 Rinse µg**	**Blank BH H_2O Rinse µg**	**Blank BH KMnO4 Cap.Soln. + Rinse µg**	**Blank BH HCl Rinse µg**	**Total Blank Correction µg**	**Is Total Blank Correction ≥ 0 and ≤ 0.6?**
Run 1	0.00	0.0406	0.12	0.00	0.00	0.10	0.00	0.2623	Yes
Reagent vol, ml	100.0		200.00	200.0	100.0	300.0	225.0		
Run 2	0.00	0.0406	0.12	0.00	0.00	0.10	0.00	0.2623	Yes
Reagent vol, ml	100.0		200.00	200.0	100.0	300.0	225.0		
Run 3	0.00	0.0406	0.12	0.00	0.00	0.10	0.00	0.2623	Yes
Reagent vol, ml	100.0		200.0	200.0	100.0	300.0	225.0		
Notes:	0.1N HNO_3 FH Probe Rinse	FH Filter	5% HNO_3/ 10% H_2O_2 BH Imps 2&3	0.1N HNO_3 BH Imps 1-4	H_2O BH Imps 5&6	4% $KMnO_4$/ 10% H_2SO_4 BH Imps 5&6	25 ml 8N HCl/ 200 ml H2O BH Imps 5&6		

Blank Corrected Results

Analyte: Mercury	**Sample FH Rinse + Filter Cont. 1&3 µg**	**Sample BH Cap.Soln. + HNO_3 Rinse Cont. 4 µg**	**Sample BH Imp. 4 + Rinse Cont. 5A µg**	**Sample BH Imps. 5&6 + Rinses Cont. 5B µg**	**Sample BH HCl Rinse + Water Cont. 5C µg**	**Total Sample µg**	**Total Blank Correction µg**	**Total Net Sample µg**
Run 1	< 0.0219	0.135	< 0.00928	0.213	< 0.0201	< 0.3774	0.2623	< 0.1151
Lab ID	23-S684	23-S685	23-S686	23-S687	23-S688			
Run 2	0.0250	0.196	< 0.00998	0.124	< 0.0196	< 0.3746	0.2623	< 0.1123
Lab ID	23-S689	23-S690	23-S691	23-S692	23-S693			
Run 3	< 0.0219	0.215	< 0.00998	0.175	< 0.0196	< 0.4415	0.2623	< 0.1792
Lab ID	23-S694	23-S695	23-S696	23-S697	23-S698			

Blank Rules: '<' indicates value is below the method detection limit (MDL)
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations but results are preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.
If the total blank correction value is less than or equal to 0.6 µg, subtract the total blank correction value from the total sample value to determine total net Hg. Otherwise, the value used for the blank correction shall be the greater of (1) 0.6 µg or (2) the lesser of [total FH blank + total BH blank] or 5% of the total sample valu

EPA Method 29
Gas Stream Characteristics
Test Summary

Client: **Eagle Foundry Company**
Source: **Cooling Bunker BH Inlet - Steel Alloy**
Location: **Eagle Creek, OR**

Parameter	Units	Run 1	Run 2	Run 3	
Date		3/27/2023	3/28/2023	3/29/2023	
Run Start Time		13:00	10:30	10:35	
Run End Time		17:10	14:40	14:45	
Duration	minutes	250	250	250	**Average**
Barometric Pressure	inHg	29.79	29.38	29.45	**29.54**
Nozzle Diameter	inches	0.250	0.250	0.250	**0.250**
Isokinetic Average	%	99.0	101.2	100.9	**100.4**
Sample Volume	dscf	291.103	274.533	295.936	**287.191**
Sample Volume	dscm	8.243	7.774	8.380	**8.132**
Stack Diameter	inches	48.00	48.00	48.00	**48.00**
Stack Area	ft^2	12.566	12.566	12.566	**12.566**
CO_2	%vd	0.09	0.09	0.06	**0.08**
O_2	%vd	20.64	20.84	20.90	**20.79**
Static Pressure	inH_2O	-0.90	-0.90	-0.90	**-0.90**
H_2O	%v	0.28	0.69	0.69	**0.55**
Wet Molecular Weight	lb/lb-mole	28.81	28.78	28.78	**28.79**
Velocity	fps	57.67	53.76	57.96	**56.46**
Flow Rate	adcfm	43,359	40,253	43,398	**42,337**
	acfm	43,481	40,533	43,700	**42,571**
	dscfm	43,321	39,968	43,227	**42,172**
Stack Temperature	°F	65.0	61.0	60.6	**62.2**
Production Data	lb melt/pour	12,201.579	12,201.119	12,077.535	
	ton melt/pour	6.101	6.101	6.039	
	lb Cr/melt	209.764	201.394	201.494	
	ton Cr/melt	0.105	0.101	0.101	
	lb Mn/melt	834.059	834.082	822.739	
	ton Mn/melt	0.417	0.417	0.411	
	lb Ni/Pour	74.327	70.459	69.572	
	ton Ni/Pour	0.037	0.035	0.035	

Eagle Foundry Company **Test Dates:** 3/27/2023
Cooling Bunker BH Inlet - Steel Alloy 3/28/2023
EPA Method 29 Results Summary 3/29/2023

Run 1													
	Total					FH Net			BH Net				
Analyte	µg	µg/dscm	lb/hr	lb/ton melt		µg	µg/dscm	lb/hr	µg	µg/dscm	lb/hr		
Aluminum	3138.275	380.720	6.18E-02	4.22E-02		3111.200	377.435	6.12E-02	27.075	3.285	5.33E-04		Al
Antimony	< 1.015	< 0.123	< 2.00E-05	< 1.36E-05		0.420	0.051	8.27E-06	< 0.595	< 0.072	< 1.17E-05		Sb
Arsenic	< 10.093	< 1.224	< 1.99E-04	< 1.36E-04		9.260	1.123	1.82E-04	< 0.833	< 0.101	< 1.64E-05		As
Barium	17.153	2.081	3.38E-04	2.31E-04		16.423	1.992	3.23E-04	0.730	0.089	1.44E-05		Ba
Beryllium	< 0.098	< 0.012	< 1.93E-06	< 1.32E-06		0.074	0.009	1.46E-06	< 0.024	< 0.003	< 4.72E-07		Be
Cadmium	3.689	0.448	7.26E-05	4.96E-05		0.339	0.041	6.67E-06	3.350	0.406	6.59E-05		Cd
Chromium	74.637	9.055	1.47E-03			74.070	8.986	1.46E-03	0.567	0.069	1.12E-05		Cr
Cobalt	0.404	0.049	7.95E-06	5.43E-06		0.404	0.049	7.95E-06	0.000	0.000	0.00E+00		Co
Copper	30.840	3.741	6.07E-04	4.15E-04		29.800	3.615	5.87E-04	1.040	0.126	2.05E-05		Cu
Lead	37.633	4.565	7.41E-04	5.06E-04		37.000	4.489	7.28E-04	0.633	0.077	1.25E-05		Pb
Manganese	2580.162	313.012	5.08E-02			2579.259	312.903	5.08E-02	0.903	0.110	1.78E-05		Mn
Mercury	< 0.115	< 0.014	< 2.27E-06	< 1.55E-06									Hg
Nickel	6.570	0.797	1.29E-04			5.960	0.723	1.17E-04	0.610	0.074	1.20E-05		Ni
Phosphorus	42.130	5.111	8.29E-04	5.66E-04		37.870	4.594	7.45E-04	4.260	0.517	8.39E-05		P
Selenium	< 5.530	< 0.671	< 1.09E-04	< 7.43E-05	<	3.750	< 0.455	< 7.38E-05	< 1.780	< 0.216	< 3.50E-05		Se
Silver	< 3.558	< 0.432	< 7.00E-05	< 4.78E-05		3.320	0.403	6.54E-05	< 0.238	< 0.029	< 4.69E-06		Ag
Thallium	< 3.690	< 0.448	< 7.26E-05	< 4.96E-05	<	2.500	< 0.303	< 4.92E-05	< 1.190	< 0.144	< 2.34E-05		Tl
Vanadium	< 1.239	< 0.150	< 2.44E-05	< 1.67E-05		1.120	0.136	2.20E-05	< 0.119	< 0.014	< 2.34E-06		V
Zinc	362.497	43.976	7.14E-03	4.87E-03		358.480	43.489	7.06E-03	4.017	0.487	7.91E-05		Zn

Chromium	lb Cr / ton Cr in melt =	5.84E-02
Manganese	lb Mn / ton Mn in melt =	5.07E-01
Nickel	lb Ni / ton Ni in melt =	1.45E-02

Run 1 Emission Factors

Run 2													
	Total					FH Net			BH Net				
Analyte	µg	µg/dscm	lb/hr	lb/ton melt		µg	µg/dscm	lb/hr	µg	µg/dscm	lb/hr		
Aluminum	5448.370	700.845	1.05E-01	7.17E-02		5421.200	697.350	1.04E-01	27.170	3.495	5.23E-04		Al
Antimony	< 2.255	< 0.290	< 4.34E-05	< 2.97E-05		1.660	0.214	3.20E-05	< 0.595	< 0.077	< 1.15E-05		Sb
Arsenic	< 13.533	< 1.741	< 2.61E-04	< 1.78E-04		12.700	1.634	2.45E-04	< 0.833	< 0.107	< 1.60E-05		As
Barium	30.203	3.885	5.82E-04	3.97E-04		26.323	3.386	5.07E-04	3.880	0.499	7.47E-05		Ba
Beryllium	< 0.134	< 0.017	< 2.58E-06	< 1.76E-06		0.110	0.014	2.12E-06	< 0.024	< 0.003	< 4.62E-07		Be
Cadmium	1.650	0.212	3.18E-05	2.17E-05		0.630	0.081	1.21E-05	1.020	0.131	1.96E-05		Cd
Chromium	52.904	6.805	1.02E-03			52.270	6.724	1.01E-03	0.634	0.082	1.22E-05		Cr
Cobalt	0.571	0.073	1.10E-05	7.51E-06		0.571	0.073	1.10E-05	0.000	0.000	0.00E+00		Co
Copper	47.153	6.065	9.08E-04	6.20E-04		46.200	5.943	8.90E-04	0.953	0.123	1.84E-05		Cu
Lead	< 44.595	< 5.736	< 8.59E-04	< 5.87E-04		44.000	5.660	8.47E-04	< 0.595	< 0.077	< 1.15E-05		Pb
Manganese	2152.462	276.880	4.15E-02			2149.259	276.468	4.14E-02	3.203	0.412	6.17E-05		Mn
Mercury	< 0.112	< 0.014	< 2.16E-06	< 1.48E-06									Hg
Nickel	8.060	1.037	1.55E-04			6.840	0.880	1.32E-04	1.220	0.157	2.35E-05		Ni
Phosphorus	< 55.550	< 7.146	< 1.07E-03	< 7.31E-04		53.170	6.839	1.02E-03	< 2.380	< 0.306	< 4.58E-05		P
Selenium	< 5.535	< 0.712	< 1.07E-04	< 7.28E-05	<	3.750	< 0.482	< 7.22E-05	< 1.785	< 0.230	< 3.44E-05		Se
Silver	< 2.248	< 0.289	< 4.33E-05	< 2.96E-05		2.010	0.259	3.87E-05	< 0.238	< 0.031	< 4.58E-06		Ag
Thallium	< 3.690	< 0.475	< 7.11E-05	< 4.85E-05	<	2.500	< 0.322	< 4.81E-05	< 1.190	< 0.153	< 2.29E-05		Tl
Vanadium	< 2.109	< 0.271	< 4.06E-05	< 2.77E-05		1.990	0.256	3.83E-05	< 0.119	< 0.015	< 2.29E-06		V
Zinc	365.957	47.074	7.05E-03	4.81E-03		362.480	46.627	6.98E-03	3.477	0.447	6.70E-05		Zn

Chromium	lb Cr / ton Cr in melt =	4.22E-02
Manganese	lb Mn / ton Mn in melt =	4.14E-01
Nickel	lb Ni / ton Ni in melt =	1.84E-02

Run 2 Emision Factors

Note: Results for Hg front half and back half fractions are not shown because these values are not blank-corrected. Per EPA Method 29, only the sum of Hg front and back half results is subject to blank correction.

'<' denotes results which were calculated using the method detection limit for front half or back half results that were non-detect.

Eagle Foundry Company **Test Dates:** 3/27/2023
Cooling Bunker BH Inlet - Steel Alloy 3/28/2023
EPA Method 29 Results Summary 3/29/2023

Run 3												
	Total				FH Net			BH Net				
Analyte	µg	µg/dscm	lb/hr	lb/ton melt	µg	µg/dscm	lb/hr	µg	µg/dscm	lb/hr		
Aluminum	5650.270	674.257	1.09E-01	7.53E-02	5621.200	670.788	1.09E-01	29.070	3.469	5.62E-04	Al	
Antimony	< 2.350	< 0.280	< 4.54E-05	< 3.13E-05	1.770	0.211	3.42E-05	< 0.580	< 0.069	< 1.12E-05	Sb	
Arsenic	< 17.012	< 2.030	< 3.29E-04	< 2.27E-04	16.200	1.933	3.13E-04	< 0.812	< 0.097	< 1.57E-05	As	
Barium	28.523	3.404	5.51E-04	3.80E-04	24.923	2.974	4.82E-04	3.600	0.430	6.96E-05	Ba	
Beryllium	< 0.128	< 0.015	< 2.47E-06	< 1.71E-06	0.105	0.013	2.03E-06	< 0.023	< 0.003	< 4.44E-07	Be	
Cadmium	0.967	0.115	1.87E-05	1.29E-05	0.686	0.082	1.33E-05	0.281	0.034	5.43E-06	Cd	
Chromium	48.262	5.759	9.32E-04		48.070	5.736	9.29E-04	0.192	0.023	3.71E-06	Cr	
Cobalt	0.481	0.057	9.29E-06	6.41E-06	0.481	0.057	9.29E-06	0.000	0.000	0.00E+00	Co	
Copper	< 51.680	< 6.167	< 9.99E-04	< 6.89E-04	51.100	6.098	9.87E-04	< 0.580	< 0.069	< 1.12E-05	Cu	
Lead	46.905	5.597	9.06E-04	6.25E-04	46.000	5.489	8.89E-04	0.905	0.108	1.75E-05	Pb	
Manganese	2102.802	250.931	4.06E-02		2089.259	249.315	4.04E-02	13.543	1.616	2.62E-04	Mn	
Mercury	< 0.179	< 0.021	< 3.46E-06	< 2.39E-06							Hg	
Nickel	7.692	0.918	1.49E-04		7.140	0.852	1.38E-04	0.552	0.066	1.07E-05	Ni	
Phosphorus	< 71.790	< 8.567	< 1.39E-03	< 9.57E-04	69.470	8.290	1.34E-03	< 2.320	< 0.277	< 4.48E-05	P	
Selenium	< 5.490	< 0.655	< 1.06E-04	< 7.32E-05	< 3.750	< 0.447	< 7.25E-05	< 1.740	< 0.208	< 3.36E-05	Se	
Silver	< 2.042	< 0.244	< 3.95E-05	< 2.72E-05	1.810	0.216	3.50E-05	< 0.232	< 0.028	< 4.48E-06	Ag	
Thallium	< 3.660	< 0.437	< 7.07E-05	< 4.88E-05	< 2.500	< 0.298	< 4.83E-05	< 1.160	< 0.138	< 2.24E-05	Tl	
Vanadium	< 2.006	< 0.239	< 3.88E-05	< 2.67E-05	1.890	0.226	3.65E-05	< 0.116	< 0.014	< 2.24E-06	V	
Zinc	427.807	51.051	8.27E-03	5.70E-03	426.480	50.893	8.24E-03	1.327	0.158	2.56E-05	Zn	

Chromium	lb Cr / ton Cr in melt =	3.86E-02
Manganese	lb Mn / ton Mn in melt =	4.12E-01
Nickel	lb Ni / ton Ni in melt =	1.78E-02

Run 3 Emision Factors

Mean Runs 1-3												
	Total				FH Net			BH Net				
Analyte	µg	µg/dscm	lb/hr	lb/ton melt	µg	µg/dscm	lb/hr	µg	µg/dscm	lb/hr		
Aluminum	4745.638	585.274	9.20E-02	6.31E-02	4717.867	581.858	9.14E-02	27.772	3.416	5.39E-04		
Antimony	< 1.873	< 0.231	< 3.63E-05	< 2.49E-05	1.283	0.159	2.48E-05	< 0.590	< 0.073	< 1.15E-05	Sb	
Arsenic	< 13.546	< 1.665	< 2.63E-04	< 1.80E-04	12.720	1.563	2.47E-04	< 0.826	< 0.102	< 1.60E-05	As	
Barium	25.293	3.123	4.90E-04	3.36E-04	22.556	2.784	4.37E-04	2.736	0.339	5.29E-05	Ba	
Beryllium	< 0.120	< 0.015	< 2.33E-06	< 1.60E-06	0.096	0.012	1.87E-06	< 0.024	< 0.003	< 4.59E-07	Be	
Cadmium	2.102	0.258	4.10E-05	2.81E-05	0.552	0.068	1.07E-05	1.550	0.190	3.03E-05	Cd	
Chromium	58.601	7.206	1.14E-03		58.137	7.149	1.13E-03	0.464	0.058	9.03E-06	Cr	
Cobalt	0.485	0.060	9.41E-06	6.45E-06	0.485	0.060	9.41E-06	0.000	0.000	0.00E+00	Co	
Copper	< 43.224	< 5.325	< 8.38E-04	< 5.75E-04	42.367	5.219	8.21E-04	< 0.858	< 0.106	< 1.67E-05	Cu	
Lead	< 43.044	< 5.300	< 8.35E-04	< 5.73E-04	42.333	5.213	8.21E-04	< 0.711	< 0.087	< 1.38E-05	Pb	
Manganese	2278.475	280.274	4.43E-02		2272.592	279.562	4.42E-02	5.883	0.713	1.14E-04	Mn	
Mercury	< 0.136	< 0.017	< 2.63E-06	< 1.80E-06							Hg	
Nickel	7.441	0.917	1.44E-04		6.647	0.818	1.29E-04	0.794	0.099	1.54E-05	Ni	
Phosphorus	< 56.490	< 6.941	< 1.10E-03	< 7.51E-04	53.503	6.575	1.04E-03	< 2.987	< 0.367	< 5.82E-05	P	
Selenium	< 5.518	< 0.679	< 1.07E-04	< 7.34E-05	< 3.750	< 0.462	< 7.28E-05	< 1.768	< 0.218	< 3.43E-05	Se	
Silver	< 2.616	< 0.321	< 5.09E-05	< 3.49E-05	2.380	0.292	4.63E-05	< 0.236	< 0.029	< 4.58E-06	Ag	
Thallium	< 3.680	< 0.453	< 7.15E-05	< 4.90E-05	< 2.500	< 0.308	< 4.86E-05	< 1.180	< 0.145	< 2.29E-05	Tl	
Vanadium	< 1.785	< 0.220	< 3.46E-05	< 2.37E-05	1.667	0.206	3.23E-05	< 0.118	< 0.015	< 2.29E-06	V	
Zinc	385.420	47.367	7.48E-03	5.13E-03	382.480	47.003	7.43E-03	2.940	0.364	5.72E-05	Zn	

Chromium	lb Cr / ton Cr in melt =	4.64E-02
Manganese	lb Mn / ton Mn in melt =	4.44E-01
Nickel	lb Ni / ton Ni in melt =	1.69E-02

Mean Runs 1-3

Note: Results for Hg front half and back half fractions are not shown because these values are not blank-corrected. Per EPA Method 29, only the sum of Hg front and back half results is subject to blank correction.

'<' denotes results which were calculated using the method detection limit for front half or back half results that were non-detect.

BISON ENGINEERING, INC.

COMPANY	**Eagle Foundry Company**
FACILITY	**Eagle Foundry**
LOCATION	**Eagle Creek, OR**
SOURCE	**Cooling Bunker BH Outlet - Steel Alloy**
DATE	**3/27/2023 - 3/29/2023**
METHOD	**29**
POLLUTANT	**Metals**

EPA Method 1
Stack Parameters and Traverse Points

Client: **Eagle Foundry Company**
Location: **Eagle Creek, OR**
Source: **Cooling Bunker BH Outlet - Steel Alloy**
Facility: **Eagle Foundry**

Type of Testing: P (P for Particulate; V for Velocity/Nonparticulate)
Type of Duct: C (C for circular; R for rectangular)

Number of ports available:	2	
Number of ports to be used:	2	
Port diameter:	4	inches
Sampling location height (approx.):		feet
Stack height (approx.):		feet
Circular ID (Rectangular Depth):	55.75	inches
Port depth and/or wall thickness:	6.50	inches
Stack width (Rectangular only):		inches

Equivalent Diameter
If rectangular = $\frac{2*Depth*Width}{Depth + Width}$ = 55.75 inches (If circular = duct ID)
Stack/duct area = 16.952 sq.feet 2441.1 sq. inches

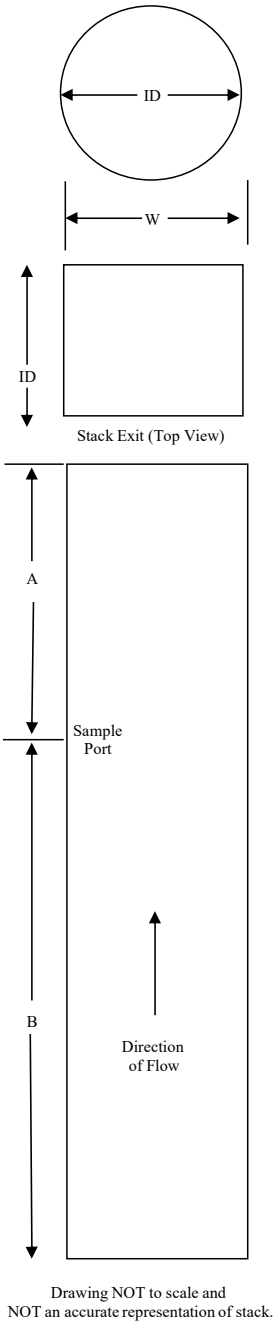
Sample Port Location:	Downstream flow disturbance from process B	Upstream flow disturbance toward exit A
Number of Inches:	246.00	45.00
Number of Diameters:	4.41	0.81

Minimum Number of Traverse Points: 24

Traverse points less than 1.0 inch from the stack wall are relocated to a distance of 1.0 inch.

Points	% of diameter	Distance from inside wall (in.)	Distance including port (in.)
1	2.1	1.17	7 5/8
2	6.7	3.74	10 1/4
3	11.8	6.58	13 1/8
4	17.7	9.87	16 3/8
5	25.0	13.94	20 1/2
6	35.6	19.85	26 3/8
7	64.4	35.90	42 3/8
8	75.0	41.81	48 3/8
9	82.3	45.88	52 3/8
10	88.2	49.17	55 5/8
11	93.3	52.01	58 1/2
12	97.9	54.58	61 1/8

Reference Diagram



Drawing NOT to scale and NOT an accurate representation of stack.

Pre-Test Traverse

Client: **Eagle Foundry Company**
Location: **Eagle Creek, OR**
Source: **Cooling Bunker BH Outlet - Steel Alloy**

Stack Temp: 58 °F

Traverse Point	Velocity ΔP ("H_2O)	Null Angle
1	0.67	0
2	0.71	5
3	0.73	0
4	0.69	5
5	0.65	5
6	0.69	0
7	0.72	5
8	0.76	0
9	0.75	5
10	0.72	0
11	0.71	5
12	0.62	5
Average:	0.70	3

Flow is found to be: Non-cyclonic

Isokinetic Field Data
Field Data Entry

Client:	**Eagle Foundry Company**	**Run:**	**1**
Location:	**Eagle Creek, OR**	**Start Time:**	**13:00**
Source:	**Cooling Bunker BH Outlet - Steel Alloy**	**End Time:**	**17:10**
EPA Method:	**29**	**Date:**	**3/27/2023**
Box Operator:	**JCR**		
Technician(s):	**AJV**		

Environmental Conditions/Test Notes:
Overcast and 40°F
Stopped at approximately 4 hours because melting and pouring was completed, cooling was sampled for approximately 1 hour similar to white iron.

Stack Dimensional Data:

Circular		
Diameter	55.750	in
Rectangular		
Width		in
Length		in
Stack Area	16.952	sq.ft.

Equipment:

Meterbox ID	12	Probe ID	7C	Liner type	GLASS		
Y factor	1.0267	Nozzle ID	0.266	Nozzle size	0.266	inches	
ΔH@	1.8	Hot box ID	HHB4	Nozzle area	0.000386	sq.ft.	
Bp ID	TS1	Pitot Cp	0.84	Probe heat	250	°F	
Balance ID	HLN FB-1	Pitot ID	7C	Filter heat	250	°F	
Weights ID	HLN FW-1	Probe Length, ft	7				

Source Information:

Barometric Pressure	29.89	"Hg	O_2	20.90	%
Static Pressure	1	"H_2O	CO_2	0.00	%
Ave. ΔP	0.7	"H_2O	Rec. Nz.	0.222	inches
Stack Temperature	58	°F			
Assumed moisture	0.50	%			
Assumed meter temp.	60	°F			
Total number of points	20				
Time per point	12.5	min.			
Total run time	250	min.			

Leak Checks:

	Pre-test	Post-test
Pitot	X	X
Leak rate, dcf	0.000	0.000
Leak check vacuum, "Hg	10	10

Nozzle check for roundness:

1	2	3	
0.265	0.267	0.267	inches
	Caliper ID	WS1	

Post Test Calculations:

Sample volume	234.771	dcf	Ave. ΔP	0.554	"H_2O
Wet mol. weight	28.78	M_s (actual)	Ave. √ΔP	0.744	"H_2O
Actual H_2O	0.55	%	Ave. ΔH	3.04	"H_2O
Std. meter vol.	241.322	dscf	Ave. T_s	69.2	°F
Isokinetic Average	100.2	%	Ave. T_m	70.8	°F

Moisture/Lab:
Filter, # N/A

	Initial	Final	Gain
Impingers, g	3,456.2	3,443.0	-13.2
Silica gel, g	864.5	906.1	41.6
		Total water gain, g:	28.4

Traverse Point	Time (min.)	Meter Volume (dcf) 0.000	Velocity ΔP ("H_2O)	Stack Temp. (°F)	Meter Temp. (°F)	Calc. ΔH	Run ΔH	Vacuum ("Hg)	Filter Box (°F)	Condenser Temp (≤68°F)
1	12.5	11.270	0.50	66	68	2.75	2.75	4	255	68
2	25.0	22.820	0.55	66	67	3.02	3.00	4	255	67
3	37.5	35.030	0.61	71	68	3.32	3.30	4	254	51
4	50.0	46.540	0.53	72	69	2.89	2.90	4	260	50
5	62.5	58.260	0.55	72	69	3.00	3.00	4	255	49
6	75.0	70.150	0.58	71	70	3.17	3.15	4	252	50
7	87.5	81.730	0.53	71	71	2.90	2.90	4	252	51
8	100.0	92.880	0.57	71	71	3.12	3.15	4	252	50
9	112.5	104.670	0.55	70	71	3.02	3.00	4	249	49
10	125.0	116.660	0.56	69	72	3.09	3.10	4	252	49
11	137.5	128.540	0.57	69	72	3.14	3.15	4	248	50
12	150.0	139.820	0.51	69	72	2.81	2.80	4	257	49
13	162.5	151.150	0.51	69	72	2.81	2.80	4	257	50
14	175.0	163.570	0.60	70	72	3.30	3.30	4	246	50
15	187.5	176.380	0.64	70	72	3.52	3.50	4	254	49
16	200.0	188.700	0.64	69	72	3.53	3.55	4	252	50
17	212.5	200.100	0.51	68	72	2.82	2.80	4	256	50
18	225.0	211.850	0.52	68	72	2.87	2.90	4	254	49
19	237.5	223.330	0.54	67	72	2.99	3.00	4	255	50
20	250.0	234.771	0.50	66	72	2.77	2.75	4	255	49

Isokinetic Field Data
Field Data Entry

Client:	**Eagle Foundry Company**	**Run:**	**2**
Location:	**Eagle Creek, OR**	**Start Time:**	**10:30**
Source:	**Cooling Bunker BH Outlet - Steel Alloy**	**End Time:**	**14:40**
EPA Method:	**29**	**Date:**	**3/28/2023**
Box Operator:	**JCR**		
Technician(s):	**AJV**		

Environmental Conditions/Test Notes:
Overcast and 40°F

Stack Dimensional Data:

Circular		
Diameter	55.750	in
Rectangular		
Width		in
Length		in
Stack Area	16.952	sq.ft.

Equipment:

Meterbox ID	12	Probe ID	7C	Liner type	GLASS		
Y factor	1.0267	Nozzle ID	0.266	Nozzle size	0.266	inches	
ΔH@	1.8	Hot box ID	HHB4	Nozzle area	0.000386	sq.ft.	
Bp ID	TS1	Pitot Cp	0.84	Probe heat	250	°F	
Balance ID	HLN FB-1	Pitot ID	7C	Filter heat	250	°F	
Weights ID	HLN FW-1	Probe Length, ft	7				

Source Information:

Barometric Pressure	29.38	"Hg	O_2	20.90	%
Static Pressure	1	"H_2O	CO_2	0.00	%
Ave. ΔP	0.7	"H_2O	Rec. Nz.	0.219	inches
Stack Temperature	58	°F			
Assumed moisture	0.55	%			
Assumed meter temp.	70.8	°F			
Total number of points	20				
Time per point	12.5	min.			
Total run time	250	min.			

Leak Checks:

	Pre-test	Post-test
Pitot	X	X
Leak rate, dcf	0.000	0.000
Leak check vacuum, "Hg	10	10

Nozzle check for roundness:

1	2	3	
0.265	0.267	0.267	inches
	Caliper ID	WS1	

Post Test Calculations:

Sample volume	229.677	dcf	Ave. ΔP	0.530	"H_2O
Wet mol. weight	28.74	M_s (actual)	Ave. √ΔP	0.727	"H_2O
Actual H_2O	0.94	%	Ave. ΔH	2.91	"H_2O
Std. meter vol.	233.772	dscf	Ave. T_s	65.4	°F
Isokinetic Average	100.2	%	Ave. T_m	66.8	°F

Moisture/Lab:

Filter, # N/A

	Initial	Final	Gain
Impingers, g	3,468.2	3,479.2	11.0
Silica gel, g	858.9	894.8	35.9
		Total water gain:	46.9

Traverse Point	Time (min.)	Meter Volume (dcf) 0.000	Velocity ΔP ("H_2O)	Stack Temp. (°F)	Meter Temp. (°F)	Calc. ΔH	Run ΔH	Vacuum ("Hg)	Filter Box (°F)	Condenser Temp (≤68°F)
1	12.5	11.500	0.50	56	66	2.79	2.80	3	258	39
2	25.0	22.830	0.51	57	66	2.84	2.85	3	255	39
3	37.5	34.380	0.53	58	67	2.95	2.95	3	250	42
4	50.0	45.660	0.50	66	67	2.74	2.75	3	249	43
5	62.5	56.850	0.51	64	67	2.81	2.80	3	249	42
6	75.0	69.170	0.60	65	68	3.31	3.30	3.5	253	43
7	87.5	81.230	0.59	65	68	3.25	3.25	3.5	252	44
8	100.0	92.990	0.56	65	67	3.08	3.10	3.5	253	44
9	112.5	105.490	0.62	65	65	3.40	3.40	3.5	256	43
10	125.0	117.590	0.60	65	66	3.29	3.30	3.5	255	44
11	137.5	128.650	0.49	65	65	2.68	2.70	3	253	44
12	150.0	139.770	0.50	65	66	2.74	2.75	3	265	46
13	162.5	150.880	0.50	66	65	2.73	2.70	3	256	46
14	175.0	162.110	0.50	66	67	2.74	2.70	3	253	46
15	187.5	172.950	0.48	66	66	2.63	2.60	3	253	47
16	200.0	184.180	0.49	67	67	2.68	2.70	3	256	46
17	212.5	195.050	0.48	69	68	2.62	2.60	3	253	47
18	225.0	206.580	0.55	72	69	3.00	3.00	3.5	252	47
19	237.5	218.610	0.59	75	68	3.19	3.20	3.5	251	47
20	250.0	229.677	0.50	70	68	2.73	2.75	3	252	47

Isokinetic Field Data
Field Data Entry

Client:	**Eagle Foundry Company**	**Run:**	**3**
Location:	**Eagle Creek, OR**	**Start Time:**	**10:35**
Source:	**Cooling Bunker BH Outlet - Steel Alloy**	**End Time:**	**14:45**
EPA Method:	**29**	**Date:**	**3/29/2023**
Box Operator:	**JCR**		
Technician(s):	**AJV**		

Environmental Conditions/Test Notes:
Overcast and 40°F

Stack Dimensional Data:

Circular		
Diameter	55.750	in
Rectangular		
Width		in
Length		in
Stack Area	16.952	sq.ft.

Equipment:

Meterbox ID	12	Probe ID	7C	Liner type	GLASS		
Y factor	1.0267	Nozzle ID	0.266	Nozzle size	0.266	inches	
ΔH@	1.8	Hot box ID	HHB4	Nozzle area	0.000386	sq.ft.	
Bp ID	TS1	Pitot Cp	0.84	Probe heat	250	°F	
Balance ID	HLN FB-1	Pitot ID	7C	Filter heat	250	°F	
Weights ID	HLN FW-1	Probe Length, ft	7				

Source Information:

Barometric Pressure	29.45	"Hg	O_2	20.90	%
Static Pressure	1	"H_2O	CO_2	0.00	%
Ave. ΔP	0.7	"H_2O	Rec. Nz.	0.22	inches
Stack Temperature	58	°F			
Assumed moisture	0.94	%			
Assumed meter temp.	66.8	°F			
Total number of points	20				
Time per point	12.5	min.			
Total run time	250	min.			

Leak Checks:

	Pre-test	Post-test
Pitot	X	X
Leak rate, dcf	0.000	0.000
Leak check vacuum, "Hg	10	10

Nozzle check for roundness:

1	2	3	
0.265	0.267	0.267	inches
	Caliper ID	WS1	

Post Test Calculations:

Sample volume	232.713	dcf	Ave. ΔP	0.544	"H_2O
Wet mol. weight	28.7	M_s (actual)	Ave. √ΔP	0.737	"H_2O
Actual H_2O	1.30	%	Ave. ΔH	2.965	"H_2O
Std. meter vol.	237.319	dscf	Ave. T_s	66.3	°F
Isokinetic Average	100.6	%	Ave. T_m	67.1	°F

Moisture/Lab:

Filter, # N/A

	Initial	Final	Gain
Impingers, g	3,487.6	3,514.5	26.9
Silica gel, g	884.2	923.4	39.2
		Total water gain:	66.1

Traverse Point	Time (min.)	Meter Volume (dcf) 0.000	Velocity ΔP ("H_2O)	Stack Temp. (°F)	Meter Temp. (°F)	Calc. ΔH	Run ΔH	Vacuum ("Hg)	Filter Box (°F)	Condenser Temp (≤68°F)
1	12.5	12.600	0.58	54	64	3.22	3.20	3	255	41
2	25.0	25.280	0.58	55	63	3.21	3.20	3	253	42
3	37.5	36.900	0.57	60	62	3.11	3.10	3	253	45
4	50.0	48.580	0.57	64	63	3.10	3.10	3	242	47
5	62.5	60.170	0.53	64	64	2.88	2.90	2.5	253	48
6	75.0	71.490	0.52	63	64	2.84	2.85	2.5	253	48
7	87.5	83.080	0.55	65	64	2.99	3.00	2.5	245	49
8	100.0	94.690	0.55	64	65	3.00	3.00	2.5	255	50
9	112.5	106.480	0.57	64	65	3.11	3.10	3	247	50
10	125.0	118.240	0.53	63	66	2.90	2.90	3	252	49
11	137.5	129.890	0.55	65	66	3.00	3.00	2.5	255	52
12	150.0	141.650	0.55	67	67	2.99	3.00	2.5	257	55
13	162.5	153.590	0.57	69	69	3.10	3.10	2.5	252	56
14	175.0	164.980	0.57	69	69	3.10	3.10	2.5	266	57
15	187.5	176.760	0.54	69	70	2.94	2.95	2.5	258	57
16	200.0	187.740	0.50	73	71	2.71	2.70	2.5	250	59
17	212.5	198.930	0.52	75	71	2.81	2.80	2.5	258	52
18	225.0	210.070	0.51	76	72	2.75	2.75	2.5	257	52
19	237.5	221.250	0.51	74	73	2.77	2.75	2.5	256	52
20	250.0	232.713	0.51	73	74	2.78	2.80	2.5	252	52

EPA Method 4
Impinger Weights Summary

Client: **Eagle Foundry Company**
Location: **Eagle Creek, OR**
Source: **Cooling Bunker BH Outlet - Steel Alloy**
EPA Method: **29**
Box Operator: **JCR**
Technician(s): **AJV**

Run 1
Impinger gain by weight (g):

#	Initial	Final	Gain
1	730.1	702.3	-27.8
2	699.2	708.2	9.0
3	622.4	628.0	5.6
4	670.6	670.3	-0.3
5	733.9	734.2	0.3
Totals:	3,456.2	3,443.0	-13.2

Run 2
Impinger gain by weight (g):

#	Initial	Final	Gain
1	735.7	704.2	-31.5
2	705.1	736.5	31.4
3	628.7	635.2	6.5
4	736.8	740.4	3.6
5	661.9	662.9	1.0
Totals:	3,468.2	3,479.2	11.0

Run 3
Impinger gain by weight (g):

#	Initial	Final	Gain
1	741.2	698.9	-42.3
2	710.7	742.3	31.6
3	627.6	656.5	28.9
4	740.1	746.1	6.0
5	668.0	670.7	2.7
Totals:	3,487.6	3,514.5	26.9

Isokinetic Field Data
Field Data and Calculations
Gas Stream Characteristics

Client:	**Eagle Foundry Company**	**Run:**	**1**
Location:	**Eagle Creek, OR**	**Start Time:**	**13:00**
Source:	**Cooling Bunker BH Outlet - Steel Alloy**	**End Time:**	**17:10**
Method:	**29**	**Date:**	**3/27/2023**

Sampling Data				Traverse Data			
Time	**Meter**	**ΔH**	**Meter**	**Traverse**	**Dp**	**Stack**	
min.	**ft^3**	**"H_2O**	**T_m ^oF**	**Point**	**"H_2O**	**T_s ^oF**	**√Dp**
	0.000						
12.5	11.270	2.75	68	1	0.50	66	0.707
25.0	22.820	3.00	67	2	0.55	66	0.742
37.5	35.030	3.30	68	3	0.61	71	0.781
50.0	46.540	2.90	69	4	0.53	72	0.728
62.5	58.260	3.00	69	5	0.55	72	0.742
75.0	70.150	3.15	70	6	0.58	71	0.762
87.5	81.730	2.90	71	7	0.53	71	0.728
100.0	92.880	3.15	71	8	0.57	71	0.755
112.5	104.670	3.00	71	9	0.55	70	0.742
125.0	116.660	3.10	72	10	0.56	69	0.748
137.5	128.540	3.15	72	11	0.57	69	0.755
150.0	139.820	2.80	72	12	0.51	69	0.714
162.5	151.150	2.80	72	13	0.51	69	0.714
175.0	163.570	3.30	72	14	0.60	70	0.775
187.5	176.380	3.50	72	15	0.64	70	0.800
200.0	188.700	3.55	72	16	0.64	69	0.800
212.5	200.100	2.80	72	17	0.51	68	0.714
225.0	211.850	2.90	72	18	0.52	68	0.721
237.5	223.330	3.00	72	19	0.54	67	0.735
250.0	234.771	2.75	72	20	0.50	66	0.707

Client:	**Eagle Foundry Company**	**Run:**	**1**
Source:	**Cooling Bunker BH Outlet - Steel Alloy**	**Date:**	**03/27/23**

Field Data Input Continued

Moisture Data			Stack Dimensional Data:		
Total Test Time	250.0	min	Circular		
Sample Time Interval	12.5	min	Diameter	55.750	in
Meter Volume, V_m	234.771	dcf	Rectangular		
Water Mass	28.4	g	Width		in
Nozzle Diameter, N_z	0.2660	in.	Length		in
Nozzle Area	0.000386	sq.ft.	Stack Area	16.952	sq.ft.
Traverse Data			Molecular Weight:		
Barometric Pressure, P_b	29.89	"Hg	CO_2 Average	0.09	%vd
Static Pressure	1.00	"H_2O	O_2 Average	20.64	%vd
Pitot Factor, cp	0.84				
Meter Cal Factor	1.0267	Y			

Field Data Averages

Meter			Stack		
ΔH	3.040	"H_2O	√Dp	0.744	"H_2O
Temperature, T_m	70.8	^oF	Temperature, T_s	69.2	^oF
Temperature, T_m	530.5	^oA (^oR)	Temperature, T_s	528.9	^oA (^oR)
Pressure Meter, P_m	30.114	"Hg	Pressure Stack, P_s	29.964	"Hg

Field Data Calculations

Meter Box Capture			EPA Method 2 Stack Gas Flowrate:		
Standard Volume, $V_{m(std)}$	241.322	dscf	Velocity, V_s	41.84	fps
	6.833	dscm	Flow Rate (actual), Q_{aw}	42,556	acfm
Actual Volume, $V_{m(actual)}$	242.851	awcf		42,322	adcfm
Gas Stream Moisture			Flow Rate (standard), Q	2,551,331	wscf/hr
Moisture Vapor, $Vw_{(std)}$	1.339	scf		2,537,299	dscf/hr
Moisture, B_{ws}	0.0055			42,288	dscf/min
Moisture EPA M4	0.55	%v		42,522	wscf/min
Moisture @ Saturation	2.40	%v (for T_s < 212°F)			
EPA Method 3 Gas Density					
Dry, M_d	28.84	lb/lb-mole			
Wet, M_s	28.78	lb/lb-mole			
Percent Isokinetic	100.2	%			

Isokinetic Field Data
Field Data and Calculations
Gas Stream Characteristics

Client:	**Eagle Foundry Company**	**Run:**	**2**
Location:	**Eagle Creek, OR**	**Start Time:**	**10:30**
Source:	**Cooling Bunker BH Outlet - Steel Alloy**	**End Time:**	**14:40**
Method:	**29**	**Date:**	**03/28/23**

Sampling Data				Traverse Data			
Time	**Meter**	**ΔH**	**Meter**	**Traverse**	**Dp**	**Stack**	
min.	**ft^3**	**"H_2O**	**T_m °F**	**Point**	**"H_2O**	**T_s °F**	**√Dp**
	0.000						
12.5	11.500	2.80	66	1	0.50	56	0.707
25.0	22.830	2.85	66	2	0.51	57	0.714
37.5	34.380	2.95	67	3	0.53	58	0.728
50.0	45.660	2.75	67	4	0.50	66	0.707
62.5	56.850	2.80	67	5	0.51	64	0.714
75.0	69.170	3.30	68	6	0.60	65	0.775
87.5	81.230	3.25	68	7	0.59	65	0.768
100.0	92.990	3.10	67	8	0.56	65	0.748
112.5	105.490	3.40	65	9	0.62	65	0.787
125.0	117.590	3.30	66	10	0.60	65	0.775
137.5	128.650	2.70	65	11	0.49	65	0.700
150.0	139.770	2.75	66	12	0.50	65	0.707
162.5	150.880	2.70	65	13	0.50	66	0.707
175.0	162.110	2.70	67	14	0.50	66	0.707
187.5	172.950	2.60	66	15	0.48	66	0.693
200.0	184.180	2.70	67	16	0.49	67	0.700
212.5	195.050	2.60	68	17	0.48	69	0.693
225.0	206.580	3.00	69	18	0.55	72	0.742
237.5	218.610	3.20	68	19	0.59	75	0.768
250.0	229.677	2.75	68	20	0.50	70	0.707

Client:	**Eagle Foundry Company**	**Run:**	**2**
Source:	**Cooling Bunker BH Outlet - Steel Alloy**	**Date:**	**03/28/23**

Field Data Input Continued

Moisture Data			Stack Dimensional Data:		
Total Test Time	250.0	min	Circular		
Sample Time Interval	12.5	min	Diameter	55.750	in
Meter Volume, V_m	229.677	dcf	Rectangular		
Water Mass	46.9	g	Width		in
Nozzle Diameter, N_z	0.2660	in.	Length		in
Nozzle Area	0.000386	sq.ft.	Stack Area	16.952	sq.ft.
Traverse Data			Molecular Weight:		
Barometric Pressure, P_b	29.38	"Hg	CO_2 Average	0.09	%vd
Static Pressure	1.00	"H_2O	O_2 Average	20.84	%vd
Pitot Factor, cp	0.84				
Meter Cal Factor	1.0267	Y			

Field Data Averages

Meter			Stack		
ΔH	2.910	"H_2O	√Dp	0.727	"H_2O
Temperature, T_m	66.8	^oF	Temperature, T_s	65.4	^oF
Temperature, T_m	526.5	^oA (^oR)	Temperature, T_s	525.1	^oA (^oR)
Pressure Meter, P_m	29.594	"Hg	Pressure Stack, P_s	29.454	"Hg

Field Data Calculations

Meter Box Capture			EPA Method 2 Stack Gas Flowrate:		
Standard Volume, $V_{m(std)}$	233.772	dscf	Velocity, V_s	41.11	fps
	6.620	dscm	Flow Rate (actual), Q_{aw}	41,814	acfm
Actual Volume, $V_{m(actual)}$	238.542	awcf		41,421	adcfm
Gas Stream Moisture			Flow Rate (standard), Q	2,481,983	wscf/hr
Moisture Vapor, $Vw_{(std)}$	2.212	scf		2,458,652	dscf/hr
Moisture, B_{ws}	0.0094			40,978	dscf/min
Moisture EPA M4	0.94	%v		41,366	wscf/min
Moisture @ Saturation	2.14	%v (for $T_s < 212°F$)			
EPA Method 3 Gas Density					
Dry, M_d	28.85	lb/lb-mole			
Wet, M_s	28.75	lb/lb-mole			
Percent Isokinetic	100.2	%			

Isokinetic Field Data
Field Data and Calculations
Gas Stream Characteristics

Client:	**Eagle Foundry Company**	**Run:**	**3**
Location:	**Eagle Creek, OR**	**Start Time:**	**10:35**
Source:	**Cooling Bunker BH Outlet - Steel Alloy**	**End Time:**	**14:45**
Method:	**29**	**Date:**	**03/29/23**

Sampling Data				Traverse Data			
Time	**Meter**	**ΔH**	**Meter**	**Traverse**	**Dp**	**Stack**	
min.	**ft^3**	**"H_2O**	**T_m ^oF**	**Point**	**"H_2O**	**T_s ^oF**	**√Dp**
	0.000						
12.5	12.600	3.20	64	1	0.58	54	0.762
25.0	25.280	3.20	63	2	0.58	55	0.762
37.5	36.900	3.10	62	3	0.57	60	0.755
50.0	48.580	3.10	63	4	0.57	64	0.755
62.5	60.170	2.90	64	5	0.53	64	0.728
75.0	71.490	2.85	64	6	0.52	63	0.721
87.5	83.080	3.00	64	7	0.55	65	0.742
100.0	94.690	3.00	65	8	0.55	64	0.742
112.5	106.480	3.10	65	9	0.57	64	0.755
125.0	118.240	2.90	66	10	0.53	63	0.728
137.5	129.890	3.00	66	11	0.55	65	0.742
150.0	141.650	3.00	67	12	0.55	67	0.742
162.5	153.590	3.10	69	13	0.57	69	0.755
175.0	164.980	3.10	69	14	0.57	69	0.755
187.5	176.760	2.95	70	15	0.54	69	0.735
200.0	187.740	2.70	71	16	0.50	73	0.707
212.5	198.930	2.80	71	17	0.52	75	0.721
225.0	210.070	2.75	72	18	0.51	76	0.714
237.5	221.250	2.75	73	19	0.51	74	0.714
250.0	232.713	2.80	74	20	0.51	73	0.714

Client:	**Eagle Foundry Company**	**Run:**	**3**
Source:	**Cooling Bunker BH Outlet - Steel Alloy**	**Date:**	**03/29/23**

Field Data Input Continued

Moisture Data			Stack Dimensional Data:		
Total Test Time	250.0	min	Circular		
Sample Time Interval	12.5	min	Diameter	55.750	in
Meter Volume, V_m	232.713	dcf	Rectangular		
Water Mass	66.1	g	Width		in
Nozzle Diameter, N_z	0.2660	in.	Length		in
Nozzle Area	0.000386	sq.ft.	Stack Area	16.952	sq.ft.
Traverse Data			Molecular Weight:		
Barometric Pressure, P_b	29.45	"Hg	CO_2 Average	0.06	%vd
Static Pressure	1.00	"H_2O	O_2 Average	20.90	%vd
Pitot Factor, cp	0.84				
Meter Cal Factor	1.0267	Y			

Field Data Averages

Meter			Stack		
ΔH	2.965	"H_2O	√Dp	0.737	"H_2O
Temperature, T_m	67.1	^oF	Temperature, T_s	66.3	^oF
Temperature, T_m	526.8	^oA (^oR)	Temperature, T_s	526.0	^oA (^oR)
Pressure Meter, P_m	29.668	"Hg	Pressure Stack, P_s	29.524	"Hg

Field Data Calculations

Meter Box Capture			EPA Method 2 Stack Gas Flowrate:		
Standard Volume, $V_{m(std)}$	237.319	dscf	Velocity, V_s	41.69	fps
	6.720	dscm	Flow Rate (actual), Q_{aw}	42,404	acfm
Actual Volume, $V_{m(actual)}$	242.885	awcf		41,853	adcfm
Gas Stream Moisture			Flow Rate (standard), Q	2,518,665	wscf/hr
Moisture Vapor, $Vw_{(std)}$	3.117	scf		2,485,922	dscf/hr
Moisture, B_{ws}	0.0130			41,432	dscf/min
Moisture EPA M4	1.30	%v		41,978	wscf/min
Moisture @ Saturation	2.21	%v (for T_s < 212°F)			
EPA Method 3 Gas Density					
Dry, M_d	28.85	lb/lb-mole			
Wet, M_s	28.71	lb/lb-mole			
Percent Isokinetic	100.6	%			

Eagle Foundry Company **Run: 1**
Cooling Bunker BH Outlet - Steel Alloy **Sample Date: 03/27/23**
Method 29 Laboratory Results

Analyte	Filter + FH Rinse Cont. 1&3			BH Cap.Soln. + BH Rinse Cont. 4			Units
	<	Result	MDL	<	Result	MDL	
Aluminum		74.2	7.50		12.1	3.39	µg/sample
Antimony		3.54	1.25	<	MDL	0.565	µg/sample
Arsenic		2.63	1.75	<	MDL	0.791	µg/sample
Barium		3.30	0.125		0.703	0.056	µg/sample
Beryllium	<	MDL	0.050	<	MDL	0.023	µg/sample
Cadmium	<	MDL	0.100		0.095	0.045	µg/sample
Chromium		1.90	0.200		0.778	0.090	µg/sample
Cobalt	<	MDL	0.125	<	MDL	0.056	µg/sample
Copper		1.48	1.25	<	MDL	0.565	µg/sample
Lead	<	MDL	1.25		0.687	0.565	µg/sample
Manganese		5.53	0.075		1.15	0.034	µg/sample
Nickel		4.60	0.750		0.536	0.339	µg/sample
Phosphorus		20.2	5.00	<	MDL	2.26	µg/sample
Selenium	<	MDL	3.75	<	MDL	1.70	µg/sample
Silver	<	MDL	0.500	<	MDL	0.226	µg/sample
Thallium	<	MDL	2.50	<	MDL	1.13	µg/sample
Vanadium	<	MDL	0.250	<	MDL	0.113	µg/sample
Zinc		8.16	0.750		8.71	0.339	µg/sample

Lab ID:	23-S714	23-S715	
Sample Vol:	250	356	ml

Eagle Foundry Company **Run: 3**
Cooling Bunker BH Outlet - Steel Alloy **Sample Date: 03/29/23**
Method 29 Laboratory Results

Analyte	Filter + FH Rinse Cont. 1&3			BH Cap.Soln. + BH Rinse Cont. 4			Units
	<	Result	MDL	<	Result	MDL	
Aluminum		79.8	7.50		30.7	3.45	µg/sample
Antimony		2.36	1.25	<	MDL	0.575	µg/sample
Arsenic		2.64	1.75	<	MDL	0.805	µg/sample
Barium		3.59	0.125		1.85	0.058	µg/sample
Beryllium	<	MDL	0.050	<	MDL	0.023	µg/sample
Cadmium	<	MDL	0.100		0.059	0.046	µg/sample
Chromium		1.35	0.200		0.698	0.092	µg/sample
Cobalt	<	MDL	0.125		0.114	0.058	µg/sample
Copper	<	MDL	1.25		6.39	0.575	µg/sample
Lead	<	MDL	1.25		0.821	0.575	µg/sample
Manganese		5.81	0.075		12.7	0.034	µg/sample
Nickel		4.40	0.750		1.35	0.345	µg/sample
Phosphorus		20.3	5.00	<	MDL	2.30	µg/sample
Selenium	<	MDL	3.75	<	MDL	1.72	µg/sample
Silver	<	MDL	0.500	<	MDL	0.230	µg/sample
Thallium	<	MDL	2.50	<	MDL	1.15	µg/sample
Vanadium	<	MDL	0.250	<	MDL	0.115	µg/sample
Zinc		4.20	0.750		8.61	0.345	µg/sample

Lab ID:	23-S724	23-S725	
Sample Vol:	250	310	ml

Eagle Foundry Company **Run: 2**
Cooling Bunker BH Outlet - Steel Alloy **Sample Date: 03/28/23**
Method 29 Laboratory Results

Analyte	Filter + FH Rinse Cont. 1&3			BH Cap.Soln. + BH Rinse Cont. 4			Units
	<	Result	MDL		Result	MDL	
Aluminum		89.0	7.50		26.9	3.45	µg/sample
Antimony		3.27	1.25	<	MDL	0.575	µg/sample
Arsenic		2.61	1.75	<	MDL	0.805	µg/sample
Barium		5.00	0.125		1.35	0.058	µg/sample
Beryllium	<	MDL	0.050	<	MDL	0.023	µg/sample
Cadmium	<	MDL	0.100		0.141	0.046	µg/sample
Chromium		1.57	0.200		0.725	0.092	µg/sample
Cobalt	<	MDL	0.125		0.106	0.058	µg/sample
Copper		2.60	1.25		1.74	0.575	µg/sample
Lead		1.56	1.25		1.37	0.575	µg/sample
Manganese		5.54	0.075		2.07	0.034	µg/sample
Nickel		5.68	0.750		1.91	0.345	µg/sample
Phosphorus		20.5	5.00	<	MDL	2.30	µg/sample
Selenium	<	MDL	3.75	<	MDL	1.72	µg/sample
Silver	<	MDL	0.500	<	MDL	0.230	µg/sample
Thallium	<	MDL	2.50	<	MDL	1.15	µg/sample
Vanadium	<	MDL	0.250	<	MDL	0.115	µg/sample
Zinc		7.78	0.750		9.40	0.345	µg/sample

Lab ID:	23-S719	23-S720	
Sample Vol:	250	302	ml

Eagle Foundry Company **Sample Dates: 3/27/2023**
Cooling Bunker BH Outlet - Steel Alloy **3/28/2023**
Method 29 Blank Results **3/29/2023**

Analyte	Filter Cont. 12 µg/filter		BH Cap.Soln. Cont. 9 5% HNO_3/ 10% H_2O_2 µg/sample		FH/BH Rinse Cont. 8A 0.1 N HNO_3 µg/sample	
	< Result	MDL	< Result	MDL	< Result	MDL
Aluminum	58.8	7.50	16.3	3.78	< MDL	7.50
Antimony	2.86	1.25	< MDL	0.630	< MDL	1.25
Arsenic	< MDL	1.75	< MDL	0.882	< MDL	1.75
Barium	1.40	0.125	0.718	0.063	0.193	0.125
Beryllium	< MDL	0.050	< MDL	0.025	< MDL	0.050
Cadmium	< MDL	0.100	< MDL	0.050	< MDL	0.100
Chromium	1.03	0.200	0.306	0.101	< MDL	0.200
Cobalt	< MDL	0.125	0.153	0.063	< MDL	0.125
Copper	< MDL	1.25	< MDL	0.630	< MDL	1.25
Lead	< MDL	1.25	< MDL	0.630	< MDL	1.25
Manganese	0.741	0.075	0.742	0.038	< MDL	0.375
Nickel	3.96	0.750	< MDL	0.378	< MDL	0.750
Phosphorus	17.0	5.00	< MDL	2.52	< MDL	5.00
Selenium	< MDL	3.75	< MDL	1.89	< MDL	3.75
Silver	< MDL	0.500	< MDL	0.252	< MDL	0.500
Thallium	< MDL	2.50	< MDL	1.26	< MDL	2.50
Vanadium	< MDL	0.250	< MDL	0.126	< MDL	0.250
Zinc	1.52	0.750	0.415	0.378	< MDL	0.750

Lab ID:	23-S729	23-S731	23-S730
Blank Vol, ml:	N/A	196	250

Eagle Foundry Company **Run: 1**
Cooling Bunker BH Outlet - Steel Alloy **Test Date: 3/27/2023**
Method 29 Non-Hg Metals Blank Correction Calculations **Page: 1 of 3**

Analyte		I Sample FH Rinse+Filter µg	II Blank Correction FH Rinse µg	III Blank Correction Filter µg		IV Sample BH Cap.Soln. + BH Rinse µg	V Blank BH Cap.Soln. µg/ml	VI Blank Correction BH Cap.Soln. µg	VII Blank Correction BH Rinse µg	VIII Total BH Blank Correction µg	
Aluminum		74.200	0.000	58.800		12.100	0.083	16.633	0.000	16.633	Al
Antimony		3.540	0.000	2.860	<	0.565	0.000	0.000	0.000	0.000	Sb
Arsenic		2.630	0.000	0.000	<	0.791	0.000	0.000	0.000	0.000	As
Barium		3.300	0.077	1.400		0.703	0.004	0.733	0.077	0.810	Ba
Beryllium	<	0.050	0.000	0.000	<	0.023	0.000	0.000	0.000	0.000	Be
Cadmium	<	0.100	0.000	0.000		0.095	0.000	0.000	0.000	0.000	Cd
Chromium		1.900	0.000	1.030		0.778	0.002	0.312	0.000	0.312	Cr
Cobalt	<	0.125	0.000	0.000	<	0.056	0.001	0.156	0.000	0.156	Co
Copper		1.480	0.000	0.000	<	0.565	0.000	0.000	0.000	0.000	Cu
Lead	<	1.250	0.000	0.000		0.687	0.000	0.000	0.000	0.000	Pb
Manganese		5.530	0.000	0.741		1.150	0.004	0.757	0.000	0.757	Mn
Nickel		4.600	0.000	3.960		0.536	0.000	0.000	0.000	0.000	Ni
Phosphorus		20.200	0.000	17.000	<	2.260	0.000	0.000	0.000	0.000	P
Selenium	<	3.750	0.000	0.000	<	1.700	0.000	0.000	0.000	0.000	Se
Silver	<	0.500	0.000	0.000	<	0.226	0.000	0.000	0.000	0.000	Ag
Thallium	<	2.500	0.000	0.000	<	1.130	0.000	0.000	0.000	0.000	Tl
Vanadium	<	0.250	0.000	0.000	<	0.113	0.000	0.000	0.000	0.000	V
Zinc		8.160	0.000	1.520		8.710	0.002	0.423	0.000	0.423	Zn

Lab ID:	**23-S714**	**23-S730**	**23-S729**	**23-S715**	**23-S731**	**N/A**	**N/A**
Notes:	0.1N HNO_3	0.1N HNO_3		5% HNO_3/10% H_2O_2	5% HNO_3/	5%HNO_3/	0.1NHNO_3
	FH Filter & Probe Rinse			BH Imps 1-3	10% H_2O_2	10%H_2O_2	
	100ml 0.1N HNO_3 Rinse			100ml .1N HNO_3 Rinse			
				200ml 5% HNO_3/10% H_2O_2 Reagent			

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Analyte	X Allowable FH Blank Correction µg	XI Total FH Blank Correction µg		XII 5% of FH Sample µg	XIII Lessor of XI or XII µg	XIV Greater of A or XIII µg		XV FH Net Sample µg	
Aluminum	11.630	58.800		3.710	3.710	11.63		62.570	Al
Antimony	2.860	2.860		0.177	0.177	11.63		0.680	Sb
Arsenic	0.000	0.000		0.132	0.000	11.63		2.630	As
Barium	1.477	1.477		0.165	0.165	11.63		1.823	Ba
Beryllium	0.000	0.000	<	0.003	0.000	11.63	<	0.050	Be
Cadmium	0.000	0.000	<	0.005	0.000	11.63	<	0.100	Cd
Chromium	1.030	1.030		0.095	0.095	11.63		0.870	Cr
Cobalt	0.000	0.000	<	0.006	0.000	11.63	<	0.125	Co
Copper	0.000	0.000		0.074	0.000	11.63		1.480	Cu
Lead	0.000	0.000	<	0.063	0.000	11.63	<	1.250	Pb
Manganese	0.741	0.741		0.277	0.277	11.63		4.789	Mn
Nickel	3.960	3.960		0.230	0.230	11.63		0.640	Ni
Phosphorus	11.630	17.000		1.010	1.010	11.63		8.570	P
Selenium	0.000	0.000	<	0.188	0.000	11.63	<	3.750	Se
Silver	0.000	0.000	<	0.025	0.000	11.63	<	0.500	Ag
Thallium	0.000	0.000	<	0.125	0.000	11.63	<	2.500	Tl
Vanadium	0.000	0.000	<	0.013	0.000	11.63	<	0.250	V
Zinc	1.520	1.520		0.408	0.408	11.63		6.640	Zn

Note: Allowable FH Blank (A) = (area of filter)*(1.4 µg/in^2) = 11.63 µg
where area of filter = 8.306 in^2

If A > blank > 0, use blank-derived value, M_{fhb}.
If blank > A, use greater of A or [lessor of 5% of sample µg or FH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company | **Run:** 1
Cooling Bunker BH Outlet - Steel Alloy | **Test Date:** 3/27/2023
Method 29 Non-Hg Metals Blank Correction Calculations | **Page:** 3 of 3

Analyte	XVI Allowable BH Blank Correction µg	XVII Total BH Blank Correction µg		XVIII 5% of BH Sample µg	XIX Lessor of XVII or XVIII µg	XX Greater of 1 µg or XIX µg		XXI BH Net Sample µg		XXII FH Net Sample µg		XXIII FH+BH Total Net Sample µg	
Aluminum	1.000	16.633		0.605	0.605	1.000		**11.100**		**62.570**		**73.670**	Al
Antimony	0.000	0.000	<	0.028	0.000	1.000	<	**0.565**		**0.680**	<	**1.245**	Sb
Arsenic	0.000	0.000	<	0.040	0.000	1.000	<	**0.791**		**2.630**	<	**3.421**	As
Barium	0.810	0.810		0.035	0.035	1.000		**0.000**		**1.823**		**1.823**	Ba
Beryllium	0.000	0.000	<	0.001	0.000	1.000	<	**0.023**	<	**0.050**	<	**0.073**	Be
Cadmium	0.000	0.000		0.005	0.000	1.000		**0.095**	<	**0.100**	<	**0.195**	Cd
Chromium	0.312	0.312		0.039	0.039	1.000		**0.466**		**0.870**		**1.336**	Cr
Cobalt	0.156	0.156	<	0.003	0.156	1.000		**0.000**	<	**0.125**	<	**0.125**	Co
Copper	0.000	0.000	<	0.028	0.000	1.000	<	**0.565**		**1.480**	<	**2.045**	Cu
Lead	0.000	0.000		0.034	0.000	1.000		**0.687**	<	**1.250**	<	**1.937**	Pb
Manganese	0.757	0.757		0.058	0.058	1.000		**0.393**		**4.789**		**5.182**	Mn
Nickel	0.000	0.000		0.027	0.000	1.000		**0.536**		**0.640**		**1.176**	Ni
Phosphorus	0.000	0.000	<	0.113	0.000	1.000	<	**2.260**		**8.570**	<	**10.830**	P
Selenium	0.000	0.000	<	0.085	0.000	1.000	<	**1.700**	<	**3.750**	<	**5.450**	Se
Silver	0.000	0.000	<	0.011	0.000	1.000	<	**0.226**	<	**0.500**	<	**0.726**	Ag
Thallium	0.000	0.000	<	0.057	0.000	1.000	<	**1.130**	<	**2.500**	<	**3.630**	Tl
Vanadium	0.000	0.000	<	0.006	0.000	1.000	<	**0.113**	<	**0.250**	<	**0.363**	V
Zinc	0.423	0.423		0.436	0.423	1.000		**8.287**		**6.640**		**14.927**	Zn

Note: Allowable BH Blank rules:

If 1.00 µg > blank > 0 , use blank-derived value.
If blank > 1.00 µg, use greater of 1.00 µg or [lessor of 5% of sample µg or BH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company **Run: 2**
Cooling Bunker BH Outlet - Steel Alloy **Test Date: 3/28/2023**
Method 29 Non-Hg Metals Blank Correction Calculations **Page: 1 of 3**

Analyte		I Sample FH Rinse+Filter µg	II Blank Correction FH Rinse µg	III Blank Correction Filter µg		IV Sample BH Cap.Soln. + BH Rinse µg	V Blank BH Cap.Soln. µg/ml	VI Blank Correction BH Cap.Soln. µg	VII Blank Correction BH Rinse µg	VIII Total BH Blank Correction µg	
Aluminum		89.000	0.000	58.800		26.900	0.083	16.633	0.000	16.633	Al
Antimony		3.270	0.000	2.860	<	0.575	0.000	0.000	0.000	0.000	Sb
Arsenic		2.610	0.000	0.000	<	0.805	0.000	0.000	0.000	0.000	As
Barium		5.000	0.077	1.400		1.350	0.004	0.733	0.077	0.810	Ba
Beryllium	<	0.050	0.000	0.000	<	0.023	0.000	0.000	0.000	0.000	Be
Cadmium	<	0.100	0.000	0.000		0.141	0.000	0.000	0.000	0.000	Cd
Chromium		1.570	0.000	1.030		0.725	0.002	0.312	0.000	0.312	Cr
Cobalt	<	0.125	0.000	0.000		0.106	0.001	0.156	0.000	0.156	Co
Copper		2.600	0.000	0.000		1.740	0.000	0.000	0.000	0.000	Cu
Lead		1.560	0.000	0.000		1.370	0.000	0.000	0.000	0.000	Pb
Manganese		5.540	0.000	0.741		2.070	0.004	0.757	0.000	0.757	Mn
Nickel		5.680	0.000	3.960		1.910	0.000	0.000	0.000	0.000	Ni
Phosphorus		20.500	0.000	17.000	<	2.300	0.000	0.000	0.000	0.000	P
Selenium	<	3.750	0.000	0.000	<	1.720	0.000	0.000	0.000	0.000	Se
Silver	<	0.500	0.000	0.000	<	0.230	0.000	0.000	0.000	0.000	Ag
Thallium	<	2.500	0.000	0.000	<	1.150	0.000	0.000	0.000	0.000	Tl
Vanadium	<	0.250	0.000	0.000	<	0.115	0.000	0.000	0.000	0.000	V
Zinc		7.780	0.000	1.520		9.400	0.002	0.423	0.000	0.423	Zn

Lab ID:	**23-S719**	**23-S730**	**23-S729**	**23-S720**	**23-S731**	**N/A**	**N/A**
Content:	0.1N HNO_3	0.1N HNO_3		5% HNO_3/10% H_2O_2	5% HNO_3/	5%HNO_3/	0.1NHNO_3
	FH Filter & Probe Rinse			BH Imps 1-3	10% H_2O_2	10%H_2O_2	
	100ml 0.1N HNO_3 Rinse			100ml .1N HNO_3 Rinse			
				200ml 5% HNO_3/10% H_2O_2 Reagent			

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Analyte	X Allowable FH Blank Correction µg	XI Total FH Blank Correction µg		XII 5% of FH Sample µg	XIII Lessor of XI or XII µg	XIV Greater of A or XIII µg		XV FH Net Sample µg	
Aluminum	11.630	58.800		4.450	4.450	11.63		77.370	Al
Antimony	2.860	2.860		0.164	0.164	11.63		0.410	Sb
Arsenic	0.000	0.000		0.131	0.000	11.63		2.610	As
Barium	1.477	1.477		0.250	0.250	11.63		3.523	Ba
Beryllium	0.000	0.000	<	0.003	0.000	11.63	<	0.050	Be
Cadmium	0.000	0.000	<	0.005	0.000	11.63	<	0.100	Cd
Chromium	1.030	1.030		0.079	0.079	11.63		0.540	Cr
Cobalt	0.000	0.000	<	0.006	0.000	11.63	<	0.125	Co
Copper	0.000	0.000		0.130	0.000	11.63		2.600	Cu
Lead	0.000	0.000		0.078	0.000	11.63		1.560	Pb
Manganese	0.741	0.741		0.277	0.277	11.63		4.799	Mn
Nickel	3.960	3.960		0.284	0.284	11.63		1.720	Ni
Phosphorus	11.630	17.000		1.025	1.025	11.63		8.870	P
Selenium	0.000	0.000	<	0.188	0.000	11.63	<	3.750	Se
Silver	0.000	0.000	<	0.025	0.000	11.63	<	0.500	Ag
Thallium	0.000	0.000	<	0.125	0.000	11.63	<	2.500	Tl
Vanadium	0.000	0.000	<	0.013	0.000	11.63	<	0.250	V
Zinc	1.520	1.520		0.389	0.389	11.63		6.260	Zn

Note: Allowable FH Blank (A) = (area of filter)*(1.4 µg/in^2) = 11.63 µg
where area of filter = 8.306 in^2

If A > blank > 0, use blank-derived value.
If blank > A, use greater of A or [lessor of 5% of sample µg or FH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company | **Run:** | **2**
Cooling Bunker BH Outlet - Steel Alloy | **Test Date:** | **3/28/2023**
Method 29 Non-Hg Metals Blank Correction Calculations | **Page:** | **3 of 3**

Analyte	XVI Allowable BH Blank Correction µg	XVII Total BH Blank Correction µg		XVIII 5% of BH Sample µg	XIX Lessor of XVII or XVIII µg	XX Greater of 1 µg or XIX µg		XXI BH Net Sample µg		XXII FH Net Sample µg		XXIII FH+BH Total Net Sample µg	
Aluminum	1.345	16.633		1.345	1.345	1.345		**25.555**		**77.370**		**102.925**	Al
Antimony	0.000	0.000	<	0.029	0.000	1.000	<	**0.575**		**0.410**	<	**0.985**	Sb
Arsenic	0.000	0.000	<	0.040	0.000	1.000	<	**0.805**		**2.610**	<	**3.415**	As
Barium	0.810	0.810		0.068	0.068	1.000		**0.540**		**3.523**		**4.063**	Ba
Beryllium	0.000	0.000	<	0.001	0.000	1.000	<	**0.023**	<	**0.050**	<	**0.073**	Be
Cadmium	0.000	0.000		0.007	0.000	1.000		**0.141**	<	**0.100**	<	**0.241**	Cd
Chromium	0.312	0.312		0.036	0.036	1.000		**0.413**		**0.540**		**0.953**	Cr
Cobalt	0.156	0.156		0.005	0.005	1.000		**0.000**	<	**0.125**	<	**0.125**	Co
Copper	0.000	0.000		0.087	0.000	1.000		**1.740**		**2.600**		**4.340**	Cu
Lead	0.000	0.000		0.069	0.000	1.000		**1.370**		**1.560**		**2.930**	Pb
Manganese	0.757	0.757		0.104	0.104	1.000		**1.313**		**4.799**		**6.112**	Mn
Nickel	0.000	0.000		0.096	0.000	1.000		**1.910**		**1.720**		**3.630**	Ni
Phosphorus	0.000	0.000	<	0.115	0.000	1.000	<	**2.300**		**8.870**	<	**11.170**	P
Selenium	0.000	0.000	<	0.086	0.000	1.000	<	**1.720**	<	**3.750**	<	**5.470**	Se
Silver	0.000	0.000	<	0.012	0.000	1.000	<	**0.230**	<	**0.500**	<	**0.730**	Ag
Thallium	0.000	0.000	<	0.058	0.000	1.000	<	**1.150**	<	**2.500**	<	**3.650**	Tl
Vanadium	0.000	0.000	<	0.006	0.000	1.000	<	**0.115**	<	**0.250**	<	**0.365**	V
Zinc	0.423	0.423		0.470	0.423	1.000		**8.977**		**6.260**		**15.237**	Zn

Note: Allowable BH Blank rules:

If 1.00 µg > blank > 0 , use blank-derived value.
If blank > 1.00 µg, use greater of 1.00 µg or [lessor of 5% of sample µg or BH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company **Run: 3**
Cooling Bunker BH Outlet - Steel Alloy **Test Date: 3/29/2023**
Method 29 Non-Hg Metals Blank Correction Calculations **Page: 1 of 3**

Analyte		I Sample FH Rinse+Filter µg	II Blank Correction FH Rinse µg	III Blank Correction Filter µg		IV Sample BH Cap.Soln. + BH Rinse µg	V Blank BH Cap.Soln. µg/ml	VI Blank Correction BH Cap.Soln. µg	VII Blank Correction BH Rinse µg	VIII Total BH Blank Correction µg	
Aluminum		79.800	0.000	58.800		30.700	0.083	16.633	0.000	16.633	Al
Antimony		2.360	0.000	2.860	<	0.575	0.000	0.000	0.000	0.000	Sb
Arsenic		2.640	0.000	0.000	<	0.805	0.000	0.000	0.000	0.000	As
Barium		3.590	0.077	1.400		1.850	0.004	0.733	0.077	0.810	Ba
Beryllium	<	0.050	0.000	0.000	<	0.023	0.000	0.000	0.000	0.000	Be
Cadmium	<	0.100	0.000	0.000		0.059	0.000	0.000	0.000	0.000	Cd
Chromium		1.350	0.000	1.030		0.698	0.002	0.312	0.000	0.312	Cr
Cobalt	<	0.125	0.000	0.000		0.114	0.001	0.156	0.000	0.156	Co
Copper	<	1.250	0.000	0.000		6.390	0.000	0.000	0.000	0.000	Cu
Lead	<	1.250	0.000	0.000		0.821	0.000	0.000	0.000	0.000	Pb
Manganese		5.810	0.000	0.741		12.700	0.004	0.757	0.000	0.757	Mn
Nickel		4.400	0.000	3.960		1.350	0.000	0.000	0.000	0.000	Ni
Phosphorus		20.300	0.000	17.000	<	2.300	0.000	0.000	0.000	0.000	P
Selenium	<	3.750	0.000	0.000	<	1.720	0.000	0.000	0.000	0.000	Se
Silver	<	0.500	0.000	0.000	<	0.230	0.000	0.000	0.000	0.000	Ag
Thallium	<	2.500	0.000	0.000	<	1.150	0.000	0.000	0.000	0.000	Tl
Vanadium	<	0.250	0.000	0.000	<	0.115	0.000	0.000	0.000	0.000	V
Zinc		4.200	0.000	1.520		8.610	0.002	0.423	0.000	0.423	Zn

Lab ID:	**23-S724**	**23-S730**	**23-S729**	**23-S725**	**23-S731**	**N/A**	**N/A**
Content:	0.1N HNO_3	0.1N HNO_3		5% HNO_3/10% H_2O_2	5% HNO_3/	5%HNO_3/	0.1NHNO_3
	FH Filter & Probe Rinse			BH Imps 1-3	10% H_2O_2	10%H_2O_2	
	100ml 0.1N HNO_3 Rinse			100ml .1N HNO_3 Rinse			
				200ml 5% HNO_3/10% H_2O_2 Reagent			

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Analyte	X Allowable FH Blank Correction µg	XI Total FH Blank Correction µg		XII 5% of FH Sample µg	XIII Lessor of XI or XII µg	XIV Greater of A or XIII µg		XV FH Net Sample µg	
Aluminum	11.630	58.800		3.990	3.990	11.63		68.170	Al
Antimony	2.860	2.860		0.118	0.118	11.63		-0.500	Sb
Arsenic	0.000	0.000		0.132	0.000	11.63		2.640	As
Barium	1.477	1.477		0.180	0.180	11.63		2.113	Ba
Beryllium	0.000	0.000	<	0.003	0.000	11.63	<	0.050	Be
Cadmium	0.000	0.000	<	0.005	0.000	11.63	<	0.100	Cd
Chromium	1.030	1.030		0.068	0.068	11.63		0.320	Cr
Cobalt	0.000	0.000	<	0.006	0.000	11.63	<	0.125	Co
Copper	0.000	0.000	<	0.063	0.000	11.63	<	1.250	Cu
Lead	0.000	0.000	<	0.063	0.000	11.63	<	1.250	Pb
Manganese	0.741	0.741		0.291	0.291	11.63		5.069	Mn
Nickel	3.960	3.960		0.220	0.220	11.63		0.440	Ni
Phosphorus	11.630	17.000		1.015	1.015	11.63		8.670	P
Selenium	0.000	0.000	<	0.188	0.000	11.63	<	3.750	Se
Silver	0.000	0.000	<	0.025	0.000	11.63	<	0.500	Ag
Thallium	0.000	0.000	<	0.125	0.000	11.63	<	2.500	Tl
Vanadium	0.000	0.000	<	0.013	0.000	11.63	<	0.250	V
Zinc	1.520	1.520		0.210	0.210	11.63		2.680	Zn

Note: Allowable FH Blank (A) = (area of filter)*(1.4 µg/in^2) = 11.63 µg

where area of filter = 8.306 in^2

If A > blank > 0, use blank-derived value.
If blank > A, use greater of A or [lessor of 5% of sample µg or FH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company | **Run:** 3
Cooling Bunker BH Outlet - Steel Alloy | **Test Date:** 3/29/2023
Method 29 Non-Hg Metals Blank Correction Calculations | **Page:** 3 of 3

Analyte	XVI Allowable BH Blank Correction µg	XVII Total BH Blank Correction µg		XVIII 5% of BH Sample µg	XIX Lessor of XVII or XVIII µg	XX Greater of 1 µg or XIX µg		XXI BH Net Sample µg		XXII FH Net Sample µg		XXIII FH+BH Total Net Sample µg	
Aluminum	1.535	16.633		1.535	1.535	1.535		**29.165**		**68.170**		**97.335**	Al
Antimony	0.000	0.000	<	0.029	0.000	1.000	<	**0.575**		**0.000**	<	**0.575**	Sb
Arsenic	0.000	0.000	<	0.040	0.000	1.000	<	**0.805**		**2.640**	<	**3.445**	As
Barium	0.810	0.810		0.093	0.093	1.000		**1.040**		**2.113**		**3.153**	Ba
Beryllium	0.000	0.000	<	0.001	0.000	1.000	<	**0.023**	<	**0.050**	<	**0.073**	Be
Cadmium	0.000	0.000		0.003	0.000	1.000		**0.059**	<	**0.100**	<	**0.159**	Cd
Chromium	0.312	0.312		0.035	0.035	1.000		**0.386**		**0.320**		**0.706**	Cr
Cobalt	0.156	0.156		0.006	0.006	1.000		**0.000**	<	**0.125**	<	**0.125**	Co
Copper	0.000	0.000		0.320	0.000	1.000		**6.390**	<	**1.250**	<	**7.640**	Cu
Lead	0.000	0.000		0.041	0.000	1.000		**0.821**	<	**1.250**	<	**2.071**	Pb
Manganese	0.757	0.757		0.635	0.635	1.000		**11.943**		**5.069**		**17.012**	Mn
Nickel	0.000	0.000		0.068	0.000	1.000		**1.350**		**0.440**		**1.790**	Ni
Phosphorus	0.000	0.000	<	0.115	0.000	1.000	<	**2.300**		**8.670**	<	**10.970**	P
Selenium	0.000	0.000	<	0.086	0.000	1.000	<	**1.720**	<	**3.750**	<	**5.470**	Se
Silver	0.000	0.000	<	0.012	0.000	1.000	<	**0.230**	<	**0.500**	<	**0.730**	Ag
Thallium	0.000	0.000	<	0.058	0.000	1.000	<	**1.150**	<	**2.500**	<	**3.650**	Tl
Vanadium	0.000	0.000	<	0.006	0.000	1.000	<	**0.115**	<	**0.250**	<	**0.365**	V
Zinc	0.423	0.423		0.431	0.423	1.000		**8.187**		**2.680**		**10.867**	Zn

Note: Allowable BH Blank rules:

If 1.00 µg > blank > 0 , use blank-derived value.
If blank > 1.00 µg, use greater of 1.00 µg or [lessor of 5% of sample µg or BH blank].

Blank Rules: <' indicates value is below the method detection limit (MDL).
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations, but results are also preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.

Eagle Foundry Company
Cooling Bunker BH Outlet - Steel Alloy
Mercury Blank Correction Calculations

Blank Lab Values

	Filter Cont. 12 µg/filter		BH Imps. 2&3 Cap.Soln. Cont. 9 5% HNO_3/ 10% H_2O_2 µg/sample		FH/BH Rinse Cont. 8A 0.1 N HNO_3 µg/sample		BH Imps. 5&6 Rinse Cont. 8B H_2O µg/sample		BH Imps. 5&6 Cap.Soln. + Rinse Cont. 10 $KMnO_4$ µg/sample		BH Imps. 5&6 Rinse Cont. 11 HCl µg/sample	
Analyte	< **Result**	**MDL**	< **Result**	**MDL**	< **Result**	**MDL**	< **Result**	**MDL**	< **Result**	**MDL**	< **Result**	**MDL**
Mercury	0.0406	0.0219	0.118	0.0172	< MDL	0.0219	< MDL	0.0295	0.0628	0.0163	< MDL	0.0108
Lab ID:	23-S729		23-S731		23-S730		23-S732		23-S733		23-S734	
Blank vol, ml:	NA		196		250		337		186		124	

Blank Correction Values

Analyte: Mercury	**Blank FH HNO_3 Rinse µg**	**Blank Filter µg**	**Blank BH Cap.Soln. µg**	**Blank BH HNO_3 Rinse µg**	**Blank BH H_2O Rinse µg**	**Blank BH KMnO4 Cap.Soln. + Rinse µg**	**Blank BH HCl Rinse µg**	**Total Blank Correction µg**	**Is Total Blank Correction ≥ 0 and ≤ 0.6?**
Run 1	0.00	0.0406	0.12	0.00	0.00	0.10	0.00	0.2623	Yes
Reagent vol, ml	100.0		200.0	200.0	100.0	300.0	225.0		
Run 2	0.00	0.0406	0.12	0.00	0.00	0.10	0.00	0.2623	Yes
Reagent vol, ml	100.0		200.0	200.0	100.0	300.0	225.0		
Run 3	0.00	0.0406	0.12	0.00	0.00	0.10	0.00	0.2623	Yes
Reagent vol, ml	100.0		200.0	200.0	100.0	300.0	225.0		
Notes:	0.1N HNO_3 FH Probe Rinse	FH Filter	5% HNO_3/ 10% H_2O_2 BH Imps 2&3	0.1N HNO_3 BH Imps 1-4	H_2O BH Imps 5&6	4% $KMnO_4$/ 10% H_2SO_4 BH Imps 5&6	25 ml 8N HCl/ 200 ml H2O BH Imps 5&6		

Blank Corrected Results

Analyte: Mercury	**Sample FH Rinse + Filter Cont. 1&3 µg**	**Sample BH Cap.Soln. + HNO_3 Rinse Cont. 4 µg**	**Sample BH Imp. 4 + Rinse Cont. 5A µg**	**Sample BH Imps. 5&6 + Rinses Cont. 5B µg**	**Sample BH HCl Rinse + Water Cont. 5C µg**	**Total Sample µg**	**Total Blank Correction µg**	**Total Net Sample µg**
Run 1	0.0438	0.231	< 0.00796	0.207	< 0.0201	< 0.5099	0.2623	< 0.2476
Lab ID	23-S714	23-S715	23-S716	23-S717	23-S718			
Run 2	0.0438	0.181	< 0.00945	0.133	< 0.0189	< 0.3862	0.2623	< 0.1239
Lab ID	23-S719	23-S720	23-S721	23-S722	23-S723			
Run 3	0.0438	0.194	< 0.00870	0.197	No Sample*	< 0.4435	0.2623	< 0.1812
Lab ID	23-S724	23-S725	23-S726	23-S727	23-S728			

*The Container 5C sample was misplaced in transit to Chester LabNet. Because all Container 5C results were below the MDL for this source and for all others tested during this campaign, it is reasonable to assume that the quantity of Hg in the missing sample would have also been below the MDL, and therefore had no contribution to the total Hg samp

Blank Rules: '<' indicates value is below the method detection limit (MDL)
If blank is '<' it is treated as zero.
If sample is '<' it is used for emission rate calculations but results are preceded by a '<' symbol to indicate they were calculated using the MDL and the actual value is unknown.
If the total blank correction value is less than or equal to 0.6 µg, subtract the total blank correction value from the total sample value to determine total net Hg. Otherwise, the value used for the blank correction shall be the greater of (1) 0.6 µg or (2) the lesser of [total FH blank + total BH blank] or 5% of the total sample valu

EPA Method 29
Gas Stream Characteristics
Test Summary

Client: **Eagle Foundry Company**
Source: **Cooling Bunker BH Outlet - Steel Alloy**
Location: **Eagle Creek, OR**

Parameter	Units	Run 1	Run 2	Run 3	
Date		3/27/2023	3/28/2023	3/29/2023	
Run Start Time		13:00	10:30	10:35	
Run End Time		17:10	14:40	14:45	
Duration	minutes	250	250	250	**Average**
Barometric Pressure	inHg	29.89	29.38	29.45	**29.57**
Nozzle Diameter	inches	0.266	0.266	0.266	**0.266**
Isokinetic Average	%	100.2	100.2	100.6	**100.3**
Sample Volume	dscf	241.322	233.772	237.319	**237.471**
Sample Volume	dscm	6.833	6.620	6.720	**6.724**
Stack Diameter	inches	55.75	55.75	55.75	**55.75**
Stack Area	ft^2	16.952	16.952	16.952	**16.952**
CO_2	%vd	0.09	0.09	0.06	**0.08**
O_2	%vd	20.64	20.84	20.90	**20.79**
Static Pressure	inH_2O	1.00	1.00	1.00	**1.00**
H_2O	%v	0.55	0.94	1.30	**0.93**
Wet Molecular Weight	lb/lb-mole	28.78	28.75	28.71	**28.75**
Velocity	fps	41.84	41.11	41.69	**41.55**
Flow Rate	adcfm	42,322	41,421	41,853	**41,865**
	acfm	42,556	41,814	42,404	**42,258**
	dscfm	42,288	40,978	41,432	**41,566**
Stack Temperature	°F	69.2	65.4	66.3	**67.0**
Production Data	lb melt/pour	12,201.579	12,201.119	12,077.535	
	ton melt/pour	6.101	6.101	6.039	
	lb Cr/melt	209.764	201.394	201.494	
	ton Cr/melt	0.105	0.101	0.101	
	lb Mn/melt	834.059	834.082	822.739	
	ton Mn/melt	0.417	0.417	0.411	
	lb Ni/Pour	74.327	70.459	69.572	
	ton Ni/Pour	0.037	0.035	0.035	

Eagle Foundry Company **Test Dates:** 3/27/2023
Cooling Bunker BH Outlet - Steel Alloy 3/28/2023
EPA Method 29 Results Summary 3/29/2023

Run 1													
Analyte	Total				FH Net			BH Net					
	µg	µg/dscm	lb/hr	lb/ton melt	µg	µg/dscm	lb/hr	µg	µg/dscm	lb/hr			
Aluminum	73.670	10.782	1.71E-03	1.17E-03	62.570	9.157	1.45E-03	11.100	1.624	2.57E-04	Al		
Antimony	< 1.245	< 0.182	< 2.89E-05	< 1.97E-05	0.680	0.100	1.58E-05	< 0.565	< 0.083	< 1.31E-05	Sb		
Arsenic	< 3.421	< 0.501	< 7.93E-05	< 5.42E-05	2.630	0.385	6.10E-05	< 0.791	< 0.116	< 1.83E-05	As		
Barium	1.823	0.267	4.23E-05	2.89E-05	1.823	0.267	4.23E-05	0.000	0.000	0.00E+00	Ba		
Beryllium	< 0.073	< 0.011	< 1.69E-06	< 1.16E-06	< 0.050	< 0.007	< 1.16E-06	< 0.023	< 0.003	< 5.33E-07	Be		
Cadmium	< 0.195	< 0.029	< 4.52E-06	< 3.09E-06	< 0.100	< 0.015	< 2.32E-06	0.095	0.014	2.20E-06	Cd		
Chromium	1.336	0.196	3.10E-05		0.870	0.127	2.02E-05	0.466	0.068	1.08E-05	Cr		
Cobalt	< 0.125	< 0.018	< 2.90E-06	< 1.98E-06	< 0.125	< 0.018	< 2.90E-06	0.000	0.000	0.00E+00	Co		
Copper	< 2.045	< 0.299	< 4.74E-05	< 3.24E-05	1.480	0.217	3.43E-05	< 0.565	< 0.083	< 1.31E-05	Cu		
Lead	< 1.937	< 0.283	< 4.49E-05	< 3.07E-05	< 1.250	< 0.183	< 2.90E-05	0.687	0.101	1.59E-05	Pb		
Manganese	5.182	0.758	1.20E-04		4.789	0.701	1.11E-04	0.393	0.058	9.11E-06	Mn		
Mercury	< 0.248	< 0.036	< 5.74E-06	< 3.92E-06							Hg		
Nickel	1.176	0.172	2.73E-05		0.640	0.094	1.48E-05	0.536	0.078	1.24E-05	Ni		
Phosphorus	< 10.830	< 1.585	< 2.51E-04	< 1.71E-04	8.570	1.254	1.99E-04	< 2.260	< 0.331	< 5.24E-05	P		
Selenium	< 5.450	< 0.798	< 1.26E-04	< 8.63E-05	< 3.750	< 0.549	< 8.69E-05	< 1.700	< 0.249	< 3.94E-05	Se		
Silver	< 0.726	< 0.106	< 1.68E-05	< 1.15E-05	< 0.500	< 0.073	< 1.16E-05	< 0.226	< 0.033	< 5.24E-06	Ag		
Thallium	< 3.630	< 0.531	< 8.41E-05	< 5.75E-05	< 2.500	< 0.366	< 5.80E-05	< 1.130	< 0.165	< 2.62E-05	Tl		
Vanadium	< 0.363	< 0.053	< 8.42E-06	< 5.75E-06	< 0.250	< 0.037	< 5.80E-06	< 0.113	< 0.017	< 2.62E-06	V		
Zinc	14.927	2.185	3.46E-04	2.36E-04	6.640	0.972	1.54E-04	8.287	1.213	1.92E-04	Zn		

Chromium	lb Cr / ton Cr in melt =	1.23E-03
Manganese	lb Mn / ton Mn in melt =	1.20E-03
Nickel	lb Ni / ton Ni in melt =	3.06E-03

Run 1 Emission Factors

Run 2													
Analyte	Total				FH Net			BH Net					
	µg	µg/dscm	lb/hr	lb/ton melt	µg	µg/dscm	lb/hr	µg	µg/dscm	lb/hr			
Aluminum	102.925	15.548	2.39E-03	1.63E-03	77.370	11.687	1.79E-03	25.555	3.860	5.93E-04	Al		
Antimony	< 0.985	< 0.149	< 2.28E-05	< 1.56E-05	0.410	0.062	9.51E-06	< 0.575	< 0.087	< 1.33E-05	Sb		
Arsenic	< 3.415	< 0.516	< 7.92E-05	< 5.41E-05	2.610	0.394	6.05E-05	< 0.805	< 0.122	< 1.87E-05	As		
Barium	4.063	0.614	9.42E-05	6.43E-05	3.523	0.532	8.17E-05	0.540	0.082	1.25E-05	Ba		
Beryllium	< 0.073	< 0.011	< 1.69E-06	< 1.16E-06	< 0.050	< 0.008	< 1.16E-06	< 0.023	< 0.003	< 5.33E-07	Be		
Cadmium	< 0.241	< 0.036	< 5.59E-06	< 3.82E-06	< 0.100	< 0.015	< 2.32E-06	0.141	0.021	3.27E-06	Cd		
Chromium	0.953	0.144	2.21E-05		0.540	0.082	1.25E-05	0.413	0.062	9.58E-06	Cr		
Cobalt	< 0.125	< 0.019	< 2.90E-06	< 1.98E-06	< 0.125	< 0.019	< 2.90E-06	0.000	0.000	0.00E+00	Co		
Copper	4.340	0.656	1.01E-04	6.87E-05	2.600	0.393	6.03E-05	1.740	0.263	4.03E-05	Cu		
Lead	2.930	0.443	6.79E-05	4.64E-05	1.560	0.236	3.62E-05	1.370	0.207	3.18E-05	Pb		
Manganese	6.112	0.923	1.42E-04		4.799	0.725	1.11E-04	1.313	0.198	3.04E-05	Mn		
Mercury	< 0.124	< 0.019	< 2.87E-06	< 1.96E-06							Hg		
Nickel	3.630	0.548	8.42E-05		1.720	0.260	3.99E-05	1.910	0.289	4.43E-05	Ni		
Phosphorus	< 11.170	< 1.687	< 2.59E-04	< 1.77E-04	8.870	1.340	2.06E-04	< 2.300	< 0.347	< 5.33E-05	P		
Selenium	< 5.470	< 0.826	< 1.27E-04	< 8.66E-05	< 3.750	< 0.566	< 8.69E-05	< 1.720	< 0.260	< 3.99E-05	Se		
Silver	< 0.730	< 0.110	< 1.69E-05	< 1.16E-05	< 0.500	< 0.076	< 1.16E-05	< 0.230	< 0.035	< 5.33E-06	Ag		
Thallium	< 3.650	< 0.551	< 8.46E-05	< 5.78E-05	< 2.500	< 0.378	< 5.80E-05	< 1.150	< 0.174	< 2.67E-05	Tl		
Vanadium	< 0.365	< 0.055	< 8.46E-06	< 5.78E-06	< 0.250	< 0.038	< 5.80E-06	< 0.115	< 0.017	< 2.67E-06	V		
Zinc	15.237	2.302	3.53E-04	2.41E-04	6.260	0.946	1.45E-04	8.977	1.356	2.08E-04	Zn		

Chromium	lb Cr / ton Cr in melt =	9.14E-04
Manganese	lb Mn / ton Mn in melt =	1.42E-03
Nickel	lb Ni / ton Ni in melt =	9.95E-03

Run 2 Emission Factors

Note: Results for Hg front half and back half fractions are not shown because these values are not blank-corrected. Per EPA Method 29, only the sum of Hg front and back half results is subject to blank correction.

'<' denotes results which were calculated using the method detection limit for front half or back half results that were non-detect.

Eagle Foundry Company **Test Dates:** 3/27/2023
Cooling Bunker BH Outlet - Steel Alloy 3/28/2023
EPA Method 29 Results Summary 3/29/2023

Run 3													
Analyte	**Total**				**FH Net**			**BH Net**					
	µg	**µg/dscm**	**lb/hr**	**lb/ton melt**	**µg**	**µg/dscm**	**lb/hr**	**µg**	**µg/dscm**	**lb/hr**			
Aluminum	97.335	14.484	2.25E-03	1.55E-03	68.170	10.144	1.57E-03	29.165	4.340	6.74E-04	Al		
Antimony	< 0.575	< 0.086	< 1.33E-05	< 9.16E-06	0.000	0.000	0.00E+00	< 0.575	< 0.086	< 1.33E-05	Sb		
Arsenic	< 3.445	< 0.513	< 7.96E-05	< 5.49E-05	2.640	0.393	6.10E-05	< 0.805	< 0.120	< 1.86E-05	As		
Barium	3.153	0.469	7.28E-05	5.02E-05	2.113	0.314	4.88E-05	1.040	0.155	2.40E-05	Ba		
Beryllium	< 0.073	< 0.011	< 1.69E-06	< 1.16E-06	< 0.050	< 0.007	< 1.16E-06	< 0.023	< 0.003	< 5.31E-07	Be		
Cadmium	< 0.159	< 0.024	< 3.67E-06	< 2.53E-06	< 0.100	< 0.015	< 2.31E-06	0.059	0.009	1.36E-06	Cd		
Chromium	0.706	0.105	1.63E-05		0.320	0.048	7.39E-06	0.386	0.057	8.91E-06	Cr		
Cobalt	< 0.125	< 0.019	< 2.89E-06	< 1.99E-06	< 0.125	< 0.019	< 2.89E-06	0.000	0.000	0.00E+00	Co		
Copper	< 7.640	< 1.137	< 1.76E-04	< 1.22E-04	< 1.250	< 0.186	< 2.89E-05	6.390	0.951	1.48E-04	Cu		
Lead	< 2.071	< 0.308	< 4.78E-05	< 3.30E-05	< 1.250	< 0.186	< 2.89E-05	0.821	0.122	1.90E-05	Pb		
Manganese	17.012	2.532	3.93E-04		5.069	0.754	1.17E-04	11.943	1.777	2.76E-04	Mn		
Mercury	< 0.181	< 0.027	< 4.19E-06	< 2.89E-06							Hg		
Nickel	1.790	0.266	4.13E-05		0.440	0.065	1.02E-05	1.350	0.201	3.12E-05	Ni		
Phosphorus	< 10.970	< 1.632	< 2.53E-04	< 1.75E-04	8.670	1.290	2.00E-04	< 2.300	< 0.342	< 5.31E-05	P		
Selenium	< 5.470	< 0.814	< 1.26E-04	< 8.72E-05	< 3.750	< 0.558	< 8.66E-05	< 1.720	< 0.256	< 3.97E-05	Se		
Silver	< 0.730	< 0.109	< 1.69E-05	< 1.16E-05	< 0.500	< 0.074	< 1.15E-05	< 0.230	< 0.034	< 5.31E-06	Ag		
Thallium	< 3.650	< 0.543	< 8.43E-05	< 5.82E-05	< 2.500	< 0.372	< 5.77E-05	< 1.150	< 0.171	< 2.66E-05	Tl		
Vanadium	< 0.365	< 0.054	< 8.43E-06	< 5.82E-06	< 0.250	< 0.037	< 5.77E-06	< 0.115	< 0.017	< 2.66E-06	V		
Zinc	10.867	1.617	2.51E-04	1.73E-04	2.680	0.399	6.19E-05	8.187	1.218	1.89E-04	Zn		

Chromium	lb Cr / ton Cr in melt =	6.74E-04
Manganese	lb Mn / ton Mn in melt =	3.98E-03
Nickel	lb Ni / ton Ni in melt =	4.95E-03

Run 3 Emission Factors

Mean Runs 1-3													
Analyte	**Total**				**FH Net**			**BH Net**					
	µg	**µg/dscm**	**lb/hr**	**lb/ton melt**	**µg**	**µg/dscm**	**lb/hr**	**µg**	**µg/dscm**	**lb/hr**			
Aluminum	91.310	13.604	2.11E-03	1.45E-03	69.370	10.330	1.61E-03	21.940	3.275	5.08E-04			
Antimony	< 0.935	< 0.139	< 2.17E-05	< 1.48E-05	0.363	0.054	8.42E-06	< 0.572	< 0.085	< 1.32E-05	Sb		
Arsenic	< 3.427	< 0.510	< 7.93E-05	< 5.44E-05	2.627	0.391	6.08E-05	< 0.800	< 0.119	< 1.85E-05	As		
Barium	3.013	0.450	6.98E-05	4.78E-05	2.486	0.371	5.76E-05	0.527	0.079	1.22E-05	Ba		
Beryllium	< 0.073	< 0.011	< 1.69E-06	< 1.16E-06	< 0.050	< 0.007	< 1.16E-06	< 0.023	< 0.003	< 5.32E-07	Be		
Cadmium	< 0.198	< 0.030	< 4.59E-06	< 3.15E-06	< 0.100	< 0.015	< 2.32E-06	0.098	0.015	2.28E-06	Cd		
Chromium	0.998	0.148	2.31E-05		0.577	0.086	1.34E-05	0.422	0.063	9.76E-06	Cr		
Cobalt	< 0.125	< 0.019	< 2.89E-06	< 1.98E-06	< 0.125	< 0.019	< 2.89E-06	0.000	0.000	0.00E+00	Co		
Copper	< 4.675	< 0.697	< 1.08E-04	< 7.43E-05	< 1.777	< 0.265	< 4.12E-05	< 2.898	< 0.432	< 6.70E-05	Cu		
Lead	< 2.313	< 0.345	< 5.36E-05	< 3.67E-05	< 1.353	< 0.202	< 3.13E-05	0.959	0.143	2.22E-05	Pb		
Manganese	9.435	1.404	2.18E-04		4.886	0.727	1.13E-04	4.550	0.678	1.05E-04	Mn		
Mercury	< 0.184	< 0.027	< 4.27E-06	< 2.92E-06							Hg		
Nickel	2.199	0.329	5.09E-05		0.933	0.140	2.16E-05	1.265	0.189	2.93E-05	Ni		
Phosphorus	< 10.990	< 1.635	< 2.54E-04	< 1.74E-04	8.703	1.295	2.02E-04	< 2.287	< 0.340	< 5.29E-05	P		
Selenium	< 5.463	< 0.813	< 1.26E-04	< 8.67E-05	< 3.750	< 0.558	< 8.68E-05	< 1.713	< 0.255	< 3.97E-05	Se		
Silver	< 0.729	< 0.108	< 1.69E-05	< 1.16E-05	< 0.500	< 0.074	< 1.16E-05	< 0.229	< 0.034	< 5.29E-06	Ag		
Thallium	< 3.643	< 0.542	< 8.44E-05	< 5.78E-05	< 2.500	< 0.372	< 5.79E-05	< 1.143	< 0.170	< 2.65E-05	Tl		
Vanadium	< 0.364	< 0.054	< 8.44E-06	< 5.78E-06	< 0.250	< 0.037	< 5.79E-06	< 0.114	< 0.017	< 2.65E-06	V		
Zinc	13.677	2.034	3.17E-04	2.17E-04	5.193	0.772	1.20E-04	8.484	1.262	1.96E-04	Zn		

Chromium	lb Cr / ton Cr in melt =	9.40E-04
Manganese	lb Mn / ton Mn in melt =	2.20E-03
Nickel	lb Ni / ton Ni in melt =	5.99E-03

Mean Runs 1-3

Note: Results for Hg front half and back half fractions are not shown because these values are not blank-corrected. Per EPA Method 29, only the sum of Hg front and back half results is subject to blank correction.

'<' denotes results which were calculated using the method detection limit for front half or back half results that were non-detect.

BISON ENGINEERING, INC.

COMPANY	**Eagle Foundry Company**
FACILITY	**Eagle Foundry**
LOCATION	**Eagle Creek, OR**
SOURCE	**Cooling Bunker BH Outlet - Steel Alloy**
DATE	**3/27/2023 - 3/29/2023**
METHOD	**0061**
POLLUTANT	**Cr VI**

EPA Method 1
Stack Parameters and Traverse Points

Client: **Eagle Foundry Company**
Location: **Eagle Creek, OR**
Source: **Cooling Bunker BH Outlet - Steel Alloy**
Facility: **Eagle Foundry**

Type of Testing: P (P for Particulate; V for Velocity/Nonparticulate)
Type of Duct: C (C for circular; R for rectangular)

Number of ports available:	2	
Number of ports to be used:	2	
Port diameter:	4	inches
Sampling location height (approx.):		feet
Stack height (approx.):		feet
Circular ID (Rectangular Depth):	55.75	inches
Port depth and/or wall thickness:	6.50	inches
Stack width (Rectangular only):		inches

Equivalent Diameter
If rectangular = $\frac{2*Depth*Width}{Depth + Width}$ = 55.75 inches (If circular = duct ID)
Stack/duct area = 16.952 sq.feet 2441.1 sq. inches

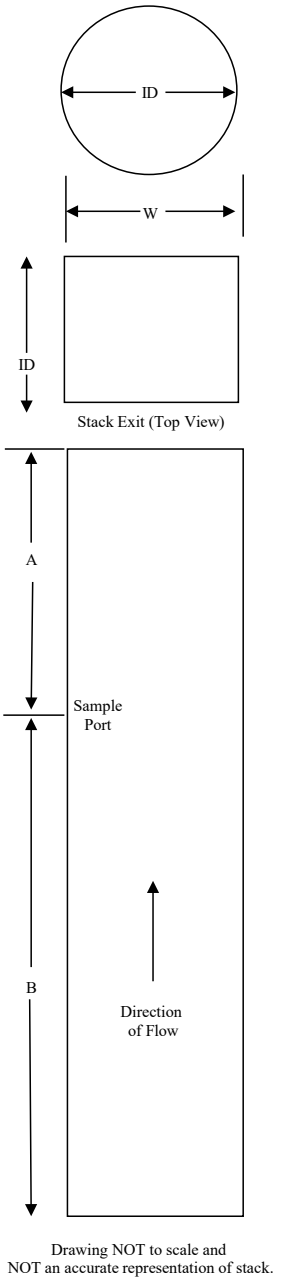
Sample Port Location:	Downstream flow disturbance from process B	Upstream flow disturbance toward exit A
Number of Inches:	246.00	45.00
Number of Diameters:	4.41	0.81

Minimum Number of Traverse Points: 24

Traverse points less than 1.0 inch from the stack wall are relocated to a distance of 1.0 inch.

Points	% of diameter	Distance from inside wall (in.)	Distance including port (in.)
1	2.1	1.17	7 5/8
2	6.7	3.74	10 1/4
3	11.8	6.58	13 1/8
4	17.7	9.87	16 3/8
5	25.0	13.94	20 1/2
6	35.6	19.85	26 3/8
7	64.4	35.90	42 3/8
8	75.0	41.81	48 3/8
9	82.3	45.88	52 3/8
10	88.2	49.17	55 5/8
11	93.3	52.01	58 1/2
12	97.9	54.58	61 1/8

Reference Diagram



Pre-Test Traverse

Client: **Eagle Foundry Company**
Location: **Eagle Creek, OR**
Source: **Cooling Bunker BH Outlet - Steel Alloy**

Stack Temp: 58 °F

Traverse Point	Velocity ΔP ("H_2O)	Null Angle
1	0.67	0
2	0.71	5
3	0.73	0
4	0.69	5
5	0.65	5
6	0.69	0
7	0.72	5
8	0.76	0
9	0.75	5
10	0.72	0
11	0.71	5
12	0.62	5
Average:	0.70	3

Flow is found to be: Non-cyclonic

Isokinetic Field Data
Field Data Entry

Client:	**Eagle Foundry Company**	**Run:**	**1**
Location:	**Eagle Creek, OR**	**Start Time:**	**13:00**
Source:	**Cooling Bunker BH Outlet - Steel Alloy**	**End Time:**	**17:10**
EPA Method:	**0061**	**Date:**	**3/27/2023**
Box Operator:	**JCR**		
Technician(s):	**AJV**		

Environmental Conditions/Test Notes:
Overcast and 40°F
Stopped at approximately 4 hours because melting and pouring was completed, cooling was sampled for approximately 1 hour similar to white iron.

Stack Dimensional Data:

Circular		
Diameter	55.750	in
Rectangular		
Width		in
Length		in
Stack Area	16.952	sq.ft.

Equipment:

Meterbox ID	13	Probe ID	8A	Liner type	GLASS		
Y factor	1.0122	Nozzle ID	N/A	Nozzle size	0.263	inches	
ΔH@	1.743	Hot box ID	N/A	Nozzle area	0.000377	sq.ft.	
Bp ID	TS1	Pitot Cp	0.84	Probe heat	250	°F	
Balance ID	HLN FB1	Pitot ID	8A	Filter heat	N/A	°F	
Weights ID	HLN FW1	Probe Length, ft	8				

Source Information:

Barometric Pressure	29.89	"Hg	O_2	20.90	%
Static Pressure	1	"H_2O	CO_2	0.00	%
Ave. ΔP	0.7	"H_2O	Rec. Nz.	0.221	inches
Stack Temperature	60	°F			
Assumed moisture	0.50	%			
Assumed meter temp.	65	°F			
Total number of points	20				
Time per point	12.5	min.			
Total run time	250	min.			

Leak Checks:

	Pre-test	Post-test
Pitot	X	X
Leak rate, dcf	0.000	0.000
Leak check vacuum, "Hg	10	10

Nozzle check for roundness:

1	2	3	
0.262	0.263	0.263	inches
	Caliper ID	WS1	

Post Test Calculations:

Sample volume	231.913	dcf	Ave. ΔP	0.569	"H_2O
Wet mol. weight	28.79	M_s (actual)	Ave. √ΔP	0.754	"H_2O
Actual H_2O	0.49	%	Ave. ΔH	2.893	"H_2O
Std. meter vol.	235.731	dscf	Ave. T_s	66.9	°F
Isokinetic Average	98.7	%	Ave. T_m	69.0	°F

Moisture/Lab:

Filter, #	N/A		
	Initial	Final	Gain
Impingers, g	1,732.5	1,703.6	-28.9
Silica gel, g	856.9	910.3	53.4
		Total water gain, g:	24.5

Traverse Point	Time (min.)	Meter Volume (dcf) 0.000	Velocity ΔP ("H_2O)	Stack Temp. (°F)	Meter Temp. (°F)	Calc. ΔH	Run ΔH	Vacuum ("Hg)	Filter Box (°F)	Condenser Temp (≤68°F)
1	12.5	12.230	0.62	63	67	3.17	3.15	5	N/A	59
2	25.0	24.190	0.60	63	65	3.05	3.05	5	N/A	60
3	37.5	35.490	0.54	68	66	2.73	2.75	4.5	N/A	58
4	50.0	46.890	0.56	70	67	2.82	2.80	4.5	N/A	57
5	62.5	58.280	0.55	69	67	2.78	2.80	4.5	N/A	55
6	75.0	69.860	0.56	69	68	2.83	2.85	4.5	N/A	53
7	87.5	81.520	0.58	69	69	2.94	2.95	5	N/A	52
8	100.0	93.080	0.55	68	69	2.79	2.80	5	N/A	53
9	112.5	104.640	0.63	68	69	3.20	3.20	5	N/A	54
10	125.0	116.230	0.57	67	70	2.91	2.90	5	N/A	55
11	137.5	127.850	0.56	67	70	2.86	2.85	5	N/A	55
12	150.0	139.380	0.55	67	70	2.81	2.80	5	N/A	55
13	162.5	150.800	0.59	67	70	3.01	3.00	5	N/A	54
14	175.0	161.890	0.52	67	70	2.65	2.65	5	N/A	53
15	187.5	173.790	0.57	67	70	2.91	2.90	5	N/A	52
16	200.0	185.650	0.59	66	70	3.02	3.00	5	N/A	52
17	212.5	197.290	0.56	66	70	2.86	2.85	5	N/A	51
18	225.0	208.670	0.55	68	70	2.80	2.80	4.5	N/A	51
19	237.5	220.260	0.57	65	70	2.92	2.90	4.5	N/A	50
20	250.0	231.913	0.55	64	72	2.83	2.85	4.5	N/A	50

Isokinetic Field Data
Field Data Entry

Client:	**Eagle Foundry Company**	**Run:**	**2**
Location:	**Eagle Creek, OR**	**Start Time:**	**10:30**
Source:	**Cooling Bunker BH Outlet - Steel Alloy**	**End Time:**	**14:40**
EPA Method:	**0061**	**Date:**	**3/28/2023**
Box Operator:	**JCR**		
Technician(s):	**AJV**		

Environmental Conditions/Test Notes:
Overcast and 40°F
Cut test run short at 250 minutes because melting and casting was complete, this includes 45 minutes of cooling.

Stack Dimensional Data:

Circular		
Diameter	55.750	in
Rectangular		
Width		in
Length		in
Stack Area	16.952	sq.ft.

Equipment:

Meterbox ID	13	Probe ID	8A	Liner type	GLASS		
Y factor	1.0122	Nozzle ID	N/A	Nozzle size	0.263	inches	
ΔH@	1.743	Hot box ID	N/A	Nozzle area	0.000377	sq.ft.	
Bp ID	TS1	Pitot Cp	0.84	Probe heat	250	°F	
Balance ID	HLN FB1	Pitot ID	8A	Filter heat	N/A	°F	
Weights ID	HLN FW1	Probe Length, ft	8				

Source Information:

Barometric Pressure	29.38	"Hg	O_2	20.90	%
Static Pressure	1	"H_2O	CO_2	0.00	%
Ave. ΔP	0.7	"H_2O	Rec. Nz.	0.219	inches
Stack Temperature	60	°F			
Assumed moisture	0.49	%			
Assumed meter temp.	69	°F			
Total number of points	20				
Time per point	12.5	min.			
Total run time	250	min.			

Leak Checks:

	Pre-test	Post-test
Pitot	X	X
Leak rate, dcf	0.000	0.000
Leak check vacuum, "Hg	10	10

Nozzle check for roundness:

1	2	3	
0.262	0.263	0.263	inches
	Caliper ID	WS1	

Post Test Calculations:

Sample volume	238.700	dcf	Ave. ΔP	0.596	"H_2O
Wet mol. weight	28.76	M_s (actual)	Ave. √ΔP	0.77	"H_2O
Actual H_2O	0.75	%	Ave. ΔH	3.055	"H_2O
Std. meter vol.	239.568	dscf	Ave. T_s	62.6	°F
Isokinetic Average	98.8	%	Ave. T_m	66.9	°F

Moisture/Lab:

Filter, #	N/A		
	Initial	Final	Gain
Impingers, g	1,738.6	1,732.0	-6.6
Silica gel, g	877.8	922.6	44.8
		Total water gain:	38.2

Traverse Point	Time (min.)	Meter Volume (dcf)	Velocity ΔP ("H_2O)	Stack Temp. (°F)	Meter Temp. (°F)	Calc. ΔH	Run ΔH	Vacuum ("Hg)	Filter Box (°F)	Condenser Temp (≤68°F)
		0.000								
1	12.5	10.820	0.49	54	67	2.55	2.55	4	N/A	41
2	25.0	21.880	0.50	54	65	2.59	2.60	4.5	N/A	47
3	37.5	34.440	0.69	54	66	3.58	3.60	5.5	N/A	43
4	50.0	47.140	0.67	63	66	3.42	3.40	5.5	N/A	42
5	62.5	59.760	0.66	62	66	3.37	3.35	5.5	N/A	44
6	75.0	72.330	0.66	62	66	3.37	3.35	5.5	N/A	43
7	87.5	84.350	0.60	63	66	3.06	3.05	5.5	N/A	45
8	100.0	96.080	0.56	62	66	2.86	2.85	5	N/A	44
9	112.5	109.210	0.69	62	67	3.53	3.55	6	N/A	44
10	125.0	121.370	0.63	62	66	3.22	3.20	5.5	N/A	45
11	137.5	133.950	0.63	62	66	3.22	3.20	5.5	N/A	45
12	150.0	144.610	0.46	62	67	2.36	2.35	4.5	N/A	45
13	162.5	155.360	0.48	62	67	2.46	2.50	4.5	N/A	45
14	175.0	166.020	0.48	63	67	2.45	2.50	4.5	N/A	44
15	187.5	178.380	0.60	63	67	3.07	3.10	5	N/A	45
16	200.0	190.140	0.56	64	68	2.86	2.90	4.5	N/A	45
17	212.5	201.780	0.56	67	69	2.85	2.90	4.5	N/A	46
18	225.0	213.290	0.65	71	69	3.29	3.30	5	N/A	46
19	237.5	226.370	0.72	72	69	3.63	3.65	6	N/A	47
20	250.0	238.700	0.63	68	68	3.20	3.20	5.5	N/A	47

Isokinetic Field Data
Field Data Entry

Client:	**Eagle Foundry Company**	**Run:**	**3**
Location:	**Eagle Creek, OR**	**Start Time:**	**10:35**
Source:	**Cooling Bunker BH Outlet - Steel Alloy**	**End Time:**	**14:45**
EPA Method:	**0061**	**Date:**	**3/29/2023**
Box Operator:	**JCR**		
Technician(s):	**AJV**		

Environmental Conditions/Test Notes:
Overcast and 40°F

Stack Dimensional Data:

Circular		
Diameter	55.750	in
Rectangular		
Width		in
Length		in
Stack Area	16.952	sq.ft.

Equipment:

Meterbox ID	13	Probe ID	8A	Liner type	GLASS		
Y factor	1.0122	Nozzle ID	N/A	Nozzle size	0.263	inches	
ΔH@	1.743	Hot box ID	N/A	Nozzle area	0.000377	sq.ft.	
Bp ID	TS1	Pitot Cp	0.84	Probe heat	250	°F	
Balance ID	HLN FB1	Pitot ID	8A	Filter heat	N/A	°F	
Weights ID	HLN FW1	Probe Length, ft	8				

Source Information:

Barometric Pressure	29.45	"Hg	O_2	20.90	%
Static Pressure	1	"H_2O	CO_2	0.00	%
Ave. ΔP	0.7	"H_2O	Rec. Nz.	0.22	inches
Stack Temperature	60	°F			
Assumed moisture	0.75	%			
Assumed meter temp.	66.9	°F			
Total number of points	20				
Time per point	12.5	min.			
Total run time	250	min.			

Leak Checks:

	Pre-test	Post-test
Pitot	X	X
Leak rate, dcf	0.000	0.000
Leak check vacuum, "Hg	10	10

Nozzle check for roundness:

1	2	3	
0.262	0.263	0.263	inches
	Caliper ID	WS1	

Post Test Calculations:

Sample volume	223.108	dcf	Ave. ΔP	0.519	"H_2O
Wet mol. weight	28.81	M_s (actual)	Ave. √ΔP	0.72	"H_2O
Actual H_2O	0.29	%	Ave. ΔH	2.643	"H_2O
Std. meter vol.	224.172	dscf	Ave. T_s	64.1	°F
Isokinetic Average	98.6	%	Ave. T_m	67.0	°F

Moisture/Lab:

Filter, #	N/A		
	Initial	Final	Gain
Impingers, g	1,767.7	1,760.2	-7.5
Silica gel, g	858.5	880.0	21.5
		Total water gain:	14.0

Traverse Point	Time (min.)	Meter Volume (dcf) 0.000	Velocity ΔP ("H_2O)	Stack Temp. (°F)	Meter Temp. (°F)	Calc. ΔH	Run ΔH	Vacuum ("Hg)	Filter Box (°F)	Condenser Temp (≤68°F)
1	12.5	11.760	0.55	51	66	2.86	2.85	2.5	N/A	39
2	25.0	23.090	0.55	52	64	2.84	2.85	2.5	N/A	37
3	37.5	34.420	0.54	57	63	2.76	2.75	2.5	N/A	39
4	50.0	45.730	0.53	62	63	2.68	2.70	2.5	N/A	40
5	62.5	57.580	0.57	62	63	2.89	2.90	2.5	N/A	40
6	75.0	67.930	0.45	61	64	2.29	2.30	2	N/A	41
7	87.5	78.980	0.50	62	65	2.54	2.55	2.5	N/A	42
8	100.0	90.060	0.51	62	65	2.59	2.60	2.5	N/A	43
9	112.5	101.170	0.51	61	65	2.60	2.60	2.5	N/A	44
10	125.0	112.370	0.52	61	66	2.65	2.65	2.5	N/A	44
11	137.5	123.600	0.51	63	67	2.60	2.60	2.5	N/A	46
12	150.0	134.890	0.51	65	67	2.59	2.60	2.5	N/A	48
13	162.5	146.380	0.54	68	69	2.73	2.75	2.5	N/A	50
14	175.0	157.190	0.54	68	69	2.73	2.75	2.5	N/A	50
15	187.5	168.610	0.53	68	69	2.68	2.70	2.5	N/A	50
16	200.0	179.970	0.55	70	70	2.78	2.80	2.5	N/A	52
17	212.5	190.550	0.49	73	70	2.46	2.45	2.5	N/A	53
18	225.0	201.470	0.50	74	71	2.51	2.50	2.5	N/A	53
19	237.5	212.280	0.48	71	71	2.42	2.40	2.5	N/A	54
20	250.0	223.108	0.50	70	72	2.54	2.55	2.5	N/A	55

EPA Method 4
Impinger Weights Summary

Client:	**Eagle Foundry Company**
Location:	**Eagle Creek, OR**
Source:	**Cooling Bunker BH Outlet - Steel Alloy**
EPA Method:	**0061**
Box Operator:	**JCR**
Technician(s):	**AJV**

Run 1
Impinger gain by weight (g):

#	Initial	Final	Gain
1	508.9	445.5	-63.4
2	432.2	425.3	-6.9
3	433.4	443.9	10.5
4	358.0	388.9	30.9
Totals:	1,732.5	1,703.6	-28.9

Run 2
Impinger gain by weight (g):

#	Initial	Final	Gain
1	507.2	433.4	-73.8
2	432.8	466.7	33.9
3	438.9	434.0	-4.9
4	359.7	397.9	38.2
Totals:	1,738.6	1,732.0	-6.6

Run 3
Impinger gain by weight (g):

#	Initial	Final	Gain
1	529.4	494.9	-34.5
2	440.1	467.6	27.5
3	438.7	437.7	-1.0
4	359.5	360.0	0.5
Totals:	1,767.7	1,760.2	-7.5

Isokinetic Field Data
Field Data and Calculations
Emissions and Gas Stream Characteristics

Client:	**Eagle Foundry**	**Run:**	**1**
Location:	**Eagle Creek, OR**	**Start Time:**	**13:00**
Source:	**Cooling Bunker BH Outlet - Steel Alloy**	**End Time:**	**17:10**
Method:	**0061**	**Date:**	**3/27/2023**

Sampling Data				Traverse Data			
Time	**Meter**	**ΔH**	**Meter**	**Traverse**	**Dp**	**Stack**	
min.	**ft^3**	**"H_2O**	**T_m °F**	**Point**	**"H_2O**	**T_s °F**	**√Dp**
	0.000						
13	12.230	3.15	67	1	0.62	63	0.787
25	24.190	3.05	65	2	0.60	63	0.775
38	35.490	2.75	66	3	0.54	68	0.735
50	46.890	2.80	67	4	0.56	70	0.748
63	58.280	2.80	67	5	0.55	69	0.742
75	69.860	2.85	68	6	0.56	69	0.748
88	81.520	2.95	69	7	0.58	69	0.762
100	93.080	2.80	69	8	0.55	68	0.742
113	104.640	3.20	69	9	0.63	68	0.794
125	116.230	2.90	70	10	0.57	67	0.755
138	127.850	2.85	70	11	0.56	67	0.748
150	139.380	2.80	70	12	0.55	67	0.742
163	150.800	3.00	70	13	0.59	67	0.768
175	161.890	2.65	70	14	0.52	67	0.721
188	173.790	2.90	70	15	0.57	67	0.755
200	185.650	3.00	70	16	0.59	66	0.768
213	197.290	2.85	70	17	0.56	66	0.748
225	208.670	2.80	70	18	0.55	68	0.742
238	220.260	2.90	70	19	0.57	65	0.755
250	231.913	2.85	72	20	0.55	64	0.742

Client:	**Eagle Foundry**	**Run:**	**1**
Source:	**Cooling Bunker BH Outlet - Steel Alloy**	**Date:**	**03/27/23**

Field Data Input Continued

Moisture Data			Stack Dimensional Data:		
Total Test Time	250.0	min	Circular		
Sample Time Interval	12.5	min	Diameter	55.750	in
Meter Volume, V_m	231.913	dcf	Rectangular		
Water Volume	24.5	g	Width		in
Nozzle Diameter, N_z	0.2630	in.	Length		in
Nozzle Area	0.000377	sq.ft.	Stack Area	16.952	sq.ft.
Traverse Data			Molecular Weight:		
Barometric Pressure, P_b	29.89	"Hg	CO_2 Average	0.09	%vd
Static Pressure	1.00	"H_2O	O_2 Average	20.64	%vd
Pitot Factor, cp	0.84				
Meter Cal Factor	1.0122	Y			

Field Data Averages

Meter			Stack		
ΔH	2.893	"H_2O	√Dp	0.754	"H_2O
Temperature, T_m	69.0	^oF	Temperature, T_s	66.9	^oF
Temperature, T_m	528.7	^oA (^oR)	Temperature, T_s	526.6	^oA (R)
Pressure Meter, P_m	30.103	"Hg	Pressure Stack, P_s	29.964	"Hg

Field Data Calculations

Meter Box Capture			EPA Method 2 Stack Gas Flowrate:		
Standard Volume, $V_{m(std)}$	235.731	dscf	Velocity, V_s	42.30	fps
	6.675	dscm	Volume (actual)	43,024	acfm
Actual Volume, $V_{m(actual)}$	236.051	awcf		42,813	adcfm
Gas Stream Moisture			Volume (standard)	2,590,647	wscf/hr
Moisture Vapor, $Vw_{(std)}$	1.155	scf		2,577,953	dscf/hr
Moisture, B_{ws}	0.0049			42,966	dscf/min
Moisture EPA M4	0.49	%v		43,177	wscf/min
Moisture @ Saturation	2.22	%v (for T_s < 212°F)			
EPA Method 3 Gas Density			Volume/Mole, V/M	383.661	
Dry, M_d	28.84	lb/lb-mole			
Wet, M_s	28.79	lb/lb-mole			
Percent Isokinetic	98.7	%			

Laboratory Results

Cr VI	2.97E-02	µg/sample
Cr VI	2.97E-08	grams
Emissions:		
Concentration Cr VI, C_s	1.94E-09	gr/dscf
	4.45E-03	µg/dscm
Mass Emissions Cr VI	7.16E-07	lb/hr

"<" represents MDL value

Isokinetic Field Data
Field Data and Calculations
Emissions and Gas Stream Characteristics

Client:	**Eagle Foundry**	**Run:**	**2**
Location:	**Eagle Creek, OR**	**Start Time:**	**10:30**
Source:	**Cooling Bunker BH Outlet - Steel Alloy**	**End Time:**	**14:40**
Method:	**0061**	**Date:**	**03/28/23**

Sampling Data				Traverse Data			
Time	**Meter**	**ΔH**	**Meter**	**Traverse**	**Dp**	**Stack**	
min.	**ft^3**	**"H_2O**	**T_m ^oF**	**Point**	**"H_2O**	**T_s ^oF**	**√Dp**
	0.000						
13	10.820	2.55	67	1	0.49	54	0.700
25	21.880	2.60	65	2	0.50	54	0.707
38	34.440	3.60	66	3	0.69	54	0.831
50	47.140	3.40	66	4	0.67	63	0.819
63	59.760	3.35	66	5	0.66	62	0.812
75	72.330	3.35	66	6	0.66	62	0.812
88	84.350	3.05	66	7	0.60	63	0.775
100	96.080	2.85	66	8	0.56	62	0.748
113	109.210	3.55	67	9	0.69	62	0.831
125	121.370	3.20	66	10	0.63	62	0.794
138	133.950	3.20	66	11	0.63	62	0.794
150	144.610	2.35	67	12	0.46	62	0.678
163	155.360	2.50	67	13	0.48	62	0.693
175	166.020	2.50	67	14	0.48	63	0.693
188	178.380	3.10	67	15	0.60	63	0.775
200	190.140	2.90	68	16	0.56	64	0.748
213	201.780	2.90	69	17	0.56	67	0.748
225	213.290	3.30	69	18	0.65	71	0.806
238	226.370	3.65	69	19	0.72	72	0.849
250	238.700	3.20	68	20	0.63	68	0.794

Client:	**Eagle Foundry**	**Run:**	**2**
Source:	**Cooling Bunker BH Outlet - Steel Alloy**	**Date:**	**03/28/23**

Field Data Input Continued

Moisture Data			Stack Dimensional Data:		
Total Test Time	250.0	min	Circular		
Sample Time Interval	12.5	min	Diameter	55.750	in
Meter Volume, V_m	238.700	dcf	Rectangular		
Water Volume	38.2	g	Width		in
Nozzle Diameter, N_z	0.2630	in.	Length		in
Nozzle Area	0.000377	sq.ft.	Stack Area	16.952	sq.ft.
Traverse Data			Molecular Weight:		
Barometric Pressure, P_b	29.38	"Hg	CO_2 Average	0.09	%vd
Static Pressure	1.00	"H_2O	O_2 Average	20.84	%vd
Pitot Factor, cp	0.84				
Meter Cal Factor	1.0122	Y			

Field Data Averages

Meter			Stack		
ΔH	3.055	"H_2O	√Dp	0.770	"H_2O
Temperature, T_m	66.9	^oF	Temperature, T_s	62.6	^oF
Temperature, T_m	526.6	^oA (^oR)	Temperature, T_s	522.3	^oA (R)
Pressure Meter, P_m	29.605	"Hg	Pressure Stack, P_s	29.454	"Hg

Field Data Calculations

Meter Box Capture			EPA Method 2 Stack Gas Flowrate:		
Standard Volume, $V_{m(std)}$	239.568	dscf	Velocity, V_s	43.41	fps
	6.784	dscm	Volume (actual)	44,153	acfm
Actual Volume, $V_{m(actual)}$	242.688	awcf		43,822	adcfm
Gas Stream Moisture			Volume (standard)	2,634,895	wscf/hr
Moisture Vapor, $Vw_{(std)}$	1.802	scf		2,615,133	dscf/hr
Moisture, B_{ws}	0.0075			43,586	dscf/min
Moisture EPA M4	0.75	%v		43,915	wscf/min
Moisture @ Saturation	1.94	%v (for T_s < 212°F)			
EPA Method 3 Gas Density			Volume/Mole, V/M	387.117	
Dry, M_d	28.85	lb/lb-mole			
Wet, M_s	28.77	lb/lb-mole			
Percent Isokinetic	98.9	%			

Laboratory Results

Cr VI	2.30E-02	µg/sample
Cr VI	2.30E-08	grams
Emissions:		
Concentration Cr VI, C_s	1.48E-09	gr/dscf
	3.40E-03	µg/dscm
Mass Emissions Cr VI	5.54E-07	lb/hr

"<" represents MDL value

Isokinetic Field Data
Field Data and Calculations
Emissions and Gas Stream Characteristics

Client:	**Eagle Foundry**	**Run:**	**3**
Location:	**Eagle Creek, OR**	**Start Time:**	**10:35**
Source:	**Cooling Bunker BH Outlet - Steel Alloy**	**End Time:**	**14:45**
Method:	**0061**	**Date:**	**03/29/23**

Sampling Data				Traverse Data			
Time	**Meter**	**ΔH**	**Meter**	**Traverse**	**Dp**	**Stack**	
min.	**ft^3**	**"H_2O**	**T_m °F**	**Point**	**"H_2O**	**T_s °F**	**√Dp**
	0.000						
13	11.760	2.85	66	1	0.55	51	0.742
25	23.090	2.85	64	2	0.55	52	0.742
38	34.420	2.75	63	3	0.54	57	0.735
50	45.730	2.70	63	4	0.53	62	0.728
63	57.580	2.90	63	5	0.57	62	0.755
75	67.930	2.30	64	6	0.45	61	0.671
88	78.980	2.55	65	7	0.50	62	0.707
100	90.060	2.60	65	8	0.51	62	0.714
113	101.170	2.60	65	9	0.51	61	0.714
125	112.370	2.65	66	10	0.52	61	0.721
138	123.600	2.60	67	11	0.51	63	0.714
150	134.890	2.60	67	12	0.51	65	0.714
163	146.380	2.75	69	13	0.54	68	0.735
175	157.190	2.75	69	14	0.54	68	0.735
188	168.610	2.70	69	15	0.53	68	0.728
200	179.970	2.80	70	16	0.55	70	0.742
213	190.550	2.45	70	17	0.49	73	0.700
225	201.470	2.50	71	18	0.50	74	0.707
238	212.280	2.40	71	19	0.48	71	0.693
250	223.108	2.55	72	20	0.50	70	0.707

Client:	**Eagle Foundry**	**Run:**	**3**
Source:	**Cooling Bunker BH Outlet - Steel Alloy**	**Date:**	**03/29/23**

Field Data Input Continued

Moisture Data			Stack Dimensional Data:		
Total Test Time	250.0	min	Circular		
Sample Time Interval	12.5	min	Diameter	55.750	in
Meter Volume, V_m	223.108	dcf	Rectangular		
Water Volume	14.0	g	Width		in
Nozzle Diameter, N_z	0.2630	in.	Length		in
Nozzle Area	0.000377	sq.ft.	Stack Area	16.952	sq.ft.
Traverse Data			Molecular Weight:		
Barometric Pressure, P_b	29.45	"Hg	CO_2 Average	0.06	%vd
Static Pressure	1.00	"H_2O	O_2 Average	20.90	%vd
Pitot Factor, cp	0.84				
Meter Cal Factor	1.0122	Y			

Field Data Averages

Meter			Stack		
ΔH	2.643	"H_2O	√Dp	0.720	"H_2O
Temperature, T_m	67.0	^oF	Temperature, T_s	64.1	^oF
Temperature, T_m	526.7	^oA (^oR)	Temperature, T_s	523.8	^oA (R)
Pressure Meter, P_m	29.644	"Hg	Pressure Stack, P_s	29.524	"Hg

Field Data Calculations

Meter Box Capture			EPA Method 2 Stack Gas Flowrate:		
Standard Volume, $V_{m(std)}$	224.172	dscf	Velocity, V_s	40.57	fps
	6.348	dscm	Volume (actual)	41,265	acfm
Actual Volume, $V_{m(actual)}$	226.155	awcf		41,145	adcfm
Gas Stream Moisture			Volume (standard)	2,461,296	wscf/hr
Moisture Vapor, $Vw_{(std)}$	0.660	scf		2,454,158	dscf/hr
Moisture, B_{ws}	0.0029			40,903	dscf/min
Moisture EPA M4	0.29	%v		41,022	wscf/min
Moisture @ Saturation	2.04	%v (for T_s < 212°F)			
EPA Method 3 Gas Density			Volume/Mole, V/M	387.308	
Dry, M_d	28.85	lb/lb-mole			
Wet, M_s	28.82	lb/lb-mole			
Percent Isokinetic	98.6	%			

Laboratory Results

Cr VI	5.64E-03	µg/sample
Cr VI	5.64E-09	grams
Emissions:		
Concentration Cr VI, C_s	3.88E-10	gr/dscf
	8.88E-04	µg/dscm
Mass Emissions Cr VI	1.36E-07	lb/hr

"<" represents MDL value

Method 0061
Laboratory Results
Cr VI

Client: **Eagle Foundry**
Location: **Eagle Creek, OR**
Source: **Cooling Bunker BH Outlet - Steel Alloy**

Lab ID	Sample ID	Sample Date	<	Result (µg/sample)	MDL (µg/sample)	Sample Vol. (ml)	Blank Correction (ug)	Blank Corrected Results (µg/sample)
23-S604	Run 1	3/27/2023		0.0333	0.0045	450	3.60E-03	2.97E-02
23-S605	Run 2	3/28/2023		0.0270	0.0046	465	3.96E-03	2.30E-02
23-S606	Run 3	3/29/2023		0.0108	0.0052	515	5.16E-03	5.64E-03
23-S607	KOH Blank	3/29/2023	<	MDL	0.0030	300	0.00	µg/ml
23-S608	H_2O Blank	3/29/2023		0.0048	0.0020	200	2.40E-05	µg/ml

*A "<" sign designates a result less than the minimum detection limit (MDL). If sample results are below MDL, the MDL value is used for calculations.
If blank value(s) are below MDL, no blank correction is performed.

Method 0061
Results Summary

Client: **Eagle Foundry**
Location: **Eagle Creek, OR**
Source: **Cooling Bunker BH Outlet - Steel Alloy**

Run			1	2	3	
Date			3/27/2023	3/28/2023	3/29/2023	
Start Time			13:00	10:30	10:35	
End Time			17:10	14:40	14:45	Average
Duration, min.			250	250	250	**250**
Barometric Pressure, "Hg			29.89	29.38	29.45	**29.57**
Nozzle Dia., in.			0.263	0.263	0.263	**0.263**
Isokinetic Average, %			98.7	98.9	98.6	**98.7**
Sample Volume, dscf			235.731	239.568	224.172	**233.157**
Sample Volume, dscm			6.675	6.784	6.348	**6.602**
Stack Diameter, in.			55.750	55.750	55.750	**55.750**
Stack Area, sq.ft.			16.952	16.952	16.952	**16.952**
CO_2 %vd			0.09	0.09	0.06	**0.08**
O_2 %vd			20.64	20.84	20.90	**20.79**
Static Pressure, "H_2O			1.00	1.00	1.00	**1.00**
H_2O %v			0.49	0.75	0.29	**0.51**
Wet Molecular Weight, lb/lb-mole			28.79	28.77	28.82	**28.79**
Velocity, FPS			42.30	43.41	40.57	**42.09**
ADCFM			42,813	43,822	41,145	**42,593**
ACFM			43,024	44,153	41,265	**42,814**
DSCFM			42,966	43,586	40,903	**42,485**
Stack Temperature, ^oF			66.9	62.6	64.1	**64.5**
Cr VI	Concentration, C_s	gr/dscf	1.94E-09	1.48E-09	3.88E-10	**1.27E-09**
		µg/dscm	4.45E-03	3.40E-03	8.88E-04	**2.91E-03**
	Mass	lb/hr	7.16E-07	5.54E-07	1.36E-07	**4.69E-07**
	lb Cr VI/ton Cr in melt		2.84E-05	2.29E-05	5.63E-06	**1.90E-05**
Process Data	Cr processed	lb/melt	209.764	201.394	201.494	
		ton/melt	0.1049	0.1007	0.1007	

APPENDIX C: O_2 AND CO_2 TEST DATA

Bison Engineering, Inc.
Gaseous Testing Summary

Client:	**Eagle Foundry Company**	Source:	**Main Foundry BH Outlet**
Facility:	**Eagle Foundry**	Test Date:	**3/27/2023 - Day 1**
Location:	**Eagle Creek, OR**		

Environmental Conditions / Test Notes: See isokinetic field data sheets for environmental conditions. Logger data was having issues reporting 1 minute averages so data is reported in 6 second blocks (10 points per minute)

Testing Personnel: JMK

Run	**White Iron Run 1**	**Steel Alloy Run 1**
Date	3/27/2023	3/27/2023
Run Start Time	6:40	13:00
Run End Time	10:40	17:10
Duration, min.	240	250
CO_2, %vd	0.25	0.26
O_2, %vd	20.85	20.99

Note: Negative concentrations are reported as zero.

Bison Engineering, Inc.
Method 3A Oxygen
Calibration Error, System Bias and System Drift

Client:	**Eagle Foundry Company**	Source:	**Main Foundry BH Outlet**	Instrument Make:	**Servomex**
Facility:	**Eagle Foundry**	Date:	**3/27/2023 - Day 1**	Instrument Model:	**1440**
Location:	**Eagle Creek, OR**			Instrument Serial #:	**01440C1STD/2919**

		Initial Values				Final Values								
		Analyzer Cal. Response	System Cal Response	Pre test System Cal. Bias		System Cal Response	Post test System Cal. Bias		System Drift		Analyzer Span	Raw Avg Gas Conc	Corrected Gas Conc	Instrument Cal. Reference Gas
				% of span	pass/fail		% of span	pass/fail	% of span	pass/fail				
White Iron	zero	0.00	-0.02	-0.09	pass	0.15	0.68	pass	0.77	pass				
Run 1	upscale	9.87	9.92	0.23	pass	9.84	-0.14	pass	0.36	pass	22.03	20.74	20.85	9.898
Mn and CM40 Steel	zero	0.00	0.15	0.68	pass	0.14	0.64	pass	0.05	pass				
Run 1	upscale	9.87	9.84	-0.14	pass	9.77	-0.45	pass	0.32	pass	22.03	20.63	20.99	9.898
				< 5%*			**< 5%***		**< 3%***					

Analyzer Calibration Error	Zero	Mid	High
Calibration Gas Standards	0	9.898	22.03
Cylinder Number		ALM026532	EB0155552
Calibration Gas Analyzer Response	0	9.87	22.02
Analyzer Calibration Error	0.00	-0.13	-0.05
Analyzer Calibration Error < 2%*	pass	pass	pass

System Response Time	
30	seconds

System Leak Check	Completed	Pass/Fail
Pre-test	Yes	Pass
Post-test	Yes	Pass

Note: All units are in %
*Or < 0.5 % absolute difference

Bison Engineering, Inc.
Method 3A CO_2
Calibration Error, System Bias and System Drift

Client:	**Eagle Foundry Company**	Source:	**Main Foundry BH Outlet**	Instrument Make:	**Servomex**
Facility:	**Eagle Foundry**	Date:	**3/27/2023 - Day 1**	Instrument Model:	**1440**
Location:	**Eagle Creek, OR**			Instrument Serial #:	**01440C102/2927**

			Initial Values			Final Values								
		Analyzer Cal. Response	System Cal Response	Pre test System Cal. Bias % of span	pass/fail	System Cal Response	Post test System Cal. Bias % of span	pass/fail	System Drift % of span	pass/fail	Analyzer Span	Raw Avg Gas Conc	Corrected Gas Conc	Instrument Cal. Reference Gas
White Iron	zero	0.03	-0.02	-0.23	pass	-0.09	-0.56	pass	0.32	pass				
Run 1	upscale	9.85	9.90	0.23	pass	9.94	0.42	pass	0.19	pass	21.61	0.20	0.25	9.85
Mn and CM40 Steel	zero	0.03	-0.09	-0.56	pass	-0.07	-0.46	pass	0.09	pass				
Run 1	upscale	9.85	9.94	0.42	pass	10.01	0.74	pass	0.32	pass	21.61	0.19	0.26	9.85
				< 5%*			**< 5%***		**< 3%***					

Analyzer Calibration Error	Zero	Mid	High
Calibration Gas Standards	0	9.85	21.61
Cylinder Number		ALM026532	EB0155552
Calibration Gas Analyzer Response	0.03	9.85	21.56
Analyzer Calibration Error	0.14	0.00	-0.23
Analyzer Calibration Error < 2%*	pass	pass	pass

System Response Time	
30	seconds

System Leak Check	Completed	Pass/Fail
Pre-test	Yes	Pass
Post-test	Yes	Pass

Note: All units are in %
*Or < 0.5 % absolute difference

Bison Engineering, Inc.
Stratification Check

Client:	**Eagle Foundry Company**	Source:	**Main Foundry BH Outlet**
Facility:	**Eagle Foundry**	Test Date:	**3/27/2023 - Day 1**
Location:	**Eagle Creek, OR**		

Stack Diameter: 61 inches
Port Depth: 6 inches

3 POINT METHOD					
% of diameter	Pt	Pt location	O2%	Diff (+/- 5%)	Pass/Fail
16.7%	S1	16.19	20.77	-0.02%	PASS
50.0%	S2	36.50	20.77	-0.02%	PASS
83.3%	S3	56.81	20.78	0.03%	PASS
		AVERAGE:	20.77		

Bison Engineering, Inc.
EPA Method 3A (O_2)
Example Calculations

Client:	**Eagle Foundry Company**	Run:	**White Iron Run 1**
Location:	**Eagle Creek, OR**	Start Time:	**6:40**
Source:	**Main Foundry BH Outlet**	End Time:	**10:40**
		Date:	**3/27/2023 - Day 1**

EPA Method 3A:

Analyzer Calibration Error (Mid)

1) $ACE = \left(\frac{C_{Dir} - CV}{CS}\right) \times 100 =$ -0.13 %v

where C_{Dir}:	9.87 %
C_V:	9.90 %
CS:	22.03 %

System Bias (Upscale)

2) $SB = \left(\frac{C_S - CDir}{CS}\right) \times 100 =$ 0.23 %v

where C_{Dir}:	9.87 %
C_S:	9.92 %
CS:	22.03 %

Drift Assessment (Upscale)

3) $D = | SB_{Final} - SB_i | =$ 0.36 %v

where SB_{Final}:	-0.14 %
SB_i:	0.23 %

Effluent Gas Concentration

4) $C_{Gas} = (C_{Avg} - C_O)\left(\frac{C_{MA}}{C_M - CO}\right) =$ 20.85 %v

where C_{Avg}:	20.74 %
C_O:	0.07 %
C_{MA}:	9.90 %
C_M:	9.88 %

Bison Engineering, Inc.
EPA Method 3A (CO_2)
Example Calculations

Client:	**Eagle Foundry Company**	Run:	**White Iron Run 1**
Location:	**Eagle Creek, OR**	Start Time:	**6:40**
Source:	**Main Foundry BH Outlet**	End Time:	**10:40**
		Date:	**3/27/2023 - Day 1**

EPA Method 3A:

Analyzer Calibration Error (Mid)

1) $ACE = \left(\frac{C_{Dir} - CV}{CS}\right) \times 100 =$ 0.00 %v

where C_{Dir}:	9.85 %
C_V:	9.85 %
CS:	21.61 %

System Bias (Upscale)

2) $SB = \left(\frac{C_S - CDir}{CS}\right) \times 100 =$ 0.23 %v

where C_{Dir}:	9.85 %
C_S:	9.90 %
CS:	21.61 %

Drift Assessment (Upscale)

3) $D = | SB_{Final} - SB_i | =$ 0.19 %v

where SB_{Final}:	0.42 %
SB_i:	0.23 %

Effluent Gas Concentration

4) $C_{Gas} = (C_{Avg} - C_O)\left(\frac{C_{MA}}{C_M - CO}\right) =$ 0.25 %v

where C_{Avg}:	0.20 %
C_O:	-0.06 %
C_{MA}:	9.85 %
C_M:	9.92 %

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES		
3/27/2023	4:03:32	0.00	0.02			
3/27/2023	4:03:38	0.00	0.02			
3/27/2023	4:03:44	0.00	0.03	**O2/CO2 Analyzer Zero**		
3/27/2023	4:03:50	0.00	0.03	**0.00**	**0.03**	
3/27/2023	4:03:56	0.00	0.03			
3/27/2023	4:04:02	0.00	0.03			
3/27/2023	4:04:08	0.00	0.03			
3/27/2023	4:04:14	0.00	0.03			
3/27/2023	4:04:20	0.00	0.03			
3/27/2023	4:04:26	0.00	0.03			
3/27/2023	4:04:32	0.00	0.03			
3/27/2023	4:04:38	0.00	0.03			
3/27/2023	4:04:44	0.00	0.03			
3/27/2023	4:04:50	0.00	0.04			
3/27/2023	4:04:56	0.00	0.04			
3/27/2023	4:09:50	22.01	21.79			
3/27/2023	4:09:56	22.01	21.74			
3/27/2023	4:10:02	22.01	21.70	**O2/CO2 Analyzer Span**		
3/27/2023	4:10:08	22.01	21.67	**22.02**	**21.56**	
3/27/2023	4:10:14	22.01	21.64			
3/27/2023	4:10:20	22.02	21.62			
3/27/2023	4:10:26	22.01	21.59			
3/27/2023	4:10:32	22.02	21.57			
3/27/2023	4:10:38	22.02	21.56			
3/27/2023	4:10:44	22.01	21.54			
3/27/2023	4:10:50	22.02	21.51			
3/27/2023	4:10:56	22.02	21.48			
3/27/2023	4:11:02	22.02	21.46			
3/27/2023	4:11:08	22.02	21.46			
3/27/2023	4:11:14	22.02	21.44			
3/27/2023	5:01:01	10.73	4.69			
3/27/2023	5:01:07	4.94	1.66			
3/27/2023	5:01:13	9.66	5.37	**O2/CO2 Analyzer Mid**		
3/27/2023	5:01:19	9.84	9.87	**9.87**	**9.85**	
3/27/2023	5:01:25	9.85	9.84			
3/27/2023	5:01:31	9.86	9.83			
3/27/2023	5:01:37	9.86	9.83			

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES	
3/27/2023	5:01:43	9.86	9.83		
3/27/2023	5:01:49	9.87	9.84		
3/27/2023	5:01:55	9.87	9.85		
3/27/2023	5:02:01	9.88	9.86		
3/27/2023	5:02:07	9.88	9.86		
3/27/2023	5:02:13	9.88	9.87		
3/27/2023	5:02:19	9.89	9.88		
3/27/2023	5:02:25	3.47	3.59		
3/27/2023	5:02:31	-0.19	-0.22	**O2/CO2 System Zero**	
3/27/2023	5:02:37	-0.05	-0.06	**-0.02**	**-0.02**
3/27/2023	5:02:43	-0.02	-0.03		
3/27/2023	5:02:49	-0.01	-0.02		
3/27/2023	5:02:55	-0.01	-0.01		
3/27/2023	5:03:01	-0.01	-0.02		
3/27/2023	5:03:07	-0.02	-0.01		
3/27/2023	5:03:13	-0.01	-0.01		
3/27/2023	5:03:19	-0.01	-0.01		
3/27/2023	5:03:25	-0.02	-0.02		
3/27/2023	5:03:31	-0.01	-0.02		
3/27/2023	5:03:37	13.32	7.78		
3/27/2023	5:03:43	9.86	9.59		
3/27/2023	5:03:49	9.87	9.60		
3/27/2023	5:03:55	9.87	9.60		
3/27/2023	5:04:01	9.87	9.61		
3/27/2023	5:04:07	9.87	9.62		
3/27/2023	5:04:13	9.88	9.63		
3/27/2023	5:04:19	9.88	9.64		
3/27/2023	5:04:25	9.88	9.64		
3/27/2023	5:04:31	9.89	9.65		
3/27/2023	5:04:37	9.89	9.66		
3/27/2023	5:04:43	9.89	9.67		
3/27/2023	5:04:49	9.90	9.67		
3/27/2023	5:04:55	9.90	9.68		
3/27/2023	5:05:01	9.90	9.71		
3/27/2023	5:05:07	9.90	9.84	**O2/CO2 System Upscale**	
3/27/2023	5:05:13	9.91	9.85	**9.92**	**9.90**
3/27/2023	5:05:19	9.91	9.86		
3/27/2023	5:05:25	9.91	9.87		
3/27/2023	5:05:31	9.91	9.90		

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	5:05:37	9.91	9.90	
3/27/2023	5:05:43	9.92	9.90	
3/27/2023	5:05:49	9.92	9.92	
3/27/2023	5:05:55	9.92	9.91	
3/27/2023	5:06:01	9.92	9.92	
3/27/2023	5:06:07	9.93	9.93	
3/27/2023	5:06:13	9.93	9.71	
3/27/2023	5:06:19	9.92	1.68	
3/27/2023	6:28:37	20.77	-0.72	
3/27/2023	6:28:43	20.77	-0.72	
3/27/2023	6:28:49	20.77	-0.72	**Stratification Check**
3/27/2023	6:28:55	20.77	-0.72	**Point 1**
3/27/2023	6:29:01	20.77	-0.72	**20.77**
3/27/2023	6:29:07	20.77	-0.72	
3/27/2023	6:29:13	20.77	-0.72	
3/27/2023	6:29:19	20.77	-0.72	
3/27/2023	6:29:25	20.77	-0.72	
3/27/2023	6:29:31	20.77	-0.72	
3/27/2023	6:29:37	20.77	-0.72	
3/27/2023	6:29:43	20.77	-0.72	
3/27/2023	6:29:49	20.77	-0.73	
3/27/2023	6:29:55	20.77	-0.73	
3/27/2023	6:30:01	20.77	-0.73	
3/27/2023	6:30:07	20.77	-0.73	
3/27/2023	6:30:13	20.77	-0.73	
3/27/2023	6:30:19	20.77	-0.73	
3/27/2023	6:30:25	20.77	-0.73	
3/27/2023	6:30:31	20.77	-0.73	
3/27/2023	6:30:37	20.77	-0.73	
3/27/2023	6:30:43	20.77	-0.73	
3/27/2023	6:30:49	20.77	-0.73	
3/27/2023	6:30:55	20.77	-0.73	
3/27/2023	6:31:01	20.77	-0.73	
3/27/2023	6:31:07	20.77	-0.73	
3/27/2023	6:31:13	20.77	-0.73	
3/27/2023	6:31:19	20.77	-0.73	
3/27/2023	6:31:25	20.77	-0.73	
3/27/2023	6:31:31	20.77	-0.73	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES	
3/27/2023	6:31:37	20.77	-0.73		
3/27/2023	6:31:43	20.77	-0.73		
3/27/2023	6:31:49	20.77	-0.74		
3/27/2023	6:31:55	20.77	-0.74		
3/27/2023	6:32:01	20.77	-0.74		
3/27/2023	6:32:07	20.77	-0.74		
3/27/2023	6:32:13	20.77	-0.74		
3/27/2023	6:32:19	20.77	-0.74		
3/27/2023	6:32:25	20.77	-0.74		
3/27/2023	6:32:31	20.77	-0.74		
3/27/2023	6:32:37	20.77	-0.74		
3/27/2023	6:32:43	20.77	-0.74		
3/27/2023	6:32:49	20.77	-0.74		
3/27/2023	6:32:55	20.77	-0.74	**Point 2**	
3/27/2023	6:33:01	20.77	-0.74		**20.77**
3/27/2023	6:33:07	20.77	-0.74		
3/27/2023	6:33:13	20.77	-0.74		
3/27/2023	6:33:19	20.77	-0.74		
3/27/2023	6:33:25	20.77	-0.74		
3/27/2023	6:33:31	20.77	-0.74		
3/27/2023	6:33:37	20.77	-0.74		
3/27/2023	6:33:43	20.77	-0.74		
3/27/2023	6:33:49	20.77	-0.75		
3/27/2023	6:33:55	20.77	-0.75		
3/27/2023	6:34:01	20.77	-0.75		
3/27/2023	6:34:07	20.77	-0.75		
3/27/2023	6:34:13	20.77	-0.75		
3/27/2023	6:34:19	20.77	-0.75		
3/27/2023	6:34:25	20.77	-0.75		
3/27/2023	6:34:31	20.77	-0.75		
3/27/2023	6:34:37	20.77	-0.75		
3/27/2023	6:34:43	20.77	-0.75		
3/27/2023	6:34:49	20.77	-0.75		
3/27/2023	6:34:55	20.77	-0.75		
3/27/2023	6:35:01	20.77	-0.75		
3/27/2023	6:35:07	20.77	-0.75		
3/27/2023	6:35:13	20.77	-0.75		
3/27/2023	6:35:19	20.77	-0.75		
3/27/2023	6:35:25	20.77	-0.75		

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES	
3/27/2023	6:35:31	20.77	-0.75		
3/27/2023	6:35:37	20.77	-0.75		
3/27/2023	6:35:43	20.77	-0.75		
3/27/2023	6:35:49	20.77	-0.76		
3/27/2023	6:35:55	20.77	-0.76		
3/27/2023	6:36:01	20.77	-0.76		
3/27/2023	6:36:07	20.77	-0.76		
3/27/2023	6:36:13	20.77	-0.76		
3/27/2023	6:36:19	20.77	-0.76		
3/27/2023	6:36:25	20.77	-0.76		
3/27/2023	6:36:31	20.77	-0.76		
3/27/2023	6:36:37	20.77	-0.76		
3/27/2023	6:36:43	20.77	-0.76		
3/27/2023	6:36:49	20.77	-0.76		
3/27/2023	6:36:55	20.77	-0.76	**Point 3**	
3/27/2023	6:37:01	20.77	-0.76		**20.78**
3/27/2023	6:37:07	20.77	-0.76		
3/27/2023	6:37:13	20.77	-0.76		
3/27/2023	6:37:19	20.77	-0.76		
3/27/2023	6:37:25	20.77	-0.76		
3/27/2023	6:37:31	20.77	-0.76		
3/27/2023	6:37:37	20.77	-0.77		
3/27/2023	6:37:43	20.77	-0.76		
3/27/2023	6:37:49	20.77	-0.77		
3/27/2023	6:37:55	20.77	-0.77		
3/27/2023	6:38:01	20.77	-0.77		
3/27/2023	6:38:07	20.77	-0.77		
3/27/2023	6:38:13	20.77	-0.77		
3/27/2023	6:38:19	20.77	-0.77		
3/27/2023	6:38:25	20.78	-0.77		
3/27/2023	6:38:31	20.78	-0.77		
3/27/2023	6:38:37	20.78	-0.77		
3/27/2023	6:38:43	20.78	-0.77		
3/27/2023	6:38:49	20.78	-0.77		
3/27/2023	6:38:55	20.78	-0.77		
3/27/2023	6:39:01	20.78	-0.77		
3/27/2023	6:39:07	20.78	-0.77		
3/27/2023	6:39:13	20.78	-0.77		
3/27/2023	6:39:19	20.78	-0.77		

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	6:39:25	20.78	-0.77	
3/27/2023	6:39:31	20.78	-0.77	
3/27/2023	6:39:37	20.78	-0.77	
3/27/2023	6:39:43	20.78	-0.77	
3/27/2023	6:39:49	20.78	-0.77	
3/27/2023	6:39:55	20.78	-0.77	
				White Iron
3/27/2023	6:40:01	20.78	0.08	**Start Run 1**
3/27/2023	6:40:07	20.78	0.08	
3/27/2023	6:40:13	20.78	0.08	
3/27/2023	6:40:19	20.78	0.08	
3/27/2023	6:40:25	20.78	0.08	
3/27/2023	6:40:31	20.78	0.08	
3/27/2023	6:40:37	20.77	0.08	
3/27/2023	6:40:43	20.78	0.08	
3/27/2023	6:40:49	20.78	0.08	
3/27/2023	6:40:55	20.78	0.08	
3/27/2023	6:41:01	20.78	0.08	
3/27/2023	6:41:07	20.78	0.08	
3/27/2023	6:41:13	20.77	0.08	
3/27/2023	6:41:19	20.77	0.08	
3/27/2023	6:41:25	20.77	0.08	
3/27/2023	6:41:31	20.77	0.08	
3/27/2023	6:41:37	20.78	0.08	
3/27/2023	6:41:43	20.78	0.08	
3/27/2023	6:41:49	20.77	0.08	
3/27/2023	6:41:55	20.77	0.08	
3/27/2023	6:42:01	20.77	0.08	
3/27/2023	6:42:07	20.77	0.08	
3/27/2023	6:42:13	20.77	0.08	
3/27/2023	6:42:19	20.78	0.08	
3/27/2023	6:42:25	20.78	0.08	
3/27/2023	6:42:31	20.77	0.08	
3/27/2023	6:42:37	20.77	0.08	
3/27/2023	6:42:43	20.77	0.08	
3/27/2023	6:42:49	20.77	0.08	
3/27/2023	6:42:55	20.77	0.08	
3/27/2023	6:43:01	20.77	0.09	
3/27/2023	6:43:07	20.77	0.09	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	6:43:13	20.77	0.09	
3/27/2023	6:43:19	20.77	0.09	
3/27/2023	6:43:25	20.77	0.09	
3/27/2023	6:43:31	20.77	0.09	
3/27/2023	6:43:37	20.77	0.09	
3/27/2023	6:43:43	20.77	0.09	
3/27/2023	6:43:49	20.77	0.09	
3/27/2023	6:43:55	20.77	0.09	
3/27/2023	6:44:01	20.77	0.09	
3/27/2023	6:44:07	20.77	0.08	
3/27/2023	6:44:13	20.77	0.08	
3/27/2023	6:44:19	20.77	0.08	
3/27/2023	6:44:25	20.77	0.08	
3/27/2023	6:44:31	20.77	0.08	
3/27/2023	6:44:37	20.77	0.08	
3/27/2023	6:44:43	20.77	0.08	
3/27/2023	6:44:49	20.77	0.08	
3/27/2023	6:44:55	20.77	0.08	
3/27/2023	6:45:01	20.77	0.08	
3/27/2023	6:45:07	20.77	0.08	
3/27/2023	6:45:13	20.77	0.08	
3/27/2023	6:45:19	20.77	0.08	
3/27/2023	6:45:25	20.77	0.08	
3/27/2023	6:45:31	20.77	0.08	
3/27/2023	6:45:37	20.77	0.08	
3/27/2023	6:45:43	20.77	0.08	
3/27/2023	6:45:49	20.77	0.08	
3/27/2023	6:45:55	20.77	0.08	
3/27/2023	6:46:01	20.77	0.08	
3/27/2023	6:46:07	20.77	0.08	
3/27/2023	6:46:13	20.77	0.08	
3/27/2023	6:46:19	20.77	0.08	
3/27/2023	6:46:25	20.77	0.08	
3/27/2023	6:46:31	20.76	0.08	
3/27/2023	6:46:37	20.77	0.08	
3/27/2023	6:46:43	20.76	0.08	
3/27/2023	6:46:49	20.76	0.08	
3/27/2023	6:46:55	20.76	0.08	
3/27/2023	6:47:01	20.76	0.08	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	6:47:07	20.76	0.08	
3/27/2023	6:47:13	20.76	0.08	
3/27/2023	6:47:19	20.76	0.09	
3/27/2023	6:47:25	20.76	0.09	
3/27/2023	6:47:31	20.76	0.09	
3/27/2023	6:47:37	20.76	0.09	
3/27/2023	6:47:43	20.76	0.09	
3/27/2023	6:47:49	20.76	0.09	
3/27/2023	6:47:55	20.76	0.09	
3/27/2023	6:48:01	20.76	0.09	
3/27/2023	6:48:07	20.76	0.09	
3/27/2023	6:48:13	20.76	0.09	
3/27/2023	6:48:19	20.76	0.09	
3/27/2023	6:48:25	20.76	0.09	
3/27/2023	6:48:31	20.76	0.09	
3/27/2023	6:48:37	20.76	0.09	
3/27/2023	6:48:43	20.76	0.09	
3/27/2023	6:48:49	20.76	0.09	
3/27/2023	6:48:55	20.76	0.09	
3/27/2023	6:49:01	20.76	0.09	
3/27/2023	6:49:07	20.76	0.10	
3/27/2023	6:49:13	20.76	0.10	
3/27/2023	6:49:19	20.76	0.10	
3/27/2023	6:49:25	20.76	0.10	
3/27/2023	6:49:31	20.76	0.10	
3/27/2023	6:49:37	20.76	0.10	
3/27/2023	6:49:43	20.76	0.10	
3/27/2023	6:49:49	20.76	0.11	
3/27/2023	6:49:55	20.76	0.11	
3/27/2023	6:50:01	20.76	0.11	
3/27/2023	6:50:07	20.76	0.11	
3/27/2023	6:50:13	20.76	0.11	
3/27/2023	6:50:19	20.76	0.11	
3/27/2023	6:50:25	20.76	0.11	
3/27/2023	6:50:31	20.76	0.11	
3/27/2023	6:50:37	20.76	0.11	
3/27/2023	6:50:43	20.76	0.11	
3/27/2023	6:50:49	20.76	0.11	
3/27/2023	6:50:55	20.76	0.11	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	6:51:01	20.76	0.11	
3/27/2023	6:51:07	20.76	0.11	
3/27/2023	6:51:13	20.76	0.11	
3/27/2023	6:51:19	20.76	0.11	
3/27/2023	6:51:25	20.76	0.11	
3/27/2023	6:51:31	20.76	0.11	
3/27/2023	6:51:37	20.76	0.11	
3/27/2023	6:51:43	20.76	0.11	
3/27/2023	6:51:49	20.76	0.11	
3/27/2023	6:51:55	20.76	0.11	
3/27/2023	6:52:01	20.76	0.11	
3/27/2023	6:52:07	20.76	0.11	
3/27/2023	6:52:13	20.76	0.11	
3/27/2023	6:52:19	20.76	0.11	
3/27/2023	6:52:25	20.76	0.11	
3/27/2023	6:52:31	20.76	0.12	
3/27/2023	6:52:37	20.76	0.14	
3/27/2023	6:52:43	20.76	0.17	
3/27/2023	6:52:49	20.76	0.32	
3/27/2023	6:52:55	20.76	0.21	
3/27/2023	6:53:01	20.76	0.13	
3/27/2023	6:53:07	20.76	0.12	
3/27/2023	6:53:13	20.76	0.11	
3/27/2023	6:53:19	20.76	0.11	
3/27/2023	6:53:25	20.76	0.11	
3/27/2023	6:53:31	20.76	0.11	
3/27/2023	6:53:37	20.75	0.11	
3/27/2023	6:53:43	20.75	0.11	
3/27/2023	6:53:49	20.76	0.11	
3/27/2023	6:53:55	20.75	0.10	
3/27/2023	6:54:01	20.75	0.10	
3/27/2023	6:54:07	20.75	0.10	
3/27/2023	6:54:13	20.75	0.10	
3/27/2023	6:54:19	20.75	0.10	
3/27/2023	6:54:25	20.75	0.10	
3/27/2023	6:54:31	20.75	0.10	
3/27/2023	6:54:37	20.75	0.09	
3/27/2023	6:54:43	20.75	0.09	
3/27/2023	6:54:49	20.75	0.09	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	6:54:55	20.75	0.09	
3/27/2023	6:55:01	20.75	0.09	
3/27/2023	6:55:07	20.75	0.09	
3/27/2023	6:55:13	20.75	0.09	
3/27/2023	6:55:19	20.75	0.09	
3/27/2023	6:55:25	20.75	0.09	
3/27/2023	6:55:31	20.75	0.09	
3/27/2023	6:55:37	20.75	0.09	
3/27/2023	6:55:43	20.75	0.09	
3/27/2023	6:55:49	20.75	0.09	
3/27/2023	6:55:55	20.75	0.09	
3/27/2023	6:56:01	20.75	0.09	
3/27/2023	6:56:07	20.75	0.09	
3/27/2023	6:56:13	20.75	0.10	
3/27/2023	6:56:19	20.75	0.10	
3/27/2023	6:56:25	20.75	0.10	
3/27/2023	6:56:31	20.75	0.10	
3/27/2023	6:56:37	20.75	0.10	
3/27/2023	6:56:43	20.75	0.10	
3/27/2023	6:56:49	20.75	0.10	
3/27/2023	6:56:55	20.75	0.11	
3/27/2023	6:57:01	20.75	0.11	
3/27/2023	6:57:07	20.75	0.11	
3/27/2023	6:57:13	20.75	0.11	
3/27/2023	6:57:19	20.75	0.11	
3/27/2023	6:57:25	20.75	0.11	
3/27/2023	6:57:31	20.75	0.11	
3/27/2023	6:57:37	20.75	0.11	
3/27/2023	6:57:43	20.75	0.11	
3/27/2023	6:57:49	20.75	0.11	
3/27/2023	6:57:55	20.75	0.11	
3/27/2023	6:58:01	20.75	0.11	
3/27/2023	6:58:07	20.75	0.12	
3/27/2023	6:58:13	20.75	0.12	
3/27/2023	6:58:19	20.75	0.12	
3/27/2023	6:58:25	20.75	0.12	
3/27/2023	6:58:31	20.75	0.12	
3/27/2023	6:58:37	20.75	0.12	
3/27/2023	6:58:43	20.75	0.13	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	6:58:49	20.75	0.12	
3/27/2023	6:58:55	20.75	0.12	
3/27/2023	6:59:01	20.75	0.12	
3/27/2023	6:59:07	20.75	0.12	
3/27/2023	6:59:13	20.76	0.12	
3/27/2023	6:59:19	20.75	0.12	
3/27/2023	6:59:25	20.75	0.12	
3/27/2023	6:59:31	20.75	0.12	
3/27/2023	6:59:37	20.75	0.12	
3/27/2023	6:59:43	20.75	0.11	
3/27/2023	6:59:49	20.75	0.12	
3/27/2023	6:59:55	20.75	0.12	
3/27/2023	7:00:01	20.75	0.12	
3/27/2023	7:00:07	20.75	0.12	
3/27/2023	7:00:13	20.75	0.12	
3/27/2023	7:00:19	20.76	0.12	
3/27/2023	7:00:25	20.75	0.12	
3/27/2023	7:00:31	20.75	0.12	
3/27/2023	7:00:37	20.75	0.12	
3/27/2023	7:00:43	20.76	0.12	
3/27/2023	7:00:49	20.76	0.12	
3/27/2023	7:00:55	20.76	0.12	
3/27/2023	7:01:01	20.76	0.12	
3/27/2023	7:01:07	20.75	0.12	
3/27/2023	7:01:13	20.76	0.12	
3/27/2023	7:01:19	20.76	0.13	
3/27/2023	7:01:25	20.76	0.13	
3/27/2023	7:01:31	20.76	0.13	
3/27/2023	7:01:37	20.75	0.13	
3/27/2023	7:01:43	20.75	0.13	
3/27/2023	7:01:49	20.75	0.13	
3/27/2023	7:01:55	20.75	0.13	
3/27/2023	7:02:01	20.75	0.13	
3/27/2023	7:02:07	20.75	0.13	
3/27/2023	7:02:13	20.75	0.13	
3/27/2023	7:02:19	20.75	0.13	
3/27/2023	7:02:25	20.75	0.13	
3/27/2023	7:02:31	20.75	0.13	
3/27/2023	7:02:37	20.75	0.12	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	7:02:43	20.75	0.12	
3/27/2023	7:02:49	20.75	0.12	
3/27/2023	7:02:55	20.75	0.12	
3/27/2023	7:03:01	20.75	0.12	
3/27/2023	7:03:07	20.75	0.12	
3/27/2023	7:03:13	20.75	0.12	
3/27/2023	7:03:19	20.75	0.12	
3/27/2023	7:03:25	20.75	0.12	
3/27/2023	7:03:31	20.75	0.12	
3/27/2023	7:03:37	20.75	0.12	
3/27/2023	7:03:43	20.75	0.12	
3/27/2023	7:03:49	20.75	0.12	
3/27/2023	7:03:55	20.75	0.12	
3/27/2023	7:04:01	20.75	0.12	
3/27/2023	7:04:07	20.75	0.12	
3/27/2023	7:04:13	20.75	0.13	
3/27/2023	7:04:19	20.75	0.13	
3/27/2023	7:04:25	20.75	0.14	
3/27/2023	7:04:31	20.75	0.14	
3/27/2023	7:04:37	20.75	0.14	
3/27/2023	7:04:43	20.75	0.14	
3/27/2023	7:04:49	20.75	0.13	
3/27/2023	7:04:55	20.75	0.13	
3/27/2023	7:05:01	20.75	0.13	
3/27/2023	7:05:07	20.75	0.13	
3/27/2023	7:05:13	20.75	0.13	
3/27/2023	7:05:19	20.75	0.13	
3/27/2023	7:05:25	20.75	0.13	
3/27/2023	7:05:31	20.75	0.13	
3/27/2023	7:05:37	20.75	0.12	
3/27/2023	7:05:43	20.75	0.12	
3/27/2023	7:05:49	20.74	0.12	
3/27/2023	7:05:55	20.75	0.12	
3/27/2023	7:06:01	20.75	0.12	
3/27/2023	7:06:07	20.75	0.12	
3/27/2023	7:06:13	20.74	0.12	
3/27/2023	7:06:19	20.74	0.11	
3/27/2023	7:06:25	20.74	0.11	
3/27/2023	7:06:31	20.74	0.11	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	7:06:37	20.74	0.11	
3/27/2023	7:06:43	20.74	0.11	
3/27/2023	7:06:49	20.74	0.12	
3/27/2023	7:06:55	20.74	0.12	
3/27/2023	7:07:01	20.74	0.12	
3/27/2023	7:07:07	20.74	0.12	
3/27/2023	7:07:13	20.74	0.12	
3/27/2023	7:07:19	20.74	0.12	
3/27/2023	7:07:25	20.74	0.12	
3/27/2023	7:07:31	20.74	0.12	
3/27/2023	7:07:37	20.74	0.12	
3/27/2023	7:07:43	20.74	0.12	
3/27/2023	7:07:49	20.74	0.12	
3/27/2023	7:07:55	20.74	0.12	
3/27/2023	7:08:01	20.74	0.12	
3/27/2023	7:08:07	20.74	0.12	
3/27/2023	7:08:13	20.74	0.12	
3/27/2023	7:08:19	20.74	0.12	
3/27/2023	7:08:25	20.74	0.12	
3/27/2023	7:08:31	20.74	0.12	
3/27/2023	7:08:37	20.74	0.12	
3/27/2023	7:08:43	20.74	0.12	
3/27/2023	7:08:49	20.74	0.12	
3/27/2023	7:08:55	20.74	0.12	
3/27/2023	7:09:01	20.74	0.12	
3/27/2023	7:09:07	20.74	0.12	
3/27/2023	7:09:13	20.74	0.12	
3/27/2023	7:09:19	20.74	0.12	
3/27/2023	7:09:25	20.74	0.12	
3/27/2023	7:09:31	20.73	0.12	
3/27/2023	7:09:37	20.74	0.12	
3/27/2023	7:09:43	20.74	0.12	
3/27/2023	7:09:49	20.74	0.12	
3/27/2023	7:09:55	20.74	0.12	
3/27/2023	7:10:01	20.74	0.12	
3/27/2023	7:10:07	20.74	0.12	
3/27/2023	7:10:13	20.74	0.12	
3/27/2023	7:10:19	20.74	0.13	
3/27/2023	7:10:25	20.74	0.13	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	7:10:31	20.74	0.13	
3/27/2023	7:10:37	20.74	0.13	
3/27/2023	7:10:43	20.74	0.13	
3/27/2023	7:10:49	20.74	0.13	
3/27/2023	7:10:55	20.74	0.13	
3/27/2023	7:11:01	20.74	0.13	
3/27/2023	7:11:07	20.74	0.13	
3/27/2023	7:11:13	20.74	0.13	
3/27/2023	7:11:19	20.74	0.13	
3/27/2023	7:11:25	20.74	0.13	
3/27/2023	7:11:31	20.74	0.13	
3/27/2023	7:11:37	20.74	0.13	
3/27/2023	7:11:43	20.74	0.13	
3/27/2023	7:11:49	20.74	0.13	
3/27/2023	7:11:55	20.74	0.13	
3/27/2023	7:12:01	20.74	0.13	
3/27/2023	7:12:07	20.74	0.13	
3/27/2023	7:12:13	20.74	0.13	
3/27/2023	7:12:19	20.74	0.13	
3/27/2023	7:12:25	20.74	0.13	
3/27/2023	7:12:31	20.74	0.13	
3/27/2023	7:12:37	20.74	0.13	
3/27/2023	7:12:43	20.74	0.13	
3/27/2023	7:12:49	20.74	0.12	
3/27/2023	7:12:55	20.74	0.12	
3/27/2023	7:13:01	20.74	0.12	
3/27/2023	7:13:07	20.74	0.12	
3/27/2023	7:13:13	20.74	0.12	
3/27/2023	7:13:19	20.74	0.12	
3/27/2023	7:13:25	20.74	0.12	
3/27/2023	7:13:31	20.74	0.12	
3/27/2023	7:13:37	20.74	0.12	
3/27/2023	7:13:43	20.74	0.12	
3/27/2023	7:13:49	20.74	0.12	
3/27/2023	7:13:55	20.74	0.12	
3/27/2023	7:14:01	20.74	0.12	
3/27/2023	7:14:07	20.74	0.12	
3/27/2023	7:14:13	20.74	0.12	
3/27/2023	7:14:19	20.74	0.13	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	7:14:25	20.74	0.12	
3/27/2023	7:14:31	20.74	0.13	
3/27/2023	7:14:37	20.74	0.13	
3/27/2023	7:14:43	20.74	0.13	
3/27/2023	7:14:49	20.74	0.13	
3/27/2023	7:14:55	20.74	0.13	
3/27/2023	7:15:01	20.74	0.13	
3/27/2023	7:15:07	20.74	0.13	
3/27/2023	7:15:13	20.74	0.13	
3/27/2023	7:15:19	20.74	0.13	
3/27/2023	7:15:25	20.74	0.13	
3/27/2023	7:15:31	20.74	0.13	
3/27/2023	7:15:37	20.74	0.14	
3/27/2023	7:15:43	20.74	0.14	
3/27/2023	7:15:49	20.74	0.13	
3/27/2023	7:15:55	20.74	0.13	
3/27/2023	7:16:01	20.74	0.13	
3/27/2023	7:16:07	20.74	0.13	
3/27/2023	7:16:13	20.74	0.13	
3/27/2023	7:16:19	20.74	0.13	
3/27/2023	7:16:25	20.74	0.14	
3/27/2023	7:16:31	20.74	0.14	
3/27/2023	7:16:37	20.74	0.14	
3/27/2023	7:16:43	20.74	0.13	
3/27/2023	7:16:49	20.74	0.14	
3/27/2023	7:16:55	20.74	0.14	
3/27/2023	7:17:01	20.74	0.14	
3/27/2023	7:17:07	20.74	0.14	
3/27/2023	7:17:13	20.74	0.14	
3/27/2023	7:17:19	20.74	0.14	
3/27/2023	7:17:25	20.74	0.14	
3/27/2023	7:17:31	20.74	0.14	
3/27/2023	7:17:37	20.74	0.13	
3/27/2023	7:17:43	20.74	0.14	
3/27/2023	7:17:49	20.74	0.13	
3/27/2023	7:17:55	20.74	0.14	
3/27/2023	7:18:01	20.74	0.13	
3/27/2023	7:18:07	20.74	0.13	
3/27/2023	7:18:13	20.74	0.13	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	7:18:19	20.74	0.13	
3/27/2023	7:18:25	20.74	0.13	
3/27/2023	7:18:31	20.74	0.13	
3/27/2023	7:18:37	20.74	0.13	
3/27/2023	7:18:43	20.74	0.13	
3/27/2023	7:18:49	20.74	0.13	
3/27/2023	7:18:55	20.74	0.13	
3/27/2023	7:19:01	20.74	0.13	
3/27/2023	7:19:07	20.74	0.13	
3/27/2023	7:19:13	20.74	0.13	
3/27/2023	7:19:19	20.74	0.14	
3/27/2023	7:19:25	20.74	0.13	
3/27/2023	7:19:31	20.74	0.13	
3/27/2023	7:19:37	20.74	0.14	
3/27/2023	7:19:43	20.74	0.14	
3/27/2023	7:19:49	20.74	0.14	
3/27/2023	7:19:55	20.74	0.14	
3/27/2023	7:20:01	20.74	0.14	
3/27/2023	7:20:07	20.74	0.14	
3/27/2023	7:20:13	20.74	0.14	
3/27/2023	7:20:19	20.74	0.14	
3/27/2023	7:20:25	20.74	0.14	
3/27/2023	7:20:31	20.74	0.14	
3/27/2023	7:20:37	20.74	0.14	
3/27/2023	7:20:43	20.74	0.14	
3/27/2023	7:20:49	20.74	0.14	
3/27/2023	7:20:55	20.74	0.14	
3/27/2023	7:21:01	20.74	0.14	
3/27/2023	7:21:07	20.74	0.15	
3/27/2023	7:21:13	20.74	0.15	
3/27/2023	7:21:19	20.74	0.15	
3/27/2023	7:21:25	20.74	0.15	
3/27/2023	7:21:31	20.74	0.14	
3/27/2023	7:21:37	20.74	0.14	
3/27/2023	7:21:43	20.74	0.14	
3/27/2023	7:21:49	20.74	0.14	
3/27/2023	7:21:55	20.74	0.14	
3/27/2023	7:22:01	20.74	0.14	
3/27/2023	7:22:07	20.74	0.15	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	7:22:13	20.74	0.15	
3/27/2023	7:22:19	20.74	0.15	
3/27/2023	7:22:25	20.74	0.15	
3/27/2023	7:22:31	20.74	0.15	
3/27/2023	7:22:37	20.74	0.15	
3/27/2023	7:22:43	20.74	0.15	
3/27/2023	7:22:49	20.74	0.15	
3/27/2023	7:22:55	20.74	0.15	
3/27/2023	7:23:01	20.74	0.15	
3/27/2023	7:23:07	20.74	0.15	
3/27/2023	7:23:13	20.74	0.15	
3/27/2023	7:23:19	20.74	0.15	
3/27/2023	7:23:25	20.74	0.15	
3/27/2023	7:23:31	20.74	0.15	
3/27/2023	7:23:37	20.74	0.15	
3/27/2023	7:23:43	20.74	0.15	
3/27/2023	7:23:49	20.74	0.15	
3/27/2023	7:23:55	20.74	0.15	
3/27/2023	7:24:01	20.74	0.15	
3/27/2023	7:24:07	20.74	0.15	
3/27/2023	7:24:13	20.74	0.15	
3/27/2023	7:24:19	20.74	0.15	
3/27/2023	7:24:25	20.74	0.15	
3/27/2023	7:24:31	20.74	0.15	
3/27/2023	7:24:37	20.74	0.15	
3/27/2023	7:24:43	20.74	0.15	
3/27/2023	7:24:49	20.74	0.15	
3/27/2023	7:24:55	20.74	0.15	
3/27/2023	7:25:01	20.74	0.15	
3/27/2023	7:25:07	20.74	0.15	
3/27/2023	7:25:13	20.75	0.15	
3/27/2023	7:25:19	20.74	0.15	
3/27/2023	7:25:25	20.74	0.15	
3/27/2023	7:25:31	20.74	0.15	
3/27/2023	7:25:37	20.74	0.15	
3/27/2023	7:25:43	20.74	0.15	
3/27/2023	7:25:49	20.74	0.15	
3/27/2023	7:25:55	20.74	0.15	
3/27/2023	7:26:01	20.75	0.15	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	7:26:07	20.75	0.15	
3/27/2023	7:26:13	20.75	0.15	
3/27/2023	7:26:19	20.74	0.15	
3/27/2023	7:26:25	20.74	0.15	
3/27/2023	7:26:31	20.74	0.15	
3/27/2023	7:26:37	20.74	0.15	
3/27/2023	7:26:43	20.74	0.15	
3/27/2023	7:26:49	20.74	0.15	
3/27/2023	7:26:55	20.74	0.15	
3/27/2023	7:27:01	20.75	0.15	
3/27/2023	7:27:07	20.75	0.15	
3/27/2023	7:27:13	20.74	0.14	
3/27/2023	7:27:19	20.75	0.14	
3/27/2023	7:27:25	20.75	0.14	
3/27/2023	7:27:31	20.75	0.14	
3/27/2023	7:27:37	20.75	0.14	
3/27/2023	7:27:43	20.75	0.14	
3/27/2023	7:27:49	20.75	0.14	
3/27/2023	7:27:55	20.75	0.14	
3/27/2023	7:28:01	20.75	0.14	
3/27/2023	7:28:07	20.75	0.14	
3/27/2023	7:28:13	20.75	0.14	
3/27/2023	7:28:19	20.75	0.14	
3/27/2023	7:28:25	20.75	0.14	
3/27/2023	7:28:31	20.75	0.14	
3/27/2023	7:28:37	20.75	0.15	
3/27/2023	7:28:43	20.75	0.15	
3/27/2023	7:28:49	20.75	0.15	
3/27/2023	7:28:55	20.75	0.16	
3/27/2023	7:29:01	20.75	0.16	
3/27/2023	7:29:07	20.75	0.16	
3/27/2023	7:29:13	20.75	0.17	
3/27/2023	7:29:19	20.75	0.17	
3/27/2023	7:29:25	20.75	0.18	
3/27/2023	7:29:31	20.75	0.18	
3/27/2023	7:29:37	20.75	0.18	
3/27/2023	7:29:43	20.75	0.18	
3/27/2023	7:29:49	20.75	0.19	
3/27/2023	7:29:55	20.75	0.19	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	7:30:01	20.75	0.19	
3/27/2023	7:30:07	20.75	0.19	
3/27/2023	7:30:13	20.75	0.20	
3/27/2023	7:30:19	20.75	0.20	
3/27/2023	7:30:25	20.75	0.20	
3/27/2023	7:30:31	20.75	0.20	
3/27/2023	7:30:37	20.75	0.20	
3/27/2023	7:30:43	20.75	0.20	
3/27/2023	7:30:49	20.75	0.20	
3/27/2023	7:30:55	20.76	0.20	
3/27/2023	7:31:01	20.76	0.20	
3/27/2023	7:31:07	20.76	0.20	
3/27/2023	7:31:13	20.76	0.20	
3/27/2023	7:31:19	20.76	0.20	
3/27/2023	7:31:25	20.76	0.20	
3/27/2023	7:31:31	20.76	0.20	
3/27/2023	7:31:37	20.76	0.20	
3/27/2023	7:31:43	20.76	0.20	
3/27/2023	7:31:49	20.76	0.20	
3/27/2023	7:31:55	20.76	0.20	
3/27/2023	7:32:01	20.76	0.20	
3/27/2023	7:32:07	20.76	0.20	
3/27/2023	7:32:13	20.76	0.20	
3/27/2023	7:32:19	20.76	0.20	
3/27/2023	7:32:25	20.76	0.20	
3/27/2023	7:32:31	20.76	0.20	
3/27/2023	7:32:37	20.76	0.20	
3/27/2023	7:32:43	20.77	0.20	
3/27/2023	7:32:49	20.77	0.20	
3/27/2023	7:32:55	20.76	0.20	
3/27/2023	7:33:01	20.77	0.21	
3/27/2023	7:33:07	20.77	0.21	
3/27/2023	7:33:13	20.77	0.21	
3/27/2023	7:33:19	20.77	0.21	
3/27/2023	7:33:25	20.77	0.21	
3/27/2023	7:33:31	20.77	0.21	
3/27/2023	7:33:37	20.77	0.21	
3/27/2023	7:33:43	20.77	0.21	
3/27/2023	7:33:49	20.77	0.21	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	7:33:55	20.77	0.21	
3/27/2023	7:34:01	20.77	0.21	
3/27/2023	7:34:07	20.77	0.21	
3/27/2023	7:34:13	20.77	0.21	
3/27/2023	7:34:19	20.77	0.21	
3/27/2023	7:34:25	20.77	0.21	
3/27/2023	7:34:31	20.77	0.21	
3/27/2023	7:34:37	20.77	0.21	
3/27/2023	7:34:43	20.77	0.21	
3/27/2023	7:34:49	20.77	0.21	
3/27/2023	7:34:55	20.77	0.21	
3/27/2023	7:35:01	20.77	0.21	
3/27/2023	7:35:07	20.77	0.21	
3/27/2023	7:35:13	20.77	0.21	
3/27/2023	7:35:19	20.77	0.21	
3/27/2023	7:35:25	20.77	0.21	
3/27/2023	7:35:31	20.77	0.21	
3/27/2023	7:35:37	20.77	0.21	
3/27/2023	7:35:43	20.77	0.21	
3/27/2023	7:35:49	20.77	0.21	
3/27/2023	7:35:55	20.77	0.21	
3/27/2023	7:36:01	20.77	0.21	
3/27/2023	7:36:07	20.77	0.21	
3/27/2023	7:36:13	20.77	0.21	
3/27/2023	7:36:19	20.77	0.21	
3/27/2023	7:36:25	20.77	0.21	
3/27/2023	7:36:31	20.77	0.21	
3/27/2023	7:36:37	20.77	0.21	
3/27/2023	7:36:43	20.77	0.21	
3/27/2023	7:36:49	20.77	0.21	
3/27/2023	7:36:55	20.77	0.21	
3/27/2023	7:37:01	20.77	0.21	
3/27/2023	7:37:07	20.77	0.21	
3/27/2023	7:37:13	20.77	0.21	
3/27/2023	7:37:19	20.77	0.21	
3/27/2023	7:37:25	20.77	0.21	
3/27/2023	7:37:31	20.77	0.21	
3/27/2023	7:37:37	20.77	0.21	
3/27/2023	7:37:43	20.77	0.21	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	7:37:49	20.77	0.21	
3/27/2023	7:37:55	20.77	0.21	
3/27/2023	7:38:01	20.77	0.21	
3/27/2023	7:38:07	20.77	0.21	
3/27/2023	7:38:13	20.77	0.21	
3/27/2023	7:38:19	20.77	0.21	
3/27/2023	7:38:25	20.77	0.21	
3/27/2023	7:38:31	20.77	0.21	
3/27/2023	7:38:37	20.77	0.21	
3/27/2023	7:38:43	20.77	0.21	
3/27/2023	7:38:49	20.77	0.21	
3/27/2023	7:38:55	20.77	0.21	
3/27/2023	7:39:01	20.77	0.21	
3/27/2023	7:39:07	20.77	0.21	
3/27/2023	7:39:13	20.77	0.21	
3/27/2023	7:39:19	20.77	0.21	
3/27/2023	7:39:25	20.77	0.21	
3/27/2023	7:39:31	20.77	0.21	
3/27/2023	7:39:37	20.77	0.21	
3/27/2023	7:39:43	20.77	0.21	
3/27/2023	7:39:49	20.77	0.21	
3/27/2023	7:39:55	20.77	0.21	
3/27/2023	7:40:01	20.77	0.21	
3/27/2023	7:40:07	20.77	0.21	
3/27/2023	7:40:13	20.77	0.21	
3/27/2023	7:40:19	20.77	0.21	
3/27/2023	7:40:25	20.77	0.21	
3/27/2023	7:40:31	20.77	0.21	
3/27/2023	7:40:37	20.77	0.21	
3/27/2023	7:40:43	20.77	0.21	
3/27/2023	7:40:49	20.77	0.21	
3/27/2023	7:40:55	20.77	0.22	
3/27/2023	7:41:01	20.77	0.22	
3/27/2023	7:41:07	20.77	0.22	
3/27/2023	7:41:13	20.77	0.22	
3/27/2023	7:41:19	20.77	0.21	
3/27/2023	7:41:25	20.77	0.21	
3/27/2023	7:41:31	20.77	0.21	
3/27/2023	7:41:37	20.77	0.21	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	7:41:43	20.77	0.22	
3/27/2023	7:41:49	20.77	0.22	
3/27/2023	7:41:55	20.77	0.22	
3/27/2023	7:42:01	20.77	0.22	
3/27/2023	7:42:07	20.77	0.21	
3/27/2023	7:42:13	20.77	0.21	
3/27/2023	7:42:19	20.77	0.22	
3/27/2023	7:42:25	20.77	0.22	
3/27/2023	7:42:31	20.77	0.22	
3/27/2023	7:42:37	20.77	0.22	
3/27/2023	7:42:43	20.77	0.22	
3/27/2023	7:42:49	20.77	0.22	
3/27/2023	7:42:55	20.77	0.22	
3/27/2023	7:43:01	20.77	0.22	
3/27/2023	7:43:07	20.77	0.22	
3/27/2023	7:43:13	20.77	0.22	
3/27/2023	7:43:19	20.77	0.22	
3/27/2023	7:43:25	20.77	0.22	
3/27/2023	7:43:31	20.77	0.21	
3/27/2023	7:43:37	20.77	0.21	
3/27/2023	7:43:43	20.77	0.22	
3/27/2023	7:43:49	20.77	0.21	
3/27/2023	7:43:55	20.77	0.22	
3/27/2023	7:44:01	20.77	0.21	
3/27/2023	7:44:07	20.77	0.21	
3/27/2023	7:44:13	20.77	0.21	
3/27/2023	7:44:19	20.77	0.21	
3/27/2023	7:44:25	20.77	0.21	
3/27/2023	7:44:31	20.77	0.21	
3/27/2023	7:44:37	20.77	0.21	
3/27/2023	7:44:43	20.77	0.21	
3/27/2023	7:44:49	20.77	0.21	
3/27/2023	7:44:55	20.77	0.21	
3/27/2023	7:45:01	20.77	0.21	
3/27/2023	7:45:07	20.77	0.21	
3/27/2023	7:45:13	20.77	0.21	
3/27/2023	7:45:19	20.77	0.21	
3/27/2023	7:45:25	20.77	0.21	
3/27/2023	7:45:31	20.77	0.21	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	7:45:37	20.77	0.21	
3/27/2023	7:45:43	20.77	0.21	
3/27/2023	7:45:49	20.77	0.21	
3/27/2023	7:45:55	20.77	0.21	
3/27/2023	7:46:01	20.77	0.21	
3/27/2023	7:46:07	20.77	0.21	
3/27/2023	7:46:13	20.77	0.21	
3/27/2023	7:46:19	20.77	0.20	
3/27/2023	7:46:25	20.77	0.20	
3/27/2023	7:46:31	20.77	0.20	
3/27/2023	7:46:37	20.77	0.20	
3/27/2023	7:46:43	20.77	0.20	
3/27/2023	7:46:49	20.77	0.20	
3/27/2023	7:46:55	20.77	0.20	
3/27/2023	7:47:01	20.77	0.20	
3/27/2023	7:47:07	20.77	0.20	
3/27/2023	7:47:13	20.77	0.20	
3/27/2023	7:47:19	20.77	0.20	
3/27/2023	7:47:25	20.77	0.20	
3/27/2023	7:47:31	20.77	0.20	
3/27/2023	7:47:37	20.77	0.20	
3/27/2023	7:47:43	20.77	0.20	
3/27/2023	7:47:49	20.77	0.20	
3/27/2023	7:47:55	20.76	0.20	
3/27/2023	7:48:01	20.77	0.20	
3/27/2023	7:48:07	20.76	0.20	
3/27/2023	7:48:13	20.76	0.20	
3/27/2023	7:48:19	20.76	0.20	
3/27/2023	7:48:25	20.76	0.20	
3/27/2023	7:48:31	20.76	0.20	
3/27/2023	7:48:37	20.76	0.20	
3/27/2023	7:48:43	20.76	0.20	
3/27/2023	7:48:49	20.76	0.20	
3/27/2023	7:48:55	20.77	0.20	
3/27/2023	7:49:01	20.76	0.20	
3/27/2023	7:49:07	20.76	0.21	
3/27/2023	7:49:13	20.76	0.21	
3/27/2023	7:49:19	20.77	0.21	
3/27/2023	7:49:25	20.77	0.21	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	7:49:31	20.77	0.21	
3/27/2023	7:49:37	20.77	0.21	
3/27/2023	7:49:43	20.77	0.21	
3/27/2023	7:49:49	20.77	0.21	
3/27/2023	7:49:55	20.76	0.22	
3/27/2023	7:50:01	20.77	0.22	
3/27/2023	7:50:07	20.76	0.22	
3/27/2023	7:50:13	20.76	0.22	
3/27/2023	7:50:19	20.76	0.22	
3/27/2023	7:50:25	20.76	0.22	
3/27/2023	7:50:31	20.76	0.22	
3/27/2023	7:50:37	20.76	0.22	
3/27/2023	7:50:43	20.76	0.22	
3/27/2023	7:50:49	20.76	0.22	
3/27/2023	7:50:55	20.76	0.22	
3/27/2023	7:51:01	20.76	0.22	
3/27/2023	7:51:07	20.76	0.22	
3/27/2023	7:51:13	20.76	0.22	
3/27/2023	7:51:19	20.76	0.22	
3/27/2023	7:51:25	20.76	0.22	
3/27/2023	7:51:31	20.76	0.22	
3/27/2023	7:51:37	20.76	0.22	
3/27/2023	7:51:43	20.76	0.22	
3/27/2023	7:51:49	20.76	0.22	
3/27/2023	7:51:55	20.76	0.22	
3/27/2023	7:52:01	20.76	0.22	
3/27/2023	7:52:07	20.76	0.22	
3/27/2023	7:52:13	20.76	0.22	
3/27/2023	7:52:19	20.76	0.22	
3/27/2023	7:52:25	20.76	0.22	
3/27/2023	7:52:31	20.76	0.22	
3/27/2023	7:52:37	20.77	0.23	
3/27/2023	7:52:43	20.77	0.23	
3/27/2023	7:52:49	20.76	0.23	
3/27/2023	7:52:55	20.76	0.23	
3/27/2023	7:53:01	20.77	0.23	
3/27/2023	7:53:07	20.77	0.23	
3/27/2023	7:53:13	20.77	0.23	
3/27/2023	7:53:19	20.77	0.23	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	7:53:25	20.77	0.23	
3/27/2023	7:53:31	20.77	0.23	
3/27/2023	7:53:37	20.77	0.24	
3/27/2023	7:53:43	20.77	0.24	
3/27/2023	7:53:49	20.77	0.24	
3/27/2023	7:53:55	20.77	0.24	
3/27/2023	7:54:01	20.77	0.24	
3/27/2023	7:54:07	20.77	0.24	
3/27/2023	7:54:13	20.77	0.24	
3/27/2023	7:54:19	20.77	0.24	
3/27/2023	7:54:25	20.77	0.24	
3/27/2023	7:54:31	20.78	0.24	
3/27/2023	7:54:37	20.77	0.24	
3/27/2023	7:54:43	20.78	0.24	
3/27/2023	7:54:49	20.78	0.24	
3/27/2023	7:54:55	20.78	0.24	
3/27/2023	7:55:01	20.78	0.24	
3/27/2023	7:55:07	20.78	0.24	
3/27/2023	7:55:13	20.78	0.24	
3/27/2023	7:55:19	20.78	0.24	
3/27/2023	7:55:25	20.78	0.24	
3/27/2023	7:55:31	20.78	0.24	
3/27/2023	7:55:37	20.78	0.24	
3/27/2023	7:55:43	20.78	0.24	
3/27/2023	7:55:49	20.78	0.24	
3/27/2023	7:55:55	20.79	0.24	
3/27/2023	7:56:01	20.79	0.24	
3/27/2023	7:56:07	20.79	0.24	
3/27/2023	7:56:13	20.79	0.24	
3/27/2023	7:56:19	20.79	0.24	
3/27/2023	7:56:25	20.79	0.24	
3/27/2023	7:56:31	20.79	0.24	
3/27/2023	7:56:37	20.79	0.23	
3/27/2023	7:56:43	20.79	0.22	
3/27/2023	7:56:49	20.79	0.25	
3/27/2023	7:56:55	20.79	0.25	
3/27/2023	7:57:01	20.79	0.25	
3/27/2023	7:57:07	20.79	0.25	
3/27/2023	7:57:13	20.79	0.25	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	7:57:19	20.79	0.25	
3/27/2023	7:57:25	20.79	0.25	
3/27/2023	7:57:31	20.79	0.25	
3/27/2023	7:57:37	20.79	0.25	
3/27/2023	7:57:43	20.79	0.25	
3/27/2023	7:57:49	20.79	0.25	
3/27/2023	7:57:55	20.79	0.25	
3/27/2023	7:58:01	20.79	0.25	
3/27/2023	7:58:07	20.79	0.25	
3/27/2023	7:58:13	20.79	0.25	
3/27/2023	7:58:19	20.79	0.25	
3/27/2023	7:58:25	20.79	0.25	
3/27/2023	7:58:31	20.79	0.25	
3/27/2023	7:58:37	20.79	0.25	
3/27/2023	7:58:43	20.79	0.25	
3/27/2023	7:58:49	20.79	0.25	
3/27/2023	7:58:55	20.79	0.25	
3/27/2023	7:59:01	20.79	0.25	
3/27/2023	7:59:07	20.79	0.25	
3/27/2023	7:59:13	20.79	0.25	
3/27/2023	7:59:19	20.79	0.25	
3/27/2023	7:59:25	20.79	0.25	
3/27/2023	7:59:31	20.79	0.25	
3/27/2023	7:59:37	20.79	0.25	
3/27/2023	7:59:43	20.79	0.25	
3/27/2023	7:59:49	20.79	0.25	
3/27/2023	7:59:55	20.79	0.25	
3/27/2023	8:00:01	20.79	0.25	
3/27/2023	8:00:07	20.79	0.25	
3/27/2023	8:00:13	20.79	0.25	
3/27/2023	8:00:19	20.79	0.25	
3/27/2023	8:00:25	20.79	0.25	
3/27/2023	8:00:31	20.79	0.25	
3/27/2023	8:00:37	20.79	0.25	
3/27/2023	8:00:43	20.79	0.25	
3/27/2023	8:00:49	20.79	0.25	
3/27/2023	8:00:55	20.79	0.25	
3/27/2023	8:01:01	20.79	0.25	
3/27/2023	8:01:07	20.79	0.25	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	8:01:13	20.79	0.26	
3/27/2023	8:01:19	20.79	0.26	
3/27/2023	8:01:25	20.79	0.26	
3/27/2023	8:01:31	20.79	0.26	
3/27/2023	8:01:37	20.79	0.26	
3/27/2023	8:01:43	20.79	0.26	
3/27/2023	8:01:49	20.79	0.26	
3/27/2023	8:01:55	20.79	0.26	
3/27/2023	8:02:01	20.79	0.26	
3/27/2023	8:02:07	20.79	0.26	
3/27/2023	8:02:13	20.79	0.26	
3/27/2023	8:02:19	20.79	0.26	
3/27/2023	8:02:25	20.79	0.26	
3/27/2023	8:02:31	20.79	0.26	
3/27/2023	8:02:37	20.79	0.26	
3/27/2023	8:02:43	20.79	0.26	
3/27/2023	8:02:49	20.79	0.26	
3/27/2023	8:02:55	20.79	0.26	
3/27/2023	8:03:01	20.79	0.26	
3/27/2023	8:03:07	20.79	0.26	
3/27/2023	8:03:13	20.79	0.26	
3/27/2023	8:03:19	20.79	0.26	
3/27/2023	8:03:25	20.79	0.26	
3/27/2023	8:03:31	20.79	0.26	
3/27/2023	8:03:37	20.79	0.26	
3/27/2023	8:03:43	20.79	0.26	
3/27/2023	8:03:49	20.79	0.26	
3/27/2023	8:03:55	20.79	0.26	
3/27/2023	8:04:01	20.79	0.26	
3/27/2023	8:04:07	20.79	0.26	
3/27/2023	8:04:13	20.79	0.26	
3/27/2023	8:04:19	20.79	0.26	
3/27/2023	8:04:25	20.79	0.26	
3/27/2023	8:04:31	20.79	0.26	
3/27/2023	8:04:37	20.79	0.26	
3/27/2023	8:04:43	20.79	0.26	
3/27/2023	8:04:49	20.79	0.26	
3/27/2023	8:04:55	20.79	0.26	
3/27/2023	8:05:01	20.79	0.26	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	8:05:07	20.79	0.26	
3/27/2023	8:05:13	20.79	0.26	
3/27/2023	8:05:19	20.79	0.26	
3/27/2023	8:05:25	20.79	0.26	
3/27/2023	8:05:31	20.79	0.26	
3/27/2023	8:05:37	20.79	0.26	
3/27/2023	8:05:43	20.79	0.26	
3/27/2023	8:05:49	20.79	0.26	
3/27/2023	8:05:55	20.79	0.26	
3/27/2023	8:06:01	20.79	0.26	
3/27/2023	8:06:07	20.79	0.26	
3/27/2023	8:06:13	20.79	0.26	
3/27/2023	8:06:19	20.79	0.26	
3/27/2023	8:06:25	20.79	0.26	
3/27/2023	8:06:31	20.79	0.26	
3/27/2023	8:06:37	20.79	0.26	
3/27/2023	8:06:43	20.79	0.26	
3/27/2023	8:06:49	20.79	0.26	
3/27/2023	8:06:55	20.79	0.26	
3/27/2023	8:07:01	20.79	0.26	
3/27/2023	8:07:07	20.79	0.26	
3/27/2023	8:07:13	20.79	0.26	
3/27/2023	8:07:19	20.79	0.26	
3/27/2023	8:07:25	20.79	0.26	
3/27/2023	8:07:31	20.79	0.26	
3/27/2023	8:07:37	20.79	0.26	
3/27/2023	8:07:43	20.79	0.26	
3/27/2023	8:07:49	20.79	0.26	
3/27/2023	8:07:55	20.79	0.26	
3/27/2023	8:08:01	20.79	0.26	
3/27/2023	8:08:07	20.79	0.26	
3/27/2023	8:08:13	20.79	0.25	
3/27/2023	8:08:19	20.79	0.25	
3/27/2023	8:08:25	20.79	0.25	
3/27/2023	8:08:31	20.79	0.25	
3/27/2023	8:08:37	20.79	0.25	
3/27/2023	8:08:43	20.79	0.25	
3/27/2023	8:08:49	20.79	0.25	
3/27/2023	8:08:55	20.79	0.25	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	8:09:01	20.79	0.25	
3/27/2023	8:09:07	20.79	0.25	
3/27/2023	8:09:13	20.79	0.25	
3/27/2023	8:09:19	20.79	0.25	
3/27/2023	8:09:25	20.79	0.25	
3/27/2023	8:09:31	20.79	0.25	
3/27/2023	8:09:37	20.79	0.25	
3/27/2023	8:09:43	20.79	0.25	
3/27/2023	8:09:49	20.79	0.24	
3/27/2023	8:09:55	20.79	0.24	
3/27/2023	8:10:01	20.79	0.24	
3/27/2023	8:10:07	20.79	0.24	
3/27/2023	8:10:13	20.79	0.24	
3/27/2023	8:10:19	20.79	0.24	
3/27/2023	8:10:25	20.79	0.24	
3/27/2023	8:10:31	20.79	0.24	
3/27/2023	8:10:37	20.79	0.24	
3/27/2023	8:10:43	20.79	0.24	
3/27/2023	8:10:49	20.79	0.24	
3/27/2023	8:10:55	20.79	0.24	
3/27/2023	8:11:01	20.79	0.24	
3/27/2023	8:11:07	20.79	0.24	
3/27/2023	8:11:13	20.79	0.24	
3/27/2023	8:11:19	20.79	0.24	
3/27/2023	8:11:25	20.79	0.24	
3/27/2023	8:11:31	20.79	0.24	
3/27/2023	8:11:37	20.79	0.24	
3/27/2023	8:11:43	20.79	0.24	
3/27/2023	8:11:49	20.79	0.24	
3/27/2023	8:11:55	20.79	0.24	
3/27/2023	8:12:01	20.79	0.24	
3/27/2023	8:12:07	20.79	0.24	
3/27/2023	8:12:13	20.79	0.24	
3/27/2023	8:12:19	20.79	0.24	
3/27/2023	8:12:25	20.79	0.24	
3/27/2023	8:12:31	20.79	0.24	
3/27/2023	8:12:37	20.79	0.24	
3/27/2023	8:12:43	20.79	0.24	
3/27/2023	8:12:49	20.79	0.24	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	8:12:55	20.79	0.24	
3/27/2023	8:13:01	20.79	0.24	
3/27/2023	8:13:07	20.79	0.24	
3/27/2023	8:13:13	20.79	0.24	
3/27/2023	8:13:19	20.79	0.24	
3/27/2023	8:13:25	20.79	0.24	
3/27/2023	8:13:31	20.79	0.24	
3/27/2023	8:13:37	20.79	0.24	
3/27/2023	8:13:43	20.79	0.24	
3/27/2023	8:13:49	20.79	0.24	
3/27/2023	8:13:55	20.79	0.24	
3/27/2023	8:14:01	20.79	0.24	
3/27/2023	8:14:07	20.79	0.24	
3/27/2023	8:14:13	20.79	0.24	
3/27/2023	8:14:19	20.79	0.24	
3/27/2023	8:14:25	20.79	0.24	
3/27/2023	8:14:31	20.79	0.24	
3/27/2023	8:14:37	20.79	0.24	
3/27/2023	8:14:43	20.79	0.24	
3/27/2023	8:14:49	20.79	0.24	
3/27/2023	8:14:55	20.79	0.24	
3/27/2023	8:15:01	20.79	0.24	
3/27/2023	8:15:07	20.79	0.24	
3/27/2023	8:15:13	20.79	0.24	
3/27/2023	8:15:19	20.79	0.24	
3/27/2023	8:15:25	20.79	0.24	
3/27/2023	8:15:31	20.79	0.25	
3/27/2023	8:15:37	20.79	0.25	
3/27/2023	8:15:43	20.79	0.25	
3/27/2023	8:15:49	20.79	0.25	
3/27/2023	8:15:55	20.79	0.25	
3/27/2023	8:16:01	20.79	0.25	
3/27/2023	8:16:07	20.79	0.25	
3/27/2023	8:16:13	20.79	0.25	
3/27/2023	8:16:19	20.79	0.25	
3/27/2023	8:16:25	20.79	0.25	
3/27/2023	8:16:31	20.79	0.25	
3/27/2023	8:16:37	20.79	0.25	
3/27/2023	8:16:43	20.79	0.24	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	8:16:49	20.79	0.24	
3/27/2023	8:16:55	20.79	0.24	
3/27/2023	8:17:01	20.79	0.24	
3/27/2023	8:17:07	20.79	0.24	
3/27/2023	8:17:13	20.79	0.24	
3/27/2023	8:17:19	20.79	0.24	
3/27/2023	8:17:25	20.79	0.24	
3/27/2023	8:17:31	20.79	0.24	
3/27/2023	8:17:37	20.79	0.24	
3/27/2023	8:17:43	20.79	0.24	
3/27/2023	8:17:49	20.79	0.24	
3/27/2023	8:17:55	20.79	0.24	
3/27/2023	8:18:01	20.79	0.24	
3/27/2023	8:18:07	20.79	0.24	
3/27/2023	8:18:13	20.79	0.24	
3/27/2023	8:18:19	20.79	0.24	
3/27/2023	8:18:25	20.79	0.24	
3/27/2023	8:18:31	20.79	0.24	
3/27/2023	8:18:37	20.79	0.24	
3/27/2023	8:18:43	20.79	0.24	
3/27/2023	8:18:49	20.79	0.24	
3/27/2023	8:18:55	20.79	0.24	
3/27/2023	8:19:01	20.79	0.24	
3/27/2023	8:19:07	20.79	0.24	
3/27/2023	8:19:13	20.79	0.24	
3/27/2023	8:19:19	20.79	0.24	
3/27/2023	8:19:25	20.79	0.24	
3/27/2023	8:19:31	20.79	0.24	
3/27/2023	8:19:37	20.79	0.24	
3/27/2023	8:19:43	20.79	0.24	
3/27/2023	8:19:49	20.79	0.24	
3/27/2023	8:19:55	20.79	0.24	
3/27/2023	8:20:01	20.79	0.24	
3/27/2023	8:20:07	20.79	0.24	
3/27/2023	8:20:13	20.79	0.24	
3/27/2023	8:20:19	20.79	0.24	
3/27/2023	8:20:25	20.79	0.24	
3/27/2023	8:20:31	20.79	0.24	
3/27/2023	8:20:37	20.79	0.24	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	8:20:43	20.79	0.24	
3/27/2023	8:20:49	20.79	0.24	
3/27/2023	8:20:55	20.79	0.24	
3/27/2023	8:21:01	20.79	0.24	
3/27/2023	8:21:07	20.79	0.24	
3/27/2023	8:21:13	20.79	0.24	
3/27/2023	8:21:19	20.79	0.23	
3/27/2023	8:21:25	20.79	0.23	
3/27/2023	8:21:31	20.79	0.23	
3/27/2023	8:21:37	20.79	0.23	
3/27/2023	8:21:43	20.79	0.23	
3/27/2023	8:21:49	20.79	0.23	
3/27/2023	8:21:55	20.79	0.23	
3/27/2023	8:22:01	20.79	0.23	
3/27/2023	8:22:07	20.79	0.23	
3/27/2023	8:22:13	20.79	0.23	
3/27/2023	8:22:19	20.79	0.23	
3/27/2023	8:22:25	20.79	0.23	
3/27/2023	8:22:31	20.79	0.23	
3/27/2023	8:22:37	20.79	0.23	
3/27/2023	8:22:43	20.79	0.23	
3/27/2023	8:22:49	20.79	0.23	
3/27/2023	8:22:55	20.79	0.23	
3/27/2023	8:23:01	20.79	0.23	
3/27/2023	8:23:07	20.79	0.23	
3/27/2023	8:23:13	20.79	0.23	
3/27/2023	8:23:19	20.79	0.23	
3/27/2023	8:23:25	20.79	0.23	
3/27/2023	8:23:31	20.79	0.23	
3/27/2023	8:23:37	20.79	0.24	
3/27/2023	8:23:43	20.79	0.24	
3/27/2023	8:23:49	20.79	0.24	
3/27/2023	8:23:55	20.79	0.24	
3/27/2023	8:24:01	20.79	0.24	
3/27/2023	8:24:07	20.79	0.24	
3/27/2023	8:24:13	20.79	0.23	
3/27/2023	8:24:19	20.79	0.23	
3/27/2023	8:24:25	20.79	0.23	
3/27/2023	8:24:31	20.79	0.23	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	8:24:37	20.79	0.24	
3/27/2023	8:24:43	20.79	0.23	
3/27/2023	8:24:49	20.79	0.24	
3/27/2023	8:24:55	20.79	0.24	
3/27/2023	8:25:01	20.79	0.24	
3/27/2023	8:25:07	20.79	0.24	
3/27/2023	8:25:13	20.79	0.24	
3/27/2023	8:25:19	20.79	0.24	
3/27/2023	8:25:25	20.79	0.24	
3/27/2023	8:25:31	20.78	0.24	
3/27/2023	8:25:37	20.79	0.24	
3/27/2023	8:25:43	20.79	0.24	
3/27/2023	8:25:49	20.79	0.24	
3/27/2023	8:25:55	20.78	0.24	
3/27/2023	8:26:01	20.78	0.24	
3/27/2023	8:26:07	20.78	0.24	
3/27/2023	8:26:13	20.79	0.24	
3/27/2023	8:26:19	20.79	0.24	
3/27/2023	8:26:25	20.79	0.24	
3/27/2023	8:26:31	20.79	0.24	
3/27/2023	8:26:37	20.79	0.24	
3/27/2023	8:26:43	20.79	0.24	
3/27/2023	8:26:49	20.79	0.24	
3/27/2023	8:26:55	20.79	0.24	
3/27/2023	8:27:01	20.79	0.24	
3/27/2023	8:27:07	20.79	0.24	
3/27/2023	8:27:13	20.78	0.23	
3/27/2023	8:27:19	20.78	0.24	
3/27/2023	8:27:25	20.78	0.24	
3/27/2023	8:27:31	20.78	0.24	
3/27/2023	8:27:37	20.78	0.24	
3/27/2023	8:27:43	20.78	0.24	
3/27/2023	8:27:49	20.78	0.24	
3/27/2023	8:27:55	20.78	0.24	
3/27/2023	8:28:01	20.78	0.23	
3/27/2023	8:28:07	20.78	0.24	
3/27/2023	8:28:13	20.78	0.24	
3/27/2023	8:28:19	20.78	0.24	
3/27/2023	8:28:25	20.78	0.23	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	8:28:31	20.78	0.23	
3/27/2023	8:28:37	20.78	0.23	
3/27/2023	8:28:43	20.78	0.23	
3/27/2023	8:28:49	20.78	0.23	
3/27/2023	8:28:55	20.78	0.23	
3/27/2023	8:29:01	20.78	0.23	
3/27/2023	8:29:07	20.78	0.23	
3/27/2023	8:29:13	20.78	0.23	
3/27/2023	8:29:19	20.78	0.23	
3/27/2023	8:29:25	20.78	0.23	
3/27/2023	8:29:31	20.78	0.23	
3/27/2023	8:29:37	20.78	0.23	
3/27/2023	8:29:43	20.78	0.23	
3/27/2023	8:29:49	20.78	0.23	
3/27/2023	8:29:55	20.78	0.23	
3/27/2023	8:30:01	20.78	0.23	
3/27/2023	8:30:07	20.78	0.23	
3/27/2023	8:30:13	20.78	0.23	
3/27/2023	8:30:19	20.78	0.23	
3/27/2023	8:30:25	20.78	0.23	
3/27/2023	8:30:31	20.78	0.23	
3/27/2023	8:30:37	20.78	0.23	
3/27/2023	8:30:43	20.78	0.23	
3/27/2023	8:30:49	20.78	0.23	
3/27/2023	8:30:55	20.78	0.23	
3/27/2023	8:31:01	20.78	0.23	
3/27/2023	8:31:07	20.78	0.23	
3/27/2023	8:31:13	20.78	0.23	
3/27/2023	8:31:19	20.78	0.23	
3/27/2023	8:31:25	20.78	0.23	
3/27/2023	8:31:31	20.78	0.23	
3/27/2023	8:31:37	20.78	0.23	
3/27/2023	8:31:43	20.78	0.23	
3/27/2023	8:31:49	20.78	0.23	
3/27/2023	8:31:55	20.78	0.23	
3/27/2023	8:32:01	20.78	0.23	
3/27/2023	8:32:07	20.78	0.23	
3/27/2023	8:32:13	20.78	0.23	
3/27/2023	8:32:19	20.78	0.23	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	8:32:25	20.78	0.23	
3/27/2023	8:32:31	20.78	0.23	
3/27/2023	8:32:37	20.78	0.23	
3/27/2023	8:32:43	20.78	0.23	
3/27/2023	8:32:49	20.78	0.23	
3/27/2023	8:32:55	20.78	0.23	
3/27/2023	8:33:01	20.78	0.23	
3/27/2023	8:33:07	20.78	0.23	
3/27/2023	8:33:13	20.78	0.23	
3/27/2023	8:33:19	20.78	0.23	
3/27/2023	8:33:25	20.78	0.23	
3/27/2023	8:33:31	20.78	0.23	
3/27/2023	8:33:37	20.78	0.23	
3/27/2023	8:33:43	20.78	0.23	
3/27/2023	8:33:49	20.78	0.23	
3/27/2023	8:33:55	20.78	0.23	
3/27/2023	8:34:01	20.78	0.23	
3/27/2023	8:34:07	20.78	0.23	
3/27/2023	8:34:13	20.77	0.23	
3/27/2023	8:34:19	20.77	0.23	
3/27/2023	8:34:25	20.77	0.23	
3/27/2023	8:34:31	20.77	0.23	
3/27/2023	8:34:37	20.77	0.23	
3/27/2023	8:34:43	20.77	0.23	
3/27/2023	8:34:49	20.77	0.23	
3/27/2023	8:34:55	20.77	0.23	
3/27/2023	8:35:01	20.77	0.23	
3/27/2023	8:35:07	20.77	0.23	
3/27/2023	8:35:13	20.77	0.23	
3/27/2023	8:35:19	20.77	0.23	
3/27/2023	8:35:25	20.77	0.23	
3/27/2023	8:35:31	20.77	0.23	
3/27/2023	8:35:37	20.77	0.23	
3/27/2023	8:35:43	20.77	0.23	
3/27/2023	8:35:49	20.77	0.23	
3/27/2023	8:35:55	20.77	0.23	
3/27/2023	8:36:01	20.77	0.23	
3/27/2023	8:36:07	20.77	0.23	
3/27/2023	8:36:13	20.77	0.23	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	8:36:19	20.77	0.23	
3/27/2023	8:36:25	20.77	0.23	
3/27/2023	8:36:31	20.77	0.23	
3/27/2023	8:36:37	20.77	0.23	
3/27/2023	8:36:43	20.77	0.23	
3/27/2023	8:36:49	20.77	0.23	
3/27/2023	8:36:55	20.77	0.23	
3/27/2023	8:37:01	20.77	0.23	
3/27/2023	8:37:07	20.77	0.23	
3/27/2023	8:37:13	20.77	0.23	
3/27/2023	8:37:19	20.77	0.23	
3/27/2023	8:37:25	20.77	0.23	
3/27/2023	8:37:31	20.77	0.23	
3/27/2023	8:37:37	20.77	0.23	
3/27/2023	8:37:43	20.77	0.23	
3/27/2023	8:37:49	20.77	0.23	
3/27/2023	8:37:55	20.77	0.23	
3/27/2023	8:38:01	20.77	0.23	
3/27/2023	8:38:07	20.77	0.23	
3/27/2023	8:38:13	20.77	0.23	
3/27/2023	8:38:19	20.77	0.23	
3/27/2023	8:38:25	20.77	0.23	
3/27/2023	8:38:31	20.77	0.23	
3/27/2023	8:38:37	20.77	0.23	
3/27/2023	8:38:43	20.77	0.23	
3/27/2023	8:38:49	20.77	0.23	
3/27/2023	8:38:55	20.77	0.23	
3/27/2023	8:39:01	20.77	0.23	
3/27/2023	8:39:07	20.77	0.23	
3/27/2023	8:39:13	20.77	0.23	
3/27/2023	8:39:19	20.77	0.23	
3/27/2023	8:39:25	20.77	0.23	
3/27/2023	8:39:31	20.77	0.23	
3/27/2023	8:39:37	20.77	0.23	
3/27/2023	8:39:43	20.76	0.23	
3/27/2023	8:39:49	20.76	0.23	
3/27/2023	8:39:55	20.76	0.23	
3/27/2023	8:40:01	20.76	0.23	
3/27/2023	8:40:07	20.76	0.23	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	8:40:13	20.76	0.23	
3/27/2023	8:40:19	20.76	0.23	
3/27/2023	8:40:25	20.76	0.23	
3/27/2023	8:40:31	20.76	0.23	
3/27/2023	8:40:37	20.76	0.23	
3/27/2023	8:40:43	20.76	0.23	
3/27/2023	8:40:49	20.76	0.23	
3/27/2023	8:40:55	20.76	0.23	
3/27/2023	8:41:01	20.76	0.23	
3/27/2023	8:41:07	20.76	0.23	
3/27/2023	8:41:13	20.76	0.23	
3/27/2023	8:41:19	20.76	0.23	
3/27/2023	8:41:25	20.76	0.23	
3/27/2023	8:41:31	20.76	0.23	
3/27/2023	8:41:37	20.76	0.23	
3/27/2023	8:41:43	20.76	0.23	
3/27/2023	8:41:49	20.76	0.23	
3/27/2023	8:41:55	20.76	0.23	
3/27/2023	8:42:01	20.76	0.23	
3/27/2023	8:42:07	20.76	0.24	
3/27/2023	8:42:13	20.76	0.24	
3/27/2023	8:42:19	20.76	0.24	
3/27/2023	8:42:25	20.76	0.24	
3/27/2023	8:42:31	20.76	0.24	
3/27/2023	8:42:37	20.76	0.24	
3/27/2023	8:42:43	20.76	0.23	
3/27/2023	8:42:49	20.76	0.23	
3/27/2023	8:42:55	20.76	0.23	
3/27/2023	8:43:01	20.76	0.23	
3/27/2023	8:43:07	20.76	0.23	
3/27/2023	8:43:13	20.76	0.23	
3/27/2023	8:43:19	20.76	0.23	
3/27/2023	8:43:25	20.76	0.23	
3/27/2023	8:43:31	20.76	0.23	
3/27/2023	8:43:37	20.76	0.23	
3/27/2023	8:43:43	20.76	0.23	
3/27/2023	8:43:49	20.76	0.23	
3/27/2023	8:43:55	20.76	0.23	
3/27/2023	8:44:01	20.76	0.23	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	8:44:07	20.76	0.23	
3/27/2023	8:44:13	20.76	0.23	
3/27/2023	8:44:19	20.76	0.23	
3/27/2023	8:44:25	20.76	0.23	
3/27/2023	8:44:31	20.76	0.23	
3/27/2023	8:44:37	20.76	0.23	
3/27/2023	8:44:43	20.76	0.23	
3/27/2023	8:44:49	20.76	0.23	
3/27/2023	8:44:55	20.76	0.23	
3/27/2023	8:45:01	20.76	0.23	
3/27/2023	8:45:07	20.76	0.23	
3/27/2023	8:45:13	20.76	0.23	
3/27/2023	8:45:19	20.76	0.23	
3/27/2023	8:45:25	20.76	0.23	
3/27/2023	8:45:31	20.76	0.23	
3/27/2023	8:45:37	20.76	0.23	
3/27/2023	8:45:43	20.76	0.23	
3/27/2023	8:45:49	20.76	0.23	
3/27/2023	8:45:55	20.76	0.23	
3/27/2023	8:46:01	20.76	0.23	
3/27/2023	8:46:07	20.76	0.23	
3/27/2023	8:46:13	20.76	0.23	
3/27/2023	8:46:19	20.76	0.23	
3/27/2023	8:46:25	20.76	0.23	
3/27/2023	8:46:31	20.76	0.23	
3/27/2023	8:46:37	20.76	0.23	
3/27/2023	8:46:43	20.76	0.23	
3/27/2023	8:46:49	20.76	0.23	
3/27/2023	8:46:55	20.76	0.23	
3/27/2023	8:47:01	20.76	0.23	
3/27/2023	8:47:07	20.76	0.23	
3/27/2023	8:47:13	20.76	0.23	
3/27/2023	8:47:19	20.76	0.23	
3/27/2023	8:47:25	20.76	0.23	
3/27/2023	8:47:31	20.76	0.23	
3/27/2023	8:47:37	20.76	0.23	
3/27/2023	8:47:43	20.76	0.23	
3/27/2023	8:47:49	20.76	0.23	
3/27/2023	8:47:55	20.76	0.23	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	8:48:01	20.76	0.23	
3/27/2023	8:48:07	20.76	0.23	
3/27/2023	8:48:13	20.76	0.23	
3/27/2023	8:48:19	20.76	0.23	
3/27/2023	8:48:25	20.76	0.23	
3/27/2023	8:48:31	20.76	0.23	
3/27/2023	8:48:37	20.76	0.23	
3/27/2023	8:48:43	20.76	0.23	
3/27/2023	8:48:49	20.76	0.23	
3/27/2023	8:48:55	20.76	0.23	
3/27/2023	8:49:01	20.76	0.23	
3/27/2023	8:49:07	20.76	0.23	
3/27/2023	8:49:13	20.76	0.23	
3/27/2023	8:49:19	20.76	0.23	
3/27/2023	8:49:25	20.76	0.23	
3/27/2023	8:49:31	20.76	0.23	
3/27/2023	8:49:37	20.76	0.23	
3/27/2023	8:49:43	20.76	0.23	
3/27/2023	8:49:49	20.76	0.23	
3/27/2023	8:49:55	20.76	0.23	
3/27/2023	8:50:01	20.76	0.23	
3/27/2023	8:50:07	20.76	0.23	
3/27/2023	8:50:13	20.76	0.23	
3/27/2023	8:50:19	20.76	0.23	
3/27/2023	8:50:25	20.76	0.23	
3/27/2023	8:50:31	20.76	0.23	
3/27/2023	8:50:37	20.76	0.23	
3/27/2023	8:50:43	20.76	0.23	
3/27/2023	8:50:49	20.76	0.23	
3/27/2023	8:50:55	20.76	0.23	
3/27/2023	8:51:01	20.76	0.23	
3/27/2023	8:51:07	20.76	0.23	
3/27/2023	8:51:13	20.76	0.23	
3/27/2023	8:51:19	20.76	0.23	
3/27/2023	8:51:25	20.76	0.23	
3/27/2023	8:51:31	20.76	0.22	
3/27/2023	8:51:37	20.76	0.22	
3/27/2023	8:51:43	20.76	0.22	
3/27/2023	8:51:49	20.76	0.22	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	8:51:55	20.76	0.22	
3/27/2023	8:52:01	20.76	0.22	
3/27/2023	8:52:07	20.76	0.23	
3/27/2023	8:52:13	20.76	0.23	
3/27/2023	8:52:19	20.76	0.23	
3/27/2023	8:52:25	20.76	0.23	
3/27/2023	8:52:31	20.76	0.23	
3/27/2023	8:52:37	20.76	0.23	
3/27/2023	8:52:43	20.76	0.23	
3/27/2023	8:52:49	20.76	0.23	
3/27/2023	8:52:55	20.76	0.23	
3/27/2023	8:53:01	20.76	0.23	
3/27/2023	8:53:07	20.76	0.23	
3/27/2023	8:53:13	20.76	0.23	
3/27/2023	8:53:19	20.76	0.23	
3/27/2023	8:53:25	20.76	0.23	
3/27/2023	8:53:31	20.76	0.22	
3/27/2023	8:53:37	20.76	0.23	
3/27/2023	8:53:43	20.76	0.22	
3/27/2023	8:53:49	20.76	0.22	
3/27/2023	8:53:55	20.76	0.22	
3/27/2023	8:54:01	20.76	0.22	
3/27/2023	8:54:07	20.76	0.22	
3/27/2023	8:54:13	20.76	0.22	
3/27/2023	8:54:19	20.76	0.23	
3/27/2023	8:54:25	20.76	0.23	
3/27/2023	8:54:31	20.76	0.23	
3/27/2023	8:54:37	20.76	0.22	
3/27/2023	8:54:43	20.76	0.22	
3/27/2023	8:54:49	20.76	0.22	
3/27/2023	8:54:55	20.76	0.23	
3/27/2023	8:55:01	20.76	0.23	
3/27/2023	8:55:07	20.76	0.23	
3/27/2023	8:55:13	20.76	0.23	
3/27/2023	8:55:19	20.75	0.23	
3/27/2023	8:55:25	20.75	0.23	
3/27/2023	8:55:31	20.76	0.23	
3/27/2023	8:55:37	20.76	0.23	
3/27/2023	8:55:43	20.76	0.23	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	8:55:49	20.76	0.23	
3/27/2023	8:55:55	20.76	0.23	
3/27/2023	8:56:01	20.76	0.23	
3/27/2023	8:56:07	20.76	0.23	
3/27/2023	8:56:13	20.76	0.23	
3/27/2023	8:56:19	20.76	0.23	
3/27/2023	8:56:25	20.76	0.23	
3/27/2023	8:56:31	20.75	0.23	
3/27/2023	8:56:37	20.75	0.23	
3/27/2023	8:56:43	20.75	0.23	
3/27/2023	8:56:49	20.75	0.23	
3/27/2023	8:56:55	20.75	0.23	
3/27/2023	8:57:01	20.75	0.23	
3/27/2023	8:57:07	20.75	0.23	
3/27/2023	8:57:13	20.75	0.23	
3/27/2023	8:57:19	20.75	0.23	
3/27/2023	8:57:25	20.75	0.23	
3/27/2023	8:57:31	20.75	0.23	
3/27/2023	8:57:37	20.75	0.23	
3/27/2023	8:57:43	20.75	0.23	
3/27/2023	8:57:49	20.75	0.23	
3/27/2023	8:57:55	20.75	0.23	
3/27/2023	8:58:01	20.75	0.23	
3/27/2023	8:58:07	20.75	0.23	
3/27/2023	8:58:13	20.75	0.23	
3/27/2023	8:58:19	20.75	0.23	
3/27/2023	8:58:25	20.75	0.23	
3/27/2023	8:58:31	20.75	0.23	
3/27/2023	8:58:37	20.75	0.23	
3/27/2023	8:58:43	20.75	0.23	
3/27/2023	8:58:49	20.75	0.23	
3/27/2023	8:58:55	20.75	0.23	
3/27/2023	8:59:01	20.75	0.23	
3/27/2023	8:59:07	20.75	0.23	
3/27/2023	8:59:13	20.75	0.23	
3/27/2023	8:59:19	20.75	0.23	
3/27/2023	8:59:25	20.75	0.23	
3/27/2023	8:59:31	20.75	0.23	
3/27/2023	8:59:37	20.75	0.23	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	8:59:43	20.75	0.23	
3/27/2023	8:59:49	20.75	0.23	
3/27/2023	8:59:55	20.75	0.23	
3/27/2023	9:00:01	20.75	0.23	
3/27/2023	9:00:07	20.75	0.23	
3/27/2023	9:00:13	20.75	0.23	
3/27/2023	9:00:19	20.75	0.23	
3/27/2023	9:00:25	20.75	0.23	
3/27/2023	9:00:31	20.75	0.23	
3/27/2023	9:00:37	20.75	0.23	
3/27/2023	9:00:43	20.75	0.23	
3/27/2023	9:00:49	20.75	0.23	
3/27/2023	9:00:55	20.75	0.23	
3/27/2023	9:01:01	20.75	0.23	
3/27/2023	9:01:07	20.75	0.23	
3/27/2023	9:01:13	20.75	0.23	
3/27/2023	9:01:19	20.75	0.23	
3/27/2023	9:01:25	20.75	0.23	
3/27/2023	9:01:31	20.75	0.23	
3/27/2023	9:01:37	20.75	0.23	
3/27/2023	9:01:43	20.75	0.23	
3/27/2023	9:01:49	20.75	0.23	
3/27/2023	9:01:55	20.75	0.23	
3/27/2023	9:02:01	20.75	0.23	
3/27/2023	9:02:07	20.75	0.23	
3/27/2023	9:02:13	20.75	0.23	
3/27/2023	9:02:19	20.75	0.23	
3/27/2023	9:02:25	20.75	0.23	
3/27/2023	9:02:31	20.75	0.23	
3/27/2023	9:02:37	20.75	0.23	
3/27/2023	9:02:43	20.76	0.23	
3/27/2023	9:02:49	20.76	0.23	
3/27/2023	9:02:55	20.76	0.23	
3/27/2023	9:03:01	20.76	0.23	
3/27/2023	9:03:07	20.76	0.23	
3/27/2023	9:03:13	20.76	0.23	
3/27/2023	9:03:19	20.76	0.23	
3/27/2023	9:03:25	20.76	0.23	
3/27/2023	9:03:31	20.76	0.23	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	9:03:37	20.76	0.23	
3/27/2023	9:03:43	20.76	0.23	
3/27/2023	9:03:49	20.76	0.23	
3/27/2023	9:03:55	20.76	0.23	
3/27/2023	9:04:01	20.76	0.23	
3/27/2023	9:04:07	20.76	0.23	
3/27/2023	9:04:13	20.76	0.23	
3/27/2023	9:04:19	20.76	0.23	
3/27/2023	9:04:25	20.75	0.23	
3/27/2023	9:04:31	20.75	0.23	
3/27/2023	9:04:37	20.75	0.23	
3/27/2023	9:04:43	20.75	0.23	
3/27/2023	9:04:49	20.75	0.23	
3/27/2023	9:04:55	20.75	0.23	
3/27/2023	9:05:01	20.75	0.23	
3/27/2023	9:05:07	20.75	0.23	
3/27/2023	9:05:13	20.75	0.23	
3/27/2023	9:05:19	20.75	0.23	
3/27/2023	9:05:25	20.75	0.23	
3/27/2023	9:05:31	20.75	0.23	
3/27/2023	9:05:37	20.75	0.23	
3/27/2023	9:05:43	20.75	0.23	
3/27/2023	9:05:49	20.75	0.23	
3/27/2023	9:05:55	20.74	0.23	
3/27/2023	9:06:01	20.74	0.23	
3/27/2023	9:06:07	20.74	0.23	
3/27/2023	9:06:13	20.74	0.23	
3/27/2023	9:06:19	20.74	0.23	
3/27/2023	9:06:25	20.74	0.23	
3/27/2023	9:06:31	20.74	0.23	
3/27/2023	9:06:37	20.74	0.23	
3/27/2023	9:06:43	20.74	0.23	
3/27/2023	9:06:49	20.74	0.23	
3/27/2023	9:06:55	20.74	0.23	
3/27/2023	9:07:01	20.74	0.23	
3/27/2023	9:07:07	20.74	0.23	
3/27/2023	9:07:13	20.74	0.23	
3/27/2023	9:07:19	20.74	0.23	
3/27/2023	9:07:25	20.74	0.23	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	9:07:31	20.74	0.23	
3/27/2023	9:07:37	20.74	0.23	
3/27/2023	9:07:43	20.74	0.23	
3/27/2023	9:07:49	20.74	0.23	
3/27/2023	9:07:55	20.74	0.23	
3/27/2023	9:08:01	20.74	0.23	
3/27/2023	9:08:07	20.74	0.23	
3/27/2023	9:08:13	20.74	0.23	
3/27/2023	9:08:19	20.74	0.23	
3/27/2023	9:08:25	20.74	0.23	
3/27/2023	9:08:31	20.74	0.23	
3/27/2023	9:08:37	20.74	0.23	
3/27/2023	9:08:43	20.74	0.23	
3/27/2023	9:08:49	20.74	0.23	
3/27/2023	9:08:55	20.74	0.23	
3/27/2023	9:09:01	20.74	0.23	
3/27/2023	9:09:07	20.74	0.23	
3/27/2023	9:09:13	20.74	0.23	
3/27/2023	9:09:19	20.74	0.23	
3/27/2023	9:09:25	20.74	0.23	
3/27/2023	9:09:31	20.74	0.23	
3/27/2023	9:09:37	20.74	0.23	
3/27/2023	9:09:43	20.74	0.23	
3/27/2023	9:09:49	20.74	0.23	
3/27/2023	9:09:55	20.74	0.22	
3/27/2023	9:10:01	20.74	0.22	
3/27/2023	9:10:07	20.74	0.22	
3/27/2023	9:10:13	20.74	0.22	
3/27/2023	9:10:19	20.74	0.22	
3/27/2023	9:10:25	20.74	0.22	
3/27/2023	9:10:31	20.74	0.22	
3/27/2023	9:10:37	20.74	0.22	
3/27/2023	9:10:43	20.74	0.22	
3/27/2023	9:10:49	20.74	0.23	
3/27/2023	9:10:55	20.74	0.22	
3/27/2023	9:11:01	20.74	0.23	
3/27/2023	9:11:07	20.74	0.23	
3/27/2023	9:11:13	20.74	0.23	
3/27/2023	9:11:19	20.74	0.23	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	9:11:25	20.74	0.22	
3/27/2023	9:11:31	20.74	0.22	
3/27/2023	9:11:37	20.74	0.22	
3/27/2023	9:11:43	20.74	0.22	
3/27/2023	9:11:49	20.74	0.22	
3/27/2023	9:11:55	20.74	0.22	
3/27/2023	9:12:01	20.74	0.22	
3/27/2023	9:12:07	20.74	0.22	
3/27/2023	9:12:13	20.74	0.22	
3/27/2023	9:12:19	20.74	0.22	
3/27/2023	9:12:25	20.74	0.22	
3/27/2023	9:12:31	20.74	0.22	
3/27/2023	9:12:37	20.74	0.22	
3/27/2023	9:12:43	20.74	0.22	
3/27/2023	9:12:49	20.74	0.22	
3/27/2023	9:12:55	20.74	0.22	
3/27/2023	9:13:01	20.74	0.22	
3/27/2023	9:13:07	20.74	0.22	
3/27/2023	9:13:13	20.74	0.22	
3/27/2023	9:13:19	20.74	0.22	
3/27/2023	9:13:25	20.74	0.22	
3/27/2023	9:13:31	20.74	0.22	
3/27/2023	9:13:37	20.74	0.22	
3/27/2023	9:13:43	20.74	0.22	
3/27/2023	9:13:49	20.74	0.22	
3/27/2023	9:13:55	20.74	0.22	
3/27/2023	9:14:01	20.74	0.22	
3/27/2023	9:14:07	20.74	0.22	
3/27/2023	9:14:13	20.74	0.22	
3/27/2023	9:14:19	20.74	0.22	
3/27/2023	9:14:25	20.74	0.22	
3/27/2023	9:14:31	20.74	0.22	
3/27/2023	9:14:37	20.74	0.22	
3/27/2023	9:14:43	20.74	0.22	
3/27/2023	9:14:49	20.74	0.22	
3/27/2023	9:14:55	20.74	0.22	
3/27/2023	9:15:01	20.74	0.22	
3/27/2023	9:15:07	20.74	0.22	
3/27/2023	9:15:13	20.74	0.22	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	9:15:19	20.74	0.22	
3/27/2023	9:15:25	20.74	0.22	
3/27/2023	9:15:31	20.74	0.22	
3/27/2023	9:15:37	20.74	0.22	
3/27/2023	9:15:43	20.74	0.22	
3/27/2023	9:15:49	20.74	0.22	
3/27/2023	9:15:55	20.74	0.22	
3/27/2023	9:16:01	20.74	0.22	
3/27/2023	9:16:07	20.74	0.22	
3/27/2023	9:16:13	20.74	0.22	
3/27/2023	9:16:19	20.74	0.22	
3/27/2023	9:16:25	20.74	0.22	
3/27/2023	9:16:31	20.74	0.22	
3/27/2023	9:16:37	20.74	0.22	
3/27/2023	9:16:43	20.74	0.22	
3/27/2023	9:16:49	20.74	0.22	
3/27/2023	9:16:55	20.74	0.22	
3/27/2023	9:17:01	20.74	0.22	
3/27/2023	9:17:07	20.74	0.22	
3/27/2023	9:17:13	20.74	0.22	
3/27/2023	9:17:19	20.74	0.22	
3/27/2023	9:17:25	20.74	0.22	
3/27/2023	9:17:31	20.74	0.22	
3/27/2023	9:17:37	20.74	0.22	
3/27/2023	9:17:43	20.74	0.22	
3/27/2023	9:17:49	20.74	0.22	
3/27/2023	9:17:55	20.74	0.22	
3/27/2023	9:18:01	20.74	0.22	
3/27/2023	9:18:07	20.74	0.22	
3/27/2023	9:18:13	20.74	0.22	
3/27/2023	9:18:19	20.74	0.22	
3/27/2023	9:18:25	20.74	0.22	
3/27/2023	9:18:31	20.74	0.22	
3/27/2023	9:18:37	20.74	0.22	
3/27/2023	9:18:43	20.74	0.22	
3/27/2023	9:18:49	20.74	0.22	
3/27/2023	9:18:55	20.73	0.22	
3/27/2023	9:19:01	20.73	0.22	
3/27/2023	9:19:07	20.74	0.22	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	9:19:13	20.73	0.22	
3/27/2023	9:19:19	20.73	0.22	
3/27/2023	9:19:25	20.73	0.22	
3/27/2023	9:19:31	20.73	0.22	
3/27/2023	9:19:37	20.73	0.22	
3/27/2023	9:19:43	20.73	0.22	
3/27/2023	9:19:49	20.73	0.22	
3/27/2023	9:19:55	20.73	0.22	
3/27/2023	9:20:01	20.73	0.22	
3/27/2023	9:20:07	20.73	0.22	
3/27/2023	9:20:13	20.73	0.22	
3/27/2023	9:20:19	20.73	0.22	
3/27/2023	9:20:25	20.73	0.22	
3/27/2023	9:20:31	20.73	0.22	
3/27/2023	9:20:37	20.73	0.22	
3/27/2023	9:20:43	20.73	0.22	
3/27/2023	9:20:49	20.73	0.22	
3/27/2023	9:20:55	20.73	0.22	
3/27/2023	9:21:01	20.73	0.22	
3/27/2023	9:21:07	20.73	0.22	
3/27/2023	9:21:13	20.73	0.22	
3/27/2023	9:21:19	20.73	0.22	
3/27/2023	9:21:25	20.73	0.22	
3/27/2023	9:21:31	20.73	0.22	
3/27/2023	9:21:37	20.73	0.22	
3/27/2023	9:21:43	20.73	0.22	
3/27/2023	9:21:49	20.73	0.22	
3/27/2023	9:21:55	20.73	0.22	
3/27/2023	9:22:01	20.73	0.22	
3/27/2023	9:22:07	20.73	0.22	
3/27/2023	9:22:13	20.73	0.22	
3/27/2023	9:22:19	20.73	0.22	
3/27/2023	9:22:25	20.73	0.22	
3/27/2023	9:22:31	20.73	0.22	
3/27/2023	9:22:37	20.73	0.22	
3/27/2023	9:22:43	20.73	0.22	
3/27/2023	9:22:49	20.73	0.22	
3/27/2023	9:22:55	20.73	0.22	
3/27/2023	9:23:01	20.73	0.22	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	9:23:07	20.73	0.22	
3/27/2023	9:23:13	20.73	0.22	
3/27/2023	9:23:19	20.73	0.22	
3/27/2023	9:23:25	20.73	0.22	
3/27/2023	9:23:31	20.73	0.22	
3/27/2023	9:23:37	20.73	0.22	
3/27/2023	9:23:43	20.73	0.22	
3/27/2023	9:23:49	20.73	0.22	
3/27/2023	9:23:55	20.73	0.22	
3/27/2023	9:24:01	20.73	0.22	
3/27/2023	9:24:07	20.73	0.22	
3/27/2023	9:24:13	20.73	0.22	
3/27/2023	9:24:19	20.73	0.22	
3/27/2023	9:24:25	20.73	0.22	
3/27/2023	9:24:31	20.73	0.22	
3/27/2023	9:24:37	20.73	0.22	
3/27/2023	9:24:43	20.73	0.22	
3/27/2023	9:24:49	20.73	0.22	
3/27/2023	9:24:55	20.73	0.22	
3/27/2023	9:25:01	20.73	0.22	
3/27/2023	9:25:07	20.73	0.22	
3/27/2023	9:25:13	20.73	0.22	
3/27/2023	9:25:19	20.73	0.22	
3/27/2023	9:25:25	20.73	0.22	
3/27/2023	9:25:31	20.73	0.22	
3/27/2023	9:25:37	20.73	0.22	
3/27/2023	9:25:43	20.73	0.22	
3/27/2023	9:25:49	20.73	0.22	
3/27/2023	9:25:55	20.73	0.22	
3/27/2023	9:26:01	20.73	0.22	
3/27/2023	9:26:07	20.73	0.22	
3/27/2023	9:26:13	20.73	0.22	
3/27/2023	9:26:19	20.73	0.22	
3/27/2023	9:26:25	20.73	0.22	
3/27/2023	9:26:31	20.73	0.22	
3/27/2023	9:26:37	20.73	0.22	
3/27/2023	9:26:43	20.73	0.22	
3/27/2023	9:26:49	20.73	0.22	
3/27/2023	9:26:55	20.73	0.22	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	9:27:01	20.73	0.22	
3/27/2023	9:27:07	20.73	0.22	
3/27/2023	9:27:13	20.73	0.22	
3/27/2023	9:27:19	20.73	0.22	
3/27/2023	9:27:25	20.73	0.22	
3/27/2023	9:27:31	20.73	0.22	
3/27/2023	9:27:37	20.73	0.22	
3/27/2023	9:27:43	20.73	0.22	
3/27/2023	9:27:49	20.73	0.22	
3/27/2023	9:27:55	20.73	0.22	
3/27/2023	9:28:01	20.73	0.22	
3/27/2023	9:28:07	20.73	0.22	
3/27/2023	9:28:13	20.73	0.22	
3/27/2023	9:28:19	20.73	0.22	
3/27/2023	9:28:25	20.73	0.22	
3/27/2023	9:28:31	20.73	0.22	
3/27/2023	9:28:37	20.73	0.22	
3/27/2023	9:28:43	20.73	0.22	
3/27/2023	9:28:49	20.73	0.21	
3/27/2023	9:28:55	20.73	0.21	
3/27/2023	9:29:01	20.73	0.21	
3/27/2023	9:29:07	20.73	0.21	
3/27/2023	9:29:13	20.73	0.21	
3/27/2023	9:29:19	20.73	0.21	
3/27/2023	9:29:25	20.73	0.21	
3/27/2023	9:29:31	20.73	0.21	
3/27/2023	9:29:37	20.73	0.22	
3/27/2023	9:29:43	20.73	0.22	
3/27/2023	9:29:49	20.73	0.21	
3/27/2023	9:29:55	20.73	0.21	
3/27/2023	9:30:01	20.73	0.21	
3/27/2023	9:30:07	20.73	0.22	
3/27/2023	9:30:13	20.73	0.21	
3/27/2023	9:30:19	20.73	0.21	
3/27/2023	9:30:25	20.73	0.21	
3/27/2023	9:30:31	20.73	0.21	
3/27/2023	9:30:37	20.73	0.21	
3/27/2023	9:30:43	20.73	0.21	
3/27/2023	9:30:49	20.73	0.21	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	9:30:55	20.73	0.21	
3/27/2023	9:31:01	20.73	0.21	
3/27/2023	9:31:07	20.73	0.22	
3/27/2023	9:31:13	20.73	0.21	
3/27/2023	9:31:19	20.73	0.22	
3/27/2023	9:31:25	20.73	0.21	
3/27/2023	9:31:31	20.73	0.21	
3/27/2023	9:31:37	20.73	0.21	
3/27/2023	9:31:43	20.73	0.22	
3/27/2023	9:31:49	20.73	0.22	
3/27/2023	9:31:55	20.73	0.21	
3/27/2023	9:32:01	20.73	0.21	
3/27/2023	9:32:07	20.73	0.21	
3/27/2023	9:32:13	20.73	0.21	
3/27/2023	9:32:19	20.73	0.21	
3/27/2023	9:32:25	20.73	0.21	
3/27/2023	9:32:31	20.73	0.21	
3/27/2023	9:32:37	20.72	0.22	
3/27/2023	9:32:43	20.72	0.22	
3/27/2023	9:32:49	20.72	0.22	
3/27/2023	9:32:55	20.72	0.22	
3/27/2023	9:33:01	20.72	0.21	
3/27/2023	9:33:07	20.72	0.21	
3/27/2023	9:33:13	20.72	0.21	
3/27/2023	9:33:19	20.72	0.21	
3/27/2023	9:33:25	20.72	0.22	
3/27/2023	9:33:31	20.72	0.22	
3/27/2023	9:33:37	20.72	0.21	
3/27/2023	9:33:43	20.72	0.22	
3/27/2023	9:33:49	20.72	0.22	
3/27/2023	9:33:55	20.72	0.22	
3/27/2023	9:34:01	20.72	0.22	
3/27/2023	9:34:07	20.72	0.21	
3/27/2023	9:34:13	20.72	0.21	
3/27/2023	9:34:19	20.72	0.21	
3/27/2023	9:34:25	20.72	0.21	
3/27/2023	9:34:31	20.72	0.21	
3/27/2023	9:34:37	20.72	0.21	
3/27/2023	9:34:43	20.72	0.21	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	9:34:49	20.72	0.21	
3/27/2023	9:34:55	20.72	0.21	
3/27/2023	9:35:01	20.72	0.21	
3/27/2023	9:35:07	20.72	0.21	
3/27/2023	9:35:13	20.72	0.21	
3/27/2023	9:35:19	20.72	0.21	
3/27/2023	9:35:25	20.72	0.21	
3/27/2023	9:35:31	20.72	0.21	
3/27/2023	9:35:37	20.72	0.22	
3/27/2023	9:35:43	20.72	0.22	
3/27/2023	9:35:49	20.72	0.21	
3/27/2023	9:35:55	20.72	0.21	
3/27/2023	9:36:01	20.72	0.21	
3/27/2023	9:36:07	20.72	0.22	
3/27/2023	9:36:13	20.72	0.22	
3/27/2023	9:36:19	20.72	0.21	
3/27/2023	9:36:25	20.72	0.21	
3/27/2023	9:36:31	20.72	0.21	
3/27/2023	9:36:37	20.72	0.21	
3/27/2023	9:36:43	20.72	0.22	
3/27/2023	9:36:49	20.72	0.21	
3/27/2023	9:36:55	20.72	0.21	
3/27/2023	9:37:01	20.72	0.21	
3/27/2023	9:37:07	20.72	0.22	
3/27/2023	9:37:13	20.72	0.21	
3/27/2023	9:37:19	20.72	0.21	
3/27/2023	9:37:25	20.72	0.21	
3/27/2023	9:37:31	20.72	0.21	
3/27/2023	9:37:37	20.72	0.21	
3/27/2023	9:37:43	20.72	0.21	
3/27/2023	9:37:49	20.72	0.21	
3/27/2023	9:37:55	20.72	0.21	
3/27/2023	9:38:01	20.72	0.21	
3/27/2023	9:38:07	20.72	0.21	
3/27/2023	9:38:13	20.72	0.21	
3/27/2023	9:38:19	20.72	0.22	
3/27/2023	9:38:25	20.72	0.21	
3/27/2023	9:38:31	20.72	0.21	
3/27/2023	9:38:37	20.72	0.22	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	9:38:43	20.72	0.22	
3/27/2023	9:38:49	20.72	0.22	
3/27/2023	9:38:55	20.72	0.22	
3/27/2023	9:39:01	20.72	0.22	
3/27/2023	9:39:07	20.72	0.22	
3/27/2023	9:39:13	20.72	0.22	
3/27/2023	9:39:19	20.72	0.22	
3/27/2023	9:39:25	20.72	0.22	
3/27/2023	9:39:31	20.72	0.22	
3/27/2023	9:39:37	20.72	0.22	
3/27/2023	9:39:43	20.72	0.22	
3/27/2023	9:39:49	20.72	0.22	
3/27/2023	9:39:55	20.72	0.22	
3/27/2023	9:40:01	20.72	0.22	
3/27/2023	9:40:07	20.72	0.22	
3/27/2023	9:40:13	20.72	0.22	
3/27/2023	9:40:19	20.72	0.22	
3/27/2023	9:40:25	20.72	0.22	
3/27/2023	9:40:31	20.72	0.22	
3/27/2023	9:40:37	20.72	0.22	
3/27/2023	9:40:43	20.72	0.22	
3/27/2023	9:40:49	20.72	0.22	
3/27/2023	9:40:55	20.72	0.22	
3/27/2023	9:41:01	20.72	0.22	
3/27/2023	9:41:07	20.72	0.22	
3/27/2023	9:41:13	20.72	0.22	
3/27/2023	9:41:19	20.72	0.22	
3/27/2023	9:41:25	20.72	0.22	
3/27/2023	9:41:31	20.72	0.22	
3/27/2023	9:41:37	20.72	0.22	
3/27/2023	9:41:43	20.72	0.22	
3/27/2023	9:41:49	20.72	0.21	
3/27/2023	9:41:55	20.72	0.21	
3/27/2023	9:42:01	20.72	0.21	
3/27/2023	9:42:07	20.72	0.21	
3/27/2023	9:42:13	20.72	0.21	
3/27/2023	9:42:19	20.72	0.21	
3/27/2023	9:42:25	20.72	0.21	
3/27/2023	9:42:31	20.72	0.21	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	9:42:37	20.72	0.21	
3/27/2023	9:42:43	20.72	0.21	
3/27/2023	9:42:49	20.72	0.21	
3/27/2023	9:42:55	20.72	0.22	
3/27/2023	9:43:01	20.72	0.22	
3/27/2023	9:43:07	20.72	0.22	
3/27/2023	9:43:13	20.72	0.22	
3/27/2023	9:43:19	20.72	0.22	
3/27/2023	9:43:25	20.72	0.22	
3/27/2023	9:43:31	20.72	0.22	
3/27/2023	9:43:37	20.72	0.22	
3/27/2023	9:43:43	20.72	0.22	
3/27/2023	9:43:49	20.72	0.22	
3/27/2023	9:43:55	20.72	0.22	
3/27/2023	9:44:01	20.72	0.22	
3/27/2023	9:44:07	20.72	0.22	
3/27/2023	9:44:13	20.72	0.22	
3/27/2023	9:44:19	20.72	0.22	
3/27/2023	9:44:25	20.72	0.22	
3/27/2023	9:44:31	20.72	0.22	
3/27/2023	9:44:37	20.72	0.22	
3/27/2023	9:44:43	20.72	0.22	
3/27/2023	9:44:49	20.72	0.22	
3/27/2023	9:44:55	20.72	0.22	
3/27/2023	9:45:01	20.72	0.22	
3/27/2023	9:45:07	20.72	0.21	
3/27/2023	9:45:13	20.72	0.21	
3/27/2023	9:45:19	20.72	0.21	
3/27/2023	9:45:25	20.72	0.21	
3/27/2023	9:45:31	20.72	0.22	
3/27/2023	9:45:37	20.72	0.22	
3/27/2023	9:45:43	20.72	0.22	
3/27/2023	9:45:49	20.72	0.21	
3/27/2023	9:45:55	20.72	0.22	
3/27/2023	9:46:01	20.72	0.21	
3/27/2023	9:46:07	20.72	0.22	
3/27/2023	9:46:13	20.72	0.21	
3/27/2023	9:46:19	20.72	0.22	
3/27/2023	9:46:25	20.72	0.22	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	9:46:31	20.72	0.21	
3/27/2023	9:46:37	20.72	0.21	
3/27/2023	9:46:43	20.72	0.21	
3/27/2023	9:46:49	20.72	0.21	
3/27/2023	9:46:55	20.72	0.21	
3/27/2023	9:47:01	20.72	0.21	
3/27/2023	9:47:07	20.72	0.21	
3/27/2023	9:47:13	20.72	0.21	
3/27/2023	9:47:19	20.72	0.21	
3/27/2023	9:47:25	20.72	0.21	
3/27/2023	9:47:31	20.72	0.21	
3/27/2023	9:47:37	20.72	0.21	
3/27/2023	9:47:43	20.72	0.21	
3/27/2023	9:47:49	20.72	0.21	
3/27/2023	9:47:55	20.72	0.21	
3/27/2023	9:48:01	20.72	0.21	
3/27/2023	9:48:07	20.72	0.21	
3/27/2023	9:48:13	20.72	0.21	
3/27/2023	9:48:19	20.72	0.21	
3/27/2023	9:48:25	20.72	0.21	
3/27/2023	9:48:31	20.72	0.21	
3/27/2023	9:48:37	20.72	0.21	
3/27/2023	9:48:43	20.72	0.21	
3/27/2023	9:48:49	20.72	0.21	
3/27/2023	9:48:55	20.72	0.20	
3/27/2023	9:49:01	20.72	0.20	
3/27/2023	9:49:07	20.72	0.21	
3/27/2023	9:49:13	20.72	0.21	
3/27/2023	9:49:19	20.72	0.21	
3/27/2023	9:49:25	20.72	0.21	
3/27/2023	9:49:31	20.72	0.21	
3/27/2023	9:49:37	20.72	0.21	
3/27/2023	9:49:43	20.72	0.21	
3/27/2023	9:49:49	20.72	0.20	
3/27/2023	9:49:55	20.72	0.20	
3/27/2023	9:50:01	20.72	0.20	
3/27/2023	9:50:07	20.72	0.20	
3/27/2023	9:50:13	20.72	0.20	
3/27/2023	9:50:19	20.72	0.20	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	9:50:25	20.72	0.20	
3/27/2023	9:50:31	20.71	0.20	
3/27/2023	9:50:37	20.72	0.20	
3/27/2023	9:50:43	20.72	0.20	
3/27/2023	9:50:49	20.72	0.20	
3/27/2023	9:50:55	20.72	0.19	
3/27/2023	9:51:01	20.72	0.19	
3/27/2023	9:51:07	20.72	0.19	
3/27/2023	9:51:13	20.72	0.19	
3/27/2023	9:51:19	20.72	0.19	
3/27/2023	9:51:25	20.72	0.19	
3/27/2023	9:51:31	20.72	0.19	
3/27/2023	9:51:37	20.72	0.18	
3/27/2023	9:51:43	20.72	0.20	
3/27/2023	9:51:49	20.72	0.20	
3/27/2023	9:51:55	20.72	0.20	
3/27/2023	9:52:01	20.72	0.20	
3/27/2023	9:52:07	20.72	0.20	
3/27/2023	9:52:13	20.72	0.19	
3/27/2023	9:52:19	20.72	0.18	
3/27/2023	9:52:25	20.72	0.19	
3/27/2023	9:52:31	20.72	0.19	
3/27/2023	9:52:37	20.72	0.19	
3/27/2023	9:52:43	20.72	0.19	
3/27/2023	9:52:49	20.72	0.19	
3/27/2023	9:52:55	20.72	0.20	
3/27/2023	9:53:01	20.72	0.20	
3/27/2023	9:53:07	20.72	0.20	
3/27/2023	9:53:13	20.72	0.20	
3/27/2023	9:53:19	20.72	0.20	
3/27/2023	9:53:25	20.72	0.20	
3/27/2023	9:53:31	20.72	0.20	
3/27/2023	9:53:37	20.72	0.20	
3/27/2023	9:53:43	20.72	0.20	
3/27/2023	9:53:49	20.72	0.20	
3/27/2023	9:53:55	20.72	0.20	
3/27/2023	9:54:01	20.72	0.20	
3/27/2023	9:54:07	20.72	0.21	
3/27/2023	9:54:13	20.72	0.21	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	9:54:19	20.72	0.20	
3/27/2023	9:54:25	20.72	0.21	
3/27/2023	9:54:31	20.72	0.20	
3/27/2023	9:54:37	20.72	0.20	
3/27/2023	9:54:43	20.72	0.20	
3/27/2023	9:54:49	20.72	0.20	
3/27/2023	9:54:55	20.72	0.20	
3/27/2023	9:55:01	20.72	0.20	
3/27/2023	9:55:07	20.72	0.20	
3/27/2023	9:55:13	20.72	0.20	
3/27/2023	9:55:19	20.72	0.20	
3/27/2023	9:55:25	20.72	0.20	
3/27/2023	9:55:31	20.72	0.20	
3/27/2023	9:55:37	20.72	0.20	
3/27/2023	9:55:43	20.72	0.20	
3/27/2023	9:55:49	20.72	0.20	
3/27/2023	9:55:55	20.72	0.19	
3/27/2023	9:56:01	20.72	0.19	
3/27/2023	9:56:07	20.72	0.19	
3/27/2023	9:56:13	20.72	0.19	
3/27/2023	9:56:19	20.71	0.20	
3/27/2023	9:56:25	20.71	0.19	
3/27/2023	9:56:31	20.71	0.19	
3/27/2023	9:56:37	20.72	0.19	
3/27/2023	9:56:43	20.71	0.19	
3/27/2023	9:56:49	20.71	0.19	
3/27/2023	9:56:55	20.71	0.20	
3/27/2023	9:57:01	20.71	0.20	
3/27/2023	9:57:07	20.71	0.20	
3/27/2023	9:57:13	20.71	0.20	
3/27/2023	9:57:19	20.71	0.20	
3/27/2023	9:57:25	20.71	0.20	
3/27/2023	9:57:31	20.71	0.20	
3/27/2023	9:57:37	20.72	0.20	
3/27/2023	9:57:43	20.71	0.20	
3/27/2023	9:57:49	20.71	0.20	
3/27/2023	9:57:55	20.71	0.20	
3/27/2023	9:58:01	20.71	0.20	
3/27/2023	9:58:07	20.71	0.20	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	9:58:13	20.71	0.20	
3/27/2023	9:58:19	20.71	0.20	
3/27/2023	9:58:25	20.71	0.20	
3/27/2023	9:58:31	20.71	0.20	
3/27/2023	9:58:37	20.71	0.20	
3/27/2023	9:58:43	20.71	0.20	
3/27/2023	9:58:49	20.71	0.20	
3/27/2023	9:58:55	20.71	0.20	
3/27/2023	9:59:01	20.71	0.20	
3/27/2023	9:59:07	20.71	0.20	
3/27/2023	9:59:13	20.71	0.20	
3/27/2023	9:59:19	20.71	0.20	
3/27/2023	9:59:25	20.71	0.20	
3/27/2023	9:59:31	20.71	0.20	
3/27/2023	9:59:37	20.71	0.19	
3/27/2023	9:59:43	20.71	0.19	
3/27/2023	9:59:49	20.71	0.19	
3/27/2023	9:59:55	20.71	0.19	
3/27/2023	10:00:01	20.71	0.19	
3/27/2023	10:00:07	20.71	0.19	
3/27/2023	10:00:13	20.71	0.19	
3/27/2023	10:00:19	20.71	0.19	
3/27/2023	10:00:25	20.71	0.19	
3/27/2023	10:00:31	20.71	0.19	
3/27/2023	10:00:37	20.71	0.19	
3/27/2023	10:00:43	20.71	0.19	
3/27/2023	10:00:49	20.71	0.20	
3/27/2023	10:00:55	20.71	0.20	
3/27/2023	10:01:01	20.71	0.20	
3/27/2023	10:01:07	20.71	0.21	
3/27/2023	10:01:13	20.71	0.21	
3/27/2023	10:01:19	20.71	0.20	
3/27/2023	10:01:25	20.71	0.21	
3/27/2023	10:01:31	20.71	0.21	
3/27/2023	10:01:37	20.71	0.21	
3/27/2023	10:01:43	20.71	0.20	
3/27/2023	10:01:49	20.71	0.20	
3/27/2023	10:01:55	20.71	0.20	
3/27/2023	10:02:01	20.71	0.20	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	10:02:07	20.71	0.20	
3/27/2023	10:02:13	20.71	0.20	
3/27/2023	10:02:19	20.71	0.20	
3/27/2023	10:02:25	20.71	0.20	
3/27/2023	10:02:31	20.71	0.20	
3/27/2023	10:02:37	20.71	0.20	
3/27/2023	10:02:43	20.71	0.20	
3/27/2023	10:02:49	20.71	0.20	
3/27/2023	10:02:55	20.71	0.20	
3/27/2023	10:03:01	20.71	0.20	
3/27/2023	10:03:07	20.71	0.20	
3/27/2023	10:03:13	20.71	0.20	
3/27/2023	10:03:19	20.71	0.20	
3/27/2023	10:03:25	20.71	0.20	
3/27/2023	10:03:31	20.71	0.20	
3/27/2023	10:03:37	20.71	0.20	
3/27/2023	10:03:43	20.71	0.20	
3/27/2023	10:03:49	20.71	0.20	
3/27/2023	10:03:55	20.71	0.20	
3/27/2023	10:04:01	20.71	0.20	
3/27/2023	10:04:07	20.71	0.20	
3/27/2023	10:04:13	20.71	0.20	
3/27/2023	10:04:19	20.71	0.20	
3/27/2023	10:04:25	20.71	0.20	
3/27/2023	10:04:31	20.71	0.20	
3/27/2023	10:04:37	20.71	0.20	
3/27/2023	10:04:43	20.71	0.20	
3/27/2023	10:04:49	20.71	0.20	
3/27/2023	10:04:55	20.71	0.20	
3/27/2023	10:05:01	20.71	0.20	
3/27/2023	10:05:07	20.71	0.20	
3/27/2023	10:05:13	20.70	0.20	
3/27/2023	10:05:19	20.70	0.20	
3/27/2023	10:05:25	20.70	0.19	
3/27/2023	10:05:31	20.71	0.19	
3/27/2023	10:05:37	20.71	0.20	
3/27/2023	10:05:43	20.71	0.19	
3/27/2023	10:05:49	20.71	0.19	
3/27/2023	10:05:55	20.71	0.19	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	10:06:01	20.71	0.20	
3/27/2023	10:06:07	20.71	0.20	
3/27/2023	10:06:13	20.71	0.19	
3/27/2023	10:06:19	20.71	0.19	
3/27/2023	10:06:25	20.71	0.20	
3/27/2023	10:06:31	20.71	0.20	
3/27/2023	10:06:37	20.71	0.20	
3/27/2023	10:06:43	20.71	0.20	
3/27/2023	10:06:49	20.71	0.20	
3/27/2023	10:06:55	20.71	0.20	
3/27/2023	10:07:01	20.71	0.20	
3/27/2023	10:07:07	20.71	0.19	
3/27/2023	10:07:13	20.71	0.19	
3/27/2023	10:07:19	20.70	0.19	
3/27/2023	10:07:25	20.70	0.20	
3/27/2023	10:07:31	20.70	0.19	
3/27/2023	10:07:37	20.70	0.19	
3/27/2023	10:07:43	20.70	0.18	
3/27/2023	10:07:49	20.70	0.19	
3/27/2023	10:07:55	20.70	0.20	
3/27/2023	10:08:01	20.70	0.19	
3/27/2023	10:08:07	20.70	0.19	
3/27/2023	10:08:13	20.70	0.19	
3/27/2023	10:08:19	20.70	0.19	
3/27/2023	10:08:25	20.70	0.19	
3/27/2023	10:08:31	20.70	0.19	
3/27/2023	10:08:37	20.70	0.19	
3/27/2023	10:08:43	20.70	0.19	
3/27/2023	10:08:49	20.70	0.19	
3/27/2023	10:08:55	20.70	0.19	
3/27/2023	10:09:01	20.70	0.19	
3/27/2023	10:09:07	20.70	0.19	
3/27/2023	10:09:13	20.70	0.19	
3/27/2023	10:09:19	20.70	0.19	
3/27/2023	10:09:25	20.70	0.19	
3/27/2023	10:09:31	20.70	0.20	
3/27/2023	10:09:37	20.70	0.20	
3/27/2023	10:09:43	20.70	0.19	
3/27/2023	10:09:49	20.70	0.20	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	10:09:55	20.70	0.20	
3/27/2023	10:10:01	20.70	0.20	
3/27/2023	10:10:07	20.70	0.19	
3/27/2023	10:10:13	20.70	0.19	
3/27/2023	10:10:19	20.70	0.20	
3/27/2023	10:10:25	20.70	0.19	
3/27/2023	10:10:31	20.70	0.19	
3/27/2023	10:10:37	20.70	0.19	
3/27/2023	10:10:43	20.70	0.19	
3/27/2023	10:10:49	20.70	0.19	
3/27/2023	10:10:55	20.70	0.19	
3/27/2023	10:11:01	20.70	0.19	
3/27/2023	10:11:07	20.70	0.19	
3/27/2023	10:11:13	20.70	0.19	
3/27/2023	10:11:19	20.70	0.19	
3/27/2023	10:11:25	20.70	0.19	
3/27/2023	10:11:31	20.70	0.19	
3/27/2023	10:11:37	20.70	0.19	
3/27/2023	10:11:43	20.70	0.19	
3/27/2023	10:11:49	20.70	0.19	
3/27/2023	10:11:55	20.70	0.19	
3/27/2023	10:12:01	20.70	0.19	
3/27/2023	10:12:07	20.70	0.19	
3/27/2023	10:12:13	20.70	0.19	
3/27/2023	10:12:19	20.70	0.19	
3/27/2023	10:12:25	20.70	0.19	
3/27/2023	10:12:31	20.70	0.19	
3/27/2023	10:12:37	20.70	0.19	
3/27/2023	10:12:43	20.70	0.19	
3/27/2023	10:12:49	20.70	0.19	
3/27/2023	10:12:55	20.70	0.19	
3/27/2023	10:13:01	20.70	0.19	
3/27/2023	10:13:07	20.70	0.19	
3/27/2023	10:13:13	20.70	0.19	
3/27/2023	10:13:19	20.70	0.19	
3/27/2023	10:13:25	20.70	0.19	
3/27/2023	10:13:31	20.70	0.19	
3/27/2023	10:13:37	20.70	0.19	
3/27/2023	10:13:43	20.70	0.19	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	10:13:49	20.70	0.19	
3/27/2023	10:13:55	20.70	0.19	
3/27/2023	10:14:01	20.70	0.19	
3/27/2023	10:14:07	20.70	0.19	
3/27/2023	10:14:13	20.70	0.19	
3/27/2023	10:14:19	20.70	0.18	
3/27/2023	10:14:25	20.70	0.19	
3/27/2023	10:14:31	20.70	0.19	
3/27/2023	10:14:37	20.70	0.19	
3/27/2023	10:14:43	20.70	0.19	
3/27/2023	10:14:49	20.70	0.19	
3/27/2023	10:14:55	20.70	0.19	
3/27/2023	10:15:01	20.70	0.19	
3/27/2023	10:15:07	20.70	0.19	
3/27/2023	10:15:13	20.70	0.18	
3/27/2023	10:15:19	20.70	0.18	
3/27/2023	10:15:25	20.70	0.19	
3/27/2023	10:15:31	20.70	0.19	
3/27/2023	10:15:37	20.70	0.19	
3/27/2023	10:15:43	20.70	0.19	
3/27/2023	10:15:49	20.70	0.19	
3/27/2023	10:15:55	20.70	0.19	
3/27/2023	10:16:01	20.70	0.19	
3/27/2023	10:16:07	20.70	0.19	
3/27/2023	10:16:13	20.70	0.19	
3/27/2023	10:16:19	20.70	0.19	
3/27/2023	10:16:25	20.70	0.19	
3/27/2023	10:16:31	20.70	0.19	
3/27/2023	10:16:37	20.70	0.19	
3/27/2023	10:16:43	20.70	0.19	
3/27/2023	10:16:49	20.69	0.19	
3/27/2023	10:16:55	20.70	0.19	
3/27/2023	10:17:01	20.70	0.20	
3/27/2023	10:17:07	20.70	0.19	
3/27/2023	10:17:13	20.69	0.19	
3/27/2023	10:17:19	20.69	0.19	
3/27/2023	10:17:25	20.69	0.19	
3/27/2023	10:17:31	20.69	0.19	
3/27/2023	10:17:37	20.69	0.19	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	10:17:43	20.69	0.19	
3/27/2023	10:17:49	20.69	0.19	
3/27/2023	10:17:55	20.69	0.19	
3/27/2023	10:18:01	20.69	0.19	
3/27/2023	10:18:07	20.69	0.19	
3/27/2023	10:18:13	20.69	0.19	
3/27/2023	10:18:19	20.69	0.19	
3/27/2023	10:18:25	20.69	0.19	
3/27/2023	10:18:31	20.69	0.19	
3/27/2023	10:18:37	20.69	0.19	
3/27/2023	10:18:43	20.69	0.19	
3/27/2023	10:18:49	20.69	0.19	
3/27/2023	10:18:55	20.69	0.19	
3/27/2023	10:19:01	20.69	0.19	
3/27/2023	10:19:07	20.69	0.19	
3/27/2023	10:19:13	20.69	0.19	
3/27/2023	10:19:19	20.69	0.19	
3/27/2023	10:19:25	20.69	0.19	
3/27/2023	10:19:31	20.69	0.19	
3/27/2023	10:19:37	20.69	0.19	
3/27/2023	10:19:43	20.69	0.19	
3/27/2023	10:19:49	20.69	0.19	
3/27/2023	10:19:55	20.69	0.19	
3/27/2023	10:20:01	20.69	0.19	
3/27/2023	10:20:07	20.69	0.19	
3/27/2023	10:20:13	20.69	0.19	
3/27/2023	10:20:19	20.69	0.19	
3/27/2023	10:20:25	20.69	0.19	
3/27/2023	10:20:31	20.69	0.19	
3/27/2023	10:20:37	20.69	0.19	
3/27/2023	10:20:43	20.69	0.19	
3/27/2023	10:20:49	20.69	0.19	
3/27/2023	10:20:55	20.69	0.19	
3/27/2023	10:21:01	20.69	0.19	
3/27/2023	10:21:07	20.69	0.18	
3/27/2023	10:21:13	20.69	0.18	
3/27/2023	10:21:19	20.69	0.18	
3/27/2023	10:21:25	20.69	0.18	
3/27/2023	10:21:31	20.69	0.18	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	10:21:37	20.69	0.18	
3/27/2023	10:21:43	20.69	0.18	
3/27/2023	10:21:49	20.69	0.18	
3/27/2023	10:21:55	20.69	0.18	
3/27/2023	10:22:01	20.69	0.18	
3/27/2023	10:22:07	20.69	0.18	
3/27/2023	10:22:13	20.69	0.18	
3/27/2023	10:22:19	20.69	0.18	
3/27/2023	10:22:25	20.69	0.18	
3/27/2023	10:22:31	20.69	0.18	
3/27/2023	10:22:37	20.70	0.18	
3/27/2023	10:22:43	20.70	0.18	
3/27/2023	10:22:49	20.70	0.18	
3/27/2023	10:22:55	20.70	0.18	
3/27/2023	10:23:01	20.70	0.18	
3/27/2023	10:23:07	20.69	0.18	
3/27/2023	10:23:13	20.70	0.18	
3/27/2023	10:23:19	20.69	0.18	
3/27/2023	10:23:25	20.70	0.18	
3/27/2023	10:23:31	20.70	0.18	
3/27/2023	10:23:37	20.70	0.18	
3/27/2023	10:23:43	20.70	0.18	
3/27/2023	10:23:49	20.70	0.18	
3/27/2023	10:23:55	20.70	0.18	
3/27/2023	10:24:01	20.70	0.18	
3/27/2023	10:24:07	20.70	0.18	
3/27/2023	10:24:13	20.70	0.18	
3/27/2023	10:24:19	20.70	0.18	
3/27/2023	10:24:25	20.70	0.18	
3/27/2023	10:24:31	20.70	0.18	
3/27/2023	10:24:37	20.70	0.18	
3/27/2023	10:24:43	20.70	0.18	
3/27/2023	10:24:49	20.69	0.19	
3/27/2023	10:24:55	20.70	0.19	
3/27/2023	10:25:01	20.70	0.19	
3/27/2023	10:25:07	20.69	0.18	
3/27/2023	10:25:13	20.69	0.18	
3/27/2023	10:25:19	20.69	0.18	
3/27/2023	10:25:25	20.69	0.18	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	10:25:31	20.70	0.18	
3/27/2023	10:25:37	20.70	0.18	
3/27/2023	10:25:43	20.69	0.18	
3/27/2023	10:25:49	20.69	0.18	
3/27/2023	10:25:55	20.69	0.18	
3/27/2023	10:26:01	20.69	0.18	
3/27/2023	10:26:07	20.69	0.18	
3/27/2023	10:26:13	20.69	0.18	
3/27/2023	10:26:19	20.69	0.18	
3/27/2023	10:26:25	20.69	0.18	
3/27/2023	10:26:31	20.69	0.18	
3/27/2023	10:26:37	20.69	0.18	
3/27/2023	10:26:43	20.69	0.18	
3/27/2023	10:26:49	20.69	0.18	
3/27/2023	10:26:55	20.69	0.18	
3/27/2023	10:27:01	20.69	0.18	
3/27/2023	10:27:07	20.69	0.18	
3/27/2023	10:27:13	20.69	0.18	
3/27/2023	10:27:19	20.69	0.18	
3/27/2023	10:27:25	20.69	0.18	
3/27/2023	10:27:31	20.69	0.18	
3/27/2023	10:27:37	20.69	0.18	
3/27/2023	10:27:43	20.69	0.18	
3/27/2023	10:27:49	20.69	0.18	
3/27/2023	10:27:55	20.69	0.18	
3/27/2023	10:28:01	20.69	0.19	
3/27/2023	10:28:07	20.69	0.19	
3/27/2023	10:28:13	20.69	0.19	
3/27/2023	10:28:19	20.69	0.19	
3/27/2023	10:28:25	20.69	0.19	
3/27/2023	10:28:31	20.69	0.19	
3/27/2023	10:28:37	20.69	0.19	
3/27/2023	10:28:43	20.69	0.18	
3/27/2023	10:28:49	20.69	0.18	
3/27/2023	10:28:55	20.69	0.18	
3/27/2023	10:29:01	20.69	0.18	
3/27/2023	10:29:07	20.69	0.18	
3/27/2023	10:29:13	20.69	0.18	
3/27/2023	10:29:19	20.69	0.18	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	10:29:25	20.69	0.18	
3/27/2023	10:29:31	20.69	0.18	
3/27/2023	10:29:37	20.69	0.19	
3/27/2023	10:29:43	20.69	0.19	
3/27/2023	10:29:49	20.69	0.18	
3/27/2023	10:29:55	20.69	0.18	
3/27/2023	10:30:01	20.69	0.18	
3/27/2023	10:30:07	20.69	0.18	
3/27/2023	10:30:13	20.69	0.18	
3/27/2023	10:30:19	20.69	0.18	
3/27/2023	10:30:25	20.69	0.18	
3/27/2023	10:30:31	20.69	0.18	
3/27/2023	10:30:37	20.69	0.18	
3/27/2023	10:30:43	20.69	0.18	
3/27/2023	10:30:49	20.69	0.18	
3/27/2023	10:30:55	20.69	0.18	
3/27/2023	10:31:01	20.69	0.18	
3/27/2023	10:31:07	20.69	0.18	
3/27/2023	10:31:13	20.69	0.18	
3/27/2023	10:31:19	20.69	0.18	
3/27/2023	10:31:25	20.69	0.18	
3/27/2023	10:31:31	20.69	0.18	
3/27/2023	10:31:37	20.69	0.18	
3/27/2023	10:31:43	20.69	0.18	
3/27/2023	10:31:49	20.69	0.18	
3/27/2023	10:31:55	20.69	0.19	
3/27/2023	10:32:01	20.69	0.19	
3/27/2023	10:32:07	20.69	0.18	
3/27/2023	10:32:13	20.69	0.18	
3/27/2023	10:32:19	20.69	0.18	
3/27/2023	10:32:25	20.69	0.18	
3/27/2023	10:32:31	20.69	0.19	
3/27/2023	10:32:37	20.69	0.18	
3/27/2023	10:32:43	20.69	0.18	
3/27/2023	10:32:49	20.69	0.18	
3/27/2023	10:32:55	20.69	0.18	
3/27/2023	10:33:01	20.69	0.19	
3/27/2023	10:33:07	20.69	0.19	
3/27/2023	10:33:13	20.69	0.19	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	10:33:19	20.69	0.19	
3/27/2023	10:33:25	20.69	0.19	
3/27/2023	10:33:31	20.69	0.19	
3/27/2023	10:33:37	20.69	0.19	
3/27/2023	10:33:43	20.69	0.18	
3/27/2023	10:33:49	20.69	0.18	
3/27/2023	10:33:55	20.69	0.18	
3/27/2023	10:34:01	20.69	0.18	
3/27/2023	10:34:07	20.69	0.18	
3/27/2023	10:34:13	20.69	0.18	
3/27/2023	10:34:19	20.69	0.18	
3/27/2023	10:34:25	20.69	0.18	
3/27/2023	10:34:31	20.69	0.18	
3/27/2023	10:34:37	20.69	0.18	
3/27/2023	10:34:43	20.69	0.18	
3/27/2023	10:34:49	20.69	0.18	
3/27/2023	10:34:55	20.69	0.18	
3/27/2023	10:35:01	20.69	0.18	
3/27/2023	10:35:07	20.69	0.18	
3/27/2023	10:35:13	20.69	0.18	
3/27/2023	10:35:19	20.69	0.18	
3/27/2023	10:35:25	20.69	0.18	
3/27/2023	10:35:31	20.69	0.18	
3/27/2023	10:35:37	20.69	0.18	
3/27/2023	10:35:43	20.69	0.18	
3/27/2023	10:35:49	20.69	0.18	
3/27/2023	10:35:55	20.69	0.18	
3/27/2023	10:36:01	20.69	0.18	
3/27/2023	10:36:07	20.69	0.18	
3/27/2023	10:36:13	20.69	0.18	
3/27/2023	10:36:19	20.69	0.18	
3/27/2023	10:36:25	20.69	0.18	
3/27/2023	10:36:31	20.69	0.18	
3/27/2023	10:36:37	20.69	0.18	
3/27/2023	10:36:43	20.69	0.18	
3/27/2023	10:36:49	20.70	0.18	
3/27/2023	10:36:55	20.70	0.18	
3/27/2023	10:37:01	20.69	0.18	
3/27/2023	10:37:07	20.69	0.18	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	10:37:13	20.69	0.18	
3/27/2023	10:37:19	20.69	0.17	
3/27/2023	10:37:25	20.69	0.17	
3/27/2023	10:37:31	20.69	0.17	
3/27/2023	10:37:37	20.69	0.17	
3/27/2023	10:37:43	20.69	0.17	
3/27/2023	10:37:49	20.70	0.18	
3/27/2023	10:37:55	20.69	0.18	
3/27/2023	10:38:01	20.70	0.18	
3/27/2023	10:38:07	20.69	0.18	
3/27/2023	10:38:13	20.69	0.18	
3/27/2023	10:38:19	20.69	0.18	
3/27/2023	10:38:25	20.69	0.18	
3/27/2023	10:38:31	20.69	0.18	
3/27/2023	10:38:37	20.69	0.18	
3/27/2023	10:38:43	20.69	0.18	
3/27/2023	10:38:49	20.69	0.18	
3/27/2023	10:38:55	20.69	0.18	
3/27/2023	10:39:01	20.69	0.18	
3/27/2023	10:39:07	20.69	0.18	
3/27/2023	10:39:13	20.69	0.18	
3/27/2023	10:39:19	20.69	0.18	
3/27/2023	10:39:25	20.69	0.18	
3/27/2023	10:39:31	20.69	0.18	
3/27/2023	10:39:37	20.69	0.18	
3/27/2023	10:39:43	20.70	0.18	
3/27/2023	10:39:49	20.69	0.18	
3/27/2023	10:39:55	20.69	0.18	
3/27/2023	10:40:01	20.69	0.18	
3/27/2023	10:40:07	20.69	0.18	
3/27/2023	10:40:13	20.70	0.18	
3/27/2023	10:40:19	20.69	0.18	
3/27/2023	10:40:25	20.69	0.17	
3/27/2023	10:40:31	20.69	0.17	
3/27/2023	10:40:37	20.70	0.17	
3/27/2023	10:40:43	20.70	0.17	
3/27/2023	10:40:49	20.69	0.17	
3/27/2023	10:40:55	20.70	0.18	**End Run 1 White Iron**
		20.74	**0.20**	**Average**

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES	
3/27/2023	10:41:01	20.69	-0.03		
3/27/2023	10:41:07	20.69	-0.03		
3/27/2023	10:41:13	20.69	-0.02		
3/27/2023	10:41:19	20.69	-0.02		
3/27/2023	10:41:25	20.69	-0.02		
3/27/2023	10:41:31	20.69	-0.02		
3/27/2023	10:41:37	20.69	-0.02		
3/27/2023	10:41:43	20.69	-0.02		
3/27/2023	10:41:49	20.69	-0.02		
3/27/2023	10:41:55	20.69	-0.02		
3/27/2023	10:42:01	20.69	-0.02		
3/27/2023	10:42:07	20.69	-0.02		
3/27/2023	10:42:13	20.69	-0.02		
3/27/2023	10:42:19	20.69	-0.02		
3/27/2023	10:42:25	20.69	-0.02		
3/27/2023	10:42:31	20.69	-0.02		
3/27/2023	10:42:37	20.69	-0.02		
3/27/2023	10:42:43	20.69	-0.02		
3/27/2023	10:42:49	20.69	-0.02		
3/27/2023	10:42:55	20.69	-0.02		
3/27/2023	10:43:01	20.69	-0.02		
3/27/2023	10:43:07	20.69	-0.02		
3/27/2023	10:43:13	20.69	-0.02		
3/27/2023	10:43:19	20.70	-0.03		
3/27/2023	10:43:25	20.50	-0.08		
3/27/2023	10:43:31	14.87	-0.08		
3/27/2023	10:43:37	6.42	-0.08		
3/27/2023	10:43:43	2.28	-0.08		
3/27/2023	10:43:49	0.83	-0.08		
3/27/2023	10:43:55	0.38	-0.08		
3/27/2023	10:44:01	0.24	-0.08		
3/27/2023	10:44:07	0.19	-0.08		
3/27/2023	10:44:13	0.17	-0.09	**O2/CO2 System Zero**	
3/27/2023	10:44:19	0.17	-0.09	**0.15**	**-0.09**
3/27/2023	10:44:25	0.16	-0.09		
3/27/2023	10:44:31	0.16	-0.09		
3/27/2023	10:44:37	0.15	-0.09		
3/27/2023	10:44:43	0.15	-0.09		

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES		
3/27/2023	10:44:49	0.15	-0.09			
3/27/2023	10:44:55	0.15	-0.09			
3/27/2023	10:45:01	0.14	-0.09			
3/27/2023	10:45:07	0.14	-0.09			
3/27/2023	10:45:13	0.14	-0.09			
3/27/2023	10:45:19	0.14	-0.09			
3/27/2023	10:45:25	0.14	-0.09			
3/27/2023	10:45:31	0.13	-0.09			
3/27/2023	10:45:37	0.18	2.32			
3/27/2023	10:45:43	1.64	11.61			
3/27/2023	10:45:49	6.43	11.88			
3/27/2023	10:45:55	8.70	11.90			
3/27/2023	10:46:01	9.52	11.90			
3/27/2023	10:46:07	9.75	11.91			
3/27/2023	10:46:13	9.81	11.91			
3/27/2023	10:46:19	9.83	10.88			
3/27/2023	10:46:25	9.84	9.94			
3/27/2023	10:46:31	9.84	9.93	**O2/CO2 System Upscale**		
3/27/2023	10:46:37	9.84	9.93	**9.84**	**9.94**	
3/27/2023	10:46:43	9.84	9.93			
3/27/2023	10:46:49	9.84	9.93			
3/27/2023	10:46:55	9.84	9.94			
3/27/2023	10:47:01	9.84	9.94			
3/27/2023	10:47:07	9.84	9.95			
3/27/2023	10:47:13	9.84	9.95			
3/27/2023	10:47:19	9.84	9.95			
3/27/2023	10:47:25	9.84	9.95			
3/27/2023	10:47:31	9.84	9.96			
3/27/2023	10:47:37	9.84	9.96			
3/27/2023	10:47:43	9.84	9.96			
3/27/2023	10:47:49	9.84	9.97			
3/27/2023	10:47:55	9.84	9.79			
3/27/2023	10:48:01	9.84	9.64			
3/27/2023	10:48:07	9.85	5.69			
3/27/2023	10:48:13	9.86	1.29			
3/27/2023	10:48:19	9.87	0.37			
				Mn and CM40 Steel		
3/27/2023	13:00:02	20.70	0.21	**Start Run 1**		

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	13:00:08	20.70	0.21	
3/27/2023	13:00:14	20.70	0.21	
3/27/2023	13:00:20	20.70	0.21	
3/27/2023	13:00:26	20.70	0.21	
3/27/2023	13:00:32	20.70	0.21	
3/27/2023	13:00:38	20.70	0.21	
3/27/2023	13:00:44	20.70	0.21	
3/27/2023	13:00:50	20.70	0.21	
3/27/2023	13:00:56	20.70	0.21	
3/27/2023	13:01:02	20.70	0.21	
3/27/2023	13:01:08	20.70	0.21	
3/27/2023	13:01:14	20.70	0.21	
3/27/2023	13:01:20	20.70	0.21	
3/27/2023	13:01:26	20.70	0.21	
3/27/2023	13:01:32	20.70	0.21	
3/27/2023	13:01:38	20.70	0.21	
3/27/2023	13:01:44	20.70	0.21	
3/27/2023	13:01:50	20.70	0.21	
3/27/2023	13:01:56	20.70	0.21	
3/27/2023	13:02:02	20.70	0.21	
3/27/2023	13:02:08	20.70	0.21	
3/27/2023	13:02:14	20.70	0.21	
3/27/2023	13:02:20	20.70	0.21	
3/27/2023	13:02:26	20.70	0.21	
3/27/2023	13:02:32	20.70	0.21	
3/27/2023	13:02:38	20.70	0.21	
3/27/2023	13:02:44	20.70	0.21	
3/27/2023	13:02:50	20.70	0.21	
3/27/2023	13:02:56	20.70	0.21	
3/27/2023	13:03:02	20.70	0.21	
3/27/2023	13:03:08	20.70	0.21	
3/27/2023	13:03:14	20.70	0.21	
3/27/2023	13:03:20	20.70	0.21	
3/27/2023	13:03:26	20.70	0.21	
3/27/2023	13:03:32	20.70	0.21	
3/27/2023	13:03:38	20.70	0.21	
3/27/2023	13:03:44	20.70	0.21	
3/27/2023	13:03:50	20.70	0.21	
3/27/2023	13:03:56	20.70	0.21	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	13:04:02	20.70	0.21	
3/27/2023	13:04:08	20.70	0.21	
3/27/2023	13:04:14	20.70	0.21	
3/27/2023	13:04:20	20.70	0.21	
3/27/2023	13:04:26	20.70	0.21	
3/27/2023	13:04:32	20.70	0.21	
3/27/2023	13:04:38	20.70	0.21	
3/27/2023	13:04:44	20.70	0.21	
3/27/2023	13:04:50	20.70	0.21	
3/27/2023	13:04:56	20.70	0.21	
3/27/2023	13:05:02	20.70	0.21	
3/27/2023	13:05:08	20.70	0.21	
3/27/2023	13:05:14	20.70	0.21	
3/27/2023	13:05:20	20.70	0.21	
3/27/2023	13:05:26	20.70	0.21	
3/27/2023	13:05:32	20.70	0.21	
3/27/2023	13:05:38	20.70	0.21	
3/27/2023	13:05:44	20.70	0.21	
3/27/2023	13:05:50	20.70	0.21	
3/27/2023	13:05:56	20.70	0.21	
3/27/2023	13:06:02	20.70	0.21	
3/27/2023	13:06:08	20.70	0.21	
3/27/2023	13:06:14	20.69	0.21	
3/27/2023	13:06:20	20.69	0.21	
3/27/2023	13:06:26	20.70	0.21	
3/27/2023	13:06:32	20.70	0.21	
3/27/2023	13:06:38	20.70	0.21	
3/27/2023	13:06:44	20.69	0.21	
3/27/2023	13:06:50	20.69	0.21	
3/27/2023	13:06:56	20.70	0.21	
3/27/2023	13:07:02	20.69	0.21	
3/27/2023	13:07:08	20.70	0.21	
3/27/2023	13:07:14	20.70	0.21	
3/27/2023	13:07:20	20.70	0.21	
3/27/2023	13:07:26	20.69	0.21	
3/27/2023	13:07:32	20.69	0.21	
3/27/2023	13:07:38	20.69	0.21	
3/27/2023	13:07:44	20.70	0.21	
3/27/2023	13:07:50	20.69	0.21	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	13:07:56	20.69	0.21	
3/27/2023	13:08:02	20.69	0.21	
3/27/2023	13:08:08	20.69	0.21	
3/27/2023	13:08:14	20.69	0.21	
3/27/2023	13:08:20	20.69	0.21	
3/27/2023	13:08:26	20.69	0.21	
3/27/2023	13:08:32	20.69	0.21	
3/27/2023	13:08:38	20.69	0.21	
3/27/2023	13:08:44	20.69	0.21	
3/27/2023	13:08:50	20.69	0.21	
3/27/2023	13:08:56	20.69	0.21	
3/27/2023	13:09:02	20.69	0.21	
3/27/2023	13:09:08	20.69	0.21	
3/27/2023	13:09:14	20.69	0.21	
3/27/2023	13:09:20	20.69	0.21	
3/27/2023	13:09:26	20.69	0.21	
3/27/2023	13:09:32	20.69	0.21	
3/27/2023	13:09:38	20.69	0.21	
3/27/2023	13:09:44	20.69	0.21	
3/27/2023	13:09:50	20.69	0.21	
3/27/2023	13:09:56	20.69	0.21	
3/27/2023	13:10:02	20.69	0.21	
3/27/2023	13:10:08	20.69	0.21	
3/27/2023	13:10:14	20.69	0.20	
3/27/2023	13:10:20	20.70	0.20	
3/27/2023	13:10:26	20.70	0.20	
3/27/2023	13:10:32	20.69	0.21	
3/27/2023	13:10:38	20.69	0.21	
3/27/2023	13:10:44	20.69	0.21	
3/27/2023	13:10:50	20.69	0.20	
3/27/2023	13:10:56	20.69	0.21	
3/27/2023	13:11:02	20.69	0.21	
3/27/2023	13:11:08	20.69	0.21	
3/27/2023	13:11:14	20.69	0.21	
3/27/2023	13:11:20	20.69	0.21	
3/27/2023	13:11:26	20.69	0.20	
3/27/2023	13:11:32	20.69	0.20	
3/27/2023	13:11:38	20.69	0.20	
3/27/2023	13:11:44	20.69	0.20	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	13:11:50	20.69	0.21	
3/27/2023	13:11:56	20.69	0.20	
3/27/2023	13:12:02	20.69	0.20	
3/27/2023	13:12:08	20.69	0.21	
3/27/2023	13:12:14	20.69	0.21	
3/27/2023	13:12:20	20.69	0.21	
3/27/2023	13:12:26	20.69	0.21	
3/27/2023	13:12:32	20.69	0.20	
3/27/2023	13:12:38	20.69	0.21	
3/27/2023	13:12:44	20.69	0.20	
3/27/2023	13:12:50	20.69	0.20	
3/27/2023	13:12:56	20.69	0.20	
3/27/2023	13:13:02	20.69	0.20	
3/27/2023	13:13:08	20.69	0.20	
3/27/2023	13:13:14	20.69	0.20	
3/27/2023	13:13:20	20.69	0.20	
3/27/2023	13:13:26	20.69	0.20	
3/27/2023	13:13:32	20.69	0.20	
3/27/2023	13:13:38	20.69	0.20	
3/27/2023	13:13:44	20.69	0.20	
3/27/2023	13:13:50	20.69	0.20	
3/27/2023	13:13:56	20.69	0.20	
3/27/2023	13:14:02	20.69	0.20	
3/27/2023	13:14:08	20.69	0.20	
3/27/2023	13:14:14	20.69	0.20	
3/27/2023	13:14:20	20.69	0.20	
3/27/2023	13:14:26	20.69	0.20	
3/27/2023	13:14:32	20.69	0.20	
3/27/2023	13:14:38	20.69	0.20	
3/27/2023	13:14:44	20.69	0.20	
3/27/2023	13:14:50	20.69	0.20	
3/27/2023	13:14:56	20.69	0.20	
3/27/2023	13:15:02	20.69	0.20	
3/27/2023	13:15:08	20.69	0.20	
3/27/2023	13:15:14	20.69	0.20	
3/27/2023	13:15:20	20.69	0.20	
3/27/2023	13:15:26	20.69	0.20	
3/27/2023	13:15:32	20.69	0.20	
3/27/2023	13:15:38	20.69	0.20	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	13:15:44	20.69	0.20	
3/27/2023	13:15:50	20.69	0.20	
3/27/2023	13:15:56	20.69	0.20	
3/27/2023	13:16:02	20.69	0.20	
3/27/2023	13:16:08	20.69	0.20	
3/27/2023	13:16:14	20.69	0.20	
3/27/2023	13:16:20	20.69	0.20	
3/27/2023	13:16:26	20.69	0.20	
3/27/2023	13:16:32	20.69	0.20	
3/27/2023	13:16:38	20.69	0.20	
3/27/2023	13:16:44	20.69	0.20	
3/27/2023	13:16:50	20.69	0.20	
3/27/2023	13:16:56	20.69	0.20	
3/27/2023	13:17:02	20.69	0.20	
3/27/2023	13:17:08	20.69	0.20	
3/27/2023	13:17:14	20.69	0.20	
3/27/2023	13:17:20	20.69	0.20	
3/27/2023	13:17:26	20.69	0.20	
3/27/2023	13:17:32	20.69	0.20	
3/27/2023	13:17:38	20.69	0.20	
3/27/2023	13:17:44	20.69	0.20	
3/27/2023	13:17:50	20.69	0.20	
3/27/2023	13:17:56	20.69	0.20	
3/27/2023	13:18:02	20.69	0.20	
3/27/2023	13:18:08	20.69	0.20	
3/27/2023	13:18:14	20.69	0.20	
3/27/2023	13:18:20	20.69	0.20	
3/27/2023	13:18:26	20.69	0.20	
3/27/2023	13:18:32	20.69	0.20	
3/27/2023	13:18:38	20.69	0.20	
3/27/2023	13:18:44	20.69	0.20	
3/27/2023	13:18:50	20.69	0.20	
3/27/2023	13:18:56	20.69	0.20	
3/27/2023	13:19:02	20.69	0.20	
3/27/2023	13:19:08	20.69	0.20	
3/27/2023	13:19:14	20.69	0.20	
3/27/2023	13:19:20	20.69	0.20	
3/27/2023	13:19:26	20.69	0.20	
3/27/2023	13:19:32	20.69	0.20	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	13:19:38	20.69	0.20	
3/27/2023	13:19:44	20.69	0.20	
3/27/2023	13:19:50	20.69	0.20	
3/27/2023	13:19:56	20.69	0.20	
3/27/2023	13:20:02	20.69	0.20	
3/27/2023	13:20:08	20.69	0.20	
3/27/2023	13:20:14	20.69	0.20	
3/27/2023	13:20:20	20.69	0.20	
3/27/2023	13:20:26	20.69	0.20	
3/27/2023	13:20:32	20.69	0.20	
3/27/2023	13:20:38	20.69	0.20	
3/27/2023	13:20:44	20.69	0.20	
3/27/2023	13:20:50	20.69	0.20	
3/27/2023	13:20:56	20.69	0.20	
3/27/2023	13:21:02	20.69	0.20	
3/27/2023	13:21:08	20.69	0.20	
3/27/2023	13:21:14	20.69	0.20	
3/27/2023	13:21:20	20.69	0.20	
3/27/2023	13:21:26	20.69	0.20	
3/27/2023	13:21:32	20.69	0.20	
3/27/2023	13:21:38	20.69	0.20	
3/27/2023	13:21:44	20.69	0.20	
3/27/2023	13:21:50	20.69	0.20	
3/27/2023	13:21:56	20.69	0.20	
3/27/2023	13:22:02	20.69	0.20	
3/27/2023	13:22:08	20.69	0.20	
3/27/2023	13:22:14	20.69	0.20	
3/27/2023	13:22:20	20.69	0.20	
3/27/2023	13:22:26	20.69	0.20	
3/27/2023	13:22:32	20.69	0.20	
3/27/2023	13:22:38	20.69	0.20	
3/27/2023	13:22:44	20.69	0.20	
3/27/2023	13:22:50	20.69	0.20	
3/27/2023	13:22:56	20.69	0.20	
3/27/2023	13:23:02	20.69	0.20	
3/27/2023	13:23:08	20.69	0.20	
3/27/2023	13:23:14	20.69	0.20	
3/27/2023	13:23:20	20.69	0.20	
3/27/2023	13:23:26	20.69	0.20	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	13:23:32	20.69	0.20	
3/27/2023	13:23:38	20.68	0.20	
3/27/2023	13:23:44	20.69	0.20	
3/27/2023	13:23:50	20.69	0.20	
3/27/2023	13:23:56	20.68	0.20	
3/27/2023	13:24:02	20.69	0.20	
3/27/2023	13:24:08	20.68	0.20	
3/27/2023	13:24:14	20.69	0.20	
3/27/2023	13:24:20	20.69	0.20	
3/27/2023	13:24:26	20.69	0.20	
3/27/2023	13:24:32	20.69	0.20	
3/27/2023	13:24:38	20.69	0.20	
3/27/2023	13:24:44	20.69	0.20	
3/27/2023	13:24:50	20.69	0.20	
3/27/2023	13:24:56	20.69	0.20	
3/27/2023	13:25:02	20.68	0.20	
3/27/2023	13:25:08	20.68	0.20	
3/27/2023	13:25:14	20.69	0.20	
3/27/2023	13:25:20	20.68	0.20	
3/27/2023	13:25:26	20.68	0.20	
3/27/2023	13:25:32	20.68	0.20	
3/27/2023	13:25:38	20.68	0.20	
3/27/2023	13:25:44	20.68	0.20	
3/27/2023	13:25:50	20.68	0.20	
3/27/2023	13:25:56	20.68	0.20	
3/27/2023	13:26:02	20.68	0.20	
3/27/2023	13:26:08	20.68	0.20	
3/27/2023	13:26:14	20.68	0.20	
3/27/2023	13:26:20	20.68	0.20	
3/27/2023	13:26:26	20.68	0.20	
3/27/2023	13:26:32	20.68	0.20	
3/27/2023	13:26:38	20.68	0.20	
3/27/2023	13:26:44	20.68	0.20	
3/27/2023	13:26:50	20.68	0.20	
3/27/2023	13:26:56	20.68	0.20	
3/27/2023	13:27:02	20.68	0.20	
3/27/2023	13:27:08	20.68	0.20	
3/27/2023	13:27:14	20.68	0.20	
3/27/2023	13:27:20	20.68	0.20	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	13:27:26	20.68	0.20	
3/27/2023	13:27:32	20.68	0.20	
3/27/2023	13:27:38	20.68	0.20	
3/27/2023	13:27:44	20.68	0.20	
3/27/2023	13:27:50	20.68	0.20	
3/27/2023	13:27:56	20.68	0.20	
3/27/2023	13:28:02	20.68	0.20	
3/27/2023	13:28:08	20.68	0.20	
3/27/2023	13:28:14	20.68	0.20	
3/27/2023	13:28:20	20.68	0.20	
3/27/2023	13:28:26	20.68	0.20	
3/27/2023	13:28:32	20.68	0.20	
3/27/2023	13:28:38	20.68	0.20	
3/27/2023	13:28:44	20.68	0.20	
3/27/2023	13:28:50	20.68	0.20	
3/27/2023	13:28:56	20.68	0.20	
3/27/2023	13:29:02	20.68	0.20	
3/27/2023	13:29:08	20.68	0.20	
3/27/2023	13:29:14	20.68	0.20	
3/27/2023	13:29:20	20.68	0.20	
3/27/2023	13:29:26	20.68	0.20	
3/27/2023	13:29:32	20.68	0.20	
3/27/2023	13:29:38	20.68	0.20	
3/27/2023	13:29:44	20.68	0.20	
3/27/2023	13:29:50	20.68	0.20	
3/27/2023	13:29:56	20.68	0.21	
3/27/2023	13:30:02	20.68	0.20	
3/27/2023	13:30:08	20.68	0.20	
3/27/2023	13:30:14	20.68	0.20	
3/27/2023	13:30:20	20.68	0.20	
3/27/2023	13:30:26	20.68	0.20	
3/27/2023	13:30:32	20.68	0.21	
3/27/2023	13:30:38	20.68	0.20	
3/27/2023	13:30:44	20.68	0.20	
3/27/2023	13:30:50	20.68	0.20	
3/27/2023	13:30:56	20.68	0.20	
3/27/2023	13:31:02	20.68	0.20	
3/27/2023	13:31:08	20.68	0.20	
3/27/2023	13:31:14	20.68	0.20	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	13:31:20	20.68	0.20	
3/27/2023	13:31:26	20.68	0.20	
3/27/2023	13:31:32	20.68	0.20	
3/27/2023	13:31:38	20.68	0.20	
3/27/2023	13:31:44	20.68	0.20	
3/27/2023	13:31:50	20.68	0.20	
3/27/2023	13:31:56	20.68	0.20	
3/27/2023	13:32:02	20.68	0.20	
3/27/2023	13:32:08	20.68	0.20	
3/27/2023	13:32:14	20.68	0.20	
3/27/2023	13:32:20	20.68	0.20	
3/27/2023	13:32:26	20.68	0.20	
3/27/2023	13:32:32	20.68	0.20	
3/27/2023	13:32:38	20.68	0.20	
3/27/2023	13:32:44	20.68	0.20	
3/27/2023	13:32:50	20.68	0.20	
3/27/2023	13:32:56	20.68	0.20	
3/27/2023	13:33:02	20.68	0.20	
3/27/2023	13:33:08	20.68	0.20	
3/27/2023	13:33:14	20.68	0.20	
3/27/2023	13:33:20	20.68	0.19	
3/27/2023	13:33:26	20.68	0.19	
3/27/2023	13:33:32	20.68	0.19	
3/27/2023	13:33:38	20.68	0.20	
3/27/2023	13:33:44	20.68	0.20	
3/27/2023	13:33:50	20.68	0.20	
3/27/2023	13:33:56	20.68	0.20	
3/27/2023	13:34:02	20.68	0.20	
3/27/2023	13:34:08	20.68	0.20	
3/27/2023	13:34:14	20.68	0.20	
3/27/2023	13:34:20	20.68	0.20	
3/27/2023	13:34:26	20.68	0.20	
3/27/2023	13:34:32	20.68	0.20	
3/27/2023	13:34:38	20.68	0.20	
3/27/2023	13:34:44	20.68	0.20	
3/27/2023	13:34:50	20.68	0.20	
3/27/2023	13:34:56	20.68	0.20	
3/27/2023	13:35:02	20.68	0.20	
3/27/2023	13:35:08	20.68	0.20	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	13:35:14	20.68	0.20	
3/27/2023	13:35:20	20.68	0.20	
3/27/2023	13:35:26	20.68	0.20	
3/27/2023	13:35:32	20.68	0.20	
3/27/2023	13:35:38	20.68	0.20	
3/27/2023	13:35:44	20.68	0.20	
3/27/2023	13:35:50	20.68	0.20	
3/27/2023	13:35:56	20.68	0.20	
3/27/2023	13:36:02	20.68	0.20	
3/27/2023	13:36:08	20.68	0.20	
3/27/2023	13:36:14	20.68	0.19	
3/27/2023	13:36:20	20.68	0.19	
3/27/2023	13:36:26	20.68	0.20	
3/27/2023	13:36:32	20.67	0.20	
3/27/2023	13:36:38	20.68	0.20	
3/27/2023	13:36:44	20.68	0.20	
3/27/2023	13:36:50	20.68	0.20	
3/27/2023	13:36:56	20.68	0.20	
3/27/2023	13:37:02	20.68	0.20	
3/27/2023	13:37:08	20.68	0.20	
3/27/2023	13:37:14	20.68	0.20	
3/27/2023	13:37:20	20.68	0.20	
3/27/2023	13:37:26	20.68	0.19	
3/27/2023	13:37:32	20.68	0.19	
3/27/2023	13:37:38	20.68	0.19	
3/27/2023	13:37:44	20.68	0.19	
3/27/2023	13:37:50	20.68	0.18	
3/27/2023	13:37:56	20.68	0.19	
3/27/2023	13:38:02	20.68	0.19	
3/27/2023	13:38:08	20.68	0.19	
3/27/2023	13:38:14	20.68	0.19	
3/27/2023	13:38:20	20.68	0.19	
3/27/2023	13:38:26	20.68	0.18	
3/27/2023	13:38:32	20.68	0.19	
3/27/2023	13:38:38	20.68	0.19	
3/27/2023	13:38:44	20.68	0.19	
3/27/2023	13:38:50	20.68	0.20	
3/27/2023	13:38:56	20.68	0.20	
3/27/2023	13:39:02	20.68	0.20	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	13:39:08	20.68	0.20	
3/27/2023	13:39:14	20.68	0.20	
3/27/2023	13:39:20	20.68	0.20	
3/27/2023	13:39:26	20.68	0.20	
3/27/2023	13:39:32	20.68	0.20	
3/27/2023	13:39:38	20.68	0.20	
3/27/2023	13:39:44	20.68	0.20	
3/27/2023	13:39:50	20.68	0.20	
3/27/2023	13:39:56	20.68	0.20	
3/27/2023	13:40:02	20.68	0.20	
3/27/2023	13:40:08	20.68	0.20	
3/27/2023	13:40:14	20.68	0.20	
3/27/2023	13:40:20	20.68	0.20	
3/27/2023	13:40:26	20.68	0.20	
3/27/2023	13:40:32	20.68	0.20	
3/27/2023	13:40:38	20.68	0.19	
3/27/2023	13:40:44	20.68	0.20	
3/27/2023	13:40:50	20.68	0.20	
3/27/2023	13:40:56	20.68	0.20	
3/27/2023	13:41:02	20.68	0.20	
3/27/2023	13:41:08	20.68	0.20	
3/27/2023	13:41:14	20.68	0.20	
3/27/2023	13:41:20	20.68	0.19	
3/27/2023	13:41:26	20.68	0.20	
3/27/2023	13:41:32	20.68	0.20	
3/27/2023	13:41:38	20.68	0.20	
3/27/2023	13:41:44	20.68	0.19	
3/27/2023	13:41:50	20.68	0.20	
3/27/2023	13:41:56	20.68	0.20	
3/27/2023	13:42:02	20.68	0.20	
3/27/2023	13:42:08	20.68	0.20	
3/27/2023	13:42:14	20.68	0.20	
3/27/2023	13:42:20	20.68	0.20	
3/27/2023	13:42:26	20.68	0.20	
3/27/2023	13:42:32	20.68	0.20	
3/27/2023	13:42:38	20.68	0.20	
3/27/2023	13:42:44	20.68	0.20	
3/27/2023	13:42:50	20.68	0.20	
3/27/2023	13:42:56	20.68	0.20	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	13:43:02	20.68	0.20	
3/27/2023	13:43:08	20.68	0.20	
3/27/2023	13:43:14	20.68	0.20	
3/27/2023	13:43:20	20.68	0.20	
3/27/2023	13:43:26	20.68	0.20	
3/27/2023	13:43:32	20.68	0.20	
3/27/2023	13:43:38	20.68	0.20	
3/27/2023	13:43:44	20.68	0.20	
3/27/2023	13:43:50	20.68	0.20	
3/27/2023	13:43:56	20.68	0.20	
3/27/2023	13:44:02	20.68	0.20	
3/27/2023	13:44:08	20.68	0.20	
3/27/2023	13:44:14	20.68	0.20	
3/27/2023	13:44:20	20.68	0.20	
3/27/2023	13:44:26	20.68	0.20	
3/27/2023	13:44:32	20.68	0.20	
3/27/2023	13:44:38	20.68	0.20	
3/27/2023	13:44:44	20.68	0.20	
3/27/2023	13:44:50	20.68	0.20	
3/27/2023	13:44:56	20.68	0.20	
3/27/2023	13:45:02	20.68	0.20	
3/27/2023	13:45:08	20.68	0.20	
3/27/2023	13:45:14	20.68	0.20	
3/27/2023	13:45:20	20.68	0.20	
3/27/2023	13:45:26	20.68	0.20	
3/27/2023	13:45:32	20.68	0.20	
3/27/2023	13:45:38	20.68	0.20	
3/27/2023	13:45:44	20.68	0.20	
3/27/2023	13:45:50	20.68	0.20	
3/27/2023	13:45:56	20.68	0.20	
3/27/2023	13:46:02	20.68	0.20	
3/27/2023	13:46:08	20.68	0.20	
3/27/2023	13:46:14	20.68	0.20	
3/27/2023	13:46:20	20.68	0.20	
3/27/2023	13:46:26	20.68	0.20	
3/27/2023	13:46:32	20.68	0.20	
3/27/2023	13:46:38	20.68	0.20	
3/27/2023	13:46:44	20.68	0.20	
3/27/2023	13:46:50	20.68	0.20	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	13:46:56	20.68	0.20	
3/27/2023	13:47:02	20.68	0.20	
3/27/2023	13:47:08	20.68	0.20	
3/27/2023	13:47:14	20.68	0.20	
3/27/2023	13:47:20	20.68	0.20	
3/27/2023	13:47:26	20.68	0.20	
3/27/2023	13:47:32	20.68	0.20	
3/27/2023	13:47:38	20.68	0.20	
3/27/2023	13:47:44	20.68	0.20	
3/27/2023	13:47:50	20.68	0.20	
3/27/2023	13:47:56	20.68	0.20	
3/27/2023	13:48:02	20.68	0.20	
3/27/2023	13:48:08	20.68	0.20	
3/27/2023	13:48:14	20.68	0.20	
3/27/2023	13:48:20	20.68	0.20	
3/27/2023	13:48:26	20.68	0.20	
3/27/2023	13:48:32	20.68	0.20	
3/27/2023	13:48:38	20.68	0.20	
3/27/2023	13:48:44	20.68	0.20	
3/27/2023	13:48:50	20.68	0.20	
3/27/2023	13:48:56	20.68	0.20	
3/27/2023	13:49:02	20.68	0.20	
3/27/2023	13:49:08	20.68	0.20	
3/27/2023	13:49:14	20.68	0.20	
3/27/2023	13:49:20	20.68	0.20	
3/27/2023	13:49:26	20.68	0.20	
3/27/2023	13:49:32	20.68	0.20	
3/27/2023	13:49:38	20.68	0.20	
3/27/2023	13:49:44	20.68	0.20	
3/27/2023	13:49:50	20.68	0.20	
3/27/2023	13:49:56	20.68	0.20	
3/27/2023	13:50:02	20.68	0.20	
3/27/2023	13:50:08	20.68	0.20	
3/27/2023	13:50:14	20.68	0.20	
3/27/2023	13:50:20	20.68	0.20	
3/27/2023	13:50:26	20.68	0.20	
3/27/2023	13:50:32	20.68	0.20	
3/27/2023	13:50:38	20.68	0.20	
3/27/2023	13:50:44	20.68	0.20	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	13:50:50	20.68	0.20	
3/27/2023	13:50:56	20.68	0.20	
3/27/2023	13:51:02	20.68	0.20	
3/27/2023	13:51:08	20.68	0.20	
3/27/2023	13:51:14	20.68	0.20	
3/27/2023	13:51:20	20.68	0.20	
3/27/2023	13:51:26	20.68	0.20	
3/27/2023	13:51:32	20.68	0.20	
3/27/2023	13:51:38	20.68	0.20	
3/27/2023	13:51:44	20.68	0.20	
3/27/2023	13:51:50	20.67	0.20	
3/27/2023	13:51:56	20.67	0.20	
3/27/2023	13:52:02	20.67	0.20	
3/27/2023	13:52:08	20.67	0.19	
3/27/2023	13:52:14	20.67	0.19	
3/27/2023	13:52:20	20.67	0.19	
3/27/2023	13:52:26	20.67	0.19	
3/27/2023	13:52:32	20.67	0.19	
3/27/2023	13:52:38	20.67	0.19	
3/27/2023	13:52:44	20.67	0.19	
3/27/2023	13:52:50	20.67	0.19	
3/27/2023	13:52:56	20.67	0.20	
3/27/2023	13:53:02	20.67	0.20	
3/27/2023	13:53:08	20.67	0.20	
3/27/2023	13:53:14	20.67	0.19	
3/27/2023	13:53:20	20.67	0.19	
3/27/2023	13:53:26	20.67	0.19	
3/27/2023	13:53:32	20.67	0.19	
3/27/2023	13:53:38	20.67	0.19	
3/27/2023	13:53:44	20.67	0.19	
3/27/2023	13:53:50	20.68	0.19	
3/27/2023	13:53:56	20.67	0.19	
3/27/2023	13:54:02	20.67	0.19	
3/27/2023	13:54:08	20.67	0.19	
3/27/2023	13:54:14	20.67	0.19	
3/27/2023	13:54:20	20.67	0.20	
3/27/2023	13:54:26	20.67	0.19	
3/27/2023	13:54:32	20.67	0.18	
3/27/2023	13:54:38	20.68	0.18	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	13:54:44	20.67	0.18	
3/27/2023	13:54:50	20.67	0.18	
3/27/2023	13:54:56	20.67	0.18	
3/27/2023	13:55:02	20.68	0.18	
3/27/2023	13:55:08	20.67	0.18	
3/27/2023	13:55:14	20.67	0.18	
3/27/2023	13:55:20	20.68	0.18	
3/27/2023	13:55:26	20.67	0.18	
3/27/2023	13:55:32	20.68	0.18	
3/27/2023	13:55:38	20.68	0.18	
3/27/2023	13:55:44	20.68	0.18	
3/27/2023	13:55:50	20.68	0.18	
3/27/2023	13:55:56	20.68	0.19	
3/27/2023	13:56:02	20.68	0.19	
3/27/2023	13:56:08	20.68	0.19	
3/27/2023	13:56:14	20.68	0.19	
3/27/2023	13:56:20	20.68	0.19	
3/27/2023	13:56:26	20.68	0.19	
3/27/2023	13:56:32	20.68	0.19	
3/27/2023	13:56:38	20.68	0.20	
3/27/2023	13:56:44	20.68	0.19	
3/27/2023	13:56:50	20.68	0.19	
3/27/2023	13:56:56	20.68	0.19	
3/27/2023	13:57:02	20.68	0.20	
3/27/2023	13:57:08	20.68	0.19	
3/27/2023	13:57:14	20.68	0.19	
3/27/2023	13:57:20	20.68	0.18	
3/27/2023	13:57:26	20.68	0.18	
3/27/2023	13:57:32	20.68	0.18	
3/27/2023	13:57:38	20.68	0.18	
3/27/2023	13:57:44	20.68	0.18	
3/27/2023	13:57:50	20.67	0.18	
3/27/2023	13:57:56	20.68	0.18	
3/27/2023	13:58:02	20.68	0.18	
3/27/2023	13:58:08	20.68	0.18	
3/27/2023	13:58:14	20.67	0.18	
3/27/2023	13:58:20	20.68	0.18	
3/27/2023	13:58:26	20.67	0.18	
3/27/2023	13:58:32	20.68	0.18	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	13:58:38	20.68	0.18	
3/27/2023	13:58:44	20.67	0.18	
3/27/2023	13:58:50	20.67	0.18	
3/27/2023	13:58:56	20.67	0.18	
3/27/2023	13:59:02	20.67	0.18	
3/27/2023	13:59:08	20.67	0.18	
3/27/2023	13:59:14	20.67	0.18	
3/27/2023	13:59:20	20.67	0.18	
3/27/2023	13:59:26	20.67	0.18	
3/27/2023	13:59:32	20.67	0.18	
3/27/2023	13:59:38	20.67	0.18	
3/27/2023	13:59:44	20.67	0.18	
3/27/2023	13:59:50	20.67	0.18	
3/27/2023	13:59:56	20.67	0.18	
3/27/2023	14:00:02	20.67	0.18	
3/27/2023	14:00:08	20.67	0.18	
3/27/2023	14:00:14	20.67	0.18	
3/27/2023	14:00:20	20.67	0.18	
3/27/2023	14:00:26	20.67	0.18	
3/27/2023	14:00:32	20.67	0.18	
3/27/2023	14:00:38	20.67	0.18	
3/27/2023	14:00:44	20.67	0.18	
3/27/2023	14:00:50	20.67	0.18	
3/27/2023	14:00:56	20.67	0.19	
3/27/2023	14:01:02	20.67	0.19	
3/27/2023	14:01:08	20.67	0.19	
3/27/2023	14:01:14	20.67	0.19	
3/27/2023	14:01:20	20.67	0.19	
3/27/2023	14:01:26	20.67	0.19	
3/27/2023	14:01:32	20.67	0.19	
3/27/2023	14:01:38	20.67	0.19	
3/27/2023	14:01:44	20.67	0.19	
3/27/2023	14:01:50	20.67	0.19	
3/27/2023	14:01:56	20.67	0.19	
3/27/2023	14:02:02	20.67	0.19	
3/27/2023	14:02:08	20.67	0.19	
3/27/2023	14:02:14	20.67	0.19	
3/27/2023	14:02:20	20.67	0.19	
3/27/2023	14:02:26	20.67	0.19	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	14:02:32	20.67	0.19	
3/27/2023	14:02:38	20.67	0.19	
3/27/2023	14:02:44	20.67	0.19	
3/27/2023	14:02:50	20.67	0.19	
3/27/2023	14:02:56	20.66	0.18	
3/27/2023	14:03:02	20.66	0.18	
3/27/2023	14:03:08	20.66	0.18	
3/27/2023	14:03:14	20.66	0.18	
3/27/2023	14:03:20	20.66	0.18	
3/27/2023	14:03:26	20.66	0.18	
3/27/2023	14:03:32	20.66	0.18	
3/27/2023	14:03:38	20.66	0.18	
3/27/2023	14:03:44	20.66	0.18	
3/27/2023	14:03:50	20.66	0.18	
3/27/2023	14:03:56	20.66	0.18	
3/27/2023	14:04:02	20.66	0.18	
3/27/2023	14:04:08	20.66	0.18	
3/27/2023	14:04:14	20.66	0.18	
3/27/2023	14:04:20	20.66	0.18	
3/27/2023	14:04:26	20.66	0.18	
3/27/2023	14:04:32	20.66	0.18	
3/27/2023	14:04:38	20.66	0.18	
3/27/2023	14:04:44	20.66	0.18	
3/27/2023	14:04:50	20.66	0.18	
3/27/2023	14:04:56	20.66	0.18	
3/27/2023	14:05:02	20.66	0.18	
3/27/2023	14:05:08	20.67	0.18	
3/27/2023	14:05:14	20.67	0.18	
3/27/2023	14:05:20	20.67	0.18	
3/27/2023	14:05:26	20.67	0.18	
3/27/2023	14:05:32	20.67	0.18	
3/27/2023	14:05:38	20.67	0.18	
3/27/2023	14:05:44	20.67	0.18	
3/27/2023	14:05:50	20.67	0.18	
3/27/2023	14:05:56	20.67	0.18	
3/27/2023	14:06:02	20.67	0.18	
3/27/2023	14:06:08	20.67	0.18	
3/27/2023	14:06:14	20.67	0.18	
3/27/2023	14:06:20	20.67	0.18	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	14:06:26	20.67	0.18	
3/27/2023	14:06:32	20.67	0.19	
3/27/2023	14:06:38	20.67	0.19	
3/27/2023	14:06:44	20.67	0.19	
3/27/2023	14:06:50	20.67	0.19	
3/27/2023	14:06:56	20.67	0.19	
3/27/2023	14:07:02	20.67	0.19	
3/27/2023	14:07:08	20.67	0.19	
3/27/2023	14:07:14	20.67	0.19	
3/27/2023	14:07:20	20.66	0.19	
3/27/2023	14:07:26	20.66	0.18	
3/27/2023	14:07:32	20.66	0.18	
3/27/2023	14:07:38	20.66	0.18	
3/27/2023	14:07:44	20.66	0.18	
3/27/2023	14:07:50	20.66	0.18	
3/27/2023	14:07:56	20.66	0.18	
3/27/2023	14:08:02	20.66	0.18	
3/27/2023	14:08:08	20.66	0.18	
3/27/2023	14:08:14	20.66	0.18	
3/27/2023	14:08:20	20.66	0.19	
3/27/2023	14:08:26	20.66	0.19	
3/27/2023	14:08:32	20.66	0.19	
3/27/2023	14:08:38	20.66	0.19	
3/27/2023	14:08:44	20.66	0.19	
3/27/2023	14:08:50	20.66	0.19	
3/27/2023	14:08:56	20.66	0.20	
3/27/2023	14:09:02	20.66	0.20	
3/27/2023	14:09:08	20.66	0.20	
3/27/2023	14:09:14	20.66	0.20	
3/27/2023	14:09:20	20.66	0.20	
3/27/2023	14:09:26	20.66	0.20	
3/27/2023	14:09:32	20.66	0.19	
3/27/2023	14:09:38	20.66	0.19	
3/27/2023	14:09:44	20.66	0.19	
3/27/2023	14:09:50	20.66	0.19	
3/27/2023	14:09:56	20.66	0.19	
3/27/2023	14:10:02	20.66	0.19	
3/27/2023	14:10:08	20.66	0.19	
3/27/2023	14:10:14	20.66	0.20	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	14:10:20	20.66	0.20	
3/27/2023	14:10:26	20.66	0.20	
3/27/2023	14:10:32	20.65	0.20	
3/27/2023	14:10:38	20.65	0.19	
3/27/2023	14:10:44	20.65	0.19	
3/27/2023	14:10:50	20.65	0.19	
3/27/2023	14:10:56	20.66	0.19	
3/27/2023	14:11:02	20.66	0.19	
3/27/2023	14:11:08	20.66	0.18	
3/27/2023	14:11:14	20.66	0.18	
3/27/2023	14:11:20	20.66	0.18	
3/27/2023	14:11:26	20.66	0.18	
3/27/2023	14:11:32	20.66	0.19	
3/27/2023	14:11:38	20.66	0.18	
3/27/2023	14:11:44	20.66	0.18	
3/27/2023	14:11:50	20.66	0.18	
3/27/2023	14:11:56	20.66	0.18	
3/27/2023	14:12:02	20.66	0.19	
3/27/2023	14:12:08	20.66	0.19	
3/27/2023	14:12:14	20.66	0.19	
3/27/2023	14:12:20	20.66	0.20	
3/27/2023	14:12:26	20.66	0.20	
3/27/2023	14:12:32	20.65	0.20	
3/27/2023	14:12:38	20.65	0.20	
3/27/2023	14:12:44	20.65	0.20	
3/27/2023	14:12:50	20.65	0.20	
3/27/2023	14:12:56	20.65	0.20	
3/27/2023	14:13:02	20.65	0.20	
3/27/2023	14:13:08	20.65	0.20	
3/27/2023	14:13:14	20.65	0.20	
3/27/2023	14:13:20	20.65	0.20	
3/27/2023	14:13:26	20.65	0.20	
3/27/2023	14:13:32	20.65	0.20	
3/27/2023	14:13:38	20.65	0.19	
3/27/2023	14:13:44	20.65	0.19	
3/27/2023	14:13:50	20.65	0.19	
3/27/2023	14:13:56	20.65	0.19	
3/27/2023	14:14:02	20.65	0.19	
3/27/2023	14:14:08	20.65	0.19	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	14:14:14	20.65	0.19	
3/27/2023	14:14:20	20.65	0.19	
3/27/2023	14:14:26	20.65	0.19	
3/27/2023	14:14:32	20.65	0.19	
3/27/2023	14:14:38	20.65	0.19	
3/27/2023	14:14:44	20.65	0.19	
3/27/2023	14:14:50	20.65	0.19	
3/27/2023	14:14:56	20.65	0.19	
3/27/2023	14:15:02	20.65	0.19	
3/27/2023	14:15:08	20.65	0.19	
3/27/2023	14:15:14	20.65	0.18	
3/27/2023	14:15:20	20.65	0.18	
3/27/2023	14:15:26	20.65	0.18	
3/27/2023	14:15:32	20.65	0.18	
3/27/2023	14:15:38	20.65	0.18	
3/27/2023	14:15:44	20.65	0.18	
3/27/2023	14:15:50	20.65	0.18	
3/27/2023	14:15:56	20.65	0.18	
3/27/2023	14:16:02	20.65	0.18	
3/27/2023	14:16:08	20.65	0.18	
3/27/2023	14:16:14	20.65	0.18	
3/27/2023	14:16:20	20.65	0.18	
3/27/2023	14:16:26	20.65	0.18	
3/27/2023	14:16:32	20.65	0.18	
3/27/2023	14:16:38	20.65	0.18	
3/27/2023	14:16:44	20.65	0.18	
3/27/2023	14:16:50	20.65	0.18	
3/27/2023	14:16:56	20.65	0.18	
3/27/2023	14:17:02	20.65	0.18	
3/27/2023	14:17:08	20.65	0.18	
3/27/2023	14:17:14	20.65	0.18	
3/27/2023	14:17:20	20.65	0.18	
3/27/2023	14:17:26	20.65	0.18	
3/27/2023	14:17:32	20.65	0.19	
3/27/2023	14:17:38	20.65	0.19	
3/27/2023	14:17:44	20.65	0.19	
3/27/2023	14:17:50	20.65	0.19	
3/27/2023	14:17:56	20.65	0.19	
3/27/2023	14:18:02	20.65	0.19	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	14:18:08	20.65	0.19	
3/27/2023	14:18:14	20.65	0.19	
3/27/2023	14:18:20	20.65	0.19	
3/27/2023	14:18:26	20.65	0.19	
3/27/2023	14:18:32	20.65	0.19	
3/27/2023	14:18:38	20.65	0.19	
3/27/2023	14:18:44	20.65	0.19	
3/27/2023	14:18:50	20.65	0.19	
3/27/2023	14:18:56	20.65	0.19	
3/27/2023	14:19:02	20.65	0.19	
3/27/2023	14:19:08	20.65	0.19	
3/27/2023	14:19:14	20.65	0.19	
3/27/2023	14:19:20	20.65	0.19	
3/27/2023	14:19:26	20.65	0.19	
3/27/2023	14:19:32	20.65	0.19	
3/27/2023	14:19:38	20.65	0.19	
3/27/2023	14:19:44	20.65	0.19	
3/27/2023	14:19:50	20.65	0.19	
3/27/2023	14:19:56	20.65	0.19	
3/27/2023	14:20:02	20.65	0.19	
3/27/2023	14:20:08	20.65	0.19	
3/27/2023	14:20:14	20.65	0.19	
3/27/2023	14:20:20	20.65	0.19	
3/27/2023	14:20:26	20.65	0.19	
3/27/2023	14:20:32	20.65	0.19	
3/27/2023	14:20:38	20.65	0.19	
3/27/2023	14:20:44	20.65	0.19	
3/27/2023	14:20:50	20.65	0.19	
3/27/2023	14:20:56	20.65	0.18	
3/27/2023	14:21:02	20.65	0.18	
3/27/2023	14:21:08	20.65	0.18	
3/27/2023	14:21:14	20.65	0.18	
3/27/2023	14:21:20	20.65	0.18	
3/27/2023	14:21:26	20.66	0.18	
3/27/2023	14:21:32	20.65	0.18	
3/27/2023	14:21:38	20.66	0.18	
3/27/2023	14:21:44	20.65	0.18	
3/27/2023	14:21:50	20.66	0.18	
3/27/2023	14:21:56	20.66	0.18	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	14:22:02	20.66	0.18	
3/27/2023	14:22:08	20.66	0.18	
3/27/2023	14:22:14	20.66	0.18	
3/27/2023	14:22:20	20.66	0.18	
3/27/2023	14:22:26	20.66	0.18	
3/27/2023	14:22:32	20.66	0.18	
3/27/2023	14:22:38	20.65	0.18	
3/27/2023	14:22:44	20.65	0.18	
3/27/2023	14:22:50	20.65	0.18	
3/27/2023	14:22:56	20.65	0.18	
3/27/2023	14:23:02	20.65	0.18	
3/27/2023	14:23:08	20.65	0.18	
3/27/2023	14:23:14	20.65	0.18	
3/27/2023	14:23:20	20.65	0.18	
3/27/2023	14:23:26	20.65	0.18	
3/27/2023	14:23:32	20.65	0.18	
3/27/2023	14:23:38	20.65	0.18	
3/27/2023	14:23:44	20.65	0.18	
3/27/2023	14:23:50	20.65	0.18	
3/27/2023	14:23:56	20.65	0.18	
3/27/2023	14:24:02	20.65	0.18	
3/27/2023	14:24:08	20.65	0.18	
3/27/2023	14:24:14	20.65	0.18	
3/27/2023	14:24:20	20.65	0.18	
3/27/2023	14:24:26	20.65	0.18	
3/27/2023	14:24:32	20.65	0.18	
3/27/2023	14:24:38	20.65	0.18	
3/27/2023	14:24:44	20.65	0.18	
3/27/2023	14:24:50	20.65	0.18	
3/27/2023	14:24:56	20.65	0.18	
3/27/2023	14:25:02	20.65	0.18	
3/27/2023	14:25:08	20.65	0.18	
3/27/2023	14:25:14	20.65	0.18	
3/27/2023	14:25:20	20.65	0.19	
3/27/2023	14:25:26	20.65	0.19	
3/27/2023	14:25:32	20.65	0.18	
3/27/2023	14:25:38	20.65	0.19	
3/27/2023	14:25:44	20.65	0.18	
3/27/2023	14:25:50	20.65	0.19	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	14:25:56	20.65	0.19	
3/27/2023	14:26:02	20.65	0.19	
3/27/2023	14:26:08	20.65	0.19	
3/27/2023	14:26:14	20.65	0.19	
3/27/2023	14:26:20	20.65	0.19	
3/27/2023	14:26:26	20.65	0.19	
3/27/2023	14:26:32	20.65	0.18	
3/27/2023	14:26:38	20.65	0.19	
3/27/2023	14:26:44	20.65	0.18	
3/27/2023	14:26:50	20.65	0.19	
3/27/2023	14:26:56	20.65	0.19	
3/27/2023	14:27:02	20.65	0.19	
3/27/2023	14:27:08	20.65	0.19	
3/27/2023	14:27:14	20.65	0.19	
3/27/2023	14:27:20	20.65	0.19	
3/27/2023	14:27:26	20.65	0.19	
3/27/2023	14:27:32	20.65	0.19	
3/27/2023	14:27:38	20.65	0.19	
3/27/2023	14:27:44	20.65	0.19	
3/27/2023	14:27:50	20.65	0.19	
3/27/2023	14:27:56	20.65	0.19	
3/27/2023	14:28:02	20.65	0.19	
3/27/2023	14:28:08	20.65	0.19	
3/27/2023	14:28:14	20.65	0.19	
3/27/2023	14:28:20	20.65	0.19	
3/27/2023	14:28:26	20.65	0.18	
3/27/2023	14:28:32	20.65	0.19	
3/27/2023	14:28:38	20.65	0.19	
3/27/2023	14:28:44	20.65	0.19	
3/27/2023	14:28:50	20.65	0.19	
3/27/2023	14:28:56	20.65	0.19	
3/27/2023	14:29:02	20.65	0.19	
3/27/2023	14:29:08	20.65	0.19	
3/27/2023	14:29:14	20.65	0.19	
3/27/2023	14:29:20	20.65	0.19	
3/27/2023	14:29:26	20.65	0.19	
3/27/2023	14:29:32	20.65	0.19	
3/27/2023	14:29:38	20.65	0.19	
3/27/2023	14:29:44	20.65	0.19	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	14:29:50	20.65	0.19	
3/27/2023	14:29:56	20.65	0.19	
3/27/2023	14:30:02	20.65	0.19	
3/27/2023	14:30:08	20.65	0.19	
3/27/2023	14:30:14	20.65	0.19	
3/27/2023	14:30:20	20.65	0.19	
3/27/2023	14:30:26	20.65	0.19	
3/27/2023	14:30:32	20.65	0.19	
3/27/2023	14:30:38	20.65	0.19	
3/27/2023	14:30:44	20.65	0.19	
3/27/2023	14:30:50	20.65	0.19	
3/27/2023	14:30:56	20.65	0.19	
3/27/2023	14:31:02	20.65	0.19	
3/27/2023	14:31:08	20.65	0.19	
3/27/2023	14:31:14	20.65	0.19	
3/27/2023	14:31:20	20.65	0.19	
3/27/2023	14:31:26	20.65	0.19	
3/27/2023	14:31:32	20.65	0.19	
3/27/2023	14:31:38	20.65	0.19	
3/27/2023	14:31:44	20.65	0.19	
3/27/2023	14:31:50	20.65	0.19	
3/27/2023	14:31:56	20.65	0.19	
3/27/2023	14:32:02	20.64	0.19	
3/27/2023	14:32:08	20.64	0.19	
3/27/2023	14:32:14	20.64	0.19	
3/27/2023	14:32:20	20.64	0.19	
3/27/2023	14:32:26	20.64	0.19	
3/27/2023	14:32:32	20.64	0.19	
3/27/2023	14:32:38	20.64	0.19	
3/27/2023	14:32:44	20.64	0.19	
3/27/2023	14:32:50	20.64	0.19	
3/27/2023	14:32:56	20.64	0.19	
3/27/2023	14:33:02	20.64	0.19	
3/27/2023	14:33:08	20.64	0.19	
3/27/2023	14:33:14	20.64	0.19	
3/27/2023	14:33:20	20.64	0.19	
3/27/2023	14:33:26	20.64	0.19	
3/27/2023	14:33:32	20.64	0.19	
3/27/2023	14:33:38	20.64	0.19	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	14:33:44	20.64	0.19	
3/27/2023	14:33:50	20.64	0.19	
3/27/2023	14:33:56	20.64	0.19	
3/27/2023	14:34:02	20.64	0.19	
3/27/2023	14:34:08	20.64	0.19	
3/27/2023	14:34:14	20.64	0.19	
3/27/2023	14:34:20	20.64	0.19	
3/27/2023	14:34:26	20.64	0.19	
3/27/2023	14:34:32	20.64	0.19	
3/27/2023	14:34:38	20.64	0.19	
3/27/2023	14:34:44	20.64	0.19	
3/27/2023	14:34:50	20.64	0.19	
3/27/2023	14:34:56	20.64	0.19	
3/27/2023	14:35:02	20.64	0.19	
3/27/2023	14:35:08	20.64	0.19	
3/27/2023	14:35:14	20.64	0.19	
3/27/2023	14:35:20	20.64	0.19	
3/27/2023	14:35:26	20.64	0.19	
3/27/2023	14:35:32	20.64	0.19	
3/27/2023	14:35:38	20.64	0.19	
3/27/2023	14:35:44	20.64	0.19	
3/27/2023	14:35:50	20.64	0.19	
3/27/2023	14:35:56	20.64	0.19	
3/27/2023	14:36:02	20.64	0.19	
3/27/2023	14:36:08	20.64	0.19	
3/27/2023	14:36:14	20.64	0.19	
3/27/2023	14:36:20	20.64	0.19	
3/27/2023	14:36:26	20.64	0.19	
3/27/2023	14:36:32	20.64	0.19	
3/27/2023	14:36:38	20.64	0.19	
3/27/2023	14:36:44	20.64	0.19	
3/27/2023	14:36:50	20.64	0.19	
3/27/2023	14:36:56	20.64	0.19	
3/27/2023	14:37:02	20.64	0.19	
3/27/2023	14:37:08	20.63	0.19	
3/27/2023	14:37:14	20.63	0.19	
3/27/2023	14:37:20	20.63	0.19	
3/27/2023	14:37:26	20.63	0.19	
3/27/2023	14:37:32	20.63	0.19	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	14:37:38	20.63	0.19	
3/27/2023	14:37:44	20.63	0.19	
3/27/2023	14:37:50	20.63	0.19	
3/27/2023	14:37:56	20.63	0.19	
3/27/2023	14:38:02	20.63	0.19	
3/27/2023	14:38:08	20.63	0.19	
3/27/2023	14:38:14	20.63	0.19	
3/27/2023	14:38:20	20.63	0.19	
3/27/2023	14:38:26	20.63	0.19	
3/27/2023	14:38:32	20.63	0.19	
3/27/2023	14:38:38	20.63	0.19	
3/27/2023	14:38:44	20.63	0.19	
3/27/2023	14:38:50	20.63	0.19	
3/27/2023	14:38:56	20.63	0.19	
3/27/2023	14:39:02	20.63	0.19	
3/27/2023	14:39:08	20.63	0.19	
3/27/2023	14:39:14	20.63	0.19	
3/27/2023	14:39:20	20.63	0.19	
3/27/2023	14:39:26	20.63	0.19	
3/27/2023	14:39:32	20.63	0.19	
3/27/2023	14:39:38	20.63	0.19	
3/27/2023	14:39:44	20.63	0.19	
3/27/2023	14:39:50	20.63	0.19	
3/27/2023	14:39:56	20.63	0.19	
3/27/2023	14:40:02	20.63	0.19	
3/27/2023	14:40:08	20.63	0.19	
3/27/2023	14:40:14	20.63	0.19	
3/27/2023	14:40:20	20.63	0.19	
3/27/2023	14:40:26	20.63	0.19	
3/27/2023	14:40:32	20.63	0.19	
3/27/2023	14:40:38	20.63	0.19	
3/27/2023	14:40:44	20.63	0.19	
3/27/2023	14:40:50	20.63	0.19	
3/27/2023	14:40:56	20.63	0.19	
3/27/2023	14:41:02	20.63	0.19	
3/27/2023	14:41:08	20.63	0.19	
3/27/2023	14:41:14	20.63	0.19	
3/27/2023	14:41:20	20.63	0.19	
3/27/2023	14:41:26	20.63	0.19	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	14:41:32	20.63	0.19	
3/27/2023	14:41:38	20.63	0.19	
3/27/2023	14:41:44	20.63	0.19	
3/27/2023	14:41:50	20.63	0.19	
3/27/2023	14:41:56	20.63	0.19	
3/27/2023	14:42:02	20.63	0.19	
3/27/2023	14:42:08	20.63	0.19	
3/27/2023	14:42:14	20.63	0.19	
3/27/2023	14:42:20	20.63	0.19	
3/27/2023	14:42:26	20.63	0.19	
3/27/2023	14:42:32	20.63	0.19	
3/27/2023	14:42:38	20.63	0.19	
3/27/2023	14:42:44	20.64	0.19	
3/27/2023	14:42:50	20.63	0.19	
3/27/2023	14:42:56	20.63	0.19	
3/27/2023	14:43:02	20.63	0.19	
3/27/2023	14:43:08	20.63	0.19	
3/27/2023	14:43:14	20.63	0.19	
3/27/2023	14:43:20	20.63	0.19	
3/27/2023	14:43:26	20.63	0.19	
3/27/2023	14:43:32	20.63	0.19	
3/27/2023	14:43:38	20.63	0.19	
3/27/2023	14:43:44	20.63	0.19	
3/27/2023	14:43:50	20.63	0.19	
3/27/2023	14:43:56	20.63	0.19	
3/27/2023	14:44:02	20.63	0.19	
3/27/2023	14:44:08	20.63	0.19	
3/27/2023	14:44:14	20.63	0.19	
3/27/2023	14:44:20	20.63	0.19	
3/27/2023	14:44:26	20.63	0.19	
3/27/2023	14:44:32	20.63	0.19	
3/27/2023	14:44:38	20.63	0.19	
3/27/2023	14:44:44	20.63	0.19	
3/27/2023	14:44:50	20.63	0.19	
3/27/2023	14:44:56	20.63	0.19	
3/27/2023	14:45:02	20.63	0.19	
3/27/2023	14:45:08	20.63	0.19	
3/27/2023	14:45:14	20.63	0.19	
3/27/2023	14:45:20	20.63	0.19	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	14:45:26	20.63	0.19	
3/27/2023	14:45:32	20.63	0.19	
3/27/2023	14:45:38	20.63	0.19	
3/27/2023	14:45:44	20.63	0.19	
3/27/2023	14:45:50	20.63	0.19	
3/27/2023	14:45:56	20.63	0.19	
3/27/2023	14:46:02	20.63	0.19	
3/27/2023	14:46:08	20.63	0.19	
3/27/2023	14:46:14	20.63	0.19	
3/27/2023	14:46:20	20.63	0.19	
3/27/2023	14:46:26	20.63	0.19	
3/27/2023	14:46:32	20.63	0.19	
3/27/2023	14:46:38	20.63	0.19	
3/27/2023	14:46:44	20.63	0.19	
3/27/2023	14:46:50	20.63	0.19	
3/27/2023	14:46:56	20.63	0.19	
3/27/2023	14:47:02	20.63	0.19	
3/27/2023	14:47:08	20.63	0.19	
3/27/2023	14:47:14	20.63	0.19	
3/27/2023	14:47:20	20.63	0.19	
3/27/2023	14:47:26	20.63	0.19	
3/27/2023	14:47:32	20.63	0.19	
3/27/2023	14:47:38	20.63	0.19	
3/27/2023	14:47:44	20.63	0.19	
3/27/2023	14:47:50	20.63	0.19	
3/27/2023	14:47:56	20.63	0.19	
3/27/2023	14:48:02	20.63	0.19	
3/27/2023	14:48:08	20.63	0.19	
3/27/2023	14:48:14	20.63	0.19	
3/27/2023	14:48:20	20.63	0.19	
3/27/2023	14:48:26	20.63	0.19	
3/27/2023	14:48:32	20.63	0.19	
3/27/2023	14:48:38	20.63	0.19	
3/27/2023	14:48:44	20.63	0.19	
3/27/2023	14:48:50	20.63	0.19	
3/27/2023	14:48:56	20.64	0.19	
3/27/2023	14:49:02	20.63	0.19	
3/27/2023	14:49:08	20.63	0.19	
3/27/2023	14:49:14	20.63	0.19	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	14:49:20	20.63	0.19	
3/27/2023	14:49:26	20.64	0.19	
3/27/2023	14:49:32	20.64	0.19	
3/27/2023	14:49:38	20.64	0.18	
3/27/2023	14:49:44	20.64	0.19	
3/27/2023	14:49:50	20.63	0.19	
3/27/2023	14:49:56	20.64	0.19	
3/27/2023	14:50:02	20.64	0.19	
3/27/2023	14:50:08	20.63	0.19	
3/27/2023	14:50:14	20.63	0.18	
3/27/2023	14:50:20	20.63	0.19	
3/27/2023	14:50:26	20.64	0.19	
3/27/2023	14:50:32	20.64	0.19	
3/27/2023	14:50:38	20.64	0.19	
3/27/2023	14:50:44	20.63	0.19	
3/27/2023	14:50:50	20.63	0.19	
3/27/2023	14:50:56	20.63	0.19	
3/27/2023	14:51:02	20.63	0.19	
3/27/2023	14:51:08	20.63	0.19	
3/27/2023	14:51:14	20.63	0.19	
3/27/2023	14:51:20	20.64	0.19	
3/27/2023	14:51:26	20.64	0.19	
3/27/2023	14:51:32	20.64	0.18	
3/27/2023	14:51:38	20.64	0.19	
3/27/2023	14:51:44	20.64	0.18	
3/27/2023	14:51:50	20.64	0.18	
3/27/2023	14:51:56	20.64	0.19	
3/27/2023	14:52:02	20.64	0.18	
3/27/2023	14:52:08	20.64	0.18	
3/27/2023	14:52:14	20.64	0.18	
3/27/2023	14:52:20	20.64	0.18	
3/27/2023	14:52:26	20.64	0.18	
3/27/2023	14:52:32	20.64	0.18	
3/27/2023	14:52:38	20.64	0.18	
3/27/2023	14:52:44	20.64	0.18	
3/27/2023	14:52:50	20.64	0.18	
3/27/2023	14:52:56	20.64	0.18	
3/27/2023	14:53:02	20.63	0.18	
3/27/2023	14:53:08	20.64	0.18	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	14:53:14	20.64	0.18	
3/27/2023	14:53:20	20.64	0.18	
3/27/2023	14:53:26	20.64	0.18	
3/27/2023	14:53:32	20.64	0.18	
3/27/2023	14:53:38	20.64	0.18	
3/27/2023	14:53:44	20.64	0.18	
3/27/2023	14:53:50	20.64	0.18	
3/27/2023	14:53:56	20.64	0.18	
3/27/2023	14:54:02	20.63	0.18	
3/27/2023	14:54:08	20.63	0.18	
3/27/2023	14:54:14	20.63	0.18	
3/27/2023	14:54:20	20.64	0.18	
3/27/2023	14:54:26	20.64	0.18	
3/27/2023	14:54:32	20.63	0.18	
3/27/2023	14:54:38	20.63	0.18	
3/27/2023	14:54:44	20.63	0.18	
3/27/2023	14:54:50	20.63	0.18	
3/27/2023	14:54:56	20.63	0.18	
3/27/2023	14:55:02	20.63	0.18	
3/27/2023	14:55:08	20.63	0.18	
3/27/2023	14:55:14	20.63	0.18	
3/27/2023	14:55:20	20.63	0.18	
3/27/2023	14:55:26	20.63	0.18	
3/27/2023	14:55:32	20.64	0.18	
3/27/2023	14:55:38	20.64	0.18	
3/27/2023	14:55:44	20.64	0.18	
3/27/2023	14:55:50	20.63	0.18	
3/27/2023	14:55:56	20.64	0.18	
3/27/2023	14:56:02	20.64	0.18	
3/27/2023	14:56:08	20.64	0.18	
3/27/2023	14:56:14	20.63	0.18	
3/27/2023	14:56:20	20.63	0.18	
3/27/2023	14:56:26	20.63	0.18	
3/27/2023	14:56:32	20.64	0.18	
3/27/2023	14:56:38	20.64	0.18	
3/27/2023	14:56:44	20.64	0.18	
3/27/2023	14:56:50	20.64	0.18	
3/27/2023	14:56:56	20.64	0.18	
3/27/2023	14:57:02	20.64	0.18	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	14:57:08	20.63	0.18	
3/27/2023	14:57:14	20.63	0.18	
3/27/2023	14:57:20	20.63	0.18	
3/27/2023	14:57:26	20.64	0.18	
3/27/2023	14:57:32	20.63	0.18	
3/27/2023	14:57:38	20.63	0.18	
3/27/2023	14:57:44	20.63	0.18	
3/27/2023	14:57:50	20.63	0.18	
3/27/2023	14:57:56	20.63	0.18	
3/27/2023	14:58:02	20.63	0.18	
3/27/2023	14:58:08	20.63	0.18	
3/27/2023	14:58:14	20.63	0.18	
3/27/2023	14:58:20	20.64	0.18	
3/27/2023	14:58:26	20.63	0.18	
3/27/2023	14:58:32	20.63	0.18	
3/27/2023	14:58:38	20.63	0.18	
3/27/2023	14:58:44	20.63	0.18	
3/27/2023	14:58:50	20.63	0.18	
3/27/2023	14:58:56	20.63	0.18	
3/27/2023	14:59:02	20.63	0.18	
3/27/2023	14:59:08	20.63	0.18	
3/27/2023	14:59:14	20.63	0.18	
3/27/2023	14:59:20	20.63	0.18	
3/27/2023	14:59:26	20.63	0.18	
3/27/2023	14:59:32	20.63	0.18	
3/27/2023	14:59:38	20.63	0.18	
3/27/2023	14:59:44	20.63	0.18	
3/27/2023	14:59:50	20.63	0.18	
3/27/2023	14:59:56	20.63	0.18	
3/27/2023	15:00:02	20.63	0.18	
3/27/2023	15:00:08	20.63	0.18	
3/27/2023	15:00:14	20.63	0.18	
3/27/2023	15:00:20	20.63	0.18	
3/27/2023	15:00:26	20.63	0.18	
3/27/2023	15:00:32	20.63	0.18	
3/27/2023	15:00:38	20.63	0.18	
3/27/2023	15:00:44	20.63	0.18	
3/27/2023	15:00:50	20.63	0.18	
3/27/2023	15:00:56	20.63	0.18	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	15:01:02	20.63	0.18	
3/27/2023	15:01:08	20.63	0.18	
3/27/2023	15:01:14	20.63	0.18	
3/27/2023	15:01:20	20.63	0.18	
3/27/2023	15:01:26	20.63	0.18	
3/27/2023	15:01:32	20.63	0.18	
3/27/2023	15:01:38	20.63	0.18	
3/27/2023	15:01:44	20.63	0.18	
3/27/2023	15:01:50	20.63	0.18	
3/27/2023	15:01:56	20.63	0.18	
3/27/2023	15:02:02	20.63	0.18	
3/27/2023	15:02:08	20.63	0.18	
3/27/2023	15:02:14	20.63	0.18	
3/27/2023	15:02:20	20.63	0.18	
3/27/2023	15:02:26	20.63	0.18	
3/27/2023	15:02:32	20.63	0.18	
3/27/2023	15:02:38	20.63	0.18	
3/27/2023	15:02:44	20.63	0.18	
3/27/2023	15:02:50	20.63	0.18	
3/27/2023	15:02:56	20.63	0.18	
3/27/2023	15:03:02	20.63	0.18	
3/27/2023	15:03:08	20.63	0.18	
3/27/2023	15:03:14	20.63	0.18	
3/27/2023	15:03:20	20.63	0.18	
3/27/2023	15:03:26	20.63	0.18	
3/27/2023	15:03:32	20.63	0.18	
3/27/2023	15:03:38	20.63	0.18	
3/27/2023	15:03:44	20.63	0.18	
3/27/2023	15:03:50	20.63	0.18	
3/27/2023	15:03:56	20.63	0.18	
3/27/2023	15:04:02	20.63	0.18	
3/27/2023	15:04:08	20.63	0.18	
3/27/2023	15:04:14	20.63	0.18	
3/27/2023	15:04:20	20.63	0.18	
3/27/2023	15:04:26	20.63	0.18	
3/27/2023	15:04:32	20.63	0.18	
3/27/2023	15:04:38	20.63	0.18	
3/27/2023	15:04:44	20.63	0.18	
3/27/2023	15:04:50	20.63	0.18	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	15:04:56	20.63	0.18	
3/27/2023	15:05:02	20.63	0.18	
3/27/2023	15:05:08	20.63	0.18	
3/27/2023	15:05:14	20.63	0.18	
3/27/2023	15:05:20	20.63	0.18	
3/27/2023	15:05:26	20.63	0.18	
3/27/2023	15:05:32	20.63	0.18	
3/27/2023	15:05:38	20.63	0.18	
3/27/2023	15:05:44	20.63	0.18	
3/27/2023	15:05:50	20.63	0.18	
3/27/2023	15:05:56	20.63	0.18	
3/27/2023	15:06:02	20.63	0.18	
3/27/2023	15:06:08	20.63	0.18	
3/27/2023	15:06:14	20.63	0.18	
3/27/2023	15:06:20	20.63	0.18	
3/27/2023	15:06:26	20.63	0.18	
3/27/2023	15:06:32	20.63	0.18	
3/27/2023	15:06:38	20.63	0.19	
3/27/2023	15:06:44	20.63	0.19	
3/27/2023	15:06:50	20.63	0.18	
3/27/2023	15:06:56	20.63	0.19	
3/27/2023	15:07:02	20.63	0.19	
3/27/2023	15:07:08	20.63	0.19	
3/27/2023	15:07:14	20.63	0.19	
3/27/2023	15:07:20	20.63	0.19	
3/27/2023	15:07:26	20.63	0.19	
3/27/2023	15:07:32	20.63	0.18	
3/27/2023	15:07:38	20.63	0.19	
3/27/2023	15:07:44	20.63	0.18	
3/27/2023	15:07:50	20.63	0.19	
3/27/2023	15:07:56	20.63	0.19	
3/27/2023	15:08:02	20.63	0.19	
3/27/2023	15:08:08	20.63	0.18	
3/27/2023	15:08:14	20.63	0.19	
3/27/2023	15:08:20	20.63	0.18	
3/27/2023	15:08:26	20.63	0.18	
3/27/2023	15:08:32	20.63	0.19	
3/27/2023	15:08:38	20.63	0.18	
3/27/2023	15:08:44	20.63	0.18	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	15:08:50	20.63	0.18	
3/27/2023	15:08:56	20.63	0.19	
3/27/2023	15:09:02	20.63	0.19	
3/27/2023	15:09:08	20.63	0.19	
3/27/2023	15:09:14	20.63	0.19	
3/27/2023	15:09:20	20.63	0.19	
3/27/2023	15:09:26	20.63	0.19	
3/27/2023	15:09:32	20.63	0.19	
3/27/2023	15:09:38	20.63	0.19	
3/27/2023	15:09:44	20.63	0.19	
3/27/2023	15:09:50	20.63	0.19	
3/27/2023	15:09:56	20.63	0.19	
3/27/2023	15:10:02	20.63	0.19	
3/27/2023	15:10:08	20.63	0.19	
3/27/2023	15:10:14	20.63	0.18	
3/27/2023	15:10:20	20.63	0.18	
3/27/2023	15:10:26	20.63	0.18	
3/27/2023	15:10:32	20.63	0.18	
3/27/2023	15:10:38	20.63	0.18	
3/27/2023	15:10:44	20.63	0.18	
3/27/2023	15:10:50	20.63	0.18	
3/27/2023	15:10:56	20.63	0.18	
3/27/2023	15:11:02	20.63	0.18	
3/27/2023	15:11:08	20.63	0.18	
3/27/2023	15:11:14	20.63	0.18	
3/27/2023	15:11:20	20.63	0.18	
3/27/2023	15:11:26	20.63	0.18	
3/27/2023	15:11:32	20.63	0.18	
3/27/2023	15:11:38	20.63	0.18	
3/27/2023	15:11:44	20.63	0.18	
3/27/2023	15:11:50	20.63	0.19	
3/27/2023	15:11:56	20.63	0.18	
3/27/2023	15:12:02	20.63	0.19	
3/27/2023	15:12:08	20.63	0.19	
3/27/2023	15:12:14	20.63	0.18	
3/27/2023	15:12:20	20.63	0.19	
3/27/2023	15:12:26	20.63	0.19	
3/27/2023	15:12:32	20.63	0.19	
3/27/2023	15:12:38	20.63	0.19	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	15:12:44	20.63	0.19	
3/27/2023	15:12:50	20.63	0.19	
3/27/2023	15:12:56	20.63	0.19	
3/27/2023	15:13:02	20.63	0.19	
3/27/2023	15:13:08	20.63	0.18	
3/27/2023	15:13:14	20.63	0.19	
3/27/2023	15:13:20	20.63	0.19	
3/27/2023	15:13:26	20.63	0.18	
3/27/2023	15:13:32	20.63	0.18	
3/27/2023	15:13:38	20.63	0.19	
3/27/2023	15:13:44	20.63	0.18	
3/27/2023	15:13:50	20.63	0.18	
3/27/2023	15:13:56	20.62	0.19	
3/27/2023	15:14:02	20.62	0.18	
3/27/2023	15:14:08	20.62	0.18	
3/27/2023	15:14:14	20.63	0.19	
3/27/2023	15:14:20	20.62	0.19	
3/27/2023	15:14:26	20.62	0.19	
3/27/2023	15:14:32	20.62	0.19	
3/27/2023	15:14:38	20.63	0.18	
3/27/2023	15:14:44	20.63	0.18	
3/27/2023	15:14:50	20.62	0.19	
3/27/2023	15:14:56	20.63	0.19	
3/27/2023	15:15:02	20.63	0.19	
3/27/2023	15:15:08	20.63	0.19	
3/27/2023	15:15:14	20.63	0.19	
3/27/2023	15:15:20	20.63	0.19	
3/27/2023	15:15:26	20.63	0.19	
3/27/2023	15:15:32	20.63	0.18	
3/27/2023	15:15:38	20.63	0.18	
3/27/2023	15:15:44	20.63	0.18	
3/27/2023	15:15:50	20.63	0.18	
3/27/2023	15:15:56	20.63	0.18	
3/27/2023	15:16:02	20.63	0.18	
3/27/2023	15:16:08	20.63	0.18	
3/27/2023	15:16:14	20.62	0.18	
3/27/2023	15:16:20	20.62	0.18	
3/27/2023	15:16:26	20.62	0.18	
3/27/2023	15:16:32	20.62	0.18	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	15:16:38	20.62	0.18	
3/27/2023	15:16:44	20.62	0.18	
3/27/2023	15:16:50	20.62	0.18	
3/27/2023	15:16:56	20.62	0.18	
3/27/2023	15:17:02	20.62	0.18	
3/27/2023	15:17:08	20.62	0.18	
3/27/2023	15:17:14	20.62	0.18	
3/27/2023	15:17:20	20.62	0.18	
3/27/2023	15:17:26	20.62	0.18	
3/27/2023	15:17:32	20.62	0.18	
3/27/2023	15:17:38	20.62	0.18	
3/27/2023	15:17:44	20.62	0.18	
3/27/2023	15:17:50	20.62	0.18	
3/27/2023	15:17:56	20.62	0.18	
3/27/2023	15:18:02	20.62	0.18	
3/27/2023	15:18:08	20.62	0.18	
3/27/2023	15:18:14	20.62	0.18	
3/27/2023	15:18:20	20.62	0.19	
3/27/2023	15:18:26	20.62	0.18	
3/27/2023	15:18:32	20.62	0.18	
3/27/2023	15:18:38	20.62	0.18	
3/27/2023	15:18:44	20.62	0.18	
3/27/2023	15:18:50	20.62	0.18	
3/27/2023	15:18:56	20.62	0.18	
3/27/2023	15:19:02	20.62	0.18	
3/27/2023	15:19:08	20.62	0.18	
3/27/2023	15:19:14	20.62	0.18	
3/27/2023	15:19:20	20.62	0.18	
3/27/2023	15:19:26	20.62	0.18	
3/27/2023	15:19:32	20.62	0.19	
3/27/2023	15:19:38	20.62	0.18	
3/27/2023	15:19:44	20.62	0.80	
3/27/2023	15:19:50	20.62	0.19	
3/27/2023	15:19:56	20.62	0.18	
3/27/2023	15:20:02	20.62	0.18	
3/27/2023	15:20:08	20.62	0.18	
3/27/2023	15:20:14	20.62	0.18	
3/27/2023	15:20:20	20.62	0.18	
3/27/2023	15:20:26	20.62	0.18	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	15:20:32	20.62	0.18	
3/27/2023	15:20:38	20.62	0.18	
3/27/2023	15:20:44	20.62	0.18	
3/27/2023	15:20:50	20.62	0.18	
3/27/2023	15:20:56	20.62	0.18	
3/27/2023	15:21:02	20.62	0.18	
3/27/2023	15:21:08	20.62	0.18	
3/27/2023	15:21:14	20.62	0.18	
3/27/2023	15:21:20	20.62	0.18	
3/27/2023	15:21:26	20.62	0.18	
3/27/2023	15:21:32	20.62	0.18	
3/27/2023	15:21:38	20.62	0.18	
3/27/2023	15:21:44	20.62	0.18	
3/27/2023	15:21:50	20.62	0.18	
3/27/2023	15:21:56	20.62	0.18	
3/27/2023	15:22:02	20.62	0.18	
3/27/2023	15:22:08	20.62	0.18	
3/27/2023	15:22:14	20.62	0.18	
3/27/2023	15:22:20	20.62	0.18	
3/27/2023	15:22:26	20.62	0.18	
3/27/2023	15:22:32	20.62	0.18	
3/27/2023	15:22:38	20.62	0.18	
3/27/2023	15:22:44	20.62	0.18	
3/27/2023	15:22:50	20.61	0.18	
3/27/2023	15:22:56	20.61	0.18	
3/27/2023	15:23:02	20.61	0.18	
3/27/2023	15:23:08	20.61	0.18	
3/27/2023	15:23:14	20.61	0.18	
3/27/2023	15:23:20	20.61	0.18	
3/27/2023	15:23:26	20.61	0.18	
3/27/2023	15:23:32	20.61	0.18	
3/27/2023	15:23:38	20.61	0.18	
3/27/2023	15:23:44	20.61	0.18	
3/27/2023	15:23:50	20.61	0.18	
3/27/2023	15:23:56	20.61	0.18	
3/27/2023	15:24:02	20.61	0.18	
3/27/2023	15:24:08	20.61	0.18	
3/27/2023	15:24:14	20.61	0.18	
3/27/2023	15:24:20	20.61	0.18	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	15:24:26	20.61	0.18	
3/27/2023	15:24:32	20.61	0.18	
3/27/2023	15:24:38	20.61	0.18	
3/27/2023	15:24:44	20.61	0.18	
3/27/2023	15:24:50	20.61	0.18	
3/27/2023	15:24:56	20.61	0.18	
3/27/2023	15:25:02	20.61	0.18	
3/27/2023	15:25:08	20.61	0.18	
3/27/2023	15:25:14	20.61	0.18	
3/27/2023	15:25:20	20.61	0.18	
3/27/2023	15:25:26	20.61	0.18	
3/27/2023	15:25:32	20.61	0.18	
3/27/2023	15:25:38	20.61	0.18	
3/27/2023	15:25:44	20.61	0.18	
3/27/2023	15:25:50	20.61	0.18	
3/27/2023	15:25:56	20.61	0.18	
3/27/2023	15:26:02	20.61	0.18	
3/27/2023	15:26:08	20.61	0.18	
3/27/2023	15:26:14	20.61	0.18	
3/27/2023	15:26:20	20.61	0.18	
3/27/2023	15:26:26	20.61	0.18	
3/27/2023	15:26:32	20.61	0.18	
3/27/2023	15:26:38	20.61	0.18	
3/27/2023	15:26:44	20.61	0.18	
3/27/2023	15:26:50	20.61	0.18	
3/27/2023	15:26:56	20.61	0.18	
3/27/2023	15:27:02	20.61	0.18	
3/27/2023	15:27:08	20.61	0.18	
3/27/2023	15:27:14	20.61	0.18	
3/27/2023	15:27:20	20.61	0.18	
3/27/2023	15:27:26	20.61	0.18	
3/27/2023	15:27:32	20.61	0.18	
3/27/2023	15:27:38	20.61	0.18	
3/27/2023	15:27:44	20.61	0.18	
3/27/2023	15:27:50	20.61	0.18	
3/27/2023	15:27:56	20.61	0.18	
3/27/2023	15:28:02	20.61	0.18	
3/27/2023	15:28:08	20.61	0.18	
3/27/2023	15:28:14	20.61	0.18	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	15:28:20	20.61	0.18	
3/27/2023	15:28:26	20.61	0.18	
3/27/2023	15:28:32	20.61	0.18	
3/27/2023	15:28:38	20.61	0.18	
3/27/2023	15:28:44	20.61	0.18	
3/27/2023	15:28:50	20.61	0.18	
3/27/2023	15:28:56	20.61	0.18	
3/27/2023	15:29:02	20.61	0.18	
3/27/2023	15:29:08	20.61	0.18	
3/27/2023	15:29:14	20.61	0.18	
3/27/2023	15:29:20	20.61	0.18	
3/27/2023	15:29:26	20.61	0.18	
3/27/2023	15:29:32	20.61	0.18	
3/27/2023	15:29:38	20.61	0.18	
3/27/2023	15:29:44	20.61	0.18	
3/27/2023	15:29:50	20.61	0.18	
3/27/2023	15:29:56	20.61	0.18	
3/27/2023	15:30:02	20.61	0.18	
3/27/2023	15:30:08	20.61	0.18	
3/27/2023	15:30:14	20.61	0.18	
3/27/2023	15:30:20	20.61	0.18	
3/27/2023	15:30:26	20.61	0.18	
3/27/2023	15:30:32	20.61	0.18	
3/27/2023	15:30:38	20.61	0.18	
3/27/2023	15:30:44	20.61	0.18	
3/27/2023	15:30:50	20.61	0.18	
3/27/2023	15:30:56	20.61	0.18	
3/27/2023	15:31:02	20.61	0.17	
3/27/2023	15:31:08	20.61	0.17	
3/27/2023	15:31:14	20.61	0.17	
3/27/2023	15:31:20	20.61	0.18	
3/27/2023	15:31:26	20.61	0.18	
3/27/2023	15:31:32	20.61	0.18	
3/27/2023	15:31:38	20.61	0.18	
3/27/2023	15:31:44	20.61	0.18	
3/27/2023	15:31:50	20.61	0.18	
3/27/2023	15:31:56	20.61	0.18	
3/27/2023	15:32:02	20.61	0.18	
3/27/2023	15:32:08	20.61	0.18	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	15:32:14	20.61	0.18	
3/27/2023	15:32:20	20.61	0.18	
3/27/2023	15:32:26	20.61	0.18	
3/27/2023	15:32:32	20.61	0.18	
3/27/2023	15:32:38	20.61	0.18	
3/27/2023	15:32:44	20.61	0.18	
3/27/2023	15:32:50	20.61	0.18	
3/27/2023	15:32:56	20.61	0.18	
3/27/2023	15:33:02	20.61	0.18	
3/27/2023	15:33:08	20.61	0.18	
3/27/2023	15:33:14	20.61	0.18	
3/27/2023	15:33:20	20.61	0.18	
3/27/2023	15:33:26	20.61	0.18	
3/27/2023	15:33:32	20.61	0.18	
3/27/2023	15:33:38	20.61	0.18	
3/27/2023	15:33:44	20.61	0.18	
3/27/2023	15:33:50	20.61	0.18	
3/27/2023	15:33:56	20.61	0.18	
3/27/2023	15:34:02	20.61	0.18	
3/27/2023	15:34:08	20.61	0.18	
3/27/2023	15:34:14	20.61	0.18	
3/27/2023	15:34:20	20.61	0.18	
3/27/2023	15:34:26	20.61	0.18	
3/27/2023	15:34:32	20.61	0.18	
3/27/2023	15:34:38	20.61	0.18	
3/27/2023	15:34:44	20.60	0.18	
3/27/2023	15:34:50	20.60	0.18	
3/27/2023	15:34:56	20.60	0.18	
3/27/2023	15:35:02	20.61	0.18	
3/27/2023	15:35:08	20.60	0.18	
3/27/2023	15:35:14	20.60	0.18	
3/27/2023	15:35:20	20.60	0.18	
3/27/2023	15:35:26	20.60	0.18	
3/27/2023	15:35:32	20.60	0.18	
3/27/2023	15:35:38	20.60	0.18	
3/27/2023	15:35:44	20.60	0.18	
3/27/2023	15:35:50	20.61	0.18	
3/27/2023	15:35:56	20.61	0.18	
3/27/2023	15:36:02	20.61	0.18	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	15:36:08	20.61	0.18	
3/27/2023	15:36:14	20.61	0.18	
3/27/2023	15:36:20	20.61	0.18	
3/27/2023	15:36:26	20.61	0.18	
3/27/2023	15:36:32	20.61	0.18	
3/27/2023	15:36:38	20.61	0.18	
3/27/2023	15:36:44	20.61	0.18	
3/27/2023	15:36:50	20.61	0.18	
3/27/2023	15:36:56	20.61	0.18	
3/27/2023	15:37:02	20.61	0.18	
3/27/2023	15:37:08	20.61	0.18	
3/27/2023	15:37:14	20.61	0.18	
3/27/2023	15:37:20	20.60	0.18	
3/27/2023	15:37:26	20.60	0.17	
3/27/2023	15:37:32	20.60	0.18	
3/27/2023	15:37:38	20.60	0.18	
3/27/2023	15:37:44	20.60	0.18	
3/27/2023	15:37:50	20.60	0.17	
3/27/2023	15:37:56	20.60	0.18	
3/27/2023	15:38:02	20.60	0.18	
3/27/2023	15:38:08	20.60	0.18	
3/27/2023	15:38:14	20.60	0.18	
3/27/2023	15:38:20	20.60	0.18	
3/27/2023	15:38:26	20.60	0.18	
3/27/2023	15:38:32	20.60	0.18	
3/27/2023	15:38:38	20.60	0.18	
3/27/2023	15:38:44	20.60	0.18	
3/27/2023	15:38:50	20.60	0.18	
3/27/2023	15:38:56	20.60	0.18	
3/27/2023	15:39:02	20.60	0.18	
3/27/2023	15:39:08	20.61	0.18	
3/27/2023	15:39:14	20.61	0.18	
3/27/2023	15:39:20	20.61	0.18	
3/27/2023	15:39:26	20.61	0.18	
3/27/2023	15:39:32	20.60	0.18	
3/27/2023	15:39:38	20.61	0.18	
3/27/2023	15:39:44	20.61	0.18	
3/27/2023	15:39:50	20.61	0.18	
3/27/2023	15:39:56	20.61	0.18	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	15:40:02	20.61	0.18	
3/27/2023	15:40:08	20.61	0.18	
3/27/2023	15:40:14	20.61	0.18	
3/27/2023	15:40:20	20.61	0.18	
3/27/2023	15:40:26	20.61	0.18	
3/27/2023	15:40:32	20.61	0.18	
3/27/2023	15:40:38	20.61	0.18	
3/27/2023	15:40:44	20.61	0.18	
3/27/2023	15:40:50	20.61	0.18	
3/27/2023	15:40:56	20.61	0.18	
3/27/2023	15:41:02	20.61	0.18	
3/27/2023	15:41:08	20.61	0.18	
3/27/2023	15:41:14	20.60	0.18	
3/27/2023	15:41:20	20.61	0.18	
3/27/2023	15:41:26	20.60	0.18	
3/27/2023	15:41:32	20.61	0.18	
3/27/2023	15:41:38	20.61	0.18	
3/27/2023	15:41:44	20.61	0.18	
3/27/2023	15:41:50	20.61	0.18	
3/27/2023	15:41:56	20.61	0.18	
3/27/2023	15:42:02	20.61	0.18	
3/27/2023	15:42:08	20.61	0.18	
3/27/2023	15:42:14	20.61	0.18	
3/27/2023	15:42:20	20.61	0.18	
3/27/2023	15:42:26	20.61	0.18	
3/27/2023	15:42:32	20.61	0.18	
3/27/2023	15:42:38	20.61	0.18	
3/27/2023	15:42:44	20.61	0.18	
3/27/2023	15:42:50	20.61	0.18	
3/27/2023	15:42:56	20.60	0.18	
3/27/2023	15:43:02	20.60	0.18	
3/27/2023	15:43:08	20.60	0.18	
3/27/2023	15:43:14	20.60	0.18	
3/27/2023	15:43:20	20.60	0.18	
3/27/2023	15:43:26	20.60	0.18	
3/27/2023	15:43:32	20.60	0.18	
3/27/2023	15:43:38	20.60	0.18	
3/27/2023	15:43:44	20.60	0.18	
3/27/2023	15:43:50	20.60	0.18	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	15:43:56	20.60	0.18	
3/27/2023	15:44:02	20.60	0.18	
3/27/2023	15:44:08	20.60	0.18	
3/27/2023	15:44:14	20.60	0.18	
3/27/2023	15:44:20	20.60	0.18	
3/27/2023	15:44:26	20.60	0.18	
3/27/2023	15:44:32	20.60	0.18	
3/27/2023	15:44:38	20.60	0.18	
3/27/2023	15:44:44	20.60	0.18	
3/27/2023	15:44:50	20.60	0.18	
3/27/2023	15:44:56	20.60	0.18	
3/27/2023	15:45:02	20.60	0.18	
3/27/2023	15:45:08	20.60	0.18	
3/27/2023	15:45:14	20.60	0.18	
3/27/2023	15:45:20	20.60	0.18	
3/27/2023	15:45:26	20.60	0.18	
3/27/2023	15:45:32	20.60	0.18	
3/27/2023	15:45:38	20.60	0.18	
3/27/2023	15:45:44	20.60	0.18	
3/27/2023	15:45:50	20.60	0.18	
3/27/2023	15:45:56	20.60	0.18	
3/27/2023	15:46:02	20.60	0.18	
3/27/2023	15:46:08	20.60	0.18	
3/27/2023	15:46:14	20.60	0.18	
3/27/2023	15:46:20	20.60	0.18	
3/27/2023	15:46:26	20.60	0.18	
3/27/2023	15:46:32	20.60	0.18	
3/27/2023	15:46:38	20.60	0.18	
3/27/2023	15:46:44	20.60	0.18	
3/27/2023	15:46:50	20.60	0.18	
3/27/2023	15:46:56	20.60	0.18	
3/27/2023	15:47:02	20.60	0.18	
3/27/2023	15:47:08	20.60	0.18	
3/27/2023	15:47:14	20.60	0.18	
3/27/2023	15:47:20	20.60	0.18	
3/27/2023	15:47:26	20.60	0.18	
3/27/2023	15:47:32	20.60	0.18	
3/27/2023	15:47:38	20.60	0.18	
3/27/2023	15:47:44	20.60	0.18	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	15:47:50	20.60	0.18	
3/27/2023	15:47:56	20.60	0.18	
3/27/2023	15:48:02	20.60	0.18	
3/27/2023	15:48:08	20.60	0.18	
3/27/2023	15:48:14	20.60	0.18	
3/27/2023	15:48:20	20.60	0.18	
3/27/2023	15:48:26	20.60	0.18	
3/27/2023	15:48:32	20.60	0.18	
3/27/2023	15:48:38	20.60	0.18	
3/27/2023	15:48:44	20.60	0.18	
3/27/2023	15:48:50	20.60	0.18	
3/27/2023	15:48:56	20.60	0.18	
3/27/2023	15:49:02	20.60	0.18	
3/27/2023	15:49:08	20.60	0.18	
3/27/2023	15:49:14	20.60	0.18	
3/27/2023	15:49:20	20.60	0.18	
3/27/2023	15:49:26	20.60	0.18	
3/27/2023	15:49:32	20.60	0.18	
3/27/2023	15:49:38	20.60	0.18	
3/27/2023	15:49:44	20.60	0.18	
3/27/2023	15:49:50	20.60	0.18	
3/27/2023	15:49:56	20.60	0.18	
3/27/2023	15:50:02	20.60	0.18	
3/27/2023	15:50:08	20.60	0.18	
3/27/2023	15:50:14	20.60	0.18	
3/27/2023	15:50:20	20.60	0.18	
3/27/2023	15:50:26	20.60	0.18	
3/27/2023	15:50:32	20.60	0.17	
3/27/2023	15:50:38	20.60	0.17	
3/27/2023	15:50:44	20.60	0.17	
3/27/2023	15:50:50	20.60	0.17	
3/27/2023	15:50:56	20.60	0.17	
3/27/2023	15:51:02	20.60	0.17	
3/27/2023	15:51:08	20.60	0.17	
3/27/2023	15:51:14	20.60	0.17	
3/27/2023	15:51:20	20.60	0.17	
3/27/2023	15:51:26	20.60	0.17	
3/27/2023	15:51:32	20.60	0.17	
3/27/2023	15:51:38	20.60	0.17	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	15:51:44	20.60	0.17	
3/27/2023	15:51:50	20.60	0.17	
3/27/2023	15:51:56	20.60	0.17	
3/27/2023	15:52:02	20.60	0.17	
3/27/2023	15:52:08	20.60	0.17	
3/27/2023	15:52:14	20.60	0.17	
3/27/2023	15:52:20	20.60	0.17	
3/27/2023	15:52:26	20.60	0.17	
3/27/2023	15:52:32	20.60	0.17	
3/27/2023	15:52:38	20.60	0.17	
3/27/2023	15:52:44	20.60	0.17	
3/27/2023	15:52:50	20.60	0.17	
3/27/2023	15:52:56	20.60	0.17	
3/27/2023	15:53:02	20.60	0.17	
3/27/2023	15:53:08	20.60	0.17	
3/27/2023	15:53:14	20.60	0.17	
3/27/2023	15:53:20	20.60	0.17	
3/27/2023	15:53:26	20.60	0.17	
3/27/2023	15:53:32	20.60	0.17	
3/27/2023	15:53:38	20.60	0.17	
3/27/2023	15:53:44	20.60	0.17	
3/27/2023	15:53:50	20.60	0.17	
3/27/2023	15:53:56	20.60	0.17	
3/27/2023	15:54:02	20.60	0.17	
3/27/2023	15:54:08	20.60	0.17	
3/27/2023	15:54:14	20.60	0.17	
3/27/2023	15:54:20	20.60	0.17	
3/27/2023	15:54:26	20.60	0.17	
3/27/2023	15:54:32	20.60	0.17	
3/27/2023	15:54:38	20.60	0.17	
3/27/2023	15:54:44	20.60	0.17	
3/27/2023	15:54:50	20.60	0.17	
3/27/2023	15:54:56	20.60	0.17	
3/27/2023	15:55:02	20.60	0.16	
3/27/2023	15:55:08	20.60	0.17	
3/27/2023	15:55:14	20.60	0.17	
3/27/2023	15:55:20	20.60	0.17	
3/27/2023	15:55:26	20.60	0.17	
3/27/2023	15:55:32	20.60	0.17	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	15:55:38	20.60	0.17	
3/27/2023	15:55:44	20.60	0.17	
3/27/2023	15:55:50	20.60	0.18	
3/27/2023	15:55:56	20.60	0.18	
3/27/2023	15:56:02	20.60	0.17	
3/27/2023	15:56:08	20.60	0.17	
3/27/2023	15:56:14	20.60	0.17	
3/27/2023	15:56:20	20.60	0.18	
3/27/2023	15:56:26	20.60	0.18	
3/27/2023	15:56:32	20.60	0.18	
3/27/2023	15:56:38	20.60	0.18	
3/27/2023	15:56:44	20.60	0.18	
3/27/2023	15:56:50	20.60	0.18	
3/27/2023	15:56:56	20.60	0.18	
3/27/2023	15:57:02	20.60	0.18	
3/27/2023	15:57:08	20.60	0.18	
3/27/2023	15:57:14	20.60	0.18	
3/27/2023	15:57:20	20.60	0.18	
3/27/2023	15:57:26	20.60	0.18	
3/27/2023	15:57:32	20.60	0.18	
3/27/2023	15:57:38	20.60	0.18	
3/27/2023	15:57:44	20.59	0.18	
3/27/2023	15:57:50	20.59	0.18	
3/27/2023	15:57:56	20.59	0.18	
3/27/2023	15:58:02	20.59	0.18	
3/27/2023	15:58:08	20.59	0.17	
3/27/2023	15:58:14	20.59	0.17	
3/27/2023	15:58:20	20.59	0.18	
3/27/2023	15:58:26	20.59	0.18	
3/27/2023	15:58:32	20.59	0.18	
3/27/2023	15:58:38	20.59	0.18	
3/27/2023	15:58:44	20.59	0.18	
3/27/2023	15:58:50	20.59	0.18	
3/27/2023	15:58:56	20.59	0.18	
3/27/2023	15:59:02	20.59	0.18	
3/27/2023	15:59:08	20.59	0.18	
3/27/2023	15:59:14	20.59	0.18	
3/27/2023	15:59:20	20.59	0.18	
3/27/2023	15:59:26	20.59	0.18	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	15:59:32	20.59	0.18	
3/27/2023	15:59:38	20.59	0.18	
3/27/2023	15:59:44	20.59	0.18	
3/27/2023	15:59:50	20.59	0.18	
3/27/2023	15:59:56	20.59	0.18	
3/27/2023	16:00:02	20.59	0.18	
3/27/2023	16:00:08	20.59	0.18	
3/27/2023	16:00:14	20.59	0.18	
3/27/2023	16:00:20	20.59	0.18	
3/27/2023	16:00:26	20.59	0.18	
3/27/2023	16:00:32	20.59	0.18	
3/27/2023	16:00:38	20.59	0.18	
3/27/2023	16:00:44	20.59	0.18	
3/27/2023	16:00:50	20.59	0.18	
3/27/2023	16:00:56	20.59	0.18	
3/27/2023	16:01:02	20.59	0.18	
3/27/2023	16:01:08	20.59	0.18	
3/27/2023	16:01:14	20.59	0.18	
3/27/2023	16:01:20	20.59	0.18	
3/27/2023	16:01:26	20.59	0.18	
3/27/2023	16:01:32	20.59	0.18	
3/27/2023	16:01:38	20.59	0.18	
3/27/2023	16:01:44	20.59	0.18	
3/27/2023	16:01:50	20.59	0.18	
3/27/2023	16:01:56	20.59	0.18	
3/27/2023	16:02:02	20.59	0.18	
3/27/2023	16:02:08	20.59	0.18	
3/27/2023	16:02:14	20.59	0.18	
3/27/2023	16:02:20	20.59	0.18	
3/27/2023	16:02:26	20.59	0.18	
3/27/2023	16:02:32	20.59	0.18	
3/27/2023	16:02:38	20.59	0.18	
3/27/2023	16:02:44	20.59	0.18	
3/27/2023	16:02:50	20.59	0.18	
3/27/2023	16:02:56	20.59	0.18	
3/27/2023	16:03:02	20.59	0.18	
3/27/2023	16:03:08	20.59	0.18	
3/27/2023	16:03:14	20.59	0.18	
3/27/2023	16:03:20	20.59	0.18	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	16:03:26	20.59	0.18	
3/27/2023	16:03:32	20.59	0.18	
3/27/2023	16:03:38	20.59	0.18	
3/27/2023	16:03:44	20.59	0.18	
3/27/2023	16:03:50	20.59	0.18	
3/27/2023	16:03:56	20.59	0.18	
3/27/2023	16:04:02	20.59	0.18	
3/27/2023	16:04:08	20.59	0.18	
3/27/2023	16:04:14	20.59	0.18	
3/27/2023	16:04:20	20.59	0.18	
3/27/2023	16:04:26	20.59	0.18	
3/27/2023	16:04:32	20.59	0.18	
3/27/2023	16:04:38	20.59	0.18	
3/27/2023	16:04:44	20.59	0.18	
3/27/2023	16:04:50	20.59	0.18	
3/27/2023	16:04:56	20.59	0.18	
3/27/2023	16:05:02	20.59	0.18	
3/27/2023	16:05:08	20.59	0.18	
3/27/2023	16:05:14	20.59	0.18	
3/27/2023	16:05:20	20.59	0.18	
3/27/2023	16:05:26	20.59	0.18	
3/27/2023	16:05:32	20.59	0.18	
3/27/2023	16:05:38	20.59	0.18	
3/27/2023	16:05:44	20.59	0.18	
3/27/2023	16:05:50	20.59	0.18	
3/27/2023	16:05:56	20.59	0.18	
3/27/2023	16:06:02	20.59	0.18	
3/27/2023	16:06:08	20.59	0.18	
3/27/2023	16:06:14	20.59	0.18	
3/27/2023	16:06:20	20.59	0.18	
3/27/2023	16:06:26	20.59	0.18	
3/27/2023	16:06:32	20.59	0.18	
3/27/2023	16:06:38	20.59	0.18	
3/27/2023	16:06:44	20.59	0.18	
3/27/2023	16:06:50	20.59	0.18	
3/27/2023	16:06:56	20.59	0.18	
3/27/2023	16:07:02	20.59	0.18	
3/27/2023	16:07:08	20.59	0.18	
3/27/2023	16:07:14	20.59	0.18	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	16:07:20	20.59	0.18	
3/27/2023	16:07:26	20.59	0.18	
3/27/2023	16:07:32	20.59	0.18	
3/27/2023	16:07:38	20.59	0.18	
3/27/2023	16:07:44	20.59	0.18	
3/27/2023	16:07:50	20.59	0.18	
3/27/2023	16:07:56	20.59	0.18	
3/27/2023	16:08:02	20.59	0.18	
3/27/2023	16:08:08	20.59	0.18	
3/27/2023	16:08:14	20.59	0.18	
3/27/2023	16:08:20	20.59	0.18	
3/27/2023	16:08:26	20.59	0.18	
3/27/2023	16:08:32	20.59	0.18	
3/27/2023	16:08:38	20.60	0.18	
3/27/2023	16:08:44	20.60	0.18	
3/27/2023	16:08:50	20.60	0.18	
3/27/2023	16:08:56	20.60	0.18	
3/27/2023	16:09:02	20.60	0.18	
3/27/2023	16:09:08	20.60	0.18	
3/27/2023	16:09:14	20.60	0.18	
3/27/2023	16:09:20	20.60	0.18	
3/27/2023	16:09:26	20.60	0.18	
3/27/2023	16:09:32	20.60	0.18	
3/27/2023	16:09:38	20.60	0.18	
3/27/2023	16:09:44	20.60	0.18	
3/27/2023	16:09:50	20.60	0.18	
3/27/2023	16:09:56	20.60	0.18	
3/27/2023	16:10:02	20.60	0.18	
3/27/2023	16:10:08	20.60	0.18	
3/27/2023	16:10:14	20.60	0.18	
3/27/2023	16:10:20	20.60	0.18	
3/27/2023	16:10:26	20.60	0.18	
3/27/2023	16:10:32	20.60	0.18	
3/27/2023	16:10:38	20.60	0.18	
3/27/2023	16:10:44	20.60	0.18	
3/27/2023	16:10:50	20.60	0.18	
3/27/2023	16:10:56	20.60	0.18	
3/27/2023	16:11:02	20.60	0.18	
3/27/2023	16:11:08	20.60	0.18	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	16:11:14	20.60	0.18	
3/27/2023	16:11:20	20.60	0.18	
3/27/2023	16:11:26	20.60	0.18	
3/27/2023	16:11:32	20.60	0.18	
3/27/2023	16:11:38	20.60	0.18	
3/27/2023	16:11:44	20.60	0.18	
3/27/2023	16:11:50	20.60	0.18	
3/27/2023	16:11:56	20.60	0.18	
3/27/2023	16:12:02	20.60	0.18	
3/27/2023	16:12:08	20.60	0.18	
3/27/2023	16:12:14	20.60	0.18	
3/27/2023	16:12:20	20.60	0.18	
3/27/2023	16:12:26	20.60	0.18	
3/27/2023	16:12:32	20.60	0.17	
3/27/2023	16:12:38	20.60	0.18	
3/27/2023	16:12:44	20.60	0.18	
3/27/2023	16:12:50	20.60	0.18	
3/27/2023	16:12:56	20.60	0.18	
3/27/2023	16:13:02	20.60	0.18	
3/27/2023	16:13:08	20.60	0.18	
3/27/2023	16:13:14	20.60	0.18	
3/27/2023	16:13:20	20.60	0.18	
3/27/2023	16:13:26	20.60	0.18	
3/27/2023	16:13:32	20.60	0.18	
3/27/2023	16:13:38	20.60	0.18	
3/27/2023	16:13:44	20.60	0.18	
3/27/2023	16:13:50	20.60	0.18	
3/27/2023	16:13:56	20.59	0.18	
3/27/2023	16:14:02	20.59	0.18	
3/27/2023	16:14:08	20.59	0.18	
3/27/2023	16:14:14	20.59	0.18	
3/27/2023	16:14:20	20.59	0.18	
3/27/2023	16:14:26	20.60	0.18	
3/27/2023	16:14:32	20.60	0.18	
3/27/2023	16:14:38	20.60	0.18	
3/27/2023	16:14:44	20.60	0.18	
3/27/2023	16:14:50	20.60	0.18	
3/27/2023	16:14:56	20.60	0.18	
3/27/2023	16:15:02	20.60	0.18	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	16:15:08	20.60	0.18	
3/27/2023	16:15:14	20.60	0.18	
3/27/2023	16:15:20	20.60	0.18	
3/27/2023	16:15:26	20.59	0.18	
3/27/2023	16:15:32	20.60	0.18	
3/27/2023	16:15:38	20.60	0.18	
3/27/2023	16:15:44	20.60	0.18	
3/27/2023	16:15:50	20.60	0.18	
3/27/2023	16:15:56	20.60	0.18	
3/27/2023	16:16:02	20.60	0.18	
3/27/2023	16:16:08	20.59	0.18	
3/27/2023	16:16:14	20.59	0.18	
3/27/2023	16:16:20	20.60	0.18	
3/27/2023	16:16:26	20.60	0.18	
3/27/2023	16:16:32	20.60	0.18	
3/27/2023	16:16:38	20.60	0.18	
3/27/2023	16:16:44	20.60	0.18	
3/27/2023	16:16:50	20.60	0.18	
3/27/2023	16:16:56	20.60	0.18	
3/27/2023	16:17:02	20.60	0.18	
3/27/2023	16:17:08	20.60	0.18	
3/27/2023	16:17:14	20.59	0.18	
3/27/2023	16:17:20	20.59	0.18	
3/27/2023	16:17:26	20.59	0.18	
3/27/2023	16:17:32	20.59	0.18	
3/27/2023	16:17:38	20.60	0.18	
3/27/2023	16:17:44	20.60	0.18	
3/27/2023	16:17:50	20.60	0.18	
3/27/2023	16:17:56	20.59	0.18	
3/27/2023	16:18:02	20.59	0.18	
3/27/2023	16:18:08	20.60	0.18	
3/27/2023	16:18:14	20.59	0.18	
3/27/2023	16:18:20	20.59	0.18	
3/27/2023	16:18:26	20.59	0.18	
3/27/2023	16:18:32	20.59	0.18	
3/27/2023	16:18:38	20.59	0.18	
3/27/2023	16:18:44	20.60	0.18	
3/27/2023	16:18:50	20.60	0.18	
3/27/2023	16:18:56	20.59	0.18	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	16:19:02	20.60	0.18	
3/27/2023	16:19:08	20.60	0.18	
3/27/2023	16:19:14	20.60	0.18	
3/27/2023	16:19:20	20.60	0.18	
3/27/2023	16:19:26	20.60	0.18	
3/27/2023	16:19:32	20.60	0.18	
3/27/2023	16:19:38	20.60	0.18	
3/27/2023	16:19:44	20.60	0.18	
3/27/2023	16:19:50	20.60	0.18	
3/27/2023	16:19:56	20.60	0.18	
3/27/2023	16:20:02	20.60	0.18	
3/27/2023	16:20:08	20.60	0.18	
3/27/2023	16:20:14	20.60	0.18	
3/27/2023	16:20:20	20.60	0.18	
3/27/2023	16:20:26	20.60	0.18	
3/27/2023	16:20:32	20.60	0.18	
3/27/2023	16:20:38	20.60	0.18	
3/27/2023	16:20:44	20.59	0.18	
3/27/2023	16:20:50	20.59	0.18	
3/27/2023	16:20:56	20.59	0.18	
3/27/2023	16:21:02	20.59	0.18	
3/27/2023	16:21:08	20.59	0.18	
3/27/2023	16:21:14	20.60	0.18	
3/27/2023	16:21:20	20.60	0.18	
3/27/2023	16:21:26	20.60	0.18	
3/27/2023	16:21:32	20.60	0.18	
3/27/2023	16:21:38	20.60	0.18	
3/27/2023	16:21:44	20.60	0.18	
3/27/2023	16:21:50	20.60	0.18	
3/27/2023	16:21:56	20.60	0.18	
3/27/2023	16:22:02	20.60	0.18	
3/27/2023	16:22:08	20.60	0.18	
3/27/2023	16:22:14	20.60	0.18	
3/27/2023	16:22:20	20.60	0.18	
3/27/2023	16:22:26	20.60	0.18	
3/27/2023	16:22:32	20.60	0.18	
3/27/2023	16:22:38	20.60	0.18	
3/27/2023	16:22:44	20.59	0.18	
3/27/2023	16:22:50	20.60	0.18	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	16:22:56	20.60	0.18	
3/27/2023	16:23:02	20.59	0.18	
3/27/2023	16:23:08	20.59	0.18	
3/27/2023	16:23:14	20.60	0.18	
3/27/2023	16:23:20	20.60	0.18	
3/27/2023	16:23:26	20.60	0.18	
3/27/2023	16:23:32	20.59	0.18	
3/27/2023	16:23:38	20.60	0.18	
3/27/2023	16:23:44	20.60	0.18	
3/27/2023	16:23:50	20.60	0.18	
3/27/2023	16:23:56	20.60	0.18	
3/27/2023	16:24:02	20.60	0.18	
3/27/2023	16:24:08	20.60	0.18	
3/27/2023	16:24:14	20.59	0.18	
3/27/2023	16:24:20	20.59	0.18	
3/27/2023	16:24:26	20.59	0.18	
3/27/2023	16:24:32	20.59	0.18	
3/27/2023	16:24:38	20.59	0.18	
3/27/2023	16:24:44	20.59	0.18	
3/27/2023	16:24:50	20.59	0.18	
3/27/2023	16:24:56	20.59	0.18	
3/27/2023	16:25:02	20.59	0.18	
3/27/2023	16:25:08	20.60	0.18	
3/27/2023	16:25:14	20.60	0.18	
3/27/2023	16:25:20	20.60	0.18	
3/27/2023	16:25:26	20.60	0.18	
3/27/2023	16:25:32	20.60	0.18	
3/27/2023	16:25:38	20.59	0.18	
3/27/2023	16:25:44	20.59	0.18	
3/27/2023	16:25:50	20.59	0.18	
3/27/2023	16:25:56	20.59	0.18	
3/27/2023	16:26:02	20.59	0.18	
3/27/2023	16:26:08	20.59	0.18	
3/27/2023	16:26:14	20.59	0.18	
3/27/2023	16:26:20	20.59	0.18	
3/27/2023	16:26:26	20.60	0.18	
3/27/2023	16:26:32	20.60	0.18	
3/27/2023	16:26:38	20.59	0.18	
3/27/2023	16:26:44	20.59	0.18	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	16:26:50	20.59	0.18	
3/27/2023	16:26:56	20.59	0.18	
3/27/2023	16:27:02	20.59	0.18	
3/27/2023	16:27:08	20.59	0.18	
3/27/2023	16:27:14	20.59	0.18	
3/27/2023	16:27:20	20.59	0.18	
3/27/2023	16:27:26	20.59	0.18	
3/27/2023	16:27:32	20.59	0.18	
3/27/2023	16:27:38	20.59	0.18	
3/27/2023	16:27:44	20.59	0.18	
3/27/2023	16:27:50	20.59	0.18	
3/27/2023	16:27:56	20.60	0.18	
3/27/2023	16:28:02	20.60	0.18	
3/27/2023	16:28:08	20.60	0.18	
3/27/2023	16:28:14	20.60	0.18	
3/27/2023	16:28:20	20.60	0.18	
3/27/2023	16:28:26	20.60	0.18	
3/27/2023	16:28:32	20.60	0.18	
3/27/2023	16:28:38	20.60	0.18	
3/27/2023	16:28:44	20.60	0.18	
3/27/2023	16:28:50	20.60	0.18	
3/27/2023	16:28:56	20.60	0.18	
3/27/2023	16:29:02	20.60	0.18	
3/27/2023	16:29:08	20.60	0.18	
3/27/2023	16:29:14	20.60	0.18	
3/27/2023	16:29:20	20.60	0.18	
3/27/2023	16:29:26	20.60	0.18	
3/27/2023	16:29:32	20.60	0.18	
3/27/2023	16:29:38	20.60	0.18	
3/27/2023	16:29:44	20.60	0.18	
3/27/2023	16:29:50	20.60	0.18	
3/27/2023	16:29:56	20.60	0.18	
3/27/2023	16:30:02	20.60	0.18	
3/27/2023	16:30:08	20.59	0.18	
3/27/2023	16:30:14	20.60	0.18	
3/27/2023	16:30:20	20.59	0.18	
3/27/2023	16:30:26	20.59	0.18	
3/27/2023	16:30:32	20.59	0.18	
3/27/2023	16:30:38	20.59	0.18	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	16:30:44	20.59	0.18	
3/27/2023	16:30:50	20.59	0.18	
3/27/2023	16:30:56	20.60	0.18	
3/27/2023	16:31:02	20.60	0.18	
3/27/2023	16:31:08	20.60	0.18	
3/27/2023	16:31:14	20.60	0.18	
3/27/2023	16:31:20	20.60	0.18	
3/27/2023	16:31:26	20.60	0.18	
3/27/2023	16:31:32	20.60	0.18	
3/27/2023	16:31:38	20.60	0.18	
3/27/2023	16:31:44	20.60	0.18	
3/27/2023	16:31:50	20.60	0.18	
3/27/2023	16:31:56	20.60	0.18	
3/27/2023	16:32:02	20.60	0.18	
3/27/2023	16:32:08	20.60	0.18	
3/27/2023	16:32:14	20.60	0.18	
3/27/2023	16:32:20	20.59	0.18	
3/27/2023	16:32:26	20.59	0.18	
3/27/2023	16:32:32	20.59	0.18	
3/27/2023	16:32:38	20.59	0.18	
3/27/2023	16:32:44	20.59	0.18	
3/27/2023	16:32:50	20.59	0.18	
3/27/2023	16:32:56	20.59	0.18	
3/27/2023	16:33:02	20.59	0.18	
3/27/2023	16:33:08	20.59	0.18	
3/27/2023	16:33:14	20.59	0.18	
3/27/2023	16:33:20	20.59	0.18	
3/27/2023	16:33:26	20.59	0.18	
3/27/2023	16:33:32	20.59	0.18	
3/27/2023	16:33:38	20.59	0.18	
3/27/2023	16:33:44	20.59	0.18	
3/27/2023	16:33:50	20.59	0.18	
3/27/2023	16:33:56	20.59	0.18	
3/27/2023	16:34:02	20.60	0.18	
3/27/2023	16:34:08	20.59	0.18	
3/27/2023	16:34:14	20.59	0.18	
3/27/2023	16:34:20	20.59	0.18	
3/27/2023	16:34:26	20.59	0.18	
3/27/2023	16:34:32	20.59	0.18	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	16:34:38	20.59	0.18	
3/27/2023	16:34:44	20.59	0.18	
3/27/2023	16:34:50	20.59	0.18	
3/27/2023	16:34:56	20.59	0.18	
3/27/2023	16:35:02	20.59	0.18	
3/27/2023	16:35:08	20.59	0.18	
3/27/2023	16:35:14	20.59	0.18	
3/27/2023	16:35:20	20.59	0.18	
3/27/2023	16:35:26	20.60	0.18	
3/27/2023	16:35:32	20.59	0.18	
3/27/2023	16:35:38	20.59	0.18	
3/27/2023	16:35:44	20.59	0.18	
3/27/2023	16:35:50	20.60	0.18	
3/27/2023	16:35:56	20.60	0.18	
3/27/2023	16:36:02	20.60	0.18	
3/27/2023	16:36:08	20.59	0.18	
3/27/2023	16:36:14	20.59	0.18	
3/27/2023	16:36:20	20.59	0.18	
3/27/2023	16:36:26	20.59	0.18	
3/27/2023	16:36:32	20.60	0.18	
3/27/2023	16:36:38	20.59	0.18	
3/27/2023	16:36:44	20.59	0.18	
3/27/2023	16:36:50	20.59	0.18	
3/27/2023	16:36:56	20.59	0.18	
3/27/2023	16:37:02	20.59	0.18	
3/27/2023	16:37:08	20.59	0.18	
3/27/2023	16:37:14	20.59	0.18	
3/27/2023	16:37:20	20.59	0.18	
3/27/2023	16:37:26	20.59	0.18	
3/27/2023	16:37:32	20.59	0.18	
3/27/2023	16:37:38	20.59	0.18	
3/27/2023	16:37:44	20.59	0.18	
3/27/2023	16:37:50	20.59	0.18	
3/27/2023	16:37:56	20.59	0.18	
3/27/2023	16:38:02	20.59	0.18	
3/27/2023	16:38:08	20.59	0.18	
3/27/2023	16:38:14	20.59	0.18	
3/27/2023	16:38:20	20.59	0.18	
3/27/2023	16:38:26	20.59	0.18	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	16:38:32	20.59	0.18	
3/27/2023	16:38:38	20.59	0.18	
3/27/2023	16:38:44	20.59	0.18	
3/27/2023	16:38:50	20.59	0.18	
3/27/2023	16:38:56	20.59	0.18	
3/27/2023	16:39:02	20.59	0.18	
3/27/2023	16:39:08	20.59	0.18	
3/27/2023	16:39:14	20.59	0.18	
3/27/2023	16:39:20	20.59	0.18	
3/27/2023	16:39:26	20.59	0.18	
3/27/2023	16:39:32	20.59	0.18	
3/27/2023	16:39:38	20.59	0.18	
3/27/2023	16:39:44	20.59	0.18	
3/27/2023	16:39:50	20.59	0.18	
3/27/2023	16:39:56	20.59	0.18	
3/27/2023	16:40:02	20.59	0.18	
3/27/2023	16:40:08	20.59	0.18	
3/27/2023	16:40:14	20.59	0.18	
3/27/2023	16:40:20	20.59	0.18	
3/27/2023	16:40:26	20.59	0.18	
3/27/2023	16:40:32	20.59	0.18	
3/27/2023	16:40:38	20.59	0.18	
3/27/2023	16:40:44	20.59	0.18	
3/27/2023	16:40:50	20.59	0.18	
3/27/2023	16:40:56	20.59	0.18	
3/27/2023	16:41:02	20.59	0.18	
3/27/2023	16:41:08	20.59	0.18	
3/27/2023	16:41:14	20.59	0.18	
3/27/2023	16:41:20	20.59	0.18	
3/27/2023	16:41:26	20.59	0.18	
3/27/2023	16:41:32	20.59	0.18	
3/27/2023	16:41:38	20.59	0.18	
3/27/2023	16:41:44	20.59	0.18	
3/27/2023	16:41:50	20.59	0.18	
3/27/2023	16:41:56	20.59	0.18	
3/27/2023	16:42:02	20.59	0.18	
3/27/2023	16:42:08	20.59	0.18	
3/27/2023	16:42:14	20.59	0.18	
3/27/2023	16:42:20	20.59	0.18	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	16:42:26	20.59	0.18	
3/27/2023	16:42:32	20.59	0.18	
3/27/2023	16:42:38	20.59	0.18	
3/27/2023	16:42:44	20.59	0.18	
3/27/2023	16:42:50	20.59	0.18	
3/27/2023	16:42:56	20.59	0.18	
3/27/2023	16:43:02	20.59	0.18	
3/27/2023	16:43:08	20.59	0.18	
3/27/2023	16:43:14	20.59	0.18	
3/27/2023	16:43:20	20.59	0.18	
3/27/2023	16:43:26	20.59	0.18	
3/27/2023	16:43:32	20.59	0.18	
3/27/2023	16:43:38	20.59	0.18	
3/27/2023	16:43:44	20.59	0.18	
3/27/2023	16:43:50	20.59	0.18	
3/27/2023	16:43:56	20.59	0.18	
3/27/2023	16:44:02	20.59	0.18	
3/27/2023	16:44:08	20.59	0.18	
3/27/2023	16:44:14	20.59	0.18	
3/27/2023	16:44:20	20.59	0.18	
3/27/2023	16:44:26	20.59	0.18	
3/27/2023	16:44:32	20.59	0.18	
3/27/2023	16:44:38	20.59	0.18	
3/27/2023	16:44:44	20.59	0.18	
3/27/2023	16:44:50	20.59	0.18	
3/27/2023	16:44:56	20.59	0.18	
3/27/2023	16:45:02	20.59	0.18	
3/27/2023	16:45:08	20.59	0.18	
3/27/2023	16:45:14	20.59	0.18	
3/27/2023	16:45:20	20.59	0.18	
3/27/2023	16:45:26	20.59	0.18	
3/27/2023	16:45:32	20.59	0.18	
3/27/2023	16:45:38	20.59	0.18	
3/27/2023	16:45:44	20.59	0.18	
3/27/2023	16:45:50	20.59	0.18	
3/27/2023	16:45:56	20.59	0.18	
3/27/2023	16:46:02	20.59	0.18	
3/27/2023	16:46:08	20.59	0.18	
3/27/2023	16:46:14	20.59	0.18	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	16:46:20	20.59	0.18	
3/27/2023	16:46:26	20.59	0.18	
3/27/2023	16:46:32	20.59	0.18	
3/27/2023	16:46:38	20.59	0.18	
3/27/2023	16:46:44	20.59	0.18	
3/27/2023	16:46:50	20.59	0.18	
3/27/2023	16:46:56	20.59	0.18	
3/27/2023	16:47:02	20.59	0.18	
3/27/2023	16:47:08	20.59	0.18	
3/27/2023	16:47:14	20.59	0.18	
3/27/2023	16:47:20	20.59	0.18	
3/27/2023	16:47:26	20.59	0.18	
3/27/2023	16:47:32	20.59	0.18	
3/27/2023	16:47:38	20.59	0.18	
3/27/2023	16:47:44	20.59	0.18	
3/27/2023	16:47:50	20.59	0.18	
3/27/2023	16:47:56	20.59	0.18	
3/27/2023	16:48:02	20.59	0.18	
3/27/2023	16:48:08	20.59	0.17	
3/27/2023	16:48:14	20.59	0.18	
3/27/2023	16:48:20	20.59	0.18	
3/27/2023	16:48:26	20.59	0.17	
3/27/2023	16:48:32	20.59	0.18	
3/27/2023	16:48:38	20.59	0.18	
3/27/2023	16:48:44	20.59	0.18	
3/27/2023	16:48:50	20.59	0.18	
3/27/2023	16:48:56	20.59	0.18	
3/27/2023	16:49:02	20.59	0.18	
3/27/2023	16:49:08	20.59	0.18	
3/27/2023	16:49:14	20.59	0.18	
3/27/2023	16:49:20	20.59	0.18	
3/27/2023	16:49:26	20.59	0.18	
3/27/2023	16:49:32	20.59	0.18	
3/27/2023	16:49:38	20.59	0.18	
3/27/2023	16:49:44	20.59	0.18	
3/27/2023	16:49:50	20.59	0.18	
3/27/2023	16:49:56	20.59	0.18	
3/27/2023	16:50:02	20.59	0.18	
3/27/2023	16:50:08	20.59	0.18	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	16:50:14	20.59	0.18	
3/27/2023	16:50:20	20.59	0.18	
3/27/2023	16:50:26	20.59	0.18	
3/27/2023	16:50:32	20.59	0.18	
3/27/2023	16:50:38	20.59	0.18	
3/27/2023	16:50:44	20.59	0.18	
3/27/2023	16:50:50	20.59	0.18	
3/27/2023	16:50:56	20.59	0.18	
3/27/2023	16:51:02	20.59	0.18	
3/27/2023	16:51:08	20.59	0.18	
3/27/2023	16:51:14	20.59	0.18	
3/27/2023	16:51:20	20.59	0.18	
3/27/2023	16:51:26	20.59	0.18	
3/27/2023	16:51:32	20.59	0.18	
3/27/2023	16:51:38	20.59	0.18	
3/27/2023	16:51:44	20.59	0.18	
3/27/2023	16:51:50	20.59	0.18	
3/27/2023	16:51:56	20.59	0.18	
3/27/2023	16:52:02	20.59	0.18	
3/27/2023	16:52:08	20.59	0.18	
3/27/2023	16:52:14	20.59	0.18	
3/27/2023	16:52:20	20.59	0.18	
3/27/2023	16:52:26	20.59	0.18	
3/27/2023	16:52:32	20.59	0.18	
3/27/2023	16:52:38	20.59	0.18	
3/27/2023	16:52:44	20.59	0.18	
3/27/2023	16:52:50	20.59	0.18	
3/27/2023	16:52:56	20.59	0.18	
3/27/2023	16:53:02	20.59	0.18	
3/27/2023	16:53:08	20.59	0.18	
3/27/2023	16:53:14	20.59	0.18	
3/27/2023	16:53:20	20.59	0.18	
3/27/2023	16:53:26	20.59	0.18	
3/27/2023	16:53:32	20.59	0.18	
3/27/2023	16:53:38	20.59	0.18	
3/27/2023	16:53:44	20.59	0.18	
3/27/2023	16:53:50	20.59	0.18	
3/27/2023	16:53:56	20.59	0.18	
3/27/2023	16:54:02	20.59	0.18	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	16:54:08	20.59	0.18	
3/27/2023	16:54:14	20.59	0.18	
3/27/2023	16:54:20	20.59	0.18	
3/27/2023	16:54:26	20.59	0.18	
3/27/2023	16:54:32	20.59	0.18	
3/27/2023	16:54:38	20.59	0.18	
3/27/2023	16:54:44	20.59	0.18	
3/27/2023	16:54:50	20.59	0.18	
3/27/2023	16:54:56	20.59	0.18	
3/27/2023	16:55:02	20.59	0.18	
3/27/2023	16:55:08	20.59	0.18	
3/27/2023	16:55:14	20.59	0.18	
3/27/2023	16:55:20	20.59	0.18	
3/27/2023	16:55:26	20.59	0.18	
3/27/2023	16:55:32	20.59	0.18	
3/27/2023	16:55:38	20.59	0.18	
3/27/2023	16:55:44	20.59	0.18	
3/27/2023	16:55:50	20.59	0.18	
3/27/2023	16:55:56	20.59	0.18	
3/27/2023	16:56:02	20.59	0.18	
3/27/2023	16:56:08	20.59	0.18	
3/27/2023	16:56:14	20.59	0.18	
3/27/2023	16:56:20	20.59	0.18	
3/27/2023	16:56:26	20.59	0.18	
3/27/2023	16:56:32	20.59	0.18	
3/27/2023	16:56:38	20.59	0.18	
3/27/2023	16:56:44	20.59	0.18	
3/27/2023	16:56:50	20.59	0.18	
3/27/2023	16:56:56	20.59	0.18	
3/27/2023	16:57:02	20.59	0.18	
3/27/2023	16:57:08	20.59	0.18	
3/27/2023	16:57:14	20.59	0.18	
3/27/2023	16:57:20	20.59	0.18	
3/27/2023	16:57:26	20.59	0.18	
3/27/2023	16:57:32	20.59	0.18	
3/27/2023	16:57:38	20.59	0.18	
3/27/2023	16:57:44	20.59	0.18	
3/27/2023	16:57:50	20.59	0.18	
3/27/2023	16:57:56	20.59	0.18	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	16:58:02	20.59	0.18	
3/27/2023	16:58:08	20.59	0.18	
3/27/2023	16:58:14	20.59	0.18	
3/27/2023	16:58:20	20.59	0.18	
3/27/2023	16:58:26	20.59	0.18	
3/27/2023	16:58:32	20.59	0.18	
3/27/2023	16:58:38	20.59	0.18	
3/27/2023	16:58:44	20.59	0.18	
3/27/2023	16:58:50	20.59	0.18	
3/27/2023	16:58:56	20.59	0.18	
3/27/2023	16:59:02	20.59	0.18	
3/27/2023	16:59:08	20.59	0.18	
3/27/2023	16:59:14	20.59	0.18	
3/27/2023	16:59:20	20.59	0.18	
3/27/2023	16:59:26	20.59	0.18	
3/27/2023	16:59:32	20.59	0.18	
3/27/2023	16:59:38	20.59	0.18	
3/27/2023	16:59:44	20.59	0.18	
3/27/2023	16:59:50	20.59	0.18	
3/27/2023	16:59:56	20.59	0.18	
3/27/2023	17:00:02	20.59	0.18	
3/27/2023	17:00:08	20.59	0.18	
3/27/2023	17:00:14	20.59	0.18	
3/27/2023	17:00:20	20.59	0.18	
3/27/2023	17:00:26	20.59	0.18	
3/27/2023	17:00:32	20.59	0.18	
3/27/2023	17:00:38	20.59	0.18	
3/27/2023	17:00:44	20.59	0.18	
3/27/2023	17:00:50	20.59	0.18	
3/27/2023	17:00:56	20.59	0.18	
3/27/2023	17:01:02	20.59	0.18	
3/27/2023	17:01:08	20.59	0.18	
3/27/2023	17:01:14	20.59	0.18	
3/27/2023	17:01:20	20.59	0.18	
3/27/2023	17:01:26	20.59	0.18	
3/27/2023	17:01:32	20.59	0.18	
3/27/2023	17:01:38	20.59	0.18	
3/27/2023	17:01:44	20.59	0.18	
3/27/2023	17:01:50	20.59	0.18	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	17:01:56	20.59	0.18	
3/27/2023	17:02:02	20.59	0.18	
3/27/2023	17:02:08	20.59	0.18	
3/27/2023	17:02:14	20.59	0.18	
3/27/2023	17:02:20	20.59	0.18	
3/27/2023	17:02:26	20.59	0.18	
3/27/2023	17:02:32	20.59	0.18	
3/27/2023	17:02:38	20.59	0.18	
3/27/2023	17:02:44	20.59	0.18	
3/27/2023	17:02:50	20.59	0.18	
3/27/2023	17:02:56	20.59	0.18	
3/27/2023	17:03:02	20.59	0.18	
3/27/2023	17:03:08	20.59	0.18	
3/27/2023	17:03:14	20.59	0.18	
3/27/2023	17:03:20	20.59	0.18	
3/27/2023	17:03:26	20.59	0.18	
3/27/2023	17:03:32	20.59	0.18	
3/27/2023	17:03:38	20.59	0.18	
3/27/2023	17:03:44	20.59	0.18	
3/27/2023	17:03:50	20.59	0.18	
3/27/2023	17:03:56	20.59	0.18	
3/27/2023	17:04:02	20.59	0.18	
3/27/2023	17:04:08	20.59	0.18	
3/27/2023	17:04:14	20.59	0.18	
3/27/2023	17:04:20	20.59	0.18	
3/27/2023	17:04:26	20.59	0.18	
3/27/2023	17:04:32	20.59	0.18	
3/27/2023	17:04:38	20.59	0.18	
3/27/2023	17:04:44	20.59	0.18	
3/27/2023	17:04:50	20.59	0.18	
3/27/2023	17:04:56	20.59	0.18	
3/27/2023	17:05:02	20.59	0.18	
3/27/2023	17:05:08	20.59	0.18	
3/27/2023	17:05:14	20.59	0.18	
3/27/2023	17:05:20	20.59	0.18	
3/27/2023	17:05:26	20.59	0.18	
3/27/2023	17:05:32	20.59	0.18	
3/27/2023	17:05:38	20.59	0.18	
3/27/2023	17:05:44	20.59	0.18	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	17:05:50	20.59	0.18	
3/27/2023	17:05:56	20.59	0.18	
3/27/2023	17:06:02	20.59	0.18	
3/27/2023	17:06:08	20.59	0.18	
3/27/2023	17:06:14	20.59	0.18	
3/27/2023	17:06:20	20.59	0.18	
3/27/2023	17:06:26	20.59	0.18	
3/27/2023	17:06:32	20.59	0.18	
3/27/2023	17:06:38	20.59	0.18	
3/27/2023	17:06:44	20.59	0.18	
3/27/2023	17:06:50	20.59	0.18	
3/27/2023	17:06:56	20.59	0.18	
3/27/2023	17:07:02	20.59	0.18	
3/27/2023	17:07:08	20.59	0.18	
3/27/2023	17:07:14	20.59	0.18	
3/27/2023	17:07:20	20.59	0.18	
3/27/2023	17:07:26	20.59	0.18	
3/27/2023	17:07:32	20.59	0.18	
3/27/2023	17:07:38	20.59	0.18	
3/27/2023	17:07:44	20.59	0.18	
3/27/2023	17:07:50	20.59	0.18	
3/27/2023	17:07:56	20.59	0.18	
3/27/2023	17:08:02	20.59	0.18	
3/27/2023	17:08:08	20.59	0.18	
3/27/2023	17:08:14	20.59	0.18	
3/27/2023	17:08:20	20.59	0.18	
3/27/2023	17:08:26	20.59	0.18	
3/27/2023	17:08:32	20.59	0.18	
3/27/2023	17:08:38	20.59	0.18	
3/27/2023	17:08:44	20.59	0.18	
3/27/2023	17:08:50	20.59	0.18	
3/27/2023	17:08:56	20.59	0.18	
3/27/2023	17:09:02	20.59	0.18	
3/27/2023	17:09:08	20.59	0.18	
3/27/2023	17:09:14	20.59	0.18	
3/27/2023	17:09:20	20.59	0.18	
3/27/2023	17:09:26	20.59	0.18	
3/27/2023	17:09:32	20.59	0.18	
3/27/2023	17:09:38	20.58	0.18	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	17:09:44	20.59	0.18	
3/27/2023	17:09:50	20.59	0.18	
3/27/2023	17:09:56	20.59	0.18	
3/27/2023	17:10:02	20.59	0.18	
3/27/2023	17:10:08	20.59	0.18	
3/27/2023	17:10:14	20.59	0.18	
3/27/2023	17:10:20	20.59	0.18	
3/27/2023	17:10:26	20.59	0.18	
3/27/2023	17:10:32	20.59	0.18	
3/27/2023	17:10:38	20.59	0.18	
3/27/2023	17:10:44	20.59	0.18	
3/27/2023	17:10:50	20.59	0.18	
3/27/2023	17:10:56	20.59	0.18	**End Run 1 Mn and CM40 Steel**
		20.63	**0.19**	**Average**
3/27/2023	17:11:02	20.59	-0.02	
3/27/2023	17:11:08	20.59	-0.02	
3/27/2023	17:11:14	20.59	-0.02	
3/27/2023	17:11:20	20.59	-0.02	
3/27/2023	17:11:26	20.59	-0.02	
3/27/2023	17:11:32	20.59	-0.02	
3/27/2023	17:11:38	20.59	-0.02	
3/27/2023	17:11:44	20.59	-0.02	
3/27/2023	17:11:50	20.59	-0.02	
3/27/2023	17:11:56	20.59	-0.02	
3/27/2023	17:12:02	20.59	-0.02	
3/27/2023	17:12:08	20.59	-0.02	
3/27/2023	17:12:14	20.59	-0.02	
3/27/2023	17:12:20	20.59	-0.02	
3/27/2023	17:12:26	20.59	-0.02	
3/27/2023	17:12:32	20.59	-0.02	
3/27/2023	17:12:38	20.59	-0.02	
3/27/2023	17:12:44	20.59	-0.02	
3/27/2023	17:12:50	20.59	-0.02	
3/27/2023	17:12:56	20.59	-0.02	
3/27/2023	17:13:02	20.59	-0.02	
3/27/2023	17:13:08	20.59	-0.02	
3/27/2023	17:13:14	20.59	-0.02	
3/27/2023	17:13:20	20.59	-0.02	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	17:13:26	20.59	-0.02	
3/27/2023	17:13:32	20.59	-0.02	
3/27/2023	17:13:38	20.59	-0.02	
3/27/2023	17:13:44	20.59	-0.02	
3/27/2023	17:13:50	20.59	-0.02	
3/27/2023	17:13:56	20.59	-0.02	
3/27/2023	17:14:02	20.59	-0.02	
3/27/2023	17:14:08	20.59	-0.02	
3/27/2023	17:14:14	20.59	-0.02	
3/27/2023	17:14:20	20.59	-0.02	
3/27/2023	17:14:26	20.59	-0.02	
3/27/2023	17:14:32	20.59	-0.01	
3/27/2023	17:14:38	20.59	-0.02	
3/27/2023	17:14:44	20.59	-0.02	
3/27/2023	17:14:50	20.59	-0.02	
3/27/2023	17:14:56	20.59	-0.02	
3/27/2023	17:15:02	20.59	-0.01	
3/27/2023	17:15:08	20.58	-0.02	
3/27/2023	17:15:14	20.59	-0.02	
3/27/2023	17:15:20	20.59	-0.02	
3/27/2023	17:15:26	20.59	-0.02	
3/27/2023	17:15:32	20.59	-0.02	
3/27/2023	17:15:38	20.59	-0.02	
3/27/2023	17:15:44	20.59	-0.02	
3/27/2023	17:15:50	20.59	-0.02	
3/27/2023	17:15:56	20.59	-0.02	
3/27/2023	17:16:02	20.59	-0.02	
3/27/2023	17:16:08	20.59	-0.01	
3/27/2023	17:16:14	20.59	-0.01	
3/27/2023	17:16:20	20.59	-0.02	
3/27/2023	17:16:26	20.59	-0.01	
3/27/2023	17:16:32	20.59	-0.01	
3/27/2023	17:16:38	20.59	-0.01	
3/27/2023	17:16:44	20.59	-0.01	
3/27/2023	17:16:50	20.59	-0.01	
3/27/2023	17:16:56	20.59	-0.01	
3/27/2023	17:17:02	20.59	-0.01	
3/27/2023	17:17:08	20.59	-0.01	
3/27/2023	17:17:14	20.59	-0.01	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES		
3/27/2023	17:17:20	20.59	-0.01			
3/27/2023	17:17:26	20.59	-0.01			
3/27/2023	17:17:32	20.59	-0.01			
3/27/2023	17:17:38	20.59	-0.01			
3/27/2023	17:17:44	20.59	-0.01			
3/27/2023	17:17:50	20.59	-0.01			
3/27/2023	17:17:56	20.59	-0.01			
3/27/2023	17:18:02	20.59	-0.02			
3/27/2023	17:18:08	20.59	-0.02			
3/27/2023	17:18:14	20.59	-0.02			
3/27/2023	17:18:20	20.59	-0.02			
3/27/2023	17:18:26	20.59	-0.02			
3/27/2023	17:18:32	20.59	-0.02			
3/27/2023	17:18:38	20.59	-0.02			
3/27/2023	17:18:44	20.59	-0.02			
3/27/2023	17:18:50	20.59	-0.02			
3/27/2023	17:18:56	20.59	-0.02			
3/27/2023	17:19:02	20.59	-0.02			
3/27/2023	17:19:08	20.59	-0.02			
3/27/2023	17:19:14	20.59	-0.01			
3/27/2023	17:19:20	20.60	-0.06			
3/27/2023	17:19:26	18.06	-0.07			
3/27/2023	17:19:32	8.95	-0.07			
3/27/2023	17:19:38	3.14	-0.07			
3/27/2023	17:19:44	1.06	-0.07			
3/27/2023	17:19:50	0.43	-0.07			
3/27/2023	17:19:56	0.24	-0.07			
3/27/2023	17:20:02	0.19	-0.07			
3/27/2023	17:20:08	0.17	-0.07	**O2/CO2 System Zeros**		
3/27/2023	17:20:14	0.16	-0.07	**0.14**	**-0.07**	
3/27/2023	17:20:20	0.15	-0.07			
3/27/2023	17:20:26	0.15	-0.07			
3/27/2023	17:20:32	0.15	-0.07			
3/27/2023	17:20:38	0.14	-0.06			
3/27/2023	17:20:44	0.14	-0.07			
3/27/2023	17:20:50	0.14	-0.07			
3/27/2023	17:20:56	0.14	-0.07			
3/27/2023	17:21:02	0.14	-0.07			
3/27/2023	17:21:08	0.13	-0.07			

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	17:21:14	0.13	-0.06	
3/27/2023	17:21:20	0.13	-0.06	
3/27/2023	17:21:26	0.13	-0.06	
3/27/2023	17:21:32	0.13	-0.07	
3/27/2023	17:21:38	0.13	-0.06	
3/27/2023	17:21:44	0.12	-0.06	
3/27/2023	17:21:50	0.12	-0.06	
3/27/2023	17:21:56	0.12	-0.06	
3/27/2023	17:22:02	0.12	-0.06	
3/27/2023	17:22:08	0.12	-0.06	
3/27/2023	17:22:14	0.12	-0.06	
3/27/2023	17:22:20	0.12	-0.06	
3/27/2023	17:22:26	0.12	-0.06	
3/27/2023	17:22:32	0.12	-0.06	
3/27/2023	17:22:38	0.11	-0.06	
3/27/2023	17:22:44	0.11	-0.06	
3/27/2023	17:22:50	0.11	-0.06	
3/27/2023	17:22:56	0.11	-0.06	
3/27/2023	17:23:02	0.11	-0.06	
3/27/2023	17:23:08	0.11	-0.06	
3/27/2023	17:23:14	0.11	-0.06	
3/27/2023	17:23:20	0.11	-0.06	
3/27/2023	17:23:26	0.11	-0.07	
3/27/2023	17:23:32	0.11	-0.07	
3/27/2023	17:23:38	0.12	3.75	
3/27/2023	17:23:44	1.79	9.78	
3/27/2023	17:23:50	6.37	9.88	
3/27/2023	17:23:56	8.64	9.89	
3/27/2023	17:24:02	9.46	9.88	
3/27/2023	17:24:08	9.69	9.89	
3/27/2023	17:24:14	9.75	9.90	
3/27/2023	17:24:20	9.76	9.91	
3/27/2023	17:24:26	9.77	9.91	
3/27/2023	17:24:32	9.77	9.93	
3/27/2023	17:24:38	9.77	9.94	
3/27/2023	17:24:44	9.77	9.95	
3/27/2023	17:24:50	9.77	9.95	
3/27/2023	17:24:56	9.77	9.95	
3/27/2023	17:25:02	9.77	9.95	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES	
3/27/2023	17:25:08	9.77	9.96		
3/27/2023	17:25:14	9.77	9.97		
3/27/2023	17:25:20	9.77	9.97		
3/27/2023	17:25:26	9.77	9.98	**O2/CO2 System Upscales**	
3/27/2023	17:25:32	9.77	9.98	**9.77**	**10.01**
3/27/2023	17:25:38	9.77	9.99		
3/27/2023	17:25:44	9.77	9.99		
3/27/2023	17:25:50	9.77	10.00		
3/27/2023	17:25:56	9.77	10.01		
3/27/2023	17:26:02	9.77	10.01		
3/27/2023	17:26:08	9.77	10.03		
3/27/2023	17:26:14	9.77	10.03		
3/27/2023	17:26:20	9.77	10.04		
3/27/2023	17:26:26	9.77	10.02		
3/27/2023	17:26:32	9.77	10.04		
3/27/2023	17:26:38	9.77	10.06		
3/27/2023	17:26:44	9.77	10.07		
3/27/2023	17:26:50	9.77	10.07		
3/27/2023	17:26:56	9.77	10.09		
3/27/2023	17:27:02	9.77	10.08		
3/27/2023	17:27:08	9.77	10.08		
3/27/2023	17:27:14	9.77	10.09		
3/27/2023	17:27:20	9.77	10.10		
3/27/2023	17:27:26	9.77	10.09		
3/27/2023	17:27:32	9.77	10.11		
3/27/2023	17:27:38	9.77	10.12		
3/27/2023	17:27:44	9.77	10.12		
3/27/2023	17:27:50	9.77	10.13		
3/27/2023	17:27:56	9.77	10.15		
3/27/2023	17:28:02	9.77	10.16		
3/27/2023	17:28:08	9.77	10.17		
3/27/2023	17:28:14	9.77	10.20		
3/27/2023	17:28:20	9.77	10.20		
3/27/2023	17:28:26	9.77	10.19		
3/27/2023	17:28:32	9.77	10.20		
3/27/2023	17:28:38	9.77	10.21		
3/27/2023	17:28:44	9.77	10.20		
3/27/2023	17:28:50	9.77	10.22		
3/27/2023	17:28:56	9.77	10.24		

Bison Engineering, Inc.
Gaseous Testing Summary

Client:	**Eagle Foundry Company**	Source:	**Main Foundry BH Outlet**
Facility:	**Eagle Foundry**	Test Date:	**3/28/2023 - Day 2**
Location:	**Eagle Creek, OR**		

Environmental Conditions / Test Notes: See isokinetic field data sheets.
Testing Personnel: JMK

Run	**White Iron Run 2**	**Steel Alloy Run 2**
Date	3/28/2023	3/28/2023
Run Start Time	5:10	10:30
Run End Time	9:10	14:40
Duration, min.	240	250
CO_2, %vd	0.15	0.08
O_2, %vd	20.91	20.93

Note: Negative concentrations are reported as zero.

Bison Engineering, Inc.
Method 3A Oxygen
Calibration Error, System Bias and System Drift

Client:	**Eagle Foundry Company**	Source:	**Main Foundry BH Outlet**	Instrument Make:	**Servomex**
Facility:	**Eagle Foundry**	Date:	**3/28/2023 - Day 2**	Instrument Model:	**1440**
Location:	**Eagle Creek, OR**			Instrument Serial #:	**01440C1STD/2919**

			Initial Values			Final Values								
		Analyzer Cal. Response	System Cal Response	Pre test System Cal. Bias % of span	pass/fail	System Cal Response	Post test System Cal. Bias % of span	pass/fail	System Drift % of span	pass/fail	Analyzer Span	Raw Avg Gas Conc	Corrected Gas Conc	Instrument Cal. Reference Gas
White Iron	zero	0.06	0.03	-0.14	pass	0.01	-0.23	pass	0.09	pass				
Run 2	upscale	9.93	9.91	-0.09	pass	9.86	-0.32	pass	0.23	pass	22.03	20.86	20.91	9.898
Mn and CM40 Steel	zero	0.06	0.01	-0.23	pass	0.04	-0.09	pass	0.14	pass				
Run 2	upscale	9.93	9.86	-0.32	pass	9.85	-0.36	pass	0.05	pass	22.03	20.81	20.93	9.898
				< 5%*			**< 5%***		**< 3%***					

Analyzer Calibration Error	Zero	Mid	High
Calibration Gas Standards	0	9.898	22.03
Cylinder Number		ALM026532	EB0155552
Calibration Gas Analyzer Response	0.06	9.93	22.1
Analyzer Calibration Error	0.27	0.15	0.32
Analyzer Calibration Error < 2%*	pass	pass	pass

System Response Time	
29	seconds

System Leak Check	Completed	Pass/Fail
Pre-test	Yes	Pass
Post-test	Yes	Pass

Note: All units are in %
*Or < 0.5 % absolute difference

Bison Engineering, Inc.
Method 3A CO_2
Calibration Error, System Bias and System Drift

Client:	**Eagle Foundry Company**	Source:	**Main Foundry BH Outlet**	Instrument Make:	**Servomex**
Facility:	**Eagle Foundry**	Date:	**3/28/2023 - Day 2**	Instrument Model:	**1440**
Location:	**Eagle Creek, OR**			Instrument Serial #:	**01440C102-2927**

			Initial Values			Final Values								
		Analyzer Cal. Response	System Cal Response	Pre test System Cal. Bias % of span	pass/fail	System Cal Response	Post test System Cal. Bias % of span	pass/fail	System Drift % of span	pass/fail	Analyzer Span	Raw Avg Gas Conc	Corrected Gas Conc	Instrument Cal. Reference Gas
White Iron	zero	-0.04	0.03	0.32	pass	0.00	0.19	pass	0.14	pass				
Run 2	upscale	9.96	9.83	-0.60	pass	9.86	-0.46	pass	0.14	pass	21.61	0.16	0.15	9.85
Mn and CM40 Steel	zero	-0.04	0.00	0.19	pass	-0.01	0.14	pass	0.05	pass				
Run 2	upscale	9.96	9.86	-0.46	pass	9.88	-0.37	pass	0.09	pass	21.61	0.08	0.08	9.85
				< 5%*			**< 5%***		**< 3%***					

Analyzer Calibration Error	Zero	Mid	High
Calibration Gas Standards	0	9.85	21.61
Cylinder Number		ALM026532	EB0155552
Calibration Gas Analyzer Response	-0.04	9.96	21.64
Analyzer Calibration Error	-0.19	0.51	0.14
Analyzer Calibration Error < 2%*	pass	pass	pass

System Response Time	
30	seconds

System Leak Check	Completed	Pass/Fail
Pre-test	Yes	Pass
Post-test	Yes	Pass

Note: All units are in %
*Or < 0.5 % absolute difference

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 2 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/28/2023	4:35:14	18.30	-0.04	
3/28/2023	4:36:14	0.49	-0.14	
3/28/2023	4:37:14	0.06	-0.04	**O2/CO2 Analyzer Zero**
3/28/2023	4:38:14	0.13	0.08	
3/28/2023	4:39:14	16.84	19.80	
3/28/2023	4:40:14	22.10	21.64	**O2/CO2 Analyzer Span**
3/28/2023	4:41:14	22.11	21.87	
3/28/2023	4:42:14	17.85	16.22	
3/28/2023	4:43:14	9.93	10.27	
3/28/2023	4:44:14	9.93	9.96	**O2/CO2 Analyzer Mid**
3/28/2023	4:45:14	10.23	6.84	
3/28/2023	4:46:14	0.94	0.34	
3/28/2023	4:47:14	0.03	0.03	**O2/CO2 System Zero**
3/28/2023	4:48:14	6.03	7.06	
3/28/2023	4:49:14	9.91	9.83	**O2/CO2 System Upscale**
3/28/2023	4:50:14	9.90	4.00	
3/28/2023	4:51:14	14.15	0.42	
				White Iron
3/28/2023	5:10:14	20.91	0.30	**Start Run 2**
3/28/2023	5:11:14	20.90	0.29	
3/28/2023	5:12:14	20.90	0.30	
3/28/2023	5:13:14	20.90	0.29	
3/28/2023	5:14:14	20.89	0.29	
3/28/2023	5:15:14	20.90	0.28	
3/28/2023	5:16:14	20.90	0.28	
3/28/2023	5:17:14	20.89	0.28	
3/28/2023	5:18:14	20.89	0.28	
3/28/2023	5:19:14	20.89	0.28	
3/28/2023	5:20:14	20.90	0.27	
3/28/2023	5:21:14	20.90	0.27	
3/28/2023	5:22:14	20.90	0.26	
3/28/2023	5:23:14	20.90	0.26	
3/28/2023	5:24:14	20.90	0.25	
3/28/2023	5:25:14	20.89	0.26	
3/28/2023	5:26:14	20.89	0.25	
3/28/2023	5:27:14	20.89	0.26	
3/28/2023	5:28:14	20.89	0.28	
3/28/2023	5:29:14	20.86	0.28	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 2 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/28/2023	5:30:14	20.86	0.26	
3/28/2023	5:31:14	20.88	0.25	
3/28/2023	5:32:14	20.89	0.23	
3/28/2023	5:33:14	20.89	0.22	
3/28/2023	5:34:14	20.90	0.22	
3/28/2023	5:35:14	20.90	0.22	
3/28/2023	5:36:14	20.90	0.21	
3/28/2023	5:37:14	20.90	0.21	
3/28/2023	5:38:14	20.89	0.21	
3/28/2023	5:39:14	20.89	0.20	
3/28/2023	5:40:14	20.89	0.21	
3/28/2023	5:41:14	20.90	0.20	
3/28/2023	5:42:14	20.89	0.20	
3/28/2023	5:43:14	20.90	0.20	
3/28/2023	5:44:14	20.90	0.20	
3/28/2023	5:45:14	20.90	0.19	
3/28/2023	5:46:14	20.89	0.19	
3/28/2023	5:47:14	20.89	0.19	
3/28/2023	5:48:14	20.89	0.18	
3/28/2023	5:49:14	20.89	0.18	
3/28/2023	5:50:14	20.90	0.18	
3/28/2023	5:51:14	20.90	0.18	
3/28/2023	5:52:14	20.89	0.17	
3/28/2023	5:53:14	20.90	0.17	
3/28/2023	5:54:14	20.89	0.18	
3/28/2023	5:55:14	20.89	0.17	
3/28/2023	5:56:14	20.89	0.17	
3/28/2023	5:57:14	20.89	0.17	
3/28/2023	5:58:14	20.89	0.17	
3/28/2023	5:59:14	20.89	0.17	
3/28/2023	6:00:14	20.89	0.17	
3/28/2023	6:01:14	20.89	0.17	
3/28/2023	6:02:14	20.89	0.16	
3/28/2023	6:03:14	20.89	0.16	
3/28/2023	6:04:14	20.89	0.17	
3/28/2023	6:05:14	20.90	0.16	
3/28/2023	6:06:14	20.90	0.17	
3/28/2023	6:07:14	20.89	0.16	
3/28/2023	6:08:14	20.89	0.16	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 2 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/28/2023	6:09:14	20.89	0.15	
3/28/2023	6:10:14	20.89	0.16	
3/28/2023	6:11:14	20.89	0.16	
3/28/2023	6:12:14	20.89	0.16	
3/28/2023	6:13:14	20.89	0.15	
3/28/2023	6:14:14	20.88	0.15	
3/28/2023	6:15:14	20.89	0.15	
3/28/2023	6:16:14	20.89	0.15	
3/28/2023	6:17:14	20.89	0.15	
3/28/2023	6:18:14	20.89	0.14	
3/28/2023	6:19:14	20.89	0.14	
3/28/2023	6:20:14	20.89	0.14	
3/28/2023	6:21:14	20.89	0.14	
3/28/2023	6:22:14	20.89	0.14	
3/28/2023	6:23:14	20.89	0.14	
3/28/2023	6:24:14	20.88	0.14	
3/28/2023	6:25:14	20.88	0.15	
3/28/2023	6:26:14	20.88	0.14	
3/28/2023	6:27:14	20.88	0.14	
3/28/2023	6:28:14	20.88	0.14	
3/28/2023	6:29:14	20.88	0.13	
3/28/2023	6:30:14	20.88	0.16	
3/28/2023	6:31:14	20.88	0.16	
3/28/2023	6:32:14	20.88	0.15	
3/28/2023	6:33:14	20.88	0.15	
3/28/2023	6:34:14	20.88	0.15	
3/28/2023	6:35:14	20.88	0.15	
3/28/2023	6:36:14	20.88	0.15	
3/28/2023	6:37:14	20.87	0.14	
3/28/2023	6:38:14	20.87	0.15	
3/28/2023	6:39:14	20.87	0.15	
3/28/2023	6:40:14	20.87	0.16	
3/28/2023	6:41:14	20.87	0.18	
3/28/2023	6:42:14	20.87	0.19	
3/28/2023	6:43:14	20.87	0.20	
3/28/2023	6:44:14	20.87	0.22	
3/28/2023	6:45:14	20.87	0.23	
3/28/2023	6:46:14	20.87	0.24	
3/28/2023	6:47:14	20.86	0.24	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 2 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/28/2023	6:48:14	20.86	0.22	
3/28/2023	6:49:14	20.87	0.23	
3/28/2023	6:50:14	20.86	0.22	
3/28/2023	6:51:14	20.86	0.23	
3/28/2023	6:52:14	20.86	0.22	
3/28/2023	6:53:14	20.86	0.23	
3/28/2023	6:54:14	20.86	0.22	
3/28/2023	6:55:14	20.86	0.21	
3/28/2023	6:56:14	20.86	0.21	
3/28/2023	6:57:14	20.86	0.21	
3/28/2023	6:58:14	20.85	0.19	
3/28/2023	6:59:14	20.86	0.20	
3/28/2023	7:00:14	20.86	0.20	
3/28/2023	7:01:14	20.86	0.20	
3/28/2023	7:02:14	20.86	0.19	
3/28/2023	7:03:14	20.86	0.18	
3/28/2023	7:04:14	20.86	0.19	
3/28/2023	7:05:14	20.86	0.18	
3/28/2023	7:06:14	20.86	0.19	
3/28/2023	7:07:14	20.86	0.18	
3/28/2023	7:08:14	20.86	0.19	
3/28/2023	7:09:14	20.85	0.18	
3/28/2023	7:10:14	20.85	0.20	
3/28/2023	7:11:14	20.85	0.20	
3/28/2023	7:12:14	20.84	0.20	
3/28/2023	7:13:14	20.84	0.18	
3/28/2023	7:14:14	20.84	0.19	
3/28/2023	7:15:14	20.85	0.18	
3/28/2023	7:16:14	20.85	0.18	
3/28/2023	7:17:14	20.85	0.17	
3/28/2023	7:18:14	20.85	0.17	
3/28/2023	7:19:14	20.85	0.16	
3/28/2023	7:20:14	20.85	0.17	
3/28/2023	7:21:14	20.85	0.16	
3/28/2023	7:22:14	20.85	0.16	
3/28/2023	7:23:14	20.85	0.16	
3/28/2023	7:24:14	20.85	0.16	
3/28/2023	7:25:14	20.85	0.16	
3/28/2023	7:26:14	20.85	0.16	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 2 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/28/2023	7:27:14	20.85	0.16	
3/28/2023	7:28:14	20.85	0.15	
3/28/2023	7:29:14	20.85	0.15	
3/28/2023	7:30:14	20.84	0.13	
3/28/2023	7:31:14	20.84	0.14	
3/28/2023	7:32:14	20.84	0.14	
3/28/2023	7:33:14	20.84	0.15	
3/28/2023	7:34:14	20.84	0.14	
3/28/2023	7:35:14	20.84	0.14	
3/28/2023	7:36:14	20.84	0.13	
3/28/2023	7:37:14	20.84	0.13	
3/28/2023	7:38:14	20.84	0.13	
3/28/2023	7:39:14	20.84	0.14	
3/28/2023	7:40:14	20.84	0.13	
3/28/2023	7:41:14	20.84	0.13	
3/28/2023	7:42:14	20.84	0.13	
3/28/2023	7:43:14	20.84	0.14	
3/28/2023	7:44:14	20.85	0.14	
3/28/2023	7:45:14	20.85	0.14	
3/28/2023	7:46:14	20.85	0.14	
3/28/2023	7:47:14	20.85	0.15	
3/28/2023	7:48:14	20.85	0.15	
3/28/2023	7:49:14	20.84	0.16	
3/28/2023	7:50:14	20.84	0.14	
3/28/2023	7:51:14	20.84	0.15	
3/28/2023	7:52:14	20.84	0.14	
3/28/2023	7:53:14	20.84	0.14	
3/28/2023	7:54:14	20.84	0.13	
3/28/2023	7:55:14	20.84	0.14	
3/28/2023	7:56:14	20.84	0.13	
3/28/2023	7:57:14	20.84	0.13	
3/28/2023	7:58:14	20.84	0.12	
3/28/2023	7:59:14	20.84	0.12	
3/28/2023	8:00:14	20.84	0.12	
3/28/2023	8:01:14	20.84	0.12	
3/28/2023	8:02:14	20.84	0.12	
3/28/2023	8:03:14	20.84	0.12	
3/28/2023	8:04:14	20.84	0.10	
3/28/2023	8:05:14	20.84	0.11	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 2 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/28/2023	8:06:14	20.84	0.11	
3/28/2023	8:07:14	20.84	0.11	
3/28/2023	8:08:14	20.84	0.10	
3/28/2023	8:09:14	20.83	0.11	
3/28/2023	8:10:14	20.83	0.10	
3/28/2023	8:11:14	20.84	0.10	
3/28/2023	8:12:14	20.83	0.10	
3/28/2023	8:13:14	20.83	0.11	
3/28/2023	8:14:14	20.83	0.10	
3/28/2023	8:15:14	20.83	0.11	
3/28/2023	8:16:14	20.83	0.11	
3/28/2023	8:17:14	20.83	0.11	
3/28/2023	8:18:14	20.83	0.10	
3/28/2023	8:19:14	20.83	0.10	
3/28/2023	8:20:14	20.83	0.10	
3/28/2023	8:21:14	20.83	0.11	
3/28/2023	8:22:14	20.83	0.11	
3/28/2023	8:23:14	20.83	0.11	
3/28/2023	8:24:14	20.83	0.10	
3/28/2023	8:25:14	20.83	0.11	
3/28/2023	8:26:14	20.82	0.10	
3/28/2023	8:27:14	20.82	0.10	
3/28/2023	8:28:14	20.82	0.10	
3/28/2023	8:29:14	20.82	0.10	
3/28/2023	8:30:14	20.82	0.10	
3/28/2023	8:31:14	20.82	0.10	
3/28/2023	8:32:14	20.82	0.10	
3/28/2023	8:33:14	20.82	0.09	
3/28/2023	8:34:14	20.82	0.08	
3/28/2023	8:35:14	20.82	0.08	
3/28/2023	8:36:14	20.82	0.08	
3/28/2023	8:37:14	20.82	0.09	
3/28/2023	8:38:14	20.82	0.08	
3/28/2023	8:39:14	20.82	0.09	
3/28/2023	8:40:14	20.82	0.08	
3/28/2023	8:41:14	20.82	0.09	
3/28/2023	8:42:14	20.82	0.08	
3/28/2023	8:43:14	20.82	0.09	
3/28/2023	8:44:14	20.82	0.08	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 2 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/28/2023	8:45:14	20.83	0.09	
3/28/2023	8:46:14	20.82	0.08	
3/28/2023	8:47:14	20.83	0.09	
3/28/2023	8:48:14	20.83	0.09	
3/28/2023	8:49:14	20.82	0.09	
3/28/2023	8:50:14	20.83	0.08	
3/28/2023	8:51:14	20.83	0.10	
3/28/2023	8:52:14	20.83	0.09	
3/28/2023	8:53:14	20.83	0.09	
3/28/2023	8:54:14	20.83	0.09	
3/28/2023	8:55:14	20.83	0.09	
3/28/2023	8:56:14	20.83	0.09	
3/28/2023	8:57:14	20.82	0.09	
3/28/2023	8:58:14	20.83	0.08	
3/28/2023	8:59:14	20.82	0.09	
3/28/2023	9:00:14	20.82	0.08	
3/28/2023	9:01:14	20.83	0.08	
3/28/2023	9:02:14	20.83	0.08	
3/28/2023	9:03:14	20.82	0.08	
3/28/2023	9:04:14	20.82	0.08	
3/28/2023	9:05:14	20.82	0.08	
3/28/2023	9:06:14	20.82	0.07	
3/28/2023	9:07:14	20.82	0.08	
3/28/2023	9:08:14	20.82	0.07	
3/28/2023	9:09:14	20.82	0.08	
3/28/2023	9:10:14	20.82	0.08	**End Run 2 White Iron**
		20.86	**0.16**	**Average**
3/28/2023	9:11:14	20.82	0.08	
3/28/2023	9:12:14	20.82	0.08	
3/28/2023	9:13:14	20.82	0.09	
3/28/2023	9:14:14	15.13	0.04	
3/28/2023	9:15:14	0.01	0.00	**O2/CO2 System Zero**
3/28/2023	9:16:14	6.17	6.81	
3/28/2023	9:17:14	9.86	9.88	
3/28/2023	9:18:14	9.86	9.86	**O2/CO2 System Upscale**
3/28/2023	9:19:14	9.88	3.90	
3/28/2023	9:20:14	12.32	0.18	
3/28/2023	9:21:14	18.15	0.17	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 2 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/28/2023	10:29:14	20.87	0.16	
				Mn and CM40 Steel
3/28/2023	10:30:14	20.86	0.16	**Start Run 2**
3/28/2023	10:31:14	20.86	0.17	
3/28/2023	10:32:14	20.86	0.16	
3/28/2023	10:33:14	20.86	0.16	
3/28/2023	10:34:14	20.86	0.16	
3/28/2023	10:35:14	20.86	0.15	
3/28/2023	10:36:14	20.86	0.15	
3/28/2023	10:37:14	20.86	0.15	
3/28/2023	10:38:14	20.85	0.15	
3/28/2023	10:39:14	20.85	0.15	
3/28/2023	10:40:14	20.86	0.15	
3/28/2023	10:41:14	20.85	0.14	
3/28/2023	10:42:14	20.85	0.14	
3/28/2023	10:43:14	20.85	0.14	
3/28/2023	10:44:14	20.85	0.14	
3/28/2023	10:45:14	20.85	0.13	
3/28/2023	10:46:14	20.85	0.13	
3/28/2023	10:47:14	20.85	0.13	
3/28/2023	10:48:14	20.85	0.12	
3/28/2023	10:49:14	20.85	0.12	
3/28/2023	10:50:14	20.85	0.13	
3/28/2023	10:51:14	20.85	0.12	
3/28/2023	10:52:14	20.85	0.12	
3/28/2023	10:53:14	20.85	0.12	
3/28/2023	10:54:14	20.85	0.12	
3/28/2023	10:55:14	20.85	0.12	
3/28/2023	10:56:14	20.85	0.12	
3/28/2023	10:57:14	20.84	0.13	
3/28/2023	10:58:14	20.84	0.13	
3/28/2023	10:59:14	20.84	0.13	
3/28/2023	11:00:14	20.84	0.13	
3/28/2023	11:01:14	20.84	0.13	
3/28/2023	11:02:14	20.84	0.13	
3/28/2023	11:03:14	20.84	0.13	
3/28/2023	11:04:14	20.84	0.12	
3/28/2023	11:05:14	20.84	0.14	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 2 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/28/2023	11:06:14	20.84	0.12	
3/28/2023	11:07:14	20.84	0.13	
3/28/2023	11:08:14	20.84	0.13	
3/28/2023	11:09:14	20.84	0.13	
3/28/2023	11:10:14	20.83	0.12	
3/28/2023	11:11:14	20.84	0.12	
3/28/2023	11:12:14	20.83	0.12	
3/28/2023	11:13:14	20.84	0.11	
3/28/2023	11:14:14	20.84	0.11	
3/28/2023	11:15:14	20.84	0.11	
3/28/2023	11:16:14	20.84	0.11	
3/28/2023	11:17:14	20.84	0.10	
3/28/2023	11:18:14	20.84	0.10	
3/28/2023	11:19:14	20.84	0.10	
3/28/2023	11:20:14	20.84	0.10	
3/28/2023	11:21:14	20.84	0.10	
3/28/2023	11:22:14	20.84	0.09	
3/28/2023	11:23:14	20.84	0.09	
3/28/2023	11:24:14	20.84	0.09	
3/28/2023	11:25:14	20.84	0.10	
3/28/2023	11:26:14	20.84	0.09	
3/28/2023	11:27:14	20.84	0.10	
3/28/2023	11:28:14	20.84	0.09	
3/28/2023	11:29:14	20.84	0.09	
3/28/2023	11:30:14	20.84	0.09	
3/28/2023	11:31:14	20.84	0.10	
3/28/2023	11:32:14	20.84	0.09	
3/28/2023	11:33:14	20.84	0.09	
3/28/2023	11:34:14	20.84	0.09	
3/28/2023	11:35:14	20.84	0.10	
3/28/2023	11:36:14	20.83	0.09	
3/28/2023	11:37:14	20.84	0.10	
3/28/2023	11:38:14	20.83	0.09	
3/28/2023	11:39:14	20.83	0.10	
3/28/2023	11:40:14	20.83	0.09	
3/28/2023	11:41:14	20.83	0.10	
3/28/2023	11:42:14	20.83	0.09	
3/28/2023	11:43:14	20.83	0.09	
3/28/2023	11:44:14	20.83	0.08	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 2 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/28/2023	11:45:14	20.83	0.08	
3/28/2023	11:46:14	20.83	0.09	
3/28/2023	11:47:14	20.83	0.09	
3/28/2023	11:48:14	20.83	0.08	
3/28/2023	11:49:14	20.83	0.08	
3/28/2023	11:50:14	20.82	0.08	
3/28/2023	11:51:14	20.82	0.08	
3/28/2023	11:52:14	20.82	0.07	
3/28/2023	11:53:14	20.82	0.08	
3/28/2023	11:54:14	20.83	0.06	
3/28/2023	11:55:14	20.82	0.07	
3/28/2023	11:56:14	20.82	0.07	
3/28/2023	11:57:14	20.82	0.07	
3/28/2023	11:58:14	20.82	0.07	
3/28/2023	11:59:14	20.82	0.08	
3/28/2023	12:00:14	20.82	0.09	
3/28/2023	12:01:14	20.81	0.09	
3/28/2023	12:02:14	20.82	0.08	
3/28/2023	12:03:14	20.81	0.09	
3/28/2023	12:04:14	20.81	0.09	
3/28/2023	12:05:14	20.81	0.08	
3/28/2023	12:06:14	20.81	0.09	
3/28/2023	12:07:14	20.81	0.08	
3/28/2023	12:08:14	20.81	0.08	
3/28/2023	12:09:14	20.80	0.08	
3/28/2023	12:10:14	20.80	0.07	
3/28/2023	12:11:14	20.80	0.08	
3/28/2023	12:12:14	20.80	0.07	
3/28/2023	12:13:14	20.80	0.07	
3/28/2023	12:14:14	20.80	0.06	
3/28/2023	12:15:14	20.81	0.06	
3/28/2023	12:16:14	20.80	0.06	
3/28/2023	12:17:14	20.80	0.06	
3/28/2023	12:18:14	20.80	0.06	
3/28/2023	12:19:14	20.80	0.06	
3/28/2023	12:20:14	20.81	0.07	
3/28/2023	12:21:14	20.80	0.07	
3/28/2023	12:22:14	20.81	0.07	
3/28/2023	12:23:14	20.81	0.07	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 2 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/28/2023	12:24:14	20.81	0.06	
3/28/2023	12:25:14	20.80	0.06	
3/28/2023	12:26:14	20.80	0.05	
3/28/2023	12:27:14	20.80	0.06	
3/28/2023	12:28:14	20.80	0.06	
3/28/2023	12:29:14	20.80	0.06	
3/28/2023	12:30:14	20.80	0.05	
3/28/2023	12:31:14	20.80	0.04	
3/28/2023	12:32:14	20.80	0.05	
3/28/2023	12:33:14	20.80	0.05	
3/28/2023	12:34:14	20.80	0.05	
3/28/2023	12:35:14	20.80	0.05	
3/28/2023	12:36:14	20.80	0.06	
3/28/2023	12:37:14	20.80	0.06	
3/28/2023	12:38:14	20.80	0.06	
3/28/2023	12:39:14	20.79	0.06	
3/28/2023	12:40:14	20.80	0.06	
3/28/2023	12:41:14	20.79	0.05	
3/28/2023	12:42:14	20.80	0.06	
3/28/2023	12:43:14	20.79	0.05	
3/28/2023	12:44:14	20.79	0.05	
3/28/2023	12:45:14	20.79	0.04	
3/28/2023	12:46:14	20.79	0.05	
3/28/2023	12:47:14	20.80	0.05	
3/28/2023	12:48:14	20.79	0.05	
3/28/2023	12:49:14	20.80	0.04	
3/28/2023	12:50:14	20.79	0.04	
3/28/2023	12:51:14	20.79	0.04	
3/28/2023	12:52:14	20.80	0.03	
3/28/2023	12:53:14	20.80	0.04	
3/28/2023	12:54:14	20.80	0.05	
3/28/2023	12:55:14	20.80	0.04	
3/28/2023	12:56:14	20.80	0.03	
3/28/2023	12:57:14	20.80	0.03	
3/28/2023	12:58:14	20.80	0.03	
3/28/2023	12:59:14	20.80	0.03	
3/28/2023	13:00:14	20.80	0.03	
3/28/2023	13:01:14	20.79	0.04	
3/28/2023	13:02:14	20.79	0.04	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 2 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/28/2023	13:03:14	20.79	0.03	
3/28/2023	13:04:14	20.79	0.03	
3/28/2023	13:05:14	20.79	0.04	
3/28/2023	13:06:14	20.79	0.03	
3/28/2023	13:07:14	20.79	0.04	
3/28/2023	13:08:14	20.79	0.04	
3/28/2023	13:09:14	20.79	0.05	
3/28/2023	13:10:14	20.79	0.05	
3/28/2023	13:11:14	20.79	0.05	
3/28/2023	13:12:14	20.79	0.04	
3/28/2023	13:13:14	20.79	0.05	
3/28/2023	13:14:14	20.79	0.04	
3/28/2023	13:15:14	20.79	0.04	
3/28/2023	13:16:14	20.79	0.04	
3/28/2023	13:17:14	20.79	0.05	
3/28/2023	13:18:14	20.79	0.05	
3/28/2023	13:19:14	20.78	0.04	
3/28/2023	13:20:14	20.79	0.04	
3/28/2023	13:21:14	20.79	0.04	
3/28/2023	13:22:14	20.79	0.04	
3/28/2023	13:23:14	20.78	0.05	
3/28/2023	13:24:14	20.79	0.05	
3/28/2023	13:25:14	20.78	0.05	
3/28/2023	13:26:14	20.78	0.05	
3/28/2023	13:27:14	20.78	0.05	
3/28/2023	13:28:14	20.78	0.05	
3/28/2023	13:29:14	20.78	0.04	
3/28/2023	13:30:14	20.78	0.05	
3/28/2023	13:31:14	20.78	0.04	
3/28/2023	13:32:14	20.78	0.05	
3/28/2023	13:33:14	20.78	0.04	
3/28/2023	13:34:14	20.78	0.05	
3/28/2023	13:35:14	20.78	0.06	
3/28/2023	13:36:14	20.78	0.06	
3/28/2023	13:37:14	20.78	0.04	
3/28/2023	13:38:14	20.78	0.05	
3/28/2023	13:39:14	20.78	0.05	
3/28/2023	13:40:14	20.78	0.06	
3/28/2023	13:41:14	20.77	0.06	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 2 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/28/2023	13:42:14	20.77	0.06	
3/28/2023	13:43:14	20.78	0.06	
3/28/2023	13:44:14	20.78	0.06	
3/28/2023	13:45:14	20.78	0.07	
3/28/2023	13:46:14	20.78	0.06	
3/28/2023	13:47:14	20.78	0.07	
3/28/2023	13:48:14	20.78	0.07	
3/28/2023	13:49:14	20.78	0.08	
3/28/2023	13:50:14	20.78	0.07	
3/28/2023	13:51:14	20.78	0.08	
3/28/2023	13:52:14	20.78	0.07	
3/28/2023	13:53:14	20.78	0.08	
3/28/2023	13:54:14	20.78	0.07	
3/28/2023	13:55:14	20.78	0.07	
3/28/2023	13:56:14	20.78	0.07	
3/28/2023	13:57:14	20.78	0.07	
3/28/2023	13:58:14	20.77	0.08	
3/28/2023	13:59:14	20.77	0.08	
3/28/2023	14:00:14	20.77	0.07	
3/28/2023	14:01:14	20.78	0.08	
3/28/2023	14:02:14	20.78	0.08	
3/28/2023	14:03:14	20.78	0.08	
3/28/2023	14:04:14	20.78	0.08	
3/28/2023	14:05:14	20.78	0.08	
3/28/2023	14:06:14	20.78	0.08	
3/28/2023	14:07:14	20.78	0.10	
3/28/2023	14:08:14	20.78	0.09	
3/28/2023	14:09:14	20.78	0.09	
3/28/2023	14:10:14	20.78	0.09	
3/28/2023	14:11:14	20.78	0.10	
3/28/2023	14:12:14	20.78	0.09	
3/28/2023	14:13:14	20.78	0.10	
3/28/2023	14:14:14	20.78	0.09	
3/28/2023	14:15:14	20.78	0.09	
3/28/2023	14:16:14	20.79	0.09	
3/28/2023	14:17:14	20.78	0.10	
3/28/2023	14:18:14	20.78	0.08	
3/28/2023	14:19:14	20.79	0.08	
3/28/2023	14:20:14	20.79	0.08	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 2 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/28/2023	14:21:14	20.79	0.08	
3/28/2023	14:22:14	20.79	0.07	
3/28/2023	14:23:14	20.79	0.07	
3/28/2023	14:24:14	20.79	0.07	
3/28/2023	14:25:14	20.79	0.07	
3/28/2023	14:26:14	20.79	0.06	
3/28/2023	14:27:14	20.79	0.06	
3/28/2023	14:28:14	20.79	0.06	
3/28/2023	14:29:14	20.79	0.06	
3/28/2023	14:30:14	20.79	0.06	
3/28/2023	14:31:14	20.79	0.06	
3/28/2023	14:32:14	20.79	0.05	
3/28/2023	14:33:14	20.79	0.06	
3/28/2023	14:34:14	20.79	0.05	
3/28/2023	14:35:14	20.79	0.05	
3/28/2023	14:36:14	20.79	0.05	
3/28/2023	14:37:14	20.79	0.06	
3/28/2023	14:38:14	20.79	0.06	
3/28/2023	14:39:14	20.79	0.05	
3/28/2023	14:40:14	20.79	0.05	**End Run 2 Mn and CM40 Steel**
		20.81	**0.08**	**Average**
3/28/2023	14:41:14	16.29	0.03	
3/28/2023	14:42:14	0.04	-0.01	**O2/CO2 System Zero**
3/28/2023	14:43:14	3.65	4.30	
3/28/2023	14:44:14	9.85	9.88	**O2/CO2 System Upscale**
3/28/2023	14:45:14	9.87	5.15	

Bison Engineering, Inc.
Gaseous Testing Summary

Client:	**Eagle Foundry Company**	Source:	**Main Foundry BH Outlet**
Facility:	**Eagle Foundry**	Test Date:	**3/29/2023 - Day 3**
Location:	**Eagle Creek, OR**		

Environmental Conditions / Test Notes: See isokinetic field data sheets.
Testing Personnel: JMK

Run	**White Iron Run 3**	**Steel Alloy Run 3**
Date	3/29/2023	3/29/2023
Run Start Time	5:15	10:35
Run End Time	9:15	14:45
Duration, min.	240	250
CO_2, %vd	0.10	0.08
O_2, %vd	20.59	20.98

Note: Negative concentrations are reported as zero.

Bison Engineering, Inc.
Method 3A Oxygen
Calibration Error, System Bias and System Drift

Client:	**Eagle Foundry Company**	Source:	**Main Foundry BH Outlet**	Instrument Make:	**Servomex**
Facility:	**Eagle Foundry**	Date:	**3/29/2023 - Day 3**	Instrument Model:	**1440**
Location:	**Eagle Creek, OR**			Instrument Serial #:	**01440C1STD/2919**

			Initial Values			Final Values								
		Analyzer Cal. Response	System Cal Response	Pre test System Cal. Bias % of span	pass/fail	System Cal Response	Post test System Cal. Bias % of span	pass/fail	System Drift % of span	pass/fail	Analyzer Span	Raw Avg Gas Conc	Corrected Gas Conc	Instrument Cal. Reference Gas
White Iron	zero	0.09	0.07	-0.09	pass	0.04	-0.23	pass	0.14	pass				
Run 3	upscale	9.87	9.89	0.09	pass	9.84	-0.14	pass	0.23	pass	22.03	20.46	20.59	9.898
Mn and CM40 Steel	zero	0.09	0.04	-0.23	pass	0.04	-0.23	pass	0.00	pass				
Run 3	upscale	9.87	9.84	-0.14	pass	9.88	0.05	pass	0.18	pass	22.03	20.85	20.98	9.898
				< 5%*			**< 5%***		**< 3%***					

Analyzer Calibration Error	Zero	Mid	High
Calibration Gas Standards	0	9.898	22.03
Cylinder Number		ALM026532	EB0155552
Calibration Gas Analyzer Response	0.09	9.87	22.08
Analyzer Calibration Error	0.41	-0.13	0.23
Analyzer Calibration Error < 2%*	pass	pass	pass

System Response Time	
30	seconds

System Leak Check		
	Completed	**Pass/Fail**
Pre-test	Yes	Pass
Post-test	Yes	Pass

Note: All units are in %
*Or < 0.5 % absolute difference

Bison Engineering, Inc.
Method 3A CO_2
Calibration Error, System Bias and System Drift

Client:	**Eagle Foundry Company**	Source:	**Main Foundry BH Outlet**	Instrument Make:	**Servomex**
Facility:	**Eagle Foundry**	Date:	**3/29/2023 - Day 3**	Instrument Model:	**1440**
Location:	**Eagle Creek, OR**			Instrument Serial #:	**01440C102-2927**

			Initial Values			Final Values								
		Analyzer Cal. Response	System Cal Response	Pre test System Cal. Bias % of span	pass/fail	System Cal Response	Post test System Cal. Bias % of span	pass/fail	System Drift % of span	pass/fail	Analyzer Span	Raw Avg Gas Conc	Corrected Gas Conc	Instrument Cal. Reference Gas
White Iron	zero	0.02	0.06	0.19	pass	-0.01	-0.14	pass	0.32	pass				
Run 3	upscale	9.83	9.86	0.14	pass	9.84	0.05	pass	0.09	pass	21.61	0.12	0.10	9.85
Mn and CM40 Steel	zero	0.02	-0.01	-0.14	pass	0.03	0.05	pass	0.19	pass				
Run 3	upscale	9.83	9.84	0.05	pass	9.82	-0.05	pass	0.09	pass	21.61	0.09	0.08	9.85
				< 5%*			**< 5%***		**< 3%***					

Analyzer Calibration Error	Zero	Mid	High
Calibration Gas Standards	0	9.85	21.61
Cylinder Number		ALM026532	EB0155552
Calibration Gas Analyzer Response	0.02	9.83	21.59
Analyzer Calibration Error	0.09	-0.09	-0.09
Analyzer Calibration Error < 2%*	pass	pass	pass

System Response Time	
30	seconds

System Leak Check	Completed	Pass/Fail
Pre-test	Yes	Pass
Post-test	Yes	Pass

Note: All units are in %
*Or < 0.5 % absolute difference

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 3 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/29/2023	3:56:27	21.40	0.08	
3/29/2023	3:57:27	15.52	0.06	
3/29/2023	3:58:27	10.57	0.06	
3/29/2023	3:59:27	0.09	0.02	**O2/CO2 Analyzer Zero**
3/29/2023	4:00:27	10.12	12.02	
3/29/2023	4:01:27	22.08	21.59	**O2/CO2 Analyzer Span**
3/29/2023	4:02:27	13.74	11.66	
3/29/2023	4:03:27	9.87	9.83	**O2/CO2 Analyzer Mid**
3/29/2023	4:04:27	4.90	3.78	
3/29/2023	4:05:27	0.07	0.06	**O2/CO2 System Zero**
3/29/2023	4:06:27	3.98	5.27	
3/29/2023	4:07:27	9.89	9.86	**O2/CO2 System Upscale**
3/29/2023	4:08:27	20.80	0.26	
3/29/2023	4:09:27	20.87	0.26	
				White Iron
3/29/2023	5:15:27	20.49	0.19	**Start Run 3**
3/29/2023	5:16:27	20.49	0.20	
3/29/2023	5:17:27	20.49	0.20	
3/29/2023	5:18:27	20.48	0.20	
3/29/2023	5:19:27	20.48	0.20	
3/29/2023	5:20:27	20.48	0.20	
3/29/2023	5:21:27	20.48	0.19	
3/29/2023	5:22:27	20.48	0.20	
3/29/2023	5:23:27	20.48	0.19	
3/29/2023	5:24:27	20.47	0.20	
3/29/2023	5:25:27	20.47	0.19	
3/29/2023	5:26:27	20.48	0.19	
3/29/2023	5:27:27	20.48	0.19	
3/29/2023	5:28:27	20.48	0.18	
3/29/2023	5:29:27	20.48	0.19	
3/29/2023	5:30:27	20.48	0.18	
3/29/2023	5:31:27	20.48	0.18	
3/29/2023	5:32:27	20.48	0.17	
3/29/2023	5:33:27	20.47	0.17	
3/29/2023	5:34:27	20.47	0.17	
3/29/2023	5:35:27	20.47	0.16	
3/29/2023	5:36:27	20.47	0.15	
3/29/2023	5:37:27	20.47	0.15	
3/29/2023	5:38:27	20.47	0.14	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 3 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/29/2023	5:39:27	20.47	0.14	
3/29/2023	5:40:27	20.47	0.14	
3/29/2023	5:41:27	20.47	0.14	
3/29/2023	5:42:27	20.47	0.14	
3/29/2023	5:43:27	20.47	0.13	
3/29/2023	5:44:27	20.47	0.14	
3/29/2023	5:45:27	20.47	0.14	
3/29/2023	5:46:27	20.47	0.14	
3/29/2023	5:47:27	20.47	0.13	
3/29/2023	5:48:27	20.47	0.14	
3/29/2023	5:49:27	20.47	0.13	
3/29/2023	5:50:27	20.46	0.14	
3/29/2023	5:51:27	20.46	0.13	
3/29/2023	5:52:27	20.46	0.13	
3/29/2023	5:53:27	20.46	0.13	
3/29/2023	5:54:27	20.47	0.13	
3/29/2023	5:55:27	20.47	0.13	
3/29/2023	5:56:27	20.46	0.14	
3/29/2023	5:57:27	20.46	0.13	
3/29/2023	5:58:27	20.46	0.14	
3/29/2023	5:59:27	20.46	0.14	
3/29/2023	6:00:27	20.46	0.13	
3/29/2023	6:01:27	20.47	0.14	
3/29/2023	6:02:27	20.46	0.13	
3/29/2023	6:03:27	20.46	0.13	
3/29/2023	6:04:27	20.47	0.13	
3/29/2023	6:05:27	20.47	0.12	
3/29/2023	6:06:27	20.47	0.12	
3/29/2023	6:07:27	20.47	0.12	
3/29/2023	6:08:27	20.46	0.12	
3/29/2023	6:09:27	20.47	0.12	
3/29/2023	6:10:27	20.46	0.12	
3/29/2023	6:11:27	20.47	0.12	
3/29/2023	6:12:27	20.47	0.12	
3/29/2023	6:13:27	20.47	0.12	
3/29/2023	6:14:27	20.47	0.12	
3/29/2023	6:15:27	20.47	0.11	
3/29/2023	6:16:27	20.47	0.12	
3/29/2023	6:17:27	20.46	0.12	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 3 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/29/2023	6:18:27	20.46	0.12	
3/29/2023	6:19:27	20.46	0.12	
3/29/2023	6:20:27	20.46	0.12	
3/29/2023	6:21:27	20.46	0.12	
3/29/2023	6:22:27	20.46	0.12	
3/29/2023	6:23:27	20.46	0.12	
3/29/2023	6:24:27	20.46	0.12	
3/29/2023	6:25:27	20.46	0.12	
3/29/2023	6:26:27	20.46	0.12	
3/29/2023	6:27:27	20.46	0.11	
3/29/2023	6:28:27	20.46	0.12	
3/29/2023	6:29:27	20.46	0.12	
3/29/2023	6:30:27	20.46	0.13	
3/29/2023	6:31:27	20.46	0.13	
3/29/2023	6:32:27	20.46	0.13	
3/29/2023	6:33:27	20.46	0.14	
3/29/2023	6:34:27	20.45	0.13	
3/29/2023	6:35:27	20.45	0.13	
3/29/2023	6:36:27	20.45	0.13	
3/29/2023	6:37:27	20.45	0.13	
3/29/2023	6:38:27	20.45	0.13	
3/29/2023	6:39:27	20.45	0.13	
3/29/2023	6:40:27	20.45	0.13	
3/29/2023	6:41:27	20.45	0.14	
3/29/2023	6:42:27	20.45	0.13	
3/29/2023	6:43:27	20.45	0.13	
3/29/2023	6:44:27	20.45	0.13	
3/29/2023	6:45:27	20.45	0.13	
3/29/2023	6:46:27	20.45	0.12	
3/29/2023	6:47:27	20.45	0.12	
3/29/2023	6:48:27	20.45	0.11	
3/29/2023	6:49:27	20.46	0.11	
3/29/2023	6:50:27	20.46	0.11	
3/29/2023	6:51:27	20.46	0.11	
3/29/2023	6:52:27	20.46	0.11	
3/29/2023	6:53:27	20.46	0.11	
3/29/2023	6:54:27	20.46	0.11	
3/29/2023	6:55:27	20.45	0.11	
3/29/2023	6:56:27	20.45	0.12	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 3 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/29/2023	6:57:27	20.45	0.11	
3/29/2023	6:58:27	20.45	0.11	
3/29/2023	6:59:27	20.45	0.11	
3/29/2023	7:00:27	20.45	0.12	
3/29/2023	7:01:27	20.45	0.12	
3/29/2023	7:02:27	20.45	0.12	
3/29/2023	7:03:27	20.45	0.12	
3/29/2023	7:04:27	20.45	0.13	
3/29/2023	7:05:27	20.45	0.13	
3/29/2023	7:06:27	20.44	0.14	
3/29/2023	7:07:27	20.45	0.13	
3/29/2023	7:08:27	20.45	0.13	
3/29/2023	7:09:27	20.45	0.12	
3/29/2023	7:10:27	20.45	0.13	
3/29/2023	7:11:27	20.45	0.13	
3/29/2023	7:12:27	20.45	0.13	
3/29/2023	7:13:27	20.45	0.12	
3/29/2023	7:14:27	20.45	0.13	
3/29/2023	7:15:27	20.45	0.13	
3/29/2023	7:16:27	20.45	0.13	
3/29/2023	7:17:27	20.45	0.12	
3/29/2023	7:18:27	20.45	0.12	
3/29/2023	7:19:27	20.45	0.12	
3/29/2023	7:20:27	20.45	0.11	
3/29/2023	7:21:27	20.45	0.11	
3/29/2023	7:22:27	20.45	0.10	
3/29/2023	7:23:27	20.45	0.11	
3/29/2023	7:24:27	20.45	0.10	
3/29/2023	7:25:27	20.45	0.10	
3/29/2023	7:26:27	20.45	0.10	
3/29/2023	7:27:27	20.45	0.11	
3/29/2023	7:28:27	20.45	0.11	
3/29/2023	7:29:27	20.44	0.11	
3/29/2023	7:30:27	20.44	0.11	
3/29/2023	7:31:27	20.45	0.11	
3/29/2023	7:32:27	20.45	0.11	
3/29/2023	7:33:27	20.45	0.11	
3/29/2023	7:34:27	20.45	0.11	
3/29/2023	7:35:27	20.45	0.11	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 3 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/29/2023	7:36:27	20.45	0.11	
3/29/2023	7:37:27	20.45	0.12	
3/29/2023	7:38:27	20.45	0.12	
3/29/2023	7:39:27	20.45	0.13	
3/29/2023	7:40:27	20.45	0.13	
3/29/2023	7:41:27	20.45	0.13	
3/29/2023	7:42:27	20.45	0.13	
3/29/2023	7:43:27	20.44	0.13	
3/29/2023	7:44:27	20.45	0.12	
3/29/2023	7:45:27	20.45	0.11	
3/29/2023	7:46:27	20.45	0.11	
3/29/2023	7:47:27	20.45	0.12	
3/29/2023	7:48:27	20.45	0.12	
3/29/2023	7:49:27	20.45	0.11	
3/29/2023	7:50:27	20.45	0.12	
3/29/2023	7:51:27	20.44	0.12	
3/29/2023	7:52:27	20.45	0.12	
3/29/2023	7:53:27	20.45	0.11	
3/29/2023	7:54:27	20.45	0.11	
3/29/2023	7:55:27	20.45	0.10	
3/29/2023	7:56:27	20.45	0.10	
3/29/2023	7:57:27	20.45	0.10	
3/29/2023	7:58:27	20.45	0.11	
3/29/2023	7:59:27	20.45	0.11	
3/29/2023	8:00:27	20.45	0.12	
3/29/2023	8:01:27	20.45	0.11	
3/29/2023	8:02:27	20.45	0.11	
3/29/2023	8:03:27	20.45	0.11	
3/29/2023	8:04:27	20.45	0.11	
3/29/2023	8:05:27	20.45	0.11	
3/29/2023	8:06:27	20.45	0.11	
3/29/2023	8:07:27	20.45	0.10	
3/29/2023	8:08:27	20.46	0.11	
3/29/2023	8:09:27	20.45	0.10	
3/29/2023	8:10:27	20.45	0.11	
3/29/2023	8:11:27	20.45	0.10	
3/29/2023	8:12:27	20.46	0.11	
3/29/2023	8:13:27	20.45	0.10	
3/29/2023	8:14:27	20.45	0.11	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 3 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/29/2023	8:15:27	20.45	0.10	
3/29/2023	8:16:27	20.45	0.10	
3/29/2023	8:17:27	20.45	0.10	
3/29/2023	8:18:27	20.45	0.10	
3/29/2023	8:19:27	20.45	0.10	
3/29/2023	8:20:27	20.45	0.10	
3/29/2023	8:21:27	20.45	0.10	
3/29/2023	8:22:27	20.45	0.10	
3/29/2023	8:23:27	20.45	0.10	
3/29/2023	8:24:27	20.45	0.10	
3/29/2023	8:25:27	20.45	0.10	
3/29/2023	8:26:27	20.45	0.10	
3/29/2023	8:27:27	20.45	0.09	
3/29/2023	8:28:27	20.45	0.09	
3/29/2023	8:29:27	20.45	0.09	
3/29/2023	8:30:27	20.45	0.09	
3/29/2023	8:31:27	20.45	0.09	
3/29/2023	8:32:27	20.45	0.09	
3/29/2023	8:33:27	20.44	0.08	
3/29/2023	8:34:27	20.45	0.09	
3/29/2023	8:35:27	20.45	0.08	
3/29/2023	8:36:27	20.45	0.08	
3/29/2023	8:37:27	20.45	0.08	
3/29/2023	8:38:27	20.45	0.08	
3/29/2023	8:39:27	20.45	0.08	
3/29/2023	8:40:27	20.45	0.09	
3/29/2023	8:41:27	20.45	0.09	
3/29/2023	8:42:27	20.45	0.09	
3/29/2023	8:43:27	20.45	0.09	
3/29/2023	8:44:27	20.45	0.10	
3/29/2023	8:45:27	20.45	0.09	
3/29/2023	8:46:27	20.45	0.10	
3/29/2023	8:47:27	20.45	0.09	
3/29/2023	8:48:27	20.45	0.09	
3/29/2023	8:49:27	20.45	0.09	
3/29/2023	8:50:27	20.45	0.09	
3/29/2023	8:51:27	20.45	0.09	
3/29/2023	8:52:27	20.45	0.09	
3/29/2023	8:53:27	20.45	0.08	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 3 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/29/2023	8:54:27	20.45	0.09	
3/29/2023	8:55:27	20.46	0.08	
3/29/2023	8:56:27	20.45	0.09	
3/29/2023	8:57:27	20.45	0.08	
3/29/2023	8:58:27	20.45	0.08	
3/29/2023	8:59:27	20.46	0.07	
3/29/2023	9:00:27	20.46	0.08	
3/29/2023	9:01:27	20.46	0.07	
3/29/2023	9:02:27	20.46	0.08	
3/29/2023	9:03:27	20.46	0.07	
3/29/2023	9:04:27	20.46	0.08	
3/29/2023	9:05:27	20.46	0.07	
3/29/2023	9:06:27	20.45	0.08	
3/29/2023	9:07:27	20.46	0.07	
3/29/2023	9:08:27	20.45	0.07	
3/29/2023	9:09:27	20.46	0.07	
3/29/2023	9:10:27	20.45	0.07	
3/29/2023	9:11:27	20.45	0.07	
3/29/2023	9:12:27	20.45	0.07	
3/29/2023	9:13:27	20.45	0.07	
3/29/2023	9:14:27	20.45	0.08	
3/29/2023	9:15:27	20.45	0.08	**End Run 3 White Iron**
		20.46	**0.12**	**Average**
3/29/2023	9:16:27	3.44	0.00	
3/29/2023	9:17:27	0.04	-0.01	**O2/CO2 System Zero**
3/29/2023	9:18:27	5.67	7.26	
3/29/2023	9:19:27	9.84	9.84	**O2/CO2 System Upscale**
3/29/2023	9:20:27	9.89	4.89	
3/29/2023	9:21:27	11.59	0.14	
3/29/2023	9:22:27	17.53	0.14	
3/29/2023	10:34:27	20.88	0.14	
				Mn and CM40 Steel
3/29/2023	10:35:27	20.88	0.13	**Start Run 3**
3/29/2023	10:36:27	20.88	0.13	
3/29/2023	10:37:27	20.88	0.13	
3/29/2023	10:38:27	20.88	0.13	
3/29/2023	10:39:27	20.89	0.12	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 3 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/29/2023	10:40:27	20.88	0.12	
3/29/2023	10:41:27	20.88	0.12	
3/29/2023	10:42:27	20.88	0.12	
3/29/2023	10:43:27	20.88	0.12	
3/29/2023	10:44:27	20.88	0.12	
3/29/2023	10:45:27	20.88	0.11	
3/29/2023	10:46:27	20.88	0.12	
3/29/2023	10:47:27	20.88	0.11	
3/29/2023	10:48:27	20.88	0.11	
3/29/2023	10:49:27	20.88	0.12	
3/29/2023	10:50:27	20.88	0.11	
3/29/2023	10:51:27	20.88	0.11	
3/29/2023	10:52:27	20.88	0.11	
3/29/2023	10:53:27	20.88	0.12	
3/29/2023	10:54:27	20.88	0.11	
3/29/2023	10:55:27	20.88	0.12	
3/29/2023	10:56:27	20.88	0.13	
3/29/2023	10:57:27	20.88	0.13	
3/29/2023	10:58:27	20.87	0.12	
3/29/2023	10:59:27	20.87	0.12	
3/29/2023	11:00:27	20.87	0.12	
3/29/2023	11:01:27	20.87	0.12	
3/29/2023	11:02:27	20.87	0.12	
3/29/2023	11:03:27	20.87	0.12	
3/29/2023	11:04:27	20.87	0.11	
3/29/2023	11:05:27	20.87	0.11	
3/29/2023	11:06:27	20.87	0.11	
3/29/2023	11:07:27	20.87	0.11	
3/29/2023	11:08:27	20.87	0.11	
3/29/2023	11:09:27	20.87	0.11	
3/29/2023	11:10:27	20.86	0.10	
3/29/2023	11:11:27	20.86	0.10	
3/29/2023	11:12:27	20.87	0.09	
3/29/2023	11:13:27	20.86	0.09	
3/29/2023	11:14:27	20.86	0.09	
3/29/2023	11:15:27	20.87	0.09	
3/29/2023	11:16:27	20.86	0.09	
3/29/2023	11:17:27	20.86	0.09	
3/29/2023	11:18:27	20.86	0.08	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 3 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/29/2023	11:19:27	20.87	0.08	
3/29/2023	11:20:27	20.87	0.08	
3/29/2023	11:21:27	20.87	0.08	
3/29/2023	11:22:27	20.87	0.08	
3/29/2023	11:23:27	20.86	0.08	
3/29/2023	11:24:27	20.86	0.08	
3/29/2023	11:25:27	20.86	0.08	
3/29/2023	11:26:27	20.87	0.08	
3/29/2023	11:27:27	20.86	0.08	
3/29/2023	11:28:27	20.87	0.08	
3/29/2023	11:29:27	20.87	0.08	
3/29/2023	11:30:27	20.87	0.08	
3/29/2023	11:31:27	20.87	0.08	
3/29/2023	11:32:27	20.87	0.07	
3/29/2023	11:33:27	20.87	0.07	
3/29/2023	11:34:27	20.87	0.07	
3/29/2023	11:35:27	20.87	0.07	
3/29/2023	11:36:27	20.87	0.07	
3/29/2023	11:37:27	20.86	0.07	
3/29/2023	11:38:27	20.86	0.07	
3/29/2023	11:39:27	20.86	0.07	
3/29/2023	11:40:27	20.86	0.07	
3/29/2023	11:41:27	20.86	0.07	
3/29/2023	11:42:27	20.86	0.06	
3/29/2023	11:43:27	20.86	0.06	
3/29/2023	11:44:27	20.86	0.06	
3/29/2023	11:45:27	20.86	0.06	
3/29/2023	11:46:27	20.86	0.06	
3/29/2023	11:47:27	20.86	0.06	
3/29/2023	11:48:27	20.86	0.06	
3/29/2023	11:49:27	20.86	0.07	
3/29/2023	11:50:27	20.86	0.06	
3/29/2023	11:51:27	20.86	0.07	
3/29/2023	11:52:27	20.86	0.07	
3/29/2023	11:53:27	20.86	0.07	
3/29/2023	11:54:27	20.86	0.06	
3/29/2023	11:55:27	20.86	0.07	
3/29/2023	11:56:27	20.86	0.07	
3/29/2023	11:57:27	20.86	0.08	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 3 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/29/2023	11:58:27	20.86	0.07	
3/29/2023	11:59:27	20.86	0.08	
3/29/2023	12:00:27	20.86	0.08	
3/29/2023	12:01:27	20.86	0.08	
3/29/2023	12:02:27	20.86	0.08	
3/29/2023	12:03:27	20.86	0.07	
3/29/2023	12:04:27	20.86	0.07	
3/29/2023	12:05:27	20.86	0.07	
3/29/2023	12:06:27	20.86	0.06	
3/29/2023	12:07:27	20.86	0.07	
3/29/2023	12:08:27	20.86	0.07	
3/29/2023	12:09:27	20.86	0.06	
3/29/2023	12:10:27	20.85	0.07	
3/29/2023	12:11:27	20.85	0.06	
3/29/2023	12:12:27	20.85	0.05	
3/29/2023	12:13:27	20.85	0.05	
3/29/2023	12:14:27	20.85	0.05	
3/29/2023	12:15:27	20.85	0.05	
3/29/2023	12:16:27	20.85	0.04	
3/29/2023	12:17:27	20.85	0.04	
3/29/2023	12:18:27	20.85	0.04	
3/29/2023	12:19:27	20.85	0.04	
3/29/2023	12:20:27	20.85	0.04	
3/29/2023	12:21:27	20.85	0.04	
3/29/2023	12:22:27	20.86	0.04	
3/29/2023	12:23:27	20.85	0.04	
3/29/2023	12:24:27	20.85	0.05	
3/29/2023	12:25:27	20.85	0.05	
3/29/2023	12:26:27	20.85	0.05	
3/29/2023	12:27:27	20.85	0.04	
3/29/2023	12:28:27	20.85	0.04	
3/29/2023	12:29:27	20.85	0.04	
3/29/2023	12:30:27	20.85	0.05	
3/29/2023	12:31:27	20.85	0.05	
3/29/2023	12:32:27	20.85	0.05	
3/29/2023	12:33:27	20.85	0.05	
3/29/2023	12:34:27	20.85	0.05	
3/29/2023	12:35:27	20.85	0.05	
3/29/2023	12:36:27	20.85	0.06	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 3 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/29/2023	12:37:27	20.85	0.06	
3/29/2023	12:38:27	20.85	0.07	
3/29/2023	12:39:27	20.85	0.06	
3/29/2023	12:40:27	20.84	0.06	
3/29/2023	12:41:27	20.84	0.06	
3/29/2023	12:42:27	20.84	0.06	
3/29/2023	12:43:27	20.84	0.05	
3/29/2023	12:44:27	20.84	0.05	
3/29/2023	12:45:27	20.84	0.04	
3/29/2023	12:46:27	20.84	0.04	
3/29/2023	12:47:27	20.84	0.03	
3/29/2023	12:48:27	20.84	0.04	
3/29/2023	12:49:27	20.84	0.04	
3/29/2023	12:50:27	20.84	0.03	
3/29/2023	12:51:27	20.84	0.03	
3/29/2023	12:52:27	20.84	0.03	
3/29/2023	12:53:27	20.84	0.04	
3/29/2023	12:54:27	20.84	0.03	
3/29/2023	12:55:27	20.84	0.04	
3/29/2023	12:56:27	20.84	0.04	
3/29/2023	12:57:27	20.83	0.05	
3/29/2023	12:58:27	20.83	0.05	
3/29/2023	12:59:27	20.83	0.06	
3/29/2023	13:00:27	20.83	0.06	
3/29/2023	13:01:27	20.83	0.07	
3/29/2023	13:02:27	20.83	0.07	
3/29/2023	13:03:27	20.83	0.08	
3/29/2023	13:04:27	20.83	0.07	
3/29/2023	13:05:27	20.83	0.08	
3/29/2023	13:06:27	20.83	0.08	
3/29/2023	13:07:27	20.82	0.08	
3/29/2023	13:08:27	20.83	0.08	
3/29/2023	13:09:27	20.83	0.08	
3/29/2023	13:10:27	20.82	0.08	
3/29/2023	13:11:27	20.82	0.09	
3/29/2023	13:12:27	20.82	0.08	
3/29/2023	13:13:27	20.82	0.09	
3/29/2023	13:14:27	20.82	0.09	
3/29/2023	13:15:27	20.82	0.09	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 3 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/29/2023	13:16:27	20.82	0.08	
3/29/2023	13:17:27	20.82	0.09	
3/29/2023	13:18:27	20.82	0.08	
3/29/2023	13:19:27	20.82	0.09	
3/29/2023	13:20:27	20.82	0.09	
3/29/2023	13:21:27	20.82	0.09	
3/29/2023	13:22:27	20.82	0.09	
3/29/2023	13:23:27	20.82	0.09	
3/29/2023	13:24:27	20.83	0.09	
3/29/2023	13:25:27	20.83	0.10	
3/29/2023	13:26:27	20.83	0.10	
3/29/2023	13:27:27	20.83	0.10	
3/29/2023	13:28:27	20.82	0.11	
3/29/2023	13:29:27	20.82	0.10	
3/29/2023	13:30:27	20.83	0.11	
3/29/2023	13:31:27	20.83	0.11	
3/29/2023	13:32:27	20.83	0.11	
3/29/2023	13:33:27	20.83	0.12	
3/29/2023	13:34:27	20.83	0.12	
3/29/2023	13:35:27	20.83	0.12	
3/29/2023	13:36:27	20.83	0.12	
3/29/2023	13:37:27	20.83	0.12	
3/29/2023	13:38:27	20.84	0.12	
3/29/2023	13:39:27	20.84	0.12	
3/29/2023	13:40:27	20.84	0.13	
3/29/2023	13:41:27	20.84	0.13	
3/29/2023	13:42:27	20.84	0.13	
3/29/2023	13:43:27	20.84	0.14	
3/29/2023	13:44:27	20.84	0.14	
3/29/2023	13:45:27	20.84	0.14	
3/29/2023	13:46:27	20.84	0.13	
3/29/2023	13:47:27	20.84	0.13	
3/29/2023	13:48:27	20.85	0.12	
3/29/2023	13:49:27	20.85	0.13	
3/29/2023	13:50:27	20.85	0.13	
3/29/2023	13:51:27	20.85	0.13	
3/29/2023	13:52:27	20.85	0.13	
3/29/2023	13:53:27	20.85	0.13	
3/29/2023	13:54:27	20.85	0.13	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 3 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/29/2023	13:55:27	20.85	0.13	
3/29/2023	13:56:27	20.85	0.13	
3/29/2023	13:57:27	20.85	0.13	
3/29/2023	13:58:27	20.85	0.13	
3/29/2023	13:59:27	20.85	0.14	
3/29/2023	14:00:27	20.85	0.14	
3/29/2023	14:01:27	20.85	0.14	
3/29/2023	14:02:27	20.85	0.14	
3/29/2023	14:03:27	20.85	0.14	
3/29/2023	14:04:27	20.85	0.14	
3/29/2023	14:05:27	20.86	0.14	
3/29/2023	14:06:27	20.86	0.15	
3/29/2023	14:07:27	20.85	0.14	
3/29/2023	14:08:27	20.85	0.15	
3/29/2023	14:09:27	20.86	0.15	
3/29/2023	14:10:27	20.86	0.15	
3/29/2023	14:11:27	20.86	0.15	
3/29/2023	14:12:27	20.86	0.15	
3/29/2023	14:13:27	20.86	0.15	
3/29/2023	14:14:27	20.86	0.15	
3/29/2023	14:15:27	20.86	0.15	
3/29/2023	14:16:27	20.86	0.15	
3/29/2023	14:17:27	20.86	0.14	
3/29/2023	14:18:27	20.86	0.14	
3/29/2023	14:19:27	20.86	0.14	
3/29/2023	14:20:27	20.86	0.14	
3/29/2023	14:21:27	20.86	0.14	
3/29/2023	14:22:27	20.87	0.14	
3/29/2023	14:23:27	20.87	0.13	
3/29/2023	14:24:27	20.86	0.13	
3/29/2023	14:25:27	20.86	0.13	
3/29/2023	14:26:27	20.86	0.12	
3/29/2023	14:27:27	20.87	0.12	
3/29/2023	14:28:27	20.87	0.12	
3/29/2023	14:29:27	20.87	0.12	
3/29/2023	14:30:27	20.87	0.12	
3/29/2023	14:31:27	20.87	0.12	
3/29/2023	14:32:27	20.87	0.11	
3/29/2023	14:33:27	20.87	0.11	

Eagle Foundry Company
Main Foundry Baghouse Outlet
Day 3 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/29/2023	14:34:27	20.87	0.11	
3/29/2023	14:35:27	20.87	0.12	
3/29/2023	14:36:27	20.87	0.11	
3/29/2023	14:37:27	20.87	0.12	
3/29/2023	14:38:27	20.87	0.11	
3/29/2023	14:39:27	20.87	0.12	
3/29/2023	14:40:27	20.87	0.11	
3/29/2023	14:41:27	20.87	0.12	
3/29/2023	14:42:27	20.87	0.12	
3/29/2023	14:43:27	20.87	0.12	
3/29/2023	14:44:27	20.87	0.12	
3/29/2023	14:45:27	20.87	0.12	**End Run 3 Mn and CM40 Steel**
		20.85	**0.09**	**Average**
3/29/2023	14:46:27	12.16	0.07	
3/29/2023	14:47:27	0.04	0.03	**O2/CO2 System Zero**
3/29/2023	14:48:27	0.06	0.98	
3/29/2023	14:49:27	9.10	10.64	
3/29/2023	14:50:27	9.88	9.82	**O2/CO2 System Upscale**
3/29/2023	14:51:27	9.88	9.99	

Bison Engineering, Inc.
Gaseous Testing Summary

Client:	**Eagle Foundry Company**	Source:	**Cooling Bunker BH Outlet**
Facility:	**Eagle Foundry**	Test Date:	**3/27/2023 - Day 1**
Location:	**Eagle Creek, OR**		

Environmental Conditions / Test Notes: See isokinetic field data sheets.
Testing Personnel: JCR

Run	**White Iron Run 1**	**Steel Alloy Run 1**
Date	3/27/2023	3/27/2023
Run Start Time	6:40	13:00
Run End Time	10:40	17:10
Duration, min.	240	250
CO_2, %vd	0.07	0.09
O_2, %vd	20.79	20.64

Note: Negative concentrations are reported as zero.

Bison Engineering, Inc.
Method 3A Oxygen
Calibration Error, System Bias and System Drift

Client:	**Eagle Foundry Company**	Source:	**Cooling Bunker BH Outlet**	Instrument Make:	**Servomex**
Facility:	**Eagle Foundry**	Date:	**3/27/2023 - Day 1**	Instrument Model:	**1440**
Location:	**Eagle Creek, OR**			Instrument Serial #:	**01440D1-5041**

			Initial Values			Final Values								
		Analyzer Cal. Response	System Cal Response	Pre test System Cal. Bias % of span	pass/fail	System Cal Response	Post test System Cal. Bias % of span	pass/fail	System Drift % of span	pass/fail	Analyzer Span	Raw Avg Gas Conc	Corrected Gas Conc	Instrument Cal. Reference Gas
White Iron	zero	0.02	0.03	0.05	pass	0.03	0.05	pass	0.00	pass				
Run 1	upscale	10.10	10.07	-0.14	pass	10.11	0.05	pass	0.18	pass	22.01	20.72	20.79	10.11
Mn and CM40 Steel	zero	0.02	0.03	0.05	pass	0.03	0.05	pass	0.00	pass				
Run 1	upscale	10.10	10.11	0.05	pass	10.09	-0.05	pass	0.09	pass	22.01	20.59	20.64	10.11
				< 5%*			**< 5%***		**< 3%***					

Analyzer Calibration Error	Zero	Mid	High
Calibration Gas Standards	0	10.11	22.01
Cylinder Number		ALM054560	EB0157290
Calibration Gas Analyzer Response	0.02	10.1	22.04
Analyzer Calibration Error	0.09	-0.05	0.14
Analyzer Calibration Error < 2%*	pass	pass	pass

System Response Time	
28	seconds

System Leak Check	Completed	Pass/Fail
Pre-test	Yes	Pass
Post-test	Yes	Pass

Note: All units are in %
*Or < 0.5 % absolute difference

Bison Engineering, Inc.
Method 3A CO_2
Calibration Error, System Bias and System Drift

Client:	**Eagle Foundry Company**	Source:	**Cooling Bunker BH Outlet**	Instrument Make:	**Servomex**
Facility:	**Eagle Foundry**	Date:	**3/27/2023 - Day 1**	Instrument Model:	**1440**
Location:	**Eagle Creek, OR**			Instrument Serial #:	**01440D1-5041**

			Initial Values			Final Values								
		Analyzer Cal. Response	System Cal Response	Pre test System Cal. Bias % of span	pass/fail	System Cal Response	Post test System Cal. Bias % of span	pass/fail	System Drift % of span	pass/fail	Analyzer Span	Raw Avg Gas Conc	Corrected Gas Conc	Instrument Cal. Reference Gas
White Iron	zero	-0.01	0.06	0.32	pass	0.05	0.28	pass	0.05	pass				
Run 1	upscale	9.91	9.95	0.18	pass	9.92	0.05	pass	0.14	pass	21.66	0.12	0.07	9.924
Mn and CM40 Steel	zero	-0.01	0.05	0.28	pass	0.05	0.28	pass	0.00	pass				
Run 1	upscale	9.91	9.92	0.05	pass	9.94	0.14	pass	0.09	pass	21.66	0.14	0.09	9.924
				< 5%*			**< 5%***		**< 3%***					

Analyzer Calibration Error	Zero	Mid	High
Calibration Gas Standards	0	9.924	21.66
Cylinder Number		ALM054560	EB0157290
Calibration Gas Analyzer Response	-0.01	9.91	21.65
Analyzer Calibration Error	-0.05	-0.06	-0.05
Analyzer Calibration Error < 2%*	pass	pass	pass

System Response Time	
30	seconds

System Leak Check		
	Completed	**Pass/Fail**
Pre-test	Yes	Pass
Post-test	Yes	Pass

Note: All units are in %
*Or < 0.5 % absolute difference

Bison Engineering, Inc.
Stratification Check

Client:	**Eagle Foundry Company**	Source:	**Cooling Bunker BH Outlet**
Facility:	**Eagle Foundry**	Test Date:	**3/27/2023 - Day 1**
Location:	**Eagle Creek, OR**		

Stack Diameter: 55.75 inches
Port Depth: 6.5 inches

3 POINT METHOD					
% of diameter	Pt	Pt location	O2%	Diff (+/- 5%)	Pass/Fail
16.7%	S1	15.81	20.76	0.06%	PASS
50.0%	S2	34.38	20.74	-0.03%	PASS
83.3%	S3	52.94	20.74	-0.03%	PASS
		AVERAGE:	20.75		

Bison Engineering, Inc.
EPA Method 3A (O_2)
Example Calculations

Client:	**Eagle Foundry Company**	Run:	**White Iron Run 1**
Location:	**Eagle Creek, OR**	Start Time:	**6:40**
Source:	**Cooling Bunker BH Outlet**	End Time:	**10:40**
		Date:	**3/27/2023 - Day 1**

EPA Method 3A:

Analyzer Calibration Error (Mid)

1) $ACE = \left(\frac{C_{Dir} - CV}{CS}\right) \times 100 =$ -0.05 %v

where C_{Dir}:	10.10 %
C_V:	10.11 %
CS:	22.01 %

System Bias (Upscale)

2) $SB = \left(\frac{C_S - CDir}{CS}\right) \times 100 =$ -0.14 %v

where C_{Dir}:	10.10 %
C_S:	10.07 %
CS:	22.01 %

Drift Assessment (Upscale)

3) $D = | SB_{Final} - SB_i | =$ 0.18 %v

where SB_{Final}:	0.05 %
SB_i:	-0.14 %

Effluent Gas Concentration

4) $C_{Gas} = (C_{Avg} - C_O) \left(\frac{C_{MA}}{C_M - CO}\right) =$ 20.79 %v

where C_{Avg}:	20.72 %
C_O:	0.03 %
C_{MA}:	10.11 %
C_M:	10.09 %

Bison Engineering, Inc.
EPA Method 3A (CO_2)
Example Calculations

Client:	**Eagle Foundry Company**	Run:	**White Iron Run 1**
Location:	**Eagle Creek, OR**	Start Time:	**6:40**
Source:	**Cooling Bunker BH Outlet**	End Time:	**10:40**
		Date:	**3/27/2023 - Day 1**

EPA Method 3A:

Analyzer Calibration Error (Mid)

1) $ACE = \left(\frac{C_{Dir} - CV}{CS}\right) \times 100 =$ -0.06 %v

where C_{Dir}:	9.91	%
C_V:	9.92	%
CS:	21.66	%

System Bias (Upscale)

2) $SB = \left(\frac{C_S - CDir}{CS}\right) \times 100 =$ 0.18 %v

where C_{Dir}:	9.91	%
C_S:	9.95	%
CS:	21.66	%

Drift Assessment (Upscale)

3) $D = | SB_{Final} - SB_i | =$ 0.14 %v

where SB_{Final}:	0.05	%
SB_i:	0.18	%

Effluent Gas Concentration

4) $C_{Gas} = (C_{Avg} - C_O)\left(\frac{C_{MA}}{C_M - CO}\right) =$ 0.07 %v

where C_{Avg}:	0.12	%
C_O:	0.06	%
C_{MA}:	9.92	%
C_M:	9.94	%

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES	
3/27/2023	3:52:28	0.04	-19.92		
3/27/2023	3:53:28	0.02	-0.01	**O2/CO2 Analyzer Zero**	
3/27/2023	3:54:28	13.83	-8.61		
3/27/2023	3:55:28	25.95	24.75		
3/27/2023	3:56:28	24.23	21.27		
3/27/2023	3:57:28	24.65	21.56		
3/27/2023	3:58:28	21.97	21.65		
3/27/2023	3:59:28	22.04	21.65	**O2/CO2 Analyzer Span**	
3/27/2023	4:00:28	15.79	14.21		
3/27/2023	4:01:28	18.28	18.04		
3/27/2023	4:02:28	23.66	22.05		
3/27/2023	4:03:28	19.98	19.35		
3/27/2023	4:04:28	10.03	9.91		
3/27/2023	4:05:28	10.10	9.91	**O2/CO2 Analyer Mid**	
3/27/2023	4:06:28	10.08	9.91		
3/27/2023	4:29:28	-0.29	0.06		
3/27/2023	4:30:28	0.03	0.06	**O2/CO2 System Zero**	
3/27/2023	4:31:28	3.90	3.57		
3/27/2023	4:32:28	10.94	9.63		
3/27/2023	4:33:28	11.10	9.81		
3/27/2023	4:34:28	10.49	9.83		
3/27/2023	4:35:28	10.07	9.95	**O2/CO2 System Upscale**	
3/27/2023	4:36:28	9.87	9.86		
3/27/2023	4:37:28	18.38	2.70		
3/27/2023	4:38:28	21.11	0.18		
3/27/2023	4:39:28	20.77	0.14		
3/27/2023	6:25:28	20.77	0.13		
3/27/2023	6:26:28	20.78	0.13		
3/27/2023	6:27:28	20.78	0.13	**Cooling Bunker Baghouse Outlet**	
3/27/2023	6:28:28	20.77	0.13	**Stratification Check**	
3/27/2023	6:29:28	20.77	0.13	**Point 1**	
3/27/2023	6:30:28	20.75	0.14		20.76
3/27/2023	6:31:28	20.76	0.13		
3/27/2023	6:32:28	20.75	0.12		
3/27/2023	6:33:28	20.74	0.13	**Point 2**	
3/27/2023	6:34:28	20.74	0.13		20.74
3/27/2023	6:35:28	20.74	0.13		

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	6:36:28	20.74	0.13	
3/27/2023	6:37:28	20.74	0.13	**Point 3**
3/27/2023	6:38:28	20.74	0.13	20.74
3/27/2023	6:39:28	20.73	0.12	
				White Iron
3/27/2023	6:40:28	20.73	0.13	**Start Run 1**
3/27/2023	6:41:28	20.73	0.13	
3/27/2023	6:42:28	20.73	0.12	
3/27/2023	6:43:28	20.73	0.12	
3/27/2023	6:44:28	20.73	0.12	
3/27/2023	6:45:28	20.73	0.11	
3/27/2023	6:46:28	20.73	0.12	
3/27/2023	6:47:28	20.73	0.12	
3/27/2023	6:48:28	20.73	0.12	
3/27/2023	6:49:28	20.72	0.12	
3/27/2023	6:50:28	20.72	0.12	
3/27/2023	6:51:28	20.72	0.12	
3/27/2023	6:52:28	20.72	0.12	
3/27/2023	6:53:28	20.71	0.12	
3/27/2023	6:54:28	20.71	0.12	
3/27/2023	6:55:28	20.71	0.12	
3/27/2023	6:56:28	20.71	0.12	
3/27/2023	6:57:28	20.71	0.12	
3/27/2023	6:58:28	20.71	0.12	
3/27/2023	6:59:28	20.70	0.12	
3/27/2023	7:00:28	20.70	0.13	
3/27/2023	7:01:28	20.70	0.13	
3/27/2023	7:02:28	20.69	0.13	
3/27/2023	7:03:28	20.66	0.13	
3/27/2023	7:04:28	20.65	0.13	
3/27/2023	7:05:28	20.65	0.13	
3/27/2023	7:06:28	20.65	0.12	
3/27/2023	7:07:28	20.67	0.13	
3/27/2023	7:08:28	20.69	0.12	
3/27/2023	7:09:28	20.71	0.12	
3/27/2023	7:10:28	20.71	0.12	
3/27/2023	7:11:28	20.71	0.12	
3/27/2023	7:12:28	20.72	0.12	
3/27/2023	7:13:28	20.72	0.12	

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	7:14:28	20.72	0.11	
3/27/2023	7:15:28	20.72	0.11	
3/27/2023	7:16:28	20.72	0.11	
3/27/2023	7:17:28	20.72	0.11	
3/27/2023	7:18:28	20.72	0.11	
3/27/2023	7:19:28	20.72	0.11	
3/27/2023	7:20:28	20.72	0.11	
3/27/2023	7:21:28	20.72	0.11	
3/27/2023	7:22:28	20.71	0.11	
3/27/2023	7:23:28	20.71	0.11	
3/27/2023	7:24:28	20.71	0.11	
3/27/2023	7:25:28	20.72	0.11	
3/27/2023	7:26:28	20.72	0.11	
3/27/2023	7:27:28	20.73	0.11	
3/27/2023	7:28:28	20.72	0.11	
3/27/2023	7:29:28	20.72	0.12	
3/27/2023	7:30:28	20.71	0.12	
3/27/2023	7:31:28	20.72	0.12	
3/27/2023	7:32:28	20.71	0.12	
3/27/2023	7:33:28	20.76	0.13	
3/27/2023	7:34:28	20.76	0.13	
3/27/2023	7:35:28	20.76	0.13	
3/27/2023	7:36:28	20.76	0.13	
3/27/2023	7:37:28	20.76	0.13	
3/27/2023	7:38:28	20.76	0.13	
3/27/2023	7:39:28	20.76	0.12	
3/27/2023	7:40:28	20.76	0.12	
3/27/2023	7:41:28	20.76	0.12	
3/27/2023	7:42:28	20.76	0.12	
3/27/2023	7:43:28	20.76	0.12	
3/27/2023	7:44:28	20.76	0.12	
3/27/2023	7:45:28	20.76	0.12	
3/27/2023	7:46:28	20.77	0.12	
3/27/2023	7:47:28	20.77	0.12	
3/27/2023	7:48:28	20.79	0.11	
3/27/2023	7:49:28	20.79	0.11	
3/27/2023	7:50:28	20.79	0.11	
3/27/2023	7:51:28	20.80	0.12	
3/27/2023	7:52:28	20.80	0.12	

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	7:53:28	20.80	0.11	
3/27/2023	7:54:28	20.80	0.12	
3/27/2023	7:55:28	20.80	0.12	
3/27/2023	7:56:28	20.80	0.12	
3/27/2023	7:57:28	20.80	0.12	
3/27/2023	7:58:28	20.80	0.12	
3/27/2023	7:59:28	20.80	0.12	
3/27/2023	8:00:28	20.80	0.12	
3/27/2023	8:01:28	20.79	0.12	
3/27/2023	8:02:28	20.79	0.13	
3/27/2023	8:03:28	20.79	0.13	
3/27/2023	8:04:28	20.79	0.13	
3/27/2023	8:05:28	20.79	0.13	
3/27/2023	8:06:28	20.79	0.13	
3/27/2023	8:07:28	20.79	0.13	
3/27/2023	8:08:28	20.78	0.13	
3/27/2023	8:09:28	20.79	0.13	
3/27/2023	8:10:28	20.79	0.13	
3/27/2023	8:11:28	20.78	0.12	
3/27/2023	8:12:28	20.78	0.12	
3/27/2023	8:13:28	20.78	0.12	
3/27/2023	8:14:28	20.78	0.12	
3/27/2023	8:15:28	20.78	0.12	
3/27/2023	8:16:28	20.77	0.12	
3/27/2023	8:17:28	20.77	0.11	
3/27/2023	8:18:28	20.77	0.11	
3/27/2023	8:19:28	20.77	0.11	
3/27/2023	8:20:28	20.77	0.11	
3/27/2023	8:21:28	20.77	0.11	
3/27/2023	8:22:28	20.76	0.11	
3/27/2023	8:23:28	20.76	0.11	
3/27/2023	8:24:28	20.76	0.11	
3/27/2023	8:25:28	20.76	0.11	
3/27/2023	8:26:28	20.76	0.11	
3/27/2023	8:27:28	20.76	0.11	
3/27/2023	8:28:28	20.75	0.11	
3/27/2023	8:29:28	20.75	0.11	
3/27/2023	8:30:28	20.75	0.11	
3/27/2023	8:31:28	20.74	0.11	

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	8:32:28	20.74	0.12	
3/27/2023	8:33:28	20.74	0.12	
3/27/2023	8:34:28	20.74	0.12	
3/27/2023	8:35:28	20.73	0.13	
3/27/2023	8:36:28	20.73	0.13	
3/27/2023	8:37:28	20.73	0.12	
3/27/2023	8:38:28	20.73	0.12	
3/27/2023	8:39:28	20.73	0.12	
3/27/2023	8:40:28	20.73	0.12	
3/27/2023	8:41:28	20.73	0.12	
3/27/2023	8:42:28	20.72	0.12	
3/27/2023	8:43:28	20.72	0.13	
3/27/2023	8:44:28	20.71	0.12	
3/27/2023	8:45:28	20.72	0.12	
3/27/2023	8:46:28	20.72	0.12	
3/27/2023	8:47:28	20.72	0.12	
3/27/2023	8:48:28	20.72	0.11	
3/27/2023	8:49:28	20.72	0.11	
3/27/2023	8:50:28	20.71	0.11	
3/27/2023	8:51:28	20.71	0.11	
3/27/2023	8:52:28	20.71	0.11	
3/27/2023	8:53:28	20.71	0.11	
3/27/2023	8:54:28	20.71	0.11	
3/27/2023	8:55:28	20.70	0.11	
3/27/2023	8:56:28	20.70	0.11	
3/27/2023	8:57:28	20.70	0.11	
3/27/2023	8:58:28	20.69	0.12	
3/27/2023	8:59:28	20.70	0.11	
3/27/2023	9:00:28	20.67	0.12	
3/27/2023	9:01:28	20.66	0.12	
3/27/2023	9:02:28	20.66	0.12	
3/27/2023	9:03:28	20.66	0.12	
3/27/2023	9:04:28	20.67	0.12	
3/27/2023	9:05:28	20.66	0.13	
3/27/2023	9:06:28	20.68	0.13	
3/27/2023	9:07:28	20.67	0.13	
3/27/2023	9:08:28	20.66	0.13	
3/27/2023	9:09:28	20.66	0.13	
3/27/2023	9:10:28	20.66	0.13	

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	9:11:28	20.66	0.13	
3/27/2023	9:12:28	20.66	0.13	
3/27/2023	9:13:28	20.66	0.12	
3/27/2023	9:14:28	20.66	0.12	
3/27/2023	9:15:28	20.67	0.12	
3/27/2023	9:16:28	20.67	0.12	
3/27/2023	9:17:28	20.67	0.12	
3/27/2023	9:18:28	20.67	0.12	
3/27/2023	9:19:28	20.67	0.12	
3/27/2023	9:20:28	20.67	0.12	
3/27/2023	9:21:28	20.69	0.12	
3/27/2023	9:22:28	20.68	0.12	
3/27/2023	9:23:28	20.68	0.12	
3/27/2023	9:24:28	20.68	0.12	
3/27/2023	9:25:28	20.67	0.12	
3/27/2023	9:26:28	20.67	0.12	
3/27/2023	9:27:28	20.67	0.13	
3/27/2023	9:28:28	20.68	0.12	
3/27/2023	9:29:28	20.68	0.13	
3/27/2023	9:30:28	20.68	0.13	
3/27/2023	9:31:28	20.68	0.13	
3/27/2023	9:32:28	20.68	0.13	
3/27/2023	9:33:28	20.69	0.13	
3/27/2023	9:34:28	20.69	0.14	
3/27/2023	9:35:28	20.69	0.14	
3/27/2023	9:36:28	20.70	0.14	
3/27/2023	9:37:28	20.69	0.13	
3/27/2023	9:38:28	20.69	0.14	
3/27/2023	9:39:28	20.70	0.14	
3/27/2023	9:40:28	20.70	0.13	
3/27/2023	9:41:28	20.70	0.13	
3/27/2023	9:42:28	20.70	0.14	
3/27/2023	9:43:28	20.71	0.13	
3/27/2023	9:44:28	20.71	0.13	
3/27/2023	9:45:28	20.71	0.13	
3/27/2023	9:46:28	20.70	0.13	
3/27/2023	9:47:28	20.71	0.13	
3/27/2023	9:48:28	20.71	0.13	
3/27/2023	9:49:28	20.71	0.12	

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	9:50:28	20.71	0.13	
3/27/2023	9:51:28	20.72	0.12	
3/27/2023	9:52:28	20.71	0.13	
3/27/2023	9:53:28	20.71	0.13	
3/27/2023	9:54:28	20.71	0.12	
3/27/2023	9:55:28	20.71	0.13	
3/27/2023	9:56:28	20.71	0.13	
3/27/2023	9:57:28	20.71	0.13	
3/27/2023	9:58:28	20.72	0.13	
3/27/2023	9:59:28	20.72	0.13	
3/27/2023	10:00:28	20.72	0.13	
3/27/2023	10:01:28	20.73	0.13	
3/27/2023	10:02:28	20.72	0.14	
3/27/2023	10:03:28	20.73	0.14	
3/27/2023	10:04:28	20.72	0.14	
3/27/2023	10:05:28	20.72	0.14	
3/27/2023	10:06:28	20.72	0.14	
3/27/2023	10:07:28	20.72	0.14	
3/27/2023	10:08:28	20.72	0.14	
3/27/2023	10:09:28	20.72	0.14	
3/27/2023	10:10:28	20.72	0.14	
3/27/2023	10:11:28	20.72	0.14	
3/27/2023	10:12:28	20.72	0.14	
3/27/2023	10:13:28	20.72	0.14	
3/27/2023	10:14:28	20.72	0.14	
3/27/2023	10:15:28	20.73	0.14	
3/27/2023	10:16:28	20.73	0.14	
3/27/2023	10:17:28	20.69	0.15	
3/27/2023	10:18:28	20.69	0.15	
3/27/2023	10:19:28	20.69	0.15	
3/27/2023	10:20:28	20.69	0.14	
3/27/2023	10:21:28	20.70	0.14	
3/27/2023	10:22:28	20.70	0.14	
3/27/2023	10:23:28	20.69	0.14	
3/27/2023	10:24:28	20.69	0.14	
3/27/2023	10:25:28	20.70	0.14	
3/27/2023	10:26:28	20.69	0.15	
3/27/2023	10:27:28	20.69	0.14	
3/27/2023	10:28:28	20.68	0.15	

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	10:29:28	20.71	0.15	
3/27/2023	10:30:28	20.68	0.15	
3/27/2023	10:31:28	20.71	0.15	
3/27/2023	10:32:28	20.70	0.14	
3/27/2023	10:33:28	20.70	0.14	
3/27/2023	10:34:28	20.71	0.14	
3/27/2023	10:35:28	20.70	0.14	
3/27/2023	10:36:28	20.70	0.15	
3/27/2023	10:37:28	20.72	0.14	
3/27/2023	10:38:28	20.73	0.15	
3/27/2023	10:39:28	20.73	0.15	
3/27/2023	10:40:28	20.73	0.15	**End Run 1**
		20.72	**0.12**	**Average**
3/27/2023	10:55:28	20.71	0.13	
3/27/2023	10:56:28	11.17	0.18	
3/27/2023	10:57:28	0.07	0.05	
3/27/2023	10:58:28	0.03	0.05	**O2/CO2 System Zero**
3/27/2023	10:59:28	1.55	1.57	
3/27/2023	11:00:28	9.67	9.35	
3/27/2023	11:01:28	10.11	9.92	**O2/CO2 System Upscale**
3/27/2023	11:02:28	11.44	7.65	
3/27/2023	11:03:28	20.43	0.33	
3/27/2023	11:04:28	20.68	0.17	
				Mn and CM40 Steel
3/27/2023	13:00:28	20.67	0.13	**Start Run 1**
3/27/2023	13:01:28	20.67	0.13	
3/27/2023	13:02:28	20.67	0.13	
3/27/2023	13:03:28	20.68	0.13	
3/27/2023	13:04:28	20.67	0.13	
3/27/2023	13:05:28	20.67	0.14	
3/27/2023	13:06:28	20.67	0.14	
3/27/2023	13:07:28	20.67	0.14	
3/27/2023	13:08:28	20.68	0.14	
3/27/2023	13:09:28	20.68	0.14	
3/27/2023	13:10:28	20.68	0.14	
3/27/2023	13:11:28	20.68	0.14	
3/27/2023	13:12:28	20.65	0.14	

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	13:13:28	20.65	0.14	
3/27/2023	13:14:28	20.65	0.14	
3/27/2023	13:15:28	20.64	0.14	
3/27/2023	13:16:28	20.63	0.14	
3/27/2023	13:17:28	20.63	0.14	
3/27/2023	13:18:28	20.62	0.15	
3/27/2023	13:19:28	20.61	0.15	
3/27/2023	13:20:28	20.61	0.15	
3/27/2023	13:21:28	20.60	0.15	
3/27/2023	13:22:28	20.60	0.15	
3/27/2023	13:23:28	20.60	0.15	
3/27/2023	13:24:28	20.60	0.15	
3/27/2023	13:25:28	20.61	0.14	
3/27/2023	13:26:28	20.62	0.13	
3/27/2023	13:27:28	20.62	0.13	
3/27/2023	13:28:28	20.61	0.14	
3/27/2023	13:29:28	20.63	0.13	
3/27/2023	13:30:28	20.61	0.13	
3/27/2023	13:31:28	20.61	0.13	
3/27/2023	13:32:28	20.61	0.13	
3/27/2023	13:33:28	20.61	0.13	
3/27/2023	13:34:28	20.61	0.13	
3/27/2023	13:35:28	20.61	0.14	
3/27/2023	13:36:28	20.61	0.14	
3/27/2023	13:37:28	20.61	0.14	
3/27/2023	13:38:28	20.61	0.14	
3/27/2023	13:39:28	20.61	0.14	
3/27/2023	13:40:28	20.61	0.14	
3/27/2023	13:41:28	20.61	0.14	
3/27/2023	13:42:28	20.61	0.14	
3/27/2023	13:43:28	20.61	0.14	
3/27/2023	13:44:28	20.61	0.14	
3/27/2023	13:45:28	20.61	0.14	
3/27/2023	13:46:28	20.61	0.14	
3/27/2023	13:47:28	20.63	0.14	
3/27/2023	13:48:28	20.62	0.14	
3/27/2023	13:49:28	20.63	0.14	
3/27/2023	13:50:28	20.60	0.14	
3/27/2023	13:51:28	20.61	0.14	

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	13:52:28	20.60	0.14	
3/27/2023	13:53:28	20.60	0.14	
3/27/2023	13:54:28	20.60	0.13	
3/27/2023	13:55:28	20.60	0.13	
3/27/2023	13:56:28	20.60	0.13	
3/27/2023	13:57:28	20.60	0.13	
3/27/2023	13:58:28	20.61	0.13	
3/27/2023	13:59:28	20.60	0.13	
3/27/2023	14:00:28	20.60	0.13	
3/27/2023	14:01:28	20.60	0.13	
3/27/2023	14:02:28	20.60	0.13	
3/27/2023	14:03:28	20.60	0.13	
3/27/2023	14:04:28	20.60	0.13	
3/27/2023	14:05:28	20.60	0.13	
3/27/2023	14:06:28	20.60	0.14	
3/27/2023	14:07:28	20.60	0.14	
3/27/2023	14:08:28	20.60	0.14	
3/27/2023	14:09:28	20.60	0.14	
3/27/2023	14:10:28	20.60	0.14	
3/27/2023	14:11:28	20.60	0.15	
3/27/2023	14:12:28	20.60	0.14	
3/27/2023	14:13:28	20.60	0.14	
3/27/2023	14:14:28	20.60	0.14	
3/27/2023	14:15:28	20.60	0.15	
3/27/2023	14:16:28	20.60	0.14	
3/27/2023	14:17:28	20.60	0.14	
3/27/2023	14:18:28	20.59	0.14	
3/27/2023	14:19:28	20.59	0.14	
3/27/2023	14:20:28	20.61	0.14	
3/27/2023	14:21:28	20.61	0.14	
3/27/2023	14:22:28	20.61	0.14	
3/27/2023	14:23:28	20.61	0.14	
3/27/2023	14:24:28	20.61	0.13	
3/27/2023	14:25:28	20.61	0.13	
3/27/2023	14:26:28	20.61	0.13	
3/27/2023	14:27:28	20.60	0.13	
3/27/2023	14:28:28	20.61	0.13	
3/27/2023	14:29:28	20.60	0.13	
3/27/2023	14:30:28	20.60	0.13	

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	14:31:28	20.60	0.14	
3/27/2023	14:32:28	20.60	0.14	
3/27/2023	14:33:28	20.59	0.13	
3/27/2023	14:34:28	20.59	0.14	
3/27/2023	14:35:28	20.58	0.13	
3/27/2023	14:36:28	20.59	0.14	
3/27/2023	14:37:28	20.59	0.14	
3/27/2023	14:38:28	20.59	0.14	
3/27/2023	14:39:28	20.59	0.14	
3/27/2023	14:40:28	20.60	0.14	
3/27/2023	14:41:28	20.61	0.15	
3/27/2023	14:42:28	20.61	0.15	
3/27/2023	14:43:28	20.61	0.15	
3/27/2023	14:44:28	20.60	0.15	
3/27/2023	14:45:28	20.61	0.15	
3/27/2023	14:46:28	20.60	0.14	
3/27/2023	14:47:28	20.60	0.14	
3/27/2023	14:48:28	20.60	0.15	
3/27/2023	14:49:28	20.59	0.14	
3/27/2023	14:50:28	20.59	0.14	
3/27/2023	14:51:28	20.59	0.14	
3/27/2023	14:52:28	20.59	0.14	
3/27/2023	14:53:28	20.60	0.14	
3/27/2023	14:54:28	20.60	0.14	
3/27/2023	14:55:28	20.59	0.14	
3/27/2023	14:56:28	20.59	0.13	
3/27/2023	14:57:28	20.59	0.13	
3/27/2023	14:58:28	20.61	0.13	
3/27/2023	14:59:28	20.61	0.13	
3/27/2023	15:00:28	20.61	0.13	
3/27/2023	15:01:28	20.61	0.13	
3/27/2023	15:02:28	20.60	0.14	
3/27/2023	15:03:28	20.60	0.13	
3/27/2023	15:04:28	20.58	0.14	
3/27/2023	15:05:28	20.58	0.14	
3/27/2023	15:06:28	20.59	0.13	
3/27/2023	15:07:28	20.59	0.14	
3/27/2023	15:08:28	20.59	0.14	
3/27/2023	15:09:28	20.59	0.14	

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	15:10:28	20.59	0.14	
3/27/2023	15:11:28	20.59	0.14	
3/27/2023	15:12:28	20.59	0.15	
3/27/2023	15:13:28	20.59	0.15	
3/27/2023	15:14:28	20.59	0.15	
3/27/2023	15:15:28	20.59	0.15	
3/27/2023	15:16:28	20.59	0.15	
3/27/2023	15:17:28	20.59	0.14	
3/27/2023	15:18:28	20.59	0.14	
3/27/2023	15:19:28	20.58	0.14	
3/27/2023	15:20:28	20.58	0.14	
3/27/2023	15:21:28	20.58	0.14	
3/27/2023	15:22:28	20.58	0.14	
3/27/2023	15:23:28	20.58	0.14	
3/27/2023	15:24:28	20.58	0.14	
3/27/2023	15:25:28	20.58	0.14	
3/27/2023	15:26:28	20.57	0.13	
3/27/2023	15:27:28	20.57	0.13	
3/27/2023	15:28:28	20.57	0.13	
3/27/2023	15:29:28	20.58	0.13	
3/27/2023	15:30:28	20.57	0.13	
3/27/2023	15:31:28	20.57	0.14	
3/27/2023	15:32:28	20.57	0.13	
3/27/2023	15:33:28	20.57	0.14	
3/27/2023	15:34:28	20.57	0.13	
3/27/2023	15:35:28	20.58	0.14	
3/27/2023	15:36:28	20.57	0.14	
3/27/2023	15:37:28	20.58	0.14	
3/27/2023	15:38:28	20.57	0.14	
3/27/2023	15:39:28	20.54	0.16	
3/27/2023	15:40:28	20.53	0.17	
3/27/2023	15:41:28	20.54	0.17	
3/27/2023	15:42:28	20.56	0.16	
3/27/2023	15:43:28	20.55	0.17	
3/27/2023	15:44:28	20.56	0.16	
3/27/2023	15:45:28	20.55	0.17	
3/27/2023	15:46:28	20.55	0.17	
3/27/2023	15:47:28	20.57	0.15	
3/27/2023	15:48:28	20.57	0.15	

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	15:49:28	20.55	0.15	
3/27/2023	15:50:28	20.58	0.15	
3/27/2023	15:51:28	20.58	0.15	
3/27/2023	15:52:28	20.58	0.15	
3/27/2023	15:53:28	20.58	0.14	
3/27/2023	15:54:28	20.58	0.14	
3/27/2023	15:55:28	20.58	0.14	
3/27/2023	15:56:28	20.58	0.14	
3/27/2023	15:57:28	20.58	0.14	
3/27/2023	15:58:28	20.58	0.14	
3/27/2023	15:59:28	20.58	0.14	
3/27/2023	16:00:28	20.58	0.14	
3/27/2023	16:01:28	20.58	0.14	
3/27/2023	16:02:28	20.58	0.14	
3/27/2023	16:03:28	20.57	0.14	
3/27/2023	16:04:28	20.56	0.14	
3/27/2023	16:05:28	20.56	0.14	
3/27/2023	16:06:28	20.56	0.14	
3/27/2023	16:07:28	20.58	0.14	
3/27/2023	16:08:28	20.59	0.14	
3/27/2023	16:09:28	20.58	0.14	
3/27/2023	16:10:28	20.59	0.14	
3/27/2023	16:11:28	20.58	0.15	
3/27/2023	16:12:28	20.58	0.15	
3/27/2023	16:13:28	20.58	0.15	
3/27/2023	16:14:28	20.59	0.15	
3/27/2023	16:15:28	20.59	0.15	
3/27/2023	16:16:28	20.59	0.15	
3/27/2023	16:17:28	20.59	0.15	
3/27/2023	16:18:28	20.57	0.15	
3/27/2023	16:19:28	20.57	0.15	
3/27/2023	16:20:28	20.57	0.15	
3/27/2023	16:21:28	20.57	0.15	
3/27/2023	16:22:28	20.59	0.15	
3/27/2023	16:23:28	20.60	0.14	
3/27/2023	16:24:28	20.60	0.14	
3/27/2023	16:25:28	20.60	0.14	
3/27/2023	16:26:28	20.59	0.14	
3/27/2023	16:27:28	20.58	0.14	

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	16:28:28	20.58	0.14	
3/27/2023	16:29:28	20.58	0.14	
3/27/2023	16:30:28	20.58	0.14	
3/27/2023	16:31:28	20.58	0.14	
3/27/2023	16:32:28	20.56	0.13	
3/27/2023	16:33:28	20.56	0.14	
3/27/2023	16:34:28	20.57	0.14	
3/27/2023	16:35:28	20.60	0.14	
3/27/2023	16:36:28	20.59	0.14	
3/27/2023	16:37:28	20.60	0.14	
3/27/2023	16:38:28	20.60	0.14	
3/27/2023	16:39:28	20.60	0.15	
3/27/2023	16:40:28	20.60	0.14	
3/27/2023	16:41:28	20.60	0.14	
3/27/2023	16:42:28	20.60	0.15	
3/27/2023	16:43:28	20.60	0.15	
3/27/2023	16:44:28	20.60	0.15	
3/27/2023	16:45:28	20.60	0.15	
3/27/2023	16:46:28	20.60	0.15	
3/27/2023	16:47:28	20.60	0.15	
3/27/2023	16:48:28	20.59	0.15	
3/27/2023	16:49:28	20.59	0.15	
3/27/2023	16:50:28	20.59	0.15	
3/27/2023	16:51:28	20.59	0.14	
3/27/2023	16:52:28	20.59	0.14	
3/27/2023	16:53:28	20.58	0.14	
3/27/2023	16:54:28	20.58	0.14	
3/27/2023	16:55:28	20.58	0.14	
3/27/2023	16:56:28	20.58	0.14	
3/27/2023	16:57:28	20.58	0.13	
3/27/2023	16:58:28	20.57	0.13	
3/27/2023	16:59:28	20.57	0.13	
3/27/2023	17:00:28	20.57	0.13	
3/27/2023	17:01:28	20.57	0.13	
3/27/2023	17:02:28	20.56	0.13	
3/27/2023	17:03:28	20.56	0.13	
3/27/2023	17:04:28	20.56	0.13	
3/27/2023	17:05:28	20.56	0.13	
3/27/2023	17:06:28	20.56	0.13	

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 1 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/27/2023	17:07:28	20.55	0.13	
3/27/2023	17:08:28	20.55	0.13	
3/27/2023	17:09:28	20.54	0.13	
3/27/2023	17:10:28	20.54	0.13	**End Run 1**
		20.59	**0.14**	**Average**
3/27/2023	17:42:28	20.49	0.15	
3/27/2023	17:43:28	9.74	0.20	
3/27/2023	17:44:28	0.03	0.05	**O2/CO2 System Zero**
3/27/2023	17:45:28	8.37	9.02	
3/27/2023	17:46:28	10.09	9.94	**O2/CO2 System Upscale**
3/27/2023	17:47:28	18.84	9.12	
3/27/2023	17:48:28	19.14	1.01	
3/27/2023	17:49:28	20.48	0.18	

Bison Engineering, Inc.
Gaseous Testing Summary

Client:	**Eagle Foundry Company**	Source:	**Cooling Bunker BH Outlet**
Facility:	**Eagle Foundry**	Test Date:	**3/28/2023 - Day 2**
Location:	**Eagle Creek, OR**		

Environmental Conditions / Test Notes: See isokinetic field data sheets.
Testing Personnel: JCR

Run	**White Iron Run 2**	**Steel Alloy Run 2**
Date	3/28/2023	3/28/2023
Run Start Time	5:10	10:30
Run End Time	9:10	14:40
Duration, min.	240	250
CO_2, %vd	0.06	0.09
O_2, %vd	20.73	20.84

Note: Negative concentrations are reported as zero.

Bison Engineering, Inc.
Method 3A Oxygen
Calibration Error, System Bias and System Drift

Client:	**Eagle Foundry Company**	Source:	**Cooling Bunker BH Outlet**	Instrument Make:	**Servomex**
Facility:	**Eagle Foundry**	Date:	**3/28/2023 - Day 2**	Instrument Model:	**1440**
Location:	**Eagle Creek, OR**			Instrument Serial #:	**01440D1-5041**

			Initial Values			Final Values								
		Analyzer Cal. Response	System Cal Response	Pre test System Cal. Bias % of span	pass/fail	System Cal Response	Post test System Cal. Bias % of span	pass/fail	System Drift % of span	pass/fail	Analyzer Span	Raw Avg Gas Conc	Corrected Gas Conc	Instrument Cal. Reference Gas
White Iron	zero	0.00	0.01	0.05	pass	0.02	0.09	pass	0.05	pass				
Run 2	upscale	10.02	10.05	0.14	pass	10.09	0.32	pass	0.18	pass	22.01	20.63	20.73	10.11
Mn and CM40 Steel	zero	0.00	0.02	0.09	pass	0.04	0.18	pass	0.09	pass				
Run 2	upscale	10.02	10.09	0.32	pass	10.09	0.32	pass	0.00	pass	22.01	20.77	20.84	10.11
				< 5%*			**< 5%***		**< 3%***					

Analyzer Calibration Error	Zero	Mid	High
Calibration Gas Standards	0	10.11	22.01
Cylinder Number		ALM054560	EB0157290
Calibration Gas Analyzer Response	0.00	10.02	22.04
Analyzer Calibration Error	0.00	-0.41	0.14
Analyzer Calibration Error < 2%*	pass	pass	pass

System Response Time	
29	seconds

System Leak Check	Completed	Pass/Fail
Pre-test	Yes	Pass
Post-test	Yes	Pass

Note: All units are in %
*Or < 0.5 % absolute difference

Bison Engineering, Inc.
Method 3A CO_2
Calibration Error, System Bias and System Drift

Client:	**Eagle Foundry Company**	Source:	**Cooling Bunker BH Outlet**	Instrument Make:	**Servomex**
Facility:	**Eagle Foundry**	Date:	**3/28/2023 - Day 2**	Instrument Model:	**1440**
Location:	**Eagle Creek, OR**			Instrument Serial #:	**01440D1-5041**

			Initial Values			Final Values								
		Analyzer Cal. Response	System Cal Response	Pre test System Cal. Bias % of span	pass/fail	System Cal Response	Post test System Cal. Bias % of span	pass/fail	System Drift % of span	pass/fail	Analyzer Span	Raw Avg Gas Conc	Corrected Gas Conc	Instrument Cal. Reference Gas
White Iron	zero	0.02	0.07	0.23	pass	0.05	0.14	pass	0.09	pass				
Run 2	upscale	9.92	9.92	0.00	pass	9.94	0.09	pass	0.09	pass	21.66	0.12	0.06	9.924
Mn and CM40 Steel	zero	0.02	0.05	0.14	pass	0.05	0.14	pass	0.00	pass				
Run 2	upscale	9.92	9.94	0.09	pass	9.90	-0.09	pass	0.18	pass	21.66	0.14	0.09	9.924
				< 5%*			**< 5%***		**< 3%***					

Analyzer Calibration Error	Zero	Mid	High
Calibration Gas Standards	0	9.924	21.66
Cylinder Number		ALM054560	EB0157290
Calibration Gas Analyzer Response	0.02	9.92	21.64
Analyzer Calibration Error	0.09	-0.02	-0.09
Analyzer Calibration Error < 2%*	pass	pass	pass

System Response Time	
30	seconds

System Leak Check	Completed	Pass/Fail
Pre-test	Yes	Pass
Post-test	Yes	Pass

Note: All units are in %
*Or < 0.5 % absolute difference

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 2 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/28/2023	3:19:35	2.23	-41.29	
3/28/2023	3:20:35	-1.07	-28.31	
3/28/2023	3:21:35	0.00	0.02	**O2/CO2 Analyzer Zero**
3/28/2023	3:22:35	-0.01	0.02	
3/28/2023	3:23:35	15.05	9.32	
3/28/2023	3:24:35	27.16	19.11	
3/28/2023	3:25:35	24.12	21.75	
3/28/2023	3:26:35	34.28	21.61	
3/28/2023	3:27:35	22.21	21.63	
3/28/2023	3:28:35	22.04	21.64	**O2/CO2 Analyzer Span**
3/28/2023	3:29:35	11.29	12.70	
3/28/2023	3:30:35	9.06	9.82	
3/28/2023	3:31:35	10.02	9.92	**O2/CO2 Analyzer Mid**
3/28/2023	3:32:35	15.46	6.53	
3/28/2023	3:33:35	3.95	0.32	
3/28/2023	3:34:35	0.01	0.07	**O2/CO2 System Zero**
3/28/2023	3:35:35	4.93	4.40	
3/28/2023	3:36:35	9.91	9.84	
3/28/2023	3:37:35	10.05	9.92	**O2/CO2 System Upscale**
3/28/2023	3:38:35	16.02	5.42	
3/28/2023	3:39:35	22.92	0.18	
3/28/2023	3:40:35	20.95	0.13	
				White Iron
3/28/2023	5:10:35	20.74	0.11	**Start Run 2**
3/28/2023	5:11:35	20.74	0.11	
3/28/2023	5:12:35	20.74	0.11	
3/28/2023	5:13:35	20.73	0.11	
3/28/2023	5:14:35	20.73	0.11	
3/28/2023	5:15:35	20.72	0.11	
3/28/2023	5:16:35	20.72	0.11	
3/28/2023	5:17:35	20.72	0.11	
3/28/2023	5:18:35	20.66	0.11	
3/28/2023	5:19:35	20.64	0.11	
3/28/2023	5:20:35	20.68	0.11	
3/28/2023	5:21:35	20.66	0.11	
3/28/2023	5:22:35	20.63	0.12	
3/28/2023	5:23:35	20.63	0.12	
3/28/2023	5:24:35	20.63	0.12	

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 2 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/28/2023	5:25:35	20.63	0.12	
3/28/2023	5:26:35	20.62	0.12	
3/28/2023	5:27:35	20.62	0.12	
3/28/2023	5:28:35	20.62	0.12	
3/28/2023	5:29:35	20.62	0.12	
3/28/2023	5:30:35	20.62	0.12	
3/28/2023	5:31:35	20.62	0.12	
3/28/2023	5:32:35	20.62	0.12	
3/28/2023	5:33:35	20.62	0.12	
3/28/2023	5:34:35	20.62	0.12	
3/28/2023	5:35:35	20.62	0.12	
3/28/2023	5:36:35	20.62	0.11	
3/28/2023	5:37:35	20.62	0.11	
3/28/2023	5:38:35	20.62	0.11	
3/28/2023	5:39:35	20.62	0.11	
3/28/2023	5:40:35	20.62	0.11	
3/28/2023	5:41:35	20.62	0.11	
3/28/2023	5:42:35	20.62	0.11	
3/28/2023	5:43:35	20.62	0.12	
3/28/2023	5:44:35	20.63	0.12	
3/28/2023	5:45:35	20.63	0.12	
3/28/2023	5:46:35	20.63	0.12	
3/28/2023	5:47:35	20.63	0.12	
3/28/2023	5:48:35	20.63	0.12	
3/28/2023	5:49:35	20.63	0.12	
3/28/2023	5:50:35	20.62	0.13	
3/28/2023	5:51:35	20.62	0.13	
3/28/2023	5:52:35	20.63	0.13	
3/28/2023	5:53:35	20.61	0.13	
3/28/2023	5:54:35	20.60	0.13	
3/28/2023	5:55:35	20.61	0.13	
3/28/2023	5:56:35	20.61	0.13	
3/28/2023	5:57:35	20.61	0.13	
3/28/2023	5:58:35	20.61	0.13	
3/28/2023	5:59:35	20.62	0.13	
3/28/2023	6:00:35	20.62	0.13	
3/28/2023	6:01:35	20.62	0.13	
3/28/2023	6:02:35	20.62	0.13	
3/28/2023	6:03:35	20.63	0.13	

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 2 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/28/2023	6:04:35	20.63	0.13	
3/28/2023	6:05:35	20.63	0.12	
3/28/2023	6:06:35	20.63	0.12	
3/28/2023	6:07:35	20.63	0.12	
3/28/2023	6:08:35	20.63	0.12	
3/28/2023	6:09:35	20.63	0.11	
3/28/2023	6:10:35	20.63	0.12	
3/28/2023	6:11:35	20.63	0.11	
3/28/2023	6:12:35	20.63	0.12	
3/28/2023	6:13:35	20.63	0.12	
3/28/2023	6:14:35	20.62	0.11	
3/28/2023	6:15:35	20.62	0.12	
3/28/2023	6:16:35	20.62	0.12	
3/28/2023	6:17:35	20.62	0.12	
3/28/2023	6:18:35	20.62	0.12	
3/28/2023	6:19:35	20.62	0.12	
3/28/2023	6:20:35	20.62	0.12	
3/28/2023	6:21:35	20.62	0.12	
3/28/2023	6:22:35	20.61	0.12	
3/28/2023	6:23:35	20.62	0.13	
3/28/2023	6:24:35	20.61	0.13	
3/28/2023	6:25:35	20.61	0.13	
3/28/2023	6:26:35	20.61	0.13	
3/28/2023	6:27:35	20.61	0.13	
3/28/2023	6:28:35	20.61	0.14	
3/28/2023	6:29:35	20.60	0.13	
3/28/2023	6:30:35	20.60	0.13	
3/28/2023	6:31:35	20.60	0.13	
3/28/2023	6:32:35	20.60	0.13	
3/28/2023	6:33:35	20.60	0.13	
3/28/2023	6:34:35	20.60	0.13	
3/28/2023	6:35:35	20.60	0.12	
3/28/2023	6:36:35	20.59	0.13	
3/28/2023	6:37:35	20.60	0.12	
3/28/2023	6:38:35	20.57	0.13	
3/28/2023	6:39:35	20.56	0.14	
3/28/2023	6:40:35	20.57	0.13	
3/28/2023	6:41:35	20.56	0.13	
3/28/2023	6:42:35	20.57	0.13	

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 2 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/28/2023	6:43:35	20.57	0.13	
3/28/2023	6:44:35	20.59	0.12	
3/28/2023	6:45:35	20.59	0.12	
3/28/2023	6:46:35	20.59	0.12	
3/28/2023	6:47:35	20.59	0.12	
3/28/2023	6:48:35	20.60	0.12	
3/28/2023	6:49:35	20.59	0.12	
3/28/2023	6:50:35	20.59	0.12	
3/28/2023	6:51:35	20.59	0.13	
3/28/2023	6:52:35	20.59	0.13	
3/28/2023	6:53:35	20.59	0.13	
3/28/2023	6:54:35	20.58	0.13	
3/28/2023	6:55:35	20.58	0.13	
3/28/2023	6:56:35	20.58	0.13	
3/28/2023	6:57:35	20.58	0.14	
3/28/2023	6:58:35	20.58	0.13	
3/28/2023	6:59:35	20.58	0.13	
3/28/2023	7:00:35	20.59	0.13	
3/28/2023	7:01:35	20.58	0.13	
3/28/2023	7:02:35	20.56	0.15	
3/28/2023	7:03:35	20.55	0.15	
3/28/2023	7:04:35	20.54	0.15	
3/28/2023	7:05:35	20.55	0.15	
3/28/2023	7:06:35	20.55	0.15	
3/28/2023	7:07:35	20.54	0.15	
3/28/2023	7:08:35	20.57	0.13	
3/28/2023	7:09:35	20.58	0.12	
3/28/2023	7:10:35	20.58	0.12	
3/28/2023	7:11:35	20.58	0.12	
3/28/2023	7:12:35	20.58	0.12	
3/28/2023	7:13:35	20.58	0.12	
3/28/2023	7:14:35	20.58	0.12	
3/28/2023	7:15:35	20.58	0.12	
3/28/2023	7:16:35	20.59	0.12	
3/28/2023	7:17:35	20.58	0.12	
3/28/2023	7:18:35	20.59	0.12	
3/28/2023	7:19:35	20.58	0.12	
3/28/2023	7:20:35	20.58	0.13	
3/28/2023	7:21:35	20.58	0.13	

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 2 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/28/2023	7:22:35	20.57	0.14	
3/28/2023	7:23:35	20.57	0.14	
3/28/2023	7:24:35	20.57	0.15	
3/28/2023	7:25:35	20.57	0.15	
3/28/2023	7:26:35	20.58	0.14	
3/28/2023	7:27:35	20.59	0.14	
3/28/2023	7:28:35	20.59	0.13	
3/28/2023	7:29:35	20.59	0.13	
3/28/2023	7:30:35	20.59	0.13	
3/28/2023	7:31:35	20.59	0.13	
3/28/2023	7:32:35	20.59	0.12	
3/28/2023	7:33:35	20.60	0.13	
3/28/2023	7:34:35	20.60	0.12	
3/28/2023	7:35:35	20.60	0.12	
3/28/2023	7:36:35	20.60	0.12	
3/28/2023	7:37:35	20.60	0.12	
3/28/2023	7:38:35	20.60	0.12	
3/28/2023	7:39:35	20.60	0.11	
3/28/2023	7:40:35	20.60	0.11	
3/28/2023	7:41:35	20.60	0.11	
3/28/2023	7:42:35	20.60	0.12	
3/28/2023	7:43:35	20.60	0.12	
3/28/2023	7:44:35	20.60	0.12	
3/28/2023	7:45:35	20.60	0.12	
3/28/2023	7:46:35	20.60	0.12	
3/28/2023	7:47:35	20.60	0.12	
3/28/2023	7:48:35	20.60	0.12	
3/28/2023	7:49:35	20.60	0.12	
3/28/2023	7:50:35	20.60	0.12	
3/28/2023	7:51:35	20.61	0.12	
3/28/2023	7:52:35	20.60	0.12	
3/28/2023	7:53:35	20.60	0.13	
3/28/2023	7:54:35	20.61	0.13	
3/28/2023	7:55:35	20.62	0.13	
3/28/2023	7:56:35	20.61	0.13	
3/28/2023	7:57:35	20.60	0.13	
3/28/2023	7:58:35	20.60	0.13	
3/28/2023	7:59:35	20.60	0.13	
3/28/2023	8:00:35	20.60	0.13	

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 2 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/28/2023	8:01:35	20.60	0.13	
3/28/2023	8:02:35	20.60	0.12	
3/28/2023	8:03:35	20.60	0.13	
3/28/2023	8:04:35	20.60	0.12	
3/28/2023	8:05:35	20.60	0.12	
3/28/2023	8:06:35	20.60	0.12	
3/28/2023	8:07:35	20.60	0.12	
3/28/2023	8:08:35	20.59	0.11	
3/28/2023	8:09:35	20.61	0.11	
3/28/2023	8:10:35	20.61	0.11	
3/28/2023	8:11:35	20.61	0.11	
3/28/2023	8:12:35	20.61	0.11	
3/28/2023	8:13:35	20.60	0.11	
3/28/2023	8:14:35	20.60	0.11	
3/28/2023	8:15:35	20.60	0.12	
3/28/2023	8:16:35	20.60	0.12	
3/28/2023	8:17:35	20.60	0.12	
3/28/2023	8:18:35	20.60	0.12	
3/28/2023	8:19:35	20.59	0.12	
3/28/2023	8:20:35	20.59	0.12	
3/28/2023	8:21:35	20.59	0.12	
3/28/2023	8:22:35	20.59	0.13	
3/28/2023	8:23:35	20.59	0.13	
3/28/2023	8:24:35	20.59	0.13	
3/28/2023	8:25:35	20.59	0.13	
3/28/2023	8:26:35	20.59	0.13	
3/28/2023	8:27:35	20.58	0.13	
3/28/2023	8:28:35	20.58	0.13	
3/28/2023	8:29:35	20.59	0.13	
3/28/2023	8:30:35	20.58	0.13	
3/28/2023	8:31:35	20.58	0.13	
3/28/2023	8:32:35	20.58	0.12	
3/28/2023	8:33:35	20.58	0.12	
3/28/2023	8:34:35	20.58	0.12	
3/28/2023	8:35:35	20.69	0.12	
3/28/2023	8:36:35	20.95	0.12	
3/28/2023	8:37:35	20.95	0.12	
3/28/2023	8:38:35	20.96	0.11	
3/28/2023	8:39:35	20.97	0.11	

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 2 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/28/2023	8:40:35	20.95	0.12	
3/28/2023	8:41:35	20.95	0.11	
3/28/2023	8:42:35	20.95	0.12	
3/28/2023	8:43:35	20.86	0.11	
3/28/2023	8:44:35	20.71	0.12	
3/28/2023	8:45:35	20.70	0.12	
3/28/2023	8:46:35	20.71	0.12	
3/28/2023	8:47:35	20.71	0.12	
3/28/2023	8:48:35	20.71	0.12	
3/28/2023	8:49:35	20.71	0.12	
3/28/2023	8:50:35	20.71	0.12	
3/28/2023	8:51:35	20.72	0.12	
3/28/2023	8:52:35	20.71	0.13	
3/28/2023	8:53:35	20.72	0.13	
3/28/2023	8:54:35	20.72	0.13	
3/28/2023	8:55:35	20.72	0.13	
3/28/2023	8:56:35	20.72	0.13	
3/28/2023	8:57:35	20.72	0.13	
3/28/2023	8:58:35	20.72	0.13	
3/28/2023	8:59:35	20.72	0.13	
3/28/2023	9:00:35	20.72	0.13	
3/28/2023	9:01:35	20.72	0.13	
3/28/2023	9:02:35	20.72	0.13	
3/28/2023	9:03:35	20.72	0.12	
3/28/2023	9:04:35	20.73	0.12	
3/28/2023	9:05:35	20.72	0.12	
3/28/2023	9:06:35	20.71	0.12	
3/28/2023	9:07:35	20.72	0.12	
3/28/2023	9:08:35	20.73	0.11	
3/28/2023	9:09:35	20.71	0.11	
3/28/2023	9:10:35	20.71	0.11	**End Run 2 White Iron**
		20.63	**0.12**	**Average**
3/28/2023	9:31:35	0.07	0.05	
3/28/2023	9:32:35	0.02	0.05	**O2/CO2 System Zero**
3/28/2023	9:33:35	7.54	9.89	
3/28/2023	9:34:35	10.09	9.94	**O2/CO2 System Upscale**
3/28/2023	9:35:35	13.78	5.29	
3/28/2023	9:36:35	20.61	0.21	

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 2 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
				Mn and CM40 Steel
3/28/2023	10:30:35	20.74	0.14	**Start Run 2**
3/28/2023	10:31:35	20.74	0.14	
3/28/2023	10:32:35	20.74	0.14	
3/28/2023	10:33:35	20.74	0.14	
3/28/2023	10:34:35	20.74	0.13	
3/28/2023	10:35:35	20.74	0.13	
3/28/2023	10:36:35	20.74	0.13	
3/28/2023	10:37:35	20.74	0.13	
3/28/2023	10:38:35	20.74	0.13	
3/28/2023	10:39:35	20.74	0.12	
3/28/2023	10:40:35	20.75	0.12	
3/28/2023	10:41:35	20.74	0.13	
3/28/2023	10:42:35	20.74	0.13	
3/28/2023	10:43:35	20.74	0.13	
3/28/2023	10:44:35	20.74	0.13	
3/28/2023	10:45:35	20.72	0.13	
3/28/2023	10:46:35	20.72	0.13	
3/28/2023	10:47:35	20.72	0.13	
3/28/2023	10:48:35	20.71	0.13	
3/28/2023	10:49:35	20.71	0.13	
3/28/2023	10:50:35	20.71	0.13	
3/28/2023	10:51:35	20.71	0.13	
3/28/2023	10:52:35	20.71	0.13	
3/28/2023	10:53:35	20.71	0.14	
3/28/2023	10:54:35	20.69	0.15	
3/28/2023	10:55:35	20.68	0.15	
3/28/2023	10:56:35	20.68	0.16	
3/28/2023	10:57:35	20.67	0.16	
3/28/2023	10:58:35	20.67	0.16	
3/28/2023	10:59:35	20.67	0.16	
3/28/2023	11:00:35	20.67	0.16	
3/28/2023	11:01:35	20.67	0.16	
3/28/2023	11:02:35	20.66	0.16	
3/28/2023	11:03:35	20.67	0.16	
3/28/2023	11:04:35	20.87	0.16	
3/28/2023	11:05:35	20.86	0.16	
3/28/2023	11:06:35	20.87	0.15	

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 2 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/28/2023	11:07:35	20.87	0.15	
3/28/2023	11:08:35	20.88	0.14	
3/28/2023	11:09:35	20.89	0.13	
3/28/2023	11:10:35	20.89	0.13	
3/28/2023	11:11:35	20.90	0.13	
3/28/2023	11:12:35	20.90	0.13	
3/28/2023	11:13:35	20.90	0.13	
3/28/2023	11:14:35	20.90	0.13	
3/28/2023	11:15:35	20.90	0.13	
3/28/2023	11:16:35	20.90	0.13	
3/28/2023	11:17:35	20.90	0.13	
3/28/2023	11:18:35	20.90	0.13	
3/28/2023	11:19:35	20.85	0.13	
3/28/2023	11:20:35	20.79	0.13	
3/28/2023	11:21:35	20.79	0.13	
3/28/2023	11:22:35	20.80	0.13	
3/28/2023	11:23:35	20.79	0.14	
3/28/2023	11:24:35	20.79	0.14	
3/28/2023	11:25:35	20.80	0.14	
3/28/2023	11:26:35	20.81	0.14	
3/28/2023	11:27:35	20.80	0.14	
3/28/2023	11:28:35	20.80	0.14	
3/28/2023	11:29:35	20.80	0.14	
3/28/2023	11:30:35	20.80	0.14	
3/28/2023	11:31:35	20.81	0.14	
3/28/2023	11:32:35	20.81	0.14	
3/28/2023	11:33:35	20.81	0.13	
3/28/2023	11:34:35	20.81	0.13	
3/28/2023	11:35:35	20.81	0.13	
3/28/2023	11:36:35	20.81	0.13	
3/28/2023	11:37:35	20.81	0.12	
3/28/2023	11:38:35	20.81	0.13	
3/28/2023	11:39:35	20.81	0.13	
3/28/2023	11:40:35	20.80	0.12	
3/28/2023	11:41:35	20.80	0.13	
3/28/2023	11:42:35	20.79	0.13	
3/28/2023	11:43:35	20.80	0.13	
3/28/2023	11:44:35	20.79	0.13	
3/28/2023	11:45:35	20.81	0.13	

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 2 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/28/2023	11:46:35	20.80	0.13	
3/28/2023	11:47:35	20.80	0.13	
3/28/2023	11:48:35	20.81	0.13	
3/28/2023	11:49:35	20.80	0.13	
3/28/2023	11:50:35	20.80	0.14	
3/28/2023	11:51:35	20.80	0.14	
3/28/2023	11:52:35	20.80	0.14	
3/28/2023	11:53:35	20.81	0.14	
3/28/2023	11:54:35	20.80	0.14	
3/28/2023	11:55:35	20.80	0.15	
3/28/2023	11:56:35	20.80	0.15	
3/28/2023	11:57:35	20.80	0.15	
3/28/2023	11:58:35	20.80	0.14	
3/28/2023	11:59:35	20.80	0.15	
3/28/2023	12:00:35	20.80	0.14	
3/28/2023	12:01:35	20.80	0.14	
3/28/2023	12:02:35	20.80	0.14	
3/28/2023	12:03:35	20.80	0.14	
3/28/2023	12:04:35	20.80	0.14	
3/28/2023	12:05:35	20.80	0.14	
3/28/2023	12:06:35	20.80	0.14	
3/28/2023	12:07:35	20.82	0.14	
3/28/2023	12:08:35	20.80	0.13	
3/28/2023	12:09:35	20.80	0.13	
3/28/2023	12:10:35	20.80	0.13	
3/28/2023	12:11:35	20.82	0.13	
3/28/2023	12:12:35	20.82	0.13	
3/28/2023	12:13:35	20.82	0.13	
3/28/2023	12:14:35	20.82	0.13	
3/28/2023	12:15:35	20.82	0.13	
3/28/2023	12:16:35	20.81	0.13	
3/28/2023	12:17:35	20.81	0.13	
3/28/2023	12:18:35	20.81	0.13	
3/28/2023	12:19:35	20.81	0.13	
3/28/2023	12:20:35	20.80	0.14	
3/28/2023	12:21:35	20.79	0.14	
3/28/2023	12:22:35	20.78	0.14	
3/28/2023	12:23:35	20.78	0.14	
3/28/2023	12:24:35	20.78	0.14	

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 2 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/28/2023	12:25:35	20.78	0.15	
3/28/2023	12:26:35	20.78	0.14	
3/28/2023	12:27:35	20.78	0.15	
3/28/2023	12:28:35	20.78	0.14	
3/28/2023	12:29:35	20.78	0.15	
3/28/2023	12:30:35	20.78	0.14	
3/28/2023	12:31:35	20.78	0.14	
3/28/2023	12:32:35	20.79	0.14	
3/28/2023	12:33:35	20.79	0.14	
3/28/2023	12:34:35	20.79	0.14	
3/28/2023	12:35:35	20.79	0.14	
3/28/2023	12:36:35	20.79	0.14	
3/28/2023	12:37:35	20.79	0.13	
3/28/2023	12:38:35	20.79	0.13	
3/28/2023	12:39:35	20.79	0.13	
3/28/2023	12:40:35	20.79	0.13	
3/28/2023	12:41:35	20.79	0.13	
3/28/2023	12:42:35	20.82	0.13	
3/28/2023	12:43:35	20.82	0.13	
3/28/2023	12:44:35	20.81	0.13	
3/28/2023	12:45:35	20.81	0.13	
3/28/2023	12:46:35	20.80	0.13	
3/28/2023	12:47:35	20.80	0.13	
3/28/2023	12:48:35	20.80	0.13	
3/28/2023	12:49:35	20.80	0.13	
3/28/2023	12:50:35	20.80	0.13	
3/28/2023	12:51:35	20.78	0.13	
3/28/2023	12:52:35	20.77	0.13	
3/28/2023	12:53:35	20.78	0.14	
3/28/2023	12:54:35	20.78	0.14	
3/28/2023	12:55:35	20.78	0.14	
3/28/2023	12:56:35	20.78	0.14	
3/28/2023	12:57:35	20.79	0.15	
3/28/2023	12:58:35	20.79	0.14	
3/28/2023	12:59:35	20.79	0.14	
3/28/2023	13:00:35	20.78	0.14	
3/28/2023	13:01:35	20.79	0.14	
3/28/2023	13:02:35	20.78	0.14	
3/28/2023	13:03:35	20.78	0.14	

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 2 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/28/2023	13:04:35	20.79	0.14	
3/28/2023	13:05:35	20.78	0.14	
3/28/2023	13:06:35	20.78	0.14	
3/28/2023	13:07:35	20.79	0.14	
3/28/2023	13:08:35	20.78	0.13	
3/28/2023	13:09:35	20.78	0.13	
3/28/2023	13:10:35	20.79	0.13	
3/28/2023	13:11:35	20.78	0.13	
3/28/2023	13:12:35	20.78	0.13	
3/28/2023	13:13:35	20.78	0.13	
3/28/2023	13:14:35	20.78	0.13	
3/28/2023	13:15:35	20.78	0.13	
3/28/2023	13:16:35	20.78	0.13	
3/28/2023	13:17:35	20.78	0.13	
3/28/2023	13:18:35	20.78	0.13	
3/28/2023	13:19:35	20.78	0.13	
3/28/2023	13:20:35	20.78	0.13	
3/28/2023	13:21:35	20.79	0.13	
3/28/2023	13:22:35	20.79	0.13	
3/28/2023	13:23:35	20.79	0.14	
3/28/2023	13:24:35	20.79	0.14	
3/28/2023	13:25:35	20.79	0.14	
3/28/2023	13:26:35	20.79	0.14	
3/28/2023	13:27:35	20.78	0.14	
3/28/2023	13:28:35	20.78	0.14	
3/28/2023	13:29:35	20.78	0.14	
3/28/2023	13:30:35	20.78	0.14	
3/28/2023	13:31:35	20.78	0.14	
3/28/2023	13:32:35	20.78	0.14	
3/28/2023	13:33:35	20.78	0.14	
3/28/2023	13:34:35	20.78	0.14	
3/28/2023	13:35:35	20.78	0.14	
3/28/2023	13:36:35	20.78	0.14	
3/28/2023	13:37:35	20.78	0.14	
3/28/2023	13:38:35	20.77	0.14	
3/28/2023	13:39:35	20.77	0.13	
3/28/2023	13:40:35	20.77	0.13	
3/28/2023	13:41:35	20.77	0.13	
3/28/2023	13:42:35	20.77	0.13	

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 2 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/28/2023	13:43:35	20.77	0.13	
3/28/2023	13:44:35	20.77	0.13	
3/28/2023	13:45:35	20.76	0.13	
3/28/2023	13:46:35	20.76	0.14	
3/28/2023	13:47:35	20.75	0.15	
3/28/2023	13:48:35	20.75	0.15	
3/28/2023	13:49:35	20.74	0.15	
3/28/2023	13:50:35	20.74	0.15	
3/28/2023	13:51:35	20.73	0.15	
3/28/2023	13:52:35	20.73	0.15	
3/28/2023	13:53:35	20.73	0.16	
3/28/2023	13:54:35	20.73	0.16	
3/28/2023	13:55:35	20.74	0.16	
3/28/2023	13:56:35	20.74	0.16	
3/28/2023	13:57:35	20.72	0.17	
3/28/2023	13:58:35	20.71	0.17	
3/28/2023	13:59:35	20.72	0.17	
3/28/2023	14:00:35	20.73	0.16	
3/28/2023	14:01:35	20.74	0.16	
3/28/2023	14:02:35	20.73	0.16	
3/28/2023	14:03:35	20.73	0.16	
3/28/2023	14:04:35	20.73	0.16	
3/28/2023	14:05:35	20.72	0.15	
3/28/2023	14:06:35	20.70	0.16	
3/28/2023	14:07:35	20.70	0.15	
3/28/2023	14:08:35	20.70	0.15	
3/28/2023	14:09:35	20.70	0.15	
3/28/2023	14:10:35	20.71	0.15	
3/28/2023	14:11:35	20.70	0.15	
3/28/2023	14:12:35	20.71	0.15	
3/28/2023	14:13:35	20.71	0.14	
3/28/2023	14:14:35	20.70	0.14	
3/28/2023	14:15:35	20.71	0.14	
3/28/2023	14:16:35	20.73	0.14	
3/28/2023	14:17:35	20.73	0.14	
3/28/2023	14:18:35	20.74	0.14	
3/28/2023	14:19:35	20.74	0.13	
3/28/2023	14:20:35	20.74	0.13	
3/28/2023	14:21:35	20.74	0.13	

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 2 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/28/2023	14:22:35	20.74	0.14	
3/28/2023	14:23:35	20.74	0.14	
3/28/2023	14:24:35	20.74	0.14	
3/28/2023	14:25:35	20.74	0.14	
3/28/2023	14:26:35	20.74	0.14	
3/28/2023	14:27:35	20.73	0.14	
3/28/2023	14:28:35	20.74	0.14	
3/28/2023	14:29:35	20.74	0.15	
3/28/2023	14:30:35	20.74	0.14	
3/28/2023	14:31:35	20.74	0.14	
3/28/2023	14:32:35	20.74	0.14	
3/28/2023	14:33:35	20.74	0.14	
3/28/2023	14:34:35	20.74	0.14	
3/28/2023	14:35:35	20.74	0.14	
3/28/2023	14:36:35	20.74	0.13	
3/28/2023	14:37:35	20.74	0.14	
3/28/2023	14:38:35	20.74	0.13	
3/28/2023	14:39:35	20.74	0.13	
3/28/2023	14:40:35	20.74	0.13	**End Run 2 Mn and CM40 Steel**
		20.77	**0.14**	**Average**
3/28/2023	14:41:35	20.74	0.13	
3/28/2023	14:42:35	20.74	0.13	
3/28/2023	14:43:35	20.73	0.13	
3/28/2023	14:44:35	20.74	0.13	
3/28/2023	14:45:35	0.41	0.20	
3/28/2023	14:46:35	0.04	0.05	**O2/CO2 System Zero**
3/28/2023	14:47:35	0.07	0.81	
3/28/2023	14:48:35	7.45	9.76	
3/28/2023	14:49:35	10.09	9.90	**O2/CO2 System Upscale**

Bison Engineering, Inc.
Gaseous Testing Summary

Client:	**Eagle Foundry Company**	Source:	**Cooling Bunker BH Outlet**
Facility:	**Eagle Foundry**	Test Date:	**3/29/2023 - Day 3**
Location:	**Eagle Creek, OR**		

Environmental Conditions / Test Notes: See isokinetic field data sheets.
Testing Personnel: JCR

Run	**White Iron Run 3**	**Steel Alloy Run 3**
Date	3/29/2023	3/29/2023
Run Start Time	5:15	10:35
Run End Time	9:15	14:45
Duration, min.	240	250
$CO_{2,}$ %vd	0.07	0.06
$O_{2,}$ %vd	20.92	20.90

Note: Negative concentrations are reported as zero.

Bison Engineering, Inc.
Method 3A Oxygen
Calibration Error, System Bias and System Drift

Client:	**Eagle Foundry Company**	Source:	**Cooling Bunker BH Outlet**	Instrument Make:	**Servomex**
Facility:	**Eagle Foundry**	Date:	**3/29/2023 - Day 3**	Instrument Model:	**1440**
Location:	**Eagle Creek, OR**			Instrument Serial #:	**01440D1-5041**

			Initial Values			Final Values								
		Analyzer Cal. Response	System Cal Response	Pre test System Cal. Bias % of span	pass/fail	System Cal Response	Post test System Cal. Bias % of span	pass/fail	System Drift % of span	pass/fail	Analyzer Span	Raw Avg Gas Conc	Corrected Gas Conc	Instrument Cal. Reference Gas
White Iron	zero	-0.07	0.00	0.32	pass	-0.05	0.09	pass	0.23	pass				
Run 3	upscale	10.08	10.08	0.00	pass	10.04	-0.18	pass	0.18	pass	22.01	20.84	20.92	10.11
Mn and CM40 Steel	zero	-0.07	-0.05	0.09	pass	-0.01	0.27	pass	0.18	pass				
Run 3	upscale	10.08	10.04	-0.18	pass	10.06	-0.09	pass	0.09	pass	22.01	20.81	20.90	10.11
				< 5%*			**< 5%***		**< 3%***					

Analyzer Calibration Error	Zero	Mid	High
Calibration Gas Standards	0	10.11	22.01
Cylinder Number		ALM054560	EB0157290
Calibration Gas Analyzer Response	-0.07	10.08	22.07
Analyzer Calibration Error	-0.32	-0.14	0.27
Analyzer Calibration Error < 2%*	pass	pass	pass

System Response Time	
30	seconds

System Leak Check		
	Completed	**Pass/Fail**
Pre-test	Yes	Pass
Post-test	Yes	Pass

Note: All units are in %
*Or < 0.5 % absolute difference

Bison Engineering, Inc.
Method 3A CO_2
Calibration Error, System Bias and System Drift

Client:	**Eagle Foundry Company**	Source:	**Cooling Bunker BH Outlet**	Instrument Make:	**Servomex**
Facility:	**Eagle Foundry**	Date:	**3/29/2023 - Day 3**	Instrument Model:	**1440**
Location:	**Eagle Creek, OR**			Instrument Serial #:	**01440D1-5041**

			Initial Values			Final Values								
		Analyzer Cal. Response	System Cal Response	Pre test System Cal. Bias % of span	pass/fail	System Cal Response	Post test System Cal. Bias % of span	pass/fail	System Drift % of span	pass/fail	Analyzer Span	Raw Avg Gas Conc	Corrected Gas Conc	Instrument Cal. Reference Gas
White Iron	zero	-0.02	0.02	0.18	pass	0.02	0.18	pass	0.00	pass				
Run 3	upscale	9.92	9.96	0.18	pass	9.93	0.05	pass	0.14	pass	21.66	0.09	0.07	9.924
Mn and CM40 Steel	zero	-0.02	0.02	0.18	pass	0.03	0.23	pass	0.05	pass				
Run 3	upscale	9.92	9.93	0.05	pass	9.98	0.28	pass	0.23	pass	21.66	0.09	0.06	9.924
				< 5%*			**< 5%***		**< 3%***					

Analyzer Calibration Error	Zero	Mid	High
Calibration Gas Standards	0	9.924	21.66
Cylinder Number		ALM054560	EB0157290
Calibration Gas Analyzer Response	-0.02	9.92	21.65
Analyzer Calibration Error	-0.09	-0.02	-0.05
Analyzer Calibration Error < 2%*	pass	pass	pass

System Response Time	
29	seconds

System Leak Check	Completed	Pass/Fail
Pre-test	Yes	Pass
Post-test	Yes	Pass

Note: All units are in %
*Or < 0.5 % absolute difference

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 3 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/29/2023	3:27:01	-2.05	0.02	
3/29/2023	3:28:01	-0.07	-0.02	**O2/CO2 Analyzer Zero**
3/29/2023	3:29:01	13.54	11.39	
3/29/2023	3:30:01	25.69	22.48	
3/29/2023	3:31:01	22.07	22.63	
3/29/2023	3:32:01	22.10	22.72	
3/29/2023	3:33:01	22.14	22.02	
3/29/2023	3:34:01	22.07	21.65	**O2/CO2 Analyzer Span**
3/29/2023	3:35:01	13.60	14.38	
3/29/2023	3:36:01	10.05	9.76	
3/29/2023	3:37:01	10.06	9.92	
3/29/2023	3:38:01	10.08	9.92	**O2/CO2 Analyzer Mid**
3/29/2023	3:39:01	10.02	9.92	
3/29/2023	3:40:01	10.22	8.32	
3/29/2023	3:41:01	17.84	0.46	
3/29/2023	3:42:01	-0.05	0.07	
3/29/2023	3:43:01	0.00	0.02	**O2/CO2 System Zero**
3/29/2023	3:44:01	-0.03	0.06	
3/29/2023	3:45:01	6.39	8.61	
3/29/2023	3:46:01	10.08	9.96	**O2/CO2 System Upscale**
3/29/2023	3:47:01	13.42	5.94	
3/29/2023	3:48:01	20.81	0.16	
3/29/2023	3:49:01	20.88	0.09	
				White Iron
3/29/2023	5:15:01	20.84	0.07	**Start Run 3**
3/29/2023	5:16:01	20.83	0.08	
3/29/2023	5:17:01	20.84	0.07	
3/29/2023	5:18:01	20.83	0.08	
3/29/2023	5:19:01	20.84	0.08	
3/29/2023	5:20:01	20.84	0.08	
3/29/2023	5:21:01	20.84	0.08	
3/29/2023	5:22:01	20.84	0.07	
3/29/2023	5:23:01	20.84	0.07	
3/29/2023	5:24:01	20.84	0.07	
3/29/2023	5:25:01	20.84	0.07	
3/29/2023	5:26:01	20.84	0.08	
3/29/2023	5:27:01	20.84	0.08	
3/29/2023	5:28:01	20.84	0.08	

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 3 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/29/2023	5:29:01	20.84	0.08	
3/29/2023	5:30:01	20.84	0.08	
3/29/2023	5:31:01	20.84	0.08	
3/29/2023	5:32:01	20.83	0.09	
3/29/2023	5:33:01	20.83	0.08	
3/29/2023	5:34:01	20.83	0.08	
3/29/2023	5:35:01	20.83	0.08	
3/29/2023	5:36:01	20.83	0.08	
3/29/2023	5:37:01	20.83	0.08	
3/29/2023	5:38:01	20.83	0.08	
3/29/2023	5:39:01	20.83	0.08	
3/29/2023	5:40:01	20.83	0.08	
3/29/2023	5:41:01	20.83	0.08	
3/29/2023	5:42:01	20.83	0.07	
3/29/2023	5:43:01	20.83	0.07	
3/29/2023	5:44:01	20.83	0.07	
3/29/2023	5:45:01	20.83	0.07	
3/29/2023	5:46:01	20.83	0.06	
3/29/2023	5:47:01	20.83	0.06	
3/29/2023	5:48:01	20.80	0.06	
3/29/2023	5:49:01	20.79	0.07	
3/29/2023	5:50:01	20.79	0.06	
3/29/2023	5:51:01	20.79	0.07	
3/29/2023	5:52:01	20.79	0.07	
3/29/2023	5:53:01	20.81	0.06	
3/29/2023	5:54:01	20.83	0.07	
3/29/2023	5:55:01	20.83	0.07	
3/29/2023	5:56:01	20.83	0.07	
3/29/2023	5:57:01	20.84	0.07	
3/29/2023	5:58:01	20.84	0.08	
3/29/2023	5:59:01	20.84	0.07	
3/29/2023	6:00:01	20.83	0.08	
3/29/2023	6:01:01	20.84	0.08	
3/29/2023	6:02:01	20.83	0.08	
3/29/2023	6:03:01	20.83	0.08	
3/29/2023	6:04:01	20.83	0.09	
3/29/2023	6:05:01	20.83	0.09	
3/29/2023	6:06:01	20.83	0.08	
3/29/2023	6:07:01	20.83	0.08	

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 3 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/29/2023	6:08:01	20.84	0.08	
3/29/2023	6:09:01	20.84	0.08	
3/29/2023	6:10:01	20.83	0.08	
3/29/2023	6:11:01	20.82	0.08	
3/29/2023	6:12:01	20.82	0.08	
3/29/2023	6:13:01	20.83	0.08	
3/29/2023	6:14:01	20.83	0.08	
3/29/2023	6:15:01	20.83	0.08	
3/29/2023	6:16:01	20.84	0.07	
3/29/2023	6:17:01	20.83	0.08	
3/29/2023	6:18:01	20.83	0.08	
3/29/2023	6:19:01	20.83	0.08	
3/29/2023	6:20:01	20.84	0.08	
3/29/2023	6:21:01	20.84	0.08	
3/29/2023	6:22:01	20.84	0.08	
3/29/2023	6:23:01	20.84	0.08	
3/29/2023	6:24:01	20.84	0.08	
3/29/2023	6:25:01	20.85	0.08	
3/29/2023	6:26:01	20.87	0.08	
3/29/2023	6:27:01	20.86	0.08	
3/29/2023	6:28:01	20.84	0.09	
3/29/2023	6:29:01	20.84	0.09	
3/29/2023	6:30:01	20.84	0.09	
3/29/2023	6:31:01	20.84	0.09	
3/29/2023	6:32:01	20.84	0.10	
3/29/2023	6:33:01	20.85	0.10	
3/29/2023	6:34:01	20.85	0.10	
3/29/2023	6:35:01	20.85	0.09	
3/29/2023	6:36:01	20.84	0.10	
3/29/2023	6:37:01	20.85	0.10	
3/29/2023	6:38:01	20.86	0.10	
3/29/2023	6:39:01	20.85	0.10	
3/29/2023	6:40:01	20.85	0.10	
3/29/2023	6:41:01	20.86	0.10	
3/29/2023	6:42:01	20.86	0.10	
3/29/2023	6:43:01	20.86	0.09	
3/29/2023	6:44:01	20.86	0.09	
3/29/2023	6:45:01	20.86	0.09	
3/29/2023	6:46:01	20.86	0.09	

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 3 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/29/2023	6:47:01	20.86	0.08	
3/29/2023	6:48:01	20.86	0.08	
3/29/2023	6:49:01	20.87	0.08	
3/29/2023	6:50:01	20.87	0.08	
3/29/2023	6:51:01	20.88	0.08	
3/29/2023	6:52:01	20.87	0.09	
3/29/2023	6:53:01	20.87	0.09	
3/29/2023	6:54:01	20.85	0.09	
3/29/2023	6:55:01	20.85	0.09	
3/29/2023	6:56:01	20.86	0.09	
3/29/2023	6:57:01	20.87	0.09	
3/29/2023	6:58:01	20.86	0.09	
3/29/2023	6:59:01	20.87	0.09	
3/29/2023	7:00:01	20.86	0.10	
3/29/2023	7:01:01	20.86	0.10	
3/29/2023	7:02:01	20.86	0.10	
3/29/2023	7:03:01	20.85	0.11	
3/29/2023	7:04:01	20.84	0.11	
3/29/2023	7:05:01	20.84	0.11	
3/29/2023	7:06:01	20.84	0.11	
3/29/2023	7:07:01	20.85	0.11	
3/29/2023	7:08:01	20.85	0.11	
3/29/2023	7:09:01	20.85	0.10	
3/29/2023	7:10:01	20.85	0.11	
3/29/2023	7:11:01	20.85	0.10	
3/29/2023	7:12:01	20.85	0.10	
3/29/2023	7:13:01	20.85	0.10	
3/29/2023	7:14:01	20.85	0.10	
3/29/2023	7:15:01	20.85	0.10	
3/29/2023	7:16:01	20.86	0.10	
3/29/2023	7:17:01	20.86	0.10	
3/29/2023	7:18:01	20.86	0.09	
3/29/2023	7:19:01	20.86	0.09	
3/29/2023	7:20:01	20.86	0.09	
3/29/2023	7:21:01	20.87	0.09	
3/29/2023	7:22:01	20.86	0.09	
3/29/2023	7:23:01	20.85	0.10	
3/29/2023	7:24:01	20.85	0.10	
3/29/2023	7:25:01	20.84	0.11	

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 3 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/29/2023	7:26:01	20.85	0.11	
3/29/2023	7:27:01	20.86	0.11	
3/29/2023	7:28:01	20.86	0.11	
3/29/2023	7:29:01	20.83	0.12	
3/29/2023	7:30:01	20.84	0.12	
3/29/2023	7:31:01	20.84	0.11	
3/29/2023	7:32:01	20.84	0.11	
3/29/2023	7:33:01	20.84	0.12	
3/29/2023	7:34:01	20.84	0.12	
3/29/2023	7:35:01	20.85	0.12	
3/29/2023	7:36:01	20.85	0.12	
3/29/2023	7:37:01	20.85	0.12	
3/29/2023	7:38:01	20.85	0.12	
3/29/2023	7:39:01	20.84	0.13	
3/29/2023	7:40:01	20.85	0.12	
3/29/2023	7:41:01	20.85	0.12	
3/29/2023	7:42:01	20.85	0.11	
3/29/2023	7:43:01	20.86	0.11	
3/29/2023	7:44:01	20.86	0.10	
3/29/2023	7:45:01	20.86	0.11	
3/29/2023	7:46:01	20.86	0.10	
3/29/2023	7:47:01	20.86	0.10	
3/29/2023	7:48:01	20.86	0.10	
3/29/2023	7:49:01	20.86	0.10	
3/29/2023	7:50:01	20.87	0.09	
3/29/2023	7:51:01	20.87	0.09	
3/29/2023	7:52:01	20.87	0.09	
3/29/2023	7:53:01	20.87	0.09	
3/29/2023	7:54:01	20.88	0.09	
3/29/2023	7:55:01	20.88	0.09	
3/29/2023	7:56:01	20.88	0.09	
3/29/2023	7:57:01	20.88	0.10	
3/29/2023	7:58:01	20.87	0.10	
3/29/2023	7:59:01	20.89	0.10	
3/29/2023	8:00:01	20.91	0.10	
3/29/2023	8:01:01	20.91	0.10	
3/29/2023	8:02:01	20.91	0.10	
3/29/2023	8:03:01	20.91	0.10	
3/29/2023	8:04:01	20.91	0.11	

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 3 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/29/2023	8:05:01	20.91	0.11	
3/29/2023	8:06:01	20.91	0.11	
3/29/2023	8:07:01	20.85	0.11	
3/29/2023	8:08:01	20.83	0.11	
3/29/2023	8:09:01	20.83	0.11	
3/29/2023	8:10:01	20.83	0.11	
3/29/2023	8:11:01	20.83	0.10	
3/29/2023	8:12:01	20.83	0.11	
3/29/2023	8:13:01	20.82	0.11	
3/29/2023	8:14:01	20.82	0.10	
3/29/2023	8:15:01	20.82	0.11	
3/29/2023	8:16:01	20.82	0.10	
3/29/2023	8:17:01	20.82	0.10	
3/29/2023	8:18:01	20.82	0.10	
3/29/2023	8:19:01	20.82	0.10	
3/29/2023	8:20:01	20.82	0.10	
3/29/2023	8:21:01	20.82	0.09	
3/29/2023	8:22:01	20.82	0.09	
3/29/2023	8:23:01	20.82	0.09	
3/29/2023	8:24:01	20.82	0.09	
3/29/2023	8:25:01	20.82	0.09	
3/29/2023	8:26:01	20.81	0.09	
3/29/2023	8:27:01	20.81	0.09	
3/29/2023	8:28:01	20.81	0.09	
3/29/2023	8:29:01	20.82	0.09	
3/29/2023	8:30:01	20.81	0.09	
3/29/2023	8:31:01	20.80	0.09	
3/29/2023	8:32:01	20.80	0.09	
3/29/2023	8:33:01	20.80	0.09	
3/29/2023	8:34:01	20.79	0.09	
3/29/2023	8:35:01	20.79	0.09	
3/29/2023	8:36:01	20.79	0.10	
3/29/2023	8:37:01	20.79	0.10	
3/29/2023	8:38:01	20.79	0.10	
3/29/2023	8:39:01	20.79	0.10	
3/29/2023	8:40:01	20.79	0.10	
3/29/2023	8:41:01	20.79	0.10	
3/29/2023	8:42:01	20.79	0.10	
3/29/2023	8:43:01	20.80	0.10	

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 3 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/29/2023	8:44:01	20.80	0.10	
3/29/2023	8:45:01	20.80	0.10	
3/29/2023	8:46:01	20.80	0.09	
3/29/2023	8:47:01	20.80	0.09	
3/29/2023	8:48:01	20.81	0.09	
3/29/2023	8:49:01	20.81	0.09	
3/29/2023	8:50:01	20.81	0.09	
3/29/2023	8:51:01	20.81	0.09	
3/29/2023	8:52:01	20.81	0.08	
3/29/2023	8:53:01	20.81	0.08	
3/29/2023	8:54:01	20.81	0.08	
3/29/2023	8:55:01	20.81	0.08	
3/29/2023	8:56:01	20.81	0.08	
3/29/2023	8:57:01	20.82	0.08	
3/29/2023	8:58:01	20.82	0.08	
3/29/2023	8:59:01	20.82	0.08	
3/29/2023	9:00:01	20.82	0.07	
3/29/2023	9:01:01	20.82	0.08	
3/29/2023	9:02:01	20.82	0.08	
3/29/2023	9:03:01	20.82	0.08	
3/29/2023	9:04:01	20.82	0.08	
3/29/2023	9:05:01	20.82	0.08	
3/29/2023	9:06:01	20.82	0.08	
3/29/2023	9:07:01	20.82	0.09	
3/29/2023	9:08:01	20.80	0.09	
3/29/2023	9:09:01	20.79	0.09	
3/29/2023	9:10:01	20.79	0.09	
3/29/2023	9:11:01	20.79	0.09	
3/29/2023	9:12:01	20.79	0.09	
3/29/2023	9:13:01	20.78	0.09	
3/29/2023	9:14:01	20.78	0.08	
3/29/2023	9:15:01	20.78	0.08	**End Run 3 White Iron**
		20.84	**0.09**	**Average**
3/29/2023	9:22:01	20.80	0.07	
3/29/2023	9:23:01	11.58	0.20	
3/29/2023	9:24:01	-0.01	0.02	
3/29/2023	9:25:01	-0.05	0.02	**O2/CO2 System Zero**
3/29/2023	9:26:01	1.35	4.45	

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 3 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/29/2023	9:27:01	10.04	9.93	**O2/CO2 System Upscale**
3/29/2023	9:28:01	13.37	5.85	
3/29/2023	9:29:01	20.70	0.16	
				Mn and CM40 Steel
3/29/2023	10:35:01	20.81	0.09	**Start Run 3**
3/29/2023	10:36:01	20.82	0.10	
3/29/2023	10:37:01	20.82	0.10	
3/29/2023	10:38:01	20.82	0.10	
3/29/2023	10:39:01	20.82	0.10	
3/29/2023	10:40:01	20.82	0.10	
3/29/2023	10:41:01	20.82	0.10	
3/29/2023	10:42:01	20.82	0.10	
3/29/2023	10:43:01	20.82	0.10	
3/29/2023	10:44:01	20.82	0.10	
3/29/2023	10:45:01	20.82	0.10	
3/29/2023	10:46:01	20.82	0.10	
3/29/2023	10:47:01	20.82	0.10	
3/29/2023	10:48:01	20.82	0.10	
3/29/2023	10:49:01	20.82	0.10	
3/29/2023	10:50:01	20.82	0.10	
3/29/2023	10:51:01	20.82	0.10	
3/29/2023	10:52:01	20.82	0.09	
3/29/2023	10:53:01	20.82	0.09	
3/29/2023	10:54:01	20.82	0.09	
3/29/2023	10:55:01	20.81	0.10	
3/29/2023	10:56:01	20.80	0.10	
3/29/2023	10:57:01	20.80	0.10	
3/29/2023	10:58:01	20.80	0.10	
3/29/2023	10:59:01	20.79	0.11	
3/29/2023	11:00:01	20.80	0.10	
3/29/2023	11:01:01	20.80	0.11	
3/29/2023	11:02:01	20.80	0.11	
3/29/2023	11:03:01	20.79	0.11	
3/29/2023	11:04:01	20.81	0.10	
3/29/2023	11:05:01	20.82	0.10	
3/29/2023	11:06:01	20.82	0.10	
3/29/2023	11:07:01	20.82	0.10	
3/29/2023	11:08:01	20.82	0.10	

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 3 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/29/2023	11:09:01	20.83	0.10	
3/29/2023	11:10:01	20.81	0.10	
3/29/2023	11:11:01	20.82	0.11	
3/29/2023	11:12:01	20.82	0.11	
3/29/2023	11:13:01	20.82	0.10	
3/29/2023	11:14:01	20.82	0.10	
3/29/2023	11:15:01	20.82	0.10	
3/29/2023	11:16:01	20.82	0.10	
3/29/2023	11:17:01	20.82	0.10	
3/29/2023	11:18:01	20.82	0.10	
3/29/2023	11:19:01	20.82	0.10	
3/29/2023	11:20:01	20.82	0.10	
3/29/2023	11:21:01	20.82	0.09	
3/29/2023	11:22:01	20.82	0.09	
3/29/2023	11:23:01	20.82	0.09	
3/29/2023	11:24:01	20.82	0.09	
3/29/2023	11:25:01	20.82	0.08	
3/29/2023	11:26:01	20.82	0.08	
3/29/2023	11:27:01	20.82	0.08	
3/29/2023	11:28:01	20.82	0.08	
3/29/2023	11:29:01	20.81	0.08	
3/29/2023	11:30:01	20.83	0.09	
3/29/2023	11:31:01	20.84	0.08	
3/29/2023	11:32:01	20.83	0.08	
3/29/2023	11:33:01	20.83	0.09	
3/29/2023	11:34:01	20.84	0.08	
3/29/2023	11:35:01	20.83	0.09	
3/29/2023	11:36:01	20.83	0.09	
3/29/2023	11:37:01	20.82	0.09	
3/29/2023	11:38:01	20.81	0.09	
3/29/2023	11:39:01	20.81	0.10	
3/29/2023	11:40:01	20.81	0.10	
3/29/2023	11:41:01	20.81	0.10	
3/29/2023	11:42:01	20.81	0.10	
3/29/2023	11:43:01	20.81	0.10	
3/29/2023	11:44:01	20.81	0.10	
3/29/2023	11:45:01	20.81	0.10	
3/29/2023	11:46:01	20.81	0.10	
3/29/2023	11:47:01	20.81	0.10	

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 3 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/29/2023	11:48:01	20.81	0.10	
3/29/2023	11:49:01	20.81	0.10	
3/29/2023	11:50:01	20.81	0.09	
3/29/2023	11:51:01	20.81	0.09	
3/29/2023	11:52:01	20.81	0.09	
3/29/2023	11:53:01	20.81	0.09	
3/29/2023	11:54:01	20.81	0.09	
3/29/2023	11:55:01	20.81	0.08	
3/29/2023	11:56:01	20.81	0.08	
3/29/2023	11:57:01	20.81	0.08	
3/29/2023	11:58:01	20.82	0.09	
3/29/2023	11:59:01	20.81	0.08	
3/29/2023	12:00:01	20.82	0.08	
3/29/2023	12:01:01	20.81	0.09	
3/29/2023	12:02:01	20.81	0.09	
3/29/2023	12:03:01	20.81	0.08	
3/29/2023	12:04:01	20.81	0.09	
3/29/2023	12:05:01	20.81	0.09	
3/29/2023	12:06:01	20.82	0.09	
3/29/2023	12:07:01	20.81	0.09	
3/29/2023	12:08:01	20.82	0.10	
3/29/2023	12:09:01	20.81	0.09	
3/29/2023	12:10:01	20.81	0.10	
3/29/2023	12:11:01	20.81	0.10	
3/29/2023	12:12:01	20.82	0.10	
3/29/2023	12:13:01	20.81	0.10	
3/29/2023	12:14:01	20.81	0.10	
3/29/2023	12:15:01	20.81	0.10	
3/29/2023	12:16:01	20.82	0.10	
3/29/2023	12:17:01	20.82	0.10	
3/29/2023	12:18:01	20.81	0.10	
3/29/2023	12:19:01	20.82	0.09	
3/29/2023	12:20:01	20.81	0.09	
3/29/2023	12:21:01	20.81	0.09	
3/29/2023	12:22:01	20.81	0.09	
3/29/2023	12:23:01	20.81	0.09	
3/29/2023	12:24:01	20.81	0.09	
3/29/2023	12:25:01	20.81	0.08	
3/29/2023	12:26:01	20.81	0.08	

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 3 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/29/2023	12:27:01	20.81	0.08	
3/29/2023	12:28:01	20.81	0.08	
3/29/2023	12:29:01	20.81	0.08	
3/29/2023	12:30:01	20.81	0.08	
3/29/2023	12:31:01	20.81	0.08	
3/29/2023	12:32:01	20.81	0.08	
3/29/2023	12:33:01	20.81	0.08	
3/29/2023	12:34:01	20.81	0.08	
3/29/2023	12:35:01	20.81	0.08	
3/29/2023	12:36:01	20.81	0.08	
3/29/2023	12:37:01	20.81	0.09	
3/29/2023	12:38:01	20.81	0.09	
3/29/2023	12:39:01	20.81	0.09	
3/29/2023	12:40:01	20.81	0.09	
3/29/2023	12:41:01	20.82	0.10	
3/29/2023	12:42:01	20.82	0.09	
3/29/2023	12:43:01	20.82	0.10	
3/29/2023	12:44:01	20.82	0.09	
3/29/2023	12:45:01	20.82	0.10	
3/29/2023	12:46:01	20.82	0.10	
3/29/2023	12:47:01	20.82	0.09	
3/29/2023	12:48:01	20.82	0.09	
3/29/2023	12:49:01	20.82	0.09	
3/29/2023	12:50:01	20.83	0.09	
3/29/2023	12:51:01	20.83	0.09	
3/29/2023	12:52:01	20.83	0.09	
3/29/2023	12:53:01	20.83	0.08	
3/29/2023	12:54:01	20.83	0.08	
3/29/2023	12:55:01	20.83	0.08	
3/29/2023	12:56:01	20.83	0.08	
3/29/2023	12:57:01	20.82	0.08	
3/29/2023	12:58:01	20.82	0.08	
3/29/2023	12:59:01	20.82	0.08	
3/29/2023	13:00:01	20.82	0.08	
3/29/2023	13:01:01	20.82	0.08	
3/29/2023	13:02:01	20.82	0.08	
3/29/2023	13:03:01	20.83	0.08	
3/29/2023	13:04:01	20.83	0.08	
3/29/2023	13:05:01	20.83	0.08	

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 3 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/29/2023	13:06:01	20.83	0.09	
3/29/2023	13:07:01	20.83	0.09	
3/29/2023	13:08:01	20.82	0.09	
3/29/2023	13:09:01	20.82	0.09	
3/29/2023	13:10:01	20.82	0.09	
3/29/2023	13:11:01	20.82	0.10	
3/29/2023	13:12:01	20.82	0.10	
3/29/2023	13:13:01	20.82	0.09	
3/29/2023	13:14:01	20.83	0.10	
3/29/2023	13:15:01	20.82	0.10	
3/29/2023	13:16:01	20.83	0.10	
3/29/2023	13:17:01	20.83	0.10	
3/29/2023	13:18:01	20.83	0.10	
3/29/2023	13:19:01	20.83	0.09	
3/29/2023	13:20:01	20.82	0.09	
3/29/2023	13:21:01	20.82	0.09	
3/29/2023	13:22:01	20.82	0.09	
3/29/2023	13:23:01	20.82	0.09	
3/29/2023	13:24:01	20.82	0.09	
3/29/2023	13:25:01	20.82	0.09	
3/29/2023	13:26:01	20.82	0.08	
3/29/2023	13:27:01	20.82	0.08	
3/29/2023	13:28:01	20.82	0.08	
3/29/2023	13:29:01	20.82	0.08	
3/29/2023	13:30:01	20.82	0.08	
3/29/2023	13:31:01	20.82	0.08	
3/29/2023	13:32:01	20.82	0.08	
3/29/2023	13:33:01	20.81	0.09	
3/29/2023	13:34:01	20.81	0.09	
3/29/2023	13:35:01	20.82	0.09	
3/29/2023	13:36:01	20.82	0.09	
3/29/2023	13:37:01	20.82	0.09	
3/29/2023	13:38:01	20.80	0.09	
3/29/2023	13:39:01	20.79	0.10	
3/29/2023	13:40:01	20.77	0.12	
3/29/2023	13:41:01	20.77	0.12	
3/29/2023	13:42:01	20.78	0.12	
3/29/2023	13:43:01	20.81	0.11	
3/29/2023	13:44:01	20.82	0.10	

Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 3 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/29/2023	13:45:01	20.82	0.10	
3/29/2023	13:46:01	20.82	0.10	
3/29/2023	13:47:01	20.82	0.10	
3/29/2023	13:48:01	20.80	0.11	
3/29/2023	13:49:01	20.81	0.11	
3/29/2023	13:50:01	20.80	0.11	
3/29/2023	13:51:01	20.80	0.10	
3/29/2023	13:52:01	20.79	0.11	
3/29/2023	13:53:01	20.79	0.10	
3/29/2023	13:54:01	20.78	0.11	
3/29/2023	13:55:01	20.78	0.10	
3/29/2023	13:56:01	20.77	0.10	
3/29/2023	13:57:01	20.77	0.10	
3/29/2023	13:58:01	20.75	0.11	
3/29/2023	13:59:01	20.76	0.10	
3/29/2023	14:00:01	20.77	0.09	
3/29/2023	14:01:01	20.77	0.09	
3/29/2023	14:02:01	20.76	0.11	
3/29/2023	14:03:01	20.76	0.10	
3/29/2023	14:04:01	20.76	0.11	
3/29/2023	14:05:01	20.76	0.10	
3/29/2023	14:06:01	20.78	0.09	
3/29/2023	14:07:01	20.78	0.10	
3/29/2023	14:08:01	20.77	0.10	
3/29/2023	14:09:01	20.77	0.11	
3/29/2023	14:10:01	20.77	0.10	
3/29/2023	14:11:01	20.75	0.11	
3/29/2023	14:12:01	20.77	0.10	
3/29/2023	14:13:01	20.78	0.10	
3/29/2023	14:14:01	20.78	0.10	
3/29/2023	14:15:01	20.78	0.10	
3/29/2023	14:16:01	20.78	0.10	
3/29/2023	14:17:01	20.78	0.09	
3/29/2023	14:18:01	20.78	0.09	
3/29/2023	14:19:01	20.79	0.09	
3/29/2023	14:20:01	20.79	0.09	
3/29/2023	14:21:01	20.79	0.09	
3/29/2023	14:22:01	20.79	0.09	
3/29/2023	14:23:01	20.79	0.08	

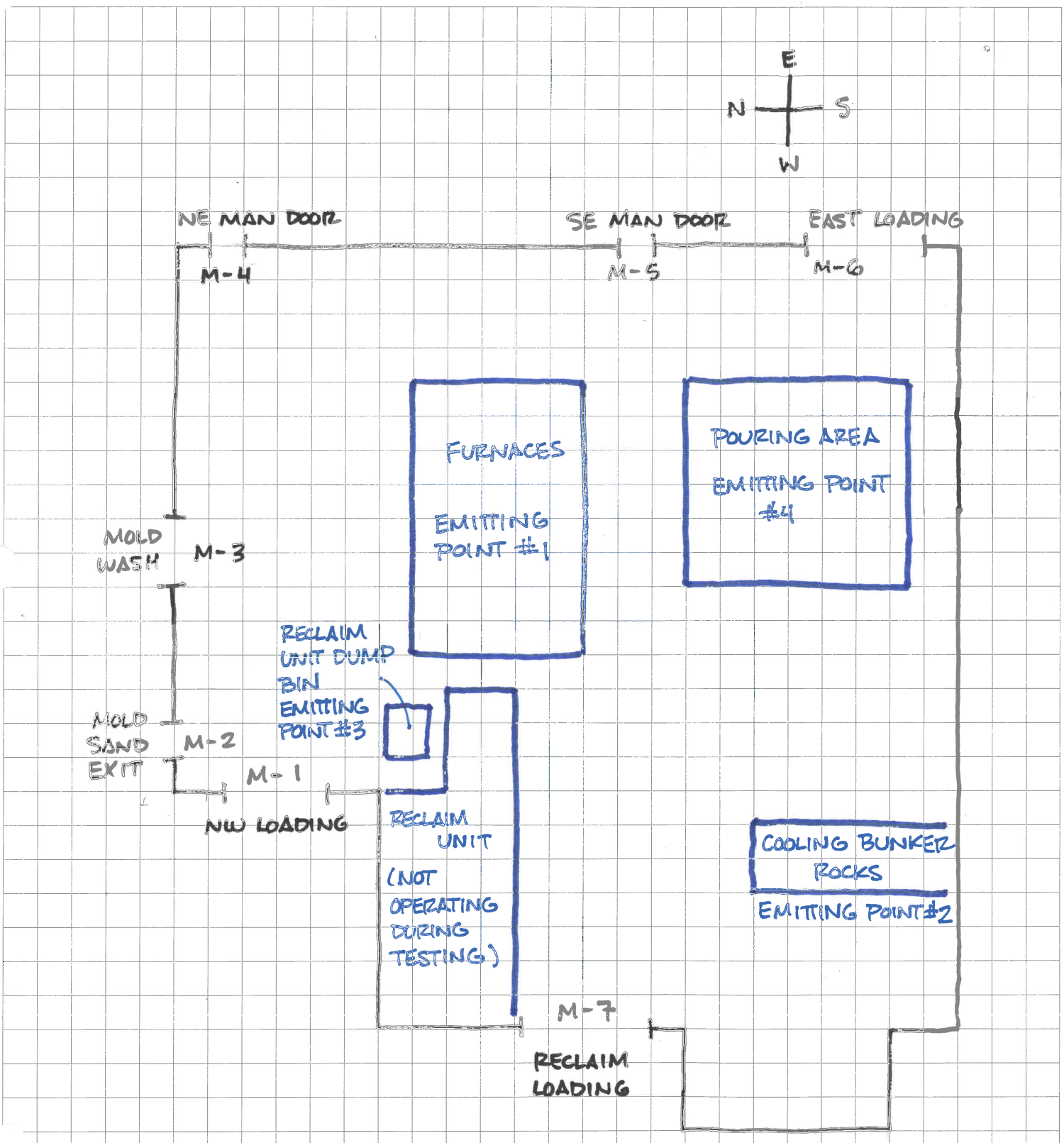
Eagle Foundry Company
Cooling Bunker Baghouse Outlet
Day 3 Calibrations and Test Runs

Date	Time	O2 [%]	CO2 [%]	NOTES
3/29/2023	14:24:01	20.79	0.08	
3/29/2023	14:25:01	20.79	0.07	
3/29/2023	14:26:01	20.79	0.07	
3/29/2023	14:27:01	20.79	0.07	
3/29/2023	14:28:01	20.79	0.07	
3/29/2023	14:29:01	20.79	0.07	
3/29/2023	14:30:01	20.79	0.07	
3/29/2023	14:31:01	20.80	0.07	
3/29/2023	14:32:01	20.80	0.07	
3/29/2023	14:33:01	20.81	0.07	
3/29/2023	14:34:01	20.81	0.07	
3/29/2023	14:35:01	20.81	0.08	
3/29/2023	14:36:01	20.81	0.08	
3/29/2023	14:37:01	20.81	0.08	
3/29/2023	14:38:01	20.81	0.08	
3/29/2023	14:39:01	20.80	0.08	
3/29/2023	14:40:01	20.80	0.09	
3/29/2023	14:41:01	20.80	0.08	
3/29/2023	14:42:01	20.80	0.08	
3/29/2023	14:43:01	20.80	0.08	
3/29/2023	14:44:01	20.80	0.08	
3/29/2023	14:45:01	20.80	0.08	**End Run 3 Mn and CM40 Steel**
		20.81	**0.09**	**Average**
3/29/2023	14:46:01	20.80	0.08	
3/29/2023	14:47:01	20.79	0.08	
3/29/2023	14:48:01	20.77	0.07	
3/29/2023	14:49:01	20.54	0.12	
3/29/2023	14:50:01	-0.83	0.13	
3/29/2023	14:51:01	-0.01	0.03	**O2/CO2 System Zero**
3/29/2023	14:52:01	-0.06	0.07	
3/29/2023	14:53:01	7.11	9.33	
3/29/2023	14:54:01	10.06	9.98	**O2/CO2 System Upscale**
3/29/2023	14:55:01	10.07	10.00	
3/29/2023	14:56:01	10.08	10.10	
3/29/2023	14:57:01	11.52	7.32	

APPENDIX D: PTE VERIFICATION DOCUMENTATION

BISON ENGINEERING, INC.

COMPANY	**Eagle Foundry Company**
FACILITY	**Eagle Foundry**
LOCATION	**Eagle Creek, Oregon**
SOURCE	**Main Foundry**
DATE	**03/24/23**
METHOD	**204**
PARAMETER	**PTE Verification**



Bison Engineering, Inc.
Method 204 Area Calculations

Enclosure Interior Dimensions

Location Description		Length (ft)	Width (ft)	Area (ft^2)
E	Wall	130.33	26.83	3,497
S	Wall	146.58	22.00	3,225
W	Wall	79.75	26.83	2,140
		50.58	19.33	978
N	Wall	120.25	19.33	2,325
		26.33	19.33	509
Floor Area 1		146.58	79.75	11,690
Floor Area 2		120.25	50.58	6,083
Ceiling Area 1		146.58	79.75	11,690
Ceiling Area 2		120.25	50.58	6,083
			Total enclosure area:	48,219 ft^2

Note: The ceiling is assumed to have the same surface area as the floor.

NEAR Calculation

Total area of NDOs (A_N): 197 ft^2
Total enclosure area (A_T): 48,219 ft^2
0.004 ≤0.05 PASS

NEAR - NDO to enclosure area ratio

NDO Dimensions

NDO #	NDO Location Description	Height (in)	Width (in)	Area (in^2)
M-6	East Loading	84	121	10,164
M-5	SE Man Door	1	35	35
M-4	NE Man Door	1	35	35
M-3	Mold Wash	1	93	93
M-2	Waste Sand Exit	36	54	1,944
M-1	NW Loading	91	103	9,373
M-7	Reclaim Loading	91	74	6,734
		Total area of all NDOs:	197.1	ft^2

Total area of Normal Operation Draft Openings

Equivalent Diameters

NDO #	NDO Location Description	ED	Distance to emitting point (in)	# of Diameters	
M-6	East Loading	99.16	420	4.2	PASS
M-5	SE Man Door	1.94	660	339.4	PASS
M-4	NE Man Door	1.94	720	370.3	PASS
M-3	Mold Wash	1.98	840	424.5	PASS
M-2	Waste Sand Exit	43.20	900	20.8	PASS
M-1	NW Loading	96.63	426	4.4	PASS
M-7	Reclaim Loading	81.62	465	5.7	PASS

Example Calculations:

NEAR = A_N/A_T 0.004
Where A_N 197 ft^2
Where A_T 48,219 ft^2

ED= (2*Length*Width) / (Length + Width) = 99.16 in
Where Length= 84 in
Where Width= 121 in
(M-6, East Loading)

Bison Engineering, Inc.
Method 204 Field Data

Client: Eagle Foundry Company
Source: Main Foundry
Location: Eagle Creek, Oregon
Date: 3/24/2023

NDO Description		East Loading			SE Man Door			NE Man Door			Mold Wash		
Time (hh:mm)		12:42	12:55	13:10	12:39	12:53	13:09	12:36	12:51	13:08	12:34	12:49	13:07
Units		Inches of H_2O			Inches of H_2O			Inches of H_2O			Inches of H_2O		
Readings	#1	-0.0082	-0.0106	-0.0080	-0.0103	-0.0194	-0.0091	-0.0182	-0.0128	-0.0233	-0.0097	-0.0215	-0.0237
	#2	-0.0200	-0.0134	-0.0093	-0.0121	-0.0166	-0.0104	-0.0114	-0.0155	-0.0102	-0.0159	-0.0192	-0.0263
	#3	-0.0071	-0.0073	-0.0074	-0.0091	-0.0155	-0.0082	-0.0077	-0.0090	-0.0119	-0.0319	-0.0228	-0.0258
	#4	-0.0083	-0.0072	-0.0080	-0.0094	-0.0215	-0.0079	-0.0121	-0.0075	-0.0073	-0.0162	-0.0170	-0.0294
	#5	-0.0115	-0.0126	-0.0086	-0.0084	-0.0217	-0.0085	-0.0095	-0.0122	-0.0103	-0.0099	-0.0287	-0.0180
Average		**-0.0110**	**-0.0102**	**-0.0083**	**-0.0099**	**-0.0189**	**-0.0088**	**-0.0118**	**-0.0114**	**-0.0126**	**-0.0167**	**-0.0218**	**-0.0246**
Overall			**-0.0098**			**-0.0125**			**-0.0119**			**-0.0211**	

NDO Description		Mold Sand Exit			NW Loading			Reclaim Loading		
Time (hh:mm)		12:31	12:48	13:06	12:27	12:47	13:04	12:45	13:02	13:12
Units		Inches of H_2O			Inches of H_2O			Inches of H_2O		
Readings	#1	-0.0089	-0.0113	-0.0125	-0.0108	-0.1160	-0.0146	-0.0078	-0.0114	-0.0100
	#2	-0.0091	-0.0173	-0.0078	-0.0090	-0.0135	-0.0108	-0.0071	-0.0083	-0.0102
	#3	-0.0127	-0.0315	-0.0097	-0.0092	-0.0121	-0.0128	-0.0083	-0.0081	-0.0085
	#4	-0.0075	-0.0361	-0.0087	-0.1100	-0.0257	-0.0221	-0.0089	-0.0096	-0.0080
	#5	-0.0078	-0.0240	-0.0173	-0.0890	-0.0107	-0.0090	-0.0108	-0.0111	-0.0097
Average		**-0.0092**	**-0.0240**	**-0.0112**	**-0.0456**	**-0.0356**	**-0.0139**	**-0.0086**	**-0.0097**	**-0.0093**
Overall			**-0.0148**			**-0.0317**			**-0.0092**	

Bison Engineering, Inc.
EPA Method 204
Documentation of Inward Flow Direction

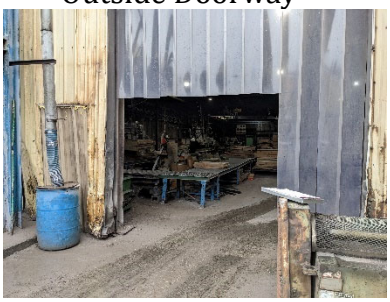
Client: Eagle Foundry Company
Location: Eagle Creek, Oregon
Enclosure: Main Foundry Building
Date: March 24, 2023

The following photographs document inward flow direction at NDOs M-1, NW Loading door; M-2, Mold Sand Exit door; M-3, Mold Wash door; M-4, NE Man door; M-5, SE Man door; M-6, East Loading door; and M-7, Reclaim Loading door.

NW Loading (M-1)

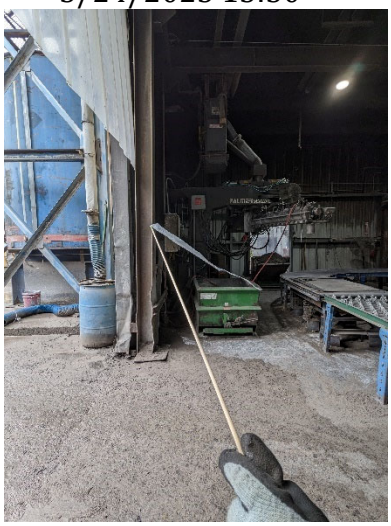
Inside Doorway

Outside Doorway

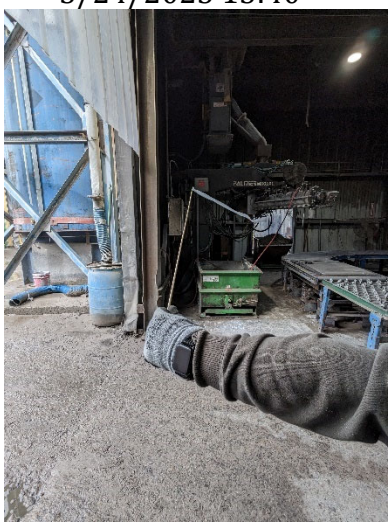


3/24/2023 13:20

3/24/2023 13:30



3/24/2023 13:40



3/24/2023 13:50

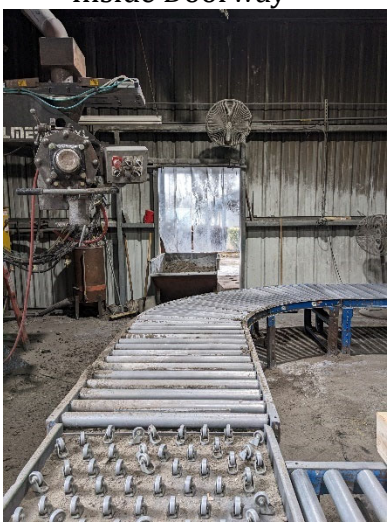
3/24/2023 14:00

3/24/2023 14:10

3/24/2023 14:20

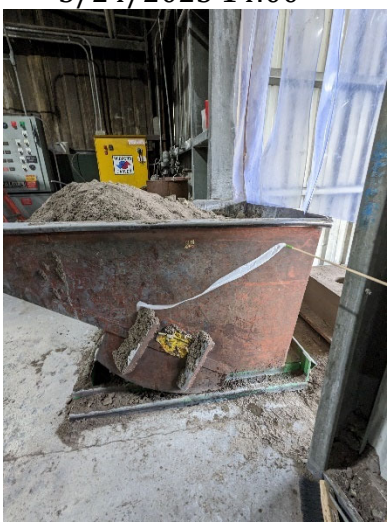
Mold Sand Exit (M-2)

Inside Doorway



3/24/2023 13:30

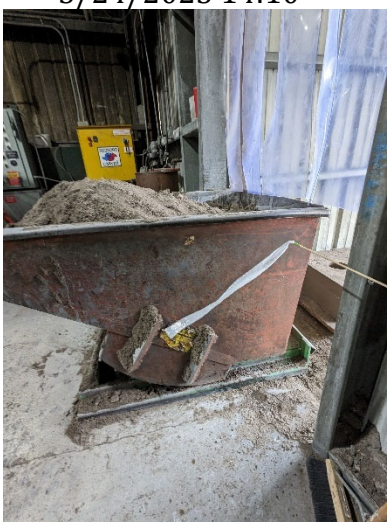
3/24/2023 14:00



Outside Doorway

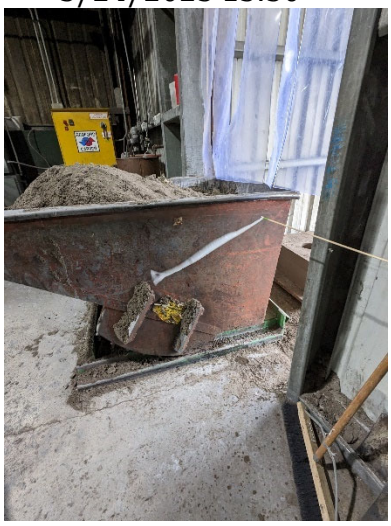
3/24/2023 13:40

3/24/2023 14:10

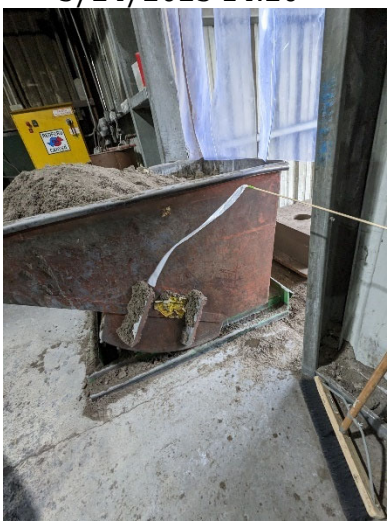


3/24/2023 13:20

3/24/2023 13:50



3/24/2023 14:20



Mold Wash (M-3)

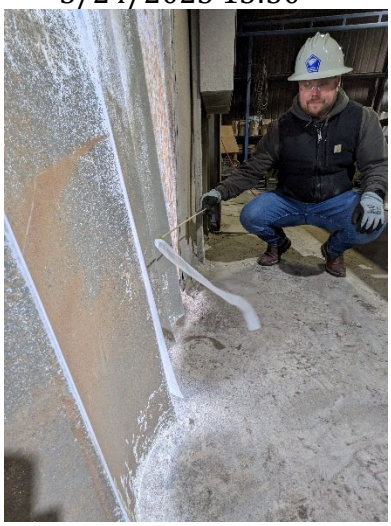
Outside Doorway

3/24/2023 13:21

3/24/2023 13:31

3/24/2023 13:40

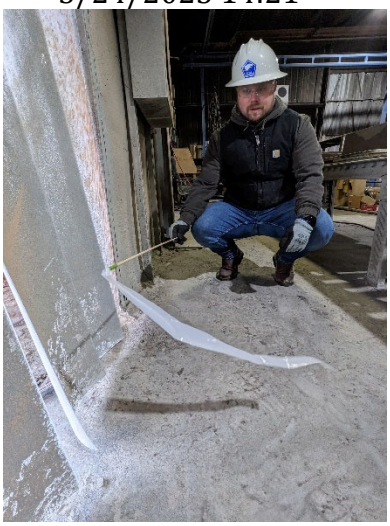
3/24/2023 13:50



3/24/2023 14:01

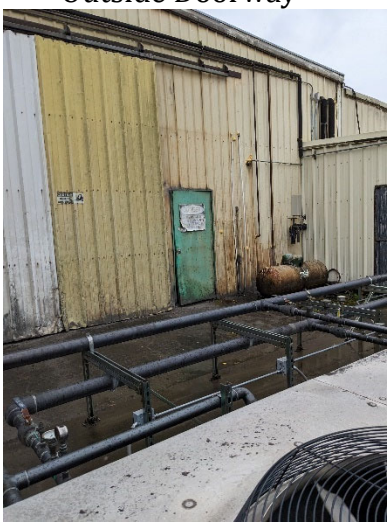
3/24/2023 14:11

3/24/2023 14:21



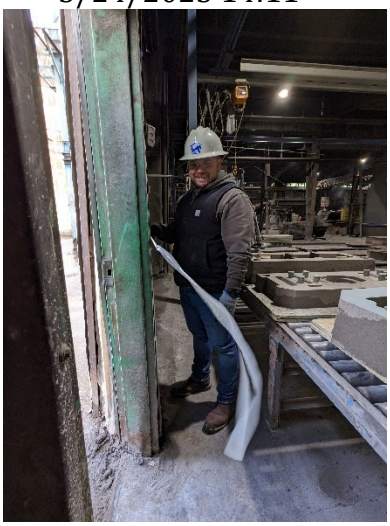
NE Man Door (M-4)

Outside Doorway



3/24/2023 13:41

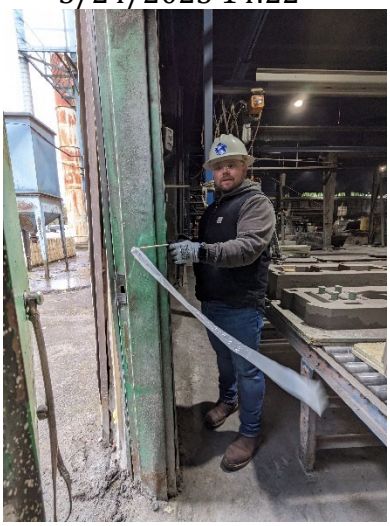
3/24/2023 14:11



3/24/2023 13:21

3/24/2023 13:51

3/24/2023 14:22

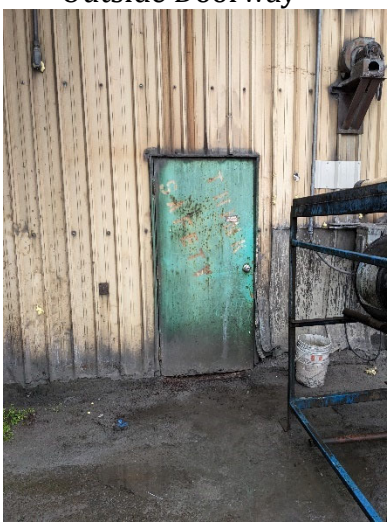


3/24/2023 13:31

3/24/2023 14:01

SE Man Door (M-5)

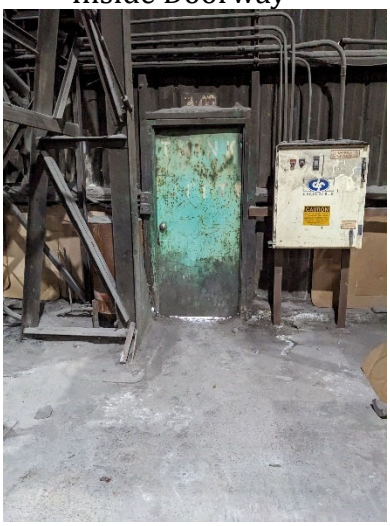
Outside Doorway



3/24/2023 13:33

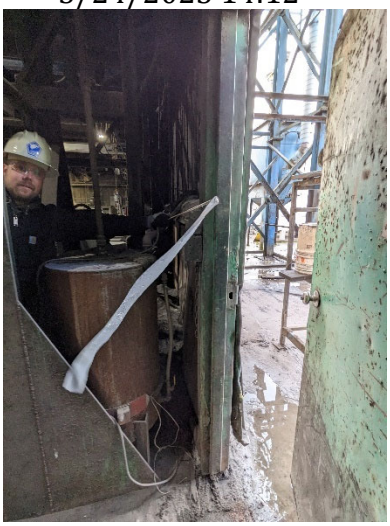
3/24/2023 14:02

Inside Doorway



3/24/2023 13:41

3/24/2023 14:12



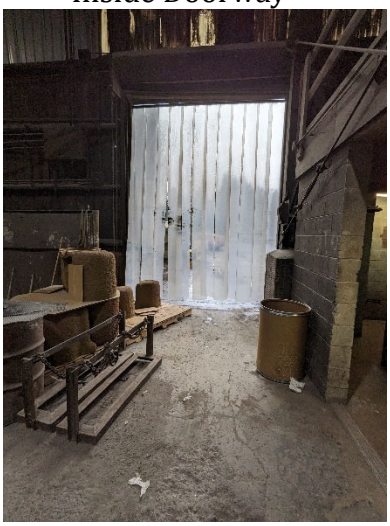
3/24/2023 13:22

3/24/2023 13:52

3/24/2023 14:22

East Loading (M-6)

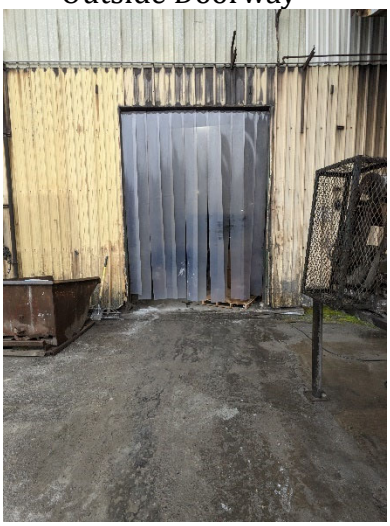
Inside Doorway



3/24/2023 13:33

3/24/2023 14:02

Outside Doorway



3/24/2023 13:42

3/24/2023 14:12

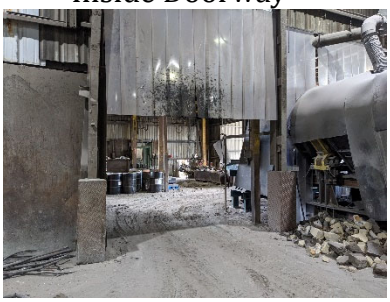
3/24/2023 13:23

3/24/2023 13:52

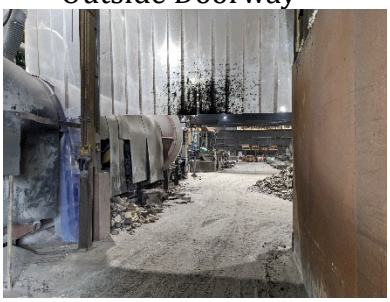
3/24/2023 14:23

Reclaim Loading (M-7)

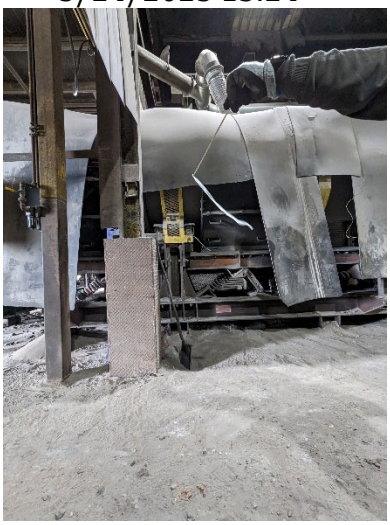
Inside Doorway



Outside Doorway



3/24/2023 13:24



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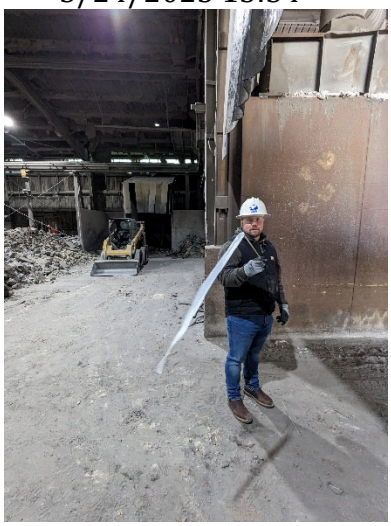
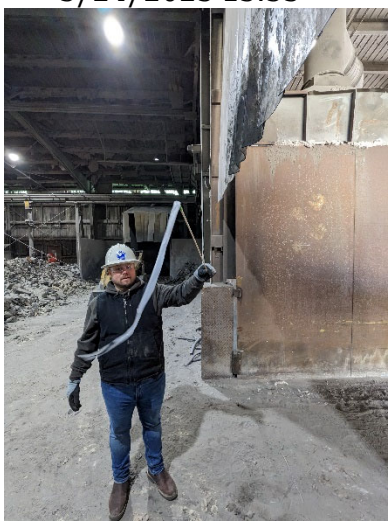
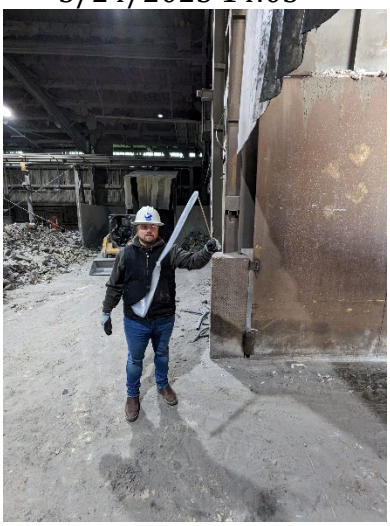


3/24/2023 13:43

3/24/2023 13:53

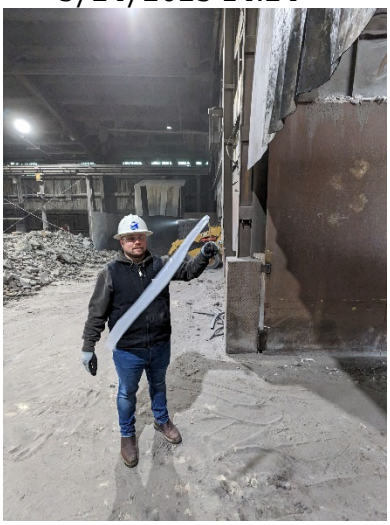


3/24/2023 14:03



3/24/2023 14:13

3/24/2023 14:24



APPENDIX E: LABORATORY REPORTS

BISON ENGINEERING

PROJECT: EFC223119

CLIENT # B020
REPORT # 23-174

SUBMITTED BY:
CHESTER LabNet
12242 S.W. GARDEN PLACE
TIGARD, OR 97223
(503)624-2183/FAX (503)624-2653
www.ChesterLab.Net

CHESTER LabNet

12242 SW Garden Place ❖ Tigard, OR 97223-8246 ❖ USA
Telephone 503-624-2183 ❖ Fax 503-624-2653 ❖ www.chesterlab.net

Case Narrative

Date: April 14, 2023

General Information

Client:	Bison Engineering
Client Number:	B020
Report Number:	23-174
Sample Description:	Impinger Solutions
Sample Numbers:	23-S595 – 23-S608

Analysis

Analytes:	Hexavalent Chromium
Analytical Protocols:	SW-846 Method 0061 (revision 0, December 1996)
Analytical Notes:	No problems were encountered during the analyses. The results are not blank corrected.
QA/QC Review:	All the data have been reviewed by the analysts performing the analyses and the project manager. All of the quality control and sample-specific information in this package is complete and meets or exceeds the minimum requirements for acceptability.
Comments:	If you have any questions or concerns regarding this analysis, please feel free to contact the project manager.
Disclaimer:	This report shall not be reproduced, except in full, without the written approval of the laboratory. The results only represent those of the samples as received into the laboratory. All data are reported to the detection limit. Results <5x DL must be considered to have a higher degree of uncertainty associated with them. Due to the statistical process of detection limit determination, data in this report should not be used for statistical analysis as the data has been censored in such a manner as to bias statistical analyses high.

Paul Duda 4/14/23

Project Manager Date
Paul Duda

Client: B020 - Bison Engineering
Report Number: 23-174

Lab ID: 23-S595
Client ID: 0061 Cont. 1 WI Run 1
Site: White Iron
Source: BH 1 Out
Sample Date: 3/27/23
Sample Volume: 500. mL

Analyte	µg/L Conc.	DL	µg/sample Conc.	DL
Cr VI	0.0150	0.010	0.0075	0.0050

Lab ID: 23-S596
Client ID: 0061 Cont. 1 WI Run 2
Site: White Iron
Source: BH 1 Out
Sample Date: 3/28/23
Sample Volume: 445. mL

Analyte	µg/L Conc.	DL	µg/sample Conc.	DL
Cr VI	0.0400	0.010	0.0178	0.0044

Lab ID: 23-S597
Client ID: 0061 Cont. 1 WI Run 3
Site: White Iron
Source: BH 1 Out
Sample Date: 3/29/23
Sample Volume: 590. mL

Analyte	µg/L Conc.	DL	µg/sample Conc.	DL
Cr VI	0.0330	0.010	0.0195	0.0059

Lab ID: 23-S598
Client ID: 0061 Cont. 1 WI Run 1
Site: White Iron
Source: BH 2 Out
Sample Date: 3/27/23
Sample Volume: 555. mL

Analyte	µg/L Conc.	DL	µg/sample Conc.	DL
Cr VI	< DL	0.010	< DL	0.0056

Lab ID: 23-S599
Client ID: 0061 Cont. 1 WI Run 2
Site: White Iron
Source: BH 2 Out
Sample Date: 3/28/23
Sample Volume: 480. mL

Analyte	µg/L Conc.	DL	µg/sample Conc.	DL
Cr VI	0.0330	0.010	0.0158	0.0048

Client: B020 - Bison Engineering
Report Number: 23-174

Lab ID: 23-S600
Client ID: 0061 Cont. 1 WI Run 3
Site: White Iron
Source: BH 2 Out
Sample Date: 3/29/23
Sample Volume: 600. mL

Analyte	µg/L Conc.	DL	µg/sample Conc.	DL
Cr VI	0.0740	0.010	0.0444	0.0060

Lab ID: 23-S601
Client ID: 0061 Cont. 1 MS Run 1
Site: Mn Steel
Source: BH 1 Out
Sample Date: 3/27/23
Sample Volume: 440. mL

Analyte	µg/L Conc.	DL	µg/sample Conc.	DL
Cr VI	0.0420	0.010	0.0185	0.0044

Lab ID: 23-S602
Client ID: 0061 Cont. 1 MS Run 2
Site: Mn Steel
Source: BH 1 Out
Sample Date: 3/28/23
Sample Volume: 400. mL

Analyte	µg/L Conc.	DL	µg/sample Conc.	DL
Cr VI	0.0240	0.010	0.0096	0.0040

Lab ID: 23-S603
Client ID: 0061 Cont. 1 MS Run 3
Site: Mn Steel
Source: BH 1 Out
Sample Date: 3/29/23
Sample Volume: 510. mL

Analyte	µg/L Conc.	DL	µg/sample Conc.	DL
Cr VI	0.0380	0.010	0.0194	0.0051

Lab ID: 23-S604
Client ID: 0061 Cont. 1 MS Run 1
Site: Mn Steel
Source: BH 2 Out
Sample Date: 3/27/23
Sample Volume: 450. mL

Analyte	µg/L Conc.	DL	µg/sample Conc.	DL
Cr VI	0.0740	0.010	0.0333	0.0045

Client: B020 - Bison Engineering
Report Number: 23-174

Lab ID: 23-S605
Client ID: 0061 Cont. 1 MS Run 2
Site: Mn Steel
Source: BH 2 Out
Sample Date: 3/28/23
Sample Volume: 465. mL

Analyte	µg/L Conc.	DL	µg/sample Conc.	DL
Cr VI	0.0580	0.010	0.0270	0.0046

Lab ID: 23-S606
Client ID: 0061 Cont. 1 MS Run 3
Site: Mn Steel
Source: BH 2 Out
Sample Date: 3/29/23
Sample Volume: 515. mL

Analyte	µg/L Conc.	DL	µg/sample Conc.	DL
Cr VI	0.0210	0.010	0.0108	0.0052

Lab ID: 23-S607
Client ID: 0061 Cont. 4
Sample Date: 3/29/23
Sample Volume: 300. mL

Analyte	µg/L Conc.	DL	µg/sample Conc.	DL
Cr VI	< DL	0.010	< DL	0.0030

Lab ID: 23-S608
Client ID: 0061 Cont. 5
Sample Date: 3/29/23
Sample Volume: 200. mL

Analyte	µg/L Conc.	DL	µg/sample Conc.	DL
Cr VI	0.0240	0.010	0.0048	0.0020

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: Ion Chromatography-PCR
Instrument: Aquion Cr VI IC (1)
Sample Description: SW846 0061
Report Number: 23-174

Blank Data

Analyte	Sample ID	Measured Conc. µg/L	DL Conc. µg/L
Cr VI	ICB	< DL	0.010
Cr VI	CCB	< DL	0.010
Cr VI	CCB	< DL	0.010

ICB: Initial Calibration Blank CCB: Continuing Calibration Blank

Calibration QC

Analyte	Sample ID	Standard Conc. µg/L	Measured Conc. µg/L	Percent Recovery
Cr VI	ICV	0.500	0.511	102.2
Cr VI	LL-LCS	0.030	0.037	123.3
Cr VI	CCV	0.500	0.514	102.8
Cr VI	CCV	0.500	0.514	102.8

ICV: Initial Calibration Verification CCV: Continuing Calibration Verification
Calibration Verification Limits: 90% - 110% Recovery
Low Level-LCS Limits: 50% - 150% Recovery
LL-LCS results are insignificant if sample results are >10x LL-LCS concentration

Duplicate Data

Analyte	Sample ID	Sample Conc. µg/L	Duplicate Conc. µg/L	RPD
Cr VI	23-S595	0.015	0.016	6.45 *
Cr VI	23-S601	0.042	0.039	7.41 *

RPD = {(sample-duplicate)/[(sample+duplicate)/2]}x100 Duplicate Limit: 20% RPD
N/C: RPD is not calculated when sample or duplicate is below detection limit
*: per EPA CLP protocol, control limits do not apply if sample and/or duplicate concentration is less than 5x the detection limit

Laboratory Control Sample/Matrix Spike Analysis

Analyte	Sample ID	Sample Conc. µg/L	Spike Conc. µg/L	Spike Amount µg/L	Percent Recovery
Cr VI	23-S596	0.040	0.537	0.500	99.4
Cr VI	23-S602	0.024	0.532	0.500	102.

LCS Limit: 80% - 120% Recovery Spike Limit: 75% - 125% Recovery
*: per EPA CLP protocol, control limits do not apply if spike concentration is less than 25% of the sample concentration

CHESTER LABNET

SOURCE SAMPLE RECEIPT CHECKLIST

Client	Bison Engineering	Date	3/30/23
# Runs	12 + Blanks	Report #	23-174

Package intact?	hand delivered	
Chain-of-Custody form inspected	✓	
CoC present with samples?	✓	
CoC indicates analytical methodology to be used? (eg M29, etc.)	SW846 0061	!!
Has CoC been signed by client?	✓	
Custody release date and time noted on CoC?	✓	
All sample containers inspected	✓	
Does number of samples match number on CoC form?	✓	!!
Do all sample ID numbers match those on the CoC form?	✓	!!
Did client mark sample volumes prior to shipment?	✓	
Sample temperature recorded?	< 4 °C	
Are the sample containers intact?	✓	!!
If present, Audit Sample intact?	n/a	!!
Are signs of leakage present?	✓	*
Chain-of-Custody form signed and dated by CLN	✓	
Corrective actions		
Client contacted due to mismatching sample ID numbers		
Client contacted due to broken sample container(s)		
Client contacted due to leaking sample container(s)		
Client contacted for verification of methodology?		
Corrective actions documented?		
Corrective actions accomplished?		

Items marked !! shall be addressed ***prior to any analytical work being started*** *.*
*Items marked * shall be* ***noted in case narrative*** *upon reporting of results to client.*

Signed Pat DL

Notes

23-174

Company Name: BISON ENGINEERING		
Contact: JACOB RANKIN	Phone: (208)954-7138	
E-Mail Address: jrankin@bison-eng.com	Fax:	
Report Address: 3143 E LYNDALE AVE.		
City: HELENA	State: MT	Zip: 59601
Billing Address: 3143 E LYNDALE AVE.		
City: HELENA	State: MT	Zip: 59601
PO #: EFC223119	Project: EFC223119	

CHESTER LabNet
12242 SW Garden Place
Tigard, OR 97223
(503) 624-2183
Fax (503) 624-2653
cln@chesterlab.net

CHAIN-OF-CUSTODY RECORD

LabNet ID	Field Sample ID	Site	Sample Date	Volume (m^3)	Particle Size	Analysis Requested: EPA 0061	Remarks
23-S595	CONT. #1 WI	BH 1 OUT.	3/27/23	RUN 1		X	
23-S598	CONT. #1 WI	BH 2 OUT.	3/27/23	RUN 1		X	
23-S601	CONT. #1 MS	BH 1 OUT.	3/27/23	RUN 1		X	
23-S604	CONT. #1 MS	BH 2 OUT.	3/27/23	RUN 1		X	
23-S596	CONT. #1 WI	BH 1 OUT.	3/28/23	RUN 2		X	
23-S599	CONT. #1 WI	BH 2 OUT.	3/28/23	↓		X	
23-S602	CONT. #1 MS	BH 1 OUT.	3/28/23	↓		X	
23-S605	CONT. #1 MS	BH 2 OUT.	3/28/23	↓		X	
23-S597	CONT. #1 WI	BH 1 OUT.	3/29/23	RUN 3		X	
23-S600	CONT. #1 WI	BH 2 OUT.	3/29/23	↓		X	
23-S603	CONT. #1 MS	BH 1 OUT.	3/29/23	↓		X	
23-S606	CONT. #1 MS	BH 2 OUT.	3/29/23	↓		X	

Turn Around Time
☐ Standard
☐ Rush _____ Specify

Relinquished By: (Signature) Date/Time	Received By: (Signature) Date/Time
3/30/23 1045	3/30/23 1100
Relinquished By: (Signature) Date/Time	Received By: (Signature) Date/Time

Notes:
NO TOTAL CHROME ANALYSIS, JUST CrG
WI - WHITE IRON MS - Mn STEEL

Company Name: BISON ENGINEERING		
Contact: JACOB RANKIN	Phone: (208)954-7138	
E-Mail Address: jrankin@bison-eng.com	Fax:	
Report Address: 3143 E LYNDALE AVE.		
City: HELENA	State: MT	Zip: 59601
Billing Address: 3143 E LYNDALE AVE.		
City: HELENA	State: MT	Zip: 59601
PO #: EFC223119	Project: EFC223119	

CHESTER LabNet
12242 SW Garden Place
Tigard, OR 97223
(503) 624-2183
Fax (503) 624-2653
cln@chesterlab.net

CHAIN-OF-CUSTODY RECORD

LabNet ID	Field Sample ID	Site	Sample Date	Volume (m^3)	Particle Size	Analysis Requested: EPA M0061	Remarks
23-5607	CONT. #4	ALL	3/29/23			X	
23-5608	CONT. #5	ALL	3/29/23			X	

Turn Around Time
☐ Standard
☐ Rush _____ Specify

Relinquished By: (Signature) Date/Time: 3/30/23 10:45	Received By: (Signature) Date/Time	Notes:
Relinquished By: (Signature) Date/Time	Received By: (Signature) Date/Time	

RAW DATA

Available upon request

BISON ENGINEERING

PROJECT: EFC223119

CLIENT # B020
REPORT # 23-175

SUBMITTED BY:
CHESTER LabNet
12242 S.W. GARDEN PLACE
TIGARD, OR 97223
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CHESTER LabNet

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Case Narrative

Date: May 31, 2023

General Information

Client:	Bison Engineering
Client Number:	B020
Report Number:	23-175
Sample Description:	Impinger Trains
Sample Numbers:	23-S609 – 23-S734

Analysis

Analytes:	Al, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Mn, Hg, Ni, P, Se, Ag, Tl, V, Zn
Analytical Protocols:	EPA Method 29 (8/2/17 version)
Analytical Notes:	Some of the front half fractions had large peaks that interfered with As. Those samples were diluted by a factor of five. The detection limits were raised to account for the dilution. The Hg result for sample 23-S641 is taken from an invalid run because there wasn't enough sample to redigest. The reported result is likely biased high based on the results for the other samples from the failed run that were redigested and reanalyzed. The bottle for HCl rinse sample was empty. The lab is guessing that that rinse was poured into 23-S727 based on the smell of that sample. Results have not been blank corrected.
QA/QC Review:	All the data have been reviewed by the analysts performing the analyses and the project manager. All of the quality control and sample-specific information in this package is complete and meets or exceeds t. minimum requirements for acceptability.
Comments:	If you have any questions or concerns regarding this analysis, please feel free to contact the project manager.
Disclaimer:	This report shall not be reproduced, except in full, without the written approval of the laboratory. The results only represent those of the samples as received into the laboratory. All data are reported to the detection limit. Results <5x DL must be considered to have a higher degree of uncertainty associated with them. Due to the statistical process of detection limit determination, data in this report should not be used for statistical analysis as the data has been censored in such a manner as to bias statistical analyses high.

Paul Duda 5/31/23

Project Manager Date
Paul Duda

Client: B020 - Bison Engineering
Report Number: 23-175

Lab ID: 23-S609
Client ID: M29 Cont. 1&3 WI Run 1
Site: White Iron
Source: BH 1 In
Sample Date: 3/27/23

Analyte	Result	DL	Units
Aluminum, ICP	520.	7.50	µg/sample
Antimony, ICP	3.57	1.25	µg/sample
Arsenic, ICP	< DL	1.75	µg/sample
Barium, ICP	5.38	0.125	µg/sample
Beryllium, ICP	< DL	0.050	µg/sample
Cadmium, ICP	0.488	0.100	µg/sample
Chromium, ICP	41.4	0.200	µg/sample
Cobalt, ICP	0.196	0.125	µg/sample
Copper, ICP	18.5	1.25	µg/sample
Lead, ICP	39.8	1.25	µg/sample
Manganese, ICP	284.	0.075	µg/sample
Mercury, CVAA	0.0406	0.0219	µg/sample
Nickel, ICP	13.1	0.750	µg/sample
Phosphorus, ICP	21.2	5.00	µg/sample
Selenium, ICP	< DL	3.75	µg/sample
Silver, ICP	2.03	0.500	µg/sample
Thallium, ICP	< DL	2.50	µg/sample
Vanadium, ICP	0.638	0.250	µg/sample
Zinc, ICP	460.	0.750	µg/sample

Lab ID: 23-S610
Client ID: M29 Cont. 4 WI Run 1
Site: White Iron
Source: BH 1 In
Sample Date: 3/27/23

Analyte	Result	DL	Units
Aluminum, ICP	28.8	4.14	µg/sample
Antimony, ICP	< DL	0.690	µg/sample
Arsenic, ICP	< DL	0.966	µg/sample
Barium, ICP	2.06	0.069	µg/sample
Beryllium, ICP	< DL	0.028	µg/sample
Cadmium, ICP	0.182	0.055	µg/sample
Chromium, ICP	0.473	0.110	µg/sample
Cobalt, ICP	0.249	0.069	µg/sample
Copper, ICP	0.865	0.690	µg/sample
Lead, ICP	3.01	0.690	µg/sample
Manganese, ICP	1.59	0.041	µg/sample
Mercury, CVAA	0.0981	0.0191	µg/sample
Nickel, ICP	< DL	0.414	µg/sample
Phosphorus, ICP	< DL	2.76	µg/sample
Selenium, ICP	< DL	2.07	µg/sample
Silver, ICP	< DL	0.276	µg/sample
Thallium, ICP	< DL	1.38	µg/sample
Vanadium, ICP	< DL	0.138	µg/sample
Zinc, ICP	5.18	0.414	µg/sample

Client: B020 - Bison Engineering
Report Number: 23-175

Lab ID: 23-S611
Client ID: M29 Cont. 5A WI Run 1
Site: White Iron
Source: BH 1 In
Sample Date: 3/27/23

Analyte	Result	DL	Units
Mercury, CVAA	0.00928	0.00928	µg/sample

Lab ID: 23-S612
Client ID: M29 Cont. 5B WI Run 1
Site: White Iron
Source: BH 1 In
Sample Date: 3/27/23

Analyte	Result	DL	Units
Mercury, CVAA	0.126	0.0368	µg/sample

Lab ID: 23-S613
Client ID: M29 Cont. 5C WI Run 1
Site: White Iron
Source: BH 1 In
Sample Date: 3/27/23

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.0198	µg/sample

Lab ID: 23-S614
Client ID: M29 Cont. 1&3 WI Run 2
Site: White Iron
Source: BH 1 In
Sample Date: 3/28/23

Analyte	Result	DL	Units
Aluminum, ICP	746.	7.50	µg/sample
Antimony, ICP	3.92	1.25	µg/sample
Arsenic, ICP	< DL	1.75	µg/sample
Barium, ICP	6.79	0.125	µg/sample
Beryllium, ICP	< DL	0.050	µg/sample
Cadmium, ICP	0.377	0.100	µg/sample
Chromium, ICP	41.5	0.200	µg/sample
Cobalt, ICP	0.287	0.125	µg/sample
Copper, ICP	24.9	1.25	µg/sample
Lead, ICP	41.2	1.25	µg/sample
Manganese, ICP	519.	0.075	µg/sample
Mercury, CVAA	< DL	0.0219	µg/sample
Nickel, ICP	10.1	0.750	µg/sample
Phosphorus, ICP	26.1	5.00	µg/sample
Selenium, ICP	< DL	3.75	µg/sample
Silver, ICP	2.22	0.500	µg/sample
Thallium, ICP	< DL	2.50	µg/sample
Vanadium, ICP	0.515	0.250	µg/sample
Zinc, ICP	397.	0.750	µg/sample

Client: B020 - Bison Engineering
Report Number: 23-175

Lab ID: 23-S615
Client ID: M29 Cont. 4 WI Run 2
Site: White Iron
Source: BH 1 In
Sample Date: 3/28/23

Analyte	Result	DL	Units
Aluminum, ICP	33.9	3.66	µg/sample
Antimony, ICP	0.661	0.610	µg/sample
Arsenic, ICP	< DL	0.854	µg/sample
Barium, ICP	1.96	0.061	µg/sample
Beryllium, ICP	< DL	0.024	µg/sample
Cadmium, ICP	< DL	0.049	µg/sample
Chromium, ICP	0.511	0.098	µg/sample
Cobalt, ICP	< DL	0.061	µg/sample
Copper, ICP	1.49	0.610	µg/sample
Lead, ICP	< DL	0.610	µg/sample
Manganese, ICP	3.32	0.037	µg/sample
Mercury, CVAA	0.0924	0.0196	µg/sample
Nickel, ICP	< DL	0.366	µg/sample
Phosphorus, ICP	< DL	2.44	µg/sample
Selenium, ICP	< DL	1.83	µg/sample
Silver, ICP	< DL	0.244	µg/sample
Thallium, ICP	< DL	1.22	µg/sample
Vanadium, ICP	< DL	0.122	µg/sample
Zinc, ICP	2.61	0.366	µg/sample

Lab ID: 23-S616
Client ID: M29 Cont. 5A WI Run 2
Site: White Iron
Source: BH 1 In
Sample Date: 3/28/23

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.0121	µg/sample

Lab ID: 23-S617
Client ID: M29 Cont. 5B WI Run 2
Site: White Iron
Source: BH 1 In
Sample Date: 3/28/23

Analyte	Result	DL	Units
Mercury, CVAA	0.120	0.0350	µg/sample

Lab ID: 23-S618
Client ID: M29 Cont. 5C WI Run 2
Site: White Iron
Source: BH 1 In
Sample Date: 3/28/23

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.0196	µg/sample

Client: B020 - Bison Engineering
Report Number: 23-175

Lab ID: 23-S619
Client ID: M29 Cont. 1&3 WI Run 3
Site: White Iron
Source: BH 1 In
Sample Date: 3/29/23

Analyte	Result	DL	Units
Aluminum, ICP	489.	7.50	µg/sample
Antimony, ICP	3.10	1.25	µg/sample
Arsenic, ICP	< DL	1.75	µg/sample
Barium, ICP	5.02	0.125	µg/sample
Beryllium, ICP	< DL	0.050	µg/sample
Cadmium, ICP	0.327	0.100	µg/sample
Chromium, ICP	29.7	0.200	µg/sample
Cobalt, ICP	0.212	0.125	µg/sample
Copper, ICP	28.5	1.25	µg/sample
Lead, ICP	41.0	1.25	µg/sample
Manganese, ICP	464.	0.075	µg/sample
Mercury, CVAA	< DL	0.0219	µg/sample
Nickel, ICP	14.5	0.750	µg/sample
Phosphorus, ICP	19.3	5.00	µg/sample
Selenium, ICP	< DL	3.75	µg/sample
Silver, ICP	2.46	0.500	µg/sample
Thallium, ICP	< DL	2.50	µg/sample
Vanadium, ICP	0.422	0.250	µg/sample
Zinc, ICP	579.	0.750	µg/sample

Lab ID: 23-S620
Client ID: M29 Cont. 4 WI Run 3
Site: White Iron
Source: BH 1 In
Sample Date: 3/29/23

Analyte	Result	DL	Units
Aluminum, ICP	29.5	3.63	µg/sample
Antimony, ICP	< DL	0.605	µg/sample
Arsenic, ICP	< DL	0.847	µg/sample
Barium, ICP	1.58	0.060	µg/sample
Beryllium, ICP	< DL	0.024	µg/sample
Cadmium, ICP	0.135	0.048	µg/sample
Chromium, ICP	0.597	0.097	µg/sample
Cobalt, ICP	0.123	0.060	µg/sample
Copper, ICP	2.01	0.605	µg/sample
Lead, ICP	1.82	0.605	µg/sample
Manganese, ICP	2.43	0.036	µg/sample
Mercury, CVAA	0.112	0.0201	µg/sample
Nickel, ICP	< DL	0.363	µg/sample
Phosphorus, ICP	< DL	2.42	µg/sample
Selenium, ICP	< DL	1.82	µg/sample
Silver, ICP	< DL	0.242	µg/sample
Thallium, ICP	< DL	1.21	µg/sample
Vanadium, ICP	< DL	0.121	µg/sample
Zinc, ICP	1.81	0.363	µg/sample

Client: B020 - Bison Engineering
Report Number: 23-175

Lab ID: 23-S621
Client ID: M29 Cont. 5A WI Run 3
Site: White Iron
Source: BH 1 In
Sample Date: 3/29/23

Analyte	Result	DL	Units
Mercury, CVAA	0.00942	0.00824	µg/sample

Lab ID: 23-S622
Client ID: M29 Cont. 5B WI Run 3
Site: White Iron
Source: BH 1 In
Sample Date: 3/29/23

Analyte	Result	DL	Units
Mercury, CVAA	0.0914	0.0376	µg/sample

Lab ID: 23-S623
Client ID: M29 Cont. 5C WI Run 3
Site: White Iron
Source: BH 1 In
Sample Date: 3/29/23

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.0194	µg/sample

Lab ID: 23-S624
Client ID: M29 Cont. 1&3 WI Run 1
Site: White Iron
Source: BH 2 In
Sample Date: 3/27/23

Analyte	Result	DL	Units
Aluminum, ICP	584.	7.50	µg/sample
Antimony, ICP	2.17	1.25	µg/sample
Arsenic, ICP	< DL	1.75	µg/sample
Barium, ICP	6.20	0.125	µg/sample
Beryllium, ICP	< DL	0.050	µg/sample
Cadmium, ICP	1.86	0.100	µg/sample
Chromium, ICP	28.5	0.200	µg/sample
Cobalt, ICP	0.212	0.125	µg/sample
Copper, ICP	12.5	1.25	µg/sample
Lead, ICP	24.0	1.25	µg/sample
Manganese, ICP	134.	0.075	µg/sample
Mercury, CVAA	< DL	0.0219	µg/sample
Nickel, ICP	6.85	0.750	µg/sample
Phosphorus, ICP	19.1	5.00	µg/sample
Selenium, ICP	< DL	3.75	µg/sample
Silver, ICP	1.16	0.500	µg/sample
Thallium, ICP	< DL	2.50	µg/sample
Vanadium, ICP	0.352	0.250	µg/sample
Zinc, ICP	189.	0.750	µg/sample

Client: B020 - Bison Engineering
Report Number: 23-175

Lab ID: 23-S625
Client ID: M29 Cont. 4 WI Run 1
Site: White Iron
Source: BH 2 In
Sample Date: 3/27/23

Analyte	Result	DL	Units
Aluminum, ICP	34.5	3.57	µg/sample
Antimony, ICP	< DL	0.595	µg/sample
Arsenic, ICP	< DL	0.833	µg/sample
Barium, ICP	1.87	0.060	µg/sample
Beryllium, ICP	< DL	0.024	µg/sample
Cadmium, ICP	0.064	0.048	µg/sample
Chromium, ICP	2.59	0.095	µg/sample
Cobalt, ICP	0.120	0.060	µg/sample
Copper, ICP	1.79	0.595	µg/sample
Lead, ICP	0.680	0.595	µg/sample
Manganese, ICP	0.894	0.036	µg/sample
Mercury, CVAA	0.134	0.0219	µg/sample
Nickel, ICP	1.70	0.357	µg/sample
Phosphorus, ICP	< DL	2.38	µg/sample
Selenium, ICP	< DL	1.78	µg/sample
Silver, ICP	< DL	0.238	µg/sample
Thallium, ICP	< DL	1.19	µg/sample
Vanadium, ICP	< DL	0.119	µg/sample
Zinc, ICP	5.33	0.357	µg/sample

Lab ID: 23-S626
Client ID: M29 Cont. 5A WI Run 1
Site: White Iron
Source: BH 2 In
Sample Date: 3/27/23

Analyte	Result	DL	Units
Mercury, CVAA	0.00664	0.00516	µg/sample

Lab ID: 23-S627
Client ID: M29 Cont. 5B WI Run 1
Site: White Iron
Source: BH 2 In
Sample Date: 3/27/23

Analyte	Result	DL	Units
Mercury, CVAA	0.141	0.0341	µg/sample

Lab ID: 23-S628
Client ID: M29 Cont. 5C WI Run 1
Site: White Iron
Source: BH 2 In
Sample Date: 3/27/23

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.0198	µg/sample

Client: B020 - Bison Engineering
Report Number: 23-175

Lab ID: 23-S629
Client ID: M29 Cont. 1&3 WI Run 2
Site: White Iron
Source: BH 2 In
Sample Date: 3/28/23

Analyte	Result	DL	Units
Aluminum, ICP	3,460	7.50	µg/sample
Antimony, ICP	2.69	1.25	µg/sample
Arsenic, ICP	< DL	1.75	µg/sample
Barium, ICP	16.8	0.125	µg/sample
Beryllium, ICP	0.074	0.050	µg/sample
Cadmium, ICP	0.338	0.100	µg/sample
Chromium, ICP	37.4	0.200	µg/sample
Cobalt, ICP	0.455	0.125	µg/sample
Copper, ICP	25.6	1.25	µg/sample
Lead, ICP	19.1	1.25	µg/sample
Manganese, ICP	432.	0.075	µg/sample
Mercury, CVAA	< DL	0.0219	µg/sample
Nickel, ICP	14.3	0.750	µg/sample
Phosphorus, ICP	47.8	5.00	µg/sample
Selenium, ICP	< DL	3.75	µg/sample
Silver, ICP	1.02	0.500	µg/sample
Thallium, ICP	< DL	2.50	µg/sample
Vanadium, ICP	2.08	0.250	µg/sample
Zinc, ICP	194.	0.750	µg/sample

Lab ID: 23-S630
Client ID: M29 Cont. 4 WI Run 2
Site: White Iron
Source: BH 2 In
Sample Date: 3/28/23

Analyte	Result	DL	Units
Aluminum, ICP	19.4	4.35	µg/sample
Antimony, ICP	< DL	0.725	µg/sample
Arsenic, ICP	< DL	1.02	µg/sample
Barium, ICP	1.31	0.072	µg/sample
Beryllium, ICP	< DL	0.029	µg/sample
Cadmium, ICP	< DL	0.058	µg/sample
Chromium, ICP	1.31	0.116	µg/sample
Cobalt, ICP	0.084	0.072	µg/sample
Copper, ICP	0.836	0.725	µg/sample
Lead, ICP	< DL	0.725	µg/sample
Manganese, ICP	1.51	0.044	µg/sample
Mercury, CVAA	0.176	0.0224	µg/sample
Nickel, ICP	0.563	0.435	µg/sample
Phosphorus, ICP	< DL	2.90	µg/sample
Selenium, ICP	< DL	2.18	µg/sample
Silver, ICP	0.433	0.290	µg/sample
Thallium, ICP	< DL	1.45	µg/sample
Vanadium, ICP	< DL	0.145	µg/sample
Zinc, ICP	2.05	0.435	µg/sample

Client: B020 - Bison Engineering
Report Number: 23-175

Lab ID: 23-S631
Client ID: M29 Cont. 5A WI Run 2
Site: White Iron
Source: BH 2 In
Sample Date: 3/28/23

Analyte	Result	DL	Units
Mercury, CVAA	0.00735	0.00643	µg/sample

Lab ID: 23-S632
Client ID: M29 Cont. 5B WI Run 2
Site: White Iron
Source: BH 2 In
Sample Date: 3/28/23

Analyte	Result	DL	Units
Mercury, CVAA	0.131	0.0368	µg/sample

Lab ID: 23-S633
Client ID: M29 Cont. 5C WI Run 2
Site: White Iron
Source: BH 2 In
Sample Date: 3/28/23

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.0198	µg/sample

Lab ID: 23-S634
Client ID: M29 Cont. 1&3 WI Run 3
Site: White Iron
Source: BH 2 In
Sample Date: 3/29/23

Analyte	Result	DL	Units
Aluminum, ICP	1,900	7.50	µg/sample
Antimony, ICP	2.36	1.25	µg/sample
Arsenic, ICP	< DL	1.75	µg/sample
Barium, ICP	11.6	0.125	µg/sample
Beryllium, ICP	< DL	0.050	µg/sample
Cadmium, ICP	0.359	0.100	µg/sample
Chromium, ICP	26.2	0.200	µg/sample
Cobalt, ICP	0.294	0.125	µg/sample
Copper, ICP	24.2	1.25	µg/sample
Lead, ICP	17.7	1.25	µg/sample
Manganese, ICP	414.	0.075	µg/sample
Mercury, CVAA	< DL	0.0219	µg/sample
Nickel, ICP	10.7	0.750	µg/sample
Phosphorus, ICP	38.0	5.00	µg/sample
Selenium, ICP	< DL	3.75	µg/sample
Silver, ICP	1.10	0.500	µg/sample
Thallium, ICP	< DL	2.50	µg/sample
Vanadium, ICP	1.37	0.250	µg/sample
Zinc, ICP	265.	0.750	µg/sample

Client: B020 - Bison Engineering
Report Number: 23-175

Lab ID: 23-S635
Client ID: M29 Cont. 4 WI Run 3
Site: White Iron
Source: BH 2 In
Sample Date: 3/29/23

Analyte	Result	DL	Units
Aluminum, ICP	25.4	3.81	µg/sample
Antimony, ICP	< DL	0.635	µg/sample
Arsenic, ICP	< DL	0.889	µg/sample
Barium, ICP	1.26	0.064	µg/sample
Beryllium, ICP	< DL	0.025	µg/sample
Cadmium, ICP	< DL	0.051	µg/sample
Chromium, ICP	0.959	0.102	µg/sample
Cobalt, ICP	< DL	0.064	µg/sample
Copper, ICP	1.81	0.635	µg/sample
Lead, ICP	< DL	0.635	µg/sample
Manganese, ICP	4.13	0.038	µg/sample
Mercury, CVAA	0.169	0.0164	µg/sample
Nickel, ICP	0.488	0.381	µg/sample
Phosphorus, ICP	< DL	2.54	µg/sample
Selenium, ICP	< DL	1.90	µg/sample
Silver, ICP	< DL	0.254	µg/sample
Thallium, ICP	< DL	1.27	µg/sample
Vanadium, ICP	< DL	0.127	µg/sample
Zinc, ICP	2.03	0.381	µg/sample

Lab ID: 23-S636
Client ID: M29 Cont. 5A WI Run 3
Site: White Iron
Source: BH 2 In
Sample Date: 3/29/23

Analyte	Result	DL	Units
Mercury, CVAA	0.00910	0.00796	µg/sample

Lab ID: 23-S637
Client ID: M29 Cont. 5B WI Run 3
Site: White Iron
Source: BH 2 In
Sample Date: 3/29/23

Analyte	Result	DL	Units
Mercury, CVAA	0.117	0.0389	µg/sample

Lab ID: 23-S638
Client ID: M29 Cont. 5C WI Run 3
Site: White Iron
Source: BH 2 In
Sample Date: 3/29/23

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.0196	µg/sample

Client: B020 - Bison Engineering
Report Number: 23-175

Lab ID: 23-S639
Client ID: M29 Cont. 1&3 WI Run 1
Site: White Iron
Source: BH 1 Out
Sample Date: 3/27/23

Analyte	Result	DL	Units
Aluminum, ICP	78.7	7.50	µg/sample
Antimony, ICP	1.71	1.25	µg/sample
Arsenic, ICP	< DL	1.75	µg/sample
Barium, ICP	2.23	0.125	µg/sample
Beryllium, ICP	< DL	0.050	µg/sample
Cadmium, ICP	< DL	0.100	µg/sample
Chromium, ICP	3.35	0.200	µg/sample
Cobalt, ICP	< DL	0.125	µg/sample
Copper, ICP	< DL	1.25	µg/sample
Lead, ICP	2.20	1.25	µg/sample
Manganese, ICP	21.9	0.075	µg/sample
Mercury, CVAA	< DL	0.0219	µg/sample
Nickel, ICP	4.58	0.750	µg/sample
Phosphorus, ICP	29.8	5.00	µg/sample
Selenium, ICP	< DL	3.75	µg/sample
Silver, ICP	< DL	0.500	µg/sample
Thallium, ICP	< DL	2.50	µg/sample
Vanadium, ICP	< DL	0.250	µg/sample
Zinc, ICP	18.3	0.750	µg/sample

Lab ID: 23-S640
Client ID: M29 Cont. 4 WI Run 1
Site: White Iron
Source: BH 1 Out
Sample Date: 3/27/23

Analyte	Result	DL	Units
Aluminum, ICP	22.9	3.72	µg/sample
Antimony, ICP	0.903	0.620	µg/sample
Arsenic, ICP	< DL	0.868	µg/sample
Barium, ICP	3.68	0.062	µg/sample
Beryllium, ICP	< DL	0.025	µg/sample
Cadmium, ICP	0.175	0.050	µg/sample
Chromium, ICP	0.615	0.099	µg/sample
Cobalt, ICP	0.134	0.062	µg/sample
Copper, ICP	3.03	0.620	µg/sample
Lead, ICP	2.53	0.620	µg/sample
Manganese, ICP	0.610	0.037	µg/sample
Mercury, CVAA	0.169	0.0182	µg/sample
Nickel, ICP	0.460	0.372	µg/sample
Phosphorus, ICP	< DL	2.48	µg/sample
Selenium, ICP	< DL	1.86	µg/sample
Silver, ICP	< DL	0.248	µg/sample
Thallium, ICP	< DL	1.24	µg/sample
Vanadium, ICP	< DL	0.124	µg/sample
Zinc, ICP	3.55	0.372	µg/sample

Client: B020 - Bison Engineering
Report Number: 23-175

Lab ID: 23-S641
Client ID: M29 Cont. 5A WI Run 1
Site: White Iron
Source: BH 1 Out
Sample Date: 3/27/23
Comments: Concentration estimated, bad CAL

Analyte	Result	DL	Units
Mercury, CVAA	0.0242	0.00892	µg/sample

Lab ID: 23-S642
Client ID: M29 Cont. 5B WI Run 1
Site: White Iron
Source: BH 1 Out
Sample Date: 3/27/23

Analyte	Result	DL	Units
Mercury, CVAA	0.121	0.0385	µg/sample

Lab ID: 23-S643
Client ID: M29 Cont. 5C WI Run 1
Site: White Iron
Source: BH 1 Out
Sample Date: 3/27/23

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.0198	µg/sample

Lab ID: 23-S644
Client ID: M29 Cont. 1&3 WI Run 2
Site: White Iron
Source: BH 1 Out
Sample Date: 3/28/23

Analyte	Result	DL	Units
Aluminum, ICP	105.	7.50	µg/sample
Antimony, ICP	1.77	1.25	µg/sample
Arsenic, ICP	< DL	1.75	µg/sample
Barium, ICP	6.18	0.125	µg/sample
Beryllium, ICP	< DL	0.050	µg/sample
Cadmium, ICP	< DL	0.100	µg/sample
Chromium, ICP	3.54	0.200	µg/sample
Cobalt, ICP	< DL	0.125	µg/sample
Copper, ICP	3.84	1.25	µg/sample
Lead, ICP	< DL	1.25	µg/sample
Manganese, ICP	5.92	0.075	µg/sample
Mercury, CVAA	< DL	0.0219	µg/sample
Nickel, ICP	8.74	0.750	µg/sample
Phosphorus, ICP	9.34	5.00	µg/sample
Selenium, ICP	< DL	3.75	µg/sample
Silver, ICP	< DL	0.500	µg/sample
Thallium, ICP	< DL	2.50	µg/sample
Vanadium, ICP	< DL	0.250	µg/sample
Zinc, ICP	11.0	0.750	µg/sample

Client: B020 - Bison Engineering
Report Number: 23-175

Lab ID: 23-S645
Client ID: M29 Cont. 4 WI Run 2
Site: White Iron
Source: BH 1 Out
Sample Date: 3/28/23

Analyte	Result	DL	Units
Aluminum, ICP	20.6	3.45	µg/sample
Antimony, ICP	0.743	0.575	µg/sample
Arsenic, ICP	< DL	0.805	µg/sample
Barium, ICP	1.97	0.058	µg/sample
Beryllium, ICP	< DL	0.023	µg/sample
Cadmium, ICP	< DL	0.046	µg/sample
Chromium, ICP	0.526	0.092	µg/sample
Cobalt, ICP	0.088	0.058	µg/sample
Copper, ICP	2.32	0.575	µg/sample
Lead, ICP	< DL	0.575	µg/sample
Manganese, ICP	8.57	0.034	µg/sample
Mercury, CVAA	0.192	0.0274	µg/sample
Nickel, ICP	0.383	0.345	µg/sample
Phosphorus, ICP	< DL	2.30	µg/sample
Selenium, ICP	< DL	1.72	µg/sample
Silver, ICP	< DL	0.230	µg/sample
Thallium, ICP	< DL	1.15	µg/sample
Vanadium, ICP	< DL	0.115	µg/sample
Zinc, ICP	1.33	0.345	µg/sample

Lab ID: 23-S646
Client ID: M29 Cont. 5A WI Run 2
Site: White Iron
Source: BH 1 Out
Sample Date: 3/28/23

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.00586	µg/sample

Lab ID: 23-S647
Client ID: M29 Cont. 5B WI Run 2
Site: White Iron
Source: BH 1 Out
Sample Date: 3/28/23

Analyte	Result	DL	Units
Mercury, CVAA	0.146	0.0341	µg/sample

Lab ID: 23-S648
Client ID: M29 Cont. 5C WI Run 2
Site: White Iron
Source: BH 1 Out
Sample Date: 3/28/23

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.0200	µg/sample

Client: B020 - Bison Engineering
Report Number: 23-175

Lab ID: 23-S649
Client ID: M29 Cont. 1&3 WI Run 3
Site: White Iron
Source: BH 1 Out
Sample Date: 3/29/23

Analyte	Result	DL	Units
Aluminum, ICP	81.5	7.50	µg/sample
Antimony, ICP	2.04	1.25	µg/sample
Arsenic, ICP	< DL	1.75	µg/sample
Barium, ICP	2.81	0.125	µg/sample
Beryllium, ICP	< DL	0.050	µg/sample
Cadmium, ICP	< DL	0.100	µg/sample
Chromium, ICP	4.66	0.200	µg/sample
Cobalt, ICP	< DL	0.125	µg/sample
Copper, ICP	3.28	1.25	µg/sample
Lead, ICP	< DL	1.25	µg/sample
Manganese, ICP	10.2	0.075	µg/sample
Mercury, CVAA	< DL	0.0219	µg/sample
Nickel, ICP	12.4	0.750	µg/sample
Phosphorus, ICP	6.20	5.00	µg/sample
Selenium, ICP	< DL	3.75	µg/sample
Silver, ICP	0.974	0.500	µg/sample
Thallium, ICP	< DL	2.50	µg/sample
Vanadium, ICP	< DL	0.250	µg/sample
Zinc, ICP	5.84	0.750	µg/sample

Lab ID: 23-S650
Client ID: M29 Cont. 4 WI Run 3
Site: White Iron
Source: BH 1 Out
Sample Date: 3/29/23

Analyte	Result	DL	Units
Aluminum, ICP	27.8	3.42	µg/sample
Antimony, ICP	0.634	0.570	µg/sample
Arsenic, ICP	< DL	0.798	µg/sample
Barium, ICP	1.45	0.057	µg/sample
Beryllium, ICP	< DL	0.023	µg/sample
Cadmium, ICP	< DL	0.046	µg/sample
Chromium, ICP	0.455	0.091	µg/sample
Cobalt, ICP	0.112	0.057	µg/sample
Copper, ICP	0.923	0.570	µg/sample
Lead, ICP	< DL	0.570	µg/sample
Manganese, ICP	11.1	0.034	µg/sample
Mercury, CVAA	0.186	0.0284	µg/sample
Nickel, ICP	< DL	0.342	µg/sample
Phosphorus, ICP	< DL	2.28	µg/sample
Selenium, ICP	< DL	1.71	µg/sample
Silver, ICP	< DL	0.228	µg/sample
Thallium, ICP	< DL	1.14	µg/sample
Vanadium, ICP	< DL	0.114	µg/sample
Zinc, ICP	0.737	0.342	µg/sample

Client: B020 - Bison Engineering
Report Number: 23-175

Lab ID: 23-S651
Client ID: M29 Cont. 5A WI Run 3
Site: White Iron
Source: BH 1 Out
Sample Date: 3/29/23

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.00542	µg/sample

Lab ID: 23-S652
Client ID: M29 Cont. 5B WI Run 3
Site: White Iron
Source: BH 1 Out
Sample Date: 3/29/23

Analyte	Result	DL	Units
Mercury, CVAA	0.117	0.0341	µg/sample

Lab ID: 23-S653
Client ID: M29 Cont. 5C WI Run 3
Site: White Iron
Source: BH 1 Out
Sample Date: 3/29/23

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.0196	µg/sample

Lab ID: 23-S654
Client ID: M29 Cont. 1&3 WI Run 1
Site: White Iron
Source: BH 2 Out
Sample Date: 3/27/23

Analyte	Result	DL	Units
Aluminum, ICP	102.	7.50	µg/sample
Antimony, ICP	2.00	1.25	µg/sample
Arsenic, ICP	< DL	1.75	µg/sample
Barium, ICP	3.87	0.125	µg/sample
Beryllium, ICP	< DL	0.050	µg/sample
Cadmium, ICP	< DL	0.100	µg/sample
Chromium, ICP	2.48	0.200	µg/sample
Cobalt, ICP	< DL	0.125	µg/sample
Copper, ICP	5.14	1.25	µg/sample
Lead, ICP	3.05	1.25	µg/sample
Manganese, ICP	5.96	0.075	µg/sample
Mercury, CVAA	< DL	0.0219	µg/sample
Nickel, ICP	8.33	0.750	µg/sample
Phosphorus, ICP	10.4	5.00	µg/sample
Selenium, ICP	< DL	3.75	µg/sample
Silver, ICP	< DL	0.500	µg/sample
Thallium, ICP	< DL	2.50	µg/sample
Vanadium, ICP	< DL	0.250	µg/sample
Zinc, ICP	19.2	0.750	µg/sample

Client: B020 - Bison Engineering
Report Number: 23-175

Lab ID: 23-S655
Client ID: M29 Cont. 4 WI Run 1
Site: White Iron
Source: BH 2 Out
Sample Date: 3/27/23

Analyte	Result	DL	Units
Aluminum, ICP	31.7	4.59	µg/sample
Antimony, ICP	< DL	0.765	µg/sample
Arsenic, ICP	< DL	1.07	µg/sample
Barium, ICP	0.902	0.076	µg/sample
Beryllium, ICP	< DL	0.031	µg/sample
Cadmium, ICP	< DL	0.061	µg/sample
Chromium, ICP	0.858	0.122	µg/sample
Cobalt, ICP	0.122	0.076	µg/sample
Copper, ICP	1.17	0.765	µg/sample
Lead, ICP	< DL	0.765	µg/sample
Manganese, ICP	0.665	0.046	µg/sample
Mercury, CVAA	0.152	0.0201	µg/sample
Nickel, ICP	1.53	0.459	µg/sample
Phosphorus, ICP	< DL	3.06	µg/sample
Selenium, ICP	< DL	2.30	µg/sample
Silver, ICP	< DL	0.306	µg/sample
Thallium, ICP	< DL	1.53	µg/sample
Vanadium, ICP	< DL	0.153	µg/sample
Zinc, ICP	4.04	0.459	µg/sample

Lab ID: 23-S656
Client ID: M29 Cont. 5A WI Run 1
Site: White Iron
Source: BH 2 Out
Sample Date: 3/27/23

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.0103	µg/sample

Lab ID: 23-S657
Client ID: M29 Cont. 5B WI Run 1
Site: White Iron
Source: BH 2 Out
Sample Date: 3/27/23

Analyte	Result	DL	Units
Mercury, CVAA	0.150	0.0363	µg/sample

Lab ID: 23-S658
Client ID: M29 Cont. 5C WI Run 1
Site: White Iron
Source: BH 2 Out
Sample Date: 3/27/23

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.0196	µg/sample

Client: B020 - Bison Engineering
Report Number: 23-175

Lab ID: 23-S659
Client ID: M29 Cont. 1&3 WI Run 2
Site: White Iron
Source: BH 2 Out
Sample Date: 3/28/23

Analyte	Result	DL	Units
Aluminum, ICP	96.2	7.50	µg/sample
Antimony, ICP	2.00	1.25	µg/sample
Arsenic, ICP	1.96	1.75	µg/sample
Barium, ICP	4.70	0.125	µg/sample
Beryllium, ICP	< DL	0.050	µg/sample
Cadmium, ICP	< DL	0.100	µg/sample
Chromium, ICP	2.20	0.200	µg/sample
Cobalt, ICP	< DL	0.125	µg/sample
Copper, ICP	4.76	1.25	µg/sample
Lead, ICP	1.93	1.25	µg/sample
Manganese, ICP	5.32	0.075	µg/sample
Mercury, CVAA	< DL	0.0219	µg/sample
Nickel, ICP	7.70	0.750	µg/sample
Phosphorus, ICP	6.11	5.00	µg/sample
Selenium, ICP	< DL	3.75	µg/sample
Silver, ICP	< DL	0.500	µg/sample
Thallium, ICP	< DL	2.50	µg/sample
Vanadium, ICP	< DL	0.250	µg/sample
Zinc, ICP	12.6	0.750	µg/sample

Lab ID: 23-S660
Client ID: M29 Cont. 4 WI Run 2
Site: White Iron
Source: BH 2 Out
Sample Date: 3/28/23

Analyte	Result	DL	Units
Aluminum, ICP	17.8	3.45	µg/sample
Antimony, ICP	< DL	0.575	µg/sample
Arsenic, ICP	< DL	0.805	µg/sample
Barium, ICP	0.656	0.058	µg/sample
Beryllium, ICP	< DL	0.023	µg/sample
Cadmium, ICP	< DL	0.046	µg/sample
Chromium, ICP	1.03	0.092	µg/sample
Cobalt, ICP	0.072	0.058	µg/sample
Copper, ICP	0.674	0.575	µg/sample
Lead, ICP	< DL	0.575	µg/sample
Manganese, ICP	1.24	0.034	µg/sample
Mercury, CVAA	0.162	0.0219	µg/sample
Nickel, ICP	0.921	0.345	µg/sample
Phosphorus, ICP	< DL	2.30	µg/sample
Selenium, ICP	< DL	1.72	µg/sample
Silver, ICP	< DL	0.230	µg/sample
Thallium, ICP	< DL	1.15	µg/sample
Vanadium, ICP	< DL	0.115	µg/sample
Zinc, ICP	1.57	0.345	µg/sample

Client: B020 - Bison Engineering
Report Number: 23-175

Lab ID: 23-S661
Client ID: M29 Cont. 5A WI Run 2
Site: White Iron
Source: BH 2 Out
Sample Date: 3/28/23

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.00884	µg/sample

Lab ID: 23-S662
Client ID: M29 Cont. 5B WI Run 2
Site: White Iron
Source: BH 2 Out
Sample Date: 3/28/23

Analyte	Result	DL	Units
Mercury, CVAA	0.144	0.0337	µg/sample

Lab ID: 23-S663
Client ID: M29 Cont. 5C WI Run 2
Site: White Iron
Source: BH 2 Out
Sample Date: 3/28/23

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.0194	µg/sample

Lab ID: 23-S664
Client ID: M29 Cont. 1&3 WI Run 3
Site: White Iron
Source: BH 2 Out
Sample Date: 3/29/23

Analyte	Result	DL	Units
Aluminum, ICP	85.9	7.50	µg/sample
Antimony, ICP	1.76	1.25	µg/sample
Arsenic, ICP	< DL	1.75	µg/sample
Barium, ICP	2.65	0.125	µg/sample
Beryllium, ICP	< DL	0.050	µg/sample
Cadmium, ICP	< DL	0.100	µg/sample
Chromium, ICP	1.36	0.200	µg/sample
Cobalt, ICP	< DL	0.125	µg/sample
Copper, ICP	1.96	1.25	µg/sample
Lead, ICP	< DL	1.25	µg/sample
Manganese, ICP	2.70	0.075	µg/sample
Mercury, CVAA	< DL	0.0219	µg/sample
Nickel, ICP	4.85	0.750	µg/sample
Phosphorus, ICP	6.98	5.00	µg/sample
Selenium, ICP	< DL	3.75	µg/sample
Silver, ICP	< DL	0.500	µg/sample
Thallium, ICP	< DL	2.50	µg/sample
Vanadium, ICP	< DL	0.250	µg/sample
Zinc, ICP	4.69	0.750	µg/sample

Client: B020 - Bison Engineering
Report Number: 23-175

Lab ID: 23-S665
Client ID: M29 Cont. 4 WI Run 3
Site: White Iron
Source: BH 2 Out
Sample Date: 3/29/23

Analyte	Result	DL	Units
Aluminum, ICP	22.9	3.57	µg/sample
Antimony, ICP	< DL	0.595	µg/sample
Arsenic, ICP	< DL	0.833	µg/sample
Barium, ICP	0.742	0.060	µg/sample
Beryllium, ICP	< DL	0.024	µg/sample
Cadmium, ICP	< DL	0.048	µg/sample
Chromium, ICP	0.524	0.095	µg/sample
Cobalt, ICP	< DL	0.060	µg/sample
Copper, ICP	0.846	0.595	µg/sample
Lead, ICP	< DL	0.595	µg/sample
Manganese, ICP	11.6	0.036	µg/sample
Mercury, CVAA	0.176	0.0224	µg/sample
Nickel, ICP	0.454	0.357	µg/sample
Phosphorus, ICP	< DL	2.38	µg/sample
Selenium, ICP	< DL	1.78	µg/sample
Silver, ICP	< DL	0.238	µg/sample
Thallium, ICP	< DL	1.19	µg/sample
Vanadium, ICP	< DL	0.119	µg/sample
Zinc, ICP	1.06	0.357	µg/sample

Lab ID: 23-S666
Client ID: M29 Cont. 5A WI Run 3
Site: White Iron
Source: BH 2 Out
Sample Date: 3/29/23

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.0137	µg/sample

Lab ID: 23-S667
Client ID: M29 Cont. 5B WI Run 3
Site: White Iron
Source: BH 2 Out
Sample Date: 3/29/23

Analyte	Result	DL	Units
Mercury, CVAA	0.127	0.0354	µg/sample

Lab ID: 23-S668
Client ID: M29 Cont. 5C WI Run 3
Site: White Iron
Source: BH 2 Out
Sample Date: 3/29/23

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.0198	µg/sample

Client: B020 - Bison Engineering
Report Number: 23-175

Lab ID: 23-S669
Client ID: M29 Cont. 1&3 MS Run 1
Site: Mn Steel
Source: BH 1 In
Sample Date: 3/27/23
Comments: 5x dilution for As

Analyte	Result	DL	Units
Aluminum, ICP	1,680	7.50	µg/sample
Antimony, ICP	5.77	1.25	µg/sample
Arsenic, ICP	< DL	8.75	µg/sample
Barium, ICP	13.5	0.125	µg/sample
Beryllium, ICP	0.069	0.050	µg/sample
Cadmium, ICP	1.05	0.100	µg/sample
Chromium, ICP	109.	0.200	µg/sample
Cobalt, ICP	0.440	0.125	µg/sample
Copper, ICP	59.4	1.25	µg/sample
Lead, ICP	135.	1.25	µg/sample
Manganese, ICP	5,800	0.075	µg/sample
Mercury, CVAA	0.0438	0.0219	µg/sample
Nickel, ICP	11.7	0.750	µg/sample
Phosphorus, ICP	46.7	5.00	µg/sample
Selenium, ICP	< DL	3.75	µg/sample
Silver, ICP	2.43	0.500	µg/sample
Thallium, ICP	< DL	2.50	µg/sample
Vanadium, ICP	0.653	0.250	µg/sample
Zinc, ICP	1,120	0.750	µg/sample

Lab ID: 23-S670
Client ID: M29 Cont. 4 MS Run 1
Site: Mn Steel
Source: BH 1 In
Sample Date: 3/27/23

Analyte	Result	DL	Units
Aluminum, ICP	51.5	4.08	µg/sample
Antimony, ICP	< DL	0.680	µg/sample
Arsenic, ICP	< DL	0.952	µg/sample
Barium, ICP	1.63	0.068	µg/sample
Beryllium, ICP	< DL	0.027	µg/sample
Cadmium, ICP	0.803	0.054	µg/sample
Chromium, ICP	0.689	0.109	µg/sample
Cobalt, ICP	0.127	0.068	µg/sample
Copper, ICP	< DL	0.680	µg/sample
Lead, ICP	< DL	0.680	µg/sample
Manganese, ICP	1.08	0.041	µg/sample
Mercury, CVAA	0.229	0.0200	µg/sample
Nickel, ICP	< DL	0.408	µg/sample
Phosphorus, ICP	< DL	2.72	µg/sample
Selenium, ICP	< DL	2.04	µg/sample
Silver, ICP	< DL	0.272	µg/sample
Thallium, ICP	< DL	1.36	µg/sample
Vanadium, ICP	< DL	0.136	µg/sample
Zinc, ICP	7.24	0.408	µg/sample

Client: B020 - Bison Engineering
Report Number: 23-175

Lab ID: 23-S671
Client ID: M29 Cont. 5A MS Run 1
Site: Mn Steel
Source: BH 1 In
Sample Date: 3/27/23

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.0268	µg/sample

Lab ID: 23-S672
Client ID: M29 Cont. 5B MS Run 1
Site: Mn Steel
Source: BH 1 In
Sample Date: 3/27/23

Analyte	Result	DL	Units
Mercury, CVAA	0.195	0.0350	µg/sample

Lab ID: 23-S673
Client ID: M29 Cont. 5C MS Run 1
Site: Mn Steel
Source: BH 1 In
Sample Date: 3/27/23

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.0192	µg/sample

Lab ID: 23-S674
Client ID: M29 Cont. 1&3 MS Run 2
Site: Mn Steel
Source: BH 1 In
Sample Date: 3/28/23
Comments: 5x dilution for As

Analyte	Result	DL	Units
Aluminum, ICP	1,320	7.50	µg/sample
Antimony, ICP	3.06	1.25	µg/sample
Arsenic, ICP	< DL	8.75	µg/sample
Barium, ICP	12.3	0.125	µg/sample
Beryllium, ICP	0.052	0.050	µg/sample
Cadmium, ICP	1.36	0.100	µg/sample
Chromium, ICP	92.6	0.200	µg/sample
Cobalt, ICP	0.355	0.125	µg/sample
Copper, ICP	51.9	1.25	µg/sample
Lead, ICP	145.	1.25	µg/sample
Manganese, ICP	6,670	0.075	µg/sample
Mercury, CVAA	< DL	0.0219	µg/sample
Nickel, ICP	13.1	0.750	µg/sample
Phosphorus, ICP	48.4	5.00	µg/sample
Selenium, ICP	3.88	3.75	µg/sample
Silver, ICP	1.57	0.500	µg/sample
Thallium, ICP	< DL	2.50	µg/sample
Vanadium, ICP	0.471	0.250	µg/sample
Zinc, ICP	1,040	0.750	µg/sample

Client: B020 - Bison Engineering
Report Number: 23-175

Lab ID: 23-S675
Client ID: M29 Cont. 4 MS Run 2
Site: Mn Steel
Source: BH 1 In
Sample Date: 3/28/23

Analyte	Result	DL	Units
Aluminum, ICP	24.7	3.72	µg/sample
Antimony, ICP	< DL	0.620	µg/sample
Arsenic, ICP	< DL	0.868	µg/sample
Barium, ICP	1.43	0.062	µg/sample
Beryllium, ICP	< DL	0.025	µg/sample
Cadmium, ICP	0.210	0.050	µg/sample
Chromium, ICP	0.429	0.099	µg/sample
Cobalt, ICP	0.071	0.062	µg/sample
Copper, ICP	0.815	0.620	µg/sample
Lead, ICP	< DL	0.620	µg/sample
Manganese, ICP	3.61	0.037	µg/sample
Mercury, CVAA	0.173	0.0180	µg/sample
Nickel, ICP	0.501	0.372	µg/sample
Phosphorus, ICP	< DL	2.48	µg/sample
Selenium, ICP	< DL	1.86	µg/sample
Silver, ICP	< DL	0.248	µg/sample
Thallium, ICP	< DL	1.24	µg/sample
Vanadium, ICP	< DL	0.124	µg/sample
Zinc, ICP	3.40	0.372	µg/sample

Lab ID: 23-S676
Client ID: M29 Cont. 5A MS Run 2
Site: Mn Steel
Source: BH 1 In
Sample Date: 3/28/23

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.0116	µg/sample

Lab ID: 23-S677
Client ID: M29 Cont. 5B MS Run 2
Site: Mn Steel
Source: BH 1 In
Sample Date: 3/28/23

Analyte	Result	DL	Units
Mercury, CVAA	0.176	0.0363	µg/sample

Lab ID: 23-S678
Client ID: M29 Cont. 5C MS Run 2
Site: Mn Steel
Source: BH 1 In
Sample Date: 3/28/23

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.0159	µg/sample

Client: B020 - Bison Engineering
Report Number: 23-175

Lab ID: 23-S679
Client ID: M29 Cont. 1&3 MS Run 3
Site: Mn Steel
Source: BH 1 In
Sample Date: 3/29/23
Comments: 5x dilution for As

Analyte	Result	DL	Units
Aluminum, ICP	1,300	7.50	µg/sample
Antimony, ICP	4.58	1.25	µg/sample
Arsenic, ICP	< DL	8.75	µg/sample
Barium, ICP	12.1	0.125	µg/sample
Beryllium, ICP	< DL	0.050	µg/sample
Cadmium, ICP	1.85	0.100	µg/sample
Chromium, ICP	83.0	0.200	µg/sample
Cobalt, ICP	0.420	0.125	µg/sample
Copper, ICP	56.3	1.25	µg/sample
Lead, ICP	125.	1.25	µg/sample
Manganese, ICP	5,340	0.075	µg/sample
Mercury, CVAA	< DL	0.0219	µg/sample
Nickel, ICP	14.4	0.750	µg/sample
Phosphorus, ICP	48.2	5.00	µg/sample
Selenium, ICP	< DL	3.75	µg/sample
Silver, ICP	1.82	0.500	µg/sample
Thallium, ICP	< DL	2.50	µg/sample
Vanadium, ICP	0.337	0.250	µg/sample
Zinc, ICP	879.	0.750	µg/sample

Lab ID: 23-S680
Client ID: M29 Cont. 4 MS Run 3
Site: Mn Steel
Source: BH 1 In
Sample Date: 3/29/23

Analyte	Result	DL	Units
Aluminum, ICP	20.6	3.54	µg/sample
Antimony, ICP	1.49	0.590	µg/sample
Arsenic, ICP	< DL	0.826	µg/sample
Barium, ICP	1.26	0.059	µg/sample
Beryllium, ICP	< DL	0.024	µg/sample
Cadmium, ICP	0.079	0.047	µg/sample
Chromium, ICP	0.357	0.094	µg/sample
Cobalt, ICP	< DL	0.059	µg/sample
Copper, ICP	0.681	0.590	µg/sample
Lead, ICP	< DL	0.590	µg/sample
Manganese, ICP	4.79	0.035	µg/sample
Mercury, CVAA	0.179	0.0228	µg/sample
Nickel, ICP	0.509	0.354	µg/sample
Phosphorus, ICP	< DL	2.36	µg/sample
Selenium, ICP	< DL	1.77	µg/sample
Silver, ICP	< DL	0.236	µg/sample
Thallium, ICP	< DL	1.18	µg/sample
Vanadium, ICP	< DL	0.118	µg/sample
Zinc, ICP	2.06	0.354	µg/sample

Client: B020 - Bison Engineering
Report Number: 23-175

Lab ID: 23-S681
Client ID: M29 Cont. 5A MS Run 3
Site: Mn Steel
Source: BH 1 In
Sample Date: 3/29/23

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.0108	µg/sample

Lab ID: 23-S682
Client ID: M29 Cont. 5B MS Run 3
Site: Mn Steel
Source: BH 1 In
Sample Date: 3/29/23

Analyte	Result	DL	Units
Mercury, CVAA	0.194	0.0376	µg/sample

Lab ID: 23-S683
Client ID: M29 Cont. 5C MS Run 3
Site: Mn Steel
Source: BH 1 In
Sample Date: 3/29/23

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.0194	µg/sample

Lab ID: 23-S684
Client ID: M29 Cont. 1&3 MS Run 1
Site: Mn Steel
Source: BH 2 In
Sample Date: 3/27/23
Comments: 5x dilution for As

Analyte	Result	DL	Units
Aluminum, ICP	3,170	7.50	µg/sample
Antimony, ICP	3.28	1.25	µg/sample
Arsenic, ICP	9.26	8.75	µg/sample
Barium, ICP	17.9	0.125	µg/sample
Beryllium, ICP	0.074	0.050	µg/sample
Cadmium, ICP	0.339	0.100	µg/sample
Chromium, ICP	75.1	0.200	µg/sample
Cobalt, ICP	0.404	0.125	µg/sample
Copper, ICP	29.8	1.25	µg/sample
Lead, ICP	37.0	1.25	µg/sample
Manganese, ICP	2,580	0.075	µg/sample
Mercury, CVAA	< DL	0.0219	µg/sample
Nickel, ICP	9.92	0.750	µg/sample
Phosphorus, ICP	49.5	5.00	µg/sample
Selenium, ICP	< DL	3.75	µg/sample
Silver, ICP	3.32	0.500	µg/sample
Thallium, ICP	< DL	2.50	µg/sample
Vanadium, ICP	1.12	0.250	µg/sample
Zinc, ICP	360.	0.750	µg/sample

Client: B020 - Bison Engineering
Report Number: 23-175

Lab ID: 23-S685
Client ID: M29 Cont. 4 MS Run 1
Site: Mn Steel
Source: BH 2 In
Sample Date: 3/27/23

Analyte	Result	DL	Units
Aluminum, ICP	28.5	3.57	µg/sample
Antimony, ICP	< DL	0.595	µg/sample
Arsenic, ICP	< DL	0.833	µg/sample
Barium, ICP	1.54	0.060	µg/sample
Beryllium, ICP	< DL	0.024	µg/sample
Cadmium, ICP	3.35	0.048	µg/sample
Chromium, ICP	0.879	0.095	µg/sample
Cobalt, ICP	0.121	0.060	µg/sample
Copper, ICP	1.04	0.595	µg/sample
Lead, ICP	0.633	0.595	µg/sample
Manganese, ICP	1.66	0.036	µg/sample
Mercury, CVAA	0.135	0.0215	µg/sample
Nickel, ICP	0.610	0.357	µg/sample
Phosphorus, ICP	4.26	2.38	µg/sample
Selenium, ICP	< DL	1.78	µg/sample
Silver, ICP	< DL	0.238	µg/sample
Thallium, ICP	< DL	1.19	µg/sample
Vanadium, ICP	< DL	0.119	µg/sample
Zinc, ICP	4.44	0.357	µg/sample

Lab ID: 23-S686
Client ID: M29 Cont. 5A MS Run 1
Site: Mn Steel
Source: BH 2 In
Sample Date: 3/27/23

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.00928	µg/sample

Lab ID: 23-S687
Client ID: M29 Cont. 5B MS Run 1
Site: Mn Steel
Source: BH 2 In
Sample Date: 3/27/23

Analyte	Result	DL	Units
Mercury, CVAA	0.213	0.0354	µg/sample

Lab ID: 23-S688
Client ID: M29 Cont. 5C MS Run 1
Site: Mn Steel
Source: BH 2 In
Sample Date: 3/27/23

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.0201	µg/sample

Client: B020 - Bison Engineering
Report Number: 23-175

Lab ID: 23-S689
Client ID: M29 Cont. 1&3 MS Run 2
Site: Mn Steel
Source: BH 2 In
Sample Date: 3/28/23
Comments: 5x dilution for As

Analyte	Result	DL	Units
Aluminum, ICP	5,480	7.50	µg/sample
Antimony, ICP	4.52	1.25	µg/sample
Arsenic, ICP	12.7	8.75	µg/sample
Barium, ICP	27.8	0.125	µg/sample
Beryllium, ICP	0.110	0.050	µg/sample
Cadmium, ICP	0.630	0.100	µg/sample
Chromium, ICP	53.3	0.200	µg/sample
Cobalt, ICP	0.571	0.125	µg/sample
Copper, ICP	46.2	1.25	µg/sample
Lead, ICP	44.0	1.25	µg/sample
Manganese, ICP	2,150	0.075	µg/sample
Mercury, CVAA	0.0250	0.0219	µg/sample
Nickel, ICP	10.8	0.750	µg/sample
Phosphorus, ICP	64.8	5.00	µg/sample
Selenium, ICP	< DL	3.75	µg/sample
Silver, ICP	2.01	0.500	µg/sample
Thallium, ICP	< DL	2.50	µg/sample
Vanadium, ICP	1.99	0.250	µg/sample
Zinc, ICP	364.	0.750	µg/sample

Lab ID: 23-S690
Client ID: M29 Cont. 4 MS Run 2
Site: Mn Steel
Source: BH 2 In
Sample Date: 3/28/23

Analyte	Result	DL	Units
Aluminum, ICP	28.6	3.57	µg/sample
Antimony, ICP	< DL	0.595	µg/sample
Arsenic, ICP	< DL	0.833	µg/sample
Barium, ICP	4.69	0.060	µg/sample
Beryllium, ICP	< DL	0.024	µg/sample
Cadmium, ICP	1.02	0.048	µg/sample
Chromium, ICP	0.946	0.095	µg/sample
Cobalt, ICP	0.123	0.060	µg/sample
Copper, ICP	0.953	0.595	µg/sample
Lead, ICP	< DL	0.595	µg/sample
Manganese, ICP	3.96	0.036	µg/sample
Mercury, CVAA	0.196	0.0221	µg/sample
Nickel, ICP	1.22	0.357	µg/sample
Phosphorus, ICP	< DL	2.38	µg/sample
Selenium, ICP	< DL	1.78	µg/sample
Silver, ICP	< DL	0.238	µg/sample
Thallium, ICP	< DL	1.19	µg/sample
Vanadium, ICP	< DL	0.119	µg/sample
Zinc, ICP	3.90	0.357	µg/sample

Client: B020 - Bison Engineering
Report Number: 23-175

Lab ID: 23-S691
Client ID: M29 Cont. 5A MS Run 2
Site: Mn Steel
Source: BH 2 In
Sample Date: 3/28/23

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.00998	µg/sample

Lab ID: 23-S692
Client ID: M29 Cont. 5B MS Run 2
Site: Mn Steel
Source: BH 2 In
Sample Date: 3/28/23

Analyte	Result	DL	Units
Mercury, CVAA	0.124	0.0363	µg/sample

Lab ID: 23-S693
Client ID: M29 Cont. 5C MS Run 2
Site: Mn Steel
Source: BH 2 In
Sample Date: 3/28/23

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.0196	µg/sample

Lab ID: 23-S694
Client ID: M29 Cont. 1&3 MS Run 3
Site: Mn Steel
Source: BH 2 In
Sample Date: 3/29/23
Comments: 5x dilution for As

Analyte	Result	DL	Units
Aluminum, ICP	5,680	7.50	µg/sample
Antimony, ICP	4.63	1.25	µg/sample
Arsenic, ICP	16.2	8.75	µg/sample
Barium, ICP	26.4	0.125	µg/sample
Beryllium, ICP	0.105	0.050	µg/sample
Cadmium, ICP	0.686	0.100	µg/sample
Chromium, ICP	49.1	0.200	µg/sample
Cobalt, ICP	0.481	0.125	µg/sample
Copper, ICP	51.1	1.25	µg/sample
Lead, ICP	46.0	1.25	µg/sample
Manganese, ICP	2,090	0.075	µg/sample
Mercury, CVAA	< DL	0.0219	µg/sample
Nickel, ICP	11.1	0.750	µg/sample
Phosphorus, ICP	81.1	5.00	µg/sample
Selenium, ICP	< DL	3.75	µg/sample
Silver, ICP	1.81	0.500	µg/sample
Thallium, ICP	< DL	2.50	µg/sample
Vanadium, ICP	1.89	0.250	µg/sample
Zinc, ICP	428.	0.750	µg/sample

Client: B020 - Bison Engineering
Report Number: 23-175

Lab ID: 23-S695
Client ID: M29 Cont. 4 MS Run 3
Site: Mn Steel
Source: BH 2 In
Sample Date: 3/29/23

Analyte	Result	DL	Units
Aluminum, ICP	30.6	3.48	µg/sample
Antimony, ICP	< DL	0.580	µg/sample
Arsenic, ICP	< DL	0.812	µg/sample
Barium, ICP	4.41	0.058	µg/sample
Beryllium, ICP	< DL	0.023	µg/sample
Cadmium, ICP	0.281	0.046	µg/sample
Chromium, ICP	0.504	0.093	µg/sample
Cobalt, ICP	0.071	0.058	µg/sample
Copper, ICP	< DL	0.580	µg/sample
Lead, ICP	0.905	0.580	µg/sample
Manganese, ICP	14.3	0.035	µg/sample
Mercury, CVAA	0.215	0.0251	µg/sample
Nickel, ICP	0.552	0.348	µg/sample
Phosphorus, ICP	< DL	2.32	µg/sample
Selenium, ICP	< DL	1.74	µg/sample
Silver, ICP	< DL	0.232	µg/sample
Thallium, ICP	< DL	1.16	µg/sample
Vanadium, ICP	< DL	0.116	µg/sample
Zinc, ICP	1.75	0.348	µg/sample

Lab ID: 23-S696
Client ID: M29 Cont. 5A MS Run 3
Site: Mn Steel
Source: BH 2 In
Sample Date: 3/29/23

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.00998	µg/sample

Lab ID: 23-S697
Client ID: M29 Cont. 5B MS Run 3
Site: Mn Steel
Source: BH 2 In
Sample Date: 3/29/23

Analyte	Result	DL	Units
Mercury, CVAA	0.175	0.0350	µg/sample

Lab ID: 23-S698
Client ID: M29 Cont. 5C MS Run 3
Site: Mn Steel
Source: BH 2 In
Sample Date: 3/29/23

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.0196	µg/sample

Client: B020 - Bison Engineering
Report Number: 23-175

Lab ID: 23-S699
Client ID: M29 Cont. 1&3 MS Run 1
Site: Mn Steel
Source: BH 1 Out
Sample Date: 3/27/23

Analyte	Result	DL	Units
Aluminum, ICP	99.0	7.50	µg/sample
Antimony, ICP	2.91	1.25	µg/sample
Arsenic, ICP	2.29	1.75	µg/sample
Barium, ICP	6.75	0.125	µg/sample
Beryllium, ICP	< DL	0.050	µg/sample
Cadmium, ICP	< DL	0.100	µg/sample
Chromium, ICP	4.97	0.200	µg/sample
Cobalt, ICP	< DL	0.125	µg/sample
Copper, ICP	4.18	1.25	µg/sample
Lead, ICP	< DL	1.25	µg/sample
Manganese, ICP	13.4	0.075	µg/sample
Mercury, CVAA	< DL	0.0219	µg/sample
Nickel, ICP	10.4	0.750	µg/sample
Phosphorus, ICP	22.1	5.00	µg/sample
Selenium, ICP	< DL	3.75	µg/sample
Silver, ICP	0.608	0.500	µg/sample
Thallium, ICP	< DL	2.50	µg/sample
Vanadium, ICP	< DL	0.250	µg/sample
Zinc, ICP	12.0	0.750	µg/sample

Lab ID: 23-S700
Client ID: M29 Cont. 4 MS Run 1
Site: Mn Steel
Source: BH 1 Out
Sample Date: 3/27/23

Analyte	Result	DL	Units
Aluminum, ICP	20.4	3.60	µg/sample
Antimony, ICP	< DL	0.600	µg/sample
Arsenic, ICP	< DL	0.840	µg/sample
Barium, ICP	2.37	0.060	µg/sample
Beryllium, ICP	< DL	0.024	µg/sample
Cadmium, ICP	0.514	0.048	µg/sample
Chromium, ICP	0.481	0.096	µg/sample
Cobalt, ICP	0.067	0.060	µg/sample
Copper, ICP	< DL	0.600	µg/sample
Lead, ICP	< DL	0.600	µg/sample
Manganese, ICP	1.73	0.036	µg/sample
Mercury, CVAA	0.183	0.0206	µg/sample
Nickel, ICP	< DL	0.360	µg/sample
Phosphorus, ICP	< DL	2.40	µg/sample
Selenium, ICP	< DL	1.80	µg/sample
Silver, ICP	< DL	0.240	µg/sample
Thallium, ICP	< DL	1.20	µg/sample
Vanadium, ICP	< DL	0.120	µg/sample
Zinc, ICP	6.09	0.360	µg/sample

Client: B020 - Bison Engineering
Report Number: 23-175

Lab ID: 23-S701
Client ID: M29 Cont. 5A MS Run 1
Site: Mn Steel
Source: BH 1 Out
Sample Date: 3/27/23

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.00910	µg/sample

Lab ID: 23-S702
Client ID: M29 Cont. 5B MS Run 1
Site: Mn Steel
Source: BH 1 Out
Sample Date: 3/27/23

Analyte	Result	DL	Units
Mercury, CVAA	0.215	0.0350	µg/sample

Lab ID: 23-S703
Client ID: M29 Cont. 5C MS Run 1
Site: Mn Steel
Source: BH 1 Out
Sample Date: 3/27/23

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.0203	µg/sample

Lab ID: 23-S704
Client ID: M29 Cont. 1&3 MS Run 2
Site: Mn Steel
Source: BH 1 Out
Sample Date: 3/28/23

Analyte	Result	DL	Units
Aluminum, ICP	87.8	7.50	µg/sample
Antimony, ICP	3.24	1.25	µg/sample
Arsenic, ICP	2.04	1.75	µg/sample
Barium, ICP	6.14	0.125	µg/sample
Beryllium, ICP	< DL	0.050	µg/sample
Cadmium, ICP	< DL	0.100	µg/sample
Chromium, ICP	4.11	0.200	µg/sample
Cobalt, ICP	< DL	0.125	µg/sample
Copper, ICP	3.74	1.25	µg/sample
Lead, ICP	< DL	1.25	µg/sample
Manganese, ICP	15.5	0.075	µg/sample
Mercury, CVAA	< DL	0.0219	µg/sample
Nickel, ICP	12.4	0.750	µg/sample
Phosphorus, ICP	18.2	5.00	µg/sample
Selenium, ICP	< DL	3.75	µg/sample
Silver, ICP	< DL	0.500	µg/sample
Thallium, ICP	< DL	2.50	µg/sample
Vanadium, ICP	< DL	0.250	µg/sample
Zinc, ICP	7.35	0.750	µg/sample

Client: B020 - Bison Engineering
Report Number: 23-175

Lab ID: 23-S705
Client ID: M29 Cont. 4 MS Run 2
Site: Mn Steel
Source: BH 1 Out
Sample Date: 3/28/23

Analyte	Result	DL	Units
Aluminum, ICP	20.0	3.45	µg/sample
Antimony, ICP	< DL	0.575	µg/sample
Arsenic, ICP	< DL	0.805	µg/sample
Barium, ICP	2.62	0.058	µg/sample
Beryllium, ICP	< DL	0.023	µg/sample
Cadmium, ICP	0.298	0.046	µg/sample
Chromium, ICP	0.333	0.092	µg/sample
Cobalt, ICP	< DL	0.058	µg/sample
Copper, ICP	1.31	0.575	µg/sample
Lead, ICP	< DL	0.575	µg/sample
Manganese, ICP	3.26	0.034	µg/sample
Mercury, CVAA	0.244	0.0262	µg/sample
Nickel, ICP	0.946	0.345	µg/sample
Phosphorus, ICP	< DL	2.30	µg/sample
Selenium, ICP	< DL	1.72	µg/sample
Silver, ICP	< DL	0.230	µg/sample
Thallium, ICP	< DL	1.15	µg/sample
Vanadium, ICP	< DL	0.115	µg/sample
Zinc, ICP	3.69	0.345	µg/sample

Lab ID: 23-S706
Client ID: M29 Cont. 5A MS Run 2
Site: Mn Steel
Source: BH 1 Out
Sample Date: 3/28/23

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.00827	µg/sample

Lab ID: 23-S707
Client ID: M29 Cont. 5B MS Run 2
Site: Mn Steel
Source: BH 1 Out
Sample Date: 3/28/23

Analyte	Result	DL	Units
Mercury, CVAA	0.231	0.0359	µg/sample

Lab ID: 23-S708
Client ID: M29 Cont. 5C MS Run 2
Site: Mn Steel
Source: BH 1 Out
Sample Date: 3/28/23

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.0201	µg/sample

Client: B020 - Bison Engineering
Report Number: 23-175

Lab ID: 23-S709
Client ID: M29 Cont. 1&3 MS Run 3
Site: Mn Steel
Source: BH 1 Out
Sample Date: 3/29/23

Analyte	Result	DL	Units
Aluminum, ICP	84.5	7.50	µg/sample
Antimony, ICP	3.16	1.25	µg/sample
Arsenic, ICP	2.51	1.75	µg/sample
Barium, ICP	7.06	0.125	µg/sample
Beryllium, ICP	< DL	0.050	µg/sample
Cadmium, ICP	< DL	0.100	µg/sample
Chromium, ICP	2.75	0.200	µg/sample
Cobalt, ICP	< DL	0.125	µg/sample
Copper, ICP	< DL	1.25	µg/sample
Lead, ICP	< DL	1.25	µg/sample
Manganese, ICP	12.5	0.075	µg/sample
Mercury, CVAA	< DL	0.0219	µg/sample
Nickel, ICP	5.35	0.750	µg/sample
Phosphorus, ICP	20.6	5.00	µg/sample
Selenium, ICP	< DL	3.75	µg/sample
Silver, ICP	< DL	0.500	µg/sample
Thallium, ICP	< DL	2.50	µg/sample
Vanadium, ICP	< DL	0.250	µg/sample
Zinc, ICP	8.84	0.750	µg/sample

Lab ID: 23-S710
Client ID: M29 Cont. 4 MS Run 3
Site: Mn Steel
Source: BH 1 Out
Sample Date: 3/29/23

Analyte	Result	DL	Units
Aluminum, ICP	18.5	3.45	µg/sample
Antimony, ICP	< DL	0.575	µg/sample
Arsenic, ICP	< DL	0.805	µg/sample
Barium, ICP	1.83	0.058	µg/sample
Beryllium, ICP	< DL	0.023	µg/sample
Cadmium, ICP	0.091	0.046	µg/sample
Chromium, ICP	0.328	0.092	µg/sample
Cobalt, ICP	< DL	0.058	µg/sample
Copper, ICP	1.22	0.575	µg/sample
Lead, ICP	< DL	0.575	µg/sample
Manganese, ICP	1.50	0.034	µg/sample
Mercury, CVAA	0.183	0.0262	µg/sample
Nickel, ICP	< DL	0.345	µg/sample
Phosphorus, ICP	< DL	2.30	µg/sample
Selenium, ICP	< DL	1.72	µg/sample
Silver, ICP	< DL	0.230	µg/sample
Thallium, ICP	< DL	1.15	µg/sample
Vanadium, ICP	< DL	0.115	µg/sample
Zinc, ICP	1.35	0.345	µg/sample

Client: B020 - Bison Engineering
Report Number: 23-175

Lab ID: 23-S711
Client ID: M29 Cont. 5A MS Run 3
Site: Mn Steel
Source: BH 1 Out
Sample Date: 3/29/23

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.00838	µg/sample

Lab ID: 23-S712
Client ID: M29 Cont. 5B MS Run 3
Site: Mn Steel
Source: BH 1 Out
Sample Date: 3/29/23

Analyte	Result	DL	Units
Mercury, CVAA	0.223	0.0363	µg/sample

Lab ID: 23-S713
Client ID: M29 Cont. 5C MS Run 3
Site: Mn Steel
Source: BH 1 Out
Sample Date: 3/29/23

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.0196	µg/sample

Lab ID: 23-S714
Client ID: M29 Cont. 1&3 MS Run 1
Site: Mn Steel
Source: BH 2 Out
Sample Date: 3/27/23

Analyte	Result	DL	Units
Aluminum, ICP	74.2	7.50	µg/sample
Antimony, ICP	3.54	1.25	µg/sample
Arsenic, ICP	2.63	1.75	µg/sample
Barium, ICP	3.30	0.125	µg/sample
Beryllium, ICP	< DL	0.050	µg/sample
Cadmium, ICP	< DL	0.100	µg/sample
Chromium, ICP	1.90	0.200	µg/sample
Cobalt, ICP	< DL	0.125	µg/sample
Copper, ICP	1.48	1.25	µg/sample
Lead, ICP	< DL	1.25	µg/sample
Manganese, ICP	5.53	0.075	µg/sample
Mercury, CVAA	0.0438	0.0219	µg/sample
Nickel, ICP	4.60	0.750	µg/sample
Phosphorus, ICP	20.2	5.00	µg/sample
Selenium, ICP	< DL	3.75	µg/sample
Silver, ICP	< DL	0.500	µg/sample
Thallium, ICP	< DL	2.50	µg/sample
Vanadium, ICP	< DL	0.250	µg/sample
Zinc, ICP	8.16	0.750	µg/sample

Client: B020 - Bison Engineering
Report Number: 23-175

Lab ID: 23-S715
Client ID: M29 Cont. 4 MS Run 1
Site: Mn Steel
Source: BH 2 Out
Sample Date: 3/27/23

Analyte	Result	DL	Units
Aluminum, ICP	12.1	3.39	µg/sample
Antimony, ICP	< DL	0.565	µg/sample
Arsenic, ICP	< DL	0.791	µg/sample
Barium, ICP	0.703	0.056	µg/sample
Beryllium, ICP	< DL	0.023	µg/sample
Cadmium, ICP	0.095	0.045	µg/sample
Chromium, ICP	0.778	0.090	µg/sample
Cobalt, ICP	< DL	0.056	µg/sample
Copper, ICP	< DL	0.565	µg/sample
Lead, ICP	0.687	0.565	µg/sample
Manganese, ICP	1.15	0.034	µg/sample
Mercury, CVAA	0.231	0.0312	µg/sample
Nickel, ICP	0.536	0.339	µg/sample
Phosphorus, ICP	< DL	2.26	µg/sample
Selenium, ICP	< DL	1.70	µg/sample
Silver, ICP	< DL	0.226	µg/sample
Thallium, ICP	< DL	1.13	µg/sample
Vanadium, ICP	< DL	0.113	µg/sample
Zinc, ICP	8.71	0.339	µg/sample

Lab ID: 23-S716
Client ID: M29 Cont. 5A MS Run 1
Site: Mn Steel
Source: BH 2 Out
Sample Date: 3/27/23

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.00796	µg/sample

Lab ID: 23-S717
Client ID: M29 Cont. 5B MS Run 1
Site: Mn Steel
Source: BH 2 Out
Sample Date: 3/27/23

Analyte	Result	DL	Units
Mercury, CVAA	0.207	0.0315	µg/sample

Lab ID: 23-S718
Client ID: M29 Cont. 5C MS Run 1
Site: Mn Steel
Source: BH 2 Out
Sample Date: 3/27/23

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.0201	µg/sample

Client: B020 - Bison Engineering
Report Number: 23-175

Lab ID: 23-S719
Client ID: M29 Cont. 1&3 MS Run 2
Site: Mn Steel
Source: BH 2 Out
Sample Date: 3/28/23

Analyte	Result	DL	Units
Aluminum, ICP	89.0	7.50	µg/sample
Antimony, ICP	3.27	1.25	µg/sample
Arsenic, ICP	2.61	1.75	µg/sample
Barium, ICP	5.00	0.125	µg/sample
Beryllium, ICP	< DL	0.050	µg/sample
Cadmium, ICP	< DL	0.100	µg/sample
Chromium, ICP	1.57	0.200	µg/sample
Cobalt, ICP	< DL	0.125	µg/sample
Copper, ICP	2.60	1.25	µg/sample
Lead, ICP	1.56	1.25	µg/sample
Manganese, ICP	5.54	0.075	µg/sample
Mercury, CVAA	0.0438	0.0219	µg/sample
Nickel, ICP	5.68	0.750	µg/sample
Phosphorus, ICP	20.5	5.00	µg/sample
Selenium, ICP	< DL	3.75	µg/sample
Silver, ICP	< DL	0.500	µg/sample
Thallium, ICP	< DL	2.50	µg/sample
Vanadium, ICP	< DL	0.250	µg/sample
Zinc, ICP	7.78	0.750	µg/sample

Lab ID: 23-S720
Client ID: M29 Cont. 4 MS Run 2
Site: Mn Steel
Source: BH 2 Out
Sample Date: 3/28/23

Analyte	Result	DL	Units
Aluminum, ICP	26.9	3.45	µg/sample
Antimony, ICP	< DL	0.575	µg/sample
Arsenic, ICP	< DL	0.805	µg/sample
Barium, ICP	1.35	0.058	µg/sample
Beryllium, ICP	< DL	0.023	µg/sample
Cadmium, ICP	0.141	0.046	µg/sample
Chromium, ICP	0.725	0.092	µg/sample
Cobalt, ICP	0.106	0.058	µg/sample
Copper, ICP	1.74	0.575	µg/sample
Lead, ICP	1.37	0.575	µg/sample
Manganese, ICP	2.07	0.034	µg/sample
Mercury, CVAA	0.181	0.0264	µg/sample
Nickel, ICP	1.91	0.345	µg/sample
Phosphorus, ICP	< DL	2.30	µg/sample
Selenium, ICP	< DL	1.72	µg/sample
Silver, ICP	< DL	0.230	µg/sample
Thallium, ICP	< DL	1.15	µg/sample
Vanadium, ICP	< DL	0.115	µg/sample
Zinc, ICP	9.40	0.345	µg/sample

Client: B020 - Bison Engineering
Report Number: 23-175

Lab ID: 23-S721
Client ID: M29 Cont. 5A MS Run 2
Site: Mn Steel
Source: BH 2 Out
Sample Date: 3/28/23

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.00945	µg/sample

Lab ID: 23-S722
Client ID: M29 Cont. 5B MS Run 2
Site: Mn Steel
Source: BH 2 Out
Sample Date: 3/28/23

Analyte	Result	DL	Units
Mercury, CVAA	0.133	0.0311	µg/sample

Lab ID: 23-S723
Client ID: M29 Cont. 5C MS Run 2
Site: Mn Steel
Source: BH 2 Out
Sample Date: 3/28/23

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.0189	µg/sample

Lab ID: 23-S724
Client ID: M29 Cont. 1&3 MS Run 3
Site: Mn Steel
Source: BH 2 Out
Sample Date: 3/29/23

Analyte	Result	DL	Units
Aluminum, ICP	79.8	7.50	µg/sample
Antimony, ICP	2.36	1.25	µg/sample
Arsenic, ICP	2.64	1.75	µg/sample
Barium, ICP	3.59	0.125	µg/sample
Beryllium, ICP	< DL	0.050	µg/sample
Cadmium, ICP	< DL	0.100	µg/sample
Chromium, ICP	1.35	0.200	µg/sample
Cobalt, ICP	< DL	0.125	µg/sample
Copper, ICP	< DL	1.25	µg/sample
Lead, ICP	< DL	1.25	µg/sample
Manganese, ICP	5.81	0.075	µg/sample
Mercury, CVAA	0.0438	0.0219	µg/sample
Nickel, ICP	4.40	0.750	µg/sample
Phosphorus, ICP	20.3	5.00	µg/sample
Selenium, ICP	< DL	3.75	µg/sample
Silver, ICP	< DL	0.500	µg/sample
Thallium, ICP	< DL	2.50	µg/sample
Vanadium, ICP	< DL	0.250	µg/sample
Zinc, ICP	4.20	0.750	µg/sample

Client: B020 - Bison Engineering
Report Number: 23-175

Lab ID: 23-S725
Client ID: M29 Cont. 4 MS Run 3
Site: Mn Steel
Source: BH 2 Out
Sample Date: 3/29/23

Analyte	Result	DL	Units
Aluminum, ICP	30.7	3.45	µg/sample
Antimony, ICP	< DL	0.575	µg/sample
Arsenic, ICP	< DL	0.805	µg/sample
Barium, ICP	1.85	0.058	µg/sample
Beryllium, ICP	< DL	0.023	µg/sample
Cadmium, ICP	0.059	0.046	µg/sample
Chromium, ICP	0.698	0.092	µg/sample
Cobalt, ICP	0.114	0.058	µg/sample
Copper, ICP	6.39	0.575	µg/sample
Lead, ICP	0.821	0.575	µg/sample
Manganese, ICP	12.7	0.034	µg/sample
Mercury, CVAA	0.194	0.0271	µg/sample
Nickel, ICP	1.35	0.345	µg/sample
Phosphorus, ICP	< DL	2.30	µg/sample
Selenium, ICP	< DL	1.72	µg/sample
Silver, ICP	< DL	0.230	µg/sample
Thallium, ICP	< DL	1.15	µg/sample
Vanadium, ICP	< DL	0.115	µg/sample
Zinc, ICP	8.61	0.345	µg/sample

Lab ID: 23-S726
Client ID: M29 Cont. 5A MS Run 3
Site: Mn Steel
Source: BH 2 Out
Sample Date: 3/29/23

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.00870	µg/sample

Lab ID: 23-S727
Client ID: M29 Cont. 5B MS Run 3
Site: Mn Steel
Source: BH 2 Out
Sample Date: 3/29/23

Analyte	Result	DL	Units
Mercury, CVAA	0.197	0.0306	µg/sample

Lab ID: 23-S728
Client ID: M29 Cont. 5C MS Run 3
Site: Mn Steel
Source: BH 2 Out
Sample Date: 3/29/23
Comments: No sample

Analyte	Result	DL	Units

Client: B020 - Bison Engineering
Report Number: 23-175

Lab ID: 23-S729
Client ID: M29 Cont. 12
Sample Date: 3/29/23
Comments: Filter Blank

Analyte	Result	DL	Units
Aluminum, ICP	58.8	7.50	µg/sample
Antimony, ICP	2.86	1.25	µg/sample
Arsenic, ICP	< DL	1.75	µg/sample
Barium, ICP	1.40	0.125	µg/sample
Beryllium, ICP	< DL	0.050	µg/sample
Cadmium, ICP	< DL	0.100	µg/sample
Chromium, ICP	1.03	0.200	µg/sample
Cobalt, ICP	< DL	0.125	µg/sample
Copper, ICP	< DL	1.25	µg/sample
Lead, ICP	< DL	1.25	µg/sample
Manganese, ICP	0.741	0.075	µg/sample
Mercury, CVAA	0.0406	0.0219	µg/sample
Nickel, ICP	3.96	0.750	µg/sample
Phosphorus, ICP	17.0	5.00	µg/sample
Selenium, ICP	< DL	3.75	µg/sample
Silver, ICP	< DL	0.500	µg/sample
Thallium, ICP	< DL	2.50	µg/sample
Vanadium, ICP	< DL	0.250	µg/sample
Zinc, ICP	1.52	0.750	µg/sample

Lab ID: 23-S730
Client ID: M29 Cont. 8A
Sample Date: 3/29/23
Comments: HNO3 Blank

Analyte	Result	DL	Units
Aluminum, ICP	< DL	7.50	µg/sample
Antimony, ICP	< DL	1.25	µg/sample
Arsenic, ICP	< DL	1.75	µg/sample
Barium, ICP	0.193	0.125	µg/sample
Beryllium, ICP	< DL	0.050	µg/sample
Cadmium, ICP	< DL	0.100	µg/sample
Chromium, ICP	< DL	0.200	µg/sample
Cobalt, ICP	< DL	0.125	µg/sample
Copper, ICP	< DL	1.25	µg/sample
Lead, ICP	< DL	1.25	µg/sample
Manganese, ICP	< DL	0.375	µg/sample
Mercury, CVAA	< DL	0.0219	µg/sample
Nickel, ICP	< DL	0.750	µg/sample
Phosphorus, ICP	< DL	5.00	µg/sample
Selenium, ICP	< DL	3.75	µg/sample
Silver, ICP	< DL	0.500	µg/sample
Thallium, ICP	< DL	2.50	µg/sample
Vanadium, ICP	< DL	0.250	µg/sample
Zinc, ICP	< DL	0.750	µg/sample

Client: B020 - Bison Engineering
Report Number: 23-175

Lab ID: 23-S731
Client ID: M29 Cont. 9
Sample Date: 3/29/23
Comments: HNO3/H2O2 Blank

Analyte	Result	DL	Units
Aluminum, ICP	16.3	3.78	µg/sample
Antimony, ICP	< DL	0.630	µg/sample
Arsenic, ICP	< DL	0.882	µg/sample
Barium, ICP	0.718	0.063	µg/sample
Beryllium, ICP	< DL	0.025	µg/sample
Cadmium, ICP	< DL	0.050	µg/sample
Chromium, ICP	0.306	0.101	µg/sample
Cobalt, ICP	0.153	0.063	µg/sample
Copper, ICP	< DL	0.630	µg/sample
Lead, ICP	< DL	0.630	µg/sample
Manganese, ICP	0.742	0.038	µg/sample
Mercury, CVAA	0.118	0.0172	µg/sample
Nickel, ICP	< DL	0.378	µg/sample
Phosphorus, ICP	< DL	2.52	µg/sample
Selenium, ICP	< DL	1.89	µg/sample
Silver, ICP	< DL	0.252	µg/sample
Thallium, ICP	< DL	1.26	µg/sample
Vanadium, ICP	< DL	0.126	µg/sample
Zinc, ICP	0.415	0.378	µg/sample

Lab ID: 23-S732
Client ID: M29 Cont. 8B
Sample Date: 3/30/23
Comments: H2O Blank

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.0295	µg/sample

Lab ID: 23-S733
Client ID: M29 Cont. 10
Sample Date: 3/30/23
Comments: KMnO4 Blank

Analyte	Result	DL	Units
Mercury, CVAA	0.0628	0.0163	µg/sample

Lab ID: 23-S734
Client ID: M29 Cont. 11
Sample Date: 3/29/23
Comments: HCl Blank

Analyte	Result	DL	Units
Mercury, CVAA	< DL	0.0108	µg/sample

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: ICP-OES
Instrument: Perkin Elmer Optima 8300
Sample Description: EPA Method 29
Report Number: 23-175

Blank Data

Analyte	Sample ID	Measured Conc. µg/L	DL Conc. µg/L
Ag	ICB	< DL	2.00
Ag	Meth_Blk	< DL	2.00
Ag	CCB	< DL	2.00
Ag	CCB	< DL	2.00
Al	ICB	< DL	30.0
Al	Meth_Blk	< DL	30.0
Al	CCB	< DL	30.0
Al	CCB	< DL	30.0
Al	CCB	< DL	30.0
As	ICB	< DL	7.00
As	Meth_Blk	< DL	7.00
As	CCB	< DL	7.00
As	CCB	< DL	7.00
Ba	ICB	< DL	0.500
Ba	Meth_Blk	1.51	0.500
Ba	CCB	< DL	0.500
Ba	CCB	< DL	0.500
Be	ICB	< DL	0.200
Be	Meth_Blk	< DL	0.200
Be	CCB	< DL	0.200
Be	CCB	< DL	0.200
Cd	ICB	< DL	0.400
Cd	Meth_Blk	< DL	0.400
Cd	CCB	< DL	0.400
Cd	CCB	< DL	0.400
Co	ICB	< DL	0.500
Co	Meth_Blk	< DL	0.500
Co	CCB	< DL	0.500
Co	CCB	< DL	0.500
Cr	ICB	< DL	0.800
Cr	Meth_Blk	< DL	0.800
Cr	CCB	< DL	0.800
Cr	CCB	< DL	0.800
Cu	ICB	< DL	5.00
Cu	Meth_Blk	< DL	5.00
Cu	CCB	< DL	5.00
Cu	CCB	< DL	5.00
Mn	ICB	< DL	0.300
Mn	Meth_Blk	< DL	0.300

ICB: Initial Calibration Blank CCB: Continuing Calibration Blank
2. Sample Media Blank (SM_Blk) concentration in µg/filter
Method Blank is in control if Method Blank results are <10% of sample results

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: ICP-OES
Instrument: Perkin Elmer Optima 8300
Sample Description: EPA Method 29
Report Number: 23-175

Blank Data (continued)

Analyte	Sample ID	Measured Conc. µg/L	DL Conc. µg/L
Mn	CCB	< DL	0.300
Mn	CCB	< DL	0.300
Ni	ICB	< DL	3.00
Ni	Meth_Blk	< DL	3.00
Ni	CCB	< DL	3.00
Ni	CCB	< DL	3.00
P	ICB	< DL	20.0
P	Meth_Blk	< DL	20.0
P	CCB	< DL	20.0
P	CCB	< DL	20.0
Pb	ICB	< DL	5.00
Pb	Meth_Blk	< DL	5.00
Pb	CCB	< DL	5.00
Pb	CCB	< DL	5.00
Sb	ICB	< DL	5.00
Sb	Meth_Blk	< DL	5.00
Sb	CCB	< DL	5.00
Sb	CCB	< DL	5.00
Se	ICB	< DL	15.0
Se	Meth_Blk	< DL	15.0
Se	CCB	< DL	15.0
Se	CCB	< DL	15.0
Tl	ICB	< DL	10.0
Tl	Meth_Blk	< DL	10.0
Tl	CCB	< DL	10.0
Tl	CCB	< DL	10.0
V	ICB	< DL	1.00
V	Meth_Blk	< DL	1.00
V	CCB	< DL	1.00
V	CCB	< DL	1.00
Zn	ICB	< DL	3.00
Zn	Meth_Blk	< DL	3.00
Zn	CCB	< DL	3.00
Zn	CCB	< DL	3.00

ICB: Initial Calibration Blank CCB: Continuing Calibration Blank
*: Sample Media Blank (SM_Blk) concentration in µg/filter
Method Blank is in control if Method Blank results are <10% of sample results

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: ICP-OES
Instrument: Perkin Elmer Optima 8300
Sample Description: EPA Method 29
Report Number: 23-175

Calibration QC

Analyte	Sample ID	Standard Conc. µg/L	Measured Conc. µg/L	Percent Recovery
Ag	ICV	2500.	2429.	97.2
Ag	LL-CCV	10.00	8.935	89.4
Ag	LL-LCS	9.000	8.650	96.1
Ag	CCV	2500.	2302.	92.1
Ag	CCV	2500.	2341.	93.6
Al	ICV	2500.	2411.	96.4
Al	LL-CCV	150.0	143.5	95.7
Al	LL-LCS	75.00	98.37	131.2
Al	CCV	2500.	2403.	96.1
Al	CCV	2500.	2349.	94.0
Al	CCV	2500.	2415.	96.6
As	ICV	2500.	2456.	98.2
As	LL-CCV	35.00	33.62	96.1
As	LL-LCS	20.00	21.17	105.8
As	CCV	2500.	2400.	96.0
As	CCV	2500.	2383.	95.3
Ba	ICV	2500.	2367.	94.7
Ba	LL-CCV	2.500	2.547	101.9
Ba	LL-LCS	1.500	1.570	104.7
Ba	CCV	2500.	2354.	94.2
Ba	CCV	2500.	2299.	92.0
Be	ICV	2500.	2499.	100.0
Be	LL-CCV	1.000	1.010	101.0
Be	LL-LCS	0.500	0.521	104.2
Be	CCV	2500.	2458.	98.3
Be	CCV	2500.	2483.	99.3
Cd	ICV	2500.	2544.	101.8
Cd	LL-CCV	2.000	2.460	123.0
Cd	LL-LCS	1.500	1.845	123.0
Cd	CCV	2500.	2518.	100.7
Cd	CCV	2500.	2564.	102.6
Co	ICV	2500.	2490.	99.6
Co	LL-CCV	2.500	2.636	105.4
Co	LL-LCS	1.500	1.809	120.6
Co	CCV	2500.	2391.	95.6
Co	CCV	2500.	2360.	94.4
Cr	ICV	2500.	2473.	98.9

ICV: Initial Calibration Verification CCV: Continuing Calibration Verification
Calibration Verification Limits: 90% - 110% Recovery
Low Level-CCV Limits: 60% - 140% Recovery
Low Level-LCS Limits: 50% - 150% Recovery
LL-LCS results are insignificant if sample results are >10x LL-LCS concentration

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: ICP-OES
Instrument: Perkin Elmer Optima 8300
Sample Description: EPA Method 29
Report Number: 23-175

Calibration QC (continued)

Analyte	Sample ID	Standard Conc. µg/L	Measured Conc. µg/L	Percent Recovery
Cr	LL-CCV	4.000	4.264	106.6
Cr	LL-LCS	2.000	2.193	109.6
Cr	CCV	2500.	2459.	98.4
Cr	CCV	2500.	2471.	98.8
Cu	ICV	2500.	2361.	94.4
Cu	LL-CCV	25.00	26.39	105.6
Cu	LL-LCS	15.00	15.03	100.2
Cu	CCV	2500.	2350.	94.0
Cu	CCV	2500.	2356.	94.2
Mn	ICV	2500.	2512.	100.5
Mn	LL-CCV	1.500	1.542	102.8
Mn	LL-LCS	1.000	1.045	104.5
Mn	CCV	2500.	2506.	100.2
Mn	CCV	2500.	2519.	100.8
Ni	ICV	2500.	2423.	96.9
Ni	LL-CCV	15.00	16.15	107.7
Ni	LL-LCS	6.000	5.643	94.0
Ni	CCV	2500.	2406.	96.2
Ni	CCV	2500.	2525.	101.0
P	ICV	2500.	2561.	102.4
P	LL-CCV	100.0	97.85	97.8
P	LL-LCS	75.00	64.66	86.2
P	CCV	2500.	2510.	100.4
P	CCV	2500.	2505.	100.2
Pb	ICV	2500.	2500.	100.0
Pb	LL-CCV	25.00	29.42	117.7
Pb	LL-LCS	15.00	17.63	117.5
Pb	CCV	2500.	2423.	96.9
Pb	CCV	2500.	2397.	95.9
Sb	ICV	2500.	2397.	95.9
Sb	LL-CCV	25.00	28.81	115.2
Sb	LL-LCS	15.00	11.60	77.3
Sb	CCV	2500.	2352.	94.1
Sb	CCV	2500.	2352.	94.1
Se	ICV	2500.	2549.	102.0
Se	LL-CCV	75.00	84.81	113.1
Se	LL-LCS	30.00	32.92	109.7

ICV: Initial Calibration Verification CCV: Continuing Calibration Verification
Calibration Verification Limits: 90% - 110% Recovery
Low Level-CCV Limits: 60% - 140% Recovery
Low Level-LCS Limits: 50% - 150% Recovery
1b LCS results are insignificant if sample results are >10x LL-LCS concentration

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: ICP-OES
Instrument: Perkin Elmer Optima 8300
Sample Description: EPA Method 29
Report Number: 23-175

Calibration QC (continued)

Analyte	Sample ID	Standard Conc. µg/L	Measured Conc. µg/L	Percent Recovery
Se	CCV	2500.	2456.	98.2
Se	CCV	2500.	2460.	98.4
Tl	ICV	2500.	2479.	99.2
Tl	LL-CCV	50.00	51.70	103.4
Tl	LL-LCS	30.00	42.79	142.6
Tl	CCV	2500.	2430.	97.2
Tl	CCV	2500.	2433.	97.3
V	ICV	2500.	2491.	99.6
V	LL-CCV	5.000	5.272	105.4
V	LL-LCS	3.000	3.062	102.1
V	CCV	2500.	2491.	99.6
V	CCV	2500.	2514.	100.6
Zn	ICV	2500.	2500.	100.0
Zn	LL-CCV	15.00	17.06	113.7
Zn	LL-LCS	6.000	6.044	100.7
Zn	CCV	2500.	2478.	99.1
Zn	CCV	2500.	2495.	99.8

ICV: Initial Calibration Verification CCV: Continuing Calibration Verification
Calibration Verification Limits: 90% - 110% Recovery
Low Level-CCV Limits: 60% - 140% Recovery
Low Level-LCS Limits: 50% - 150% Recovery
LL-LCS results are insignificant if sample results are >10x LL-LCS concentration

Replicate Data

Analyte	Sample ID	Sample Conc. µg/L	Replicate Conc. µg/L	RPD
Ag	23-S609	8.13	7.15	12.9 *
Al	23-S609	2080	2060	1.16
As	23-S609	< 7	< 7	N/C *
Ba	23-S609	21.5	21.1	1.97
Be	23-S609	< 0.2	< 0.2	N/C *
Cd	23-S609	1.95	1.97	1.17 *
Co	23-S609	0.782	0.843	7.51 *
Cr	23-S609	166.	166.	0.06
Cu	23-S609	74.2	73.8	0.41
Mn	23-S609	1140	1120	1.42
Ni	23-S609	52.5	52.0	0.96
P	23-S609	84.6	69.8	19.3 *

RPD = {(sample-replicate)/[(sample+replicate)/2]}x100
N/C: RPD is not calculated when sample or replicate is below detection limit
Replicate Limit: 20% RPD
*: per EPA CLP protocol, control limits do not apply if sample and/or replicate concentration is less than 5x the detection limit

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: ICP-OES
Instrument: Perkin Elmer Optima 8300
Sample Description: EPA Method 29
Report Number: 23-175

Replicate Data (continued)

Analyte	Sample ID	Sample Conc. µg/L	Replicate Conc. µg/L	RPD
Pb	23-S609	159.	161.	1.25
Sb	23-S609	14.3	13.9	2.70 *
Se	23-S609	< 15	< 15	N/C *
Tl	23-S609	< 10	< 10	N/C *
V	23-S609	2.55	2.62	2.55 *
Zn	23-S609	1840	1840	0.05

RPD = {(sample-replicate)/[(sample+replicate)/2]}x100
N/C: RPD is not calculated when sample or replicate is below detection limit
Replicate Limit: 20% RPD
*: per EPA CLP protocol, control limits do not apply if sample and/or replicate concentration is less than 5x the detection limit

Laboratory Control Sample/Matrix Post Spike Analysis

Analyte	Sample ID	Sample Conc. µg/L	Spike Conc. µg/L	Spike Amount µg/L	Percent Recovery
Ag	LCS	< 2	2345.	2500	93.8
Ag	LCS-Duplicate	< 2	2472.	2500	98.9
Ag	23-S614	8.868	2359.	2500	94.0
Al	LCS	< 30	2614.	2500	105.
Al	LCS-Duplicate	< 30	2519.	2500	101.
Al	23-S614	2982.	7721.	2500	190.
As	LCS	< 7	2459.	2500	98.4
As	LCS-Duplicate	< 7	2474.	2500	99.0
As	23-S614	< 7	2318.	2500	92.7
Ba	LCS	1.507	2419.	2500	96.7
Ba	LCS-Duplicate	1.507	2348.	2500	93.9
Ba	23-S614	27.17	2327.	2500	92.0
Be	LCS	< 0.2	2481.	2500	99.2
Be	LCS-Duplicate	< 0.2	2535.	2500	101.
Be	23-S614	< 0.2	2395.	2500	95.8
Cd	LCS	< 0.4	2578.	2500	103.
Cd	LCS-Duplicate	< 0.4	2599.	2500	104.
Cd	23-S614	1.507	2443.	2500	97.7
Co	LCS	< 0.5	2419.	2500	96.8
Co	LCS-Duplicate	< 0.5	2416.	2500	96.6
Co	23-S614	1.148	2267.	2500	90.6
Cr	LCS	< 0.8	2442.	2500	97.7

LCS Limit: 80% - 120% Recovery Spike Limit: 75% - 125% Recovery

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: ICP-OES
Instrument: Perkin Elmer Optima 8300
Sample Description: EPA Method 29
Report Number: 23-175

Laboratory Control Sample/Matrix Post Spike Analysis (continued)

Analyte	Sample ID	Sample Conc. µg/L	Spike Conc. µg/L	Spike Amount µg/L	Percent Recovery
Cr	LCS-Duplicate	< 0.8	2454.	2500	98.2
Cr	23-S614	166.0	2560.	2500	95.8
Cu	LCS	< 5	2405.	2500	96.2
Cu	LCS-Duplicate	< 5	2408.	2500	96.3
Cu	23-S614	99.52	2479.	2500	95.2
Mn	LCS	< 0.3	2492.	2500	99.7
Mn	LCS-Duplicate	< 0.3	2503.	2500	100.
Mn	23-S614	2076.	4364.	2500	91.5
Ni	LCS	< 3	2444.	2500	97.8
Ni	LCS-Duplicate	< 3	2456.	2500	98.2
Ni	23-S614	40.36	2330.	2500	91.6
P	LCS	< 20	2555.	2500	102.
P	LCS-Duplicate	< 20	2573.	2500	103.
P	23-S614	104.4	2612.	2500	100.
Pb	LCS	< 5	2470.	2500	98.8
Pb	LCS-Duplicate	< 5	2469.	2500	98.8
Pb	23-S614	164.8	2455.	2500	91.6
Sb	LCS	< 5	2402.	2500	96.1
Sb	LCS-Duplicate	< 5	2400.	2500	96.0
Sb	23-S614	15.68	2302.	2500	91.5
Se	LCS	< 15	2563.	2500	103.
Se	LCS-Duplicate	< 15	2571.	2500	103.
Se	23-S614	< 15	2410.	2500	96.4
Tl	LCS	< 10	2473.	2500	98.9
Tl	LCS-Duplicate	< 10	2486.	2500	99.4
Tl	23-S614	< 10	2296.	2500	91.8
V	LCS	< 1	2453.	2500	98.1
V	LCS-Duplicate	< 1	2474.	2500	99.0
V	23-S614	2.061	2447.	2500	97.8
Zn	LCS	< 3	2578.	2500	103.
Zn	LCS-Duplicate	< 3	2588.	2500	104.
Zn	23-S614	1588.	3994.	2500	96.2

LCS Limit: 80% - 120% Recovery Spike Limit: 75% - 125% Recovery

LCS Duplicate Data

Analyte	Sample ID	Original Conc. µg/L	Replicate Conc. µg/L	RPD
Ag	LCS-Duplicate	2345.	2472.	5.27
Al	LCS-Duplicate	2614.	2519.	3.70

RPD = {(sample-duplicate)/[(sample+duplicate)/2]}x100 Duplicate Limit: 20% RPD

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: ICP-OES
Instrument: Perkin Elmer Optima 8300
Sample Description: EPA Method 29
Report Number: 23-175

LCS Duplicate Data (continued)

Analyte	Sample ID	Original Conc. µg/L	Replicate Conc. µg/L	RPD
As	LCS-Duplicate	2459.	2474.	0.61
Ba	LCS-Duplicate	2419.	2348.	2.98
Be	LCS-Duplicate	2481.	2535.	2.15
Cd	LCS-Duplicate	2578.	2599.	0.81
Co	LCS-Duplicate	2419.	2416.	0.12
Cr	LCS-Duplicate	2442.	2454.	0.49
Cu	LCS-Duplicate	2405.	2408.	0.12
Mn	LCS-Duplicate	2492.	2503.	0.44
Ni	LCS-Duplicate	2444.	2456.	0.49
P	LCS-Duplicate	2555.	2573.	0.70
Pb	LCS-Duplicate	2470.	2469.	0.04
Sb	LCS-Duplicate	2402.	2400.	0.08
Se	LCS-Duplicate	2563.	2571.	0.31
Tl	LCS-Duplicate	2473.	2486.	0.52
V	LCS-Duplicate	2453.	2474.	0.85
Zn	LCS-Duplicate	2578.	2588.	0.39

RPD = {(sample-duplicate)/[(sample+duplicate)/2]}x100 Duplicate Limit: 20% RPD

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: ICP-OES
Instrument: Perkin Elmer Optima 8300
Sample Description: EPA Method 29
Report Number: 23-175

Blank Data

Analyte	Sample ID	Measured Conc. µg/L	DL Conc. µg/L
Ag	ICB	< DL	2.00
Ag	Meth_Blk	< DL	2.00
Ag	CCB	< DL	2.00
Ag	CCB	< DL	2.00
Al	ICB	< DL	30.0
Al	Meth_Blk	34.4	30.0
Al	CCB	< DL	30.0
Al	CCB	< DL	30.0
As	ICB	< DL	7.00
As	Meth_Blk	< DL	7.00
As	CCB	< DL	7.00
As	CCB	< DL	7.00
Ba	ICB	< DL	0.500
Ba	Meth_Blk	< DL	0.500
Ba	CCB	< DL	0.500
Ba	CCB	< DL	0.500
Be	ICB	< DL	0.200
Be	Meth_Blk	< DL	0.200
Be	CCB	< DL	0.200
Be	CCB	< DL	0.200
Cd	ICB	< DL	0.400
Cd	Meth_Blk	< DL	0.400
Cd	CCB	< DL	0.400
Cd	CCB	< DL	0.400
Co	ICB	< DL	0.500
Co	Meth_Blk	< DL	0.500
Co	CCB	< DL	0.500
Co	CCB	< DL	0.500
Cr	ICB	< DL	0.800
Cr	Meth_Blk	< DL	0.800
Cr	CCB	< DL	0.800
Cr	CCB	< DL	0.800
Cu	ICB	< DL	5.00
Cu	Meth_Blk	< DL	5.00
Cu	CCB	< DL	5.00
Cu	CCB	< DL	5.00
Mn	ICB	< DL	0.300
Mn	Meth_Blk	< DL	0.300
Mn	CCB	< DL	0.300

ICB: Initial Calibration Blank CCB: Continuing Calibration Blank
2. Sample Media Blank (SM_Blk) concentration in µg/filter
Method Blank is in control if Method Blank results are <10% of sample results

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: ICP-OES
Instrument: Perkin Elmer Optima 8300
Sample Description: EPA Method 29
Report Number: 23-175

Blank Data (continued)

Analyte	Sample ID	Measured Conc. µg/L	DL Conc. µg/L
Mn	CCB	< DL	0.300
Ni	ICB	< DL	3.00
Ni	Meth_Blk	< DL	3.00
Ni	CCB	< DL	3.00
Ni	CCB	< DL	3.00
P	ICB	< DL	20.0
P	Meth_Blk	< DL	20.0
P	CCB	< DL	20.0
P	CCB	< DL	20.0
Pb	ICB	< DL	5.00
Pb	Meth_Blk	< DL	5.00
Pb	CCB	< DL	5.00
Pb	CCB	< DL	5.00
Sb	ICB	< DL	5.00
Sb	Meth_Blk	< DL	5.00
Sb	CCB	< DL	5.00
Sb	CCB	< DL	5.00
Se	ICB	< DL	15.0
Se	Meth_Blk	< DL	15.0
Se	CCB	< DL	15.0
Se	CCB	< DL	15.0
Tl	ICB	< DL	10.0
Tl	Meth_Blk	< DL	10.0
Tl	CCB	< DL	10.0
Tl	CCB	< DL	10.0
V	ICB	< DL	1.00
V	Meth_Blk	< DL	1.00
V	CCB	< DL	1.00
V	CCB	< DL	1.00
Zn	ICB	< DL	3.00
Zn	Meth_Blk	< DL	3.00
Zn	CCB	< DL	3.00
Zn	CCB	< DL	3.00

ICB: Initial Calibration Blank CCB: Continuing Calibration Blank
*: Sample Media Blank (SM_Blk) concentration in µg/filter
Method Blank is in control if Method Blank results are <10% of sample results

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: ICP-OES
Instrument: Perkin Elmer Optima 8300
Sample Description: EPA Method 29
Report Number: 23-175

Calibration QC

Analyte	Sample ID	Standard Conc. µg/L	Measured Conc. µg/L	Percent Recovery
Ag	ICV	2500.	2746.	109.8
Ag	LL-CCV	10.00	10.76	107.6
Ag	LL-LCS	9.000	9.405	104.5
Ag	CCV	2500.	2681.	107.2
Ag	CCV	2500.	2559.	102.4
Al	ICV	2500.	2551.	102.0
Al	LL-CCV	150.0	141.2	94.1
Al	LL-LCS	75.00	110.2	146.9
Al	CCV	2500.	2547.	101.9
Al	CCV	2500.	2516.	100.6
As	ICV	2500.	2438.	97.5
As	LL-CCV	35.00	38.52	110.1
As	LL-LCS	20.00	25.48	127.4
As	CCV	2500.	2428.	97.1
As	CCV	2500.	2429.	97.2
Ba	ICV	2500.	2425.	97.0
Ba	LL-CCV	2.500	2.390	95.6
Ba	LL-LCS	1.500	1.807	120.5
Ba	CCV	2500.	2474.	99.0
Ba	CCV	2500.	2521.	100.8
Be	ICV	2500.	2410.	96.4
Be	LL-CCV	1.000	1.035	103.5
Be	LL-LCS	0.500	0.488	97.6
Be	CCV	2500.	2411.	96.4
Be	CCV	2500.	2418.	96.7
Cd	ICV	2500.	2502.	100.1
Cd	LL-CCV	2.000	2.280	114.0
Cd	LL-LCS	1.500	1.644	109.6
Cd	CCV	2500.	2530.	101.2
Cd	CCV	2500.	2506.	100.2
Co	ICV	2500.	2438.	97.5
Co	LL-CCV	2.500	2.772	110.9
Co	LL-LCS	1.500	1.641	109.4
Co	CCV	2500.	2463.	98.5
Co	CCV	2500.	2427.	97.1
Cr	ICV	2500.	2427.	97.1
Cr	LL-CCV	4.000	4.272	106.8

ICV: Initial Calibration Verification CCV: Continuing Calibration Verification
Calibration Verification Limits: 90% - 110% Recovery
Low Level-CCV Limits: 60% - 140% Recovery
Low Level-LCS Limits: 50% - 150% Recovery
LL-LCS results are insignificant if sample results are >10x LL-LCS concentration

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: ICP-OES
Instrument: Perkin Elmer Optima 8300
Sample Description: EPA Method 29
Report Number: 23-175

Calibration QC (continued)

Analyte	Sample ID	Standard Conc. µg/L	Measured Conc. µg/L	Percent Recovery
Cr	LL-LCS	2.000	1.931	96.6
Cr	CCV	2500.	2438.	97.5
Cr	CCV	2500.	2414.	96.6
Cu	ICV	2500.	2325.	93.0
Cu	LL-CCV	25.00	25.72	102.9
Cu	LL-LCS	15.00	14.11	94.1
Cu	CCV	2500.	2330.	93.2
Cu	CCV	2500.	2293.	91.7
Mn	ICV	2500.	2461.	98.4
Mn	LL-CCV	1.500	1.719	114.6
Mn	LL-LCS	1.000	1.222	122.2
Mn	CCV	2500.	2470.	98.8
Mn	CCV	2500.	2443.	97.7
Ni	ICV	2500.	2378.	95.1
Ni	LL-CCV	15.00	15.63	104.2
Ni	LL-LCS	6.000	6.493	108.2
Ni	CCV	2500.	2383.	95.3
Ni	CCV	2500.	2355.	94.2
P	ICV	2500.	2422.	96.9
P	LL-CCV	100.0	106.4	106.4
P	LL-LCS	75.00	68.18	90.9
P	CCV	2500.	2449.	98.0
P	CCV	2500.	2404.	96.2
Pb	ICV	2500.	2397.	95.9
Pb	LL-CCV	25.00	30.76	123.0
Pb	LL-LCS	15.00	14.31	95.4
Pb	CCV	2500.	2377.	95.1
Pb	CCV	2500.	2387.	95.5
Sb	ICV	2500.	2317.	92.7
Sb	LL-CCV	25.00	21.71	86.8
Sb	LL-LCS	15.00	16.67	111.1
Sb	CCV	2500.	2322.	92.9
Sb	CCV	2500.	2343.	93.7
Se	ICV	2500.	2438.	97.5
Se	LL-CCV	75.00	72.69	96.9
Se	LL-LCS	30.00	35.75	119.2
Se	CCV	2500.	2421.	96.8

ICV: Initial Calibration Verification CCV: Continuing Calibration Verification
Calibration Verification Limits: 90% - 110% Recovery
Low Level-CCV Limits: 60% - 140% Recovery
Low Level-LCS Limits: 50% - 150% Recovery
LL-LCS results are insignificant if sample results are >10x LL-LCS concentration

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: ICP-OES
Instrument: Perkin Elmer Optima 8300
Sample Description: EPA Method 29
Report Number: 23-175

Calibration QC (continued)

Analyte	Sample ID	Standard Conc. µg/L	Measured Conc. µg/L	Percent Recovery
Se	CCV	2500.	2430.	97.2
Tl	ICV	2500.	2416.	96.6
Tl	LL-CCV	50.00	56.91	113.8
Tl	LL-LCS	30.00	28.84	96.1
Tl	CCV	2500.	2365.	94.6
Tl	CCV	2500.	2306.	92.2
V	ICV	2500.	2429.	97.2
V	LL-CCV	5.000	4.609	92.2
V	LL-LCS	3.000	2.863	95.4
V	CCV	2500.	2468.	98.7
V	CCV	2500.	2456.	98.2
Zn	ICV	2500.	2519.	100.8
Zn	LL-CCV	15.00	17.34	115.6
Zn	LL-LCS	6.000	7.408	123.5
Zn	CCV	2500.	2542.	101.7
Zn	CCV	2500.	2507.	100.3

ICV: Initial Calibration Verification CCV: Continuing Calibration Verification
Calibration Verification Limits: 90% - 110% Recovery
Low Level-CCV Limits: 60% - 140% Recovery
Low Level-LCS Limits: 50% - 150% Recovery
LL-LCS results are insignificant if sample results are >10x LL-LCS concentration

Replicate Data

Analyte	Sample ID	Sample Conc. µg/L	Replicate Conc. µg/L	RPD
Ag	23-S610	< 2	< 2	N/C *
Al	msd:-1	2520	209.	169.
As	23-S610	< 7	< 7	N/C *
Ba	23-S610	14.9	15.2	2.25
Be	23-S610	< 0.2	< 0.2	N/C *
Cd	23-S610	1.32	1.15	13.7 *
Co	23-S610	1.80	1.30	32.1 *
Cr	23-S610	3.43	3.88	12.3 *
Cu	23-S610	6.27	6.24	0.51 *
Mn	23-S610	11.5	11.4	0.70
Ni	23-S610	< 3	< 3	N/C *
P	23-S610	< 20	< 20	N/C *
Pb	23-S610	21.8	24.1	9.95 *

RPD = {(sample-replicate)/[(sample+replicate)/2]}x100
N/C: RPD is not calculated when sample or replicate is below detection limit
Replicate Limit: 20% RPD
*: per EPA CLP protocol, control limits do not apply if sample and/or replicate concentration is less than 5x the detection limit

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: ICP-OES
Instrument: Perkin Elmer Optima 8300
Sample Description: EPA Method 29
Report Number: 23-175

Replicate Data (continued)

Analyte	Sample ID	Sample Conc. µg/L	Replicate Conc. µg/L	RPD
Sb	23-S610	< 5	< 5	N/C *
Se	23-S610	< 15	< 15	N/C *
Tl	23-S610	< 10	< 10	N/C *
V	23-S610	< 1	< 1	N/C *
Zn	23-S610	37.5	37.9	0.96

RPD = {(sample-replicate)/[(sample+replicate)/2]}x100
N/C: RPD is not calculated when sample or replicate is below detection limit
Replicate Limit: 20% RPD
*: per EPA CLP protocol, control limits do not apply if sample and/or replicate concentration is less than 5x the detection limit

Laboratory Control Sample/Matrix Post Spike Analysis

Analyte	Sample ID	Sample Conc. µg/L	Spike Conc. µg/L	Spike Amount µg/L	Percent Recovery
Ag	LCS	< 2	2327.	2500	93.1
Ag	LCS-Duplicate	< 2	2385.	2500	95.4
Ag	23-S615	< 2	2406.	2500	96.2
Al	kv:LL-CCV	141.2	2472.	2500	93.2
Al	Duplicate	208.9	2590.	2500	95.2
As	LCS	< 7	2332.	2500	93.3
As	LCS-Duplicate	< 7	2342.	2500	93.7
As	23-S615	< 7	2268.	2500	90.7
Ba	LCS	< 0.5	2363.	2500	94.5
Ba	LCS-Duplicate	< 0.5	2395.	2500	95.8
Ba	23-S615	16.03	2322.	2500	92.2
Be	LCS	< 0.2	2329.	2500	93.2
Be	LCS-Duplicate	< 0.2	2346.	2500	93.8
Be	23-S615	< 0.2	2243.	2500	89.7
Cd	LCS	< 0.4	2403.	2500	96.1
Cd	LCS-Duplicate	< 0.4	2383.	2500	95.3
Cd	23-S615	< 0.4	2355.	2500	94.2
Co	LCS	< 0.5	2338.	2500	93.5
Co	LCS-Duplicate	< 0.5	2329.	2500	93.2
Co	23-S615	< 0.5	2301.	2500	92.0
Cr	LCS	< 0.8	2330.	2500	93.2
Cr	LCS-Duplicate	< 0.8	2370.	2500	94.8
Cr	23-S615	4.185	2284.	2500	91.2

LCS Limit: 80% - 120% Recovery Spike Limit: 75% - 125% Recovery

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: ICP-OES
Instrument: Perkin Elmer Optima 8300
Sample Description: EPA Method 29
Report Number: 23-175

Laboratory Control Sample/Matrix Post Spike Analysis (continued)

Analyte	Sample ID	Sample Conc. µg/L	Spike Conc. µg/L	Spike Amount µg/L	Percent Recovery
Cu	LCS	< 5	2214.	2500	88.6
Cu	LCS-Duplicate	< 5	2242.	2500	89.7
Cu	23-S615	12.18	2152.	2500	85.6
Mn	LCS	< 0.3	2361.	2500	94.4
Mn	LCS-Duplicate	< 0.3	2400.	2500	96.0
Mn	23-S615	27.25	2330.	2500	92.1
Ni	LCS	< 3	2266.	2500	90.6
Ni	LCS-Duplicate	< 3	2289.	2500	91.6
Ni	23-S615	< 3	2198.	2500	87.9
P	LCS	< 20	2279.	2500	91.2
P	LCS-Duplicate	< 20	2303.	2500	92.1
P	23-S615	< 20	2293.	2500	91.7
Pb	LCS	< 5	2294.	2500	91.8
Pb	LCS-Duplicate	< 5	2296.	2500	91.8
Pb	23-S615	< 5	2191.	2500	87.6
Sb	LCS	< 5	2177.	2500	87.1
Sb	LCS-Duplicate	< 5	2273.	2500	90.9
Sb	23-S615	5.415	2181.	2500	87.0
Se	LCS	< 15	2335.	2500	93.4
Se	LCS-Duplicate	< 15	2344.	2500	93.8
Se	23-S615	< 15	2258.	2500	90.3
Tl	LCS	< 10	2296.	2500	91.8
Tl	LCS-Duplicate	< 10	2274.	2500	91.0
Tl	23-S615	< 10	2181.	2500	87.2
V	LCS	< 1	2343.	2500	93.7
V	LCS-Duplicate	< 1	2381.	2500	95.2
V	23-S615	< 1	2308.	2500	92.3
Zn	LCS	< 3	2415.	2500	96.6
Zn	LCS-Duplicate	< 3	2381.	2500	95.2
Zn	23-S615	21.43	2361.	2500	93.6

LCS Limit: 80% - 120% Recovery Spike Limit: 75% - 125% Recovery

LCS Duplicate Data

Analyte	Sample ID	Original Conc. µg/L	Replicate Conc. µg/L	RPD
Ag	LCS-Duplicate	2327.	2385.	2.46
Al	LCS-Duplicate	110.2	2524.	183.
As	LCS-Duplicate	2332.	2342.	0.43
Ba	LCS-Duplicate	2363.	2395.	1.35

RPD = {(sample-duplicate)/[(sample+duplicate)/2]}x100 Duplicate Limit: 20% RPD

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: ICP-OES
Instrument: Perkin Elmer Optima 8300
Sample Description: EPA Method 29
Report Number: 23-175

LCS Duplicate Data (continued)

Analyte	Sample ID	Original Conc. µg/L	Replicate Conc. µg/L	RPD
Be	LCS-Duplicate	2329.	2346.	0.73
Cd	LCS-Duplicate	2403.	2383.	0.84
Co	LCS-Duplicate	2338.	2329.	0.39
Cr	LCS-Duplicate	2330.	2370.	1.70
Cu	LCS-Duplicate	2214.	2242.	1.26
Mn	LCS-Duplicate	2361.	2400.	1.64
Ni	LCS-Duplicate	2266.	2289.	1.01
P	LCS-Duplicate	2279.	2303.	1.05
Pb	LCS-Duplicate	2294.	2296.	0.09
Sb	LCS-Duplicate	2177.	2273.	4.31
Se	LCS-Duplicate	2335.	2344.	0.38
Tl	LCS-Duplicate	2296.	2274.	0.96
V	LCS-Duplicate	2343.	2381.	1.61
Zn	LCS-Duplicate	2415.	2381.	1.42

RPD = {(sample-duplicate)/[(sample+duplicate)/2]}x100 Duplicate Limit: 20% RPD

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: ICP-OES
Instrument: Perkin Elmer Optima 8300
Sample Description: EPA Method 29
Report Number: 23-175

Blank Data

Analyte	Sample ID	Measured Conc. µg/L	DL Conc. µg/L
Ag	ICB	< DL	2.00
Ag	Meth_Blk	< DL	2.00
Ag	CCB	< DL	2.00
Ag	CCB	< DL	2.00
Ag	CCB	< DL	2.00
Al	ICB	< DL	30.0
Al	Meth_Blk	< DL	30.0
Al	CCB	< DL	30.0
Al	CCB	< DL	30.0
Al	CCB	< DL	30.0
Al	ICB	< DL	30.0
Al	CCB	< DL	30.0
Al	CCB	< DL	30.0
As	ICB	< DL	35.0
As	Meth_Blk	< DL	35.0
As	CCB	< DL	35.0
As	CCB	< DL	35.0
As	CCB	< DL	35.0
As	ICB	< DL	35.0
As	Meth_Blk	< DL	35.0
As	CCB	< DL	35.0
As	CCB	< DL	35.0
Ba	ICB	< DL	0.500
Ba	Meth_Blk	< DL	0.500
Ba	CCB	< DL	0.500
Ba	CCB	< DL	0.500
Ba	CCB	< DL	0.500
Be	ICB	< DL	0.200
Be	Meth_Blk	< DL	0.200
Be	CCB	< DL	0.200
Be	CCB	< DL	0.200
Be	CCB	< DL	0.200
Cd	ICB	< DL	0.400
Cd	Meth_Blk	< DL	0.400
Cd	CCB	< DL	0.400
Cd	CCB	< DL	0.400
Cd	CCB	< DL	0.400
Co	ICB	< DL	0.500
Co	Meth_Blk	< DL	0.500

ICB: Initial Calibration Blank CCB: Continuing Calibration Blank
2. Sample Media Blank (SM_Blk) concentration in µg/filter
Method Blank is in control if Method Blank results are <10% of sample results

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: ICP-OES
Instrument: Perkin Elmer Optima 8300
Sample Description: EPA Method 29
Report Number: 23-175

Blank Data (continued)

Analyte	Sample ID	Measured Conc. µg/L	DL Conc. µg/L
Co	CCB	< DL	0.500
Co	CCB	< DL	0.500
Co	CCB	< DL	0.500
Cr	ICB	< DL	0.800
Cr	Meth_Blk	< DL	0.800
Cr	CCB	< DL	0.800
Cr	CCB	< DL	0.800
Cr	CCB	< DL	0.800
Cu	ICB	< DL	5.00
Cu	Meth_Blk	< DL	5.00
Cu	CCB	< DL	5.00
Cu	CCB	< DL	5.00
Cu	CCB	< DL	5.00
Mn	ICB	< DL	0.300
Mn	Meth_Blk	< DL	0.300
Mn	CCB	< DL	0.300
Mn	CCB	< DL	0.300
Mn	CCB	< DL	0.300
Ni	ICB	< DL	3.00
Ni	Meth_Blk	< DL	3.00
Ni	CCB	< DL	3.00
Ni	CCB	< DL	3.00
Ni	CCB	< DL	3.00
P	ICB	< DL	20.0
P	Meth_Blk	< DL	20.0
P	CCB	< DL	20.0
P	CCB	< DL	20.0
P	CCB	< DL	20.0
Pb	ICB	< DL	5.00
Pb	Meth_Blk	< DL	5.00
Pb	CCB	< DL	5.00
Pb	CCB	< DL	5.00
Pb	CCB	< DL	5.00
Sb	ICB	< DL	5.00
Sb	Meth_Blk	< DL	5.00
Sb	CCB	< DL	5.00
Sb	CCB	< DL	5.00
Sb	CCB	< DL	5.00
Se	ICB	< DL	15.0

ICB: Initial Calibration Blank CCB: Continuing Calibration Blank
Meth_Blk: Sample Media Blank (SM_Blk) concentration in µg/filter
Method Blank is in control if Method Blank results are <10% of sample results

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: ICP-OES
Instrument: Perkin Elmer Optima 8300
Sample Description: EPA Method 29
Report Number: 23-175

Blank Data (continued)

Analyte	Sample ID	Measured Conc. µg/L	DL Conc. µg/L
Se	Meth_Blk	< DL	15.0
Se	CCB	< DL	15.0
Se	CCB	< DL	15.0
Se	CCB	< DL	15.0
Tl	ICB	< DL	10.0
Tl	Meth_Blk	< DL	10.0
Tl	CCB	< DL	10.0
Tl	CCB	< DL	10.0
Tl	CCB	< DL	10.0
V	ICB	< DL	1.00
V	Meth_Blk	< DL	1.00
V	CCB	< DL	1.00
V	CCB	< DL	1.00
V	CCB	< DL	1.00
Zn	ICB	< DL	3.00
Zn	Meth_Blk	< DL	3.00
Zn	CCB	< DL	3.00
Zn	CCB	< DL	3.00
Zn	CCB	< DL	3.00
Zn	ICB	< DL	3.00
Zn	CCB	< DL	3.00
Zn	CCB	< DL	3.00

ICB: Initial Calibration Blank CCB: Continuing Calibration Blank
*: Sample Media Blank (SM_Blk) concentration in µg/filter
Method Blank is in control if Method Blank results are <10% of sample results

Calibration QC

Analyte	Sample ID	Standard Conc. µg/L	Measured Conc. µg/L	Percent Recovery
Ag	ICV	2500.	2265.	90.6
Ag	LL-CCV	10.00	7.289	72.9
Ag	LL-LCS	9.000	6.987	77.6
Ag	CCV	2500.	2325.	93.0
Ag	CCV	2500.	2450.	98.0
Ag	CCV	2500.	2434.	97.4
Al	ICV	2500.	2382.	95.3

ICV: Initial Calibration Verification CCV: Continuing Calibration Verification
Calibration Verification Limits: 90% - 110% Recovery
Low Level-CCV Limits: 60% - 140% Recovery
Low Level-LCS Limits: 50% - 150% Recovery
LL-LCS results are insignificant if sample results are >10x LL-LCS concentration

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: ICP-OES
Instrument: Perkin Elmer Optima 8300
Sample Description: EPA Method 29
Report Number: 23-175

Calibration QC (continued)

Analyte	Sample ID	Standard Conc. µg/L	Measured Conc. µg/L	Percent Recovery
Al	LL-CCV	150.0	144.0	96.0
Al	LL-LCS	75.00	89.21	118.9
Al	CCV	2500.	2412.	96.5
Al	CCV	2500.	2369.	94.8
Al	CCV	2500.	2374.	95.0
Al	ICV	2500.	2435.	97.4
Al	LL-CCV	150.0	147.1	98.1
Al	CCV	2500.	2403.	96.1
Al	CCV	2500.	2459.	98.4
As	ICV	2500.	2432.	97.3
As	LL-CCV	35.00	38.30	109.4
As	LL-LCS	20.00	16.54	82.7
As	CCV	2500.	2459.	98.4
As	CCV	2500.	2490.	99.6
As	CCV	2500.	2503.	100.1
As	ICV	2500.	2484.	99.4
As	LL-CCV	35.00	39.64	113.3
As	LL-LCS	20.00	22.13	110.6
As	CCV	2500.	2465.	98.6
As	CCV	2500.	2407.	96.3
Ba	ICV	2500.	2447.	97.9
Ba	LL-CCV	2.500	2.634	105.4
Ba	LL-LCS	1.500	1.805	120.3
Ba	CCV	2500.	2365.	94.6
Ba	CCV	2500.	2344.	93.8
Ba	CCV	2500.	2369.	94.8
Be	ICV	2500.	2421.	96.8
Be	LL-CCV	1.000	1.048	104.8
Be	LL-LCS	0.500	0.501	100.2
Be	CCV	2500.	2518.	100.7
Be	CCV	2500.	2580.	103.2
Be	CCV	2500.	2582.	103.3
Cd	ICV	2500.	2362.	94.5
Cd	LL-CCV	2.000	2.369	118.4
Cd	LL-LCS	1.500	1.749	116.6
Cd	CCV	2500.	2395.	95.8
Cd	CCV	2500.	2378.	95.1

ICV: Initial Calibration Verification CCV: Continuing Calibration Verification
Calibration Verification Limits: 90% - 110% Recovery
Low Level-CCV Limits: 60% - 140% Recovery
Low Level-LCS Limits: 50% - 150% Recovery
LL-LCS results are insignificant if sample results are >10x LL-LCS concentration

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: ICP-OES
Instrument: Perkin Elmer Optima 8300
Sample Description: EPA Method 29
Report Number: 23-175

Calibration QC (continued)

Analyte	Sample ID	Standard Conc. µg/L	Measured Conc. µg/L	Percent Recovery
Cd	CCV	2500.	2394.	95.8
Co	ICV	2500.	2321.	92.8
Co	LL-CCV	2.500	2.530	101.2
Co	LL-LCS	1.500	1.501	100.1
Co	CCV	2500.	2353.	94.1
Co	CCV	2500.	2355.	94.2
Co	CCV	2500.	2371.	94.8
Cr	ICV	2500.	2442.	97.7
Cr	LL-CCV	4.000	4.442	111.0
Cr	LL-LCS	2.000	2.198	109.9
Cr	CCV	2500.	2439.	97.6
Cr	CCV	2500.	2417.	96.7
Cr	CCV	2500.	2400.	96.0
Cu	ICV	2500.	2289.	91.6
Cu	LL-CCV	25.00	26.67	106.7
Cu	LL-LCS	15.00	14.83	98.9
Cu	CCV	2500.	2292.	91.7
Cu	CCV	2500.	2278.	91.1
Cu	CCV	2500.	2292.	91.7
Mn	ICV	2500.	2540.	101.6
Mn	LL-CCV	1.500	1.576	105.1
Mn	LL-LCS	1.000	1.063	106.3
Mn	CCV	2500.	2573.	102.9
Mn	CCV	2500.	2525.	101.0
Mn	CCV	2500.	2557.	102.3
Ni	ICV	2500.	2356.	94.2
Ni	LL-CCV	15.00	15.18	101.2
Ni	LL-LCS	6.000	5.949	99.2
Ni	CCV	2500.	2381.	95.2
Ni	CCV	2500.	2399.	96.0
Ni	CCV	2500.	2417.	96.7
P	ICV	2500.	2440.	97.6
P	LL-CCV	100.0	104.5	104.5
P	LL-LCS	75.00	70.77	94.4
P	CCV	2500.	2399.	96.0
P	CCV	2500.	2446.	97.8
P	CCV	2500.	2435.	97.4

ICV: Initial Calibration Verification CCV: Continuing Calibration Verification
Calibration Verification Limits: 90% - 110% Recovery
Low Level-CCV Limits: 60% - 140% Recovery
Low Level-LCS Limits: 50% - 150% Recovery
LL-LCS results are insignificant if sample results are >10x LL-LCS concentration

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: ICP-OES
Instrument: Perkin Elmer Optima 8300
Sample Description: EPA Method 29
Report Number: 23-175

Calibration QC (continued)

Analyte	Sample ID	Standard Conc. µg/L	Measured Conc. µg/L	Percent Recovery
Pb	ICV	2500.	2366.	94.6
Pb	LL-CCV	25.00	27.95	111.8
Pb	LL-LCS	15.00	20.37	135.8
Pb	CCV	2500.	2380.	95.2
Pb	CCV	2500.	2455.	98.2
Pb	CCV	2500.	2488.	99.5
Sb	ICV	2500.	2301.	92.0
Sb	LL-CCV	25.00	25.54	102.2
Sb	LL-LCS	15.00	13.90	92.7
Sb	CCV	2500.	2324.	93.0
Sb	CCV	2500.	2291.	91.6
Sb	CCV	2500.	2273.	90.9
Se	ICV	2500.	2400.	96.0
Se	LL-CCV	75.00	90.46	120.6
Se	LL-LCS	30.00	33.65	112.2
Se	CCV	2500.	2422.	96.9
Se	CCV	2500.	2488.	99.5
Se	CCV	2500.	2524.	101.0
Tl	ICV	2500.	2405.	96.2
Tl	LL-CCV	50.00	52.22	104.4
Tl	LL-LCS	30.00	29.43	98.1
Tl	CCV	2500.	2510.	100.4
Tl	CCV	2500.	2639.	105.6
Tl	CCV	2500.	2629.	105.2
V	ICV	2500.	2379.	95.2
V	LL-CCV	5.000	5.210	104.2
V	LL-LCS	3.000	3.025	100.8
V	CCV	2500.	2405.	96.2
V	CCV	2500.	2391.	95.6
V	CCV	2500.	2402.	96.1
Zn	ICV	2500.	2402.	96.1
Zn	LL-CCV	15.00	17.65	117.7
Zn	LL-LCS	6.000	5.763	96.0
Zn	CCV	2500.	2430.	97.2
Zn	CCV	2500.	2425.	97.0
Zn	CCV	2500.	2446.	97.8
Zn	ICV	2500.	2523.	100.9

ICV: Initial Calibration Verification CCV: Continuing Calibration Verification
Calibration Verification Limits: 90% - 110% Recovery
Low Level-CCV Limits: 60% - 140% Recovery
Low Level-LCS Limits: 50% - 150% Recovery
Lb-LCS results are insignificant if sample results are >10x LL-LCS concentration

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: ICP-OES
Instrument: Perkin Elmer Optima 8300
Sample Description: EPA Method 29
Report Number: 23-175

Calibration QC (continued)

Analyte	Sample ID	Standard Conc. µg/L	Measured Conc. µg/L	Percent Recovery
Zn	CCV	2500.	2485.	99.4
Zn	CCV	2500.	2506.	100.2

ICV: Initial Calibration Verification CCV: Continuing Calibration Verification
Calibration Verification Limits: 90% - 110% Recovery
Low Level-CCV Limits: 60% - 140% Recovery
Low Level-LCS Limits: 50% - 150% Recovery
LL-LCS results are insignificant if sample results are >10x LL-LCS concentration

Replicate Data

Analyte	Sample ID	Sample Conc. µg/L	Replicate Conc. µg/L	RPD
Ag	23-S669	9.70	9.86	1.53 *
Al	23-S669	6730	6630	1.44
As	23-S669	< 35	< 35	N/C *
Ba	23-S669	54.2	54.5	0.55
Be	23-S669	0.276	0.226	19.9 *
Cd	23-S669	4.22	4.63	9.30
Co	23-S669	1.76	1.84	4.78 *
Cr	23-S669	436.	438.	0.23
Cu	23-S669	238.	239.	0.67
Mn	23-S669	23200	22900	1.08
Ni	23-S669	46.6	47.2	1.32
P	23-S669	187.	183.	2.22
Pb	23-S669	540.	545.	0.87
Sb	23-S669	23.1	20.4	12.2 *
Se	23-S669	< 15	< 15	N/C *
Tl	23-S669	< 10	< 10	N/C *
V	23-S669	2.61	2.41	7.96 *
Zn	23-S669	4490	4530	0.89

RPD = {(sample-replicate)/[(sample+replicate)/2]}x100
N/C: RPD is not calculated when sample or replicate is below detection limit
Replicate Limit: 20% RPD
*: per EPA CLP protocol, control limits do not apply if sample and/or replicate concentration is less than 5x the detection limit

Laboratory Control Sample/Matrix Post Spike Analysis

Analyte	Sample ID	Sample Conc. µg/L	Spike Conc. µg/L	Spike Amount µg/L	Percent Recovery
Ag	LCS	< 2	2598.	2500	104.

LCS Limit: 80% - 120% Recovery Spike Limit: 75% - 125% Recovery

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: ICP-OES
Instrument: Perkin Elmer Optima 8300
Sample Description: EPA Method 29
Report Number: 23-175

Laboratory Control Sample/Matrix Post Spike Analysis (continued)

Analyte	Sample ID	Sample Conc. µg/L	Spike Conc. µg/L	Spike Amount µg/L	Percent Recovery
Ag	LCS-Duplicate	< 2	2647.	2500	106.
Ag	23-S674	6.281	2013.	2500	80.3
Al	kv:LL-CCV	144.0	2488.	2500	93.8
Al	kv:LL-CCV	144.0	2588.	2500	97.8
Al	23-S674	5287.	18700	12500	107.
As	LCS	< 7	2560.	2500	102.
As	LCS-Duplicate	< 7	2524.	2500	101.
As	LCS-Duplicate	< 7	2501.	2500	100.
As	LCS-Duplicate	< 7	2505.	2500	100.
As	23-S674	< 35	11660	12500	93.3
Ba	LCS	< 0.5	2328.	2500	93.1
Ba	LCS-Duplicate	< 0.5	2412.	2500	96.5
Ba	23-S674	49.31	2327.	2500	91.1
Be	LCS	< 0.2	2486.	2500	99.4
Be	LCS-Duplicate	< 0.2	2539.	2500	102.
Be	23-S674	0.209	2378.	2500	95.1
Cd	LCS	< 0.4	2497.	2500	99.9
Cd	LCS-Duplicate	< 0.4	2492.	2500	99.7
Cd	23-S674	5.458	2257.	2500	90.1
Co	LCS	< 0.5	2388.	2500	95.5
Co	LCS-Duplicate	< 0.5	2388.	2500	95.5
Co	23-S674	1.421	2209.	2500	88.3
Cr	LCS	< 0.8	2399.	2500	96.0
Cr	LCS-Duplicate	< 0.8	2419.	2500	96.8
Cr	23-S674	370.4	2701.	2500	93.2
Cu	LCS	< 5	2394.	2500	95.8
Cu	LCS-Duplicate	< 5	2399.	2500	96.0
Cu	23-S674	207.6	2597.	2500	95.6
Mn	LCS	< 0.3	2536.	2500	101.
Mn	LCS-Duplicate	< 0.3	2514.	2500	101.
Mn	23-S674	26690	49730	2500	922. *
Ni	LCS	< 3	2460.	2500	98.4
Ni	LCS-Duplicate	< 3	2428.	2500	97.1
Ni	23-S674	52.27	2303.	2500	90.0
P	LCS	< 20	2527.	2500	101.
P	LCS-Duplicate	< 20	2539.	2500	102.

LCS Limit: 80% - 120% Recovery Spike Limit: 75% - 125% Recovery

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: ICP-OES
Instrument: Perkin Elmer Optima 8300
Sample Description: EPA Method 29
Report Number: 23-175

Laboratory Control Sample/Matrix Post Spike Analysis (continued)

Analyte	Sample ID	Sample Conc. µg/L	Spike Conc. µg/L	Spike Amount µg/L	Percent Recovery
P	23-S674	193.5	2605.	2500	96.5
Pb	LCS	< 5	2466.	2500	98.6
Pb	LCS-Duplicate	< 5	2449.	2500	98.0
Pb	23-S674	580.0	2756.	2500	87.0
Sb	LCS	< 5	2439.	2500	97.6
Sb	LCS-Duplicate	< 5	2403.	2500	96.1
Sb	23-S674	12.25	2233.	2500	88.8
Se	LCS	< 15	2595.	2500	104.
Se	LCS-Duplicate	< 15	2586.	2500	103.
Se	23-S674	15.54	2337.	2500	92.9
Tl	LCS	< 10	2526.	2500	101.
Tl	LCS-Duplicate	< 10	2569.	2500	103.
Tl	23-S674	< 10	2360.	2500	94.4
V	LCS	< 1	2405.	2500	96.2
V	LCS-Duplicate	< 1	2399.	2500	96.0
V	23-S674	1.883	2297.	2500	91.8
Zn	LCS	< 3	2566.	2500	103.
Zn	LCS-Duplicate	< 3	2579.	2500	103.
Zn	23-S674	4163.	27510	25000	93.4

LCS Limit: 80% - 120% Recovery Spike Limit: 75% - 125% Recovery

LCS Duplicate Data

Analyte	Sample ID	Original Conc. µg/L	Replicate Conc. µg/L	RPD
Ag	LCS-Duplicate	2598.	2647.	1.87
Al	LCS-Duplicate	2488.	2588.	3.94
As	LCS-Duplicate	2560.	2524.	1.42
As	LCS-Duplicate	2501.	2505.	0.16
Ba	LCS-Duplicate	2328.	2412.	3.54
Be	LCS-Duplicate	2486.	2539.	2.11
Cd	LCS-Duplicate	2497.	2492.	0.20
Co	LCS-Duplicate	2388.	2388.	0.00
Cr	LCS-Duplicate	2399.	2419.	0.83
Cu	LCS-Duplicate	2394.	2399.	0.21
Mn	LCS-Duplicate	2536.	2514.	0.87
Ni	LCS-Duplicate	2460.	2428.	1.31
P	LCS-Duplicate	2527.	2539.	0.47
Pb	LCS-Duplicate	2466.	2449.	0.69
Sb	LCS-Duplicate	2439.	2403.	1.49

RPD = {(sample-duplicate)/[(sample+duplicate)/2]}x100 Duplicate Limit: 20% RPD

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: ICP-OES
Instrument: Perkin Elmer Optima 8300
Sample Description: EPA Method 29
Report Number: 23-175

LCS Duplicate Data (continued)

Analyte	Sample ID	Original Conc. µg/L	Replicate Conc. µg/L	RPD
Se	LCS-Duplicate	2595.	2586.	0.35
Tl	LCS-Duplicate	2526.	2569.	1.69
V	LCS-Duplicate	2405.	2399.	0.25
Zn	LCS-Duplicate	2566.	2579.	0.51

RPD = {(sample-duplicate)/[(sample+duplicate)/2]}x100 Duplicate Limit: 20% RPD

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: ICP-OES
Instrument: Perkin Elmer Optima 8300
Sample Description: EPA Method 29
Report Number: 23-175

Blank Data

Analyte	Sample ID	Measured Conc. µg/L	DL Conc. µg/L
Ag	ICB	< DL	2.00
Ag	Meth_Blk	< DL	2.00
Ag	CCB	< DL	2.00
Ag	CCB	< DL	2.00
Al	ICB	< DL	30.0
Al	Meth_Blk	< DL	30.0
Al	CCB	< DL	30.0
Al	CCB	< DL	30.0
As	ICB	< DL	7.00
As	Meth_Blk	< DL	7.00
As	CCB	< DL	7.00
As	CCB	< DL	7.00
Ba	ICB	< DL	0.500
Ba	Meth_Blk	< DL	0.500
Ba	CCB	< DL	0.500
Ba	CCB	< DL	0.500
Be	ICB	< DL	0.200
Be	Meth_Blk	< DL	0.200
Be	CCB	< DL	0.200
Be	CCB	< DL	0.200
Cd	ICB	< DL	0.400
Cd	Meth_Blk	< DL	0.400
Cd	CCB	< DL	0.400
Cd	CCB	< DL	0.400
Co	ICB	< DL	0.500
Co	Meth_Blk	< DL	0.500
Co	CCB	< DL	0.500
Co	CCB	< DL	0.500
Cr	ICB	< DL	0.800
Cr	Meth_Blk	< DL	0.800
Cr	CCB	< DL	0.800
Cr	CCB	< DL	0.800
Cu	ICB	< DL	5.00
Cu	Meth_Blk	< DL	5.00
Cu	CCB	< DL	5.00
Cu	CCB	< DL	5.00
Mn	ICB	< DL	0.300
Mn	Meth_Blk	< DL	0.300
Mn	CCB	< DL	0.300

ICB: Initial Calibration Blank CCB: Continuing Calibration Blank
2. Sample Media Blank (SM_Blk) concentration in µg/filter
Method Blank is in control if Method Blank results are <10% of sample results

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: ICP-OES
Instrument: Perkin Elmer Optima 8300
Sample Description: EPA Method 29
Report Number: 23-175

Blank Data (continued)

Analyte	Sample ID	Measured Conc. µg/L	DL Conc. µg/L
Mn	CCB	< DL	0.300
Ni	ICB	< DL	3.00
Ni	Meth_Blk	< DL	3.00
Ni	CCB	< DL	3.00
Ni	CCB	< DL	3.00
P	ICB	< DL	20.0
P	Meth_Blk	< DL	20.0
P	CCB	< DL	20.0
P	CCB	< DL	20.0
Pb	ICB	< DL	5.00
Pb	Meth_Blk	< DL	5.00
Pb	CCB	< DL	5.00
Pb	CCB	< DL	5.00
Sb	ICB	< DL	5.00
Sb	Meth_Blk	12.2	5.00
Sb	CCB	< DL	5.00
Sb	CCB	< DL	5.00
Se	ICB	< DL	15.0
Se	Meth_Blk	< DL	15.0
Se	CCB	< DL	15.0
Se	CCB	< DL	15.0
Tl	ICB	< DL	10.0
Tl	Meth_Blk	< DL	10.0
Tl	CCB	< DL	10.0
Tl	CCB	< DL	10.0
V	ICB	< DL	1.00
V	Meth_Blk	< DL	1.00
V	CCB	< DL	1.00
V	CCB	< DL	1.00
Zn	ICB	< DL	3.00
Zn	Meth_Blk	< DL	3.00
Zn	CCB	< DL	3.00
Zn	CCB	< DL	3.00

ICB: Initial Calibration Blank CCB: Continuing Calibration Blank
*: Sample Media Blank (SM_Blk) concentration in µg/filter
Method Blank is in control if Method Blank results are <10% of sample results

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: ICP-OES
Instrument: Perkin Elmer Optima 8300
Sample Description: EPA Method 29
Report Number: 23-175

Calibration QC

Analyte	Sample ID	Standard Conc. µg/L	Measured Conc. µg/L	Percent Recovery
Ag	ICV	2500.	2493.	99.7
Ag	LL-CCV	10.00	9.103	91.0
Ag	LL-LCS	9.000	7.634	84.8
Ag	CCV	2500.	2458.	98.3
Ag	CCV	2500.	2442.	97.7
Al	ICV	2500.	2383.	95.3
Al	LL-CCV	150.0	136.7	91.1
Al	LL-LCS	75.00	149.0	198.7
Al	CCV	2500.	2441.	97.6
Al	CCV	2500.	2439.	97.6
As	ICV	2500.	2493.	99.7
As	LL-CCV	35.00	33.97	97.1
As	LL-LCS	20.00	17.35	86.8
As	CCV	2500.	2526.	101.0
As	CCV	2500.	2530.	101.2
Ba	ICV	2500.	2392.	95.7
Ba	LL-CCV	2.500	2.720	108.8
Ba	LL-LCS	2.000	2.014	100.7
Ba	CCV	2500.	2440.	97.6
Ba	CCV	2500.	2432.	97.3
Be	ICV	2500.	2482.	99.3
Be	LL-CCV	1.000	0.973	97.3
Be	LL-LCS	0.500	0.547	109.4
Be	CCV	2500.	2496.	99.8
Be	CCV	2500.	2519.	100.8
Cd	ICV	2500.	2476.	99.0
Cd	LL-CCV	2.000	2.279	114.0
Cd	LL-LCS	1.500	1.327	88.5
Cd	CCV	2500.	2531.	101.2
Cd	CCV	2500.	2511.	100.4
Co	ICV	2500.	2421.	96.8
Co	LL-CCV	2.500	2.374	95.0
Co	LL-LCS	1.500	1.734	115.6
Co	CCV	2500.	2471.	98.8
Co	CCV	2500.	2472.	98.9
Cr	ICV	2500.	2471.	98.8
Cr	LL-CCV	4.000	4.222	105.6

ICV: Initial Calibration Verification CCV: Continuing Calibration Verification
Calibration Verification Limits: 90% - 110% Recovery
Low Level-CCV Limits: 60% - 140% Recovery
Low Level-LCS Limits: 50% - 150% Recovery
LL-LCS results are insignificant if sample results are >10x LL-LCS concentration

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: ICP-OES
Instrument: Perkin Elmer Optima 8300
Sample Description: EPA Method 29
Report Number: 23-175

Calibration QC (continued)

Analyte	Sample ID	Standard Conc. µg/L	Measured Conc. µg/L	Percent Recovery
Cr	LL-LCS	2.000	2.229	111.4
Cr	CCV	2500.	2523.	100.9
Cr	CCV	2500.	2499.	100.0
Cu	ICV	2500.	2370.	94.8
Cu	LL-CCV	25.00	25.48	101.9
Cu	LL-LCS	15.00	15.26	101.7
Cu	CCV	2500.	2415.	96.6
Cu	CCV	2500.	2396.	95.8
Mn	ICV	2500.	2511.	100.4
Mn	LL-CCV	1.500	1.513	100.9
Mn	LL-LCS	1.000	1.212	121.2
Mn	CCV	2500.	2561.	102.4
Mn	CCV	2500.	2546.	101.8
Ni	ICV	2500.	2429.	97.2
Ni	LL-CCV	15.00	15.17	101.1
Ni	LL-LCS	6.000	5.913	98.6
Ni	CCV	2500.	2451.	98.0
Ni	CCV	2500.	2451.	98.0
P	ICV	2500.	2492.	99.7
P	LL-CCV	100.0	106.3	106.3
P	LL-LCS	75.00	76.17	101.6
P	CCV	2500.	2462.	98.5
P	CCV	2500.	2470.	98.8
Pb	ICV	2500.	2441.	97.6
Pb	LL-CCV	25.00	28.07	112.3
Pb	LL-LCS	15.00	18.05	120.3
Pb	CCV	2500.	2436.	97.4
Pb	CCV	2500.	2459.	98.4
Sb	ICV	2500.	2363.	94.5
Sb	LL-CCV	25.00	25.52	102.1
Sb	LL-LCS	15.00	23.40	156.0
Sb	CCV	2500.	2455.	98.2
Sb	CCV	2500.	2494.	99.8
Se	ICV	2500.	2488.	99.5
Se	LL-CCV	75.00	78.31	104.4
Se	LL-LCS	30.00	30.06	100.2
Se	CCV	2500.	2477.	99.1

ICV: Initial Calibration Verification CCV: Continuing Calibration Verification
Calibration Verification Limits: 90% - 110% Recovery
Low Level-CCV Limits: 60% - 140% Recovery
Low Level-LCS Limits: 50% - 150% Recovery
LL-LCS results are insignificant if sample results are >10x LL-LCS concentration

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: ICP-OES
Instrument: Perkin Elmer Optima 8300
Sample Description: EPA Method 29
Report Number: 23-175

Calibration QC (continued)

Analyte	Sample ID	Standard Conc. µg/L	Measured Conc. µg/L	Percent Recovery
Se	CCV	2500.	2477.	99.1
Tl	ICV	2500.	2431.	97.2
Tl	LL-CCV	50.00	55.85	111.7
Tl	LL-LCS	30.00	38.46	128.2
Tl	CCV	2500.	2386.	95.4
Tl	CCV	2500.	2373.	94.9
V	ICV	2500.	2483.	99.3
V	LL-CCV	5.000	4.556	91.1
V	LL-LCS	3.000	2.612	87.1
V	CCV	2500.	2530.	101.2
V	CCV	2500.	2502.	100.1
Zn	ICV	2500.	2503.	100.1
Zn	LL-CCV	15.00	15.93	106.2
Zn	LL-LCS	6.000	7.430	123.8
Zn	CCV	2500.	2556.	102.2
Zn	CCV	2500.	2547.	101.9

ICV: Initial Calibration Verification CCV: Continuing Calibration Verification
Calibration Verification Limits: 90% - 110% Recovery
Low Level-CCV Limits: 60% - 140% Recovery
Low Level-LCS Limits: 50% - 150% Recovery
LL-LCS results are insignificant if sample results are >10x LL-LCS concentration

Replicate Data

Analyte	Sample ID	Sample Conc. µg/L	Replicate Conc. µg/L	RPD
Ag	23-S670	< 2	< 2	N/C *
Al	23-S670	379.	379.	0.05
As	23-S670	< 7	< 7	N/C *
Ba	23-S670	12.0	11.8	1.60
Be	23-S670	< 0.2	< 0.2	N/C *
Cd	23-S670	5.90	5.90	0.02
Co	23-S670	0.933	0.749	21.9 *
Cr	23-S670	5.07	5.11	0.90
Cu	23-S670	< 5	< 5	N/C *
Mn	23-S670	7.94	7.90	0.57
Ni	23-S670	< 3	< 3	N/C *
P	23-S670	< 20	< 20	N/C *
Pb	23-S670	< 5	< 5	N/C *

RPD = {(sample-replicate)/[(sample+replicate)/2]}x100
N/C: RPD is not calculated when sample or replicate is below detection limit
Replicate Limit: 20% RPD
*: per EPA CLP protocol, control limits do not apply if sample and/or replicate concentration is less than 5x the detection limit

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: ICP-OES
Instrument: Perkin Elmer Optima 8300
Sample Description: EPA Method 29
Report Number: 23-175

Replicate Data (continued)

Analyte	Sample ID	Sample Conc. µg/L	Replicate Conc. µg/L	RPD
Sb	23-S670	< 5	< 5	N/C *
Se	23-S670	< 15	< 15	N/C *
Tl	23-S670	< 10	< 10	N/C *
V	23-S670	< 1	< 1	N/C *
Zn	23-S670	53.2	52.6	1.23

RPD = {(sample-replicate)/[(sample+replicate)/2]}x100
N/C: RPD is not calculated when sample or replicate is below detection limit
Replicate Limit: 20% RPD
*: per EPA CLP protocol, control limits do not apply if sample and/or replicate concentration is less than 5x the detection limit

Laboratory Control Sample/Matrix Post Spike Analysis

Analyte	Sample ID	Sample Conc. µg/L	Spike Conc. µg/L	Spike Amount µg/L	Percent Recovery
Ag	LCS	< 2	2403.	2500	96.1
Ag	LCS-Duplicate	< 2	2430.	2500	97.2
Ag	23-S675	< 2	2263.	2500	90.5
Al	kv:LL-CCV	136.7	2397.	2500	90.4
Al	kv:LL-CCV	136.7	2534.	2500	95.9
Al	23-S675	199.2	2459.	2500	90.4
As	LCS	< 7	2266.	2500	90.6
As	LCS-Duplicate	< 7	2422.	2500	96.9
As	23-S675	< 7	2314.	2500	92.6
Ba	LCS	< 0.5	2327.	2500	93.1
Ba	LCS-Duplicate	< 0.5	2381.	2500	95.2
Ba	23-S675	11.55	2323.	2500	92.5
Be	LCS	< 0.2	2261.	2500	90.4
Be	LCS-Duplicate	< 0.2	2396.	2500	95.8
Be	23-S675	< 0.2	2307.	2500	92.3
Cd	LCS	< 0.4	2274.	2500	91.0
Cd	LCS-Duplicate	< 0.4	2400.	2500	96.0
Cd	23-S675	1.693	2304.	2500	92.1
Co	LCS	< 0.5	2340.	2500	93.6
Co	LCS-Duplicate	< 0.5	2357.	2500	94.3
Co	23-S675	0.572	2265.	2500	90.6
Cr	LCS	< 0.8	2310.	2500	92.4
Cr	LCS-Duplicate	< 0.8	2439.	2500	97.6

LCS Limit: 80% - 120% Recovery Spike Limit: 75% - 125% Recovery

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: ICP-OES
Instrument: Perkin Elmer Optima 8300
Sample Description: EPA Method 29
Report Number: 23-175

Laboratory Control Sample/Matrix Post Spike Analysis (continued)

Analyte	Sample ID	Sample Conc. µg/L	Spike Conc. µg/L	Spike Amount µg/L	Percent Recovery
Cr	23-S675	3.462	2348.	2500	93.8
Cu	LCS	< 5	2217.	2500	88.7
Cu	LCS-Duplicate	< 5	2331.	2500	93.2
Cu	23-S675	6.576	2236.	2500	89.2
Mn	LCS	< 0.3	2339.	2500	93.6
Mn	LCS-Duplicate	< 0.3	2481.	2500	99.2
Mn	23-S675	29.09	2404.	2500	95.0
Ni	LCS	< 3	2198.	2500	87.9
Ni	LCS-Duplicate	< 3	2355.	2500	94.2
Ni	23-S675	4.037	2248.	2500	89.8
P	LCS	< 20	2206.	2500	88.2
P	LCS-Duplicate	< 20	2327.	2500	93.1
P	23-S675	< 20	2269.	2500	90.8
Pb	LCS	< 5	2202.	2500	88.1
Pb	LCS-Duplicate	< 5	2322.	2500	92.9
Pb	23-S675	< 5	2256.	2500	90.2
Sb	LCS	12.21	2139.	2500	85.1
Sb	LCS-Duplicate	12.21	2283.	2500	90.8
Sb	23-S675	< 5	2224.	2500	89.0
Se	LCS	< 15	2223.	2500	88.9
Se	LCS-Duplicate	< 15	2339.	2500	93.6
Se	23-S675	< 15	2268.	2500	90.7
Tl	LCS	< 10	2152.	2500	86.1
Tl	LCS-Duplicate	< 10	2268.	2500	90.7
Tl	23-S675	< 10	2180.	2500	87.2
V	kv:LL-LCS	2.612	2311.	2500	92.3
V	kv:LL-LCS	2.612	2441.	2500	97.5
V	23-S675	< 1	2364.	2500	94.6
Zn	kv:LL-LCS	7.430	2287.	2500	91.2
Zn	kv:LL-LCS	7.430	2413.	2500	96.2
Zn	23-S675	27.44	2325.	2500	91.9

LCS Limit: 80% - 120% Recovery Spike Limit: 75% - 125% Recovery

LCS Duplicate Data

Analyte	Sample ID	Original Conc. µg/L	Replicate Conc. µg/L	RPD
Ag	LCS-Duplicate	2403.	2430.	1.12
Al	LCS-Duplicate	2397.	2534.	5.56
As	LCS-Duplicate	2266.	2422.	6.66

RPD = {(sample-duplicate)/[(sample+duplicate)/2]}x100 Duplicate Limit: 20% RPD

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: ICP-OES
Instrument: Perkin Elmer Optima 8300
Sample Description: EPA Method 29
Report Number: 23-175

LCS Duplicate Data (continued)

Analyte	Sample ID	Original Conc. µg/L	Replicate Conc. µg/L	RPD
Ba	LCS-Duplicate	2327.	2381.	2.29
Be	LCS-Duplicate	2261.	2396.	5.80
Cd	LCS-Duplicate	2274.	2400.	5.39
Co	LCS-Duplicate	2340.	2357.	0.72
Cr	LCS-Duplicate	2310.	2439.	5.43
Cu	LCS-Duplicate	2217.	2331.	5.01
Mn	LCS-Duplicate	2339.	2481.	5.89
Ni	LCS-Duplicate	2198.	2355.	6.90
P	LCS-Duplicate	2206.	2327.	5.34
Pb	LCS-Duplicate	2202.	2322.	5.31
Sb	LCS-Duplicate	2139.	2283.	6.51
Se	LCS-Duplicate	2223.	2339.	5.09
Tl	LCS-Duplicate	2152.	2268.	5.25
V	LCS-Duplicate	2311.	2441.	5.47
Zn	LCS-Duplicate	2287.	2413.	5.36

RPD = {(sample-duplicate)/[(sample+duplicate)/2]}x100 Duplicate Limit: 20% RPD

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: Cold Vapor Atomic Absorption
Instrument: Nippon 3320A CVAA
Sample Description: EPA Method 29
Report Number: 23-175

Blank Data

Analyte	Sample ID	Measured Conc. µg/L	DL Conc. µg/L
Hg	ICB	< DL	0.007
Hg	CCB	< DL	0.007
Hg	CCB	< DL	0.007
Hg	CCB	< DL	0.007

ICB: Initial Calibration Blank CCB: Continuing Calibration Blank
*: Sample Media Blank (SM_Blk) concentration in µg/filter
Method Blank is in control if Method Blank results are <10% of sample results

Calibration QC

Analyte	Sample ID	Standard Conc. µg/L	Measured Conc. µg/L	Percent Recovery
Hg	ICV	5.00	5.20	104.0
Hg	LL-LCS	0.020	0.022	110.0
Hg	CCV	5.00	5.09	101.8
Hg	CCV	5.00	5.06	101.1
Hg	CCV	5.00	5.03	100.6

ICV: Initial Calibration Verification CCV: Continuing Calibration Verification
Calibration Verification Limits: 90% - 110% Recovery
Low Level-LCS Limits: 50% - 150% Recovery
LL-LCS results are insignificant if sample results are >10x LL-LCS concentration

Duplicate Data

All samples analyzed in duplicate. The reported concentrations are the average of the two measurements.

Laboratory Control Sample/Matrix Spike Analysis

Analyte	Sample ID	Sample Conc. µg/L	Spike Conc. µg/L	Spike Amount µg/L	Percent Recovery
Hg	23-S609	0.013	5.04	5.00	101.

LCS Limit: 80% - 120% Recovery Spike Limit: 75% - 125% Recovery

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: Cold Vapor Atomic Absorption
Instrument: Nippon 3320A CVAA
Sample Description: EPA Method 29
Report Number: 23-175

Blank Data

Analyte	Sample ID	Measured Conc. µg/L	DL Conc. µg/L
Hg	ICB	< DL	0.007
Hg	CCB	< DL	0.007
Hg	CCB	< DL	0.007
Hg	CCB	< DL	0.007

ICB: Initial Calibration Blank CCB: Continuing Calibration Blank
*: Sample Media Blank (SM_Blk) concentration in µg/filter
Method Blank is in control if Method Blank results are <10% of sample results

Calibration QC

Analyte	Sample ID	Standard Conc. µg/L	Measured Conc. µg/L	Percent Recovery
Hg	ICV	5.00	5.07	101.5
Hg	LL-LCS	0.020	0.016	80.0
Hg	CCV	5.00	5.04	100.8
Hg	CCV	5.00	5.07	101.4
Hg	CCV	5.00	5.00	100.1

ICV: Initial Calibration Verification CCV: Continuing Calibration Verification
Calibration Verification Limits: 90% - 110% Recovery
Low Level-LCS Limits: 50% - 150% Recovery
LL-LCS results are insignificant if sample results are >10x LL-LCS concentration

Duplicate Data

All samples analyzed in duplicate. The reported concentrations are the average of the two measurements.

Laboratory Control Sample/Matrix Spike Analysis

Analyte	Sample ID	Sample Conc. µg/L	Spike Conc. µg/L	Spike Amount µg/L	Percent Recovery
Hg	23-S610	0.036	5.00	5.00	99.3

LCS Limit: 80% - 120% Recovery Spike Limit: 75% - 125% Recovery

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: Cold Vapor Atomic Absorption
Instrument: Nippon 3320A CVAA
Sample Description: EPA Method 29
Report Number: 23-175

Blank Data

Analyte	Sample ID	Measured Conc. µg/L	DL Conc. µg/L
Hg	ICB	< DL	0.007
Hg	CCB	< DL	0.007
Hg	CCB	< DL	0.007
Hg	CCB	< DL	0.007

ICB: Initial Calibration Blank CCB: Continuing Calibration Blank
*: Sample Media Blank (SM_Blk) concentration in µg/filter
Method Blank is in control if Method Blank results are <10% of sample results

Calibration QC

Analyte	Sample ID	Standard Conc. µg/L	Measured Conc. µg/L	Percent Recovery
Hg	ICV	5.00	5.19	103.7
Hg	LL-LCS	0.020	0.026	130.0
Hg	CCV	5.00	5.04	100.8
Hg	CCV	5.00	5.03	100.6
Hg	CCV	5.00	5.00	100.1

ICV: Initial Calibration Verification CCV: Continuing Calibration Verification
Calibration Verification Limits: 90% - 110% Recovery
Low Level-LCS Limits: 50% - 150% Recovery
LL-LCS results are insignificant if sample results are >10x LL-LCS concentration

Duplicate Data

All samples analyzed in duplicate. The reported concentrations are the average of the two measurements.

Laboratory Control Sample/Matrix Spike Analysis

Analyte	Sample ID	Sample Conc. µg/L	Spike Conc. µg/L	Spike Amount µg/L	Percent Recovery
Hg	23-S616	< 0.007	5.00	5.00	100.

LCS Limit: 80% - 120% Recovery Spike Limit: 75% - 125% Recovery

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: Cold Vapor Atomic Absorption
Instrument: Nippon 3320A CVAA
Sample Description: EPA Method 29
Report Number: 23-175

Blank Data

Analyte	Sample ID	Measured Conc. µg/L	DL Conc. µg/L
Hg	ICB	< DL	0.007
Hg	CCB	< DL	0.007
Hg	CCB	< DL	0.007
Hg	CCB	< DL	0.007

ICB: Initial Calibration Blank CCB: Continuing Calibration Blank
*: Sample Media Blank (SM_Blk) concentration in µg/filter
Method Blank is in control if Method Blank results are <10% of sample results

Calibration QC

Analyte	Sample ID	Standard Conc. µg/L	Measured Conc. µg/L	Percent Recovery
Hg	ICV	5.00	5.19	103.7
Hg	LL-LCS	0.020	0.026	130.0
Hg	CCV	5.00	5.04	100.8
Hg	CCV	5.00	5.03	100.6
Hg	CCV	5.00	5.00	100.1

ICV: Initial Calibration Verification CCV: Continuing Calibration Verification
Calibration Verification Limits: 90% - 110% Recovery
Low Level-LCS Limits: 50% - 150% Recovery
LL-LCS results are insignificant if sample results are >10x LL-LCS concentration

Duplicate Data

All samples analyzed in duplicate. The reported concentrations are the average of the two measurements.

Laboratory Control Sample/Matrix Spike Analysis

Analyte	Sample ID	Sample Conc. µg/L	Spike Conc. µg/L	Spike Amount µg/L	Percent Recovery
Hg	23-S616	< 0.007	5.00	5.00	100.

LCS Limit: 80% - 120% Recovery Spike Limit: 75% - 125% Recovery

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: Cold Vapor Atomic Absorption
Instrument: Nippon 3320A CVAA
Sample Description: EPA Method 29
Report Number: 23-175

Blank Data

Analyte	Sample ID	Measured Conc. µg/L	DL Conc. µg/L
Hg	ICB	< DL	0.007
Hg	CCB	< DL	0.007
Hg	CCB	< DL	0.007
Hg	CCB	< DL	0.007

ICB: Initial Calibration Blank CCB: Continuing Calibration Blank
*: Sample Media Blank (SM_Blk) concentration in µg/filter
Method Blank is in control if Method Blank results are <10% of sample results

Calibration QC

Analyte	Sample ID	Standard Conc. µg/L	Measured Conc. µg/L	Percent Recovery
Hg	ICV	5.00	5.11	102.2
Hg	LL-LCS	0.020	0.018	90.0
Hg	CCV	5.00	5.06	101.1
Hg	CCV	5.00	5.06	101.3
Hg	CCV	5.00	5.01	100.1

ICV: Initial Calibration Verification CCV: Continuing Calibration Verification
Calibration Verification Limits: 90% - 110% Recovery
Low Level-LCS Limits: 50% - 150% Recovery
LL-LCS results are insignificant if sample results are >10x LL-LCS concentration

Duplicate Data

All samples analyzed in duplicate. The reported concentrations are the average of the two measurements.

Laboratory Control Sample/Matrix Spike Analysis

Analyte	Sample ID	Sample Conc. µg/L	Spike Conc. µg/L	Spike Amount µg/L	Percent Recovery
Hg	23-S612	0.024	5.10	5.00	101.

LCS Limit: 80% - 120% Recovery Spike Limit: 75% - 125% Recovery

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: Cold Vapor Atomic Absorption
Instrument: Nippon 3320A CVAA
Sample Description: EPA Method 29
Report Number: 23-175

Blank Data

Analyte	Sample ID	Measured Conc. µg/L	DL Conc. µg/L
Hg	ICB	< DL	0.007
Hg	CCB	< DL	0.007
Hg	CCB	< DL	0.007
Hg	CCB	< DL	0.007

ICB: Initial Calibration Blank CCB: Continuing Calibration Blank
*: Sample Media Blank (SM_Blk) concentration in µg/filter
Method Blank is in control if Method Blank results are <10% of sample results

Calibration QC

Analyte	Sample ID	Standard Conc. µg/L	Measured Conc. µg/L	Percent Recovery
Hg	ICV	5.00	5.34	106.7
Hg	LL-LCS	0.020	0.023	115.0
Hg	CCV	5.00	5.05	101.1
Hg	CCV	5.00	5.06	101.2
Hg	CCV	5.00	5.07	101.5

ICV: Initial Calibration Verification CCV: Continuing Calibration Verification
Calibration Verification Limits: 90% - 110% Recovery
Low Level-LCS Limits: 50% - 150% Recovery
LL-LCS results are insignificant if sample results are >10x LL-LCS concentration

Duplicate Data

All samples analyzed in duplicate. The reported concentrations are the average of the two measurements.

Laboratory Control Sample/Matrix Spike Analysis

Analyte	Sample ID	Sample Conc. µg/L	Spike Conc. µg/L	Spike Amount µg/L	Percent Recovery
Hg	23-S613	< 0.007	5.10	5.00	102.

LCS Limit: 80% - 120% Recovery Spike Limit: 75% - 125% Recovery

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: Cold Vapor Atomic Absorption
Instrument: Nippon 3320A CVAA
Sample Description: EPA Method 29
Report Number: 23-175

Blank Data

Analyte	Sample ID	Measured Conc. µg/L	DL Conc. µg/L
Hg	ICB	< DL	0.007
Hg	CCB	< DL	0.007
Hg	CCB	< DL	0.007
Hg	CCB	< DL	0.007
Hg	CCB	< DL	0.007

ICB: Initial Calibration Blank CCB: Continuing Calibration Blank
*: Sample Media Blank (SM_Blk) concentration in µg/filter
Method Blank is in control if Method Blank results are <10% of sample results

Calibration QC

Analyte	Sample ID	Standard Conc. µg/L	Measured Conc. µg/L	Percent Recovery
Hg	ICV	5.00	5.08	101.6
Hg	LL-LCS	0.020	0.022	110.0
Hg	CCV	5.00	5.01	100.1
Hg	CCV	5.00	5.11	102.3
Hg	CCV	5.00	5.16	103.2
Hg	CCV	5.00	5.23	104.6

ICV: Initial Calibration Verification CCV: Continuing Calibration Verification
Calibration Verification Limits: 90% - 110% Recovery
Low Level-LCS Limits: 50% - 150% Recovery
LL-LCS results are insignificant if sample results are >10x LL-LCS concentration

Duplicate Data

All samples analyzed in duplicate. The reported concentrations are the average of the two measurements.

Laboratory Control Sample/Matrix Spike Analysis

Analyte	Sample ID	Sample Conc. µg/L	Spike Conc. µg/L	Spike Amount µg/L	Percent Recovery
Hg	23-S669	0.014	5.05	5.00	101.

LCS Limit: 80% - 120% Recovery Spike Limit: 75% - 125% Recovery

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: Cold Vapor Atomic Absorption
Instrument: Nippon 3320A CVAA
Sample Description: EPA Method 29
Report Number: 23-175

Blank Data

Analyte	Sample ID	Measured Conc. µg/L	DL Conc. µg/L
Hg	ICB	< DL	0.007
Hg	ccb	< DL	0.007
Hg	ccb	< DL	0.007
Hg	ccb	< DL	0.007
Hg	ccb	< DL	0.007

ICB: Initial Calibration Blank CCB: Continuing Calibration Blank
*: Sample Media Blank (SM_Blk) concentration in µg/filter
Method Blank is in control if Method Blank results are <10% of sample results

Calibration QC

Analyte	Sample ID	Standard Conc. µg/L	Measured Conc. µg/L	Percent Recovery
Hg	ICV	5.00	5.01	100.2
Hg	LL-LCS	0.020	0.023	115.0
Hg	ccv	5.00	5.01	100.2
Hg	ccv	5.00	4.92	98.4
Hg	ccv	5.00	4.93	98.6
Hg	ccv	5.00	4.96	99.3

ICV: Initial Calibration Verification CCV: Continuing Calibration Verification
Calibration Verification Limits: 90% - 110% Recovery
Low Level-LCS Limits: 50% - 150% Recovery
LL-LCS results are insignificant if sample results are >10x LL-LCS concentration

Duplicate Data

All samples analyzed in duplicate. The reported concentrations are the average of the two measurements.

Laboratory Control Sample/Matrix Spike Analysis

Analyte	Sample ID	Sample Conc. µg/L	Spike Conc. µg/L	Spike Amount µg/L	Percent Recovery
Hg	23-S670	0.080	4.86	5.00	95.6

LCS Limit: 80% - 120% Recovery Spike Limit: 75% - 125% Recovery

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: Cold Vapor Atomic Absorption
Instrument: Nippon 3320A CVAA
Sample Description: EPA Method 29
Report Number: 23-175

Blank Data

Analyte	Sample ID	Measured Conc. µg/L	DL Conc. µg/L
Hg	ICB	< DL	0.007
Hg	CCB	< DL	0.007

ICB: Initial Calibration Blank CCB: Continuing Calibration Blank
*: Sample Media Blank (SM_Blk) concentration in µg/filter
Method Blank is in control if Method Blank results are <10% of sample results

Calibration QC

Analyte	Sample ID	Standard Conc. µg/L	Measured Conc. µg/L	Percent Recovery
Hg	ICV	5.00	5.10	102.0
Hg	LL-LCS	0.020	0.021	105.0
Hg	CCV	5.00	5.04	100.8

ICV: Initial Calibration Verification CCV: Continuing Calibration Verification
Calibration Verification Limits: 90% - 110% Recovery
Low Level-LCS Limits: 50% - 150% Recovery
LL-LCS results are insignificant if sample results are >10x LL-LCS concentration

Duplicate Data

All samples analyzed in duplicate. The reported concentrations are the average of the two measurements.

Laboratory Control Sample/Matrix Spike Analysis

Analyte	Sample ID	Sample Conc. µg/L	Spike Conc. µg/L	Spike Amount µg/L	Percent Recovery
Hg	23-S676	< 0.007	5.05	5.00	101.

LCS Limit: 80% - 120% Recovery Spike Limit: 75% - 125% Recovery

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: Cold Vapor Atomic Absorption
Instrument: Nippon 3320A CVAA
Sample Description: EPA Method 29
Report Number: 23-175

Blank Data

Analyte	Sample ID	Measured Conc. µg/L	DL Conc. µg/L
Hg	ICB	< DL	0.007
Hg	CCB	< DL	0.007
Hg	CCB	< DL	0.007
Hg	CCB	< DL	0.007

ICB: Initial Calibration Blank CCB: Continuing Calibration Blank
*: Sample Media Blank (SM_Blk) concentration in µg/filter
Method Blank is in control if Method Blank results are <10% of sample results

Calibration QC

Analyte	Sample ID	Standard Conc. µg/L	Measured Conc. µg/L	Percent Recovery
Hg	ICV	5.00	5.07	101.4
Hg	LL-LCS	0.020	0.031	155.0
Hg	CCV	5.00	5.01	100.2
Hg	CCV	5.00	5.10	101.9
Hg	CCV	5.00	5.11	102.2

ICV: Initial Calibration Verification CCV: Continuing Calibration Verification
Calibration Verification Limits: 90% - 110% Recovery
Low Level-LCS Limits: 50% - 150% Recovery
LL-LCS results are insignificant if sample results are >10x LL-LCS concentration

Duplicate Data

All samples analyzed in duplicate. The reported concentrations are the average of the two measurements.

Laboratory Control Sample/Matrix Spike Analysis

Analyte	Sample ID	Sample Conc. µg/L	Spike Conc. µg/L	Spike Amount µg/L	Percent Recovery
Hg	23-S677	0.034	5.07	5.00	101.

LCS Limit: 80% - 120% Recovery Spike Limit: 75% - 125% Recovery

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: Cold Vapor Atomic Absorption
Instrument: Nippon 3320A CVAA
Sample Description: EPA Method 29
Report Number: 23-175

Blank Data

Analyte	Sample ID	Measured Conc. µg/L	DL Conc. µg/L
Hg	ICB	< DL	0.007
Hg	CCB	< DL	0.007
Hg	CCB	< DL	0.007
Hg	CCB	< DL	0.007

ICB: Initial Calibration Blank CCB: Continuing Calibration Blank
*: Sample Media Blank (SM_Blk) concentration in µg/filter
Method Blank is in control if Method Blank results are <10% of sample results

Calibration QC

Analyte	Sample ID	Standard Conc. µg/L	Measured Conc. µg/L	Percent Recovery
Hg	ICV	5.00	5.16	103.1
Hg	LL-LCS	0.020	0.021	105.0
Hg	CCV	5.00	4.96	99.2
Hg	CCV	5.00	4.93	98.7
Hg	CCV	5.00	4.92	98.5

ICV: Initial Calibration Verification CCV: Continuing Calibration Verification
Calibration Verification Limits: 90% - 110% Recovery
Low Level-LCS Limits: 50% - 150% Recovery
LL-LCS results are insignificant if sample results are >10x LL-LCS concentration

Duplicate Data

All samples analyzed in duplicate. The reported concentrations are the average of the two measurements.

Laboratory Control Sample/Matrix Spike Analysis

Analyte	Sample ID	Sample Conc. µg/L	Spike Conc. µg/L	Spike Amount µg/L	Percent Recovery
Hg	23-S678	< 0.007	4.99	5.00	99.8

LCS Limit: 80% - 120% Recovery Spike Limit: 75% - 125% Recovery

QA/QC Report

Client Name: Bison Engineering
Project Number: B020
Analytical Technique: Cold Vapor Atomic Absorption
Instrument: Nippon 3320A CVAA
Sample Description: EPA Method 29
Report Number: 23-175

Blank Data

Analyte	Sample ID	Measured Conc. µg/L	DL Conc. µg/L
Hg	ICB	< DL	0.007
Hg	CCB	< DL	0.007
Hg	CCB	< DL	0.007

ICB: Initial Calibration Blank CCB: Continuing Calibration Blank
*: Sample Media Blank (SM_Blk) concentration in µg/filter
Method Blank is in control if Method Blank results are <10% of sample results

Calibration QC

Analyte	Sample ID	Standard Conc. µg/L	Measured Conc. µg/L	Percent Recovery
Hg	ICV	5.00	5.05	100.9
Hg	LL-LCS	0.020	0.019	95.0
Hg	CCV	5.00	5.02	100.4
Hg	CCV	5.00	5.02	100.3

ICV: Initial Calibration Verification CCV: Continuing Calibration Verification
Calibration Verification Limits: 90% - 110% Recovery
Low Level-LCS Limits: 50% - 150% Recovery
LL-LCS results are insignificant if sample results are >10x LL-LCS concentration

Duplicate Data

All samples analyzed in duplicate. The reported concentrations are the average of the two measurements.

Laboratory Control Sample/Matrix Spike Analysis

Analyte	Sample ID	Sample Conc. µg/L	Spike Conc. µg/L	Spike Amount µg/L	Percent Recovery
Hg	23-S696	< 0.007	5.01	5.00	100.

LCS Limit: 80% - 120% Recovery Spike Limit: 75% - 125% Recovery

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SOURCE SAMPLE RECEIPT CHECKLIST

Client	Bison Engineering	Date	3/30/23
# Runs	24 + Blanks	Report #	23-175

Package intact?	Hand delivered	
Chain-of-Custody form inspected	✓	
CoC present with samples?	✓	
CoC indicates analytical methodology to be used? (eg M29, etc.)	EPA 29	!!
Has CoC been signed by client?	✓	
Custody release date and time noted on CoC?	✓	
All sample containers inspected	✓	
Does number of samples match number on CoC form?	✓	!!
Do all sample ID numbers match those on the CoC form?	✓	!!
Did client mark sample volumes prior to shipment?	✓	
Sample temperature recorded?	ambient	
Are the sample containers intact?	✓	!!
If present, Audit Sample intact?	n/a	!!
Are signs of leakage present?	No	*
Chain-of-Custody form signed and dated by CLN	✓	
Corrective actions		
Client contacted due to mismatching sample ID numbers		
Client contacted due to broken sample container(s)		
Client contacted due to leaking sample container(s)		
Client contacted for verification of methodology?		
Corrective actions documented?		
Corrective actions accomplished?		

Items marked !! shall be addressed ***prior to any analytical work being started****.*
*Items marked * shall be* ***noted in case narrative*** *upon reporting of results to client.*

Signed Pat DeLuca

Notes

Company Name: BISON ENGINEERING		
Contact: JACOB RANKIN	Phone: (208) 954-7138	
E-Mail Address: jrankin@bison-eng.com	Fax:	
Report Address: 3143 E LYNDALE AVE.		
City: HELENA	State: MT	Zip: 59601
Billing Address: 3143 E LYNDALE AVE.		
City: HELENA	State: MT	Zip: 59601
PO #: EFC223119	Project: EFC223119	

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cln@chesterlab.net

23-175

CHAIN-OF-CUSTODY RECORD

LabNet ID	Field Sample ID	Site	Sample Date	Volume (m^3)	Particle Size	Analysis Requested: EPA M29	EPA M0041									Remarks
23-5609	CONT.#1 WI	BH 1 IN.	3/27/23	RUN 1		X										
	CONT.#3 WI	↓	↓	↓		X										
23-5610	CONT.#4 WI					X										
23-5611	CONT.#5A WI					X										
23-5612	CONT.#5B WI					X										
23-5613	CONT.#5C WI	↓				X										
23-5624	CONT.#1 WI	BH 2 IN.				X										
	CONT.#3 WI	↓				X										
23-5625	CONT.#4 WI					X										
23-5626	CONT.#5A WI					X										
23-5627	CONT.#5B WI					X										
23-5628	CONT.#5C WI	↓	↓	↓		X										

Turn Around Time
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3/30/23 11:38	3/30/23 11:38
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Notes:
WI - WHITE IRON
MS - Mn STEEL
IN. - INLET
OUT. - OUTLET
BH - BAGHOUSE

METALS TO ANALYZE - Al, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Mn, Hg, Ni, P, Se, Ag, Tl, V, Zn

Company Name: SAME AS PAGE 1		
Contact	Phone	
E-Mail Address	Fax	
Report Address		
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CHAIN-OF-CUSTODY RECORD

LabNet ID	Field Sample ID	Site	Sample Date	Volume (m^3)	Particle Size	Analysis Requested: EPA M29	Remarks
23-5614	CONT. #1 WI	BH 1 IN.	3/28/23	RUN 2		X	
	CONT. #3 WI	↓	↓	↓		X	
23-5615	CONT. #4 WI					X	
23-5616	CONT. #5A WI					X	
23-5617	CONT. #5B WI					X	
23-5618	CONT. #5C WI	↓				X	
23-5629	CONT. #1 WI	BH 2 IN.				X	
	CONT. #3 WI	↓				X	
23-5630	CONT. #4 WI					X	
23-5631	CONT. #5A WI					X	
23-5632	CONT. #5B WI					X	
23-5633	CONT. #5C WI	↓	↓	↓		X	

Turn Around Time
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3/30/23 11:38	3/30/23 1138	
Relinquished By: (Signature) Date/Time	Received By: (Signature) Date/Time	

Company Name: SAME AS PAGE 1		
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CHAIN-OF-CUSTODY RECORD

LabNet ID	Field Sample ID	Site	Sample Date	Volume (m^3)	Particle Size	Analysis Requested: EPA M29										Remarks
23-5619	CONT. #1 WI	BH 1 IN.	3/29/23	RUN 3		X										
	CONT. #3 WI	↓	↓	↓		X										
23-5620	CONT. #4 WI					X										
23-5621	CONT. #5A WI					X										
23-5622	CONT. #5B WI					X										
23-5623	CONT. #5C WI	↓				X										
23-5634	CONT. #1 WI	BH 2 IN.	3/29/23	RUN 3		X										
	CONT. #3 WI	↓	↓	↓		X										
23-5635	CONT. #4 WI					X										
23-5636	CONT. #5A WI					X										
23-5637	CONT. #5B WI			↓		X										
23-5638	CONT. #5C WI	↓	↓			X										

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3/30/23 11:38	3/30/23 1138	
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CHAIN-OF-CUSTODY RECORD

Turn Around Time
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LabNet ID	Field Sample ID	Site	Sample Date	Volume (m^3)	Particle Size	Analysis Requested: EPA M29	Remarks
23-5614	CONT.#1 WI	BH 1 OUT.	3/27/23	RUN 1		X	> 23-5639
	CONT.#3 WI					X	
23-5615	CONT.#4 WI					X	23-5640
23-5616	CONT.#5A WI					X	23-5641
23-5617	CONT.#5B WI					X	23-5642
23-5618	CONT.#5C WI					X	23-5643
23-5629	CONT.#1 WI	BH 2 OUT.				X	> 23-5654
	CONT.#3 WI					X	
23-5630	CONT.#4 WI					X	23-5655
23-5631	CONT.#5A WI					X	23-5656
23-5632	CONT.#5B WI					X	23-5657
23-5633	CONT.#5C WI					X	23-5658

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3/30/23 11:38	3/30/23 1138
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CHAIN-OF-CUSTODY RECORD

LabNet ID	Field Sample ID	Site	Sample Date	Volume (m^3)	Particle Size	Analysis Requested: EPA M29	Remarks
23-5644	CONT. #1 WI	BH 1 OUT.	3/28/23	RUN 2		X	
	CONT. #3 WI					X	
23-5645	CONT. #4 WI					X	
23-5646	CONT. #5A WI					X	
23-5647	CONT. #5B WI					X	
23-5648	CONT. #5C WI					X	
23-5659	CONT. #1 WI	BH 2 OUT.				X	
	CONT. #3 WI					X	
23-5660	CONT. #4 WI					X	
23-5661	CONT. #5A WI					X	
23-5662	CONT. #5B WI					X	
23-5663	CONT. #5C WI					X	

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3/30/23 11:38	3/30/23 1138
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Notes:

Company Name: SAME AS PAGE 1		
Contact	Phone	
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CHAIN-OF-CUSTODY RECORD

LabNet ID	Field Sample ID	Site	Sample Date	Volume (m^3)	Particle Size	Analysis Requested: EPA M29	Remarks
23-5649	CONT. #1 WI	BH 1 OUT.	3/29/23	RUN 3		X	
	CONT. #3 WI					X	
23-5650	CONT. #4 WI					X	
23-5651	CONT. #5A WI					X	
23-5652	CONT. #5B WI					X	
23-5653	CONT. #5C WI					X	
23-5654	CONT. #1 WI	BH 2 OUT.				X	
	CONT. #3 WI					X	
23-5655	CONT. #4 WI					X	
23-5656	CONT. #5A WI					X	
23-5658	CONT. #5B WI					X	
23-5659	CONT. #5C WI					X	

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Company Name: SAME AS PAGE 1		
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CHAIN-OF-CUSTODY RECORD

LabNet ID	Field Sample ID	Site	Sample Date	Volume (m^3)	Particle Size	Analysis Requested: EPA M29	Remarks
23-5619	CONT. #1 MS	BH 1 IN.	3/27/23	RUN 1		X	23-5669
	CONT. #3 MS					X	
23-5620	CONT. #4 MS					X	23-5670
23-5621	CONT. #5A MS					X	23-5671
23-5622	CONT. #5B MS					X	23-5672
23-5623	CONT. #5C MS					X	23-5673
	CONT. #1 MS	BH 2 IN.				X	23-5684
	CONT. #3 MS					X	
	CONT. #4 MS					X	23-5685
	CONT. #5A MS					X	23-5686
	CONT. #5B MS					X	23-5687
	CONT. #5C MS					X	23-5688

Turn Around Time
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Company Name: SAME AS PAGE 1		
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CHAIN-OF-CUSTODY RECORD

Analysis Requested

Turn Around Time
☒ Standard
☐ Rush _____ Specify

LabNet ID	Field Sample ID	Site	Sample Date	Volume (m^3)	Particle Size	EPA M29										Remarks
23-5674	CONT. #1 MS	BH 1 IN.	3/28/23	RUN 2		X										
	CONT. #3 MS	↓	↓	↓		X										
23-5675	CONT. #4 MS					X										
23-5676	CONT. #5A MS					X										
23-5677	CONT. #5B MS					X										
23-5678	CONT. #5C MS	↓				X										
23-5689	CONT. #1 MS	BH 2 IN.				X										
	CONT. #3 MS	↓				X										
23-5690	CONT. #4 MS					X										
23-5691	CONT. #5A MS					X										
23-5692	CONT. #5B MS					X										
23-5693	CONT. #5C MS	↓	↓	↓		X										

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3/30/23 11:38	3/30/23 1138
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Notes:

Company Name	SAME AS PAGE 1
Contact	Phone
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CHAIN-OF-CUSTODY RECORD

Analysis Requested

EPA M29

Turn Around Time
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LabNet ID	Field Sample ID	Site	Sample Date	Volume (m^3)	Particle Size	EPA M29	Remarks
23-5679	CONT.#1 MS	BH 1 IN.	3/29/23	RUN 3		X	
	CONT.#3 MS					X	
23-5680	CONT.#4 MS					X	
23-5681	CONT.#5A MS					X	
23-5682	CONT.#5B MS					X	
23-5683	CONT.#5C MS					X	
23-5694	CONT.#1 MS	BH 2 IN.				X	
	CONT.#3 MS					X	
23-5695	CONT.#4 MS					X	
23-5696	CONT.#5A MS					X	
23-5697	CONT.#5B MS					X	
23-5698	CONT.#5C MS					X	

Relinquished By: (Signature) Date/Time	Received By: (Signature) Date/Time
3/30/23 11:38	3/30/23 1138
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Notes:

Company Name: SAME AS PAGE 1		
Contact	Phone	
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CHAIN-OF-CUSTODY RECORD

LabNet ID	Field Sample ID	Site	Sample Date	Volume (m^3)	Particle Size	Analysis Requested: EPA M29	Remarks
23-5699	CONT.#1 MS	BH 1 OUT.	3/27/23	RUN 1		X	
	CONT.#3 MS	↓	↓	↓		X	
23-5700	CONT.#4 MS					X	
23-5701	CONT.#5A MS					X	
23-5702	CONT.#5B MS					X	
23-5703	CONT.#5C MS	↓				X	
23-5714	CONT.#1 MS	BH 2 OUT.				X	
	CONT.#3 MS	↓				X	
23-5715	CONT.#4 MS					X	
23-5716	CONT.#5A MS					X	
23-5717	CONT.#5B MS					X	
23-5718	CONT.#5C MS	↓	↓	↓		X	

Turn Around Time
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Relinquished By: (Signature) Date/Time	Received By: (Signature) Date/Time	Notes:
[signature] 3/30/23 11:38	[signature] 3/30/23 11:38	
Relinquished By: (Signature) Date/Time	Received By: (Signature) Date/Time	

Company Name: SAME AS PAGE 1		
Contact	Phone	
E-Mail Address	Fax	
Report Address		
City	State	Zip
Billing Address		
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CHAIN-OF-CUSTODY RECORD

LabNet ID	Field Sample ID	Site	Sample Date	Volume (m^3)	Particle Size	Analysis Requested: EPA M29	Remarks
23-5704	CONT. #1 MS	BH 1 OUT.	3/28/23	RUN 2		X	
	CONT. #3 MS	↓	↓	↓		X	
23-5705	CONT. #4 MS					X	
23-5706	CONT. #5A MS					X	
23-5707	CONT. #5B MS					X	
23-5708	CONT. #5C MS	↓				X	
23-5719	CONT. #1 MS	BH 2 OUT.				X	
	CONT. #3 MS	↓				X	
23-5720	CONT. #4 MS					X	
23-5721	CONT. #5A MS					X	
23-5722	CONT. #5B MS					X	
23-5723	CONT. #5C MS	↓	↓	↓		X	

Turn Around Time
☒ Standard
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Relinquished By: (Signature) Date/Time	Received By: (Signature) Date/Time	Notes:
[signature] 3/30/23 11:38	[signature] 3/30/23 11 38	
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Company Name: SAME AS PAGE 1		
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CHAIN-OF-CUSTODY RECORD

LabNet ID	Field Sample ID	Site	Sample Date	Volume (m^3)	Particle Size	Analysis Requested: EPA M29	Remarks
23-5709	CONT.#1 MS	BH 1 OUT.	3/29/23	RUN 3		X	
	CONT.#3 MS	↓	↓	↓		X	
23-5710	CONT.#4 MS					X	
23-5711	CONT.#5A MS					X	
23-5712	CONT.#5B MS					X	
23-5713	CONT.#5C MS	↓				X	
23-5724	CONT.#1 MS	BH 2 OUT.				X	
	CONT.#3 MS	↓				X	
23-5725	CONT.#4 MS					X	
23-5726	CONT.#5A MS					X	
23-5727	CONT.#5B MS					X	
23-5728	CONT.#5C MS	↓	↓	↓		X	

Turn Around Time
☒ Standard
☐ Rush _____ Specify

Relinquished By: (Signature) Date/Time	Received By: (Signature) Date/Time	Notes:
[signature] 3/30/23 11:38	[signature] 3/30/23 1138	
Relinquished By: (Signature) Date/Time	Received By: (Signature) Date/Time	

Company Name: SAME AS PAGE 1		
Contact	Phone	
E-Mail Address	Fax	
Report Address		
City	State	Zip
Billing Address		
City	State	Zip
PO #	Project	

CHESTER LabNet
12242 SW Garden Place
Tigard, OR 97223
(503) 624-2183
Fax (503) 624-2653
cln@chesterlab.net

CHAIN-OF-CUSTODY RECORD

LabNet ID	Field Sample ID	Site	Sample Date	Volume (m^3)	Particle Size	Analysis Requested: EPA M29	Remarks
23-5732	CONT. #8B	ALL	~~3/27/23~~	3/30/23		X	water
23-5733	CONT. #10	ALL	~~3/27/23~~	3/30/23		X	$KMnO_4$
23-5730	CONT. #8A	ALL	3/29/23			X	HNO_3
23-5731	CONT. #9	ALL	3/29/23			X	HNO_3 / H_2O_2
23-5734	CONT. #11	ALL	3/29/23			X	HCl
23-5729	CONT. #12	ALL	3/29/23			X	filter

Turn Around Time
☒ Standard
☐ Rush _____ Specify

Relinquished By: (Signature) Date/Time	Received By: (Signature) Date/Time	Notes:
3/30/23 11:38	~~Received~~ By: 3/30/23 1138	
Relinquished By: (Signature) Date/Time	Received By: (Signature) Date/Time	

RAW DATA

Available upon request

Bison Engineering Inc.
Method 0061 Nitrogen Purge Log

Company: EAGLE FOUNDRY

Facility: EAGLE FOUNDRY WHITE IRON

Source	Run	Date mm/dd/yyyy	Start hh:mm	Stop hh:mm	Flow LPM
MAIN FOUNDRY BH OUTLET	1	3/27/2023	11:26	11:58	10
↓	2	3/28/2023	9:44	10:26	10
↓	3	3/29/2023	9:34	10:09	10
COOLING BUNKER BH OUTLET	1	3/27/2023	11:26	11:58	10
↓	2	3/28/2023	9:44	10:26	10
↓	3	3/29/2023	9:34	10:09	10

Technician: JCR

Revision No.: 0
Date: January 11, 2018

Y:\SOURCE\MASTER SPREADSHEETS\Field Datasheets\N2 Purge Log

Bison Engineering Inc.
Method 0061 Nitrogen Purge Log

Company: EAGLE FOUNDRY

Facility: EAGLE FOUNDRY STEEL ALLOY COMBINATION

Source	Run	Date mm/dd/yyyy	Start hh:mm	Stop hh:mm	Flow LPM
MAIN FOUNDRY BH OUTLET	1	3/27/2023	17:44	18:16	10
COOLING BUNKER BH OUTLET	1	3/27/2023	17:44	18:16	10
MAIN FOUNDRY BH OUTLET	2	3/28/2023	15:08	15:39	16
COOLING BUNKER BH OUTLET	2	3/28/2023	15:08	15:39	10
MAIN FOUNDRY BH OUTLET	3	3/29/2023	15:11	15:41	10
COOLING BUNKER BH OUTLET	3	3/29/23	15:11	15:41	10

Technician: JCR

Revision No.: 0
Date: January 11, 2018

Y:\SOURCE\MASTER SPREADSHEETS\Field Datasheets\N2 Purge Log

APPENDIX F: PLANT OPERATING RECORDS

Eagle Foundry Company
Process Data

White Iron **Eagle Foundry Co. Stack Testing March 27 - 29, 2023** Prepared By: Jack Scott, EFC

	HC-25	C	Mn	Si	P	S	Cr	Ni	Mo	Ti	Fe	Total Pounds Melt/Pour	Charge Wt.	Diff
1	Day 1 HT 1	89.949	30.884	10.747	0.449	0.399	771.919	7.261	12.079	0.307	2,029.992	2,953.985	2,954	-0.015
2	Day 1 HT 2	91.392	30.539	10.983	0.492	0.435	782.160	7.452	13.150	0.249	2,102.152	3,039.003	3,039	0.003
3	Day 1 HT 3	90.436	28.637	9.892	0.464	0.393	768.660	7.420	12.648	0.286	2,055.162	2,973.997	2,974	-0.003
4	Day 1 HT 4	90.558	30.625	10.958	0.457	0.427	784.203	7.233	12.252	0.287	2,051.999	2,989.000	2,989	0.000
	Day 1/Run 1 (Total lbs)		120.685				3,106.941					11,955.985		
5	Day 2 HT 1	88.972	32.358	11.579	0.496	0.410	791.248	7.913	12.725	0.347	2,093.949	3,039.997	3,040	-0.003
6	Day 2 HT 2	89.309	31.090	10.357	0.465	0.395	793.400	7.971	12.218	0.304	2,094.487	3,039.997	3,040	-0.003
7	Day 2 HT 3	89.846	30.630	14.056	0.429	0.463	768.604	8.368	13.352	0.362	2,118.894	3,045.003	3,045	0.003
8	Day 2 HT 4	88.885	32.831	14.001	0.426	0.487	771.359	8.487	13.177	0.341	2,111.007	3,041.000	3,041	0.000
	Day 2/Run 2 (Total lbs)		126.908				3,124.611					12,165.997		
9	Day 3 HT 1	90.459	30.316	10.994	0.428	0.529	768.547	8.826	12.591	0.353	2,066.960	2,990.003	2,990	0.003
10	Day 3 HT 2	88.337	31.216	12.160	0.407	0.449	764.660	7.610	12.758	0.296	2,072.112	2,990.003	2,990	0.003
11	Day 3 HT 3	88.636	30.337	14.173	0.434	0.463	776.123	7.935	12.986	0.332	2,058.579	2,989.997	2,990	-0.003
12	Day 3 HT 4	88.127	30.932	13.075	0.404	0.466	761.810	8.004	13.036	0.347	2,073.801	2,990.003	2,990	0.003
	Day 3/Run 3 (Total lbs)		122.799				3,071.140					11,960.006		
	Total Pounds	1,074.906	370.392	142.974	5.350	5.316	9,302.692	94.481	152.972	3.810	24,929.095	36,081.988	36,082	-0.012

Notes:

1. CrVI emission results also should be divided by the Cr processed in each run to develop emission factor as lbs CrVI/ton Cr present in the alloy.

2. Mn and Cr emission results should be divided by the lbs or tons of the metal element processed to develop emission factors of lbs emitted/ lb (or ton) present in the alloy.

3. Al, Sb, As, Ba, Be, Cd, Co, Cu, Ni, P, Pb, Hg, Se, Ag, Tl, V, Zn are all trace TAC metals not expected to be in or added to alloys. Emission factors should be developed as lbs emitted/total tons of metal processed from Column M above because these could be trace elements in any batch and are not part of a specific recipe.

Mn, Cr, and CrVi may change with changing recipes and therefore, need a specific emission rate depending upon the amount present.

Eagle Foundry Company
Process Data

Steel	Eagle Foundry Co. Stack Testing March 27 - 29, 2023										Prepared By: Jack Scott, EFC		
CM40	**C**	**Mn**	**Si**	**P**	**S**	**Cr**	**Ni**	**Mo**	**V**	**Fe**	**Total Pounds Melt/Pour**	**Charge Wt.**	**Diff**
1 Day 1 HT 5	12.127	32.929	8.245	0.273	0.214	98.384	34.974	15.012	0.282	2,890.448	3,092.887	3,103	-10.113
2 Day 1 HT 6	11.992	26.138	7.639	0.294	0.220	99.850	32.601	14.399	0.251	2,891.074	3,084.458	3,094	-9.542
Day 1/Run 1		59.067		0.567		198.233	67.575		0.533		6,177.345		
3 Day 2 HT 5	12.393	24.359	7.765	0.390	0.229	95.029	31.570	14.418	0.279	2,902.324	3,088.755	3,096	-7.245
4 Day 2 HT 6	12.059	28.446	6.407	0.272	0.226	94.287	31.585	14.087	0.340	2,895.349	3,083.058	3,092	-8.942
Day 2/Run 2		52.806		0.662		189.316	63.155		0.619		6,171.813		
5 Day 3 HT 5	12.094	23.911	7.652	0.382	0.225	93.195	31.029	14.129	0.273	2,843.896	3,026.785	3,034	-7.215
6 Day 3 HT 6	12.527	27.534	7.397	0.300	0.228	95.538	30.003	14.536	0.367	2,837.649	3,026.078	3,034	-7.922
Day 3/Run 3		51.445		0.683		188.733	61.032		0.640		6,052.863		
MNB2													
7 Day 1 HT 7	34.098	388.863	20.809	0.517	0.523	6.148	3.347	14.138		2,543.848	3,012.290	3,021	-8.710
8 Day 1 HT 8	33.397	386.129	20.519	0.514	0.565	5.383	3.405	13.477		2,548.555	3,011.943	3,021	-9.057
Day 1/Run 1		774.992		1.030		11.531	6.752				6,024.233		
9 Day 2 HT 7	37.037	381.054	19.733	0.571	0.607	5.362	4.278	15.365		2,552.231	3,016.239	3,021	-4.761
10 Day 2 HT 8	34.225	400.222	21.642	0.520	0.562	6.716	3.027	15.292		2,530.861	3,013.067	3,021	-7.933
Day 2/Run 2		781.276		1.091		12.078	7.305				6,029.306		
11 Day 3 HT 7	32.050	379.129	21.081	0.483	0.535	5.770	3.667	13.712		2,555.044	3,011.472	3,021	-9.528
12 Day 3 HT 8	33.346	392.165	20.573	0.495	0.535	6.991	4.873	15.782		2,538.441	3,013.200	3,021	-7.800
Day 3/Run 3		771.295		0.979		12.761	8.540				6,024.672		

	Mn	**P**	**Cr**	**Ni**	**V**	**Total lbs Metal Melt/Pour per Run**
Day 1/Run 1 Total lbs	834.059	1.597	209.764	74.327	0.533	12,201.579
Day 2/Run 2 Total lbs	834.082	1.753	201.394	70.459	0.619	12,201.119
Day 3/Run 3 Total lbs	822.739	1.661	201.494	69.572	0.640	12,077.535

Notes:

1. CrVI emission results should be also be divided by the Cr processed in each run to develop emission factor as lbs CrVI/ton Cr present in the alloy.
2. Mn, Cr, and Niemission results should be divided by the lbs or tons of the metal element processed to develop emission factors of lbs emitted/ lb (or ton) present in the alloy.
3. Al, Sb, As, Ba, Be, Cd, Co, Cu, P, Pb, Hg, Se, Ag, Tl, Zn, and V are all trace TAC metals not expected to be in or added to alloys. Emission factors should be developed as lbs emitted/total tons of metal processed from Column M above because these could be trace elements in any batch and are not part of a specific recipe.

Mn, P, Cr, CrVi, Ni, and V may change with changing recipes and therefore, need a specific emission rate depending upon the amount present.

APPENDIX G: CALIBRATIONS AND CERTIFICATIONS

STAC STACK TESTING ACCREDITATION COUNCIL

A2LA American Association for Laboratory Accreditation

Accredited Air Emission Testing Body

A2LA has accredited

BISON ENGINEERING, INC.

In recognition of the successful completion of the joint A2LA and Stack Testing Accreditation Council (STAC) evaluation process, this laboratory is accredited to perform testing activities in compliance with ASTM D7036:2004 - Standard Practice for Competence of Air Emission Testing Bodies.

Presented this 27th day of January 2022 .

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 4675.01
Valid to November 30, 2023

This accreditation program is not included under the A2LA ILAC Mutual Recognition Arrangement.

APEX INSTRUMENTS

METERBOX CALIBRATION USING REFERENCE DGM

Meter Console Information	
Console Model Number	Box 10
Console Serial Number	0028-052711-1
DGM Model Number	SK25R-Q58
DGM Serial Number	A2003246

Calibration Conditions			
Date	Time	2-Mar-23	17:00
Barometric Pressure		26.59	in Hg
Calibration Technician		RTM	
Calibration Meter Gamma		1.0000	

Standardized Factors/Conversions		
Temperature	528	R
Pressure	29.92	in Hg
K_1	17.647	R/in Hg

<<<<<<<Your reference meter here

Calibration Data

Run Time	Metering Console						Reference Meter				
	Manometer	Volume	Volume	Sample	Outlet Temp	Outlet Temp	Volume	Volume	Sample Volume	Outlet Temp	Outlet Temp
Elapsed	ΔH	Initial	Final	Volume	Initial	Final	Initial	Final		Initial	Final
Θ minutes	P_m in H_2O	V_{mi} cubic feet	V_{mf} cubic feet	V_m cubic feet	t_{Oi} °F	t_{Of} °F	V_{wi} cubic feet	V_{wf} cubic feet	V_w cubic feet	t_{wi} °F	t_{wf} °F
11.00	5.00	290.189	305.395	15.206	66	67	0.000	15.064	15.064	68	68
11.00	3.00	305.395	317.295	11.900	67	67	0.000	11.677	11.677	68	68
10.00	2.00	317.295	326.050	8.755	68	69	0.000	8.642	8.642	68	69
10.00	1.00	326.050	332.310	6.260	70	71	0.000	6.086	6.086	70	71
10.00	0.50	332.310	336.630	4.320	71	71	0.000	4.207	4.207	71	72

Results

Standardized Data				Dry Gas Meter				
Dry Gas Meter		Calibration Meter		Calibration Factor		Flowrate	$\Delta H_@$	
				Value	Variation			
$V_{m(std)}$ cubic feet	$Q_{m(std)}$ ft^3/min	$V_{w(std)}$ cubic feet	$Q_{w(std)}$ ft^3/min	Y	ΔY	$Q_{m(std)(corr)}$ ft^3/min	$\Delta H_@$ in H_2O	$\Delta\Delta H_@$
13.739	1.249	13.388	1.217	0.9744	0.001	1.217	1.694	-0.027
10.684	0.971	10.378	0.943	0.9714	-0.002	0.943	1.689	-0.031
7.816	0.782	7.673	0.767	0.9817	0.008	0.767	1.698	-0.022
5.552	0.555	5.383	0.538	0.9696	-0.004	0.538	1.718	-0.002
3.823	0.382	3.714	0.371	0.9716	-0.002	0.371	1.803	0.083
Pre-test Y	0.9647	% Deviation	PASS	**0.9737**	**Y Average**		**1.720**	**$\Delta H_@$ Average**

Note: For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is +-0.02.

Note: For $DH_@$, orifice pressure differential that equates to 0.75cfm (0.0212m^3/min) at standard temperature and pressure, acceptable tolerance of individual values from the average is +-0.2inches (5.1mm) H_20.

Initials RTM Date 2-Mar-23

RTM

APEX INSTRUMENTS · 204 Technology Park Lane · Fuquay-Varina, North Carolina 27526 · (919) 557-7300 · FAX (919) 557-7110

APEX INSTRUMENTS

METERBOX CALIBRATION USING REFERENCE DGM

Meter Console Information	
Console Model Number	Box 10
Console Serial Number	0028-052711-1
DGM Model Number	SK25R-Q58
DGM Serial Number	A2003246

Calibration Conditions			
Date	Time	31-Mar-23	12:18
Barometric Pressure		26.69	in Hg
Calibration Technician		KAD	
Calibration Meter Gamma		1.0000	

Standardized Factors/Conversions		
Temperature	528	R
Pressure	29.92	in Hg
K_1	17.647	R/in Hg

<<<<<<<Your reference meter here

Calibration Data

Run Time	Metering Console						Reference Meter				
	Manometer	Volume	Volume	Sample	Outlet Temp	Outlet Temp	Volume	Volume	Sample Volume	Outlet Temp	Outlet Temp
Elapsed	ΔH	Initial	Final	Volume	Initial	Final	Initial	Final		Initial	Final
Θ minutes	P_m in H_2O	V_{mi} cubic feet	V_{mf} cubic feet	V_m cubic feet	t_{Oi} °F	t_{Of} °F	V_{wi} cubic feet	V_{wf} cubic feet	V_w cubic feet	t_{wi} °F	t_{wf} °F
10.00	6.00	881.700	896.985	15.285	74	77	0.000	15.041	15.041	76	76
22.00	3.00	897.400	921.238	23.838	77	80	0.000	23.165	23.165	76	77
21.50	2.00	921.600	940.484	18.884	80	81	0.000	18.252	18.252	77	77
10.00	1.00	940.800	947.045	6.245	81	81	0.000	6.026	6.026	77	77
10.00	0.50	852.900	857.180	4.280	81	81	0.000	4.144	4.144	78	78

Results

Standardized Data				Dry Gas Meter				
Dry Gas Meter		Calibration Meter		Calibration Factor		Flowrate	$\Delta H_@$	
				Value	Variation			
$V_{m(std)}$ cubic feet	$Q_{m(std)}$ ft^3/min	$V_{w(std)}$ cubic feet	$Q_{w(std)}$ ft^3/min	Y	ΔY	$Q_{m(std)(corr)}$ ft^3/min	$\Delta H_@$ in H_2O	$\Delta\Delta H_@$
13.666	1.367	13.217	1.322	0.9671	-0.002	1.322	1.701	-0.062
21.022	0.956	20.337	0.924	0.9674	-0.001	0.924	1.729	-0.034
16.546	0.770	16.009	0.745	0.9675	-0.001	0.745	1.770	0.007
5.452	0.545	5.285	0.529	0.9694	0.001	0.529	1.755	-0.009
3.731	0.373	3.628	0.363	0.9723	0.004	0.363	1.862	0.099
Pre-test Y	0.9737	% Deviation	PASS	**0.9687**	**Y Average**		**1.763**	**$\Delta H_@$ Average**

Note: For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is +-0.02.

Note: For $DH_@$, orifice pressure differential that equates to 0.75cfm (0.0212m^3/min) at standard temperature and pressure, acceptable tolerance of individual values from the average is +-0.2inches (5.1mm) H_20.

Initials KAD Date 31-Mar-23

KAD

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APEX INSTRUMENTS
METERBOX CALIBRATION USING REFERENCE DGM

Meter Console Information	
Console Model Number	Box 11
Console Serial Number	2029
DGM Model Number	
DGM Serial Number	13966757

Calibration Conditions			
Date	Time	7-Apr-23	9:40
Barometric Pressure		26.92	in Hg
Calibration Technician		MTK	
Calibration Meter Gamma		1.0000	

<<<<<<<Your reference meter here

Standardized Factors/Conversions		
Temperature	528	R
Pressure	29.92	in Hg
K_1	17.647	R/in Hg

Calibration Data

Run Time	Metering Console						Reference Meter				
	Manometer	Volume	Volume	Sample	Outlet Temp	Outlet Temp	Volume	Volume	Sample Volume	Outlet Temp	Outlet Temp
Elapsed	ΔH	Initial	Final	Volume	Initial	Final	Initial	Final		Initial	Final
Θ minutes	P_m in H_2O	V_{mi} cubic feet	V_{mf} cubic feet	V_m cubic feet	t_{Oi} °F	t_{Of} °F	V_{wi} cubic feet	V_{wf} cubic feet	V_w cubic feet	t_{wi} °F	t_{wf} °F
12.00	8.00	966.215	986.221	20.006	72	72	0.000	20.005	20.005	67	73
10.00	6.00	986.389	1000.943	14.554	72	72	0.000	14.393	14.393	73	76
12.00	4.00	1.299	15.502	14.203	72	72	0.000	13.908	13.908	76	78
10.00	2.00	15.876	24.211	8.335	72	72	0.000	8.093	8.093	77	80
10.00	1.00	24.429	30.632	6.203	72	72	0.000	6.026	6.026	78	80

Results

Standardized Data				Dry Gas Meter				
Dry Gas Meter		Calibration Meter		Calibration Factor		Flowrate	$\Delta H_@$	
				Value	Variation			
$V_{m(std)}$ cubic feet	$Q_{m(std)}$ ft^3/min	$V_{w(std)}$ cubic feet	$Q_{w(std)}$ ft^3/min	Y	ΔY	$Q_{m(std)(corr)}$ ft^3/min	$\Delta H_@$ in H_2O	$\Delta\Delta H_@$
18.255	1.521	17.931	1.494	0.9822	0.018	1.494	1.801	-0.061
13.209	1.321	12.792	1.279	0.9684	0.004	1.279	1.843	-0.019
12.821	1.068	12.303	1.025	0.9596	-0.005	1.025	1.913	0.051
7.484	0.748	7.140	0.714	0.9540	-0.010	0.714	1.972	0.110
5.554	0.555	5.311	0.531	0.9563	-0.008	0.531	1.782	-0.080
Pre-test Y	0.9708	% Deviation	PASS	**0.9641**	**Y Average**		**1.862**	**$\Delta H_@$ Average**

Note: For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is +-0.02.

Note: For $DH_@$, orifice pressure differential that equates to 0.75cfm (0.0212m^3/min) at standard temperature and pressure, acceptable tolerance of individual values from the average is +-0.2inches (5.1mm) H_20.

Initials AJV Date 7-Apr-23

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APEX INSTRUMENTS
METERBOX CALIBRATION USING REFERENCE DGM

Meter Console Information	
Console Model Number	Box 11
Console Serial Number	2029
DGM Model Number	
DGM Serial Number	13966757

Calibration Conditions			
Date	Time	17-Dec-22	12:51
Barometric Pressure		25.92	in Hg
Calibration Technician		MTK	
Calibration Meter Gamma		1.0000	

<<<<<<<Your reference meter here

Standardized Factors/Conversions		
Temperature	528	R
Pressure	29.92	in Hg
K_1	17.647	R/in Hg

Calibration Data

Run Time	Metering Console						Reference Meter				
	Manometer	Volume	Volume	Sample	Outlet Temp	Outlet Temp	Volume	Volume	Sample Volume	Outlet Temp	Outlet Temp
Elapsed	ΔH	Initial	Final	Volume	Initial	Final	Initial	Final		Initial	Final
Θ minutes	P_m in H_2O	V_{mi} cubic feet	V_{mf} cubic feet	V_m cubic feet	t_{Oi} °F	t_{Of} °F	V_{wi} cubic feet	V_{wf} cubic feet	V_w cubic feet	t_{wi} °F	t_{wf} °F
10.00	6.00	83.005	97.750	14.745	62	65	0.000	14.602	14.602	65	65
14.00	3.00	97.940	112.630	14.690	65	68	0.000	14.335	14.335	65	67
15.00	2.00	113.100	125.770	12.670	68	70	0.000	12.289	12.289	67	67
10.00	1.00	126.100	132.190	6.090	70	71	0.000	5.880	5.880	67	68
10.00	0.50	132.500	136.830	4.330	71	72	0.000	4.163	4.163	68	67

Results

Standardized Data				Dry Gas Meter				
Dry Gas Meter		Calibration Meter		Calibration Factor		Flowrate	$\Delta H_@$	
				Value	Variation			
$V_{m(std)}$ cubic feet	$Q_{m(std)}$ ft^3/min	$V_{w(std)}$ cubic feet	$Q_{w(std)}$ ft^3/min	Y	ΔY	$Q_{m(std)(corr)}$ ft^3/min	$\Delta H_@$ in H_2O	$\Delta\Delta H_@$
13.103	1.310	12.722	1.272	0.9710	0.002	1.272	1.823	-0.042
12.871	0.919	12.465	0.890	0.9685	0.000	0.890	1.851	-0.014
11.018	0.735	10.666	0.711	0.9681	-0.001	0.711	1.925	0.060
5.266	0.527	5.099	0.510	0.9682	0.000	0.510	1.867	0.002
3.732	0.373	3.610	0.361	0.9674	-0.001	0.361	1.859	-0.006
Pre-test Y	0.9690	% Deviation	PASS	**0.9686**	Y Average		**1.865**	$\Delta H_@$ Average

Note: For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is +-0.02.

Note: For $DH_@$, orifice pressure differential that equates to 0.75cfm (0.0212m^3/min) at standard temperature and pressure, acceptable tolerance of individual values from the average is +-0.2inches (5.1mm) H_20.

Initials MTK Date 17-Dec-22

MTK

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APEX INSTRUMENTS
METERBOX CALIBRATION USING REFERENCE DGM

Meter Console Information	
Console Model Number	Box 12
Console Serial Number	2199-D
DGM Model Number	Itron
DGM Serial Number	481

Calibration Conditions			
Date	Time	20-Apr-23	9:10
Barometric Pressure		26.23	in Hg
Calibration Technician		JCR	
Calibration Meter Gamma		1.0000	

Standardized Factors/Conversions		
Temperature	528	R
Pressure	29.92	in Hg
K_1	17.647	R/in Hg

<<<<<<<Your reference meter here

Calibration Data

Run Time	Metering Console						Reference Meter				
	Manometer	Volume	Volume	Sample	Outlet Temp	Outlet Temp	Volume	Volume	Sample Volume	Outlet Temp	Outlet Temp
Elapsed	ΔH	Initial	Final	Volume	Initial	Final	Initial	Final		Initial	Final
Θ minutes	P_m in H_2O	V_{mi} cubic feet	V_{mf} cubic feet	V_m cubic feet	t_{Oi} °F	t_{Of} °F	V_{wi} cubic feet	V_{wf} cubic feet	V_w cubic feet	t_{wi} °F	t_{wf} °F
15.00	6.00	0.000	20.346	20.346	67	68	0.000	21.671	21.671	70	70
10.00	3.00	0.000	9.810	9.810	68	71	0.000	10.212	10.212	70	70
10.00	2.00	0.000	8.042	8.042	71	73	0.000	8.306	8.306	70	71
10.00	1.00	0.000	5.759	5.759	73	74	0.000	5.900	5.900	71	71
10.00	0.50	0.000	4.085	4.085	74	75	0.000	4.180	4.180	71	72

Results

Standardized Data				Dry Gas Meter				
Dry Gas Meter		Calibration Meter		Calibration Factor		Flowrate	$\Delta H_@$	
				Value	Variation			
$V_{m(std)}$ cubic feet	$Q_{m(std)}$ ft^3/min	$V_{w(std)}$ cubic feet	$Q_{w(std)}$ ft^3/min	Y	ΔY	$Q_{m(std)(corr)}$ ft^3/min	$\Delta H_@$ in H_2O	$\Delta\Delta H_@$
18.154	1.210	18.927	1.262	1.0426	0.011	1.262	1.862	0.008
8.648	0.865	8.918	0.892	1.0313	0.000	0.892	1.856	0.002
7.036	0.704	7.247	0.725	1.0300	-0.002	0.725	1.865	0.011
5.011	0.501	5.143	0.514	1.0264	-0.005	0.514	1.846	-0.007
3.543	0.354	3.640	0.364	1.0275	-0.004	0.364	1.840	-0.014
Pre-test Y	1.0267	% Deviation	PASS	**1.0316**	Y Average		**1.854**	$\Delta H_@$ Average

Note: For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is +-0.02.

Note: For $DH_@$, orifice pressure differential that equates to 0.75cfm (0.0212m^3/min) at standard temperature and pressure, acceptable tolerance of individual values from the average is +-0.2inches (5.1mm) H_20.

Initials JCR Date 20-Apr-23

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APEX INSTRUMENTS
METERBOX CALIBRATION USING REFERENCE DGM

Meter Console Information	
Console Model Number	Box 12
Console Serial Number	2199-D
DGM Model Number	Itron
DGM Serial Number	481

Calibration Conditions			
Date	Time	24-Feb-23	15:18
Barometric Pressure		26.02	in Hg
Calibration Technician		ARB	
Calibration Meter Gamma		1.0000	

Standardized Factors/Conversions		
Temperature	528	R
Pressure	29.92	in Hg
K_1	17.647	R/in Hg

<<<<<<<Your reference meter here

Calibration Data											
Run Time	Metering Console						Reference Meter				
	Manometer	Volume	Volume	Sample	Outlet Temp	Outlet Temp	Volume	Volume	Sample Volume	Outlet Temp	Outlet Temp
Elapsed	ΔH	Initial	Final	Volume	Initial	Final	Initial	Final		Initial	Final
Θ minutes	P_m in H_2O	V_{mi} cubic feet	V_{mf} cubic feet	V_m cubic feet	t_{Oi} °F	t_{Of} °F	V_{wi} cubic feet	V_{wf} cubic feet	V_w cubic feet	t_{wi} °F	t_{wf} °F
10.00	6.00	0.000	13.956	13.956	70	70	0.000	14.638	14.638	75	74
10.00	3.00	0.000	10.054	10.054	72	74	0.000	10.508	10.508	74	74
10.00	2.00	0.000	8.112	8.112	74	73	0.000	8.406	8.406	74	73
10.00	1.00	0.000	5.917	5.917	73	73	0.000	6.087	6.087	73	73
10.00	0.50	0.000	4.226	4.226	70	74	0.000	4.329	4.329	74	73

Results								
Standardized Data				Dry Gas Meter				
Dry Gas Meter		Calibration Meter		Calibration Factor		Flowrate	$\Delta H_@$	
				Value	Variation			
$V_{m(std)}$ cubic feet	$Q_{m(std)}$ ft^3/min	$V_{w(std)}$ cubic feet	$Q_{w(std)}$ ft^3/min	Y	ΔY	$Q_{m(std)(corr)}$ ft^3/min	$\Delta H_@$ in H_2O	$\Delta\Delta H_@$
12.296	1.230	12.575	1.258	1.0227	-0.004	1.258	1.851	0.051
8.735	0.873	9.036	0.904	1.0344	0.008	0.904	1.782	-0.018
7.021	0.702	7.235	0.724	1.0304	0.004	0.724	1.851	0.052
5.112	0.511	5.244	0.524	1.0258	-0.001	0.524	1.764	-0.036
3.653	0.365	3.726	0.373	1.0200	-0.007	0.373	1.750	-0.049
Pre-test Y	1.0343	% Deviation	PASS	**1.0267**	**Y Average**		**1.800**	**$\Delta H_@$ Average**

Note: For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is +-0.02.

Note: For $DH_@$, orifice pressure differential that equates to 0.75cfm (0.0212m^3/min) at standard temperature and pressure, acceptable tolerance of individual values from the average is +-0.2inches (5.1mm) H_20.

Initials ARB ARB Date 24-Feb-23

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APEX INSTRUMENTS
METERBOX CALIBRATION USING REFERENCE DGM

Meter Console Information	
Console Model Number	Box 13
Console Serial Number	2200-D
DGM Model Number	Itron
DGM Serial Number	343

Calibration Conditions			
Date	Time	6-Mar-23	15:09
Barometric Pressure		26.06	in Hg
Calibration Technician		ARB	
Calibration Meter Gamma		1.0000	

Standardized Factors/Conversions		
Temperature	528	R
Pressure	29.92	in Hg
K_1	17.647	R/in Hg

<<<<<<<Your reference meter here

Calibration Data											
Run Time	Metering Console						Reference Meter				
	Manometer	Volume	Volume	Sample	Outlet Temp	Outlet Temp	Volume	Volume	Sample Volume	Outlet Temp	Outlet Temp
Elapsed	ΔH	Initial	Final	Volume	Initial	Final	Initial	Final		Initial	Final
Θ minutes	P_m in H_2O	V_{mi} cubic feet	V_{mf} cubic feet	V_m cubic feet	t_{Oi} °F	t_{Of} °F	V_{wi} cubic feet	V_{wf} cubic feet	V_w cubic feet	t_{wi} °F	t_{wf} °F
10.00	6.00	0.000	14.023	14.023	51	52	0.000	14.651	14.651	54	53
10.00	3.00	0.000	10.111	10.111	52	53	0.000	10.356	10.356	53	53
10.00	2.00	0.000	8.333	8.333	53	54	0.000	8.473	8.473	53	54
10.00	1.00	0.000	5.985	5.985	54	55	0.000	6.042	6.042	54	55
13.00	0.50	0.000	5.539	5.539	55	56	0.000	5.569	5.569	55	55

Results								
Standardized Data				Dry Gas Meter				
Dry Gas Meter		Calibration Meter		Calibration Factor		Flowrate	$\Delta H_@$	
				Value	Variation			
$V_{m(std)}$ cubic feet	$Q_{m(std)}$ ft^3/min	$V_{w(std)}$ cubic feet	$Q_{w(std)}$ ft^3/min	Y	ΔY	$Q_{m(std)(corr)}$ ft^3/min	$\Delta H_@$ in H_2O	$\Delta\Delta H_@$
12.821	1.282	13.121	1.312	1.0234	0.011	1.312	1.764	0.021
9.150	0.915	9.284	0.928	1.0147	0.002	0.928	1.758	0.015
7.505	0.751	7.588	0.759	1.0110	-0.001	0.759	1.751	0.008
5.365	0.536	5.401	0.540	1.0068	-0.005	0.540	1.725	-0.018
4.948	0.381	4.973	0.383	1.0050	-0.007	0.383	1.716	-0.027
Pre-test Y	1.0106	% Deviation	PASS	**1.0122**	**Y Average**		**1.743**	**$\Delta H_@$ Average**

Note: For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is +-0.02.

Note: For $DH_@$, orifice pressure differential that equates to 0.75cfm (0.0212m^3/min) at standard temperature and pressure, acceptable tolerance of individual values from the average is +-0.2inches (5.1mm) H_20.

Initials ARB ARB Date 6-Mar-23

APEX INSTRUMENTS
METERBOX CALIBRATION USING REFERENCE DGM

Meter Console Information	
Console Model Number	Box 13
Console Serial Number	2200-D
DGM Model Number	Itron
DGM Serial Number	343

Calibration Conditions			
Date	Time	6-Apr-23	15:40
Barometric Pressure		26.06	in Hg
Calibration Technician		AJV	
Calibration Meter Gamma		1.0000	

<<<<<<<Your reference meter here

Standardized Factors/Conversions		
Temperature	528	R
Pressure	29.92	in Hg
K_1	17.647	R/in Hg

Calibration Data

Run Time	Metering Console						Reference Meter				
	Manometer	Volume	Volume	Sample	Outlet Temp	Outlet Temp	Volume	Volume	Sample Volume	Outlet Temp	Outlet Temp
Elapsed	ΔH	Initial	Final	Volume	Initial	Final	Initial	Final		Initial	Final
Θ minutes	P_m in H_2O	V_{mi} cubic feet	V_{mf} cubic feet	V_m cubic feet	t_{Oi} °F	t_{Of} °F	V_{wi} cubic feet	V_{wf} cubic feet	V_w cubic feet	t_{wi} °F	t_{wf} °F
10.00	6.00	0.000	13.894	13.894	71	71	0.000	14.493	14.493	68	69
10.00	3.00	0.000	9.762	9.762	71	71	0.000	9.998	9.998	69	69
10.00	2.00	0.000	7.836	7.836	71	70	0.000	7.970	7.970	69	70
10.00	1.00	0.000	5.899	5.899	70	70	0.000	5.958	5.958	70	71
10.00	0.50	0.000	4.258	4.258	70	70	0.000	4.276	4.276	71	71

Results

Standardized Data				Dry Gas Meter				
Dry Gas Meter		Calibration Meter		Calibration Factor		Flowrate	$\Delta H_@$	
				Value	Variation	Std & Corr	0.75 SCFM	Variation
$V_{m(std)}$ cubic feet	$Q_{m(std)}$ ft^3/min	$V_{w(std)}$ cubic feet	$Q_{w(std)}$ ft^3/min	Y	ΔY	$Q_{m(std)(corr)}$ ft^3/min	$\Delta H_@$ in H_2O	$\Delta\Delta H_@$
12.237	1.224	12.611	1.261	1.0306	0.017	1.261	1.839	-0.046
8.526	0.853	8.692	0.869	1.0194	0.005	0.869	1.936	0.051
6.831	0.683	6.922	0.692	1.0133	-0.001	0.692	2.037	0.152
5.133	0.513	5.165	0.516	1.0061	-0.008	0.516	1.831	-0.054
3.700	0.370	3.704	0.370	1.0010	-0.013	0.370	1.781	-0.104
Pre-test Y	1.0122	% Deviation	PASS	**1.0141**	**Y Average**		**1.885**	**$\Delta H_@$ Average**

Note: For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is +-0.02.

Note: For $DH_@$, orifice pressure differential that equates to 0.75cfm (0.0212m^3/min) at standard temperature and pressure, acceptable tolerance of individual values from the average is +-0.2inches (5.1mm) H_20.

Initials AJV Date 6-Apr-23

AJV

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APEX INSTRUMENTS
METERBOX CALIBRATION USING REFERENCE DGM

Meter Console Information	
Console Model Number	BOX 15
Console Serial Number	6688
DGM Model Number	SK25R
DGM Serial Number	A2003246

Calibration Conditions			
Date	Time	17-Mar-23	16:00
Barometric Pressure		27.04	in Hg
Calibration Technician		JCA	
Calibration Meter Gamma		1.0000	

Standardized Factors/Conversions		
Temperature	528	R
Pressure	29.92	in Hg
K_1	17.647	R/in Hg

<<<<<<<Your reference meter here

Calibration Data											
Run Time	Metering Console						Reference Meter				
	Manometer	Volume	Volume	Sample	Outlet Temp	Outlet Temp	Volume	Volume	Sample Volume	Outlet Temp	Outlet Temp
Elapsed	ΔH	Initial	Final	Volume	Initial	Final	Initial	Final		Initial	Final
Θ minutes	P_m in H_2O	V_{mi} cubic feet	V_{mf} cubic feet	V_m cubic feet	t_{Oi} °F	t_{Of} °F	V_{wi} cubic feet	V_{wf} cubic feet	V_w cubic feet	t_{wi} °F	t_{wf} °F
11.00	6.00	0.000	14.982	14.982	64	65	0.000	15.283	15.283	62	63
10.00	3.00	0.000	9.693	9.693	65	66	0.000	9.786	9.786	63	64
10.00	2.00	0.000	7.876	7.876	66	67	0.000	7.926	7.926	64	64
10.50	1.00	0.000	5.739	5.739	67	67	0.000	5.758	5.758	64	65
10.00	0.50	0.000	4.184	4.184	67	67	0.000	4.193	4.193	65	65

Results								
Standardized Data				Dry Gas Meter				
Dry Gas Meter		Calibration Meter		Calibration Factor		Flowrate	$\Delta H_@$	
				Value	Variation	Std & Corr	0.75 SCFM	Variation
$V_{m(std)}$ cubic feet	$Q_{m(std)}$ ft^3/min	$V_{w(std)}$ cubic feet	$Q_{w(std)}$ ft^3/min	Y	ΔY	$Q_{m(std)(corr)}$ ft^3/min	$\Delta H_@$ in H_2O	$\Delta\Delta H_@$
13.853	1.259	13.957	1.269	1.0076	0.002	1.269	1.909	-0.011
8.873	0.887	8.920	0.892	1.0052	0.000	0.892	1.927	0.008
7.177	0.718	7.218	0.722	1.0057	0.000	0.722	1.959	0.039
5.211	0.496	5.238	0.499	1.0053	0.000	0.499	2.048	0.129
3.794	0.379	3.811	0.381	1.0047	-0.001	0.381	1.754	-0.165
Pre-test Y	1.0040	% Deviation	PASS	**1.0057**	**Y Average**		**1.919**	**$\Delta H_@$ Average**

Note: For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is +-0.02.

Note: For $DH_@$, orifice pressure differential that equates to 0.75cfm (0.0212m^3/min) at standard temperature and pressure, acceptable tolerance of individual values from the average is +-0.2inches (5.1mm) H_20.

Initials JCA JCA Date 17-Mar-23

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APEX INSTRUMENTS
METERBOX CALIBRATION USING REFERENCE DGM

Meter Console Information	
Console Model Number	BOX 15
Console Serial Number	6688
DGM Model Number	SK25R
DGM Serial Number	A2003246

Calibration Conditions			
Date	Time	31-Mar-23	10:37
Barometric Pressure		26.61	in Hg
Calibration Technician		KAD	
Calibration Meter Gamma		1.0000	

Standardized Factors/Conversions		
Temperature	528	R
Pressure	29.92	in Hg
K_1	17.647	R/in Hg

<<<<<<<Your reference meter here

Calibration Data											
Run Time	Metering Console						Reference Meter				
	Manometer	Volume	Volume	Sample	Outlet Temp	Outlet Temp	Volume	Volume	Sample Volume	Outlet Temp	Outlet Temp
Elapsed	ΔH	Initial	Final	Volume	Initial	Final	Initial	Final		Initial	Final
Θ minutes	P_m in H_2O	V_{mi} cubic feet	V_{mf} cubic feet	V_m cubic feet	t_{Oi} °F	t_{Of} °F	V_{wi} cubic feet	V_{wf} cubic feet	V_w cubic feet	t_{wi} °F	t_{wf} °F
10.00	6.00	0.000	13.715	13.715	64	69	0.000	13.996	13.996	66	67
10.00	3.00	0.000	9.892	9.892	69	71	0.000	9.957	9.957	67	68
10.00	2.00	0.000	8.065	8.065	71	72	0.000	8.018	8.018	68	69
11.00	1.00	0.000	6.457	6.457	72	73	0.000	6.444	6.444	69	70
23.50	0.50	0.000	9.887	9.887	73	74	0.000	9.858	9.858	70	71

Results								
Standardized Data				Dry Gas Meter				
Dry Gas Meter		Calibration Meter		Calibration Factor		Flowrate	$\Delta H_@$	
				Value	Variation			
$V_{m(std)}$ cubic feet	$Q_{m(std)}$ ft^3/min	$V_{w(std)}$ cubic feet	$Q_{w(std)}$ ft^3/min	Y	ΔY	$Q_{m(std)(corr)}$ ft^3/min	$\Delta H_@$ in H_2O	$\Delta\Delta H_@$
12.435	1.244	12.483	1.248	1.0039	0.003	1.248	1.933	0.046
8.837	0.884	8.864	0.886	1.0030	0.002	0.886	1.904	0.018
7.165	0.716	7.124	0.712	0.9943	-0.006	0.712	1.960	0.073
5.710	0.519	5.715	0.520	1.0009	0.000	0.520	1.839	-0.048
8.715	0.371	8.726	0.371	1.0013	0.001	0.371	1.797	-0.090
Pre-test Y	1.0057	% Deviation	PASS	**1.0007**	**Y Average**		**1.887**	**$\Delta H_@$ Average**

Note: For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is +-0.02.

Note: For $DH_@$, orifice pressure differential that equates to 0.75cfm (0.0212m^3/min) at standard temperature and pressure, acceptable tolerance of individual values from the average is +-0.2inches (5.1mm) H_20.

Initials KAD Date 31-Mar-23

KAD

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APEX INSTRUMENTS
METERBOX CALIBRATION USING REFERENCE DGM

Meter Console Information	
Console Model Number	SB -2
Console Serial Number	1602002
DGM Model Number	S-110
DGM Serial Number	234728

Calibration Conditions			
Date	Time	10-Jan-23	9:00
Barometric Pressure		28.84	in Hg
Calibration Technician		MTK	
Calibration Meter Gamma		1.0000	

Standardized Factors/Conversions		
Temperature	528	R
Pressure	29.92	in Hg
K_1	17.647	R/in Hg

<<<<<<<Your reference meter here

Calibration Data

Run Time	Metering Console						Reference Meter				
	Manometer	Volume	Volume	Sample	Outlet Temp	Outlet Temp	Volume	Volume	Sample Volume	Outlet Temp	Outlet Temp
Elapsed	ΔH	Initial	Final	Volume	Initial	Final	Initial	Final		Initial	Final
Θ minutes	P_m in H_2O	V_{mi} cubic feet	V_{mf} cubic feet	V_m cubic feet	t_{Oi} °F	t_{Of} °F	V_{wi} cubic feet	V_{wf} cubic feet	V_w cubic feet	t_{wi} °F	t_{wf} °F
10.00	6.00	956.305	971.170	14.865	79	80	0.000	14.972	14.972	72	73
12.00	3.00	971.415	983.990	12.575	80	80	0.000	12.522	12.522	73	73
12.00	2.00	984.180	994.450	10.270	80	81	0.000	10.204	10.204	73	73
10.00	1.00	995.000	1001.100	6.100	81	80	0.000	6.044	6.044	73	73
10.00	0.50	1.300	5.535	4.235	80	79	0.000	4.204	4.204	73	73

Results

Standardized Data				Dry Gas Meter				
Dry Gas Meter		Calibration Meter		Calibration Factor		Flowrate	$\Delta H_@$	
				Value	Variation			
$V_{m(std)}$ cubic feet	$Q_{m(std)}$ ft^3/min	$V_{w(std)}$ cubic feet	$Q_{w(std)}$ ft^3/min	Y	ΔY	$Q_{m(std)(corr)}$ ft^3/min	$\Delta H_@$ in H_2O	$\Delta\Delta H_@$
14.238	1.424	14.310	1.431	1.0051	0.002	1.431	1.556	-0.045
11.942	0.995	11.956	0.996	1.0012	-0.002	0.996	1.603	0.002
9.720	0.810	9.743	0.812	1.0024	0.000	0.812	1.608	0.007
5.758	0.576	5.771	0.577	1.0022	-0.001	0.577	1.592	-0.010
4.000	0.400	4.014	0.401	1.0034	0.001	0.401	1.648	0.047
Pre-test Y	1.0010	% Deviation	PASS	**1.0028**	**Y Average**		**1.601**	**$\Delta H_@$ Average**

Note: For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is +-0.02.

Note: For $DH_@$, orifice pressure differential that equates to 0.75cfm (0.0212m^3/min) at standard temperature and pressure, acceptable tolerance of individual values from the average is +-0.2inches (5.1mm) H_20.

Initials MTK Date 10-Jan-23

MTK

APEX INSTRUMENTS
METERBOX CALIBRATION USING REFERENCE DGM

Meter Console Information	
Console Model Number	SB - 2
Console Serial Number	1602002
DGM Model Number	S-110
DGM Serial Number	234728

Calibration Conditions			
Date	Time	7-Apr-23	11:00
Barometric Pressure		28.84	in Hg
Calibration Technician		AJV	
Calibration Meter Gamma		1.0000	

<<<<<<<Your reference meter here

Standardized Factors/Conversions		
Temperature	528	R
Pressure	29.92	in Hg
K_1	17.647	R/in Hg

Calibration Data

Run Time	Metering Console						Reference Meter				
	Manometer	Volume	Volume	Sample	Outlet Temp	Outlet Temp	Volume	Volume	Sample Volume	Outlet Temp	Outlet Temp
Elapsed	ΔH	Initial	Final	Volume	Initial	Final	Initial	Final		Initial	Final
Θ minutes	P_m in H_2O	V_{mi} cubic feet	V_{mf} cubic feet	V_m cubic feet	t_{Oi} °F	t_{Of} °F	V_{wi} cubic feet	V_{wf} cubic feet	V_w cubic feet	t_{wi} °F	t_{wf} °F
10.00	8.00	71.905	88.882	16.977	72	72	0.000	17.323	17.323	71	75
10.00	6.00	89.398	104.125	14.727	72	72	0.000	14.829	14.829	73	76
10.00	4.00	104.405	116.420	12.015	72	72	0.000	11.9827	11.983	76	78
11.00	2.00	144.810	154.382	9.572	70	70	0.000	9.636	9.636	67	70
10.00	1.00	128.735	134.777	6.042	72	72	0.000	6.004	6.004	76	76

Results

Standardized Data				Dry Gas Meter				
Dry Gas Meter		Calibration Meter		Calibration Factor		Flowrate	$\Delta H_@$	
				Value	Variation	Std & Corr	0.75 SCFM	Variation
$V_{m(std)}$ cubic feet	$Q_{m(std)}$ ft^3/min	$V_{w(std)}$ cubic feet	$Q_{w(std)}$ ft^3/min	Y	ΔY	$Q_{m(std)(corr)}$ ft^3/min	$\Delta H_@$ in H_2O	$\Delta\Delta H_@$
16.572	1.657	16.541	1.654	0.9981	0.008	1.654	1.575	-0.034
14.304	1.430	14.120	1.412	0.9871	-0.003	1.412	1.621	0.012
11.611	1.161	11.357	1.136	0.9781	-0.012	1.136	1.670	0.062
9.239	0.840	9.280	0.844	1.0045	0.014	0.844	1.519	-0.089
5.795	0.579	5.701	0.570	0.9838	-0.007	0.570	1.657	0.049
Pre-test Y	1.0028	% Deviation	PASS	**0.9903**	Y Average		**1.608**	$\Delta H_@$ Average

Note: For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is +-0.02.

Note: For $DH_@$, orifice pressure differential that equates to 0.75cfm (0.0212m^3/min) at standard temperature and pressure, acceptable tolerance of individual values from the average is +-0.2inches (5.1mm) H_20.

Initials AJV Date 7-Apr-23

AJV

Field Barometer Calibration Form

Project #: EFC223119

IN OFFICE PRE-TEST CALIBRATION

Reference Standard Used:

Standard ID	Serial number	Adjusted on:	Calibration due:
Helena mercury barometer	BIS01	3/24/2023	Must be properly adjusted prior to every use

Field Barometer Verification:

Barometer ID: TS1

Reference Value (in Hg)	Observed (in Hg)	Correction*	Tolerance (+/- 0.1 in Hg)**
25.90	25.85	-0.05	PASS

*Correction is the difference between the observed and reference values
**EPA Method 5, Section 6.1.2 and EPA Method 2, Section 6.5.

Technician: AJV

Date: 3/24/2023

Field Balance and Weights Calibration Form

BISON ENGINEERING, INC.

Project #: EFC223119

IN OFFICE PRE-TEST CHECKS

Date: 3/21/2023

Performed by: A. Van Sickle

Environmental conditions in the lab:

Temperature °F	Pressure "Hg
70	25.85

Reference Standard(s) Used:

Standard ID	Serial number(s)	Calibrated on:	Calibration due:
500g weight	10696	3/20/2023	3/20/2024
1kg and 2kg weight set	11078/11072	3/20/2023	3/20/2024

Verification of Field Balance Against Reference Standard Weights:

Field Balance ID: HLN FB-1

Nominal Value (g)	Observed (g)	Correction*	Tolerance (+/- 0.5g)**
500	500.0	0.0	PASS
1000	1000.3	0.3	PASS
2000	2000.4	0.4	PASS

Verification of Field Standard Weights :

Field Weights ID: HLN FW-1

Nominal Value (g)	Observed (g)	Correction*	Tolerance (+/- 0.5g)**
500	500.0	0.0	PASS
1000	999.7	0.3	PASS
2000	2000.0	0.0	PASS

*Correction is the difference between the observed and nominal mass values

**EPA Method 5, Section 6.3.4

ONSITE BALANCE VERIFICATION

Date: 3/27/2023
Performed by: ARB

Environmental conditions onsite:

Temperature °F	Pressure "Hg
~30	29.88

Field Balance Verification:
Balance ID: HLN FB-1
Weights ID: HLN FW-1

Nominal Value (g)	Observed (g)	Correction*	PASS/FAIL Tolerance (+/- 0.5g)
500	500.0	0.0	PASS
1000	1000.2	0.2	PASS
2000	2000.2	0.2	PASS

*Correction is the difference between the observed and nominal mass values

ONSITE BALANCE VERIFICATION

Date: 3/28/2023
Performed by: ARB

Environmental conditions onsite:

Temperature °F	Pressure "Hg
~35	29.41

Field Balance Verification:
Balance ID: HLN FB-1
Weights ID: HLN FW-1

Nominal Value (g)	Observed (g)	Correction*	PASS/FAIL Tolerance (+/- 0.5g)
500	500.0	0.0	PASS
1000	1000.0	0.0	PASS
2000	2000.1	0.1	PASS

*Correction is the difference between the observed and nominal mass values

ONSITE BALANCE VERIFICATION

Date: 3/29/2023
Performed by: ARB

Environmental conditions onsite:

Temperature °F	Pressure "Hg
~34	29.41

Field Balance Verification:
Balance ID: HLN FB-1
Weights ID: HLN FW-1

Nominal Value (g)	Observed (g)	Correction*	PASS/FAIL Tolerance (+/- 0.5g)
500	500.1	0.1	PASS
1000	1000.2	0.2	PASS
2000	2000.2	0.2	PASS

*Correction is the difference between the observed and nominal mass values

BISON ENGINEERING, INC.

Field Caliper Calibration Form

Project #: EFC223119

IN OFFICE PRE-TEST CHECKS

Date: 3/21/2023
Performed by: A. Van Sickle

Reference Standard Used:

Standard ID	Serial number	Calibrated on:	Calibration due:
HLN1 Aurora	77160806226	3/30/2022	3/30/2023

Caliper Verification:

Field Caliper ID: WS2
Inside Diameter

Reference Value (inches)	Observed (inches)	Correction*	Tolerance (+/- 0.0050 inch)
2.620	2.620	0.000	PASS

*Correction is the difference between the observed and reference values

Outside Diameter

Reference Value (inches)	Observed (inches)	Correction*	Tolerance (+/- 0.0050 inch)
4.790	4.790	0.000	PASS

Field Caliper ID: WS1
Inside Diameter

Reference Value (inches)	Observed (inches)	Correction*	Tolerance (+/- 0.0050 inch)
2.620	2.620	0.000	PASS

*Correction is the difference between the observed and reference values

Outside Diameter

Reference Value (inches)	Observed (inches)	Correction*	Tolerance (+/- 0.0050 inch)
4.790	4.790	0.000	PASS

*Correction is the difference between the observed and reference values

BISON ENGINEERING, INC.

Thermocouple Calibration Form

Project #: EFC223119

POST-TEST CHECKS

Reference Standard Used:

Standard ID	Serial number(s)	Calibrated on:	Calibration due:
Omega	T-318009	10/13/2022	10/13/2023

Temperature Meter Mode:

Thermocouple ID	Continuity (x = pass)	Observed Temp (°F)	Reference Temp (°F)	Correction*	Tolerance (+/- 2°F)**
Stack Temp (Bison 1)	x	71.0	70.5	0.5	PASS
Stack Temp (7C)	x	71.0	70.6	0.4	PASS
Stack Temp (8A)	x	70.0	70.7	0.7	PASS
Stack Temp (5B)	x	71.0	70.6	0.4	PASS
Stack Temp (7D)	x	71.0	72.0	1.0	PASS
Stack Temp (B5C)	x	72.0	71.6	0.4	PASS
Probe Liner (Bison 1)	x	71.0	70.5	0.5	PASS
Probe Liner (7C)	x	68.9	70.0	1.1	PASS
Probe Liner (8A)	x	68.8	70.1	1.3	PASS
Probe Liner (5B)	x	68.8	70.0	1.2	PASS
Probe Liner (7D)	x	72.0	72.0	0.0	PASS
Probe Liner (B5C)	x	72.0	71.6	0.4	PASS
Hot Box (HHB1)	x	71.0	70.8	0.2	PASS
Hot Box (HHB4)	x	72.0	70.8	1.2	PASS
Hot Box (HHB2)	x	71.0	70.8	0.2	PASS
Hot Box (HHB7)	x	71.0	70.8	0.2	PASS
GN2	x	70.0	70.8	0.8	PASS
GN4	x	70.0	70.8	0.8	PASS
GN6	x	70.0	70.8	0.8	PASS
GN8	x	71.0	70.8	0.2	PASS
GN3	x	71.0	70.8	0.2	PASS
GN5	x	71.0	70.8	0.2	PASS
DGM Outlet (Box 11)	x	71.0	72.0	1.0	PASS
DGM Outlet (Box 12)	x	70.0	72.0	2.0	PASS
DGM Outlet (Box 13)	x	70.0	72.0	2.0	PASS
DGM Outlet (SB-2)	x	71.0	72.0	1.0	PASS
DGM Outlet (Box 10)	x	71	71.6	0.6	PASS
DGM Outlet (Box 15)	x	72		0.4	PASS

Calibration Output Mode:

Switch the Omega from 'Meter Input' to 'Calibration Output' mode. Test the meter box temperature readout by sending a voltage output equivalent to a temperature similar to stack temperature.

Meter Box ID	Reference Temp Output (°F)	Meter Box Readout (°F)	Correction*	Tolerance (+/- 2°F)**
11	60.0	59	1.0	PASS
12		60	0.0	PASS
13		58	2.0	PASS
SB-2		59	1.0	PASS
10	60.0	59	1.0	PASS
15		60	0.0	PASS

*Correction is the difference between the observed and reference values
**Alt-011 6/21/94 Alternative Method 2 Thermocouple Calibration Procedure:
Continuity Check - confirm the thermocouple is reading at the tip by subjecting it to a change in temperature (e.g. removing it from the stack, or touching it with your hand).
Single-point temperature check at ambient temperature, or any temperature, within the range specified by the manufacturer.

Technician: KAD, ARB, JMK

Date: 5/5/2023, 5/19/2023, 5/31/2023

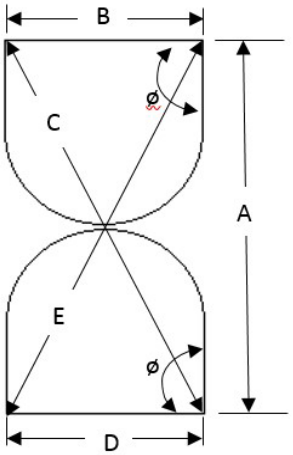
S-Type Pitot Tube Geometric Calibration

BISON ENGINEERING, INC.

Pitot ID: B5C

Date of Geometric Calibration (< 6 months): 12/20/2022

Effective Length (ft.) 5



A	0.85
B	0.39
C	0.95
D	0.39
E	0.93

$$\frac{a^2+b^2-c^2}{2ab}=\cos\emptyset$$

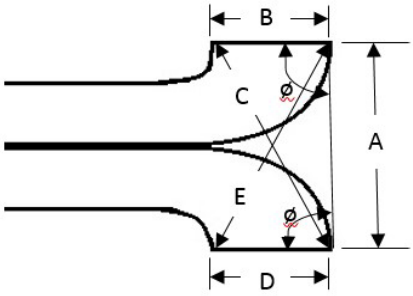
$$\frac{a^2+d^2-e^2}{2ad}=\cos\emptyset$$

ø	92.52

$(80° < \emptyset < 100°)$

ø	89.49

$(80° < \emptyset < 100°)$



A	0.85
B	0.65
C	1.04
D	0.63
E	1.05

$$\frac{a^2+b^2-c^2}{2ab}=\cos\emptyset$$

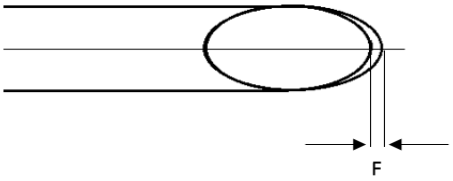
$$\frac{a^2+d^2-e^2}{2ad}=\cos\emptyset$$

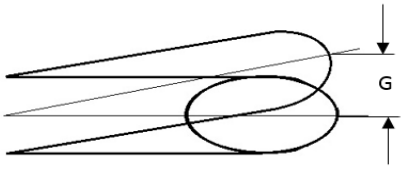
ø	86.40

$(85° < \emptyset < 95°)$

ø	88.27

$(85° < \emptyset < 95°)$





F=	0.000

(F < 0.125)

G=	0.000

(G < 0.032)

Results of the Post-Test Pitot Inspection (mark with x below)**:**

No change x

Damaged

New Calibration

Technician: KAD **Date:** 5/5/2023

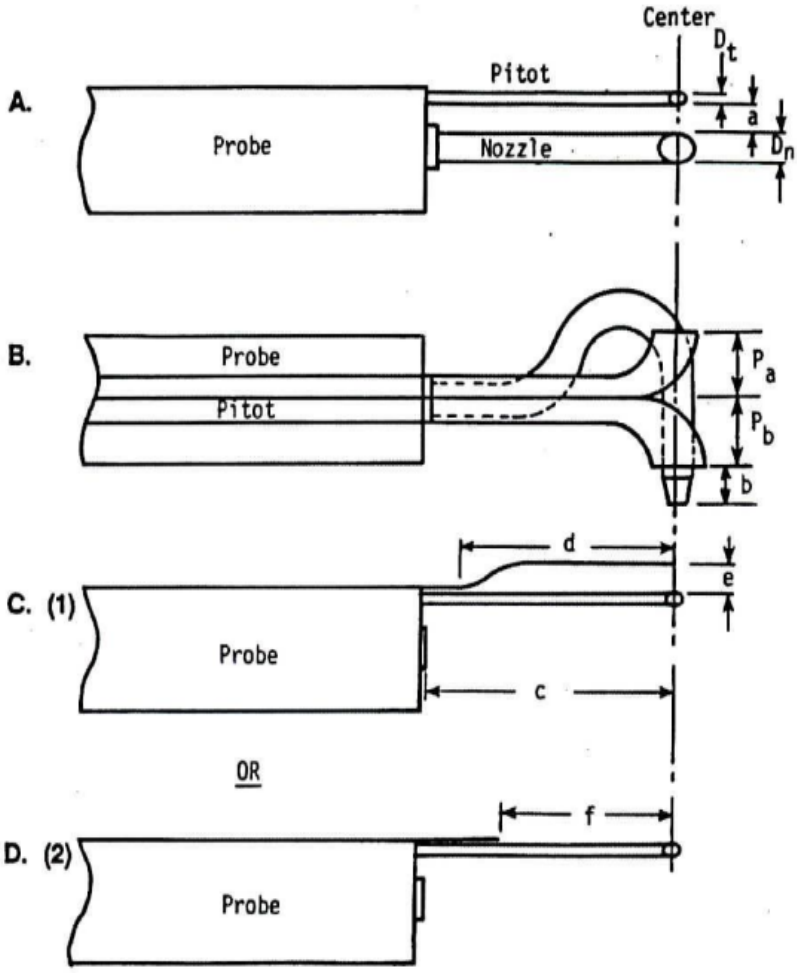
BISON ENGINEERING, INC.

Probe Calibration

Probe ID and Length: B5C

Date of calibration (< 6 months): 12/20/2022

Effective Length (ft.) 5



		Measure (Inch)
Dt:	0.38	**Dt = 0.187 to 0.375**
Dn:	0.50	**Dn = 0.5**
a:	0.83	**a ≥ 0.750**
Pa:	0.44	**Pa = Pb**
Pb:	0.44	
b:	0.50	**B ≥ 0**
c:	3.00	**c ≥ 3.0**
d:	5.75	**d ≥ 3.0**
e:	1.50	**e ≥ 0.750**
or		
f:	N/A	**f ≥ 2.0**

R

No change x

Damaged _____

New Calibration _____

Technician: KAD **Date:** 5/5/2023

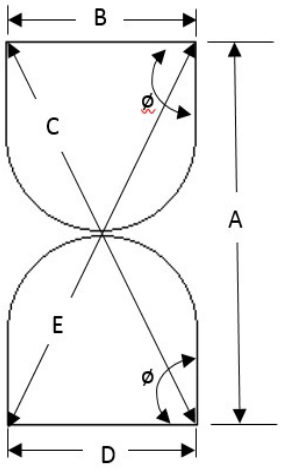
S-Type Pitot Tube Geometric Calibration

BISON ENGINEERING, INC.

Pitot ID: 5B

Date of Geometric Calibration (< 6 months): 5/26/2023

Effective Length (ft.) 5ft



A	0.89
B	0.37
C	0.97
D	0.37
E	0.96

$$\frac{a^2+b^2-c^2}{2ab}=\cos\emptyset$$

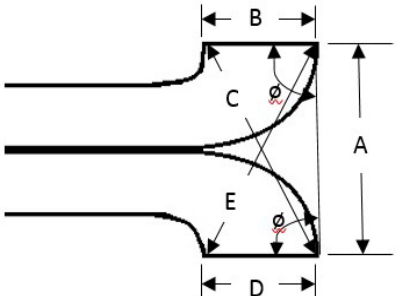
$$\frac{a^2+d^2-e^2}{2ad}=\cos\emptyset$$

ø	91.05

$(80° < \emptyset < 100°)$

ø	90.51

$(80° < \emptyset < 100°)$



A	0.88
B	0.75
C	1.19
D	0.75
E	1.18

$$\frac{a^2+b^2-c^2}{2ab}=\cos\emptyset$$

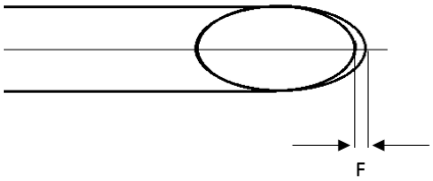
$$\frac{a^2+d^2-e^2}{2ad}=\cos\emptyset$$

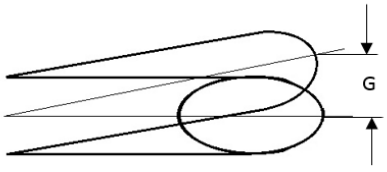
ø	93.41

$(85° < \emptyset < 95°)$

ø	92.17

$(85° < \emptyset < 95°)$





F=	0.081	(F < 0.125)	G=	0.000	(G < 0.032)

Results of the Post-Test Pitot Inspection (mark with x below)**:**

No change _____

Damaged _____

New Calibration x

Technician: ARB **Date:** 5/26/2023

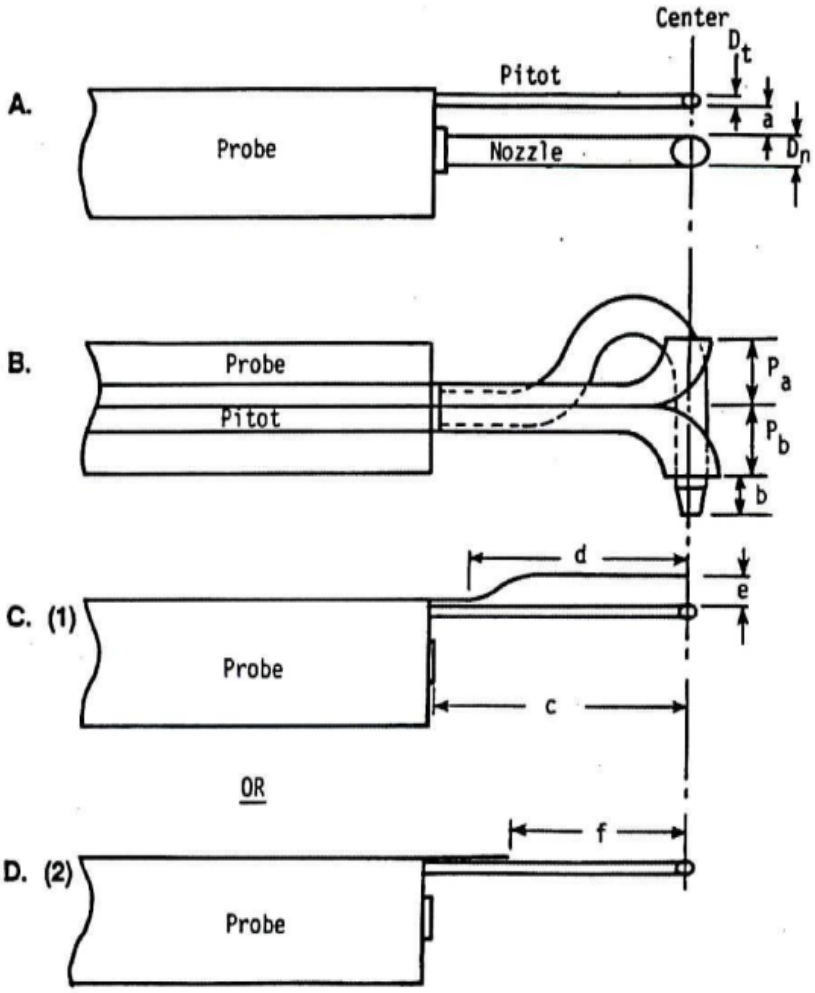
BISON ENGINEERING, INC.

Probe Calibration

Probe ID and Length: 5B

Date of calibration (< 6 months): 5/26/2023

Effective Length (ft.) 5ft



		Measure (Inch)
Dt:	0.38	**Dt = 0.187 to 0.375**
Dn:	0.50	**Dn = 0.5**
a:	0.77	**a ≥ 0.750**
Pa:	0.42	**Pa = Pb**
Pb:	0.42	
b:	0.18	**B ≥ 0**
c:	4.58	**c ≥ 3.0**
d:	6.08	**d ≥ 3.0**
e:	0.77	**e ≥ 0.750**
or		
f:		**f ≥ 2.0**

R

No change _____

Damaged _____

New Calibration x

Technician: ARB **Date:** 5/26/2023

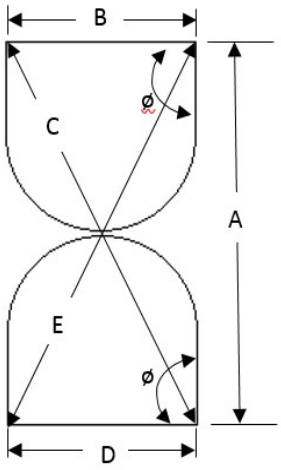
S-Type Pitot Tube Geometric Calibration

BISON ENGINEERING, INC.

Pitot ID: 7C

Date of Geometric Calibration (< 6 months): 5/26/2023

Effective Length (ft.) 7ft



A	0.88
B	0.38
C	0.95
D	0.38
E	0.95

$$\frac{a^2+b^2-c^2}{2ab}=\cos\emptyset$$

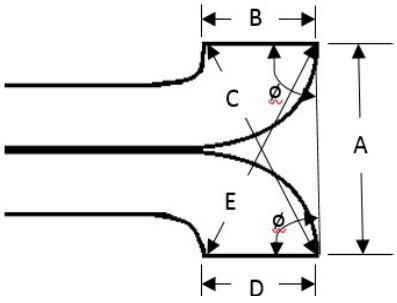
$$\frac{a^2+d^2-e^2}{2ad}=\cos\emptyset$$

ø	87.92

$(80° < \emptyset < 100°)$

ø	88.18

$(80° < \emptyset < 100°)$



A	0.88
B	0.61
C	1.11
D	0.61
E	1.09

$$\frac{a^2+b^2-c^2}{2ab}=\cos\emptyset$$

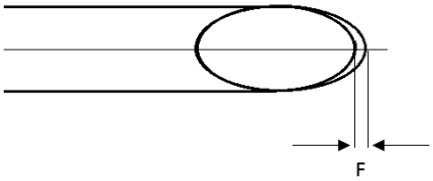
$$\frac{a^2+d^2-e^2}{2ad}=\cos\emptyset$$

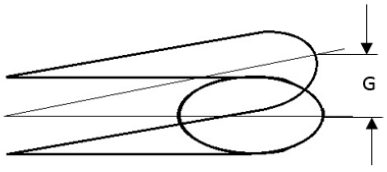
ø	94.72

$(85° < \emptyset < 95°)$

ø	92.08

$(85° < \emptyset < 95°)$





F=	0.062	(F < 0.125)	G=	0.000	(G < 0.032)

Results of the Post-Test Pitot Inspection (mark with x below)**:**

No change _____

Damaged _____

New Calibration x

Technician: ARB **Date:** 5/26/2023

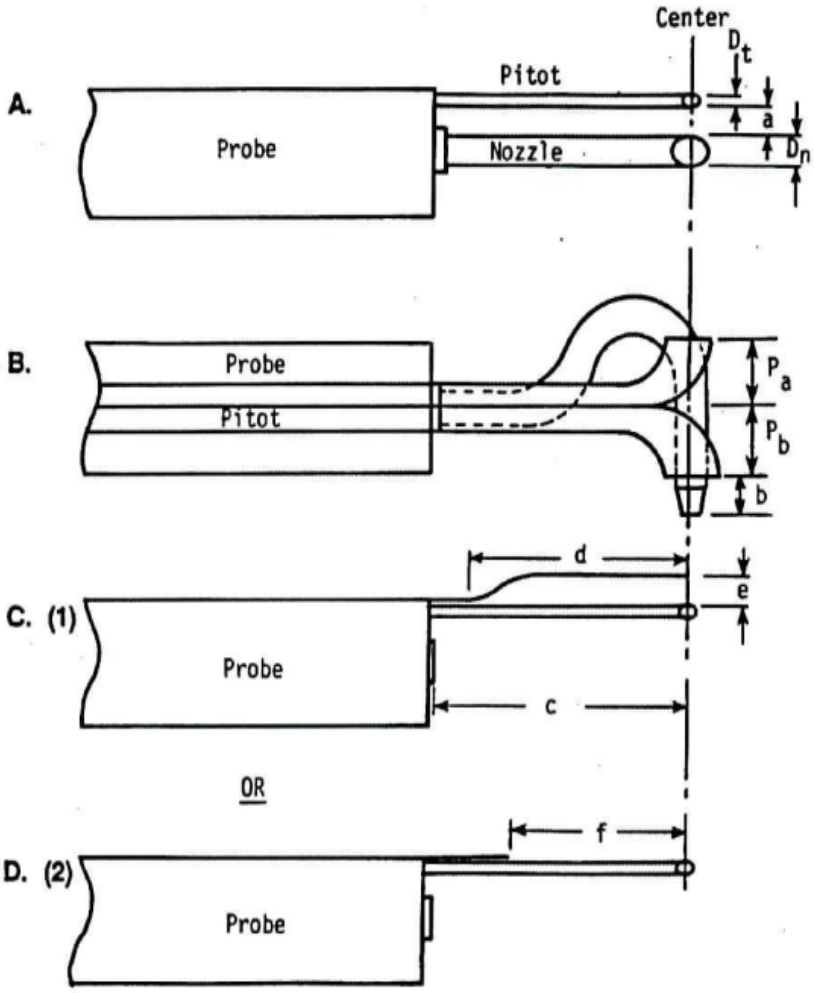
BISON ENGINEERING, INC.

Probe Calibration

Probe ID and Length: 7C

Date of calibration (< 6 months): 5/26/2023

Effective Length (ft.) 7ft



		Measure (Inch)
Dt:	0.38	**Dt = 0.187 to 0.375**
Dn:	0.50	**Dn = 0.5**
a:	0.89	**a ≥ 0.750**
Pa:	0.44	**Pa = Pb**
Pb:	0.44	
b:	0.15	**B ≥ 0**
c:	4.08	**c ≥ 3.0**
d:	6.14	**d ≥ 3.0**
e:	1.28	**e ≥ 0.750**
or		
f:		**f ≥ 2.0**

R

No change _____

Damaged _____

New Calibration x

Technician: ARB **Date:** 5/26/2023

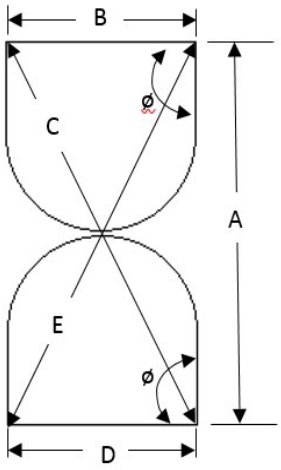
S-Type Pitot Tube Geometric Calibration

BISON ENGINEERING, INC.

Pitot ID: 8A

Date of Geometric Calibration (< 6 months): 5/26/2023

Effective Length (ft.) 8ft



A	0.91
B	0.39
C	0.97
D	0.39
E	0.97

$$\frac{a^2+b^2-c^2}{2ab}=\cos\emptyset$$

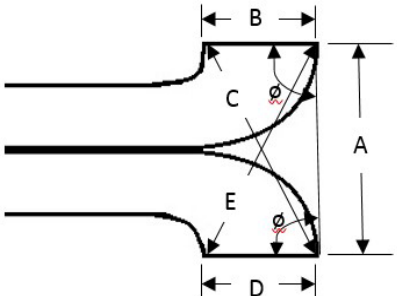
$$\frac{a^2+d^2-e^2}{2ad}=\cos\emptyset$$

ø	87.23

$(80° < \emptyset < 100°)$

ø	86.87

$(80° < \emptyset < 100°)$



A	0.90
B	0.59
C	1.04
D	0.58
E	1.06

$$\frac{a^2+b^2-c^2}{2ab}=\cos\emptyset$$

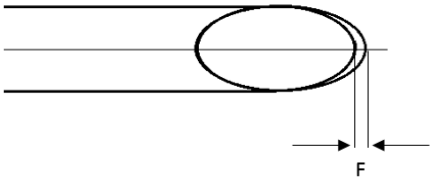
$$\frac{a^2+d^2-e^2}{2ad}=\cos\emptyset$$

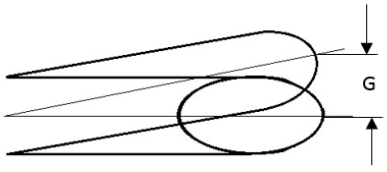
ø	86.24

$(85° < \emptyset < 95°)$

ø	89.26

$(85° < \emptyset < 95°)$





F=	0.058	(F < 0.125)	G=	0.000	(G < 0.032)

Results of the Post-Test Pitot Inspection (mark with x below)**:**

No change _____

Damaged _____

New Calibration x

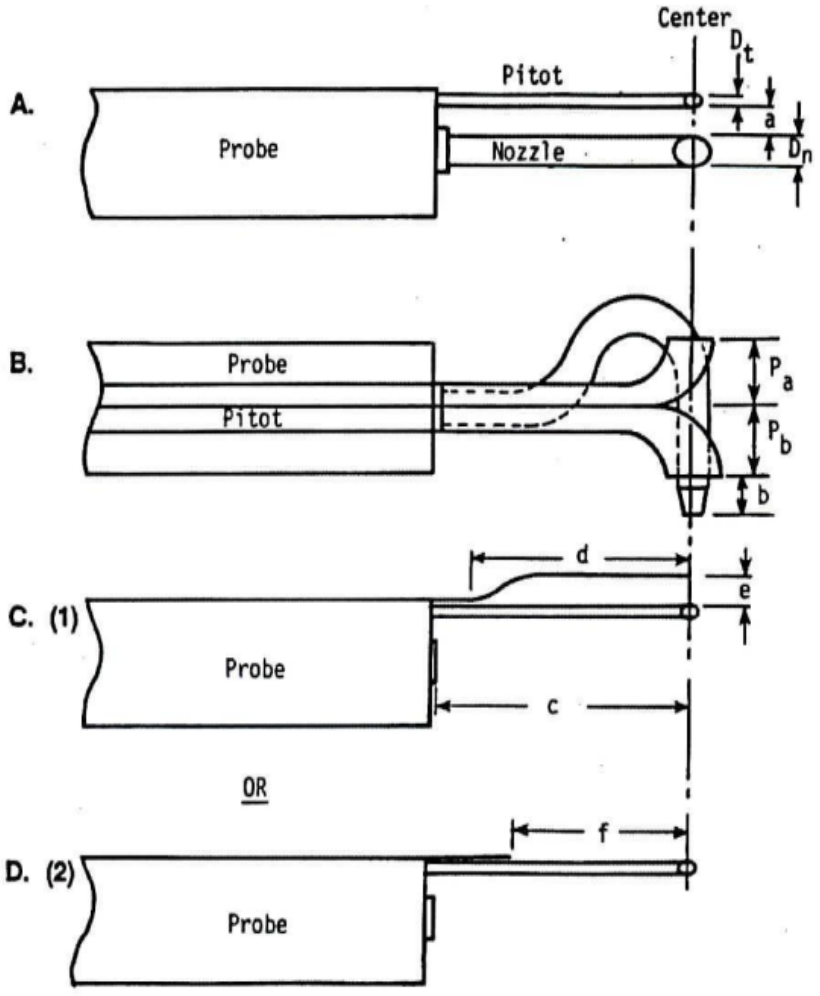
Technician: ARB **Date:** 5/26/2023

Probe Calibration

Probe ID and Length: 8A

Date of calibration (< 6 months): 5/26/2023

Effective Length (ft.) 8ft



		Measure (Inch)
Dt:	0.37	**Dt = 0.187 to 0.375**
Dn:	0.50	**Dn = 0.5**
a:	1.15	**a ≥ 0.750**
Pa:	0.46	**Pa = Pb**
Pb:	0.46	
b:	0.97	**B ≥ 0**
c:	5.54	**c ≥ 3.0**
d:	13.52	**d ≥ 3.0**
e:	0.70	**e ≥ 0.750**
or		
f:		**f ≥ 2.0**

R

No change _____

Damaged _____

New Calibration x

Technician: ARB **Date:** 5/26/2023

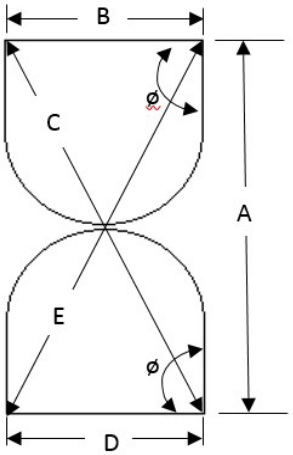
BISON ENGINEERING, INC.

S-Type Pitot Tube Geometric Calibration

Pitot ID: 7D

Date of Geometric Calibration (< 6 months): 5/31/2023

Effective Length (ft.) 7



A	0.89
B	0.38
C	0.94
D	0.39
E	0.95

$$\frac{a^2+b^2-c^2}{2ab}=\cos\emptyset$$

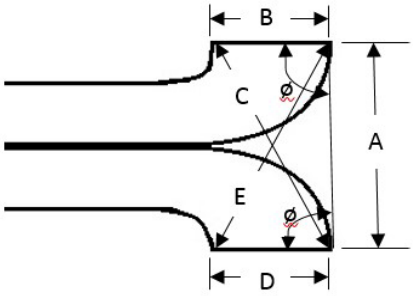
$$\frac{a^2+d^2-e^2}{2ad}=\cos\emptyset$$

ø	84.85

$(80° < \emptyset < 100°)$

ø	87.61

$(80° < \emptyset < 100°)$



A	0.88
B	0.51
C	1.04
D	0.49
E	1.02

$$\frac{a^2+b^2-c^2}{2ab}=\cos\emptyset$$

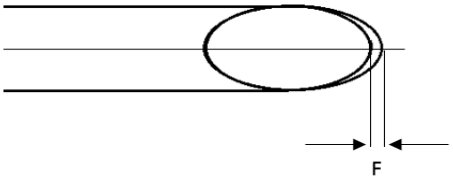
$$\frac{a^2+d^2-e^2}{2ad}=\cos\emptyset$$

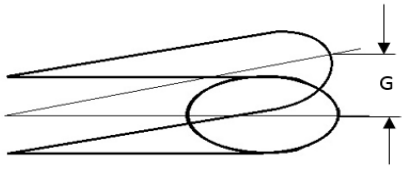
ø	92

$(85° < \emptyset < 95°)$

ø	91

$(85° < \emptyset < 95°)$





F=	-0.020

(F < 0.125)

G=	0.000

(G < 0.032)

Results of the Post-Test Pitot Inspection (mark with x below)**:**

No change _____

Damaged _____

New Calibration x

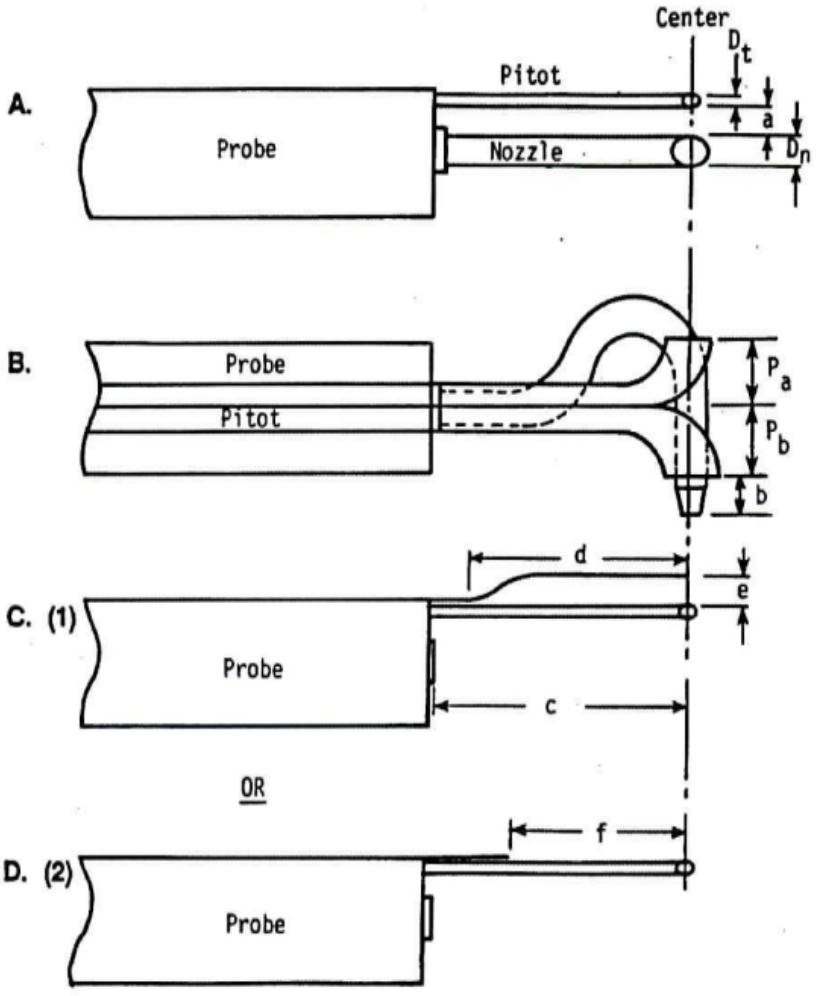
Technician: JMK **Date:** 5/31/2023

Probe Calibration

Probe ID and Length: 7D

Date of calibration (< 6 months): 5/31/2023

Effective Length (ft.) 7



		Measure (Inch)
Dt:	0.38	**Dt = 0.187 to 0.375**
Dn:	0.50	**Dn = 0.5**
a:	0.75	**a ≥ 0.750**
Pa:	0.50	**Pa = Pb**
Pb:	0.50	
b:	0.50	**B ≥ 0**
c:	7.50	**c ≥ 3.0**
d:	4.50	**d ≥ 3.0**
e:	1.50	**e ≥ 0.750**
or		
f:		**f ≥ 2.0**

R

No change _____

Damaged _____

New Calibration x

Technician: JMK **Date:** 5/31/2023

Airgas Specialty Gases
Airgas USA LLC
525 North Industrial Loop Road
Tooele, UT 84074
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA PROTOCOL STANDARD

Part Number:	E03NI80E15A0138	Reference Number:	153-402665182-1
Cylinder Number:	ALM026532	Cylinder Volume:	141.0 CF
Laboratory:	124 - Tooele (SAP) - UT	Cylinder Pressure:	2015 PSIG
PGVP Number:	B72023	Valve Outlet:	590
Gas Code:	CO2,O2,BALN	Certification Date:	Feb 13, 2023

Expiration Date: Feb 13, 2031

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted. The results relate only to the items tested. The report shall not be reproduced except in full without approval of the laboratory. Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON DIOXIDE	10.00 %	9.850 %	G1	+/- 0.8% NIST Traceable	02/13/2023
OXYGEN	10.00 %	9.898 %	G1	+/- 0.7% NIST Traceable	02/13/2023
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	13060405	CC411744	7.489 % CARBON DIOXIDE/NITROGEN	0.6%	May 14, 2025
NTRM	98051010	SG9161286BAL	12.05 % OXYGEN/NITROGEN	0.7%	Dec 14, 2023

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Horiba VIA-510 SV4MEUTJ CO2	CO2 NDIR (Dixon)	Feb 09, 2023
Horiba MPA-510 W603MM58 O2	O2 Paramagnetic (Mason)	Feb 09, 2023

Triad Data Available Upon Request

Signature on file
Approved for Release

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA LLC
525 North Industrial Loop Road
Tooele, UT 84074
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA PROTOCOL STANDARD

Part Number:	E03NI80E15A0138	Reference Number:	153-402667044-1
Cylinder Number:	ALM054560	Cylinder Volume:	141.0 CF
Laboratory:	124 - Tooele (SAP) - UT	Cylinder Pressure:	2015 PSIG
PGVP Number:	B72023	Valve Outlet:	590
Gas Code:	CO2,O2,BALN	Certification Date:	Feb 14, 2023

Expiration Date: Feb 14, 2031

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted. The results relate only to the items tested. The report shall not be reproduced except in full without approval of the laboratory. Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON DIOXIDE	10.00 %	9.924 %	G1	+/- 0.8% NIST Traceable	02/14/2023
OXYGEN	10.00 %	10.11 %	G1	+/- 0.9% NIST Traceable	02/14/2023
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	13060405	CC411744	7.489 % CARBON DIOXIDE/NITROGEN	0.6%	May 14, 2025
NTRM	98051010	SG9161286BAL	12.05 % OXYGEN/NITROGEN	0.7%	Dec 14, 2023

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Horiba VIA-510 SV4MEUTJ CO2	CO2 NDIR (Dixon)	Feb 09, 2023
Horiba MPA-510 W603MM58 O2	O2 Paramagnetic (Mason)	Feb 09, 2023

Triad Data Available Upon Request

Signature on file
Approved for Release

Airgas Specialty Gases
Airgas USA LLC
525 North Industrial Loop Road
Tooele, UT 84074
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA PROTOCOL STANDARD

Part Number:	E03NI56E15A1055	Reference Number:	153-402665181-1
Cylinder Number:	EB0155552	Cylinder Volume:	162.0 CF
Laboratory:	124 - Tooele (SAP) - UT	Cylinder Pressure:	2015 PSIG
PGVP Number:	B72023	Valve Outlet:	590
Gas Code:	CO2,O2,BALN	Certification Date:	Feb 13, 2023

Expiration Date: Feb 13, 2031

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted. The results relate only to the items tested. The report shall not be reproduced except in full without approval of the laboratory. Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON DIOXIDE	22.00 %	21.61 %	G1	+/- 0.8% NIST Traceable	02/13/2023
OXYGEN	22.00 %	22.03 %	G1	+/- 0.5% NIST Traceable	02/13/2023
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	13060802	CC415397	24.04 % CARBON DIOXIDE/NITROGEN	0.6%	Dec 11, 2025
NTRM	09061434	CC282492	22.53 % OXYGEN/NITROGEN	0.4%	May 13, 2025

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Horiba VIA-510 SV4MEUTJ CO2	CO2 NDIR (Dixon)	Feb 09, 2023
Horiba MPA-510 W603MM58 O2	O2 Paramagnetic (Mason)	Feb 09, 2023

Triad Data Available Upon Request

Signature on file
Approved for Release

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA LLC
525 North Industrial Loop Road
Tooele, UT 84074
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA PROTOCOL STANDARD

Part Number:	E03NI56E15A1055	Reference Number:	153-402665181-1
Cylinder Number:	EB0157290	Cylinder Volume:	162.0 CF
Laboratory:	124 - Tooele (SAP) - UT	Cylinder Pressure:	2015 PSIG
PGVP Number:	B72023	Valve Outlet:	590
Gas Code:	CO2,O2,BALN	Certification Date:	Feb 13, 2023

Expiration Date: Feb 13, 2031

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a mole/mole basis unless otherwise noted. The results relate only to the items tested. The report shall not be reproduced except in full without approval of the laboratory. Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
CARBON DIOXIDE	22.00 %	21.66 %	G1	+/- 0.8% NIST Traceable	02/13/2023
OXYGEN	22.00 %	22.01 %	G1	+/- 0.5% NIST Traceable	02/13/2023
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	13060802	CC415397	24.04 % CARBON DIOXIDE/NITROGEN	0.6%	Dec 11, 2025
NTRM	09061434	CC282492	22.53 % OXYGEN/NITROGEN	0.4%	May 13, 2025

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Horiba VIA-510 SV4MEUTJ CO2	CO2 NDIR (Dixon)	Feb 09, 2023
Horiba MPA-510 W603MM58 O2	O2 Paramagnetic (Mason)	Feb 09, 2023

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