



EMISSIONS TEST PROTOCOL

EAGLE FOUNDRY COMPANY

TOTAL ENCLOSURE 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.
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Prepared by:

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Project Number: EFC223174
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PLANT REPRESENTATIVE ENDORSEMENT

I have reviewed the information being submitted in its entirety and, 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.

Plant Official: Greg Lasslett

Title: Project Manager

Signature: 

Date: 2-16-2023

PROTOCOL ENDORSEMENT

Bison Engineering, Inc. certifies that emissions testing will be conducted as described in this protocol. Every effort will be made to obtain reliable, repeatable, and representative data using approved test methods and following procedures listed in Bison Engineering, Inc.'s quality manual and American Society for Testing and Materials (ASTM) D7036-04.

Project Manager: Jacob Rankin, QSTI, EIT

Title: Helena Source Team Lead

Signature: _____

Date: _____

1.0 INTRODUCTION

Eagle Foundry Company (Eagle Foundry) has contracted Bison Engineering, Inc. (Bison) to perform total enclosure verification testing on the air arc and finish end areas (also known as cutoff and grinding respectively) at the Eagle Foundry facility in Eagle Creek, Oregon. Testing will be conducted to evaluate if the cutoff and grinding enclosures meet the criteria to be considered a permanent total enclosure (PTE). This facility is subject to the provisions of Oregon Department of Environmental Quality (ODEQ) Air Contaminant Discharge Permit No. 03-2631-ST-01. All testing will be performed in accordance with the Environmental Protection Agency (EPA) testing methodology in Title 40 Code of Federal Regulations, Part 60 (40 CFR 60) Appendix A as outlined in this protocol.

2.0 KEY PERSONNEL AND CONTACT INFORMATION

The Eagle Foundry enclosure verification tests will be performed by Bison’s Helena-based source testing team. Jacob Rankin, Qualified Source Testing Individual (QSTI), Helena Source Team Lead, will serve as project manager and facilitate communications. Mr. Rankin will lead on-site testing. One additional source team personnel will assist Mr. Rankin on-site. Mr. Rankin will process the test data and draft the test report. A member of Bison’s quality management team will perform a final quality assurance review of all test data and the report. Mr. Rankin will perform the project manager’s review and submit the final report.

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State Authority: **Oregon Department of Environmental Quality**
Address: Northwest Region
700 NE Multnomah St., Suite 600
Portland, OR 97232
Contact: Julia DeGagne
Phone: (503) 866-9643
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3.0 SUMMARY OF TEST PROGRAM

3.1 Facility Description

Eagle Foundry owns and operates an iron and steel alloy casting facility in Eagle Creek, Oregon. The facility specializes in custom cast metal components for end users in the recycling, asphalt, cement, wood products, and mining industries, among others.

3.2 Process Information

After parts are cast in the main foundry, cutting and grinding may be required before Eagle Foundry can supply parts to their customers. Cutting and grinding are in two separate buildings at the facility and operate with their own respective baghouse collection systems. The cutoff building is approximately 708 square feet with 3 potential natural draft openings (NDO) and the collection system is powered by a 10,000 cubic feet per minute (cfm) baghouse. The grinding building is approximately 5,147 square feet with 7 potential NDO and the collection system is powered by a 30,000-cfm baghouse. Enclosures around the cutoff and grinding activities have been constructed within these two buildings to ensure capture of emissions by creating a smaller volume and more tightly sealed space in which the activities occur.

3.3 Test Plan

Bison will follow EPA Method 204 to determine whether the cutoff and grinding areas meet the criteria to qualify as permanent total enclosures. Eagle Foundry will continue the work to ensure the cutoff and grinding areas meet the criteria to assume 100% capture efficiency. Table 1 summarizes the Method 204 criteria that will be used to evaluate the PTE status of the cutoff and grinding areas. Table 2 describes the test methods that will be used to perform the verification testing.

Table 1 PTE Evaluation Criteria

Parameter	Units	Limit
NEAR Ratio	%	≤ 5
FV (via differential pressure measurement approach)*	Inches of Water	≤ -0.007
Distances of NDO	Feet	At least four equivalent opening diameters from each PM emitting point to any NDO.
Inward direction of airflow	NA	If the FV is less than 500 fpm, the inward direction of flow will be monitored for at least one hour. This verification will be documented photographically using streamers or smoke emitters at 10-minute intervals.

NEAR – NDO to enclosure area ratio

FV – facial velocity

fpm – feet per minute

NA – not applicable

PM – particulate matter

* EPA Method 204, Section 8.3, states that FV shall be at least 3,600 meters/hour (m/hr) which is equivalent to 200 fpm. Alternatively, pressure differential across the enclosure may be measured. A pressure drop of 0.013 millimeters mercury (0.007 inches water) corresponds to a FV of 3,600 m/hr (200 fpm).

Table 2 Air Arc and Finish End Total Enclosure Test Matrix

Source	EPA Method	Parameter	Details
Air Arc & Finish End	204	Verification of PTE	Distances from PM emitting points to all NDOs. Differential pressure measurements and air flow direction. Measurement of area of each NDO and enclosure.

All direct measurements of differential pressure will be made using a Shortridge ADM-850L micromanometer with a four decimal place display and current calibration certificate demonstrating instrument accuracy to differential pressures as low as 0.01 inches of water. If any of the differential pressure measurements are between 0.01 and 0.007 inches of water, Bison will send the micromanometer for a post-test validation calibration to a lower range. Differential pressure will be measured at least 15 times per location. Measurements will be recorded in a series of three rounds; during each round, five measurements will be recorded per location. One hundred percent of all measurements must indicate a pressure drop of at least 0.007 inches of water to demonstrate containment.

Total enclosure verification tests are scheduled to take place the week of March 20th, 2023. Testing is expected to follow a schedule similar to the one in Table 3.

Table 3 Proposed Test Schedule

Day	Source	Details
1	N/A	Travel to Eagle Creek, OR.
2	Air Arc Building (Cutoff)	Complete total enclosure verification tests on cutoff area and possibly move to the grinding area if time allows.
3	Finish End Building (Grinding)	Complete total enclosure verification tests on the grinding area.
4	N/A	Prepare for emission factor verification tests.

The schedule above assumes that testing proceeds as planned with minimal interruptions or process downtime. Bison will inform ODEQ of any changes to the schedule ahead of testing. A finalized test report will be submitted to ODEQ on or before March 31st. If Bison is unable to meet this deadline, Bison will inform ODEQ as soon as possible to request an extension of the report due date.

3.4 Responsibilities of Plant

Eagle Foundry will be responsible for:

- Assuring availability of the processes on the scheduled test day as needed to facilitate the test program.
- Providing safe and secure access to the sampling locations.
- Ensuring each collection system in both areas operate at normal capacity during the total enclosure verification tests even if no material processing is being performed.

Only regular operating staff may adjust the production process and emission control parameters during the total enclosure verification tests. Any operating adjustments made during testing, which are a result of consultation during the test with source testing personnel, equipment vendors or consultants, may render the total enclosure verification tests invalid.

3.5 Plant Entry and Safety Requirements

Bison personnel receive annual training on and will adhere to Bison’s Health, Safety and Environmental Management System (HSEMS). They will also comply with all facility safety requirements and will attend Eagle Foundry’s standard safety briefing for visitors. Bison crew members will complete an on-site job safety analysis prior to the start of work and provide their own personal protective equipment, including hard hats, gloves, long sleeves, steel toe boots, safety glasses, and hearing protection.

4.0 EMISSION TEST METHODS AND PROCEDURES

4.1 Instrumentation and Equipment

Bison will conduct the total enclosure verification tests using a Shortridge brand micromanometer as described in section 3.3. Other instrumentation may be used depending on availability. All field equipment will be calibrated, at a minimum, in accordance with method requirements.

4.2 Test Methods and Descriptions

Testing will be performed using the following EPA test methods as described in 40 CFR 60, and as approved and adopted by the appropriate regulatory agency.

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 particulate matter capture efficiency (CE) is assumed to be 100 percent.

4.3 Analytical Methods

Sampling procedures are cited in the appropriate methods and there will be no deviation from those methods. No physical samples that require off-site processing will be generated during this test campaign.

5.0 QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES

5.1 Sampling Protocol and Collection Procedures

All testing will be performed in accordance with the specified test methods and their prescribed quality control procedures.

No physical samples will be generated during this campaign. Therefore, no chain of custody will be necessary.

Test data will be recorded electronically using a data acquisition system. Field data, such as flow measurements, temperatures, and volumes, will be entered directly into spreadsheets for subsequent calculations. The data can also be recorded on hand-written datasheets if requested by the client or the regulatory agency.

5.2 Equipment and Instrument Calibration, Audits and Maintenance

Ongoing calibrations and audits of the testing equipment comprise a preventive maintenance program. Bison personnel calibrate equipment and instruments according to a set schedule and with standards traceable to the National Institute of Standards and Technology (NIST) All equipment requiring calibration will be calibrated according to the criteria specified in the proposed test methods. Equipment and instrument calibration results will be included in an appendix to the final test report.

5.3 Data Collection, Reduction and Validation

Emissions test data is subject to multiple levels of validation. Bison has self-auditing spreadsheets that alert the field technician when data may be entered incorrectly by flagging calculation results that are outside of expected or reasonable values. Data is also audited during data processing and report generation. Quality assurance and quality control checks associated with testing (such as on-site analyzer calibrations, spikes and pre- or post-test equipment certifications) are audited during the review process.

A final draft of the test report is reviewed for technical content by a member of Bison's quality management team and the project manager. All field data and spreadsheets will be supplied in an appendix to the test report.

5.4 Internal Audits and Corrective Action

When departures from policies or procedures in Bison's quality system or technical operations are identified, Bison's quality management team meets with the personnel involved to evaluate the significance of the non-conforming work and discuss appropriate corrective action. Corrective actions are given the highest priority and determined immediately after identifying non-conforming work. The format for implementing corrective action follows ASTM D7036-04.

5.5 Documentation, Tracking and Certifications

Bison has assigned this project a unique number for document control and record keeping. The tracking number for this project is **EFC223174**.

Electronic project records are maintained on Bison's server for a minimum of five years. The project manager and a member of the quality management team will sign a certification page to document and authenticate that testing was performed according to the appropriate methods, applicable regulatory requirements and Bison's quality manual. This certification page will accompany the final report.

Should a situation arise that warrants a deviation from the approved protocol, it will be discussed with the client and/or regulatory agency. If necessary, approval to modify the test plan will be obtained from the regulatory agency. Any modification to the test plan or deviation from approved test methods will be documented in the final test report.

APPENDIX A: EXAMPLE TEST REPORT FORMAT

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