STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION AUGUSTA, MAINE 04333-0017

DEPARTMENT ORDER

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| **Bath Iron Works Corporation**<br>**Cumberland County**<br>**Brunswick, Maine**<br>**A-271-71-Q-M** | **Departmental**<br>**Findings of Fact and Order**<br>**Air Emission License**<br>**Amendment #1** |

## FINDINGS OF FACT

After review of the air emission license amendment application, staff investigation reports, and other documents in the applicant's file in the Bureau of Air Quality, pursuant to 38 Maine Revised Statutes (M.R.S.) § 344 and § 590, the Maine Department of Environmental Protection (Department) finds the following facts:

## I. REGISTRATION

### A. Introduction

Bath Iron Works Corporation (BIW) was issued Air Emission License A-271-71-P-R/A on March 13, 2023, for the operation of emission sources associated with their shipbuilding prefabrication facility.

The equipment addressed in this license amendment is located on Bath Rd, Brunswick, Maine.

BIW has requested a minor revision to their license in order to replace Makeup Air Units #1 and #2 with new, like-kind replacements.

### B. Emission Equipment

The following equipment is addressed in this air emission license amendment:

**Fuel Burning Equipment**

| Equipment | Max. Capacity (MMBtu/hr) | Maximum Firing Rate | Fuel Type | Date of Manuf. | Date of Install. | Stack # |
|---|---|---|---|---|---|---|
| Makeup Air Unit #1 | 4.3 | 4,164 scf/hr | Natural gas | 2024 | 2024 | A.V. * |
| Makeup Air Unit #2 | 4.3 | 4,164 scf/hr | Natural gas | 2024 | 2024 | A.V. * |
| *Makeup Air Unit #1*** | *4.3* | *4,164 scf/hr* | *Natural gas* | *1989* | *1989* | *A.V. ** |
| *Makeup Air Unit #2*** | *4.3* | *4,164 scf/hr* | *Natural gas* | *1989* | *1989* | *A.V. ** |

* Ambient Vent
** This equipment has been replaced with a new like-kind replacement.

C. Application Classification

All rules, regulations, or statutes referenced in this air emission license refer to the amended version in effect as of the date this license was issued.

This amendment will not increase licensed emissions of any pollutant. Therefore, this amendment is determined to be a minor revision and has been processed as such.

D. Facility Classification

With the annual fuel limit on the distillate fuel-fired boilers and heaters and the facility-wide VOC limit, the facility is licensed as follows:

- As a synthetic minor source of air emissions for criteria pollutants, because BIW is subject to license restrictions that keep facility emissions below major source thresholds for $NO_x$ and VOC; and
- As an area source of hazardous air pollutants (HAP), because the licensed emissions are below the major source thresholds for HAP.

Emissions of VOC are licensed above 80% of the major source threshold. Therefore, this facility is classified as an "80% Synthetic Minor" for the purpose of determining the minimum required compliance inspection frequency in accordance with Maine's Compliance Monitoring Strategy.

## II. BEST PRACTICAL TREATMENT (BPT)

A. Introduction

In order to receive a license, the applicant must control emissions from each unit to a level considered by the Department to represent Best Practical Treatment (BPT), as defined in *Definitions Regulation*, 06-096 C.M.R. ch. 100. Separate control requirement categories exist for new and existing equipment.

BPT for new sources and modifications requires a demonstration that emissions are receiving Best Available Control Technology (BACT), as defined in *Definitions Regulation*, 06-096 C.M.R. ch. 100. BACT is a top-down approach to selecting air emission controls considering economic, environmental, and energy impacts.

B. Makeup Air Units #1 and #2

BIW is replacing Makeup Air Units #1 and #2 located in the OFAB building of their facility as the existing units have reached the end of their serviceable life. The replacement units will be of the same manufacturer and model of the existing units (Hastings Model SBD-233-50-4250). The replacement units fire natural gas, have a maximum heat input capacity of 4.3 MMBtu/hr, and vent to the interior of the building.

1. BACT Findings

Following is a BACT analysis for control of emissions from Makeup Air Units #1 and #2.

a. Particulate Matter (PM, $PM_{10}$, $PM_{2.5}$)
BIW has proposed to burn only low-ash content fuels (natural gas) in Makeup Air Units #1 and #2. Additional add-on pollution controls are not economically feasible.

BACT for PM/$PM_{10}$/$PM_{2.5}$ emissions from Makeup Air Units #1 and #2 is the use of natural gas, good combustion practices, and the emission limits listed in the tables below.

b. Sulfur Dioxide ($SO_2$)
BIW has proposed to fire only natural gas, which inherently has a low sulfur content. The use of this fuel results in minimal emissions of $SO_2$, and additional add-on pollution controls are not economically feasible.

BACT for $SO_2$ emissions from Makeup Air Units #1 and #2 is the use of natural gas and the emission limits listed in the tables below.

c. Nitrogen Oxides ($NO_x$)
BIW considered several control strategies for the control of $NO_x$ including Selective Catalytic Reduction (SCR), Selective Non-Catalytic Reduction (SNCR), flue gas recirculation (FGR), use of oxygen trim systems, and good combustion practices.

Both SCR and SNCR are technically feasible control technologies for minimizing $NO_x$. Both methods include injection of a $NO_x$ reducing agent, typically ammonia or urea, into the boiler combustion gases, where the reagent reacts with $NO_x$ to form nitrogen and water. Each technology is effective within a specific temperature range, 500 – 1,200 °F for SCR and 1,400 – 1,600 °F for SNCR. However, both SCR and SNCR have the negative environmental impact of emissions of unreacted ammonia. In addition, due to the initial high capital costs and the annual operating costs, these systems are typically only considered cost effective for units larger than Makeup Air Units #1 and #2.

FGR can attain similar $NO_x$ reduction efficiencies through lowering burner flame temperature and thereby reducing thermal $NO_x$ formation. However, FGR reduces the units fuel efficiency and is therefore considered economically infeasible.

An oxygen trim system is not available on this these units and is therefore considered technically infeasible.

BACT for $NO_x$ emissions from Makeup Air Units #1 and #2 is the use of good combustion practices and the emission limits listed in the tables below.

d. Carbon Monoxide (CO) and Volatile Organic Compounds (VOC)
BIW considered several control strategies for the control of CO and VOC including oxidation catalysts, thermal oxidizers, use of an oxygen trim system, and good combustion practices.

Oxidation catalysts and thermal oxidizers both have high capital, maintenance, and operational costs considering the size of the makeup air units in question. These controls were determined to be economically infeasible.

An oxygen trim system is not available on this these units and is therefore considered technically infeasible.

BACT for CO and VOC emissions from Makeup Air Units #1 and #2 is the use of good combustion practices and the emission limits listed in the tables below.

e. Emission Limits
The BACT emission limits for Makeup Air Units #1 and #2 were based on the following:

| | | |
|---|---|---|
| PM | – | 0.05 lb/MMBtu based on 06-096 C.M.R. ch. 115, BACT |
| $SO_2$ | – | 0.6 lb/MMscf based on AP-42 Table 1.4-2 dated 7/98 |
| $NO_x$ | – | 100 lb/MMscf based on AP-42 Table 1.4-1 dated 7/98 |
| CO | – | 84 lb/MMscf based on AP-42 Table 1.4-1 dated 7/98 |
| VOC | – | 5.5 lb/MMscf based on AP-42 Table 1.4-2 dated 7/98 |
| Visible Emissions | – | 06-096 C.M.R. ch. 101 |

The BACT emission limits for Makeup Air Units #1 and #2 are the following:

| Unit | Pollutant | lb/MMBtu |
|---|---|---|
| Makeup Air Unit #1 | PM | 0.05 |
| Makeup Air Unit #2 | PM | 0.05 |

| Unit | PM (lb/hr) | $PM_{10}$ (lb/hr) | $PM_{2.5}$ (lb/hr) | $SO_2$ (lb/hr) | $NO_x$ (lb/hr) | CO (lb/hr) | VOC (lb/hr) |
|---|---|---|---|---|---|---|---|
| Makeup Air Unit #1 | 0.22 | 0.22 | 0.22 | 0.01 | 0.42 | 0.35 | 0.02 |
| Makeup Air Unit #2 | 0.22 | 0.22 | 0.22 | 0.01 | 0.42 | 0.35 | 0.02 |

2. Visible Emissions

   Visible emissions from Makeup Air Units #1 and #2 shall each not exceed 10% opacity on a six-minute block average basis.

3. New Source Performance Standards (NSPS): 40 C.F.R. Part 60, Subpart Dc

   Because the units to not heat water, Makeup Air Units #1 and #2 are not subject to *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units* 40 C.F.R. Part 60, Subpart Dc for units greater than 10 MMBtu/hr manufactured after June 9, 1989. [40 C.F.R. § 60.40c]

4. National Emission Standards for Hazardous Air Pollutants (NESHAP): 40 C.F.R. Part 63, Subpart JJJJJJ

   Because the units do not heat water, Makeup Air Units #1 and #2 are not subject to *National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources*, 40 C.F.R. Part 63, Subpart JJJJJJ.

C. Annual Emissions

This license amendment will not change the facility's licensed annual emissions.

## ORDER

Based on the above Findings and subject to conditions listed below, the Department concludes that the emissions from this source:

- will receive Best Practical Treatment,
- will not violate applicable emission standards, and
- will not violate applicable ambient air quality standards in conjunction with emissions from other sources.

The Department hereby grants Air Emission License Amendment A-271-71-Q-M subject to the conditions found in Air Emission License A-271-71-P-R/A.

Severability. The invalidity or unenforceability of any provision of this License Amendment or part thereof shall not affect the remainder of the provision or any other provisions. This License Amendment shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.

**This Amendment will not change any Specific Conditions of Air Emission License A-271-71-P-R/A.**

DONE AND DATED IN AUGUSTA, MAINE THIS 25th DAY OF SEPTEMBER, 2024.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: _____ for _____
MELANIE LOYZIM, COMMISSIONER

**The term of this license amendment shall be ten (10) years from the issuance of Air Emission License A-271-71-P-R/A (issued 03/13/23).**

[Note: If a renewal application, determined as complete by the Department, is submitted prior to expiration of this license, then pursuant to Title 5 M.R.S. § 10002, all terms and conditions of the license shall remain in effect until the Department takes final action on the license renewal application.]

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: 8/8/24
Date of application acceptance: 8/9/24

Date filed with the Board of Environmental Protection:

This Order prepared by Chris Ham, Bureau of Air Quality.

**FILED**

SEP 25, 2024

**State of Maine**
**Board of Environmental Protection**