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

DEPARTMENT ORDER

Bath Iron Works Corporation **Cumberland County** **Brunswick, Maine** **A-271-71-R-A**	**Departmental** **Findings of Fact and Order** **Air Emission License** **Amendment #2**

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 license was subsequently amended in license amendment A-271-71-Q-M issued September 25, 2024, to replace Makeup Air Units #1 and #2 with new, like-kind replacements.

BIW has requested a minor amendment to their license in order to replace Furnaces #5 and #6 with AH-1 and AH-2. Additionally, the visible emissions standards will be updated to conform to the latest standards as found in 06-096 Code of Maine Rules (C.M.R.) ch. 101, *Visible Emissions Regulation.*

The equipment addressed in this license amendment is located at their Central Warehouse (CW) on Mallet Park Drive off Bath Rd, Brunswick, Maine.

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 #
*Furnace #5 (CW) **	*3.8*	*3,678 scf/hr*	*Natural Gas*	*1986*	*1986*	*CW1*
*Furnace #6 (CW) **	*3.8*	*3,678 scf/hr*	*Natural Gas*	*1986*	*1986*	*CW2*
AH-1 (CW) **	3.05	2,961 scf/hr	Natural Gas	2025	2025	Ambient vent
AH-2 (CW) **	3.05	2,961 scf/hr	Natural Gas	2025	2025	Ambient vent

* Removed from license
** New to license

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.

The modification of a minor source is considered a major or minor modification based on whether or not expected emission increases exceed the "Significant Emissions" levels as defined in the Department's *Definitions Regulation*, 06-096 C.M.R. ch. 100. The emission increases are determined by subtracting the current licensed annual emissions preceding the modification from the maximum future licensed annual emissions, as follows:

Pollutant	Current License (tpy)	Future License (tpy)	Net Change (tpy)	Significant Emissions Levels
PM	22.3	22.0	-0.3	100
PM_{10}	22.3	22.0	-0.3	100
$PM_{2.5}$	- **	22.0	-0.0	100
SO_2	0.8	0.8	-0.0	100
NO_x	43.0	42.4	-0.6	100
CO	24.7	24.1	-0.6	100
VOC	48.8	48.8	-0.0	50*

* BIW is located in an area of the state included in the Ozone Transport Region. Therefore, the significant emission level for VOC is 50 tpy.

** $PM_{2.5}$ is being addressed (per new standards) for the first time in this amendment.

This modification is determined to be a minor modification and has been processed as such.

D. Facility Classification

With the annual fuel use limit on the distillate fuel-fired boilers and heaters and the facility-wide VOC emissions 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. AH-1 and AH-2

BIW is installing two non-recirculating direct gas-fired industrial air heating units (AHU). The AHUs are Cambridge S3200 models with a maximum heat input capacity of 3.05 MMBtu/hr each, which vent to the interior of the building.

1. BACT Findings

Following is a BACT analysis for control of emissions from AH-1 and AH-2.

a. Particulate Matter (PM, PM_{10}, $PM_{2.5}$)
BIW has proposed to fire only natural gas, a low ash-content fuel, in the heaters. Additional add-on pollution controls are not economically feasible.

BACT for $PM/PM_{10}/PM_{2.5}$ emissions from AH-1 and AH-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 has a low sulfur content. The use of this fuel results in minimal emissions of SO_2, making additional add-on pollution controls not economically feasible.

BACT for SO_2 emissions from AH-1 and AH-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), water/steam injection, flue gas recirculation (FGR), low-NO_x burners, and use of oxygen trim systems.

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 capital cost and the annual operating costs, these systems are typically only considered cost effective for units larger than AH-1 and AH-2.

FGR and low-NO_x burners can attain similar NO_x reduction efficiencies through lowering burner flame temperature and thereby reducing thermal NO_x formation. However, FGR and low-NO_x burners reduce the units' fuel efficiency and are therefore economically infeasible.

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

BACT for NO_x emissions from AH-1 and AH-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, and use of an oxygen trim system.

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

An oxygen trim system is not available on these units and therefore has been determined to be technically infeasible.

BACT for CO and VOC emissions from AH-1 and AH-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 AH-1 and AH-2 were based on the following:

Natural Gas

$PM/PM_{10}/PM_{2.5}$	–	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	–	Vent inside the building, so no applicable visible limits

The BACT emission limits for AH-1 and AH-2 are the following:

Unit	Pollutant	lb/MMBtu
AH-1	PM	0.05
AH-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)
AH-1	0.15	0.15	0.15	-	0.30	0.25	0.02
AH-2	0.15	0.15	0.15	-	0.30	0.25	0.02

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

   Since AH-1 and AH-2 do not heat water and each have a heat input capacity of less than 10 MMBtu/hr, they 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]

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

   Since AH-1 and AH-2 do not heat water, they are not subject to the *National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources*, 40 C.F.R. Part 63, Subpart JJJJJJ.

C. C.M.R. Chapter Updates

Due to updates to requirements for general process sources and for fugitive emissions in *Visible Emissions Regulation*, C.M.R. ch. 101, Specific Conditions have been updated to reflect the current rule.

1. General Process Sources

   Visible emissions from any general process source shall not exceed 20% opacity on a six-minute block average basis. [06-096 C.M.R. ch. 101, § 4(B)(4)]

2. Fugitive Emissions

   A. BIW shall not cause emissions of any fugitive dust during any period of construction, reconstruction, or operation without taking reasonable precautions. Such reasonable precautions shall be included in the facility's continuing program of best management practices for suppression of fugitive particulate matter. See 06-096 C.M.R. ch. 101, § 4(C) for a list of potential reasonable precautions.

B. BIW shall not cause or allow visible emissions within 20 feet of ground level, measured as any level of opacity and not including water vapor, beyond the legal boundary of the property on which such emissions occur. Compliance with this standard shall be determined pursuant to 40 C.F.R. Part 60, Appendix A, Method 22.

[06-096 C.M.R. ch. 101, § 4(C)]

D. Annual Emissions

The table below provides an estimate of facility-wide annual emissions for the purposes of calculating the facility's annual air license fee and establishing the facility's potential to emit (PTE). Only licensed equipment is included, i.e., emissions from insignificant activities are excluded. Similarly, unquantifiable fugitive particulate matter emissions are not included except when required by state or federal regulations. Maximum potential emissions were calculated based on the following assumptions:

- Firing 475,000 gal/yr distillate fuel in Boilers #3 and #8, the SFAB Hot Air Furnace, and the SFAB Heat Treat Furnace using the worst-case emission factors;
- Firing Boilers #3, #4, #7, and #8, AH-1 and AH-2, the SFAB Preheat Ovens #1 and #2, the SFAB Drying Oven, the PC Cure Oven, the PC Batch Oven, and the OFAB Makeup Air Units #1 and #2 continuously on natural gas for all remaining time after all distillate fuel has been fired for applicable units;
- A facility-wide VOC limit of 46.5 tpy for all process equipment; and
- A facility-wide HAP limit of 9.9 tpy for any single HAP and 24.9 tpy for combined HAP.

This information does not represent a comprehensive list of license restrictions or permissions. That information is provided in the Order section of this license.

Total Licensed Annual Emissions for the Facility
Tons/year
(used to calculate the annual license fee)

	PM	PM_{10}	$PM_{2.5}$	SO_2	NO_x	CO	VOC
Total Distillate Fuel	7.2	7.2	7.2	0.1	16.1	1.4	0.3
Total Natural Gas	14.8	14.8	14.8	0.7	26.3	22.7	2.0
Facility Wide VOC Limit	-	-	-	-	-	-	46.5
Total TPY	**22.0**	**22.0**	**22.0**	**0.8**	**42.4**	**24.1**	**48.8**

Pollutant	Tons/year
Single HAP	9.9
Total HAP	24.9

III. AMBIENT AIR QUALITY ANALYSIS

The level of ambient air quality impact modeling required for a minor source is determined by the Department on a case-by-case basis. In accordance with 06-096 C.M.R. ch. 115, an ambient air quality impact analysis is not required for a minor source if the total licensed annual emissions of any pollutant released do not exceed the following levels and there are no extenuating circumstances:

Pollutant	Tons/Year
PM_{10}	25
$PM_{2.5}$	15
SO_2	50
NO_x	50
CO	250

The total annual licensed emissions for the facility are above at least one of the emission levels contained in the table above due to changes to this table since previous licensing actions (addition of $PM_{2.5}$ requirements). However, the current licensing action makes no changes that would result in increased emissions. Therefore, the Department has determined that an ambient air quality impact analysis is not required at this time.

This determination is based on information provided by the applicant regarding the expected construction and operation of the proposed emission units. If the Department determines that any parameter (e.g., stack size, configuration, flow rate, emission rates, nearby structures, etc.) deviates from what was included in the application, the Department may require BIW to submit additional information and may require an ambient air quality impact analysis at that time.

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-R-A subject to the conditions found in Air Emission License A-271-71-P-R/A and amendment A-271-71-Q-M and the following conditions.

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.

The following shall replace Conditions (17)(C) and (D), (23), and (24) of Air Emission License A-271-71-P-R/A:

(17) **Fuel Burning Equipment**

C. Emissions shall not exceed the following:

Emission Unit	Fuel	Pollutant	lb/MMBtu	Origin and Authority
Boiler #3	Distillate Fuel	PM	0.2	06-096 C.M.R. ch. 115, BACT for AH-1 and AH-2; 06-096 C.M.R. ch. 115, BPT for all other units
	Natural Gas	PM	0.05	
Boiler #8	Distillate Fuel	PM	0.05	
		PM_{10}	0.03	
	Natural Gas	PM/PM_{10}	0.03	
AH-1	Natural Gas	PM	0.05	
AH-2	Natural Gas	PM	0.05	
SFAB Heat Treat Furnace	Distillate Fuel	PM	0.12	
SFAB Preheat Oven #1	Natural Gas	PM	0.05	
SFAB Preheat Oven #2	Natural Gas	PM	0.05	
SFAB Drying Oven	Natural Gas	PM	0.05	
OFAB Makeup Air Unit #1	Natural Gas	PM	0.05	
OFAB Makeup Air Unit #2	Natural Gas	PM	0.05	

D. Emissions shall not exceed the following [06-096 C.M.R. ch. 115: BACT for AH-1 and AH-2; BPT for all other units]:

Emission Unit	PM (lb/hr)	PM_{10} (lb/hr)	SO_2 (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Boiler #3 – Distillate Fuel	5.02	5.02	0.04	11.30	0.84	0.03
Boiler #3 – Natural Gas	1.26	1.26	0.02	2.44	2.05	0.13
Boiler #4	0.13	0.13	0.01	0.25	0.21	0.01
AH-1	0.15	0.15	-	0.30	0.25	0.02
AH-2	0.15	0.15	-	0.30	0.25	0.02
Boiler #7	0.08	0.08	0.01	0.15	0.12	0.01
Boiler #8 – Distillate Fuel	1.26	0.76	0.04	2.77	1.01	0.18
Boiler #8 – Natural Gas	0.76	0.76	0.03	0.88	0.25	0.18
SFAB Heat Treat Furnace	0.60	0.60	0.01	0.70	0.21	0.05
SFAB Hot Air Furnace	0.16	0.16	-	0.19	0.05	0.01
SFAB Preheat Oven #1	0.20	0.20	0.01	0.40	0.34	0.02
SFAB Preheat Oven #2	0.20	0.20	0.01	0.40	0.34	0.02
SFAB Drying Oven	0.20	0.20	0.01	0.40	0.34	0.02
PC Cure Oven	0.15	0.15	0.01	0.28	0.24	0.02
PC Batch Oven	0.08	0.08	0.01	0.16	0.13	0.01
OFAB Makeup Air Unit #1	0.22	0.22	0.01	0.42	0.35	0.02
OFAB Makeup Air Unit #2	0.22	0.22	0.01	0.42	0.35	0.02

(23) **General Process Sources**

Visible emissions from any general process source shall not exceed 20% opacity on a six-minute block average basis. [06-096 C.M.R. ch. 101, § 4(B)(4)]

(24) **Fugitive Emissions**

A. BIW shall not cause emissions of any fugitive dust during any period of construction, reconstruction, or operation without taking reasonable precautions. Such reasonable precautions shall be included in the facility's continuing program of best management practices for suppression of fugitive particulate matter. See 06-096 C.M.R. ch. 101, § 4(C) for a list of potential reasonable precautions.

B. BIW shall not cause or allow visible emissions within 20 feet of ground level, measured as any level of opacity and not including water vapor, beyond the legal boundary of the property on which such emissions occur. Compliance with this standard shall be determined pursuant to 40 C.F.R. Part 60, Appendix A, Method 22.

[06-096 C.M.R. ch. 101, § 4(C)]

DONE AND DATED IN AUGUSTA, MAINE THIS 2nd DAY OF SEPTEMBER, 2025.

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 03/13/2023).

[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: June 25, 2025
Date of application acceptance: July 2, 2025

This Order prepared by Zac Hicks, Bureau of Air Quality.