

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

DEPARTMENT ORDER

Johnson Outdoors Watercraft Inc. Penobscot County Old Town, Maine A-319-71-L-A Departmental Findings of Fact and Order Air Emission License After-the-Fact 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

Johnson Outdoors Watercraft Inc. (Johnson Outdoors) was issued Air Emission License A-319-71-K-N/M on February 18, 2015, for the operation of emission sources associated with their canoe and kayak manufacturing facility. Johnson Outdoors has requested an after-the-fact amendment to their license in order to remove Oven #7 and add Oven #5. Oven #7, which was installed in 2014, was in use for less than a year before it was replaced with Oven #5 in 2014.

The equipment addressed in this license amendment is located at 125 Gilman Falls Avenue, Old Town, Maine.

B. Emission Equipment

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

Ovens

Equipment	Max. Capacity (MMBtu/hr)	Maximum Firing Rate	Fuel Type	Date of Manuf.	Date of Install.	Stack #
<i>Oven</i> #7*	3.0	2,900 scf/hr	Natural gas	2014	2014	7
Oven #5**	8.7	8,700 scf/hr	Natural gas	2013	2014	5

* Removed from license

** New to license

C. Definitions

<u>Records</u> or <u>Logs</u> mean either hardcopy or electronic records.

D. 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 Code of Maine Rules (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:

	Current License	Future License	Net Change	Significant
Pollutant	(tpy)	(tpy)	(tpy)	Emission Levels
PM	4.9	5.3	0.4	100
PM ₁₀	4.9	5.3	0.4	100
PM _{2.5}		5.3	5.3 ¹	100
SO_2				100
NO _x	9.2	10.8	1.6	100
CO	7.5	8.8	1.3	100
VOC	9.9	9.9	0.0	100

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

E. Facility Classification

With the annual fuel limit on the VOC limits associated with the boat manufacturing process, the facility is licensed as follows:

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

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.

¹ PM_{2.5} emissions were not previously addressed in the license, which is why the net change is 5.3 tpy.

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. <u>Oven #5</u>

Johnson Outdoors uses Oven #5, which is a rotomolding oven. In this oven, powdered polyethylene is introduced into a mold which is heated and rotated until the powder melts and is distributed evenly. The oven is rated at 8.7 MMBtu/hr and fires natural gas. The combustion gases come into contact with the outside of the mold. The combustion gases are then exhausted through the stack for Oven #5, Stack #5, via exhaust fans above the oven chamber. Oven #5 was installed in 2014.

1. BACT Findings

Following is a BACT analysis for control of emissions from Oven #5.

a. Particulate Matter (PM, PM₁₀, PM_{2.5})

Johnson Outdoors has proposed to burn only low-ash content fuels (natural gas) in Oven #5. Additional add-on pollution controls are not economically feasible.

BACT for $PM/PM_{10}/PM_{2.5}$ emissions from Oven #5 is the firing of natural gas and the emission limits listed in the tables below.

b. <u>Sulfur Dioxide (SO₂)</u>

Johnson Outdoors has proposed to fire only natural gas. The use of this fuel results in minimal emissions of SO₂, and additional add-on pollution controls are not economically feasible.

BACT for SO_2 emissions from Oven #5 is the firing of natural gas and the emission limits listed in the tables below.

c. <u>Nitrogen Oxides (NO_x)</u>

Possible strategies for the control of NO_x include Selective Catalytic Reduction (SCR), Selective Non-Catalytic Reduction (SNCR), water/steam injection, flue gas recirculation (FGR), and low-NO_x burners.

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 unit's 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 Oven #5.

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Water/steam injection and FGR can attain similar NO_x reduction efficiencies through lowering burner flame temperature and thereby reducing thermal NO_x formation. However, both control strategies reduce the unit's fuel efficiency.

Low-NO_x burners control mixing of fuel and air in a pattern that keeps flame temperature lower and dissipates the heat quickly. The reduced flame temperature lowers the thermal NO_x emissions; the resulting lower oxygen levels in the flame also reduces fuel NO_x emissions.

Given that the expected maximum NO_x emissions from operating Oven #5 at 8,760 hr/yr each is less than 4 tpy, additional add-on pollution controls are not economically feasible.

BACT for NO_x emissions from Oven #5 is the emission limits listed in the tables below.

d. <u>Carbon Monoxide (CO) and Volatile Organic Compounds (VOC)</u>

Possible strategies for the control of CO and VOC include oxidation catalysts and thermal oxidizers. Oxidation catalysts and thermal oxidizers both have high capital, maintenance, and operational costs considering the size of the unit in question. These controls were determined to be economically infeasible.

BACT for CO and VOC emissions from Oven #5 is the emission limits listed in the tables below.

e. <u>Emission Limits</u>

The BACT emission limits for Oven #5 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	—	06-096 C.M.R. ch. 101, 06-096 C.M.R. ch. 101, § 4(A)(3)
Emissions		

The BACT emission limits for Oven #5 are the following:

Unit	Pollutant	lb/MMBtu
Oven #5	PM	0.05

	PM	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO	VOC
Unit	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
Oven #5	0.44	0.44	0.44	0.01	0.84	0.71	0.05

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2. Visible Emissions

Visible emissions from the Oven #5 shall 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

Oven #5 does not meet the definition of "steam generating unit," because it does not heat water. Therefore, Oven #5 is 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 and 60.41c]

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

Oven #5 does not meet the definition of "steam generating unit," because it does not heat water. Therefore, Oven #5 is 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 JJJJJ. [40 C.F.R. §§ 63.11193 and 63.11237]

C. 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 operating Ovens #1, #2, #3, #4, #5, #6, #8, and #9 for 8,760 hr/yr and a facility-wide VOC limit of 9.9 tpy.

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

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Total Licensed Annual Emissions for the Facility Tons/year

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								Total
	PM	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO	VOC ²	HAP
Oven #1	0.4	0.4	0.4		0.8	0.6		
Oven #2	0.4	0.4	0.4		0.8	0.6		
Oven #3	0.9	0.9	0.9		1.7	1.4		
Oven #4	0.7	0.7	0.7		1.3	1.1		
Oven #5	1.9	1.9	1.9		3.7	3.1		
Oven #6	0.5	0.5	0.5		1.1	0.9		
Oven #8	0.5	0.5	0.5		1.1	0.9		
Oven #9	0.5	0.5	0.5		1.1	0.9		
Facility Wide							9.9	2.0
Total TPY	5.8	5.8	5.8		11.6	9.5	9.9	2.0

(used to calculate the annual license fee)

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
СО	250

The total licensed annual emissions for the facility are below the emission levels contained in the table above and there are no extenuating circumstances; therefore, an ambient air quality impact analysis is not required as part of this license amendment.

This determination is based on information provided by the applicant regarding the expected construction and operation of the proposed and licensed 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 Johnson Outdoors to submit additional information and may require an ambient air quality impact analysis at that time.

² Estimated VOC emissions from the ovens are not included, because there is a facility wide limit of 9.9 tpy.

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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-319-71-L-A subject to the conditions found in Air Emission License A-319-71-K-N/M and the following conditions.

<u>Severability</u>. 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.

SPECIFIC CONDITIONS

The following shall replace Condition (16) of Air Emission License A-319-71-K-N/M:

- (16) **Ovens #1, #2, #3, #4, #5, #6, #8, and #9**
 - A. Ovens #1, #2, #3, #4, #5, #6, #8, and #9 are licensed to fire natural gas. [06-096 C.M.R. ch. 115, BPT and BACT (Oven #5)]
 - B. Emissions shall not exceed the following:

Emission Unit	Pollutant	lb/MMBtu	Origin and Authority
Oven #3	PM	0.05	06-096 C.M.R. ch. 115, BPT
Oven #4	PM	0.05	06-096 C.M.R. ch. 115, BPT
Oven #5	PM	0.05	06-096 C.M.R. ch. 115, BACT

C. Emissions shall not exceed the following [06-096 C.M.R. ch. 115, BPT and BACT (Oven #5)]:

Emission	PM	PM ₁₀	PM _{2.5}	SO ₂	NOx	CO	VOC
Unit	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
Oven #1	0.09	0.09	0.09	0.001	0.17	0.15	0.01
Oven #2	0.09	0.09	0.09	0.001	0.17	0.15	0.01
Oven #3	0.20	0.20	0.20	0.002	0.39	0.33	0.02
Oven #4	0.15	0.15	0.15	0.002	0.29	0.24	0.02
Oven #5	0.44	0.44	0.44	0.01	0.84	0.71	0.05
Oven #6	0.13	0.13	0.13	0.001	0.24	0.20	0.01
Oven #8	0.13	0.13	0.13	0.001	0.24	0.20	0.01
Oven #9	0.13	0.13	0.13	0.001	0.24	0.20	0.01

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D. Visible emissions from each oven shall not exceed 10% opacity on a six-minute block average basis. [06-096 C.M.R. ch. 101, § 4(A)(3)]

The following is a new condition:

(20) If the Department determines that any parameter value pertaining to construction and operation of the emissions units, including but not limited to stack size, configuration, flow rate, emission rates, nearby structures, etc., deviates from what was submitted in the application or ambient air quality impact analysis for this air emission license, Johnson Outdoors may be required to submit additional information. Upon written request from the Department, Johnson Outdoors shall provide information necessary to demonstrate AAQS will not be exceeded, potentially including submission of an ambient air quality impact analysis or an application to amend this air emission license to resolve any deficiencies and ensure compliance with AAQS. Submission of this information is due within 60 days of the Department's written request unless otherwise stated in the Department's letter. [06-096 C.M.R. ch. 115, § 2(O)]

done and dated in Augusta, maine this 31^{st} day of OCTOBER, 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-319-71-K-N/M (issued 2/18/2015).

[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 applicat	ion: September 27, 2024
Date of application acceptance:	October 2, 2024

Date filed with the Board of Environmental Protection:

This Order prepared by Kendra Nash, Bureau of Air Quality.

