



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

DEPARTMENT ORDER

**Kingfish Maine Inc.
Washington County
Jonesport, Maine
A-1157-71-C-M**

**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

Kingfish Maine Inc. (Kingfish) was issued Air Emission License A-1157-71-A-N on August 17, 2021, for the operation of emission sources associated with their aquaculture facility. The license was subsequently amended on January 9, 2023, (A-1157-71-B-M) to extend the deadline to commence construction of the proposed facility.

The equipment addressed in this license will be located at 9 Dun Garvin Road, Jonesport, Maine.

Kingfish has requested a minor revision to their license in order to extend the deadline to commence construction on the proposed facility for a second time.

In addition, the Department is taking this opportunity to update visible emission standards as necessary due to recent changes to 06-096 Code of Maine Rules (C.M.R.) ch. 101, *Visible Emissions Regulation*.

B. Emission Equipment

The following equipment is addressed in this air emission license:

Stationary Engines

Equipment	Max. Input Capacity (MMBtu/hr)	Rated Output Capacity (kW)	Fuel Type, % sulfur	Firing Rate (gal/hr)	Date of Manuf.
Generator #1	23.5	2,500	distillate fuel, 0.0015%	171.3	≥ 2021
Generator #2	23.5	2,500	distillate fuel, 0.0015%	171.3	≥ 2021
Generator #3	23.5	2,500	distillate fuel, 0.0015%	171.3	≥ 2021
Generator #4	23.5	2,500	distillate fuel, 0.0015%	171.3	≥ 2021
Generator #5	23.5	2,500	distillate fuel, 0.0015%	171.3	≥ 2021
Generator #6	23.5	2,500	distillate fuel, 0.0015%	171.3	≥ 2021

C. Revision Description and Best Available Control Technology Analysis

Condition (20) of Air Emission License A-1157-71-B-M states:

- (20) The Department grants an 18-month construction timeframe extension to Kingfish to commence construction on the proposed facility in air emission license A-1157-71-A-N. If Kingfish does not commence construction within 18 months of the issuance date of this air emission license amendment, approval to construct shall become invalid, and Kingfish shall be required to apply for a license amendment to re-address Best Available Control Technology (BACT) for licensed emissions sources. [06-096 C.M.R. ch. 115, § (3)(E)(5)(c)]

The air emission license thereby anticipates that additional time to commence construction may be needed and provides the licensee the ability to request an extension provided BACT for the licensed emissions units is re-evaluated.

Kingfish is licensed to install six new emergency generators used to provide backup electricity in the event of an emergency. The emergency generators are generator sets with each set consisting of an engine and an electrical generator. Each engine will exhaust through its own dedicated stack.

Each generator will be rated for no more than 2,500 kW and be powered by an engine with a maximum heat input capacity of no more than 23.5 MMBtu/hr firing distillate fuel.

Kingfish submitted a BACT analysis for control of emissions from Generators #1 - #6. Since the generators are classified as emergency use only, all calculations of cost effectiveness are based on each engine operating for 100 hours per year, the maximum discretionary, non-emergency usage allowed by 40 C.F.R. Part 60, Subpart III.

1. Particulate Matter (PM, PM₁₀)

Kingfish considered the use of diesel particulate filters (DPF) and diesel oxidation catalysts (DOC) for control of particulate matter from Generators #1 - #6. Kingfish also considered purchasing engines designed for non-emergency use and, therefore, certified to meet more stringent (lower) emission standards (Tier 4). Cost estimates for this option were based on the difference in cost between a Tier 4 certified engine and the proposed Tier 2 certified engines.

The cost of control is estimated to be in excess of \$1.3 million per ton of particulate matter controlled for DPF, \$2.5 million per ton of particulate matter for DOC, and \$4.6 million per ton of particulate matter for a Tier 4 certified engine. Further, the installation of add-on controls would void the manufacturer's emissions certification since the engines would no longer be configured according to the manufacturer's emission-related settings. This would result in additional costs to perform initial and repeat performance tests pursuant to 40 C.F.R. § 60.4211(g)(3). Therefore, DPF, DOC, and Tier 4 certified engines were determined to not be economically feasible for these units.

Pursuant to 40 C.F.R. Part 60, Subpart III, the proposed engines must be designed to meet a particulate matter emission standard of 0.2 g/kW-hr. [40 C.F.R. § 60.4202(b)(2)] However, the manufacturer's certification to this standard is based on a weighted average of emission rates across various loads and does not represent the maximum emission rate. Kingfish proposed an emission limit of 0.58 lb/hr for each engine based on manufacturer test data which takes into account potential site variation and emission factors for condensable particulate matter from EPA's Compilation of Air Emission Factors (AP-42), Fifth Edition, Volume 1, Chapter 3, *Stationary Internal Combustion Sources*.

BACT for particulate matter emissions from Generators #1 - #6 is determined to be the emission limits listed in the tables below, compliance with a visible emission standard of 20% on a six-minute block average basis, and compliance with applicable requirements of 40 C.F.R. Part 60, Subpart III.

2. Sulfur Dioxide (SO₂)

Kingfish has proposed to fire only distillate fuel with a sulfur content not to exceed 0.0015% by weight. The use of this fuel results in minimal emissions of SO₂, and additional add-on pollution controls are not economically feasible.

BACT for SO₂ emissions from Generators #1 - #6 is the use of ultra-low-sulfur distillate fuel (i.e., 15 ppmw sulfur content or lower) and the emission limits listed in the tables below.

3. Nitrogen Oxides (NO_x)

Kingfish considered the use of selective catalytic reduction (SCR) for control of NO_x from Generators #1 - #6 as well as purchasing a Tier 4 certified engine which has an integrated SCR system.

The cost of control to add SCR to the proposed engines is in excess of \$47,000 per ton of NO_x controlled. Further, the installation of add-on controls would void the manufacturer's emissions certification since the engines would no longer be configured according to the manufacturer's emission-related settings. This would result in additional costs to perform initial and repeat performance tests pursuant to 40 C.F.R. § 60.4211(g)(3).

The cost of control for purchasing Tier 4 certified engines was calculated based on the cost difference between those units and the proposed Tier 2 certified engines. The cost of control to purchase Tier 4 certified engines is in excess of \$53,000 per ton of NO_x controlled. The Department finds that both installation of SCR and purchasing Tier 4 engines are not economically feasible for these units.

Pursuant to 40 C.F.R. Part 60, Subpart IIII, each of the proposed engines must be designed to meet an emission standard of 6.4 g/kW-hr for NO_x and non-methane hydrocarbons (NMHC) combined. [40 C.F.R. § 60.4202(b)(2)] However, the manufacturer's certification to this standard is based on a weighted average of emission rates across various loads and does not represent the maximum emission rate. Kingfish proposed an emission limit of 51.10 lb/hr for each engine based on manufacturer test data which takes into account potential site variation.

BACT for NO_x emissions from Generators #1 - #6 is determined to be the emission limits listed in the tables below and compliance with applicable requirements of 40 C.F.R. Part 60, Subpart IIII.

Additionally, if the sum of the operating time for all six generators combined exceeds 3,900 hours on a 12-month rolling total basis, the facility's potential to emit (PTE) will exceed 100 tpy for NO_x, which would cause Kingfish to be considered a major source for NO_x. Therefore, if this threshold is exceeded, Kingfish shall submit to the Department an application for a Part 70 license pursuant to 06-096 C.M.R. ch. 140 within 12 months of the date the generators exceed this operating threshold.

4. Carbon Monoxide (CO) and Volatile Organic Compounds (VOC)

Kingfish considered the use of DOC for control of CO and VOC from Generators #1 - #6 as well as purchasing Tier 4 certified engines.

The cost of control to add DOC to the proposed engines exceeds \$80,000 per ton of CO controlled and \$405,000 per ton of VOC controlled. Further, the installation of add-on controls would void the manufacturer's emissions certification since the engines would no longer be configured according to the manufacturer's emission-related settings. This would result in additional costs to perform initial and repeat performance tests pursuant to 40 C.F.R. § 60.4211(g)(3).

The cost of control to purchase Tier 4 certified engines exceeds \$447,000 per ton of CO controlled and \$2.2 million per ton of VOC controlled. The Department finds that both installation of DOC and purchasing Tier 4 certified engines are not economically feasible for these units.

Pursuant to 40 C.F.R. Part 60, Subpart III, each of the proposed engines must be designed to meet an emission standard of 3.5 g/kW-hr for CO and 6.4 g/kW-hr for NO_x and NMHC combined [40 C.F.R. § 60.4202(b)(2)]. However, the manufacturer's certification to these standards is based on a weighted average of emission rates across various loads and does not represent the maximum emission rates. Kingfish proposed an emission limit of 6.09 lb/hr for CO and 1.21 lb/hr for VOC for each engine based on manufacturer test data which takes into account potential site variation.

BACT for CO and VOC emissions from Generators #1 - #6 is determined to be the emission limits listed in the tables below and compliance with applicable requirements of 40 C.F.R. Part 60, Subpart III.

5. Emission Limits

The BACT emission limits for Generators #1 - #6 were based on the following:

PM/PM ₁₀	0.05 g/hp-hr based on manufacturer's data
SO ₂	combustion of distillate fuel with a maximum sulfur content not to exceed 15 ppmw (0.0015% sulfur by weight)
NO _x	6.38 g/hp-hr @ 100% load based on manufacturer's data
CO	0.76 g/hp-hr @ 100% load based on manufacturer's data
VOC*	0.29 g/hp-hr @ 50% load based on manufacturer's data

*Represents worst-case emissions scenario

The BACT emission limits for Generators #1 - #6 are the following:

Unit	Pollutant	lb/MMBtu
Generator #1	PM	0.09
Generator #2	PM	0.09
Generator #3	PM	0.09
Generator #4	PM	0.09
Generator #5	PM	0.09
Generator #6	PM	0.09

Unit	PM (lb/hr)	PM ₁₀ (lb/hr)	SO ₂ (lb/hr)	NO _x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Generator #1	0.58	0.58	0.04	51.10	6.09	1.21
Generator #2	0.58	0.58	0.04	51.10	6.09	1.21
Generator #3	0.58	0.58	0.04	51.10	6.09	1.21
Generator #4	0.58	0.58	0.04	51.10	6.09	1.21
Generator #5	0.58	0.58	0.04	51.10	6.09	1.21
Generator #6	0.58	0.58	0.04	51.10	6.09	1.21

Visible emissions from each of the emergency generators shall not exceed 20% opacity on a six-minute block average basis.

The Department finds that an extension is justified based on Kingfish's stated need for additional time due to the pandemic's effect on contractor scheduling and the necessity to complete the appeal process for other required permits prior to commencing construction of the facility.

The Department has reviewed the BACT analysis submitted by Kingfish and finds the emission control technologies and standards listed above, which are identical to those in Air Emission License A-1157-71-A-N, continue to be appropriate.

The Department hereby extends the allowable period to commence construction of the air emission sources at the facility to 18 months from the date of this amendment.

D. Visible Emissions

In 2023, the Department completed rulemaking on revisions to *Visible Emissions Regulation*, 06-096 C.M.R. ch. 101. The revised rule went into effect on January 1, 2024. The following section identifies applicable visible emissions requirements and addresses necessary revisions to applicable requirements due to this rulemaking.

1. General Process Sources

The visible emissions standard for general process sources not otherwise identified has not changed. However, the citation is updated to 06-096 C.M.R. ch. 101, § 4(B)(4).

2. Fugitive Emissions

On January 1, 2024, the applicable visible emissions standard for Fugitive Emissions contained in 06-096 C.M.R. ch. 101 changed to the following:

Kingfish 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.

Kingfish 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)]

E. 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-1157-71-C-M subject to the conditions found in Air Emission License A-1157-71-A-N and amendment A-1157-71-B-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.

SPECIFIC CONDITIONS

The following shall replace Condition (18) of Air Emission License A-1157-71-A-N:

(18) **Fugitive Emissions**

- A. Kingfish 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. Kingfish 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)]

The following shall replace Condition (19) of Air Emission License A-1157-71-A-N:

(19) 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)]

The following shall replace Condition (20) of Air Emission License A-1157-71-B-M:

(20) The Department grants an 18-month construction timeframe extension to Kingfish to commence construction on the proposed facility in air emission license A-1157-71-A-N. If Kingfish does not commence construction within 18 months of the issuance date of this air emission license amendment, approval to construct shall become invalid, and Kingfish shall be required to apply for and receive a license amendment prior to commencing construction. The Department may condition such extension upon a review of either the control technology analysis or the ambient air quality standards analysis, or both. [06-096 C.M.R. ch. 115 § (3)(E)(5)(c)]

DONE AND DATED IN AUGUSTA, MAINE THIS 27th DAY OF AUGUST, 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-1157-71-A-N (issued 8/17/2021).

[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: 7/2/2024

Date of application acceptance: 7/8/2024

Date filed with the Board of Environmental Protection:

This Order prepared by Lynn Muzzey, Bureau of Air Quality.

