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Augusta, Maine

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KINGFISH MAINE INC.
APPLICATION FOR MINOR SOURCE AIR LICENSE (CHAPTER 115)

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CONTENTS

APPENDICES

ACRONYMS

BACT	Best Available Control Technology
CAA	Clean Air Act
CFR	Code of Federal Regulations
CI	Compression Ignition
CMR	Code of Maine Regulations
CO	Carbon Monoxide
CO_2e	Carbon Dioxide Equivalents
DEP	Department of Environmental Protection
DOC	Diesel Oxidation Catalyst
DPF	Diesel Particulate Filter
GHG	Greenhouse Gases
HAP	Hazardous Air Pollutant
ICE	Internal Combustion Engine
kPa	kilopascal
LAER	Lowest Achievable Emissions Rate
MMBtu/hr	Million BTUs/hour
MWe	Megawatts
NAAQS	National Ambient Air Quality Standard
NESCAUM	Northeast States for Coordinated Air Use Management
NESHAP	National Emission Standards for Hazardous Air Pollutants
NNSR	Non-attainment new source review
NO_X	Nitrogen Oxides
NSCR	Non-selective Catalytic Reduction
NSPS	New Source Performance Standards
NSR	New Source Review
PM	Particulate Matter
PSD	Prevention of Significant Deterioration
psia	pounds per square inch
RACT	Reasonably Available Control Technology
RAS	Recirculating Aquaculture System
RICE	Reciprocating Internal Combustion Engines
RMP	Risk Management Prevention
SCR	Selective Catalytic Reduction
SI	Spark Ignition
SNCR	Selective Non-Catalytic Reduction
SO2	Sulfur Dioxide
tpy	Tons Per Year
Vp	Vapor Pressure
ULSD	Ultra-Low Sulfur Diesel
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compounds
VOL	Volatile Organic Liquid

1. INTRODUCTION

Kingfish Maine Inc ("the applicant") is submitting this application to the Maine Department of Environmental Protection (DEP) for an air emissions license to construct and operate emissions sources pursuant to Chapter 115 of Maine DEP regulations (06-096 CMR 115). Specifically, the applicant proposes to install six diesel-fired emergency generators that will provide emergency back-up power to a new land-based aquaculture facility, located in Jonesport, Maine ("the facility").

1.1 Permitting Requirements

The Clean Air Act (CAA) New Source Review (NSR) program is a preconstruction permitting program for new major sources of pollution and major modifications to existing sources. NSR is comprised of two elements: Non-attainment NSR (NNSR), which is potentially applicable to facilities located in an area classified as non-attainment for the National Ambient Air Quality Standards (NAAQS) and Prevention of Significant Deterioration (PSD), which is applicable to facilities located in an area classified as attainment for the NAAQS.

The proposed facility will be located in Washington County, which is located within the Ozone Transport Region (OTR)[1], and is designated as attainment or unclassifiable for all pollutants with respect to the National Ambient Air Quality Standards (NAAQS).[2] As such, NNSR is the applicable permitting program for emissions of volatile organic compounds (VOCs) and nitrogen oxides (NOx); and PSD is the applicable permitting program for all other criteria pollutants.

Based on the potential emissions for the proposed project, the Kingfish facility will be classified as a minor source with respect to both NNSR and PSD preconstruction permitting programs. Once constructed, the facility will also be classified as a minor source with respect to the CAA Title V operating permit program.

1.2 Application Contents

The subsequent sections of this air license application provide a discussion of the methodology used to estimate the project emissions, proposed air license conditions, a Best Available Control Technology (BACT) review, and a detailed review of federal and state regulatory applicability.

Further, the following has been appended to this application:

- Appendix 1: Facility location map and site layout
- Appendix 2: Chapter 115 Air Emission License Application Forms
- Appendix 3: Proposed Generator Manufacturer Specifications and Emissions Data Sheets
- Appendix 4: Emission Calculations
- Appendix 5: Proof of Public Notice
- Appendix 6: Documentation of Title, Right or Interest

[1] On January 11, 2021, the USEPA proposed to approve a petition from the state of Maine requesting to remove a portion of the state from the OTR. However, this did not include Washington County, which will remain part of the OTR.

[2] 40 CFR 81.320

2. PROJECT DESCRIPTION

The applicant plans to construct a new land-based aquaculture facility on an approximately 94-acre parcel of land at 9 Dun Garvin Road in Jonesport, Maine. The aquaculture facility will be used to grow Yellowtail Kingfish using a Recirculating Aquaculture System (RAS) approach. The growing process will begin with breeding and hatching operations that will be housed in Building 1, followed by grow-out and harvest in Building 2 (see Figure 2 in **Appendix 1**). Emissions sources associated with this project will be limited to diesel-fired emergency generators that will be used to provide backup electricity in the event of an emergency, diesel tanks that will be used to store fuel for the emergency generators, and ancillary routine maintenance activities. The proposed emissions sources are described in more detail below.

2.1 Emergency Generators

The applicant is proposing to construct and operate six diesel-fired emergency generators, each with a rated electrical output of 2.5 megawatts (MWe). Each generator will be certified to meet United States Environmental Protection Agency (UESPA) Tier 2 emissions standards. Additional generator specifications are summarized in **Table 1** below and in the manufacturers specification sheets included in **Appendix 3**.

In addition to operating during emergency events, the generators will be operated for regular maintenance and testing. The generators will not be used for demand response or peak shaving and will meet all other applicable standards for emergency generators under Subpart IIII of Federal New Source Performance Standards (NSPS) regulations (40 CFR 60 Subpart IIII).

To allow for some flexibility when finalizing the selection of the generator model that will be used for this project, the applicant requests that the air emissions license allow for the construction and operation of set of generators that are equivalent to the generators described below and throughout this application. Proposed license conditions are included in Section 4 of this application.

Table 1. Summary of Proposed Emergency Generators[1]

Fuel Type	Electrical Output per Generator	Heat Input per Generator	Number of Generators	Emission Unit ID Numbers for Generators
Diesel	2.5 MWe	23.5 MMBtu/hr	6	Generator #1 through Generator #6

Notes:

[1]To allow for flexibility when making a final selection of generator model, the applicant requests that the license allow for the construction and operation of a generator model that is equivalent to the model described here and throughout this application. Proposed permit conditions related to the desired flexibility are included in Section 3.4.

2.2 Other Emissions Sources

Other sources associated with this project will include the following, each of which is exempt from Chapter 115 air emissions licensing requirements:

- **Diesel storage tanks:** The applicant plans to construct ten approximately 13,000 to 15,000-gallon stand-alone aboveground diesel storage tanks that will store fuel for the emergency generators. Because the storage tanks will store diesel fuel only, which has a vapor pressure (Vp) less than 5 mm Hg at 21°C, the storage tanks are classified as insignificant and thus are not included in a Chapter 115 license, pursuant to 06-096 CMR 115 Appendix B Section B(19).
- **Facility upkeep activities:** The applicant plans to conduct typical facility upkeep activities, including painting, cleaning, plastic welding, metal welding. These activities are considered categorically exempt insignificant activities that are exempt from being included on a Chapter 115 license application and Chapter 115 license, pursuant to 06-096 CMR 115 Appendix A Sections A(12), A(16), A(49), and A(115), respectively.

2.3 Schedule for Construction and Installation

The applicant plans to start initial groundwork during Q4 of 2021. Construction is expected to be completed over approximately two years. The first generators are currently proposed for installation and commissioning during Q1 of 2023.

3. EMISSIONS CALCULATIONS

Pollutants emitted from the proposed project will include the following regulated pollutants: nitrogen oxides (NO_X); carbon monoxide (CO); volatile organic compounds (VOCs); sulfur dioxide (SO_2); particulate matter (PM); PM less than 10 microns in aerodynamic diameter (PM_{10}); PM less than 2.5 microns in aerodynamic diameter ($PM_{2.5}$); and hazardous air pollutants (HAPs); and greenhouse gases (GHGs), the latter of which are expressed herein in terms of carbon dioxide equivalents (CO_2e).

The methodology used to estimate the potential emissions from the generators is discussed in Sections 3.1 and 3.2. The generator manufacturer's specification sheets are provided in **Appendix 3**, and detailed calculations are provided in **Appendix 4**.

3.1 Derivation of Potential Hourly Emissions

The following emission factors were used to estimate the potential hourly emissions from the emergency generators:

- Engine-specific emission factors provided by the manufacturer for NO_X, VOCs (as hydrocarbons), CO, and filterable PM were used to estimate the emissions of those pollutants at each generator load. The potential emissions were conservatively calculated based on the manufacturer's "Potential Site Variation" emissions data. Actual emissions are expected to be lower.
- Diesel fuel emission factors in the United States Environmental Protection Agency (USEPA) AP-42, Section 3.4, *Large Stationary Diesel and All Stationary Dual-fuel Engines* (October 1996) were used to calculate emissions of condensable PM, SO_2, and HAPs.
- GHG emission factors and global warming potentials provided in 40 CFR 98 were used to estimate emissions of CO_2e from diesel fuel combustion.

3.2 Derivation of Potential Annual Emissions

Each generator is subject to a maximum of 100 hours of non-emergency operation annually based on the Federal NSPS Subpart IIII limitations on emergency generator use for maintenance and testing purposes. Actual hours of non-emergency operation are expected to be significantly less than 100 hours per generator per year. The calculated maximum annual emissions based on the NSPS limit are provided in **Table 2**. These maximum annual emissions are below the Maine DEP air dispersion modeling thresholds outlined in 06-096 CMR Chapter 115 Section 7(C)(1), and thus dispersion modeling is not required.[3] Based on a review of prior permits issued by Maine DEP, this is the approach that has previously taken by the agency.

Also as described in **Table 2**, the facility will be a classified as a minor source with respect to CAA New Source Review (NSR) and the Title V operating permit program. Because PTE is below major source thresholds for these programs, no limit on emergency hours of use is necessary to establish the facility as a minor source.

[3] Based on a review of previously issued permits by Maine DEP, the agency

Table 2. Maximum Annual Emissions from Non-Emergency Operations

Pollutant	Maximum Annual Emissions (tpy)	Mandatory Air Dispersion Modeling Threshold (tpy)	Title V Major Source Threshold (tpy)[1]	NNSR Major Source Threshold (tpy)[1]	PSD Major Source Threshold (tpy)[1]	Above Thresholds (Yes/No)
NO_X	15.3	50	100	100	--	No
CO	1.8	250	100	--	250	No
VOC	0.4	--	50	50	--	No
$PM/PM_{10}/PM_{2.5}$	0.2	--/25/15	100	--	250	No
SO_2	0.01	50	100		250	No
Max. Individual HAP	0.0055	--	10	--	--	No
Total HAP	0.011	--	25	--	--	No
CO_2e	1,152	--	--	--	--	

Notes:
[1]Potential emissions continue to remain below Title V, NNSR, and PSD thresholds when PTE is calculated based on 500 hours per year per engine of operation, as per UESPA guidance outlined in a September 6, 1995 memo titled Calculating Potential to Emit (PTE) for Emergency Generators (https://www.epa.gov/sites/production/files/2015-08/documents/emgen.pdf).

4. PROPOSED LICENSE CONDITIONS

The applicant expects that license conditions will generally mirror Federal NSPS Subpart IIII requirements for emergency generators, including (but not limited to) requirements for emissions certification, use of Ultra Low Sulfur Diesel (ULSD), and limiting maintenance and testing to 100 hours per generator per year. To minimize short-term pollutant concentrations due to generator maintenance and testing, the applicant proposes to operate no more than one generator in a given hour for regular monthly maintenance and testing purposes, with occasional testing runs requiring the operation of more than one generator at a time.

The applicant proposes the following license conditions regarding concurrent operation of the engines:

- *Kingfish will operate no more than one generator at a time for regular monthly maintenance and testing purposes.*

- *Kingfish may operate more than one generator at a time for occasional testing or other non-emergency purposes, and in the event of an emergency.*

In addition, to allow for some flexibility when finalizing generator selection, the applicant proposes that the license include the following language allowing for the construction and operation of equivalent emergency generators:

The following equipment is addressed in this air emission license:

Stationary Engines

Equipment	***Max. Input Capacity (MMBtu/hr)***	***Rated Output Capacity (MWe)***	***Fuel Type, % sulfur***	***Firing Rate (gallons/hr)***	***Date of Manufacture***	***Date of installation***
Generators #1 through Generator #6	*23.5 (each generator)*	*2.5 (each generator)*	*Diesel, 0.0015%*	*171.3 (each generator)*	*2021 or later (est.)*	*2023 or later (est.)*

Kingfish may install and operate an equivalent set of emergency generators in lieu of the six emergency generators described above so long as the following conditions are met, in addition to all other conditions stated in this license:

- *The maximum heat input capacity, rated output capacity, and firing rate of the equivalent generators are equal to or less than the specifications identified in the table above.*
- *The maximum hourly and annual emission rates from the equivalent generators do not exceed the emission rates listed in this license for PM, SO_2, NO_X, CO, and VOC.*
- *The equivalent generators will burn only diesel fuel with ≤ 0.0015% sulfur content.*

If the equivalent generators have a rated output capacity of less than 2.5 MWe each, the total number of non-exempt generators at the facility may exceed 2.5 MWe, so long as the combined rated output capacity for all non-exempt generators at the facility does not exceed 15 MWe of electrical output.

5. BEST AVAILABLE CONTROL TECHNOLOGY REVIEW

In accordance with 06-096 CMR Chapter 115 Section 4 (A)(4), new minor source license applications must include a demonstration that emissions from the proposed emissions sources meet Best Available Control Technology (BACT). BACT is defined as follows in 06-096 CMR Chapter 100:

"Best Available Control Technology" means an emission limitation (including a visible emissions standard) based on the maximum degree of reduction for each pollutant emitted from or which results from the new or modified emissions unit which the Department on a case-by-case basis, taking into account energy, environmental and economic impacts and other costs, determines is achievable for such emissions unit through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combination techniques for control of each pollutant. In no event shall application of BACT result in emissions of any pollutant which would exceed the emissions allowed by any applicable standard under 40 C.F.R. Part 60 and 61 or any applicable emission standard established by the Department. If the Department determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emission standard infeasible, a design, equipment, work practice, operational standard or combination thereof may be prescribed instead to satisfy the requirement for the application of BACT. Such standard shall, to the degree possible, set forth the emission reduction achievable by implementation of such design, equipment, work practice or operation, and shall provide for compliance by means which achieve equivalent results.

In accordance with 06-096 CMR Chapter 115 Section 4 (A)(4)(d), BACT must include the following steps:

(i) ***Identify all potential control strategies****.*

(ii) ***Eliminate technically infeasible options****. The demonstration of technical infeasibility should be clearly documented and should show, based on physical, chemical and engineering principles, that the technical difficulties would preclude the successful use of the control option on the emission unit under review.*

(iii) ***Rank remaining control technologies by control effectiveness****. The ranking should include relevant information including:*

(a) *control effectiveness*

(b) *expected emission rate*

(c) *expected emission reduction*

(d) *energy impacts*

(e) *environmental impacts*

(f) *economic impacts*

(iv) ***Evaluate most effective controls and document results****. The evaluation should include case by case consideration of energy, environmental and economic impacts. If top option is not selected as BACT, the evaluation should consider the next most effective control option.*

(v) ***Select BACT****. BACT is the most effective option not rejected in Step (iv).*

The five steps outlined above have been completed for the proposed project and are outlined in more detail below. This analysis encompasses all criteria air pollutants that will be emitted by the proposed emergency generators including NO_X, CO, VOC, $PM/PM_{10}/PM_{2.5}$, and SO_2.

5.1 Identification of Potential Control Strategies and Elimination of Technically Infeasible Options

Based on a review of the USEPA RACT/BACT/LAER Clearinghouse[4], air permits for other facilities using emergency generators in Maine and more broadly across the United States (**Table 3**), USEPA's Alternative Control Technology Document for Stationary Diesel Engines[5], and documentation from the Northeast States for Coordinated Air Use Management (NESCAUM) APTI Course 418 for NO_X Emissions Controls from Stationary Sources[6], the applicant identified the potential control technologies listed in **Table 4**.

Table 3. Emissions Control Requirements for Selected Emergency Engines Permitted in the Northeast[7]

State	Company Name	Number and Size Range of Diesel Emergency Generators	UESPA Certification Level of Emergency Generators[1]	Add-On Emissions Controls	Reference
ME	Maine Medical Center	4 (250 kW – 2,000 kW)	Tier 2	None	https://www.maine.gov/dep/ftp/AIR/licenses/ch115/A0431LM.pdf
ME	Sunday River Skiway Corporation	11 (152 HP – 800 HP)	Tier 2	None	https://www.maine.gov/dep/ftp/AIR/licenses/ch115/A0634JR.pdf
NH	Capital Region Health Care Corporation	5 (300 kW – 1,000 kW)	Tier 2	None	https://www4.des.state.nh.us/OneStopPub/Air/330130000920-0636TypePermit.pdf
VT	University of Vermont	21 (15 kW – 1,000 kW)	Tier 2	None	https://anrweb.vt.gov/DEC/AirFacilities/DownloadFile.aspx?FPD=2548&option=view
[1]The certification level listed is for the newer diesel emergency generators in the noted permits, which are subject to NSPS IIII (i.e., generator engines that were manufactured in 2006 or later)					

[4] https://cfpub.epa.gov/rblc/index.cfm?action=Search.BasicSearch&lang=en

[5] Alternative Controls Technology Document: Stationary Diesel Engines; Prepared by Bradley Nelson, EC/R Incorporated; Prepared for USEPA; dated March 5, 2010; https://www.epa.gov/sites/production/files/2014-02/documents/3_2010_diesel_eng_alternativecontrol.pdf

[6] NO_X Emissions Control from Stationary Sources, Student Manual, APTI Course 418; Developed by NESCAUM; September 2009 (Chapter 8 revised in January 2012); https://www.apti-learn.net/lms/register/display_document.aspx?dID=749

[7] Additional examples of issued permits in the northeast can be provided upon request.

Table 4. Control Technologies

Control Technology Identified	Pollutants Controlled	Notes
Use of Ultra-Low Sulfur Diesel (ULSD) Fuel	SO_2	Use of ULSD is required under NSPS IIII.
Tier 2 Certified Engine	NO_X, PM, VOC, and CO	USEPA Tier 2 certification is required under NSPS IIII. Tier 2 certified engines typically use pre-combustion controls such as fuel injection timing and exhaust gas recirculation to meet emissions standards.
Selective Catalytic Reduction (SCR)	NO_X	Add-on air pollution control devices. One or more of these devices may be installed on a Tier 2 engine to further reduce emissions.
Diesel Particulate Filter (DPF)	PM	
Diesel Oxidation Catalyst (DOC)	PM, VOC, and CO	
Tier 4 Certified Engine (Integrated SCR, DPF, and DOC)	NO_X, PM, VOC, and CO	Tier 4 certified engines come equipped with an integrated SCR, DPF, and DOC.

In addition to the control technologies identified in **Table 4**, the applicant identified the following control technologies which were determined to be technically infeasible:

- Selective Non-Catalytic Reduction (SNCR) removes NO_X without a catalyst. Because there is no catalyst, there is a very narrow temperature window in which the SNCR will effectively remove NO_X[3]. This narrow window of effectiveness makes this type of control unsuitable for an intermittent source that operates at variable loads and temperatures.

- Non-selective Catalytic Reduction (NSCR) removes NO_X with a catalyst and no reagent. This technology requires no excess air and is therefore unsuitable for an intermittent source that operates at variable loads and air to fuel ratios.

5.2 Evaluate Most Effective Controls

To comply with NSPS IIII requirements, the applicant must at a minimum use Tier 2 certified engines and ULSD. To further evaluate the remainder of the emissions controls identified in **Table 3**, the applicant reviewed the energy, environmental, and economic impacts of each control in more detail. Energy impacts are expected to be negligible since these controls do not require significant energy to operate. Based on the economic and environmental impacts discussed below, the applicant has concluded that the use of SCR, DPF, DOC, and/or Tier 4 engines does not represent BACT.

5.2.1 ECONOMIC IMPACTS

To evaluate economic impacts, the applicant calculated the cost effectiveness of each control, expressed in terms of the cost of the control per ton of pollutant removed. The results of this evaluation are summarized in **Table 5**, and a detailed summary of the approach and assumptions is included in **Appendix 4**. It should be noted that if one or more of these

emissions controls were to be used, the dollar per ton amounts that would be achieved in practice may be significantly higher than the amounts summarized below due to a number of conservative assumptions that underlie the cost analysis, most notably:

- The cost effectiveness calculations assume each generator will operate up to 100 hours per year, which is the maximum number of hours that each generator can run for non-emergency purposes under NSPS IIII. However, based on the manufacturer's recommended maintenance and testing schedule, each engine is only expected to operate between 20 and 25 hours per year. As such, in practice, the dollar per ton amounts may be up to 4 and 5 times higher than the amounts shown below.

- For SCR controls, NO_X removal does not occur until the SCR catalyst reaches a certain elevated temperature. The time that it takes for the catalyst to reach the required operating temperature typically varies between 10 – 40 minutes, depending on generator load and ambient conditions.[8] The applicant's cost effectiveness calculations conservatively assume that the SCR will begin controlling NO_X emissions immediately upon startup, whereas in practice, the SCR will be removing NO_X for only a portion of each run, after the catalyst has reached the required operating temperature.

Table 5. Cost Effectiveness of Emission Controls

Control Technology	Cost Effectiveness ($/ton)[9]			
	NO_X	PM	VOC	CO
SCR	$23,090	--	--	--
DPF	--	$995,975	--	--
DOC	--	$1,756,577	$281,785	$55,907
Tier 4 (Integrated SCR, DPF, DOC)	$28,833	$2,534,976	$1,219,959	$242,045

Significant additional costs may be incurred if an expanded building footprint is required to accommodate the emissions controls. Based on the results of the cost effectiveness evaluation, the use of SCR, DPF, DOC, and/or Tier 4 engines is not economically feasible.

5.2.2 ENVIRONMENTAL IMPACTS

Although each of the controls was determined to be economically infeasible, the applicant further considered the following environmental impacts related to the controls:

- The use of SCR results in the release of a small amount of ammonia due to the use of an ammonia or urea-based reducing agent. This is referred to as ammonia slip.

- DPFs require regeneration at high temperatures that are typically achieved at close to 100% load. This requires operation for approximately two hours once per year at 100% load. If operation at this load does not occur during the year under normal operation, then the engine would be required to operate for approximately two additional hours for the purpose

[8] Analysis of the Technical Feasibility and Costs of After-Treatment Controls on New Emergency Standby Engines; Prepared by the California Air Recourses Board; dated 2010; https://ww3.arb.ca.gov/regact/2010/atcm2010/atcmappb.pdf
[9] See detailed calculations in Appendix 4

of DPF regeneration, resulting in emissions of volatile combustion pollutants (NO_X, VOC, CO) that would not otherwise occur without a DPF.

The negative environmental impacts described above further support the applicant's conclusion that the use of these controls does not represent BACT.

5.3 Selection of BACT

The applicant has selected the use of Tier 2 certified engines with ULSD as BACT. Because the engines will operate for a limited number of hours each year, overall emissions will be generally low and the use of emissions controls is not cost effective.

6. FEDERAL, STATE, AND CITY REGULATORY APPLICABILITY REVIEW

The following section outlines the federal and state air regulations that are potentially applicable to the proposed project. Specifically, the requirements under the federal major NSR permitting program, Title V of the Clean Air Act Amendments, NSPS, National Emissions Standards for Hazardous Air Pollutants (NESHAP), Chemical Accident Prevention Provisions, and Maine DEP air rules are discussed herein.

6.1 Major Source New Source Review

The federal NSR permitting program regulates criteria pollutant emissions from major stationary sources. NSR is comprised of two elements: NNSR and PSD. NNSR permitting is applicable in areas that have been designated as nonattainment for a regulated pollutant under the NAAQS. In addition, NNSR permitting is applicable to facilities that exceed certain thresholds of NO_X or VOC emissions and are located in the OTR. PSD permitting applies in cases where NNSR permitting does not apply. The proposed facility will be located in Washington County, which is located within the OTR and is designated as attainment or unclassifiable for all pollutants with respect to the NAAQS.[10,11] As such, NNSR is the applicable preconstruction permitting program for VOC and NO_X, and PSD is the applicable preconstruction permitting program for all other criteria pollutants. The Kingfish facility will be a minor source with respect to both NNSR and PSD. As shown in **Table 2**, all criteria pollutant emissions for the facility will be below the PSD major source thresholds and thus a PSD permit is not required for this project.

6.2 Title V Operating Permits

The Title V operating permits program, promulgated in 40 CFR Part 70, requires a facility to obtain a "Part 70" or Title V operating permit if it has potential emissions of a regulated criteria pollutant exceeding 100 tpy, of any single HAP exceeding 10 tpy, or of the aggregate of all HAPs exceeding 25 tpy. More stringent emissions thresholds apply to areas that are in nonattainment with a NAAQS and/or in the Ozone Transport Region (OTR). Because Washington County is located in the OTR, a lower threshold of 50 tons per year applies to emissions of VOCs. As shown in **Table 2**, potential emissions from the facility will be below applicable Title V thresholds and the facility will be classified as a minor source with respect to the Title V operating permits program.

6.3 New Source Performance Standards

NSPS, promulgated in 40 CFR 60, provide emissions standards for criteria pollutant emissions from new, modified, and reconstructed sources. The remainder of this section discusses the NSPS that are potentially applicable to the proposed project.

[10] 40 CFR 81.320
[11] On January 11, 2021, the USEPA proposed to approve a petition from the state of Maine requesting to remove a portion of the state from the OTR. However, this did not include Washington County, which will remain part of the OTR.

6.3.1 40 CFR 60 SUBPART A – GENERAL PROVISIONS

NSPS Subpart A provides generally applicable requirements for testing, monitoring, notifications, and recordkeeping. Any source that is subject to another subpart under 40 CFR 60 is also subject to Subpart A, unless otherwise stated in the specific subpart.

6.3.2 40 CFR 60 SUBPART K – STORAGE VESSELS FOR PETROLEUM LIQUIDS FOR WHICH CONSTRUCTION, RECONSTRUCTION, OR MODIFICATION COMMENCED AFTER JUNE 11, 1973, AND PRIOR TO MAY 19, 1978

NSPS Subpart K is applicable to petroleum storage tanks which were constructed, reconstructed, or modified between June 1973 and May 1978, and which have a storage capacity greater than 40,000 gallons.[12] The project includes the installation of diesel tanks for its proposed generators; however, each of these tanks will be new units constructed after 1978, and none of the tanks will have a storage capacity greater than 40,000 gallons. Therefore, NSPS Subpart K does not apply.

6.3.3 40 CFR 60 SUBPART Ka – STORAGE VESSELS FOR PETROLEUM LIQUIDS FOR WHICH CONSTRUCTION, RECONSTRUCTION, OR MODIFICATION COMMENCED AFTER MAY 18, 1978, AND PRIOR TO JULY 23, 1984

Similar to NSPS Subpart K, NSPS Subpart Ka is applicable to petroleum storage tanks which were constructed, reconstructed, or modified between May 1978 and July 1984, and which have a storage capacity greater than 40,000 gallons.[13] Further, none of the diesel storage tanks will have a storage capacity greater than 40,000 gallons and all the proposed storage tanks will be new units constructed after 1984. Therefore, NSPS Subpart Ka does not apply.

6.3.4 40 CFR 60 SUBPART Kb – VOLATILE ORGANIC LIQUID STORAGE VESSELS (INCLUDING PETROLEUM LIQUID STORAGE VESSELS) FOR WHICH CONSTRUCTION, RECONSTRUCTION, OR MODIFICATION COMMENCED AFTER JULY 23, 1984

NSPS Subpart Kb applies to volatile organic liquid (VOL) storage vessels constructed, reconstructed, or modified after July 1984. VOL storage tanks are only subject to this rule if they meet one of the following criteria:[14]

- The storage vessel has a maximum storage capacity greater than or equal to 151 m^3 (39,890 gallons) and which stores a VOL with a maximum true vapor pressure exceeding 3.5 kPa (0.51 psia); or
- The storage vessel has a maximum storage capacity greater than or equal to 75 m^3 (19,812.9 gallons) but less than 151 m^3 and which stores a VOL with a maximum true vapor pressure exceeding 15.0 kPa (2.2 psia).

The diesel tanks for the proposed generators each will have a storage capacity less than 19,812.9 gallons. In addition, diesel fuel has a maximum true vapor pressure less than 2.2 psia. Therefore, NSPS Subpart Kb does not apply.

[12] 40 CFR 60.110
[13] 40 CFR 60.110a
[14] 40 CFR 60.110b(b)

6.3.5 40 CFR 60 SUBPART IIII – STATIONARY COMPRESSION IGNITION INTERNAL COMBUSTION ENGINES

NSPS Subpart IIII applies to new, modified, and reconstructed compression ignition (CI) internal combustion engines (ICE). New engines are subject to this regulation if construction of the CI ICE commenced after July 11, 2005, and if the engine was manufactured after April 1, 2006, for CI ICE that are not fire pump engines, or July 1, 2006, for CI ICE that are fire pump engines.[15]

The proposed generators will meet the definition of emergency stationary ICE in 40 CFR 60.4219 and will not operate as fire pump engines. Thus NSPS Subpart IIII applies to the proposed CI ICEs that will be installed and operated as part of this project.

6.3.5.1 40 CFR 60 Subpart IIII Emission Standards

The proposed generators will be classified as emergency generators under this regulation and will each have a displacement of less than 10 liters per cylinder. Per 40 CFR 60.4205(b), each generator will be subject to the applicable emission standards in 40 CFR 89.112-113. The Tier 2 emission standards for nonroad engines with a rated power greater than 560 kW are summarized in **Table 6**.[16] The USEPA Tier 2 standards for nonroad engines are based on a weighted cycle and cannot be used for comparison to load-specific emission rates.

Table 6. Tier 2 Emission Standards

Pollutant	Emission Standard (g/kW-hr)
NO_X + Non-Methane Hydrocarbons (NMHC)	6.4
CO	3.5
PM	0.20

Additionally, the facility is required to only combust in its generators fuel that complies with the following requirements in 40 CFR 80.510(b) for nonroad diesel fuel:[17]

- Maximum sulfur content of 15 ppm; and
- Either a minimum cetane index of 40 or a maximum aromatic content of 35 volume percent.

The applicant will comply with the emission standards in 40 CFR 89.112-113 by purchasing engines certified by the manufacturer to comply with the Tier 2 emission standards.[18] Further, the site will operate and maintain each engine according to the manufacturer's emission-related written instructions and only change those emission-related settings that are permitted by the manufacturer.[19]

6.3.5.2 40 CFR 60 Subpart IIII Run Time Restrictions for Emergency ICE

In order for a stationary engine to be considered an emergency ICE under NSPS Subpart IIII, it must meet the run time restrictions in 40 CFR 60.4211(f).

[15] 40 CFR 60.4200(a)(2)
[16] 40 CFR 89.112(a), Table 1.
[17] 40 CFR 60.4207(b)
[18] 40 CFR 60.4211(c)
[19] 40 CFR 60.4211(a)

There is no restriction on usage of an emergency ICE in emergency situations.[20] Each engine is restricted to a maximum of 100 hours per calendar year of operation for maintenance checks and readiness testing.[21] Each engine is allowed up to 50 hours per calendar year of non-emergency operation other than maintenance and testing; however, any non-emergency run time must be counted as part of the 100 hours per calendar year for maintenance and testing.[22] Any other operations are prohibited.

Kingfish will equip each emergency ICE with a non-resettable hour meter prior to startup of the unit in order to verify compliance with the run time restrictions for emergency and non-emergency runs.[23]

6.3.5.3 40 CFR 60 Subpart IIII Notifications, Reporting, and Recordkeeping

An Initial Notification under NSPS Subpart A is not required for emergency stationary ICE. Kingfish will retain records of the emergency and non-emergency runs for each engine, as recorded through the engine's non-resettable hour meter. The records will indicate the time of operation of the engine and the reason the engine was in operation during that time.[24]

6.3.6 40 CFR 60 SUBPART JJJJ – STATIONARY SPARK IGNITION INTERNAL COMBUSTION ENGINES

NSPS Subpart JJJJ is applicable to new, modified, and reconstructed stationary spark ignition (SI) ICE. All of the proposed generators will be categorized as CI ICE. As such, NSPS Subpart JJJJ does not apply.

6.4 National Emission Standards for Hazardous Air Pollutants (NESHAP)

NESHAP, promulgated in 40 CFR 63, regulate emissions of HAP from specific source categories. A facility that has potential emissions exceeding 10 tpy for any individual HAP and/or emissions exceeding 25 tpy for the sum of all HAP is classified as a major source of HAP emissions. A facility that is not a major source of HAP is classified as an area source.

The proposed facility will be classified as an area source since it has potential HAP emissions less than the major source thresholds. The following sections discuss the potentially applicable NESHAP standards to the proposed facility.

6.4.1 40 CFR 63 SUBPART A – GENERAL PROVISIONS

NESHAP Subpart A provides generally applicable requirements for testing, monitoring, notifications, and recordkeeping. Any source that is subject to another subpart under 40 CFR 63 is also subject to Subpart A, unless otherwise stated in the specific subpart.

[20] 40 CFR 60.4211(f)(1)

[21] 40 CFR 60.4211(f)(2)(i). The U.S. Court of Appeals for the DC Circuit vacated 40 CFR 60.4211(f)(ii)-(iii) in a May 2015 ruling. https://www.epa.gov/sites/production/files/2016-06/documents/ricevacaturguidance041516.pdf

[22] 40 CFR 60.4211(f)(3)

[23] 40 CFR 60.4209(a)

[24] 40 CFR 60.4214(b)

6.4.2 40 CFR 63 SUBPART EEEE – ORGANIC LIQUIDS DISTRIBUTION (NON-GASOLINE)

NESHAP Subpart EEEE is applicable to organic liquids distribution operations, including organic liquid storage tanks, located at major sources of HAP emissions.[25] This regulation does not apply since the facility will be an area source of HAP emissions.

6.4.3 40 CFR 63 SUBPART ZZZZ – STATIONARY RECIPROCATING INTERNAL COMBUSTION ENGINES

NESHAP Subpart ZZZZ applies to new and existing stationary reciprocating internal combustion engines (RICE) located at both major and area sources of HAP emissions. Per 40 CFR 63.6590(c), for new or reconstructed stationary RICE located at an area source of HAP emissions, the only requirement under NESHAP Subpart ZZZZ is to meet the requirements of NSPS Subpart IIII for CI ICE and of NSPS Subpart JJJJ for SI ICE. Since the proposed CI ICE at the facility will be in compliance with NSPS Subpart IIII, the units will also be in compliance with NESHAP Subpart ZZZZ. No further requirements apply for these engines under this regulation.

6.5 Chemical Accident Prevention Provisions

The Chemical Accident Prevention Provisions, promulgated in 40 CFR 68, provide requirements for the development of risk management prevention (RMP) plans for regulated substances. Applicability to RMP plan requirements is based on the types and amounts of chemicals stored at a facility. Diesel fuel is not on the list of regulated substances in Subpart F of this rule; therefore, the proposed project is not required to develop an RMP plan under 40 CFR 68.

6.6 Maine Department of Environmental Protection Rule Chapters

In addition to federal regulations, the Maine DEP rules contained in 06-096 establish regulations applicable at the emission unit level and at the facility level. Source specific standards in 06-096 that are potentially applicable to the facility's emission units are discussed in the following sections.

6.6.1 06-096 CMR 101 VISIBLE EMISSIONS

This regulation limits visible emissions from any stationary internal combustion engine manufactured after the year 2000 to no more than 20% opacity on a six-minute block average basis, except for no more than two six-minute block average in a 3-hour period. During the periods of startup, the unit operator of a reciprocating engine may elect to comply with the work practice standards of Section 4(B) of 06-096 CMR 101.

This limitation is applicable to the proposed generators. Kingfish will comply with this limitation through the use of NSPS-certified engines, and the exclusive combustion of ultra-low sulfur diesel fuel, which is expected to result in negligible visible emissions.

6.6.2 06-096 CMR 103 FUEL BURNING EQUIPMENT PARTICULATE EMISSION STANDARD

This regulation limits particulate emissions from any fuel burning equipment with a maximum rated capacity of 3 MMBtu/hr. Any source burning distillate or residual fuel oil, gas, or other petroleum product with a heat input capacity that is greater than 3 MMBtu/hr and less than 50 million BTU/hr shall not exceed 0.12 lbs particulate/Mmbtu. The proposed generators meet this standard at all operating loads. Detailed emissions calculations are summarized in **Appendix 3**.

[25] 40 CFR 63.2330

6.6.3 06-096 CMR 105 GENERAL PROCESS SOURCE PARTICULATE EMISSION STANDARD

This regulation establishes a limit on the amount of particulate emissions allowed from any general process source determined on the basis of the size and rate at which the process operates. A general process source is defined as any emission source except fuel-burning equipment, incinerators, mobile sources, open burning sources, and sources of fugitive dust. The proposed generators are fuel-burning equipment, as such this regulation is not applicable.

6.6.4 06-096 CMR 106 LOW SULFUR FUEL REGULATION

This regulation limits sulfur fuel contents of distillate fuels to 0.0015% by weight. This limitation is applicable to the proposed generators. The applicant will comply with the requirements of this regulation by only using ULSD in the emergency generators.

6.6.5 06-096 CMR 111 PETROLEUM LIQUID STORAGE VAPOR CONTROL

This regulation applies to all fixed roof storage vessels with capacities greater than 150,000 liters (39,000 gallons) containing volatile petroleum liquids with vapor pressures greater than 10.5 kilo pascals or a Reid vapor pressure of 4 psi. Kingfish will maintain diesel tanks for its proposed generators; however, none of the tanks will have a storage capacity greater than 39,000 gallons. As such, this regulation is not applicable.

6.6.6 06-096 CMR 115 MAJOR AND MINOR SOURCE AIR EMISSION LICENSE REGULATION

This regulation establishes air permitting requirements for emissions sources. Based on the facility-wide emissions presented in **Table 2**, this project is subject to minor source air emissions license requirements under this regulation. Kingfish is complying with applicable minor source licensing requirements by submitting this application. As required under 06-096 CMR 115 Section 4(C), documentation of Public Notice and Title, Right, and Interest are included in **Appendix 5** and **Appendix 6**, respectively. All other required elements of the application are discussed in the previous sections of this application, with further detail provided in **Appendix 1** though **Appendix 4**.

6.6.7 06-096 CMR 134 REASONABLE AVAILABLE CONTROL TECHNOLOGY FOR FACILITIES THAT EMIT VOLATILE ORGANIC COMPOUNDS

This regulation establishes Reasonable Available Control Technology (RACT) requirements for facilities that emit or have the potential to emit 40 tons per year or more of VOCs. As shown in **Table 2**, potential annual VOC emissions from the proposed facility are below 40 tons per year. Therefore, VOC RACT requirements do not apply.

6.6.8 06-096 CMR 137 EMISSION STATEMENTS

This regulation establishes requirements for the reporting of pollutant emissions from stationary air pollution sources that meet the following minimum reporting thresholds:

Table 7: 06-096 CMR 137 Minimum Reporting Thresholds

Criteria Air Pollutants	Minimum Reporting Threshold
(1) Carbon monoxide (CO)	75 tpy
(2) Sulfur dioxide (SO_2)	40 tpy
(3) Volatile organic compounds (VOC)	25 tpy
(4) Nitrogen oxides (NOx) (in NO_2 equivalents)	25 tpy
(5) Fine Particulate Matter (PM_{10})	15 tpy
(6) Fine Particulate Matter ($PM_{2.5}$)	15 tpy
(7) Lead (Pb)	0.1 tpy
(8) Ammonia (NH_3)	50 tpy

As shown in **Table 2**, potential annual emissions from the proposed facility are below the minimum reporting thresholds presented in the above table.

6.6.9 06-096 CMR 138 REASONABLE AVAILABLE CONTROL TECHNOLOGY FOR FACILITIES THAT EMIT NITROGEN OXIDES

This regulation establishes RACT requirements for stationary sources of NO_X which have the potential to emit 100 tons per year or more of NO_X. As shown in **Table 2**, potential annual NO_X emissions from the proposed facility are below 100 tons per year. Therefore, NOx RACT requirements do not apply.

APPENDIX 1
FIGURES

RAMBOLL

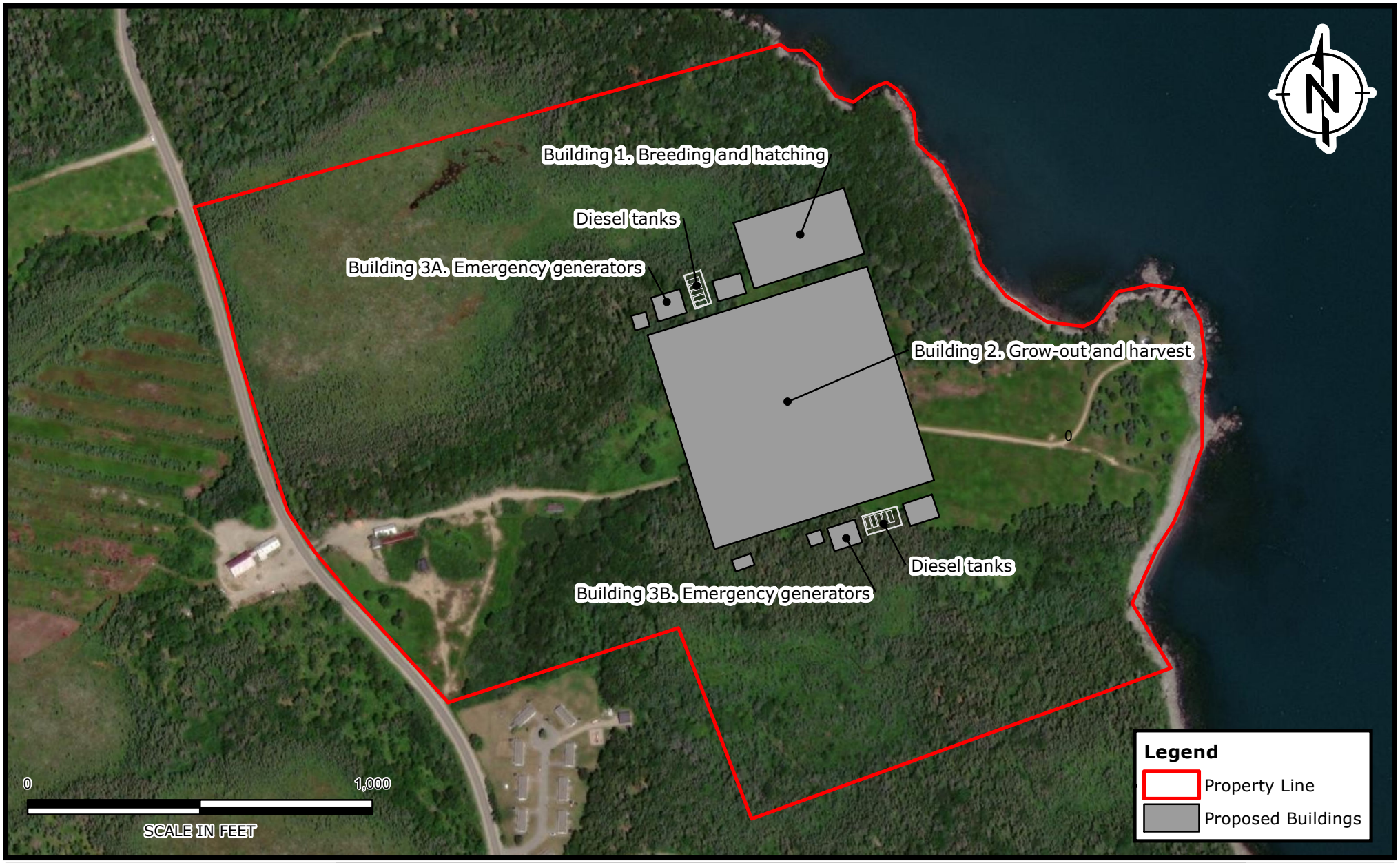
DRAFTED BY: DMD | DATE: 2021-01-19

SITE LOCATION MAP

KINGFISH MAINE INC.
9 Dun Garvin Road
Jonesport, Maine

FIGURE
1

PROJECT: 1690016697-004



RAMBOLL

DRAFTED BY: DMD | DATE: 2021-01-29

SITE LAYOUT MAP

KINGFISH MAINE INC.
9 Dun Garvin Road
Jonesport, Maine

FIGURE
2

PROJECT: 1690016697-004

APPENDIX 2
CHAPTER 115 AIR EMISSION LICENSE APPLICATION FORMS

CHAPTER 115
AIR EMISSION LICENSE APPLICATION FORM

State of Maine
Department of Environmental Protection
Bureau of Air Quality
17 State House Station
Augusta, Maine 04333-0017
Phone: (207) 287-7688 Fax: (207) 287-7641

Section A: FACILITY INFORMATION

Owner or Operator (*Legal name as registered with the Secretary of State*):
Kingfish Maine Inc

Facility Site Name: Kingfish Maine

Facility Site Address (*Physical, no post office boxes*): 9 Dun Garvin Road

City/Town: Jonesport Zip Code: 04649 County: Washington

Facility Description: Land-based aquaculture facility

Application Description:
The applicant is proposing to construct and operate an aquaculture facility at 9 Dun Garvin Road, Jonesport, Maine. The facility will install and operate 19 diesel-fired emergency generators that will provide backup electricity to facility operations in the event of an emergency.

Current License #: A- _____ - _____ - _____ - _____

Check When Done:

All Sources

✓	Application Completed
✓	Copy Sent to Town (date sent: 4/2/21)
✓	Public Notice Published paper name & date: See Appendix 5
✓	Enclosed Public Notice Tear Sheet
✓	Signed Signatory Form (Section K)

Additional Requirements for New Sources

✓	Schedule for construction or installation of equipment
✓	Title, Right, or Interest (e.g. copy of deed or lease)
✓	Check for Fee

Additional Requirements for New Major Sources and Major Modifications

	Notify Abutting Landowners

For Department Use

Application #: A- _____ - _____ - _____ - _____

App Track #: _____

Facility Contact:

Name: Megan Sorby, Tom Sorby Title: Operations Management
Company: Kingfish Maine Inc
Mailing Address: 33 Salmon Farm Road

City/Town: Franklin State: ME Zip Code: 04634
Phone: Fax:
e-mail: m.sorby@kingfish-maine.com, t.sorby@kingfish-maine.com

Application Contact:

Name: Megan Sorby, Tom Sorby Title: Operations Management
Company: Kingfish Maine Inc
Mailing Address: 33 Salmon Farm Road

City/Town: Franklin State: ME Zip Code: 04634
Phone: Fax:
e-mail: m.sorby@kingfish-maine.com, t.sorby@kingfish-maine.com

Billing Contact:

Name: Christo du Plessis Title: Chief Financial Officer
Company: Kingfish Maine Inc
Mailing Address: 33 Salmon Farm Road

City/Town: Franklin State: ME Zip Code: 04634
Phone: Fax:
e-mail: admin@kingfish-maine.com

Section B1: STATIONARY FUEL BURNING EQUIPMENT

(List equipment such as boilers, hot water heaters, etc.)

Emission Unit ID	Type of Equipment (boiler, water heater, etc.)	Maximum Design Capacity	Maximum Firing Rate	Fuel Type	% Sulfur	Date of Manufacture	Date of Installation	Stack #
Boiler #1 (Example)	*asphalt heater (Example)*	*5.0 MMBtu/hr (Example)*	*35.7 gal/hr (Example)*	*#2 fuel oil (Example)*	*0.35% (Example)*	*1984 (Example)*	*1990 (Example)*	*#1 (Example)*
N/A								

Section B2: INTERNAL COMBUSTION ENGINES

(List equipment such as generators, diesel drive units, fire pumps, etc. Do not list wheeled mobile equipment such as loaders, backhoes, trucks, etc.)

Emission Unit ID	Serial Number	Maximum Design Heat Input Capacity (MMBtu/hr)	Maximum Output Capacity (kW or Hp)	Maximum Firing Rate	Fuel Type	% Sulfur	Date of Manf	Date of Installation	Portable	Stationary	Spark Ignition Engines Only			
											2-Stroke	4-Stroke	Rich Burn	Lean Burn
Generator #1 (Example)	*123ABC456 (Example)*	*5.0 MMBtu/hr (Example)*	*512 kW (Example)*	*35.7 gal/hr (Example)*	*Diesel (Example)*	*0.0015% (Example)*	*1984 (Example)*	*1990 (Example)*	*X*			*X*	*X*	
#1 through #6	TBD	23.5	2.5MWe	171.3	Diesel	0.0015 %	TBD	2023 (est)	☐	☒	☐	☐	☐	☐
									☐	☐	☐	☐	☐	☐
									☐	☐	☐	☐	☐	☐
									☐	☐	☐	☐	☐	☐
									☐	☐	☐	☐	☐	☐
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									☐	☐	☐	☐	☐	☐
									☐	☐	☐	☐	☐	☐
									☐	☐	☐	☐	☐	☐
									☐	☐	☐	☐	☐	☐
									☐	☐	☐	☐	☐	☐

Does your facility participate in a Demand Response program in which the generator(s) may be operated for more than 15 hours per calendar year?
☐ yes ☒ no

If yes, what units? ____________________

Control Equipment for Fuel Burning Equipment

If applicable, indicate the types of required/operated add-on pollution control equipment, including baghouses, cyclones/multiclones, SCR, SNCR, etc.

Emission Unit	Type of Control	Pollutant Controlled	Control Efficiency
Boiler #1 (Example)	*Cyclone (Example)*	*PM (Example)*	*90% (Example)*
N/A			

Monitors for Fuel Burning Equipment:

If applicable, indicate types of required/operated monitors, including Continuous Emission Monitors (CEM), Continuous Opacity Monitors (COM), parameter monitors for operational purposes, etc.

Emission Unit	Type of Monitor	Data Measured
Boiler #1 (Example)	*CEM (Example)*	*NO_x (Example)*
Boiler #1 (Example)	*Parameter – operational (Example)*	*Temperature (Example)*
N/A		

Section C: INCINERATORS

	Incinerator Unit 1	Incinerator Unit 2
Incinerator Type (medical waste, municipal, etc.)	N/A	N/A
Waste Type		
Make (Shenandoah, Crawford, etc.)		
Model Number		
Date of Manufacture		
Date of Installation		
Number of Chambers		
Max. Initial Charge	lb	lb
Max. Design Combustion Rate	lb/hr	lb/hr
Heat Recovery? (Yes or No)		
Retention Time of Exhaust Gases	seconds	seconds
Automatic Feeder? (Yes or No)		
Temperature Range Primary	to °F	to °F
Secondary	to °F	to °F
Auxiliary Burner - Primary Chamber max. rating (MMBtu/hr)		
type of fuel used		
Auxiliary Burner - Secondary Chamber max. rating (MMBtu/hr)		
type of fuel used		
Annual Waste Combusted for _____(yr)		
Pollution Control Equipment (if any)		
Stack Number		
Monitors (ie - temperature recorder)		

Section D: PROCESS EQUIPMENT

Emission Unit ID	Type of Equipment	Maximum Raw Material Process Rate (name and rate)	Maximum Finished Material Process Rate (name and rate)	Date of Manufacture	Date of Installation	Stack #	Control Device
Kilns (Example)	*Drying Kilns (Example)*	*N/A (Example)*	*25 MMBF/year (Example)*	*1990 (Example)*	*1990 (Example)*	*fugitive (Ex.)*	*none (Example)*
PB#1 (Example)	*Paint Booth (Example)*	*10 gal/hr (Example)*	*N/A (Example)*	*2001 (Example*	*2001 (Example)*	*#4 (Ex.)*	*Paper Filters (Example)*
N/A							

Solvent Cleaners
(Also known as Parts Washers and/or Solvent Degreasers)

Emission Unit ID	Capacity (gallons)	Solvent Used	Solvent % VOC
Degreaser #1 (Example)	*15 (Example)*	*Kerosene (Example)*	*100% (Example)*
N/A			

PROCESS EQUIPMENT (section D cont'd)

Chemical Usage

Note: Complete this section for any chemicals integral to your process, for example, a cementing process for outersoles, dyes, surface coating, printing, cleaning, etc. Attach additional pages or MSDS sheets as needed.

Process	Chemical substance used in process	Actual Usage (gal or lb for yr ____)	Hazardous chemical(s) in substance	Percent VOC[1] (%)	Percent HAP[2] (%)	Total VOC emitted (lb/year)	Total HAP emitted (lb/year)
N/A							

[1] Volatile Organic Compounds
[2] Hazardous Air Pollutants

Describe method of record keeping (ie. monthly calculations from purchase records, flow monitors on solvent tanks, etc.)

Describe methods used to calculate VOC/HAP emitted (ie – test results, if control equipment was taken into account; if conditions exist where solvents remain in the substrate rather than complete volatilization, etc.)

Section E: STACK DATA

Stack #	Height Above Ground (ft)	Inside Diameter (ft)	Exit Temperature °F	Exhaust Flow Rate (ft^3/s) [indicate actual or standard]
#1 through #6	48 (See note)	2.5	915.2	326.3 acfs

Note: the generator stacks will each extend approximately 20 feet above the generator building and approximately 3 feet above the next closest building.

Section F: ANNUAL FACILITY FUEL USE

Total Fuel Consumption by Month for: Typical (year)

	Fuel type: Diesel	Fuel type: _____	Fuel type: _____
	Avg % sulfur (oil) 0.0015	Avg % sulfur (oil) _____	Avg % sulfur (oil) _____
	Avg % moisture (wood) _____	Avg % moisture (wood) _____	Avg % moisture (wood) _____
	(circle one: gal, tons, scf)	(circle one: gal, tons, scf)	(circle one: gal, tons, scf)
January	Varies		
February	Varies		
March	Varies		
April	Varies		
May	Varies		
June	Varies		
July	Varies		
August	Varies		
September	Varies		
October	Varies		
November	Varies		
December	Varies		
Total	20,600 (est)		
Proposed Annual Limit	N/A		

Annual fuel usage is estimated based on each generator operating one hour per month for regular maintenance and testing and 8 hours per year for an annual test. The estimate conservatively assumes operating at 100% load.

Section G: LIQUID ORGANIC MATERIAL STORAGE

Tank #	1 through 10					
Capacity (gallons)	13208.6					
Materials Stored	Diesel					
Reid Vapor Pressure (RVP)	0.006 psi (est.)					
Annual Throughput	12,221 gal (est.)					
Above or Below Ground?	Above					
Tank Type (floating or fixed, riveted or bolted, etc.)	Fixed					
Physical Description – year installed	2023 (est.)					
Physical Description – color	TBD					
Dimensions - height (ft)	9.7					
Dimensions - Diameter (ft)	8.2					
Construction Material	Stainless Steel					
Control Device	N/A					

Section H: MISCELLANEOUS

Note: Use this section to describe any equipment, activities, or other air emission sources that did not fit in any of the above categories. Include descriptions of the associated emissions. Attach additional pages if necessary.

Miscellaneous building upkeep activities. See description in Section 2 of the application narrative.

Section I: BPT/BACT AND OTHER ATTACHMENTS

BPT/BACT Analysis:

For a license renewal for existing equipment, the applicant is required to submit a Best Practical Treatment (BPT) analysis to the Department. A BPT analysis establishes what equipment or requirements are appropriate for control or reduction of emissions of regulated pollutants to the lowest possible level considering the existing state of technology, the effectiveness of available alternatives, and the economic feasibility.

For a new license or the addition of new equipment to an existing license, the applicant is required to submit a Best Available Control Technology (BACT) analysis. A BACT analysis is a top-down approach to selecting air emission controls. It is done on a case-by-case basis and develops emission limits based on the maximum degree of reduction for each pollutant emitted taking into account economic, environmental and energy impacts.

☐ I certify that, to the best of my knowledge, the control equipment, fuel limitations, and process constraints outlined in this application represent BPT / BACT for the equipment and processes listed.

OR

☑ I have attached a separate BPT / BACT analysis to this application.

Other Attachments:

Please list any other attachments included with this application.

A list of attachments is included in the Table of Contents at the beginning of the application narrative.

Section J: APPLICABLE RULES

Please indicate any rules you believe may be applicable to your facility by checking the associated box.

	Citation	Title
✓	06-096 CMR 101	Visible Emissions
✓	06-096 CMR 103	Fuel Burning Equipment Particulate Emission Standard
	06-096 CMR 104	Incinerator Particulate Emission Standard
	06-096 CMR 105	General Process Source particulate Emission Standard
✓	06-096 CMR 106	Low Sulfur Fuel Regulation
	06-096 CMR 111	Petroleum Liquid Storage Vapor Control
	06-096 CMR 112	Bulk Terminal Petroleum Liquid Transfer Requirements
	06-096 CMR 117	Source Surveillance
	06-096 CMR 118	Gasoline Dispensing Facilities Vapor Control
	06-096 CMR 121	Emission Limitations and Emission Testing of Resource Recovery Facilities
	06-096 CMR 123	Paper Coating Regulation
	06-096 CMR 124	Total Reduced Sulfur Control from Kraft Mills
	06-096 CMR 125	Perchloroethylene Dry Cleaner Regulation
	06-096 CMR 126	Capture Efficiency Test Proceedures
	06-096 CMR 129	Surface Coating Facilities
	06-096 CMR 130	Solvent Degreasers
	06-096 CMR 131	Cutback Asphalt and Emulsified Asphalt
	06-096 CMR 132	Graphic Arts – Rotogravure and Flexography
	06-096 CMR 133	Petroleum Liquids Transfer Vapor Recovery at Bulk Gasoline Plants
	06-096 CMR 134	Reasonably Available Control Technology for Facilities That Emit Volatile Organic Compounds
	06-096 CMR 137	Emission Statements
	06-096 CMR 138	Reasonably Available Control Technology for Facilities That Emit Nitrogen Oxides
	06-096 CMR 140	Part 70 Air Emission License Regulations
	06-096 CMR 145	NOx Control Program
	06-096 CMR 153	Mobile Equipment Repair and Refinishing
	06-096 CMR 159	Control of Volatile Organic Compounds from Adhesives and Sealants
	06-096 CMR 161	Graphic Arts – Offset Lithography and Letterpress Printing
✓	40 CFR Part 60	New Source Performance Standards (NSPS) (please list Subpart(s): IIII)
✓	40 CFR Part 63	National Emission Standards for Hazardous Air Pollutants (NESHAP) (please list Subpart(s): ZZZZ)
	Other (list)	
	Other (list)	

Section K:SIGNATORY REQUIREMENT

Each application submitted to the Department must include the following certification signed by a Responsible Official*:

"I certify under penalty of law that, based on information and belief formed after reasonable inquiry, I believe the information included in the attached document is true, complete, and accurate."

Responsible Official Signature	4-2-21 Date
Megan Sorby Responsible Official (Printed or Typed)	Operations Management Title

* A Responsible Official is defined by MEDEP Rule, Chapter 100 as:

A. For a corporation: a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit and either:

(1) The facilities employ more than 250 persons or have gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars); or

(2) The delegation of authority to such representatives is approved in advance by the permitting authority;

B. For a partnership or sole proprietorship: a general partner or the proprietor, respectively;

C. For a municipality, State, Federal, or other public agency: Either a principal executive officer or ranking elected official. For the purposes of this part, a principal executive officer of a Federal agency includes the chief executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., a Regional Administrator of EPA).

APPENDIX 3
PROPOSED GENERATOR MANUFACTURER SPECIFICATIONS AND EMISSIONS DATA SHEETS

Cat® 3516C
Diesel Generator Sets

Image shown may not reflect actual configuration

Bore – mm (in)	170 (6.69)
Stroke – mm (in)	215 (8.46)
Displacement – L (in^3)	78 (4764.73)
Compression Ratio	14.7:1
Aspiration	TA
Fuel System	EUI
Governor Type	ADEM™ A3

Standby 60 Hz ekW (kVA)	Mission Critical 60 Hz ekW (kVA)	Prime 60 Hz ekW (kVA)	Continuous 60 Hz ekW (kVA)	Emissions Performance
2500 (3125)	2500 (3125)	2250 (2812)	2050 (2562)	U.S. EPA Stationary Emergency Use Only (Tier 2)

Features

Cat® Diesel Engine
- Meets U.S. EPA Stationary Emergency Use Only (Tier 2) emission standards
- Reliable performance proven in thousands of applications worldwide

Generator Set Package
- Accepts 100% block load in one step and meets NFPA 110 loading requirements
- Conforms to ISO 8528-5 G3 load acceptance requirements
- Reliability verified through torsional vibration, fuel consumption, oil consumption, transient performance, and endurance testing

Alternators
- Superior motor starting capability minimizes need for oversizing generator
- Designed to match performance and output characteristics of Cat diesel engines

Cooling System
- Cooling systems available to operate in ambient temperatures up to 50°C (122°F)
- Tested to ensure proper generator set cooling

EMCP 4 Control Panels
- User-friendly interface and navigation
- Scalable system to meet a wide range of installation requirements
- Expansion modules and site specific programming for specific customer requirements

Warranty
- 24 months/1000-hour warranty for standby and mission critical ratings
- 12 months/unlimited hour warranty for prime and continuous ratings
- Extended service protection is available to provide extended coverage options

Worldwide Product Support
- Cat dealers have over 1,800 dealer branch stores operating in 200 countries
- Your local Cat dealer provides extensive post-sale support, including maintenance and repair agreements

Financing
- Caterpillar offers an array of financial products to help you succeed through financial service excellence
- Options include loans, finance lease, operating lease, working capital, and revolving line of credit
- Contact your local Cat dealer for availability in your region

Standard and Optional Equipment

Engine

Air Cleaner
- ❑ Single element
- ❑ Dual element

Muffler
- ❑ Industrial grade (15 dB)

Starting
- ❑ Standard batteries
- ❑ Oversized batteries
- ❑ Standard electric starter(s)
- ❑ Heavy duty electric starter(s)
- ❑ Air starter(s)
- ❑ Jacket water heater

Alternator

Output voltage
- ❑ 380V ❑ 6300V
- ❑ 440V ❑ 6600V
- ❑ 480V ❑ 6900V
- ❑ 600V ❑ 12470V
- ❑ 2400V ❑ 13200V
- ❑ 4160V ❑ 13800V

Temperature Rise (over 40°C ambient)
- ❑ 150°C
- ❑ 125°C/130°C
- ❑ 105°C
- ❑ 80°C

Winding type
- ❑ Random wound
- ❑ Form wound

Excitation
- ❑ Internal excitation (IE)
- ❑ Permanent magnet (PM)

Attachments
- ❑ Anti-condensation heater
- ❑ Stator and bearing temperature monitoring and protection

Power Termination

Type
- ❑ Bus bar
- ❑ Circuit breaker
- ❑ 1600A ❑ 2000A
- ❑ 2500A ❑ 3000A
- ❑ 3200A ❑ 4000A
- ❑ 5000A
- ❑ IEC ❑ UL
- ❑ 3-pole ❑ 4-pole
- ❑ Manually operated
- ❑ Electrically operated

Trip Unit
- ❑ LSI ❑ LSI-G
- ❑ LSIG-P

Control System

Controller
- ❑ EMCP 4.2B
- ❑ EMCP 4.3
- ❑ EMCP 4.4

Attachments
- ❑ Local annunciator module
- ❑ Remote annunciator module
- ❑ Expansion I/O module
- ❑ Remote monitoring software

Charging
- ❑ Battery charger – 10A
- ❑ Battery charger – 20A
- ❑ Battery charger – 35A

Vibration Isolators
- ❑ Rubber
- ❑ Spring
- ❑ Seismic rated

Cat Connect

Connectivity
- ❑ Ethernet
- ❑ Cellular

Extended Service Options

Terms
- ❑ 2 year (prime)
- ❑ 3 year
- ❑ 5 year
- ❑ 10 year

Coverage
- ❑ Silver
- ❑ Gold
- ❑ Platinum
- ❑ Platinum Plus

Ancillary Equipment
- ❑ Automatic transfer switch (ATS)
- ❑ Paralleling switchgear
- ❑ Paralleling controls

Certifications
- ❑ UL 2200 Listed
- ❑ CSA
- ❑ IBC seismic certification
- ❑ OSHPD pre-approval

Note: *Some options may not be available on all models. Certifications may not be available with all model configurations. Consult factory for availability.*

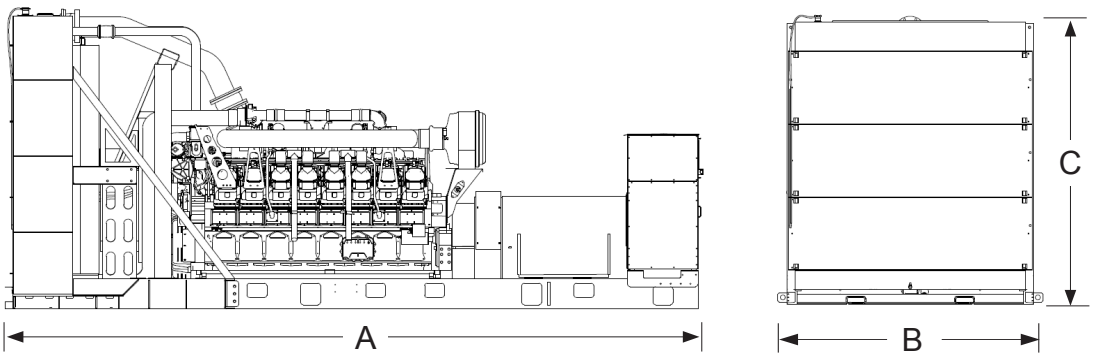
Package Performance

Performance	Standby		Mission Critical		Prime		Continuous	
Frequency	60 Hz		60 Hz		60 Hz		60 Hz	
Gen set power rating with fan	2500 ekW		2500 ekW		2250 ekW		2050 ekW	
Gen set power rating with fan @ 0.8 power factor	3125 kVA		3125 kVA		2812 kVA		2562 kVA	
Emissions	EPA ESE (TIER 2)		EPA ESE (TIER 2)		EPA ESE (TIER 2)		EPA ESE (TIER 2)	
Performance number	EM1894-01		EM1895-02		DM8447-04		DM8268-03	
Fuel Consumption								
100% load with fan – L/hr (gal/hr)	656.8	(175.3)	656.8	(175.3)	593.0	(156.6)	549.3	(145.1)
75% load with fan – L/hr (gal/hr)	510.8	(134.9)	510.8	(134.9)	467.8	(123.6)	435.6	(115.1)
50% load with fan – L/hr (gal/hr)	372.4	(98.4)	372.4	(98.4)	341.9	(90.3)	316.8	(83.7)
25% load with fan – L/hr (gal/hr)	219.3	(57.9)	219.3	(57.9)	203.0	(53.6)	188.9	(49.9)
Cooling System								
Radiator air flow restriction (system) – kPa (in. water)	0.12	(0.48)	0.12	(0.48)	0.12	(0.48)	0.12	(0.48)
Radiator air flow – m^3/min (cfm)	2356	(83201)	2356	(83201)	2356	(83201)	2356	(83201)
Engine coolant capacity – L (gal)	233.0	(61.6)	233.0	(61.6)	233.0	(61.6)	233.0	(61.6)
Radiator coolant capacity – L (gal)	180.0	(47.6)	180.0	(47.6)	180.0	(47.6)	180.0	(47.6)
Total coolant capacity – L (gal)	413.0	(109.2)	413.0	(109.2)	413.0	(109.2)	413.0	(109.2)
Inlet Air								
Combustion air inlet flow rate – m^3/min (cfm)	242.2	(7212.2)	242.2	(7212.2)	193.1	(6819.8)	183.8	(6491.7)
Exhaust System								
Exhaust stack gas temperature – °C (°F)	490.7	(915.2)	490.7	(915.2)	471.3	(880.4)	463.6	(866.5)
Exhaust gas flow rate – m^3/min (cfm)	554.5	(19578.8)	554.5	(19578.8)	507.9	(17935.1)	476.5	(16826.7)
Exhaust system backpressure (maximum allowable) – kPa (in. water)	6.7	(27.0)	6.7	(27.0)	6.7	(27.0)	6.7	(27.0)
Heat Rejection								
Heat rejection to jacket water – kW (Btu/min)	826	(46992)	826	(46992)	777	(44160)	739	(42021)
Heat rejection to exhaust (total) – kW (Btu/min)	2502	(142265)	2502	(142265)	2243	(127532)	2092	(118949)
Heat rejection to aftercooler – kW (Btu/min)	786	(44723)	786	(44723)	690	(39224)	619	(35176)
Heat rejection to atmosphere from engine – kW (Btu/min)	161	(9146)	161	(9146)	150	(8542)	145	(8229)
Heat rejection from alternator – kW (Btu/min)	121	(6853)	121	(6853)	99	(5607)	94	(5368)
Emissions* (Nominal)								
NOx mg/Nm^3 (g/hp-h)	2349.1	(5.32)	2349.1	(5.32)	2206.7	(4.95)	2038.1	(4.62)
CO mg/Nm^3 (g/hp-h)	195.4	(0.42)	195.4	(0.42)	141.2	(0.30)	124.8	(0.27)
HC mg/Nm^3 (g/hp-h)	42.1	(0.10)	42.1	(0.10)	44.4	(0.11)	49.2	(0.12)
PM mg/Nm^3 (g/hp-h)	14.1	(0.04)	14.1	(0.04)	10.9	(0.03)	11.0	(0.03)
Emissions* (Potential Site Variation)								
NOx mg/Nm^3 (g/hp-h)	2818.9	(6.38)	2818.9	(6.38)	2648.0	(5.94)	2445.8	(5.55)
CO mg/Nm^3 (g/hp-h)	351.8	(0.76)	351.8	(0.76)	254.2	(0.55)	224.6	(0.49)
HC mg/Nm^3 (g/hp-h)	55.9	(0.14)	55.9	(0.14)	59.1	(0.15)	65.5	(0.16)
PM mg/Nm^3 (g/hp-h)	19.7	(0.05)	19.7	(0.05)	15.2	(0.04)	15.3	(0.04)

**mg/Nm^3 levels are corrected to 5% O_2. Contact your local Cat dealer for further information.*

3516C Diesel Generator Sets
Electric Power

Weights and Dimensions



Dim "A" mm (in)	Dim "B" mm (in)	Dim "C" mm (in)	Dry Weight kg (lb)
6800 (267.7)	2339 (92.1)	2997 (118.0)	17 590 (38,780)

Note: *For reference only. Do not use for installation design. Contact your local Cat dealer for precise weights and dimensions.*

Ratings Definitions

Standby
Output available with varying load for the duration of the interruption of the normal source power. Average power output is 70% of the standby power rating. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year.

Mission Critical
Output available with varying load for the duration of the interruption of the normal source power. Average power output is 85% of the mission critical power rating. Typical peak demand up to 100% of rated power for up to 5% of the operating time. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year.

Prime
Output available with varying load for an unlimited time. Average power output is 70% of the prime power rating. Typical peak demand is 100% of prime rated ekW with 10% overload capability for emergency use for a maximum of 1 hour in 12. Overload operation cannot exceed 25 hours per year.

Continuous
Output available with non-varying load for an unlimited time. Average power output is 70-100% of the continuous power rating. Typical peak demand is 100% of continuous rated kW for 100% of the operating hours.

Applicable Codes and Standards
AS 1359, CSA C22.2 No. 100-04, UL 142, UL 489, UL 869, UL 2200, IBC, IEC 60034-1, ISO 3046, ISO 8528, NEMA MG1-22, NEMA MG1-33, 2014/35/EU, 2006/42/EC, 2014/30/EU and facilitates compliance to NFPA 37, NFPA 70, NFPA 99, NFPA 110.

Note: Codes may not be available in all model configurations. Please consult your local Cat dealer for availability.

Data Center Applications

- ISO 8528-1 Data Center Power (DCP) compliant per DCP application of Cat diesel generator set prime power rating.
- All ratings Tier III/Tier IV compliant per Uptime Institute requirements.
- All ratings ANSI/TIA-942 compliant for Rated-1 through Rated-4 data centers.

Fuel Rates
Fuel rates are based on fuel oil of 35º API [16°C (60ºF)] gravity having an LHV of 42,780 kJ/kg (18,390 Btu/lb) when used at 29ºC (85ºF) and weighing 838.9 g/liter (7.001 lbs/U.S. gal.)

www.cat.com/electricpower

PERFORMANCE DATA[EM1894]

November 23, 2020

Performance Number: EM1894 **Change Level: 04**

SALES MODEL:	3516C	**COMBUSTION:**	DIRECT INJECTION
BRAND:	CAT	**ENGINE SPEED (RPM):**	1,800
ENGINE POWER (BHP):	3,634	**HERTZ:**	60
GEN POWER WITH FAN (EKW):	2,500.0	**FAN POWER (HP):**	130.1
COMPRESSION RATIO:	14.7	**ASPIRATION:**	TA
RATING LEVEL:	STANDBY	**AFTERCOOLER TYPE:**	ATAAC
PUMP QUANTITY:	1	**AFTERCOOLER CIRCUIT TYPE:**	JW+OC, ATAAC
FUEL TYPE:	DIESEL	**INLET MANIFOLD AIR TEMP (F):**	122
MANIFOLD TYPE:	DRY	**JACKET WATER TEMP (F):**	219.2
GOVERNOR TYPE:	ADEM3	**TURBO CONFIGURATION:**	PARALLEL
ELECTRONICS TYPE:	ADEM3	**TURBO QUANTITY:**	4
CAMSHAFT TYPE:	STANDARD	**TURBOCHARGER MODEL:**	GT6041BN-48T-1.10
IGNITION TYPE:	CI	**CERTIFICATION YEAR:**	2006
INJECTOR TYPE:	EUI	**CRANKCASE BLOWBY RATE (FT3/HR):**	3,619.4
FUEL INJECTOR:	3920221	**FUEL RATE (RATED RPM) NO LOAD (GAL/HR):**	16.0
UNIT INJECTOR TIMING (IN):	64.34	**PISTON SPD @ RATED ENG SPD (FT/MIN):**	2,539.4
REF EXH STACK DIAMETER (IN):	12		
MAX OPERATING ALTITUDE (FT):	2,953		

INDUSTRY	SUBINDUSTRY	APPLICATION
ELECTRIC POWER	STANDARD	PACKAGED GENSET
OIL AND GAS	LAND PRODUCTION	PACKAGED GENSET

General Performance Data

THIS STANDBY RATING IS FOR A STANDBY ONLY ENGINE ARRANGEMENT. RERATING THE ENGINE TO A PRIME OR CONTINUOUS RATING IS NOT PERMITTED.

THE INLET MANIFOLD AIR TEMP LISTED IN THE HEADER, AND IN THE GENERAL PERFORMANCE DATA, IS THE AVERAGE INLET MANIFOLD TEMP FRONT TO REAR ON THE ENGINE.

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	BRAKE MEAN EFF PRES (BMEP)	BRAKE SPEC FUEL CONSUMPTN (BSFC)	VOL FUEL CONSUMPTN (VFC)	INLET MFLD PRES	INLET MFLD TEMP	EXH MFLD TEMP	EXH MFLD PRES	ENGINE OUTLET TEMP
EKW	%	BHP	PSI	LB/BHP-HR	GAL/HR	IN-HG	DEG F	DEG F	IN-HG	DEG F
2,500.0	100	3,633	336	0.334	171.3	78.1	121.9	1,235.6	67.6	915.2
2,250.0	90	3,283	303	0.335	155.1	71.3	119.4	1,190.0	61.3	881.2
2,000.0	80	2,935	271	0.339	140.4	64.3	116.9	1,158.9	55.3	864.0
1,875.0	75	2,760	255	0.342	133.2	60.7	115.8	1,145.6	52.3	858.5
1,750.0	70	2,586	239	0.346	125.9	57.0	114.7	1,133.3	49.3	854.6
1,500.0	60	2,237	207	0.354	111.5	49.5	112.7	1,112.4	43.2	851.2
1,250.0	50	1,889	174	0.365	97.1	41.3	111.0	1,091.8	36.8	850.7
1,000.0	40	1,547	143	0.373	81.4	31.4	109.4	1,061.5	29.3	856.6
750.0	30	1,203	111	0.385	65.3	21.7	107.9	1,010.3	22.1	848.2
625.0	25	1,029	95	0.394	57.2	17.2	107.2	968.3	18.7	831.1
500.0	20	854	79	0.403	48.6	12.7	106.4	902.0	15.5	796.1
250.0	10	497	46	0.441	30.9	4.8	104.1	700.7	9.8	647.3

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	COMPRESSOR OUTLET PRES	COMPRESSOR OUTLET TEMP	WET INLET AIR VOL FLOW RATE	ENGINE OUTLET WET EXH GAS VOL FLOW RATE	WET INLET AIR MASS FLOW RATE	WET EXH GAS MASS FLOW RATE	WET EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)	DRY EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)
EKW	%	BHP	IN-HG	DEG F	CFM	CFM	LB/HR	LB/HR	FT3/MIN	FT3/MIN
2,500.0	100	3,633	85	466.7	7,212.2	19,578.8	32,046.3	33,260.4	7,001.7	6,362.4
2,250.0	90	3,283	78	443.0	6,831.8	17,980.7	30,219.3	31,318.8	6,593.0	6,013.7
2,000.0	80	2,935	70	417.8	6,404.5	16,560.6	28,284.6	29,277.2	6,151.5	5,625.4
1,875.0	75	2,760	66	404.7	6,173.3	15,893.2	27,261.3	28,202.4	5,928.1	5,427.1
1,750.0	70	2,586	63	391.2	5,929.9	15,232.6	26,196.0	27,086.8	5,698.4	5,222.0
1,500.0	60	2,237	55	363.5	5,411.9	13,879.0	23,947.5	24,739.5	5,205.5	4,779.1
1,250.0	50	1,889	46	334.6	4,843.3	12,413.0	21,444.3	22,133.2	4,657.5	4,283.2
1,000.0	40	1,547	36	297.5	4,121.4	10,609.5	18,262.0	18,840.0	3,963.0	3,647.2
750.0	30	1,203	25	249.8	3,423.0	8,763.8	15,175.3	15,640.3	3,294.6	3,037.8
625.0	25	1,029	21	223.4	3,104.6	7,844.6	13,765.1	14,171.8	2,988.1	2,760.8
500.0	20	854	16	197.2	2,791.2	6,823.5	12,376.2	12,722.2	2,671.7	2,476.1
250.0	10	497	7	152.3	2,237.9	4,800.2	9,917.6	10,136.8	2,132.0	1,999.8

PERFORMANCE DATA[EM1894]

November 23, 2020

Heat Rejection Data

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	REJECTION TO JACKET WATER	REJECTION TO ATMOSPHERE	REJECTION TO EXH	EXHAUST RECOVERY TO 350F	FROM OIL COOLER	FROM AFTERCOOLER	WORK ENERGY	LOW HEAT VALUE ENERGY	HIGH HEAT VALUE ENERGY
EKW	%	BHP	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN
2,500.0	100	3,633	46,992	9,146	142,265	79,907	19,835	44,723	154,077	372,403	396,702
2,250.0	90	3,283	44,242	8,557	127,929	70,449	17,960	39,380	139,243	337,204	359,207
2,000.0	80	2,935	41,477	8,162	116,879	63,561	16,262	34,167	124,444	305,311	325,233
1,875.0	75	2,760	40,076	8,007	111,588	60,518	15,425	31,612	117,053	289,608	308,505
1,750.0	70	2,586	38,657	7,874	106,293	57,637	14,588	29,085	109,651	273,881	291,752
1,500.0	60	2,237	35,755	7,684	95,729	52,220	12,915	24,201	94,874	242,485	258,307
1,250.0	50	1,889	32,626	7,527	85,184	46,626	11,245	19,401	80,109	211,118	224,893
1,000.0	40	1,547	29,235	7,262	72,693	40,153	9,427	13,873	65,583	176,995	188,544
750.0	30	1,203	25,476	6,784	59,425	32,726	7,565	8,706	51,005	142,037	151,305
625.0	25	1,029	23,394	6,435	52,542	28,568	6,621	6,496	43,653	124,317	132,429
500.0	20	854	21,006	5,995	44,739	23,683	5,624	4,534	36,223	105,594	112,484
250.0	10	497	15,737	5,026	27,795	12,371	3,578	1,916	21,071	67,181	71,564

Sound Data

SOUND PRESSURE DATA FOR THIS RATING CAN BE FOUND IN PERFORMANCE NUMBER - DM8779.

Emissions Data

RATED SPEED POTENTIAL SITE VARIATION: 1800 RPM

GENSET POWER WITH FAN		EKW	2,500.0	1,875.0	1,250.0	625.0	250.0
PERCENT LOAD		%	100	75	50	25	10
ENGINE POWER		BHP	3,633	2,760	1,889	1,029	497
TOTAL NOX (AS NO2)		G/HR	22,948	14,101	7,004	3,568	3,185
TOTAL CO		G/HR	2,726	1,304	1,092	1,496	2,098
TOTAL HC		G/HR	500	499	543	408	437
PART MATTER		G/HR	185.5	123.7	132.1	139.5	141.0
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	2,818.9	2,229.5	1,544.3	1,352.7	2,230.2
TOTAL CO	(CORR 5% O2)	MG/NM3	351.8	213.9	252.3	594.6	1,552.7
TOTAL HC	(CORR 5% O2)	MG/NM3	55.9	72.8	108.8	140.7	282.4
PART MATTER	(CORR 5% O2)	MG/NM3	19.7	16.5	25.8	48.5	88.2
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	1,373	1,086	752	659	1,086
TOTAL CO	(CORR 5% O2)	PPM	281	171	202	476	1,242
TOTAL HC	(CORR 5% O2)	PPM	104	136	203	263	527
TOTAL NOX (AS NO2)		G/HP-HR	6.38	5.15	3.74	3.50	6.47
TOTAL CO		G/HP-HR	0.76	0.48	0.58	1.47	4.26
TOTAL HC		G/HP-HR	0.14	0.18	0.29	0.40	0.89
PART MATTER		G/HP-HR	0.05	0.05	0.07	0.14	0.29
TOTAL NOX (AS NO2)		LB/HR	50.59	31.09	15.44	7.87	7.02
TOTAL CO		LB/HR	6.01	2.88	2.41	3.30	4.62
TOTAL HC		LB/HR	1.10	1.10	1.20	0.90	0.96
PART MATTER		LB/HR	0.41	0.27	0.29	0.31	0.31

RATED SPEED NOMINAL DATA: 1800 RPM

GENSET POWER WITH FAN		EKW	2,500.0	1,875.0	1,250.0	625.0	250.0
PERCENT LOAD		%	100	75	50	25	10
ENGINE POWER		BHP	3,633	2,760	1,889	1,029	497
TOTAL NOX (AS NO2)		G/HR	19,123	11,751	5,837	2,974	2,654
TOTAL CO		G/HR	1,515	725	607	831	1,165
TOTAL HC		G/HR	376	375	408	307	329
TOTAL CO2		KG/HR	1,740	1,340	966	559	296
PART MATTER		G/HR	132.5	88.4	94.3	99.6	100.7
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	2,349.1	1,857.9	1,286.9	1,127.3	1,858.5
TOTAL CO	(CORR 5% O2)	MG/NM3	195.4	118.8	140.1	330.3	862.6
TOTAL HC	(CORR 5% O2)	MG/NM3	42.1	54.8	81.8	105.8	212.3
PART MATTER	(CORR 5% O2)	MG/NM3	14.1	11.8	18.4	34.7	63.0
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	1,144	905	627	549	905

PERFORMANCE DATA[EM1894]

TOTAL CO	(CORR 5% O2)	PPM	156	95	112	264	690
TOTAL HC	(CORR 5% O2)	PPM	79	102	153	197	396
TOTAL NOX (AS NO2)		G/HP-HR	5.32	4.30	3.12	2.92	5.39
TOTAL CO		G/HP-HR	0.42	0.26	0.32	0.82	2.37
TOTAL HC		G/HP-HR	0.10	0.14	0.22	0.30	0.67
PART MATTER		G/HP-HR	0.04	0.03	0.05	0.10	0.20
TOTAL NOX (AS NO2)		LB/HR	42.16	25.91	12.87	6.56	5.85
TOTAL CO		LB/HR	3.34	1.60	1.34	1.83	2.57
TOTAL HC		LB/HR	0.83	0.83	0.90	0.68	0.72
TOTAL CO2		LB/HR	3,836	2,955	2,130	1,233	654
PART MATTER		LB/HR	0.29	0.19	0.21	0.22	0.22
OXYGEN IN EXH		%	9.4	10.4	11.3	12.2	14.4
DRY SMOKE OPACITY		%	1.7	1.4	1.9	2.6	4.0
BOSCH SMOKE NUMBER			0.58	0.49	0.62	0.92	1.27

Regulatory Information

EPA EMERGENCY STATIONARY		**2011 - ----**		
GASEOUS EMISSIONS DATA MEASUREMENTS PROVIDED TO THE EPA ARE CONSISTENT WITH THOSE DESCRIBED IN EPA 40 CFR PART 60 SUBPART IIII AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. THE "MAX LIMITS" SHOWN BELOW ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE EMERGENCY STATIONARY REGULATIONS.				
Locality	**Agency**	**Regulation**	**Tier/Stage**	**Max Limits - G/BKW - HR**
U.S. (INCL CALIF)	EPA	STATIONARY	EMERGENCY STATIONARY	CO: 3.5 NOx + HC: 6.4 PM: 0.20

Altitude Derate Data

ALTITUDE CORRECTED POWER CAPABILITY (BHP)

AMBIENT OPERATING TEMP (F)	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**	**110**	**120**	**NORMAL**
ALTITUDE (FT)											
0	3,634	3,634	3,634	3,634	3,634	3,634	3,634	3,634	3,634	3,634	3,634
1,000	3,634	3,634	3,634	3,634	3,634	3,634	3,634	3,634	3,634	3,561	3,634
2,000	3,634	3,634	3,634	3,634	3,634	3,634	3,634	3,604	3,541	3,480	3,634
3,000	3,628	3,628	3,628	3,628	3,628	3,603	3,537	3,474	3,413	3,354	3,628
4,000	3,504	3,504	3,504	3,504	3,504	3,471	3,408	3,347	3,289	3,232	3,504
5,000	3,384	3,384	3,384	3,384	3,384	3,344	3,283	3,225	3,168	3,113	3,384
6,000	3,269	3,269	3,269	3,269	3,269	3,221	3,162	3,105	3,051	2,998	3,269
7,000	3,159	3,159	3,159	3,159	3,159	3,101	3,044	2,990	2,937	2,887	3,159
8,000	3,052	3,052	3,052	3,052	3,041	2,985	2,930	2,878	2,827	2,779	3,052
9,000	2,950	2,950	2,950	2,950	2,926	2,872	2,820	2,769	2,721	2,674	2,950
10,000	2,851	2,851	2,851	2,851	2,815	2,763	2,713	2,664	2,617	2,544	2,851

Cross Reference

Test Spec	**Setting**	**Engine Arrangement**	**Engineering Model**	**Engineering Model Version**	**Start Effective Serial Number**	**End Effective Serial Number**
4577175	LL1857	5084280	GS336	-	SBK02483	
4581566	LL6759	5157721	PG243	-	LYM00001	

Supplementary Data

Type	**Classification**	**Performance Number**
SOUND	SOUND PRESSURE	DM8779

Performance Parameter Reference

PERFORMANCE DATA[EM1894]

Parameters Reference:DM9600-12

PERFORMANCE DEFINITIONS

PERFORMANCE DEFINITIONS DM9600
APPLICATION:
Engine performance tolerance values below are representative of a typical production engine tested in a calibrated dynamometer test cell at SAE J1995 standard reference conditions. Caterpillar maintains ISO9001:2000 certified quality management systems for engine test Facilities to assure accurate calibration of test equipment. Engine test data is corrected in accordance with SAE J1995. Additional reference material SAE J1228, J1349, ISO 8665, 3046-1:2002E, 3046-3:1989, 1585, 2534, 2288, and 9249 may apply in part or are similar to SAE J1995. Special engine rating request (SERR) test data shall be noted.
PERFORMANCE PARAMETER TOLERANCE FACTORS:
Power +/- 3%
Torque +/- 3%
Exhaust stack temperature +/- 8%
Inlet airflow +/- 5%
Intake manifold pressure-gage +/- 10%
Exhaust flow +/- 6%
Specific fuel consumption +/- 3%
Fuel rate +/- 5%
Specific DEF consumption +/- 3%
DEF rate +/- 5%
Heat rejection +/- 5%
Heat rejection exhaust only +/- 10%
Heat rejection CEM only +/- 10%
Heat Rejection values based on using treated water.
Torque is included for truck and industrial applications, do not use for Gen Set or steady state applications.
On C7 - C18 engines, at speeds of 1100 RPM and under these values are provided for reference only, and may not meet the tolerance listed.
These values do not apply to C280/3600. For these models, see the tolerances listed below.
C280/3600 HEAT REJECTION TOLERANCE FACTORS:
Heat rejection +/- 10%
Heat rejection to Atmosphere +/- 50%
Heat rejection to Lube Oil +/- 20%
Heat rejection to Aftercooler +/- 5%
TEST CELL TRANSDUCER TOLERANCE FACTORS:
Torque +/- 0.5%
Speed +/- 0.2%
Fuel flow +/- 1.0%
Temperature +/- 2.0 C degrees
Intake manifold pressure +/- 0.1 kPa
OBSERVED ENGINE PERFORMANCE IS CORRECTED TO SAE J1995 REFERENCE AIR AND FUEL CONDITIONS.
REFERENCE ATMOSPHERIC INLET AIR
FOR 3500 ENGINES AND SMALLER
SAE J1228 AUG2002 for marine engines, and J1995 JAN2014 for other engines, reference atmospheric pressure is 100 KPA (29.61 in hg), and standard temperature is 25deg C (77 deg F) at 30% relative humidity at the stated aftercooler water temp, or inlet manifold temp.
FOR 3600 ENGINES
Engine rating obtained and presented in accordance with ISO 3046/1 and SAE J1995 JANJAN2014 reference atmospheric pressure is 100 KPA (29.61 in hg), and standard temperature is 25deg C (77 deg F) at 30% relative humidity and 150M altitude at the stated aftercooler water temperature.
MEASUREMENT LOCATION FOR INLET AIR TEMPERATURE
Location for air temperature measurement air cleaner inlet at stabilized operating conditions.
REFERENCE EXHAUST STACK DIAMETER
The Reference Exhaust Stack Diameter published with this dataset is only used for the calculation of Smoke Opacity values displayed in this dataset. This value does not necessarily represent the actual stack diameter of the engine due to the variety of exhaust stack adapter options available. Consult the price list, engine order or general dimension drawings for the actual stack diameter size ordered or options available.
REFERENCE FUEL
DIESEL
Reference fuel is #2 distillate diesel with a 35API gravity;
A lower heating value is 42,780 KJ/KG (18,390 BTU/LB) when used at 15 deg C (59 deg F), where the density is 850 G/Liter (7.0936 Lbs/Gal).
GAS
Reference natural gas fuel has a lower heating value of 33.74 KJ/L (905 BTU/CU Ft). Low BTU ratings are based on 18.64 KJ/L (500 BTU/CU FT) lower heating value gas. Propane ratings are based on 87.56 KJ/L (2350 BTU/CU Ft) lower heating value gas.

PERFORMANCE DATA[EM1894]

ENGINE POWER (NET) IS THE CORRECTED FLYWHEEL POWER (GROSS) LESS EXTERNAL AUXILIARY LOAD

Engine corrected gross output includes the power required to drive standard equipment; lube oil, scavenge lube oil, fuel transfer, common rail fuel, separate circuit aftercooler and jacket water pumps. Engine net power available for the external (flywheel) load is calculated by subtracting the sum of auxiliary load from the corrected gross flywheel out put power. Typical auxiliary loads are radiator cooling fans, hydraulic pumps, air compressors and battery charging alternators. For Tier 4 ratings additional Parasitic losses would also include Intake, and Exhaust Restrictions.

ALTITUDE CAPABILITY

Altitude capability is the maximum altitude above sea level at standard temperature and standard pressure at which the engine could develop full rated output power on the current performance data set.

Standard temperature values versus altitude could be seen on TM2001.

When viewing the altitude capability chart the ambient temperature is the inlet air temp at the compressor inlet.

Engines with ADEM MEUI and HEUI fuel systems operating at conditions above the defined altitude capability derate for atmospheric pressure and temperature conditions outside the values defined, see TM2001.

Mechanical governor controlled unit injector engines require a setting change for operation at conditions above the altitude defined on the engine performance sheet. See your Caterpillar technical representative for non standard ratings.

REGULATIONS AND PRODUCT COMPLIANCE

TMI Emissions information is presented at 'nominal' and 'Potential Site Variation' values for standard ratings. No tolerances are applied to the emissions data. These values are subject to change at any time. The controlling federal and local emission requirements need to be verified by your Caterpillar technical representative.

Customer's may have special emission site requirements that need to be verified by the Caterpillar Product Group engineer.

EMISSION CYCLE LIMITS:

Cycle emissions Max Limits apply to cycle-weighted averages only. Emissions at individual load points may exceed the cycle-weighted limit.

EMISSIONS DEFINITIONS:

Emissions : DM1176

EMISSION CYCLE DEFINITIONS

1. For constant-speed marine engines for ship main propulsion, including,diesel-electric drive, test cycle E2 shall be applied, for controllable-pitch propeller sets
test cycle E2 shall be applied.
2. For propeller-law-operated main and propeller-law-operated auxiliary engines the test cycle E3 shall be applied.
3. For constant-speed auxiliary engines test cycle D2 shall be applied.
4. For variable-speed, variable-load auxiliary engines, not included above, test cycle C1 shall be applied.

HEAT REJECTION DEFINITIONS:

Diesel Circuit Type and HHV Balance : DM9500

HIGH DISPLACEMENT (HD) DEFINITIONS:

3500: EM1500

RATING DEFINITIONS:

Agriculture : TM6008
Fire Pump : TM6009
Generator Set : TM6035
Generator (Gas) : TM6041
Industrial Diesel : TM6010
Industrial (Gas) : TM6040
Irrigation : TM5749
Locomotive : TM6037
Marine Auxiliary : TM6036
Marine Prop (Except 3600) : TM5747
Marine Prop (3600 only) : TM5748
MSHA : TM6042
Oil Field (Petroleum) : TM6011
Off-Highway Truck : TM6039
On-Highway Truck : TM6038

SOUND DEFINITIONS:

Sound Power : DM8702
Sound Pressure : TM7080
Date Released : 07/10/19

APPENDIX 4
CALCULATIONS

Table 1. Facility-Wide Maximum Annual Emissions from Non-Emergency Operations

Pollutant	Potential Annual Facility-Wide Emissions (tpy)[1]	Modeling Threshold (tpy)	Title V Major Source Threshold (tpy)	NNSR Major Source Threshold (tpy)	PSD Major Source Threshold (tpy)
NO_X	15.3	50	100	100	250
CO	1.8	250	100	--	250
VOC	0.4	--	50	50	250
$PM/PM_{10}/PM_{2.5}$	0.2	--/25/15	100	--	250
SO_2	0.011	50	100	--	250
Max. Individual HAP	0.0055	--	10	--	--
Total HAP	0.011	--	25	--	--
CO_2e	1,152	--	N/A	--	--

[1]Facility-Wide Potential emissions for 6 x 2.5MWe diesel-fired emergency generators, assuming a maximum of 100 hours of operation annually for each generator in accordance with NSPS IIII limitations on non-emergency operations.

Number of Engines

CAT 3516C (2.5MW) 6

Table 2. Engine-Specific Emission Factors

		Engine Data by Load					Maximum for Any Load
		100% Load	75% Load	50% Load	25% Load	10% Load	
Fuel Consumption (gal/hr/gen)[1]		171.3	133.2	97.1	57.2	30.9	--
Heat input (MMBtu/hr)[1]		23.5	18.3	13.3	7.8	4.2	--
Engine Power (hp/gen)[2]		3,633	2,760	1,889	1,029	497	--
Emission Factors by Horsepower-Hour (g/hp-hr)[2]	NO_X	6.38	5.15	3.74	3.50	6.47	--
	CO	0.76	0.48	0.58	1.47	4.26	--
	VOC[3]	0.14	0.18	0.29	0.4	0.89	--
	Filterable PM[4]	0.05	0.05	0.07	0.14	0.29	--
Maximum Hourly Emissions (lb/hr/gen)[6]	NO_X	51.10	31.34	15.58	7.94	7.09	51.10
	CO	6.09	2.92	2.42	3.33	4.67	6.09
	VOC	1.12	1.10	1.21	0.91	0.98	1.21
	$PM/PM_{10}/PM_{2.5}$[4,5]	0.58	0.44	0.39	0.38	0.35	0.58
Emission Factors by Fuel Usage (lb/gal)[7]	NO_X	0.30	0.24	0.16	0.14	0.23	0.30
	CO	0.04	0.02	0.02	0.06	0.15	0.15
	VOC	6.5E-03	8.2E-03	1.2E-02	1.6E-02	3.2E-02	0.03
	$PM/PM_{10}/PM_{2.5}$[4,5]	3.4E-03	3.3E-03	4.1E-03	6.6E-03	1.1E-02	0.01
Emission Factor by Heat Input (lb/MMBtu)	*$PM/PM_{10}/PM_{2.5}$[4,5]*	*0.02*	*0.02*	*0.03*	*0.05*	*0.08*	*0.08*

Notes:

1. Fuel consumption rates were obtained from the manufacturer's emissions data sheet. Heat input calculated based on the fuel consumption rate and the high heating value (HHV) for diesel, per AP-42, Section 3.4, Table 3.4-1, footnote a (19,300 Btu/lb and 7.1 lb/gallon)
2. Emission factors and engine power were obtained from the manufacturer's emissions data sheet and are "Potential Site Variation" values.
3. It is conservatively assumed that all hydrocarbons (HC) are VOC.
4. It is conservatively assumed that all PM is less than 2.5 microns in diameter.
5. $PM/PM_{10}/PM_{2.5}$ is the sum of filterable and condensable PM. The emission factor for condensable PM is provided in the table entitled "AP-42 Emission Factors."
6. Hourly Emissions per Generator (lb/hr/gen) = Emission Factor (g/hp-hr) * Engine Power (hp/engine) / (453.59 g/lb)
7. Emissions per Gallon of Fuel Usage (lb/gal) = Emission Factor (lb/hr/gen) / Diesel Consumption (gal/hr/gen)

Table 3. AP-42 Emission Factors

Pollutant	Emission Factor	
	(lb/MMBtu)[1]	(lb/gal)[2]
Condensable PM	7.70E-03	1.06E-03
SO_2 [3,4]	1.52E-03	2.08E-04
Benzene	7.76E-04	1.06E-04
Toluene	2.81E-04	3.85E-05
Xylenes	1.93E-04	2.64E-05
Formaldehyde	7.89E-05	1.08E-05
Acetaldehyde	2.52E-05	3.45E-06
Acrolein	7.88E-06	1.08E-06
Naphthalene	1.30E-04	1.78E-05
Other PAH [5]	8.20E-05	1.12E-05
Total HAPs	1.57E-03	2.16E-04

Notes:

1. Emission factors are based on the USEPA's AP-42, Section 3.4, *Large Stationary Diesel and All Stationary Dual-fuel Engines,* Tables 3.4-1, 3.4-2, 3.4-3, and 3.4-4 (October 1996).
2. The AP-42 emission factors were converted from lb/MMBtu to lb/gal based on the high heating value (HHV) for diesel, per AP-42, Section 3.4, Table 3.4-1, footnote a:
   HHV = 137 MMBtu/Mgal
3. The SO_2 emission factor was calculated based on the maximum allowable diesel fuel sulfur content under NSPS Subpart IIII:
   Diesel %S Content = 0.0015 wt% sulfur
4. It is conservatively assumed that all SO_X is SO_2.
5. PAH = Polycyclic Aromatic Hydrocarbons

Table 4. Greenhouse Gases (GHG) Emission Factors

Pollutant	Emission Factor	
	(lb/MMBtu)[1]	(lb/gal)[2]
CO_2	163.05	22.34
CH_4	6.61E-03	9.06E-04
N_2O	1.32E-03	1.81E-04
CO_2e [3]	163.61	22.42

Notes:

1. Per 40 CFR 98, Subpart C, Tables C-1 and C-2 for No. 2 fuel oil combustion. The emission factors were converted from kg/MMBtu to lb/MMBtu.
2. The GHG emission factors were converted from lb/MMBtu to lb/gal based on the high heating value for diesel, per AP-42, Section 3.4, Table 3.4-1, footnote a:
   HHV = 137 MMBtu/Mgal
3. The CO_2e emission factor is calculated as the sum of each GHG pollutant multiplied by its global warming potential, per 40 CFR 98, Subpart A, Table A-1:
   CO_2: 1
   CH_4: 25
   N_2O: 298

Table 5. Maximum Emissions Per Generator for Non-Emergency Operations

Pollutant	Maximum Hourly Emissions per Generator (lb/hr/gen)	Maximum Annual Emissions per Generator (tpy/gen)[1]
Criteria Pollutants		
NO_X	51.10	2.55
CO	6.09	0.30
VOC	1.21	0.06
$PM/PM_{10}/PM_{2.5}$	0.58	0.03
SO_2	0.04	0.00
Hazardous Air Pollutants		
Benzene	1.82E-02	9.11E-04
Toluene	6.60E-03	3.30E-04
Xylenes	4.53E-03	2.27E-04
Formaldehyde	1.85E-03	9.26E-05
Acetaldehyde	5.92E-04	2.96E-05
Acrolein	1.85E-04	9.25E-06
Naphthalene	3.05E-03	1.53E-04
Other PAH	1.92E-03	9.62E-05
Total HAPs	3.69E-02	1.85E-03
Greenhouse Gases		
CO_2	3827	1.91E+02
CH_4	0.16	7.76E-03
N_2O	0.031	1.55E-03
CO_2e	3,841	1.92E+02

Notes:

1. The maximum annual emissions per engine are based on a maximum of 100 hours of operation annually for each generator in accordance with NSPS IIII limitations on non-emergency operations.

Table 6. Maximum Annual Emissions for Non-Emergency Operations - All Generators

Pollutant	Maximum Annual Emissions[1] (tpy)
Criteria Pollutants	
NO_X	15.33
CO	1.83
VOC	0.36
$PM/PM_{10}/PM_{2.5}$	0.17
SO_2	0.01
Hazardous Air Pollutants	
Benzene	5.46E-03
Toluene	1.98E-03
Xylenes	1.36E-03
Formaldehyde	5.56E-04
Acetaldehyde	1.77E-04
Acrolein	5.55E-05
Naphthalene	9.15E-04
Other PAH	5.77E-04
Total HAPs	1.108E-02
Greenhouse Gases	
CO_2	1,148
CH_4	0.05
N_2O	9.31E-03
CO_2e	1,152

Notes:

1. The maximum annual emissions for all engines combined are based on a maximum of 100 hours of operation annually for each generator in accordance with NSPS IIII limitations on non-emergency operations.

Table 1. Engine Information			
Parameter	**Value**	**Units**	**Reference**	**Notes**
Engine make and model	CAT 3516C	--	Manufacturer specification sheet.	1
Number of engines	6	--	Full-build design specified by applicant.	--
Rated Horsepower	3,633	HP/engine	Manufacturer specification sheet.	1
Maximum fuel consumption rate	171	gal/hr/ engine	Manufacturer specification sheet.	1
Annual hours of operation	100	hrs/yr/ engine	Maximum allowable hours of non-emergency operation under NSPS IIII. Actual hours of operation are expected to be significantly lower.	--

Table 2. SCR Cost Effectiveness					
Parameter		**Value**	**Units**	**Reference**	**Notes**
Emission Control Specifications					
NOx Emission Rate (Uncontrolled)		306.6	lb/hr	Manufacturer specification sheet. Maximum "potential site variation" emission rate at any load. Emission rate is for all engines combined.	1
NOx Removal Efficiency		90%	--	USEPA Alternative Control Techniques Document: Diesel Engines, Section 5.2.1.3.	2
NOx Emission Rate (Controlled)		30.66	lb/hr	NOx Emission Rate (Uncontrolled)*(1-NOx Removal Efficiency)	--
NOx Removed		13.8	tpy	[NOx Emission Rate (Uncontrolled)*(Annual Hours of Operation/2000]-[NOx Emission Rate (Controlled)*(Annual Hours of Operation/2000]	--
Equipment Life		25	Years	CARB Technical Feasibility and Cost Analysis, Table B-7	3
Capital Recovery Factor					
Interest Rate		5.00%	--	Estimated business-related lending rate based on Kingfish discussions with project vendors.	4
Capital Recovery Factor		0.07	--	USEPA Control Cost Manual, Section 1, Chapter 2, Equation 2.8a	4
Total Capital Investment					
Direct Capital Cost	**Control Device Cost**	$1,470,000	USD	Vendor estimate. $245,000 per engine.	5
	Sales Tax	$80,850	USD	5.5% State of Maine sales tax charged on Control Device Cost.	--
	Freight	$73,500	USD	5% of Control Device Cost. Typical cost from USEPA Control Cost Manual, Chapter 2 Table 2.4.	4
	Installation	$1,470,000	USD	100% of Control Device Cost. CARB Technical Feasibility and Cost Analysis, Section I.B (range of 25% to 100+% of control cost).	3
Indirect Capital Cost	**Engineering**	$162,435	USD	10% of [Control Device Cost + Sales Tax + Freight]. USEPA Control Cost Manual, Section 3.2, Chapter 2, Table 2.10.	4
	Construction and Field Expenses	$81,218	USD	5% of [Control Device Cost + Sales Tax + Freight]. USEPA Control Cost Manual, Section 3.2, Chapter 2, Table 2.10.	4
	Contractor Fees	$162,435	USD	10% of [Control Device Cost + Sales Tax + Freight]. USEPA Control Cost Manual. Section 3.2, Chapter 2, Table 2.10.	4
	Startup	$32,487	USD	2% of [Control Device Cost + Sales Tax + Freight]. USEPA Control Cost Manual. Section 3.2, Chapter 2, Table 2.10.	4
	Performance Tests	$16,244	USD	1% of [Control Device Cost + Sales Tax + Freight]. Additional cost expected if emissions testing is required. USEPA Control Cost Manual. Section 3.2, Chapter 2, Table 2.10.	4
	Contingencies	$354,917	USD	10% of [Direct Capital Cost + Indirect Capital Cost]. Middle of range (5% - 15%) from USEPA Control Cost Manual. Section 3.2, Chapter 2, Table 2.10.	4
Total Capital Investment		$3,904,085	USD	TCI = [Direct Capital Cost] + [Indirect Capital Cost] USEPA Control Cost Manual. Section 1, Chapter 2, Figure 2.2	4
Total Annual Cost					
Direct Annual Cost	**Maintenance**	$36,000	USD	Vendor estimate. $6,000 per engine per year.	5
	Reagent Purchase (Diesel Exhaust Fluid)	$5,139	USD	Diesel Exhaust Fluid (DEF) consumption rate will be 2% of fuel consumption rate. Average DEF cost will be $2.50/gallon.	6
Indirect Annual Cost	**Administrative Charges**	$432	USD	0.03*0.4*[Maintenance]. USEPA Control Cost Manual, Section 4, Chapter 2, Equation 2.69. Assume labor costs are negligible.	4
	Capital Recovery	$277,004	USD	[Capital Recovery Factor]*[Total Capital Investment] USEPA Control Cost Manual, Chapter 2, Equation 2.70	4
Total Annual Cost		$318,575	USD	[Direct Annual Cost] + [Indirect Annual Cost] USEPA Control Cost Manual. Section 1, Chapter 2, Figure 2.2	4
Cost Effectiveness		**$23,090**	$/ton NOx	[Total Annual Cost]/[NOx Removed]	--

Table 3. DPF Cost Effectiveness					
Parameter		**Value**	**Units**	**Reference**	**Notes**
Emission Control Specifications					
PM Emission Rate (Uncontrolled)		3.49	lb/hr	Manufacturer specification sheet. Maximum "potential site variation" emission rate at any load. Emission rate is for all engines combined.	1
PM Removal Efficiency		90%	--	USEPA Alternative Control Techniques Document: Diesel Engines, Section 4.1.2 (USEPA verified DPF systems)	2
PM Emission Rate (Controlled)		0.35	lb/hr	PM Emission Rate (Uncontrolled)*(1-PM Removal Efficiency)	--
PM Removed		0.16	tpy	[PM Emission Rate (Uncontrolled)*(Annual Hours of Operation/2000]-[PM Emission Rate (Controlled)*(Annual Hours of Operation/2000]	--
Equipment Life		25	Years	CARB Technical Feasibility and Cost Analysis, Table B-7	3
Capital Recovery Factor					
Interest Rate		5.00%	--	Estimated business-related lending rate based on Kingfish discussions with project vendors.	4
Capital Recovery Factor		0.07	--	USEPA Control Cost Manual, Section 1, Chapter 2, Equation 2.8a	4
Total Capital Investment					
Direct Capital Cost	**Control Device Cost**	$780,000	USD	Vendor estimate. $130,000 per engine.	5
	Sales Tax	$42,900	USD	5.5% State of Maine sales tax charged on Control Device Cost.	--
	Freight	$39,000	USD	5% of Control Device Cost. Typical cost from USEPA Control Cost Manual, Chapter 2 Table 2.4.	4
	Installation	$217,500	USD	[Installation] + [Control Device Cost] = 19% of Tier 2 engine cost. CARB Technical Feasibility and Cost Analysis, Table B-4.	3
Indirect Capital Cost	**Engineering**	$86,190	USD	10% of [Control Device Cost + Sales Tax + Freight]. USEPA Control Cost Manual, Section 3.2, Chapter 2, Table 2.10.	4
	Construction and Field Expenses	$43,095	USD	5% of [Control Device Cost + Sales Tax + Freight]. USEPA Control Cost Manual, Section 3.2, Chapter 2, Table 2.10.	4
	Contractor Fees	$86,190	USD	10% of [Control Device Cost + Sales Tax + Freight]. USEPA Control Cost Manual. Section 3.2, Chapter 2, Table 2.10.	4
	Startup	$17,238	USD	2% of [Control Device Cost + Sales Tax + Freight]. USEPA Control Cost Manual. Section 3.2, Chapter 2, Table 2.10.	4
	Performance Tests	$8,619	USD	1% of [Control Device Cost + Sales Tax + Freight]. Additional cost expected if emissions testing is required. USEPA Control Cost Manual. Section 3.2, Chapter 2, Table 2.10.	4
	Contingencies	$132,073	USD	10% of [Direct Capital Cost + Indirect Capital Cost]. Middle of range (5% - 15%) from USEPA Control Cost Manual. Section 3.2, Chapter 2, Table 2.10.	4
Total Capital Investment		$1,452,805	USD	TCI = [Direct Capital Cost] + [Indirect Capital Cost] USEPA Control Cost Manual. Section 1, Chapter 2, Figure 2.2	4
Total Annual Cost					
Direct Annual Cost	**Maintenance**	$18,000	USD	Vendor estimate. $3,000 per engine per year.	5
	Annual Filter Regeneration	$35,000	USD	Vendor estimate. $35,000 for load bank and field service assistance for passive DPF regeneration at 100% load.	5
Indirect Annual Cost	**Administrative Charges**	$216	USD	0.03*0.4*[Maintenance]. Use same formula as SCR. USEPA Control Cost Manual, Section 4, Chapter 2, Equation 2.69. Assume labor costs are negligible.	4
	Capital Recovery	$103,080	USD	[Capital Recovery Factor]*[Total Capital Investment] USEPA Control Cost Manual, Chapter 2, Equation 2.70	4
Total Annual Cost		$156,296	USD	[Direct Annual Cost] + [Indirect Annual Cost] USEPA Control Cost Manual. Section 1, Chapter 2, Figure 2.2	4
Cost Effectiveness		**$995,975**	$/ton PM	[Total Annual Cost]/[PM Removed]	--

Table 4. DOC Cost Effectiveness					
Parameter		**Value**	**Units**	**Reference**	**Notes**
Emission Control Specifications					
VOC Emission Rate (Uncontrolled)		7.25	lb/hr	Manufacturer specification sheet. Maximum "potential site variation" emission rate at any load. Emission rate is for all engines combined.	1
VOC Removal Efficiency		90%	--	USEPA Alternative Control Techniques Document: Diesel Engines, Section 5.2.3.3	2
VOC Emission Rate (Controlled)		0.72	lb/hr	VOC Emission Rate (Uncontrolled)*(1-VOC Removal Efficiency)	--
VOC Removed		0.33	tpy	[VOC Emission Rate (Uncontrolled)*(Annual Hours of Operation/2000]-[VOC Emission Rate (Controlled)*(Annual Hours of Operation)/2000]	--
CO Emission Rate (Uncontrolled)		36.52	lb/hr	Manufacturer specification sheet. Maximum "potential site variation" emission rate at any load. Emission rate is for all engines combined.	1
CO Removal Efficiency		90%	--	USEPA Alternative Control Techniques Document: Diesel Engines, Section 5.2.3.3.	2
CO Emission Rate (Controlled)		3.65	lb/hr	CO Emission Rate (Uncontrolled)*(1-CO Removal Efficiency)	--
CO Removed		1.64	tpy	[CO Emission Rate (Uncontrolled)*(Annual Hours of Operation/2000]-[CO Emission Rate (Controlled)*(Annual Hours of Operation/2000]	--
PM Emission Rate (Uncontrolled)		3.49	lb/hr	Manufacturer specification sheet. Maximum "potential site variation" emission rate at any load. Emission rate is for all engines combined.	1
PM Removal Efficiency		30%	--	USEPA Alternative Control Techniques Document: Diesel Engines, Section 5.2.3.3.	2
PM Emission Rate (Controlled)		2.44	lb/hr	PM Emission Rate (Uncontrolled)*(1-PM Removal Efficiency)	--
PM Removed		0.05	tpy	[PM Emission Rate (Uncontrolled)*(Annual Hours of Operation/2000]-[PM Emission Rate (Controlled)*(Annual Hours of Operation/2000]	--
Equipment Life		10	Years	USEPA Alternative Control Techniques Document: Diesel Engines, Table 5-8	2
Total Capital Investment					
Interest Rate		5.00%	--	Estimated business-related lending rate based on Kingfish discussions with project vendors.	4
Capital Recovery Factor		0.13	--	USEPA Control Cost Manual, Section 1, Chapter 2, Equation 2.8a	4
Capital Cost					
Direct Capital Cost	**Control Device Cost**	$192,000	USD	Vendor estimate. $32,000 per engine.	5
	Sales Tax	$10,560	USD	5.5% State of Maine sales tax charged on Control Device Cost.	--
	Freight	$9,600	USD	5% of Control Device Cost. Typical cost from USEPA Control Cost Manual, Chapter 2 Table 2.4.	4
	Installation	$63,648	USD	30% of [Control Device Cost + Sales Tax + Freight]. USEPA Control Cost Manual, Section 3, Chapter 2, Section 2.5.1.2.	4
Indirect Capital Cost	**Engineering**	$86,190	USD	10% of [Control Device Cost + Sales Tax + Freight]. USEPA Control Cost Manual, Section 3.2, Chapter 2, Table 2.10.	4
	Construction and Field Expenses	$43,095	USD	5% of [Control Device Cost + Sales Tax + Freight]. USEPA Control Cost Manual, Section 3.2, Chapter 2, Table 2.10.	4
	Contractor Fees	$86,190	USD	10% of [Control Device Cost + Sales Tax + Freight]. USEPA Control Cost Manual. Section 3.2, Chapter 2, Table 2.10.	4
	Startup	$17,238	USD	2% of [Control Device Cost + Sales Tax + Freight]. USEPA Control Cost Manual. Section 3.2, Chapter 2, Table 2.10.	4
	Performance Tests	$8,619	USD	1% of [Control Device Cost + Sales Tax + Freight]. Additional cost expected if emissions testing is required. USEPA Control Cost Manual. Section 3.2, Chapter 2, Table 2.10.	4
	Contingencies	$51,714	USD	10% of [Direct Capital Cost + Indirect Capital Cost]. Middle of range (5% - 15%) from USEPA Control Cost Manual. Section 3.2, Chapter 2, Table 2.10.	4
Total Capital Investment		$568,854	USD	TCI = [Direct Capital Cost] + [Indirect Capital Cost] USEPA Control Cost Manual. Section 1, Chapter 2, Figure 2.2	4
Total Annual Cost					
Direct Annual Cost	**Maintenance**	$18,000	USD	Vendor estimate. $3,000 per engine per year.	5
Indirect Annual Cost	**Administrative Charges**	$216.00	USD	0.03*0.4*[Maintenance]. Use same formula as SCR. USEPA Control Cost Manual, Section 4, Chapter 2, Equation 2.69. Assume labor costs are negligible.	4
	Capital Recovery	$73,669	USD	[Capital Recovery Factor]*[Total Capital Investment] USEPA Control Cost Manual, Chapter 2, Equation 2.70	4
Total Annual Cost		$91,885	USD	[Direct Annual Cost] + [Indirect Annual Cost] USEPA Control Cost Manual. Section 1, Chapter 2, Figure 2.2	4
Cost Effectiveness		**$281,785**	$/ton VOC	[Total Annual Cost]/[VOC Removed]	--
		$55,907	$/ton CO	[Total Annual Cost]/[CO Removed]	--
		$1,756,577	$/ton PM	[Total Annual Cost]/[PM Removed]	--

Table 5. Tier 4 Engine Cost Effectiveness (Engine with Integrated SCR, DPF, and DOC Controls)					
Parameter		**Value**	**Units**	**Reference**	**Notes**
Emission Control Specifications					
NOx Removed		13.80	tpy	NOx will be removed by SCR. See Table 2 for NOx removal assumptions.	--
VOC Removed		0.33	tpy	VOC will be removed by DOC. See Table 4 for VOC removal assumptions.	--
CO Removed		1.64	tpy	CO will be removed by DOC. See Table 4 for CO removal assumptions.	--
PM Removed		0.16	tpy	PM will be removed by DPF. See table 3 for PM removal assumptions.	--
Equipment Life		25	Years	Conservatively assume longest lifetime for all integrated controls (SCR, DPF, and DOC). See Tables 2,3, and 4.	--
Capital Recovery Factor					
Interest Rate		5.00%	--	Estimated business-related lending rate based on Kingfish discussions with project vendors.	4
Capital Recovery Factor		0.07	--	USEPA Control Cost Manual, Section 1, Chapter 2, Equation 2.8a	4
Total Capital Investment					
Direct Capital Cost	**Control Device Cost**	$2,910,000	USD	Vendor estimate. Represents cost difference between Tier 4 and Tier 2 engine of the same make and size ($1,360,000 for Tier 4 and $875,000 for Tier 2)	--
	Sales Tax	$160,050	USD	5.5% State of Maine sales tax charged on Control Device Cost.	--
	Freight	$145,500	USD	5% of Control Device Cost. Typical cost from USEPA Control Cost Manual, Chapter 2 Table 2.4.	4
	Installation	$0	USD	Emissions controls will arrive already installed on the engine.	4
Indirect Capital Cost	**Engineering**	$321,555	USD	10% of [Control Device Cost + Sales Tax + Freight]. USEPA Control Cost Manual, Section 3.2, Chapter 2, Table 2.10.	4
	Construction and Field Expenses	$160,778	USD	5% of [Control Device Cost + Sales Tax + Freight]. USEPA Control Cost Manual, Section 3.2, Chapter 2, Table 2.10.	4
	Contractor Fees	$321,555	USD	10% of [Control Device Cost + Sales Tax + Freight]. USEPA Control Cost Manual. Section 3.2, Chapter 2, Table 2.10.	4
	Startup	$64,311	USD	2% of [Control Device Cost + Sales Tax + Freight]. USEPA Control Cost Manual. Section 3.2, Chapter 2, Table 2.10.	4
	Performance Tests	$32,156	USD	1% of [Control Device Cost + Sales Tax + Freight]. Additional cost expected if emissions testing is required. USEPA Control Cost Manual. Section 3.2, Chapter 2, Table 2.10.	4
	Contingencies	$411,590	USD	10% of [Direct Capital Cost + Indirect Capital Cost]. Middle of range (5% - 15%) from USEPA Control Cost Manual. Section 3.2, Chapter 2, Table 2.10.	4
Total Capital Investment		$4,527,494	USD	TCI = [Direct Capital Cost] + [Indirect Capital Cost] USEPA Control Cost Manual. Section 1, Chapter 2, Figure 2.2	4
Total Annual Cost					
Direct Annual Cost	**Maintenance**	$36,000	USD	Vendor estimate. $6,000 per engine per year.	5
	Reagent Purchase (Diesel Exhaust Fluid)	$5,139	USD	Diesel Exhaust Fluid (DEF) consumption rate will be 2% of fuel consumption rate. Average DEF cost will be $2.50/gallon.	6
	Annual Filter Regeneration	$35,000	USD	Vendor estimate. $35,000 for load bank and field service assistance for passive DPF regeneration at 100% load.	5
Indirect Annual Cost	**Administrative Charges**	$432	USD	0.03*0.4*[Maintenance]. USEPA Control Cost Manual, Section 4, Chapter 2, Equation 2.69. Assume labor costs are negligible.	4
	Capital Recovery	$321,237	USD	[Capital Recovery Factor]*[Total Capital Investment] USEPA Control Cost Manual, Chapter 2, Equation 2.70	4
Total Annual Cost		$397,808	USD	[Direct Annual Cost] + [Indirect Annual Cost] USEPA Control Cost Manual. Section 1, Chapter 2, Figure 2.2	4
Cost Effectiveness		**$28,833**	$/ton NOx	[Total Annual Cost]/[NOx Removed]	--
		$1,219,959	$/ton VOC	[Total Annual Cost]/[VOC Removed]	--
		$242,045	$/ton CO	[Total Annual Cost]/[CO Removed]	--
		$2,534,976	$/ton PM	[Total Annual Cost]/[PM Removed]	--

Notes

[1]Caterpillar: Performance Data [EM1894]; CAT 3516E; Change Level 04

[2]USEPA: Alternative Controls Technology Document: Stationary Diesel Engines: Alternative Controls Technology Document: Stationary Diesel Engines; Prepared by Bradley Nelson, EC/R Incorporated; Prepared for USEPA; dated March 5, 2010; https://www.epa.gov/sites/production/files/2014-02/documents/3_2010_diesel_eng_alternativecontrol.pdf

Engineering, Construction and Field Expenses, Contractor Fees, Startup, Performance Tests, and Contingencies expenses are typical for various emissions controls (e.g., oxidizers, carbon adsorbers, refrigerated condensers)

[3]CARB: Analysis of the Technical Feasibility and Costs of After-Treatment Controls on New Emergency Standby Engines; Prepared by the California Air Recourses Board; dated 2010; https://ww3.arb.ca.gov/regact/2010/atcm2010/atcmappb.pdf

[4]USEPA: Air Pollution Control Cost Manual - Seventh Edition; United States Environmental Protection Agency; https://www.epa.gov/economic-and-cost-analysis-air-pollution-regulations/cost-reports-and-guidance-air-pollution.
Note: the Seventh edition is currently being updated. This review incorporated information available as of February 2021.

[5]Caterpiller: February 23, 2021 E-mail correspondence with Milton CAT.

[6]Cummins: Diesel Exhaust Fluid Q & A; https://www.cumminsfiltration.com/sites/default/files/MB10033.pdf

APPENDIX 5
PUBLIC NOTICE

COUNTY SEAT WEEKLY

Machias Valley News Observer

In this is

SERVING WASHINGTON COUNTY CITIZENS & BUSINESSES FOR MORE THAN 160 YEARS

ALL THE HOME

SINCE 1852

NOTICE OF INTENT TO FILE

AIR EMISSIONS, NATURAL RESOURCES PROTECTION and SITE LOCATION

PERMIT APPLICATIONS

Please take note that:

Gartley & Dorsky Engineering & Surveying

59 Union St. Unit #1

Camden, ME 04843

(207) 236-4365

On behalf of:

Kingfish Maine, Inc. 33 Salmon Farm Road, Franklin, Maine

is intending to file three permit applications with the Maine Department of Environmental Protection:

- Natural Resources Protection Act permit application, pursuant 38 M.R.S.A. Sections 480-A - 480-BB
- Site Location of Development Act permit application, pursuant 38 M.R.S.A. 481 – 490

- Air Emissions License permit application, pursuant 38 M.R.S.A. Section 590

These applications are for Kingfish Maine's land-based aquaculture project located at **9 Dun Garvin Road, Jonesport Maine**.

Kingfish Maine is owned by the Kingfish Company [Euronext: KING] which currently operates a land-based recirculating aquaculture system (RAS) in the Netherlands. Over the past 24 months, Kingfish Maine has shared the details of the proposed land-based facility through community outreach. Kingfish Maine's proposed project continues to reflect the aesthetics of the surrounding landscape with respect for preserving the character of the local community.

Kingfish Maine's application for Natural Resources Protection Act and Site Location of Development Act will be filed on or about March 19, 2021 and will be available for public inspection at DEP's Bangor office during normal business hours. The application for Air Emissions will be filed on or about March 19, 2021 also and made available for review by contacting the Bureau of Air Quality (BAQ) DEP offices in Augusta, (207) 287-7688. Copies may also be seen at the Jonesport municipal offices at 70 Snare Creek Lane, Jonesport, ME.

A request for a public hearing or a request that the Board of Environmental Protection assume jurisdiction over this application must be received by the Department in writing, no later than 20 days after the application is found by the Department to be complete and is accepted for processing. A public hearing may or may not be held at the discretion of the Commissioner or Board of Environmental Protection. Public comment on the application will be accepted throughout the processing of the application.

For Federally licensed, permitted, or funded activities in the Coastal Zone, review of this application shall also constitute the State's consistency review in accordance with the Maine Coastal Program pursuant to Section 307 of the federal Coastal Zone Management Act, 16 U.S.C. § 1456

Please take note that Kingfish Maine Inc. will hold a public meeting Thursday, March 18, 2021 at 6pm at the Jonesport Fire Station, 44 Main Street, Jonesport. The meeting will also be available online via Zoom at https://us02web.zoom.us/j/86042856644 . At that time, the company will present project details pertaining to its Air Emissions, Natural Resources Protection and Site Location permit applications. Company representatives will answer questions and provide information on further opportunities for public comment related to these applications.

Written public comments or requests for information may be made to

Natural Resources Protection Act and Site Law of Development Act applications:

Bangor, Eastern Maine Regional Office - EMRO

106 Hogan Road, Bangor, Maine 04401

(207)941-4570 • (888)769-1137 • FAX (207)941-458

Air Emissions License Application:

Bureau of Air Quality

- State Capital (15)
- Police (16)
- Top Stories (76)
- Jonesport (144)
- Coastal (80)
- Sports (303)
- Machiasport (168)
- East Machias (180)
- Editorial Opinion (5)
- Machias (4,373)

Comments | Popular | Rando


DOT seeks public feedbac
Machias dike alternatives
[COMMENT_COUNT] COMMENTS

Lack of high-speed Intern
unyielding in holding back
[COMMENT_COUNT] COMMENTS

Grow your own garden wi
from WHRL and CCC
[COMMENT_COUNT] COMMENTS

Jonesport takes no action
Amendment resolution
[COMMENT_COUNT] COMMENTS

Archive

- March 2021 (49)
- February 2021 (39)
- January 2021 (40)
- December 2020 (47)
- November 2020 (40)
- October 2020 (43)
- September 2020 (49)
- August 2020 (43)
- July 2020 (47)

State House Station #17,

Augusta, ME 04333

(207)287-7688

Kingfish Maine welcomes questions and comments regarding permitting and project scope. The public can email the Kingfish Maine team at admin@kingfish-maine.com

PUBLISHER

Related Posts

Organizers announce cancellation of Machias Wild Blueberry Festival

Machias 7-8-grade boys in JHS and travel team shots

Porter Memorial Library news

APPENDIX 6
DOCUMENTATION OF TITLE, RIGHT, OR INTEREST

OPTION TO PURCHASE REAL ESTATE

THIS AGREEMENT is made as of May 2nd 2019, by and between **W.W. Wood Properties, LLC,** a Maine limited liability company, with a mailing address of **P.O. Box 358, Holden, ME 04429 ("Owner")** and **Kingfish Maine, Inc. ("Optionee"),** WHO AGREE AS FOLLOWS:

1. Option Property: Owner is the owner of certain premises situated at **9 Dun Garvin Road**, consisting of approximately **94 acres** of land, together with all buildings and improvements thereon and all rights and easements appurtenant thereto, which parcel is further identified in the Jonesport, ME assessor's records as **9 Dun Garvin Road, Map/Lot reference of 008-023** and is outlined in heavy line on the attached **Exhibit A** (the "Property") and being the premises described in a deed to Grantor recorded in the Washington County Registry of Deeds in Book 4301, Page 266.

2. Option: In consideration of the "Option Consideration" herewith paid to Owner by Optionee as identified below, Owner hereby grants to Optionee the exclusive, irrevocable right to purchase the Property on the terms set forth in this Agreement (the "Option"). If Optionee elects to purchase the Property, such election shall be made by written notice given to Owner at any time on or before the end of the "Option Period" identified below. Optionee shall have the right, on each occasion by written notice, to extend the Option Period for up to three (3) consecutive "Extension Periods" as described below, in exchange for the corresponding "Extension Consideration" payments set forth below. Each such extension notice and payment shall be made on or before the end of the Option Period (as then extended). The Option and Extension Periods (hereinafter collectively the "Option Period") and their corresponding Option and Extension Consideration payments (hereinafter collectively the "Option Consideration") are as follows:

Option Period	Option Consideration
[redacted] from execution of this Agreement	[redacted]
Extension Periods	**Extension Consideration**
[redacted] from expiration of Option Period from expiration of First Extension Period from expiration of Second Extension Period	[redacted]

3. Purchase Price: If Optionee elects to exercise this Option, the purchase price for the Property shall be [redacted] ("Purchase Price"). The Option Consideration and first Extension Consideration of [redacted] shall be credited against the Purchase Price payable at the closing. All other Extension Considerations shall not be credited against the Purchase Price. If Optionee does not exercise this Option, or if Optionee fails to close, Owner shall retain all Option and Extension Considerations then paid as full consideration and as its sole remedy. Optionee shall be entitled to a refund of the Option Consideration and Extension Considerations only if Owner's title to the Property proves defective, as provided below.

4. Inspections and Approvals: During the Option Period, Optionee and its employees, contractors and agents shall have the right and easement, at Optionee's expense and after reasonable notice to Owner, to enter upon the Property for the purposes of conducting inspections, surveys, soils tests, and other testing. Optionee shall reasonably restore the Property to its prior condition in the event that Optionee's activities disturb or damage the Property. During the Option Period, Optionee may seek at its expense such rezoning, permits and approvals for permits and programs necessary to make the project feasible (for example, the State of Maine's Pine Tree Zone Program and/or permits that will allow the company to build and sustain its desired business) and the like as Optionee requires ("Approvals"), and Owner agrees to cooperate and join with Optionee in obtaining such Approvals. If, at the end of the Extension Periods, Optionee shall be diligently pursuing any such Approvals, Optionee shall have the right, upon written notice to Owner, to further extend the Option Period for a reasonable period of time (not to exceed [redacted]) in order that Optionee may receive a final decision thereon. If Optionee elects to exercise this Option period extension, Optionee shall pay to Owner an Option Consideration of [redacted] or a prorated portion thereof if

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said Option Period extension is less than 6 months.

Promptly following execution of this Agreement, Owner shall provide the following ("Due Diligence Materials") to Optionee, to the extent the same are in Owner's possession or control:

a) Title documents pertaining to the Property
b) Copies of all applicable licenses, permits, zoning, development and governmental approvals received by the Owner (or, if requested but not yet received by Owner, copies of all applicable requests/applications and related documents);
c) Copies of all environmental, soils, traffic and other pre-development reports or studies in Owner's possession;
d) Any other relevant material documentation such as tax abatement agreements, easement agreements, ground leases and the like, if applicable;
e) Property tax bills for the prior two years;

Any and all material written correspondence with governmental bodies in Owner's possession relating to the Property

5. Closing: If Optionee elects to purchase the Property, Owner shall convey the Property to Optionee (or its designee) by good and sufficient general Warranty Deed conveying marketable title, free and clear of all encumbrances, defects, liens, tenants and occupants ("Title Defects"), and utilizing the description obtained by Optionee's survey if requested. The closing shall take place within 90 days after written notice from Optionee that it has exercised the Option at the date, time and place specified in the notice. Optionee shall have the right to apply the Purchase Price at the Closing to the removal of any mortgages encumbering the Property. The parties agree to execute and deliver such documents as are reasonably necessary and customary to complete the closing. Real estate taxes and utilities shall be prorated as of the closing date. Real estate transfer taxes, income taxes and gains taxes shall be paid by Owner.

6. Broker: The parties agree that no broker has been involved in this transaction, other than The Boulos Company and Bold Coast Properties. Optionee shall be responsible for any fees to The Boulos Company. Owner shall be directly responsible for any fees to be paid to Bold Coast Properties or any other broker engaged by Owner. Each party agrees to indemnify the other from and against any damages, costs or expenses (including reasonable attorneys' fees) that the other party may suffer as a result of claims made or suits brought by any broker, finder or agent in connection with this transaction, the obligated party hereunder to be the party whose conduct gives rise to such claims. This indemnity shall survive the closing and any termination of this Option.

7. Ownership/Risk of Loss: Owner hereby warrants that Owner is the owner of the Property in fee simple, that Owner has the full right and authority to grant the Option described in this Agreement, and that there is no other option, contract or other right to purchase the Property in existence. Prior to the Closing, the risk of loss to the Property or taking by eminent domain shall be on Owner. Possession of the Property will be delivered to Buyer upon Closing.

8. Owner's Warranties: To the best of Owner's knowledge and belief there are no and have never been any Hazardous Materials on, under, in or about, or migrating to or from the Property. The presence of such materials at or any time prior to the Closing shall constitute a Title Defect, rendering the title unmarketable as aforesaid. As used herein, "Hazardous Materials" means any hazardous or toxic materials, waste, substances or matter, oil or other petroleum products, underground tanks, asbestos, or similar materials, including as defined in any federal, state or local law or regulation, or any other substances constituting a hazard or threat to the health of persons, animals or plants. This warranty shall survive the Closing and any expiration or other termination of this Option.

9. Memorandum of Option; No Further Encumbrances: Owner agrees to execute a document for recording purposes which will include the primary terms of this Option, other than the Purchase Price. During the term of this Option Agreement, Owner agrees not to further encumber the Property in any manner without Optionee's consent.

10. Notice: Any notice required to be given by Optionee to extend or exercise this Option shall be in writing, shall be addressed to Owner as set forth above, and shall be sent by registered or certified mail, return

receipt requested, or by a reputable overnight carrier that provides a receipt, such as FedEx or Airborne, and shall be deemed delivered on the date postmarked or the date deposited with the overnight carrier.

11. Confidentiality: Owner agrees not to disclose any Confidential Information to any person or other entity without Optionee's prior written consent, except to Owner's professional consultants who agree to be bound by this paragraph. For purposes of this Agreement, "Confidential Information" includes Optionee's interest in the Property; the prospective use of the Property (if disclosed); and the terms of this Agreement and any other agreements between the parties with respect to the Property, except to the extent Optionee may have publicly disclosed any such information.

12. Binding Effect: This Option Agreement shall be binding upon the parties and their heirs, administrators, successors and assigns upon full execution by Owner and Optionee in the spaces provided below. Optionee may freely assign its rights hereunder.

IN WITNESS WHEREOF, Owner and Optionee have executed this Agreement as of the date first set forth above.

OWNER:
W.W. Wood Properties, LLC.

DocuSigned by:
222CE152A0EF4DD...

By: Wayne Wright
Its: Authorized Signatory

OPTIONEE:
Kingfish Maine, Inc.

By: Ohad Maiman
Its: CEO

Exhibit A