



**U.S. Environmental Protection Agency
Region 2**

OUTER CONTINENTAL SHELF AIR PERMIT

Issued to

Empire Leaseholder LLC

For the
Empire Offshore Wind: Empire Wind Project

EPA Permit Number: OCS-EPA-R2 NY 01

Issue Date: 2/15/2024

Effective Date: 3/16/2024

Administrative Permit Amendment: [November 21, 2024]

In accordance with the provisions of section 328 of the Clean Air Act, 42 U.S.C. § 7627, and the implementing Outer Continental Shelf ("OCS") air regulations at title 40 of the Code of Federal Regulations ("C.F.R."), part 55, the United States Environmental Protection Agency, Region 2 Office ("EPA") is proposing to issue an OCS air quality permit to:

Empire Leaseholder LLC
600 Washington Blvd, 8th Floor
Stamford, CT 06901

Empire Leaseholder LLC is hereby authorized to construct and operate an offshore wind farm project located on the OCS within the lease area OCS-A 0512 at about 12 nautical miles ("nm") south of Long Island, New York, and 17 nm east of Long Branch, New Jersey. The construction and operation of the wind farm shall be subject to the attached permit conditions and permit limitations.

November 21, 2024

Richard Ruvo, Director
Air and Radiation Division

Date

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I. DEFINITIONS

Category 1 means relating to a marine engine with specific engine displacement below 7.0 liters per cylinder.¹

Category 2 means relating to a marine engine with a specific engine displacement at or above 7.0 liters per cylinder but less than 30.0 liters per cylinder.

Category 3 means relating to a reciprocating marine engine with a specific engine displacement at or above 30.0 liters per cylinder.

Certification means relating to the process of obtaining a certificate of conformity for an engine family that complies with the emission standards and requirements in this part.

Commence construction refers to commencing construction within the Wind Development Area. This is the date on which the owner or operator has all necessary preconstruction approvals or permits and has either:

- (1) Begun, or caused to begin, a continuous program of actual construction, to be completed within a reasonable time as determined by EPA; or
- (2) Entered into binding agreement or contractual obligation, which cannot be cancelled or modified without substantial loss to the owner or operator, to undertake a program of actual construction to be completed within a reasonable time as determined by EPA.

Construction and Commissioning Phase, or *C&C*, begins on the C&C Start Date and ends for EW1 or EW2 when the last wind turbine generator (“WTG”) of EW1 or EW2, respectively, to be constructed begins producing commercial power.

Construction and Commissioning Phase Start Date, or *C&C Start Date*, is the first day any vessel, equipment, or activity, that meets the definition of an OCS source, operates, occurs, or exists in the Wind Development Area.

Foreign-flagged vessel means a vessel of foreign registry, or a vessel operated under the authority of a country other than the United States.

Harbor Craft (also called “Commercial Harbor Craft”) means any private, commercial, government, or military marine vessel including, but not limited to, passenger ferries, excursion vessels, tugboats², ocean-going tugboats, towboats, push-boats, crew, and supply

¹Category 1, Category 2, and Category 3 for marine engines are defined at 40 C.F.R. § 1042.901 (“Definitions”).

²Tugboat means any self-propelled vessel engaged in, or intending to engage in, the service of pulling, pushing, maneuvering, berthing, or hauling alongside other vessels, or any combination of pulling, pushing, maneuvering, berthing, or hauling alongside such vessels in harbors, over the open seas, or through rivers and canals. Tugboats generally can be divided into three groups: harbor or short-haul tugboats, ocean-going or long-haul tugboats, and barge tugboats. “Tugboat” is interchangeable with “towboat” and “push boat” when the vessel is used in conjunction with barges.”

vessels³, work boats⁴, pilot vessels, supply boats, fishing vessels, research vessels, U.S. Coast Guard vessels, hovercraft, emergency response harbor craft, and barge vessels⁵ that do not otherwise meet the definition of ocean-going vessels or recreational vessels.

*Marine engine*⁶ means a nonroad engine that is installed or intended to be installed on a marine vessel. This includes a portable auxiliary marine engine only if its fueling, cooling, or exhaust system is an integral part of the vessel. A fueling system is considered integral to the vessel only if one or more essential elements are permanently affixed to the vessel. There are two kinds of marine engines:

- (1) Propulsion marine engine means a marine engine that moves a vessel through the water or directs the vessel's movement.
- (2) Auxiliary marine engine means a marine engine not used for propulsion.

Ocean-going Vessel means a commercial, government, or military vessel meeting any one of the following criteria:

- (1) a vessel greater than or equal to 400 feet in length overall (LOA) as defined in 50 C.F.R. § 679.2, as adopted June 19, 1996;
- (2) a vessel greater than or equal to 10,000 gross tons (GT ITC) per the convention measurement (international system) as defined in 46 C.F.R. §§ 69.51-.61, as adopted September 12, 1989; or
- (3) a vessel propelled by a marine compression-ignition engine with a per-cylinder displacement of greater than or equal to 30 liters.

OCS Facility means the entire wind development area once the first OCS source is established in the wind development area. The first OCS source is established once any equipment or activity that meets the definition of an OCS source is located within the wind development area.

³Crew and Supply Vessel means a self-propelled vessel used for carrying personnel and/or supplies to and from off-shore and in-harbor locations (including, but not limited to, off-shore work platforms, construction sites, and other vessels). Supply Vessel means a self-propelled vessel used for carrying supplies to and from off-shore and in-harbor locations including, but not limited to, off-shore work platforms, construction sites, and other vessels. Both the crew transfer vessels and primary crew transfer vessel, as these terms are used throughout the permit, are "crew vessels."

⁴Work Boat means a self-propelled vessel that is used to perform duties such as fire/rescue, law enforcement, hydrographic surveys, spill/response, research, training, and construction (including drilling).

⁵Barge means a vessel having a flat-bottomed rectangular hull with sloping ends and built with or without a propulsion engine.

⁶Marine engine is defined at 40 C.F.R. § 1042.901.

OCS Lease Area means the area within the designated Renewable Energy Lease Area OCS-A 0512, awarded by the Bureau of Ocean Energy Management (“BOEM”) and located about 12 nautical miles (“nm”) south of Long Island, New York, and 17 nm east of Long Branch, New Jersey. The boundaries of the lease area are those defined by the BOEM lease.

OCS Source has the same meaning as set forth in 40 C.F.R. § 55.2.

OCS Source Vessel, or a *Vessel that is an OCS Source*, is any vessel that:

- (1) Emits or has the potential to emit any air pollutant;
- (2) Is regulated or authorized under the Outer Continental Shelf Lands Act (“OCSLA”) (43 U.S.C. §1331 *et seq.*);
- (3) Is located on the OCS or in or on waters above the OCS; and
- (4) Is permanently or temporarily attached to the seabed and erected thereon and used for the purpose of exploring, developing, or producing resources therefrom, within the meaning of section 4(a)(1) of OCSLA (43 U.S.C. § 1331 *et seq.*) or physically attached to an OCS facility, in which case only the stationary source aspects of the vessels will be regulated.

Operation and Maintenance Phase, or *O&M*, is the period that begins on the operation and maintenance phase start date.

Operations and Maintenance Phase Start Date, or *O&M Phase Start Date*, is the first day the Empire Wind project produces commercial power.

Permittee includes Empire Leaseholder LLC; its successor(s) in operating the permitted project; its contractors; and any agents or parties acting on its behalf that conduct activities regulated by this permit, including but not limited to vessel, barge, and equipment operators.

Tier 1 means relating to the Tier 1 emission standards, as shown in Appendix I to 40 C.F.R. Part 1042.

Tier 2 means relating to the Tier 2 emission standards, as shown in 40 C.F.R. § 1042.104 and Appendix I to 40 C.F.R. Part 1042.

Tier 3 means relating to the Tier 3 emission standards, as shown in 40 C.F.R. § 1042.101 and § 1042.104.

Tier 4 means relating to the Tier 4 emission standards, as shown in 40 C.F.R. § 1042.101.

U.S.-flagged vessel means a vessel of U.S. registry, or a vessel operated under the authority of the United States.

Wind Development Area (“WDA”) is the designated Renewable Energy Lease Area OCS-A 0512, awarded by BOEM, located on the OCS. The Project lease area is approximately 79,350 acres located in federal waters off the New York coast. At its nearest points, the WDA is approximately 12 nm south of Long Island, New York, and 17 nm east of Long Branch, New Jersey. Note that the term WDA is used before an individual OCS source is established. Once the first OCS source is established in the WDA, the entire WDA is considered the OCS Facility.

II. PROJECT DESCRIPTION

Empire Leaseholder LLC (Empire Wind or the Permittee) proposes to construct (install) and operate an approximately 2,076 megawatt (“MW”) offshore wind farm project in the designated Renewable Energy Lease Area OCS-A 0512 awarded by BOEM. The Lease Area covers approximately 79,350 acres located about 12 nm south of Long Island, New York, and 17 nm east of Long Branch, New Jersey.⁷ Empire Wind proposes to develop the OCS lease area into two wind farms, known as Empire Wind 1 (“EW1”) and Empire Wind 2 (“EW2”), collectively referred to as the project or facility.

The main project components that are subject to the OCS air permit terms and conditions will encompass (1) 147⁸ wind turbines generators (“WTGs”) with monopile foundations. The WTGs use the energy of the wind, a source of renewable energy, and convert it to electricity; (2) two offshore substations (“OSSs⁹”) with jacket foundations that will have permanent diesel generator engines; (3) all infrastructure, including inter-array cables that will connect the WTGs and OSSs, and the portions of the offshore export cables located on the OCS within the federal waters required to transmit the power generated by the WTGs to two onshore grid interconnection points in New York (in Kings County for EW1, and Nassau County for EW2); (4) marine vessels with marine engines that will be used to construct and maintain the project components; and (5) portable diesel generator engines that will be temporarily located on the WTGs and OSSs platforms at times both during the project’s construction and commissioning (“C&C”) phase and during its operations and maintenance (“O&M”) phase.

For OCS air permitting purposes, the project is divided into two phases, a Construction and Commissioning Phase and an Operations and Maintenance Phase. The C&C Phase is estimated to last about four years, and the O&M Phase will last for the duration of the project’s operational life. The project’s anticipated operational life is 35 years. There will also be a decommissioning phase at the end of the project’s anticipated operational life, which would involve the use of various marine vessels and construction equipment to remove the project’s structures from the OCS, is not addressed in this permit. The OCS air permitting requirements for decommissioning will be determined at that time because it is expected that marine vessel technology will substantially change over the next 35 years.

This OCS air permit covers emissions from the activities and emission sources that will occur within the OCS Lease Area, as well as emissions from marine vessels while enroute to and from the OCS location of the project when within 25 nm of the OCS Lease Area’s boundary.

Air pollutant emissions generated by the project include nitrogen oxides (NO_x), carbon monoxide (CO), sulfur dioxide (SO₂), particulate matter (PM), particulate matter with an aerodynamic diameter less than or equal to 10 microns (PM₁₀), particulate matter with an aerodynamic

⁷A nm equals 1.15 statute miles. EPA performs jurisdictional and OCS air emissions determinations based on nm.

⁸The proposed project includes 147 WTGs positions. However due to the presence of glauconite in the seabed, there will likely be only 140 or fewer WTGs positions used.

⁹The OSS will serve as the common interconnection point for WTGs as they will receive the electricity generated by the WTGs via interarray cables.

diameter less than or equal to 2.5 microns (PM_{2.5}), volatile organic compounds (VOC), greenhouse gas (GHG), and hazardous air pollutants (HAPs). These air pollutants are mainly associated with the combustion of diesel fuel in (1) marine engines, including main or propulsion marine engines and auxiliary marine engines on marine vessels that will be used at various times during C&C and O&M to construct and maintain the project, and marine engines that will power construction equipment onboard marine vessels during C&C and that will provide power during commissioning of each OSS or WTGs; (2) non-marine engines, including portable diesel generator engines used on a temporary basis during C&C and O&M and permanent diesel generator engines installed on and used on OSSs during O&M. These permanent diesel engines will each be limited to 2,000 hours of operation per year. Other emission sources include (1) Sulfur hexafluoride (SF₆) insulated electrical switchgears installed in the WTGs' foundations and OSSs' topsides, which will emit fugitive SF₆ emissions (a GHG pollutant) due to possible equipment leakage; (2) Ultra Low Sulfur Diesel ("ULSD") storage tanks that will be located on a temporary basis on the OSS platforms during C&C, and on a permanent basis on the OSSs during O&M, and which will emit fugitive VOC emissions; and (3) touch-up painting activities and cleaning of WTG and OSS mechanical components during C&C and O&M, which will also emit fugitive VOC emissions.

III. EMISSION SOURCES LISTS AND DESCRIPTIONS

A. Marine Vessels and Associated Main and Auxiliary Marine Engines During C&C

The following Table 1A is a list of the marine vessels and their marine engines that are anticipated to be used during C&C. Empire Wind has already contracted for some, but not all, of these vessels. For those vessels that have not yet been contracted, the table below lists marine vessels (and their marine engines) that are assumed to be representative of the types of vessels that will be used by the Permittee. However, Empire Wind may end up using vessels & associated marine engines similar to but different from those listed, and those engines will be subject to the terms and conditions of this permit.

Table 1A provides information related to the different types of vessels Empire Wind expects to use for C&C and indicates for each vessel type whether it qualifies as a "harbor craft" ("HC") or as an "ocean-going vessel" ("OGV"), as those terms are defined in this permit. Some of the vessels listed in Table 1A are anticipated to meet the definition of "OCS source" in 40 C.F.R. § 55.2; other vessels are not. Each vessel type listed in Table 1A may also be a "U.S.-flagged vessel" or a "Foreign-flagged vessel," as these terms are defined in the permit.

The main (or propulsion) and auxiliary marine engines listed below will be Category 1, Category 2, or Category 3 marine engines, as those terms are defined in this permit. All of the marine engines are compression ignition ("CI") internal combustion engines ("ICE") that will use ULSD (for Category 1 and 2 marine engines) or diesel fuel with a maximum sulfur content of 1,000 ppm (for Category 3 marine engines).

Table 1A – Types of marine vessels, and associated main and auxiliary marine engines, to be used during C&C

Vessel Types to be used for WTGs Monopile and Transition Piece Installation (for both EW1 and EW2*)	Number of Vessels of this Type	Marine Engines (per each vessel): Type (Main or Auxiliary), Number & Maximum Engine Power (in kilowatts (kW)/engine)
Main Installation Vessel for WTGs Monopile and Transition Piece (Name vessel: Thialf) (OGV)	1	Main engines (6): 4,900 Main engines (4): 4,500 Main engines (2): 6,000
Heavy Transport Vessels (OGV)	3	Main engines (4): 5,712 Main engines (2): 1,320 Auxiliary engine: 218
Fall Pipe Vessel – Seabed Filter Layer Installation (OGV)	1	Main engines (3): 4,500 Auxiliary engine (1): 1,200 Auxiliary engine (1): 492
Fall Pipe Vessel – Scour Protection Installation (OGV)	1	Main engines (3): 4,500 Auxiliary engine (1): 1,200 Auxiliary engine (1): 492
Anchor Handling Tug (OGV)	1	Main engines (4): 3,000
Bubble Curtain Vessel (HC)	1	Main engines (2): 560 Auxiliary engine (1): 242 Auxiliary engines (2): 99
Primary Crew Transfer Vessel (HC)	1	Main engines (2): 746 Main engines (2): 20
Protected Species Observer Vessel (HC)	1	Main engines (2): 746 Main engines (2): 20
Vessel Types to be used for WTGs Installation (for both EW1 and EW2*)	Number of Vessels of this Type	Marine Engines (per each vessel): Type (Main or Auxiliary), Number & Maximum Engine Power (in kW/engine)
Main Installation Vessel for WTGs Towers, Nacelles, and Blades (Vessel name: MAERSK) (OGV)	1	Main engines (6): 4,500
Tug 1 for WTGs Towers, Nacelles, and Blades (HC)	1	Main engines (2): 2,250 Main engines (2): 1,550
Tug 2 for WTGs Towers, Nacelles, and Blades (HC)	1	Main engines (2): 2,250 Main engines (2): 1,550
Cargo Barges 1 and 2 (for WTGs Towers, Nacelles, and Blades)	2	No engines
Cargo Barge 3 (for WTGs Towers, Nacelles, and Blades)	2	No engines

*EW1 and EW2 will each use the same set of vessels.

Table 1A – Types of marine vessels, and associated main and auxiliary marine engines, to be used during C&C (Continued)

Vessel Types to be used for OSSs Topside and Foundation Installation (for both EW1 and EW2*)	Number of Vessels of this Type	Marine Engines (per each vessel): Type (Main or Auxiliary), Number & Maximum Engine Power (in kW/engine)
Heavy Transport Vessel (OSS Jacket) (OGV)	1	Main engines (2): 3,900
Heavy Transport Vessel (OSS Topside) (OGV)	1	Main engines (2): 2,800 Main engines (2): 3,840 Auxiliary engines (1): 994 Auxiliary engines (1): 601
Main Installation Vessel for WTGs Monopile and Transition Piece (Vessel name: Thialf) (OGV) to be used in lieu of the Heavy Lift Main Installation Vessel for OSSs Jacket and Topside (OGV)	1	Main engines (6): 4,900 Main engines (4): 4,500 Main engines (2): 6,000
Anchor Handling Tug OSSs (Vessel name: Bylgia)(OGV)	1	Main engines (4): 3,000 Auxiliary marine engines (2): 994 Auxiliary marine engine (1): 600
Fall Pipe Vessel – Seabed Filter Layer (OGV)	1	Main engines (3): 4,500 Auxiliary engine (1): 1,200 Auxiliary engine (1): 492
Fall Pipe Vessel – Scour Protection Installation (armor layer) (OGV)	1	Main engines (3): 4,500 Auxiliary engine (1): 1,200 Auxiliary engine (1): 492
Primary Crew Transfer Vessel (HC)	1	Main engines (2): 746 Main engines (2): 20
Bubble Curtain Vessel (HC)	1	Main engines (2): 560 Auxiliary engine (1): 242 Auxiliary engines (2): 99

*EW1 and EW2 will each use the same set of vessels.

Table 1A – Types of marine vessels, and associated main and auxiliary marine engines, to be used during C&C (Continued)

Vessel Types to be used for Export and Inter-Array Cable Installation (for both EW1 and EW2*)	Number of Vessels of this Type	Marine Engines (per each vessel): Type (Main or Auxiliary), Number & Maximum Engine Power (kW)/engine
Export Cable Lay Barge (Near-shore) (OGV)	1	Main engines (3): 1,050 Auxiliary engines (2): 900 Auxiliary engine (1): 125
Heavy Lift Vessel – Cable Spool Transport (OGV) (Currently not planning to use, included as a contingency)	1	Main engines (4): 7,200
Export Cable Lay Vessel (Mid-shore) (OGV)	1	Main engines (2): 1,969 Main engines (2): 1,865 Main engines (4): 400 Auxiliary engine: 70
Export Cable (Far-offshore) (OGV)	1	Main engines (6): 3,450
Tender Support Vessel (HC)	1	Main engines (2): 1,840 Main engines (2): 1,380 Auxiliary engine: 285
Inter-Array Cable Lay Vessel (OGV)	1	Main engines (4): 1,750
Installation Support Vessel (OGV)	1	Main engines (2): 1,840 Main engines (2): 1,380 Auxiliary engine (1): 1,840
Fall Pipe Vessel - Scour Protection (OGV)	1	Main engines (3): 4,500 Main engine (1): 1,200 Auxiliary engine (1): 492
Pre-Sweep Dredger/Tug Combination (OGV) (Currently not planning to use, included as a contingency)	1	Main engines (2): 5,842 Auxiliary engine (1): 730 Auxiliary engine (1): 550 Main engines (2): 3,730 Main engine (1): 910
Pre-Trenching Barge(OGV) (Currently not planned to use, included as contingency)	1	Main engines (4):994 Auxiliary engine (1): 400 Auxiliary engine (1): 269
Pre-Trenching Tug 1 and Tug 2 (HC) (Currently not planned to use, included as contingency)	2	Main engines (2): 940 Auxiliary engine: 335 Auxiliary engine: 65
Pre-Lay Grapnel Run Vessel (HC)	2	Main engines (2): 560 Auxiliary engines (2): 99 Auxiliary engine (1): 242
Export Cable Safety Vessel (HC)	1	Main engines (2): 492 Main engines (2): 20
Inter-Array Cable Safety Vessel (HC)	1	Main engines (2): 492 Main engines (2): 20

*EW1 and EW2 will each use the same set of vessels.

Table 1A – Types of marine vessels, and associated main and auxiliary marine engines, to be used during C&C (Continued)

Vessel Types to be used for Commissioning (for both EW1 and EW2*)	Number of Vessels of this Type	Marine Engines: Type (Main or Auxiliary), Number & Maximum Engine Power (kW)/engine
Service Operations Vessel (HC)	1	Main engines (4): 1,650
Primary Crew Transfer Vessel (HC)	1	Main engines (2): 746 Main engines (2): 20
Crew Transfer Vessels (HC)	2	Main engines (2): 746 Main engines (2): 20
Jack-up Vessel for OSSs Hookup and Commissioning (HC)	1	Main engine (1): 2,350 Auxiliary engine (1): 1,000 Auxiliary engine (1): 158

*EW1 and EW2 will each use the same set of vessels.

B. Marine Vessels, and Associated Main and Auxiliary Marine Engines, to be Used During O&M

The following Table 1B is a list of the marine vessels and their marine engines that are anticipated to be used during O&M. Empire Wind has already contracted for some, but not all, of these vessels. For those vessels that have not yet been contracted, the table below lists marine vessels (and their marine engines) that are assumed to be representative of the types of vessels that will be used by the Permittee. However, Empire Wind may end up using vessels & associated marine engines similar to but different from those listed, and those engines will be subject to the terms and conditions of this permit.

Table 1B provides information related to the different types of vessels Empire Wind expects to use for O&M and indicates for each vessel type whether it qualifies as a “harbor craft” (“HC”) or as an “ocean-going vessel” (“OGV”), as those terms are defined in this permit. Some of the vessels listed in Table 1B are anticipated to meet the definition of “OCS source” in 40 C.F.R. § 55.2; other vessels are not. Each vessel type listed in Table 1B may also be a “U.S.-flagged vessel” or a “Foreign-flagged vessel”, as these terms are defined in the permit.

The main (or propulsion) and auxiliary marine engines listed below will be Category 1, Category 2, or Category 3 marine engines, as those terms are defined in this permit. All of the marine engines are CI ICE that will use ULSD (for Category 1 and 2 marine engines) or diesel fuel with a maximum sulfur content of 1,000 ppm (for Category 3 marine engines).

Table 1B – Types of marine vessels, and associated main and auxiliary marine engines, to be used during O&M

Vessel Types to be used for Offshore Marine Operations (for EW1 and EW2**)	Number of Vessels of this Type	Marine Vessel Engines (per each vessel): Type (Main or Auxiliary), Number & Maximum Engine Power (in kW/engine)
Service Operations Vessel (Battery)	1	No engines
Service Operations Vessel (offshore accommodations) (HC)	1	Main engines (3): 1,400 Main engine (1): 279
Primary Crew Transfer Vessels (HC)	4	Main engines (2): 746 Main engines (2): 20
Survey Vessel (HC)	1	Main engine (1): 1,590 Main engines (2): 300
Vessel Types to be used for Offshore Maintenance (either EW1 or EW2**)	Number of Vessels of this Type	Marine Vessel Engines (per each vessel): Type (Main or Auxiliary), Number & Maximum Engine Power (in kW/engine)
Heavy Lift Vessel (OGV)	1	Main engine (1): 5,712 Main engines (2): 1,320 Auxiliary engine (1): 218
Tug 1 and Tug 2 (HC)	2	Main engines (2): 2,686 Auxiliary engine (1): 71
Cargo Barge	1	No engines
Inter-Array Cable Lay Vessel (HC)	1	Main engines (4): 1,944
Export Cable Lay Vessel (OGV)	1	Main engines (6): 2,240

**These vessels may serve one or both of EW1 and EW2 on a given trip.

C. Marine Engines Used for Equipment Onboard Marine Vessels and Marine Engines Used to Power OSSs and WTGs During C&C

The following Table 1C is a list of marine engines that will be located onboard vessels and will be used to (1) power construction equipment onboard marine vessels during C&C; and/or (2) provide power during commissioning of each OSS or WTG. For some of the engines, the engine data (i.e., marine engine category and maximum engine power) are assumed, as the exact specifications are not known at this time. Thus, Empire Wind may end up using marine engines similar to but different from those listed below, and those engines will be subject to the terms and conditions of this permit. Some of these marine engines will be located on marine vessels anticipated to meet the definition of “OCS Source.” The marine engines in Table 1C will all be Category 2 CI ICE and will use ULSD as fuel:

Table 1C – Marine Engines used for Equipment Onboard Marine Vessels and Marine Engines used to power OSSs and WTGs during C&C

Activity	Engine Description	Number of Engines	Engine Category	Maximum Engine Power (kW)
EW1 or EW2 WTGs Monopile Foundation Installation	Motion Compensated Gripper Frame Generator Engine: It will be located on the heavy lift main installation vessel for WTGs monopile and transition pieces (Thialf) and will provide power to a gripper frame that compensates for wave action to hold each monopile in a fixed position during installation.	1	Category 2	1,044
EW1 or EW2 OSS Topside & Foundation Installation	OSS Commissioning Generator Engine: It will be located on the jack-up vessel for OSSs hookup and commissioning and will be used to provide power during commissioning to the OSS topside structure.	1	Category 2	750
EW1 or EW2 WTG Installation	WTG Installation Generator Engine: It will be located on the WTG main installation vessel (MAERSK) and will operate at each WTG location to provide power during installation.	1	Category 2	1,200

D. Non-Marine Engines – Portable Diesel Generator Engines Used During C&C

The following Table 2A is a list of non-marine portable diesel generator engines temporarily located on either the OSSs or WTGs platforms that will be used during C&C to (1) provide power for construction equipment, lighting, and other tasks for each WTG during commissioning; and (2) to pull inter-array or submarine export cables during commissioning. The engine data (maximum engine power) included in the table below are assumed, as the exact engine specifications are not known at this time. Thus, Empire Wind may end up using similar engines with different maximum engine power than those listed below, and those engines will be subject to the terms and conditions of this permit. The engines in Table 2A are CI ICE and will use ULSD as fuel:

Table 2A – Non-Marine Engines – Portable Diesel Generator Engines used during C&C

Activity	Engine Description	Number of Engines	Maximum Engine Power (kW)
EW1 OSS Topside & Foundation Installation	OSS Installation Generator Engine	1	350
EW2 OSS Topside & Foundation Installation	OSS Installation Generator Engine	1	350
EW1 WTG Installation	WTG Commissioning Generators	3	150
EW2 WTG Installation	WTG Commissioning Generators	3	150
EW1 Commissioning	Inter-array Cable Pulling Engine (at each WTG)	1	15
EW2 Commissioning	Inter-array Cable Pulling Engine (at each WTG)	1	15
EW1 Commissioning	Inter-array Cable Pulling Engine (at OSS)	1	15
EW2 Commissioning	Inter-array Cable Pulling Engine (at OSS)	1	15
EW1 Commissioning	Export Cable Pulling Engine (at OSS)	1	25
EW2 Commissioning	Export Cable Puling Engine (at OSS)	1	25

E. Non-Marine Engines – Portable Diesel Generator Engines Used During O&M

The following Table 2B is a list of non-marine portable diesel generator engines that will be temporarily located on the WTGs platforms and used to provide emergency power at individual WTGs during O&M. Empire Wind estimated that each of these engines will be needed for approximately 6 days at EW1 and 6 days at EW2, up to once every 10 years. The engine data (maximum engine power) included in the table below is assumed, as exact engine specifications were not available at the time of the application. Thus, Empire Wind may end up using similar engines with different maximum engine power than those listed below, and those engines will be subject to the terms and conditions of this permit. The engines in Table 2B are CI ICE and will use ULSD as fuel:

Table 2B - Non-Marine Engines – Portable Diesel Generator Engines used during O&M

Activity	Engine Description	Number of Engines	Maximum Engine Power (kW)
EW1 Offshore Maintenance	WTG Temporary Generators	16	150
EW2 Offshore Maintenance	WTG Temporary Generators	16	150

F. Non-Marine Engines – Permanent Diesel Generator Engines Used During O&M

The following Table 2C is a list of non-marine permanent diesel generator engines that will be located on a permanent basis on the OSSs and will be used for both emergency and non-emergency purposes during O&M. The engines in Table 2C are CI ICE and will use ULSD as fuel:

Table 2C

Engine Description	Number of Generators	Maximum Engine Power (kW)
OSS Permanent Diesel Generator Engines for the two OSSs	2 (1 at each OSS)	600 kW

G. SF₆-Insulated Electrical Switchgears

Table 3 lists equipment which will be used during O&M that will contain SF₆, and which are collectively referred to in this permit as “SF₆-insulated electrical switchgears.” This includes SF₆-insulated electrical equipment, namely switches (or circuit breakers) that will be installed on the WTGs and OSSs for both EW1 and EW2. “SF₆-insulated electrical switchgears” also includes an SF₆-containing gas-insulated bus duct (“gas-insulated bus duct”) that will be used on the EW2 OSS. The gas-insulated bus duct is a metal pipe with an internal bus consisting of a copper bar encapsulated in an aluminum enclosure containing SF₆ for proper insulation.¹⁰ Due to possible equipment leakage, the SF₆-insulated electrical switchgears will be emission sources for fugitive emissions of SF₆, a greenhouse gas. Fugitive SF₆ emissions will also occur during refilling events during the operational life of the project.¹¹

Table 3 - SF₆-Insulated Electrical Switchgears - Operation and Maintenance

WTGs and OSSs	Switchgear Location Types, and Number of SF ₆ Switchgears per Location
WTGs switches located in the entrance platform or tower bottom platform of each WTG	EW1 and EW2 WTGs: 147 switches, each rated at 72.5 kilovolts (“kV”)
OSSs switches and gas-insulated bus duct located on the topside of each OSS	EW1 OSS: 2 switches, each rated at 245 kV; 18 switches, each rated at 72.5 kV; and 2 switches, each rated at 13.8 kV EW2 OSS: 2 switches, each rated at 362 kV; 26 switches, each rated at 145 kV; and 2 switches, each rated at 13.8 kV EW2 OSS: One gas-insulated bus duct at 66 kV

H. ULSD Storage Tanks During C&C

The following Table 4 is a list of ULSD storage tanks that will be located on a temporary basis on OSSs’ platforms during C&C. These storage tanks will be emission sources of fugitive VOC emissions:

Table 4 – Temporary ULSD Storage Tanks – Construction and Commissioning

OSS	Number of Storage Tanks	Storage Tank Volume (Gallons/each tank)
Storage tanks on each OSS platform	2 (1 per each OSS)	7,925 gallons

¹⁰A bus duct is designed to transfer power more efficiently than cables.

¹¹Some SF₆ storage containers (not listed in the table 4) will be located at the Empire Wind project and used for offshore refilling of the SF₆-insulated electrical switchgears.

I. ULSD Storage Tanks During O&M

The following Table 5 is a list of ULSD storage tanks that will be located during O&M on a permanent basis on the OSSs' platforms. These storage tanks will be emissions sources of fugitive VOC emissions:

Table 5 - Permanent ULSD Storage Tanks - Operation and Maintenance

OSS	Number of Storage Tanks	Storage Tank Volume (Gallons/each tank)
Storage tanks on each OSS platform	2 (1 per each OSS)	7,925 gallons

J. Painting and Cleaning Activities

Empire Wind will conduct touch-up painting of the WTGs' and OSSs' components and will use small amounts of various solvents for cleaning mechanical components on the WTGs and OSSs at the project location during C&C. Empire Wind will also conduct, periodically, small amounts of repainting and/or touch-up painting of the WTGs and OSSs and will use small amounts of various solvents for periodic cleaning of mechanical components of the WTGs and OSSs during O&M. Painting and cleaning activities will constitute emission sources of fugitive VOC emissions.

IV. EMISSION LIMITS AND COMPLIANCE REQUIREMENTS

A. Marine Vessel Engines

1. General Requirement

- a. Section IV.A of this permit establishes NSPS IIII emission standards and BACT and LAER emission limits for (1) each marine engine of those marine vessels that will be OCS sources during C&C and O&M; and (2) marine engines of equipment onboard marine vessels that will be OCS sources and will be used during C&C to power equipment onboard marine vessels or to provide power during commissioning of each WTG or OSS, and marine engines used to power OSSs and WTGs (used during C&C).
- b. Notwithstanding paragraph (a) above, this permit does not prohibit the Permittee from using marine vessels or marine engines that differ from the OCS source vessels and/or marine engines listed in Section IV.A of this permit if: 1) those different vessels or marine engines will be used in lieu of OCS source vessels or marine engines listed in this permit, and for the same functions as the vessels or engines that they replace; 2) those different vessels or marine engines meet the NSPS IIII requirements, BACT and LAER requirements, and any other requirements in this permit that apply to the vessels or engines that they replace; and 3) the Permittee complies with the requirements in Section XI.7 of this permit.
- c. Each PM₁₀ and PM_{2.5} (g/kW-hr) BACT emission limit specified in this permit for marine or non-marine engines includes both filterable and condensable fractions of PM.

2. Marine Engines of Harbor Craft Vessels: Marine Engines of Primary Crew Transfer Vessels (used during C&C and O&M)

- a. The Permittee shall comply with the 40 C.F.R. part 60, subpart IIII (“Standards of Performance for Stationary Compression Ignition Internal Combustion Engines”) (“NSPS IIII”) emission standards by ensuring that each Category 1 main and auxiliary marine engine (“marine engine”) of a primary crew transfer vessel, used during C&C or O&M while the vessel is an OCS source, is certified to the engine Tier emission standards below. [40 C.F.R. §§ 60.4204(b), 60.4201(a), & 60.4201(f)(2), 40 C.F.R. § 1042.101]
 - 1) Category 1 marine engines with a maximum engine power of 20 kilowatts (“kW”) - The NO_x + Hydrocarbons (“HC”) and PM grams/kilowatt-hour (“g/kW-hr”) emission standards in Table 1 to 40 C.F.R. § 1042.101 (“Tier 3 Standards for Category 1 Engines below 3700 kW”), and the CO emission standard in 40 C.F.R. § 1042.101(a)(2)(iii) required for Tier 3 engines:
 - i. NO_x + HC: 4.7 g/kW-hr
 - ii. CO: 5.5 g/kW-hr
 - iii. PM: 0.30 g/kW-hr

- 2) Category 1 marine engines with a maximum engine power of 760 kW - The NO_x, HC, and PM (g/kW-hr) emission standards in Table 3 to 40 C.F.R. § 1042.101 (“Tier 4 Standards for Category 2 and Commercial Category 1 Engines at or Above 600 kW”), and the CO emission standard in 40 C.F.R. § 1042.101(a)(2)(iv) required for Tier 4 engines:
 - i. NO_x: 1.8 g/kW-hr
 - ii. HC: 0.19 g/kW-hr
 - iii. CO: 5.0 g/kW-hr
 - iv. PM: 0.04 g/kW-hr
- b. The BACT emission limits and LAER emission limit below shall apply to each Category 1 marine engine of primary crew transfer vessels, used during C&C or O&M, while the vessels are OCS sources. [6 NYCRR 231-7.5(c), 6 NYCRR 231-5.3(a)(3)]
 - 1) Category 1 marine engines with a maximum engine power of 20 kW:
 - i. NO_x: 4.47 g/kW-hr
 - ii. VOC: 0.25 g/kW-hr
 - iii. CO: 5.5 g/kW-hr
 - iv. PM: 0.30 g/kW-hr
 - v. PM₁₀: 0.30 g/kW-hr
 - vi. PM_{2.5}: 0.29 g/kW-hr
 - vii. SO₂: 0.00625 g/kW-hr
 - 2) Category 1 marine engines with a maximum engine power of 760 kW:
 - i. NO_x: 1.8 g/kW-hr
 - ii. VOC: 0.20 g/kW-hr
 - iii. CO: 5.0 g/kW-hr
 - iv. PM: 0.04 g/kW-hr
 - v. PM₁₀: 0.04 g/kW-hr
 - vi. PM_{2.5}: 0.03 g/kW-hr
 - vii. SO₂: 0.00625 g/kW-hr
3. Marine Engines of Harbor Craft Vessels: Marine Vessels Engines of Service Operations Vessel (used during O&M)
 - a. The Permittee shall comply with the NSPS IIII emission standards by ensuring that the Category 1 and 2 marine engines of the service operations vessel, while the vessel is an OCS source, are certified to the Tier engine emission standards below. [40 C.F.R. §§ 60.4204(b), 60.4201(a), & 60.4201(f)(2), 40 C.F.R. § 1042.101]

- 1) Category 1 marine engines - The NO_x + HC and PM (g/kW-hr) emission standards in Table 1 to 40 C.F.R. § 1042.101 (“Tier 3 Standards for Category 1 Engines below 3700 kW”), and the CO emission standard in 40 C.F.R. § 1042.101(a)(2)(iii), required for Tier 3 engines:
 - i. NO_x + HC: 5.6 g/kW-hr
 - ii. PM: 0.10 g/kW-hr
 - iii. CO: 5.0 g/kW-hr
 - 2) Category 2 marine engines – The NO_x, HC, and PM (g/kW-hr) emission standards in Table 3 to 40 C.F.R. § 1042.101 (“Tier 4 Standards for Category 2 and Commercial Category 1 Engines at or Above 600 kW”), and the CO emission standard in 40 C.F.R. § 1042.101(a)(2)(iv) required for Tier 4 engines:
 - i. NO_x: 1.8 g/kW-hr
 - ii. HC: 0.19 g/kW-hr
 - iii. CO: 5.0 g/kW-hr
 - iv. PM: 0.04 g/kW-hr[40 C.F.R. §§ 60.4204(b), 60.4201(a), 60.4201(f)(2), 40 C.F.R. § 1042.101]
- b. The BACT and LAER emission limits below shall apply to each Categories 1 and 2 marine engine of service operations vessel, while the vessel is an OCS source. [6 NYCRR 231-7.5(c), 6 NYCRR 231-5.3(a)(3)]
- 1) Category 1 marine engines:
 - i. NO_x: 5.32 g/kW-hr
 - ii. VOC: 0.30 g/kW-hr
 - iii. CO: 5.0 g/kW-hr
 - iv. PM: 0.10 g/kW-hr
 - v. PM₁₀: 0.10 g/kW-hr
 - vi. PM_{2.5}: 0.09 g/kW-hr
 - vii. SO₂: 0.00625 g/kW-hr
 - 2) Category 2 marine engines:
 - i. NO_x: 1.8 g/kW-hr
 - ii. VOC: 0.20 g/kW-hr
 - iii. CO: 5.0 g/kW-hr
 - iv. PM: 0.04 g/kW-hr
 - v. PM₁₀: 0.04 g/kW-hr
 - vi. PM_{2.5}: 0.03 g/kW-hr
 - vii. SO₂: 0.00625 g/kW-hr

4. Marine Engines of Harbor Craft Vessels: Marine Vessels Engines of Tug 1 and Tug 2 for WTGs Towers, Nacelles, and Blades (used during C&C)

- a. The Permittee shall comply with the NSPS IIII emission standards by ensuring that each Category 2 marine engine of Tug 1 and Tug 2, while each vessel is an OCS source, is certified to the Tier engine emission standards below. [40 C.F.R. §§ 60.4204(b), 60.4201(a), & 60.4201(f)(2), 40 C.F.R. § 1042.101]

- 1) Category 2 marine engines – The NO_x, HC, and PM (g/kW-hr) emission standards in Table 3 to 40 C.F.R. § 1042.101 (“Tier 4 Standards for Category 2 and Commercial Category 2 Engines at or Above 600 kW”), and the CO emission standard in 40 C.F.R. § 1042.101(a)(2)(iv) required for Tier 4 engines:

- i. NO_x: 1.8 g/kW-hr
- ii. HC: 0.19 g/kW-hr
- iii. CO: 5.0 g/kW-hr
- iv. PM: 0.04 g/kW-hr

- b. The BACT and LAER emission limits below shall apply to each Category 2 marine engine of Tug 1 and Tug 2, while those vessels are OCS sources. [6 NYCRR 231-7.5(c), 6 NYCRR 231-5.3(a)(3)]

- 1) NO_x: 1.8 g/kW-hr
- 2) VOC: 0.20 g/kW-hr
- 3) CO: 5.0 g/kW-hr
- 4) PM: 0.04 g/kW-hr
- 5) PM₁₀: 0.04 g/kW-hr
- 6) PM_{2.5}: 0.03 g/kW-hr
- 7) SO₂: 0.00625 g/kW-hr

5. Marine Engines of Harbor Craft Vessels: Marine Vessels Engines of Crew Transfer Vessels (used during C&C), Service Operations Vessel (used during C&C), and Tugs 1 and 2 (used during O&M)

- a. The Permittee shall comply with the NSPS IIII emission standards by ensuring that each Category 1 and 2 marine engine of each of the above-listed vessels, while each vessel is an OCS source, is certified to the following Tier engine emission standards:

- 1) Category 1 marine engines below 37 kW - Tier 2 emission standards in 40 C.F.R. § 1042, Appendix I, Table 1 (“Emissions Standards for Engines Below 37 kW (g/kW-hr)”) that apply to each engine based on the engine rated power and model year:

Engine Rated Power	Model Year	NO _x + NMHC* (g/kW-hr)	CO (g/kW-hr)	PM (g/kW-hr)
19 ≤ kW < 37	2004	7.5	5.5	0.60

*“NMHC” means non-methane hydrocarbons.

[40 C.F.R. §§ 60.4204(b), 60.4201(a), 60.4201(f)(2), 40 C.F.R. § 1042, Appendix I]

- 2) Category 1 marine engines at or above 37 kW - Tier 2 emission standards in 40 C.F.R. § 1042, Appendix I, Table 2 (“Primary Tier 2 Emission Standards for Commercial and Recreational Marine Engines at or Above 37 kW (g/kW-hr)”) that apply to each engine based on the maximum engine power, engine size liters/cylinder, category, and model year:

Engine size liters/cylinder	Maximum Engine Power	Model Year	NO _x + THC* (g/kW-hr)	CO (g/kW-hr)	PM (g/kW-hr)
0.9 ≤ disp. < 1.2	All	2004 - 2006	7.2	5.0	0.30
1.2 ≤ disp. < 5.0	All	2004 - 2009	7.2	5.0	0.20

*“THC” means total hydrocarbons.

[40 C.F.R. §§ 60.4204(b), 60.4201(a), & 60.4201(f)(2), 40 C.F.R. § 1042, Appendix I]

- 3) Category 2 marine engines - Tier 2 emission standards in 40 C.F.R. § 1042, Appendix I, Table 2 (“Primary Tier 2 Emission Standards for Commercial and Recreational Marine Engines at or Above 37 kW (g/kW-hr)”) that apply to each engine based on the maximum engine power, engine size liters/cylinder, category, and model year:

Engine size liters/cylinder	Maximum Engine Power	Model Year	NO _x + THC g/kW-hr	CO g/kW-hr	PM g/kW-hr
5.0 ≤ disp. < 15.0	All	2007	7.8	5.0	0.27

[40 C.F.R. §§ 60.4204(b), 60.4201(a), & 60.4201(f)(2), 40 C.F.R. § 1042, Appendix I]

- b. The BACT and LAER emission limits below shall apply to each Categories 1 or 2 marine engine of the vessels listed at 2.D above, while the vessels are OCS sources. [6 NYCRR 231-7.5(c), 6 NYCRR 231-5.3(a)(3)]

- 1) Category 1 marine engines below 37 kW:

- i. NO_x: 7.13 g/kW-hr
- ii. VOC: 0.40 g/kW-hr
- iii. CO: 5.5 g/kW-hr
- iv. PM: 0.60 g/kW-hr
- v. PM₁₀: 0.60 g/kW-hr
- vi. PM_{2.5}: 0.58 g/kW-hr
- vii. SO₂: 0.00625 g/kW-hr

2) Category 1 marine engines at or above 37 kW

Engine size liters/cylinder	Maximum Engine Power	Model Year	NO _x g/kW-hr	VOC g/kW-hr	CO g/kW-hr	PM/PM ₁₀ g/kW-hr	PM _{2.5} g/kW-hr	SO ₂ g/kW-hr
0.9 ≤ disp.< 1.2	All	2004 - 2006	6.84	0.38	5.0	0.30	0.29	0.00625
1.2 ≤ disp.< 5.0	All	2004 - 2009	6.84	0.38	5.0	0.20	0.19	0.00625

3) Category 2 marine engines

Engine size liters/cylinder	Maximum Engine Power	Model Year	NO _x g/kW-hr	VOC g/kW-hr	CO g/kW-hr	PM/PM ₁₀ g/kW-hr	PM _{2.5} g/kW-hr	SO ₂ g/kW-hr
5.0 ≤ disp.< 15	All	2007	7.41	0.41	5.0	0.27	0.26	0.00625

6. Marine Engines of Ocean-Going Vessels: Heavy Lift Vessel (used for O&M)

- a. The Permittee shall comply with the NSPS IIII emission standards by ensuring that each Category 1 and 2 marine engine of the above-listed ocean-going vessel, while the vessel is an OCS source, is certified to the Tier engine emission standards below. [40 C.F.R. §§ 60.4204(b), 60.4201(a), & 60.4201(f)(2), 40 C.F.R. § 1042.101]

- 1) Category 1 marine engines – The NO_x + HC and PM (g/kW-hr) emission standards in Table 1 to 40 C.F.R. § 1042.101 (“Tier 3 Standards for Category 1 Engines below 3700 kW”) and the CO emission standard in 40 C.F.R. § 1042.101(a)(2)(iv), required for Tier 3 engines:

- i. NO_x + HC: 5.6 g/kW-hr
- ii. CO: 5.0 g/kW-hr
- iii. PM: 0.10 g/kW-hr

- 2) Category 2 marine engines – The NO_x + HC and PM (g/kW-hr) emission standards in Table 2 to 40 C.F.R. § 1042.101 (“Tier 3 Standards for Category 2 Engines below 3700 kW”) and the CO emission standard in 40 C.F.R. § 1042.101(a)(2)(iv), required for Tier 3 engines:

- i. NO_x + HC: 6.2 g/kW-hr
- ii. CO: 5.0 g/kW-hr
- iii. PM: 0.14 g/kW-hr

- b. The Permittee shall comply with the NSPS IIII emission standards below for each Category 3 marine engine of the above-listed vessel, while the vessel is an OCS source. [40 C.F.R. §§ 60.4204(c)(3) & (4)]

- 1) NO_x: 2.6 g/kW-hr
- 2) PM (filterable): 0.15 g/kW-hr

- c. The BACT and LAER emission limits below shall apply to each Category 1, 2 and 3 marine engine of the above-listed vessel, while the vessel is an OCS source. [6 NYCRR 231-7.5(c), 6 NYCRR 231-5.3(a)(3)]

- 1) Category 1 marine engines:

- i. NO_x: 5.32 g/kW-hr
- ii. VOC: 0.30 g/kW-hr
- iii. CO: 5.0 g/kW-hr
- iv. PM: 0.10 g/kW-hr
- v. PM₁₀: 0.10 g/kW-hr
- vi. PM_{2.5}: 0.09 g/kW-hr
- vii. SO₂: 0.00625 g/kW-hr

- 2) Category 2 marine engines:

- i. NO_x: 5.89 g/kW-hr
- ii. VOC: 0.32 g/kW-hr
- iii. CO: 5.0 g/kW-hr
- iv. PM: 0.14 g/kW-hr
- v. PM₁₀: 0.14 g/kW-hr
- vi. PM_{2.5}: 0.13 g/kW-hr
- vii. SO₂: 0.00625 g/kW-hr

- 3) Category 3 marine engines:

- i. NO_x: 2.6 g/kW-hr
- ii. VOC: 2.10 g/kW-hr
- iii. CO: 5.0 g/kW-hr
- iv. PM: 0.15 g/kW-hr
- v. PM₁₀: 0.18 g/kW-hr
- vi. PM_{2.5}: 0.17 g/kW-hr
- vii. SO₂: 0.40 g/kW-hr

7. Marine Engines of Ocean-Going Vessels: Main Installation Vessel for WTGs Towers, Nacelles, and Blades (Name vessel: MAERSK) (used for C&C)

- a. The Permittee shall comply with the NSPS IIII emission standards below for each Category 3 marine engine of the above-listed ocean-going vessel, while the vessel is an OCS source. [40 C.F.R. §§ 60.4204(c)(3) & (4)]

- 1) NO_x: 2.4 g/kW-hr
- 2) PM: 0.15 g/kW-hr

- b. The BACT and LAER emission limits below shall apply to each Category 3 marine engine of the above-listed ocean-going vessel, while the vessel is an OCS source. [6 NYCRR 231-7.5(c), 6 NYCRR 231-5.3(a)(3)]

- 1) NO_x: 2.4 g/kW-hr
- 2) VOC: 2.10 g/kW-hr
- 3) CO: 5.0 g/kW-hr
- 4) PM: 0.15 g/kW-hr
- 5) PM₁₀: 0.18 g/kW-hr
- 6) PM_{2.5}: 0.17 g/kW-hr
- 7) SO₂: 0.40 g/kW-hr

8. Marine Engines Onboard Marine Vessels, which are OCS Sources, Used During C&C to Provide Power During Commissioning of Each WTG or OSS

- a. The Permittee shall comply with the NSPS IIII emission standards by ensuring that each of the following Category 2 marine engines: the OSS Commissioning Generator engine located on the Jack-up Vessel for OSSs Hookup and Commissioning, and the WTG Installation Generator engine located on the Main Installation Vessel for WTGs Towers, Nacelles, and Blades (MAERSK), both listed in Section III, Table 1C of this permit, are certified to meet the below Tier 2 emission standards in 40 C.F.R. § 1042, Appendix I, Table 2 (“Primary Tier 2 Emission Standards for Commercial and Recreational Marine Engines at or Above 37 kW (g/kW-hr)”). [40 C.F.R. §§ 60.4204(b), 60.4201(a), & 60.4201(f)(2), 40 C.F.R. § 1042, Appendix I]

- 1) NO_x + THC: 11 g/kW-hr
- 2) CO: 5.0 g/kW-hr
- 3) PM: 0.50 g/kW-hr

- b. The BACT and LAER emission limits below shall apply to each marine engine listed at 4.a and 4.b above. [6 NYCRR 231-7.5(c), 6 NYCRR 231-5.3(a)(3)]

Engine Description	NO _x g/kW-hr	VOC g/kW-hr	CO g/kW-hr	PM g/kW-hr	PM ₁₀ g/kW-hr	PM _{2.5} g/kW-hr	SO ₂ g/kW-hr
OSS Commissioning Generator Engine	10.55	0.14	2.48	0.309	0.309	0.30	0.00625
WTG Installation Generator Engine	10.55	0.14	2.48	0.309	0.309	0.30	0.00625

9. GHG BACT Emission Limits

- a. The combined carbon dioxide equivalent (“CO₂e”) emissions from all marine engines of marine vessels that will be used during C&C (these are listed in Table 1A of this permit), while the vessels are OCS sources, shall not exceed 75,567 tons per year (“tpy”) on a 12-month rolling total. [6 NYCRR 231-7.5(c)]
- b. The combined CO₂e emissions from all marine engines onboard marine vessels, while the vessels are OCS sources, used to power OSSs and WTGs during C&C (which are listed in Table 1C of this permit) shall not exceed 16,027 tpy on a 12-month rolling total. [6 NYCRR 231-7.5(c)]
- c. The combined CO₂e emissions from all marine engines of marine vessels that will be used during O&M (which are listed in Table 1B of this permit), while the vessels are OCS sources, shall not exceed 21,909 tpy on a 12-month rolling total. [6 NYCRR 231-7.5(c)]
- d. CO₂e or carbon dioxide equivalent tpy limits represent the sum of the following GHG pollutants: carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O), all converted to CO₂e. [6 NYCRR 231-7.5(c)]
- e. Compliance with each of the above BACT CO₂e tpy emission limits shall be verified by calculations, as specified elsewhere in this permit. [40 C.F.R. § 55.8]

10. Compliance Requirements

- a. The Permittee shall ensure compliance with the NSPS IIII emission standards (g/kW-hr) specified in this permit for Category 1 and 2 marine engines by ensuring that each engine has an EPA issued certificate of conformity¹² to the corresponding Tier emission standard (g/kW-hr) of 40 C.F.R. part 1042. [40 C.F.R. § 60.4211(c)]
- b. The Permittee shall determine compliance with the NSPS IIII NO_x and PM emission standards specified in this permit for each of the Category 3 marine engines of the Main Installation Vessel for WTGs Towers, Nacelles, and Blades (MAERSK) (used for C&C) and the Heavy Lift Vessel (used for O&M) as follows:
 - 1) Conducting an initial performance test to demonstrate initial compliance with the emission standards, and annual performance tests, thereafter in accordance with 40 C.F.R. §§ 60.4211(d)(1) and (d)(3). This compliance requirement shall apply unless and until such time as the Permittee requests a waiver for performance test requirements pursuant to 40 C.F.R. § 60.8(b)(4) and EPA grants such a request. [40 C.F.R. §§ 60.4211(d)(1) and (d)(3)]
 - 2) Establishing operating parameters to be monitored continuously to ensure that the engines continue to meet the emission standards according to the provisions specified in § 60.4211(d)(2). [40 C.F.R. § 60.4211(d)(2)]
- c. The Permittee shall ensure compliance with the below BACT and LAER requirements established in this permit for each marine engine. [6 NYCRR 231-7.5(c), 6 NYCRR 231-5.3(a)(3); 40 C.F.R. § 55.8]
 - 1) Ensure compliance with the NSPS IIII emission standards specified in this permit;
 - 2) Ensure that each Category 3 marine engine of the (1) Main Installation Vessel for WTGs Towers, Nacelles, and Blades (MAERSK) (used for C&C) has an International Air Pollution Prevention (IAPP) certificate to the Tier III NO_x emission standard in Annex VI; and (2) Heavy Lift Vessel (used for O&M) has an EPA issued certificate of conformity to the Tier 3 NO_x, CO, and HC emission standards in part 1042;
 - 3) Ensure compliance with the diesel fuel sulfur content requirements specified at Section VIII of this permit; and

¹² See 40 C.F.R. § 1042.901 (“*Certification* means relating to the process of obtaining a certificate of conformity for an engine family that complies with the emission standards and requirements in [part 1042].”).

- 4) Ensure compliance with the good combustion practices requirements specified at Section IX.C of this permit.

B. Non-Marine Engines

1. Non-Marine Engines: Portable Diesel Generator Engines used during C&C and O&M

- a. The Permittee shall comply with the NSPS IIII emission standards by ensuring that each of the portable diesel generator engines used during C&C and O&M, listed in Tables 2A and 2B of this permit, is certified to meet the following Tier 4 emission standards from 40 C.F.R. § 1039.101(b), Table 1 (“Tier 4 Exhaust Emission Standards After the 2014 Model Year, g/kW-hr”) that apply to each engine based on the maximum engine power (kW):

Maximum Engine Power	NO _x + NMHC g/kW-hr	NO _x g/kW-hr	NMHC g/kW-hr	CO g/kW-hr	PM g/kW-hr
kW < 19	7.5	-	-	6.6	0.40
19 ≤ kW < 56	4.7	-	-	5.5	0.03
130 ≤ kW ≤ 560	-	0.40	0.19	3.5	0.02

[40 C.F.R. §§ 60.4204(b), 60.4201(a), and 1039.101(b)]

- b. The following BACT and LAER emission limits shall apply to the portable diesel generator engines used during C&C and O&M and listed in Tables 2A and 2B of this permit.

Maximum Engine Power	NO _x g/kW-hr	VOC g/kW-hr	CO g/kW-hr	PM g/kW-hr	PM ₁₀ g/kW-hr	PM _{2.5} g/kW-hr	SO ₂ g/kW-hr
kW < 19	7.13	0.38	6.6	0.40	0.40	0.38	0.00625
19 ≤ kW < 56	4.47	0.25	5.50	0.03	0.03	0.02	0.00625
130 ≤ kW ≤ 560	0.40	0.20	3.5	0.02	0.02	0.01	0.00625

[6 NYCRR 231-7.5(c), 6 NYCRR 231-5.3(a)(3)]

2. Permanent Diesel Generator Engines on OSSs during O&M

- a. The Permittee shall comply with the NSPS IIII emission standards by ensuring that each of the two permanent diesel generator engines (“permanent engine”) on the OSS platforms (one on each platform), listed in Table 2C of this permit, is certified to meet the below Tier 4 emission standards set forth at 40 C.F.R. § 1039.101(b), Table 1 (“Tier 4 Exhaust Emission Standards After the 2014 Model Year, g/kW-hr”). [40 C.F.R. §§ 60.4204(b), 60.4201(a), and 1039.101(b)]

- 1) NO_x: 0.67 g/kW-hr
- 2) NMHC: 0.19 g/kW-hr
- 3) PM: 0.03 g/kW-hr
- 4) CO: 3.5 g/kW-hr

- b. The below BACT and LAER emission limits shall apply to each permanent diesel generator engine on the OSSs' platforms listed in Table 2C of this permit. [6 NYCRR 231-7.5(c), 6 NYCRR 231-5.3(a)(3)]

- 1) NO_x: 0.67 g/kW-hr
- 2) CO: 3.5 g/kW-hr
- 3) VOC: 0.20 g/kW-hr
- 4) PM: 0.03 g/kW-hr
- 5) PM₁₀: 0.03 g/kW-hr
- 6) PM_{2.5}: 0.02 g/kW-hr
- 7) SO₂: 0.00625 g/kW-hr

- c. The NO_x emissions from each of the two permanent engines on the OSSs' platforms must not exceed 2.3 grams per brake horsepower-hour ("bhp-hr"). Compliance with this NO_x emission limit shall be verified via initial performance test, and every five years, thereafter. [6 NYCRR 227-2.4(f)(3), 6 NYCRR 227-2.6(a)(6), 6 NYCRR 201-6.4(b)(2)]

3. GHG BACT Emission Limit

- a. The combined CO₂e emissions from all portable diesel generator engines used during C&C, which are listed in Table 2A of this permit, shall not exceed 476 tpy on a 12-month rolling total. [6 NYCRR 231-7.5(c)]
- b. The combined CO₂e emissions from all portable diesel generators engines used during O&M, which are listed in Table 2B of this permit, shall not exceed 119 tpy on a 12-month rolling total. [6 NYCRR 231-7.5(c)]
- c. The combined CO₂e emissions from the two permanent diesel generators engines on OSSs platforms during O&M, which are listed in Table 2C of this permit, shall not exceed 1,842 tpy on a 12-month rolling total. [6 NYCRR 231-7.5(c)]
- d. CO₂e or carbon dioxide equivalent tpy limits represent the sum of the following GHG pollutants: CO₂, CH₄, and N₂O, all converted to CO₂e.
- e. Compliance with each of the above BACT CO₂e tpy emission limits shall be verified by calculations, as specified elsewhere in this permit [40 C.F.R. §. 55.8]

4. Compliance Requirements

- a. The Permittee shall ensure compliance with the NSPS IIII emission standards (g/kW-hr) specified in this permit for each non-marine engine, by ensuring that each engine has an EPA-issued certificate of conformity to the applicable Tier 4 emission standards. [40 C.F.R. § 60.4211(c)]

- b. The Permittee shall ensure compliance with the BACT and LAER requirements established in this permit for each non-marine engine as follows:
- 1) Ensure compliance with the NSPS IIII emission standards specified in this permit;
 - 2) Ensure compliance with the diesel fuel sulfur content requirements specified at Section VIII of this permit; and
 - 3) Ensure compliance with the good combustion practices requirements specified at Section IX.C of this permit.
- [6 NYCRR 231-7.5(c), 6 NYCRR 231-5.3(a)(3); 40 C.F.R. § 55.8]

C. Marine and Non-Marine Engines GHG BACT Emission Limits-Calculation Methodology Requirements

1. The Permittee shall use the following methodology in calculating the actual CO_{2e} emissions from (1) marine engines of vessels while the vessels are OCS sources, for each C&C and O&M; (2) marine engines onboard marine vessels that are OCS sources, that are used during C&C to provide power during commissioning of each WTG or OSS; and (3) non-marine engines used during C&C and O&M. The calculated actual emissions shall be used to verify compliance with the BACT CO_{2e} emission limits (expressed in tons of CO_{2e} on a 12-month rolling total basis) which are specified in this permit and are established for the following combinations of marine engines and non-marine engines:
 - a. Marine Engines Combinations:
 - 1) All marine engines of marine vessels used during C&C, while the vessels are OCS sources.
 - 2) All marine engines onboard marine vessels, while the vessels are OCS sources, used to power OSSs and WTGs during C&C.
 - 3) All marine engines of marine vessels used during O&M, while the vessels are OCS sources.
 - b. Non-marine Engines Combinations:
 - 1) All portable diesel generator engines used during C&C.
 - 2) All portable diesel generator engines used during O&M.
 - 3) Two permanent diesel generator engines on OSSs during O&M.
2. Emissions (“E”) of CO_{2e} from each relevant marine and non-marine engine shall be calculated daily using the formulas below. [6 NYCRR 231-5.3(a)(1), 6 NYCRR 237-7.5(a), 40 C.F.R. §§ 55.6 & 55.8, 6 NYCRR 201-6.4(b)]

Formula 1:

$$E = \text{kW} * \text{Engine load factor (\%)} * \frac{\text{Hours}}{\text{day}} * \text{Emission Factor} \left(\frac{\text{g}}{\text{kW-hr}} \right) * 1.10231 * 10^{-6}$$

Formula 2:

$$E = \frac{\text{MMBTU}}{\text{hr}} * \text{Engine load factor (\%)} * \frac{\text{Hours}}{\text{day}} * \text{Emission Factor} \left(\frac{\text{lb}}{\text{MMBTU}} \right) * 1/2000$$

Where:

- E = actual tons of CO₂e emissions of each relevant engine per day, including emissions of CO₂, CH₄ and N₂O
 - kW = the maximum engine power (kW) of the relevant marine engine
 - MMBTU/hr = the maximum heat input rate (MMBTU/hr) of the relevant non-marine engine
 - Engine load factor (%) = the engine daily load factor for a given marine or non-marine engine calculated as follows:
 - For each marine engine of a marine vessel, the daily load factor (%) shall be calculated and recorded daily by dividing the actual daily fuel use rate (gallons/day) of a specific vessel by the maximum daily fuel rate for the vessel (gallons/day) (i.e. daily fuel use assuming all vessel engines operating at their maximum rated kW power for 24 hours/day). The calculated daily load factor (%) shall apply to each marine engine of that vessel. If the daily load factor is not calculated on a certain day, the Permittee shall assume 100% load for that day.
 - For each marine engine used to power OSSs and WTGs during C&C, and for each non-marine engine, the engine load factor shall be 100%, consistent with the OCS air permit application.
 - Hours/day = number of hours that (1) the relevant marine engine is in operation on a vessel that is an OCS source (*Formula 1*); or (2) the relevant non-marine engine is in operation (*Formula 2*). The hours/day should be monitored and recorded daily for each relevant engine.
 - Emission factor (g/kW-hr): The CO₂, CH₄ and N₂O emission factors (in g/kW-hr) for each marine engine should be equal to the corresponding emission factors used in the application.
 - Emission factor (lb/MMBTU): The CO₂, CH₄ and N₂O emission factors (in lb/MMBTU) for each non-marine engine should be equal to the corresponding emission factors used in the application.
 - $1.10231 * 10^{-6}$ = grams to tons conversion factor
 - 1/2,000 = lb to ton conversion factor
- a. The Permittee shall calculate the tons of each of CO₂, CH₄, and N₂O emitted by each relevant marine engine, each calendar day using formula 1.
 - b. The Permittee shall then calculate the tons of CO₂e emitted by each relevant marine engine each calendar day based on the Global Warming Potentials (“GWP”) listed in Table A-1 to 40 C.F.R. Part 98, Subpart A.
 - c. The Permittee shall calculate the tons of each of CO₂, CH₄, and N₂O emitted by each relevant non-marine engine, each calendar day using formula 2.

- d. The Permittee shall then calculate the tons of CO₂e emitted by each relevant non-marine engine each calendar day based on the Global Warming Potentials (“GWP”) listed in Table A-1 to 40 C.F.R. Part 98, Subpart A.
- e. At the end of each calendar day, the Permittee shall sum the tons of CO₂e calculated for that day for all relevant marine engines or non-marine engines included in each combination (listed above) that is subject to a BACT emission limit for tons of CO₂e and get the actual daily tons of CO₂e for that particular combination of marine or non-marine engines.
- f. On a monthly basis, for each relevant combination of marine or non-marine engines, the Permittee shall calculate the tons of CO₂e emitted that month by adding the CO₂e daily emissions for that month. Then, the tons of monthly CO₂e shall be added to the tons of CO₂e from the previous 11 months to get the 12-month rolling total tons of CO₂e. This calculated 12-month rolling total tons of CO₂e shall be used to verify compliance with the BACT emission limits expressed as tons of CO₂e on a 12-month rolling total basis established in this permit for certain combinations of marine and non-marine engines.

D. SF₆-Insulated Electrical Switchgears

1. Emission Limits

- a. The following BACT CO₂e emission limit shall apply to all SF₆-insulated electrical switchgears, combined, during O&M: 1,393 tpy CO₂e on a 12-month rolling total basis. [6 NYCRR 231-7.5(c)]

2. Compliance Requirements

The Permittee shall comply with the below requirements. [6 NYCRR 231-7.5(c), 40 C.F.R. § 55.8, 6 NYCRR 201-6.4(b)]

- a. Compliance with the tons of BACT CO₂e limit for the SF₆-insulated electrical switchgears shall be verified using the following calculations:
 - 1) On a monthly basis, the Permittee shall calculate and record the tons of monthly CO₂e emitted by the SF₆-insulated electrical switchgears (switches and gas-insulated bus duct), combined, by using the mass approach included in the permit application and by converting the SF₆ emissions to CO₂e based on the Global Warming Potentials (“GWP”) listed in Table A-1 to 40 C.F.R. Part 98, Subpart A.
 - 2) Then the tons of monthly CO₂e shall be added to the tons of CO₂e from the previous 11 months to get the 12-month rolling total tons of CO₂e. This calculated 12-month rolling total tons of CO₂e shall be used to verify compliance with the BACT emission limits of CO₂e on a 12-month rolling total basis established in this permit for the SF₆-insulated electrical switchgears.

- b. The Permittee shall install and operate enclosed-pressure SF₆-insulated electrical switchgears (switches and gas-insulated bus duct) that each shall have a manufacturer-guaranteed leak rate(s) of:
 - 1) 0.5% or less per year by weight of the SF₆ material stored in each of the switches installed on each of the wind turbines, each of the 362 kV, 245 kV, 145 kV, and 72.5 kV switches installed on each of the offshore substations, and the gas-insulated bus duct.
 - 2) 0.1% or less per year by weight of the SF₆ material stored in each of the 13.8 kV switches installed on each of the offshore substations.
- c. The Permittee shall install, operate, and maintain a SF₆ leak detection alarm system with low pressure alarms for SF₆ leak detection.
- d. Upon a detectable pressure drop that is 10 percent of the original pressure (accounting for ambient air conditions) for any switch other than a 13.8 kV switch or for the gas-insulated bus duct, and a detectable pressure drop that is 14 percent of the original pressure (accounting for ambient air conditions) for a 13.8 kV switch, perform maintenance on an SF₆-insulated electrical switchgear to fix seals as soon as possible but no later than 14 days after the detection of the pressure drop.
- e. If an event requires removal of SF₆, the affected major components will be replaced with new components. For purposes of this requirement, an event means when any component of a switchgear is damaged and results in SF₆ leakage.
- f. When low pressure alarms are triggered, the Permittee shall activate all of the manufacturer's prescribed measures to minimize SF₆ emissions to the maximum extent possible.
- g. All corrective actions targeted to repair the SF₆-insulated electrical switchgear(s) shall be taken by the Permittee, as soon as practicable, but not exceed five (5) calendar days after a leak or other need for a repair is first detected.
- h. The Permittee shall conduct visual inspection of the SF₆-insulated electrical switchgears as prescribed by the manufacturer(s).
- i. The Permittee shall implement the following:
 - 1) The manufacturer's prescribed routine and periodic inspection and maintenance program for each of the WTGs' and OSSs' SF₆-insulated electrical switchgears and leak detection alarm systems.
 - 2) The manufacturer's prescribed procedures and measures to reduce SF₆ emissions during re-filling of the SF₆-insulated electrical switchgears.

- 3) The manufacturer's recommended measures to minimize emissions associated with the storage of any SF₆ material at the project site.

E. ULSD Storage Tanks

1. Emission Limits

- a. The following VOC LAER emission limit shall apply to the VOC fugitive emissions from all ULSD storage tanks, combined, listed in Table 4 of this permit, which will be located on a temporary basis on OSSs during C&C: 0.17 tpy on a 12-month rolling total. [6 NYCRR 231-5.3(a)(3)]
- b. The following VOC LAER emission limit shall apply to the VOC fugitive emissions from all ULSD storage tanks, combined, listed in Table 5 of this permit, which will be located on a permanent basis on the OSSs platforms during O&M: 0.17 tpy on a 12-month rolling total. [6 NYCRR 231-5.3(a)(3)]

2. Compliance Requirements

- a. The Permittee shall ensure that all ULSD storage used during C&C and O&M are light color storage tanks. [6 NYCRR 231-5.3(a)(3)]
- b. The Permittee shall implement the measures below. [6 NYCRR 231-5.3(a)(3)]
 - 1) Good tank design
 - 2) Good storage, operating, and maintenance procedures as indicated by the tank's manufacturer to prevent and minimize the emissions; and
 - 3) Submerged fill as the method of filling the storage tanks.
- c. Compliance with the VOC LAER emission limits for the ULSD storage tanks specified in Tables 4 and 5 of this permit shall be verified by calculations as follows:
[6 NYCRR 231-5.3(a)(3), 40 C.F.R. § 55.8]
 - 1) On a monthly basis, the Permittee shall calculate and record the tons of monthly VOC emitted by the storage tanks used during C&C or O&M, by using the EPA's TANKS emission estimation software, version 4.0.9d or newer.
 - 2) Then, the tons of monthly VOC shall be added to the tons of VOC from the previous 11 months to get the 12-month rolling total tons of VOC. The calculated 12-month rolling total tons of VOC shall be used to verify compliance with the LAER VOC emission limits of tons on a 12-month rolling total basis, established in this permit for the ULSD storage tanks.

- d. During C&C and O&M, the Permittee is authorized to construct, install, and operate on the OSSs platforms the number of storage tanks, and the associated volume in gallons for each tank, which are listed in Tables 4 and 5 of this permit. [40 C.F.R. § 55.6(a)(4)]
- e. The content of each storage tank shall be limited to ULSD with a sulfur content that shall not exceed 0.0015% by weight. [40 C.F.R. § 55.6(a)(4), 40 C.F.R. § 55.8]

F. Painting and Cleaning Activities

1. Emission Limits

- a. The following VOC LAER emission limit shall apply to VOC fugitive emissions from all painting and cleaning activities during C&C: 0.17 tpy on a 12-month rolling total.
- b. The following VOC LAER emission limit shall apply to VOC fugitive emissions from all painting and cleaning activities during O&M: 0.17 tpy on a 12-month rolling total.
[6 NYCRR 231-5.3(a)(3)]

2. Compliance Requirements

- a. Compliance with the VOC LAER emission limits for the painting and cleaning activities for each of C&C and O&M shall be verified by calculations as specified below.
[6 NYCRR 231-5.3(a)(3), 40 C.F.R. § 55.8]
 - 1) On a monthly basis, the Permittee shall calculate and record the tons of monthly VOC emitted by painting and cleaning activities, separately, for C&C and for O&M, following the methodology used in the permit application.
 - 2) Then, the tons of monthly VOC shall be added to the tons of VOC from the previous 11 months to get the 12-month rolling total tons of VOC for C&C and for O&M, respectively. The actual tons of VOC shall be used to verify compliance with the VOC LAER emission limits of tons on a 12-month rolling total basis established in this permit for the painting and cleaning activities.
- b. The Permittee shall comply with the below requirements.
[6 NYCRR 231-5.3(a)(3), 40 C.F.R. § 55.8]
 - 1) Use only low-VOC-containing paints and solvents;
 - 2) Use best management practices, whenever practical, to prevent the airborne particulate matter generated in the process of painting from drifting into the atmosphere; and
 - 3) Ensure proper storage of all paints and solvents in non-leaking containers.

G. Facility Potential to Emit Limits

The Permittee shall comply with the below requirements. [6 NYCRR 231-5.3(a)(1), 6 NYCRR 237-7.5(a), 40 C.F.R. § 55.8, 6 NYCRR 201-6.4(b)]

1. The Permittee shall comply with the following limits on the Potential to Emit (“PTE”) of the OCS Facility. Each of the tpy emission limits in Table 6 is based on a 12-month rolling total. The C&C tpy listed in Table 6 represent the maximum emissions for each type of air pollutant that are estimated to occur in any one of the 4 years anticipated for C&C, and the O&M tpy listed in Table 6 represent the maximum emissions that are estimated to occur in any year of the 35 years of the anticipated commercial lifespan of the project. [6 NYCRR 231-5.3(a)(1), 6 NYCRR 231-7.5(a)]

Table 6 – OCS Facility Potential to Emit Limits (in tpy, on a 12-month rolling total basis)

Project Phase	NO _x	CO	VOC	PM	PM ₁₀	PM _{2.5}	SO ₂	GHGs (as CO _{2e})
C&C	1,821.85	833.29	145.76	56.27	56.27	53.83	44.59	151,404
O&M	178.68	234.71	18.97	6.06	6.06	5.83	2.39	35,237

2. The tpy limits on the PTE of the OCS Facility for C&C and O&M in Table 6 represent the sum of the types of emissions specified below. [40 C.F.R. § 55.2]
 - a. marine engines’ emissions while the vessels are OCS sources;
 - b. marine engines’ emissions while the vessels are at the OCS Facility, but are not OCS sources;
 - c. emissions from marine engines of vessels servicing or associated with the OCS Facility while the vessels are en route to and from the OCS Facility and within 25 nm of the OCS Lease Area boundaries, including those emissions that may occur within state waters (e.g., less than 3 nm from the NY shoreline);
 - d. non-marine engines’ emissions; and
 - e. emissions from other emission sources included in the permit.
3. Emissions (“E”) of NO_x, CO, VOC, PM, PM₁₀, PM_{2.5}, SO₂ and CO_{2e} from each marine and non-marine engine shall be calculated daily using the formulas below. [6 NYCRR 231-5.3(a)(1), 6 NYCRR 237-7.5(a), 40 C.F.R. § 55.8, 6 NYCRR 201-6.4(b)]

Formula 1 (to be used to calculate emissions for each air pollutant emitted by a marine engine, and for each air pollutant other than CO_{2e} emitted by a non-marine engine):

$$E = kW * \text{Engine load factor (\%)} * \frac{\text{Hours}}{\text{day}} * \text{Emission Factor} \left(\frac{\text{g}}{\text{kW-hr}} \right) * 1.10231 * 10^{-6}$$

Formula 2 (to be used to calculate CO_{2e} emissions from a non-marine engine):

$$E = \frac{\text{MMBTU}}{\text{hr}} * \text{Engine load factor (\%)} * \frac{\text{Hours}}{\text{day}} * \text{Emission Factor} \left(\frac{\text{lb}}{\text{MMBTU}} \right) * 1/2000$$

Where:

- E = actual emissions for a given engine in tons/day
- kW = the maximum engine power (kW) of the relevant marine or non-marine engine
- MMBTU/hr = the maximum heat input rate (MMBTU/hr) of the relevant non-marine engine
- Engine load factor (%) = the engine daily load factor for a given marine or non-marine engine calculated as follows:
 - For each marine engine of a marine vessel, the daily load factor (%) shall be calculated and recorded daily by dividing the actual daily fuel use rate (gallons/day) of a specific vessel by the maximum daily fuel rate for the vessel (gallons/day) (i.e. daily fuel use assuming all vessel engines operating at their maximum rated kW power for 24 hours/day). The calculated daily load factor (%) shall apply to each marine engine of that vessel.
 - If the daily load factor is not calculated on a certain day, the Permittee shall (1) assume 100% load for all marine engines of the marine vessel while the marine vessel is at the OCS Facility, regardless of whether the vessel is an OCS source; and (2) use the load factors from the application for all marine engines of marine vessels servicing or associated with the OCS Facility, while within 25 nm of the OCS Lease Area boundaries.
 - For each marine engine of equipment onboard marine vessels, for marine engines used to power OSSs and WTGs during C&C, and for each non-marine engine, the engine load factor shall be 100%, consistent with the OCS air permit application.
- Hours/day = the number of hours the relevant marine or non-marine engine is in operation, which shall be monitored and recorded daily
 - For each marine engine on a vessel, this includes the hours the engine is in operation when the vessel is either an OCS source or is not an OCS source but is at the OCS Facility or within 25 nm from the OCS Lease Area boundaries.
 - For each non-marine engine, this includes the hours each engine is in operation.
- Emission factor (g/kW-hr or lb/MMBTU):
 - The emission factor (in g/kW-hr) for marine engines located on vessels that are OCS sources:
 - The NO_x, CO, VOC, PM, PM₁₀, PM_{2.5}, and SO₂ emission factors (in g/kW-hr) used in this formula shall be the BACT/LAER NO_x, CO, VOC, PM, PM₁₀, PM_{2.5}, and SO₂ emission limits (in g/kW-hr) specified in this permit. Alternatively, the Permittee may use lower NO_x, CO, VOC, PM, PM₁₀, and PM_{2.5} emission factors (in g/kW-hr) that correspond to higher Tier marine engines emission standards if the Permittee actually uses higher Tier marine engines than are listed in this

- permit; in this case, the emission factors shall be derived from the Tier emission standards following the methodology used in the application.
- For the NO_x and PM emission factors (in g/kW-hr) for Category 3 marine engines subject to the NSPS IIII emission standards, the Permittee may alternatively choose to use the actual NO_x and PM (g/kW-hr) values determined during the performance tests required in the permit.
 - For the SO₂ emission factors (in g/kW-hr) for Category 3 marine engines, the Permittee may alternatively choose to use an SO₂ emission factor based on the actual sulfur content of fuel used.
- The emission factor (in g/kW-hr) for marine engines located on vessels that are not OCS sources, during the times the vessels are at the OCS Facility or within 25 nm from the OCS Lease Area boundaries:
 - The NO_x, CO, VOC, PM, PM₁₀, and PM_{2.5} emission factors (g/kW-hr) shall be determined based on the Tier emission standards for the actual Tier to which each marine engine that the Permittee uses is certified. These emission factors shall be derived from the Tier emission standards following the methodology used in the application. If the Tier emission standards for the relevant engine are not available, then the Permittee shall use the NO_x, CO, VOC, PM, PM₁₀, and PM_{2.5} emission factors (g/kW-hr) used in the application.
 - The SO₂ emission factors (g/kW-hr) shall be equal to the ones used in the application. For Category 3 marine engines, the Permittee may use a lower SO₂ emission factor if the engine is using fuel with a lower sulfur content than the 1000 ppm specified in this permit.
 - The emission factor (in g/kW-hr) for non-marine engines covered by this permit:
 - The NO_x, CO, VOC, PM, PM₁₀, PM_{2.5}, and SO₂ emission factors (g/kW-hr) shall be the BACT/LAER NO_x, CO, VOC, PM, PM₁₀, PM_{2.5}, and SO₂ emission limits (g/kW-hr) specified in this permit.
 - For marine engines covered by this permit, the CO₂, CH₄ and N₂O emission factors (g/kW-hr) used to calculate the engine's CO₂e emissions should be equal to the emission factors used in the permit application.
 - For non-marine engines covered by this permit, the CO₂, CH₄ and N₂O emission factors (lb/MMBTU) used to calculate the engine's CO₂e emissions should be equal to the emission factors used in the permit application.
- 1.10231×10^{-6} = grams to tons conversion factor
 - 1/2,000 = lb to ton conversion factor
4. The Permittee shall calculate the tons of each air pollutant emitted by each relevant marine and non-marine engine, each calendar day using either formula 1 or formula 2, as appropriate.

5. On a monthly basis, the Permittee shall calculate and record the tons of each air pollutant emitted that month by all marine and non-marine engines by adding the daily emissions for each engine for that month. Then, the tons of monthly emissions for each air pollutant shall be added to the tons of the corresponding air pollutant from the previous 11 months to get the 12-month rolling total tons of each air pollutant.
 - a. To calculate the 12-month rolling total tons of CO₂e, the Permittee shall add together the calculated 12-month rolling total tons of CO₂e from the SF₆-insulated electrical switchgears (required to be calculated elsewhere in this permit) and the calculated “12-month rolling total actual CO₂e emissions” from the marine and non-marine engines.
 - b. To calculate the 12-month rolling total tons of VOC, the Permittee shall add together the calculated 12-month rolling total tons of VOC from the ULSD Storage Tanks (required to be calculated elsewhere in this permit), the calculated 12-month rolling total tons of VOC emissions from the Painting and Cleaning Activities (required to be calculated elsewhere in this permit), and the calculated 12-month rolling total tons of VOC from the marine and non-marine engines.
6. The actual tons of NO_x, CO, VOC, PM, PM₁₀, PM_{2.5}, SO₂, and CO₂e, calculated using the methods provided above for determining 12-month rolling total tons of pollutant, shall be used to verify compliance with the PTE emission limits for the facility specified in Table 6 of this permit.

H. Emissions Offsets

1. The Permittee shall secure emission offsets for the O&M phase that meet all of the criteria established at 6 NYCRR 231-5.2(d) and 231-5.5, as specified below. [6 NYCRR 231-5.2(d) and 231-5.5]
 - a. 232.3 tpy of NO_x, from the following sources:
 - 1) Lovett Generating Station, DEC Permit ID 3-3928-00010 (shutdown of facility)
 - 2) Key Span Gen, LLC, DEC Permit ID: 1-2822-00481 (shutdown of emission sources)
 - 3) National Grid Far Rockaway Power Station, DEC Permit ID: 2-6308-00040 (shutdown of facility)
 - b. 24.7 tpy of VOC, from the following source:
 - 1) Northville Industries Corporation, DEC Permit ID 1-4722-01658 (shutdown of emission sources)
2. At least 60 days prior to the date the Empire Wind project enters the O&M phase, the Permittee must submit a permit application to EPA to revise the above offsets list if there are any proposed changes to the approved list of emission offset sources included in the permit for the facility. For each such change, the applicant must submit another use of emission reduction credits form signed by the applicant and an authorized representative of the new offset source. [6 NYCRR 231-5.3(e)]

I. OCS Facility Limits on Daily Emissions

1. The Permittee shall comply with the following limits on the OCS Facility's daily emissions, expressed as tons per day ("tpd") and included in Table 7. These limits are derived from the emissions modeled in the application. [6 NYCRR 231-12.2(c)]

Table 7 – OCS Facility Daily Emissions Limits (in tpd)

Project Phase	NO _x	CO	PM ₁₀	PM _{2.5}	SO ₂
C&C	464.09	148.28	11.35	10.85	11.78
O&M	68.54	56.52	2.20	2.14	1.57

2. Compliance with the C&C and O&M emission limits (in tpd) in Table 7 shall be determined using the sum of the types of emissions below. [40 C.F.R. § 55.2]
 - a. marine engines' emissions while the vessels are OCS sources;
 - b. marine engines' emissions while the vessels are at the OCS Facility, but are not OCS sources;
 - c. emissions from marine engines of vessels servicing or associated with the OCS Facility while the vessels are en route to and from the OCS Facility and within 25 nm of the OCS Lease Area boundaries, including those emissions that may occur within state waters (e.g., less than 3 nm from the NY shoreline); and
 - d. non-marine engines' emissions.
3. Emissions ("E") of NO_x, CO, PM₁₀, PM_{2.5}, and SO₂ from each marine and non-marine engine, for each air pollutant, shall be calculated daily using the formula below. [40 C.F.R. § 55.8, 6 NYCRR 201-6.4(b)]

$$E = kW * \text{Engine load factor (\%)} * \frac{\text{Hours}}{\text{day}} * \text{Emission Factor} \left(\frac{\text{g}}{\text{kW-hr}} \right) * 1.10231 * 10^{-6}$$

Where:

- E = actual emissions for a given engine in tons/day
- kW = the maximum engine power (kW) of the relevant marine or non-marine engine
- Engine load factor (%) = the engine daily load factor for a given marine or non-marine engine, calculated as follows:
 - For each marine engine of a marine vessel, the load factor (%) shall be calculated and recorded daily by dividing the actual daily fuel use rate (gallons/day) of a specific vessel by the maximum daily fuel rate for the vessel (gallons/day) (i.e. daily fuel use assuming all vessel engines operating at their maximum rated kW power for 24 hours/day). The calculated daily load factor (%) shall apply to each marine engine of that vessel.

- If the daily load factor is not calculated on a certain day, the Permittee shall (1) assume 100% load for all marine engines of the marine vessel while the marine vessel is at the OCS Facility, regardless of whether the vessel is an OCS source; and (2) use the load factors from the application for all marine engines of marine vessels servicing or associated with the OCS Facility, while within 25 nm of the OCS Lease Area boundaries.
- For each marine of equipment onboard marine vessels, for marine engines used to power OSSs and WTGs during C&C, and for each non-marine engine, the engine load factor shall be 100%, consistent with the OCS air permit application.
- Hours/day = the number of hours the relevant marine or non-marine engine is in operation, which shall be monitored and recorded daily
 - For each marine engine on a vessel, this includes the hours the engine is in operation when the vessel is either an OCS source or is not an OCS source but is at the OCS Facility or within 25 nm from the OCS Lease Area boundaries.
 - For each non-marine engine, this includes the hours each engine is in operation.
- Emission factor (g/kW-hr):
 - The emission factor (in g/kW-hr) for marine engines located on vessels that are OCS sources:
 - The NO_x, CO, PM₁₀, PM_{2.5}, and SO₂ emission factors (in g/kW-hr) used in this formula shall be the BACT/LAER NO_x, CO, PM₁₀, PM_{2.5}, and SO₂ emission limits (in g/kW-hr) specified in this permit. Alternatively, the Permittee may use lower NO_x, CO, PM₁₀, and PM_{2.5} emission factors (in g/kW-hr) that correspond to higher Tier marine engines emission standards if the Permittee actually uses higher Tier marine engines than are listed in this permit; in this case, the emission factors shall be derived from the Tier emission standards following the methodology used in the application.
 - For the NO_x emission factor (in g/kW-hr) for Category 3 marine engines subject to the NSPS IIII emission standards, the Permittee may alternatively choose to use the actual NO_x (g/kW-hr) values determined during the performance tests required in the permit.
 - For the SO₂ emission factors (in g/kW-hr) for Category 3 marine engines, the Permittee may alternatively choose to use an SO₂ emission factor based on the actual sulfur content of fuel used.
 - The emission factor (in g/kW-hr) for marine engines located on vessels that are not OCS sources, during the times the vessels are at the OCS Facility or within 25 nm from the OCS Lease Area boundaries:
 - The NO_x, CO, PM₁₀, and PM_{2.5} emission factors (g/kW-hr) shall be based on the Tier emission standards for the actual Tier to which each marine engine that the Permittee uses is certified. These emission factors shall be derived from the Tier emission standards following the methodology used in the application. If the Tier emission standards for the relevant engine are not available, then the Permittee shall use the NO_x, CO, PM₁₀, and PM_{2.5} emission factors (g/kW-hr) used in the application.

- The SO₂ emission factors (g/kW-hr) shall be equal to the ones used in the application. For Category 3 marine engines, the Permittee may alternatively choose to use a lower SO₂ emission factor if the engine is using fuel with a lower sulfur content than the 1000 ppm specified in this permit.
- The emission factor (in g/kW-hr) for non-marine engines covered by this permit:
 - The NO_x, CO, PM₁₀, PM_{2.5}, and SO₂ emission factors (g/kW-hr) shall be the BACT/LAER NO_x, CO, PM₁₀, PM_{2.5}, and SO₂ emission limits (g/kW-hr) specified in this permit.
- 1.10231×10^{-6} = grams to tons conversion factor
- 1/2,000 = lb to ton conversion factor
- 4. The Permittee shall calculate the tons of each air pollutant emitted by each relevant marine and non-marine engine, each calendar day using the formula above.
- 5. The sums of the actual tons of NO_x, CO, PM₁₀, PM_{2.5}, and SO₂ emissions per day for each relevant marine and non-marine engine, calculated using the method provided above, shall be used to verify compliance with the tpd emission limits for the facility specified in Table 7 of this permit.

V. SMOKE AND OPACITY LIMITATIONS AND MEASUREMENTS, AND CRANKCASE EMISSIONS

1. The Permittee shall ensure that each marine engine of any marine vessel that is an OCS source, and each non-marine engine (portable diesel generator engines used during C&C and O&M, and permanent diesel generator engines on OSSs during O&M), meets the opacity standard of no more than 20 percent (on a 6-minute average), except for one 6-minute period per hour of not more than 27 percent opacity. [6 NYCRR 227-1.4(a)]
2. For each marine engine on the marine vessels listed below, the Permittee shall conduct a one-minute visible emissions survey of the marine engine's emission points, each day during C&C and O&M that the engine operates. The survey shall be conducted using EPA test Method 22, while the engine is operating. No more than four emission points shall be observed simultaneously:
 - Main Installation Vessel for WTGs Towers, Nacelles, and Blades (MAERSK) (used during C&C).
 - Heavy Lift Vessel (used during O&M).
- a. For emission points where a Method 22 observation provides credible evidence that visible emissions could potentially exceed the opacity limit of 20 percent, the Permittee shall initiate corrective action within no more than eight hours of the initial observation.

- b. If, after taking the corrective action, the visible emissions persist, the Permittee shall perform an EPA test Method 9 visual determination of opacity in accordance with 40 C.F.R. § 60, Appendix F, as close to 24 hours of the initial observation as reasonably practicable based on safe logistical planning and availability of a trained Method 9 observer. [6 NYCRR 201-6.4(b), 40 C.F.R. § 55.8]
3. The Permittee shall conduct, annually, an EPA test Method 9 visual determination of opacity in accordance with 40 C.F.R. Part 60, Appendix F for each permanent diesel generator engine on the OSSs during O&M. [6 NYCRR 227-1.4(b)(1), 6 NYCRR 201-6.4(b), 40 C.F.R. § 55.8]
4. The Permittee shall, upon request of the EPA, conduct a Method 9 visual determination of opacity for any marine engine of a vessel that is not an OCS source, or any non-marine engine used during C&C or O&M. [6 NYCRR 201-6.4(b), 40 C.F.R. § 55.8]
5. The Permittee shall ensure that each non-marine engine (portable diesel generator engines used during C&C and O&M, and permanent diesel generator engines on the OSSs during O&M) does not exceed the smoke opacity standards below. [40 C.F.R. §§ 60.4204(b), 60.4201(a), and 1039.105(b)]
 - a. 20 percent during the acceleration mode;
 - b. 15 percent during the lugging mode; and
 - c. 50 percent during the peaks in either the acceleration or lugging modes.
6. The Permittee shall ensure compliance with the following crankcase emissions provisions at 40 C.F.R. § 1039.115(a) for each non-marine engine (portable diesel generator engines used during C&C and O&M, and permanent diesel generator engines on the OSSs during O&M):
 - a. The crankcase emissions may not be discharged directly into the atmosphere from any engine throughout its useful life unless the crankcase emissions are added to the exhaust emissions (either physically or mathematically) during all emission testing. Crankcase emissions shall have the meaning of “crankcase emissions” as defined at 40 C.F.R. § 1039.801: Crankcase emissions means any airborne substances emitted to the atmosphere from any part of the engine crankcase’s ventilation or lubrication system. The crankcase is the housing for the crankshaft and other related parts. [40 C.F.R. §§ 60.4204(b), 60.4201(a), and 1039.115(a)]
7. The Permittee shall ensure compliance with the following crankcase emissions provisions at 40 C.F.R. § 1042.115(a) for each of the marine engines listed in the permit and subject to the Tier engine emission standards in 40 C.F.R. § 1042.101 or Appendix I to 40 C.F.R. Part 1042, while the vessels are OCS sources:

- a. The crankcase emissions may not be discharged directly into the atmosphere from any engine throughout its useful life unless the crankcase emissions are added to the exhaust emissions (either physically or mathematically) during all emission testing. Crankcase emissions shall have the meaning of “crankcase emissions” as defined at 40 C.F.R. § 1042.901: Crankcase emissions means any airborne substances emitted to the atmosphere from any part of the engine crankcase’s ventilation or lubrication system. The crankcase is the housing for the crankshaft and other related internal parts. [40 C.F.R. § 1042.115(a)]

VI. 40 C.F.R. PART 60, SUBPART III – STANDARDS OF PERFORMANCE FOR STATIONARY COMPRESSION IGNITION INTERNAL COMBUSTION ENGINES (“NSPS III”) – OPERATING PRACTICES, COMPLIANCE AND MONITORING REQUIREMENTS AND OTHER REQUIREMENTS

1. The Permittee shall ensure that the following are complied with for each marine engine used during C&C and O&M, and each non-marine engine (portable diesel generator engines used during C&C and O&M, and permanent diesel generator engines on OSSs during O&M) for which this permit requires compliance with NSPS III emission standards:
 - a. Operate and maintain each engine and control device according to the manufacturer’s emission-related written instructions. [40 C.F.R. § 60.4211(a)(1)]
 - b. Only change those emissions-related settings that are permitted by the manufacturer. [40 C.F.R. § 60.4211(a)(2)]
 - c. Meet the applicable requirements of 40 C.F.R. part 1068. [40 C.F.R. § 60.4211(a)(3)]
 - d. Operate and maintain each engine to achieve the emissions standards at 40 C.F.R. § 60.4204, which are specified in this permit, over the entire life of the engines. [40 C.F.R. § 60.4206]
 - e. For each engine, the diesel particulate filter (if the engine is equipped with one) must be installed with a backpressure monitor that notifies the owner or operator when the high backpressure limit of the engine is approached. [40 C.F.R. § 60.4209(b)]
2. The Permittee shall comply with all applicable requirements of the New Source Performance Standards provisions from 40 C.F.R. part 60, Subpart A (General Provisions) that are specifically listed in Table 8 of 40 C.F.R. part 60, subpart III. [40 C.F.R. § 60.4218]

3. For the two permanent diesel generator engines on the OSSs during O&M, the Permittee shall maintain (1) documentation supporting that the engines were installed and configured according to the manufacturer's specifications; and (2) records of the manufacturer's written instructions for the operation and maintenance of the engines.
[6 NYCRR 201-6.4(c)(1) and (c)(2)]
4. Any new, modified, or reconstructed CI ICE, as these terms are defined in NSPS IIII, that is listed in this permit at Section IV.A or IV.B shall comply with all applicable NSPS IIII requirements, except to the extent EPA has granted a request for exemption from such requirements under 40 C.F.R. § 55.7. [40 C.F.R. §§ 55.7 & 55.13(c)]
5. Except for marine engines that are covered by Section IV.A.1.b of this permit, prior to the use of any new, modified, or reconstructed CI ICE marine engine of a vessel that is an OCS source which is not listed in Section IV.A of this permit, or any replacement CI ICE marine engine being used in lieu of one specified in Section IV.A:
 - a. The Permittee shall notify EPA immediately and shall submit to EPA an OCS air permit modification application; and
 - b. The Permittee shall not use the CI ICE marine engine unless and until EPA has issued the OCS air permit authorizing such use.
6. For any new, modified, or reconstructed CI ICE non-marine engine that is part of the OCS Facility, that is not listed in Section IV.B of this permit, and that is certified by EPA to less stringent emission standards than the Tier 4 emission standards in 40 C.F.R. §1039.101(b), Table 1 ("Tier 4 Exhaust Emission Standards After the 2014 Model Year, g/kW-hr"):
 - a. The Permittee shall notify EPA immediately and shall submit to EPA an OCS air permit modification application; and
 - b. The Permittee shall not use the CI ICE non-marine engine unless and until EPA has issued the OCS air permit authorizing such use.
7. For any new, modified, or reconstructed CI ICE non-marine engine that is part of the OCS Facility, that is not listed in Section IV.B of this permit, and that is certified by EPA to the Tier 4 emission standards in 40 C.F.R. §1039.101(b), Table 1, and the engine is not subject to other regulatory requirements incorporated by reference into 40 C.F.R. part 55 at the time:
 - a. The Permittee shall notify EPA immediately and shall submit to EPA an OCS air permit application modification together with a demonstration supporting that the non-marine engine (1) meets the Tier 4 emission standards in 40 C.F.R. §1039.101(b), Table 1; and (2) is not subject to other regulatory requirements incorporated by reference into 40 C.F.R. part 55 at the time, within 30 days after the Permittee starts using that CI ICE non-marine engine; and

- b. The Permittee may use the non-marine engine after submittal of the OCS air permit application, prior to EPA issuance of the OCS air permit modification authorizing the use of the CI ICE marine engine.
8. For any replacement CI ICE non-marine engine that is being used in lieu of one specified in Section IV.B of this permit and that is certified by EPA to the Tier 4 emission standards in 40 C.F.R. §1039.101(b), Table 1, and which meets all other requirements in this permit for the engine it is replacing:
- a. The Permittee shall notify EPA immediately;
 - b. The Permittee may use the CI ICE non-marine engine under this OCS air permit without seeking an OCS air permit modification and shall comply with all the requirements that apply to the non-marine engine it is replacing;
 - c. The Permittee shall submit to EPA a demonstration supporting that the CI ICE non-marine engine (1) is certified by EPA to the Tier 4 emission standards in 40 C.F.R. §1039.101(b), Table 1; and (2) meets all of the air requirements in this permit for the engine it is replacing, within 30 days after the Permittee starts using the replacement CI ICE non-marine engine; and
 - d. If the replacement CI ICE non-marine engine is used during O&M, the Permittee shall include it in the next title V permit renewal application and EPA will include it in the Empire Wind OCS air permit at the next title V renewal. *See* Section XIII of this permit for details on title V permit requirements.
9. For any replacement CI ICE non-marine engine that is being used in lieu of one specified in Section IV.B of this permit and that is certified by EPA to less stringent emission standards than the Tier 4 emission standards in 40 C.F.R. §1039.101(b), Table 1:
- a. The Permittee shall notify EPA immediately and shall submit to EPA an OCS air permit modification application. The Permittee shall not use the CI ICE non-marine engine unless and until EPA has issued the OCS air permit authorizing such use.

VII. 40 C.F.R. PART 63, SUBPART ZZZZ – NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS FOR STATIONARY RECIPROCATING INTERNAL COMBUSTION ENGINES – COMPLIANCE REQUIREMENTS, MAINTENANCE AND MANAGEMENT PRACTICES, AND OTHER REQUIREMENTS

1. For all of the Permittee's marine engines of vessels that are OCS sources, and non-marine engines, specified in this permit and that are required to comply with both the requirements of 40 C.F.R. part 63, NESHAP ZZZZ (National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines ("RICE")) ("NESHAP ZZZZ") and NSPS IIII, the Permittee shall comply with the requirements of NESHAP ZZZZ by meeting the requirements of NSPS IIII. [40 C.F.R. § 63.6590(c)(1)]
2. The Permittee shall comply with all applicable requirements of the National Emission Standards for Hazardous Air Pollutants for Source Categories provisions at 40 C.F.R. part 63, subpart A (General Provisions) that are specifically listed in Table 8 of NESHAP ZZZZ. [40 C.F.R. § 63.6665]
3. The below applies to the use of RICE other than those specified in this permit. [40 C.F.R. § 55.6(a)(4)]
 - a. Prior to the use of any replacement RICE that is a marine engine on a vessel that is an OCS source or is a non-marine engine that is part of the OCS Facility, and which is being used in lieu of an engine specified in Section IV.A or IV.B of this permit, respectively:
 - 1) The Permittee shall notify EPA immediately;
 - 2) If the engine meets the NESHAP ZZZZ requirements and any other requirements in this permit for the RICE it is replacing:
 - i. The Permittee may use the RICE under this OCS air permit without seeking an OCS air permit modification. The RICE shall comply with the NESHAP ZZZZ requirements and any other requirements that apply to the RICE it is replacing;
 - ii. The Permittee shall submit a demonstration supporting that the RICE meets the NESHAP ZZZZ requirements and any other requirements in the permit for the RICE it is replacing within 30 days after the Permittee starts using the replacement RICE; and

- iii. If the RICE is used during O&M, the Permittee shall include it in the next title V permit renewal application and EPA will include it in the Empire Wind OCS air permit at the next title V renewal. *See* Section XIII of this permit for details on title V permit requirements.
- 3) If the engine cannot meet the NESHAP ZZZZ requirements in this permit for the RICE it is replacing, then the Permittee shall submit an OCS air permit modification application and shall not use the engine unless and until EPA has issued the OCS air permit authorizing such use.
- b. Prior to the use of any new, existing, or reconstructed RICE (as these terms are defined in NESHAP ZZZZ) that is a marine engine on a vessel that is an OCS source or is a non-marine engine that is part of the OCS Facility, and which is not identified in this permit:
 - 1) If the RICE is subject to any NESHAP ZZZZ CO emission limitations, the Permittee shall submit to EPA an OCS air permit modification application together with an evaluation of NESHAP ZZZZ applicability for that RICE and shall not use the engine unless and until EPA has issued the OCS air permit authorizing such use.
 - 2) If the RICE is not subject to any NESHAP ZZZZ CO emission limitations, or to other regulatory requirements incorporated by reference into 40 C.F.R. part 55 at the time, the Permittee shall submit to EPA an OCS air permit modification application. The Permittee may use that RICE following submittal of the OCS air permit application, prior to the issuance of an OCS air permit, provided that the Permittee complies with all applicable NESHAP ZZZZ requirements at all times.

VIII. FUEL CONTENT REQUIREMENTS

1. For Category 1 and Category 2 marine engines of all marine vessels (listed in Tables 1A and 1B), for marine engines used onboard marine vessels to power OSSs and WTGs during C&C (listed in Table 1C), for all non-marine engines (portable diesel generator engines used during C&C and O&M (listed in Tables 2A and 2B), and for permanent diesel generator engines on OSSs during O&M (listed in Table 2C)), comply with the following fuel content requirements:
 - a. The Permittee shall ensure that the diesel fuel used in all of the above-listed engines meets the per-gallon standards below. [40 C.F.R. § 60.4207(b), 40 C.F.R. § 1090.305(a), 40 C.F.R. § 63.6604]
 - 1) Maximum sulfur content of 15 parts per million (ppm); and

- 2) Cetane index or aromatic content as follows:
 - i. A minimum cetane index of 40; or
 - ii. A maximum aromatic content of 35 volume percent.
 - b. The Permittee shall ensure that sulfur content of the diesel fuel used in all of the above-listed engines is limited to 0.0015 percent by weight or less. [6 NYCRR 225-1.2(d)]
2. Category 3 Marine Engines
- a. The Permittee shall ensure that the diesel fuel used in the Category 3 marine engines of all marine vessels (listed in Tables 1A and 1B) meets a maximum per-gallon sulfur content of 1,000 ppm. [40 C.F.R. § 60.4207(d), 40 C.F.R. § 1090.325(b), 40 C.F.R. § 63.6604]
3. Compliance demonstration requirements
- a. Compliance with the above maximum sulfur content of fuel limit(s) of 15 ppm (or 0.0015 percent by weight) and 1,000 ppm shall be demonstrated by fuel supplier certifications for each fuel delivery. [40 C.F.R. § 55.8(a), 6 NYCRR 227-1.5(b)(3), 6 NYCRR 225-1.5(d)]

IX. OPERATING LIMITATIONS, WORK PRACTICES, MONITORING, AND OTHER REQUIREMENTS

A. Permanent Diesel Generator Engines

1. The Permittee shall comply with the following for each of the two permanent diesel generator engines on the OSSs during O&M. Each permanent diesel generator engine shall:
 - a. Have a maximum engine power of less than or equal to 600 kW. [40 C.F.R. § 55.6(a)(4), 6 NYCRR 201-6.4(a)]
 - b. Be operated for no more than 2,000 hours on a 12-month rolling total basis. [40 C.F.R. § 55.6(a)(4), 6 NYCRR 201-6.4(a)]
 - c. Have no more than one emission point, which shall have the characteristics below. [40 C.F.R. § 55.6(a)(4), 6 NYCRR 201-6.4(a)]
 - 1) Permanent diesel generator engine on the OSS for EW1: Emission Point ID 10001
 - i. Height (feet or ft): 69
 - ii. Inside Stack Diameter (inches or in): 13
 - iii. NYTM-N (kilometers or km): 550,637.03
 - iv. NYTM-E (km): 785,566.06

- 2) Permanent diesel generator engine on the OSS for EW2: Emission Point ID 10002
 - i. Height (feet): 69
 - ii. Inside Stack Diameter (in): 13
 - iii. NYTM-N (kilometers or km): 532,036.93
 - iv. NYTM-E (km): 845,548.14

2. Performance Testing Requirements

- a. The Permittee shall conduct initial performance tests for the NO_x emissions from each of the two permanent diesel generator engines on the OSSs during O&M. [6 NYCRR 227-2.6(a)(6)]
- b. The Permittee shall submit a compliance test protocol to EPA for approval at the address indicated elsewhere in this permit, at least 30 days prior to the performance test. The test protocol must detail the methods and procedure to be used during the performance testing. [6 NYCRR 227-2.6(c)(1)].
- c. The Permittee must follow the procedures set forth in 6 NYCRR 202 and use test methods 7, 7E, or 19 from 40 C.F.R. part 60, Appendix A, or any other method acceptable to the EPA for determining compliance with the appropriate NO_x limit. [6 NYCRR 227-2.6(c)(2)(iv)]
- d. Each performance test shall consist of three separate test runs, with each run lasting at least one hour. For purposes of determining compliance with the NO_x emission limit in 6 NYCRR 227-2.4(f)(3), the arithmetic mean of the results of the three test runs shall apply. [40 C.F.R. § 60.8(f)(1)]
- e. Once the initial NO_x performance test is complete, the Permittee shall conduct additional/subsequent testing once every five years from the date of the initial performance test. [6 NYCRR 201-6.4(b)(2), 40 C.F.R. § 55.8]
- f. The results of the initial and any subsequent tests must be submitted to the EPA no later than 60 days after completion of the emission test. For subsequent tests, the results must be submitted to the EPA prior to the submittal of each title V permit renewal application that will be due periodically during O&M. [6 NYCRR 227-2.6(c)(3), 40 C.F.R. § 55.8]

B. Marine Engines of Main Installation Vessel for WTGs Towers, Nacelles, and Blades (MAERSK) (used during C&C) and of Heavy Lift Vessel (used during O&M)

1. The NO_x and PM performance tests required for each Category 3 marine engine on the above-listed marine vessels shall be conducted as specified in § 60.4213. [40 C.F.R. §§ 60.4211(d)(1) & (3) and 60.4213]

2. The Permittee shall ensure that the performance tests are completed within 180 days after (1) for the MAERSK vessel, the initial “startup” of the construction activities involving the use of the MAERSK vessel; and (2) for the Heavy Lift Vessel, the first instance the Heavy Lift Vessel is used during O&M. Startup shall have meaning provided at 40 C.F.R. § 60.2 (“Definitions”). [40 C.F.R. § 60.8(a)]
3. At least 60 days prior to each performance test, the Permittee shall submit to the EPA at the address indicated elsewhere in this permit, for review and approval, a Quality Assurance Project Plan (an emission test protocol) detailing methods and procedures to be used during the performance testing. [40 C.F.R. § 55.8]
4. The Permittee shall submit the performance test report to the EPA within 60 days after the completion of each performance test. [40 C.F.R. § 55.8]

C. Good Combustion Practices

1. The Permittee shall use good combustion practices based on the manufacturer’s specifications for all marine and non-marine engines of the Empire Wind project.
2. For the two permanent diesel generators engines on the OSSs during O&M, the Permittee shall:
 - a. Develop and implement an enhanced monitoring and maintenance plan that will ensure good combustion practices and combustion efficiency.
 - b. Submit the enhanced monitoring and maintenance plan to EPA along with the first annual compliance report required elsewhere in this permit at the address provided in this permit. [6 NYCRR 201-6.4(b), 40 C.F.R. § 55.8]

D. Other Requirements

1. The Permittee shall monitor and record on a daily basis the hours each engine is in operation, for the following engines, when they are at the OCS Facility or within 25 nm of the OCS Lease Area boundaries: each marine engine of each marine vessel listed in Tables 1A and 1B of this permit; each marine engine listed in Table 1C of this permit; and each non-marine engine listed in Tables 2A, 2B and 2C of this permit. The hours of operation shall be recorded from a non-resettable hour-meter, or, if no such meter is available, by monitoring and maintaining records of the actual daily operating hours. [40 C.F.R. §§ 55.6(a)(4) and 55.8(a), 6 NYCRR 201-6.4(a)]
2. The Permittee shall monitor and record on a daily basis the fuel use rate (gallons/day) for each marine vessel used that day.

3. The Permittee shall provide EPA at least 30 days prior notice of each NO_x and PM performance test, annual visual determination of opacity, or any other performance test that may be required by EPA, to afford EPA the opportunity to have an observer present. If after 30 days notice for a scheduled performance test or visual determination of opacity test, there is a delay (due to operational problems, etc.) in conducting that scheduled test, the Permittee shall notify EPA as soon as possible of any delay in the original test date, either by providing at least 7 days prior notice of the rescheduled date of the performance test, or by arranging a rescheduled date with the EPA by mutual agreement. [40 C.F.R. § 60.8(d), 40 C.F.R. § 55.8]

X. RECORDKEEPING REQUIREMENTS

The Permittee shall comply with the below recordkeeping requirements. [40 C.F.R. § 55.8, unless otherwise specified below]

1. Ocean-Going Vessels – Performance Tests
 - a. The Permittee shall maintain records of any NO_x and PM emissions performance test reports required by this permit for Category 3 marine engines on ocean-going vessels (used during C&C and O&M), which shall at minimum include the date and the results of the test.
2. Portable Diesel Generator Engines on OSSs and WTGs (used during C&C and O&M) and Permanent Diesel Generator Engines on OSSs during O&M

The Permittee shall maintain the following records:

- a. For each of the above-listed engines that are equipped with a diesel particulate filter, the records of any corrective action taken after the backpressure monitor has notified the owner or operator that the high backpressure limit of the engine is approached. [40 C.F.R. § 60.4214(c)]
- b. For each of the permanent diesel generator engines on the OSSs during O&M, the records of:
 - 1) all NO_x emissions performance tests, which shall at a minimum include the date and the results of the test.
 - 2) the enhanced monitoring and maintenance plan.

3. SF₆-Insulated Electrical Switchgears

The Permittee shall maintain the following records:

- a. Actual SF₆ emissions (in tons of CO₂e) and the corresponding calculations required elsewhere in this permit for verifying compliance with the BACT CO₂e emission limit.
- b. Amount of SF₆ material (in lbs) added to and/or removed from all SF₆ switches and the gas-insulated bus duct, collectively, on a monthly basis, as applicable.
- c. The date and time that any alarm is activated, the corrective action(s) taken to remedy the problem, the date of each such corrective action, and the date when the problem was resolved.
- d. Results of all routine and periodic inspections and, for inspections during which an issue was uncovered, records of any corrective action(s) taken to remedy the problem.
- e. Documentation supporting the manufacturer-guaranteed SF₆ leak rates specified in this permit.

4. ULSD Storage Tanks

The Permittee shall maintain the following records:

- a. Actual amount of ULSD stored in all storage tanks collectively, on a 12-month rolling total basis, during C&C and, separately, during O&M.
- b. Actual tons of VOC fugitive emissions, and the corresponding calculations required elsewhere in this permit to verify compliance with the LAER VOC emission limit for ULSD storage tanks.

5. Painting and Cleaning Activities

The Permittee shall maintain the following records:

- a. Actual amount of each type of paint and/or solvent used on a 12-month rolling total basis.
- b. Data sheets or other materials that provide the name, VOC content, and density for each paint and/or solvent used.
- c. Actual tons of VOC fugitive emissions, and the corresponding calculations required elsewhere in this permit to verify compliance with the LAER VOC emission limit for painting and cleaning activities.

6. Opacity

The Permittee shall maintain records of the results of all annual Method 9 visual determination of opacity tests, and of any Method 9 visual determination of opacity test initiated by the Permittee after visible emissions being observed.

7. Sulfur Content in Fuel

The Permittee shall maintain records, for all fuel deliveries, of the fuel supplier certifications required by this permit to demonstrate compliance with the sulfur content in fuel limits specified in this permit.

8. Other Recordkeeping Requirements

The Permittee shall maintain records of the following:

- a. Construction and Commissioning Phase Start Date.
- b. Operations and Maintenance Phase Start Date.
- c. For each vessel that will be used for each of the C&C activities, which are detailed in Table 1A of this permit, and each vessel that will be used for each of the O&M activities, which are detailed in Table 1B:
 - 1) The vessel's owner (individual or company), vessel name, build year, nation of origin (US.-flagged or foreign-flagged vessel), exact vessel function, and documentation specifically supporting whether (1) the vessel requires attachment to the seabed (either via anchors, spuds (type of jack-up vessel), or other type of attachment) while at the Empire Wind project site during the C&C or O&M activities; (2) the vessel could be maintained in a fixed position using only the vessel engines and without any attachment to the seabed during the C&C and O&M activities; or (3) the vessel would require attachment to other vessels, while those other vessels are OCS sources, or to the WTGs or OSSs structures during the C&C or O&M activities.
- d. For each marine engine of each vessel that will be used for each of the C&C and O&M activities, regardless of whether the vessel is considered an OCS source or not: the engine's category (1 through 3), type of marine engine (i.e., main (or propulsion) or auxiliary marine engine), maximum engine power (kW), make and model year, displacement in liters/cylinder, install date, maximum in-use engine speed in rotations per minute, type of fuel used and sulfur content for each fuel type, average loads, and the EPA certificate of conformity to a Tier engine rating or IAPP certificate, as applicable.

- e. For each non-marine engine that will be used for each of the C&C and O&M activities: maximum engine power (kW), model year, type of fuel used and sulfur content of fuel, and the EPA certificate of conformity to the Tier 4 emission standards in 40 C.F.R. § 1039.101(b).
- f. Daily records of the following:
 - 1) Number of hours that each marine engine of a marine vessel is operated, while the vessel is an OCS source.
 - 2) Number of hours that each marine engine of any vessel is operated both while the vessel is at the OCS Facility but not an OCS source, and when the vessel is within 25 nm of the OCS Lease Area boundaries of the project.
 - 3) Number of hours that each non-marine engine will be operated.
 - 4) Daily marine engines load factors.
 - 5) Daily fuel use rate (gallons/day) for each marine vessel.
 - 6) All actual emissions (in tons/day), along with the supporting calculations, which are required to be calculated by this permit to verify compliance with the limits on the modeled emission rates included in Table 7 of this permit.
- g. Monthly records of the following:
 - 1) Actual CO₂e emissions from marine and non-marine engines subject to this permit's BACT CO₂e emission limits, along with supporting calculations, to verify compliance with the BACT CO₂e emission limits.
 - 2) Actual emissions of pollutants subject to the PTE limits in Table 6 of this permit, and supporting calculations, for all relevant emission sources, used to verify compliance with those PTE limits.

XI. REPORTING REQUIREMENTS

- 1. The Permittee shall notify EPA within 5 days of the C&C Phase Start Date.
- 2. The Permittee shall notify EPA within 5 days of the O&M Phase Start Date.
- 3. The Permittee shall submit an annual report including the information required in this Section XI or elsewhere in this permit. The Permittee shall submit the annual report to EPA by the following dates:

a. For those records created during C&C:

- 1) The first report shall be submitted to EPA within 30 days of the end of the first 12 consecutive calendar months, starting with the month in which the C&C Phase Start Date occurs.
- 2) The following reports shall be submitted to EPA within 30 days from the end of the subsequent 12 consecutive calendar months period.

b. For those records created during O&M:

- 1) Each report shall cover a calendar year and shall be submitted by no later than April 15 of the following calendar year. The first report shall cover the calendar year in which the O&M Phase Start Date occurs, regardless of whether this is a whole or partial year.

c. If C&C and O&M activities overlap in time (for example, if EW1 is in the O&M Phase and EW2 is in the C&C Phase for a given reporting period), the Permittee shall submit separate annual reports covering those activities in the C&C Phase and those activities in the O&M Phase.

4. SF₆-Insulated Electrical Switchgears

The Permittee shall include in the annual report submitted to EPA during O&M all records required at Sections X.3.c and d of this permit related to SF₆-insulated electrical switchgears.

5. Opacity

- a. The Permittee shall submit to EPA, within 30 days of the completion of each annual Method 9 visual determination of opacity test required by this permit, a copy of the results of the test. [6 NYCRR 201-6.4(c), 40 C.F.R. § 55.8]
- b. The Permittee shall include in each annual report submitted to EPA during C&C or O&M a copy of the test results from any Method 9 visual determination of opacity tests conducted during the reporting period after visible emissions were observed.

6. The Permittee shall include in the annual reports submitted to EPA during C&C and O&M the following:

- a. all actual emissions (expressed as tons, for each 12-month rolling period falling in whole or in part within the reporting period) of each pollutant listed in Table 6 of this permit, along with the supporting calculations, to verify compliance with the PTE limits specified in Table 6;

- b. all actual emissions (expressed as tons per day) for each pollutant listed in Table 7, along with supporting calculations, to verify compliance with the limits on the modeled emission rates specified in Table 7 of this permit; and
 - c. all records required at Sections X.8.c, d, and e of this permit.
7. In the event that additional marine vessels that will be OCS sources or additional marine engines on vessels that will be OCS sources are used during C&C or O&M, other than the ones specified in Section IV.A of this permit, the Permittee shall notify EPA immediately. The Permittee shall also take the following steps, as appropriate:
- a. If the additional marine vessels or marine engines meet the criteria at Section IV.A.1.b:
 - 1) The Permittee may use the marine vessels or marine engines under this OCS air permit without seeking an OCS air permit modification. As specified in Section IV.A.1.b, those marine vessels or marine engines shall comply with the requirements that apply to the vessels or engines they are replacing;
 - 2) The Permittee shall submit a demonstration supporting that the marine vessels or marine engines meet the criteria in Section IV.A.1.b to EPA, within 30 days of when the Permittee starts using the additional marine vessels or marine engines; and
 - 3) If the additional marine vessels or marine engines are used during O&M, the Permittee shall include them in the next title V permit renewal application and EPA will include them in the Empire Wind OCS air permit at the next title V renewal. *See* Section XIII of this permit for details on title V permit requirements.
 - b. If the additional marine vessels or marine engines do not meet the criteria at Section IV.A.1.b of this permit, the Permittee shall submit an OCS air permit modification application and shall not use the additional marine vessels or marine engines unless and until EPA has issued the OCS air permit authorizing such use.

XII. EMISSION STATEMENTS AND TITLE V FEES

The following emission statement requirements of 6 NYCRR 202-2 and title V fees requirements of 6 NYCRR 201-6.4(a)(7), apply to the O&M Phase and its emission sources: [40 C.F.R. §§ 55.10(a)(1) and (2), 6 NYCRR 201-6.4(a)(7)].

- 1. The Permittee shall submit to EPA an annual emission statement of its actual O&M Phase emissions for each calendar year, that is consistent with the requirements of 6 NYCRR Part 202 (“Emissions Verification”), Subpart 202-2 (“Emission Statements”). This annual emission statement shall be submitted by no later than April 15 of the following calendar year. The first annual emission statement shall cover the calendar year in which the

O&M Phase Start Date occurs, regardless of whether this is a whole or partial year. The annual emission statements shall be submitted electronically to chan.suilin@epa.gov, or another email address or addresses provided by EPA to the Permittee and shall be certified by a responsible official as provided at 6 NYCRR 202-2.3.

2. The Permittee shall retain and maintain a copy of each emission statement submitted to EPA, and all records and other materials supporting how the information submitted in the emission statement was determined, including any calculations, data, measurements, and estimates used, for five years following the year in which the emission report is submitted. These records shall all be made available at the facility to the representatives of EPA upon request during normal business hours. [6 NYCRR 202-2.5]
3. No later than April 15 of each year, starting with the calendar year following the year in which the O&M Phase Start Date occurs, the Permittee shall submit to EPA full payment of the annual permit fee that shall be calculated according to the fee schedule and requirements authorized by 6 NYCRR Subpart 482-2 ("Operating Permit Program Fee").
4. The Permittee shall submit the fee payments and the required supporting documentation to the following address:

U.S. EPA
OCFO/OC/ACAD/FCB
Attn: Collections Team
1300 Pennsylvania Ave NW
Mail Code 2733R
Washington, DC 20004

5. Each payment submittal shall include a cover letter containing the following supporting documentation with the payment:
 - a. Permittee's name.
 - b. Complete Permittee address, including city, state, zip code.
 - c. Name and phone number of permittee point of contact.
 - d. EPA Permit Number: OCS-EPA-R2 NY 01.
 - e. EPA Contact: [Contact Name], Supervisor, Permitting Section, Air and Radiation Division. EPA will provide the Permittee with a Contact Name at least 6 months prior to the first payment deadline.
 - f. Reason for payment: "Miscellaneous Receipts Payment for OCS Air Permit Fee under 40 C.F.R. Part 55".
 - g. All emissions information used to calculate the fee (i.e., an annual emission report of actual emissions for the relevant calendar year).

6. The Permittee shall send a photocopy of each fee payment check (or other confirmation of actual fee paid) and a copy of the supporting documentation to:

Supervisor
Permitting Section, Air and Radiation Division
U.S. EPA Region 2
290 Broadway
New York, NY 10007-1866

7. The Permittee shall retain and maintain a copy of all materials used to determine fee payments for five years following the year in which the fee payment is submitted.

XIII. TITLE V FACILITY PERMIT REQUIREMENTS

The following requirements of 6 NYCRR 201-6 (“Title V Facility Permits”) apply to the Empire Wind project’s O&M phase and its emission sources and all of the conditions of this permit that pertain to the O&M phase:

1. The permit expiration date for the O&M phase and its emission sources that are included in this permit is five years from the O&M Phase Start Date, which shall be reported to EPA as required elsewhere in this permit. [6 NYCRR 201-6.4(h)]
2. Expiration of this permit terminates the Permittee’s right to operate unless the Permittee has submitted a timely and complete permit renewal application at least 180 days, but not more than 18 calendar months, prior to the date of permit expiration for permit renewal purposes. [6 NYCRR 201-6.2(a)(4)]
3. The Permittee must comply with all conditions of this permit. Any noncompliance with this permit constitutes a violation of the Clean Air Act and is grounds for the below. [NYCRR 201-6.4(a)(2)]
 - a. An enforcement action;
 - b. Permit termination, revocation and reissuance, or modification; or
 - c. Denial of a permit renewal application.
4. This permit may be modified, revoked, suspended, reopened, and reissued, or terminated for cause. The filing of a request by the Permittee for a permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance does not stay any permit condition. [6 NYCRR 201-6.4(a)(3)]
5. The owner and/or operator shall furnish to the EPA, within a reasonable time, any information that the EPA may request in writing to determine whether cause exists for modifying, revoking, and reissuing, or terminating the permit or to determine compliance with the permit. Upon request, the permittee shall also furnish to the EPA copies of records required to be kept by the permit. [6 NYCRR 201-6.4(a)(4)]

6. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. [6 NYCRR 201-6.4(a)(5)]
7. This permit does not convey any property rights of any sort, or any exclusive privilege. [6 NYCRR 201-6.4(a)(6)]
8. The EPA or an authorized representative shall be allowed upon presentation of credentials and other documents as may be required by law to:
 - a. Enter upon the Permittee's premises where the facility is located or emissions-related activity is conducted, or where records must be kept under the conditions of this permit;
 - b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
 - c. Inspect at reasonable times any emission sources, equipment (including monitoring and air pollution control equipment), practices, and operations regulated or required under this permit; and
 - d. Sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with this permit or applicable requirements.[6 NYCRR 201-6.4(a)(8)]
9. The provisions of this permit are severable, and in the event of any challenge to any portion of this permit, or if any portion is held invalid, the remaining permit conditions shall remain valid and in force. [6 NYCRR 201-6.4(a)(9)]
10. Compliance with the conditions of this permit shall be deemed compliance with any applicable requirements as of the date of permit issuance, provided that:
 - a. Either such applicable requirements are included and are specifically identified in the permit, or EPA, in acting on the permit application or revision, determines in writing that other requirements specifically identified are not applicable to the project, and the permit includes the determination or a concise summary of the determination.
 - b. Nothing in the permit shield or in this permit shall alter or affect the following:
 1. The ability of EPA to seek to bring suit on behalf of the United States to immediately restrain any person causing or contributing to pollution presenting an imminent and substantial endangerment to public health, welfare, or the environment to stop the emission of air pollutants causing or contributing to such pollution;

2. The liability of an owner or operator of the facility for any violation of applicable requirements prior to or at the time of permit issuance;
3. The applicable requirements of Title IV of the Clean Air Act; or
4. The ability of the EPA to obtain information from the Permittee concerning the ability to enter, inspect and monitor the facility.

However, EPA is not precluded from modifying or revoking this permit in accordance with 40 C.F.R. Part 55. [6 NYCRR 201-6.4(g), 40 C.F.R. Part 55]

11. EPA shall reopen and revise the permit under any of the circumstances described in 6 NYCRR 201-6.4(i)(1)(i) through (iv) and follow the procedures at 6 NYCRR 201-6.4(i)(2) and (i)(3). [6 NYCRR 201-6.4(i)]
12. Records and reports required by this permit shall contain the information below, where applicable. [6 NYCRR 201-6.4(c)(1)]
 - a. The date, place, and time of sampling or measurements;
 - b. The date(s) analyses were performed;
 - c. The company or entity that performed the analyses;
 - d. The analytical techniques or methods used including quality assurance and quality control procedures if required;
 - e. The results of such analyses including quality assurance data where required;
 - f. The operating conditions as existing at the time of sampling or measurement;
 - g. Any deviation from permit requirements must be clearly identified in all records and reports; and
 - h. Reports must be certified by a responsible official, consistent with 6 NYCRR 201-6.2.
13. Compliance monitoring and recordkeeping shall be conducted according to the terms and conditions contained in this permit and shall follow all quality assurance requirements found in applicable regulations. Records of all monitoring data and support information must be retained for a period of at least 5 years from the date of the monitoring, sampling, measurement, report, or application. Support information includes all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by the permit. [6 NYCRR 201-6.4(c)(2), 40 C.F.R. § 55.8]
14. To meet the requirements of this facility permit with respect to reporting, the Permittee must submit reports of any required monitoring at a minimum frequency of every 6 months ("semiannual reports"), based on a calendar year reporting schedule. The first report shall cover the period in which the O&M Phase Start Date occurs. These reports shall be submitted to the EPA within 30 days after the end of a reporting period. The semiannual reports must clearly identify all instances of deviations from permit requirements, and include the information identified in parts of paragraph 15 below. All required reports must be certified by the responsible official for this facility. [6 NYCRR 201-6.4(c)(3)(i)]

15. The Permittee shall notify the EPA and report permit deviations and incidences of noncompliance stating the probable cause of such deviations, and any corrective actions or preventive measures taken. Where the underlying applicable requirement contains a definition of prompt or otherwise specifies a time frame for reporting deviations, that definition or time frame shall govern. Where the underlying applicable requirement fails to address the time frame for reporting deviations, reports of deviations shall be submitted to the permitting authority based on the schedule and in the manner specified below. [6 NYCRR 201-6.4(c)(3)(ii), 40 C.F.R. § 55.8]
- a. For emissions of any regulated air pollutant that continue for more than two hours in excess of permit requirements, a brief initial notification must be made via phone within three calendar days in the manner specified at Section XIII.15.d. below.
 - b. For all other deviations from permit requirements, the report shall be contained in the semiannual report required above.
 - c. However, this permit may contain a more stringent reporting requirement than required by paragraphs (a) or (b) above. If more stringent reporting requirements have been placed in this permit or exist in applicable requirements that apply to this facility, the more stringent reporting requirement shall apply.
 - d. If the above paragraph (a) is met, the source must notify the EPA by telephone during normal business hours at 212-637-5031 according to the timetable listed in paragraph (a) of this section. For deviations and incidences that must be reported outside of normal business hours, on weekends, or holidays, the EPA Spill Hotline phone number at 877-251-4575 shall be used. In addition to notification via phone, a written notice, certified by a responsible official consistent with 6 NYCRR 201-6.2(d)(12), must be submitted within 10 working days of an occurrence for deviations reported under (a). All deviations reported under paragraph (a) of this section must also be identified in the 6-month monitoring report required above.
 - e. In the case of any condition contained in this permit with a reporting requirement of "Upon request by the EPA," the permittee shall include in the semiannual report a statement for each such condition that the monitoring or recordkeeping was performed as required or requested and a listing of all instances of deviations from these requirements.
 - f. In the case of any emission testing performed during the previous six-month reporting period, due to either a request by the EPA or a regulatory requirement, the permittee shall include in the semiannual report a summary of the testing results and shall indicate whether or not the EPA has approved the results.

- g. All semiannual reports may be submitted electronically or physically. Electronic reports shall be submitted using the EPA's Compliance and Emission Reporting Data Interface (CEDRI). If the Permittee elects to send physical copies instead, those copies shall be sent to the EPA at the mailing address provided in this permit.
16. If there is any applicable schedule of compliance for the OCS Facility, progress reports consistent with the applicable schedule of compliance are to be submitted at least semiannually, or at a more frequent period if specified in the applicable requirement elsewhere in this permit. Such progress reports shall contain the information below. [6 NYCRR 201-6.4(d)(4)]
- a. Dates for achieving the activities, milestones, or compliance required in the schedule of compliance, and dates when such activities, milestones or compliance were achieved; and
 - b. An explanation of why any dates in the schedule of compliance were not or will not be met, and any preventive or corrective measures adopted.
17. The permittee shall submit to EPA an annual certification of compliance with permit terms and conditions, including emission limitations, standards, or work practices, postmarked by January 30 of each year, and covering the previous calendar year except that the first certification shall cover the period from the O&M Phase Start Date through December 31. The compliance certification shall be certified as to truth, accuracy, and completeness by a responsible official. The certification shall include the following:
- a. The identification of each permit term or condition that is the basis of the certification;
 - b. The compliance status;
 - c. Whether compliance was continuous or intermittent;
 - d. The method(s) used by the Permittee for determining compliance status of the facility, currently and over the reporting period consistent with the monitoring and related recordkeeping and reporting requirements of this permit; and
 - e. Such other facts as EPA shall require to determine the compliance status of the facility.
- The annual compliance certification may be submitted physically, at the mailing address provided in this permit, or electronically via EPA's Compliance and Emission Reporting Data Interface (CEDRI). [6 NYCRR 201-6.4(e)]
18. A permit modification is not required for changes that are provided for in this permit. Such changes include approved alternate operating scenarios and changes that have been submitted and approved pursuant to an established operational flexibility protocol and the requirements of 6 NYCRR 201-6.4(f). Each such change cannot be a modification under any provision of Title I of the Clean Air Act or exceed, or cause the facility to exceed, an emissions cap or limitation in the permit. The facility owner or operator must incorporate all changes into any compliance certifications, recordkeeping, and/or reporting required by the permit. [6 NYCRR 201-6.4(f)]

XIV. GENERAL REQUIREMENTS

1. Air Pollution Prohibited.

No person shall cause or allow emissions of air contaminants to the outdoor atmosphere of such quantity, characteristic or duration which are injurious to human, plant, or animal life or to property, or which unreasonably interfere with the comfortable enjoyment of life or property. Notwithstanding the existence of specific air quality standards or emission limits, this prohibition applies, but is not limited to, any particulate, fume, gas, mist, odor, smoke, vapor, pollen, toxic or deleterious emission, either alone or in combination with others. [6 NYCRR 211.1]

2. Acceptable Ambient Air Quality.

Notwithstanding the provisions of 6 NYCRR Chapter III, Subchapter A, no person shall allow or permit any air contamination source to emit air contaminants in quantities which alone or in combination with emissions from other air contamination sources would contravene any applicable ambient air quality standard and/or cause air pollution. In such cases where contravention occurs or may occur, the EPA shall specify the degree and/or method of emission control required. [6 NYCRR 200.6]

3. Open Fires – Prohibitions.

- a. Except as allowed by 6 NYCRR 215.3, no person shall burn, cause, suffer, allow, or permit the burning of any materials in an open fire. [6 NYCRR 215.2]
- b. An open fire, provided it is not contrary to other law or regulation, will only be allowed as specified at 6 NYCRR 215.3(a) through (l). [6 NYCRR 215.3]

4. Maintenance of Equipment.

Any person who owns or operates an air contamination source which is equipped with an emission control device shall operate such device and keep it in a satisfactory state of maintenance and repair in accordance with ordinary and necessary practices, standards, and procedures, inclusive of manufacturer's specifications, required to operate such device effectively. [6 NYCRR 200.7]

5. Malfunctions and Start-up/Shutdown Activities.

The Permittee shall comply with the provisions at 6 NYCRR 201-1.4 (“Malfunctions and start-up/shutdown activities”), except that 6 NYCRR 201-1.4(e) does not apply. [6 NYCRR 201-1.4]

6. Recycling and Salvage.

Where practical, the owner or operator of an air contamination source shall recycle, or salvage air contaminants collected in an air cleaning device according to the requirements of Title 6 of the New York Codes, Rules, and Regulations. [6 NYCRR 201-1.7]

7. Prohibition of Reintroduction of Collected Contaminants to the Air.

No person shall unnecessarily remove, handle, or cause to be handled, collected air contaminants from an air cleaning device for recycling, salvage or disposal in a manner that would reintroduce them to the outdoor atmosphere. [6 NYCRR 201-1.8]

8. Permit Expiration.

- a. An approval to construct shall become invalid if the Permittee does not commence construction within 18 months after receipt of such approval, if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable time. The 18-month period may be extended upon a showing satisfactory to the EPA that an extension is justified. Sources obtaining extensions are subject to all new or interim requirements and a reassessment of the applicable control technology when the extension is granted. This requirement shall not supersede a more stringent requirement under 40 C.F.R. §§ 55.13 or 55.14. [40 C.F.R. § 55.6(b)(4), 6 NYCRR 231-3.7]
- b. Any OCS air permit to construct issued to a new OCS source or modification shall remain in effect until it expires under 40 C.F.R. § 55.6(b)(4), is rescinded under the applicable requirements incorporated in 40 C.F.R. §§ 55.13 and 55.14, or until the date EPA terminates this permit at the Permittee's request as specified by this permit. [40 C.F.R. § 55.6(b)(5)]
- c. For the expiration date of the title V permit (which covers the O&M Phase) see pertinent conditions of this permit.

9. Enforcement.

The Permittee shall comply with all requirements of 40 C.F.R. part 55 and this permit. Failure to do so shall be considered a violation of section 111(e) of the CAA. All enforcement provisions of the CAA, including, but not limited to, the provisions of sections 113, 114, 120, 303 and 304 of the CAA, shall apply to the OCS source and Permittee. [40 C.F.R. §§ 55.9(a) and (b)]

10. Safe Shutdown.

As provided in 40 C.F.R. § 55.9(c), if this facility is ordered to cease operation of any piece of equipment due to enforcement action taken by EPA, the shutdown will be coordinated by EPA with the Department of the Interior's Bureau of Ocean Energy Management and the United States Coast Guard to assure that the shutdown will proceed in a safe manner. No shutdown action will occur until after EPA's consultation with these entities, but in no case will initiation of the shutdown be delayed by more than 24 hours. [40 C.F.R. § 55.9(c)]

11. Construction and Operation.

- a. Any owner or operator who constructs or operates an OCS source not in accordance with the application submitted pursuant to this part 55, or with any approval to construct or permit to operate, or any owner or operator of a source subject to the requirements of this part who commences construction after the effective date of this part without applying for and receiving approval under this part, shall be in violation of this part. [40 C.F.R. § 55.6(a)(4)(i)]
- b. Receipt of an approval to construct or a permit to operate from the Administrator or delegated agency shall not relieve any owner or operator of the responsibility to comply fully with the applicable provisions of any other requirements under Federal law. [40 C.F.R. § 55.6(a)(4)(ii)]

12. Notification to Owners, Operators, and Contractors.

The Permittee shall notify all other owners or operators, contractors, and any subsequent owners or operators associated with the emissions from this facility, of the terms and conditions of this permit. A copy of the notification letter shall be forwarded to the EPA Region 2 Office at the address specified in this permit. [40 C.F.R. § 55.6(a)(4)(iv)]

13. Monitoring and Compliance.

- a. The Permittee shall, upon request by the EPA, conduct emissions test(s), including but not limited to testing for visible emissions, for any emission sources listed in this permit. [40 C.F.R. § 55.8, 42 U.S.C. § 7414]

14. Required Emissions Tests.

For the purpose of ascertaining compliance or noncompliance with any air pollution control code, rule, or regulation, the EPA may require the person who owns such air contamination source to submit an acceptable report of measured emissions within a stated time. Such person shall bear the cost of measurement and preparing the report of measured emission. The Permittee shall comply with the acceptable procedures specified at 6 NYCRR 202-1.3(a) and (b) or other procedures specified in this permit or under federal law, as applicable. [6 NYCRR 202-1.1 and 1.3(a) & (b), 40 C.F.R. § 55.8, 42 U.S.C. § 7414]

15. Credible Evidence.

For the purpose of establishing whether or not the Permittee is in compliance with any provision of this permit, the methods used in this permit shall be used, as applicable. However, nothing in this permit shall preclude the use, including the exclusive use, of any credible evidence or information, regarding whether the Permittee has violated or is in violation of any requirement or prohibition of this permit or of federal law, or relevant to whether the Permittee would have been in compliance with applicable requirements if the appropriate performance or compliance test or procedure had been performed. [CAA §§ 113(a) and (e)(1), 40 C.F.R. §§ 60.11(g) and 61.12]

16. Permit Fees.

The Permittee shall comply with all permit fees requirements specified at 40 C.F.R. §§ 55.10(a)(1) and (2).

17. Right to Entry.

Pursuant to section 114 of the CAA, 42 U.S.C. § 7414, EPA authorized personnel have the right to enter this facility and inspect for all purposes authorized under section 114 of the Act. The Permittee acknowledges that EPA authorized personnel, upon the presentation of credentials, shall be permitted:

- a. to enter at any time upon the premises where the source is located or in which any records are required to be kept under the terms and conditions of this OCS Permit;
- b. at reasonable times to access and to copy any records required to be kept under the terms and conditions of this OCS Permit;
- c. to inspect any equipment, operation, or method required in this OCS Permit; and
- d. to sample emissions from the source relevant to this permit.

[40 C.F.R. §§ 55.8(a), (b) and (d), 42 U.S.C. 7414]

18. Certification Requirement.

Any document required to be submitted under this permit, or any other document requested by the EPA, which is not specified in this permit, shall be certified by a responsible official as to truth, accuracy, and completeness. Such certifications shall state that based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete. [40 C.F.R. §§ 55.8(a) and (b)]

19. Recordkeeping Requirements.

- a. Notwithstanding any other term in this permit, in accepting this permit, the Permittee understands and agrees that all information relating to this permitted source may be used by the EPA as evidence in any enforcement case involving the permitted source arising under federal statutes, EPA rules, or rules enforceable by EPA.
- b. This permit or a copy thereof shall be kept at the office of Empire Leaseholder LLC, which is located at the address specified on page 1 of this permit.
- c. The Permittee shall furnish all records required by this permit when requested by EPA.
- d. The Permittee shall hold at the office of Empire Leaseholder LLC, which is located at the address specified on page 1 of this permit, all records required by the permit including, but not limited to, monitoring data and support information required by the permit, and records of all data used to complete the application for this permit. These materials shall be retained for at least five years from the date of the sample, measurement, or report unless otherwise specified. Records of all data used to complete the permit application must be kept for five years from the date of the application, unless otherwise specified. Support information includes all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation and copies of all reports required by the permit. [40 C.F.R. §§ 55.8(a) and (b)]

20. Reporting.

- a. When requested by the EPA, the Permittee shall furnish any information required by law which is needed to determine compliance with the permit. If the Permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the EPA, the Permittee shall, upon becoming aware of such facts or corrected information, promptly submit such facts or corrected information to the EPA. [40 C.F.R. §§ 55.8(a) and (b)]
- b. The Permittee shall furnish to the EPA, within a reasonable time, any information that the EPA may request in writing to determine whether cause exists for modifying, revoking, reissuing, or terminating the permit, or to determine compliance with the permit. Upon request, the Permittee shall also furnish to the EPA copies of records that are required to be kept pursuant to the terms of the permit, including information claimed to be confidential. Information claimed to be confidential must be accompanied by a claim of confidentiality according to the provisions of 40 C.F.R. part 2, subpart B. [40 C.F.R. §§ 55.8(a) and (b)]

- c. All notifications, reporting, performance tests protocols, or other communications related to this permit shall be submitted to:

Chief – Stationary Source Compliance Section
Air Compliance Branch
USEPA Region 2
290 Broadway
New York, NY 10007-1866

Supervisor – Permitting Section
Air Programs Branch
USEPA Region 2
290 Broadway
New York, NY 10007-1866