U.S. Environmental Protection Agency
Region 1

Outer Continental Shelf Air Permit:
Deepwater Wind New England, LLC

Meteorological Buoy

Offshore Renewable Wind Energy Project
Massachusetts-Rhode Island Wind Energy Area

EPA Permit Number
OCS-R1-02

Pursuant to the provisions of Section 328 of the Clean Air Act (CAA) and the Code of Federal Regulations (C.F.R.) Title 40, Part 55, the United State Environmental Protection Agency-Region 1 (EPA) hereby issues an Outer Continental Shelf (OCS) air quality permit to Deepwater Wind New England, LLC (DWW). DWW proposes to install and operate a meteorological buoy in the Rhode Island-Massachusetts Wind Energy Area.

The construction and operation of the meteorological buoy shall be subject to the attached permit conditions and permit limitations. This permit shall be effective 33 days after the service of notice of the final permit decision unless review is requested on the permit in accordance with 40 C.F.R. § 124.19.

This permit does not relieve DWW from the obligation to comply with applicable state and federal air pollution control rules and regulations.

Deborah A. Szaro
Acting Regional Administrator

7/15/19
Date of Signature

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Acronyms and Abbreviations

CAA	Clean Air Act
C.F.R.	Code of Federal Regulations
CI	Compression Ignition
CO	Carbon Monoxide
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act
g/hp-hr	Grams per horsepower-hour
g/kw-hr	Grams per kilowatt-hour
kW	Kilowatt
NMHC	Non-methane hydrocarbons
NO_x	Nitrogen Oxides
OCS	Outer Continental Shelf
PM	Particulate matter
PTE	Potential to emit
The Project	Meteorological Buoy and supporting equipment and vessels

I. Project Description (For Informational Purposes)

Deepwater Wind New England, LLC (DWW or the Permittee) is proposing a project to install and operate a meteorological buoy (Met Buoy) on the OCS within 25 nautical miles offshore of the Massachusetts seaward boundary.[1] The location of the Met Buoy is at or about 41° 05' 16" N and 71° 13' 22" W, Southwest of Martha's Vineyard. DWW anticipates operating the Met Buoy for approximately six years to collect data to assist DWW in determining the location of future wind turbines in the lease area. The Met Buoy will consist of instrumentation and supporting systems atop a floating moored platform. The instrumentation and lighting on the Met Buoy will be powered by batteries, primarily charged by a hybrid wind-solar system. The Met Buoy will also be equipped with a small diesel-fired generator engine as a secondary or backup battery charging source. The proposed project includes installation, operation and maintenance, and decommissioning phases.

Installation – The installation of the Met Buoy will require the use of marine vessels to transport the buoy and its mooring system from the mainland to its location on the OCS.

Operation and Maintenance – DWW anticipates that operation of the Met Buoy will last approximately 6 years. Maintenance of the Met Buoy will involve a work vessel going out to the site twice per year for scheduled maintenance and possibly additional visits due to unanticipated equipment malfunctions or repairs.

Decommissioning – After operation, the Met Buoy will be decommissioned (removed) from its OCS location. The decommissioning phase of the Met Buoy will involve the use of similar vessels and activities as the installation phase, but with the activities performed in reverse order.

As presented in DWW's permit application, a workboat and support vessels may constitute OCS sources during the installation, operation and maintenance, and decommissioning phases of the project. Any vessel qualifying as part of the OCS source or any vessel that is itself an OCS source must meet the applicable conditions of this permit.

Criteria air pollutant emissions and their precursors generated from the project include nitrogen oxides (NO_x), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), particulate matter with an aerodynamic diameter less than or equal to 10 microns (PM_{10}), particulate matter with an aerodynamic diameter less than or equal to 2.5 microns ($PM_{2.5}$), and volatile organic compounds (VOCs). These air pollutants are associated with the combustion of diesel fuel in (1) a vessel's propulsion and auxiliary engines and (2) the engine located on the Met Buoy. The estimated potential to emit (PTE) of the project includes (1) emissions from the OCS source(s) (i.e., emissions from the diesel-fired engine onboard the Met Buoy and any associated vessel(s) meeting the definition of an OCS source) and 2) emissions from vessels' engines when vessels are not OCS sources during the installation, annual inspection, quarterly maintenance and

[1] The buoy will be located within DWW's lease area. A copy of the Deepwater Wind OCS lease # OCS-A 0486 may be found at https://www.boem.gov/Renewable-Energy-Program/State-Activities/RI/Executed-Lease-OCS-A-0486.aspx (last visited on September 25, 2018).

decommissioning activities at the Met Buoy's location as well as when the vessels are en route to and from the OCS source and within 25 miles of the Met Buoy. Based on the PTE, the Met Buoy project is not a major source of air pollution, and thus is not subject to Prevention of Significant Deterioration or Nonattainment New Source Review permitting requirements. As a minor source of air pollution, the project is subject to the requirements for a limited plan approval under 310 C.M.R. 7.02.

II. Air Emission Source List (For Informational Purposes)

Emission Source	Description	Project Phase
Work Vessel	Flat-topped barge or comparable work vessel with sufficient deck space to store and secure clump weight, mooring chain, hull, and all miscellaneous monitoring equipment to be installed on the Met Buoy. May use anchors or dynamic positioning for station keeping.	Installation Decommissioning
Handling Tug	Ocean-going tug for moving the work barge, anchor handling, and installation support.	Installation Decommissioning
Work Vessel	Planned onsite maintenance would be scheduled twice per year and would be completed by comparable or smaller vessels as compared to the installation vessel(s). Planned maintenance activities would include replacement of consumables, service of sensors, data retrieval, and checking the mooring configuration.	Operation
Back-up Engine Installed on the Met Buoy	An 11-kilowatt ultra-low sulfur diesel (ULSD) fired emergency engine will be used for battery back-up if the wind turbine and solar panels fail to sufficiently charge the Met Buoy battery.	Operation

III. Definitions

1. *Air Pollutant* shall have the same meaning as that term has within 40 C.F.R. part 55.

2. *Commence* means, with respect to the deployment of a Met Buoy that meets the definition of an OCS source as defined in this permit, that an owner or operator has undertaken a continuous program of construction or modification or that an owner or operator has entered into a contractual obligation to undertake and complete, within a reasonable time, a

continuous program of construction or modification.

3. *Responsible Official* shall mean a president, secretary, treasurer, or vice-president of the DWW in charge of a principal business function, or any other person who performs similar policy or decision-making functions for DWW, or a duly authorized representative of such person if the representative is responsible for the overall operation regulated by this permit and the delegation of authority to such representatives is approved in advance by the EPA.

4. *Emission Unit* means any part of the OCS source vessel or OCS source that emits or would have the potential to emit any air pollutant.

5. *Met Buoy* means floating moored buoy platform with instrumentation and supporting systems that measure meteorological conditions. In addition to the systems, the platform consists of a hull, mooring chain, and clump weight anchor.

6. *Met Buoy Engine* means a diesel-fired compression ignition engine located on the Met Buoy with a model year between 2008-2014 and a maximum engine power of 11 kW/hr.

7. *No. 1 of the [Ringelmann] Chart* has the same meaning as 20 % opacity.

8. *No. 2 of the [Ringelmann] Chart* has the same meaning as 40 % opacity.

9. *The Permittee* includes Deepwater Wind, 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.

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

11. *OCS Source Vessel* is any vessel that is:

    (1) 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

    (2) Physically attached to an OCS facility, in which case only the stationary source aspects of the vessels will be regulated.

12. *Vessel* means:

    (1) self-propelled vessels; and

    (2) barges or other non-self-propelled vessels that must be towed by another vessel. It includes vessels with or without systems that attach, either permanently or temporarily to the seabed.

13. *Smoke* means the visible aerosol, which may contain fly ash, resulting from combustion of materials but does not mean condensed water vapor.

14. *ULSD* means transportation diesel or biodiesel (containing no more than 20% non-fossil fuel) with a sulfur content of 15 ppm by weight or less.

IV. Emission Limits

A. Met Buoy Engine

1. The Permittee shall only burn ULSD in the Met Buoy Engine. [310 C.M.R. 7.05(1)(a)1.]

2. The Permittee shall not cause, suffer, allow, or permit the emission of smoke from the Met Buoy Engine which has a shade, density, or appearance equal to or greater than No. 1 of the [Ringelmann] Chart for a period, or aggregate period of time in excess of six minutes during any one hour, provided that at no time during the said six minutes shall the shade, density, or appearance be equal to or greater than No. 2 of the [Ringelmann] Chart. [310 C.M.R. 7.06(1)(a)]

3. The Permittee shall not cause, suffer, allow or permit the operation of the Met Buoy Engine to emit contaminant(s), exclusive of uncombined water or smoke subject to section IV.A.2. above, that exceed 20% opacity for a period or aggregate period of time in excess of two minutes during any one hour provided that, at no time during the said two minutes shall the opacity exceed 40%. [310 C.M.R. 7.06(1)(b)]

4. The Permittee shall install and operate a Met Buoy Engine that is certified by the manufacturer to comply with the following emission standards set forth at 40 C.F.R. § 1039.102(b) for new non-road stationary compression ignition engines, model years 2008-2014, with a maximum engine power of 11 kW:

   a. NO_x + NMHC = 7.5 grams/kilowatt-hour (g/kW-hr);

   b. CO = 6.6 g/kW-hr;

   c. PM = 0.40 g/kW-hr.

   [40 C.F.R. §§ 60.4201(a), 60.4204(b), and 1039.102(b) and 310 CMR 7.02]

B. OCS Source Vessel Engines

The following terms and conditions contained within this subsection shall apply to all operating emission units on a vessel while that vessel meets the definition of an OCS source vessel.

1. The Permittee shall not cause, suffer, allow, or permit the emission of smoke which has a shade, density, or appearance equal to or greater than No. 1 of the [Ringelmann] Chart for a period, or aggregate period of time in excess of six minutes during any one hour, provided

that at no time during the said six minutes shall the shade, density, or appearance be equal to or greater than No. 2 of the [Ringelmann] Chart. [310 C.M.R. 7.06(1)(a)]

2. The Permittee shall not cause, suffer, allow or permit the operation of the Met Buoy Engine to emit contaminant(s) that exceed 20% opacity for a period or aggregate period of time in excess of two minutes during any one hour provided that, at no time during the said two minutes shall the opacity exceed 40%. [310 C.M.R. 7.06(1)(b)]

3. The Permittee while owning, operating, or having control of a seagoing vessel shall not cause, suffer, allow, or permit, aboard said vessel, tube blowing or soot removal activities that cause or contribute to a condition of air pollution. [310 C.M.R. 7.11(4)]

4. The Permittee shall only burn ULSD when operating any diesel-fired emission unit. [310 C.M.R. 7.05(1)(a)1.]

5. The Permittee shall ensure that all emission units are operated in compliance with the requirements of 40 C.F.R. part 60, subparts IIII and JJJJ and part 63, subpart ZZZZ, as applicable, including, but not limited to, any applicable emission limits, work practice standards, recordkeeping, and/or reporting requirements. [40 C.F.R. part 60, subparts IIII and JJJJ and 40 C.F.R. part 63, subpart ZZZZ]

V. Operating Requirements and Work Practices

A. Met Buoy Engine

1. The Permittee shall install and operate a Met Buoy Engine that is certified by the manufacturer to meet the following smoke standards set forth at 40 C.F.R. § 1039.105(b):

   a. 20 percent during the acceleration mode;

   b. 15 percent during the lugging mode;

   c. 50 percent during the peaks in either the acceleration or lugging modes.

   [40 C.F.R. §§ 60.4201(a), 60.4204(b), and 1039.105(b)]

2. The Permittee shall install and operate a Met Buoy Engine that is certified by the manufacturer to meet the applicable crankcase emissions provisions at 40 C.F.R. § 1039.115(a). [40 C.F.R. §§ 60.4204(b), 60.4201(a), and 1039.115(a)]

3. The Permittee must install, operate and maintain the Met Buoy Engine to achieve the emissions standards at 40 C.F.R. § 60.4204(b) over the entire life of the engine. [40 C.F.R. § 60.4206]

4. The Permittee shall ensure that the diesel fuel purchased for and used in the Met Buoy Engine meets the following per-gallon standards:

    1. Sulfur content of 15 parts per million (ppm) by weight maximum; and

    2. Cetane index or aromatic content as follows:

        a. A minimum cetane index of 40; or

        b. A maximum aromatic content of 35 volume percent.

    [40 C.F.R. § 60.4207(b) and 40 C.F.R. § 80.510(b)]

5. The Permittee shall install and operate a Met Buoy Engine that is certified by the manufacturer to meet or surpass the emission standards in 40 C.F.R. § 60.4204(b) as specified in this permit; [40 C.F.R. § 60.4211(c)]

6. The Permittee shall meet the following requirements:

    a. The Permittee shall install, operate and maintain the Met Buoy Engine and control devices according to the manufacturer's emission-related written instructions; [40 C.F.R. § 60.4211(a)(1)]

    b. The Permittee shall only change emission-related settings on the Met Buoy Engine that are permitted by the manufacturer. [40 C.F.R. § 60.4211(a)(2)]

    c. The Permittee shall comply with the applicable provisions of 40 C.F.R. parts 89, 94 and/or 1068. [40 C.F.R. § 60.4211(a)(3)]

    d. The Permittee shall install and operate the Met Buoy Engine configured according to the manufacturer's emission-related specifications; [40 C.F.R. § 60.4211(c)]

B. OCS Source Vessel Engines

The following term and condition contained within this subsection shall apply to all operating emission units on a vessel while that vessel meets the definition of an OCS source vessel.

1. All OCS vessel engines must comply with the operating and work practice standards, as applicable, specified in condition IV.B.5 of this permit. [40 C.F.R. part 60, subparts IIII and JJJJ and 40 C.F.R. part 63, subpart ZZZZ]

VI. Testing Requirements

1. Upon request by the EPA, the Permittee shall conduct a visible emission test of any emission unit subject to this permit. The visible emission test shall be conducted in accordance with the EPA test requirements specified in 40 C.F.R. part 60, appendix A, method 9.

VII. Recordkeeping Requirements

A. Met Buoy Engine

1. The Permittee shall provide fuel supplier certifications, for each fuel delivery, documenting that the sulfur content of the ULSD is 15 ppm sulfur or less by weight. Fuel supplier certifications shall include the following information:

    a. The name of the oil supplier;

    b. The sulfur content of the oil;

    c. The method used to determine the sulfur content of the oil;

    d. The location of the oil when the sample was drawn for analysis to determine the sulfur content of the oil; specifically including whether the oil was sampled as delivered to DWW or whether the sample was drawn from oil in storage at the oil supplier's or oil refiner's facility or another location;

    If the oil was not sampled as delivered, a statement that the sampling was performed according to either the single tank composite sampling procedure or the all-levels sampling procedure in ASTM D4057-88, "Standard Practice for Manual Sampling of Petroleum and Petroleum Products" and that no additions have been made to the supplier's tank since sampling.

2. The Permittee shall maintain a copy of the installation and order date for the Met Buoy Engine.

3. The Permittee shall furnish all records required by this permit when requested by the EPA.

B. OCS Source Vessel Engines

The following term and condition contained within this subsection shall apply to all operating emission units on a vessel while that vessel meets the definition of an OCS source vessel.

1. The Permittee shall maintain a copy of the installation and order date of any reciprocating internal combustion engine used on the vessel while the vessel meets the definition of an OCS source vessel and shall provide such copy to the EPA upon request.

VIII. Reporting Requirements

1. The Permittee shall notify the EPA, in writing, at least 30 days, but no more than 90 days, prior to the installation and decommission of the Met Buoy.

2. 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 to the EPA such facts or corrected information.

3. 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 maintained by this 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.

4. 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 the 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.

5. The Permittee shall hold at its office all records required by the permit including, but not limited to, monitoring data and support information required by this 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.

6. The Permittee shall comply with the requirements specified at the following parts of the New Source Performance Standards, Subpart A (General Provisions): 40 C.F.R. §§ 60.1 through 60.6, 60.9, 60.10, 60.12, 60.14 through 60.17, and 60.19, as specified in Table 8 of 40 C.F.R. part 60, subpart IIII (Standards of Performance for Stationary Compression Ignition (CI) Internal Combustion Engines (ICE)). [40 C.F.R. § 60.4218]

7. The Permittee shall comply with the requirements specified at the following parts of the New Source Performance Standards, Subpart A (General Provisions): 40 C.F.R. §§ 60.1 through 60.6, 60.9, 60.10, 60.12, 60.14 through 60.17, and 60.19, as specified in Table 8 of 40 C.F.R. part 60, subpart JJJJ (Standards of Performance for Stationary Spark Ignition Internal Combustion Engines). [40 C.F.R. § 60.4246]

IX. General Conditions for the Met Buoy Engine and the OCS Vessel Engines

The Permittee shall comply with the following general conditions:

1. Should there be any differences between the permit application and this permit, the permit shall govern.

2. The ability to operate and/or construct an OCS source under this permit shall become invalid if construction is not commenced within 18 months after the effective date of this permit, 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 or the delegated agency 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)].

3. This permit may be suspended, modified, or revoked by the EPA if the EPA determines that any condition or part of this permit is being violated.

4. This permit may be modified or amended when in the opinion of the EPA such modification or amendment is necessary or appropriate to clarify the permit conditions, or after consideration of a written request by the Permittee to modify or amend the permit conditions.

5. Pursuant to 310 C.M.R. 7.01(3) and 7.02(3)(f) and 40 C.F.R. 55.6(a)(4), the Permittee shall comply with all conditions contained in this permit. Should there be any differences between provisions contained in the General Conditions of this permit and any provisions contained elsewhere in this permit, the latter shall govern.

6. The Permittee shall notify all other owners and operators, contractors, and the subsequent owners and operators associated with emissions from the permitted activities, of the conditions of the permit. [40 C.F.R. § 55.6(a)(4)(iv)]

7. The Permittee shall comply with all applicable 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 permitted activities. [40 §§ C.F.R. 55.9(a) and (b)].

8. As provided in 40 C.F.R. § 55.9(c), if the Permittee is ordered to cease operation of any piece of equipment due to enforcement action taken by EPA, the shutdown will be coordinated by the EPA with the Department of 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 the EPA's consultation with these entities, but in no

case, will initiation of the shutdown be delayed by more than 24 hours.

9. All applicable permit fees as specified under 40 C.F.R. § 55.10 and 310 CMR 4.00, shall be submitted to the federal government within 30 days of receiving notification from the EPA, including the amount due.

X. Other Applicable Requirements

The Permittee shall construct and operate all equipment regulated herein in compliance with all other applicable provisions of federal and state air regulations. [40 C.F.R. § 55.6(a)(4)(iii)].

XI. Right of Entry

The Permittee shall allow all authorized representatives of EPA, upon presentation of credentials, to enter upon or through any OCS source vessel or the Met Buoy permitted by this permit and to enter upon or through any location where records required under this permit are maintained. The Permittee shall allow such authorized representatives, at reasonable times:

1. To access and copy any records that must be maintained under this permit;

2. To inspect any OCS source vessel or the Met Buoy, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit; and

3. To monitor substances or parameters, and sample emissions, for purposes of assuring compliance with this permit. [Section 114 of the Clean Air Act, 42 U.S.C. § 7414; 40 C.F.R. §§ 55.8(a), (b), and (d)].

XII. Transfer of Ownership

In the event of any changes in control or ownership of the Met Buoy, this permit shall be binding on all subsequent owners and operators. The Permittee shall notify the succeeding owner and operator of the existence of this permit and its conditions before such change if possible, but in no case later than 14 days after such change. Notification shall be sent by letter with a copy forwarded within 5 days to the EPA.

XIII. Severability

The provisions of this permit are severable, and if any provision of the permit is held by a court or other tribunal of competent jurisdiction to be invalid or unenforceable, the remainder of this permit will not be affected thereby and shall remain in full force and effect.

XIV. Credible Evidence

For the purpose of establishing whether or not the Permittee has violated or is in violation of 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, relevant to whether the Permittee would have been in compliance with applicable requirements if the appropriate performance or compliance test procedures or methods had been performed.

XV. Procedure for Permit Termination

Upon request by the Permittee, in the event that the EPA determines in writing that the Met Buoy no longer meets all three of the legal criteria contained within the definition of "OCS source," in 40 C.F.R. part 55, this permit shall be terminated as of the date of the EPA's written notification to the Permittee. Upon receipt of the EPA's notification, the Permittee shall be relieved of all permit terms and conditions, including but not limited to, emission limits, work practice standards, recordkeeping, and/or reporting requirements. Termination of this permit shall not relieve the Permittee from complying with all other applicable provisions of federal and state air regulations.

XVI. Agency Address

Subject to change, all correspondence required by this permit, including, but not limited to, all records, reports, or other information requested by EPA shall be forwarded to:

Air Compliance Clerk
U.S. EPA New England
5 Post Office Square
Suite 100, OES04-2
Boston MA 02109-3912