

Incidental Harassment Authorization

Deepwater Wind, LLC (DWW) is hereby authorized under section 101(a)(5)(D) of the Marine Mammal Protection Act (16 U.S.C. 1371(a)(5)(D)) and 50 CFR 216.107, to harass marine mammals incidental to high-resolution geophysical (HRG) and geotechnical survey investigations associated with marine site characterization activities off the coast of New York in the area of the Commercial Lease of Submerged Lands for Renewable Energy Development on the Outer Continental Shelf (OCS-A 0486) (the Lease Area) and along potential submarine cable routes to a landfall location in Easthampton, New York (Submarine Cable Corridor) (collectively, the Lease Area and Submarine Cable Corridor are the Project Area).

1. This Authorization is valid from June 16, 2017, through June 15, 2018.
2. This Authorization is valid only for HRG and geotechnical survey investigations associated with marine site characterization activities as described in the Incidental Harassment Authorization (IHA) application.
3. The holder of this authorization (Holder) is hereby authorized to take the species listed in Table 1 incidental to HRG and geotechnical survey activities using sub-bottom profilers, vibracores, and dynamic positioning (DP) vessel thruster use during geotechnical activities.
4. The taking of any marine mammal in a manner prohibited under this IHA must be reported immediately to NMFS Greater Atlantic Regional Fisheries Office (GARFO) at 978-281-9300, and NMFS Office of Protected Resources at 301-427-8401.

5. The Holder or designees must notify NMFS' GARFO and Office of Protected Resources at least 24 hours prior to the seasonal commencement of the specified activity.
6. The holder of this Authorization must notify the Chief of the Permits and Conservation Division, Office of Protected Resources, or her designee at least 24 hours prior to the start of survey activities (unless constrained by the date of issuance of this Authorization in which case notification shall be made as soon as possible) at 301-427-8401 or to *laura.mccue@noaa.gov*.
7. Mitigation Requirements

The Holder is required to abide by the following mitigation conditions listed in 7(a)-(f). Failure to comply with these conditions may result in the modification, suspension, or revocation of this IHA.

(a) *Marine Mammal Exclusion Zones*: Protected species observers (PSOs) shall monitor the following zones for the presence of marine mammals:

- A 200-m exclusion zone during HRG surveys is in operation.
- A 400-m monitoring zone during the use of sparker systems.
- At all times, the vessel operator shall maintain a separation distance of 500 m from any sighted North Atlantic right whale as stipulated in the *Vessel Strike Avoidance* procedures described below.
- A 208-m exclusion zone for harbor porpoise only, during vibracore activities only.

Visual monitoring of the established exclusion zone(s) shall be performed by qualified and NMFS-approved protected species observers (PSOs). An observer team comprising a minimum

of four NMFS-approved PSOs and two certified Passive Acoustic Monitoring (PAM) operators, operating in shifts, shall be stationed aboard either the survey vessel or a dedicated PSO-vessel.

PSOs shall be equipped with binoculars and have the ability to estimate distances to marine mammals located in proximity to the vessel and/or exclusion zone using range finders.

Reticulated binoculars will also be available to PSOs for use as appropriate based on conditions and visibility to support the siting and monitoring of marine species.

During night operations, PAM (see *Passive Acoustic Monitoring* requirements below) and night-vision equipment in combination with infrared video monitoring shall be used. The PSOs shall begin observation of the exclusion zone(s) at least 60 minutes prior to ramp-up of HRG survey equipment. Use of noise-producing equipment shall not begin until the exclusion zone is clear of all marine mammals for at least 60 minutes. If a marine mammal is seen approaching or entering the 200-m or 400-m exclusion zones, the vessel operator shall adhere to the shutdown/powerdown procedures described below to minimize noise impacts on the animals.

(b) *Ramp-Up*: A ramp-up procedure shall be used for HRG survey equipment capable of adjusting energy levels at the start or re-start of HRG survey activities. The ramp-up procedure shall not be initiated during daytime, nighttime, or periods of inclement weather if the exclusion zone cannot be adequately monitored by the PSOs using the appropriate visual technology (*e.g.*, reticulated binoculars, night vision equipment) and/or PAM for a 60-minute period. A ramp-up shall begin with the power of the smallest acoustic HRG equipment at its lowest practical power output appropriate for the survey. The power shall then be gradually turned up and other acoustic sources added such that the source level would increase in steps not exceeding 6 dB per 5-minute period. If a marine mammal is sighted within the HRG survey exclusion zone prior to or during

the ramp-up, activities shall be delayed until the animal(s) has moved outside the monitoring zone and no marine mammals are sighted for a period of 60 minutes.

(c) Shutdown and Powerdown

HRG Survey - The exclusion zone(s) around the noise-producing activities HRG survey equipment will be monitored, as previously described, by PSOs and at night by PAM operators for the presence of marine mammals before, during, and after any noise-producing activity. The vessel operator must comply immediately with any call for shutdown by the Lead PSO. If a non-delphinoid cetacean (*i.e.*, mysticetes and sperm whales) is detected at or within the established exclusion zone (200-m exclusion zone during HRG surveys; 400-m exclusion zone during use of the sparker system), an immediate shutdown of the HRG survey equipment is required.

Subsequent restart of the electromechanical survey equipment must use the ramp-up procedures described above and may only occur following clearance of the exclusion zone for 60 minutes. If a delphinoid cetacean or pinniped is detected at or within the exclusion zone, the HRG survey equipment must be powered down to the lowest power output that is technically feasible.

Subsequent power up of the survey equipment must use the ramp-up procedures described above and may occur after (1) the exclusion zone is clear of a delphinoid cetacean and/or pinniped for 60 minutes or (2) a determination by the PSO after a minimum of 10 minutes of observation that the delphinoid cetacean or pinniped is approaching the vessel or towed equipment at a speed and vector that indicates voluntary approach to bow-ride or chase towed equipment. If the HRG sound source shuts down for reasons other than encroachment into the exclusion zone by a marine mammal including but not limited to a mechanical or electronic failure, resulting in the cessation of sound source for a period greater than 20 minutes, a restart for the HRG survey equipment is required using the full ramp-up procedures and clearance of the exclusion zone of

all cetaceans and pinnipeds for 60 minutes. If the pause is less than 20 minutes, the equipment may be restarted as soon as practicable at its operational level as long as visual surveys were continued diligently throughout the silent period and the exclusion zone remained clear of cetaceans and pinnipeds. If the visual surveys were not continued diligently during the pause of 20 minutes or less, a restart of the HRG survey equipment is required using the full ramp-up procedures and clearance of the exclusion zone for all cetaceans and pinnipeds for 60 minutes.

Geotechnical Survey (DP Thrusters) - During geotechnical survey activities if marine mammals enter or approach the established 120 dB isopleth monitoring zone, DWW shall reduce DP thruster to the maximum extent possible, except under circumstances when reducing DP thruster use would compromise safety (both human health and environmental) and/or the integrity of the equipment. After decreasing thruster energy, PSOs shall continue to monitor marine mammal behavior and determine if the animal(s) is moving towards or away from the established monitoring zone. If the animal(s) continues to move towards the sound source then DP thruster use shall remain at the reduced level. Normal use shall resume when PSOs report that the marine mammals have moved away from and remained clear of the monitoring zone for a minimum of 60 minutes since the last sighting.

(d) *Vessel Strike Avoidance*: The Holder shall ensure that vessel operators and crew maintain a vigilant watch for cetaceans and pinnipeds and slow down or stop their vessels to avoid striking these protected species. Survey vessel crew members responsible for navigation duties shall receive site-specific training on marine mammal sighting/reporting and vessel strike avoidance measures. Vessel strike avoidance measures shall include the following, except under extraordinary circumstances when complying with these requirements would put the safety of the vessel or crew at risk:

- All vessel operators shall comply with 10 knot (<18.5 km per hour (km/h)) speed restrictions in any Dynamic Management Area (DMA). In addition, all vessels operating from November 1 through July 31 shall operate at speeds of 10 knots (<18.5 km/h) or less.
- All survey vessels shall maintain a separation distance of 500 m or greater from any sighted North Atlantic right whale.
- If underway, vessels must steer a course away from any sighted North Atlantic right whale at 10 knots (<18.5 km/h) or less until the 500 m minimum separation distance has been established. If a North Atlantic right whale is sighted in a vessel's path, or within 100 m to an underway vessel, the underway vessel must reduce speed and shift the engine to neutral. Engines shall not be engaged until the North Atlantic right whale has moved outside of the vessel's path and beyond 100 m. If stationary, the vessel must not engage engines until the North Atlantic right whale has moved beyond 100 m.
- All vessels shall maintain a separation distance of 100 m or greater from any sighted non-delphinoid cetacean (*i.e.*, mysticetes and sperm whales). If sighted, the vessel underway must reduce speed and shift the engine to neutral, and must not engage the engines until the non-delphinoid cetacean has moved outside of the vessel's path and beyond 100 m. If a survey vessel is stationary, the vessel shall not engage engines until the non-delphinoid cetacean has moved out of the vessel's path and beyond 100 m.
- All vessels shall maintain a separation distance of 50 m or greater from any sighted delphinoid cetacean. Any vessel underway shall remain parallel to a

sighted delphinoid cetacean's course whenever possible, and avoid excessive speed or abrupt changes in direction. Any vessel underway shall reduce vessel speed to 10 knots or less when pods (including mother/calf pairs) or large assemblages of delphinoid cetaceans are observed. Vessels may not adjust course and speed until the delphinoid cetaceans have moved beyond 50 m and/or abeam of the underway vessel.

- All vessels shall maintain a separation distance of 50 m (164 ft) or greater from any sighted pinniped.

(e) *Seasonal Operating Requirements:* Between watch shifts members of the monitoring team shall consult the NMFS North Atlantic right whale reporting systems for the presence of North Atlantic right whales throughout survey operations. The proposed survey activities shall occur outside of the seasonal management area (SMA) located off the coast of New Jersey and Delaware and outside of the seasonal mandatory speed restriction period for this SMA (November 1 through April 30). Throughout all survey operations, the Holder shall monitor the NMFS North Atlantic right whale reporting systems for the establishment of a DMA. If NMFS should establish a DMA in the Lease Area under survey, within 24 hours of the establishment of the DMA the Holder shall work with NMFS to shut down and/or alter the survey activities to avoid the DMA.

(f) *Passive Acoustic Monitoring:* To support 24-hour survey operations, the Holder shall include PAM as part of the project monitoring during the geophysical survey during nighttime operations, or as needed during periods when visual observations may be impaired.

The PAM system shall consist of an array of hydrophones with both broadband (sampling mid-range frequencies of 2 kHz to 200 kHz) and at least one low-frequency

hydrophone (sampling range frequencies of 75 Hz to 30 kHz). The PAM operator(s) shall monitor the hydrophone signals in real time both aurally (using headphones) and visually (via the monitor screen displays). PAM operators shall communicate detections/vocalizations to the Lead PSO on duty who shall ensure the implementation of the appropriate mitigation measure.

8. Monitoring Requirements

The Holder is required to abide by the following monitoring conditions listed in 8(a)-(b). Failure to comply with these conditions may result in the modification, suspension, or revocation of this IHA.

(a) *Visual Monitoring* – Protected species observers (refer to the PSO qualifications and requirements for *Marine Mammal Exclusion Zones* above) shall visually monitor all visible waters to the extent practicable so as to not undermine effectiveness of shutdown zone monitoring. The observers shall be stationed on the highest available vantage point on the associated operating platform. PSOs shall estimate distance to marine mammals visually, using laser range finders or by using reticulated binoculars during daylight hours. During night operations, PSOs shall use night-vision binoculars and infrared technology. Data on all PSO observations will be recorded based on standard PSO collection requirements. This will include dates and locations of survey operations; time of observation, location and weather; details of the sightings (*e.g.*, species, age classification (if known), numbers, behavior); and details of any observed “taking” (behavioral disturbances or injury/mortality). In addition, prior to initiation of survey work, all crew members will undergo environmental training, a component of which will focus on the procedures for sighting and protection of marine mammals

(b) *Acoustic Field Verification* – Field verification of the exclusion/monitoring zones shall be conducted to determine whether the proposed zones correspond accurately to the

relevant isopleths and are adequate to minimize impacts to marine mammals. The Holder shall conduct field verification of the exclusion/monitoring zone (the 160 dB isopleth) for HRG survey equipment and the monitoring/powerdown zone (the 120 dB isopleth) for DP thruster use for all equipment operating below 200 kHz. The Holder shall take acoustic measurements at a minimum of two reference locations and in a manner that is sufficient to establish source level (peak at 1 meter) and distance to the 160 dB isopleths (the B harassment zones for HRG surveys) and 120 dB isopleth (the Level B harassment zone) for DP thruster use. Sound measurements shall be taken at the reference locations at two depths (i.e., a depth at mid-water and a depth at approximately 1 meter (3.28 ft) above the seafloor). The Holder may use the results from its field-verification efforts to request modification of the exclusion/monitoring zones for the HRG or geotechnical surveys. Any new exclusion/monitoring zone radius proposed by the Holder shall be based on the most conservative measurements (i.e., the largest safety zone configuration) of the target Level A or Level B harassment acoustic threshold zones. The modified zone shall be used for all subsequent use of field-verified equipment. The Holder shall obtain approval from NMFS and BOEM of any new exclusion/monitoring zone before it may be implemented and the IHA shall be modified accordingly.

9. Reporting Requirements

The Holder shall provide the following reports as necessary during survey activities:

(a) The Holder shall contact NMFS (301-427-8401) and BOEM (703-787-1300) within 24 hours of the commencement of survey activities and again within 24 hours of the completion of the activity.

(b) Any observed significant behavioral reactions (e.g., animals departing the area) or injury or mortality to any marine mammals shall be reported to NMFS and BOEM within

24 hours of observation. Dead or injured protected species shall be reported to the NMFS GARFO Stranding Hotline (800-900-3622) within 24 hours of sighting, regardless of whether the injury is caused by a vessel. In addition, if the injury of death was caused by a collision with a project related vessel, the Holder shall ensure that NMFS and BOEM are notified of the strike within 24 hours. The Holder shall use the form included as Appendix A to Addendum C of the Lease to report the sighting or incident. If the Holder is responsible for the injury or death, the vessel must assist with any salvage effort as requested by NMFS.

Additional reporting requirements for injured or dead animals are described below

(Notification of Injured or Dead Marine Mammals).

(c) Notification of Injured or Dead Marine Mammals

(i) In the unanticipated event that the specified HRG and geotechnical survey activities lead to an injury of a marine mammal (Level A harassment) or mortality (e.g., ship-strike, gear interaction, and/or entanglement), the Holder shall immediately cease the specified activities and report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, 301-427-8401, and the NOAA GARFO Stranding Coordinator, 978-281-9300. The report shall include the following information:

- Time, date, and location (latitude/longitude) of the incident;
- Name and type of vessel involved;
- Vessel's speed during and leading up to the incident;
- Description of the incident;
- Status of all sound source use in the 24 hours preceding the incident;
- Water depth;

- Environmental conditions (e.g., wind speed and direction, Beaufort sea state, cloud cover, and visibility);
- Description of all marine mammal observations in the 24 hours preceding the incident;
- Species identification or description of the animal(s) involved;
- Fate of the animal(s); and
- Photographs or video footage of the animal(s) (if equipment is available).

Activities shall not resume until NMFS is able to review the circumstances of the event.

NMFS would work with the Holder to minimize reoccurrence of such an event in the future. The Holder shall not resume activities until notified by NMFS.

(ii) In the event that the Holder discovers an injured or dead marine mammal and determines that the cause of the injury or death is unknown and the death is relatively recent (i.e., in less than a moderate state of decomposition), the Holder shall immediately report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, 301-427-8401, and the GARFO Stranding Coordinator, 978-281-9300. The report shall include the same information identified in the paragraph above. Activities would be able to continue while NMFS reviews the circumstances of the incident. NMFS would work with the Holder to determine if modifications in the activities are appropriate.

(iii) In the event that the Holder discovers an injured or dead marine mammal and determines that the injury or death is not associated with or related to the activities authorized in the IHA (e.g., previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), the Holder shall report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, 301-427-8401, and the NMFS

GARFO Regional Stranding Coordinator, 978-281-9300, within 24 hours of the discovery. The Holder shall provide photographs or video footage (if available) or other documentation of the stranded animal sighting.

(d) Within 90 days after completion of the marine site characterization survey activities, a technical report shall be provided to NMFS and BOEM that fully documents the methods and monitoring protocols, summarizes the data recorded during monitoring, estimates the number of marine mammals that may have been taken during survey activities, and provides an interpretation of the results and effectiveness of all monitoring tasks. Any recommendations made by NMFS shall be addressed in the final report prior to acceptance by NMFS.

(e) In addition to the Holder's reporting requirements outlined above, the Holder shall provide an assessment report of the effectiveness of the various mitigation techniques, *i.e.* visual observations during day and night, compared to the PAM detections/operations. This shall be submitted as a draft to NMFS and BOEM 30 days after the completion of the HRG and geotechnical surveys and as a final version 60 days after completion of the surveys.

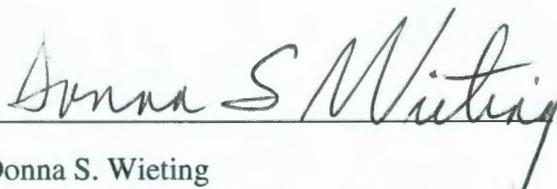
10. This Authorization may be modified, suspended, or withdrawn if the Holder fails to abide by the conditions prescribed herein or if NMFS determines the authorized taking is having more than a negligible impact on the species or stock of affected marine mammals.

11. A copy of this Authorization and the Incidental Take Statement must be in the possession of each vessel operator taking marine mammals under the authority of this Incidental Harassment Authorization.

12. The Holder is required to comply with the Terms and Conditions of the Incidental Take Statement corresponding to NMFS' Biological Opinion.

Table 1. Species for Which Take is Authorized

Species	Authorized Level B Take (No.)	Authorized Level A Take (No.)	Percentage of Stock Affected
North Atlantic right whale (<i>Eubalaena glacialis</i>)	105	0	23.86
Fin Whale (<i>Balaenoptera physalus</i>)	73	0	4.51
Sei whale (<i>Balaenoptera borealis</i>)	3	0	0.84
Humpback whale (<i>Megaptera novaeangliae</i>)	53	0	6.43
Minke whale (<i>Balaenoptera acutorostrata</i>)	16	0	0.62
Sperm whale (<i>Physeter macrocephalus</i>)	3	0	0.13
False killer whale (<i>Pseudorca crassidens</i>)	3	0	0.68
Cuvier's beaked whale (<i>Ziphius cavirostris</i>)	6	0	0.09
Long-finned pilot whale (<i>Globicephala melas</i>)	53	0	0.94
Atlantic white-sided dolphin (<i>Lagenorhynchus acutus</i>)	513	0	1.05
White-beaked dolphin (<i>Lagenorhynchus albirostris</i>)	3	0	0.15
Short beaked common Dolphin (<i>Delphinus delphis</i>)	1,433	0	2.04
Atlantic spotted dolphin (<i>Stenella frontalis</i>)	2	0	0.0045
Striped dolphin (<i>Stenella coruleoalba</i>)	1	0	0.0018
Bottlenose Dolphin (<i>Tursiops truncatus</i>)	411	0	0.53
Harbor Porpoise (<i>Phocoena phocoena</i>)	1188	0	1.48
Harbor Seal ¹ (<i>Phoca vitulina</i>)	11,137	0	14.68
Gray seal (<i>Halichoerus grypus</i>)	1293	0	0.25


 Donna S. Wieting
 Director, Office of Protected Resources,
 National Marine Fisheries Service.

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Date