



MARINE MAMMAL COMMISSION

23 August 2019

Ms. Jolie Harrison, Chief
Permits and Conservation Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910-3225

Dear Ms. Harrison:

The Marine Mammal Commission (the Commission), in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the application submitted by Ørsted Wind Power North America LLC (Ørsted) under section 101(a)(5)(D) of the Marine Mammal Protection Act (the MMPA). Ørsted is seeking authorization to take small numbers of marine mammals by harassment incidental to high-resolution geophysical (HRG) surveys off the northeast United States. The Commission also has reviewed the National Marine Fisheries Service's (NMFS) 26 July 2019 notice (84 Fed. Reg. 36054) requesting comments on its proposal to issue the authorization, subject to certain conditions.

Background

Ørsted is proposing to conduct HRG surveys to characterize the lease areas¹ and export cable route corridor(s) associated with an offshore wind project off the coast of Massachusetts and Rhode Island. Ørsted also would conduct HRG surveys along potential export cable route corridors between the lease areas and possible landfall locations between New York and Massachusetts. The surveys would occur year-round during day and night and would involve use of up to nine vessels² at a given time. Sound-generating equipment proposed for use includes sub-bottom profilers (SBPs)³, ultra high resolution seismic equipment, multi-beam depth sounders, and side-scan sonar.

NMFS preliminarily has determined that the proposed activities could cause Level B harassment of small numbers of 15 marine mammal species. It also anticipates that any impact on the affected species and stocks would be negligible. NMFS does not anticipate any take of marine mammals by death or serious injury and believes that the potential for disturbance will be at the least practicable level because of the proposed mitigation measures. The proposed mitigation, monitoring, and reporting measures include—

¹ Bureau of Ocean Energy Management (BOEM) Lease Areas OCS-A 0486 and OCS-A 0487 are held by Deepwater Wind New England LLC and Lease Area OCS-A 0500 is held by Bay State Wind LLC.

² Including an autonomous surface vehicle (ASV).

³ Including parametric, chirp, sparker, and boomer types.

- using protected species observers to monitor the exclusion zones⁴ and Level B harassment zones for 30 minutes before, during, and for 30 minutes after the HRG surveys;
- using standard pre-clearance, ramp-up, delay, and shut-down procedures;
- using shut-down procedures if a species for which authorization has not been granted, or a species for which authorization has been granted but the authorized number of takes are met, approaches or is observed within the Level B harassment zone;
- using a dual thermal/high definition camera mounted on the mother vessel when using the ASV;
- using night-vision equipment (with infrared technology) to detect marine mammals during nighttime operations;
- using standard vessel strike avoidance procedures and monitoring⁵ the NMFS North Atlantic right whale reporting systems during all survey activities;
- reporting injured and dead marine mammals to the Office of Protected Resources and the Greater Atlantic Region Stranding Coordinator⁶ using NMFS's phased approach and suspending activities, if appropriate; and
- submitting a final report to NMFS.

Appropriateness of Level B harassment zones

NMFS has proposed to implement a 180-m Level B harassment zone for all sound sources⁷, based on Crocker and Fratantonio (2016). However, measurements of the same (or similar) sources conducted in the same project area during previous surveys indicate that the Level B harassment zones are in fact quite small, ranging from 0 to 27 m (Appendix E of Ørsted's application)⁸. NMFS chose to use Level B harassment zones based on Crocker and Fratantonio (2016) in lieu of the in-situ measurements, because it believes that some measurements may not be accurate. It is unclear, though, whether NMFS has reviewed all of the in-situ measurements provided by Ørsted to make that determination in this instance.

⁴ 500 m for North Atlantic right whales and 100 m for other large cetaceans (i.e., humpback whales, sperm whales, minke whales, pilot whales, and Risso's dolphins), as stipulated by the leases.

⁵ The Commission noted that NMFS included this standard measure in the preamble but omitted it from the draft authorization. NMFS confirmed the measure would be included in the final authorization.

⁶ The draft authorization incorrectly specified the New England Stranding Network Coordinator rather than the Greater Atlantic Region Stranding Coordinator as stipulated in the preamble. NMFS confirmed the measure would be revised in the final authorization.

⁷ The 180-m zone is the largest Level B harassment zone of all the various sound sources Ørsted proposed to use (see Table 8 in the *Federal Register* notice).

⁸ The Level B harassment zones provided by NMFS in Table 8 of the *Federal Register* notice were derived from back-calculated source levels based on the various in-situ propagation loss coefficients. Those source levels then were forward propagated based on 15logR, resulting in larger Level B harassment zones than those estimated by the various contractors that conducted the in-situ measurements. For example, the Level B harassment zone calculated for the parametric SBP was 63 m, whereas, the in-situ measurements yielded a Level B harassment zone of less than 10 m. A smaller zone is to be expected from a source that operates non-linearly at very high primary frequencies effectively reducing the sound levels by 30 to 40 dB due to interference at those high frequencies, while emitting sound at lower secondary frequencies (at 2–22 kHz) and downward in a 1° beam.

Regardless, there is a fundamental discrepancy between the agencies regarding how the source levels from Crocker and Fratantonio (2016) should be used. For Ørsted's proposed activities, NMFS used the reported sound pressure level root-mean-square (SPL_{rms}) source levels from Crocker and Fratantonio (2016) and 20logR to determine the extents of the Level B harassment zones. BOEM has indicated that, for HRG sources that have very short pulse durations (less than 1 msec to 10s of msec), the pulse duration and number of pulses per second should be accounted for, resulting in a reduction of the SPL_{rms}⁹ source level¹⁰. Using BOEM's method, the SPL_{rms} source level of 205 dB re 1 µPa for the Applied Acoustics S-Boom boomer operating at 700 J from Crocker and Fratantonio (2016) would be reduced to 178 dB re 1 µPa¹¹. Assuming 20logR consistent with NMFS's approach in the preamble, the resulting Level B harassment zone would be 8 m, which matches the in-situ measurements conducted by Marine Acoustics Inc. (2018, Appendix E of Ørsted's application). In both cases, the Level B harassment zones are an order of magnitude less than the 178 m estimated by NMFS. Similar results are evident for the Applied Acoustics S-Boom boomer operating at 1,000 J and the EdgeTech 512 chirp when in-situ measurements are compared to Level B harassment zones estimated from adjusted source levels that originated in Crocker and Fratantonio (2016). It is unclear whether BOEM, which funded and is familiar with the data collection and analysis by Crocker and Fratantonio (2016), may be aware of nuances associated with what the SPL_{rms} source levels represent, but it is clear that the agencies do not agree on how the SPL_{rms}-based source levels from Crocker and Fratantonio (2016) should be used.

Two other factors, beamwidth and frequency-related absorption, were not considered by NMFS¹² for Ørsted's proposed authorization. Many of the HRG sources have narrow beams and operate at high frequencies. For example, if only the 1° beamwidth of the parametric SBP is considered¹³, absent any corrections for absorption, the resulting Level B harassment zone based on the manufacturer's specified source level of 247 dB re 1 µPa_{rms} would be less than 2 m. Using NMFS's presumed 187-dB re 1 µPa source level that was back-calculated from in-situ measurements, the Level B harassment zone would be even smaller. For all these reasons, the Commission recommends that NMFS review the in-situ measured Level B harassment zones submitted by Ørsted and, if those data were collected and analyzed properly, use them rather than the source levels back-calculated from those measurements to inform the extents of the Level B harassment zones. The Commission further recommends that, if SPL_{rms}-based source levels are used to inform the extents of the Level B harassment zones, NMFS (1) consult with BOEM regarding how the SPL_{rms}-based source levels from Crocker and Fratantonio (2016) should be used and whether pulse duration and the number of pulses should be used to adjust the respective source levels, (2) use both the beamwidth and operating frequency of the various sources to better inform the extents of the Level B harassment zones, and (3) assume a consistent 20logR propagation loss

⁹ With a reference frequency of 1 Hz.

¹⁰ $10\log(T)$ is added to the reported source level, where T is the pulse duration in seconds. Since many of the pulse durations for HRG sources are less than 1 sec, the correction will be a negative number (e.g., for a 0.1-sec pulse, the correction is -10 dB). To account for the number of pulses that are emitted per second, $10\log(N)$ is added to the reported source level as well, where N is the number of pulses per second (e.g., for 10 pulses, 10 dB is added).

¹¹ Based on a pulse duration of 0.6 msec from Crocker and Fratantonio (2016) and a repetition rate of 0.333 from Table 6 in the *Federal Register* notice.

¹² NMFS has recently developed interim guidance regarding sound propagation modeling for HRG sources.

¹³ Based on $R=r \sin \frac{\theta}{2}$; where R is the horizontal distance, r is the slant distance, and θ is the beamwidth in radians.

for all Level B harassment zone¹⁴ calculations. NMFS should provide its internal spreadsheet¹⁵ that includes beamwidth and source frequency¹⁶ to action proponents when it provides them with its interim guidance regarding sound propagation modeling for HRG sources.

The Commission understands that some in-situ measurements and resulting data may be inaccurate and therefore are a cause of concern by the agencies. Those concerns include contractors having difficulty obtaining adequate on-axis measurements of the signals¹⁷ and georeferencing the source relative to the hydrophone, the hydrophone clipping the sound¹⁸, and signal processing issues. However, these issues should be minimized with proper methodological requirements and signal processing standards. It is unclear if BOEM has provided that information to the various lessees, many of which are required to conduct in-situ measurements as part of their lease stipulations. To ensure that the data are collected and analyzed appropriately, the Commission recommends that NMFS work with BOEM to develop methodological and signal processing standards for use by action proponents that conduct HRG surveys and that either choose to conduct in-situ measurements to inform an authorization application or are required to conduct measurements to fulfill a lease condition.

HRG surveys in general

Ørsted is already required by BOEM to implement shut-down procedures at 500 and 100 m for North Atlantic right whales and other large cetaceans, respectively, based on conditions stipulated in Addendum C of the leases. For the remaining marine mammal species, Ørsted could choose to shut down if an animal approached at 30 m to reduce the potential for taking, based on the largest in-situ measured Level B harassment zone. Alternatively, a standard 50-m exclusion zone should be sufficient for those species, depending on how NMFS ultimately estimates the Level B harassment zones. As NMFS seeks to streamline and improve the efficiency of its authorization processes, it should consider whether, in such situations involving HRG surveys¹⁹, incidental harassment authorizations are even necessary given the very small size of the Level B harassment zones, proposals by applicants to shut down activities if a marine mammal approaches those zones, and the added protection afforded by the lease-stipulated exclusion zones.

Proposed one-year authorization renewals

NMFS has indicated that it may issue a second one-year²⁰ incidental harassment authorization renewal for this and other future authorizations if various criteria are met and after an expedited public comment period of 15 days. The Commission is concerned that the proposed renewal process is inconsistent with the statutory requirements—section 101(a)(5)(D)(iii) clearly

¹⁴ Level A harassment zones for HRG surveys are calculated using 20logR as well.

¹⁵ Similar to its user spreadsheet for calculating Level A harassment zones.

¹⁶ Which could be modified to include pulse duration and number of pulses, if necessary.

¹⁷ Some of the in-situ measurements likely were conducted outside the main lobe of the source.

¹⁸ Which could be based on the location and sensitivity of the hydrophone used.

¹⁹ And until it revises its 160-dB re 1 μ Pa threshold for intermittent, non-impulsive sources.

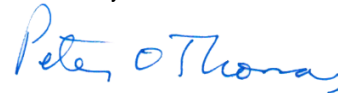
²⁰ NMFS informed the Commission that the renewal would be issued as a one-time opportunity, after which time a new authorization application would be required. NMFS has yet to specify this in any *Federal Register* notice detailing the new proposed renewal process but should do so.

states that proposed authorizations are subject to a 30-day comment period—and Congressional expectations regarding the length of the comment period when it passed that provision²¹.

Another significant issue with the proposed 15-day comment period is the burden that it places on reviewers, who will need to review the original authorization and supporting documentation²², the draft monitoring report(s), the renewal application or request²³, and the proposed authorization and then formulate comments very quickly. Depending on how frequently NMFS invokes the renewal option, how much the proposed renewal or the information on which it is based deviates from the original authorization, and how complicated the activities are and the taking authorization is, those who try to comment on all proposed authorizations and renewals, such as the Commission, would be hard pressed to do so within the proposed 15-day comment period. Therefore, the Commission recommends that NMFS refrain from using the proposed renewal process. The renewal process should be used sparingly and selectively, by limiting its use only to those proposed incidental harassment authorizations that are expected to have the lowest levels of impacts to marine mammals and that require the least complex analyses. Notices for other types of activities should not include the possibility that a renewal might be issued using the proposed foreshortened 15-day comment period. If NMFS intends to use the renewal process frequently *or* for authorizations that require a more complex review or for which much new information has been generated (e.g., multiple or extensive monitoring reports), the Commission recommends that NMFS provide the Commission and other reviewers the full 30-day comment opportunity set forth in section 101(a)(5)(D)(iii) of the MMPA.

Please contact me if you have questions regarding the Commission's recommendations.

Sincerely,



Peter O. Thomas, Ph.D.,
Executive Director

cc: Stan Labak, BOEM

References

Crocker, S.E., and F.D. Fratantonio. 2016. Characteristics of sounds emitted during high-resolution marine geophysical surveys. Naval Undersea Warfare Center Division, Newport, Rhode Island. 265 pages.

²¹ See, for example, the legislative history of section 101(a)(5)(D), which states "...in some instances, a request will be made for an authorization identical to one issued the previous year. In such circumstances, the Committee expects the Secretary to act expeditiously in complying with the notice and comment requirements." (H.R. Rep. No. 439, 103d Cong., 2d Sess. 29 (1994)). The referenced "notice and comment requirements" specify a 30-day comment period.

²² Including the original application, hydroacoustic and marine mammal monitoring plans, take estimation spreadsheets, etc.

²³ Including any proposed changes or any new information.

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Marine Acoustics, Inc. 2018. Final report for Oceaneering International, Inc. Sound source verification: Supporting Deepwater Wind's Skipjack Wind Farm Project off Maryland and Delaware. MAI 1046, TN 18-026, Arlington, Virginia. 21 pages.