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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RTID 0648-XC326

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Marine Site Characterization Surveys in the Area of Commercial Lease of Submerged Lands for Renewable Energy Development on the Outer Continental Shelf (OCS) Lease Areas OCS-A 0486, 0487, and 0500

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice; issuance of an incidental harassment authorization.

SUMMARY: In accordance with the regulations implementing the Marine Mammal Protection Act (MMPA) as amended, notification is hereby given that NMFS has issued an incidental harassment authorization (IHA) to Orsted Wind Power North America LLC (Orsted) to incidentally harass, by Level B harassment only, marine mammals during marine site characterization surveys offshore from Rhode Island to Massachusetts, including the areas of Commercial Lease of Submerged Lands for Renewable Energy Development on the Outer Continental Shelf Lease Areas OCS-A 0486, 0487, 0500, and along potential export cable routes (ECR)s to landfall locations between Raritan Bay and Falmouth, MA.

DATES: This authorization is effective for one year from the date of issuance.

FOR FURTHER INFORMATION CONTACT: Jessica Taylor, Office of Protected Resources, NMFS, (301) 427-8401. Electronic copies of the application and supporting documents, as well as a list of the references cited in this document, may be obtained online at: *www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-*

mammal-protection-act-other-energy-activities-renewable. In case of problems accessing these documents, please call the contact listed above.

SUPPLEMENTARY INFORMATION:

Background

The MMPA prohibits the "take" of marine mammals, with certain exceptions. Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 *et seq*.) direct the Secretary of Commerce (as delegated to NMFS) to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are proposed or, if the taking is limited to harassment, a notice of a proposed IHA is provided to the public for review.

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for taking for subsistence uses (where relevant). Further, NMFS must prescribe the permissible methods of taking and other "means of effecting the least practicable adverse impact" on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stocks for taking for certain subsistence uses (referred to in shorthand as "mitigation"); and requirements pertaining to the mitigation, monitoring and reporting of the takings are set forth. The definitions of all applicable MMPA statutory terms cited above are included in the relevant sections below.

Summary of Request

On April 19, 2022, NMFS received a request from Orsted for an IHA to take small numbers of marine mammals incidental to marine site characterization surveys in federal waters located in the OCS Commercial Lease Areas off the coasts from Rhode

Island to Massachusetts, and along potential ECRs to landfall locations between Raritan Bay (part of the New York Bight) and Falmouth, Massachusetts. Following NMFS' review of the draft application, a revised version was submitted on July 8, 2022. The application was deemed adequate and complete on August 3, 2022. Orsted's request is for take of 16 species of marine mammals (consisting of 16 stocks) by Level B harassment only. Neither Orsted nor NMFS expect serious injury or mortality to result from this activity and, therefore, an IHA is appropriate.

NMFS previously issued IHAs and a renewal IHA to Orsted for marine site characterization HRG surveys in the OCS-A 0486, 0487, and 0500 Lease Areas (84 FR 52464, October 2, 2019; 85 FR 63508, October 8, 2020; 87 FR 13975, March 11, 2022). Orsted complied with all the requirements (*e.g.*, mitigation, monitoring, and reporting) of the previous IHAs and information regarding their monitoring results may be found in the **Effects of the Specified Activity on Marine Mammals and their Habitat** section in the proposed **Federal Register** notice (87 FR 52515)**.** There are no changes from the proposed IHA to the final IHA.

On August 1, 2022, NMFS announced proposed changes to the existing North Atlantic right whale vessel speed regulations to further reduce the likelihood of mortalities and serious injuries to endangered right whales from vessel collisions, which are a leading cause of the species' decline and a primary factor in an ongoing Unusual Mortality Event (87 FR 46921). Should a final vessel speed rule be issued and become effective during the effective period of this IHA (or any other MMPA incidental take authorization), the authorization holder would be required to comply with any and all applicable requirements contained within the final rule. Specifically, where measures in any final vessel speed rule are more protective or restrictive than those in this or any other MMPA authorization, authorization holders would be required to comply with the requirements of the rule. Alternatively, where measures in this or any other MMPA

authorization are more restrictive or protective than those in any final vessel speed rule, the measures in the MMPA authorization would remain in place. These changes would become effective immediately upon the effective date of any final vessel speed rule and would not require any further action on NMFS's part.

Description of Authorized Activity

Overview

Orsted plans to conduct HRG surveys in the Lease Areas OCS-A 0486, 0487, 0500 and ECR Area in federal and state waters from New York to Massachusetts to support the characterization of the existing seabed and subsurface geological conditions, which is necessary for the development of an offshore electric transmission system. The project will use active acoustic sources, including some with potential to result in the incidental take of marine mammals by Level B harassment. This take of marine mammals is anticipated to be in the form of behavioral harassment only. In-water work will include approximately 400 survey days using multiple vessels for a period of one year.

Dates and Duration

As described above, HRG surveys are expected to consist of approximately 400 survey days (Table 1) over the course of one year. Orsted plans to conduct continuous HRG survey operations 12-hours per day and 24-hours per day using multiple vessels. A survey day is defined as a 24-hour activity day in which an assumed number of line kilometer (km) are surveyed. The number of anticipated survey days was calculated as the number of days needed to reach the overall level of effort required to meet survey objectives assuming any single vessel covers, on average 70 line kilometer (km) per 24-hour operations. A survey day accounts for multiple vessels such that two vessels operating within one 24-hour period equates to two survey days. A maximum of three vessels will work concurrently in the project area in any combination of 24-hour and 12-hour vessels. To be conservative, our exposure analysis assumes daily 24-hour

operations. Although vessels may complete 20-80 km/day of actual source operations, we anticipate that vessels will average 70 line km of active sources assumed to potentially cause take of marine mammals per day. As shown by Table 1, the estimated number of survey days varies by Lease Area and ECR.

Table 1. Number of survey days for each Lease Area and ECR

Area	Total Number of Survey days [1]
OCS-A-0486	10
OCA-A-0487	10
OCS-A-0500	200
ECR	180
TOTAL	400

[1] *Up to three total survey vessels may be operating within both of the survey areas concurrently.*

Specific Geographic Region

Orsted's survey activities will occur in the Lease Areas located approximately 14 miles (22.5 km) south of Martha's Vineyard, Massachusetts at its closest point to land, as well as along potential export cable route (ECR) corridors off the coast of New York, Connecticut, Rhode Island, and Massachusetts to landfall locations between Raritan Bay and Falmouth, MA, as shown in Figure 1. Water depths in the project area extend out from shoreline to approximately 90 m in depth.

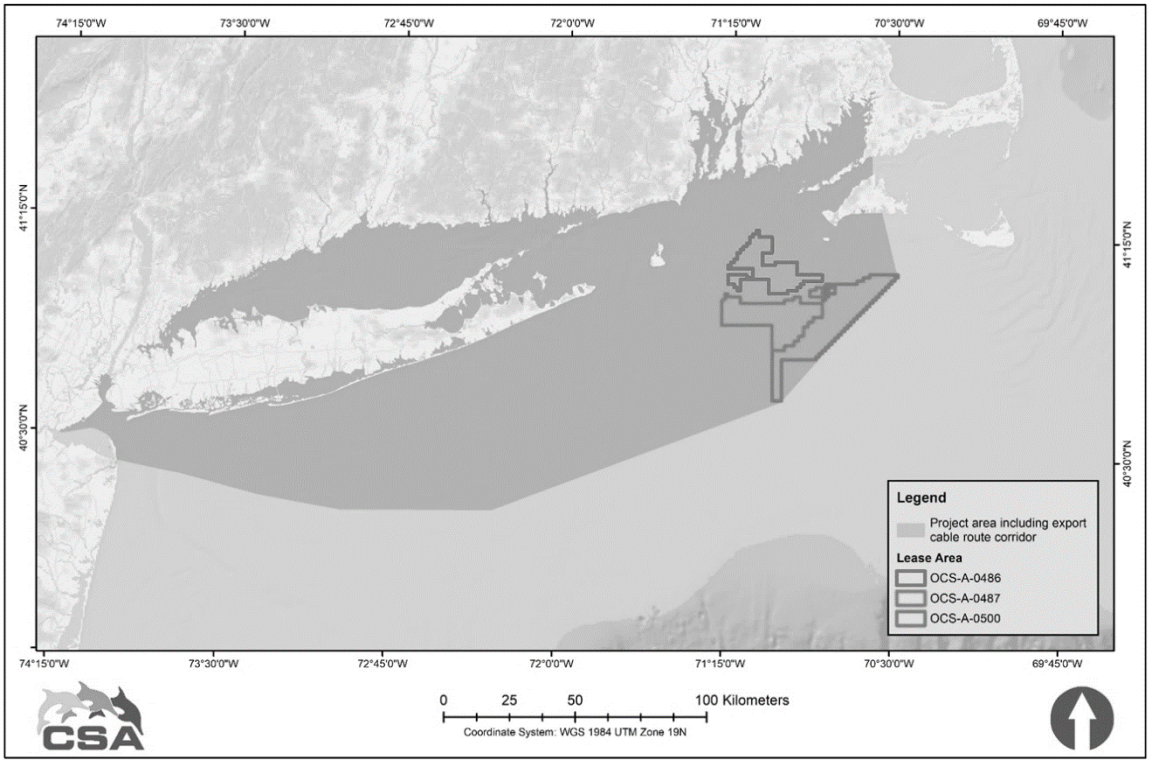

Figure 1. Survey area for site characterization surveys

Orsted plans to conduct HRG survey operations, including multibeam depth sounding, seafloor imaging, and shallow and medium penetration sub-bottom profiling. The HRG surveys will include the use of seafloor mapping equipment with operating frequencies above 180 kilohertz (kHz) (*e.g.,* side-scan sonar (SSS), multibeam echosounders (MBES)); magnetometers and gradiometers that have no acoustic output; and shallow- to medium-penetration sub-bottom profiling (SBP) equipment (*e.g.,* parametric sonars, compressed high-intensity radiated pulses (CHIRPs), boomers, sparkers) with operating frequencies below 180 kilohertz (kHz). No deep-penetration SBP surveys (*e.g.,* airgun or bubble gun surveys) will be conducted. A detailed description of the planned HRG surveys is provided in the **Federal Register** notice for the proposed IHA (87 FR 52515; August 26, 2022). Since that time, no changes have been made to the planned HRG survey activities. Therefore, a detailed description is not provided here. Please refer to that **Federal Register** notice for the description of the specific activity.

Comments and Responses

A notice of NMFS' proposal to issue an IHA to Orsted was published in the **Federal Register** on August 26, 2022 (87 FR 52515), initiating a 30-day public comment period. The proposed notice described, in detail, Orsted's activities, the marine mammal species that may be affected by the activities, and the anticipated effects on marine mammals. In that notice, we requested public input on the request for authorization described therein, our analyses, the proposed authorization, and any other aspect of the notice of proposed IHA, and requested that interested persons submit relevant information, suggestions, and comments.

During the 30-day public comment period, NMFS received one comment from a private citizen that did not provide relevant information to NMFS' decision, and one comment letter from Responsible Offshore Development Alliance (RODA). A summary

of comments from RODA and NMFS' responses is provided below; the letter is available online at: *https://www.fisheries.noaa.gov/action/incidental-take-authorization-orsted-wind-power-north-america-llc-marine-site-0.* Please review the letter for full details regarding the comments and underlying justification.

Comment 1: RODA states that, to their knowledge, there are no resources easily accessible to the public to understand what authorizations are required for each of these activities (pre-construction surveys, construction, operations, monitoring surveys, etc.). RODA recommends that NMFS improve the transparency of this process and move away from what it refers to as a "segmented phase-by-phase and project-by-project approach to IHAs."

NMFS' response: The MMPA, and its implementing regulations, allows, upon request, the incidental take of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographic region. NMFS responds to these requests by authorizing the incidental take of marine mammals if it is found that the taking would be of small numbers, have no more than a "negligible impact' on the marine mammal species or stock, and not have an "unmitigable adverse impact" on the availability of the species or stock for subsistence use. NMFS emphasizes that an IHA does not authorize the activity itself but authorizes the take of marine mammals incidental to the "specified activity" for which incidental take coverage is being sought. In this case, NMFS is responding to the applicant, Orsted, and the specified activity described in their application and making necessary findings on the basis of what was provided in their application. The authorization of Orsted's activity (note, not the authorization of takes incidental to that activity) is not within the jurisdiction of NMFS. NMFS refers RODA to the Permitting Dashboard for Federal Infrastructure Projects for further information on timelines and proposed authorizations

planned for application for each of these activities: *https://www.permits.performance.gov/*.

NMFS is required to consider applications upon request. To date, NMFS has not received any joint applications. While an individual company owning multiple lease areas may apply for a single authorization to conduct site characterization surveys across a combination of those lease areas (see 85 FR 63508, October 8, 2020; 87 FR 13975, March 11, 2022), this is not applicable in this case. In the future, if applicants wish to undertake this approach, NMFS is open to the receipt of joint applications and additional discussions on joint actions.

Comment 2: RODA expressed concern regarding the potential for increased uncertainty in estimates of marine mammal abundance resulting from wind turbine presence during aerial surveys and potential effects of NMFS' ability to continue using current aerial survey methods to fulfill its mission of precisely and accurately assessing protected species.

NMFS' response: NMFS has determined that offshore wind development projects may impact several surveys carried out by its Northeast Fisheries Science Center (NEFSC), including aerial surveys for protected species. NEFSC has developed a federal survey mitigation program to mitigate the impacts to these surveys, and is in the early stages of implementing this program. However, this impact is outside the scope of analysis related to the authorization of take incidental to Orsted's specified activity under the MMPA.

Comment 3: RODA expressed concerns with the high amount of increased vessel traffic associated with the OSW projects throughout the region in areas transited or utilized by certain protected resources, as well as concern for vessel noise.

NMFS' response: Orsted did not request authorization for take incidental to vessel traffic during Orsted's marine site characterization survey. Nevertheless, NMFS analyzed

the potential for vessel strikes to occur during the survey, and determined that the potential for vessel strike is so low as to be discountable. NMFS does not authorize any take of marine mammals incidental to vessel strike resulting from the survey. If Orsted were to strike a marine mammal with a vessel, this would be an unauthorized take and be in violation of the MMPA. This gives Orsted a strong incentive to operate its vessels with all due caution and to effectively implement the suite of vessel strike avoidance measures called for in the IHA. Orsted proposed a very conservative suite of mitigation measures related to vessel strike avoidance, including measures specifically designed to avoid impacts to North Atlantic right whales. Section 4(g) in the IHA contains a suite of non-discretionary requirements pertaining to ship strike avoidance, including vessel operation protocols and monitoring. To date, NMFS is not aware of any site characterization vessel from surveys reporting a vessel strike within the United States. When considered in the context of low overall probability of any vessel strike by Orsted vessels, given the limited additional survey-related vessel traffic relative to existing traffic in the survey area, the comprehensive visual monitoring, and other additional mitigation measures described herein, NMFS believes these measures are sufficiently protective to avoid ship strike. These measures are described fully in the **Mitigation** section below, and include, but are not limited to: training for all vessel observers and captains, daily monitoring of North Atlantic right whale Sighting Advisory System, WhaleAlert app, and USCG Channel 16 for situational awareness regarding North Atlantic right whale presence in the survey area, communication protocols if whales are observed by any Orsted personnel, vessel operational protocol should any marine mammal be observed, and visual monitoring.

The potential for impacts related to an overall increase in the amount of vessel traffic due to OSW development is separate from the aforementioned analysis of potential for vessel strike during Orsted's specified survey activities.

Comment 4: RODA defers to the Marine Mammal Commission's previous comments on the matter of effects on marine mammals from offshore wind development, expressing that "they are more knowledgeable on impacts of pile driving and acoustics to marine mammals".

NMFS' response: In response to RODA's deferral to the Marine Mammal Commission, the Commission, the agency charged with advising federal agencies on the impacts of human activity on marine mammals, has questioned in its previous public comment whether incidental take authorizations are even necessary for surveys utilizing HRG equipment (*i.e.,* take is unlikely to occur), and has subsequently informed NMFS that they would no longer be commenting on such actions, including Orsted's activity described herein. Additionally, comments related to pile driving and OSW construction are outside the scope of this IHA and, therefore, are not discussed.

Comment 5: RODA defers to the September 9, 2020 letter submitted by seventeen Environmental NRGs and echoes their concerns.

NMFS' response: NMFS refers RODA to the **Federal Register** notice 85 FR 63508 (October 8, 2020) for previous responses to the Environmental NGOs' previous letter of which RODA references and defers expertise to.

Comment 6: RODA expressed concern that negative impacts to local fishermen and coastal communities as a result of a potentially adverse impact to marine mammals (*e.g.,* vessel strike resulting in death or severe injury) were not mentioned nor evaluated in "the IHA request for this project". RODA also emphasized concern about the lack of adequate analysis of individual and cumulative impacts to marine mammals, noting existing fishery restrictions as a result of other North Atlantic right whale protections.

NMFS' response: Neither the MMPA nor our implementing regulations require NMFS to analyze impacts to other industries (*e.g.,* fisheries) or coastal communities from issuance of an ITA. Nevertheless, as detailed in the proposed IHA notice and in our

response to comment 3, NMFS has analyzed the potential for adverse impacts such as vessel strikes to marine mammals, including North Atlantic right whales, as a result of Orsted's planned site characterization survey activities and determined that no serious injury or mortality is anticipated. In fact, as discussed in the **Negligible Impact Analysis and Determination** section, later in this document, no greater than low-level behavioral harassment is expected for any affected species. For North Atlantic right whale in particular it is considered unlikely, as a result of the required precautionary shutdown zone (*i.e.,* 500 m versus the estimated maximum Level B harassment zone of 141 m), that the authorized take would occur at all. Thus, NMFS would also not anticipate the impacts RODA raises as a result of issuing this IHA for site characterization survey activities to Orsted.

In regards to cumulative impacts, neither the MMPA nor NMFS' codified implementing regulations call for consideration of other unrelated activities and their impacts on populations. The preamble for NMFS' implementing regulations (54 FR 40338; September 29, 1989) states in response to comments that the impacts from other past and ongoing anthropogenic activities are to be incorporated into the negligible impact analysis via their impacts on the baseline. Consistent with that direction, NMFS has factored into its negligible impact analysis the impacts of other past and ongoing anthropogenic activities via their impacts on the baseline, *e.g.*, as reflected in the density/distribution and status of the species, population size and growth rate, and other relevant stressors. The 1989 final rule for the MMPA implementing regulations also addressed public comments regarding cumulative effects from future, unrelated activities. There NMFS stated that such effects are not considered in making findings under section 101(a)(5) concerning negligible impact. In this case, this IHA, as well as other IHAs currently in effect or proposed within the specified geographic region, are appropriately considered an unrelated activity relative to the others. The IHAs are unrelated in the

sense that they are discrete actions under section 101(a)(5)(D), issued to discrete applicants.

Section 101(a)(5)(D) of the MMPA requires NMFS to make a determination that the take incidental to a "specified activity" will have a negligible impact on the affected species or stocks of marine mammals. NMFS' implementing regulations require applicants to include in their request a detailed description of the specified activity or class of activities that can be expected to result in incidental taking of marine mammals. 50 CFR 216.104(a)(1). Thus, the "specified activity" for which incidental take coverage is being sought under section 101(a)(5)(D) is generally defined and described by the applicant. Here, Orsted was the applicant for the IHA, and we are responding to the specified activity as described in that application (and making the necessary findings on that basis).

Through the response to public comments in the 1989 implementing regulations, NMFS also indicated (1) that we would consider cumulative effects that are reasonably foreseeable when preparing a NEPA analysis, and (2) that reasonably foreseeable cumulative effects would also be considered under section 7 of the Endangered Species Act (ESA) for ESA-listed species, as appropriate. Accordingly, NMFS has written Environmental Assessments (EA) that addressed cumulative impacts related to substantially similar activities, in similar locations, *e.g.*, the 2019 Avangrid EA for survey activities offshore North Carolina and Virginia; the 2017 Ocean Wind, LLC EA for site characterization surveys off New Jersey; and the 2018 Deepwater Wind EA for survey activities offshore Delaware, Massachusetts, and Rhode Island. Cumulative impacts regarding issuance of IHAs for site characterization survey activities such as those planned by Orsted have been adequately addressed under NEPA in prior environmental analyses that support NMFS' determination that this action is appropriately categorically excluded from further NEPA analysis. NMFS independently evaluated the use of a

categorical exclusion (CE) for issuance of Orsted's IHA, which included consideration of extraordinary circumstances.

Separately, the cumulative effects of substantially similar activities in the northwest Atlantic Ocean have been analyzed in the past under section 7 of the ESA when NMFS has engaged in formal intra-agency consultation, such as the 2013 programmatic Biological Opinion for BOEM Lease and Site Assessment Rhode Island, Massachusetts, New York, and New Jersey Wind Energy Areas (*https://repository.library.noaa.gov/view/noaa/29291*). Analyzed activities include those for which NMFS issued previous IHAs (82 FR 31562; July 7, 2017, 83 FR 28808; June 21, 2018, 83 FR 36539; July 30, 2018; and 86 FR 26465; May 10, 2021), which are similar to those planned by Orsted under this current IHA request. This Biological Opinion determined that NMFS' issuance of IHAs for site characterization survey activities associated with leasing, individually *and* cumulatively, are not likely to adversely affect listed marine mammals. NMFS notes that, while issuance of this IHA is covered under a different consultation, this BiOp remains valid.

Comment 7: RODA expressed interest in understanding the outcome if the number of actual takes exceed the number authorized during construction of an offshore wind project (*i.e.,* would the project be stopped mid-construction or operation), and how offshore wind developers will be held accountable for impacts to protected species such that impacts are not inadvertently assigned to fishermen, should they occur. Lastly, RODA maintains that the OSW industry must be accountable for incidental takes from construction and operations separately from the take authorizations for managed commercial fish stocks.

NMFS' response: It is important to recognize that an IHA does not authorize the activity but authorizes take of marine mammals incidental to the activity. As described in condition 3(b) and (c) of the IHA, authorized take, by Level B harassment only, is limited

to the species and numbers listed in Table 1 of the final IHA, and any taking exceeding the authorized amounts listed in Table 1 is prohibited and may result in the modification, suspension, or revocation of the IHA. As described in condition 4(f)(vii), shutdown of acoustic sources is required upon observation of either a species for which incidental take is not authorized or a species for which incidental take has been authorized but the authorized number of takes has been met, entering or within the Level B harassment zone as described in Table 2 of the IHA.

It is unclear why RODA would be concerned that the OSW developers are responsible for their own impacts and "the burdens of those are not also assigned to fishermen". Fishing impacts generally center on entanglement in fishing gear, which is a very acute, visible, and severe impact. In contrast, the pathway by which impacts occur incidental to construction or site characterization survey activities, such as those planned by Orsted here, is primarily acoustic in nature. Regardless, NMFS reiterates that this IHA does not authorize take incidental to construction activities, but site characterization survey activities, and any take beyond that authorized would be in violation of the MMPA. It is BOEM's responsibility as the permitting agency to make decisions regarding ceasing Orsted's overall offshore wind development activities, not NMFS. If the case suggested by RODA does occur, NMFS would work with BOEM and Orsted to determine the most appropriate means by which to ensure compliance with the MMPA. The impacts of commercial fisheries on marine mammals and incidental take for said fishing activities are indeed managed separately from those of non-commercial fishing activities such as offshore wind site characterization surveys (MMPA section 118).

Comment 8: RODA urges NMFS to use the best available science including the most comprehensive models for estimating marine mammal take and developing robust mitigation measures.

NMFS' response: NMFS has carefully reviewed the best available scientific information in assessing impacts to marine mammals, and recognizes that the surveys have the potential to impact marine mammals through behavioral effects, stress responses, and auditory masking. To limit the potential severity of any possible behavioral disruptions, NMFS has prescribed a robust suite of mitigation measures, including extended distance shutdowns for North Atlantic right whale, that are expected to further reduce the duration and intensity of acoustic exposure. As described in the **Mitigation** section, NMFS has determined that the prescribed mitigation requirements are sufficient to effect the least practicable adverse impact on all affected species or stocks.

Description of Marine Mammals in the Area of Specified Activities

Sections 3 and 4 of the application summarize available information regarding status and trends, distribution and habitat preferences, and behavior and life history of the potentially affected species. NMFS fully considered all of this information, and we refer the reader to these descriptions, incorporated here by reference, instead of reprinting the information. Additional information regarding population trends and threats may be found in NMFS' Stock Assessment Reports (SARs; *www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments*) and more general information about these species (*e.g.*, physical and behavioral descriptions) may be found on NMFS' website (*https://www.fisheries.noaa.gov/find-species)*.

Table 2 lists all species or stocks for which take is expected and authorized for these activities, and summarizes information related to the population or stock, including regulatory status under the MMPA and Endangered Species Act (ESA) and potential biological removal (PBR), where known. PBR is defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine

mammal stock while allowing that stock to reach or maintain its optimum sustainable population (as described in NMFS' SARs). While no serious injury or mortality is anticipated or authorized here, PBR and annual serious injury and mortality from anthropogenic sources are included here as gross indicators of the status of the species and other threats.

Marine mammal abundance estimates presented in this document represent the total number of individuals that make up a given stock or the total number estimated within a particular study or survey area. NMFS' stock abundance estimates for most species represent the total estimate of individuals within the geographic area, if known, that comprises that stock. For some species, this geographic area may extend beyond U.S. waters. All managed stocks in this region are assessed in NMFS' U.S. 2021 U.S. Atlantic and Gulf of Mexico SARs. All values presented in Table 2 are the most recent available at the time of publication and are available in the 2021 SARs (Hayes *et al.,* 2022).

Table 2. Marine Mammal Species[6] Likely Impacted by the Specified Activities

Common Name	Scientific Name	Stock	ESA/MMPA status; strategic (Y/N)[1]	Stock abundance (CV, N_{min}, most recent abundance survey)[2]	PBR	Annual M/SI[3]
Order Artiodactyla – Infraorder Cetacea—Mysticeti (baleen whales)						
Family Balaenidae						
North Atlantic right whale	*Eubalaena glacialis*	Western Atlantic	E/D, Y	368 (0; 364; 2019)[5]	0.7	7.7
Family Balaenopteridae (rorquals)						
Humpback whale	*Megaptera novaeangliae*	Gulf of Maine	-/-, Y	1,396 (0; 1,380; 2016)	22	12.15
Fin whale	*Balaenoptera physalus*	Western North Atlantic	E/D, Y	6,802 (0.24; 5,573; 2016)	11	1.8
Sei whale	*Balaenoptera borealis*	Nova Scotia	E/D, Y	6,292 (1.02; 3,098; 2016)	6.2	0.8
Minke whale	*Balaenoptera acutorostrata*	Canadian East Coastal	-/-, N	21,968 (0.31; 17,002; 2016)	170	10.6

Odontoceti (toothed whales, dolphins, and porpoises)						
Family Physeteridae						
Sperm whale	*Physeter macrocephalus*	North Atlantic	E/D, Y	4,349 (0.28; 3,451; 2016)	3.9	0
Family Delphinidae						
Long-finned pilot whale	*Globicephala melas*	Western North Atlantic	-/-, N	39,215 (0.3; 30,627; 2016)	306	29
Striped dolphin	*Stenella coeruleoalba*	Western North Atlantic	-, -, N	67,036 (0.29, 52,939, 2016)	529	0
Atlantic white-sided dolphin	*Lagenorhynchus acutus*	Western North Atlantic	-/-, N	93,233 (0.71; 54,443; 2016)	544	27
Bottlenose dolphin	*Tursiops truncatus*	Western North Atlantic Offshore	-/-, N	62,851 (0.23; 51,914; 2016)	519	28
Short-beaked Common dolphin	*Delphinus delphis*	Western North Atlantic	-/-, N	172,974(0.21, 145,216, 2016)	1,452	390
Atlantic spotted dolphin	*Stenella frontalis*	Western North Atlantic	-/-, N	39,921 (0.27; 32,032; 2016)	320	0
Risso's dolphin	*Grampus griseus*	Western North Atlantic Sock	-/-, N	35,215 (0.19; 30,051; 2016)	301	34
Harbor porpoise	*Phocoena phocoena*	Gulf of Maine/Bay of Fundy	-/-, N	95,543 (0.31; 74,034; 2016)	851	164
Order Carnivora—Pinnipedia						
Harbor seal	*Phoca vitulina*	Western North Atlantic	-/-, N	61,336 (0.08; 57,637; 2018)	1,729	339
Gray seal[4]	*Halichoerus grypus*	Western North Atlantic	-/-, N	27,300 (0.22; 22,785; 2018)	1,389	4,453

[1] ESA status: Endangered (E), Threatened (T)/MMPA status: Depleted (D). A dash (-) indicates that the species is not listed under the ESA or designated as depleted under the MMPA. Under the MMPA, a strategic stock is one for which the level of direct human-caused mortality exceeds PBR or which is determined to be declining and likely to be listed under the ESA within the foreseeable future. Any species or stock listed under the ESA is automatically designated under the MMPA as depleted and as a strategic stock.

[2] NMFS marine mammal stock assessment reports online at: *www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments. CV is the coefficient of variation;* N_{min} *is the minimum estimate of stock abundance. In some cases,* CV is not applicable.

[3] These values, found in NMFS' SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (*e.g.,* commercial fisheries, ship strike).
[4] NMFS' stock abundance estimate (and associated PBR value) applies to U.S. population only. Total stock abundance (including animals in Canada) is approximately 451,431. The annual M/SI value given is for the total stock.
[5] The draft 2022 SARs have yet to be released; however, NMFS has updated its species web page to recognize the population estimate for NARWs is now below 350 animals (*https://www.fisheries.noaa.gov/species/north-atlantic-right-whale*).
[6] - Information on the classification of marine mammal species can be found on the web page for The Society for Marine Mammalogy's Committee on Taxonomy (*https://marinemammalscience.org/science-and-publications/list-marine-mammal-species-subspecies/*; Committee on Taxonomy (2022)).

A detailed description of the species likely to be affected by Orsted's activities, including information regarding population trends, threats, and local occurrence, was provided in the **Federal Register** notice for the proposed IHA (87 FR 52515; August 26, 2022); since that time, we are not aware of any changes in the status of these species and stocks; therefore, detailed descriptions are not provided here. Please refer to that **Federal Register** notice for these descriptions. Please also refer to NMFS' website (*https://www.fisheries.noaa.gov/find-species*) for generalized species accounts.

Marine Mammal Hearing

Hearing is the most important sensory modality for marine mammals underwater, and exposure to anthropogenic sound can have deleterious effects. To appropriately assess the potential effects of exposure to sound, it is necessary to understand the frequency ranges marine mammals are able to hear. Not all marine mammal species have equal hearing capabilities (*e.g.*, Richardson *et al.*, 1995; Wartzok and Ketten, 1999; Au and Hastings, 2008). To reflect this, Southall *et al.* (2007, 2019) recommended that marine mammals be divided into hearing groups based on directly measured (behavioral or auditory evoked potential techniques) or estimated hearing ranges (behavioral response data, anatomical modeling, etc.). Note that no direct measurements of hearing ability have been successfully completed for mysticetes (*i.e.*, low-frequency cetaceans). Subsequently, NMFS (2018) described generalized hearing ranges for these marine mammal hearing groups. Generalized hearing ranges were chosen based on the approximately 65 decibel (dB) threshold from the normalized composite audiograms, with the exception for lower limits for low-frequency cetaceans where the lower bound

was deemed to be biologically implausible and the lower bound from Southall *et al.* (2007) retained. Marine mammal hearing groups and their associated hearing ranges are provided in Table 3.

Table 3. Marine Mammal Hearing Groups (NMFS, 2018).

Hearing Group	Generalized Hearing Range*
Low-frequency (LF) cetaceans (baleen whales)	7 Hz to 35 kHz
Mid-frequency (MF) cetaceans (dolphins, toothed whales, beaked whales, bottlenose whales)	150 Hz to 160 kHz
High-frequency (HF) cetaceans (true porpoises, *Kogia*, river dolphins, Cephalorhynchid, *Lagenorhynchus cruciger* & *L. australis*)	275 Hz to 160 kHz
Phocid pinnipeds (PW) (underwater) (true seals)	50 Hz to 86 kHz
Otariid pinnipeds (OW) (underwater) (sea lions and fur seals)	60 Hz to 39 kHz
* Represents the generalized hearing range for the entire group as a composite (*i.e.*, all species within the group), where individual species' hearing ranges are typically not as broad. Generalized hearing range chosen based on ~65 dB threshold from normalized composite audiogram, with the exception for lower limits for LF cetaceans (Southall *et al*., 2007) and PW pinniped (approximation).	

The pinniped functional hearing group was modified from Southall *et al*. (2007) on the basis of data indicating that phocid species have consistently demonstrated an extended frequency range of hearing compared to otariids, especially in the higher frequency range (Hemilä *et al*., 2006; Kastelein *et al*., 2009; Reichmuth and Holt, 2013).

For more detail concerning these groups and associated frequency ranges, please see NMFS (2018) for a review of available information. 16 marine mammal species (14 cetacean and 2 pinniped (both phocid) species) have the reasonable potential to co-occur with the planned survey activities. Please refer to Table 2. Of the cetacean species that may be present, five are classified as low-frequency cetaceans (*i.e.,* all mysticete species), eight are classified as mid-frequency cetaceans (*i.e.,* all delphinid species and the sperm whale), and one is classified as high-frequency cetaceans (*i.e.,* harbor porpoise and Kogia spp.).

Potential Effects of Specified Activities on Marine Mammals and their Habitat

The effects of underwater noise from the deployed acoustic sources have the potential to result in behavioral harassment of marine mammals in the vicinity of the

study area. The **Federal Register** notice for the proposed IHA (87 FR 52515; August 26, 2022) included a discussion of the effects of anthropogenic noise on marine mammals and their habitat, therefore that information is not repeated here; please refer to the **Federal Register** notice (87 FR 52515; August 26, 2022) for that information.

Estimated Take

This section provides an estimate of the number of incidental takes authorized through the IHA, which will inform both NMFS' consideration of "small numbers" and the negligible impact determinations.

Harassment is the only type of take expected to result from these activities. Except with respect to certain activities not pertinent here, section 3(18) of the MMPA defines "harassment" as any act of pursuit, torment, or annoyance, which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment).

Authorized takes are by Level B harassment only, in the form of disruption of behavioral patterns for individual marine mammals resulting from exposure to certain HRG sources. Based on the nature of the activity and the anticipated effectiveness of the mitigation measures (*i.e.*, shutdown measures, vessel strike avoidance procedures) discussed in detail below in the **Mitigation** section, Level A harassment is neither anticipated nor authorized.

As described previously, no serious injury or mortality is anticipated or authorized for this activity. Below we describe how the authorized take numbers are estimated.

For acoustic impacts, generally speaking, we estimate take by considering: (1) acoustic thresholds above which NMFS believes the best available science indicates marine mammals will be behaviorally harassed or incur some degree of permanent

hearing impairment; (2) the area or volume of water that will be ensonified above these levels in a day; (3) the density or occurrence of marine mammals within these ensonified areas; and, (4) the number of days of activities. We note that while these factors can contribute to a basic calculation to provide an initial prediction of potential takes, additional information that can qualitatively inform take estimates is also sometimes available (*e.g.,* previous monitoring results or average group size). Below, we describe the factors considered here in more detail and present the authorized take estimates.

Acoustic Thresholds

NMFS recommends the use of acoustic thresholds that identify the received level of underwater sound above which exposed marine mammals would be reasonably expected to be behaviorally harassed (equated to Level B harassment) or to incur PTS of some degree (equated to Level A harassment.

Level B Harassment – Though significantly driven by received level, the onset of behavioral disturbance from anthropogenic noise exposure is also informed to varying degrees by other factors related to the source or exposure context (*e.g.*, frequency, predictability, duty cycle, duration of the exposure, signal-to-noise ratio, distance to the source), the environment (*e.g.*, bathymetry, other noises in the area, predators in the area), and the receiving animals (hearing, motivation, experience, demography, life stage, depth) and can be difficult to predict (*e.g.*, Southall *et al.,* 2007, 2021, Ellison *et al.*, 2012). Based on what the available science indicates and the practical need to use a threshold based on a metric that is both predictable and measurable for most activities, NMFS typically uses a generalized acoustic threshold based on received level to estimate the onset of behavioral harassment. NMFS generally predicts that marine mammals are likely to be behaviorally harassed in a manner considered to be Level B harassment when exposed to underwater anthropogenic noise above root-mean-squared pressure received levels (RMS SPL) of 120 dB (re 1 μPa) for continuous (*e.g.,* vibratory pile-driving,

drilling) and above RMS SPL 160 dB re 1 μPa for non-explosive impulsive (*e.g.*, seismic airguns) or intermittent (*e.g.*, scientific sonar) sources.

Level A harassment – NMFS' Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0) (Technical Guidance, 2018) identifies dual criteria to assess auditory injury (Level A harassment) to five different marine mammal groups (based on hearing sensitivity) as a result of exposure to noise from two different types of sources (impulsive or non-impulsive).

These thresholds are provided in the table below. The references, analysis, and methodology used in the development of the thresholds are described in NMFS' 2018 Technical Guidance, which may be accessed at: *www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance*.

Orsted's activity includes the use of impulsive (*i.e.,* boomers and sparkers) and non-impulsive (*i.e.,* CHIRP SBPs) sources. However, as discussed above, NMFS has concluded that Level A harassment is not a reasonably likely outcome for marine mammals exposed to noise from the sources planned for use here, and the potential for Level A harassment is not evaluated further in this document. Please see Orsted's application (Section 1.4) for a quantitative Level A exposure analysis exercise. The results indicated that maximum estimated distances to Level A harassment isopleths were less than 3 m for all sources and hearing groups, with the exception of an estimated 18.9 m and 11.4 m distance to the Level A harassment isopleth for high-frequency cetaceans (*i.e.,* harbor porpoises) during use of the GeoPulse 5430 and TB CHIRP III, respectively (see Table 2 in the **Federal Register** notice for the proposed IHA for source characteristics; 87 FR 52515; August 26, 2022). Orsted did not request authorization of take by Level A harassment and no take by Level A harassment is authorized by NMFS.

Table 4. Thresholds Identifying the Onset of Permanent Threshold Shift.

	PTS Onset Thresholds* (Received Level)	
Hearing Group	Impulsive	Non-impulsive
Low-Frequency (LF) Cetaceans	*Cell 1* $L_{p,0\text{-pk,flat}}$: 219 dB $L_{E,p,\text{LF,24h}}$: 183 dB	*Cell 2* $L_{E,p,\text{LF,24h}}$: 199 dB
Mid-Frequency (MF) Cetaceans	*Cell 3* $L_{p,0\text{-pk,flat}}$: 230 dB $L_{E,p,\text{MF,24h}}$: 185 dB	*Cell 4* $L_{E,p,\text{MF,24h}}$: 198 dB
High-Frequency (HF) Cetaceans	*Cell 5* $L_{p,0\text{-pk,flat}}$: 202 dB $L_{E,p,\text{HF,24h}}$: 155 dB	*Cell 6* $L_{E,p,\text{HF,24h}}$: 173 dB
Phocid Pinnipeds (PW) (Underwater)	*Cell 7* $L_{p,0\text{-pk.flat}}$: 218 dB $L_{E,p,\text{PW,24h}}$: 185 dB	*Cell 8* $L_{E,p,\text{PW,24h}}$: 201 dB
Otariid Pinnipeds (OW) (Underwater)	*Cell 9* $L_{p,0\text{-pk,flat}}$: 232 dB $L_{E,p,\text{OW,24h}}$: 203 dB	*Cell 10* $L_{E,p,\text{OW,24h}}$: 219 dB

* Dual metric thresholds for impulsive sounds: Use whichever results in the largest isopleth for calculating PTS onset. If a non-impulsive sound has the potential of exceeding the peak sound pressure level thresholds associated with impulsive sounds, these thresholds are recommended for consideration. *Note:* Peak sound pressure level ($L_{p,0\text{-pk}}$) has a reference value of 1 µPa, and weighted cumulative sound exposure level ($L_{E,p}$) has a reference value of 1µPa^{2}s. In this Table, thresholds are abbreviated to be more reflective of International Organization for Standardization standards (ISO 2017). The subscript "flat" is being included to indicate peak sound pressure are flat weighted or unweighted within the generalized hearing range of marine mammals (*i.e.*, 7 Hz to 160 kHz). The subscript associated with cumulative sound exposure level thresholds indicates the designated marine mammal auditory weighting function (LF, MF, and HF cetaceans, and PW and OW pinnipeds) and that the recommended accumulation period is 24 hours. The weighted cumulative sound exposure level thresholds could be exceeded in a multitude of ways (*i.e.*, varying exposure levels and durations, duty cycle). When possible, it is valuable for action proponents to indicate the conditions under which these thresholds will be exceeded.

Ensonified Area

Here, we describe operational and environmental parameters of the activity that are used in estimating the area ensonified above the acoustic thresholds, including source levels and transmission loss coefficient.

NMFS has developed a user-friendly methodology for determining the rms sound pressure level (SPL_{rms}) at the 160-dB isopleth for the purpose of estimating the extent of Level B harassment isopleths associated with HRG survey equipment (NMFS, 2020). This methodology incorporates frequency and some directionality to refine estimated ensonified zones. Orsted used NMFS's methodology, using the source level and operation mode of the equipment planned for use during the survey, to estimate the maximum ensonified area over a 24-hr period also referred to as the harassment area (Table 5). Potential takes by Level B harassment are estimated within the ensonified area (*i.e.,*

harassment area) as an SPL exceeding 160 dB re 1 μPa for impulsive sources (*e.g.,* sparkers, boomers) within an average day of activity.

The harassment zone, also known as the Zone of Influence (ZOI), is a representation of the maximum extent of the ensonified area around a sound source over a 24-hr period. The ZOI was calculated for mobile sound sources per the following formula:

$$ZOI = (Distance/day \times 2r) + \pi r^2$$

Where r is the linear distance from the source to the isopleth for the Level B harassment threshold.

The estimated potential daily active survey distance of 70 km was used as the estimated areal coverage over a 24-hr period. This distance accounts for the vessel traveling at roughly 4 knots (kn) (2.1 m/s) and only for periods during which equipment <180 kHz is in operation. A vessel traveling 4 kn (2.1 m/s) can cover approximately 110 km per day; however, based on data collected since 2017, survey coverage over a 24-hour period is closer to 70 km per day as a result of delays due to, *e.g.,* weather, equipment malfunction. For daylight only vessels, the distance is reduced to 20 km per day; however, to maintain the potential for 24-hr surveys, the corresponding Level B harassment zones provided in Table 5 were calculated for each source based on the Level B threshold distances within a 24-hour (30 km) operational period.

NMFS considers the data provided by Crocker and Fratantonio (2016) to represent the best available information on source levels associated with HRG equipment and, therefore, recommends that source levels provided by Crocker and Fratantonio (2016) be incorporated in the method described above to estimate isopleth distances to harassment thresholds. In cases, when the source level for a specific type of HRG equipment is not provided in Crocker and Fratantonio (2016), NMFS recommends that either the source levels provided by the manufacturer be used, or, in instances where

source levels provided by the manufacturer are unavailable or unreliable, a proxy from Crocker and Fratantonio (2016) be used instead. Table 2 in the **Federal Register** notice for the proposed IHA (87 FR 52515; August 26, 2022) shows the HRG equipment types that may be used during the planned surveys and the source levels associated with those HRG equipment types.

Based upon modeling results, of the HRG survey equipment planned for use by Orsted that has the potential to result in Level B harassment of marine mammals, the Applied Acoustics Dura-Spark UHD and GeoMarine Geo-Source sparkers would produce the largest Level B harassment isopleth (141 m) or ZOI. Estimated distances to Level B harassment isopleths for all sources evaluated here, including the sparkers, are provided in Table 5. Although Orsted does not expect to use sparker sources on all planned survey days, Orsted assumes for purposes of analysis that the sparker would be used on all survey days. This is a conservative approach, as the actual sources used on individual survey days may produce smaller harassment distances.

Table 5. Distance to Level B Harassment Thresholds (160 dB rms)

Source	Distance to Level B harassment threshold (m)
Non-impulsive, non-parametric, shallow SBP (CHIRPs)	
ET 216 CHIRP	12
ET 424 CHIRP	4
ET 512i CHIRP	6
GeoPulse 5430	29
TB CHIRP III	54
Pangeo SBI	22
Impulsive, medium SBP (Boomers and Sparkers)	
AA Triple plate S-Boom (700/1,000 J)	76
AA, Dura-spark UHD Sparkers	141
GeoMarine Sparkers	141

AA = Applied Acoustics; CHIRP = compressed high-intensity radiated pulses; ET = edgetech; HF = high-frequency; J = joules; LF = low-frequency; MF = mid-frequency; PW = phocid pinnipeds in water; SBI = sub-bottom imager; SBP = sub-bottom profiler; TB = Teledyne benthos; UHD = ultra-high definition.

Marine Mammal Occurrence

In this section we provide information about the occurrence of marine mammals, including density or other relevant information that will inform the take calculations.

Habitat based density models produced by the Duke University Marine Geospatial Ecology Laboratory (Roberts *et al.,* 2016, 2022) represent the best available information regarding marine mammal densities in the project area. The density data presented by Roberts *et al.* (2016, 2022) incorporate aerial and shipboard line-transect data from NMFS and other organizations and incorporate data from 8 physiographic and 16 dynamic oceanographic and biological covariates, and control for the influence of sea state, group size, availability bias, and perception bias on the probability of making a sighting. These density models were originally developed for all cetacean taxa in the U.S. Atlantic (Roberts *et al.,* 2016). In subsequent years, certain models have been updated based on additional data as well as certain methodological improvements. More information is available online at *https://seamap.env.duke.edu/models/Duke/EC/.* Marine mammal density estimates in the project area (animals/km^2) were obtained using the most recent model results for all taxa (Roberts 2022). The updated models incorporate sighting data, including sightings from NOAA's Atlantic Marine Assessment Program for Protected Species (AMAPPS) surveys.

For exposure analysis, density data from Roberts (2022) were mapped using a geographic information system (GIS). Density grid cells that included any portion of the project area were selected for all survey months (see Figure 3 of Orsted's application). Given the variability in level of effort between the Lease Areas and the ECR area, densities were separated for the three Lease Areas (OCS-A 0486, 0487, and 0500) and the ECR area. The densities for each species as reported by Roberts *et al.* (2022) for each

of the Lease Areas and ECR were averaged by month; those values were then used to calculate the mean annual density for each species within the project area. Estimated mean monthly and annual densities (animals per km^2) of all marine mammal species that may be taken by the survey are shown in Tables 8-11 of Orsted's application. Please see Table 6 for density values used in the exposure estimation process.

Given their size and behavior when in the water, seals are difficult to identify during shipboard visual surveys and limited information is currently available on their distribution. Therefore, data used to establish the density estimates from Roberts *et al.* (2022) are based on information for all seal species that may occur in the Western North Atlantic (*i.e.,* harbor, gray, hooded, harp). However, only the harbor seal and gray seal are reasonably expected to occur in the project area, and the densities were split evenly between both species.

Long- and short-finned pilot whales are also difficult to distinguish during shipboard surveys so individual habitat models were not able to be developed for these species. As only long-finned pilot whales are expected to occur within the study area, pilot whale densities within the study area were attributed to this species.

For bottlenose dolphin densities, Roberts (2022) does not differentiate by stock. As previously discussed, only the Western North Atlantic offshore stock is expected to occur in the project area. Thus, all bottlenose dolphin density estimates within the project area were attributed to the offshore stock.

Table 6. Average Annual Marine Mammal Density Estimates across Survey Sites

Species	Average Annual Density (km^2)			
	OCS-A 0486	OCS-A 0487	OCS-A 0500	ECR
Low-frequency Cetaceans				
Fin whale	0.0013	0.0021	0.0023	0.0015
Sei whale	0.0000	0.0001	0.0001	0.0000
Minke whale	0.0005	0.0008	0.0009	0.0005

Humpback whale	0.0012	0.0013	0.0015	0.0006
North Atlantic right whale	0.0040	0.0020	0.0034	0.0008
Mid-frequency Cetaceans				
Sperm whale	0.0001	0.0001	0.0001	0.0001
Atlantic white sided dolphin	0.0092	0.0234	0.0367	0.0163
Atlantic spotted dolphin	0.0001	0.0003	0.0004	0.0003
Common bottlenose dolphin	0.0151	0.0078	0.0097	0.0266
Long-finned pilot whale	0.0020	0.0074	0.0090	0.0043
Risso's dolphin	0	0.0001	0.0001	0.0001
Common dolphin	0.0457	0.0924	0.0945	0.0562
Striped dolphin	0.0000	0.0000	0.0000	0.0000
High-frequency Cetaceans				
Harbor porpoise	0.0335	0.0399	0.0384	0.0337
Pinnipeds in-water[1]				
Gray seal	0.0104	0.0110	0.0124	0.0182
Harbor seal	0.0104	0.0110	0.0124	0.0182

[1]Seal species are not separated in the Roberts (2022) data therefore densities were evenly split between the two species expected to occur in the project area.

Take Estimation

Here we describe how the information provided above is synthesized to produce a quantitative estimate of the take that is reasonably likely to occur.

Level B exposures were estimated by multiplying the average annual density of each species within the project area (Table 6) by the largest ZOI that was estimated to be ensonified to an SPL exceeding 160 dB re 1 µPa (141m; Table 5). That result was then multiplied by the number of survey days in that Lease Area or ECR (Table 1), and rounded to the nearest whole number to arrive at estimated take. This final number equals the instances of take for the entire operational period. It was assumed the sparker systems were operating all 400 survey days as it is the sound source expected to produce the

largest harassment zone. A summary of this method is illustrated in the following formula with the resulting authorized take of marine mammals is shown below in Table 7:

Estimated take = species density × ZOI × # of survey days

Table 7. Total Estimated and Authorized Take Numbers (by Level B harassment only)

Species		Abundance	Estimated Level B Takes	Authorized Level B Takes	Max percent Population
Low-frequency Cetaceans					
Fin whale		6,802	14	14	0.21
Sei whale		6,292	0	3	0.05
Minke whale		21,968	6	13	0.06
Humpback whale		1,396	8	34	2.44
North Atlantic right whale		368	17	17	4.62
Mid-frequency Cetaceans					
Sperm whale		4,349	0	2	0.05
Atlantic white-sided dolphin		93,233	210	210	0.23
Atlantic spotted dolphin		39,921	3	29	0.07
Common bottlenose dolphin		62,851	139	139	0.22
Pilot whale		39,215	17	17	0.13
Risso's dolphin		35,215	1	30	0.09
Common dolphin		172,974	601	6,000	3.47
Striped dolphin		67,036	0	20	0.03
High-frequency Cetaceans					
Harbor porpoise		95,543	287	287	0.30
Pinnipeds					
Seals	Gray seal	27,300	118	118	0.43
	Harbor seal	61,336	118	118	0.19

Additional data regarding average group sizes from survey effort in the region was considered to ensure adequate take estimates are evaluated. Take estimates for several species were adjusted based upon observed group sizes in the area. The adjusted

take estimates for these species are indicated in Table 7. These calculated take estimates were adjusted for these species as follows:

- Sei whale: Although no takes were estimated, prior Protected Species Observer (PSO) monitoring documented the presence of sei whales in the area. One take was requested based on the most common group size reported in Kenney and Vigness-Raposa (2010);
- Minke and humpback whales: Requested takes were increased to the number recorded within 500 m of an active source based on draft PSO data (see Table 13 in the application);
- Sperm whale: No takes were estimated but based on their occurrence in PSO data, 1 group of 2 (Barkaszi and Kelly, 2019) was added to the requested takes;
- Atlantic spotted dolphin: Requested takes were increased to the average number of dolphins in a group reported in Palka *et al.* (2017, 2021);
- Risso's dolphin: Only one take was estimated but based on their occurrence in PSO data, 1 group of 30 (Kenney and Vigness-Raposa, 2010) was added to the requested takes.
- Common dolphin: Requested takes were increased to 6,000. This is based on the average group size of 15 from the PSO data (calculated by dividing the total number of individuals [14,250] by the total number of detections [927] in Table 13 of the application) multiplied by the planned number of survey days (400) in Table 1.
- Striped dolphin: No takes were estimated but based on their occurrence in PSO data, one group of 20 dolphins (Kenney and Vigness-Raposa, 2010) was added to the requested takes.

PSO data for adjusting take estimates of minke whales, humpback whales, common bottlenose dolphins, and common dolphins was derived from draft PSO observer reports from surveys conducted in the project lease areas and ECR from 2020-2021, as shown in Table 13 of Orsted's application.

Mitigation

In order to issue an IHA under section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to the activity, and other means of effecting the least practicable impact on the species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stock for taking for certain subsistence uses (latter not applicable for this action). NMFS regulations require applicants for incidental take authorizations to include information about the availability and feasibility (economic and technological) of equipment, methods, and manner of conducting the activity or other means of effecting the least practicable adverse impact upon the affected species or stocks, and their habitat (50 CFR 216.104(a)(11)).

In evaluating how mitigation may or may not be appropriate to ensure the least practicable adverse impact on species or stocks and their habitat, as well as subsistence uses where applicable, NMFS considers two primary factors:

(1) The manner in which, and the degree to which, the successful implementation of the measure(s) is expected to reduce impacts to marine mammals, marine mammal species or stocks, and their habitat. This considers the nature of the potential adverse impact being mitigated (likelihood, scope, range). It further considers the likelihood that the measure will be effective if implemented (probability of accomplishing the mitigating result if implemented as planned), the likelihood of effective implementation (probability implemented as planned), and;

(2) The practicability of the measures for applicant implementation, which may consider such things as cost and impact on operations.

Mitigation for Marine Mammals and their Habitat

NMFS has determined that the following mitigation measures be implemented during Orsted's marine site characterization surveys. Pursuant to section 7 of the ESA, Orsted will also be required to adhere to relevant Project Design Criteria (PDC) of the NMFS' Greater Atlantic Regional Fisheries Office (GARFO) programmatic consultation (specifically PDCs 4, 5, and 7) regarding geophysical surveys along the U.S. Atlantic coast (*https://www.fisheries.noaa.gov/new-england-mid-atlantic/consultations/section-7-take-reporting-programmatics-greater-atlantic#offshore-wind-site-assessment-and-site-characterization-activities-programmatic-consultation*).

Marine Mammal Shutdown Zones

Marine mammal shutdown zones will be established around impulsive HRG survey equipment (<180 kHz; *e.g.,* sparkers and boomers) for all marine mammals, and around impulsive HRG survey equipment and non-impulsive, non-parametric sub-bottom profilers (*e.g.,* CHIRPs) for North Atlantic right whales. Shutdown zones will be monitored by protected species observers (PSOs) based upon the radial distance from the acoustic source rather than being based around the vessel itself. An immediate shutdown of impulsive HRG survey equipment will be required if a whale is sighted at or within the corresponding marine mammal shutdown zones to minimize noise impacts on the animals. If a shutdown is required, a PSO will notify the survey crew immediately. Vessel operators and crews will comply immediately with any call for shutdown. The shutdown zone may or may not encompass the Level B harassment zone. Shutdown zone distances are as follows:

- A 500-meter (m) Shutdown Zone for North Atlantic right whales for use of impulsive acoustic sources (*e.g.,* boomers and/or sparkers) and non-impulsive, non-parametric sub-bottom profilers; and
- A 100-m shutdown zone for use of impulsive acoustic sources for all other marine mammals, with the exception of delphinids belonging to the Family *Delphinidae* and one of the following genera: *Delphinus*, *Lagenorhynchus, Stenella*, or *Tursiops*, and pinnipeds.

Shutdown will remain in effect until the minimum separation distances (detailed above) between the animal and noise source are re-established. If a marine mammal enters the respective shutdown zone during a shutdown period, the equipment may not restart until that animal is confirmed outside the clearance zone as stated in the pre-start clearance procedures. These stated requirements will be included in the site-specific training to be provided to the survey team.

Pre-start Clearance

Marine mammal clearance zones will be established at the following distances around the HRG survey equipment and monitored by PSOs:

- 500 m for all ESA-listed marine mammals;
- 100 m for all other whales; and
- 50 m for dolphins and porpoises.

Orsted will implement a 30-minute pre-start clearance period prior to the initiation of ramp-up of specified HRG equipment. During this period, clearance zones will be monitored by PSOs, using the appropriate visual technology. Ramp-up may not be initiated if any marine mammal(s) is within its respective clearance zone. If a marine mammal is observed within a clearance zone during the pre-start clearance period, ramp-up may not begin until the animal(s) has been observed exiting its respective exclusion zone or until an additional time period has elapsed with no further sighting (*i.e.,* 15

minutes for small odontocetes and seals, and 30 minutes for all other species). Monitoring will be conducted throughout all pre-clearance and shutdown zones as well as all visible waters surrounding the sound sources and the vessel. All marine mammals detected will be recorded as described in the **Monitoring and Reporting** section.

Ramp-up of Survey Equipment

A ramp-up procedure, involving a gradual increase in source level output, is required at all times as part of the activation of the acoustic source when technically feasible. The ramp-up procedure will be used at the beginning of HRG survey activities in order to provide additional protection to marine mammals near the project area by allowing them to vacate the area prior to the commencement of survey equipment operation at full power. Operators should ramp-up sources to half power for 5 minutes and then proceed to full power.

The ramp-up procedure will not be initiated (*i.e.,* equipment will not be started) during periods of inclement conditions when the marine mammal pre-start clearance zone cannot be adequately monitored by the PSOs for a 30 minute period using the appropriate visual technology. If any marine mammal enters the clearance zone, ramp-up will not be initiated until the animal is confirmed outside the marine mammal clearance zone, or until the appropriate time (30 minutes for whales, 15 minutes for dolphins, porpoises, and seals) has elapsed since the last sighting of the animal in the clearance zone.

Shutdown, pre-start clearance, and ramp-up procedures are not required during HRG survey operations using only non-impulsive sources (*e.g.,* echosounders) other than non-parametric sub-bottom profilers (*e.g.,* CHIRPs).

Vessel Strike Avoidance

Orsted must adhere to the following measures except in the case where compliance would create an imminent and serious threat to a person or vessel or to the

extent that a vessel is restricted in its ability to maneuver and, because of the restriction, cannot comply.

- Vessel operators and crews must maintain a vigilant watch for all protected species and slow down, stop their vessel, or alter course, as appropriate and regardless of vessel size, to avoid striking any protected species. A visual observer aboard the vessel must monitor a vessel strike avoidance zone based on the appropriate separation distance around the vessel (distances stated below). Visual observers monitoring the vessel strike avoidance zone may be third-party observers (*i.e.,* PSOs) or crew members, but crew members responsible for these duties must be provided sufficient training to (1) distinguish protected species from other phenomena, and (2) broadly identify a marine mammal as a right whale, other whale (defined in this context as sperm whales or baleen whales other than right whales), or other marine mammal;
    - All survey vessels, regardless of size, must observe a 10-knot speed restriction in specified areas designated by NMFS for the protection of North Atlantic right whales from vessel strikes including seasonal management areas (SMAs) and dynamic management areas (DMAs) when in effect;
    - Members of the monitoring team will consult NMFS North Atlantic right whale reporting system and Whale Alert, as able, for the presence of North Atlantic right whales throughout survey operations, and for the establishment of a DMA. If NMFS should establish a DMA in the project area during the survey, the vessels will abide by speed restrictions in the DMA;

    - All vessels greater than or equal to 19.8 m in overall length operating from November 1 through April 30 will operate at speeds of 10 kn (5.1 m/s) or less at all times;
    - All vessels must reduce their speed to 10 kn (5.1 m/s) or less when mother/calf pairs, pods, or large assemblages of any species of cetaceans is observed near a vessel;
    - All vessels must maintain a minimum separation distance of 500 m from right whales and other ESA-listed large whales;
    - If a whale is observed but cannot be confirmed as a species other than a right whale or other ESA-listed large whale, the vessel operator must assume that it is a right whale and take appropriate action;
    - All vessels must maintain a minimum separation distance of 100 m from non-ESA listed whales;
- All vessels must, to the maximum extent practicable, attempt to maintain a minimum separation distance of 50 m from all other marine mammals, with an understanding that at times this may not be possible (*e.g.,* for animals that approach the vessel);
- When marine mammals are sighted while a vessel is underway, the vessel shall take action as necessary to avoid violating the relevant separation distance (*e.g.,* attempt to remain parallel to the animal's course, avoid excessive speed or abrupt changes in direction until the animal has left the area). If marine mammals are sighted within the relevant separation distance, the vessel must reduce speed and shift the engine to neutral, not engaging the engines until animals are clear of the area. This does not apply to any vessel towing gear or any vessel that is navigationally constrained.

Project-specific training will be conducted for all vessel crew prior to the start of a survey and during any changes in crew such that all survey personnel are fully aware and understand the mitigation, monitoring, and reporting requirements. Prior to implementation with vessel crews, the training program will be provided to NMFS for review and approval. Confirmation of the training and understanding of the requirements will be documented on a training course log sheet. Signing the log sheet will certify that the crew member understands and will comply with the necessary requirements throughout the survey activities.

Based on our evaluation, NMFS has determined that the mitigation measures provide the means of effecting the least practicable impact on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

Monitoring and Reporting

In order to issue an IHA for an activity, section 101(a)(5)(D) of the MMPA states that NMFS must set forth requirements pertaining to the monitoring and reporting of such taking. The MMPA implementing regulations at 50 CFR 216.104(a)(13) indicate that requests for authorizations must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present while conducting the activities. Effective reporting is critical both to compliance as well as ensuring that the most value is obtained from the required monitoring.

Monitoring and reporting requirements prescribed by NMFS should contribute to improved understanding of one or more of the following:

- Occurrence of marine mammal species or stocks in the area in which take is anticipated (*e.g.*, presence, abundance, distribution, density);

- Nature, scope, or context of likely marine mammal exposure to potential stressors/impacts (individual or cumulative, acute or chronic), through better understanding of: (1) action or environment (*e.g.*, source characterization, propagation, ambient noise); (2) affected species (*e.g.*, life history, dive patterns); (3) co-occurrence of marine mammal species with the action; or (4) biological or behavioral context of exposure (*e.g.*, age, calving or feeding areas);
- Individual marine mammal responses (behavioral or physiological) to acoustic stressors (acute, chronic, or cumulative), other stressors, or cumulative impacts from multiple stressors;
- How anticipated responses to stressors impact either: (1) long-term fitness and survival of individual marine mammals; or (2) populations, species, or stocks;
- Effects on marine mammal habitat (*e.g.*, marine mammal prey species, acoustic habitat, or other important physical components of marine mammal habitat); and,
- Mitigation and monitoring effectiveness.

Monitoring Measures

Visual monitoring will be performed by qualified, NMFS-approved PSOs, the resumes of whom will be provided to NMFS for review and approval prior to the start of survey activities. Orsted will employ independent, dedicated, trained PSOs, meaning that the PSOs must (1) be employed by a third-party observer provider, (2) have no tasks other than to conduct observational effort, collect data, and communicate with and instruct relevant vessel crew with regard to the presence of marine mammals and mitigation requirements (including brief alerts regarding maritime hazards), and (3) have successfully completed an approved PSO training course appropriate for their designated task. On a case-by-case basis, non-independent observers may be approved by NMFS for

limited, specified duties in support of approved, independent PSOs on smaller vessels with limited crew operating in nearshore waters.

The PSOs will be responsible for monitoring the waters surrounding each survey vessel to the farthest extent permitted by sighting conditions, including shutdown and pre-clearance zones, during all HRG survey operations. PSOs will visually monitor and identify marine mammals, including those approaching or entering the established shutdown and pre-clearance zones during survey activities. It will be the responsibility of the Lead PSO on duty to communicate the presence of marine mammals as well as to communicate the action(s) that are necessary to ensure mitigation and monitoring requirements are implemented as appropriate.

During all HRG survey operations (*e.g.,* any day on which use of an HRG source is planned to occur), a minimum of one PSO must be on duty during daylight operations on each survey vessel, conducting visual observations at all times on all active survey vessels during daylight hours (*i.e.,* from 30 minutes prior to sunrise through 30 minutes following sunset). Two PSOs will be on watch during nighttime operations. The PSO(s) will ensure 360 degree visual coverage around the vessel from the most appropriate observation posts and will conduct visual observations using binoculars and/or night vision goggles and the naked eye while free from distractions and in a consistent, systematic, and diligent manner. PSOs may be on watch for a maximum of 4 consecutive hours followed by a break of at least 2 hours between watches and may conduct a maximum of 12 hours of observations per 24-hr period. In cases where multiple vessels are surveying concurrently, any observations of marine mammals will be communicated to PSOs on all nearby survey vessels.

PSOs must be equipped with binoculars and have the ability to estimate distance and bearing to detect marine mammals, particularly in proximity to exclusion zones. Reticulated binoculars must also be available to PSOs for use as appropriate based on

conditions and visibility to support the sighting and monitoring of marine mammals. During nighttime operations, night-vision goggles with thermal clip-ons and infrared technology will be used. Position data will be recorded using hand-held or vessel GPS units for each sighting.

During good conditions (*e.g.,* daylight hours; Beaufort sea state (BSS) 3 or less), to the maximum extent practicable, PSOs will also conduct observations when the acoustic source is not operating for comparison of sighting rates and behavior with and without use of the active acoustic sources. Any observations of marine mammals by crew members aboard any vessel associated with the survey will be relayed to the PSO team. Data on all PSO observations will be recorded based on standard PSO collection requirements. This will include dates, times, and locations of survey operations; dates and times of observations, location and weather, details of marine mammal sightings (*e.g.,* species, numbers, behaviors); and details of any observed marine mammal behavior that occurs (*e.g.,* notes behavioral disturbances). For more detail on the monitoring requirements, see Condition 5 of the IHA.

Reporting Measures

Within 90 days after completion of survey activities or expiration of this IHA, whichever comes sooner, a draft comprehensive report will be provided to NMFS that fully documents the methods and monitoring protocols, summarizes the data recorded during monitoring, summarizes the number of marine mammals observed during survey activities (by species, when known), summarizes the mitigation actions taken during surveys including what type of mitigation and the species and number of animals that prompted the mitigation action, when known), and provides an interpretation of the results and effectiveness of all mitigation and monitoring. Any recommendations made by NMFS must be addressed in the final report prior to acceptance by NMFS. A final report must be submitted within 30 days following any comments on the draft report. All

draft and final marine mammal and acoustic monitoring reports must be submitted to *PR.ITP.MonitoringReports@noaa.gov* and *ITP.Taylor@noaa.gov.* The report must contain at minimum, the following:

a. PSO names and affiliations;

b. Dates of departures and returns to port with port names;

c. Dates and times (Greenwich Mean Time) of survey effort and times corresponding with PSO effort;

d. Vessel location (latitude/longitude) when survey effort begins and ends; vessel location at beginning and end of visual PSO duty shifts;

e. Vessel heading and speed at beginning and end of visual PSO duty shifts and upon any line change;

f. Environmental conditions while on visual survey (at beginning and end of PSO shift and whenever conditions change significantly), including wind speed and direction, Beaufort sea state, Beaufort wind force, swell height, weather conditions, cloud cover, sun glare, and overall visibility to the horizon;

g. Factors that may be contributing to impaired observations during each PSO shift change or as needed as environmental conditions change (*e.g.,* vessel traffic, equipment malfunctions); and

h. Survey activity information, such as type of survey equipment in operation, acoustic source power output while in operation, and any other notes of significance (*i.e.,* pre-clearance survey, ramp-up, shutdown, end of operations, etc.).

If a marine mammal is sighted, the following information should be recorded:

a. Watch status (sighting made by PSO on/off effort, opportunistic, crew, alternate vessel/platform);

b. PSO who sighted the animal;

c. Time of sighting;

d. Vessel location at time of sighting;

e. Water depth;

f. Direction of vessel's travel (compass direction);

g. Direction of animal's travel relative to the vessel;

h. Pace of the animal;

i. Estimated distance to the animal and its heading relative to vessel at initial sighting;

j. Identification of the animal (*e.g.,* genus/species, lowest possible taxonomic level, or unidentified); also note the composition of the group if there is a mix of species;

k. Estimated number of animals (high/low/best);

l. Estimated number of animals by cohort (adults, yearlings, juveniles, calves, group composition, etc.);

m. Description (as many distinguishing features as possible of each individual seen, including length, shape, color, pattern, scars or markings, shape and size of dorsal fin, shape of head, and blow characteristics);

n. Detailed behavior observations (*e.g.,* number of blows, number of surfaces, breaching, spyhopping, diving, feeding, traveling; as explicit and detailed as possible; note any observed changes in behavior);

o. Animal's closest point of approach and/or closest distance from the center point of the acoustic source;

p. Platform activity at time of sighting (*e.g.,* deploying, recovering, testing, data acquisition, other); and

q. Description of any actions implemented in response to the sighting (*e.g.,* delays, shutdown, ramp-up, speed or course alteration, etc.) and time and location of the action.

If a North Atlantic right whale is observed at any time by PSOs or personnel on any project vessels, during surveys or during vessel transit, Orsted must immediately report sighting information to the NMFS North Atlantic Right Whale Sighting Advisory System: (866) 755-6622. North Atlantic right whale sightings in any location may also be reported to the U.S. Coast Guard via channel 16.

In the event that Orsted personnel discover an injured or dead marine mammal, Orsted will report the incident to the NMFS Office of Protected Resources (OPR) and the NMFS New England/Mid-Atlantic Stranding Coordinator as soon as feasible. The report would include the following information:

a. Time, date, and location (latitude/longitude) of the first discovery (and updated location information if known and applicable);
b. Species identification (if known) or description of the animal(s) involved;
c. Condition of the animal(s) (including carcass condition if the animal is dead);
d. Observed behaviors of the animal(s), if alive;
e. If available, photographs or video footage of the animal(s); and
f. General circumstances under which the animal was discovered.

In the unanticipated event of a ship strike of a marine mammal by any vessel involved in this activities covered by the IHA, Orsted will report the incident to NMFS OPR and the NMFS New/England/Mid-Atlantic Stranding Coordinator as soon as feasible. The report will include the following information:

a. Time, date, and location (latitude/longitude) of the incident;
b. Species identification (if known) or description of the animal(s) involved;

c. Vessel's speed during and leading up to the incident;

d. Vessel's course/heading and what operations were being conducted (if applicable);

e. Status of all sound sources in use;

f. Description of avoidance measures/requirements that were in place at the time of the strike and what additional measures were taken, if any, to avoid strike;

g. Environmental conditions (*e.g.,* wind speed and direction, Beaufort sea state, cloud cover, visibility) immediately preceding the strike;

h. Estimated size and length of animal that was struck;

i. Description of the behavior of the marine mammal immediately preceding and following the strike;

j. If available, description of the presence and behavior of any other marine mammals immediately preceding the strike;

k. Estimated fate of the animal (*e.g.,* dead, injured but alive, injured and moving, blood or tissue observed in the water, status unknown, disappeared); and

l. To the extent practicable, photographs or video footage of the animal(s).

Negligible Impact Analysis and Determination

NMFS has defined negligible impact as an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival (50 CFR 216.103). A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (*i.e.*, population-level effects). An estimate of the number of takes alone is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be "taken" through harassment, NMFS considers other factors, such as the likely nature of any impacts or responses (*e.g.*, intensity, duration), the context of any

impacts or responses (*e.g.*, critical reproductive time or location, foraging impacts affecting energetics), as well as effects on habitat, and the likely effectiveness of the mitigation. We also assess the number, intensity, and context of estimated takes by evaluating this information relative to population status. Consistent with the 1989 preamble for NMFS' implementing regulations (54 FR 40338; September 29, 1989), the impacts from other past and ongoing anthropogenic activities are incorporated into this analysis via their impacts on the baseline (*e.g.*, as reflected in the regulatory status of the species, population size and growth rate where known, ongoing sources of human-caused mortality, or ambient noise levels).

To avoid repetition, the discussion of our analysis applies to all the species listed in Table 2, given that the anticipated effects of this activity on these different marine mammal stocks are expected to be similar. Where there are meaningful differences between species or stocks—as is the case of the North Atlantic right whale—they are included as separate subsections below. NMFS does not anticipate that serious injury or mortality will occur as a result from HRG surveys, even in the absence of mitigation, and no serious injury or mortality is authorized. As discussed in the **Potential Effects of Specified Activities on Marine Mammals and their Habitat** section in the **Federal Register** notice for the proposed IHA (87 FR 52515; August 26, 2022), non-auditory physical effects and vessel strike are not expected to occur. NMFS expects that all potential takes will be in the form of Level B behavioral harassment in the form of temporary avoidance of the area or decreased foraging (if such activity was occurring), reactions that are considered to be of low severity and with no lasting biological consequences (*e.g.,* Southall *et al.,* 2007, 2021). As described above, Level A harassment is not expected to occur given the nature of the operations and the estimated small size of the Level A harassment zones.

In addition to being temporary, the maximum expected harassment zone around the survey vessel is 141 m. Therefore, the ensonified area surrounding each vessel is relatively small compared to the overall distribution of the animals in the area and their use of the habitat. Feeding behavior is not likely to be significantly impacted as prey species are mobile and are broadly distributed throughout the project area; therefore, marine mammals that may be temporarily displaced during survey activities are expected to be able to resume foraging once they have moved away from areas with disturbing levels of underwater noise. Because of the temporary nature of the disturbance and the availability of similar habitat and resources in the surrounding area, the impacts to marine mammals and the food sources that they utilize are not expected to cause significant or long-term consequences for individual marine mammals or their populations.

There are no rookeries, mating or calving grounds known to be biologically important to marine mammals within the project area. Several harbor and gray seal haul out sites have been identified on Block Island, Great Gull Island, and Fishers Island as wells as along Narragansett and Nantucket Sounds. As the acoustic footprint of the HRG activities is relatively small, hauled seals are not expected to be impacted by these activities. In addition, cable landfall sites have yet to be determined and may not be in the vicinity of haul out sites. The ECR area encompasses a feeding BIA for fin whales east of Montauk Point, NY that is active from March through October (LaBrecque *et al.,* 2015). The fin whale feeding BIA is extensive and sufficiently large (2,933 km^2), and the acoustic footprint of the survey activities is sufficiently small (project area) that feeding opportunities for fin whales will not be reduced appreciably. Given the relatively small size of the ensonified area, it is unlikely that prey availability will be adversely affected by HRG survey operations. In addition, feeding success is not likely to be significantly affected as minimal impacts to prey species are expected, for reasons as described above in the **Potential Effects of Specified Activities on Marine Mammals and their Habitat**

section in the **Federal Register** notice of the proposed IHA (87 FR 52515; August 26, 2022).

North Atlantic Right Whale

The status of the North Atlantic right whale population is of heightened concern and therefore, merits additional analysis. As noted previously, elevated North Atlantic right whale mortalities began in June 2017 and there is an active UME. Overall, preliminary findings support human interactions, specifically vessel strikes and entanglements, as the cause of death for the majority of right whales. The project area overlaps with a migratory corridor BIA for North Atlantic right whales (effective March-April; November-December) that extends from Massachusetts to Florida and, off the coast of NY and RI, from the coast to beyond the shelf break (LaBrecque *et al.,* 2015). Right whale migration is not expected to be impacted by the survey activities due to the very small size of the project area relative to the spatial extent of the available migratory habitat in the BIA. The project area also overlaps with the Block Island seasonal management area (SMA), active from November 1 to April 30. North Atlantic right whales may be feeding or migrating within the SMA. Required vessel strike avoidance measures and following the speed restrictions of the SMA will decrease the risk of ship strike during North Atlantic right whale migration; no ship strike is expected to occur during Orsted's activities. For reasons as described above, minimal impacts are expected to prey availability and feeding success. Additionally, HRG survey operations are required to maintain a 500 distance and shutdown if a North Atlantic right whale is sighted at or within 500 m. The 500 m shutdown zone for right whales is conservative, considering the Level B harassment isopleth for the most impactful sources (*i.e.,* GeoMarine Sparkers, AA Dura-spark UHD Sparkers, AA Triple plate S-Boom) is estimated to be 141 m, and thereby minimizes the potential for behavioral harassment of this species. Therefore only very limited take by Level B harassment of North Atlantic

right whale has been authorized by NMFS. As noted previously, Level A harassment is not expected, nor authorized, due to the small PTS zones associated with HRG equipment types planned for use. NMFS does not anticipate North Atlantic right whale takes that result from the survey activities will impact annual rates of recruitment or survival. Thus, any takes that occur will not result in population level impacts.

Other Marine Mammals with Active UMEs

As noted previously, there are several active UMEs occurring in the vicinity of Orsted's project area. Elevated humpback whale mortalities have occurred along the Atlantic coast from Maine through Florida since January 2016. Of the cases examined, approximately half had evidence of human interaction (ship strike or entanglement). The UME does not yet provide cause for concern regarding population-level impacts. Despite the UME, the relevant population of humpback whales (the West Indies breeding population, or DPS) remains stable at approximately 12,000 individuals.

Beginning in January 2017, elevated minke whale strandings have occurred along the Atlantic coast from Maine through South Carolina, with highest numbers in Massachusetts, Maine, and New York. This event does not provide cause for concern regarding population level impacts, as the likely population abundance is greater than 20,000 whales.

The required mitigation measures are expected to reduce the number and/or severity of takes for all species listed in Table 2, including those with active UMEs, to the level of least practicable adverse impact. In particular, they will provide animals the opportunity to move away from the sound source before HRG survey equipment reaches full energy, thus preventing them from being exposed to more severe Level B harassment. No Level A harassment is anticipated, even in the absence of mitigation measures, or authorized.

NMFS expects that takes will be in the form of short-term Level B behavioral harassment by way of brief startling reactions and/or temporary vacating of the area, or decreased foraging in the area (if such activity was occurring)—reactions that (at the scale and intensity anticipated here) are considered to be of low severity, with no lasting biological consequences. Since both the sources and marine mammals are mobile, animals will only be exposed briefly to a small ensonified area that might result in take. Required mitigation measures, such as shutdown zones and ramp up, will further reduce exposure to sound that could result in more severe behavioral harassment.

In summary and as described above, the following factors support our determination that the impacts resulting from this activity are not expected to adversely affect any of the species or stocks through effects on annual rates of recruitment or survival:

- No serious injury or mortality is anticipated or authorized;
- No Level A harassment (PTS) is anticipated, even in the absence of mitigation measures, or authorized;
- Foraging success is not likely to be significantly impacted as effects on species that serve as prey species for marine mammals from the survey are expected to be minimal;
- The availability of alternate areas of similar habitat value for marine mammals to temporarily vacate the survey area during the planned survey to avoid exposure to sounds from the activity;
- Take is anticipated to be of Level B behavioral harassment only consisting of brief startling reactions and/or temporary avoidance of the survey area;
- While the project area is within areas noted as a migratory BIA and SMA for North Atlantic right whales, the activities will occur in such a comparatively small area such that any avoidance of the ensonified area

due to activities will not affect migration. In addition, mitigation measures require shutdown at 500 m (almost four times the size of the Level B harassment isopleth (141 m), which minimizes the effects of the take on the species; and

- The mitigation measures, including visual monitoring and shutdowns, are expected to minimize potential impacts to marine mammals.

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the monitoring and mitigation measures, NMFS finds that the total marine mammal take from the planned survey activities will have a negligible impact on all affected marine mammal species or stocks.

Small Numbers

As noted above, only small numbers of incidental take may be authorized under sections 101(a)(5)(A) and (D) of the MMPA for specified activities other than military readiness activities. The MMPA does not define small numbers and so, in practice, where estimated numbers are available, NMFS compares the number of individuals taken to the most appropriate estimation of abundance of the relevant species or stock in our determination of whether an authorization is limited to small numbers of marine mammals. When the predicted number of individuals to be taken is fewer than one-third of the species or stock abundance, the take is considered to be of small numbers. Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities.

The amount of take NMFS has authorized is below one third of the estimated stock abundance for all species (in fact, take of individuals is less than 6 percent of the abundance of the affected stocks for these species, see Table 7). The figures presented in Table 7 are likely conservative estimates as they assume all takes are of different

individual animals which is likely not to be the case. Some individuals may return multiple times in a day, but PSOs will count them as separate takes if they cannot be individually identified.

Based on the analysis contained herein of the planned survey activities (including the mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS finds that small numbers of marine mammals will be taken relative to the population size of the affected species or stocks.

Unmitigable Adverse Impact Analysis and Determination

There are no relevant subsistence uses of the affected marine mammal stocks or species implicated by this action. Therefore, NMFS has determined that the total taking of affected species or stocks will not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

National Environmental Policy Act

To comply with the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq*.) and NOAA Administrative Order (NAO) 216-6A, NMFS must review our proposed action (*i.e.*, the issuance of an IHA) with respect to potential impacts on the human environment.

This action is consistent with categories of activities identified in Categorical Exclusion B4 (IHAs with no anticipated serious injury or mortality) of the Companion Manual for NOAA Administrative Order 216-6A, which do not individually or cumulatively have the potential for significant impacts on the quality of the human environment and for which we have not identified any extraordinary circumstances that would preclude this categorical exclusion. Accordingly, NMFS has determined that the issuance of the IHA qualifies to be categorically excluded from further NEPA review.

Endangered Species Act

Section 7(a)(2) of the Endangered Species Act of 1973 (ESA: 16 U.S.C. 1531 *et seq*.) requires that each Federal agency insure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. To ensure ESA compliance for the issuance of IHAs, NMFS Office of Protected Resources (OPR) consults internally whenever we propose to authorize take for endangered or threatened species.

NMFS OPR has authorized the incidental take of four species of marine mammals which are listed under the ESA, including the North Atlantic right, fin, sei, and sperm whale, and has determined that these activities fall within the scope of activities analyzed in GARFO's programmatic consultation regarding geophysical surveys along the U.S. Atlantic coast in the three Atlantic Renewable Energy Regions (completed June 29, 2021; revised September 2021).

Authorization

NMFS has issued an IHA to Orsted for potential harassment of small numbers of 16 marine mammal species incidental to HRG site characterization surveys off the coast of New York and Rhode Island, provided the previously mentioned mitigation, monitoring, and reporting requirements are followed.

Dated: October 6, 2022.

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Catherine Marzin,
Deputy Director, Office of Protected Resources,
National Marine Fisheries Service.

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