BILLING CODE 3510-22-P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648-XD055]

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Marine Site Characterization Surveys in the New York Bight

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 Attentive Energy LLC (AE) to incidentally harass marine mammals during marine site characterization surveys off of New York and New Jersey in the New York Bight.

DATES: This Authorization is effective from June 20, 2023 through June 19, 2024.

FOR FURTHER INFORMATION CONTACT: Karolyn Lock, 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 *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-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 December 28, 2022, NMFS received a request from AE for an IHA to take marine mammals incidental to conducting marine site characterization surveys in coastal

waters off of New York and New Jersey in the New York Bight, specifically within the Bureau of Ocean Energy Management (BOEM) Commercial Lease of Submerged Lands for Renewable Energy Development on the Outer Continental Shelf (Lease) Area OCS-A 0538 and associated export cable route (ECR) area. Following NMFS' review of the application, the application was deemed adequate and complete on February 22, 2023. AE's request is for take of small numbers of 15 species (16 stocks) of marine mammals by Level B harassment only. Neither AE nor NMFS expect serious injury or mortality to result from this activity and, therefore, an IHA is appropriate. There are no changes from the proposed IHA to the final IHA.

Description of Activity

Overview

AE plans to conduct marine site characterization surveys, including high-resolution geophysical (HRG) surveys, in coastal waters off of New Jersey and New York in the New York Bight, specifically within the BOEM Lease Area OCS-A 0538 and associated ECR area.

The planned marine site characterization surveys are designed to obtain data sufficient to meet BOEM guidelines for providing geophysical, geotechnical, and geohazard information for site assessment plan surveys and/or construction and operations plan development. The objective of the surveys is to support the site characterization, siting, and engineering design of offshore wind project facilities including wind turbine generators, offshore substations, and submarine cables within the Lease Area. Up to two vessels may conduct survey efforts concurrently. Underwater sound resulting from AE's marine site characterization survey activities, specifically

HRG surveys, have the potential to result in incidental take of marine mammals in the form of Level B harassment.

Dates and Duration

The survey is planned to begin as soon as practicable and estimated to require 201 survey days across a maximum of two vessels operating concurrently within a single year. A "survey day" is defined as a 24-hour (hr) activity period in which active acoustic sound sources are used. It is expected that each vessel would cover approximately 170 kilometers (km) per day based on the applicant's expectations regarding data acquisition efficiency, and there is up to 21,745 km (13,512 miles) of track line of survey effort planned; 14,025 km in the Lease Area and 7,720 km in the ECR area. The IHA would be effective for 1 year from the date of issuance.

Specific Geographic Region

AE's survey activities would occur in coastal waters off of New York and New Jersey in the New York Bight, specifically within Lease Area OCS-A 0538 and the associated ECR area (Figure 1). The Survey Area (*i.e.*, the Lease Area and ECR) is between 1 and 65 meters (m) in water depth. The Lease Area does not include water depths below 30 m, only portions of the ECR area does (Figure 2).

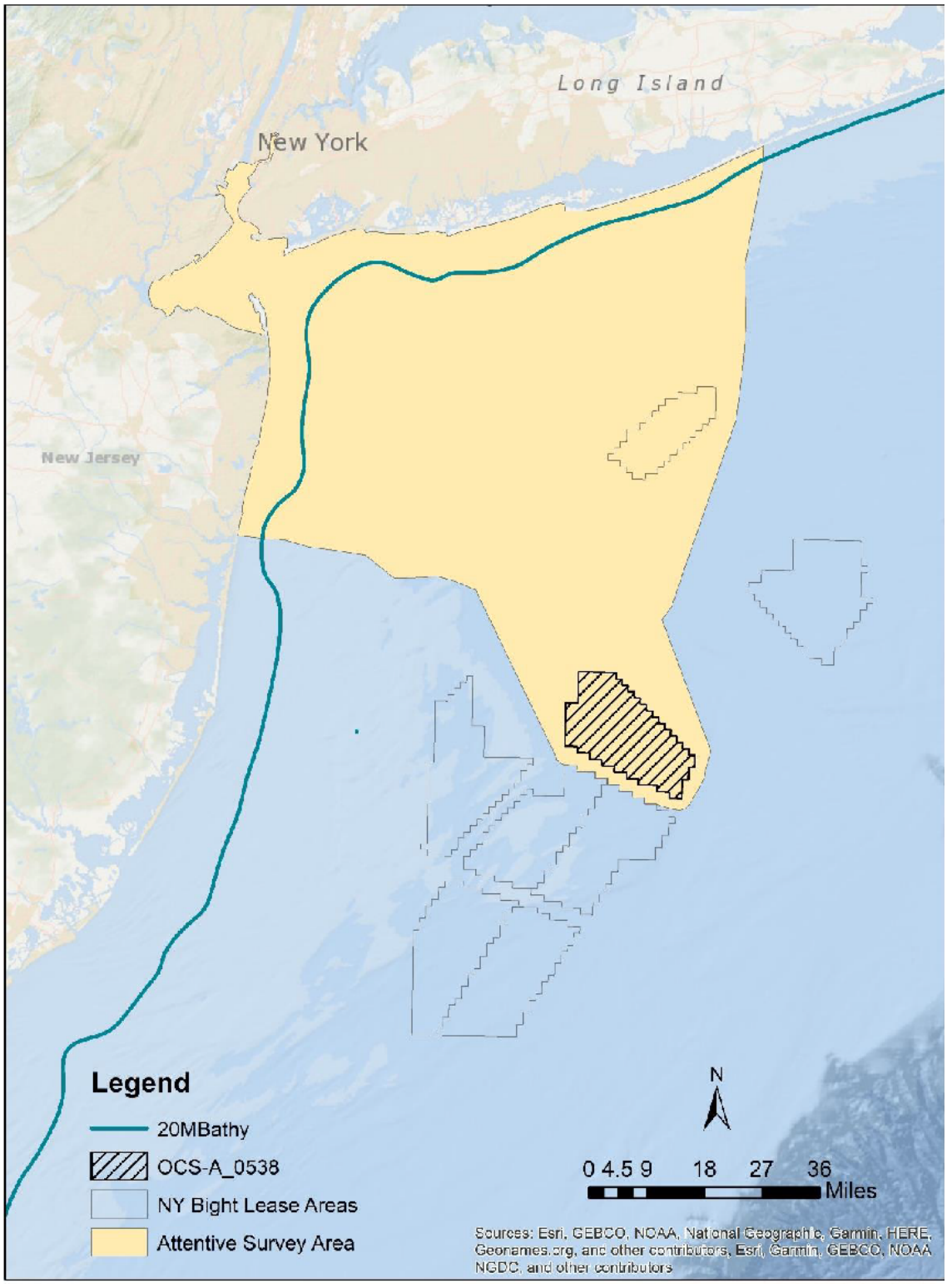

Figure 1 -- Survey Area

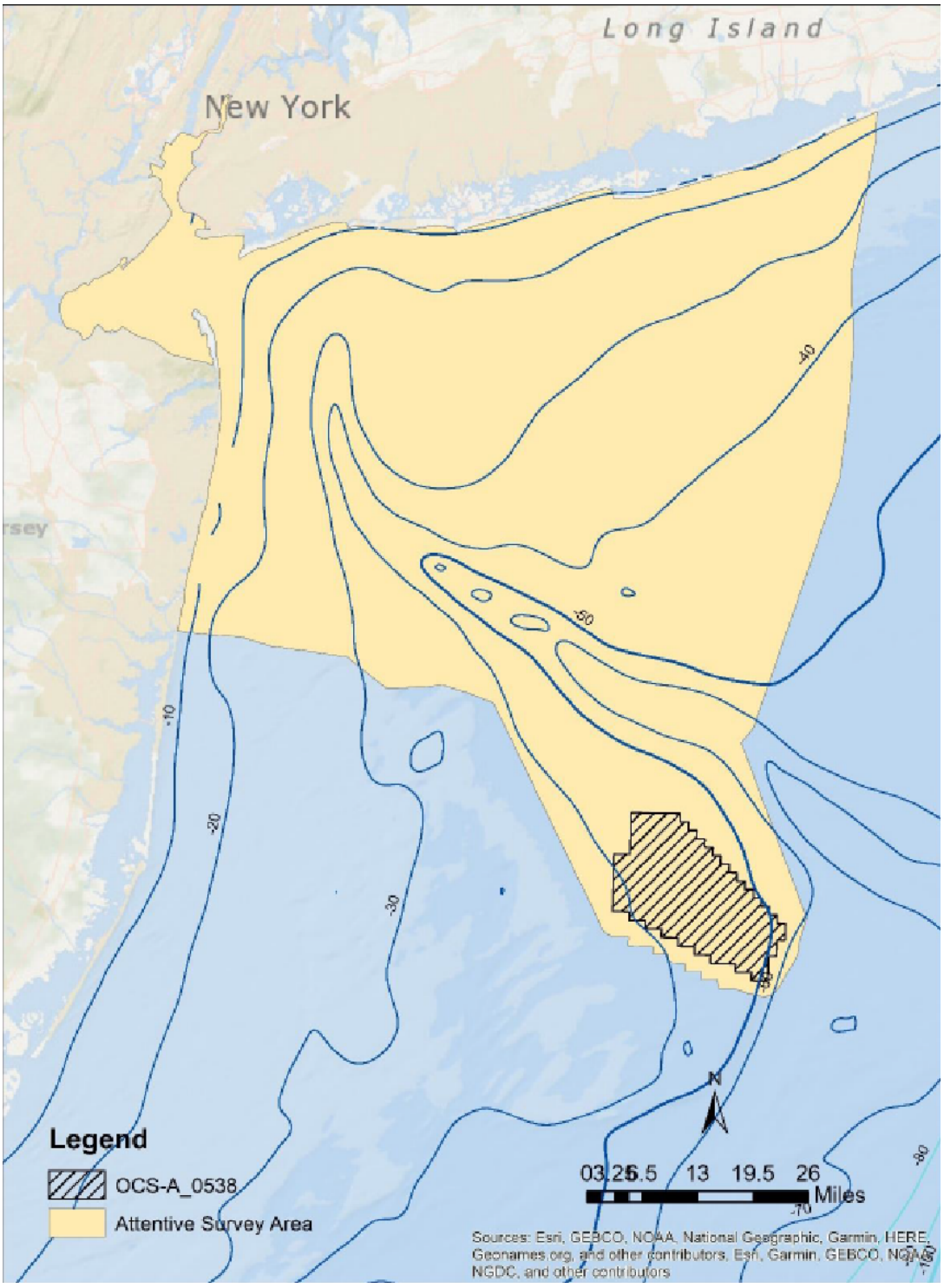

Figure 2 -- Survey Area with Bathymetric Contours Showing Water Depth

Detailed Description of Specified Activity

AE's marine site characterization surveys include HRG surveys and geotechnical sampling activities within the Lease Area and the ECR area. The total HRG survey tracklines for the Survey Area is 21,745 km, with 14,025 km in the Lease Area and 7,720 km in the ECR Area. The geotechnical sampling activities, including use of vibracores and seabed core penetration tests, would occur during the same period as the HRG survey activities and would use an additional survey vessel. NMFS does not expect geotechnical sampling activities to present reasonably anticipated risk of causing incidental take of marine mammals, and these activities are not discussed further in this notice.

AE plans to conduct HRG survey operations, including multibeam depth sounding, seafloor imaging, and medium penetration sub-bottom profiling (SBP). 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)); gradiometers that have no acoustic output; non-impulsive, parametric sub-bottom profilers (SBPs) with narrow beamwidth; and medium-penetration SBP equipment (*e.g.*, boomers and sparkers) with operating frequencies below 180 kilohertz (kHz). NMFS does not expect operation of the aforementioned survey equipment to result in take of marine mammals, and these activities are not discussed further in this notice.

The only acoustic sources planned for use during AE's HRG survey activities with expected potential to cause incidental take of marine mammals are the sparker and boomer. Sparkers and boomers are medium penetration, impulsive sources used to map deeper subsurface stratigraphy. Sparkers create omnidirectional acoustic pulses from 50

Hz to 4 kHz, are typically towed behind the vessel, and may be operated with different numbers of electrode tips to allow tuning of the acoustic waveform for specific applications. The sparker system planned for use is the Dual Geo-Spark 2000X (400 tip/800 J). A boomer is a broadband source operating in the 3.5 Hz to 10 kHz frequency range. The boomer system planned for use is the Geo-Boomer 300-500.

A detailed description of AE's planned HRG surveys is provided in the *Federal Register* notice for the proposed IHA (88 FR 24553, April 21, 2023). 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 detailed description of the specific activity.

Comments and Responses

A notice of NMFS' proposal to issue an IHA to AE was published in the *Federal Register* on April 21, 2023 (88 FR 24553). That notice described, in detail, AE's proposed 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. This proposed notice was available for a 30-day public comment period.

NMFS received eleven comment letters. Two of these comment letters were from non-governmental organizations: the Responsible Offshore Development Alliance (RODA) and Clean Ocean Action (COA), and one was from an elected local

governmental official (Mayor of Borough of Seaside Park, New Jersey; Seaside Park). The remaining eight comments were from private citizens.

All comments from private citizens expressed general opposition to issuance of the IHA or to the underlying associated activities. We reiterate here that NMFS' proposed actions concerns only the authorization of marine mammal take incidental to the planned surveys—NMFS' authority under the MMPA does not extend to the surveys themselves or to wind energy development more generally. Many comments received request that NMFS not issue any IHAs related to wind energy development and/or expressed opposition for wind energy development generally without providing information relevant to NMFS' decision. We do not specifically address comments expressing general opposition to activities related to wind energy development or respond to comments that are out of scope of the proposed IHA (88 FR 24553), such as comments on other Federal agency processes and activities not planned under this IHA.

All substantive comments and NMFS' responses are provided below, and all comment letters are available online at *https://www.fisheries.noaa.gov/action/incidental-take-authorization-attentive-energy-llc-marine-site-characterization-surveys-0*. Please review the comment letters for full details regarding the comments and associated rationale.

Comment 1: Multiple commenters expressed concern that negative impacts to local fishermen and/or 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 this IHA. RODA specifically noted concern regarding existing fishery restrictions as a result of other North Atlantic right whale protections.

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 Incidental Take Authorization (ITA). Nevertheless, as detailed in the proposed IHA notice, NMFS has analyzed the potential for adverse impacts such as vessel strikes to marine mammals, including North Atlantic right whales, as a result of AE'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 whales 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 raised in this comment as a result of issuing this IHA for site characterization survey activities to AE.

Comment 2: Multiple commenters expressed concern about an alleged lack of adequate analysis of cumulative impacts to marine mammals.

Response: 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, AE 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 National Environmental Policy Act (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 AE 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 AE'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 AE 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 3: Multiple commenters urged NMFS to deny the proposed project and/or postpone any offshore wind (OSW) activities until NMFS determines effects of all OSW activities on marine mammals in the region and determines that the recent whale deaths are not related to OSW activities. Similarly, some commenters provided general concerns regarding recent whale stranding events on the Atlantic Coast, including speculation that the strandings may be related to wind energy development-related activities. However, the commenters did not provide any specific information supporting these concerns.

Response: NMFS authorizes take of marine mammals incidental to surveys but does not authorize the surveys themselves. Therefore, while NMFS has the authority to modify, suspend, or revoke an IHA if the IHA holder fails to abide by the conditions prescribed therein (including, but not limited to, failure to comply with monitoring or reporting requirements), or if NMFS determines that (1) the authorized taking is having or is likely to have more than a negligible impact on the species or stocks of affected marine mammals, or (2) the prescribed measures are likely not or are not effecting the least practicable adverse impact on the affected species or stocks and their habitat, it is not within NMFS' jurisdiction to impose a moratorium on offshore wind development or to require surveys to cease on the basis of unsupported speculation.

NMFS reiterates that there is no evidence that noise resulting from offshore wind development-related site characterization surveys could potentially cause marine mammal stranding, and there is no evidence linking recent large whale mortalities and currently ongoing surveys. The commenters offer no such evidence. NMFS will continue to gather data to help us determine the cause of death for these stranded whales. We note

the Marine Mammal Commission's recent statement: "There continues to be no evidence to link these large whale strandings to offshore wind energy development, including no evidence to link them to sound emitted during wind development-related site characterization surveys, known as HRG surveys. Although HRG surveys have been occurring off New England and the mid-Atlantic coast, HRG devices have never been implicated or causatively-associated with baleen whale strandings." (Marine Mammal Commission Newsletter, Spring 2023).

There is an ongoing Unusual Mortality Event (UME) for humpback whales along the Atlantic coast from Maine to Florida, which includes animals stranded since 2016. Partial or full necropsy examinations were conducted on approximately half of the whales. Necropsies were not conducted on other carcasses because they were too decomposed, not brought to land, or stranded on protected lands (e.g., national and state parks) with limited or no access. Of the whales examined (roughly 90), about 40 percent had evidence of human interaction, either ship strike or entanglement. Vessel strikes and entanglement in fishing gear are the greatest human threats to large whales. The remaining 50 necropsied whales either had an undetermined cause of death (due to a limited examination or decomposition of the carcass), or had other causes of death including parasite-caused organ damage and starvation.

As discussed herein, HRG sources may behaviorally disturb marine mammals (*e.g.*, avoidance the immediate area). These HRG surveys are very different from seismic airguns used in oil and gas surveys or tactical military sonar. They produce much smaller impact zones because, in general, they have lower source levels and produce output at higher frequencies. The area within which HRG sources might behaviorally disturb a

marine mammal is orders of magnitude smaller than the impact areas for seismic airguns or military sonar. Any marine mammal exposure would be at significantly lower levels and shorter duration, which is associated with less severe impacts to marine mammals.

Comment 4: Multiple commenters expressed a concern that the proposed IHA would lead to mortality (death) of marine mammals as a result of AE's project.

Response: NMFS emphasizes that there is no credible scientific evidence available suggesting that mortality and/or serious injury is a potential outcome of the planned survey activity. NMFS cannot authorize mortality or serious injury via an IHA. Additionally, such taking is prohibited under Condition 3(c) of the IHA and may result in modification, suspension, or revocation of the IHA. NMFS notes there has never been a report of any serious injuries or mortalities of a marine mammal associated with site characterization surveys.

The best available science indicates that Level B harassment, or disruption of behavioral patterns, may occur as a result of AE's specified activities. We also refer to the Greater Atlantic Regional Fisheries Office (GARFO) 2021 Programmatic Consultation, which finds that these survey activities are in general not likely to adversely affect ESA-listed marine mammal species (*i.e.*, GARFO's analysis conducted pursuant to the ESA finds that marine mammals are not likely to be taken at all (as that term is defined under the ESA), much less be taken by serious injury or mortality). That document is found at *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*.

Comment 5: Commenters claimed that NMFS did not provide a meaningful opportunity for public engagement and/or asserted that the review process for this IHA was too rapid and NMFS' due diligence was lacking.

Response: NMFS has satisfied the requirements of the MMPA, which requires that NMFS publish notice of a proposed authorization and request public comment for a period of 30 days. The notice of proposed IHA was published in the *Federal Register* on April 21, 2023 (88 FR 24553) and was open for a 30-day comment period (*i.e.*, through May 22, 2023). Following conclusion of the comment period, NMFS has thoroughly reviewed and duly considered all relevant comments received.

NMFS' ITA application and review process has numerous steps to ensure due diligence occurs for all ITA requests. On average, applications for IHAs take 5-8 months from application received to the final decisional date where an IHA is either issued or denied (50 CFR 216.104(d)). Following an application being deemed adequate and complete, the ITA application progresses through the NMFS authorization review and decisional process, which includes a public notice period of 30 days (50 CFR 216.104(b) and (c)). The public comment period allows for meaningful public engagement. The public comment period provides a mechanism for external input, including the opportunity for new scientific information relevant to the proposed activities, to be submitted for agency consideration. More information on the authorization steps and timelines can be found at *https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act*.

In this case, NMFS received AE's initial application on December 28, 2023 and completed several rounds of agency review and analysis before considering the

application adequate and complete on February 22, 2023. NMFS drafted the *Federal Register* notice of the proposed IHA and proposed IHA, which went through additional rounds of internal review. The notice and proposed IHA were published in the *Federal Register* on April 21, 2023 (88 FR 24553) and was open for a 30-day comment period. NMFS reviewed all within-scope comments received for consideration in the final decisional process.

Comment 6: Commenters stated that NMFS was not utilizing the best available science when assessing impacts to marine mammals. Commenters also asserted NMFS had not fully considered the effect of the project on North Atlantic right whales (NARW).

Response: NMFS relied upon the best scientific evidence available, including, but not limited to, the draft 2022 Stock Assessment Reports (SAR), scientific literature, and Duke University's density model (Roberts *et al*., 2022)), in analyzing the impacts of AE's specified activities on marine mammals, including NARWs. While commenters suggest generally that NMFS consider the best scientific evidence available, none of the commenters provided additional scientific information for NMFS to consider.

NMFS determined that AE's surveys have the potential to take marine mammals by Level B harassment and does not anticipate or authorize mortality (death), serious injury, or Level A harassment of any marine mammal species, including NARW. Further, NMFS does not expect that the generally short-term, intermittent, and transitory nature of AE's marine site characterization survey activities will create conditions of acute or chronic acoustic exposure leading to long-term physiological stress responses in marine mammals.

Comment 7: 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". RODA also requests a "comprehensive list/table of all Level A and Level B takes under currently approved Authorizations per project, as well as Level A and Level B takes per project being requested in all Authorization applications currently under review".

Response: The MMPA and its implementing regulations allow 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 authorizes the requested incidental take of marine mammals if it finds 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 refers RODA to its website for more information on the marine mammal incidental take authorization process and timelines: *https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act*.

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 AE's request to incidentally take marine mammals while engaged in marine site characterization surveys

and determining whether the necessary findings can be made based on AE's application. The authorization of AE's survey activities is not within NMFS' jurisdiction. NMFS refers RODA to BOEM's website: *https://www.boem.gov/renewable-energy.*

A list of all proposed and issued IHAs for renewable energy activities, such as AE's marine site characterization surveys, including the requested, proposed, and/or authorized take is available on the agency website at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-other-energy-activities-renewable*.

Comment 8: A commenter 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.

Response: NMFS has determined that OSW development projects may impact several Northeast Fisheries Science Center (NEFSC) surveys, 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 AE's specified activity under the MMPA.

Comment 9: Multiple commenters expressed concerns with what they characterize as 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 and increased risk for vessel strikes.

Response: AE did not request authorization for take incidental to vessel strike during AE'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. For this IHA, NMFS did not authorize any take of marine mammals incidental to vessel strike resulting from the survey. If AE were to strike a marine mammal with a vessel, this would be an unauthorized take and a violation of the MMPA. This gives AE 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. Section 4(m) in the issued IHA contains a suite of non-discretionary requirements pertaining to vessel strike avoidance, including vessel operation protocols and monitoring. NMFS takes seriously the risk of vessel strike and has prescribed measures sufficient to avoid the potential for vessel strike to the extent practicable.

To date, NMFS is not aware of any site characterization vessels from HRG surveys reporting a vessel strike within the United States. When considered in the context of low overall probability of any vessel strike by AE 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 vessel strikes. These measures are described fully in the **Mitigation** section below, and include, but are not limited to: training for all vessel observers and captains, a requirement that all vessel operators comply with 10 knots (18.5 km/hour) or less speed restrictions in any SMA, DMA or Slow Zone while underway, daily monitoring of North Atlantic Right Whale

Sighting Advisory System, WhaleAlert app, and United States Coast Guard (USCG) Channel 16 for situational awareness regarding NARW presence in the survey area, communication protocols if whales are observed by any AE personnel, vessel operational protocol should any marine mammal be observed, and visual monitoring. Vessel speed mitigations are also briefly discussed in NMFS' response to *Comment 2*.

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 AE's specified survey activities and is not discussed further as it is outside the scope of this specific action.

Comment 10: A commenter asserted that additional clarification should be added to the IHA that explicitly states if weather or other conditions limit the range of observation, shutdown zones will be initiated. Multiple commenters also questioned the feasibility of the shutdown mitigation requirements in real-world conditions and what would occur if the authorized take levels were exceeded. Concerns were also asserted on the required mitigation measures, assessing the effectiveness of the mitigation measures, and reporting the use of the mitigation measures in real-time.

Response: In regards to a scenario where AE exceeds their authorized take levels, any further take would be unauthorized and, therefore, prohibited under the MMPA.

All mitigation measures stated in this notice and in the issued IHA are considered feasible. NMFS works with each ITA applicant, including AE, to ensure that project-specific mitigation measures are possible in real-world conditions. This includes shutdown zones when there is reduced visibility. As stated in the IHA condition 5(d), AE must ensure certain equipment is provided to protected species observers (PSOs), such as

thermal (infrared) cameras, to allow PSOs to adequately complete their duties, including in reduced-visibility conditions. NMFS does not agree that additional wording is necessary within the IHA to further describe the requirement and implementation of shutdown zones. If NMFS determines during the effective period of the IHA that the prescribed measures are likely not or are not effecting the least practicable adverse impact on the affected species or stocks and their habitat, NMFS may modify, suspend, or revoke the IHA. NMFS disagrees that the IHA's mitigation measures are insufficient.

NMFS reviews required reporting (see **Monitoring and Reporting**) and uses the information to evaluate the mitigation measure effectiveness. Additionally, the mitigation measures included in AE's IHA are not unique, and data from prior IHAs support the effectiveness of these mitigation measures. NMFS finds the level of reporting currently required is sufficient for managing the issued IHA and monitoring the affected stocks of marine mammals.

Comment 11: Commenters objected to NMFS' "small numbers" determination for the numbers of marine mammals taken by Level B harassment under AE's planned activities.

Response: NMFS disagrees with the commenters' arguments on the topic of small numbers. Although there is limited legislative history available to guide NMFS and an apparent lack of biological underpinning to the concept, we have worked to develop a reasoned approach to small numbers. NMFS explains the concept of "small numbers" in recognition that there could also be quantities of individuals taken that would correspond with "medium" and "large" numbers. As such, NMFS considers that one-third of the most appropriate population abundance number—as compared with the assumed number

of individuals taken—is an appropriate limit with regard to "small numbers." This relative approach is consistent with the statement from the legislative history that "[small numbers] is not capable of being expressed in absolute numerical limits" (H.R. Rep. No. 97-228, at 19 (September 16, 1981)), and relevant case law (Center for Biological Diversity v. Salazar, 695 F.3d 893, 907 (9th Cir. 2012) (holding that the U.S. Fish and Wildlife Service reasonably interpreted "small numbers" by analyzing take in relative or proportional terms)). NMFS has made the necessary small numbers finding for all affected species and stocks in this case.

Comment 12: Several commenters 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.

Response: NMFS reiterates that this IHA authorizes incidental take of marine mammals during marine site characterization survey activities and not offshore wind project construction and operation activities. Therefore, these comments are outside the scope of the proposed IHA. Fishing impacts generally center on entanglement in fishing gear, which is a very acute, visible, and severe impact. In contrast, the impacts incidental to AE's site characterization survey activities are primarily acoustic in nature resulting in behavioral disturbance. Because of the difference in potential impacts (*i.e.,* physical

versus auditory), any impacts resulting from AE's survey activities would not be assigned to fishermen. The impacts of commercial fisheries on marine mammals and incidental take for said fishing activities are managed separately from those of non-commercial fishing activities such as offshore wind site characterization surveys, under MMPA section 118.

Comment 13: A commenter expressed concern over potential "masking" of NARW calls, which could reduce breeding and foraging opportunities or impair navigation and transiting.

Response: Fundamentally, the masking effects to any one individual whale from one survey are expected to be minimal. Masking is referred to as a chronic effect because one of the key harmful components of masking is its duration—the fact that an animal would have reduced ability to hear or interpret critical cues becomes much more likely to cause a problem the longer it is occurring. Also, inherent in the concept of masking is the fact that the potential for the effect is only present during the times that the animal and the source are in close enough proximity for the effect to occur (and further this time period would need to coincide with a time that the animal was utilizing sounds at the masked frequency) and, as our analysis (both quantitative and qualitative components) indicates, because of the relative movement of whales and vessels, we do not expect these exposures with the potential for masking to be of a long duration within a given day. Further, because of the relatively low density of mysticetes, and relatively large area over which the vessels travel, we do not expect any individual whales to be exposed to potentially masking levels from these surveys for more than a few days in a year.

As noted above, any masking effects of this survey are expected to be limited and brief, if present. Given the likelihood of significantly reduced received levels beyond even short distances from the survey vessel, combined with the short duration of potential masking and the lower likelihood of extensive additional contributors to background noise offshore and within these short exposure periods, we believe that the incremental addition of the survey vessel is unlikely to result in more than minor and short-term masking effects, likely occurring to some small number of the same individuals captured in the estimate of behavioral harassment.

Comment 14: A commenter expressed concern about the use of multiple vessels concurrently performing the survey work and that vessel work should be limited to no more than one vessel performing acoustic surveying at a time within 200 miles (321.9 km) of other surveying vessels.

Response: NMFS appreciates the commenters' concerns, but notes that no evidence is provided to substantiate this concern. NMFS believes that the authorized take numbers adequately account for the potential take that may result from the proposed survey work, inclusive of the concurrent use of surveying vessels.

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 instead of reprinting the information here. 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 at *https://www.fisheries.noaa.gov/find-species*.

Table 1 lists all species or stocks for which take is authorized for this activity and summarizes information related to the species 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 authorized here, PBR and annual serious injury and mortality from anthropogenic sources are included here as gross indicators of the status of the species or stocks 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 MMPA managed stocks in this region are assessed in NMFS' U.S. Atlantic and Gulf of Mexico SARs. All values presented in Table 1 are the most recent available at the time of publication (draft 2022 SAR) and are available online at *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments*.

Table 1 -- Species and Stocks 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)						
North Atlantic right whale	*Eubalaena glacialis*	Western Atlantic Stock	E/D, Y	338 (0; 332; 2020)	0.7	8.1
Humpback whale	*Megaptera novaeangliae*	Gulf of Maine	-/-; Y	1,396 (0; 1,380; 2016)	22	12.15
Fin whale	*Balaenoptera physalus*	Western North Atlantic Stock	E/D, Y	6,802 (0.24; 5,573; 2016)	11	1.8
Sei whale	*Balaenoptera borealis*	Nova Scotia Stock	E/D, Y	6,292 (1.02; 3,098; 2016)	6.2	0.8
Minke whale	*Balaenoptera acutorostrata*	Canadian East Coastal Stock	-/-, N	21,968 (0.31; 17,002; 2016)	170	10.6
Odontoceti (toothed whales, dolphins, and porpoises)						
Sperm whale	*Physeter macrocephalus*	North Atlantic Stock	E/D, Y	4,349 (0.28; 3,451; 2016)	3.9	0
Long-finned pilot whale	*Globicephala melas*	Western North Atlantic Stock	-/-, N	39,215 (0.3; 30,627; 2016)	306	9
Atlantic white-sided dolphin	*Lagenorhynchus acutus*	Western North Atlantic Stock	-/-, N	93,233 (0.71; 54,443; 2016)	544	27
Bottlenose dolphin	*Tursiops truncatus*	Western North Atlantic Offshore Stock	-/-, N	62,851 (0.23; 51,914; 2016)	519	28

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]
Bottlenose dolphin	*Tursiops truncatus*	Northern Migratory Coastal	-/D, Y	6,639 (0.41; 4,759; 2016)	48	12.2-21.5
Common dolphin	*Delphinus delphis*	Western North Atlantic Stock	-/-, N	172,974 (0.21, 145,216, 2016)	1,452	390
Atlantic spotted dolphin	*Stenella frontalis*	Western North Atlantic Stock	-/-, N	39,921 (0.27; 32,032; 2016)	320	0
Risso's dolphin	*Grampus griseus*	Western North Atlantic Stock	-/-, N	35,215 (0.19; 30,051; 2016)	301	34
Harbor porpoise	*Phocoena phocoena*	Gulf of Maine/Bay of Fundy Stock	-/-, N	95,543 (0.31; 74,034; 2016)	851	164
Order Carnivora—Pinnipedia						
Harbor seal	*Phoca vitulina*	Western North Atlantic Stock	-/-, N	61,336 (0.08; 57,637; 2018)	1,729	339
Gray seal[4]	*Halichoerus grypus*	Western North Atlantic Stock	-/-, N	27,300 (0.22; 22,785; 2016)	1,458	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 the U.S. population only. Total stock abundance (including animals in Canada) is approximately 451,600. The annual mortality and serious injury (M/SI) value given is for the total stock.

A detailed description of the species likely to be affected by AE's activities, including information regarding population trends, threats, and local occurrence, was provided in the *Federal Register* notice for the proposed IHA (88 FR 24553, April 21, 2023). 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 2.

Table 2 -- 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.

Potential Effects of Specified Activities on Marine Mammals and Their Habitat

A description of the potential effects of the specified activities on marine mammals and their habitat can be found in the *Federal Register* notice for the proposed

IHA (88 FR 24553, April 21, 2023). There is no new information on the potential effects of the specified activities on marine mammals. Therefore, that information is not repeated here; please refer to the *Federal Register* notice (88 FR 24553, April 21, 2023).

Estimated Take

This section provides an estimate of the number of incidental takes authorized through the IHA, which informs both NMFS' "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 sound produced by the sparker or boomer. Based on the characteristics of the signals produced by the acoustic sources planned for use, Level A harassment is neither anticipated (even absent mitigation), nor authorized. As described previously, no serious injury or mortality is anticipated or authorized for this activity. Below, we describe how the 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 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 permanent threshold shift (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 (referenced to 1 micropascal (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.

Generally speaking, Level B harassment take estimates based on these behavioral harassment thresholds are expected to include any likely takes by temporary threshold shift (TTS) as, in most cases, the likelihood of TTS occurs at distances from the source less than those at which behavioral harassment is likely. TTS of a sufficient degree can manifest as behavioral harassment, as reduced hearing sensitivity and the potential reduced opportunities to detect important signals (conspecific communication, predators, prey) may result in changes in behavior patterns that would not otherwise occur. AE's planned activities include the use of impulsive (*i.e.*, boomer and sparker) sources, and therefore, the RMS SPL thresholds of 160 dB re 1 μPa is applicable.

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).

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.

AE's planned activity includes the use of impulsive (*i.e.,* boomer and sparker) sources. However, as discussed above, NMFS has concluded that Level A harassment is not a reasonably likely outcome for marine mammals exposed to noise through use of the sources planned for use here, and the potential for Level A harassment is not evaluated further in this document. Please see AE's application for details of a quantitative exposure analysis exercise, *i.e.,* calculated Level A harassment isopleths and estimated potential Level A harassment exposures. AE did not request authorization of take by Level A harassment, and NMFS is not authorizing take by Level A harassment.

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 estimating the extent of the Level B harassment isopleths associated with relevant HRG survey equipment (NMFS, 2020). This methodology incorporates frequency and directionality (when relevant) to refine estimated ensonified zones. For acoustic sources that operate with different beamwidths, the maximum beamwidth was used, and the lowest frequency of the source was used when calculating the frequency-dependent absorption coefficient (Table 1). AE used 180-degree beamwidth in the calculation for the planned sparker as is appropriate for an omnidirectional source.

NMFS considers the data provided by Crocker and Fratantonio (2016) to represent the best available information on source levels associated with HRG survey 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 where the source level for a specific type of HRG equipment is not provided in Crocker and Fratantonio (2016), NMFS recommends 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 1 in the *Federal Register* notice for the proposed IHA (88 FR 24553, April 21, 2023), shows the HRG equipment type used during the planned surveys and the source levels associated with those HRG equipment types.

AE plans to use the Dual Geo-Spark 2000X (400 tip/800 J). For all source configurations, the maximum power expected to be discharged from the sparker source is 800 J. However, Crocker and Fratantonio (2016) did not measure the Dual Geo-Spark or a source with an energy of 800 J. A similar alternative system, the Applied Acoustics Dura-spark with a 400 tip, was measured by Crocker and Fratantonio (2016) with an input voltage of 500 – 2,000 J, and these measurements were used as a proxy for the Dual Geo-Spark. Table 1 in the *Federal Register* notice for the proposed IHA (88 FR 24553, April 21, 2023) shows the source parameters associated with this proxy. Using the measured source level of 203 dB RMS of the proxy, results of modeling indicated that the sparker would produce an estimated distance of 141 m to the Level B harassment isopleth.

AE additionally plans to use the Geo-Boomer 300-500. Crocker and Fratantonio (2016) did not measure the Geo-Boomer 300-500. A similar alternative system, Applied Acoustics S-Boom, was measured by Crocker and Fratantonio (2016) and the 500 J values were used as a proxy for the Geo-Boomer 300-500. Using the measured source level of 202 dB RMS of the proxy, results of modeling indicated that the boomer would produce an estimated distance of 51 m to the Level B harassment isopleth.

Results of modeling using the methodology described above indicated that, of the HRG survey equipment planned for use by the applicant that has the potential to result in Level B harassment of marine mammals, the Dual Geo-Spark 2000X would produce the largest distance to the Level B harassment isopleth (141 m). More detail is provided on the acoustic sources and methodology in the proposed IHA published in the *Federal Register* on April 21, 2023 (88 FR 24553).

Marine Mammal Occurrence

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

Habitat-based density models produced by the Duke University Marine Geospatial Ecology Laboratory (Roberts *et al.,* 2016; Roberts and Halpin*,* 2022) represent the best available information regarding marine mammal densities in the survey area. These density data incorporate aerial and shipboard line-transect survey data from NMFS and other organizations and incorporate data from numerous physiographic and dynamic oceanographic and biological covariates, and controls 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). Most recently, in 2022, models for all taxa were updated. More information is available online at *https://seamap.env.duke.edu/models/Duke/EC/.* Marine mammal density estimates in the survey area (animals/km^2) were obtained using the most recent model results for all taxa.

For the exposure analysis, density data from Roberts and Halpin (2022) were mapped using a geographic information system (GIS). For the survey area, the monthly densities of each species as reported by Roberts and Halpin (2022) were averaged by season; thus, a density was calculated for each species for spring, summer, fall, and winter. Density seasonal averages were calculated for both the Lease Area and the ECR Area for each species to assess the greatest average seasonal densities for each species. To be conservative, since the exact timing for the survey during the year is uncertain, the greatest average seasonal density calculated for each species was carried forward in the exposure analysis, with exceptions noted later in this discussion. Estimated greatest average seasonal densities (animals/km^2) of marine mammal species that may be taken incidental to the planned survey can be found in Tables 6-1 and 6-2 of AE's IHA application. Below, we discuss how densities were assumed to apply to specific species for which the Roberts and Halpin (2022) models provide results at the genus or guild level.

There are two stocks of bottlenose dolphins that may be impacted by the surveys (Western North Atlantic Northern Migratory Coastal Stock (coastal stock) and the Western North Atlantic Offshore Stock (offshore stock)). However, Roberts and Halpin (2022) do not differentiate by stock. The Coastal Stock is assumed to generally occur in waters less than 20 m and the Offshore Stock in waters deeper than 20 m (65-ft) isobath.

The Lease Area is in waters deeper than 20 m and only the Offshore Stock would occur and could be potentially taken by survey effort in that area. For the ECR survey area, both stocks could occur in the area, so AE calculated separate mean seasonal densities for the portion to be surveyed that is less than 20 m in depth and for the portion that is greater than 20 m in depth to use for estimating take of the Coastal and Offshore Stocks of bottlenose dolphins, respectively. The total tracklines in waters deeper than 20 m, between the ECR and the lease area, are 20,305 km. The total tracklines in waters less than 20 m depth, only found in portions of the ECR, are 1,440 km. Therefore, different trackline totals were used to calculate take of the Coastal and Offshore Stocks of bottlenose dolphins (20,305 km trackline of Offshore Stock and 1,440 km trackline of the Coastal Stock). All other species analyzed used the total 21,745 km of trackline for calculations.

Furthermore, the Roberts and Halpin (2022) density model does not differentiate between the different pinniped species. For seals, given their size and behavior when in the water, seasonality, and feeding preferences, there is limited information available on species-specific distribution. Density estimates of Roberts and Halpin (2022) include all seal species that may occur in the Western North Atlantic combined (*i.e.*, harbor, gray, hooded, and harp). For this IHA, only the harbor seals and gray seals are reasonably expected to occur in the survey area; densities of seals were split evenly between these two species.

Lastly, the Roberts and Halpin (2022) density model does not differentiate between the pilot whale species. While the exact latitudinal ranges of the two species are uncertain, only long-finned pilot whales are expected to occur in this project area due to

their more northerly distribution and tolerance of shallower, colder shelf waters (Hayes *et al*., 2022).

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 and is authorized.

In order to estimate the number of marine mammals predicted to be exposed to sound levels that would result in harassment, radial distances to predicted isopleths corresponding to Level B harassment thresholds are calculated, as described above. The maximum distance (*i.e.*, 141-m distance associated with the Dual Geo-Spark 2000X) to the Level B harassment criterion and the total length of the survey trackline are then used to calculate the total ensonified area, or zone of influence (ZOI) around the survey vessel.

AE proposes to conduct the survey, using either the boomer or sparker, for a total of 21,745 km of trackline, of which 14,025 km are in the Lease area and 7,720 km in the ECR area. Of the ECR survey trackline, 1,440 km are in waters less than 20 m depth. AE is requesting take based on the worst-case-scenario between the equipment planned, which is the use of only the Dual Geo-Spark 2000X - based on the largest estimated distance to the harassment criterion. Based on the maximum estimated distance to the Level B harassment threshold of 141-m (sparker) and the total survey length, the total ensonified area is 6,133 km^2. That is approximately 3,955 km^2 for the lease area and 2,177 km^2 in the ECR area with 407 km^2 in waters less than 20 m depth based on the following formula:

$$\textit{Mobile Source ZOI} = (\textit{Total survey length} \times 2r) + \pi r^2$$

Where total survey length is equal to the total distance of the survey track lines within the lease area; and r is equal to the maximum radial distance from a given sound source to the Level B harassment threshold.

This is a conservative estimate as it assumes the HRG source that results in the greatest isopleth distance to the Level B harassment threshold would be operated at all times during the entire survey, which may not ultimately occur and assumes the worst case scenario is the scenario chosen for the surveys. The number of marine mammals expected to be incidentally taken during the total survey is then calculated by estimating the number of each species predicted to occur within the ensonified area (animals/km^2), incorporating the greatest seasonal estimated marine mammal densities as described above. The product is then rounded, to generate an estimate of the total number of instances of harassment expected for each species over the duration of the survey. A summary of this method is illustrated in the following formula with the resulting take of marine mammals shown below in Table 3:

$$Estimated\ Take = D \times ZOI$$

Where: *D* is the greatest average seasonal species density (per km^2); and *ZOI* is the maximum daily ensonified area to relevant thresholds.

Table 3 -- Estimated Take Numbers and Total Take Authorized

Species	Ensonified Area (km^2)	Density (Animals/km^2)	Estimated Take	Total Take Authorized	Percent of Abundance[c]
North Atlantic right whale	6,133	0.001932	12	12	3.51
Humpback whale	6,133	0.003853	24	24	1.69
Fin whale	6,133	0.006256	38	38	0.56
Sei whale	6,133	0.001972	12	12	0.19
Minke whale	6,133	0.029226	179	179	0.82
Sperm whale	6,133	0.000447	3	3	0.06

Risso's dolphin	6,133	0.003695	23	23	0.06
Long-finned pilot whale	6,133	0.003363	21	21	0.05
Atlantic white-sided dolphin	6,133	0.033740	207	207	0.22
Common dolphin	6,133	0.335271	2,056	2,056	1.19
Atlantic spotted dolphin	6,133	0.014496	89	89	0.22
Bottlenose dolphin (W.N. Atlantic Offshore)[a]	5,727	0.304831	1,746	1,746	2.78
Bottlenose dolphin (Northern Migratory Coastal) [b]	407	0.956430	389	389	5.86
Harbor porpoise	6,133	0.178544	1,095	1,095	1.15
Harbor seal	6,133	0.260186[d]	1,596	1,596	2.60
Gray seal	6,133	0.260186[d]	1,596	1,596	0.35[e]

[a] The ensonified area for the offshore stock is for ≥20 m water depth includes all the lease area and portions of the ECR.
[b] The ensonified area for the migratory coastal stock is only the areas of < 20 m water depth (found only in portions of the ECR).
[c] Based on the 2022 draft marine mammal stock assessment reports (SAR).
[d] These each represent 50 percent of a generic seal density value.
[e] This abundance estimate is based on the total stock abundance (including animals in Canada). The NMFS stock abundance estimate for US population is only 27,300.

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, 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.

The following mitigation measures must be implemented during AE's planned marine site characterization surveys. Pursuant to section 7 of the ESA, AE would 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*).

Visual Monitoring and Shutdown Zones

AE must 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 geophysical surveys. Visual monitoring must be performed by qualified, NMFS-approved PSOs. PSO resumes must be provided to NMFS for review and approval prior to the start of survey activities.

During survey operations (*e.g.,* any day on which use of the sparker or boomer sources is planned to occur, and whenever the sparker or boomer source is in the water, whether activated or not), a minimum of one visual marine mammal observer (PSO) must be on duty on each source vessel and conducting visual observations at all times during daylight hours (*i.e.,* from 30 minutes prior to sunrise through 30 minutes following sunset). A minimum of two PSOs must be on duty on each source vessel during nighttime hours. Visual monitoring must begin no less than 30 minutes prior to ramp-up (described below) and must continue until one hour after use of the sparker or boomer source ceases.

Visual PSOs shall coordinate to ensure 360° visual coverage around the vessel from the most appropriate observation posts and shall conduct visual observations using binoculars and the naked eye while free from distractions and in a consistent, systematic, and diligent manner. PSOs shall establish and monitor applicable shutdown zones (see below). These zones shall be based upon the radial distance from the sparker or boomer source (rather than being based around the vessel itself).

Four shutdown zones are defined, depending on the species and context. An extended shutdown zone encompassing the area at and below the sea surface out to a radius of 500 m from the sparker or boomer source (0-500 m) is defined for NARW. For all other marine mammals, the shutdown zone encompasses a standard distance of 100 m (0-100 m) during the use of the sparker. For ESA-listed marine mammals during the use of the boomer, the shutdown zone is 100 m (0-100 m). For all non-ESA-listed marine mammals, the shutdown zone during the use of the boomer is 50 m (0-50 m). Any observations of marine mammals by crew members aboard any vessel associated with the survey shall be relayed to the PSO team.

Visual PSOs may be on watch for a maximum of 4 consecutive hours followed by a break of at least 1 hour between watches and may conduct a maximum of 12 hours of observation per 24-hour period.

Pre-Start Clearance and Ramp-up

A ramp-up procedure, involving a gradual increase in source level output, is required at all times as part of the activation of the sparker and boomer sources when technically feasible. Operators should ramp up sparker and boomer to half power for 5 minutes and then proceed to full power. A 30-minute pre-start clearance observation period of the shutdown zones must occur prior to the start of ramp-up. The intent of the pre-start clearance observation period (30 minutes) is to ensure no marine mammals are within the shutdown zones prior to the beginning of ramp-up. The intent of the ramp-up is to warn marine mammals of pending operations and to allow sufficient time for those animals to leave the immediate vicinity. All operators must adhere to the following pre-start clearance and ramp-up requirements:

- The operator must notify a designated PSO of the planned start of ramp-up as agreed upon with the lead PSO; the notification time should not be less than 60 minutes prior to the planned ramp-up in order to allow the PSOs time to monitor the shutdown zones for 30 minutes prior to the initiation of ramp-up (pre-start clearance). During this 30 minute pre-start clearance period the entire shutdown zone must be visible, except as indicated below.
- Ramp-ups shall be scheduled so as to minimize the time spent with the source activated.
- A visual PSO conducting pre-start clearance observations must be notified again immediately prior to initiating ramp-up procedures and the operator must receive confirmation from the PSO to proceed.
- Any PSO on duty has the authority to delay the start of survey operations if a marine mammal is detected within the applicable pre-start clearance zone.
- The operator must establish and maintain clear lines of communication directly between PSOs on duty and crew controlling the acoustic source to ensure that mitigation commands are conveyed swiftly while allowing PSOs to maintain watch.

The pre-start clearance requirement is waived for small delphinids and pinnipeds. Detection of a small delphinid (individual belonging to the following genera of the Family Delphinidae: *Steno, Delphinus, Lagenorhynchus, Stenella,* and *Tursiops*) or pinniped within the shutdown zone does not preclude beginning of ramp-up, unless the PSO confirms the individual to be of a genus other than those listed, in which case normal pre-clearance requirements apply.

If there is uncertainty regarding identification of a marine mammal species (*i.e.,* whether the observed marine mammal(s) belongs to one of the delphinid genera for which the pre-clearance requirement is waived), PSOs may use best professional judgment in making the decision to call for a shutdown.

- Ramp-up may not be initiated if any marine mammal to which the pre-start clearance requirement applies is within the shutdown zone. If a marine mammal is observed within the shutdown zone during the 30-minute pre-start clearance period, ramp-up may not begin until the animal(s) has been observed exiting the zones or until an additional time period has elapsed with no further sightings (30 minutes for all baleen whale species and sperm whales and 15 minutes for all other species).
- PSOs must monitor the shutdown zones 30 minutes before and during ramp-up, and ramp-up must cease and the source must be shut down upon observation of a marine mammal within the applicable shutdown zone.
- Ramp-up may occur at times of poor visibility, including nighttime, if appropriate visual monitoring has occurred with no detections of marine mammals in the 30 minutes prior to beginning ramp-up. Sparker or boomer activation may only occur at night where operational planning cannot reasonably avoid such circumstances.

If the acoustic source is shut down for brief periods (*i.e.,* less than 30 minutes) for reasons other than implementation of prescribed mitigation (*e.g.,* mechanical difficulty), it may be activated again without ramp-up if PSOs have maintained constant visual observation and no detections of marine mammals have occurred within the applicable

shutdown zone. For any longer shutdown, pre-start clearance observation and ramp-up are required.

Shutdown

All operators must adhere to the following shutdown requirements:

- Any PSO on duty has the authority to call for shutdown of the sparker or boomer source if a marine mammal is detected within the applicable shutdown zone.
- The operator must establish and maintain clear lines of communication directly between PSOs on duty and crew controlling the source to ensure that shutdown commands are conveyed swiftly while allowing PSOs to maintain watch.
- When the sparker or boomer source is active and a marine mammal appears within or enters the applicable shutdown zone, the source must be shut down. When shutdown is instructed by a PSO, the sparker or boomer source must be immediately deactivated and any dispute resolved only following deactivation.
- Four shutdown zones are defined, depending on the species and context. An extended shutdown zone encompassing the area at and below the sea surface out to a radius of 500 m from the sparker or boomer source (0-500 m) is defined for NARW. For all other marine mammals, the shutdown zone encompasses a standard distance of 100 m (0-100 m) during the use of the sparker. For ESA-listed marine mammals during the use of the boomer, the shutdown zone is 100 m (0-100 m). For all non-ESA-listed marine mammals, the shutdown zone during use of the boomer is 50 m (0-50 m).

The shutdown requirement is waived for small delphinids and pinnipeds. If a small delphinid (individual belonging to the following genera of the Family Delphinidae:

Steno, Delphinus, Lagenorhynchus, Stenella, and *Tursiops*) or pinniped is visually detected within the shutdown zone, no shutdown is required unless the PSO confirms the individual to be of a genus other than those listed, in which case a shutdown is required.

If there is uncertainty regarding identification of a marine mammal species (*i.e.,* whether the observed marine mammal(s) belongs to one of the delphinid genera for which shutdown is waived or one of the species with a larger shutdown zone), PSOs may use best professional judgment in making the decision to call for a shutdown.

Upon implementation of shutdown, the source may be reactivated after the marine mammal has been observed exiting the applicable shutdown zone or following a clearance period (30 minutes for all baleen whale species and sperm whales and 15 minutes for all other species) with no further detection of the marine mammal.
If a species for which authorization has not been granted, or a species for which authorization has been granted but the authorized number of takes have been met, approaches or is observed within the Level B harassment zone (141 m sparkers, 51 m boomers), shutdown must occur.

Vessel Strike Avoidance

Crew and supply vessel personnel must have access to and use an appropriate reference guide that includes identifying information on all marine mammals that may be encountered. Vessel operators must comply with the below measures except under extraordinary circumstances when the safety of the vessel or crew is in doubt or the safety of life at sea is in question. These requirements do not apply in any 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 marine mammals and slow down, stop their vessel(s), or alter course, as appropriate and regardless of vessel size, to avoid striking any marine mammals. A single marine mammal at the surface may indicate the presence of submerged animals in the vicinity of the vessel; therefore, precautionary measures should always be exercised. A visual observer aboard the vessel must monitor a vessel strike avoidance zone around the vessel (species-specific distances are detailed 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 marine mammal from other phenomena and (2) broadly to identify a marine mammal as a NARW, other whale (defined in this context as sperm whales or baleen whales other than NARWs), or other marine mammals.

All survey vessels, regardless of size, must observe a 10-knot (18.52 km/h) speed restriction in specific areas designated by NMFS for the protection of NARWs from vessel strikes. These include all Seasonal Management Areas (SMA) established under 50 CFR 224.105 (when in effect), any dynamic management areas (DMA) (when in effect), and Slow Zones. See *www.fisheries.noaa.gov/national/endangered-species-conservation/reducing-ship-strikes-north-atlantic-right-whales* for specific detail regarding these areas.

- All vessels must reduce speed to 10 knots (18.52 km/h) or less when mother/calf pairs, pods, or large assemblages of cetaceans are observed near a vessel.

- All vessels must maintain a minimum separation distance of 500 m from NARWs, baleen whales (except humpback and minke), sperm whales, and any unidentified large whales. If a NARW, baleen whale (except humpback and minke), or an unidentified large whale is sighted within the relevant separation distance, the vessel must steer a course away at 10 kn (18.52 km/h) or less until the 500-m separation distance has been established. If a whale is observed but cannot be confirmed as a species other than a NARW, the vessel operator must assume that it is a NARW and take appropriate action.
- All vessels must maintain a minimum separation distance of 100 m from all humpback and mike 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 must 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, reduce speed and shift the engine to neutral). This does not apply to any vessel towing gear or any vessel that is navigationally constrained.

Members of the PSO team will consult NMFS NARW reporting system and Whale Alert, daily and as able, for the presence of NARWs throughout survey operations, and for the establishment of DMAs and/or Slow Zones. It is AE's responsibility to maintain

awareness of the establishment and location of any such areas and to abide by these requirements accordingly.

Seasonal Operating Requirements

As described above, a section of the survey area partially overlaps with a portion of a NARW SMA off the port of New York/New Jersey. This SMA is active from November 1 through April 30 of each year. The survey vessel, regardless of length, would be required to adhere to vessel speed restrictions (<10 knots (18.52 km/h)) when operating within the SMA during times when the SMA is active (Table 4).

Table 4 – North Atlantic Right Whale Dynamic Management Area (DMA) and Seasonal Management Area (SMA) Restrictions Within the Survey Areas

Survey area	Species	DMA restrictions	Slow zones	SMA restrictions
Lease Area	North Atlantic right whale (*Eubalaena glacialis*)	If established by NMFS, all of AE's vessel will abide by the described restrictions		N/A
ECR (within SMA)				November 1 through April 31 (Ports of New York/New Jersey)
ECR (outside SMA)				N/A
More information on Ship Strike Reduction for the NARW can be found at NMFS' website: *https://www.fisheries.noaa.gov/national/endangered-species-conservation/reducing-vessel-strikes-north-atlantic-right-whales.*				

Based on our evaluation of the applicant's planned measures, as well as other measures considered by NMFS, 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 activity; 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 must be performed by qualified, NMFS-approved PSOs. AE must submit PSO resumes for NMFS review and approval prior to commencement of the survey. Resumes should include dates of training and any prior NMFS approval, as well as dates and description of last experience, and must be accompanied by information documenting successful completion of an acceptable training course.

For prospective PSOs not previously approved, or for PSOs whose approval is not current, NMFS must review and approve PSO qualifications. Resumes should include information related to relevant education, experience, and training, including dates, duration, location, and description of prior PSO experience. Resumes must be accompanied by relevant documentation of successful completion of necessary training.

NMFS may approve PSOs as conditional or unconditional. A conditionally-approved PSO may be one who is trained but has not yet attained the requisite experience. An unconditionally-approved PSO is one who has attained the necessary experience. For unconditional approval, the PSO must have a minimum of 90 days at sea performing the role during a geophysical survey, with the conclusion of the most recent relevant experience not more than 18 months previous.

At least one of the visual PSOs aboard the vessel must be unconditionally-approved. One unconditionally-approved visual PSO shall be designated as the lead for the entire PSO team. This lead should typically be the PSO with the most experience, who would coordinate duty schedules and roles for the PSO team and serve as primary point of contact for the vessel operator. To the maximum extent practicable, the duty schedule shall be planned such that unconditionally-approved PSOs are on duty with conditionally-approved PSOs.

At least one PSO aboard each acoustic source vessel must have a minimum of 90 days at-sea experience working in the role, with no more than 18 months elapsed since the conclusion of the at-sea experience. One PSO with such experience must be designated as the lead for the entire PSO team and serve as the primary point of contact for the vessel operator. (Note that the responsibility of coordinating duty schedules and roles may instead be assigned to a shore-based, third-party monitoring coordinator.) To the maximum extent practicable, the lead PSO must devise the duty schedule such that experienced PSOs are on duty with those PSOs with appropriate training but who have not yet gained relevant experience.

PSOs must successfully complete relevant training, including completion of all required coursework and passing (80 percent or greater) a written and/or oral examination developed for the training program.

PSOs must have successfully attained a bachelor's degree from an accredited college or university with a major in one of the natural sciences, a minimum of 30 semester hours or equivalent in the biological sciences, and at least one undergraduate course in math or statistics. The educational requirements may be waived if the PSO has

acquired the relevant skills through alternate experience. Requests for such a waiver shall be submitted to NMFS and must include written justification. Alternate experience that may be considered includes, but is not limited to (1) secondary education and/or experience comparable to PSO duties; (2) previous work experience conducting academic, commercial, or government-sponsored marine mammal surveys; and (3) previous work experience as a PSO (PSO must be in good standing and demonstrate good performance of PSO duties).

AE must work with the selected third-party PSO provider to ensure PSOs have all equipment (including backup equipment) needed to adequately perform necessary tasks, including accurate determination of distance and bearing to observed marine mammals, and to ensure that PSOs are capable of calibrating equipment as necessary for accurate distance estimates and species identification. Such equipment, at a minimum, shall include:

- At least one thermal (infrared) imagine device suited for the marine environment;
- Reticle binoculars (*e.g.*, 7 x 50) of appropriate quality (at least one per PSO, plus backups);
- Global Positioning Units (GPS) (at least one plus backups);
- Digital cameras with a telephoto lens that is at least 300-mm or equivalent on a full-frame single lens reflex (SLR) (at least one plus backups). The camera or lens should also have an image stabilization system;
- Equipment necessary for accurate measurement of distances to marine mammal;
- Compasses (at least one plus backups);
- Means of communication among vessel crew and PSOs; and,

- Any other tools deemed necessary to adequately and effectively perform PSO tasks.

The equipment specified above may be provided by an individual PSO, the third-party PSO provider, or the operator, but AE is responsible for ensuring PSOs have the proper equipment required to perform the duties specified in the IHA.

The PSOs will be responsible for monitoring the waters surrounding the survey vessel to the farthest extent permitted by sighting conditions, including Shutdown Zones, during all HRG survey operations. PSOs will visually monitor and identify marine mammals, including those approaching or entering the established Shutdown Zones during survey activities. It will be the responsibility of the PSO(s) 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.

PSOs must be equipped with binoculars and have the ability to estimate distance and bearing to detect marine mammals, particularly in proximity to Shutdown 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, appropriate night-vision devices (*e.g.,* night-vision goggles with thermal clip-ons and infrared technology) would be used. Position data would 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 must 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 and between acquisition periods, to the maximum extent practicable. Any observations of marine mammals by crew members aboard the vessel associated with the survey would be relayed to the PSO team. Data on all PSO observations would be recorded based on standard PSO collection requirements (see *Reporting Measures*). This would 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, behavior); and details of any observed marine mammal behavior that occurs (*e.g.*, noted behavioral disturbances). Members of the PSO team shall consult the NMFS NARW reporting system and Whale Alert, daily and as able, for the presence of NARWs throughout survey operations.

Reporting Measures

AE shall submit a draft comprehensive report to NMFS on all activities and monitoring results within 90 days of the completion of the survey or expiration of the IHA, whichever comes sooner. The report must describe all activities conducted and sightings of marine mammals, must provide full documentation of methods, results, and interpretation pertaining to all monitoring, and must summarize the dates and locations of survey operations and all marine mammals sightings (dates, times, locations, activities, associated survey activities). The draft report shall also include geo-referenced, time-stamped vessel tracklines for all time periods during which acoustic sources were operating. Tracklines should include points recording any change in acoustic source status (*e.g.*, when the sources began operating, when they were turned off, or when they changed operational status such as from full array to single gun or vice versa). GIS files shall be provided in Environmental Systems Research Institute, Inc. (ESRI) shapefile

format and include the Coordinated Universal Time (UTC) date and time, latitude in decimal degrees, and longitude in decimal degrees. All coordinates shall be referenced to the WGS84 geographic coordinate system. In addition to the report, all raw observational data shall be made available. The report must summarize the information. A final report must be submitted within 30 days following resolution of any comments on the draft report. All draft and final marine mammal monitoring reports must be submitted to *PR.ITP.MonitoringReports@noaa.gov, nmfs.gar.incidental-take@noaa.gov,* and *ITP.lock@noaa.gov*.

PSOs must use standardized electronic data forms to record data. PSOs shall record detailed information about any implementation of mitigation requirements, including the distance of marine mammal to the acoustic source and description of specific actions that ensued, the behavior of the animal(s), any observed changes in behavior before and after implementation of mitigation, and if shutdown was implemented, the length of time before any subsequent ramp-up of the acoustic source. If required mitigation was not implemented, PSOs should record a description of the circumstances. At a minimum, the following information must be recorded:

1. Vessel names (source vessel), vessel size and type, maximum speed capability of vessel;
2. Dates of departures and returns to port with port name;
3. PSO names and affiliations;
4. Date and participants of PSO briefings;
5. Visual monitoring equipment used;

6. PSO location on vessel and height of observation location above water surface;

7. Dates and times (Greenwich Mean Time) of survey on/off effort and times corresponding with PSO on/off effort;

8. Vessel location (decimal degrees) when survey effort begins and ends and vessel location at beginning and end of visual PSO duty shifts;

9. Vessel location at 30-second intervals if obtainable from data collection software, otherwise at practical regular interval;

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

11. Water depth (if obtainable from data collection software);

12. Environmental conditions while on visual survey (at beginning and end of PSO shift and whenever conditions change significantly), including BSS and any other relevant weather conditions including cloud cover, fog, sun glare, and overall visibility to the horizon;

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

14. Survey activity information (and changes thereof), such as acoustic source power output while in operation, number and volume of airguns operating in an array, tow depth of an acoustic source, and any other notes of significance (*i.e.*, pre-start clearance, ramp-up, shutdown, testing, shooting, ramp-up completion, end of operations, streamers, *etc.*).

15. Upon visual observation of any marine mammal, the following information must be recorded:

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

b. Vessel/survey activity at time of sighting (*e.g.*, deploying, recovering, testing, shooting, data acquisition, other);

c. PSO who sighted the animal;

d. Time of sighting;

e. Initial detection method;

f. Sightings cue;

g. Vessel location at time of sighting (decimal degrees);

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

i. Speed of the vessel(s) from which the observation was made;

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. Species reliability (an indicator of confidence in identification);

l. Estimated distance to the animal and method of estimating distance;

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

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

o. 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);

p. Detailed behavior observations (*e.g.*, number of blows/breaths, number of surfaces, breaching, spyhopping, diving, feeding, traveling; as explicit and detailed as possible; note any observed changes in behavior before and after point of closest approach);

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

r. Equipment operating during sighting;

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

t. Description of any actions implemented in response to the sighting (*e.g.*, delays, shutdown, ramp-up) and time and location of the action.

If a NARW is observed at any time by PSOs or personnel on the project vessel, during surveys or during vessel transit, AE must report the sighting information to the NMFS NARW Sighting Advisory System (866-755-6622) within 2 hours of occurrence, when practicable, or no later than 24 hours after occurrence. NARW sightings in any location may also be reported to the U.S. Coast Guard via channel 16 and through the WhaleAlert app (*https://www.whalealert.org*).

In the event that personnel involved in the survey activities discover an injured or dead marine mammal, the incident must be reported to NMFS as soon as feasible by

phone (866-755-6622) and by email (*nmfs.gar.incidental-take@noaa.gov* and *PR.ITP.MonitoringReports@noaa.gov*). The report must include the following information:

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

In the event of a ship strike of a marine mammal by any vessel involved in the activities, AE must report the incident to NMFS by phone (866-755-6622) and by email (*nmfs.gar.incidental-take@noaa.gov* and *PR.ITP.MonitoringReports@noaa.gov*) as soon as feasible. The report would include the following information:

1. Time, date, and location (latitude/longitude) of the incident;
2. Species identification (if known) or description of the animal(s) involved;
3. Vessel's speed during and leading up to the incident;
4. Vessel's course/heading and what operations were being conducted (if applicable);
5. Status of all sound sources in use;
6. 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;

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

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

9. Description of the behavior of the marine mammal immediately preceding and/or following the strike;

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

11. 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,

12. 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 majority of our analysis applies to all the species listed in Table 2, given that some of the anticipated effects of this project on different marine mammal stocks are expected to be relatively similar in nature. Where there are meaningful differences between species or stocks, or groups of species, in anticipated individual responses to activities, impact of expected take on the population due to differences in population status, or impacts on habitat, they are included as separate subsections below. Specifically, we provide additional discussion related to NARW and to other species currently experiencing UMEs.

NMFS does not anticipate that serious injury or mortality would 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, non-auditory physical effects, auditory physical effects, and vessel strike are not expected to occur. NMFS expects that all potential takes would be in the form of Level B 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; Ellison *et al.,* 2012).

In addition to being temporary, the maximum expected harassment zone around a 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 survey 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 planned survey area and there are no feeding areas known to be biologically important to marine mammals within the survey area. There is no designated critical habitat for any ESA-listed marine mammals in the survey area.

North Atlantic Right Whales

The status of the NARW population is of heightened concern and, therefore, merits additional analysis. As noted previously, elevated NARW mortalities began in June 2017 and there is an active UME. Overall, preliminary findings attribute human interactions, specifically vessel strikes and entanglements, as the cause of death for the majority of NARWs. As noted previously, the survey area overlaps a migratory corridor BIA for NARWs that extends from Massachusetts to Florida and from the coast to

beyond the shelf break. Due to the fact that the planned survey activities are temporary (will occur for up to 1 year) and the spatial extent of sound produced by the survey would be small relative to the spatial extent of the available migratory habitat in the BIA, NARW migration is not expected to be impacted by the survey. This important migratory area is approximately 269,488 km^2 in size (compared with the worst case scenario of approximately 6,133 km^2 of total estimated Level B harassment ensonified area associated with both the Lease Area and the ECR area surveys) and is comprised of the waters of the continental shelf offshore the East Coast of the United States, extending from Florida through Massachusetts.

Given the relatively small size of the ensonified area, it is unlikely that prey availability would be adversely affected by HRG survey operations. Required vessel strike avoidance measures will also decrease risk of ship strike during migration; no ship strike is expected to occur during AE's planned activities. Additionally, only very limited take by Level B harassment of NARWs has been requested and is being authorized by NMFS as HRG survey operations are required to maintain and implement a 500-m shutdown zone. The 500-m shutdown zone for NARWs is conservative, considering the Level B harassment isopleth for the most impactful acoustic source (*i.e.*, sparker) is estimated to be 141-m, and thereby minimizes the intensity and duration of any potential incidents of behavioral harassment for this species. As noted previously, Level A harassment is not expected due to the small estimated zones in conjunction with the aforementioned shutdown requirements. NMFS does not anticipate NARWs takes that result from AE's planned activities will impact annual rates of recruitment or survival. Thus, any takes that occur will not result in population level impacts.

Other Marine Mammal Species with Active UMEs

As noted previously, there are several active UMEs occurring in the vicinity of AE's survey 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 distinct population segment (DPS)) remains stable at approximately 12,000 individuals.

Elevated numbers of harbor seal and gray seal mortalities were first observed between 2018-2020 and, as part of a separate UME, again in 2022. These have occurred across Maine, New Hampshire, and Massachusetts. Based on tests conducted so far, the main pathogen found in the seals is phocine distemper virus (2018-2020) and avian influenza (2022), although additional testing to identify other factors that may be involved in the UMEs is underway. The UMEs do not provide cause for concern regarding population-level impacts to any of these stocks. For harbor seals, the population abundance is over 60,000 and annual M/SI (339) is well below PBR (1,729) (Hayes *et al.,* 2023). The population abundance for gray seals in the United States is over 27,000, with an estimated abundance, including seals in Canada, of approximately 450,000. In addition, the abundance of gray seals is likely increasing in the U.S. Atlantic as well as in Canada (Hayes *et al.,* 2021; Hayes *et al.*, 2023).

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. This UME is no longer active and is pending closure.

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 would 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 sound levels that have the potential to cause injury. No Level A harassment is anticipated, even in the absence of mitigation measures, or authorized.

NMFS expects that takes would be in the form of short-term Level B harassment by way of brief startling reactions and/or temporary vacating of the area, or decreased foraging (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 would only be exposed briefly to a small ensonified area that might result in take. Additionally, required mitigation measures would further reduce exposure to sound that could result in more severe behavioral harassment.

In summary and as described above, the following factors primarily 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 ensonified areas during the planned survey to avoid exposure to sounds from the activity;
- Take is anticipated to be by Level B harassment only consisting of brief startling reactions and/or temporary avoidance of the ensonified area;
- Survey activities will occur in such a comparatively small portion of the BIA for the NARW migration that any avoidance of the area due to survey activities would not affect migration. In addition, mitigation measures require shutdown at 500 m (almost four times the size of the Level B harassment zone of 141 m) to minimize the effects of any Level B harassment take of 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 activity will have a negligible impact on all affected marine mammal species or stocks.

Small Numbers

As noted previously, only take of small numbers of marine mammals 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.

NMFS authorizes incidental take by Level B harassment only of 15 marine mammal species with 16 managed stocks. The total amount of takes authorized is less than 6 percent relative to the best available population abundance for any of the 16 managed stocks (highest being for the Western North Atlantic Migratory Coastal Stock of Bottlenose dolphins) (Table 3). The take numbers authorized are considered conservative estimates for purposes of the small numbers determination as they assume all takes represent different individual animals, which is unlikely to be the case.

Based on the analysis contained herein of the planned activity (including the mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS finds that small numbers of marine mammals would 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 would not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

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 consults internally whenever we propose to authorize take for endangered or threatened species.

NMFS Office of Protected Resources (OPR) has authorized 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 NMFS Greater Atlantic Regional Fisheries Office's (GARFO) 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).

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.

Authorization

As a result of these determinations, NMFS has issued an IHA to AE for conducting marine site characterization surveys in coastal waters off of New York and New Jersey in the New York Bight for a period of 1 year, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated. The IHA can be found at *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-other-energy-activities-renewable.*

Dated: June 22, 2023.

Kimberly Damon-Randall,

Director, Office of Protected Resources,

National Marine Fisheries Service.

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