DATES: Written, telefaxed, or email comments must be received on or before June 4, 2018.

ADDRESSES: These documents are available upon written request or by appointment in the Permits and Conservation Division, Office of Protected Resources, NMFS, 1315 East-West Highway, Room 13705, Silver Spring, MD 20910; phone (301) 427–8401; fax (301) 713–0376.

Written comments on this application should be submitted to the Chief, Permits and Conservation Division, at the address listed above. Comments may also be submitted by facsimile to (301) 713–0376, or by email to *NMFS.Pr1Comments@noaa.gov.* Please include the File No. 22049 in the subject line of the email comment.

Those individuals requesting a public hearing should submit a written request to the Chief, Permits and Conservation Division at the address listed above. The request should set forth the specific reasons why a hearing on this application would be appropriate.

FOR FURTHER INFORMATION CONTACT: Carrie Hubard, (301) 427–8401.

SUPPLEMENTARY INFORMATION: The subject permit is requested under the authority of the Marine Mammal Protection Act of 1972, as amended (MMPA; 16 U.S.C. 1361 *et seq.*) and the regulations governing the taking and importing of marine mammals (50 CFR part 216).

The applicant proposes to film bottlenose dolphins in Everglades National Park, Florida from boats, helicopters, and underwater cameras from June through September 2018. Up to 140 dolphins may be harassed during helicopter flights. An additional 276 dolphins may be harassed during vessel filming. The goal of the project is to obtain footage of mud-ring feeding dolphins that will be used in an upcoming television documentary series to be released on Netflix. The permit would be valid until October 1, 2018.

In compliance with the National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*), an initial determination has been made that the activity proposed is categorically excluded from the requirement to prepare an environmental assessment or environmental impact statement.

Concurrent with the publication of this notice in the **Federal Register**, NMFS is forwarding copies of the application to the Marine Mammal Commission and its Committee of Scientific Advisors.

Dated: May 1, 2018.

Julia Marie Harrison,

Chief, Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries Service.

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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648–XF984

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Marine Site Characterization Surveys Off of Rhode Island and Massachusetts

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

ACTION: Notice; proposed incidental harassment authorization; request for comments.

SUMMARY: NMFS has received a request from Deepwater Wind New England, LLC (DWW), for authorization to take marine mammals incidental to marine site characterization surveys off the coast of Rhode Island and Massachusetts in the area of the Commercial Lease of Submerged Lands for Renewable Energy Development on the Outer Continental Shelf (OCS–A 0486) and along potential submarine cable routes to a landfall location in Rhode Island, Massachusetts or New York. Pursuant to the Marine Mammal Protection Act (MMPA), NMFS is requesting comments on its proposal to issue an incidental harassment authorization (IHA) to incidentally take marine mammals during the specified activities. NMFS will consider public comments prior to making any final decision on the issuance of the requested MMPA authorizations and agency responses will be summarized in the final notice of our decision.

DATES: Comments and information must be received no later than June 4, 2018.

ADDRESSES: Comments should be addressed to Jolie Harrison, Chief, Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries Service. Physical comments should be sent to 1315 East-West Highway, Silver Spring, MD 20910 and electronic comments should be sent to *ITP.carduner@noaa.gov.*

Instructions: NMFS is not responsible for comments sent by any other method, to any other address or individual, or received after the end of the comment period. Comments received electronically, including all attachments, must not exceed a 25-megabyte file size. Attachments to electronic comments will be accepted in Microsoft Word or Excel or Adobe PDF file formats only. All comments received are a part of the public record and will generally be posted online at *www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-other-energy-activities-renewable* without change. All personal identifying information (*e.g.,* name, address) voluntarily submitted by the commenter may be publicly accessible. Do not submit confidential business information or otherwise sensitive or protected information.

FOR FURTHER INFORMATION CONTACT: Jordan Carduner, Office of Protected Resources, NMFS, (301) 427–8401. Electronic copies of the applications and supporting documents, as well as a list of the references cited in this document, may be obtained by visiting the internet at: *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

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 issued or, if the taking is limited to harassment, a notice of a proposed authorization is provided to the public for review.

An authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s), will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses (where relevant), and if the permissible methods of taking and requirements pertaining to the mitigation, monitoring and reporting of such takings are set forth.

NMFS has defined ''negligible impact'' in 50 CFR 216.103 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.

The MMPA states that the term ''take'' means to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal.

Except with respect to certain activities not pertinent here, 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).

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 incidental harassment authorization) with respect to potential impacts on the human environment.

Accordingly, NMFS is preparing an Environmental Assessment (EA) to consider the environmental impacts associated with the issuance of the proposed IHA. We will review all comments submitted in response to this notice prior to concluding our NEPA process or making a final decision on the IHA request.

Summary of Request

On January 3, 2018, NMFS received a request from DWW for an IHA to take marine mammals incidental to marine site characterization surveys off the coast of Massachusetts and Rhode Island in the area of the Commercial Lease of Submerged Lands for Renewable Energy Development on the Outer Continental Shelf (OCS–A 0486) and along potential submarine cable routes to a landfall location in either Rhode Island, Massachusetts or New York. A revised application was received on April 18, 2018. NMFS deemed that request to be adequate and complete. DWW's request is for take of 14 marine mammal species by Level B harassment. Neither DWW nor NMFS expects serious injury or mortality to result from this activity and the activity is expected to last no more than one year, therefore, an IHA is appropriate.

Description of the Proposed Activity

Overview

DWW proposes to conduct marine site characterization surveys, including high-resolution geophysical (HRG) and geotechnical surveys, in the area of Commercial Lease of Submerged Lands for Renewable Energy Development on the Outer Continental Shelf #OCS–A 0486 (Lease Area) and along potential submarine cable routes to landfall locations in either Rhode Island, Massachusetts or Long Island, New York. Surveys would occur from approximately June 15, 2018 through December 31, 2018.

The purpose of the marine site characterization surveys are to obtain a baseline assessment of seabed/sub-surface soil conditions in the Lease Area and cable route corridors to support the siting of potential future offshore wind projects. Underwater sound resulting from DWW's proposed site characterization surveys has the potential to result in incidental take of marine mammals in the form of behavioral harassment.

Dates and Duration

The estimated duration of the geophysical survey is expected to be up to 200 days between June 15, 2018, and December 31, 2018. The geotechnical surveys are expected to take up to 100 days between June 15, 2018, and December 31, 2018. This schedule is based on 24-hour operations and includes potential down time due to inclement weather. Surveys will last for approximately seven months and are anticipated to commence upon issuance of the requested IHA, if appropriate.

Specific Geographic Region

DWW's survey activities would occur in the Northwest Atlantic Ocean within Federal waters. Surveys would occur in the Lease Area and along potential submarine cable routes to landfall locations in either Rhode Island, Massachusetts or Long Island, New York (see Figure 1 in the IHA application). The Lease Area is approximately 394 square kilometers (km^2) (97,498 acres) and is approximately 20 km south of Rhode Island at its closest point to land.

Detailed Description of the Specified Activities

DWW's proposed marine site characterization surveys include HRG and geotechnical survey activities. Surveys would occur within the Bureau of Ocean Energy Management (BOEM) Rhode Island–Massachusetts Wind Energy Area (RI–MA WEA) which is east of Long Island, New York and south of Rhode Island and Massachusetts (see Figure 1 in the IHA application). Water depths in the Lease Area range from 26 to 48 meters (m) (85 to 157 feet (ft)). For the purpose of this IHA the Lease Area and submarine cable corridor are collectively termed the Project Area.

Geophysical and shallow geotechnical survey activities are anticipated to be supported by a vessel approximately 20–70 m long which will maintain a speed of up to five knots (kn) while transiting survey lines. Near shore geophysical and shallow geotechnical surveys (if required) would be performed by shallow draft vessels approximately 9 to 23 m long which will maintain a speed of up to five kn while transiting survey lines. Deep geotechnical survey activities and possible shallow geotechnical activities are anticipated to be conducted from a 40 to 100 m dynamically positioned (DP) vessel, jack-up vessel, or anchored vessel, with support of a tug boat. Survey activities will be executed in compliance with the July 2015 *BOEM Guidelines for Providing Geophysical, Geotechnical, and Geohazard Information Pursuant to 30 CFR part 585.* The proposed HRG and geotechnical survey activities are described below.

Geotechnical Survey Activities

DWW's proposed geotechnical survey activities would include the following:

- Vibracores to characterize the geological and geotechnical characteristics of the seabed, up to approximately 5 m deep. A hydraulic or electric driven pulsating head is used to drive a hollow tube into the seafloor and recover a stratified representation of the sediment.
- Core Penetration Testing (CPT) to determine stratigraphy and in-situ conditions of the sediments. Target penetration is 60 to 75 m.
- Deep Boring Cores would be drilled to determine the vertical and lateral variation in seabed conditions and provide geotechnical data to depths at least 10 m deeper than design penetration of the foundations (60 to 75 m target penetration).

Shallow geotechnical surveys, consisting of CPTs and vibracores, are planned for within the Lease Area and approximately every one to two kilometers (km) along the export cable routes. Foundation-depth geotechnical borings are also planned at each proposed foundation location within the Lease Area. While the quantity and locations of wind turbine generators to be installed, as well as cable route, has yet to be determined, an estimate of 153 vibracores, 20 CPTs, and 16 deep borings are planned within the Lease Area and along the export cable routes.

In considering whether marine mammal harassment is an expected outcome of exposure to a particular

activity or sound source, NMFS considers the nature of the exposure itself (*e.g.,* the magnitude, frequency, or duration of exposure), characteristics of the marine mammals potentially exposed, and the conditions specific to the geographic area where the activity is expected to occur (*e.g.,* whether the activity is planned in a foraging area, breeding area, nursery or pupping area, or other biologically important area for the species). We then consider the expected response of the exposed animal and whether the nature and duration or intensity of that response is expected to cause disruption of behavioral patterns (*e.g.,* migration, breathing, nursing, breeding, feeding, or sheltering) or injury.

Geotechnical survey activities would be conducted from a drill ship equipped with DP thrusters. DP thrusters would be used to position the sampling vessel on station and maintain position at each sampling location during the sampling activity. Sound produced through use of DP thrusters is similar to that produced by transiting vessels and DP thrusters are typically operated either in a similarly predictable manner or used for short durations around stationary activities. NMFS does not believe acoustic impacts from DP thrusters are likely to result in take of marine mammals in the absence of activity- or location-specific circumstances that may otherwise represent specific concerns for marine mammals (*i.e.,* activities proposed in area known to be of particular importance for a particular species), or associated activities that may increase the potential to result in take when in concert with DP thrusters. In this case, we are not aware of any such circumstances. Monitoring of past projects that entailed use of DP thrusters has shown a lack of observed marine mammal responses as a result of exposure to sound from DP thrusters. Therefore, NMFS believes the likelihood of DP thrusters used during the proposed geotechnical surveys resulting in harassment of marine mammals to be so low as to be discountable. As DP thrusters are not expected to result in take of marine mammals, these activities are not analyzed further in this document.

Vibracoring entails driving a hydraulic or electric pulsating head through a hollow tube into the seafloor to recover a stratified representation of the sediment. The vibracoring process is short in duration and is performed from a dynamic positioning vessel. The vessel would use DP thrusters to maintain the vessel's position while the vibracore sample is taken, as described above. The vibracoring process would always be performed in concert with DP thrusters, and DP thrusters would begin operating prior to the activation of the vibracore to maintain the vessel's position; thus, we expect that any marine mammals in the project area would detect the presence and noise associated with the vessel and the DP thrusters prior to commencement of vibracoring. Any reaction by marine mammals would be expected to be similar to reactions to the concurrent DP thrusters, which are expected to be minor and short term, *i.e.,* not constituting Level B harassment, as defined by the MMPA. In this case, vibracoring is not planned in any areas of particular biological significance for any marine mammals. Thus while a marine mammal may perceive noise from vibracoring and may respond briefly, we believe the potential for this response to rise to the level of take to be so low as to be discountable, based on the short duration of the activity and the fact that marine mammals would be expected to react to the vessel and DP thrusters before vibracoring commences, potentially through brief avoidance. In addition, the fact that the geographic area is not biologically important for any marine mammal species means that such reactions are not likely to carry any meaningful significance for the animals.

Field studies conducted off the coast of Virginia to determine the underwater noise produced by CPTs and borehole drilling found that these activities did not result in underwater noise levels that exceeded current thresholds for Level B harassment of marine mammals (Kalapinski, 2015). Given the small size and energy footprint of CPTs and boring cores, NMFS believes the likelihood that noise from these activities would exceed the Level B harassment threshold at any appreciable distance is so low as to be discountable. Therefore, geotechnical survey activities, including CPTs, boring cores and vibracores, are not expected to result in harassment of marine mammals and are not analyzed further in this document.

Geophysical Survey Activities

DWW has proposed that HRG survey operations would be conducted continuously 24 hours per day. Based on 24-hour operations, the estimated duration of the geophysical survey activities would be approximately 200 days (including estimated weather down time). The geophysical survey activities proposed by DWW would include the following:

- Multibeam Depth Sounder to determine water depths and general bottom topography. The multibeam echosounder sonar system projects sonar pulses in several angled beams from a transducer mounted to a ship's hull. The beams radiate out from the transducer in a fan-shaped pattern orthogonally to the ship's direction.
- Shallow Penetration Sub-Bottom Profiler (Chirp) to map the near surface stratigraphy (top 0 to 5 m of sediment below seabed). A Chirp system emits sonar pulses which increase in frequency (3.5 to 200 kHz) over time. The pulse length frequency range can be adjusted to meet project variables.
- Medium Penetration Sub-Bottom Profiler (Boomer) to map deeper subsurface stratigraphy as needed. This system is commonly mounted on a sled and towed behind a boat.
- Medium Penetration Sub-Bottom Profiler (Sparker and/or bubble gun) to map deeper subsurface stratigraphy as needed. Sparkers create acoustic pulses omni-directionally from the source that can penetrate several hundred meters into the seafloor. Hydrophone arrays towed nearby receive the return signals.
- Sidescan Sonar used to image the seafloor for seabed sediment classification purposes and to identify natural and man-made acoustic targets on the seafloor. The sonar device emits conical or fan-shaped pulses down toward the seafloor in multiple beams at a wide angle, perpendicular to the path of the sensor through the water. The acoustic return of the pulses is recorded in a series of cross-track slices, which can be joined to form an image of the sea bottom within the swath of the beam.
- Marine Magnetometer to detect ferrous metal objects on the seafloor which may cause a hazard including anchors, chains, cables, pipelines, ballast stones and other scattered shipwreck debris, munitions of all sizes, unexploded ordinances, aircraft, engines and any other object with magnetic expression.

Table 1 identifies the representative survey equipment that may be used in support of planned geophysical survey activities. The make and model of the listed geophysical equipment will vary depending on availability and the final equipment choices will vary depending upon the final survey design, vessel availability, and survey contractor selection. Geophysical surveys are expected to use several equipment types concurrently in order to collect multiple aspects of geophysical data along one transect. Selection of equipment combinations is based on specific survey objectives. Any survey equipment selected would have characteristics similar to the systems described below, if different.

TABLE 1—SUMMARY OF GEOPHYSICAL SURVEY EQUIPMENT PROPOSED FOR USE BY DWW

Equipment type	Operating frequencies (kHz)	Source level (SLrms dB re 1 μPA @1 m)	Operational depth (meters below surface)	Beam width (degrees)	Pulse duration (milliseconds)
Multibeam Depth Sounding					
Reson SeaBat 7125 [1]	200 and 400	220	4	128	0.03 to 0.3.
Reson SeaBat 7101 [2]	100	162	2 to 5	140	0.8 to 3.04.
R2SONIC Sonic 2020 [1]	170 to 450	162	2 to 5	160	0.11.
Shallow Sub-bottom Profiling					
Teledyne Benthos Chirp III [3]	2 to 7	197	4	45	0.2.
EdgeTech SB3200 XS SB216 [4]	2 to 16	176	2 to 5	170	3.4.
Medium Penetration Sub-bottom Profiling					
Applied Acoustics Fugro boomer [1]	0.1 to 10	175	1 to 2	60	58.
Applied Acoustics S-Boom system—CSP–D 2400HV (600 joule/pulse) [5]	0.25 to 8	203	2	25 to 35	0.6.
GeoResources 800 Joule Sparker [6]	0.75 to 2.75	203	4	360 (omni-directional).	0.1 to 0.2.
Falmouth Scientific HMS 620 bubble gun [7].	0.02 to 1.7	196	1.5	360 (omni-directional).	1.6.
Applied Acoustics Dura-Spark 240 [5]	0.03 to 5	213	1 to 2	170	2.1.
Side Scan Sonar					
Klein Marine Systems model 3900 [1].	445 and 900	242	20	40	0.025.
EdgeTech model 4125 [1]	105 and 410	225	10	158	10 to 20.
EdgeTech model 4200 [1]	300 and 600	215 to 220	1	0.5 and 0.26	5 to 12.

[1] Source level obtained from equipment specifications as described in 2017 IHA issued to DWW for takes of marine mammals incidental to site characterization surveys off the coast of New York (82 FR 22250).
[2] Source level based on published manufacturer specifications and/or systems manual.
[3] Source level based on published manufacturer specifications and/or systems manual—assumed configured as TTV–171 with AT–471 transducer per system manual.
[4] Source level obtained from Crocker and Fratantonio (2016). Assumed to be 3200 XS with SB216. Used as proxy: 3200 XS with SB424 in 4–24 kHz mode Since the 3200 XS system manual lists same power output between SB216 and SB 424.
[5] Source level obtained from Crocker and Fratantonio (2016).
[6] Source level obtained from Crocker and Fratantonio (2016)—ELC820 used as proxy.
[7] Source level obtained from Crocker and Fratantonio (2016)—Used single plate 1 due to discrepancies noted in Crocker and Fratantonio (2016) regarding plate 2.

The deployment of HRG survey equipment, including the equipment planned for use during DWW's planned activity, produces sound in the marine environment that has the potential to result in harassment of marine mammals. However, sound propagation is dependent on several factors including operating mode, frequency and beam direction of the HRG equipment; thus, potential impacts to marine mammals from HRG equipment are driven by the specification of individual HRG sources. The specifications of the potential equipment planned for use during HRG survey activities (Table 1) were analyzed to determine which types of equipment would have the potential to result in harassment of marine mammals. HRG equipment that would be operated either at frequency ranges that fall outside the functional hearing ranges of marine mammals (*e.g.,* above 200 kHz) or that operate within marine mammal functional hearing ranges but have low sound source levels (*e.g.,* a single pulse at less than 200 dB re re 1 μPa) were assumed to not have the potential to result in marine mammal harassment and were therefore eliminated from further analysis. Of the potential HRG survey equipment planned for use, the following equipment was determined to have the potential to result in harassment of marine mammals:

- Teledyne Benthos Chirp III Sub-bottom Profiler;
- EdgeTech Sub-bottom Profilers (Chirp);
- Applied Acoustics Fugro Sub-bottom Profiler (Boomer);
- Applied Acoustics S-Boom Sub-bottom Profiling System consisting of a CSP–D 2400HV power supply and 3-plate catamaran;
- GeoResources 800 Joule Sparker;
- Falmouth Scientific HMS 620 Bubble Gun; and
- Applied Acoustics Dura-Spark 240 System.

As the HRG survey equipment listed above was determined to have the potential to result in harassment of marine mammals, the equipment listed above was carried forward in the analysis of potential impacts to marine mammals; all other HRG equipment planned for use by DWW is not expected to result in harassment of marine mammals and is therefore not analyzed further in this document.

Proposed mitigation, monitoring, and reporting measures are described in

detail later in this document (please see ''Proposed Mitigation'' and ''Proposed Monitoring and Reporting'').

Description of Marine Mammals in the Area of Specified Activity

Sections 3 and 4 of DWW's IHA application summarize available information regarding status and trends, distribution and habitat preferences, and behavior and life history, of the potentially affected species. Additional information regarding population trends and threats may be found in NMFS' Stock Assessment Reports (SAR; *www.nmfs.noaa.gov/pr/sars/*) and more general information about these species (*e.g.,* physical and behavioral descriptions) may be found on NMFS' website (*www.nmfs.noaa.gov/pr/species/mammals/*). All species that could potentially occur in the proposed survey areas are included in Table 5 of the IHA application. However, the temporal and/or spatial occurrence of several species listed in Table 5 of the IHA application is such that take of these species is not expected to occur, and they are not discussed further beyond the explanation provided here. Take of these species is not anticipated either because they have very low densities in the project area, are known to occur further offshore than the project area, or are considered very unlikely to occur in the project area during the proposed survey due to the species' seasonal occurrence in the area.

Table 2 lists all species with expected potential for occurrence in the survey area and with the potential to be taken as a result of the proposed survey and summarizes information related to the population or stock, including regulatory status under the MMPA and ESA and potential biological removal (PBR), where known. For taxonomy, we follow Committee on Taxonomy (2017). 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 mortality is anticipated or authorized here, PBR is included here as a gross indicator of the status of the species and other threats.

Marine mammal abundance estimates presented in this document represent the total number of individuals that make up a given stock or the total number estimated within a particular study or survey area. NMFS' stock abundance estimates for most species represent the total estimate of individuals within the geographic area, if known, that comprises that stock. For some species, this geographic area may extend beyond U.S. waters. All managed stocks in this region are assessed in NMFS' U.S. Atlantic SARs (*e.g.,* Hayes *et al.,* 2018). All values presented in Table 2 are the most recent available at the time of publication and are available in the 2017 draft Atlantic SARs (Hayes *et al.,* 2018).

TABLE 2—MARINE MAMMALS KNOWN TO OCCUR IN THE SURVEY AREA

Common name	Stock	NMFS MMPA and ESA status; strategic (Y/N) [1]	Stock abundance (CV, N_{min}, most recent abundance survey) [2]	Predicted abundance (CV) [3]	PBR [4]	Occurrence and seasonality in the survey area
Toothed whales (Odontoceti)						
Sperm whale (*Physeter macrocephalus*).	North Atlantic	E; Y	2,288 (0.28; 1,815; n/a)	5,353 (0.12)	3.6	Rare.
Long-finned pilot whale (*Globicephala melas*).	W North Atlantic	-; Y	5,636 (0.63; 3,464; n/a)	[5] 18,977 (0.11)	35	Rare.
Atlantic white-sided dolphin (*Lagenorhynchus acutus*).	W North Atlantic	-; N	48,819 (0.61; 30,403; n/a)	37,180 (0.07)	304	Rare.
Atlantic spotted dolphin (*Stenella frontalis*).	W North Atlantic	-; N	44,715 (0.43; 31,610; n/a)	55,436 (0.32)	316	Rare.
Bottlenose dolphin (*Tursiops truncatus*).	W North Atlantic, Offshore	-; N	77,532 (0.40; 56,053; 2011)	[5] 97,476 (0.06)	561	Common year round.
Common dolphin [6] (*Delphinus delphis*).	W North Atlantic	-; N	173,486 (0.55; 55,690; 2011)	86,098 (0.12)	557	Common year round.
Harbor porpoise (*Phocoena phocoena*).	Gulf of Maine/Bay of Fundy	-; N	79,833 (0.32; 61,415; 2011)	*45,089 (0.12)	706	Common year round.
Baleen whales (Mysticeti)						
North Atlantic right whale (*Eubalaena glacialis*).	W North Atlantic	E; Y	458 (0; 455; n/a)	*535 (0.45)	1.4	Year round in continental shelf and slope waters, occur seasonally to forage.
Humpback whale [7] (*Megaptera novaeangliae*).	Gulf of Maine	-; N	823 (0.42; 239; n/a)	*1,637 (0.07)	3.7	Common year round.
Fin whale [6] (*Balaenoptera physalus).*	W North Atlantic	E; Y	3,522 (0.27; 1,234; n/a)	4,633 (0.08)	2.5	Year round in continental shelf and slope waters, occur seasonally to forage.
Sei whale (*Balaenoptera borealis*).	Nova Scotia	E; Y	357 (0.52; 236; n/a)	*717 (0.30)	0.5	Year round in continental shelf and slope waters, occur seasonally to forage.
Minke whale [6] (*Balaenoptera acutorostrata*).	Canadian East Coast	-; N	20,741 (0.3; 1,425; n/a)	*2,112 (0.05)	162	Year round in continental shelf and slope waters, occur seasonally to forage.
Earless seals (Phocidae)						
Gray seal [8] (*Halichoerus grypus*).	W North Atlantic	-; N	27,131 (0.10; 25,908; n/a)		1,554	Rare.
Harbor seal (*Phoca vitulina*)	W North Atlantic	-; N	75,834 (0.15; 66,884; 2012)		2,006	Common year round.

[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 (see footnote 3) 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] Stock abundance as reported in NMFS marine mammal stock assessment reports except where otherwise noted. NMFSs abundance reports available online at: *www.nmfs.noaa.gov/pr/sars.* CV is coefficient of variation; N_{min} is the minimum estimate of stock abundance. In some cases, CV is not applicable. For certain stocks, abundance estimates are actual counts of animals and there is no associated CV. The most recent abundance survey that is reflected in the abundance estimate is presented; there may be more recent surveys that have not yet been incorporated into the estimate. All values presented here are from the 2017 draft Atlantic SARs.

[3] This information represents species- or guild-specific abundance predicted by recent habitat-based cetacean density models (Roberts *et al.,* 2016). These models provide the best available scientific information regarding predicted density patterns of cetaceans in the U.S. Atlantic Ocean, and we provide the corresponding abundance predictions as a point of reference. Total abundance estimates were produced by computing the mean density of all pixels in the modeled area and multiplying by its area. For those species marked with an asterisk, the available information supported development of either two or four seasonal models; each model has an associated abundance prediction. Here, we report the maximum predicted abundance.

[4] Potential biological removal, 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 size (OSP).

[5] Abundance estimates are in some cases reported for a guild or group of species when those species are difficult to differentiate at sea. Similarly, the habitat-based cetacean density models produced by Roberts *et al.* (2016) are based in part on available observational data which, in some cases, is limited to genus or guild in terms of taxonomic definition. Roberts *et al.* (2016) produced density models to genus level for *Globicephala* spp. and produced a density model for bottlenose dolphins that does not differentiate between offshore and coastal stocks.

[6] Abundance as reported in the 2007 Canadian Trans-North Atlantic Sighting Survey (TNASS), which provided full coverage of the Atlantic Canadian coast (Lawson and Gosselin, 2009). Abundance estimates from TNASS were corrected for perception and availability bias, when possible. In general, where the TNASS survey effort provided superior coverage of a stock's range (as compared with NOAA shipboard survey effort), the resulting abundance estimate is considered more accurate than the current NMFS abundance estimate (derived from survey effort with inferior coverage of the stock range). NMFS stock abundance estimate for the common dolphin is 70,184. NMFS stock abundance estimate for the fin whale is 1,618.

[7] 2017 U.S. Atlantic draft SAR for the Gulf of Maine feeding population lists a current abundance estimate of 335 individuals; this estimate was revised from the previous estimate of 823 individuals. However, the newer estimate is based on a single aerial line-transect survey in the Gulf of Maine. The 2017 U.S. Atlantic draft SAR notes that that previous estimate was based on a minimum number alive calculation which is generally more accurate than one derived from line-transect survey (Hayes *et al.,* 2017), and that the abundance estimate was revised solely because the previous estimate was greater than 8 years old. Therefore, the previous estimate of 823 is more accurate, and we note that even that estimate is defined on the basis of feeding location alone (*i.e.,* Gulf of Maine).

[8] NMFS stock abundance estimate applies to U.S. population only, actual stock abundance is approximately 505,000.

Four marine mammal species that are listed under the Endangered Species Act (ESA) may be present in the survey area and are included in the take request: The North Atlantic right whale, fin whale, sei whale, and sperm whale.

Below is a description of the species that are both common in the survey area south of Rhode Island and Massachusetts that have the highest likelihood of occurring, at least seasonally, in the survey area and are thus are expected to potentially be taken by the proposed activities. Though other marine mammal species are known to occur in the Northwest Atlantic Ocean, the temporal and/or spatial occurrence of several of these species is such that take of these species is not expected to occur, and they are therefore not discussed further beyond the explanation provided here. Take of these species is not anticipated either because they have very low densities in the project area (*e.g.,* blue whale, Clymene dolphin, pantropical spotted dolphin, striped dolphin, spinner dolphin, killer whale, false killer whale, pygmy killer whale, short-finned pilot whale), or, are known to occur further offshore than the project area (*e.g.,* beaked whales, rough toothed dolphin, Kogia *spp.*). For the majority of species potentially present in the specific geographic region, NMFS has designated only a single generic stock (*e.g.,* ''western North Atlantic'') for management purposes. This includes the ''Canadian east coast'' stock of minke whales, which includes all minke whales found in U.S. waters. For humpback and sei whales, NMFS defines stocks on the basis of feeding locations, *i.e.,* Gulf of Maine and Nova Scotia, respectively. However, our reference to humpback whales and sei whales in this document refers to any individuals of the species that are found in the specific geographic region.

North Atlantic Right Whale

The North Atlantic right whale ranges from the calving grounds in the southeastern United States to feeding grounds in New England waters and into Canadian waters (Waring *et al.,* 2016). Surveys have demonstrated the existence of seven areas where North Atlantic right whales congregate seasonally, including north and east of the proposed survey area in Georges Bank, off Cape Cod, and in Massachusetts Bay (Waring *et al.,* 2016). In the late fall months (*e.g.* October), right whales are generally thought to depart from the feeding grounds in the North Atlantic and move south to their calving grounds off Florida. However, recent research indicates our understanding of their movement patterns remains incomplete (Davis *et al.* 2017). A review of passive acoustic monitoring data from 2004 to 2014 throughout the western North Atlantic Ocean demonstrated nearly continuous year-round right whale presence across their entire habitat range, including in locations previously thought of as migratory corridors, suggesting that not all of the population undergoes a consistent annual migration (Davis *et al.* 2017). Acoustic monitoring data from 2004 to 2014 indicated that the number of North Atlantic right whale vocalizations detected in the proposed survey area were relatively constant throughout the year, with the exception of August through October when detected vocalizations showed an apparent decline (Davis *et al.* 2017). North Atlantic right whales are expected to be present in the proposed survey area during the proposed survey, especially during the summer months, with numbers possibly lower in the fall.

The western North Atlantic population demonstrated overall growth of 2.8 percent per year between 1990 to 2010, despite a decline in 1993 and no growth between 1997 and 2000 (Pace *et al.* 2017). However, since 2010 the population has been in decline, with a 99.99 percent probability of a decline of just under 1 percent per year (Pace *et al.* 2017). Between 1990 and 2015, calving rates varied substantially, with low calving rates coinciding with all three periods of decline or no growth (Pace *et al.* 2017). On average, North Atlantic right whale calving rates are estimated to be roughly half that of southern right whales (*Eubalaena australis*) (Pace *et al.* 2017), which are increasing in abundance (NMFS 2015). In 2018, no new North Atlantic right whale calves were documented in their calving grounds; this represented the first time since annual NOAA aerial surveys began in 1989 that no new right whale calves were observed.

Data indicates that the number of adult females fell from 200 in 2010 to 186 in 2015 while males fell from 283 to 272 in the same time frame (Pace *et al.,* 2017). In addition, elevated North Atlantic right whale mortalities have occurred since June 7, 2017. A total of 18 confirmed dead stranded whales (12 in Canada; 6 in the United States), with an additional 5 live whale entanglements in Canada, have been documented to date. This event has been declared an Unusual Mortality Event (UME), with human interactions (*i.e.,* fishery-related entanglements and vessel strikes) identified as the most likely cause. More information is available online at: *http://www.nmfs.noaa.gov/pr/health/mmume/2017northatlanticrightwhaleume.html.*

The proposed survey area is part of an important migratory area for North Atlantic right whales; this important

migratory area is comprised of the waters of the continental shelf offshore the East Coast of the United States and extends from Florida through Massachusetts. NMFS' regulations at 50 CFR part 224.105 designated nearshore waters of the Mid-Atlantic Bight as Mid-Atlantic U.S. Seasonal Management Areas (SMA) for right whales in 2008. SMAs were developed to reduce the threat of collisions between ships and right whales around their migratory route and calving grounds. A portion of one SMA, which occurs off Block Island, Rhode Island, overlaps spatially with a section of the proposed survey area. The SMA which occurs off Block Island is active from November 1 through April 30 of each year.

Humpback Whale

Humpback whales are found worldwide in all oceans. Humpback whales were listed as endangered under the Endangered Species Conservation Act (ESCA) in June 1970. In 1973, the ESA replaced the ESCA, and humpbacks continued to be listed as endangered. NMFS recently evaluated the status of the species, and on September 8, 2016, NMFS divided the species into 14 distinct population segments (DPS), removed the current species-level listing, and in its place listed four DPSs as endangered and one DPS as threatened (81 FR 62259; September 8, 2016). The remaining nine DPSs were not listed. The West Indies DPS, which is not listed under the ESA, is the only DPS of humpback whale that is expected to occur in the survey area. The best estimate of population abundance for the West Indies DPS is 12,312 individuals, as described in the NMFS Status Review of the Humpback Whale under the Endangered Species Act (Bettridge *et al.,* 2015).

In New England waters, feeding is the principal activity of humpback whales, and their distribution in this region has been largely correlated to abundance of prey species, although behavior and bathymetry are factors influencing foraging strategy (Payne *et al.* 1986, 1990). Humpback whales are frequently piscivorous when in New England waters, feeding on herring (*Clupea harengus*), sand lance (*Ammodytes* spp.), and other small fishes, as well as euphausiids in the northern Gulf of Maine (Paquet *et al.* 1997). During winter, the majority of humpback whales from North Atlantic feeding areas (including the Gulf of Maine) mate and calve in the West Indies, where spatial and genetic mixing among feeding groups occurs, though significant numbers of animals are found in mid- and high-latitude regions at this time and some individuals have been sighted repeatedly within the same winter season, indicating that not all humpback whales migrate south every winter (Waring *et al.,* 2016).

Since January 2016, elevated humpback whale mortalities have occurred along the Atlantic coast from Maine through North Carolina. Partial or full necropsy examinations have been conducted on approximately half of the 62 known cases. A portion of the whales have shown evidence of pre-mortem vessel strike; however, this finding is not consistent across all of the whales examined so more research is needed. NOAA is consulting with researchers that are conducting studies on the humpback whale populations, and these efforts may provide information on changes in whale distribution and habitat use that could provide additional insight into how these vessel interactions occurred. Three previous UMEs involving humpback whales have occurred since 2000, in 2003, 2005, and 2006. More information is available at *www.nmfs.noaa.gov/pr/health/mmume/2017humpbackatlanticume.html.*

Fin Whale

Fin whales are common in waters of the U. S. Atlantic Exclusive Economic Zone (EEZ), principally from Cape Hatteras northward (Waring *et al.,* 2016). Fin whales are present north of 35-degree latitude in every season and are broadly distributed throughout the western North Atlantic for most of the year, though densities vary seasonally (Waring *et al.,* 2016). Fin whales are found in small groups of up to five individuals (Brueggeman *et al.,* 1987). The main threats to fin whales are fishery interactions and vessel collisions (Waring *et al.,* 2016). The proposed survey area would overlap spatially and temporally with a biologically important feeding area for fin whales. The important fin whale feeding area occurs from March through October and stretches from an area south of Montauk Point to south of Martha's Vineyard.

Sei Whale

The Nova Scotia stock of sei whales can be found in deeper waters of the continental shelf edge waters of the northeastern United States and northeastward to south of Newfoundland. The southern portion of the stock's range during spring and summer includes the Gulf of Maine and Georges Bank. Spring is the period of greatest abundance in U.S. waters, with sightings concentrated along the eastern margin of Georges Bank and into the Northeast Channel area, and along the southwestern edge of Georges Bank in the area of Hydrographer Canyon (Waring *et al.,* 2015). Sei whales occur in shallower waters to feed. Sei whales are listed as engendered under the ESA and the Nova Scotia stock is considered strategic and depleted under the MMPA.

Minke Whale

Minke whales can be found in temperate, tropical, and high-latitude waters. The Canadian East Coast stock can be found in the area from the western half of the Davis Strait (45 °W) to the Gulf of Mexico (Waring *et al.,* 2016). This species generally occupies waters less than 100 m deep on the continental shelf. There appears to be a strong seasonal component to minke whale distribution in which spring to fall are times of relatively widespread and common occurrence, and when the whales are most abundant in New England waters, while during winter the species appears to be largely absent (Waring *et al.,* 2016).

Sperm Whale

The distribution of the sperm whale in the U.S. EEZ occurs on the continental shelf edge, over the continental slope, and into mid-ocean regions (Waring *et al.,* 2014). The basic social unit of the sperm whale appears to be the mixed school of adult females plus their calves and some juveniles of both sexes, normally numbering 20–40 animals in all. There is evidence that some social bonds persist for many years (Christal *et al.,* 1998). This species forms stable social groups, site fidelity, and latitudinal range limitations in groups of females and juveniles (Whitehead, 2002). In summer, the distribution of sperm whales includes the area east and north of Georges Bank and into the Northeast Channel region, as well as the continental shelf (inshore of the 100-m isobath) south of New England. In the fall, sperm whale occurrence south of New England on the continental shelf is at its highest level, and there remains a continental shelf edge occurrence in the mid-Atlantic bight. In winter, sperm whales are concentrated east and northeast of Cape Hatteras.

Long-Finned Pilot Whale

Long-finned pilot whales are found from North Carolina and north to Iceland, Greenland and the Barents Sea (Waring *et al.,* 2016). In U.S. Atlantic waters the species is distributed principally along the continental shelf edge off the northeastern U.S. coast in winter and early spring and in late spring, pilot whales move onto Georges Bank and into the Gulf of Maine and more northern waters and remain in

these areas through late autumn (Waring *et al.,* 2016). Long-finned pilot whales are not listed under the ESA. The Western North Atlantic stock is considered strategic under the MMPA.

Atlantic White-Sided Dolphin

White-sided dolphins are found in temperate and sub-polar waters of the North Atlantic, primarily in continental shelf waters to the 100-m depth contour from central West Greenland to North Carolina (Waring *et al.,* 2016). The Gulf of Maine stock is most common in continental shelf waters from Hudson Canyon to Georges Bank, and in the Gulf of Maine and lower Bay of Fundy. Sighting data indicate seasonal shifts in distribution (Northridge *et al.,* 1997). During January to May, low numbers of white-sided dolphins are found from Georges Bank to Jeffreys Ledge (off New Hampshire), with even lower numbers south of Georges Bank, as documented by a few strandings collected on beaches of Virginia to South Carolina. From June through September, large numbers of white-sided dolphins are found from Georges Bank to the lower Bay of Fundy. From October to December, white-sided dolphins occur at intermediate densities from southern Georges Bank to southern Gulf of Maine (Payne and Heinemann 1990). Sightings south of Georges Bank, particularly around Hudson Canyon, occur year round but at low densities.

Atlantic Spotted Dolphin

Atlantic spotted dolphins are found in tropical and warm temperate waters ranging from southern New England, south to Gulf of Mexico and the Caribbean to Venezuela (Waring *et al.,* 2014). This stock regularly occurs in continental shelf waters south of Cape Hatteras and in continental shelf edge and continental slope waters north of this region (Waring *et al.,* 2014). There are two forms of this species, with the larger ecotype inhabiting the continental shelf and is usually found inside or near the 200 m isobaths (Waring *et al.,* 2014). Atlantic spotted dolphins are not listed under the ESA and the stock is not considered depleted or strategic under the MMPA.

Common Dolphin

The short-beaked common dolphin is found world-wide in temperate to subtropical seas. In the North Atlantic, short-beaked common dolphins are commonly found over the continental shelf between the 100-m and 2,000-m isobaths and over prominent underwater topography and east to the mid-Atlantic Ridge (Waring *et al.,* 2016). Only the western North Atlantic stock may be present in the Lease Area.

Bottlenose Dolphin

There are two distinct bottlenose dolphin ecotypes in the western North Atlantic: the coastal and offshore forms (Waring *et al.,* 2016). The offshore form is distributed primarily along the outer continental shelf and continental slope in the Northwest Atlantic Ocean from Georges Bank to the Florida Keys and is the only type that may be present in the survey area as the survey area is north of the northern extent of the range of the Western North Atlantic Northern Migratory Coastal Stock.

Harbor Porpoise

In the Lease Area, only the Gulf of Maine/Bay of Fundy stock may be present. This stock is found in U.S. and Canadian Atlantic waters and is concentrated in the northern Gulf of Maine and southern Bay of Fundy region, generally in waters less than 150 m deep (Waring *et al.,* 2016). They are seen from the coastline to deep waters (>1800 m; Westgate *et al.* 1998), although the majority of the population is found over the continental shelf (Waring *et al.,* 2016). The main threat to the species is interactions with fisheries, with documented take in the U.S. northeast sink gillnet, mid-Atlantic gillnet, and northeast bottom trawl fisheries and in the Canadian herring weir fisheries (Waring *et al.,* 2016).

Harbor Seal

The harbor seal is found in all nearshore waters of the North Atlantic and North Pacific Oceans and adjoining seas above about 30° N (Burns, 2009). In the western North Atlantic, harbor seals are distributed from the eastern Canadian Arctic and Greenland south to southern New England and New York, and occasionally to the Carolinas (Waring *et al.,* 2016). Haulout and pupping sites are located off Manomet, MA and the Isles of Shoals, ME, but generally do not occur in areas in southern New England (Waring *et al.,* 2016).

Gray Seal

There are three major populations of gray seals found in the world; eastern Canada (western North Atlantic stock), northwestern Europe and the Baltic Sea. Gray seals in the survey area belong to the western North Atlantic stock. The range for this stock is thought to be from New Jersey to Labrador. Current population trends show that gray seal abundance is likely increasing in the U.S. Atlantic EEZ (Waring *et al.,* 2016). Although the rate of increase is unknown, surveys conducted since their arrival in the 1980s indicate a steady increase in abundance in both Maine and Massachusetts (Waring *et al.,* 2016). It is believed that recolonization by Canadian gray seals is the source of the U.S. population (Waring *et al.,* 2016).

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. Current data indicate that 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) recommended that marine mammals be divided into functional hearing groups based on directly measured or estimated hearing ranges on the basis of available behavioral response data, audiograms derived using auditory evoked potential techniques, anatomical modeling, and other data. Note that no direct measurements of hearing ability have been successfully completed for mysticetes (*i.e.,* low-frequency cetaceans). Subsequently, NMFS (2016) 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. The functional groups and the associated frequencies are indicated below (note that these frequency ranges correspond to the range for the composite group, with the entire range not necessarily reflecting the capabilities of every species within that group):

- Low-frequency cetaceans (mysticetes): Generalized hearing is estimated to occur between approximately 7 Hertz (Hz) and 35 kilohertz (kHz);
- Mid-frequency cetaceans (larger toothed whales, beaked whales, and most delphinids): Generalized hearing is estimated to occur between approximately 150 Hz and 160 kHz;
- High-frequency cetaceans (porpoises, river dolphins, and members of the genera Kogia and Cephalorhynchus; including two members of the genus Lagenorhynchus, on the basis of recent echolocation data

and genetic data): Generalized hearing is estimated to occur between approximately 275 Hz and 160 kHz; and

• Pinnipeds in water; Phocidae (true seals): Generalized hearing is estimated to occur between approximately 50 Hz to 86 kH.

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 (2016) for a review of available information. Fourteen marine mammal species (twelve cetacean and two pinniped (both phocid species) have the reasonable potential to co-occur with the proposed survey activities (see Table 2). Of the cetacean species that may be present, five are classified as low-frequency cetaceans (*i.e.,* all mysticete species), six are classified as mid-frequency cetaceans (*i.e.,* all delphinid species and the sperm whale), and one is classified as a high-frequency cetacean (*i.e.,* harbor porpoise).

Potential Effects of Specified Activities on Marine Mammals and Their Habitat

This section includes a summary and discussion of the ways that components of the specified activity may impact marine mammals and their habitat. The ''Estimated Take'' section later in this document includes a quantitative analysis of the number of individuals that are expected to be taken by this activity. The ''Negligible Impact Analysis and Determination'' section considers the content of this section, the ''Estimated Take'' section, and the ''Proposed Mitigation'' section, to draw conclusions regarding the likely impacts of these activities on the reproductive success or survivorship of individuals and how those impacts on individuals are likely to impact marine mammal species or stocks.

Background on Sound

Sound is a physical phenomenon consisting of minute vibrations that travel through a medium, such as air or water, and is generally characterized by several variables. Frequency describes the sound's pitch and is measured in Hz or kHz, while sound level describes the sound's intensity and is measured in dB. Sound level increases or decreases exponentially with each dB of change. The logarithmic nature of the scale means that each 10-dB increase is a 10-fold increase in acoustic power (and a 20-dB increase is then a 100-fold increase in power). A 10-fold increase in acoustic power does not mean that the sound is perceived as being 10 times louder, however. Sound levels are compared to a reference sound pressure (micro-Pascal) to identify the medium. For air and water, these reference pressures are ''re: 20 micro Pascals (µPa)'' and ''re: 1 µPa,'' respectively. Root mean square (RMS) is the quadratic mean sound pressure over the duration of an impulse. RMS is calculated by squaring all of the sound amplitudes, averaging the squares, and then taking the square root of the average (Urick 1975). RMS accounts for both positive and negative values; squaring the pressures makes all values positive so that they may be accounted for in the summation of pressure levels. This measurement is often used in the context of discussing behavioral effects, in part because behavioral effects, which often result from auditory cues, may be better expressed through averaged units rather than by peak pressures.

When sound travels (propagates) from its source, its loudness decreases as the distance traveled by the sound increases. Thus, the loudness of a sound at its source is higher than the loudness of that same sound one km away. Acousticians often refer to the loudness of a sound at its source (typically referenced to one meter from the source) as the source level and the loudness of sound elsewhere as the received level (*i.e.,* typically the receiver). For example, a humpback whale 3 km from a device that has a source level of 230 dB may only be exposed to sound that is 160 dB loud, depending on how the sound travels through water (*e.g.,* spherical spreading (6 dB reduction with doubling of distance) was used in this example). As a result, it is important to understand the difference between source levels and received levels when discussing the loudness of sound in the ocean or its impacts on the marine environment.

As sound travels from a source, its propagation in water is influenced by various physical characteristics, including water temperature, depth, salinity, and surface and bottom properties that cause refraction, reflection, absorption, and scattering of sound waves. Oceans are not homogeneous and the contribution of each of these individual factors is extremely complex and interrelated. The physical characteristics that determine the sound's speed through the water will change with depth, season, geographic location, and with time of day (as a result, in actual active sonar operations, crews will measure oceanic conditions, such as sea water temperature and depth, to calibrate models that determine the path the sonar signal will take as it travels through the ocean and how strong the sound signal will be at a given range along a particular transmission path). As sound travels through the ocean, the intensity associated with the wavefront diminishes, or attenuates. This decrease in intensity is referred to as propagation loss, also commonly called transmission loss.

Acoustic Impacts

Geophysical surveys may temporarily impact marine mammals in the area due to elevated in-water sound levels. Marine mammals are continually exposed to many sources of sound. Naturally occurring sounds such as lightning, rain, sub-sea earthquakes, and biological sounds (*e.g.,* snapping shrimp, whale songs) are widespread throughout the world's oceans. Marine mammals produce sounds in various contexts and use sound for various biological functions including, but not limited to: (1) Social interactions; (2) foraging; (3) orientation; and (4) predator detection. Interference with producing or receiving these sounds may result in adverse impacts. Audible distance, or received levels of sound depend on the nature of the sound source, ambient noise conditions, and the sensitivity of the receptor to the sound (Richardson *et al.,* 1995). Type and significance of marine mammal reactions to sound are likely dependent on a variety of factors including, but not limited to, (1) the behavioral state of the animal (*e.g.,* feeding, traveling, etc.); (2) frequency of the sound; (3) distance between the animal and the source; and (4) the level of the sound relative to ambient conditions (Southall *et al.,* 2007).

When considering the influence of various kinds of sound on the marine environment, it is necessary to understand that different kinds of marine life are sensitive to different frequencies of sound. Current data indicate that not all marine mammal species have equal hearing capabilities (Richardson *et al.,* 1995; Wartzok and Ketten, 1999; Au and Hastings, 2008).

Animals are less sensitive to sounds at the outer edges of their functional hearing range and are more sensitive to a range of frequencies within the middle of their functional hearing range.

Hearing Impairment

Marine mammals may experience temporary or permanent hearing

impairment when exposed to loud sounds. Hearing impairment is classified by temporary threshold shift (TTS) and permanent threshold shift (PTS). PTS is considered auditory injury (Southall *et al.,* 2007) and occurs in a specific frequency range and amount. Irreparable damage to the inner or outer cochlear hair cells may cause PTS; however, other mechanisms are also involved, such as exceeding the elastic limits of certain tissues and membranes in the middle and inner ears and resultant changes in the chemical composition of the inner ear fluids (Southall *et al.,* 2007). There are no empirical data for onset of PTS in any marine mammal; therefore, PTS-onset must be estimated from TTS-onset measurements and from the rate of TTS growth with increasing exposure levels above the level eliciting TTS-onset. PTS is presumed to be likely if the hearing threshold is reduced by ≥40 dB (that is, 40 dB of TTS).

Temporary Threshold Shift (TTS)

TTS is the mildest form of hearing impairment that can occur during exposure to a loud sound (Kryter 1985). While experiencing TTS, the hearing threshold rises and a sound must be stronger in order to be heard. At least in terrestrial mammals, TTS can last from minutes or hours to (in cases of strong TTS) days, can be limited to a particular frequency range, and can occur to varying degrees (*i.e.,* a loss of a certain number of dBs of sensitivity). For sound exposures at or somewhat above the TTS threshold, hearing sensitivity in both terrestrial and marine mammals recovers rapidly after exposure to the noise ends.

Marine mammal hearing plays a critical role in communication with conspecifics and in interpretation of environmental cues for purposes such as predator avoidance and prey capture. Depending on the degree (elevation of threshold in dB), duration (*i.e.,* recovery time), and frequency range of TTS and the context in which it is experienced, TTS can have effects on marine mammals ranging from discountable to serious. For example, a marine mammal may be able to readily compensate for a brief, relatively small amount of TTS in a non-critical frequency range that takes place during a time when the animals is traveling through the open ocean, where ambient noise is lower and there are not as many competing sounds present. Alternatively, a larger amount and longer duration of TTS sustained during a time when communication is critical for successful mother/calf interactions could have more serious impacts if it were in the same frequency band as the necessary vocalizations and of a severity that it impeded communication. The fact that animals exposed to levels and durations of sound that would be expected to result in this physiological response would also be expected to have behavioral responses of a comparatively more severe or sustained nature is also notable and potentially of more importance than the simple existence of a TTS.

Currently, TTS data only exist for four species of cetaceans (bottlenose dolphin, beluga whale (*Delphinapterus leucas*), harbor porpoise, and Yangtze finless porpoise (*Neophocaena phocaenoides*)) and three species of pinnipeds (northern elephant seal (*Mirounga angustirostris*), harbor seal, and California sea lion (*Zalophus californianus*)) exposed to a limited number of sound sources (*i.e.,* mostly tones and octave-band noise) in laboratory settings (*e.g.,* Finneran *et al.,* 2002 and 2010; Nachtigall *et al.,* 2004; Kastak *et al.,* 2005; Lucke *et al.,* 2009; Mooney *et al.,* 2009; Popov *et al.,* 2011; Finneran and Schlundt, 2010). In general, harbor seals (Kastak *et al.,* 2005; Kastelein *et al.,* 2012a) and harbor porpoises (Lucke *et al.,* 2009; Kastelein *et al.,* 2012b) have a lower TTS onset than other measured pinniped or cetacean species. However, even for these animals, which are better able to hear higher frequencies and may be more sensitive to higher frequencies, exposures on the order of approximately 170 dB RMS or higher for brief transient signals are likely required for even temporary (recoverable) changes in hearing sensitivity that would likely not be categorized as physiologically damaging (Lucke *et al.,* 2009). Additionally, the existing marine mammal TTS data come from a limited number of individuals within these species. There are no data available on noise-induced hearing loss for mysticetes. For summaries of data on TTS in marine mammals or for further discussion of TTS onset thresholds, please see Finneran (2015).

Scientific literature highlights the inherent complexity of predicting TTS onset in marine mammals, as well as the importance of considering exposure duration when assessing potential impacts (Mooney *et al.,* 2009a, 2009b; Kastak *et al.,* 2007). Generally, with sound exposures of equal energy, quieter sounds (lower sound pressure levels (SPL)) of longer duration were found to induce TTS onset more than louder sounds (higher SPL) of shorter duration (more similar to sub-bottom profilers). For intermittent sounds, less threshold shift will occur than from a continuous exposure with the same energy (some recovery will occur between intermittent exposures) (Kryter *et al.,* 1966; Ward 1997). For sound exposures at or somewhat above the TTS-onset threshold, hearing sensitivity recovers rapidly after exposure to the sound ends; intermittent exposures recover faster in comparison with continuous exposures of the same duration (Finneran *et al.,* 2010). NMFS considers TTS as Level B harassment that is mediated by physiological effects on the auditory system.

Animals in the Lease Area during the HRG survey are unlikely to incur TTS hearing impairment due to the characteristics of the sound sources, which include low source levels (208 to 221 dB re 1 μPa-m) and generally very short pulses and duration of the sound. Even for high-frequency cetacean species (*e.g.,* harbor porpoises), which may have increased sensitivity to TTS (Lucke *et al.,* 2009; Kastelein *et al.,* 2012b), individuals would have to make a very close approach and also remain very close to vessels operating these sources in order to receive multiple exposures at relatively high levels, as would be necessary to cause TTS. Intermittent exposures—as would occur due to the brief, transient signals produced by these sources—require a higher cumulative SEL to induce TTS than would continuous exposures of the same duration (*i.e.,* intermittent exposure results in lower levels of TTS) (Mooney *et al.,* 2009a; Finneran *et al.,* 2010). Moreover, most marine mammals would more likely avoid a loud sound source rather than swim in such close proximity as to result in TTS. Kremser *et al.* (2005) noted that the probability of a cetacean swimming through the area of exposure when a sub-bottom profiler emits a pulse is small—because if the animal was in the area, it would have to pass the transducer at close range in order to be subjected to sound levels that could cause TTS and would likely exhibit avoidance behavior to the area near the transducer rather than swim through at such a close range. Further, the restricted beam shape of the majority of the geophysical survey equipment planned for use (Table 1) makes it unlikely that an animal would be exposed more than briefly during the passage of the vessel.

Masking

Masking is the obscuring of sounds of interest to an animal by other sounds, typically at similar frequencies. Marine mammals are highly dependent on sound, and their ability to recognize sound signals amid other sound is important in communication and

detection of both predators and prey (Tyack 2000). Background ambient sound may interfere with or mask the ability of an animal to detect a sound signal even when that signal is above its absolute hearing threshold. Even in the absence of anthropogenic sound, the marine environment is often loud. Natural ambient sound includes contributions from wind, waves, precipitation, other animals, and (at frequencies above 30 kHz) thermal sound resulting from molecular agitation (Richardson *et al.,* 1995).

Background sound may also include anthropogenic sound, and masking of natural sounds can result when human activities produce high levels of background sound. Conversely, if the background level of underwater sound is high (*e.g.,* on a day with strong wind and high waves), an anthropogenic sound source would not be detectable as far away as would be possible under quieter conditions and would itself be masked. Ambient sound is highly variable on continental shelves (Myrberg 1978; Desharnais *et al.,* 1999). This results in a high degree of variability in the range at which marine mammals can detect anthropogenic sounds.

Although masking is a phenomenon which may occur naturally, the introduction of loud anthropogenic sounds into the marine environment at frequencies important to marine mammals increases the severity and frequency of occurrence of masking. For example, if a baleen whale is exposed to continuous low-frequency sound from an industrial source, this would reduce the size of the area around that whale within which it can hear the calls of another whale. The components of background noise that are similar in frequency to the signal in question primarily determine the degree of masking of that signal. In general, little is known about the degree to which marine mammals rely upon detection of sounds from conspecifics, predators, prey, or other natural sources. In the absence of specific information about the importance of detecting these natural sounds, it is not possible to predict the impact of masking on marine mammals (Richardson *et al.,* 1995). In general, masking effects are expected to be less severe when sounds are transient than when they are continuous. Masking is typically of greater concern for those marine mammals that utilize low-frequency communications, such as baleen whales, because of how far low-frequency sounds propagate.

Marine mammal communications would not likely be masked appreciably by the sub-bottom profiler signals given the directionality of the signals (for most geophysical survey equipment types planned for use (Table 1)) and the brief period when an individual mammal is likely to be within its beam.

Non-Auditory Physical Effects (Stress)

Classic stress responses begin when an animal's central nervous system perceives a potential threat to its homeostasis. That perception triggers stress responses regardless of whether a stimulus actually threatens the animal; the mere perception of a threat is sufficient to trigger a stress response (Moberg 2000; Seyle 1950). Once an animal's central nervous system perceives a threat, it mounts a biological response or defense that consists of a combination of the four general biological defense responses: Behavioral responses, autonomic nervous system responses, neuroendocrine responses, or immune responses.

In the case of many stressors, an animal's first and sometimes most economical (in terms of biotic costs) response is behavioral avoidance of the potential stressor or avoidance of continued exposure to a stressor. An animal's second line of defense to stressors involves the sympathetic part of the autonomic nervous system and the classical ''fight or flight'' response which includes the cardiovascular system, the gastrointestinal system, the exocrine glands, and the adrenal medulla to produce changes in heart rate, blood pressure, and gastrointestinal activity that humans commonly associate with ''stress.'' These responses have a relatively short duration and may or may not have significant long-term effect on an animal's welfare.

An animal's third line of defense to stressors involves its neuroendocrine systems; the system that has received the most study has been the hypothalamus-pituitary-adrenal system (also known as the HPA axis in mammals). Unlike stress responses associated with the autonomic nervous system, virtually all neuro-endocrine functions that are affected by stress—including immune competence, reproduction, metabolism, and behavior—are regulated by pituitary hormones. Stress-induced changes in the secretion of pituitary hormones have been implicated in failed reproduction (Moberg 1987; Rivier 1995), altered metabolism (Elasser *et al.,* 2000), reduced immune competence (Blecha 2000), and behavioral disturbance. Increases in the circulation of glucocorticosteroids (cortisol, corticosterone, and aldosterone in marine mammals; see Romano *et al.,* 2004) have been equated with stress for many years.

The primary distinction between stress (which is adaptive and does not normally place an animal at risk) and distress is the biotic cost of the response. During a stress response, an animal uses glycogen stores that can be quickly replenished once the stress is alleviated. In such circumstances, the cost of the stress response would not pose a risk to the animal's welfare. However, when an animal does not have sufficient energy reserves to satisfy the energetic costs of a stress response, energy resources must be diverted from other biotic function, which impairs those functions that experience the diversion. For example, when mounting a stress response diverts energy away from growth in young animals, those animals may experience stunted growth. When mounting a stress response diverts energy from a fetus, an animal's reproductive success and its fitness will suffer. In these cases, the animals will have entered a pre-pathological or pathological state which is called ''distress'' (Seyle 1950) or ''allostatic loading'' (McEwen and Wingfield 2003). This pathological state will last until the animal replenishes its biotic reserves sufficient to restore normal function. Note that these examples involved a long-term (days or weeks) stress response exposure to stimuli.

Relationships between these physiological mechanisms, animal behavior, and the costs of stress responses have also been documented fairly well through controlled experiments; because this physiology exists in every vertebrate that has been studied, it is not surprising that stress responses and their costs have been documented in both laboratory and free-living animals (for examples see, Holberton *et al.,* 1996; Hood *et al.,* 1998; Jessop *et al.,* 2003; Krausman *et al.,* 2004; Lankford *et al.,* 2005; Reneerkens *et al.,* 2002; Thompson and Hamer, 2000). Information has also been collected on the physiological responses of marine mammals to exposure to anthropogenic sounds (Fair and Becker 2000; Romano *et al.,* 2002). For example, Rolland *et al.* (2012) found that noise reduction from reduced ship traffic in the Bay of Fundy was associated with decreased stress in North Atlantic right whales.

Studies of other marine animals and terrestrial animals would also lead us to expect some marine mammals to experience physiological stress responses and, perhaps, physiological responses that would be classified as ''distress'' upon exposure to high frequency, mid-frequency and low-

frequency sounds. For example, Jansen (1998) reported on the relationship between acoustic exposures and physiological responses that are indicative of stress responses in humans (for example, elevated respiration and increased heart rates). Jones (1998) reported on reductions in human performance when faced with acute, repetitive exposures to acoustic disturbance. Trimper *et al.* (1998) reported on the physiological stress responses of osprey to low-level aircraft noise while Krausman *et al.* (2004) reported on the auditory and physiology stress responses of endangered Sonoran pronghorn to military overflights. Smith *et al.* (2004a, 2004b), for example, identified noise-induced physiological transient stress responses in hearing-specialist fish (*i.e.,* goldfish) that accompanied short- and long-term hearing losses. Welch and Welch (1970) reported physiological and behavioral stress responses that accompanied damage to the inner ears of fish and several mammals.

Hearing is one of the primary senses marine mammals use to gather information about their environment and to communicate with conspecifics. Although empirical information on the relationship between sensory impairment (TTS, PTS, and acoustic masking) on marine mammals remains limited, it seems reasonable to assume that reducing an animal's ability to gather information about its environment and to communicate with other members of its species would be stressful for animals that use hearing as their primary sensory mechanism. Therefore, we assume that acoustic exposures sufficient to trigger onset PTS or TTS would be accompanied by physiological stress responses because terrestrial animals exhibit those responses under similar conditions (NRC 2003). More importantly, marine mammals might experience stress responses at received levels lower than those necessary to trigger onset TTS. Based on empirical studies of the time required to recover from stress responses (Moberg 2000), we also assume that stress responses are likely to persist beyond the time interval required for animals to recover from TTS and might result in pathological and pre-pathological states that would be as significant as behavioral responses to TTS.

In general, there are few data on the potential for strong, anthropogenic underwater sounds to cause non-auditory physical effects in marine mammals. The available data do not allow identification of a specific exposure level above which non-auditory effects can be expected (Southall *et al.,* 2007). There is no definitive evidence that any of these effects occur even for marine mammals in close proximity to an anthropogenic sound source. In addition, marine mammals that show behavioral avoidance of survey vessels and related sound sources are unlikely to incur non-auditory impairment or other physical effects. NMFS does not expect that the generally short-term, intermittent, and transitory HRG and geotechnical activities would create conditions of long-term, continuous noise and chronic acoustic exposure leading to long-term physiological stress responses in marine mammals.

Behavioral Disturbance

Behavioral disturbance may include a variety of effects, including subtle changes in behavior (*e.g.,* minor or brief avoidance of an area or changes in vocalizations), more conspicuous changes in similar behavioral activities, and more sustained and/or potentially severe reactions, such as displacement from or abandonment of high-quality habitat. Behavioral responses to sound are highly variable and context-specific and any reactions depend on numerous intrinsic and extrinsic factors (*e.g.,* species, state of maturity, experience, current activity, reproductive state, auditory sensitivity, time of day), as well as the interplay between factors (*e.g.,* Richardson *et al.,* 1995; Wartzok *et al.,* 2003; Southall *et al.,* 2007; Weilgart, 2007; Archer *et al.,* 2010). Behavioral reactions can vary not only among individuals but also within an individual, depending on previous experience with a sound source, context, and numerous other factors (Ellison *et al.,* 2012), and can vary depending on characteristics associated with the sound source (*e.g.,* whether it is moving or stationary, number of sources, distance from the source). Please see Appendices B–C of Southall *et al.* (2007) for a review of studies involving marine mammal behavioral responses to sound.

Habituation can occur when an animal's response to a stimulus wanes with repeated exposure, usually in the absence of unpleasant associated events (Wartzok *et al.,* 2003). Animals are most likely to habituate to sounds that are predictable and unvarying. It is important to note that habituation is appropriately considered as a ''progressive reduction in response to stimuli that are perceived as neither aversive nor beneficial,'' rather than as, more generally, moderation in response to human disturbance (Bejder *et al.,* 2009). The opposite process is sensitization, when an unpleasant experience leads to subsequent responses, often in the form of avoidance, at a lower level of exposure. As noted, behavioral state may affect the type of response. For example, animals that are resting may show greater behavioral change in response to disturbing sound levels than animals that are highly motivated to remain in an area for feeding (Richardson *et al.,* 1995; NRC 2003; Wartzok *et al.,* 2003). Controlled experiments with captive marine mammals have shown pronounced behavioral reactions, including avoidance of loud sound sources (Ridgway *et al.,* 1997; Finneran *et al.,* 2003). Observed responses of wild marine mammals to loud, pulsed sound sources (typically seismic airguns or acoustic harassment devices) have been varied but often consist of avoidance behavior or other behavioral changes suggesting discomfort (Morton and Symonds, 2002; see also Richardson *et al.,* 1995; Nowacek *et al.,* 2007).

Available studies show wide variation in response to underwater sound; therefore, it is difficult to predict specifically how any given sound in a particular instance might affect marine mammals perceiving the signal. If a marine mammal does react briefly to an underwater sound by changing its behavior or moving a small distance, the impacts of the change are unlikely to be significant to the individual, l*et al*one the stock or population. However, if a sound source displaces marine mammals from an important feeding or breeding area for a prolonged period, impacts on individuals and populations could be significant (*e.g.,* Lusseau and Bejder, 2007; Weilgart 2007; NRC 2005). However, there are broad categories of potential response, which we describe in greater detail here, that include alteration of dive behavior, alteration of foraging behavior, effects to breathing, interference with or alteration of vocalization, avoidance, and flight.

Changes in dive behavior can vary widely and may consist of increased or decreased dive times and surface intervals as well as changes in the rates of ascent and descent during a dive (*e.g.,* Frankel and Clark 2000; Costa *et al.,* 2003; Ng and Leung 2003; Nowacek *et al.,* 2004; Goldbogen *et al.,* 2013a,b). Variations in dive behavior may reflect interruptions in biologically significant activities (*e.g.,* foraging) or they may be of little biological significance. The impact of an alteration to dive behavior resulting from an acoustic exposure depends on what the animal is doing at the time of the exposure and the type and magnitude of the response.

Disruption of feeding behavior can be difficult to correlate with anthropogenic sound exposure, so it is usually inferred by observed displacement from known foraging areas, the appearance of secondary indicators (*e.g.,* bubble nets or sediment plumes), or changes in dive behavior. As for other types of behavioral response, the frequency, duration, and temporal pattern of signal presentation, as well as differences in species sensitivity, are likely contributing factors to differences in response in any given circumstance (*e.g.,* Croll *et al.,* 2001; Nowacek *et al.;* 2004; Madsen *et al.,* 2006; Yazvenko *et al.,* 2007). A determination of whether foraging disruptions incur fitness consequences would require information on or estimates of the energetic requirements of the affected individuals and the relationship between prey availability, foraging effort and success, and the life history stage of the animal.

Variations in respiration naturally vary with different behaviors and alterations to breathing rate as a function of acoustic exposure can be expected to co-occur with other behavioral reactions, such as a flight response or an alteration in diving. However, respiration rates in and of themselves may be representative of annoyance or an acute stress response. Various studies have shown that respiration rates may either be unaffected or could increase, depending on the species and signal characteristics, again highlighting the importance in understanding species differences in the tolerance of underwater noise when determining the potential for impacts resulting from anthropogenic sound exposure (*e.g.,* Kastelein *et al.,* 2001, 2005b, 2006; Gailey *et al.,* 2007).

Marine mammals vocalize for different purposes and across multiple modes, such as whistling, echolocation click production, calling, and singing. Changes in vocalization behavior in response to anthropogenic noise can occur for any of these modes and may result from a need to compete with an increase in background noise or may reflect increased vigilance or a startle response. For example, in the presence of potentially masking signals, humpback whales and killer whales have been observed to increase the length of their songs (Miller *et al.,* 2000; Fristrup *et al.,* 2003; Foote *et al.,* 2004), while right whales have been observed to shift the frequency content of their calls upward while reducing the rate of calling in areas of increased anthropogenic noise (Parks *et al.,* 2007b). In some cases, animals may cease sound production during production of aversive signals (Bowles *et al.,* 1994).

Avoidance is the displacement of an individual from an area or migration path as a result of the presence of a sound or other stressors, and is one of the most obvious manifestations of disturbance in marine mammals (Richardson *et al.,* 1995). For example, gray whales are known to change direction—deflecting from customary migratory paths—in order to avoid noise from seismic surveys (Malme *et al.,* 1984). Avoidance may be short-term, with animals returning to the area once the noise has ceased (*e.g.,* Bowles *et al.,* 1994; Goold 1996; Stone *et al.,* 2000; Morton and Symonds, 2002; Gailey *et al.,* 2007). Longer-term displacement is possible, however, which may lead to changes in abundance or distribution patterns of the affected species in the affected region if habituation to the presence of the sound does not occur (*e.g.,* Blackwell *et al.,* 2004; Bejder *et al.,* 2006; Teilmann *et al.,* 2006).

A flight response is a dramatic change in normal movement to a directed and rapid movement away from the perceived location of a sound source. The flight response differs from other avoidance responses in the intensity of the response (*e.g.,* directed movement, rate of travel). Relatively little information on flight responses of marine mammals to anthropogenic signals exist, although observations of flight responses to the presence of predators have occurred (Connor and Heithaus, 1996). The result of a flight response could range from brief, temporary exertion and displacement from the area where the signal provokes flight to, in extreme cases, marine mammal strandings (Evans and England, 2001). However, it should be noted that response to a perceived predator does not necessarily invoke flight (Ford and Reeves, 2008) and whether individuals are solitary or in groups may influence the response.

Behavioral disturbance can also impact marine mammals in more subtle ways. Increased vigilance may result in costs related to diversion of focus and attention (*i.e.,* when a response consists of increased vigilance, it may come at the cost of decreased attention to other critical behaviors such as foraging or resting). These effects have generally not been demonstrated for marine mammals, but studies involving fish and terrestrial animals have shown that increased vigilance may substantially reduce feeding rates (*e.g.,* Beauchamp and Livoreil, 1997; Fritz *et al.,* 2002; Purser and Radford, 2011). In addition, chronic disturbance can cause population declines through reduction of fitness (*e.g.,* decline in body condition) and subsequent reduction in reproductive success, survival, or both (*e.g.,* Harrington and Veitch, 1992; Daan *et al.,* 1996; Bradshaw *et al.,* 1998). However, Ridgway *et al.* (2006) reported that increased vigilance in bottlenose dolphins exposed to sound over a five-day period did not cause any sleep deprivation or stress effects.

Many animals perform vital functions, such as feeding, resting, traveling, and socializing, on a diel cycle (24-hour cycle). Disruption of such functions resulting from reactions to stressors such as sound exposure are more likely to be significant if they last more than one diel cycle or recur on subsequent days (Southall *et al.,* 2007). Consequently, a behavioral response lasting less than one day and not recurring on subsequent days is not considered particularly severe unless it could directly affect reproduction or survival (Southall *et al.,* 2007). Note that there is a difference between multi-day substantive behavioral reactions and multi-day anthropogenic activities. For example, just because an activity lasts for multiple days does not necessarily mean that individual animals are either exposed to activity-related stressors for multiple days or, further, exposed in a manner resulting in sustained multi-day substantive behavioral responses.

Marine mammals are likely to avoid the HRG survey activity, especially the naturally shy harbor porpoise, while the harbor seals might be attracted to them out of curiosity. However, because the sub-bottom profilers and other HRG survey equipment operate from a moving vessel, and the maximum radius to the Level B harassment threshold is relatively small, the area and time that this equipment would be affecting a given location is very small. Further, once an area has been surveyed, it is not likely that it will be surveyed again, thereby reducing the likelihood of repeated HRG-related impacts within the survey area.

We have also considered the potential for severe behavioral responses such as stranding and associated indirect injury or mortality from DWW's use of HRG survey equipment, on the basis of a 2008 mass stranding of approximately 100 melon-headed whales in a Madagascar lagoon system. An investigation of the event indicated that use of a high-frequency mapping system (12-kHz multibeam echosounder) was the most plausible and likely initial behavioral trigger of the event, while providing the caveat that there is no unequivocal and easily identifiable single cause (Southall *et al.,* 2013). The investigatory panel's conclusion was

based on (1) very close temporal and spatial association and directed movement of the survey with the stranding event; (2) the unusual nature of such an event coupled with previously documented apparent behavioral sensitivity of the species to other sound types (Southall *et al.,* 2006; Brownell *et al.,* 2009); and (3) the fact that all other possible factors considered were determined to be unlikely causes. Specifically, regarding survey patterns prior to the event and in relation to bathymetry, the vessel transited in a north-south direction on the shelf break parallel to the shore, ensonifying large areas of deep-water habitat prior to operating intermittently in a concentrated area offshore from the stranding site; this may have trapped the animals between the sound source and the shore, thus driving them towards the lagoon system. The investigatory panel systematically excluded or deemed highly unlikely nearly all potential reasons for these animals leaving their typical pelagic habitat for an area extremely atypical for the species (*i.e.,* a shallow lagoon system). Notably, this was the first time that such a system has been associated with a stranding event. The panel also noted several site- and situation-specific secondary factors that may have contributed to the avoidance responses that led to the eventual entrapment and mortality of the whales. Specifically, shoreward-directed surface currents and elevated chlorophyll levels in the area preceding the event may have played a role (Southall *et al.,* 2013). The report also notes that prior use of a similar system in the general area may have sensitized the animals and also concluded that, for odontocete cetaceans that hear well in higher frequency ranges where ambient noise is typically quite low, high-power active sonars operating in this range may be more easily audible and have potential effects over larger areas than low frequency systems that have more typically been considered in terms of anthropogenic noise impacts. It is, however, important to note that the relatively lower output frequency, higher output power, and complex nature of the system implicated in this event, in context of the other factors noted here, likely produced a fairly unusual set of circumstances that indicate that such events would likely remain rare and are not necessarily relevant to use of lower-power, higher-frequency systems more commonly used for HRG survey applications. The risk of similar events recurring may be very low, given the extensive use of active acoustic systems used for scientific and navigational purposes worldwide on a daily basis and the lack of direct evidence of such responses previously reported.

Tolerance

Numerous studies have shown that underwater sounds from industrial activities are often readily detectable by marine mammals in the water at distances of many km. However, other studies have shown that marine mammals at distances more than a few km away often show no apparent response to industrial activities of various types (Miller *et al.,* 2005). This is often true even in cases when the sounds must be readily audible to the animals based on measured received levels and the hearing sensitivity of that mammal group. Although various baleen whales, toothed whales, and (less frequently) pinnipeds have been shown to react behaviorally to underwater sound from sources such as airgun pulses or vessels under some conditions, at other times, mammals of all three types have shown no overt reactions (*e.g.,* Malme *et al.,* 1986; Richardson *et al.,* 1995; Madsen and Mohl 2000; Croll *et al.,* 2001; Jacobs and Terhune 2002; Madsen *et al.,* 2002; Miller *et al.,* 2005). In general, pinnipeds seem to be more tolerant of exposure to some types of underwater sound than are baleen whales. Richardson *et al.* (1995) found that vessel sound does not seem to affect pinnipeds that are already in the water. Richardson *et al.* (1995) went on to explain that seals on haul-outs sometimes respond strongly to the presence of vessels and at other times appear to show considerable tolerance of vessels, and Brueggeman *et al.* (1992) observed ringed seals (*Pusa hispida*) hauled out on ice pans displaying short-term escape reactions when a ship approached within 0.16–0.31 miles (0.25–0.5 km). Due to the relatively high vessel traffic in the Lease Area it is possible that marine mammals are habituated to noise (*e.g.,* DP thrusters) from project vessels in the area.

Vessel Strike

Ship strikes of marine mammals can cause major wounds, which may lead to the death of the animal. An animal at the surface could be struck directly by a vessel, a surfacing animal could hit the bottom of a vessel, or a vessel's propeller could injure an animal just below the surface. The severity of injuries typically depends on the size and speed of the vessel (Knowlton and Kraus 2001; Laist *et al.,* 2001; Vanderlaan and Taggart 2007).

The most vulnerable marine mammals are those that spend extended periods of time at the surface in order to restore oxygen levels within their tissues after deep dives (*e.g.,* the sperm whale). In addition, some baleen whales, such as the North Atlantic right whale, seem generally unresponsive to vessel sound, making them more susceptible to vessel collisions (Nowacek *et al.,* 2004). These species are primarily large, slow moving whales. Smaller marine mammals (*e.g.,* bottlenose dolphin) move quickly through the water column and are often seen riding the bow wave of large ships. Marine mammal responses to vessels may include avoidance and changes in dive pattern (NRC 2003).

An examination of all known ship strikes from all shipping sources (civilian and military) indicates vessel speed is a principal factor in whether a vessel strike results in death (Knowlton and Kraus 2001; Laist *et al.,* 2001; Jensen and Silber 2003; Vanderlaan and Taggart 2007). In assessing records with known vessel speeds, Laist *et al.* (2001) found a direct relationship between the occurrence of a whale strike and the speed of the vessel involved in the collision. The authors concluded that most deaths occurred when a vessel was traveling in excess of 24.1 km/h (14.9 mph; 13 knots (kn)). Given the slow vessel speeds and predictable course necessary for data acquisition, ship strike is unlikely to occur during the geophysical and geotechnical surveys. Marine mammals would be able to easily avoid the survey vessel due to the slow vessel speed. Further, DWW would implement measures (*e.g.,* protected species monitoring, vessel speed restrictions and separation distances; see *Proposed Mitigation*) set forth in the BOEM lease to reduce the risk of a vessel strike to marine mammal species in the survey area.

Marine Mammal Habitat

The HRG survey equipment will not contact the seafloor and does not represent a source of pollution. We are not aware of any available literature on impacts to marine mammal prey from sound produced by HRG survey equipment. However, as the HRG survey equipment introduces noise to the marine environment, there is the potential for it to result in avoidance of the area around the HRG survey activities on the part of marine mammal prey. Any avoidance of the area on the part of marine mammal prey would be expected to be short term and temporary.

Because of the temporary nature of the disturbance, and the availability of similar habitat and resources (*e.g.,* prey

species) 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. Impacts on marine mammal habitat from the proposed activities will be temporary, insignificant, and discountable.

Estimated Take

This section provides an estimate of the number of incidental takes proposed for authorization through this IHA, which will inform both NMFS' consideration of ''small numbers'' and the negligible impact determination.

Harassment is the only type of take expected to result from these activities. Except with respect to certain activities not pertinent here, 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 would be by Level B harassment, as use of the HRG equipment has the potential to result in disruption of behavioral patterns for individual marine mammals. NMFS has determined take by Level A harassment is not an expected outcome of the proposed activity and thus we do not propose to authorize the take of any marine mammals by Level A harassment. This is discussed in greater detail below. As described previously, no mortality or serious injury is anticipated or proposed to be authorized for this activity. Below we describe how the take is estimated for this project.

Described in the most basic way, 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) and the number of days of activities. Below, we describe these components in more detail and present the proposed take estimate.

Acoustic Thresholds

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

Level B Harassment—Though significantly driven by received level, the onset of behavioral disturbance from anthropogenic noise exposure is also informed to varying degrees by other factors related to the sound source (*e.g.,* frequency, predictability, duty cycle); the environment (*e.g.,* bathymetry); and the receiving animals (hearing, motivation, experience, demography, behavioral context); therefore can be difficult to predict (Southall *et al.,* 2007, Ellison *et al.* 2012). NMFS uses a generalized acoustic threshold based on received level to estimate the onset of Level B (behavioral) harassment. NMFS predicts that marine mammals may be behaviorally harassed when exposed to underwater anthropogenic noise above received levels 160 dB re 1 μPa (RMS) for non-explosive impulsive (*e.g.,* seismic HRG equipment) or intermittent (*e.g.,* scientific sonar) sources. DWW's proposed activity includes the use of impulsive sources. Therefore, the 160 dB re 1 μPa (RMS) criteria is applicable for analysis of Level B harassment.

Level A Harassment—NMFS' Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (NMFS 2016) 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 Technical Guidance identifies the received levels, or thresholds, above which individual marine mammals are predicted to experience changes in their hearing sensitivity for all underwater anthropogenic sound sources, reflects the best available science, and better predicts the potential for auditory injury than does NMFS' historical criteria.

These thresholds were developed by compiling and synthesizing the best available science and soliciting input multiple times from both the public and peer reviewers to inform the final product, and are provided in Table 3 below. The references, analysis, and methodology used in the development of the thresholds are described in NMFS 2016 Technical Guidance, which may be accessed at: *www.nmfs.noaa.gov/pr/acoustics/guidelines.htm.* As described above, DWW's proposed activity includes the use of intermittent and impulsive sources.

TABLE 3—THRESHOLDS IDENTIFYING THE ONSET OF PERMANENT THRESHOLD SHIFT IN MARINE MAMMALS

Hearing group	PTS onset thresholds	
	Impulsive *	Non-impulsive
Low-Frequency (LF) Cetaceans	$L_{pk,flat}$: 219 dB; $L_{E,LF,24h}$: 183 dB	$L_{E,LF,24h}$: 199 dB.
Mid-Frequency (MF) Cetaceans	$L_{pk,flat}$: 230 dB; $L_{E,MF,24h}$: 185 dB	$L_{E,MF,24h}$: 198 dB.
High-Frequency (HF) Cetaceans	$L_{pk,flat}$: 202 dB; $L_{E,HF,24h}$: 155 dB	$L_{E,HF,24h}$: 173 dB.
Phocid Pinnipeds (PW) (Underwater)	$L_{pk,flat}$: 218 dB; $L_{E,PW,24h}$: 185 dB	$L_{E,PW,24h}$: 201 dB.

Note: *Dual metric acoustic thresholds for impulsive sounds: Use whichever results in the largest isopleth for calculating PTS onset. If a non-impulsive sound has the potential of exceeding the peak sound pressure level thresholds associated with impulsive sounds, these thresholds should also be considered.

Note: Peak sound pressure (Lpk) has a reference value of 1 μPa, and cumulative sound exposure level (LE) has a reference value of 1μPa2s. In this Table, thresholds are abbreviated to reflect American National Standards Institute standards (ANSI 2013). However, peak sound pressure is defined by ANSI as incorporating frequency weighting, which is not the intent for this Technical Guidance. Hence, the subscript ''flat'' is being included to indicate peak sound pressure should be flat weighted or unweighted within the generalized hearing range. The subscript associated with cumulative sound exposure level thresholds indicates the designated marine mammal auditory weighting function (LF, MF, and HF cetaceans, and PW and OW pinnipeds) and that the recommended accumulation period is 24 hours. The cumulative sound exposure level thresholds could be exceeded in a multitude of ways (*i.e.,* varying exposure levels and durations, duty cycle). When possible, it is valuable for action proponents to indicate the conditions under which these acoustic thresholds will be exceeded.

Ensonified Area

Here, we describe operational and environmental parameters of the activity that will feed into estimating the area ensonified above the acoustic thresholds.

The proposed survey would entail the use of HRG survey equipment. The distance to the isopleth corresponding to the threshold for Level B harassment was calculated for all HRG survey equipment with the potential to result in harassment of marine mammals using the spherical transmission loss (TL) equation: $TL = 20\log_{10}\gamma$. Results of modeling indicated that, of the HRG survey equipment planned for use that has the potential to result in harassment of marine mammals, the AA Dura-Spark would be expected to produce sound that would propagate the furthest in the water (Table 4); therefore, for the purposes of the take calculation, it was assumed the AA Dura-Spark would be active during the entirety of the survey. Thus the distance to the isopleth corresponding to the threshold for Level B harassment for the AA Dura-Spark (estimated at 447 m; Table 4) was used as the basis of the Level B take calculation for all marine mammals.

TABLE 4—MODELED RADIAL DISTANCES FROM HRG SURVEY EQUIPMENT TO ISOPLETHS CORRESPONDING TO LEVEL B HARASSMENT THRESHOLD

HRG system	Radial distance (m) to Level B harassment threshold (160 dB re 1 μPa)
TB Chirp	70.79
EdgeTech Chirp	6.31
AA Boomer	5.62
AA S-Boom	141.25
Bubble Gun	63.1
800J Spark	141.25
AA Dura Spark	446.69

Predicted distances to Level A harassment isopleths, which vary based on marine mammal functional hearing groups (Table 5), were also calculated. The updated acoustic thresholds for impulsive sounds (such as HRG survey equipment) contained in the Technical Guidance (NMFS, 2016) were presented as dual metric acoustic thresholds using both cumulative sound exposure level (SEL_{cum}) and peak sound pressure level metrics. As dual metrics, NMFS considers onset of PTS (Level A harassment) to have occurred when either one of the two metrics is exceeded (*i.e.,* metric resulting in the largest isopleth).

The SEL_{cum} metric considers both level and duration of exposure, as well as auditory weighting functions by marine mammal hearing group. In recognition of the fact that calculating Level A harassment ensonified areas could be more technically challenging to predict due to the duration component and the use of weighting functions in the new SEL_{cum} thresholds, NMFS developed an optional User Spreadsheet that includes tools to help predict a simple isopleth that can be used in conjunction with marine mammal density or occurrence to facilitate the estimation of take numbers. DWW used the NMFS optional User Spreadsheet to calculate distances to Level A harassment isopleths based on SEL_{cum}. To calculate distances to the Level A harassment isopleths based on peak pressure, the spherical spreading loss model was used (similar to the method used to calculate Level B isopleths as described above).

Modeling of distances to isopleths corresponding to Level A harassment was performed for all types of HRG equipment planned for use with the potential to result in harassment of marine mammals. Of the HRG equipment types modeled, the AA Dura Spark resulted in the largest distances to isopleths corresponding to Level A harassment for all marine mammal functional hearing groups; therefore, to be conservative, the isopleths modeled for the AA Dura Spark were used to estimate potential Level A take. Based on a conservative assumption that the AA Dura Spark would be operated at 1,000 joules during the survey, a peak source level of 223 dB re 1μPa was used for modeling Level A harassment isopleths based on peak pressure (Crocker & Fratantonio, 2016). Inputs to the NMFS optional User Spreadsheet for the AA Dura Spark are shown in Table 5. Modeled distances to isopleths corresponding to Level A harassment thresholds for the AA Dura Spark are shown in Table 6 (modeled distances to Level A harassment isopleths for all other types of HRG equipment planned for use are shown in Table 6 of the IHA application). As described above, NMFS considers onset of PTS (Level A harassment) to have occurred when either one of the two metrics is exceeded (*i.e.,* metric resulting in the largest isopleth).

TABLE 5—INPUTS TO THE NMFS OPTIONAL USER SPREADSHEET FOR THE AA DURA SPARK

Source Level (RMS SPL) [1]	213 dB re 1μPa.
Source Level (peak) [1]	223 dB re 1μPa.
Weighting Factor Adjustment (kHz) [1].	3.2.
Source Velocity (meters/second)	2.07.
Pulse Duration (seconds)	0.0021.
1/Repetition rate (seconds)	2.42.
Duty Cycle	0.00.

[1] Derived from Crocker & Fratantonio (2016), based on operation at 1,000 joules.

TABLE 6—MODELED RADIAL DISTANCES TO ISOPLETHS CORRESPONDING TO LEVEL A HARASSMENT THRESHOLDS

Functional hearing group (Level A harassment thresholds)	Radial distance (m) to Level A harassment threshold (SEL_{cum})	Radial distance (m) to Level A harassment threshold (Peak SPL_{flat})
Low frequency cetaceans		
($L_{pk,flat}$: 219 dB; $L_{E,LF,24h}$: 183 dB)	1.3	1.6
Mid frequency cetaceans		
($L_{pk,flat}$: 230 dB; $L_{E,MF,24h}$: 185 dB)	0.0	0.0
High frequency cetaceans		
($L_{pk,flat}$: 202 dB; $L_{E,HF,24h}$: 155 dB)	8.6	11.2
Phocid Pinnipeds (Underwater)		
($L_{pk,flat}$: 218 dB; $L_{E,HF,24h}$: 185 dB)	0.7	1.8

Due to the small estimated distances to Level A harassment thresholds for all marine mammal functional hearing groups, based on both SEL_{cum} and peak SPL (Table 6), and in consideration of the proposed mitigation measures (see the *Proposed Mitigation* section for more detail), NMFS has determined that the likelihood of Level A take of marine mammals occurring as a result of the proposed survey is so low as to be discountable.

We note that because of some of the assumptions included in the methods used, isopleths produced may be overestimates to some degree. Most of the acoustic sources proposed for use in DWW's survey (including the AA Dura-Spark) do not radiate sound equally in all directions but were designed instead to focus acoustic energy directly toward the sea floor. Therefore, the acoustic energy produced by these sources is not received equally in all directions around the source but is instead concentrated along some narrower plane depending on the beamwidth of the source. However, the calculated distances to isopleths do not account for this directionality of the sound source and are therefore conservative. Two types of geophysical survey equipment planned for use in the proposed survey are omni-directional (Table 1), however the modeled distances to isopleths corresponding to the Level B harassment threshold for these sources are smaller than that for the Dura Spark (Table 1), and the Dura Spark was used to conservatively estimate take for the duration of the survey. For mobile sources, such as the proposed survey, the User Spreadsheet predicts the closest distance at which a stationary animal would not incur PTS if the sound source traveled by the animal in a straight line at a constant speed.

Marine Mammal Occurrence

In this section we provide the information about the presence, density, or group dynamics of marine mammals that will inform the take calculations.

The best available scientific information was considered in calculating marine mammal exposure estimates (the basis for estimating take). For cetacean species, densities calculated by Roberts *et al.* (2016) were used. The density data presented by Roberts *et al.* (2016) incorporates aerial and shipboard line-transect survey data from NMFS and from other organizations collected over the period 1992–2014. Roberts *et al.* (2016) modeled density from 8 physiographic and 16 dynamic oceanographic and biological covariates, and controlled for the influence of sea state, group size, availability bias, and perception bias on the probability of making a sighting. NMFS considers the models produced by Roberts *et al.* (2016) to be the best available source of data regarding cetacean densities for this project. More information, including the model results and supplementary information for each model, is available online at: *seamap.env.duke.edu/models/Duke-EC-GOM-2015/.*

For the purposes of the take calculations, density data from Roberts *et al.* (2016) were mapped using a geographic information system (GIS), using density data for the months June through December. Mean density per month for each species within the survey area was calculated by selecting 13 random raster cells selected from 100 km^2 raster cells that were inside, or adjacent to, the RI–MA WEA (see Figure 1 in the IHA application). Estimates provided by the models are based on a grid cell size of 100 km^2; therefore, model grid cell values were then divided by 100 to determine animals per square km.

Systematic, offshore, at-sea survey data for pinnipeds are more limited than those for cetaceans. The best available information concerning pinniped densities in the proposed survey area is the U.S. Navy's Operating Area (OPAREA) Density Estimates (NODEs) (DoN, 2007). These density models utilized vessel-based and aerial survey data collected by NMFS from 1998–2005 during broad-scale abundance studies. Modeling methodology is detailed in DoN (2007). For the purposes of the take calculations, NODEs Density Estimates (DoN, 2007) as reported for the summer and fall seasons were used to estimate harbor seal and gray seal densities.

Take Calculation and Estimation

Here we describe how the information provided above is brought together to produce a quantitative take estimate.

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 harassment thresholds are calculated, as described above. Those distances are then used to calculate the area(s) around the HRG survey equipment predicted to be ensonified to sound levels that exceed harassment thresholds. The area estimated to be ensonified to relevant thresholds in a single day of the survey is then calculated, based on areas predicted to be ensonified around the HRG survey equipment and the estimated trackline distance traveled per day by the survey vessel. DWW estimates a maximum daily track line distance of 110 km per day during HRG surveys. Based on the maximum estimated distance to the Level B harassment threshold of 447 m (Table 4) and the maximum estimated daily track line distance of 110 km, an area of 98.9 km^2 would be ensonified to the Level B harassment threshold per day during HRG surveys.

The number of marine mammals expected to be incidentally taken per day is then calculated by estimating the number of each species predicted to occur within the daily ensonified area, using estimated marine mammal densities as described above. Estimated numbers of each species taken per day are then multiplied by the number of survey days (*i.e.,* 200), and the product is then rounded, to generate an estimate of the total number of each species expected to be taken over the duration of the survey (Table 7).

The applicant estimated a total of 11 takes by Level A harassment of harbor porpoises, 5 takes by Level A harassment of harbor seals, and 7 takes by Level A harassment of gray seals would occur, in the absence of mitigation. However, as described above, due to the very small estimated distances to Level A harassment thresholds (Table 6), and in consideration of the proposed mitigation measures, the likelihood of the proposed survey resulting in take in the form of Level A harassment is considered so low as to be discountable; therefore, we do not propose to authorize take of any marine mammals by Level A harassment. Although there are no exclusion zones (EZs) proposed for pinnipeds, the estimated distance to the isopleth corresponding to the Level A harassment threshold for pinnipeds is less than 2 m (Table 6); therefore, we determined the likelihood of an animal being taken within this proximity of the survey equipment to be so low as to be discountable. Proposed take numbers are shown in Table 7.

TABLE 7—TOTAL NUMBERS OF POTENTIAL INCIDENTAL TAKE OF MARINE MAMMALS PROPOSED FOR AUTHORIZATION AND PROPOSED TAKES AS A PERCENTAGE OF POPULATION

Species	Density (#/100 km²)	Proposed Level A takes	Estimated Level B takes	Proposed Level B takes	Total Proposed takes	Total proposed takes as a percentage of population [1]
North Atlantic right whale	0.01706	0	3	3	3	0.6
Humpback whale	0.14439	0	29	29	29	1.8
Fin whale [2]	0.21353	0	42	42	42	1.2
Sei whale [3]	0.005	0	1	2	2	0.3
Minke whale	0.04745	0	9	9	9	<0.1
Sperm whale	0.00665	0	1	1	1	<0.1
Long-finned pilot whale [3]	0.15364	0	30	32	32	0.2
Bottlenose dolphin	1.60936	0	318	318	318	0.3
Atlantic Spotted dolphin [3]	0.00886	0	2	50	50	0.1
Common dolphin [2]	4.59986	0	910	910	910	0.5
Atlantic white-sided dolphin	1.8036	0	357	357	357	1.0
Harbor porpoise [4]	2.53125	0	501	501	501	1.1
Harbor seal	6.49533	0	1,285	1,285	1,285	1.7
Gray seal	9.41067	0	1,861	1,861	1,861	6.9

[1] Estimates of total proposed takes as a percentage of population are based on marine mammal abundance estimates provided by Roberts *et al.* (2016), when available, except where noted otherwise, to maintain consistency with density estimates which are derived from data provided by Roberts *et al.* (2016). In cases where abundances are not provided by Roberts *et al.* (2016), total proposed takes as a percentage of population are based on abundance estimates in the NMFS Atlantic SARs (Hayes *et al.,* 2018).

[2] Estimates of total proposed takes as a percentage of population are based on marine mammal abundance estimates as reported in the 2007 TNASS (Lawson and Gosselin, 2009) (Table 2). Abundance estimates from TNASS were corrected for perception and availability bias, when possible. In general, where the TNASS survey effort provided superior coverage of a stock's range (as compared with NOAA shipboard survey effort), the resulting abundance estimate is considered more accurate than abundance estimates based on NMFS surveys.

[3] The proposed number of authorized takes (Level B harassment only) for these species has been increased from the estimated take to mean group size. Source for sei whale group size estimate is: Schilling *et al.* (1992). Source for long-finned pilot whale group size estimate is: Augusto *et al.* (2017). Source for Atlantic spotted dolphin group size estimate is: Jefferson *et al.* (2008).

[4] The density estimate in the IHA application is incorrectly shown as 0.0225781 animals/km2. The correct density estimate is reflected in Table 7.

Species with Take Estimates Less than Mean Group Size: Using the approach described above to estimate take, the take estimates for the sei whale, long-finned pilot whale and Atlantic spotted dolphin were less than the average group sizes estimated for these species (Table 6). However, information on the social structures and life histories of these species indicates these species are often encountered in groups. The results of take calculations support the likelihood that the proposed survey is expected to encounter and to incidentally take these species, and we believe it is likely that these species may be encountered in groups. Therefore it is reasonable to conservatively assume that one group of each of these species will be taken during the proposed survey. We propose to authorize the take of the average group size for these species and stocks to account for the possibility that the proposed survey encounters a group of any of these species or stocks (Table 7). Note that the take estimate for the sperm whale was not increased to average group size because, based on water depths in the proposed survey area (16 to 28 m (52 to 92 ft)), it is very unlikely that groups of sperm whales, which tend to prefer deeper depths, would be encountered by the proposed survey.

Proposed 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 such activity, and other means of effecting the least practicable impact on such species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such 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 such activity or other means of effecting the least practicable adverse impact upon the affected species or stocks and their habitat (50 CFR 216.104(a)(11)).

In evaluating how mitigation may or may not be appropriate to ensure the least practicable adverse impact on species or stocks and their habitat, as well as subsistence uses where applicable, we carefully consider 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 relative cost and impact on operations.

Proposed Mitigation Measures

With NMFS' input during the application process, and as per the BOEM Lease, DWW is proposing the following mitigation measures during the proposed marine site characterization surveys.

Marine Mammal Exclusion and Watch Zones

Marine mammal exclusion zones (EZ) will be established around the HRG survey equipment and monitored by protected species observers (PSO) during HRG surveys as follows:

- 500 m EZ for North Atlantic right whales;
- 200 m EZ for all other ESA-listed cetaceans (including fin whale, sei whale and sperm whale); and

• 25 m EZ for harbor porpoises.

The applicant proposed a 500 m EZ for North Atlantic right whales and 200 m EZ for all other marine mammal species; however, for non-ESA-listed marine mammals, based on estimated distances to isopleths corresponding with Level A harassment thresholds (Table 5), we determined EZs for species other than those described above were not warranted. In addition to the EZs described above, PSOs will visually monitor and record the presence of all marine mammals within 500 m.

Visual Monitoring

As per the BOEM lease, visual and acoustic monitoring of the established exclusion and monitoring zones will be performed by four qualified and NMFS-approved PSOs. It would be the responsibility of the Lead PSO on duty to communicate the presence of marine mammals as well as to communicate and enforce the action(s) that are necessary to ensure mitigation and monitoring requirements are implemented as appropriate. PSOs would be equipped with binoculars and would estimate distances to marine mammals located in proximity to the vessel and/or exclusion zone using range finders. Reticulated binoculars would also be available to PSOs for use as appropriate based on conditions and visibility to support the siting and monitoring of marine species. Position data will be recorded using hand-held or vessel global positioning system (GPS) units for each sighting. Observations will take place from the highest available vantage point on the survey vessel. During surveys conducted at night, night-vision equipment with infrared light-emitting diodes spotlights and/or infrared video monitoring will be available for PSO use, and passive acoustic monitoring (PAM; described below) will be used (as required per the BOEM lease).

Pre-Clearance of the Exclusion Zone

Prior to initiating HRG survey activities, DWW would implement a 30-minute pre-clearance period. During this period, the PSOs would ensure that no marine mammals are observed within 200 m of the survey equipment (500 m in the case of North Atlantic right whales). Survey equipment would not start up until this 200 m zone (or, 500 m zone in the case of North Atlantic right whales) is clear of marine mammals for at least 30 minutes. This pre-clearance requirement would include small delphinoids that approach the vessel (*e.g.,* bow ride). PSOs would also continue to monitor the zone for 30 minutes after survey equipment is shut down or survey activity has concluded.

Passive Acoustic Monitoring

As proposed by the applicant and required by the BOEM lease, PAM will be used to support monitoring during night time operations to provide for optimal acquisition of species detections at night. The PAM system will consist of an array of hydrophones with both broadband (sampling mid-range frequencies of 2 kHz to 200 kHz) and at least one low-frequency hydrophone (sampling range frequencies of 75 Hz to 30 kHz). The PAM operator(s) will monitor acoustic signals in real time both aurally (using headphones) and visually (via sound analysis software). PAM operators will communicate nighttime detections to the lead PSO on duty who will ensure the implementation of the appropriate mitigation measure. However, PAM detection alone would not trigger a requirement that any mitigation action be taken upon acoustic detection of marine mammals.

Ramp-Up of Survey Equipment

As proposed by the applicant, where technically feasible, a ramp-up procedure would be used for geophysical survey equipment capable of adjusting energy levels at the start or re-start of survey activities. The ramp-up procedure would be used at the beginning of HRG survey activities in order to provide additional protection to marine mammals near the survey area by allowing them to detect the presence of the survey and vacate the area prior to the commencement of survey equipment use at full energy. Ramp-up of the survey equipment would not begin until the relevant EZ has been cleared by the PSOs, as described above. Systems will be initiated at their lowest power output and will be incrementally increased to full power. If any marine mammals are detected within the EZ prior to or during the ramp-up, HRG equipment will be shut down (as described below).

Shutdown Procedures

As required in the BOEM lease, if a marine mammal is observed within or approaching the relevant EZ (as described above) an immediate shutdown of the survey equipment is required. Subsequent restart of the survey equipment may only occur after the animal(s) has either been observed exiting the relevant EZ or until an additional time period has elapsed with no further sighting of the animal (*e.g.,* 15 minutes for harbor porpoise and 30 minutes for North Atlantic right whale, fin whale, sei whale and sperm whale).

As required in the BOEM lease, if the HRG equipment shuts down for reasons other than mitigation (*i.e.,* mechanical or electronic failure) resulting in the cessation of the survey equipment for a period greater than 20 minutes, a 30 minute pre-clearance period (as described above) would precede the restart of the HRG survey equipment. If the pause is less than less than 20 minutes, the equipment may be restarted as soon as practicable at its full operational level only if visual surveys were continued diligently throughout the silent period and the EZs remained clear of marine mammals during that entire period. If visual surveys were not continued diligently during the pause of 20 minutes or less, a 30-minute pre-clearance period (as described above) would precede the re-start of the HRG survey equipment. Following a shutdown, HRG survey equipment may be restarted following pre-clearance of the zones as described above.

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 area encompassing the Level B harassment isopleth (450 m), shutdown would occur.

Vessel Strike Avoidance

Vessel strike avoidance measures will include, but are not limited to, the following, as required in the BOEM lease, except under circumstances when complying with these requirements would put the safety of the vessel or crew at risk:

• All vessel operators and crew will maintain vigilant watch for cetaceans and pinnipeds, and slow down or stop their vessel to avoid striking these protected species;

• All vessel operators will comply with 10 knot (18.5 km/hr) or less speed restrictions in any SMA and DMA per NOAA guidance;

• All vessel operators will reduce vessel speed to 10 knots (18.5 km/hr) or less when any large whale, any mother/calf pairs, large assemblages of non-delphinoid cetaceans are observed near (within 100 m (330 ft)) an underway vessel;

• All survey vessels will maintain a separation distance of 500 m (1640 ft) or greater from any sighted North Atlantic right whale;

• If underway, vessels must steer a course away from any sighted North Atlantic right whale at 10 knots (18.5 km/hr) or less until the 500 m (1640 ft) minimum separation distance has been

established. If a North Atlantic right whale is sighted in a vessel's path, or within 100 m (330 ft) to an underway vessel, the underway vessel must reduce speed and shift the engine to neutral. Engines will not be engaged until the North Atlantic right whale has moved outside of the vessel's path and beyond 100 m. If stationary, the vessel must not engage engines until the North Atlantic right whale has moved beyond 100 m;

- All vessels will maintain a separation distance of 100 m (330 ft) or greater from any sighted non-delphinoid cetacean. If sighted, the vessel underway must reduce speed and shift the engine to neutral, and must not engage the engines until the non-delphinoid cetacean has moved outside of the vessel's path and beyond 100 m. If a survey vessel is stationary, the vessel will not engage engines until the non-delphinoid cetacean has moved out of the vessel's path and beyond 100 m;
- All vessels will maintain a separation distance of 50 m (164 ft) or greater from any sighted delphinoid cetacean. Any vessel underway remain parallel to a sighted delphinoid cetacean's course whenever possible, and avoid excessive speed or abrupt changes in direction. Any vessel underway reduces vessel speed to 10 knots (18.5 km/hr) or less when pods (including mother/calf pairs) or large assemblages of delphinoid cetaceans are observed. Vessels may not adjust course and speed until the delphinoid cetaceans have moved beyond 50 m and/or the abeam of the underway vessel;
- All vessels will maintain a separation distance of 50 m (164 ft) or greater from any sighted pinniped; and
- All vessels underway will not divert or alter course in order to approach any whale, delphinoid cetacean, or pinniped. Any vessel underway will avoid excessive speed or abrupt changes in direction to avoid injury to the sighted cetacean or pinniped.

DWW will ensure that vessel operators and crew maintain a vigilant watch for cetaceans and pinnipeds by slowing down or stopping the vessel to avoid striking marine mammals. Project-specific training will be conducted for all vessel crew prior to the start of the site characterization survey activities. Confirmation of the training and understanding of the requirements will be documented on a training course log sheet. Signing the log sheet will certify that the crew members understand and will comply with the necessary requirements throughout the survey activities.

Seasonal Operating Requirements

As described above, the northern section of the proposed survey area partially overlaps with a portion of a North Atlantic right whale SMA which occurs east of Long Island, New York, and south of Massachusetts and Rhode Island. This SMA is active from November 1 through April 30 of each year. Survey vessels that are >65 ft in length would be required to adhere to the mandatory vessel speed restrictions (<10 kn) when operating within the SMA during times when the SMA is active. In addition, between watch shifts, members of the monitoring team would consult NMFS' North Atlantic right whale reporting systems for the presence of North Atlantic right whales throughout survey operations. Members of the monitoring team would monitor the NMFS North Atlantic right whale reporting systems for the establishment of a Dynamic Management Area (DMA). If NMFS should establish a DMA in the survey area, within 24 hours of the establishment of the DMA DWW would coordinate with NMFS to shut down and/or alter the survey activities as needed to avoid right whales to the extent possible.

The proposed mitigation measures are designed to avoid the already low potential for injury in addition to some Level B harassment, and to minimize the potential for vessel strikes. There are no known marine mammal rookeries or mating grounds in the survey area that would otherwise potentially warrant increased mitigation measures for marine mammals or their habitat (or both). The proposed survey would occur in an area that has been identified as a biologically important area for migration for North Atlantic right whales. However, given the small spatial extent of the survey area relative to the substantially larger spatial extent of the right whale migratory area, the survey is not expected to appreciably reduce migratory habitat nor to negatively impact the migration of North Atlantic right whales, thus mitigation to address the proposed survey's occurrence in North Atlantic right whale migratory habitat is not warranted. The proposed survey area would partially overlap spatially with a biologically important feeding area for fin whales. However, the fin whale feeding area is sufficiently large (2,933 km^2), and the acoustic footprint of the proposed survey is sufficiently small (<100 km^2 estimated to be ensonified to the Level B harassment threshold per day), that the survey is not expected to appreciably reduce fin whale feeding habitat nor to negatively impact the feeding of fin whales, thus mitigation to address the proposed survey's occurrence in fin whale feeding habitat is not warranted. Further, we believe the proposed mitigation measures are practicable for the applicant to implement.

Based on our evaluation of the applicant's proposed measures, NMFS has preliminarily determined that the proposed 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.

Proposed 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 in the proposed action area. Effective reporting is critical both to compliance as well as ensuring that the most value is obtained from the required monitoring.

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

- Occurrence of marine mammal species or stocks in the area in which take is anticipated (*e.g.,* presence, abundance, distribution, density);
- Nature, scope, or context of likely marine mammal exposure to potential stressors/impacts (individual or cumulative, acute or chronic), through better understanding of: (1) Action or environment (*e.g.,* source characterization, propagation, ambient noise); (2) affected species (*e.g.,* life history, dive patterns); (3) co-occurrence of marine mammal species with the action; or (4) biological or behavioral context of exposure (*e.g.,* age, calving or feeding areas);
- Individual marine mammal responses (behavioral or physiological) to acoustic stressors (acute, chronic, or cumulative), other stressors, or cumulative impacts from multiple stressors;
- How anticipated responses to stressors impact either: (1) Long-term fitness and survival of individual

marine mammals; or (2) populations, species, or stocks;

- Effects on marine mammal habitat (*e.g.,* marine mammal prey species, acoustic habitat, or other important physical components of marine mammal habitat); and
- Mitigation and monitoring effectiveness.

Proposed Monitoring Measures

As described above, visual monitoring of the EZs and monitoring zone will be performed by qualified and NMFS-approved PSOs. Observer qualifications would include completion of a PSO training course and documented field experience on a marine mammal observation vessel and/or aerial surveys. As proposed by the applicant and required by BOEM, an observer team comprising a minimum of four NMFS-approved PSOs and a minimum of two certified PAM operator(s), operating in shifts, will be employed by DWW during the proposed surveys. PSOs and PAM operators will work in shifts such that no one monitor will work more than 4 consecutive hours without a 2 hour break or longer than 12 hours during any 24-hour period. During daylight hours the PSOs will rotate in shifts of one on and three off, while during nighttime operations PSOs will work in pairs. The PAM operators will also be on call as necessary during daytime operations should visual observations become impaired. Each PSO will monitor 360 degrees of the field of vision. DWW will provide résumés of all proposed PSOs and PAM operators (including alternates) to NMFS for review and approval at least 45 days prior to the start of survey operations.

Also as described above, PSOs will be equipped with binoculars and have the ability to estimate distances to marine mammals located in proximity to the vessel and/or exclusion zone using range finders. Reticulated binoculars will also be available to PSOs for use as appropriate based on conditions and visibility to support the sighting and monitoring of marine species. During night operations, PAM and night-vision equipment with infrared light-emitting diode spotlights and/or infrared video monitoring will be used to increase the ability to detect marine mammals. Position data will be recorded using hand-held or vessel global positioning system (GPS) units for each sighting. Observations will take place from the highest available vantage point on the survey vessel. General 360-degree scanning will occur during the monitoring periods, and target scanning by the PSO will occur when alerted of a marine mammal presence.

Data on all PAM/PSO observations will be recorded based on standard PSO collection requirements. This will include dates, times, and locations of survey operations; time of observation, location and weather; details of marine mammal sightings (*e.g.,* species, numbers, behavior); and details of any observed taking (*e.g.,* behavioral disturbances or injury/mortality).

Proposed Reporting Measures

Within 90 days after completion of survey activities, a final technical report will be provided to NMFS that fully documents the methods and monitoring protocols, summarizes the data recorded during monitoring, summarizes the number of marine mammals estimated to have been taken during survey activities (by species, when known), summarizes the mitigation actions taken during surveys (including what type of mitigation and the species and number of animals that prompted the mitigation action, when known), and provides an interpretation of the results and effectiveness of all mitigation and monitoring. Any recommendations made by NMFS must be addressed in the final report prior to acceptance by NMFS.

In addition to the final technical report, DWW will provide the reports described below as necessary during survey activities. In the unanticipated event that DWW's survey activities lead to an injury (Level A harassment) or mortality (*e.g.,* ship-strike, gear interaction, and/or entanglement) of a marine mammal, DWW would immediately cease the specified activities and report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources and the NMFS Greater Atlantic Stranding Coordinator. The report would include the following information:

- Time, date, and location (latitude/longitude) of the incident;
- Name and type of vessel involved;
- Vessel's speed during and leading up to the incident;
- Description of the incident;
- Status of all sound source use in the 24 hours preceding the incident;
- Water depth;
- Environmental conditions (*e.g.,* wind speed and direction, Beaufort sea state, cloud cover, and visibility);
- Description of all marine mammal observations in the 24 hours preceding the incident;
- Species identification or description of the animal(s) involved;
- Fate of the animal(s); and
- Photographs or video footage of the animal(s) (if equipment is available).

Activities would not resume until NMFS is able to review the circumstances of the event. NMFS would work with DWW to minimize reoccurrence of such an event in the future. DWW would not resume activities until notified by NMFS.

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

In the event that DWW discovers an injured or dead marine mammal and determines that the injury or death is not associated with or related to the activities authorized in the IHA (*e.g.,* previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), DWW would report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, and the NMFS Greater Atlantic Regional Stranding Coordinator, within 24 hours of the discovery. DWW would provide photographs or video footage (if available) or other documentation of the stranded animal sighting to NMFS. DWW may continue its operations under such a case.

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. 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 responses (*e.g.,*

intensity, duration), the context of any responses (*e.g.,* critical reproductive time or location, migration), 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's 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 environmental 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, our analysis applies to all the species listed in Table 7, given that NMFS expects the anticipated effects of the proposed survey to be similar in nature.

NMFS does not anticipate that serious injury or mortality would occur as a result of DWW's proposed survey, even in the absence of proposed mitigation. Thus the proposed authorization does not authorize any serious injury or mortality. As discussed in the *Potential Effects* section, non-auditory physical effects and vessel strike are not expected to occur.

We expect that all potential takes would be in the form of short-term Level B behavioral harassment in the form of temporary avoidance of the area or decreased foraging (if such activity were occurring), reactions that are considered to be of low severity and with no lasting biological consequences (*e.g.,* Southall *et al.,* 2007).

Potential impacts to marine mammal habitat were discussed previously in this document (see *Potential Effects of the Specified Activity on Marine Mammals and their Habitat*). Marine mammal habitat may be impacted by elevated sound levels, but these impacts would be temporary. In addition to being temporary and short in overall duration, the acoustic footprint of the proposed survey is small relative to the overall distribution of the animals in the area and their use of the area. Feeding behavior is not likely to be significantly impacted. Prey species are mobile and are broadly distributed throughout the project area; therefore, marine mammals that may be temporarily displaced during survey activities are expected to be able to resume foraging once they have moved away from areas with disturbing levels of underwater noise. Because of the temporary nature of the disturbance and the availability of similar habitat and resources in the surrounding area, the impacts to marine mammals and the food sources that they utilize are not expected to cause significant or long-term consequences for individual marine mammals or their populations.

There are no rookeries or mating grounds known to be biologically important to marine mammals within the proposed survey area. As described above, the proposed survey area would overlap spatially and temporally with a biologically important feeding area for fin whales. The important fin whale feeding area occurs from March through October and stretches from an area south of Montauk Point to south of Martha's Vineyard. However, the fin whale feeding area is sufficiently large (2,933 km^2), and the acoustic footprint of the proposed survey is sufficiently small (<100 km^2 estimated to be ensonified to the Level B harassment threshold per day), that fin whale feeding habitat would not be reduced appreciably. Any fin whales temporarily displaced from the proposed survey area would be expected to have sufficient remaining feeding habitat available to them, and would not be prevented from feeding in other areas within the biologically important feeding habitat. In addition, any displacement of fin whales from the survey area would be expected to be temporary in nature. Therefore, we do not expect fin whale feeding to be negatively impacted by the proposed survey. There are no feeding areas known to be biologically important to marine mammals within the proposed project area with the exception of the aforementioned feeding area for fin whales. There is no designated critical habitat for any ESA-listed marine mammals in the proposed survey area.

The proposed survey area is within a biologically important migratory area for North Atlantic right whales (effective March–April and November–December) that extends from Massachusetts to Florida (LaBrecque, *et al.,* 2015). Off the south coast of Massachusetts and Rhode Island, this biologically important migratory area extends from the coast to beyond the shelf break. Due to the fact that that the proposed survey is temporary and short in overall duration, and the fact that the spatial acoustic footprint of the proposed survey is very small relative to the spatial extent of the available migratory habitat in the area, right whale migration is not expected to be impacted by the proposed survey.

The proposed mitigation measures are expected to reduce the number and/or severity of takes by (1) giving animals the opportunity to move away from the sound source before HRG survey equipment reaches full energy; (2) preventing animals from being exposed to sound levels that may otherwise result in injury. Additional vessel strike avoidance requirements will further mitigate potential impacts to marine mammals during vessel transit to and within the survey area.

NMFS concludes that exposures to marine mammal species and stocks due to DWW's proposed survey would result in only short-term (temporary and short in duration) effects to individuals exposed. Marine mammals may temporarily avoid the immediate area, but are not expected to permanently abandon the area. Major shifts in habitat use, distribution, or foraging success are not expected. NMFS does not anticipate the proposed take estimates to impact annual rates of recruitment or survival.

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

- No mortality, serious injury, or Level A harassment is anticipated or authorized;
- The anticipated impacts of the proposed activity on marine mammals would be temporary behavioral changes due to avoidance of the area around the survey vessel;
- The availability of alternate areas of similar habitat value for marine mammals to temporarily vacate the survey area during the proposed survey to avoid exposure to sounds from the activity;
- The proposed project area does not contain areas of significance for mating or calving;
- Effects on species that serve as prey species for marine mammals from the proposed survey would be temporary and would not be expected to reduce the availability of prey or to affect marine mammal feeding;
- The proposed mitigation measures, including visual and acoustic monitoring, exclusion zones, and shutdown measures, 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 proposed monitoring and mitigation measures, NMFS preliminarily finds that the total marine mammal take from the proposed activity will have a negligible impact on all affected marine mammal species or stocks.

Small Numbers

As noted above, only small numbers of incidental take may be authorized under Section 101(a)(5)(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. Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities.

The numbers of marine mammals that we propose for authorization to be taken, for all species and stocks, would be considered small relative to the relevant stocks or populations (less than 7 percent of each species and stocks). See Table 7. Based on the analysis contained herein of the proposed activity (including the proposed mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS preliminarily finds that small numbers of marine mammals will be taken relative to the population size of the affected species or stocks.

Unmitigable Adverse Impact Analysis and Determination

There are no relevant subsistence uses of the affected marine mammal stocks or species implicated by this action. Therefore, NMFS has determined that the total taking of affected species or stocks 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 (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, in this case with the NMFS Greater Atlantic Regional Fisheries Office (GARFO), whenever we propose to authorize take for endangered or threatened species.

The NMFS Office of Protected Resources is proposing to authorize the incidental take of four species of marine mammals which are listed under the ESA: The North Atlantic right, fin, sei, and sperm whale. BOEM consulted with NMFS GARFO under section 7 of the ESA on commercial wind lease issuance and site assessment activities on the Atlantic Outer Continental Shelf in Massachusetts, Rhode Island, New York and New Jersey Wind Energy Areas. NMFS GARFO issued a Biological Opinion concluding that these activities may adversely affect but are not likely to jeopardize the continued existence of the North Atlantic right, fin, and sperm whale. The Biological Opinion can be found online at: *www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-other-energy-activities-renewable.* NMFS will conclude the ESA section 7 consultation prior to reaching a determination regarding the proposed issuance of the authorization. If the IHA is issued, the Biological Opinion may be amended to include an incidental take statement for these marine mammal species, as appropriate.

Proposed Authorization

As a result of these preliminary determinations, NMFS proposes to issue an IHA to DWW for conducting marine site assessment surveys offshore Massachusetts and Rhode Island and along potential submarine cable routes from the date of issuance for a period of one year, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated. This section contains a draft of the IHA itself. The wording contained in this section is proposed for inclusion in the IHA (if issued).

1. This IHA is valid for a period of one year from the date of issuance.

2. This IHA is valid only for marine site characterization survey activity, as specified in the IHA application, in the Atlantic Ocean.

3. General Conditions

(a) A copy of this IHA must be in the possession of DWW, the vessel operator and other relevant personnel, the lead PSO, and any other relevant designees of DWW operating under the authority of this IHA.

(b) The species authorized for taking are listed in Table 6. The taking, by Level B harassment only, is limited to the species and numbers listed in Table 6. Any taking of species not listed in Table 6, or exceeding the authorized amounts listed in Table 6, is prohibited and may result in the modification, suspension, or revocation of this IHA.

(c) The taking by injury, serious injury or death of any species of marine mammal is prohibited and may result in the modification, suspension, or revocation of this IHA.

(d) DWW shall ensure that the vessel operator and other relevant vessel personnel are briefed on all responsibilities, communication procedures, marine mammal monitoring protocols, operational procedures, and IHA requirements prior to the start of survey activity, and when relevant new personnel join the survey operations.

4. Mitigation Requirements—the holder of this Authorization is required to implement the following mitigation measures:

(a) DWW shall use at least four (4) NMFS-approved protected species observers (PSOs) during HRG surveys. The PSOs must have no tasks other than to conduct observational effort, record observational data, and communicate with and instruct relevant vessel crew with regard to the presence of marine mammals and mitigation requirements. PSO resumes shall be provided to NMFS for approval prior to commencement of the survey.

(b) Visual monitoring must begin no less than 30 minutes prior to initiation of survey equipment and must continue until 30 minutes after use of survey equipment ceases.

(c) Exclusion Zones—PSOs shall establish and monitor marine mammal Exclusion Zones and Watch Zone. Exclusion Zones are as follows:

(i) 500 m Exclusion Zone for North Atlantic right whales;

(ii) 200 m Exclusion Zone for fin whales, sei whales, and sperm whales; and

(iii) 25 m Exclusion Zone for harbor porpoises.

(d) Watch Zone—PSOs shall monitor a marine mammal Watch Zone that shall encompass an area 500 m from the survey equipment. PSOs shall document and record the behavior of all marine mammals observed within the Watch Zone.

(e) Shutdown requirements—If a marine mammal is observed within, entering, or approaching the relevant Exclusion Zones as described under 4(c) while geophysical survey equipment is operational, the geophysical survey equipment must be immediately shut down.

(i) Any PSO on duty has the authority to call for shutdown of survey equipment. When there is certainty regarding the need for mitigation action, the relevant PSO(s) must call for such action immediately.

(ii) When a shutdown is called for by a PSO, the shutdown must occur and any dispute resolved only following shutdown.

(iii) Upon implementation of a shutdown, survey equipment may be reactivated when all marine mammals have been confirmed by visual observation to have exited the relevant Exclusion Zone or an additional time period has elapsed with no further sighting of the animal that triggered the shutdown (15 minutes for harbor porpoise and 30 minutes for North Atlantic right whales, fin whales, sei whales, and sperm whales).

(iv) If geophysical equipment shuts down for reasons other than mitigation (*i.e.,* mechanical or electronic failure) resulting in the cessation of the survey equipment for a period of less than 20 minutes, the equipment may be restarted as soon as practicable if visual surveys were continued diligently throughout the silent period and the relevant Exclusion Zones are confirmed by PSOs to have remained clear of marine mammals during the entire 20-minute period. If visual surveys were not continued diligently during the pause of 20 minutes or less, a 30-minute pre-clearance period shall precede the restart of the geophysical survey equipment as described in 4(f). If the period of shutdown for reasons other than mitigation is greater than 20 minutes, a pre-clearance period shall precede the restart of the geophysical survey equipment as described in 4(f).

(v) 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 450 m of the survey equipment, shutdown must occur.

(f) Pre-clearance observation—30 minutes of pre-clearance observation shall be conducted prior to initiation of geophysical survey equipment. Geophysical survey equipment shall not be initiated if marine mammals are observed within 200 m of the survey equipment (500 m for North Atlantic right whales) during the pre-clearance period. If a marine mammal is observed within 200 m of geophysical survey equipment (500 m for North Atlantic right whales) during the pre-clearance period, initiation of the survey equipment will be delayed until the marine mammal(s) departs the 200 m zone (500 m for North Atlantic right whales).

(g) Ramp-up—when technically feasible, survey equipment shall be ramped up at the start or re-start of survey activities. Ramp-up will begin with the power of the smallest acoustic equipment at its lowest practical power output appropriate for the survey. When technically feasible the power will then be gradually turned up and other acoustic sources added in way such that the source level would increase gradually.

(h) Vessel Strike Avoidance—Vessel operator and crew must maintain a vigilant watch for all marine mammals and slow down or stop the vessel or alter course, as appropriate, to avoid striking any marine mammal, unless such action represents a human safety concern. Survey vessel crew members responsible for navigation duties shall receive site-specific training on marine mammal sighting/reporting and vessel strike avoidance measures. Vessel strike avoidance measures shall include the following, except under circumstances when complying with these requirements would put the safety of the vessel or crew at risk:

(i) The vessel operator and crew shall maintain vigilant watch for cetaceans and pinnipeds, and slow down or stop the vessel to avoid striking marine mammals;

(ii) The vessel operator shall reduce vessel speed to 10 knots (18.5 km/hr) or less when any large whale, any mother/calf pairs, whale or dolphin pods, or larger assemblages of non-delphinoid cetaceans are observed near (within 100 m (330 ft)) an underway vessel;

(iii) The survey vessel shall maintain a separation distance of 500 m (1,640 ft) or greater from any sighted North Atlantic right whale;

(iv) If underway, the vessel must steer a course away from any sighted North Atlantic right whale at 10 knots (18.5 km/hr) or less until the 500 m (1,640 ft) minimum separation distance has been established. If a North Atlantic right whale is sighted in a vessel's path, or within 100 m (330 ft) to an underway vessel, the underway vessel must reduce speed and shift the engine to neutral. Engines will not be engaged until the North Atlantic right whale has moved outside of the vessel's path and beyond 100 m. If stationary, the vessel must not engage engines until the North Atlantic right whale has moved beyond 100 m;

(v) The vessel shall maintain a separation distance of 100 m (330 ft) or greater from any sighted non-delphinoid cetacean. If sighted, the vessel underway must reduce speed and shift the engine to neutral and must not engage the engines until the non-delphinoid cetacean has moved outside of the vessel's path and beyond 100 m. If a survey vessel is stationary, the vessel will not engage engines until the non-delphinoid cetacean has moved out of the vessel's path and beyond 100 m;

(vi) The vessel shall maintain a separation distance of 50 m (164 ft) or greater from any sighted delphinoid cetacean. Any vessel underway remain parallel to a sighted delphinoid cetacean's course whenever possible and avoid excessive speed or abrupt changes in direction. Any vessel underway reduces vessel speed to 10 knots (18.5 km/hr) or less when pods (including mother/calf pairs) or large assemblages of delphinoid cetaceans are observed. Vessels may not adjust course and speed until the delphinoid cetaceans have moved beyond 50 m and/or the abeam of the underway vessel;

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

(viii) All vessels underway shall not divert or alter course in order to approach any whale, delphinoid cetacean, or pinniped. Any vessel underway will avoid excessive speed or abrupt changes in direction to avoid injury to the sighted cetacean or pinniped.

(ix) The vessel operator shall comply with 10 knot (18.5 km/hr) or less speed restrictions in any Seasonal Management Area per NMFS guidance.

(x) If NMFS should establish a Dynamic Management Area (DMA) in the area of the survey, within 24 hours of the establishment of the DMA, DWW shall contact the NMFS Office of Protected Resources to determine whether survey location and/or activities should be altered to avoid North Atlantic right whales.

5. Monitoring Requirements—The Holder of this Authorization is required to conduct marine mammal visual monitoring and passive acoustic monitoring (PAM) during geophysical survey activity. Monitoring shall be conducted in accordance with the following requirements:

(a) A minimum of four NMFS-approved PSOs and a minimum of two certified (PAM) operator(s), operating in shifts, shall be employed by DWW during geophysical surveys.

(b) Observations shall take place from the highest available vantage point on the survey vessel. General 360-degree scanning shall occur during the monitoring periods, and target scanning by PSOs will occur when alerted of a marine mammal presence.

(c) PSOs shall be equipped with binoculars and have the ability to estimate distances to marine mammals located in proximity to the vessel and/or Exclusion Zones using range finders. Reticulated binoculars will also be available to PSOs for use as appropriate based on conditions and visibility to support the sighting and monitoring of marine species.

(d) PAM shall be used during nighttime geophysical survey

operations. The PAM system shall consist of an array of hydrophones with both broadband (sampling mid-range frequencies of 2 kHz to 200 kHz) and at least one low-frequency hydrophone (sampling range frequencies of 75 Hz to 30 kHz). PAM operators shall communicate detections or vocalizations to the Lead PSO on duty who shall ensure the implementation of the appropriate mitigation measure.

(e) During night surveys, night-vision equipment with infrared light-emitting diode spotlights and/or infrared video monitoring shall be used in addition to PAM. Specifications for night-vision equipment shall be provided to NMFS for review and acceptance prior to start of surveys.

(f) PSOs and PAM operators shall work in shifts such that no one monitor will work more than 4 consecutive hours without a 2 hour break or longer than 12 hours during any 24-hour period. During daylight hours the PSOs shall rotate in shifts of 1 on and 3 off, and while during nighttime operations PSOs shall work in pairs.

(g) PAM operators shall also be on call as necessary during daytime operations should visual observations become impaired.

(h) Position data shall be recorded using hand-held or vessel global positioning system (GPS) units for each sighting.

(i) A briefing shall be conducted between survey supervisors and crews, PSOs, and DWW to establish responsibilities of each party, define chains of command, discuss communication procedures, provide an overview of monitoring purposes, and review operational procedures.

(j) DWW shall provide resumes of all proposed PSOs and PAM operators (including alternates) to NMFS for review and approval at least 45 days prior to the start of survey operations.

(k) PSO Qualifications shall include completion of a PSO training course and documented field experience on a marine mammal observation vessel and/or aerial surveys.

(a) Data on all PAM/PSO observations shall be recorded based on standard PSO collection requirements. PSOs must use standardized data forms, whether hard copy or electronic. The following information shall be reported:

(i) PSO names and affiliations.

(ii) Dates of departures and returns to port with port name.

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

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

(v) Vessel heading and speed at beginning and end of visual PSO duty shifts and upon any line change.

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

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

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

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

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

(B) PSO who sighted the animal;

(C) Time of sighting;

(D) Vessel location at time of sighting;

(E) Water depth;

(F) Direction of vessel's travel (compass direction);

(G) Direction of animal's travel relative to the vessel;

(H) Pace of the animal;

(I) Estimated distance to the animal and its heading relative to vessel at initial sighting;

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

(K) Estimated number of animals (high/low/best);

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

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

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

(O) Animal's closest point of approach and/or closest distance from the center point of the acoustic source;

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

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

6. Reporting—a technical report shall be provided to NMFS within 90 days after completion of survey activities that fully documents the methods and monitoring protocols, summarizes the data recorded during monitoring, estimates the number of marine mammals that may have been taken during survey activities, describes the effectiveness of the various mitigation techniques (*i.e.* visual observations during day and night compared to PAM detections/operations) and provides an interpretation of the results and effectiveness of all monitoring tasks. Any recommendations made by NMFS shall be addressed in the final report prior to acceptance by NMFS.

(a) Reporting injured or dead marine mammals:

(i) In the event that the specified activity clearly causes the take of a marine mammal in a manner not prohibited by this IHA (if issued), such as serious injury or mortality, DWW shall immediately cease the specified activities and immediately report the incident to the NMFS Office of Protected Resources and the NMFS Greater Atlantic Stranding Coordinator. The report must include the following information:

(A) Time, date, and location (latitude/longitude) of the incident;

(B) Vessel's speed during and leading up to the incident;

(C) Description of the incident;

(D) Status of all sound source use in the 24 hours preceding the incident;

(E) Water depth;

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

(G) Description of all marine mammal observations in the 24 hours preceding the incident;

(H) Species identification or description of the animal(s) involved;

(I) Fate of the animal(s); and

(J) Photographs or video footage of the animal(s).

Activities shall not resume until NMFS is able to review the circumstances of the prohibited take. NMFS will work with DWW to determine what measures are necessary to minimize the likelihood of further prohibited take and ensure MMPA

compliance. DWW may not resume their activities until notified by NMFS.

(ii) In the event that DWW discovers an injured or dead marine mammal, and the lead PSO determines that the cause of the injury or death is unknown and the death is relatively recent (*e.g.,* in less than a moderate state of decomposition), DWW shall immediately report the incident to the NMFS Office of Protected Resources and the NMFS Greater Atlantic Stranding Coordinator. The report must include the same information identified in condition 6(b)(i) of this IHA. Activities may continue while NMFS reviews the circumstances of the incident. NMFS will work with DWW to determine whether additional mitigation measures or modifications to the activities are appropriate.

(iii) In the event that DWW discovers an injured or dead marine mammal, and the lead PSO determines that the injury or death is not associated with or related to the specified activities (*e.g.,* previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), DWW shall report the incident to the NMFS Office of Protected Resources and the NMFS Greater Atlantic Stranding Coordinator within 24 hours of the discovery. DWW shall provide photographs or video footage or other documentation of the sighting to NMFS.

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

Request for Public Comments

We request comment on our analyses, the draft authorization, and any other aspect of this Notice of Proposed IHA for the proposed marine site characterization surveys. Please include with your comments any supporting data or literature citations to help inform our final decision on the request for MMPA authorization.

On a case-by-case basis, NMFS may issue a one-year renewal IHA without additional notice when (1) another year of identical or nearly identical activities as described in the Specified Activities section is planned, or (2) the activities would not be completed by the time the IHA expires and renewal would allow completion of the activities beyond that described in the Dates and Duration section, provided all of the following conditions are met:

- A request for renewal is received no later than 60 days prior to expiration of the current IHA.
- The request for renewal must include the following:

(1) An explanation that the activities to be conducted beyond the initial dates either are identical to the previously analyzed activities or include changes so minor (*e.g.,* reduction in pile size) that the changes do not affect the previous analyses, take estimates, or mitigation and monitoring requirements.

(2) A preliminary monitoring report showing the results of the required monitoring to date and an explanation showing that the monitoring results do not indicate impacts of a scale or nature not previously analyzed or authorized.

- Upon review of the request for renewal, the status of the affected species or stocks, and any other pertinent information, NMFS determines that there are no more than minor changes in the activities, the mitigation and monitoring measures remain the same and appropriate, and the original findings remain valid.

Dated: April 30, 2018.

Donna S. Wieting,

Director, Office of Protected Resources, National Marine Fisheries Service.

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BILLING CODE 3510–22–P

COMMITTEE FOR PURCHASE FROM PEOPLE WHO ARE BLIND OR SEVERELY DISABLED

Procurement List; Proposed Additions and Deletions

AGENCY: Committee for Purchase From People Who Are Blind or Severely Disabled.

ACTION: Proposed additions to and deletions from the Procurement List.

SUMMARY: The Committee is proposing to add products to the Procurement List that will be furnished by a nonprofit agency employing persons who are blind or have other severe disabilities, and deletes products and services previously furnished by such agencies.

DATES: Comments must be received on or before: June 04, 2018.

ADDRESSES: Committee for Purchase From People Who Are Blind or Severely Disabled, 1401 S Clark Street, Suite 715, Arlington, Virginia, 22202–4149.

FOR FURTHER INFORMATION CONTACT: For further information or to submit comments contact: Amy B. Jensen, Telephone: (703) 603–7740, Fax: (703) 603–0655, or email *CMTEFedReg@AbilityOne.gov.*

SUPPLEMENTARY INFORMATION: This notice is published pursuant to 41 U.S.C. 8503 (a)(2) and 41 CFR 51–2.3. Its purpose is to provide interested persons an opportunity to submit comments on the proposed actions.

Additions

If the Committee approves the proposed additions, the entities of the Federal Government identified in this notice will be required to procure the products listed below from the nonprofit agency employing persons who are blind or have other severe disabilities.

The following products are proposed for addition to the Procurement List for production by the nonprofit agency listed:

Products

NSN—Product Name:
2540–00–248–4603—Blade, Windshield Wiper, HMMW Vehicle, 18″L
2540–01–262–7708—Blade, Windshield Wiper, HMMW Vehicle, 20″L
2540–01–271–8026—Blade, Windshield Wiper, HMMW Vehicle, 16″L
2540–01–377–3125—Arm, Windshield Wiper, HMMW Vehicle, 20″L
2540–01–454–0415—Blade, Refill, Windshield Wiper, HMMW Vehicle, 20 ½″L
Mandatory Source of Supply: Center for the Blind and Visually Impaired, Atlanta, GA
Mandatory for: 100% of the requirement of the Department of Defense
Contracting Activity: DLA Land and Maritime

Deletions

The following products and services are proposed for deletion from the Procurement List:

Products

NSN(s)—Product Name(s):
8415–00–NSH–0687—Pants, Level 1, PCU, Army, Brown, M
Mandatory Source of Supply: Southeastern Kentucky Rehabilitation Industries, Inc., Corbin, KY
Contracting Activity: W6QK ACC–APG NATICK
NSN(s)—Product Name(s):
8415–01–519–7444—Pants, Level 1, PCU, Army, Brown, M
Mandatory Source of Supply: Southeastern Kentucky Rehabilitation Industries, Inc., Corbin, KY
Contracting Activity: W6QK ACC–APG NATICK

Services

Service Type: Switchboard Operation Service
Mandatory for: 4th Communication Squadron: 1695 Wright Brothers Avenue Seymour Johnson AFB, NC
Mandatory Source of Supply: Coastal Enterprises of Jacksonville, Inc., Jacksonville, NC