BILLING CODE 3510-22-P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648-XD131

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Construction of the Block Island Transmission System

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 an application from Deepwater Wind Block Island Transmission, LLC (DWBIT) for an Incidental Harassment Authorization (IHA) to take marine mammals, by harassment, incidental to construction of the Block Island Transmission System. Pursuant to the Marine Mammal Protection Act (MMPA), NMFS is requesting comments on its proposal to issue an IHA to DWBIT to incidentally take, by Level B harassment only, marine mammals during the specified activity.

DATES: Comments and information must be received no later than [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: Comments on the application should be addressed to Jolie Harrison, Supervisor, Incidental Take Program, Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring, MD 20910. The mailbox address for providing email comments is itp.magliocca@noaa.gov. Comments sent via e-mail, including all attachments, must not exceed a 25-megabyte file size. NMFS is not responsible for comments sent to addresses other than those provided here.

Instructions: All comments received are a part of the public record and will generally be posted to http://www.nmfs.noaa.gov/pr/permits/incidental.htm without change. All Personal Identifying Information (for example, name, address, etc.) voluntarily submitted by the commenter may be publicly accessible. Do not submit Confidential Business Information or otherwise sensitive or protected information.

An electronic copy of the application may be obtained by writing to the address specified above, telephoning the contact listed below (see FOR FURTHER INFORMATION CONTACT), or visiting the internet at: http://www.nmfs.noaa.gov/pr/permits/incidental.htm. Documents cited in this notice may also be viewed, by appointment, during regular business hours, at the aforementioned address.

NMFS is also preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) and will consider comments submitted in response to this notice as part of that process. The EA will be posted at the website listed above once it is finalized.

FOR FURTHER INFORMATION CONTACT: Michelle Magliocca, Office of Protected Resources, NMFS, (301) 427-8401.

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 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."

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].

Summary of Request

On March 11, 2013, NMFS received an application from DWBIT for the taking of marine mammals incidental to construction of the Block Island Transmission System. The application went through a series of revisions and the final version was submitted on November 26, 2013. NMFS determined that the application was adequate and complete on December 2, 2013.

DWBIT proposes to develop the Block Island Transmission System (BITS), a bi-directional submarine transmission cable, over a 1-year period. The proposed activity could begin in late 2014 and last through late 2015; however, portions of the project would only occur for short, sporadic periods of times over the 1-year period. The following specific aspects of the proposed activities are likely to result in the take of marine mammals: vibratory pile driving and the use of dynamically positioned (DP) vessel thrusters. Take, by Level B Harassment only, of individuals of nine species is anticipated to result from the specified activity.

Description of the Specified Activity

Overview

DWBIT proposes to construct a bi-directional submarine transmission cable that will run from Block Island to the Rhode Island mainland. Construction of the marine portion of the BITS will involve three activities: cable landfall construction on Block Island using a short-distance horizontal directional drill (HDD) from a temporary excavated trench box on Crescent Beach; cable landfall construction on Scarborough State Beach in Narragansett, Rhode Island using a long-distance HDD from a temporary offshore cofferdam; and installation of the submarine BITS cable. Cable landfall construction may require the installation and removal of a temporary offshore cofferdam, which would involve vibratory pile driving. The generation of underwater noise from vibratory pile driving and the DP vessel thruster may result in the incidental take of marine mammals.

The BITS will interconnect Block Island to the existing Narragansett Electric Company National Grid distribution system on the Rhode Island mainland. In connection with the BITS, Deepwater Wind Block Island, LLC (a different applicant) proposes to develop the Block Island

Wind Farm, a 30-megawatt offshore wind farm. Incidental take of marine mammals resulting from construction of the Block Island Wind Farm project will be assessed separately.

Dates and Duration

Construction activities could begin in late 2014 and are scheduled to be complete by August 2015. The anticipated project work windows are provided in Table 1.

Table 1. Anticipated project work windows.

Activity	Anticipated Work Window
Contracting, mobilization, and verification	January 2014 – December 2014
Onshore short-distance HDD installation	December 2014 – June 2015
Onshore/offshore long-distance HDD installation	January 2015 – June 2015
Onshore cable installation	October 2014 – May 2015
Substation construction	October 2014 – May 2015
Offshore cable installation	April 2015 – August 2015
Landfall demobilization and remediation	May 2015 – June 2015

NMFS is proposing to issue an authorization effective December 2014 through December 2015, based on the anticipated work windows for in-water construction that could result in the incidental take of marine mammals. While project activities may occur for 1 year, in-water vibratory pile driving is only expected to occur for up to of 4 days (2 days each for construction of the cofferdam and 2 days each for removal of the cofferdam). Use of the DP vessel thruster during cable installation activities is expected to occur for 4 to 6 weeks (42 days maximum). Vibratory pile driving would occur during daylight hours only, starting approximately 30 minutes after dawn and ending 30 minutes prior to dusk. Cable installation (and subsequent use of the DP vessel thruster) would be conducted 24 hours per day.

Specified Geographic Region

The BITS cable would originate from a manhole on Block Island and traverse federal and state submerged lands in Rhode Island Sound from Block Island to Narragansett for a total

distance of 19.8 miles with water depths reaching up to 39 meters (m). Figure 1.2-1 of DWBIT's application shows the project location in detail (see ADDRESSES). Vibratory pile driving for temporary offshore cofferdam would occur at a site located off of Scarborough State Beach. The temporary offshore cofferdam would be located between 685.8 m and 1,112.5 m from shore. Terrestrial cables and other terrestrial facilities associated with the BITS will be located in the towns of New Shoreham (Block Island) and Narragansett in Washington County, Rhode Island. Construction staging and laydown for offshore components of the project will occur at the Quonset Point port facility in North Kingstown, also in Washington County, Rhode Island.

Detailed Description of Activities

The following sections provide additional details associated with each portion of the BITS marine construction activities.

1. Landfall Construction

On Block Island, DWBIT plans to bring the BITS cable ashore via a short-distance HDD. DWBIT would use the short-distance HDD to install either a steel or high density polyethylene conduit for the cable from the parking lot under Crescent Beach to a temporary excavated trench beginning at about mean high water. The excavated trench on Crescent Beach would be approximately 2 to 3 m wide, 4 m deep, and 11 m long. Spoils from the trench excavation would be stored on the respective beach and returned to the trench after cable installation. To support the short-distance HDD on Crescent Beach, DWBIT would install steel sheet piling to stabilize the excavated trench, possibly using a vibratory pile driver. The HDD would enter through the shore side of the excavated trench and the cable conduit would be installed between the trench and the manhole. The BITS cable would then be pulled from the excavated trench into the

respective manhole through the newly installed conduit. Sheet piling installations would occur at low tide.

The coupling of land-based vibrations and nearshore sounds into the underwater acoustic field is not well understood and cannot be accurately predicted using current models. However, because the excavation for the cable trench and the HDD installation on the beach would occur onshore and because sand is generally a very poor conductor of vibrations, NMFS considers it unlikely that the underwater noise generated from either of these installations would result in harassment of marine mammals.

DWBIT is proposing to conduct the cable landfall on Scarborough State Beach using a long-distance HDD from the manhole located within the RIDEM parking lot to a temporary offshore cofferdam located between 685.8 m and 1,112.5 m from shore. From this location, a jet plow, supported by a DP cable installation barge, would be used to install the BITS cable below the seabed. Construction of the temporary cofferdam would consist of the installation of steel sheet piles to create an enclosed area approximately 15.2 by 6.1 m. The steel sheet piles would be installed and later removed using a vibratory hammer supported by a spud barge. DWBIT expects the cofferdam to be in place between January and the end of May.

Vibratory pile driving would be required to install the temporary cofferdam off of Scarborough State Beach. DWBIT assumes a 1,800 kilo Newton vibratory force for estimating source levels and frequency spectra. DWBIT modeled vibratory hammering at a source level of 194 decibels (dB) re 1 micro Pascal, using adjusted 1/3-octave band source levels from measurements of a similar offshore construction, and adjusted to account for the estimated force necessary for driving of the BITS cofferdam sheet piles. Detailed information on the acoustic

modeling for this source is provided in Appendix A of DWBIT's application (see ADDRESSES).

2. Offshore Cable Installation

DWBIT would use a jet plow, supported by a DP cable installation barge, to install the BITS cable below the seabed. The jet plow would be positioned over the trench and pulled from shore by the cable installation vessel. The jet plow would likely be a rubber-tired or skid-mounted plow with a maximum width of about 4.6 m, and pulled along the seafloor behind the cable-laying barge with assistance of a non-DP material barge. High-pressure water from vessel-mounted pumps would be injected into the sediments through nozzles situated along the plow, causing the sediments to temporarily fluidize and create a liquefied trench. DWBIT anticipates a temporary trench width of up to 1.5 m. As the plow is pulled along the route behind the barge, the cable would be laid into the temporary, liquefied trench through the back of the plow. The trench would be backfilled by the water current and the natural settlement of the suspended material. Umbilical cords would connect the submerged jet plow to control equipment on the vessel to allow the operators to monitor and control the installation process and make adjustments to the speed and alignment as the installation proceeds across the water.

The BITS cable would be buried to a target depth of 1.8 m beneath the seafloor. The actual burial depth depends on substrate encountered along the route and could vary from 1.2 to 2.4 m. Where the BITS crosses two existing submarine cables on the outer continental shelf, the cable would be installed directly on the seafloor and protected from external aggression using a combination of sand bags and concrete mattresses. Anchored vessels would be used to install both the BITS and the associated cable armoring at these locations.

DP systems maintain their precise coordinates in waters through the use of automatic controls. These control systems use variable levels of power to counter forces from current and wind. During cable-lay activities, DWBIT expects that a reduced 50 percent power level will be used by DP vessels. DWBIT modeled scenarios using a source level of 180 dB re 1 micro Pascal for the DP vessel thruster, assuming water depths of 7, 10, 20, and 40 m, and thruster power of 50 percent. Detailed information on the acoustic modeling for this source is provided in Appendix A of DWBIT's application (see ADDRESSES).

Description of Marine Mammals in the Area of the Specified Activity

There are 34 marine mammal species with possible or confirmed occurrence in the proposed area of the specified activity (Table 2).

Table 2. Marine mammal species with possible or confirmed occurrence in the proposed project area.

Common Name	**Scientific Name**	**Status**	**Occurrence**	**Seasonality**	**Range**	**Abundance**
Toothed whales (Odontocetes) Atlantic white-sided dolphin	Lagenorhynchus acutus	-	Confirmed	Year-round	North Carolina to Canada	23,390
Atlantic spotted dolphin	Stenella frontalis					50,978
Bottlenose dolphin	Tursiops truncatus	Strategic (northern coastal stock)				9,604
Short-beaked common dolphin	Delphinus delphis	-	Common	Year-round	North Carolina to Canada	120,743
Harbor porpoise	Phocoena phocoena	Strategic	Common	Year-round	North Carolina to Greenland	89,054
Killer whale	Orcinus orca					Unknown
False killer whale	Pseudorca crassidens					Unknown
Long-finned pilot whale	Globicephala malaena					12,619
Short-finned pilot whale	Globicephala macrohynchus					24,674
Risso's	Grampus					20,479

dolphin	griseus					
Striped dolphin	Stenella coeruleoalba					94,462
White-beaked dolphin	Lagenorhynchus albirostris					2,003
Sperm whale	Physeter macrocephalus	Endangered				4,804
Pygmy sperm whale	Kogia breviceps	Strategic				395
Dwarf sperm whale	Kogia sima					395
Cuvier's beaked whale	Ziphius cavirostris	Strategic				3,513
Blainville's beaked whale	Mesoplodon densirostris					3,513
Gervais' beaked whale	Mesoplodon europaeus	Strategic				3,513
True's beaked whale	Mesoplodon mirus	Strategic				3,513
Bryde's whale	Balaenoptera edeni					
Northern bottlenose whale	Hyperoodon ampullatus					
Baleen whales (Mysticetes) Minke whale	Balaenoptera acutorostrata	-	Common (spring and summer)	Spring, summer, fall	Caribbean to Greenland	8,987
Blue whale	Balaenoptera musculus	Endangered				Unknown
Fin whale	Balaenoptera physalus	Endangered	Common	Year-round	Caribbean to Greenland	3,985
Humpback whale	Megaptera novaeangliae	Endangered	Confirmed	Year-round	Caribbean to Greenland	11,570
North Atlantic right whale	Eubalaena glacialis	Endangered	Confirmed	Year-round	Southeastern U.S. to Candada	444
Sei whale	Balaenoptera borealis	Endangered				Unknown
Pinnipeds Gray seals	Halichoerus grypus	-	Confirmed	Year-round	New England to Canada	348,900
Harbor seals	Phoca vitulina	-	Common	Spring, summer, winter	Florida to Canada	99,340
Hooded seals	Cystophora cristata					Unknown
Harp seal	Phoca groenlandica					Unknown
West Indian manatee	Trichechus manatus	Endangered				3,802

The highlighted species in Table 2 are pelagic and/or northern species, or are so rarely sighted that their presence in the proposed project area, and therefore take, is unlikely. These species are not considered further in this proposed IHA notice. The West Indian manatee is managed by the U.S. Fish and Wildlife Service and is also not considered further in this proposed IHA notice. Further information on the biology and local distribution of these species can be found in section 4 of DWBIT's application (see ADDRESSES), and the NMFS Marine Mammal Stock Assessment Reports, which are available online at: http://www.nmfs.noaa.gov/pr/species/.

Potential Effects of the Specified Activity on Marine Mammals

This section includes a summary and discussion of the ways that the types of stressors associated with the specified activity (i.e., vibratory pile driving and use of the DP vessel thruster) have been observed to impact marine mammals. This discussion may also include reactions that we consider to rise to the level of a take and those that we do not consider to rise to the level of a take (for example, with acoustics, we may include a discussion of studies that showed animals not reacting at all to sound or exhibiting barely measurable avoidance). This section is intended as a background of potential effects and does not consider either the specific manner in which this activity will be carried out or the mitigation that will be implemented, and how either of those will shape the anticipated impacts from this specific activity. The "Estimated Take by Incidental Harassment" section later in this document will include a quantitative analysis of the number of individuals that are expected to be taken by this activity. The "Negligible Impact Analysis" section will include the analysis of how this specific activity will impact marine mammals and will consider the content of this "Potential Effects of the Specified Activity on Marine Mammals" section, the "Estimated Take by Incidental Harassment" section,

the "Proposed Mitigation" section, and the "Anticipated Effects on Marine Mammal Habitat" section to draw conclusions regarding the likely impacts of this activity on the reproductive success or survivorship of individuals, and from that on the affected marine mammal populations 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 hertz (Hz) or kilohertz (kHz), while sound level describes the sound's intensity and is measured in decibels (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 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 (Hastings and Popper, 2005). 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.

Acoustic Impacts

Vibratory pile driving and use of the DP vessel thruster during the BITS project 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. Based on available behavioral data, audiograms have been derived using auditory evoked potentials, anatomical modeling, and other data, Southall et al. (2007) designate "functional hearing groups" for marine mammals and estimate the lower and upper frequencies of functional hearing of the groups. The functional groups and the associated frequencies are indicated below (though animals are less sensitive to sounds at the outer edge of their functional range and most sensitive to sounds of frequencies within a smaller range somewhere in the middle of their functional hearing range):

- Low frequency cetaceans (13 species of mysticetes): functional hearing is estimated to occur between approximately 7 Hz and 22 kHz (however, a study by Au et al. (2006) of humpback whale songs indicate that the range may extend to at least 24 kHz);
- Mid-frequency cetaceans (32 species of dolphins, six species of larger toothed whales, and 19 species of beaked and bottlenose whales): functional hearing is estimated to occur between approximately 150 Hz and 160 kHz;
- High frequency cetaceans (eight species of true porpoises, six species of river dolphins, Kogia, the franciscana, and four species of cephalorhynchids): functional hearing is estimated to occur between approximately 200 Hz and 180 kHz; and
- Pinnipeds in Water: functional hearing is estimated to occur between approximately 75 Hz and 75 kHz, with the greatest sensitivity between approximately 700 Hz and 20 kHz.

As mentioned previously in this document, nine marine mammal species (seven cetaceans and two pinnipeds) are likely to occur in the proposed project area. Of the seven cetacean species likely to occur in DWBIT's proposed project area, four are classified as low-frequency cetaceans (i.e., minke whale, fin whale, humpback whale, and North Atlantic right whale), two are classified as mid-frequency cetaceans (i.e., Atlantic white-sided dolphin and short-beaked common dolphin), and one is classified as a high-frequency cetacean (i.e., harbor porpoise) (Southall et al., 2007). A species' functional hearing group is a consideration when we analyze the effects of exposure to sound on marine mammals.

1. 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). 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). 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).

2. 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.

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 SPL) of longer duration were found to induce TTS onset more than louder sounds (higher SPL) of shorter duration (more similar to subbottom 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. Southall et al. (2007) considers a 6 dB TTS (that is, baseline thresholds are elevated by 6 dB) to be a sufficient definition of TTS-onset. NMFS considers TTS as Level B harassment that is mediated by physiological effects on the auditory system; however, NMFS does not consider TTS-onset to be the lowest level at which Level B harassment may occur. The potential for TTS is considered within NMFS' analysis of potential impacts from Level B harassment.

3. 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 kilometers. However, other studies have shown that marine mammals at distances more than a few kilometers 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 strongly 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 mi (0.25-0.5 km).

4. 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. 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 (Thompson, 1965; Myrberg, 1978; Chapman et al., 1998; 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.

5. Behavioral Disturbance

Behavioral responses to sound are highly variable and context-specific. An animal's perception of and response to (in both nature and magnitude) an acoustic event can be influenced by prior experience, perceived proximity, bearing of the sound, familiarity of the sound, etc. (Southall et al., 2007). 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, let alone 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).

The studies that address responses of low-frequency cetaceans to non-pulse sounds (such as vibratory pile driving or the sound emitted from a DP vessel thruster) include data gathered in the field and related to several types of sound sources (of varying similarity to chirps), including: vessel noise, drilling and machinery playback, low-frequency M-sequences (sine wave with multiple phase reversals) playback, tactical low-frequency active sonar playback, drill ships, and non-pulse playbacks. These studies generally indicate no (or very limited) responses to received levels in the 90 to 120 dB re: 1µPa range and an increasing likelihood of avoidance and other behavioral effects in the 120 to 160 dB range. As mentioned earlier, though, contextual variables play a very important role in the reported responses and the severity of effects are not linear

when compared to received level. Also, few of the laboratory or field datasets had common conditions, behavioral contexts, or sound sources, so it is not surprising that responses differ.

The studies that address responses of mid-frequency cetaceans to non-pulse sounds include data gathered both in the field and the laboratory and related to several different sound sources (of varying similarity to chirps) including: pingers, drilling playbacks, ship and ice-breaking noise, vessel noise, Acoustic harassment devices (AHDs), Acoustic Deterrent Devices (ADDs), mid-frequency active sonar, and non-pulse bands and tones. Southall et al. (2007) were unable to come to a clear conclusion regarding the results of these studies. In some cases animals in the field showed significant responses to received levels between 90 and 120 dB, while in other cases these responses were not seen in the 120 to 150 dB range. The disparity in results was likely due to contextual variation and the differences between the results in the field and laboratory data (animals typically responded at lower levels in the field).

The studies that address responses of high-frequency cetaceans to non-pulse sounds include data gathered both in the field and the laboratory and related to several different sound sources (of varying similarity to chirps), including: pingers, AHDs, and various laboratory non-pulse sounds. All of these data were collected from harbor porpoises. Southall et al. (2007) concluded that the existing data indicate that harbor porpoises are likely sensitive to a wide range of anthropogenic sounds at low received levels (around 90 to 120 dB), at least for initial exposures. All recorded exposures above 140 dB induced profound and sustained avoidance behavior in wild harbor porpoises (Southall et al., 2007). Rapid habituation was noted in some but not all studies.

The studies that address the responses of pinnipeds in water to non-pulse sounds include data gathered both in the field and the laboratory and related to several different sound sources

(of varying similarity to chirps), including: AHDs, various non-pulse sounds used in underwater data communication, underwater drilling, and construction noise. Few studies exist with enough information to include them in the analysis. The limited data suggest that exposures to non-pulse sounds between 90 and 140 dB generally do not result in strong behavioral responses of pinnipeds in water, but no data exist at higher received levels (Southall et al., 2007).

Given the many uncertainties in predicting the quantity and types of impacts of noise on marine mammals, it is common practice to estimate how many mammals would be present within a particular distance of activities and/or exposed to a particular level of sound. In most cases, this approach likely overestimates the numbers of marine mammals that would be affected in some biologically-important manner.

6. Vessel Strike

Vessels and in-water structures have the potential to cause physical disturbance to marine mammals. Various types of vessels already use the water surrounding Rhode Island and Block Island in particular. Tug boats and barges, both of which would be required during the BITS construction are slow moving and follow a predictable course. Marine mammals would be able to easily avoid these vessels and are likely already habituated to the presence of numerous vessels.

Anticipated Effects on Marine Mammal Habitat

There are no feeding areas, rookeries, or mating grounds known to be biologically important to marine mammals within the proposed project area. There is also no designated critical habitat for any ESA-listed marine mammals. Harbor seals haul out on Block Island and points along Narragansett Bay, the most important haul-out being on the edge of New Harbor, about 2.4 km from the proposed BITS landfall on Block Island. The only consistent haul-out

locations for gray seals within the vicinity of Rhode Island are around Monomoy National Wildlife Refuge and Nantucket Sound in Massachusetts (more than 80 nautical miles from the proposed project area). NMFS' regulations at 50 CFR 224 designated the nearshore waters of the Mid-Atlantic Bight as the Mid-Atlantic U.S. Seasonal Management Area (SMA) for right whales in 2008. Mandatory vessel speed restrictions are in place in that SMA from November 1 through April 30 to reduce the threat of collisions between ships and right whales around their migratory route and calving grounds. .

The BITS involves activities that would disturb the seafloor and potentially affect benthic and finfish communities. Installation of the BITS cable and the temporary offshore cofferdam would result in the temporary disturbance of no more than 45.3 acres of seafloor. These installation activities would also result in temporary and localized increases in turbidity around the proposed project area. DWBIT is required to install additional protective armoring over the BITS where it would cross two existing marine cables in federal waters. At the cable crossing locations, the installation of additional protective armoring would result in the permanent conversion of about 1.7 acre of soft substrate to hard substrate. The BITS cable may also require additional protective armoring in areas where the burial depth achieved is less than 1.2 m. DWBIT expects that additional protection would be required at a maximum of 1 percent of the entire BITS cable, resulting in a conversion of up to 1 acre of soft substrate to hard substrate along the cable route. During the installation of additional protective armoring at the cable crossings and as necessary along the cable route, anchors and anchor chains would temporarily impact about 1.8 acres of bottom substrate during each anchoring event.

Jet-plowing and cofferdam installation would cause either the displacement or loss of benthic and finfish resources in the immediate areas of disturbance. This may result in a

temporary loss of forage items and a temporary reduction in the amount of benthic habitat available for foraging marine mammals in the immediate proposed project area. However, the amount of habitat affected represents a very small percentage of the available foraging habitat in the proposed project area. Increased underwater sound levels from cofferdam installation and use of the DP vessel thruster may temporarily result in marine mammals avoiding or abandoning the area.

Because of the temporary nature of the disturbance, the availability of similar habitat and resources in the surrounding area, and the lack of important or unique marine mammal habitat, 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.

Proposed Mitigation

In order to issue an incidental take authorization (ITA) 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 (where relevant).

Proposed Mitigation Measures

With NMFS' input during the application process, DWBIT is proposing the following mitigation measures during vibratory pile driving and use of the DP vessel thruster:

1. Marine Mammal Exclusion Zone

Protected species observers would visually monitor a 200-m radius during all in-water vibratory pile driving. This distance is estimated to be the 160 dB isopleth based on DWBIT's sound exposure model. A minimum of two observers would be stationed aboard each noise-

producing construction support vessel. Each observer would visually monitor a 360-degree field of vision from the vessel. Observers would begin monitoring at least 30 minutes prior to vibratory pile driving, continue monitoring during vibratory pile driving, and stop monitoring 30 minutes after vibratory pile driving has ended. If a marine mammal is seen approaching or entering the 200-m zone during vibratory pile driving, DWBIT would stop vibratory pile driving as a precautionary measure to minimize noise impacts on the animal.

2. Soft-start Procedures

DWBIT would use a soft-start (or ramp-up) procedure at the beginning of vibratory pile driving. This procedure would require an initial set of three strikes from the vibratory hammer at 40 percent energy with a 1-minute waiting period between subsequent 3-strike sets. DWBIT would repeat the procedure two additional times. DWBIT would initiate a soft-start at the beginning of each day of pile driving and if pile driving stops for more than 30 minutes. DWBIT would not initiate a soft-start if the monitoring zone is obscured by fog, inclement weather, poor lighting conditions, etc.

3. Delay and Shut-down Procedures

DWBIT would delay vibratory pile driving and reduce DP vessel thruster use if a marine mammal is observed within the exclusion zone and until the exclusion zone is clear of marine mammals. DWBIT proposes to stop vibratory pile driving if a marine mammal is seen within a 200-m radius from the sound source at the Scarborough State Beach cofferdam and would not be reinitiated until the 200-m radius is clear of marine mammals for at least 30 minutes.

4. DP Thruster Power Reduction

A constant tension must be maintained during cable installation and any significant stoppage in vessel maneuverability during jet plow activities would result in damage to the cable.

Therefore, during DP vessel operations, DWBIT proposes to reduce DP thruster power to the maximum extent possible if a marine mammal approaches or enters a 5-m radius from the vessel (estimated to be the 160-dB isopleth from the vessel). This reduction would not be implemented at the risk of compromising safety and/or the integrity of the BITS. DWBIT would not increase power until the 5-m zone is clear of marine mammals for 30 minutes.

5. Time of Day and Weather Restrictions

DWBIT would conduct vibratory pile driving off of Scarborough State Beach during daylight hours only, starting approximately 30 minutes after dawn and ending 30 minutes before dusk. If a soft-start is initiated before the onset of inclement weather, DWBIT would complete that segment of vibratory pile driving. DWBIT would not initiate new vibratory pile driving activities until the entire monitoring zone is visible.

Mitigation Conclusions

NMFS has carefully evaluated the applicant's proposed mitigation measures and considered a range of other measures in the context of ensuring that NMFS prescribes the means of effecting the least practicable impact on the affected marine mammal species and stocks and their habitat. Our evaluation of potential measures included consideration of the following factors in relation to one another:

- The manner in which, and the degree to which, the successful implementation of the measure is expected to minimize adverse impacts to marine mammals;
- The proven or likely efficacy of the specific measure to minimize adverse impacts as planned; and
- The practicability of the measure for applicant implementation.

Any mitigation measure(s) prescribed by NMFS should be able to accomplish, have a reasonable likelihood of accomplishing (based on current science), or contribute to the accomplishment of one or more of the general goals listed below:

1. Avoidance or minimization of injury or death of marine mammals wherever possible (goals 2, 3, and 4 may contribute to this goal).
2. A reduction in the numbers of marine mammals (total number or number at biologically important time or location) exposed to received levels of continuous noise, or other activities expected to result in the take of marine mammals (this goal may contribute to 1, above, or to reducing harassment takes only).
3. A reduction in the number of times (total number or number at biologically important time or location) individuals would be exposed to received levels of continuous noise, or other activities expected to result in the take of marine mammals (this goal may contribute to 1, above, or to reducing harassment takes only).
4. A reduction in the intensity of exposures (either total number or number at biologically important time or location) to received levels of continuous noise, or other activities expected to result in the take of marine mammals (this goal may contribute to a, above, or to reducing the severity of harassment takes only).
5. Avoidance or minimization of adverse effects to marine mammal habitat, paying special attention to the food base, activities that block or limit passage to or from biologically important areas, permanent destruction of habitat, or temporary destruction/disturbance of habitat during a biologically important time.
6. For monitoring directly related to mitigation – an increase in the probability of detecting marine mammals, thus allowing for more effective implementation of the mitigation.

Based on our evaluation of the applicant's proposed measures, as well as other measures considered by NMFS, NMFS has preliminarily determined that the proposed mitigation measures provide the means of effecting the least practicable impact on marine mammals 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 ITA 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 ITAs 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. Monitoring measures prescribed by NMFS should accomplish one or more of the following general goals:

1. An increase in the probability of detecting marine mammals, both within the mitigation zone (thus allowing for more effective implementation of the mitigation) and in general to generate more data to contribute to the analyses mentioned below;
2. An increase in our understanding of how many marine mammals are likely to be exposed to levels of continuous noise from vibratory pile driving and use of a DP vessel thruster that we associate with specific adverse effects, such as behavioral harassment, TTS, or PTS;
3. An increase in our understanding of how marine mammals respond to stimuli expected to result in take and how anticipated adverse effects on individuals (in different ways and to

varying degrees) may impact the population, species, or stock (specifically through effects on annual rates of recruitment or survival) through any of the following methods:

- Behavioral observations in the presence of stimuli compared to observations in the absence of stimuli (need to be able to accurately predict received level, distance from source, and other pertinent information);
- Physiological measurements in the presence of stimuli compared to observations in the absence of stimuli (need to be able to accurately predict received level, distance from source, and other pertinent information);
- Distribution and/or abundance comparisons in times or areas with concentrated stimuli versus times or areas without stimuli;

4. An increased knowledge of the affected species; and
5. An increase in our understanding of the effectiveness of certain mitigation and monitoring measures.

Proposed Monitoring Measures

DWBIT submitted a marine mammal monitoring plan as part of the IHA application. It can be found in section 12 of their application. The plan may be modified or supplemented based on comments or new information received from the public during the public comment period.

1. Visual Monitoring

DWBIT would use protected species observers to visually monitor the surrounding area during all in-water vibratory pile driving and use of DP vessel thrusters. These observers would monitor beyond the estimated 160-dB isopleths, in addition to conducting mitigation monitoring within these zones. Observers would estimate distances to marine mammals visually, using laser

range finders, or by using reticle binoculars during daylight hours. During night operations (DP vessel thruster use only), observers would use night-vision binoculars. Observers would record their position using hand-held or vessel global positioning system units for each sighting, vessel position change, and any environmental change. Each observer would scan the surrounding area for visual indication of marine mammal presence. Observers would be located from the highest available vantage point on the associated operational platform (e.g., support vessel, barge or tug), estimated to be at least 6 m above the waterline.

Prior to initiation of construction work, all crew members on barges, tugs, and support vessels would undergo environmental training, a component of which would focus on the procedures for sighting and protection of marine mammals. DWBIT would also conduct a briefing with the construction supervisors and crews and observers to define chains of command, discuss communication procedures, provide an overview of the monitoring purposes, and review operational procedures. The DWBIT Construction Compliance Manager (or other authorized individual) would have the authority to stop or delay vibratory pile driving activities if deemed necessary.

2. Acoustic Field Verification

DWBIT would conduct field verification of the estimated 160-dB isopleths during vibratory pile driving and use of the DP vessel thruster to determine whether the proposed distances are adequate to minimize impacts to marine mammals.

DWBIT would conduct field verification of the 200-m radius marine mammal exclusion zone at the Scarborough State Beach cofferdam. DWBIT would take acoustic measurements during vibratory pile driving of the last half (deepest sheet pile segment) for any given open-water pile and would also measure from two reference locations at two water depths (a depth at

mid-water and at about 1 m above the seafloor). If the field measurements determine that the 160-dB isopleth is less than or beyond the proposed 200-m distance, a new zone may be established accordingly. DWBIT would notify NMFS and the USACE within 24 hours if a new marine mammal exclusion zone is established that extends beyond 200 m. Implementation of a smaller zone would be contingent on NMFS' review and would not be used until NMFS approves the change.

DWBIT would also perform field verification of the 160-dB isopleth associated with DP vessel thruster use during cable installation. DWBIT would take acoustic measurements from two reference locations at two water depths (a depth at mid-water and at about 1 m above the seafloor). Similar to field verification during vibratory pile driving, the DP thruster power reduction zone may be modified as necessary.

Proposed Reporting Measures

Observers would record dates and locations of construction operations; times of observations; location and weather; details of marine mammal sightings (e.g., species, age, numbers, behavior); and details of any observed take.

DWBIT proposes to provide the following notifications and reports during construction activities:

- Notification to NMFS and the U.S. Army Corps of Engineers (USACE) within 24-hours of beginning construction activities and again within 24-hours of completion;
- Detailed report of field-verification measurements within 7 days of completion (including: sound levels, durations, spectral characteristics, DP thruster use, etc.) and notification to NMFS and the USACE within 24-hours if a new zone is established;

- Notification to NMFS and USACE within 24-hours if field verification measurements suggest a larger marine mammal exclusion zone;
- Final technical report to NMFS and the USACE within 120 days of completion of the specified activity documenting methods and monitoring protocols, mitigation implementation, marine mammal observations, other results, and discussion of mitigation effectiveness.

In the unanticipated event that the specified activity clearly causes the take of a marine mammal in a manner not permitted by the authorization (if issued), such as an injury, serious injury, or mortality (e.g., ship-strike, gear interaction, and/or entanglement), DWBIT shall immediately cease the specified activities and immediately report the incident to the Incidental Take Program Supervisor, Permits and Conservation Division, Office of Protected Resources, NMFS, at 301-427-8401 and/or by email to Jolie.Harrison@noaa.gov and Michelle.Magliocca@noaa.gov and the Northeast Regional Stranding Coordinator at 978-281-9300 (Mendy.Garron@noaa.gov). The report must 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).

DWBIT shall not resume its activities until we are able to review the circumstances of the prohibited take. We will work with DWBIT to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. DWBIT may not resume their activities until notified by us via letter, email, or telephone.

In the event that DWBIT discovers an injured or dead marine mammal, and the lead visual observer 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), DWBIT shall immediately report the incident to the Incidental Take Program Supervisor, Permits and Conservation Division, Office of Protected Resources, at 301-427-8401 and/or by email to Jolie.Harrison@noaa.gov and Michelle.Magliocca@noaa.gov and the Northeast Regional Stranding Coordinator at 978-281-9300 (Mendy.Garron@noaa.gov). The report must include the same information identified in the paragraph above this section. Activities may continue while we review the circumstances of the incident. We would work with DWBIT to determine whether modifications in the activities are appropriate.

In the event that DWBIT discovers an injured or dead marine mammal, and the lead visual observer determines that the injury or death is not associated with or related to the authorized activities (e.g., previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), DWBIT would report the incident to the Incidental Take Program Supervisor, Permits and Conservation Division, Office of Protected Resources, at 301-

427-8401 and/or by email to Jolie.Harrison@noaa.gov and Michelle.Magliocca@noaa.gov and the Northeast Regional Stranding Coordinator at 978-281-9300 (Mendy.Garron@noaa.gov), within 24 hours of the discovery. DWBIT would provide photographs or video footage (if available) or other documentation of the stranded animal sighting to us.

Estimated Take by Incidental Harassment

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].

Project activities that have the potential to harass marine mammals, as defined by the MMPA, include noise associated with vibratory pile driving of the temporary cofferdam, and noise associated with the use of DP vessel thrusters during cable installation. Harassment could take the form of masking, temporary threshold shift, avoidance, or other changes in marine mammal behavior. NMFS anticipates that impacts to marine mammals would be in the form of behavioral harassment and no take by injury, serious injury, or mortality is proposed. NMFS does not anticipate take resulting from the movement of vessels associated with construction because there will be a limited number of vessels moving at slow speeds over a relatively shallow, nearshore area.

NMFS' current acoustic exposure criteria are shown in Table 3 below. Sound levels from vibratory pile driving or use of the DP vessel thruster would not reach the Level A harassment threshold of 180/190 dB (cetaceans/pinnipeds) during the proposed BITS project.

DWBIT modeled distances to these acoustic exposure criteria are shown in Table 4. Details on the model characteristics and results are provided in the Underwater Acoustic Report at the end of DWBIT's application (see ADDRESSES). DWBIT and NMFS believe that this estimate represents the worst-case scenario and that the actual distance to the Level B harassment threshold may be shorter.

Table 3. NMFS' current acoustic exposure criteria.

Non-Explosive Sound		
Criterion	Criterion Definition	Threshold
Level A Harassment (Injury)	Permanent Threshold Shift (PTS) (Any level above that which is known to cause TTS)	180 dB re 1 microPa-m (cetaceans) / 190 dB re 1 microPa-m (pinnipeds) root mean square (rms)
Level B Harassment	Behavioral Disruption (for impulse noises)	160 dB re 1 microPa-m (rms)
Level B Harassment	Behavioral Disruption (for continuous, noise)	120 dB re 1 microPa-m (rms)

Table 4. DWBIT's modeled distances to acoustic exposure criteria.

Activity	Distance to Level B Harassment (120 dB)	Distance to Level A Harassment (180/190 dB)
Vibratory pile driving (for long-distance HDD)	>40 km	N/A
DP vessel thruster use	4,750 m	N/A

DWBIT estimated species densities within the proposed project area in order to estimate the number of marine mammal exposures to sound levels above 120 dB. DWBIT used sightings per unit effort (SPUE) from Kenney and Vigness-Raposa (2009) for relative cetacean abundance and the Northeast Navy OPAREA Density Estimates (DoN, 2007) for seal abundance. Based on multiple reports, harbor seal abundance off the coast of Rhode Island is thought to be about 20 percent of the total abundance for southern New England. Because the seasonality and habitat

use of gray seals off the coast of Rhode Island roughly overlaps with harbor seals, DWBIT applied this 20 percent estimate to both pinniped species. While the density estimates relied upon for this proposed authorization are from 2007 and 2009, they are the best scientific data available. NMFS is not aware of any efforts to collect more recent density estimates than those relied upon here.

Estimated takes were calculated by multiplying the average highest species density (per 100 km^2) by the zone of influence (maximum ensonified area of 120 dB), multiplied by a correction factor of 1.5 to account for marine mammals underwater, multiplied by the number of days of the specified activity. A detailed description of the DWBIT's model used to calculate zones of influence is provided in the Underwater Acoustic Report at the end of their application (see ADDRESSES).

DWBIT used a zone of influence of 4,352 km^2 and a total construction period of 4 days to estimate take from vibratory pile driving. In contrast to their application, DWBIT clarified that the vibratory pile driving would likely occur over a 2-day period during the winter and a 2-day period during the spring. Their take calculations were revised after the application was submitted. For each species, DWBIT used the estimated seasonal density (winter and spring) to calculate take for a total of 4 days (2 days each season). DWBIT's requested take numbers are provided in Table 5 and this is also the number of takes NMFS is proposing to authorize. DWBIT's calculations do not take into account whether a single animal is harassed multiple times or whether each exposure is a different animal. Therefore, the numbers in Table 5 are the maximum number of animals that may be harassed during vibratory pile driving (i.e., DWBIT assumes that each exposure event is a different animal). These estimates do not account for mitigation measures that DWBIT would implement during vibratory pile driving.

DWBIT used a zone of influence of 23.0 km^2 and a maximum installation period of 42 days to estimate take from use of the DP vessel thruster during cable installation. The zone of influence represents the average ensonified area across the three representative water depths along the cable route (7m,10 m, 20 m, and 40 m). DWBIT expects cable installation to occur between April and August; to be conservative, DWBIT used the highest seasonal species density to calculate take. Again, DWBIT's calculations do not take into account whether a single animal is harassed multiple times or whether each exposure is a different animal. Therefore, the numbers in Table 5 are the maximum number of animals that may be harassed during cable installation. These estimates do not account for mitigation measures that DWBIT would implement during the cable installation.

DWBIT did not request, and NMFS is not proposing, take from vessel strike. We do not anticipate marine mammals to be impacted by vessel movement because a limited number of vessels would be involved in construction activities and they would mostly move at slow speeds throughout construction.

Table 5. DWBIT's estimated take for the BITS project.

Common Species Name	Estimated Winter Density (per 100 km^2)	Estimated Spring Density (per 100 km^2)	Estimated Take by Level B Harassment	Maximum Seasonal Density (per 100 km^2)	Estimated Take by Level B Harassment	Total Estimated Take
	Vibratory Pile Driving			DP Vessel Thruster		
Atlantic white-sided dolphin	2.12	1.23	438	2.12	18	456
Short-beaked common dolphin	2.04	2.59	604	2.59	38	644
Harbor porpoise	0.00	0.74	97	0.74	11	108
Minke whale	0.19	0.12	40	0.19	3	43
Fin whale	0.30	0.62	121	2.15	32	153
Humpback whale	0.00	0.11	15	0.11	2	17
North Atlantic right whale	0.00	0.06	7	0.06	1	8

Gray seal	14.16	14.16	739	14.16	41	780
Harbor seal	9.74	9.74	509	9.74	29	538

Table 6. Species information and take proposed for authorization by NMFS.

Common Species Name	Take Proposed for Authorization	Abundance of Stock	Percentage of Stock Potentially Affected	Population Trend
Atlantic white-sided dolphin	456	23,390	1.95%	N/A
Short-beaked common dolphin	644	120,743	0.53%	N/A
Harbor porpoise	108	89,054	0.12%	N/A
Minke whale	43	8,987	0.48%	N/A
Fin whale	153	3,985	3.84%	N/A
Humpback whale	17	11,570	0.15%	Increasing
North Atlantic right whale	8	444	1.80%	Increasing
Gray seal	784	348,900	0.22%	Increasing
Harbor seal	540	99,340	0.54%	N/A

Analysis and Preliminary Determinations

Negligible Impact

Negligible impact is "an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival" (50 CFR 216.103). A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (i.e., population-level effects). An estimate of the number of Level B harassment 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 behavioral harassment, NMFS must consider other factors, such as the likely nature of any responses (their intensity, duration, etc.), the context of any responses (critical reproductive time or location, migration, etc.), as well as the number and nature of estimated Level A harassment takes, the number of estimated mortalities, and effects on habitat.

DWBIT did not request, and NMFS is not proposing, take of marine mammals by injury, serious injury, or mortality. NMFS expects that take would be in the form of behavioral harassment. Exposure to sound levels above 120 dB during vibratory pile driving would not last for more than 12 hours per day for 4 non-consecutive days. Exposure to sound levels above 120 dB during use of the DP vessel thruster may last for 24 hours per day for 42 days. While use of the DP thruster may last for consecutive days, the vessel would be moving and therefore not focused on one specific area for the entire duration. Given the duration and intensity of the activity, and the fact that shipping contributes to the ambient sound levels around Rhode Island, NMFS does not anticipate the proposed take estimates to impact annual rates of recruitment or survival. Animals may temporarily avoid the immediate area, but are not expected to permanently abandon the area. Marine mammal habitat may be impacted by elevated sound levels and sediment disturbance, but these impacts would be temporary. Furthermore, there are no feeding areas, rookeries, or mating grounds known to be biologically important to marine mammals within the proposed project area. There is also no designated critical habitat for any ESA-listed marine mammals. 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 the pile driver reaches full energy; (2) reducing the intensity of exposure within a certain distance by reducing the DP vessel thruster power; and (3) preventing animals from being exposed to increased sound levels within 200 m of vibratory pile driving.

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 DWBIT's BITS project will have a negligible impact on the affected marine mammal species or stocks.

Small Numbers

The number of individual animals that may be exposed to sound levels above 120 dB is small relative to the species or stock size (Table 6). The proposed take numbers are the maximum numbers of animals that are expected to be harassed during the BITS project; it is possible that some of these exposures may occur to the same individual. NMFS preliminarily finds that small numbers of marine mammals will be taken relative to the populations of the affected species or stocks.

Impact on Availability of Affected Species for Taking for Subsistence Uses

There are no relevant subsistence uses of marine mammals 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 (ESA)

There are three marine mammal species that are listed as endangered under the ESA: fin whale, humpback whale, and North Atlantic right whale. Under section 7 of the ESA, the USACE (the federal permitting agency for the actual construction) consulted with NMFS on the proposed BITS project. NMFS Northeast Region issued a Biological Opinion on January 30, 2014, concluding that the Block Island Wind Farm project (which includes the BITS) may adversely affect but is not likely to jeopardize the continued existence of fin whale, humpback whale, or North Atlantic right whale. NMFS is also consulting internally on the issuance of an

IHA under section 101(a)(5)(D) of the MMPA for this activity. The Biological Opinion may be amended to include an incidental take exemption for these marine mammal species.

National Environmental Policy Act (NEPA)

The USACE is preparing an Environmental Assessment on the construction and operation of the BITS. The USACE's EA is not expected to be finalized prior to NMFS making a determination on the issuance of an IHA. Therefore, NMFS is currently conducting an analysis, pursuant to the NEPA, to determine whether or not DWBIT's proposed activity may have a significant effect on the human environment. This analysis will be completed prior to the issuance or denial of this proposed IHA.

Proposed Authorization

As a result of these preliminary determinations, NMFS proposes to issue an IHA to DWBIT for conducting vibratory pile driving and use of a DP vessel thruster during construction of the BITS from late 2014 to late 2015, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated. The proposed IHA language is provided next.

This section contains a draft of the IHA itself. The wording contained in this section is proposed for inclusion in the IHA (if issued).

Deepwater Wind Block Island Transmission, LLC (DWBIT) (56 Exchange Terrace, Suite 101, Providence, RI 02903-1772) is hereby authorized under section 101(a)(5)(D) of the Marine Mammal Protection Act (16 U.S.C. 1371(a)(5)(D)) and 50 CFR 216.107, to harass marine mammals incidental to vibratory pile driving and DP vessel thruster use during construction of the Block Island Transmission System (BITS).

1. This Authorization is valid from December 1, 2014 through November 31, 2015.

2. This Authorization is valid for construction of the BITS off Block Island, Rhode Island, as described in the Incidental Harassment Authorization (IHA) application.
3. The holder of this authorization (Holder) is hereby authorized to take, by Level B harassment only, 456 Atlantic white-sided dolphins (Lagenorhynchus acutus), 644 short-beaked common dolphins (Delphinus delphis), 108 harbor porpoises (Phocoena phocoena), 43 minke whales (Balaenoptera acutorostrata), 153 fin whales (Balaenoptera physalus), 17 humpback whales (Megaptera novaeangliae), 8 North Atlantic right whales (Eubalaena glacialis), 780 gray seals (Halichoerus grypus), and 538 harbor seals (Phoca vitulina) incidental to vibratory pile driving DP vessel thruster use associated with construction of the BITS.
4. The taking of any marine mammal in a manner prohibited under this IHA must be reported immediately to NMFS' Northeast Region, 55 Great Republic Drive, Gloucester, MA 01930-2276; phone 978-281-9328, and NMFS' Office of Protected Resources, 1315 East-West Highway, Silver Spring, MD 20910; phone 301-427-8401; fax 301-713-0376.
5. The Holder or designees must notify NMFS' Northeast Region and Headquarters at least 24 hours prior to the seasonal commencement of the specified activity (see contact information in 4 above).
6. Mitigation Requirements

   The Holder is required to abide by the following mitigation conditions listed in 6(a)-(e). Failure to comply with these conditions may result in the modification, suspension, or revocation of this IHA.

(a) Marine Mammal Exclusion Zone: Protected species observers shall visually monitor an estimated 160-dB isopleth during all vibratory pile driving activity to ensure that no marine mammals enter this zone. A minimum of two observers shall be stationed aboard the noise-

producing support vessel and shall monitor a 360-degree field of vision. Observers shall begin monitoring at least 30 minutes prior to vibratory pile driving, continue monitoring during vibratory pile driving, and stop monitoring 30 minutes after vibratory pile driving has ended.

(b) Soft-start Procedures: Soft-start procedures shall be implemented at the beginning of each day and if pile driving has stopped for more than 30 minutes. Contractors shall initiate a set of three strikes form the vibratory hammer at 40 percent energy with a 1-minute waiting period between subsequent three-strike sets. This procedure shall be repeated two additional times before full energy is reached.

(c) Delay and Shutdown Procedures: The Holder shall delay vibratory pile driving if a marine mammal is observed within the estimated 160-dB isopleth marine mammal exclusion zone and until the exclusion zone is clear of marine mammals. The Holder shall stop vibratory pile driving if a marine mammal is seen within the estimated 160-dB isopleth from the sound source at the Scarborough State Beach cofferdam and would not reinitiate vibratory pile driving until the exclusion zone is clear of marine mammals for at least 30 minutes.

(d) DP Thruster Power Reduction: The Holder shall reduce DP thruster power to the maximum extent possible if a marine mammal approaches or enters the estimated 160-dB isopleth from the vessel. The Holder shall not increase power until the zone is clear of marine mammals for 30 minutes.

(e) Time of Day and Weather Restrictions: The Holder shall conduct vibratory pile driving during daylight hours only, starting approximately 30 minutes after dawn and ending 30 minutes before dusk. The Holder shall not initiate vibratory pile driving until the entire marine mammal exclusion zone is visible.

7. Monitoring Requirements

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

(a) General: If the Level B harassment area is obscured by fog or poor lighting conditions, the start of vibratory pile driving shall be delayed until the area is visible.

(b) Visual Monitoring: Protected species observers shall survey beyond the estimated 160-dB isopleths 30 minutes before, during, and 30 minutes after all in-water vibratory pile driving and use of DP vessel thrusters. The observers shall be stationed on the highest available vantage point on the associated operating platform. Observers shall estimate distances to marine mammals visually, using laser range finders, or by using reticle binoculars during daylight hours. During night operations (DP vessel thruster use only), observers shall use night-vision binoculars. Information recorded during each observation shall be used to estimate numbers of animals potentially taken and shall include the following:

- Numbers of individuals observed;
- Frequency of observation;
- Location (i.e., distance from the sound source);
- Vibratory pile driving status (i.e., soft-start, active, post pile driving, etc.);
- DP vessel thruster status (i.e., energy level); and
- Reaction of the animal(s) to relevant sound source (if any) and observed behavior, including bearing and direction of travel.

(c) Acoustic Field Verification: The Holder shall conduct field verification of the estimated 160-dB isopleths during vibratory pile driving and use of the DP vessel thruster. Acoustic measurements shall be taken during vibratory pile driving of the last half (deepest sheet pile

segment) for any given open-water pile and from two reference locations at two water depths (a depth at mid-water and at about 1 m above the seafloor). If the field measurements show that the 160-dB isopleth is less than or beyond the initially proposed 200-m distance, a new zone may be established accordingly. The Holder shall notify NMFS within 24 hours if a new marine mammal exclusion zone is established that extends beyond 200 m. Implementation of a smaller zone shall be contingent on NMFS' review and shall not be used until NMFS approves the change.

The Holder shall also perform field verification of the 160-dB isopleth associated with DP vessel thruster use during cable installation. Acoustic measurements shall be taken from two reference locations at two water depths (a depth at mid-water and at about 1 m above the seafloor). Similar to field verification during vibratory pile driving, the DP thruster power reduction zone may be modified as necessary.

8. Reporting Requirements

The Holder shall provide the following notifications during construction activities:

- Notification to NMFS within 24-hours of beginning construction and again within 24-hours of completion;
- Detailed report of field-verification measurements within 7 days of completion and notification to NMFS within 24-hours if a new zone is established; and
- Notification to NMFS within 24-hours if field verification measurements suggest a larger marine mammal exclusion zone.

The Holder shall submit a technical report to the Office of Protected Resources, NMFS, within 120 days of the conclusion of monitoring.

(a) The report shall contain the following information:

- A summary of the activity and monitoring plan (i.e., dates, times, locations);
- A summary of mitigation implementation;
- Monitoring results and a summary that addresses the goals of the monitoring plan, including the following:
    - Environmental conditions when observations were made:
    - Water conditions (i.e., Beaufort sea-state, tidal state)
    - Weather conditions (i.e., percent cloud cover, visibility, percent glare)
    - Date and time survey initiated and terminated
    - Date, time, number, species, and any other relevant data regarding marine mammals observed (for pre-activity, during activity, and post-activity surveys)
    - Description of the observed behaviors (in both the presence and absence of activities):
        - If possible, the correlation to underwater sound level occurring at the time of any observable behavior
- Estimated exposure/take numbers during activities; and
- An assessment of the implementation and effectiveness of prescribed mitigation and monitoring measures.

(b) In the unanticipated event that the specified activity clearly causes the take of a marine mammal in a manner not permitted by the authorization (if issued), such as an injury, serious injury, or mortality (e.g., ship-strike, gear interaction, and/or entanglement), the Holder shall immediately cease the specified activities and immediately report the incident to the Incidental Take Program Supervisor, Permits and Conservation Division, Office of Protected

Resources, NMFS, at 301-427-8401 and/or by email to Jolie.Harrison@noaa.gov and Michelle.Magliocca@noaa.gov. The report must 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).

The Holder shall not resume its activities until we are able to review the circumstances of the prohibited take. NMFS will work with the Holder to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. The Holder may not resume activities until notified by us via letter, email, or telephone.

(c) In the event that the Holder discovers an injured or dead marine mammal, and the lead visual observer 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 as we describe in the next

paragraph), the Holder shall immediately report the incident to the Incidental Take Program Supervisor, Permits and Conservation Division, Office of Protected Resources, at 301-427-8401 and/or by email to Jolie.Harrison@noaa.gov, Michelle.Magliocca@noaa.gov, and Mendy.Garron@noaa.gov. The report must include the same information identified in the paragraph above this section. Activities may continue while we review the circumstances of the incident. NMFS will work with the Holder to determine whether modifications in the activities are appropriate.

(d) In the event that the Holder discovers an injured or dead marine mammal, and the lead visual observer determines that the injury or death is not associated with or related to the authorized activities (e.g., previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), the Holder shall report the incident to the Incidental Take Program Supervisor, Permits and Conservation Division, Office of Protected Resources, at 301-427-8401 and/or by email to Jolie.Harrison@noaa.gov, Michelle.Magliocca@noaa.gov, and Mendy.Garron@noaa.gov within 24 hours of the discovery. The Holder shall provide photographs or video footage (if available) or other documentation of the stranded animal sighting to us.

9. A copy of this IHA must be in the possession of the lead contractor on site and protected species observers operating under the authority of this authorization.

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

Request for Public Comments

NMFS requests comment on our analysis, the draft authorization, and any other aspect of the Notice of Proposed IHA for DWBIT's construction of the BITS. Please include with your comments any supporting data or literature citations to help inform our final decision on DWBIT's request for an MMPA authorization.

Dated: March 14, 2014.

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

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