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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648-XG108

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Unexploded Ordnance Investigation Survey off the Coast of Virginia

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

ACTION: Notice; issuance of an incidental harassment authorization.

SUMMARY: In accordance with the regulations implementing the Marine Mammal Protection Act (MMPA) as amended, notification is hereby given that NMFS has issued an Incidental Harassment Authorization (IHA) to Virginia Electric and Power Company d/b/a Dominion Energy Virginia (Dominion) for the take marine mammals, by harassment, incidental to high-resolution geophysical (HRG) surveys associated with unexploded ordnance investigation activities off the coast of Virginia in the area of the Research Lease of Submerged Lands for Renewable Energy Activities on the Outer Continental Shelf Offshore Virginia (OCS-A 0497) and coastal waters where one or more cable route corridors will be established (the Survey Area).

DATES: This Authorization is in effect for one year from the date of issuance.

FOR FURTHER INFORMATION CONTACT: Dale Youngkin, 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).

Summary of Request

On March 7, 2018, NMFS received a request from Dominion for an IHA to take marine mammals incidental to high resolution geophysical (HRG) surveys off the coast of Virginia. The purpose of these surveys are to acquire data regarding the potential presence of UXO within the proposed construction and operational footprints of the Coastal Virginia Offshore Wind (CVOW) Project Area in the Lease Area and export cable route construction corridor (Survey Area). A revised application was received on April 26, 2018. NMFS deemed that request to be adequate and complete. Dominion's request is for take of nine marine mammal species by Level B harassment. Neither Dominion nor NMFS expects injury, 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

Dominion proposes to conduct marine site characterization surveys including HRG surveys to search for UXO in the marine environment of the approximately 2,135-acre Lease Area located offshore of Virginia (see Figure 1-1 in the IHA application). Additionally, an export cable route will be established between the Lease Area and Virginia Beach, identified as the Export Cable Route Area (see Figure 1 in the IHA application). See the IHA application for further information. The survey area consists of two 1-kilometer (km) X 1-km turbine position locations, a 2 km by 300 meter (m) Inter-array cable route connecting the two turbine position

locations, and a 43-km X 300 m Export Corridor Route. For the purpose of this IHA, the survey area is designated as the Lease Area and cable route corridors. Water depths across the Lease Area are estimated to range from approximately 8 to 40 m (26 to 131 feet (ft)) while the cable route corridors will extend to shallow water areas near landfall locations. Surveys would begin no earlier than August 1, 2018 and are anticipated to last for up to three months.

The purpose of the marine site characterization surveys are to acquire data regarding the potential presence of UXO within the proposed construction and operational footprints of the CVOW Project Area (*i.e.*, export cable construction corridor, inter-array cable area, and wind turbine positions) in accordance with the Bureau of Ocean Energy Management (BOEM) guidelines for archaeology surveys as well as geophysical activities. No removal of ordnance would be conducted as a part of the activities. Underwater sound resulting from Dominion's proposed HRG surveys for UXO have the potential to result in incidental take of marine mammals in the form of harassment.

Dates and Duration

Surveys will last for approximately three months and are anticipated to commence no earlier than August 1, 2018. This schedule is based on 24-hour operations and includes potential down time due to inclement weather. Based on 24-hour operations, the estimated duration of the HRG survey activities would be approximately 60 days for the export cable route corridor and approximately 15 days each for the inter-array cable route and wind turbine positions.

Specific Geographic Region

Dominion's survey activities will occur in the approximately 2,135-acre Research Lease Area located off the coast of Virginia (see Figure 1 in the IHA application). Additionally, a cable route corridor would be surveyed between the Lease Area and the coast of Virginia. The cable

route corridor to be surveyed is anticipated to be 300 m wide and 43 km long. The wind turbine positions to be surveyed are twoapproximately 1 km X 1 km square areas connected by an inter-array cable route that is 300 m wide and 2 km in length.

A detailed description of the planned survey activities, including types of survey equipment planned for use, is provided in the *Federal Register* notice for the proposed IHA (83 FR 26968; June 11, 2018). Since that time, no changes have been made to the planned activities and a detailed description is not repeated here. Please refer to that *Federal Register* notice for the description of the specific activity.

Comments and Responses

NMFS published a notice of proposed IHA in the *Federal Register* on June 11, 2018 (83 FR 26968). During the 30-day public comment period, NMFS received one comment letter, which was from the Marine Mammal Commission (Commission). No other public comments were received. NMFS has posted the comment letter received online at: *www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-other-energy-activities-renewable*. The following is a summary of the Commission comments received and NMFS's responses.

Comment 1: The Commission notes that impulsive thresholds, rather than non-impulsive thresholds, were incorrectly used to model Level A harassment zones for the ultra-short baseline positioning system (UBPS) and sub-bottom profiler (SBP) sources, which resulted in overly conservative Level A harassment zones. The Commission states that NMFS should not permit applicants to arbitrarily choose which thresholds to use, and should prohibit applicants from using impulsive thresholds for non-impulsive sources.

NMFS Response: NMFS appreciates the input from the Commission. We acknowledge the error, and have corrected it in this final notice (refer to Table 4) and IHA, and will ensure it does not happen again. Take by Level A harassment was not proposed for authorization based on the fact that it is not considered likely to occur, even based on the larger (more conservative) isopleths associated with the impulsive threshold. The use of the non-impulsive threshold does not change our findings or determinations under the MMPA.

Comment 2: The Commission recommends that NMFS revise the extent of the Level A harassment zones for the Geo-Source sparker based on both the SPL_{pk} and SEL_{cum} thresholds and for the GeoPulse SBP based on the SEL_{cum} threshold.

NMFS Response: As stated above, the thresholds have been revised and are presented in Table 4 of this notice.

Comment 3: The Commission continues to recommend that, until behavioral thresholds are updated, NMFS require applicants to use the 120-decibel (dB) re 1 micropascal (μPa), rather than 160- dB re 1μPa, behavioral harassment threshold for acoustic, non-impulsive sources (*e.g.*, sub-bottom profilers / chirps, echosounders, and other sonars including side-scan and fish-finding).

NMFS Response: As NMFS has said on numerous other responses to this recommendation, certain sub-bottom profiling systems are appropriately considered to be impulsive sources (*e.g.*, boomers, sparkers); therefore, the threshold of 160 dB re 1μPa will continue to be used for those sources. Other source types referenced by the Commission produce signals that are not necessarily strictly impulsive; however, NMFS finds that the 160-dB root mean square (rms) threshold is most appropriate for use in evaluating potential behavioral impacts to marine mammals because the temporal characteristics (*i.e.*, intermittency) of these

sources are better captured by this threshold. The 120-dB threshold is associated with continuous sources and was derived based on studies examining behavioral responses to drilling and dredging. Continuous sounds are those whose sound pressure level remains above that of the ambient sound, with negligibly small fluctuations in level (NIOSH, 1998; ANSI, 2005). Examples of sounds that NMFS would categorize as continuous are those associated with drilling or vibratory pile driving activities. Intermittent sounds are defined as sounds with interrupted levels of low or no sound (NIOSH, 1998). Thus, signals produced by these source types are not continuous but rather intermittent sounds. With regard to behavioral thresholds, we consider the temporal and spectral characteristics of signals produced by these source types to more closely resemble those of an impulse sound rather than a continuous sound. The threshold of 160 dB re 1μPa is typically associated with impulsive sources, which are inherently intermittent. Therefore, the 160 dB threshold (typically associated with impulsive sources) is more appropriate than the 120 dB threshold (typically associated with continuous sources) for estimating takes by behavioral harassment incidental to use of such sources.

Comment 4: The Commission commented that harbor seals have been occurring in the Virginia area earlier in fall months. The Commission recommends that NMFS include at least five harbor seal takes and one gray seal take in the Final IHA to account for their potential occurrence in the project area.

NMFS Response: NMFS has included the takes of five harbor seals and one gray seal, as recommended by the Commission.

Comment 5: The Commission noted concerns with density information and take calculations and recommended the following: NMFS should 1) clarify why various densities were revised and ensure all are correct; 2) report densities and ensonified areas out to three

significant digits to ensure takes were calculated properly; 3) include takes for Risso's dolphins based on average group size, noting that Dominion estimated 0.59 takes for this species, but did not request take while estimating "similarly low numbers" for pilot whales and requesting take for this species based on group size.

NMFS Response: The densities were not revised and remain the same as were included in the notice for the proposed IHA (83 FR 26968, June 11, 2018), with the exception of adding three decimal places, as requested by the Commission (refer to Table 6 of this notice). The Commission erroneously states that 0.59 takes of Risso's dolphins were calculated. As shown in the notice for the proposed IHA, only 0.08 takes of Risso's dolphins were estimated based on calculations. Calculations of pilot whales estimated 1.15 takes. As Risso's dolphin calculations are so low as to not round up to one (1) take, and the applicant did not request take due to the low likelihood of encountering this species based on take estimates and lack of sighting data, NMFS did not propose takes, and is not authorizing takes for this species. However, calculated takes for pilot whales did estimate over one (1) take. Therefore, takes have been authorized for this species and the take estimate was adjusted to account for average group size for this species.

Comment 6: The Commission recommended that NMFS refrain from authorizing Level B harassment takes of any low frequency (LF) cetacean, including humpback whales and minke whales. This recommendation is based on the fact that the sound source used to calculate the Level B harassment zone (Innomar sub-bottom profiler) operates at frequencies which are 50 kHz beyond the best hearing capabilities of these species, and the sound source with the largest Level B harassment zone within the best hearing range of LF cetaceans only has a 20 m Level B harassment isopleth.

NMFS Response: NMFS has not authorized take of any LF cetaceans, as recommended by the Commission.

Comment 7: The Commission continues to express concern that the method used to estimate the numbers of takes, which summed fractions of takes for each species across project days, does not account for and negates the intent of NMFS' 24-hour reset policy and recommended that NMFS share the rounding criteria with the Commission in an expeditious manner.

NMFS Response: NMFS recently completed internal guidance on rounding and consideration of qualitative factors in the estimation of instances of take, and provided this information to the Commission. As discussed with the Commission, we believe that the methodology used for take calculation in this IHA remains appropriate and is not at odds with the 24-hour reset policy the Commission references.

Comment 8: The Commission continues to request clarification regarding certain issues associated with NMFS' notice that one-year renewals could be issued in certain limited circumstances and expressed concern that the process would bypass the public notice and comment requirements. The Commission also suggested that NMFS should discuss the possibility of renewals through a more general route, such as a rulemaking, instead of notice in a specific authorization. The Commission further recommended that if NMFS did not pursue a more general route, that the agency provide the Commission and the public with a legal analysis supporting our conclusion that this process is consistent with the requirements of section 101(a)(5)(D) of the MMPA. The Commission also noted that NMFS had recently begun utilizing abbreviated notices, referencing relevant documents, to solicit public input and suggested that NMFS use these notices and solicit review in lieu of the currently proposed renewal process.

NMFS Response: As stated in previous responses to this comment from the Commission, the process of issuing a renewal IHA does not bypass the public notice and comment requirements of the MMPA. The notice of the proposed IHA expressly notifies the public that under certain, limited conditions an applicant could seek a renewal IHA for an additional year. The notice describes the conditions under which such a renewal request could be considered and expressly seeks public comment in the event such a renewal is sought. Additional reference to this solicitation of public comment has recently been added at the beginning of the FR notices that consider renewals, requesting input specifically on the possible renewal itself. NMFS appreciates the streamlining achieved by the use of abbreviated FR notices and intends to continue using them for proposed IHAs that include minor changes from previously issued IHAs, but which do not satisfy the renewal requirements. However, we believe our proposed method for issuing renewals meets statutory requirements and maximizes efficiency.

Importantly, such renewals would be limited to circumstances where: the activities are identical or nearly identical to those analyzed in the proposed IHA; monitoring does not indicate impacts that were not previously analyzed and authorized; and, the mitigation and monitoring requirements remain the same, all of which allow the public to comment on the appropriateness and effects of a renewal at the same time the public provides comments on the initial IHA. NMFS has, however, modified the language for future proposed IHAs to clarify that all IHAs, including renewal IHAs, are valid for no more than one year and that the agency would consider only one renewal for a project at this time. In addition, notice of issuance or denial of a renewal IHA would be published in the *Federal Register*, as they are for all IHAs. The option for issuing renewal IHAs has been in NMFS's incidental take regulations since 1996. We will provide any

additional information to the Commission and consider posting a description of the renewal process on our website before any renewal is issued utilizing this process.

Description of Marine Mammals in the Area of Specified Activity

Sections 3 and 4 of Dominion's IHA application summarize available information regarding status and trends, distribution and habitat preferences, and behavior and life history, of the potentially affected marine mammal species. Additional information regarding population trends and threats may be found in NMFS's Stock Assessment Reports (SAR; *www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments*) and more general information about these species (*e.g*., physical and behavioral descriptions) may be found on NMFS's website (*www.fisheries.noaa.gov/species-directory*).

Table 1 lists all species with expected potential for occurrence in the survey area and summarizes information related to the population or stock, including regulatory status under the MMPA and Endangered Species Act (ESA) and potential biological removal (PBR), where known. 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's SARs). While no mortality is anticipated or authorized here, PBR is included here as gross indicators of the status of the species and other threats.

Marine mammal abundance estimates presented in this document represent the total number of individuals that make up a given stock or the total number estimated within a particular study or survey area. NMFS's 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's U.S. 2017 draft 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 SARs (Hayes *et al.*, 2018).

Table 1. Marine Mammals with Potential Occurrence in the Survey Area.

Common Name	Stock	NMFS MMPA and ESA Status; Strategic (Y/N)[1]	Stock Abundance (CV,N_{min})[2]	PBR[3]	Occurrence and seasonality in the NW Atlantic OCS
Toothed whales (Odontoceti)					
Atlantic white-sided dolphin (*Lagenorhynchus acutus)*	W. North Atlantic	--; N	48,819 (0.61; 30,403)	304	rare
Atlantic spotted dolphin (*Stenella frontalis)*	W. North Atlantic	--; N	44,715 (0.43; 31,610)	316	rare
Bottlenose dolphin (*Tursiops truncatus)*	W. North Atlantic, Southern Migratory Coastal	--; Y	3,751 (0.60; 2,353)	23	Common year round
Clymene dolphin (*Stenella clymene)*	W. North Atlantic	--; N	Unknown (unk; unk; n/a)	Undet	rare
Pantropical Spotted dolphin (*Stenella attenuata)*	W. North Atlantic	--; N	3,333 (0.91; 1,733)	17	rare
Risso's dolphin (*Grampus griseus)*	W. North Atlantic	--; N	18,250 (0.46; 12,619)	126	rare
Common dolphin (*Delphinus delphis)*	W. North Atlantic	--; N	70,184 (0.28; 55,690)	557	Common year round
Striped dolphin (*Stenella coeruleoalba)*	W. North Atlantic	--; N	54,807 (0.3; 42,804)	428	rare
Spinner Dolphin (*Stenella longirostris)*	W. North Atlantic	--; N	Unknown (unk; unk; n/a)	Undet	rare

Harbor porpoise (*Phocoena phocoena)*	Gulf of Maine/Bay of Fundy	--; N	79,833 (0.32; 61,415)	706	Common year round
Killer whale (*Orcinus orca)*	W. North Atlantic	--; N	Unknown (unk; unk; n/a)	Undet	rare
False killer whale (*Pseudorca crassidens)*	W. North Atlantic	--; Y	442 (1.06; 212)	2.1	rare
Long-finned pilot whale (*Globicephala melas)*	W. North Atlantic	--; Y	5,636 (0.63; 3,464)	35	rare
Short-finned pilot whale (*Globicephala macrorhynchus)*	W. North Atlantic	--; Y	21,515 (0.37; 15,913)	159	rare
Sperm whale (*Physeter macrocephalus)*	North Atlantic	E; Y	2,288 (0.28; 1,815)	3.6	Year round in continental shelf and slope waters, occur seasonally to forage
Pygmy sperm whale [4] (*Kogia breviceps)*	W. North Atlantic	--; N	3,785 (0.47; 2,598)	26	rare
Dwarf sperm whale [4] (*Kogia sima)*	W. North Atlantic	--; N	3,785 (0.47; 2,598)	26	rare
Cuvier's beaked whale (*Ziphius cavirostris)*	W. North Atlantic	--; N	6,532 (0.32; 5,021)	50	rare
Blainville's beaked whale [5] (*Mesoplodon densirostris)*	W. North Atlantic	--; N	7,092 (0.54; 4,632)	46	rare
Gervais' beaked whale [5] (*Mesoplodon europaeus)*	W. North Atlantic	--; N	7,092 (0.54; 4,632)	46	rare
True's beaked whale [5] (*Mesoplodon*	W. North Atlantic	--; N	7,092 (0.54; 4,632)	46	rare

mirus)					
Sowerby's Beaked Whale [5] (*Mesoplodon bidens)*	W. North Atlantic	--; N	7,092 (0.54; 4,632)	46	rare
Melon-headed whale (*Peponocephala electra)*	W. North Atlantic	--; N	Unknown (unk; unk; n/a)	Undet	rare
Baleen whales (Mysticeti)					
Minke whale (*Balaenoptera acutorostrata)*	Canadian East Coast	--; N	2,591 (0.81; 1,425)	14	Year round in continental shelf and slope waters, occur seasonally to forage
Blue whale (*Balaenoptera musculus)*	W. North Atlantic	E; Y	Unknown (unk; 440)	0.9	Year round in continental shelf and slope waters, occur seasonally to forage
Fin whale (*Balaenoptera physalus)*	W. North Atlantic	E; Y	1,618 (0.33; 1,234)	2.5	Year round in continental shelf and slope waters, occur seasonally to forage
Humpback whale (*Megaptera novaeangliae)*	Gulf of Maine	--; Y	335 (0.42; 239)	3.7	Common year round
North Atlantic right whale (*Eubalaena glacialis)*	W. North Atlantic	E; Y	458 (0; 455)	1.4	Year round in continental shelf and slope waters, occur seasonally to forage.
Sei whale (*Balaenoptera borealis)*	Nova Scotia	E; Y	357 (0.52; 236)	0.5	Year round in continental shelf and slope waters, occur seasonally to forage
Earless seals (Phocidae)					
Gray seal [6] (*Halichoerus grypus)*	W. North Atlantic	--; N	27,131 (0.10; 25,908)	1,554	Unlikely

Harbor seal (*Phoca vitulina)*	W. North Atlantic	--; N	75,834 (0.15; 66,884)	2,006	Common year round
Hooded seal (*Cystophora cristata)*	W. North Atlantic	--; N	Unknown (unk; unk)	Undet	rare
Harp seal (*Phoca groenlandica)*	North Atlantic	--; N	Unknown (unk; unk)	Undet	rare

[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] CV is coefficient of variation; Nmin 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] 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).

[4] Abundance estimate includes both dwarf and pygmy sperm whales.

[5] Abundance estimate includes all species of *Mesoplodon* in the Atlantic.

[6] Abundance estimate applies to U.S. population only, actual abundance, including those occurring in Canada, is estimated at 505,000.

All species that could potentially occur in the proposed survey areas are included in Table 1. However, the temporal and/or spatial occurrence for all but 11 of the species listed in Table 2 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 or further north 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. The 11 species/stocks evaluated for incidental take in the proposed IHA included: North Atlantic right whale; humpback whale; fin whale; minke whale; Atlantic white-sided dolphin; common dolphin; bottlenose dolphin; Atlantic spotted dolphin; long-finned pilot whale; short-finned pilot whale;

and harbor porpoise. However, as discussed below, takes for harbor seals and gray seals have been authorized as a result of consideration of public comment on the proposed IHA.

Five marine mammal species listed in Table 2 are listed under the ESA and are known to be present, at least seasonally, in waters of the mid-Atlantic (sperm whale, north Atlantic right whale, fin whale, blue whale, and sei whale). All of these species are highly migratory and do not spend extended periods of time in the localized survey area. The offshore waters of Virginia (including the survey area) are primarily used as a migration corridor for these species, particularly north Atlantic right whales, during seasonal movements north or south between feeding and breeding grounds (Knowlton *et al.*, 2002; Firestone *et al.*, 2008). While fin and north Atlantic right whales have the potential to occur within the survey area, sperm, blue, and sei whales are more pelagic and/or northern species and their presence within the survey area is unlikely (Waring *et al.*, 2007; 2010; 2012; 2013) and these species are therefore not considered further in this analysis. In addition, the proposed IHA (83 FR 26968, June 11, 2018) noted that, while stranding data exists for harbor and gray seals along the mid-Atlantic coast south of New Jersey, their preference for colder, northern waters during the survey period makes their presence in the survey area unlikely. Winter haulout sites for harbor seals have been identified within the Chesapeake Bay region. However, the proposed IHA noted that the seals were not expected to be present during the summer and fall months when the survey activities are planned (Waring *et al.*, 2016). In addition, the proposed IHA noted that coastal Virginia represents the southern extent of the habitat range for gray seals, with few stranding records reported and sightings only occur during winter months as far south as New Jersey (Waring *et al.*, 2016). Therefore pinniped species were not considered for take in the proposed IHA. However, after review of public comments received on the proposed IHA that stated harbor seals and gray seals have more

recently been observed to be present in the area earlier than expected, NMFS has added a small number of takes for these species out of an abundance of caution.

A detailed description of the species likely to be affected by Dominion's UXO survey activities, including brief introductions to the species and relevant stocks as well as available information regarding population trends and threats, and information regarding local occurrence, were provided in the *Federal Register* notice for the proposed IHA (83 FR 26968; June 11, 2018); since that time, we are not aware of any changes in the status of these species and stocks; therefore, detailed descriptions are not repeated here. Please refer to the *Federal Register* notice for the proposed IHA for descriptions of species. Please also refer to NMFS' web site (*www.fisheries.noaa.gov/species-directory*) for generalized species accounts.

Potential Effects of Specified Activities on Marine Mammals and their Habitat

The potential effects of Dominion's UXO survey activities have the potential to result in incidental take of marine mammals by harassment in the vicinity of the survey area. The *Federal Register* notice for the proposed IHA (83 FR 26968; June 11, 2018) included a discussion of the potential effects of Dominion's UXO survey activities on marine mammals and their habitat, and that information is not repeated here; please refer to that *Federal Register* notice for that information. No instances of injury, serious injury, or mortality are expected as a result of the planned activities.

Estimated Take

This section provides an estimate of the number of incidental takes authorized through this IHA, which informed 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 only, 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 as discussed in greater detail below. As described previously, no mortality or serious injury is anticipated, nor is any 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 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.* 2011). 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. Dominion'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 2 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, Dominion's proposed activity includes the use of intermittent and impulsive sources. We note here that for intermittent sources such as the Geo-Source 800 sparker and the Innomar Medium 100 sub-bottom profiler, it is more appropriate to consider these sources as non-impulsive for consideration of potential for Level A harassment but due to their intermittent nature they are considered impulsive for consideration of potential for Level B harassment.

Table 2. 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
Otariid Pinnipeds (OW) (Underwater)	$L_{pk,flat}$: 232 dB $L_{E,OW,24h}$: 203 dB	$L_{E,OW,24h}$: 219 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 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 (see Table 1 of the Proposed IHA (83 FR 26968; June 11, 2018)). Of the HRG survey equipment planned for use that has the potential to result in harassment of marine mammals, acoustic modeling indicated the Innomar Medium 100 sub-bottom profiler would be expected to produce sound that would propagate the furthest in water (Table 3); therefore, for the purposes of the take calculation, it was assumed this equipment 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 Innomar Medium 100 sub-bottom profiler (100 m; Table 3) was used as the basis of the Level B take calculation for all marine mammals. However, this sound source operates at frequencies that are 50 kHz beyond the best hearing capabilities of LF cetaceans, so there is no potential for behavioral harassment of these species. The sound source with the next-largest Level B harassment threshold distance was the Geo-Source 800 sparker and this distance is 20 m, which is well within the required 100-m exclusion zone for large whales. Therefore, no take for LF cetaceans have been authorized.

Table 3. Predicted Radial Distances (m) from HRG Sources to Isopleths Corresponding to Level B Harassment Threshold.

HRG System	HRG Survey Equipment	Modeled Distance to Threshold (160 dB re 1 µPa)
Pinger/Chirper	GeoPulse sub-bottom profiler	<5 m
Sparker	Geo-Source 800 sparker	<20 m
Medium penetration sub-bottom profiler	Innomar Medium 100 sub-bottom profiler	<100 m*

* We note here that the Innomar Medium 100 sub-bottom profiler operating frequencies (85 – 115 kHz) are beyond the best hearing capabilities of LF cetaceans (7 – 35 kHz), but as this sound source provides the largest Level B isopleth, this information was used to calculate the zone of influence and estimate take for all species.

Predicted distances to Level A harassment isopleths, which vary based on marine mammal functional hearing groups (Table 4), were also calculated by Dominion. 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 SEL_{cum} and peak sound pressure level (SPL) metrics for all equipment in the notice of the proposed IHA (83 FR 26968, June 11, 2018). 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). However, the Geo-Source 800 sparker and Innomar 100 sub-bottom profiler are more appropriately considered as non-impulsive sources, which considers the SEL_{cum} metric only. This information has been corrected in Table 4 below, and NMFS notes that the correction results in smaller distances to the Level A threshold than reported in the proposed IHA notice and reinforces our determination that Level A harassment is so unlikely to occur as to be discountable. 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. Dominion used the NMFS optional User Spreadsheet to calculate distances to Level A harassment isopleths (see Appendix A of the IHA application). Modeled distances to isopleths corresponding to Level A harassment thresholds for the proposed HRG equipment and marine mammal hearing groups are shown in Table 4.

Table 4. Modeled Radial Distances (m) to Isopleths Corresponding to Level A Harassment Thresholds.

Functional Hearing Group (Level A harassment thresholds)	PTS Onset	Lateral Distance (m)
GeoPulse Sub-Bottom Profiler		
Low frequency cetaceans	199 dB SEL_{cum}	--
Mid frequency cetaceans	198 dB SELcum	--
High frequency cetaceans	173 dB SELcum	< 1
Phocid Pinnipeds (Underwater)	201 dB SELcum	--
Geo-Source 800 Sparker		
Low frequency cetaceans	219 dB_{peak}/ 183 dB SEL_{cum}	-- 5
Mid frequency cetaceans	230 dBpeak/ 185 dB SELcum	-- < 1
High frequency cetaceans	202 dBpeak/ 155 dB SELcum	< 1 24
Phocid Pinnipeds (Underwater)	218 dBpeak/ 185 dB SELcum	-- 3
Innomar Medium 100 Sub-Bottom Profiler		
Low frequency cetaceans	199 dB SEL_{cum}	N/A
Mid frequency cetaceans	198 dB SELcum	--
High frequency cetaceans	173 dB SELcum	< 5
Phocid Pinnipeds (Underwater)	201 dB SELcum	N/A
Note: Peak SPL is unweighted (flat weighted), whereas the cumulative SEL criterion is M-weighted for the given marine mammal hearing group. -- indicates not expected to be measureable to regulatory threshold at any appreciable distance. N/A indicates not applicable as the HRG sound source is outside the effective marine mammal hearing range.		

In this case, due to the very small estimated distances to Level A harassment thresholds for all marine mammal functional hearing groups, based on both SEL_{cum} and peak SPL (Table 4), and in consideration of the mitigation measures that must be implemented, including marine mammal exclusion zones to avoid Level A harassment (see the Mitigation section for more

detail) NMFS has determined that the likelihood of Level A harassment take of marine mammals occurring as a result of the proposed survey is so low as to be discountable. Therefore, NMFS has not authorized Level A harassment take of any marine mammals in the IHA.

We note that because of some of the assumptions included in the methods used, isopleths produced may be overestimates to some degree. The acoustic sources proposed for use in Dominion's survey 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. For example, in the case of the Innomar Medium 100 sub-bottom profiler, the beamwidth is only one degree. However, the calculated distances to isopleths do not account for this directionality of the sound source and are therefore conservative. 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. In addition to the conservative estimation of calculated distances to isopleths associated with the Innomar Medium 100 sub-bottom profiler, calculated takes may be conservative due to the fact that this sound source operates at frequencies beyond the best hearing capabilities of LF cetaceans, but calculated takes for all species were based on the isopleths associated with this sound source. As discussed above, the Innomar Medium 100 sub-bottom profiler operates at frequencies between 85 and 115 kHz and the best hearing range of LF cetaceans is between 7 and 35 kHz. Therefore, we would not expect that take of LF cetaceans would likely occur due to the use of this equipment because it operates beyond their hearing capabilities. The proposed IHA (83 FR 26968, June 11, 2018) noted takes were estimated based on these isopleths due to the fact that

the largest distances were associated with this equipment. However, after consideration of public comments, NMFS has determined not to issue take of LF cetaceans for the following reasons: 1) the Innomar Medium 100 sub-bottom profiler operates at frequencies that are 50 kHz beyond the best hearing capabilities for these species, so there would be no potential for behavioral disturbance, and 2) the sound source with the next largest Level B harassment isopleth is the Geo-Source 800 Sparker, for which the distance to the Level B harassment threshold has been calculated to be 20 m, and this is well within the required 100-m exclusion zone (EZ) for large whales.

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 conducting 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. In general, NMFS considers the models produced by Roberts *et al*. (2016) to be the best available source of data regarding cetacean density in the Atlantic Ocean. 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 within the boundary of the survey area for each survey segment (*i.e.*, the Lease Area survey segment and the cable route area survey segment; See Figure 1 in the IHA application) using a geographic information system. Monthly density data for all cetacean species potentially taken by the proposed survey was available via Roberts *et al.* (2016). Monthly mean density within the survey area, as provided in Roberts *et al.* (2016), were averaged by season (*i.e.*, Summer (June, July, August), and Fall (September, October, November)) to provide seasonal density estimates. The highest average seasonal density as reported by Roberts *et al.* (2016), for each species, was used based on the planned survey dates of August through October.

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 estimated trackline distance traveled per day by the survey vessel. The estimated daily vessel track line distance was determined using the estimated average speed of the vessel (4 kn) multiplied by 24 (to account for the 24 hour operational period of the survey). Using the maximum distance to the regulatory threshold criteria (Tables 4 and 5) and estimated daily track line distance of approximately 177.8 km

(110.5 mi), it was estimated that an area of 35.59 km^2 (13.74 mi^2) per day would be ensonified to the largest Level B harassment threshold, and 17.78 km^2 (0.69 mi^2) per day would be ensonifed to the Level A harassment threshold (largest threshold of 155 dB SEL_{cum} for HF cetaceans was used) (Table 5).

Table 5. Estimated track line distance per day (km) and Area (km^2) Estimated to be Ensonified to Level B Harassment Threshold Per Day.

Estimated track line distance per day (km)	Estimated area ensonified to Level A Harassment Threshold Per Day (km^2)	Estimated area ensonified to Level B Harassment Threshold Per Day (km^2)
177.8	17.78	35.59

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. In this case, estimated marine mammal density values varied between the turbine positions, inter-array cable route corridor survey areas, and export cable route corridors; therefore, the estimated number of each species taken per survey day was calculated separately for the these survey areas. Estimated numbers of each species taken per day are then multiplied by the number of survey days to generate an estimate of the total number of each species expected to be taken over the duration of the survey. In this case, as the estimated number of each species taken per day varied depending on survey area (turbine positions, inter-array cable route, and export cable route corridor), the number of each species taken per day in each respective survey area was multiplied by the number of survey days anticipated in each survey area (*i.e.*, 15 survey days each in the turbine position location and inter-array cable route, and 60 survey days in the export cable route corridor portion of the survey) to get a total number of takes per species in each respective survey area.

As described above, due to the very small estimated distances to Level A harassment thresholds (based on both SEL_{cum} and peak SPL; Table 4), and in consideration of the mitigation measures that must be implemented, the likelihood of the proposed survey resulting in take in the form of Level A harassment is considered so unlikely as to be discountable. Authorized take numbers are shown in Table 6. As described above, the zone of influence (ZOI) were calculated based on the sound source with the largest isopleths to the regulatory thresholds (the Innomar Medium 100 sub-bottom profiler) without consideration of the fact that this equipment operates beyond the best hearing capability of LF cetaceans, so calculated takes of these species are likely to be overestimates due to the fact that we would not necessarily expect LF cetaceans to be harassed by sound produced by this equipment. Additionally, as shown in Table 3, the Geo-Source 800 Sparker has the next largest Level B harassment threshold distance of 20 m, which is well within the required distance of 100 m for which vessels are required to avoid large cetaceans. Therefore, take for all low frequency cetaceans have been adjusted to zero.

Table 6. Numbers of Incidental Take of Marine Mammals Calculated and Authorized for Level B Harassment.

Species	Turbine Positions		Export Cable Route		Inter-Array Cable Route		Totals	
	Max. Seasonal Density[a] (# / 100 km^2)	Calculated Takes	Max. Seasonal Density[a] (# / 100 km^2)	Calculated Takes	Max. Seasonal Density[a] (# / 100 km^2)	Calculated Takes	Adjusted Take	% of Population
North Atlantic right whale	0.003	0.018	0.003	0.070	0.003	0.018	0[b, c]	0.000
Humpback whale	0.018	0.097	0.018	0.387	0.018	0.097	0[b,c]	0.000
Fin whale	0.107	0.570	0.107	2.279	0.107	0.570	0[b, c]	0.00
Minke whale	0.027	0.144	0.027	0.575	0.027	0.144	0 [b,c]	0.39
Bottlenose dolphin – N. Coastal	13.991	74.691	13.991	298.765	13.991	74.691	350[c,d, e]	9.33

Migratory								
Bottlenose dolphin – Offshore	13.991	74.691	13.991	298.765	13.991	74.691	350[c.d, e]	9.33
Atlantic spotted dolphin	0.899	4.800	1.231	26.289	0.899	4.800	300[d]	0.67
Common dolphin	2.501	13.349	2.501	53.397	2.501	13.349	400[d]	0.57
Atlantic white-sided dolphin	0.389	2.076	0.389	8.305	0.389	2.076	200[d]	0.41
Risso's dolphin	0.007	0.035	0.001	0019	0.007	0.035	0	0.00
Short-finned/long-finned pilot whale	0.058	0.310	0.025	0.532	0.058	0.310	15[f]	0.27
Harbor porpoise	0.272	1.452	0.230	4.915	0.272	1.452	6	0.01
Harbor seal	0.000	0.000	0.000	0.000	0.000	0.000	5	0.007
Gray seal	0.000	0.000	0.000	0.000	0.000	0.000	1	0.000

[a] Density values from Duke University (Roberts *et al.*, 2016)
[b] Mitigation (exclusion zone) will prevent take
[c] Take calculations based on largest Level B harassment isopleth; however, the sound source is 50 kHz beyond the best hearing sensitivity for LF cetaceans and the Level B harassment isopleth for the next largest source is 20 m, which is well within the required 100-m exclusion zone for large whales. No take has been authorized for LF cetaceans.
[d] Calculated take has been modified to account for increases in actual sighting data to date (Smultea Environmental Sciences 2016; Gardline 2016b) based on similar project activities
[e] Take adjusted to account for possible overlap of the Western North Atlantic southern migratory coastal and offshore stocks.
[f] Take adjusted to account for potential overlap of stocks (assume 50 percent of each).

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.

Mitigation Measures

With NMFS' input during the application process, and as per the BOEM Lease, Dominion must implement the following mitigation measures during the proposed marine site characterization surveys.

Marine Mammal Exclusion and Watch Zones

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

- 50 m (164.0 ft) EZ for harbor porpoises, which is the extent of the largest calculated distance to the potential for onset of PTS (Level A harassment);
- 100 m (328.1 ft) EZ for ESA-listed large whales (*i.e.*, fin whales), which is the largest calculated distance to the potential for behavioral harassment (Level B behavioral harassment), and for species for which authorization has not been granted, or for species for which authorization has been granted but the authorized number of takes have been met; and
- 500 m (1,640.4 ft) EZ for North Atlantic right whales. In addition, PSOs must visually monitor to the extent of the Level B zone (100 m (328.1 ft)) for all other marine mammal species not listed above.

Visual Monitoring

Visual monitoring of the established exclusion and monitoring zones must be performed by qualified and NMFS-approved PSOs. It must 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 must 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 must also be available to PSOs for use as appropriate based on conditions and visibility to support the siting and monitoring of marine species. Digital single-lens reflex camera equipment must be used to record sightings and verify species identification. During surveys conducted at night, night-vision equipment and infrared technology must be available for PSO use.

Pre-Clearance of the Exclusion Zone

For all HRG survey activities, Dominion must implement a 30-minute pre-clearance period of the relevant EZs prior to the initiation of HRG survey equipment. During this period the EZs must be monitored by PSOs, using the appropriate visual technology for a 30-minute period. HRG survey equipment must not be initiated if marine mammals are observed within or approaching the relevant EZs during this pre-clearance period. If a marine mammal were observed within or approaching the relevant EZ during the pre-clearance period, ramp-up must not begin until the animal(s) has been observed exiting the EZ or until an additional time period has elapsed with no further sighting of the animal (15 minutes for small delphinoid cetaceans and pinnipeds and 30 minutes for all other species). This pre-clearance requirement must include small cetaceans (dolphins and harbor porpoises) that approach the vessel (*e.g.*, bow ride). PSOs must also continue to monitor the zone for 30 minutes after survey equipment is shut down or survey activity has concluded.

Ramp-Up of Survey Equipment

Where technically feasible, a ramp-up procedure must be used for HRG survey equipment capable of adjusting energy levels at the start or re-start of HRG survey activities. The ramp-up procedure must 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 vacate the area prior to the commencement of survey equipment use at full energy. A ramp-up must begin with the power of the smallest acoustic equipment at its lowest practical power output appropriate for the survey. When technically feasible the power must then be gradually turned up and other acoustic sources added in way such that the source level would increase gradually.

Shutdown Procedures

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 must 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 (15 minutes for harbor porpoises and 30 minutes for all other species).

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) must precede the restart of the HRG survey equipment. If the pause is less than less than 20 minutes, the equipment shall 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) must precede the re-start of the HRG survey equipment. Following a shutdown, HRG survey equipment shall be restarted following pre-clearance of the zones as described above.

Vessel Strike Avoidance

Dominion must 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. Survey vessel crew members responsible for navigation duties must receive site-specific training on marine mammal sighting/reporting and vessel strike avoidance measures. Vessel strike avoidance measures must include, but are not limited to, the following, except under circumstances when complying with these requirements would put the safety of the vessel or crew at risk:

- All vessel operators and crew must maintain vigilant watch for cetaceans and pinnipeds, and slow down or stop their vessel to avoid striking these protected species;
- All vessel operators must comply with 10 kn (18.5 km/hr) or less speed restrictions in any DMA. This applies to all vessels operating at any time of year. In addition (if applicable, as surveys are not anticipated to occur during this time of year), vessels over 19.8 m (65 ft) operating from November 1 through April 30 must operate at speeds of 10 kn or less;
- All vessel operators must reduce vessel speed to 10 kn (18.5 km/hr) or less when any large whale, any mother/calf pairs, pods, or large assemblages of non-delphinoid cetaceans are observed near (within 100 m (330 ft)) an underway vessel;
- All survey vessels must 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 kn (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 500 m (1640 ft)) to an underway vessel, the underway vessel must reduce speed and shift the engine to neutral. Engines must not be engaged until the North Atlantic right whale has moved outside of the vessel's path and beyond 500 m. If stationary, the vessel must not engage engines until the North Atlantic right whale has moved beyond 100 m;
- All vessels must 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

must not engage engines until the non-delphinoid cetacean has moved out of the vessel's path and beyond 100 m;

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

Seasonal Operating Requirements

Between watch shifts, members of the monitoring team must consult NMFS' North Atlantic right whale reporting systems for the presence of North Atlantic right whales throughout survey operations. The proposed survey activities will occur in the vicinity of the Right Whale

Mid-Atlantic SMA located at the mouth of the Chesapeake Bay. The proposed survey start date in August, 2018 and would last for up to three months. Therefore, it is possible that the HRG survey activities would occur outside of the seasonal mandatory speed restriction period for this SMA (November 1 through April 30). Members of the monitoring team must 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 Dominion must work with NMFS to shut down and/or alter the survey activities as needed to avoid right whales to the extent possible.

These 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 feeding areas, 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 additional mitigation to address the proposed survey's occurrence in North Atlantic right whale migratory habitat is not warranted. Further, these mitigation measures are practicable for the applicant to implement.

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

Monitoring and Reporting

In order to issue an IHA for an activity, Section 101(a)(5)(D) of the MMPA states that NMFS must set forth, requirements pertaining to the monitoring and reporting of such taking. The MMPA implementing regulations at 50 CFR 216.104 (a)(13) indicate that requests for authorizations must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present 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.

Monitoring Measures

As described above, visual monitoring of the EZs and monitoring zone must be performed by qualified and NMFS-approved PSOs. Observer qualifications must include direct field experience on a marine mammal observation vessel and/or aerial surveys and completion of a PSO training program, as appropriate. An observer team comprising a minimum of four NMFS-approved PSOs operating in shifts, must be employed by Dominion during the proposed surveys. PSOs must work in shifts such that no one monitor must 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 must rotate in shifts of one on and three off, while during nighttime operations PSOs must work in pairs. During ramp-up procedures, two PSOs must be required. Each PSO must monitor 360 degrees of the field of vision.

Also as described above, PSOs must 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 must also be available to PSOs for use as appropriate based on conditions and visibility to support the siting and monitoring of marine species. Digital single-lens reflex camera equipment must be used to record sightings and verify species identification. During night operations, night-vision equipment, and infrared technology must be used to increase the ability to detect marine mammals. Position data must be recorded using hand-held or vessel global positioning system (GPS) units for each sighting. Observations must take place from the highest available vantage point on the survey vessel. General 360-degree

scanning must occur during the monitoring periods, and target scanning by the PSO must occur when alerted of a marine mammal presence.

Data on all PSO observations must be recorded based on standard PSO collection requirements. This must include dates and locations of survey operations; time of observation, location and weather; details of the sightings (*e.g.*, species, age classification (if known), numbers, behavior); and details of any observed "taking" (behavioral disturbances). The data sheet must be provided to NMFS for review and approval prior to the start of survey activities. In addition, prior to initiation of survey work, all crew members must undergo environmental training, a component of which must focus on the procedures for sighting and protection of marine mammals. A briefing must also be conducted between the survey supervisors and crews, the PSOs, and Dominion. The purpose of the briefing must be to establish responsibilities of each party, define the chains of command, discuss communication procedures, provide an overview of monitoring purposes, and review operational procedures.

Reporting Measures

Dominion must provide the following reports as necessary during survey activities:

Notification of Injured or Dead Marine Mammals - In the unanticipated event that the specified HRG activities lead to an injury of a marine mammal (Level A harassment) or mortality (*e.g.*, ship-strike, gear interaction, and/or entanglement), Dominion must 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 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).

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

In the event that Dominion 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), Dominion must 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 must include the same information identified in the paragraph above. Activities must be able to continue while NMFS reviews the circumstances of the incident. NMFS must work with Dominion to determine if modifications in the activities are appropriate.

In the event that Dominion 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), Dominion must 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. Dominion must provide photographs or video footage (if available) or other documentation of the stranded animal sighting to NMFS. Dominion may continue its operations under such a case.

Within 90 days after completion of survey activities, a final technical report must be provided to NMFS that fully documents the methods and monitoring protocols, summarizes the data recorded during monitoring, estimates the number of marine mammals estimated to have been taken during survey activities, 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.

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 Tables 8 and 9, given that NMFS expects the anticipated effects of the proposed survey to be similar in nature.

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

We expect that most 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 in the notice of proposed IHA (83 FR 26968; June 11, 2018, 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, as no areas of biological significance for marine mammal feeding are known to exist in the survey area. 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, the availability of similar habitat and resources in the surrounding area, and the lack of important or unique marine mammal feeding 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. In addition, there are no rookeries or mating or calving areas known to be biologically important to marine mammals within the proposed project 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 coast of Virginia, this biologically important migratory area extends from the coast to the just 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, North Atlantic right whale migration is not expected to be impacted by the proposed survey.

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 Dominion'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 authorized take estimates to impact annual rates of recruitment or survival.

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

- No mortality or serious injury is anticipated or authorized;
- No injury is anticipated or authorized;
- The anticipated impacts of the proposed activity on marine mammals would be limited to temporary behavioral changes due to avoidance of the area around the survey vessel;
- Alternate areas of similar habitat value for marine mammals to temporarily vacate the survey area during the proposed survey and avoid exposure to sounds from the activity are available;
- The proposed project area does not contain areas of significance for feeding, mating or calving;
- Effects on species that serve as prey species for marine mammals from the proposed survey are expected to be minimal;

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

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the monitoring and mitigation measures, NMFS finds that the total marine mammal take from the 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 authorized to be taken would be considered small relative to the relevant stocks or populations for all species and stocks (less than 10 percent of bottlenose dolphin stocks, and less than 1 percent of each of the other species and stocks). See Tables 6 and 7. Based on the analysis contained herein of the proposed activity (including the mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS finds that small numbers of marine mammals will be taken relative to the population size of the affected species or stocks.

Unmitigable Adverse Impact Analysis and Determination

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

National Environmental Policy Act

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

This action is consistent with categories of activities identified in Categorical Exclusion B4 (incidental harassment authorizations with no anticipated serious injury or mortality) of the Companion Manual for NOAA Administrative Order 216-6A, which do not individually or cumulatively have the potential for significant impacts on the quality of the human environment and for which we have not identified any extraordinary circumstances that would preclude this categorical exclusion. Accordingly, NMFS has determined that the issuance of the IHA qualifies to be categorically excluded from further NEPA review. We have reviewed all comments submitted in response to the proposed IHA notice prior to concluding our NEPA process and making this final decision on the IHA request.

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..

The NMFS Office of Protected Resources is proposing mitigation to avoid the incidental take of the species of marine mammals which are likely to be present and are listed under the ESA: the North Atlantic right and fin whales. Therefore, consultation under section 7 of the ESA is not required.

Authorization

NMFS has issued an IHA to Dominion for conducting UXO surveys offshore Virginia for a period of one year, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated.

Dated: July 31, 2018.

Donna S. Wieting,

Director, Office of Protected Resources,

National Marine Fisheries Service.

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