



MARINE MAMMAL COMMISSION

6 July 2018

Ms. Jolie Harrison, Chief
Permits and Conservation Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910-3225

Dear Ms. Harrison:

The Marine Mammal Commission (the Commission), in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the application submitted by Virginia Electric and Power Company d/b/a/ Dominion Energy Virginia (Dominion) under section 101(a)(5)(D) of the Marine Mammal Protection Act (the MMPA). Dominion is seeking authorization to take small numbers of marine mammals by harassment incidental to unexploded ordnance investigation surveys off the coast of Virginia. The Commission also has reviewed the National Marine Fisheries Service's (NMFS) 11 June 2018 notice (83 Fed. Reg. 26968) requesting comments on its proposal to issue the authorization, subject to certain conditions.

Background

Dominion is proposing to conduct high-resolution geophysical (HRG) surveys to acquire data regarding the presence of unexploded ordnance within the proposed construction and operational footprints of the Coastal Virginia Offshore Wind (CVOW) project and export cable route construction corridor (these combined areas are henceforth referred to as the survey area). The survey would occur day and night for three months¹, beginning on 1 August 2018. Two vessels would be used at a time. HRG survey equipment proposed for use includes an ultra-short baseline (USBL) positioning system, sub-bottom profilers (SBPs), multi-beam sonar, and side-scan sonar.

NMFS preliminarily has determined that the proposed activities could cause Level B harassment of small numbers of nine marine mammal species or stocks. It also anticipates that any impact on the affected species and stocks would be negligible. NMFS does not anticipate any take of marine mammals by death or serious injury and believes that the potential for disturbance will be at the least practicable level because of the proposed mitigation measures. The proposed mitigation, monitoring, and reporting measures include—

- conducting sound source verification (SSV) measurements on the Innomar SBP²;
- using vessel-based protected species observers to monitor the exclusion zones and the Level B harassment zone before, during, and after the HRG surveys;

¹ 60 days for the export cable route corridor and 15 days each for the inter-array cable route and wind turbine sites.

² In response to the Commission's informal inquiry regarding whether the applicant would conduct an SSV, NMFS has confirmed that an SSV would be conducted for the Innomar—a narrow-beam, parametric SBP.

- using standard ramp-up, delay³, and shut-down procedures;
- using delay and shut-down procedures if a species for which authorization has not been granted, or a species for which authorization has been granted but the authorized number of takes have been met, approaches or is observed within the Level A and/or B harassment zone;
- using night-vision equipment (with infrared capabilities) to detect marine mammals during nighttime operations;
- using standard vessel strike avoidance procedures and monitoring⁴ the NMFS North Atlantic right whale reporting systems during all survey activities;
- working with NMFS to shut down and/or alter the survey activities if a Dynamic Management Area is established in the survey area;
- reporting injured and dead marine mammals to the Office of Protected Resources and the Greater Atlantic Regional Fisheries Office (GARFO) Stranding Coordinator⁵ using NMFS's phased approach and suspending activities, if appropriate; and
- submitting a final report to NMFS.

Appropriate Level A harassment thresholds and zones

As noted in previous Commission comments on similar HRG surveys⁶, Dominion used the impulsive rather than non-impulsive threshold for estimating the Level A harassment zone for parametric and chirp SBPs, which are non-impulsive sources⁷. As a result, the Level A harassment zones for the SBPs were greatly overestimated by using the impulsive thresholds. The Level A harassment zone for the GeoPulse SBP (chirp) should have been 0.1 m rather than 16 m for high-frequency (HF) cetaceans, while the Level A harassment zone for the Innomar SBP should have been much less than 10 m⁸ rather than <50 m for HF cetaceans⁹.

In this instance, and as was the case for the recent Orsted proposed authorization, NMFS knowingly allowed Dominion to use the wrong thresholds for both the parametric SBP and chirp

³ Section 4(e) of the Proposed Authorization section refers to pre-clearance observation of the exclusion zones described under section 4(d); the exclusion zones are actually described in section 4(c).

⁴ The Commission informally noted that NMFS included this standard measure in the preamble but omitted it from the proposed authorization. NMFS indicated that this measure would be included in the final authorization.

⁵ The Commission informally noted that the preamble specified that both the Office of Protected Resources and GARFO Stranding Coordinator would be notified, however the proposed authorization specified only that NMFS be notified. NMFS needs to revise the measure to include reporting to both the Office of Protected Resources and GARFO in the final authorization.

⁶ See the Commission's [13 June 2018 letter](#).

⁷ See Table 1 in Crocker and Fratantonio (2016) for source and signal types. These types of SBPs are characterized by neither a broadband pulse nor a high peak sound pressure with rapid rise time and rapid decay, which are indicative of impulsive sources.

⁸ Dominion used BELLHOP rather than NMFS's user spreadsheet to estimate the Level A harassment zone for the Innomar SBP. Dominion did not provide information on the sound speed profile, water depths/bathymetry, or sediment characteristics it used as inputs. Thus, the results cannot be recreated precisely. Basic calculations however yield Level A harassment zones of less than 5 m or approximately 2 percent of the original zone.

⁹ The Commission also informally noted that the estimated area that would be ensounded based on Level A harassment was incorrectly reported as 1.78 rather than 17.78 km² per day in Table 6 of the *Federal Register* notice. That point is now moot given that the wrong threshold was used. NMFS will have to re-estimate the largest ensounded area for Level A harassment.

but did not believe it was a major issue because it resulted in a more conservative estimate of takes. Although the impulsive threshold is more conservative than the non-impulsive threshold, allowing action proponents to choose arbitrarily which thresholds to use undermines the intent of the acoustic thresholds and does not represent best available science. Therefore, the Commission recommends that NMFS prohibit Dominion and other action proponents from using the impulsive Level A harassment thresholds for estimating the extents of the Level A harassment zones for non-impulsive sources (i.e., parametric SBPs, chirps, pingers, etc.).

NMFS also incorrectly included Level A harassment zones for the Innomar¹⁰ and GeoPulse SBPs based on the peak sound pressure level (SPL_{peak}) threshold (Table 5 of the *Federal Register* notice), which is not applicable for non-impulsive sources. A single threshold is used for non-impulsive sources based on cumulative sound exposure levels (SEL_{cum}), while dual thresholds based on SPL_{peak} and SEL_{cum} are used for impulsive sources.

The Commission notes that Dominion estimated the extent of the Level A harassment zones for the impulsive source (i.e., the Geo-Source sparker) incorrectly as well. The estimated zones for SPL_{peak} should be greater than reported and the zones for SEL_{cum} should be less than reported in Table 5. Specifically, the zones for SPL_{peak} appear to have been miscalculated. They should be <1 m for low-frequency (LF) cetaceans and phocids¹¹ and 2 m for HF cetaceans. For the SEL_{cum} thresholds, Dominion used incorrect source levels based on single-strike SELs (SEL_{s-s}). A SEL_{s-s} source level is a function of the pulse duration and the root-mean-square SPL (SPL_{rms}) source level¹², which would yield a SEL_{s-s} source level of 166 not 183 dB re 1 μPa^2 -sec. Thus, the Level A harassment zones would decrease from 24 to 0.5 m for HF cetaceans, from 5 to 0.1 m for LF cetaceans, and from 3 to 0 m for phocids. A similar error is evident for the SEL_{s-s} source level reported by Dominion for the GeoPulse SBP¹³. The resulting Level A harassment zones should be the same regardless of whether one uses the SPL_{rms} - or the SEL_{s-s} -based method, noted as F1 and F2, respectively, in NMFS's user spreadsheet. As such, the Commission recommends that NMFS revise the extents of the Level A harassment zones for the Geo-Source sparker based on both the SPL_{peak} and SEL_{cum} thresholds and for the GeoPulse SBP based on the SEL_{cum} threshold.

Appropriate Level B harassment thresholds, zones, and take estimates

Level B harassment thresholds—In lieu of an appropriate Level B harassment threshold for parametric SBPs and chirps, NMFS has characterized them as impulsive sources relative to the 160-dB re 1 μPa threshold¹⁴. However, researchers have observed that various species of marine mammals respond to sound from sources with similar characteristics (including acoustic deterrent devices, acoustic harassment devices, pingers, echosounders, and sonars) at received levels below

¹⁰ The Commission notes that the Level A harassment zones reported in Table 5 of the *Federal Register* notice are incorrect even if the threshold was applicable.

¹¹ Both zones are 0.3 m based on the source levels reported in Table 5-1 of Dominion's application and spherical spreading.

¹² Assuming a pulse duration of 10 msec and a SPL_{rms} source level of 186 dB re 1 μPa based on information provided by Dominion.

¹³ The SEL_{s-s} source level should be 156 rather than 160.8 dB re 1 μPa^2 -sec based on a pulse duration of 22 msec and a SPL_{rms} source level of 172.8 dB re 1 μPa .

¹⁴ The general Level B harassment thresholds only relate to impulsive and continuous sources. Parametric SBPs and chirps are neither impulsive nor continuous sources, rather they are non-impulsive, intermittent sources.

160 dB re 1 μ Pa. The Commission has noted in previous letters regarding this matter that those sources have temporal and spectral characteristics suggesting that, until such time that NMFS updates its behavior thresholds, a lower, more precautionary Level B harassment threshold of 120 dB re 1 μ Pa would be more appropriate than the 160-dB re 1 μ Pa threshold.

The Commission remains concerned that the behavior thresholds currently used by NMFS do not reflect the current state of understanding regarding the temporal and spectral characteristics of various sound sources and their impacts on marine mammals. Therefore, the Commission recommends that, *until* the behavior thresholds are updated, NMFS require applicants to use the 120- rather than 160-dB re 1 μ Pa threshold for acoustic, non-impulsive sources (i.e., parametric SBPs, chirps, echosounders, and other sonars).

Level B harassment zone and takes—The Commission informally noted that, based on data recently collected by the Navy¹⁵, harbor seals are occurring in the Virginia area earlier in the fall months and later in the summer months than reported by Dominion and included in the *Federal Register*. Gray seals also are observed at the same haul-out sites as harbor seals, albeit in smaller numbers. Despite this, NMFS stated in the *Federal Register* that gray seal sightings only occur during winter months as far south as New Jersey. Although Dominion did not request takes of harbor or gray seals, it should have done so because the potential exists to take those species. As such, the Commission recommends that NMFS include at least five harbor seal takes and one gray seal take in Dominion's final authorization to account for their potential occurrence in the project area.

The Commission noted informally to NMFS several inconsistencies and inaccuracies in the densities and take estimates provided in Table 7¹⁶. For example, the Commission indicated that the densities used for Atlantic spotted dolphins and humpback whales are lower for the turbine and inter-array cable route areas than for the export cable route area, when those areas are farther offshore and have higher densities of both species (Roberts et al. 2016). The Commission also noted that, based on Roberts et al. (2016), many of the densities¹⁷ appear to be underestimated¹⁸. In addition, the resulting take estimates were incorrect based on simple mathematical calculations and reported number of significant figures¹⁹. Dominion subsequently revised the densities for 6 of the 11 species. However, those revisions do not appear to be in response to the Commission's informal comments²⁰ that the densities were underestimated, as the majority of the densities were estimated downward.

Based on the density revisions, Dominion estimated that 0.59 Risso's dolphins would be taken. However, it did not request to include takes of Risso's dolphins in the final authorization. The

¹⁵ <https://www.navy-marine-species-monitoring.us/reading-room/project-profiles/haul-out-counts-and-photo-identification-pinnipeds-lower-chesapeake-bay/>

¹⁶ The proposed authorization also erroneously referred the reader to Table 8 for the list of species proposed for taking authorization and Table 9 for the numbers of each species/stock to be authorized for taking. Tables 8 and 9 were not included in the *Federal Register* and the Commission presumes the reference should instead be Table 7.

¹⁷ In addition, the Commission noted that the densities in Table 7 of the *Federal Register* were reported as numbers of animals per 1,000 km² rather than numbers of animals per 100 km².

¹⁸ E.g., all species of baleen whales and Atlantic spotted dolphins.

¹⁹ Based on the densities and ensonified areas reported to two significant figures, the numbers of takes are incorrect for 10 of the 11 species in Table 7 of the *Federal Register*. If Dominion intends to estimate the calculated takes to two significant figures, then it should report the densities and ensonified areas to at least three significant figures.

²⁰ The revisions also did not address the significant figures issue.

Commission questions this, as Dominion estimated similarly low numbers of takes of pilot whales and yet requested takes based on average group size. The same should have been done for Risso's dolphins. Therefore, the Commission recommends that NMFS (1) clarify why the various densities have been revised and ensure that all of the densities are correct based on the turbine and inter-array cable route areas and the export cable route area relative to Roberts et al. (2016), (2) report the densities and ensonified areas out to three significant digits to ensure the estimated numbers of takes were calculated properly in Table 7, and (3) include takes of Risso's dolphins in the final authorization based on average group size.

Further, NMFS did not propose to authorize takes for North Atlantic right whales or fin whales based on the presumed effectiveness of the proposed mitigation measures. However, it did not make the same assumptions for humpback and minke whales. More importantly, NMFS noted that the Innomar SBP operates at frequencies from 85–115 kHz, which are 50 kHz beyond the best hearing capabilities of LF cetaceans (7–35 kHz). However, because the largest Level B harassment zone was associated with the Innomar SBP, those data were used to calculate the ensonified areas and estimate takes for all species, including LF cetaceans. NMFS acknowledged that LF cetaceans aren't affected by the Innomar SBP yet still proceeded to calculate takes associated with a source the animals cannot hear, which doesn't make sense. Further, the next largest Level B harassment zone was estimated to be somewhat less than 20 m. Given that LF cetaceans do not routinely approach vessels to within 20 m without being detected and Dominion would be required to shut down at much greater distances, the Commission recommends that NMFS refrain from authorizing Level B harassment takes of any LF cetacean, including humpbacks and minke whales. Additionally, the Commission recommends that NMFS base its take estimation process on whether the species can actually hear the sound source rather than the largest ensonified area. NMFS routinely incorporates such an approach, as it did for multi-beam and side scan sonars (83 Fed. Reg. 26970).

Rounding of take estimates

The method used to estimate the numbers of takes during the proposed activities, which summed fractions of takes for each species across project days, does not account for and negates the intent of NMFS's 24-hour reset policy. As the Commission has indicated in numerous previous letters regarding this matter²¹, the issue at hand involves policy rather than mathematical accuracy. The Commission understands that NMFS has nearly completed revising its draft criteria and plans to share them with the Commission in the near future. The Commission again recommends that NMFS provide those criteria without further delay.

Proposed one-year authorization renewals

NMFS has indicated that it may issue a one-year²² incidental harassment authorization renewal for this and other future authorizations on a case-by-case basis without additional public

²¹ See the Commission's [29 November 2016 letter](#) detailing this issue.

²² In other proposed authorizations (e.g., 83 Fed. Reg. 8456), NMFS clarified that it would issue a *second* one-year authorization, which should have been specified in the proposed authorization. However, NMFS has yet to specify whether the renewal would be issued as a one-time opportunity, after which time a new authorization application would be required. These specific details should be included in all *Federal Register* notices that describe the proposed renewal process.

notice or comment opportunity when (1) another year of identical, or nearly identical activities, as described in the ‘Specified Activities’ section of the *Federal Register* notice is planned or (2) the originally planned activities would not be completed by the time the incidental harassment authorization expires and a renewal would allow for completion of the authorized activities beyond the timeframe described in the ‘Dates and Duration’ section of the notice. NMFS would consider issuing a renewal only if—

- the request for renewal is received no later than 60 days prior to the expiration of the current authorization;
- the activities to be conducted either are identical to the previously analyzed and authorized activities or include changes so minor (e.g., reduction in pile size) that they do not affect the previous analyses, take estimates, or mitigation and monitoring requirements;
- a preliminary monitoring report provides the results of the required monitoring to date and those results do not indicate impacts of a scale or nature not previously analyzed or authorized;
- the status of the affected species or stocks and any other pertinent information, including the mitigation and monitoring requirements, remain the same and appropriate; and
- the original determinations under the MMPA remain valid.

The Commission agrees that NMFS should take appropriate steps to streamline the authorization process under section 101(a)(5)(D) of the MMPA to the extent possible. However, the Commission is concerned that the renewal process proposed in the *Federal Register* notice is inconsistent with the statutory requirements. Section 101(a)(5)(D) clearly states that proposed authorizations are subject to publication in the *Federal Register* and elsewhere and that there be a presumably concurrent opportunity for public review and comment. NMFS’s proposed renewal process would bypass the public notice and comment requirements when it is considering the renewal.

The Commission further notes that NMFS recently implemented an abbreviated authorization process by publishing the required information²³ via an abbreviated *Federal Register* notice and by referencing the relevant documents. The abbreviated process preserves the full opportunity for public review and comment, does not appear to be unduly burdensome on either the applicant or NMFS, and is much preferred over NMFS’s proposed renewal process²⁴. Thus, the Commission recommends that NMFS refrain from implementing its proposed renewal process and instead use abbreviated *Federal Register* notices and reference existing documents to streamline the incidental harassment authorization process.

If NMFS believes that its proposed renewal process is consistent with the applicable statutory requirements and intends that process to be generally applicable to all incidental harassment authorizations that meet the specified criteria, it should not seek to adopt such a process through a brief notice at the end of a specific proposed authorization. That process should be adopted through more general procedures, preferably a rulemaking, that provides NMFS’s rationale and analysis regarding why it believes the proposed renewal process is consistent with the

²³ Including any changes to the proposed activities or assumptions made and results from the draft monitoring report.

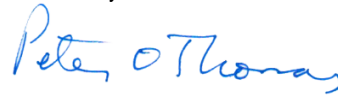
²⁴ See the Commission’s [30 April 2018 letter](#) detailing this matter.

requirements of section 101(a)(5)(D) of the MMPA and adequate public notice and opportunity for comment. If NMFS adopts the proposed renewal process notwithstanding the Commission's recommendation, the Commission further recommends that NMFS provide the Commission and the public with a legal analysis supporting its conclusion that the process is consistent with the requirements under section 101(a)(5)(D) of the MMPA. Furthermore, if NMFS decides to bypass the notice and comment process in advance of issuing a renewal, it should nevertheless publish notice in the *Federal Register* whenever such a renewal has been issued.

In closing, many of the issues discussed herein should have been recognized and addressed prior to NMFS deeming the application complete and submitting the notice for publication in the *Federal Register*. It is imperative that NMFS's technical experts review the proposed modeling methods and the resulting extents of the Level A and B harassment zones, as neither the analysts nor the early review team managed to identify and address the issues associated with those aspects of the application. Insofar as NMFS believes issuing authorizations is necessary for these types of activities²⁵, it must do a better job of analyzing the activities and drafting the proposed authorizations.

Please contact me if you have questions regarding the Commission's recommendations.

Sincerely,



Peter O. Thomas, Ph.D.,
Executive Director

References

- Crocker, S.E., and F.D. Fratantonio. 2016. Characteristics of sounds emitted during high-resolution marine geophysical surveys. Naval Undersea Warfare Center Division, Newport, Rhode Island. 265 pages.
- Roberts, J.J., B.D. Best, L. Mannocci, E. Fujioka, P.N. Halpin, D.L. Palka, L.P. Garrison, K.D. Mullin, T.V.N. Cole, C.B. Khan, W.A. McLellan, D.A. Pabst, and G.G. Lockhart. 2016. Habitat-based cetacean density models for the U.S. Atlantic and Gulf of Mexico. *Scientific Reports* 6:22615. doi:10.1038/srep22615.

²⁵ After the SSV is conducted for the Innomar SBP, the largest extent of the Level B harassment zone is expected to be less than 20 m.