4 January 2021

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 National Marine Fisheries Service's (NMFS) 21 December 2020 notice (85 Fed. Reg. 83001) and the letter of authorization (LOA) application submitted by the U.S. Navy (the Navy) seeking regulations under section 101(a)(5)(A) of the Marine Mammal Protection Act (the MMPA). The taking would be incidental to conducting construction activities at Naval Station Norfolk (NAVSTA Norfolk) in Virginia during a five-year period.

The Navy plans to remove and install piles to repair, maintain, and improve various marine structures at NAVSTA Norfolk. During the five years, operators would remove up to 3,039 12-in timber piles and 80 16-in high-density polyethylene (HPDE) or hollow-core fiberglass (referred to as composite piles) using a vibratory hammer, clamshell bucket, or direct pull or by cutting them at the mudline. Operators also would install up to 1,983 16-in composite or timber piles using a vibratory and/or impact hammer and up to 100 24-in square concrete piles using an impact hammer. The Navy's activities could occur on 18–208 days per year[1], weather permitting, during daylight hours only.

NMFS preliminarily has determined that, at most, the proposed activities could cause Level B harassment of small numbers of five marine mammal species. NMFS anticipates that any impact on the affected species and stocks would be negligible. NMFS also 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 and sound propagation measurements for pile types other than timber and concrete;
- ceasing in-water heavy machinery activities if any marine mammal comes within 10 m of the activity and reducing vessel speed to the minimum level required to maintain steerage and safe working conditions;

[1] For up to 574 days total during the five years.

- using standard soft-start, delay, and shut-down procedures;
- using at least two qualified protected species observers (PSOs) to monitor the Level A and B harassment and shut-down zones for 30 minutes before, during, and for 30 minutes after the proposed activities;
- using delay and shut-down procedures, if a species for which authorization has not been granted or if a species for which authorization has been granted but the authorized takes are met, approaches or is observed within the Level A or B harassment zone;
- reporting injured and dead marine mammals to the Office of Protected Resources and the Greater Atlantic Region New England/Mid-Atlantic Regional Stranding Coordinator and ceasing activities, if appropriate; and
- submitting a draft and final report.

Take estimates

The Commission informally noted that the numbers of takes of humpback whales and harbor porpoises were incorrect based on NMFS's proposed take estimation methods. NMFS indicated that two humpback whales could be taken every 60 days (85 Fed. Reg. 83015). Based on that assumption and the proposed number of days of activities in Table 4 of the *Federal Register* notice, 8 takes could occur in 2021 rather than 6 and 6 takes could occur in 2025 rather than 8 (see Table 13). NMFS agreed that the proposed takes were incorrect for humpback whales and indicated that it would include the correct number of takes in the final rule. NMFS used the same assumption for harbor porpoises, but proposed to authorize 7 rather than 8 takes in 2021, 3 rather than 4 takes in 2022, 1 rather than 2 takes in 2023, and 3 rather than 4 takes in 2024 (see Table 13). NMFS similarly agreed that the proposed takes were incorrect for harbor porpoises and indicated that it would include the correct numbers of takes in the final rule.

For harbor seals, NMFS proposed to use the average of the average daily counts of seals observed at the Chesapeake Bay Bridge Tunnel (CBBT) haul-out sites from 2014–2019 (n=14 seals)[2], occurrence of seals from November through April of each year, and the number of pile-driving days that could occur during the timeframe in which seals could be present in any given year[3] to inform its take estimates. Although the method is reasonable, NMFS failed to account for seals that haul out at the Eastern Shore (ES) haul-out sites also occur within Chesapeake Bay. As stipulated in the Navy's LOA application, seals move between CBBT and ES haul-out sites, and four of the seven harbor seals that were captured at the Eastern Shore haul-out site and tagged with satellite-linked transmitters moved into Chesapeake Bay, including one seal that stayed in the bay until it migrated from the area (Ampela et al. 2019). The Navy also indicated that 36 percent of the trips of the ES-tagged seals occurred within Chesapeake Bay. Given that the Level B harassment zones associated with the Navy's proposed activities at NAVSTA Norfolk were estimated to be 7.2 km or less (see Table 9 in the *Federal Register* notice), one could argue that using the average of the average daily counts is reasonable. However, NMFS should have accounted for the seals that could enter the bay from the ES haul-out sites as well. As such, the Commission recommends that NMFS

[2] Jones et al. (2020) indicated that the maximum daily count ranged from 17–45 seals at CBBT and from 24–69 seals at ES. The maximum average daily count was 23 at CBBT and 25 at ES.
[3] If fewer than 183 days of activities could occur in a given year, NMFS assumed seals could be present on all days. If more than 183 days of activities could occur in a given year, NMFS assumed that seals could be present for a maximum of 183 days.

re-estimate the numbers of Level B harassment takes of harbor seals based on up to 21[4] rather than 14 seals potentially being taken on the various days of proposed activities.

Mitigation and monitoring measures and plans

Hydroacoustic monitoring—NMFS proposed to require the Navy to conduct sound source and sound propagation measurements of all the various pile types other than timber and concrete piles. The Commission supports such a requirement, particularly since measurements are scant or lacking altogether for certain pile types and sizes that the Navy proposed to use. The Commission would support sound propagation measurements of concrete piles as well. Rather than assume practical spreading (15logR), the Navy used a model developed by the University of Washington (UW) to estimate the Level A and B harassment zones (see Appendix B in the Navy's LOA application). Some of the model-estimated zones are much larger than would result from assuming practical spreading (e.g., some of the Level B harassment zones for vibratory pile driving), while others are much smaller than they would be assuming practical spreading (e.g., some of the Level A and B harassment zones for impact pile driving[5]). It is unclear whether UW's model or modeling assumptions have been verified in-situ, including in the substrate(s) and water depth(s) present at NAVSTA Norfolk and for the pile types the Navy proposed to use[6]. In addition, few measurements exist for impact installation of 24-in square concrete piles (e.g., one project was reported in California Department of Transportation (2015) and after jetting/drilling at NAVSTA Norfolk as reported in Illingworth & Rodkin, Inc. (2017[7]))[8].

When asked how many and which types of piles would be measured, NMFS indicated that it was still working with the Navy on the hydroacoustic monitoring plan. The Commission cannot comment on the sufficiency of the hydroacoustic monitoring plan absent the necessary details. However, given the paucity of data and the numbers of piles proposed for installation, NMFS should require the Navy to conduct sound source and sound propagation measurements of vibratory and impact installation of at least a day's worth[9] of each size and type (HPDE, hollow-core fiberglass, and concrete) of pile. To ensure appropriate information is collected, the near-field hydrophone should be positioned at 10 m from the pile and the far-field hydrophone(s) should be placed far enough away to assess sound propagation (e.g., at 50–100 m for impact installation and at

[4] Based on the average of average daily counts of 18.3 seals at ES haul-out sites and 36 percent of those seals occurring in Chesapeake Bay, which would equate to an additional 7 seals.
[5] For example, the Level B harassment zone would be 117 m for impact pile driving of 24-in concrete piles using practical spreading but ranged from 47–59 m based on the model.
[6] For example, a damped cylindrical spreading (DCS) model has been developed based on larger-sized monopiles that yields *larger* Level B harassment zones for impact pile driving than practical spreading (Lippert et al. 2018, Müller et al. 2019, Ainslie et al. 2020)—the theory should apply to smaller-sized piles as well. The Bureau of Ocean Energy Management funded the development of a DCS model-based spreadsheet (DCSiE; Heaney et al. 2020) for wind energy development. The spreadsheet tool incorporates information related to bathymetry and substrate type, in addition to the measured sound level at a reference distance (typically no less than three times the water depth at the source). It is unclear how UW's model would compare to DCSiE.
[7] Illingworth & Rodkin, Inc. (2017) also measured the installation of a concrete pile driven twice at Craney Island but noted that the sound levels would not necessarily match or be reflective of the typical levels measured for the driving of a typical concrete pile due to the short duration of the drives.
[8] Many of the 24-in piles that have been measured have been octagonal.
[9] The Navy estimated that up to 10 composite piles and 3 concrete piles would be installed on a given day (Table 6-9 in the LOA application).

least a few hundred meters out to a few kilometers for vibratory pile driving). Both of these should be placed mid-water column. The hydroacoustic monitoring report also should include—

- Recording device type, sampling rate, distance (m) from the pile where measurements were made, and depth of recording device(s).
- Size of pile being driven, substrate type, and method of driving (vibratory vs. impact).
- Number of strikes per pile measured, pulse duration, one-third octave band spectrum, power spectral density plot, and propagation loss coefficients, as well as the minimum, mean, median, and maximum sound levels at the referenced distances in SPL_{rms}[10], SPL_{peak}, $SEL_{s\text{-}s}$, and cumulative SEL for impact pile driving.
- Timeframe over which vibratory installation occurred, time integral over which the measurements were taken (i.e., 1-second), one-third octave band spectrum, power spectral density plot, and propagation loss coefficients, as well as the minimum, mean, median, and maximum sound levels at the referenced distances in SPL_{rms}[11] and cumulative SEL for vibratory pile driving.
- Estimated distances to the Level A harassment and Level B harassment thresholds for the various pile sizes and types.

The Commission recommends that NMFS require the Navy to (1) conduct sound source and sound propagation measurements of vibratory and impact installation of at least 10 HPDE, 10 hollow-core fiberglass, and 3 concrete piles using near-field (10 m from the pile) and far-field (e.g., at 50–100 m for impact installation and at least a few hundred meters out to a few kilometers for vibratory pile driving) hydrophones placed mid-water column and (2) include in its hydroacoustic monitoring report all of the aforementioned elements. The Commission also recommends that NMFS require the Navy to increase the sizes of the shut-down zones and Level B harassment zones if the measured data indicate that the model-estimated zones were underestimated.

Shut-down zones—Although the Level A harassment zone for low-frequency (LF) cetaceans during impact installation of 24-in concrete piles at the Morale, Welfare, and Recreation (MWR) Marina was estimated to be 52 m, NMFS indicated that the Navy is planning to implement a 50-m shut-down zone. However, the Navy indicated that the shut-down zone would include all areas where the underwater sound pressure levels are anticipated to equal or exceed the Level A harassment thresholds and shut downs would be implemented in accordance with procedures stated in the final approved monitoring plan (see section 11.3.4 in the LOA application). The Commission is unable to verify what the shut-down zones would be since the Navy did not provide its marine mammal monitoring plan for review, which is discussed in the following section herein. However, as the Commission has noted in previous letters, unless implementation of a shut-down zone is impracticable[12], it should encompass the extent of the associated Level A harassment zone. In this instance, a 5-m increase in the shut-down zone to only 55 m would not cause unnecessary shut downs and is practicable to implement. Further, the Navy is capable of implementing multiple different-sized shut-down zones for numerous different activities and scenarios. As such, it is not impracticable for the Navy to implement a 55-m shut-down zone for LF cetaceans only during

[10] With a time window that consists of 90 percent of the acoustic energy.
[11] With a time window that consists of 90 percent of the acoustic energy. In addition, 1-sec SEL sound levels could be reported at the referenced distances.
[12] Or Level A harassment takes are proposed for authorization.

impact installation of 24-in concrete piles. Until NMFS revises the manner in which it estimates Level A harassment zones using its cumulative sound exposure thresholds[13], the Commission recommends that NMFS require the Navy to implement a shut-down zone of 55 rather than 50 m for LF cetaceans during impact installation of 24-in concrete piles.

Marine mammal monitoring plan—In its June 2020 informal comments on NMFS's advance notice of proposed rulemaking for the Navy's proposed activities, the Commission noted that the number and placement of PSOs were not specified in the Navy's LOA application but assumed that they would be provided in the forthcoming marine mammal monitoring plan. NMFS indicated that it was working with the Navy on the exact PSO locations. Six months later, the marine mammal monitoring plan has yet to be posted on NMFS's website and the proposed rule would require only that the Navy use a minimum of two PSOs. In response to the Commission's request for the Navy's monitoring plan, NMFS indicated that the Navy was still working on the specifics of it and would submit the plan for NMFS review and approval prior to the start of construction. This is not sufficient for public review. As stated in previous Commission letters, *all* monitoring plans, hydroacoustic and marine mammal-related, should be provided to the public for review and comment along with any proposed rule or proposed incidental harassment authorization. Neither the public nor the Commission should have to guess how many PSOs would be required to monitor which activities and where they would be located. Although two PSOs would be sufficient for monitoring the Level A and B harassment zones associated with impact installation, two PSOs would not be sufficient for vibratory installation and removal of piles. Furthermore, the location of the PSOs would depend on the number required to be monitoring each activity at the various locations, the extents of the Level B harassment zones, and the vantage points of the various locations. This information should have been ascertained long before NMFS published a proposed rule, consistent with nearly all other proposed incidental taking authorizations. In the absence of the Navy's marine mammal monitoring plan, the Commission recommends that NMFS require the Navy to use at least three PSOs to monitor for marine mammals during vibratory pile installation and removal at Pier 3, Pier 12, and Craney Island and four PSOs for Lambert's Point positioned sufficiently in the far field to monitor the largest extents of the respective Level B harassment zones. The Commission also recommends that NMFS make available to the public for review and comment *all* monitoring plans, hydroacoustic and marine mammal-related, contemporaneously with any proposed rule or proposed incidental harassment authorization that it publishes in the *Federal Register*.

Daylight hours—NMFS indicated that pile installation and removal would occur during daylight hours only[14] in the preamble to the proposed rule (85 Fed. Reg. 83002). However, NMFS did not stipulate in the proposed rule[15] that activities must occur during daylight hours only. Those standard conditions have been included in other recently-issued authorizations[16] and in other draft authorizations[17]. It is unclear why NMFS did not include them for the Navy's proposed rule, as the

[13] Which currently includes either the number of strikes per pile for impact pile driving or the time necessary to install/remove a pile for vibratory pile driving and the number of piles installed/removed in a given day.
[14] The Navy indicated as much in its LOA application as well.
[15] Or indicate that such a requirement would be included in any LOA issued under the final rule.
[16] e.g., see the Chesapeake Tunnel Joint Venture final authorization; https://www.fisheries.noaa.gov/webdam/download/104970969.
[17] e.g., see the Gastineau Historical Channel Society draft authorization; https://www.fisheries.noaa.gov/webdam/download/105647341.

measure would help to ensure that the Navy is effecting the least practicable adverse impact on the affected species[18]. The Commission recommends that NMFS include the requirement that the Navy conduct pile-driving and -removal activities during daylight hours only either in section 218.5 of the final rule or in any LOA issued under the final rule.

Reporting measures

NMFS omitted from the Navy's proposed rule what had been standard conditions for extrapolating and reporting takes for construction-related authorizations. In this instance, NMFS has not even required the Navy to report the number of marine mammals taken. Section 218.6(g)(9) in the proposed rule would only require that the Navy report the number of marine mammals *detected* within the harassment zones, by species. That condition is (1) ambiguous, (2) omits a requirement to specify the numbers of marine mammals *taken* by harassment, and most importantly, (3) does not require the applicant to extrapolate takes to the extents of the Level B harassment zones of more than 7 km, particularly since the Navy may only be required to have two PSOs conducting marine mammal monitoring.

The Commission provided comments and underlying justification on a similar example in its 25 August 2020 letter regarding Navy activities at Bangor. In that case, NMFS did require that the Navy include estimates of the number of marine mammals *taken*, by species, in the draft authorizations and the final authorizations[19] and it specified the types of takes[20] consistent with the Commission's recommendation (85 Fed. Reg. 68293). As such, it is unclear why NMFS has reverted to not requiring the Navy to include estimates of the numbers of marine mammals taken. The Commission recommends that NMFS revise section 218.6(g)(9) in the final rule to require the Navy to report the number of individuals of each species detected within the Level A and B harassment zones, and estimates of number of marine mammals taken by Level A[21] and B harassment, by species.

Because NMFS had yet to provide a detailed explanation of why it did not adopt the Commission's previous recommendation regarding extrapolation of takes to the full extents of the harassment zones, the Commission provided a full rationale in its 19 November 2020 letter regarding why extrapolation of takes is needed and the Commission expects that to be considered in this case as well. NMFS merely specified only what was and was not included in that final authorization (see 85 Fed. Reg. 68293), which does not fulfill NMFS's obligation to provide a detailed explanation of *why* the Commission's recommendations were not followed or adopted as required under section 202(d) of the MMPA. In addition, the Navy is one of the few action proponents that routinely has reported both observed and extrapolated takes. Therefore, it is unclear why such a requirement was not included in the proposed rule. The Commission recommends that, for the final rule, NMFS include requirements in section 218.6(g) that the Navy include in its monitoring report (1) the estimated percentages of the Level B harassment zones that were not visible consistent with the Navy's recent authorizations for Bangor, (2) an extrapolation of the

[18] Since the Navy did not request Level A harassment takes.
[19] The Navy also was required to report the estimated percentages of the Level B harassment zones that were not visible.
[20] Which were both Level A and B harassment.
[21] Level A harassment was not proposed to be authorized. However, any Level A harassment take should be reported if presumed to occur.

estimated takes by Level B harassment based on the number of observed exposures within the Level B harassment zones and the percentages of the Level B harassment zones that were not visible (i.e., extrapolated takes) consistent with other authorizations, and (3) the total number of Level B harassment takes based on both the observed and extrapolated takes for each species.

Tally of takes

It is unclear from both the preamble and the proposed rule whether the Navy will keep a running tally of the total Level B harassment takes. Given that NMFS proposed to authorize only a small number of takes of certain species, it is imperative that the Navy keep a running tally of takes, both observed and extrapolated, to ensure that the numbers of authorized takes are not exceeded and inform when mitigation requirement 218.5(a)(10) in the proposed rule would need to be implemented. The Commission recommends that NMFS *reinforce*[22] that the Navy must keep a running tally of the total Level B harassment takes, both observed and extrapolated, for each species consistent with section 218.5(a)(10) of the final rule.

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

Sincerely,

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

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[22] In response to this similar recommendation for the Navy's activities at Bangor, NMFS provided a response related to *ensuring* that the Navy keep a running tally (95 Fed. Reg. 68293) rather than *reinforcing* with the action proponent that it does.

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