25 September 2017

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 the Federal Aviation Administration (FAA) seeking authorization under section 101(a)(5)(D) of the Marine Mammal Protection Act (the MMPA) to take small numbers of marine mammals by harassment. The taking would be incidental to replacement of the Biorka Island dock in Alaska. The Commission also has reviewed the National Marine Fisheries Service's (NMFS) 29 August 2017 notice (82 Fed. Reg. 41229) announcing receipt of the application and proposing to issue the authorization, subject to certain conditions.

FAA plans to remove and install piles during construction of a new dock on Biorka Island. Operators would install up to 166 18- to 30-in steel pipe or sheet piles and 84 12-in temporary steel pipe or H-piles using a vibratory hammer, impact hammer, and/or down-the-hole hammer. They would remove 46 8- to 24-in concrete, steel, or timber piles and 12-in temporary piles using a vibratory hammer, clamshell bucket, direct pull, and/or excavator. FAA expects activities to take 70 days, weather permitting. It would limit pile-driving and -removal activities to daylight hours from 1 May to 30 September 2018.

NMFS preliminarily has determined that, at most, the proposed activities could cause Level A and/or B harassment[1] 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 mitigation, monitoring, and reporting measures include—

- conducting in-situ sound source measurements during installation activities[2] and adjusting the Level A and B harassment zones, if necessary;

[1] The Commission informally advised NMFS that the justification for the proposed Level A harassment takes for harbor seals and harbor porpoises was illogical and the proposed takes were insufficient. FAA agreed to increase the numbers of Level A harassment takes from 2 to 13 for harbor seals and 32 to 46 for harbor porpoises.
[2] Based on a lack of validation for JASCO's pile driving source model and multiple Level A and B harassment zones that are illogical, the Commission requested and FAA agreed to conduct measurements of two each of the 18- and 30-in pipe

- using a sound attenuation device (e.g., hammer cushion) during impact driving of piles[3];
- ceasing pile-driving and -removal activities if any marine mammal comes within 10 m of the equipment;
- using two qualified land-based protected species observers to monitor the Level A and B harassment zones[4] for 30 minutes[5] before, during, and for 30 minutes after the proposed activities;
- using standard soft-start, delay, and shut-down procedures;
- 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 B harassment zone;
- reporting injured and dead marine mammals to the Office of Protected Resources and the Alaska Regional Stranding Coordinator using NMFS's phased approach and suspending activities, if appropriate; and
- submitting a final report.

In addition, the Sitka Tribe of Alaska, Central Council of the Tlingit and Haida, and Sealaska were contacted regarding impacts of the proposed activities on their cultural resources. No issues or concerns were raised. Based on the proposed activities and mitigation measures, NMFS has preliminarily determined that the proposed taking would not have an unmitigable adverse impact on the availability of marine mammals for subsistence use by Alaska Natives.

Appropriateness of the Level A harassment zones

The Commission has concerns regarding the appropriateness of the manner in which NMFS has estimated Level A harassment zones. For impact driving of 30-in piles during scenario 6, the Level A harassment zones for both low- and high-frequency cetaceans were estimated to be much greater (1,360 and 2,930 m, respectively) than the Level B harassment zone (790 m)[6]. Based on the extent of those zones, it is assumed that an animal would experience permanent hearing damage via permanent threshold shift (PTS) at ranges that far exceed the ranges at which an animal would exhibit a behavioral response. That notion runs counter to the logic that permanent and temporary physiological effects are expected to occur closest to the sound source, with behavioral responses triggered at lower received levels, and thus at farther distances. Numerous Navy environmental impact statements[7], as well as a National Research Council (NRC) report (Figure 4-1; NRC 2005), support this logic.

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piles when a vibratory, impact and down-the-hole hammer is used. NMFS plans to include this measure in the final authorization.

[3] Based on a request from the Commission, FAA plans to use a hammer cushion. NMFS plans to include this measure in the final authorization.

[4] The Commission noted that the Level A harassment zones for scenarios 1 and 3 are illogical and insufficient for high-frequency cetaceans based on the extent of the zones for the other functional hearing groups. NMFS plans to increase the shut-down zones to 50 m for high-frequency cetaceans during those activities and will include the revision in the final authorization.

[5] NMFS included a pre-monitoring period of 15 rather than 30 minutes in the *Federal Register* notice but plans to amend the final authorization accordingly.

[6] Similar results were evident for scenarios 3 and 5 as well.

[7] For which NMFS has been a cooperating agency.

The Commission assumes it was an oversight that NMFS did not address this issue in the current *Federal Register* notice, but NMFS did address it in another recent *Federal Register* notice. Specifically, it stated that animals would not likely remain in the area with intense sound that could cause severe levels of hearing damage and that, in reality, animals avoid those areas (82 Fed. Reg. 15511). NMFS further stated that marine mammals taken by Level B harassment would most likely exhibit overt brief disturbance and avoidance of the area (82 Fed. Reg. 15511). However, those conclusions do not comport with NMFS's proposed Level A and B harassment zones—specifically, an animal would experience PTS before it has had the chance to respond behaviorally and avoid the area.

The Level A and B harassment zones do not make sense biologically or acoustically due to NMFS's unrealistic assumption that the animals remain stationary throughout the entire day of the activity, which is problematic when action proponents are using a simple area x density method[8] for take estimation. By assuming a stationary receiver, all of the energy emitted during a 24-hour period is accumulated for the PTS sound exposure level (SEL_{cum}) thresholds. In this instance, that assumption leads to the determination that the animals would be subjected to 6,120 hammer strikes per day.

The Commission continues to believe that it would be prudent for NMFS to consult with scientists and acousticians to determine the appropriate accumulation time that action proponents should use to determine the extent of the Level A harassment zones based on the associated PTS SEL_{cum} thresholds for stationary sources[9]. Those zones should incorporate more than a few hammer strikes but less than an entire work day's worth of strikes[10]. This recommendation is similar to those made in the Commission's 11 July 2017 letter and 31 August 2015 letter on NMFS's proposed Technical Guidance[11]. As such, the Commission again recommends that NMFS consult with both internal[12] and external scientists and acousticians to determine the appropriate accumulation time that action proponents should use to determine the extent of the Level A harassment zones based on the associated PTS SEL_{cum} thresholds for the various types of sound sources, including stationary sound sources, when simple area x density methods are employed. Estimated swimming speeds of various species and behavior patterns (including residency patterns)[13] should be considered, and multiple scenarios should be evaluated using animat modeling.

In addition, NMFS proposed to require FAA to implement delay or shut-down procedures if a marine mammal approaches or enters the various shut-down zones[14] during use of the vibratory or down-the-hole hammer[15]. In another recent proposed incidental harassment authorization, NMFS indicated that there was no potential for Level A harassment because a marine mammal is not

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[8] The Commission does support using a baseline accumulation period of 24 hours (unless an activity would occur for less time (e.g., 8 hours)) when an action proponent is able to conduct more sophisticated sound propagation and animat modeling.
[9] When animat modeling is not used.
[10] Or an entire day's worth of continuous sound from vibratory or down-the-hole hammers.
[11] And other letters from 11 May and 11 April 2017.
[12] Including staff in the Marine Mammal and Sea Turtle Conservation Division of the Office of Protected Resources and staff in the Office of Science and Technology.
[13] Results from monitoring reports that include information on animal responses and are submitted in support of incidental harassment authorizations issued by NMFS also may inform this matter.
[14] Ranging from less than 10 m to more than 500 m.
[15] Activities that can occur for nearly 7 hours per day.

expected to remain at such close distances for long periods of time during vibratory pile driving or removal[16] (82 Fed. Reg. 34641). The Commission is unsure why NMFS is not implementing consistent measures for action proponents that plan to conduct similar activities. Thus, the Commission recommends that NMFS (1) determine whether action proponents would be required to implement delay or shut-down procedures[17] during use of vibratory and down-the-hole hammers and (2) require, or refrain from requiring, those measures consistently for all authorizations involving those activities.

Rounding of take estimates

The method NMFS 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. In this instance, NMFS also used fractional activity days to inform its take estimation. As the Commission has indicated in previous letters regarding this matter[18], the issue at hand involves policy rather than mathematical accuracy. The Commission notes that, although NMFS developed criteria associated with rounding that it had planned to share with the Commission a few months ago, it has yet to do so. Therefore, the Commission recommends that NMFS share the rounding criteria with the Commission such that this matter can be resolved in the near future.

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

Sincerely,

Rebecca J. Lent, Ph.D.,
Executive Director

Reference

NRC. 2005. Marine mammal populations and ocean noise: Determining when noise causes biologically significant effects. The National Academies Press, Washington, D.C. 126 pages.

[16] The standard 10-m shut-down zone would be implemented.
[17] Beyond the requisite 10-m shut-down zone.
[18] See the Commission's 29 November 2016 letter detailing this issue.