2 April 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 Alaska Department of Transportation and Public Facilities (AK DOT) under section 101(a)(5)(D) of the Marine Mammal Protection Act. AK DOT is proposing to take small numbers of marine mammals by harassment incidental to dock and ferry terminal replacement in Tenakee Springs, Alaska. The Commission also has reviewed the National Marine Fisheries Service's (NMFS) 20 March 2018 notice (83 Fed. Reg. 12152) announcing receipt of the application and proposing to issue the authorization, subject to certain conditions.

AK DOT proposes to replace the city dock and ferry terminal in Tenakee Springs. Operators would install up to 121 14- to 30-in steel or timber piles using a vibratory and/or impact hammer or down-the-hole drilling (DTH drilling). They would remove 84 12.75- to 18-in steel or timber piles using direct pull or a vibratory hammer. AK DOT would limit in-water pile-driving and -removal activities to daylight hours on up to 93 days beginning in June 2019.

NMFS preliminarily has determined that, at most, the proposed activities would temporarily modify the behavior of small numbers of up to seven marine mammal species. 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—

- ceasing heavy equipment activities if any marine mammal comes within 10 m of the equipment;
- using two qualified protected species observers to monitor the Level A and B harassment zones for 30 minutes 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[1] or if a species for which authorization has been granted but the authorized takes are met, approaches or is observed within the Level A and/or 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

NMFS had proposed to require AK DOT to delay or shut down activities if a pinniped or mid-frequency (MF) cetacean was observed within 100 m of pile-driving, pile-removal, and drilling activities. The Commission informally noted that 100 m was unnecessary for activities other than impact driving of two or more steel piles per day for phocids. NMFS agreed to reduce the shut-down zone from 100 to 50 m for pinnipeds and MF cetaceans during all pile-driving, pile-removal, and drilling activities except impact driving of two or more piles. The Commission further notes that if AK DOT expects a large number of pinnipeds to be in the immediate project area, it can further reduce the shutdown zone to 10 or 15 m for otariids during all activities and for phocids during vibratory driving/removal of all pile types and impact driving of 14- to 18-in piles.

Method for estimating source levels

AK DOT used in-situ measurements taken by JASCO in Kodiak, Alaska, to estimate the source level for DTH drilling. Rather than using the linear average of the raw data as reported by JASCO, AK DOT proposed to base its proxy source level on the arithmetic mean of the source levels reported for each individual pile—that method effectively reduced the reported mean source level by a few decibels. It is standard practice for acousticians to take a linear average of sound pressures or sound exposures and then convert those to decibels[2] (Jensen et al. 2011). Decibels are not intended to be averaged, and a simple arithmetic mean of decibel values would underestimate the long-term sound exposure. A linear average of sound exposures also yields the correct average sound exposure per impulse. In addition, the Commission has recommended numerous times that NMFS use median rather than mean values for estimating source levels[3]. NMFS has been requiring all action proponents that conduct hydroacoustic monitoring to report the minimum, mean, median, and maximum values. Therefore, the Commission recommends that NMFS (1) clarify that action proponents should use linear averaging rather than simple arithmetic means to estimate source levels both as reported in hydroacoustic monitoring reports and for proposed use in applications, (2) continue to require that minimum, mean, median, and maximum values be reported in all hydroacoustic monitoring reports, and (3) base proxy source levels on median rather than mean values.

Further, the Commission understands the AK DOT questioned why it was advised by NMFS to use practical spreading[4] for Tenakee Springs rather than transmission loss as measured at

[1] The Commission informally noted that NMFS did not include this standard measure in the proposed incidental harassment authorization language. NMFS indicated it would be included in the final authorization.
[2] Similarly, taking the linear average of the total sound exposure level and then converting to decibels would yield an accurate average decibel value of an individual pulse.
[3] See the Commission's 3 January 2017 letter detailing this and other source level and general pile-driving issues.
[4] 15 log R.

Kodiak (18.9–21.9 log R). As noted in numerous previous letters, transmission loss is dependent on sediment characteristics, bathymetry/water depth, and sound speed profiles. The environmental conditions at Kodiak included a narrow channel approximately 8 m in depth that led to a gentle slope of approximately 15 m in depth, which JASCO indicated inhibited the propagation of lower frequency sound (Denes et al. 2016). Tenakee Springs Inlet is comprised of steep rocky shorelines. Both Ketchikan and Auke Bay have more steep drop-offs than Kodiak and had transmission loss values ranging from 12–15 log R and 14.6–16.4 log R, respectively. More telling is that transmission loss at the four sites[5] where in-situ measurements were conducted in Alaska ranged from 12–21.9 dB, which corroborates the variability inherent in site-specific environmental conditions and the inappropriateness of using transmission loss from other sites as a proxy. The Commission supports NMFS's decision to require AK DOT to use practical spreading rather than transmission loss from Kodiak and recommends that NMFS continue to require action proponents to use practical spreading unless site-specific transmission loss data are available from the proposed project site.

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. As the Commission has indicated in previous letters regarding this matter[6], the issue at hand involves policy rather than mathematical accuracy. Although NMFS developed criteria associated with rounding quite some time ago, NMFS has indicated that the draft criteria need additional revisions before it can share them with the Commission. Therefore, the Commission recommends that NMFS promptly revise its draft rounding criteria in order to share them with the Commission in a timely manner.

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

Sincerely,

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

References

Denes, S.L., G.J. Warner, M.E. Austin, A.O. MacGillivray. 2016. Hydroacoustic pile driving noise study: Comprehensive report. Document 001285, Version 2.0. JASCO Applied Sciences, Anchorage, Alaska. 238 pages.

Jensen, F.B., W.A. Kuperman, M.B. Porter, and H. Schmidt. 2011. Wave propagation theory. Pages 65–153 *in* Computational Ocean Acoustics, second edition. Springer, New York, New York.

[5] Including Kake as well.
[6] See the Commission's 29 November 2016 letter detailing this issue.