24 July 2023

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 Alaska Department of Transportation and Public Facilities (AK DOT) 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 refurbishing the Hydaburg Seaplane Base in Hydaburg, Alaska. The Commission also has reviewed the National Marine Fisheries Service's (NMFS) 17 July 2023 notice (88 Fed. Reg. 45774) announcing receipt of the application and proposing to issue the authorization, subject to certain conditions.

AK DOT plans to replace portions of the Hydaburg Seaplane Base. Operators would install up to 18 20- to 24-in steel piles using a vibratory, an impact, and/or a down-the-hole (DTH) hammer. They also would install six 8-in casings within the piles for tension anchors using a DTH hammer. Operators would remove up to 5 16-in and 10 24-in steel piles using a vibratory hammer. AK DOT expects activities to take up to 26 days, weather permitting. Operators would implement standard mitigation, monitoring, and reporting measures for pile-driving activities. For the proposed IHA, NMFS specifically requested public comment on its proposed DTH characterization and source levels for installation of tension anchors and transmission loss (TL) coefficients for all DTH activities as compared to those proposed by AK DOT.

DTH characterization and source levels for tension anchors

DTH pile installation utilizes percussive hammering and rotational drilling mechanisms to break bedrock into small cuttings and debris, which are pumped out by either air or water. In 2019, the Commission began commenting on the need for NMFS to characterize the sound emitted from DTH hammers appropriately since the source had both percussive and continuous components. Shortly thereafter, NMFS agreed and began to characterize the DTH hammer as an impulsive, continuous sound source. For Level A harassment, the source has been considered impulsive, the relevant metrics of peak sound pressure level (SPL_{peak}) and single-strike sound exposure level ($SEL_{s\text{-}s}$) have applied, and the impulsive thresholds for permanent threshold shift (PTS) have been used (88 Fed. Reg. 45792). For Level B harassment, the source has been considered continuous, the relevant

metric of root-mean-square SPL (SPL_{rms}) has applied, and the continuous threshold for behavioral disturbance has been used (88 Fed. Reg. 45792).

NMFS and AK DOT agree that DTH pile installation of 20- and 24-inch piles is considered an impulsive, continuous source but do not agree on the characterization of DTH pile installation of 8-in piles. NMFS maintains that DTH pile installation of 8-in piles should be considered an impulsive, continuous source, while AK DOT believes that it should be considered a non-impulsive continuous source. The Commission disagrees.

Numerous references have characterized DTH pile installation as having impulsive characteristics both for pile driving[1] and pile drilling[2] (Dazey et al. 2012, Denes et al. 2016, Denes et al. 2019, Reyff and Heyvaert 2019, Guan and Miner 2020, Reyff 2020, Heyvaert and Reyff 2021, Guan et al. 2022). The pulsive structures are evident even for pile drilling, which is overall less impulsive than pile driving (see Figure 3 in Guan et al. 2022). More importantly, Reyff (2020; Figures 4 and 5) and Heyvaert and Reyff (2021; Figure 16) denote that percussive hammering occurred during DTH installation of 8-in piles that are in question and for which the proxy source levels apply (see NMFS 2022 and Table 5 in the *Federal Register* notice). The Commission agrees with NMFS that it is important to account for the impulsive characteristics of DTH pile installation since they have a greater potential to cause noise-induced hearing loss compared to non-impulsive sound (88 Fed. Reg. 45794). As such, it also is appropriate for NMFS to use the SPL_{peak} and SEL_{s-s} proxy source levels from NMFS (2022) to estimate the Level A harassment zones for the tension anchors. The Commission recommends that NMFS consider all DTH pile installation methods to be impulsive, continuous sound sources, including installation of the 8-in tension anchors in Hydaburg, and use the SPL_{peak} proxy source level of 170 dB re 1 µPa and SEL_{s-s} proxy source level of 144 dB re 1 μPa^2-s as recommended in NMFS (2022) to estimate the Level A harassment zones for the 8-in tension anchors.

Transmission loss

Although AK DOT proposed to use practical spreading, 15logR, for impact installation and vibratory installation and removal, it proposed to use 19logR for DTH pile installation from another location in Alaska. As stated in previous letters regarding AK DOT activities (e.g., 21 September 2015 letter for Kodiak and 2 April 2018 letter for Tenakee Springs), the Commission firmly and longstandingly opposes NMFS applying in-situ transmission loss coefficients from one location as a proxy for other locations. If in-situ transmission loss coefficients are not available for the given location, then the Commission has recommended that NMFS use practical spreading.

Applying proxy transmission loss coefficients is inappropriate, because transmission loss is dependent on sediment characteristics[3], bathymetry/water depth, and sound speed profiles in a given area. As one example, Denes et al. (2016) determined that transmission loss ranged from 12 to 21.9logR at four sites[4] where in-situ measurements were conducted in Alaska, corroborating the variability inherent in site-specific environmental conditions and the inappropriateness of using

[1] When the hammer bit directly contacts the pile shoe and the rock face.
[2] When the hammer bit does not contact the pile shoe and only makes contact with the rock face.
[3] Including sediment composition and layering and the thickness of the different layers.
[4] Including Kake as well.

transmission loss from other sites as a proxy. The Commission supports NMFS's decision to require AK DOT to use 15logR instead of 19logR for DTH pile installation at Hydaburg and again 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.

NMFS's and the Commission's stance against applying transmission loss coefficients from one location as a proxy for another location has been resolved for many years and is not going to change. AK DOT should consider this issue settled when submitting applications for all future incidental take authorizations.

The Commission hopes you find its letter useful. Please contact me if you have questions regarding the Commission's recommendations.

Sincerely,

Peter O. Thomas, Ph.D.
Executive Director

cc: Dr. Reny Tyson-Moore, Office of Protected Resources
Dr. Cara Hotchkin, Office of Protected Resources
Dr. Amy Scholik-Schlomer, Office of Protected Resources

References

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[5] https://media.fisheries.noaa.gov/2022-11/PUBLIC%20DTH%20Basic%20Guidance_November%202022.pdf

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