



MARINE MAMMAL COMMISSION

2 November 2020

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 U.S. Coast Guard (USCG) 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 expanding the existing wharf at the Coast Guard Base Los Angeles/Long Beach (Coast Guard Base) in California during a one-year period. The Commission also has reviewed the National Marine Fisheries Service's (NMFS) 21 October 2020 notice (85 Fed. Reg. 66939) announcing receipt of the application and proposing to issue the authorization, subject to certain conditions.

USCG plans to install piles during expansion of an existing wharf to house two additional patrol vessels. Operators would install¹ up to 228 16- to 30-in concrete piles² using an impact hammer. USCG's activities could occur on up to 38 days, 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—

¹ The Commission informally noted that NMFS included pile removal throughout the *Federal Register* notice and draft authorization, even though USCG has no plans to remove piles. NMFS indicated it would clarify the information in the notice for issuance of the final authorization and the final authorization as necessary.

² The Commission informally noted that NMFS referenced an incorrect peak sound pressure level (SPL_{peak}) source level for 30-in piles in Table 4 of the *Federal Register* notice, which it indicated was based on Table 1.2-3 in Caltrans (2015). The SPL_{peak} source level in Table 1.2-3 was based on the maximum SPL_{peak} source level of the seven piles installed in Choctawhatchee Bay; whereas, the single-strike sound exposure level (SEL_{s-s}) and root-mean-square SPL (SPL_{rms}) source levels were based on the mean source level across the means of the seven piles (see Tables 1.5.17 and 1.5.19 in Caltrans 2015). NMFS should have specified the SPL_{peak} source level as 189 dB re 1 μ Pa rather than 200 dB re 1 μ Pa, consistent with the metrics used for the SEL_{s-s} and SPL_{rms} source levels, and should revise the source level in the notice for issuance of the final authorization.

- using a sound attenuation device during pile driving and implementing various measures regarding performance standards;
- conducting in-situ measurements of at least two piles of each diameter;
- ceasing in-water heavy machinery activities if any marine mammal comes within 10 m of the equipment and reducing vessel speed to the minimum level required to maintain steerage and safe working conditions;
- using standard soft-start, delay, and shut-down procedures³;
- using one land-based qualified protected species observer to monitor the Level A and B harassment 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 and/or B harassment zone⁴;
- reporting injured and dead marine mammals to the Office of Protected Resources and the West Coast Regional Stranding Coordinator and ceasing activities, if appropriate; and
- submitting a draft and final report⁵.

Numbers of takes

NMFS indicated that California sea lions were the most abundant marine mammal observed in the project area⁶, while harbor seals were the second most abundant in the Los Angeles and Long Beach harbors (85 Fed. Reg. 66943). The greatest number of seals observed on any given day was one in the three zones surrounding the Coast Guard Base during the three biological baseline surveys (MEC 2002, SAIC 2010, MBC 2016). NMFS indicated that 0.5 seals were conservatively estimated to enter the Level A harassment zone⁷ per day, equating to 19 Level A harassment takes (85 Fed. Reg. 66951). The Commission notes that half an animal cannot be taken and NMFS uses whole numbers of animals when it uses counts of animals to inform its take estimates. The

³ The Commission informally noted that NMFS specified the shut-down zone as 200 m rather than 170 m in the Federal Register notice (85 Fed. Reg. 66950). NMFS indicated it would correct the information in the notice for issuance of the final authorization.

⁴ The Commission informally noted that NMFS only referenced the Level B harassment zone in its Federal Register notice (85 Fed. Reg. 66952) and condition 4(j) of the draft authorization. Since the Level A harassment zone is greater than the Level B harassment zone for low- and high-frequency cetaceans and phocids, pile driving must cease when those species enter the Level A harassment zone rather than Level B harassment zone. NMFS indicated it would include those clarifications in the notice for issuance of the final authorization and condition 4(j) of the final authorization accordingly.

⁵ The Commission informally noted that NMFS did not stipulate that USCG must specify the number of individuals detected in the shut-down zones, as well as those detected in the monitoring zone, in its monitoring report (see item 6(b)(viii) in the draft authorization). NMFS indicated it would include that clarification in item 6(b)(viii) of the final authorization.

⁶ The Commission informally noted that NMFS in the *Federal Register* notice and USCG in its application incorrectly specified that the greatest number of sea lions observed on any given day was 65 in the three zones (i.e., zones 4, 20, and 34) surrounding the Coast Guard Base during the three biological baseline surveys (MEC Analytical Systems, Inc. (MEC) 2002, Science Applications International Corporation (SAIC) 2010, MBC Applied Environmental Sciences (MBC) 2016). Seventy sea lions were observed in zones 4 (n=47) and 34 (n=23) on 1 March 2008 (see Appendix I in SAIC 2010). NMFS should revise this in the notice for issuance of the final authorization.

⁷ The Level A harassment zone of 90 m exceeds the Level B harassment zone of 55 m. Thus, NMFS would only be authorizing Level A harassment takes of harbor seals, as well as gray whales.

Commission also notes that the most recent survey that included raw data enumerating where and how many marine mammals were observed was conducted in 2007–2008 (SAIC 2010). During those surveys, 8 to 23 seals were observed on a given day in zone 8, which is less than 1 km from the project site and is the zone with the greatest numbers of seals observed. It is unclear whether more seals have been observed in the immediate project area in the last 13 years. However, harbor seals could easily swim into the project area from a different zone throughout the day, and USCG should not have to shut down its activities because the authorized number of takes has been met. To minimize unnecessary delays in completing the activities should the authorized takes be met, the Commission recommends that NMFS authorize at least 38 Level A harassment takes of harbor seals based on the possibility that at least one seal could occur in the project area on each of the 38 days of proposed activities.

For common dolphins, USCG and ultimately NMFS estimated the number of takes based on the assumption that one group of 40 dolphins could be present each full week of activities. While that method is reasonable, USCG estimated the number of weeks of activities based on the definition of a week being equivalent to seven days. Since the activities could occur on up to 38 days, USCG estimated that a group of dolphins could be taken during each of the five full weeks of activities. That assumption is based on operators working seven days per week, rather than a five-day work week consistent with other federal construction projects. Contrary to NMFS's assertion that it is irrelevant whether work occurs on actual days in groups of 5, 7, or some other amount, the Commission believes that the number of weeks of activities should be based on the number of days that constitute a work week. If NMFS intended to authorize taking of a group of dolphins every seven days, then that should have been stipulated. The Commission recommends that NMFS either (1) increase the number of takes of common dolphins from 200 to 280⁸ if USCG intended to assume that one group of dolphins could be present each full week of activities and activities would occur only five days per week or (2) clarify that it assumed that one group of common dolphins would be present every 7 days rather than every full week of activities.

Bubble curtain efficacy

The Commission has commented numerous times on the assumptions used by NMFS regarding the efficacy of bubble curtains (see the Commission's [25 August 2020 letter](#) and [20 April 2020 letter](#)). Generally, NMFS uses a standard 7-dB source level reduction when bubble curtains are to be used during impact pile driving based on data from Caltrans (2015) and Austin et al. (2016; 84 Fed. Reg. 64834 and 85 Fed. Reg. 54884). In another recent proposed authorization, NMFS assumed an average source level reduction of 8 dB based on Illingworth and Rodkin (2012; 85 Fed. Reg. 48218). For USCG's proposed authorization, NMFS assumed a 5-dB reduction based on Caltrans (2015) and Austin et al. (2016; 85 Fed. Reg. 66949). Although variability in sound attenuation can result from differences in device design and site and environmental conditions and from difficulties in properly installing and operating sound attenuation devices, NMFS should not be using two different source level reduction factors based on the same referenced data. The Commission recommends that NMFS specify why it has used two different source level reduction factors based on the same reference data from Caltrans (2015) and Austin et al. (2016) and whether it intends to use a standard 5-dB rather than 7-dB source level reduction for proposed

⁸ Based on seven full weeks of activities and 40 takes per week.

authorizations moving forward.

In regard to the reference data, Caltrans (2015) stated that an assumed source level reduction should be limited to 5 dB in the near field, because of the uncertainties associated with the degree of attenuation that would be provided by a bubble curtain. At distances of 400–500 m, Caltrans (2015) indicated that sound pressure levels were reduced by only 1 to 2 dB. Similarly, Austin et al. (2016) noted that transmission loss consistently decreased when a bubble curtain⁹ was used, because it only attenuated in-water sound levels and some sound propagated directly from the pile into the seafloor unattenuated, which then propagated through the seafloor refracting back into the water column at longer ranges. In short, the bubble curtain attenuated the near-source sound levels, which are dominated by water-borne propagation paths, more strongly than the long-range sound levels, resulting in an apparent decrease of the rate of sound level decay between recorders (Austin et al. 2016)¹⁰. Bubble curtains placed immediately around the pile are not designed to, nor can they, attenuate ground-borne sound—this is the reason European wind developers place bubble curtains in the far field at 100 m or more from the pile to minimize far-field effects on marine mammals.

Bohne et al. (2019) conducted a review of modeling and ground-truthing noise mitigation associated with bubble curtains¹¹. They too found that, for frequencies greater than 200 Hz, measured attenuation was less for a bubble curtain placed at approximately 84 m from the pile than one placed at approximately 102 m from the pile (Bohne et al. 2019). The researchers further indicated that, by accounting for the inclination angle of the radiated sound wave, the radial distance between the bubble curtain and the pile determined the location of incidence¹². A location of incidence closer to the seabed, resulting from a smaller radial distance, elicited lesser attenuation¹³ (Bohne et al. 2019).

Mitigation effectiveness during impact pile driving was discussed in detail at a meeting hosted by Ørsted Wind Power North America LLC (Ørsted) in 2019 that the Commission, NMFS, Bureau of Ocean Energy Management, and Illingworth and Rodkin also attended. Specifically, the experts noted that *any* type of near-field mitigation device placed immediately around the pile *would not* attenuate ground-borne sound and that in Europe only devices, such as AdM resonator systems and hydro-sound-damper) systems, are used in the near field¹⁴. Bubble curtains, including double bubble curtains, are used *only* in the far field¹⁵ to attenuate the ground-borne sound that has re-entered the water column beyond the near-field mitigation device.

⁹ And resonator systems.

¹⁰ As noted in the Commission's [20 April 2020 letter](#), source levels in the far field were either comparable between the attenuated and unattenuated hammers or greater for the attenuated rather than unattenuated hammer, which is counterintuitive.

¹¹ Bohne et al. (2019) noted that Würsig et al. (2000) measured sound emitted during bubble curtain use out to 1 km from the pile and observed a reduction of the broadband sound of around 5 dB. In review of Würsig et al. (2000), the researchers observed a reduction of 3 to 5 dB in the broadband sound, with lesser reductions farther from the source. Würsig et al. (2000) also noted that sound transmission probably occurred through the substrate under the bubble curtain, which can be seen in the frequencies less than 2 kHz in Figure 5B—the bubble curtain was placed at a 25-m radial distance from the pile.

¹² Where reflection occurs.

¹³ Deeper waters also elicited less attenuation due to the bubbles being distributed over a wider region and causing a lower air fraction and thus greater transmission of sound.

¹⁴ To minimize low-frequency sound emitted directly into the water column.

¹⁵ Approximately 100 m from the pile.

Although Caltrans (2015) has indicated that near-source sound reduction should be limited to 5 dB, the plethora of data that NMFS has compiled shows attenuated and unattenuated median source level measurements of numerous pile sizes and types differ by only 1 to 6 dB at 10 m. Thus, even smaller reductions are expected in the far field. The Commission recommends that NMFS (1) refrain from using the 5-dB source level reduction factor for far-field impacts (>100 m) and (2) consult with acousticians, including those at the University of Washington-Applied Physics Laboratory, regarding the appropriate source level reduction factor, if any, to use to minimize far-field effects on marine mammals¹⁶.

USCG indicated in the application that it planned to conduct hydroacoustic monitoring to determine actual underwater sound levels of the pile installation activities, which the Commission fully supports. USCG indicated that sound measurements would be taken at a reference location and at additional locations¹⁷. However, it did not specify at what distance(s) in the far field those measurements would be taken. Based on the uncertainties regarding efficacy of the bubble curtain¹⁸ and maximizing the utility of the data that USCG would be collecting, the Commission recommends that NMFS work with USCG to ensure that the near-source hydrophone location¹⁹ is 10 m from the pile and the far-field hydrophone location(s)¹⁹ are 100–200 m from the pile.

Appropriateness of the Level A harassment zones

The Commission reiterates that NMFS needs to investigate further the appropriate timeframes over which sound exposure levels should be accumulated when estimating the extents of the Level A harassment zones—an issue that was not investigated prior to NMFS finalizing its Technical Guidance more than four years ago. The Commission understands that NMFS formed an internal committee to address this issue and had previously consulted with external acousticians and modelers. In the absence of relevant recovery time data for marine mammals, the Commission continues to believe that animat modeling that considers various operational and animal scenarios should be used to inform the appropriate accumulation time and could be incorporated into NMFS’s user spreadsheet that currently estimates the Level A harassment zones. The Commission recommends that NMFS prioritize resolving this issue in the near future and consider incorporating animat modeling into its user spreadsheet.

Mitigation, monitoring, and reporting measures

Daylight hours—NMFS did not stipulate in the draft authorization that activities must occur during daylight hours only, a standard condition included in other recently-issued authorizations²⁰ and draft authorizations²¹. It is unclear why it was not included since NMFS indicated that pile driving is

¹⁶ Which includes Level A harassment as well.

¹⁷ USCG specified that the hydrophones would be placed at two depths, one mid-water and one near the bottom but at least 1 meter above the seafloor.

¹⁸ Which USCG also noted in section 10.2 of its application.

¹⁹ While also accounting for the two hydrophone depths.

²⁰ e.g., see the City and County of San Francisco final authorization; <https://www.fisheries.noaa.gov/webdam/download/108858983>.

²¹ e.g., see the Port of Kalama proposed renewal authorization that published the same day as USCG’s proposed authorization; https://s3.amazonaws.com/media.fisheries.noaa.gov/2020-10/PortofKalamaColumbiaRiver_2020IHARenewal_Draft_OPR1.pdf?null=.

planned to occur during daylight hours (85 Fed. Reg. 66952) and USCG specifically stated that pile driving will occur only during daylight hours, when visual marine mammal monitoring can be conducted. The Commission agrees that the requirement is necessary to ensure that USCG is effecting the least practicable adverse impact on the species and stocks and recommends that NMFS include in the final authorization the requirement that USCG conduct pile-driving activities during daylight hours only.

Tally of takes—It is unclear from both the preamble and the draft authorization whether USCG will keep a running tally of the total Level A and B harassment takes. Given that NMFS proposed to authorize only a small number of takes of certain species (i.e., harbor seals) that are known to occur in the project area, it is imperative that USCG keep a running tally of takes to ensure that the numbers of authorized takes are not exceeded and inform when condition 4(j) in the draft authorization would need to be implemented. The Commission recommends that NMFS reinforce that USCG must keep a running tally of the total Level A and B harassment takes for each species consistent with condition 4(j) of the final authorization.

Proposed one-year authorization renewals

The Commission has raised ongoing concerns regarding NMFS's renewal process for a number of years. NMFS responded to those concerns most recently in summer 2020. The Commission intends to respond in detail to NMFS's letter in separate correspondence. Until that time, the Commission recommends that NMFS refrain from issuing a renewal for any authorization unless it is consistent with the procedural requirements specified in section 101(a)(5)(D)(iii) of the MMPA.

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

Sincerely,



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

References

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