23 January 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 Port of Alaska (POA) 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 construction of a new petroleum and cement terminal (PCT) in Anchorage, Alaska, during a two-year period. NMFS plans to issue two separate, but consecutive, one-year incidental harassment authorizations, one for activities from 1 April 2020 through 31 March 2021 and the second from 1 April 2021 through 31 March 2022. The Commission also has reviewed the National Marine Fisheries Service's (NMFS) 30 December 2019 notice (84 Fed. Reg. 72154) announcing receipt of the application and proposing to issue the authorization, subject to certain conditions.

POA would install and remove piles during construction of the PCT in Knik Arm. Operators would (1) install and/or remove up to 81 24-in, 30 36-in, and 71 48-in steel piles using a vibratory hammer and/or impact hammer during Phase 1 and (2) install and/or remove up to 9 24-in, 76 36-in, and 9 144-in steel piles using a vibratory and/or impact hammer during Phase 2. Up to two hammers could be used simultaneously. POA's activities could occur on up to 127 days during Phase I and 75 days during Phase 2, weather permitting. It would limit pile-driving and -removal activities to daylight hours from April through November each year.

NMFS preliminarily has determined that, at most, the proposed activities could cause Level A and/or B harassment of small numbers of six 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—

- using a sound attenuation device (e.g., confined bubble curtain, linear or semi-linear bubble curtain, etc.) during vibratory and impact pile driving and requiring the implementation of measures regarding performance standards;

- conducting *in-situ* sound source and sound propagation monitoring during vibratory and/or impact installation of 5 to 10 24-in piles, 7 36-in piles, 5 to 10 48-in[1], and at least 2 144-in piles[2];
- restricting vibratory installation of 144-in piles during August to minimize impacts on beluga whales, unless a human safety concern arises;
- requiring that unattenuated plumb piles be installed in water depths of less than 3 m to reduce sound propagation;
- prohibiting simultaneous use of two vibratory hammers;
- ceasing activities if any marine mammal comes within 10 m of any heavy equipment (including barges) and reducing vessel speed to the minimum level required to maintain steerage and safe working conditions;
- implementing standard soft-start, delay, and shut-down procedures;
- delaying activities if a beluga whale swims toward or into lower Knik Arm until the animal travels north of POA, leaves Knik Arm, or is not sighted for 30 minutes and shutting down activities if a beluga whale is observed within or likely to enter the Level B harassment zone;
- if low-visibility conditions (i.e., fog, rain, wind) occur and the extent of the Level B harassment zone can no longer be monitored, allowing only driving of the current segment of pile and delaying driving of additional piles until the extent of the zone can be monitored effectively;
- using six qualified protected species observers (PSOs)[3] 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 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;
- alerting NMFS when the number of takes documented reaches 80 percent of that authorized; and
- submitting (1) weekly and monthly marine mammal monitoring reports, (2) interim hydroacoustic monitoring reports, and (1) draft and final comprehensive marine mammal and hydroacoustic monitoring reports.

Availability of marine mammals for subsistence use

The information provided in NMFS's 'Unmitigable Adverse Impact Analysis and Determination' section of the *Federal Register* notice is scant, while much of the necessary information is missing altogether. That section does not include the standard verbiage regarding the

[1] Measurements would be taken of one to three piles with the bubble curtain turned on and off during vibratory installation of 24-in and 36-in piles and impact installation of 48-in piles to quantify the effectiveness of sound reduction of the bubble curtain.
[2] Measurements would be taken of one 144-in pile with the bubble curtain turned on and off during impact installation to quantify the effectiveness of sound reduction of the bubble curtain.
[3] Two located at the project site, two located south of the site, and two located north of the site.

definitions of unmitigable adverse impact under NMFS's implementing regulations or information regarding whether POA's activities overlap in time and space with known hunting activities, whether the local Native Alaskan communities that hunt marine mammals were contacted[4], whether any concerns were conveyed consistent with other recent authorizations, and whether additional mitigation measures are necessary (City of Juneau, 84 Fed. Reg. 55939 and AK DOT Whittier, 84 Fed. Reg. 56444). POA included much of the necessary information in sections 8 and 12 of its application, including when a plan of cooperation (POC) would be developed[5]. It is unclear why NMFS did not use the information provided and whether NMFS asked POA if it had contacted the communities, whether concerns were conveyed, whether additional mitigation measures are necessary, and whether a POC was being developed.

The Commission has commented informally and formally[6] on previous proposed authorization regarding the shortcomings associated with NMFS's analysis regarding unmitigable adverse impact on subsistence use. It is disappointing that this issue persists. As such, the Commission recommends that, in the *Federal Register* notice for POA's authorization, if issued, and all future *Federal Register* notices involving the taking of species that also are hunted for subsistence purposes, NMFS (1) include the standard verbiage regarding the definitions of unmitigable adverse impact under NMFS's implementing regulations; (2) specify whether the proposed activities overlap in time and space with known hunting activities, whether the local Native Alaskan communities that hunt marine mammals were contacted, whether any concerns were conveyed, whether additional mitigation measures are necessary, and whether a POC is being or was developed; and (3) if a POC is necessary, ensure that it contains all of the relevant information[5].

Inadequate analysis of impacts on beluga whales

As indicated in previous letters regarding proposed incidental take authorizations for other sound-producing activities in Cook Inlet[7], the Commission remains concerned about the potential cumulative impacts of human activities on the endangered Cook Inlet beluga whale population. The Commission has recommended that NMFS defer issuance of incidental take authorizations and regulations until it has better information on the cause or causes of the decline in that population and, as part of NMFS's small numbers and negligible impact determinations, has a reasonable basis for determining that authorizing additional takes by harassment would not contribute to or exacerbate that decline. No new information was presented in NMFS's analysis of the proposed activities to indicate that the cause (or causes) of the continued decline of the beluga whale population is understood. Consistent with these ongoing and unresolved concerns, the Commission once again recommends that NMFS defer issuance of the final incidental harassment authorizations to POA or any other applicant proposing to conduct sound-producing activities in Cook Inlet until

[4] Including the Kenaitze, Tyonek, Knik, Eklutna, Ninilchik, Seldovia, Salamatoff, and Chickaloon tribes.
[5] The POC must include (1) a statement that the applicant has notified affected subsistence communities and provided them a draft POC, (2) a schedule for meeting with the affected communities to discuss proposed activities and resolve potential conflicts, (3) a description of the measures the applicant will take to ensure the proposed activities will not interfere with subsistence hunting, and (4) plans to continue to meet with the affected communities to resolve conflicts and notify the communities of any changes in the proposed activities consistent with NMFS's implementing regulations (50 C.F.R. §216.104(a)(12)).
[6] For example, see the Commission's recent 9 January 2020 letter.
[7] See the Commission's most recent 5 August 2019 letter.

NMFS has a reasonable basis for determining that authorizing any additional incidental harassment takes of Cook Inlet beluga whales would not contribute to or exacerbate the stock's decline.

Appropriately evaluating and limiting incidental takes of beluga whales

The Commission also is concerned that NMFS continues to propose to issue and issue multiple authorizations for the incidental taking of Cook Inlet beluga whales without adequate consideration of the combined or cumulative impacts of current and planned sound-producing activities on that population. NMFS has indicated on numerous occasions[8] its intent to take a programmatic approach to assessing impacts of human activities on Cook Inlet beluga whales, but the intended documents were never made available and the programmatic approach has been abandoned. NMFS also has not taken any steps to place annual limits on the total number and types of incidental takes authorized, as recommended by the Commission in its 14 July 2015 letter on NMFS's draft Cook Inlet Beluga Whale Recovery Plan. In addition to POA's current project, there are plans for Alaska Gasline Development Corporation to construct liquefied natural gas facilities and operate for the next 30 years[9], for the POA to double in size,[10] and for oil and gas development to expand in both state and federal waters of Cook Inlet[11]. The Commission continues to believe that a programmatic environmental impact statement (PEIS) on the issuance of incidental take authorizations in Cook Inlet should be drafted and finalized before any further authorizations are granted. The Commission therefore recommends that NMFS defer issuance of POA's final incidental harassment authorizations until all activities for which incidental take authorizations or regulations have been or are expected to be issued are considered with respect to their anticipated, cumulative take of Cook Inlet beluga whales, as part of a PEIS. Given the number of sound-producing activities expected to occur in Cook Inlet and the potential impact of such activities on beluga whales, the Commission also reiterates its recommendation that NMFS establish annual limits on the total number and types of takes that are authorized for all sound-producing activities in Cook Inlet before issuing the final authorizations.

Should NMFS decide, once again, to issue the final authorizations despite the Commission's recommendation that the issuances be deferred, the Commission has the following additional concerns regarding the proposed authorizations.

Bubble curtain efficacy and harassment zones

The Commission has commented numerous times on the assumptions used by NMFS

[8] NMFS issued a notice of intent to prepare a programmatic EIS on the issuance of incidental take authorizations in Cook Inlet on 14 October 2014 (79 Fed. Reg. 61616), followed by notices of intent to prepare programmatic environmental assessments on 12 August 2015 (80 Fed. Reg. 48299), 28 September 2016 (81 Fed. Reg. 66639), and 5 September 2017 (82 Fed. Reg. 41938).
[9] See the Federal Energy Regulatory Commission's draft environmental impact statement, https://www.ferc.gov/industries/gas/enviro/eis/2019/06-28-19-DEIS.asp
[10] See POA's Modernization Program, https://www.portofalaska.com/modernization-project. For clarification, the POA was known as the Port of Anchorage until 2017. To avoid unnecessary confusion regarding the use of different names for the same location, the Commission has used POA for both herein.
[11] See Alaska Department of Natural Resources' oil and gas activity maps for projected activities in state and federal waters, http://dog.dnr.alaska.gov/Documents/Maps/ActivityMaps/CookInlet/2019-05_ActivityMap_CookInlet.pdf.

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regarding the efficacy of bubble curtains, and advises that its 2 December 2019 letter be reviewed in conjunction with this letter. NMFS has adopted a standard 7-dB source level reduction when bubble curtains are to be used during impact pile driving. Although variability in attenuation levels can result from differences in device design and in site and environmental conditions and from difficulties in properly installing and operating sound attenuation devices, bubble curtains that are placed immediately around the pile do not achieve consistent reductions in sound levels because they cannot attenuate ground-borne sound[12]. That is, appreciable attenuation is not observed for the sound that resonates through the ground into the far field or for low-frequency sound in general.

POA used data from Austin et al. (2016) for source levels for 48-in piles, propagation loss factors for all pile sizes and installation and removal methods, and for ambient conditions previously measured at the port. However, NMFS did not discuss Austin et al. (2016) in the context of the 7-dB source level reduction factor[13] nor did it discuss or substantiate the reduction factor in general. Austin et al. (2016) in fact noted that transmission loss consistently decreased when a bubble curtain[14] was used, because it only attenuated in-water sound levels. 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 (Austin et al. 2016). 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). As one example, the sound levels at 1 km were comparable at 163.6 dB re 1 µPa for the unattenuated hydraulic hammer[15] and 163.8 dB re 1 µPa for the bubble curtain-attenuated hydraulic hammer[16] (Austin et al. 2016), which indicates that the bubble curtain was ineffective. More telling is the fact that the sound level at 1.06 km was 169.9 dB re 1 µPa for the *bubble curtain-attenuated* hydraulic hammer for IP10, which is more than 6 dB *greater* than for the *unattenuated* hydraulic hammer (see Table 8 of Austin et al. 2016). Austin et al. 2016 noted that transmission loss varied greatly, ranging from 12.6 to 19.2 log R for best-fit data. Specifically, for IP10, the transmission loss was estimated to be 9.8 log R[17] for the far-field hydrophone, which explains why the sound levels are much greater for that pile. Similar results are evident for use of bubble curtains during vibratory pile driving. The attenuated sound level at 1.06 km was 139.8 dB re 1 µPa for IP10, which exceeded the unattenuated sound levels of 136.9 dB re 1 µPa at 959 m for IP1 and 138.6 dB re 1 µPa at 968 m for IP5 (see Table 11 in Austin et al. 2016).

Based on NMFS's use of the 7-dB source level reduction and the propagation loss factors from Austin et al. (2016), NMFS has underestimated *at a minimum* the Level B harassment zones for 48-in piles. Table 12 provides the extents of the Level B harassment zones for impact installation. For the four piles in which a bubble curtain was used (IP3, IP6a, IP7, and IP10), the average of the median distances[18] to the 160-dB re 1 µPa threshold was 1,174 m (Table 12 in Austin et al. 2016), which is much greater than NMFS's estimated 629 m. NMFS's estimate was underestimated, because it assumed the average median *unattenuated* source level of 200 dB 1 µPa at 10 m minus the

[12] Moreover, bubble curtains attenuate high- rather than low-frequency sound.
[13] Which has been referenced previously by NMFS to support the source level reduction factor.
[14] And resonator systems.
[15] Based on the best-fit regression for impact pile (IP) 1 in Figure 64.
[16] Based on the best-fit regression for IP3 in Figure 66.
[17] Based on the best-fit source level intercept of 199.6 dB re 1 µPa for IP10 in Figure 76. The best-fit regression was based on an averaged transmission loss of 13.2 log R.
[18] The source level that NMFS used was based on the median and not the mean.

7-dB source level reduction to yield an *attenuated* source level and the average *unattenuated* propagation loss of 18.35 log R. The average of the median bubble curtain *attenuated* source levels was 190 dB 1 μPa at 10 m and the average of the *attenuated* propagation loss factors was 15 log R, resulting in a Level B harassment zone more in line with the distances provided in Table 12 of Austin et al. (2016).

For vibratory pile driving, it is a bit more complicated. Table 13 in Austin et al. (2016) provided the extents to the Level B harassment zones for vibratory installation based on thresholds of both 125 and 120 dB re 1 μPa. For the four piles in which a bubble curtain was used (IP3, IP6a, IP7, and IP10), the average of the median distances[19] to the *125-dB re 1 μPa threshold* was 2,458 m (Table 13 in Austin et al. 2016), which is much greater than NMFS's estimated 2,247 m based on the *122.2-dB re 1 μPa threshold*. That estimate was underestimated, because NMFS assumed the average median *unattenuated* source level of 168 dB 1 μPa at 10 m minus the 7-dB source level reduction to yield an *attenuated* source level and the average *unattenuated* propagation loss of 16.5 log R. The average median bubble curtain *attenuated* source level was in fact 159.5 dB re 1 μPa at 10 m and the average bubble curtain *attenuated* propagation loss was 14.67, which results in a Level B harassment zone of 3,502 m based on the 122.2 dB re 1 μPa threshold. The 3,502-m Level B harassment zone is reasonable and much more accurate than NMFS's estimate, given that the average of the median distances to the *120-dB re 1 μPa threshold* was 5,485 km (Table 13 of Austin et al. 2016).

In both of these cases, NMFS's approach has underestimated the Level B harassment zones based on actual measurements taken at the project site. The underestimation is driven largely by the reduced propagation loss factors that are evident when a bubble curtain is employed. Those lesser propagation loss factors result in farther sound propagation[20], likely due to the ground-borne sound[21]. Bubble curtains placed immediately around the pile are not designed to, nor can they, attenuate ground-borne sound—for this reason European wind-energy developers place bubble curtains in the far field at 100 m or more from the pile to minimize far-field effects on marine mammals. Furthermore, it has proven to be inappropriate to use an *attenuated* source level and an *unattenuated* propagation loss factor. Thus, all of the Level B harassment zones, as well as the Level A harassment zones, have been underestimated. It is important to note that propagation loss also differs based on the installation method[22] and size of pile. The propagation loss factors determined by Austin et al. (2016) for 48-in piles may not be appropriate for the other pile sizes. However, if NMFS intends to use those *unattenuated* propagation loss factors, then they must be used with *unattenuated* source levels. For all these reasons, the Commission recommends that, until such time that POA conducts hydroacoustic monitoring to confirm the extents of the Level A and B harassment zones, NMFS (1) use 1,174 m rather than 629 m for the Level B harassment zone during attenuated impact pile driving of 48-in piles and 3,502 rather than 2,247 m during attenuated vibratory pile driving of 48-in piles based on the extents of the Level B harassment zones presented in Tables 12 and 13, respectively, of Austin et al. (2016), (2) re-estimate the Level A harassment zones during attenuated impact installation of 48-in piles based on the *attenuated* source level of 190

[19] The source level that NMFS used was based on the median and not the mean.
[20] Denes et al. (2019) found similar results when a bubble curtain was used during down-the-hole drilling, except those propagation loss factors were less than 10 log R.
[21] This phenomenon also was noted in Caltrans (2015). If sound was primarily being emitted through the water column, comparable reductions (or greater reductions with increasing water depths) should be produced with increasing distance from the source, not lesser reductions.
[22] As provided herein.

dB 1 μPa at 10 m and 15 log R and during attenuated vibratory installation of 48-in piles based on the *attenuated* source level of 159.5 dB re 1 μPa at 10 m and 14.67 log R, and (3) re-estimate the Level A and B harassment zones during attenuated impact and vibratory impact installation of 24-, 36-, and 144-in piles based on the *unattenuated* source levels in Table 2 and 6 of the *Federal Register* notice, if it intends to use the *unattenuated* propagation loss factors presented in the notice. Based on all of the issues discussed in this and numerous previous letters regarding NMFS source level reduction, the Commission recommends that NMFS refrain from using the 7-dB source level reduction in these authorizations and all future proposed incidental take authorizations.

Additional issues with the Level A and B harassment zones

Inputs and extents of Level A and B harassment zones—The Commission notes that some of the inputs to estimate Level A harassment zones stipulated by NMFS in Table 7 of the *Federal Register* notice do not comport with the information NMFS provided in Tables 1–2[23], 2, and 6 of the notice and some do not result in the estimated Level A harassment zones provided in Table 8 of the notice. For example—

- For unattenuated vibratory installation of 24-in piles, NMFS indicated in Table 7 of the *Federal Register* notice that 1 to 5 piles could be installed per day, but Table 1–2 indicated that only up to 4 piles would be installed. It is unclear whether Table 7 included an error or whether up to 5 piles could be installed based on POA using two impact hammers simultaneously. In addition, the Level A harassment zones provided in Table 8 of the notice have been underestimated[24] and are not based on the information in Tables 1–2 or 7.
- For attenuated vibratory installation of 24-in piles, NMFS indicated in Table 7 of the *Federal Register* notice that it would take 100 minutes to drive a single pile, but Table 1–2 indicated that it would take only 30 minutes to install a given pile. It is unclear which table included the error. In addition, Table 7 indicated that only up to 3 piles could be installed per day but Table 8 provided Level A harassment zones for 4 piles being installed on a given day. It is unclear what the appropriate inputs in Table 7 should be. However, the Level A harassment zones provided in Table 8 of the notice are incorrect[25] and are not based on the information in Table 7.
- For unattenuated impact installation of 24-in piles, the Level A harassment zones provided in Table 8 of the notice have been underestimated[26] and are not based on the information in Table 7.
- For attenuated vibratory installation of 48-in piles, NMFS indicated in Table 7 of the *Federal Register* notice that 1 pile could be installed per day, but Table 1–2 indicated that 1.5 piles

[23] The Commission notes that NMFS's numbering of this table reflects the application rather than the numbering scheme in the notice. For clarity, the Commission is using NMFS's reference in this letter. All tables should be renumbered in the *Federal Register* notice for POA's authorizations, if issued.
[24] Vibratory installation of 5 piles was not included at all in Table 8. For 3 piles, the Level A harassment zones should be 16 rather than 9 m for low-frequency (LF) cetaceans, 2 rather than 1 m for mid-frequency (MF) cetaceans, 23 rather than 13 m for high-frequency (HF) cetaceans, and 10 rather than 6 m for phocids.
[25] The Commission cannot provide the relevant Level A harassment zones of attenuated vibratory pile driving, because it is unclear what the correct inputs are.
[26] The Level A harassment zones should be 117 rather than 77 m for low-frequency (LF) cetaceans, 6 rather than 4 m for mid-frequency (MF) cetaceans, 136 rather than 90 m for high-frequency (HF) cetaceans, 67 rather than 44 m for phocids, and 7 rather than 4 m for otariids.

could be installed at the loading platform and 1 to 3 piles could be installed at the access trestle. In addition, NMFS specified that the source level was 161 dB re 1 μPa at 10 m in Tables 2 and 6 of the notice, but Table 7 specified a source level of 171 dB re 1 μPa at 10 m. Because the measured spectra were used to estimate the Level A harassment zones and the calculations cannot be recreated using NMFS's user spreadsheet, it is unclear by how much the Level A harassment zones were underestimated.

In addition to these inconsistencies and errors, the Commission questions the source levels that NMFS used to estimate the Level A and B harassment zones for impact installation of the 144-in piles. Acoustic data for 144-in piles are unavailable. Thus, POA used various assumptions regarding radial vibration levels, energy offsets, surface area, and circumference of 48-in piles, for which data are available from Caltrans (2015), and the 144-in piles to determine the relationship between pile size and amplitude (see section 6 of POA's application for details). The resulting logistic regression indicated that the SPL_{rms} source level for the 144-in pile is expected to be 9.5 dB greater than source level for the 48-in pile. Although that may be the case, both POA and NMFS assumed that the difference between the source levels was only 9 dB (see Table 2 in the *Federal Register* notice and Table 6–5 in POA's application). More importantly, Caltrans (2015) did not include data for piles larger than 126 in, so the data included in Figure 6–1 for larger-sized piles are theoretical not empirical. Those theoretical data are flattening the Caltrans regression in Figure 6–1, which yields lower source levels than the Caltrans regression for 66-in and larger piles. Thus, both regressions would result in underestimated source levels for larger-sized piles. For SEL and SPL_{rms} source levels, it is unclear to what degree the Caltrans regressions are flattened for larger-sized piles and how much lower the source levels from the theoretical regressions are from the Caltrans regressions, as POA did not include the Caltrans regressions in Figure 6–2. In any case, NMFS has not implemented the results of the regression analysis appropriately[27]. The Level B harassment zones would be 4,984[28] rather than 1,945 m (Table 8 of the notice) based on the 209.5-dB re 1 μPa at 10 m assumed source level for attenuated impact installation of 144-in piles[29]. Given the questionable nature of the source levels for the 144-in piles, the hydroacoustic monitoring must be conducted appropriately to confirm the size of the various Level A and B harassment zones, as discussed in detail in a subsequent section herein.

Generally speaking, it is imperative that the Level A and B harassment zones are accurate based on the various inputs, as they inform the take estimates from which NMFS bases both its negligible impact and small numbers determinations and they are compared against the proposed shut-down zones[30] to ensure that POA's proposed mitigation measures are sufficient to effect the least practicable impact on the various species. In the last year and a half, the Commission has noted informally and formally ongoing errors in the extents of the Level A and B harassment zones for half of the proposed authorizations involving construction activities. It is evident that NMFS needs to conduct a more thorough review of the *Federal Register* notices and draft authorizations before publishing them in the *Federal Register* for public comment. In addition to conducting a more

[27] Assuming the 9.5-dB difference between the *unattenuated* 200-dB re 1 μPa at 10 m source level for 48-in piles, the *unattenuated* source level for the 144-in piles would be at least 209.5 dB re 1 μPa at 10 m.
[28] Based on the *unattenuated* propagation loss of 18.35 log R.
[29] Notwithstanding the Commission's recommendation to use unattenuated source levels and propagation loss factors, the Level B harassment zone would be 2,071 m based on the attenuated source level and unattenuated propagation loss factor.
[30] Including shutting down for beluga whales that approach or enter the Level B harassment zones.

thorough review of future notices and authorizations, the Commission recommends that in the *Federal Register* notice for POA's authorizations, if issued, *and* the final authorizations NMFS (1)(a) fix all of the aforementioned issues regarding inconsistencies and errors in Tables 1–2, 2, 6, 7, and 8 of the *Federal Register* notice for unattenuated and attenuated vibratory installation of 24-in piles, unattenuated impact installation of 24-in piles, and attenuated vibratory installation of 48-in piles and (b) ensure that all of the Level A and B harassment zones, along with the shut-down and monitoring zones, are correct based on all the various assumptions and (2) use 209.5 rather than 202 dB re 1 μPa at 10 m as the assumed source level for attenuated impact installation of 144-in piles and increase the Level B harassment zone from 1,945 to 4,984 m.

Appropriate accumulation time for Level A harassment zones—As the Commission has indicated in previous letters, there are some shortcomings that need to be addressed regarding the method NMFS uses for determining the extent of the Level A harassment zones based on the cumulative SEL (SEL_{cum}) thresholds for the various types of sound sources, including stationary sound sources[31]. For determining the range to the SEL_{cum} thresholds, NMFS uses a baseline accumulation period of 24 hours unless an activity would occur for less time (e.g., 8 hours). In instances when action proponents either are unable or choose not to conduct more sophisticated modeling[32], the receiver is assumed to be stationary and all of the energy emitted during that period is accumulated for the SEL_{cum} thresholds. For POA's activities, that assumption results in the Level A harassment zones for LF and HF cetaceans being greater than the Level B harassment zones during attenuated impact installation of 36-, 48-, and 144-in piles and for phocids during attenuated impact installation of two and three 36-in, three 48-in, and 144-in piles. Based on the extent of those zones, it is assumed that an animal would experience PTS before responding behaviorally and leaving or avoiding the area. 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.

The Commission understands that NMFS has formed an internal committee to address this issue and is consulting with external acousticians and modelers as well. 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 continue to make this issue a *priority* to resolve in the near future and consider incorporating animat modeling into its user spreadsheet.

Numbers of takes

Beluga whales—POA estimated the numbers of beluga whale takes based on densities from Goetz et al. (2012), the ensonified areas associated with Level B harassment, and the number of days of activities. Those takes, 103 takes during Phase I and 125 during Phase II, were then reduced by 50 percent based on various assumptions. NMFS did not agree with POA's 50-percent reduction—neither does the Commission—and then implemented its own take calculation. NMFS used hourly sightings rates from Kendall and Cornick (2015) and hours of proposed pile driving/removal for

[31] However, this also could be an issue for moving sound sources that have short distances between transect lines.
[32] Sound propagation and animat modeling.

each of the 8 months of activities, which resulted in 94 takes during Phase I and 60 takes during Phase II (84 Fed. Reg. 72176). Because NMFS is requiring POA to delay or cease activities if a beluga whale approaches or enters the Level B harassment zone, it assessed the number of beluga whales that have been taken under previous authorizations and while implementing the same mitigation measures. From 2008-12, NMFS authorized 34 beluga whale takes per year to POA. POA documented that 12 to 59 percent of the beluga whales authorized to be taken were in fact taken (see Table 10; 84 Fed. Reg. 72177). NMFS used the maximum 59 percent to reduce the 94 takes during Phase I to 55 takes and the 60 takes during Phase II to 35 takes of beluga whales[33]. The Commission agrees that NMFS's assumption to reduce the number of takes based on the maximum percentage of beluga whales taken is justifiable, but questions the underlying take estimates.

NMFS indicated that using the Goetz et al. (2012) density estimates is problematic, because they are based on data from June aerial surveys while POA's project is occurring from April to November, the data are more than 7 years old, and those data do not incorporate previous sightings data from POA. It is unclear what point NMFS is attempting to make with the fact that the estimates by Goetz et al. (2012) are based on data from June, a month with some of the lowest densities of beluga whales during the 8-month project period[34]. Even though the June density estimates are lower than other months, the numbers of takes estimated using POA's approach (103 takes for Phase I and 125 takes for Phase II) were greater, particularly for Phase II, than those estimated using NMFS's approach (94 takes for Phase I and 60 takes for Phase II). POA's take estimates are more realistic, because they are based on the actual ensonified areas. NMFS used sightings rates that have no spatial dimension and are not applicable for species that routinely occur in the project area and for activities with larger ensonified areas than were observed during POA's 2016 monitoring efforts. NMFS ultimately estimated a greater number of takes during Phase I than Phase II, because the numbers of takes were based on time (sightings rates) rather than space (densities and ensonified areas). The Commission agrees with NMFS's point that POA did use the greatest density from Knik Arm of 0.291 whales/km^2, while the density in the project area ranged from 0.042 to 0.236 whales/km^2. But rather than removing the densities altogether, NMFS should have used the maximum density estimate of 0.236 whales/km^2, the relevant ensonified areas, and numbers of days of activities. And, although the density data from Goetz et al. (2012) are more than 7 years old, they are still considered the best available and are used by NMFS for its other authorizations. For these reasons, the Commission recommends that NMFS revise its take estimates based on the maximum density estimate in the project area of 0.236 whales/km^2 from Goetz et al. (2012), the revised ensonified areas based on the Commission's recommendations herein, the numbers of days of the various activities from Table 6-21 in POA's application, and an assumed maximum take rate of 59 percent based on Table 10 of the *Federal Register* notice. If the number of revised beluga whale takes during either Phase I or II exceeds NMFS's assumed one third of the population estimate (83 Fed. Reg. 63376) of 327, the Commission recommends that NMFS deny the authorization(s) outright. Further analytical attempts to achieve reductions in the take estimates are likely to be perceived as an effort to reduce the number(s) to a level that would allow NMFS to authorize the proposed activities rather than reductions merited on the basis of best available science.

[33] The Commission notes that NMFS incorrectly specified 45 and 33 takes in the preamble text (84 Fed. Reg. 72178).
[34] Which also can be observed in the sightings data from Kendall and Cornick (2015) as included in Table 9 of the *Federal Register* notice.

Other species—For harbor seals, NMFS assumed that up to eight harbor seals could be taken on each day that activities could occur during Phase I and II. However, up to nine harbor seals were observed on a given day during POA's 2016 construction-related monitoring efforts. Further confounding this issue is the fact that the raw sightings data and distances to the animals were not provided in the 2016 construction-related monitoring report[35]. Based on Figure 3.3 in the 2016 construction-related monitoring report, it appears that harbor seals were only observed within 2 km of the PSO[36], while beluga whales and Steller sea lions were observed farther offshore. The reason harbor seals were not observed farther offshore was not because they do not occur in those waters but because the PSOs were unable to see them any farther away. The Level B harassment zones extend to more than 9 km[37] when 144-in piles are installed. Thus, NMFS vastly underestimated the takes by basing them on only those seals observed within 2 km of the PSOs and similar to beluga whales, NMFS proposed to authorize more takes during Phase I than during Phase II. That approach is not warranted for a species that occurs in the area regularly and would be expected to be taken in greater numbers based on the size of the revised Level B harassment zones during Phase II.

In addition, POA indicated in its application that harbor seals congregate at the mouth of Ship Creek, particularly from July through September. No information was provided on the numbers observed though. Based on the available information, at least 9 harbor seal takes should be authorized when activities are expected to result in harassment zones of approximately 2 km. But, for Phase I, the revised Level B harassment zone for vibratory installation of 48-in piles is more than double the 2-km distance on 37 percent of construction days[38] and the Level B harassment zone for vibratory installation of the 144-in piles is more than four times[39] that distance on 16 percent of the construction days[40] during Phase II. To ensure that the numbers of harbor seal takes are sufficient and that POA does not have to cease its activities if the numbers of takes are met, the Commission recommends that NMFS increase the numbers of total harbor seal takes from 1,016 to at least 1,566 takes[41] during Phase I and from 600 to at least 999 takes[42] during Phase II, if NMFS does not revise the extent of the Level B harassment zone for vibratory installation of 144-in piles based on the Commission's recommendation, or to at least 1,863[43], if it does. NMFS then would reduce the total Level B harassment takes in Phase I and II by 30 percent to account for Level A harassment takes.

For cetaceans, NMFS assumed that Level A harassment takes account for 33 percent of the total number of takes for harbor porpoises and 25 percent for humpback whales. Both of those are underestimates. As noted herein, the Level A harassment zones for LF and HF cetaceans exceed the Level B harassment zones during attenuated impact installation of 36-, 48-, and 144-in piles. Table 1–2 in the Federal Register notice indicated that those activities would occur on 97 of 187 days during Phase I, equating to nearly 52 percent of the days. The Commission recommends that NMFS

[35] Or any of the monitoring reports.
[36] Similar results were provided in Figure 4.12 of Port of Anchorage's scientific marine mammal monitoring report for 2011.
[37] And the revised Level B harassment zone for vibratory installation of 48-in piles is nearly 5 km.
[38] 47 of the 127 days.
[39] It would be 12 times the size if NMFS implemented the Commission's recommendation to revise the Level B harassment zones based on unattenuated source levels and propagation loss.
[40] 12 of 75 days.
[41] Based on 9 takes on 80 days and 18 takes on 47 days.
[42] Based on 9 takes on 63 days and 36 takes on 12 days.
[43] Based on 9 takes on 63 days and 108 takes on 12 days.

re-estimate the numbers of Level A and B harassment takes for harbor porpoises and humpback whales based on 50 percent of the takes being Level A harassment, which would result in 32 Level A harassment and 32 Level B harassment takes of harbor porpoises and 4 Level A harassment and 4 Level B harassment takes of humpback whales.

It is imperative that the Level A and B harassment takes for the various species are accurate and sufficient, as they are the basis for both NMFS's negligible impact and small numbers determinations. In the last year and a half, the Commission has noted informally and formally ongoing errors in the Level A and B harassment takes for all but three of the proposed authorizations involving construction activities. These issues, particularly underestimated numbers of takes, undermine the public's ability to comment meaningfully on the proposed authorizations. NMFS must ensure that the proposed numbers of takes are accurate based on operational and species-specific parameters and substantiated biologically.

Mitigation, monitoring, and reporting measures

General comments—The Commission notes that some of the mitigation measures are inconsistent within and between the *Federal Register* notice and draft authorizations. Specifically—

- The *Federal Register* notice indicated that the clearance time was 30 minutes for the beluga whale-specific mitigation measures (84 Fed. Reg. 72179). Measure 4(h) in the 2020 draft authorization and measure 4(g) in the 2021 draft authorization stated that clearance time was 15 minutes. It is unclear how long NMFS intended the clearance time to be. However, Martin and Smith (1999) indicated that beluga whales can dive for nearly 23 minutes. Thus, 15 minutes is insufficient.
- The *Federal Register* notice indicated that pile driving and removal would be delayed if a beluga whale *was observed within 1 km of the mouth of Knik Arm*[44] (84 Fed. Reg. 72182), while another portion of the notice indicated that a delay would occur if a beluga whale *approached the mouth of Knik Arm* (84 Fed. Reg. 72179). Measure 4(h) in the 2020 draft authorization and measure 4(g) in the 2021 draft authorization stated that pile driving and removal would be delayed if a beluga whale *was observed swimming toward or into Knik Arm*. In addition, the *Federal Register* notice indicated that activities would be delayed until the whale moves *away from the POA* (84 Fed. Reg. 72179); while measure 4(h) in the 2020 draft authorization and measure 4(g) in the 2021 draft authorization indicated that activities would be delayed until the whale moves *into Knik Arm and past the POA (e.g., toward Eagle River)* and cannot commence until the animal *has traveled north of the POA or leaves Knik Arm*. NMFS's delineations of where a beluga whale has to be located for activities to be delayed and then commenced are unclear and some of those delineations do not include the possibility of a beluga entering the project area from the north.
- Measure 4(a) and 4(g) in the 2020 draft authorization appear to have the same intent but different details. The Commission assumes that NMFS intended to include only measure 4(a) in the 2020 draft authorization consistent with the 2021 draft authorization and that measure 4(g) was included in error.

[44] Based on Figure 6-15 of POA's application, delaying activities if a beluga whale was within 1 km of the mouth of Knik Arm would not be sufficient to avoid taking during vibratory installation and removal of 144-in piles. The Level B harassment zone appears to extend to just less than 2 km.

- Section 4(k) of the draft authorization included the measures for bubble curtain performance standards. Those measures were omitted from the *Federal Register* notice, which the Commission assumes was an error.

In addition to the inconsistencies, there are ambiguities and omissions in the mitigation, monitoring, and reporting measures in the *Federal Register* notice and draft authorizations. Those include—

- The 'Dates and Duration' section of the *Federal Register* notice indicated that pile driving and removal would occur during daylight hours only. However, the mitigation sections of the notice and draft authorizations[45] did not include that restriction. The stipulation to not conduct activities in darkness also was not included in mitigation measures for low-visibility conditions. It is imperative that the activities are restricted only to daylight hours in the final authorizations to ensure that POA is effecting the least practicable impact on the various species, and in particular beluga whales.
- Details regarding the number of each pile size and installation method that would be monitored acoustically were omitted from the *Federal Register* notice and section 5(d) of the draft authorizations. Requirements to report the (1) substrate type(s), (2) number of strikes per pile or strikes per day and pulse durations associated with impact pile driving, (3) spectra for all pile sizes, installation methods, and with and without the bubble curtain, and (4) amount of time the bubble curtain was turned on and off were omitted from the draft authorizations. These details are considered either necessary information or minimum requirements similar to the other requirements that were included in the draft authorizations.
- Requirement 6(b) of the draft authorizations would require POA to alert NMFS when the number of takes documented reaches 80 percent of those authorized per year. It is unclear if that requirement applies to all species or just beluga whales, but it should apply to all species. It also is unclear whether the number of takes documented includes those extrapolated to the unobserved portions of the Level A *and* B harassment zones, particularly for harbor seals and harbor porpoises[46]. A running tally of the total takes, including observed and extrapolated, should be kept. It is imperative that POA estimate and report the numbers of animals taken by both Level A and B harassment in an accurate manner to ensure the takes are within the authorized limits and the authorized numbers of takes are not exceeded and to fulfill requirement 6(b) of both authorizations.
- Reporting requirements to extrapolate Level A and B harassment takes to the unobserved portions of the Level A and B harassment zones and to include the raw PSO sightings datasheets were omitted from 6(d) of the authorizations. It is imperative that the draft and final reports are accurate and include all the relevant data.
- The Level A harassment zones for species other than beluga whales were omitted from both draft authorizations. It is imperative that the final authorizations include the extents of the Level A harassment zones consistent with the Level B harassment zones included in Tables 2 of the authorizations.

It is imperative that the mitigation, monitoring, and reporting measures are consistent and

[45] None of the sections of the draft authorizations included that requirement. Sometimes it is included in section 3.
[46] This is especially important given that the Commission asserts that the numbers of takes were underestimated.

complete within the *Federal Register* notice and between the notice and draft authorizations to ensure that POA is effecting the least practicable impact on the various species and that the monitoring and reporting measures are sufficient. In the last year and a half, the Commission has noted informally and formally ongoing inconsistencies and omissions of mitigation, monitoring, and reporting measures[47] for all but one proposed authorization involving construction activities. It is evident that NMFS needs to conduct a more thorough review of the *Federal Register* notices and draft authorizations before publishing them in the *Federal Register* for public comment. In addition to conducting a more thorough review of future notices and authorizations, the Commission recommends that in the *Federal Register* notice for POA's authorizations, if issued, *and* the final authorizations NMFS (1) specify a clearance time of 30 rather than 15 minutes for beluga whales; (2) specify that delay procedures must be implemented if a beluga whale is observed (a)(i) within 1 km of the mouth of Knik Arm to the south and Green Lake Creek to the north during all activities except vibratory installation and removal of 144-in piles and (ii) within 2 km of the mouth of Knik Arm to the south and Mule Creek to the north during vibratory installation and removal of 144-in piles and (b) activities cannot commence[48] until the whale has moved at least 100 m beyond the Level B harassment zone and is transiting away from the zone; (3) include the measures for bubble curtain performance standards; (4) include the requirement that pile driving and removal can occur only during daylight hours; (5) specify the number of each pile size and installation method that would be monitored acoustically; (6) include the requirements for POA to include in the draft and final hydroacoustic monitoring reports the (a) substrate type(s), (b) number of strikes per pile or strikes per day and pulse durations associated with impact pile driving, (c) spectra for all pile sizes, installation methods, and with and without the bubble curtain, and (d) amount of time the bubble curtain was turned on and off; (7) include the requirements for POA to extrapolate Level A and B harassment takes to the unobserved portions of the Level A and B harassment zones and to include the raw PSO sightings datasheets in the draft and final marine mammal monitoring reports; and (8) require POA to alert NMFS when the total number of takes, including observed and extrapolated takes, for *any species* reaches 80 percent of those authorized per year. The Commission further recommends that NMFS remove measure 4(g) from the 2020 final authorization and include the Level A harassment zones in both final authorizations.

Hydroacoustic monitoring plan and methods—POA proposed to conduct sound source and sound propagation monitoring during vibratory and/or impact installation of 5 to 10 24-in piles, 7 36-in piles, 5 to 10 48-in, and at least 2 144-in piles and provide the interim hydroacoustic monitoring reports to NMFS. However, NMFS did not indicate whether it planned to adjust the Level A and B harassment zones or whether the zones would be increased if the zones are larger than would be specified in the final authorizations. NMFS indicated that the results of the hydroacoustic monitoring (see the Proposed Monitoring and Reporting Measures) must demonstrate that the bubble curtain is achieving consistent noise attenuation such that the source levels are at or below those used in the analysis (84 Fed. Reg. 72179). That requirement was not included in either draft authorization, and the *Federal Register* notice did not indicate what would occur if the source levels are not at or below those used in the analysis. More importantly, and as discussed at length herein, the source levels are only one small portion of determining whether the bubble curtain is effective and are potentially useful only for estimating some of the Level A harassment zones. The extents of the larger Level A harassment zones and the Level B harassment zones are best measured *in-situ*

[47] Many of which are standard measures.
[48] Or until 30 minutes have passed and the animal is not sighted again.

rather than calculated using the various sound propagation assumptions in the notice, particularly since NMFS also assumed that sound emitted during vibratory pile driving and removal would not be distinguishable above ambient[49]. The Commission recommends that NMFS include in the final authorizations a requirement that POA provide the Level A and B harassment zones measured in-situ for each pile size rather than just the source levels and if the Level A or B harassment zones exceed those included in the final authorization, either (1) increase the Level A and B harassment zones accordingly or (2) require POA to implement an additional sound attenuation device and verify that the resulting Level A and B harassment zones are equal to or less than those included in the final authorization.

In addition, the Commission notes that Reyff[50] and Heyvaert (2019) conducted impact pile driving for only 1 minute in two circumstances. They indicated that, in those circumstances, the pile was installed at a level of refusal (no measurable penetration could occur), and the measurements were obtained in an attempt to estimate the source level and sound propagation (Reyff and Heyvaert 2019). If the pile was installed at a level of refusal, the source levels are less than would be normally expected and the extents of the harassment zones would be smaller than if the pile was actually driven to depth. As such, the Commission recommends that NMFS ensure that POA (1) is aware that the number of piles of each pile size that are to be monitored must actually be driven to depth and sound levels associated with piles installed at a level of refusal are not appropriate and do not count toward the numbers of piles to be monitored and (2) conducts measurements during the installation of the entire pile rather than just a portion of the installation (e.g., 5 of 60 minutes). The latter will ensure that the differences in the sound levels as the pile moves through the various sediment layers is captured fully.

To quantify the effectiveness of the sound attenuation device, POA proposed to conduct acoustic measurements during vibratory installation of one to three 24- and 36-in piles and impact installation of one to three 48-in piles and one 144-in pile with and without the bubble curtain. POA proposed to conduct the measurements during 5-minute intervals when the bubble curtain is on and off. Attempting to determine the effectiveness of the bubble curtain for only one pile (n=1) of each size is insufficient. In addition, during previous hydroacoustic monitoring activities at the POA, the effectiveness of the bubble curtain was determined with or without the bubble curtain for the entire pile (Austin et al. 2016), not by turning the bubble curtain on and off throughout the installation of the entire pile segment. The Commission is not convinced that capturing 5-minute snippets of pile driving with and without the bubble curtain is an accurate method for determining its effectiveness, particularly if the portions with the bubble curtain on happen to coincide with when the pile is advanced through softer sediments. By measuring the installation of the entire pile either with or without the bubble curtain, the differences that sediment layers may introduce should even out as the sound levels are integrated over the entire length of the pile. If POA is adamant about capturing 5-minute snippets of a single pile, it must consider alternating whether it starts with the bubble curtain on or off[51] to minimize the possible confounding factor of sediment layers. In addition, the Commission notes that the bubbles emitted by the bubble curtain do not dissipate quickly. It can

[49] That is, NMFS increased its standard 120-dB re 1 μPa threshold to 122.2 dB re 1 μPa.
[50] Who is one of the acousticians listed as a consultant for POA's hydroacoustic monitoring plan.
[51] The bubble curtain would be on when driving of the first 24-in pile begins and off when driving of the second 24-in pile begins.

take up to 30 minutes for the bubbles to dissipate fully (Wochner pers. comm.)[52]. If the measurements when the bubble curtain is turned off are taken before the bubbles dissipate fully, they could be underestimated due to the lingering bubbles. The Commission appreciates that POA plans to conduct the relevant measurements to determine whether the bubble curtain is effective but wants to ensure that measurements are taken appropriately given the resources and time spent conducting the measurements. If POA intends to determine the effectiveness of the bubble curtain (or other sound attenuation device), the Commission recommends that NMFS advise POA to (1) conduct measurements during vibratory installation of two 24- and two 36-in piles and impact installation of two 48-in piles and two 144-in piles with and without the bubble curtain[53], (2) alternate whether the bubble curtain is on or off when pile driving begins for each pile size, if POA still plans to turn the bubble curtain on and off for the same pile, and (3) ensure that the bubbles are dissipated fully before making measurements with the bubble curtain turned off. Another option could be to start each pile with the bubble curtain off, drive it halfway, and then turn the bubble curtain on. By the time the next pile is ready to be installed, the bubbles should have dissipated.

Proposed one-year authorization renewals

NMFS has indicated that it may issue a one-year incidental harassment authorization renewal for this and other future authorizations if various criteria are met and after an expedited public comment period of 15 days. The Commission notes that neither the *Federal Register* notice (84 Fed Reg. 72184) nor term and condition 8(a) in the draft authorizations specify NMFS's current criteria. The documents state that a request for a renewal must be received *60 days prior to the expiration of the current incidental harassment authorization* rather than *60 days prior to the needed renewal authorization's effective date*[54] (see 84 Fed. Reg. 72302 as well). In addition to the ambiguity of NMFS's revised criteria as discussed in the Commission's 8 January 2019 letter, the Commission and various other entities (e.g., 84 Fed. Reg. 31035 and 52466) have asserted and continue to consider that the renewal process is inconsistent with the statutory requirements under section 101(a)(5)(D) of the MMPA. As such, the Commission recommends that NMFS refrain from issuing renewals for any authorization and instead use its abbreviated *Federal Register* notice process. That process is similarly expeditious and fulfills NMFS's intent to maximize efficiencies. The Commission recommends that NMFS ensure that the current renewal terms and conditions are included in section 8(a) of the final authorization, if issued and notwithstanding the Commission's recommendation to refrain from issuing renewals.

Over the past few years, NMFS informed the Commission that a renewal would be issued as a one-time opportunity, after which time a new authorization application would be required. NMFS also has included such verbiage in its response to comments regarding renewals. Specifically, NMFS indicated that it had modified the language for future proposed incidental harassment authorizations to clarify that all authorizations, including renewal authorizations, are valid for no more than one year and that the agency will consider *only one renewal* for a project at this time (e.g., 84 Fed Reg. 36892 from 30 July 2019). However, NMFS has yet to stipulate that the agency will consider *only one renewal* or that a renewal is a *one-time opportunity* in any *Federal Register* notice requesting comments on the possibility of a renewal, on its webpage detailing the renewal process[54], or in any draft or final

[52] The bubble curtain emits a large size distribution of bubbles. While the big bubbles are gone after 5 min, the small, only slightly buoyant bubble are still in the water column.
[53] Equating to n=2 for bubble curtain on and n=2 for bubble curtain off for each pile size.
[54] https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-harassment-authorization-renewals

authorization that includes a term and condition for a renewal (including section 8 of POA's draft authorizations).

In response to the Commission's 29 November 2019 letter recommending that NMFS stipulate those specifics in the relevant documents and on its webpage, NMFS indicated that, in the 'summary' portion of its notices, it requests comments on a possible *one-year renewal* that could be issued under certain circumstances and if all requirements are met (84 Fed. Reg. 68131). However, neither the notices nor the webpage or final authorizations state that *one-year renewals* are *one-time opportunities*. NMFS also indicated that, for notices involving proposed renewals, it has not included an option of an additional renewal (84 Fed. Reg. 68131). Absent specifics regarding one-year renewals being a one-time opportunity in the *Federal Register* notices, on NMFS's webpage, and more importantly as a term and condition in its draft and final authorizations, NMFS appears to knowingly allow that door to remain open. If NMFS chooses to continue proposing to issue renewals, the Commission recommends that it (1) stipulate that a renewal is a *one-time opportunity* (a) in all *Federal Register* notices requesting comments on the possibility of a renewal, (b) on its webpage detailing the renewal process, and (c) in all draft and final authorizations that include a term and condition for a renewal and, (2) if NMFS refuses to stipulate a renewal being a one-time opportunity, justify why it will not do so in its *Federal Register* notices, on its webpage, and in all draft and final authorizations.

The most concerning aspect of NMFS's proposal to issue a renewal for Phase 1 activities is that it could have unintended consequences that remain unaddressed by NMFS. If POA is unable to complete Phase 1 activities by March 2021 and a renewal is necessary, the renewal authorization would overlap with the Phase 2 activities that are to begin in April 2021. As noted in the Commission's 14 August 2019 letter, this issue should have been recognized and addressed in the *Federal Register* notice requesting comments on the draft authorizations. This is the second time NMFS has proposed to issue back-to-back authorizations and the associated renewals. However, NMFS has yet to address the Commission's concerns adequately.

As stated in its August 2019 letter, NMFS did not make its determinations regarding *small numbers*, *negligible impact*, and *unmitigable adverse impact on subsistence use* on the two authorizations combined, and therefore it should not issue a Phase 1 renewal without issuing a coincident one-year delay for the Phase 2 authorization. NMFS has not fully addressed this point. Instead, NMFS indicated in its response that the Commission's comment likely reflects concern regarding the potential for *cumulative impacts* or cumulative effects to occur (85 Fed. Reg. 679). This is not the Commission's concern and at no place in the Commission's August 2019 letter did it discuss cumulative impacts in regard to renewals. Rather, the Commission's specific concerns focused on small numbers, negligible impact, and unmitigable adverse impact on subsistence use and the fact that NMFS did not and may not be able to make those determinations regarding the numbers and types of takes involved for the two authorizations combined. NMFS further stated that, as with any two independent incidental harassment authorizations, the small numbers and negligible impact determinations are made in the context of the impacts of each of the specified activities considered in each of the separate authorizations (85 Fed. Reg. 679). That approach is wholly inappropriate for a single action proponent conducting activities in support of the same project in the same area. This is particularly problematic for Cook Inlet beluga whales for which neither a negligible impact nor a small number determination may able to be made on the authorizations separately, let alone combined. This appears to be a way to subvert the authorization process under 101(a)(5)(D) of the

MMPA and authorize the taking under two separate authorizations that could not be issued under a single authorization. As such, the Commission recommends that NMFS either make its determinations regarding negligible impact, small numbers, and unmitigable adverse impact on subsistence use based on the total number and type of taking for each species or stock for both authorizations combined or delay the Phase 2 activities until 2022 if a renewal authorization is issued for the Phase 1 activities.

Revise and republish

Based on the numerous omissions, inconsistencies, ambiguities, and incorrect information and assumptions identified, and, more significantly, the errors associated with the estimation of the Level A harassment zones and the numbers of Level A and B harassment takes, the Commission is unable to determine whether NMFS's negligible impact and small numbers determinations are valid and whether the mitigation measures would effect the least practicable adverse impact on beluga whales and other marine mammals. As such, neither the Commission nor the public was afforded an opportunity to provide informed and meaningful comments. Therefore, the Commission recommends that NMFS (1) consult with POA regarding the numerous issues raised in this letter and direct the applicant to revise the application accordingly and (2) publish revised proposed authorizations prior to issuance of any final authorization or authorizations.

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

Sincerely,

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

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