



MARINE MAMMAL COMMISSION

20 April 2015

Ms. Jolie Harrison, Chief
Permits and Conservation Division
National Marine Fisheries Service
Office of Protected Resources
1315 East-West Highway, Room 13635
Silver Spring, MD 20910

Dear Ms. Harrison:

The Marine Mammal Commission (the Commission), in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the January 2015 application submitted by SAExploration, Inc. (SAE) seeking an incidental harassment authorization under section 101(a)(5)(D) of the Marine Mammal Protection Act (MMPA). SAE is seeking authorization to take small numbers of marine mammals by harassment incidental to seismic surveys in Cook Inlet, Alaska, during the 2015 open-water season. The Commission also has reviewed the National Marine Fisheries Service's (NMFS) 20 March 2015 notice (80 Fed. Reg. 14913) announcing receipt of the application and proposing to issue the authorization subject to certain conditions. The Commission previously has reviewed and provided comments on similar incidental harassment authorizations and incidental take regulations for oil and gas exploration and drilling activities in Cook Inlet in 2012, 2013, 2014, and 2015¹.

Background

SAE is proposing to conduct seismic surveys in Cook Inlet in an area encompassing approximately 3,934 km², including portions of both upper and lower Cook Inlet. The proposed authorization would cover activities from 1 April 2015 through 31 December 2015². SAE would use two survey vessels, each equipped with a 1,760-in³ airgun array, and would operate them using a "ping/pong" shooting technique. SAE has indicated that although the vessels would use the 1,760-in³ airgun configuration as the primary seismic source, a 440-in³ airgun configuration may be used by the vessels in very shallow waters. Other survey equipment would include a 10-in³ mitigation airgun, a 35- to 55-kHz ultra-short baseline transceiver (pinger), and a 35- to 55-kHz OBC transponder. The survey will use a "recording patch" approach, with each patch consisting of 6 receiver lines and 32 source lines (Figure 1 of SAE's application). Receiver lines are 8 km in length and spaced 402 m apart; source lines are 12 km in length and spaced 502 m apart. Each patch is 192 km², and SAE has indicated that no more than 777 km² would be surveyed in the 160 days proposed for the project in 2015.

NMFS preliminarily has determined that the proposed activities could modify temporarily the behavior of small numbers of up to nine species of marine mammals, but that the total taking

¹ Commission letters are posted at www.mmc.gov.

² As referenced in the proposed authorization text at page 14938 of the *Federal Register* notice, although there is a reference in the notice to 1 April 2015 to 31 March 2016.

would have a negligible impact on the affected species or stocks. NMFS does not anticipate any take of marine mammals by death or serious injury. It believes that the potential for temporary or permanent hearing impairment will be at the least practicable level because of SAE's proposed mitigation measures. The mitigation, monitoring, and reporting measures include—

- (1) using shore- and vessel-based observers to monitor exclusion zones (based on Level A harassment thresholds of 190 and 180 dB re 1 μ Pa) and the disturbance zone (based on Level B harassment threshold of 160 dB re 1 μ Pa) (a) during all daylight hours when airguns are operating, (b) for a minimum of 30 minutes prior to ramp-up and during airgun use, and (c) during most daylight hours when airguns are not operating;
- (2) using standard ramp-up, delay, power-down, and shut-down procedures;
- (3) prohibiting ramp-up of airguns during nighttime operations or during low-light hours after an extended shut-down (i.e., when airguns have not been operating for at least 10 minutes);
- (4) implementing additional delay and shut-down procedures if a beluga whale or an aggregation of five or more killer whales or harbor porpoises is observed approaching or within the disturbance zone;
- (5) operating the 10-in³ mitigation gun at no more than one shot per minute and prohibiting use of the mitigation gun for more than three hours;
- (6) restricting airgun operations from occurring within 16 km of the mean higher high water line of the Susitna Delta³ from 15 April to 15 October;
- (7) ceasing seismic survey operations if authorized numbers of takes for any marine mammals are met or exceeded;
- (8) altering vessel speed or course to avoid having a marine mammal enter the respective exclusion zone;
- (9) alerting NMFS immediately when a total of 25 (or more) beluga whales have been detected in the disturbance zone in a season;
- (10) reporting injured and dead marine mammals to NMFS and the Alaska Regional Stranding Coordinators using NMFS's phased approach and suspending activities, if appropriate; and
- (11) submitting field and technical reports and a final comprehensive report to NMFS.

Inadequate basis for issuance of incidental take authorizations

As indicated in previous letters regarding proposed incidental harassment authorizations for exploration and drilling activities by other oil and gas operators in Cook Inlet⁴, the Commission remains concerned about the potential impacts of such activities on the endangered Cook Inlet beluga whale population, which continues to decline. 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 ongoing decline of beluga whales and has a reasonable basis for determining that authorizing additional takes by harassment would not contribute to or exacerbate that decline. Given the precarious status of the Cook Inlet beluga whale population, any activity that may contribute to or worsen the observed decline should not be viewed as having a negligible impact on the population.

³ From the Beluga River to the Little Susitna River.

⁴ See the Commission's 21 October 2011, 9 January 2013, 31 January 2014, 4 April 2014, 9 May 2014, 14 September 2014, and 13 April 2015 letters.

Consistent with these concerns, and for the additional reasons outlined herein, the Commission once again recommends that NMFS defer issuance of any incidental take authorizations or regulations to SAE or any other applicant proposing to conduct oil and gas exploration and development activities in Cook Inlet until such time that NMFS can, with reasonable confidence, support a conclusion that those activities would affect no more than a small number of Cook Inlet beluga whales and have no more than a negligible impact on the population. That conclusion should be based on clear and consistent criteria regarding the MMPA's small numbers and negligible impact standards, which currently do not exist. Therefore, the Commission further recommends that NMFS develop a policy that sets forth clear criteria and/or thresholds for determining what constitutes small numbers and negligible impact for the purpose of authorizing incidental takes of marine mammals. The Commission understands that NMFS is working on developing such a policy and would welcome the opportunity to discuss that policy as it is being developed and before it is finalized.

Programmatic evaluation of the impacts of anthropogenic activities on Cook Inlet beluga whales

The Commission is concerned that NMFS is continuing to propose and issue authorizations for the incidental taking of Cook Inlet beluga whales without adequate consideration of the combined or cumulative effects of current and planned activities on this population. This concern was raised most recently in the Commission's 13 April 2015 letter (enclosed) regarding the proposed incidental take authorization for Apache Alaska Corporation's (Apache) seismic surveys in Cook Inlet, Alaska. In October 2014, NMFS announced its intention to prepare a programmatic environmental impact statement (EIS) on the issuance of incidental take authorizations in Cook Inlet (79 Fed. Reg. 61616). In its comments on the notice⁵, the Commission expressed support for a programmatic approach to evaluating the broad range of anthropogenic activities in the Inlet and the cumulative impacts of those activities on beluga whales. The Commission believes that such an approach would provide NMFS with a stronger foundation from which to determine whether negligible impact determinations are warranted. For the reasons outlined in the two referenced letters, the Commission recommends that NMFS complete its programmatic EIS and develop clear policies and criteria for ensuring full consideration of the impacts of each new activity in combination with the cumulative impacts of ongoing and planned activities in Cook Inlet before issuing any additional incidental take authorizations or regulations for activities in Cook Inlet.

Recovery plan for beluga whales

As noted also in the Commission's 13 April 2015 letter regarding Apache's proposed incidental take authorization, NMFS is in the process of reviewing the Cook Inlet Beluga Whale Recovery Team's draft recovery plan. That plan identified priorities for filling data gaps to promote recovery of beluga whales. The Commission believes that access to the research and monitoring priorities identified by the recovery team and approved by NMFS could facilitate collaborative efforts among SAE, other oil and gas operators in Cook Inlet, and local, state, and federal agencies to minimize impacts on and promote the recovery of beluga whales. The Commission therefore recommends that NMFS expedite its review and issuance of the Cook Inlet Beluga Whale Recovery

⁵ See the Commission's 29 December 2014 letter.

Plan as an essential tool for guiding and prioritizing research and monitoring efforts needed to provide better information on the status of beluga whales, baseline environmental conditions, and various anthropogenic and environmental impacts on beluga whales. The Commission further recommends that NMFS periodically reconvene the Cook Inlet Beluga Whale Recovery Team and related science and stakeholder working groups to assist in further refining and prioritizing research and monitoring recommendations and other recovery plan action items.

If NMFS decides to issue the requested authorization, notwithstanding the Commission's recommendation against doing so and the potentially significant impacts of the proposed seismic surveys, in combination with other ongoing anthropogenic activities, on the Cook Inlet beluga whale population, the Commission has several additional concerns regarding the proposed authorization. These include ambiguities regarding the survey area and also the methods used to estimate takes. As outlined herein, these deficiencies may undermine the bases on which NMFS has made its small numbers and negligible impact determinations. The Commission provides the following comments and further recommendations regarding these and other concerns regarding NMFS's proposed incidental harassment authorization.

The location of actual survey activities

SAE has indicated that the survey area during the 2015 open-water season would be limited to 777 km², but that the survey could occur anywhere within a 3,934 km² area that includes portions of both upper and lower Cook Inlet. Information regarding the specific areas that would be surveyed by SAE, or specific times of year for the survey, was not available as part of the proposed incidental harassment authorization. Although NMFS has indicated that information would be available before the final incidental harassment authorization is issued, SAE must have some indication as to where and when survey activities would be conducted, as the *Federal Register* notice states that SAE plans, for the most part, to limit seismic activity along the Kenai Peninsula to spring and fall, and that those restricted survey periods would limit interactions with humpback and gray whales. As evidenced by these types of statements, the location and timing of survey activities within Cook Inlet determines what species may be affected and how many animals may be taken, as the distribution of marine mammals is not uniform throughout the inlet or throughout the open-water season. In lieu of specific information regarding where and when the survey would be conducted, it appears that SAE has included all species that could occur in the broader project area as a (perhaps overly) precautionary measure. This approach undermines NMFS's ability to meet its responsibility under section 101(a)(5)(D)(ii)(I) of the MMPA to structure incidental harassment authorizations to effect the "least practicable impact" on marine mammal species and stocks. If NMFS does not know with greater specificity where and when activities will occur, it is unable to limit those activities to avoid areas where and times when marine mammals may be more abundant.

In addition, SAE indicated that the total survey area for the entire 160-day project will be 777 km². That survey area equates to roughly four times the size of each recording patch (192 km²). SAE has indicated that each patch would take about four days to shoot. That means that SAE would be able to shoot the proposed 777-km² survey area within 16 days. Although NMFS has indicated that some patches could be shot more than once, the proposed 160-day project duration appears excessive in relation to the proposed survey area. Conversely, SAE may have underestimated the

total survey area that could be shot during the season by not including the number of patches to be shot or factoring in the number of times a single patch would be shot.

For these reasons, the Commission recommends that, prior to issuing the authorization, NMFS require SAE to determine what areas it will survey and when to ensure that the proposed survey area and associated estimated takes are consistent with what NMFS plans to authorize and, if not, amend the numbers of takes and times during which surveys can be conducted accordingly.

Density estimates

NMFS indicated that density estimates used both by SAE and Apache⁶ were derived from NMFS aerial surveys conducted from 2000–2012. Thus, it is unclear why the density estimates for harbor seals, harbor porpoises, and killer whales differ in the two proposed authorizations. To ensure consistency in density estimates used to estimate takes, particularly when surveys are proposed for essentially the same areas during the same time of year, the Commission recommends that NMFS determine whether SAE's or Apache's harbor seal, harbor porpoise, and killer whale densities are correct and amend the analyses and proposed authorizations accordingly. In addition, the Commission recommends that NMFS work with SAE, Apache, and any other applicants that are conducting or plan to conduct activities in the same area at the same time of year to ensure consistency in the density estimates being used to derive take estimates.

Take estimates for harbor seals

The Commission is concerned about the method used by NMFS to estimate takes of harbor seals—particularly its inappropriate application of a turnover rate from Wood et al. (2012) and its departure from basing take estimates on numbers of exposures. To estimate numbers of takes of harbor seals and other marine mammals (except beluga whales), SAE multiplied the maximum ensonified area for the project⁷ by the density for each species. However, this approach inappropriately used the total ensonified area instead of the daily ensonified area. It also did not account for the number of survey days. Therefore, NMFS revised the take estimates for all species except harbor seals by multiplying the daily ensonified area (414.92 km²) by the densities for each species⁸ and the number of survey days (160 days). NMFS stated that method overestimated the number of individual harbor seals expected to be taken, so it instead used SAE's originally proposed take estimation method based on the total ensonified area of the entire project (1,732 km²) to yield a “snapshot abundance” for harbor seals in the project area. To account for new animals entering the survey area, NMFS applied a turnover factor (i.e., turnover rate) of 2.5 to the harbor seal snapshot abundance estimate. NMFS indicated that the specifically derived 2.5 turnover rate for migratory species from Wood et al. (2012) was used rather than the turnover rate of 1 for harbor seals (a

⁶ As noted in the Commission's comments in its 4 September 2014 letter, Apache inappropriately used density estimates based on animals per hour of survey effort per square kilometer, rather than animals per square kilometer. However, Table 2 of the *Federal Register* notice appropriately provided density estimates based on animals per square kilometer.

⁷ Presumably that area is based on the total survey area of 777 km² with a buffer zone to account for adjacent areas ensonified at levels at or exceeding 160 dB re 1 µPa. In addition, NMFS uses the phrase “total ensonified area of the entire project” to equate to SAE's “maximum ensonified area for the project.”

⁸ Based on Table 4 in the *Federal Register* notice, Table 2 listed an incorrect density estimate for gray whales.

resident species) because 2.5 was considered more conservative to accommodate for the difference between an ocean environment and the enclosed environment of the Inlet.

The take estimation method that NMFS used for harbor seals is not appropriate for several reasons. First, NMFS's method did not incorporate a time element to account for the duration of the survey, which SAE indicated would be 160 days. Therefore, NMFS's method implies that an animal exposed repeatedly during a 160-day survey would result in only one take. It is also unclear if that total ensonified area included areas of overlap, which would not conform to NMFS's standard practice of using a 24-hour reset (i.e., animals can be taken only once during a given day). Second, using a turnover rate of 2.5 to account for new harbor seals entering the survey area is inconsistent with Wood et al. (2012), which applied a turnover rate of 1 for resident species such as harbor seals. The 2.5 turnover rate was based on tagged blue whales foraging for a mean of 21 days⁹ off the west coast of the United States (Bailey et al. 2009) and the proposed 53 days for the Pacific Gas and Electric (PG&E) survey off Diablo Canyon. The behavior of blue whales foraging off California in the open ocean is not comparable to harbor seals that are resident in Cook Inlet. NMFS also incorrectly described the 2.5 turnover rate as applying to migratory species. Based on Wood et al. (2012), the 2.5 turnover rate applies to blue whales foraging not migrating. Wood et al. (2012) indicated that turnover is likely greater for some migrating species and incorporated a separate adjustment for foraging vs. migrating mysticetes, also based on Bailey et al. (2009). In addition, NMFS's supposition that the 2.5 turnover rate was considered more conservative to reflect the difference between an ocean environment and the enclosed environment of the Inlet is unfounded. Greater turnover rates should be applied to the open ocean rather than an enclosed inlet in which the same individuals could be taken repeatedly. Furthermore, based on recent sightings by Apache in 2012 of 3,471 harbor seal in a smaller project area within Cook Inlet (Lomac-MacNair et al. 2013), the assertion that only 1,223 harbor seal takes would occur during a given year is likely an underestimate.

Lastly, NMFS is proposing to authorize both numbers of takes and numbers of individuals taken, but did not provide sufficient justification for doing so. For beluga whales and other marine mammal species (other than harbor seals), NMFS has proposed to authorize the estimated numbers of takes, recognizing that some of those takes may involve the same individuals. For harbor seals, NMFS has proposed to authorize the estimated numbers of individuals to be taken. It is unclear why the numbers of takes to be authorized are based on different methods and different underlying metrics for different species—numbers of takes vs. numbers of individuals taken. The Commission can see value in determining the number of individuals taken from any given species or stock in addition to the total number of takes for that species or stock, as both should inform the small numbers and negligible impact determinations. However, NMFS's rationale and justification for doing so, not only for this proposed authorization but other recently proposed authorizations or regulations, are unsubstantiated.

For these reasons, the Commission recommends that NMFS (1) use the standard area¹⁰ times density¹¹ times number of survey days method to estimate the total number of takes for harbor

⁹ It is important to note that the 21-day mean also included a standard deviation of 27 days due to blue whales spending from 3 to 115 days foraging within an area-restricted search patch.

¹⁰ Based on the estimated ensonified area per day, without overlap.

seals and (2) if it plans to determine the number of individuals taken during the proposed surveys following an approach similar to what was intended by Wood et al. (2012), review the scientific literature for applicable information regarding migratory, residence, and foraging patterns for the various species in Cook Inlet and relate those data to the 160-day survey period for the proposed survey to derive applicable turnover rates. The Commission further recommends that NMFS re-evaluate its small numbers and negligible impact determinations for harbor seals based on its revised take estimates and for any other species for which NMFS revises its take estimates.

Mitigation and monitoring measures

NMFS has proposed that SAE monitor for marine mammals for 30 minutes before and continuously during seismic activities. No post-activity monitoring appears to have been proposed. However, post-activity monitoring is needed to ensure that marine mammals have not been taken in unexpected or unauthorized ways or in unanticipated numbers. Some types of taking (e.g., taking by death or serious injury) may not be observed until after the activity has ceased. Accordingly, the Commission recommends that NMFS require SAE to monitor for marine mammals for 30 minutes before seismic activities begin, while those activities are being conducted, and for 30 minutes after those activities have ceased.

SAE did not propose to conduct aerial surveys to detect and avoid beluga whales and aggregations of five or more killer whales or harbor porpoises. However, SAE has stated that it intends to shut down seismic activities if a beluga whale or an aggregation of five or more killer whales or harbor porpoises is observed approaching or within the disturbance zone. Considering that the distance to the edge of the disturbance zone for the 1,760-in³ array is 6.83 km¹², vessel-based visual monitoring alone would not be adequate to identify beluga whales or other marine mammals approaching that zone. Therefore, the Commission recommends that NMFS, in support of the specified shut-down provision, require SAE to conduct aerial surveys during seismic activities to detect beluga whales and aggregations of five or more killer whales or harbor porpoises that may approach or enter the disturbance zone.

In addition, as noted in the Commission's 13 April 2015 letter regarding Apache's proposed incidental take authorization, passive acoustic monitoring is a potentially useful tool to supplement visual monitoring of beluga whales and other marine mammals throughout the survey area. As such, the Commission recommends that NMFS require SAE, in coordination with other entities that are conducting or intend to conduct seismic operations in Cook Inlet, to deploy a series of bottom-mounted, passive acoustic monitoring buoys throughout the survey area to collect information on marine mammal presence and spatial patterns and to share these data with NMFS.

To help determine the probability of detecting marine mammals in Cook Inlet, the Commission recommends that NMFS require SAE to investigate and report on detection probabilities for each of the proposed observation platforms being used and under the sea states,

¹¹ Based on Table 4 in the *Federal Register* notice, Table 2 listed an incorrect density for gray whales.

¹² It is not clear why SAE proposed to base the disturbance zone radius on the 90th percentile of measured values from Heath et al. (2014), versus the 95th percentile which is commonly used by other applicants.

Ms. Jolie Harrison
20 April 2015
Page 8

weather conditions, and light levels expected to be encountered in Cook Inlet at times when activities would be conducted.

Reducing the potential for duplicative seismic surveys

As noted in the Commission's 13 April 2015 letter regarding Apache's proposed incidental take authorization, NMFS should clarify whether SAE and Apache are seeking separate authorizations for separate surveys or whether some or all of the proposed activities overlap. If the latter, these applicants should be required to amend or combine their requests for any overlapping survey activities (i.e., if authorizations related to essentially the same survey are being sought by both the seismic operator and the client). The Commission has repeatedly emphasized the need to minimize redundant seismic surveys in all areas subject to oil and gas exploration and development. This is consistent with the requirements of section 101(a)(5)(A) and (D) that incidental take authorizations be structured to include means of effecting the least practicable adverse impact on marine mammal species and stocks. NMFS has had some success in the past in encouraging applicants to collaborate on seismic surveys in areas of common interest, and the Bureau of Ocean Energy Management (BOEM) is in the process of developing options for minimizing duplicative surveys in other oil and gas planning areas.

The Commission therefore recommends that NMFS (1) scrutinize potentially related or duplicative authorization requests and issue only one authorization if both the operator and the client request an authorization for similar activities (which may be the case for SAE's and Apache's proposed activities) and (2) work with BOEM to encourage SAE and other applicants proposing to conduct seismic surveys in Cook Inlet to collaborate on those surveys and, to the extent possible, submit a single application seeking authorization for incidental takes of marine mammals.

I trust these comments will be helpful. Please let me know if you have any questions with regard to this letter.

Sincerely,



Rebecca J. Lent, Ph.D.
Executive Director

cc: Jon Kurland, National Marine Fisheries Service, Alaska Regional Office

Enclosure

References

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MARINE MAMMAL COMMISSION

13 April 2015

Ms. Jolie Harrison, Chief
Permits and Conservation Division
National Marine Fisheries Service
Office of Protected Resources
1315 East-West Highway, Room 13635
Silver Spring, MD 20910

Dear Ms. Harrison:

The Marine Mammal Commission (the Commission), in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the July 2014 application submitted by Apache Alaska Corporation (Apache) seeking a five-year authorization under section 101(a)(5)(A) of the Marine Mammal Protection Act (MMPA) to take small numbers of marine mammals by harassment incidental to seismic surveys in Cook Inlet, Alaska. The Commission also has reviewed Apache's August 2014 biological assessment for the proposed seismic surveys and the National Marine Fisheries Service's (NMFS) 23 February 2015 proposed rule (80 Fed. Reg. 9510) and 19 March 2015 notice (80 Fed. Reg. 14345), which extended the comment period for the proposed rule by 15 days. The Commission previously has reviewed and provided comments on similar incidental harassment authorizations for Apache in Cook Inlet in 2012, 2013, and 2014. In addition, the Commission provided comments in its 4 September 2014 letter regarding NMFS's notice of receipt of Apache's request for incidental take regulations governing its 2015–2020 proposed seismic activities¹.

Background

In its July 2014 application, Apache proposed to conduct 3D seismic surveys in Cook Inlet in an area of approximately 4,285 km². In the 23 February 2015 proposed rule, that area was expanded by 18 percent to 5,684 km² and included areas in upper Cook Inlet near the Susitna Delta region². Surveys are proposed for the open-water season (1 March through 31 December) from 1 March 2015 through 29 February 2020. Apache would use two survey vessels, each equipped with a 2,400-in³ airgun array, and would operate them using a “ping/pong” shooting technique. Apache has indicated that although the vessels would use the 2,400-in³ airgun configuration most frequently, a 440-in³ airgun configuration would be used by the vessels in shallow waters. Other survey equipment would include a 10-in³ mitigation airgun, a 33- to 55-kHz ultra-short baseline transceiver (pinger), and a 35- to 50-kHz lightweight release ultra-short baseline transponder. Apache would use bottom-mounted, cableless hydrophones to collect all seismic data. Apache would conduct the survey for an estimated 160 days annually—100 days in offshore waters and 60 days in nearshore waters.

¹ Commission letters are posted at www.mmc.gov.

² The map included in the *Federal Register* notice is not accurate. It does not show clearly the expanded seismic survey area in the upper portion of Cook Inlet as proposed by Apache in its biological assessment.

NMFS preliminarily has determined that the proposed activities could modify temporarily the behavior of small numbers of up to six species of marine mammals, but that the total taking would have a negligible impact on the affected species or stocks. NMFS does not anticipate any take of marine mammals by death or serious injury. It believes that the potential for temporary or permanent hearing impairment will be at the least practicable level because of Apache's proposed mitigation measures. The mitigation, monitoring, and reporting measures include—

- (1) using shore- and vessel-based observers to monitor exclusion zones (based on Level A harassment thresholds of 190 and 180 dB re 1 μ Pa) and the disturbance zone (based on Level B harassment threshold of 160 dB re 1 μ Pa) (a) during all daylight hours when airguns are operating, (b) for a minimum of 30 minutes prior to ramp-up and 30 minutes after cessation of airgun use, and (c) during most daylight hours when airguns are not operating;
- (2) using standard ramp-up, delay, power-down, and shut-down procedures;
- (3) prohibiting ramp-up of airguns during nighttime operations or during low-light hours after an extended shut-down (i.e., when airguns have not been operating for at least 10 minutes);
- (4) implementing additional delay and shut-down procedures if a beluga whale or an aggregation of five or more killer whales or harbor porpoises is observed approaching or within the disturbance zone;
- (5) operating the 10-in³ mitigation gun at no more than one shot per minute and prohibiting use of the mitigation gun for more than three hours;
- (6) ceasing airgun operations within 16 km of the mean higher high water line of the Susitna Delta³ from 15 April to 15 October;
- (7) ceasing seismic survey operations if authorized numbers of takes for any marine mammals are met or exceeded;
- (8) altering vessel speed or course to avoid having a marine mammal enter the respective exclusion zone;
- (9) conducting aerial surveys on a daily basis in the survey area, even when the airguns are not operating (weather and safety permitting);
- (10) conducting aerial surveys to identify (and presumably avoid) beluga whale aggregations (five or more whales) or female-calf pairs;
- (11) limiting aerial surveys to an altitude of at least 305 m at all times and to a radial distance of 457 m or greater when marine mammals are present (except during takeoff, landing, or an emergency situation);
- (12) alerting NMFS immediately when a total of 25 (or more) beluga whales have been detected in a season in the disturbance zone;
- (13) reporting injured and dead marine mammals to NMFS and the local stranding network using NMFS's phased approach and suspending activities, if appropriate; and
- (14) submitting field and technical reports and a final comprehensive report to NMFS.

Inadequate basis for issuance of incidental take regulations

As indicated in previous letters regarding proposed incidental harassment authorizations for Apache's seismic surveys and exploration activities by other oil and gas operators in Cook Inlet⁴, the

³ From Beluga River to the Little Susitna Delta.

Commission remains concerned about the potential impacts of those activities on the declining Cook Inlet beluga whale population and the likelihood of a continued decline in that population's size. The Commission has recommended in its previous letters that NMFS defer issuance of incidental take authorizations and regulations until it has better information on the cause or causes of the ongoing decline of beluga whales and has a reasonable basis for determining that authorizing additional takes by harassment would not contribute to or exacerbate that decline. The Commission continues to believe that, given the precarious status of the Cook Inlet beluga whale population, any activity that may contribute to or worsen the observed decline should not be viewed as having a negligible impact on the population.

Consistent with these continuing concerns, and for the additional reasons outlined in the following sections, the Commission once again recommends that NMFS defer issuance of any incidental take authorizations or regulations to Apache or any other applicant proposing to conduct oil and gas exploration activities in Cook Inlet until such time that NMFS can, with reasonable confidence, support a conclusion that those activities would affect no more than a small number of Cook Inlet beluga whales and have no more than a negligible impact on the population. That conclusion should be based on clear and consistent criteria regarding how NMFS is defining small numbers and negligible impact, which currently do not exist. Therefore, the Commission further recommends that NMFS develop a policy that sets forth clear criteria and/or thresholds for determining what constitutes small numbers and negligible impact for the purpose of authorizing incidental takes of marine mammals. The Commission understands that NMFS is working on developing such a policy and would welcome the opportunity to discuss that policy as it is being developed and before it is finalized.

Programmatic evaluation of the impacts of anthropogenic activities on Cook Inlet beluga whales

The Commission is concerned that NMFS is continuing to propose authorizations for the incidental taking of Cook Inlet beluga whales without adequate consideration of the combined or cumulative effects of current and planned activities on this population. Those activities include not only oil and gas exploration, but also bridge and port construction, shipping, coastal development, military exercises, fishing, and mineral extraction. Continued authorization of incidental harassment of beluga whales, absent a better understanding of the effects of oil and gas exploration and other activities on these animals, could exacerbate the population's more than 10-year-long decline and reduce its prospects for recovery. The lack of understanding of the effects of oil and gas exploration on beluga whales, and seismic survey activities specifically, is particularly troubling in that NMFS is proposing to issue Apache an authorization to take beluga whales incidental to seismic surveys for a period of five years, rather than the one-year authorizations previously issued.

In November 2014 NMFS convened a meeting on "Conservation and Recovery of Cook Inlet Beluga Whales in the Context of Continued Development" in Anchorage, Alaska. At the meeting NMFS reviewed the status of beluga whales and ongoing research and monitoring efforts. NMFS also summarized the available information regarding anthropogenic and environmental impacts on Cook Inlet beluga whales. Scientists and managers at that meeting presented evidence of

⁴ See 21 October 2011, 9 January 2013, 31 January 2014, 4 April 2014, 9 May 2014, and 14 September 2014 letters.

a continued decline of these whales and identified significant data gaps regarding seasonal movement patterns, group composition and dynamics, disease and other health issues, and causes of mortality and/or reduced fecundity. In addition, meeting participants recognized the considerable uncertainties that exist regarding baseline environmental conditions in Cook Inlet (including the acoustic environment) and the impacts of various anthropogenic and environmental stressors on beluga whales.

Concurrent with the Anchorage meeting, NMFS announced its intention to prepare a programmatic environmental impact statement (EIS) for the issuance of incidental take authorizations in Cook Inlet (79 Fed. Reg. 61616). NMFS conducted a public hearing in Anchorage at which comments were provided on alternatives and other information that should be considered in the development of the EIS. In its comments on the notice⁵, the Commission expressed its support for a programmatic approach to evaluating the broad range of anthropogenic activities in the Inlet and the cumulative impacts of those activities on beluga whales. The Commission believes that such an approach would provide NMFS with a stronger foundation from which to determine whether negligible impact determinations are warranted.

However, instead of using a programmatic approach as the basis for evaluating the impact of Apache's proposed seismic activities (and for evaluating additional 2015 open-water season seismic activities conducted by SAExploration, Inc., (SAE); 80 Fed. Reg. 14913), NMFS is proposing to issue five-year regulations authorizing the incidental taking of beluga whales (and other marine mammals) in Cook Inlet. NMFS made no mention in the proposed rule of the status of the programmatic EIS or how the analysis of impacts would be used to evaluate or modify Apache's proposed seismic activities. In light of increasing interest in oil and gas exploration and development in Cook Inlet and the potential for those activities to adversely affect beluga whales and their habitat, the Commission recommends that NMFS complete its programmatic EIS and develop clear policies and criteria for ensuring full consideration of the impacts of each new activity in combination with the cumulative impacts of ongoing and planned activities in Cook Inlet prior to the issuance of any additional incidental take authorizations or regulations in Cook Inlet.

Recovery plan for beluga whales

The MMPA and its accompanying implementing regulations include a broad requirement for the recipients of incidental take authorizations to conduct monitoring to help understand the effects of their activities on marine mammals. That requirement is particularly relevant in areas where numerous anthropogenic activities, including oil and gas exploration and development, have the potential to take marine mammals. One of the objectives of the November 2014 meeting was to explore measures and strategies to minimize impacts and promote recovery of Cook Inlet beluga whales while providing for continued economic use of the Inlet. At that meeting, it was noted that the Cook Inlet Beluga Whale Recovery Team's draft recovery plan had identified priorities for filling data gaps to promote recovery of beluga whales. The draft plan was submitted to NMFS in 2013 in accordance with section 4(f) of the Endangered Species Act, has been under review by NMFS since that time, and was to be made available for public comment early in 2015.

⁵ See the Commission's 29 December 2014 letter.

The Commission believes that access to the research and monitoring priorities identified by the recovery team and approved by NMFS could facilitate collaborative efforts among Apache, other oil and gas operators in Cook Inlet, and local, state, and federal agencies to minimize impacts on and promote the recovery of beluga whales. The Commission therefore recommends that NMFS expedite its review and issuance of the Cook Inlet Beluga Whale Recovery Plan as an essential tool for guiding and prioritizing research and monitoring efforts needed to provide better information on the status of beluga whales, baseline environmental conditions, and various anthropogenic and environmental impacts on beluga whales. The Commission further recommends that NMFS periodically reconvene the Cook Inlet Beluga Whale Recovery Team and related science and stakeholder working groups to assist in further refining and prioritizing research and monitoring recommendations and other recovery plan action items.

If NMFS decides to issue the requested authorization, notwithstanding the Commission's recommendations and the potentially significant impacts of the proposed seismic surveys, in combination with other ongoing anthropogenic activities, on the Cook Inlet beluga whale population, the Commission has several additional concerns regarding the proposed authorization. These include the expanded survey area, the species for which NMFS has estimated takes, and the methods used to estimate the takes. As outlined below, these deficiencies may undermine the bases on which NMFS has made its small numbers and negligible impact determinations. Therefore, the Commission recommends that NMFS (1) amend the proposed rule to address issues regarding the expanded survey area and associated estimates of beluga whale takes, and the methods used to estimate takes for other marine mammal species, and (2) allow for additional public comment after publishing a revised proposed rule. The Commission provides the following comments and further recommendations regarding these and other concerns with NMFS's proposed rule.

The proposed survey area and resulting beluga whale take estimates

The survey area as proposed by Apache in its July 2014 application was located primarily in the middle portion of Cook Inlet, south of the Susitna River Delta and other portions of beluga whale Critical Habitat Area 1. However, in its August 2014 biological assessment, Apache expanded its proposed survey area northward to include portions of upper Cook Inlet, including the Susitna River Delta and waters east to Fire Island (Figure 1 in the biological assessment). The disturbance zone would extend a further 9.5 km east of the expanded survey area, to the mouth of Knik Arm and into Chickaloon Bay.

NMFS designated upper Cook Inlet as Critical Habitat Area 1 for beluga whales because of its importance as feeding and calving habitat (74 Fed. Reg. 63080). NMFS has proposed to restrict Apache from conducting in-water seismic surveys within 16 km of the mean higher high water line of the Susitna Delta between 15 April and 15 October of each year. However, NMFS appears to have based the proposed restriction on previous Apache applications in which the survey area would not have extended as far north into upper Cook Inlet as Apache currently proposes. The expanded survey area includes important feeding and calving habitat for beluga whales, as evidenced by its inclusion in NMFS's Critical Habitat designation, and should be subject to the same seasonal restrictions required for survey activities conducted within 16 km of the mean higher high water line of the Susitna Delta.

In addition, the Commission is concerned that Apache's proposed expanded survey area includes a much larger portion of Critical Habitat Area 1 than previous applications. In spite of this expansion, Apache has proposed to use the same Zone 1 and Zone 2 designation and associated marine mammal density estimates⁶ as referenced in its application for upper and middle Cook Inlet habitats, respectively. Application of the beluga whale density estimates previously derived for Zone 1 may not be appropriate for the proposed expanded survey area (Goetz et al. 2012) and may underestimate the number of takes that would occur in that area. Apache or NMFS should have revised the take estimates based on the densities of beluga whales expected to occur in that expanded area.

NMFS's *Federal Register* notice also failed to provide a clear description of the revised survey areas in which Apache is proposing to conduct its seismic activities, undermining the public's ability to provide fully informed comments. The maps included in Apache's application are no longer applicable, and the maps published in the *Federal Register* notice purporting to illustrate the revised proposed survey area (Figure 1) and the zones upon which beluga whale density estimates were based (Figure 2) are unclear and inaccurate. The correct maps were only available in the biological assessment, which NMFS did not reference in its notice or provide on its website.

For these reasons, the Commission recommends that NMFS require Apache to revise the take estimates for beluga whales to account for the potentially greater densities of beluga whales that occur in the expanded survey area. The Commission further recommends that NMFS restrict all seismic activities from occurring in waters designated as beluga whale Critical Habitat Area 1 from 15 April to 15 October.

Density and take estimates for other marine mammals

NMFS indicated that density estimates used both by Apache⁷ and SAE⁸ were derived from NMFS aerial surveys conducted from 2000–2012. However, it is unclear why the density estimates for harbor seals, harbor porpoises, and killer whales were different in the two proposed authorizations. To ensure consistency in density estimates used for surveys proposed for essentially the same areas and during the same time of year, the Commission recommends that NMFS determine whether Apache's or SAE's harbor seal, harbor porpoise, and killer whale densities are correct and amend the analyses and proposed authorizations accordingly. In addition, the Commission recommends that NMFS work with Apache, SAE, and any other applicants that are conducting or plan to conduct activities in the same area at the same time of year to ensure consistency in the density estimates being used to derive take estimates.

The Commission also has concerns regarding the method by which NMFS has estimated takes for other marine mammals—particularly its application of turnover rates from Wood et al.

⁶ 78 Fed. Reg. 80386.

⁷ As noted in the Commission's comments in its 4 September 2014 letter, Apache inappropriately used density estimates based on animals per hour of survey effort per square kilometer, rather than animals per square kilometer. However, Table 2 of the *Federal Register* notice provided density estimates based on animals per square kilometer, as appropriate.

⁸ 80 Fed. Reg. 14934.

(2012) and its departure from basing take estimates on numbers of exposures. To estimate numbers of takes of other marine mammals, Apache used its standard method of multiplying area⁹ x density x number of survey days¹⁰. However, NMFS indicated that Apache's method likely overestimates takes, as it counted every possible instance of a take without allowing for repeated takes of the same individual, as would occur for resident species such as harbor seals. NMFS therefore proposed to base the take estimates on the numbers of exposed individuals rather than the numbers of exposures¹¹. In short, NMFS's method used the total ensonified area estimated by Apache (7,096 km²) plus a 25 percent contingency factor to estimate a total ensonified survey area of 8,870 km². The total ensonified survey area then was multiplied by the densities provided in Table 2 of the application. To account for movement of new animals into the survey area, NMFS applied a turnover factor (i.e., turnover rate) of 2.5 and 1.25 to the take estimates for gray whales and killer whales, respectively, based on Wood et al. (2012). NMFS applied a turnover factor of 1 to harbor seals, harbor porpoises, and Steller sea lions.

Unfortunately, that method has various shortcomings. The area x density method used by NMFS apparently did not incorporate a time element to account for the duration of the survey, which in this case would be 160 days. This would imply that an animal exposed repeatedly during a 160-day survey would result in only one take. Also, while Apache indicated in its application that the total annual ensonified area was 2,231 km², NMFS used a total ensonified area of 7,096 km² without indicating the basis for that area. It is unclear if that total area included areas of overlap, which would not conform to NMFS's standard practice of using a 24-hour reset (i.e., animals can be taken only once during a given day).

In addition, as noted for a number of recently proposed authorizations, the Wood et al. (2012) turnover rates of 2.5 and 1.25 were used inappropriately by NMFS. Briefly, Wood et al. (2012) determined a turnover rate of 2.5 for mysticetes based on tagged blue whales foraging for a mean of 21 days¹² off the west coast of the United States (Bailey et al. 2009) and the proposed 53 days for the Pacific Gas and Electric (PG&E) survey off Diablo Canyon. However, the behavior of blue whales foraging off California in the open ocean is not comparable to gray whales likely migrating to their summer feeding grounds with a possible stopover in Cook Inlet. In addition, Apache's activities would occur for more than three times the number of survey days as the PG&E survey. Even if the species and behavioral states in the respective environments were comparable between the Apache and PG&E surveys, the turnover rates would be underestimated by a factor of more than three. Wood et al. (2012) proposed a turnover rate of 1 for resident species and 1.25 for other odontocetes and pinnipeds—justification was not provided for the latter. However, a turnover rate of 1.25 implies that killer whales would remain in the survey area for 128 days, which does not comport with NMFS's assertion that very few killer whales, if any, are expected to approach or be in the vicinity of the project area. In addition, based on recent sightings by Apache in 2012 of 190 harbor porpoises in a smaller project area within Cook Inlet (Lomac-MacNair et al. 2013), the

⁹ Based on the estimated ensonified area per day for each water depth.

¹⁰ Based on the number of days that surveys would be conducted at each water depth.

¹¹ Although NMFS did provide exposure instances (presumably this is the same as numbers of takes or exposures) in Table 4 of the *Federal Register*, it provided neither the information nor the method upon which those were based.

¹² It is important to note that the 21-day mean also included a standard deviation of 27 days due to blue whales spending from 3 to 115 days foraging within an area-restricted search patch.

conclusion that only 35 harbor porpoise takes would occur during a given year is likely an underestimate.

Further, NMFS is using two different methods for estimating takes but does not provide sufficient justification for doing so. For beluga whales, NMFS has proposed to authorize the estimated number of takes, recognizing that some of those takes may be of the same individuals. For other marine mammal species, NMFS has proposed to authorize the estimated numbers of individuals to be taken.

For these reasons, the Commission recommends that NMFS (1) use Apache's standard area¹³ x density¹⁴ x number of survey days method to estimate the total number of takes for each species and (2) if it plans to determine the number of individuals taken during the proposed surveys following an approach similar to what was intended by Wood et al. (2012), review the scientific literature for applicable information regarding migratory, residence, and foraging patterns for the various species in Cook Inlet and relate those data to the 160-day survey period for the proposed survey to derive applicable turnover rates. The Commission further recommends that NMFS re-evaluate its small numbers and negligible impact determinations for those other marine mammal species based on its revised take estimates.

Marine mammal species expected to be affected by oil and gas exploration activities in Cook Inlet

In general, requests for incidental take authorizations and regulations should be based on the best available information on the likelihood that a given species will be present in the survey area and the potential for that species to be harassed during the timeframe of the proposed activities. As indicated in the Commission's 4 September 2014 letter, the list of species for which applicants conducting oil- and gas-related activities in Cook Inlet have sought authorization for incidental taking has not been consistent. Apache requested authorization for the incidental harassment of gray whales in its current request, consistent with the Commission's 31 January 2014 recommendation and NMFS's authorization issued to Apache for seismic activities during the 2014 open-water season (79 Fed. Reg. 13626). However, NMFS should clarify whether Apache should also be requesting authorization to take humpback whales, minke whales, and Dall's porpoises in its current application, as was requested by SAE for the 2015 open-water season (80 Fed. Reg. 14913). To address these inconsistencies, the Commission recommends that NMFS work with Apache and other applicants proposing to conduct activities in Cook Inlet to determine which marine mammal species should be included in incidental take authorizations and regulations.

Mitigation and monitoring measures

Passive acoustic monitoring is a potentially useful tool to supplement visual monitoring of beluga whales and other marine mammals throughout the survey area. In its monthly monitoring report for May 2012, Apache indicated that a monitoring buoy had been deployed but waves and currents had caused damage to the unit. A single over-the-side hydrophone was used instead, but its

¹³ Based on the estimated ensonified area per day for each water depth, without overlap.

¹⁴ Based on Table 2 in the *Federal Register* notice, not Table 6 in Apache's application.

range was limited (3 km). Given the ability to detect beluga whales and other marine mammals in Cook Inlet with moored buoys (Lammers et al. 2013), the Commission believes that a series of moored buoys deployed throughout all of the proposed seismic survey areas in Cook Inlet could provide useful information. Although calls recorded by these buoys would not be useful for real-time mitigation monitoring, the data could be analyzed after the open-water season to better understand beluga whale and other marine mammal use of the survey areas during and after the surveys. As such, the Commission recommends that NMFS require Apache, in coordination with other entities that are conducting or intend to conduct seismic operations in Cook Inlet, to deploy a series of bottom-mounted, passive acoustic monitoring buoys throughout the survey area to collect information on marine mammal presence and movements and to share these data with NMFS.

Very little information is available regarding the effectiveness and reliability of observers to monitor various sizes of exclusion and disturbance zones visually. To help determine the probability of detecting marine mammals in Cook Inlet, the Commission recommends that NMFS require Apache to investigate and report on detection probabilities for each of the proposed observation platforms being used and under the sea states, weather conditions, and light levels that would be encountered in Cook Inlet at times when activities would be conducted.

Reducing the potential for duplicative seismic surveys

As noted above, NMFS has recently published a separate application from SAE seeking authorization to take beluga whales and other marine mammals by harassment incidental to proposed seismic surveys in Cook Inlet in 2015. SAE has conducted similar seismic surveys on behalf of Apache in the past. It should be clarified whether the two applicants are seeking separate authorizations for some or all of the same activities and whether those applicants would be required to amend or combine their requests for any overlapping survey activities (i.e., if authorizations related to essentially the same survey are being sought by both the seismic operator and the client). Similarly, NMFS and the Bureau of Ocean Energy Management (BOEM) need to work together to develop and implement policies and procedures to ensure that separate applications to conduct essentially the same activities in the same areas are considered more holistically. If indeed the applicants are proposing to conduct multiple, independent seismic surveys within the same area, this would increase the numbers of marine mammals taken and expose beluga whales and other marine mammals to unnecessary risks. Section 101(a)(5)(A)(i)(II)(aa) of the MMPA directs NMFS to structure incidental take authorizations so that they prescribe “other means of effecting the least practicable adverse impact on such species or stock and its habitat...” Allowing multiple operators to obtain separate authorizations to conduct duplicative surveys is inconsistent with that mandate.

The Commission has repeatedly emphasized the need to minimize redundant seismic surveys in all areas subject to oil and gas exploration. NMFS has had some success in the past in encouraging applicants to collaborate on seismic surveys in areas of common interest, and BOEM is in the process of developing options for minimizing duplicative surveys in other oil and gas planning areas. The Commission therefore recommends that NMFS (1) scrutinize potentially related or duplicative authorization requests and issue only one authorization if both the operator and the client request an authorization for similar activities (which may be the case for Apache’s and SAE’s proposed activities) and (2) work with BOEM to encourage Apache and other applicants proposing

Ms. Jolie Harrison
13 April 2015
Page 10

to conduct seismic surveys in Cook Inlet to collaborate on those surveys and, to the extent possible, submit a single application seeking authorization for incidental harassment of marine mammals.

I trust these comments will be helpful. Please let me know if you have any questions with regard to this letter.

Sincerely,

A handwritten signature in blue ink that reads "Rebecca J. Lent". The signature is written in a cursive style.

Rebecca J. Lent, Ph.D.
Executive Director

cc: Jon Kurland, National Marine Fisheries Service, Alaska Regional Office

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