21 October 2011

Mr. P. Michael Payne
Chief, Permits Division
National Marine Fisheries Service
Office of Protected Resources
1315 East-West Highway, Room 13635
Silver Spring, MD 20910

Dear Mr. Payne:

The Marine Mammal Commission, in consultation with its Committee of Scientific Advisors on Marine Mammals, has reviewed the application submitted by Apache Alaska Corporation seeking authorization under section 101(a)(5)(D) of the Marine Mammal Protection Act to take small numbers of marine mammals by harassment incidental to a 3D seismic survey in Cook Inlet, Alaska. The Commission also has reviewed the National Marine Fisheries Service's 21 September 2011 *Federal Register* notice (76 Fed. Reg. 58473) announcing receipt of the application and proposing to issue the authorization, subject to certain conditions.

RECOMMENDATIONS

Based on its review of the information provided in those documents, the Marine Mammal Commission recommends that the National Marine Fisheries Service defer issuance of the proposed incidental harassment authorization until such time as the Service can, with reasonable confidence, support a conclusion that the proposed activities would have no more than a negligible impact on the Cook Inlet beluga whale population.

However, if the National Marine Fisheries Service decides to issue the requested authorization notwithstanding possible significant impacts to the Cook Inlet population of beluga whales, the Marine Mammal Commission further recommends that the National Marine Fisheries Service—

- require Apache Alaska Corporation to re-estimate the ensonified areas for each sound threshold (i.e., 190, 180, and 160 dB re 1 µPa) and the expected number of marine mammal takes, accounting for the simultaneous, alternating use of two sound sources and the overlap of their acoustic footprints;
- require Apache Alaska Corporation to describe and provide the rationale for the method used to determine the non-river density estimate for beluga whales and recalculate the density estimates accordingly;
- require Apache Alaska Corporation to recalculate the estimated number of takes for all species based on the modeled areas of ensonification for each sound threshold (i.e., 190, 180, and 160 dB re 1 µPa), using the full number of survey days rather than half that number;
- require that Apache Alaska Corporation either amend its application to seek authorization to take the full number of marine mammals that may be taken or provide sufficient justification for requesting lesser numbers of takes, particularly for beluga whales and harbor seals; and

- ensure that the monitoring measures included in the authorization are sufficient to account for all takes of marine mammals and require Apache Alaska Corporation to provide timely reports of the number of marine mammals taken so that surveys can be stopped before the authorized takes are exceeded.

RATIONALE

Apache Alaska Corporation (Apache) has oil and gas leases throughout Cook Inlet, Alaska, and proposes to conduct 3D seismic surveys to explore and develop those leases during the next three to five years. Apache would use two survey vessels, each equipped with a 2,400-in^3 air gun array. Other survey equipment includes a 440-in^3 air gun array, a 10-in^3 air gun, a 33–55 kHz ultra-short baseline transreceiver, and a 35–50 kHz lightweight release ultra-short baseline transponder. In addition, Apache plans to detonate 4 kg of Orica OSX pentolite explosives onshore to acquire additional data. Apache would use bottom-mounted, cableless hydrophone nodes to collect acoustic data. Apache would collect seismic data within an area of approximately 829 km^2 along the west coast of Cook Inlet from the MacArthur River to south of the Beluga River in waters up to 128 m in depth. Intertidal zone surveys would be conducted during November and December 2011 and March 2012; nearshore surveys adjacent to uplands and channel surveys would be conducted in open-water periods from April through September 2012.

The Service preliminarily has determined that the proposed activities could result in a temporary modification in the behavior of small numbers of up to five species of marine mammals, but that the total taking would have a negligible impact on the affected species or stocks. The Service 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 and monitoring measures, as well as additional measures proposed by the Service, which include—

(1) using Service-approved vessel- and shore-based observers to monitor the 190-dB and 180-dB re 1 µPa safety zones and the 160-dB re 1 µPa disturbance zone during all seismic surveys;
(2) when practicable, using aerial-based observers to monitor near river mouths prior to commencing air gun operations to identify locations where beluga whales congregate;
(3) using passive acoustic devices to monitor for marine mammals;
(4) reducing vessel speed within 274 m of whales and (when possible) in poor visibility weather conditions, and altering course to steer around groups of marine mammals and avoid marine mammals entering the safety zones;
(5) using power-down procedures during airgun operations (except for the 10-in^3 airgun) when a marine mammal is within or likely to enter a safety zone;
(6) using ramp-up and shut-down procedures;
(7) prohibiting ramp-up of airguns during nighttime operations after an extended shut-down;
(8) conducting sound source verification measurements of underwater sound propagation resulting from onshore detonations;

(9) reporting all injured and dead marine mammals encountered while conducting the proposed activities to the National Marine Fisheries Service and its associated stranding network; and
(10) submitting field and technical reports and a final comprehensive report to the Service.

Following an initial review of the application and Federal *Register* notice, the Commission submitted questions to the Service seeking to clarify certain matters before sending comments. The Service has yet to fully respond. Therefore, the Commission's review of the application and its recommendations are based on the information available in the *Federal Register* notice and associated application.

Negligible impact determination for Cook Inlet beluga whales

The Cook Inlet beluga whale population was listed as endangered under the Endangered Species Act in October 2008 (73 Fed. Reg. 62919) and was designated as depleted under the Marine Mammal Protection Act in 2000. The proposed seismic survey would occur within the home range of the Cook Inlet beluga whale (Hobbs et al. 2005) in an area that the Service designated as critical habitat in 2011 (76 Fed. Reg. 20180). Although harbor porpoises, harbor seals, killer whales, and Steller sea lions also occur in the project area, the Service has determined, and the Commission agrees, that any impact to those species from the proposed seismic surveys likely would be negligible. The following recommendation and rationale therefore focuses on Cook Inlet beluga whales.

Stock assessment reports continue to indicate a lack of recovery of the Cook Inlet population of beluga whale. The most recent abundance estimate for the Cook Inlet beluga whale population was 345 animals (coefficient of variation=0.13), based on a three-year average of abundance estimates from 2008-2010. The population declined precipitously during the 1990s, primarily due to overharvesting, and was expected to rebound after subsistence hunting was brought under control. Since 1999, subsistence hunters reportedly have taken only five whales. However, the population has not grown as expected. In fact, the Cook Inlet beluga whale population declined at an average rate of 1.11 percent per year between 2000 and 2010 (Allen and Angliss 2011), and Service scientists have projected that there is an 80 percent chance the population will continue to decline (Hobbs and Shelden 2008). Information regarding this population's ecology, life history, and reproductive potential is limited and current factors adversely affecting the population and its habitat have yet to be identified. These findings demonstrate the precarious situation concerning the viability of the Cook Inlet beluga whale population.

Nevertheless, Apache has requested, and the Service has proposed issuing, an authorization for taking by Level B harassment up to 30 beluga whales incidental to seismic activities. Thirty beluga whales are approximately 8.8 percent of the most recent population estimate. The proposed seismic activities have the potential to displace animals from resting and foraging areas and that repeated exposure of whales to the proposed seismic activities and continued avoidance of the project area may have long-term impacts on the reproduction and survival of this population. These effects may be exacerbated by the impacts of other factors that already are adversely affecting beluga whales in Cook Inlet. Contributing factors possibly include increased vessel traffic, coastal

development, contaminant concentrations, disturbance from sound, military operations, competition with fisheries for prey, habitat modification, waste discharges, and urban runoff. The National Marine Fisheries Service (2003) concluded that "a significant part of the habitat for this species has been modified by municipal, industrial, and recreational activities in Cook Inlet." Furthermore, a number of oil and gas and construction activities are ongoing or are being planned for Cook Inlet during the period for which this incidental harassment authorization is being sought. Some of those activities also have the potential to alter the physical habitat of beluga whales in Cook Inlet. Neither the application nor the Service's *Federal Register* notice provides a substantive discussion regarding the potential cumulative impacts of human activities on the beluga whale population. As such, it is unclear if those impacts were considered in the Service's analysis that led to its negligible impact determination.

In light of the continued decline of the Cook Inlet beluga whale population, the Commission believes that the proposed seismic activities, when added to the existing baseline, pose potentially significant risks to the population. To avoid those risks, the Marine Mammal Commission recommends that the National Marine Fisheries Service defer issuance of the proposed incidental harassment authorization until such time as the Service can, with reasonable confidence, support a conclusion that the proposed activities would have no more than a negligible impact on the Cook Inlet beluga whale population.

If the National Marine Fisheries Service decides to issue the requested authorization notwithstanding the Commission's recommendation and the possible significant impacts to the Cook Inlet population of beluga whales, then the Commission makes the following additional recommendations that highlight other major concerns with the proposed incidental harassment authorization.

Uncertainty in the estimation of marine mammal takes

Apache indicated that it would use two source vessels and that each source vessel would be equipped with a 2,400-in^3 airgun array. The application states that the two source vessels would operate simultaneously and that the two airgun arrays would alternate firing every twelve seconds (a shooting technique referred to as "ping/pong"). The Commission considers this to be a simultaneous use of the two airgun arrays, which must be accounted for in the estimation of the ensonified areas and the calculation of takes. However, the modeling method used to determine the acoustic footprint of the survey referenced in Appendix A of the application was based on the operation of a single airgun array, rather than two arrays, and did not stipulate a firing sequence of twelve seconds. It did not account for the acoustic footprints resulting from the simultaneous, alternating use of the two airgun arrays and the resulting overlap of their acoustic footprints. To ensure that Apache has correctly estimated the acoustic footprints that will be generated by the two airgun arrays, the Marine Mammal Commission recommends that the National Marine Fisheries Service require Apache Alaska Corporation to re-estimate the ensonified areas for each sound threshold (i.e., 190, 180, and 160 dB re 1 μPa) and the expected number of marine mammal takes, accounting for the simultaneous, alternating use of two sound sources and the overlap of their acoustic footprints.

In deriving its take estimates, Apache used two density estimates for beluga whales, a river estimate based on the maximum number of whales observed and a non-river estimate based on the average number of whales observed. Density estimates for all other species were based on the total number of animals observed. However, the non-river density estimate for beluga whales does not appear to be based either on an average observed density or a total observed density. In fact, the Commission is not sure how the density estimates were derived and was not able to replicate them. Because this non-river density estimate is essential for estimating how many beluga whales might be taken and how that might affect those whales of the population, the Marine Mammal Commission recommends that the National Marine Fisheries Service require Apache Alaska Corporation to describe and provide the rationale for the method used to determine the non-river density estimate for beluga whales and recalculate the density estimates accordingly.

The applicant also divided the estimated number of takes in half, using the rationale that the crew would be able to collect seismic data for 12 hours only during each 24-hour survey day. However, the modeling method in Appendix A already accounted for only 12 hours of seismic data collection within a 24-hour survey day in its calculation of the project's daily acoustic footprint. The proposed area to be surveyed each day was a function of the number of tracklines surveyed, the length of each trackline, and the distance between tracklines—not the amount of time it would take to survey the area within a 24-hour survey day. Both the modeling method and the application stated that a maximum of 14 tracklines would be surveyed each day, that tracklines would be 16.1 km in length, and that the spacing between tracklines would be 503 m. The applicant did not state that the number of tracklines or the length of each trackline would be less than those incorporated into the model because survey crews would collect data only for 12 hours out of a 24-hour day. Therefore, the applicant should have calculated its take estimates by simply multiplying the ensonified areas by the species-specific densities of marine mammals. The take estimates should not be divided in half, as suggested by the applicant, as the areas of ensonification would be the same regardless of how long seismic data are collected within a 24-hour survey day, provided the area surveyed did not change. As such, the Marine Mammal Commission recommends that the National Marine Fisheries Service require Apache Alaska Corporation to recalculate the estimated number of takes for all species based on the modeled areas of ensonification for each sound threshold (i.e., 190, 180, and 160 dB re 1 μPa), using the full number of survey days rather than half that number.

Finally, Apache's application requests authorization to take fewer beluga whales and harbor seals than its maximum estimated number of takes for these species (see Tables 5 and 6 of the *Federal Register* notice, respectively). Specifically, Apache estimated a maximum take of approximately 46 beluga whales and an average take of 19, but requested authorization to take only 30 whales. Apache also estimated a maximum take of approximately 207 harbor seals and an average take of 102, but only requested authorization to take 50 seals. These discrepancies in the numbers of marine mammals that potentially could be taken and the number of takes being requested should be explained. To address this concern, the Marine Mammal Commission recommends that the National Marine Fisheries Service require that Apache Alaska Corporation either amend its application to seek authorization to take the full number of marine mammals that may be taken or provide sufficient justification for requesting lesser numbers of takes, particularly for beluga whales and

harbor seals. In addition, the Marine Mammal Commission recommends that the National Marine Fisheries Service ensure that the monitoring measures included in the authorization are sufficient to account for all takes of marine mammals and require Apache Alaska Corporation to provide timely reports of the numbers of marine mammals taken so that surveys can be stopped before the authorized takes are exceeded.

The continued need for caution

The Commission previously has recommended that the Service defer issuing any incidental take authorizations for Cook Inlet beluga whales until it has a better understanding of the factor or factors that are causing or contributing to the observed population trend or until the population begins to experience sustained growth. We are particularly concerned about authorization for additional activities that potentially could have detrimental cumulative impacts beyond those from the numerous human activities already occurring in Cook Inlet. The Commission is not convinced that much, if any, progress has been made to identify or alleviate the causes contributing to the continued decline of this population. Yet, the Service continues to issue new take authorizations based on the theory that, individually, they only incrementally add to the existing level of disturbance and therefore can be discounted. Managers repeatedly have underestimated the Cook Inlet beluga whale's vulnerability and overestimated its ability to recover from multiple risk factors. There is little indication that the Service has given sufficient priority to its efforts to identify and address the causes of this population's decline. As such, a precautionary approach is needed until such time as we have sufficient scientific evidence to be confident we are not adding to the population's risk of extinction as we expose it to additional sources of disturbance.

Please contact me if you have any questions concerning these recommendations and rationale.

Sincerely,

Timothy J. Ragen, Ph.D.
Executive Director

cc: Kaja Brix, National Marine Fisheries Service Alaska Regional Office

References

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