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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648-XD039

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to Seismic Survey in Cook Inlet, Alaska

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice; issuance of an incidental harassment authorization.

SUMMARY: In accordance with the Marine Mammal Protection Act (MMPA) regulations, notification is hereby given that NMFS has issued an Incidental Harassment Authorization (IHA) to Apache Alaska Corporation (Apache) to take marine mammals, by harassment, incidental to a proposed 3D seismic survey in Cook Inlet, Alaska, between March 4, 2014, and December 31, 2014.

DATES: Effective March 4, 2014, through December 31, 2014.

ADDRESSES: Electronic copies of the IHA, application, and associated Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) may be obtained by writing to Jolie Harrison, Supervisor, Incidental Take Program, Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring, MD 20910, telephoning the contact listed below (see FOR FURTHER INFORMATION CONTACT), or visiting the internet at: http://www.nmfs.noaa.gov/pr/permits/incidental.htm. Documents cited in this notice may also be viewed, by appointment, during regular business hours, at the aforementioned address.

FOR FURTHER INFORMATION CONTACT: Candace Nachman, Office of Protected Resources, NMFS, (301) 427-8401.

SUPPLEMENTARY INFORMATION:

Background

Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 et seq.) direct the Secretary of Commerce to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are issued or, if the taking is limited to harassment, a notice of a proposed authorization is provided to the public for review.

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s), will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses (where relevant), and if the permissible methods of taking and requirements pertaining to the mitigation, monitoring and reporting of such takings are set forth. NMFS has defined "negligible impact" in 50 CFR 216.103 as "an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival."

Except with respect to certain activities not pertinent here, the MMPA defines "harassment" as: "any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild [Level A harassment]; or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding,

feeding, or sheltering [Level B harassment]."

Summary of Request

On July 18, 2013, NMFS received an application from Apache for the taking of marine mammals incidental to a 3D seismic survey program. Based on comments and questions from NMFS, the application was revised. Apache submitted a new application on November 11, 2013. The application was determined adequate and complete on November 20, 2013. On December 31, 2013, NMFS published a notice in the Federal Register of our proposal to issue an IHA with preliminary determinations and explained the basis for the proposal and preliminary determinations (78 FR 80386). The filing of the notice initiated a 30-day public comment period. The comments and our responses are discussed later in this document.

Apache proposes to conduct a 3D seismic survey in Cook Inlet, Alaska. The activity would occur for approximately 8-9 months between March 4 and December 31, 2014. In-water airguns will only be active for approximately 2-3 hours during each of the slack tide periods. There are approximately four slack tide periods in a 24-hour period; therefore, airgun operations will be active during approximately 8-12 hours per day, if weather conditions allow. The following specific aspects of the activities are likely to result in the take of marine mammals: seismic airgun operations. Take, by Level B Harassment only, of individuals of five species/stocks is anticipated to result from the specified activity.

This is the third request NMFS has received from Apache for takes of marine mammals incidental to conducting a seismic survey in Cook Inlet. On April 30, 2012, NMFS issued a 1-year IHA to Apache for their first season of seismic acquisition in Cook Inlet (77 FR 27720). NMFS issued a second 1-year IHA to Apache in February 2013 (78 FR 12720, February 25, 2013). That IHA expired on March 1, 2014. Except for the location and the size of the survey

area, the activities authorized under this third IHA are essentially the same as those conducted during the first season. No seismic survey operations were conducted under the second IHA.

Description of the Specified Activity

Overview

Apache proposes to conduct a 3D seismic survey in Cook Inlet, Alaska, in an area that encompasses approximately 4,238 km^2 (1,636 mi^2) of intertidal and offshore areas (see Figure 2 in Apache's application). Vessels will lay and retrieve nodal sensors on the sea floor in periods of low current, or, in the case of the intertidal area, during high tide over a 24-hour period. Apache will utilize two synchronized vessels. Each source vessel will be equipped with compressors and 2,400 cubic inch (in^3) airgun arrays. Additionally, one of the source vessels will be equipped with a 440 in^3 shallow water source array, which can be deployed at high tide in the intertidal area in less than 1.8 m (6 ft) of water. The two source vessels do not fire the airguns simultaneously; rather, each vessel fires a shot every 24 seconds, leaving 12 seconds between shots.

The operation will utilize two source vessels, three cable/nodal deployment and retrieval operations vessels, a mitigation/monitoring vessel, a node re-charging and housing vessel, and two small vessels for personnel transport and node support in the extremely shallow waters in the intertidal area. Water depths for the program will range from 0-128 m (0-420 ft).

Apache has acquired over 800,000 acres of oil and gas leases in Cook Inlet since 2010 with the primary objective to explore for and develop oil and gas resources in Cook Inlet. Seismic surveys are designed to collect bathymetric and sub-seafloor data that allow the evaluation of potential shallow faults, gas zones, and archeological features at prospective exploration drilling locations. In the spring of 2011, Apache conducted a seismic test program to

evaluate the feasibility of using new nodal (no cables) technology seismic recording equipment for operations in Cook Inlet. This test program found and provided important input to assist in finalizing the design of the 3D seismic program in Cook Inlet (the nodal technology was determined to be feasible). Apache began seismic onshore acquisition on the west side of Cook Inlet in September 2011 and offshore acquisition in May 2012 under an IHA issued by NMFS for April 30, 2012 through April 30, 2013 (77 FR 27720, May 11, 2012) (see Figure 1 in Apache's application).

Dates and Duration

Apache proposes to acquire offshore/transition zone operations for approximately 8 to 9 months in offshore areas in open water periods from March 4 through December 31, 2014. During each 24-hour period, seismic support activities may be conducted throughout the entire period; however, in-water airguns will only be active for approximately 2-3 hours during each of the slack tide periods. There are approximately four slack tide periods in a 24-hour period; therefore, airgun operations will be active during approximately 8-12 hours per day, if weather conditions allow. Two airgun source vessels will work concurrently on the spread, acquiring source lines approximately 12 km (7.5 mi) in length. Apache anticipates that a crew can acquire approximately 6.2 km^2 (2.4 mi^2) per day, assuming a crew can work 8-12 hours per day. Thus, the actual survey duration will take approximately 160 days over the course of 8 to 9 months. The vessels will be mobilized out of Homer or Anchorage with resupply runs occurring multiple times per week out of Homer, Anchorage, or Nikiski.

Specified Geographic Region

Each phase of the Apache program would encounter land, intertidal transition zone, and marine environments in Cook Inlet, Alaska. However, only the portions occurring in the

intertidal zone and marine environments have the potential to take marine mammals. The land-based portion of the program would not result in underwater sound levels that would rise to the level of a marine mammal take.

The proposed location of Apache's acquisition plan has been divided into areas denoted as Zone 1 and Zone 2 (see Figure 2 in Apache's application). Zone 1 is located in mid-Cook Inlet and extends on the east coast from approximately 10 km (6.2 mi) south of Point Possession to 25 km (15.5 mi) north of the East Foreland. Zone 1 only reaches into mid-channel and parallels the western shoreline from the Beluga River south to Bertha Bay. Zone 2 begins at the southern edge of Zone 1 (25 km [15.5 mi] north of the East Foreland) on both the east and west coasts and extends down to approximately Harriet Point on the west coast and to an area about 12 km (7.5 mi) north of Homer. Zones 1 and 2 together encompass approximately 4,238 km^2 (1,636 mi^2) of intertidal and offshore areas. Although Apache would only operate in a portion of this entire area between March 4 and December 31, 2014, Apache requested to operate in this entire region in order to allow for operational flexibility. There are numerous factors that influence the survey areas, including the geology of the Cook Inlet area, other permitting restrictions (i.e., commercial fishing, Alaska Department of Fish and Game refuges), seismic imaging of leases held by other entities with whom Apache has agreements (e.g., data sharing), overlap of sources and receivers to obtain the necessary seismic imaging data, and general operational restrictions (ice, weather, environmental conditions, marine life activity, etc.). Water depths for the program will range from 0-128 m (0-420 ft).

Detailed Description of Activities

The Notice of Proposed IHA (78 FR 80386, December 31, 2013) contains a full detailed description of the 3D seismic survey, including the recording system, sensor positioning, and

seismic source. That information has not changed and is therefore not repeated here.

Comments and Responses

A Notice of Proposed IHA was published in the Federal Register on December 31, 2013 (78 FR 80386) for public comment. During the 30-day public comment period, NMFS received nine comment letters from the following: the Natural Resources Defense Council (NRDC); the Marine Mammal Commission (MMC); the Resource Development Council; Alaska Oil and Gas Association; the Alaska Big Village Network, Center for Water Advocacy, the Chickaloon Village Traditional Council, and Alaska Inter-Tribal Council (hereafter referred to as "AITC"); Apache; and three private citizens.

NRDC submitted several journal articles and documents as attachments to their comment letter. NMFS acknowledges receipt of these articles and documents but does not intend to address each one specifically in the responses to comments. All of the public comment letters received on the Notice of Proposed IHA (78 FR 80386, December 31, 2013) are available on the internet at: http://www.nmfs.noaa.gov/pr/permits/incidental.htm. Following is a summary of the public comments and NMFS' responses.

Comment 1: The three private citizen letters requested that we deny issuance of the IHA. One letter requested denial because "we still do not know how much harm their proposed activity will create." The other citizens requested denial because marine mammals would be killed as a result of this survey.

Response: Extensive analysis of the proposed 3D seismic survey was conducted in accordance with the MMPA, Endangered Species Act (ESA), and National Environmental Policy Act (NEPA). Pursuant to those statutes, we analyzed the impacts to marine mammals (including those listed as threatened or endangered under the ESA), their habitat (including

critical habitat designated under the ESA), and to the availability of marine mammals for taking for subsistence uses. The MMPA analyses revealed that the activities would have a negligible impact on affected marine mammal species or stocks and would not have an unmitigable adverse impact on the availability of marine mammals for taking for subsistence uses. The ESA analysis concluded that the activities likely would not jeopardize the continued existence of ESA-listed species or destroy or adversely modify designated critical habitat. The NEPA analysis concluded that there would not be a significant impact on the human environment. Moreover, this activity is not expected to result in the death of any marine mammal species, and no such take is authorized. Mitigation and monitoring measures (as described later in this document) are required to reduce this potential even further.

Comment 2: The Resource Development Council and the Alaska Oil and Gas Association support issuance of this IHA in a timely manner and urge NMFS to recognize the benefits of seismic surveys and subsequent development of energy resources to Alaskans and the local economy.

Response: After careful evaluation of all comments and the data and information available regarding potential impacts to marine mammals and their habitat and to the availability of marine mammals for subsistence uses, NMFS has issued the final authorization to Apache to take marine mammals incidental to conducting a 3D seismic survey program in Cook Inlet for the period March 4 through December 31, 2014.

Comment 3: The MMC recommends that NMFS defer issuance of the proposed IHA until such time as NMFS can, with reasonable confidence, support a conclusion that the proposed 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. The MMC recommends that NMFS defer

issuance until we have better information on the cause or causes of ongoing decline of the population and a reasonable basis for determining that authorizing additional takes would not contribute to or exacerbate that decline. The MMC continues to believe that any activity that may contribute to or that may worsen the observed decline should not be viewed as having a negligible impact on the population. The NRDC states that NMFS failed to meet both the "small numbers" and "negligible impact" standards.

Response: In accordance with our implementing regulations at 50 CFR 216.104(c), we use the best available scientific evidence to determine whether the taking by the specified activity within the specified geographic region will have a negligible impact on the species or stock and will not have an unmitigable adverse impact on the availability of such species or stock for subsistence uses. Based on the scientific evidence available, NMFS determined that the impacts of the proposed 3D seismic survey program, which are primarily acoustic in nature, would meet these standards. Moreover, Apache proposed and NMFS has required in the IHA a rigorous mitigation plan to reduce impacts to Cook Inlet beluga whales and other marine mammals to the lowest level practicable, including measures to power down or shutdown airguns if any beluga whale is observed approaching or within the Level B harassment zone and restricting activities within a 10 mi (16 km) radius of the Susitna Delta from April 15 through October 15, which is an important area for beluga feeding and calving in the spring and summer months.

Our analysis indicates that issuance of this IHA will not contribute to or worsen the observed decline of the Cook Inlet beluga whale population. Additionally, the February 14, 2013, ESA Biological Opinion determined that the issuance of an IHA is not likely to jeopardize the continued existence of the Cook Inlet beluga whales or the western distinct population

segment of Steller sea lions or destroy or adversely modify Cook Inlet beluga whale critical habitat. The Biological Opinion also outlined Terms and Conditions and Reasonable and Prudent Measures to reduce impacts, which have been incorporated into the IHA. Therefore, based on the analysis of potential effects, the parameters of the seismic survey, and the rigorous mitigation and monitoring program, NMFS determined that the activity would have a negligible impact on the population.

Moreover, the seismic survey would take only small numbers of marine mammals relative to their population sizes. The number of animals likely to be taken for harbor porpoises, killer whales, harbor seals, and Steller sea lions represent less than 2% of the stock or population sizes. As described in the proposed IHA Federal Register notice, NMFS used a method that incorporates density of marine mammals overlaid with the anticipated ensonified area to calculate an estimated number of takes for belugas, which was estimated to be less than 10% of the stock abundance, which NMFS considers small. In addition to this quantitative evaluation, NMFS has also considered qualitative factors that further support the "small numbers" determination, including: (1) The seasonal distribution and habitat use patterns of Cook Inlet beluga whales, which suggest that for much of the time only a small portion of the population would be accessible to impacts from Apache's activity, as most animals are concentrated in upper Cook Inlet; (2) the mitigation requirements, which provide spatio-temporal limitations that avoid impacts to large numbers of animals feeding and calving in the Susitna Delta and limit exposures to sound levels associated with Level B harassment; and (3) monitoring results from previous surveys conducted by Apache in the same general vicinity, which indicated that no Cook Inlet beluga whales were sighted within the Level B harassment zone. Based on all of this information, NMFS determined that the number of beluga whales likely to be taken is small. See

response to Comment 4 and our small numbers analysis later in this document for more information about the small numbers determination for beluga whales and the other marine mammal species.

Comment 4: The MMC states that it remains unclear how NMFS is defining both small numbers and negligible impact in this situation and more generally. Reviewing courts have ruled that "small numbers" and "negligible impact" are not synonymous and the former cannot be defined on the basis of the latter—that is, they are separate standards. Defining the term "small numbers" for application to multiple species or stocks has been a challenge. An absolute definition (i.e., a set number of animals) might make sense in some cases but would not in others. A relative definition (e.g., a percentage) also might be appropriate in some cases but not in others. Because the Cook Inlet beluga population has been significantly reduced and is relatively small (about 300 individuals), defining small numbers as a percentage of the population's abundance would seem most appropriate in this instance. The NRDC commented that NMFS provides inadequate justification for these two standards.

Response: As both this notice and the proposed IHA Federal Register notice (78 FR 80386, December 31, 2013) show, NMFS considers "small numbers" and "negligible impact" as separate standards and conducts its analysis of each requirement separately. When making the negligible impact determination, NMFS assesses whether or not the activity is likely to affect annual rates of recruitment or survival of the affected species or stock. In addition to the number of estimated Level B harassment takes, NMFS considers other factors, such as the likely nature of any responses (their intensity, duration, etc.), the context of any responses (critical reproductive time or location, migration corridor, etc.), as well as the number and nature of estimated Level A harassment takes and the number of estimated serious injuries or mortalities.

We also consider the status of the species or stock (threatened, endangered, depleted, etc.) and how the mitigation measures are expected to reduce the number or severity of takes. As noted previously, Apache proposed and NMFS has required a rigorous set of mitigation measures to not only reduce and/or avoid Level A harassment takes but also to reduce and/or avoid Level B (behavioral) harassment takes.

In both the proposed IHA notice and this document, we have made a separate "small numbers" finding. As recommended by the MMC, we have based that finding on the percentage of the stock anticipated to be taken. The amount of Cook Inlet beluga whale takes authorized represents 9.6% of the population. This percentage is consistent with previous authorizations issued by NMFS and does not violate the "small numbers" requirement.

Comment 5: The MMC recommends that NMFS work with the U.S. Fish and Wildlife Service (USFWS) and the MMC to 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 MMC understands that NMFS has been working on developing a policy and would welcome an opportunity to discuss this policy further before it is finalized.

Response: NMFS is in the process of developing both a clearer policy to outline the criteria for determining what constitutes "small numbers" and an improved analytical framework for determining whether an activity will have a "negligible impact" for the purpose of authorizing takes of marine mammals. We fully intend to engage the MMC in these processes at the appropriate time, and we will coordinate with the USFWS where needed.

Comment 6: The NRDC states: "As NMFS' regulations make clear, the agency must modify, withdraw, or suspend an IHA if the authorized taking, "either individually or in

combination with other authorizations," is having a greater than negligible impact on the species or population or an unmitigable adverse impact on subsistence use. 50 CFR 216.107(f)(2). This year, in addition to Apache's, NMFS has received IHA applications from two other companies, Furie and SAExploration, that plan to conduct seismic exploration in Cook Inlet and, according to documents published by the Alaska Department of Natural Resources, largely within the same general areas identified by Apache." The NRDC, AITC, and the MMC both note that NMFS must address the cumulative effects of activities in Cook Inlet on Cook Inlet beluga whales and whether the cumulative impacts of all the activities are having "either individually or in combination" a greater than negligible impact on marine mammals.

Response: The section of the implementing regulations cited by the NRDC relates to the level of take and degree of impacts known to have occurred or be occurring after issuance of the IHA not to the standards and protocols that must be followed to issue the authorization initially. Neither the MMPA nor NMFS' implementing regulations specify how to consider other activities and their impacts on the same populations when conducting a negligible impact analysis. However, consistent with the 1989 preamble for NMFS' implementing regulations (54 FR 40338, September 29, 1989), the impacts from other past and ongoing anthropogenic activities are incorporated into the negligible impact analysis via their impacts on the environmental baseline (e.g., as reflected in the density/distribution and status of the species, population size and growth rate, and ambient noise).

In addition, cumulative effects were addressed in the EA and Biological Opinion prepared for this action. These documents, as well as the Alaska Marine Stock Assessments and the most recent abundance estimate for Cook Inlet beluga whales (Allen and Angliss, 2013), are part of NMFS' Administrative Record for this action, and provided the decision maker with

information regarding other activities in the action area that affect marine mammals, an analysis of cumulative impacts, and other information relevant to the determination made under the MMPA.

Comment 7: The MMC states that NMFS should explain why it believes marine mammals that avoid an area in response to a sound source, even if their exposure is below the assumed disturbance threshold, should not be considered to have been taken under the MMPA's definition of Level B harassment (16 U.S.C. 1362(18)(A)(ii)).

Response: When estimating the numbers of animals that may be "taken" by Level B harassment by acoustic sources, NMFS has identified specific sound thresholds to make that assessment. Based on available scientific data and information some individuals may react to a degree that is considered a take by harassment while others may not. Additionally, some individuals may react before entering the relevant sound isopleth, and, again, others may not. Avoidance to the degree that would be considered a take under the MMPA has been incorporated into our threshold and our analysis.

Comment 8: The MMC notes that in the 2012 monitoring reports, Apache reported four instances in which gray whales were observed approaching the disturbance zone, resulting in shutdown of operations. To ensure that unauthorized takes of gray whales do not occur in 2014, the MMC recommends that NMFS advise Apache to request the authorization of incidental takes of gray whales associated with its proposed activities.

Response: Distribution of gray whales in upper Cook Inlet has not been well understood, and Apache's monitoring reports have provided new information. However, occurrence of gray whales is still not expected to be common in the seismic survey area. The IHA contains a measure that states if any marine mammal species are encountered during seismic activities that

are not listed in the IHA for authorized taking and are likely to be exposed to sound pressure levels (SPLs) greater than or equal to 160 dB re 1 μPa (rms), then Apache must alter speed or course, power down, or shut-down the sound source to avoid take. Take, even by Level B harassment, of any species not specifically listed in the IHA is prohibited. Therefore, Apache will continue to implement mitigation measures to avoid take of gray whales. Based on the low level of occurrence, the ability to implement mitigation measures, and the high likelihood of detectability of gray whales during monitoring, NMFS determined that take of gray whales is not needed in this IHA. However, Apache intends to continue their 3D seismic survey program and has submitted an application requesting 5-year regulations and a Letter of Authorization. We will advise Apache to consider including take of gray whales in that longer-term request.

Comment 9: The NRDC and AITC state that NMFS failed to properly estimate take in the proposed IHA. The NRDC states that NMFS failed to account for survey duration in the estimation of beluga whale takes and that NMFS based beluga takes using a predictive habitat density model (Goetz et al., 2012) that is based on data from summer months and confined to summer distribution when belugas are generally concentrated in the Upper Inlet, even though activity could occur year round.

Response: The numerical estimation of take for beluga whales did not consider survey duration in the calculation. However, the method of using daily footprints (as was done for the four other marine mammal species for which take is authorized), while offering a good picture of instances of take, overestimates the numbers of individual animals likely to be taken because the calculation assumes a 100% turnover of animals every day, which is unlikely. This overestimation of individuals would be especially exacerbated if this method were used for Cook Inlet beluga whales because it is well known from data that the majority of the population occurs

in the upper Inlet (around the Susitna, Little Susitna, and Beluga Rivers) from late April/early May until late September/early October.

Moreover, the model (or other numerical methods for estimating take) does not take into consideration the rigorous mitigation protocols that will be implemented by Apache to reduce the number of actual Level B harassment takes of Cook Inlet beluga whales. As mentioned previously, the IHA contains a condition restricting Apache's airgun operations within 10 mi (16 km) of the mean higher high water line of the Susitna Delta from April 15 through October 15. During this time, a significant portion of the Cook Inlet beluga whale population occurs in this area for feeding and calving. This setback distance includes the entire 160 dB radius of 5.9 mi (9.5 km) predicted for the full airgun array plus an additional 4.1 mi (6.5 km) of buffer, thus reducing the number of animals that may be exposed to Level B harassment thresholds. Apache is also required to shut down the airguns if any beluga whale is sighted approaching or entering the Level B harassment zone to avoid take. Additionally, Apache will fly daily aerial surveys, safety and weather permitting, to monitor for the presence of large groups of beluga whales. Observations from these surveys will provide the basis for real-time mitigation (i.e., airgun power down, shutdown, and ramp up), and aerial observers will be in radio contact with the seismic operations personnel. The aerial surveys can be used to redirect seismic operations as needed based on presence of large numbers of beluga whales. Lastly, observations from previous Apache monitoring reports did not note sightings of any beluga whales inside the 160 dB threshold. Therefore, NMFS combined use of the National Marine Mammal Laboratory (NMML) model, which we determined to be the best available data upon which to base density estimates, with consideration of all of the mitigation measures required to be implemented to authorize 30 beluga whale takes. This approach is reasonable and does not contradict available

science and data of beluga whale distribution and local abundance during the period of operations.

Comment 10: The NRDC states that in the case of marine mammals other than beluga whales, NMFS repeated past errors associated with its use of raw NMML survey data. Errors in the density calculations include the failure to incorporate correction factors for missed marine mammals in the analysis and the failure to fully account for survey duration by multiplying densities (which are calculated on an hourly basis) by the number of survey days but not the number of hours in a day.

Response: Based on a comment from the MMC (see Comment 11), NMFS has increased the number of harbor seal takes to match the average density and take estimation. Correction factors for marine mammal surveys, with the exception of beluga whales, are not available for Cook Inlet. The primary purpose and focus of the NMFS aerial surveys in Cook Inlet for the past decade has been to monitor the beluga whale population. Although incidental observations of other marine mammals are noted during these surveys, they are focused on beluga whales. With the exception of the beluga whale, no detailed statistical analysis of Cook Inlet marine mammal survey results has been conducted, and no correction factors have been developed for Cook Inlet marine mammals. The only published Cook Inlet correction factor is for beluga whales. Developing correction factors for other marine mammals would have required different survey data collection and consideration of unavailable data such as Cook Inlet sightability, movement patterns, tidal correlations and detailed statistical analyses. For example, other marine mammal numbers are often rounded to the nearest 10 or 100 during the NMFS aerial survey; resulting in unknown observation bias. Therefore, the data from the NMFS surveys are the best available and take levels are still likely overestimated because of the assumption that there is a

100% turnover rate of marine mammals each day.

Survey duration was appropriately considered in the estimations by multiplying density by area of ensonification by number of survey days. NMFS does not calculate takes on an hourly basis, and, additionally, the multiple hours surveyed within a day are reflected in the area of ensonification, which considers the distance they can move within a day and is therefore larger than what would be covered in one hour. Moreover, Apache will not be using the seismic airguns 24 hours per day, so multiplying by a daily duration may in fact overestimate take for some species. While protected species observers (PSOs) cannot detect every single animal within the Level B harassment zone, the monitoring reports indicate that sightings did not exceed anticipated estimates. Also, Apache was able to successfully implement mitigation measures to avoid Level A harassment takes of these species. The take estimates for species other than beluga whales also assume that Apache will operate in the entire proposed area (all of Zone 1 and all of Zone 2). Because Apache will only operate in a subset of the total area, the take levels are again likely overestimates. Therefore, we determined that appropriate calculations were used to estimate take levels.

Comment 11: The MMC notes that Apache made adjustments to the average and maximum densities for several species in its newest application and that the estimates for harbor seals went up significantly from the previous application. However, no corresponding adjustments were made either to Apache's take request or the number of takes proposed by NMFS for harbor seals. Therefore, to ensure that authorized takes for harbor seals are not exceeded for proposed activities in 2014, the MMC recommends that NMFS authorize, at a minimum, the average estimated number of takes for harbor seals.

Response: Based on the MMC recommendation, NMFS has increased the number of

estimated and authorized harbor seal takes from 200 (number included in the proposed IHA notice) to 440 (the average estimated number of harbor seal takes in Apache's application). This changes the percentage of the population potentially taken by Level B harassment from 0.87% to 1.9%. However, the amount of take is still a small number relative to the affected species/stock size. Additionally, the change in the amount of take does not alter the previous analysis for harbor seals, and the takes will have a negligible impact on harbor seals.

Comment 12: The NRDC commented that NMFS underestimated the size of Apache's impact area by: (1) Using an outdated and incorrect threshold for behavioral take; and (2) disregarding the best available evidence on the potential for temporary and permanent threshold shift on mid- and high-frequency cetaceans and on pinnipeds.

Response: The comment that NMFS uses an outdated and incorrect threshold for behavioral takes does not include any specific recommendations. NMFS uses 160 dB (rms) as the exposure level for estimating Level B harassment takes for most species in most cases. This threshold was established for underwater impulse sound sources based on measured avoidance responses observed in whales in the wild. Specifically, the 160 dB threshold was derived from data for mother-calf pairs of migrating gray whales (Malme et al., 1983, 1984) and bowhead whales (Richardson et al., 1985, 1986) responding to seismic airguns (e.g., impulsive sound source). We acknowledge there is more recent information bearing on behavioral reactions to seismic airguns, but those data only illustrate how complex and context-dependent the relationship is between the two. See 75 FR 49710, 49716 (August 13, 2010) (IHA for Shell seismic survey in Alaska; response to comment 9). Accordingly, it is not a matter of merely replacing the existing threshold with a new one. NOAA is developing relatively more sophisticated draft guidelines for determining acoustic impacts, including information for

determining Level B harassment thresholds. Due to the complexity of the task, the draft guidelines will undergo a rigorous review that includes internal agency review, public notice and comment, and external peer review before any final product is published. In the meantime, and taking into consideration the facts and available science, NMFS determined it is reasonable to use the 160 dB threshold for estimating takes of marine mammals in Cook Inlet by Level B harassment. However, we discuss the science on this issue qualitatively in our analysis of potential effects to marine mammals.

The comment that NMFS disregarded the best available evidence on the potential for temporary and permanent threshold shift on mid- and high-frequency cetaceans and on pinnipeds does not contain any specific recommendations. We acknowledge there is more recent information available bearing on the relevant exposure levels for assessing temporary and permanent hearing impacts. (See NMFS' Federal Register notice (78 FR 78822, December 27, 2013) for the draft guidance for assessing the onset of permanent and temporary threshold shift.) Again, NMFS will be issuing new acoustic guidelines, but that process is not complete, so we did not use it to assign new thresholds for calculating take estimates for hearing impacts. However, we did consider the information, and it suggests the current 180 and 190 dB thresholds are appropriate and that they likely overestimate potential for hearing impacts. See 75 FR 49710, 49715, 49724 (August 13, 2010) (IHA for Shell seismic survey in Alaska; responses to comment 8 and comment 27). Moreover, the required mitigation is designed to ensure there are no exposures at levels thought to cause hearing impairment, and, for several of the marine mammal species in the project area, mitigation measures are designed to reduce or eliminate exposure to Level B harassment thresholds.

Comment 13: The NRDC commented that the proposed IHA fails to properly evaluate

the impacts of stress, the risk of stranding, potential reduction in prey, and effects of increased turbidity.

Response: NMFS provided a detailed discussion of the potential effects of this action in the notice of the proposed IHA (78 FR 80386, December 31, 2013) and determined the analyses and preliminary determinations were appropriate. The comment does not provide any specific recommendations or criticism regarding the sufficiency of those analyses. The potential effects of this action are also addressed in NMFS's EA and Biological Opinion (which are incorporated by reference herein).

Comment 14: AITC commented that NMFS focuses mostly on marine mammals in its analysis, but they believe a more comprehensive ecological risk assessment is needed to understand localized and cumulative effects to subsistence use of the ecosystem resources.

Response: The proposed IHA Federal Register notice contained analysis of potential impacts to marine mammals, marine mammal habitat, and the availability of marine mammals for subsistence uses. That document thoroughly analyzed these issues, allowing us to come to preliminary determinations that the proposed activity would have a negligible impact on marine mammals and would not have an unmitigable adverse impact on the availability of marine mammals for taking for subsistence uses. See response to Comment 6 for information on NMFS' cumulative effects analysis.

Comment 15: AITC commented that to date NMFS has avoided requests for consultation with affected Native Alaskan Tribal governments on the IHAs, including this one.

Response: Apache and NMFS recognize the importance of ensuring that Alaska Native Organizations (ANOs) and federally recognized tribes are informed, engaged, and involved during the permitting process and will continue to work with the ANOs and tribes to discuss

operations and activities. On February 6, 2012, in response to requests for government-to-government consultations by the Cook Inlet Marine Mammal Council (CIMMC)—a now dissolved ANO that represented Cook Inlet tribes—and Native Village of Eklutna, NMFS met with representatives of these two groups and a representative from the Ninilchik. We engaged in a discussion about the proposed IHA for phase 1 of Apache's seismic program, the MMPA process for issuing an IHA, concerns regarding Cook Inlet beluga whales, and how to achieve greater coordination with NMFS on issues that impact tribal concerns. We immediately notified local tribal governments of the publication of this proposed IHA notice and invited their input. However, we did not receive any emails, letters, or phone calls requesting formal government-to-government consultation on this most recent proposed IHA notice.

Additionally, Apache met with the CIMMC on March 29, 2011, to discuss the proposed activities and discuss any subsistence concerns. Apache also met with the Tyonek Native Corporation on November 9, 2010 and the Salamatof Native Corporation on November 22, 2010. Additional meetings were held with the Native Village of Tyonek, the Kenaitze Indian Tribe, and Knik Tribal Council, and the Ninilchik Traditional Council. According to Apache, during these meetings, no concerns were raised regarding potential conflict with subsistence harvest of marine mammals.

Since the issuance of the April 2012 IHA, Apache has maintained regular and consistent communication with federally recognized Alaska Natives. The Alaska Natives, Native Corporations, and ANOs that Apache has communicated with include: the Native Village of Tyonek; Tyonek Native Corporation; Ninilchik Native Association; Ninilchik Traditional Council; Salamatof Native Association; Knikatnu; Knik Native Council; Alexander Creek; Cook Inlet Region, Inc.; the Native Village of Eklutna; Kenaitze Indian Tribe; and Seldovia Native

Assocaition. Apache has shared information gathered during the seismic survey conducted under the April 2012 IHA and hosted an information exchange with Alaska Native Villages, Native Corporations, and other Non-Governmental Organizations in the spring of 2013 where data from the past year's monitoring operations were presented. Apache continued to meet with the Native Village of Tyonek, Tyonek Native Corporation, Cook Inlet Region Inc., and other recognized tribes and village corporations in the Cook Inlet Region throughout 2013.

Comment 16: The NRDC and AITC comment that the proposed mitigation measures fail to meet the MMPA's "least practicable adverse impact" standard. The NRDC provides a list of approximately eight measures that NMFS "failed to consider or adequately consider."

Response: NMFS provided a detailed discussion of proposed mitigation measures and the MMPA's "least practicable impact" standard in the notice of the proposed IHA (78 FR 80836, December 31, 2013), which are repeated in the "Mitigation" section of this notice. The measures that NMFS allegedly failed to consider or adequately consider are identified and discussed below:

(1) Seasonal exclusions around river mouths, including early spring (pre-April 14) exclusions around the Beluga River and Susitna Delta, and avoidance of other areas that have a higher probability of beluga occurrence: NMFS has required a 10 mile (16 km) exclusion zone around the Susitna Delta (which includes the Beluga River) in this IHA. This mitigation mirrors a measure in the Incidental Take Statement for the 2012 and 2013 Biological Opinions. Seismic survey operations involving the use of airguns will be prohibited in this area between April 15 and October 15. In both the MMPA and ESA analysis, NMFS determined that this date range is sufficient to protect Cook Inlet beluga whales and the critical habitat in the Susitna Delta. While data indicate that belugas may use this part of the inlet year round, peak use occurs from early

May to late September. NMFS added a 2-week buffer on both ends of this peak usage period to add extra protection to feeding and calving belugas. (In addition, the Alaska Department of Fish and Game (ADF&G) prohibits the use of airguns within 1 mi (1.6 km) of the mouth of any stream listed by the ADF&G on the Catalogue of Waters Important for the Spawning, Rearing, or Migration of Anadromous Fishes. See additional explanation in "Mitigation Measures Considered but not Required" section, later in this document.)

(2) Use of advance aerial surveys to redirect activity if sufficient numbers of belugas or other species are sighted: Safety and weather permitting, aerial surveys will occur daily. Aerial surveys will be required when operating near river mouths to identify large congregations of beluga whales and harbor seal haul outs. In addition, daily aerial surveys must be conducted when there are any seismic-related activities (including, but not limited to, node laying/retrieval or airgun operations) occurring in either Zone 1 or Zone 2 of Apache's seismic operating area (see Figure 2 in Apache's application). Aerial survey paths will encompass river mouths to search for groups of belugas and harbor seal haulouts. The purposes of these surveys is to mitigate impacts and reduce incidental take by identifying the presence of Cook Inlet belugas and alert the vessels accordingly of necessary actions to avoid or minimize potential disturbance, to monitor the effects of the seismic program on Cook Inlet belugas and their primary feeding and reproduction areas, and to monitor that any displacement from the Susitna Delta region is temporary and would not be likely to cause harm to whales by reducing their ability to feed. This information allows for better planning by PSOs and assists in better understanding of the movements of large groups of beluga whales with respect to the tide. Moreover, aerial observations can be used to locate rarely seen animals that are difficult to track from the vessels.

(3) Field testing and use of alternative technologies, such as vibroseis and gravity

gradiometry, to reduce or eliminate the need for airguns and delaying seismic acquisition in higher density areas until the alternative technology of marine vibroseis becomes available: Apache requested takes of marine mammals incidental to the seismic survey operations described in the IHA application, which identified airgun arrays as the technique Apache would employ to acquire seismic data. It would be impractical for NMFS to require Apache to make this kind of change to the specified activity and is beyond the scope of the request for takes incidental to Apache's operation of airguns and other active acoustic sources.

Apache continues to examine new and emerging alternative technology such as marine vibroseis, marine sparkers, and other systems to incorporate into their seismic program. Apache knows of no current technology scaled for industrial use that is reliable enough to meet the environmental challenges of operating in Cook Inlet. Apache is aware that many prototypes are currently in development, and may ultimately incorporate these new technologies into their evaluation process as they enter commercial viability. However, none of these technologies are currently ready for use on a large scale in Cook Inlet. As this technology is developed, Apache will evaluate its utility for operations in the Cook Inlet environment.

(4) Required use of the lowest practicable source level in conducting airgun activity: Apache determined that the 2400 in^3 array provides the data required for Apache's operations. If it is determined that lower source levels or volume outputs are appropriate to complete the seismic acquisition, testing will occur to determine the extent of the new array size that can be used. If a lower source level is acceptable to complete Apache's operations, a new sound source verification will be conducted based on the airgun array and reported to NMFS.

(5) Observance of a 10 knot speed limit for all vessels, including supply vessels, employed in the activity: Apache has indicated that vessels typically move at 2-4 knots during

active seismic data acquisition. While other vessels typically do not operate at speeds greater than 10 knots, stipulating vessel speeds could hamper Apache's seismic survey by increasing the amount of time needed to complete the survey because it may take longer to transit to other survey areas, and would not be practicable. In any event, NMFS requires speed and course alterations when a marine mammal is detected outside the 160 dB zone and, based on position and relative motion, is likely to enter the zone. When not conducting seismic acquisition operations, vessels are operated at speeds based upon sea state and safe operating conditions. Moreover, ship strikes of Cook Inlet beluga whales or other Cook Inlet marine mammals have not been an issue.

(6) Limitation of the mitigation airgun to the longest shot interval necessary to carry out its intended purpose: This general comment contained no specific recommendations. However NMFS has added a mitigation measure to the IHA requiring that Apache reduce the shot interval for the mitigation gun to one shot per minute.

(7) Immediate suspension of airgun activity, pending investigation, if any beluga strandings occur within or within an appropriate distance of the year 3 survey area: There is no evidence in the literature that airgun pulses cause marine mammal strandings, and the sounds produced by airguns are quite different from sound sources that have been associated with stranding events, such as military mid-frequency active sonar or sub-bottom profilers. Nevertheless, the IHA requires Apache to immediately cease activities and report unauthorized takes of marine mammals, such as injury, serious injury, or mortality. NMFS will review the circumstances of Apache's unauthorized take and determine if additional mitigation measures are needed before activities can resume to minimize the likelihood of further unauthorized take and to ensure MMPA compliance. Apache may not resume activities until notified by NMFS.

Separately the IHA includes measures if injured or dead marine mammals are sighted and the cause cannot be easily determined. In those cases, NMFS will review the circumstances of the stranding event while Apache continues with operations.

(8) Establishment of a larger exclusion zone for beluga whales that is not predicated on the detection of whale aggregations or cow-calf pairs: Both the proposed IHA notice and the issued IHA contain a requirement for Apache to delay the start of airgun use or shutdown the airguns if a beluga whale is visually sighted approaching or within the 160-dB disturbance zone until the animal(s) are no longer present within the 160-dB zone. The measure applies to the sighting of any beluga whale, not just sightings of groups or cow-calf pairs.

Comment 17: The NRDC comments that monitoring measures should include passive acoustic monitoring (PAM) superior to over-the-side hydrophone, and, for visual surveillance, NMFS should require at least two ship-based PSOs per vessel on watch at all times during daylight hours with a maximum of 2 consecutive hours on watch and 8 hours of watch time per day per PSO.

Response: The passive acoustic monitoring plan for Apache's 2012 survey anticipated the use of a bottom-mounted telemetry buoy to broadcast acoustic measurements using a radio-system link back to a monitoring vessel. Although a buoy was deployed during the first week of surveying under the 2012 IHA, it was not successful. Upon deployment, the buoy immediately turned upside down due to the strong current in Cook Inlet. After retrieval, the buoy was not redeployed and the survey used a single omni-directional hydrophone lowered from the side of the mitigation vessel. During the entire 2012 survey season, Apache's PAM equipment yielded only six confirmed marine mammal detections, one of which was a Cook Inlet beluga whale. The single Cook Inlet beluga whale detection did not, however, result in a shutdown procedure.

Additionally, Joint Base Elmendorf-Fort Richardson, NMML, and ADF&G conducted a 2012 study (Gillespie et al., 2013) to determine if beluga whale observations at the mouth of Eagle River corresponded with acoustic detections received by a PAMBuoy data collection system. The PAMBuoy data collection system was deployed in the mouth of Eagle River from 12-31 August 2012. This study was a trial period conducted with one hydrophone at the mouth of the river. Overall, it was successful in detecting beluga whale echolocation clicks and whistles, but came with several limitations:

- The PAM system was able to reliably detect all whales approaching or entering the river but still performs less well than a human observer;
- Sounds from vessels in Cook Inlet (e.g. vessel noise) have a large chance of interfering with detections from PAM. The mouth of Eagle River has very little vessel traffic, which is likely why the study was successful there and not likely to be successful in Cook Inlet;
- PAMbouys could be a navigational hazard in Cook Inlet for commercial, subsistence, and sport fishing, as well as the commercial vessel traffic traveling through Cook Inlet;
- The limited testing in a very small area should not become the new standard of monitoring in the entire Cook Inlet. The tide, vessel traffic, bathymetry, and substrate of Cook Inlet are far more complex than the study area;
- It appears the hydrophone must be hardwired to the shore which is not practical for mobile marine seismic operations;
- Currently, deployment of the system is done by walking tripods onto the mudflats. This is not feasible for the vast majority of the Apache project area. Walking onto the mudflats in parts of Cook Inlet also poses a safety risk;
- The study found considerable investment would be necessary to develop an ice and

debris proof mounting system. Other issues with hydrophone configuration include: at extreme low tides, the hydrophone was uncovered and therefore not usable; the hydrophone had to be located in such a position so that it could be occasionally visually inspected; hydrophone battery supply has to constantly be checked; the costs and practicalities of long-term hydrophone mounting and data transmission have not been determined.; and only one hydrophone was tested, and Apache would need several hydrophones;

● Observer sightings and acoustic detections of belugas generally corresponded with one another. Thus PAMBuoys would be simply duplicating PSO and aerial efforts;

● The wireless modem that transmits the acoustic data to the "base station" was only tested to 3.2 km; and

● The study did not conclude anything about the detection range of the system, except that it was greater than 400 m.

Therefore, given the limited capability of various PAM methodologies for Apache's project in Cook Inlet (see Austin and Zeddies, 2012 for more information), as compared to visual monitoring methods, including expanded daily aerial surveys, the bottom-mounted telemetry buoy and omni-directional hydrophone are no longer considered practicable, and will not be a component of the 2014 seismic survey.

Vessel-based observers are stationed on three vessels with two PSOs on the support vessel and one PSO on each of the two source vessels. Due to space limitations onboard the source vessels, no more than one PSO can be accommodated on each vessel. PSOs monitor for marine mammals during all daylight hours prior to and during seismic survey operations, unless precluded by weather (e.g., fog, ice, high sea states). PSOs on the vessels rotate observation shifts every 4-6 hours in order to better monitor the survey area, implement mitigation measures,

and avoid fatigue. In addition, vessel crews are instructed to assist with detecting marine mammals and implementing mitigation measures.

Comment 18: The MMC notes that NMFS is reviewing two other IHA applications for proposed seismic surveys in Cook Inlet in 2014 and that it is not clear whether these applications are seeking separate authorizations for some or all of the same activities. NMFS needs to adopt policies and institute 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 seismic surveys within the same area, it would increase the numbers of marine mammals taken and expose beluga whales and other marine mammals to unnecessary, avoidable risks. Section 101(a)(5)(D)(ii)(I) of the MMPA directs NMFS to structure IHAs so that they prescribe "other means of effecting the least practicable impact on such species or stock and its habitat." Allowing multiple operators to obtain separate IHAs to conduct duplicative surveys is inconsistent with that mandate. Data sharing and collaboration is critical in habitat areas used by endangered populations, such as Cook Inlet beluga whales. The MMC recommends that NMFS encourage Apache and other applicants proposing to conduct seismic surveys in Cook Inlet in 2014 to collaborate on those surveys and, to the extent possible, submit a single application seeking authorization for incidental harassment of marine mammals.

Response: We agree and have encouraged Apache to cooperate with other interested parties to minimize the impacts of new seismic surveys in the region. Currently, Apache works with other oil and gas operators in the area to enter into cooperative agreements. Sometimes these negotiations are successful, but at other times the companies cannot reach an agreement acceptable to both parties. Apache will continue its discussions with other operators in Cook Inlet to find opportunities to joint venture in oil and gas operations, including seismic data

acquisition.

The portion of the statute cited by the MMC refers to the need to require mitigation measures to ensure that the specified activity for which take is authorized in that particular authorization "effects the least practicable impact." Apache proposed and NMFS has required a rigorous mitigation and monitoring plan to ensure that Apache's program meets that standard. Moreover, NMFS will not issue IHAs to other applicants if that standard cannot be met. Regarding the issue of cumulative impacts, see our response to Comment 6.

Comment 19: Apache comments that there is no scientific basis or rationale for the 10 mi (16 km) buffer spanning from the Beluga River to the Little Susitna River and requests that the exclusion zone be described as a 5.9 mi (9.5 km) radius from the mouth of the Big Susitna River.

Response: As described in the proposed IHA notice and in detail in the 2013 Biological Opinion, the seasonal exclusion area contained in the Terms and Conditions section of the Incidental Take Statement is defined as 10 mi (16 km) of the mean higher high water (MHHW) line of the Susitna Delta (Beluga River to the Little Susitna River). This zone is based on the location of beluga whales during the spring and fall in that area for foraging and calving with a buffer to keep sound over 160 dB (rms) out of this area. NMFS does not support the suggested reduction in distance and has included the mitigation measure in the IHA with the 10 mi (16 km) setback.

Comment 20: Apache requested clarification on the aerial monitoring measures (condition 7(c)(ii) in the proposed IHA) to reduce redundancy.

Response: Conditions 7(c)(ii) and 7(c)(iv) both outlined parameters for conducting aerial surveys in Zone 1 of Apache's operating area, but the language did not match and thus created some confusion. NMFS has combined the two conditions in the proposed IHA into one

condition in this final IHA (now condition 7(c)(ii)) to read as follows: "When operating in Zone 1 (see Figure 2 for proposed survey zones), flight paths should encompass areas from Anchorage, along the coastline of the Susitna Delta to Tyonek, across the inlet to Point Possession, around the coastline of Chickaloon Bay to Burnt Island, and across to Anchorage (or in reverse order). The surveys will continue daily when Apache has any activities north or east of a line from Tyonek across to the eastern side of Number 3 Bay of the Captain Cook State Recreation Area (IHA Application Figure 19)." NMFS has also added language to the final IHA specific to aerial monitoring when Apache is operating in Zone 2.

Comment 21: Apache requested to only fly aerial surveys when airguns are in operation but not at other times (i.e., node laying/retrieval).

Response: In the marine mammal monitoring plan submitted with the IHA application, Apache proposed to conduct aerial surveys both during active seismic airgun operations and during other activities, such as node laying/retrieval. This is included in the Terms and Conditions of the ESA ITS, and was included in the proposed IHA notice. The purpose of flying during both active airgun operations and other operations is to better understand distribution and abundance of marine mammals (especially beluga whales) in the operating area and to better understand if displacement is occurring as a result of the operation. Therefore, NMFS has required aerial monitoring flights to occur for both activities in the final IHA.

Comment 22: Apache requested that language is added to clarify that permitted Level B harassment takes are estimated from the methods described in Apache's application but that the permitted Level B takes are for actual individual marine mammals observed inside of the exclusion zones by the PSOs.

Response: In the IHA application, Apache presented a detailed equation that indicated

when 30 "estimated" beluga takes may occur. In the application, Apache stated: "Apache will operate in Zone 1 or Zone 2 until the 30 calculated takes of belugas has been met or the IHA expires." We based our analysis on the fact that Apache predicted that 30 takes would occur if they operated within a specified area. If, for example, Apache operates in double that amount of area or time, then we would have needed to estimate a higher level of activity. Apache cannot conduct more activity than what was predicted and analyzed in the application and proposed IHA.

Description of Marine Mammals in the Area of the Specified Activity

The marine mammal species under NMFS's jurisdiction that could occur near operations in Cook Inlet include three cetacean species, all odontocetes (toothed whales): beluga whale (Delphinapterus leucas), killer whale (Orcinus orca), and harbor porpoise (Phocoena phocoena), and two pinniped species: harbor seal (Phoca vitulina richardsi) and Steller sea lions (Eumetopias jubatus). The marine mammal species that is likely to be encountered most widely (in space and time) throughout the period of the planned surveys is the harbor seal. While killer whales and Steller sea lions have been sighted in upper Cook Inlet, their occurrence is considered rare in that portion of the Inlet.

Of the five marine mammal species likely to occur in the proposed marine survey area, Cook Inlet beluga whales and Steller sea lions are listed as endangered under the ESA (Steller sea lions are listed as two distinct population segments (DPSs), an eastern and a western DPS; the relevant DPS in Cook Inlet is the western DPS). The eastern DPS was recently removed from the endangered species list (78 FR 66139, November 4, 2013). These species are also designated as "depleted" under the MMPA. Despite these designations, Cook Inlet beluga whales and the western DPS of Steller sea lions have not made significant progress towards

recovery. Data indicate that the Cook Inlet population of beluga whales has been decreasing at a rate of 1.1 percent annually between 2001 and 2011 (Allen and Angliss, 2013). A recent review of the status of the population indicated that there is an 80% chance that the population will decline further (Hobbs and Shelden 2008). Counts of non-pup Steller sea lions at trend sites in the Alaska western stock increased 11% from 2000 to 2004 (Allen and Angliss, 2013). These were the first region-wide increases for the western stock since standardized surveys began in the 1970s and were due to increased or stable counts in all regions except the western Aleutian Islands. Between 2004 and 2008, Alaska western non-pup counts increased only 3%: eastern Gulf of Alaska (Prince William Sound area) counts were higher and Kenai Peninsula through Kiska Island counts were stable, but western Aleutian counts continued to decline. Johnson (2010) analyzed western Steller sea lion population trends in Alaska and concluded that the overall 2000-2008 trend was a decline 1.5% per year; however, there continues to be considerable regional variability in recent trends (Allen and Angliss, 2013). NMFS has not been able to complete a non-pup survey of the AK western stock since 2008, due largely to weather and closure of the Air Force base on Shemya in 2009 and 2010.

Pursuant to the ESA, critical habitat has been designated for Cook Inlet beluga whales and Steller sea lions. The proposed action falls within critical habitat designated in Cook Inlet for beluga whales but is not within critical habitat designated for Steller sea lions. The portion of beluga whale critical habitat – identified as Area 2 in the critical habitat designation - where the seismic survey will occur is located south of the Area 1 critical habitat where belugas are particularly vulnerable to impacts due to their high seasonal densities and the biological importance of the area for foraging, nursery, and predator avoidance. Area 2 is based on dispersed fall and winter feeding and transit areas in waters where whales typically appear in

smaller densities or deeper waters (76 FR 20180, April 11, 2011).

There are several species of mysticetes that have been observed infrequently in lower Cook Inlet, including minke whale (Balaenoptera acutorostrata), humpback whale (Megaptera novaeangliae), fin whale (Balaenoptera physalus), and gray whale (Eschrichtius robustus). Because of their infrequent occurrence in the location of seismic acquisition, take is not likely, and they are not included in this IHA notice. Sea otters also occur in Cook Inlet but are managed by the USFWS and are therefore not considered further in this IHA notice. The Notice of Proposed IHA (78 FR 80836, December 31, 2013) and Apache's application contain detailed descriptions of the status, distribution, seasonal distribution, abundance, and life history of the five marine mammal species most likely to occur in the project area. That information has not changed and is therefore not repeated here. Additional information can also be found in the NMFS 2012 Alaska Stock Assessment Report on the Internet at: http://www.nmfs.noaa.gov/pr/sars/pdf/ak2012.pdf.

Potential Effects of the Specified Activity on Marine Mammals

This section includes a summary and discussion of the ways that the types of stressors associated with the specified activity (e.g., seismic airgun operations, vessel movement) have been observed to or are thought to impact marine mammals. This section may include a discussion of known effects that do not rise to the level of an MMPA take (for example, with acoustics, we may include a discussion of studies that showed animals not reacting at all to sound or exhibiting barely measurable avoidance). The discussion may also include reactions that we consider to rise to the level of a take and those that we do not consider to rise to the level of a take. This section is intended as a background of potential effects and does not consider either the specific manner in which this activity will be carried out or the mitigation that will be

implemented or how either of those will shape the anticipated impacts from this specific activity. The "Estimated Take by Incidental Harassment" section later in this document will include a quantitative analysis of the number of individuals that are expected to be taken by this activity. The "Negligible Impact Analysis" section will include the analysis of how this specific activity will impact marine mammals and will consider the content of this section, the "Estimated Take by Incidental Harassment" section, the "Mitigation" section, and the "Anticipated Effects on Marine Mammal Habitat" section to draw conclusions regarding the likely impacts of this activity on the reproductive success or survivorship of individuals and from that on the affected marine mammal populations or stocks.

Operating active acoustic sources, such as airgun arrays, has the potential for adverse effects on marine mammals. The majority of anticipated impacts would be from the use of acoustic sources.

The effects of sounds from airgun pulses might include one or more of the following: tolerance, masking of natural sounds, behavioral disturbance, and temporary or permanent hearing impairment or non-auditory effects (Richardson et al., 1995). However, for reasons discussed in the proposed IHA, it is unlikely that there would be any cases of temporary, or especially permanent, hearing impairment resulting from Apache's activities. As outlined in previous NMFS documents, the effects of noise on marine mammals are highly variable, often depending on species and contextual factors (based on Richardson et al., 1995).

In the "Potential Effects of the Specified Activity on Marine Mammals" section of the Notice of Proposed IHA (78 FR 80836, December 31, 2013), NMFS included a qualitative discussion of the different ways that Apache's 2014 3D seismic survey program may potentially affect marine mammals. The discussion focused on information and data regarding potential

acoustic and non-acoustic effects from seismic activities (i.e., use of airguns, pingers, and support vessels and aircraft). Marine mammals may experience masking and behavioral disturbance. The information contained in the "Potential Effects of Specified Activities on Marine Mammals" section from the proposed IHA has not changed. Please refer to the proposed IHA for the full discussion (78 FR 80836, December 31, 2013).

Marine mammals may behaviorally react to sound when exposed to anthropogenic noise. These behavioral reactions are often shown as: changing durations of surfacing and dives, number of blows per surfacing, or moving direction and/or speed; reduced/increased vocal activities; changing/cessation of certain behavioral activities (such as socializing or feeding); visible startle response or aggressive behavior (such as tail/fluke slapping or jaw clapping); avoidance of areas where noise sources are located; and/or flight responses (e.g., pinnipeds flushing into water from haulouts or rookeries).

Masking is the obscuring of sounds of interest by other sounds, often at similar frequencies. Marine mammals use acoustic signals for a variety of purposes, which differ among species, but include communication between individuals, navigation, foraging, reproduction, avoiding predators, and learning about their environment (Erbe and Farmer, 2000; Tyack, 2000). Masking, or auditory interference, generally occurs when sounds in the environment are louder than, and of a similar frequency as, auditory signals an animal is trying to receive. Masking is a phenomenon that affects animals that are trying to receive acoustic information about their environment, including sounds from other members of their species, predators, prey, and sounds that allow them to orient in their environment. Masking these acoustic signals can disturb the behavior of individual animals, groups of animals, or entire populations. For the airgun sound generated from Apache's seismic surveys, sound will consist of low frequency (under 500 Hz)

pulses with extremely short durations (less than one second). There is little concern regarding masking near the sound source due to the brief duration of these pulses and relatively longer silence between air gun shots (approximately 12 seconds). Masking from airguns is more likely in low-frequency marine mammals like mysticetes (which do not occur or are uncommon in the survey area). It is less likely for mid- to high-frequency cetaceans and pinnipeds.

Hearing impairment (either temporary or permanent) is unlikely. Given the higher level of sound necessary to cause permanent threshold shift as compared with temporary threshold shift, it is considerably less likely that permanent threshold shift would occur during the seismic survey in Cook Inlet. Cetaceans generally avoid the immediate area around operating seismic vessels, as do some other marine mammals. Some pinnipeds show avoidance reactions to airguns, but their avoidance reactions are generally not as strong or consistent as those of cetaceans, and occasionally they seem to be attracted to operating seismic vessels (NMFS, 2010).

Serious injury or mortality is not anticipated from use of the equipment. To date, there is no evidence that serious injury, death, or stranding by marine mammals can occur from exposure to airgun pulses, even in the case of large air gun arrays. It should be noted that strandings related to sound exposure have not been recorded for marine mammal species in Cook Inlet. Beluga whale strandings in Cook Inlet are not uncommon; however, these events often coincide with extreme tidal fluctuations ("spring tides") or killer whale sightings (Shelden et al., 2003). For example, in August 2012, a group of Cook Inlet beluga whales stranded in the mud flats of Turnagain Arm during low tide and were able to swim free with the flood tide. No strandings or marine mammals in distress were observed during the 2D test survey conducted by Apache in March 2011, and none were reported by Cook Inlet inhabitants. Furthermore, no strandings were reported during seismic survey operations conducted under the April 2012 IHA. Accordingly,

NMFS does not expect any marine mammals will incur serious injury or mortality in Cook Inlet or strand as a result of the proposed seismic survey.

Studies on the reactions of cetaceans to aircraft show little negative response (Richardson et al., 1995). In general, reactions range from sudden dives and turns and are typically found to decrease if the animals are engaged in feeding or social behavior. Whales with calves or in confined waters may show more of a response. Generally there has been little or no evidence of marine mammals responding to aircraft overflights when altitudes are at or above 305 m (1,000 ft), based on three decades of flying experience in the Arctic (NMFS, unpublished data). Based on long-term studies that have been conducted on beluga whales in Cook Inlet since 1993, NMFS expect that there will be no effects of this activity on beluga whales or other cetaceans. No change in beluga swim directions or other noticeable reactions have been observed during the Cook Inlet aerial surveys flown from 183 to 244 m (600 to 800 ft) (e.g., Rugh et al., 2000). By applying operational requirements regarding altitude, sound levels underwater are not expected to rise to the level of a take.

Vessel activity and noise associated with vessel activity will temporarily increase in the action area during Apache's seismic survey as a result of the operation of nine vessels. The addition of nine vessels and noise due to vessel operations associated with the seismic survey would not be outside the present experience of marine mammals in Cook Inlet, although levels may increase locally. Vessels will be operating at slow speed (2-4 knots) when conducting surveys and in a purposeful manner to and from work sites in as direct a route as possible. Marine mammal monitoring observers and passive acoustic devices will alert vessel captains as animals are detected to ensure safe and effective measures are applied to avoid coming into direct contact with marine mammals. Therefore, NMFS neither anticipates nor authorizes takes

of marine mammals from ship strikes.

Anticipated Effects on Marine Mammal Habitat

The primary potential impacts to marine mammal habitat and other marine species are associated with elevated sound levels produced by airguns and other active acoustic sources. However, other potential impacts to the surrounding habitat from physical disturbance are also possible. The proposed IHA contains a full discussion of the potential impacts to marine mammal habitat and prey species in the project area. No changes have been made to that discussion. Please refer to the proposed IHA for the full discussion of potential impacts to marine mammal habitat (78 FR 80836, December 31, 2013). NMFS has determined that Apache's 3D seismic survey program is not expected to have any habitat-related effects that could cause significant or long-term consequences for individual marine mammals or their populations.

Mitigation

In order to issue an incidental take authorization (ITA) under section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to such activity, and other means of effecting the least practicable impact on such species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such species or stock for taking for certain subsistence uses (where relevant). This section summarizes the required mitigation measures contained in the IHA.

Mitigation Measures in Apache's Application

Apache listed the following protocols to be implemented during its seismic survey in Cook Inlet.

1. Exclusion and Disturbance Zones

Apache will establish exclusion zones corresponding to the 180 dB (rms) isopleth for cetaceans and the 190 dB (rms) isopleth for pinnipeds to avoid Level A harassment of all marine mammals and will shut down or power down operations if animals are seen approaching this zone (more detail next). Additionally, Apache will monitor the Level B harassment disturbance zone corresponding to the 160 dB (rms) isopleth for all marine mammals and implement shut down measures if any beluga whales or groups of five or more harbor porpoise or killer whales are seen entering or approaching the Level B harassment disturbance zone.

2. Power Down and Shutdown Procedures

A power down is the immediate reduction in the number of operating energy sources. A shutdown is the immediate cessation of firing of all energy sources. The arrays will be immediately powered down whenever a marine mammal is sighted approaching close to or within the applicable exclusion zone of the full arrays but is outside the applicable exclusion zone of the single source. If a marine mammal is sighted within the applicable exclusion zone of the single energy source, the entire array will be shutdown (i.e., no sources firing). Following a power down or a shutdown, airgun activity will not resume until the marine mammal has left the applicable exclusion zone. The animal will be considered to have left the zone if it: (1) is visually observed to have left the zone; (2) has not been seen within the zone for 15 minutes in the case of pinnipeds and small odontocetes; or (3) has not been seen within the zone for 30 minutes in the case of large odontocetes, including killer whales and belugas.

3. Ramp-up Procedures

A ramp-up of an airgun array provides a gradual increase in sound levels, and involves a step-wise increase in the number and total volume of air guns firing until the full volume is achieved. The purpose of a ramp-up (or "soft start") is to "warn" cetaceans and pinnipeds in the

vicinity of the airguns and to provide the time for them to leave the area and thus avoid any potential injury or impairment of their hearing abilities.

During the seismic survey, the seismic operator will ramp up the airgun array slowly. NMFS requires the rate of ramp-up to be no more than 6 dB per 5-minute period. Ramp-up is used at the start of airgun operations, after a power- or shut-down, and after any period of greater than 10 minutes in duration without airgun operations (i.e., extended shutdown).

A full ramp-up after a shutdown will not begin until there has been a minimum of 30 minutes of observation of the Level A harassment exclusion zones by PSOs to assure that no marine mammals are present. The entire exclusion zone must be visible during the 30-minute lead-in to a full ramp up. If the entire exclusion zone is not visible, then ramp-up from a cold start cannot begin. If a marine mammal(s) is sighted within the relevant exclusion zone during the 30-minute watch prior to ramp-up, ramp-up will be delayed until the marine mammal(s) is sighted outside of the zone or the animal(s) is not sighted for at least 15-30 minutes: 15 minutes for small odontocetes and pinnipeds (e.g. harbor porpoises, harbor seals, and Steller sea lions), or 30 minutes for large odontocetes (e.g., killer whales and beluga whales).

4. Operation of Mitigation Airgun at Night

Apache proposes to conduct both daytime and nighttime operations. Nighttime operations would only be initiated if a mitigation airgun (typically the 10 in^3) has been continuously operational from the time that PSO monitoring has ceased for the day. The mitigation airgun would operate on a longer duty cycle than the full airgun arrays, firing every 60 seconds. At night, the vessel captain and crew would maintain lookout for marine mammals and would order the airgun(s) to be shut down if marine mammals are observed in or about to enter the established exclusion or disturbance zones. Seismic activity would not ramp up from

an extended shut-down (i.e., when the airgun has been down with no activity for at least 10 minutes) during nighttime operations and survey activities would be suspended until the following day because dedicated PSOs would not be on duty.

5. Speed or Course Alteration

If a marine mammal is detected outside the Level A (injury) harassment zone and, based on its position and the relative motion, is likely to enter that zone, the vessel's speed and/or direct course may, when practical and safe, be changed that also minimizes the effect on the seismic program. This can be used in coordination with a power down procedure. The marine mammal activities and movements relative to the seismic and support vessels will be closely monitored to ensure that the marine mammal does not approach within the applicable exclusion radius. If the mammal appears likely to enter the exclusion radius, further mitigative actions will be taken, i.e., either further course alterations, power down, or shut down of the airgun(s).

6. Shut-downs for Beluga Whales and Aggregations of Other Cetaceans

A 160-dB Level B harassment disturbance zone would be established and monitored in Cook Inlet during all seismic surveys. As mentioned previously, Whenever a beluga whale or an aggregation of killer whales or harbor porpoises (five or more individuals of any age/sex class) are observed approaching the 160-dB zone around the survey operations, the survey activity will not commence or will shut down, until they are no longer present within the 160-dB zone of seismic surveying operations.

Additional Mitigation Measures Required by NMFS

Activities shall not occur within 16 km (10 mi) of the MHHW line of the Susitna Delta (Beluga River to the Little Susitna River) between April 15 and October 15. The purpose of this mitigation measure is to protect the designated critical habitat in this area that is important for

beluga whale feeding and calving during the spring and fall months. The range of the setback required creates an effective buffer where sound does not encroach on this important habitat during those months. Activities can occur within this area from October 16-April 14.

Additionally, seismic survey operations, involving the use of airguns and pingers, must cease if the total authorized takes of any marine mammal species are met or exceeded.

Mitigation Measures Considered but not Required

NMFS considered whether additional time/area restrictions were warranted. NMFS determined that such restrictions are not necessary or practicable elsewhere in the 2014 survey area. Beluga whales remain in Cook Inlet year-round, but demonstrate seasonal movement within the Inlet; in the summer and fall, they concentrate in upper Cook Inlet's rivers and bays, but tend to disperse offshore and move to mid-Inlet in winter (Hobbs et al., 2005). The available information indicates that in the winter months belugas are dispersed in deeper waters in mid-Inlet past Kalgin Island, with occasional forays into the upper inlet, including the upper ends of Knik and Turnagain Arms. Their winter distribution does not appear to be associated with river mouths, as it is during the warmer months. The spatial dispersal and diversity of winter prey are likely to influence the wider beluga winter range throughout the mid-Inlet. Apache expects to mobilize crews and equipment for its seismic survey in February and March 2014, which would coincide with the time of year when belugas are dispersed offshore in the mid-Inlet and away from river mouths. In the spring, when survey operations are expected to start, beluga whales are regularly sighted in the upper Inlet beginning in late April or early May, coinciding with eulachon runs in the Susitna River and Twenty Mile River in Turnagain Arm. Therefore, NMFS determined that the timing and location of the seismic survey, with the exclusion zone around the Susitna Delta, adequately avoids areas and seasons that overlap with important beluga whale

behavioral patterns.

NMFS also considered whether to require time area restrictions for areas identified as home ranges during August through March for 14 satellite-tracked beluga whales in Hobbs et al. (2005). NMFS has determined not to require time/area restrictions for these areas within the phase 3 survey area. The areas in question within phase 3 are relatively large areas in which belugas are dispersed. In addition, data for 14 tracked belugas do not establish that belugas will not appear in other areas - particularly during the periods of the year when belugas are more dispersed in Cook Inlet. We do not have enough information to establish that time/area restrictions for these areas would yield a benefit for the species. Such restrictions also are not practicable given the applicant's need to survey the areas in question and the need for operational flexibility given weather conditions, real-time adjustment of operations to avoid marine mammals and other factors. The suite of other mitigation and monitoring measures still apply whenever survey operations occur.

Mitigation Conclusions

NMFS has carefully evaluated Apache's mitigation measures and considered a range of other measures, including measures recommended by the public, in the context of ensuring that NMFS prescribes the means of effecting the least practicable impact on the affected marine mammal species and stocks and their habitat. Our evaluation of potential measures included consideration of the following factors in relation to one another:

● The manner in which, and the degree to which, the successful implementation of the measures are expected to minimize adverse impacts to marine mammals;

● The proven or likely efficacy of the specific measure to minimize adverse impacts as planned; and

● The practicability of the measure for applicant implementation.

Based on our evaluation of the applicant's proposed measures, as well as other measures considered by NMFS and those recommended by the public, NMFS has determined that the required mitigation measures provide the means of effecting the least practicable impact on marine mammals species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

Monitoring and Reporting

In order to issue an ITA for an activity, section 101(a)(5)(D) of the MMPA states that NMFS must set forth "requirements pertaining to the monitoring and reporting of such taking". The MMPA implementing regulations at 50 CFR 216.104 (a)(13) indicate that requests for ITAs must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present in the proposed action area. Apache submitted information regarding marine mammal monitoring to be conducted during seismic operations as part of the IHA application. That information can be found in Sections 12 and 14 of the application.

Monitoring Measures

1. Visual Vessel-based Monitoring

Vessel-based monitoring for marine mammals will be conducted by experienced PSOs throughout the period of marine survey activities. PSOs will monitor the occurrence and behavior of marine mammals near the survey vessel during all daylight periods during operation and during most daylight periods when airgun operations are not occurring. PSO duties include watching for and identifying marine mammals, recording their numbers, distances, and reactions

to the survey operations, and documenting "take by harassment" as defined by NMFS.

A sufficient number of PSOs is required onboard the survey vessel to meet the following criteria: (1) 100 percent monitoring coverage during all periods of survey operations in daylight; (2) maximum of 4 consecutive hours on watch per PSO; and (3) maximum of 12 hours of watch time per day per PSO.

PSO teams shall consist of experienced field biologists. An experienced field crew leader would supervise the PSO team onboard the survey vessel. Apache currently plans to have PSOs aboard three vessels: the two source vessels (M/V Peregrine Falcon and M/V Arctic Wolf) and one support vessel (M/V Dreamcatcher). Two PSOs would be on the source vessels, and two PSOs would be on the support vessel to observe and implement the exclusion, power down, and shut down areas. When marine mammals are about to enter or are sighted within designated Level B harassment disturbance zones and Level A harassment exclusion zones, airgun or pinger operations would be powered down (when applicable) or shut down immediately. The vessel-based observers would watch for marine mammals during all periods when sound sources are in operation and for a minimum of 30 minutes prior to the start of airgun or pinger operations after an extended shut down.

Crew leaders and most other biologists serving as observers would be individuals with experience as observers during seismic surveys in Alaska or other areas in recent years.

The observer(s) will watch for marine mammals from the best available vantage point on the source and support vessels, typically the flying bridge. The observer(s) will scan systematically with the unaided eye and 7×50 reticle binoculars. Laser range finders will be available to assist with estimating distance on the two source vessels. Personnel on the bridge will assist the observer(s) in watching for marine mammals. Seismic survey personnel will

receive the same training as the marine mammal PSOs.

All observations will be recorded in a standardized format. Data will be entered into a custom database using a notebook computer. The accuracy of the data would be verified by computerized validity data checks as the data are entered and by subsequent manual checks of the database. These procedures would allow for initial summaries of the data to be prepared during and shortly after the completion of the field program, and would facilitate transfer of the data to statistical, geographical, or other programs for future processing and achieving. When a mammal sighting is made, the following information about the sighting will be recorded:

● Species, group size, age/size/sex categories (if determinable), behavior when first sighted and after initial sighting, heading (if consistent), bearing and distance from the PSO, apparent reaction to activities (e.g., none, avoidance, approach, paralleling, etc.), closest point of approach, and behavioral pace;

● Time, location, speed, activity of the vessel (e.g., seismic airguns off, pingers on, etc.), sea state, ice cover, visibility, and sun glare; and

● The positions of other vessel(s) in the vicinity of the PSO location.

The ship's position, speed of support vessels, and water temperature, water depth, sea state, ice cover, visibility, and sun glare will also be recorded at the start and end of each observation watch, every 30 minutes during a watch, and whenever there is a change in any of those variables.

2. Visual Shore-based Monitoring

In addition to the vessel-based PSOs, Apache will utilize a shore-based station daily, when safety and weather permit, to visually monitor for marine mammals. The shore-based station would follow all safety procedures, including bear safety. The location of the shore-

based station will be sufficiently high to observe marine mammals; the PSOs will be equipped with pedestal mounted "big eye" (20x110) binoculars. The shore-based PSOs will scan the area prior to, during, and after the airgun operations and will be in contact with the vessel-based PSOs via radio to communicate sightings of marine mammals approaching or within the project area. This communication will allow the vessel-based observers to go on a "heightened" state of alert regarding occurrence of marine mammals in the area and aid in timely implementation of mitigation measures.

3. Aerial-based Monitoring

Safety and weather permitting, Apache will conduct daily aerial surveys when there are any seismic-related activities (including but not limited to node laying/retrieval or airgun operations). Safety and weather permitting, surveys are to be flown even if the airguns are not being fired. Flights will be conducted with an aircraft with adequate viewing capabilities (i.e., view not obstructed by wing or other obstruction).

When operating north or east of a line from Tyonek across to the eastern side of Number 3 Bay of the Captain Cook State Recreation Area, Cook Inlet, Apache will fly daily aerial surveys (safety and weather permitting). Flight paths shall encompass areas from Anchorage, along the coastline of the Susitna Delta to Tyonek, across the inlet to Point Possession, around the coastline of Chickaloon Bay to Burnt Island, and across to Anchorage (or in reverse order). These designations apply when Apache is operating in Zone 1 (see Figure 2 in the IHA application). These aerial surveys will be conducted in order to notify the vessel-based PSOs of marine mammals that may be on a path that could intersect with the seismic survey, and so that Apache can determine if operations should be relocated or temporarily suspended.

When operating in Zone 2 (see Figure 2 in the IHA application), Apache will conduct

aerial surveys, safety and weather permitting, a minimum distance of 30 km (18.6 mi) around the seismic operating area expected for that day. Additionally, Apache will, safety and weather permitting, conduct aerial surveys when operating near river mouths to identify large congregations of beluga whales and harbor seal haul outs. Again, these aerial surveys will be conducted in order to notify the vessel-based PSOs of the presence of marine mammals that may be on a path that could intersect with the seismic survey, and so that Apache can determine if operations should be relocated or temporarily suspended.

Weather and scheduling permitting, aerial surveys will fly at an altitude of 305 m (1,000 ft). In the event of a marine mammal sighting, aircraft would attempt to maintain a radial distance of 457 m (1,500 ft) from the marine mammal(s). Aircraft would avoid approaching marine mammals from head-on, flying over or passing the shadow of the aircraft over the marine mammal(s). By following these operational requirements, sound levels underwater are not expected to meet or exceed NMFS harassment thresholds (Richardson et al., 1995; Blackwell et al., 2002).

Based on data collected from Apache during its survey operations conducted under the April 2012 IHA, NMFS has determined that the foregoing monitoring measures will allow Apache to identify animals nearing or entering the Level B harassment zone with a reasonably high degree of accuracy.

Reporting Measures

Reports will be submitted to NMFS immediately if 25 belugas are detected in the Level B harassment zone to evaluate and make necessary adjustments to monitoring and mitigation. If the number of detected takes for any marine mammal species is met or exceeded, Apache will immediately cease survey operations involving the use of active sound sources (e.g., airguns and

pingers) and notify NMFS.

1. Weekly Reports

Weekly reports will be submitted to NMFS no later than the close of business (Alaska time) each Thursday during the weeks when in-water seismic activities take place. The field reports will summarize species detected, in-water activity occurring at the time of the sighting, behavioral reactions to in-water activities, and the number of marine mammals taken.

2. Monthly Reports

Monthly reports will be submitted to NMFS for all months during which in-water seismic activities take place. The monthly report will contain and summarize the following information:

● Dates, times, locations, heading, speed, weather, sea conditions (including Beaufort sea state and wind force), and associated activities during all seismic operations and marine mammal sightings.

● Species, number, location, distance from the vessel, and behavior of any sighted marine mammals, as well as associated seismic activity (number of power-downs and shutdowns), observed throughout all monitoring activities.

● An estimate of the number (by species) of: (i) pinnipeds that have been exposed to the seismic activity (based on visual observation) at received levels greater than or equal to 160 dB re 1 μPa (rms) and/or 190 dB re 1 μPa (rms) with a discussion of any specific behaviors those individuals exhibited; and (ii) cetaceans that have been exposed to the seismic activity (based on visual observation) at received levels greater than or equal to 160 dB re 1 μPa (rms) and/or 180 dB re 1 μPa (rms) with a discussion of any specific behaviors those individuals exhibited.

● A description of the implementation and effectiveness of the: (i) terms and conditions of the Biological Opinion's Incidental Take Statement (ITS); and (ii) mitigation measures of the

IHA. For the Biological Opinion, the report shall confirm the implementation of each Term and Condition, as well as any conservation recommendations, and describe their effectiveness, for minimizing the adverse effects of the action on ESA-listed marine mammals.

3. 90-Day Technical Report

A report will be submitted to NMFS within 90 days after the end of the project. The report will summarize all activities and monitoring results (i.e., vessel and shore-based visual monitoring and aerial monitoring) conducted during in-water seismic surveys. The Technical Report will include the following:

● Summaries of monitoring effort (e.g., total hours, total distances, and marine mammal distribution through the study period, accounting for sea state and other factors affecting visibility and detectability of marine mammals).

● Analyses of the effects of various factors influencing detectability of marine mammals (e.g., sea state, number of observers, and fog/glare).

● Species composition, occurrence, and distribution of marine mammal sightings, including date, water depth, numbers, age/size/gender categories (if determinable), group sizes, and ice cover.

● Analyses of the effects of survey operations.

● Sighting rates of marine mammals during periods with and without seismic survey activities (and other variables that could affect detectability), such as: (i) initial sighting distances versus survey activity state; (ii) closest point of approach versus survey activity state; (iii) observed behaviors and types of movements versus survey activity state; (iv) numbers of sightings/individuals seen versus survey activity state; (v) distribution around the source vessels versus survey activity state; and (vi) estimates of take by Level B harassment based on presence

in the 160 dB harassment zone.

4. Notification of Injured or Dead Marine Mammals

In the unanticipated event that the specified activity clearly causes the take of a marine mammal in a manner prohibited by the IHA (if issued), such as an injury (Level A harassment), serious injury or mortality (e.g., ship-strike, gear interaction, and/or entanglement), Apache would immediately cease the specified activities and immediately report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, and the Alaska Regional Stranding Coordinators. The report would include the following information:

- Time, date, and location (latitude/longitude) of the incident;
- Name and type of vessel involved;
- Vessel's speed during and leading up to the incident;
- Description of the incident;
- Status of all sound source use in the 24 hours preceding the incident;
- Water depth;
- Environmental conditions (e.g., wind speed and direction, Beaufort sea state, cloud cover, and visibility);
- Description of all marine mammal observations in the 24 hours preceding the incident;
- Species identification or description of the animal(s) involved;
- Fate of the animal(s); and
- Photographs or video footage of the animal(s) (if equipment is available).

Activities would not resume until NMFS is able to review the circumstances of the prohibited take. NMFS would work with Apache to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. Apache would not be able to resume

their activities until notified by NMFS via letter, email, or telephone.

In the event that Apache discovers an injured or dead marine mammal, and the lead PSO determines that the cause of the injury or death is unknown and the death is relatively recent (i.e., in less than a moderate state of decomposition as described in the next paragraph), Apache would immediately report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, and the NMFS Alaska Stranding Hotline and/or by email to the Alaska Regional Stranding Coordinators. The report would include the same information identified in the paragraph above. Activities would be able to continue while NMFS reviews the circumstances of the incident. NMFS would work with Apache to determine whether modifications in the activities are appropriate.

In the event that Apache discovers an injured or dead marine mammal, and the lead PSO determines that the injury or death is not associated with or related to the activities authorized in the IHA (e.g., previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), Apache would report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, and the NMFS Alaska Stranding Hotline and/or by email to the Alaska Regional Stranding Coordinators, within 24 hours of the discovery. Apache would provide photographs or video footage (if available) or other documentation of the stranded animal sighting to NMFS and the Marine Mammal Stranding Network.

Estimated Take by Incidental Harassment

Except with respect to certain activities not pertinent here, the MMPA defines "harassment" as: any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild [Level A harassment]; or (ii) has the

potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering [Level B harassment]. Only take by Level B behavioral harassment is anticipated as a result of the marine survey program. Anticipated impacts to marine mammals are associated with noise propagation from the sound sources (e.g., airguns and pingers) used in the seismic survey; no take is expected to result from the detonation of explosives onshore, as supported by the SSV study, from vessel strikes because of the slow speed of the vessels (2-4 knots), or from aircraft overflights, as surveys will be flown at a minimum altitude of 305 m (1,000 ft) and at 457 m (1,500 ft) when marine mammals are detected.

Apache requested and NMFS has authorized the take of five marine mammal species by Level B harassment. These five marine mammal species are: Cook Inlet beluga whale; killer whale; harbor porpoise; harbor seal; and Steller sea lion.

For impulse sounds, such as those produced by airgun(s) used in the seismic survey, NMFS uses the 160 dB re 1 μPa (rms) isopleth to indicate the onset of Level B harassment. The current Level A (injury) harassment threshold is 180 dB (rms) for cetaceans and 190 dB (rms) for pinnipeds. Section 7 of Apache's application contains a full description of the methodology used by Apache to estimate takes by harassment, including calculations for the 160 dB (rms) isopleths and marine mammal densities in the areas of operation (see ADDRESSES), which was also provided in the proposed IHA notice (78 FR 80836, December 31, 2013). Please refer to those documents for the full description of the methodology. This discussion is not repeated here. NMFS verified Apache's methods and used Apache's take estimates in its analyses. However, as discussed previously in this document in the response to Comment 11, NMFS has increased the authorized take for harbor seals from that requested by Apache and published in

the proposed IHA notice to the average estimate noted in Apache's IHA application.

The estimated take levels presented in Table 5 in the proposed IHA Federal Register notice and in Table 8 of Apache's application identify the worst-case probability of encountering these marine mammal species within the 160 dB zone during the survey and does not account for seasonal distribution of these species, haul outs of harbor seals and Steller sea lions, or the rigorous mitigation and monitoring techniques implemented by Apache to reduce Level B takes to all species.

Table 1 here outlines the density estimates used to estimate Level B takes, the authorized Level B harassment take levels, the abundance of each species in Cook Inlet, the percentage of each species or stock estimated to be taken, and current population trends.

Table 1. Density estimates, authorized Level B harassment take levels, species or stock abundance, percentage of population proposed to be taken, and species trend status.

Species	Average Density (#/hr/km^2)	Authorized Level B Take	Abundance	Percentage of Population	Trend
Beluga Whale	Zone 1=0.0212 Zone 2=0.0056	30	312	9.6	Decreasing
Harbor Seal	0.00512	440	22,900	1.9	Stable
Harbor Porpoise	0.00009	20	25,987	0.08	No reliable information
Killer Whale	0.00001	10	1,123 (resident) 552 (transient)	0.89 1.8	Resident stock possibly increasing Transient stock stable
Steller Sea Lion	0.00016	20	45,916	0.04	Decreasing but with regional variability (some stable)

Analysis and Determinations

Negligible Impact

Negligible impact is "an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock

through effects on annual rates of recruitment or survival" (50 CFR 216.103). A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (i.e., population-level effects). An estimate of the number of Level B harassment takes, alone, is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be "taken" through behavioral harassment, NMFS must consider other factors, such as the likely nature of any responses (their intensity, duration, etc.), the context of any responses (critical reproductive time or location, feeding, migration, etc.), as well as the number and nature of estimated Level A harassment takes, the number of estimated mortalities, and effects on habitat, and the status of the species.

Given the required mitigation and related monitoring, no injuries or mortalities are anticipated to occur as a result of Apache's seismic survey in Cook Inlet, and none are authorized. Additionally, animals in the area are not expected to incur hearing impairment (i.e., TTS or PTS) or non-auditory physiological effects. The number of takes that are anticipated and authorized are expected to be limited to short-term Level B behavioral harassment. The seismic airguns do not operate continuously over a 24-hour period. Rather airguns are operational for a few hours at a time totaling about 12 hours a day.

Both Cook Inlet beluga whales and the western DPS of Steller sea lions are listed as endangered under the ESA. Both stocks are also considered depleted under the MMPA, and both stocks are declining at a rate of about 1.1-1.5 percent per year. Additionally, as discussed in NMFS' EA for this IHA, the Cook Inlet beluga whale population has not rebounded since the moratorium on subsistence hunting was enacted in 1999 and extended indefinitely in December 2000. The population of belugas has a constricted range that is confined to the Inlet. The other

three species that may be taken by harassment during Apache's seismic survey program are not listed as threatened or endangered under the ESA nor as depleted under the MMPA.

Odontocete (including Cook Inlet beluga whales, killer whales, and harbor porpoises) reactions to seismic energy pulses are usually assumed to be limited to shorter distances from the airgun(s) than are those of mysticetes, in part because odontocete low-frequency hearing is assumed to be less sensitive than that of mysticetes. When in the Canadian Beaufort Sea in summer, belugas appear to be fairly responsive to seismic energy, with few being sighted within 10–20 km (6–12 mi) of seismic vessels during aerial surveys (Miller et al., 2005). However, as noted previously, Cook Inlet belugas are more accustomed to anthropogenic sound than beluga whales in the Beaufort Sea. Therefore, the results from the Beaufort Sea surveys do not directly relate to potential reactions of Cook Inlet beluga whales. Also, due to the dispersed distribution of beluga whales in Cook Inlet during winter and the concentration of beluga whales in upper Cook Inlet from late April through early fall, belugas would likely occur in small numbers in the survey area designated as Zone 2 by Apache during the survey period. For the same reason, it is unlikely that animals would be exposed to received levels capable of causing injury.

Taking into account the required mitigation measures, effects on cetaceans are generally expected to be restricted to avoidance of a limited area around the survey operation and short-term changes in behavior, falling within the MMPA definition of "Level B harassment". However, even Level B harassment takes will likely be limited and less than those authorized based on the rigorous mitigation measures required in the IHA, especially for cetaceans. Apache is required to shutdown airguns when any beluga whale is sighted approaching or entering the Level B harassment disturbance zone and must also shutdown if aggregations of five or more harbor porpoise or killer whales are sighted approaching or entering this same zone. This is

meant to reduce behavioral disturbances even further. Animals are not expected to permanently abandon any area that is surveyed, and any behaviors that are interrupted during the activity are expected to resume once the activity ceases. Only a small portion of marine mammal habitat will be affected at any time, and other areas within Cook Inlet will be available for necessary biological functions. In addition, the area where the survey will take place is not known to be an important location where beluga whales congregate for feeding, calving, or nursing. The primary location for these biological life functions occur in the Susitna Delta region of upper Cook Inlet. The IHA requires Apache to implement a 16 km (10 mi) seasonal exclusion from seismic survey operations in this region from April 15-October 15. The highest concentrations of belugas are typically found in this area from early May through September each year. NMFS has incorporated a 2-week buffer on each end of this seasonal use timeframe to account for any anomalies in distribution and marine mammal usage.

Mitigation measures such as controlled vessel speed, dedicated PSOs, non-pursuit, and shutdowns or power downs when marine mammals are seen within defined ranges will further reduce short-term reactions and minimize any effects on hearing sensitivity. In all cases, the effects of the seismic survey are expected to be short-term, with no lasting biological consequence. Therefore, because exposure of cetaceans to sounds produced by this phase of Apache's seismic survey is not anticipated to have any fitness effects that would reduce the reproductive success or survivorship of any individuals, it is not expected to affect annual rates of recruitment or survival of the stock.

Some individual pinnipeds may be exposed to sound from the seismic surveys more than once during the timeframe of the project. Taking into account the required mitigation measures, effects on pinnipeds are generally expected to be restricted to avoidance of a limited area around

the survey operation and short-term changes in behavior, falling within the MMPA definition of "Level B harassment". Animals are not expected to permanently abandon any area that is surveyed, and any behaviors that are interrupted during the activity are expected to resume once the activity ceases. Only a small portion of pinniped habitat will be affected at any time, and other areas within Cook Inlet will be available for necessary biological functions. In addition, the area where the survey will take place is not known to be an important location where pinnipeds haul out. The closest known haul-out site is located on Kalgin Island, which is about 22 km from the McArthur River. Data from some 2013 aerial surveys indicate large groups of harbor seal sightings in the Susitna Delta region. However, these large groups were sighted during time periods when Apache is not permitted to conduct airgun operations within 16 km (10 mi) of the MHHW line of the Susitna Delta region. For these reasons, the exposure of pinnipeds to sounds produced by this phase of Apache's seismic survey is not anticipated to have an effect on annual rates of recruitment or survival.

Potential impacts to marine mammal habitat were discussed previously in this document and the proposed IHA notice (see the "Anticipated Effects on Habitat" section). Although some disturbance is possible to food sources of marine mammals, the impacts are anticipated to be minor enough as to not affect annual rates of recruitment or survival of marine mammals in the area. Based on the size of Cook Inlet where feeding by marine mammals occurs versus the localized area of the marine survey activities, any missed feeding opportunities in the direct project area would be minor based on the fact that other feeding areas exist elsewhere. Additionally, seismic survey operations will not occur in the primary beluga feeding and calving habitat during times of high use.

Based on the analysis contained herein of the likely effects of the specified activity on

marine mammals and their habitat, and taking into consideration the implementation of the required monitoring and mitigation measures, NMFS finds that the total marine mammal take from Apache's seismic survey will have a negligible impact on the affected marine mammal species or stocks.

Small Numbers

The authorized takes represent 9.6 percent of the Cook Inlet beluga whale population of approximately 312 animals (Allen and Angliss, 2013), 0.89 percent of the Alaska resident stock and 1.8 percent of the Gulf of Alaska, Aleutian Island and Bering Sea stock of killer whales (1,123 residents and 552 transients), and 0.08 percent of the Gulf of Alaska stock of approximately 25,987 harbor porpoises. The authorized takes for harbor seals represent 1.9 percent of the Cook Inlet/Shelikof stock of approximately 22,900 animals. The authorized takes for Steller sea lions represent 0.04 percent of the western stock of approximately 45,916 animals. These take estimates represent the percentage of each species or stock that could be taken by Level B behavioral harassment if each animal is taken only once.

NMFS finds that any incidental take reasonably likely to result from the effects of the proposed activities, as mitigated through this IHA process, will be limited to small numbers of the affected species or stock sizes. In addition to the quantitative methods used to estimate take, NMFS also considered qualitative factors that further support the "small numbers" determination, including: (1) The seasonal distribution and habitat use patterns of Cook Inlet beluga whales, which suggest that for much of the time only a small portion of the population would be accessible to impacts from Apache's activity, as most animals are found in the Susitna Delta region of Upper Cook Inlet from early May through September; (2) other cetacean species and Steller sea lions are not common in the seismic survey area; (3) the mitigation requirements,

which provide spatio-temporal limitations that avoid impacts to large numbers of belugas feeding and calving in the Susitna Delta and limit exposures to sound levels associated with Level B harassment; (4) the required monitoring requirements and mitigation measures described earlier in this document for all marine mammal species will further reduce impacts and the amount of takes; and (5) monitoring results from previous activities that indicated no beluga whale sightings within the Level B harassment disturbance zone and low levels of Level B harassment takes of other marine mammals. Therefore, NMFS determined that the number of animals likely to be taken is small.

Impact on Availability of Affected Species for Taking for Subsistence Uses

Relevant Subsistence Uses

The subsistence harvest of marine mammals transcends the nutritional and economic values attributed to the animal and is an integral part of the cultural identity of the region's Alaska Native communities. Inedible parts of the whale provide Native artisans with materials for cultural handicrafts, and the hunting itself perpetuates Native traditions by transmitting traditional skills and knowledge to younger generations (NOAA, 2007).

The Cook Inlet beluga whale has traditionally been hunted by Alaska Natives for subsistence purposes. For several decades prior to the 1980s, the Native Village of Tyonek residents were the primary subsistence hunters of Cook Inlet beluga whales. During the 1980s and 1990s, Alaska Natives from villages in the western, northwestern, and North Slope regions of Alaska either moved to or visited the south central region and participated in the yearly subsistence harvest (Stanek, 1994). From 1994 to 1998, NMFS estimated 65 whales per year (range 21-123) were taken in this harvest, including those successfully taken for food and those struck and lost. NMFS has concluded that this number is high enough to account for the

estimated 14 percent annual decline in the population during this time (Hobbs et al., 2008). Actual mortality may have been higher, given the difficulty of estimating the number of whales struck and lost during the hunts. In 1999, a moratorium was enacted (Public Law 106-31) prohibiting the subsistence take of Cook Inlet beluga whales except through a cooperative agreement between NMFS and the affected Alaska Native organizations. Since the Cook Inlet beluga whale harvest was regulated in 1999 requiring cooperative agreements, five beluga whales have been struck and harvested. Those beluga whales were harvested in 2001 (one animal), 2002 (one animal), 2003 (one animal), and 2005 (two animals). The Native Village of Tyonek agreed not to hunt or request a hunt in 2007, when no co-management agreement was to be signed (NMFS, 2008a).

On October 15, 2008, NMFS published a final rule that established long-term harvest limits on the Cook Inlet beluga whales that may be taken by Alaska Natives for subsistence purposes (73 FR 60976). That rule prohibited harvest for a 5-year period (2008-2012), if the average abundance for the Cook Inlet beluga whales from the prior five years (2003-2007) was below 350 whales. The next 5-year period that could allow for a harvest (2013-2017), would require the previous five-year average (2008-2012) to be above 350 whales. The 2008 Cook Inlet Beluga Whale Subsistence Harvest Final Supplemental Environmental Impact Statement (NMFS, 2008a) authorizes how many beluga whales can be taken during a 5-year interval based on the 5-year population estimates and 10-year measure of the population growth rate. Based on the 2008-2012 5-year abundance estimates, no hunt occurred between 2008 and 2012 (NMFS, 2008a). The CIMMC, which managed the Alaska Native Subsistence fishery with NMFS, was disbanded by a unanimous vote of the Tribes' representatives on June 20, 2012. At this time, no harvest is expected in 2014. Residents of the Native Village of Tyonek are the primary

subsistence users in Knik Arm area.

Data on the harvest of other marine mammals in Cook Inlet are lacking. Some data are available on the subsistence harvest of harbor seals, harbor porpoises, and killer whales in Alaska in the marine mammal stock assessments. However, these numbers are for the Gulf of Alaska including Cook Inlet, and they are not indicative of the harvest in Cook Inlet.

Some detailed information on the subsistence harvest of harbor seals is available from past studies conducted by the ADF&G (Wolfe et al., 2009). In 2008, only 33 harbor seals were taken for harvest in the Upper Kenai-Cook Inlet area. In the same study, reports from hunters stated that harbor seal populations in the area were increasing (28.6%) or remaining stable (71.4%). The specific hunting regions identified were Anchorage, Homer, Kenai, and Tyonek, and hunting generally peaks in March, September, and November (Wolfe et al., 2009).

Potential Impacts to Subsistence Uses

Section 101(a)(5)(D) requires NMFS to determine that the authorization will not have an unmitigable adverse impact on the availability of marine mammal species or stocks for subsistence use. NMFS has defined "unmitigable adverse impact" in 50 CFR 216.103 as: an impact resulting from the specified activity: (1) That is likely to reduce the availability of the species to a level insufficient for a harvest to meet subsistence needs by: (i) Causing the marine mammals to abandon or avoid hunting areas; (ii) Directly displacing subsistence users; or (iii) Placing physical barriers between the marine mammals and the subsistence hunters; and (2) That cannot be sufficiently mitigated by other measures to increase the availability of marine mammals to allow subsistence needs to be met.

The primary concern is the disturbance of marine mammals through the introduction of anthropogenic sound into the marine environment during the seismic survey. Marine mammals

could be behaviorally harassed and either become more difficult to hunt or temporarily abandon traditional hunting grounds. However, the seismic survey will not have any impacts to beluga harvests as none currently occur in Cook Inlet. Additionally, subsistence harvests of other marine mammal species are limited in Cook Inlet.

Plan of Cooperation or Measures to Minimize Impacts to Subsistence Hunts

Regulations at 50 CFR 216.104(a)(12) require IHA applicants for activities that take place in Arctic waters to provide a Plan of Cooperation or information that identifies what measures have been taken and/or will be taken to minimize adverse effects on the availability of marine mammals for subsistence purposes. NMFS regulations define Arctic waters as waters above 60° N. latitude. Consistent with NMFS' implementing regulations, Apache met with the CIMMC – a now dissolved ANO that represented Cook Inlet tribes - on March 29, 2011, to discuss the proposed activities and discuss any subsistence concerns. Apache also met with the Tyonek Native Corporation on November 9, 2010 and the Salamatof Native Corporation on November 22, 2010. Additional meetings were held with the Native Village of Tyonek, the Kenaitze Indian Tribe, and Knik Tribal Council, and the Ninilchik Traditional Council. According to Apache, during these meetings, no concerns were raised regarding potential conflict with subsistence harvest of marine mammals. Apache has identified the following features that are intended to reduce impacts to subsistence users:

- In-water seismic activities will follow mitigation procedures to minimize effects on the behavior of marine mammals and, therefore, opportunities for harvest by Alaska Native communities; and
- Regional subsistence representatives may support recording marine mammal observations along with marine mammal biologists during the monitoring programs and will be

provided with annual reports.

Since the issuance of the April 2012 IHA, Apache has maintained regular and consistent communication with federally recognized Alaska Natives. The Alaska Natives, Native Corporations, and ANOs that Apache has communicated with include: the Native Village of Tyonek; Tyonek Native Corporation; Ninilchik Native Association; Ninilchik Traditional Council; Salamatof Native Association; Knikatnu; Knik Native Council; Alexander Creek; Cook Inlet Region, Inc.; the Native Village of Eklutna; Kenaitze Indian Tribe; and Seldovia Native Assocaition. Apache has shared information gathered during the seismic survey conducted under the April 2012 IHA and hosted an information exchange with Alaska Native Villages, Native Corporations, and other Non-Governmental Organizations in the spring of 2013 where data from the past year's monitoring operations was presented.

Apache and NMFS recognize the importance of ensuring that ANOs and federally recognized tribes are informed, engaged, and involved during the permitting process and will continue to work with the ANOs and tribes to discuss operations and activities. On February 6, 2012, in response to requests for government-to-government consultations by the CIMMC and Native Village of Eklutna, NMFS met with representatives of these two groups and a representative from the Ninilchik. We engaged in a discussion about the proposed IHA for phase 1 of Apache's seismic program, the MMPA process for issuing an IHA, concerns regarding Cook Inlet beluga whales, and how to achieve greater coordination with NMFS on issues that impact tribal concerns. Following the publication of this proposed IHA, we contacted the local Native Villages to inform them of the availability of the Federal Register notice and the opening of the public comment period and to invite their input. We received one comment letter from several Native organizations, and we have responded to their comments and concerns earlier in

this document. However, they did not request a formal government-to-government consultation with us on the third IHA. Apache has continued to meet with the Native Village of Tyonek, Tyonek Native Corporation, Cook Inlet Region Inc., and other recognized tribes and village corporations in the Cook Inlet Region throughout 2013.

Unmitigable Adverse Impact Analysis and Determination

The project will not have any effect on current beluga whale harvests because no beluga harvest will take place in 2014. Additionally, the seismic survey area is not an important native subsistence site for other subsistence species of marine mammals. Also, because of the relatively small proportion of marine mammals utilizing Cook Inlet, the number harvested is expected to be extremely low. Therefore, because the program would result in only temporary disturbances, the seismic program would not impact the availability of these other marine mammal species for subsistence uses.

The timing and location of subsistence harvest of Cook Inlet harbor seals may coincide with Apache's project, but because this subsistence hunt is conducted opportunistically and at such a low level (NMFS, 2013c), Apache's program is not expected to have an impact on the subsistence use of harbor seals.

NMFS anticipates that any effects from Apache's seismic survey on marine mammals, especially harbor seals and Cook Inlet beluga whales, which are or have been taken for subsistence uses, would be short-term, site specific, and limited to inconsequential changes in behavior and mild stress responses. NMFS does not anticipate that the authorized taking of affected species or stocks will reduce the availability of the species to a level insufficient for a harvest to meet subsistence needs by: (1) causing the marine mammals to abandon or avoid hunting areas; (2) directly displacing subsistence users; or (3) placing physical barriers between

the marine mammals and the subsistence hunters; and that cannot be sufficiently mitigated by other measures to increase the availability of marine mammals to allow subsistence needs to be met. Based on the description of the specified activity, the measures described to minimize adverse effects on the availability of marine mammals for subsistence purposes, and the required mitigation and monitoring measures, NMFS has determined that there will not be an unmitgable adverse impact on subsistence uses from Apache's activities.

Endangered Species Act (ESA)

There are two marine mammal species listed as endangered under the ESA with confirmed or possible occurrence in the proposed project area: the Cook Inlet beluga whale and the western DPS of Steller sea lion. In addition, the proposed action would occur within designated critical habitat for the Cook Inlet beluga whale. NMFS' Permits and Conservation Division consulted with NMFS' Alaska Region Protected Resources Division under section 7 of the ESA on the issuance of the first IHA to Apache under section 101(a)(5)(D) of the MMPA, which analyzed the impacts in the other areas where Apache has proposed to conduct seismic surveys, including Area 2 (the area covered in the second IHA).

On May 21, 2012, NMFS' Alaska Region issued a revised Biological Opinion, which concluded that the IHA is not likely to jeopardize the continued existence of the marine mammal species (such as Cook Inlet beluga whales and Steller sea lions) affected by the seismic survey or destroy or adversely modify designated critical habitat for Cook Inlet beluga whales. Although the Biological Opinion considered the effects of multiple years of seismic surveying in the entire project area as a whole (see Figure 6 in the Biological Opinion), to be cautious, in light of the change in scope, NMFS' Permits and Conservation Division requested reinitiation of consultation under section 7 of the ESA to address these changes in the proposed action. A new

Biological Opinion was issued on February 14, 2013. That Biological Opinion determined that the issuance of an IHA is not likely to jeopardize the continued existence of the Cook Inlet beluga whales or the western distinct population segment of Steller sea lions or destroy or adversely modify Cook Inlet beluga whale critical habitat. Finally, the Alaska Region issued an Incidental Take Statement (ITS) for Cook Inlet beluga whales and Steller sea lions. The ITS contains reasonable and prudent measures implemented by terms and conditions to minimize the effects of this take.

The Biological Opinion issued on February 14, 2013, is valid through December 31, 2014. NMFS' Permits and Conservation Division discussed this third IHA request with NMFS' Alaska Region and determined that this IHA falls within the scope and analysis of the current Biological Opinion. This IHA does not trigger any of the factors requiring a reinitiation of consultation. Therefore, a new section 7 consultation was not conducted.

National Environmental Policy Act (NEPA)

NMFS prepared an EA that includes an analysis of potential environmental effects associated with NMFS' issuance of an IHA to Apache to take marine mammals incidental to conducting a 3D seismic survey program in Cook Inlet, Alaska. NMFS has finalized the EA and prepared a FONSI for this action. Therefore, preparation of an Environmental Impact Statement is not necessary.

Authorization

As a result of these determinations, NMFS has issued an IHA to Apache for the take of marine mammals incidental to conducting a seismic survey program in Cook Inlet, Alaska, from March 4 through December 31, 2014, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated.

Dated: March 4, 2014.

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Perry F. Gayaldo,
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