Requests for sign language interpretation or other auxiliary aids should be directed to Kitty M. Simonds, (808) 522–8220 (voice) or (808) 522–8226 (fax), at least 5 days prior to the meeting date.

**Authority:** 16 U.S.C. 1801 *et seq.*

Dated: February 27, 2014.

**Tracey L. Thompson,**

*Acting Deputy Director, Office of Sustainable Fisheries, National Marine Fisheries Service.*

[FR Doc. 2014–04754 Filed 3–3–14; 8:45 am]

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## DEPARTMENT OF COMMERCE

### National Oceanic and Atmospheric Administration

**RIN 0648–XC668**

### 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; proposed incidental harassment authorization; request for comments.

**SUMMARY:** NMFS received an application from Furie Operating Alaska LLC (Furie) for an Incidental Harassment Authorization (IHA) to take marine mammals, by harassment, incidental to a proposed 3D seismic survey in Cook Inlet, Alaska, between May 2014 and May 2015. Pursuant to the Marine Mammal Protection Act (MMPA), NMFS requests comments on its proposal to issue an IHA to Furie to take, by Level B harassment only, six species of marine mammals during the specified activity.

**DATES:** Comments and information must be received no later than April 3, 2014.

**ADDRESSES:** Comments on the application should be addressed to Michael Payne, Chief, Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring, MD 20910. The mailbox address for providing email comments is *ITP.Hopper@noaa.gov.* NMFS is not responsible for email comments sent to addresses other than the one provided here. Comments sent via email, including all attachments, must not exceed a 10-megabyte file size.

Instructions: All comments received are a part of the public record and will generally be posted to *http://www.nmfs.noaa.gov/pr/permits/incidental.htm* without change. All Personal Identifying Information (for example, name, address, etc.) voluntarily submitted by the commenter may be publicly accessible. Do not submit Confidential Business Information or otherwise sensitive or protected information.

An electronic copy of the application used in this document may be obtained by writing to the address specified above, 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:** Brian D. Hopper, 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.''

Section 101(a)(5)(D) of the MMPA established an expedited process by which citizens of the U.S. can apply for an authorization to incidentally take small numbers of marine mammals by harassment. Section 101(a)(5)(D) establishes a 45-day time limit for NMFS review of an application followed by a 30-day public notice and comment period on any proposed authorizations for the incidental harassment of marine mammals. Within 45 days of the close of the comment period, NMFS must either issue or deny the authorization.

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

NMFS received an application on January 23, 2013, from Furie for the taking, by harassment, of marine mammals incidental to a 3D seismic survey program in Cook Inlet, Alaska. In response to questions and comments from NMFS, a revised application was submitted on March 7, 2013. Furie then decided to postpone the proposed seismic survey until 2014 and further revisions were made to the IHA application to reflect this change in scheduling, and a final revised application was submitted to NMFS on December 11, 2013. The seismic survey would be conducted during the 2014 open water season (May to November), but the IHA would be valid for 12 months to account for changes in the schedule due to weather, shut downs from the presence of marine mammals, or equipment maintenance.

The proposed 3D seismic surveys would employ the use of two source vessels. Each source vessel would be equipped with compressors and 2400 $in^3$ air gun arrays, although a lesser volume may be used if practicable. The two vessels would work in tandem, alternating discharge of the arrays to allow for efficient data acquisition and resulting in fewer survey hours. In addition, one source vessel would be equipped with a 440 $in^3$ to 1,800 $in^3$ shallow water air gun array, which it can deploy at high tide in the intertidal area in less than 1.8 m of water. The sensor, or receiving, system would be deployed to rest on the seafloor. The proposed survey would take place in the Kitchen Lights Unit (KLU) area of Cook Inlet, which encompasses approximately 337 $km^2$ (130 square miles ($mi^2$). In order to acquire data from the entire KLU area, the proposed seismic survey would be conducted in Cook Inlet from approximately Tyonek at the northern extent to the Forelands in the south, encompassing approximately 868 $km^2$ (335 $mi^2$) of

intertidal and offshore areas (see Figure A–2 in Furie's IHA application). Impacts to marine mammals may occur from noise produced from active acoustic sources (primarily air guns) used in the surveys.

**Description of the Specified Activity**

The proposed operations would be performed from multiple vessels; however the exact number and type of vessel used would depend on the contractor. The typical vessel use configuration for seismic surveys in Cook Inlet by the bidding contractors is what follows. The proposed survey would employ the use of two source vessels. Each source vessel would be equipped with compressors and 2400 $in^3$ air gun arrays. In addition, one source vessel would be equipped with a 440 $in^3$ to 1800 $in^3$ shallow water air gun array, which it can deploy at high tide in the intertidal area in less than 1.8 m of water. Shallow draft vessels would support cable/nodal deployment and retrieval operations, and monitoring/navigation vessels would also be used. Finally, smaller jet boats would be used for personnel transport and node support in the extremely shallow water of the intertidal area. For additional information, such as vessel specifications, see Furie's application.

During the 2014 Cook Inlet open water season (May to November), Furie proposes to survey the entire project area in approximately 120 days beginning in May 2014, with exact start dates and end dates dependent on the timing of permits and actual survey days, which can be influenced by other factors such as commercial fishing, other seismic surveys operations in overlapping or adjacent areas, and general operational factors (i.e., weather). Furie anticipates conducting survey operations 24 hours per day (e.g., receiver line deployment and retrieval, dependent on weather and permit conditions). During each 24 hour period, seismic operations would be active; however air guns would only be used for approximately 2–3 hours during each of the slack tide periods. There are approximately four slack tide periods in a 24-hour day, therefore, air gun operations would be active during approximately 8–12 hours per day, if weather conditions allow.

*3D Seismic Surveys*

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. Data are typically collected using multiple types of acoustic equipment. During the surveys, Furie proposes to use the following in-water acoustic sources: two 2400 $in^3$ air gun arrays; a single 1800 $in^3$ air gun array; a single 440 $in^3$ air gun array; and a pinger, or transceiver, may be used to determine receiver location. In 2012, Apache Alaska Corporation (Apache) successfully measured the sounds produced by the air guns and pingers during a 3D seismic survey in Cook Inlet and the preliminary distances for the exclusion zone and harassment zone are based on these results; however, the distances to each sound threshold would be verified onsite and adjusted based on actual measurements at the startup of the survey.

(1) Airguns

The 2400 $in^3$ air gun arrays, the 1800 $in^3$ air gun array, and the 440 $in^3$ air gun array would be used to obtain geological data during the survey. In 2011, the acoustic source level of the 2400 $in^3$ air gun array was predicted using an air gun array source model (AASM) developed by JASCO (Warner *et al.,* 2011). The AASM simulates the expansion and oscillation of the air bubbles generated by each air gun within a seismic array, taking into account pressure interaction effects between bubbles from different air guns. It includes effects from surface-reflected pressure waves, heat transfer from the bubbles to the surrounding water, and the movements of bubbles due to their buoyancy. The model outputs high-resolution air gun pressure signatures for each air gun, which are superimposed with the appropriate time delays to yield the overall array source signature in any direction. Based on this modeling, the broadband seismic source level is anticipated to be 240 dB re 1 $\mu Pa^2$/Hz at 1 meter or less with dominant frequency components from 1 to 500 Hz. Higher frequencies are expected to have increasingly lower decibel levels. For example, the source level at 2,000 Hz is anticipated to be less than 180 dB re 1 $\mu Pa^2$/Hz at 1 meter. The 440 to 1800 $in^3$ airgun array to be used in the intertidal environment will have a lower sound level. Isopleths were estimated at three different water depths (5 m, 25 m, and 45 m) for nearshore surveys and at 80 m for channel surveys. The distances to these thresholds for the nearshore survey locations are provided in Table 1 and correspond to the three transects modeled at each site in the onshore, offshore, and parallel to shore directions. The distances to the thresholds for the channel survey locations are provided in Table 2 and correspond to the broadside and endfire directions. The areas ensonified to the 160 dB isopleth for the nearshore survey are provided in Table 3. The area ensonifed to the 160 dB isopleth for the channel survey is 389 $km^2$.

TABLE 1—DISTANCES TO SOUND THRESHOLDS FOR THE NEARSHORE SURVEYS

| Threshold (dB re 1 μPa) | Water depth at source location (m) | Distance in the onshore direction (km) | Distance in the Offshore Direction (km) | Distance in the Parallel to Shore Direction (km) |
|---|---|---|---|---|
| 160 | 5 | 0.85 | 3.91 | 1.48 |
| | 25 | 4.70 | 6.41 | 6.34 |
| | 45 | 5.57 | 4.91 | 6.10 |
| 180 | 5 | 0.46 | 0.60 | 0.54 |
| | 25 | 1.06 | 1.07 | 1.42 |
| | 45 | 0.70 | 0.83 | 0.89 |
| 190 | 5 | 0.28 | 0.33 | 0.33 |
| | 25 | 0.35 | 0.36 | 0.44 |
| | 45 | 0.10 | 0.10 | 0.51 |

TABLE 2—DISTANCE TO SOUND THRESHOLDS FOR THE CHANNEL SURVEYS

| Threshold (dB re 1 μPa) | Water depth at source location (m) | Distance in the broadside direction (km) | Distance in the endfire direction (km) |
|---|---|---|---|
| 160 | 80 | 4.24 | 4.89 |
| 180 | 80 | 0.91 | 0.98 |
| 190 | 80 | 0.15 | 0.18 |

TABLE 3—AREAS ENSONIFIED TO 160 dB FOR NEARSHORE SURVEYS

| Nearshore survey depth classification | Depth range (m) | Area ensonifed to 160 dB ($km^2$) |
|---|---|---|
| Shallow | 5–21 | 346 |
| Mid-Depth | 21–38 | 458 |
| Deep | 38–54 | 455 |

(2) Pingers

These instruments would be operated during survey operations to determine the exact position of the nodes after they have been placed on the seafloor. One device, the Scout Ultra-Short Baseline Transceiver, operates at frequencies between 33 and 55 kHz with a source level of 188 dB re 1 μPa at 1 m. The other device, an LR Ultra-Short Baseline Transponder, operates at a frequency of 35–50 kHz at a source level of 185 dB re 1 μPa at 1 m. With respect to these two sources, Furie provided and NMFS relied on the distances to the Level B harassment thresholds estimated for the ''louder'' of the two; therefore, assuming a simple spreading loss of 20 log R (where R is radius), with a source level of 188 dB the distance to the 190, 180, and 160 dB isopleths would be 1, 3, and 25 m, respectively. Another technique for locating the nodes in deeper water is called Ocean Bottom Receiver Location, which uses a small volume air gun (10 $in^3$) firing parallel to the node line.

**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 four cetacean species (three odontocetes) (toothed whales) and one mysticete (baleen whale): Beluga whale (*Delphinapterus leucas*), killer whale (*Orcinus orca*), harbor porpoise (*Phocoena phocoena*), and gray whale (*Eschrichtius robustus*) 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.

Of the six marine mammal species likely to occur in the proposed marine survey area, only 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). 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. Over the last 10 years (2002–2012), the Cook Inlet beluga whale population has declined at a rate of 0.6 percent per year (Allen and Angliss, 2013). With respect to Steller sea lions, results of aerial surveys conducted in 2008 (Fritz *et al.,* 2008) confirmed that the recent (2004–2008) overall trend in the western population of adult and juvenile Steller sea lions in Alaska is stable or possibly in decline; however, there continues to be considerable regional variability in recent trends. 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 largely based on dispersed fall and winter feeding and transit areas in waters where whales typically appear in lower densities or deeper waters (76 FR 20180, April 11, 2011).

**Cetaceans**

*Beluga Whales*—Cook Inlet beluga whales reside in Cook Inlet year-round although their distribution and density changes seasonally. Factors that are likely to influence beluga whale distribution within the inlet include prey availability, predation pressure, sea-ice cover, and other environmental factors, reproduction, sex and age class, and human activities (Rugh *et al.,* 2000; NMFS, 2008). Seasonal movement and density patterns as well as site fidelity appear to be closely linked to prey availability, coinciding with seasonal salmon and eulachon concentrations (Moore *et al.,* 2000). For example, during spring and summer, beluga whales are generally concentrated near the warmer waters of river mouths where prey availability is high and predator occurrence in low (Huntington, 2000; Moore *et al.,* 2000). During the winter (November to April), belugas disperse throughout the upper and mid-inlet areas, with animals found between Kalgin Island and Point Possession (Rugh *et al.,* 2000). During these months, there are generally fewer observations of beluga whales in the Anchorage and Knik Arm area (NMML 2004; Rugh *et al.,* 2004).

Beluga whales use several areas of the upper Cook Inlet for repeated summer and fall feeding. The primary hotspots for beluga feeding include the Big and Little Susitna rivers, Eagle Bay to Eklutna River, Ivan Slough, Theodore River, Lewis River, and Chickaloon River and Bay (NMFS, 2008). Availability of prey species appears to be the most influential environmental variable affecting Cook Inlet beluga whale distribution and relative abundance (Moore *et al.,* 2000). The

patterns and timing of eulachon and salmon runs have a strong influence on beluga whale feeding behavior and their seasonal movements (Nemeth *et al.,* 2007; NMFS, 2008). The presence of prey species may account for the seasonal changes in beluga group size and composition (Moore *et al.,* 2000). Aerial and vessel-based monitoring conducted by Apache during the March 2011 2D test program in Cook Inlet reported 33 beluga sightings. One of the sightings was of a large group (~25 individuals on March 27, 2011) of feeding/milling belugas near the mouth of the Drift River. Also on March 27, 2011, PSOs onboard the *M/V Dreamcatcher* reported a group of seven beluga whales approximately 0.5 nm from the vessel. Land-based PSOs were able to observe this group of beluga whales for approximately 2.5 hrs. A single beluga whale was observed near the mouth of the Drift River by the aerial-based monitors on March 28, 2011, prior to the seismic ramp-up period. If belugas are present during the late summer/early fall, they are more likely to occur in shallow areas near river mouths in upper Cook Inlet. For example, no beluga whales were sighted in Trading Bay during the SSV conducted in September 2011 because during this time of year they are more likely to be in the upper regions of Cook Inlet. Expected densities were calculated from the annual aerial surveys conducted by NMFS between 2000 and 2011 (Rugh *et al.,* 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007; Shelden *et al.,* 2008, 2009, 2010; Hobbs *et al.,* 2011). Those densities are presented below in Table 6.

*Killer Whales*—In general, killer whales are rare in upper Cook Inlet, where transient killer whales are known to feed on beluga whales and resident killer whales are known to feed on anadromous fish (Shelden *et al.,* 2003). The availability of these prey species largely determines the likeliest times for killer whales to be in the area. Between 1993 and 2004, 23 sightings of killer whales were reported in the lower Cook Inlet during aerial surveys by Rugh *et al.* (2005). Surveys conducted over a span of 20 years by Shelden *et al.* (2003) reported 11 sightings in upper Cook Inlet between Turnagain Arm, Susitna Flats, and Knik Arm. No killer whales were spotted during recent surveys by Funk *et al.* (2005), Ireland *et al.* (2005), Brueggeman *et al.* (2007a, 2007b, 2008), or Prevel Ramos *et al.* (2006, 2008). Eleven killer whale strandings have been reported in Turnagain Arm, six in May 1991 and five in August 1993. Therefore, very few killer whales, if any, are expected to approach or be in the vicinity of the action area.

*Harbor Porpoise*—The most recent estimated density for harbor porpoises in Cook Inlet is 7.2 per 1,000 $km^2$ (Dahlheim *et al.,* 2000) indicating that only a small number use Cook Inlet. Harbor porpoise have been reported in lower Cook Inlet from Cape Douglas to the West Foreland, Kachemak Bay, and offshore (Rugh *et al.,* 2005). Small numbers of harbor porpoises have been consistently reported in upper Cook Inlet between April and October, except for a recent survey that recorded higher than usual numbers. Prevel Ramos *et al.* (2008) reported 17 harbor porpoises from spring to fall 2006, while other studies reported 14 in the spring of 2007 (Brueggeman *et al.,* 2007) and 12 in the fall (Brueggeman *et al.,* 2008). During the spring and fall of 2007, 129 harbor porpoises were reported between Granite Point and the Susitna River; however, the reason for the increase in numbers of harbor porpoise in the upper Cook Inlet remains unclear and the disparity with the result of past sightings suggests that it may be an anomaly. The spike in reported sightings occurred in July, which was followed by sightings of 79 harbor porpoises in August, 78 in September, and 59 in October, 2007. It is important to note that the number of porpoises counted more than once was unknown, which suggests that the actual numbers are likely smaller than those reported. In addition, recent passive acoustic research in Cook Inlet by the Alaska Department of Fish and Game and the National Marine Mammal Laboratory have indicated that harbor porpoises occur in the area more frequently than previously thought, particularly in the West Foreland area in the spring (NMFS, 2011); however overall numbers are still unknown at this time.

*Gray Whale*—The gray whale is a large baleen whale known to have one of the longest migrations of any mammal. This whale can be found all along the shallow coastal waters of the North Pacific Ocean.

The Eastern North Pacific stock, which includes those whales that travel along the coast of Alaska, was delisted from the ESA in 1994 after a distinction was made between the western and eastern populations (59 FR 31094, June 16, 1994). It is estimated that approximately 18,000 individuals exist in the eastern stock (Allen and Angliss, 2012).

Although observations of gray whales are rare within Cook Inlet, marine mammal observers noted individual gray whales on nine occasions in the vicinity of Furie's proposed survey location in 2012 while conducting marine mammal monitoring for seismic survey activities under the IHA NMFS issued to Apache: Four times in May; twice in June; and three times in July (Apache, 2013). Annual survey conducted by NMFS in Cook Inlet since 1993 have resulted in a total of five gray whale sightings (Rugh *et al.,* 2005). Although Cook Inlet is not believed to comprise either essential feeding or social ground, and gray whales are typically not observed within upper Cook Inlet, due to the sightings reported during Apache's survey in 2012, Furie includes gray whales in their request for takes incidental to seismic survey activities in 2013.

**Pinnipeds**

Two species of pinnipeds may be encountered in Cook Inlet: Harbor seal and Steller sea lion.

*Harbor Seals*—Harbor seals inhabit the coastal and estuarine waters of Cook Inlet. In general, harbor seals are more abundant in lower Cook Inlet than in upper Cook Inlet, but they do occur in the upper inlet throughout most of the year (Rugh *et al.,* 2005). Harbor seals are non-migratory; their movements are associated with tides, weather, season, food availability, and reproduction. The major haulout sites for harbor seals are located in lower Cook Inlet and their presence in the upper inlet coincides with seasonal runs of prey species. For example, harbor seals are commonly observed along the Susitna River and other tributaries along upper Cook Inlet during the eulachon and salmon migrations (NMFS, 2003). During aerial surveys of upper Cook Inlet in 2001, 2002, and 2003, harbor seals were observed 24 to 96 km south-southwest of Anchorage at the Chickaloon, Little Susitna, Susitna, Ivan, McArthur, and Beluga Rivers (Rugh *et al.,* 2005). Many harbor seals were observed during the 3D seismic survey conducted under Apache's April 2012 IHA, especially when survey operations were conducted close to shore. NMFS and Apache do not anticipate encountering large haulouts of seals in Area 2—the closest haulout site to the action area is located on Kalgin Island, which is approximately 22 km away from the McArthur River—but we do expect to see curious individual harbor seals; especially during large fish runs in the various rivers draining into Cook Inlet.

*Steller Sea Lion*—Two separate stocks of Steller sea lions are recognized within U.S. waters: An eastern U.S. stock, which includes animals east of Cape Suckling, Alaska; and a western U.S. stock, which includes animals west of Cape Suckling (NMFS, 2008).

Individuals in Cook Inlet are considered part of the western U.S. stock, which is listed as endangered under the ESA. Steller sea lions primarily occur in lower, rather than upper Cook Inlet and are rarely sighted north of Nikiski on the Kenai Peninsula. Haul-outs and rookeries are located near Cook Inlet at Gore Point, Elizabeth Island, Perl Island, and Chugach Island (NMFS, 2008). No Steller seal lion haul-outs or rookeries are located in the vicinity of the proposed seismic survey. Furthermore, no sightings of Steller sea lions were reported by Apache during the 2D test program in March 2011. During the 3D seismic survey, from May 6 to September 30, 2012, one Steller sea lion was observed on May 6, two on June 23, and one Steller sea lion was observed on August 18, 2012, during a period when the air guns were not active. Although Furie has requested takes of Steller sea lions, Steller sea lions would be rare in the action area during seismic survey operations.

Furie's application contains information on the status, distribution, seasonal distribution, and abundance of each of the species under NMFS jurisdiction mentioned in this document. Please refer to the application for that information (see **ADDRESSES**). Additional information can also be found in the NMFS Stock Assessment Reports (SAR). The draft Alaska 2013 SAR is available at: *http://www.nmfs.noaa.gov/pr/sars/pdf/ak2013_draft.pdf*.

**Potential Effects of the Specified Activity on Marine Mammals**

Operating active acoustic sources, such as air gun arrays, has the potential for adverse effects on marine mammals.

*Potential Effects of Air Gun Sounds on Marine Mammals*

The effects of sounds from air gun 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). As outlined in previous NMFS documents, the effects of noise on marine mammals are highly variable, often depending on species and contextual factors, and can be categorized as follows (based on Richardson *et al.,* 1995):

(1) Tolerance

Numerous studies have shown that pulsed sounds from air guns are often readily detectable in the water at distances of many kilometers. Numerous studies have also shown that marine mammals at distances more than a few kilometers from operating survey vessels often show no apparent response. That is often true even in cases when the pulsed sounds must be readily audible to the animals based on measured received levels and the hearing sensitivity of that mammal group. In general, pinnipeds and small odontocetes (toothed whales) seem to be more tolerant of exposure to air gun pulses than baleen whales. Although various toothed whales, and (less frequently) pinnipeds have been shown to react behaviorally to air gun pulses under some conditions, at other times, mammals of both types have shown no overt reactions. For example, the available evidence also indicates that Cook Inlet beluga whales are less impacted behaviorally by anthropogenic sounds compared to marine mammals in more pristine acoustic environments (e.g., the Beaufort Sea) given the Cook Inlet population's greater experience with anthropogenic sounds.

(2) Behavioral Disturbance

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).

The biological significance of many of these behavioral disturbances is difficult to predict, especially if the detected disturbances appear minor. However, the consequences of behavioral modification have the potential to be biologically significant if the change affects growth, survival, or reproduction. Examples of significant behavioral modifications include:

- Drastic change in diving/surfacing patterns (such as those thought to be causing beaked whale stranding due to exposure to military mid-frequency tactical sonar);
- Habitat abandonment due to loss of desirable acoustic environment; and
- Cessation of feeding or social interaction.

The onset of behavioral disturbance from anthropogenic noise depends on both external factors (characteristics of noise sources and their paths) and the receiving animals (hearing, motivation, experience, demography) and is also difficult to predict (Southall *et al.,* 2007).

Currently NMFS uses a received level of 160 dB re 1 μPa to estimate the onset threshold for marine mammal behavioral harassment for impulse noises (such as air gun pulses). As explained below, NMFS has determined that use of this threshold is appropriate for Furie's IHA considering the scientific literature pertaining to this issue and the evidence specific to the marine mammal species and populations in question.

(3) Masking

Marine mammals use acoustic signals for a variety of purposes, which differ among species, but include communication between individuals, navigation, foraging, reproduction, and learning about their environment (e.g., predator avoidance) (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.

Masking occurs when noise and signals (that the animal utilizes) overlap at both spectral and temporal scales. For the air gun noise generated from the proposed seismic surveys, noise will consist of low frequency (under 500 Hz) pulses with extremely short durations (less than one second). Lower frequency man-made noises are more likely to affect detection of communication calls and other potentially important natural sounds such as surf and prey noise. There is little concern regarding masking near the noise source due to the brief duration of these pulses and relatively longer silence between air gun shots (approximately 12 seconds). However, at long distances (over tens of kilometers away), due to multipath propagation and reverberation, the durations of air gun pulses can be ''stretched'' to seconds with long decays (Madsen *et al.* 2006), although the intensity of the noise is greatly reduced.

This could affect communication signals used by low frequency mysticetes when they occur near the noise band and thus reduce the communication space of animals (e.g., Clark *et al.,* 2009) and cause increased

stress levels (e.g., Foote *et al.,* 2004; Holt *et al.,* 2009); however, baleen whales are rarely reported to occur within the action area. Marine mammals are thought to be able to compensate for masking, at least partially, by adjusting their acoustic behavior by shifting call frequencies, and/or increasing call volume and vocalization rates. For example, blue whales are found to increase call rates when exposed to seismic survey noise in the St. Lawrence Estuary (Di Iorio and Clark 2010). The North Atlantic right whales (*Eubalaena glacialis*) exposed to high shipping noise increase call frequency (Parks *et al.,* 2007), while some humpback whales respond to low-frequency active sonar playbacks by increasing song length (Miller *el al.,* 2000).

(4) Hearing Impairment

Marine mammals exposed to high intensity sound repeatedly or for prolonged periods can experience hearing threshold shift (TS), which is the loss of hearing sensitivity at certain frequency ranges (Kastak *et al.,* 1999; Schlundt *et al.,* 2000; Finneran *et al.,* 2002; 2005). TS can be permanent (PTS), in which case the loss of hearing sensitivity is unrecoverable, or temporary (TTS), in which case the animal's hearing threshold will recover over time (Southall *et al.,* 2007). Just like masking, marine mammals that suffer from PTS or TTS could have reduced fitness in survival and reproduction, either permanently or temporarily. Repeated noise exposure that leads to TTS could cause PTS. For transient sounds, the sound level necessary to cause TTS is inversely related to the duration of the sound.

Researchers have studied TTS in certain captive odontocetes and pinnipeds exposed to strong sounds (reviewed in Southall *et al.,* 2007). However, there has been no specific documentation of TTS let alone permanent hearing damage, i.e., permanent threshold shift (PTS), in free-ranging marine mammals exposed to sequences of airgun pulses during realistic field conditions.

*Temporary Threshold Shift*—TTS is the mildest form of hearing impairment that can occur during exposure to a strong sound (Kryter, 1985). While experiencing TTS, the hearing threshold rises and a sound must be stronger in order to be heard. At least in terrestrial mammals, TTS can last from minutes or hours to (in cases of strong TTS) days. For sound exposures at or somewhat above the TTS threshold, hearing sensitivity in both terrestrial and marine mammals recovers rapidly after exposure to the noise ends. Few data on sound levels and durations necessary to elicit mild TTS have been obtained for marine mammals, and none of the published data concern TTS elicited by exposure to multiple pulses of sound. Available data on TTS in marine mammals are summarized in Southall *et al.* (2007).

To safely avoid the potential for injury, NMFS (1995, 2000) concluded that cetaceans and pinnipeds should not be exposed to pulsed underwater noise at received levels exceeding 180 and 190 dB re 1 µPa (rms), respectively. Based on the available scientific information, NMFS also assumes that cetaceans and pinnipeds exposed to levels exceeding 160 dB re 1 µPa (rms) may experience Level B harassment.

For toothed whales, researchers have derived TTS information for odontocetes from studies on captive bottlenose dolphin and beluga whale. The experiments show that exposure to a single impulse at a received level of 207 kPa (or 30 psi, p-p), which is equivalent to 228 dB re 1 Pa (p-p), resulted in a 7 and 6 dB TTS in the beluga whale at 0.4 and 30 kHz, respectively. Thresholds returned to within 2 dB of the pre-exposure level within 4 minutes of the exposure (Finneran *et al.,* 2002). For the one harbor porpoise tested, the received level of airgun sound that elicited onset of TTS was lower (Lucke *et al.,* 2009). If these results from a single animal are representative, it is inappropriate to assume that onset of TTS occurs at similar received levels in all odontocetes (*cf.* Southall *et al.,* 2007). Some cetaceans apparently can incur TTS at considerably lower sound exposures than are necessary to elicit TTS in the beluga or bottlenose dolphin.

In pinnipeds, researchers have not measured TTS thresholds associated with exposure to brief pulses (single or multiple) of underwater sound. Initial evidence from more prolonged (non-pulse) exposures suggested that some pinnipeds (harbor seals in particular) incur TTS at somewhat lower received levels than do small odontocetes exposed for similar durations (Kastak *et al.,* 1999, 2005; Ketten *et al.,* 2001). The TTS threshold for pulsed sounds has been indirectly estimated as being an SEL of approximately 171 dB re 1 $\mu Pa^2 \cdot s$ (Southall *et al.,* 2007) which would be equivalent to a single pulse with a received level of approximately 181 to 186 dB re 1 µPa (rms), or a series of pulses for which the highest rms values are a few dB lower. Corresponding values for California sea lions and northern elephant seals are likely to be higher (Kastak *et al.,* 2005).

No cases of TTS are expected as a result of Furie's proposed activities given the strong likelihood that marine mammals would avoid the approaching air guns (or vessel) before being exposed to levels high enough for there to be any possibility of TTS, and the mitigation measures proposed to be implemented during the survey described later in this document.

*Permanent Threshold Shift*—When PTS occurs, there is physical damage to the sound receptors in the ear. In severe cases, there can be total or partial deafness, whereas in other cases, the animal has an impaired ability to hear sounds in specific frequency ranges (Kryter, 1985). There is no specific evidence that exposure to pulses of airgun sound can cause PTS in any marine mammal, even with large arrays of airguns. However, given the possibility that mammals close to an airgun array might incur at least mild TTS, there has been further speculation about the possibility that some individuals occurring very close to airguns might incur PTS (e.g., Richardson *et al.,* 1995; Gedamke *et al.,* 2008). Single or occasional occurrences of mild TTS are not indicative of permanent auditory damage, but repeated or (in some cases) single exposures to a level well above that causing TTS onset might elicit PTS.

Relationships between TTS and PTS thresholds have not been studied in marine mammals, but are assumed to be similar to those in humans and other terrestrial mammals (Southall *et al.,* 2007). PTS might occur at a received sound level at least several dBs above that inducing mild TTS if the animal were exposed to strong sound pulses with rapid rise times. Based on data from terrestrial mammals, a precautionary assumption is that the PTS threshold for impulse sounds (such as airgun pulses as received close to the source) is at least 6 dB higher than the TTS threshold on a peak-pressure basis, and probably greater than 6 dB (Southall *et al.,* 2007).

Given the higher level of sound necessary to cause PTS as compared with TTS, it is considerably less likely that PTS would occur during the proposed 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).

(5) Non-Auditory Physical Effects

Non-auditory physical effects might occur in marine mammals exposed to strong underwater pulsed sound. Possible types of non-auditory physiological effects or injuries that theoretically might occur in mammals close to a strong sound source include stress, neurological effects, bubble formation, and other types of organ or tissue damage. Some marine mammal species (i.e., beaked whales) may be especially susceptible to injury and/or stranding when exposed to strong pulsed sounds. However, there is no definitive evidence that any of these effects occur even for marine mammals in close proximity to large arrays of air guns, and beaked whales do not occur in the proposed project area. In addition, marine mammals that show behavioral avoidance of seismic vessels, including most baleen whales, some odontocetes (including belugas), and some pinnipeds, are especially unlikely to incur non-auditory impairment or other physical effects. The preliminary distances to the 180 and 190 dB thresholds for the air gun array proposed to be used by Furie are provided above in Tables 1 and 2.

Therefore, it is unlikely that such effects would occur during Furie's proposed survey given the brief duration of exposure and the planned monitoring and mitigation measures described later in this document.

(6) Stranding and Mortality

Marine mammals close to underwater detonations of high explosive can be killed or severely injured, and the auditory organs are especially susceptible to injury (Ketten *et al.* 1993; Ketten 1995). Air gun pulses are less energetic and their peak amplitudes have slower rise times. To date, there is no evidence that serious injury, death, or stranding by marine mammals can occur from exposure to air gun pulses, even in the case of large air gun arrays.

However, in numerous past IHA notices for seismic surveys, commenters have referenced two stranding events allegedly associated with seismic activities, one off Baja California and a second off Brazil. NMFS has addressed this concern several times, including in the **Federal Register** notice announcing the 2012 IHA for Apache's seismic survey in Cook Inlet, and, without new information, does not believe that this issue warrants further discussion. For information relevant to strandings of marine mammals, readers are encouraged to review NMFS' response to comments on this matter found in 69 FR 74905 (December 14, 2004), 71 FR 43112 (July 31, 2006), 71 FR 50027 (August 24, 2006), 71 FR 49418 (August 23, 2006), and 77 FR 27720 (May 11, 2012).

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 Apache's April 2012 IHA. As a result, NMFS does not expect any marine mammals will incur serious injury or mortality in Cook Inlet or strand as a result of Furie's proposed seismic survey.

*Potential Effects From Pingers on Marine Mammals*

Active acoustic sources other than the airguns have been proposed for Furie's 2014 seismic survey in Cook Inlet. The specifications for the pingers (source levels and frequency ranges) were provided earlier in this document. In general, the potential effects of this equipment on marine mammals are similar to those from the airguns, except the magnitude of the impacts is expected to be much less due to the lower intensity of the source.

*Potential Effects From Vessels and Vessel Noise on Marine Mammals*

Vessel activity and noise associated with vessel activity will temporarily increase in the action area during Furie's seismic survey as a result of the operation of multiple vessels. To minimize the effects of vessels and noise associated with vessel activity, Furie will follow NMFS' Marine Mammal Viewing Guidelines and Regulations and will alter heading or speed if a marine mammal gets too close to a vessel. In addition, 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.

Odontocetes, such as beluga whales, killer whales, and harbor porpoises, often show tolerance to vessel activity; however, they may react at long distances if they are confined by ice, shallow water, or were previously harassed by vessels (Richardson, 1995). Beluga whale response to vessel noise varies greatly from tolerance to extreme sensitivity depending on the activity of the whale and previous experience with vessels (Richardson, 1995). Reactions to vessels depends on whale activities and experience, habitat, boat type, and boat behavior (Richardson, 1995) and may include behavioral responses, such as altered headings or avoidance (Blane and Jaakson, 1994; Erbe and Farmer, 2000); fast swimming; changes in vocalizations (Lesage *et al.,* 1999; Scheifele *et al.,* 2005); and changes in dive, surfacing, and respiration patterns.

There are few data published on pinniped responses to vessel activity, and most of the information is anecdotal (Richardson, 1995). Generally, sea lions in water show tolerance to close and frequently approaching vessels and sometimes show interest in fishing vessels. They are less tolerant when hauled out on land; however, they rarely react unless the vessel approaches within 100–200 m (330–660 ft; reviewed in Richardson, 1995).

The addition of multiple 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. Given the large number of vessels in Cook Inlet and the apparent habituation to vessels by Cook Inlet beluga whales and the other marine mammals that may occur in the area, vessel activity and noise is not expected to have effects that could cause significant or long-term consequences for individual marine mammals or their populations.

*Potential Effects From Aircraft Noise on Marine Mammals*

Furie plans to utilize aircraft to conduct aerial surveys near river mouths in order to identify locations or congregations of beluga whales and other marine mammals prior to the commencement of operations. The aircraft would not be used every day, but will be used for surveys near river mouths. Aerial surveys would fly at an altitude of 305 m (1,000 ft) when practicable and weather conditions permit. In the event of a marine

mammal sighting, aircraft would try 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 mammals.

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 1,000 ft (305 m), 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 600 to 800 ft. (e.g., Rugh *et al.,* 2000). By applying the operational requirements discussed above, sound levels underwater are not expected to reach NMFS' harassment thresholds.

The majority of observations of pinnipeds reacting to aircraft noise are associated with animals hauled out on land or ice. There are very little data describing the reactions of pinnipeds in water to aircraft (Richardson *et al.,* 1995). In the presence of aircraft, pinnipeds hauled out for pupping or molting generally became alert and then rushed or slipped (when on ice) into the water. Stampedes often result from this response and may increase pup mortality due to crushing or an increase rate of pup abandonment. The greatest reactions from hauled out pinnipeds were observed when low flying aircrafts passed directly above the animal(s) (Richardson *et al.,* 1995). Although noise associated with aircraft activity could cause hauled out pinnipeds to rush into the water, there are no known haul out sites in the vicinity of the survey site.

Therefore, the operation of aircraft during the seismic survey is not expected to have effects that could cause significant or long-term consequences for individual marine mammals or their populations. To minimize the noise generated by aircraft, Furie would follow NMFS' Marine Mammal Viewing Guidelines and Regulations found at *http://www.alaskafisheries.noaa.gov/protectedresources/mmv/guide.htm.*

**Anticipated Effects on Marine Mammal Habitat**

The primary potential impacts to marine mammal habitat and other marine species, including prey 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 and are discussed below.

*Potential Impacts on Prey Species*

With regard to fish as a prey source for cetaceans and pinnipeds, fish are known to hear and react to sounds and to use sound to communicate (Tavolga *et al.,* 1981) and possibly avoid predators (Wilson and Dill, 2002). Experiments have shown that fish can sense both the strength and direction of sound (Hawkins, 1981). Primary factors determining whether a fish can sense a sound signal, and potentially react to it, are the frequency of the signal and the strength of the signal in relation to the natural background noise level.

The level of sound at which a fish will react or alter its behavior is usually well above the detection level. Fish have been found to react to sounds when the sound level increased to about 20 dB above the detection level of 120 dB (Ona, 1988); however, the response threshold can depend on the time of year and the fish's physiological condition (Engas *et al.,* 1993). In general, fish react more strongly to pulses of sound rather than a continuous signal (Blaxter *et al.,* 1981), and a quicker alarm response is elicited when the sound signal intensity rises rapidly compared to sound rising more slowly to the same level.

Investigations of fish behavior in relation to vessel noise (Olsen *et al.,* 1983; Ona, 1988; Ona and Godo, 1990) have shown that fish react when the sound from the engines and propeller exceeds a certain level. Avoidance reactions have been observed in fish such as cod and herring when vessels approached close enough that received sound levels are 110 dB to 130 dB (Nakken, 1992; Olsen, 1979; Ona and Godo, 1990; Ona and Toresen, 1988). However, other researchers have found that fish such as polar cod, herring, and capeline are often attracted to vessels (apparently by the noise) and swim toward the vessel (Rostad *et al.,* 2006). Typical sound source levels of vessel noise in the audible range for fish are 150 dB to 170 dB (Richardson *et al.,* 1995).

**Potential Impacts to the Benthic Environment**

Furie's seismic survey requires the deployment of a submersible receiving and recording system in the inter-tidal and marine zones. The systems that may be used are a nodal system, an ocean bottom cable (OBC) system, or a combination of the two. The system would be deployed in parallel lines, laid out in units or patches. An entire patch would be placed on the seafloor prior to air gun activity. As the patches are surveyed, the receiver lines would be moved either side to side or inline to the next location. Placement and retrieval of the receivers may cause temporary and localized increases in turbidity on the seafloor. The substrate of Cook Inlet consists of glacial silt, clay, cobbles, pebbles, and sand (Sharma and Burrell, 1970). Sediments like sand and cobble dissipate quickly when suspended, but finer materials like clay and silt can create thicker plumes that may harm fish; however, the turbidity created by placing and removing nodes on the seafloor would settle to background levels within minutes after the cessation of activity.

In addition, seismic noise will radiate throughout the water column from air guns and pingers until is dissipates to background levels. No studies have demonstrated that seismic noise affects the life stages, condition, or amount of food resources (fish, invertebrates, eggs) used by marine mammals, except when exposed to sound levels within a few meters of the seismic source or in few very isolated cases. Where fish or invertebrates did respond to seismic noise, the effects were temporary and of short duration. Consequently, disturbance to fish species due to the activities associated with the seismic survey (i.e., placement and retrieval of nodes and noise from sound sources) would be short term and fish would be expected to return to their pre-disturbance behavior once seismic survey activities cease.

Based on the preceding discussion, the proposed activity is not expected to have any habitat-related effects that could cause significant or long-term consequences for individual marine mammals or their populations.

**Proposed Mitigation**

In order to issue an incidental take authorization 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 adverse 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.

For the proposed seismic survey in Cook Inlet, Furie worked with NMFS and proposed the following mitigation measures to minimize the potential impacts to marine mammals in the project vicinity as a result of the survey activities.

*Mitigation Measures Proposed in Furie's IHA Application*

For the proposed mitigation measures, Furie listed the following protocols to be implemented during its seismic survey in Cook Inlet.

(1) Operation of Mitigation Air Gun at Night

Furie proposes to conduct both daytime and nighttime operations. Nighttime operations would only be initiated if a ''mitigation air gun'' (typically the 10 $in^3$) has been continuously operational from the time that PSO monitoring has ceased for the day to alert marine mammals of the presence of the seismic survey. The mitigation airgun would operate on a longer duty cycle than the full airgun arrays, firing every 30–45 seconds. 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 and any unseen animals may be exposed to injurious levels of sound from the full array. 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 safety radii.

(2) Designation of Disturbance and Safety Zones

NMFS typically identifies two zones to help with mitigation, monitoring, and analyses. One zone is used for shutdowns to limit marine mammal exposure to received sound levels that are ≥180 $dB_{rms}$ re 1 μPa for cetaceans and ≥190 $dB_{rms}$ re 1 μPa for pinnipeds, which is based on the assumption that SPLs received at levels lower than these will not injure these animals or impair their hearing abilities. In their IHA application, Furie refers to the distances to the 180/190 dB thresholds as the ''exclusion'' radii; however, to avoid confusion with other actions, for consistency NMFS will refer to this zone as the ''safety zone'' for the remainder of this notice. NMFS also typically identifies the zone between the 180/190 dB isopleths and the 160 dB threshold where harassment in the form of behavioral disturbance may occur. Furie's IHA application refers to this area as the ''safety zone;'' however, to avoid confusion with other actions where ''safety zone'' has meant the area above 180/190 dB, NMFS will use the term ''disturbance zone.''

The proposed survey would use airgun sources composed of two 2400 $in^3$ airguns, a single 440 $in^3$ to 1800 $in^3$ airgun, and a single 10 $in^3$ airgun. Safety and disturbance radii for the sound levels produced by the planned airgun configurations and pinger have been estimated (see Table 4) and would be used for mitigation purposes (see description of measures below) during the seismic survey activities. However, Furie plans on conducting a sound source verification study for this project prior to the start of the seimic survey, which will be used to modify the distances to the actual isopleths, if necessary.

TABLE 4—PRELIMINARY DISTANCES TO SAFETY AND DISTURBANCE ZONE ISOPLETHS

| Source | 190 dB | 180 dB | 160 dB |
|---|---|---|---|
| Pinger | 1 m | 3 m | 25 m. |
| 10 $in^3$ Airgun | 10 m | 10 m | 280 m. |
| 440 $in^3$ Airgun | 100 m | 310 m | 2.5 km. |
| 2400 $in^3$ Airgun | 380 m | 1.4 km | 9.5 km. |

In addition to the required mitigation associated with the safety and disturbance zones (which are described below), pursuant to Alaska Department of Fish and Game restrictions, there would be a 1.6 km setback of sound source points from the mouths of any anadromous streams.

Furie also plans to use dedicated vessels to deploy and retrieve the receiving and recording system. Sounds produced by the vessels are not expected to exceed ambient sound levels in Cook Inlet. Therefore, mitigation related to acoustic impacts from vessels is not expected to be necessary.

(3) Speed and Course Alterations

If a marine mammal is detected outside the applicable 160 dB disturbance zone and, based on its position and the relative motion, is likely to enter the disturbance zone, changes of the vessel's speed and/or direct course would be considered if this does not compromise operational safety to increase the distance between the observed marine mammal and the disturbance zone. For marine seismic surveys using large arrays, course alterations are not typically possible. However, for the smaller air gun arrays planned during the proposed site surveys, such changes may be possible. After any such speed and/or course alteration is begun, the marine mammal activities and movements relative to the survey vessel would be closely monitored to ensure that the marine mammal does not approach within the disturbance zone. If the mammal appears likely to enter the disturbance zone, further mitigative actions would be taken, including a power down or shut down of the airgun(s).

(4) Power-Downs

A power-down for mitigation purposes is the immediate reduction in the number of operating airguns such that the radii of the 190 dB rms, 180 dB rms, and 160 dB rms zones are decreased to the extent that an observed marine mammal(s) are not in the applicable zone of the full array. During a power-down, one air gun, typically the 10 $in^3$, continues firing. Operation of the 10 $in^3$ air gun decreases the radii to 10 m, 10 m, and 280 m for the safety and disturbance zones, respectively. The continued operation of one airgun is intended to alert marine mammals to the presence of the survey vessel in the area.

The array would be immediately powered down whenever a marine mammal is sighted approaching the 160 dB disturbance zone of the full array. Likewise, if a mammal is already within the disturbance zone when first detected, the airguns would be powered down immediately. If a marine mammal is sighted within or about to enter the disturbance zone of the single

mitigation airgun, it would be shut down (see following section).

Following a power-down, operation of the full airgun array would not resume until the marine mammal has cleared the disturbance zone. The animal would be considered to have cleared the disturbance zone if it:

- Is visually observed to have left the disturbance zone of the full array, or
- Has not been seen within the zone for 15 min in the case of pinnipeds or small odontocetes, or
- Has not been seen within the zone for 30 min in the case of large odontocetes and mysticetes.

(5) Shut-Downs

The operating airgun(s) would be shut down completely if a marine mammal approaches or enters the safety radius and a power-down is not practical or adequate to reduce exposure to less than 190 or 180 dB rms, as appropriate. In most cases, this means that the full array, including the mitigation airgun would be shut down completely if a marine mammal approaches or enters the estimated safety radius around the single 10 $in^3$ air gun while it is operating during a power down. Airgun activity would not resume until the marine mammal has cleared the safety radius. The animal would be considered to have cleared the safety radius as described above under power down procedures.

(6) Ramp-Ups

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 proposed seismic survey, the seismic operator will ramp up the airgun array slowly, at a rate of 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 shut down will not begin until there has been a minimum of 30 minutes of observation of the 160 dB disturbance zone by PSOs to assure that no marine mammals are present. The entire zone must be visible during the 30-minute lead-in to a full ramp up. If the entire zone is not visible, then ramp-up from a cold start cannot begin. If a marine mammal(s) is sighted within the 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) and mysticetes (gray whales).

(7) Shut-Downs for Aggregations of Marine Mammals and Beluga Cow-Calf Pairs

The following additional protective measures for beluga whale cow-calf pairs and aggregations of marine mammals are proposed. Whenever an aggregation of beluga whales, killer whales, harbor porpoises, gray whales, or Steller sea lions (four or more whales of any age/sex class), or beluga whale cow-calf pairs are observed approaching the 160-dB disturbance zone around the survey operations, the survey activity would not commence or would shut down, until they are no longer present within the 160-dB disturbance zone of seismic surveying operations.

*Additional Mitigation Measures Proposed by NMFS*

Furthermore, NMFS proposes the following measures be included in the IHA, if issued:

(1) All vessels should reduce speed when within 300 yards (274 m) of whales, and those vessels capable of steering around such groups should do so. Vessels may not be operated in such a way as to separate members of a group of whales from other members of the group;

(2) Avoid multiple changes in direction and speed when within 300 yards (274 m) of whales; and

(3) When weather conditions require, such as when visibility drops, support vessels must adjust speed (increase or decrease) and direction accordingly to avoid the likelihood of injury to whales.

*Mitigation Measures Considered But Not Proposed*

NMFS considered whether time/area restrictions were warranted. NMFS has preliminary determined that such restrictions are not necessary or practicable here. 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. Furie expects to mobilize crews and equipment for its seismic survey in May 2014, which would coincide with the time of year when belugas are located in the upper Inlet. In the spring, beluga whales are regularly sighted in Knik Arm, which is located 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, and well outside of the area where Furie would be conducting seismic surveys. Therefore, NMFS believes that the timing and location of the seismic survey, as proposed, will avoid 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 preliminarily determined not to require time/area restrictions for these areas within the proposed survey area. The areas in question are relatively large throughout which belugas are dispersed. In addition, data for 14 tracked belugas does 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. Time/area restrictions for these areas thus would not yield a material 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.

*Mitigation Conclusions*

NMFS has carefully evaluated the applicant's proposed mitigation measures and considered a range of other measures 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 measure is 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, NMFS has preliminarily determined that the proposed mitigation measures provide the means of effecting the least practicable impact on marine mammal species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

**Proposed 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.

*Monitoring Measures Proposed in Furie's IHA Application*

The monitoring plan proposed by Apache can be found in section 1.4 of the IHA application. The plan may be modified or supplemented based on comments or new information received from the public during the public comment period. A summary of the primary components of the plan follows.

(1) Visual Vessel-Based Monitoring

Vessel-based monitoring for marine mammals would be done by experienced PSOs throughout the period of marine survey activities. PSOs would 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 would include watching for and identifying marine mammals, recording their numbers, distances, and reactions to the survey operations, and documenting ''take by harassment.''

A sufficient number of PSOs would be 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 would consist of experienced field biologists. An experienced field crew leader would supervise the PSO team onboard the survey vessel. Furie currently plans to have PSOs aboard up to four vessels: the two source vessels and two support vessels. Two PSOs would be on the source vessels and two PSOs would be on the support vessel to observe the safety, power down, and shut down areas. When marine mammals are about to enter or are sighted within designated disturbance (i.e., 160 dB) 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) would watch for marine mammals from the best available vantage point on the source and support vessels, typically the flying bridge. The observer(s) would scan systematically with the unaided eye and 7×50 reticle binoculars. Laser range finders would be available to assist with estimating distance. Personnel on the bridge would assist the observer(s) in watching for marine mammals.

All observations would be recorded in a standardized format. Data would 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 would be recorded:

(A) 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;

(B) Time, location, speed, activity of the vessel, sea state, ice cover, visibility, and sun glare; and

(C) 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 would 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, Furie proposes to utilize a shore-based station to visually monitor for marine mammals when the disturbance radius includes the intertidal area within one mile from shore. The shore-based station would follow all safety procedures, including bear safety. The location of the shore-based station would need to be sufficiently high to observe marine mammals; the PSOs would be equipped with pedestal mounted ''big eye'' (20x110) binoculars. The shore-based PSOs would scan the area prior to, during, and after the air gun operations, and would be in contact with the vessel-based PSOs via radio to communicate sightings of marine mammals approaching or within the project area.

(3) Aerial-Based Monitoring

When survey operations occur within 1.6 km (1 mi) a river mouth, Furie would conduct aerial surveys utilizing either a helicopter or fixed-wing aircraft prior to the commencement of airgun operations in order to identify locations where beluga whales congregate. The aircraft may also be used at other times, when practicable. Weather and scheduling permitting, aerial surveys would 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 believes that the foregoing monitoring measures will allow Furie to identify animals nearing or entering the 160 db zone with a reasonably high degree of effectiveness.

*Reporting Measures*

(1) Field Reports

During the proposed survey program, the PSOs would prepare a report each day or at such other interval as the IHA (if issued), or Furie may require, summarizing the recent results of the monitoring program. The field reports would summarize the species and numbers of marine mammals sighted. These reports would be provided to NMFS and to the survey operators on a weekly basis. At the end of each month, a summary of the weekly reports would be submitted to NMFS.

(2) Technical Report

The results of Furie's 2014 monitoring program, including estimates of ''take'' by harassment (based on presence in the 160 dB harassment zone), would be presented in the ''90-day'' and Final Technical reports. The Technical Report would include:

(a) 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);

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

(c) 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;

(d) 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:
- Initial sighting distances versus survey activity state;
- Closest point of approach versus survey activity state;
- Observed behaviors and types of movements versus survey activity state;
- Numbers of sightings/individuals seen versus survey activity state;
- Distribution around the source vessels versus survey activity state; and
- Estimates of take by harassment based on presence in the 160 dB disturbance zone.

(3) Comprehensive Report

Following the survey season, a comprehensive report describing the vessel-based, shore-based, aerial-based, and acoustic monitoring programs would be prepared. The comprehensive report would describe the methods, results, conclusions and limitations of each of the individual data sets in detail. The report would also integrate (to the extent possible) the studies into a broad based assessment of industry activities, and other activities that occur in Cook Inlet, and their impacts on marine mammals. The report would help to establish long-term data sets that can assist with the evaluation of changes in the Cook Inlet ecosystem. The report would attempt to provide a regional synthesis of available data on industry activity in this part of Alaska that may influence marine mammal density, distribution and behavior.

(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), Furie 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 Furie to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. Furie would not be able to resume their activities until notified by NMFS via letter, email, or telephone.

In the event that Furie 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), Furie 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 Furie to determine whether modifications in the activities are appropriate.

In the event that Furie 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. Furie would provide photographs or video footage (if available) or other documentation of the stranded animal sighting to NMFS and the Marine Mammal Stranding Network.

**Exposure Analysis and Estimated Take of Marine Mammals**

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 proposed 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 vessel strikes.

Furie requests authorization to take six marine mammal species by Level B harassment. These six marine mammal species are: Cook Inlet beluga whale (*Delphinapterus leucas*); killer whale (*Orcinus orca*); harbor porpoise (*Phocoena phocoena*); gray whale (*Eschrichtius robustus*); harbor seal (*Phoca vitulina richardsi*), and Steller sea lion (*Eumetopias jubatus*).

The full suite of potential impacts to marine mammals was described in detail in the ''Potential Effects of the Specified Activity on Marine Mammals'' section found earlier in this document. The potential effects of sound from the proposed seismic survey might include one or more of the following: Tolerance; masking of natural sounds; behavioral disturbance; non-auditory physical effects; and, at least in theory, temporary or permanent hearing impairment (Richardson *et al.,* 1995). The most common and likely impact would be from behavioral disturbance, including avoidance of the ensonified area or changes in speed, direction, and/or diving profile of the animal. Hearing impairment (TTS and PTS) are highly unlikely to occur based on the proposed mitigation and monitoring measures that would preclude marine mammals being exposed to noise levels high enough to cause hearing impairment.

For impulse sounds, such as those produced by airgun(s) used in the seismic survey, NMFS uses the 160 $dB_{rms}$ re 1 µPa isopleth to indicate the onset of Level B harassment. To estimate potential exposure of marine mammals to sound generated during seismic survey operations, Furie used the 160-dB isopleths measured by Apache in 2012 and then overlaid those isopleth areas with the density of marine mammals in the total area ensonified within those isopleths over the time of the surveys. Furie provided a full description of the methodology used to estimate takes by harassment in its IHA application (see **ADDRESSES**), which is also provided in the following sections. NMFS reviewed and used Furie's exposure analysis and take estimates in our analyses.

*Basis for Estimating Exposure to Sound Levels at or Exceeding 160 dB*

As stated previously, NMFS considers exposure to impulsive sounds at a received level of 160 $dB_{rms}$ re 1µPa or above to be Level B harassment. As described earlier in this notice, impulsive sounds would be generated by airgun arrays that would be used to obtain geological data during the surveys. The following series of calculations and assumptions were applied to estimate potential Level B harassment in this application:

(1) The expected density of each marine mammal species in the project area is estimated using the best available data.

(2) The total estimated number of marine mammals that could potentially (without the implementation of mitigation measures) be exposed to pulsed sound levels at or exceeding 160 $dB_{rms}$ re 1µPa, is calculated by multiplying the density of the marine mammals expected to be present by the area that would be ensonified to 160 dB or above. The area predicted to be ensonified to ≥160 dB is presented below in Table 5 for each priority area under two proposed scenarios identified by different contractors:

TABLE 5—MONTHY AREA PREDICTED TO BY ENSONIFIED TO ≥160 dB

| Priority area | Area Ensonified to ≥160 dB ($km^2$) | |
|---|---|---|
| | Proposal A | Proposal B |
| Priority Area 1 ... | 890 | 905 |
| Priority Area 2 ... | 880 | 885 |
| Priority Area 3a | 775 | 865 |
| Priority Area 3b | 1050 | 1000 |

Furie has indicated that Priority Area 1 is the highest priority area for seismic survey operations in 2014.

(3) The estimated numbers of marine mammals that may be taken by Level B harassment are derived by modifying the number of calculated exposures above 160 dB based on the data and information regarding site-specific observations of marine mammals and the effects of the proposed mitigation measures. Specifically, the following two factors are expected to lower the number of animals that are actually exposed above 160 dB and taken: (1) The coordination of timing and location of the proposed seismic survey to avoid areas where marine mammals (particularly Cook Inlet beluga whales) concentrate at certain times of the year; and (2) power-down and shut-down procedures that would suspend airgun operations when marine mammals are observed in or about to enter the 160 dB zone. Of note, as described above in the mitigation section, Furie would be utilizing more protective power-down/shut-down procedures than are typically employed during seismic survey operations. In addition to the regular shut-down for the safety zone, Furie would be implementing power-downs in the disturbance zone for all marine mammals and special aggregation/cow-calf shut-downs in disturbance zone.

The following subsections describe the estimated densities of marine mammals that may occur in the areas where activities are planned, and areas of water that may be ensonified by pulsed sounds to ≥160 dB. The densities presented here are likely to be higher than those expected in the project area because the population surveys target areas where marine mammals are concentrated (e.g., haulout areas, feeding grounds), which are outside of the proposed survey site, and, therefore, over-estimate the densities that would be found in the open waters of upper Cook Inlet, which is where the survey will take place. According to Furie's IHA application, a survey crew will collect seismic data 10–12 hours per day over approximately 4 months (120 days). Furie has identified four ''priority areas'' for surveying with each requiring about 30 days to complete. It is important to note that environmental conditions (such as ice, wind, and fog) will play a significant role in the actual number of operating days; therefore, these estimates are conservative in order to provide a basis for the probability of encountering these marine mammal species in the action area. The timing and location of the survey for each priority area can be adjusted to avoid anticipated locations of higher concentrations of beluga whales during each month.

Beluga Whales

Annual surveys of the Cook Inlet beluga whale provide total population estimates, but because the whales are not typically distributed across the entire survey area, the data do not allow for the direct calculation of density across their entire range. Assumptions are necessary to estimate density for the proposed seismic survey project area.

A population estimate is developed annually for Cook Inlet beluga whales through aerial surveys that cover approximately 30 percent of the Cook Inlet surface area using the methods described by Hobbs *et al.* (2000) (Rugh *et al.,* 2000; Rugh *et al.,* 2005). During early June, three to seven surveys of upper Cook Inlet and one survey of lower Cook Inlet are conducted. During each aerial survey, the entire coastline to approximately 3 km offshore and all river mouths are surveyed. Transects across the Inlet are flown as well. The daily counts during the annual aerial survey are corrected for perception bias, which is the possibility of not seeing or counting a visible whale, as well as for availability bias, which is the inverse of the probability that a typical beluga is at or will appear at the surface during the survey. The population estimate for

the Cook Inlet beluga whales was 312 individuals for 2012 (Shelden *et al.,* 2012). Based on the coefficient of variation, Shelden *et al.* (2012) reported a minimum Cook Inlet beluga population estimate of 280 and an upper confidence limit of 402 individuals in 2012.

During May and for most of the summer, beluga whales are concentrated in the upper Cook Inlet near river mouths in Turnagain Arm, Knik Arm, Chickaloon Bay and the Susitna Delta (Rugh *et al.,* 2005; Hobbs *et al.,* 2005). The majority of the total population was observed in these areas from approximately June through September. In most years of the June aerial survey since the mid-1990s, beluga whales were not observed south of the East and West Forelands, with the majority of the population occurring in the Susitna Delta (Rugh *et al.,* 2010). The median daily count of beluga whales in mid Cook Inlet near the proposed Furie project area was nine in 1993, one in 1994, and four in 1995. There were no beluga whales counted in mid Cook Inlet near the proposed Furie project area in any year from 1996 through 2011, until a group of 21 beluga whales was observed in Trading Bay in June of 2012 for the first time since 1995 (Rugh *et al.,* 2005; Shelden *et al,* 2012; NMFS unpublished data). However, in August 2012, an aerial survey did not observe any beluga in the Trading Bay area, or even south of the Beluga River (Sims *et al.,* 2012).

Due to the seasonal concentration of beluga whales in certain areas of Cook Inlet, accurate densities cannot be calculated by assuming the total population is spread evenly throughout the Inlet at all times of the year; doing so would greatly overestimate the density of belugas expected in most areas of the upper Cook Inlet from May through November. Although the actual distribution of the Cook Inlet beluga population during the proposed project period is unknown and inherently varies over time, some studies and additional observations inform the calculation of the best density estimates (see Section 4.1 of Furie's IHA application for a more detailed discussion on seasonal distribution of beluga whales in Cook Inlet).

The distribution of beluga whales varies over the course of the summer and into the fall, depending largely on the timing of various fish runs. Movements of 14 satellite-tagged beluga whales studied from 2000 to 2003 indicate that 95 percent of the range where belugas are found from August through November varies from 982 km$^2$ to 2,945 km$^2$ (Hobbs *et al.,* 2005; Figure A–7). Hobbs *et al.* (2005) did not predict distributions for the months of May, June, or July; however, given that the annual aerial surveys in June typically observe the population in the Susitna Delta and Chickaloon Bay and that the population remains in the Susitna Delta and moves into the Knik Arm around August, the predicted distribution for the month of August is generally expected to represent the distribution of beluga whales during June and July. Prey species, specifically eulachon, arrive in upper Cook Inlet in April with major spawning runs in the Susitna River beginning in May (NMFS, 2008a). The arrival of eulachon appears to draw Cook Inlet beluga whales north around mid-April (NMFS, 2008a; Huntington, 2000) and thus the distribution of beluga whales in May is assumed to be similar to June, July, and August. Accordingly, the 95 percent probability range area estimated for May, June, and July is assumed to be equal to the area presented for August (982 km$^2$).

The predicted densities set forth below are based on the reasonable assumption that 95 percent of the total Cook Inlet beluga whale population will be distributed within the 95 percent probability range area for any given month (high concentration area) and that the remaining 5 percent of the population will occur in other areas of the upper Cook Inlet (low concentration area). Figures A–8 through A–23 of Furie's IHA application show the high concentration areas (shaded red, green and yellow per Hobbs *et al.,* 2005) in relation to the proposed project area. The density for the high and low concentration areas is calculated by dividing 95 percent of the population estimate by the area within the 95 percent range probability kernel of the given month, and 5 percent of the population by the remaining area of upper Cook Inlet (3840 km$^2$ total), respectively. Table 6 presents the population density estimate for the high and low concentration areas of upper Cook Inlet based on the 2012 population estimate (312) and the 95 percent probability range areas published by Hobbs *et al.* (2005).

TABLE 6—PREDICTED COOK INLET BELUGA WHALE DENSITIES WITHIN AND OUTSIDE OF THE 95% PROBABILITY KERNEL

| Month | Area of 95% probability (km$^2$) | High concentration area (number of animals/km$^2$) | Low concentration area (number of animals/km$^2$) |
|---|---|---|---|
| May/June/July/August | 982 | 0.3018 | 0.005458 |
| July | 982 | 0.3018 | 0.005458 |
| August | 982 | 0.3018 | 0.005458 |
| September | 1605 | 0.1847 | 0.006980 |
| October | 2945 | 0.1006 | 0.01743 |
| November | 2013 | 0.1472 | 0.008539 |

Goetz *et al.* (2012a) re-analyzed the data reported in Hobbs *et al.* (2005) and also predicted low numbers of belugas per km$^2$ in the vicinity of the proposed project area, with the greatest numbers occurring along the coastline along Trading Bay and a shallow area known as Middle Ground Shoal. The density of belugas in the 2012 modeling study was derived as the product of the probability of beluga presence in a specific location and the expected number of individuals when beluga whales are present, using aerial survey data from 1994 to 2008. Of these years, belugas were only observed near the proposed project area in 1994 and 1995.

Additionally, site-specific observations support the findings reported by Hobbs *et al.* (2005) and Goetz *et al.* (2012a). Individual observers have reported sighting beluga whales ranging from 1 to 75 individuals (average 16.5) on 24 occasions from 2000 through 2010 in the area south of Threemile Creek connecting to Point Possession and north of East Forelands connecting to West Forelands (observations were made from planes, vessels, shore, and oil platforms; NMFS unpublished data). Only 13 of these sightings occurred in the months of June through September, and no sightings were reported in May, October or

November. This average number of beluga whales (16.5) represents 5 percent of the average population abundance estimate (350) from the same time period.

Marine mammal observations are available for the vicinity of the proposed Furie project area as part of monitoring efforts for seismic survey work conducted during May through September of 2012 (Apache, 2013). In 2012, Apache conducted a seismic survey in a 2,719 km$^2$ area extending from the McArthur River to the Beluga River. During the 2012 survey, Apache was required to monitor the area for the presence of marine mammals and regularly submitted reports to NMFS containing marine mammal observations. These observations were made as part of the implementation of mitigation measures to avoid potential harassment and injury to marine mammal species and not for the purpose of estimating population abundance. However, this monitoring data from Apache's 2012 seismic program represents the best available site-specific observational data (Table 7). Monitoring was conducted from land-based, vessel-based, and aerial platforms. Belugas whales were most often observed in coastal waters and in river mouths along the western side of Cook Inlet, as far south as the McArthur River to as far north as the Ivan River. Beluga whales were also commonly observed adjacent to the shoreline near river mouths, which is consistent with other studies conducted in the area (Rugh *et al.,* 2000; Nemeth *et al.,* 2007). Beluga whale abundance in the vicinity of the 2012 survey decreased and moved north (Beluga River to Susitna River) July through September, when beluga whales are more commonly observed in the upper reaches of Cook Inlet (e.g., Knik and Turnagain Arms; Hobbs *et al.,* 2005). Dividing the number of individuals visually recorded through vessel and land-based observers per month by the number of sightings, the average group size of beluga whales in May, June, July, and September was 6.9. No belugas were observed by vessel and land-based observers in August.

TABLE 7—BELUGA WHALES OBSERVED DURING 2012 SEISMIC SURVEY ACTIVITIES

| Month | Estimated number of individuals observed | Number of sightings | Assumed average group size |
|---|---|---|---|
| May | 52 | 20 | 2.6 |
| June | 77 | 7 | 11 |
| July | 161 | 23 | 7 |
| August | 0 | 0 | N/A |
| September | 35 | 5 | 7 |
| Average | ..... | ..... | 6.9 |

Tables 7 and 8 show two estimates of the number of individual Cook Inlet beluga whales potentially exposed to sound levels at or above the Level B harassment threshold each month over the course of the entire 2014 survey season. Table 17 presents the calculated number of potential exposures for other marine mammal species.

In order to calculate the number of individual beluga whales potentially exposed to sound at or above 160 dB, the following factors were considered:

(1) The size of the ensonified area: The size of the ensonified area varies for each priority area surveyed and varies with the proposals submitted by the surveying contractors. Tables 8 and 9 present the predicted number of beluga exposures under Proposals A and B, respectively. Proposal C is identical to Proposal A and, therefore, is not presented in a separate table.

(2) The month during which work will take place in that area: The month during which each priority area would be surveyed depends on the available start date for work and the desire to avoid working in areas where beluga whales would be present in higher concentrations. Figures A–9 to A–24 in Furie's IHA application show work in each priority area over four different months, August through November. The distribution of beluga whales is presumed to be similar in May, June, and July to that observed in August based on the best available data.

(3) The size of the ensonified area that overlaps predicted high and low beluga concentration areas: The fact that there are more belugas in some areas compared to others is relevant in different ways depending on what type of data is used and how it is analyzed. The difference comes down to accounting for the overall density of animals and their distribution. Information about beluga distribution and abundance is available in different formats. Some data (coarse-scale distribution and density estimates) were used to estimate potential exposures, but other types of information have more biological relevance to the calculation of take.

The beluga whale densities used to calculate potential exposure are based on models that provide density estimates on a monthly time scale and assume an even distribution of individuals (per square kilometer) throughout each of the predicted concentration areas (high and low density). These density estimates are based on the best available data and allow for an estimate of the total number of individuals in the entire survey area; however, at a finer scale, they do not account for the beluga whale's gregarious social behavior or habitat preferences. Therefore, the exposure estimates only account for coarse-scale density of the species (even distribution across the entire area) whereas belugas are social animals that generally travel in groups within relatively small portions of their habitat.

As mentioned above, the degree to which each ensonified area overlaps high concentration areas for beluga whales varies from month to month. For example, the entire ensonified area for Priority Area 1 (890 km$^2$) in August is within the predicted low concentration area for belugas. However, in October the ensonified area for Priority Area 1 overlaps the high concentration area by 240 km$^2$. Therefore, the predicted number of beluga whales exposed to sound at or exceeding 160 dB was calculated for each priority area for each month by multiplying the ensonified area by the density of beluga whales in that area, accounting for the degree of overlap with low and high beluga concentration areas. (Table 8 for Proposal A and Table 9 for Proposal B).

Using Priority Area 1 in August as an example, the predicted number of beluga whales exposed to sound at or exceeding 160 dB is calculated by multiplying the ensonified area (890 km$^2$) by the density of belugas in low concentration areas in August (0.005458 belugas per km$^2$) to equal 4.8 beluga whales (rounded to 5). For Priority Area 1 in October, the number of belugas was

calculated by first multiplying the ensonified area overlapping the red ''high concentration'' area (240 $km^2$) by the density of beluga whales in that area (0.1006 belugas per $km^2$) resulting in 24.1 belugas (rounded up to 25) and then by adding this number to the number calculated for the remaining low concentration area ([890 $km^2$–240 $km^2$] × 0.01743 belugas per $km^2$ = 11.3 rounded up to 12). The total for Priority Area 1 in October is 37 beluga whales (Table 8). This method is carried through for each priority area in each month.

TABLE 8—PREDICTED NUMBER OF BELUGAS POTENTIALLY EXPOSED TO 160 DB (PROPOSAL A)

| Month | Priority area 1 (890 $km^2$) | Priority area 2 (880 $km^2$) | Priority area 3a (775 $km^2$) | Priority area 3b (1,050 $km^2$) |
|---|---|---|---|---|
| May | 5 | 42 | 5 | 6 |
| June | 5 | 42 | 5 | 6 |
| July | 5 | 42 | 5 | 6 |
| August | 5 | 42 | 5 | 6 |
| September | 7 | 28 | 6 | 8 |
| October | 37 | 37 | 36 | 76 |
| November | 8 | 27 | 7 | 23 |

The same calculations were applied to the Proposal B survey area using the methods described above (Table 9).

TABLE 9—PREDICTED NUMBER OF BELUGAS POTENTIALLY EXPOSED TO 160 DB (PROPOSAL B)

| Month | Priority area 1 (905 $km^2$) | Priority area 2 (885 $km^2$) | Priority area 3a (865 $km^2$) | Priority area 3b (1,000 $km^2$) |
|---|---|---|---|---|
| May | 6 | 51 | 5 | 6 |
| June | 6 | 51 | 5 | 6 |
| July | 6 | 51 | 5 | 6 |
| August | 6 | 51 | 5 | 6 |
| September | 7 | 33 | 7 | 7 |
| October | 35 | 39 | 43 | 74 |
| November | 10 | 30 | 8 | 20 |

The timing of survey activities in various tracts can be adjusted, to some extent, to avoid areas where beluga whales may be expected in greater densities. The modeling data are fairly coarse and can be expected to vary annually, but the best available anecdotal and scientific knowledge shows that belugas would be concentrated in the Susitna River delta, Turnagain Arm, and Knik Arm following the timing of various fish runs. The number of potential exposures that could occur depends upon the time frames during which Furie could accomplish the proposed work and the priority of the area. Under Proposal A, the proposed project dates would result in an exposure estimate of 58 beluga whales at the lower end of the range to 186 at the upper end of the range. Furie has identified Priority Area 1 as the highest priority area for conducting seismic survey operations.

To estimate takes, the fine-scale distribution of beluga whales within discrete portions of their range was used rather than the overall density of whales in the larger ''concentration area.'' The fine-scale distribution makes it less likely that the total number of individuals in given monthly ensonified area would fall within the areas actually ensonified during the time that air guns are actually fired. In addition, the implementation of mitigation measures when animals are reported approaching the 160 dB disturbance zone is expected to reduce the number of beluga whales actually exposed to sound levels at or above 160 dB (i.e., make it lower than in the exposure analysis described above). The estimated number of beluga whales (and other marine mammals) that may be taken by Level B harassment takes into account the exposure analysis, the effects of implementing mitigation measures, and actual observer data from similar operations (i.e., Apache's 2012 seismic survey). Recent implementation of other mitigation measures in Cook Inlet—shut down of airguns if animals approach or occur within the 180/190 dB zone—have been effective in reducing harassment. Furthermore, qualified PSOs would monitor the 160 dB isopleth zone around the source vessel prior to and during all airgun operations. This monitoring would be used to detect marine mammals approaching the 160 dB zone and implement power downs and shut downs. Airguns would be shut down if groups of four or more beluga whales or cow/calf pairs are observed approaching the 160 dB zone. The monitoring reports submitted by Apache in 2012 suggest that the proposed mitigation measures would be effective at reducing the potential for beluga incidental takes. Between June and October, Apache's PSOs reported no observed takes of beluga whales during seismic survey operations, which included similar monitoring and less conservative mitigation measures to those proposed by Furie. However, due to the potential for observers missing whales because of the conditions in Cook Inlet that make sighting marine mammals challenging (i.e., the opacity of the water due to high turbidity) and low surface profile of beluga whales, it is not realistic to assume that seismic survey activities conducted over a period of months would consistently result in zero takes; therefore, Furie has requested a small number of beluga whale takes incidental to the proposed activity.

The requested takes are based on a consideration of the data from Apache's monitoring program, the fine-scale distribution analysis of beluga whales provided above, the implementation mitigation measures before animals

reach the 160 dB threshold, and the available information on beluga distribution and abundance, which estimates that up to two groups of nine (18) beluga whales may be harassed incidental to Furie's seismic survey operations. This group size is based on the average group size reported from vessel and land-based platforms by Apache in 2012, which is considered to be the best available information. In estimating potential beluga group size, Furie considered all group size data reported by Apache and based its group size estimate on data reported in June, July, and August. Group sizes reported by Apache in May were significantly smaller than those observed in June through August and may not accurately reflect average beluga group size in Cook Inlet.

Harbor Porpoise

A population estimate for the harbor porpoise is available for the Gulf of Alaska stock encompassing the area from Cape Suckling to Unimak Pass, which includes Cook Inlet (Allen and Angliss, 2012). The most current estimate of 31,046 individuals is based on a 1998 harbor porpoise aerial survey of the Gulf of Alaska and the 1998 Cook Inlet beluga whale aerial survey and was corrected for availability bias in 2010 (Hobbs and Waite, 2010). According to Hobbs and Waite (2010) the survey area for the Gulf of Alaska stock was 158,733 $km^2$, and the estimated density was 0.196 porpoise per $km^2$ across the Gulf of Alaska area. Using data specific to Cook Inlet, the Cook Inlet harbor porpoise density estimate can be calculated as 0.0389 porpoises per $km^2$ (Hobbs and Waite, 2010) (Table 10). Both of these estimates are greater than the calculated Cook Inlet harbor porpoise density from 1991 aerial surveys (0.0072 porpoises per $km^2$) (Dahlheim *et al.,* 2000). The 1991 estimate was not corrected for availability bias and application of the same correction factor used in Hobbs and Waite (2010) results in a density estimate of 0.0214 porpoises per $km^2$. The average density of harbor porpoise in Cook Inlet, combining the results from the two Cook Inlet specific surveys, is 0.0302 porpoise per $km^2$ (Table 10).

TABLE 10—HARBOR PORPOISE DENSITIES OBSERVED OR CALCULATED FROM COOK INLET SURVEYS

| Stock and survey year | Population estimate | Area ($km^2$) | Density (number of animals/$km^2$) |
|---|---|---|---|
| Cook Inlet, 1998 | [1]737 | 18948 | 0.0389 |
| Cook Inlet, 1991 | [2]402 | 18787 | 0.0214 |

Notes:
[1] Population estimate and area from Hobbs and Waite 2010.
[2] Population estimate reported in Dahlheim et al. 2000 of 136 multiplied by 2.96 correction factor.

Harbor porpoise are documented during the annual aerial surveys for beluga whales, but are generally not observed in the upper Cook Inlet. The numbers of harbor porpoises observed in lower Cook Inlet in recent surveys are reported in Table 11 (Shelden *et al.,* 2009, 2010, 2012). The 2011 survey did not report sightings of marine mammals other than beluga whales and is not included in this table. The observed number of harbor porpoises is multiplied by a 2.96 correction factor and divided by the area of the aerial survey each year to estimate harbor porpoise densities.

TABLE 11—HARBOR PORPOISE DENSITIES BASED ON OBSERVATIONS DURING ANNUAL AERIAL SURVEYS

| Year | Observed number of porpoises | Corrected numbers | Area ($km^2$) | Density (number of animals/$km^2$) |
|---|---|---|---|---|
| 2009 | 86 | 254.56 | 5766 | 0.044 |
| 2010 | 10 | 29.6 | 6120 | 0.0048 |
| 2012 | 11 | 32.56 | 6219 | 0.0052 |
| Average | ..... | ..... | ..... | 0.018 |

The average of the calculated density from three recent aerial surveys (0.018 porpoises per $km^2$) and the two published harbor porpoise densities for Cook Inlet (0.0389 and 0.0214 porpoises per $km^2$) is 0.0261 porpoises per $km^2$. Using this average as an approximation of Cook Inlet harbor porpoise density provides better accounts for variability in the areas of Cook Inlet surveyed in each study by considering the potential for bias due to some of the surveys being for porpoise and some for belugas with incidental porpoise sightings, and for inclusion of the most recent data than could be accounted for by using only one of the calculated densities.

Marine mammal observations gathered by Apache during 2012 seismic survey work reports the number of individuals visually recorded through vessel and land-based observers (Table 12). Dividing the number of individuals visually recorded by the number of sightings, the average group size in May, June, July, August, and September was 1.37.

TABLE 12—HARBOR PORPOISES

| Month | Estimated number of individuals observed | Number of sightings | Assumed average group size |
|---|---|---|---|
| May | 49 | 41 | 1.20 |

TABLE 12—HARBOR PORPOISES

| Month | Estimated number of individuals observed | Number of sightings | Assumed average group size |
|---|---|---|---|
| June | 81 | 53 | 1.52 |
| July | 37 | 26 | 1.42 |
| August | 6 | 5 | 1.2 |
| September | 15 | 10 | 1.5 |
| Average | ..... | ..... | 1.37 |

Harbor Seals

Harbor seal population estimates are available for the Cook Inlet/Shelikof stock (Allen and Angliss, 2012). The most current estimate of 22,900 individuals is based on a multi-year study of seasonal movements and abundance of harbor seals in Cook Inlet conducted between 2004 and 2007 (Montgomery *et al.,* 2007). The surveys were conducted only in the lower Cook Inlet from the Forelands south to Cape Douglas. Actual abundance in the survey area is not reported so presumed density cannot be calculated from this information.

Harbor seals are observed during the annual aerial surveys for beluga whales and are the only marine mammals other than belugas to be routinely reported in the upper Cook Inlet. The number of harbor seals observed in upper Cook Inlet in recent surveys are reported in Table 6–6 (Shelden *et al.,* 2009, 2010, 2012). The 2011 survey did not report sightings of marine mammals other than beluga whales and is not included in this table. The observed number of harbor seals is divided by the area of the upper Cook Inlet surveyed each year to estimate harbor seal densities. Harbor seals tend to concentrate and spend much of their time in haulout areas in June when these surveys are conducted. In contrast, harbor seals are not expected to be present at these densities in open water, as they tend to travel in small groups or as individuals when not hauled out. Accordingly, the densities reported in Table 13 overestimate the actual densities that likely occur in the proposed project area.

TABLE 13—HARBOR SEAL DENSITIES BASED ON OBSERVATIONS DURING ANNUAL AERIAL SURVEYS

| Year | Observed number of seals | Area ($km^2$) | Density (number of animals/$km^2$) |
|---|---|---|---|
| 2009 | 387 | 2036 | 0.190 |
| 2010 | 543 | 2340 | 0.232 |
| 2012 | 937 | 1756 | 0.534 |
| Average | ..... | ..... | 0.319 |

Marine mammal observations gathered by Apache during 2012 seismic survey work reports the number of individual harbor seals visually recorded through vessel and land-based observers (Table 14). Dividing the number of individuals visually recorded by the number of sightings, the average group size in May, June, July, August, and September was 1.17. This average group size supports the concept of harbor seals in the open water traveling in small groups or as individuals, thus at a lower density, through the project area.

TABLE 14—HARBOR SEALS OBSERVED DURING 2012 SEISMIC SURVEY ACTIVITIES

| Month | Estimated number of individuals observed | Number of sightings | Assumed average group size |
|---|---|---|---|
| May | 184 | 182 | 1.01 |
| June | 174 | 166 | 1.05 |
| July | 115 | 104 | 1.11 |
| August | 31 | 29 | 1.07 |
| September | 64 | 39 | 1.64 |
| Average | ..... | ..... | 1.17 |

Gray Whale

Gray whale population estimates are available for the Eastern North Pacific stock (Allen and Angliss, 2012). The most current population estimate is 19,126 individuals, but most of the stock spends the summer in the northern and western Bering and Chukchi seas. During the annual aerial surveys for beluga whales, a total of seven individual gray whales were observed from 1993 to 2004 in the lower Cook Inlet (Rugh *et al.,* 2005). More recently, aerial surveys report only one gray whale in lower Cook Inlet and none in upper Cook Inlet in 2009, 2010, and 2012 (Shelden *et al.,* 2009, 2010, 2012). During Apache's 2012 seismic survey work in a similar area, at least one individual gray whale was observed by protected species observers on four occasions in May, two times in June, and again three times in July (Apache, 2013). In sum, gray whales are rarely observed in Cook Inlet. For purposes of the analysis set forth in this application, and based upon the recent observation by Apache, this analysis assumes that two gray whales will potentially occur in the project area.

Killer Whale

Killer whale population estimates are available for the Gulf of Alaska, Aleutian Islands, and Bering Sea transient stock. The most recent population estimate is 587 individuals for the entire stock with 136 in the Gulf of Alaska (Allen and Angliss, 2013). Estimates for the Eastern North Pacific Alaska resident stock are 2,347 individuals with 751 of those in the Prince William Sound area (Allen and Angliss, 2013).

Most killer whale sightings are recorded in lower Cook Inlet and the observed animals may be from any one of the stocks identified above. The number of killer whales observed in Cook Inlet during recent aerial surveys for beluga whales are reported in Table 15 below (Shelden *et al.,* 2009, 2010, 2012). The 2011 survey did not report sightings of marine mammals other than beluga whales and is not included in this table. The observed number of killer whales is divided by the area of the aerial survey each year to estimate density. No killer whales were observed by protected species observers during Apache's seismic survey from May through September 2012 in a similar project area (Apache, 2013).

TABLE 15—KILLER WHALE DENSITIES BASED ON OBSERVATIONS DURING ANNUAL AERIAL SURVEYS

| Year | Number of killer whales | Area ($km^2$) | Density (number of animals/$km^2$) |
|---|---|---|---|
| 2009 | 0 | 5766 | 0 |
| 2010 | 33 | 6120 | 0.0054 |
| 2012 | 3 | 6219 | 0.00048 |
| Average | ..... | ..... | 0.00196 |

Steller Sea Lion

The population estimate available for the Western DPS of Steller Sea Lions is 45,659 (Allen and Angliss, 2013) but the actual number of sea lions that occur in Cook Inlet is unknown. During the annual aerial surveys for beluga whales, a total of 560 individuals were observed in 42 sightings from 1993 to 2004 (Rugh *et al.,* 2005). The sea lions are considered to be undercounted in these surveys, however, because researchers were mainly scanning the water and not shore areas. The numbers of Steller Sea lions observed in Cook Inlet in recent surveys are reported in Table 16 (Shelden *et al.,* 2009, 2010, 2012). All sea lions were observed in lower Cook Inlet. The observed number of sea lions is divided by the area of the aerial survey each year to estimate densities. The 2011 survey did not report sightings of marine mammals other than beluga whales and is not included in this table. During seismic survey work from May through September 2012 in a similar project area, one individual Steller sea lion was observed in May, two in June, and one in August (Apache, 2013).

TABLE 16—STELLER SEA LION DENSITIES BASED ON OBSERVATIONS DURING ANNUAL AERIAL SURVEYS

| Year | Number of Steller Sea Lions | Area ($km^2$) | Density (number of animals/$km^2$) |
|---|---|---|---|
| 2009 | 39 | 5766 | 0.00676 |
| 2010 | 1 | 6120 | 0.000163 |
| 2012 | 65 | 6219 | 0.0105 |
| Average | ..... | ..... | 0.00579 |

For other marine mammals, the densities reported are not as seasonally dependent as for belugas, so the predicted density of animals is multiplied across the entire project area and is not reported on a monthly basis (Table 17). The largest exposure area of 1,925 km2 was used to calculate for Proposal A.

The actual number of marine mammals that may be incidentally taken will be much less than the number potentially exposed due to the implementation of a suite of mitigation measures (Section 1.3 of Furie's IHA application). Similar measures used by Apache in this area resulted in 13 observed instances of harbor seals within the 160 dB zone, four reports of harbor porpoises within the 160 dB zone and no observed reports of any other marine mammals, including belugas, inside the 160 dB zone during May through September 2012 (Apache, 2013). The final estimates of the number of marine mammals (including beluga whales) that may be incidentally taken as a result of the proposed project, after mitigation measures and other information are taken into account, are presented in Table 18.

TABLE 17—ESTIMATED NUMBER OF OTHER MARINE MAMMALS POTENTIALLY EXPOSED TO ≥160 DB

| Species | Average density (number of animals/$km^2$) | Ensonified area ($km^2$) | Number of individuals |
|---|---|---|---|
| Harbor Porpoise | 0.0261 | 1925 | 51. |
| Harbor Seal | 0.319 | 1925 | 614. |
| Gray Whales | unknown | 1925 | assumed at 2. |
| Killer Whales | 0.00196 | 1925 | 4. |
| Steller Sea Lions | 0.00579 | 1925 | 12. |

*Proposed Incidental Takes*

Cetaceans—Effects on cetaceans are generally expected to be restricted to avoidance of an area around the seismic survey and short-term changes in behavior, falling within the MMPA definition of ''Level B harassment.''

Using the 160 dB criterion, the requested take numbers of individual cetaceans exposed to sounds> 160 $dB_{rms}$ re 1 μPa represent varying proportions of the populations of each species in Cook Inlet (Table 18). For Cook Inlet beluga whales, Furie requests 18 takes by Level B harassment. The proposal to power down air guns when animals approach the 160 dB disturbance zone and shut down air guns when aggregations of marine mammals or cow-calf pairs approach the disturbance zone would substantially reduce the potential for takes incidental to seismic survey activities. Therefore, the requested number of takes is based on the assumption that the implementation of mitigation and monitoring would significantly reduce the number of takes to below the estimated exposures above 160 dB that were calculated without consideration of mitigation, though not completely eliminate, the potential for incidental harassment. In summary, the number of beluga whale takes requested is based, in part, on the average number of sightings and group size estimated over the course of the seismic survey conducted by Apache in 2012, as well as the seasonal distribution and habitat use of belugas in Cook Inlet, the assumption that belugas would avoid approaching the area during survey activities, and the effective implementation of mitigation measures. This number is approximately 6 percent of the population of approximately 312 animals (Shelden *et al.,* 2012). For other cetaceans that might occur in the vicinity of the seismic survey in Cook Inlet, the requested takes represent an even smaller percentage of their respective populations. The requested takes of 4 killer whales and 25 harbor porpoises represent 0.7 percent and 0.08 percent of their respective populations in the proposed action area. The requested takes of 2 gray whales represents 0.01 percent of their population.

Pinnipeds—Two pinniped species may be encountered in the proposed action area, but the harbor seal is likely to be the more abundant species in this area. The number of takes requested for individuals exposed to sounds at received levels> 160 $dB_{rms}$ re 1 μPa during the proposed seismic survey are as follows: harbor seals (160) and Steller sea lions (12). These numbers represent 0.7 percent and 0.02 percent of their respective populations in the proposed action area.

TABLE 18—REQUESTED NUMBER OF TAKES

| Species | Number of Requested Takes | Population Abundance | Percent of Population |
|---|---|---|---|
| Beluga whales | 18 | 312 | 5.8 |
| Harbor seals | 160 | 22,900 | 0.7 |
| Harbor porpoises | 25 | 31,783 | 0.08 |
| Gray whales | 2 | 19,126 | 0.01 |
| Killer whales | 4 | 2,934 | 0.1 |
| Steller sea lions | 12 | 45,659 | 0.02 |

**Preliminary Determinations**

*Negligible Impact*

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.'' In making a negligible impact determination, NMFS considers a variety of factors, including but not limited to: (1) the number of anticipated mortalities; (2) the number and nature of anticipated injuries; (3) the number, nature, intensity, and duration of Level B harassment; and (4) the context in which the takes occur.

Given the required mitigation and related monitoring, no injuries or mortalities are anticipated to occur as a result of Furie's proposed seismic survey in Cook Inlet, and none are proposed to be authorized. Additionally, animals in the area are not expected to incur hearing impairment (i.e., TTS or PTS) or non-auditory physiological effects. The small number of takes that are anticipated are expected to be limited to short-term Level B behavioral harassment. Although it is possible that some marine mammals individuals may be exposed to sounds from seismic survey activities more than once, the duration of these multi-exposures is expected to be low since both the animals and the survey vessels will be moving constantly in and out of the survey area and the seismic airguns do not operate continuously all day, but for a few hours at a time totaling about 12 hours a day.

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 6–12 mi (10–20 km) of seismic vessels during aerial surveys (Miller *et al.,* 2005). However, as noted above, Cook Inlet belugas are more accustomed to anthropogenic sound than beluga whales in the Beaufort Sea. Accordingly, NMFS does not find this data determinative here. 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 proposed survey area during the survey period and few will likely be affected by the survey activity in a manner that would be considered behavioral harassment. In addition, due to the constant moving of the survey vessel, the duration of the noise exposure by cetaceans to seismic impulse would be brief. For the same reason, it is unlikely that any individual animal would be exposed to high received levels multiple times.

Taking into account the mitigation measures that are planned, 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''. 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 very 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, although the area where the survey will take place is within designated beluga whale critical habitat, beluga whales do not appear to congregate in the area for important life functions such as feeding, calving, or nursing.

Furthermore, the estimated numbers of animals potentially exposed to sound levels sufficient to cause Level B harassment are low percentages of the population sizes in Cook Inlet, as shown in Table 18.

Mitigation measures such as controlled vessel speed, dedicated marine mammal observers, non-pursuit, and shut downs or power downs when marine mammals are seen within or approaching the 160 dB zone 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, the exposure of cetaceans to sounds produced by the seismic survey is not anticipated to have an effect on annual rates or recruitment or survival, and therefore will have a negligible impact on affected cetacean species.

Some individual pinnipeds may be exposed to sound from the proposed marine surveys more than once during the time frame of the project. However, as discussed previously, due to the constant moving of the survey vessel, the probability of an individual pinniped being exposed to sound multiple times is much lower than if the source is stationary. Taking into account the mitigation measures that are planned, 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 very 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 pinnipeds haulout. The closest known haulout site is located on Kalgin Island, which is about 22 km from the McArther River. Therefore, NMFS has preliminarily determined that the exposure of pinnipeds to sounds produced by the proposed seismic survey in Cook Inlet is not expected to result in more than Level B harassment and will have no effect on annual rates of recruitment or survival, and therefore is anticipated to have no more than a negligible impact on the affected species.

*Small Numbers*

The requested takes proposed to be authorized represent 5.8 percent of the Cook Inlet beluga whale population of approximately 312 animals (Shelden *et al.,* 2012), 0.1 percent of the combined Alaska resident stock and Gulf of Alaska, Aleutian Island and Bering Sea stock of killer whales (2,347 residents and 587 transients), 0.01 percent of the Eastern North Pacific stock of approximately 19,126 gray whales, and 0.08 percent of the combined Gulf of Alaska and Cook Inlet stocks of approximately 31,783 harbor porpoises. The take requests presented for harbor seals represent 0.7 percent of the Gulf of Alaska stock of approximately 22,900 animals. The requested takes proposed for Steller sea lions represent 0.02 percent of the western stock of approximately 45,659 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. In each case, the numbers of marine mammals taken is small relative to the affected species or stocks.

**Conclusion**

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 mitigation and monitoring measures, NMFS preliminarily finds that the total taking from Furie's proposed seismic survey in Cook Inlet will have a negligible impact on the affected species or stocks. NMFS also preliminarily finds that small numbers of marine mammals will be taken relative to the populations of the affected species or stocks.

**Impact on Availability of Affected Species or Stock for Taking for Subsistence Uses**

Section 101(a)(5)(D) also requires NMFS to determine that the authorization will not have an unmitigable adverse effect 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 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). However, due to dramatic declines in the Cook Inlet beluga whale population, on May 21, 1999, legislation was passed to temporarily prohibit (until October 1, 2000) the taking of Cook Inlet belugas under the subsistence harvest exemption in section 101(b) of the MMPA without a cooperative agreement between NMFS and the affected Alaska Native Organizations (ANOs) (Public Law No. 106–31, section 3022, 113 Stat. 57,100).. That prohibition was extended indefinitely on December 21, 2000 (Pub. L. 106–553, section 1(a)(2), 114 Stat. 2762). NMFS subsequently entered into six annual co-management agreements (2000–2003, 2005–2006) with the Cook Inlet Marine Mammal Council, an ANO representing Cook Inlet beluga hunters, which allowed for the harvest of 1–2 belugas. 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 prohibits 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) is 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.

There is a low level of subsistence hunting for harbor seals in Cook Inlet. Seal hunting occurs opportunistically among Alaska Natives who may be fishing or travelling in the upper Inlet near the mouths of the Susitna River, Beluga River, and Little Susitna River.

Furie concluded, and NMFS agrees, that the size of the affected area, mitigation measures, and input from the consultations Alaska Natives should result in the proposed action having no

effect on the availability of marine mammals for subsistence uses. Furie 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.

Prior to the publication of the proposed IHA, NMFS contacted the local Native Villages to inform them of the upcoming availability of the **Federal Register** notice and the opening of the public comment period.

NMFS anticipates that any effects from Furie's proposed 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. Therefore, NMFS has preliminarily determined that the proposed regulations will not have an unmitigable adverse impact on the availability of marine mammal stocks for subsistence uses.

**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 Steller sea lion. In addition, the proposed action would occur within designated critical habitat for the Cook Inlet beluga whales. NMFS' Permits and Conservation Division has begun consultation with NMFS' Alaska Region Protected Resources Division under section 7 of the ESA on the issuance of an IHA to Furie under section 101(a)(5)(D) of the MMPA for this activity. Consultation will be concluded prior to a determination on the issuance of an IHA.

**National Environmental Policy Act (NEPA)**

NMFS is currently preparing an Environmental Assessment, pursuant to NEPA, to determine whether or not this proposed activity may have a significant effect on the human environment. This analysis will be completed prior to the issuance or denial of the IHA.

**Proposed Authorization**

As a result of these preliminary determinations, NMFS proposes to authorize the take of marine mammals incidental to Furie's seismic survey in Cook Inlet, Alaska, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated.

IHA language is provided next.

This section contains a draft of the IHA itself. The wording contained in this section is proposed for inclusion in the IHA (if issued). The language contained in the draft IHA is not intended for codification and would not be published in the Code of Federal Regulations, if issued.

1. This Authorization is valid from May 1, 2014, through April 30, 2015.

2. This Authorization is valid only for Furie's activities associated with seismic survey operations that shall occur within the areas between Tyonek and the Forelands as denoted in Figure A–2 of Furie's IHA application to NMFS.

3. Species Authorized and Level of Take

a. The incidental taking of marine mammals, by Level B harassment only, is limited to the following species in the waters of Cook Inlet:

i. Odontocetes: 18 beluga whales; 25 harbor porpoise; and 4 killer whales.

ii. Mysticetes: 2 gray whales.

iii. Pinnipeds: 160 harbor seals and 12 Steller sea lions.

iv. If any marine mammal species are encountered during seismic activities that are not listed in conditions 3.a.i., ii., or iii. 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 the Holder of this Authorization must alter speed or course, powerdown or shut-down the sound source to avoid take.

b. The taking by injury (Level A harassment) serious injury, or death of any of the species listed in condition 3.a. or the taking of any kind of any other species of marine mammal is prohibited and may result in the modification, suspension or revocation of this Authorization.

c. If the number of detected takes of any marine mammal species listed in condition 3.a. is met or exceeded, Furie shall immediately cease survey operations involving the use of active sound sources (e.g., airguns and pingers) and notify NMFS.

4. The authorization for taking by harassment is limited to the following acoustic sources (or sources with comparable frequency and intensity):

i. Two airgun arrays, each with a capacity of 2,400 $in^3$;

ii. A 1,800 $in^3$airgun arrays;

iii. A 440 $in^3$ airgun array;

iv. A 10 $in^3$ airgun;

v. A Scott Ultra-Short Baseline (USBL) transceiver; and

vi. A Lightweight Release USBL transponder.

5. The taking of any marine mammal in a manner prohibited under this Authorization must be reported immediately to the Chief, Permits and Conservation Division, Office of Protected Resources, NMFS or his designee.

6. The holder of this Authorization must notify the Chief of the Permits and Conservation Division, Office of Protected Resources, or his designee at least 48 hours prior to the start of seismic survey activities (unless constrained by the date of issuance of this Authorization in which case notification shall be made as soon as possible).

7. Mitigation and Monitoring Requirements: The Holder of this Authorization is required to implement the following mitigation and monitoring requirements when conducting the specified activities to achieve the least practicable impact on affected marine mammal species or stocks:

a. Utilize a sufficient number of NMFS-qualified, vessel-based Protected Species Observers (PSOs) (except during meal times and restroom breaks, when at least one PSO shall be on watch) to visually watch for and monitor marine mammals near the seismic source vessels during daytime operations (from nautical twilight-dawn to nautical twilight-dusk) and before and during start-ups of sound sources day or night. Two PSOs will be on each source vessel, and two PSOs will be on the support vessel to observe the safety and disturbance zones. PSVOs shall have access to reticle binoculars (7x50 Fujinon), big-eye binoculars (25xI50), and night vision devices. PSO shifts shall last no longer than 4 hours at a time. PSOs shall also make observations during daytime periods when the sound sources are not operating for comparison of animal abundance and behavior, when feasible. When practicable, as an additional means of visual observation, Furie's vessel crew may also assist in detecting marine mammals.

b. In addition to the vessel-based PSOs, utilize a shore-based station to visually monitor for marine mammals.

The shore-based station will follow all safety procedures, including bear safety. The location of the shore-based station will need to be sufficiently high to observe marine mammals; the PSOs would be equipped with pedestal mounted ''big eye'' (20 x 110) binoculars. The shore-based PSOs would scan the area prior to, during, and after the survey operations involving the use of sound sources, and would be in contact with the vessel-based PSOs via radio to communicate sightings of marine mammals approaching or within the project area.

c. Weather and safety permitting, aerial surveys shall be conducted. Surveys are to be flown even if the airguns are not being fired. If weather or safety conditions prevent Furie from conducting aerial surveys, seismic survey operations may proceed subject to the terms and conditions of the IHA.

i. When survey operations occur within 1.6 km (1 mi) of a river mouth, Furie shall conduct aerial surveys to identify large congregations of beluga whales and harbor seal haul-outs.

ii. Aerial surveys may be conducted from either a helicopter or fixed-wing aircraft. A fixed-wing aircraft may be used in lieu of a helicopter. If flights are to be conducted with a fixed-wing aircraft, it must have adequate viewing capabilities, i.e., view not obstructed by wing or other part of the plane.

iii. Weather and safety permitting, aerial surveys will fly at an altitude of 305 m (1,000 ft). In the event of a marine mammal sighting, aircraft will attempt to maintain a radial distance of 457 m (1,500 ft) from the marine mammal(s). Aircraft will avoid approaching marine mammals from head-on, flying over or passing the shadow of the aircraft over the marine mammal(s).

d. PSOs shall conduct monitoring while the air gun array and nodes are being deployed or recovered from the water.

e. Record the following information when a marine mammal is sighted:

i. Species, group size, age/size/sex categories (if determinable), behavior when first sighted and after initial sighting, heading (if consistent), bearing and distance from seismic vessel, sighting cue, apparent reaction to the airguns or vessel (e.g., none, avoidance, approach, paralleling, etc., and including responses to ramp-up), and behavioral pace;

ii. Time, location, heading, speed, activity of the vessel (including number of airguns operating and whether in state of ramp-up or power-down), Beaufort sea state and wind force, visibility, and sun glare; and

iii. The data listed under Condition 7.e.ii. shall also be recorded at the start and end of each observation watch and during a watch whenever there is a change in one or more of the variables.

f. Establish a 180 dB re 1 µPa (rms) and 190 dB re 1 µPa (rms) ''safety zone'' for marine mammals before the full array (2400 $in^3$) is in operation; and a 180 dB re 1 µPa (rms) and 190 dB re 1 µPa (rms) safety zone before a single airgun (10 $in^3$) is in operation, respectively. Prior to the commencement of survey activities, a sound source verification will be conducted to determine site-specific sound attenuation and confirm the appropriate 180 and 190 dB safety zones, and 160 dB disturbance zones.

g. Visually observe the entire extent of the safety zone (180 dB re 1 µPa [rms] for cetaceans and 190 dB re 1 µPa [rms] for pinnipeds) using NMFS-qualified PSOs, for at least 30 minutes (min) prior to starting the airgun array (day or night). If the PSO finds a marine mammal within the safety zone, Furie must delay the seismic survey until the marine mammal(s) has left the area. If the PSO sees a marine mammal that surfaces, then dives below the surface, the PSO shall wait 30 min. If the PSO sees no marine mammals during that time, they should assume that the animal has moved beyond the safety zone. If for any reason the entire radius cannot be seen for the entire 30 min (i.e., rough seas, fog, darkness), or if marine mammals are near, approaching, or in the safety zone, the airguns may not be ramped-up.

h. Implement a ''ramp-up'' procedure when starting up at the beginning of seismic operations or any time after the entire array has been shut down for more than 10 min, which means start the smallest sound source first and add sound sources in a sequence such that the source level of the array shall increase in steps not exceeding approximately 6 dB per 5-min period. During ramp-up, the PSOs shall monitor the safety zone, and if marine mammals are sighted, a power-down, or shutdown shall be implemented as though the full array were operational. Therefore, initiation of ramp-up procedures from shutdown requires that the PSOs be able to visually observe the full safety zone as described in Condition 7(f) (above).

i. Alter speed or course during seismic operations if a marine mammal, based on its position and relative motion, appears likely to enter the relevant safety zone. If speed or course alteration is not safe or practicable, or if after alteration the marine mammal still appears likely to enter the safety zone, further mitigation measures, such as a power-down or shutdown, shall be taken.

j. Power-down or shutdown the sound source(s) if a marine mammal is detected within, approaches, or enters the relevant safety zone. A shutdown means all operating sound sources are shut down (i.e., turned off). A power-down means reducing the number of operating sound sources to a single operating 10 $in^3$ airgun, which reduces the safety zone to the degree that the animal(s) is no longer in or about to enter it.

k. Following a power-down, if the marine mammal approaches the smaller designated safety zone, the sound sources must then be completely shut down. Seismic survey activity shall not resume until the PSO has visually observed the marine mammal(s) exiting the safety zone and is not likely to return, or has not been seen within the safety zone for 15 min for species with shorter dive durations (small odontocetes and pinnipeds) or 30 min for species with longer dive durations (large odontocetes, including killer whales and beluga whales and mysticetes).

l. Following a power-down or shutdown and subsequent animal departure, survey operations may resume following ramp-up procedures described in Condition 7(h).

m. Marine geophysical surveys may continue into night and low-light hours if such segment(s) of the survey is initiated when the entire relevant safety zones can be effectively monitored visually (i.e., PSO(s) must be able to see the extent of the entire relevant safety zone).

n. No initiation of survey operations involving the use of sound sources is permitted from a shutdown position at night or during low-light hours (such as in dense fog or heavy rain).

o. If any marine mammal is visually sighted approaching or within the 160-dB disturbance zone, survey activity will not commence or the sound source(s) shall be powered down in accordance with the Condition 7.j. until the animals are no longer present within the 160-dB zone.

p. Whenever aggregations or groups of marine mammals (beluga whales, killer whales, gray whales, harbor porpoises, and Steller sea lion) or beluga cow/calf pairs are detected approaching or within the 160-dB disturbance zone, survey activity will not commence or the sound source(s) shall be shut-down until the animals are no longer present within the 160-dB zone. An aggregation or group of marine mammals shall consist of four or more individuals of any age/sex class.

q. Furie must not operate airguns within 10 miles (16 km) of the mean higher high water (MHHW) line of the Susitna Delta (Beluga River to the Little Susitna River) between mid-April and mid-October (to avoid any effects to belugas in an important feeding and potential breeding area).

r. Seismic survey operations involving the use of air guns and pingers must cease if takes of any marine mammal are met or exceeded.

8. Reporting Requirements: The Holder of this Authorization is required to:

a. Submit a weekly field report, no later than close of business (Alaska time) each Thursday during the weeks when in-water seismic survey 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.

b. Submit a monthly report, no later than the 15th of each month, to NMFS' Permits and

Conservation Division for all months during which in-water seismic survey activities occur. These reports must contain and summarize the following information:

i. 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;

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

iii. An estimate of the number (by species) of: A. 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 B. 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.

iv. A description of the implementation and effectiveness of the: (A) terms and conditions of the Biological Opinion's Incidental Take Statement (ITS); and (B) mitigation measures of the Incidental Harassment Authorization. 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 Endangered Species Act-listed marine mammals.

c. Submit a draft Technical Report on all activities and monitoring results to NMFS' Permits and Conservation Division within 90 days of the completion of the Furie survey. The Technical Report will include:

i. 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);

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

iii. 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;

iv. Analyses of the effects of survey operations;

v. Sighting rates of marine mammals during periods with and without seismic survey activities (and other variables that could affect detectability), such as: A. initial sighting distances versus survey activity state; B. closest point of approach versus survey activity state; C. observed behaviors and types of movements versus survey activity state; D. numbers of sightings/individuals seen versus survey activity state; E. distribution around the source vessels versus survey activity state; and F. estimates of take by Level B harassment based on presence in the 160 dB harassment zone.

d. Submit a final report to the Chief, Permits and Conservation Division, Office of Protected Resources, NMFS, within 30 days after receiving comments from NMFS on the draft report. If NMFS decides that the draft report needs no comments, the draft report shall be considered to be the final report.

e. Furie must immediately report to NMFS if 18 belugas are detected within the 160 dB re 1 μPa (rms) disturbance zone during seismic survey operations to allow NMFS to consider making necessary adjustments to monitoring and mitigation.

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

i. Time, date, and location (latitude/longitude) of the incident;

ii. The name and type of vessel involved;

iii. The vessel's speed during and leading up to the incident;

iv. Description of the incident;

v. Status of all sound source use in the 24 hours preceding the incident;

vi. Water depth;

vii. Environmental conditions (e.g., wind speed and direction, Beaufort sea state, cloud cover, and visibility);

viii. Description of marine mammal observations in the 24 hours preceding the incident;

ix. Species identification or description of the animal(s) involved;

x. The fate of the animal(s); and

xi. Photographs or video footage of the animal (if equipment is available).

Activities shall not resume until NMFS is able to review the circumstances of the prohibited take. NMFS shall work with Furie to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. Furie may not resume their activities until notified by NMFS via letter or email, or telephone.

b. In the event that Furie 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), Furie will immediately report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, his designees, and the NMFS Alaska Stranding Hotline. The report must include the same information identified in the Condition 9(a) above. Activities may continue while NMFS reviews the circumstances of the incident. NMFS will work with Furie to determine whether modifications in the activities are appropriate.

c. In the event that Furie 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 Condition 2 of this Authorization (e.g., previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), Furie shall report

the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, his designees, the NMFS Alaska Stranding Hotline (1–877–925–7773), and the Alaska Regional Stranding Coordinators within 24 hours of the discovery. Furie shall provide photographs or video footage (if available) or other documentation of the stranded animal sighting to NMFS and the Marine Mammal Stranding Network. Activities may continue while NMFS reviews the circumstances of the incident.

10. Furie is required to comply with the Reasonable and Prudent Measures and Terms and Conditions of the ITS corresponding to NMFS' Biological Opinion issued to both U. S. Army Corps of Engineers and NMFS' Office of Protected Resources.

11. A copy of this Authorization and the ITS must be in the possession of all contractors and PSOs operating under the authority of this Incidental Harassment Authorization.

12. Penalties and Permit Sanctions: Any person who violates any provision of this Incidental Harassment Authorization is subject to civil and criminal penalties, permit sanctions, and forfeiture as authorized under the MMPA.

13. This Authorization may be modified, suspended or withdrawn if the Holder fails to abide by the conditions prescribed herein or if the authorized taking is having more than a negligible impact on the species or stock of affected marine mammals, or if there is an unmitigable adverse impact on the availability of such species or stocks for subsistence uses.

**Request for Public Comments**

NMFS requests comments on our analysis, the draft authorization, and any other aspect of the Notice of Proposed IHA for Furie's 3D seismic survey in Cook Inlet, Alaska. Please include with your comments any supporting data or literature citations to help inform our final decision on Furie's request for an MMPA authorization.

Dated: February 26, 2014.

**Perry F. Gayaldo,**

*Acting Deputy Director, Office of Protected Resources, National Marine Fisheries Service.*

[FR Doc. 2014–04770 Filed 3–3–14; 8:45 am]

**BILLING CODE 3510–22–P**

## DEPARTMENT OF COMMERCE

### National Oceanic and Atmospheric Administration

**RIN 0648–XD068**

### Whaling Provisions; Aboriginal Subsistence Whaling Quotas

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

**ACTION:** Notice; notification of quota for bowhead whales.

**SUMMARY:** NMFS notifies the public of the aboriginal subsistence whaling quota for bowhead whales that it has assigned to the Alaska Eskimo Whaling Commission (AEWC), and of limitations on the use of the quota deriving from regulations of the International Whaling Commission (IWC). For 2014, the quota is 75 bowhead whales struck. This quota and other applicable limitations govern the harvest of bowhead whales by members of the AEWC.

**DATES:** Effective March 4, 2014.

**ADDRESSES:** Office of International Affairs, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring, MD 20910.

**FOR FURTHER INFORMATION CONTACT:** Melissa Garcia, (301) 427–8385.

**SUPPLEMENTARY INFORMATION:** Aboriginal subsistence whaling in the United States is governed by the Whaling Convention Act (WCA) (16 U.S.C. 916 *et seq.*). Regulations that implement the Act, found at 50 CFR 230.6, require the Secretary of Commerce (Secretary) to publish, at least annually, aboriginal subsistence whaling quotas and any other limitations on aboriginal subsistence whaling deriving from regulations of the IWC.

At the 64th Annual Meeting of the IWC, the Commission set catch limits for aboriginal subsistence use of bowhead whales from the Bering-Chukchi-Beaufort Seas stock. The bowhead catch limits were based on a joint request by the United States and the Russian Federation, accompanied by documentation concerning the needs of two Native groups: Alaska Eskimos and Chukotka Natives in the Russian Far East.

The IWC set a 6-year block catch limit of 336 bowhead whales landed. For each of the years 2013 through 2018, the number of bowhead whales struck may not exceed 67, except that any unused portion of a strike quota from any prior year may be carried forward. No more than 15 strikes may be added to the strike quota for any one year. At the end of the 2013 harvest, there were 15 unused strikes available for carry-forward, so the combined strike quota set by the IWC for 2014 is 82 (67 + 15).

An arrangement between the United States and the Russian Federation ensures that the total quota of bowhead whales landed and struck in 2014 will not exceed the limits set by the IWC. Under this arrangement, the Russian natives may use no more than seven strikes, and the Alaska Eskimos may use no more than 75 strikes.

Through its cooperative agreement with the AEWC, NOAA has assigned 75 strikes to the Alaska Eskimos. The AEWC will in turn allocate these strikes among the 11 villages whose cultural and subsistence needs have been documented, and will ensure that its hunters use no more than 75 strikes.

**Other Limitations**

The IWC regulations, as well as the NOAA regulation at 50 CFR 230.4(c), forbid the taking of calves or any whale accompanied by a calf.

NOAA regulations (at 50 CFR 230.4) contain a number of other prohibitions relating to aboriginal subsistence whaling, some of which are summarized here:

- Only licensed whaling captains or crew under the control of those captains may engage in whaling.
- Captains and crew must follow the provisions of the relevant cooperative agreement between NOAA and a Native American whaling organization.
- The aboriginal hunters must have adequate crew, supplies, and equipment to engage in an efficient operation.
- Crew may not receive money for participating in the hunt.
- No person may sell or offer for sale whale products from whales taken in the hunt, except for authentic articles of Native American handicrafts.
- Captains may not continue to whale after the relevant quota is taken, after the season has been closed, or if their licenses have been suspended. They may not engage in whaling in a wasteful manner.

Dated: February 24, 2014.

**Jean-Pierre Plé,**

*Acting Director, Office of International Affairs, National Marine Fisheries Service.*

[FR Doc. 2014–04481 Filed 3–3–14; 8:45 am]

**BILLING CODE 3510–22–P**

## COMMODITY FUTURES TRADING COMMISSION

### Sunshine Act Meetings

**TIME AND DATE:** 10 a.m., Friday, March 21, 2014.