

(particularly bowhead whales) and subsistence harvests from acoustic sounds. However, we expect these impacts can be mitigated through incorporation of specified mitigation measures.

Alternatives/Mitigations

NMFS/MMS have identified 9 alternatives, including the no action alternative. Analyzed alternatives range from issuance of MMS permits with and without mitigation measures. Specifically, the alternatives include different combinations of safety and exclusion zones for preventing injury (180/190 dB), limiting behavioral harassment (160 dB) and limiting impacts on feeding and migrating bowhead cow calf pairs (160 dB/120 dB, respectively). An identified alternative to protecting feeding and migration areas through specific temporal/spatial/operational restrictions to further reduce impacts to feeding/socializing/migrating aggregations of bowhead and gray whales and bowhead cow/calf pairs has also been analyzed. At this time, MMS and NMFS have not identified a preferred alternative.

Special Accommodations

These meetings are accessible to people with disabilities. Requests for sign language interpretation or other auxiliary aids should be directed to the person listed above (see **FOR FURTHER INFORMATION CONTACT**), at least five business days before the scheduled meeting date.

Dated: March 27, 2007.

P. Michael Payne,

Acting Deputy Director, Office of Protected Resources, National Marine Fisheries Service.
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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[I.D. 030607A]

Taking of Marine Mammals Incidental to Specified Activities; Open Water Seismic Operations in Cook Inlet, Alaska

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

ACTION: Notice of issuance of two incidental harassment authorizations.

SUMMARY: In accordance with provisions of the Marine Mammal Protection Act (MMPA) as amended, notification is

hereby given that Incidental Harassment Authorizations (IHAs) to take marine mammals, by harassment, incidental to conducting seismic operations in the northwest portion of Cook Inlet, Alaska, have been issued to ConocoPhillips Alaska, Inc. (CPAI) and Union Oil Company of California (UOCC) for a period between mid-March and mid-June, 2007.

DATES: The authorization for CPAI is effective from March 30 until May 31, 2007; and the authorization for UOCC is effective from May 1 until June 15, 2007.

ADDRESSES: A copy of the application, IHA, Environmental Assessment (EA), and/or a list of references used in this document may be obtained by writing to P. Michael Payne, Chief, Permits, Conservation and Education Division, Office of Protected Resources, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring, MD 20910-3225, or by telephoning one of the contacts listed here (see **FOR FURTHER INFORMATION CONTACT**).

FOR FURTHER INFORMATION CONTACT: Shane Guan, Office of Protected Resources, NMFS, (301) 713-2289, ext 137, or Brad Smith, Alaska Region, NMFS, (907) 271-3023.

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, notice of a proposed authorization is provided to the public for review.

An authorization shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses and that the permissible methods of taking and requirements pertaining to the mitigation, monitoring and reporting of such taking 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 United States can apply for an authorization to incidentally take small numbers of marine mammals by harassment. Except with respect to certain activities not pertinent here, the MMPA defines "harassment" as:

any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild [Level A harassment]; or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering [Level B harassment].

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 small numbers of marine mammals. Within 45 days of the close of the comment period, NMFS must either issue or deny issuance of the authorization.

Summary of Request

On October 6 and on October 12, 2006, NMFS received applications from CPAI and UOCC, respectively, requesting Incidental Harassment Authorizations (IHAs) for the possible harassment of small numbers of the Cook Inlet beluga whale (*Delphinapterus leucas*), Steller lions (*Eumetopias jubatus*), Pacific harbor seals (*Phoca vitulina richardsi*), harbor porpoises (*Phocoena phocoena*), and killer whales (*Orcinus orca*) incidental to conducting open water seismic operations in portions of Cook Inlet, Alaska. A detailed description of these activities was published in the **Federal Register** on January 5, 2007 (72 FR 536). No change has been made to these proposed activities.

Both proposed operations use an ocean-bottom cable (OBC) system to conduct seismic surveys. OBC seismic surveys are used in waters that are too shallow for the data to be acquired using a marine-streamer vessel and/or too deep to have static ice in the winter. The proposed operations would be active 24 hours per day, but the airguns would only be active for 1 – 2 hours during each of the 3 – 4 daily slack tide periods. The source for the proposed OBC seismic surveys would be a 900-in³ BOLT airgun array situated on the source vessel, the *Peregrine Falcon*. The array would be made up of 2 sub-arrays, each with 2 3-airgun clusters separated by 1.5 m (4.9 ft) off the stern of the vessel. One cluster will consist of 3 225-in³ airguns and the second cluster

will have 3 75–in³ airguns. During seismic operations, the sub-arrays will fire at a rate of every 10 – 25 seconds and focus energy in the downward direction as the vessel travels at 4 – 5 knots (4.6 – 5.8 mph). Source level of the airgun array is 249 dB re 1 microPa at 1 m (0 – peak), and the dominant frequency range is 8 – 40 Hz.

The geographic region for the seismic operation proposed by CPAI encompasses a 25 mi² (65 km²) area in northwestern Cook Inlet, paralleling the shoreline from just offshore of the Beluga River south for about 6 km (3.7 miles). The approximate boundaries of the region of the proposed project area are 61°09.473'N, 151°11.987'W; 61°16.638'N, 151°02.198'W; 61°12.538'N, 150°49.979'W; and 61°05.443'N, 151°00.165'W. Water depths range from 0 to 24 m (80 ft). There will be a 1.6 km (1 mile) setback of operations from the mouth of the Beluga River to comply with Alaska Department of Fish and Game (ADFG) restrictions. The proposed seismic operations would occur from mid March depending on the time of ice breakup, and last until mid-May, 2007.

The geographic region for the activity proposed by UOCC encompasses a 28.2 km² (10.9 square miles) area in northwestern Cook Inlet, paralleling the shoreline offshore of Granite Point, and extending from shore into the inlet to an average of about 1.6 km (1 mile). The approximate boundaries of the region of the proposed project area are 61°00.827'N, 151°24.071'W; 61°02.420'N, 151°15.375'W; 61°00.862'N, 150°15.313'W; and 61°57.979'N, 151°23.946'W. There are no major rivers flowing into the open water seismic project area. Water depths range from 0 to 18 m (60 ft). The proposed seismic operations would begin as early as May 1 and end no later than June 15, 2007.

Comments and Responses

A notice of receipt and request for 30–day public comment on the applications and proposed authorizations was published on January 5, 2007 (72 FR 536). During the 30–day public comment period, NMFS received the following comments from the Marine Mammal Commission (Commission), the Humane Society of the United States (HSUS), the Center for Biological Diversity (CBD), the Whales and Dolphin Conservation Society (WDACS), the Animal Welfare Institute (AWI), CPAI, the Center for Regulatory Effectiveness (CRE), and one private citizen.

General Comments

Comment 1: The Commission recommends that NMFS issue the IHAs subject to the following stipulations:

(1) The applicants be required to institute monitoring and mitigation measures sufficient to afford the potentially affected marine mammals species adequate protection from sources of disturbance, including disturbance of behavior;

(2) The period of observation be extended from 15 to 30 minutes before it is assumed that an animal has moved beyond the safety zone;

(3) Observations be carried out during all ramp-up procedures to gather data regarding the effectiveness of ramp-up as a mitigation measures; and

(4) Operations be suspended immediately if a dead or seriously injured marine mammals is found in the vicinity of the operations and the death or injury could be attributable to the applicants' activities. Any suspension should remain in place until NMFS has (a) reviewed the situation and determined that further deaths or serious injuries are unlikely or (b) issued regulations authorizing such takes under section 101(a)(5)(A) of the MMPA.

Response: NMFS agrees with the Commission's comments and recommendation that the applicants must institute monitoring and mitigation measures sufficient to afford the potentially affected marine mammal species adequate protection from sources of disturbance, including disturbance of behavior. As an additional measure of marine mammal monitoring, NMFS requires that CPAI conducting aerial monitoring of Cook Inlet beluga whales in the vicinity of the project area during seismic surveys between mid-March and mid-May (see Monitoring Section later in this document). The aerial surveys would determine the presence and relative numbers of belugas between east Susitna River and North Foreland and determine the location of belugas relative to seismic operations. No aerial monitoring is required for seismic operations by UOCC since the proposed project area and time would not have a relative high number of beluga whales.

NMFS also agrees with the Commission that the duration of pre-operation monitoring be extended to 30 minutes to make sure that no marine mammals are in the safety zone before the initiation of airgun firing. As is standard under IHAs, observation would also be conducted during all ramp-up procedures to ensure the

effectiveness of ramp-up as a mitigation measure.

NMFS further agrees with the Commission that seismic operations must be suspended immediately if a dead or seriously injured marine mammal is found in the vicinity of the project area and the death or injury of the animal could be attributable to the applicants' activities. This requirement is a conditions in the IHA.

Comment 2: CPAI urges NMFS to proceed with the authorization as proposed in the **Federal Register** notice (72 FR 536, January 5, 2007) and to require only the mitigation measures, monitoring and reporting procedures listed in the notice, including: (1) limiting the time and frequency of the operations and the use of airguns; (2) establishment of safety zones; (3) vessel speed and course alteration; (4) power-down procedures; (5) shut down procedures; (6) ramp-up procedures; (7) use of qualified NMFS-approved vessel-based marine mammal observers (MMOs); and (8) report of submission after the end of the project.

Response: The **Federal Register** notice (72 FR 536), published on January 5, 2007, provides a detailed description of the proposed seismic operations by CPAI and UOCC in upper Cook Inlet, the anticipated impacts to marine mammal species and/or stocks and their habitat within the project area, the potential effects on the subsistence harvest of these marine mammal species and/or stocks, and a list of proposed monitoring and mitigation measures to reduce the potential impacts that would result from the proposed actions. A thorough review by NMFS biologists of these projects, impacts, and monitoring and mitigation measures led NMFS to reach a preliminary determination the proposed projects, would result in no more than a negligible impact on such species or stocks, and would not have an unmitigable adverse impact on the availability of such species or stocks for subsistence uses, provided that all monitoring and mitigation measures are carried out.

After careful consideration, NMFS decided to add an additional monitoring measure to require CPAI to also conduct aerial monitoring of Cook Inlet beluga whales within its project area off Beluga River in upper Cook Inlet to ensure beluga whales are not displaced from their normal habitat. Please refer to the Monitoring Section later in this document for a detailed description of CPAI's aerial monitoring plan.

In addition, CPAI and UOCC are required to conduct pre-survey monitoring of marine mammals for 30 minutes to ensure that the safety zone

is free of marine mammals prior to initiating airgun firing, and that seismic operations must be suspended immediately if a dead or seriously injured marine mammal is found in the vicinity of the operations and the death or injury could be attributable to the applicants' activities. All these requirements are conditions of the IHAs.

MMPA Concerns

Comment 3: CBD states that NMFS did not make the distinction between "small number" and "negligible impact" while making the decision in the **Federal Register** notice (72 FR 536, January 5, 2007).

Response: NMFS disagree. The analysis provided in the **Federal Register** notice (72 FR 536, January 5, 2007) clearly described in detail the numbers of Cook Inlet beluga whales, Pacific harbor seals, and harbor porpoises that may be potentially taken by Level B harassment as a result of the seismic operations in upper Cook Inlet. Although no take number was estimated for Steller sea lions and killer whales within the project area due to their rare presence based on surveys conducted in recent years, NMFS believes that the harassment of these species would be much less likely than those of beluga whales and harbor seals. NMFS believes that the numbers for all affected species are small.

NMFS conducts separate detailed analyses on the levels of take by noise exposure and cumulative impacts to these marine mammal species and stocks from a wide spectrum in the past, current, and foreseeable future were also conducted and described in the aforementioned **Federal Register** notice and in the EA. These analyses led NMFS to conclude that while behavioral modifications, including temporarily vacating the area during the project period may be made by these species to avoid the resultant visual and acoustic disturbance, NMFS nonetheless finds that this action would result in no more than a negligible impact on these marine mammal species and/or stocks. NMFS also finds that the proposed action would not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence uses. Please refer to the **Federal Register** notice (72 FR 536, January 5, 2007) and the EA for a detailed description of the analysis.

Comment 4: CBD questions whether NMFS used the "best available science" in making its negligible impact statement. As CBD points out that in making its determination, NMFS must give the benefit of the doubt to the

species rather than for the benefit of commercial exploitation.

Response: NMFS disagree. 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. An authorization shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses and that the permissible methods of taking and requirements pertaining to the mitigation, monitoring and reporting of such taking are set forth. To reach a determination whether such take constitute a negligible impact to the marine mammal species or stock(s), NMFS must use the best available scientific information.

In reaching the determination for issuance of two IHAs for conducting seismic surveys in upper Cook Inlet, NMFS has consulted a number of scientific studies in this field and prepared an EA based on the most recent peer-reviewed information. Where information is unobtainable because of ethical concerns regarding conducting invasive and injurious effects on marine mammals, surrogate species or appropriate modeling is used in lieu of empirical information on marine mammals. This information are reviewed by the Commission and its Scientific Advisors, some of whom are experts on assessing impacts on marine mammals from underwater sound sources. The information contained in the EA has also been reviewed by endangered species biologists at NMFS Anchorage Field Office and expert in bioacoustics at NMFS Office of Protected Resources. Please refer to the **Federal Register** notice (72 FR 536, January 5, 2007) and the EA for a detailed description of NMFS analyses.

As NMFS has used the best science currently available in making its negligible impact determination and because NMFS always gives the benefit of the doubt to the species when making these determinations, NMFS believes that no harm will occur to these affected species and/or stocks.

Comment 5: The WDCC recommends that the IHA should not be issued and that seismic surveying should not be allowed to take place in the Cook Inlet. The WDCC further states that recent

status review and extinction assessment reveals that Cook Inlet beluga whale population has not shown appreciable recovery since 1999, and should be listed under the Endangered Species Act (ESA) as an endangered species. The WDCC states that any added pressure to this population might push it beyond recovery.

Response: NMFS disagrees. As stated here and in the EA, NMFS determined that the proposed short-term action that has several mitigation measures incorporated to reduce impacts to the lowest level practicable would result in no more than a negligible impact on Cook Inlet beluga whales (72 FR 536, January 5, 2007). The Cook Inlet beluga whale listing action under the ESA is a separate action, that is currently under NMFS review and consideration.

Comment 6: CBD states that it does not believe NMFS can lawfully authorize any Level A harassment of Cook Inlet beluga whales.

Response: As stated in the **Federal Register** notice (72 FR 536, January 5, 2007), no take by Level A harassment (injury) or death is anticipated or authorized for the proposed Cook Inlet seismic operations.

Comment 7: CBD states that in light of the impending listing of the Cook Inlet beluga, NMFS should delay issuing any take authorization for the species until the ESA process is complete.

Response: NMFS cannot legally delay issuing a take authorization based on the impending listing of a species. Section 101(a)(5)(D) of MMPA establishes a 45-day time limit for NMFS review of an IHA application followed by a 30-day public notice and comment period on any proposed authorizations for the incidental harassment of small numbers of marine mammals. Within 45 days of the close of the comment period, NMFS must either issue or deny issuance of the authorization. An authorization shall be granted if NMFS finds, that as here, the taking will have a no more than negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses and that the permissible methods of taking and requirements pertaining to the mitigation, monitoring and reporting of such taking are set forth, such as the case of this action.

NEPA Concerns

Comment 8: The Commission is concerned about the potential impact of the proposed activities in conjunction with other factors that might be adversely affecting beluga whales (i.e.,

cumulative effects). The Commission states that such factors include increased vessel traffic, contaminants, military operations, waste management, urban runoff, and furthermore, a variety of new activities that are planned for Cook Inlet during the period for which the incidental taking authorizations are sought.

Response: NMFS concurs with the Commission's concern regarding the potential impact of the proposed activities in conjunction with other factors that might be adversely affecting the Cook Inlet beluga whale stock. NMFS also believes that extra caution is needed when proceed in authorizing any IHAs for Cook Inlet beluga whales, due to the precarious situation of this stock. Therefore, NMFS has conducted a detailed analysis on the cumulative impact on the environment which may result from the incremental impact of the proposed short-term seismic survey action when added to other past, present, and reasonably foreseeable future actions within upper Cook Inlet. The analyses are described in detail in the *Environmental Assessment on the Issuance of Incidental Harassment Authorizations to ConocoPhillips Alaska, Inc. and Union Oil Company of California to Take Marine Mammals by Harassment Incidental to Conducting Seismic Operations in Northwestern Cook Inlet, Alaska*.

Comment 9: CBD states that for the analyses on CPAI and UOCC's applications, NMFS must consider these effects together with all other activities that affect these species, stocks, and local populations, other anthropogenic risk factors such as other industrial development, climate change, and the cumulative effect of these activities over time.

Response: NMFS has conducted extensive analyses on the cumulative impact to marine mammal species within the proposed action areas in the EA. Please also refer to *Response to Comment 8*.

Comment 10: CBD states that NMFS cannot rationally adopt its EA and make a Finding of No Significant Impact (FONSI). CBD states that NMFS must prepare a full environmental impact statement (EIS) analyzing the effects of the proposed seismic surveys in the context of the cumulative effects of all other natural and anthropogenic impacts on the marine mammals, habitats and communities of Cook Inlet.

Response: In December, 2006, NMFS prepared a draft EA for public comment and review. During the 30-day comment period, rigorous reviews were conducted by NMFS scientists in the NMFS Alaska Office and by members of

the Committee of Scientific Advisors on Marine Mammals of the Commission. In view of the information presented in this document and the analysis contained in the supporting draft EA prepared for this proposed action, and the best available scientific information on effects of sound on marine mammals, we have determined that the this action would not significantly impact the quality of the human environment.

In addition, monitoring and mitigation measures described in this document and in the supporting draft EA when implemented will reduce impacts on marine mammal stock to the lowest level practicable. Furthermore, additional aerial monitoring measure for Cook Inlet beluga whales is added to the requirements for seismic operations by CPAI near Beluga River (see Monitoring Section below), which was included in the Final EA. This additional aerial monitoring measure is contained in the IHA issued to CPAI. In addition, all beneficial and adverse impacts of the proposed action have been addressed to reach the conclusion of no significant impacts. Accordingly, preparation of an EIS for this action is not warranted. Subsequently, NMFS finalized the draft EA and issued a FONSI on the proposed project.

Levels and Numbers of Marine Mammals Affected

Comment 11: CBD and one private citizen express their concerns that there is a threat of serious injury and mortality to the Cook Inlet beluga whales and other marine mammals from the proposed seismic surveys.

Response: As described in detail in a **Federal Register** notice (72 FR 536) published on January 5, 2007, and in the draft EA for the proposed action, NMFS has performed a thorough analysis on the levels of potential impacts to Cook Inlet beluga whales and four other species of marine mammals as a result of seismic operations in the upper Cook Inlet. Based on this analysis, which is supported by the best available scientific information, NMFS has come to the conclusion that only a few beluga whales, Pacific harbor seals, harbor porpoises, Steller sea lions, and killer whales may be taken incidental to seismic surveys, by no more than Level B harassment and that such taking will result in no more than a negligible impact on such species or stocks.

Therefore, NMFS believes that the authorized harassment takes should be at the lowest level practicable due to incorporation of mitigation measures described in the IHA, the EA, and in this document.

No take by Level A harassment (injury) or death is anticipated or

authorized, and harassment takes should be at the lowest level practicable due to incorporation of strict monitoring and mitigation requirements conditioned in the IHA. Please refer to the **Federal Register** notice (72 FR 536, January 5, 2007) and the EA for a detailed description of the analysis.

Comment 12: The Commission states that the estimated taking of up to 57 beluga whales incidental to the two proposed projects can be characterized as a small number of animals for purposes of making the finding required under the MMPA. However, it represents more than one-quarter of the IUCN's estimate of the number of mature animals in this population (Lowry *et al.*, 2006). Arguably, the Commission states that this level of anticipated taking could have more than a negligible impact on the survival and recovery of the stock. The Commission believes that caution is warranted.

Response: NMFS agrees with the Commission that extra caution is needed when authorizing any incidental take permits of Cook Inlet beluga whales, due to the precarious situation of this stock. The IUCN stated that the population of Cook Inlet beluga whale is estimated at 207 mature individuals (Lowry *et al.*, 2006), however, there is no mention of any population surveys the IUCN conducted to reach this number. A Bayesian inference on the population size of Cook Inlet beluga (1994 2005) provided by the IUCN on its website (<http://www.iucnredlist.org/search/details/61442.pdf>) showed that the population estimate of Cook Inlet beluga whales to be over 300 (range: approximately 290 400) whales, above NMFS' estimate of 278 whales, in 2005. In addition, the estimated potential take of up to 57 Cook Inlet beluga whales would include all individuals, and the potential take would be limited to only Level B behavioral harassment. Furthermore, with the implementation of monitoring and mitigation measures discussed in the EA and this document, NMFS believe the actual take by harassment would be much lower. Therefore, NMFS does not believe that the anticipated taking resulted from the proposed activities would have more than a negligible impact on the survival and recover of the Cook Inlet beluga whale stock.

Comment 13: CBD is concerned that beluga's foraging behavior and the large tidal fluctuations in Cook Inlet pose high risk of stranding at low tide even in the absence of anthropogenic disturbance.

Response: Beluga whale stranding events in upper Cook Inlet are not uncommon. NMFS has reported 804

strandings (both individual and mass strandings) in upper Cook Inlet since 1988 (Vos and Shelden, 2005). Mass stranding events primarily occurred along Turnagain Arm, and often coincided with extreme tidal fluctuations ("spring tides") and/or killer whale sighting reports (Shelden *et al.*, 2003). These mass stranding events involve both adult and juvenile beluga whales and are apparently healthy, robust animals.

It is uncertain why beluga whales strand in Cook Inlet. Beluga whales are known to intentionally strand themselves during molting, while rubbing their skin against rocky bottoms (NMFS, 2005). Beluga whales may also strand purposely or accidentally to avoid predation by killer whales. Stranded whales, particularly large adults, are at risk of mortality due to stress, hyperthermia and suffocation. During two mass stranding events in 1996 and 1999 involving about 120 whales, 9 adult whales died (Moore *et al.*, 2000). In 2003, 115 beluga whales stranded during five events. Five mortalities occurred during one of these events when 46 animals stranded in Turnagain Arm (Vos and Shelden, 2005). However, NMFS has determined that implementation of mitigation measures described in this document, such as altering vessel direction, power-down or shut-down of airguns when whales are detected to be heading towards the safety zone, carrying out ramp-up procedure when startup airguns, and conducting seismic surveys only during slack tide periods, would prevent such stranding events from occurring.

Comment 14: HSUS states that the information provided and the impact analysis for Cook Inlet belugas are not based on the most recent sources. HSUS states that the most recent status review issued by NMFS for Cook Inlet beluga (Hobbs *et al.*, 2006) updates, and dramatically expands on, information from the stock assessment. HSUS states that only the most recent information should be used when considering the status, distribution and effects on the stock.

Response: NMFS agrees with the HSUS that the most recent information should be used when considering the status, distribution, and effects of the stock. NMFS has updated the EA for this action with new stock assessment data based on the most recent aerial surveys conducted by NMFS National Marine Mammal Laboratory in the 2006 season. The revised data updates the Cook Inlet beluga whale population at 302 whales (NMFS, unpublished data) from the previous 278 whales assessed

in 2005. However, NMFS does not agree with the HSUS that the Status Review updates, and dramatically expands on, information from the stock assessment. As stated in its Executive Summary, the Status Review "provides a summary of the best available science to aid NMFS policy makers" in determining that the listing action may be warranted, and therefore is consistent with NMFS *Draft Conservation Plan for the Cook Inlet Beluga Whale (Delphinapterus leucas)* (draft Conservation Plan, NMFS, 2005a).

Comment 15: HSUS, citing Hobbs, states that the range of beluga whales has contracted considerably to focus during spring and summer around river mouths in upper Cook Inlet, in the general area where the seismic projects are proposed. HSUS states that the contracted smaller ranges are very important habitat to a vulnerable population. HSUS is concerned that the mitigation measures of ramping would displace beluga whales and force them to utilize suboptimal habitat.

Response: In the Status Review (Hobbs *et al.*, 2006) the statement regarding the diminishing of the beluga whale's ranges provides the following description:

"In the 1970s and 1980s, beluga sightings occurred across much of the northern and central parts of Cook Inlet (Calkins 1984), but in the 1990s the summer distribution diminished to only the northernmost portion of Cook Inlet (Rugh *et al.*, 2000)."

The Status Review and the draft Conservation Plan, as supported by NMFS long-term beluga whale surveys in Cook Inlet, showed that whales do not just congregate around any river mouth in upper Cook Inlet. The Status Review states that from late spring and throughout the summer months, the majority of beluga probably feed on fish species that are abundant in the Susitna River system and adjacent intertidal mudflats. The proposed project area for CPAI, as described in detail in the **Federal Register** notice (72 FR 536, January 5, 2007), is paralleling the shoreline from just offshore of the Beluga River south for about 6 km, which is about 15 miles south of Susitna River mouth. This area is in the extreme southern edge of the area classified by NMFS as Type 2 habitat (high value, summer feeding area) in its draft Conservation Plan. Since the proposed CPAI seismic operations will be completed by May 15, NMFS does not believe that this project would have significant impact to beluga foraging activities. However to ensure that CPAI survey does not have a significant impact, NMFS is requiring CPAI to conduct an aerial monitoring program

(see Monitoring Section). As for the proposed UOCC seismic project, which would occur further south in a latter period (from May 15 June 15) when the majority of Cook Inlet belugas will be feeding around the Susitna River, Knik Arm, and Turnagain Arm areas (Rugh *et al.*, 2000), no aerial monitoring is required. Therefore, it is not likely that the proposed seismic operations and the mitigation measures will displace beluga whales from their prime feeding ground or force them to utilize suboptimal habitat. Please refer to the draft Conservation Plan and the EA for a detailed description of beluga whales' temporal and spatial distribution in Cook Inlet.

Comment 16: HSUS is concerned that displacing animals for up to 8 hours each day (1 2 hours during each of 3 4 daily slack tides) for a period of months could have significant effects on foraging success and thus fitness of individuals in this declining population. HSUS notes that disturbance resulting in displacement by beluga whales does not appear to have been considered in the draft EA. HSUS also states that displacement even from a small area, if that area is important habitat, could have serious long term impacts on Cook Inlet beluga. In addition, citing Morton and Symonds (2002), HSUS states that killer whales and harbor porpoises have been displaced from important habitat by seal scammers, a sound source similar to airguns.

Response: NMFS disagree. Regarding the potential concern of displacing animals for up to 8 hours each day for the three-month period, since the survey vessel will be moving as it is conducting seismic surveys, NMFS does not believe that the whales will be displaced from a particular location during the entire period. The most likely scenario is that as the survey vessel conducts the surveys, marine mammals including beluga whales will be temporarily displaced from an approximately 370 m (1,214 ft) radius zone of influence (ZOI). As the vessel moves around, the ZOI will be shifting constantly. Therefore, no animal is expected to be displaced from an area for longer than 1 2 hours. NMFS considers temporary (rather than long-term) displacement of marine mammals as a form of behavior avoidance and is discussed in the draft EA (page 28). Please refer to the EA, Cook Inlet Beluga Conservation Plan, and *Response to Comment 15* for additional information on beluga whale habitat.

Regarding Morton and Symonds's (2002), HSUS incorrectly stated that acoustic harassment devices (AHDs) and

airguns were similar in acoustic features. The sound produced by an AHD is intermittent but is considered non-pulse, based on differences in measurements between continuous and impulses sound level meters (Harris, 1998). In addition, the 10-kHz Airmar AHD mentioned in Morton and Symond's (2002) was designed specifically to cause physical pain to seals, and the nature of killer-whale hearing (similar to most odontocetes including belugas) makes this species vulnerable to impact by this type of sound source as well. As a result, NMFS believes that the AHD which was used from 1993 to 1999, is not be comparable to seismic airguns as proposed to be used during the three-month long seismic surveys proposed in Cook Inlet.

Comment 17: Citing NMFS Stock Assessment Reports (SARs), HSUS points out that the Gulf of Alaska harbor seals should not be treated as a single stock.

Response: Whether the Gulf of Alaska harbor seals should be reclassified into more finely scaled stocks remains under study. Until NMFS officially has adopted the revised stock reclassification based on available scientific information, NMFS will continue to use the existing stock information with the latest population abundance assessment for management purposes under the MMPA. In addition, even if the Cook Inlet harbor seals were to be reclassified as a separate stock, NMFS does not believe that the proposed seismic project would have significant impact to these animals due to the rare occurrence of the harbor seals within the project area. The most recent count for harbor seals within Cook Inlet is 7,330 seals (Josh London, National Marine Mammal Laboratory, Pers. Comm. February 2007). NMFS calculated that up to 30 Pacific harbor seals could be taken by Level B behavioral harassment as a result of the seismic projects. Therefore, the estimated take as a result of the proposed projects would represent 0.4 percent of the total seals in Cook Inlet.

Comment 18: HSUS points out that the Gulf of Alaska harbor porpoise stock was recently revised from "not strategic" to "strategic" due to poor and/or outdated abundance estimates.

Response: NMFS updated the information on Gulf of Alaska stock of harbor porpoise in the EA, based on the newly released draft Stock Assessment Report. The classification of the Gulf of Alaska harbor porpoises to a strategic stock is largely due to lack of information on incidental harbor porpoise mortality in commercial fisheries. The population estimate for

this stock has been revised from 30,506 to 41,854 porpoises. Therefore, the percentage of estimated take of the Gulf of Alaska harbor porpoise by seismic surveys has been revised from 0.02 percent to 0.01 percent.

Comment 19: HSUS is concerned that information on harbor porpoise densities in Cook Inlet was based on surveys done in 1991-1993, therefore, the abundance data would not be accurate. HSUS further states that harbor porpoises are not evenly distributed but "tend to clump in areas where forage conditions are more ideal, making them more vulnerable to anthropogenic impacts in some areas than others." Citing Rugh (2005), HSUS states that there were high densities of harbor porpoises in two different areas in Cook Inlet.

Response: NMFS acknowledges that the survey studies on population densities of Cook Inlet harbor porpoises cited (Dalheim *et al.*, 2002) were conducted 14 years ago, however, there is no evidence that these data are not accurate. A reference search did not show that there are any better or more recent studies available. Therefore, NMFS considers that Dalheim *et al.*'s (2002) research on population densities of Cook Inlet harbor porpoises is the best scientific information available thus far.

The statement "that harbor porpoises tend to clump in areas where forage conditions are more ideal, making them more vulnerable to anthropogenic impacts in some areas than others" is not totally relevant since the proposed seismic surveys do not necessarily seek areas where forage conditions are good for marine mammals. Even if the areas were the same, marine mammals clustered in groups would offer a better opportunity to see them and implement appropriate mitigation.

NMFS assumes that the citation HSUS mentioned is Rugh *et al.* (2005), NOAA Technical Memorandum NMFS-AFSC-149: *Aerial Surveys of Belugas in Cook Inlet, Alaska, June 2001, 2002, 2003, and 2004*. In this paper, Rugh *et al.* stated that twice they located high density areas for harbor porpoises: south of Tuxedni Bay in 1994 and south of Chinitna Bay in 2004. Both areas are located in lower Cook Inlet, which are not the proposed project area. This statement supports NMFS assessment in its EA that harbor porpoises tend to concentrate in lower Cook Inlet.

Comment 20: Citing NMFS' draft EA that there is no abundance estimate of Steller sea lions and killer whales in the proposed project area, HSUS and the AWI state that this does not preclude the occurrence of Steller sea lion within

the project area and the analysis in the EA is inadequate. HSUS further questions NMFS regarding source references that Steller sea lions seldom occur in upper Cook Inlet besides data from aerial surveys conducted in June and July.

Response: First, one should not interpret the statement in the draft EA that no population estimate has been made for Steller sea lions and killer whales within the proposed project area as that NMFS has no knowledge whether these species occur in the area or not. Repeated aerial surveys by NMFS for Cook Inlet beluga whales have recorded any sighting of other marine mammals including Steller sea lions and killer whales, however, no efforts were made to calculate the abundance of these species due to their rare occurrence in the project area (Rugh *et al.*, 2005). In fact, Rugh *et al.* (2005) documented every sighting of marine mammals in their beluga whale aerial survey report. Although systematic surveys for beluga whales are usually conducted in June and July, field observations were made by biologists in NMFS Anchorage Office throughout the year on marine mammals within Cook Inlet. All these observations point out that Steller sea lions are rare in upper Cook Inlet (Brad Smith, NMFS Anchorage Office, Pers. Comm. February 2007).

Acoustic Impacts

Comment 21: CBD, the AWI and the WDCA question NMFS assumption that belugas would not be harassed by seismic sounds below 160 dB re: 1 microPa. CBD states that there are numerous studies showing significant behavioral impacts from received sounds well below 160 dB. For example, in its recent decision document related to seismic surveys associated with oil and gas exploration in the Chukchi Sea, NMFS imposed a 120-dB safety zone for aggregations of bowhead whales based on its finding that "bowhead whales apparently show some avoidance in areas of seismic sounds at levels lower than 120 dB" (MMS, 2006). Also harbor porpoises have been reported to avoid a broad range of sounds low-frequency (airgun pulses), mid-frequency (sonar transmissions), and high-frequency (acoustic harassment devices) at very low sound pressure levels (between 100 and 140 dB re: 1 microPa) (Kastelein *et al.*, 2000; Olesiuk *et al.*, 2002; Calambokidis *et al.*, 1998; NMFS, 2005b). AWI states that whales have stranded and died after being exposed to lower levels of sound, notably in the Bahamas incident of 2001.

Response: NMFS does not agree. As stated in the **Federal Register** (72 FR 536, January 5, 2007) and the EA, one of the most important aspects to assess the effects of high intensity sounds on marine mammals is to understand their hearing sensitivity. For most small- and medium-sized odontocetes (beluga whales included), the most sensitive hearing ranges fall between 1 and 100 kHz (Richardson *et al.*, 1995). Although it has been reported that beluga whale's hearing extends to as low as 40 75 Hz (Awbrey *et al.*, 1988; Johnson *et al.*, 1989), its hearing threshold is at about 130 140 dB re: 1 microPa (Richardson *et al.*, 1995). The dominant frequencies (i.e., frequencies with highest sound pressure levels) of the airguns to be used in the proposed seismic operations are in the extreme low end of the spectrum (around 20 Hz). NMFS believes that at these low frequency ranges, the ability for belugas to detect sound is greatly reduced, therefore, belugas are not likely to be harassed.

While bowhead whales may be affected by seismic sounds above 120 dB re: 1 microPa, they are mostly found within the Arctic, do not occur in Cook Inlet and therefore will not be affected. Other mysticete species are not expected in upper Cook Inlet. The harbor porpoise examples given in the comments were exposed to acoustic signals with much higher frequencies than the acoustic signals being produced by the proposed project (150 3,500 Hz). For example, the experiment conducted by Kastelein *et al.* (2000) used three types of sounds, all had harmonics with high sound pressure levels above the range of 11 to 30 kHz. Gordon *et al.* (1998) reported on experimental playbacks to harbor porpoises in inshore waters around Orkney, United Kingdom using a small source air gun (source level 228 dB re: 1 microPa zero-to-peak at 1 m) and observed no changes in the rate of acoustic detection as a result of sound exposure. In general, it is well known that harbor porpoises' hearing sensitivity drops sharply as frequency goes under 8,000 Hz (Andersen, 1970; Kastelein *et al.*, 2002).

In addition, it is also important to understand that whether a marine mammal would be harassed by sound or not also depends on the context of the animal's behavior and the acoustical property of the sound signal. It is also very possible that whales may not be harassed when exposed to sound at received levels higher than 160 dB re: 1 microPa (e.g., Madsen and Mohl, 2000; Harris *et al.*, 2001). Furthermore, as discussed in the EA, the upper Cook Inlet is one of the most industrialized

and urbanized regions of Alaska. As such, ambient noise levels are high and range from 100 120 dB re: 1 microPa (Blackwell and Greene, Jr., 2002). Therefore, it is likely that marine mammals in this region are habituated to these anthropogenic sounds.

NMFS does not concur with the AWI that there was a whale stranding event in the Bahamas in 2001 caused by exposure to sound levels under 160 dB re: 1 microPa, as mentioned in its comment (no reference provided). There was a mass stranding event in the Bahamas on March 15 16, 2000, which is possibly linked to naval exercises in the area (Cox *et al.*, 2006). Although no received levels and mechanism that caused the stranding were determined, it was revealed that four of five ships were using mid-frequency sonar (AN/SQS-53C: 2.6 3.3 kHz, approximately 235 dB re: 1 microPa SPL, AN/SQS-56: 6.8, 7.5, and 8.2 kHz, approximately 223 dB re: 1 microPa SPL; Anon, 2001). These sounds are very different from the seismic pulses in terms of frequencies, amplitudes, and temporal patterns.

Comment 22: Citing a recently issued IHA by NMFS to the National Science Foundation for conducting seismic surveys, CBD is concerned that beluga whales could be displaced at a significant distance (up to 20 km, or 12.4 mi) from a sound source.

Response: NMFS notes that there have been observations that small toothed whales sometimes move away, or maintain a somewhat greater distance from the seismic vessel, when a large array of airguns is operating than when it is silent (e.g., Calambokidis and Osmek, 1998; Stone, 2003). Aerial surveys during seismic operations in the southeastern Beaufort Sea recorded much lower sighting rates of beluga whales within 10 20 km (16 – 32 mi) of an active seismic vessel. These results were consistent with the low number of beluga sightings reported by observers aboard the seismic vessel, suggesting that some belugas might be avoiding the seismic operations at distances of 10–20 km (Miller *et al.*, 2005). However, as noted in the **Federal Register** notice referenced by the CBD (71 FR 43450, August 1, 2006), NMFS does not consider minor movements away from an acoustic source to rise to Level B harassment, since at the range of 7,097 and 10,646 m (4.4–6.6 mi; depending on ocean depths), received levels dropped down to below 160 dB re: 1 microPa.

Comment 23: The WDCS states the possibility that up to 57 Cook Inlet beluga whales (up to 20 percent of the population) could be subjected to 180–dB received level is unacceptable. Given the most recent research survey,

providing a population abundance estimate of only 278 animals, it would be unacceptable for even one animal to be subjected to the received levels proposed during the seismic surveys.

Response: NMFS does not think the WDCS statement is accurate. Based on NMFS' calculation, as discussed in the draft EA, no Cook Inlet beluga whales would be subjected to noise levels equal to or greater than 180 dB re: 1 microPa (rms) from the proposed seismic surveys. Based on NMFS' acoustic criteria, 180 dB re: 1 microPa (rms) is considered to be the onset of TTS and exposure of cetaceans to this level of noise will not be permitted under these IHAs. Strict mitigation and monitoring measures described in the EA and required under these IHAs will prevent any cetaceans from exposure to 180 dB re: 1 microPa (rms) or greater.

NMFS states that up to 57 beluga whales (representing 19 percent of the population based on the most recent survey data) could be exposed to noise levels of 160 dB re: 1 microPa (rms), which is the onset of Level B behavioral harassment, as a result of the seismic operations.

Comment 24: CBD questions NMFS' Level A harassment criteria of 180 dB re: 1 microPa for cetacean and 190 dB re: 1 microPa for pinniped species. CBD cites that in 2002, 2 Cuvier's beaked whales (*Ziphius cavirostris*) were found to have stranded in the Gulf of California, Mexico, coincident with geophysical surveys that were being conducted in the area (Hildebrand, 2004), and in the same year, humpback whales (*Megaptera novaeangliae*) were reported to have stranded in unusually high numbers along Brazil's Abrolhos Banks, where oil-and-gas surveys were being conducted (Engel *et al.*, 2004). In addition, CBD states that the western Pacific gray whales were displaced from feeding grounds and exhibited behavioral changes in response to seismic surveys off Russia's Sakhalin Island (Wursig *et al.*, 1999). CBD also states that no studies undertaken on the acoustic sensitivity of pinnipeds suggests these species are at lower risk of threshold shift or auditory injury than cetaceans (Kastak *et al.*, 1999; 2005), and that harbor seals have exhibited low discomfort thresholds to anthropogenic noise (Kastelein *et al.*, 2006).

Response: In 1998, scientists convened at the High Energy Seismic Sound (HESS) Workshop, reviewed the available scientific information, and agreed on the received sound levels above which marine mammals might incur permanent tissue damage resulting in a permanent threshold shift (PTS) of hearing. Shortly thereafter, a

NMFS panel of bioacousticians used the information gathered at the HESS workshop to establish the current Level A Harassment acoustic criteria for non-explosive sounds, 180 dB re: 1 microPa-m (rms) for cetaceans, and 190 dB re: 1 microPa-m (rms) for pinnipeds, exposed to impulsive sounds. In the absence of good sound scientific information for specific species, NMFS conservatively adopt these criteria to establish safety zones, within which monitoring or mitigation measures must be applied, for all cetacean and pinniped species.

A study by Finneran *et al.* (2002) on bottlenose dolphin (*Tursiops truncatus*) and beluga whale using a behavioral response paradigm and exposing them to intense impulses from a seismic watergun showed that masking temporary threshold shifts (MTTS) occurred after being exposed to an impulsive sound of 160 kPa, or 226 dB re: 1 microPa p-p, with total energy fluxes of 186 dB re: 1 microPa²-s for the beluga whale. No MTTS was observed in the dolphin at the highest exposure conditions: 207 kPa, 228 dB re: 1 microPa p-p, and 188 dB re: 1 microPa²-s total energy flux.

As for these two stranding examples cited in the comment (Hildebrand, 2004; Engel *et al.*, 2004) that occurred in the vicinity where there had been seismic surveys conducted using powerful airguns, a causation relationship between seismic surveys and strandings has yet to be scientifically established. These references did not state that seismic surveys are the cause of the strandings. Please see NMFS more detailed response to these two events in the previous notice (69 FR 74906, December 16, 2004). NMFS notes that no measurements were made on the distance between the acoustic source and the marine mammals. The report by Wursig *et al.* (1999), which is also cited in the comment, provided a detailed study of behavioral ecology of western Pacific gray whale summering off Sakhalin Island. The report did not suggest that the species were displaced from important feeding ground. On the contrary, a follow up final report (Wursig *et al.*, 2000) on the same subject stated that "whales did not appear to be displaced by industrial activity."

No comparable studies have been conducted on pinnipeds regarding their responses to impulsive sounds. The two references (Kastak *et al.*, 1999; 2005) cited in the comment cannot be used to address the noise responses of pinnipeds for the proposed project because animals in these studies were exposed to octave-band noises for extended durations (20 22 minutes in Kastka *et al.*, 1999; 20, 25, and 50

minutes in Kastka *et al.*, 2005). In the third reference (Kastelein *et al.*, 2006) cited in the comment, harbor seals were also exposed to octave-band noise, nonetheless, no TTS was observed. All these studies underscore the importance of including sound exposure metrics (incorporating sound pressure level and exposure duration) in order to fully assess the effects of noise on marine mammal hearing, not just looking at the absolute sound pressure levels.

Comment 25: HSUS uses an example that workers in loud factories become habituated to noise in order to make money to feed their families, but that does not insulate them from the multiplicity of effects of stress or chronic sub-lethal conditions that may go undetected by external monitoring, therefore, the habituation to high level acoustic disturbance cannot be dismissed.

Response: NMFS does not believe that the HSUS' example of workers working in noisy factories is a good analogue to marine mammals living in a noisy environment due to the different contexts. In addition, such comparison cannot be performed as HSUS did not provide quantitative data on the noise levels of the "loud factories" that are presumed to cause stress or chronic sub-lethal condition.

The marine environment is an efficient medium for sound propagation and the ambient noise, as shown in many studies, are much higher underwater than in air, although quantitative comparison is often impossible due to different reference point in acoustic pressures selected. Many of the sounds (e.g., those from marine life, wind, surf, waves, rain, bubbles, ice, earthquakes, and thunder/lightning) underwater occur naturally and are considered an intrinsic property of the environment (Wenz, 1962; Diachok and Winokur, 1974; Arnold *et al.*, 1984; Wilson *et al.*, 1984; Nystuen and Farmer, 1987; Richardson *et al.*, 1995; Tklich and Chan, 2002; Ma *et al.*, 2005). Therefore, marine mammal hearing sensitivities may not reflect those of terrestrial animals. Furthermore, the proposed seismic surveys would occur in a short period of three months and are not confined in one fixed spot, while the factory workers in HSUS' example are presumed to be working in the same noisy environment for a number of years.

Comment 26: HSUS states that when describing the characteristics of seismic sound, NMFS did not cite the most recent literature except Richardson *et al.* (1995), *Marine Mammal and Noise* (Academic Press), which HSUS

considers to be outdated. HSUS brings NMFS attention to a recent paper by Madsen *et al.* (2006) indicating that seismic airguns generate significant sound energy at frequencies well above those of interest to the surveyors. Citing Madsen *et al.* (2006), HSUS states that received levels of up to 147 dB re: 1 microPa rms were generated for higher frequencies, which may cause avoidance, stress, and masking to marine mammals.

Response: NMFS disagrees. NMFS does not consider Richardson *et al.*'s (1995) work as outdated. To the contrary, it is still one of the most authoritative and widely cited literatures on characteristics of seismic sound and airguns. In fact, Richardson *et al.* (1995) has noted that low frequency airgun pulses contain energy in much higher frequencies, which was also cited in our draft EA. NMFS is aware of Madsen *et al.*'s work and considers it an important contribution to our understanding of seismic sounds propagation in deep water.

In addition, NMFS does not believe that received levels from impulse noise (sound as seismic) of up to 147 dB re: 1 microPa rms would cause a biologically significant response by marine mammal species and stocks in Cook Inlet (see *Response to Comment 21*). However, in recognition of the potential of horizontal propagation of sound energy at higher frequencies, NMFS requires that safety zones based on 180 dB and 190 dB re: 1 microPa rms isopleths around the survey vessel be established for cetacean and pinniped species, respectively at the distance of greatest propagation. Please refer to the EA and **Federal Register** notice (72 FR 536, January 5, 2007) for detailed information.

Comment 27: HSUS states that NMFS did not consider some of the more recent work examining the impacts of seismic airguns on marine mammals. HSUS brings NMFS attention to the proceedings from a workshop on this issue by the International Whaling Commission (IWC) Scientific Committee's Standing Working Group on Environmental Concerns. In addition, HSUS states that very outdated sources (primarily from the 1990s) of empirical work on the impact of seismic airguns on marine mammals were cited in the draft EA.

Responses: NMFS is aware of the proceeding by the 2006 IWC Scientific Committee's Standing Working Group on Environmental Concerns and has reviewed all its session papers on impacts of seismic surveys on cetaceans. These papers and the proceeding were not considered in the EA because none

of the session papers were peer-reviewed, and many are summaries of original studies that were already included in the EA. Nonetheless, a few of the new studies presented at the IWC did provide information on long-range effects of airgun noise on marine mammals. For example, field monitoring of seismic surveys by U.S. Geological Survey (USGS) in Juan de Fuca Strait, Georgia Strait, Puget Sound, Hood Canal, and other marine waters in British Columbia and Washington showed that most marine mammals exhibited avoidance and Level B behavioral change when exposed at 170-183 dB re: 1 microPa rms but were not affected when levels were below 170 dB, except for harbor porpoises (Bain and Williams, 2006). Although the authors stated that there were insufficient numbers of individuals of marine mammals observed to merit statistical analysis, the general observations support NMFS 160-dB criteria for the onset of Level B behavioral harassment.

As regards to the sources used in the draft EA, NMFS does not consider them outdated. All references NMFS used are peer-reviewed and are cited in peer-reviewed papers. All these papers were tested in time and thus NMFS considers them to be the best available scientific information. A quick tally showed that among the 21 references cited on noise impacts on marine mammals, 3 (14 percent) were published in the 1980s, 8 (38 percent) in the 1990s, and 10 (48 percent) in the 2000s.

Comment 28: HSUS states that the fact that cetaceans are near vessels during airgun firing, even riding the bows of vessels towing arrays is more a reflection of the characteristics of airgun sound propagation than an indication that airgun pulses do not affect cetaceans. HSUS states that there may well be sound shadows closer to the vessel and the animals may be attracted to the vessels in an effort to escape exposure to the blast.

Response: The Lloyd-mirror effect phenomenon, where acoustic energy is diminished in a sound field near the surface where engine and propeller noise from a ship is blocked by the vessel's hull, has been a discussion regarding ship strike of large whales (Terhune and Verboom, 1999; Blue *et al.*, 2001). However, it is highly unlikely that the received levels would be reduced to the degree from the source (airgun array) with no blockage between the source and the receivers. Nonetheless, the IHAs require the surveyors to shut down the airgun as soon as a marine mammal is sighted or

believed to be inside the safety zones, and no airgun can be started until 30 minutes after all marine mammals have vacated the safety zones.

Comment 29: HSUS states that beluga whales react to low frequency sounds from icebreaker ships, probably at the level at which they are just able to detect them, up to 40 km away (Finley *et al.*, 1990; Cosens and Dueck, 1993). HSUS questions NMFS' assumption that beluga whales do not react to low frequency sounds.

Response: NMFS does not agree with HSUS' extrapolation of beluga reactions to approaching icebreaker ship sounds to predict their responses to low-frequency seismic surveys. First, the acoustic characteristics of an icebreaker do not resemble those from a seismic airgun array. While seismic airguns produce transient sounds (pulses), the noise from a ship is continuous sounds (non-pulses) (Richardson *et al.*, 1995). In addition, HSUS incorrectly classified sounds from icebreaker ships as "low-frequency." In fact, mid-point frequencies of intense sound levels (over 162 dB re: 1 microPa) from icebreaker ships recorded ranged from 50.1 Hz to 5.01 kHz (Cosens and Dueck, 1993). In a more recent study, the statistical source spectrum levels in 12th octave bands between 100 Hz and 20 kHz from the Canadian Coast Guard icebreaker *Henry Larsen*, were calculated at a median source level of 192 dB re: 1 microPa @ 1 m from bubbler system noise and 197 dB re: 1 microPa @ 1 m for noise associated with propeller cavitation along this entire frequency range (Erbe and Farmer, 2000). Therefore, their effects of noises from icebreaking ships and seismic airguns to marine mammals cannot be compared. Furthermore, the contexts of the acoustic signals and the prior exposure of anthropogenic sounds by the whales need also to be taken into consideration when interpreting animal responses. As suggested in both publications cited by HSUS (Finley *et al.*, 1990; Cosens and Dueck, 1993), the beluga whale reactions to icebreaker noise at unprecedented ranges in the remote Canada High Arctic was probably due to the fact that these animals are relatively naive with respect to exposure to industrial noise. Richardson *et al.* (1995) also suggested that the acute responsiveness to icebreakers was probably caused by the partial confinement of whales by heavy ice, scarcity of ships in the high arctic in spring, and ideal sound propagation conditions (LGL and Greeneridge, 1986).

Comment 30: HSUS states that there is an overemphasis on avoidance behavior and hearing loss when

discussing the potential impacts of the seismic surveys on marine mammals in Cook Inlet in NMFS' draft EA. Citing the IWC *Report of the Standing Working Group on Environmental Concerns* (2006), HSUS states that "Clark and his colleagues...suggest strongly that masking may be a significant problem for animals exposed to seismic airguns," but it was not mentioned in the draft EA.

Response: NMFS considers that long-term displacement and hearing loss as a result of anthropogenic sounds are biologically significant impacts to marine mammals, as discussed in detail in the draft EA. Therefore, NMFS considers it better to overemphasize and to call extra attention to the reviewers and the public regarding the danger of these impacts, than to have these issues overlooked. However, NMFS does not believe beluga whale or other marine mammal acoustic communications would be masked as a result from the seismic surveys. For the most part, the low-frequency and intermittent seismic pulses, the high-frequency communication calls of five species of marine mammals in Cook Inlet, and the broadband echolocation signals from three cetacean species do not overlap in either frequency or temporal domain. And the non-sequential, high-frequency nature of cetacean communication signals (whistles and pulsed calls) can be easily transmitted in between the brief seismic pulses.

The IWC report (IWC, 2006) did not state or even suggest that masking is a potential problem for marine mammals exposed to seismic sounds. In fact, the only places "masking" is mentioned in that report is when discussing noises from pile-driving, windfarms, and high ambient noise environments. Clark and Gagnon (2006), in their session paper presented at the 2006 IWC meeting, do not suggest that masking is a problem for marine mammals exposed to seismic sounds. In fact, "masking" or "mask" was not mentioned in their paper (Clark and Gagnon, 2006). This particular paper does state that highly sequential and patterned low-frequency, narrowband mysticete songs often coincide with the same acoustic features of seismic sounds. The paper also provided examples showing acoustic maps for the 20-22 Hz frequency band, where analyses indicate that fin whales would stop singing when a seismic survey was operating but would resume singing within hours to days after the survey stopped. NMFS does not think this would be the case in Cook Inlet since there are no mysticete species present.

Comment 31: The AWI and HSUS are concerned about seismic sound on fish species and state that several recent studies demonstrating hearing loss and widespread behavioral disruption in commercial species of fish (Engas *et al.*, 1996; Popper *et al.*, 2003). HSUS further states that the discussion of sound effects on fish seemed brief and sketchy. HSUS suggests that the draft EA expands its discussion of the impacts of seismic on other marine life. HSUS also points that some studies cited in the draft EA suggest very strongly that marine mammal prey might be negatively impacted by seismic surveys, either because they are significantly displaced (e.g., Slotte *et al.*, 2004) or because they are physically injured (e.g., McCauley *et al.*, 2003).

Response: The purpose of the EA is to evaluate environmental impacts of issuing the two IHAs for incidental taking of marine mammals by harassment will: (1) have a negligible impact on the marine mammal species or stocks; and (2) not have an unmitigable adverse impact on the availability of the species or stock for subsistence uses. However, throughout the EA, NMFS provided a basic analysis on potential seismic surveys impacts on marine environment, including fish species. The analysis indicates that it is highly unlikely the marine environment, including other marine species, would be significantly impacted as a result of the proposed seismic surveys. Therefore, a more in depth discussion on the effects of seismic surveys on other marine life is beyond the scope of the EA.

The research conducted by Slotte *et al.* (2004) during the seismic investigations off the Norwegian west coast, as cited in HSUS' comment, did not find that pelagic fish (herring, blue whiting and mesopelagic species) were displaced. This particular research recorded the acoustic abundance of fish during the seismic surveys, and compared it with data recorded directly prior to and after shooting along the seismic transects. The comparison showed that although lower acoustic abundance of fish was recorded during the shooting, there was not a difference in fish abundance prior to and after shooting within the seismic area. The authors state that these results indicate "that the shooting had insignificant short-term scaring effects." In addition, the authors state that "both blue whiting and mesopelagic species were found in deeper waters in periods with shooting compared to periods without shooting, indicating that vertical movement rather than horizontal movement could be a short-term reaction to this noise." The

word "displacement" or "displace" did not appear in the paper.

The experiments by McCauley *et al.* (2003), as cited in the comment, were conducted by carrying out trials where pink snapper (*Pagrus auratus*) were held in cages and were exposed to signals from an airgun towed toward and away from the cages. The airgun, which has a source level of 222.6 dB re: 1 microPa p-p (or 203.6 dB re: 1 microPa rms) at 1 m, was towed from start up at 400 – 800 m (1,312 – 2,615 ft) away to 5 – 15 m (16 – 49 ft) at closest approach to the cage. The study showed that the ears of fish exposed to an operating air-gun sustained extensive damage to their sensory epithelia that was apparent as ablated hair cells. However, the authors cautioned that several caveats must be considered when interpreting these results. Foremost of these caveats was that the fish studied were caged and could not swim away from the sound source. Video monitoring of behavior suggested that the fish would have fled the sound source if possible. It is also likely that many fish species hearing the approaching air-gun would swim away, as has been observed on a large scale by Engas *et al.* (1996).

Comment 32: HSUS states that NMFS' draft EA overemphasizes TTS and serious injury, as well as behavioral harassment, but ignores the potential for increased stress, displacement to sub-optimal habitat (even if only temporarily), and masking. The AWI, WDCCS, and HSUS state that the proposed mitigation measures are inadequate and will not necessarily protect the marine mammals in the project area.

Response: NMFS believes that the proposed mitigation measures will protect marine mammals from Level A harassment and TTS (Level B harassment), as described in detail in the EA. These are standard mitigation measures widely used for seismic operations and are statutorily required in many countries (JNCC, 2004; Weir *et al.*, 2006; Wilson *et al.*, 2006). Regarding the comments on potential increased stress, displacement to sub-optimal habitat, and masking of marine mammals, please refer to *Responses to Comments 25, 15, and 30*, respectively.

Comment 33: HSUS states that the TTS data used in the draft EA are primarily based on studies conducted on captive animals that have been habituated to research protocols and a noisy environment (San Diego Harbor). These TTS values have never been validated on free-ranging naive animals, which at best might be more sensitive behaviorally than captive animals and at

worst might also be more susceptible to hearing damage at lower received levels.

Response: It is true that three of the six studies on marine mammal TTS cited in the draft EA were based on research conducted on animals in San Diego Bay, however, recent studies on the same animals, which was also cited in the EA, indicated that masking noise did not have a substantial effect on the onset-TTS levels observed (Finneran *et al.*, 2005). These data represent the best scientific information available to date. In addition, those TTS data were not used by NMFS as criteria for onset of TTS. The criterion used by NMFS for onset-TTS is 180 dB re: 1 microPa for cetaceans, which is much lower than levels reported in these studies.

Regarding the validation of TTS values on free-ranging naive animals, as noted in the HSUS comments, NMFS is not aware of any such studies being conducted or other data existing, either within or outside the United States.

Comment 34: AWI states that anthropogenic noise does not just affect hearing organs, and that the hearing range of the Cook Inlet belugas has not been assessed. AWI further states that presumably the data used is from a few captive individuals, likely habituated to noise over a length of time.

Response: NMFS agrees that anthropogenic noise does not just affect hearing organs of marine mammals. For a detailed discussion on the effects of anthropogenic noise on marine mammals, please refer to the EA. Hearing sensitivity of beluga whales is well documented (White *et al.*, 1978; Awbrey *et al.*, 1988; Johnson *et al.*, 1989), and multiple studies on beluga whales' behavioral audiograms from different researchers largely agree with each other. Therefore, in view of the scientific methods, there is no reason to believe that Cook Inlet beluga whales would have significantly different hearing range than the same species from different areas. In addition, habituation to noise does not affect animal's hearing sensitivity, especially in the experimental setting, where animals are rewarded to "hear better."

Monitoring and Mitigation

Comment 35: CBD questions whether NMFS has taken the "means effecting the least practicable impact" on marine mammals when implementing mitigation measures. CBD argues that the mitigation requirement that the taking have the "least practicable impact" on the species requires NMFS to consider a larger safety zone.

Response: NMFS disagrees. It may seem that a large safety zone would be a more conservative mitigation measure

to ensure that marine mammals are not exposed to intense seismic sound pressure levels. However, a larger safety zone often presents more challenges in monitoring, and would compromise the effectiveness of spotting marine mammals within or approaching the safety zones. In addition, as mentioned in *Response to Comment 22*, and discussed in detail in the **Federal Register** notice (72 FR 536, January 5, 2007) and in the EA, carefully modeled and empirically field-verified safety zones based on isopleths of 180 dB re: 1 microPa for cetaceans and 190 dB re: 1 microPa for pinnipeds are one of the most conservative mitigation measures which allows the least practicable impact on the species for this proposed action.

Comment 36: CBD states that the proposed requirements related to monitoring of the safety zone for the proposed actions do not meet the MMPA's standards because, for example, there is no requirement for passive acoustic monitoring (PAM). The WDCS also recommends that PAM be undertaken to enable an additional opportunity to detect marine mammals in the survey area.

Response: NMFS disagrees. The MMPA has not established standards for monitoring requirements. The monitoring requirements proposed are to ensure that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses. Monitoring measures are also used to reduce the level of takes to the lowest level practicable due to implementation of the mitigation measures.

Monitoring measures for different project are proposed in a case-by-case basis, and there is no "one size fits all" type of monitoring procedures. For the proposed seismic projects in upper Cook Inlet, the radius of the safety zone (370 m, or 1,214 ft) based on the 180 dB re: 1 microPa isopleths is too small to allow accurate and effective acoustic monitoring. As the Joint Nature Conservation Committee (JNCC, 2004) stated that in practice the exclusion zone (safety zone) need be more than 500 m (1,640 ft) to allow for accurate passive acoustic monitoring (PAM). JNCC also noted that in many cases PAM is not as accurate as visual observation when determining range. NMFS believes that in the subject seismic survey projects, where safety zone is sufficient small, passive acoustic monitoring is not warranted. The presence of additional vessels for deploying PAM would only introduce

more noise to the small area where the proposed projects are to occur.

However, as an additional monitoring measure, NMFS requires CPAI to conduct aerial monitoring for its seismic surveys off Beluga River in upper Cook Inlet. A detailed aerial monitoring plan is provided in the Monitoring Section of this document.

Comment 37: The WDCS recommends that at least three marine mammal observers (MMOs) should be available so that two visual observers are on watch at all times during the survey. The Commission expresses its concern that operations at night or under foggy condition may not provide sufficient measure to protect marine mammals. The WDCS recommends that no operations should take place at night or in sea conditions above a sea state 2, where the likelihood of detection of elusive and cryptic cetacean species, in particular beaked whales, *Kogia*, harbor porpoises, and beluga whales dramatically decreases.

Response: NMFS agrees with the WDCS recommendation that at least two MMOs should be available for visual monitoring at all times during the survey, in addition, aerial monitoring will be required for all seismic survey during day-light hours off Beluga River. NMFS does not agree with the WDCS that seismic surveys need to be shut down at night or in sea conditions above Beaufort sea state 2, as the safety zone is small enough (370 m, or 1,214 ft, radius for 180 db re: 1 microPa) and that the action area can be sufficiently monitored with night-vision devices (NVDs), even at Beaufort sea state 2. The comment regarding prohibiting seismic surveys at night is not practicable due to cost consideration and ship time schedule. If the vessel is prohibited from operating during nighttime, the survey would have to be extended for much longer period of time and would not be beneficial to the marine mammal species in the area. In addition, ramp-up prior to initiation of seismic surveys will provide sufficient warning to marine mammals in the project vicinity to temporarily vacate the project area for 1 2 hours. Therefore, NMFS does not believe that monitoring would be compromised as a result of low-light and high waves.

No beaked whales and *Kogia* spp. are expected to occur in Cook Inlet.

Comment 38: The Commission recommends that NMFS provide an assessment of the likelihood of detecting marine mammals at or below the surface within zones of potential impacts, particularly under less than optimal conditions, prior to concluding that these measures will be effective in

ensuring that marine mammals are not exposed to potentially harmful sound levels.

Response: NMFS believes that monitoring measures described in the EA, in addition to aerial surveys monitoring, would detect all marine mammals at or below the surface within zones of potential impacts. Vessel-based monitoring procedures are standard measures that are commonly used during seismic surveys. Especially for the proposed activities, the safety zone is small enough due to the low-intensity airgun array, visual monitoring from the survey vessel by two MMOs is believed to be adequate. Though such monitoring does not guarantee that there would be no marine mammals within the zones of influence during a survey, NMFS also requires the ramp-up procedure before initiation of airgun firing.

Comment 39: The AWI is concerned that ramp-up procedure has been found to attract inquisitive animals to a noise source (no reference provided).

Response: NMFS is not aware of any instances that an inquisitive marine mammal has been attracted to a noise source during ramp-up of a seismic survey. In any case, the IHAs will require that surveyors shut down the airgun as soon as a marine mammal is sighted or believed to be inside the safety zones. An inquisitive marine mammal moving to the ship due to its inquisitive nature to the sound source will be easily spotted before it enters the safety zone.

Comment 40: HSUS states that the safety zone is inadequate to prevent or minimize stress, displacement, and masking.

Response: Regarding the establishment and effectiveness of the safety zone, please referred to *Response to Comment 21*; regarding potential stress, displacement, and masking, please refer to *Responses to Comments 15, 16, 21, 22, 24, and 25*. Please also refer to the EA for a thorough analysis of the mitigation and monitoring measures for the proposed projects.

Other – ESA Listing, Subsistence Harvest, and Paper Reduction Act

Comment 41: CBD believes that the threats facing Cook Inlet beluga are of sufficient magnitude and immediacy that NMFS should proceed with an emergency listing provided by Section 4(b)(7) of the ESA and designate the proposed seismic survey area in upper Cook Inlet as critical habitat. The WDCS recommends that whilst NMFS has categorized habitat according to its value and sensitivity, all habitats that the Cook Inlet beluga whales use should be considered critical.

Response: As detailed in **Federal Register** notice (65 FR 34590, May 31, 2000), NMFS stated that the MMPA and ESA establish a specific regulatory process for limiting subsistence harvest, and neither statute includes emergency provisions to eliminate portions of the process. Since recent subsistence harvest is considered to be the major link directly to the decline of Cook Inlet beluga whales (NMFS, 2005a), therefore, other emergency polices, strategies, or actions would not likely promote recovery.

Critical habitat designations must be based on the best scientific information available, in an open public process, within specific time-frames. Before designating critical habitat, careful consideration must be given to the economic impacts, impacts on national security, and other relevant impacts of specifying any particular area as critical habitat. The Secretary of Commerce may exclude an area from critical habitat if the benefits of exclusion outweigh the benefits of designation, unless excluding the area will result in the extinction of the species concerned.

For additional information regarding Cook Inlet beluga whale conservation, please refer to NMFS' (2005a) *Draft Conservation Plan for the Cook Inlet Beluga Whale (Delphinapterus leucas)*.

Comment 42: AWI states that the proposed project area is home to endangered Steller sea lions and the Cook Inlet beluga whales that are currently being considered by the U.S. Fish and Wildlife Service (FWS) for listing under the ESA.

Response: As stated in the EA, Steller sea lion occurrence is rare in Cook Inlet and its appearance during the project period is unlikely. The Cook Inlet beluga whales are currently being considered by NMFS, not the FWS as mentioned in the comment, for listing under the ESA.

Comment 43: CBD observes that given the very low subsistence take of Cook Inlet belugas authorized in recent years, the injury or mortality of even a single beluga by Conoco/Union Oil's activities could very well have the effect of precluding any subsistence harvest in a given year.

Response: The subsistence take of Cook Inlet belugas by the Alaskan natives is currently managed under an interim harvest management plan developed by the Alaska native organizations and NMFS (69 FR 17973, April 6, 2004) and is not directly related to the proposed action. The proposed action does not authorize any takes by Level A harassment (injury) or death of any marine mammals within the

proposed project area in upper Cook Inlet, nor is such takes anticipated.

Comment 44: The CRE notes that they have not been successful in identifying the Paperwork Reduction Act authorizations that would allow NMFS to collect any seismic permit information.

Response: Applications and reporting requirements for small take authorizations under sections 101(a)(5)(A) and 101(A)(5)(D) of the MMPA have been approved by the Office of Management and Budget under control number 0648–0151.

Description of Marine Mammals Affected by the Activity

Marine mammal species potentially occurring within the proposed action area include the Cook Inlet beluga whales, Steller sea lions, Pacific harbor seals, harbor porpoises, and killer whales. Among these species, only the Steller sea lion is listed as endangered under the ESA, and it is also designated as depleted under the MMPA. The Cook Inlet beluga whale is designated as depleted under the MMPA. General information for these species can be found in Angliss and Outlaw (2006), which is available at the following URL: <http://www.nmfs.noaa.gov/pr/pdfs/sars/ak2005.pdf>. A more detailed description of these species and stocks within Cook Inlet is provided in the January 5, 2007, **Federal Register** (72 FR 536). Therefore, it is not repeated here.

Potential Effects on Marine Mammals and Their Habitat

Seismic surveys using acoustic energy may have the potential to adversely impact marine mammals in the vicinity of the activities (Gordon *et al.*, 2004). The sound source levels (zero to peak) associated with the OBC seismic survey can be as high as 233 – 240 dB re 1 microPa at 1 m. However, most energy is directed downward, and the short duration of each pulse limits the total energy. Received levels within several kilometers typically exceed 160 dB re 1 microPa (Richardson *et al.*, 1995), depending on water depth, bottom type, ice cover, etc. Intense acoustic signals from seismic surveys have been known to cause behavioral alteration such as reduced vocalization rates (Goold, 1996), avoidance (Malme *et al.*, 1986, 1988; Richardson *et al.*, 1995; Harris *et al.*, 2001), and changes in blow rates (Richardson *et al.*, 1995) in several marine mammal species.

The proposed surveys would use a 900-in³ BOLT airgun array consisting of 3 225-in³ airguns and 3 75-in³ airguns. The source level of this array is expected to be considerably lower than

the 1,200-in³ BOLT airgun array used by the U.S. Coast Guard (USCG) vessel *Healy* (70 FR 47792, August 15, 2005). To conservatively assess the received levels from airgun pulses, the USCG's *Healy* modeled data were used to calculate the maximum distances where sound levels would be 190, 180, and 160 dB re 1 microPa rms. The maximum distances where sound levels were estimated at 190, 180, and 160 dB re 1 microPa rms from a single 1,200-in³ BOLT airgun in the northern Beaufort Sea were 313 m (1,027 ft), 370 m (1,214 ft), and 1,527 m (5,010 ft), respectively. However, since the proposed seismic surveys would use a smaller 900-in³ airgun array in an area with soft mud bottom that gradually slopes outward from shore, which is a poor condition for sound transmission (Richardson *et al.*, 1995), the received levels are expected to be significantly lower at these distances.

The seismic surveys would only introduce acoustic energy into the water column and no objects would be released into the environment. The survey vessel would travel at a speed of 4 – 5 knots and the two projects would be conducted in a small area of Cook Inlet for a short period of time.

There is a relative lack of knowledge about the potential impacts of seismic energy on marine fish and invertebrates. Available data suggest that there may be physical impacts on eggs and on larval, juvenile, and adult stages of fish at very close range (within meters) to seismic energy source. Considering typical source levels associated with seismic arrays, close proximity to the source would result in exposure to very high energy levels. Where eggs and larval stages are not able to escape such exposures, juvenile and adult fish most likely would avoid them. In the cases of eggs and larvae, it is likely that the numbers adversely affected by such exposure would be very small in relation to natural mortality. Studies on fish confined in cages that were exposed under intense sound for extended period showed physical or physiological impacts (Scholik and Yan, 2001; 2002; McCauley *et al.*, 2003; Smith *et al.*, 2004). While limited data on seismic surveys regarding physiological effects on fish indicate that impacts are short-term and are most apparent after exposure at very close range (McCauley *et al.*, 2000a; 2000b; Dalen *et al.*, 1996), other studies have demonstrated that seismic guns had little effect on the day-to-day behavior of marine fish and invertebrates (Knudsen *et al.*, 1992; Wardle *et al.*, 2001). It is more likely that fish will swim away upon hearing the approaching seismic impulses

(Engas *et al.*, 1996). Based on the foregoing, NMFS finds preliminarily that the proposed seismic surveys would not cause any permanent impact on the physical habitats and marine mammal prey species in the proposed project area.

Number of Marine Mammals Expected to Be Taken

NMFS estimates that approximately 6 – 57 Cook Inlet beluga whales (average 26 whales) out of a population of 302 whales (NMFS, unpublished data) and a maximum of 30 Pacific harbor seals out of a population of 29,175 seals would be harassed incidentally by the two proposed seismic operations from March to June, 2007. These numbers of take represent 2.0 – 18.9 percent (average 8.6 percent) Cook Inlet beluga whales and less than 0.1 percent of Alaska stock of Pacific harbor seals that could be taken by Level B harassment if no mitigation and monitoring measures are implemented. These numbers are based on the animal density, length of track planned, and the assumption that all animals will be harassed at distances where noise at received level is at and above 160 dB re 1 microPa rms. Beluga whale and harbor seal densities were calculated by dividing the daily counts of whales (ranges from 11 – 99, with an average of 46) and seals (75) by the approximate area (1,248 km², or 482 square miles) surveyed in the Susitna Delta (Beluga River to Pt. MacKenzie) during the most recently published survey for June 2004 (Rugh *et al.*, 2005). Although 18.9 percent of Cook Inlet beluga whales could subject to take by Level B harassment, this estimate was based on an unusually high count of whales on June 3, 2004 in Susitna Delta (from North Foreland to Pt. Mackenzie). Cook Inlet beluga aerial surveys conducted by NMFS in June, 2003 and 2004, provided median counts of whales between 0 – 99, with an average count of 29 whales in the same area. This estimate is conservative as it assumes that all animals exposed by seismic impulses over 160 dB re 1 microPa would be harassed and disturbed. As mentioned earlier that the majority acoustic energy of low frequency airgun impulses falls outside beluga whale's most sensitive hearing range (Richardson *et al.*, 1995), it is most likely that only a portion of whales within the 160 dB re 1 microPa isopleth would be disturbed. In addition, it is also possible that many of the animals would be habituated to this level of acoustic disturbances. Furthermore, mitigation measures, including the ramp-up requirement during the initiation of the seismic operations (see

below) could eliminate most, if not all, startling behavior from animals near the proposed project area. Therefore, NMFS believes that the actual number of Level B harassment takes of Cook Inlet beluga whale would be much lower than the estimated average of 26 whales.

There are no similar population surveys for harbor porpoises, Steller sea lions, and killer whales conducted within the proposed project area. However, based on an abundance survey of harbor porpoises within the entire Cook Inlet (Dahlheim *et al.*, 2000), it is estimated that the population density of harbor porpoise in the entire Inlet is 0.0072 animal per km². Based on this density data, NMFS estimates that about 6 harbor porpoises out of a population of 30,506 porpoises could be harassed incidentally by the two proposed seismic operations from March to June, 2007. This number of take represents less than 0.02 percent of harbor porpoises that could be taken by Level B harassment.

There is no density estimates available for Steller sea lions and killer whales with in Cook Inlet. However, their appearance in Upper Cook Inlet is rare and none of these species were sighted in the upper Inlet during the 2004 survey (Rugh *et al.*, 2005). Therefore, NMFS concludes that the harassment of these species is reasonably believed to be much lower than those of beluga whales and harbor seals.

Effects on Subsistence Needs

The proposed project areas are located 4 – 15 miles (6.4 – 24.1 km) from Tyonek, which is predominately a Dena'ina Athabaskan community. However, these areas are not important subsistence areas for Tyonek hunters. The Tyonek native community has been displaced from many traditional hunting (and trapping and fishing) areas north of Tyonek including Beluga River during the twentieth century. As more non-natives utilized and occupied traditional subsistence areas combined with harvest regulation restrictions, changes in the abundance and distribution of subsistence resources, and other factors, Tyonek native subsistence activities have focused closer to the village. While Tyonek natives may harvest one beluga whale per year and occasionally harbor seals (Huntington, 2000), their primary source of meat is moose (Foster, 1982). Therefore, NMFS believes that the proposed projects would not have an unmitigable adverse impact on the availability of marine mammal species or stocks for subsistence harvest.

Mitigation

The following mitigation measures are required under the IHAs that were issued to CPAI and UOCC for conducting seismic operations in northwestern Cook Inlet. NMFS believes that the implementation of these mitigation measures would result in the least practicable impact on marine mammal species or stocks and their habitat.

Time and Frequency

Seismic operations will be limited from early March to mid-June in portions of northwestern Cook Inlet. During the seismic operations, airguns will only be active for 1 – 2 hours during each of the 3 – 4 slack tide periods, with the vessel moving at a speed of 4 – 5 knots (4.6 – 5.8 mph).

There will be a 1.6 km (1 mile) set back of airguns from the mouth of the Beluga River to comply with Alaska Department of Fish and Game restrictions.

Establishment of Safety Zones

The applicants will establish a 370-m (1,214-ft) radius safety zone for cetaceans and a 313-m (1,027-ft) radius safety zone for pinnipeds for the seismic operations. These safety zone radii were calculated from a model for a 1,200-in³ BOLT array used in the Beaufort Sea where the received sound pressure levels (SPL) attenuated to 180 dB and 190 dB re 1 microPa rms, respectively. Since the data used in calculating the size of safety zones were from a much larger array, while the proposed seismic operations will use a smaller array in an area with poor conditions for sound transmission, NMFS believes that these safety zone radii are conservative. Additional data will be acquired to verify the 190, 180, and 160 dB (rms) distances for the airgun configurations during the proposed seismic operations, and the disturbance could be modified if NMFS finds that the level of take is being exceeded and resulting in higher than a negligible impact on the species or stocks in question. An independent marine acoustic firm, will be used to acquire the data. A scientifically valid sampling design will be followed to collect data at the beginning of the seismic program. The data will be used to calibrate the acoustic model and adjust the safety radii to match the field values for the 190, 180, and 160 dB distances for each array, if different from these estimated values.

Safety zones will be surveyed and monitored prior to, during, and after the airgun seismic operations. A detailed description of marine mammal

monitoring is described in the Monitoring and Reporting section below.

Speed and Course Alteration

If a marine mammal is detected outside the safety radius and based on its position and the relative course of travel is likely to enter the safety zone, the vessel's speed and/or direct course may, when practicable and safe, be changed to avoid the impacts to the animal. The marine mammal activities and movements relative to the seismic and support vessels must be closely monitored to ensure that the animal does not (1) approach the safety radius, or (2) enter the safety zone. If either of these scenarios occur, further mitigation measures must be taken (i.e., either further course alterations or power down or shut down of the airgun(s)).

Power-down Procedures

A power down involves decreasing the number of airguns in use so that the radius of the 180- or 190-dB zone is decreased to the extent that marine mammals are not in the safety zone. During a power-down, one airgun is operated. The continued operation of one airgun is intended to alert marine mammals to the presence of the seismic guns in the area.

If a marine mammal is detected outside the safety zone but is likely to enter the safety zone, and if the vessel's course and/or speed cannot be changed to avoid having the animal enter the safety radius, the airguns must be powered down before the animal is within the safety zone.

Shut-down Procedures

A shut-down occurs when all airgun activity is suspended. The operating airgun(s) must be shut down if a marine mammal approaches the applicable safety zone and a power down still would not likely to keep the animal outside the newly adjusted smaller safety zone. The operating airgun(s) must also be shut down completely if a marine mammal is found within the safety zone during the seismic operations. The shut-down procedure should be accomplished within several seconds (of a "one shot" period) of the determination that a marine mammal is within or about to enter the safety zone.

Following a shut-down, airgun activity will not resume until the marine mammal has cleared the safety zone. The animal will be considered to have cleared the safety zone if it is visually observed to have left the safety zone, or if it has not been seen within the safety zone for 30 minutes.

Ramp-up Procedures

Although marine mammals will be protected from Level A harassment by establishment of a safety zone at a SPL levels of 180 and 190 dB re 1 microPa rms for cetaceans and pinnipeds, respectively, mitigation may not be 100 percent effective at all times in locating marine mammals. In order to provide additional protection to marine mammals near the project area by allowing marine mammals to vacate the area prior to receiving a potential injury, and to further reduce Level B harassment by startling marine mammals with a sudden intensive sound, CPAI and UOCC are required to implement "ramp-up" practice when starting up airgun arrays. Ramp-up will begin with the smallest airgun in the array that is being used for all subsets of the 6-gun array. Airguns will be added in a sequence such that the source level in the array will increase at a rate no greater than 6 dB per 5 minutes. During the ramp-up, the safety zone for the full 6-airgun system will be maintained.

Monitoring

Vessel-based Monitoring

Vessel based monitoring will be conducted by at least two qualified NMFS-approved MMOs. Reticle binoculars (e.g., 7 x 50 Bushnell or equivalent) and laser range finders (Leica LRF 1200 laser range finder or equivalent) would be standard equipment for the monitors.

Vessel-based MMOs will begin marine mammals monitoring at least 30 minutes prior to the planned start of airgun operations and during all periods of airgun operations. MMOs will survey the safety zone to ensure that no marine mammals are seen within the zone before a seismic survey begins. If marine mammals are found within the safety zone, seismic operations will be suspended until the marine mammal leaves the area. If a marine mammal is seen above the water and then dives below, the operator will wait 30 minutes, and if no marine mammals are seen by the MMOs in that time it will be assumed that the animal has moved beyond the safety zone. Observations will also be conducted during all ramp-up procedures to ensure the effectiveness of ramp-up as a mitigation measure. When feasible, observations will also be made during transits, moving cable, and other operations when airguns are inactive.

Data for each distinct marine mammal species observed in the proposed project area during the period of the seismic operations would be collected. Numbers

of marine mammals observed, species identification if possible, frequency of observation, the time corresponding to the daily tidal cycle, and any behavioral changes due to the airgun operations will be recorded and entered into a custom database using a notebook computer. The accuracy of the data entry will be verified by computerized validity data checks as the data are entered and by subsequent manual checking of the database. These procedures will allow initial summaries of data to be prepared during and shortly after the field program, and will facilitate transfer of the data to statistical, graphical, or other programs for further processing and archiving.

Results from the vessel-based observations will provide: (1) Basis for real-time mitigation (airgun shut-down); (2) information needed to estimate the number of marine mammals potentially taken by harassment, which must be reported to NMFS; (3) data on the occurrence, distribution, and activities of marine mammals in the area where the seismic study is conducted; (4) information to compare the distance and distribution of marine mammals relative to the source vessel at times with and without seismic activity; and (5) data on the behavior and movement patterns of marine mammals seen at times with and without seismic activity.

Aerial Monitoring

In addition to vessel monitoring, seismic surveys that will be conducted off the Beluga River between mid-March and mid-May by CPAI will also be required to conduct aerial monitoring. The aerial surveys will: (1) determine the presence and relative numbers of beluga whales between the west side of the Susitna River and North Foreland, (2) determine the location of belugas relative to seismic operations, and (3) record other marine mammals observed during the seismic surveys.

The aerial monitoring area will be centered on the project area plus a buffer (from Susitna River to North Foreland) for detecting belugas before or after they pass through the project area. The boundary for the aerial survey extends approximately 7 mi (11 km) south of the project area to the North Foreland, approximately 7 mi (11 km) north to the Susitna River, West Fork, and 0.25 mi (0.4 km) from shore. The size of the survey area provides a design for observing whales before and during exposure to seismic sounds.

Aerial monitoring will be conducted from a single engine helicopter, which will fly a single transect line paralleling the shoreline along the coast in the project area. The survey will begin from

the north and finish by returning to the Beluga Gas Field, which will be the base of helicopter operations. This pattern will be flown unless observation conditions (glare, etc) require flying from south to north depending on the effect of glare on observations. The helicopter will fly at 1,500 ft (457 m), due to glide path needs, and at a ground speed of 60 knot (111 km/h). This altitude should prevent disturbance of marine mammals and birds by the helicopter noise.

Helicopter monitoring will be conducted at a frequency that reflects the monthly abundance of belugas in the project area (LGL, 2006). The helicopter will be flown once per week in March when few if any whales are expected in the project area. However, should belugas be observed (by helicopter or boat), helicopter will be flown daily until whales are not observed for two consecutive days. Once belugas are no longer observed for two consecutive days, helicopter will be flown once per week in March. Aerial monitoring will be increased to twice a week through mid-April, until such time as belugas are observed, when helicopter will be flown daily until whales are not observed for two consecutive days. After mid-April, aerial monitoring will be conducted daily when the number of belugas transiting through the project area to the upper Cook Inlet is anticipated to be higher. Aerial monitoring will fly 1 – 2 transects shortly before and half (0.50) of a transect during seismic operations, which corresponds to the 3 – 4, 1–2 hour slack tides each day. Half transects are flown during seismic operations to prevent noise interference on the surveys. Half transect flight direction will be determined by the relative position of activities to the helicopter landing location. Aerial monitoring will alternate over various tidal cycles when ever possible, since beluga distribution may vary during the tidal cycles (LGL, 2006).

To the extent consistent with applicable aviation regulation, aerial surveys will be conducted under the following conditions: (1) when the pilot considers it safe to do so; (2) during daylight hours; and (3) during good viewing conditions (ceiling height above 1,500 ft (457 M) and Beaufort Sea States below 4. Flights will also be oriented to minimize sun glare on the observer.

One NMFS-approved MMO will be on the helicopter observing and recording marine mammals, covering the 180o view in front of the helicopter. Space will be made available on the helicopter for NMFS staff to participate in surveys at least twice a month.

Data from aerial monitoring will be recorded on the species, number, group size, location (latitude/longitude), time, date, direction of travel, angle from helicopter as determined by using a clinometer, ceiling height, Beaufort Sea State, glare, weather, tide, real time positions (latitude/longitude) of seismic survey vessel, shooting, and vessel activities. Marine mammal behavior data will be recorded when possible. Observation conditions will be recorded at the start and finish of each survey or whenever conditions change. All information collected during the marine mammal survey and/or reported to the vessel will be recorded on a field form.

Land-based Monitoring

Land-based monitoring will be conducted by the MMO during days when no aerial monitoring is practicable. Monitoring will be conducted at Ladd Landing, a site previously used for land-based observations (LGL, 2006). The MMO will use binoculars to regularly scan the area visible from the land site for marine mammals. Data recorded will include sighting, weather, sea state, glare, amount of viewable area visible, and seismic operation information. Sighting data will include species, number, group size, direction of travel, date, time, and distance from shore.

Reporting

Reports from aerial and land-based monitoring will be faxed or e-mailed to NMFS Anchorage Field Office on a daily basis.

Reports from CPAI and UOCC will be submitted to NMFS within 90 days after the end of the respective projects. The reports will describe the operations that were conducted, the marine mammals that were detected near the operations, and provide full documentation of methods, results, and interpretation pertaining to all monitoring. The reports will also include estimates of the amount and nature of potential “take” of marine mammals by harassment or in other ways.

National Environmental Policy Act (NEPA)

In January 2007, NMFS prepared a draft EA on the issuance of IHAs to CPAI and UOCC to take marine mammals by harassment incidental to conducting seismic operations in upper Cook Inlet, Alaska. The draft EA was released for public review and comment along with the applications and the proposed IHAs. During the 30-day public comment period NMFS received comments from the HSUS, CBD, WDGS, and AWI on the draft EA. All comments

are addressed in full in the Comments and Responses section. Subsequently, NMFS finalized the draft EA and on March 30, 2007, issued a Finding of No Significant Impact on the proposed project.

Endangered Species Act (ESA)

Based on a review conducted by NMFS Alaska Regional Office biologists, it is not likely that any ESA-listed species would be affected due to the proposed seismic operations. Steller sea lions are recorded in these waters, but are considered uncommon in spring and early summer in the proposed project area. Therefore, NMFS has determined that section 7 consultation is not necessary.

Determinations

NMFS has determined that small numbers of beluga whales, Pacific harbor seals, and harbor porpoises may be taken incidental to seismic surveys, by no more than Level B harassment and that such taking will result in no more than a negligible impact on such species or stocks. In addition, NMFS has determined that Steller sea lions and killer whales, if present within the vicinity of the proposed activities could be taken incidentally, by no more than Level B harassment and that such taking would result in no more than a negligible impact on such species or stocks. Although there is no estimated take numbers for Steller sea lions or killer whales available due to their rare occurrence within the project areas. Regardless, given the infrequent occurrence of these species (or none at all), NMFS believes that any take would be significantly lower than those of beluga whales or harbor seals.

While behavioral modifications, including temporarily vacating the area during the project period may be made by these species to avoid the resultant visual and acoustic disturbance, NMFS nonetheless finds that this action would result in no more than a negligible impact on these marine mammal species and/or stocks. NMFS also finds that the proposed action will not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence uses.

In addition, no take by Level A harassment (injury) or death is anticipated or authorized, and harassment takes should be at the lowest level practicable due to incorporation of the mitigation measures described in this document.

Authorization

NMFS has issued IHAs to CPAI and UOCC for the potential harassment of

small numbers of Cook Inlet beluga whales, Pacific harbor seals and harbor porpoises incidental to conducting seismic operations in the northwestern Cook Inlet in Alaska, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated. Likewise, NMFS has issued IHAs for potential harassment of Steller sea lions and killer whales incidental to conducting of seismic operations in the northwestern Cook Inlet in Alaska, provided that previously mentioned mitigation, monitoring, and reporting requirements are incorporated.

Dated: March 30, 2007.

Angela Somma,

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

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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[I.D. 040307A]

Mid-Atlantic Fishery Management Council; Public Meeting

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

ACTION: Notice of a public meeting.

SUMMARY: The Mid-Atlantic Fishery Management Council's Surfclam/Ocean Quahog and Tilefish Committee and Tilefish Advisory Panel will hold a public meeting.

DATES: The meeting will be held on Thursday, April 26, 2007, from 9 a.m. to 4:30 p.m.

ADDRESSES: The meeting will be held at the Crowne Plaza Hotel, 2 Harmon Plaza, Secaucus, NJ; telephone: (201) 348-6900.

Council address: Mid-Atlantic Fishery Management Council; 300 S. New Street, Room 2115, Dover, DE 19904, telephone: (302) 674-2331.

FOR FURTHER INFORMATION CONTACT: Daniel T. Furlong, Executive Director, Mid-Atlantic Fishery Management Council; 300 S. New Street, Room 2115, Dover, DE 19904; telephone: (302) 674-2331, extension 19.

SUPPLEMENTARY INFORMATION: The purpose of this meeting is to review progress regarding Amendment 1 to the Tilefish Fishery Management Plan (FMP). It is expected that preferred management measures will be discussed and identified when possible. Amendment 1 to the Tilefish FMP

addresses: (1) Possible implementation of an Individual Fishing Quota (IFQ) management system for tilefish [initial IFQ allocation, IFQ transferability of ownership, IFQ share accumulation, fees and cost recovery, establish flexibility to revise/adjust IFQ program, establish IFQ reporting requirements, other]; (2) Possible implementation of recreational bag-size limit; (3) Possible implementation of recreational permits and reporting requirements; (4) Potential improvements for monitoring of tilefish commercial landings; (5) Potential revisions to current tilefish reporting requirements (Interactive Voice Response); (6) Possible expansion of and revision to the list of management measures that can be adjusted via the framework adjustment process; (7) Potential revisions to essential fish habitat (EFH) designation; (8) Potential revisions to habitat areas of particular concern (HAPC) designation; (9) Consideration of possible measures to reduce gear impacts on EFH; and, (10) other issues to be considered in Amendment 1.

Although non-emergency issues not contained in this agenda may come before this group for discussion, those issues may not be the subject of formal action during this meeting. Action will be restricted to those issues specifically identified in this notice and any issues arising after publication of this notice that require emergency action under section 305(c) of the Magnuson-Stevens Fishery Conservation and Management Act, provided the public has been notified of the Committee's intent to take final action to address the emergency.

Special Accommodations

The meeting is physically accessible to people with disabilities. Requests for sign language interpretation or other auxiliary aids should be directed to M. Jan Bryan at the Mid-Atlantic Council Office, (302) 674-2331 extension 18, at least 5 days prior to the meeting date.

Dated: April 3, 2007.

Tracey L. Thompson,

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

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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[I.D. /707A]

Annual National Marine Fisheries Service/State Marine Fisheries Directors Meeting

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

ACTION: Notice of open public meetings.

SUMMARY: Notice is hereby given of an annual meeting of the National Marine Fisheries Service (NMFS) and the State Marine Fisheries Directors. This annual meeting provides the opportunity for State and Federal fishery managers to discuss fishery management areas of concern. The meeting will be hosted by the Pacific States Marine Fisheries Commission (PSMFC). All sessions will be open to the public.

DATES: The meeting will be held on May 1 – May 3, 2007. See **SUPPLEMENTARY INFORMATION** for dates, times, and agenda.

ADDRESSES: The meeting will be held at the Hotel Del Coronado, 1500 Orange Avenue, Coronado, CA 92118, (800) HOTELDEL.

FOR FURTHER INFORMATION CONTACT: Chris Moore, Chief, Partnerships and Communications Division, Office of Sustainable Fisheries, NMFS; telephone: (301) 713-2379x165.

SUPPLEMENTARY INFORMATION: As required by section 10(a) (2) of the Federal Advisory Committee Act, 5 U.S.C. App. 2, notice is hereby given of this meeting. This annual meeting provides the opportunity for State Marine Fisheries Directors and Federal fishery managers to discuss fishery management areas of concern.

Tuesday, May 1, 2007

8 a.m. to 8:30 a.m. – Opening remarks and introductions will be presented by Dr. William T. Hogarth, Assistant Administrator for Fisheries, and by Mr. Randy Fisher, Executive Director of PSMFC.

8:30 a.m. to 10 a.m. – Presentations by the three Interstate Marine Fisheries Commissions; overview of state activities, and Gulf States experience with natural disasters.

10:30 a.m. to 11:30 a.m. – Implementation of Magnuson-Stevens Fishery Management and Conservation Act (MSA) will be presented; recreational fisheries registry and recreational fisheries data Marine