catch not tagged would be landed and sold, consistent with the current daily and trip possession landing limits. The EFP would not provide exemptions from the Eastern U.S./Canada Management Area closures, should this area or portions of this area be closed due to attainment of the U.S./Canada TACs of GB cod, GB haddock, or GB yellowtail flounder. Undersized fish would be returned to the sea as quickly as possible. The participating vessels would be required to report all landings in their Vessel Trip Reports.

The goal of this study is to assess haddock movement between stock areas and across closure area boundaries. The proposed project would test existing assumptions about haddock movement rates between the GOM and GB, haddock movement rates between the eastern and western GB regulated areas, and haddock movement rates in and out of the closure areas. Researchers propose to use benthic longline gear consisting of hooks with fabricated baits (Norbait or Trident) that target haddock and reduce cod bycatch. An estimated total of 10,500 Hallmark T-bar tags would be deployed in the closure areas as follows: CA I (38 percent of tags); CA II (9.5 percent of tags); WGOM Closure Area (19 percent of tags); and Cashes (5 percent of tags). The remaining tags would be deployed in open areas of GB (19 percent of tags) and the GOM (9.5 percent of tags). Researchers under this tagging study would be allowed to catch a maximum of 104,052 lb (47,198 kg) of haddock and 3,625 lb (1,645 kg) of cod within the closure areas. Catch limits would reflect tagging effort in closure areas, on GB (62,980 lb (28,567 kg) of haddock, 1,575 lb (715 kg) of cod) and within the GOM (41,072 lb (18,630 kg) haddock, 1,420 lb (644 kg) cod). A total of 35 percent of haddock caught is estimated to be viable for tagging. Thus, vessels would not be allowed to land more 65 percent of their overall haddock catch from the GB (40,937 lb (18,569 kg)) and GOM (26,697 lb (12,110 kg)) closure areas. If any of the maximum limits (haddock caught, haddock landed, or cod caught) is reached within GB or the GOM, vessels would not be allowed to continue fishing in the corresponding closure areas.

The target fishery is the groundfish mixed-species fishery. The main species expected to be caught under this EFP are haddock and Atlantic cod. Other commercially important fish commonly found in the groundfish fishery are expected to be caught incidentally. In the previous study conducted in 2005, the incidental catch that was kept was comprised primarily of cusk and redfish. The incidental catch that was discarded consisted primarily of skates and spiny dogfish. Other species that were encountered were red hake, monkfish, pollock, and wolffish. Of the groundfish stocks of concern, no yellowtail flounder, winter flounder, or witch flounder were caught during year 1 of the study, and minimal amounts of American plaice (approximately 8 lb (4 kg)) and white hake (approximately 38 lb (17 kg)) were caught and landed.

The applicant may make requests to NMFS for minor modifications and extensions to the EFP throughout the year. EFP modifications and extensions may be granted by NMFS without further notice if they are deemed essential to facilitate completion of the proposed research and result in only a minimal change in the scope or impact of the initially approved EFP request. The applicant has prepared a draft Environmental Assessment (EA) that analyzes the impacts of the proposed experimental fishery on the human environment. The draft EA examines whether the proposed activities are consistent with the goals and objectives of the FMP, whether they would be detrimental to the well-being of any stocks of fish harvested, and whether they would have any significant environmental impacts. The draft EA also examines whether the proposed experimental fishery would be detrimental to essential fish habitat, marine mammals, or protected species. After publication of this document in the **Federal Register**, the EFP, if approved, may become effective following a 15-day public comment period.

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

Dated: May 9, 2006.

James P. Burgess,

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

[FR Doc. E6–7272 Filed 5–11–06; 8:45 am]

BILLING CODE 3510–22–S

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[I.D. 042606H]

Small Takes of Marine Mammals Incidental to Open-water Seismic Operations in the Chukchi Sea

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

ACTION: Notice; receipt of application and proposed incidental take authorization; request for comments.

SUMMARY: NMFS has received an application from Conoco Phillips Alaska, Inc, (Conoco) for an Incidental Harassment Authorization (IHA) to take small numbers of marine mammals, by harassment, incidental to conducting open-water seismic data aquisition in the Chukchi Sea during the summer of 2006. Under the Marine Mammal Protection Act (MMPA), NMFS is requesting comments on its proposal to issue an authorization to Conoco to incidentally take, by harassment, small numbers of several species of marine mammals during the seismic survey.

DATES: Comments and information must be received no later than June 12, 2006.

ADDRESSES: Comments on the application should be addressed to Steve Leathery, Chief, Permits, Conservation and Education Division, Office of Protected Resources, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring, MD 20910–3225. The mailbox address for providing email comments is *PR1.042606H@noaa.gov*. NMFS is not responsible for e-mail comments sent to addresses other than the one provided here. Comments sent via e-mail, including all attachments, must not exceed a 10–megabyte file size.

A copy of the application containing a list of the references used in this document may be obtained by writing to the address specified above, telephoning the contact listed below (see **FOR FURTHER INFORMATION CONTACT**), or visiting the internet at: *http://www.nmfs.noaa.gov/pr/permits/incidental.htm*.

Documents cited in this notice may be viewed, by appointment, during regular business hours, at the aforementioned address.

FOR FURTHER INFORMATION CONTACT: Jolie Harrison, Office of Protected Resources, NMFS, (301) 713–2289, ext 166.

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 marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are issued or, if the taking is limited to harassment, a notice of a proposed

authorization is provided to the public for review.

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

Section 101(a)(5)(D) of the MMPA established an expedited process by which citizens of the 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 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 February 2, 2006, NMFS received an application from Conoco for the taking, by harassment, of several species of marine mammals incidental to conducting open-water seismic data aquisition in the Chukchi Sea from July through November, 2006. Seismic surveys such as the one proposed here provide accurate data on the location, extent, and properties of hydrocarbon resources as well as information on shallow geologic hazards and seafloor geotechnical properties to explore, develop, produce, and transport hydrocarbons safely, economically, and in an environmentally safe manner. This information is utilized by both the oil and gas industry and the Minerals Management Service (MMS).

Description of the Activity

Conoco seeks an IHA for conducting open-water seismic surveys between July 1 and November 30, 2006. The seismic vessel planned for use is the MV *Patriot*. Mobilization of operations will occur in mid-July, and seismic operations are proposed to begin in late July. Open water seismic operations are ordinarily confined to no more than this five-month period because of the timing of ice melt and formation, which typically occurs during a four to five month period. The geographic region of activity encompasses a 2500–3600 km^2–area (965–1390 mi^2–area) in the northeastern Chukchi Sea. The approximate boundaries of the region are within 158°00′ W. and 169°00′ W. and 69°00′ N. and 73°00′ N. with eastern boundary located parallel to the coast of Alaska, north of Point Hope to Point Barrow, and ranging 40–180 km (25–112 mi) off the coast. The nearest approximate point of the project to Point Hope is 74 km (46 mi), Point Lay 90 km (56 mi), Wainwright 40 km (25 mi), and Barrow 48 km (30 mi). Water depths are typically less than 50 m (164 ft).

Conoco anticipates a work schedule of approximately 90–100 days to complete the planned 16,576 km (10,300 mi) of trackline, with about 30–percent downtime due to weather, ice conditions, repairs etc. In addition to the primary activity of the seismic vessel, there will also be support vessels. A supply vessel and a fuel bunkering vessel will be employed to bring supplies to the seismic vessel. The seismic crew will most likely be changed out by helicopter and fixed-wing support may be used to report ice conditions if necessary.

Description of Marine 3–D Seismic Data Acquisition

In the seismic method proposed here, reflected sound energy produces graphic images of seafloor and sub-seafloor features. The seismic system consists of sources and detectors, the positions of which must be accurately measured at all times. The sound signal comes from arrays of towed energy sources. These energy sources store compressed air which is released on command from the towing vessel. The released air forms a bubble which expands and contracts in a predictable fashion, emitting sound waves as it does so. Individual sources are configured into arrays. These arrays have an output signal which is more desirable than that of a single bubble and also serves to focus the sound output primarily in the downward direction which is useful for the seismic method. This array effect also minimizes the sound emitted in the horizontal direction.

The downward propagating sound travels to the seafloor and into the geologic strata below the seafloor. Changes in the acoustic properties between the various rock layers result in a portion of the sound being reflected back toward the surface at each layer. This reflected energy is received by detectors called hydrophones, which are housed within submerged streamer cables which are towed behind the seismic vessel. Data from these hydrophones are recorded to produce seismic records or profiles. Seismic profiles often resemble geologic cross-sections along the course traveled by the survey vessel.

Vessel and Seismic Source Specifications

The MV *Patriot* is owned by Western Geco. The MV *Patriot* has a length of 78 m (256 ft), a beam of 17 m (56 ft), a maximum draft of 5.9 m (19.4 ft), and 3586 gross tonnage. During seismic operations, the MV *Patriot* typically travels at 4–5 knots (7.4–9.2 km/hr). The MV *Patriot's* average speed when not using seismic is 12 - 15 knots (22 -28 km/hr).

The energy source for the proposed activity will be air gun array systems towed behind the vessel. There will be six to eight cables approximately 4 km (2.5 mi) in length spaced 100 m (328 ft) apart. Each source array consists of identically tuned Bolt gun sub-arrays operating at 2000 pounds per square inch (psi) air pressure operating about 8 m (26 ft) below the surface. The dominant frequency components are in the range of 5–70 Hz, the source level at those frequencies is about 209 dB, and the pulse length is 50 ms. The arrays will fire on interleaved 50–meter (164–ft) intervals (i.e., approximately every 15 seconds) and they are designed to focus energy in the downward direction. The proposal is to have two air-gun arrays, each approximately 1695^3–in size (27,776–cm^3)(and spaced approximately 50 m (164 ft) apart). Together the two arrays will total approximately 3390^3 in (55,552–cm^3). The airgun array will fire approximately every 25 m (82 ft) as the vessel is traveling at 4 to 5 knots (7.4–9.2 km/hr). The sub-array is composed of six tuning elements; two 2–gun clusters and four single guns. The clusters have their component guns arranged in a fixed side-by-side fashion with the distance between the gun ports set to maximize the bubble suppression effects of clustered guns. A near-field hydrophone is mounted about 1 meter (3.28 ft) above

each gun station (one phone is used per cluster), one depth transducer per position is mounted on the gun's ultrabox, and a high pressure transducer is mounted at the aft end of the sub-array to monitor high pressure air supply. All the data from these sensors are transmitted to the vessel for input into the onboard systems and recording to tape. See Appendix A of the application for additional information on the array configuration.

Conoco will also operate two additional pieces of equipment throughout the planned study that emit sound at a frequency at or near that which a marine mammal could hear. The Simrad EA500 echo-sounder operates at 200 kHz, the maximum output is 185 dB re 1 µPa @ 1m, and the beam is directed downwards and can be up to 33° wide. The Sonardyne SIPS–2 acoustic positioning system operates at 55–110 kHz, the maximum output is 183 dB re 1 µPa @ 1m, and the beam is omnidirectional.

Characteristics of Airgun Pulses

Discussion of the characteristics of airgun pulses has been provided in the application and in previous **Federal Register** notices (see 69 FR 31792, June 7, 2004 or 69 FR 34996, June 23, 2004). Reviewers are referred to those documents for additional information.

Description of Marine Mammals and Habitat Affected by the Activity

A detailed description of the Beaufort and Chukchi sea ecosystems and their associated marine mammals can be found in several documents (Corps of Engineers, 1999; NMFS, 1999; MMS, 2006, 1996 and 1992). MMS' Programmatic Environmental Assessment (PEA) - Arctic Ocean Outer Continental Shelf Seismic Surveys - 2006 may be viewed at: *http://www.mms.gov/alaska/*.

Marine Mammals

A total of five cetacean species (bowhead, beluga, killer, gray, and minke whales) and three pinniped species (ringed, bearded, and spotted seals) are known to occur in the project area. Both minke whales and killer whales are very uncommon in the area and are not expected to be encountered during the seismic survey. One of the species, the bowhead whale, is listed as Endangered under the Endangered Species Act (ESA). Polar bears and the Pacific walrus also occur in the project area, but the U.S. Fish and Wildlife Service is responsible for both of these species and is conducting a separate consultation to ensure compliance with the MMPA, and, therefore, they are not discussed further in this document.

Table 1 includes estimated abundances and densities for the species expected to be potentially encountered during Conoco's seismic surveys. Abundance and density information for bowhead, gray, and beluga whales are based on the estimates provided in LGL's Healy Arctic Cruise Application (2005). In the Conoco application, ringed seal density was based on Bengston et al.'s (2005) estimates of density in the Chukchi Sea recorded in 1999 and 2000. Also in the Conoco application, bearded seal densities were obtained by adjusting the density for ringed seals based on the ratio of bearded to ringed seals observed during surveys in the Chukchi Sea by Brueggerman *et al.* (1990, 1991). Both the bearded and ringed seal densities are likely high, since Bengston *et al.* (2005) surveys included an area south of the project area, where they reported ringed and bearded seal densities were considerablye higher than north of Point Hope, which corresponds to the seismic project area. Accordingly, NMFS also provides the densities estimated by LGL (2005) for comparison. Additional information regarding the distribution of these species and how the estimated densities were calculated may be found in Conoco's application and NMFS' Updated Species Reports at: (*http://www.nmfs.noaa.gov/pr/readingrm/MMSARS/2005alaskasummarySARs.pdf).*

Species		Abundance	Density	Estimated take (w/o mitigation)	Percent of Stock
Bowhead Whale	Balaena mysticetus	10,545	0.0064	418	4.0
Beluga Whale	Delphinapterus leucas	42,968	0.0034	361	0.8
Gray Whale	Eschiritius robustus	18,813	0.0045	481	2.6
Killer Whale	Orcinus orca	>100	N/A	0	0.0
Minke Whale	Balaenoptera acutorostrata	No est. available	N/A	0	0.0
Ringed Seal	Phoca hispida	>249,000	0.25 - 0.53	56,458	10.7 - 22.7
Bearded Seal	Erignathuis barbatus	250,000 - 300,000	0.01 - 0.24	25,567	0.5 - 9.3
Spotted Seal	Phoca largha	59,214	0.0001	100	0.2

Potential Effects on Marine Mammals

Summary of Potential Effects of Airgun Sounds on Marine Mammals

Disturbance by seismic noise is the principal means of taking by this activity. Support vessels and aircraft may provide a potential secondary source of noise. The physical presence of vessels and aircraft could also lead to non-acoustic effects on marine mammals involving visual or other cues. NMFS does not expect any takings to result from operations of the other sound sources discussed (echosounder and acoustic positioning system). For the echosounder , produced sounds are beamed downward, the beam is narrow, the pulses are extremely short, and the sound source is relatively low, and with the acoustic postioning system, the beam is spherical, but the sound source is relatively low. Additionally, in the case of both of these pieces of equipment, the small area ensonified to a level that could potentially disturb marine mammals is entirely subsumed by the louder levels of airgun noise (which will also be running when these equipment are used.)

As outlined in previous NMFS documents, the effects of noise on marine mammals are highly variable, and can be categorized as follows (based on Richardson *et al.*, 1995):

(1) The noise may be too weak to be heard at the location of the animal (*i.e.*, lower than the prevailing ambient noise level, the hearing threshold of the animal at relevant frequencies, or both);

(2) The noise may be audible but not strong enough to elicit any overt behavioral response;

(3) The noise may elicit reactions of variable conspicuousness and variable relevance to the well being of the marine mammal; these can range from temporary alert responses to active avoidance reactions such as vacating an area at least until the noise event ceases;

(4) Upon repeated exposure, a marine mammal may exhibit diminishing responsiveness (habituation), or disturbance effects may persist; the latter is most likely with sounds that are highly variable in characteristics, infrequent and unpredictable in

occurrence, and associated with situations that a marine mammal perceives as a threat;

(5) Any anthropogenic noise that is strong enough to be heard has the potential to reduce (mask) the ability of a marine mammal to hear natural sounds at similar frequencies, including calls from conspecifics, and underwater environmental sounds such as surf noise;

(6) If mammals remain in an area because it is important for feeding, breeding or some other biologically important purpose even though there is chronic exposure to noise, it is possible that there could be noise-induced physiological stress; this might in turn have negative effects on the well-being or reproduction of the animals involved; and

(7) Very strong sounds have the potential to cause temporary or permanent reduction in hearing sensitivity. In terrestrial mammals, and presumably marine mammals, received sound levels must far exceed the animal's hearing threshold for there to be any temporary threshold shift (TTS) in its hearing ability. For transient sounds, the sound level necessary to cause TTS is inversely related to the duration of the sound. Received sound levels must be even higher for there to be risk of permanent hearing impairment. In addition, intense acoustic or explosive events may cause trauma to tissues associated with organs vital for hearing, sound production, respiration and other functions. This trauma may include minor to severe hemorrhage.

Effects of Seismic Surveys on Marine Mammals

NMFS anticipates that the effects of Conoco's seismic surveys on marine mammals will primarily consist of behavioral disturbance, masking (the animals cannot hear the other sounds around them as well while the seismic noise is present), TTS (temporary damage to the auditory tissues), and low-level physiological effects. NMFS is also currently analyzing the potential effects of issuing IHAs to two other companies that have proposed seismic surveys in the Chukchi Sea during the same general time period, and is considering the possibility and effects of marine mammals being exposed to seismic pulses from multiple vessels at the same time.

When the received levels of noise exceed some behavioral reaction threshold, cetaceans will show disturbance reactions. The levels, frequencies, and types of noise that will elicit a response vary between and within species, individuals, context, locations, and seasons. Behavioral changes may be subtle alterations in surface, respiration, and dive cycles. More conspicuous responses include changes in activity or aerial displays, movement away from the sound source, or complete avoidance of the area. The reaction threshold and degree of response are related to the activity of the animal at the time of the disturbance. Whales engaged in active behaviors, such as feeding, socializing, or mating, may be less likely than resting animals to show overt behavioral reactions, unless the disturbance is directly threatening.

Although NMFS believes that some limited masking of low-frequency sounds (e.g., whale calls) is a possibility during seismic surveys, the intermittent nature of seismic source pulses (1 second in duration every 16 to 24 seconds, less than 7 percent)) will limit the extent of masking. Bowhead whales are known to continue calling in the presence of seismic survey sounds, and their calls can be heard between seismic pulses (Greene *et al.*, 1999, Richardson *et al.*, 1986). Masking effects are expected to be absent in the case of belugas, given that sounds important to them are predominantly at much higher frequencies than are airgun sounds (Western Geophysical, 2000).

Hearing damage is not expected to occur during the Conoco seismic survey project. It is not positively known whether the hearing systems of marine mammals very close to an airgun would be at risk of temporary or permanent hearing impairment, but TTS is a theoretical possibility for animals within a few hundred meters of the source (Richardson *et al.*, 1995). However, planned monitoring and mitigation measures (described later in this document) are designed to avoid sudden onsets of seismic pulses at full power, to detect marine mammals occurring near the array, and to avoid exposing them to sound pulses that have any possibility of causing hearing impairment. Moreover, as mentioned previously, bowhead whales avoid an area many kilometers in radius around ongoing seismic operations, precluding any possibility of hearing damage.

Reported species-specific responses of the marine mammals likely to be encountered in the proposed survey area to seismic pulses are discussed later in this section. Masking, TTS, and behavioral disturbance as a result of exposure to low frequency sounds have been discussed in detail in other NMFS documents (70 FR 47797), as well as the 2006 MMS PEA.

In addition to TTS, exposure to intense seismic sounds is likely to result in other physiological changes that have other consequences for the health and ecological fitness of marine mammals. There is mounting evidence that wild animals respond to human disturbance in the same way that they respond to predators (Beale and Monaghan, 2004; Frid, 2003; Frid and Dill, 2002; Gill *et al.*, 2000; Gill and Sutherland, 2001; Harrington and Veitch, 1992; Lima, 1998; Romero, 2004). These responses manifest themselves as interruptions of essential behavioral or physiological events, alteration of an animal's time or energy budget, or stress responses in which an animal perceives human activity as a potential threat and undergoes physiological changes to prepare for a flight or fight response or more serious physiological changes with chronic exposure to stressors (Frid and Dill, 2002; Romero, 2004; Sapolsky *et al.*, 2000; Walker *et al.*, 2005).

Classic stress responses begin when an animal's central nervous system perceives a potential threat to its homeostasis. That perception triggers stress responses regardless of whether a stimulus actually threatens the animal; the mere perception of a threat is sufficient to trigger a stress response (Sapolsky *et al.*, 2005; Seyle, 1950). Once an animal's central nervous system perceives a threat, it develops a biological response or defense that consists of a combination of the four general biological defense responses: behavioral responses, autonomic nervous system responses, neuroendocrine responses, or immune response.

The physiological mechanisms behind stress responses involving the hypothalamus-pituitary-adrenal glands have been well-established through controlled experiment in the laboratory and natural settings (Korte *et al.*, 2005; McEwen and Seeman, 2000; Moberg, 1985; 2000; Sapolsky *et al.*, 2005). Relationships between these physiological processes, animal behavior, neuroendocrine responses, immune responses, inhibition of reproduction (by suppression of pre-ovulatory luteinizing hormones), and the costs of stress responses have also been documented through controlled experiment in both laboratory and free-living animals (for examples see, Holberton *et al.*, 1996; Hood *et al.*, 1998; Jessop *et al.*, 2003; Krausman *et al.*, 2004; Lankford *et al.*, 2005; Reneerkens *et al.*, 2002; Thompson and Hamer, 2000; Tilbrook *et al.*, 2000).

The available evidence suggests that: with the exception of unrelieved pain or extreme environmental conditions, in

most animals (including humans) chronic stress results from exposure to a series of acute stressors whose cumulative biotic costs produce a pathological or pre-pathological state in an animal. The biotic costs can result from exposure to an acute stressor or from the accumulation of a series of different stressors acting in concert before the animal has a chance to recover.

Although few of these responses have been explicitly identified in marine mammals, they have been identified in other vertebrate animals and every vertebrate mammal that has been studied, including humans. Because of the physiological similarities between marine mammals and other mammal species, NMFS believes that acoustic energy sufficient to trigger onset TTS is likely to initiate physiological stress responses. More importantly, NMFS believes that marine mammals might experience stress responses at received levels lower than those necessary to trigger onset TTS, and that some of these stress responses rise to the level of Harassment.

The following species summaries are provided by NMFS to facilitate understanding of our knowledge of impulsive noise impacts on the principal marine mammal species that are expected to be affected.

Bowhead Whales

Seismic pulses are known to cause strong avoidance reactions by many of the bowhead whales occurring within a distance of a few kilometers, including changes in surfacing, respiration and dive cycles, and may sometimes cause avoidance or other changes in bowhead behavior at considerably greater distances (Richardson *et al.*, 1995; Rexford, 1996; MMS, 1997). Studies conducted prior to 1996 (Reeves *et al.*, 1984, Fraker *et al.*, 1985, Richardson *et al.*, 1986, Ljungblad *et al.*, 1988) have reported that, when an operating seismic vessel approaches within a few kilometers, most bowhead whales exhibit strong avoidance behavior and changes in surfacing, respiration, and dive cycles. In these studies, bowheads exposed to seismic pulses from vessels more than 7.5 km (4.7 mi) away rarely showed observable avoidance of the vessel, but their surface, respiration, and dive cycles appeared altered in a manner similar to that observed in whales exposed at a closer distance (Western Geophysical, 2000). In three studies of bowhead whales and one of gray whales during this period, surfacing-dive cycles were unusually rapid in the presence of seismic noise, with fewer breaths per surfacing and longer intervals between breaths (Richardson *et al.*,1986; Koski and Johnson,1987; Ljungblad *et al.*,1988; Malme *et al.*,1988). This pattern of subtle effects was evident among bowheads 6 km (3mi) to at least 73 km (3.7 to 45.3 mi) from seismic vessels. However, in the pre–1996 studies, active avoidance usually was not apparent unless the seismic vessel was closer than about 6 to 8 km (3.7 to 5.0 mi)(Western Geophysical, 2000).

The proposed seismic survey will occur during a time when bowhead whales are migrating west from Canada back across the North Slope of Alaska. Results from the 1996–1998 BP and Western Geophysical seismic program monitoring in the Beaufort Sea indicate that most migrating bowheads deflected seaward to avoid an area within about 20 km (12.4 mi) of an active nearshore seismic operation, with the exception of a few closer sightings when there was an island or very shallow water between the seismic operations and the whales (Miller *et al.*, 1998, 1999). The available data do not provide an unequivocal estimate of the distance at which approaching bowheads begin to deflect, but this may be on the order of 35 km (21.7 mi). It is also uncertain how far beyond (west of) the seismic operation the seaward deflection persists (Miller *et al.*, 1999). Although very few bowheads approached within 20 km (12.4 mi) of the operating seismic vessel, the number of bowheads sighted within that area returned to normal within 12–24 hours after the airgun operations ended (Miller *et al.*, 1999).

Inupiat whalers believe that migrating bowheads are sometimes displaced at distances considerably greater than suggested by pre–1996 scientific studies (Rexford, 1996) previously mentioned in this document. Also, whalers believe that avoidance effects can extend out to distances on the order of 30 miles (48.3 km), and that bowheads exposed to seismic also are ''skittish'' and more difficult to approach. The ''skittish'' behavior may be related to the observed subtle changes in the behavior of bowheads exposed to seismic pulses from distant seismic vessels (Richardson *et al.*, 1986).

Gray Whales

The reactions of gray whales to seismic pulses are similar to those documented for bowheads during the 1980s. Migrating gray whales along the California coast were noted to slow their speed of swimming, turn away from seismic noise sources, and increase their respiration rates. Malme *et al.* (1983, 1984, 1988) concluded that approximately 50 percent of the migrating gray whales showed avoidance when the average received pulse level was 170 dB (re 1 μPa). By some behavioral measures, clear effects were evident at average pulse levels of 160dB or greater; less consistent results were suspected at levels of 140–160 dB. Recent research on migrating gray whales showed responses similar to those observed in the earlier research when the source was moored in the migration corridor 2 km (1.2 mi) from shore. However, when the source was placed offshore (4 km (2.5 mi) from shore) of the migration corridor, the avoidance response was not evident on track plots (Tyack and Clark, 1998).

Beluga

The beluga is the only species of toothed whale (odontocete) expected to be encountered in the Beaufort Sea. Belugas have poor hearing thresholds at frequencies below 200 Hz, where most of the energy from airgun arrays is concentrated. Their thresholds at these frequencies (as measured in a captive situation), are 125 dB re 1 μPa or more depending upon frequency (Johnson *et al.*, 1989). Although not expected to be significantly affected by the noise, given the high source levels of seismic pulses, airgun sounds sometimes may be audible to belugas at distances of 100 km (62.1 mi) (Richardson and Wursig, 1997), and perhaps further if actual low-frequency hearing thresholds in the open sea are better than those measured in captivity (Western Geophysical, 2000). The reaction distance for belugas, although presently unknown, is expected to be less than that for bowheads, given the presumed poorer sensitivity of belugas than that of bowheads for low-frequency sounds.

As noted in the MMS PEA, effects on the immune system from seismic pulses have been documented by Romano *et al.* (2004). They summarized that ''anthropogenic sound is a potential ''stressor'' for marine mammals. Not only can loud or persistent noise impact the auditory system of cetaceans, it may impact health by bringing about changes in immune function, as has been shown in other mammals'' These authors identified neural immune measurements that may be ''implicated as indicates of stress in a beluga and bottlenose dolphin that were either released acutely or changed over time during experimental period.'' Specifically, they found significant increases in aldosterone and a significant decrease in monocytes in a bottlenose dolphin after exposure to single impulsive sounds (up to 200 kiloPascals (kPa)) from a seismic water gun. Neural-immune changes following

exposure to single pure tones (up to 201 dB re 1 microPa) resembling sonar pings were minimal, but changes were observed over time. A beluga whale exposed to single underwater impulses produced by a seismic water gun had significantly higher norepinephrine, dopamine and epinephrine levels after high-level sound exposure (>100 kPa) as compared with low-level exposures (<100kPa) or controls and increased with increasing sound levels.

Ringed, Spotted and Bearded Seals

No detailed studies of reactions by seals to noise from open water seismic exploration have been published (Richardson *et al.*, 1995). However, there are some data on the reactions of seals to various types of impulsive sounds (LGL and Greeneridge, 1997, 1998, 1999a; J. Parsons as quoted in Greene *et al.*, 1985; Anon., 1975; Mate and Harvey, 1985). These studies indicate that ice seals typically either tolerate or habituate to seismic noise produced from open water sources.

Underwater audiograms have been obtained using behavioral methods for three species of phocinid seals, ringed, harbor, and harp seals (*Pagophilus groenlandicus*). These audiograms were reviewed in Richardson *et al.* (1995) and Kastak and Schusterman (1998). Below 30–50 kHz, the hearing threshold of phocinids is essentially flat, down to at least 1 kHz, and ranges between 60 and 85 dB (re 1 microPa @ 1 m). There are few data on hearing sensitivity of phocinid seals below 1 kHz. NMFS considers harbor seals to have a hearing threshold of 70–85 dB at 1 kHz (60 FR 53753, October 17, 1995), and recent measurements for a harbor seal indicate that, below 1 kHz, its thresholds deteriorate gradually to 97 dB (re 1 microPa @ 1 m) at 100 Hz (Kastak and Schusterman, 1998).

While no detailed studies of reactions of seals from open-water seismic exploration have been published (Richardson *et al.*, 1991, 1995), some data are available on the reactions of seals to various types of impulsive sounds (see LGL and Greeneridge, 1997, 1998, 1999a; Thompson et al., 1998). These references indicate that it is unlikely that pinnipeds would be harassed or injured by low frequency sounds from a seismic source unless they were within relatively close proximity of the seismic array. For permanent injury, pinnipeds would likely need to remain in the high-noise field for extended periods of time. Existing evidence also suggests that, while seals may be capable of hearing sounds from seismic arrays, they appear to tolerate intense pulsatile sounds without known effect once they learn that there is no danger associated with the noise (see, for example, NMFS/Washington Department of Wildlife, 1995). In addition, they will apparently not abandon feeding or breeding areas due to exposure to these noise sources (Richardson *et al.*, 1991) and may habituate to certain noises over time.

Proposed Safety Radii

NMFS has determined that for acoustic effects, using established acoustic thresholds in combination with corresponding safety radii is the most effective way to consistently both apply measures to avoid or minimize the impacts of an action and to quantitatively estimate the effects of an action. NMFS believes that cetaceans and pinnipeds should not be exposed to pulsed underwater noise at received levels exceeding, respectively, 180 and 190 dB re 1 µPa (rms) to avoid permanent physiological damage (Level A Harassment). NMFS also assumes that cetaceans or pinnipeds exposed to levels exceeding 160 dB re 1 µPa (rms) experience Level B Harassment. Thresholds are used in two ways: (1) To establish a mitigation shut-down or power down zone, i.e., if an animal enters an area calculated to be ensonified above the level of an established threshold, a sound source is powered down or shut down; and (2) to calculate take, in that a model may be used to calculate the area around the sound source that will be ensonified to that level or above, then, based on the estimated density of animals and the distance that the sound source moves, NMFS can estimate the number of marine mammals that may be ''taken''.

In order to implement shut-down zones, or to estimate how many animals may potentially be exposed to a particular sound level using the acoustic thresholds described above, it is necessary to understand how sound will propagate in a particular situation. Models may be used to estimate at what distance from the sound source the water will be ensonified to a particular level. Safety radii represent the estimated distance from the sound source at which the received level of sound would be 190, 180, and 160 dB.

Conoco's application contains their initial proposed safety radii and take estimates. However, the initial model Conoco used did not take into consideration either the physical characteristics of the Chukchi Sea or the fact that the water was only 50 m deep, and NMFS was concerned that the proposed radii were too small. Subsequently, Conoco adopted a new model and submitted new proposed safety and take estimates. They used an advanced airgun array source model to predict the 190, 180, and 160 dB isopleths for the proposed seismic survey in the Chukchi Sea. This model simulates the throttled injection of high-pressure air from airgun chambers into underwater air bubbles, simulates the complex oscillation of each bubble, taking into account the hydrostatic pressure effects of the pressure waves from all other airguns, and includes effects such as surface-reflected pressure waves, heat transfer from bubble to the surrounding water, and the buoyancy of the bubbles. The model also takes into consideration the bathymetry, water properties, and geoacoustic properties of the sea bed layers in the proposed survey area. The calculated safety radii from this model are as follows: the 190–dB radius is 230 m (754 ft), the 180–dB radius is 850 m (2,788), and the 160–dB radius is 4,590 m (2.85 mi).

Though the model considers some of the site-specific characteristics of the Chukchi Sea, because no sound propagation studies have previously been conducted in the proposed survey area (against which model results can be prepared) NMFS believes that it is appropriate and necessary to field-verify the modeled safety radii. Accordingly, field verification will be conducted prior to initiation of the seismic survey and, until that time, Conoco will multiply the modeled 190–dB and 180–dB safety radii by 1.5 (which equals 345 m (1121 ft) and 1,275 m (4, 174 ft), respectively) to conservatively establish the mitigation shutdown zones for marine mammals (see Mitigation section). The 1.5 correction factor will not be used in the take estimations.

Field verification will be conducted using an autonomous ocean bottom hydrophone. This hydrophone is suspended (upward, by float) from an anchor dropped to the ocean floor, and then released to the surface for data collection when a particular frequency tone is directed at the hydrophone. The MV *Patriot* will run directly, in a straight line, at, over, and past the hydrophone to establish received sound levels at distances in front of and behind the sound source. Then, the MV *Patriot* will do a lawnmower type zig-zag sideways to the hydrophone so that received levels at varying distances to the side of the sound source may be measured. Because of the shape of the array, sound propagates farther laterally from the source than forward or backward, so both orientations are measured, then a conservative combination of the two is used to calculate the safety radii. NMFS will use the field verified safety radii to establish

power-down and shut-down zones for the MV *Patriot*.

Estimated Take by Incidental Harassment for Conoco's Proposed Seismic Survey

Given the proposed mitigation (see Mitigation later in this document), all anticipated takes will consist of Level B harassment, at most. The proposed mitigation measures are expected to minimize or eliminate the possibility of Level A harassment or mortality. Additionally, these numbers do not take into consideration either the effectiveness of the mitigation measures or the fact that some species will avoid the sound source at distances greater than those estimated to result in a take.

It is difficult to make accurate, scientifically defensible, and observationally verifiable estimates of the number of individuals likely to be subject to Level B Harassment by the noise from Conoco's airguns. There are many uncertainties in marine mammal and seasonally varying abundance, in local horizontal and vertical distribution; in marine mammal reactions to varying frequencies and levels of acoustic pulses; and in perceived sound levels at different horizontal and oblique ranges from the source.

NMFS beleieves the best estimate of potential ''take by harassment'' is derived by multiplying the estimated densities (per square kilometer) of each species within the proposed survey area by the width of the 160–dB safety radii (4,590 m (2.85 mi)) over the length of Conoco's estimated trackline (16,576 km (10,300)). Since Conoco revised their safety radii after submitting their application, the estimated take numbers presented here are higher than those predicted in their application. The total estimated ''take by harassment'' is presented in Table 1. As mentioned previously, the upper limit of estimated take for ringed and bearded seals suggested in Table 1 is most likely an overestimate, as it is based on surveys of the animals conducted nearer to shore, where densities are higher than they are off-shore where the seismic surveys will be conducted.

Potential Effects on Habitat

Conoco states that the proposed seismic survey will not cause any permanent impact on habitats and the prey used by marine mammals. A broad discussion on the various types of potential effects of exposure to seismic on fish and invertebrates can be found in LGL (2005; University of Alaska-Fairbanks Seismic Survey across Arctic Ocean at *http://www.nmfs.noaa.gov/pr/permits/incidental.htm#iha*), and includes a summary of direct mortality (pathological/ physiological) and indirect (behavioral) effects.

Mortality to fish, fish eggs and larvae from seismic energy sources would be expected within a few meters (0.5 to 3 m (1.6 to 9.8 ft)) from the seismic source. Direct mortality has been observed in cod and plaice within 48 hours of being subjected to seismic pulses two meters from the source (Matishov, 1992), however other studies did not report any fish kills from seismic source exposure (La Bella *et al.,* 1996; IMG, 2002; Hassel *et al.,* 2003). To date, fish mortalities associated with normal seismic operations are thought to be slight. Saetre and Ona (1996) modeled a worst-case mathematical approach on the effects of seismic energy on fish eggs and larvae, and concluded that mortality rates caused by exposure to seismic are so low compared to natural mortality that issues relating to stock recruitment should be regarded as insignificant.

Limited studies on physiological effects on marine fish and invertebrates to acoustic stress have been conducted. No significant increases in physiological stress from seismic energy were detected for various fish, squid, and cuttlefish (McCauley *et al.*, 2000) or in male snow crabs (Christian *et al.*, 2003). Behavioral changes in fish associated with seismic exposures are expected to be minor at best. Because only a small portion of the available foraging habitat would be subjected to seismic pulses at a given time, fish would be expected to return to the area of disturbance anywhere from 15–30 minutes (McCauley *et al.*, 2000) to several days (Engas *et al.*, 1996).

Available data indicates that mortality and behavioral changes do occur within very close range to the seismic source, however, the proposed seismic acquisition activities in the Chukchi are predicted by Conoco to have a negligible effect to the prey resource of the various life stages of fish and invertebrates available to marine mammals occurring during the project's duration. The planned Conoco trackline is 16,576 km (10,300 ft) long, and will encompass approximately a 2500–3600 km^2–area (965–1390 mi^2–area) in the northeastern Chukchi Sea. Only a small fraction of the available habitat would be impacted by noise at any given time during the seismic surveys, and the constant movement of the seismic vessel would prevent any area from sustaining high noise levels for extended periods of time. Disturbance to fish species would most likely be short-term and temporary. Similarly, concentrations of zooplankton consumed by mysticetes would only respond to a seismic impulse very close to the source, where they may scatter before regrouping after the seismic vessel passes. Thus, the proposed activity is not expected to have any effects on habitat or prey that could cause permanent or long-term consequences for individual marine mammals or their populations, since operations will be limited in duration, location, timing, and intensity.

Potential Effects on Subsistence Use of Marine Mammals

Marine mammals are key in the subsistence economies of the communities bordering the seismic survey area, including Barrow, Wainwright, Point Lay, and Point Hope. Other communities that subsist on marine mammals are considerably beyond the project area, and their subsistence activities are unlikely to be affected by the seismic operations in the Chukchi Sea. The whale harvests have a great influence on social relations by strengthening the sense of Inupiat culture and heritage in addition to reinforcing family and community ties.

Bowhead whales are important for subsistence at all of the villages bordering the project area except Point Lay, which does not hunt bowhead whales. The harvest is based on a quota, established by the International Whaling Commission (IWC) and regulated by agreement between Alaska Eskimo Whaling Commission (AEWC) and NMFS, according to the cultural and nutritional needs of Alaska Eskimos as well as on estimates of the size and growth of the stock of bowhead whales (Suydam and George 2004). In 2002 the IWC set a 5–year block quota of 67 strikes per year with a total landed not to exceed 280 whales (IWC 2003). The most recent data show that 37, 35, and 36 whales were landed in 2000–2004 for a total of 108 whales (Suydam and George 2004, Suydam *et al.* 2005). Between 23 and 28 were taken at Point Hope, Wainwright, and Barrow during these years, with most (60–90 percent) taken by Barrow each year.

Bowheads are hunted during the spring and fall migrations. Point Hope and Wainwright only hunt during the spring migration whereas Barrow hunts during the spring and fall migrations. Barrow takes most bowheads during the spring migration. The spring bowhead hunt occurs after leads open due to the deterioration of pack ice, which typically occurs from early April until the first week of June. Because of the timing, the Spring hunts of Point Hope, Wainwright, and Barrow should not be affected by seismic operation, since the

hunt should be completed before the start of seismic operations in July.

The autumn hunt at Barrow usually begins in mid-September, and mainly occurs in the waters east and northeast of Point Barrow in the Beaufort Sea. The whales have usually left the Beaufort Sea by late October (Treacy 2002a,b). The location of the fall hunt depends on ice conditions, which can influence distance of whales from shore (Brower, 1996). Hunters prefer to take bowheads close to shore to avoid a long tow during which the meat can spoil, but Braund and Moorehead (1995) report that crews may (rarely) pursue whales as far as 80 km, and in 2004 hunters harvested a whale up to 50 km northeast of Barrow (Suydam *et al.*, 2005). Conoco asserts that though some whales are reported off Barrow in summer between migrations, subsistence at Barrow should not be affected by seismic operations since the location of the hunt is a considerable distance from the project area (Craig George, personal communications).

Beluga whales are hunted for subsistence at Barrow, Wainwright, Point Lay, and Point Hope, with the most taken by Point Lay (Fuller and George 1997). Point Lay harvests belugas primarily during summer in Kasegaluk Lagoon, where they averaged 40 belugas per year over a 10–year period (Fuller and George, 1997). Compared to Point Lay, small numbers of belugas are harvested by Barrow with intermediate numbers harvested by Point Hope and Wainwright. Harvest at these villages generally occurs between April and July, with most taken in April and May when pack-ice conditions deteriorate and leads open up. Hunters usually wait until after the bowhead whale hunt to hunt belugas. The Alaska Beluga Whale Committee recorded 23 beluga whales harvested by Barrow hunters from 1987 to 2002, ranging from 0 in 1987, 1988 and 1995 to the high of 8 in 1997 (Fuller and George, 1999; Alaska Beluga Whale Committee 2002 in USDI/BLM 2005). The time of the project will not overlap hunts at Point Hope, Wainwright, and Barrow, and Point Hope and Barrow should be largely beyond any influence of the project activities. Point Lay villagers hunt in Kasegaluk Lagoon, which is beyond the influence of the project activities. Furthermore, the lagoon is shallow and close to shore, which would greatly reduce any underwater seismic noise, in the unlikely event noise reached the lagoon.

Ringed, bearded, and spotted seals are hunted by all of the villages bordering the project area (Fuller and George 1997). Ringed seals comprise the largest part of the subsistence hunt and spotted seal the least, particularly at Barrow where they are primarily hunted near shore. Spotted seals are considerably more abundant in the Chukchi than Beaufort Sea. At Barrow, spotted seals are primarily hunted in Admiralty Bay, which is about 60 km east of Barrow. The largest concentrations of spotted seals in Alaska are in Kasegaluk Lagoon, where Point Lay hunters harvest them. (Frost et al. 1993). Braund et al. (1993) found that the majority of bearded seals taken by Barrow hunters are within approximately 24 km (15 mi) off shore. Ringed and bearded seals are hunted throughout the year, but most are taken in May, June, and July when ice breaks up and there is open water instead of the more difficult hunting of seals at holes and lairs. The timing slightly varies among villages, with peak hunting occurring incrementally later going from Point Hope to Barrow. Spotted seals are only hunted in spring through summer, since they winter in the Bering Sea. The seismic operation should have little to no effect on subsistence hunting since the seismic survey will no more than minimally overlap the end of the primary period when seals are harvested, and most hunting at the villages will be a considerable distance away from seismic operations, particularly at Point Hope (74 km (46 mi)) and Point Lay (90 km (56 mi)).

Natives in Alaska are very concerned about how seismic operations in the Chukchi Sea will impact their subsistence harvest of marine mammals. NMFS shares these concerns and some of the studies presented in the Effects section of this document further validate them. NMFS notes, though, that some of the types of behaviors that may affect the subsistence harvest may not be considered MMPA Harassment (such as a minor migration route deflection). Following are a few of their primary concerns:

(1) Native knowledge suggests that sound from seismic surveys may cause bowhead whales or other subsistence stocks to change their behavior or migratory patterns in such a way that they are not present in traditional hunting grounds or in historical numbers. If so, natives may be unable to harvest any animals, or will have to harvest them from such a distance that the animal may spoil during the long tow back and human safety risks are increased during the extended trip.

(2) Native knowledge indicates that bowhead whales become increasingly ''skittish'' in the presence of seismic noise. Whales are more wary around the hunters and tend to expose a much smaller portion of their back when surfacing (which makes harvesting more difficult). Additionally, natives report that bowheads exhibit angry behaviors in the presence of seismic, such as tail-slapping, which translate to danger for nearby subsistence harvesters.

(3) Natives are concerned that the cumulative effects of increased numbers of concurrent seismic surveys in the Chukchi and Beaufort Seas may have population-level effects on subsistence stocks that will permanently affect their subsistence harvest. An additional concern is the perception of the increased risk of population-level effects by the IWC, which could decide to lower the subsistence quotas for Alaska or reduce them to zero.

Plan of Cooperation

Regulations at 50 CFR 216.104(a)(12)(i) require IHA applicants for activities that take place in Arctic waters to provide a plan of cooperation (POC) or information that identifies what measures have been taken and/or will be taken to minimize any adverse effects on the availability of marine mammals for subsistence purposes. Representatives of Conoco have been in continued coordination with the AEWC and met with the whaling captains of the potentialy affected villages in March, 2006. Additionally, both Conoco and the AEWC had representatives present at the Open-Water Seismic meeting held in Alaska in April and further negotiated appropriate measures to minimize impacts to the subsistence harvest. Conoco is currently working on a Conflict Avoidance Agreement (CAA) with the AEWC.

Conoco anticipates signing the CAA sometime this spring. The CAA will incorporate all appropriate measures and procedures regarding the timing and areas of the operator's planned activities (*i.e.*, times and places where seismic operations will be curtailed or moved in order to avoid potential conflicts with active subsistence whaling and sealing); communications system between operators vessels and whaling and hunting crews; provision for marine mammal observers/Inupiat communicators aboard all project vessels; conflict resolution procedures; and provisions for rendering emergency assistance to subsistence hunting crews.

Based on our understanding of what the finalized CAA will contain, as well as some additional mitigation and monitoring measures discussed later in this document (see Mitigation), NMFS has preliminarily determined that the proposed activity will not have an unmitigable adverse impact on the

subsistence harvest of the affected species or stocks.

Mitigation and Monitoring

Three categories of mitigation and monitoring measures are discussed in the following section. In the first subsection, the mitigation and monitoring measures proposed by Conoco in their application are discussed. In the second subsection an additional comprehensive monitoring plan, which Conoco has agreed to in concept, but not in every detail, is discussed. The third subsection refers to an additional set of mitigation measures that are intended to ensure that NMFS' can adopt MMS' PEA to meet our NEPA responsibility for the issuance of an IHA to Conoco, and subsequently issue a Finding of No Significant Impact.

Mitigation and Monitoring Measures Proposed in Conoco's Application

Mitigation

Conoco's application indicates that both a 16–gun array and, occasionally, a 24–gun array will be used to acquire data during the proposed seismic survey. However, subsequent to discussions at the Alaska Open-Water Seismic meeting of how to reduce effects to marine mammals, Conoco has redesigned their survey plan to use only the 16–array gun.

Conoco's proposed mitigation measures include (1) speed or course alteration, provided that doing so will not compromise operational safety requirements, (2) power-or shutdown procedures, and (3) no start up of airgun operations unless the full 180 dB safety zone is visible for at least 30 minutes during day or night. Details regarding these measures are provided below:

Speed or Course Alteration: If a marine mammal is detected outside the safety radius and, based on its position and the relative motion, is likely to enter the safety radius, the vessel's speed and/or direct course may, when practical and safe, be changed in a way that avoids the marine mammal and also minimizes the effect on the seismic program. The marine mammal activities and movements relative to the seismic vessel will be closely monitored to ensure that the marine mammal does not approach within the safety radius. If the mammal appears likely to enter the safety radius, further mitigative actions will 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 such that the radius of the 180–dB (or 190–dB) zone is decreased to the extent that marine mammals are not in the safety zone. A power down may also occur when the vessel is moving from one seismic line to another. 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 vessel in the area. In contrast, a shut down occurs when all airgun activity is suspended. If a marine mammal is detected outside the safety radius but is likely to enter the safety radius, and if the vessel's speed and/or course cannot be changed to avoid having the mammal enter the safety radius, the airguns may (as an alternative to a complete shut down) be powered down before the mammal is within the safety radius. Likewise, if a mammal is already within the safety zone when first detected, the airguns will be powered down if doing so leaves the animals outside of the new safety radii around the airguns still operating, else they will be shut down. Following a power 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 by marine mammal observers (MMOs) to have left the safety zone, or
- Has not been seen within the zone for 15 min in the case of pinnipeds or belugas, or
- Has not been seen within the zone for 30 min in the case of bowhead, gray, or killer whales.

Shut-down Procedures: The operating airgun(s) will be shut down completely if a marine mammal approaches or enters the safety radius and a power down will not succeed in removing the animal from within the 180 dB isopleth. The operating airgun(s) will also be shut down completely if a marine mammal approaches or enters the estimated safety radius of the source that would be used during a power down. The shutdown 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. Airgun activity will not resume until the marine mammal has cleared the safety radius. The animal will be considered to have cleared the safety radius if it is visually observed to have left the safety radius, or if it has not been seen within the radius for 15 minutes (beluga and seals) or 30 minutes (bowhead, gray, and killer whales).

Ramp-up Procedures: A ''ramp up'' procedure will be followed when the airgun array begins operating after a specified-duration period without airgun operations. Under normal operation conditions (4–5 knots (7.4–9.2 km/hr)) a ramp-up would be required after a ''no shooting'' period lasting 2 minutes or longer. NMFS normally requires that the rate of ramp up be no more than 6 dB per 5 minute period. The specified period depends on the speed of the source vessel and the size of the airgun array that is being used. Ramp up will begin with the smallest gun in the array that is being used for all subsets of the array. Guns 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, which is the normal rate of ramp up for larger airgun arrays. During the ramp up (i.e., when only one airgun is operating), the safety zone for the full 16–airgun system will be maintained.

If the complete safety radius has not been visible for at least 30 minutes prior to the start of operations in daylight or nighttime, ramp-up will not commence unless one gun has been operating during the interruption of seismic survey operations. This means that it will not be permissible to ramp up the source from a complete shut down in thick fog or at other times when the full safety zone is not visible (i.e., sometimes at night). If the entire safety radius is visible using vessel lights and/or Night Vision Devices (NVDs) (as may be possible under moonlit and calm conditions), then start up of the airguns from a shut down may occur at night. If one airgun has operated during a power-down period, ramp up to full power will be permissible at night or in poor visibility, on the assumption that marine mammals will be alerted to the approaching seismic vessel by the sounds from the single airgun and could move away if they choose. Ramp-up of the airguns will not be initiated if a marine mammal is sighted within or near the applicable safety radii during the day or a night. For operations in the Chukchi during summer and autumn months, there will be enough daylight to monitor beyond a 12–hour cycle.

Monitoring

Vessel-based observers will monitor marine mammals near the seismic vessel during: (1) all daytime hours; (2) 30 minutes before all start ups (day or night), and (3) at night when marine mammals are suspected (based on observations of the bridge crew) of either approaching or being within the safety radii. When feasible, observations will also be made during daytime periods during transits and other operations when guns are inactive.

During seismic operations observers will be based aboard the vessel. Marine

mammal observers (MMOs) will be hired by Conoco, with NMFS approval. One resident from the North Slope Borough, preferably from Point Hope, Point Lay, Wainwright, or Barrow, who is knowledgeable about marine mammals of the project area will to be included in the MMO team aboard the vessel. Observers will follow a schedule so at least two observers will simultaneously monitor marine mammals near the seismic vessel during ongoing daytime operations and nighttime start ups of the airgun. Use of two simultaneous observers will increase the proportion of the animals present detected near the source vessel. MMO(s) will normally be on duty in shifts no longer than 4 hours. The vessel crew will also be instructed to assist in detecting marine mammals and implementing mitigation requirements (if practical). Before the start of the seismic survey the crew will be given additional instruction on how to do so.

The vessel is a suitable platform for marine mammal observations. When stationed on the flying bridge, the eye level will be approximately 10 m (32.8 ft) above sea level, and the observer will have an unobstructed view around the entire vessel. If surveying from the bridge, the observer's eye level will be about 10 m (32.8 ft) above sea level and approx. 25° of the view will be partially obstructed directly to the stern by the stack. During daytime, the MMO(s) will scan the area around the vessel systematically with reticle binoculars (e.g., 7 50 Bushnell or equivalent) and with the naked eye. Laser range finders (Leica LRF 1200 laser rangefinder or equivalent) will be available to assist with distance estimation. They are useful in training observers to estimate distances visually, but are generally not useful in measuring distances to animals directly. During darkness, NVDswill be available (ITT F500 Series Generation 3 binocular-image intensifier or equivalent), if and when required.

MMOs will collect the following data during their watch:

(1) Marine mammals – species, number, age/size/gender, behavior, movement, distance and bearing from ship, point of closest approach;

(2) Ship – location, heading, speed, seismic state, time, other ships; and

(3) Environment – sea state, ice cover, visibility, glare.

When mammals are detected within or about to enter the designated safety radius, the airgun(s) will be powered down (or shut down if necessary) immediately. The observer(s) will continue to maintain watch to determine when the animal(s) are outside the safety radius. Airgun operations will not resume until the animal is outside the safety radius. The animal will be considered to have cleared the safety radius if it is visually observed to have left the safety radius, or if it has not been seen within the radius for 15 minutes (beluga whales and seals) or 30 minutes (gray, bowhead, and killer whales).

All observations and airgun shut downs will be recorded in a standardized format. Data will be 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) The basis for real-time mitigation (airgun shut-down and power-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.

(5) Data on the behavior and movement patterns of marine mammals seen at times with and without seismic activity.

Reporting

A report will be submitted to NMFS within 90 days after the end of the project. The report will describe the operations that were conducted and the marine mammals that were detected near the operations. The report will be submitted to NMFS, providing full documentation of methods, results, and interpretation pertaining to all monitoring. The 90–day report will summarize the dates and locations of seismic operations, and all marine mammal sightings (dates, times, locations, activities, associated seismic survey activities), ship data, and environmental data. The report will also include estimates of the amount and nature of potential exposure of marine mammals to seismic sound levels above the Level B Harassment threshold.

Additional Comprehensive Monitoring Plan

On April 19–20, 2006, NMFS held a scientific peer-review meeting in Anchorage, AK to discuss appropriate mitigation and monitoring measures for Arctic Ocean seismic activities in 2006. The workshop participants recommended several monitoring measures to increase our knowledge of marine mammal distribution and abundance in the Chukchi Sea. These included use of passive acoustics, either towed from a vessel or set out in a series of arrays along the Chukchi Sea coast. As of the publication date of this notice, Conoco is studying these recommendations and will inform NMFS prior to the close of the comment period on this document.

Additional Mitigation and Monitoring Measures Required by NMFS

The 2006 MMS PEA, which is still open for public comment, contains multiple alternatives with several different mitigation and monitoring measures beyond those proposed by Conoco in their IHA application, such as more effective monitoring methods and expanded power-down and shut-down zones for bowhead and gray whales during certain periods of time. NMFS' final IHA may include some portion and combination of those additional mitigation and monitoring measures.

Endangered Species Act

Under section 7 of the ESA, the MMS has begun consultation on the proposed seismic survey activities in the Beaufort and Chukchi seas during 2006. NMFS will also consult on the issuance of the IHA under section 101(a)(5)(D) of the MMPA to Conoco for this activity. Consultation will be concluded prior to a determination on the issuance of an IHA.

National Environmental Policy Act (NEPA)

The MMS has prepared a Draft PEA for the 2006 Arctic Outer Continental Shelf (OCS) Seismic Surveys. NMFS is a cooperating agency in the preparation of the Draft PEA. NMFS is reviewing this PEA and will either adopt it or prepare its own NEPA document before making a determination on the issuance of Arctic Ocean OCS seismic surveys in 2006. A copy of the MMS Draft PEA for this activity is available upon request and is available online (see **ADDRESSES**).

Preliminary Conclusions

Summary

Based on the information provided in Conoco's application and the MMS PEA, NMFS has preliminarily determined that the impact of Conoco conducting seismic surveys in the northeastern Chukchi Sea in 2006 will have a negligible impact on marine mammals and that there will not be any unmitigable adverse impacts to subsistence communities, provided the mitigation measures required under the authorization are implemented and a CAA is implemented.

Potential Impacts on Marine Mammals

NMFS has preliminarily determined that the relatively short-term impact of conducting seismic surveys in the U.S. Chukchi Sea may result, at worst, in a temporary modification in behavior by certain species of marine mammals and/or low-level physiological effects (Level B Harassment). While behavioral and avoidance reactions may be made by these species in response to the resultant noise, this behavioral change is expected to have a negligible impact on the affected species and stocks of marine mammals.

While the number of potential incidental harassment takes will depend on the distribution and abundance of marine mammals (which vary annually due to variable ice conditions and other factors) in the area of seismic operations, the number of potential harassment takings is estimated to be relatively small in light of the population size (see Table 1).

In addition, no take by death and/or serious injury is anticipated, and the potential for temporary or permanent hearing impairment will be avoided through the incorporation of the proposed mitigation measures described in this document. This preliminary determination is supported by (1) the likelihood that, given sufficient notice through slow ship speed and ramp-up of the seismic array, marine mammals are expected to move away from a noise source that it is annoying prior to its becoming potentially injurious; (2) recent research that indicates that TTS is unlikely (at least in delphinids) until levels closer to 200–205 dB re 1 microPa are reached rather than 180 dB re 1 microPa; (3) the fact that the 200–205 dB isopleth (see number 2 above) would be very close to the vessel; and (4) the likelihood that marine mammal detection ability by trained observers is close to 100 percent during daytime and remains high at night out to the distance from the seismic vessel that corresponds to the 205 dB isopleth.

Finally, no known rookeries, mating grounds, areas of concentrated feeding, or other areas of special significance for marine mammals are known to occur within or near the planned areas of operations during the season of operations.

Potential Impacts on Subsistence Uses of Marine Mammals

Preliminarily, NMFS believes that the proposed seismic activity by Conoco in the northern Chukchi Sea in 2006, in combination with other seismic and oil and gas programs in these areas, will not have an unmitigable adverse impact on the subsistence uses of bowhead whales and other marine mammals. This preliminary determination is supported by the following: (1) Seismic activities in the Chukchi Sea will not begin until after July 10 by which time the spring bowhead hunt is expected to have ended; (2) the fall bowhead whale hunt in the Beaufort Sea will be governed by a CAA between Conoco and the AEWC and village whaling captains, which includes conditions that will significantly reduce impacts on subsistence hunters; (4) while it is possible, but unlikely, that accessibility to belugas during the spring subsistence beluga hunt could be impaired by the survey, very little of the proposed survey is within 25 km (15.5 mi) of the Chukchi coast, meaning the vessel will usually be well offshore away from areas where seismic surveys would influence beluga hunting by communities; and (5) because seals (ringed, spotted, bearded) are hunted in nearshore waters and the seismic survey will remain offshore of the coastal and nearshore areas of these seals, it should not conflict with harvest activities.

Proposed Authorization

As a result of these preliminary determinations, NMFS proposes to issue an IHA to Conoco for conducting a seismic survey in the northern Chukchi Sea in 2006, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated.

Dated: May 8, 2006.

Donna Wieting,

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

[FR Doc. 06–4434 Filed 5–9–06; 1:01 pm]

BILLING CODE 3510–22–S

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[I.D. 031704B]

Taking and Importing Marine Mammals; Taking Marine Mammals Incidental to Conducting Air-to-Surface Gunnery Missions in the Gulf of Mexico

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

ACTION: Notice of issuance of an incidental harassment authorization.

SUMMARY: In accordance with provisions of the Marine Mammal Protection Act (MMPA) as amended, notification is hereby given that an Incidental Harassment Authorization (IHA) to take marine mammals, by harassment, incidental to conducting air-to-surface (A-S) gunnery missions in the Gulf of Mexico (GOM) has been issued to Eglin Air Force Base (Eglin AFB) for a period of 1 year.

DATES: Effective from May 3, 2006, through May 2, 2007.

ADDRESSES: The authorization and application containing a list of the references used in this document may be obtained by writing to Steve Leathery, Chief, Permits, Conservation and Education Division, Office of Protected Resources, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring, MD 20910–3226 or by telephoning the contact listed here (see **FOR FURTHER INFORMATION CONTACT**). The application and the Final Programmatic Environmental Assessment (Final PEA) is also available at: *http://www.nmfs.noaa.gov/pr/permits/incidental.htm*. A paper copy of the Final PEA is available by writing to the Department of the Air Force, AAC/EMSN, Natural Resources Branch, 501 DeLeon St., Suite 101, Eglin AFB, FL 32542–5133.

FOR FURTHER INFORMATION CONTACT: Kenneth R. Hollingshead, NMFS, 301–713–2289, ext 128.

SUPPLEMENTARY INFORMATION:

Background

Sections 101(a)(5)(A) and 101(a)(5)(D) of the Marine Mammal Protection Act (16 U.S.C. 1361 *et seq.*)(MMPA) direct the Secretary of Commerce (Secretary) to allow, upon request, the incidental, but not intentional taking of marine mammals by U.S. citizens who engage in a specified activity (other than