award funds for any specific project or to obligate any available funds.

Evaluation and Selection Procedures: After receiving the applications, ITA will screen each one to determine the applicant's eligibility to receive an award. After receiving all applications, a selection panel composed of at least three ITA managers will review the applications using the evaluation criteria below, score them, and forward a ranked funding recommendation to the Assistant Secretary for Manufacturing and Services. The evaluation criteria scores assigned by the panel determine which applications are recommended for funding. The Assistant Secretary makes the final selection of award winners, justifying any deviation from the selection panel's ranked recommendation by application of the selection factors listed below.

Evaluation Criteria: The selection panel reviews each eligible application based on five evaluation criteria. The evaluation criteria are listed below.

(1) Potential to Strengthen Competitiveness (20%). This is the likelihood that a project will result in export initiatives by U.S. firms, particularly small- and medium-sized enterprises.

(2) Performance Measures (20%). Applicants must provide quantifiable estimates of export and market share increases, explain how they are derived, and detail the methods they will use to gather and report performance information.

(3) Partnership and Priorities (20%). This criterion indicates the degree to which the project initiates or enhances partnership with ITA and the degree to which the proposal furthers or is compatible with ITA's priorities.

(4) Creativity and Capacity (20%). Applicants demonstrate creativity, innovation, and realism in the project work plan as well as their institutional capacity to carry out the work plan.

(5) Budget and Sustainability (20%). This criterion indicates the reasonableness and effectiveness of the itemized budget for project activities, the amount of the cash match that is readily available, and the probability that the project can be continued on a self-sustained basis after the completion of the award.

The five criteria together constitute the application score. At 20 points per criterion, the total possible score is 100.

Selection Factors: The Assistant Secretary may deviate from the selection panel's ranked recommendation only based on the following factors: (1) The selection panel's written assessments, (2) Degree to which applications satisfy ITA priorities, (3) Geographic distribution of the proposed awards, (4) Diversity of industry sectors and overseas markets covered by the proposed awards, (5) Diversity of project activities represented by the proposed awards, (6) Avoidance of redundancy and conflicts with the initiatives of other federal agencies, and (7) Availability of funds.

The ITA priorities referred to under Evaluation Criteria (3) and Selection Factor (2) are listed below. ITA is interested in receiving proposals to promote U.S. exports that include, but are not limited to, projects that: (1) Improve the competitiveness of U.S. manufacturing and service industries by addressing impediments to innovation and reducing the cost of doing business in foreign countries; (2) Increase competitiveness of U.S. industries in large markets like China, India, and Brazil by addressing non-tariff barriers, especially those related to standards and intellectual property rights; (3) Help U.S. industry to capitalize on effective global supply chain management strategies; (4) Advance market-based approaches to energy, clean development, and commercialization of nuclear and alternative energy technologies; (5) Facilitate ease of travel to the United States and promote U.S. higher education and training opportunities to non-U.S. entities; (6) Capitalize on trade opportunities resulting from trade agreements; (7) Increase overall export awareness and awareness of ITA programs and services among U.S. companies, by making small- and medium-size enterprises export-ready or by facilitating deal-making; and (8) Support the Administration's broader foreign policy objectives through competitiveness-related initiatives.

The Department of Commerce Pre-Award Notification Requirements for Grants and Cooperative Agreements

The Department of Commerce Pre-Award Notification Requirements for Grants and Cooperative Agreements contained in the **Federal Register** notice of February 11, 2008 (73 FR 7697) are applicable to this solicitation.

Paperwork Reduction Act

This document contains collection-of-information requirements subject to the Paperwork Reduction Act (PRA). The use of Standard Forms 424 and 424A, 424B, SF–LLL, and CD–346 has been approved by OMB under the respective control numbers 0348–0043, 0348–0044, 0348–0040, 0348–0046, and 0605–0001. Notwithstanding any other provision of law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with, a collection of information subject to the requirements of the PRA unless that collection of information displays a currently valid OMB control number.

Executive Order 12866

This notice has been determined to be not significant for purposes of Executive Order 12866.

Executive Order 13132 (Federalism)

It has been determined that this notice does not contain policies with Federalism implications as that term is defined in Executive Order 13132.

Administrative Procedure Act/ Regulatory Flexibility Act

Prior notice and an opportunity for public comments are not required by the Administrative Procedure Act for rules concerning public property, grants, benefits, and contracts (5 U.S.C. section 553(a)(2)). Because notice and opportunity for comment are not required pursuant to 5 U.S.C. 553 or any other law, the analytical requirements of the Regulatory Flexibility Act (5 U.S.C. section 601 *et seq.*) are inapplicable. Therefore, a regulatory flexibility analysis is not required and has not been prepared.

Dated: June 11, 2008.

Robert W. Pearson,

Director, Office of Planning, Coordination and Management, Manufacturing and Services, International Trade Administration, Department of Commerce.

[FR Doc. E8–13599 Filed 6–16–08; 8:45 am]

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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648–XI41

Small Takes of Marine Mammals Incidental to Specified Activities; Seismic Survey in the Beaufort Sea, Alaska, Summer 2008

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

ACTION: Notice; proposed incidental take authorization; request for comments.

SUMMARY: NMFS has received an application from PGS Onshore, Inc. (PGS) for an Incidental Harassment Authorization (IHA) to take marine mammals incidental to an exploratory three-dimensional (3D) marine seismic survey in the Beaufort Sea, Alaska, utilizing an ocean bottom cable/

transition zone (OBC/TZ) technique in summer 2008. Pursuant to the Marine Mammal Protection Act (MMPA), NMFS is requesting comments on its proposal to issue an IHA to PGS to incidentally take, by harassment, small numbers of several species of marine mammals between July and September, 2008, during the aforementioned activity.

DATES: Comments and information must be received no later than July 17, 2008.

ADDRESSES: Comments on the application should be addressed 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. The mailbox address for providing email comments is *PR1.0648XI41@noaa.gov*. 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 (**FOR FURTHER INFORMATION CONTACT**), or visiting the Internet at: *http://www.nmfs.noaa.gov/pr/permits/incidental.htm#applications*.

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

A copy of the 2006 Minerals Management Service's (MMS) Final Programmatic Environmental Assessment (PEA) and/or the NMFS/MMS Draft Programmatic Environmental Impact Statement (DPEIS) are available on the Internet at: *http://www.mms.gov/alaska/*.

FOR FURTHER INFORMATION CONTACT: Candace Nachman, Office of Protected Resources, NMFS, (301) 713–2289 or Brad Smith, NMFS, Alaska Region, (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, a notice of a proposed authorization is provided to the public for review.

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

Section 101(a)(5)(D) of the MMPA established an expedited process by which citizens of the 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 the authorization.

Summary of Request

On May 9, 2008, NMFS received an application from PGS for the taking, by Level B harassment only, of small numbers of several species of marine mammals incidental to conducting an exploratory 3D marine seismic survey in the Alaskan Beaufort Sea, utilizing an OBC/TZ technique. PGS has been contracted by ENI Petroleum (ENI) to conduct the seismic survey. The proposed survey is scheduled to occur from July to mid-September 2008. Because the proposed survey is weather and ice dependent, the exact dates of the survey cannot be determined at this time. However, the proposed survey would begin as soon as ice and weather conditions allow, possibly as soon as July 1. The survey is expected to last for an estimated 75 days of data acquisition, excluding weather days.

The proposed survey location is in the Nikaitchuq Lease Block (see Figure 1 of PGS' application), north of Oliktok Point and covering Thetis, Spy, and Leavitt Islands, and would extend to the 5–km (3–mi) state/Federal water boundary line and would not go into Federal waters. The water depth in this area ranges from 0–15 m (0–49 ft), and a third of the project waters are shallower than 3 m (10 ft). The total area covered by source or receiver lines is 304.6 km^2 (117.6 mi^2); since the islands comprise approximately 1.7 km^2 (0.7 mi^2) of this, the total marine area is 303 km^2 (117 mi^2).

The work would be divided into two parts. Data acquisition (use of airguns) outside the barrier islands (Thetis, Spy, and Leavitt Islands) would be performed first and would be completed by August 5. This portion of the work would begin in the east and move toward the west. Data acquisition inside the barrier islands would then be conducted and would be completed by September 15. This portion of the work would also move from east to west. No data acquisition (use of airguns) would be conducted outside the barrier islands after August 5.

Description of Activity

The OBC/TZ survey involves deploying cables from small boats, called DIB boats, to the ocean bottom, forming a pattern consisting of three parallel receiver line cables, each a maximum of 17.3 km (10.7 mi) long and spaced approximately 200 m (656 ft) apart. Hydrophones and geophones attached to the cables are used to detect seismic energy reflected back from rock strata below the ocean bottom. The energy is generated from a submerged acoustic source, called a seismic airgun array, that releases compressed air into the water, creating an acoustic energy pulse directed downward toward the seabed. PGS proposes using two shallow water source vessels for this survey. The source vessels will be used sequentially: one vessel will be active while the other travels to its next position. Both source vessels, *M/V Wiley Gunner* and *M/V Little Joe*, will each be equipped with identical airgun arrays with total air discharge volume of 880 in^3. The source has a peak to peak amplitude equal to 31.4 bar-meters, giving a source output of approximately 250 dB. These airgun arrays are expected to operate at a depth of between 0.91 m and 2.29 m (3 ft and 7.5 ft). Data acquisition would also require the following instrumentation (instrumentation specifications are included in Appendix A of PGS' application): seismic recording equipment; line equipment; transducers; energy source output; bathymetry; and positioning survey equipment.

Vessel Descriptions

The marine crew would be configured with the following vessels (vessel specifications are included in Appendix A of PGS' application). Vessel usage is subject to availability; however, vessels of similar dimensions will be used if those listed below are unavailable.

• Two source vessels, the *M/V Wiley Gunner* and the *M/V Little Joe*, which are both 13 m (44 ft) long, 5.8 m (19 ft) wide, and 3.5 m (11.5 ft) tall with a weight of 18 metric tons (20 tons) loaded and a draft of 0.69 m (2.2 ft) with the engines down. These boats are able to maneuver in waters less than 1.2 m (4 ft) deep.

• The recording vessel, *M/V William Bradley*, is a self-propelled barge and has hydraulic gravity spuds that can be lowered in water up to 6 m (20 ft) deep. It would be fitted with a Sercel 408 recording system. The *William Bradley* is 45.7 m (150 ft) long and 11 m (36.1 ft) wide with a draft of 1.23 m (4 ft).

• Up to seven shallow-water cable boats (DIB boats) would be available for the survey. The DIB boats are 12.5 m (41 ft) long and 4.3 m (14 ft) wide and have 0.76 m (2.5 ft) draft. The boats are powered by two, 200–horsepower (HP) diesel Volvo Penta engines. The dry weight of each boat is 4.5 metric tons (5 tons) with a working load of 7.7 metric tons (8.5 tons).

• The supply boat *M/V Katmai Spirit* would be used for crew support and supplying marine vessels during the job. The *Katmai Spirit* has dimensions of 12 m (40 ft) long, 5.5 m (18 ft) wide, and 0.6 m (2 ft) draft.

• The Project Manager/Client boat would be available for use by the Project Manager, the client, or other personnel as needed to perform their tasks. The boat may also be used for crew support and supplying marine vessels as required. The Project Manager/Client boat has dimensions of 7.3 m (24 ft) long, 2.4 m (8 ft) wide, and 0.45 m (1.5 ft) draft. The boat is powered by a 90 HP engine.

• The Mechanic's boat would be used to support maintenance and mechanical support for marine vessels used during the project. The Mechanic's boat has dimensions of 7.9 m (26 ft) long, 2.4 m (8 ft) wide, and 0.45 m (1.5 ft) draft. The boat is powered by twin 90 HP engines.

Seismic Recording Equipment

The seismic recording system scheduled to be housed on the *William Bradley* during the proposed 3D marine seismic survey is a Sercel 408. The system would record data using a tape emulator drive hard drive imbedded into the recorder so that verified IBM 3590 archive tapes can be created at the quality control processing laboratory. Digital records would be formatted in SEG D configuration and traced at three lines of 156 per record for every 2–ms periods. The digital filters would be linear or minimum phase, and the anti-alias filters would be high-cut 0.8 Field Nyquist Stop Band Attenuation greater than 120 dB. Record length would be 6 s versus a shot point distance of 34 m (111.5 ft). This Sercel system would be capable of an inter-record delay of equal to or less than 2 s of overhead. The plotter that would also be housed on the *William Bradley* would be a Veritas V–12.

Line Equipment

PGS would have a 2400 Sercel FDU Operative Remote Acquisition Units available. The following equipment would also be available: 125 Sercel line acquisition unit line repeaters/powers; 12 Sercel line acquisition unit crossing line interface; 20 x-line cables; and 1,200 telemetry cables of 67 m (220 ft) each and 1,200 mini cables of 1 m (3.3 ft) each.

Transducers

The transducers used during the proposed seismic survey in the Beaufort Sea would be GeoSpace GS-PV1 sensors. The GS30CT geophone has a sensitivity of 2.55 volts (V) per inch per second ± 2 percent. The pressure phone has a sensitivity of 6.76 V/bar ± 1.5 dB. The hydrophone crystals are configured for acceleration cancellation.

Energy Source Output

PGS would use an airgun energy source for the proposed data acquisition. A minimum of a 10–airgun array is expected to be used as a single output source. The operating source depth for the guns is a maximum of 2.5 m (8.2 ft). Source centers separation will be from 1–1.5 m (3.3–4.9 ft), and the shot point distance is 34 m (110 ft). The single source volume is 880 in^3. Although PGS is proposing to use only a 10–airgun array for acquisition, a 12 airgun array would be placed on each vessel. This would provide two spare airguns at all times. The source layout will be 8 m (26 ft) wide by 6 m (20 ft) long. At a depth of 2.5 m (8.2 ft), the point to point output pressure is plus or minus 22 bar meters, giving a signal/bubble ratio of 10:1. The array is designed to direct sound pressure downwards, as shown in Figure 2 of PGS' application.

The power is provided by either a 78 cubic feet per minute (CFM) or 150 CFM diesel air compressor. The air pressure can deliver between 1,750 pounds per square inch (psi) to 1,900 psi. This system will require a 12–s to 15–s recycle time. The energy source synchronizing system is a Digital Real Time Long Shot Source Controller.

Bathymetry

Bathymetric equipment would be located on each of the source vessels and the shallow-water cable boats. Bathymetric data would be recorded simultaneously with the seismic data acquisition, by employing Interspace Tech DX 150 (or equivalent) instruments, which can operate in water up to 120 m (400 ft) deep. This equipment has an operating frequency of 200 kHz and a sound source of 100 dB re 1 µPa. The digitizer and logger system would be a National Marine Electronic Association standard output to Horizon. PGS would use a Gator INM system and a Gator INS system as source firing controllers. For measures of depth, temperature, and salinity, a Valeport TS Dip Meter would be used.

Positioning Survey Equipment

To conduct the proposed 3D seismic survey in the Beaufort Sea, PGS would employ a Novatel system and a global positioning system (GPS) mobile receiver with 8 to 12 channels of dual frequency. For the Novatel system, there would be three onshore reference stations and four valid satellites. As a second main system, PGS has available a Trimble 4700 system and a GPS Mobile Receiver, also with 8 to 12 channels of dual frequency. For the Trimble 4700, there would be two onshore reference stations. PGS will also have 700 active Sonardyne Acoustic transponders available for in-water positioning.

Marine Mammals Affected by the Activity

The Beaufort Sea supports a diverse assemblage of marine mammals, including bowhead, gray, beluga, killer, minke, fin, humpback, and North Pacific right whales, harbor porpoises, ringed, spotted, bearded, and ribbon seals, polar bears, and walruses. These latter two species are under the jurisdiction of the U.S. Fish and Wildlife Service (USFWS) and are not discussed further in this document. Within the project activity areas, only the polar bear is known to occur in significant numbers, and a separate Letter of Authorization request will be submitted by PGS to USFWS for this species.

A total of three cetacean species and three pinniped species are known to occur or may occur in the Beaufort Sea in or near the proposed project area (see

Table 3.0–1 in PGS' application for information on habitat and estimated abundance). Of these species, only the bowhead whale is listed as endangered under the Endangered Species Act (ESA). The killer whale, harbor porpoise, minke whale, fin whale, North Pacific right whale, humpback whale, and ribbon seal could occur in the Beaufort Sea, but each of these species is rare or extralimital and unlikely to be encountered in the proposed seismic survey area.

The marine mammal species expected to be encountered most frequently throughout the seismic survey in the project area is the ringed seal. The bearded and spotted seal can also be observed but to a far lesser extent than the ringed seal. Presence of beluga, bowhead, and gray whales in the shallow water environment within the barrier islands is possible but expected to be very limited as this is not their typical habitat. Descriptions of the biology, distribution, and population status of the marine mammal species under NMFS' jurisdiction can be found in PGS' application, the 2007 NMFS/MMS DPEIS on Arctic Seismic Surveys, and the NMFS Stock Assessment Reports (SARS). The Alaska SAR is available at: *http://www.nmfs.noaa.gov/pr/pdfs/sars/ak2007.pdf*. Please refer to those documents for information on these species.

Potential Effects of Airgun Sounds on Marine Mammals

The effects of sounds from airguns might include one or more of the following: tolerance, masking of natural sounds, behavioral disturbance, and temporary or permanent hearing impairment or non-auditory effects (Richardson *et al.*, 1995). As outlined in previous NMFS documents, the effects of noise on marine mammals are highly variable, 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.

Tolerance

Numerous studies have shown that pulsed sounds from airguns are often readily detectable in the water at distances of many kilometers. Numerous studies have shown that marine mammals at distances more than a few kilometers from operating seismic vessels often show no apparent response. That is often true even in cases when the pulsed sounds must be readily audible to the animals based on measured received levels and the hearing sensitivity of that mammal group. Although various baleen whales, toothed whales, and (less frequently) pinnipeds have been shown to react behaviorally to airgun pulses under some conditions, at other times, mammals of all three types have shown no overt reactions. In general, pinnipeds and small odontocetes seem to be more tolerant of exposure to airgun pulses than baleen whales.

Masking

Masking effects of pulsed sounds (even from large arrays of airguns) on marine mammal calls and other natural sounds are expected to be limited, although there are very few specific data of relevance. Some whales are known to continue calling in the presence of seismic pulses. Their calls can be heard between the seismic pulses (e.g., Richardson *et al.*, 1986; McDonald *et al.*, 1995; Greene *et al.*, 1999; Nieukirk *et al.*, 2004). Although there has been one report that sperm whales cease calling when exposed to pulses from a very distant seismic ship (Bowles *et al.*, 1994), a more recent study reports that sperm whales off northern Norway continued calling in the presence of seismic pulses (Madsen *et al.*, 2002). That has also been shown during recent work in the Gulf of Mexico (Tyack *et al.*, 2003; Smultea *et al.*, 2004). Masking effects of seismic pulses are expected to be negligible in the case of the smaller odontocete cetaceans, given the intermittent nature of seismic pulses. Dolphins and porpoises commonly are heard calling while airguns are operating (e.g., Gordon *et al.*, 2004; Smultea *et al.*, 2004; Holst *et al.*, 2005a; 2005b). Also, the sounds important to small odontocetes are predominantly at much higher frequencies than are airgun sounds.

Disturbance Reactions

Disturbance includes a variety of effects, including subtle changes in behavior, more conspicuous changes in activities, and displacement. Reactions to sound, if any, depend on species, state of maturity, experience, current activity, reproductive state, time of day, and many other factors. If a marine mammal does react briefly to an underwater sound by changing its behavior or moving a small distance, the impacts of the change are unlikely to be significant to the individual, let alone the stock or the species as a whole. However, if a sound source displaces marine mammals from an important feeding or breeding area for a prolonged period, impacts on the animals could be significant. Given the many uncertainties in predicting the quantity and types of impacts of noise on marine mammals, it is common practice to estimate how many mammals were present within a particular distance of industrial activities or exposed to a particular level of industrial sound. That likely overestimates the numbers of marine mammals that are affected in some biologically-important manner.

The following species summaries are provided to facilitate understanding of our knowledge of impulsive noise impacts on the principal marine mammal species that are expected to be affected. The impacts on Beaufort Sea cetaceans and pinnipeds are likely to be short-term and transitory.

Bowhead Whales—Bowhead whales will likely show some behavioral changes during airgun activity, but depending on distance from the noise source, overall displacement should be minimal. Bowhead whales in the Beaufort Sea were observed remaining in a location where they were exposed to seismic, dredging, and drilling sounds. Their social and feeding behavior appeared normal as industry-related noises occurred (Richardson *et al.*, 1987). When observed over multiple years, bowhead whales in the same area also did not appear to avoid seismic locations. MMS did not find a statistical difference in the change of direction for bowhead whales traveling during seismic activity when analyzing fall migration data from 1996 to 1998 (MMS, 2005). Bowhead and gray whales have not appeared bothered when seismic pulses between 160 dB and 170 dB re 1 µPa were fired from a seismic vessel within a few km of their locality, but tended to avoid the area when levels exceeded 170 dB (Richardson *et al.*, 1997).

Common behavioral responses of marine mammals include displacement, startle, attraction to sound, altered communication sounds, discontinued feeding, disruption to social behaviors, temporary or permanent habitat abandonment, panic, flight, stampede, and in worse cases stranding, and sometimes death (Nowacek *et al.*, 2007; Southall *et al.*, 2007; Gordon *et al.*, 2004). Behavior ranges from temporary to severe, and the effects can influence foraging, reproduction, or survival. Response level is based on how habituated or sensitive the individual mammal is and whether or not previous interactions with sound was positive, negative, or neutral (Southall *et al.*, 2007). The common behavioral patterns seen in bowhead whales when seismic operations were operated nearby include displacement, avoidance, and altered respiration (Richardson *et al.*,1999; Ljungland *et al.*, 1988). Whales may also display varied reactions based on the time of year and activity. Bowhead whales migrating in the fall exhibited avoidance at distances up to 20 km (12 mi) or more, while bowheads feeding during summer displayed more subtle reactions and did not show a strong avoidance at distances past 6 km (3.7 mi) from active airguns (Miller *et al.*, 2005).

It is unclear exactly what causes displacement, but whales have tended to show shorter surface and dive times, fewer blows per surfacing, and longer blow intervals when noise levels were at or above 152 dB and showed avoidance of seismic operations within a 20–km (12–mi) radius (Ljungbald, 1988; Richardson, 1999). Bowhead whales may also flee from or show total avoidance of vessels if they are too close. Bowhead whales showed total avoidance at distances of 1.3 km, 7.2 km, 3.5 km, and 2.9 km (0.8 mi, 4.5 mi, 2.2 mi, and 1.8 mi) when sound levels were 152 dB, 165 dB, 178 dB, and 165 dB, respectively (Ljungbald *et al.*, 1988). Based upon McCauley *et al.* (2000) bowhead whales exhibit a behavioral change at 120 dB when migrating. However, other low-frequency cetaceans, including bowhead whales, exhibit behavioral changes at 140 dB to 160 dB when not migrating, and sometimes higher levels (Miller *et al.*, 2005).

Beluga Whales—Seismic activity is expected to cause temporary displacement of beluga whales, but the impact is not expected to be significant. Belugas have been shown to have greater displacement in response to a moving source (e.g., airgun activity on a moving vessel) and less displacement or behavioral change in response to a stationary source. The presence of belugas has been documented within the ensonified zones of industrial sites near platforms and stationary dredges, and the belugas did not seem to be disturbed by the activity (Richardson *et al.*, 1995). When drilling sounds were played to belugas in industry-free areas, the belugas only showed a behavioral reaction when received levels were high. For example, beluga whales have been observed to show only an initial scare when drilling noises were played with a received level greater than or equal to 153 dB re 1 µPa. Richardson (1997) suggested that the effect could be a result of belugas having less sensitivity to low-frequency sounds. Other reports suggested that belugas will remain far away from seismic vessels (Miller *et al.*, 2005). A study in the Beaufort Sea observed low numbers of belugas within 10 km to 20 km (6 mi to 12 mi) of seismic vessels (noted in LGL, 2006).

Gray Whales—Gray whales in the immediate area of seismic activity will likely show some behavioral changes. The changes in behavior, however, depend upon distance from the seismic source and are expected to be minimal. In a study including gray whales, behavioral responses were observed when the whales were subjected to seismic sounds between 160 and 170 dB re 1 µPa. Studies in the Bering Sea by Malme *et al.* (1986, 1988) showed the responses of gray whales to seismic sound pulses from a 100 in^3 airgun array. Fifty percent of feeding whales stopped feeding when exposed to sound levels of 173 dB re 1 µPa on average, and 10 percent stopped feeding at a received sound level of 163 dB re 1 µPa. One whale study found indications of behavioral changes such as increased swim speed and shorter blow periods for seismic activities at a distance of up to 30 km (Wursig *et al.*, 1999). However, when conducting shore-based counts Johnson (2007) did not mention any change in behavior and found no significance between abundance and seismic activity. Also, given the infrequent occurrence of gray whales in the Beaufort Sea east of Point Barrow, recent marine mammal observer (MMO) information from the Beaufort Sea indicating that, at least for bowhead whales, sound pressure levels of 160 dB or less did not result in abandonment of feeding areas, and the incorporation of mitigation and monitoring measures, including the use of MMOs and avoidance of concentrated areas of feeding whales, the number of animals exposed to sound levels that could cause disturbance of feeding or other behaviors should be greatly reduced.

Data on short-term reactions of cetaceans to impulsive noises do not necessarily provide information about long-term effects. It is not known whether impulsive noises affect reproductive rate or distribution and habitat use in subsequent days or years. Gray whales continued to migrate annually along the west coast of North America despite intermittent seismic exploration (and much ship traffic) in that area for decades (Malme *et al.*, 1984; Richardson *et al.*, 1995; Angliss and Outlaw, 2005).

Ringed Seals—Ringed seals are expected to have only short-term and temporary displacement as a result of the proposed PGS project activities. Seals should not be exposed to source levels higher than 190 dB re 1 µPa due to the potential for hearing damage. Though ringed seals have density and estimated take higher than other marine mammals in the project area, ringed seals exposed to sound sources as high as 200 dB, displayed only brief orientation and minor behavioral modifications, and only momentarily left young (Moulton *et al.*, 2005; Southall, 2007; Blackwell, 2004). Any behavioral reactions to activities should only be temporary and not disrupt

reproductive activities. When industrial-related sounds propagated 1–3 km (0.6–1.9 mi) within ringed seal locations, normal behavior such as maintaining active breathing holes and lairs continued, and observed breeding females appeared not to be bothered (Moulton *et al.*, 2005).

In 1998, a total of 252 ringed seals were counted in the project area over a period of 1,331 hours, contributing to 98.5 percent of the total pinniped population during this time. Richardson (1999) found sounds produced from both a 16 - 1,500 in^3 sleeve gun array and another 8 - 560 in^3 sleeve gun array affected distribution and behavior only when seals were within a few hundred meters of the array, and ringed seals remained in the project area during operations. During seismic activities, whales also remained at a mean radial distance of 223 m (731 ft) during seismic operations and 116 m (381 ft) when seismic operations did not occur (Richardson, 1999). Over time, ringed seals may also show less displacement and fewer behavioral changes. In one study, ringed seals remained distant from activities during the first season of seismic activities, but during the second season, were observed at close proximity of the marine vessel. No observable behavioral changes were accounted for with received levels ranging between 170 and 200 dB (Miller *et al.*, 2005).

Spotted Seals—The total number of spotted seals in Alaska is assumed to be tens of thousands, and their range sometimes includes the Beaufort Sea (MMS, 1996; Rugh *et al.*, 1997). Any impacts on spotted seal populations should also be minimal as high numbers of spotted seals should not occur in the project area. From July-September 1996, Harris *et al.* (2001) counted a total of 422 seals in the Beaufort Sea. Of the seals counted, only 0.9 percent (n = 4) were spotted seals. Spotted seal reactions to seismic activities are typically minimal, and spotted seals have demonstrated little or no reaction to scare devices even when linked to areas for feeding or reproduction (Harris *et al.*, 2001).

Bearded Seals—In a study during summer 1996, Harris *et al.* (2001) found bearded seals were 7.3 percent (n = 31) of the total number of seals counted. Though bearded seals are bottom feeders and are usually found in water depths less than 200 m (656 ft), if the rarity of an encounter should occur, bearded seals, like other pinnipeds, should demonstrate only minimal displacement and behavioral reaction. Bearded seals did not show reactions to 1,450 in^3 to 2,250 in^3 airguns when received levels averaged in the range of 170–200 dB (Richardson, 1999).

Hearing Impairment

When conducting the proposed seismic activities, TTS or permanent threshold shift (PTS) is not expected to occur in marine mammals. When marine mammals located within a vulnerable range (> 180 dB re 1 µPa for cetaceans, or > 190 dB re 1 µPa for pinnipeds) are impacted by impulsive noises, the noises can lead to TTS or PTS. When TTS occurs, the result is reversible: hearing in exposed mammals is temporarily affected. TTS may result in mammals failing to locate predators or prey and the inability to communicate effectively with other individuals of the same species. When the threshold does not return to the original threshold levels, the damage is classified as PTS. It is unknown what level of sound will cause PTS in marine mammals, but it is reasoned to occur at a much greater level than that caused by TTS (Southall *et al.*, 2007).

TTS and PTS in given species depends upon the frequency sensitivity of that species. Bowhead and gray whales operate at a low frequency, killer whale and beluga at mid frequency, and the harbor porpoise at high frequency (Southall, 2005). Finneran (2002) estimated that sound levels greater than 192 dB re 1 µPa will lead to TTS in most cetaceans. There are no data identifying the level of sound intensity that causes TTS in baleen whales, but because most baleen whales show avoidance at certain sound intensities, risk of TTS should be avoided (MMS, 2006; Southall, 2007). Under prolonged exposure, pinnipeds have been shown to exhibit TTS. Kastak *et al.* (1999) investigated the effects of noise on two California sea lions, one northern elephant seal, and one harbor seal. Kastak *et al.* (1999) subjected each pinniped to a noise source (100 to 2,000 Hz) for 20 to 22 min. Each pinniped showed a threshold shift averaging 4.8 dB (harbor seal), 4.9 dB (sea lion), and 4.6 dB (northern elephant seal) until the hearing threshold returned to pre-exposure values (under a 12-hour period). PGS mitigation measures, such as monitoring by MMOs within the safety zone and ramp-up prior to seismic operations, should prevent marine mammals from sound exposure that causes TTS and PTS. Currently NMFS considers 190 dB re 1 µPa received level as the onset of TTS for pinnipeds.

Potential Effects of Bathymetric Equipment on Marine Mammals

The bathymetric equipment used to determine depth will operate at a frequency of 200 kHz and sound source of 100 dB. At a frequency of this caliber, any overlap with the functional marine mammal hearing groups and the estimated auditory bandwidth at which they are suspected to hear will be avoided (Southall *et al.*, 2007). Of the marine mammals in the project area, bowhead whales are considered low-frequency mammals, and their estimated bandwidth occurs between 7 and 22 kHz (Southall *et al.*, 2007). Though no direct measurements have been tested directly on the low-frequency cetaceans, such as bowhead whales, hearing sensitivity was determined by observable levels of response to sound levels played at various frequencies, including vocalization frequencies (Southall *et al.*, 2007; Richardson *et al.*, 1995).

The only mid-frequency marine mammal expected within the project area is the beluga whale. Estimated auditory bandwidth for belugas occurs between 150 Hz and 160 kHz (Southall *et al.*, 2007). Beluga hearing is functional and occurs over a low to very high range. Belugas also typically detect signals only within their frequency but have specialized echolocation features that cater to communication and tracking prey (Southall *et al.*, 2007).

No high-frequency cetaceans are expected within the project area; however, pinnipeds, such as the ringed, spotted, and bearded seals will be present. Pinnipeds lack the specialized biosonar systems common to beluga whales. Pinnipeds also communicate in water and air but are expected to be more sensitive to noises in water. Pinnipeds are estimated to have an auditory bandwidth range at 75 Hz to 75 kHz in water and 75 Hz to 30 kHz in air (Southall *et al.*, 2007). Based on information that is available, the bathymetric equipment proposed to be used within the project area will not overlap with the hearing range of marine mammals. Therefore, the likelihood of impacts, if any, are expected to be quite low.

Estimated Take of Marine Mammals by Incidental Harassment

The anticipated harassments from the activities described above may involve temporary changes in behavior and short-term displacement within ensonified areas. There is no evidence that the planned activities could result in injury, serious injury, or mortality, for example due to collisions with

vessels. Disturbance reactions, such as avoidance, are very likely to occur amongst marine mammals in the vicinity of the source vessel. The mitigation and monitoring measures proposed to be implemented (described later in this document) during this survey are based on Level B harassment criteria and will minimize any potential risk to injury or mortality.

The methodology used by PGS to estimate incidental take by harassment by seismic and the numbers of marine mammals that might be affected in the proposed seismic acquisition activity area in the Beaufort Sea is presented here. The bowhead whale, beluga whale, and bearded seal density estimates are based on the estimates developed by LGL (2005) for the University of Alaska IHA and used here for consistency. The ringed seal density estimates are from Frost *et al.* (2002). Spotted seal density estimates were derived from Green *et al.* (2005; 2006; 2007) observations that spotted seals in the Beaufort Sea in the vicinity represent about 5 percent of all phocid seal sightings and then multiplying Frost *et al.*'s (2002) density estimates times 5 percent.

Exposure Calculations for Marine Mammals

In its application, PGS presented the average and maximum estimates of ''take,'' which were calculated by multiplying the expected average and maximum animal densities provided in Table 6.2–1 in the application by the area of ensonification. The area of ensonification was assumed to be the length of trackline in marine waters multiplied by the 160–dB and 170–dB isopleths times 2. The total length of trackline in marine waters is estimated at 1,280 km (795 mi), including 770 km (478 mi) outside the barrier islands and 510 km (317 mi) inside the barrier islands.

In the PGS' application, it provides both average and maximum density data for the marine mammals that are likely to be adversely affected. These density numbers were based on survey and monitoring data of marine mammals in recent years in the vicinity of the proposed action area (LGL, 2005; Frost *et al.*, 2002; Green *et al.*, 2005; 2006; 2007). In addition, PGS also provided maximum density estimates for those marine mammal populations. The average and maximum population density of marine mammals are provided in Table 6.2.1 of the PGS application. However, PGS did not provide a rationale regarding the maximum estimate or a description as to how these maximum density estimates were calculated. NMFS decides that the average density data of marine mammal populations will be used to calculate estimated take numbers because these numbers are based on surveys and monitoring of marine mammals in the vicinity of the proposed project area.

In its review of PGS' application, NMFS determined that the safety radii calculated by PGS were too small based on the size and source level of the airgun array to be used. Therefore, NMFS requested that PGS submit an addendum to the IHA application, which outlined in greater detail the modeling techniques used. Based on this additional information, NMFS recalculated the distances to the 160-, 170-, 180-, and 190–dB isopleths, using 250 dB as the source output. Based on this new information, the respective radii for the 160-, 170-, 180-, and 190–dB isopleths are: 2,894 m (1.8 mi); 1,194 m (0.74 mi); 492 m (0.31 mi); and 203 m (0.13 mi).

The total area of ensonification using the 160–dB criteria is 7,398.4 km^2 (2,856.5 mi^2; including 4,450.6 km^2, or 1,718.4 mi^2 outside the barrier islands; and 2,947.8 km^2, or 1,138.1 mi^2 inside the barrier islands) and for the 170–dB criteria is 3,056.6 km^2 (1,180.2 mi^2; including 1,838.8 km^2, or 710 mi^2 outside the barrier islands, and 1,217.9 km^2, or 470.2 mi^2 inside the barrier islands). However, given that none of the area occurs in waters greater than 15 m (49 ft) deep (and half the area is in waters less than 4 m, 13 ft, deep), which is not suitable habitat for migrating bowhead whales, which has been defined as waters 15–200 m (49–660 ft) deep (Richardson and Thomson, 2002), this calculation provides a very conservative estimate of potential take. Therefore, only the area outside the barrier islands was used in the calculations for bowhead whales.

The ''take'' estimates were determined by multiplying the various density estimates in Table 6.2–1 by the ensonification area using the 160–dB criteria for cetaceans and the 170–dB criteria for pinnipeds. However, NMFS has noted in the past that it is unaware of any empirical evidence to indicate that pinnipeds do not respond at the lower level (i.e., 160 dB). As a result, NMFS will estimate Level B harassment takes based on the 160–dB criterion. The bowhead and beluga density estimates come from LGL (2005) and the ringed seal estimates from Frost *et al.* (2002). The spotted seal densities were determined by multiplying the ringed seal estimate by 5 percent, a reflection of three years of survey results by Green *et al.* (2005; 2006; 2007), showing that spotted seals represented about 5 percent of several thousand phocid sightings in nearshore waters of the Beaufort Sea.

Based on the calculation of using the average density estimates presented in Table 6.2–1 in PGS' application and the area of ensonification outlined above, it is estimated that up to approximately 28 bowhead whales, 25 beluga whales, 1,467 ringed seals, 73 spotted seals, and 20 bearded seals would be affected by Level B behavioral harassment as a result of the proposed 3D OBC/TZ seismic survey in the Beaufort Sea. These take numbers represent 0.27 percent of the western Arctic stock of bowhead whales, 0.06 percent of the Beaufort Sea stock of beluga whales, and 0.59 percent, 0.12 percent, and 0.008 percent of the Alaska stocks of ringed, spotted, and bearded seals, respectively.

Although gray whales are considered to be an extralimital species in the project area, there have been a few rare sightings in the Beaufort Sea east of Point Barrow in late summer and as far east as Smith Bay (Green *et al.*, 2007). Currently, there are no reliable density or population estimates for gray whales in the project area. A take estimate of two gray whales has been requested. This number is considered minimal based on the population size of the eastern North Pacific stock of gray whales.

PGS plans to continue conducting seismic surveys after August 25, the commencement of annual bowhead whale hunt, and the beginning of the fall bowhead migration. NMFS requires take estimates be evaluated out to the 120–dB isopleth for any operation occurring after August 25, unless the operator can show that their sound source would attenuate to less than 120 dB before reaching the normal bowhead whale migration lanes. Because of the downward sound directionality of the proposed array configuration, the radius to the 120–dB isopleth would extend out to about 10–15 km (6–9 mi). Further, beginning in early August, PGS will move their operations inside the barrier islands and remain there throughout the subsistence hunt and whale migration. Consequently, the closest 120 dB level sounds could reach migrating whales is a point approximately 10 km (6 mi) north of a line between Spy and Thetis islands. At this point the water depth is approximately 6 m (20 ft), less than suitable habitat for migrating bowhead whales. Further, much of the sound emanating from inside the barrier islands would be blocked by Spy, Thetis, and Leavitt Islands, leaving only a fraction of the survey area inside the barrier islands from which the 120–dB radius could even reach a point 10 km

(6 mi) north of barrier islands. During most of the survey inside the barrier islands, it is expected that the 120–dB radii would not extend at all outside the barrier islands since the islands will absorb the sound.

However, the 120–dB radius estimate is based on modeling. Actual field measurements of acoustical signatures for the proposed array are planned at the onset of the surveys. Should these measurements determine that the 120–dB radius could extend into the bowhead whale migration corridor, additional mitigation measures will be proposed in conjunction with consultation with NMFS, the North Slope Borough (NSB), and the Alaska Eskimo Whaling Commission (AEWC).

Because PGS plans to operate inside the barrier islands only during the fall, and these interior habitats typically provide less suitable habitat for marine mammals as compared to outside the barrier islands, no increase in animal densities are expected during the fall seismic survey. Thus, separate take estimates for the fall period were not calculated.

Conclusions

Impacts of seismic sounds on cetaceans are generally expected to be restricted to avoidance of a limited area around the seismic operation and short-term changes in behavior, falling within the MMPA definition of Level B harassment. No Level A takes (including injury, serious injury, or mortality) are expected as a result of the proposed activities. The estimated numbers of cetaceans and pinnipeds potentially exposed to sound levels sufficient to cause behavioral disturbance are very low percentages of the population sizes in the Bering-Chukchi-Beaufort seas.

Mitigation measures such as look outs, non-pursuit, shutdowns or power-downs when marine mammals are seen within defined ranges, and avoiding migration pathways when animals are likely most sensitive to noise will further reduce short-term reactions, and minimize any effects on hearing sensitivity. In all cases, the effects are expected to be short-term, with no lasting biological consequence. Subsistence issues are addressed later in this document.

Potential Impact on Habitat

The proposed seismic survey will not result in any permanent impact on habitats used by marine mammals or their prey sources. Furthermore, seismic activity will take place in shallow, nearshore waters less than 15 m (49 ft) deep, which is not considered to be bowhead whale habitat. No impacts are expected to the ocean floor or anticipated by placing geophones on the ocean floor.

Relative to toothed whale and pinniped prey, a broad discussion of the various types of potential effects of exposure to seismic activity on fish and invertebrates can be found in LGL (2005). This discussion 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 m to 3 m, 1.6 ft to 10 ft) from the seismic source. Direct mortality has been observed in cod and plaice within 48 hours after they were subjected to seismic pulses 2 m (6.6 ft) 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 energy 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 for male snow crabs (Christian *et al.*, 2003). Behavioral changes in fish associated with seismic exposures from project activities 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 within anywhere from 15–30 min (McCauley *et al.*, 2000) to several days (Engas *et al.*, 1996) after cessation of activities.

Available data indicate that mortality and behavioral changes do occur within very close range to the seismic sources; however, the proposed seismic site clearance activity in the Beaufort Sea is predicted to have a negligible effect on the prey resources of the various life stages of fish and invertebrates available to marine mammals. Further, the 880 in^3 array, proposed for this project, produces a relatively low energy pulse (250 dB) compared to the seismic systems used in the above studies.

It is estimated that only a small portion of the marine mammals utilizing the areas of the proposed activities would be temporarily displaced. No loss of habitat is anticipated due to laying cable on the ocean floor.

During the period of seismic surveying (July through mid-September), most marine mammals would be dispersed throughout the area. The peak of the bowhead whale migration through the Alaskan Beaufort Sea typically occurs in September. Starting in late August, bowheads may travel in proximity to the seismic surveys and hear sounds from vessel traffic and seismic activity, which might temporarily displace some whales. In addition, feeding does not appear to be an important activity for bowheads migrating through the Chukchi Sea in most years; however, sightings of bowhead whales do occur in the summer near Barrow (Moore and DeMaster, 2000), and there are suggestions that certain areas near Barrow are important feeding grounds. In the absence of important feeding areas, the potential diversion of a small number of bowheads away from survey activities is not expected to have any significant or long-term consequences for individual bowheads or their population. Bowheads are not expected to be excluded from any habitat.

The numbers of cetaceans and pinnipeds subject to displacement are very small in relation to abundance estimates for the mammals addressed under this IHA request. The proposed activities are not expected to have any habitat-related effects that would produce long-term effects to marine mammals or their habitat due to the limited extent and very nearshore location of the survey area.

Effects of Seismic Noise and Other Related Activities on Subsistence

Subsistence hunting and fishing is historically, and continues to be, an essential aspect of Alaska Native life, especially in rural coastal villages. The Inupiat people participate in subsistence hunting and fishing activities in and around the Beaufort Sea. The animals taken for subsistence provide a significant portion of the food that will feed the people throughout the year. Along with providing the nourishment necessary for survival, subsistence activities strengthen bonds within the culture, provide a means for educating the young, provide supplies for artistic expression, and allow for important celebratory events.

Only minor, temporary effects from the seismic survey project are anticipated on Native subsistence hunting. PGS does not expect any permanent impacts on marine mammals

that will adversely affect subsistence hunting. Mitigation efforts will be implemented to minimize or completely avoid any adverse effects on marine mammals. Additionally, areas being used for subsistence hunting grounds will be avoided. It is anticipated that only minor, temporary displacement of marine mammals will occur.

Alaska Natives, including the Inupiat, legally hunt several species of marine mammals. Marine animals used for subsistence within the Beaufort Sea region include bowhead and beluga whales and ringed, spotted, and bearded seals. Each village along the Beaufort Sea hunts key subsistence species. Hunts for these animals occur during different seasons throughout the year. Depending upon the success of a village's hunt for a certain species, another species may become a priority in order to provide enough nourishment to sustain the village. Communities that participate in subsistence activities potentially affected by seismic surveys within the proposed development area are Nuiqsut and Barrow.

Nuiqsut is the village nearest to the proposed seismic activity area. Bowhead and beluga whales and ringed, spotted, and bearded seals are harvested by residents of Nuiqsut. Because the village is 56 km (35 mi) inland (Alaska community Online Database, 2008), whaling crews travel in aluminum skiffs equipped with outboard motors to offshore areas such as Cross Island (Funk and Galginaitis, 2005). Of the marine mammals harvested, bowhead whales are most commonly harvested. In 1992 an estimated 34,884 kg (76,906 lbs) were harvested (ADF&G, 2008). Seals are also regularly hunted and may account for up to 3,770 kg (8,310 lbs) of harvest, while beluga whale harvests account for little or none (ADF&G, 2008).

Barrow residents' main subsistence focus is concentrated on biannual bowhead whale hunts that take place during the spring and fall. Other animals, such as seals, are hunted outside of the whaling season, but they are not the primary source of the subsistence harvest (URS Corp., 2005).

Bowhead Whales

The bowhead whales that could potentially be affected by seismic activity in the Beaufort Sea come from the Western Arctic stock. The majority of these whales migrate annually during the spring from wintering grounds in the Bering Sea, through the Chukchi Sea, to summer grounds in the Beaufort Sea. During the fall migration, the whales travel back through the Chukchi Sea to their wintering grounds in the Bering Sea. While on their spring migration route, bowhead whales travel through leads in the ice between the shore-fast ice and pack ice.

In a study of approximately 440 bowhead whales between 1989 and 1994 off the coast of Point Barrow, Richardson *et al.* (1995) documented movements and behaviors in response to playback of sounds similar to those produced by site clearance and shallow hazard surveys. Whale behavior in relation to the sound level being received at the whales' locations was observed. The research team concluded that the sounds emitted did not have a biologically significant effect on bowhead movement, distribution, or behavior.

Ten primary coastal Alaskan villages deploy whaling crews during whale migrations. Of these ten, Nuiqsut has the potential to be affected by the proposed project, as it is the village situated closest to the proposed project area. Barrow is located farther from the proposed seismic activity but has the potential to be affected. These two communities are part of the AEWC. The AEWC was formed as a response to the International Whaling Commission's past closure of bowhead whale hunting for subsistence purposes. IWC sets a quota for the whale hunt, and AEWC allocates the quota between villages. Each of the villages within the AEWC is represented by a Whaling Captains' Association. Bowhead whales migrate within the hunting range of whaling crews in the spring (north migration) and the fall (south migration). In the spring, the whales must travel through leads in the ice that tend to occur close to shore. In the fall, the water is much more open, allowing the whales to swim farther from the coast.

Whaling crews in Barrow hunt in both the spring and the fall (Funk and Galginaitis, 2005). In the spring, the whales are hunted along leads that occur when the pack ice starts deteriorating. This tends to occur in Barrow between the first week of April and the first week of June, well before the geophysical surveys will be conducted. The proposed seismic survey is anticipated to start after all the ice melts, in approximately mid-July, and will not affect spring whaling. Fall whaling activities are anticipated to take place east of Point Barrow (BLM, 2005). The project area is located 260 km (160 mi) east of Point Barrow. It is anticipated that the project will not impact the Barrow fall hunt. The Nuiqsut fall whale hunt takes place in the vicinity of Cross Island, ranging from there to approximately 50 km (30 mi) north of the island. The project area is located approximately 60 km (37 mi) west of Cross Island and is too shallow (less than 15 m, 50 ft deep) to support bowhead whales. It is unlikely that the Nuiqsut fall hunt would extend to the project area. Adverse impacts on the subsistence harvest of bowhead whales as a result of the proposed survey are not anticipated.

Beluga Whales

Beluga whales summer in the waters of the Chukchi and Beaufort Seas and winter in the Bering Sea. Living in areas mostly covered in ice, they are associated with leads and polynyas (Haard, 1988). Beluga whales can be hunted from the first week in April to July or August. It is common for the Inupiat to refrain from hunting beluga during the spring or fall bowhead whale hunt to prevent scaring the larger whales away from hunting locations. Belugas do not account for a majority of the total subsistence harvest in Barrow or Nuiqsut (ADF&G, 2008). Between 1999 and 2003, the annual beluga subsistence ''take'' was 65 (Frost and Suydam, 1995).

Ringed Seals

Ringed seals are distributed throughout the Arctic Ocean. They inhabit both seasonal and permanent ice. An abundance and distribution study conducted in the Beaufort Sea before, during, and after anthropogenic sound-producing construction found that there were only slight changes near construction activities around British Petroleum's (BP's) Northstar oil development that most likely were caused by environmental factors (Moulton *et al.*, 2005). Harris *et al.* (2001) performed a study using 3D seismic arrays in which the number of seal sightings varied only slightly in periods of no sonar firing, single sonar firing, and multiple-array sonar firing. Seals tended to stay slightly farther away from the vessel at times of full-array sonar firing, but they rarely moved more than 250 m (820 ft) from the vessel. Sonar activity was interrupted when seals came within a certain radius (150 m, 492 ft, to 250 m, 820 ft) of the vessel, in accordance with regulations set by NMFS.

Ringed seals are available to subsistence users year-round, but they are primarily hunted in the winter due to the rich availability of other mammals in the summer. In 2000, the annual estimated subsistence ''take'' from Alaska of ringed seals was 9,567. Because the bulk of the ringed seal hunting will occur outside the time scope of the proposed project, adverse

impacts on ringed seals as a result of the proposed survey are not anticipated.

Spotted Seals

Spotted seals in Alaska are distributed along the continental shelf of the Beaufort, Chukchi, and Bering Seas. These seals migrate south from the Chukchi Sea, through the Bering Strait, into the Bering Sea beginning in October. They spend the winter in the Bering Sea traveling east and west along the ice edge (Lowry *et al.*, 1998). Because of the numbers of whales and bearded seals and the opportunities for subsistence harvesting of them, spotted and ringed seals are primarily hunted during winter months in the Beaufort Sea. Since this time frame is outside the scope of the proposed project, subsistence activities involving spotted and ringed seals are unlikely to occur during the survey (BLM, 2005). PGS does not anticipate adverse effects to spotted seals as a result of project activities.

Bearded Seals

Bearded seals tend to inhabit relatively shallow water (less than 200 m, 656 ft, deep) that does not have much ice. In Alaska, they are distributed along the continental shelf of the Bering, Chukchi, and Beaufort Seas. Most bearded seals migrate in the spring from the Bering Sea, through the Bering Strait, and into the Chukchi Sea and spend the summer season along the ice edge. Some bearded seals do not migrate and spend all year in the waters of the Bering and Chukchi Seas. According to a subsistence harvest database, the 2000 annual harvest of bearded seals in Alaska was 6,788 (ADF&G, 2000). Bearded seals are an important source of meat and hide for Chukchi Sea villages. They tend to be targeted by subsistence users over ringed and spotted seals because they are very large. This provides a large amount of meat and skins for constructing boats (BLM, 2005).

Bearded seals are primarily hunted during July in the Beaufort Sea; however, in 2007, bearded seals were harvested in the months of August and September at the mouth of the Colville River Delta (Smith, pers. comm., 2008). The proposed project location is not a primary subsistence hunting ground; however, it is occasionally used by residents of Nuiqsut for subsistence hunting of bearded seals. An annual bearded seal harvest occurs in the vicinity of Thetis Island in July through August (J. Nukapigak, Nuiqsut hunter, pers. comm., 2008). Approximately 20 bearded seals are harvested annually through this hunt.

PGS anticipates that there is not a significant potential for the proposed project to affect the bearded seal subsistence hunt. Mitigation measures will be in place to minimize potential impacts.

Plan of Cooperation (POC)

Regulations at 50 CFR 216.104(a)(12) require IHA applicants for activities that take place in Arctic waters to provide a POC or information that identifies what measures have been taken and/or will be taken to minimize adverse effects on the availability of marine mammals for subsistence purposes. PGS developed a Draft POC, which included a timeline of meetings set to occur in the communities identified as potentially being affected by the proposed project. These communities are Nuiqsut and Barrow. The Draft POC document was distributed to the communities, subsistence users groups, NMFS, and USFWS on March 20, 2008. Based upon discussions with communities and subsistence users, PGS has incorporated changes to the project to reduce potential subsistence conflicts. These changes are discussed in Addendum 1 of the Draft POC, which was submitted to the potentially affected communities and subsistence users groups, NMFS, and USFWS on May 7, 2008. Copies were also available during POC meetings in Barrow on May 8, 2008, and in Nuiqsut on May 9, 2008. A Final POC document including all input from potentially affected communities and subsistence users groups will be provided upon completion of the May POC meetings. Meetings that have taken place prior to the survey include:

- February 7, 2008: AEWC 2008 Conflict Avoidance Agreement (CAA) meeting with Nuiqsut whalers in Deadhorse to present the proposed project and to gather feedback in support of a 2008 CAA;
- February 11, 2008: AEWC 2008 CAA meeting with Barrow whalers in Barrow to present the proposed project and to gather feedback in support of a 2008 CAA;
- February 28, 2008: AEWC 2008 CAA meeting in Barrow to discuss the 2008 CAA with the AEWC;
- April 1, 2008: Kuukpikmiut Subsistence Oversight Panel, Inc. Meeting and the Nuiqsut POC Meeting/ Open House in Nuiqsut to present the proposed project and to gather feedback;
- April 2, 2008: NSB Planning Commission in Barrow to present the proposed project in support of a NSB Development Permit application;
- April 14–16, 2008: Open Water Meeting in Anchorage to present the proposed project to NMFS and other attendees in support of the IHA application. The Open Water Meeting includes a forum for discussion of potential conflicts between industry activities and subsistence use activities.
- May 8, 2008: Barrow POC Meeting/ Open House in Barrow to present the proposed project and to gather feedback from the community; and
- May 9, 2008: Nuiqsut POC Meeting/ Open House in Nuiqsut to present the project revisions and gather feedback from the community.

It should be noted that NMFS must make a determination under the MMPA that an activity would not have an unmitigable adverse impact on the subsistence needs for marine mammals. While this includes usage of both cetaceans and pinnipeds, the primary impact by seismic activities is expected to be impacts from noise on bowhead whales during its westward fall feeding and migration period in the Beaufort Sea. NMFS has defined unmitigable adverse impact as an impact resulting from the specified activity: (1) That is likely to reduce the availability of the species to a level insufficient for a harvest to meet subsistence needs by: (i) causing the marine mammals to abandon or avoid hunting areas, (ii) directly displacing subsistence users, or (iii) placing physical barriers between the marine mammals and the subsistence hunters; and (2) That cannot be sufficiently mitigated by other measures to increase the availability of marine mammals to allow subsistence needs to be met (50 CFR 216.103).

However, while a signed CAA allows NMFS to make a determination that the activity will not have an unmitigable adverse impact on the subsistence use of marine mammals, if one or both parties fail to sign the CAA, then NMFS will make the determination that the activity will or will not have an unmitigable adverse impact on subsistence uses of marine mammals. This determination may require that the IHA contain additional mitigation measures in order for this decision to be made.

Proposed Mitigation Measures

The introduction of pulsed sounds generated by seismic airguns is the main source of potential impacts on marine mammal species and the focus of this request. The response of the animal depends on various factors, but short-term behavioral responses are the most likely to occur. No serious or lethal injuries are expected. Implementation of the proposed mitigation measures described below will reduce the potential impacts to marine mammals.

Several mitigation measures are proposed to be implemented in order to

cause a minimal adverse impact upon affect marine mammal species. These include:

• The seismic vessel will remain within 5 km (3 mi) of the coastline and is not expected to pass the state/Federal boundary line, avoiding bowhead whale migration routes;

• In response to discussions with the AEWC, PGS has negotiated the following operational windows to further avoid potential impacts to migrating whales. The timing of the proposed survey would be divided into two parts. Data acquisition outside the barrier islands (Thetis, Spy, and Leavitt Islands), the deepest water in the survey area, would be performed first and would be completed by August 5. Data acquisition inside the barrier islands, with maximum water depth of approximately 4.6 m (15 ft), would then be conducted from August 5–September 15. No data acquisition would be conducted outside the barrier islands after August 5.

• Although seismic operations are proposed to be conducted during the fall whale hunt (after August 25), they would not occur within the areas normally used by hunters from Barrow (Point Barrow) or Nuiqsut (Cross Island). The survey area is 60 km (37 mi) west of Cross Island (and downstream of the bowhead fall migration) and 260 km (160 mi) east of Point Barrow.

• Although seismic operations are proposed to be conducted during the fall whale migration, activities would occur in shallow waters within the barrier islands that are not considered whale habitat. The barrier islands are also expected to act as an obstacle to sounds generated by seismic activities, effectively keeping sound propagation from entering the zone of migration.

• MMOs will be stationed on source vessels to ensure that the airguns are not operated in close proximity to marine mammals and will be actively involved in vessel operations during all survey operations.

• PGS has offered to hire Inupiat speakers to perform seismic work on each of the PGS vessels. As part of their duties, the Inupiat speakers will also keep watch for marine mammals and will communicate with the MMOs located on the source vessels.

• PGS will participate in the Com Centers proposed to be operated in Barrow and Deadhorse. Com Centers enable vessel operators to be aware of and avoid marine mammal and subsistence activity in the area. Communications of vessel operations and transit will occur via telephones, the Internet, and very high frequency radios.

• The proposed airgun energy source is of moderate size, reducing the ensonified zone and the impacts to marine mammals.

• The airgun source will be acoustically measured from all directions and in varying water depths at the start of operations. Using this information, an avoidance radius will be determined within which any marine mammal sighting will cause immediate airgun shutdown.

• Ramp up and soft start methods will be conducted while seismic operations are initiated. This is intended to alert marine mammals in the area so that they may swim away from the source before the full energy source is employed.

• Shutdown safety radii of 203 m (0.13 mi) and 492 m (0.31 mi) for pinnipeds and cetaceans, respectively, will be monitored during operations to ensure that injurious ''takes'' are avoided. These radii will be adjusted accordingly based on the results of the acoustic measurements mentioned above.

• PGS will participate in an offshore monitoring program that will take place from mid-August until mid- to late September in cooperation with Pioneer Natural Resources, Inc., (Pioneer) and ENI and in coordination with Shell Offshore, Inc. which includes: (1) Monitor in-water sound near and distant from Pioneer's Oooguruk drill site, ENI's Spy Island drill pad, and vessel operations using four autonomous seafloor acoustic recorders (ASARs); (2) Monitor and characterize sounds produced from shallow-depth seismic survey planned by PGS using ASARs and directional autonomous seafloor recorders (DASARs); (3) Detect and localize marine mammal vocalizations using an array of DASAR's positioned north and northwest of the Pioneer and ENI projects; and (4) Visually survey the coastal Beaufort Sea from an aircraft to search for bowhead whales and characterize behavior of those animals observed.

Establishment and Monitoring of Safety Zones

In-water sounds from support vessels and associated with the Pioneer and ENI projects will be measured and source levels determined. Primary vessels may include crew boats, tugs, and barges. A total of 12 vessels will be associated with the PGS seismic survey, many of these relatively small, outboard powered skiffs. Between all three operations, it is expected that sounds will be measured from 18–20 vessels.

Most measurements will be made using JASCO Research's Ocean Bottom Hydrophones (OBH) in early July with methods used previously (Zykov *et al.*, 2008b; Laurinolli *et al.*, 2008). Measurements will be made with a single OBH system positioned in 4.6–9 m (15–30 ft) of water with the vessel sailing along a line from 10–25 km (6–15.5 mi) away to directly over the OBH. The sail past is conducted at normal operating speed of the vessel. Some vessel measurement may be performed using the ASARs stationed near ODS and SID (instead of the OBHs).

Sound source measurements will be made of the two PGS airgun arrays at two locations (inside and outside the barrier islands in early July and prior to seismic data acquisition). Both airgun array configurations will be measured at each location, leading to four separate measurements. The measurements will be made using four OBH systems (see PGS' application, Figure 2 in Appendix B). These recorders sample at 48 kHz, using a high-resolution 24–bit digitization systems. They can record autonomously for up to 3 days per deployment. The distances to the important sound level thresholds will vary strongly with operating water depth. In the shallowest depths of near 4 ft, sounds will be rapidly attenuated and the distances will be relatively small. The survey area outside the barrier islands reaches depths that support much better sound propagation, and ENI expects the 120–dB distance could be as great as 10–20 km (6–12 mi). The OBH placement should be made to correspond with the best pre-field estimates of the 190, 180, 160, and 120 dB re 1 μPa (rms) thresholds. JASCO will consider previous sound source verification (SSV) measurements near BP's Liberty prospect in similar water depths, combined with modeling to estimate the appropriate distances prior to the SSV measurements.

The OBH deployment configuration distances will be determined as discussed previously. The optimal deployment configurations will be determined for both the inside barrier island and outside barrier island locations. The OBHs will be deployed and seismic vessels asked to shoot along pre-defined test tracks. The test tracks will be oriented in at least two directions to capture the directivity characteristics of the airgun arrays; airgun arrays typically produce greater sound energy perpendicular to the tow direction than in line with the tow direction.

PGS will apply appropriate adjustments to the estimated safety zones of 203 m (0.13 mi) for the 190–dB isopleth and 492 m (0.31 mi) for the 180–dB isopleth. Results will be used

for the implementation of mitigation measures to power down the sound source and reduce the size of the safety zones when required.

Speed and Course Alterations

If a marine mammal (in water) 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 would be changed in a manner that does not compromise safety requirements. The animal's activities and movements relative to the seismic vessel will be closely monitored to ensure that the individual 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 shutdown of the airgun(s).

Power-down Procedure

A power-down involves decreasing the number of airguns in use such that the radii of the 190–dB and 180–dB zones are decreased to the extent that observed marine mammals are not in the applicable safety zone. Situations that would require a power-down are listed below.

(1) When the vessel is changing from one source line to another, one airgun or a reduced number of airguns is operated. The continued operation of one airgun or a reduced airgun array is intended to: (a) alert marine mammals to the presence of the seismic vessel in the area and (b) retain the option of initiating a ramp up to full operations under poor visibility conditions.

(2) 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 the animal from entering the safety zone. As an alternative to a complete shutdown, the airguns may be powered- down before the animal is within the safety zone.

(3) If a marine mammal is already within the safety zone when first detected, the airguns would be powered-down immediately if this is a reasonable alternative to a complete shutdown, to have the marine mammal outside the newly established safety zone that would be smaller due to reduced number of operating airguns. This decision will be made by the MMO and can be based on the results obtained from the acoustic measurements for the establishments of safety zones.

Following a power-down, operation of the full airgun array 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:

(1) Is visually observed to have left the safety zone;

(2) Has not been seen within the zone for 15 min in the case of small odontocetes and pinnipeds; or

(3) Has not been seen within the zone for 30 min in the case of mysticetes (large odontocetes do not occur within the study area).

Shutdown Procedure

A shutdown procedure involves the complete turn off of all airguns. Ramp-up procedures will be followed during resumption of full seismic operations. The operating airgun(s) will be shut down completely during the following situations:

(1) If a marine mammal approaches or enters the applicable safety zone, and a power- down is not practical or adequate to reduce exposure to less than 190 dB (rms; pinnipeds) or 180 dB (rms; cetaceans).

(2) If a marine mammal approaches or enters the estimated safety radius around the reduced source that will be used during a power-down.

(3) If a marine mammal is detected within the safety radius and a power down would not keep the animal outside the reduced new safety radius, the airguns will be shut-down.

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 as described above for power-down procedures.

Ramp-up Procedure

A ramp-up procedure will be followed when the airgun array begins operating after a specified duration with no or reduced airgun operations. The specified duration depends on the speed of the source vessel, the size of the airgun array that is being used, and the size of the safety zone, but is often about 10 min.

NMFS requires that, once ramp-up commences, the rate of ramp-up be no more than 6 dB per 5 min period. Ramp-up will likely begin with the smallest airgun, in this case, 80 in^3. The precise ramp-up procedure has yet to be determined. A common procedure is to double the number of operating airguns at 5-min intervals. During the ramp-up, the safety zone for the full 8–gun array will be maintained. A ramp-up procedure can be applied only in the following situations:

(1) If, after a complete shutdown, the entire 180 dB safety zone has been visible for at least 30 min prior to the planned start of the ramp-up in either daylight or nighttime. If the entire safety zone is visible with vessel lights and/or night vision devices, then ramp-up of the airguns from a complete shutdown may occur at night.

(2) 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 either be alerted by the sounds from the single airgun and could move away or may be detected by visual observations.

(3) If no marine mammals have been sighted within or near the applicable safety zone during the previous 15 min in either daylight or nighttime, provided that the entire safety zone was visible for at least 30 min.

Proposed Monitoring and Reporting Plan

PGS proposes to sponsor marine mammal monitoring during the seismic survey in order to implement the proposed mitigation measures that require real-time monitoring, to satisfy the anticipated monitoring requirements of the IHA, and to meet any monitoring requirements agreed to as part of the POC/CAA. PGS will meet the requirements by using two techniques: use of MMOs and participating in an acoustics monitoring plan through ENI. The monitoring plan is described here.

Vessel-based Visual Monitoring by MMOs

PGS' approach to monitoring is to station two or more MMOs aboard each seismic vessel to document the occurrence of marine mammals near the vessel, to help implement mitigation requirements, and to record the reactions of marine mammals to the survey. At least one MMO, if not all, will be an Inupiat trained in collecting marine mammal data. Each MMO will, while on duty, scan the area of operation (using 8 to 10 power binoculars) for marine mammals, recording the species, location, distance from survey vessel, and behavior (and associated weather data) of all that are seen. Observer watches will last no more than 4 consecutive hours, and no observer will watch more than 12 total hours in a 24–hr day. Observation will occur while survey operations are conducted. (Use of night-scope for fall monitoring will be explored prior to the fall field season.) Most importantly, however, each MMO will determine that the safety radius is clear of marine mammals prior to operating the high-energy sound equipment, and each will have the authority to suspend active side-scan sonar or sleeve gun operations should a marine mammal be observed

approaching the safety radius. NMFS will be provided with weekly reports of the marine mammal observations as long as the onboard communication systems allow.

In addition to the marine mammal monitoring to be performed by the MMOs located on the source vessels, PGS has offered to hire Inupiat speakers to perform seismic work on each of the PGS vessels. As part of their duties, the Inupiat speakers will also keep watch for marine mammals and will communicate with the MMOs located on the source vessels.

Acoustic Monitoring of Drillsite Activities and Marine Mammal Vocalizations

Acoustic measurements of drillsite activities and marine mammal vocalizations in 2008 will be performed using Greeneridge's autonomous seafloor recorders. For monitoring the near-drillsite sounds, four omnidirectional ASARs (Greene *et al.*, 1997) will be used, which sample at a rate of 5 kHz and have an acoustic bandwidth of 10–2,200 Hz. The ASARs can record ambient and anthropogenic sounds and vocalizations from bowhead whales, beluga whales, seals, and walrus.

For the whale-call acoustic array, five directional DASARs (Greene *et al.*, 2004; see Figure 3 in Appendix B of PGS' application) will be used, which have an acoustic bandwidth of 10–450 Hz. In addition to bowhead whale calls, the DASARs will also detect and record industrial sounds, including those produced by vessels and seismic airguns. Regarding the ability to detect ultra-low frequency sounds that might be produced from drilling, the DASAR and the ASAR can record sounds as low as 1 or 2 Hz but at reduced sensitivity relative to frequencies above 10 Hz. The DASARs will be modified versions of units (DASAR ''b'') that were used for Shell's 2007 Beaufort Sea Monitoring Program and will be identical to those proposed for monitoring BP's Northstar Island and Shell's five DASAR arrays in 2008. The modification involves a new version of the sensor (a three-channel device). In total, nine recorders will be used for Pioneer/ENI in 2008; four ASARs will be deployed in the vicinity of the ODS and SID and five DASARs will be located approximately 13–20 km (8–12 mi) north of the drillsites in 9–15.2 m (30–50 ft) of water (see Figure 4 in Appendix B of PGS' application).

The acoustic recorders will be deployed/retrieved using a workboat supplied by Pioneer/ENI. Recorders will be retrieved from a tag line and the grapple method. The recorders will be deployed in mid-August and then allowed to record as long as possible into September, taking weather factors (e.g., sea state and ice formation) into consideration. The NSB Wildlife Department will be informed prior to removing the recorders.

The four ASARs will be placed near the two drillsites to monitor sounds produced from drilling (ODS only), vessel (ODS and SID), and construction activities (primarily SID). Figure 5 in Appendix B of PGS' application provides a finer scale resolution of the acoustic recorders in the vicinity of ODS and SID than in Figure 4. One ASAR will be placed approximately 0.4 km (0.25) mi from each ODS and SID. One ASAR will be placed 6.4 km (4 mi) north of ODS and one 0.6 km (1 mi) north of SID. Similar to the nearby Shell DASAR Site 1 and Site 2 arrays, the DASARs will be spaced 7 km (4.3 mi) from each other and will detect marine mammal vocalizations to the north and south of the array out to 10 to 15 km (6 to 9 mi) from any one recorder.

The acoustic data collected during the summer 2008 near ODS and SID will be suitable to compute sound levels received from: (1) heavy equipment and machinery operating on the drillsites; (2) small vessels and crew change vessels operating around the ODS and SID and between Oliktok Point and the ODS; (3) loaded and empty barges traversing to and from Oliktok Point and ODS and SID; and (4) the process of holding the barges in place at the drillsites while offloading equipment and supplies.

An important aspect to characterizing sounds and correlating them to specific activities will be to maintain an accurate record of all sound-producing activities in the project areas. Time-referenced information of vessel movements and construction activities at and around the drillsites will be required in order to interpret acoustic sound level data. This is especially important in order to determine whether measured sound levels are generated by activities at or near the drillsites. To acquire detailed position information from key sources of in-water sounds, Pioneer/ENI proposes to place GPS units capable of logging position data on selected project vessels during the open-water period. The vessel logs and GPS position data will be used to verify (or exclude) various sources of anthropogenic sounds that are detected on the acoustic recorders and to associate any visual observations of marine mammal behavior from aerial surveys with project activities. Pioneer/ENI will also maintain logs of equipment inventory and associated daily activities at ODS and SID and the drilling activity at ODS.

Additional information on how the ASARs and DASARs will be utilized is found in Appendix B of the PGS application.

Acoustic Monitoring of Seismic Survey and Ambient Sounds

PGS will use an automated process developed by A. Thode of Scripps to detect airgun pulses in the DASAR data and compute the instantaneous peak pressure, the sound pressure level (rms), the sound exposure level, and the pulse duration. Background sound levels (between the pulses) are also characterized using this automated procedure. These measurements provide time series for the entire study period, expected to be from 4–6 weeks beginning in mid-August. Vessel sounds will be noted and their levels included in the background time series (Blackwell *et al.*, 2008).

Aerial Surveys

Working with NSB scientists in 2006, Pioneer developed an aerial survey program to assess the distribution of bowhead whales within 24–32 km (15–20 mi) of the Pioneer operation during fall whale migration. These surveys were done in 2006 and 2007 and were conducted with two dedicated observers from a Bell 412 helicopter (Reiser *et al.*, 2008; Williams *et al.*, 2008).

For 2008, PGS proposes to collaborate with Shell to expand the temporal coverage of their aerial survey program, which is otherwise planned to start around September 7. These surveys are to be performed in support of Shell's shallow hazard surveys being planned from mid-September through October, 2008. PGS will work to expand the duration of these surveys to start August 25 and be conducted along the survey tracklines.

Weather conditions permitting, surveys will be conducted 3 or more days per week beginning August 25 and continuing through as far into October as Shell continues its operation. The surveys will be conducted from a de Havilland Twin Otter following similar protocols used by Shell in the Beaufort Sea in 2006 and 2007. Survey tracklines will be spaced 8 km (5 mi) apart and will run approximately 64.4 km (40 mi) in a north-south direction. Surveys will be conducted in good survey conditions (i.e., favorable weather and sea state). Four trained and experienced surveyors seated in the rear of the aircraft will make observations from the right and left sides of the airplane. The airplane will be operated by two pilots in the

front seats who will also survey the area ahead of the aircraft.

Standard aerial survey procedures used by LGL and others in many previous marine mammal projects will be followed, including those surveys completed for Shell in the Alaskan Beaufort Sea in 2006 (Thomas *et al.*, 2007) and 2007 (Lyons *et al.*, 2008). Following these procedures will facilitate comparisons and (as appropriate) pooling of results with other datasets (e.g., sighting rates, whale group size and composition). The aircraft will be flown at 100–110 knots ground speed and at an altitude of 457 m (1500 ft). Aerial surveys at an altitude of 457 m (1500 ft) do not provide much information about seals but are suitable for both bowhead and beluga whales. The need for a 457 m (1500 ft) cloud ceiling will limit the dates and times when surveys can be flown. The surveys will follow a GPS-referenced tracklines.

For each marine mammal sighting, the observer will not the species, number, size/age/sex class when determinable, activity, heading, swimming speed category (if traveling), sighting cue, ice conditions (type and percentage), and inclinometer reading. An inclinometer reading (angle from horizontal) will be taken when the animal's location is at a right angle to the side of the aircraft track, allowing calculation of lateral distance from the aircraft trackline. Transect information, sighting data, and environmental data will be entered into a GPS-linked data logger.

Reporting

A report on the preliminary results of the acoustic verification measurements, including as a minimum the measured 190- and 180–dB (rms) radii of the airgun sources, will be submitted within 72–hrs after collection of those measurements at the start of the field season. This report will specify the distances of the safety zones that were adopted for the survey.

A report on PGS' activities and on the relevant monitoring and mitigation results will be submitted to NMFS within 90 days after the end of the seismic survey. The report will describe the operations that were conducted, the measured sound levels, and the cetaceans and seals that were detected near the operations. The report will be submitted to NMFS, providing full documentation of methods, results, and interpretation pertaining to all acoustic and vessel-based marine mammal monitoring. The 90-day report will summarize the dates and locations of seismic operations, and all whale and seal sightings (dates, times, locations, activities, associated seismic survey activities). Marine mammal sightings will be reported at species level, however, especially during unfavorable environmental conditions (e.g., low visibility, high sea states) this will not always be possible. The number and circumstances of ramp-up, power-down, shutdown, and other mitigation actions will be reported. The report will also include estimates of the amount and nature of potential impact to marine mammals encountered during the survey.

ESA

NMFS has previously consulted under section 7 of the ESA on the issuance of IHAs for seismic survey activities in the Beaufort and Chukchi Seas. NMFS issued a Biological Opinion on June 16, 2006, regarding the effects of this action on ESA-listed species and critical habitat under the jurisdiction of NMFS. The Opinion concluded that this action is not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat. A copy of the Biological Opinion is available at: *http://www.mms.gov/alaska/ref/BioOpinions/ARBOIII–2.pdf*.

National Environmental Policy Act (NEPA)

In 2006, the MMS prepared Draft and Final Programmatic Environmental Assessments (PEAs) for seismic surveys in the Beaufort and Chukchi Seas. NMFS was a cooperating agency in the preparation of the MMS PEA. On November 17, 2006 (71 FR 66912), NMFS and MMS announced that they were preparing a DPEIS in order to assess the impacts of MMS' annual authorizations under the Outer Continental Shelf Lands Act to the U.S. oil and gas industry to conduct offshore geophysical seismic surveys in the Chukchi and Beaufort Seas off Alaska and NMFS' authorizations under the MMPA to incidentally harass marine mammals while conducting those surveys.

On March 30, 2007 (72 FR 15135), the Environmental Protection Agency (EPA) noted the availability for comment of the NMFS/MMS DPEIS. Based upon several verbal and written requests to NMFS for additional time to review the DPEIS, EPA has twice announced an extension of the comment period until July 30, 2007 (72 FR 28044, May 18, 2007; 72 FR 38576, July 13, 2007). Because NMFS has been unable to complete the PEIS, it determined that the 2006 PEA would need to be updated in order to meet NMFS' NEPA requirements. This approach was warranted as it was reviewing five proposed Arctic seismic survey IHAs for 2008, well within the scope of the PEA's eight consecutive seismic surveys. To update the 2006 Final PEA, NMFS is currently preparing an EA which incorporates by reference the 2006 Final PEA and other related documents. The necessary NEPA analysis will be concluded prior to making a determination on the issuance of the IHA to PGS.

Preliminary Determinations

Based on the information provided in PGS' application, this document, and the MMS Final PEA, NMFS has preliminarily determined that the impact of PGS conducting seismic surveys in the Beaufort Sea in 2008 may result, at worst, in a temporary modification in behavior (Level B Harassment) of small numbers of six species of marine mammals, will have no more than a negligible impact on the affected species or stocks, and that there will not be any unmitigable adverse impacts to subsistence communities, provided the mitigation measures described previously in this document are implemented.

NMFS has preliminarily determined that the short-term impact of conducting seismic surveys in the U.S. Beaufort Sea may result, at worst, in a temporary modification in behavior by certain species of marine mammals. 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 animals. 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 small (less than one percent of any of the estimated population sizes) and has been mitigated to the lowest level practicable through incorporation of the measures mentioned previously in this document. 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 mitigation and monitoring measures proposed above. No rookeries, mating grounds, areas of concentrated feeding, or other areas of special significance for marine mammals occur within or near the planned area of operations during the season of operations.

NMFS has preliminarily determined that the proposed seismic activity by PGS in the Beaufort Sea in 2008 will not

have an unmitigable adverse impact on the subsistence uses of bowhead whales and other marine mammals. This determination is supported by the information in this **Federal Register** Notice, including: (1) the fall bowhead whale hunt in the Beaufort Sea will either be governed by a CAA between PGS and the AEWC and village whaling captains or by mitigation measures contained in the IHA; (2) the CAA or IHA conditions will significantly reduce impacts on subsistence hunters to ensure that there will not be an unmitigable adverse impact on subsistence uses of marine mammals; (3) because ringed seals are hunted mainly from October through June, although they are available year-round; however, the seismic survey will not occur during the primary period when these seals are typically harvested; and (4) specific provisions to avoid interference with the seal hunts will be integrated into the survey in compliance with the CAA where applicable.

Proposed Authorization

As a result of these preliminary determinations, NMFS proposes to issue an IHA to PGS for conducting a seismic survey in the Beaufort Sea in 2008, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated.

Dated: June 11, 2008.

James H. Lecky,

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

[FR Doc. E8–13650 Filed 6–16–08; 8:45 am]

BILLING CODE 3510–22–S

DEPARTMENT OF DEFENSE

Office of the Secretary

[Transmittal Nos. 08–06]

36(b)(1) Arms Sales Notification

AGENCY: Department of Defense, Defense Security Cooperation Agency.

ACTION: Notice.

SUMMARY: The Department of Defense is publishing the unclassified text of a section 36(b)(1) arms sales notification. This is published to fulfill the requirements of section 155 of Public Law 104–164 dated 21 July 1996.

FOR FURTHER INFORMATION CONTACT: Ms. B. English, DSCA/DBO/CFM, (703) 601–3740.

The following is a copy of a letter to the Speaker of the House of Representatives, Transmittals 08–06 with attached transmittal, policy justification, and Sensitivity of Technology.

Dated: May 5, 2008.

Patricia L. Toppings,

OSD Federal Register Liaison Officer, Department of Defense.

BILLING CODE 5001–06–M