DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648–XJ62

North Pacific Fishery Management Council; Notice of Public Meeting

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

ACTION: Notice.

SUMMARY: The North Pacific Fishery Management Council (Council) will host a public workshop on proposed gear modifications to trawl sweeps used in the BSAI flatfish fisheries, at Dantrawl, in Seattle.

DATES: The meeting will be held on September 8, 2008, 1 p.m.–5 p.m.

ADDRESSES: Dantrawl, 1121 NW 52nd, Seattle, WA 98107.

Council address: North Pacific Fishery Management Council, 605 W. 4th Ave., Suite 306, Anchorage, AK 99501–2252.

FOR FURTHER INFORMATION CONTACT: Diana Evans, Council staff, Phone: 907–271–2809.

SUPPLEMENTARY INFORMATION: The agenda will be as follows:

(1) Introductions; (2) Latest research results; (3) Gear designs (bobbins, placement, rope types, with net reels and without net reels, practical applications); (4) Council June motion; (5) Draft regulations; (6) Monitoring and enforcement issues (identify problems and suggest solutions).

These meetings are physically accessible to people with disabilities. Requests for sign language interpretation or other auxiliary aids should be directed to Gail Bendixen at 907–271–2809 at least 7 working days prior to the meeting date.

Dated: August 4, 2008.

Tracey L. Thompson,

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

[FR Doc. E8–18161 Filed 8–6–08; 8:45 am]

BILLING CODE 3510–22–S

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648–XJ56

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

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

ACTION: Notice; issuance of an incidental take authorization.

SUMMARY: In accordance with the Marine Mammal Protection Act (MMPA) regulations, notification is hereby given that NMFS has issued an Incidental Harassment Authorization (IHA) to PGS Onshore, Inc. (PGS) to take, by harassment, small numbers of six species of 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 and early fall 2008.

DATES: Effective July 30, 2008, through July 29, 2009.

ADDRESSES: The application containing a list of references used in this document, an addendum to the application, and the IHA are available by writing to P. Michael Payne, Chief, Permits, Conservation and Education Division, Office of Protected Resources, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring, MD 20910–3225 or by telephoning the contact listed below (**FOR FURTHER INFORMATION CONTACT**) or online 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/*. NMFS' 2008 Supplemental Environmental Assessment (SEA) is available at: *http://www.nmfs.noaa.gov/pr/permits/incidental.htm#applications*.

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 for a period of approximately 75 days from mid-July to late-September, 2008, barring weather delays. 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 25. 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 late-September. This portion of the work would also move from east to west. If additional data acquisition is required outside of the barrier islands after August 25, it would not recommence until the close of the fall bowhead hunt by the Nuiqsut community.

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. A detailed overview of the activities of this survey were provided in the Notice of Proposed IHA (73 FR 34254, June 17, 2008). No changes have been made to these proposed activities. Additional information is contained in PGS' application and application addendum, which are available for review (see **ADDRESSES**).

Comments and Responses

A notice of receipt of PGS' MMPA application and NMFS' proposal to issue an IHA to PGS was published in the **Federal Register** on June 17, 2008 (73 FR 34254). That notice described, in detail, PGS' proposed activity, the marine mammal species that may be affected by the activity, and the anticipated effects on marine mammals. During the 30–day public comment period on PGS' application, comments were received from the Marine Mammal Commission (Commission), the Center for Biological Diversity (CBD) and Pacific Environment (collectively ''CBD''), the Alaska Eskimo Whaling Commission (AEWC), the North Slope Borough (NSB) Office of the Mayor and the NSB Department of Wildlife Management (DWM), and Resisting Environmental Destruction on Indigenous Lands (REDOIL) and the Native Village of Point Hope (NVPH; collectively ''REDOIL''). CBD attached the comments submitted by the Natural Resources Defense Council (NRDC) on the 2006 MMS PEA as an appendix to its comments on the IHA. With the exception of some comments relevant to this specific action which are addressed here, comments on the Draft PEA have been addressed in Appendix D of the Final PEA and are not repeated here. Copies of those comment letters and the responses to comments can be found at: *http://www.mms.gov/alaska/*. CBD also attached the comments submitted by EarthJustice on the 2007 DPEIS. Those comments are not substantially different from the comments submitted on the PEA and do not contain comments specific to the PGS project. Therefore, they are not addressed separately in this document. REDOIL attached the declaration of Rosemary Ahtuangaruak, a Native Alaskan resident in Nuiqsut, submitted on behalf of the plaintiffs in *Native Village of Point Hope et al.* v. *Minerals Management Service et al.*. Several of her statements are referenced in their comment letter and addressed in this section of the document. The majority of her statement relates to issues raised by other commenters regarding subsistence concerns.

General Concerns

Comment 1: CBD urges NMFS not to issue a take authorization to PGS for the proposed activities unless and until the agency can ensure that mitigation measures are in place that truly avoid adverse impacts to all species and their habitats and only after full and adequate public participation has occurred and environmental review of the cumulative impacts of such activities on these species and their habitats has been undertaken. CBD, AEWC, and NSB feel that the proposed IHA does not meet these standards and therefore violates the MMPA, the Endangered Species Act (ESA), the National Environmental Policy Act (NEPA), and other governing statutes and regulations.

Response: In its proposed IHA **Federal Register** notice (73 FR 34254, June 17, 2008), NMFS outlined in detail the proposed mitigation and monitoring requirements. The implementation of these measures will reduce the impacts of the proposed survey on marine mammals and their surrounding environment to the lowest level practicable. The public was given 30 days to review and comment on these measures, in accordance with section 101(a)(5)(D) of the MMPA. NMFS has prepared a SEA to the 2006 MMS PEA. The PEA was available for comment in 2006. NMFS has fulfilled its obligations under NEPA by completing a SEA, which is not required to be available for public comment prior to its finalization. These documents fully analyze the cumulative impacts of seismic activity in the Arctic region. Additionally, NMFS completed a Biological Opinion in July, 2008, as required by section 7 of the ESA, which 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. The 2008 seismic survey off Oliktok Point in the Beaufort Sea has been analyzed pursuant to the ESA.

Comment 2: CBD assumes that PGS is seeking authorization from the U.S. Fish and Wildlife Service (USFWS) for the take of polar bears and Pacific walrus that will occur from their proposed activities. While these species are outside of NMFS' jurisdiction for purposes of take authorization, they are clearly part of the ''affected environment'' adversely impacted by NMFS' action and therefore cannot lawfully be simply discounted, as NMFS has done in the proposed IHA.

Response: Since the IHA issued by NMFS can only regulate take of species under NMFS' jurisdiction, the Notice of Proposed IHA does not go into detail regarding species under the jurisdiction of other Federal agencies. However, NMFS does analyze the impacts to these species in its NEPA analysis as part of the ''affected environment.'' The USFWS has issued a Letter of Authorization (LOA) to PGS to take species under its jurisdiction (i.e., polar bears and walruses).

Comment 3: The NSB and AEWC point out that several sections of PGS' application were poorly researched and drafted, especially the sections on impacts to bowhead and beluga whales. REDOIL states that the modeling used by PGS was inadequate.

Response: NMFS reviewed the application and considered it complete after PGS submitted an addendum on May 29, 2008. While information is lacking, NMFS conducted relevant research and made its own calculations so that accurate and complete information could be provided in the **Federal Register** notice for the proposed IHA (73 FR 34254, June 17, 2008). In addition, detailed and updated information on bowhead whales and other Arctic Ocean marine mammal species is provided in the MMS 2006 PEA, the MMS/NMFS 2007 DPEIS, the NMFS 2008 SEA, and the Stock Assessment Reports (SARs), as referenced in the proposed IHA notice.

The addendum to PGS' application provided NMFS with additional information regarding the airgun array and the modeling used. NMFS used this information to calculate the various isopleths, which will be verified through sound source verification tests prior to beginning the survey. NMFS then used these recalculated radii to estimate take.

Comment 4: The NSB states that PGS' application indicates it will take 90 days to complete the survey while the proposed IHA notice states it will take 75 days. Thus, the amount of activity that will occur is unclear. In addition, since the IHA will not be issued before mid-July at the earliest, the surveys are not likely to be completed by mid-September. Therefore, additional monitoring would be required, and PGS would need to consult with AEWC and sign a Conflict Avoidance Agreement (CAA). Without additional monitoring plans for September and October, the NSB opposes an IHA that permits seismic activity during that time period.

Response: PGS will begin work upon receipt of the IHA and will work until approximately September 15. PGS, through ENI, has an agreement to complete operations by September 15 to allow another seismic program to begin. Although the project may extend beyond September 15 if the start date of other projects are pushed back, it is not anticipated to continue much beyond that date.

PGS has agreed to conduct additional monitoring after August 25. Acoustic monitoring and aerial surveys will begin in late August (see ''Monitoring and Reporting Plan'' section later in this document). This additional monitoring would continue until the PGS seismic survey is completed. Moreover, PGS signed a CAA with the AEWC on June 23, 2008.

Comment 5: The AEWC indicates that PGS signed the CAA on June 23, 2008 and that language about conducting activities near Nuiqsut was added specifically to address the village's concerns regarding both the bowhead whale migration and the potential effects of PGS' operations in nearshore areas used by Arctic Cisco, a fish commonly harvested by the community. The AEWC is satisfied with the negotiations and appreciates PGS' and ENI's willingness to work with them and their whaling captains.

Response: NMFS has reviewed the CAA and agrees that the time limitations placed on activities inside and outside the barrier islands mitigates the potential impacts to subsistence activities in the area. This language has been added to the IHA as well.

Comment 6: The AEWC and REDOIL are concerned about the lack of traditional knowledge in the application and NMFS' apparent failure to include this knowledge in reaching its conclusions.

Response: While traditional knowledge is not often included in applications for IHAs in the Arctic, and while NMFS encourages applicants to include this information, NMFS uses a wide variety of information when making the determinations required under section 101(a)(5)(D) of the MMPA and does not rely solely on the application. Traditional knowledge, for example, is discussed in several documents issued by MMS under NEPA, which were used by NMFS in making its MMPA determinations. In the case of the 2008 PGS IHA application, the MMS 2006 PEA and MMS' Final EIS for the Alaska Outer Continental Shelf Beaufort Sea Planning Area Oil and Gas Lease Sales 186, 195, and 202 (MMS 2003–001) and subsequent supporting NEPA documents, and NMFS' 2008 Arctic Regional Biological Opinion (ARBO) provide NMFS with information on traditional knowledge that can be used, as here, when making determinations under NEPA and the MMPA.

Comment 7: REDOIL incorporated CBD's comments by reference in their entirety, and the AEWC incorporated the NSB's comments by reference.

Response: Comments submitted by CBD and the NSB are addressed in this section of the document.

MMPA Concerns

Comment 8: CBD and the NSB state that because the proposed seismic activity carries the real potential to cause injury or death to marine mammals, neither an IHA nor a LOA (because NMFS has not promulgated regulations for mortality by seismic activities) can be issued for PGS' proposed activities.

Response: Section 101(a)(5)(D) of the MMPA authorizes Level A (injury) harassment and Level B (behavioral) harassment takes. While NMFS' regulations indicate that a LOA must be issued if there is a potential for serious injury or mortality, NMFS does not believe that PGS' seismic surveys require issuance of a LOA. As explained throughout this **Federal Register** Notice, it is highly unlikely that marine mammals would be exposed to sound pressure levels (SPLs) that could result in serious injury or mortality. The best scientific information indicates that an auditory injury is unlikely to occur as apparently sounds need to be significantly greater than 180 dB for injury to occur (Southall *et al.*, 2007). NMFS has determined that exposure to several seismic pulses at received levels near 200–205 dB (rms) might result in slight temporary threshold shift (TTS) in hearing in a small odontocete, assuming the TTS threshold is a function of the total received pulse energy. Seismic pulses with received levels of 200–205 dB or more are usually restricted to a radius of no more than 200 m (656 ft) around a seismic vessel operating a large array of airguns. PGS' airgun array is considered to be of moderate size. For baleen whales, while there are no data, direct or indirect, on levels or properties of sound that are required to induce TTS, there is a strong likelihood that baleen whales (bowhead and gray whales) would avoid the approaching airguns (or vessel) before being exposed to levels high enough for there to be any possibility of onset of TTS. For pinnipeds, information indicates that for single seismic impulses, sounds would need to be higher than 190 dB rms for TTS to occur while exposure to several seismic pulses indicates that some pinnipeds may incur TTS at somewhat lower received levels than do small odontocetes exposed for similar durations. Consequently, NMFS has determined that it would be lawful to issue an IHA to PGS for the 2008 seismic survey program.

Comment 9: CBD and the NSB state that while PGS' application does generally describe the location and duration of the seismic activities themselves, there is minimal description and no analysis of the impacts on marine mammals of the transport and deployment of the 13 vessels that will be involved in the

survey. By failing to adequately specify the activities and impacts of these vessels, PGS has failed to comply with 16 U.S.C. 1371(a)(5)(D)(i) and 50 CFR 216.104(a)(2).

Response: The specified activity that has been proposed and for which an IHA has been requested is the use of seismic airguns to conduct oil and gas exploration. While the support vessels play a role in facilitating seismic operations, NMFS does not expect these operations to result in the incidental take of marine mammals. The majority of the vessels to be used in the seismic survey will be transported to the North Slope via trucks. Moreover, any vessels to be used in the seismic survey are typically slow-moving, and therefore, any risk of vessel collisions with marine mammals is expected to be minimal. Additionally, since marine mammal observers (MMOs) will be scanning the area for marine mammals during seismic operations, this further reduces the risk of a collision with cetaceans or pinnipeds. PGS has also agreed to hire Inupiat speakers to work on the seismic vessels. As part of their duties, the Inupiat speakers will be required to watch for marine mammals. Finally, normal shipping and transit operations do not rise to a level requiring an authorization under the MMPA. To require IHAs and LOAs for standard shipping would reduce the ability of NMFS to review activities that have a potential to cause harm to marine mammal populations.

Comment 10: The NSB and CBD are concerned that NMFS has not made separate findings for both small numbers and negligible impact (16 U.S.C. 1371(a)(5)(D)(i)(I); 50 CFR 206.107). CBD states that the closest thing to a separate ''small numbers'' finding is a single sentence in the Preliminary Conclusions section of the proposed IHA. In recent proposed IHAs, NMFS has directly cited its invalid ''small numbers'' definition. In the current IHA, NMFS does not directly cite to the regulatory definition of ''small numbers'', but nevertheless conducts its analysis according to this invalid standard. Yet neither the **Federal Register** document nor PGS' application provide any support whatsoever for this ''conclusion.'' The CBD continues that for PGS' proposed seismic surveys in the Beaufort Sea, the number of marine mammals likely to be exposed to sounds of 160 dB re 1 μPa (rms) or greater, and therefore ''harassed'' according to NMFS' operative thresholds, is almost 1,600. In absolute terms this number cannot be considered ''small.'' The proposed seismic surveys simply are not designed to avoid impacting more than small numbers of marine mammals, and, therefore, the IHA must be denied.

Response: NMFS believes that the small numbers requirement has been satisfied. The species most likely to be harassed during seismic surveys off Oliktok Point in the Beaufort Sea is the ringed seal, with an ''average estimate'' of 3,551 exposures to SPLs of 160 dB or greater. (The estimate contained in the proposed IHA notice (73 FR 34254, June 17, 2008) was 1,467 ringed seals. However, this estimate was based on exposures to SPLs of 170 dB or greater.) This does not mean that this is the number of ringed seals that will actually exhibit a disruption of behavioral patterns in response to the sound source; rather, it is simply the best estimate of the number of animals that potentially could have a behavioral modification due to the noise. For example, Moulton and Lawson (2002) indicate that most pinnipeds exposed to seismic sounds lower than 170 dB do not visibly react to that sound, and, therefore, pinnipeds are not likely to react to seismic sounds unless they are greater than 170 dB re 1 μPa (rms). In addition, these estimates are calculated based upon line miles of survey effort, animal density, and the calculated zone of influence (ZOI). While this methodology is valid for seismic surveys that transect long distances, for those surveys that ''mow the lawn'' (that is, remain within a relatively small area, transiting back and forth while shooting seismic), the take estimate numbers tend to be highly inflated because animals that might have been affected (taken) are likely to have moved out of the area to avoid additional annoyance from the seismic sounds (assuming they were taken in the first place).

The Level B harassment take estimate of 3,551 ringed seals is a small number, at least in relative terms, in that it represents only 1.4 percent of the regional stock size of that species (249,000), if each ''exposure'' at 160 dB represents an individual ringed seal. The percentage would be even lower if a higher SPL is required for a behavioral reaction (as is expected) or, if as expected, animals move out of the seismic area. As a result, NMFS believes that these ''exposure'' estimates are conservative, and seismic surveys will actually affect less than 1.4 percent of the Beaufort Sea ringed seal population.

The ''average estimates'' of exposures for the remaining species that could potentially occur in the project area (i.e., beluga, bowhead, and gray whales and bearded and spotted seals) are only between 25 and 178 animals, which constitute at most 0.3 percent of any of these five species populations in the Arctic. Additionally, the presence of beluga, bowhead, and gray whales in the shallow water environment within the barrier islands is possible but expected to be very limited.

Further, NMFS believes that it is incorrect to add the number of exposures together to support an argument that the numbers are not ''small.'' The MMPA is quite clear ''...taking by harassment of small numbers of marine mammals of a species or population stock...'' does not refer to an additive calculation (small numbers, not small number).

Separate detailed analyses on the levels of take by noise exposure and cumulative impacts to these marine mammal species and stocks from a wide spectrum in the past, current, and foreseeable future were also conducted and described in the **Federal Register** notice of the proposed IHA (73 FR 34254, June 17, 2008), the MMS 2006 PEA, and the NMFS 2008 SEA. These analyses led NMFS to conclude that while behavioral modifications, including temporarily vacating the area during the project period may be made by these species to avoid the resultant acoustic disturbance, NMFS nonetheless found that this action would result in no more than a negligible impact on the affected marine mammal species and/or stocks.

In sum, NMFS concludes that PGS' 3D OBC/TZ seismic survey will only result in the taking, by incidental harassment, of small numbers of marine mammals of a species or stock and would result in a negligible impact on such species or stock(s).

Comment 11: CBD states that in 2006, NMFS required surveys of a 120–dB safety zone for bowhead cow/calf pairs and ''large groups'' (greater than 12 individuals). If 12 bowheads constitute a ''large group,'' we do not see how the numerous bowheads that will be harassed by PGS are a ''small number.'' This displacement and the disruption of pod integrity clearly constitute harassment under the MMPA. PGS' activities can be expected to have similar effects. NMFS' determination that PGS' activities will have a ''negligible impact'' does not withstand scrutiny. First, as explained above and in our NEPA comments, the calculation of numbers of marine mammals harassed by PGS is likely an underestimate as it relies on a received sound threshold (160/170 dB) that is too high. Any negligible impacts determination based on such flawed data is itself unsupportable. Moreover, NMFS has previously recognized a harassment threshold of 120 dB for

continuous sounds. Given that PGS is using 13 vessels, the engine and operating noise from these vessels should be treated as ''continuous'' for purposes of estimating harassment thresholds. The MMPA is precautionary. In making its determinations, NMFS must give the benefit of the doubt to the species. As the D.C Circuit has repeatedly stated, ''it is clear that ''the Act was to be administered for the benefit of the protected species rather than for the benefit of commercial exploitation'' (*Kokechik Fishermen's Association* v. *Secretary of Commerce*, 839 F.2d 795, 800 (D.C. Cir. 1988) citing *Committee for Humane Legislation, Inc.* v. *Richardson*, 540 F.2d 1141, 1148 (D.C. Cir. 1976)). NMFS seems to be ignoring this mandate in analyzing the impacts of PGS' activities.

Response: On CBD's first point, there is no relationship between the term ''large group'' and ''small numbers.'' The first term refers to a number of 12 or more in order to implement additional mitigation measures, the second to a concept found in the MMPA, which has been addressed previously in this notice. NMFS agrees that while the ''displacement and the disruption of pod integrity constitute harassment under the MMPA,'' NMFS is unaware of any information that seismic survey operations will result in bowhead whale pod integrity disruption. On the contrary, traditional knowledge indicates that when migrating bowhead whales encounter anthropogenic noises, as a group they all divert away from the noise and continue to do so even if the noise ceases.

Secondly, NMFS does not agree that the sources used in PGS' activity should be considered ''continuous.'' The airgun arrays are the primary noise source that could potentially impact marine mammals. As stated previously in this document, NMFS does not issue IHAs for simple vessel traffic.

The decision in *Kokechik Fishermen's Association* v. *Secretary of Commerce*, 839 F.2d 795 (D.C. Circ. 1988), does not apply to this case because it is factually and legally distinguishable. The incidental take permit challenged in Kokechik was for commercial fishing operations, governed by section 101(a)(2) of the MMPA, whereas the incidental authorization that is the subject of this IHA is for an activity other than commercial fishing and is appropriately authorized pursuant to section 101(a)(5)(D). Consequently, as discussed throughout this document, it is not unlawful for NMFS to apply section 101(a)(5)(D) when issuing an IHA to PGS for the take of marine mammals incidental to seismic surveys.

Comment 12: Additionally, CBD and NSB state that NMFS has no idea of the actual population status of several of the species subject to the proposed IHA. For example, in the most recent SARs prepared pursuant to the MMPA, NMFS acknowledges it has no accurate information on the status of ribbon, spotted, bearded, and ringed seals. CBD and NSB both indicate that without this data, NMFS cannot make a rational ''negligible impact'' finding. This is particularly so given there is real reason to be concerned about the status of these populations. Such concerns were raised in a recent letter to NMFS from the Commission following the Commission's 2005 annual meeting in Anchorage, Alaska (Commission, January 25, 2006 Letter). With regard to these species, the MMC cautioned against assuming a stable population.

On December 20, 2007, CBD petitioned NMFS to list the ribbon seal under the ESA due to the loss of its sea-ice habitat from global warming and the adverse impacts of oil industry activities on the species. On May 27, 2008, CBD submitted a similar petition seeking listing of the spotted, bearded, and ringed seals. We request that NMFS consider the information contained in these petitions, as well as other information in its files on the status of these species, when analyzing the impacts of the proposed IHA on these increasingly imperiled species. Because the status of the ribbon, spotted, ringed, and bearded seals and other stocks is unknown, NMFS cannot conclude that surveys which will harass untold numbers of individuals of each species will have no more than a ''negligible effect'' on the stocks.

Response: As required by the MMPA implementing regulations at 50 CFR 216.102(a), NMFS has used the best scientific information available in making its determinations required under the MMPA. The Alaska SAR provides population estimates based on past survey work conducted in the region. PGS' survey is not expected to have adverse impacts on ice seals. The activity will last for approximately 75 days in the open-water environment of the Beaufort Sea. On March 28, 2008, NMFS published a notice of a 90–day petition finding, request for information, and initiation of status reviews of ribbon, bearded, ringed, and spotted seals (73 FR 16617). The comment period for this action closed on May 27, 2008. NMFS is currently reviewing all relevant information and within 1 year of receipt of the petition, NMFS shall conclude the review with a finding as to whether or not the petitioned action is warranted. The ribbon seal petition submitted in December, 2007, is not relevant for this survey, as ribbon seals are not found in the project area. Information contained in the May, 2008, petition does not provide sufficient evidence that NMFS' preliminary determination that only small numbers of ringed, bearded, and spotted seals would be affected as a result of PGS' seismic activity is invalid.

Comment 13: CBD states that the analyses in the proposed IHA are largely confined to looking at the immediate effects of PGS' airgun surveys in the Beaufort Sea on several marine mammal species. However, there is no analysis of the impacts of the 13 vessels and any related aircraft participating in the surveys on marine mammals. The impacts of these activities must be analyzed and mitigated before any ''negligible impact'' finding can be made. CBD and NSB believe that NMFS must consider these effects together with other oil and gas activities that affect these species, stocks and local populations, other anthropogenic risk factors such as climate change, and the cumulative effect of these activities over time. The effects should be analyzed with respect to their potential population consequences at the species level, stock level, and at the local population level.

Response: Under section 101(a)(5)(D) of the MMPA, NMFS is required to determine whether the taking by the applicant's specified activity will have a negligible impact on the affected marine mammal species or population stocks. Cumulative impact assessments are NMFS' responsibility under NEPA, not the MMPA. In that regard, the MMS Final PEA and NMFS 2008 SEA address cumulative impacts. The Final PEA's cumulative activities scenario and cumulative impact analysis focused on oil and gas-related and non-oil and gas-related noise-generating events/activities in both Federal and State of Alaska waters that were likely and foreseeable. Other appropriate factors, such as Arctic warming, military activities, and noise contributions from community and commercial activities were also considered. Appendix D of the Final PEA addresses similar comments on cumulative impacts, including global warming. That information was incorporated into and updated in the NMFS 2008 SEA and into this document by citation. NMFS adopted the MMS Final PEA, and it is part of NMFS' Administrative Record.

NMFS does not require authorizations under section 101(a)(5) of the MMPA for normal shipping or transit. A further

explanation was addressed in the response to Comment 9.

Comment 14: NSB and CBD are both concerned about cumulative impacts from multiple operations. PGS' proposal is only one of numerous oil industry activities recently occurring, planned, or ongoing in the U.S. portions of the Chukchi and Beaufort Seas. No analysis of seismic surveys in the Russian or Canadian portions of the Chukchi and Beaufort seas is mentioned either. Similarly, significant increases in onshore oil and gas development with attendant direct impacts and indirect impacts on marine mammals such as through increased ship traffic are also occurring and projected to occur at greater rates than in the past (e.g., NMFS' IHA for barge traffic to NPR-A; IHA for barge operations in the Beaufort Sea; and a notice regarding new oil and gas development in the NPR-A). CBD states that further cumulative effects impacting the marine mammals of the Beaufort and Chukchi Seas are outlined in their NEPA comments on the MMS PEA and the DPEIS.

The NSB points out that in addition to the proposed offshore industrial operations listed above, there will be supply and fuel barging to villages, barging for support of onshore development and exploration, scientific cruises, climate change studies, USCG operations, tourist vessel traffic, and other activities as well. The cumulative impacts of all these activities must be factored into any negligible impact determination. Further, without an analysis of the effects of all of the planned operations, it is impossible to determine whether the monitoring plans are sufficient.

Response: See the response to the previous comment. The issue of cumulative impacts has been addressed in the 2006 MMS Final PEA and the 2008 NMFS SEA.

Comment 15: According to CBD, another factor causing NMFS' ''negligible impact'' findings to be suspect is the fact that the Beaufort Sea area is undergoing rapid change as a result of global warming. For species under NMFS' jurisdiction, and therefore subject to the proposed IHA, seals are likely to face the most severe consequences. The Arctic Climate Impact Assessment (ACIA) concluded that ringed, spotted, and bearded seals would all be severely negatively impacted by global warming this century. The ACIA stated that ringed seals are particularly vulnerable (ACIA, 2004). In 2003, the NRC noted that oil and gas activities combined with global warming presented a serious cumulative impact to the species. NMFS' failure to address global warming as a cumulative effect renders its negligible impact findings invalid.

Response: Under section 101(a)(5)(D) of the MMPA, ''the Secretary shall authorize... taking by harassment of small numbers of marine mammals of a species or population stock by such citizens while engaging in that activity within that region if the Secretary finds that such harassment during each period concerned (I) will have a negligible impact on such species or stock, and (II) will not have an unmitigable adverse impact on the availability of such species or stock for taking for subsistence uses.'' Section 101(a)(5)(D) of the MMPA does not require NMFS to base its negligible impact determination on the possibility of cumulative effects of other actions.

As stated in previous responses, cumulative impact assessments are NMFS' responsibility under NEPA, not the MMPA. In that regard, the MMS 2006 Final PEA and NMFS' 2008 SEA address cumulative impacts. The PEA's cumulative activities scenario and cumulative impact analysis focused on oil and gas-related and non-oil and gas-related noise-generating events/activities in both Federal and State of Alaska waters that were likely and foreseeable. Other appropriate factors, such as Arctic warming, military activities, and noise contributions from community and commercial activities were also considered. Appendix D of the PEA addresses similar comments on cumulative impacts, including global warming. That information was incorporated into and updated in the NMFS 2008 SEA and into this document by citation. NMFS adopted the MMS Final PEA, and it is part of NMFS' Administrative Record.

Marine Mammal Impact Concerns

Comment 16: CBD states that they referenced the scientific literature linking seismic surveys with marine mammal stranding events in its comments to MMS on the 2006 Draft PEA and in comments to NMFS and MMS on the 2007 DPEIS. NMFS' failure to address these studies and the threat of serious injury or mortality to marine mammals from seismic surveys renders NMFS' conclusory determination that serious injury or morality will not occur from PGS' activities arbitrary and capricious.

Response: MMS briefly addressed the humpback whale stranding in Brazil on page PEA–127 in the Final PEA. Marine mammal strandings are also discussed in the NMFS/MMS DPEIS. A more detailed response to the cited strandings has been provided in several previous IHA issuance notices for seismic surveys (e.g., 71 FR 50027, August 24, 2006; 73 FR 40512, July 15, 2008). Additional information has not been provided by CBD or others regarding these strandings. As NMFS has stated, the evidence linking marine mammal strandings and seismic surveys remains tenuous at best. Two papers, Taylor *et al.* (2004) and Engel *et al.* (2004), reference seismic signals as a possible cause for a marine mammal stranding. Taylor *et al.* (2004) noted two beaked whale stranding incidents related to seismic surveys. The statement in Taylor *et al.* (2004) was that the seismic vessel was firing its airguns at 1300 hrs on September 24, 2004, and that between 1400 and 1600 hrs, local fishermen found live-stranded beaked whales some 22 km (12 nm) from the ship's location. A review of the vessel's trackline indicated that the closest approach of the seismic vessel and the beaked whales' stranding location was 33 km (18 nm) at 1430 hrs. At 1300 hrs, the seismic vessel was located 46 km (25 nm) from the stranding location. What is unknown is the location of the beaked whales prior to the stranding in relation to the seismic vessel, but the close timing of events indicates that the distance was not less than 33 km (18 nm). No physical evidence for a link between the seismic survey and the stranding was obtained. In addition, Taylor *et al.* (2004) indicate that the same seismic vessel was operating 500 km (270 nm) from the site of the Galapagos Island stranding in 2000. Whether the 2004 seismic survey caused two beaked whales to strand is a matter of considerable debate (see Cox *et al.*, 2004). NMFS believes that scientifically, these events do not constitute evidence that seismic surveys have an effect similar to that of mid-frequency tactical sonar. However, these incidents do point to the need to look for such effects during future seismic surveys. To date, follow-up observations on several scientific seismic survey cruises have not indicated any beaked whale stranding incidents.

Engel *et al.* (2004), in a paper presented to the International Whaling Commission (IWC) in 2004 (SC/56/E28), mentioned a possible link between oil and gas seismic activities and the stranding of eight humpback whales (seven off the Bahia or Espirito Santo States and one off Rio de Janeiro, Brazil). Concerns about the relationship between this stranding event and seismic activity were raised by the International Association of Geophysical Contractors (IAGC). The IAGC (2004) argues that not enough

evidence is presented in Engel *et al.* (2004) to assess whether or not the relatively high proportion of adult strandings in 2002 is anomalous. The IAGC contends that the data do not establish a clear record of what might be a ''natural'' adult stranding rate, nor is any attempt made to characterize other natural factors that may influence strandings. As stated previously, NMFS remains concerned that the Engel *et al.* (2004) article appears to compare stranding rates made by opportunistic sightings in the past with organized aerial surveys beginning in 2001. If so, then the data are suspect.

Second, strandings have not been recorded for those marine mammal species expected to be harassed by seismic in the Arctic Ocean. Beaked whales and humpback whales, the two species linked in the literature with stranding events with a seismic component are not located in the area of the Beaufort Sea where seismic activities would occur (although humpback whales have been spotted in the Chukchi Sea and much farther west in the Beaufort Sea). Moreover, NMFS notes that in the Beaufort Sea, aerial surveys have been conducted by MMS and industry during periods of industrial activity (and by MMS during times with no activity). No strandings or marine mammals in distress have been observed during these surveys; nor reported by NSB inhabitants. Finally, if bowhead and gray whales react to sounds at very low levels by making minor course corrections to avoid seismic noise and mitigation measures require PGS to ramp-up the seismic array to avoid a startle effect, strandings are highly unlikely to occur in the Arctic Ocean. Ramping-up of the array will allow marine mammals the opportunity to vacate the area of ensonification and thus avoid any potential injury or impairment of their hearing capabilities. In conclusion, NMFS does not expect any marine mammals will incur serious injury or mortality as a result of seismic surveys in the Beaufort Sea in 2008.

Comment 17: CBD states that seismic surveys pose the risk of permanent hearing loss by marine mammals, which itself is a ''serious injury'' likely to lead to the death of these animals. Seismic pulses of sufficient volume, such as those proposed to be used by PGS, have the potential to cause temporary and permanent hearing loss in marine mammals.

Response: NMFS does not expect that animals will be injured, or for that matter seriously injured or killed, if they are within the 180 dB (cetaceans) and 190 dB (pinnipeds) isopleths. These criteria were set to approximate where Level A harassment (defined as ''any act of pursuit, torment or annoyance which has the potential to injure a marine mammal or marine mammal stock in the wild'') from acoustic sources begins. NMFS has determined that a TTS, which is the mildest form of hearing impairment that can occur during exposures to a strong sound may occur at these levels. For sound exposures at or somewhat above TTS, hearing sensitivity recovers rapidly after exposure to the noise ends. Few data on sound levels and durations necessary to elicit mild TTS have been obtained for marine mammals, and none of the published data concern TTS elicited by exposure to multiple pulses of sound. TTS is not an injury, as there is no injury to individual cells.

As NMFS has published several times in **Federal Register** notices regarding issuance of IHAs for seismic survey work or in supporting documentation for such authorizations, for whales exposed to single short pulses, the TTS threshold appears to be a function of the energy content of the pulse. Given the data available at the time of the IHA issuance, the received level of a single seismic pulse might need to be approximately 210 dB re 1 Pa rms in order to produce brief, mild TTS. Exposure to several seismic pulses at received levels near 200–205 dB (rms) might result in slight TTS in a small odontocete, assuming the TTS threshold is a function of the total received pulse energy. Seismic pulses with received levels of 200–205 dB or more are usually restricted to a radius of no more than 200 m (656 ft) around a seismic vessel operating a large array of airguns. Since PGS is operating a moderate-sized array, this radius would be even smaller. For baleen whales, there are no data, direct or indirect, on levels or properties of sound that are required to induce TTS. However, there is a strong likelihood that baleen whales (bowhead and gray whales) would avoid the approaching airguns (or vessel) before being exposed to levels high enough for there to be any possibility of onset of TTS.

A marine mammal within a radius of 100 m (328 ft) or less around a typical large array of operating airguns may be exposed to a few seismic pulses with levels greater than or equal to 205 dB and possibly more pulses if the marine mammal moves with the seismic vessel. When permanent threshold shift (PTS) occurs, there is physical damage to the sound receptors in the ear. In some cases, there can be total or partial deafness, whereas in other cases, the animal has an impaired ability to hear sounds in specific frequency ranges. However, there is no specific evidence that exposure to pulses of airgun sound can cause PTS in any marine mammal, even with airgun arrays larger than that proposed to be used in PGS' survey. Given the possibility that mammals close to an airgun array might incur TTS, there has been further speculation about the possibility that some individuals occurring very close to airguns might incur PTS. Single or occasional occurrences of mild TTS are not indicative of permanent auditory damage in terrestrial mammals. Relationships between TTS and PTS thresholds have not been studied in marine mammals but are assumed to be similar to those in humans and other terrestrial mammals.

The information provided here regarding PTS is for large airgun arrays. PGS is proposing to use an 880 in3 array, which is considered mid-size. Therefore, animals would have to be very close to the vessel to incur serious injuries. Because of the monitoring and mitigation measures required in the IHA (i.e., MMOs, ramp-up, power-down, shutdown, etc.), it is expected that appropriate corrective measures can be taken to avoid any injury, including serious injury.

Comment 18: The NSB DWM states that humpback and fin whales were seen in the Beaufort and Chukchi Seas in 2007. Therefore, it is reasonable to expect that both of these species could occur in the vicinity of Harrison Bay in 2008. Given that both species are endangered, NMFS should include an evaluation of potential impacts to humpback and fin whales from PGS' proposed seismic activities and other oil and gas activities planned for 2008. Narwhals have also been seen in the vicinity of PGS' operations. Several years ago, hunters observed several narwhals in the vicinity of Thetis Island (E. Nukapigak, pers. comm.), which is in the area proposed for seismic surveys. Potential impacts to narwhals should also be evaluated.

Response: As an initial matter, NMFS prepared a Biological Opinion in July, 2008, to assess the effects of oil and gas exploration in the Arctic Ocean, particularly in light of new sightings data for fin and humpback whales. Until 2007, historic and recent information did not indicate humpback whales inhabit northern portions of the Chukchi Sea or enter the Beaufort Sea. No sightings of humpback whales were reported during aerial surveys of endangered whales in summer (July) and autumn (August-October) of 1979–1987 in the Northern Bering Sea (from north of St. Lawrence Island), the

Chukchi Sea north of lat. 66° N. and east of the International Date Line, and the Alaskan Beaufort Sea from long. 157° 01' W. east to long. 140° W. and offshore to lat. 72° N. (Ljungblad *et al.*, 1988). Humpbacks have not been observed during annual aerial surveys of the Beaufort Sea conducted in September and October from 1982–2007 (e.g., Monnett and Treacy, 2005; Moore *et al.*, 2000; Treacy, 2002; Monnett, 2008, pers. comm.). During a 2003 research cruise in which all marine mammals observed were recorded from July 5 to August 18 in the Chukchi and Beaufort Seas, no humpback whales were observed (Bengtson and Cameron, 2003). One observation of a single humpback whale was recorded in 2006 by MMOs aboard a vessel in the southern Chukchi Sea outside of the Chukchi Sea Planning Area (Patterson *et al.*, 2007; MMS, 2006, unpublished data). During summer 2007 between August 1 and October 16, humpback whales were observed during seven observation sequence events in the western Alaska Beaufort Sea (1 animal) and eastern and southeastern Chukchi Sea (6 animals; MMS, 2007, unpublished data) and one other observation in the southern Chukchi Sea in 2007 (Sekiguchi, In prep.). The one humpback sighting in the Beaufort Sea in 2007 was in Smith Bay, which is more than 150 km (100 mi) west of the PGS project area. Therefore, humpback whales are not expected to occur in the location of PGS' survey.

Additionally, there is no indication that fin whales typically occur within the project area. There have been only rare observations of fin whales into the eastern half of the Chukchi Sea. Fin whales have not been observed during annual aerial surveys of the Beaufort Sea conducted in September and October from 1982–2007 (e.g., Monnett and Treacy, 2005; Moore *et al.*, 2000; Treacy, 2002; Monnett, 2008, pers. comm.). During a research cruise in the Chukchi and Beaufort seas (from July 5–August 18, 2003), in which all marine mammals observed were recorded, no fin whales were observed (Bengtson and Cameron, 2003). Therefore, fin whales are not expected to occur in the location of PGS' survey.

Discussions at this year's Open-water Meeting in Anchorage, Alaska, in April, in which the NSB participated, indicated that narwhals are extremely unlikely to occur in the U.S. Beaufort Sea and mainly inhabit the Canadian Beaufort Sea. At present, NMFS does not have a SAR available for narwhal, making it difficult to assess distribution and abundance of the narwhal in the Alaskan Beaufort Sea. Therefore, it is highly unlikely that narwhals would be affected by the survey.

Comment 19: The NSB DWM states that contrary to the information contained in PGS' application, some bowhead whales spend the summer in the Beaufort Sea. Thus, evaluation of the potential for impact from seismic surveys on summering whales is needed.

Response: NMFS conducted this analysis in its NEPA documents. Although it is possible that bowhead whales could occur inside the barrier islands, the extremely shallow water in which PGS will operate (less than 15 m, 49 ft) is not suitable bowhead habitat. Mitigation and monitoring measures required in the IHA will also help to reduce impacts to bowheads throughout the entire time period of the survey.

Comment 20: CBD and the NSB state that NMFS' estimate of the number of marine mammals that may be harassed under the proposed authorization is based on the assumption that sounds below 160 dB re 1 μPa (rms) do not constitute harassment. This assumption is incorrect, and therefore PGS' and NMFS' estimated take numbers represent an underestimate of the possible true impact. In our NEPA comments on the 2006 PEA, we pointed out the numerous studies showing significant behavioral impacts from received sounds well below 160 dB. Even the 2006 PEA itself acknowledges that impacts to bowheads occur at levels of 120 dB and below. This clearly meets the statutory definition of harassment and demonstrates that the numbers of bowhead estimated in the proposed IHA to be taken by PGS' activities likely constitute a significant underestimate. NMFS' ''small numbers'' conclusion is therefore arbitrary and capricious for this reason as well.

The NSB DWM questions why PGS does not acknowledge that bowheads avoided an area around active seismic to much lower sound levels, down to 120 dB or lower (Richardson *et al.*, 1999). Bowheads' sensitivity to very low level of industrial sounds must be considered in assessing impacts from one industrial operation, as well as impacts from cumulative impacts from multiple operations.

Response: On the first point, NMFS uses the best science available when making its determinations under section 101(a)(5)(D) of the MMPA. On the second point, CBD misunderstands the purpose of ''potential to harass'' in the MMPA. This was not meant to mean that highly speculative numbers of marine mammals could ''potentially be harassed'' but that Congress intended for U.S. citizens to apply for an MMPA authorization prior to its activity taking marine mammals, not waiting until after the taking occurred and someone needed to ''prove'' that the taking happened.

As stated previously, the ''take'' numbers provided in the proposed IHA notice (73 FR 34254, June 17, 2008) and subsequently amended herein are considered the numbers of animals that could potentially be ''exposed'' to the sounds based on species density, the area potentially affected, and the length of time the noise would be expected to last. This does not necessarily indicate that all animals will have a significant behavioral reaction to that sound at the level of 160 dB. In addition, CBD took the maximum number of marine mammals (based on animal density), instead of the expected density (as explained in PGS' application). Using maximum density estimates is problematic as it tends to inflate harassment take estimates to an unreasonably high number and is not based on empirical science. As a result, NMFS believes that far fewer marine mammals would receive SPLs sufficient to cause a significant biological reaction by the species. In regard to bowhead whales, while this species reacts to sounds at levels lower than 160 dB, during its fall westward migration (but not while in a non-migratory behavior), those reactions are not detectable by MMOs and that information is obtained only later during computer analysis of collected data.

Richardson *et al.* (1999) monitored the reactions of migrating bowhead whales and found that most avoided the area of seismic activity within 20 km (12.4 mi) of the source at levels as low as 120–130 dB (rms). Also, the Northstar recordings are conducted during the fall migration westward across the Beaufort. Since some of the work to be conducted by PGS will overlap with the bowhead migration period, beginning on August 25, PGS will be required to monitor out to the 120–dB isopleth. This will be done via vessel and aerial surveys. PGS will be required to shutdown operations if 4 or more cow/calf pairs are seen within this radius. PGS will conduct sound source verification tests at the beginning of the survey to determine the exact distances to the 190-, 180-, 160-, and 120–dB isopleths both inside and outside the barrier islands.

Lastly, the requirement to assess cumulative impacts is required under NEPA, not the MMPA. Cumulative impacts were assessed and analyzed in both the 2006 PEA and the 2008 SEA.

Comment 21: The NSB DWM, CBD, and REDOIL state that a 160–dB threshold for belugas is similarly

flawed. As NMFS is aware, belugas are among the most sensitive of marine mammals to anthropogenic sound. In previous IHA notices, NMFS has acknowledged the impacts of sounds on belugas even at significant distances from a sound source. For example, in a recent proposed take authorization related to seismic surveys by NSF, NMFS noted that belugas can be displaced at distances of up to 20 km (12.4 mi) from a sound source. Aerial surveys during seismic operations in the southeastern Beaufort Sea recorded much lower sighting rates of beluga whales within 10–20 km (6.2–12.4 mi) of an active seismic vessel. These results were consistent with the low number of beluga sightings reported by observers aboard the seismic vessel. Such displacement clearly meets the statutory definition of harassment and demonstrates that the number of belugas estimated to be taken by PGS' activities constitutes a significant underestimate. Belugas are also extremely sensitive to ships. A study of Canadian belugas showed flight responses from ice-breakers at received sound levels as low as 94 dB. Presumed alarm vocalizations of belugas indicated that they were aware of an approaching ship over 80 km (50 mi) away and they showed strong avoidance reactions to ships approaching at distances of 35–50 km (22–31 mi) when received noise levels ranged from 94 to 105 dB re 1 Pa in the 20–1000 Hz band. The ''flee'' response of the beluga involved large herds undertaking long dives close to or beneath the ice edge; pod integrity broke down and diving appeared asynchronous. Belugas were displaced along ice edges by as much as 80 km (50 mi; Finley *et al.*, 1990). The NSB DWM states that the 120–dB zone should be used for estimating numbers of beluga whales that may be taken during seismic operations in the Beaufort Sea.

The NSB DWM notes that while most beluga whales are found near the shelf break, they are also regularly seen in shallower nearshore waters of the Beaufort Sea.

Response: Much of the Beaufort Sea seasonal population of belugas enters the Mackenzie River estuary (in Canada) for a short period from July through August to molt their epidermis, but they spend most of the summer in offshore waters of the eastern Beaufort Sea, Amundsen Gulf, and more northerly areas (Davis and Evans, 1982; Harwood *et al.*, 1996; Richard *et al.*, 2001). Belugas are rarely seen in the central Alaskan Beaufort Sea during the early summer. During late summer and autumn, most belugas migrate westward far offshore near the pack ice (Frost *et al.*, 1988; Hazard, 1988; Clarke *et al.*, 1993; Miller *et al.*, 1999), with the main fall migration corridor approximately 160 km (100 mi) or more north of the coast. Therefore, most belugas migrate well offshore away from the proposed project area, although there is a small possibility that they could occur near the project area in small numbers. MMOs will be monitoring the exclusion zones for all marine mammals. Therefore, in the event that belugas are sighted in the project area, the appropriate mitigation measures (described later in this document) will be implemented. Additionally, as PGS does not intend to use ice-breakers during its seismic survey, statements regarding beluga reactions to ice-breaker noise are not relevant to this activity.

Comment 22: The NSB DWM points out that while ringed seals may be the most common marine mammal species in the area, since the seismic shoot is near a spotted seal haulout in the Colville River Delta, PGS should expect to encounter and expose spotted seals to seismic sounds. Additional information is needed about impacts from seismic activities on spotted seals, including impacts to seals at haulouts.

Response: Both the application and proposed IHA notice analyze the distribution, density, and potential impacts to spotted seals. NMFS estimates that 178 spotted seals may be exposed to sound levels of 160 dB (rms) or greater and thereby possibly taken as a result of PGS' seismic survey. Impacts to spotted seals are not expected to be all that different than those to the other ice seals in the area. While there may be some behavioral disturbance, for reasons stated earlier in this document, TTS and PTS are not expected for spotted seals or any other marine mammal species. Additionally, if the animals are hauled out during seismic shooting, then they would not be exposed to underwater noise.

Comment 23: The NSB is concerned about the potential impacts of PGS' seismic survey to the food sources of marine mammals. Part of the survey occurs in productive nearshore waters. Additional information is needed about impacts from seismic surveys to marine mammal prey and the resulting impacts to the marine mammals themselves.

Response: PGS has modified the project timeline to address concerns from local subsistence users regarding impacts to fish. PGS has agreed not to begin work inside the barrier islands prior to August 5. Additionally, NMFS does not expect the proposed action to have a substantial impact on biodiversity or ecosystem function within the affected area. The potential for the PGS activity to affect ecosystem features and biodiversity components, including fish and invertebrates, is fully analyzed in the 2006 PEA and incorporated by reference into the 2008 SEA. NMFS' evaluation indicates that any direct, indirect, or cumulative effects of the action would not result in a substantial impact on biodiversity or ecosystem function. In particular, the potential for effects to these resources are considered here with regard to the potential effects on diversity or functions that may serve as essential components of marine mammal habitat. Most effects are considered to be short-term and unlikely to affect normal ecosystem function or predator/prey relationships; therefore, NMFS believes that there will not be a substantial impact on marine life biodiversity or on the normal function of the nearshore or offshore Beaufort Sea ecosystems.

During the seismic survey, only a small fraction of the available habitat would be ensonified at any given time. Disturbance to fish species would be short-term, and fish would return to their pre-disturbance behavior once the seismic activity in a specific area ceases. Thus, the proposed survey would have little, if any, impact on the ability of marine mammals to feed in the area where seismic work is conducted.

Some mysticetes, including bowhead whales, feed on concentrations of zooplankton. Some feeding bowhead whales may occur in the Alaskan Beaufort Sea in July and August, and others feed intermittently during their westward migration in September and October (Richardson and Thomson [eds.], 2002; Lowry *et al.*, 2004). A reaction by zooplankton to a seismic impulse would only be relevant to whales if it caused concentrations of zooplankton to scatter. Pressure changes of sufficient magnitude to cause that type of reaction would probably occur only very close to the source, if any would occur at all. Impacts on zooplankton behavior are predicted to be negligible, and that would translate into negligible impacts on availability of mysticete prey. More importantly, bowhead whales, while possible, are not expected to feed in the shallow area covered by this seismic survey; therefore, no impacts to mysticete feeding are anticipated.

Little or no mortality to fish and/or invertebrates is anticipated. The proposed Beaufort Sea seismic survey is predicted to have negligible to low physical effects on the various life stages of fish and invertebrates. Though these effects do not require authorization under an IHA, the effects on these features were considered by

NMFS with respect to consideration of effects to marine mammals and their habitats, and NMFS finds that these effects from the survey itself on fish and invertebrates are not anticipated to have a substantial effect on biodiversity and/or ecosystem function within the survey area.

Comment 24: REDOIL states that NMFS appears to lay great stock in the mitigating effect of PGS conducting its post August 5 seismic surveying inside the barrier islands so as not to disturb the fall bowhead migration. NMFS does not sufficiently analyze this conclusion, nor does it address the fact that whales are sometimes sighted within the barrier islands.

Response: Although whales are sometimes sighted inside the barrier islands, the shallow depths are not considered primary habitat for the animals, so NMFS does not believe that whales will occur in any significant numbers inside the barrier islands. Sound propagation in shallow waters is less than in deeper waters. Additionally, the islands will serve as a barrier and should absorb the majority of the sound produced by the airguns, thereby minimizing the distance that the sound will travel and reducing the impacts to animals outside the islands. Sound source verification tests will determine the distance to the exclusion and monitoring zones and may reveal that the distances provided in this document are overestimates. The increased monitoring that will be required during the fall bowhead migration and the required mitigation measures should help to reduce impacts to migrating whales.

Estimated Take Calculation Concerns

The **Federal Register** Notice for the proposed PGS IHA (73 FR 34254, June 17, 2008) estimated Level B harassment takes for pinnipeds using the 170–dB (rms) radius. To be consistent with NMFS' Level B (behavioral) harassment criteria for pinnipeds, NMFS will continue to use 160 dB re 1 μPa (rms) as the threshold of onset for Level B (behavioral) harassment, as noted later in this document. The estimated numbers of pinnipeds that could be exposed within the 160 dB re 1 μPa ensonified zone are provided throughout this document, particularly in the responses to public comments and in the ''Estimated Take of Marine Mammals by Incidental Harassment'' section. Nevertheless, it is important to note that even with the 160–dB criteria, NMFS expects that only small numbers of pinnipeds would be exposed to seismic noises that could cause Level B (behavioral) harassment. In addition, research by Moulton and Lawson (2002) indicated that most pinnipeds exposed to seismic sounds lower than 170 dB do not visibly react to that sound, and, therefore, pinnipeds are not likely to react to seismic sounds unless they are greater than 170 dB re 1 μPa (rms). While the number of potential exposures of pinnipeds at 170 dB rms is smaller than that at 160 dB rms, the overall environmental effect of received sound levels at 170 dB rms versus 160 dB rms is expected to be similar based on the best available science.

Comment 25: The NSB DWM states that both the summer and fall density estimates should be used for estimating takes given the timeframe of PGS' survey. Bowhead and beluga whales will be migrating past the area where PGS' activities will occur. Thus, estimates of take must be based on different animals being exposed to PGS' seismic sounds each day.

Response: The density estimates provided in Table 6.2–1 of PGS' application are similar to autumn density estimates provided in other applications to NMFS. As described previously in this document, the take estimates are calculated based upon line miles of survey effort, animal density, and the calculated ZOI. This methodology most likely provides an overestimation of the take numbers because animals that might have been affected (taken) are likely to have moved out of the area to avoid additional annoyance from the seismic sounds (assuming they were taken in the first place).

Comment 26: The NSB DWM believes that take estimates for bowhead whales may be too low. Increasing the sound isopleth to encompass an area that is exposed to sounds down to 120 dB will increase the estimate of how many bowheads are deflected from the seismic surveys. Accurately estimating how many whales will be disturbed is essential when evaluating the potential takes of each industrial activity and all activities combined.

Response: Under the MMPA, NMFS makes its determinations for small numbers and negligible impact for the individual IHA, not in combination with other offshore activities. The cumulative impact analysis is made under NEPA which can be found in MMS' 2006 Final PEA as updated by NMFS' 2008 SEA. This analysis however, is required to be made in the industry's Comprehensive Report for 2008 offshore activities.

In regard to using a 120–dB (rms) isopleth to calculate estimated Level B harassment takes, it is not appropriate in this case because previous bowhead whale observations indicate that a 120–dB isopleth is appropriate only for migrating bowhead whales, not for bowhead whales residing over the summer in the central Beaufort Sea, nor for bowhead whales ceasing migration and feeding along the migratory route. In the case of PGS' survey, all seismic data acquisition work will move inside the barrier islands beginning on August 25 where few bowhead whales are expected to be found. As with all seismic surveys, a sound source verification test will be performed for PGS' seismic airgun array to determine the 190-, 180-, 160-, and 120–dB isopleths and that information used later to assess potential impacts on bowhead whales while seismic data acquisition is being conducted inside (and outside) the barrier islands.

Comment 27: The NSB DWM points out that the study referenced for the number of spotted seals hauled out in the Colville River Delta is 10 years old and that it was likely not timed for spotted seals. Even though the tides in the central Beaufort Sea are not large, spotted seals likely time their haul outs with low tides. The reference states that fewer than 20 seals were seen at any one time. The sighting of 20 seals probably represents many more animals. Lowry *et al.* (1994) showed that satellite-tagged spotted seals only used haulouts for approximately 10 percent of the time. If a similar pattern occurs in the Beaufort Sea, a count of 20 seals would likely represent about 200. It is likely that PGS will expose every spotted seal that uses the haulout to seismic sounds as the seals swim to and from the haulout. There is a very good chance that more than 73 spotted seals will be disturbed by PGS' seismic surveys. NMFS should require PGS to survey the Colville River Delta as a means to better understand whether seismic surveys are keeping spotted seals from reaching and using the haulout.

Response: NMFS uses the best information available in making its determinations under the MMPA. While recent information (either scientific or traditional) is lacking on the Colville River Delta spotted seal haulouts, PGS also used survey information by Green *et al.* (2005, 2006, 2007) to develop its estimated take levels. Green *et al.* (2005, 2006, 2007) monitored marine mammals from FEX barging activity between Prudhoe Bay and Cape Simpson. The number of spotted seals annually recorded along the shallow trackline segments coincident with the PGS seismic survey area ranged from 1 to 10 animals. Overall, Green *et al.* (2005, 2006, 2007) annually recorded between 23 and 54 spotted seals. In addition,

Richardson (2000) notes that in total, there probably are only a few dozen spotted seals along the coast of the central Beaufort Sea during summer and early fall. As stated above, NMFS has revised the estimate of spotted seals that may be taken to 178 and believes this estimate is accurate. NMFS would welcome information from subsistence hunters regarding spotted seal distribution and abundance in areas near offshore seismic activity and whether these species have been affected in previous years (for example, during the seismic surveys prior to construction of the Northstar facility in the late 1990s).

Subsistence Use Concerns

Comment 28: CBD and REDOIL state that the MMPA requires that any incidental take authorized will not have ''an unmitigable adverse impact on the availability of such species or stock for taking for subsistence uses'' by Alaska Natives. REDOIL further states that in making this determination, NMFS must factor in ongoing authorized activities that may also affect the availability of subsistence resources and measure the effects of PGS' activities against the baseline of the effects of other activities on subsistence activities. CBD notes they are aware that the NVPH, a federally recognized tribal government, has opposed seismic surveys due to impacts on subsistence, and along with many community members has commented on myriad other related agency documents that have direct bearing on these take authorization such as the Chukchi Sea Sale 193, MMS Five-Year Plan, and the DPEIS. Similarly, the NSB, the AEWC, and REDOIL have all filed challenges in federal court challenging offshore activities due to impacts on the subsistence hunt of bowheads and other species. In light of the positions of these communities and organizations, we do not see how NMFS can lawfully make the findings required under the MMPA for approving PGS' proposed IHA.

Response: NMFS believes that the concerns expressed by subsistence hunters and their representatives have been addressed by NMFS through the comments that they submitted on this action, which are responded to in this section of the document. Additionally, while cumulative impact assessments are not required under section 101(a)(5)(D) of the MMPA, NMFS considered all of the seismic surveys planned for the Arctic in 2008, as well as other activities in the Arctic Ocean, when it prepared its NEPA documents.

Comment 29: The Commission states that issuance of the IHA be contingent on a requirement that the applicant implement all practicable monitoring and mitigation measures that will ensure the proposed activities do not adversely affect the availability of bowhead whales and other marine mammals to subsistence hunters. Such measures should reflect the provisions of any CAA between Alaska Native hunters and the applicant and be sufficient to meet the requirements of the MMPA.

Response: NMFS believes that it has implemented mitigation measures for conducting seismic surveys to avoid, to the greatest extent practicable, impacts on coastal marine mammals and thereby, the needs of the subsistence communities that depend upon these mammals for sustenance and cultural cohesiveness. For the 2008 season, these mitigation measures are similar to those contained in the CAA signed by PGS on June 23, 2008, and include black-out areas during the subsistence hunt for bowhead whales and coastal community communication stations and emergency assistance.

Comment 30: REDOIL and the NSB state that the MMPA requires NMFS to find that the specified activities covered by an IHA ''will not have an unmitigable adverse impact on the availability of [marine mammal populations] for taking for subsistence uses'' (16 U.S.C. 1371(a)(5)(D)(i)(II)). NMFS fails to provide the substantive analysis required to support any meaningful finding regarding the possible effect of PGS' activities on the availability of bearded, spotted, and ringed seals and bowhead whales for subsistence uses by the coastal communities of Nuiqsut, Barrow, and other communities that depend upon these migratory species, or the effectiveness of mitigation measures to eliminate such impacts. For example, NMFS does not explain in sufficient detail how the mitigation measure of moving from east to west will reduce impacts to the bearded seal hunt from Thetis Island in July and August. Also, because the survey will occur during the fall bowhead hunt in Nuiqsut, information out to the 120–dB isopleth is needed. The proposed mitigation measures are inadequate because they fail to extend to the 120–dB zone. The IHA also provides inadequate information to determine whether or where whales would return to their original migration routes once deflected.

Response: During the fall bowhead migration, PGS will not conduct data acquisition in the migration corridors. The 120–dB isopleth is expected to extend 10–15 km (6.2–9 mi) from the source; however, much of this sound is expected to be absorbed by the islands, which are closer than this distance. Therefore, little sound (if any) is expected in the migration corridor, thus avoiding deflection of whales farther offshore. The work outside of the barrier islands will occur prior to the beginning of the bowhead migration and hunt. Beginning on August 25, PGS will be required to monitor out to the 120–dB isopleth and will fly aerial surveys three times a week, weather permitting. PGS will also be required to shutdown if an aggregation of 12 or more whales are sighted within the 160–dB isopleth.

To avoid impacts to the bearded seal subsistence hunt at Thetis Island, PGS has agreed to begin work on the east side of the project area (outside the barrier islands) in July and slowly move to the west away from Thetis Island. This action was recommended and approved by the Kuukpikmiut Subsistence Oversight Panel (KSOP), the Nuiqsut subsistence users' group. Additionally, PGS will use the following mechanisms to identify and address concerns of subsistence users during the project, including concerns about impacts to the Thetis Island seal hunt:

(1) PGS will maintain open communication with subsistence users by providing weekly reports to KSOP that discuss project activities as per an agreement with KSOP.

(2) PGS has hired a local resident as a Subsistence Advisor who will maintain communication with the communities of Nuiqsut and Barrow so that concerns about potential impacts on subsistence can be brought to PGS' attention.

(3) PGS has hired local residents (from Nuiqsut and Barrow) as members of the seismic crew who will have the additional duty of observing for marine mammals. They will be able to provide the PGS project manager with information about the timing and status of ongoing subsistence activities (such as the Thetis Island seal hunt).

(4) Nuiqsut whalers (who also harvest other subsistence species such as seals) will likely be using PGS facilities at Oliktok Point (a temporary dock and boat launch) to launch boats for whaling at Cross Island. Although this will likely take place after the Thetis Island seal hunt, this interaction will allow subsistence users from Nuiqsut to bring up any concerns they have with the Subsistence Advisor and the Project Manager.

Comment 31: REDOIL believes that NMFS has not made any effort to discern whether seismic surveying activities in the Beaufort Sea in 2006 or 2007 had an adverse impact on the

availability of seal and whale species for subsistence uses. Before authorizing another year of surveys, NMFS must at least evaluate the effect of recent surveys, assess the effectiveness of mitigation measures used during those surveys, and make the results of such assessment available to the affected public, including the NVPH and REDOIL.

Response: In preparing the 2008 SEA, NMFS reviewed the comprehensive monitoring reports from 2006 and 2007. Those reports do not note any instances of serious injury or mortality. In November, 2007, Shell (in coordination and cooperation with other Arctic seismic IHA holders) released a final, peer-reviewed edition of the 2006 Joint Monitoring Program in the Chukchi and Beaufort Seas, July-November 2006 (LGL, 2007). This report is available for download on the NMFS website (see **ADDRESSES**). A draft comprehensive report for 2007 was provided to NMFS and those attending the NMFS/MMS Open-water Meeting in Anchorage, AK, on April 14–16, 2008. Based on reviewer comments made at that meeting, Shell and others are currently revising this report and plans to make it available to the public shortly. Additionally, the annual summary monitoring reports submitted by BP to NMFS for its operations at the Northstar facility indicate that in 2006, Nuiqust whalers landed the full quota of four bowhead whales. In 2007, the hunters landed three whales, and one whale was struck and lost at sea. These reports are also available on the NMFS website.

Comment 32: REDOIL states that there is no guarantee that the development of a Plan of Cooperation (POC) will result in enforceable limits that ensure PGS' activities have no unmitigable adverse impact on the availability of seals and whales for subsistence purposes. By relying on these processes without ensuring that they produce a meaningful outcome, NMFS has effectively deferred its determination whether PGS' activities will have an unmitigable adverse impact on the availability of seals and whales for subsistence uses by communities along the Beaufort Sea until after such a POC has been developed. Consequently, NMFS has failed its basic duty under the MMPA and its own regulations to make a proposed determination available to the public to scrutinize and comment on. Absent specification of the restrictions and mitigation measures that will result from these processes, NMFS cannot reasonably conclude that they will prove effective, which it must in order to determine that they will eliminate potential for substantial impacts to our subsistence activities. Without any indication of what the agency may impose if these processes should prove ineffective, it has failed to make a meaningful finding available for the public to comment upon. Additionally, the NSB DWM points out that impacts to the bowhead hunt off Cross Island are possible unless conflicts are avoided through a CAA and that there could be impacts to hunting of ringed and spotted seals for the communities of Barrow and Nuiqsut.

Response: PGS distributed a Draft POC to NMFS, USFWS, and the affected communities and subsistence user groups in March, 2008. Based on input from these various groups and additional meetings, PGS updated the POC and finalized it in early July. The Final POC contains mitigation measures that resulted from discussions with the KSOP and the AEWC to avoid conflicts with the seal and whale hunts. Additionally, PGS signed a CAA with AEWC and the affected village whaling captains on June 23, 2008. Conditions that will help avoid or reduce impacts on subsistence activities have been included in the IHA as well. NMFS believes that the measures contained in the POC, CAA, and IHA will ensure that there is no unmitigable adverse impact on the availability of marine mammal species for subsistence uses.

Mitigation Concerns

Comment 33: CBD states that the MMPA authorizes NMFS to issue a small take authorization only if it can first find that it has required adequate monitoring of such taking and all methods and means of ensuring the least practicable impact have been adopted (16 U.S.C. 1371(a)(5)(D)(ii)(I)). The proposed IHA largely ignores this statutory requirement. In fact, while the proposed IHA lists various monitoring measures, it contains virtually nothing by way of mitigation measures. The specific deficiencies of the ''standard'' MMS mitigation measures as outlined in the 2006 PEA are described in detail in our NEPA comments, incorporated by reference, and are not repeated here. Because the MMPA explicitly requires that ''means effecting the least practicable impact'' on a species, stock, or habitat be included, an IHA must explain why measures that would reduce the impact on a species were not chosen (i.e., why they were not ''practicable''). Neither the proposed IHA, PGS' application, the 2006 PEA, or the 2007 DPEIS attempts to do this.

Response: The proposed IHA outlined several mitigation, monitoring, and reporting requirements to be implemented during the Beaufort Sea survey. By way of mitigation, the Notice of Proposed IHA (73 FR 34254, June 17, 2008) described the following actions to be undertaken by PGS including: speed and course alterations; power-downs and shutdowns when marine mammals are sighted just outside or in the specified safety zones; and ramp-up procedures. Speed or course alteration helps to keep marine mammals out of the 180 or 190 dB safety zones. Additionally, power-down and shutdown procedures are used to prevent marine mammals from exposure to received levels that could potentially cause injury. Ramping-up provides a ''warning'' to marine mammals in the vicinity of the airguns, providing them time to leave the area and thus avoid any potential injury or impairment of hearing capabilities. After August 25, PGS will be required to shutdown if an aggregation of 12 or more bowhead or gray whales are sighted within the 160–dB isopleth. Additionally, after this date, PGS will be required to monitor out to the 120–dB isopleth via both vessel and aerial surveys. If a group of four or more bowhead whale cow/calf pairs are sighted within this zone, operations must be shutdown until two consecutive surveys indicate that there are not more than three pairs in the area of operations. Because these mitigation measures will be included in the IHA to PGS, no marine mammal injury or mortality is anticipated. Numbers of individuals of all species taken are expected to be small (relative to stock or population size), and the take is anticipated to have a negligible impact on the affected species or stock.

Additionally, the survey design itself has been created to mitigate the effects to the lowest level practicable. Two seismic source vessels will be used simultaneously (alternating their shots) to minimize the total survey period. Also, by agreeing to begin activities in the east and move towards the west, impacts to migrating fish and seal hunts at Thetis Island will be avoided. Similarly, by working outside of the barrier islands prior to August 5 and inside the islands from August 25 until the end of the bowhead hunt in Nuiqsut, impacts to hunters and the whales will be greatly reduced. Beluga whales are not hunted in the area during the time of the PGS survey. Additionally, although ringed seals are available to be taken by subsistence hunters year-round, the seismic survey will not occur during the primary period when this species is typically harvested (October through June). For these reasons, NMFS believes that it has required all methods and means necessary to ensure the least

practicable impact on the affected species or stocks. CBD's comments on the 2006 PEA and the responses to those comments were addressed in Appendix D of the PEA and are not repeated here.

Comment 34: CBD and REDOIL state that while NMFS has not performed any analysis of why additional mitigation measures are not ''practicable,'' the proposed IHA contains information to suggest that many such measures are in fact practicable. For example, in 2006, NMFS required monitoring of a 120–dB safety zone for bowhead cow/calf pairs and monitoring of a 160–dB safety zone for large groups of bowhead and gray whales (greater than 12 individuals). The PGS IHA is silent as to the applicability of these safety zones. Moreover, the fact that a 120–dB safety zone is possible for aggregations of bowheads means that such a zone is also possible for other marine mammals such as belugas which are also subject to disturbance at similar sound levels. The failure to require such, or at least analyze it, violates the MMPA. REDOIL also adds that NMFS does not even discuss the option of requiring PGS to power down its airguns or cease its surveying during the annual bearded seal hunt near Thetis Island.

Response: Several of the previous responses in this document address the issues raised here. PGS has agreed to several mechanisms to avoid conflicts during the Thetis Island seal hunt and signed a CAA to avoid conflicts with whalers from Nuiqsut. After August 25, PGS will be required to monitor and take mitigative measures inside both the 160–dB and 120–dB isopleths. Also, because the seismic survey will take place shoreward of the barrier islands during the main migration period in very shallow waters up to 15 m deep (49 ft; where high seismic propagation loss is expected), few bowhead whales are likely to occur in the data acquisition area. The distance of received levels that might elicit avoidance will likely not (or barely) reach the main migration corridor and then only through the inter-island passages. Additionally, over the past 25–30 years, gray whales have not commonly or consistently been seen in the area of the Beaufort Sea where PGS will conduct its activities.

Comment 35: The Commission recommends that NMFS issue the IHA provided that NMFS require: (a) the applicant to implement all described monitoring and mitigation measures to protect bowhead whales and other marine mammals from disturbance; and (b) operations to be suspended immediately if a dead or seriously injured marine mammal is found in the vicinity of the operations and if that death or injury could be attributable to the applicant's activities. Any suspension should remain in place until NMFS: (1) has reviewed the situation and determined that further deaths or serious injuries are unlikely to occur; or (2) has issued regulations authorizing such takes under section 101(a)(5)(A) of the MMPA.

Response: NMFS concurs with the Commission's recommendation and will require the immediate suspension of seismic activities if a dead or injured marine mammal has been sighted within an area where the holder of the IHA deployed and utilized seismic airguns within the past 24 hours.

Comment 36: REDOIL suggests that another practicable mitigation measure that NMFS fails to discuss, let alone impose, is a mandatory limit on the number of concurrent seismic and/or shallow hazard surveys in the Beaufort Sea. At all times, but especially during the fall bowhead migration, NMFS should prohibit the simultaneous operations of multiple vessels within the Beaufort Sea. Moreover, it should require that no two vessels operate within 100 km (62 mi) of one another. Given the large size of the 120–dB zone, closer simultaneous operation would pose a real risk of disrupting the bowhead whale migration and the behaviors of beluga and gray whales.

Response: PGS' survey will overlap with BP's Liberty seismic survey for approximately one month. However, BP's activity will occur nearly 100 km (62 mi) to the east of PGS' project. Shell's Beaufort Sea activities should only have minimal temporal overlap with PGS' survey. Additionally, the IHA will contain the following measure: The taking of any marine mammals by seismic sounds when the seismic vessel is within 15 mi (24.1 km) of another operating seismic vessel, which is being used for a separate operation, is prohibited.

Monitoring Concerns

Comment 37: CBD states that MMOs cannot effectively detect 100 percent of the marine mammals that may enter the safety zones. NMFS allows seismic vessels to operate airguns during periods of darkness, but does not require MMOs to monitor the exclusion zones during nighttime operations except when starting airguns at night or if the airgun was powered down due to marine mammal presence the preceding day. Even during the day, visually detecting marine mammals from the deck of a seismic vessel presents challenges and may be of limited effectiveness due to glare, fog, rough seas, the small size of animals such as seals, and the large proportion of time that animals spend submerged. CBD feels that there is no documentation to prove that PGS' operations will more effectively monitor exclusion zones than in 2006 and 2007. Therefore, marine mammals will likely be exposed to sound levels that could result in permanent hearing loss and therefore serious injury. As such, because PGS' proposed activities ''have the potential to result in serious injury or mortality'' to marine mammals, NMFS cannot lawfully issue the requested IHA. Moreover, NMFS cannot authorize some take (i.e., harassment) if other unauthorized take (i.e., serious injury or mortality) may also occur. However, even if an IHA were the appropriate vehicle to authorize take for PGS' planned activities, because the proposed IHA is inconsistent with the statutory requirements for issuance, it cannot lawfully be granted by NMFS.

Response: The seismic vessels will be traveling at speeds of about 1–5 knots (1.9–9.3 km/hr). With a 180–dB safety range of 492 m (0.31 mi), a vessel will have moved out of the safety zone within a few minutes. As a result, during underway seismic operations, MMOs are instructed to concentrate on the area ahead of the vessel, not behind the vessel where marine mammals would need to be voluntarily swimming towards the vessel to enter the 180–dB zone. In fact, in some of NMFS' IHAs issued for scientific seismic operations, shutdown is not required for marine mammals that approach the vessel from the side or stern in order to ride the bow wave or rub on the seismic streamers deployed from the stern (and near the airgun array) as some scientists consider this a voluntary action on the part of an animal that is not being harassed or injured by seismic noise. While NMFS concurs that shutdowns are not likely warranted for these voluntary approaches, in the Arctic Ocean, all seismic surveys are shutdown or powered down for all marine mammal close approaches. Also, in all seismic IHAs, including PGS' IHA, NMFS requires that the safety zone be monitored for 30 min prior to beginning ramp-up to ensure that no marine mammals are present within the safety zones. Implementation of ramp-up is required because it is presumed it would allow marine mammals to become aware of the approaching vessel and move away from the noise, if they find the noise annoying.

Periods of total darkness will not set in during PGS' survey until early September. For the final few weeks of data acquisition, nighttime conditions will occur for approximately 1.5–5 hrs.

However, during times of reduced light, MMOs will be equipped with night vision devices. During poor visibility conditions, if the entire safety zone is not visible for the entire 30 min pre-ramp-up period, operations cannot begin.

NMFS believes that an IHA is the proper authorization required to cover PGS' survey. As described in other responses to comments in this document, NMFS does not believe that there is a potential for serious injury or mortality from these activities. The monitoring reports from 2006 and 2007 do not note any instances of serious injury or mortality. Additionally, NMFS feels it has met all of the requirements of section 101(a)(5)(D) of the MMPA (as described throughout this document) and therefore can issue an IHA to PGS for seismic operations in 2008.

Comment 38: The NSB and CBD states that with regard to nighttime and poor visibility conditions, BPXA proposes essentially no limitations on operations, even though the likelihood of observers seeing marine mammals in such conditions is very low. The obvious solution, not analyzed by PGS or NMFS, is to simply prohibit seismic surveying when conditions prevent observers from detecting all marine mammals in the safety zone. CBD also states that in its treatment of passive acoustic monitoring (PAM), NMFS and PGS are also deficient. While past IHAs have required PAM, this IHA completely ignores even discussing the possibility of using such monitoring. Additional mitigation measures that are clearly ''practicable'' are included in our NEPA comments on the PEA and DPEIS and incorporated by reference here. The NSB DWM acknowledges that the proposed IHA notice contained an explanation of the acoustic monitoring planned for this project. However, they feel it has some weaknesses. The five hydrophone offshore array is not adequate as it will not cover the entire ensonified area. A sixth hydrophone is needed to more appropriately cover the proposed seismic survey area. The NSB DWM feels that NMFS should require PGS to carefully monitor impacts from the seismic operations on all marine mammals and subsistence hunters of those marine mammals.

Response: Total darkness will not occur until early September in the project area. Beginning around July 29, nautical twilight will begin to occur for short periods of time each day, with the amount of time that twilight occurs increasing by about 15–30 minutes each day. Nautical twilight is defined as the sun being approximately 12° below the horizon. At the beginning or end of nautical twilight, under good atmospheric conditions and in the absence of other illumination, general outlines of ground objects may be distinguishable, but detailed outdoor operations are not possible, and the horizon is indistinct. Beginning on September 5, there will be periods of darkness, which will occur between the end of nautical twilight and the beginning of morning nautical twilight. Nighttime or darkness periods will not last more than 5 hrs and then only around the last week of operations. During periods of impaired light or fog, operations will not be allowed to resume after a full shutdown if the entire 180–dB safety radius cannot be monitored for a full 30–min period. Additionally, night vision devices will be onboard each source vessel.

Contrary to CBD's assertion, acoustic monitoring is being required for this project. A full description can be found in the ''Monitoring and Reporting Plan'' section of this document. Since the offshore recorders to be deployed by PGS will not be the only acoustic monitoring devices located in the Beaufort Sea at this time, NMFS feels that the five recorders will provide sufficient coverage. Every fall, BPXA deploys Directional Autonomous Seafloor Acoustic Recorders (DASARs) near its Northstar facility in the Beaufort Sea, which is slightly westward of this survey to record bowhead whale calls during the fall migration. Results of those recordings are available in the Northstar reports and can be found on the NMFS PR website (see **ADDRESSES** for availability). Additionally, Shell proposes to deploy DASARs east and northwest of the PGS DASAR site.

Reports and data that must be contained in those reports can be found in the ''Monitoring and Reporting Plan'' section of this document. If marine mammals are sighted during seismic operations, PGS is required to record information such as species and reaction (if any). Additionally, PGS has agreed to communicate with subsistence hunters throughout the season to determine if their activities are having an impact on the hunts.

Comment 39: REDOIL notes that NMFS regulations require that an IHA set forth ''requirements for the independent peer-review of proposed monitoring plans where the proposed activity may affect the availability of a species or stock for taking for subsistence uses'' (50 CFR 216.107(a)(3)). The proposed IHA fails to provide for peer review of PGS' proposed monitoring plans. NMFS should reject any suggestion that the 2008 Open-water meeting satisfied the peer review requirement. Peer review by independent, objective reviewers remains necessary.

Response: In order for the independent peer-review of Arctic area activity monitoring plans, it must be conducted in an open and timely process. Review by an independent organization, such as the National Academy of Sciences, would be costly (at least $500,000), take at least a year to complete, would limit NMFS, USFWS, MMS, and stakeholder input, would likely provide for an inflexible, multi-year monitoring plan (e.g., any modifications may require reconvening the Committee), and may not address issues of mutual concern (degree of bowhead westward migration, etc.). As a result, NMFS believes that independent peer-review of monitoring plans can be conducted via two means. First, the monitoring plans are made public and available for review by scientists and members of the public in addition to scientists from the NSB, NMFS, and the USFWS. In accordance with the MMPA, the Commission's Committee of Scientific Advisors reviews all IHA applications, including the monitoring plans. Second, monitoring plans and the results of previous monitoring are reviewed once or twice annually at public meetings held with the industry, the AEWC, the NSB, Federal agencies, and the public. PGS' mitigation and monitoring plan was reviewed by scientists and stakeholders at a meeting in Anchorage between April 14, 2008, and April 16, 2008, and by the public between June 17, 2008 (73 FR 34254) and July 17, 2008.

Cumulative Impact Concerns

Comment 40: REDOIL feels that NMFS has not adequately analyzed the impacts of PGS' surveying activity against the background of the many other seismic surveys planned for the Beaufort in the summer of 2008, let alone provided adequate mitigation of the effects of this activity on subsistence activities.

Response: NMFS disagrees. The 2008 SEA provides an analysis of all seismic surveys planned for the Arctic Ocean for summer 2008. Additionally, NMFS believes that it has required in the IHA all practicable monitoring and mitigation measures required to ensure the least practicable adverse impact on the affected species or stocks and that there is no unmitigable adverse impact on the availability of the species or stocks for subsistence uses.

Comment 41: The MMC recommends that NMFS, together with the applicant and other appropriate agencies and

organizations, develop and implement a broad-based population monitoring and impact assessment program to collect baseline population information sufficient to detect changes and identify their possible causes and to verify that ongoing and planned oil and gas-related activities, in combination with other risk factors, are not individually or cumulatively having any significant adverse population-level effects on marine mammals or having an unmitigable adverse effect on the availability of marine mammals for subsistence uses by Alaska Natives.

Response: A description of the monitoring program submitted by PGS was provided in PGS' application, outlined in the **Federal Register** notice of the proposed IHA (73 FR 34254, June 17, 2008), and posted on the NMFS PR IHA webpage. As a result of a dialogue on monitoring by scientists and stakeholders attending NMFS' public meetings in Anchorage in April, 2006, October, 2006, and April, 2007, the industry has expanded its monitoring program in order to fulfill its responsibilities under the MMPA. For the third year, industry participants have included a marine mammal research component designed to provide baseline data on marine mammals for future operations planning. A description of this research is provided later in this document (see ''Joint Industry Program'' section). Scientists are continuing discussions to ensure that the research effort obtains the best scientific information possible. Finally, it should be noted that this far-field monitoring program follows the guidance of the MMC's recommended approach for monitoring seismic activities in the Arctic (Hofman and Swartz, 1991), that additional research might be warranted when impacts to marine mammals would not be detectable as a result of vessel observation programs.

ESA Concerns

Comment 42: CBD states that the proposed IHA will affect, at a minimum, three endangered species, the bowhead and humpback whales and the polar bear. As a consequence, NMFS must engage in consultation under Section 7 of the ESA prior to issuing the IHA. Previous recent biological opinions for industrial activities in the Arctic (e.g., the 2006 ARBO) have suffered from inadequate descriptions of the proposed action, inadequate descriptions of the status of the species, inadequate descriptions of the environmental baseline, inadequate descriptions of the effects of the action, inadequate analysis of cumulative effects, and inadequate descriptions and analysis of proposed mitigation. We hope NMFS performs the full analysis required by law and avoids these problems in its consultation for the proposed IHA.

Response: Under section 7 of the ESA, NMFS has completed consultation with the MMS on the issuance of seismic permits for offshore oil and gas activities in the Beaufort and Chukchi seas. In a Biological Opinion issued on July 17, 2008, NMFS concluded that the issuance of seismic survey permits by MMS and the issuance of the associated IHAs for seismic surveys are not likely to jeopardize the continued existence of threatened or endangered species (specifically the bowhead whale) under the jurisdiction of NMFS or destroy or adversely modify any designated critical habitat. The 2008 ARBO takes into consideration all oil and gas related activities that are reasonably likely to occur, including exploratory (but not production) oil drilling activities. In addition, NMFS issued an Incidental Take Statement under this Biological Opinion, which contains reasonable and prudent measures with implementing terms and conditions to minimize the effects of take of bowhead whales. Regarding the polar bear, MMS has contacted the USFWS about conducting a section 7 consultation.

Comment 43: CBD states NMFS may authorize incidental take of the listed marine mammals under the ESA pursuant to Section 7(b)(4) of the ESA, but only where such take occurs while ''carrying out an otherwise lawful activity.'' To be ''lawful,'' such activities must ''meet all State and Federal legal requirements except for the prohibition against taking in section 9 of the ESA''. As discussed above, PGS' proposed activities violate the MMPA and NEPA and therefore are ''not otherwise lawful.'' Any take authorization for listed marine mammals would, therefore, violate the ESA, as well as these other statutes.

Response: As noted in this document, NMFS has made the necessary determinations under the MMPA, the ESA, and NEPA regarding the incidental harassment of marine mammals by PGS while it is conducting activities permitted legally under MMS' jurisdiction.

NEPA Concerns

Comment 44: The NSB, REDOIL, and CBD state that NEPA requires Federal agencies to prepare an EIS for all ''major Federal actions significantly affecting the quality of the human environment.'' In the notice of proposed IHA, NMFS cites the 2006 PEA and the 2007 DPEIS. As explained in our comment letters on these two documents (incorporated by reference), neither of these documents satisfy NMFS' NEPA obligation. The 2006 PEA explicitly limited its scope to the 2006 seismic season. Additional seismic work cannot be authorized without further NEPA analysis of the cumulative impacts of increasing activity offshore in the Arctic Ocean.

The monitoring reports from 2006 and 2007 seismic testing must be considered in any NEPA analysis for further seismic testing. Moreover, these reports indicate that the 120 dB and 160 dB zones from seismic surveys were much larger than anticipated or analyzed in the PEA. As such, the analysis of the PEA is simply inaccurate and underestimates the actual impacts from seismic activities. Also, in 2007, significant bowhead feeding activity occurred in Camden Bay, rendering the PEA's analyses of important bowhead feeding areas inadequate and inaccurate. Additionally, sea ice in 2007 retreated far beyond that predicted or analyzed in the PEA, rendering any discussion of cumulative impacts of seismic activities in the context of climate change horribly out of date.

Moreover, even if the EA was not of limited scope and out of date, the proposed surveys threaten potentially significant impacts to the environment, and must be considered in a full EIS. (See 42 U.S.C. 5 4332(2)(c); *Idaho Sporting Cong* v. *Thomas*, 137 F.3d 1146, 1149 (9th Cir. 1998)). As explained in our comment letter of May 10, 2006, on the PEA (incorporated by reference), seismic surveys trigger several of the significance criteria enumerated in NEPA regulations. Additionally, the ''significance thresholds'' in the PEA are, as explained in our comment letters, arbitrary and unlawful. Moreover, the 120 dB and 160 dB safety zones that NMFS relied upon to avoid a finding of significance in the 2006 PEA are not part of the current proposal and cannot in anyway support a finding of no significant impact (FONSI). Finally, where, as here, a proposed action may have cumulatively significant impacts, an EIS must be prepared, and cannot be avoided by breaking a program down into multiple actions. See *Blue Mountains Biodiversity Project* v. *Blackwood*, 161 F.3d 1208, 1215 (9th Cir. 1998); *Kern* v. *Bureau of Land Mgmt.*, 284 F.3d 1062, 1078 (9th Cir. 2002).

Response: NMFS prepared a Final SEA to analyze further the effects of PGS' (and other companies') proposed open-water seismic survey activities for the 2008 season. NMFS has incorporated by reference the analyses contained in the MMS 2006 Final PEA

and has also relied in part on analyses contained in the DPEIS submitted for public comment on March 30, 2007.

The 2006 PEA analyzed a broad scope of proposed seismic activities in the Arctic Ocean. In fact, the PEA assessed the effects of multiple, ongoing seismic surveys (up to 8 surveys) in the Beaufort and Chukchi Seas for the 2006 season. Although PGS' proposed activity for this season was not explicitly identified in the 2006 PEA, the PEA did contemplate that future seismic activity, such as PGS', could occur. NMFS believes the range of alternatives and environmental effects considered in the 2006 PEA, combined with NMFS' SEA for the 2008 season are sufficient to meet the agency's NEPA responsibilities. In addition, the 2008 SEA includes new information obtained since the 2006 Final PEA was issued, including updated information on cumulative impacts. NMFS also includes a new section in the 2008 SEA, which provides a review of the 2006 and 2007 monitoring reports. As a result of this review and analysis, NMFS has determined that it was not necessary to prepare an EIS for the issuance of an IHA to PGS in 2008 for seismic activity in the Beaufort Sea but that preparation of an SEA and issuance of a FONSI were sufficient under NEPA.

As stated in previous responses in this document and explained in the ''Mitigation Measures'' section later in this document, NMFS will require PGS to monitor the 120–dB and 160–dB zones.

Comment 45: The NSB and CBD state that NMFS also appears to rely on the NEPA analysis in the DPEIS in clear violation of NEPA law. Here, the very purpose of the PEIS process is to consider seismic surveys in the Chukchi and Beaufort Seas for the years 2007 and beyond. NMFS cannot authorize such activities before the NEPA process is complete. See *Metcalf* v. *Daley*, 214 F.3d 1135, 1143–44 (9th Cir. 2000). In sum, NMFS seems to either be relying on a NEPA document that is not just inadequate, but which by its very terms only covers activities from two years ago (the 2006 PEA), or one which is nowhere near complete (the 2007 DPEIS). Neither of these is sufficient to meet NMFS' NEPA obligations under the law. The NSB believes that NMFS may not avoid the requirements of NEPA by only completing a SEA this season because the seismic activity has the potential to significantly impact marine resources and subsistence hunting.

Response: See previous responses on this concern. Contrary to the NSB's and CBD's statement, NMFS relied on information contained in the MMS 2006 Final PEA, as updated by NMFS' 2008 SEA for making its determinations under NEPA and that the DPEIS was not the underlying document to support NMFS' issuance of PGS' IHA. NMFS merely relied upon specific pieces of information and analyses contained in the DPEIS to assist in preparing the SEA. It is NMFS' intention that the PEIS currently being developed will be used to support, in whole, or in part, future MMPA actions relating to oil and gas exploration in the Arctic Ocean. Additionally, NMFS believes that a SEA is the appropriate NEPA analysis for this season as the amount of activity for 2008 is less than what was analyzed in the 2006 PEA.

Comment 46: REDOIL believes that the analysis in the PEA understates the risk of significant impacts to bowhead whales and all marine mammals. It assumes the source vessels-both 3D seismic and shallow hazard vessels-will ensonify much smaller zones than those which have been subsequently measured in the field. In practice, seismic airgun noise has propagated far greater distances than NMFS anticipated in the PEA and thus authorized activity presumably has displaced marine mammals from far more habitat, including important feeding and resting habitats, than NMFS' analysis in the PEA anticipated. See, e.g., PEA Figures III.F–10 and III.F–11 (assuming 20 km avoidance of surveys by bowhead whales). Based on the propagation actually measured in 2006 and 2007, the impacts of a single 3D seismic survey are two to three times as large as NMFS anticipated or more. The impacts of a single shallow hazard survey are comparable to the impacts NMFS anticipated from a single 2D or 3D seismic survey. Before authorizing further seismic surveying activity or shallow hazard surveys in the Arctic Ocean, NMFS must complete the PEIS that it began in 2006 to evaluate the potentially significant impacts of such activities.

Response: The subject PEA was written by MMS, not NMFS. However, NMFS was a cooperating agency under NEPA in its preparation. As noted in your cited part in the PEA, 20 km (12.4 mi) was used for illustrative purposes in an exercise to estimate the impact of four seismic vessels operating within 24 km (15 mi) of each other. To do so, MMS created a box (that was moveable along the Beaufort Sea coast) to make these estimates. NMFS believes that the use of 20 km (12.4 mi) remains the best information available at this time and was the radius agreed to by participants at the 2001 Arctic Open-water Noise Peer Review Workshop in Seattle, Washington. This estimate is based on the results from the 1998 aerial survey (as supplemented by data from earlier years) as reported in Miller *et al.* (1999). In 1998, bowhead whales below the water surface at a distance of 20 km (12.4 mi) from an airgun array received pulses of about 117–135 dB re 1 μPa rms, depending upon propagation. Corresponding levels at 30 km (18.6 mi) were about 107–126 dB re 1 μPa rms. Miller *et al.* (1999) surmise that deflection may have begun about 35 km (21.7 mi) to the east of the seismic operations, but did not provide SPL measurements to that distance, and noted that sound propagation has not been studied as extensively eastward in the alongshore direction, as it has northward, in the offshore direction. Therefore, while this single year of data analysis indicates that bowhead whales may make minor deflections in swimming direction at a distance of 30–35 km (18.6–21.7 mi), there is no indication that the SPL where deflection first begins is at 120 dB, it could be at another SPL lower or higher than 120 dB. Miller *et al.* (1999) also note that the received levels at 20–30 km (12.4–18.6 mi) were considerably lower in 1998 than have previously been shown to elicit avoidance in bowheads exposed to seismic pulses. However, the seismic airgun array used in 1998 was larger than the ones used in 1996 and 1997. Therefore, NMFS believes that it cannot scientifically support adopting any single SPL value below 160 dB and apply it across the board for all species and in all circumstances. For this reason, until more data collection and analyses are conducted on impacts of anthropogenic noise (principally from seismic) on marine mammals in the Beaufort and Chukchi Seas, NMFS will continue to use 20 km (12.4 mi) as the radius for estimating impacts on bowhead whales during the fall migration period.

In regards to REDOIL's statement, ''The impacts of a single shallow hazard survey are comparable to the impacts NMFS anticipated from a single 2D or 3D seismic survey,'' NMFS notes that PGS' seismic program is not a shallow hazards survey but a 3D seismic survey conducted in shallow water, partly inside the barrier islands. This OBC/TZ survey is similar to those conducted for BP by Western Geophysical in the late 1990s at the nearby Northstar Prospect (see Richardson, W.J. (ed) 1997, 1998, 1999, 2000a, and 2000b for acoustic measurements and marine mammal impact assessments from OBC surveys during 1996 through 2000, respectively).

As a result of these previous acoustic propagation measurements, NMFS believes that the sound propagation characteristics for the 880 in 3 airgun array proposed by NMFS in the proposed IHA notice (73 FR 34254, June 17, 2008) for PGS' 2008 OBC/TZ survey has been accurately calculated for the 190 dB, 180 dB, 160 dB, and 120 (rms) zones. In addition, in compliance with the terms and conditions of its IHA, PGS will conduct a sound source verification test prior to conducting its survey to ensure that the correct distances are applied to the safety and monitoring zones (see ''Mitigation Measures'' section later in this document).

Comment 47: REDOIL states that the PEA fails to provide site-specific analysis. Thus, in order to reduce the likelihood of significant impacts, NMFS has imposed 160–dB and 120–dB safety zones when authorizing surveys pursuant to the PEA. At a minimum, it must do the same for PGS' seismic surveys.

Response: The SEA prepared for the 2008 open-water season activities provides site specific information for the various projects, in particular PGS' project. NMFS will require that PGS monitor exclusion zones of 160–dB for aggregations of 12 or more whales and 120–dB for four or more cow/calf pairs. These conditions are contained in the IHA.

Comment 48: REDOIL states that the scope of the PEA is explicitly limited to activities that occur during 2006. Those seismic survey activities have already occurred, as well as an additional season worth of activities in 2007. The PEA does not evaluate activities that will occur over a period of several years, though NMFS has continued to rely on it as if its scope were for a multi-year program of seismic surveys. In addition, the PEA uses arbitrary significance criteria for non-endangered marine mammals that would allow long-lasting impacts to populations, or in fact the entire Arctic ecosystem, that would nonetheless be deemed insignificant. These significance criteria are inappropriate for an evaluation of impacts from seismic surveys, as indicated by MMS' use of more defensible significance criteria based on potential biological removal form marine mammal populations affected by seismic surveys in the Gulf of Mexico.

Response: NMFS prepared and released to the public, a SEA for seismic surveys that are expected to occur in 2008 (see **ADDRESSES** for availability). This SEA incorporates by reference the relevant information contained in the 2006 PEA and updates that information where necessary to assess impacts on the marine environment from the 2008 seismic survey activities. NMFS believes that it is fully compliant with the requirements of NEPA in its preparation of its NEPA documents.

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 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 LOA was issued to PGS by the 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 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 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 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.

The notice of the proposed IHA (73 FR 34254, June 17, 2008) included a discussion of the effects of sounds from airguns on mysticetes, odontocetes, and pinnipeds, including tolerance, masking, behavioral disturbance, and hearing impairment. The notice also included a discussion on the effects of bathymetric equipment on marine mammals. Based on available information, the bathymetric equipment to be used within the project area will not overlap with the hearing range of marine mammals. Therefore, NMFS believes it is unlikely that marine mammals will be exposed to signals from the bathymetric equipment at levels at or above those likely to cause harassment.

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 or from sound levels high enough to result in PTS. 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 of injury or mortality.

The notice of the proposed IHA (73 FR 34254, June 17, 2008) included an in-depth discussion of 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 seismic acquisition activity area in the Beaufort Sea. Additional information was provided in PGS' application. A summary is provided 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

PGS' application 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 action area (LGL, 2005; Frost *et al.*, 2002; Green *et al.*, 2005; 2006; 2007). Additionally, PGS provided maximum density estimates for those marine mammal populations. The average and maximum population densities of marine mammals are provided in Table 6.2–1 of 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 decided to use the average density data of marine mammal populations to calculate estimated take numbers because these numbers are based on surveys and monitoring of marine mammals in the vicinity of the 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-, 180-, and 190–dB isopleths, using 250 dB as the source output. Based on this new information, the respective radii for the 160-, 180-, and 190–dB isopleths are: 2,894 m (1.8 mi); 492 m (0.31 mi); and 203 m (0.13 mi).

The area of ensonification was assumed to be the length of trackline in marine waters multiplied by the 160–dB isopleth 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. 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). 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 current practice to estimate Level B harassment takes based on the 160–dB criterion for all species and has revised pinniped take estimates based on the 160–dB criterion.

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, 3,551 ringed seals, 178 spotted seals, and 94 bearded seals would be affected by Level B behavioral harassment as a result of PGS' 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 1.4 percent, 0.3 percent, and 0.04 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. It is estimated that up to two gray whales may be taken by this survey. This number is considered minimal based on the population size of the eastern North Pacific stock of gray whales.

PGS plans to continue seismic surveying after August 25, the commencement of the 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 (6.2–9 mi). Further, PGS will move their operations inside the barrier islands by August 25 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 (6.2 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 the 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.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 small relative to their stock or 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

A detailed discussion of the potential effects of this action on marine mammal habitat, including behavioral and physiological effects on marine fish and invertebrates, was included in the notice of proposed IHA (73 FR 34254, June 17, 2008). Based on the discussion in the proposed IHA and the nature of the activities (moderate-size airgun array, short duration of the survey, and the location inside the barrier islands in very shallow water), the authorized operations are not expected to have any habitat-related effects that could cause significant or long-term consequences for individual marine mammals or their populations or stocks.

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's main subsistence focus is concentrated on biannual bowhead whale hunts that take place in 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).

The notice of proposed IHA (73 FR 34254, June 17, 2008) contained a complete description of the species that could potentially be affected by the seismic surveys in the Beaufort Sea area and the subsistence hunting conducted by the Native Alaskans of these species. A summary of whether or not PGS' activity will affect the subsistence hunting of these various species is provided below.

Bowhead Whales

The bowhead whales that could potentially be affected by seismic activity in the Beaufort Sea come from the Western Arctic stock. Ten primary coastal Alaskan villages deploy whaling crews during whale migrations. Of these ten, Nuiqsut has the potential to be affected by the project, as it is the village situated closest to the project area. Barrow is located farther from the proposed seismic activity but also has the potential to be affected, albeit to a lesser degree than Nuiqsut. These two communities are part of the AEWC. The AEWC was formed as a response to the IWC'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 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 since the village's efforts are usually centered father east, closer to Cross Island. 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. 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).

Ringed Seals

Ringed seals are distributed throughout the Arctic Ocean. They inhabit both seasonal and permanent ice. 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 timeframe of the project, adverse impacts on ringed seals as a result of PGS' 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. 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 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

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 user 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 was submitted to NMFS on July 10, 2008. This document was also distributed to other Federal agencies and affected communities and subsistence user groups. PGS conducted the following meetings:

- February 7, 2008: AEWC 2008 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. (KSOP) 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 and the KSOP meeting 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 availability of marine mammal species or stocks for taking for subsistence uses. 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).

Based on the signed CAA, the mitigation and monitoring measures included in the IHA (see next sections), and the project design itself, NMFS has determined that there will not be an unmitigable adverse impact on subsistence uses from PGS' activities.

Mitigation Measures

This section describes the measures that have been included in the survey design and those that are required to be implemented during the survey. Mitigation measures to reduce any potential impact on marine mammals that have been considered and included in the planning and design phase are as follows:

• 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 25 (just before the bowheads begin their westward migration across the Beaufort Sea). Data acquisition inside the barrier islands, with maximum water depth of approximately 4.6 m (15 ft), would then be conducted from approximately August 25–mid- to late-September. No data acquisition would be conducted outside the barrier islands after August 5. If necessary, data acquisition may be performed outside the barrier islands after the close of the Nuiqsut fall bowhead hunt. No data acquisition would be conducted or permitted to occur outside the barrier islands from August 25 until the close of the Nuiqsut fall bowhead hunt.

• Although seismic operations will 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 will 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 migration corridor.

• 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.

• PGS will designate an individual to act as the conduit for information to and from potentially affected communities, subsistence users, and stakeholder groups.

• PGS proposes to avoid potential conflicts with subsistence users by not conducting operations during subsistence activities, to the extent practicable, or in marine mammal migration routes and known subsistence use areas.

• The 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 to determine avoidance radii 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. After August 25, shutdown safety radii of 2,894 m (1.8 mi) will be required for sightings of groups of 12 or more bowhead or gray whales and of 10 km (6.2 mi) when 4 or more cow/calf pairs are sighted.

• 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) prior to the beginning of the survey 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 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 1.2 m (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 (6.2–12.4 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 Pa (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, 492 m (0.31 mi) for the 180–dB isopleth, and 2,894 m (1.8 mi) for the 160–dB isopleth. Results will be used for the implementation of mitigation measures to power down or shutdown 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 the 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.

(4) If, after August 25, a group of 12 or more bowhead or gray whales enters the 160–dB (rms) radius or a group of four or more cow/calf pairs enters the 120–dB (rms) radius.

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. PGS intends to follow the ramp-up guideline of no more than 6 dB per 5 min period. 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.

Monitoring and Reporting Plan

PGS will sponsor marine mammal monitoring during the seismic survey in order to implement the required mitigation measures that require real-time monitoring, to satisfy the required 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 NMFS-approved 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. Night vision devices will be available on each source vessel for low light conditions or times when there is insufficient ambient light to see the entire monitoring area. 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 (8–12.4 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 DWM 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 (6.2 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 SPL (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 will 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 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. Surveys will extend to approximately 80 km (50 mi) offshore. 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 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 GPS-referenced tracklines.

When a large whale is sighted, the pilot will break transect and circle the sighting at least twice to confirm species, group size, and composition. If additional sightings are made in the vicinity, these will also be circled to confirm species, group size, composition, and activity if it can be determined (such as feeding or migrating). An aggregation of 12 whales is defined as 12 whales seen, either on transect or while circling, within a circular area with a diameter of 15 km (9.3 mi). Therefore, after a sighting is made, it should be circled sufficiently to check a 7.5 km (4.7 mi) radius around the area, and any subsequent sightings should be circled to see if they are within 15 km (9.3 mi) of the original sighting.

For each marine mammal sighting, the observer will note 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.

Some of PGS' monitoring (e.g., aerial surveys and acoustic arrays) will provide additional information for the Joint Industries Program. This program includes coastal aerial surveys in the Chukchi Sea, acoustic ''net'' arrays in the Chukchi Sea, and acoustic arrays in the Beaufort Sea. These studies aid in the gathering of data on abundance and distribution of marine mammals in the Chukchi and Beaufort Seas.

Comprehensive Monitoring Report

In November, 2007, Shell (in coordination and cooperation with other Arctic seismic IHA holders) released a final, peer-reviewed edition of the 2006 Joint Monitoring Program in the Chukchi and Beaufort Seas, July-November 2006 (LGL, 2007). This report is available for downloading on the NMFS website (see ADDRESSES). A draft comprehensive report for 2007 was provided to NMFS and those attending the NMFS/MMS Arctic Ocean open water meeting in Anchorage, Alaska, on April 14–16, 2008. Based on reviewer comments made at that meeting, Shell and others are currently revising this report and plans to make it available to the public shortly.

Following the 2008 open water season, a comprehensive report describing the proposed acoustic, vessel-based, and aerial monitoring programs will be prepared. The 2008 comprehensive report will describe the methods, results, conclusions and limitations of each of the individual data sets in detail. The report will also integrate (to the extent possible) the studies into a broad based assessment of industry activities and their impacts on marine mammals in the Beaufort Sea during 2008. The 2008 report will form the basis for future monitoring efforts and will establish long term data sets to help evaluate changes in the Beaufort/

Chukchi Sea ecosystems. The report will also incorporate studies being conducted in the Chukchi Sea and will attempt to provide a regional synthesis of available data on industry activity in offshore areas of northern Alaska that may influence marine mammal density, distribution, and behavior.

This comprehensive report will consider data from many different sources including two relatively different types of aerial surveys; several types of acoustic systems for data collection (net array, PAM, vertical array, and other acoustical monitoring systems that might be deployed), and vessel based observations. Collection of comparable data across the wide array of programs will help with the synthesis of information. However, interpretation of broad patterns in data from a single year is inherently limited. Much of the 2008 data will be used to assess the efficacy of the various data collection methods and to establish protocols that will provide a basis for integration of the data sets over a period of years.

ESA

Under section 7 of the ESA, NMFS has completed consultation with the MMS on the issuance of seismic permits for offshore oil and gas activities in the Beaufort and Chukchi seas. In a Biological Opinion issued on July 17, 2008, NMFS concluded that the issuance of seismic survey permits by MMS and the issuance of the associated IHAs for seismic surveys are not likely to jeopardize the continued existence of threatened or endangered species (specifically the bowhead, humpback, and fin whales) under the jurisdiction of NMFS or destroy or adversely modify any designated critical habitat. The 2008 Biological Opinion takes into consideration all oil and gas related activities that are reasonably likely to occur, including exploratory (but not production) oil drilling activities. In addition, NMFS has issued an Incidental Take Statement under this Biological Opinion which contains reasonable and prudent measures with implementing terms and conditions to minimize the effects of take of listed species.

NEPA

In 2006, the MMS prepared Draft and Final 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 was 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 prepared a SEA which incorporates by reference the 2006 Final PEA and other related documents.

Determinations

Based on the information provided in PGS' application and addendum, public comments received on PGS' application, the proposed IHA notice (73 FR 34254, June 17, 2008), this document, the 2006 and 2007 Comprehensive Monitoring Reports by Shell and others, public review of PGS' mitigation and monitoring program in Anchorage, Alaska, in April, 2008, and the analysis contained in the MMS Final PEA and NMFS' 2008 Final SEA, NMFS has determined that the impact of PGS conducting seismic surveys in the Beaufort Sea in 2008 will have a negligible impact on the affected species or stock of marine mammals and that there will not be an unmitigable adverse impact on their availability for taking for subsistence uses provided the mitigation measures required under the authorization are implemented. Moreover, as explained below, NMFS has determined that only small numbers of marine mammals of a species or population stock would be taken by PGS' seismic activities. The impact of conducting a seismic survey in this area will result, at worst, in a temporary modification in behavior of small numbers of the affected marine mammal species.

NMFS has 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 affected species or stocks. In addition, no take by death and/or serious injury is anticipated or authorized, and the potential for temporary or permanent hearing impairment will be avoided through the incorporation of the mitigation and monitoring measures described above.

For reasons explained in this document, NMFS does not expect that any marine mammals will be seriously injured or killed during PGS' seismic survey activities, even if some animals are not detected prior to entering the 180–dB (cetacean) and 190–dB (pinniped) safety zones. These criteria were set originally by the HESS Workshop (1997, 1999) to approximate where Level A harassment (i.e., defined as ''any act of pursuit, torment or annoyance which has the potential to injure a marine mammal or marine mammal stock in the wild'') from acoustic sources begins. Scientists have determined that these criteria are conservative as they were set for preventing TTS, not PTS. NMFS has determined that a TTS which is the mildest form of hearing impairment that can occur during exposure to a strong sound may occur at these levels. When a marine mammal experiences TTS, the hearing threshold rises and a sound must be stronger in order to be heard. TTS can last from minutes or hours to (in cases of strong TTS) days. For sound exposures at or somewhat above the TTS threshold, hearing sensitivity recovers rapidly after exposure to the noise ends. Few data on sound levels and durations necessary to elicit mild TTS have been obtained for marine mammals, and none of the published data concern TTS elicited by exposure to multiple pulses of sound. It should be understood that TTS is not an injury, as there is no injury to individual cells.

For whales exposed to single short pulses (such as seismic), the TTS threshold appears to be a function of the energy content of the pulse. As noted in this document, the received level of a single seismic pulse might need to be greater than 210 dB re 1 μPa rms (approximately 221–226 dB pk-pk) in order to produce brief, mild TTS. Exposure to several seismic pulses at received levels near 200–205 dB (rms) might result in slight TTS in a small odontocete, assuming the TTS threshold is a function of the total received pulse energy. Seismic pulses with received levels of 200–205 dB or more are usually restricted to a radius of no more

than 200 m (656 ft) around a seismic vessel operating a large array of airguns. As a result, NMFS believes that injury or mortality is highly unlikely due to the injury zone being close to the airgun array (astern of the vessel), the establishment of conservative safety zones and shutdown requirements (see ''Mitigation Measures'') and the fact that there is a strong likelihood that baleen whales (bowhead and gray whales) would avoid the approaching airguns (or vessel) before being exposed to levels high enough for there to be any possibility of onset of TTS.

For pinnipeds, information indicates that for single seismic impulses, sounds would need to be higher than 190 dB rms for TTS to occur while exposure to several seismic pulses indicates that some pinnipeds may incur TTS at somewhat lower received levels than do small odontocetes exposed for similar durations. This indicates to NMFS that the 190–dB safety zone provides a sufficient buffer to prevent PTS in pinnipeds.

In conclusion, NMFS believes that a marine mammal within a radius of <100 m (<328 ft) around a typical large array of operating airguns (larger than that to be used by PGS) may be exposed to a few seismic pulses with levels of >205 dB, and possibly more pulses if the marine mammal moved with the seismic vessel. However, there is no specific evidence that exposure to pulses of airgun sound can cause PTS in any marine mammal, even with large arrays of airguns. The array to be used by PGS is of moderate size. Given the possibility that marine mammals close to an airgun array might incur TTS, there has been further speculation about the possibility that some individuals occurring very close to airguns might incur PTS. Single or occasional occurrences of mild TTS are not indicative of permanent auditory damage in terrestrial mammals. Relationships between TTS and PTS thresholds have not been studied in marine mammals, but are assumed to be similar to those in humans and other terrestrial mammals.

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 1.5 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, NMFS has determined that the location for seismic activity in the Beaufort Sea meets the statutory requirement for the activity to identify the ''specific geographical region'' within which it will operate. With regard to dates for the activity, PGS intends to work beginning upon receipt of the IHA (late-July) and ceasing activity by late-September.

Finally, NMFS has determined that the seismic activity by PGS in the Beaufort Sea in 2008 will not have an unmitigable adverse impact on the availability of marine mammals for subsistence uses. 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 the CAA between PGS and the AEWC and village whaling captains or by mitigation measures contained in the IHA; (2) the CAA and 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; (4) because spotted seals are hunted mainly during times outside of the project timeframe; and (5) because the project will begin in the east and move towards the west to avoid conflicts with the bearded seal hunt at Thetis Island, which usually ends in August.

Authorization

As a result of these determinations, NMFS has issued 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: July 30, 2008.

James H. Lecky,

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

[FR Doc. E8–18104 Filed 8–6–08; 8:45 am]

BILLING CODE 3510–22–S

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648–XJ30

Taking and Importing Marine Mammals; Taking Marine Mammals Incidental to Surf Zone Testing/Training and Amphibious Vehicle Training and Weapons Testing

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

ACTION: Notice of issuance of an incidental harassment authorization.

SUMMARY: In accordance with regulations implementing the Marine Mammal Protection Act (MMPA) as amended, notification is hereby given that an Incidental Harassment Authorization (IHA) to take marine mammals, by harassment, incidental to conducting surf zone testing/training and amphibious vehicle training and weapons testing off the coast of Santa Rosa Island (SRI), has been issued to the Eglin Air Force Base (Eglin AFB) for a period of 1 year.

DATES: This authorization is effective from July 25, 2008, until July 24, 2009.

ADDRESSES: A copy of the application, IHA, and a list of references used in this document may be obtained by writing to P. Michael Payne, Chief, Permits, Conservation and Education Division, Office of Protected Resources, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring, MD 20910–3225. A copy of the *Santa Rosa Island Mission Utilization Plan Programmatic Environmental Assessment* (SRI Mission PEA) (U.S. Air Force, 2005) is available by writing to the Department of the Air Force, AAC/EMSN, Natural Resources Branch, 501 DeLeon St., Suite 101, Eglin AFB, FL 32542–5133.

FOR FURTHER INFORMATION CONTACT: Shane Guan, Office of Protected Resources, NMFS, (301) 713–2289, ext 137.

SUPPLEMENTARY INFORMATION:

Background

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