

amount of information pertaining to each company's sales practices, factors of production, corporate relationships, and to review responses to supplemental questionnaires, we are extending the time period for issuing the preliminary results of review by an additional 10 days until August 31, 2006, in accordance with section 751(a)(3)(A) of the Act. The final results continue to be due 120 days after the publication in the **Federal Register** of the preliminary results of review.

Dated: August 17, 2006.

**Gary Taverman,**

*Acting Deputy Assistant Secretary for Import Administration.*

[FR Doc. E6-13979 Filed 8-22-06; 8:45 am]

**BILLING CODE 3510-DS-S**

## DEPARTMENT OF COMMERCE

### National Oceanic and Atmospheric Administration

[I.D. 081606B]

#### Endangered and Threatened Species; Recovery Plans

**AGENCY:** National Marine Fisheries Service, National Oceanic and Atmospheric Administration, Commerce.

**ACTION:** Notice of Availability; request for comments.

**SUMMARY:** The National Marine Fisheries Service (NMFS) announces the availability for public review of the draft updated Recovery Plan (Plan) for the U.S. Distinct Population Segment (DPS) of smalltooth sawfish (*Pristis pectinata*). NMFS is soliciting review and comments from the public and all interested parties on the draft Plan, and will consider all substantive comments received during the review period before submitting the Plan for final approval.

**DATES:** Comments on the draft Plan must be received by close of business on *October 23, 2006*.

**ADDRESSES:** Send written comments to Smalltooth Sawfish Coordinator. Comments may be submitted by:

- E-mail: *smalltooth sawfish.recoveryplan@noaa.gov*, include in the subject line the following document identifier: Smalltooth Sawfish Recovery Plan. E-mail comments, with or without attachments, are limited to 5 megabytes;

- Smalltooth Sawfish Coordinator, NMFS, Southeast Regional Office, Protected Resources Division, 263 13th Avenue South, St. Petersburg, Florida 33071; or

- Fax: (727) 824-5309. Interested persons may obtain the Plan for review from the above address or on-line from <http://www.nmfs.noaa.gov/pr/recovery/plans.htm>.

**FOR FURTHER INFORMATION CONTACT:**

Shelley Norton, (727) 824-5312, or by e-mail *Shelley.Norton@noaa.gov*.

**SUPPLEMENTARY INFORMATION:** The Endangered Species Act of 1973 (15 U.S.C. 1531 *et seq.*; ESA) requires that NMFS develop and implement recovery plans for the conservation and survival of threatened and endangered species under its jurisdiction, unless it is determined that such plans would not promote the conservation of the species. Section 4(f) of the ESA, as amended in 1988, requires that public notice and opportunity to review and comment be provided during recovery plan development.

The U.S. DPS of smalltooth sawfish (*Pristis pectinata*) was listed as endangered under the ESA on April 1, 2003 (68 FR 15680) subsequent to a 1999 listing petition from The Ocean Conservancy (formerly the Center for Marine Conservation). Smalltooth sawfish were once prevalent throughout Florida and were commonly encountered from Texas to North Carolina. Currently, smalltooth sawfish can only be found with any regularity in south Florida between the Caloosahatchee River and the Florida Keys.

The draft recovery plan for the U.S. DPS of smalltooth sawfish was prepared for NMFS by the smalltooth sawfish recovery team. The team is composed of nine members from Federal, State, non-governmental, and non-profit organizations. The goal of the recovery plan is to rebuild and assure the long-term viability of the U.S. DPS of smalltooth sawfish in the wild, allowing initially for reclassification from endangered to threatened status (downlisting) and ultimately to recovery and subsequent removal from the List of Endangered and Threatened Wildlife (delisting). NMFS will consider all substantive comments and information presented during the public comment period in the course of finalizing this Plan.

Dated: August 17, 2006.

**Maria Boroja,**

*Acting Chief, Endangered Species Division, Office of Protected Resources, National Marine Fisheries Service.*

[FR Doc. E6-13975 Filed 8-22-06; 8:45 am]

**BILLING CODE 3510-22-P**

## DEPARTMENT OF COMMERCE

### National Oceanic and Atmospheric Administration

[I.D. 071406A]

#### Small Takes of Marine Mammals Incidental to Specified Activities; Seismic Surveys in the Chukchi Sea off Alaska

**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 marine geophysical seismic surveys, on oil and gas lease blocks located on Outer Continental Shelf (OCS) waters in the Chukchi Sea, has been issued to GX Technology of Houston, Texas (GXT).

**DATES:** Effective from August 15, 2006, through December 31, 2006.

**ADDRESSES:** The application, a list of references used in this document, and/or 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 one of the contacts listed here. A copy of the application, the IHA and/or the research monitoring plan is also available at: <http://www.nmfs.noaa.gov/pr/permits/incidental.htm#iha>.

A copy of the Minerals Management Service's (MMS) Programmatic Environmental Assessment (PEA) is available on-line at: [http://www.mms.gov/alaska/ref/pea\\_be.htm](http://www.mms.gov/alaska/ref/pea_be.htm)

Documents cited in this document, that are not available through standard public (inter-library loan) access, may be viewed, by appointment, during regular business hours at this address.

**FOR FURTHER INFORMATION CONTACT:** Kenneth Hollingshead, Office of Protected Resources, NMFS, (301) 713-2289, ext 128.

**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.

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

Section 101(a)(5)(D) of the MMPA established an expedited process by which citizens of the United States can apply for an authorization to incidentally take small numbers of marine mammals by harassment. Except with respect to certain activities not pertinent here, the MMPA defines "harassment" as: any act of pursuit, torment, or annoyance which

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

Section 101(a)(5)(D) establishes a 45-day time limit for NMFS review of an application followed by a 30-day public notice and comment period on any proposed authorizations for the incidental harassment of marine mammals. Within 45 days of the close of the comment period, NMFS must either issue or deny issuance of the authorization.

#### Summary of Request

On March 28, 2006, NMFS received an IHA application from GXT to take several species of marine mammals incidental to conducting a marine seismic survey in the Chukchi and Beaufort Seas. On March 31, 2006, GXT notified NMFS that it would not be conducting surveys in the U.S. Beaufort Sea, but would instead conduct seismic surveys in the Canadian Exclusive

Economic Zone (EEZ) in the Beaufort Sea.

GXT plans to collect seismic reflection data that reveal the sub-bottom profile for assessments of petroleum reserves in the area. Ultra-deep 2D lines such as those to be collected are used to better evaluate the evolution of the petroleum system at the basin level, including identifying source rocks, migration pathways, and play types. All planned geophysical data acquisition activities will be conducted by GXT. The geophysical survey will be performed from the *M/V Discoverer* (the original proposed action was for the *M/V Discoverer II* to conduct the seismic survey, see Comments and Responses).

The *M/V Discoverer* will arrive in Dutch Harbor about June 1st where it will be resupplied and the crew will change in preparation for the beginning of seismic surveys in the Chukchi Sea. Depending on ice conditions, the vessel will mobilize to arrive off Cape Lisburne and begin survey data acquisition as soon as possible; the expected date is July 30, 2006, depending upon ice conditions. Two alternative schedule scenarios are planned depending on the seasonal ice conditions encountered in 2006.

The first (and most likely) scenario entails operations beginning in the Chukchi Sea about July 30, 2006. Collection of seismic data will continue there until there is sufficient open water near Point Barrow and in the Alaskan Beaufort Sea to allow passage east into the Canadian Beaufort Sea. The *M/V Discoverer* will then leave the Chukchi Sea, traverse the Alaskan Beaufort Sea, and conduct surveys in the Canadian Beaufort Sea under GX Technology Canada Ltd. of Calgary, Alberta., a company incorporated in Canada. Seismic operations will continue in the Canadian Beaufort Sea until all planned seismic lines have been completed, or new ice begins forming in the fall. The vessel will then return to the Chukchi Sea to complete any lines not previously surveyed, or until weather and sea ice force an end to the survey season, which is not expected to continue past November 30, 2006.

The second scenario will occur only if sea ice in the Beaufort Sea does not move far enough offshore to allow the *M/V Discoverer* to travel to the Canadian Beaufort. In that case, the vessel will continue operations in the Chukchi Sea until all survey lines there are completed. The *M/V Discoverer* will then exit the area and transit to Dutch Harbor to de-mobilize. Helicopter operations are not planned as a part of the seismic survey and would occur only in the case of an emergency.

The total seismic survey program, if it can be completed, will consist of a total of about 5302 km (3294.5 mi) of surveys, not including transits when the airguns are not operating. Water depths within the study area are 30–3800 m (98–12467 ft). Approximately 14 percent of the survey (about 742 km (461 mi)) will occur in water depths greater than 500 m (1640 ft), 5 percent of the survey (about 265 km (165 mi)) will be conducted in water 200–500 m (656–1640 ft) deep, and most (81 percent) of the survey (about 4295 km (2669 mi)) will occur in water less than 200 m (656 ft). None of the survey will take place in nearshore waters within 25 km (15.5 mi) of the coast (the Chukchi polynya zone).

The *M/V Discoverer* will tow an airgun array directly astern and a single hydrophone streamer up to 9 km long. The array will consist of 36 sleeve airguns (8 40 in<sup>3</sup>, 4 70 in<sup>3</sup>, 4 80 in<sup>3</sup>, 12 100 in<sup>3</sup>, and 8 150 in<sup>3</sup>) that produce a total discharge of 3320 in<sup>3</sup>. The vessel will travel along pre-determined lines at about 4–5 knots while the airgun array discharges about every 20 seconds (shot interval about 46 m (151 ft)). The towed hydrophone streamer will receive the reflected signals and transfer the data to an on-board processing system. The proposed survey lines cover a large portion of the Chukchi Sea, and tie together known wells, core locations, fault lines and other geophysical points of interest. Specifications of the *M/V Discoverer* and the 36-airgun array that will be used can be found in GXT's application (Appendices A and B; see **ADDRESSES**).

The survey consists of a large grid of 14 lines oriented to connect previous well locations and core sample locations as well as geological structures in the sub-surface. The extent of the lines allows flexibility to mitigate any interaction with seasonal subsistence hunting as well as species migration patterns. GXT has restricted its survey lines along the shore to the area of the MMS lease sales (greater than 25 km (15.5 mi) offshore) to exclude the nearshore Chukchi polynya, through which marine mammals migrate in the spring. Lines will be chosen based on marine mammal migration and subsistence hunting, as well as ice movement and geophysical importance. If heavy ice conditions are encountered in the northern portions of the survey area, some trackline planned for that region may be shifted to ice-free waters within the central or southern portions of the survey area. There will be additional seismic operations associated with airgun testing, start up, and repeat coverage of any areas where initial data

quality is sub-standard. In addition to the airgun array, a pinger system will be used to position the 36-airgun array and streamer relative to the vessel.

The *M/V Discoverer* will serve as the platform from which vessel-based marine mammal observers will watch for marine mammals before and during airgun operations (see Mitigation and Monitoring later in this document). A "chase boat" will be used to protect the streamer from damage and otherwise lend support to the *M/V Discoverer*. It will not be introducing sounds into the water beyond those associated with normal vessel operations.

*Characteristics of Airgun Pulses*

Discussion of the characteristics of airgun pulses was provided in several previous **Federal Register** documents (see 69 FR 31792 (June 7, 2004) or 69 FR 34996 (June 23, 2004)) and is not repeated here. Additional information can be found in the MMS PEA and Appendix C in GXT's application. Reviewers are encouraged to read these documents for additional information.

*Safety Radii*

The rms (root mean square) received sound pressure levels (SPLs) that are used to estimate marine mammal takes and establish safety zones for mitigation are not directly comparable to the peak or peak-to-peak values normally used by

geophysicists to characterize source levels of airguns (GXT IHA Application, Appendix C). The measurement units used to describe airgun sources, peak or peak-to-peak dB, are always higher than the rms dB referred to in much of the biological literature and by NMFS. A measured broadband received level of 160 dB re 1 microPa (rms) in the far field would typically correspond to a peak measurement of about 170 to 172 dB, and to a peak-to-peak measurement of about 176 to 178 decibels, as measured for the same pulse received at the same location (Greene, 1997; McCauley *et al.*, 1998, 2000a). The precise difference between rms and peak or peak-to-peak values for a given pulse depends on the frequency content and duration of the pulse, among other factors. However, the rms level is always lower than the peak or peak-to-peak level for an airgun-type source.

Received sound fields have been modeled by GXT using the Gundalf software suite (Gundalf, 2002) for the 36-airgun array that will be used during this survey (GXT IHA Application Appendix B). GXT used an advanced version of the Gundalf modeling program to estimate the rms received sound levels (in dB re 1 microPa) at different distances from the seismic source on a broadband basis (0-256 Hz). These estimates are believed by GXT to be conservative (*i.e.*, likely to

overestimate the distance at which received levels will be  $\geq 160$  dB) and most applicable to the 36-airgun array discharging 3320 in<sup>3</sup> in water depths between 200 and 500 m (656-1640 ft), or "intermediate depths." The safety radii are expected by GXT to be smaller in "deep" (greater than 500 m) and "shallow" (less than 200 m) water. Empirical data do not exist for this airgun array's sound propagation, so those data will be collected at the beginning of seismic operations. During this initial period, a 1.5X precautionary factor will be applied to the 190 dB and 180 dB radii listed here in Table 1, for use as shutdown radii for marine mammals in the water. Once empirical measurements of the sound produced by GXT's airgun array have been collected and analyzed, the safety radii presented in Table 1 may be adjusted to reflect those results.

As discussed in detail later in this document (see Mitigation), the airguns will be powered down immediately (or shut down if necessary) when cetaceans or pinnipeds are detected within or about to enter the  $\geq 180$  dB or  $\geq 190$  dB radii, respectively. A single 40 in<sup>3</sup> sleeve airgun will be used as the power down source. The 160-190 dB re 1 microPa (rms) radii for this source will be measured during acoustic verification measurements at the beginning of seismic shooting.

TABLE 1. Estimated distances to which sound levels  $\geq 190$ , 180, and 160 dB re 1  $\mu$ Pa (rms) might be received from a 40 G. gun array (10 x 40 in<sup>3</sup>, 8 x 60 in<sup>3</sup>, 10 x 90 in<sup>3</sup>, 8 x 150 in<sup>3</sup>, 4 x 250 in<sup>3</sup>) that will be used during the seismic survey. Distances are based on Gundalf model computations provided by GXT.

Seismic Source Volume	Water depth	190 dB (shut-down criterion for pinnipeds) (m)	180 dB (shut-down criterion for cetaceans) (m)	160 dB (assumed onset of behavioral harassment) (m)
3980 in <sup>3</sup> (40 G. gun array)	<200 m	46	195	5684
	200-500 m	46	195	5684
	>500 m	46	195	5684

## Comments and Responses

A notice of receipt of GXT's MMPA application and NMFS' proposal to issue an IHA to GXT was published in the **Federal Register** on June 6, 2006 (71 FR 32045). That notice described, in detail, GXT's 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 GXT's application, substantive comments were received from the Marine Mammal Commission (Commission), the Alaska Eskimo Whaling Commission (AEWC), the Center for Biological Diversity (CBD) and GXT. The comments of the Commission are identical to its comments on NMFS' proposed IHA to Shell. NMFS has addressed these comments in its **Federal Register** notice of issuance of that IHA and they are not repeated here. That notice will publish shortly. The CBD suggested that the comments submitted by the Natural Resources Defense Council on the PEA also be considered for the issuance of the IHA. These comments have been considered in the Final PEA and in NMFS' and MMS' Finding of No Significant Impact (FONSI) determinations. Many of those comments are specific to the PEA. However, where either of these sets of comments raise issues germane to the IHA issue that have not been addressed already, NMFS has addressed them either in this section or in notices of issuance of IHAs to Shell and ConocoPhillips (71 FR 43112, July 31, 2006).

### Activity Concerns

*Comment 1:* GXT notes that the source vessel for the planned seismic survey in the Chukchi Sea will be the *M/V Discoverer*, not the *M/V Discoverer II*. Because the *M/V Discoverer* is the sister-ship of the *M/V Discoverer II*, the two vessels are almost identical. The *M/V Discoverer* is 2 m (6.6 ft) longer, 2 m (6.6 ft) narrower, and its draft is 0.7 m (2.3 ft) less than the *M/V Discoverer II*. Because of the great similarities between the two vessels, the noise generated by the operations of each of the two sister-ships is expected to be approximately the same. The airgun array described in the notice is accurate for the *M/V Discoverer*.

*Response:* NMFS has made the appropriate modifications to this document.

### MMPA Concerns

*Comment 2:* The CBD states that waters in the Canadian Beaufort EEZ are

“high seas” and therefore GXT's activities there are subject to the take prohibition in section 102(a)(1) of the MMPA, 16 U.S.C. 1372(a)(1). They cite the *Center for Biological Diversity v. National Science Foundation*, (2002 WL 31548073 (N.D. Cal., Oct 30, 2002)).

*Response:* MMPA section 102(a)(1) applies only to persons and vessels subject to the jurisdiction of the United States (16 U.S.C. 1372(a)(1)). The vessel is Chinese-owned and flagged in the Bahamas, and there will be no person subject to the jurisdiction of the United States owning or operating the vessel while it is in the Canadian EEZ. Further, the persons responsible for the conduct of the seismic survey in the Canadian EEZ are not U.S. citizens (and the seismic work in the Canadian EEZ will be conducted under permits issued by the Canadian government to GX Technology Ltd of Calgary, Canada). Therefore, section 102(a)(1) of the MMPA is irrelevant.

*Comment 3:* The CBD also states that “the MMPA prohibits any person to use “any port, harbor, or other place” under U.S. jurisdiction to take marine mammals. 16 U.S.C. 1372(a)(2)(B). Because GXT will start operations from Dutch Harbor, which is under U.S. jurisdiction, CBD believes this brings GXT's surveys in the Canadian Beaufort Sea within the jurisdictional reach of the MMPA.

*Response:* We do not interpret the use of Dutch Harbor in this manner as falling within the meaning of 16 U.S.C. 1372(a)(2)(B). We also point out that the surveys in the Chukchi and Beaufort Seas are not one continuous survey. See also NMFS' response to Comment MMPAC1.

*Comment 4:* The CBD believes that the proposed IHA does not adequately specify the specific geographic region where the activity will occur.

*Response:* NMFS defines “specified geographical region” as “an area within which a specified activity is conducted and which has certain biogeographic characteristics” (50 CFR 216.103). NMFS believes that GXT's description of the activity and the locations for conducting seismic surveys meet the requirements of the MMPA. GXT intends to conduct seismic surveys within the area of the Chukchi Sea indicated in its application.

### Marine Mammal Impact Concerns

*Comment 5:* The CBD states that NMFS' failure to address the scientific literature linking seismic surveys with marine mammal stranding events, and the threat of serious injury or mortality renders NMFS' conclusionary determination that serious injury or

mortality will not occur from GXT's activities arbitrary and capricious.

*Response:* 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 18 nm (33 km) at 1430 hrs. At 1300 hrs, the seismic vessel was located 25 nm (46 km) 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 18 nm (33 km). No physical evidence for a link between the seismic survey and the stranding was obtained. In addition, Taylor *et al.* (2004) indicates 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 to 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 Chukchi Sea seismic areas. 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 GXT to ramp-up the seismic array to avoid a startle effect, strandings are highly unlikely to occur in the Arctic Ocean. In conclusion, NMFS does not expect any marine mammals will incur serious injury or mortality as a result of Arctic Ocean seismic surveys in 2006.

*Comment 6:* The CBD states that the IHA notice provide no support for NMFS' "conclusion" on small numbers and negligible impact. For GXT's proposed seismic surveys in the Chukchi, the number of bowheads likely to be harassed is 337. In absolute terms these numbers cannot be considered "small." Even relative to population size, the higher estimate represents a third of the estimated population of bowheads. For beluga whales, the number harassed is estimated to be 650; for gray whales the number is 481. None of these numbers can be considered "small." Given the MMPA is designed to protect not just populations, but individual marine mammals, any number in the hundreds or thousands simply cannot be considered "small."

*Response:* As discussed elsewhere in this document, NMFS believes that the small numbers requirement has been satisfied (see *Estimates of Marine Mammal Exposures* later in this document). The maximum number of bowhead whales that may be exposed to seismic sounds is estimated to be 337 (Table 2). With a population size estimated to be 10,545 bowheads, NMFS estimates that the maximum percentage of the population that will be exposed would be approximately 3 percent, not 33 percent. For beluga whales and gray whales these numbers represent less

than 5 percent of each population stock size.

Also, NMFS must clarify that the numbers provided in Table 2 estimate the numbers indicate the number of animals that would be exposed to seismic noise at the SPLs indicated, not the numbers of animals that will be taken by Level B (behavioral) harassment. Not all individuals of a marine mammal species would be expected to react at the same level or even react at all as indicated in GXT's application.

*Comment 7:* The CBD notes that as many as 12,223 ringed seals and over 7000 bearded seals may be harassed in the Chukchi Sea. Bearded seals with over seven thousand to be harassed. The total numbers of marine mammals potentially harassed in the Chukchi from GXT's seismic surveys is almost twenty thousand individuals. These numbers cannot rationally 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 is not required to consider the total estimated take across all species in making its small numbers determination. The species most likely to be harassed during seismic surveys in the Arctic Ocean area is the ringed seal, with a "best estimate" of animals being exposed to sound levels of 160 dB or greater of 3056 in the Chukchi Sea. As stated previously, this does not mean that this number of ringed seals will be taken by Level B harassment, it is only the best estimate of the number of animals that could be exposed to an SPL of 160 dB or greater and, theoretically could be harassed due to the noise. However, Moulton and Lawson (2002) indicate that most pinnipeds exposed to seismic sounds in the Beaufort Sea lower than 170 dB do not visibly react to that sound; pinnipeds are not likely to react to seismic sounds unless they are greater than 170 dB re 1 microPa (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 (as part of GXT's survey will be), those surveys that "mow the lawn," that is, remain within a relatively small area, transiting back and forth while shooting seismic, numbers tend to be highly inflated. As a result, NMFS believes that these exposure estimates are conservative and may actually affect very few animals.

Although it might be argued that the absolute number of ringed seal

behavioral harassment numbers may not be small, the number of "exposures" is relatively small, representing less than 4 percent of the regional population of that species (245,000) if each "exposure" represented an individual ringed seal and maximum ringed seal density was used. Bearded (and spotted) seals take estimates ignore the likelihood that these two species frequent polar ice areas where seismic vessels cannot operate and, therefore, likely overestimate take levels.

*Comment 8:* The CBD believes that NMFS' assumption that sounds below 160 dB do not constitute harassment is incorrect and, therefore, underestimates the possible true impact. The CBD notes that their NEPA comments pointed out numerous studies showing significant behavioral impacts from received sounds well below 160 dB and even the PEA 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 marine mammals estimated to be taken by GXT's activity likely constitute a significant underestimate. NMFS' "small numbers" conclusion is therefore arbitrary and capricious.

*Response:* The best information available to date for reactions by bowhead whales to impulse noise, such as seismic, 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  $\mu\text{Pa}_{\text{rms}}$ , depending upon propagation. Corresponding levels at 30 km (18.6 mi) were about 107–126 dB re 1  $\mu\text{Pa}_{\text{rms}}$ . 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 (1500 in<sup>3</sup> vs 1320 in<sup>3</sup>). It should also be pointed out that these minor course changes are during migration and, as indicated in the Final PEA, have not been seen at other times of the year and during other activities. Therefore, until additional data is obtained to indicate at what SPL bowhead whales begin to deflect away from a seismic airgun array, NMFS will not adopt any single SPL value below 160 dB and apply it across the board for all species and in all circumstances. NMFS therefore continues to estimate "takings" under the MMPA from impulse noises, such as seismic, as being at a distance of 160 dB (re 1 µPa).

*Comment 9:* The CBD states that NMFS has no idea of the actual population status of several of the species subject to the proposed IHA. NMFS acknowledges (in its Status of Stock's Reports (SARS)) it has no accurate information on the status of spotted seals, bearded seals, and ringed seals. 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 recently in a letter to NMFS from the Commission that cautioned against assuming a stable population given apparent changes in the Bering, Chukchi, and Beaufort Seas and the declines of many other Alaska marine mammals.

*Response:* NMFS uses the best information available when making a determination that the impacts from an activity will have a negligible impact on the affected species and stocks of marine mammals. This information comes from many sources, including NMFS' SARS reports. As noted in GXT's application for the pinniped species mentioned by CBD:

(1) *Bearded seals:* While no reliable estimate of bearded seal abundance is available for the Beaufort Sea (Angliss and Lodge, 2002), results from aerial surveys of the eastern Chukchi Sea indicated densities of up to 0.149 bearded seals/km<sup>2</sup> and a population of 4862 animals, although actual abundance may be much higher (Angliss and Lodge, 2004).

(2) *Spotted seals:* While the total number of spotted seals in Alaskan waters is not known (Angliss and Lodge, 2002), the estimate is most likely between several thousand and several tens of thousands (Rugh *et al.*, 1997).

(3) *Ringed seals:* While no estimate for the size of the Alaska ringed seal stock is currently available (Angliss and Lodge, 2002), past ringed seal population estimates in the Bering-

Chukchi-Beaufort area ranged from 1–1.5 million (Frost, 1985) to 3.3–3.6 million (Frost *et al.*, 1988). Frost and Lowry (1981) estimated 80,000 ringed seals in the Beaufort Sea during summer and 40,000 during winter.

At present, there is no scientific information that population declines are occurring or have occurred. Moreover, long-term monitoring studies of Alaskan marine mammals being conducted by NMFS and others would note significant population declines.

#### *Cumulative Effects Concerns*

*Comment 10:* In its comments on NMFS' negligible impact determination, CBD states that NMFS must look at the immediate effects of GXT's seismic surveys together with the cumulative effects over multiple years of other oil and gas activities and anthropogenic risk factors such as climate change, both onshore and offshore Alaska. CBD contends that these cumulative effects should be analyzed with respect to their potential population consequences at the species level, stock level, and at the local population level, citing *Anderson v. Evans*, 371 F.3d 475 (9th Cir. 2004).

*Response:* Under section 101(a)(5)(D) of the MMPA, NMFS is required to determine whether the taking by the IHA 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 addresses cumulative impacts, as did its Draft PEA. 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 that PEA addresses similar comments on cumulative impacts, including global warming. That information is incorporated in this document by citation. NMFS has adopted the MMS Final PEA and it is part of NMFS' Administrative Record. Finally, the proposition for which CBD cites *Anderson* was in the context of the court's analysis under NEPA, not MMPA section 101(a)(5)(D), which was not at issue in *Anderson*.

#### *Mitigation Concerns*

*Comment 11:* GXT suggests (as noted in section XI of GXT's IHA application) that the 190-dB radius, not the 180-dB

radius, is the appropriate zone that should be fully visible to observers and clear of all marine mammal sightings for 30 minutes prior to ramp-up from a full shutdown of all airguns. This includes during night-time or other times of reduced visibility. The rationale for this is as follows:

(1) Pinnipeds, to which the 190-dB safety zone applies, have not shown much avoidance of operating seismic arrays in the Beaufort Sea (Harris *et al.*, 2001; Moulton and Lawson, 2002; Miller *et al.*, 2005). Therefore, it is appropriate to assume that some pinnipeds will not move out of the safety zone during a ramp-up. Accordingly, the 190-dB zone should be visible before a ramp-up begins.

(2) The types of cetaceans likely to be encountered (bowheads, belugas, and gray whales) have shown avoidance of active seismic surveys and it is expected that they will move beyond the full 180-dB radius for the airgun array during the ramp-up (Malme and Miles, 1985; Malme *et al.*, 1986, 1988; Richardson *et al.*, 1986, 1999; Miller *et al.* 2005). Thus, it is not critical that the full 180-dB radius applicable to cetaceans be visible prior to commencing a ramp-up.

*Response:* While NMFS fully expects that bowhead and beluga whales will avoid seismic activity by large distances, scientific information is less clear that the gray whales will do so. Documentation of avoidance in either the Beaufort or Chukchi seas is lacking and, although Malme *et al.* (1985) indicate that gray whales will avoid seismic activity, later research by Clark and Tyack (1999) duplicating the work of Malme *et al.* (1985) indicates that gray whale avoidance response is context dependent. Essentially, gray whales did not react (avoid) the sound source when the source was not directly in its migratory path. Also, because GXT will be conducting seismic operations in the Chukchi Sea where additional cetaceans may be affected (killer whales and harbor porpoise (although these species are more sensitive to higher frequencies than seismic)), NMFS has determined that the scientific evidence to support using only 190-dB isopleth as a safety zone for all species of marine mammals is not supportable at this time.

*Comment 12:* The CBD believes that the proposed IHA notice ignores the MMPA statutory requirement that all methods and means of ensuring the least practicable impact have been adopted.

*Response:* NMFS believes that the mitigation measures required under GXT's IHA will result in the least

practicable adverse impact. Inherent in implementing these mitigation measures is some level of uncertainty on the distribution and abundance of cetaceans in the Chukchi Sea and on whether the acoustic impacts observed in the Beaufort Sea also occur in the Chukchi Sea. Additional information on this concern can be found later in this document and in previous responses to this concern by CBD (see for example, comment MiC2 and MiC3 in Shell's IHA notice).

#### *Monitoring Concerns*

*Comment 13:* The AEWG incorporates by reference into its comments on the GXT application, the comments submitted by the North Slope Borough's Department of Wildlife Management regarding the most recent version of the "Marine Mammal Monitoring, Mitigation, and Investigatory Plan for Seismic Exploration in the Alaskan Chukchi Sea, 2006" (Monitoring Plan) prepared on behalf of Shell, ConocoPhillips and GXT.

*Response:* Please see the discussion on marine mammal monitoring later in this document.

#### *Subsistence Concerns*

*Comment 14:* The AEWG notes that GXT's proposed data acquisition in the Chukchi Sea includes work near shore, the AEWG is concerned about the potential effects on the fall bowhead whale subsistence hunt at Barrow and possibly Wainwright and Pt. Hope. The village of Barrow traditionally has hunted during both the spring and fall bowhead whale migrations; however, unfavorable ice conditions in the Chukchi Sea this year resulted in a very poor spring bowhead whale hunt for all of the spring (hunt) villages. As a result, the villages of Wainwright and Point Hope have announced that they may attempt to hunt bowheads this fall.

To protect the fall bowhead hunt at Barrow, the Conflict Avoidance Agreement (CAA) (see description later in this document) includes a prohibition on all seismic operations beginning on September 10th through October 25<sup>th</sup>, from Pitt Point on the east side of Smith Bay to the east to a location about half way between Barrow and Peard Bay to the west. However, given the outcome of the spring bowhead hunt in the Chukchi villages (which had not been completed at the time the CAA was negotiated), the AEWG requests NMFS' assistance in providing further protections for the near-shore areas of the Chukchi during the fall bowhead migration in this region. In particular, the AEWG requests NMFS include in GXT's IHA, provisions designed to protect the nearshore area

from the effects of seismic operations, either directly or through sound propagation. The AEWG suggests that GXT refrain from conducting seismic operations within 50 miles of the Chukchi coast beginning September 15 through October 25<sup>th</sup>, from the halfway point between Barrow and Peard Bay to 50 miles due west of Cape Lisburne.

*Response:* The IHA requires GXT to comply with the conditions of the CAA. This requirement ensures that, to the greatest extent practicable, GXT's activities will not have an unmitigable adverse impact on subsistence uses of marine mammals, particularly bowhead whales.

*Comment 15:* The CBD disagrees with NMFS' "no unmitigable adverse impact" determination for the same reasons it disagrees with NMFS' "negligible impact" and "small numbers" determinations.

*Response:* This comment is not specific enough for a response, but we disagree with the conclusion.

#### *Endangered Species Act (ESA) Concerns*

*Comment 16:* The CBD states that previous Biological Opinions for the bowhead whale have been inadequate. The CBD hopes NMFS will perform a full analysis required by law.

*Response:* NMFS has issued a biological opinion regarding the effects of this action on ESA-listed species and critical habitat under the jurisdiction of NMFS. That biological opinion concluded that this action is not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat. A copy of the Biological Opinion is available upon request (see ADDRESSES).

*Comment 17:* The CBD states that NMFS may authorize incidental take of bowhead whales under the ESA pursuant to section 7(b)(4), but only where such take occurs while "carrying out an otherwise lawful activity." CBD believes GXT's proposed activities violate the MMPA and NEPA and therefore are not "otherwise lawful." Any take authorization for the bowhead whale would therefore violate the ESA as well as other statutes.

*Response:* NMFS believes it has complied with the requirements of the MMPA, the ESA and NEPA in connection with the incidental harassment of marine mammals by GXT while conducting activities permitted under MMS' jurisdiction.

#### *NEPA Concerns*

*Comment 18:* The CBD notes that they submitted comments on the MMS PEA along with comments on GXT's IHA

application. Subsequent to CBD's May 10, 2006 letter on the PEA, they believe additional information has come to light that requires the preparation of an EIS in accordance with 40 CFR

1508.27(b)(4). The CBD notes that the Native Village of Kaktovik passed a resolution opposing Shell's seismic survey plans and the Native Village of Point Hope also officially expressed its opposition to this summer's various seismic surveys. The CBD believes that NMFS cannot rationally adopt the PEA and make a FONSI on this action. Instead, it must prepare a full EIS analyzing the effects of Shell's proposed activities in the context of cumulative effects of all other natural and anthropogenic impacts on marine mammals, habitats and communities of the Chukchi and Beaufort seas.

*Response:* While the Villages of Point Hope and Kaktovik expressed opposition to seismic activities (specifically by Shell) in the Chukchi and Beaufort seas this year (as coastal native Alaskan communities have done for many years), the Whaling Captains' Associations of Point Hope, Kaktovik, Nuiqsut, and Wainwright signed a CAA with Shell, ConocoPhillips and GXT. This CAA indicates to NMFS that seismic exploration activities by these companies will not have an unmitigable adverse impact on the availability of marine mammals for subsistence uses, including bowheads and belugas. This, along with the required mitigation and monitoring measures, informed NMFS' FONSI.

#### **Description of Habitat and Marine Mammals Affected by the Activity**

A detailed description of the Chukchi Sea ecosystem and its associated marine mammals can be found in several documents, including the MMS PEA and does not need to be repeated here. The Chukchi Seas support a diverse assemblage of marine mammals, including bowhead whales (*Balaena mysticetus*), gray whales (*Eschrichtius robustus*), beluga whales (*Delphinapterus leucas*), killer whales (*Orcinus orca*), harbor porpoise (*Phocoena phocoena*), ringed seals (*Phoca hispida*), spotted seals (*Phoca largha*), bearded seals (*Erignathus barbatus*), walrus (*Odobenus rosmarus*) and polar bears (*Ursus maritimus*). These latter two species are under the jurisdiction of the U.S. Fish and Wildlife Service (USFWS) and are not discussed further in this document. Abundance estimates of these species can be found in Table 2 in GXT's application. Descriptions of the biology and distribution of the marine mammal species under NMFS' jurisdiction can be

found in GXT's application, MMS' PEA, and several other documents (Corps of Engineers, 1999; Lentfer, 1988; MMS, 1992, 1996; Hill *et al.*, 1999). Information on marine mammal hearing capabilities can be found in GXT's application.

Information on these species can also be found in NMFS Stock Assessment Reports. The Alaska stock assessment document is available at: <http://www.nmfs.noaa.gov/pr/readingrm/MMSARS/sar2003akfinal.pdf>. Updated species reports are available at: <http://www.nmfs.noaa.gov/pr/readingrm/MMSARS/2005alaskasummarySARs.pdf>. Please refer to these documents for information on these species.

#### *Potential Impacts of Seismic Surveys on Marine Mammals*

Disturbance by seismic noise is the principal means of taking by this activity. Support vessels and marine mammal survey aircraft (if required) may provide a potential secondary source of noise. The physical presence of vessels and aircraft could also lead to non-acoustic effects on marine mammals involving visual or other cues.

As outlined in several 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.

#### *Potential Effects of Seismic Airgun Arrays on Marine Mammals*

GXT believes that the effects of sounds from airguns might include one or more of the following: (1) Tolerance; (2) masking of natural sounds; (2) behavioral disturbance; and (3) at least in theory, hearing impairment and other non-auditory physical effects (Richardson *et al.*, 1995). Discussion on marine mammal tolerance to noise, masking effects of noise, temporary or permanent hearing impairment, and non-auditory effects can be found in GXT's IHA application, and previous **Federal Register** notices for seismic activities (e.g., see 69 FR 74906, December 14, 2004). In summary, NMFS and GXT believe that it is unlikely that there would be any cases of temporary or permanent hearing impairment, non-auditory physical effects, or strandings. NMFS has also provided information previously on the potential effects of noise on marine mammal species expected to be in the Chukchi Sea region (see 71 FR 26055 (May 3, 2006), 71 FR 27685 (May 12, 2006) and 71 FR 32045 (June 6, 2006)). Readers are encouraged to review those documents for additional information.

#### *Potential Effects of Pinger Signals on Marine Mammals*

A description of the pinger system (DigiRANGE I and II, Input/Output, Inc) that will be used during seismic

operations to position the airgun array and hydrophone streamer relative to the vessel was described in the proposed IHA notice for GXT June 6, 2006 (71 FR 32045) and is not repeated here.

#### *Estimates of Marine Mammal Exposures to SPLs of 160 dB or Higher (Level B Harassment)*

Table 2 of this **Federal Register** notice provides the estimates of the number of potential sound exposure to levels 160 dB re 1 microPa (rms) or greater. The methodology used and the assumptions made to estimate incidental take by Level B harassment, at sound pressure levels at 160 dB or above, by seismic and the numbers of marine mammals that might be affected during the proposed seismic survey area in the Chukchi Sea are presented in the GXT application. While GXT believes, based on the evidence summarized in the application, that the 170-dB criterion is appropriate for estimating Level B harassment for delphinids and pinnipeds, which tend to be less responsive (whereas the 160-dB criterion is considered relevant for other cetaceans), there is no empirical evidence to indicate that some delphinid species do not respond at the lower level (i.e., 160 dB). Also, since delphinids are not expected to be affected by this action, this suggested new criterion is not relevant for this action. While the application cites recent empirical information regarding responses of pinnipeds to low-frequency seismic sounds, the information cited in the application is less than convincing. As a result, NMFS will continue to use the 160-dB isopleth to estimate the numbers of pinnipeds that may be taken by Level B harassment. However, while some autumn migrating bowheads in the Beaufort Sea have been found to react to a noise threshold closer to 130 dB re 1 microPa<sub>rms</sub>; (Miller *et al.*, 1999; Richardson *et al.*, 1999), evidence in Richardson *et al.* (1986) and Miller *et al.* (2005) indicate that the 160-dB criterion is suitable for summering bowhead whales.

The following estimates are based on a consideration of the number of marine mammals that might be exposed to SPLs of 160 dB or more along about 5302 line-km (3294 line mi) of seismic surveys across the Chukchi Sea. An assumed total of 6628 km (4118 mi) of trackline in the Chukchi Sea includes a 25 percent allowance over and above the planned trackline to allow for turns and lines that might have to be repeated because of poor data quality, or for minor changes to the survey design.

The anticipated radii of influence of the *M/V Discoverer's* pinger system are



much less than those for the airgun array (for those species that can hear it). It is assumed that, during simultaneous operations of the airgun array and pinger system, any marine mammals close enough to be affected by the pingers will already be affected by the airguns. However, whether or not the airguns are operating simultaneously with the pinger system, odontocetes and seals are expected to exhibit no more than momentary and inconsequential responses to the pingers, based on evidence of their reactions from pingers on maritime private and commercial vessels using similar instrumentation for obtaining bathymetric information. Therefore, no additional take numbers are provided for animals exposed to pingers.

The estimates of marine mammals that might be exposed to SPLs that could result in Level B harassment are based on available data about mammal distribution and densities at different locations and times of the year. The proposed survey covers a large area in the Chukchi Sea in two different seasons. The estimates of marine mammal densities have therefore been separated both spatially and temporarily in an attempt to represent the distribution of animals expected to be encountered over the duration of the survey. Density estimates in the

Chukchi Sea have been derived for two time periods, the early summer period covering the months of June and July (Table 3 in GXT's IHA application), and the late fall period including most of October and November (Table 4 in GXT's IHA application). For the Chukchi Sea, cetacean densities during the summer were estimated from effort and sighting data in Moore *et al.* (2000) and Richardson and Thomson (eds., 2002), while pinniped densities were estimated from Bengtson (2005) and Moulton and Lawson (2002).

The potential number of events when members of each species might be exposed to received levels 160 dB re 1 microPa (rms) or greater was calculated by summing the results for each season and habitat zone by multiplying:

- (1) The expected species density, either "average" (*i.e.*, best estimate) or "maximum" (see Tables 3 and 4 in GXT's IHA application),
- (2) The anticipated total line-kilometers of operations with the 36-airgun array in the time period, and habitat zone to which that density applies after applying a 25 percent allowance for possible additional line kilometers (see GXT IHA application) and
- (3) The cross-track distances within which received sound levels are

predicted to be  $\geq 160$  (Table 1 in this document).

Some marine mammals that are estimated to be exposed, particularly migrating bowhead whales, might show avoidance reactions before being exposed to 160 dB re 1 microPa (rms). Thus, these calculations actually estimate the number of exposures to  $\leq 160$  dB that would occur if there were no earlier avoidance of the area ensonified to that level.

For the 36-airgun array, the cross track distance is 2X the predicted 160-dB radius predicted by the Gundalf model or 6000 m (19685 ft). Applying the approach described above, 55,560 km<sup>2</sup> of open-water habitat in the Chukchi Sea would be within the 160-dB isopleth over the course of the seismic project (though not at any given moment). After adding the 25-percent contingency to the expected number of line kilometers of seismic run, the number of exposures is calculated based on 69,450 km<sup>2</sup>.

The numbers of exposures in the two habitat categories (open water and ice margin) were then summed for each species. GXT's estimate of marine mammal exposures to SPL of 160 dB (and greater) is provided in Tables 5, 6, and 7 in the IHA application. Table 2 in this document is a summary of that information.

TABLE 2. SUMMARY OF THE NUMBER OF POTENTIAL EXPOSURES OF MARINE MAMMALS TO RECEIVED SOUND LEVELS IN THE WATER OF  $\geq 160$  DB DURING GXT'S PROPOSED SEISMIC PROGRAM IN THE CHUKCHI SEA, ALASKA, -15 JUNE -25 JULY AND -1 OCTOBER - 30 NOVEMBER, 2006. NOT ALL MARINE MAMMALS WILL CHANGE THEIR BEHAVIOR WHEN EXPOSED TO THESE SOUND LEVELS, ALTHOUGH SOME MIGHT ALTER THEIR BEHAVIOR SOMEWHAT WHEN LEVELS ARE LOWER.

Species	Number of Exposure to Sound Levels $\geq 160$ dB					
	Summer		Fall		Total	
	Average	Maximum	Average	Maximum	Average	Maximum
<b>Odontocetes</b>						
<b>Monodontidae</b>						
Beluga	3	11	160	639	163	650
<b>Delphinidae</b>						
Killer whale	3	11	5	22	8	33
<b>Phocoenidae</b>						
Harbor porpoise	0	0	0	0	0	0
<b>Mysticetes</b>						
Bowhead whale	1	8	57	328	59	337
Gray whale	1	4	83	333	84	337
Minke whale	3	11	5	22	8	33
Fin whale	1	2	1	4	2	7
Total Cetaceans	11	47	313	1349	324	1396
<b>Pinnipeds</b>						
Bearded seal	586	2344	1190	4760	1776	7104
Spotted seal	6	23	12	47	17	70
Ringed seal	1008	4033	2047	8189	3056	12223
Harbor seal	0	0	0	0	0	0
<b>Total Pinnipeds</b>	<b>1600</b>	<b>6401</b>	<b>3249</b>	<b>12996</b>	<b>4849</b>	<b>19397</b>

GXT and NMFS believe that bowhead, beluga, and gray whales are the only cetaceans expected to be exposed to noise levels  $\geq 160$ -dB levels. The estimates show that one endangered cetacean species, the bowhead whale, is expected to be exposed to such noise levels, unless bowheads avoid the approaching survey vessel before the received levels reach 160 dB. Migrating bowheads are likely to do so, though summering bowheads, if encountered may not. For convenience, GXT refers to either eventuality as an "exposure". As a result, GXT's average and maximum estimates for bowhead whale exposures are 59 and 337, respectively (Table 2). The average and maximum estimates of the number of exposures of cetaceans are beluga (163 and 650) and gray whale (84 and 337). The seasonal breakdown of these numbers is shown in Tables 5 and 6 and totaled in Table 7 in the application and Table 2 in this document. Other cetacean species may occasionally occur near the seismic areas, but given their low estimated densities in the area, they are not likely to be exposed to SPLs of 160 dB or greater. With a population size estimated to be 10,545 bowheads, NMFS estimates that the maximum percentage of the population that will be exposed would be approximately 3 percent. For beluga whales and gray whales these numbers represent less than 5 percent of each population stock size. NMFS believes that this number of potential Level B harassment takes is small.

The ringed seal is the most widespread and abundant pinniped in ice-covered arctic waters, but there is a great deal of annual variation in population size and distribution of these marine mammals. Ringed seals account for the vast majority of marine mammals expected to be encountered, and, therefore, exposed to airgun sounds with received levels  $\geq 160$  dB re 1 microPa (rms) during the proposed seismic survey. Haley and Ireland (2006) reported that 20 percent of ringed seals remained on the ice when a seismic vessel passed. Because the SPL radii for this project are assumed to be larger than those found in the Haley and Ireland (2006) project, NMFS and GXT believe a larger percent of ringed seals within the 160-dB radii are likely to remain on the ice while the *M/V Discoverer* passes, and not subject to potential harassment. Therefore, GXT's estimates of numbers of ringed seals that might be exposed to sound levels 160 dB re 1 microPa (rms) were reduced by 50 percent to account for animals that are expected to be out of the water, and hence exposed to much lower levels of

seismic sounds. The average (and maximum) estimate is that 3056 (max. 12,223) ringed seals out of a Beaufort/Chukchi Sea population of 245,048 seals might be exposed to seismic sounds with received levels  $\leq 160$  dB. NMFS believes that this number of potential Level B harassment takes (less than 4 percent of the population size of ringed seals is small.

Two other species of pinnipeds are expected to be encountered during the proposed seismic survey. With Alaskan stock estimates of 300–450,000 and 1000 respectively, the bearded seal has average and maximum exposure estimates of 1776 and 7104, and the spotted seal has average and maximum exposure estimates of 17 and 70, respectively. These exposure estimates are small numbers relative to their population sizes. Finally, the harbor seal is unlikely to be encountered so no exposure estimates have been made.

#### Effects of Seismic Survey Noise on Subsistence Uses

GXT (2006) reports that marine mammals are legally hunted in Alaskan waters by coastal Alaska Natives; species hunted include bowhead and beluga whales; ringed, spotted, and bearded seals; walrus, and polar bears. The importance of each of the various species varies among the communities based largely on availability. Bowhead whales, belugas, and walrus are the marine mammal species primarily harvested during the time of the proposed seismic survey. There is little or no bowhead hunting by the community of Point Lay, so beluga and walrus hunting are of more importance there. Members of the Wainwright community do hunt bowhead whales in the spring, although bowhead whale hunting conditions there are often more difficult than elsewhere, and traditionally they do not hunt bowheads during seasons when GXT's seismic operation would occur. Depending on the level of success during the spring bowhead hunt, Wainwright residents may be very dependent on the presence of belugas in a nearby lagoon system during July and August. Barrow residents focus hunting efforts on bowhead whales during the spring and generally do not hunt beluga then. Barrow residents also hunt in the fall.

Bowhead whale hunting is the key activity in the subsistence economies of Barrow and Wainwright. The whale harvests have a great influence on social relations by strengthening the sense of Inupiat culture and heritage in addition to reinforcing family and community ties.

An overall quota system for the hunting of bowhead whales was established by the International Whaling Commission in 1977. The quota is now regulated through an agreement between NMFS and the Alaska Eskimo Whaling Commission (AEWC). The AEWC allots the number of bowhead whales that each whaling community may harvest annually (USDI/BLM, 2005).

Bowhead whales migrate around northern Alaska twice each year, during the spring and autumn, and are hunted in both seasons. Bowhead whales are hunted from Wainwright only during the spring migration and animals are not successfully harvested every year. The spring hunt there and at Barrow occurs after leads open due to the deterioration of pack ice; the spring hunt typically occurs from early April until the first week of June. The fall migration of bowhead whales that summer in the eastern Beaufort Sea typically begins in late August or September. Fall migration into Alaskan waters is primarily during September and October. However, in recent years a small number of bowheads have been seen or heard offshore from the Prudhoe Bay region during the last week of August (Treacy, 1993; LGL and Greeneridge, 1996; Greene, 1997; Greene *et al.*, 1999; Blackwell *et al.*, 2004).

The location of the fall subsistence hunt near Barrow depends on ice conditions and (in some years) industrial activities that influence the bowheads movements as they move west (Brower, 1996). In the fall, subsistence hunters use aluminum or fiberglass boats with outboards. Hunters prefer to take bowheads close to shore to avoid a long tow during which the meat can spoil, but Braund and Moorehead (1995) report that crews may (rarely) pursue whales as far as 80 km (50 mi). The autumn hunt usually begins in Barrow in mid-September, and mainly occurs in waters east and northeast of Point Barrow. The whales have usually left the Beaufort Sea by late October (Treacy, 2002a,b).

The scheduling of this seismic survey has been discussed with representatives of those concerned with the subsistence bowhead hunt, most notably the AEWC, the Barrow Whaling Captains' Association, and the North Slope Borough (NSB) Department of Wildlife Management.

The starting date for seismic surveys in the Chukchi Sea is well after the end of the spring bowhead migration and hunt at Wainwright and Barrow. Similarly, the resumption of seismic activities in the Chukchi Sea in October will occur after most subsistence whaling from Barrow has been

completed and if the hunt is still active, seismic operations will be conducted far from Barrow to avoid conflicting with subsistence hunting activities.

Beluga whales are available to subsistence hunters along the coast of Alaska in the spring when pack-ice conditions deteriorate and leads open up. Belugas may remain in coastal areas or lagoons through June and sometimes into July and August. The community of Point Lay is heavily dependent on the hunting of belugas in Kasegaluk Lagoon for subsistence meat. From 1983–1992 the average annual harvest was about 40 whales (Fuller and George, 1997). In Wainwright and Barrow, hunters usually wait until after the spring bowhead whale hunt is finished before turning their attention to hunting belugas. The average annual harvest of beluga whales taken by Barrow for 1962–1982 was five (MMS, 1996). The Alaska Beluga Whale Committee recorded that 23 beluga whales were harvested by Barrow hunters from 1987 to 2002, ranging from 0 in 1987, 1988 and 1995 to the high of 8 in 1997 (Fuller and George, 1997; Alaska Beluga Whale Committee, 2002 in USDI/BLM, 2005). GXT states that it is possible, but unlikely, that accessibility to belugas during the subsistence hunt could be impaired during the survey. However, very little of the proposed survey is within 25 km (15.5 mi) of the Chukchi coast. That means the vessel will usually be well offshore away from areas where seismic surveys would influence beluga hunting by these communities.

Because seals (ringed, spotted, bearded) are hunted in nearshore waters and the seismic survey will remain offshore of the coastal and nearshore areas of these seals, seismic surveys should not conflict with seal harvest activities.

#### *Impact on Habitat*

The proposed seismic survey will not result in any long-term impact on habitats used by marine mammals, or to the food sources they utilize. Although feeding cetaceans and pinnipeds may occur in the area, the proposed activities will be of short duration in any particular area at any given time; thus any effects would be localized and short-term.

One of the reasons for the adoption of airguns as the standard energy source for marine surveys was that, unlike explosives, they do not result in any appreciable fish kill. However, the existing body of information relating to the impacts of seismic on marine fish and invertebrate species, the primary

food sources of pinnipeds and belugas, is very limited.

In water, acute injury and death of organisms exposed to seismic energy depends primarily on two features of the sound source: (1) the received peak pressure, and (2) the time required for the pressure to rise and decay (Hubbs and Rechnitzer, 1952; Wardle *et al.*, 2001). Generally, the higher the received pressure and the less time it takes for the pressure to rise and decay, the greater the chance of acute pathological effects. Considering the peak pressure and rise/decay time characteristics of seismic airgun arrays used today, the pathological zone for fish and invertebrates would be expected to be within a few meters of the seismic source (Buchanan *et al.*, 2004).

Therefore, NMFS has determined that the proposed Chukchi Sea seismic program for 2006 will have negligible physical effects on the various life stages of fish and invertebrates or have any habitat-related effects that could cause significant or long-term consequences for individual marine mammals or their populations, since operations at any specific location will be limited in duration.

#### **Mitigation Measures**

For the proposed seismic survey in the Chukchi Sea, GXT will deploy an airgun source composed of 36 sleeve airguns. The airguns comprising the array will be spread out horizontally, so that most of the energy will be directed downward. GXT and NMFS believe that the directional nature of this array is an important factor for mitigating high energy sounds on marine mammals that are on or in near-surface waters. This directionality will result in reduced sound levels at any given horizontal distance compared to levels expected at that distance if the source were omnidirectional with the stated nominal source.

Important mitigation factors built into the design of the survey include the fact that the spring migration and hunt for bowhead whales in Chukchi waters will be completed prior to the start of GXT's survey. Also, it is likely that many bowhead whales have already reached Russian waters north of the Chukotsk Peninsula when surveying is expected to resume in the autumn. Thus, the density of bowhead whales encountered during the fall in the Chukchi Sea, where the migration corridor becomes broad across the Chukchi, is expected to be much lower than that of the Beaufort Sea during the fall, where the migration corridor is narrow (Richardson and Thomson, 2002).

Received sound fields were modeled by GXT for the 36-airgun configuration, in relation to distance and direction from the array. The distance from the array by which received levels would have diminished to 190, 180, 160 and other levels (in dB re 1 microPa rms) are likely to depend on water depth and location. Table 1 presents the predicted sound radii for the 36-airgun array in intermediate (200–500 m (656–1640 ft)) water depths. The radii for deeper or shallower water are predicted by GXT to be smaller than those for intermediate depths.

Empirical data concerning these radii are not yet available, but will be acquired prior to commencing the 2006 seismic field season. In addition to performing an acoustic characterization/verification of the full 36-airgun array at different depths, the output from a single 40 in3 sleeve gun source will also be measured in order to determine the appropriate safety radius for use during power downs. A summary report on the acoustic measurements and proposed refinements to the safety radii will be made available for review shortly after the data have been collected. Until these empirical data are available, the 180- and 190-dB radii predicted to be applicable to intermediate water depths (with a precautionary 1.5X adjustment) will also be applied for deep and shallow water operations when estimating the required safety radii. More detailed modeling of the airgun array may be completed prior to the beginning of the field season and the resulting 120-, 160-, 180- and 190-dB (rms) safety radii (with 1.5X factor) will be applied at the start of the season if that occurs.

The following mitigation measures, as well as marine mammal visual monitoring (discussed later in this document), will be implemented for the subject seismic survey: (1) Speed and course alteration (provided that they do not compromise operational safety requirements); (2) power-down/shut-down procedures; and (3) ramp-up procedures.

#### *Speed and Course Alteration*

If a marine mammal is detected outside its respective safety zone (180 dB for cetaceans, 190 dB for pinnipeds) and, based on its position and the relative motion, is likely to enter the safety zone, the vessel's speed and/or direct course may, when practical and safe, be changed to avoid the mammal in a manner that also minimizes the effect to the planned science objectives. The marine mammal activities and movements relative to the seismic vessel will be closely monitored to ensure that

the marine mammal does not enter the safety zone. If the mammal appears likely to enter the safety zone, further mitigative actions will be taken (i.e., either further course alterations or shut down of the airguns).

#### *Power-down and Shut-down Procedures*

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. A power-down may also occur when the vessel is moving from one seismic line to another. During a power-down, one airgun (or some other number of airguns less than the full airgun array) is operated. The continued operation of one airgun 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. In contrast, a shut down occurs when all airgun activity is suspended.

If a marine mammal is detected outside the safety radius but appears likely to enter the safety radius, and if the vessel's speed and/or course cannot be changed to avoid having the mammal enter the safety radius, the airguns may (as an alternative to a complete shut down) be powered down before the mammal is within the safety radius. Likewise, if a mammal is already within the safety zone when first detected, the airguns will be powered down immediately if this is a reasonable alternative to a complete shut down. During a power-down of the 36-airgun array, the number of guns operating will be reduced to a single 40 in3 sleeve airgun. The 190-dB (rms) safety radius around the 40 in3 airgun had not been modeled previously, but will empirically measured during acoustic verification measurements made at the start of seismic operations. If a marine mammal is detected within or near the smaller safety radius around the single 40 in3 sleeve airgun, all airguns will be shut down.

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 is visually observed to have left the safety zone, or has not been seen within the zone for 15 minutes in the case of small odontocetes and pinnipeds, and for 30 minutes in the case of mysticetes (large odontocetes do not occur within the activity area).

#### *Shut-down Procedures*

The operating airgun(s) will be shut down completely if a marine mammal approaches or enters the applicable safety radius and a power down is not practical or adequate to reduce exposure to less than 190 or 180 dB (rms), as appropriate. The operating airgun(s) will also be shut down completely if a marine mammal approaches or enters the estimated safety radius around the reduced source (one 40 in<sup>3</sup> sleeve gun) that will be used during a power down.

Airgun activity will not resume until the marine mammal has cleared the safety radius. The animal will be considered to have cleared the safety radius as described previously. Ramp-up procedures will be followed during resumption of full seismic operations.

#### *Ramp-up Procedure*

A "ramp up" or "soft start" procedure will be followed when the airgun array begins operating after a specified-duration period with no or reduced airgun operations. The specified period depends on the speed of the source vessel, the size of the airgun array that is being used, and the size of the safety radii, but is typically about 10 minutes or the time the vessel would reach the location of the 180-dB radius at the time of shut-down or power-down, whichever is greater.

Ramp-up will likely begin with a single airgun (the smallest, or 40 in<sup>3</sup>). The precise ramp-up procedure will be determined prior to start-up (based upon array configuration), but will proceed at a ramp-up rate of no more than 6 dB per 5 min period. The standard industry procedure is to double the number of operating airguns at 5-minute intervals which is equal to about a 6 dB increase. During the ramp-up, the safety zone for the full 36-airgun array (or whatever smaller source might then be in use) will be maintained. If the complete 180-dB safety radius has not been visible for at least 30 minutes prior to the planned start of a ramp-up in either daylight or nighttime, ramp-up will not commence unless at least one airgun has been operating during that period. This means that it will not be permissible to ramp up the 36-airguns from a complete shut down in thick fog, when the entire 180-dB safety zone is not visible. If the entire safety radius is visible using vessel lights and/or night-vision devices (NVDs), then start up of the airguns from a complete shut down may occur at night. If one airgun has operated during a power-down period, ramp-up to full power will be permissible at night or in poor visibility, on the assumption that marine

mammals will either be alerted by the sounds from the single airgun and could move away, or may be detected by visual observations. Given the responsiveness of bowhead and beluga whales to airgun sounds, it can be assumed that those species, in particular, will move away during a ramp-up.

Ramp-up of the airguns will not be initiated during the day or at night if a marine mammal has been sighted within or near the applicable safety radius during the previous 15 minutes.

#### *Mitigation for Subsistence Needs*

GXT has signed a Conflict Avoidance Agreement (CAA) for the proposed 2006 seismic survey in the Chukchi Sea, in consultation with representatives of communities along the Alaska coast including Pt. Hope, Pt. Lay, Wainwright, and Barrow. The signed CAA provides NMFS with information to make a determination that the activity will not have an unmitigable adverse impact on the subsistence use of marine mammals. GXT worked with representatives of these communities to identify and avoid areas of potential conflict, and provided a presentation at the AEWC mini-convention in Anchorage, Alaska, on 15 March 2006. Meetings with AEWC and NSB representatives also occurred at the time of the convention. Also, GXT participated in the open water peer/stakeholder review meeting that was convened by NMFS in Anchorage on April 18-21, 2006, along with representatives of the AEWC and NSB.

The signed CAA covers GXT's seismic survey planned to occur in the Chukchi Sea between July 1 and November 30, 2006. The purpose is to identify measures that will be taken to minimize any adverse effects on the availability of marine mammals for subsistence uses, and to ensure good communication between GXT (including the project leaders and the *M/V Discoverer*), native communities along the coast, and subsistence hunters at sea.

The CAA also addresses the following: (1) operational agreement and communications procedures; (2) where/when agreement becomes effective; (3) general communications scheme; (4) on-board Inupiat observer; identification of seasonally sensitive areas; (5) vessel navigation; (6) air navigation; (7) marine mammal monitoring activities; (7) measures to avoid impacts to marine mammals; (8) measures to avoid conflicts in areas of active whaling; (9) emergency assistance; and (10) dispute resolution process.

In the unlikely event that subsistence hunting or fishing is occurring within 5 km (3 mi) of the *M/V Discoverer's*

trackline, or in other situations inconsistent with the CAA, the airgun operations will be suspended until the vessel is greater than 5 km (3 mi) away and otherwise in compliance with the CAA.

### Monitoring

GXT will implement a marine mammal monitoring program during the present project, in order to implement the mitigation measures that require real-time monitoring, to satisfy the anticipated monitoring requirements of the NMFS and USFWS IHAs, and to meet any monitoring requirements agreed to as part of the CAA. The monitoring work described here has been planned as a self-contained project independent of any other related monitoring projects that may be occurring simultaneously in the same regions.

#### *Vessel-based Visual Monitoring*

Vessel-based observers will monitor marine mammals near the seismic source vessel during all daytime hours and during any power ups of the airgun(s) at night. Airgun operations will be powered down or (if necessary) shut down when marine mammals are observed within, or about to enter, designated safety radii. Vessel-based marine mammal observers (MMOs) will also watch for marine mammals near the seismic vessel for at least 30 minutes prior to the planned start of airgun operations and after any shut downs of the airgun array that do not have at least 30 minutes of continuous marine mammal observations prior to start-up. When feasible, observations will also be made during daytime periods without seismic operations (e.g., during transits).

During seismic operations when there is 24 hrs of daylight, four observers will be based aboard the vessel. As the number of hours of daylight decreases in the fall, the number of MMOs on the vessel will be reduced to three MMOs. MMOs will be appointed by GXT with NMFS and USFWS concurrence. An Alaska native resident knowledgeable about the mammals and fish of the area is expected to be included as one of the team of MMOs aboard the *M/V Discoverer*. At least one observer, and when practical two observers, will monitor marine mammals near the seismic vessel during ongoing daytime operations and any nighttime start ups of the airguns. (There will be no periods of total darkness until mid-August.) Use of two simultaneous observers will increase the proportion of the animals present near the source vessel that are detected. MMOs will be on duty in shifts of duration no longer than 4

hours. The *M/V Discoverer* crew will be instructed by the MMOs onboard to assist in detecting marine mammals and implementing mitigation requirements (if practical). Before the start of the seismic survey the crew will be given additional instruction by the MMOs regarding implementation of mitigation measures.

The *M/V Discoverer* is a suitable platform for marine mammal observations. Observations will be made from either the bridge or the flying bridge, which are greater than 12 m (40 ft) above sea level. From the bridge, about 45° of the view will be obstructed directly to the stern. During daytime, the MMO(s) will scan the area around the vessel systematically with reticle binoculars (e.g., 7 50 Fujinon), and with the naked eye. During any periods of darkness, NVDs will be available (ITT F500 Series Generation 3 binocular-image intensifier or equivalent), if and when required. Laser rangefinding binoculars (Leica LRF 1200 laser rangefinder or equivalent) will be available to assist with distance estimation; these are useful in training observers to estimate distances visually, but are generally not useful in measuring distances to animals directly.

When marine mammals in the water are detected within or about to enter the designated safety radius, the airgun(s) will be powered down or shut down immediately. To assure prompt implementation of shut downs, multiple channels of communication between the MMOs and the airgun technicians will be established. During power downs and shut downs, the MMO(s) will continue to maintain watch to determine when the animal(s) are outside the safety radius. Airgun operations will not resume until the animal is outside the safety radius. Marine mammals will be considered to have cleared the safety radius if they are visually observed to have left the safety radius, or if they have not been seen within the radius for 15 minutes (pinnipeds and small cetaceans) or for 30 minutes (large cetaceans).

All observations and airgun power downs or shut downs will be recorded in a standardized format. Data will be entered into a custom database using a notebook computer. The accuracy of the data entry will be verified by computerized validity data checks as the data are entered and by subsequent manual checking of the database. These procedures will allow initial summaries of data to be prepared during and shortly after the field program, and will facilitate transfer of the data to statistical, graphical, or other programs for further processing and archiving.

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

#### *Acoustic Verification and Modeling*

Measurements of received sound levels as a function of distance and direction from the proposed airgun arrays will be made prior to beginning the seismic survey. Results of this acoustic characterization/verification will be used to refine the pre-season estimates of safety and disturbance radii applicable to the sources during the remainder of seismic operations. A preliminary report of the measurement results concerning the 190-dB and 180-dB (rms) safety radii will be submitted shortly after data collection.

Additionally, more extensive modeling of the sounds that will be produced by the airgun array may be completed prior to the field season. The results of this modeling, if done, will be made available before the field season and the safety radii adjusted accordingly.

#### *Additional Mitigation and Monitoring Measures*

As part of NMFS' week-long open-water meeting in Anchorage, on April 19–20, 2006, participants had a discussion on appropriate mitigation and monitoring measures for Arctic Ocean seismic activities in 2006. In addition to the standard mitigation and monitoring measures, additional measures, such as expanded monitoring-safety zones for bowhead and gray whales, and having those zones monitored effectively, have been implemented in order for NMFS to meet its requirements under NEPA. The additional mitigation measures reviewed here are specific for this project. They do not establish NMFS policy applicable to other projects or other locations under NMFS' jurisdiction, as each application for an IHA is context dependent, that is, judged independently as to which measures are practicable and necessary to reduce impacts to the lowest level and to ensure that takings do not have

an unmitigable adverse impact on subsistence uses. These measures have been developed based upon available data specific to the project areas. NMFS and MMS intend to collect additional information from all sources, including industry, non-governmental organizations, Alaska Natives and other federal and state agencies regarding measures necessary for effectively monitoring marine mammal populations, assessing impacts from seismic on marine mammals, and determining practicable measures for mitigating those impacts. MMS and NMFS anticipate that mitigation measures applicable to future seismic and other activities may change and evolve based on newly-acquired data.

### Research

GXT, Shell and ConocoPhillips have developed, and will implement, a joint-research component to their individual marine mammal monitoring programs that will further improve the understanding of impacts of seismic exploration on marine mammals, particularly bowhead whales. A preliminary description of this research was outlined in NMFS' proposed notice (71 FR 32045, June 6, 2006). Following NMFS' open water meeting in Anchorage, AK on April 19–24, 2006, a more detailed research plan was developed for the seismic industry. The latest version of this report is available for downloading (see **ADDRESSES**). This plan includes:

*Vessel-based Surveys:* MMOs will conduct observations onboard a dedicated vessel conducting at least three individual surveys early in the seismic season, in the middle of the season and late in the season, as well as opportunistic surveys while the vessel is being used for crew changes/supply runs. The survey will systematically cover broad areas of the Chukchi planning area in order to obtain adequate coverage across multiple habitat types (subject to vessel operational limitations near ice pack). The surveys will provide: (1) quantitative data on distribution and densities for each marine mammal species by habitat (depth and ice); (2) sighting data to compute densities during seismic and non seismic periods; (3) density information during non-seismic periods to be used to estimate numbers of marine mammals that would have been exposed to various sound levels (160, 180, 190 dB re 1 microPa), if they had not moved away from the seismic vessel; and (4) sighting and density information from operating seismic vessel will provide data on numbers that did not avoid the vessel

and were exposed to the same sound levels.

*Passive Acoustic Monitoring (PAM):* A towed hydrophone array will be used to monitor for vocalizing marine mammals during the dedicated marine mammal surveys. The array will contain two hydrophone elements designed to receive sounds in approximately the 100 Hz to 45 kHz range. This range covers the frequency of calls known to be produced by cetaceans and pinnipeds likely to be encountered in the Chukchi Sea during the open-water season (gray and bowhead whales ranging from 100 Hz–4 kHz; beluga whales ranging up to approximately 10 kHz; pinnipeds ranging up to 5 kHz). The hydrophone array will be monitored during daylight hours by at least one bioacoustician. Sighting rates, and depending on the amount of data collected, the densities of marine mammals in the survey area will be estimated during the three surveys. Most likely the *R/V Torsvik*, the dedicated marine mammal monitoring vessel will tow the PAM.

*Chukchi Sea Coastal Aerial Survey:* An aerial survey program will be conducted in support of the seismic programs in the Chukchi Sea during summer and fall of 2006. The objectives of the aerial survey will be: (1) to address data deficiencies in the distribution and abundance of marine mammals in coastal areas of the eastern Chukchi Sea; and (2) to collect and report data on the distribution, numbers, orientation and behavior of marine mammals, particularly beluga whales, near traditional hunting areas in the eastern Chukchi Sea.

*Acoustic "Net" Array:* A suite of autonomous seafloor recorders (pop-ups) will be deployed to collect acoustic data from strategically situated sites in the Chukchi Sea. The basic plan is to deploy horizontal line arrays (HLA) of pop-ups in four areas from approximately Pt. Hope to the western Beaufort Sea east of Barrow, Alaska. Each of the four HLAs will contain four pop-ups separated by approximately 6–8 nm (11–15 km) so as to have an end-to-end length of approximately 18–24 nm (33–44 km) thus forming an inshore-to-offshore "net." An additional four pop-ups will be deployed at sites about 50–75 nm (93–139 km) offshore. The acoustic "net" array has been designed to accomplish two main objectives: (1) to collect information on the occurrence and distribution of beluga whales that may be available to subsistence hunters near villages located on the Chukchi Sea coast, and (2) to measure the ambient noise levels near these villages and record received levels of sounds from

seismic survey activities should they be detectable.

### Reporting

During the field season, brief bi-weekly progress reports on the status of the activity and level of marine mammal interactions will be submitted. A report on the preliminary results of the acoustic verification measurements, including as a minimum the measured 180- and 190-dB (rms) radii of the airgun sources, will be submitted shortly after collection and analysis of those measurements at the start of the field season. This report will specify the refinements to the safety radii that are proposed for adoption.

A report on GXT's seismic activities and on the relevant monitoring and mitigation results will be submitted to NMFS within 90 days after the end of the Chukchi sea seismic work. The report will provide full documentation of methods, results, and interpretation pertaining to all acoustic characterization work and vessel-based monitoring. The 90-day report will summarize the dates and locations of seismic operations, and all cetacean and seal sightings (dates, times, locations, activities, associated seismic survey activities). The number and circumstances of ramp-ups, power-downs, shutdowns, and other mitigation actions will be reported. The report will also include estimates of the numbers of mammals affected and the nature of observed impacts on cetaceans and seals.

Following the 2006 open water season, a single comprehensive report describing the acoustic, vessel-based, and aerial monitoring programs for all industrial seismic programs will be prepared. This 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 Chukchi Sea during 2006. The report will help to establish long-term data sets that can assist with the evaluation of changes in the Chukchi Sea ecosystem. The report will also incorporate studies being conducted in the Beaufort 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, 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. Many of the 2006 data will be used to assess the efficacy of the various data collection methods and to help establish protocols that will provide a basis for integration of the data sets over a period of years. Because of the complexity of this comprehensive report, NMFS is requiring that this report be submitted in draft to NMFS by April 1, 2007 in order for consideration, review and comment at the 2007 open water meeting.

#### ESA

NMFS has issued a biological opinion regarding the effects of this action on ESA-listed species and critical habitat under the jurisdiction of NMFS. That biological opinion concluded that this action is not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat. A copy of the Biological Opinion is available upon request (see **ADDRESSES**).

#### NEPA

The MMS prepared a Draft PEA for the 2006 Arctic Outer Continental Shelf (OCS) Seismic Surveys. NMFS was a cooperating agency in the preparation of the MMS Draft and Final PEAs and made this Draft PEA available upon request (71 FR 26055, May 3, 2006). In accordance with NOAA Administrative Order 216-6 (Environmental Review Procedures for Implementing the National Environmental Policy Act, May 20, 1999), NMFS has determined that the MMS Final PEA contains an in-depth and detailed description of the seismic survey activities, reasonable alternatives to the proposed action, the affected environment, mitigation and monitoring measures identified to reduce impacts on the human environment to non-significant levels, and the potential effects of the action on the human environment. In view of the information presented in this document and the analysis contained in the supporting PEA, NMFS has determined that issuance by NMFS of an IHA to GXT and other companies for conducting seismic surveys this year in the Arctic Ocean will not significantly impact the quality of the human environment as described above and in the supporting Final PEA.

This determination is predicated on full implementation of standard mitigation measures for preventing

injury or mortality to marine mammals, in addition to area-specific mitigation measures, such as implementation of (1) a 120-dB rms monitoring-safety zone for cow/calf pairs of bowhead whales in the Beaufort and Chukchi seas; (2) a 160-dB rms monitoring-safety zone for aggregations of feeding bowheads and gray whales in the Beaufort and Chukchi seas; (3) seismic shut-down criteria to protect bowhead and gray whales when inside the 120-dB or 160-dB monitoring-safety zones; and (4) a joint industry cooperative program on marine mammal research in the Chukchi Sea. These mitigation measures were incorporated into NMFS' Selected Alternative and IHA conditions for this year's seismic survey operations. Accordingly, NMFS adopts MMS' Final PEA and has determined that the preparation of an Environmental Impact Statement for this action is not necessary. A copy of the MMS Final PEA for this activity is available upon request and is available online (see **ADDRESSES**).

#### Essential Fish Habitat (EFH)

The action area has been identified and described as EFH for 5 species of Pacific salmon (pink (humpback), chum (dog), sockeye (red), chinook (king), and coho (silver)) occurring in Alaska. The issuance of this proposed incidental harassment authorization is not anticipated to have any adverse effects on EFH, and therefore no consultation is required.

#### Determinations

##### Summary

Based on the information provided in GXT's application and the MMS Final PEA, NMFS has determined that GXT's seismic surveys in the northern Chukchi Sea in 2006 will have a negligible impact on the affected species or stocks of marine mammals, result in the taking of small numbers of marine mammals, and will not have an unmitigable adverse impacts on their availability for taking for subsistence uses, provided the mitigation and monitoring measures required under the IHA are implemented and the POC/CAA is implemented.

##### Potential Impacts on Marine Mammals

NMFS has determined that the impact of conducting relatively short-term seismic surveys in the U.S. Chukchi Sea may result, at worst, in a temporary modification in behavior by certain species of marine mammals. While behavioral and avoidance reactions may occur in response to the resultant seismic noise and vessel appearance,

this behavioral change is expected to have a negligible impact on the affected species and stocks of marine mammals.

While the number of potential incidental harassment takes will depend on the distribution and abundance of marine mammals in the area of seismic operations, which will vary annually due to variable ice conditions and other factors, the number of potential harassment takings is estimated to be small relative to the population estimates (see Table 2 in this document).

In addition, no take by death or serious injury is anticipated, and the potential for temporary or permanent hearing impairment will be avoided through the incorporation of the mitigation measures proposed for GXT's IHA. This determination is supported by: (1) the likelihood that, given sufficient notice through slow ship speed and ramp-up of the seismic array, marine mammals (especially bowhead, gray, and beluga whales in Arctic waters) are expected to move away from seismic noise that is annoying prior to its becoming potentially injurious; (2) recent research that indicates that TTS is unlikely at SPLs as low as 180 dB re 1 microPa; (3) the fact that injurious levels would be very close to the vessel; and (4) the likelihood that marine mammal detection ability by trained observers is close to 100 percent during daytime and remains high at night close to the seismic vessel. Finally, no known rookeries, mating grounds, areas of concentrated feeding, or other areas of special significance for marine mammals are known to occur within or near the planned areas of operations during the season of operations.

##### Potential Impacts on Subsistence Uses of Marine Mammals

NMFS believes that the proposed seismic activity by GXT in the northern Chukchi Sea in 2006, in combination with other seismic and oil and gas programs in this area, will not have an unmitigable adverse impact on the subsistence uses of bowhead whales and other marine mammals. This determination is supported by the following: (1) seismic activities in the Chukchi Sea will not begin until after the spring bowhead hunt is expected to have ended; (2) the CAA conditions should significantly reduce impacts on subsistence hunters; (3) while it is possible that accessibility to belugas during the spring subsistence beluga hunt could be impaired by the survey, it is unlikely because little to none of GXT's proposed survey is within 25 km (15.5 mi) of the Chukchi coast, meaning the vessel will usually be well offshore

and away from areas where seismic surveys would influence beluga hunting by communities; and (4) because seals (ringed, spotted, bearded) are hunted in nearshore waters and the seismic survey will remain offshore of the coastal and nearshore areas of these seals where natives would harvest these seals, it should not conflict with harvest activities.

#### Authorization

As a result of these determinations, NMFS has issued an IHA to GXT to take small numbers of marine mammals, by harassment, incidental to conducting a seismic survey in the northern Chukchi Sea in 2006, provided the mitigation, monitoring, and reporting requirements described in this document are undertaken.

Dated: August 15, 2006.

**James H. Lecky,**

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

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## DEPARTMENT OF COMMERCE

### National Oceanic and Atmospheric Administration

[I.D. 080806A]

#### Taking Marine Mammals Incidental to Specified Activities; Construction of the Knik Arm Bridge

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

**ACTION:** Notice of receipt of application for an incidental take authorization; request for comments.

**SUMMARY:** NMFS has received a request from the Knik Arm Bridge and Toll Authority (KABATA) for an authorization to take small numbers of marine mammals, by harassment, incidental to construction of the Knik Arm Bridge at the Knik Arm Crossing in Alaska during the period 2007 through 2012. In order to promulgate regulations and issue annual Letters of Authorization (LOAs) to KABATA, NMFS must determine that these takings will have a negligible impact on the affected species and stocks of marine mammals and not have an unmitigable impact on subsistence uses of marine mammals. NMFS invites comment on the application and suggestions on the content of the regulations.

**DATES:** Comments and information must be received no later than September 22, 2006.

**ADDRESSES:** Comments on the application should be addressed to Michael Payne, Chief, Permits, Conservation and Education Division, Office of Protected Resources, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring, MD 20910-3225. The mailbox address for providing email comments is [PR1.080806A@noaa.gov](mailto:PR1.080806A@noaa.gov). Comments sent via e-mail, including all attachments, must not exceed a 10-megabyte file size. A copy of the application (which includes the reference citations found in this **Federal Register** document) may be obtained by writing to this address or by telephoning the contact listed here and are also available at: <http://www.nmfs.noaa.gov/pr/permits/incidental.htm#iha>.

**FOR FURTHER INFORMATION CONTACT:** Kenneth Hollingshead, Office of Protected Resources, NMFS, (301) 713-2289, ext 128.

#### SUPPLEMENTARY INFORMATION:

##### Background

Section 101(a)(5)(A) of the Marine Mammal Protection Act (16 U.S.C. 1361 *et seq.*) (MMPA) directs 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.

Permission may be granted for periods of 5 years or less if the Secretary finds that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses, and if regulations are prescribed setting forth the permissible methods of taking and the requirements pertaining to the mitigation, monitoring and reporting of such taking.

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." An authorization may be granted for periods of 5 years or less if the Secretary finds that the total taking will have a negligible impact on the species or stock(s), will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses,

and regulations are prescribed setting forth the permissible methods of taking and the requirements pertaining to the monitoring and reporting of such taking.

Except for certain categories of activities not pertinent here, the MMPA defines "harassment" as any act of pursuit, torment, or annoyance which

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

#### Summary of Request

On May 6, 2006, NMFS received an application, under section 101(a)(5)(A) of the MMPA, from KABATA to take marine mammals, by harassment, incidental to construction of the Knik Arm Bridge in Alaska. KABATA proposes to construct an 8,180 ft (2,493 m) pile-supported steel bridge spanning Knik Arm in Upper Cook Inlet, in Alaska. The project area is located north of Anchorage and west of Elmendorf Air Force Base in the southern portion of Knik Arm. The crossing would traverse Knik Arm over waters between zero and 70 ft (0-20 m) in depth.

According to KABATA, the bridge would be used for vehicular traffic in order to: (1) Move freight and goods between the Port of Anchorage/Ship Creek industrial areas and the Port MacKenzie district; (2) provide safety and redundant overland routes connecting area airports, military bases, ports and hospitals for emergency response; (3) provide transportation infrastructure to meet projected local population and economic growth forecasts; and (4) support economic advancement in the region.

Three alternatives for the crossing alignment have been proposed. A complete description of these alternatives are discussed in the Draft Environmental Impact Statement (Draft EIS) for the Knik Arm Crossing that will be released to the public shortly. A bridge across lower Knik Arm in the southern alignment is KABATA's preferred alternative identified in that document. For the southern alignment, causeways approximately 3,600 ft (1,100 m) and 2,100 ft (640 m) in length would be constructed from the east and west shores, respectively. During year one for construction (presently scheduled for 2007), the east and west bridge causeway foundations and abutments would be constructed in April-May following the establishment of access roads.