of NEPA (40 CFR parts 1500–1508), (3) USDA regulations implementing NEPA (7 CFR part 1b), and (4) APHIS' NEPA Implementing Procedures (7 CFR part 372).

Unless substantial issues with adverse environmental impacts are raised in response to this notice, APHIS intends to issue a finding of no significant impact (FONSI) based on the EA and authorize shipment of the above product for the initiation of field tests following the close of the comment period for this notice.

Because the issues raised by field testing and by issuance of a license are identical, APHIS has concluded that the EA that is generated for field testing would also be applicable to the proposed licensing action. Provided that the field test data support the conclusions of the original EA and the issuance of a FONSI, APHIS does not intend to issue a separate EA and FONSI to support the issuance of the product license, and would determine that an environmental impact statement need not be prepared. APHIS intends to issue a veterinary biological product license for this vaccine following completion of the field test provided no adverse impacts on the human environment are identified and provided the product meets all other requirements for licensing.

Authority: 21 U.S.C. 151–159; 7 CFR 2.22, 2.80, and 371.4.

Done in Washington, DC, this 21st day of August 2006.

Kevin Shea,

Acting Administrator, Animal and Plant Health Inspection Service.

[FR Doc. E6–14040 Filed 8–23–06; 8:45 am]

BILLING CODE 3410–34–P

DEPARTMENT OF AGRICULTURE

Forest Service

Notice of Resource Advisory Committee, Sundance, WY

AGENCY: Notice of Resource Advisory Committee, Sundance, Wyoming, USDA Forest Service, USDA.

ACTION: Notice of meeting.

SUMMARY: Pursuant to the authorities in the Federal Advisory Committee Act (Pub. L. 92–463) and under the Secure Rural Schools and Community Self-Determination Act of 2000 (Pub. L. 106–393) the Black Hills National Forests' Crook County Resource Advisory Committee will meet Monday, September 11th, 2006 in Sundance, Wyoming for a business meeting. The meeting is open to the public.

SUPPLEMENTARY INFORMATION: The business meeting on September 11 will begin at 6:30 p.m., at the USFS Bearlodge Ranger District office, 121 South 21st Street, Sundance, Wyoming. Agenda topics will include a review of previously funded projects and consideration of FY 2007 project proposals. A public forum will begin at 8 p.m. (MT).

FOR FURTHER INFORMATION CONTACT: Steve Kozel, Bearlodge District Ranger and Designated Federal Officer at (307) 283–1361.

Dated: August 18, 2006.

Steven J. Kozel,

District Ranger, Bearlodge Ranger District.

[FR Doc. 06–7118 Filed 8–23–06; 8:45 am]

BILLING CODE 3410–11–M

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[I.D. 020306A]

Small Takes of Marine Mammals Incidental to Specified Activities; Seismic Surveys in the Beaufort and Chukchi Seas 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 small numbers of marine mammals, by harassment, incidental to conducting a marine geophysical program, including deep seismic surveys, on oil and gas lease blocks located on Outer Continental Shelf (OCS) waters in the mid- and eastern-Beaufort Sea and on pre-lease areas in the Northern Chukchi Sea has been issued to Shell Offshore, Inc. (Shell) and WesternGeco, Inc.

DATES: Effective from July 10, 2006 through December 31, 2006.

ADDRESSES: The application, a list of references used in this document, and the IHA are available by writing to P. Michael Payne, Chief, Permits, Conservation and Education Division, Office of Protected Resources, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring, MD 20910–3225, or by telephoning one of the contacts listed here. A copy of the application and/or the research monitoring plan (LGL, 2006) is also available at: *http://www.nmfs.noaa.gov/pr/permits/incidental.htm#iha*. 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.

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*.

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

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 November 16, 2005, NMFS received two applications from Shell for the taking, by Level B harassment, of several species of marine mammals incidental to conducting a marine seismic survey program during 2006 in the mid- and eastern-Beaufort and northern Chukchi seas. The deep seismic survey component of the program will be conducted from WesternGeco's vessel the *M/V Gilavar*. Detailed specifications on this seismic survey vessel are provided in Shell's application (Seismic Survey, Overview/Description). These specifications include: (1) complete descriptions of the number and lengths of the streamers which form the airgun and hydrophone arrays; (2) airgun size and sound propagation properties; and (3) additional detailed data on the *M/V Gilavar*'s characteristics. In summary, the *M/V Gilavar* will tow two source arrays, comprising three identical subarrays each, which will be fired alternately as the ship sails downline in the survey area. The *M/V Gilavar* will tow up to 6 hydrophone streamer cables up to 5.4 kilometers (km)(3.4 mi) long. With this configuration each pass of the *Gilavar* can record 12 subsurface lines spanning a swath of up to 360 meters (m; 1181 ft). The seismic data acquisition vessel will be supported by the *M/V Alex Gordon*, which will serve to resupply and re-fuel the *M/V Gilavar*. The *M/V Alex Gordon* is also capable of ice management should that be required. The *M/V Alex Gordon* will not deploy seismic acquisition gear.

Plan for Seismic Operations

It is planned that the *M/V Gilavar* will be in the Chukchi Sea in early July to begin deploying the acquisition equipment. Seismic acquisition will not begin before July 15, 2006. The approximate areas of operations are shown in Appendix 4 in Shell's IHA application. Acquisition will continue in the Chukchi Sea until ice conditions permit a transit into the Beaufort Sea around early August. Seismic acquisition is planned to continue in the Beaufort at one of three 3–D areas until early October depending on ice conditions. These 3–D areas are shown in Appendix 5 in Shell's application. For each of the 3–D areas, the *M/V Gilavar* will traverse the area multiple times until data on the area of interest has been recorded. At the conclusion of seismic acquisition in the Beaufort Sea, the *M/V Gilavar* will return to the Chukchi Sea and resume recording data there until all seismic lines are completed or weather prevents data collection.

The proposed Beaufort Sea deep seismic, site clearance, shallow hazard surveys and geotechnical activities are proposed to commence in August (if ice conditions allow) and continue until weather precludes further seismic work. In addition to deep seismic surveys, Shell plans to conduct site clearance and shallow hazard surveys of potential exploratory drilling locations within Shell's lease areas in the Beaufort Sea. The *M/V Henry Christoffersen* will be conducting the shallow-hazard seismic survey program in the Beaufort Sea while the *M/V Gilavar* conducts the deep seismic survey. The site clearance surveys are confined to very small specific areas within defined lease blocks. Also, very small and limited geophysical survey energy sources will be employed to measure bathymetry, topography, geo-hazards and other seabed characteristics. On the *M/V Henry Christoffersen*, the following acoustic instrumentation will be used: (1) a dual frequency subbottom profiler (Datasonics CAP6000 Chirp II (2–7kHz or 8–23kHz)); (2) a medium penetration subbottom profiler (Datasonics SPR–1200 Bubble Pulser (400Hz)); (3)a hi-resolution multi-channel seismic system (240cu in (4X60) gun array (0–150 Hz)); (4) a multi-beam bathymetric sonar (Seabat 8101 (240 kHz)); and (5) a side-scan sonar system (Datasonics SIS–1500 (190kHz - 210 kHz)). The timing is scheduled to avoid any conflict with the Beaufort Sea subsistence hunting conducted by the Alaska Eskimo Whaling Commission's (AEWC) villages.

In summary, the proposed Chukchi deep seismic survey will occur in two phases. Phase 1 will commence sometime after July 15, 2006, as sea ice coverage conditions allow and will continue through July to early August, 2006. Phase 2 of the Chukchi deep seismic survey will occur upon completion of the Beaufort Sea survey sometime after mid-October and continue until such time as sea ice and weather conditions preclude further work, probably sometime in mid- to late-November, 2006. Shell plans to run approximately 5556 km (3452 mi) of surveys in the Chukchi Sea and a similar survey length in the Beaufort Sea.

Alternatively, if ice conditions preclude seismic operations in the Beaufort Sea, Shell proposes to continue its seismic program in the Chukchi Sea through mid- to late-November, 2006, or approximately 5.5 months. This scenario takes into account that approximately twice as many seismic line miles would be completed during this time in the Chukchi Sea. Under this scenario approximately 6000 nm (6905 stat mi; 11,112 km) of seismic line miles could be completed in the Chukchi Sea.

A detailed description of the work proposed by Shell for 2006 is contained in the two applications which are available for review (see **ADDRESSES**).

Description of Marine 3–D Seismic Data Acquisition

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

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

Description of WesternGeco's Air-Gun Array

Shell will use WesternGeco's 3147 in^3 Bolt-Gun Array for its 3–D seismic survey operations in the Chukchi and

Beaufort Seas. WesternGeco's source arrays are composed of 3 identically tuned Bolt-gun sub-arrays operating at an air pressure of 2,000 psi. In general, the signature produced by an array composed of multiple sub-arrays has the same shape as that produced by a single sub-array while the overall acoustic output of the array is determined by the number of sub-arrays employed.

The gun arrangement for each of the three 1049–in^3 sub-array is detailed in Shell's application. As indicated in the application's diagram, each sub-array is composed of six tuning elements; two 2–gun clusters and four single guns. The standard configuration of a source array for 3D surveys consists of one or more 1049–in^3 sub-arrays. When more than one sub-array is used, as here, the strings are lined up parallel to each other with either 8 m or 10 m (26 or 33 ft) cross-line separation between them. This separation was chosen so as to minimize the areal dimensions of the array in order to approximate point source radiation characteristics for frequencies in the nominal seismic processing band. For the 3147 in^3 array the overall dimensions of the array are 15 m (49 ft) long by 16 m (52.5 ft) wide.

Shell's application provides illustrations of the time series and amplitude spectrum for the far-field signature and the computed acoustic emission pattern for the vertical inline and crossline planes for the 3147 in^3 array with guns at a depth of 6 m (20 ft). The signature for this array was first computed using GSAP, WesternGeco's in house signature modeling software.

Subsequent to submitting its application, Shell contracted with JASCO to model sound source characteristics using a different model than the one used in the application. The JASCO parabolic equation model is believed by Shell and NMFS to be superior in these waters because it accounts for bathymetry effects, water properties, and the geoacoustic properties of seabed layers. The JASCO-modeled radii are based on the worst case model predictions. For this model, the proposed 180–dB and 190–dB radii are 1.5 km (0.9 mi) and 0.5 km (0.3 mi), respectively. This model will be used by Shell and NMFS to estimate preliminary sound level isopleths and radii for rms sound level thresholds between 120 and 190 dB at six proposed survey locations for the proposed airgun arrays. In addition, these modeled radii estimates will be multiplied by a safety margin of 1.5 to obtain conservative exclusion radii for marine mammal safety until empirical sound field verification measurements are completed within the first few days of seismic shooting and new safety radii are calculated and used for implementing safety zones.

An explanation for the indicated sound pressure levels (SPLs) is provided later in this document (see Impacts to Marine Mammals).

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 Final PEA. Reviewers are encouraged to read these earlier documents for additional information.

Site Clearance Surveys

In addition to deep seismic surveys in the Beaufort Sea, Shell also plans to conduct site clearance and shallow hazards surveys of potential exploratory drilling locations within Shell's lease areas as required by MMS regulations. The site clearance surveys are confined to very small specific areas within defined OCS blocks. Shell has contracted for the *M/V Henry Christoffersen* to conduct the site clearance/shallow hazards surveys, and geotechnical borings. This survey will be conducted contemporaneously with the deep seismic survey program in the Beaufort Sea. Very small and limited geophysical survey energy sources will be employed to measure bathymetry, topography, geo-hazards and other seabed characteristics. These include: (1) a dual frequency subbottom profiler (Datasonics CAP6000 Chirp II (2–7kHz or 8–23kHz)); (2) a medium penetration Subbottom profiler (Datasonics SPR–1200 Bubble Pulser (400Hz)); (3) a hi-resolution multi-channel seismic system (240cu in (4X60) gun array (0–150 Hz)); (4) a multi-beam bathymetric sonar (Seabat 8101 (240 kHz)); and (5) a side-scan sonar system (Datasonics SIS–1500 (190kHz - 210 kHz)). The actual locations of site clearance and shallow hazard surveys in the U.S. Beaufort Sea have not been released by Shell for proprietary reasons. That information will be supplied to NMFS and MMS prior to commencement of operations in the Beaufort Sea. The vessels conducting the site clearance and shallow hazard surveys, and geotechnical borings will also operate in accordance with the provisions of a Conflict Avoidance Agreement (CAA), between the seismic industry, the AEWC and the Whaling Captains Associations regarding times and areas in order to avoid any possible conflict with the bowhead subsistence whale hunts by the Kaktovik and Nuiqsut.

Offshore site clearance surveys use various geophysical methods and tools to acquire graphic records of seafloor and sub-seafloor geologic conditions. The data acquired and the type of investigations outlined in this document are performed routinely for most exploratory drilling and production platforms, submarine pipelines, port facilities, and other offshore projects. High-resolution geophysical data such as two- dimensional, high-resolution multi-channel seismic, medium penetration seismic, subbottom profiler, side scan sonar, multibeam bathymetry, magnetometer and possibly piston core soil sampling are typical types of data acquired. These data are interpreted to define geologic and geotechnical conditions at the site and to assess the potential engineering significance of these conditions. The following section provides a brief description of those instruments used for site clearance that may impact marine mammals. Information on the data acquisition methodology planned by Shell can be found in the Shell application.

Geophysical Tools for Site Clearance

High-Resolution seismic profiling

Reflected sound energy, often called acoustic or seismic energy, produces graphic images of seafloor and sub-seafloor features. These systems transmit the acoustic energy from various sources called transducers that are attached to the hull of the vessel or towed astern. Part of this energy is reflected from the seafloor and from geologic strata below the seafloor. This reflected energy is received by the hydrophone or streamer and is recorded to produce seismic records or profiles. Seismic profiles often resemble geologic cross-sections along the course traveled by the survey vessel.

In most Beaufort Sea site surveys, Shell will operate several high-resolution profiling systems simultaneously to obtain detailed records of seafloor and near seafloor conditions. The survey will include data acquisition using a shallow penetration profiler or subbottom profiler (1 - 12.0 kHz, typically 3.5 kHz), medium penetration system or boomer/sparker/airgun (400–800 Hz) and a deep penetrating hi-resolution multi-channel seismic system (20–300 Hz) not to be confused with the deep seismic used for hydrocarbon exploration. These profiling systems complement each other since each system achieves different degrees of resolution and depths of sub-seafloor penetrations.

Side Scan Sonar

Unlike seismic profiling systems, which produce a vertical profile along the vessel's path, side scan sonar systems provide graphic records that show two-dimensional (map) views of seafloor topography and of objects on the seafloor. The sonar images provide a swath display/record covering an area on the seafloor up to several hundred feet on both sides of the survey trackline. The side scan sonar transmits very high-frequency acoustic signals (100 – 410 kHz) and records the reflected energy from the seafloor. Signals reflected from the seafloor are displayed on a continuous record produce by a two-channel recorder. Reflected signals normally appear as dark areas on the record whereas shadows behind objects appear as light or white areas. The intensity and distribution of reflections displayed on the sonar image depend on the composition and surface texture of the reflecting features, on their size, and on their orientation with respect to the transducers in the towfish. Line spacing and display range are designed to ensure 100 percent coverage of the proposed survey area in the prime survey line direction, with additional tie-lines acquired in an orthogonal direction.

Side scan sonar data are useful for mapping areas of boulders, rock outcrops, and other areas of rough seafloor, and for determining the location and trends of seafloor scarps and ice gouges. These data are also used to locate shipwrecks, pipelines, and other objects on the seafloor.

Multi-beam Bathymetry

Multi-beam bathymetric systems are either hull mounted or towed astern of the survey vessel. The system transmits acoustic signals (200–500 kHz) from multiple projectors propagating to either side of the vessel at angles that vary from vertical to near horizontal. The locations of the soundings cover a swath whose width may be equal to many times the waterdepth. By adjusting the spacing of the survey tracklines such that adjacent swaths are overlapping, Shell obtains depth information for 100 percent of the bottom in the survey area. The time it takes to receive the signals as well as signal intensity, position, and other characteristics for echoes received across the swath are used to calculate depth of each individual beam transmitted across the swath.

Acoustic systems similar to the ones proposed for use by Shell have been described in detail by NMFS previously (see 66 FR 40996, August 6, 2001; 70 FR 13466, March 21, 2005). NMFS encourages readers to refer to these documents for additional information on these systems.

Comments and Responses

A notice of receipt of Shell's MMPA application and NMFS' proposal to issue an IHA to Shell was published in the **Federal Register** on May 3, 2006 (71 FR 26055). That notice described, in detail, Shell'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 Shell's application, comments were received from Shell, the Marine Mammal Commission (Commission), the Center for Biological Diversity (CBD) on behalf of several environmental organizations, the Northern Alaska Environmental Center (NAEC), the Alaska Oil and Gas Association (AOGA), the Alaska Eskimo Whaling Commission (AEWC), the North Slope Borough (NSB), Village of Point Hope (NVPH), and the Alaska Nanuuq Commission (Nanuuq Commission). The AOGA submitted a copy of the comments it submitted on the MMS PEA and the CBD attached the comments submitted by the Natural Resources Defense Council on the PEA. With the exception of some comments relevant to this specific action which are addressed here, comments on the Draft PEA have been addressed in Appendix D of the Final PEA and are not repeated. Some comments providing additional information for NMFS' consideration have been incorporated into this document without further reference.

Activity Concerns

Comment 1: Shell notes that it was awarded 84 OCS leases in the Western Beaufort Sea Planning Area by the MMS in 2005 pursuant to the MMS Lease Sale 195 held March 30, 2005. Shell made plans and signed contracts to perform seismic surveys in the Chukchi and Beaufort Seas during the open water season of 2006, beginning in July. The 2006 seismic surveys are critical in assessing hydrocarbon potential and site conditions necessary to conduct drilling operations in subsequent open water seasons. Shell notes that the 2006 seismic operations in the Chukchi Sea will be very surgical in nature, be at least 50 mi (80.5 km) from shore, and cover less than 2 percent of the lease sale area. In the Beaufort Sea, Shell's seismic operations will be limited to the areas near its lease blocks and cover less than 1 percent of the lease sale area. As Shell's IHA application included a much broader area for seismic operations; the take estimates in its application are inflated and should be recalculated.

Response: While NMFS recognizes that Shell will be concentrating seismic activity in relatively small areas, the Level B harassment estimates are calculated as ''exposures'' to sound and, therefore, while the survey may result in fewer marine mammals being exposed, those animals may be exposed more frequently than if the seismic vessel track were linear.

MMPA Concerns

Comment 2: The CBD states that an IHA is only available if the activity has no potential to result in serious injury or mortality to a marine mammal. If injury or mortality to a marine mammal is possible, take can only be authorized pursuant to a Letter of Authorization (LOA) consistent with regulations promulgated pursuant to 16 U.S.C. 1371 (a)(5)(D)(i) and 50 CFR 216.107. Because NMFS has not promulgated regulations related to incidental takes for seismic surveys, and because such surveys carry the real potential of injury or death to marine mammals, neither an IHA nor an LOA can be issued for Shell's proposed activities.

Response: For reasons discussed later in this document, NMFS does not believe that there is any potential for marine mammal mortality to occur incidental to conducting seismic surveys in the Chukchi and Beaufort seas in 2006. IHAs can authorize takings by Level A (injury) and Level B harassment (behavioral harassment). As documented by Richardson [ed] (1998), aerial and vessel monitoring of marine mammals under previous incidental take authorizations did not indicate more than behavioral harassment takings would occur.

Comment 3: The CBD believes that NMFS cannot issue an IHA to Shell because it has not complied with the MMPA's specific geographic region requirement.

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 Shell's description of the activity and the locations for conducting seismic surveys meet the requirements of the MMPA. Within the Chukchi Sea, Shell intends to conduct seismic activity within the area designated for Lease Sale 97 (shown in Appendix 4 in Shell's IHA application). More specific locations within the Lease Sale area are considered proprietary. In the Beaufort Sea, the areas of seismic operations are shown in Appendix 5 in

Shell's IHA application. Shell has provided a well-defined area within which certain biogeographic characteristics occur.

Comment 4: The CBD states that Shell's application fails to specify the ''dates and duration'' of these activities as required by 50 CFR 216.103(a)(2), or even who will perform them or in what manner. For example, CBD notes the various dates listed by Shell for beginning seismic. The CBD notes that the proposed IHA (notice) states that seismic acquisition is planned to begin on or about July 10, 2006, while a couple of paragraphs later states that ''Phase I will commence sometime after June 15, 2006; elsewhere the proposed IHA (notice) states that seismic operations will not begin until after July 1, 2006. The CBD believes NMFS' ''small numbers'' and ''negligible impacts'' conclusions are highly suspect given NMFS' confusion as to when and where Shell will actually be operating.

Response: The application shows that Shell plans to pick up crew members and refuel near the end of June in Dutch Harbor and sail for the Chukchi Sea upon completion of resupply. Seismic surveys would begin no earlier than July 10, depending upon ice conditions in the Chukchi Sea. To avoid bowhead whales migrating in the spring leads, seismic survey work cannot begin prior to July 1, as explained in the PEA and as stipulated in Shell's permit from MMS. More recently, agreements with Alaskan natives restricted seismic operations prior to July 15, 2006. Sound exposure calculations are based on miles of seismic lines to be run and the average and maximum density of marine mammals expected to be exposed. Minor variations in dates would be due mostly to ice conditions in either the Chukchi or Beaufort Seas would not affect noise exposure estimates. However, to avoid further confusion, NMFS has modified the IHA to indicate that seismic data collection cannot begin prior to July 1, 2006.

Comment 5: The CBD states that Shell's application and NMFS' notice fail to provide information on the ''dates and duration of the activities and provide only boilerplate descriptions of typical activities.

Response: NMFS has determined that the activity descriptions in Shell's application, including the Appendixes, provide information necessary to make its determinations under the MMPA. The duration of the activity is highly dependent upon logistics, weather, mechanical problems, shut-downs and power-downs. However, Shell provided estimates of expected line miles of survey effort they expect to run which is used in part for calculating incidental harassment estimates.

Comment 6: To protect bowhead whales, other marine mammals, and subsistence use of marine mammal resources, the AEWC states that NMFS must ensure that the planned activities, if authorized, conform to the statutory requirements of the MMPA. In that regard, the AEWC states that while not all acoustic takes threaten an impact that is greater than negligible, the MMPA requires that NMFS take special care to protect whales engaged in biologically significant behaviors such as feeding, mating, calving, and tending to young.

Response: NMFS takes into account biological activities in its analyses and in determining appropriate mitigation and monitoring requirements. We recognize there is uncertainty in the distribution and abundance of marine mammal stocks in the Chukchi Sea. As a result, NMFS has required additional monitoring and mitigation measures for this year's survey. NMFS anticipates the industry research program will answer some of the uncertainties involving distribution and abundance of marine mammals in the Chukchi Sea.

Comment 7: The CBD states that because the MMPA explicitly requires that NMFS prescribe the ''means effecting the least practicable impact'' on the affected species, stock or habitat, an IHA [notice] must explain why measures that would reduce the impact on a species were not chosen (i.e., why they were not practicable). Neither the proposed IHA [notice], Shell's application, nor the PEA do this. The AEWC made a similar comment on the context of biologically significant behaviors.

Response: Neither the MMPA nor NMFS regulations implementing the incidental take program require NMFS to itemize and discuss all measures that were determined to be impractical. Such an effort can quickly become a matter of speculation. For example, drones, manned balloons, and satellites are currently considered impractical for technological and safety reasons and usually need not be discussed in issuing IHAs (although drones may become available for non-military activities within a few years). Helicopters and other aircraft may be practical depending upon distance between landing and activity location, weather and safety and are usually discussed if safety zones cannot be visually monitored effectively. Also, active and passive acoustics are often discussed when issuing an IHA if the safety zone cannot be visually monitored effectively. Time and area closures or restrictions are discussed when appropriate. In many cases, monitoring larger zones to reduce the Level B harassment take, is viewed as secondary to effectively monitoring the Level A harassment zone to prevent marine mammal injury. A final mitigation measure mentioned by commenters to the Draft PEA of using vibroseis technology in winter instead of open water seismic is not practical do to human safety concerns and must be limited to extremely shallow water depths.

Comment 8: The CBD notes that while NMFS has not performed an analysis of why additional mitigation measures are not ''practicable,'' the proposed IHA [notice] contains information to conclude that many such measures are in fact practicable. For example, during periods when conflict with subsistence hunting is most likely, Shell proposes additional ''special'' monitoring and mitigation measures from August 15 until the end of the bowhead hunting season. While these measures are designed to avoid impacts to bowheads so as not to affect the subsistence hunt, there is no reason, and certainly no explanation of, why these measures cannot be instituted for the entirety of the seismic survey. The MMPA requires minimizing all impacts on marine mammals, not only avoiding impacts on the subsistence hunt.

Response: The ''special'' monitoring and mitigation measures proposed by Shell during the bowhead subsistence hunt were: (1) An aerial monitoring program during the bowhead subsistence hunt as described elsewhere in this document, and (2) time/area closures to prevent the survey from potentially having an unmitigable adverse impact. Only the latter is considered a measure that could potentially lower the impact on bowhead whales and other marine mammal species in the central Beaufort Sea. Since the CAA had not been developed at the time of Shell's application or NMFS' **Federal Register** notice for Shell, what those mitigation conditions might be would have been speculation. However, in general the imposition of additional time/area closures in the Beaufort Sea (and to some extent in the Chukchi Sea) are impractical for reasons of cost effectiveness and the limited ice-free time in Arctic Ocean waters. Overlooking costs, time/area closures are not practical in the Beaufort Sea if seismic had to occur over multiple years in an effort to obtain seismic data that could have been obtained with possibly a single-year of effort. For that reason, NMFS limits time/area closures as a

mitigation measure in Arctic waters only to protect subsistence hunting or marine mammal life stages that could significantly affect survival and reproduction.

Marine Mammal Impact Concerns

Comment 9: The CBD states that the tables in the proposed IHA notice provide no support for NMFS' conclusion on small numbers. For Shell's proposed seismic surveys in the Chukchi, the number of bowheads likely to be exposed to sounds of 160 dB or greater and therefore harassed'' according to NMFS' operative thresholds, range from 403 to 3226. 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. CBD makes a similar comment regarding beluga whales.

Response: NMFS believes that the small numbers requirement has been satisfied. The species most likely to be harassed during seismic surveys in the Arctic Ocean area is the ringed seal, with a ''best estimate'' of 7,335 animals in the Beaufort Sea and 13,610 animals in the Chukchi Sea being exposed to sound levels of 160 dB or greater, for a total of 20,945 animals. This does not mean that this is the number of ringed seals that will be taken by Level B harassment, it is the best estimate of the number of animals that potentially could have a behavioral modification due to the noise (for example Moulton and Lawson (2002) indicate that most pinnipeds exposed to seismic sounds lower than 170 dB do not visibly react to that sound; 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, for those surveys that ''mow the lawn'' (that is, remain within a relatively small area, transiting back and forth while shooting seismic), the numbers tend to be highly inflated. As a result, NMFS believes that these exposure estimates are conservative and may actually affect much fewer animals.

Although it might be argued that the estimated number of ringed seals behaviorally harassed is not small in absolute numbers, the number of exposures is relatively small, representing less than 10 percent of the regional stock size of that species (249,000) if each ''exposure'' represents an individual ringed seal. In addition, it should be recognized that because Shell will spend most of the time surveying small areas in the Chukchi Sea, fewer ringed seals would likely be harassed but these animals could be affected more often, unless they habituate to the sounds (see ''Ringed, Largha and Bearded Seals later in this document).

For beluga and bowhead whales, the estimated number of sound exposures during Shell's seismic surveys in the Arctic will be 1702 and 3226, respectively. While these exposure numbers represent a sizable portion of their respective population sizes (46 percent of the beluga population (3710) and 31 percent of the bowhead population (10545)), NMFS believes that the estimated number of exposures by bowheads and belugas greatly overestimate actual exposures for the following reasons: (1) The proposed seismic activities would occur in the Chukchi Sea when bowheads are concentrated in the Canadian Beaufort Sea; (2) bowheads and belugas may be absent or widely distributed and likely occur in very low numbers within the seismic activity area in the Chukchi Sea; (3) seismic surveys are not authorized in the Beaufort Sea during the bowhead westward migration; (4) Shell proposes to conduct seismic in the Beaufort Sea after the bowhead whales have migrated out of the Beaufort Sea; and (5) Shell will conduct late-fall seismic surveys in the Chukchi Sea after most bowheads have migrated out of the area, Therefore, NMFS believes that the number of bowhead whales that may be exposed to sounds at or greater than 160 dB re 1 microPa (rms) would be small.

Comment 10: 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 Shell's activities arbitrary and capricious.

Response: First, 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 8 humpback whales (7 off the Bahia or Espirito Santo States and 1 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 Beaufort and Chukchi seas 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 Shell 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 11: In submitted comments on the MMS Draft PEA, (and referenced by CBD), the NRDC states that the decibel thresholds selected for pinnipeds and cetaceans are based on old data which has since been ''superseded by science,'' and that pinnipeds should be included with cetaceans in the 180–db Level A harassment threshold.

Response: New acoustic guidelines will be implemented by NMFS upon completion of a planned EIS on this subject. If NMFS were to implement new criteria at this time, it would need to be species-specific and safety zones would fluctuate depending upon the species believed to be affected by the action. Considering that the 180/190 dB safety zones were established based on onset TTS, a non-injurious (Level B harassment) level, the current safety zones of 180 dB rms for cetaceans and 190 dB rms for pinnipeds is conservative and will protect marine mammals from injury (Level A harassment).

Comment 12: In submitted comments on the MMS Draft PEA, (and referenced by CBD), the NRDC states that harassment of marine mammals can occur at levels below the 160 dB threshold for Level B harassment, and that NMFS should reassess its harassment thresholds for acoustic impacts.

Response: The 160–dB rms isopleth is based on work by Malme *et al.* (1984) for migrating gray whales along the California coast. Clark *et al.* (2000) replicating the work by Malme *et al.* (1984) indicated that this response is context dependent, as gray whales did not respond to simulated airgun noise when the acoustic source was removed from the gray whale migratory corridor. This indicates to NMFS that establishing a 160–dB isopleth for estimating a ZOI for low-frequency hearing specialists when exposed to a low frequency source is conservative. For mid- or high-frequency hearing specialists, a 160–dB ZOI for a low-frequency source is likely overly conservative. In this action, empirical research indicates that bowhead whales respond to sounds at levels lower than 160 dB during periods of important biological behavior (migration) but possibly not during other important periods (feeding). As a result, to reduce the uncertainty over whether these same avoidance characteristics will occur in the Chukchi Sea as they appear to have in the Beaufort Sea, MMS and NMFS have established conservative ZOIs where additional mitigation measures could be imposed to further protect these species during critical periods in Arctic waters.

Comment 13: In submitted comments on the MMS Draft PEA, (and referenced by CBD), NRDC states that MMS' calculations of PTS may be based on an improper model (i.e. traditional, linear models underestimate harm) and that MMS should lower its estimate for auditory injury. They cite Kastak *et al.* (2005) for this contention.

Response: Kastak *et al.* (2005) note the non-linear growth of TTS for relatively small magnitude shifts (<6 dB) and the inadequacy of a linear model using only these data in predicting the growth of TTS with exposure level for a wider range of exposures. It is well known that the TTS growth function is sigmoidal and thus it is misleading to describe it solely based on exposures that generate only small-magnitude TTS (where the slope of the growth function is relatively shallow). For a wide range of exposures, however, there is a steeper, linear portion of the sigmoidal function and a fairly consistent relationship between exposure magnitude and growth of TTS. The slope of this relationship is relatively well-known for humans (on the order of 1.6 dB TTS/dB noise (Ward *et al.*, 1958; 1959)). While it is not well-understood for marine mammals (because studies to date have yet to induce sufficiently large TTS values to properly assess it), the slope of this portion of the function predicted by the Kastak *et al.*(2005) data fit with the curvilinear approximation (based on Maslen, 1981), and was found to be comparable. Therefore, estimations of PTS from TTS onset that use a linear growth function with the steepest slope from a curvilinear function are very likely appropriate and in fact a conservative approximation, based on the information available at this time.

Comment 14: In a footnote to the above comment, NRDC notes that NMFS adopted a higher criterion for pinnipeds (190 dB rms) despite the 1997 HESS (High Energy Seismic Survey) Workshop declining to set this higher criterion. The NRDC claims that this is in violation of the Administrative Procedure Act and the Data Quality Act.

Response: The 190 dB threshold for pinnipeds was not based on the HESS Workshop but came out of a follow-up workshop on acoustics in 1998 (Gentry, 1998). Workshop participants included the same scientists as the HESS Workshop.

Comment 15: With regard to bowhead whales, the CBD says NMFS' requires conclusive evidence of harm before it will find more than a negligible impact from Shell's activity. This is not the standard.

Response: NMFS believes that CBD is referring to a sentence which reads: ''Additionally, Shell cites Richardson and Thomson [eds]. (2002) that there is no conclusive evidence that exposure to sounds exceeding 160 db have displaced bowheads from feeding activity.'' This statement was made by Shell, not NMFS. However, empirical information cannot be ignored when making the required determinations under the MMPA.

Comment 16: The Commission continues to question NMFS' definition of temporary threshold shift (TTS) in marine mammal hearing as constituting Level B Harassment. Clearly an animal's survival depends on its ability to detect and protect itself from threats. If because of temporarily compromised hearing it is unable to display a normal behavioral reaction to events in its environment (e.g., to detect predators or respond to warnings of danger from conspecifics, it is at a significantly greater risk of being seriously injured or killed. Therefore, the Commission reiterates its recommendation that NMFS revise its definition of TTS to include the potential for Level A harassment due to secondary effects of temporary hearing loss.

Response: This issue has been addressed several times by NMFS in the past (see 70 FR 48675, August 19, 2005; 66 FR 22450, May 4, 2001). As stated in those documents, NMFS is using the best scientific information available on this subject. The Commission's argument for considering TTS as both Level A harassment and Level B harassment is based on conjecture on what might occur if a marine mammal with compromised hearing was at a disadvantage for survival. As noted previously, it is likely that marine mammals evolved certain behavioral responses to address natural loud noises in the environment (for example, billions of lightning strikes per year on the ocean at about 260 dB peak), by changes in conspecific spatial separation.

Cumulative Effects Concerns

Comment 17: The Commission questions whether there is a sufficient basis for concluding that the cumulative

effects of the proposed activities, coupled with past and prospective activities in the Beaufort and Chukchi seas, will be negligible for bowhead whales and other marine mammal species. The CBD. citing *Anderson* v. *Evans*, 371 F.3d 475 (9th Cir. 2004), believes that individual IHA review and not a cumulative impact review is inappropriate and should address impacts from multi-activities over multi-years, both onshore and offshore Alaska. The CBD also states that NMFS' failure to address global warming as a cumulative effect renders its negligible findings invalid.

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*.

Comment 18: The Commission notes that NMFS should consider the cumulative effects of the University of Texas at Austin's (UTA) seismic survey planned for this summer in the northern Chukchi Sea in combination with the three seismic surveys proposed by the oil industry and require similar, comprehensive monitoring and mitigation measures for that program as well.

Response: See previous response on cumulative impacts. The UTA program is a separate action that was under internal NMFS review following the public comment period at the time the Shell IHA decision was issued (see 71 FR 27997, May 15, 2006). Essentially, seismic survey is significantly further north in the Chukchi Sea than are the oil company surveys, is for a shorter period of time during the summer, will have completed its work weeks prior to the bowhead migration and establishes very conservative safety zones to protect marine mammals.

Subsistence Concerns

Comment 19: The Nanuuq Commission requests that someone from MMS or NMFS attend the Ice Seal Committee's July meeting to share information on the proposed seismic surveys and to respond to questions from the Committee. Issues for discussion include mitigation and monitoring for long-term effects on marine mammals and subsistence hunting due to increased vessel traffic in the area.

Response: NMFS understands that the July meeting was cancelled. The next meeting is scheduled for October. NMFS plans to attend this meeting.

Comment 20: The NVPH objects to any oil and gas activities as referenced in Resolution 06–05, based on concerns relating to NEPA, consultation and cooperation with the oil industry, and impacts on marine mammal resources. The CBD notes that the Villages of Kaktovik and Point Hope have passed resolutions opposing the proposed seismic surveys due to impacts on the subsistence hunt of bowheads and other species. In light of the positions of these communities, the CBD does not see how NMFS can lawfully make the findings required under the MMPA for Shell's proposed IHA.

Response: NMFS acknowledges that these villages have passed resolutions objecting to offshore oil development. However, the village whaling captains of these villages (in addition to villages of Nuiqsuk and Wainwright and the AEWC) have signed a Programmatic CAA indicating to NMFS that there will not be an unmitigable adverse impact on subsistence uses of marine mammals. (see Impact on Subsistence).

Comment 21: The AEWC states that under the MMPA, NMFS must impose mitigation measures sufficient to ensure that authorized activities will not have ''an unmitigable adverse impact'' on the availability of marine mammals for taking for subsistence uses. To accomplish this level of protection, NMFS must evaluate the activities within the context of the many other industrial operations expected this year, including (1) seismic operations in the Canadian Beaufort Sea, (2) vessel traffic associated with NPRA, and (3) ongoing operations at Northstar.

Response: While acknowledging increasing industrialization of the Arctic Ocean and resultant impacts on the subsistence lifestyle of its inhabitants, section 101(a)(5)(D)(i) limits the scope of this determination to the specified activity. However, NMFS works cooperatively with the AEWC to ensure that activities that might result in marine mammal harassment and have an impact on their availability for subsistence uses are fully analyzed for their impacts on subsistence and are the subject of a CAA.

Comment 22: The AEWC is also concerned that Chukchi Sea seismic operations to the west of Barrow, combined with Shell's proposed Beaufort Sea operations and other Beaufort Sea industrial operations, including FEX barging and work at Oooguruk could combine to drive the fall migration offshore, out of reach of whalers before the whales reach Barrow.

Response: See previous response. Shell's Chukchi Sea proposed seismic operation locations are at least one hundred miles southwest of Barrow and, therefore, are unlikely to impact the fall Barrow subsistence hunt. Incidentally, FEX signed a CAA with the AEWC to restrict barging operations during the subsistence hunt. Shell and the other seismic companies also signed a CAA that prohibits most seismic operations in the Beaufort Sea during the subsistence hunt and limits activities affecting hunts in the Chukchi Sea.

Comment 23: The AEWC notes that it has attempted through a CAA to craft mitigation measures to protect the fall bowhead whale subsistence hunt. The whaling captains of the Villages of Barrow, Nuiqsut and Kaktovik have established operating limitations applicable to seismic operations during the fall bowhead whale migration and subsistence hunt. The AEWC hopes these operating limitations will be effective despite the extraordinary level of industrial activity planned during the bowhead migration, in Alaskan as well as Canadian Arctic. The AEWC notes that if these mitigation measures are not adequate to protect the subsistence hunt, the AEWC will work with seismic operators and NMFS to address the concerns of the subsistence hunters.

Response: As noted in the AEWC letter, the signed CAA excludes seismic operations in the near-shore polyna (although it will be necessary in future years for CAAs to address the Alaska Current). Also, Shell has agreed not to commence seismic operations in the Chukchi Sea before July 15, to reduce impacts on the beluga hunt. Additional mitigation requirements are addressed later in this document (see Plan of Cooperation).

Monitoring Concerns

Comment 24: The Commission recommends that if NMFS decides to issue the IHA it should require all practical monitoring and mitigation measures to protect bowhead and other marine mammals from behavioral disturbance and to ensure their availability to Alaska Natives for subsistence purposes. To ensure additional protection to bowhead whales, and other marine mammals, and to obtain as much information as possible on the effects of the proposed (seismic) studies on marine mammals, the Commission recommends that NMFS also require: (1) The use of passive acoustic arrays from the seismic and/or support vessels and a passive net array along the Chukchi Sea coast as recommended by participants at NMFS' open water meeting in Anchorage, AK on April 19–20, 2006; and (2) pre- and post-operation aerial surveys to supplement real-time monitoring for the presence of bowhead whales and other marine mammal species within the proposed action areas, out to the 120–dB isopleth. Finally, the Commission notes that it will be important to assess the efficacy of such surveys to determine their value and reliability in monitoring potential effects.

Response: NMFS considered these recommendations and discusses the required monitoring and mitigation programs required under the IHAs in this **Federal Register** notice.

Comment 25: The CBD states that the MMPA authorizes NMFS to issue an incidental take authorization only if it can first find that it has required adequate monitoring of such taking and all methods and means of ensuring the least practicable impact have been adopted. The proposed IHA (notice) largely ignores this statutory requirement.

Response: NMFS believes Shell and the other seismic survey operators in the Chukchi and Beaufort seas will be implementing a comprehensive monitoring and marine mammal research program that is fully capable of providing information on impacts from the seismic surveys and supporting NMFS' determinations that the activity will result in takes of small numbers of marine mammals, have a negligible impact on affected species and stocks and not have an unmitigable impact on the availability of marine mammals for subsisence. Mitigation measures were addressed previously (see previous comments 7 and 8; also see the Mitigation and Monitoring sections later in this document).

Comment 26: The CBD notes that the proposed IHA notice suggests NMFS will require additional measures of Shell so as to be able to comply with NEPA, such as expanded safety zones for bowhead and gray whale, and having those zones monitored effectively in order to remain within the scope of the PEA. While in agreement, CBD notes that such additional measures are also required to comply with the MMPA. As such they should be explicitly spelled out in the proposed IHA (notice) and subject to public comment.

Response: A detailed description of the monitoring program submitted by Shell was provided in Shell's application and cited in the **Federal Register** notice of the proposed IHA. That notice also provided a description of ongoing discussions regarding improvements to Shell's monitoring program including aerial monitoring and using passive acoustics. As a result of a dialogue on monitoring by scientists and stakeholders attending NMFS' public meeting in Anchorage in April, the industry expanded on its monitoring program in order to fulfill its responsibilities under the MMPA. The only addition to the monitoring program that was not offered for public review at the time was a research component designed to provide baseline data on marine mammals for future operations planning. This research program includes: (1) an acoustic program to measure sounds produced by seismic vessels (mentioned in the proposed IHA notice); (2) aerial monitoring and reconnaissance of marine mammals available for subsistence harvest along the Chukchi Sea coast; (3) research vessel surveys of the Chukchi Sea, including a towed hypdrophone passive acoustic monitoring (PAM) system to collect data on the distribution and abundance of marine mammals; and (4) deployment of, and later analysis of data from, bottom-founded autonomous acoustic recorder arrays along the coast of the Chukchi Sea to record ambient sound levels, vocalizations of marine mammals, and received levels of seismic operations should they be detectable. As a result of the workshop discussions a draft monitoring program was provided to workshop participants around April 26, 2006 and a revised plan distributed in mid-May. Scientists from NMFS and the NSB are continuing discussions to ensure that the research effort obtains the best scientific information possible.

The proposed joint-industry research plan (which is a separate plan from the individual applicant monitoring plans) was not available prior to publication of the proposed IHA **Federal Register** notice on May 3, 2006 (71 FR 26055) and could not be detailed without significantly delaying the public comment period on Shell's application. It should be noted that this research monitoring program follows the guidance of the Commission's recommended approach for monitoring seismic activities in the Arctic (Hofman and Swartz, 1991), that additional research might be warranted when impacts to marine mammals would not be detectable as a result of vessel observation programs.

Comment 27: The AEWC notes the MMPA requires that authorizations for incidental take in Arctic waters include: ''requirements for the monitoring and reporting of such taking by harassment, including the requirements for independent peer review of proposed monitoring plans. '' The MMPA and NMFS' regulations are clear that any monitoring plan accompanying an IHA for activities in Arctic waters and potentially affecting subsistence uses of marine resources shall be subject to independent peer review. The agency has no discretion in this regard. Since Shell has not prepared a legally adequate monitoring plan, independent peer review of such a plan has not been possible. Given the strict requirements governing timing of agency and public review of an IHA application, such independent peer review will not occur as part of this process.≥

Response: Shell submitted its monitoring plans for the Beaufort and Chukchi seas as part of its application. NMFS noted the availability of the application and monitoring plans on May 3, 2006 (71 FR 26055). Shell also made its application available to the AEWC and the NSB and its Department of Wildlife at the time of its application to NMFS and held meetings on its activity with affected communities beginning in the spring, 2006. Shell's Beaufort and Chukchi Sea monitoring plans were the subject of discussion at the NMFS' peer-review workshop in April, 2006. This workshop is the means used by NMFS to meet the requirement for peer-review. As a result of discussions at the April, 2006 workshop, Shell and others proposed conducting additional monitoring and research. That proposal was completed on April 26, 2006, and reviewed by NSB and NMFS scientists. Comments were submitted by the NSB Department of Wildlife Management on May 18, 2006. A revised research plan was released on June 9, 2006 and is currently being reviewed by scientists.

Mitigation Concerns

Comment 28: The CBD recommends NMFS deny an IHA to Shell unless and until NMFS can ensure that mitigation measures are in place to truly avoid adverse impacts to all species and their habitats.

Response: NMFS is required to prescribe means of effecting the least practicable (adverse) impact (i.e., mitigation), not to ensure that no adverse impacts occur. NMFS believes that the mitigation measures required under Shell's IHA will reduce levels to the lowest level practicable. 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.

Comment 29: The CBD believes that the proposed IHA [notice] contains information to conclude that many such measures are in fact practicable. For example, during periods when conflict with subsistence hunting is most likely, Shell proposes additional monitoring and mitigation measures: ''From August 15 until the end of the bowhead hunting season (or until the end of the seismic operations in the Beaufort Sea) special monitoring and mitigation/monitoring measures will be adopted (i.e. aerial surveys).'' While these measures are designed to avoid impacts to bowheads so as not to affect the subsistence hunt, there is no reason, and certainly no explanation of, why these measures cannot be instituted for the entirety of the seismic surveys.

Response: As noted elsewhere in this document, Shell has agreed to area closures in the Beaufort Sea to ensure that there is not an unmitigable adverse impact on the subsistence use of bowheads by its seismic operation in the Beaufort Sea. This mitigation measure was proposed by the AEWC and the whaling captains associations after Shell submitted its application. As a result, neither Shell nor NMFS could address this measure at the time of the proposed IHA notice. While area closures are a valuable mitigation tool for protecting sensitive life stages for marine mammals and possibly for reducing impacts at less sensitive times, the application of temporal and spatial measures need to be balanced with the need to accomplish the activity. In the Beaufort Sea, the short season available for seismic surveys precludes extension of this measure for reasons other than subsistence.

The second measure proposed by Shell in its application is an aerial monitoring program of the Beaufort Sea during the fall bowhead migration. This activity, which is not a mitigation measure (except to the extent detailed later in this document) was fully described in Shell's application. However, it is not a mitigation measure but a measure to obtain information on the fall migration of bowhead whales. Based upon discussions with scientists, modifications to that aerial monitoring program and the addition of aerial and vessel monitoring to the Chukchi Sea have been made to Shell's program.

Comment 30: With regard to night-time and poor visibility conditions, the CBD notes that Shell proposes essentially no limitations in operations, even though they acknowledge that the likelihood of observers seeing marine mammals in such conditions is low. Only when the senior observer determines that ''densities of endangered cetaceans'' are high enough ''to warrant concern'' that an ''endangered cetacean'' will enter the safety zone would Shell have to stop surveying or move to another part of the survey area. The CBD also states that there is no rationale under the MMPA to limit this provision to ''endangered cetaceans'' (i.e., bowheads) since minimizing impacts to all marine mammals is required. CBD claims the obvious solution, not analyzed by Shell or NMFS is to simply prohibit seismic surveying when conditions prevent observers from detecting all marine mammals in the safety zone.

Response: NMFS agrees that mitigation is not restricted to bowhead whales, but should apply to all marine mammals. However, a shutdown of all seismic activity whenever the shutdown zone cannot be visually seen is simply not practical. It is NMFS opinion that once a safety zone is determined visually to be free of marine mammals, seismic should continue into periods of poor visibility. It should be understood that the safety zone not stationary but is moving along with the ship at whatever speed the ship is progressing. For example, if the ship is making 5 knots, the safety zone will be 5 nm (9.3 km) upstream in an hour). With a 180–dB exclusion zone of 1.5 km (08 nm), marine mammals potentially affected by seismic noise would have ample time to move away from the source, as evidenced by bowhead, beluga and gray whale avoidance behavior. A review of previous monitoring programs indicates these species will not be within a distance to incur Level A harassment. For pinnipeds, NMFS believes that because they are not likely to even react to seismic sounds unless the received levels are >170 dB re 1 microPa (rms), hearing impairment is also unlikely at an SPL as low as 190 dB. Therefore, it is unlikely that marine mammals will be harmed as a result of continuing seismic into periods of poor visibility in Arctic waters. As a result, NMFS has determined that it is only if daytime activities have a large abundance of marine mammals and/or a significant number of shutdowns, should nighttime seismic be prohibited.

Also as a general rule, termination of seismic during nighttime and poor visibility is simply not practicable due to cost considerations and ship time schedules. The cost to operate a large industrial seismic survey with support vessels is approximately $300,000 per day (Kent Satterlee, pers. comn). If the vessels were prohibited from operating during nighttime, each trip could require several additional Arctic survey operations to complete, depending on average daylight at the time of work. In the Chukchi and Beaufort seas, fog is common even though there is 24 hours of daylight per day until late August, but by late September there is less than 12 hours of daylight and by late October there would be only 3–4 hours of daylight, seriously limiting operations later in the year if a daylight and clear weather requirement were imposed.

ESA Concerns

Comment 31: 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.'' To be ''lawful,'' such activities must ''meet all State and Federal legal requirements except the prohibition against taking in section 9 of the [ESA].'' As discussed, Shell'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: As noted in this document, NMFS has made the necessary determinations under the MMPA and NEPA regarding the incidental harassment of marine mammals by Shell while it is conducting activities permitted legally under MMS' jurisdiction.

NEPA Concerns

Comment 32: The CBD notes that they submitted comments on the MMS PEA along with comments on Shell'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 Finding of No Significant Impact (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 Shell's activities 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 GXTechnology. 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 Beaufort and Chukchi sea ecosystems and their associated marine mammals can be found in several documents (Corps of Engineers, 1999; NMFS, 1999; Minerals Management Service (MMS), 2006, 1996 and 1992) and does not need to be repeated here.

Marine Mammals

The Beaufort/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. Descriptions of the biology and distribution of the marine mammal species under NMFS' jurisdiction can be found in Shell's application and MMS' Final PEA. Information on these species can be found also in the NMFS Stock Assessment Reports. The Alaska Stock Assessment Report is available at: *http://www.nmfs.noaa.gov/pr/sars/region.htm* Please refer to those documents for information on these species.

Potential Effects of Seismic Surveys on Marine Mammals

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

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

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

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

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

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

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

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

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

Effects of Seismic Surveys on Marine Mammals

Shell (2005) states that the only anticipated impacts to marine mammals associated with noise propagation from vessel movement, seismic airgun operations, and seabed profiling and coring work (in the Beaufort Sea) would be the temporary and short term displacement of whales and seals from within ensonified zones produced by such noise sources. In the case of bowhead whales, that displacement might well take the form of a deflection of the swim paths of migrating bowheads away from (seaward of) received noise levels greater than 160 db (Richardson *et al.*, 1999). The cited and other studies conducted to test the hypothesis of the deflection response of bowheads have determined that bowheads return to the swim paths they were following at relatively short distances after their exposure to the received sounds. NMFS believes that there is no evidence that bowheads so exposed to low sound pressure levels have incurred injury to their auditory mechanisms. Additionally, Shell cites Richardson and Thomson [eds]. (2002) for the proposition that there is no conclusive evidence that exposure to sounds exceeding 160 dB have displaced bowheads from feeding activity.

Results from the 1996–1998 BP and Western Geophysical seismic monitoring programs in the Beaufort Sea indicate that most fall migrating bowheads deflected seaward to avoid an area within about 20 km (12.4 mi) of an active nearshore seismic operation, with the exception of a few closer sightings when there was an island or very shallow water between the seismic operations and the whales (Miller *et al.*, 1998, 1999). The available data do not provide an unequivocal estimate of the distance (and received sound levels) at

which approaching bowheads begin to deflect, but this may be on the order of 35 km (21.7 mi). It is also uncertain how far beyond (west of) the seismic operation the seaward deflection persists (Miller *et al.*, 1999). In one study, although very few bowheads approached within 20 km (12.4 mi) of the operating seismic vessel, the number of bowheads sighted within that area returned to normal within 12–24 hours after the airgun operations ended (Miller *et al.*, 1999).

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

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

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

A description of potential impulsive noise impacts to bowhead whales, gray whales, beluga whales and ringed, largha and bearded seals were provided in the May 3, 2006 **Federal Register** notice (71 FR 26055) and is not repeated here. Additional information can be found in NMFS notice of receipt of an application from GX Technologies (71 FR 32045, June 2, 2006).

Numbers of Marine Mammals Expected to Be Exposed to Seismic Noise

The methodology used by Shell to estimate incidental take by Level B harassment is presented in the application. Subsequent to submission of that application, Shell provided more conservative estimates of potential marine mammal exposures by using the JASCO model. Therefore, Tables 1 and 2 provide exposure calculations for both sets of calculations. NMFS has used the more conservative estimates of noise exposure to determine impacts to marine mammals.

TABLE 1. BEAUFORT SEA REVISED ESTIMATES

	Average Density	Maximum Density	Original Estimate Average Density	Original Estimate Maximum Density	Revised Estimate Average Density	Revised Estimates Maximum Density
Cetaceans						
bowhead whales	0.0064	0.0256	46	185	395	1579
gray whale	0.0045	0.0179	33	129	278	1104
beluga	0.0034	0.0135	25	98	210	833
Pinnipeds						
ringed seal	0.251	0.444	1185	2097	7335	12976
spotted seal	0.0001	0.0005	0	2	3	15
bearded seal	0.0128	0.0226	60	107	374	660

TABLE 2. CHUKCHI SEA REVISED ESTIMATES

	Average Density	Maximum Density	Original Estimate Average Density	Original Estimate Maximum Density	Revised Estimate Average Density	Revised Estimates Maximum Density	Revised Estimates Scenario 2 Average	Revised Estimates Chukchi Scenario 2 Maximum
Cetaceans								
bowhead whales	0.0064	0.0256	46	185	403	1613	806	3226
gray whale	0.0045	0.0179	33	129	284	1128	568	2256
beluga	0.0034	0.0135	25	98	214	851	428	1702
killer whale	0	0	0	5	10	10	20	20
harbor porpoise	0	0.0002	0	5	10	13	26	26
Pinnipeds								
ringed seal	0.251	0.444	1185	2097	6805	12038	13610	24076
spotted seal	0.0001	0.0005	0	2	3	14	6	28
bearded seal	0.0128	0.0226	60	107	347	613	694	1226

The density estimates for the species covered under this IHA are based on the estimates developed by LGL (2005). The LGL density estimates are based on the original data from Moore et al. (2000) on summering bowhead, gray, and beluga whales in the Beaufort and Chukchi Seas, and relevant studies on ringed seal estimates, including Stirling et al. (1982) and Kingsley (1986).

In its application, Shell provides estimates of the number of potential exposures to sound levels greater than 160 dB re 1 microPa (rms) and greater than 170 dB. Shell states that while the 160–dB criterion is applied for estimating Level B harassment of all species of cetaceans and pinnipeds, Shell believes that a 170–dB criterion should be considered appropriate for estimating Level B harassment of delphinid cetaceans and pinnipeds, which tend to be less responsive, whereas the 160–dB criterion is considered appropriate for other cetaceans (LGL, 2005). However, NMFS has noted in the past that there is no empirical evidence to indicate that some delphinid species do not respond at the lower level (i.e., 160 dB). As a result, NMFS is using the 160–dB isopleth to estimate the numbers of marine mammals that may be taken by Level B harassment.

The estimates in Tables 1 and 2 are based on marine mammal exposures to 160 dB (and greater) from either approximately 5,556 km (3452 mi) of seismic surveys in three distinct areas of the eastern- and mid-Beaufort Sea and a similar level of effort in the Chukchi Sea or approximately 11,112 km (6905 mi) only in the Chukchi Sea if seismic work in the Beaufort Sea is not undertaken. These latter calculations are provided in the last column of Table 2.

There will be no site clearance work performed for the seismic activities in the Chukchi Sea, therefore, potential taking estimates only include noise disturbance from the use of airguns. It is assumed that, during simultaneous operations of those additional sound sources and the airgun(s), any marine mammals close enough to be affected by the sonars or pinger would already be affected by the airgun(s).

Exposure Calculations for Cetaceans and Pinnipeds

The number of exposures of a particular species to sound pressure levels between 160 dB and 180 dB re 1 microPa (rms) was calculated by multiplying: (1) the expected species density (i.e., average and maximum), as shown in Tables 1 and 2; (2) the anticipated total line-kilometers of operations with the three 1,049–in3 subarrays (*i.e.*, 5556 km (3452 mi)); and (3) the cross-track distances within which received sound levels are predicted to be between 160 and 180 dB (Figure 6–1 and Table 6–3 in the Shell application).

Chukchi Sea

Shell estimates that the average and maximum numbers of bowhead whales that may be exposed to noise levels of 160 dB or greater are 798 and 3192 (based on seismic work in both the Chukchi and Beaufort seas), respectively. However, according to Shell, the proposed seismic activities would occur when bowheads are widely distributed and would be expected to occur in very low numbers within the seismic activity area. Therefore, based on the 160–dB threshold criterion, the number of bowhead whales that may be exposed to sounds at or greater than 160 dB re 1 microPa (rms) would be even smaller, and represents a small percent of the estimated population within the Beaufort and Chukchi Seas. The average and maximum estimates of the number of exposures at or greater than 160 dB are 284 and 1128 for gray whales, 214 and 851 for beluga whales, 10 and 10 for killer whales, and 10 and 13 for harbor porpoises.

While no reliable abundance numbers currently exist for ringed, spotted, and bearded seals for the Chukchi Sea, the potential number of exposures would be a very small fraction of abundance estimates as shown in Table 2.

Beaufort Sea

As indicated in Table 1 in this document, the estimated average and maximum numbers for bowhead whales at exposures 160 dB or greater are 395 and 1579, respectively. Again, as stated earlier, proposed activities would occur mainly when bowheads are not present in the area or are in very low numbers. Gray and beluga whales also have the potential for exposure, particularly near seismic survey area 3. The average and maximum estimates of the number of exposures for gray whales are 278 and 1104, and 210 and 833 for beluga whales, respectively.

Ringed seals would be the most prevalent marine mammal species encountered at each of the three proposed seismic acquisition areas, and would account for most of the marine mammals that might be exposed to seismic sounds equal to or greater than 160 dB. Potential exposure estimates for pinnipeds in the Beaufort Sea are shown in Table 1. However, Moulton and Lawson (2002) indicated that most pinnipeds exposed to seismic sounds lower than 170 dB do not visibly react. As a result, NMFS believes that these exposure estimates are very conservative. Spotted and bearded seals may be encountered in much smaller numbers than ringed seals, but also have the potential for some minor exposure.

Finally, if Shell does not conduct seismic survey work in the Beaufort Sea in 2006, and implements scenario 2 as mentioned previously, Shell estimates that additional sound exposures would occur in the Chukchi Sea. These estimates are provided in the last column of Table 2.

Potential Impact on Habitat

It is unlikely that the proposed seismic activities will result in any permanent impact on habitats used by marine mammals, or to their prey sources. Seismic activities will occur during the time of year when bowhead whales are widely distributed and would be expected to occur in very low numbers within the seismic activity area (during July and again from mid-October through November). The northeastern-most of the recurring feeding areas is in the northeastern Chukchi Sea southwest of Barrow. Any effects would be temporary and of short duration at any one place.

A broad discussion on the various types of potential effects of exposure to seismic on fish and invertebrates can be found in LGL (2005; University of Alaska-Fairbanks Seismic Survey across Arctic Ocean at *http://www.nmfs.noaa.gov/pr/permits/incidental.htm#iha*), and includes a summary of direct mortality (pathological/ physiological) and indirect (behavioral) effects.

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

Limited studies on physiological effects on marine fish and invertebrates to acoustic stress have been conducted.

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

Available data indicate that mortality and behavioral changes do occur within very close range to the seismic source, however, the proposed seismic acquisition activities in the Chukchi and Beaufort seas are predicted by Shell to have a negligible effect to the prey resource of the various life stages of fish and invertebrates available to marine mammals occurring during the project's duration.

The total footprint of the proposed seismic survey area covers approximately 378,000 acres in the Chukchi Sea and 717,000 acres in the Beaufort Sea. The effects of the planned seismic activity at each of the seismic locations on marine mammal habitats and food resources are expected to be negligible, as described. It is estimated that only a small portion of the animals utilizing the areas of the proposed activities would be temporarily displaced.

In addition, feeding does not appear to be an important activity by bowheads migrating through the Chukchi Sea or the eastern and central part of the Alaskan Beaufort Sea in most years (Shell, 2005). Sightings of bowhead whales occur in the summer near Barrow (Moore and DeMaster, 2000) and there are suggestions that certain areas near Barrow are important feeding grounds. In addition, a few bowheads can be found in the Chukchi and Bering Seas during the summer and Rugh *et al.* (2003) suggest that this may be an expansion of the western Arctic stock, although more research is needed. In the absence of important feeding areas, the potential diversion of a small number of bowheads away from seismic activities is not expected to have any significant or long-term consequences for individual bowheads or their population. As a result, NMFS believes Shell's seismic activities will not have any habitat-related effects that would produce long-term effects to marine mammals or their habitat due to the limited extent of the acquisition areas and timing of the activities.

Effects of Seismic Noise and Other Activities on the Availability of Marine Mammals for Subsistence Uses

The disturbance and potential displacement of marine mammals by sounds from seismic activities are the principal concerns related to subsistence use of the area. The harvest of marine mammals (mainly bowhead whales, but also ringed and bearded seals) is central to the culture and subsistence economies of the coastal North Slope and Western Alaskan communities. In particular, if migrating bowhead whales are displaced farther offshore by elevated noise levels, the harvest of these whales could be more difficult and dangerous for hunters. The harvest could also be affected if bowheads become more skittish when exposed to seismic noise. Hunters related how whales also appear ''angry'' due to seismic noise, making whaling more dangerous.

In the Chukchi Sea, Shell seismic work should not have unmitigable adverse impacts on the availability of the whale species for subsistence uses. The whale species normally taken by Inupiat hunters are the bowhead and belugas. Shell's Chukchi seismic operations will not begin until after July 15, 2006 by which time the majority of bowheads will have migrated to their summer feeding areas in Canada. Even if any bowheads remain in the northeastern Chukchi Sea after July 15, they are not normally hunted after this date until the return migration occurs around late September when a fall hunt by Barrow whalers takes place. In the past few years, a small number of bowheads have also been taken by coastal villages along the Chukchi coast. Seismic operations for phase two of the Chukchi program will be timed and located so as to avoid any possible conflict with the Barrow fall whaling, and specific provisions governing the timing and location have been incorporated into the CAA established between Shell and WesternGeco, the AEWC, and the Barrow Whaling Captains Association.

Beluga whales may also be taken sporadically for subsistence needs by coastal villages, but traditionally are taken in small numbers very near the coast. Because the seismic surveys will be conducted at least 12 miles (25 km) offshore, impacts to subsistence uses of bowheads are not anticipated. However, Shell will establish ''communication stations'' in the villages to monitoring impacts. Gray whales, which will be abundant in the northern Chukchi Sea from spring through autumn, are not taken by subsistence hunters.

The various pinniped species, including walrus, are all taken by subsistence hunters of the Chukchi villages (Barrow, Wainwright, Pt Lay, Pt Hope). The planned seismic operations will not adversely affect the usual open-water locations of these species and no haul-out areas will be encountered (with the possible exception of the polar ice front used by walrus, which is under the jurisdiction of the USFWS). However, most seismic operations will take place sufficiently distant from nearshore traditional beluga, seal, and walrus hunting areas such that no unmitigable adverse impacts are anticipated.

In the Beaufort Sea, there could be an adverse impact on the Inupiat bowhead subsistence hunt if the whales were deflected seaward (further from shore) in traditional hunting areas. The impact would be that whaling crews would necessarily be forced to travel greater distances to intercept westward migrating whales thereby creating a safety hazard for whaling crews and/or limiting chances of successfully striking and landing bowheads. This potential impact will be mitigated by application of the procedures established in the CAA between the seismic operators and the AEWC and the whaling captains' associations of Kaktovik, Nuiqsut and Barrow. The times and locations of seismic and other noise producing sources will be curtailed during times of active scouting and whaling within the traditional subsistence hunting areas of the three potentially affected communities. (Shell, 2005).

Monitoring

As part of its application, Shell provided a monitoring plan for assessing impacts to marine mammals from seismic surveys in the Beaufort and Chukchi seas. During NMFS' Arctic Open Water Meeting in Anchorage on April 19–24, 2006, scientists and stakeholders indicated to Shell, ConocoPhillips and GXTechnology (the 3 companies planning to conduct seismic in the Arctic Ocean) that additional research monitoring would be necessary in order to obtain information on marine mammals in the Chukchi Sea and potential impacts of industrial noise on marine mammals and subsistence uses of marine mammals. For this year, in order to reduce uncertainty of impacts on low-frequency hearing sensitive marine mammals (bowhead and gray whales) during periods of significant behavioral activities (migration and feeding), and on subsistence activities, additional mitigation and monitoring measures are warranted. As a result, Shell will conduct the following monitoring:

Vessel-based Visual Monitoring

Seismic Source Vessel Monitoring

Shell will have at least four observers (three trained biologists and one Inupiat observer/communicator) based aboard the seismic vessel. Marine mammal observers (MMOs) will search for and observe marine mammals whenever seismic operations are in progress and for at least 30 minutes before the planned start of seismic transmissions or whenever the seismic array's operations have been suspended for more than 10 minutes. These observers will scan the area immediately around the vessels with reticle binoculars during the daytime. Laser rangefinding equipment will be available to assist with distance estimation. After mid-August, when the duration of darkness increases, image intensifiers will be used by observers and additional light sources may be used to illuminate the safety zone.

The use of four observers allows two observers to be on duty simultaneously for up to 50 percent of the active airgun hours. The use of two observers increases the probability of detecting marine mammals, and two observers will be on duty whenever the seismic array is ramped up. Individual watches will be limited to no more than 4 consecutive hours to avoid observer fatigue (and no more than 12 hours on watch per 24 hour day). When mammals are detected within or about to enter the safety zone designated to prevent injury to the animals (see Mitigation), the geophysical crew leader will be notified so that shutdown procedures can be implemented immediately. Information on training, duties etc can be found in LGL (2006) which is available on the NMFS Web site (see **ADDRESSES**).

Chase Boat Monitoring

In addition to MMOs onboard the seismic vessels, Shell will also have at least two MMOs aboard a ''chase boat'' or ''guard boat.'' During seismic operations, a chase boat remains very near to the stern of the source vessel anytime a member of the source vessel crew is on the back deck deploying or retrieving equipment related to the seismic array. Once the seismic array is deployed the chase boat then serves to keep other vessels away from the seismic vessel and its array (including the hydrophone streamer) during production of seismic data and provide additional emergency response capabilities. Whenever source vessel members are not working on the back deck and radar indicates no vessels approaching the source vessel, the chase boat will conduct observations of the area delineated by the 160–dB isopleth to look for bowhead and gray whale aggregations (see Mitigation). During all active seismic survey activity, the chase boat will conduct marine mammal surveys no less than every 48 hours or 3 times per 7 days, of the 160–dB area to be seismically surveyed over the next 24 hours. MMOs will search for aggregations of bowhead and gray whale feeding. The MMOs on the chase boat will be responsible for immediately contacting the seismic survey ship if marine mammals are sited within the 180/190–dB safety zone or aggregations of 12 or more non-migratory bowhead whales or gray whales are sited within the surveyed 160–dB zone. The MMOs aboard the chase boat will also provide additional observations on the water to document any marine mammals in the vicinity of seismic operations. To maximize the amount of time during the day that an observer is on duty, the two observers aboard the chase boat will rarely work at the same time. As on the source vessel, shifts will be limited to 4 hours in length and 12 hours total in a 24–hour period.

Aerial Monitoring Surveys

Beaufort Sea

Aerial Surveys: Shell will conduct aerial surveys of the Beaufort Sea regional distribution and abundance of marine mammals with special attention to bowhead whales prior to the initiation of the seismic survey starts and periodically during and after the survey. The objectives of the Beaufort Sea aerial surveys are the following:

(1) document the occurrence, distribution, and movements of bowhead, as well as beluga and gray, whales in and near the area where they might be affected by the seismic pulses. These observations will be used to estimate the level of harassment takes and to assess the possibility that seismic operations affect the accessibility of bowhead whales for subsistence hunting. Pinnipeds will be recorded when seen, although survey altitude will be too high for systematic surveys of seals;

(2) document the numbers of whales, at least theoretically, exposed to noise from seismic survey and their responses to the surveys (if detectable); and

(3) Provide real-time or near real-time information that can be used (if appropriate) to alter the survey's starting point and survey line sequence based on the actual distribution of whales in the area immediately prior to and during surveys (see below),.

Aerial surveys will be conducted only when they can be carried out in a safe manner and during periods of good visibility where there is sufficient probability of detecting bowhead whales and other marine mammals. Generally, the flight plan and coverage of the aerial survey will be conducted following established standards and methodologies, as described above, with particular reference to MMS' Bowhead Whale Aerial Survey Program (BWASP) procedures. Specific details of the flight pattern and coverage will be fully developed in an aerial flight operations plan but will be subject to operation changes as needed to provide effective coverage during field operations. Aerial surveys conducted during the bowhead whaling season will be coordinated with whaling efforts, such that airplanes operating in close proximity to whalers can take action (e.g. flying at higher altitudes, to reduce the potential to impact the hunt).

Shell will conduct Beaufort Sea aerial surveys twice a week from August 25 through September 15, 2006 and daily (when weather permits) from September 16th on. Aerial surveys in the Beaufort Sea will continue for three days after the cessation of seismic operations in the Beaufort Sea. Aerial surveys will be conducted by teams of up to four observers (a pilot, two dedicated observers, and an observer/data recorder) in a twin-engine airplane (not a helicopter). Observations are made at an altitude of 900 to 1,500 ft (274 to 457 m)and a ground speed of 120 knots (120 nm/hr; 138 statute mi (mi)/hr; 222 km/hr). Similar to previous Beaufort Sea aerial surveys, the survey plane will traverse a survey grid (approved in advance by marine mammal scientists at NMFS' National Marine Mammal Laboratory (NMML) in coordination with other marine mammal scientists), centered on the seismic operations, which extends 50 to 75 km (31 to 46.6 mi) both east and west of the seismic operations and to 75 km (46.6 mi) offshore. Shell recommends that periodic flights range further to the east may be utilized prior to the onset of migration to provide an early warning of the approach of migrating bowhead whales. After September 1st , the daily flights will also monitor the area within the 120–dB isopleth (to the extent practicable) to locate migrating bowhead whale cow/calf pairs in compliance with mitigation requirements described later in this document.

If seismic work in the Beaufort Sea is suspended by Shell during the bowhead subsistence hunting season, but resumes later in the autumn, aerial surveys, including monitoring the 120–dB zone, will commence (or resume) when the seismic work resumes.

In addition to Shell's Beaufort Sea aerial monitoring program, MMS expects to conduct its broad-scale BWASP aerial survey work from approximately August 31st until the end of the bowhead migration in October. NMFS believes that this combined aerial survey data will provide good information to estimate the number of bowheads taken by Level B harassment.

Chukchi Sea

As described previously in this document, NMFS has determined that in order to avoid potentially significant impact (for purposes of NEPA), Shell must conduct aerial monitoring in the Chukchi Sea either after September 25th, once the research vessel monitoring program has detected 4 cow/calf pairs during a vessel transit (see Research Monitoring) or once bowhead whale hunters have determined that the ''pulse'' of cow/calf pairs are passing Barrow AK, whichever is sooner. Once initiated, aerial monitoring will take place daily (weather permitting), whenever Shell's seismic vessel is conducting seismic surveys and is operating within an area of the Chukchi Sea that can be covered safely and practically. The primary objectives of the offshore aerial surveys will be to (1) document the occurrence, distribution, and movements of bowhead and gray whales, and other marine mammals in and near the area where they might be affected by the seismic sounds and (2) detect bowhead whale cow/calf pairs in or near the area ensonified to a 120–dB SPL near the seismic survey vessel (as detailed later in this document (see Mitigation)).

If an aerial monitoring program cannot be implemented due to human safety concerns, a dedicated vessel may be used for surveys of the 120–dB zone. If vessel surveys are used, a dedicated passive acoustic monitoring program, capable of locating the position of the vocalization, must be employed and monitored at all times that seismic is operating on the vessel. If the passive acoustic system detects one or more bowhead vocalizations within the 120–dB zone, Shell must immediately shut-down the seismic airgun array and/or other acoustic sources; and not proceed with ramping up the seismic airgun array until the passive acoustic monitoring program confirms that bowhead whales are not within the eastern portion of the 120–dB zone ahead of the ship's trackline over the next 24 hours.

Research Monitoring

Research

Shell, ConocoPhillips, and GXTechnology 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 26055, May 3, 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**). A description of this Monitoring Plan was provided in an earlier **Federal Register** notice 71 FR 43112, July 31, 2006) and is not repeated here.

Mitigation Measures

Shell will implement five main mitigation measures: (1) The timing and locations for active seismic acquisition work will be scheduled to curtail operations when whaling captains inform the operator that they are scouting or hunting within traditional hunting areas; (2) the configuration of airguns in a manner that directs energy primarily down to the seabed thus decreasing the range of horizontal spreading of seismic noise; (3) a seismic energy source that is as small as possible; (4) the use of ramp-up (soft start) as a method for initiating seismic operations to alert any marine mammals either within or approaching an operating airgun array so that they may swim away from the source; and (5) the curtailment (shut-down/power-down) of active seismic work when the MMOs visually sight (from shipboard or aerially) the presence of marine mammals within identified ensonified (safety) zones. Details of the required mitigation measures follow:

Seasonal/Area Restrictions: Shell will take all practicable measures to complete seismic operations as early as possible and to vacate areas within close proximity of subsistence bowhead hunting areas during periods of hunting activity. During periods of hunting activity, seismic operations will be moved to areas remote from hunting operations or will cease for a period. From August 25 until the end of the bowhead hunting season (or until the end of seismic operations in the Beaufort Sea), seasonal area closures will be implemented as follows: (1) No geophysical activity from (1) the Canadian border to the Canning River from August 25th to September 20th, (2) the Canning River to Point Storkersen from August 25th to September 25th and (3) Pitt Point on the east side of Smith Bay to a location about half way between Barrow and Peard Bay from September 10th to October 25th. Shell will make all reasonable efforts to avoid disruption of the hunt or deflection of migrating bowheads in hunting areas.

Airgun Arrays: For the seismic survey, Shell will:

(a) Configure the airgun array to maximize the proportion of the energy that is directed downward and to minimize horizontal sound propagation. In particular, closely spaced airguns whose overall radiation pattern is nearly omni-directional will be avoided. The size of the airgun arrays, as measured by the source level, will not be any larger than required to meet the technical objectives for the seismic survey.

(b) Utilize pre-initiation modeling, based upon anticipated sound propagation characteristics of the array, to establish anticipated impact zones of 180 dB and 190 dB.

(c) Conduct an independent field sound propagation assessments at the initiation of the field season and adjust the 180–dB and 190–dB zones accordingly, after consultation with NMFS.

Ramp-up (soft-start): For the 2006 seismic survey, Shell will implement the following ramp-up (soft start) procedures:

(a) The seismic operator will ramp-up airguns slowly over a period of 20 minutes each time shooting begins or whenever the shut-down period has been greater than 10 minutes. Soft starts will follow every interruption of the airgun array firing that is greater than 10 minutes, most importantly if the survey is discontinued until marine mammals leave the safety zone. The seismic operator and MMOs will maintain records of the times when ramp-ups start, and when the airgun array reaches full power.

(b) During periods of turn around and transit between seismic transects, one airgun will remain operational. Through use of this approach, seismic operations can resume upon entry to a new transect without full ramp up. While it is routine to ramp up from a single gun firing to full array operation, operation of a single gun allows starting during poor visibility and ramp up without a period of static visual observation.

(c) If shut down occurs, ramp-up will begin only following a minimum of a 30–min period of observation of the prescribed safety zone to assure that no marine mammals are present. However,

if the MMOs are on-duty prior to the shut-down, and continue their observations during the shut-down, then an additional 30–min period of observation prior to ramp-up is not necessary. Ramp-up procedures will be followed until full operating intensity is achieved.

Safety Zones: For the proposed seismic survey, Shell will implement the following measures:

(a) Initial safety zones will be established prior to the survey based on available data and modeling concerning sound output. The sound levels are based on frequencies between 10 Hz and 120 Hz, the typical peak spectrum of sound emitted for seismic surveys.

(b) The safety distances will be verified (and if necessary adjusted) during the first week of the seismic survey, based on direct measurements via calibrated hydrophones of the received levels of underwater sound versus distance and direction from the airgun array. The acoustic data will be analyzed as quickly as reasonably practicable in the field and used to adjust safety distance. The same acoustic data will be useful in interpreting observations of marine mammals during analysis of sighting data after the programs completion (see below).

Biological Observers: For the 2006 Arctic Ocean seismic survey, Shell will implement the following measures:

(a) Trained MMOs on the seismic ship will be on watch for marine mammals during all daylight hours when seismic operations are in progress, as described under Monitoring.

(b) The purpose of the observers on the seismic vessel will primarily be to document the occurrence and responses of marine mammals visible from the vessel, and to initiate airgun shutdown requirements whenever a marine mammal is observed within the safety zone. Furthermore, the observers will confirm the absence of marine mammals in the safety zones prior to ramp-up.

(c) When a marine mammal is sighted within, or approaching, the 180/190–dB safety zones around the airgun array by the seismic vessel MMOs or the chase boat MMOs, the MMO will notify the seismic vessel contractor who will shut down the airguns. After completion of the survey, a technical report and a scientific research paper will be prepared to summarize the observations, results, and conclusions of the marine mammal monitoring program.

Operations at Night and in Poor Visibility: For the 2006 Arctic Ocean seismic programs in the Beaufort and Chukchi seas, Shell will implement the following measures:

(a) When operating under conditions of reduced visibility attributable to darkness or to adverse weather conditions, infra-red or night-vision binoculars will be available for use. It is recognized, however, that their effectiveness for this application is very limited even in clear night time conditions.

(b) Seismic activities will not be initiated during darkness or during conditions when visibility is reduced to less than the radius of the safety zone. If a single small airgun remains firing during a shut-down, the rest of the array can be ramped up during darkness or in periods of low visibility. Seismic operations may continue under conditions of darkness or reduced visibility unless, in the judgment of the senior MMO, densities of marine mammals in the general area are high enough to warrant concern that there is a high concern that one or more marine mammals is likely to enter the safety zone undetected. In that case, observers will advise the ship's captain or his designee to halt airgun operations or to move to a part of the survey area where visibility is adequate or where the likelihood of encountering marine mammals is low based on aerial and vessel based surveys that would be part of the real-time monitoring program.

Mitigation for Subsistence Needs

To issue an IHA in Arctic waters, NMFS must determine that an activity will not have an unmitigable adverse impact on the availability of marine mammals for taking for subsistence uses. While this includes both cetaceans and pinnipeds, the primary impact by seismic activities on subsistence hunting is expected to be impacts from noise on bowhead whales during their westward fall feeding and migration period in the Beaufort Sea. NMFS has defined unmitigable adverse impact in 50 CFR 216.103 as an impact resulting from the specified activity:

> (1) that is likely to reduce the availability of the species to a level insufficient for a harvest to meet subsistence needs by: (i) causing the marine mammals to abandon or avoid hunting areas; (ii) directly displacing subsistence users; or (iii) placing physical barriers between the marine mammals and the subsistence hunters; and (2) that cannot be sufficiently mitigated by other measures to increase the availability of marine mammals to allow subsistence needs to be met.

Regulations at 50 CFR 216.104(a)(12) require IHA applicants for activities that take place in Arctic waters to provide a plan of cooperation (POC) or information that identifies what measures have been taken and/or will be taken to minimize any adverse effects on the availability of marine mammals for subsistence uses. Shell's POC notes that negotiations were initiated beginning in summer of 2005 with the AEWC to create a CAA between Shell and WesternGeco for 2006, and the subsistence hunting communities of Barrow, Nuiqsut, and Kaktovik. The CAA covers both the Beaufort Sea seismic program (including deep seismic, site clearance, shallow hazard surveys and a geotechnical seabed coring program) and the Chukchi Sea deep seismic survey. Meetings between Shell and the AEWC began in October 2005 with representatives of the North Slope Borough also present in Fairbanks during the annual meeting of the Alaska Federation of Natives. Additional meetings were held this past spring.

Given the number of activities planned for 2006, the AEWC elected to prepare a Programmatic CAA, setting forth mitigation measures that will apply to all seismic activities. Shell and other companies signed the CAA in July 2006. The CAA excludes conduct of seismic operations in the Chukchi Sea near-shore polyna, imposes time/area closures in the Beaufort Sea, prevents seismic operations in the Chukchi Sea before July 15 (to reduce impacts on the beluga hunt), requires sound signature tests of all geophysical equipment and vessels before initiating operations in the Beaufort and Chukchi seas; makes source verification test results available to the AEWC and others, requires preparation and implementation of a noise impact monitoring plan to collect data designed to determine the effects of its operations on fall migrating bowhead whales and other affected marine mammals; requires bowhead whale collision avoidance measures when within 1 mi (1.6 km) of a bowhead whale,; and requires a cumulative effects analysis of the multiple sound sources and their possible relationship to any observed changes in marine mammal behavior. The monitoring plan was subject to stake-holder review at the 2006 Open Water Meeting in Anchorage as discussed previously.

The CAA incorporates all appropriate measures and procedures regarding the timing and areas of Shell's planned activities (*i.e.*, times and places where seismic operations will be curtailed or moved in order to avoid potential conflicts with active subsistence whaling and sealing); communications system between operator's vessels and whaling and hunting crews (i.e., the communications center will be located in Deadhorse with links to Kaktovik, Nuiqsut, Cross Island, and Barrow); provision for marine mammal observers/Inupiat communicators aboard all project vessels; conflict

resolution procedures; and provisions for rendering emergency assistance to subsistence hunting crews.

In addition, all geophysical activity in the Beaufort Sea will be restricted until the appropriate village has ended its bowhead whale subsistence hunt or exhausted its quota, whichever comes first, as follows. For Kaktovik, there will not be any geophysical activity from the Canadian border to the Canning River from August 25th to September 20th. For Nuiqsut, there will not be any geophysical activity from the Canning River to Point Storkersen from August 25th to September 25th . For Barrow, there will not be any geophysical activity from Pitt Point in Smith Bay to a location about half way between Barrow and Peard Bay from September 10th to October 25th.

In the Chukchi Sea, once fall bowhead whaling starts, seismic operators (and others) will take all reasonable steps to avoid adverse effects on the bowhead whale subsistence hunt and on the behavior of migrating bowhead whales. If alerted to an adverse effect, the operators will promptly reduce the level and volume of geophysical operations and if such adverse effects continue, operators should promptly move operations to an area where seismic operations are feasible and consistent with the CAA. If adverse effects continue and negotiations are unsuccessful, the seismic operations are to cease in the area of the reported adverse effect until the affected village has completed its bowhead whale hunting for 2006.

If requested, post-season meetings will also be held to assess the effectiveness of the 2006 CAA, to address how well conflicts (if any) were resolved; and to receive recommendations on any changes (if any) might be needed in the implementation of future CAAs. The Programmatic CAA for the Beaufort and Chukchi Seas was signed by Shell on May 12, 2006. A 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.

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 make its FONSI under NEPA. The additional mitigation measures 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.

Reporting

Shell will submit a report to NMFS approximately 90 days after completion of the 2006 survey season. The 90–day report will: (1) present the results of the 2006 shipboard marine mammal monitoring; (2) estimate exposure of marine mammals to industry sounds; (3) provide data on marine mammal sightings (e.g., species, numbers, locations, age/size/gender, environmental correlates); (4) analyze the effects of seismic operations (e.g., on sighting rates, sighting distances, behaviors, movement patterns); (5) provide summaries of power downs, shut downs, and ramp up delays; (6) provide an analysis of factors influencing detectability of marine mammals; and (7) provide summaries on communications with hunters and potential effects on subsistence activities.

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 it be submitted in draft to NMFS by April 1, 2007 in order for consideration, review and comment at the 2007 open water meeting.

Endangered Species Act (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. NMFS noted that the MMS had prepared a PEA for the 2006 Arctic seismic surveys 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 therefore that issuance by NMFS of an IHA to Shell 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 the area and project specific mitigation measures described in this **Federal Register** notice. By incorporating the appropriate mitigation measures into NMFS' IHA conditions for this year's seismic survey operations, NMFS has determined that there will be no significant impact on the quality of the human environment. Accordingly, NMFS hereby 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**).

Conclusions

Summary

Based on the information provided in Shell's application and the MMS PEA, NMFS has determined that the impact of Shell conducting seismic surveys in the northern Chukchi Sea and eastern and central Beaufort Sea in 2006 will have a negligible impact on affected species or stocks of marine mammals and will not have an unmitigable adverse impact on their availability for taking for subsistence uses, provided the mitigation measures required under the authorization and CAA are implemented.

Potential Impacts on Marine Mammals

NMFS has determined that the impact of conducting relatively short-term seismic surveys in the U.S. Chukchi and Beaufort seas may result, at worst, in a temporary modification in behavior by certain species of marine mammals. While behavioral and avoidance reactions may be made by these species in response to the resultant noise, this behavioral change is expected to have a negligible impact on the affected species 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 (as shown in Table 4–1 in the applications), which will vary annually due to variable ice conditions and other factors, the number of potential harassment takings is estimated to be small (see Tables 1 and 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 contained in Shell's IHA. This determination by NMFS is supported by: the information in this **Federal Register** notice, including: (1) the likelihood that, given sufficient notice through slow ship speed and ramp-up of the seismic array, marine mammals are expected to move away from a noise source that is annoying prior to its becoming potentially injurious; (2) the fact that injurious levels would be very close to the vessel; and (3) 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 has determined that the proposed seismic activity by Shell in the northern Chukchi Sea and central and eastern Beaufort Sea in 2006, in combination with other seismic and oil and gas programs in these areas, will not have an unmitigable adverse impact on the subsistence uses of bowhead whales and other marine mammals. This determination is supported by the information in this **Federal Register** notice, including: (1) Seismic activities in the Chukchi Sea will not begin until after July 10 by which time the spring bowhead hunt is expected to have ended; (2) that the fall bowhead whale hunt in the Beaufort Sea will be governed by a CAA between Shell and the AEWC and village whaling captains; (3) the CAA conditions will significantly reduce impacts on subsistence hunters; (4) while it is possible that accessibility to belugas during the spring subsistence beluga hunt could be impaired by the survey, it is unlikely because very little of the proposed survey is within 25 km (15.5 mi) of the Chukchi coast, meaning the vessel will usually be well offshore and away from areas where seismic surveys would influence beluga hunting by communities; and (5) because seals (ringed, spotted, bearded) are hunted in nearshore waters and the seismic survey will remain offshore of the coastal and nearshore areas of these seals 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 Shell to take small numbers of marine mammals, by harassment, incidental to conducting a seismic survey in the northern Chukchi Sea and central and eastern Beaufort Sea in 2006, provided the mitigation, monitoring, and reporting requirements described in this document are undertaken.

Dated: August 18, 2006.

P. Michael Payne,

Chief, Permits, Conservation and Education Division, Office of Protected Resources, National Marine Fisheries Service.

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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[I.D. 081806B]

New England Fishery Management Council; Public Meeting

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

ACTION: Notice; public meeting.

SUMMARY: The New England Fishery Management Council (Council) is scheduling a public meeting of its Scallop Committee in September, 2006 to consider actions affecting New England fisheries in the exclusive economic zone (EEZ). Recommendations from this group will be brought to the full Council for formal consideration and action, if appropriate.

DATES: This meeting will be held on Wednesday, September 13, 2006, at 9 a.m.

ADDRESSES: This meeting will be held at the Holiday Inn, 700 Myles Standish Boulevard, Taunton, MA 02780: telephone: (508) 823–0430; fax: (508) 880–6480.

Council address: New England Fishery Management Council, 50 Water Street, Mill 2, Newburyport, MA 01950.