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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648-XC389

Takes of Marine Mammals Incidental to Specified Activities; Low-Energy Marine Geophysical Survey in the Gulf of Mexico, April to May 2013

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

ACTION: Notice; issuance of an Incidental Take Authorization (ITA).

SUMMARY: In accordance with the Marine Mammal Protection Act (MMPA) regulations, notification is hereby given that NMFS has issued an Incidental Harassment Authorization (IHA) to the U.S. Geological Survey (USGS) to take marine mammals, by Level B harassment, incidental to conducting a low-energy marine geophysical (i.e., seismic) survey in the deep water of the Gulf of Mexico, April to May 2013.

DATES: Effective April 17 through June 10, 2013.

ADDRESSES: A copy of the final IHA and application are available by writing to P. Michael Payne, Chief, Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring, MD 20910 or by telephoning the contacts listed here.

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

FOR FURTHER INFORMATION CONTACT: Howard Goldstein or Jolie Harrison, Office of Protected Resources, NMFS, 301-427-8401.

SUPPLEMENTARY INFORMATION:

Background

Section 101(a)(5)(D) of the MMPA, as amended (16 U.S.C. 1371 (a)(5)(D)), directs the Secretary of Commerce (Secretary) to authorize, upon request, the incidental, but not intentional, taking of small numbers of marine mammals of a species or population stock, by United States citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and, if the taking is limited to harassment, a notice of a proposed authorization is provided to the public for review.

Authorization for the incidental taking of small numbers of marine mammals 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 (where relevant). The authorization must set forth the permissible methods of taking, other means of effecting the least practicable adverse impact on the species or stock and its habitat, and requirements pertaining to the mitigation, monitoring and reporting of such takings. 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. Section 101(a)(5)(D) of the MMPA establishes a 45-day time limit for NMFS's review of an application followed by a 30-day public notice and comment period on

any proposed authorizations for the incidental harassment of small numbers of marine mammals. Within 45 days of the close of the public comment period, NMFS must either issue or deny the authorization.

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].

The USGS has prepared an "Environmental Assessment and Determination Pursuant to the National Environmental Policy Act, 42 U.S.C. 4321 et seq. and Executive Order 12114 Low-Energy Marine Seismic Survey by the U.S. Geological Survey in the Deepwater Gulf of Mexico, April-May 2013" (EA). USGS's EA incorporates an "Environmental Assessment of a Low-Energy Marine Geophysical Survey by the U.S. Geological Survey in the Northwestern Gulf of Mexico, April-May 2013," prepared by LGL Ltd., Environmental Research Associates, on behalf of USGS, which is also available at the same Internet address as well as on the USGS's environmental compliance website, which is available online at: http://woodshole.er.usgs.gov/project-pages/environmental_compliance/index.html. NMFS also issued a Biological Opinion under section 7 of the Endangered Species Act (ESA) to evaluate the effects of the survey and IHA on marine species listed as threatened or endangered. The NMFS Biological Opinion is available online at: http://www.nmfs.noaa.gov/pr/consultations/opinions.htm. Documents cited in this notice may be viewed, by appointment, during regular business hours, at the aforementioned address.

Summary of Request

On November 5, 2012, NMFS received an application from the USGS requesting that NMFS issue an IHA for the take, by Level B harassment only, of small numbers of marine mammals incidental to conducting a low-energy marine seismic survey within the U.S. Exclusive Economic Zone in the deep water of the Gulf of Mexico during April to May 2013. The USGS plans to use one source vessel, the R/V Pelican (Pelican), or similar vessel, and a seismic airgun array to collect seismic data as part of the "Gas Hydrates Project" in the deep water of the northwest Gulf of Mexico. The USGS plans to use conventional low-energy, seismic methodology and ocean bottom seismometers (OBSs) to acquire the data necessary to delineate the distribution, saturation, and thickness of sub-seafloor methane hydrates and to image near-seafloor structure (e.g., faults) at high-resolution. In addition to the planned operations of the seismic airgun array and hydrophone streamer, USGS intends to operate a sub-bottom profiler continuously throughout the survey. On February 20, 2013, NMFS published a notice in the Federal Register (78 FR 11821) making preliminary determinations and proposing to issue an IHA. The notice initiated a 30-day public comment period.

Acoustic stimuli (i.e., increased underwater sound) generated during the operation of the seismic airgun array may have the potential to cause a behavioral disturbance for marine mammals in the survey area. This is the principal means of marine mammal taking associated with these activities, and USGS has requested an authorization to take 19 species of marine mammals by Level B harassment. Take is not expected to result from the use of the sub-bottom profiler, for reasons discussed in this notice; nor is take expected to result from collision with the source vessel because it is a single vessel moving at a relatively slow speed (4.5 knots [kts]; 8.1 kilometers per hour [km/hr]; 5.0 miles per hour [mph]) during seismic acquisition within the

survey, for a relatively short period of time (approximately 8 days of airgun operations out of 15 total operational days). It is likely that any marine mammal would be able to avoid the vessel.

Description of the Specified Activity

USGS planned to conduct a low-energy seismic survey at two sites that have been studied as part of the Gulf of Mexico Gas Hydrates Joint Industry Project. The GC955 (i.e., Green Canyon lease block 955) and WR313 (i.e., Walker Ridge lease block 313) study sites are located in the deep water of the northwestern GOM (see Figure 1 of the IHA application). Study site GC955 will be surveyed first, followed by WR313. The seismic survey is scheduled to take place for approximately eight days (out of 15 total operational days) in April to May 2013.

The purpose of USGS's seismic survey, which is to be carried out by personnel from the USGS Gas Hydrates Project, is to develop technology and to collect data to assist in the characterization of marine gas hydrates in order to respond to a need to better understand their potential as an energy source and their impact on seafloor stability. In addition to these two topics, the USGS Gas Hydrates Project also researches the impact of climate change on natural gas hydrates and the impact of degassing from shallow sub-seafloor and permafrost gas hydrates on climate change. However, that is not the purpose of this specific project. These goals of the GOM research program are consistent with the USGS mission to "provide reliable scientific information to describe and understand the Earth; minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; and enhance and protect our quality of life." The objectives of this seismic research program also coincide with the goals articulated in the USGS Energy and Minerals Science Strategy (Ferrero et al., 2012). Through the USGS Energy Resources Program (ERP), which partially funds the USGS Gas Hydrates Project, the USGS conducts research to enhance understanding of the geologic occurrence,

formation, and evolution of oil, gas, coal, and uranium resources. The ERP is responsible for applying the results of this research to the assessment of, economic and environmental impact of development of these resources, as well, and making this knowledge public. The ERP provides accurate, dependable, and unbiased assessments of the world's energy resources and associated hazards for use in formulating policies at local, state, and Federal levels. As an agency whose mission is entirely scientific, the USGS has no authority to exploit natural resources.

The target sites for the GOM methane hydrates seismic characterization study have been extensively studied, including detailed logging while drilling (LWD), and are known to hold thick sequences of sand containing high saturations of gas hydrate. The purpose of this new seismic acquisition is to expand outward from the boreholes the detailed characterization that has been accomplished there and to develop and calibrate improved geophysical techniques for gas hydrate characterization, which may in some cases obviate further scientific drilling.

The need for this activity is related to the inadequacy of existing seismic data to fully characterize the gas hydrate deposits and nearby geologic structures. The available industry data for the locations of the survey were acquired with parameters that targeted deep (in some cases, sub-salt) hydrocarbon occurrences. Exhaustive analysis of these existing data during site evaluation (Hutchinson et al., 2009a; 2009b) and before and after the LWD expedition underscored the inadequacy of these data for complete characterization of the gas hydrate deposits and relevant geologic structures. Specifically, the existing data do not appropriately image the shallow sub-seafloor, including potential gas migration pathways, and do not provide appropriate data for regional estimates of gas hydrate saturations through analysis of compressional to shear wave conversions. If new seismic data designed to address these deficiencies are not acquired, then researchers will be unable to constrain whether faults intersect

the hydrate-bearing sediments and how extensive the hydrate-bearing sediments may be. The new seismic data will also expand scientific expertise in using shipborne, instead of drilling, data to estimate hydrate saturations within sediment formations.

The survey will involve one source vessel, most likely the R/V Pelican (Pelican) or a similar vessel. USGS will deploy two (each with a discharge volume of 105 cubic inch [in^3]) Generator Injector (GI) airgun array as a primary energy source at a tow depth of 3 m (9.8 ft). A subset of the survey lines will be repeated using a single 35 in^3 GI airgun. The receiving system will consist of one 450 meter (m) (1,476.4 feet [ft]) long, 72-channel hydrophone streamer and 25 ocean bottom seismometers (OBSs). As the GI airguns are towed along the survey lines, the hydrophone streamer will receive the returning acoustic signals and transfer the data to the onboard processing system. The OBSs record the returning acoustic signals internally for later analysis. Regardless of which energy source is used, the calculated isopleths for the two GI (105 in^3) airguns will be used.

At each of the two study sites, 25 OBSs will be deployed and a total of approximately 700 km (378 nautical miles [nmi]) of survey lines will be collected in a grid pattern (see Figure 1 of the IHA application). The water depth will be 1,500 to 2,000 m (4,921.3 to 6,561.7 ft) at each study site). All planned seismic data acquisition activities will be conducted by technicians provided by USGS with onboard assistance by the scientists who have planned the study. The Principal Investigators are Dr. Seth Haines (USGS Energy Program, Denver, Colorado) and Mr. Patrick Hart (USGS Coastal and Marine Geology, Santa Cruz, California). The vessel will be self-contained, and the crew will live aboard the vessel for the entire cruise.

The planned seismic survey (e.g., equipment testing, startup, line changes, repeat coverage of any areas, and equipment recovery) will consist of approximately 1,480 km (799.1

nmi) of transect lines (including turns) in the survey area in the deep water of the northwestern Gulf of Mexico (GOM) (see Figure 1 of the IHA application). In addition to the operation of the airgun array, a Knudsen sub-bottom profiler will also likely be operated from the Pelican continuously throughout the cruise. USGS will not be operating a multibeam system, the Pelican is not equipped with this equipment. There will be additional seismic operations associated with equipment testing, ramp-up, and possible line changes or repeat coverage of any areas where initial data quality is sub-standard. In USGS's estimated take calculations, 25% has been added for those additional operations.

Dates, Duration, and Specified Geographic Region

The planned project will be located near the GC955 and WR313 study sites in the deep water of the northwest Gulf of Mexico and would have a total duration of approximately 15 operational days occurring during the April through May 2013 timeframe, which will include approximately 8 days of active seismic airgun operations. Water depth at the site is approximately 2,000 m (6561.7 ft). The total survey time would be approximately 96 hours at each site. The survey is scheduled from April 17 to May 6, 2013. The Pelican is expected to depart and return to Cocodrie, Louisiana, with no intermediate stops.

Some minor deviation from this schedule is possible, depending on logistics and weather (i.e., the cruise may depart earlier or be extended due to poor weather; there could be additional days of seismic operations if collected data are deemed to be of substandard quality).

The latitude and longitude for the bounds of the two study sites are:

WR313:

91° 34.75' West to 91° 46.75' West

26° 33.75' North to 26° 45.75' North

GC955:

90º 20.0' West to 90º 31.75' West

26º 54.1' North to 27º 6.0' North

NMFS outlined the purpose of the program in a previous notice for the proposed IHA (78 FR 11821, February 20, 2013). The activities to be conducted have not changed between the proposed IHA notice and this final notice announcing the issuance of the IHA. For a more detailed description of the authorized action, including vessel and acoustic source specifications, the reader should refer to the proposed IHA notice (78 FR 11821, February 20, 2013), the IHA application, EA, and associated documents referenced above this section.

Comments and Responses

A notice of the proposed IHA for the USGS seismic survey was published in the Federal Register on February 20, 2013 (78 FR 11821). During the 30-day public comment period, NMFS received comments from the Marine Mammal Commission (Commission), International Association of Geophysical Contractors (IAGC) and the America Petroleum Institute (API) (hereinafter referred to as Industry Associations), Center for Biological Diversity (CBD), and numerous private citizens. The Commission, Industry Associations, CBD, and private citizen's comments are online at: http://www.nmfs.noaa.gov/pr/permits/incidental.htm. Following are their substantive comments and NMFS's responses:

Comment 1: The Commission recommends that NMFS require the USGS to re-estimate the proposed exclusion and buffer zones and associated takes of marine mammals using site-specific information – if the exclusion and buffer zones and numbers of takes are not re-estimated, require the USGS to provide a detailed justification for (1) basing the exclusion and buffer zones for the proposed survey on modeling that does not incorporate site-specific

environmental parameters and has been documented to underestimate the size of those zones and (2) how tow depth was incorporated into the model.

Response: With respect to the Commission's first point regarding re-estimating the proposed exclusion and buffer zones and associated takes of marine mammals using site-specific information, based upon the best available information and NMFS's analysis of the likely effects of the specified activity on marine mammals and their habitat, NMFS is satisfied that the data supplied by USGS are sufficient for NMFS to conduct its analysis and support the determinations under the MMPA, Endangered Species Act of 1973 (ESA; 16 U.S.C. 1531 et seq.), and the National Environmental Policy Act (NEPA). The identified exclusion and buffer zones are appropriate for the survey, and additional field measurements are not necessary at this time. Thus, for this survey, NMFS will not require USGS to re-estimate the proposed exclusion zones and buffer zones and associated number of marine mammal takes using operational and site-specific environmental parameters.

With respect to the Commission's second point on how tow depth was incorporated into the model, USGS has modeled the exclusion and buffer zones in the action area based on Lamont-Doherty Earth Observatory (L-DEO) of Columbia University's 2003 (Tolstoy et al., 2004) and 2007-2008 (Tolstoy et al., 2009; Diebold et al., 2010) peer-reviewed, calibration studies in the GOM. Received levels have been predicted and modeled by L-DEO for a number of airgun configurations and tow depths (e.g., 36-airgun array and a single 1900LL 40 in^3 airgun), including two 105 in^3 GI airguns, in relation to distance and direction from airguns (see Figure 2 of the IHA application). This modeling approach uses ray tracing for the direct wave traveling from the array to the receiver and its associated source ghost (reflection at the air-water interface in the vicinity of the array), in a constant-velocity half space (infinite homogeneous

ocean layer, unbounded by a seafloor). USGS's EA and the conclusions in Appendix H of the "Programmatic Environmental Impact Statement/Overseas Environmental Impact Statement for Marine Seismic Research Funded by the National Science Foundation or Conducted by the U.S. Geological Survey" (NSF/USGS PEIS) include detailed information on the study, their modeling process of the experiment in shallow, intermediate, and deep water. It also shows that L-DEO's model represents the actual produced sound levels, particularly within the first few kilometers, where the predicted zones (i.e., exclusion and buffer zones) lie. The conclusions show that USGS model represents the actual produced sound levels. At greater distances, local oceanographic variations begin to take effect, and the model tends to over predict.

Because the modeling matches the observed measurement data, the authors of these peer-reviewed papers concluded that those using the models to predict zones can continue to do so, including predicting exclusion and buffer zones around the vessel for various depths. At present, L-DEO's model does not account for site-specific environmental conditions and the calibration study analysis of the model predicted that using site-specific environmental conditions. In addition, the calibration study analysis of the model predicted that using site-specific information may actually estimate less conservative exclusion zones at greater distances.

While it is difficult to estimate exposures of marine mammals to acoustic stimuli, USGS's approach to quantifying the exclusion and buffer zones uses the best available scientific information (as required by NMFS regulations) and estimation methodologies. After considering this comment and evaluating the respective approaches for establishing exclusion and buffer zones, NMFS has determined that USGS's approach and corresponding monitoring and mitigation measures will effect the least practicable impact on affected marine mammal species or stocks.

Comment 2: The Commission recommends that NMFS require USGS to re-estimate the numbers of takes by including those takes that would occur if the survey repeats a subset of the tracklines using the single airgun, which would be in addition to takes that occur during turns and equipment testing or that occur because of equipment failure/poor data.

Response: On page 21 of the USGS's IHA application, USGS states that "…ensonified areas calculated using the planned number of line-kilometers have been increased by 25% to accommodate turns, lines that may need to be repeated, equipment testing, etc." The IHA application states that approximately 700 km of survey lines will be conducted at each site and that the total survey time would be approximately 96 hours (i.e., 700 km + 25% [175 km] = 875 km). As a result, the request for a 25% increase accounts for turns, lines that may be repeated and equipment testing. Also, the repeated lines in the survey grid may increase the number of potential exposures to the sound source but may not increase the number of individuals of marine mammals exposed as the USGS's take calculation methodology assumes that all marine mammals are stationary.

Comment 3: The Commission recommends that NMFS prohibit the use of only a 15-minute pause following the sighting of a mysticete or large odontocete in the exclusion zone and extend that pause to cover the maximum dive times of the species likely to be encountered prior to initiating ramp-up procedures after a shut-down.

Response: NMFS would like to clarify the Commission's understanding of two conditions within the IHA – one related to turning on the airguns (ramp-up) after a shut-down due to a marine mammal sighting about to enter or within the exclusion zone, and the other related to a ramp-up after an extended shut-down (i.e., the 15 minute pause due to equipment failure or routine maintenance).

To clarify, the IHA requires the Pelican to shut-down the airguns when a Protected Species Observer (PSO) sees a marine mammal within, approaching, or entering the relevant exclusion zone for cetaceans. Following a shut-down, the Pelican would only ramp-up the airguns if a marine mammal had exited the exclusion zone or if the PSO had not seen the animals within the relevant exclusion zone for 15 minutes for species with shorter dive times (i.e., small odontocetes and pinnipeds) or 30 minutes for species with longer dive durations (i.e., mysticetes and large odontocetes, including sperm, pygmy sperm, dwarf sperm, killer, and beaked whales).

NMFS believes that 30 minutes is an adequate length for the monitoring period prior to the ramp-up of the airgun array after sighting a mysticete or large odontocete for the following reasons:

- The Pelican can transit roughly 4.5 knots; the ship would move 1.1 km (0.6 nmi) in 15 minutes or 2.3 km (1.3 nmi) in 30 minutes. At this distance, the vessel will have moved 15.7 times (1.1 km/0.07 km) in 15 minutes and 32.9 times (2.3 km/0.07 km) in 30 minutes away from the distance of the original 180 dB exclusion zone (70 m [229.7 ft] for two 105 in^3 airguns) from the initial sighting.

- The relevant exclusion zone for cetaceans is relatively small (i.e., 70 m for cetaceans for the two 105 in^3 GI airguns). Extending the monitoring period for a relatively small exclusion zones would not meaningfully increase the effectiveness of observing marine mammals approaching or entering the exclusion zone for the full source level and would not further minimize the potential for take.

- Because a significant part of their movement is vertical (deep-diving), it is unlikely that a submerged mysticete or large odontocete would move in the same direction and speed (roughly 4.5 knots) with the vessel for 30 minutes. If a mysticete or large odontocete's

maximum underwater dive time is 45 minutes, then there is only a one in three chance that the last random surfacing could occur within the 70 m exclusion zone.

- The PSOs are constantly monitoring the horizon and the exclusion zones during the 30-minute period. PSOs can observe to the horizon from the height of the Pelican's observation deck and should be able to say with a reasonable degree of confidence whether a marine mammal would be encountered within this distance before resuming the two GI airgun operations at full power.

Next, NMFS intends to clarify the monitoring period associated with an extended shut-down (i.e., the 15-minute pause due to equipment failure or routine maintenance). During active seismic operations, there are occasions when the Pelican crew will need to temporarily shut-down the airguns due to equipment failure or for maintenance. Thus, an extended shut-down is not related to the PSO detecting a marine mammal within, approaching, or entering the relevant exclusion zones. However, the PSOs are still actively monitoring the relevant exclusion zones for cetaceans and pinnipeds.

In conclusion, NMFS has designed monitoring and mitigation measures to comply with the requirement that incidental take authorizations must include means of effecting the least practicable impact on marine mammal species and their habitat. The effectiveness of monitoring is science-based, and monitoring and mitigation measures must be "practicable." NMFS believes that the framework for visual monitoring will: (1) be effective at spotting almost all species for which USGS has requested take, and (2) that imposing additional requirements, such as those suggested by the Commission, would not meaningfully increase the effectiveness of observing marine mammals approaching or entering the exclusion zones and further minimize the potential for take.

In the case of an extended shut-down, due to equipment failure or routine maintenance, the Pelican's crew will turn on the airguns and follow the mitigation and monitoring procedures for a ramp-up after a period of 15 minutes. Again, the PSOs will monitor the full exclusion zones for marine mammals and will implement a shut-down, if necessary. After considering this comment and evaluating the monitoring and mitigation requirements to be included in the IHA, NMFS has determined that USGS's approach and corresponding monitoring and mitigation measures will effect the least practicable impact on affected marine mammal species or stocks.

Comment 4: The Commission recommends that NMFS consult with the USGS and other relevant entities (e.g., NSF and L-DEO) to develop, validate, and implement a monitoring program that provides a scientifically sound, reasonably accurate assessment of the types of marine mammal taking and the numbers of marine mammals taken – the assessment should account for availability biases and the detection biases of the seismic survey observers.

Response: Several studies have reported on the abundance and distribution of marine mammals inhabiting the GOM, and the USGS has incorporated these data into their analyses used to predict marine mammal take in their IHA applications. NMFS believes that the USGS's approach for estimating abundance in the survey areas (prior to the survey) is the best available approach.

There will be periods of transit time during the cruise, and Protected Species Observers (PSOs) will be on watch prior to and after the seismic portions of the surveys, in addition to during the surveys. The collection of this visual observational data by PSOs may contribute to baseline data on marine mammals (presence/absence) and provide some generalized support for estimated take numbers, but it is unlikely that the information gathered from these cruises alone would result in any statistically robust conclusions for any particular species because of the small

number of animals typically observed.

NMFS acknowledges the Commission's recommendations and is open to further coordination with the Commission, USGS, and other entities, to develop, validate, and implement a monitoring program that will provide or contribute towards a more scientifically sound and reasonably accurate assessment of the types of marine mammal taking and the number of marine mammals taken. However, the cruise's primary focus is marine seismic research, and the surveys may be operationally limited due to considerations such as location, time, fuel, services, and other resources.

Comment 5: The Commission recommends that NMFS work with USGS and NSF to analyze monitoring data to assess the effectiveness of ramp-up procedures as a mitigation measure for geophysical surveys.

Response: NMFS acknowledges the Commission's request for an analysis of ramp-ups and will work with USGS and NSF to help identify the effectiveness of the mitigation measure for seismic surveys. The IHA requires that PSOs on the Pelican make observations for 30-minutes prior to ramp-up, during all ramp-ups, and during all daytime seismic operations and record the following information when a marine mammal is sighted:

(i) Species, group size, age/size/sex categories (if determinable), behavior when first sighted and after initial sighting, heading (if consistent), bearing and distance from the seismic vessel, sighting cue, apparent reaction of the airguns or vessel (e.g., none, avoidance, approach, paralleling, etc., and including responses to ramp-up), and behavioral pace; and

(ii) Time, location, heading, speed, activity of the vessel (including number of airguns operating and whether in state of ramp-up or shut-down), Beaufort wind force and sea state, visibility, and sun glare.

One of the primary purposes of monitoring is to result in "increased knowledge of the species" and the effectiveness of required monitoring and mitigation measures; the effectiveness of ramp-up as a mitigation measure and marine mammal reaction to ramp-up would be useful information in this regard. NMFS requires USGS and NSF to gather all data that could potentially provide information regarding the effectiveness of ramp-up as a mitigation measure in its monitoring report. However, considering the low numbers of marine mammal sightings and low number of ramp-ups, it is unlikely that the information will result in any statistically robust conclusions for this particular seismic survey. Over the long term, these requirements may provide information regarding the effectiveness of ramp-up as a mitigation measure, provided PSOs detect animals during ramp-up.

Comment 6: The Industry Associations state that environmental consequences should be evaluated using the best available science that properly discriminates between empirical fact and conjecture; and reflects the probabilities of effect and weight of the evidence in presenting the risks of adverse impacts of anthropogenic sound upon marine species.

Response: NMFS's determinations, in order to meet the requirements of section 101(a)(5)(D) of the MMPA, use peer-reviewed data that are based on the best science available regarding the biology of animals affected and the propagation of sounds from sources during the seismic survey. This information is supported by USGS's IHA application and EA.

Comment 7: The Industry Associations state that reasonable threshold for anticipation of adverse effects should be established before mitigation is demanded and that mitigation should be effective and practicable.

Response: NMFS's proposed action is triggered by USGS requesting an IHA to take marine mammals incidental to conducting a low-energy marine seismic survey in the deep water

of the GOM. The USGS's seismic survey has the potential to cause marine mammals to be behaviorally disturbed by exposing them to elevated levels of sound which, as NMFS has explained, is anticipated to result in take that would otherwise be prohibited by the MMPA. The USGS, therefore, requires an IHA for incidental take and has requested that NMFS provide it through the issuance of an IHA under section 101(a)(5)(D) of the MMPA. IHAs must include requirements or conditions pertaining to the monitoring and reporting of such taking in large part to better understand the effects of such taking on the species.

Based on the analysis contained in the USGS's EA and IHA application, NMFS notice of the proposed IHA (78 FR 11821, February 20, 2013), and this document, of the likely effects (including potential adverse effects) of the specified activity on marine mammals and their habitat, which is based on the best scientific information available, and taking into consideration the implementation of the mitigation and monitoring measures, NMFS finds that USGS's planned research activities, will result in the incidental take of small numbers of marine mammals, by Level B harassment only, and that the total taking from the low-energy marine seismic survey will have a negligible impact on the affected species or stocks of marine mammals; and that impacts to affected species or stocks of marine mammals have been mitigated to the lowest level practicable. Therefore, per our implementing regulations, NMFS shall issue the IHA to USGS.

Also, USGS has proposed to implement the monitoring and mitigation measures included in the IHA in their IHA application and EA. They have determined that the measures are effective and practicable as described in this Federal Register notice, and NMFS concurs with their determination.

Comment 8: The Industry Associations state that the USGS IHA application refers to

related NEPA documents that results in a much less robust EA which contains conjectural risk assessments and unwarranted mitigation zone requirements. The NSF, USGS and NMFS expended significant resources over a five-year period in development of the 2011 NSF/USGS PEIS to develop a consistent, standardized approach to frequent IHA applications for seismic surveys. The IHA application, while referencing the 2011 NSF/USGS PEIS, does not appear to fully utilize its extensive environmental assessment indicating minimal impacts from low energy seismic surveys not adopts its more moderate, generic mitigation requirements. In fact, the USGS IHA application seems to require larger buffer and exclusion zones without information or explanation of what new or site-specific risk factors justify them.

Response: In many sections throughout USGS's EA, the USGS refers to the NSF/USGS PEIS for comprehensive reviews on relevant background and more specific information, and incorporates them by reference. USGS has proposed the buffer and exclusion zones as well as monitoring and mitigation measures that are included in the IHA in their IHA application and EA, and they have determined that the zones and measures are effective and practicable.

Comment 9: The Industry Associations states that the requested IHA application has minimal potential for substantive, adverse environmental consequences. The benefits of the action are significant. Thus, an IHA for non-lethal, incidental take of small numbers of marine mammals should be issued promptly.

Response: Generally, under the MMPA, NMFS shall authorize the harassment of small numbers of marine mammals incidental to an otherwise lawful activity, provided NMFS finds that the taking will have a negligible impact on the species or stock, will not have an unmitigable adverse impact on the availability of the species or stock for subsistence uses (where relevant), and if the permissible methods of taking and requirements pertaining to the mitigation,

monitoring, and reporting of such takings are set forth to achieve the least practicable adverse impact. 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.'' NMFS believes that the short time period of the seismic survey, the small size of the airgun array, the requirement to implement mitigation measures (e.g., shut-down of seismic operations), and the inclusion of the monitoring and reporting measures, will reduce the amount and severity of the potential impacts from the activity to the degree that it will have a negligible impact on the species or stocks in the action area. USGS has applied for an IHA and has met the necessary requirements for issuance of an IHA for small numbers of marine mammals, by Level B harassment, incidental to the low-energy marine seismic survey in the deep water of the GOM. Therefore, NMFS has issued an IHA to USGS.

Comment 10: The Industry Associations state that a clear and consistently applied regulatory process is needed where the various factors are evaluated, conservative factors reflecting reasonable probabilities are documented in a way that the regulated community can see the layers of conservative factors and the balancing of empirical facts, conjecture and observed field effects for decisions are clearly explained.

Response: To the maximum extent possible, NMFS applies a clear and consistent process under section 105(a)(5)(A) and (D) of the MMPA. 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. Section 101(a)(5)(D) of the MMPA establishes a 45-day time limit for NMFS's review of an application followed by a 30-day public notice and comment period on any proposed authorizations for the

incidental harassment of small numbers of marine mammals. Within 45 days of the close of the public comment period, NMFS must either issue or deny the authorization. In requesting an IHA from NMFS, USGS provided the information detailed in 14 sections specified in 50 CFR 216.104 for its specified activity NMFS determined that the USGS's IHA request was adequate and complete, and began a public review process by publishing it in the Federal Register. NMFS makes available the IHA application, proposed IHA, related NEPA documents, etc. online at: http://www.nmfs.noaa.gov/pr/permits/incidental.htm#iha

In order to issue an ITA under section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to such activity, and other means of effecting the least practicable adverse impact on such species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and the availability of such species or stock for taking for certain subsistence uses.

NMFS has carefully evaluated the applicant's mitigation measures and has considered a range of other measures in the context of ensuring that NMFS prescribes the means of effecting the least practicable adverse impact on the affected marine mammal species and stocks and their habitat. NMFS's evaluation of potential measures included consideration of the following factors in relation to one another:

(1) The manner in which, and the degree to which, the successful implementation of the measure is expected to minimize adverse impacts to marine mammals;

(2) The proven or likely efficacy of the specific measure to minimize adverse impacts as planned; and

(3) The practicability of the measure for applicant implementation.

Based on NMFS's evaluation of the applicant's measures, as well as other measures considered by NMFS or recommended by the public, NMFS has determined that the mitigation measures provide the means of effecting the least practicable adverse impacts on marine mammal species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

In making a negligible impact determination, NMFS evaluated factors such as:

(1) The number of anticipated injuries, serious injuries, or mortalities;

(2) The number, nature, and intensity, and duration of Level B harassment (all relatively limited); and

(3) The context in which the takes occur (i.e., impacts to areas of significance, impacts to local populations, and cumulative impacts when taking into account successive/contemporaneous actions when added to baseline data);

(4) The status of stock or species of marine mammals (i.e., depleted, not depleted, decreasing, increasing, stable, impact relative to the size of the population);

(5) Impacts on habitat affecting rates of recruitment/survival; and

(6) The effectiveness of monitoring and mitigation measures (i.e., the manner and degree in which the measure is likely to reduce adverse impacts to marine mammals, the likely effectiveness of the measures, and the practicability of implementation)..

NMFS believes that the length of the seismic survey, the requirement to implement mitigation measures (e.g., shut-down of seismic operations), and the inclusion of the monitoring and reporting measures, will reduce the amount and severity of the potential impacts from the activity to the degree that it will have a negligible impact on the species or stocks in the action area.

Comment 11: The Industry Associations state that the evaluation of impacts from marine sound sources continues to blur the distinctions between exposure and effect leading to unsupportable overestimates of the risks to marine wildlife. The USGS IHA in fact validates this concern: "It is common practice to estimate how many mammals would be present within a particular distance of industrial activities and/or exposed to a particular level of sound. In most cases, this approach likely overestimates the numbers of marine mammals that would be affected in some biologically important manner."

Response: In USGS and NMFS's analysis, we focus qualitatively on the different ways that exposure to signals from the seismic airguns may affect marine mammals (e.g., sensory impairment, masking, physiological responses, behavioral disturbance, etc.) that may be classified as behavioral harassment or injury and may be likely to adversely affect the species or stocks of marine mammals in the GOM study area. Although responses to sound are highly variable and context-specific, NMFS uses acoustic criteria, estimates of take of marine mammals to various sound sources and modeled received levels are used as a method in to estimate the number of individuals that would potentially be taken by Level B harassment and to meet NMFS's small numbers and negligible impact determinations under the MMPA.

Comment 12: The Industry Associations do not believe the principle of equating received sound levels to "takes" has been subjected to public comment or peer review as is required. This interpretive application of exposure as a proxy for incidental take is not supported by the MMPA, which requires that harassment must occur (16 U.S.C. 1362(18)(A)). In the case of Level B harassment, the disturbance must be related to a disruption in behavioral patterns, not just a change in behavior (16 U.S.C. 1362(18)(A)(ii), 1362(18)(D)).

Further, the Industry Associations state that there is no jurisdiction precedent defining

whether sound occurring at a certain level constitutes a take. It is simply not enough for an animal to be exposed to a sound. For there to be a "take" based on harassment, there must be disruption in a pattern of behavior, and it must be caused by an act of pursuit, torment or annoyance (16 U.S.C. 1362(18)(A)).

Response: 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]. Because the behavioral and/or physiological responses of the majority of the marine mammals exposed to noise from the airgun array cannot be detected or measured, a method is needed to estimate the number of individuals that will be taken, pursuant to the MMPA, based on the proposed action. To this end, NMFS uses established acoustic criteria that estimate at what received level (when exposed to seismic airguns) Level B harassment of marine mammals would occur. NMFS has published notices in the Federal Register initiating a 30-day public review process for specified activities producing anthropogenic noise, and specifically seismic surveys, for over a decade.

Comment 13: The Industry Associations state that the USFWS in its Polar Bear and Walrus incidental take regulations clarified how it evaluates the potential effects of sound on marine life by clearly labeling "exposures" and more clearly differentiating "exposures" from "takes."

The USGS IHA application and associated EA do not provide this clarity and thus overstate the environmental effects of the action. In addition, the USGS IHA application does not clearly explain when an exposure has a behavioral effect, whether this rises to be a countable

take and finally whether any of this is biologically significant at either an individual or population level. The overestimate of effect is especially acute for a "low-energy" seismic survey. The fact that in the IHA, USGS proposes to use large seismic source arrays as a proxy for a small two source element operation and that it uses shallow-water sound propagation as a proxy for deep water propagation further adds to the overestimate of potential acoustic impacts.

Response: For USGS's action, NMFS uses a reasonable estimate of exposures that may elicit a response that rises to the level of "take" definition. In the EA and IHA application, the number of different individuals that could be exposed to airguns sounds with received levels greater than or equal to 160 dB (rms) on one or more occasions can be estimated by considering the total marine area that would be within the 160 dB (rms) radius around the operating seismic source on at least one occasion, along with the expected density of animals in the area. The number of possible exposures (including repeated exposures of the same individuals) can be estimated by considering the total marine area that would be within the 160 dB (rms) radius around the operating airguns, including areas of overlap. During the planned survey, the transect lines in the square grid are closely spaced (100 m [ft] apart at the GC955 site and 250 m [ft] at the WR313 site) relative to the 160 dB distance (670 m [ft]). Thus, the area including overlap is 6.5 times the area excluding overlap at GC955 and 5.3 times the area excluding overlap at WR313, so a marine mammal that stayed in the survey areas during the entire survey could be exposed approximately 6 or 7 times, on average. Some degree of re-exposure may occur due to re-exposure of the same area along designated tracklines; however, it is unlikely to assume that a particular animal would not move within their environment and stay in the area during the entire survey. NMFS assumes that individuals will move away if they experience sound levels high enough to cause significant stress or functional impairment.

For marine mammals in the IHA (including those listed under the ESA, such as sperm whales), exposures are often equated to take and are assessed in a quantitative method, however, take does not necessarily mean an exposure to a specific threshold. In the Biological Opinion conducted under the ESA, exposure analyses identify species that are likely to co-occur with the specified activity's effects on the environment in space and time, and identify the nature of that co-occurrence. The exposure analysis identifies, as possible, the number, age or life stage, and gender of the individuals likely to be exposed to the action's effects and the population(s) or subpopulation(s) those individuals represent. See the "Estimated Take by Incidental Harassment" section below to see how USGS and NMFS calculated take for this IHA. NMFS applies certain acoustic thresholds to help determine at what point during exposure to seismic airguns marine mammals may be "harassed," and these thresholds help to develop buffer and exclusion zones around the sound source. Pending better information, NMFS believes the data and methodology represent the best available information and methods to evaluate exposure and take to the marine mammal species in the action area of the specified activity.

Comment 14: The Industry Associations states that the USGS IHA application and associated EA would have been improved by the inclusion of more recent scientific information. The application, for example, makes extensive reference to Richardson et al. (1995) and Richardson et al. (1999). It should have also included more recent science indicating that avoidance responses are likely both minor and unrelated to sound levels (Richardson et al., 2011; Southall, 2010; and Ellison, 2012). This would have facilitated a more accurate risk assessment and would have more clearly noted that the detailed statistical analyses needed to validate conjecture regarding subtle changes in direction are simply not available.

Response: NMFS acknowledges that behavioral responses are complex and influenced

by a variety of factors, including species, behavioral context, source characteristics, and prior experience and agrees with current science indicating this. All these factors are important in determining the likelihood of an animal exhibiting an avoidance response. In the severity index provided in Ellison et al. (2012), avoidance responses are given a severity score of 6 or higher, which indicates a higher-level response (i.e., those that score between 5 and 9 on the severity index). Ellison et al. (2012) states that higher-level response are best described by a dose-response relationship, which directly relates to received sound level (opposed to lower-level responses that correspond more closely to the context of exposure). Nevertheless, NMFS agrees that context of exposure is an important factor for consideration for all behavioral responses and is considered within the overall assessment qualitatively, since it cannot yet be formally incorporated into quantitative acoustic criteria.

Comment 15: The Industry Associations state that it does not appear that frequency weighting was adequately considered in assessing Level B (behavioral) effects. It is well documented that dolphins are mid-frequency hearing specialists. The seismic source, as described in the IHA application, has "dominant frequency components <500 Hz" and the 105 in^3 GI airgun source has dominant frequency components 0 to 188 Hz. There is little overlap in dolphins' nominal hearing range (150 Hz to 160 kHz; Southall et al., 2007), and the dominant frequency components of the seismic sources. Failure to incorporate frequency weighting likely results in overestimating dolphin incidental takes by at least a factor of two.

Response: Frequency weighting takes into account that all marine mammal species do not have identical hearing capabilities. To reflect this, Southall et al. (2007) proposed that marine mammals divided into five functional hearing groups and subsequently recommended frequency weighting functions for each of these groups. NMFS agrees that taking into account

frequencies that marine mammals hear is an important consideration. For example, if a sound is entirely outside the hearing range of a species, it is not considered to have the potential to cause a significant response.

There are data to indicate that frequency weighting is an important consideration associated with noise-induced hearing loss (Finneran and Schlundt, 2009; Finneran and Schlundt, 2011). For behavior, the relationship between severity of response and frequency weighting is less clear and does not necessarily correspond to the severity of behavioral response expected (e.g., individuals have been shown to behaviorally respond to sounds that are on the edge of their hearing range, where they cannot hear sound as well). Behavioral effects are more challenging to predict since they often involve other variables beyond detection (e.g., perception and cognition, contextual cues, and previous experience). Despite most of the acoustic energy from seismic activities occurring outside the best hearing range of odontocetes, there are data showing that these species do behaviorally respond to these types of activities. For example, Miller et al. (2005) reported that belugas responded (avoidance) to seismic activity by 10 to 20 km (5.4 to 10.8 nmi). Thus, frequency weighting does not appear to be an accurate way to predict the potential of an animal to behavioral respond to a sound.

Comment 16: The Industry Associations state that there is mounting scientific evidence that behavioral reactions are species-dependent (Stone and Tasker, 2006) and can vary due to biological and environmental context (Wartzok et al., 2004; Frost et al., 1984; Finley et al., 1990; Richardson et al., 2011; Miller et al., 2005; and Richardson et al., 1999).

Response: In the notice of the proposed IHA (78 FR 11821, February 20, 2013), NMFS agrees that "behavioral responses to stimuli are complex and influenced to varying degrees by a number of factors, such as species, behavioral contexts, geographical regions, source

characteristics (moving or stationary, speed, direction, etc.), prior experience of the animal and physical status of the animal." NMFS's current acoustic criteria are based on the best available science, which does not typically allow for one to develop species-specific criteria. Instead, species, as far as acoustic criteria, must be considered within larger overall marine mammal groups. Species-specific or context-dependent considerations are considered within larger overall marine mammal groups. Species-specific or context-dependent considerations are considered within the overall assessment qualitatively, since they cannot yet be formally incorporated into quantitative acoustic criteria.

Comment 17: The Industry Associations states that bow-riding dolphins are an excellent example of a normal behavioral pattern and should not be assessed as a take based on received sound levels, using any metric. This behavior has been commonly observed on seismic and other vessels, challenging assertions of harm to the animals. The fact that various marine mammals want to approach and enter the ensonified area raises serious questions about the basic validity of a regulatory approach that rigidly established proximity to sound as its basis. The proposed shut-down requirement for dolphins, which frequently bowride vessels, is not warranted.

The USGS IHA prescribes mitigation zones and requires shut-downs for all marine mammals, including dolphins, entering the defined 190/180/160 dB (rms) ensonified area. Scientific research on the hearing of delphinids and hearing control plus decades of studies and field observations of dolphins interacting with seismic vessels fail to support a conclusion that sound from seismic surveys injure these animals. The biology of dolphin hearing, hearing control mechanisms, and dolphin behavior involving bow-riding should have been more fully considered in the IHA request and environmental risk analyses of the EA. Failure to adequately consider these factors results in overestimating the risk of seismic surveys to bow-riding

dolphins. The EA fails to present the environmental assessment sufficient to justify the need for shut-downs. This faulty risk assessment is then used to support the new and unwarranted dolphin shut-down requirement. The proposal is operationally disruptive, potentially to a level of making such surveys impossible to conduct. The requirement conflicts with longstanding mitigation methods for seismic surveys in the GOM as well as proposed mitigation measures. Based on the information detailed in the Industry Associations letter, they strongly recommend that NMFS and USGS do not require shut-down of the seismic sources for dolphins entering the exclusion zone.

Response: USGS has proposed the buffer and exclusion zones included in the IHA in their IHA application and EA. Also, USGS has proposed to implement the monitoring and mitigation measures included in the IHA in their IHA application and EA. They have determined that the measures are effective and practicable as described in this Federal Register notice, and NMFS concurs with their determination. As a precautionary approach, USGS has included dolphins and whales in the shut-down procedures as a mitigation measure, which has been standard for other seismic surveys conducted for the purpose of scientific research and that have occurred worldwide.

The shut-down procedure for dolphins is not a "new and unwarranted" requirement, it has been proposed by USGS and NSF (and required by NMFS in IHAs) on numerous seismic surveys that have occurred around the world since at least 2003.

Comment 18: The Industry Associations states that it has been long recognized that cetaceans emit sounds as they echolocate that are well above the regulatory protective levels of 180/160 dB 1 μPa (rms). Repeated dolphin clicks have been measures up to 230 dB (Au et al., 1978). Dr. Alexander Supin and Dr. Paul Nachtigall developed a way of measuring the hearing

of cetaceans during echolocation by examining the brain wave patterns of the animals to both the outgoing echolocation signal and the echo that returned from that signal (Supin et al., 2003; Nachtigall and Supin, 2008). Research on harbor porpoise (Linnenschmidt et al., 2012) and the bottlenose dolphin (Li et al., 2011; 2012) suggest hearing control may apply to a number of different species of echolocating whales and dolphins. The EA should consider this new research regarding the potential hearing control mechanisms of odontocetes. There are indications that some cetaceans naturally reduce their hearing sensitivity and therefore the estimates of incidental takes should be reduced.

Response: Many mammals, especially those that echolocate (i.e., bats), exhibit a vocally-induced acoustic reflex of the middle ear muscles (i.e., stapedius reflex). This reflex acts as a protective mechanism to protect the ear from damage from loud sounds. This reflex depends on a multitude of factors, including sound pressure level and frequency. It is not surprising that marine mammals are able to control their hearing while echolocating. Whether this phenomenon in marine mammals is associated with the stapedius reflex or another mechanism is uncertain. What also remains unclear is whether these animals are capable of adjusting their hearing when exposed to sources other than their own vocalizations (which they know are about to occur) and specifically the acoustic characteristics associated with seismic activities. Last, considering the amount of anthropogenic sound present in the marine environment, using this reflex in association with it would likely reduce their ability to hear important environmental and biological cues.

Comment 19: The Industry Associations state that recent work by Dr. Jim Finneran investigated the auditory effects on bottlenose dolphins exposed to multiple underwater impulses produced by a seismic airgun. The pre- and post-exposure hearing thresholds in exposed

dolphins were compared to determine the amount of temporary hearing loss, called a temporary threshold shift (TTS), as a function of exposure level and the number of impulses. The dolphins exposed to seismic sound levels up to 196 dB re 1 μPa^2s (cumulative SEL) showed no measurable TTS (Finneran et al., 2012; Finneran et al., 2011). The USGS EA would be improved by a discussion of this research regarding animal sound tolerance. These results would further explain why dolphins may bow-ride seismic vessels without sustaining injury.

Response: NMFS believes that these documents are adequate and contain a proper description of risk assessment in order for it to make the necessary determinations under the MMPA and issue the IHA. USGS has proposed the buffer and exclusion zones included in the IHA in their IHA application and EA. As a precautionary approach, USGS has included dolphins and whales in the shut-down procedures as a mitigation measure. Also, USGS has proposed to implement the monitoring and mitigation measures included in the IHA in their IHA application and EA. They have determined that the measures are effective and practicable as described in this Federal Register notice, and NMFS concurs with their determination. USGS included a discussion of tolerance in the section on the "Potential Effects of Airguns Sounds on Marine Mammals" in the EA as well as the IHA application. No Level A harassment, serious injury, or mortality is expected or has been authorized.

Comment 20: The Industry Associations state that the USGS EA should have considered extensive peer-reviewed literature and field observations that establish that bow-riding is normal, not abnormal, behavior for dolphins. Also, Northern bottlenose whales (Hyperoodon ampullatus) are sometimes quite tolerant of slow-moving vessels (Reeves et al., 1993; Hooker et al., 2001); dolphins may tolerate boats of all sizes, often approaching and riding the bow and stern waves (Shane et al., 1986); and spinner dolphins in the GOM were observed bow-riding the

survey vessel in all 14 sightings of this species during one survey (Wursig et al., 1998).

Response: NMFS believes that these documents are adequate and contain a proper description of risk assessment in order for it to make the necessary determinations under the MMPA and issue the IHA. NMFS states in the notice of the proposed IHA (78 FR 11821, February 20, 2013) that "seismic operators and PSOs on seismic vessels regularly see dolphins and other small toothed whales near operating airgun arrays, but in general there is a tendency for most delphinids to show some avoidance of operating seismic vessels (e.g., Goold, 1996a,b,c; Calambokidis and Osmek, 1998; Stone, 2003; Moulton and Miller, 2005; Holst et al., 2006; Stone and Tasker, 2006; Weir, 2008; Richardson et al., 2009; Barkaszi et al., 2009; Moulton and Holst, 2010). Some dolphins seem to be attracted to the seismic vessel and floats, and some ride the bow wave of the seismic vessel even when large arrays of airguns are firing (e.g., Moulton and Miller, 2005). Nonetheless, small toothed whales more often tend to head away, or to maintain a somewhat greater distance from the vessel, when a large array of airguns is operating than when it is silent (e.g., Stone and Tasker, 2006; Weir, 2008; Barry et al., 2010; Moulton and Holst, 2010). In most cases, the avoidance radii for delphinids appear to be small, on the order of one km or less, and some individuals show no apparent avoidance."

Comment 21: The Industry Associations state that proposed mitigation measures conflict with existing requirements. In the U.S. GOM, the requirement to shut-down seismic sources if an animal enters the exclusion zone has historically been applied to whales, but not dolphins. The Bureau of Ocean Energy Management (BOEM) and Bureau of Safety and Environmental Enforcement's (BSEE) existing mitigation requirements are documented in JOINT NTL No. 2012-G02 "Notice to Lessees and Operators of Federal Oil, Gas, and Sulphur Leases in the OCS, Gulf of Mexico OCS Region - Implementation of Seismic Survey Mitigation Measures and

Protected Species Observer Program," which can be found online at: http://www.boem.gov/Regulations/Notices-To-Lessees/Notices-to-Lessees-and-Operators.aspx The USGS monitoring/shut-down zones should be consistent with these existing mitigation measures which have been proven protective. The existing standard is premised upon a 2002 NMFS Biological Opinion. BOEM has itself previously recognized in its recent Supplemental EA for a specific seismic permit in the GOM that extending the shut-down requirement to delphinids is unwarranted.

Response: USGS has proposed the buffer and exclusion zones included in the IHA in their IHA application and EA. As a precautionary approach, USGS has included dolphins and whales in the shut-down procedures as a mitigation measure. USGS states that if a marine mammal is detected outside the exclusion zone, but is likely to enter the exclusion zone, and if the vessel's speed and/or course cannot be changed to avoid having the animal enter the exclusion zone, the seismic source will be shut-down before the animal is within the exclusion zone. Likewise, if a marine mammal is already within the exclusion zone when first detected, the seismic source will be shut-down immediately. For USGS's specified activity, NMFS has included this mitigation measure in the IHA. Under the MMPA, NMFS (not BOEM) must set forth the permissible methods of taking pursuant to such activity, and other means of effecting the least practicable adverse impact on such species or stock and its habitat; therefore, it has included the shut-down for whales and dolphins as a mitigation measure in the IHA. NMFS will enter into further future discussions with BOEM, BSEE, the Industry Associations, and other parties as to whether certain monitoring and mitigation measures are practicable from an economic, safety, and/or operational standpoint as part of BOEM's request to NMFS for incidental take regulations under the MMPA for oil and gas-related seismic surveys on the outer

continental shelf of the GOM.

Comment 22: The Industry Associations state that the proposed USGS requirement to shut-down for all marine mammals entering the exclusion zone conflicts with discretionary shut-downs contemplated in BOEM's "Atlantic Geological and Geophysical (G&G) Activities Programmatic Environmental Impact Statement" (Atlantic G&G PEIS). In the Atlantic G&G draft PEIS proposal, shut-downs would not be required for dolphins approaching the vessel or towed equipment at a speed and vector that indicates voluntary approach to bow-ride or chase towed equipment (this proposed mitigation measures is also unwarranted). If a dolphin voluntarily moves into the exclusion zone after acoustic sound sources are operating, it is reasoned that the sound pressure level is not negatively affecting that particular animal.

The Industry Associations state that dolphin shut-downs would be operationally disruptive. Seismic operators report that dolphins frequently approach and chase equipment towed in the water behind the vessel. Therefore, requiring a shut-down for dolphins could significantly increase survey duration or even make it impossible to conduct some high-resolution surveys.

Response: USGS has proposed the buffer and exclusion zones included in the IHA in their IHA application and EA. As a precautionary approach, USGS has included dolphins and whales in the shut-down procedures as a mitigation measure. Also, USGS has proposed to implement the monitoring and mitigation measures included in the IHA in their IHA application and EA. They have determined that the measures are effective and practicable as described in this Federal Register notice, and NMFS concurs with their determination.

NMFS will enter into further future discussions with BOEM, BSEE, the Industry Associations, and other parties as to whether certain monitoring and mitigation measures are

practicable from an economic, safety, and/or operational standpoint as part of Industry's request to NMFS for IHAs under the MMPA for oil and gas-related seismic surveys on the outer continental shelf of the Atlantic Ocean.

Comment 23: CBD states that if NMFS intends to allow harassment of marine mammal for this activity, the IHA and supporting environmental analyses under the NEPA must be revised and reissued as a draft for further public review and comment.

Response: NMFS disagrees with the CBD's statement. USGS has revised its EA made it available online on its environmental compliance website at: http://woodshole.er.usgs.gov/project-pages/environmental_compliance/index.html

Comment 24: CBD states that NMFS is violating its duty under NEPA to take a hard look at the impact of its decision to allow incidental harassment of marine mammals generally failing to analyze cumulative impacts of human activity on the habitat and wildlife in the GOM. The NEPA analysis must quantitatively evaluate the impacts of military activities, fisheries, the Deepwater Horizon disaster, and the ongoing Unusual Mortality Event (UME) declared for cetaceans in the northern GOM beginning February 1, 2010. In the absence of such analysis, the Finding of No Significant Impact (FONSI) is arbitrary. Without knowing the extent of the harm done to the GOM ecosystem, NMFS should proceed with utmost caution before authorizing additional disruptive activities. Not quantitatively analyzing cumulative impacts prevents the public from understanding whether the incremental harm that this survey inflicts has significant impacts on an already injured ecosystem that could restrict other uses like fishing.

Response: NMFS disagrees with the CBD's statement. Cumulative effects are defined as "the impact on the environment which results from the incremental impact on the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency

(Federal or non-Federal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative impacts can result from individually minor but collectively significant actions that take place over a period of time. While the EA did not contain a quantitative analysis, USGS's EA had a comprehensive discussion of ongoing and reasonably foreseeable actions in the GOM that included: ongoing oil and gas exploration, development, and production; existing oil and gas infrastructure; commercial fishing; alternate energy development; military operations; marine vessel traffic; scientific research; recreation and tourism; acoustic masking; and marine mining and disposal areas. These activities account for cumulative impacts to regional and worldwide populations of marine mammals, many of whom are a small fraction of their former abundance and are listed as endangered or threatened under the ESA and depleted under the MMPA.

Despite these regional and global anthropogenic and natural pressures, available trend information indicates that most local populations of marine mammals in the GOM are stable or increasing (Waring et al., 2013). Most importantly, this seismic survey uses a small airgun array configuration and would be limited to a small area for a relatively short period of time, the inclusion of the monitoring and reporting measures and the requirement to implement mitigation measures (e.g., shut-down of seismic operations), will reduce the amount and severity of the potential impacts; therefore, it is expected to have a negligible impact on the species or stocks of marine mammals in the action area.

The results of the cumulative impacts analysis in the NSF/USGS PEIS indicated that there would not be any significant cumulative effects to marine resources from the proposed NSF-funded or USGS marine seismic research. That same section of the NSF/USGS PEIS also stated that, "a more detailed, cruise-specific cumulative effects analysis would be conducted at the time of the preparation of the cruise-specific EAs, allowing for the identification of other

potential activities in the area of the proposed seismic survey that may result in cumulative impacts to environmental resources." USGS's cruise-specific EA for the low-energy seismic survey, "it appears that there is little overlap between the seismic survey and other activities, and little chance of significant cumulative effects…low-energy airgun operations are unlikely to cause any large-scale or prolonged effects in marine mammals, and the duration of the surveys is very short (i.e., 96 hours at each site)."

Comment 25: The CBD states that the EA fails to mention the lingering effects on habitat and wildlife in the GOM from the Deepwater Horizon oil spill. Without knowing the extent of the harm done to the GOM ecosystem, NMFS should proceed with utmost caution before authorizing additional disruptive activities. Not quantitatively analyzing cumulative impacts prevents the public from understanding whether the incremental harm that this survey inflicts has significant impacts on an already injured ecosystem that could restrict other uses like fishing.

Response: NMFS disagrees with the CBD's statement. While the EA did not contain a quantitative analysis, USGS's EA had a qualitative analysis and comprehensive discussion of ongoing and reasonably foreseeable actions in the GOM that included: ongoing oil and gas exploration, development, and production; existing oil and gas infrastructure; commercial fishing; alternate energy development; military operations; marine vessel traffic; scientific research; recreation and tourism; and marine mining and disposal areas.

Comment 26: The CBD states that NMFS's IHA does not rely on the best available science regarding marine mammal impact thresholds, including the 160 dB (rms) Level B harassment threshold (i.e., buffer zone) and the 180 dB (rms) Level A harassment threshold (i.e., exclusion zone). Further, even if NMFS's assumptions regarding impact thresholds were

correct, the IHA authorizes the take of more than small numbers of marine mammals and greater than negligible impacts on species and stocks, rendering the IHA as proposed illegal under the MMPA.

Response: NMFS has established 160 dB (rms) as the criterion for potential Level B harassment for impulse noise for marine mammals and 180 dB (rms) and 190 dB (rms) as the criterion for potential Level A harassment for impulse noise for cetaceans (i.e., whales, dolphins, and porpoises) and pinnipeds (i.e., seals and sea lions), respectively. NMFS is currently developing new acoustic guidelines for assessing the effects of anthropogenic sound on marine mammal species under our jurisdiction. The updated acoustic criteria will be based on recent advances in science. More information regarding NMFS's marine mammal acoustic guidelines can be found online at: http://www.nmfs.noaa.gov/pr/acoustics/guidelines.htm. NMFS has determined, provided that the aforementioned mitigation and monitoring measures are implemented, that the impact of conducting a marine seismic survey in the deep water of the Gulf of Mexico, April to May 2013, may result, at worst, in a temporary modification in behavior and/or low-level physiological effects (Level B harassment) of small numbers of certain species of marine mammals (see Table 3 below for authorized take numbers).

Comment 27: The CBD requests that NMFS make all of the information regarding the contents of an EFH assessment and EFH consultation (including EFH conservation recommendations), available to the public along with the revised NEPA analysis prior to publishing a final rule authorizing the activity.

Response: USGS has made a no effect determination regarding impacts on EFH. NMFS, Office of Protected Resources, Permits and Conservation Division has determined that the issuance of an IHA for the taking of marine mammals incidental to a low-energy marine seismic

survey in the GOM will not have an adverse impact on EFH; therefore, an EFH consultation is not required.

Comment 28: The CBD states that NMFS's IHA does not rely on the best available science regarding thresholds for marine mammal impacts, including the 160 dB (rms) threshold and the 180/190 dB (rms) Level A harassment (exclusion zone) threshold. Five of the world's leading biologists and bioacousticians working in this field recently characterized the 160 dB threshold as "overly simplified, scientifically outdated, and artificially rigid" and therefore NMFS must use a more conservative threshold. Using a single sound pressure level of 160 dB for Level B harassment represents a major step backward from recent programmatic authorizations. For Navy sonar activity, NMFS has incorporated into its analysis linear risk functions that endeavor to take account of risk and individual variability and to reflect the potential for take at relatively low levels. If NMFS were to modify its threshold estimates, as it must be based on the best available science, the estimated number of marine mammal takes incidental to the proposed seismic survey would be significantly higher than NMFS's current estimates. Further, even if NMFS's assumptions regarding impact thresholds were correct, the IHA authorizes the take of more than small numbers of marine mammals and greater than negligible impacts on species and stocks, rendering the IHA as proposed illegal under the MMPA.

Response: NMFS has established 180 dB (rms) and 190 dB (rms) as the criterion for potential Level A harassment for impulse noise for cetaceans (i.e., whales, dolphins, and porpoises) and pinnipeds (i.e., seals and sea lions), respectively, which were conservatively derived to encompass levels associated with temporary threshold shifts (TTS) and not permanent threshold shifts (PTS). NMFS's is currently developing new acoustic guidelines for assessing

the effects of anthropogenic sound on marine mammal species under our jurisdiction. The updated acoustic criteria will be based on recent advances in science. NMFS is working toward establishing Level B harassment criteria that better account for the variability and complexity of behavioral responses associated with noise exposure (e.g., moving away from a step function towards exposure-response functions that accounts for risk varying with received level. More information regarding NMFS's marine mammal acoustic guidelines can be found online at: http://www.nmfs.noaa.gov/pr/acoustics/guidelines.htm. NMFS has determined, provided that the aforementioned mitigation and monitoring measures are implemented, that the impact of conducting a marine seismic survey in the deep water of the Gulf of Mexico, April to May 2013, may result, at worst, in a temporary modification in behavior and/or low-level physiological effects (Level B harassment) of small numbers of certain species of marine mammals (see Table 3 below for authorized take numbers).

Comment 29: The CBD states that NMFS's use of the 180/190 dB (rms) threshold for Level A harassment ignores the best available science and is inadequate. NMFS cannot assume that TTS, and even PTS would be unlikely for marine mammals that enter the exclusion zone. A number of recent studies indicate that anthropogenic sound can induce PTS at lower levels than anticipated. New data indicate that mid-frequency cetaceans have greater sensitivity to sounds within their best hearing range than was previously thought. This recent research indicates it is possible that marine mammals will experience injury, or potentially serious injury, at lower sound thresholds than NMFS assumes. NMFS must take into account the best available science and set lower thresholds for Level A harassment, which would lead to larger exclusion zones around the survey. Given NMFS's lax approach to estimating impact thresholds for injury to marine mammals from the proposed survey, it is likely that many more marine mammals will be

harmed than NMFS estimates. In light of the best available science, NMFS cannot rationally defend its conclusion that the proposed survey will harm no more than small numbers of marine mammals and will have no more than negligible impacts on those species or stocks.

Response: NMFS has established 180 dB (rms) and 190 dB (rms) as the criterion for potential Level A harassment for impulse noise for cetaceans (i.e., whales, dolphins, and porpoises) and pinnipeds (i.e., seals and sea lions), respectively, which were conservatively based on TTS. NMFS's is currently developing new acoustic guidelines for assessing the effects of anthropogenic sound on marine mammal species under our jurisdiction. The updated acoustic criteria will be based on recent advances in science and includes studies that take into account frequency sensitivity associated with noise-induced hearing loss. Nevertheless, since these original criteria (i.e., 180/190 dB [rms]) were based on TTS, in the majority of situations, especially for intermittent sources, like airguns, the ranges of exclusion zones that account for these new data are equal, if not smaller than the zones based on the 180 and 190 dB (rms) thresholds. Thus, the exclusion zones to 180 and 190 dB are expected to be protective. More information regarding NMFS's marine mammal acoustic guidelines can be found online at: http://www.nmfs.noaa.gov/pr/acoustics/guidelines.htm.

NMFS has determined, provided that the aforementioned mitigation and monitoring measures are implemented, that the impact of conducting a marine seismic survey in the deep water of the Gulf of Mexico, April to May 2013, may result, at worst, in a temporary modification in behavior and/or low-level physiological effects (Level B harassment) of small numbers of certain species of marine mammals (see Table 3 below for authorized take numbers). NMFS believes that the length of the seismic survey, the requirement to implement mitigation measures (e.g., shut-down of seismic operations), and the inclusion of the monitoring and

reporting measures, will reduce the amount and severity of the potential impacts from the activity to the degree that it will have a negligible impact on the species or stocks in the action area.

Comment 30: The CBD states that NMFS has blatantly disregarded the MMPA's prohibition on allowing the take of more than small numbers of marine mammals. For example, NMFS estimates that in eight days, 118 melon-headed whales will be taken, which is over five percent of the population. As noted above, this number is likely an underestimate. But even taken at face value, NMFS cannot rationally argue that this is a small number. There is no numerical cut-off for "small numbers." NMFS does not even attempt to explain how its take estimates meet the "small numbers" requirement. In fact, the IHA entirely disregards this statutory requirement. NMFS does not attempt to define small numbers, nor does it undertake any sort of analysis of what small numbers might be. The Ninth Circuit recently confirmed that the MMPA requires that authorizing agencies (here NMFS) to separately find both that only small numbers of marine mammals will be taken and that the impacts to the species or stock will be negligible. While NMFS attempted to rationalize its determination that impacts to the species or stocks will be negligible, it undertook no such analysis regarding small numbers. The IHA here violates the MMPA because it does not guarantee that only small numbers of marine mammals will be taken.

Response: 50 CFR 216.103 defines "small numbers" as "a portion of a marine mammal species or stock whose taking would have a negligible impact on that species or stock." NMFS has determined, provided that the aforementioned mitigation and monitoring measures are implemented, that the impact of USGS conducting a low-energy marine seismic survey in the deep water of the Gulf of Mexico, April to May 2013, may result, at worst, in a temporary

modification in behavior and/or low-level physiological effects (Level B harassment) of small numbers of 18 species of marine mammals (see Table 3 below for authorized take numbers and approximate percentage of best population estimate of stock). NMFS has determined that the 118 authorized takes of melon-headed whales is a small number, as it is approximately 5.3% of the estimated best population (2,235 animals) in the northern GOM stock.

Comment 31: The CBD states that for the endangered sperm whale, a deep-diving whale that feeds in the ocean's "sound channel," take of even one individual would constitute more than a negligible impact and would therefore violate the MMPA. Reliance on observers for mitigation also has limited likelihood of success given the deep-diving behavior of sperm whales and the limits of visual observations at night and in poor weather. For sperm whales, the take is planned for peak breeding season, suggesting that the long-term impacts if reproductive success is compromised may be more severe than anticipated.

Response: NMFS believes that the length of the seismic survey, the requirement to implement mitigation measures (e.g., shut-down of seismic operations), and the inclusion of the monitoring and reporting measures, will reduce the amount and severity of the potential impacts from the activity to the degree that it will have a negligible impact on the species or stocks in the action area. No Level A harassment, serious injury, or mortality is expected or has been authorized.

Comment 32: The CBD states that NMFS underestimates the risk of entanglement for sperm whales. Even though NMFS acknowledges that this "large of an array carries the risk of entanglement for marine mammals," it completely fails to support the conclusion that large whales "have a low probability of becoming entangled due to slow speed of the survey vessel and onboard monitoring efforts." In 2008, a fishing vessel killed a sperm whale that became

entangled in the sea anchor (parachute anchor and lines). As the purpose of the sea anchor is to drastically slow a vessel (almost stop it), this contradicts the proposition that the USGS can reduce sperm whale entanglements by slow speed or onboard monitoring efforts (which are limited by low visibility at night, when a sperm whale also might not be able to see the array).

Response: In the notice of the proposed IHA (78 FR 11821, February 20, 2013), NMFS states that the "…proposed seismic survey would require towing approximately a single 450 m cable streamer. This large of an array carries the risk of entanglement for marine mammals. Wildlife, especially slow moving individuals, such as large whales, have a low probability of becoming entangled due to slow speed of the survey vessel and onboard monitoring efforts. The probability for entanglement of marine mammals is considered not significant because of the vessel speed and the monitoring efforts onboard the survey vessel." NMFS has included a requirement in the IHA that PSOs shall conduct monitoring while the airgun array and streamer are being deployed or recovered from the water. Although the towed hydrophone streamers and other towed seismic equipment could come in direct contact with marine mammal species, NMFS believes that entanglement is highly unlikely due to streamer design and extensive use of this equipment (thousands of miles of effort over a many years) without entanglement of marine mammals; therefore entanglement is considered discountable. No Level A harassment, serious injury, or mortality is expected or has been authorized.

Comment 33: The CBD states that the estimated take exceeds the potential biological removal (PBR) level of 1.1 sperm whales. The most recent abundance estimate for the sperm whale is 763, from a summer 2009 oceanic survey covering waters from the 200 m isobaths to the seaward extend of the U.S. EEZ. Threats to sperm whales in the GOM are numerous. The most recent stock assessment report counts one death from entanglement in a fishing vessel's

anchor line and seven strandings from 2006 to 2010 for which it could not be determined if it was due to human interaction. This presents the possibility that mortality from human activities is already above the PBR level of 1.1. Any additional take of a sperm whale would have greater than negligible impacts on the stock because NMFS must take into account the cumulative take of sperm whales from other activities.

Response: The NMFS Draft 2012 Stock Assessment Report for the Northern GOM stock of sperm whale has a best abundance estimate of 763 and a minimum population estimate of 560 individuals. PBR is the product of the minimum population size (560), one half the maximum net productivity rate (0.04), and a recovery factor (assumed to be 0.1 because it is an endangered species). PBR for the northern GOM stock of sperm whales is 1.1. NMFS has reviewed USGS's EA and IHA application and has determined that no more than Level B harassment of marine mammals would occur. Any marine mammal that could be exposed to the seismic survey would likely experience short-term disturbance. Marine mammals are expected, at most, to show an avoidance response to the seismic pulses. Further, mitigation measures such as controlled speed, course alteration, visual monitoring, and shut-downs when marine mammals are detected within defined ranges should further reduce short-term reactions to disturbance, and minimize any effects on hearing sensitivity. No Level A harassment, serious injury, or mortality is expected or has been authorized; therefore PBR is not applicable.

Comment 34: The CBD states that based on multiple factors in NEPA's regulations and the controversial nature of the government seismic surveys to prospect for novel deepwater fossil fuel sources as well as the significant environmental effects of this action requires NMFS to prepare a full Environmental Impact Statement (EIS) analyzing the impacts of the proposed survey.

Response: NMFS disagrees with the CBD's comments, NMFS and USGS have satisfied all requirements of NEPA. NMFS has adopted USGS's EA and prepared a FONSI for this action. NMFS has evaluated USGS's EA and found it includes all required components for adoption, these include: sufficient evidence and analysis for determining whether to prepare an EIS or FONSI; brief discussion of need for the proposed action; a listing of alternative to the proposed action; description of the affected environment; and brief discussion of the environmental impacts of the proposed action and alternatives. NMFS has determined that it is not necessary to prepare an EIS for the issuance of an IHA to USGS for this activity.

Comment 35: The CBD states that the EA fails to meet the requirement that alternatives "be given full and meaningful consideration" by dismissing the no action alternative in a cursory fashion and failing to consider other alternatives adequately. Other alternatives for NMFS to consider include (1) using alternative equipment that would reduce the number or length of survey lines; (2) selecting alternative sites that are not in EFH and a habitat area of particular concern; or (3) conducting more extensive analysis of the data collected previously to either eliminate the need for the current survey or reduce its size or duration. NMFS cannot support the EA and determinations conclusion that the "no action" alternative would result in the loss of seismic data of considerable scientific value because it is possible to collect seismic data without harassing marine mammals. In light of this, the USGS and NMFS must analyze alternative means of collecting seismic data that lessen impacts to wildlife.

Response: NMFS and USGS have satisfied all requirements of NEPA. Given the limited window for the operations and the fact that marine mammals are widespread in the survey area throughout the year, altering the timing of the proposed project likely would result in no net benefits and does not meet the purpose and need of the USGS. Issuing the IHA for another

period could result in significant delays and disruptions to the cruise as well as subsequent studies on the Pelican for 2013 and beyond. NMFS has fully complied with its obligations under NEPA.

Comment 36: Several private citizens oppose the issuance of an IHA to USGS for the take of marine mammals incidental to conducting a low-energy seismic survey in deep water of the northwest Gulf of Mexico from April to May 2013. They state that the airguns will emit decibels at 190 to 230 for 96 hours in two different locations, and can cause hearing damage, bleeding of the brain, behavioral issues, and strandings. Marine mammals depend on their sensitive hearing for survival. Hearing loss for a cetacean can mean the inability to function, hunt, navigate, and cause death. They state that it has been widely documented that the use of active sonar, underwater detonations, and other extremely loud noises terrorizes and often kills cetaceans. Marine life is already threatened from oil spills, drilling, pollution, hunting, ship strikes, over-fishing, climate change, etc. Species, such as the North Atlantic, humpback, sei, fin, blue, and sperm whale and West Indian manatee, are listed as endangered under the ESA. Using lookouts (i.e., PSOs) to detect marine life during this seismic survey is unacceptable as they can only see the surface of the ocean, and the marine mammals spend most of their lives underwater. Alternative technologies and methods should be used so that these activities have less potential impacts. They request a public hearing be held before the Commission.

Response: NMFS recognizes that numerous private citizens oppose the issuance of an IHA to USGS for the low-energy marine seismic survey in the deep water of the GOM. The notice of the proposed IHA (78 FR 11821, February 20, 2013) included a discussion of the effects of sounds from airguns and Navy sonar on mysticetes and odontocetes including tolerance, masking, behavioral disturbance, hearing impairment, other non-auditory physical

effects and strandings. In April 2013, NMFS issued a Biological Opinion and concluded that the action and issuance of the IHA are not likely to jeopardize the continued existence of cetaceans and sea turtles, which included sperm whales, and included an Incidental Take Statement (ITS) incorporating the requirements of the IHA as Terms and Conditions of the ITS is likewise a mandatory requirement of the IHA. The West Indian manatee is managed under the jurisdiction of the U.S. Fish and Wildlife Service (USFWS) and is not expected to occur in the action area. On February 25 to 27, 2013, the BOEM held a workshop on the status of alternative and quieting technologies entitled "Quieting Technologies for Reducing Noise during Seismic Surveying and Pile Driving" that examined current and emerging technologies that have the potential to reduce the impacts of noise generated during offshore exploratory seismic surveys, pile driving, and vessels associated with these activities. NMFS will work with other Federal agencies to identify, evaluate, and potentially develop these alternative and quieting technologies for potential future use. During the 30-day public comment period, NMFS forwarded copies of the IHA application to the Commission and its Committee of Scientific Advisors and received comments on March 12, 2013. NMFS does not expect to hold a public hearing before the Commission.

Comment 37: A private citizen recommends:

(1) The installation of a passive acoustic monitoring (PAM) system to detect any vocalizations by whales or dolphins, and to help PSOs locate any that may be present at night;

(2) Additional PSOs be added to the ship; and

(3) An additional support vessel should be provided to steam in front of the survey vessel to spot any whales or dolphins prior to the larger vessel approaching.

Response: The NSF/USGS PEIS states that a towed PAM system is used normally for high-energy seismic surveys, and implied that it was not used for low-energy seismic surveys

since towing PAM equipment is not practicable in some cases. USGS's project is considered a low-energy marine seismic survey; therefore, USGS has determined that it is not practicable and a towed PAM system will not be used for this specific project. USGS has appointed two PSOs onboard the Pelican, with NMFS's concurrence, to monitor and mitigate the buffer and exclusion zones during daylight. The Pelican is relatively small; therefore, the available berths for additional PSOs are limited. In addition to the PSOs, at least two of the USGS personnel aboard the vessel will have PSO training to detect protected species and will be available to cover for PSOs during mealtimes and restroom breaks, if needed. Also, the vessel's crew will be instructed to observe from the bridge and decks for opportunistic sightings. In certain situations, NMFS has recommended the use of additional support vessels to enhance PSO monitoring effort during seismic surveys. For this and other similar low-energy seismic surveys, however, NMFS has not deemed it necessary to employ additional support vessels to monitor the buffer and exclusion zones due to the relatively small distances of these zones. An additional vessel would unnecessarily increase noise and emissions in the action area as well.

Description of the Marine Mammals in the Specified Geographic Area of the Specified Activity

The marine mammal species that potentially occur within the GOM include 28 species of cetaceans and one sirenian (Jefferson and Schiro, 1997; Wursig et al., 2000; see Table 2 below). In addition to the 28 species known to occur in the GOM, the long-finned pilot whale (Globicephala melas), long-beaked common dolphin (Delphinus capensis), and short-beaked common dolphin (Delphinus delphis) could potentially occur there. However, there are no confirmed sightings of these species in the GOM, but they have been seen close and could eventually be found there (Wursig et al., 2000). Those three species are not considered further in this document. The marine mammals that generally occur in the action area belong to three

taxonomic groups: mysticetes (baleen whales), odontocetes (toothed whales), and sirenians (the West Indian manatee). Of the marine mammal species that potentially occur within the GOM, 21 species of cetaceans (20 odontocetes, 1 mysticete) are routinely present and have been included in the analysis for incidental take to the seismic survey. Marine mammal species listed as endangered under the U.S. Endangered Species Act of 1973 (ESA; 16 U.S.C. 1531 et seq.), includes the North Atlantic right (Eubalaena glacialis), humpback (Megaptera novaeangliae), sei (Balaenoptera borealis), fin (Balaenoptera physalus), blue (Balaenoptera musculus), and sperm (Physeter macrocephalus) whale, as well as the West Indian (Florida) manatee (Trichechus manatus latirostris). Of those endangered species, only the sperm whale is likely to be encountered in the survey area. No species of pinnipeds are known to occur regularly in the GOM, and any pinniped sighted in the study area would be considered extralimital. The Caribbean monk seal (Monachus tropicalis) used to inhabit the GOM but is considered extinct and has been delisted from the ESA. The West Indian manatee is the one marine mammal species mentioned in this document that is managed by the U.S. Fish and Wildlife Service (USFWS) and is not considered further in this analysis; all others are managed by NMFS.

In general, cetaceans in the GOM appear to be partitioned by habitat preferences likely related to prey distribution (Baumgartner et al., 2001). Most species in the northern GOM concentrated along the upper continental slope in or near areas of cyclonic circulation in waters 200 to 1,000 m (656.2 to 3,280.8 ft) deep. Species sighted regularly in these waters include Risso's, rough-toothed, spinner, striped, pantropical spotted, and Clymene dolphins, as well as short-finned pilot, pygmy and dwarf sperm, sperm, Mesoplodon beaked, and unidentified beaked whales (Davis et al., 1998). In contrast, continental shelf waters (< 200 m deep) are primarily inhabited by two species: bottlenose and Atlantic spotted dolphins (Davis et al., 2000, 2002;

Mullin and Fulling, 2004). Bottlenose dolphins are also found in deeper waters (Baumgartner et al., 2001). The narrow continental shelf south of the Mississippi River delta (20 km [10.8 nmi] wide at its narrowest point) appears to be an important habitat for several cetacean species (Baumgartner et al., 2001; Davis et al., 2002). There appears to be a resident population of sperm whales within 100 km (54 nmi) of the Mississippi River delta (Davis et al., 2002).

Table 2 (below) presents information on the abundance, distribution, population status, conservation status, and population trend of the species of marine mammals that may occur in the study area during April to May 2013.

Table 2. The habitat, regional abundance, and conservation status of marine mammals that may occur in or near the seismic survey area in the deep water of the northwest GOM (See text and Table 2 in USGS's application for further details).

Species	Habitat	Population Estimate[3] (Minimum)	ESA[1]	MMPA[2]	Population Trend[3]
Mysticetes					
North Atlantic right whale (Eubalaena glacialis)	Coastal and shelf	Extralimital	EN	D	Increasing
Humpback whale (Megaptera novaeangliae)	Pelagic, nearshore waters, and banks	Rare	EN	D	Increasing
Minke whale (Balaenoptera acutorostrata)	Pelagic and coastal	Rare	NL	NC	No information available
Bryde's whale (Balaenoptera brydei)	Pelagic and coastal	33 (16) – Northern GOM stock	NL	NC	Unable to determine
Sei whale (Balaenoptera borealis)	Primarily offshore, pelagic	Rare	EN	D	Unable to determine
Fin whale (Balaenoptera physalus)	Continental slope, pelagic	Rare	EN	D	Unable to determine
Blue whale (Balaenoptera musculus)	Pelagic, shelf, coastal	Extralimital	EN	D	Unable to determine
Odontocetes					
Sperm whale (Physeter macrocephalus)	Pelagic, deep sea	763 (560) - Northern GOM stock	EN	D	Unable to determine
Pygmy sperm whale (Kogia breviceps) and Dwarf sperm whale (Kogia sima)	Deep waters off the shelf	186 (90) - Northern GOM stock	NL	NC	Unable to determine
Cuvier's beaked whale (Ziphius cavirostris)	Pelagic	74 (36) - Northern GOM stock	NL	NC	Unable to determine
Mesoplodon beaked whale (includes Blainville's beaked whale [M. densirostris], Gervais' beaked whale [M. europaeus], and Sowerby's beaked whale [M. bidens]	Pelagic	149 (77) - Northern GOM stock	NL	NC	Unable to determine
Killer whale (Orcinus orca)	Pelagic, shelf, coastal	28 (14) – Northern GOM stock	NL	NC	Unable to determine

Short-finned pilot whale (Globicephala macrorhynchus)	Pelagic, shelf coastal	2,415 (1,456) - Northern GOM stock	NL	NC	Unable to determine
False killer whale (Pseudorca crassidens)	Pelagic	NA – Northern GOM stock	NL	NC	Unable to determine
Melon-headed whale (Peponocephala electra)	Pelagic	2,235 (1,274) – Northern GOM stock	NL	NC	Unable to determine
Pygmy killer whale (Feresa attenuata)	Pelagic	152 (75) – Northern GOM stock	NL	NC	Unable to determine
Risso's dolphin (Grampus griseus)	Deep water, seamounts	2,442 (1,563) - Northern GOM stock	NL	NC	Unable to determine
Bottlenose dolphin (Tursiops truncatus)	Offshore, inshore, coastal, estuaries	NA (NA) - 32 Northern GOM Bay, Sound and Estuary stocks NA (NA) - Northern GOM continental shelf stock 7,702 (6,551) - GOM eastern coastal stock 2,473 (2,004) - GOM northern coastal stock NA (NA) – GOM western coastal stock 5,806 (4,230) – Northern GOM oceanic stock	NL	NC S - 32 stocks inhabitiing the bays, sounds, and estuaries along GOM coast, and GOM western coastal stock	Unable to determine
Rough-toothed dolphin (Steno bredanensis)	Pelagic	624 (311) – Northern GOM stock	NL	NC	Unable to determine
Fraser's dolphin (Lagenodelphis hosei)	Pelagic	NA (NA) – Northern GOM stock	NL	NC	Unable to determine
Striped dolphin (Stenella coeruleoalba)	Pelagic	1,849 (1,041) - Northern GOM stock	NL	NC	Unable to determine
Pantropical spotted dolphin (Stenella attenuata)	Pelagic	50,880 (40,699) - Northern GOM stock	NL	NC	Unable to determine
Atlantic spotted dolphin (Stenella frontalis)	Coastal and pelagic	NA (NA) - Northern GOM stock	NL	NC	Unable to determine
Spinner dolphin (Stenella longirostris)	Mostly pelagic	11,441 (6,221) - Northern GOM stock	NL	NC	Unable to determine
Clymene dolphin (Stenella clymene)	Pelagic	129 (64) - Northern GOM stock	NL	NC	Unable to determine
Sirenians					
West Indian (Florida) manatee (Trichechus manatus	Coastal, rivers, and estuaries	3,802 - U.S. stock	EN	D	Increasing or stable throughout

latrostris)					much of Florida

NA = Not available or not assessed.
[1] U.S. Endangered Species Act: EN = Endangered, T = Threatened, DL = Delisted, NL = Not listed.
[2] U.S. Marine Mammal Protection Act: D = Depleted, S = Strategic, NC = Not Classified.
[3] NMFS Draft 2012 Stock Assessment Reports.
[4] USFWS Stock Assessment Reports.

Refer to sections 3 and 4 of USGS's application for detailed information regarding the abundance and distribution, population status, and life history and behavior of these other marine mammal species and their occurrence in the project area. The application also presents how USGS calculated the estimated densities for the marine mammals in the survey area. NMFS has reviewed these data and determined them to be the best available scientific information for the purposes of the IHA.

Potential Effects on Marine Mammals

Acoustic stimuli generated by the operation of the airguns, which introduce sound into the marine environment, may have the potential to cause Level B harassment of marine mammals in the survey area. The effects of sounds from airgun operations might include one or more of the following: tolerance, masking of natural sounds, behavioral disturbance, temporary or permanent hearing impairment, or non-auditory physical or physiological effects (Richardson et al., 1995; Gordon et al., 2004; Nowacek et al., 2007; Southall et al., 2007).

Permanent hearing impairment, in the unlikely event that it occurred, would constitute injury, but temporary threshold shift (TTS) is not an injury (Southall et al., 2007). Although the possibility cannot be entirely excluded, it is unlikely that the project would result in any cases of temporary or permanent hearing impairment, or any significant non-auditory physical or physiological effects. Based on the available data and studies described here, some behavioral disturbance is expected, but NMFS expects the disturbance to be localized and short-term. A more comprehensive review of these issues can be found in the "Programmatic Environmental Impact Statement/Overseas Environmental Impact Statement prepared for Marine Seismic Research that is funded by the National Science Foundation and conducted by the U.S. Geological Survey" (NSF/USGS, 2011).

The notice of the proposed IHA (78 FR 11821, February 20, 2013) included a discussion of the effects of sounds from airguns on mysticetes and odontocetes including tolerance, masking, behavioral disturbance, hearing impairment, and other non-auditory physical effects. NMFS refers the reader to USGS's application and EA for additional information on the behavioral reactions (or lack thereof) by all types of marine mammals to seismic vessels.

Anticipated Effects on Marine Mammal Habitat, Fish, and Invertebrates

NMFS included a detailed discussion of the potential effects of this action on marine mammal habitat, including physiological and behavioral effects on marine fish, fisheries, and invertebrates in the notice of the proposed IHA (78 FR 11821, February 20, 2013). The seismic survey will not result in any permanent impact on habitats used by the marine mammals in the survey area, including the food sources they use (i.e., fish and invertebrates), and there will be no physical damage to any habitat. While NMFS anticipates that the specified activity may result in marine mammals avoiding certain areas due to temporary ensonification, this impact to habitat is temporary and reversible which was considered in further detail in the notice of the proposed IHA (78 FR 11821, February 20, 2013), as behavioral modification. The main impact associated with the activity will be temporarily elevated noise levels and the associated direct effects on marine mammals.

Recent work by Andre et al. (2011) purports to present the first morphological and ultrastructural evidence of massive acoustic trauma (i.e., permanent and substantial alterations of statocyst sensory hair cells) in four cephalopod species subjected to low-frequency sound. The cephalopods, primarily cuttlefish, were exposed to continuous 40 to 400 Hz sinusoidal wave sweeps (100% duty cycle and 1 second sweep period) for two hours while captive in relatively small tanks (one 2,000 liter [L, 2 m^3] and one 200 L [0.2 m^3] tank). The received SPL was

reported as 157±5 dB re 1 µPa, with peak levels at 175 dB re 1 µPa. As in the McCauley et al. (2003) paper on sensory hair cell damage in pink snapper as a result of exposure to seismic sound, the cephalopods were subjected to higher sound levels than they would be under natural conditions, and they were unable to swim away from the sound source.

Mitigation

In order to issue an ITA under section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to such activity, and other means of effecting the least practicable adverse impact on such species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and the availability of such species or stock for taking for certain subsistence uses.

USGS reviewed the following source documents and have incorporated a suite of appropriate mitigation measures into their project description.

(1) Protocols used during previous NSF and USGS-funded seismic research cruises as approved by NMFS and detailed in the recently completed "Final Programmatic Environmental Impact Statement/Overseas Environmental Impact Statement for Marine Seismic Research Funded by the National Science Foundation or Conducted by the U.S. Geological Survey;"

(2) Previous IHA applications and IHAs approved and authorized by NMFS; and

(3) Recommended best practices in Richardson et al. (1995), Pierson et al. (1998), and Weir and Dolman, (2007).

To reduce the potential for disturbance from acoustic stimuli associated with the activities, USGS and/or its designees shall implement the following mitigation measures for marine mammals:

(1) Exclusion zones around the sound source;

(2) Speed and course alterations;

(3) Shut-down procedures; and

(4) Ramp-up procedures.

Exclusion Zones – USGS use radii to designate exclusion and buffer zones and to estimate take for marine mammals. Table 1 (presented earlier in this document) shows the distances at which one would expect to receive three sound levels (160, 180, and 190 dB) from the 18 airgun array and a single airgun. The 180 dB and 190 dB level shut-down criteria are applicable to cetaceans and pinnipeds, respectively, as specified by NMFS (2000). USGS used these levels to establish the exclusion and buffer zones.

Received sound levels have been modeled by L-DEO for a number of airgun configurations, including two 105 in^3 GI airguns, in relation to distance and direction from the airguns (see Figure 2 of the IHA application). USGS has used the modeling by L-DEO to determine the buffer and exclusion zones for this seismic survey. The model does not allow for bottom interactions, and is most directly applicable to deep water. Based on the modeling, estimates of the maximum distances from the GI airguns where sound levels are predicted to be 190, 180, and 160 dB re 1 μPa (rms) in deep water were determined (see Table 1 above).

Empirical data concerning the 190, 180, and 160 dB (rms) distances were acquired for various airgun arrays based on measurements during the acoustic verification studies conducted by L-DEO in the northern GOM in 2003 (Tolstoy et al., 2004) and 2007 to 2008 (Tolstoy et al., 2009). Results of the 36 airgun array are not relevant for the 2 GI airguns to be used in the survey. The empirical data for the 6, 10, 12, and 20 airgun arrays indicate that, for deep water, the L-DEO model tends to overestimate the received sound levels at a given distance (Tolstoy et al., 2004). Measurements were not made for the two GI airgun array in deep water; however,

USGS propose to use the safety radii predicted by L-DEO's model for the GI airgun operations in deep water, although they are likely conservative given the empirical results for the other arrays. The 180 and 190 dB (rms) radii are shut-down criteria applicable to cetaceans and pinnipeds, respectively, as specified by NMFS (2000); these levels were used to establish exclusion zones. Therefore, the assumed 180 and 190 dB radii are 70 m (229.7 ft) and 20 m (65.6 ft), respectively. If the PSO detects a marine mammal(s) within or about to enter the appropriate exclusion zone, the airguns will be shut-down immediately.

Table 2 summarizes the predicted distances at which sound levels (160, 180, and 190 dB [rms]) are expected to be received from the two airgun array operating in deep water (greater than 1,000 m [3,280 ft]) depths. For the project, USGS plans to use the distances for the two 105 in^3 GI airguns for the single 35 in^3 GI airgun, for the determination of the buffer and exclusion zones since this represents the largest and therefore most conservative distances determined by the model results provided by L-DEO.

Table 2**.** Modeled (two 105 in^3 GI airgun array) distances to which sound levels ≥ 190, 180, and 160 dB re: 1 μPa (rms) could be received in deep water during the survey in the deep water of the northwest GOM, April to May 2013.

Source and Volume	Tow Depth (m)	Water Depth (m)	Predicted RMS Radii Distances (m) for 2 Airgun Array		
			190 dB	180 dB	160 dB
Two GI Airguns (105 in^3)	3	Deep (>1,000)	20 m (65.6 ft)	70 m (229.7 ft)	670 m (2,198.2 ft)

Speed and Course Alterations – If a marine mammal is detected outside the exclusion zone and, based on its position and direction of travel (relative motion), is likely to enter the exclusion zone, changes of the vessel's speed and/or direct course will be considered if this does not compromise operational safety. This would be done if operationally practicable while

minimizing the effect on the planned science objectives. For marine seismic surveys towing large streamer arrays, however, course alterations are not typically implemented due to the vessel's limited maneuverability. After any such speed and/or course alteration is begun, the marine mammal activities and movements relative to the seismic vessel will be closely monitored to ensure that the marine mammal does not approach within the exclusion zone. If the marine mammal appears likely to enter the exclusion zone, further mitigation actions will be taken, including further course alterations and/or shut-down of the airgun(s). Typically, during seismic operations, the source vessel is unable to change speed or course, and one or more alternative mitigation measures will need to be implemented.

Shut-down Procedures - USGS will shut-down the operating airgun(s) if a marine mammal is detected outside the exclusion zone for the airgun(s), and if the vessel's speed and/or course cannot be changed to avoid having the animal enter the exclusion zone, the seismic source will be shut-down before the animal is within the exclusion zone. Likewise, if a marine mammal is already within the exclusion zone when first detected, the seismic source will be shut down immediately.

Following a shut-down, USGS will not resume airgun activity until the marine mammal has cleared the exclusion zone. USGS will consider the animal to have cleared the exclusion zone if:

- A PSO has visually observed the animal leave the exclusion zone, or
- A PSO has not sighted the animal within the exclusion zone for 15 minutes for species with shorter dive durations (i.e., small odontocetes), or 30 minutes for species with longer dive durations (i.e., mysticetes and large odontocetes, including sperm, killer, and beaked whales).

Although power-down procedures are often standard operating practice for seismic surveys, they are not planned to be used during this planned seismic survey because powering-down from two airguns to one airgun would make only a small difference in the exclusion zone(s) – but probably not enough to allow continued one-airgun operations if a marine mammal came within the exclusion zone for two airguns.

Ramp-up Procedures – Ramp-up of an airgun array provides a gradual increase in sound levels, and involves a step-wise increase in the number and total volume of airguns firing until the full volume of the airgun array is achieved. The purpose of a ramp-up is to "warn" marine mammals in the vicinity of the airguns and to provide the time for them to leave the area avoiding any potential injury or impairment of their hearing abilities. USGS will follow a ramp-up procedure when the airgun array begins operating after a specified period without airgun operations or when a shut-down shut down has exceeded that period. USGS proposes that, for the present cruise, this period would be approximately 15 minutes. L-DEO and Scripps Institution of Oceanography (SIO) has used similar periods (approximately 15 minutes) during previous low-energy seismic surveys.

Ramp-up will begin with a single GI airgun (105 in^3). The second GI airgun (105 in^3) will be added after 5 minutes. During ramp-up, the PSOs will monitor the exclusion zone, and if marine mammals are sighted, a shut-down will be implemented as though both GI airguns were operational.

If the complete exclusion zone has not been visible for at least 30 minutes prior to the start of operations in either daylight or nighttime, USGS will not commence the ramp-up. Given these provisions, it is likely that the airgun array will not be ramped-up from a complete shut-down at night or in thick fog, because the outer part of the exclusion zone for that array will not

be visible during those conditions. If one airgun has operated, ramp-up to full power will be permissible at night or in poor visibility, on the assumption that marine mammals will be alerted to the approaching seismic vessel by the sounds from the single airgun and could move away if they choose. A ramp-up from a shut-down may occur at night, by only where the exclusion zone is small enough to be visible. USGS will not initiate a ramp-up of the airguns if a marine mammal is sighted within or near the applicable exclusion zones during the day or close to the vessel at night.

NMFS has carefully evaluated the applicant's mitigation measures and has considered a range of other measures in the context of ensuring that NMFS prescribes the means of effecting the least practicable adverse impact on the affected marine mammal species and stocks and their habitat. NMFS's evaluation of potential measures included consideration of the following factors in relation to one another:

(1) The manner in which, and the degree to which, the successful implementation of the measure is expected to minimize adverse impacts to marine mammals;

(2) The proven or likely efficacy of the specific measure to minimize adverse impacts as planned; and

(3) The practicability of the measure for applicant implementation.

Based on NMFS's evaluation of the applicant's measures, as well as other measures considered by NMFS or recommended by the public, NMFS has determined that the mitigation measures provide the means of effecting the least practicable adverse impacts on marine mammal species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

Monitoring and Reporting

In order to issue an ITA for an activity, section 101(a)(5)(D) of the MMPA states that NMFS must set forth "requirements pertaining to the monitoring and reporting of such taking." The MMPA implementing regulations at 50 CFR 216.104 (a)(13) indicate that requests for IHAs must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present in the action area.

Monitoring

USGS will sponsor marine mammal monitoring during the present project, in order to implement the mitigation measures that require real-time monitoring, and to satisfy the anticipated monitoring requirements of the IHA. USGS's "Monitoring Plan" is described below this section. USGS understand that this monitoring plan will be subject to review by NMFS and that refinements may be required. The monitoring work described here has been planned as a self-contained project independent of any other related monitoring projects that may be occurring simultaneously in the same regions. USGS are prepared to discuss coordination of their monitoring program with any related work that might be done by other groups insofar as this is practical and desirable.

Vessel-based Visual Monitoring

USGS's PSOs will be based aboard the seismic source vessel and will watch for marine mammals near the vessel during daytime airgun operations and during any ramp-ups of the airguns at night. PSOs will also watch for marine mammals near the seismic vessel for at least 30 minutes prior to the start of airgun operations after an extended shut-down (i.e., greater than approximately 15 minutes for this cruise). When feasible, PSOs will conduct observations during daytime periods when the seismic system is not operating for comparison of sighting rates

and behavior with and without airgun operations and between acquisition periods. Based on PSO observations, the airguns will be shut-down when marine mammals are observed within or about to enter a designated exclusion zone. The exclusion zone is a region in which a possibility exists of adverse effects on animal hearing or other physical effects.

During seismic operations in the deep water of the northwestern GOM, at least three PSOs will be based aboard the Pelican. USGS will appoint the PSOs with NMFS's concurrence. Observations will take place during ongoing daytime operations and nighttime ramp-ups of the airguns. During the majority of seismic operations, at least one PSO will be on duty from observation platforms (i.e., the best available vantage point on the source vessel) to monitor marine mammals near the seismic vessel. PSO(s) will be on duty in shifts no longer than 4 hours in duration. Other crew will also be instructed to assist in detecting marine mammals and implementing mitigation requirements (if practical). Before the start of the seismic survey, the crew will be given additional instruction on how to do so.

The Pelican is a suitable platform for marine mammal observations and will serve as the platform from which PSOs will watch for marine mammals before and during seismic operations. Two locations are likely as observation stations onboard the Pelican. When stationed on the aft control station on the upper deck (01 level), the eye level will be approximately 12 m (39.3 ft) above sea level, and the PSO will have an approximately 210º view aft of the vessel centered on the seismic source location. At the bridge station, the eye level will be approximately 13 m (42.7 ft) above sea level, and the location will offer a full 360º view around the entire vessel. During daytime, the PSO(s) will scan the area around the vessel systematically with reticle binoculars (e.g., 7 x 50 Fujinon), optical range-finders (to assist with distance estimation), and the naked eye. At night, night-vision equipment will be available. The

optical range-finders are useful in training observers to estimate distances visually but are generally not useful in measuring distances to animals directly. Estimating distances is done primarily with the reticles in the binoculars. The PSO(s) will be in wireless communication with ship's officers on the bridge and scientists in the vessel's operations laboratory, so they can advise promptly of the need for avoidance maneuvers or a shut-down of the seismic source.

When marine mammals are detected within or about to enter the designated exclusion zone, the airguns will immediately be shut-down if necessary. The PSO(s) will continue to maintain watch to determine when the animal(s) are outside the exclusion zone by visual confirmation. Airgun operations will not resume until the animal is confirmed to have left the exclusion zone, or if not observed after 15 minutes for species with shorter dive durations (small odontocetes) or 30 minutes for species with longer dive durations (mysticetes and large odontocetes, including sperm, pygmy sperm, dwarf sperm, killer, and beaked whales).

PSO Data and Documentation

PSOs will record data to estimate the numbers of marine mammals exposed to various received sound levels and to document apparent disturbance reactions or lack thereof. Data will be used to estimate numbers of animals potentially "taken" by harassment (as defined in the MMPA). They will also provide information needed to order a shut-down of the airguns when a marine mammal is within or near the exclusion zone. Observations will also be made during daytime periods when the Pelican is underway without seismic operations (i.e., transits, to, from, and through the study area) to collect baseline biological data.

When a sighting is made, the following information about the sighting will be recorded:

1. Species, group size, age/size/sex categories (if determinable), behavior when first sighted and after initial sighting, heading (if consistent), bearing and distance from seismic

vessel, sighting cue, apparent reaction to the seismic source or vessel (e.g., none, avoidance, approach, paralleling, etc.), and behavioral pace.

2. Time, location, heading, speed, activity of the vessel, sea state, wind force, visibility, and sun glare.

The data listed under (2) will also be recorded at the start and end of each observation watch, and during a watch whenever there is a change in one or more of the variables.

All observations, as well as information regarding ramp-ups or shut-downs will be recorded in a standardized format. The data accuracy will be verified by the PSOs at sea, and preliminary reports will be prepared during the field program and summaries forwarded to the operating institution's shore facility weekly or more frequently.

Results from the vessel-based observations will provide the following information:

1. The basis for real-time mitigation (airgun shut-down).

2. Information needed to estimate the number of marine mammals potentially taken by harassment, which must be reported to NMFS.

3. Data on the occurrence, distribution, and activities of marine mammals in the area where the seismic study is conducted.

4. Information to compare the distance and distribution of marine mammals relative to the source vessel at times with and without seismic activity.

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

USGS will submit a comprehensive report to NMFS within 90 days after the end of the cruise. The report will describe the operations that were conducted and sightings of marine mammals near the operations. The report submitted to NMFS will provide full documentation of

methods, results, and interpretation pertaining to all monitoring. The 90-day report will summarize the dates and locations of seismic operations and all marine mammal sightings (i.e., dates, times, locations, activities, and associated seismic survey activities). The report will minimally include:

- Summaries of monitoring effort – total hours, total distances, and distribution of marine mammals through the study period accounting for sea state and other factors affecting visibility and detectability of marine mammals;
- Analyses of the effects of various factors influencing detectability of marine mammals including sea state, number of PSOs, and fog/glare;
- Species composition, occurrence, and distribution of marine mammals sightings including date, water depth, numbers, age/size/gender, and group sizes; and analyses of the effects of seismic operations;
- Sighting rates of marine mammals during periods with and without airgun activities (and other variables that could affect detectability);
- Initial sighting distances versus airgun activity state;
- Closest point of approach versus airgun activity state;
- Observed behaviors and types of movements versus airgun activity state;
- Numbers of sightings/individuals seen versus airgun activity state; and
- Distribution around the source vessel versus airgun activity state.

The report will also include estimates of the number and nature of exposures that could result in "takes" of marine mammals by harassment or in other ways. After the report is considered final, it will be publicly available on the NMFS website at: http://www.nmfs.noaa.gov/pr/permits/incidental.htm#iha.

In the unanticipated event that the specified activity clearly causes the take of a marine mammal in a manner prohibited by this IHA, such as an injury (Level A harassment), serious injury or mortality (e.g., ship-strike, gear interaction, and/or entanglement), USGS will immediately cease the specified activities and immediately report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS at 301-427-8401 and/or by email to Jolie.Harrison@noaa.gov and Howard.Goldstein@noaa.gov, and the NMFS Southeast Region Marine Mammal Stranding Network at 877-433-8299 (Blair.Mase@noaa.gov and Erin.Fougeres@noaa.gov) or the Florida Marine Mammal Stranding Hotline at 888-404-3922. The report must include the following information:

- Time, date, and location (latitude/longitude) of the incident;
- Name and type of vessel involved;
- Vessel's speed during and leading up to the incident;
- Description of the incident;
- Status of all sound source use in the 24 hours preceding the incident;
- Water depth;
- Environmental conditions (e.g., wind speed and direction, Beaufort sea state, cloud cover, and visibility);
- Description of all marine mammal observations in the 24 hours preceding the incident;
- Species identification or description of the animal(s) involved;
- Fate of the animal(s); and
- Photographs or video footage of the animal(s) (if equipment is available).

Activities shall not resume until NMFS is able to review the circumstances of the prohibited take. NMFS shall work with USGS to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. USGS may not resume their activities until notified by NMFS via letter or email, or telephone.

In the event that USGS discovers an injured or dead marine mammal, and the lead PSO determines that the cause of the injury or death is unknown and the death is relatively recent (i.e., in less than a moderate state of decomposition as described in the next paragraph), USGS will immediately report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, at 301-427-8401, and/or by email to Jolie.Harrison@noaa.gov and Howard.Goldstein@noaa.gov, and the NMFS Southeast Region Marine Mammal Stranding Network (877-433-8299) and/or by email to the Southeast Regional Stranding Coordinator (Blair.Mase@noaa.gov) and Southeast Regional Stranding Program Administrator (Erin.Fougeres@noaa.gov). The report must include the same information identified in the paragraph above. Activities may continue while NMFS reviews the circumstances of the incident. NMFS will work with USGS to determine whether modifications in the activities are appropriate.

In the event that USGS discovers an injured or dead marine mammal, and the lead PSO determines that the injury or death is not associated with or related to the activities authorized in the IHA (e.g., previously wounded animal, carcass with moderate or advanced decomposition, or scavenger damage), USGS will report the incident to the Chief of the Permits and Conservation Division, Office of Protected Resources, NMFS, at 301-427-8401, and/or by email to Jolie.Harrison@noaa.gov and Howard.Goldstein@noaa.gov, and the NMFS Southeast Regional Marine Mammal Stranding Network (877-433-8299), and/or by email to the Southeast Regional

Stranding Coordinator (Blair.Mase@noaa.gov) and Southeast Regional Stranding Program Administrator (Erin.Fougeres@noaa.gov), within 24 hours of discovery. USGS will provide photographs or video footage (if available) or other documentation of the stranded animal sighting to NMFS and the Marine Mammal Stranding Network. Activities may continue while NMFS reviews the circumstances of the incident.

Estimated Take by Incidental 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].

Level B harassment is anticipated and authorized as a result of the low-energy marine seismic survey in the deep water of the northwestern GOM. Acoustic stimuli (i.e., increased underwater sound) generated during the operation of the seismic airgun array are expected to result in the behavioral disturbance of some marine mammals. There is no evidence that the planned activities for which USGS seeks the IHA could result in injury, serious injury, or mortality. The required mitigation and monitoring measures will minimize any potential risk for injury, serious injury, or mortality.

The following sections describe USGS's methods to estimate take by incidental harassment and present the applicant's estimates of the numbers of marine mammals that could be affected during the seismic program in the deep water of the northwestern GOM. The estimates are based on a consideration of the number of marine mammals that could be harassed

by approximately 1,480 km (799.1 nmi) of seismic operations with the two GI airgun array to be used. The size of the 2D seismic survey area in 2013 is approximately 356 km^2 (103.8 nmi^2) (approximately 445 km^2 [129.7 nmi^2]), as depicted in Figure 1 of the IHA application.

USGS assumes that, during simultaneous operations of the airgun array and the other sources, any marine mammals close enough to be affected by the sub-bottom profiler would already be affected by the airguns. However, whether or not the airguns are operating simultaneously with the other sources, marine mammals are expected to exhibit no more than short-term and inconsequential responses to the sub-bottom profiler given their characteristics (e.g., narrow, downward-directed beam) and other considerations described previously. Such reactions are not considered to constitute "taking" (NMFS, 2001). Therefore, USGS provides no additional allowance for animals that could be affected by sound sources other than airguns.

USGS used spring densities reported in Table A-9 of Appendix A of the Bureau of Ocean Energy Management, Regulation and Enforcement's (BOEMRE, now the BOEM and BSEE) "Request for incidental take regulations governing seismic surveys on the Outer Continental Shelf (OCS) of the Gulf of Mexico" (BOEMRE, 2011). Those densities were calculated from the U.S. Navy's "OPAREA Density Estimates" (NODE) database (DoN, 2007b). The density estimates are based on the NMFS-Southeast Fisheries Science Center (SEFSC) shipboard surveys conducted from 1994 to 2006 and were derived using a model-based approach and statistical analysis of the existing survey data. The outputs from the NODE database are four seasonal surface density plots of the GOM for each of the marine mammal species occurring there. Each of the density plots was overlaid with the boundaries of the 9 acoustic model regions used in Appendix A of BOEMRE (2011). USGS used the densities for Acoustic Model Region

8, which corresponds roughly with the deep waters (greater than 1,000 m) of the BOEMRE GOM Central Planning Area, and includes the GC955 and WR313 study sites.

Table 3. Estimated densities and possible number of marine mammal species that might be exposed to greater than or equal to 160 dB during USGS's seismic survey (ensonified area 445.4 km^2) in the deep water of the northwestern GOM, April to May 2013.

Species	Density[a] (#/1,000 km^2)	Calculated Take (i.e., Estimated Number of Individuals Exposed to Sound Levels ≥ 160 dB re 1 µPa)[1]	Approximate Percentage of Best Population Estimate of Stock (Calculated Take)[2]	Requested Take Authorization[3]
Mysticetes				
North Atlantic right whale	NA	NA	NA	NA
Humpback whale	NA	NA	NA	NA
Minke whale	NA	NA	NA	NA
Bryde's whale	0.1	0	0	0
Sei whale	NA	NA	NA	NA
Fin whale	NA	NA	NA	NA
Blue whale	NA	NA	NA	NA
Odontocetes				
Sperm whale	4.9	2	1.7 (0.26)	13
Kogia spp. (Pygmy and dwarf sperm whale)	2.1	1	1.1 (0.54)	2
Small (Mesoplodon and Cuvier's) beaked whale	3.7	2	1.3 (1.3) – Mesoplodon beaked whale 2.7 (2.7) – Cuvier's beaked whale	2
Killer whale	0.40	0	0	0
Short-finned pilot whale	6.3	3	0.79 (0.12)	19
False killer whale	2.7	1	NA	36
Melon-headed whale	9.1	4	5.3 (0.18)	118
Pygmy killer	1.1	0	0	0

whale				
Risso's dolphin	10.0	4	0.37 (0.16)	9
Bottlenose dolphin	4.8	2	NA (NA) – 32 Northern GOM Bay, Sound and Estuary stocks NA (NA) – Northern GOM continental shelf stock 0.23 (0.03) – GOM eastern coastal stock 0.73 (0.08) – GOM northern coastal stock NA (NA) – GOM western coastal stock 0.28 (0.03) – Northern GOM oceanic stock	18
Rough-toothed dolphin	6.7	3	2.6 (0.48)	16
Fraser's dolphin	1.9	1	NA (NA)	117
Striped dolphin	51.5	23	2.43 (1.24)	45
Pantropical spotted dolphin	582.6	259	0.51 (0.51)	259
Atlantic spotted dolphin	2.2	1	NA (NA)	15
Spinner dolphin	72.6	32	0.86 (0.28)	99
Clymene dolphin	45.6	20	15.5 (15.5)	20

NA = Not available or not assessed.
[1] Calculated take is density times the area ensonified to >160 dB (rms) around the planned seismic lines, increased by 25%.
[2] Stock sizes are best populations from NMFS Draft 2012 Stock Assessment Reports (see Table 2 above).
[3] Requested Take Authorization increased to mean group size.

USGS estimated the number of different individuals that may be exposed to airgun sounds with received levels greater than or equal to 160 dB re 1 µPa (rms) on one or more occasions by considering the total marine area that would be within the 160 dB radius around the operating airgun array on at least one occasion and the expected density of marine mammals in the area. The number of possible exposures (including repeat exposures of the same individuals) can be estimated by considering the total marine area that would be within the 160 dB radius around the operating airguns, excluding areas of overlap. During the survey, the transect lines in the square grid are closely spaced (approximately 100 m [328.1 ft] apart at the GC955 site and 250 m [820.2 ft] apart at the WR313 site) relative to the 160 dB distance (670 m [2,198.2 ft]). Thus, the area including overlap is 6.5 times the area excluding overlap at GC955 and 5.3 times the area excluding overlap at WR313, so a marine mammal that stayed in the survey areas during the entire survey could be exposed approximately 6 or 7 times on average. While some individuals may be exposed multiple times since the survey tracklines are spaced close together; however, it is unlikely that a particular animal would stay in the area during the entire survey.

The number of different individuals potentially exposed to received levels greater than or equal to 160 re 1 µPa (rms) was calculated by multiplying:

(1) The expected species density (in number/km^2), times

(2) The anticipated area to be ensonified to that level during airgun operations excluding overlap.

The area expected to be ensonified was determined by entering the planned survey lines into a MapInfo GIS, using the GIS to identify the relevant areas by "drawing" the applicable 160 dB buffer (see Table 1 of the IHA application) around each seismic line, and then calculating the total area within the buffers.

Applying the approach described above, approximately 356 km^2 (approximately 445 km^2 including the 25% contingency) would be within the 160 dB isopleth on one or more occasions during the survey. The take calculations within the study sites do not explicitly add animals to account for the fact that new animals (i.e., turnover) are not accounted for in the initial density snapshot and animals could also approach and enter the area ensonified above 160 dB; however, studies suggest that many marine mammals will avoid exposing themselves to sounds at this level, which suggests that there would not necessarily be a large number of new animals entering the area once the seismic survey started. Because this approach for calculating take estimates does not allow for turnover in the marine mammal populations in the area during the course of the survey, the actual number of individuals exposed may be underestimated, although the conservative (i.e., probably overestimated) line-kilometer distances used to calculate the area may offset this. Also, the approach assumes that no cetaceans will move away or toward the tracklines as the Pelican approaches in response to increasing sound levels before the levels reach 160 dB. Another way of interpreting the estimates that follow is that they represent the number of individuals that are expected (in absence of a seismic program) to occur in the waters that will be exposed to greater than or equal to 160 dB (rms).

USGS's estimates of exposures to various sound levels assume that the surveys will be carried out in full (i.e., approximately 8 days of seismic airgun operations for the two study sites, respectively); however, the ensonified areas calculated using the planned number of line-kilometers have been increased by 25% to accommodate lines that may need to be repeated, equipment testing, account for repeat exposure, etc. As is typical during offshore ship surveys, inclement weather and equipment malfunctions are likely to cause delays and may limit the number of useful line-kilometers of seismic operations that can be undertaken. The estimates of

the numbers of marine mammals potentially exposed to 160 dB (rms) received levels are precautionary and probably overestimate the actual numbers of marine mammals that could be involved. These estimates assume that there will be no weather, equipment, or mitigation delays, which is highly unlikely.

Table 3 (Table 3 of the IHA application) shows the estimates of the number of different individual marine mammals anticipated to be exposed to greater than or equal to 160 dB re 1 μPa (rms) during the seismic survey if no animals moved away from the survey vessel. The requested take authorization is given in the far right column of Table 3 (Table 3 of the IHA application). The requested take authorization has been increased to the average mean group sizes in the GOM in 1996 to 2001 (Mullin and Fulling, 2004) and 2003 and 2004 (Mullin, 2007) in cases where the calculated number of individuals exposed was between one and the mean group size.

The estimate of the number of individual cetaceans that could be exposed to seismic sounds with received levels greater than or equal to 160 dB re 1 μPa (rms) during the survey is (with 25% contingency) as follows: 0 baleen whales, 13 sperm whales, 1 dwarf/pygmy sperm whale, and 2 beaked whales, (including Cuvier's and Mesoplodon beaked whales) could be taken by Level B harassment during the seismic survey. Most of the cetaceans potentially taken by Level B harassment are delphinids; pantropical spotted, spinner, Clymene, and striped dolphins are estimated to be the most common species in the area, with estimates of 259, 32, 20, and 23, which would represent 0.51, 0.28, 15.5, and 1.24% of the affected populations or stocks, respectively.

Encouraging and Coordinating Research

USGS will coordinate the planned marine mammal monitoring program associated with the seismic survey with any parties that express interest in this activity.

Negligible Impact and Small Numbers Analysis Determination

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.’’ In making a negligible impact determination, NMFS evaluated factors such as:

(1) The number of anticipated injuries, serious injuries, or mortalities;

(2) The number, nature, and intensity, and duration of Level B harassment (all relatively limited); and

(3) The context in which the takes occur (i.e., impacts to areas of significance, impacts to local populations, and cumulative impacts when taking into account successive/contemporaneous actions when added to baseline data);

(4) The status of stock or species of marine mammals (i.e., depleted, not depleted, decreasing, increasing, stable, impact relative to the size of the population);

(5) Impacts on habitat affecting rates of recruitment/survival; and

(6) The effectiveness of monitoring and mitigation measures (i.e., the manner and degree in which the measure is likely to reduce adverse impacts to marine mammals, the likely effectiveness of the measures, and the practicability of implementation).

For reasons stated previously in this document, in the notice of the proposed IHA (78 FR 11821, February 20, 2013) and based on the following factors, the specified activities associated with the marine seismic survey are not likely to cause PTS, or other non-auditory injury, serious injury, or death. The factors include:

(1) The likelihood that, given sufficient notice through relatively slow ship speed, marine mammals are expected to move away from a noise source that is annoying prior to its becoming potentially injurious;

(2) The potential for temporary or permanent hearing impairment is relatively low and would likely be avoided through the implementation of the shut-down measures; and

(3) The likelihood that marine mammal detection ability by trained PSOs is high at close proximity to the vessel.

No injuries, serious injuries, or mortalities are anticipated to occur as a result of the USGS's planned marine seismic surveys, and none are authorized by NMFS. Table 3 of this document outlines the number of requested Level B harassment takes that are anticipated as a result of these activities. Due to the nature, degree, and context of Level B (behavioral) harassment anticipated and described (see "Potential Effects on Marine Mammals" section above) in this notice, the activity is not expected to impact rates of annual recruitment or survival for any affected species or stock, particularly given the NMFS and the applicant's plan to implement mitigation, monitoring, and reporting measures to minimize impacts to marine mammals. Additionally, the seismic survey will not adversely impact marine mammal habitat.

For the other marine mammal species that may occur within the action area, there are no known designated or important feeding and/or reproductive areas. Many animals perform vital functions, such as feeding, resting, traveling, and socializing, on a diel cycle (i.e., 24 hr cycle). Behavioral reactions to noise exposure (such as disruption of critical life functions, displacement, or avoidance of important habitat) are more likely to be significant if they last more than one diel cycle or recur on subsequent days (Southall et al., 2007). Additionally, the seismic survey will be increasing sound levels in the marine environment in a relatively small area surrounding the

vessel (compared to the range of the animals), which is constantly travelling over distances, and some animals may only be exposed to and harassed by sound for less than day.

Of the 28 marine mammal species under NMFS jurisdiction that may or are known to likely to occur in the study area, six are listed as threatened or endangered under the ESA: North Atlantic right, humpback, sei, fin, blue, and sperm whales. These species are also considered depleted under the MMPA. Of these ESA-listed species, incidental take has been requested to be authorized for sperm whales. There is generally insufficient data to determine population trends for the other depleted species in the study area. To protect these animals (and other marine mammals in the study area), USGS must cease or reduce airgun operations if any marine mammal enters designated zones. No injury, serious injury, or mortality is expected to occur and due to the nature, degree, and context of the Level B harassment anticipated, and the activity is not expected to impact rates of recruitment or survival.

As mentioned previously, NMFS estimates that 19 species of marine mammals under its jurisdiction could be potentially affected by Level B harassment over the course of the IHA. The population estimates for the marine mammal species that may be taken by Level B harassment were provided in Table 3 of this document.

NMFS's practice has been to apply the 160 dB re 1 μPa (rms) received level threshold for underwater impulse sound levels to determine whether take by Level B harassment occurs. Southall et al. (2007) provide a severity scale for ranking observed behavioral responses of both free-ranging marine mammals and laboratory subjects to various types of anthropogenic sound (see Table 4 in Southall et al. [2007]).

NMFS has determined, provided that the aforementioned mitigation and monitoring measures are implemented, the impact of conducting a low-energy marine seismic survey in the

deep water of the northwestern GOM, April to May 2013, may result, at worst, in a modification in behavior and/or low-level physiological effects (Level B harassment) of certain species of marine mammals.

While behavioral modifications, including temporarily vacating the area during the operation of the airgun(s), may be made by these species to avoid the resultant acoustic disturbance, the availability of alternate areas within these areas for species and the short and sporadic duration of the research activities, have led NMFS to determine that the taking by Level B harassment from the specified activity will have a negligible impact on the affected species in the specified geographic region. NMFS believes that the length of the seismic survey, the requirement to implement mitigation measures (e.g., shut-down of seismic operations), and the inclusion of the monitoring and reporting measures, will reduce the amount and severity of the potential impacts from the activity to the degree that it will have a negligible impact on the species or stocks in the action area.

NMFS has determined, provided that the aforementioned mitigation and monitoring measures are implemented, that the impact of conducting a marine seismic survey in the deep water of the Gulf of Mexico, April to May 2013, may result, at worst, in a temporary modification in behavior and/or low-level physiological effects (Level B harassment) of small numbers of certain species of marine mammals. See Table 3 for the requested authorized take numbers of marine mammals.

Impact on Availability of Affected Species or Stock for Taking for Subsistence Uses

Section 101(a)(5)(D) of the MMPA also requires NMFS to determine that the authorization will not have an unmitigable adverse effect on the availability of marine mammal species or stocks for subsistence use. There are no relevant subsistence uses of marine mammals

in the study area (in the deep water of the northwest GOM) that implicate MMPA section 101(a)(5)(D).

Endangered Species Act

Of the species of marine mammals that may occur in the survey area, several are listed as endangered under the ESA, including the North Atlantic right, humpback, sei, fin, blue, and sperm whales. USGS did not request take of endangered North Atlantic right, humpback, sei, fin, and blue whales due to the low likelihood of encountering this species during the cruise. Under section 7 of the ESA, USGS has initiated formal consultation with the NMFS, Office of Protected Resources, Endangered Species Act Interagency Cooperation Division, on this seismic survey. NMFS's Office of Protected Resources, Permits and Conservation Division, has also initiated and engaged in formal consultation under section 7 of the ESA with NMFS's Office of Protected Resources, Endangered Species Act Interagency Cooperation Division, on the issuance of an IHA under section 101(a)(5)(D) of the MMPA for this activity. These two consultations were consolidated and addressed in a single Biological Opinion addressing the direct and indirect effects of these interdependent actions. In April 2013, NMFS issues a Biological Opinion and concluded that the action and issuance of the IHA are not likely to jeopardize the continued existence of cetaceans and sea turtles and included an Incidental Take Statement (ITS) incorporating the requirements of the IHA as Terms and Conditions of the ITS is likewise a mandatory requirement of the IHA. The Biological Opinion also concluded that designated critical habitat of these species does not occur in the action area and would not be affected by the survey.

National Environmental Policy Act

To meet NMFS's NEPA requirements for the issuance of an IHA to USGS, USGS

provided NMFS an "Environmental Assessment and Determination Pursuant to the National Environmental Policy Act, 42 U.S.C. 4321 et seq. and Executive Order 12114 Low-Energy Marine Seismic Survey by the U.S. Geological Survey in the Deepwater Gulf of Mexico, April-May 2013," which incorporates a draft "Environmental Assessment of Low-Energy Marine Geophysical Survey by the U.S. Geological Survey in the Northwestern Gulf of Mexico, April-May 2013," prepared by LGL Ltd., Environmental Research Associates on behalf of USGS. The EA analyzes the direct, indirect, and cumulative environmental impacts of the specified activities on marine mammals including those listed as threatened or endangered under the ESA. NMFS has fully evaluated the potential direct, indirect, and cumulative effects on the human environment prior to making a final decision on the IHA application and deciding whether or not to issue a Finding of No Significant Impact (FONSI). After considering the EA, the information in the IHA application, Biological Opinion, and the Federal Register notice, as well as public comments, NMFS has determined that the issuance of the IHA is not likely to result in significant impacts on the human environment and has prepared a FONSI. An Environmental Impact Statement is not required and will not be prepared for the action.

Authorization

NMFS has issued an IHA to USGS for the take, by Level B harassment, of small numbers of marine mammals incidental to conducting a low-energy marine seismic survey in the deep water of the northwestern GOM, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated.

Dated: May 30, 2013.

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

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