

whales, beluga whales, ringed seals, bearded seals and spotted seals; would have a negligible impact on these marine mammal stocks; and would not have an unmitigable adverse impact on the availability of marine mammal stocks for subsistence.

Dated: August 9, 2007.

James H. Lecky,

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

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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[I.D. 050107H]

Incidental Takes of Marine Mammals During Specified Activities; Seismic Testing and Calibration in the Northern Gulf of Mexico

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

ACTION: Notice; issuance of incidental harassment authorization.

SUMMARY: In accordance with the Marine Mammal Protection Act (MMPA) regulations, notification is hereby given that NMFS has issued an Incidental Harassment Authorization (IHA) to the Lamont-Doherty Earth Observatory (L-DEO) to take small numbers of marine mammals, by Level B Harassment only, incidental to conducting an acoustic calibration and seismic testing program in the northern Gulf of Mexico.

DATES: Effective from July 31, 2007 through July 30, 2008.

ADDRESSES: A copy of the IHA, the application, and the associated Environmental Assessment (EA) and Supplemental EA are available by writing to Michael Payne, Chief, Permits, Conservation, and Education Division, Office of Protected Resources, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring, MD 20910-3225, or by telephoning the contact listed here. A copy of the application containing a list of references used in this document may be obtained by writing to this address, by telephoning the contact listed here (**FOR FURTHER INFORMATION CONTACT**) or online at: <http://www.nmfs.noaa.gov/pr/permits/incidental.htm>. Documents cited in this notice may be viewed, by appointment, during regular business hours, at the aforementioned address.

FOR FURTHER INFORMATION CONTACT: Jolie Harrison, Office of Protected Resources, NMFS, (301) 713-2289, ext 166.

SUPPLEMENTARY INFORMATION:

Background

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

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

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

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

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

Summary of Request

On June 2, 2006, NMFS received an application from L-DEO for the taking, by Level B harassment, of several species of marine mammals incidental to conducting, with research funding from the National Science Foundation (NSF), an acoustic calibration and seismic testing program in the northern Gulf of Mexico in Fall, 2006. This project will be conducted with L-DEO's new seismic vessel, the *R/V Marcus G Langseth (Langseth)*, which will deploy different configurations of airguns and a different bottom-mapping sonar than used previously by L-DEO. L-DEO requests that it be issued an IHA allowing Level B Harassment takes of marine mammals incidental to the planned seismic surveys in the Gulf of Mexico. A detailed description of the purpose of the calibration and testing program was outlined in the NMFS notice of the proposed IHA (71 FR 58790, October 5, 2006).

Description of the Specified Activity

The *Langseth* is expected to depart Mobile, AL in July, 2007 (at the earliest) and will transit to the survey area in the northern Gulf of Mexico. The survey will encompass an area between 24°N. and 31°N. and between 83°W. and 96°W., which is within the Exclusive Economic Zone (EEZ) of the U.S.A. The study will consist of three phases: (1) an initial testing/shakedown phase, (2) measurements of the sounds produced by various airgun arrays to be used by the *Langseth* (calibration), and (3) a three-dimensional (3D) seismic testing phase. The entire survey, calibration and testing included, will take approximately 25 days and include approximately 1420 km (174 hours) of airgun operation. Measurements will be made during seismic operations in three categories of water depth: shallow (<100 m or <328 ft), intermediate/slope (100–1000 m or 328–3281 ft), and deep (>1000 m or >3281 ft). The vessel will transit to Galveston after the study is completed. The exact dates of the activities will depend on logistics and weather conditions.

The full airgun array on the *Langseth* consists of 36 airguns, with a total discharge volume of 6600 in³. The array is made up of four identical linear arrays or strings, with 10 airguns on each string. For each operating string, nine airguns will be fired simultaneously, while the tenth is kept in reserve as a spare, to be turned on in case of failure of another airgun. The calibration phase will use the full 36-airgun array and subsets thereof. The subsets will consist of either 1 string (9

airguns, 1650 in³) or 2 strings (18 airguns, 3300 in³). In addition, sounds from a single 45 in³ GI gun and 2 GI guns (210 in³) will be measured. During the seismic testing phase, the 2-string array will be used at most times, although the full 36-airgun array may also be used. The ocean floor will be

mapped with the 12-kHz Simrad EM120 MBB sonar. This sonar will be operated from the *Langseth* simultaneous with the airgun array during the seismic testing program, but will likely be operated on its own during the acoustic calibration study.

A more detailed description of the authorized action, including vessel

specifications and acoustic source specifications, was included in the notice of the proposed IHA (71 FR 58790, October 5, 2006). Table 1 includes a summary of the use of the airgun configurations by phase and depth.

Airgun Specifications	1 GI Gun	2 GI Guns	1 Single Airgun	9-Airgun Array (1 Strings)	18-Airgun Array (2 Strings)	36-Airgun Array (4 Strings)
Energy Source	One 45 in ³ GI Airgun	Two 105 in ³ GI Airguns	One 2000 psi Bolt Airgun	Nine 2000 psi Bolt Airguns of 40-360 in ³	Eighteen 2000 psi Bolt Airguns of 40-360 in ³	Thirty-six 2000 psi Bolt Airguns of 40-360 in ³
Air Discharge Volume (in ³)	45 in ³	210 in ³	40 in ³	1650 in ³	3300 in ³	6600 in ³
Towing Depth of Source	2.5 m	3 m	6 m	6 m	6 m	6 m or 12 m
Source Output (dB re 1 mPa m) 0-pk (pk-pk)*	225.3 (230.7)	237 (243)		246 (253)	252 (259)	259 (265)
Proposed Approximate Airgun Use						
Calibration Phase						
Shallow Site (30-60 m)	10 km	10 km		34 km	34 km	34 km
Intermediate/Slope Site (475 m)				34 km	34 km	34 km
Deep Site (1500)	10 km	10 km		45 km	45 km	45 km
Testing Phase						
Shallow (<100 m)			89 km	24 km	175 km	58 km
Intermediate/Slope (100-1000 m)			89 km	24 km	175 km	58 km
Deep (<1000 m)			89 km	24 km	175 km	58 km

Table 1. L-DEO airgun configurations and proposed approximate use for each configuration by depth and phase.
 * The root mean square values (typically discussed in biological literature) for these sources will generally be about 10-15 dB lower than those reflected here.

Safety Radii

L-DEO has estimated the safety radii around their operations using a model, but also by adjusting the model results based on empirical data gathered in the Gulf of Mexico in 2003. Additional information regarding safety radii in

general, how the safety radii were calculated, and how the empirical measurements were used to correct the modeled numbers may be found in NMFS proposed IHA (71 FR 58790, October 5, 2006) and Section I and Appendix A of L-DEO's application. Using the modeled distances and

various correction factors, Table 2 shows the distances at which three rms sound levels (190 dB, 180 dB, and 160 dB) are expected to be received from the various airgun configurations in shallow, intermediate, and deep water depths.

Source and Volume	Tow Depth (m)	Water Depth	Predicted RMS Radii (m)		
			190 DB	180 dB	160 dB
Single Gi gun 45 in ³	3	Deep	9	25	236
		Intermediate/Slope	13.5	38	354
		Shallow	113	185	645
2 Gi guns 210 in ³	3	Deep	20	69	670
		Intermediate/Slope	30	104	1005
		Shallow	294	511	1970
Single Bolt 40 in ³	6	Deep	12	36	360
		Intermediate/Slope	18	54	540
		Shallow	150	267	983
1 string 9 airguns 1650 in ³	6	Deep	200	650	6200
		Intermediate/Slope	300	975	7880
		Shallow	1450	2360	8590
2 string 18 airguns 3300 in ³	6	Deep	250	820	6700
		Intermediate/Slope	375	1230	7370
		Shallow	1820	3190	8930
4 string 36 airguns 6600 in ³	6	Deep	410	1320	8000
		Intermediate/Slope	615	1980	8800
		Shallow	2980	5130	10670
4 string 36 airguns 6600 in ³	12	Deep	620	1980	12000
		Intermediate/Slope	930	2970	13200
		Shallow	4500	7700	16000

Table 2. Modeled distances to which sound levels 190, 180, and 160 dB re 1 μ Pa (rms) might be received in shallow (<100 m), intermediate/slope (100–1000 m), and deep (>1000 m) water from the various sources planned for use during the Gulf of Mexico study, fall 2007.

Comments and Responses

A notice of receipt of the L-DEO application and proposed IHA was published in the **Federal Register** on October 5, 2006 (71 FR 58790). During the comment period, NMFS received comments from the Marine Mammal Commission (MMC) and the Center for Regulatory Effectiveness (CRE). Following are the comments from the MMC and CRE and NMFS' responses:

Comment 1: The MMC recommends that observations be made during all ramp-up procedures to gather data regarding the effectiveness of ramp-up as a mitigation measure.

Response: The IHA requires that MMOs on the *Langseth* make observations for the 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 seismic vessel,

sighting cue, apparent reaction to the airguns or vessel (e.g., none, avoidance, approach, paralleling, etc., and including responses to ramp-up), and behavioral pace;

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

These requirements should provide information regarding the effectiveness of ramp-up as a mitigation measure, provided animals are detected during ramp-up.

Comment 2: The MMC recommends that the monitoring period prior to the initiation of seismic activities be extended to one hour.

Response: As the MMC points out, several species of deep-diving cetaceans are capable of remaining underwater for more than 30 minutes, however, for the following reasons NMFS believes that 30 minutes is an adequate length for the monitoring period prior to the start-up of airguns: (1) because the *Langseth* is required to ramp-up, the time of

monitoring prior to start-up of any but the smallest array is effectively longer than 30 minutes (Ramp up will begin with the smallest gun in the array and airguns will be added in a sequence such that the source level of the array will increase in steps not exceeding approximately 6 dB per 5-min period over a total duration of 20–30 min), (2) in many cases MMOs are making observations during times when sonar is not being operated and will actually be observing prior to the 30-minute observation period anyway, (3) the majority of the species that may be exposed do not stay underwater more than 30 minutes, and (4) all else being equal and if a deep diving individual happened to be in the area in the short time immediately prior to the pre-start-up monitoring, if an animal's maximum underwater time is 45 minutes, there is only a 1 in 3 chance that his last random surfacing would be prior to the beginning of the required 30-minute monitoring period.

Comment 3: The MMC recommends that the Service provide additional

justification for its proposed determination that marine mammal detection ability by trained observers is close to 100 percent during daytime (in good weather) and remains high at night.

Response: The *Langseth* is utilizing a team of trained MMOs to both visually monitor from the high observation tower of the *Langseth* and to conduct passive acoustic monitoring.

When stationed on the observation platform of the *Langseth*, the eye level will be approximately 17.8 m (58.4 ft) above sea level, so the visible distance (in good weather) to the horizon is 8.9 nm (16.5 km) (the largest safety radii is 7.7 km (4.2 nm)). Big eyes are most effective at scanning the horizon (for blows), while 7 X 50 reticle binoculars are more effective closer in (MMOs also use a naked eye scan). Additionally, MMOs will have a good view in all directions around the entire vessel.

In some cases, particularly in shallow water and while deploying streamers, chase boats will be deployed. The primary mission of the chase boat is to warn boats that the seismic vessel is approaching and thus the boat will be in front of the seismic vessel (generally about 2 nm). The plan is to have one MMO on the chase boat, who will advise the *Langseth* of the presence of marine mammals in the operating area when forward of the vessel and check for injured animals when aft of the vessel.

Theoretical detection distance of this PAM system is 10s of kilometers. One LGL biologist reported - "Past experience in the GOM would indicate good detection rates out to several kilometers. It is not unreasonable to state that the PAM will detect most marine mammal calls within the 3 km safety radius, particularly clicks from sperm whales." The PAM is operated both during the day and at night.

Though it depends on the lights on the ship, the sea state, and thermal factors, MMOs estimated that visual detection is effective out to between 150 and 250 m using NVDs and about 30 m with the naked eye. However, the PAM operates equally as effectively at night as during the day, especially for sperm whales and dolphins (dolphins are the only species likely to be detected in the "shallow" depths, where the safety zones are the largest).

Comment 4: The MMC recommends that NMFS take steps to ensure that the planned monitoring program will be sufficient to detect, with reasonable certainty, all marine mammals within or entering identified safety zones.

Response: Based on the information provided in the previous comment

(above) and the following information, NMFS believes that the planned monitoring program will be sufficient to detect (using visual detection and PAM), with reasonable certainty, all marine mammals within or entering identified safety zones.

As mentioned above, the platform of the *Langseth* is high enough that, in good weather, MMOs can see out to 8.9 nm (16.5 km). The PAM has reliable detection rates out to 3 km and more limited ability out to 10s of km. The largest 180-dB safety radii (3.2, 5.1, and 7.7 km), which is the radii within which the *Langseth* is required to shut down if a marine mammal enters, are found when the 9-gun, 18-gun, and 36-gun arrays are operating in shallow water. The species most likely to be encountered in the shallow water of the GOM, by far, are bottlenose and Atlantic spotted dolphins, which have relatively larger group sizes (6-10 animals for Atlantic spotted and 1-90 animals for bottlenose), are not cryptic at the surface, and have relatively short dive times (< 2 minutes for Atlantic spotted and 5-12 minutes for bottlenose), all which generally make them easier to visually detect. Additionally, the vocalizations of these species are easily detected by the PAM. Additionally, as mentioned above, MMOs on chase boats will sometimes be used in addition to visual monitoring from the seismic vessels and PAM. During the Maurice Ewing cruise in the GOM in 2003, MMOs detected marine mammals at a distance of approximately 10 km from the vessel and identified them to species at approximately 5 km from the vessel, though the bridge of that vessel was only 11 m above the water (vs. the *Langseth*, which is 17 m above). All of the 180-dB safety radii for other depths are less than 3 km (all less than 2 km, except the 36-gun array at intermediate depth, which is 2.97 km).

The likelihood of visual detection at night is significantly lower than during the day, though the PAM remains just as effective at night as during the day. However, the *Langseth* will not be starting up the airguns unless the safety range is visible for the entire 30 minutes prior (i.e., not at night), and therefore in all cases at night, the airguns will already be operating, which NMFS believes will cause many cetaceans to avoid the vessel, which therefore will reduce the number likely to come within the safety radii. Additionally, because of normal operating procedures, which entail beginning seismic operations as soon after dawn as possible, at the most 33% of the actual airgun operation (and much less, most likely) will occur at nighttime. With the

exception of operation of airguns in shallow water (which between the 9-, 18-, and 36-gun array totals about 18 hours), all of the other safety radii are smaller than 3 km and fall easily within the reliable detection capabilities of the PAM.

Comment 5: The CRE believes that NMFS should grant the Lamont-Doherty Earth Observatory an IHA for L-DEO's proposed seismic experiments in the GOM. However, the CRE recommended that NMFS revise the IHA to state:

(1) There is no evidence that Gulf seismic operations complying with the traditional 500 meter safety radii have injured marine mammals or any other marine life.

(2) The much larger safety radii in the proposed IHA are based on flawed models and unreliable data.

(3) Visual observation and PAM cannot accurately and reliably monitor for marine mammals in safety radii significantly larger than the traditional 500 meters.

Response:

(1) Neither the proposed IHA nor this **Federal Register** notice state that Gulf seismic operations, utilizing any size safety zone, have injured marine mammals. The proposed IHA states that there is "no specific evidence that exposure to pulses of airgun sound can cause PTS in any marine mammal" and that "Airgun pulses are less energetic and have slower rise times [than explosives], and there is no proof that they can cause serious injury, death, or stranding even in the case of large airgun arrays".

(2) As CRE points out in their letter, L-DEO acknowledges in their application the shortcomings of the 2003 data collection using airguns in the GOM, however, this is the best available data for seismic sound propagation in the GOM and L-DEO further explains (see proposed IHA) how they use conservative correction factors in the development of appropriate safety radii (based on the 180-dB criteria prescribed by NMFS). The purpose of the current L-DEO seismic calibration is to improve these data for use in future operations and MMPA authorizations.

(3) NMFS believes that between visual monitoring and PAM the MMOs can accurately and reliably detect marine mammals within safety radii significantly larger than 500 m (see NMFS' responses to comments 3 and 4).

Description of Marine Mammals in the Activity Area

In the Gulf of Mexico, 28 cetacean species and one species of manatee are known to occur (Jefferson and Schiro, 1997; Wursig *et al.*, 2000). In the U.S.,

manatees are managed by the U.S. Fish & Wildlife Service (USFWS), are unlikely to be encountered in or near the open waters of the Gulf of Mexico where seismic operations will occur, and are, therefore, not addressed further in this document. Most of these species of cetaceans occur in oceanic waters (>200 m or 656 ft deep) of the Gulf, whereas the continental shelf waters (<200 m) are primarily inhabited by bottlenose dolphins and Atlantic spotted dolphins (Mullin and Fulling 2004).

Seven species that may occur in the Gulf of Mexico are listed as endangered under provisions of the U.S. Endangered Species Act (ESA), including the sperm, North Atlantic right, humpback, sei, fin, and blue whale, as well as the West Indian manatee. However, of those species, only sperm whales are likely to be encountered. In addition to the 28 species known to occur in the Gulf of Mexico, another three species of cetaceans could potentially occur there: the long-finned pilot whale, the long-beaked common dolphin, and the short-beaked common dolphin (Table 3).

Though any pinnipeds sighted in the study area would be extralimital, hooded seals have been reported in Florida and L-DEO has requested authorization for the take of 2 animals.

During the 2003 acoustical calibration study in the Gulf of Mexico from 28 May to 2 June, a total of seven visual sightings of marine mammals were documented from the *Maurice Ewing*; these included a total of approximately 38–40 individuals (LGL Ltd. 2003). In addition, three sea turtles were sighted. These totals include times when airguns were not operating as well as times

Species	Habitat	Occurrence in GOM	Abundance in GOM and/or North Atlantic	BEST		MAXIMUM	
				Estimated Exposures	Approx. % of Population	Ext. Exposures Auth IHA**	Approx.C% of Population
<i>Odontocetes</i>							
Sperm whale	Usually pelagic and deep seas	Common	1349 / 13190 (add)	22	0.2	22	0.2
Pygmy sperm whale	Deeper waters off the shelf	Common	742 / 695 (add)	56	3.9	59	4.1
Dwarf sperm whale	Deeper waters off the shelf	Common	742 / 695 (add)	56	3.9	59	4.1
Cuvier's beaked whale	Pelagic	Rare	159 / 3196 (add)	10	0.3	21	0.7
Sowerby's beaked whale	Pelagic	Extralimital	106 / 541 (add)	5	0.8	8	1.2
Gervais' beaked whale	Pelagic	Uncommon	106 / 541 (add)	5	0.8	8	1.2
Blainville's beaked whale	Pelagic	Rare	106 / 541 (add)	5	0.8	8	1.2
Rough-toothed dolphin	Mostly pelagic	Common	2223 / 274 (add)	58	2.3	92	3.7
Bottlenose dolphin	Cont. shelf, coastal and offshore	Common	25,320 / 2239 / 29774 (add)	773	1.3	1713	5.0
Pantropical spotted dolphin	Mainly pelagic	Common	91,321 / 13117 (add)	1282	1.2	1587	1.5
Atlantic spotted dolphin	Mainly coastal waters	Common	30,947 / 52279 (add)	876	1.1	1755	0.2
Spinner dolphin	Pelagic in Gulf of Mexico	Common	11,971	168	1.4	921	7.7
Clymene dolphin	Pelagic	Common	17,355 / 6086 (add)	244	1.0	311	1.3
Striped dolphin	Off the continental shelf	Common	6505 / 61546 (add)	91	0.1	134	0.2
Short-beaked common dolphin	Continental shelf and pelagic waters	Possible	30,768	0	0.0	0 (5)**	<0.1
Long-beaked common dolphin	Coastal	Possible	N.A.	0	0.0	0 (5)**	0.0
Fraser's dolphin	Water >1000m	Common	726	10	1.4	60	8.3
Risso's dolphin	Waters 400-1000m	Common	2169 / 29110 (add)	54	0.2	81	0.3
Melon-headed whale	Oceanic	Common	3451	49	1.4	142	4.1

Species	Habitat	Occurrence in GOM	Abundance in GOM and/or North Atlantic	BEST		MAXIMUM	
				Estimated Exposures	Approx. % of Population	Ext. Exposures Auth IHA**	Approx.C% of Population
Pygmy killer whale	Oceanic	Uncommon	408	10	2.6	21	5.1
False killer whale	Pelagic	Uncommon	1038	14	1.4	28	2.7
Killer whale	Widely distributed	Uncommon	133 / 6600 (add)	3	<0.1	5	0.1
Short-finned pilot whale	Mostly pelagic	Common	2388 / 780000 / 14524	34	<0.1	98	<0.1
Long-finned pilot whale	Mostly pelagic	Possible	N.A.	0		0 (5)**	
<i>Mysticetes</i>							
North Atlantic right whale*	Coastal and shelf waters	Extralimital	291	0		0	
Humpback whale*	Mainly near-shore waters / banks	Rare	11,570 / 10400	0		0	
Minke whale	Coastal waters	Rare	149,000	0		0	
Bryde's whale	Pelagic and coastal	Uncommon	40 / 90000	1	2.5	2	5.0
Sei whale*	Primarily offshore, pelagic	Rare	12-13,000	0		0	
Fin whale*	Cont. slope, mostly pelagic	Rare	2814 / 47300	0		0	
Blue whale*	Coastal, shelf, and oceanic waters	Extralimital	308	0		0	
<i>Pinnipeds</i>							
Hood seal	Coastal	Vagrant	400,000 ^z	0		0 (2)**	<0.1
Total				3770		7096	

Table 3. Abundance, preferred habitat, and commonness of the marine mammals species found in the survey area. The far right columns indicate the estimated number of each species that will be exposed to 160 dB based on best and maximum density estimates. NMFS believes that, when mitigation measures are taken into consideration, the activity is likely to result in take of numbers of animals less than those indicated by the best column, however, NMFS has authorized the number in this column.

* Federally listed endangered

** Parenthetical number indicates take authorization, though exposure estimate is 0

when airguns were firing. Visual monitoring effort consisted of 60.9 hours of observations (all in daylight) along 891.5 km of vessel trackline on seven days, and passive acoustic monitoring (PAM) occurred for approximately 32 hours. Most of the monitoring effort (visual as well as acoustic) occurred when airguns were not operating, since airgun operations were limited during the 2003 study. No marine mammals were detected during acoustic monitoring. Marine mammal and sea turtle sightings and locations during the 2003 calibration study are summarized in Appendix C of L-DEOs application.

Additional information regarding the status and distribution of the marine mammals in the area and how the densities were calculated was included in the notice of the proposed IHA (71 FR

58790) and may be found in L-DEO's application.

Potential Effects of the Activity on Marine Mammals

The effects of sounds from airguns might include one or more of the following: tolerance, masking of natural sounds, behavioral disturbance, temporary or permanent hearing impairment (Richardson *et al.*, 1995), or other non-auditory physiological effects such as stress, neurological effects, bubble formation, resonance effects, and other types of organ or tissue damage. To avoid injury, NMFS has determined that cetaceans and pinnipeds should not be exposed to pulsed underwater noise at received levels exceeding, respectively, 180 and 190 dB re 1 µPa (rms). The predicted 180- and 190-dB distances for the GI guns operated by SIO are summarized in Table 2. Given

the required mitigation and monitoring measures, it is unlikely that there would be any cases of temporary or, especially, permanent hearing impairment or other serious non-auditory physiological effects.

The notice of the proposed IHA (71 FR 58790, October 5, 2006) included a discussion of the effects of sounds from airguns on mysticetes, odontocetes, and pinnipeds, including tolerance, masking, behavioral disturbance, hearing impairment and other non-auditory physical effects. Additional details on the behavioral reactions (or the lack thereof) by all types of marine mammals to seismic vessels can be found in Appendix A (e) of L-DEO's application.

The notice of the proposed IHA also included a discussion of the potential effects of the bathymetric sonar. Because of the shape of the beam of this source

and its power, NMFS believes it unlikely that marine mammals will be exposed to bathymetric sonar at levels at or above those likely to cause harassment. Further, NMFS believes that the brief exposure of cetaceans or pinnipeds to small numbers of signals from the multi-beam bathymetric sonar system are not likely to result in the harassment of marine mammals.

Monitoring and Mitigation Measures

Monitoring

L-DEO will conduct mammal monitoring of its seismic program, in order to implement the planned mitigation measures and to satisfy the requirements of the IHA. More information regarding the Monitoring program (including both visual observation and passive acoustic detection) was included in NMFS' proposed IHA (71 FR 58790, October 5, 2006).

Vessel Based Monitoring

Vessel-based marine mammal observers (MMOs) will watch for marine mammals near the seismic source vessel during all daytime airgun operations and during any start ups of the airguns at night. When feasible, observations will also be made during daytime periods without seismic operations (e.g., during transits).

During seismic operations in the Gulf of Mexico, five observers will be based aboard the vessel. MMOs will be appointed by L-DEO with NMFS concurrence. At least one MMO, and when practical two MMOs, will watch for marine mammals near the seismic vessel during ongoing daytime operations and nighttime start ups of the airguns. MMO(s) will be on duty in shifts of duration no longer than 4 h. The crew will also be instructed to assist in detecting marine mammals and implementing mitigation requirements (if practicable). Before the start of the seismic survey the crew will be given additional instruction in how to do so.

The *Langseth* is a suitable platform for marine mammal observations. When stationed on the observation platform, the eye level will be approximately 17.8 m (58.4 ft) above sea level, and the observer will have a good view around the entire vessel. However, neither the actual bow of the vessel nor the stern will be visible from the observation platform, although it will be possible to see the airguns. To monitor the areas immediately at the bow and stern of the vessel, two video cameras will be installed at the bow (one on the starboard and one on the port side), and a wide-angle camera will be installed at

the stern. Real-time footage from these cameras will be played on the observation platform, so that the MMO(s) are able to monitor those areas. In addition a high-power video camera will be mounted on the observation platform to assist with species identification.

During daytime, the MMO(s) will scan the area around the vessel systematically with reticle binoculars (e.g., 7 50 Fujinon), Big-eye binoculars (25 150), and with the naked eye. At night, Night Vision Devices (NVDs) will be available (ITT F500 Series Generation 3 binocular-image intensifier or equivalent), when required. Laser rangefinding binoculars (Leica LRF 1200 laser rangefinder or equivalent) will be available to assist with distance estimation. Those are useful in training observers to estimate distances visually, but are generally not useful in measuring distances to animals directly.

MMOs will not be on duty during ongoing seismic operations at night. At night, bridge personnel will watch for marine mammals. If the airguns are started up at night, two MMOs will watch for marine mammals near the source vessel for 30 min prior to start up of the airguns using NVDs, if the proper conditions for nighttime start up exist (see Mitigation below).

The vessel-based monitoring will provide data to estimate the numbers of marine mammals exposed to various received sound levels, to document any apparent disturbance reactions or lack thereof, and thus to estimate the numbers of mammals potentially "taken" by harassment. It will also provide the information needed in order to power down or shut down the airguns at times when mammals are present in or near the safety radii. 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 airguns or vessel (e.g., none, avoidance, approach, paralleling, etc.), and behavioral pace.

2. Time, location, heading, speed, activity of the vessel, sea state, 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 and power-downs or shut downs (see Mitigation below) will be recorded in a standardized format.

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

Passive Acoustic Monitoring

Passive acoustic monitoring will take place to complement the visual monitoring program. Visual monitoring typically is less effective during periods of bad weather or at night, and even with good visibility, is unable to detect marine mammals when they are below the surface or beyond visual range. Acoustical monitoring can be used in addition to visual observations to improve detection, identification, localization, and tracking of cetaceans. The acoustic monitoring will serve to alert visual observers when vocalizing cetaceans are detected. It will be monitored in real time so that the visual observers can be advised when cetaceans are detected.

SEAMAP (Houston, TX) will be used as the primary acoustic monitoring system. This system was also used during previous L-DEO seismic cruises (e.g., Smultea *et al.*, 2004, 2005; Holst *et al.*, 2004a,b). The PAM system consists of hardware (i.e., the hydrophone) and software. The "wet end" of the SEAMAP system consists of a low-noise, towed hydrophone array that is connected to the vessel by a "hairy" faired cable. The array will be deployed from a winch located on the back deck. A deck cable will connect from the winch to the main computer lab where the acoustic station and signal conditioning and processing system will be located. The lead-in from the hydrophone array is approximately 400 m (1312 ft) long, and the active part of the hydrophone array is approximately 56 m (184 ft) long. The hydrophone array is typically towed at depths of less than 20 m or 66 ft.

The acoustical array will be monitored 24 hours per day while at the seismic survey area during airgun operations and during most periods when airguns are not operating. One MMO will monitor the acoustic detection system at any one time, by listening to the signals from two channels via headphones and/or speakers and watching the real-time spectrographic display for frequency ranges produced by cetaceans. MMOs

monitoring the acoustical data will be on shift from 1–6 h. All MMOs are expected to rotate through the PAM position, although the most experienced with acoustics will be on PAM duty more frequently.

When a vocalization is detected, the acoustic MMO will contact the visual MMO immediately (so a power-down or shut down can be initiated, if required), and the information regarding the call will be entered into a database. The data to be entered include an acoustic encounter identification number, whether it was linked with a visual sighting, GMT date, GMT time when first and last heard and whenever any additional information was recorded, GPS position and water depth when first detected, species or species group (e.g., unidentified dolphin, sperm whale), types and nature of sounds heard (e.g., clicks, continuous, sporadic, whistles, creaks, burst pulses, strength of signal, etc.), and any other notable information. The acoustic detection can also be recorded onto the hard-drive for further analysis.

Mitigation

L-DEO's study in the northern Gulf of Mexico will deploy an energy source of up to 36 airguns (6600 in³). The airguns comprising the array will be spread out horizontally, so that the energy will be directed mostly downward. This directionality will result in reduced sound levels at any given horizontal distance than would be expected at that distance if the source were omnidirectional with the stated nominal source level.

Localized and temporally-variable areas of concentrated feeding or of special significance for marine mammals may occur within or near the planned area of operations during the season of operations. However, L-DEO will avoid conducting the activities near important concentrations of marine mammals insofar as these can be identified in advance from other sources of information, or during the cruise.

Safety Radii

As noted earlier (Table 2), received sound levels were modeled by L-DEO for various configurations of the 36-airgun array in relation to distance and direction from the airguns, and for a single and 2 GI guns. Correction factors based on empirical measurements were applied to estimate safety radii in shallow and intermediate-depth water. The distances from the airguns where sound levels of 190, 180, and 160 dB re 1 μ Pa (rms) are estimated to be received are shown Table 2. Also, the safety radii for a single (40 in³) airgun are given, as

that source will be in operation when the 36-airgun array is powered down. Airguns will be powered down (or shut down if necessary) immediately when marine mammals are detected within or about to enter the appropriate radius: 180 dB (rms) for cetaceans, and 190 dB (rms) for pinnipeds, in the very unlikely event that pinnipeds are encountered.

Mitigation During Operations

Mitigation measures that will be required will include (1) speed or course alteration, provided that doing so will not compromise operational safety requirements, (2) power-down procedures, (3) shut-down procedures, (4) special shut-down procedures for baleen whales at any distance, (5) ramp-up procedures, (6) avoidance of submarine canyons and areas with known concentrations of marine mammals, if possible, and (7) shut down and notification of NMFS if an injured or dead marine mammal is found and is judged likely to have resulted from the operation of the airguns.

Speed or Course Alteration—If a marine mammal or is detected outside the safety radius and, based on its position and the relative motion, is likely to enter the safety radius, the vessel's speed and/or direct course may be changed. This would be done if practicable while minimizing the effect to the planned science objectives. The activities and movements of the marine mammal or sea turtle (relative to the seismic vessel) will be closely monitored to determine whether the animal is approaching the applicable safety radius. If the animal appears likely to enter the safety radius, further mitigative actions will be taken, i.e., either further course alterations or a power-down or shut down of the airguns.

Power-down Procedures—A power-down involves decreasing the number of airguns in use such that the radius of the 18-dB (or 190-dB) zone is decreased to the extent that marine mammals are no longer in or about to enter the safety zone. A power-down may also occur when the vessel is moving from one seismic line to another (i.e., during a turn). During a power-down, one airgun will be operated. The continued operation of one airgun is intended to alert marine mammals to the presence of the seismic vessel in the area. In contrast, a shut down occurs when all airgun activity is suspended.

If a marine mammal is detected outside the safety zone but is likely to enter the safety radius, and if the vessel's speed and/or course cannot be changed to avoid having the animal enter the safety radius, the airguns will

be powered down before the animal is within the safety radius. Likewise, if a mammal or turtle is already within the safety zone when first detected, the airguns will be powered down immediately. During a power-down of the airgun array, at least one airgun (e.g., 40 in³) will be operated. If a marine mammal is detected within or near the smaller safety radius around that single airgun (Table 2), all airguns will be shut down (see next subsection).

Following a power-down, airgun activity will not resume until the marine mammal has cleared the safety zone. The animal will be considered to have cleared the safety zone if it: (1) is visually observed to have left the safety zone; or, (2) has not been seen within the zone for 15 min in the case of small odontocetes and pinnipeds; or, (3) has not been seen within the zone for 30 min in the case of mysticetes and large odontocetes, including sperm, pygmy sperm, dwarf sperm, and beaked whales.

During airgun operations following a power-down whose duration has exceeded specified limits, the airgun array will be ramped up gradually. Ramp-up procedures are described below.

Shut-down Procedures—During a power-down, the operating airgun will be shut down if a marine mammal approaches within the modeled safety radius for the then-operating source, typically a single 40 in³ gun or a GI gun (Table 2). If a marine mammal is detected within or about to enter the appropriate safety radius around the small source in use during a power-down, airgun operations will be entirely shut down.

Airgun activity will not resume until the animal has cleared the safety zone, or until the MMO is confident that the marine mammal has left the vicinity of the vessel. Criteria for judging that the animal has cleared the safety zone will be as described in the preceding subsection.

Special Shut-down Provision for Mysticetes—The airguns will be shut down (not just powered down) if a mysticete is sighted anywhere near the vessel, even if the whale is located outside the safety radius. This measure is planned because of the assumed greater effects of seismic surveys on mysticetes in general (as compared with other marine mammals).

Ramp-up Procedures—A ramp-up procedure will be followed when the airgun array begins operating after a specified-duration without airgun operations. For the present cruise, this period would be approximately 10 min. This duration is based on provisions

during previous L-DEO surveys and on the approximately 180-dB radius for the 4-string array in deep water in relation to the planned speed of the *Langseth* while shooting. Ramp up will begin with the smallest gun in the array. Airguns will be added in a sequence such that the source level of the array will increase in steps not exceeding approximately 6 dB per 5-min period over a total duration of 20–30 min. During ramp up, the safety zone for the full airgun array to be used will be maintained.

If the complete safety radius has not been visible for at least 30 min prior to the start of operations in either daylight or nighttime, ramp up will not commence unless at least one airgun has been operating during the interruption of seismic survey operations. That airgun will have a source level of more than 180 dB re 1 μ Pa . m (rms). It is likely that the airgun array will not be ramped up from a complete shut down at night or in thick fog (the array will definitely not be ramped up from a complete shut down at night in shallow water), because the outer part of the safety zone for the array will not be visible during those conditions. If one airgun has operated during a power-down period, ramp up to full power will be permissible at night or in poor visibility, on the assumption that marine mammals will be alerted to the approaching seismic vessel by the sounds from the single airgun and could move away if they choose. Ramp up of the airguns will not be initiated if a marine mammal is sighted within or near the applicable safety radii during the day or close to the vessel at night.

Avoidance of Areas with

Concentrations of Marine Mammals – Beaked whales may be highly sensitive to sounds produced by airguns, based mainly on what is known about their responses to other sound sources. Beaked whales tend to concentrate in continental slope areas, and especially in areas where there are submarine canyons on the slope. Therefore, L DEO will, if possible, avoid airgun operations over or near submarine canyons within the present study area. Also, if concentrations of beaked whales are observed at the slope site just prior to or during the airgun operations there, those operations will be moved to another location along the slope based on recommendations by the lead MMO aboard the *Langseth*. Furthermore, any areas where concentrations of sperm whales are known to be present will be avoided if possible.

Shutdown if Injured or Dead Whale is Found – In the unanticipated event that any cases of marine mammal injury or

mortality are found and are judged likely to have resulted from these activities, L-DEO will cease operating seismic airguns and report the incident to the Office of Protected Resources, NMFS immediately.

Reporting

L-DEO will provide brief field reports on the progress of the project on a weekly basis.

A report will be submitted to NMFS within 90 days after the end of the cruise. The report will describe the operations that were conducted and the marine mammals and turtles that were detected near the operations. The report will be submitted to NMFS, providing 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 and turtle sightings (dates, times, locations, activities, associated seismic survey activities). The report will also include estimates of the amount and nature of potential “take” of marine mammals by harassment or in other ways.

Estimated Take by Incidental Harassment

The notice of the proposed IHA (71 FR 58790, October 5, 2006) included an in-depth discussion of the methods used to calculate the densities of marine mammals in the area of the seismic airgun operation and the take estimates. Additional information was included in section VII of L-DEO’s application. A summary of the total take authorized by NMFS is included here in Table 3. Generally, estimates of the numbers of marine mammals that might be affected during the seismic program in the northern Gulf of Mexico are based on consideration of the number of marine mammals that might be exposed to 160 dB along the 1420 km (767 nm) trackline of seismic surveys during the Gulf of Mexico program. The numbers of animals estimated below do not take into consideration the implementation of mitigation measures and, therefore, probably overestimate the take to some degree.

Because of the mitigation measures that will be required and the likelihood that some cetaceans will avoid the area around the operating airguns of their own accord, NMFS does not expect any marine mammals to approach the sound source close enough to be injured (Level A harassment). All anticipated takes would be “takes by Level B harassment”, as described previously, involving temporary behavioral

modifications or low level physiological effects.

The “best estimate” of the number of individual marine mammals that might be exposed, absent any mitigation measures, to seismic sounds with received levels 160 dB re 1 μ Pa (rms) is 3770 (Table 3). That total includes 22 endangered sperm whales, 25 beaked whales, and one Bryde’s whale (Table 3). Pantropical spotted dolphins, Atlantic spotted dolphins, and bottlenose dolphins are expected to be the most common species in the study area; the best estimates for those species, absent any mitigation, are 1282, 876, and 773, respectively (Table 3). Estimates for other species are lower.

The “Maximum Estimate” column in Table 3 shows estimates totaling 7082 individual marine mammals based on maximum densities, and taking into account an adjustment for small numbers of other species that might be encountered in the survey area, even though there were not recorded during previous surveys. These are the numbers for which “take authorization” is requested. NMFS does not expect the total number of marine mammal takes to be this high, however, it is appropriate to err on the cautious side to ensure that L-DEO is covered in the event that an unexpectedly large number of any particular species were exposed to \leq 160 dB during the survey and, further, to ensure that this exposure would result in a negligible impact to the species or stock.

Based on numbers of animals encountered during L-DEO’s 2003 cruise in the Gulf of Mexico, the likelihood of the successful implementation of the required mitigation measure, and the likelihood that some animals will avoid the area around the operating airguns, NMFS believes that L-DEO’s airgun calibration and seismic testing program may result in the Level B harassment of some lower number of individual marine mammals than is indicated by the “best estimates” in Table 3. These best estimates compose no more than 3.9 percent of any given species population in the northern Gulf of Mexico, and NMFS has determined that these numbers are small relative to the population sizes in the specified geographic area (Table 3). L-DEO has asked for authorization for take of their “maximum estimate” of numbers for each species, which includes the take of two hooded seals. Though NMFS believes that take of the maximum numbers is unlikely, we still find these numbers small (up to 8.3 percent of the Fraser’s dolphin population and 7.7 percent of the spinner dolphin

population, but less than 5 percent the others) relative to the population sizes.

Potential Effects on Habitat

A detailed discussion of the potential effects of this action on the marine mammal habitat, including physiological and behavioral effects on marine fish and invertebrates, was included in the notice of the proposed IHA (71 FR 58790, October 5, 2007).

The main impact issue associated with the activity will be temporarily elevated noise levels and the associated direct effects on marine mammals. Based on the discussion in the proposed IHA, the authorized operations are not expected to have any habitat-related effects that could cause significant or long-term consequences for individual marine mammals or their populations or stocks.

Negligible Impact Determination

NMFS has determined, provided that the aforementioned mitigation and monitoring measures are implemented, that the impact of conducting an acoustic calibration and seismic testing program in the Gulf of Mexico 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. While behavioral and avoidance reactions may be made by these species in response to the resultant noise from the airguns, these behavioral changes are expected to have a negligible impact on the affected species and stocks of marine mammals.

While the number of potential incidental harassment takes will depend on the distribution and abundance of marine mammals in the area of seismic operations, the number of potential harassment takings is estimated to be relatively small in light of the population size (see Table 3). NMFS anticipates the actual take of individuals to be lower than the numbers depicted in the table, because those numbers do not reflect either the implementation of the mitigation measures or the fact that some animals will avoid the sound at levels lower than those expected to result in harassment. Additionally, mitigation measures require that the *Langseth* avoid any areas where marine mammals are concentrated.

In addition, no take by death and/or serious injury is anticipated, and the potential for temporary or permanent hearing impairment will be avoided through the incorporation of the required mitigation measures described in this document. This determination is supported by (1) the likelihood that, given sufficient notice through slow

ship speed and ramp-up of the seismic array, marine mammals are expected to move away from a noise source that it is annoying prior to its becoming potentially injurious; (2) TTS is unlikely to occur, especially in odontocetes, until levels above 180 dB re 1 μ Pa are reached; (3) the fact that injurious levels of sound are only likely close to the vessel; and (4) the likelihood of detection of marine mammals within the safety radii developed to avoid injury is high due to the height of the *Langseth's* bridge and the use of a passive acoustic detection system.

Endangered Species Act

Pursuant to section 7 of the ESA, the National Science Foundation (NSF) has consulted with NMFS on this seismic survey. NMFS has also consulted internally pursuant to Section 7 of the ESA on the issuance of an IHA under section 101(a)(5)(D) of the MMPA for this activity. In a Biological Opinion (BO), NMFS concluded that the 2007 L-DEO seismic survey in the northern GOM and the issuance of the associated IHA are not likely to jeopardize the continued existence of threatened or endangered species or destroy or adversely modify any designated critical habitat. NMFS has issued an incidental take statement (ITS) for 22 sperm whales (as well as a number of individuals of green, hawksbill, Kemp's ridley, leatherback, and loggerhead sea turtles) that contains reasonable and prudent measures with implementing terms and conditions to minimize the effects of this take. The terms and conditions of the Biological Opinion that apply to listed marine mammals have been incorporated into the IHA.

National Environmental Policy Act (NEPA)

In 2003, NSF prepared an Environmental Assessment (EA) for a marine seismic survey by the R/V Maurice Ewing in the Northern Gulf of Mexico. This EA addressed the potential effects of a different combination of airgun arrays (20 airguns, total volume 8580 in³) being operated in the same part of the ocean and affecting the same populations of marine mammals as is proposed for the *Langseth* in this application. NMFS adopted NSF's EA in 2003 and prepared a supplemental EA in 2007 to clarify the differences between the two activities and their potential effects on the environment. NMFS has issued a Finding of Significant based on NSF's 2003 EA and NMFS supplemental EA.

Conclusions

Based on the preceding information, and provided that the required mitigation and monitoring are incorporated, NMFS has concluded that the activity will incidentally take, by Level B harassment only, small numbers of marine mammals. NMFS has further determined that L-DEO's calibration study will have a negligible impact on the affected species or stocks of marine mammals and will not have an unmitigable adverse impact on the availability of the affected species or stocks for subsistence uses.

Authorization

NMFS has issued an IHA to L-DEO for an acoustic calibration and seismic testing program in the northern Gulf of Mexico in Fall, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated.

Dated: July 27, 2007.

James H. Lecky,

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

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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

Notice of Public Meeting

SUMMARY: The Advisory Committee on Commercial Remote Sensing (ACCRES) will meet September 20, 2007.

Date and Time: The meeting is scheduled as follows: September 20, 2007, 9 a.m.–4 p.m. The first part of this meeting will be closed to the public. The public portion of the meeting will begin at 1:30 p.m.

ADDRESSES: The meeting will be held in the Auditorium of the National Association of Home Builders Building, Washington, DC, located at 1201 15th Street, NW., Washington, DC 20005. While open to the public, seating capacity may be limited.

SUPPLEMENTARY INFORMATION: As required by section 10(a)(2) of the Federal Advisory Committee Act, 5 U.S.C. App. (1982), notice is hereby given of the meeting of ACCRES. ACCRES was established by the Secretary of Commerce (Secretary) on May 21, 2002, to advise the Secretary through the Under Secretary of Commerce for Oceans and Atmosphere on long- and short-range strategies for the licensing of commercial remote sensing satellite systems.