more than three to five minutes each. Requests must be submitted by email to *cheryl.gendron@nist.gov* and must be received by August 20, 2021 to be considered. The exact time for public comments will be included in the final agenda that will be posted on the MEP Advisory Board website at *http://www.nist.gov/mep/about/advisory-board.cfm.* Questions from the public will not be considered during this period. Speakers who wish to expand upon their oral statements, those who wished to speak but could not be accommodated on the agenda or those who are/were unable to attend the meeting are invited to submit written statements electronically by email to *cheryl.gendron@nist.gov.*

Admittance Instructions: Anyone wishing to attend the MEP Advisory Board meeting must submit their name, email address and phone number to Cheryl Gendron (*Cheryl.Gendron@nist.gov* or 301–975–2785) no later than Wednesday, August 25, 2021, 5:00 p.m. Eastern Time.

Alicia Chambers,

NIST Executive Secretariat.

[FR Doc. 2021–15081 Filed 7–14–21; 8:45 am]

BILLING CODE 3510–13–P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648–XB232]

Endangered and Threatened Species; Take of Anadromous Fish

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

ACTION: Notice of availability.

SUMMARY: Notice is hereby given that the Final Environmental Assessment (EA), Finding of No Significant Impact (FONSI), and Section (10)(a)(1)(A) enhancement permit have been issued for the Russian River Coho Salmon Captive Broodstock Program Hatchery Genetic Management Plan (HGMP). The program propagates endangered coho salmon of the Central California Coast (CCC) Evolutionary Significant Unit (ESU). This notice is being provided for information purposes only, and as such, there is no public comment period associated with this notice.

ADDRESSES: The Final EA, FONSI, Section (10)(a)(1)(A) enhancement permit and supporting documents are available by visiting the NMFS website (*www.fisheries.noaa.gov/west-coast/laws-and-policies/west-coast-region-national-environmental-policy-act-documents*).

FOR FURTHER INFORMATION CONTACT: Bob Coey at: 707–575–6090 or via email: *Bob.Coey@noaa.gov.*

SUPPLEMENTARY INFORMATION:

Endangered Species Act—Listed Species Covered in This Notice

- *Coho salmon (Oncorhynchus kisutch):* Endangered Central California Coast (CCC) ESU.
- *Steelhead (Oncorhynchus mykiss):* Threatened CCC Distinct Population Segment (DPS).
- *Chinook salmon (Oncorhynchus tshawytscha):* Threatened California Coastal (CC) ESU.

Background

On September 30, 2019, the California Department of Fish and Wildlife (CDFW) and the United States Army Corps of Engineers (Corps) submitted an Endangered Species Act (ESA) Section 10(a)(1)(A) permit application (Permit Application 21501) along with a proposed HGMP for the artificial propagation of individuals in the CCC coho salmon ESU at the Don Clausen Fish Hatchery (DCFH). Since 2017, NMFS' West Coast Region's California Coastal Office has provided technical assistance to the Corps and CDFW on the development of the HGMP. The Proposed Action, as described in the HGMP, involves the operation of a hatchery program at DCFH, which produces CCC coho salmon.

The Russian River Coho Salmon Captive Broodstock Program (RRCSCBP) is a conservation program intended to prevent extirpation and establish self-sustaining populations of CCC coho salmon in Sonoma, Marin, and Mendocino counties, where populations are currently at a high-risk of extinction. The RRCSCBP will continue to collect CCC coho for broodstock, conduct routine hatchery activities including broodstock collection, egg incubation, rearing, tissue sampling, marking, and release of 500,000 juveniles and 700 adult coho salmon into rivers and streams in Sonoma, Marin, and Mendocino counties associated with the northern portion of the CCC ESU. Measures will be applied in the hatchery program to reduce the risk of incidental adverse genetic, ecological, and demographic effects on natural-origin CCC steelhead, CC Chinook salmon, and CCC coho salmon populations.

From November 26, 2018 to December 26, 2018, the HGMP and draft EA were available for public review and comment (83 FR 60405; November 26, 2018). During the public comment period, NMFS received no comments. NMFS has determined that there are no significant impacts associated with the project and issued a FONSI for the program on December 21, 2020. The ESA Section 10(a)(1)(A) permit issued January 13, 2021, will allow the Corps to perform broodstock collection, propagation, rearing, release, and monitoring activities throughout Sonoma, Marin, and Mendocino counties, in accordance with the HGMP for 10 years (expiring December 31, 2028).

Authority

Enhancement permits are issued in accordance with Section 10(a)(1)(A) of the ESA (16 U.S.C. 1531 *et seq.*), and regulations governing listed fish and wildlife permits (50 CFR parts 222–227). NMFS issues permits based on findings that such permits: (1) Are applied for in good faith; (2) if granted and exercised, would not operate to the disadvantage of the listed species that are the subject of the permit; (3) are consistent with the purposes and policies of Section 2 of the ESA. The authority to take listed species is subject to conditions set forth in the permit.

Dated: July 12, 2021.

Margaret Miller,

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

[FR Doc. 2021–15075 Filed 7–14–21; 8:45 am]

BILLING CODE 3510–22–P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648–XB223]

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to a Geophysical Survey of the Queen Charlotte Fault

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 regulations implementing the Marine Mammal Protection Act (MMPA) as amended, notification is hereby given that NMFS has issued an incidental harassment authorization (IHA) to the Lamont-Doherty Earth Observatory of Columbia University (L–DEO) to incidentally harass marine mammals

during a marine geophysical survey of the Queen Charlotte Fault in the Northeast Pacific Ocean.

DATES: The authorization is effective for a period of one year, from July 9, 2021, through July 8, 2022.

FOR FURTHER INFORMATION CONTACT: Ben Laws, Office of Protected Resources, NMFS, (301) 427–8401.

SUPPLEMENTARY INFORMATION:

Availability

Electronic copies of the application and supporting documents, as well as a list of the references cited in this document, may be obtained online at: *www.fisheries.noaa.gov/action/incidental-take-authorization-lamont-doherty-earth-observatory-geophysical-survey-queen.* In case of problems accessing these documents, please call the contact listed above.

Background

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

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for taking for subsistence uses (where relevant). Further, NMFS must prescribe the permissible methods of taking and other ''means of effecting the least practicable adverse impact'' on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stocks for taking for certain subsistence uses (referred to in shorthand as ''mitigation''); and requirements pertaining to the mitigation, monitoring and reporting of the takings are set forth. The definitions of all applicable MMPA statutory terms cited above are included in the relevant sections below.

Summary of Request

On December 3, 2019, NMFS received a request from L–DEO for an IHA to take marine mammals incidental to a geophysical survey of the Queen Charlotte Fault (QCF) off of Alaska and British Columbia, Canada. L–DEO submitted a revised version of the application on April 2, 2020. On April 10, 2020, L–DEO informed NMFS that the planned survey would be deferred to 2021 as a result of issues related to the COVID–19 pandemic. L–DEO subsequently submitted revised versions of the application on October 22 and December 16, 2020, the latter of which was deemed adequate and complete. A final, revised version was submitted on January 11, 2021. L–DEO's request is for take of 21 species of marine mammals by Level B harassment. In addition, NMFS proposes to authorize take by Level A harassment for seven of these species.

Description of Proposed Activity

Overview

Researchers from L–DEO, the University of New Mexico, and Western Washington University, with funding from NSF, plan to conduct a high-energy seismic survey from the Research Vessel (R/V) *Marcus G. Langseth* (*Langseth*) at the QCF in the northeast Pacific Ocean during late summer 2021. Other research collaborators include Dalhousie University, the Geological Survey of Canada, and the U.S. Geological Survey. The two-dimensional (2–D) seismic survey will occur within the Exclusive Economic Zones (EEZ) of the United States and Canada, including in Canadian territorial waters. The survey will use a 36-airgun towed array with a total discharge volume of ~6,600 cubic inches (in^3) as an acoustic source, acquiring return signals using both a towed streamer as well as ocean bottom seismometers (OBSs).

The study will use 2–D seismic surveying to characterize crustal and uppermost mantle velocity structure, fault zone architecture and rheology, and seismicity of the QCF. The QCF system is an approximately 1,200 kilometer (km)-long onshore-offshore transform system connecting the Cascadia and Alaska-Aleutian subduction zones; the QCF is the approximately 900 km-long offshore component of the transform system. The purpose of the study is to characterize an approximately 450-km segment of the fault that encompasses systematic variations in key parameters in space and time: (1) changes in fault obliquity relative to Pacific-North American plate motion leading to increased convergence from north to south; (2) Pacific plate age and theoretical mechanical thickness decrease from north to south; and (3) a shift in Pacific plate motion at approximately 12–6 million years ago that may have increased convergence along the entire length of the fault, possibly initiating underthrusting in the southern portion of the study area. Current understanding of how these variations are expressed through seismicity, crustal-scale deformation, and lithospheric structure and dynamics is limited due to lack of instrumentation and modern seismic imaging.

Dates and Duration

The survey is expected to last for approximately 36 days, including approximately 27 days of seismic operations, 3 days of equipment deployment/retrieval, 2 days of transits, and 4 contingency days (accounting for potential delays due to, *e.g.,* weather). R/V *Langseth* will likely leave out of and return to port in Ketchikan, Alaska, during July-August 2021.

Specific Geographic Region

The survey will occur within the area of approximately 52–57° N and approximately 131–137° W. Representative survey tracklines are shown in Figure 1. Some deviation in actual track lines, including the order of survey operations, could be necessary for reasons such as science drivers, poor data quality, inclement weather, or mechanical issues with the research vessel and/or equipment. The survey will occur within the EEZs of the United States and Canada, including Alaskan state waters and Canadian territorial waters, ranging in depth from 50–2,800 meters (m). Approximately 4,250 km of transect lines will be surveyed, with 13 percent of the transect lines in Canadian territorial waters. Most of the survey (69 percent) will occur in deep water (≤ 1,000 m), 30 percent will occur in intermediate water (100–1,000 m deep), and approximately 1 percent will take place in shallow water <100 m deep.

Note that the MMPA does not apply in Canadian territorial waters. L–DEO is subject only to Canadian law in conducting that portion of the survey. However, NMFS has calculated the expected level of incidental take in the entire activity area (including Canadian territorial waters) as part of the analysis supporting our determination under the MMPA that the activity will have a negligible impact on the affected species (see Estimated Take and Negligible Impact Analysis and Determination).

BILLING CODE 3510–22–P

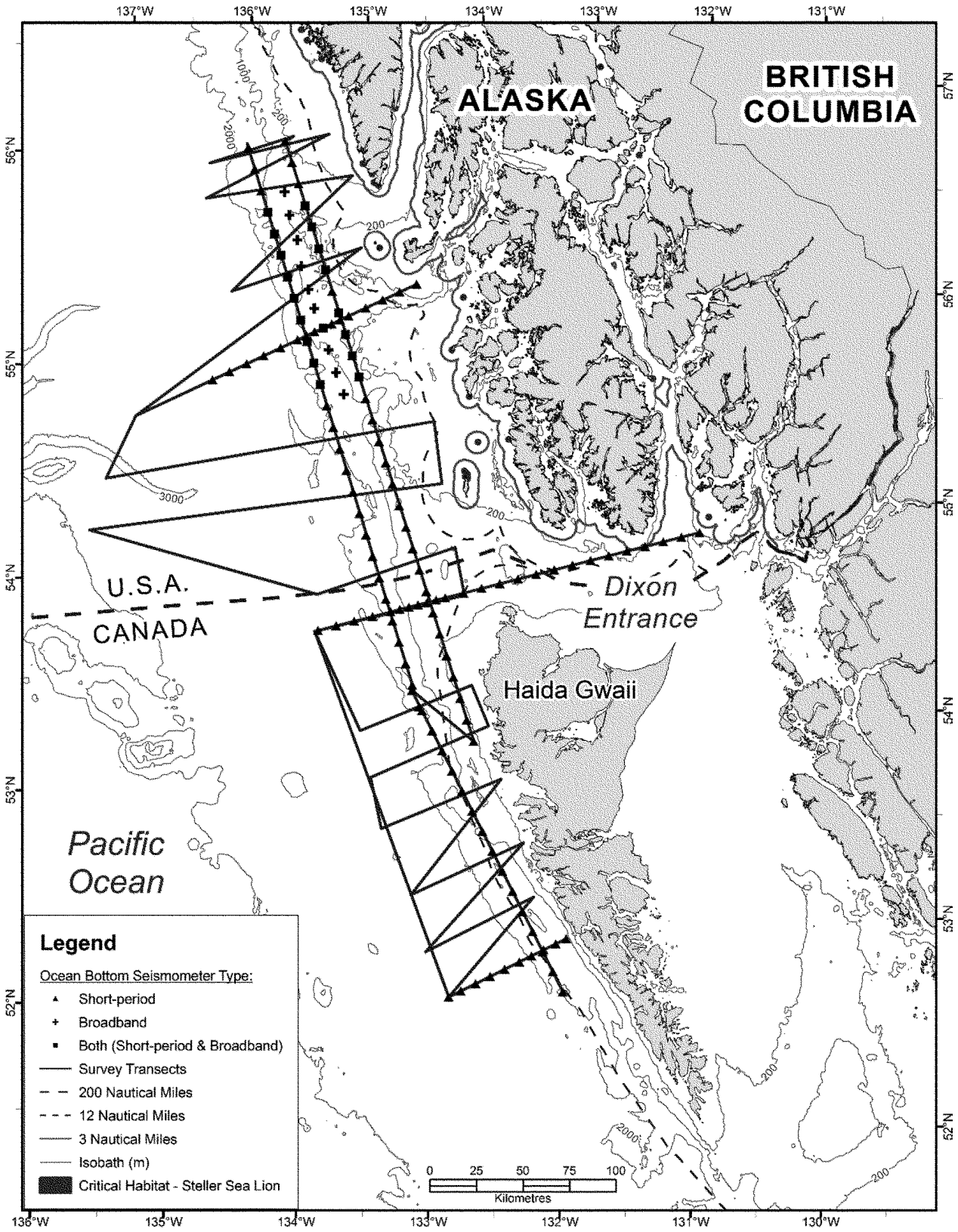

Figure 1. Location of the Seismic Survey in the Northeast Pacific Ocean

BILLING CODE 3510–22–C

Detailed Description of Specific Activity

The procedures to be used for the survey will be similar to those used during previous seismic surveys by L–DEO and will use conventional seismic methodology. The survey will involve one source vessel, the R/V *Langseth*. R/V *Langseth* will deploy an array of 36 airguns as an energy source with a total volume of 6,600 cubic inches (in^3). The array consists of 36 elements, including 20 Bolt 1500LL airguns with volumes of 180 to 360 in^3 and 16 Bolt 1900LLX airguns with volumes of 40 to 120 in^3. The airgun array configuration is illustrated in Figure 2–11 of NSF and USGS's Programmatic Environmental Impact Statement (PEIS; NSF–USGS, 2011). (The PEIS is available online at: *www.nsf.gov/geo/oce/envcomp/usgs-nsf-marine-seismic-research/nsf-usgs-final-eis-oeis-with-appendices.pdf*). The vessel speed during seismic operations will be approximately 4.2 knots (kn) (~7.8 km/hour) during the survey and the airgun array will be towed at a depth of 12 m. The receiving system will consist of OBSs and a towed hydrophone streamer with a nominal length of 15 km (OBS and multi-channel seismic (MCS) shooting). As the airguns are towed along the survey lines, the hydrophone streamer will transfer the data to the on-board processing system, and the OBSs will receive and store the returning acoustic signals internally for later analysis.

Approximately 60 short-period OBSs will be deployed and subsequently retrieved at a total of 123 sites in multiple phases from a second vessel, the Canadian Coast Guard ship *John P. Tully* (CCGS *Tully*). Along OBS refraction lines, OBSs will be deployed by CCGS *Tully* at 10 km intervals, with a spacing of 5 km over the central 40 km of the fault zone for fault-normal crossings. Twenty-eight broadband OBS instruments will also collect data during the survey and will be deployed prior to the active-source seismic survey, depending on logistical constraints. When an OBS is ready to be retrieved, an acoustic release transponder (pinger) interrogates the instrument at a frequency of 8–11 kilohertz (kHz); a response is received at 11.5–13 kHz. The burn-wire release assembly is then activated, and the instrument is released from its 80-kg anchor to float to the surface. Take of marine mammals is not expected to occur incidental to L–DEO's use of OBSs.

The airguns will fire at a shot interval of 50 m (approximately 23 seconds (s)) during MCS shooting with the hydrophone streamer (approximately 42 percent of survey effort), at a 150-m interval (approximately 69 s) during refraction surveying to OBSs (approximately 29 percent of survey effort), and at a shot interval of every minute (approximately 130 m) during turns (approximately 29 percent of survey effort).

Short-period OBSs will be deployed first along five OBS refraction lines by CCGS *Tully*. Two OBS lines run parallel to the coast, and three are perpendicular to the coast; one perpendicular line is located off Southeast Alaska, one is off Haida Gwaii, British Columbia, and another is located in Dixon Entrance. Please see Figure 1 for all location references. Following refraction shooting of a single line, short-period instruments on that line will be recovered, serviced, and redeployed on a subsequent refraction line while MCS data will be acquired by the *Langseth*. MCS lines will be acquired off Southeast Alaska, Haida Gwaii, and Dixon Entrance. The coast-parallel OBS refraction transect nearest to shore will only be surveyed once at OBS shot spacing. The other coast-parallel OBS refraction transect (on the ocean side) will be acquired twice, once during refraction and once during reflection surveys. In addition, portions of the three coast-perpendicular OBS refraction lines will also be surveyed twice, once for OBS shot spacing and once for MCS shot spacing. The coincident reflection/refraction profiles that run parallel to the coast will be acquired in multiple segments to ensure straight-line geometry. Sawtooth transits during which seismic data will be acquired will take place between transect lines when possible; otherwise, boxcar turns will be performed to save time. Both reflection and refraction surveys will use the same airgun array with the same discharge volume. There could be additional seismic operations associated with turns, airgun testing, and repeat coverage of any areas where initial data quality is sub-standard, and 25 percent has been added to the assumed survey line-kms to account for this potential.

In addition to the operations of the airgun array, a multibeam echosounder (MBES), a sub-bottom profiler (SBP), and an Acoustic Doppler Current Profiler (ADCP) will be operated from R/V *Langseth* continuously during the seismic surveys, but not during transit to and from the survey area. Take of marine mammals is not expected to occur incidental to use of the MBES, SBP, or ADCP because they will be operated only during seismic acquisition, and it is assumed that, during simultaneous operations of the airgun array and the other sources, any marine mammals close enough to be affected by the MBES, SBP, and ADCP would already be affected by the airguns. However, whether or not the airguns are operating simultaneously with the other sources, given the other sources' characteristics (*e.g.,* narrow downward-directed beam), marine mammals would experience no more than one or two brief ping exposures from them, if any exposure were to occur. No take of marine mammals is expected to occur incidental to the use of these sources, regardless of whether they are used in conjunction with the airgun array. Required mitigation, monitoring, and reporting measures are described in detail later in this document (please see Mitigation and Monitoring and Reporting).

Comments and Responses

A notice of proposed IHA was published in the **Federal Register** on June 4, 2021 (86 FR 30006). During the 30-day public comment period, NMFS did not receive any substantive public comments.

Changes From the Proposed IHA

The primary change from the proposed IHA is the addition of take authorization for the North Pacific right whale. In the notice of proposed IHA, we described available information regarding North Pacific right whale occurrence in the survey region and determined that encounter was unlikely and that authorization of take was not warranted. Following publication of the notice of proposed IHA, on approximately June 15, 2021, a North Pacific right whale was observed in Canadian waters off Haida Gwaii during survey effort by the Department of Fisheries and Oceans Canada (Kloster, 2021). As a result, NMFS has authorized North Pacific right whale take, as described in greater detail in Estimated Take, given the potential for a repeat encounter during L–DEO's survey.

In addition, we rectify an error in the estimated take of Steller sea lions occurring within Canadian territorial waters. Estimates of take that may occur within foreign territorial waters are not authorized under the MMPA, but are considered in making a finding of negligible impact on the affected species or stocks. In this case, we incorrectly applied a density value to L–DEO survey effort in deep water, when in fact the density of Steller sea lions in the deep depth stratum is correctly assumed to be zero (DoN, 2021). Through correction of this error, the estimated take of Steller sea lions in Canadian

territorial waters is revised from 2,522 to 2,278. Please see Table 7.

Description of Marine Mammals in the Area of Specified Activities

Sections 3 and 4 of the application summarize available information regarding status and trends, distribution and habitat preferences, and behavior and life history, of the potentially affected species. Additional information regarding population trends and threats may be found in NMFS' Stock Assessment Reports (SARs; *www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments*) and more general information about these species (*e.g.,* physical and behavioral descriptions) may be found on NMFS' website (*www.fisheries.noaa.gov/find-species*).

Table 1 lists all species with expected potential for occurrence in the survey area and summarizes information related to the population or stock, including regulatory status under the MMPA and Endangered Species Act (ESA) and potential biological removal (PBR), where known. For taxonomy, we follow Committee on Taxonomy (2021). PBR is defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population (as described in NMFS's SARs). While no mortality is anticipated or authorized here, PBR and annual serious injury and mortality from anthropogenic sources are included here as gross indicators of the status of the species and other threats.

Marine mammal abundance estimates presented in this document represent the total number of individuals that make up a given stock or the total number estimated within a particular study or survey area. NMFS' stock abundance estimates for most species represent the total estimate of individuals within the geographic area, if known, that comprises that stock. For some species, this geographic area may extend beyond U.S. waters. All managed stocks in this region are assessed in NMFS' U.S. Pacific and Alaska SARs. All MMPA stock information presented in Table 1 is the most recent available at the time of publication and is available in the 2019 SARs (Caretta *et al.,* 2020; Muto *et al.,* 2020) and draft 2020 SARs (available online at: *www.fisheries.noaa.gov/national/marine-mammal-protection/draft-marine-mammal-stock-assessment-reports*). Where available, abundance and status information is also presented for marine mammals in British Columbia waters. Twenty-two species (with 29 managed stocks) are considered to have the potential to occur in the survey area.

TABLE 1—MARINE MAMMALS THAT COULD OCCUR IN THE SURVEY AREA

Common name	Scientific name	Stock	ESA/MMPA status; strategic (Y/N) [1]	Stock abundance (CV, N_{min}, most recent abundance survey) [2]	British Columbia abundance [3]	PBR	Annual M/SI [4]
Order Cetartiodactyla—Cetacea—Superfamily Mysticeti (baleen whales)							
Family Balaenidae:							
North Pacific right whale.	*Eubalaena japonica*	Eastern North Pacific (ENP).	E/D; Y	31 (0.226; 26; 2008)		0.05	0
Family Eschrichtiidae:							
Gray whale	*Eschrichtius robustus*	Eastern North Pacific (ENP)*.	-; N	26,960 (0.05; 25,849; 2016).		801	131
		Western North Pacific (WNP)*.	E/D; Y	290 (n/a; 271; 2016)		0.12	Unk
Family Balaenopteridae (rorquals):							
Humpback whale	*Megaptera novaeangliae kuzira.*	Central North Pacific (CNP)*.	E/D; Y	10,103 (0.3; 7,891; 2006).	1,029	83	26
Minke whale	*Balaenoptera acutorostrata scammoni.*	Alaska*	-; N	Unknown	522	Undet.	0
Sei whale	*B. borealis borealis*	ENP	E/D; Y	519 (0.4; 374; 2014)		0.75	≥0.2
Fin whale	*B. physalus physalus*	Northeast Pacific*	E/D; Y	Unknown	329	Undet.	0.6
Blue whale	*B. musculus musculus*	ENP	E/D; Y	1,496 (0.44; 1,050; 2014).		[7] 1.2	≥19.4
Superfamily Odontoceti (toothed whales, dolphins, and porpoises)							
Family Physeteridae:							
Sperm whale	*Physeter macrocephalus*	North Pacific*	E/D; Y	Unknown		Undet.	3.5
Family Ziphiidae (beaked whales):							
Cuvier's beaked whale	*Ziphius cavirostris*	Alaska*	-; N	Unknown		Undet.	0
Baird's beaked whale	*Berardius bairdii*	Alaska*	-; N	Unknown		Undet.	0
Stejneger's beaked whale.	*Mesoplodon stejnegeri*	Alaska*	-; N	Unknown		Undet.	0
Family Delphinidae:							
Pacific white-sided dolphin.	*Lagenorhynchus obliquidens.*	North Pacific [6]	-; N	26,880 (n/a; 26,880; 1990).	22,160	Undet.	0
Northern right whale dolphin.	*Lissodelphis borealis*	CA/OR/WA	-; N	26,556 (0.44; 18,608; 2014).		179	3.8
Risso's dolphin	*Grampus griseus*	CA/OR/WA	-; N	6,336 (0.32; 4,817; 2014).		46	≥3.7
Killer whale	*Orcinus orca* [5]	ENP Offshore	-; N	300 (0.1; 276; 2012)	371	2.8	0
		ENP Gulf of Alaska, Aleutian Islands, and Bering Sea Transient.	-; N	587 (n/a; 2012)		5.9	0.8
		ENP West Coast Transient	-; N	349 (n/a; 2018)		3.5	0.4
		ENP Alaska Resident	-; N	2,347 (n/a; 2012)		24	1
		Northern Resident	-; N	302 (n/a; 2018)		2.2	0.2

TABLE 1—MARINE MAMMALS THAT COULD OCCUR IN THE SURVEY AREA—Continued

Common name	Scientific name	Stock	ESA/MMPA status; strategic (Y/N) [1]	Stock abundance (CV, N_{min}, most recent abundance survey) [2]	British Columbia abundance [3]	PBR	Annual M/SI [4]
Family Phocoenidae (porpoises):							
Harbor porpoise	*Phocoena phocoena vomerina.*	Southeast Alaska *	–; Y	Unknown	8,091	Undet.	34
Dall's porpoise	*Phocoenoides dalli dalli*	Alaska [6]	-; N	83,400 (0.097; n/a; 1991).	5,303	Undet.	38
Order Carnivora—Superfamily Pinnipedia							
Family Otariidae (eared seals and sea lions):							
Northern fur seal	*Callorhinus ursinus*	Pribilof Islands/Eastern Pacific.	D; Y	608,143 (0.2; 514,738; 2018).		11,067	387
California sea lion	*Zalophus californianus*	United States	–/-; N	257,606 (N/A, 233,515, 2014).		14,011	≥321
Steller sea lion	*Eumetopias jubatus jubatus.*	Western U.S. *	E/D; Y	52,932 (n/a; 2019)	15,348	318	255
	E. j. monteriensis	Eastern U.S. *	–/-; N	43,201 (n/a; 2017)		2,592	112
Family Phocidae (earless seals):							
Harbor seal	*Phoca vitulina richardii*	Sitka/Chatham Strait	-; N	13,289 (n/a; 11,883; 2015).	24,916	356	77
		Dixon/Cape Decision	-; N	23,478 (n/a; 21,453; 2015).		644	69
		Clarence Strait	-; N	27,659 (n/a; 24,854; 2015).		746	40
Northern elephant seal	*Mirounga angustirostris*	California Breeding	-; N	179,000 (n/a; 81,368; 2010).		4,882	8.8

*Stocks marked with an asterisk were addressed in further detail in the notice of proposed IHA (86 FR 30006; June 4, 2021).

[1] Endangered Species Act (ESA) status: Endangered (E), Threatened (T)/MMPA status: Depleted (D). A dash (-) indicates that the species is not listed under the ESA or designated as depleted under the MMPA. Under the MMPA, a strategic stock is one for which the level of direct human-caused mortality exceeds PBR or which is determined to be declining and likely to be listed under the ESA within the foreseeable future. Any species or stock listed under the ESA is automatically designated under the MMPA as depleted and as a strategic stock.

[2] NMFS marine mammal stock assessment reports at: *www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments.* CV is coefficient of variation; N_{min} is the minimum estimate of stock abundance. In some cases, CV is not applicable. For most stocks of killer whales, the abundance values represent direct counts of individually identifiable animals; therefore there is only a single abundance estimate with no associated CV. For certain stocks of pinnipeds, abundance estimates are based upon observations of animals (often pups) ashore multiplied by some correction factor derived from knowledge of the species' (or similar species') life history to arrive at a best abundance estimate; therefore, there is no associated CV. In these cases, the minimum abundance may represent actual counts of all animals ashore.

[3] Total abundance estimates for animals in British Columbia based on surveys of the Strait of Georgia, Johnstone Strait, Queen Charlotte Sound, Hecate Strait, and Dixon Entrance. This column represents estimated abundance of animals in British Columbia, where available, but does not necessarily represent additional stocks. Please see Best *et al.* (2015) and Pitcher *et al.* (2007) for additional information.

[4] These values, found in NMFS's SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (*e.g.,* commercial fisheries, subsistence hunting, ship strike). Annual M/SI often cannot be determined precisely and is in some cases presented as a minimum value. All M/SI values are as presented in the draft 2020 SARs.

[5] Transient and resident killer whales are considered unnamed subspecies (Committee on Taxonomy, 2020).

[6] Abundance estimates for these stocks are not considered current. PBR is therefore considered undetermined for these stocks, as there is no current minimum abundance estimate for use in calculation. We nevertheless present the most recent abundance estimates, as these represent the best available information for use in this document.

[7] This stock is known to spend a portion of time outside the U.S. EEZ. Therefore, the PBR presented here is the allocation for U.S. waters only and is a portion of the total. The total PBR for blue whales is 2.1 (7/12 allocation for U.S. waters). Annual M/SI presented for these species is for U.S. waters only.

Table 1 denotes the status of species and stocks under the U.S. MMPA and ESA. We note also that under Canada's Species at Risk Act, the sei whale and blue whale are listed as endangered; the fin whale and northern resident, offshore, and transient populations of killer whales are listed as threatened; and the humpback whale, harbor porpoise, and Steller sea lion are considered species of special concern.

The North Pacific right whale historically occurred across the North Pacific Ocean in subpolar to temperate waters, including waters off the coast of British Columbia (Scarff, 1986; Clapham *et al.,* 2004). Sightings of this endangered species are now extremely rare, occurring primarily in the Okhotsk Sea and the eastern Bering Sea (Brownell *et al.,* 2001; Shelden *et al.,* 2005; Wade *et al.,* 2006; Zerbini *et al.,* 2010). The summer range of the eastern North Pacific stock includes the Gulf of Alaska (GOA) and the Bering Sea, while the winter calving grounds remain unknown. Sightings in GOA are extremely rare. During three separate marine mammal surveys in the northern GOA from 2013–2019, including one dedicated to right whales, right whales were acoustically detected off Kodiak Island but were not visually observed (Muto *et al.,* 2020).

In 2013, two North Pacific right whale sightings were made off the coast of British Columbia (U.S. Department of the Navy, 2015), representing the first sightings in Canadian waters since the 1950s. Individual sightings in Canadian waters were subsequently recorded in 2018 and 2020 (Muto *et al.,* 2020). There have also been four sightings, each of a single North Pacific right whale, in California waters within approximately the last 30 years (most recently in 2017) (Carretta *et al.,* 1994; Brownell *et al.,* 2001; Price, 2017). This historical paucity of sightings in the region led NMFS to conclude that there would be a very low probability of encountering this species in the action area and, therefore, that take should not be proposed for authorization. However, following the June 2021 sighting of a single right whale in Canadian waters discussed above, we have determined that an encounter could occur and, therefore, that take should be authorized. This sighting, and the subsequent decision to authorize take, is not necessarily inconsistent with the analysis presented in the notice of

proposed authorization. Rather, this sighting is consistent with the recent historical record of infrequent, unpredictable occurrence in the region. The fact that this most recent sighting has occurred within the survey area and nearly contemporaneous with the planned survey means that there is some heightened potential for encounter that should be considered in authorizing take that may occur incidental to the survey activity. See Estimated Take for additional discussion.

Two populations of gray whales are recognized, eastern and western North Pacific (ENP and WNP). WNP whales are known to feed in the Okhotsk Sea and off of Kamchatka before migrating south to poorly known wintering grounds, possibly in the South China Sea. The two populations have historically been considered geographically isolated from each other; however, data from satellite-tracked whales indicate that there is some overlap between the stocks. Two WNP whales were tracked from Russian foraging areas along the Pacific rim to Baja California (Mate *et al.,* 2011), and, in one case where the satellite tag remained attached to the whale for a longer period, a WNP whale was tracked from Russia to Mexico and back again (IWC, 2012). A number of whales are known to have occurred in the eastern Pacific through comparisons of ENP and WNP photo-identification catalogs (IWC, 2012; Weller *et al.,* 2011; Burdin *et al.,* 2011). Therefore, a portion of the WNP population is assumed to migrate, at least in some years, to the eastern Pacific during the winter breeding season. Based on guidance provided through interagency consultation under section 7 of the ESA, approximately 0.1 percent of gray whales occurring in southeast Alaska and northern British Columbia are likely to be from the Western North Pacific stock; the rest would be from the Eastern North Pacific stock.

Prior to 2016, humpback whales were listed under the ESA as an endangered species worldwide. Following a 2015 global status review (Bettridge *et al.,* 2015), NMFS delineated 14 distinct population segments (DPS) with different listing statuses (81 FR 62259; September 8, 2016) pursuant to the ESA. The DPSs that occur in U.S. waters do not necessarily equate to the existing stocks designated under the MMPA and shown in Table 1.

In the eastern North Pacific, three humpback whale DPSs may occur: the Hawaii DPS (not listed), Mexico DPS (threatened), and Central America DPS (endangered). Individuals encountered in the proposed survey area would likely be from the Hawaii DPS, followed by the Mexico DPS; individuals from the Central America DPS are unlikely to feed in northern British Columbia and Southeast Alaska (Ford *et al.,* 2014). According to Wade (2017), in southeast Alaska and northern British Columbia, encountered whales are most likely to be from the Hawaii DPS (96.1 percent), but could be from the Mexico DPS (3.8 percent).

Additional detailed information regarding the potentially affected stocks of marine mammals was provided in the notice of proposed IHA (86 FR 30006; June 4, 2021). No new information is available, and we do not reprint that discussion here. Please see the notice of proposed IHA for additional information.

Important Habitat

Several biologically important areas (BIA) for marine mammals are recognized in southeast Alaska, and critical habitat is designated in southeast Alaska for the Steller sea lion (58 FR 45269; August 27, 1993) and the Mexico DPS of humpback whale (86 FR 21082; April 21, 2021). Note that although the eastern DPS of Steller sea lion was delisted in 2013, the change in listing status does not affect the designated critical habitat. Critical habitat is defined by section 3 of the ESA as (1) the specific areas within the geographical area occupied by the species, at the time it is listed, on which are found those physical or biological features (a) essential to the conservation of the species and (b) which may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination by the Secretary that such areas are essential for the conservation of the species.

Mexico DPS humpback whale critical habitat includes marine waters in Washington, Oregon, California, and Alaska. Only the areas designated in southeast Alaska fall within the survey area. The relevant designated critical habitat (Unit 10) extends from 139°24′ W, southeastward to the U.S. border with Canada. The area also extends offshore to a boundary drawn along the 2,000-m isobath. The essential feature for Mexico DPS humpback whale critical habitat is prey species, primarily euphausiids and small pelagic schooling fishes of sufficient quality, abundance, and accessibility within humpback whale feeding areas to support feeding and population growth. This area was drawn to encompass well-established feeding grounds in southeast Alaska and an identified feeding BIA (86 FR 21082; April 21, 2021). Humpback whales occur year-round in this unit, with highest densities occurring in summer and fall (Baker *et al.,* 1985, 1986).

Critical habitat for humpback whales has been designated under Canadian law in four locations in British Columbia (DFO, 2013), including in the waters of the survey area off Haida Gwaii (Langara Island and Southeast Moresby Island). These areas show persistent aggregations of humpback whales and have features such as prey availability, suitable acoustic environment, water quality, and physical space that allow for feeding, foraging, socializing, and resting (DFO, 2013).

Designated Steller sea lion critical habitat includes terrestrial, aquatic, and air zones that extend 3,000 ft (0.9 km) landward, seaward, and above each major rookery and major haul-out in Alaska. Within the survey area, critical habitat is located on islands off the coast of southeast Alaska (*e.g.,* Sitka, Coronation Island, Noyes Island, and Forrester Island). The physical and biological features identified for the aquatic areas of Steller sea lion designated critical habitat that occur within the survey area are those that support foraging, such as adequate prey resources and available foraging habitat. The proposed survey tracklines do not directly overlap any areas of Steller sea lion critical habitat, though the extent of the estimated ensonified area associated with the survey would overlap with units of Steller sea lion critical habitat. However, the brief duration of ensonification for any critical habitat unit leads us to conclude that any impacts on Steller sea lion habitat would be insignificant and would not affect the conservation value of the critical habitat.

For humpback whales, seasonal feeding BIAs for spring (March–May), summer (June–August), and fall (September–November) are recognized in southeast Alaska (Ferguson *et al.,* 2015). It should be noted that the aforementioned designated critical habitat in the survey area was based in large part on the same information that informed an understanding of the BIAs. Though the BIAs are not synonymous with critical habitat designated under the ESA, they were regarded by the humpback whale critical habitat review team as an important source of information and informative to their review of areas that meet the definition of critical habitat for humpback whales (86 FR 21082; April 21, 2021). The aforementioned southeast Alaska unit of designated critical habitat encompasses the BIAs, with the offshore and

nearshore boundaries corresponding with the BIA boundary.

A separate feeding BIA is recognized in southeast Alaska for gray whales. Once considered only a migratory pathway, the Gulf of Alaska is now known to provide foraging and overwintering habitat for ENP gray whales (Ferguson *et al.,* 2015). Based on the regular occurrence of feeding gray whales (including repeat sightings of individuals across years) off southeast Alaska, an area off of Sitka is recognized. The greatest densities of gray whales on the feeding area in southeast Alaska occur from May to November. However, this area is located to the north of the proposed survey area and would not be expected to be meaningfully impacted by the survey activities. A separate migratory BIA is recognized as extending along the continental shelf throughout the Gulf of Alaska. During their annual migration, most gray whales pass through the Gulf of Alaska in the fall (November through January; southbound) and again in the spring (March through May; northbound) (Ferguson *et al.,* 2015). Therefore, the planned survey would not be expected to impact gray whale migratory habitat due to the timing of the survey in late summer. No important behaviors of gray whales in either the feeding or migratory BIAs are expected to be affected. For more information on BIAs, please see Ferguson *et al.* (2015) or visit *https://oceannoise.noaa.gov/biologically-important-areas.*

Unusual Mortality Events (UME)

A UME is defined under the MMPA as ''a stranding that is unexpected; involves a significant die-off of any marine mammal population; and demands immediate response.'' For more information on UMEs, please visit: *www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-unusual-mortality-events.* There is a currently ongoing UME affecting gray whales throughout their migratory range.

Since January 1, 2019, elevated gray whale strandings have occurred along the west coast of North America from Mexico through Alaska. As of July 1, 2021, there have been a total of 480 whales reported in the event, with approximately 225 dead whales in Mexico, 237 whales in the United States (70 in California; 11 in Oregon; 55 in Washington, 101 in Alaska), and 18 whales in British Columbia, Canada. For the United States, the historical 18-year 5-month average (Jan–May) is 14.8 whales for the four states for this same time-period. Several dead whales have been emaciated with moderate to heavy whale lice (cyamid) loads. Necropsies have been conducted on a subset of whales with additional findings of vessel strike in three whales and entanglement in one whale. In Mexico, 50–55 percent of the free-ranging whales observed in the lagoons in winter have been reported as ''skinny'' compared to the annual average of 10–12 percent ''skinny'' whales normally seen. The cause of the UME is as yet undetermined. For more information, please visit: *www.fisheries.noaa.gov/national/marine-life-distress/2019–2020-gray-whale-unusual-mortality-event-along-west-coast-and.*

Another recent, notable UME involved large whales and occurred in the western Gulf of Alaska and off of British Columbia, Canada. Beginning in May 2015, elevated large whale mortalities (primarily fin and humpback whales) occurred in the areas around Kodiak Island, Afognak Island, Chirikof Island, the Semidi Islands, and the southern shoreline of the Alaska Peninsula. Although most carcasses have been non-retrievable as they were discovered floating and in a state of moderate to severe decomposition, the UME is likely attributable to ecological factors, *i.e.,* the 2015 El Niño, ''warm water blob,'' and the Pacific Coast domoic acid bloom. The UME was closed in 2016. More information is available online at *www.fisheries.noaa.gov/national/marine-life-distress/2015-2016-large-whale-unusual-mortality-event-western-gulf-alaska.*

Marine Mammal Hearing

Hearing is the most important sensory modality for marine mammals underwater, and exposure to anthropogenic sound can have deleterious effects. To appropriately assess the potential effects of exposure to sound, it is necessary to understand the frequency ranges marine mammals are able to hear. Current data indicate that not all marine mammal species have equal hearing capabilities (*e.g.,* Richardson *et al.,* 1995; Wartzok and Ketten, 1999; Au and Hastings, 2008). To reflect this, Southall *et al.* (2007) recommended that marine mammals be divided into functional hearing groups based on directly measured or estimated hearing ranges on the basis of available behavioral response data, audiograms derived using auditory evoked potential techniques, anatomical modeling, and other data. Note that no direct measurements of hearing ability have been successfully completed for mysticetes (*i.e.,* low-frequency cetaceans). Subsequently, NMFS (2018) described generalized hearing ranges for these marine mammal hearing groups. Generalized hearing ranges were chosen based on the approximately 65 decibel (dB) threshold from the normalized composite audiograms, with the exception for lower limits for low-frequency cetaceans where the lower bound was deemed to be biologically implausible and the lower bound from Southall *et al.* (2007) retained. Marine mammal hearing groups and their associated hearing ranges are provided in Table 2.

TABLE 2—MARINE MAMMAL HEARING GROUPS (NMFS, 2018)

Hearing group	Generalized hearing range *
Low-frequency (LF) cetaceans (baleen whales)	7 Hz to 35 kHz.
Mid-frequency (MF) cetaceans (dolphins, toothed whales, beaked whales, bottlenose whales)	150 Hz to 160 kHz.
High-frequency (HF) cetaceans (true porpoises, *Kogia,* river dolphins, cephalorhynchid, *Lagenorhynchus cruciger* & *L. australis*).	275 Hz to 160 kHz.
Phocid pinnipeds (PW) (underwater) (true seals)	50 Hz to 86 kHz.
Otariid pinnipeds (OW) (underwater) (sea lions and fur seals)	60 Hz to 39 kHz.

* Represents the generalized hearing range for the entire group as a composite (*i.e.,* all species within the group), where individual species' hearing ranges are typically not as broad. Generalized hearing range chosen based on ~65 dB threshold from normalized composite audiogram, with the exception for lower limits for LF cetaceans (Southall *et al.* 2007) and PW pinniped (approximation).

The pinniped functional hearing group was modified from Southall *et al.* (2007) on the basis of data indicating that phocid species have consistently demonstrated an extended frequency range of hearing compared to otariids,

especially in the higher frequency range (Hemilä *et al.,* 2006; Kastelein *et al.,* 2009; Reichmuth and Holt, 2013).

For more detail concerning these groups and associated frequency ranges, please see NMFS (2018) for a review of available information. Twenty-two marine mammal species (17 cetacean and 5 pinniped (3 otariid and 2 phocid) species) are considered herein. Of the cetacean species that may be present, seven are classified as low-frequency cetaceans (*i.e.,* all mysticete species), eight are classified as mid-frequency cetaceans (*i.e.,* all delphinid and ziphiid species and the sperm whale), and two are classified as high-frequency cetaceans (*i.e.,* porpoises).

Potential Effects of Specified Activities on Marine Mammals and Their Habitat

This section includes a summary of the ways that L–DEO's specified activity may impact marine mammals and their habitat. Detailed descriptions of the potential effects of similar specified activities have been provided in other recent **Federal Register** notices, including for survey activities using the same methodology and over a similar amount of time, and affecting similar species (*e.g.,* 83 FR 29212, June 22, 2018; 84 FR 14200, April 9, 2019; 85 FR 19580, April 7, 2020). No significant new information is available, and we refer the reader to these documents for additional detail. The Estimated Take section includes a quantitative analysis of the number of individuals that are expected to be taken by L–DEO's activity. The Negligible Impact Analysis and Determination section considers the potential effects of the specified activity, the Estimated Take section, and the Mitigation section, to draw conclusions regarding the likely impacts of these activities on the reproductive success or survivorship of individuals and how those impacts on individuals are likely to impact marine mammal species or stocks. The notice of proposed IHA (86 FR 30006; June 4, 2021) provided a discussion and background information regarding active acoustic sound sources and acoustic terminology, which is not repeated here. Please see that notice for additional information.

Summary on Specific Potential Effects of Acoustic Sound Sources

Underwater sound from active acoustic sources can include one or more of the following: Temporary or permanent hearing impairment, non-auditory physical or physiological effects, behavioral disturbance, stress, and masking. The degree of effect is intrinsically related to the signal characteristics, received level, distance from the source, and duration of the sound exposure. Marine mammals exposed to high-intensity sound, or to lower-intensity sound for prolonged periods, can experience hearing threshold shift (TS), which is the loss of hearing sensitivity at certain frequency ranges (Finneran, 2015). TS can be permanent (PTS), in which case the loss of hearing sensitivity is not fully recoverable, or temporary (TTS), in which case the animal's hearing threshold would recover over time (Southall *et al.,* 2007).

Due to the characteristics of airgun arrays as a distributed sound source, maximum estimated Level A harassment isopleths for species of certain hearing groups are assumed to fall within the near field of the array. For these species, *i.e.,* mid-frequency cetaceans and all pinnipeds, animals in the vicinity of L–DEO's proposed seismic survey activity are unlikely to incur PTS. For low-frequency cetaceans and high-frequency cetaceans, potential exposures sufficient to cause low-level PTS may occur on the basis of cumulative exposure level and instantaneous exposure to peak pressure levels, respectively. However, when considered in conjunction with the potential for aversive behavior, relative motion of the exposed animal and the sound source, and the anticipated efficacy of the proposed mitigation requirements, a reasonable conclusion may be drawn that PTS is not a likely outcome for any species. However, we propose to authorize take by Level A harassment, where indicated by the quantitative exposure analysis, for species from the low- and high-frequency cetacean hearing groups. Please see Estimated Take and Mitigation for further discussion.

Behavioral disturbance may include a variety of effects, including subtle changes in behavior (*e.g.,* minor or brief avoidance of an area or changes in vocalizations), more conspicuous changes in similar behavioral activities, and more sustained and/or potentially severe reactions, such as displacement from or abandonment of high-quality habitat. Behavioral responses to sound are highly variable and context-specific and any reactions depend on numerous intrinsic and extrinsic factors (*e.g.,* species, state of maturity, experience, current activity, reproductive state, auditory sensitivity, time of day), as well as the interplay between factors. Available studies show wide variation in response to underwater sound; therefore, it is difficult to predict specifically how any given sound in a particular instance might affect marine mammals perceiving the signal.

In addition, sound can disrupt behavior through masking, or interfering with, an animal's ability to detect, recognize, or discriminate between acoustic signals of interest (*e.g.,* those used for intraspecific communication and social interactions, prey detection, predator avoidance, navigation). Masking occurs when the receipt of a sound is interfered with by another coincident sound at similar frequencies and at similar or higher intensity, and may occur whether the sound is natural (*e.g.,* snapping shrimp, wind, waves, precipitation) or anthropogenic (*e.g.,* shipping, sonar, seismic exploration) in origin.

Sound may affect marine mammals through impacts on the abundance, behavior, or distribution of prey species (*e.g.,* crustaceans, cephalopods, fish, zooplankton) (*i.e.,* effects to marine mammal habitat). Prey species exposed to sound might move away from the sound source, experience TTS, experience masking of biologically relevant sounds, or show no obvious direct effects. The most likely impacts (if any) for most prey species in a given area would be temporary avoidance of the area. Surveys using active acoustic sound sources move through an area relatively quickly, limiting exposure to multiple pulses. In all cases, sound levels would return to ambient once a survey ends and the noise source is shut down and, when exposure to sound ends, behavioral and/or physiological responses are expected to end relatively quickly. Finally, the survey equipment will not have significant impacts to the seafloor and does not represent a source of pollution.

Vessel Strike

Vessel collisions with marine mammals, or ship strikes, can result in death or serious injury of the animal. These interactions are typically associated with large whales, which are less maneuverable than are smaller cetaceans or pinnipeds in relation to large vessels. The severity of injuries typically depends on the size and speed of the vessel, with the probability of death or serious injury increasing as vessel speed increases (Knowlton and Kraus, 2001; Laist *et al.,* 2001; Vanderlaan and Taggart, 2007; Conn and Silber, 2013). Impact forces increase with speed, as does the probability of a strike at a given distance (Silber *et al.,* 2010; Gende *et al.,* 2011). The chances of a lethal injury decline from approximately 80 percent at 15 kn to approximately 20 percent at 8.6 kn. At speeds below 11.8 kn, the chances of lethal injury drop below 50 percent (Vanderlaan and Taggart, 2007).

Ship strikes generally involve commercial shipping, which is much more common in both space and time than is geophysical survey activity and which typically involves larger vessels moving at faster speeds. Jensen and Silber (2004) summarized ship strikes of large whales worldwide from 1975–2003 and found that most collisions occurred in the open ocean and involved large vessels (*e.g.,* commercial shipping). Commercial fishing vessels were responsible for 3 percent of recorded collisions, while no such incidents were reported for geophysical survey vessels during that time period.

For vessels used in geophysical survey activities, vessel speed while towing gear is typically only 4–5 kn. At these speeds, both the possibility of striking a marine mammal and the possibility of a strike resulting in serious injury or mortality are so low as to be discountable. At average transit speed for geophysical survey vessels (approximately 10 kn), the probability of serious injury or mortality resulting from a strike (if it occurred) is less than 50 percent (Vanderlaan and Taggart, 2007; Conn and Silber, 2013). However, the likelihood of a strike actually happening is again low given the smaller size of these vessels and generally slower speeds. We anticipate that vessel collisions involving seismic data acquisition vessels towing gear, while not impossible, represent unlikely, unpredictable events for which there are no preventive measures. Given the required mitigation measures, the relatively slow speeds of vessels towing gear, the presence of bridge crew watching for obstacles at all times (including marine mammals), the presence of marine mammal observers, and the small number of seismic survey cruises relative to commercial ship traffic, we believe that the possibility of ship strike is discountable and, further, that were a strike of a large whale to occur, it would be unlikely to result in serious injury or mortality. No incidental take resulting from ship strike is anticipated or proposed for authorization, and this potential effect of the specified activity will not be discussed further in the following analysis.

The potential effects of L–DEO's specified survey activity are expected to be limited to Level B harassment consisting of behavioral harassment and/or temporary auditory effects and, for certain species of low- and high-frequency cetaceans only, low-level permanent auditory effects. No permanent auditory effects for any species belonging to other hearing groups, or significant impacts to marine mammal habitat, including prey, are expected.

Estimated Take

This section provides an estimate of the number of incidental takes authorized through the IHA, which will inform both NMFS' consideration of ''small numbers'' and the negligible impact determination.

Harassment is the only type of take expected to result from these activities. Except with respect to certain activities not pertinent here, section 3(18) of 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).

Authorized takes are primarily by Level B harassment, as use of seismic airguns has the potential to result in disruption of behavioral patterns for individual marine mammals. There is also some potential for auditory injury (Level A harassment) for mysticetes and high-frequency cetaceans (*i.e.,* porpoises). The mitigation and monitoring measures are expected to minimize the severity of such taking to the extent practicable.

As described previously, no serious injury or mortality is anticipated or authorized for this activity. Below we describe how the take is estimated.

Generally speaking, we estimate take by considering: (1) Acoustic thresholds above which NMFS believes the best available science indicates marine mammals will be behaviorally harassed or incur some degree of permanent hearing impairment; (2) the area or volume of water that will be ensonified above these levels in a day; (3) the density or occurrence of marine mammals within these ensonified areas; and, (4) and the number of days of activities. We note that while these basic factors can contribute to a basic calculation to provide an initial prediction of takes, additional information that can qualitatively inform take estimates is also sometimes available (*e.g.,* previous monitoring results or average group size). Below, we describe the factors considered here in more detail and present the take numbers.

Acoustic Thresholds

NMFS uses acoustic thresholds that identify the received level of underwater sound above which exposed marine mammals would be reasonably expected to be behaviorally harassed (equated to Level B harassment) or to incur PTS of some degree (equated to Level A harassment).

Level B Harassment—Though significantly driven by received level, the onset of behavioral disturbance from anthropogenic noise exposure is also informed to varying degrees by other factors related to the source (*e.g.,* frequency, predictability, duty cycle), the environment (*e.g.,* bathymetry), and the receiving animals (hearing, motivation, experience, demography, behavioral context) and can be difficult to predict (Southall *et al.,* 2007, Ellison *et al.,* 2012). NMFS uses a generalized acoustic threshold based on received level to estimate the onset of behavioral harassment. NMFS predicts that marine mammals may be behaviorally harassed (*i.e.,* Level B harassment) when exposed to underwater anthropogenic noise above received levels of 160 dB re 1 microPascal (root mean square) (μPa (rms)) for the impulsive sources (*i.e.,* seismic airguns) evaluated here.

Level A Harassment—NMFS' Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0) (Technical Guidance, 2018) identifies dual criteria to assess auditory injury (Level A harassment) to five different marine mammal groups (based on hearing sensitivity) as a result of exposure to noise from two different types of sources (impulsive or non-impulsive). L–DEO's seismic survey includes the use of impulsive (seismic airguns) sources.

These thresholds are provided in the table below. The references, analysis, and methodology used in the development of the thresholds are described in NMFS 2018 Technical Guidance, which may be accessed at *www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance.*

TABLE 3—THRESHOLDS IDENTIFYING THE ONSET OF PERMANENT THRESHOLD SHIFT

Hearing group	PTS onset acoustic thresholds * (received level)	
	Impulsive	Non-impulsive
Low-Frequency (LF) Cetaceans	*Cell 1:* $L_{pk,flat}$: 219 dB; $L_{E,LF,24h}$: 183 dB	*Cell 2:* $L_{E,LF,24h}$: 199 dB.
Mid-Frequency (MF) Cetaceans	*Cell 3:* $L_{pk,flat}$: 230 dB; $L_{E,MF,24h}$: 185 dB	*Cell 4:* $L_{E,MF,24h}$: 198 dB.
High-Frequency (HF) Cetaceans	*Cell 5:* $L_{pk,flat}$: 202 dB; $L_{E,HF,24h}$: 155 dB	*Cell 6:* $L_{E,HF,24h}$: 173 dB.
Phocid Pinnipeds (PW) (Underwater)	*Cell 7:* $L_{pk,flat}$: 218 dB; $L_{E,PW,24h}$: 185 dB	*Cell 8:* $L_{E,PW,24h}$: 201 dB.
Otariid Pinnipeds (OW) (Underwater)	*Cell 9:* $L_{pk,flat}$: 232 dB; $L_{E,OW,24h}$: 203 dB	*Cell 10:* $L_{E,OW,24h}$: 219 dB.

* Dual metric acoustic thresholds for impulsive sounds: Use whichever results in the largest isopleth for calculating PTS onset. If a non-impulsive sound has the potential of exceeding the peak sound pressure level thresholds associated with impulsive sounds, these thresholds should also be considered.

Note: Peak sound pressure (L_{pk}) has a reference value of 1 μPa, and cumulative sound exposure level (L_E) has a reference value of 1μPa^{2}s. In this Table, thresholds are abbreviated to reflect American National Standards Institute standards (ANSI 2013). However, peak sound pressure is defined by ANSI as incorporating frequency weighting, which is not the intent for this Technical Guidance. Hence, the subscript ''flat'' is being included to indicate peak sound pressure should be flat weighted or unweighted within the generalized hearing range. The subscript associated with cumulative sound exposure level thresholds indicates the designated marine mammal auditory weighting function (LF, MF, and HF cetaceans, and PW and OW pinnipeds) and that the recommended accumulation period is 24 hours. The cumulative sound exposure level thresholds could be exceeded in a multitude of ways (*i.e.,* varying exposure levels and durations, duty cycle). When possible, it is valuable for action proponents to indicate the conditions under which these acoustic thresholds will be exceeded.

Ensonified Area

Here, we describe operational and environmental parameters of the activity and other relevant information that will feed into identifying the area ensonified above the acoustic thresholds.

L–DEO's modeling methodologies are described in greater detail in Appendix A of L–DEO's IHA application. The 2D survey will acquire data using the 36-airgun array with a total discharge volume of 6,600 in^3 at a maximum tow depth of 12 m. L–DEO's 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). To validate the model results, L–DEO measured propagation of pulses from the 36-airgun array at a tow depth of 6 m in the Gulf of Mexico, for deep water (~1,600 m), intermediate water depth on the slope (~600–1,100 m), and shallow water (~50 m) (Tolstoy *et al.,* 2009; Diebold *et al.,* 2010).

L–DEO collected a MCS data set from R/V *Langseth* (array towed at 9 m depth) on an 8-km streamer in 2012 on the shelf of the Cascadia Margin off of Washington in water up to 200 m deep that allowed Crone *et al.* (2014) to analyze the hydrophone streamer data (>1,100 individual shots). These empirical data were then analyzed to determine in situ sound levels for shallow and upper intermediate water depths. These data suggest that modeled radii were 2–3 times larger than the measured radii in shallow water. Similarly, data collected by Crone *et al.* (2017) during a survey off New Jersey in 2014 and 2015 confirmed that in situ measurements collected by the R/V *Langseth* hydrophone streamer were 2–3 times smaller than the predicted radii.

L–DEO model results are used to determine the assumed radial distance to the 160-dB rms threshold for these arrays in deep water (>1,000 m) (down to a maximum water depth of 2,000 m). Water depths in the project area may be up to 2,800 m, but marine mammals in the region are generally not anticipated to dive below 2,000 m (*e.g.,* Costa and Williams, 1999). L–DEO typically derives estimated distances for intermediate water depths by applying a correction factor of 1.5 to the model results for deep water. In this case, the estimated radial distance for intermediate (100–1,000 m) and shallow (<100 m) water depths is taken from Crone *et al.* (2014), as these empirical data were collected in the same region as this survey. A correction factor of 1.15 was applied to account for differences in array tow depth.

The estimated distances to the Level B harassment isopleths for the array are shown in Table 4.

TABLE 4—PREDICTED RADIAL DISTANCES TO ISOPLETHS CORRESPONDING TO LEVEL B HARASSMENT THRESHOLD

Source and volume	Tow depth (m)	Water depth (m)	Level B harassment zone (m)
36 airgun array; 6,600 in^3	12	>1000	[1] 6,733
		100–1000	[2] 9,468
		<100	[2] 12,650

[1] Distance based on L–DEO model results.
[2] Based on empirical data from Crone *et al.* (2014) with scaling.

Predicted distances to Level A harassment isopleths, which vary based on marine mammal hearing groups, were calculated based on modeling performed by L–DEO using the NUCLEUS source modeling software program and the NMFS User Spreadsheet, described below. The acoustic thresholds for impulsive sounds (*e.g.,* airguns) contained in the Technical Guidance were presented as dual metric acoustic thresholds using both cumulative sound exposure level (SEL_{cum}) and peak sound pressure metrics (NMFS 2018). As dual metrics, NMFS considers onset of PTS (Level A harassment) to have occurred when either one of the two metrics is exceeded (*i.e.,* metric resulting in the largest isopleth). The SEL_{cum} metric considers both level and duration of

exposure, as well as auditory weighting functions by marine mammal hearing group. In recognition of the fact that the requirement to calculate Level A harassment ensonified areas could be more technically challenging to predict due to the duration component and the use of weighting functions in the new SEL_{cum} thresholds, NMFS developed an optional User Spreadsheet that includes tools to help predict a simple isopleth that can be used in conjunction with marine mammal density or occurrence to facilitate the estimation of take numbers.

The values for SEL_{cum} and peak SPL for the *Langseth* airgun arrays were derived from calculating the modified far-field signature. The farfield signature is often used as a theoretical representation of the source level. To compute the farfield signature, the source level is estimated at a large distance below the array (*e.g.,* 9 km), and this level is back projected mathematically to a notional distance of 1 m from the array's geometrical center. However, when the source is an array of multiple airguns separated in space, the source level from the theoretical farfield signature is not necessarily the best measurement of the source level that is physically achieved at the source (Tolstoy *et al.,* 2009). Near the source (at short ranges, distances <1 km), the pulses of sound pressure from each individual airgun in the source array do not stack constructively, as they do for the theoretical farfield signature. The pulses from the different airguns spread out in time such that the source levels observed or modeled are the result of the summation of pulses from a few airguns, not the full array (Tolstoy *et al.,* 2009). At larger distances, away from the source array center, sound pressure of all the airguns in the array stack coherently, but not within one time sample, resulting in smaller source levels (a few dB) than the source level derived from the farfield signature. Because the farfield signature does not take into account the large array effect near the source and is calculated as a point source, the modified farfield signature is a more appropriate measure of the sound source level for distributed sound sources, such as airgun arrays. L–DEO used the acoustic modeling methodology as used for estimating Level B harassment distances with a small grid step of 1 m in both the inline and depth directions. The propagation modeling takes into account all airgun interactions at short distances from the source, including interactions between subarrays, which are modeled using the NUCLEUS software to estimate the notional signature and MATLAB software to calculate the pressure signal at each mesh point of a grid.

In order to more realistically incorporate the Technical Guidance's weighting functions over the seismic array's full acoustic band, unweighted spectrum data for the *Langseth's* airgun array (modeled in 1 Hz bands) was used to make adjustments (dB) to the unweighted spectrum levels, by frequency, according to the weighting functions for each relevant marine mammal hearing group. These adjusted/weighted spectrum levels were then converted to pressures (μPa) in order to integrate them over the entire broadband spectrum, resulting in broadband weighted source levels by hearing group that could be directly incorporated within the User Spreadsheet (*i.e.,* to override the Spreadsheet's more simple weighting factor adjustment). Using the User Spreadsheet's ''safe distance'' methodology for mobile sources (described by Sivle *et al.,* 2014) with the hearing group-specific weighted source levels, and inputs assuming spherical spreading propagation and information specific to the planned survey (*i.e.,* the 2.2 m/s source velocity and (worst-case) 23-s shot interval), potential radial distances to auditory injury zones were then calculated for SEL_{cum} thresholds.

Inputs to the User Spreadsheets in the form of estimated source levels are shown in Appendix A of L–DEO's application. User Spreadsheets used by L–DEO to estimate distances to Level A harassment isopleths for the airgun arrays are also provided in Appendix A of the application. Outputs from the User Spreadsheets in the form of estimated distances to Level A harassment isopleths for the survey are shown in Table 5. As described above, NMFS considers onset of PTS (Level A harassment) to have occurred when either one of the dual metrics (SEL_{cum} and Peak SPL_{flat}) is exceeded (*i.e.,* metric resulting in the largest isopleth).

TABLE 5—MODELED RADIAL DISTANCES (m) TO ISOPLETHS CORRESPONDING TO LEVEL A HARASSMENT THRESHOLDS

Source (volume)	Threshold	Level A harassment zone (m)				
		LF cetaceans	MF cetaceans	HF cetaceans	Phocids	Otariids
36-airgun array (6,600 in^3)	SEL_{cum}	320	0	1	10	0
	Peak	39	14	268	44	11

Note that because of some of the assumptions included in the methods used (*e.g.,* stationary receiver with no vertical or horizontal movement in response to the acoustic source), isopleths produced may be overestimates to some degree, which will ultimately result in some degree of overestimation of Level A harassment. However, these tools offer the best way to predict appropriate isopleths when more sophisticated modeling methods are not available, and NMFS continues to develop ways to quantitatively refine these tools and will qualitatively address the output where appropriate. For mobile sources, such as this seismic survey, the User Spreadsheet predicts the closest distance at which a stationary animal would not incur PTS if the sound source traveled by the animal in a straight line at a constant speed.

Auditory injury is unlikely to occur for mid-frequency cetaceans, otariid pinnipeds, and phocid pinnipeds given very small modeled zones of injury for those species (all estimated zones less than 15 m for mid-frequency cetaceans and otariid pinnipeds, up to a maximum of 44 m for phocid pinnipeds), in context of distributed source dynamics. The source level of the array is a theoretical definition assuming a point source and measurement in the far-field of the source (MacGillivray, 2006). As described by Caldwell and Dragoset (2000), an array is not a point source, but one that spans a small area. In the far-field, individual elements in arrays will effectively work as one source because individual pressure peaks will have coalesced into one relatively broad pulse. The array can then be considered a ''point source.'' For distances within the near-field, *i.e.,* approximately 2–3 times the array dimensions, pressure peaks from individual elements do not arrive simultaneously because the observation point is not equidistant from each element. The effect is

destructive interference of the outputs of each element, so that peak pressures in the near-field will be significantly lower than the output of the largest individual element. Here, the peak isopleth distances would in all cases be expected to be within the near-field of the array where the definition of source level breaks down. Therefore, actual locations within this distance of the array center where the sound level exceeds peak SPL isopleth distances would not necessarily exist. In general, Caldwell and Dragoset (2000) suggest that the near-field for airgun arrays is considered to extend out to approximately 250 m. We provided additional discussion and quantitative support for this theoretical argument in the notice of proposed IHA. Please see that notice (86 FR 30006; June 4, 2021) for additional information.

In consideration of the received sound levels in the near-field as described above, we expect the potential for Level A harassment of mid-frequency cetaceans, otariid pinnipeds, and phocid pinnipeds to be de minimis, even before the likely moderating effects of aversion and/or other compensatory behaviors (*e.g.,* Nachtigall *et al.,* 2018) are considered. We do not believe that Level A harassment is a likely outcome for any mid-frequency cetacean, otariid pinniped, or phocid pinniped and do not authorize any Level A harassment for these species.

Marine Mammal Occurrence

Information about the presence, density, and group dynamics of marine mammals that informs the take calculations was provided in our notice of proposed IHA (86 FR 30006; June 4, 2021). That information is not re-printed here. For additional detail, please see the notice of proposed IHA. Density values were provided in Table 6 of that notice. No new density information is available since we published the notice of proposed IHA, and no changes have been made. We relied largely upon the Navy's Marine Species Density Database (DoN, 2019, 2021), which is currently the most comprehensive compendium for density data available for the GOA and the only source of density data available for southeast Alaska.

As described above in Changes from the Proposed IHA, the estimated take of Steller sea lions in Canadian territorial waters was incorrect. The correct density values were provided in Table 6 of the notice of proposed IHA; however, an erroneous density value was applied in producing the incorrect estimate provided in Table 8 of the notice of proposed IHA. That error has been corrected herein (see Table 7).

Take Calculation and Estimation

Here we describe how the information provided above is brought together to produce a quantitative take estimate. In order to estimate the number of marine mammals predicted to be exposed to sound levels that would result in Level A or Level B harassment, radial distances from the airgun array to predicted isopleths corresponding to the Level A harassment and Level B harassment thresholds are calculated, as described above. Those radial distances are then used to calculate the area(s) around the airgun array predicted to be ensonified to sound levels that exceed the Level A and Level B harassment thresholds. The distance for the 160-dB threshold (based on L–DEO model results) was used to draw a buffer around every transect line in GIS to determine the total ensonified area in each depth category. Estimated incidents of exposure above Level A and Level B harassment criteria are presented in Table 6. For additional details regarding calculations of ensonified area, please see Appendix D of L–DEO's application. As noted previously, L–DEO has added 25 percent in the form of operational days, which is equivalent to adding 25 percent to the line-kms to be surveyed. This accounts for the possibility that additional operational days are required, but likely results in an overestimate of actual exposures.

For North Pacific right whales, the recent observation of an individual whale in Canadian waters where the survey will occur means that the potential for an encounter, while still unpredictable, is heightened. While we here assume that a North Pacific right whale encounter may occur, we also assume that such an event is unlikely (during two weeks of survey effort, the DFO researchers had a single encounter) and would occur no more than once during the survey. In order to determine the appropriate take number for authorization, we reviewed available information for North Pacific right whales. While most observations outside of typical habitat near Kodiak Island in the northern GOA and in the eastern Bering Sea have been of single individuals, the average group size during observations in more typical habitat is of two whales (Shelden *et al.,* 2005; Waite *et al.,* 2003; Wade *et al.,* 2011; Muto *et al.,* 2020). The assumption that an encounter will occur once, in conjunction with a conservative assumption that the encounter could be with an average group, supports a determination that authorization of two takes is appropriate as a precautionary approach to ensuring that potential effects to North Pacific right whales are evaluated and that unauthorized take is avoided. We also note that application of density data from the Navy's northern GOA Temporary Marine Activities Area would produce an estimate of two exposures. Although it is likely that this density information is not an accurate representation of North Pacific right whale occurrence off of southeast Alaska and British Columbia, this approach provides additional support for the authorization of two takes.

As previously noted, NMFS cannot authorize incidental take under the MMPA that may occur within the territorial seas of foreign nations (from 0–12 nmi (22.2 km) from shore), as the MMPA does not apply in those waters. However, NMFS has still calculated the estimated level of incidental take in the entire activity area (including Canadian territorial waters) as part of the analysis supporting our determination under the MMPA that the activity will have a negligible impact on the affected species. The total estimated take in U.S. and Canadian waters is presented in Table 7 (see Negligible Impact Analysis and Determination).

The estimated marine mammal exposures above harassment thresholds are generally assumed here to equate to take, and the estimates form the basis for our take authorization numbers. For the species for which NMFS does not expect there to be a reasonable potential for take by Level A harassment to occur, *i.e.,* mid-frequency cetaceans and all pinnipeds, the estimated exposures above Level A harassment thresholds have been added to the estimated exposures above the Level B harassment threshold to produce a total number of incidents of take by Level B harassment that is authorized. Estimated exposures and take numbers for authorization are shown in Table 6. Regarding humpback whale take numbers, we assume that whales encountered will follow Wade (2017), *i.e.,* that 96.1 percent of takes would accrue to the Hawaii DPS and 3.8 percent to the Mexico DPS. Of the estimated take of gray whales, and based on guidance provided through interagency consultation under section 7 of the ESA, we assume that 0.1 percent of encountered whales would be from the WNP stock and authorize take accordingly. For Steller sea lions, 2.2 percent are assumed to belong to the western DPS (Hastings *et al.,* 2020).

TABLE 6—ESTIMATED TAKING BY LEVEL A AND LEVEL B HARASSMENT, AND PERCENTAGE OF POPULATION

Species	Stock	Estimated Level B harassment	Estimated Level A harassment	Authorized Level B harassment	Authorized Level A harassment	Total take	Percent of stock [1]
North Pacific right whale [2]		2	0	2	0	2	6.1
Gray whale	WNP	1,450	45	2	0	2	0.7
	ENP			1,448	45	1,493	5.5
Humpback whale		403	14	403	14	417	4.1
Blue whale		31	1	31	1	32	2.1
Fin whale [3]		873	44	873	44	917	n/a
Sei whale		34	1	34	1	35	6.7
Minke whale [3]		57	2	57	2	59	n/a
Sperm whale [3]		131	0	131	0	131	n/a
Baird's beaked whale [3]		29	0	29	0	29	n/a
Stejneger's beaked whale [3]		120	0	120	0	120	n/a
Cuvier's beaked whale [3]		114	0	114	0	114	n/a
Pacific white-sided dolphin		1,371	3	1,374	0	1,374	5.1
Northern right whale dolphin		922	5	927	0	927	3.5
Risso's dolphin [4]		1	0	22	0	22	0.3
Killer whale	Offshore	290	0	290	0	290	96.7
	GOA/BSAI Transient						49.4
	WC Transient						83.1
	AK Resident						12.4
	Northern Resident						96.0
Dall's porpoise		5,661	178	5,661	178	5,839	7.0
Harbor porpoise		990	26	990	26	1,016	n/a
Northern fur seal		5,804	8	5,812	0	5,812	1.0
California sea lion		1,256	1	1,258	0	1,258	0.5
Steller sea lion	WDPS	2,433	2	54	0	54	0.1
	EDPS			2,381	0	2,381	5.5
Northern elephant seal		6,811	39	6,850	0	6,850	3.8
Harbor seal	Sitka/Chatham Strait	5,992	21	6,012	0	6,012	45.2
	Dixon/Cape Decision						25.6
	Clarence Strait						21.7

[1] In most cases, where multiple stocks are being affected, for the purposes of calculating the percentage of the stock impacted, the take is being analyzed as if all takes occurred within each stock. Where necessary, additional discussion is provided in the Small Numbers section.
[2] Take number represents qualitative consideration of likelihood of encounter, average group size, and available density information.
[3] As noted in Table 1, there is no estimate of abundance available for these species.
[4] Estimated exposure of one Risso's dolphin increased to group size of 22 (Barlow, 2016).

Mitigation

In order to issue an IHA under Section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to the activity, and other means of effecting the least practicable impact on the species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of the species or stock for taking for certain subsistence uses (latter not applicable for this action). NMFS regulations require applicants for incidental take authorizations to include information about the availability and feasibility (economic and technological) of equipment, methods, and manner of conducting the activity or other means of effecting the least practicable adverse impact upon the affected species or stocks and their habitat (50 CFR 216.104(a)(11)).

In evaluating how mitigation may or may not be appropriate to ensure the least practicable adverse impact on species or stocks and their habitat, as well as subsistence uses where applicable, we carefully consider two primary factors:

(1) The manner in which, and the degree to which, the successful implementation of the measure(s) is expected to reduce impacts to marine mammals, marine mammal species or stocks, and their habitat. This considers the nature of the potential adverse impact being mitigated (likelihood, scope, range). It further considers the likelihood that the measure will be effective if implemented (probability of accomplishing the mitigating result if implemented as planned), the likelihood of effective implementation (probability implemented as planned); and

(2) The practicability of the measures for applicant implementation, which may consider such things as cost, impact on operations, and, in the case of a military readiness activity, personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity.

In order to satisfy the MMPA's least practicable adverse impact standard, NMFS has evaluated a suite of basic mitigation protocols for seismic surveys that are required regardless of the status of a stock. Additional or enhanced protections may be required for species whose stocks are in particularly poor health and/or are subject to some significant additional stressor that lessens that stock's ability to weather the effects of the specified activities without worsening its status. We reviewed seismic mitigation protocols required or recommended elsewhere (*e.g.,* HESS, 1999; DOC, 2013; IBAMA, 2018; Kyhn *et al.,* 2011; JNCC, 2017; DEWHA, 2008; BOEM, 2016; DFO, 2008; GHFS, 2015; MMOA, 2016; Nowacek *et al.,* 2013; Nowacek and Southall, 2016), recommendations received during public comment periods for previous actions, and the available scientific literature. We also considered recommendations given in a number of review articles (*e.g.,* Weir and Dolman, 2007; Compton *et al.,* 2008; Parsons *et al.,* 2009; Wright and Cosentino, 2015; Stone, 2015b). This exhaustive review and consideration of public comments regarding previous, similar activities has led to development of the protocols included here.

Vessel-Based Visual Mitigation Monitoring

Visual monitoring requires the use of trained observers (herein referred to as visual protected species observers (PSOs)) to scan the ocean surface for the presence of marine mammals. The area to be scanned visually includes primarily the exclusion zone (EZ),

within which observation of certain marine mammals requires shutdown of the acoustic source, but also a buffer zone and, to the extent possible depending on conditions, the surrounding waters. The buffer zone means an area beyond the EZ to be monitored for the presence of marine mammals that may enter the EZ. During pre-start clearance monitoring (*i.e.,* before ramp-up begins), the buffer zone also acts as an extension of the EZ in that observations of marine mammals within the buffer zone would also prevent airgun operations from beginning (*i.e.,* ramp-up). The buffer zone encompasses the area at and below the sea surface from the edge of the 0–500 m EZ, out to a radius of 1,000 m from the edges of the airgun array (500–1,000 m). This 1,000-m zone (EZ plus buffer) represents the pre-start clearance zone. Visual monitoring of the EZ and adjacent waters is intended to establish and, when visual conditions allow, maintain zones around the sound source that are clear of marine mammals, thereby reducing or eliminating the potential for injury and minimizing the potential for more severe behavioral reactions for animals occurring closer to the vessel. Visual monitoring of the buffer zone is intended to (1) provide additional protection to naïve marine mammals that may be in the area during pre-start clearance, and (2) during airgun use, aid in establishing and maintaining the EZ by alerting the visual observer and crew of marine mammals that are outside of, but may approach and enter, the EZ.

L–DEO must use dedicated, trained, NMFS-approved PSOs. The PSOs must have no tasks other than to conduct observational effort, record observational data, and communicate with and instruct relevant vessel crew with regard to the presence of marine mammals and mitigation requirements. PSO resumes shall be provided to NMFS for approval.

At least one of the visual and two of the acoustic PSOs (discussed below) aboard the vessel must have a minimum of 90 days at-sea experience working in those roles, respectively, with no more than 18 months elapsed since the conclusion of the at-sea experience. One visual PSO with such experience shall be designated as the lead for the entire protected species observation team. The lead PSO shall serve as primary point of contact for the vessel operator and ensure all PSO requirements per the IHA are met. To the maximum extent practicable, the experienced PSOs should be scheduled to be on duty with those PSOs with appropriate training but who have not yet gained relevant experience.

During survey operations (*e.g.,* any day on which use of the acoustic source is planned to occur, and whenever the acoustic source is in the water, whether activated or not), a minimum of two visual PSOs must be on duty and conducting visual observations at all times during daylight hours (*i.e.,* from 30 minutes prior to sunrise through 30 minutes following sunset). Visual monitoring of the pre-start clearance zone must begin no less than 30 minutes prior to ramp-up, and monitoring must continue until one hour after use of the acoustic source ceases or until 30 minutes past sunset. Visual PSOs shall coordinate to ensure 360° visual coverage around the vessel from the most appropriate observation posts, and shall conduct visual observations using binoculars and the naked eye while free from distractions and in a consistent, systematic, and diligent manner.

PSOs shall establish and monitor the exclusion and buffer zones. These zones shall be based upon the radial distance from the edges of the acoustic source (rather than being based on the center of the array or around the vessel itself). During use of the acoustic source (*i.e.,* anytime airguns are active, including ramp-up), detections of marine mammals within the buffer zone (but outside the EZ) shall be communicated to the operator to prepare for the potential shutdown of the acoustic source. Visual PSOs will immediately communicate all observations to the on duty acoustic PSO(s), including any determination by the PSO regarding species identification, distance, and bearing and the degree of confidence in the determination. Any observations of marine mammals by crew members shall be relayed to the PSO team. During good conditions (*e.g.,* daylight hours; Beaufort sea state (BSS) 3 or less), visual PSOs shall conduct observations when the acoustic source is not operating for comparison of sighting rates and behavior with and without use of the acoustic source and between acquisition periods, to the maximum extent practicable.

Visual PSOs may be on watch for a maximum of 4 consecutive hours followed by a break of at least one hour between watches and may conduct a maximum of 12 hours of observation per 24-hour period. Combined observational duties (visual and acoustic but not at same time) may not exceed 12 hours per 24-hour period for any individual PSO.

Passive Acoustic Monitoring

Acoustic monitoring means the use of trained personnel (sometimes referred to as passive acoustic monitoring (PAM) operators, herein referred to as acoustic PSOs) to operate PAM equipment to acoustically detect the presence of marine mammals. Acoustic monitoring involves acoustically detecting marine mammals regardless of distance from the source, as localization of animals may not always be possible. Acoustic monitoring is intended to further support visual monitoring (during daylight hours) in maintaining an EZ around the sound source that is clear of marine mammals. In cases where visual monitoring is not effective (*e.g.,* due to weather, nighttime), acoustic monitoring may be used to allow certain activities to occur, as further detailed below.

PAM will take place in addition to the visual monitoring program. Visual monitoring typically is not effective during periods of poor visibility or at night, and even with good visibility, is unable to detect marine mammals when they are below the surface or beyond visual range. Acoustic monitoring can be used in addition to visual observations to improve detection, identification, and localization of cetaceans. The acoustic monitoring serves to alert visual PSOs (if on duty) when vocalizing cetaceans are detected. It is only useful when marine mammals vocalize, but it can be effective either by day or by night, and does not depend on good visibility. It will be monitored in real time so that the visual observers can be advised when cetaceans are detected.

The R/V *Langseth* will use a towed PAM system, which must be monitored by at a minimum one on duty acoustic PSO beginning at least 30 minutes prior to ramp-up and at all times during use of the acoustic source. Acoustic PSOs may be on watch for a maximum of 4 consecutive hours followed by a break of at least one hour between watches and may conduct a maximum of 12 hours of observation per 24-hour period. Combined observational duties (acoustic and visual but not at same time) may not exceed 12 hours per 24-hour period for any individual PSO.

Survey activity may continue for 30 minutes when the PAM system malfunctions or is damaged, while the PAM operator diagnoses the issue. If the diagnosis indicates that the PAM system must be repaired to solve the problem, operations may continue for an additional 5 hours without acoustic monitoring during daylight hours only under the following conditions:

- Sea state is less than or equal to BSS 4;
- No marine mammals (excluding delphinids) detected solely by PAM in

the applicable EZ in the previous 2 hours;

• NMFS is notified via email as soon as practicable with the time and location in which operations began occurring without an active PAM system; and

• Operations with an active acoustic source, but without an operating PAM system, do not exceed a cumulative total of 5 hours in any 24-hour period.

Establishment of Exclusion and Pre-Start Clearance Zones

An EZ is a defined area within which occurrence of a marine mammal triggers mitigation action intended to reduce the potential for certain outcomes, *e.g.,* auditory injury, disruption of critical behaviors. The PSOs will establish a minimum EZ with a 500-m radius. The 500-m EZ will be based on radial distance from the edge of the airgun array (rather than being based on the center of the array or around the vessel itself). With certain exceptions (described below), if a marine mammal appears within or enters this zone, the acoustic source will be shut down.

The pre-start clearance zone is defined as the area that must be clear of marine mammals prior to beginning ramp-up of the acoustic source, and includes the EZ plus the buffer zone. Detections of marine mammals within the pre-start clearance zone will prevent airgun operations from beginning (*i.e.,* ramp-up).

The 500-m EZ is intended to be precautionary in the sense that it would be expected to contain sound exceeding the injury criteria for all cetacean hearing groups, (based on the dual criteria of SEL_{cum} and peak sound pressure level (SPL)), while also providing a consistent, reasonably observable zone within which PSOs will typically be able to conduct effective observational effort. Additionally, a 500-m EZ is expected to minimize the likelihood that marine mammals will be exposed to levels likely to result in more severe behavioral responses. Although significantly greater distances may be observed from an elevated platform under good conditions, we believe that 500 m is likely regularly attainable for PSOs using the naked eye during typical conditions. The pre-start clearance zone simply represents the addition of a buffer to the EZ, doubling the EZ size during pre-clearance.

An extended EZ of 1,500 m must be enforced for all beaked whales. No buffer of this extended EZ is required.

Pre-Start Clearance and Ramp-Up

Ramp-up (sometimes referred to as ''soft start'') means the gradual and systematic increase of emitted sound levels from an airgun array. Ramp-up begins by first activating a single airgun of the smallest volume, followed by doubling the number of active elements in stages until the full complement of an array's airguns are active. Each stage should be approximately the same duration, and the total duration should not be less than approximately 20 minutes. The intent of pre-start clearance observation (30 minutes) is to ensure no protected species are observed within the pre-clearance zone (or extended EZ, for beaked whales) prior to the beginning of ramp-up. During pre-start clearance period is the only time observations of marine mammals in the buffer zone would prevent operations (*i.e.,* the beginning of ramp-up). The intent of ramp-up is to warn marine mammals of pending seismic operations and to allow sufficient time for those animals to leave the immediate vicinity. A ramp-up procedure, involving a step-wise increase in the number of airguns firing and total array volume until all operational airguns are activated and the full volume is achieved, is required at all times as part of the activation of the acoustic source. All operators must adhere to the following pre-start clearance and ramp-up requirements:

• The operator must notify a designated PSO of the planned start of ramp-up as agreed upon with the lead PSO; the notification time should not be less than 60 minutes prior to the planned ramp-up in order to allow the PSOs time to monitor the pre-start clearance zone (and extended EZ) for 30 minutes prior to the initiation of ramp-up (pre-start clearance);

• Ramp-ups shall be scheduled so as to minimize the time spent with the source activated prior to reaching the designated run-in;

• One of the PSOs conducting pre-start clearance observations must be notified again immediately prior to initiating ramp-up procedures and the operator must receive confirmation from the PSO to proceed;

• Ramp-up may not be initiated if any marine mammal is within the applicable exclusion or buffer zone. If a marine mammal is observed within the pre-start clearance zone (or extended EZ, for beaked whales) during the 30 minute pre-start clearance period, ramp-up may not begin until the animal(s) has been observed exiting the zones or until an additional time period has elapsed with no further sightings (15 minutes for small odontocetes and pinnipeds, and 30 minutes for all mysticetes and all other odontocetes, including sperm whales, beaked whales, and large delphinids, such as killer whales);

• Ramp-up shall begin by activating a single airgun of the smallest volume in the array and shall continue in stages by doubling the number of active elements at the commencement of each stage, with each stage of approximately the same duration. Duration shall not be less than 20 minutes. The operator must provide information to the PSO documenting that appropriate procedures were followed;

• PSOs must monitor the pre-start clearance zone (and extended EZ) during ramp-up, and ramp-up must cease and the source must be shut down upon detection of a marine mammal within the applicable zone. Once ramp-up has begun, detections of marine mammals within the buffer zone do not require shutdown, but such observation shall be communicated to the operator to prepare for the potential shutdown;

• Ramp-up may occur at times of poor visibility, including nighttime, if appropriate acoustic monitoring has occurred with no detections in the 30 minutes prior to beginning ramp-up. Acoustic source activation may only occur at times of poor visibility where operational planning cannot reasonably avoid such circumstances;

• If the acoustic source is shut down for brief periods (*i.e.,* less than 30 minutes) for reasons other than that described for shutdown (*e.g.,* mechanical difficulty), it may be activated again without ramp-up if PSOs have maintained constant visual and/or acoustic observation and no visual or acoustic detections of marine mammals have occurred within the applicable EZ. For any longer shutdown, pre-start clearance observation and ramp-up are required. For any shutdown at night or in periods of poor visibility (*e.g.,* BSS 4 or greater), ramp-up is required, but if the shutdown period was brief and constant observation was maintained, pre-start clearance watch of 30 minutes is not required; and

• Testing of the acoustic source involving all elements requires ramp-up. Testing limited to individual source elements or strings does not require ramp-up but does require pre-start clearance of 30 min.

Shutdown

The shutdown of an airgun array requires the immediate de-activation of all individual airgun elements of the array. Any PSO on duty will have the authority to delay the start of survey operations or to call for shutdown of the acoustic source if a marine mammal is detected within the applicable EZ. The operator must also establish and

maintain clear lines of communication directly between PSOs on duty and crew controlling the acoustic source to ensure that shutdown commands are conveyed swiftly while allowing PSOs to maintain watch. When both visual and acoustic PSOs are on duty, all detections will be immediately communicated to the remainder of the on-duty PSO team for potential verification of visual observations by the acoustic PSO or of acoustic detections by visual PSOs. When the airgun array is active (*i.e.,* anytime one or more airguns is active, including during ramp-up) and (1) a marine mammal appears within or enters the applicable EZ and/or (2) a marine mammal (other than delphinids, see below) is detected acoustically and localized within the applicable EZ, the acoustic source will be shut down. When shutdown is called for by a PSO, the acoustic source will be immediately deactivated and any dispute resolved only following deactivation. Additionally, shutdown will occur whenever PAM alone (without visual sighting), confirms presence of marine mammal(s) in the EZ. If the acoustic PSO cannot confirm presence within the EZ, visual PSOs will be notified but shutdown is not required.

Following a shutdown, airgun activity will not resume until the marine mammal has cleared the EZ. The animal would be considered to have cleared the EZ if it is visually observed to have departed the EZ (*i.e.,* animal is not required to fully exit the buffer zone where applicable), or it has not been seen within the EZ for 15 minutes for small odontocetes and pinnipeds, or 30 minutes for all mysticetes and all other odontocetes, including sperm whales, beaked whales, and large delphinids, such as killer whales.

The shutdown requirement can be waived for small dolphins if an individual is detected within the EZ. As defined here, the small dolphin group is intended to encompass those members of the Family Delphinidae most likely to voluntarily approach the source vessel for purposes of interacting with the vessel and/or airgun array (*e.g.,* bow riding). This exception to the shutdown requirement applies solely to specific genera of small dolphins (*Lagenorhynchus* and *Lissodelphis*).

We include this small dolphin exception because shutdown requirements for small dolphins under all circumstances represent practicability concerns without likely commensurate benefits for the animals in question. Small dolphins are generally the most commonly observed marine mammals in the specific geographic region and would typically be the only marine mammals likely to intentionally approach the vessel. As described above, auditory injury is extremely unlikely to occur for mid-frequency cetaceans (*e.g.,* delphinids), as this group is relatively insensitive to sound produced at the predominant frequencies in an airgun pulse while also having a relatively high threshold for the onset of auditory injury (*i.e.,* permanent threshold shift).

A large body of anecdotal evidence indicates that small dolphins commonly approach vessels and/or towed arrays during active sound production for purposes of bow riding, with no apparent effect observed in those delphinoids (*e.g.,* Barkaszi *et al.,* 2012, 2018). The potential for increased shutdowns resulting from such a measure would require the *Langseth* to revisit the missed track line to reacquire data, resulting in an overall increase in the total sound energy input to the marine environment and an increase in the total duration over which the survey is active in a given area. Although other mid-frequency hearing specialists (*e.g.,* large delphinids) are no more likely to incur auditory injury than are small dolphins, they are much less likely to approach vessels. Therefore, retaining a shutdown requirement for large delphinids would not have similar impacts in terms of either practicability for the applicant or corollary increase in sound energy output and time on the water. We do anticipate some benefit for a shutdown requirement for large delphinids in that it simplifies somewhat the total range of decision-making for PSOs and may preclude any potential for physiological effects other than to the auditory system as well as some more severe behavioral reactions for any such animals in close proximity to the source vessel.

Visual PSOs shall use best professional judgment in making the decision to call for a shutdown if there is uncertainty regarding identification (*i.e.,* whether the observed marine mammal(s) belongs to one of the delphinid genera for which shutdown is waived or one of the species with a larger EZ).

L–DEO must implement shutdown if a marine mammal species for which take was not authorized, or a species for which authorization was granted but the takes have been met, approaches the Level A or Level B harassment zones. L–DEO must also implement shutdown if any of the following are observed at any distance:

- Any large whale (defined as a sperm whale or any mysticete species) with a calf (defined as an animal less than two-thirds the body size of an adult observed to be in close association with an adult);
- An aggregation of six or more large whales; and/or
- A North Pacific right whale.

Vessel Strike Avoidance

1. Vessel operators and crews must maintain a vigilant watch for all protected species and slow down, stop their vessel, or alter course, as appropriate and regardless of vessel size, to avoid striking any marine mammal. A visual observer aboard the vessel must monitor a vessel strike avoidance zone around the vessel (distances stated below). Visual observers monitoring the vessel strike avoidance zone may be third-party observers (*i.e.,* PSOs) or crew members, but crew members responsible for these duties must be provided sufficient training to (1) distinguish marine mammals from other phenomena and (2) broadly to identify a marine mammal as a right whale, other whale (defined in this context as sperm whales or baleen whales other than right whales), or other marine mammal.

2. Vessel speeds must also be reduced to 10 kn or less when mother/calf pairs, pods, or large assemblages of cetaceans are observed near a vessel.

3. All vessels must maintain a minimum separation distance of 500 m from right whales. If a whale is observed but cannot be confirmed as a species other than a right whale, the vessel operator must assume that it is a right whale and take appropriate action.

4. All vessels must maintain a minimum separation distance of 100 m from sperm whales and all other baleen whales.

5. All vessels must, to the maximum extent practicable, attempt to maintain a minimum separation distance of 50 m from all other marine mammals, with an understanding that at times this may not be possible (*e.g.,* for animals that approach the vessel).

6. When marine mammals are sighted while a vessel is underway, the vessel shall take action as necessary to avoid violating the relevant separation distance (*e.g.,* attempt to remain parallel to the animal's course, avoid excessive speed or abrupt changes in direction until the animal has left the area). If marine mammals are sighted within the relevant separation distance, the vessel must reduce speed and shift the engine to neutral, not engaging the engines until animals are clear of the area. This does not apply to any vessel towing gear or any vessel that is navigationally constrained.

7. These requirements do not apply in any case where compliance would create an imminent and serious threat to a person or vessel or to the extent that a vessel is restricted in its ability to maneuver and, because of the restriction, cannot comply.

We have carefully evaluated the suite of mitigation measures described here and considered a range of other measures in the context of ensuring that we prescribe the means of effecting the least practicable adverse impact on the affected marine mammal species and stocks and their habitat. Based on our evaluation of the required measures, as well as other measures considered by NMFS described above, NMFS has determined that the mitigation measures provide the means of effecting the least practicable impact on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

Mitigation Measures in Canadian Waters

As stated previously, NMFS cannot authorize the incidental take of marine mammals in the territorial seas of foreign nations, as the MMPA does not apply in those waters. L–DEO is required to adhere to the mitigation measures described above while operating within the U.S. EEZ and Canadian EEZ. The requirements do not apply within Canadian territorial waters. DFO may prescribe mitigation measures that would apply to L–DEO's survey operations within the Canadian EEZ and Canadian territorial waters but NMFS is currently unaware of the specifics of any potential measures. While operating within the Canadian EEZ but outside Canadian territorial waters, if mitigation requirements prescribed by NMFS differ from the requirements established under Canadian law, L–DEO would adhere to the most protective measure. For operations in Canadian territorial waters, L–DEO would implement measures required under Canadian law (if any).

Monitoring and Reporting

In order to issue an IHA 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 authorizations 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. Effective reporting is critical both to compliance as well as ensuring that the most value is obtained from the required monitoring.

Monitoring and reporting requirements prescribed by NMFS should contribute to improved understanding of one or more of the following:

- Occurrence of marine mammal species or stocks in the area in which take is anticipated (*e.g.,* presence, abundance, distribution, density);
- Nature, scope, or context of likely marine mammal exposure to potential stressors/impacts (individual or cumulative, acute or chronic), through better understanding of: (1) Action or environment (*e.g.,* source characterization, propagation, ambient noise); (2) affected species (*e.g.,* life history, dive patterns); (3) co-occurrence of marine mammal species with the action; or (4) biological or behavioral context of exposure (*e.g.,* age, calving or feeding areas);
- Individual marine mammal responses (behavioral or physiological) to acoustic stressors (acute, chronic, or cumulative), other stressors, or cumulative impacts from multiple stressors;
- How anticipated responses to stressors impact either: (1) Long-term fitness and survival of individual marine mammals; or (2) populations, species, or stocks;
- Effects on marine mammal habitat (*e.g.,* marine mammal prey species, acoustic habitat, or other important physical components of marine mammal habitat); and
- Mitigation and monitoring effectiveness.

Vessel-Based Visual Monitoring

As described above, PSO observations will take place during daytime airgun operations. During seismic operations, at least five visual PSOs will be based aboard the *Langseth.* Two visual PSOs will be on duty at all time during daytime hours. Monitoring shall be conducted in accordance with the following requirements:

- The operator shall provide PSOs with bigeye binoculars (*e.g.,* 25 x 150; 2.7 view angle; individual ocular focus; height control) of appropriate quality (*i.e.,* Fujinon or equivalent) solely for PSO use. These shall be pedestal-mounted on the deck at the most appropriate vantage point that provides for optimal sea surface observation, PSO safety, and safe operation of the vessel; and
- The operator will work with the selected third-party observer provider to ensure PSOs have all equipment (including backup equipment) needed to adequately perform necessary tasks, including accurate determination of distance and bearing to observed marine mammals.

PSOs must have the following requirements and qualifications:

- PSOs shall be independent, dedicated, trained visual and acoustic PSOs and must be employed by a third-party observer provider;
- PSOs shall have no tasks other than to conduct observational effort (visual or acoustic), collect data, and communicate with and instruct relevant vessel crew with regard to the presence of protected species and mitigation requirements (including brief alerts regarding maritime hazards);
- PSOs shall have successfully completed an approved PSO training course appropriate for their designated task (visual or acoustic). Acoustic PSOs are required to complete specialized training for operating PAM systems and are encouraged to have familiarity with the vessel with which they will be working;
- PSOs can act as acoustic or visual observers (but not at the same time) as long as they demonstrate that their training and experience are sufficient to perform the task at hand;
- NMFS must review and approve PSO resumes accompanied by a relevant training course information packet that includes the name and qualifications (*i.e.,* experience, training completed, or educational background) of the instructor(s), the course outline or syllabus, and course reference material as well as a document stating successful completion of the course;
- NMFS shall have one week to approve PSOs from the time that the necessary information is submitted, after which PSOs meeting the minimum requirements shall automatically be considered approved;
- PSOs must successfully complete relevant training, including completion of all required coursework and passing (80 percent or greater) a written and/or oral examination developed for the training program;
- PSOs must have successfully attained a bachelor's degree from an accredited college or university with a major in one of the natural sciences, a minimum of 30 semester hours or equivalent in the biological sciences, and at least one undergraduate course in math or statistics; and
- The educational requirements may be waived if the PSO has acquired the relevant skills through alternate

experience. Requests for such a waiver shall be submitted to NMFS and must include written justification. Requests shall be granted or denied (with justification) by NMFS within one week of receipt of submitted information. Alternate experience that may be considered includes, but is not limited to (1) secondary education and/or experience comparable to PSO duties; (2) previous work experience conducting academic, commercial, or government-sponsored protected species surveys; or (3) previous work experience as a PSO; the PSO should demonstrate good standing and consistently good performance of PSO duties.

For data collection purposes, PSOs shall use standardized data collection forms, whether hard copy or electronic. PSOs shall record detailed information about any implementation of mitigation requirements, including the distance of animals to the acoustic source and description of specific actions that ensued, the behavior of the animal(s), any observed changes in behavior before and after implementation of mitigation, and if shutdown was implemented, the length of time before any subsequent ramp-up of the acoustic source. If required mitigation was not implemented, PSOs should record a description of the circumstances. At a minimum, the following information must be recorded:

- Vessel names (source vessel and other vessels associated with survey) and call signs;
- PSO names and affiliations;
- Dates of departures and returns to port with port name;
- Date and participants of PSO briefings;
- Dates and times (Greenwich Mean Time) of survey effort and times corresponding with PSO effort;
- Vessel location (latitude/longitude) when survey effort began and ended and vessel location at beginning and end of visual PSO duty shifts;
- Vessel heading and speed at beginning and end of visual PSO duty shifts and upon any line change;
- Environmental conditions while on visual survey (at beginning and end of PSO shift and whenever conditions changed significantly), including BSS and any other relevant weather conditions including cloud cover, fog, sun glare, and overall visibility to the horizon;
- Factors that may have contributed to impaired observations during each PSO shift change or as needed as environmental conditions changed (*e.g.,* vessel traffic, equipment malfunctions); and
- Survey activity information, such as acoustic source power output while in operation, number and volume of airguns operating in the array, tow depth of the array, and any other notes of significance (*i.e.,* pre-start clearance, ramp-up, shutdown, testing, shooting, ramp-up completion, end of operations, streamers, etc.).

The following information should be recorded upon visual observation of any protected species:

- Watch status (sighting made by PSO on/off effort, opportunistic, crew, alternate vessel/platform);
- PSO who sighted the animal;
- Time of sighting;
- Vessel location at time of sighting;
- Water depth;
- Direction of vessel's travel (compass direction);
- Direction of animal's travel relative to the vessel;
- Pace of the animal;
- Estimated distance to the animal and its heading relative to vessel at initial sighting;
- Identification of the animal (*e.g.,* genus/species, lowest possible taxonomic level, or unidentified) and the composition of the group if there is a mix of species;
- Estimated number of animals (high/low/best);
- Estimated number of animals by cohort (adults, yearlings, juveniles, calves, group composition, etc.);
- Description (as many distinguishing features as possible of each individual seen, including length, shape, color, pattern, scars or markings, shape and size of dorsal fin, shape of head, and blow characteristics);
- Detailed behavior observations (*e.g.,* number of blows/breaths, number of surfaces, breaching, spyhopping, diving, feeding, traveling; as explicit and detailed as possible; note any observed changes in behavior);
- Animal's closest point of approach (CPA) and/or closest distance from any element of the acoustic source;
- Platform activity at time of sighting (*e.g.,* deploying, recovering, testing, shooting, data acquisition, other); and
- Description of any actions implemented in response to the sighting (*e.g.,* delays, shutdown, ramp-up) and time and location of the action.

If a marine mammal is detected while using the PAM system, the following information should be recorded:

- An acoustic encounter identification number, and whether the detection was linked with a visual sighting;
- Date and time when first and last heard;
- Types and nature of sounds heard (*e.g.,* clicks, whistles, creaks, burst pulses, continuous, sporadic, strength of signal); and
- Any additional information recorded such as water depth of the hydrophone array, bearing of the animal to the vessel (if determinable), species or taxonomic group (if determinable), spectrogram screenshot, and any other notable information.

Reporting

A report will be submitted to NMFS within 90 days after the end of the cruise. The report will summarize the dates and locations of seismic operations, and all marine mammal sightings (dates, times, locations, activities, associated seismic survey activities), and provide full documentation of methods, results, and interpretation pertaining to all monitoring.

The draft report shall also include geo-referenced time-stamped vessel tracklines for all time periods during which airguns were operating. Tracklines should include points recording any change in airgun status (*e.g.,* when the airguns began operating, when they were turned off, or when they changed from full array to single gun or vice versa). GIS files shall be provided in ESRI shapefile format and include the UTC date and time, latitude in decimal degrees, and longitude in decimal degrees. All coordinates shall be referenced to the WGS84 geographic coordinate system. In addition to the report, all raw observational data shall be made available to NMFS. The report must summarize the data collected as described above and in the IHA. A final report must be submitted within 30 days following resolution of any comments on the draft report.

Reporting Injured or Dead Marine Mammals

Discovery of injured or dead marine mammals—In the event that personnel involved in survey activities covered by the authorization discover an injured or dead marine mammal, the L–DEO shall report the incident to the Office of Protected Resources (OPR), NMFS and to the NMFS Alaska Regional Stranding Coordinator as soon as feasible. The report must include the following information:

- Time, date, and location (latitude/longitude) of the first discovery (and updated location information if known and applicable);
- Species identification (if known) or description of the animal(s) involved;
- Condition of the animal(s) (including carcass condition if the animal is dead);

• Observed behaviors of the animal(s), if alive;
• If available, photographs or video footage of the animal(s); and
• General circumstances under which the animal was discovered.

Vessel strike—In the event of a ship strike of a marine mammal by any vessel involved in the activities covered by the authorization, L–DEO shall report the incident to OPR, NMFS and to the NMFS Alaska Regional Stranding Coordinator as soon as feasible. The report must include the following information:

• Time, date, and location (latitude/longitude) of the incident;
• Vessel's speed during and leading up to the incident;
• Vessel's course/heading and what operations were being conducted (if applicable);
• Status of all sound sources in use;
• Description of avoidance measures/requirements that were in place at the time of the strike and what additional measure were taken, if any, to avoid strike;
• Environmental conditions (*e.g.,* wind speed and direction, Beaufort sea state, cloud cover, visibility) immediately preceding the strike;
• Species identification (if known) or description of the animal(s) involved;
• Estimated size and length of the animal that was struck;
• Description of the behavior of the animal immediately preceding and following the strike;
• If available, description of the presence and behavior of any other marine mammals present immediately preceding the strike;
• Estimated fate of the animal (*e.g.,* dead, injured but alive, injured and moving, blood or tissue observed in the water, status unknown, disappeared); and
• To the extent practicable, photographs or video footage of the animal(s).

Actions To Minimize Additional Harm to Live-Stranded (or Milling) Marine Mammals

In the event of a live stranding (or near-shore atypical milling) event within 50 km of the survey operations, where the NMFS stranding network is engaged in herding or other interventions to return animals to the water, the Director of OPR, NMFS (or designee) will advise L–DEO of the need to implement shutdown for all active acoustic sources operating within 50 km of the stranding. Procedures related to shutdowns for live stranding or milling marine mammals include the following:

• If at any time, the marine mammal(s) die or are euthanized, or if herding/intervention efforts are stopped, the Director of OPR, NMFS (or designee) will advise L–DEO that the shutdown around the animals' location is no longer needed.
• Otherwise, shutdown procedures will remain in effect until the Director of OPR, NMFS (or designee) determines and advises L–DEO that all live animals involved have left the area (either of their own volition or following an intervention).
• If further observations of the marine mammals indicate the potential for re-stranding, additional coordination with L–DEO will be required to determine what measures are necessary to minimize that likelihood (*e.g.,* extending the shutdown or moving operations farther away) and to implement those measures as appropriate.

Additional Information Requests—If NMFS determines that the circumstances of any marine mammal stranding found in the vicinity of the activity suggest investigation of the association with survey activities is warranted, and an investigation into the stranding is being pursued, NMFS will submit a written request to L–DEO indicating that the following initial available information must be provided as soon as possible, but no later than 7 business days after the request for information:

• Status of all sound source use in the 48 hours preceding the estimated time of stranding and within 50 km of the discovery/notification of the stranding by NMFS; and
• If available, description of the behavior of any marine mammal(s) observed preceding (*i.e.,* within 48 hours and 50 km) and immediately after the discovery of the stranding.

In the event that the investigation is still inconclusive, the investigation of the association of the survey activities is still warranted, and the investigation is still being pursued, NMFS may provide additional information requests, in writing, regarding the nature and location of survey operations prior to the time period above.

Negligible Impact Analysis and Determination

NMFS has defined negligible impact 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 (50 CFR 216.103). A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (*i.e.,* population-level effects). An estimate of the number of takes alone is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be ''taken'' through harassment, NMFS considers other factors, such as the likely nature of any responses (*e.g.,* intensity, duration), the context of any responses (*e.g.,* critical reproductive time or location, migration), as well as effects on habitat, and the likely effectiveness of the mitigation. We also assess the number, intensity, and context of estimated takes by evaluating this information relative to population status. Consistent with the 1989 preamble for NMFS's implementing regulations (54 FR 40338; September 29, 1989), the impacts from other past and ongoing anthropogenic activities are incorporated into this analysis via their impacts on the environmental baseline (*e.g.,* as reflected in the regulatory status of the species, population size and growth rate where known, ongoing sources of human-caused mortality, or ambient noise levels).

To avoid repetition, our analysis applies to all species listed in Table 1, given that NMFS expects the anticipated effects of the planned geophysical survey to be similar in nature. Where there are meaningful differences between species or stocks, or groups of species, in anticipated individual responses to activities, impact of expected take on the population due to differences in population status, or impacts on habitat, NMFS has identified species-specific factors to inform the analysis.

As described above, we authorize only the takes estimated to occur outside of Canadian territorial waters (Table 6); however, for the purposes of our negligible impact analysis and determination, we consider the total number of takes that are anticipated to occur as a result of the entire survey (including the portion of the survey that would occur within the Canadian territorial waters (approximately 13 percent of the survey) (Table 7).

TABLE 7—TOTAL ESTIMATED TAKE INCLUDING CANADIAN TERRITORIAL WATERS

Species	Level B harassment (excluding Canadian territorial waters)	Level A harassment (excluding Canadian territorial waters)	Level B harassment (Canadian territorial waters)	Level A harassment (Canadian territorial waters)	Total Level B harassment	Total Level A harassment
North Pacific right whale	2	0	0	0	2	0
Gray whale, WNP	2	0	1	0	3	0
Gray whale, ENP	1,448	45	666	16	2,114	61
Humpback whale	403	14	165	4	568	18
Blue whale	31	1	4	0	35	1
Fin whale	873	44	69	1	942	45
Sei whale	34	1	7	0	41	1
Minke whale	57	2	14	0	71	2
Sperm whale	131	0	22	0	153	0
Baird's beaked whale	29	0	2	0	31	0
Stejneger's beaked whale	120	0	9	0	129	0
Cuvier's beaked whale	114	0	9	0	123	0
Pacific white-sided dolphin	1,374	0	191	0	1,565	0
Northern right whale dolphin	927	0	451	0	1,378	0
Risso's dolphin	22	0	22	0	44	0
Killer whale	290	0	89	0	379	0
Dall's porpoise	5,661	178	1,825	36	7,486	214
Harbor porpoise	990	26	455	9	1,445	35
Northern fur seal	5,812	0	1,213	0	7,025	0
California sea lion	1,258	0	433	0	1,691	0
Steller sea lion, wDPS	54	0	46	0	100	0
Steller sea lion, eDPS	2,381	0	2,232	0	4,613	0
Northern elephant seal	6,850	0	1,429	0	8,279	0
Harbor seal	6,012	0	6,228	0	12,240	0

NMFS does not anticipate that serious injury or mortality would occur as a result of L–DEO's planned survey, even in the absence of mitigation, and none is authorized. Similarly, non-auditory physical effects, stranding, and vessel strike are not expected to occur.

We are authorizing a limited number of instances of Level A harassment of seven species (low- and high-frequency cetacean hearing groups only) and Level B harassment only of the remaining marine mammal species. However, we believe that any PTS incurred in marine mammals as a result of the planned activity would be in the form of only a small degree of PTS, not total deafness, because of the constant movement of both the R/V *Langseth* and of the marine mammals in the project areas, as well as the fact that the vessel is not expected to remain in any one area in which individual marine mammals would be expected to concentrate for an extended period of time. Since the duration of exposure to loud sounds will be relatively short it would be unlikely to affect the fitness of any individuals. Also, as described above, we expect that marine mammals would likely move away from a sound source that represents an aversive stimulus, especially at levels that would be expected to result in PTS, given sufficient notice of the R/V *Langseth's* approach due to the vessel's relatively low speed when conducting seismic surveys. We expect that the majority of takes will be in the form of short-term Level B behavioral harassment in the form of temporary avoidance of the area or decreased foraging (if such activity were occurring), reactions that are considered to be of low severity and with no lasting biological consequences (*e.g.,* Southall *et al.,* 2007, Ellison *et al.,* 2012).

Marine mammal habitat may be impacted by elevated sound levels, but these impacts would be temporary. Prey species are mobile and are broadly distributed throughout the project areas; therefore, marine mammals that may be temporarily displaced during survey activities are expected to be able to resume foraging once they have moved away from areas with disturbing levels of underwater noise. Because of the relatively short duration (27 days) and temporary nature of the disturbance, the availability of similar habitat and resources in the surrounding area, the impacts to marine mammals and the food sources that they utilize are not expected to cause significant or long-term consequences for individual marine mammals or their populations.

The tracklines of this survey either traverse or are proximal to critical habitat for the Mexico DPS of humpback whales and for Steller sea lions, and to feeding BIAs for humpback whales in general (including both the Hawaii and Mexico DPSs/Central North Pacific stock whales that are anticipated to occur in the survey area). As described previously, the survey area is near a feeding BIA for gray whales and covers the gray whale migratory BIA. However, these BIAs would not be affected as they are spatially and temporally separated, respectively, from the survey.

Yazvenko *et al.* (2007) reported no apparent changes in the frequency of feeding activity in Western gray whales exposed to airgun sounds in their feeding grounds near Sakhalin Island. Goldbogen *et al.* (2013) found blue whales feeding on highly concentrated prey in shallow depths (such as the conditions expected within humpback feeding BIAs) were less likely to respond and cease foraging than whales feeding on deep, dispersed prey when exposed to simulated sonar sources, suggesting that the benefits of feeding for humpbacks foraging on high-density prey may outweigh perceived harm from the acoustic stimulus, such as the seismic survey (Southall *et al.,* 2016). Additionally, L–DEO will shut down the airgun array upon observation of an aggregation of six or more large whales, which would reduce impacts to cooperatively foraging animals. For all habitats, no physical impacts to habitat are anticipated from seismic activities. While SPLs of sufficient strength have

been known to cause injury to fish and fish and invertebrate mortality, in feeding habitats, the most likely impact to prey species from survey activities would be temporary avoidance of the affected area and any injury or mortality of prey species would be localized around the survey and not of a degree that would adversely impact marine mammal foraging. The duration of fish avoidance of a given area after survey effort stops is unknown, but a rapid return to normal recruitment, distribution and behavior is expected. Given the short operational seismic time near or traversing important habitat areas, as well as the ability of cetaceans and prey species to move away from acoustic sources, NMFS expects that there would be, at worst, minimal impacts to animals and habitat within these areas.

Critical habitat for Steller sea lions has been established at three rookeries in southeast Alaska (Hazy Island, White Sisters Island, and Forrester Island near Dixon Entrance), at several major haul-outs, and including aquatic zones that extend 0.9 km seaward and air zones extending 0.9 km above the rookeries. Steller sea lions occupy rookeries and pup from late-May through early-July (NMFS. 2008), indicating that L–DEO's survey is unlikely to impact important sea lion behaviors in critical habitat. Impacts to Steller sea lions within these areas, and throughout the survey area, as well as impacts to other pinniped species, are expected to be limited to short-term behavioral disturbance, with no lasting biological consequences.

Negligible Impact Conclusions

The survey would be of short duration (27 days of seismic operations), and the acoustic ''footprint'' of the survey would be small relative to the ranges of the marine mammals that would potentially be affected. Sound levels would increase in the marine environment in a relatively small area surrounding the vessel compared to the range of the marine mammals within the survey area. Short term exposures to survey operations are not likely to significantly disrupt marine mammal behavior, and the potential for longer-term avoidance of important areas is limited.

The mitigation measures are expected to reduce the number and/or severity of takes by allowing for detection of marine mammals in the vicinity of the vessel by visual and acoustic observers, and by minimizing the severity of any potential exposures via shutdowns of the airgun array. Based on previous monitoring reports for substantially similar activities associated with NMFS-issued IHAs, we expect that the mitigation will be effective in preventing, at least to some extent, potential PTS in marine mammals that may otherwise occur in the absence of the mitigation (although all authorized PTS has been accounted for in this analysis).

NMFS concludes that exposures to marine mammal species and stocks due to L–DEO's survey would result in only short-term (temporary and short in duration) effects to individuals exposed, over relatively small areas of the affected animals' ranges. Animals may temporarily avoid the immediate area, but are not expected to permanently abandon the area. Major shifts in habitat use, distribution, or foraging success are not expected. NMFS does not anticipate the authorized take to impact annual rates of recruitment or survival.

In summary and as described above, the following factors primarily support our determination that the impacts resulting from this activity are not expected to adversely affect the species or stock through effects on annual rates of recruitment or survival:

- No serious injury or mortality is anticipated or authorized;
- The activity is temporary and of relatively short duration (27 days);
- The anticipated impacts of the activity on marine mammals would primarily be temporary behavioral changes due to avoidance of the area around the survey vessel;
- The number of instances of potential PTS that may occur are expected to be very small in number. Instances of potential PTS that are incurred in marine mammals are expected to be of a low level, due to constant movement of the vessel and of the marine mammals in the area, and the nature of the survey design (not concentrated in areas of high marine mammal concentration);
- The availability of alternate areas of similar habitat value for marine mammals to temporarily vacate the survey area during the survey to avoid exposure to sounds from the activity;
- The potential adverse effects on fish or invertebrate species that serve as prey species for marine mammals from the survey would be temporary and spatially limited, and impacts to marine mammal foraging would be minimal; and
- The required mitigation measures, including visual and acoustic monitoring and shutdowns are expected to minimize potential impacts to marine mammals (both amount and severity).

Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the required mitigation and monitoring measures, NMFS finds that the total marine mammal take from the activity will have a negligible impact on all affected marine mammal species or stocks.

Small Numbers

As noted above, only small numbers of incidental take may be authorized under Sections 101(a)(5)(A) and (D) of the MMPA for specified activities other than military readiness activities. The MMPA does not define small numbers and so, in practice, where estimated numbers are available, NMFS compares the number of individuals taken to the most appropriate estimation of abundance of the relevant species or stock in our determination of whether an authorization is limited to small numbers of marine mammals. When the predicted number of individuals to be taken is fewer than one-third of the species or stock abundance, the take is considered to be of small numbers. Additionally, other qualitative factors may be considered in the analysis, such as the temporal or spatial scale of the activities.

There are several stocks for which the estimated instances of take appear high when compared to the stock abundance (Table 6), or for which there is no currently accepted stock abundance estimate. These include the fin whale, minke whale, sperm whale, three species of beaked whale, four stocks of killer whales, harbor porpoise, and one stock of harbor seal. However, when other qualitative factors are used to inform an assessment of the likely number of individual marine mammals taken, the resulting numbers are appropriately considered small. We discuss these in further detail below.

For all other stocks (aside from those referenced above and discussed below), the proposed take is less than one-third of the best available stock abundance (recognizing that some of those takes may be repeats of the same individual, thus rendering the actual percentage even lower), and noting that we generally excluded consideration of abundance information for British Columbia in considering the amount of take relative to the best available stock abundance information.

The stock abundance estimates for the fin, minke, beaked, and sperm whale stocks that occur in the survey area are unknown, according to the latest SARs. The same is true for the harbor porpoise. Therefore, we reviewed other scientific information in making our small numbers determinations for these species. As noted previously, partial

abundance estimates of 1,233 and 2,020 minke whales are available for shelf and nearshore waters between the Kenai Peninsula and Amchitka Pass and for the eastern Bering Sea shelf, respectively. For the minke whale, these partial abundance estimates alone are sufficient to demonstrate that the proposed take number of 59 is of small numbers. The same surveys produced partial abundance estimates of 1,652 and 1,061 fin whales, for the same areas, respectively. Considering these two partial abundance estimates in conjunction with the British Columbia abundance estimate of 329 whales produces a total partial estimate of 3,042 whales for shelf and nearshore waters between the Kenai Peninsula and Amchitka Pass, the eastern Bering Sea shelf, and British Columbia. Given that the Northeast Pacific stock of fin whale's range is described as covering the entire GOA and Bering Sea, we reasonably assume that a total abundance estimate for the stock would show that the take number proposed for authorization (917) is small. In addition, for these stocks as well as for other stocks discussed below whose range spans the GOA, given that the estimated take will take place in a relatively small portion of the stock's range, it is likely there would be repeat takes of a smaller number of individuals, and therefore, the number of individual animals taken will be lower.

As noted previously, Kato and Miyashita (1998) produced an abundance estimate of 102,112 sperm whales in the western North Pacific. However, this estimate is believed to be positively biased. We therefore refer to Barlow and Taylor (2005)'s estimate of 26,300 sperm whales in the northeast temperate Pacific to demonstrate that the take number of 136 is a small number. There is no abundance information available for any Alaskan stock of beaked whale. However, the take numbers are sufficiently small (ranging from 29–120) that we can safely assume that they are small relative to any reasonable assumption of likely population abundance for these stocks. As an example, we review available abundance information for other stocks of Cuvier's beaked whales, which is widely distributed throughout deep waters of all oceans and is typically the most commonly encountered beaked whale in its range. Where some degree of bias correction, which is critical to an accurate abundance estimate for cryptic species like beaked whales, is incorporated to the estimate, we see typical estimates in the thousands of animals, demonstrating that the authorized take numbers are reasonably considered small. Current abundance estimates include the Western North Atlantic stock (5,744 animals; CV = 0.36), the Hawaii Pelagic stock (4,431 animals, CV = 0.41), and the California/Oregon/Washington stock (3,274 animals; CV = 0.67).

For the southeast Alaska stock of harbor porpoise, whose range is defined as from Dixon Entrance to Cape Suckling (including inland waters), the SAR describes a partial abundance estimate, covering inland waters but not coastal waters, totaling 1,354 porpoise. This most recent abundance estimate is based on survey effort in inland waters during 2010–12 (Dahlheim *et al.,* 2015). An older abundance estimate, based on survey effort conducted in 1997, covering both coastal and inland waters of the stock's range, provides a more complete abundance estimate of 11,146 animals (Hobbs and Waite, 2010). This estimate is sufficient to demonstrate that the take number (1,016) is small.

For the potentially affected stocks of killer whale, it would be unreasonable to assume that all takes would accrue to any one stock. Although the Gulf of Alaska, Aleutian Islands, and Bering Sea (GOA/BSAI) transient stock could occur in southeast Alaska, it is unlikely that any significant proportion of encountered whales would belong to this stock, which is generally considered to occur mainly from Prince William Sound through the Aleutian Islands and Bering Sea. Transient killer whales in Canadian waters are considered part of the West Coast transient stock, further minimizing the potential for encounter with the GOA/BSAI transient stock. We assume that only nominal, if any, take would actually accrue to this stock. Similarly, the offshore stock is encountered only rarely compared with resident and transient stocks. Seasonal sighting data collected in southeast Alaska waters between 1991 and 2007 shows a ratio of offshore and resident killer whale sightings of 0.05 (Dahlheim *et al.,* 2009), and it is unlikely that any amount of take accruing to this stock would exceed small numbers. We anticipate that most killer whales encountered would be transient or resident whales. For the remaining stocks, we assume that take would accrue to each stock in a manner roughly approximate to the stocks' relative abundances, *i.e.,* 78 percent Alaska resident, 12 percent West Coast transient, and 10 percent northern resident. This would equate to approximately 226 takes from the Alaska resident stock (9.6 percent of the stock abundance); 35 takes from the West Coast transient stock (10 percent of the stock abundance), and 29 takes from the northern resident stock (9.6 percent of the stock abundance). Based on the assumptions described in this paragraph, we find that the authorized taking is of no greater than small numbers for any stock of killer whale.

If all authorized takes are allotted to each individual harbor seal stock, the estimated instances of take would be greater than one-third of the best available abundance estimate for the Sitka/Chatham Strait stock of harbor seal. However, similar to the discussion provided above for killer whale, it would be unreasonable to assume that all takes would accrue to any one stock. Based on the location of the survey relative to the potentially affected stocks' ranges, it is unlikely that a significant proportion of the estimated takes would occur to the Sitka/Chatham Strait stock (whose range just overlaps with the northern extent of the survey area) (Muto *et al.,* 2020). A majority of takes are likely to accrue to the Dixon/Cape Decision stock, which most directly overlaps with the survey area. In the unlikely event that all takes occurred to the Dixon/Cape Decision stock, the amount of take would be of small numbers.

Based on the analysis contained herein of the planned activity (including the required mitigation and monitoring measures) and the anticipated take of marine mammals, NMFS finds that small numbers of marine mammals will be taken relative to the population size of the affected species or stocks.

Unmitigable Adverse Impact Analysis and Determination

Marine mammals are legally hunted in Alaskan waters by coastal Alaska Natives. In the GOA, the only marine mammals under NMFS' jurisdiction that are currently hunted are Steller sea lions and harbor seals. These species are an important subsistence resource for Alaska Natives from southeast Alaska to the Aleutian Islands. There are numerous communities along the shores of the GOA that participate in subsistence hunting, including Juneau, Ketchikan, Sitka, and Yakutat in southeast Alaska (Wolfe *et al.,* 2013). According to Muto *et al.* (2019), the annual subsistence take of Steller sea lions from the eastern stock was 11, and 415 northern fur seals are taken annually. In addition, 340 harbor seals are taken annually (Muto *et al.* 2019). The seal harvest throughout Southeast Alaska is generally highest during spring and fall, but can occur any time of the year (Wolfe *et al.,* 2013).

Given the temporary nature of the activities and the fact that most

operations would occur further from shore, the survey would not be expected to have any impact on the availability of the species or stocks for subsistence users. L–DEO conducted outreach to local stakeholders, including subsistence communities, to notify subsistence hunters of the planned survey, to identify the measures that would be taken to minimize any effects on the availability of marine mammals for subsistence uses, and to provide an opportunity for comment on these measures. During operations, radio communications and Notice to Mariners would keep interested parties apprised of vessel activities. NMFS is unaware of any other subsistence uses of the affected marine mammal stocks or species that could be implicated by this action. On this basis, NMFS preliminarily determined that the total taking of affected species or stocks would not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes, and requested comments or any information that may help to inform this determination. We did not receive any comments or additional information regarding potential impacts on the availability of marine mammals for subsistence uses. Therefore, NMFS has determined that the total taking of affected species or stocks would not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

National Environmental Policy Act

In compliance with the National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*), as implemented by the regulations published by the Council on Environmental Quality (40 CFR parts 1500–1508), the National Science Foundation prepared an Environmental Analysis (EA) to consider the direct, indirect, and cumulative effects to the human environment from this geophysical survey of the Queen Charlotte Fault. NSF's EA was made available to the public for review and comment in relation to its suitability for adoption by NMFS in order to assess the impacts to the human environment of issuance of an IHA to L–DEO. In compliance with NEPA and the CEQ regulations, as well as NOAA Administrative Order 216–6A, NMFS has reviewed the NSF's EA, determined it to be sufficient, and adopted that EA and signed a Finding of No Significant Impact (FONSI). NSF's EA is available at *www.nsf.gov/geo/oce/envcomp/*, and NMFS' FONSI is available at *www.fisheries.noaa.gov/action/incidental-take-authorization-lamont-doherty-earth-observatory-geophysical-survey-queen.*

Endangered Species Act (ESA)

Section 7(a)(2) of the Endangered Species Act of 1973 (ESA: 16 U.S.C. 1531 *et seq.*) requires that each Federal agency insure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat. To ensure ESA compliance for the issuance of IHAs, NMFS consults internally whenever we propose to authorize take for endangered or threatened species.

On July 7, 2021, the NMFS Office of Protected Resources (OPR) ESA Interagency Cooperation Division issued a Biological Opinion under section 7 of the ESA, on the issuance of an IHA to L–DEO under section 101(a)(5)(D) of the MMPA by the NMFS OPR Permits and Conservation Division. The Biological Opinion concluded that the proposed action is not likely to jeopardize the continued existence of the sei whale, fin whale, blue whale, sperm whale, Mexico DPS of humpback whale, western North Pacific DPS of gray whale, North Pacific right whale, and western DPS of Steller sea lion.

Authorization

As a result of these determinations, NMFS has issued an IHA to L–DEO for conducting a marine geophysical survey of the Queen Charlotte Fault beginning in July 2021, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated.

Dated: July 12, 2021.

Catherine Marzin,

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

[FR Doc. 2021–15046 Filed 7–14–21; 8:45 am]

BILLING CODE 3510–22–P

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

[RTID 0648–XB222]

Taking and Importing Marine Mammals; Taking Marine Mammals Incidental to Geophysical Surveys Related to Oil and Gas Activities in the Gulf of Mexico

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

ACTION: Notice of issuance of Letter of Authorization.

SUMMARY: In accordance with the Marine Mammal Protection Act (MMPA), as amended, its implementing regulations, and NMFS' MMPA Regulations for Taking Marine Mammals Incidental to Geophysical Surveys Related to Oil and Gas Activities in the Gulf of Mexico, notification is hereby given that a Letter of Authorization (LOA) has been issued to Shell Offshore Inc. (Shell) for the take of marine mammals incidental to geophysical survey activity in the Gulf of Mexico.

DATES: The LOA is effective from July 15, 2021, through August 15, 2021.

ADDRESSES: The LOA, LOA request, and supporting documentation are available online at: *www.fisheries.noaa.gov/action/incidental-take-authorization-oil-and-gas-industry-geophysical-survey-activity-gulf-mexico.* In case of problems accessing these documents, please call the contact listed below (see **FOR FURTHER INFORMATION CONTACT**).

FOR FURTHER INFORMATION CONTACT: Ben Laws, Office of Protected Resources, NMFS, (301) 427–8401.

SUPPLEMENTARY INFORMATION:

Background

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

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

Except with respect to certain activities not pertinent here, the MMPA