

this notice for two years from the deadline to fill any vacancies.

**ADDRESSES:** Please submit application information by email to [TTAB@trade.gov](mailto:TTAB@trade.gov).

**FOR FURTHER INFORMATION CONTACT:**

Jennifer Aguinaga, National Travel and Tourism Office, U.S. Department of Commerce; telephone: 202-482-2404; email: [TTAB@trade.gov](mailto:TTAB@trade.gov).

**SUPPLEMENTARY INFORMATION:**

*Background:* The Board was established pursuant to Section 607 of the Visit America Act, Subtitle A of title VI of division BB of the Consolidated Appropriations Act, 2023, Public Law 117-328, and in accordance with the provisions of the FACA, 5 U.S.C. 1001 *et seq.* The Board (1) serves as the advisory body to the Secretary of Commerce (Secretary) on matters relating to the travel and tourism industry in the United States; (2) advises the Secretary on government policies and programs that affect the U.S. travel and tourism industry; (3) offers counsel on current and emerging issues; (4) provides a forum for discussing and proposing solutions to problems related to the travel and tourism industry; and (5) provides advice regarding the domestic travel and tourism industry as an economic engine.

*Membership:* The National Travel and Tourism Office is accepting applications for Board members. Members of the Board will be selected in accordance with applicable Department of Commerce guidelines based on their ability to carry out the objectives of the Board as set forth in the Board's charter and in a manner that ensures that the Board is balanced in terms of geographic diversity, diversity in size of company or organization to be represented, and representation of a broad range of services in the travel and tourism industry. Each member shall serve for two years from the date of the appointment and at the pleasure of the Secretary of Commerce.

Members shall be Chief Executive Officers or senior executives from U.S. companies, U.S. organizations, or U.S. entities in the travel and tourism sectors representing a broad range of products and services, company sizes, and geographic locations.

Members serve in a representative capacity, representing the views and interests of their business sector, and not as Special Government employees. Members will receive no compensation for their participation in Board activities. Members participating in Board meetings and events will be responsible for their travel, living, and other personal expenses. Meetings will

be held regularly and, to the extent practical, not less than twice annually, usually in Washington, DC or virtually.

*Request for Nominations:* All nominations for membership on the Board should provide the following information:

1. Sponsor letter on the company's or organization's letterhead containing the name, title, and relevant contact information (including phone number and email address) of the individual who is applying or being nominated, and containing a brief description of why the nominee should be considered for membership;

2. Short biography of nominee, including credentials;

3. Brief description of the U.S. company or U.S. organization to be represented and its business activities and company size (number of employees and annual sales);

4. An affirmative statement that the nominee meets all Board eligibility requirements for representative members, including that the applicant represents a U.S. company or U.S. organization and that the applicant is not required to register as a foreign agent under the Foreign Agents Registration Act of 1938; and

5. An affirmative statement that the nominee will be able to meet the expected time commitments of the work of the Board, which includes: (1) a commitment to attend quarterly Board meetings (typically, two in-person meetings and two-to-three virtual meetings), (2) undertaking additional work outside of full Board meetings including regular participation in virtual subcommittee meetings, and (3) frequently drafting, preparing, or commenting on proposed recommendations to be evaluated at Board meetings.

For eligibility purposes, a "U.S. company" is a for-profit firm that is incorporated in the United States (or an unincorporated U.S. firm with its principal place of business in the United States) that is controlled by U.S. citizens or by other U.S. companies. A company is not a U.S. company if 50 percent plus one share of its stock (if a corporation, or a similar ownership interest of an unincorporated entity) is known to be controlled, directly or indirectly, by non-U.S. citizens or non-U.S. companies. For eligibility purposes, a "U.S. organization" is an organization, including trade associations and nongovernmental organizations (NGOs), established under the laws of the United States, that is controlled by U.S. citizens, by another U.S. organization (or organizations), or by a U.S. company (or companies), as

determined based on its board of directors (or comparable governing body), membership, and funding sources, as applicable. For eligibility purposes, a U.S. entity is a tourism-related entity that can demonstrate U.S. ownership or control, including but not limited to state and local tourism marketing entities, state government tourism offices, state and/or local government-supported tourism marketing entities, and multi-state tourism marketing entities.

Nominations should be emailed to [TTAB@trade.gov](mailto:TTAB@trade.gov).

**Brian Beall,**

*Director, National Travel and Tourism Office.*

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**BILLING CODE 3510-DR-P**

**DEPARTMENT OF COMMERCE**

**National Oceanic and Atmospheric Administration**

[RTID 0648-XE202]

**Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to the Office of Naval Research's Arctic Research Activities in the Beaufort and Chukchi Seas (Year 7)**

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

**ACTION:** Notice; issuance of an 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 Office of Naval Research (ONR) to incidentally harass marine mammals during Arctic Research Activities (ARA) in the Beaufort Sea and eastern Chukchi Sea. The ONR's activities are considered military readiness activities pursuant to the MMPA, as amended by the National Defense Authorization Act for Fiscal Year 2004 (2004 NDAA).

**DATES:** This authorization is effective from September 14, 2024, through September 13, 2025.

**ADDRESSES:** 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: <https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-military-readiness-activities>. In case of problems accessing

these documents, please call the contact listed below.

**FOR FURTHER INFORMATION CONTACT:**  
Alyssa Clevens, Office of Protected Resources, NMFS, (301) 427-8401.

**SUPPLEMENTARY INFORMATION:**

**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 proposed or, if the taking is limited to harassment, a notice of a proposed IHA is 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 monitoring and reporting of the takings. The definitions of all applicable MMPA statutory terms cited above are included in the relevant sections below.

The 2004 NDAA (Pub. L. 108–136) removed the “small numbers” and “specified geographical region” limitations indicated above and amended the definition of “harassment” as applied to a “military readiness activity.” The activity for which incidental take of marine mammals is being requested qualifies as a military readiness activity.

**Summary of Request**

On March 29, 2024, NMFS received a request from the ONR for an IHA to take marine mammals incidental to ARA in the Beaufort and Chukchi Seas. Following NMFS’ review of the application, the ONR submitted a revised version on July 23, 2024. The application was deemed adequate and complete on August 5, 2024. The ONR’s request is for take of beluga whales and ringed seals by Level B harassment only. Neither the ONR nor NMFS expect serious injury or mortality to result from this activity and, therefore, an IHA is appropriate.

This IHA will cover the seventh year of a larger project for which ONR obtained prior IHAs and renewal IHAs (83 FR 48799, September 27, 2018; 84 FR 50007, September 24, 2019; 85 FR 53333, August 28, 2020; 86 FR 54931, October 5, 2021; 87 FR 57458, September 20, 2022; 88 FR 65657, September 18, 2023). ONR has complied with all the requirements (*e.g.*, mitigation, monitoring, and reporting) of the previous IHAs. There are no changes from the proposed IHA to the final IHA.

**Description of the Specified Activity**

*Overview*

The ONR plans to conduct scientific experiments in support of ARA using active acoustic sources within the Beaufort and Chukchi Seas. Project activities involve acoustic testing and a

multi-frequency navigation system concept test using left-behind active acoustic sources. The planned experiments involve the deployment of moored, drifting, and ice-tethered active acoustic sources from the Research Vessel (R/V) Sikuliaq. Recovery of equipment may be from R/V Sikuliaq, U.S. Coast Guard Cutter (CGC) HEALY, or another vessel, and icebreaking may be required. Underwater sound from the active acoustic sources and noise from icebreaking may result in Level B harassment of marine mammals.

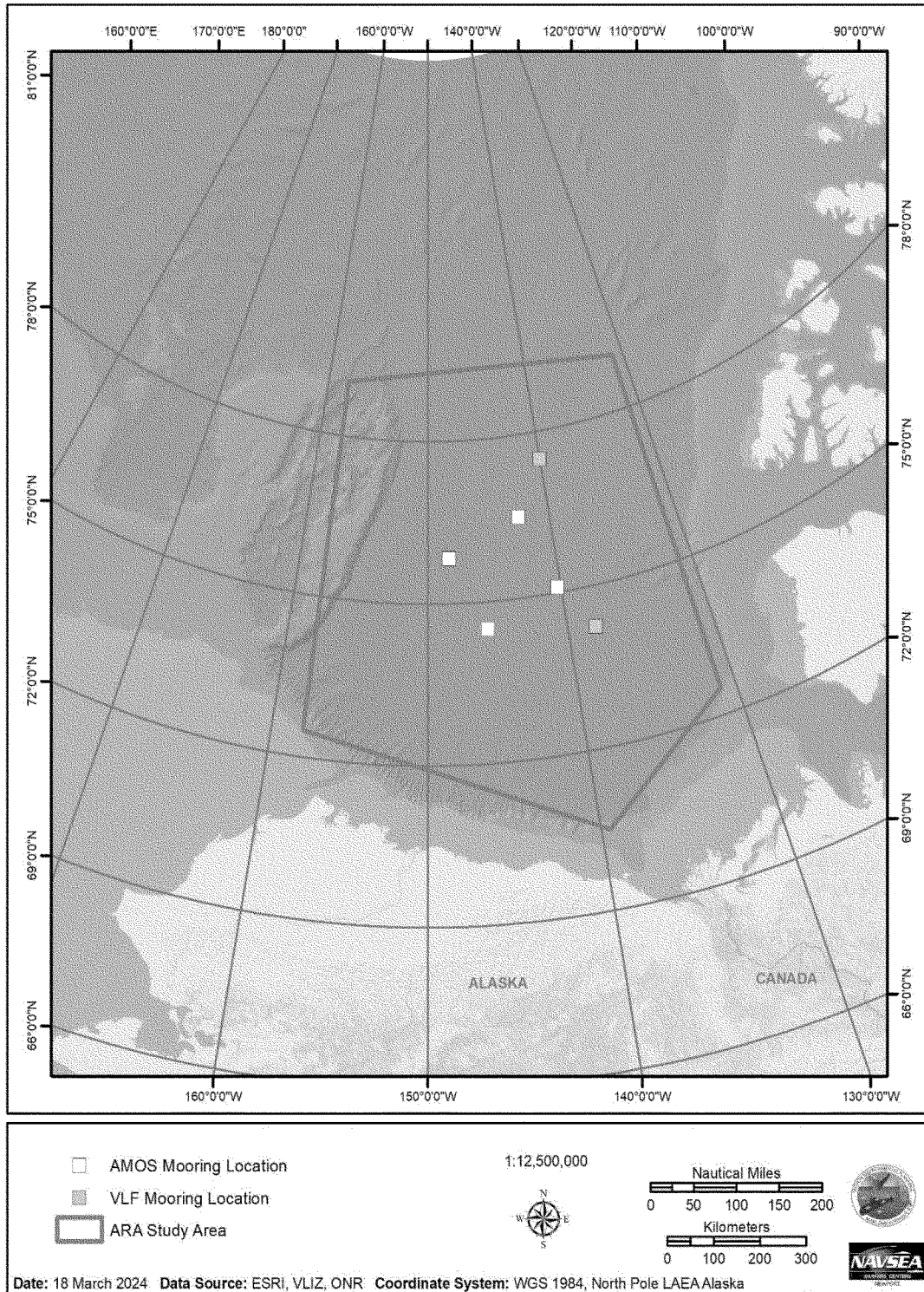
*Dates and Duration*

The planned action will occur from September 2024 through September 2025 and include up to two research cruises. Acoustic testing will take place during the cruises, with the first cruise beginning September 2024, and a potential second cruise occurring in summer or fall 2025, which may include up to 8 days of icebreaking activities.

*Geographic Region*

The planned action will occur across the U.S. Exclusive Economic Zone (EEZ) in the Beaufort and Chukchi Seas, partially in the high seas north of Alaska, the Global Commons, and within a part of the Canadian EEZ (in which the appropriate permits will be obtained by the Navy) (figure 1). The planned action will primarily occur in the Beaufort Sea but the analysis considers the drifting of active sources on buoys into the eastern portion of the Chukchi Sea. The closest point of the study area to the Alaska coast is 204 kilometers (km; 110 nautical miles (nmi)). The study area is approximately 639,267 square kilometers (km<sup>2</sup>).

**BILLING CODE 3510-22-P**



**Figure 1 – Arctic Research Activities Study Area and Mooring Locations**

BILLING CODE 3510-22-C

*Detailed Description of the Specified Activity*

A detailed description of the planned ARA is provided in the **Federal Register** notice for the proposed IHA (89 FR 66068, August 14, 2024). Since that

time, no changes have been made to the planned activities. Therefore, a detailed description is not provided here. Please refer to that **Federal Register** notice for the description of the specific activity.

Planned 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 NMFS' proposal to issue an IHA to ONR was published in the **Federal Register** on August 14, 2024 (89 FR 66068). That notice described, in

detail, ONR’s activity, the marine mammal species that may be affected by the activity, and the anticipated effects on marine mammals. In that notice, we requested public input on the request for authorization described therein, our analyses, the proposed authorization, and any other aspect of the notice of proposed IHA, and requested that interested persons submit relevant information, suggestions, and comments. This proposed notice was available for a 30-day public comment period.

In total, NMFS received two comments from one private citizen and from a state government department (Alaska Department of Fish and Game). One comment was out-of-scope or not applicable to the project and is not described herein or discussed further. We do not specifically address comments expressing general opposition to military readiness activities or respond to comments that are out of scope of the proposed IHA (89 FR 66068, August 14, 2024).

All comments received during the public comment period which contained relevant points were considered by NMFS and are described and responded to below. All relevant comment letters are available on NMFS’ website (<https://www.fisheries.noaa.gov/action/incidental-take-authorization-office-naval-researchs-arctic-research-activities-year-7>).

*Comment:* A commenter expressed concern that bowhead whales were not included as a potential species in the area and provided a publication by George and Thewissen (2020), specifically referencing a satellite telemetry study where multiple bowhead whales were detected north of 75 degrees N during the months of July, September, and October. The commenter indicated that the mitigation measures in the proposed IHA (89 FR 66068, August 14, 2024) would minimize disturbance to bowhead whales, but that the proposal should have discussed bowhead whales in more detail.

*Response:* NMFS refers the commenter to the Description of Marine Mammals in the Area of Specified Activities section of the proposed IHA (89 FR 66068, August 14, 2024), which indicates bowhead whales are expected in the ARA Study Area during the planned action and were considered in the applicant’s quantitative modeling of potential effects of acoustic sources on marine mammals expected within the study area. The modeling resulted in no calculated exposures for the bowhead whale due to either active acoustic sources or icebreaking and, as no harassment of the bowhead whale is expected, the species was not discussed further.

In addition to the references used by the applicant in their request for an IHA, the *Overseas Environmental Assessment for Office of Naval Research Arctic Research Activities in the Beaufort and Chukchi Seas 2022–2025*, provided on the project website (<https://www.fisheries.noaa.gov/action/incidental-take-authorization-office-naval-researchs-arctic-research-activities-year-7>), includes information on the distribution of bowhead whales, specifically that their range can expand and contract beyond 75 degrees N depending on ice cover and access to Arctic straits (Rugh *et al.*, 2003),” which is in agreement with the information provided by the commenter. Importantly, the commenter does not suggest that incidental take of bowhead whales is likely, and following review of the comments and cited information NMFS has determined that no new information is presented and that the commenter’s evaluation is consistent with NMFS’. No changes have been made as a result of this comment.

**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. NMFS fully considered all of this information, and we refer the

reader to these descriptions, instead of reprinting the information. Additional information regarding population trends and threats may be found in NMFS’ Stock Assessment Reports (SARs; <https://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 (<https://www.fisheries.noaa.gov/find-species>).

Table 1 lists all species or stocks for which take is expected and authorized for this activity 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. 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’ SARs). While no serious injury or mortality is anticipated or authorized here, PBR and annual serious injury and mortality (M/SI) from anthropogenic sources are included here as gross indicators of the status of the species or stocks 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. Alaska SARs (Young *et al.*, 2023). All values presented in table 1 are the most recent available at the time of publication and are available online at: <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments>.

TABLE 1—SPECIES LIKELY IMPACTED BY THE SPECIFIED ACTIVITIES <sup>1</sup>

Common name	Scientific name	Stock	ESA/MMPA status; strategic (Y/N) <sup>2</sup>	Stock abundance (CV, N <sub>min</sub> , most recent abundance survey) <sup>3</sup>	PBR	Annual M/SI <sup>4</sup>
Beluga Whale .....	<i>Delphinapterus leucas</i> .....	Beaufort Sea .....	- , - , N	39,258 (0.229, N/A, 1992) .....	UND	104
Beluga Whale .....	<i>Delphinapterus leucas</i> .....	Eastern Chukchi .....	- , - , N	13,305 (0.51, 8,875, 2017) .....	178	56
Ringed Seal .....	<i>Pusa hispida</i> .....	Arctic .....	T, D, Y	UND <sup>5</sup> (UND, UND, 2013) .....	UND	6,459

<sup>1</sup> Information on the classification of marine mammal species can be found on the web page for The Society for Marine Mammalogy’s Committee on Taxonomy (<https://marinemammalscience.org/science-and-publications/list-marine-mammal-species-subspecies/>).

<sup>2</sup>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.

<sup>3</sup>NMFS marine mammal stock assessment reports online at: <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region>. CV is coefficient of variation;  $N_{min}$  is the minimum estimate of stock abundance.

<sup>4</sup>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, vessel strike). Annual M/SI often cannot be determined precisely and is in some cases presented as a minimum value or range. A CV associated with estimated mortality due to commercial fisheries is presented in some cases.

<sup>5</sup>A reliable population estimate for the entire stock is not available. Using a sub-sample of data collected from the U.S. portion of the Bering Sea, an abundance estimate of 171,418 ringed seals has been calculated, but this estimate does not account for availability bias due to seals in the water or in the shore-fast ice zone at the time of the survey. The actual number of ringed seals in the U.S. portion of the Bering Sea is likely much higher. Using the  $N_{min}$  based upon this negatively biased population estimate, the PBR is calculated to be 4,755 seals, although this is also a negatively biased estimate.

As indicated above, both species (with three managed stocks) in table 1 temporally and spatially co-occur with the activity to the degree that take is reasonably likely to occur. While bowhead whales (*Balaena mysticetus*), gray whales (*Eschrichtius robustus*), bearded seals (*Erignathus barbatus*), spotted seals (*Phoca largha*), and ribbon seals (*Histiophoca fasciata*) have been documented in the area, the temporal and/or spatial occurrence of these species is such that take is not expected to occur, and they are not discussed further.

A detailed description of the species likely to be affected by the ARA, including brief introductions to the species and relevant stocks as well as available information regarding population trends and threats, and information regarding local occurrence, were provided in the **Federal Register** notice for the proposed IHA (89 FR

66068, August 14, 2024); since that time, we are not aware of any changes in the status of these species and stocks; therefore, detailed descriptions are not provided here. Please refer to that **Federal Register** notice for these descriptions. Please also refer to NMFS' website (<https://www.fisheries.noaa.gov/find-species>) for generalized species accounts.

*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. 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) and Southall *et al.* (2019) recommended that marine mammals be divided into hearing groups based on directly measured (behavioral or auditory evoked potential techniques) or estimated hearing ranges (behavioral response data, anatomical modeling, etc.). 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, <i>Kogia</i> , river dolphins, Cephalorhynchid, <i>Lagenorhynchus cruciger</i> & <i>L. australis</i> ).	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 approximately 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 *et al.*, 2013). This division between phocid and otariid pinnipeds is now reflected in the updated hearing groups proposed in Southall *et al.* (2019).

For more detail concerning these groups and associated frequency ranges, please see NMFS (2018) for a review of available information.

**Potential Effects of Specified Activities on Marine Mammals and Their Habitat**

The effects of underwater noise from ONR's ARA have the potential to result in behavioral harassment of marine mammals in the vicinity of the study area. The notice of proposed IHA (89 FR 66068, August 14, 2024) included a discussion of the effects of anthropogenic noise on marine mammals and the potential effects of underwater noise from ONR's ARA on marine mammals and their habitat. That information and analysis is referenced in this final IHA determination and is not repeated here; please refer to the

notice of proposed IHA (89 FR 66068, August 14, 2024).

**Estimated Take of Marine Mammals**

This section provides an estimate of the number of incidental takes authorized through the IHA, which will inform NMFS' consideration of the negligible impact determinations and impacts on subsistence uses.

Harassment is the only type of take expected to result from these activities. For this military readiness activity, the MMPA defines "harassment" as (i) Any act that injures or has the significant potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) Any act that

disturbs or is likely to disturb a marine mammal or marine mammal stock in the wild by causing disruption of natural behavioral patterns, including, but not limited to, migration, surfacing, nursing, breeding, feeding, or sheltering, to a point where the behavioral patterns are abandoned or significantly altered (Level B harassment).

Authorized takes will be by Level B harassment only, in the form of direct behavioral disturbances and/or temporary threshold shift (TTS) for individual marine mammals resulting from exposure to active acoustic transmissions and icebreaking. Based on the nature of the activity, Level A harassment is neither anticipated nor authorized.

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

For acoustic impacts, 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) the number of days of activities. We note that while these factors can contribute to a basic calculation to provide an initial prediction of potential 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 authorized take estimates.

#### Acoustic Thresholds

NMFS recommends the use of 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 permanent threshold shift (PTS) of some degree (equated to Level A harassment). Thresholds have also been developed identifying the received level of in-air sound above which exposed pinnipeds would likely be behaviorally harassed.

#### 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 or exposure context (*e.g.*, frequency, predictability, duty cycle, duration of the exposure, signal-to-noise ratio, distance to the source), the environment (*e.g.*, bathymetry, other noises in the area, predators in the area), and the receiving animals (hearing, motivation, experience, demography, life stage, depth) and can be difficult to predict (*e.g.*, Southall *et al.*, 2007; Southall *et al.*, 2021; Ellison *et al.*, 2012). Based on what the available science indicates and the practical need to use a threshold based on a metric that is both predictable and measurable for most activities, NMFS typically uses a generalized acoustic threshold based on received level to estimate the onset of behavioral harassment. NMFS generally predicts that marine mammals are likely to be behaviorally harassed in a manner considered to be Level B harassment when exposed to underwater anthropogenic noise above root-mean-squared pressure received levels (RMS SPL) of 120 dB (referenced to 1 microPascal (re 1  $\mu$ Pa)) for continuous (*e.g.*, vibratory pile driving, drilling) and above RMS SPL 160 dB re 1  $\mu$ Pa for non-explosive impulsive (*e.g.*, seismic airguns) or intermittent (*e.g.*, scientific sonar) sources. Generally speaking, Level B harassment estimates based on these behavioral harassment thresholds are expected to include any likely takes by TTS as, in most cases, the likelihood of TTS occurs at distances from the source less than those at which behavioral harassment is likely. TTS of a sufficient degree can manifest as behavioral harassment, as reduced hearing sensitivity and the potential reduced opportunities to detect important signals (conspecific communication, predators, prey) may result in changes in behavior patterns that would not otherwise occur.

In this case, NMFS is proposing to adopt the ONR's approach to estimating incidental take by Level B harassment from the active acoustic sources for this action, which includes use of dose response functions. The ONR's dose response functions were developed to estimate take from sonar and similar transducers, but are not applicable to icebreaking. Multi-year research efforts have conducted sonar exposure studies for odontocetes and mysticetes (Miller *et al.*, 2012; Sivle *et al.*, 2012). Several studies with captive animals have provided data under controlled circumstances for odontocetes and pinnipeds (Houser *et al.*, 2013b; Houser *et al.*, 2013a). Moretti *et al.* (2014) published a beaked whale dose-response curve based on passive acoustic monitoring of beaked whales

during U.S. Navy training activity at Atlantic Underwater Test and Evaluation Center during actual anti-submarine warfare exercises.

Southall *et al.* (2007), and more recently (Southall *et al.*, 2019), synthesized data from many past behavioral studies and observations to determine the likelihood of behavioral reactions at specific sound levels. While in general, the louder the sound source the more intense the behavioral response, it was clear that the proximity of a sound source and the animal's experience, motivation, and conditioning were also critical factors influencing the response (Southall *et al.*, 2007; Southall *et al.*, 2019). After examining all of the available data, the authors felt that the derivation of thresholds for behavioral response based solely on exposure level was not supported because context of the animal at the time of sound exposure was an important factor in estimating response. Nonetheless, in some conditions, consistent avoidance reactions were noted at higher sound levels depending on the marine mammal species or group allowing conclusions to be drawn. Phocid seals showed avoidance reactions at or below 190 dB re 1  $\mu$ Pa at 1 m; thus, seals may actually receive levels adequate to produce TTS before avoiding the source.

Odontocete behavioral criteria for non-impulsive sources are based on controlled exposure studies for dolphins and sea mammals, sonar, and safety (3S) studies where odontocete behavioral responses were reported after exposure to sonar (Miller *et al.*, 2011; Miller *et al.*, 2012; Antunes *et al.*, 2014; Miller *et al.*, 2014; Houser *et al.*, 2013b). For the 3S study, the sonar outputs included 1–2 kilohertz (kHz) up- and down-sweeps and 6–7 kHz up-sweeps; source levels were ramped up from 152–158 dB re 1  $\mu$ Pa to a maximum of 198–214 dB re 1  $\mu$ Pa at 1 m. Sonar signals were ramped up over several pings while the vessel approached the mammals. The study did include some control passes of vessels with the sonar off to discern the behavioral responses of the mammals to vessel presence alone versus active sonar.

The controlled exposure studies included exposing the Navy's trained bottlenose dolphins to mid-frequency sonar while they were in a pen. Mid-frequency sonar was played at six different exposure levels from 125–185 dB re 1  $\mu$ Pa (RMS). The behavioral response function for odontocetes resulting from the studies described above has a 50 percent probability of response at 157 dB re 1  $\mu$ Pa. Additionally, distance cutoffs (20 km for

MF cetaceans) were applied to exclude exposures beyond which the potential of significant behavioral responses is considered to be unlikely.

The pinniped behavioral threshold are based on controlled exposure experiments on the following captive animals: hooded seal (*Cystophora cristata*), gray seal (*Halichoerus grypus*), and California sea lion (Götz *et al.*, 2010; Houser *et al.*, 2013a; Kvadsheim *et al.*, 2010). Hooded seals were exposed to increasing levels of sonar until an avoidance response was observed, while the grey seals were exposed first to a single received level multiple times, then an increasing received level. Each individual California sea lion was exposed to the same received level ten times. These exposure sessions were combined into a single response value, with an overall response assumed if an animal responded in any single session. The resulting behavioral response

function for pinnipeds has a 50 percent probability of response at 166 dB re 1 µPa. Additionally, distance cutoffs (10 km for pinnipeds) were applied to exclude exposures beyond which the potential of significant behavioral responses is considered unlikely. For additional information regarding marine mammal thresholds for PTS and TTS onset, please see NMFS (2018) and table 4.

Empirical evidence has not shown responses to non-impulsive acoustic sources that will constitute take beyond a few km from a non-impulsive acoustic source, which is why NMFS and the Navy conservatively set distance cutoffs for pinnipeds and mid-frequency cetaceans (U.S. Department of the Navy, 2017a). The cutoff distances for fixed sources are different from those for moving sources, as they are treated as individual sources in ONR's modeling given that the distance between them is

significantly greater than the range to which environmental effects can occur. Fixed source cutoff distances used were 5 km (2.7 nmi) for pinnipeds and 10 km (5.4 nmi) for beluga whales (table 3). As some of the on-site drifting sources could come closer together, the drifting source cutoffs applied were 10 km (5.4 nmi) for pinnipeds and 20 km (10.8 nmi) for beluga whales (table 3). Regardless of the received level at that distance, take is not estimated to occur beyond these cutoff distances. Range to thresholds were calculated for the noise associated with icebreaking in the study area. These all fall within the same cutoff distances as non-impulsive active acoustic sources; range to behavioral threshold for both beluga whales and ringed seal were under 5 km (2.7 nmi), and range to TTS threshold for both under 15 m (49.2 ft) (table 3).

TABLE 3—CUTOFF DISTANCES AND ACOUSTIC THRESHOLDS IDENTIFYING THE ONSET OF BEHAVIORAL DISTURBANCE, TTS, AND PTS FOR NON-IMPULSIVE SOUND SOURCES

Hearing group	Species	Fixed source behavioral threshold cutoff distance <sup>a</sup>	Drifting source behavioral threshold cutoff distance <sup>a</sup>	Behavioral criteria: non-impulsive acoustic sources	Icebreaking source behavioral threshold cutoff distance <sup>a b</sup>	Behavioral criteria: icebreaking sources	Physiological criteria: onset TTS	Physiological criteria: onset PTS
Mid-frequency cetaceans.	Beluga whale	10 km (5.4 nmi).	20 km (10.8 nmi).	Mid-frequency BRF dose-response function*.	5 km (2.7 nmi)	120 dB re 1 µPa step function.	178 dB SEL <sub>cum.</sub>	198 dB SEL <sub>cum.</sub>
Phocidae (in water)	Ringed seal	5 km (2.7 nmi).	10 km (5.4 nmi).	Pinniped dose-response function*.	5 km (2.7 nmi)	120 dB re 1 µPa step function.	181 dB SEL <sub>cum.</sub>	201 dB SEL <sub>cum.</sub>

**Note:** The threshold values provided are assumed for when the source is within the animal's best hearing sensitivity. The exact threshold varies based on the overlap of the source and the frequency weighting (see figure 6–1 in IHA application).

<sup>a</sup>Take is not estimated to occur beyond these cutoff distances, regardless of the received level.

<sup>b</sup>Range to TTS threshold for both hearing groups for the noise associated with icebreaking in the study area is under 15 m (49.2 ft).

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). The ONR's action includes the use of non-impulsive (active sonar and icebreaking) sources; however, Level A harassment is not expected as a result of the activities based on modeling, as described below, nor is it authorized by NMFS.

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: <https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance>.

TABLE 4—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 <sub>pk,flat</sub> : 219 dB; L <sub>E,LF,24h</sub> : 183 dB .....	Cell 2: L <sub>E,LF,24h</sub> : 199 dB.
Mid-Frequency (MF) Cetaceans .....	Cell 3: L <sub>pk,flat</sub> : 230 dB; L <sub>E,MF,24h</sub> : 185 dB .....	Cell 4: L <sub>E,MF,24h</sub> : 198 dB.
High-Frequency (HF) Cetaceans .....	Cell 5: L <sub>pk,flat</sub> : 202 dB; L <sub>E,HF,24h</sub> : 155 dB .....	Cell 6: L <sub>E,HF,24h</sub> : 173 dB.
Phocid Pinnipeds (PW) (Underwater) .....	Cell 7: L <sub>pk,flat</sub> : 218 dB; L <sub>E,PW,24h</sub> : 185 dB .....	Cell 8: L <sub>E,PW,24h</sub> : 201 dB.
Otariid Pinnipeds (OW) (Underwater) .....	Cell 9: L <sub>pk,flat</sub> : 232 dB; L <sub>E,OW,24h</sub> : 203 dB .....	Cell 10: L <sub>E,OW,24h</sub> : 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  $\mu$ Pa, and cumulative sound exposure level ( $L_E$ ) has a reference value of 1  $\mu$ Pa<sup>2</sup>s. In this table, thresholds are abbreviated to reflect American National Standards Institute (ANSI) standards. 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.

### Quantitative Modeling

The Navy performed a quantitative analysis to estimate the number of marine mammals likely to be exposed to underwater acoustic transmissions above the previously described threshold criteria during the planned action. Inputs to the quantitative analysis included marine mammal density estimates obtained from the Kaschner *et al.* (2006) habitat suitability model and (Cañadas *et al.*, 2020), marine mammal depth occurrence (U.S. Department of the Navy, 2017b), oceanographic and mammal hearing data, and criteria and thresholds for levels of potential effects. The quantitative analysis consists of computer modeled estimates and a post-model analysis to determine the number of potential animal exposures. The model calculates sound energy propagation from the non-impulsive acoustic sources, the sound received by animat (virtual animal) dosimeters representing marine mammals distributed in the area around the modeled activity, and whether the sound received by animats exceeds the thresholds for effects.

The Navy developed a set of software tools and compiled data for estimating acoustic effects on marine mammals and we note that these tools do not include any quantitative adjustments to account for the fact that marine mammals are likely to avoid loud sources to some degree, or that the successful implementation of mitigation would be expected to reduce the probability or severity of some impacts. These tools and data sets serve as integral components of the Navy Acoustic Effects Model (NAEMO). In NAEMO, animats are distributed non-uniformly based on species-specific density, depth distribution, and group size information and animats record energy received at their location in the water column. A fully three-dimensional environment is used for calculating sound propagation and animat exposure in NAEMO. Site-specific bathymetry, sound speed profiles, wind speed, and bottom properties are incorporated into the propagation modeling process. NAEMO calculates the likely propagation for various levels of energy (sound or pressure) resulting from each source used during the training event.

NAEMO then records the energy received by each animat within the energy footprint of the event and calculates the number of animats having received levels of energy exposures that fall within defined impact thresholds. Predicted effects on the animats within a scenario are then tallied and the highest order effect (based on severity of criteria; *e.g.*, PTS over TTS) predicted for a given animat is assumed. Each scenario, or each 24-hour period for scenarios lasting greater than 24 hours is independent of all others, and therefore, the same individual marine mammal (as represented by an animat in the model environment) could be impacted during each independent scenario or 24-hour period. In few instances, although the activities themselves all occur within the study location, sound may propagate beyond the boundary of the study area. Any exposures occurring outside the boundary of the study area are counted as if they occurred within the study area boundary. NAEMO provides the initial estimated impacts on marine species with a static horizontal distribution (*i.e.*, animats in the model environment do not move horizontally).

There are limitations to the data used in the acoustic effects model, and the results must be interpreted within this context. While the best available data and appropriate input assumptions have been used in the modeling, when there is a lack of definitive data to support an aspect of the modeling, conservative modeling assumptions have been chosen (*i.e.*, assumptions that may result in an overestimate of acoustic exposures):

- Animats are modeled as being underwater, stationary, and facing the source and therefore always predicted to receive the maximum potential sound level at a given location (*i.e.*, no porpoising or pinnipeds' heads above water);
- Animats do not move horizontally (but change their position vertically within the water column), which may overestimate physiological effects such as hearing loss, especially for slow moving or stationary sound sources in the model;
- Animats are stationary horizontally and therefore do not avoid the sound source, unlike in the wild where

animals would most often avoid exposures at higher sound levels, especially those exposures that may result in PTS;

- Multiple exposures within any 24-hour period are considered one continuous exposure for the purposes of calculating potential threshold shift, because there are not sufficient data to estimate a hearing recovery function for the time between exposures; and

- Mitigation measures were not considered in the model. In reality, sound-producing activities will be reduced, stopped, or delayed if marine mammals are detected by visual monitoring.

Due to these inherent model limitations and simplifications, model-estimated results should be further analyzed, considering such factors as the range to specific effects, avoidance, and the likelihood of successfully implementing mitigation measures. This analysis uses a number of factors in addition to the acoustic model results to predict acoustic effects on marine mammals, as described below in the *Marine Mammal Occurrence and Take Estimation* section.

The underwater radiated noise signature for icebreaking in the central Arctic Ocean by CGC HEALY during different types of ice-cover was characterized in Roth *et al.* (2013). The radiated noise signatures were characterized for various fractions of ice cover. For modeling, the 8/10 and 3/10 ice cover were used. Each modeled day of icebreaking consisted of 16 hours of 8/10 ice cover and 8 hours of 3/10 ice cover. Icebreaking was modeled for 8 days total. Since ice forecasting cannot be predicted more than a few weeks in advance, it is unknown if icebreaking will be needed to deploy or retrieve the sources after 1 year of transmitting. Therefore, the potential for an icebreaking cruise on CGC HEALY was conservatively analyzed within the ONR's request for an IHA. As the R/V Sikuliaq is not capable of icebreaking, acoustic noise created by icebreaking is only modeled for the CGC HEALY. Figures 5a and 5b in Roth *et al.* (2013) depict the source spectrum level versus frequency for 8/10 and 3/10 ice cover, respectively. The sound signature of each of the ice coverage levels was broken into 1-octave bins (table 5). In



the model, each bin was included as a separate source on the modeled vessel. When these independent sources go active concurrently, they simulate the sound signature of CGC HEALY. The modeled source level summed across these bins was 196.2 dB for the 8/10 signature and 189.3 dB for the 3/10 ice signature. These source levels are a good approximation of the icebreaker's observed source level (provided in

figure 4b of Roth *et al.* (2013). Each frequency and source level was modeled as an independent source, and applied simultaneously to all of the animats within NAEMO. Each second was summed across frequency to estimate SPL<sub>RMS</sub>. Any animat exposed to sound levels greater than 120 dB was considered a take by Level B harassment. For PTS and TTS, determinations, sound exposure levels

were summed over the duration of the test and the transit to the deep water deployment area. The method of quantitative modeling for icebreaking is considered to be a conservative approach; therefore, the number of takes estimated for icebreaking are likely an overestimate and are not expected to reach that level.

TABLE 5—MODELED BINS FOR 8/10 ICE COVERAGE (FULL POWER) AND 3/10 ICE COVERAGE (QUARTER POWER) ICEBREAKING ON CGC HEALY

Frequency (Hz)	8/10 source level (dB)	3/10 source level (dB)
25	189	187
50	188	182
100	189	179
200	190	177
400	188	175
800	183	170
1,600	177	166
3,200	176	171
6,400	172	168
12,800	167	164

*Marine Mammal Occurrence and Take Estimation*

In this section we provide information about the occurrence of marine mammals, including density or other relevant information which will inform the take calculations. We also describe how the marine mammal occurrence information is synthesized to produce a quantitative estimate of the take that is reasonably likely to occur and is authorized.

The beluga whale density numbers utilized for quantitative acoustic modeling are from the Navy Marine Species Density Database (U.S. Department of the Navy, 2014). Where available (*i.e.*, June through 15 October over the continental shelf primarily), density estimates used were from Duke density modeling based upon line-transect surveys (Cañadas *et al.*, 2020). The remaining seasons and geographic area were based on the habitat-based

modeling by Kaschner (2004) and Kaschner *et al.* (2006). Density for beluga whales was not distinguished by stock and varied throughout the project area geographically and monthly; the range of densities in the study area is shown in table 6. The density estimates for ringed seals are based on the habitat suitability modeling by Kaschner (2004) and Kaschner *et al.* (2006) and shown in table 6.

TABLE 6—DENSITY ESTIMATES OF IMPACTED SPECIES

Common name	Stock	Density (animals/km <sup>2</sup> )
Beluga whale	Beaufort Sea	0.000506 to 0.5176.
Beluga whale	Eastern Chukchi Sea	0.000506 to 0.5176.
Ringed seal	Arctic	0.1108 to 0.3562.

Take of all species will occur by Level B harassment only. NAEMO was previously used to produce a qualitative estimate of PTS, TTS, and behavioral exposures for ringed seals. For this action, a new approach that utilizes sighting data from previous surveys conducted within the study area was used to estimate Level B harassment associated with non-impulsive active acoustic sources for ringed seals (see section 6.4.3 of the IHA application).

Of historical sightings registered in the Ocean Biodiversity Information System Spatial Ecological Analysis of Megavertebrate Populations (OBIS-SEAMAP database) (Halpin *et al.*, 2009)

in the ARA study area, nearly all (99 percent) occurred in summer and fall seasons. However, there is no documentation to prove that this is because ringed seals will all move out of the study area during the cold season, or if the lack of sightings is due to the harsh environment and ringed seal behavior being prohibitive factors for cold season surveying. OBIS-SEAMAP reports 542 animals sighted over 150 records in the ARA study area across all years and seasons. Taking the average of 542 animals in 150 records aligns with survey data from previous ARA cruises that show up to 3 ringed seals (or small, unidentified pinnipeds assumed to be

ringed seals) per day sighted in the study area. To account for any unsighted animals, that number was rounded up to 4. Assuming that four animals will be present in the study area, a rough estimate of density can be calculated using the overall study area size:

$$4 \text{ ringed seals} \div 48,725 \text{ km}^2 = 0.00008209 \text{ ringed seals/km}^2$$

The Level B harassment zone surrounding each moored source will be 78.5 km<sup>2</sup>, and the Level B harassment zone surrounding each drifting source will be 314 km<sup>2</sup>. The total Level B harassment zone on any given day from

non-impulsive acoustic sources will be 942 km<sup>2</sup>. The number of ringed seals that could be taken daily can be calculated:

$$0.00008209 \text{ ringed seals/km}^2 \times 942 \text{ km}^2 = 0.077 \text{ ringed seals/day}$$

To be conservative, the ONR assumed 1 ringed seal will be exposed to acoustic transmissions above the threshold for Level B harassment, and that each will be exposed each day of the planned action (365 days total). Unlike the NAEMO modeling approach used to estimate ringed seal takes in previous ARA IHAs, the occurrence method used in this ARA IHA request does not support the differentiation between behavioral or TTS exposures. Therefore, all takes are classified as Level B

harassment and not further distinguished. Modeling for all previous years of ARA activities did not result in any estimated Level A harassment. NMFS has no reason to expect that the ARA activities during the effective dates of this IHA will be more likely to result in Level A harassment. Therefore, no Level A harassment is anticipated due to the planned action.

NAEMO modeling is still used to provide estimated takes of beluga whales associated with non-impulsive acoustic sources, as well as provide take estimations associated with icebreaking for both species. Table 7 shows the total number of requested takes by Level B harassment that NMFS has authorized for both beluga whale stocks and the Arctic ringed seal stock.

Density estimates for beluga whales are equal as estimates were not distinguished by stock (Kaschner, 2004; Kaschner *et al.*, 2006). The ranges of the Beaufort Sea and Eastern Chukchi Sea beluga whales vary within the study area throughout the year (Hauser *et al.*, 2014). Based upon the limited information available regarding the expected spatial distributions of each stock within the study area, take has been apportioned equally to each stock (table 7). In addition, in NAEMO, animals do not move horizontally or react in any way to avoid sound, therefore, the current model may overestimate non-impulsive acoustic impacts.

TABLE 7—ESTIMATED TAKE NUMBERS AND TOTAL TAKE AUTHORIZED

Species	Stock	Active acoustics	Icebreaking (behavioral)	Icebreaking (TTS)	Total take authorized	SAR abundance	Percentage of population
Beluga whale	Beaufort Sea	<sup>a</sup> 177	<sup>a</sup> 21	0	99	39,258	<1
Beluga whale	Chukchi Sea	<sup>a</sup> 177	<sup>a</sup> 21	0	99	13,305	<1
Ringed seal	Arctic	365	538	1	904	UND (171, 418) <sup>b</sup>	<1

<sup>a</sup> Acoustic and icebreaking exposures to beluga whales were not modeled at the stock level as the density value is not distinguished by stock in the Arctic for beluga whales (U.S. Department of the Navy, 2014). Estimated take of beluga whales due to active acoustics is 177 and 21 due to icebreaking activities, totaling 198 takes of beluga whales. The total take was evenly distributed among the two stocks.

<sup>b</sup> A reliable population estimate for the entire Arctic stock of ringed seals is not available and NMFS SAR lists it as Undetermined (UND). Using a sub-sample of data collected from the U.S. portion of the Bering Sea (Conn *et al.*, 2014), an abundance estimate of 171,418 ringed seals has been calculated but this estimate does not account for availability bias due to seals in the water or in the shore-fast ice zone at the time of the survey. The actual number of ringed seals in the U.S. portion of the Bering Sea is likely much higher. Using the minimum population size (N<sub>min</sub> = 158,507) based upon this negatively biased population estimate, the PBR is calculated to be 4,755 seals, although this is also a negatively biased estimate.

**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. 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)). The 2004 NDAA amended the MMPA as it relates to military readiness activities and the incidental take authorization process such that “least practicable impact” shall include consideration of personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity.

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, NMFS considers 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, as well as subsistence uses. 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.

The following measures are required in this IHA:

- All vessels operated by or for the Navy must have personnel assigned to stand watch at all times while underway. Watch personnel must employ visual search techniques using binoculars. While underway and while using active acoustic sources/towed in-water devices, at least one person with access to binoculars is required to be on watch at all times.

- Vessel captains and vessel personnel must remain alert at all times, proceed with extreme caution, and operate at a safe speed so that the vessel can take proper and effective action to avoid any collisions with marine mammals.

- During moored and drifting acoustic source deployment and recovery, ONR must implement a mitigation zone of 55 m (180 ft) around the deployed source. Deployment and recovery must cease if a marine mammal is visually deterred within the mitigation zone. Deployment and recovery may recommence if any one of the following conditions are met:

- The animal is observed exiting the mitigation zone;
- The animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to the sound source;

- The mitigation zone has been clear from any additional sightings for a period of 15 minutes for pinnipeds and 30 minutes for cetaceans.
  - Vessels must avoid approaching marine mammals head-on and must maneuver to maintain a mitigation zone of 457 m (500 yards) around all

observed cetaceans and 183 m (200 yards) around all other observed marine mammals, provided it is safe to do so.

- Activities must cease if a marine mammal species for which take was not authorized, or a species for which authorization was granted but the authorized number of takes have been

met, is observed approaching or within the mitigation zone (table 8). Activities must not resume until the animal is confirmed to have left the area.

- Vessel captains must maintain at-sea communication with subsistence hunters to avoid conflict of vessel transit with hunting activity.

TABLE 8—MITIGATION ZONES

Activity and/or effort type	Species	Mitigation zone
Acoustic source deployment and recovery, stationary .....	Beluga whale .....	55 m (180 ft).
Acoustic source deployment and recovery, stationary .....	Ringed seal .....	55 m (180 ft).
Transit .....	Beluga whale .....	457 m (500 yards).
Transit .....	Ringed seal .....	183 m (200 yards).

Based on our evaluation of the applicant’s planned measures, 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, areas of similar significance, and on the availability of such species or stock for subsistence uses.

**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 while conducting the activities. 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 activity; 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.

The Navy has coordinated with NMFS to develop an overarching program plan in which specific monitoring will occur. This plan is called the Integrated Comprehensive Monitoring Program (ICMP) (U.S. Department of the Navy, 2011). The ICMP has been developed in direct response to Navy permitting requirements established through various environmental compliance efforts. As a framework document, the ICMP applies by regulation to those activities on ranges and operating areas for which the Navy is seeking or has sought incidental take authorizations. The ICMP is intended to coordinate monitoring efforts across all regions and to allocate the most appropriate level and type of effort based on a set of standardized research goals, and in acknowledgement of regional scientific value and resource availability.

The ICMP is focused on Navy training and testing ranges where the majority of Navy activities occur regularly as those areas have the greatest potential for being impacted. ONR’s ARA in comparison is a less intensive test with

little human activity present in the Arctic. Human presence is limited to the deployment of sources that will take place over several weeks. Additionally, due to the location and nature of the testing, vessels and personnel will not be within the study area for an extended period of time. As such, more extensive monitoring requirements beyond the basic information being collected will not be feasible as it would require additional personnel and equipment to locate seals and a presence in the Arctic during a period of time other than what is planned for source deployment. However, ONR will record all observations of marine mammals, including the marine mammal’s species identification, location (latitude/longitude), behavior, and distance from project activities. ONR will also record date and time of sighting. This information is valuable in an area with few recorded observations.

Marine mammal monitoring must be conducted in accordance with the Navy’s ICMP and the IHA:

- While underway, all vessels must have at least one person trained through the U.S. Navy Marine Species Awareness Training Program on watch during all activities;
- Watch personnel must use standardized data collection forms, whether hard copy or electronic. Watch personnel must distinguish between sightings that occur during transit or during deployment or recovery of acoustic sources. Data must be recorded on all days of activities, even if marine mammals are not sighted;
- At minimum, the following information must be recorded:
  - Vessel name;
  - Watch personnel names and affiliation;
  - Effort type (i.e., transit, deployment, recovery); and
  - Environmental conditions (at the beginning of watch stander shift and

whenever conditions change significantly), including Beaufort Sea State (BSS) and any other relevant weather conditions, including cloud cover, fog, sun glare, and overall visibility to the horizon.

- Upon visual observation of any marine mammal, the following information must be recorded:
  - Date/time of sighting;
  - Identification of animal (*e.g.*, genus/species, lowest possible taxonomic level, or unidentified) and the composition of the group if there is a mix of species;
  - Location (latitude/longitude) of sighting;
  - Estimated number of animals (high/low/best);
  - 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; length of time observed in the mitigation zone, note any observed changes in behavior);
  - Distance from vessel to animal;
  - Direction of animal's travel relative to the vessel;
  - Platform activity at time of sighting (*i.e.*, transit, deployment, recovery); and
  - Weather conditions (*i.e.*, BSS, cloud cover).
  - During icebreaking, the following information must be recorded:
    - Start and end time of icebreaking; and
    - Ice cover conditions.
- During deployment and recovery of acoustic sources or unmanned undersea vehicles, visual observation must begin 30 minutes prior to deployment or recovery and continue through 30 minutes following the source deployment or recovery.
- The ONR must submit its draft report(s) on all monitoring conducted under the IHA within 90 calendar days of the completion of monitoring or 60 calendar days prior to the requested issuance of any subsequent IHA for research activities at the same location, whichever comes first. A final report must be prepared and submitted within 30 calendar days following receipt of any NMFS comments on the draft report. If no comments are received from NMFS within 30 calendar days of receipt of the draft report, the report shall be considered final.
- All draft and final monitoring reports must be submitted to [PR.ITP.MonitoringReports@noaa.gov](mailto:PR.ITP.MonitoringReports@noaa.gov) and [ITP.clevenstine@noaa.gov](mailto:ITP.clevenstine@noaa.gov).

- The marine mammal report, at minimum, must include:
  - Dates and times (begin and end) of all marine mammal monitoring;
  - Acoustic source use or icebreaking;
  - Watch stander location(s) during marine mammal monitoring;
  - Environmental conditions during monitoring periods (at beginning and end of watch standing shift and whenever conditions change significantly), including BSS and any other relevant weather conditions including cloud cover, fog, sun glare, and overall visibility to the horizon, and estimated observable distance;
  - Upon observation of a marine mammal, the following information:
    - Name of watch stander who sighted the animal(s), the watch stander location, and activity at time of sighting;
    - Time of sighting;
    - Identification of the animal(s) (*e.g.*, genus/species, lowest possible taxonomic level, or unidentified), watch stander confidence in identification, and the composition of the group if there is a mix of species;
    - Distance and location of each observed marine mammal relative to the acoustic source or icebreaking for each sighting;
    - Estimated number of animals (min/max/best estimate);
    - Estimated number of animals by cohort (adults, juveniles, neonates, group composition, *etc.*);
    - Animal's closest point of approach and estimated time spent within the harassment zone; and
    - Description of any marine mammal behavioral observations (*e.g.*, observed behaviors such as feeding or traveling), including an assessment of behavioral responses thought to have resulted from the activity (*e.g.*, no response or changes in behavioral state such as ceasing feeding, changing direction, flushing, or breaching).
  - Number of shutdowns during monitoring, if any;
  - Marine mammal sightings (including the marine mammal's location (latitude/longitude));
  - Number of individuals of each species observed during source deployment, operation, and recovery; and
  - Detailed information about implementation of any mitigation (*e.g.*, shutdowns, delays), a description of specific actions that ensued, and resulting changes in behavior of the animal(s), if any.
- The ONR must submit all watch stander data electronically in a format that can be queried, such as a spreadsheet or database (*i.e.*, digital images of data sheets are not sufficient).

- Reporting injured or dead marine mammals:
  - In the event that personnel involved in the specified activities discover an injured or dead marine mammal, the ONR must report the incident to the Office of Protected Resources (OPR), NMFS ([PR.ITP.MonitoringReports@noaa.gov](mailto:PR.ITP.MonitoringReports@noaa.gov) and [ITP.clevenstine@noaa.gov](mailto:ITP.clevenstine@noaa.gov)) and to the Alaska regional stranding network (877-925-7773) as soon as feasible. If the death or injury was clearly caused by the specified activity, the ONR must immediately cease the activities until NMFS OPR is able to review the circumstances of the incident and determine what, if any, additional measures are appropriate to ensure compliance with the terms of this IHA. The ONR must not resume their activities until notified by NMFS.
    - 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 vessel strike of a marine mammal by any vessel involved in the activities covered by the authorization, the ONR shall report the incident to OPR, NMFS and to the Alaska regional stranding coordinator (877-925-7773) as soon as feasible. The report must include the following information:
    - Time, date, and location (latitude/longitude) of the incident;
    - Species identification (if known) or description of the animal(s) involved;
    - 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 measures were taken, if any, to avoid strike;
    - Environmental conditions (*e.g.*, wind speed and direction, BSS, cloud cover, visibility) immediately preceding the strike;
    - Estimated size and length of animal that was struck;

- Description of the behavior of the marine mammal immediately preceding and following the strike;

- If available, description of the presence and behavior of any other marine mammals 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).

### 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 impacts or responses (*e.g.*, intensity, duration), the context of any impacts or responses (*e.g.*, critical reproductive time or location, foraging impacts affecting energetics), 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’ 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 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, the discussion of our analysis applies to beluga whales and ringed seals, given that the anticipated effects of this activity on these different marine mammal stocks are expected to be similar. 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, they are described independently in the analysis below.

Underwater acoustic transmissions associated with the ARA, as outlined previously, have the potential to result in Level B harassment of beluga seals and ringed seals in the form of behavioral disturbances. No serious injury, mortality, or Level A harassment are anticipated to result from these described activities. Effects on individual belugas or ringed seals taken by Level B harassment could include alteration of dive behavior and/or foraging behavior, effects to breathing rates, interference with or alteration of vocalization, avoidance, and flight. More severe behavioral responses are not anticipated due to the localized, intermittent use of active acoustic sources. Exposure duration is likely to be short-term and individuals will, most likely, simply be temporarily displaced by moving away from the acoustic source. Exposures are, therefore, unlikely to result in any significant realized decrease in fitness for affected individuals or adverse impacts to stocks as a whole.

Arctic ringed seals are listed as threatened under the ESA. The primary concern for Arctic ringed seals is the ongoing and anticipated loss of sea ice and snow cover resulting from climate change, which is expected to pose a significant threat to ringed seals in the future (Muto *et al.*, 2021). In addition, Arctic ringed seals have also been experiencing an Unusual Mortality Event (UME) since 2019 although the cause of the UME is currently undetermined. As mentioned earlier, no mortality or serious injury to ringed seals is authorized. Due to the short-term duration of expected exposures and required mitigation measures to reduce adverse impacts, we do not expect the ARA to compound or exacerbate the impacts of the ongoing UME.

A small portion of the study area overlaps with ringed seal critical habitat. Although this habitat contains features necessary for ringed seal formation and maintenance of subnivean birth lairs, basking and molting, and foraging, these features are also available throughout the rest of the designated critical habitat area. Any potential limited displacement of ringed seals from the ARA study area is not expected to interfere with their ability to access necessary habitat features, given the availability of similar necessary habitat features nearby.

The study area also overlaps with beluga whale migratory and feeding

biologically important areas (BIAs). Due to the small amount of overlap between the BIAs and the ARA study area as well as the low intensity and short-term duration of acoustic sources and required mitigation measures, we expect minimal impacts to migrating or feeding belugas. Shutdown zones are expected to avoid the potential for Level A harassment of belugas and ringed seals, and to minimize the severity of any Level B harassment. The requirements of trained dedicated watch personnel and speed restrictions will also reduce the likelihood of any vessel strikes to migrating belugas.

In all, the planned activities are expected to have minimal adverse effects on marine mammal habitat. While the activities may cause some fish to leave the area of disturbance, temporarily impacting marine mammals’ foraging opportunities, this will encompass a relatively small area of habitat leaving large areas of existing fish and marine mammal foraging habitat unaffected. As such, the impacts to marine mammal habitat are not expected to impact the health or fitness of any marine mammals.

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 any of the species or stocks through effects on annual rates of recruitment or survival:

- No serious injury or mortality is anticipated or authorized;
- Impacts will be limited to Level B harassment only;
- Only temporary and relatively low-level behavioral disturbances are expected to result from these activities; and
- Impacts to marine mammal prey or habitat will be minimal and short term.

The authorized take is not expected to impact the reproduction or survival of any individual marine mammals, much less rates of recruitment or survival. 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 planned monitoring and mitigation measures, NMFS finds that the total marine mammal take from the planned activity will have a negligible impact on all affected marine mammal species or stocks.

### Unmitigable Adverse Impact Analysis and Determination

In order to issue an IHA, NMFS must find that the specified activity will not have an “unmitigable adverse impact” on the subsistence uses of the affected

marine mammal species or stocks by Alaskan Natives. NMFS has defined “unmitigable adverse impact” in 50 CFR 216.103 as an impact resulting from the specified activity: (1) That is likely to reduce the availability of the species to a level insufficient for a harvest to meet subsistence needs by: (i) Causing the marine mammals to abandon or avoid hunting areas; (ii) Directly displacing subsistence users; or (iii) Placing physical barriers between the marine mammals and the subsistence hunters; and (2) That cannot be sufficiently mitigated by other measures to increase the availability of marine mammals to allow subsistence needs to be met.

Subsistence hunting is important for many Alaska Native communities. A study of the North Slope villages of Nuiqsut, Kaktovik, and Utqiagvik identified the primary resources used for subsistence and the locations for harvest (Stephen R. Braund & Associates, 2010), including terrestrial mammals, birds, fish, and marine mammals (bowhead whale, ringed seal, bearded seal, and walrus). Ringed seals and beluga whales are likely located within the project area during this action, yet the action will not remove individuals from the population nor behaviorally disturb them in a manner that will affect their behavior more than 100 km farther inshore where subsistence hunting occurs. The acoustic sources will be placed far outside of the range for subsistence hunting. The closest active acoustic source (fixed or drifting) within the study area that is likely to cause Level B harassment is approximately 204 km (110 nmi) from land. This ensures a significant standoff distance from any subsistence hunting area. The closest distance to subsistence hunting (130 km (70 nmi)) is well beyond the largest distance from the sound sources in use at which behavioral harassment will be expected to occur (20 km (10.8 nmi)) described above. Furthermore, there is no reason to believe that any behavioral disturbance of beluga whales or ringed seals that occurs far offshore (we do not anticipate any Level A harassment) will affect their subsequent behavior in a manner that will interfere with subsistence uses should those animals later interact with hunters.

In addition, ONR has been communicating with the Native communities about the planned action. The ONR-sponsored chief scientist for AMOS gave a briefing on ONR research planned for 2024–2025 Alaska Eskimo Whaling Commission (AEWC) meeting on December 15, 2023 in Anchorage, Alaska. No questions were asked from the commissioners during the brief or in

subsequent weeks afterwards. The AEWC consists of representatives from 11 whaling villages (Wainwright, Utqiagvik, Savoonga, Point Lay, Nuiqut, Kivalina, Kaktovik, Wales, Point Hope, Little Diomed, and Gambell). These briefings have communicated the lack of any effect on subsistence hunting due to the distance of the sources from hunting areas. ONR-supported scientists also attend Arctic Waterways Safety Committee (AWSC) and AEWC meetings on a regular basis to discuss past, present, and future research activities. While no take is anticipated to result during transit, points of contact for at-sea communication will also be established between vessel captains and subsistence hunters to avoid any conflict of vessel transit with hunting activity.

Based on the description of the specified activity, distance of the study area from subsistence hunting grounds, the measures described to minimize adverse effects on the availability of marine mammals for subsistence purposes, and the planned mitigation and monitoring measures, NMFS has determined that there will not be an unmitigable adverse impact on subsistence uses from ONR’s ARA.

#### *Peer Review of the Monitoring Plan*

The MMPA requires that monitoring plans be independently peer reviewed where the activity may affect the availability of a species or stock for taking for subsistence uses (16 U.S.C. 1371(a)(5)(D)(ii)(III)). Given the factors discussed above, NMFS has also determined that the activity is not likely to affect the availability of any marine mammal species or stock for taking for subsistence uses, and therefore, peer review of the monitoring plan is not warranted for this project.

#### **Endangered Species Act**

Section 7(a)(2) of the ESA of 1973 (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, in this case with the Alaska Regional Office (AKR).

There is one marine mammal species (Arctic ringed seal) with confirmed occurrence in the study area that is listed as threatened under the ESA. The NMFS AKR Protected Resources

Division issued a Biological Opinion on September 13, 2022, under section 7 of the ESA, on the issuance of an IHA to ONR under section 101(a)(5)(D) of the MMPA by the NMFS Permits and Conservation Division. The 2022 Biological Opinion is based on a Biological Evaluation that covers ONR’s ARA from 2022–2025. Therefore, NMFS has determined that issuance of this IHA is covered by the 2022 Biological Opinion and that further consultation is unnecessary. The Biological Opinion concluded that the action is not likely to jeopardize the continued existence of Arctic ringed seals, and is not likely to destroy or adversely modify Arctic ringed seal critical habitat.

#### **National Environmental Policy Act**

In compliance with the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq.*) as implemented by the regulations published by the Council on Environmental Quality (CEQ; 40 CFR parts 1500–1508), the ONR prepared an Overseas Environmental Assessment (OEA) to consider the direct, indirect, and cumulative effects to the human environment resulting from the ARA project. NMFS made the ONR’s OEA available to the public for review and comment, concurrently with the publication of the proposed IHA, on the NMFS website (at <https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-military-readiness-activities>), 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 ONR. Also in compliance with NEPA and the CEQ regulations, as well as NOAA Administrative Order 216–6A, NMFS has reviewed ONR’s OEA, determined it to be sufficient, and adopted that OEA and signed a Finding of No Significant Impact (FONSI) on September 14, 2024.

#### **Authorization**

NMFS has issued an IHA to ONR for the potential harassment of two marine mammal species incidental to conducting a seventh year of ARA in the Beaufort and Chukchi Seas that includes the previously explained mitigation, monitoring, and reporting requirements.

Dated: September 17, 2024.

#### **Kimberly Damon-Randall,**

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

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