**DEPARTMENT OF COMMERCE**

**National Oceanic and Atmospheric Administration**

**50 CFR Part 218**

**[Docket No. 201020–0272]**

**RIN 0648–BJ30**

# Taking and Importing Marine Mammals; Taking Marine Mammals Incidental to the U.S. Navy Training and Testing Activities in the Northwest Training and Testing (NWTT) Study Area

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

**ACTION:** Final rule; notification of issuance of Letters of Authorization.

**SUMMARY:** NMFS, upon request from the U.S. Navy (Navy), issues these regulations pursuant to the Marine Mammal Protection Act (MMPA) to govern the taking of marine mammals incidental to the training and testing activities conducted in the Northwest Training and Testing (NWTT) Study Area. The Navy's activities qualify as military readiness activities pursuant to the MMPA, as amended by the National Defense Authorization Act for Fiscal Year 2004 (2004 NDAA). These regulations, which allow for the issuance of Letters of Authorization (LOA) for the incidental take of marine mammals during the described activities and timeframes, prescribe the permissible methods of taking and other means of effecting the least practicable adverse impact on marine mammal species and their habitat, and establish requirements pertaining to the monitoring and reporting of such taking.

**DATES:** Effective from November 9, 2020 to November 8, 2027.

**ADDRESSES:** A copy of the Navy's application, NMFS' proposed and final rules and subsequent LOAs for the existing regulations, and other supporting documents and documents cited herein may be obtained online at: *www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-military-readiness-activities.* In case of problems accessing these documents, please use the contact listed here (see **FOR FURTHER INFORMATION CONTACT**).

**FOR FURTHER INFORMATION CONTACT:** Leah Davis, Office of Protected Resources, NMFS, (301) 427–8401.

**SUPPLEMENTARY INFORMATION:**

## Purpose of Regulatory Action

These regulations, issued under the authority of the MMPA (16 U.S.C. 1361 *et seq.*), provide the framework for authorizing the take of marine mammals incidental to the Navy's training and testing activities (which qualify as military readiness activities) from the use of sonar and other transducers, in-water detonations, and potential vessel strikes based on Navy movement in the NWTT Study Area. The NWTT Study Area includes air and water space off the coast of Washington, Oregon, and Northern California; in the Western Behm Canal, Alaska; and portions of waters of the Strait of Juan de Fuca and Puget Sound, including Navy pierside and harbor locations in Puget Sound (see Figure 1–1 of the Navy's rulemaking/LOA application).

NMFS received an application from the Navy requesting seven-year regulations and authorizations to incidentally take individuals of multiple species of marine mammals (''Navy's rulemaking/LOA application'' or ''Navy's application''). Take is anticipated to occur by Level A harassment and Level B harassment as well as a very small number of serious injuries or mortalities incidental to the Navy's training and testing activities.

Section 101(a)(5)(A) of the MMPA (16 U.S.C. 1371(a)(5)(A)) directs 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, after notice and public comment, the agency makes certain findings and issues regulations that set forth permissible methods of taking pursuant to that activity, as well as monitoring and reporting requirements. Section 101(a)(5)(A) of the MMPA and the implementing regulations at 50 CFR part 216, subpart I, provide the legal basis for issuing this final rule and the subsequent LOAs. As directed by this legal authority, this final rule contains mitigation, monitoring, and reporting requirements.

## Summary of Major Provisions Within the Final Rule

The following is a summary of the major provisions of this final rule regarding the Navy's activities. Major provisions include, but are not limited to:

- The use of defined powerdown and shutdown zones (based on activity);
- Measures to reduce the likelihood of ship strikes;
- Activity limitations in certain areas and times that are biologically important (*e.g.,* for foraging or migration) for marine mammals;
- Implementation of a Notification and Reporting Plan (for dead or live stranded marine mammals); and
- Implementation of a robust monitoring plan to improve our understanding of the environmental effects resulting from the Navy training and testing activities.

Additionally, the rule includes an adaptive management component that allows for timely modification of mitigation or monitoring measures based on new information, when appropriate.

## Background

The MMPA prohibits the ''take'' of marine mammals, with certain exceptions. Sections 101(a)(5)(A) and (D) of the MMPA 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 proposed authorization is provided to the public for review and the opportunity to submit comments.

An authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stocks and will not have an unmitigable adverse impact on the availability of the species or stocks 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 this rule as ''mitigation measures''); and requirements pertaining to the monitoring and reporting of such takings. The MMPA defines ''take'' to mean to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal. The Analysis and Negligible Impact Determination section below discusses the definition of ''negligible impact.''

The NDAA for Fiscal Year 2004 (2004 NDAA) (Pub. L. 108–136) amended section 101(a)(5) of the MMPA to remove the ''small numbers'' and

''specified geographical region'' provisions indicated above and amended the definition of ''harassment'' as applied to a ''military readiness activity.'' The definition of harassment for military readiness activities (Section 3(18)(B) of the MMPA) is (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 such behavioral patterns are abandoned or significantly altered (Level B harassment). In addition, the 2004 NDAA amended the MMPA as it relates to military readiness activities such that the least practicable adverse impact analysis shall include consideration of personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity.

More recently, Section 316 of the NDAA for Fiscal Year 2019 (2019 NDAA) (Pub. L. 115–232), signed on August 13, 2018, amended the MMPA to allow incidental take rules for military readiness activities under section 101(a)(5)(A) to be issued for up to seven years. Prior to this amendment, all incidental take rules under section 101(a)(5)(A) were limited to five years.

**Summary and Background of Request**

On March 11, 2019, NMFS received an application from the Navy for authorization to take marine mammals by Level A harassment and Level B harassment incidental to training and testing activities (which qualify as military readiness activities) from the use of sonar and other transducers and in-water detonations in the NWTT Study Area over a seven-year period beginning when the 2015—2020 authorization expires. In addition, the Navy requested incidental take authorization by serious injury or mortality for up to three takes of large whales from vessel strikes over the seven-year period. We received revised applications on June 6, 2019 and June 21, 2019, which provided revisions in the take number estimates and vessel strike analysis, and the Navy's rulemaking/LOA application was found to be adequate and complete. On August 6, 2019 (84 FR 38225), we published a notice of receipt (NOR) of application in the **Federal Register**, requesting comments and information related to the Navy's request for 30 days. On October 4, 2019, the Navy submitted an amendment to its application which incorporated new Southern Resident killer whale offshore density information, and on December 19, 2019, the Navy submitted an amendment to its application which incorporated revised testing activity numbers. On June 2, 2020, we published a notice of proposed rulemaking (85 FR 33914) and requested comments and information related to the Navy's request for 45 days. All comments received during the NOR and the proposed rulemaking comment periods were considered in this final rule. Comments received on the proposed rule are addressed in this final rule in the Comments and Responses section.

The following types of training and testing, which are classified as military readiness activities pursuant to the MMPA, as amended by the 2004 NDAA, will be covered under the regulations and LOAs: Anti-submarine warfare (sonar and other transducers, underwater detonations), mine warfare (sonar and other transducers, underwater detonations), surface warfare (underwater detonations), and other testing and training (sonar and other transducers). The activities will not include pile driving/removal or use of air guns.

This would be the third time NMFS has promulgated incidental take regulations pursuant to the MMPA relating to similar military readiness activities in the NWTT Study Area. Specifically, five-year regulations addressing training in the Northwest Training Range Complex were first issued on November 9, 2010 (75 FR 69295; November 10, 2010) and five-year regulations addressing testing in the NUWC Keyport Range Complex were issued on April 11, 2011 (76 FR 20257; April 12, 2011). Regulations addressing both the training and testing activities from the two previous separate rules, Northwest Training and Testing (NWTT), were issued and were effective from November 9, 2015 through November 8, 2020 (80 FR 73555; November 24, 2015). For this third round of rulemaking, the activities the Navy is planning to conduct are largely a continuation of ongoing activities conducted over the past 10 years under the previous rulemakings, with the addition of some new training and testing activities, as well as additional mitigation measures.

The Navy's mission is to organize, train, equip, and maintain combat-ready naval forces capable of winning wars, deterring aggression, and maintaining freedom of the seas. This mission is mandated by Federal law (10 U.S.C. 8062), which requires the readiness of the naval forces of the United States. The Navy executes this responsibility in part by training and testing at sea, often in designated operating areas (OPAREA) and testing and training ranges. The Navy must be able to access and utilize these areas and associated sea space and air space in order to develop and maintain skills for conducting naval operations. The Navy's testing activities ensure naval forces are equipped with well-maintained systems that take advantage of the latest technological advances. The Navy's research and acquisition community conducts military readiness activities that involve testing. The Navy tests ships, aircraft, weapons, combat systems, sensors, and related equipment, and conducts scientific research activities to achieve and maintain military readiness.

The Navy has been conducting training and testing activities in the NWTT Study Area for decades, with some activities dating back to at least the early 1900s. The tempo and types of training and testing activities fluctuate because of the introduction of new technologies, the evolving nature of international events, advances in warfighting doctrine and procedures, and changes in force structure (*e.g.,* organization of ships, submarines, aircraft, weapons, and personnel). Such developments influence the frequency, duration, intensity, and location of required training and testing activities, however the Navy's planned activities for the period of this rule will be largely a continuation of ongoing activities. In addition to ongoing activities, the Navy is planning some new training activities such as torpedo exercise—submarine training and unmanned underwater vehicle training.[1] The Navy is also planning some new testing activities, including: At-sea sonar testing, Mine Countermeasure and Neutralization testing, mine detection and classification testing, kinetic energy weapon testing, propulsion testing, undersea warfare testing, vessel signature evaluation, acoustic and oceanographic research, radar and other system testing, and simulant testing.[2]

[1] Some of the activities included here are new to the 2020 NWTT FSEIS/OEIS, but are not new to the Study Area. TORPEX—SUB activity was previously analyzed in 2010 as part of the Sinking Exercise. The Sinking Exercise is no longer conducted in the NWTT Study Area and the TORPEX—SUB activity is now a separate activity included in the 2020 NWTT FSEIS/OEIS. Unmanned underwater vehicle activity was analyzed in 2010 as a testing activity, but is now being included as a training activity.

[2] Mine detection and classification testing was analyzed in 2010 in the Inland waters, but was not previously analyzed in the Offshore waters. Vessel signature evaluation testing was analyzed in 2010

Continued

The Navy's rulemaking/LOA application reflects the most up-to-date compilation of training and testing activities deemed necessary to accomplish military readiness requirements. The types and numbers of activities included in the rule account for fluctuations in training and testing in order to meet evolving or emergent military readiness requirements. These regulations cover training and testing activities that will occur for a seven-year period following the expiration of the current MMPA authorization for the NWTT Study Area, which expires on November 8, 2020.

**Description of the Specified Activity**

A detailed description of the specified activity was provided in our **Federal Register** notice of proposed rulemaking (85 FR 33914; June 2, 2020); please see that notice of proposed rulemaking or the Navy's application for more information. Since publication of the proposed rule, the Navy has made some minor changes to its planned activities, all of which are in the form of reductions and thereby have the effect of reducing the impact of the activity. See the discussion of these changes below. In addition, since publication of the proposed rule, additional mitigation measures have been added, which are discussed in detail in the Mitigation Measures section of this rule. The Navy has determined that acoustic and explosive stressors are most likely to result in impacts on marine mammals that could rise to the level of harassment, and NMFS concurs with this determination. Additional detail regarding these activities is provided in Chapter 2 of the 2020 NWTT Final Supplemental Environmental Impact Statement (FSEIS)/Overseas EIS (OEIS) (2020 NWTT FSEIS/OEIS) (*https://www.nwtteis.com*) and in the Navy's rulemaking/LOA application (*https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-military-readiness-activities*) and are summarized here.

*Dates and Duration*

The specified activities can occur at any time during the seven-year period of validity of the regulations, with the exception of the activity types and time periods for which limitations have explicitly been identified (see Mitigation Measures section). The planned number of training and testing activities are described in the Detailed Description of the Specified Activities section (Tables 3 through 4).

*Geographical Region*

The NWTT Study Area is composed of established maritime operating and warning areas in the eastern North Pacific Ocean region, including areas of the Strait of Juan de Fuca, Puget Sound, and Western Behm Canal in southeastern Alaska. The Study Area includes air and water space within and outside Washington state waters, within Alaska state waters, and outside state waters of Oregon and Northern California (see Figure 1 in the proposed rule). The eastern boundary of the Offshore Area portion of the Study Area is 12 nautical miles (nmi) off the coastline for most of the Study Area, including southern Washington, Oregon, and Northern California. The Offshore Area includes the ocean all the way to the coastline only along that part of the Washington coast that lies beneath the airspace of W–237 and the Olympic Military Operations Area. The Study Area includes four existing range complexes and facilities: The Northwest Training Range Complex, the Keyport Range Complex, Carr Inlet Operations Area, and the Southeast Alaska Acoustic Measurement Facility (Western Behm Canal, Alaska). In addition to these range complexes, the Study Area also includes Navy pierside locations where sonar maintenance and testing occurs as part of overhaul, modernization, maintenance, and repair activities at Naval Base Kitsap, Bremerton; Naval Base Kitsap, Bangor; and Naval Station Everett. Additional detail can be found in Chapter 2 of the Navy's rulemaking/LOA application.

*Overview of Training and Primary Mission Areas*

The Navy categorizes its at-sea activities into functional warfare areas called primary mission areas. These activities generally fall into the following eight primary mission areas: Air warfare; amphibious warfare; anti-submarine warfare (ASW); electronic warfare; expeditionary warfare; mine warfare (MIW); strike warfare; and surface warfare (SUW). The Navy's planned activities for NWTT generally fall into the following six primary mission areas: Air warfare; anti-submarine warfare; electronic warfare; expeditionary warfare; mine warfare; and surface warfare. Most activities addressed in the NWTT Study Area are categorized under one of these primary mission areas. Activities that do not fall within one of these areas are listed as ''other activities.'' Each warfare community (surface, subsurface, aviation, and expeditionary warfare) may train in some or all of these primary mission areas. The testing community also categorizes most, but not all, of its testing activities under these primary mission areas. A description of the sonar, munitions, targets, systems, and other material used during training and testing activities within these primary mission areas is provided in Appendix A (*Navy Activities Descriptions*) of the 2020 NWTT FSEIS/OEIS.

The Navy describes and analyzes the effects of its activities within the 2020 NWTT FSEIS/OEIS. In its assessment, the Navy concluded that sonar and other transducers and in-water detonations were the stressors most likely to result in impacts on marine mammals that could rise to the level of harassment as defined under the MMPA. Therefore, the Navy's rulemaking/LOA application provides the Navy's assessment of potential effects from these stressors in terms of the various warfare mission areas in which they would be conducted. Those mission areas include the following:

- Anti-submarine warfare (sonar and other transducers, underwater detonations);
- expeditionary warfare;
- mine warfare (sonar and other transducers, underwater detonations);
- surface warfare (underwater detonations); and
- other (sonar and other transducers).

The Navy's training and testing activities in air warfare and electronic warfare do not involve sonar and other transducers, underwater detonations, or any other stressors that could result in harassment, serious injury, or mortality of marine mammals. Therefore, the activities in air warfare and electronic warfare are not discussed further in this rule, but are analyzed fully in the 2020 NWTT FSEIS/OEIS. Additional detail regarding the primary mission areas was provided in our **Federal Register** notice of proposed rulemaking (85 FR 33914; June 2, 2020); please see that notice of proposed rulemaking or the Navy's application for more information.

*Overview of Testing Activities Within the NWTT Study Area*

The Navy's research and acquisition community engages in a broad spectrum of testing activities in support of the Fleet. These activities include, but are not limited to, basic and applied scientific research and technology development; testing, evaluation, and maintenance of systems (missiles, radar, and sonar) and platforms (surface ships, submarines, and aircraft); and acquisition of systems and platforms.

as a component to other activities, but is included in the list of new activities because it was not previously identified as an independent activity.

The individual commands within the research and acquisition community include Naval Air Systems Command, Naval Sea Systems Command, and Office of Naval Research.

*Description of Stressors*

The Navy uses a variety of sensors, platforms, weapons, and other devices, including ones used to ensure the safety of Sailors and Marines, to meet its mission. Training and testing with these systems may introduce acoustic (sound) energy or shock waves from explosives into the environment. The following subsections describe the acoustic and explosive stressors for marine mammals and their habitat (including prey species) within the NWTT Study Area. Because of the complexity of analyzing sound propagation in the ocean environment, the Navy relied on acoustic models in its environmental analyses and rulemaking/LOA application that considered sound source characteristics and varying ocean conditions across the NWTT Study Area. Stressor/resource interactions that were determined to have de minimis or no impacts (*e.g.,* vessel noise, aircraft noise, weapons noise, and explosions in air) were not carried forward for analysis in the Navy's rulemaking/LOA application. No Major Training Exercises (MTEs) or Sinking Exercise (SINKEX) events are planned in the NWTT Study Area. NMFS reviewed the Navy's analysis and conclusions on de minimis sources and finds them complete and supportable.

Acoustic stressors include acoustic signals emitted into the water for a specific purpose, such as sonar, other transducers (devices that convert energy from one form to another—in this case, into sound waves), as well as incidental sources of broadband sound produced as a byproduct of vessel movement, aircraft transits, and use of weapons or other deployed objects. Explosives also produce broadband sound but are characterized separately from other acoustic sources due to their unique hazardous characteristics. Characteristics of each of these sound sources are described in the following sections.

In order to better organize and facilitate the analysis of approximately 300 sources of underwater sound used for training and testing by the Navy, including sonar and other transducers and explosives, a series of source classifications, or source bins, were developed. The source classification bins do not include the broadband sounds produced incidental to vessel and aircraft transits and weapons firing. Noise produced from vessel, aircraft, and weapons firing activities are not carried forward because those activities were found to have de minimis or no impacts, as stated above.

The use of source classification bins provides the following benefits:

- Provides the ability for new sensors or munitions to be covered under existing authorizations, as long as those sources fall within the parameters of a ''bin;''
- Improves efficiency of source utilization data collection and reporting requirements anticipated under the MMPA authorizations;
- Ensures a conservative approach to all impact estimates, as all sources within a given class are modeled as the most impactful source (highest source level, longest duty cycle, or largest net explosive weight) within that bin;
- Allows analyses to be conducted in a more efficient manner, without any compromise of analytical results; and
- Provides a framework to support the reallocation of source usage (hours/explosives) between different source bins, as long as the total numbers of takes remain within the overall analyzed and authorized limits. This flexibility is required to support evolving Navy training and testing requirements, which are linked to real world events.

Sonar and Other Transducers

Active sonar and other transducers emit non-impulsive sound waves into the water to detect objects, navigate safely, and communicate. Passive sonars differ from active sound sources in that they do not emit acoustic signals; rather, they only receive acoustic information about the environment, or listen. In this rule, the terms sonar and other transducers will be used to indicate active sound sources unless otherwise specified.

The Navy employs a variety of sonars and other transducers to obtain and transmit information about the undersea environment. Some examples are mid-frequency hull-mounted sonars used to find and track enemy submarines; high-frequency small object detection sonars used to detect mines; high-frequency underwater modems used to transfer data over short ranges; and extremely high-frequency (greater than 200 kilohertz (kHz)) Doppler sonars used for navigation, like those used on commercial and private vessels. The characteristics of these sonars and other transducers, such as source level, beam width, directivity, and frequency, depend on the purpose of the source. Higher frequencies can carry more information or provide more information about objects off which they reflect, but attenuate more rapidly. Lower frequencies attenuate less rapidly, so they may detect objects over a longer distance, but with less detail.

Additional detail regarding sound sources and platforms and categories of acoustic stressors was provided in our **Federal Register** notice of proposed rulemaking (85 FR 33914; June 2, 2020); please see that notice of proposed rulemaking or the Navy's application for more information.

Sonars and other transducers are grouped into classes that share an attribute, such as frequency range or purpose of use. As detailed below, classes are further sorted by bins based on the frequency or bandwidth; source level; and, when warranted, the application in which the source would be used. Unless stated otherwise, a reference distance of 1 meter (m) is used for sonar and other transducers.

- Frequency of the non-impulsive acoustic source:
  - Low-frequency sources operate below 1 kHz;
  - Mid-frequency sources operate at and above 1 kHz, up to and including 10 kHz;
  - High-frequency sources operate above 10 kHz, up to and including 100 kHz;
  - Very-high-frequency sources operate above 100 kHz but below 200 kHz;
- Sound pressure level of the non-impulsive source;
  - Greater than 160 decibels (dB) re 1 micro Pascal (μPa), but less than 180 dB re: 1 μPa;
  - Equal to 180 dB re: 1 μPa and up to 200 dB re: 1 μPa;
  - Greater than 200 dB re: 1 μPa;
- Application in which the source would be used:
  - Sources with similar functions that have similar characteristics, such as pulse length (duration of each pulse), beam pattern, and duty cycle.

The bins used for classifying active sonars and transducers that are quantitatively analyzed in the NWTT Study Area are shown in Table 1 below. While general parameters or source characteristics are shown in the table, actual source parameters are classified.

TABLE 1—SONAR AND OTHER TRANSDUCERS QUANTITATIVELY ANALYZED IN THE NWTT STUDY AREA

| Source class category | Bin | Description |
|---|---|---|
| Low-Frequency (LF): Sources that produce signals less than 1 kHz. | LF4 | LF sources equal to 180 dB and up to 200 dB. |
| | LF5 | LF sources less than 180 dB. |
| Mid-Frequency (MF): Tactical and non-tactical sources that produce signals between 1 and 10 kHz. | MF1 | Hull-mounted surface ship sonars (*e.g.,* AN/SQS–53C and AN/SQS–60). |
| | MF1K | Kingfisher mode associated with MF1 sonars. |
| | MF2 | Hull-mounted surface ship sonars (*e.g.,* AN/SQS–56). |
| | MF3 | Hull-mounted submarine sonars (*e.g.,* AN/BQQ–10). |
| | MF4 | Helicopter-deployed dipping sonars (*e.g.,* AN/AQS–22). |
| | MF5 | Active acoustic sonobuoys (*e.g.,* DICASS). |
| | MF6 | Underwater sound signal devices (*e.g.,* MK 84 SUS). |
| | MF9 | Sources (equal to 180 dB and up to 200 dB) not otherwise binned. |
| | MF10 | Active sources (greater than 160 dB, but less than 180 dB) not otherwise binned. |
| | MF11 | Hull-mounted surface ship sonars with an active duty cycle greater than 80 percent. |
| | MF12 | Towed array surface ship sonars with an active duty cycle greater than 80 percent. |
| High-Frequency (HF): Tactical and non-tactical sources that produce signals between 10 and 100 kHz. | HF1 | Hull-mounted submarine sonars (*e.g.,* AN/BQQ–10). |
| | HF3 | Other hull-mounted submarine sonars (classified). |
| | HF4 | Mine detection, classification, and neutralization sonar (*e.g.,* AN/SQS–20). |
| | HF5 | Active sources (greater than 200 dB) not otherwise binned. |
| | HF6 | Sources (equal to 180 dB and up to 200 dB) not otherwise binned. |
| | HF8 | Hull-mounted surface ship sonars (*e.g.,* AN/SQS–61). |
| | HF9 | Weapon-emulating sonar source. |
| Very High-Frequency (VHF): Tactical and non-tactical sources that produce signals greater than 100 kHz but less than 200 kHz. | VHF1 | Active sources greater than 200 dB. |
| | VHF2 | Active sources with a source level less than 200 dB. |
| Anti-Submarine Warfare (ASW): Tactical sources (*e.g.,* active sonobuoys and acoustic countermeasures systems) used during ASW training and testing activities. | ASW1 | MF systems operating above 200 dB. |
| | ASW2 | MF Multistatic Active Coherent sonobuoy (*e.g.,* AN/SSQ–125). |
| | ASW3 | MF towed active acoustic countermeasure systems (*e.g.,* AN/SLQ–25). |
| | ASW4 | MF expendable active acoustic device countermeasures (*e.g.,* MK 3). |
| | ASW5 [1] | MF sonobuoys with high duty cycles. |
| Torpedoes (TORP): Active acoustic signals produced by torpedoes. | TORP1 | Lightweight torpedo (*e.g.,* MK 46, MK 54, or Anti-Torpedo Torpedo). |
| | TORP2 | Heavyweight torpedo (*e.g.,* MK 48). |
| | TORP3 | Heavyweight torpedo (*e.g.,* MK 48). |
| Looking Sonar (FLS): Forward or upward looking object avoidance sonars used for ship navigation and safety. | FLS2 | HF sources with short pulse lengths, narrow beam widths, and focused beam patterns. |
| Acoustic Modems (M): Sources used to transmit data ..... | M3 | MF acoustic modems (greater than 190 dB). |
| Synthetic Aperture Sonars (SAS): Sonars used to form high-resolution images of the seafloor. | SAS2 | HF SAS systems. |
| Broadband Sound Sources (BB): Sonar systems with large frequency spectra, used for various purposes. | BB1 | MF to HF mine countermeasure sonar. |
| | BB2 | HF to VHF mine countermeasure sonar. |

[1] Formerly ASW2 in the 2015–2020 (Phase II) rulemaking.

Explosives

This section describes the characteristics of explosions during naval training and testing. The activities analyzed in the Navy's rulemaking/LOA application that use explosives are described in additional detail in Appendix A (*Training and Testing Activities Descriptions*) of the 2020 NWTT FSEIS/OEIS. Explanations of the terminology and metrics used when describing explosives in the Navy's rule making/LOA application are also in Appendix H (*Acoustic and Explosive Concepts*) of the 2020 NWTT FSEIS/OEIS.

The near-instantaneous rise from ambient to an extremely high peak pressure is what makes an explosive shock wave potentially damaging. Farther from an explosive, the peak pressures decay and the explosive waves propagate as an impulsive, broadband sound. Several parameters influence the effect of an explosive: The weight of the explosive in the warhead, the type of explosive material, the boundaries and characteristics of the propagation medium, and, in water, the detonation depth and the depth of the receiver (*i.e.,* marine mammal). The net explosive weight, which is the explosive power of a charge expressed as the equivalent weight of trinitrotoluene (TNT), accounts for the first two parameters. The effects of these factors are explained in Appendix D (*Acoustic and Explosive Concepts*) of the 2020 NWTT FSEIS/OEIS. The activities analyzed in the Navy's rulemaking/LOA application and this final rule that use explosives are described in further detail in Appendix A (*Navy Activities Descriptions*) of the 2020 NWTT FSEIS/OEIS. Explanations of the terminology and metrics used when describing explosives are provided in Appendix D (*Acoustic and Explosive Concepts*) of the 2020 NWTT FSEIS/OEIS.

Explosive detonations during training and testing activities are associated with high-explosive munitions, including,

but not limited to, bombs, missiles, naval gun shells, torpedoes, mines, demolition charges, and explosive sonobuoys. Explosive detonations during training and testing involving the use of high-explosive munitions (including bombs, missiles, and naval gun shells) could occur in the air or near the water's surface. Explosive detonations associated with torpedoes and explosive sonobuoys would occur in the water column; mines and demolition charges could be detonated in the water column or on the ocean bottom. Most detonations will occur in waters greater than 200 ft in depth, and greater than 50 nmi from shore, with the exception of Mine Countermeasure and Neutralization testing planned in the Offshore Area, and existing mine warfare training areas in Inland Waters (*i.e.,* Crescent Harbor and Hood Canal Explosive Ordnance Disposal Training Ranges). Mine countermeasure and neutralization testing is a new planned testing activity that would occur closer to shore than other in-water explosive activities analyzed in the 2015 NWTT Final EIS/OEIS for the Offshore Area of the NWTT Study Area. This activity would occur in waters 3 nmi or greater from shore in the Quinault Range Site (outside the Olympic Coast National Marine Sanctuary), or 12 nmi or greater from shore elsewhere in the Offshore Area, and will not occur off the coast of California. Since publication of the proposed rule, the Navy has agreed that it will conduct explosive Mine Countermeasure and Neutralization testing in daylight hours only, and in Beaufort Sea state number 3 conditions or less. Two of the three events would involve the use of explosives, and would typically occur in water depths shallower than 1,000 ft. The two multi-day events (1–10 days per event) would include up to 36 E4 explosives (>2.5–5 lb net explosive weight) and 5 E7 explosives (>20–60 lb net explosive weight). Use of E7 explosives would occur greater than 6 nmi from shore. Since publication of the proposed rule, the Navy has agreed that, within 20 nmi from shore in the Marine Species Coastal Mitigation Area, the Navy will conduct no more than one Mine Countermeasure and Neutralization testing event annually, not to exceed the use of 20 E4 and 3 E7 explosives, from October 1 through June 30. Additionally, within 20 nmi from shore in the Marine Species Coastal Mitigation Area, the Navy will not exceed 60 E4 and 9 E7 explosives over seven years, from October 1 through June 30. Finally, to the maximum extent practical, the Navy will conduct explosive Mine Countermeasure and Neutralization Testing from July 1 through September 30 when operating within 20 nmi from shore in the Marine Species Coastal Mitigation Area. In order to better organize and facilitate the analysis of explosives used by the Navy during training and testing that could detonate in water or at the water surface, explosive classification bins were developed. The use of explosive classification bins provides the same benefits as described for acoustic source classification bins discussed above and in Section 1.4.1 (Acoustic Stressors) of the Navy's rulemaking/LOA application.

Explosives detonated in water are binned by net explosive weight. The bins of explosives in the NWTT Study Area are shown in Table 2 below.

TABLE 2—EXPLOSIVES ANALYZED IN THE NWTT STUDY AREA

| Bin | Net explosive weight (lb) | Example explosive source |
|---|---|---|
| E1 | 0.1–0.25 | Medium-caliber projectiles. |
| E2 | >0.25–0.5 | Medium-caliber projectiles. |
| E3 | >0.5–2.5 | Explosive Ordnance Disposal Mine Neutralization. |
| E4 | >2.5–5 | Mine Countermeasure and Neutralization. |
| E5 | >5–10 | Large-caliber projectile. |
| E7 | >20–60 | Mine Countermeasure and Neutralization. |
| E8 | >60–100 | Lightweight torpedo. |
| E10 | >250–500 | 1,000 lb bomb. |
| E11 | >500–650 | Heavyweight torpedo. |

Propagation of explosive pressure waves in water is highly dependent on environmental characteristics such as bathymetry, bottom type, water depth, temperature, and salinity, which affect how the pressure waves are reflected, refracted, or scattered; the potential for reverberation; and interference due to multi-path propagation. In addition, absorption greatly affects the distance over which higher-frequency components of explosive broadband noise can propagate. Appendix D (*Acoustic and Explosive Concepts*) of the 2020 NWTT FSEIS/OEIS explains the characteristics of explosive detonations and how the above factors affect the propagation of explosive energy in the water.

Marine mammals could be exposed to fragments from underwater explosions associated with the specified activities. When explosive ordnance *(e.g.,* bomb or missile) detonates, fragments of the weapon are thrown at high-velocity from the detonation point, which can injure or kill marine mammals if they are struck. These fragments may be of variable size and are ejected at supersonic speed from the detonation. The casing fragments will be ejected at velocities much greater than debris from any target due to the proximity of the casing to the explosive material. Risk of fragment injury reduces exponentially with distance as the fragment density is reduced. Fragments underwater tend to be larger than fragments produced by in-air explosions (Swisdak and Montaro, 1992). Underwater, the friction of the water would quickly slow these fragments to a point where they no longer pose a threat. Opposingly, the blast wave from an explosive detonation moves efficiently through the seawater. Because the ranges to mortality and injury due to exposure to the blast wave are likely to far exceed the zone where fragments could injure or kill an animal, the thresholds and associated ranges for assessing the likelihood of mortality and injury from a blast, which are also used to inform mitigation zones, are assumed to encompass risk due to fragmentation.

*Other Stressor—Vessel Strike*

Vessel strikes are not specific to any particular training or testing activity, but rather a potential, limited, sporadic, and incidental result of Navy vessel movement within the NWTT Study Area. Navy vessels transit at speeds that are optimal for fuel conservation or to meet training and testing requirements. Should a vessel strike occur, it would likely result in incidental take from

serious injury and/or mortality and, accordingly, for the purposes of the analysis we assume that any authorized ship strike would result in serious injury or mortality. Information on Navy vessel movement is provided in the *Vessel Movement* section of this rule. Additional detail on vessel strike was provided in our **Federal Register** notice of proposed rulemaking (85 FR 33914; June 2, 2020); please see that notice of proposed rulemaking or the Navy's application for more information.

## Detailed Description of Specified Activities

### *Planned Training and Testing Activities*

The Navy's Operational Commands and various System Commands have identified activity levels that are needed in the NWTT Study Area to ensure naval forces have sufficient training, maintenance, and new technology to meet Navy missions in the Northwest. Training prepares Navy personnel to be proficient in safely operating and maintaining equipment, weapons, and systems to conduct assigned missions. Navy research develops new science and technology followed by concept testing relevant to future Navy needs.

The training and testing activities that the Navy plans to conduct in the NWTT Study Area are summarized in Table 3 (training) and Table 4 (testing). The tables are organized according to primary mission areas and include the activity name, associated stressor(s), description of the activity, sound source bin, the locations of those activities in the NWTT Study Area, and the number of activities. For further information regarding the primary platform used (*e.g.,* ship or aircraft type) see Appendix A (*Training and Testing Activities Descriptions*) of the 2020 NWTT FSEIS/OEIS.

This section indicates the number of activities that could occur each year and then the maximum total that could occur over seven years. When a range of annual activities is provided, the maximum number is analyzed. The maximum number of activities may occur during some years, but not others, as several activities—Torpedo Exercise-Submarine Training, Tracking Exercise-Helicopter Training, Civilian Port Defense- Homeland Security Anti-Terrorism/Force Protection Training, Bomb Exercise Training, and Missile Exercise Training—do not occur every year, and other activities may occur every year, but less frequently than the maximum annual total. However, to conduct a conservative analysis, NMFS analyzed the maximum times these activities could occur over one year and seven years, with the assumption that this number of activities would be representative of the annual and seven-year activity totals.

TABLE 3—TRAINING ACTIVITIES ANALYZED FOR THE SEVEN-YEAR PERIOD IN THE NWTT STUDY AREA

| Stressor category | Activity | Description | Typical duration of event | Source bin | Location | Annual number of events | 7-Year number of events |
|---|---|---|---|---|---|---|---|
| **Anti-Submarine Warfare** | | | | | | | |
| Acoustic; Explosive | Torpedo Exercise—Submarine (TORPEX—Sub). | Submarine crews search for, track, and detect submarines. Event would include one MK–48 torpedo used during this event. | 8 hours | TORP2 | Offshore Area >12 nmi from land. | 0–2 | 5 |
| Acoustic | Tracking Exercise –Helicopter (TRACKEX—Helo). | Helicopter crews search for, track, and detect submarines. | 2–4 hours | MF4, MF5 | Offshore Area >12 nmi from land. | 0–2 | 5 |
| Acoustic | Tracking Exercise—Maritime Patrol Aircraft (TRACKEX—MPA). | Maritime patrol aircraft crews search for, track, and detect submarines. | 2–8 hours | ASW2, ASW5, MF5, TORP1. | Offshore Area >12 nmi from land. | 373 | 2,611 |
| Acoustic | Tracking Exercise –Ship (TRACKEX—Ship). | Surface ship crews search for, track, and detect submarines. | 2–4 hours | ASW3, MF1, MF11. | Offshore Area | 62 | 434 |
| Acoustic | Tracking Exercise—Submarine (TRACKEX—Sub). | Submarine crews search for, track, and detect submarines. | 8 hours | HF1, MF3 | Offshore Area | 75–100 | 595 |
| **Mine Warfare** | | | | | | | |
| Acoustic | Civilian Port Defense—Homeland Security Anti-Terrorism/Force Protection Exercises. | Maritime security personnel train to protect civilian ports and harbors against enemy efforts to interfere with access to those ports.. | Multiple days. | HF4, SAS2 | Inland Waters | 0–1 | 5 |
| Explosive | Mine Neutralization—Explosive Ordnance Disposal (EOD). | Personnel disable threat mines using explosive charges. | Up to 4 hours. | E3 | Crescent Harbor EOD Training Range, Hood Canal EOD Training Range. | [1] 6 | [1] 42 |
| **Surface Warfare** | | | | | | | |
| Explosive | Bombing Exercise (Air-to-Surface)(BOMBEX [A–S]). | Fixed-wing aircrews deliver bombs against surface targets. | 1 hour | E10 | Offshore Area (W–237) > 50 nmi from land. | 0–2 (counts only the explosive events) | 5 |
| Explosive | Gunnery Exercise (Surface-to-Surface)—Ship (GUNEX [S–S]—Ship). | Surface ship crews fire large- and medium-caliber guns at surface targets.. | Up to 3 hours. | E1, E2, E5 | Offshore Area > 50 nmi from land. | [1] 34 (counts only the explosive events) | [1] 238 |
| Explosive | Missile Exercise (Air-to-Surface)(MISSILEX [A–S]). | Fixed-wing aircrews simulate firing precision-guided missiles, using captive air training missiles (CATMs) against surface targets. Some activities include firing a missile with a high-explosive (HE) warhead.. | 2 hours | E10 | Offshore Area (W–237) >50 nmi from land. | 0–2 | 5 |
| **Other Training** | | | | | | | |
| Acoustic | Submarine Sonar Maintenance. | Maintenance of submarine sonar and other system checks are conducted pierside or at sea.. | Up to 1 hour. | LF5, MF3, HF1. | NBK Bangor, NBK Bremerton, and Offshore Area >12 nmi from land. | 26 | 182 |
| Acoustic | Surface Ship Sonar Maintenance. | Maintenance of surface ship sonar and other system checks are conducted pierside or at sea.. | Up to 4 hours. | MF1 | NBK Bremerton, NS Everett, and Offshore Area >12 nmi from land. | 25 | 175 |

TABLE 3—TRAINING ACTIVITIES ANALYZED FOR THE SEVEN-YEAR PERIOD IN THE NWTT STUDY AREA—Continued

| Stressor category | Activity | Description | Typical duration of event | Source bin | Location | Annual number of events | 7-Year number of events |
|---|---|---|---|---|---|---|---|
| Acoustic | Unmanned Underwater Vehicle Training. | Unmanned underwater vehicle certification involves training with unmanned platforms to ensure submarine crew proficiency. Tactical development involves training with various payloads for multiple purposes to ensure that the systems can be employed effectively in an operational environment.. | Up to 24 hours. | FLS2, M3 .. | Inland Waters, Offshore Area. | 60 | 420 |

[1] These activities have been reduced since publication of the proposed rule.

TABLE 4—TESTING ACTIVITIES ANALYZED FOR THE SEVEN-YEAR PERIOD IN THE NWTT STUDY AREA

| Stressor category | Activity | Description | Typical duration | Source bin | Location | Annual number of events | 7-Year number of events |
|---|---|---|---|---|---|---|---|
| **Naval Sea Systems Command Testing Activities Anti-Submarine Warfare** | | | | | | | |
| Acoustic | Anti-Submarine Warfare Testing. | Ships and their supporting platforms (rotary-wing aircraft and unmanned aerial systems) detect, localize, and prosecute submarines. | 4–8 hours of active sonar use. | ASW1, ASW2, ASW3, ASW5, MF1K, MF4, MF5, MF10, MF11, MF12, TORP1. | Offshore Area | 44 | 308 |
| Acoustic | At-Sea Sonar Testing .. | At-sea testing to ensure systems are fully functional in an open ocean environment.. | From 4 hours to 11 days. | ASW3, HF1, HF5, M3, MF3,. | Offshore Area | 4 | 28 |
| | | | | ASW3, HF5, TORP1. | Inland Waters (DBRC) | 4–6 | 34 |
| Acoustic | Countermeasure Testing. | Countermeasure testing involves the testing of systems that will detect, localize, and track incoming weapons, including marine vessel targets. Countermeasures may be systems to obscure the vessel's location or systems to rapidly detect, track, and counter incoming threats. Testing includes surface ship torpedo defense systems and marine vessel stopping payloads. | From 4 hours to 6 days. | ASW3, ASW4, HF8, MF1, TORP2. | Offshore Area (QRS) | 14 | 98 |
| | | | | ASW3, ASW4. | Inland Waters (DBRC, Keyport Range Site). | 29 | 203 |
| | | | | ASW4 | Western Behm Canal, AK. | 1 | 5 |
| Acoustic | Pierside-Sonar Testing | Pierside testing to ensure systems are fully functional in a controlled pierside environment prior to at-sea test activities. | Up to 3 weeks. | ASW3, HF3, MF1, MF2, MF3, MF9, MF10, MF12. | Inland Waters (NS Everett, NBK Bangor, NBK Bremerton). | 88–99 | 635 |
| Acoustic | Submarine Sonar Testing/Maintenance. | Pierside, moored, and underway testing of submarine systems occurs periodically following major maintenance periods and for routine maintenance. | Up to 3 weeks. | HF6, MF9 .. | Western Behm Canal, AK. | 1–2 | 10 |
| Acoustic; Explosive | Torpedo (Explosive) Testing. | Air, surface, or submarine crews employ explosive and non-explosive torpedoes against artificial targets. | 1–2 hours during daylight only. | E8, E11, ASW3, HF1, HF6, MF1, MF3, MF4, MF5, MF6, TORP1, TORP2. | Offshore Area> 50 nmi from land. | 4 | 28 |
| Acoustic | Torpedo (Non-explosive) Testing. | Air, surface, or submarine crews employ non-explosive torpedoes against targets, submarines, or surface vessels.. | Up to 2 weeks. | ASW3, ASW4, HF1, HF5, HF6, MF1, MF3, MF4, MF5, MF6, MF9, MF10, TORP1, TORP2. | Offshore Area | 22 | 154 |
| | | | | HF6, LF4, TORP1, TORP2, TORP3. | Inland Waters (DBRC) | 61 | 427 |

TABLE 4—TESTING ACTIVITIES ANALYZED FOR THE SEVEN-YEAR PERIOD IN THE NWTT STUDY AREA—Continued

| Stressor category | Activity | Description | Typical duration | Source bin | Location | Annual number of events | 7-Year number of events |
|---|---|---|---|---|---|---|---|
| **Mine Warfare** | | | | | | | |
| Acoustic; Explosive ..... | Mine Countermeasure and Neutralization Testing. | Air, surface, and subsurface vessels neutralize threat mines and mine-like objects.. | 1–10 days | E4, E7, HF4. | Offshore Area ..... | [1] 2 | [1] 6 |
| | | | | HF4 ..... | Inland Waters ..... | 3 | 13 |
| Acoustic ..... | Mine Detection and Classification Testing. | Air, surface, and subsurface vessels and systems detect and classify mines and mine-like objects. Vessels also assess their potential susceptibility to mines and mine-like objects.. | Up to 24 days. | BB1, BB2, LF4. | Offshore Area (QRS) ... | 1 | 7 |
| | | | | BB1, BB2, HF4, LF4. | Inland Waters (DBRC, Keyport Range Site). | 42 | 294 |
| **Unmanned Systems** | | | | | | | |
| Acoustic ..... | Unmanned Underwater Vehicle Testing. | Testing involves the production or upgrade of unmanned underwater vehicles. This may include testing of mission capabilities (*e.g.,* mine detection), evaluating the basic functions of individual platforms, or conducting complex events with multiple vehicles.. | Typically 1–2 days, up to multiple months. | FLS2, HF5, TORP1, VHF1. | Offshore Area (QRS) ... | 38–39 | 269 |
| | | | | DS3, FLS2, HF5, HF9, M3, SAS2, VHF1, TORP1. | Inland Waters (DBRC, Keyport Range Site, Carr Inlet). | 371–379 | 2,615 |
| **Vessel Evaluation** | | | | | | | |
| Acoustic ..... | Undersea Warfare Testing. | Ships demonstrate capability of countermeasure systems and underwater surveillance, weapons engagement, and communications systems. This tests ships' ability to detect, track, and engage undersea targets.. | Up to 10 days. | ASW3, ASW4, HF4, MF1, MF4, MF5, MF6, MF9, TORP1, TORP2. | Offshore Area ..... | 1–12 | 27 |
| **Other Testing** | | | | | | | |
| Acoustic ..... | Acoustic and Oceanographic Research. | Research using active transmissions from sources deployed from ships, aircraft, and unmanned underwater vehicles. Research sources can be used as proxies for current and future Navy systems.. | Up to 14 days. | LF4, MF9 .. | Offshore Area (QRS) ... | 1 | 7 |
| | | | | | Inland Waters (DBRC, Keyport Range Site). | 3 | 21 |
| Acoustic ..... | Acoustic Component Testing. | Various surface vessels, moored equipment, and materials are tested to evaluate performance in the marine environment. | 1 day to multiple months. | HF3, HF6, LF5, MF9. | Western Behm Canal, AK. | 13–18 | 99 |
| Acoustic ..... | Cold Water Support ..... | Fleet training for divers in a cold water environment, and other diver training related to Navy divers supporting range/test site operations and maintenance.. | 8 hours ..... | HF6 ..... | Inland Waters (Keyport Range Site, DBRC, Carr Inlet). | 4 | 28 |
| | | | | | Western Behm Canal, AK. | 1 | 7 |
| Acoustic ..... | Post-Refit Sea Trial ..... | Following periodic maintenance periods or repairs, sea trials are conducted to evaluate submarine propulsion, sonar systems, and other mechanical tests.. | 8 hours ..... | HF9, M3, MF10. | Inland Waters (DBRC) | 30 | 210 |
| Acoustic ..... | Semi-Stationary Equipment Testing. | Semi-stationary equipment (*e.g.,* hydrophones) is deployed to determine functionality.. | From 10 minutes to multiple days. | HF6, HF9, LF4, MF9, VHF2. | Inland Waters (DBRC, Keyport Range Site). | 120 | 840 |
| | | | | HF6, HF9 .. | Western Behm Canal, AK. | 2–3 | 12 |
| **Naval Air Systems Command Testing Activities Anti-Submarine Warfare** | | | | | | | |
| Acoustic; Explosive ..... | Tracking Test—Maritime Patrol Aircraft. | The test evaluates the sensors and systems used by maritime patrol aircraft to detect and track submarines and to ensure that aircraft systems used to deploy the tracking systems perform to specifications and meet operational requirements.. | 4–8 flight hours. | E1, E3, ASW2, ASW5, MF5, MF6. | Offshore Area ..... | 8 | 56 |

[1] In the proposed rule, NMFS analyzed three events annually, and 15 events over the seven-year period; however, only two of the three annual events include sonar and/or explosives. The third annual event does not have acoustic components, and therefore, is not included here in the final rule. Additionally, the seven-year number of events has been reduced since publication of the proposed rule.

*Summary of Acoustic and Explosive Sources Analyzed for Training and Testing*

Tables 5 through 8 show the acoustic and explosive source classes, bins, and quantities used in either hours or counts associated with the Navy's training and testing activities over a seven-year period in the NWTT Study Area that were analyzed in the Navy's rulemaking/LOA application and by NMFS through the rulemaking process. Table 5 describes the acoustic source classes (*i.e.,* low-frequency (LF), mid-frequency (MF), and high-frequency (HF)) that could occur over seven years under the planned training activities. Acoustic source bin use in the proposed activities will vary annually. The seven-year totals for the planned training activities take into account that annual variability.

TABLE 5—ACOUSTIC SOURCE CLASSES ANALYZED AND USAGE FOR SEVEN-YEAR PERIOD FOR TRAINING ACTIVITIES IN THE NWTT STUDY AREA

| Source class category | Bin | Description | Unit [1] | Annual | 7-year total |
|---|---|---|---|---|---|
| Low-Frequency (LF): Sources that produce signals less than 1 kHz. | LF5 | LF sources less than 180 dB | H | 1 | 5 |
| Mid-Frequency (MF): Tactical and non-tactical sources that produce signals between 1 and 10 kHz. | MF1 | Hull-mounted surface ship sonars (*e.g.,* AN/SQS–53C and AN/SQS–61). | H | 164 | 1,148 |
| | MF3 | Hull-mounted submarine sonars (*e.g.,* AN/BQQ–10). | H | 70 | 490 |
| | MF4 | Helicopter-deployed dipping sonars (*e.g.,* AN/AQS–22 and AN/AQS–13). | H | 0–1 | 1 |
| | MF5 | Active acoustic sonobuoys (*e.g.,* DICASS) | C | 918–926 | 6,443 |
| | MF11 | Hull-mounted surface ship sonars with an active duty cycle greater than 80%. | H | 16 | 112 |
| High-Frequency (HF): Tactical and non-tactical sources that produce signals between 10 and 100 kHz. | HF1 | Hull-mounted submarine sonars (*e.g.,* AN/BQQ–10). | H | 48 | 336 |
| | HF4 | Mine detection, classification, and neutralization sonar (*e.g.,* AN/SQS–20). | H | 0–65 | 269 |
| Anti-Submarine Warfare (ASW): Tactical sources (*e.g.,* active sonobuoys and acoustic countermeasures systems) used during ASW training and testing activities. | ASW2 | MF Multistatic Active Coherent sonobuoy (*e.g.,* AN/SSQ–125). | C | 350 | 2,450 |
| | ASW3 | MF towed active acoustic countermeasure systems (*e.g.,* AN/SLQ–25). | H | 86 | 602 |
| | ASW5 | MF sonobuoys with high duty cycles | H | 50 | 350 |
| Torpedoes (TORP): Source classes associated with the active acoustic signals produced by torpedoes. | TORP1 | Lightweight torpedo (*e.g.,* MK 46, MK 54, or Anti-Torpedo Torpedo). | C | 16 | 112 |
| | TORP2 | Heavyweight torpedo (*e.g.,* MK 48) | C | 0–2 | 5 |
| Forward Looking Sonar (FLS): Forward or upward looking object avoidance sonars used for ship navigation and safety. | FLS2 | HF sources with short pulse lengths, narrow beam widths, and focused beam patterns. | H | 240 | 1,680 |
| Acoustic Modems (M): Systems used to transmit data through the water. | M3 | MF acoustic modems (greater than 190 dB) | H | 30 | 210 |
| Synthetic Aperture Sonars (SAS): Sonars in which active acoustic signals are post-processed to form high-resolution images of the seafloor. | SAS2 | HF SAS systems | H | 0–561 | 2,353 |

[1] H = hours; C = count.

Table 6 describes the acoustic source classes and numbers that could occur over seven years under the planned testing activities. Acoustic source bin use in the planned activities would vary annually. The seven-year totals for the planned testing activities take into account that annual variability.

TABLE 6—ACOUSTIC SOURCE CLASSES ANALYZED AND USAGE FOR SEVEN-YEAR PERIOD FOR TESTING ACTIVITIES IN THE NWTT STUDY AREA

| Source class category | Bin | Description | Unit [1] | Annual | 7-year total |
|---|---|---|---|---|---|
| Low-Frequency (LF): Sources that produce signals less than 1 kHz. | LF4 | LF sources equal to 180 dB and up to 200 dB | H | 177 | 1,239 |
| | LF5 | LF sources less than 180 dB | H | 0–18 | 23 |
| Mid-Frequency (MF): Tactical and non-tactical sources that produce signals between 1 and 10 kHz. | MF1 | Hull-mounted surface ship sonars (*e.g.,* AN/SQS–53C and AN/SQS–61). | H | 20–169 | 398 |
| | MF1K | Kingfisher mode associated with MF1 sonars | H | 48 | 336 |
| | MF2 | Hull-mounted surface ship sonars (*e.g.,* AN/SQS–56). | H | 32 | 224 |
| | MF3 | Hull-mounted submarine sonars (*e.g.,* AN/BQQ–10). | H | 34–36 | 239 |
| | MF4 | Helicopter-deployed dipping sonars (*e.g.,* AN/AQS–22 and AN/AQS–13). | H | 41–50 | 298 |
| | MF5 | Active acoustic sonobuoys (*e.g.,* DICASS) | C | 300–673 | 2,782 |
| | MF6 | Active underwater sound signal devices (*e.g.,* MK 84 SUS). | C | 60–232 | 744 |
| | MF9 | Active sources (equal to 180 dB and up to 200 dB) not otherwise binned. | H | 644–959 | 5,086 |
| | MF10 | Active sources (greater than 160 dB, but less than 180 dB) not otherwise binned. | H | 886 | 6,197 |

TABLE 6—ACOUSTIC SOURCE CLASSES ANALYZED AND USAGE FOR SEVEN-YEAR PERIOD FOR TESTING ACTIVITIES IN THE NWTT STUDY AREA—Continued

| Source class category | Bin | Description | Unit [1] | Annual | 7-year total |
|---|---|---|---|---|---|
| | MF11 | Hull-mounted surface ship sonars with an active duty cycle greater than 80 percent. | H | 48 | 336 |
| | MF12 | Towed array surface ship sonars with an active duty cycle greater than 80 percent. | H | 100 | 700 |
| High-Frequency (HF): Tactical and non-tactical sources that produce signals between 10 and 100 kHz. | HF1 | Hull-mounted submarine sonars (*e.g.,* AN/BQQ–10). | H | 10 | 68 |
| | HF3 | Other hull-mounted submarine sonars (classified). | H | 1–19 | 30 |
| | HF4 | Mine detection, classification, and neutralization sonar (*e.g.,* AN/SQS–20). | H | 1,860–1,868 | 11,235 |
| | HF5 | Active sources (greater than 200 dB) not otherwise binned. | H | 352–400 | 2,608 |
| | HF6 | Active sources (equal to 180 dB and up to 200 dB) not otherwise binned. | H | 1,705–1,865 | 12,377 |
| | HF8 | Hull-mounted surface ship sonars (*e.g.,* AN/SQS–61). | H | 24 | 168 |
| | HF9 | Weapon emulating sonar source | H | 257 | 1,772 |
| Very High-Frequency (VHF): Tactical and non-tactical sources that produce signals greater than 100 kHz but less than 200 kHz. | VHF1 | Very high frequency sources greater than 200 dB. | H | 320 | 2,240 |
| | VHF2 | Active sources with a frequency greater than 100 kHz, up to 200 kHz with a source level less than 200 dB. | H | 135 | 945 |
| Anti-Submarine Warfare (ASW): Tactical sources (*e.g.,* active sonobuoys and acoustic countermeasures systems) used during ASW training and testing activities. | ASW1 | MF systems operating above 200 dB | H | 80 | 560 |
| | ASW2 | MF systems operating above 200 dB | C | 240 | 1,680 |
| | ASW3 | MF towed active acoustic countermeasure systems (*e.g.,* AN/SLQ–25). | H | 487–1,015 | 4,091 |
| | ASW4 | MF expendable active acoustic device countermeasures (*e.g.,* MK 3). | C | 1,349–1,389 | 9,442 |
| | ASW5 | MF sonobuoys with high duty cycles | H | 80 | 560 |
| Torpedoes (TORP): Source classes associated with the active acoustic signals produced by torpedoes. | TORP1 | Lightweight torpedo (*e.g.,* MK 46, MK 54, or Anti-Torpedo Torpedo). | C | 298–360 | 2,258 |
| | TORP2 | Heavyweight torpedo (*e.g.,* MK 48) | C | 332–372 | 2,324 |
| | TORP3 | Heavyweight torpedo test (*e.g.,* MK 48) | C | 6 | 42 |
| Forward Looking Sonar (FLS): Forward or upward looking object avoidance sonars used for ship navigation and safety. | FLS2 | HF sources with short pulse lengths, narrow beam widths, and focused beam patterns. | H | 24 | 168 |
| Acoustic Modems (M): Systems used to transmit data through the water. | M3 | MF acoustic modems (greater than 190 dB) | H | 1,088 | 7,616 |
| Synthetic Aperture Sonars (SAS): Sonars in which active acoustic signals are post-processed to form high-resolution images of the seafloor. | SAS2 | HF SAS systems | H | 1,312 | 9,184 |
| Broadband Sound Sources (BB): Sonar systems with large frequency spectra, used for various purposes. | BB1 | MF to HF mine countermeasure sonar | H | 48 | 336 |
| | BB2 | HF to VHF mine countermeasure sonar | H | 48 | 336 |

[1] H = hours; C = count.

Table 7 describes the number of in-water explosives that could be used in any year under the planned training activities. Under the planned activities, bin use will vary annually, and the seven-year totals for the planned training activities take into account that annual variability.

TABLE 7—EXPLOSIVE SOURCE CLASS BINS ANALYZED AND NUMBER OF DETONATIONS USED FOR SEVEN-YEAR PERIOD FOR TRAINING ACTIVITIES IN THE NWTT STUDY AREA

| Bin | Net explosive weight [1] (lb) [2] | Example explosive source | Annual [3] | 7-year total |
|---|---|---|---|---|
| E1 | 0.1–0.25 | Medium-caliber projectiles | 60–120 | 672 |
| E2 | >0.25–0.5 | Medium-caliber projectiles | 65–130 | 728 |
| E3 | >0.5–2.5 | Explosive Ordnance Disposal Mine Neutralization | 6 | 42 |
| E5 | >5–10 | Large-caliber projectile | 56–112 | 628 |

TABLE 7—EXPLOSIVE SOURCE CLASS BINS ANALYZED AND NUMBER OF DETONATIONS USED FOR SEVEN-YEAR PERIOD FOR TRAINING ACTIVITIES IN THE NWTT STUDY AREA—Continued

| Bin | Net explosive weight [1] (lb) [2] | Example explosive source | Annual [3] | 7-year total |
|---|---|---|---|---|
| E10 | >250–500 | 1,000 lb bomb | 0–4 | 9 |

[1] Net explosive weight refers to the equivalent amount of TNT. The actual weight of a munition may be larger due to other components.
[2] lb = pound(s).
[3] Annual Nominal—Max. Two values indicate a range from Nominal to Max annual totals.

Table 8 describes the number of in-water explosives that could be used in any year under the planned testing activities. Under the planned activities, bin use will vary annually, and the seven-year totals for the planned testing activities take into account that annual variability.

TABLE 8—EXPLOSIVE SOURCE CLASS BINS ANALYZED AND NUMBER OF DETONATIONS USED FOR SEVEN-YEAR PERIOD FOR TESTING ACTIVITIES IN THE NWTT STUDY AREA

| Bin | Net explosive weight [1] (lb) [2] | Example explosive source | Annual [3] | 7-year total |
|---|---|---|---|---|
| E1 | 0.1–0.25 | SUS buoy | 8 | 56 |
| E3 | >0.5–2.5 | Explosive sonobuoy | 72 | 504 |
| E4 | >2.5–5 | Mine Countermeasure and Neutralization | 36 | 108 |
| E7 | >20–60 | Mine Countermeasure and Neutralization | 5 | 15 |
| E8 | >60–100 | Lightweight torpedo | 4 | 28 |
| E11 | >500–650 | Heavyweight torpedo | 4 | 28 |

[1] Net explosive weight refers to the equivalent amount of TNT. The actual weight of a munition may be larger due to other components.
[2] lb = pound(s).
[3] Annual Nominal—Max.

*Vessel Movement*

Vessels used as part of the planned activities include ships, submarines, unmanned vessels, and boats ranging in size from small, 22 ft rigid hull inflatable boats to aircraft carriers with lengths up to 1,092 ft. Large ships greater than 60 ft generally operate at speeds in the range of 10–15 kn for fuel conservation. Submarines generally operate at speeds in the range of 8–13 kn in transits and less than those speeds for certain tactical maneuvers. Small craft (for purposes of this discussion—less than 60 ft in length) have much more variable speeds (dependent on the mission). While these speeds are representative of most events, some vessels need to temporarily operate outside of these parameters. For example, to produce the required relative wind speed over the flight deck, an aircraft carrier engaged in flight operations must adjust its speed through the water accordingly. Conversely, there are other instances, such as launch and recovery of a small rigid hull inflatable boat; vessel boarding, search, and seizure training events; or retrieval of a target when vessels will be dead in the water or moving slowly ahead to maintain steerage.

The number of military vessels used in the NWTT Study Area varies based on military training and testing requirements, deployment schedules, annual budgets, and other unpredictable factors. Many training and testing activities involve the use of vessels. These activities could be widely dispersed throughout the NWTT Study Area, but will be typically conducted near naval ports, piers, and range areas. Training and testing activities involving vessel movements occur intermittently and are variable in duration, ranging from a few hours to up to two weeks. There is no seasonal differentiation in military vessel use. Large vessel movement primarily occurs with the majority of the traffic flowing between the installations and the Operating Areas (OPAREAS). Smaller support craft would be more concentrated in the coastal waters in the areas of naval installations, ports, and ranges. The number of activities that include the use of vessels for training events is lower (approximately 10 percent) than the number for testing activities. Testing can occur jointly with a training event, in which case that testing activity could be conducted from a training vessel.

Additionally, a variety of smaller craft will be operated within the NWTT Study Area. Small craft types, sizes, and speeds vary. During training and testing, speeds generally range from 10–14 kn; however, vessels can and will, on occasion, operate within the entire spectrum of their specific operational capabilities. In all cases, the vessels/craft will be operated in a safe manner consistent with the local conditions.

*Standard Operating Procedures*

For training and testing to be effective, personnel must be able to safely use their sensors and weapon systems as they are intended to be used in military missions and combat operations and to their optimum capabilities. While standard operating procedures are designed for the safety of personnel and equipment and to ensure the success of training and testing activities, their implementation often yields benefits on environmental, socioeconomic, public health and safety, and cultural resources.

Because standard operating procedures are essential to safety and mission success, the Navy considers them to be part of the planned specified activities, and they have been included in the environmental analysis in the 2020 NWTT FSEIS/OEIS. Additional details on standard operating procedures were provided in our **Federal Register** notice of proposed rulemaking (85 FR 33914; June 2, 2020); please see that notice of proposed rulemaking or the Navy's application for more information.

**Comments and Responses**

We published the proposed rule in the **Federal Register** on June 2, 2020 (85 FR 33914), with a 45-day comment period. With that proposed rule, we requested public input on our analyses, our preliminary findings, and the

proposed regulations, and requested that interested persons submit relevant information and comments. During the 45-day comment period, we received 9,047 comments. Of this total, one submission was from the Marine Mammal Commission, two submissions were from tribes or coalitions of tribes, three submissions were from state agencies or officials, and the remaining comments were from organizations or individuals acting in an official capacity (*e.g.,* non-governmental organizations (NGOs)) and private citizens. We received some submissions that expressed general opposition toward the Navy's proposed training and testing activities and requested that NMFS not issue the regulations and LOAs, but provided no specific comments or information. These general comments have been noted, but because they did not include information pertinent to NMFS' decision, they are not addressed further.

NMFS has reviewed and considered all public comments received on the proposed rule and issuance of the LOAs. General comments that did not provide information pertinent to NMFS' decisions have been noted, but are not addressed further. All substantive comments and our responses are described below. We provide no response to specific comments that addressed species or statutes not relevant to the rulemaking under section 101(a)(5)(A) of the MMPA (*e.g.,* comments related to sea turtles). We organize our comment responses by major categories.

*Impact Analysis and Thresholds*

*Comment 1:* A commenter stated that the criteria that the Navy has produced to estimate temporary and permanent threshold shift in marine mammals, and that NMFS applied in the proposed rule, are erroneous and non-conservative. According to the commenter, Wright (2015) has identified several statistical and numerical faults in the Navy's approach, such as pseudo-replication, use of means rather than onset (as with the treatment of blast trauma), and inconsistent treatment of data, that tend to bias the criteria towards an underestimation of effects. The commenter stated that similar and additional issues were raised by a dozen scientists during the public comment period on the draft criteria held by NMFS. The commenter asserts that the issue is NMFS' broad extrapolation from a small number of individual animals, mostly bottlenose dolphins, without taking account of what Racca *et al.* (2015b) have succinctly characterized as a ''non-linear accumulation of uncertainty.'' The commenter asserts that the auditory impact criteria should be revised. Another commenter noted that NMFS has not considered that repeated exposure to noise that can cause TTS can lead to PTS, or that TTS increases the likelihood of vessel strike.

*Response:* The ''Navy criteria'' that the commenter references for estimating were developed in coordination with NMFS and ultimately finalized, following three peer reviews and three public comment periods, as NMFS' Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing-Underwater Acoustic Thresholds for Onset of Permanent and Temporary Threshold Shifts (Acoustic Technical Guidance). NMFS disagrees with the commenter's criticism about inconsistent treatment of data and any suggestion that the use of the Acoustic Technical Guidance provides erroneous results. The Acoustic Technical Guidance represents the best available science and provides thresholds and weighting functions that allow us to predict when marine mammals are likely to incur permanent threshold shift (PTS). All public comments on the Acoustic Technical Guidance, including those referenced by the commenter here, were addressed in full in the **Federal Register** notice announcing the finalization of the Acoustic Technical Guidance. We refer the reader to *https://www.federalregister.gov/documents/2016/08/04/2016-18462/technical-guidance-for-assessing-the-effects-of-anthropogenic-sound-on-marine-mammal* for full responses to those previously raised comments.

As described in the Estimated Take of Marine Mammals section, when the acoustic thresholds, the Navy model, and other inputs into the take calculation are considered, the authorized incidental takes represent the maximum number of instances in which marine mammals are reasonably expected to be taken, which is appropriate under the statute and there is no need or requirement for NMFS to authorize a larger number.

Multiple studies from humans, terrestrial mammals, and marine mammals have demonstrated less temporary threshold shift (TTS) from intermittent exposures compared to continuous exposures with the same total energy because hearing is known to experience some recovery in between noise exposures, which means that the effects of intermittent noise sources such as tactical sonars are likely overestimated. Marine mammal TTS data have also shown that, for two exposures with equal energy, the longer duration exposure tends to produce a larger amount of TTS. Most marine mammal TTS data have been obtained using exposure durations of tens of seconds up to an hour, much longer than the durations of many tactical sources (much less the continuous time that a marine mammal in the field would be exposed consecutively to those levels), further suggesting that the use of these TTS data are likely to overestimate the effects of sonars with shorter duration signals.

Regarding the suggestion of pseudoreplication and erroneous models, since marine mammal hearing and noise-induced hearing loss data are limited, both in the number of species and in the number of individuals available, attempts to minimize pseudoreplication would further reduce these already limited data sets. Specifically, with marine mammal behaviorally derived temporary threshold shift studies, behaviorally derived data are only available for two mid-frequency cetacean species (bottlenose dolphin, beluga) and two phocid (in-water) pinniped species (harbor seal and northern elephant seal), with otariid (in-water) pinnipeds and high-frequency cetaceans only having behaviorally-derived data from one species each. Arguments from Wright (2015) regarding pseudoreplication within the TTS data are therefore largely irrelevant in a practical sense because there are so few data. Multiple data points were not included for the same individual at a single frequency. If multiple data existed at one frequency, the lowest TTS onset was always used. There is only a single frequency where TTS onset data exist for two individuals of the same species: 3 kHz for bottlenose dolphins. Their TTS (unweighted) onset values were 193 and 194 dB re 1 µPa2s. Thus, NMFS believes that the current approach makes the best use of the given data. Appropriate means of reducing pseudoreplication may be considered in the future, if more data become available. Many other comments from Wright (2015) and the comments from Racca *et al.* (2015b) appear to be erroneously based on the idea that the shapes of the auditory weighting functions and TTS/PTS exposure thresholds are directly related to the audiograms; *i.e.,* that changes to the composite audiograms would directly influence the TTS/PTS exposure functions (*e.g.,* Wright (2015) describes weighting functions as ''effectively the mirror image of an audiogram'' (p. 2) and states, ''The underlying goal was to estimate how much a sound level needs to be above

hearing threshold to induce TTS.'' (p. 3)). Both statements are incorrect and suggest a fundamental misunderstanding of the criteria/threshold derivation. This would require a constant (frequency-independent) relationship between hearing threshold and TTS onset that is not reflected in the actual marine mammal TTS data. Attempts to create a ''cautionary'' outcome by artificially lowering the composite audiogram thresholds would not necessarily result in lower TTS/PTS exposure levels, since the exposure functions are to a large extent based on applying mathematical functions to fit the existing TTS data.

Please refer to the response to Comment 9 for additional information regarding the use of ''means rather than onset'' in the analysis of blast trauma.

Regarding the comment about repeated exposures to TTS leading to PTS, NMFS is aware of studies by Kujawa and Liberman (2009) and Lin *et al.* (2011), which found that despite completely reversible TS that leave cochlear sensory cells intact, large (but temporary) TS could cause synaptic level changes and delayed cochlear nerve degeneration in mice and guinea pigs. However, the large TS (*i.e.,* maximum 40 decibel dB) that led to the synaptic changes shown in these studies are in the range of the large shifts used by Southall *et al.* (2007) and in NMFS Acoustic Technical Guidance (2018) to define PTS onset (*i.e.,* 40 dB). There is no evidence indicating that smaller levels of TTS would lead to similar changes or the long-term implications of irreversible neural degeneration and NMFS has included several conservative assumptions in its protocol for examining marine mammal hearing loss data *(e.g.,* using a 6 dB threshold shift to represent TTS onset, not directly accounting for exposures that did not result in threshold shifts, assuming there is no recovery with the 24-h baseline accumulation period or between intermittent exposures). Moreover, as described in the final rule, TTS incurred as a result of exposures to Navy NWTT activities is expected to be of a smaller degree and, further, no individual is expected to incur repeated exposures of TTS in a manner that could accrue to PTS. Nonetheless, NMFS acknowledges the complexity of sound exposure on the nervous system, and will re-examine this issue as more data become available. Separately, the commenter provides no credible evidence to support the speculative assertion that TTS increases the likelihood of vessel strike of marine mammals.

*Comment 2:* A commenter recommended that NMFS clarify whether and how the Navy incorporated uncertainty in its density estimates for its animat modeling specific to NWTT and if uncertainty was not incorporated, re-estimate the numbers of marine mammal takes based on the uncertainty inherent in the density estimates provided in Department of the Navy (2019) or the underlying references (Jefferson *et al.,* 2017, Smultea *et al.,* 2017, NMFS SARs, *etc.*).

*Response:* Uncertainty was incorporated into the density estimates used for modeling and estimating take for NMFS' rule. Where available, a coefficient of variation (CV) was used to represent uncertainty in the species-specific density estimates. The CV was incorporated into the acoustic effects model by randomly varying the number of animats distributed for each scenario within the range described by the CV. If a measure of uncertainty was not available, then the number of animats distributed in the model remained the same for each modeled scenario. Multiple iterations of each modeled scenario were run until the results converged with minimal variation, meaning that even without incorporating a CV into the animat distribution, uncertainty in the exposure results were minimized.

The commenter is referred to the technical report titled *Quantifying Acoustic Impacts on Marine Mammals and Sea Turtles: Methods and Analytical Approach for Phase III Training and Testing* (U.S. Department of the Navy, 2018) for clarification on the consideration of uncertainty in density estimates. Specifically, see Section 4.2 (Marine Species Distribution Builder) of the technical report where details are provided on how statistical uncertainty surrounding density estimates was incorporated into the modeling for the NWTT Study Area, as has been done for all other recent NMFS and Navy analyses of training and testing at sea. To the commenter's more specific question, as with the 2018/2020 Hawaii-Southern California Training and Testing (HSTT) final rules and 2020 Mariana Islands Training and Testing (MITT) final rule, a lognormal distribution was used in the density regression model. Uncertainty was incorporated into the take estimation through the density estimates and it is not necessary to re-estimate the take numbers for marine mammals.

*Comment 3:* A commenter recommended that NMFS specify in the preamble to the final rule whether the data regarding behavioral audiograms (Branstetter *et al.,* 2017, Kastelein *et al.,* 2017b) and TTS (Kastelein *et al.,* 2017a and c, Popov *et al.,* 2017, Kastelein *et al.,* 2018a and 2019b, c, and d) support the continued use of the current weighting functions and PTS and TTS thresholds.

*Response:* NMFS has carefully considered the references that the commenter cites and the new data included in those articles are consistent with the thresholds and weighting functions included in the current version of the Acoustic Technical Guidance (NMFS, 2018). Furthermore, the recent peer-reviewed updated marine mammal noise exposure criteria by Southall *et al.* (2019a) provide identical PTS and TTS thresholds and weighting functions to those provided in NMFS' Acoustic Technical Guidance. NMFS will continue to review and evaluate new relevant data as it becomes available and consider the impacts of those studies on the Acoustic Technical Guidance to determine what revisions/updates may be appropriate.

*Comment 4:* A commenter stated that the Navy, and in turn NMFS, has not provided adequate justification for ignoring the possibility that single underwater detonations can cause a behavioral response. The commenter recommends that NMFS estimate and ultimately authorize behavior takes of marine mammals during all explosive activities, including those that involve single detonations. In a similar comment, another commenter stated that the literature on responses to explosions does not distinguish between single and multiple detonations, and asserts that it is arbitrary for NMFS, in estimating takes and assessing impacts, to assume that only multiple rounds of in-water detonations can cause Level B harassment takes by behavioral disturbance.

*Response:* NMFS does not ignore the possibility that single underwater detonations can cause a behavioral response. The current take estimate framework allows for the consideration of animals exhibiting behavioral disturbance during single explosions as they are counted as ''taken by Level B harassment'' if they are exposed above the TTS threshold, which is only 5 dB higher than the behavioral harassment threshold. We acknowledge in our analysis that individuals exposed above the TTS threshold may also be harassed by behavioral disruption and those potential impacts are considered in the negligible impact determination. Neither NMFS nor the Navy are aware of evidence to support the assertion that animals will have significant behavioral responses (*i.e.,* those that would rise to the level of a take) to temporally and

spatially isolated explosions at received levels below the TTS threshold. However, if any such responses were to occur, they would be expected to be few and to result from exposure to the somewhat higher received levels bounded by the TTS thresholds and would, thereby, be accounted for in the take estimates. The derivation of the explosive injury criteria is provided in the 2017 technical report titled *Criteria and Thresholds for U.S. Navy Acoustic and Explosive Effects Analysis (Phase III).*

*Comment 5:* A commenter stated that the behavioral response functions (BRFs) rely on captive animal studies and the risk functions do not incorporate a number of relevant studies on wild marine mammals (specifically referencing a passive acoustic study on blue whales). The commenter states that some were included in the only published quantitative synthesis of behavioral response data, Gomez *et al.* (2016), while others appeared after that synthesis was published, and after the Navy produced its BRFs two years ago. The commenter asserts that exclusion of those studies fails to meet regulatory requirements (citing to National Environmental Policy Act (NEPA) regulations) that base evaluation of impacts on research methods generally accepted in the scientific community and that the result is arbitrary.

The commenter asserts that it is not clear from the proposed rule, the 2020 NWTT DSEIS/OEIS, or the Navy's associated technical report on acoustic ''criteria and thresholds'' exactly how each of the studies considered relevant were applied in the analysis, or how the functions were fitted to the data, but the available evidence on behavioral response raises concerns that—notwithstanding the agencies' claims to the contrary—the functions are not conservative for some species. For this reason and others, the commenter requests that NMFS make additional technical information available, including expert elicitation and peer review (if any), so that the public can fully comment pursuant to the Administrative Procedure Act (APA).

*Response:* We refer the commenter to the Criteria and Thresholds for the U.S. Navy Acoustic and Explosive Effects Analysis (Phase III) Technical Report (U.S. Department of the Navy, 2017) for details on how the Navy accounted for the differences in captive and wild animals in the development of the behavioral response risk functions, which NMFS has evaluated and deemed appropriate to incorporate into the analysis in the rule. The appendices to this report detail the specific data points used to generate the BRFs. Data points come from published data that is readily available and cited within the technical report.

The Navy used the best available science in the analysis, which has been reviewed by external scientists and approved by NMFS. The Navy considered all data available at the time for the development of updated criteria and thresholds, and limiting the data to the small number of field studies would not provide enough data with which to develop the new risk functions. In addition, the Navy accounted for the fact that captive animals may be less sensitive, and the scale at which a moderate-to-severe response was considered to have occurred is different for captive animals than for wild animals, as the Navy understands those responses will be different. The new risk functions were developed in 2016, before several recent papers were published or the data were available. The Navy and NMFS continue to evaluate the information as new science is made available. The criteria have been rigorously vetted within the Navy community, among scientists during expert elicitation, and then reviewed by the public before being applied. It is unreasonable to revise and update the criteria and risk functions every time a new paper is published. NMFS concurs with the Navy's evaluation and conclusion that there is no new information that necessitates changing the acoustic thresholds at this time.

These new papers provide additional information, and the Navy is considering them for updates to the criteria in the future, when the next round of updated criteria will be developed. Regarding consideration of research findings involving a passive acoustic study on blue whale vocalizations and behavior, the Navy considered multiple recent references, including but not limited to: Paniagua-Mendoza, 2017; Lesage, 2017; DeRuiter, 2017; Mate, 2016; Lomac-MacNair, 2016; Friedlaender, 2016; and Mate, 2015. Thus far, no new information has been published or otherwise conveyed that would fundamentally change the assessment of impacts or conclusions of this rule. To be included in the BRF, data sets needed to relate known or estimable received levels to observations of individual or group behavior. Melcon *et al.* (2012) does not relate observations of individual/group behavior to known or estimable received levels at that individual/group. In Melcon *et al.* (2012), received levels at the HARP buoy averaged over many hours are related to probabilities of D-calls, but the received level at the blue whale individuals/group are unknown.

*Comment 6:* Commenters recommended that NMFS refrain from using cut-off distances in conjunction with the Bayesian BRFs and re-estimate the numbers of marine mammal takes based solely on the Bayesian BRFs, as the use of cut-off distances could be perceived as an attempt to reduce the numbers of takes. One commenter suggested that the actual cut-off distances used by the Navy appear to be unsubstantiated and questioned several of the choices made in the development of the cutoff distances (although alternate recommendations were not included).

*Response:* The consideration of proximity (cut-off distances) was part of the criteria developed in consultation between the Navy and NMFS, and is appropriate based on the best available science which shows that marine mammal responses to sound vary based on both sound level and distance. Therefore these cut-off distances were applied within the Navy's acoustic effects model. The derivation of the BRFs and associated cut-off distances is provided in the 2017 technical report titled *Criteria and Thresholds for U.S. Navy Acoustic and Explosive Effects Analysis (Phase III).* To account for non-applicable contextual factors, all available data on marine mammal reactions to actual Navy activities and other sound sources (or other large scale activities such as seismic surveys when information on proximity to sonar sources was not available for a given species group) were reviewed to find the farthest distance to which significant behavioral reactions were observed. For use as distance cut-offs to be used in conjunction with the BRFs, these distances were rounded up to the nearest 5 or 10 km interval, and for moderate to large scale activities using multiple or louder sonar sources, these distances were greatly increased—doubled in most cases. The Navy's BRFs applied within these distances provide technically sound methods reflective of the best available science to estimate the impact and potential take for the actions analyzed within the 2020 NWTT FSEIS/OEIS and included in this rule. NMFS has independently assessed the thresholds used by the Navy to identify Level B harassment by behavioral disturbance (referred to as ''behavioral harassment thresholds'' throughout the rest of the rule) and finds that they appropriately apply the best available science and it is not necessary to recalculate take estimates.

The commenters also specifically expressed concern that distance ''cut-

offs'' alleviate some of the exposures that would otherwise have been counted if the received level alone were considered. It is unclear why the commenters find this inherently inappropriate, as this is what the data show. There are multiple studies illustrating that in situations where one would expect behavioral disturbance of a certain degree because of the received levels at which previous responses were observed, it has not occurred when the distance from the source was larger than the distance of the first observed response.

*Comment 7:* A commenter stated that dipping sonar, like hull-mounted sonar, appears to be a significant predictor of deep-dive rates in beaked whales, with the dive rate falling significantly (*e.g.,* to 35 percent of that individual's control rate) during sonar exposure, and likewise appears associated with habitat abandonment. According to the commenter, the data sources used to produce the Navy's BRFs concern hull-mounted sonar, an R/V-deployed sonar playback, or an in-pool source. According to the commenter, the generic BRF for beaked whales used in the rule does not incorporate their heightened response to these sources, although such a response would be presumed to shift its risk function ''leftward.'' Nor do the response functions for other species account for this difference, although unpredictability is known to exacerbate stress response in a diversity of mammalian species and should conservatively be assumed, in this case, to lead to a heightened response in marine mammal species other than beaked whales.

*Response:* The best available science was used to develop the BRFs. The current beaked whale BRF acknowledges and incorporates the increased sensitivity observed in beaked whales during both behavioral response studies and during actual Navy training events, as well as the fact that dipping sonar can have greater effects than some other sources with the same source level. Specifically, the distance cut-off for beaked whales is 50 km, larger than any other group. Moreover, although dipping sonar has a significantly lower source level than hull-mounted sonar, it is included in the category of sources with larger distance cut-offs, specifically in acknowledgement of its unpredictability and association with observed effects. This means that ''takes'' are reflected at lower received levels that would have been excluded because of the distance for other source types. An article referenced by the commenter (Associating patterns in movement and diving behavior with sonar use during military training exercises: A case study using satellite tag data from Cuvier's beaked whales at the Southern California Anti-submarine Warfare Range (Falcone *et al.,* 2017)) was not available at the time the BRFs were developed. However, NMFS and the Navy have reviewed the article and concur that neither this article nor any other new information that has been published or otherwise conveyed since the BRFs were developed changes the assessment of impacts or conclusions in the 2020 NWTT FSEIS/OEIS or in this rulemaking. Additionally, the current beaked whale BRF covers the responses observed in this study since the beaked whale risk function is more sensitive than the other risk functions at lower received levels. The researchers involved with the study continue to further refine their analytical approach and integrate additional statistical parameters for future reporting. Nonetheless, the new information and data presented in the article were thoroughly reviewed by NMFS and the Navy and will be quantitatively incorporated into future BRFs, as appropriate, when and if other new data that would meaningfully change the functions would necessitate their revision. Furthermore, ongoing beaked whale monitoring at the same site where the dipping sonar tests were conducted has not documented habitat abandonment by beaked whales. Passive acoustic detections of beaked whales have not significantly changed over ten years of monitoring (DiMarzio *et al.,* 2018, updated in 2020). From visual surveys in the same area since 2006, there have been repeated sightings of the same individual beaked whales, beaked whale mother-calf pairs, and beaked whale mother-calf pairs with mothers on their second calf (Schorr *et al.,* 2018, 2020). Satellite tracking studies of beaked whales documented high site fidelity to this area (Schorr *et al.,* 2018, updated in 2020).

*Comment 8:* A commenter recommends that NMFS: (1) Explain why, if the constants and exponents for onset mortality and onset slight lung injury thresholds for the current phase of incidental take rulemaking for the Navy (Phase III) have been amended to account for lung compression with depth, they result in lower rather than higher absolute thresholds when animals occur at depths greater than 8 m and (2) specify what additional assumptions were made to explain this counterintuitive result.

*Response:* The derivation of the explosive injury equations, including any assumptions, is provided in the 2017 technical report titled *Criteria and Thresholds for U.S. Navy Acoustic and Explosive Effects Analysis (Phase III).* Specifically, the equations were modified for the current rulemaking period (Phase III) to fully incorporate the injury model in Goertner (1982), specifically to include lung compression with depth. NMFS independently reviewed and concurred with this approach.

The impulse mortality/injury equations are depth dependent, with thresholds increasing with depth due to increasing hydrostatic pressure in the model for both the previous 2015–2020 phase of rulemaking (Phase II) and Phase III. The underlying experimental data used in Phase II and Phase III remain the same, and two aspects of the Phase III revisions explain the relationships the commenter **Notes:**

(1) The numeric coefficients in the equations are computed by inserting the Richmond *et al.* (1973) experimental data into the model equations. Because the Phase III model equation accounts for lung compression, the plugging of experimental exposure values into a different model results in different coefficients. The numeric coefficients are slightly larger in Phase III versus Phase II, resulting in a slightly greater threshold near the surface.

(2) The rate of increase for the Phase II thresholds with depth is greater than the rate of increase for Phase III thresholds with depth because the Phase III equations take into account the corresponding reduction in lung size with depth (making an animal more vulnerable to injury per the Goertner model), as the commenter notes.

*Comment 9:* A commenter recommended that NMFS use onset mortality, onset slight lung injury, and onset gastrointestinal (GI) tract injury thresholds rather than the 50-percent thresholds to estimate both the numbers of marine mammal takes and the respective ranges to effect. If NMFS does not implement the recommendation, the commenter further recommends that NMFS (1) specify why it is inconsistently basing its explosive thresholds for Level A harassment on onset of PTS and Level B harassment on onset of TTS and onset behavioral response, while the explosive thresholds for mortality and Level A harassment are based on the 50-percent criteria for mortality, slight lung injury, and GI tract injury, (2) provide scientific justification supporting the assumption that slight lung and GI tract injuries are less severe than PTS and thus the 50-percent rather than onset criteria are more appropriate for estimating Level A harassment for those types of injuries,

and (3) justify why the number of estimated mortalities should be predicated on at least 50 percent rather than 1 percent of the animals dying.

Another commenter also stated that they do not understand why the Navy and NMFS use the 50 percent average for the explosive impact analysis while using onset for purposes of assessing the effectiveness of the Navy's mitigation zones. This commenter also stated that this approach is not consistent with the probability standards set forth in the MMPA. The MMPA incorporates a standard of ''significant potential'' into its definition of ''injury'' for military readiness activities; this standard plainly differs from the higher ''likelihood'' standard that applies to behavioral disruption. And while the probability standard for mortality is not specifically defined in the Act, Congress expressly amended the MMPA in 1994 to incorporate a ''potential'' standard in the wake of the Ninth Circuit decision in *U.S.* v. *Hiyashi,* 22 F.3d 859 (9th Cir. 1993). If NMFS is to satisfy the plain language of the MMPA, and provide a more conservative estimate of harm, it cannot base its mortality and injury estimates on the mean.

*Response:* First, we note an error in one of the commenters' assertions. The BRFs used in the behavioral harassment thresholds are not based on the onset of any behavioral response. They are based on responses at or above a severity at which we believe ''take'' occurs, therefore the BRFs do not predict onset behavioral response. Also, the ''onset'' of TTS is not when there is any measurable TTS (*i.e.,* 0.5, 1 dB); we've defined the onset of TTS as where there is a consistently measurable amount of TTS, which has been defined as 6 dB of TTS. Additionally, the weighting function components of the TTS thresholds are based on the average of all of the data points. Since the PTS threshold is derived from an offset of the TTS threshold, this same averaging concept holds true for PTS criteria.

For explosives, the type of data available are different than those available for hearing impairment, and this difference supports the use of different prediction methods. Nonetheless, as appropriate and similar to take estimation methods for PTS, NMFS and the Navy have used a combination of exposure thresholds and consideration of mitigation to inform the take estimates. The Navy used the range to 1 percent risk of onset mortality and onset injury (also referred to as ''onset'' in the 2020 NWTT FSEIS/OEIS) to inform the development of mitigation zones for explosives. Ranges to effect based on 1 percent risk criteria to onset injury and onset mortality were examined to ensure that explosive mitigation zones would encompass the range to any potential mortality or non-auditory injury, affording actual protection against these effects. In all cases, the mitigation zones for explosives extend beyond the range to 1 percent risk of onset non-auditory injury, even for a small animal (representative mass = 5 kg). Given the implementation and expected effectiveness of this mitigation, the application of the indicated threshold is appropriate for the purposes of estimating take. Using the 1 percent onset non-auditory injury risk criteria to estimate take would result in an over-estimate of take, and would not afford extra protection to any animal. Specifically, calculating take based on marine mammal density within the area that an animal might be exposed above the 1 percent risk to onset injury and onset mortality criteria would over-predict effects because many of those exposures will not happen because of the effective mitigation. The Navy, in coordination with NMFS, has determined that the 50 percent incidence of onset injury and onset mortality occurrence is a reasonable representation of a potential effect and appropriate for take estimation, given the mitigation requirements at the 1 percent onset injury and onset mortality threshold, and the area ensonified above this threshold would capture the appropriate reduced number of likely injuries.

While the approaches for evaluating non-auditory injury and mortality are based on different types of data and analyses than the evaluation of PTS and behavioral disturbance, and are not identical, NMFS disagrees with the commenter's assertion that the approaches are inconsistent, as both approaches consider a combination of thresholds and mitigation (where applicable) to inform take estimates. For the same reasons, it is not necessary for NMFS to ''provide scientific justification supporting the assumption that slight lung and GI tract injuries are less severe than PTS,'' as that assumption is not part of NMFS' rationale for the methods used. NMFS has explained in detail its justification for the number of estimated mortalities, which is based on both the 50 percent threshold and the mitigation applied at the one percent threshold. Further, we note that many years of Navy monitoring following explosive exercises has not detected evidence that any injury or mortality has resulted from Navy explosive exercises with the exception of one incident with dolphins in California, after which mitigation was adjusted to better account for explosives with delayed detonations (*i.e.,* zones for events with time-delayed firing were enlarged).

Further, for these reasons, the methods used for estimating mortality and non-auditory injury are appropriate for estimating take, including determining the ''significant potential'' for non-auditory injury consistent with the statutory definition of Level A harassment for military readiness activities, within the limits of the best available science. Using the one percent threshold would be inappropriate and result in an overestimation of effects, whereas given the mitigation applied within this larger area, the 50 percent threshold results an appropriate mechanism for estimating the significant potential for non-auditory injury.

*Comment 10:* A commenter had concerns regarding the various areas, abundance estimates, and correction factors that the Navy used for pinnipeds. The commenter referenced information in the context of both what the Navy used and what the commenter argued they should have used and summarized the discussion with several recommendations.

Broadly, the commenter stated that since NMFS used the draft 2019 Stock Assessment Reports (SARs) or the most recently finalized SAR for the abundance estimates in its negligible impact determination analyses (Tables 9 and 52–57 in the **Federal Register** notice), it also must use the most recent abundance estimates to inform the associated densities and resulting take estimates as those abundance estimates represent the best available science.

The commenter noted that the abundance estimate for northern fur seals was based on pup count data from 2014 and did not include the more recent data from Bogoslof Island in 2015 and from St. Paul and St. George in 2016. For northern fur seals, the commenter recommended that NMFS revise the density based on the abundance estimate that includes data from Bogoslof Island in 2015 and from St. Paul and St. George in 2016.

The commenter noted that the abundance estimate for Guadalupe fur seals was based on pup count data from 2008 and 2010 and did not include the more recent survey data from 2013–2015 and associated correction factors. For Guadalupe fur seals, the commenter recommended that NMFS revise the density based on abundance data from 2013–2015 at both Isla Guadalupe and Isla San Benito.

The commenter stated that the abundance estimate for Steller sea lions was based on pup and non-pup count and trend data from 2015 and did not incorporate the more recent trend data from 2017. The commenter also noted that the Navy applied non-pup growth rates to the non-pup and pup abundance estimates rather than applying the non-pup growth rates to the non-pup abundances and the pup growth rates to the pup abundances. For Steller sea lions, the commenter recommended that NMFS revise the density based on adjusting the 2015 pup and non-pup data using the trend data from 2017, applying the non-pup growth rate to the non-pup counts and the pup growth rates to the pup counts.

For Guadalupe fur seal, Steller sea lion, California sea lions, harbor seals, and elephant seals, the commenter recommended that NMFS revise the densities based on applying the relevant growth rates up to at least 2020.

For harbor seals in the Strait of Juan de Fuca and the San Juan Islands, the commenter recommended that NMFS revise the densities based on assuming that 46 percent of the animals would be in the water at a given time from Huber *et al.* (2001).

Based on the recommendations above, the commenter recommended that NMFS re-estimate the numbers of takes accordingly in the final rule.

*Response:* The Navy provided NMFS clarification regarding the referenced concerns about areas, abundance estimates, and correction factors that were used for pinnipeds. We first note that take estimation is not an exact science. There are many inputs that go into an estimate of marine mammal exposure, and the data upon which those inputs are based come with varying levels of uncertainty and precision. Also, differences in life histories, behaviors, and distributions of stocks can support different decisions regarding methods in different situations. Further, there may be more than one acceptable method to estimate take in a particular situation. Accordingly, while the applicant bears the responsibility of providing by species or stock the estimated number and type of takes (see 50 CFR 216.104(a)(6)) and NMFS always ensures that an applicant's methods are technically supportable and reflect the best available science, NMFS does not prescribe any one method for estimating take (or calculating some of the specific take estimate components that the commenter is concerned about). NMFS reviewed the areas, abundances, and correction factors used by the Navy to estimate take and concurs that they are appropriate. While some of the suggestions the commenter makes could provide alternate valid ways to conduct the analyses, these modifications are not required in order to have equally valid and supportable analyses. In addition, we note that (1) some of the specific recommendations that the commenter makes are largely minor in nature within the context of our analysis (*e.g.,* ''46 not 37 percent'') and (2) even where the recommendation is somewhat larger in scale, given the ranges of the majority of these stocks, the size of the stocks, and the number and nature of pinniped takes, recalculating the estimated take for any of these pinniped stocks using the commenter's recommended changes would not change NMFS' assessment of impacts on the rates of recruitment or survival of any of these stocks, or the negligible impact determinations. Below, we address the commenter's issues in more detail and, while we do not explicitly note it in every section, NMFS has reviewed the Navy's analysis and choices in relation to these comments and concurs that they are technically sound and reflect the best available science.

*Northern fur seal*—The Navy analyzed unpublished tagging data provided by subject matter experts at NMFS' Alaska Fisheries Science Center (AKFSC). The Navy also did not integrate the 2015 data from Bogoslof Island suggested by the commenter based on advice from subject matter experts at the AKFSC, due to a volcanic eruption at the rookery on Bogoslof Island where a portion of the counts are made, which in the opinion of the AKFSC experts skewed the 2015 data. Therefore, the Navy found that incorporating this data would not reflect the best available science. NMFS concurs with this assessment, and therefore, has not included this information in the take estimation in this final rule. Regarding the recommendation for NMFS to revise the density based on the abundance estimate from St. Paul and St. George in 2016, to complete the modeling on schedule, the density data available at that time from the final 2016 SAR (Muto *et al.,* 2017) were used. Note that the latest pup counts reported in the final 2019 SAR (Muto *et al.,* 2020) using the more recent data from Bogoslof Island in 2015 and St. Paul and St. George in 2016 result in a lower pup count than the one used in the density calculation, which suggests that the estimates used for this final rule are likely conservative.

*Guadalupe fur seal*—The Navy Marine Species Density Database (NMSDD) technical report describes density estimates that were used in the Navy's acoustics effects model. To complete the modeling on schedule, the density data available at that time from the final 2016 SAR (Carretta *et al.,* 2017) were used. The initial abundance estimate of 20,000 fur seals was based on surveys between 2008 and 2010 as the commenter points out, but to account for a likely increasing population trend, the Navy applied a growth rate of 7.64 percent per year to estimate an abundance for the year 2017. That resulted in an abundance of 33,485 fur seals (a 67 percent increase over the reported abundance of 20,000). The final 2019 SAR (Carretta *et al.,* 2020) reported comparable abundance estimates based on the later surveys, some of which were from sources published in 2018, and an estimated growth rate of 5.9 percent, less than the growth rate applied by the Navy. The Navy's abundance estimate for the year 2017 is consistent with the latest abundance estimates.

*Steller sea lion*—As stated above, the NMSDD technical report describes density estimates that were used in the Navy's acoustics effects model. To complete the modeling on schedule, the density data available at that time from the final 2016 SAR (Muto *et al.,* 2017) were used. Steller sea lion densities were calculated independently for regional populations in Washington, Oregon, California, and southeast Alaska, consistent with the stock assessment reports. No trend data were (or are currently) estimated for pups in Washington, therefore, the non-pup growth rate of 8.77 percent per year was used for the entire population. In addition, the baseline abundance for Washington sea lions was increased over the abundance from the stock assessment report based on data reported in Wiles (2015) before the growth rate was applied to project a 2017 abundance. For sea lions in Oregon, California, and southeast Alaska the non-pup growth rate was used, because the number of non-pups in each population was substantially greater than the number of pups. Using separate growth rates for pups and non-pups in all three regions results in less than a 1 percent increase in the projected 2017 abundance. The associated change in the density is minimal and would not change the results of NMFS' or the Navy's analysis of acoustic impacts on Steller sea lions.

*Harbor seal*—Density estimates for harbor seal in the Strait of Juan de Fuca and San Juan Islands were based on sighting data provided by the Washington Department of Fish and Game (Jeffries, 2017). In the context of analyzing that data, a 37 percent in-

water correction factor was applied to the abundance estimate, which is specific to southern Puget Sound. Huber *et al.* (2001) noted that a 46 percent in-water correction factor would have been more appropriate given that the survey location was in the Strait. However, there were specific haulout factors for other areas within the Study Area that gave lower estimates throughout the Inland Waters. Subject matter experts from the Alaska Fisheries Science Center and the Northwest Fisheries Science Center concurred with the Navy's use of 37 percent as being most representative.

Regarding revising the densities based on applying the relevant growth rates up to at least 2020, the density estimates are based on sighting numbers from surveys over many years to encompass variation and are not future predictions. It would not be appropriate to base densities on growth rates. The densities do not incorporate abundances or estimates of growth rate since the abundances for population and their population trend (reduction or growth) are not directly applicable to the density within a given area. Subject matter experts at the NMFS Alaska Fisheries Science Center advised in 2015 and again in 2019 that growth/decline rates provided in the SARs should not be used to project future population numbers for use in the Navy's analysis where abundance have been integrated into the analysis. NMFS concurs with this assessment and has not applied the growth rates in the take estimation in this final rule.

Additionally, the Navy's purpose in applying an annual growth rate to estimate pinniped abundances in 2017 was to account for stock assessment report abundances that were based on surveys conducted several years prior to 2017. The intent was to update an older abundance estimate to the time of the Navy's analysis, not to predict abundances several years into the future. Projecting abundances from the past to the present (2017) allowed adjustments. For example, the growth rate for Guadalupe fur seal reported in the 2016 SAR (Carretta *et al.,* 2017) was 10.3 percent; however, as the commenter pointed out, that rate is based on survey data from 2008–2010. Subsequently, the 2015–2016 unusual mortality event (UME) occurred and the growth rate needed to be revised, which the Navy did. Projections extending into the future would not have allowed these types of corrections.

Please see Comment 18 for additional information about the harbor seal abundance estimates included in this final rule.

*Comment 11:* A commenter stated that a majority of the data that the Navy reviews and uses to determine species population density and breeding grounds is admittedly old and is not the most accurate representation of the species population or their geographic location. In its requirements for an authorization, the MMPA clearly states that requesters must include ''the species and numbers of marine mammals likely to be found within the activity area'' in order to demonstrate the requesting party's understanding of their activity impact on the animals and habitat. Normally, this sort of data requires up-to-date assessment reports, statistics, and accurate data that accurately portray the information that is necessary to require an authorization under the MMPA. However, the commenter stated that the Navy is violating the MMPA by providing outdated data from 2012 and 2014 to account for current patterns of marine activities in 2020–2027, even though they are conducting training exercises in the same Northwest waters where they are hoping to continue practicing for another seven years.

The commenter suggested that the Navy should instead provide accurate up-to-date surveys of the activity areas as well as data for a long-term projection for at least 30 years of activity in the area if it continues to expect to apply for the same authorization over and over again.

*Response:* The *U.S. Navy Marine Species Density Database Phase III for the Northwest Training and Testing Study Area Final Technical Report* includes an in-depth description of the process used to derive density estimates for marine mammal species occurring in the NWTT Study Area, and to provide a summary of species-specific and area-specific density estimates incorporated into the Marine Species Density Database. NMFS concurs that as described in the report, the process the Navy uses ensures that the density estimates reflect the best available data. Given the extensive and comprehensive process, it is not possible (or necessary) to update the density estimates or information about marine mammal breeding grounds each time a new paper is published, nor does the commenter provide additional data or publications that should have been incorporated into the density estimates or identify new information related to breeding grounds. However, the Navy will continue to incorporate, and NMFS will continue to consider, additional data for the next phase of Navy training and testing activities (Phase IV). Through the use of the Navy's methodology and the data inputs used, which were coordinated with NMFS, NMFS has ensured that this final rule incorporates the best available information related to marine mammal density and breeding areas in this final rule.

The commenter suggested that the Navy should provide accurate, up-to-date surveys of the activity areas, as well as data for a long-term projection for at least 30 years of activity in the NWTT Study Area. As discussed in the Monitoring section of this final rule, the Navy funds numerous marine mammal monitoring efforts, and this data is incorporated into the density and abundance estimates as appropriate. For example, this final rule incorporates new data regarding harbor seal abundance in NWTT inland waters from Navy-funded surveys (see the Analysis and Negligible Impact Determination section of this final rule). It is unclear what the commenter means by suggesting that the Navy provide a long-term projection for at least 30 years of activity in the area; however, NMFS notes that the current authorization is limited to seven years. NMFS will conduct a new analysis on the potential effects to marine mammals assuming the Navy seeks an authorization for training and testing activities beyond 2027 in the NWTT Study Area, and will ensure that the best available science, including new data as available, is included in that analysis.

*Comment 12:* A commenter recommended that NMFS require the Navy to provide the method(s) by which species-specific cetacean densities were calculated for Western Behm Canal and cite the primary literature from which those data originated in the report (Department of the Navy (2019)). The commenter states that that level of information should be provided in all technical reports that underpin the Navy's density databases for future Phase III and IV DSEISs, DEISs, and proposed rules.

*Response:* There were two primary sources of density data used to establish cetacean density estimates for Behm Canal: (1) The marine mammal occurrence/density report prepared in support of Navy activities at the Southeast Alaska Acoustic Measurement Facility (U.S. Department of the Navy, 2010) and (2) Density estimates derived by the National Marine Mammal Laboratory, Alaska Fisheries Science Center based on systematic surveys conducted in Southeast Alaska (*e.g.,* Dahlheim *et al.,* 2015). These sources were cited as appropriate in the species-specific sections of Department of the Navy (2020); methods by which species-

specific density estimates were calculated are also described in Department of the Navy (2020). Multiple sources were used to establish pinniped density estimates for Behm Canal. All are cited as appropriate and methods described within the species-specific sections of Department of the Navy, 2020 (U.S. Navy Marine Species Density Database Phase III for the Northwest Training and Testing Study Area: Technical report. Naval Facilities Engineering Command Pacific, Pearl Harbor, Hawaii. 258 pages).

*Comment 13:* A commenter stated that the delineation of Biologically Important Areas by NMFS, the updates made by the Navy to its predictive habitat models, and evidence of additional important habitat areas within the NWTT Study Area provide the opportunity for the agencies to improve upon their current approach to the development of alternatives by improving resolution of their analysis of operations.

The commenter stated that recognizing that important habitat areas imply the non-random distribution and density of marine mammals in space and time, both the spatial location and the timing of training and testing events in relation to those areas is a significant determining factor in the assessment of acoustic impacts. Levels of acoustic impact are likely to be under- or over-estimated depending on whether the location of the modeled event is further from the important habitat area, or closer to it, than the actual event. Thus, there is a need for the Navy to compile and provide more information regarding the number, nature, and timing of testing and training events that take place within, or in close proximity to, important habitat areas, and to refine its scale of analysis of operations to match the scale of the habitat areas that are considered to be important. And there is a need for NMFS to demand it.

The commenter stated that while the 2019 NWTT DSEIS/OEIS, in assessing environmental impacts on marine mammals, breaks down estimated impacts by population, little detail is provided about assumptions concerning modeled locations and times of year. See, *e.g.,* DSEIS at 2–28 to 2–38 (*e.g.,* defining numerous activities as simply occurring ''[o]ffshore''). The commenter further stated that the proposed rule notice adds nothing further, making it impossible for the public to assess the reasonableness of NMFS take estimates and negligible impact analysis in capturing the distribution of the activities proposed in the document. Additionally, the commenter asserts that the lack of definition in activity locations means that the agency cannot ensure takes are kept below authorized levels—and that sufficient measures are taken to protect particularly vulnerable marine mammal populations, such as the critically endangered Southern Resident killer whale and the struggling California gray whale.

The commenter recommended that NMFS require the Navy to produce further information on modeled locations and, if activities are not limited through the authorization process to specific geographic areas, to determine a worst-case take estimate for each species or population.

Another commenter stated that the Navy should provide NMFS with details on proposed timing of their training and testing activities and adjust the timing of their activities to minimize such overlap—such as through seasonal closures. The commenter stated that the DSEIS and the LOA application did not detail the times of year during which the proposed activities would take place. To issue a LOA, NMFS requires that proposed actions ''be well-planned with enough detailed information to allow for a robust analysis of the entire duration of your planned activity,'' which is lacking here. The Southern Resident killer whales have exhibited seasonality in their movements, and information from tagging studies, coastal surveys and passive acoustic monitoring allows some degree of understanding of seasonal areas for when and where they may be traveling and foraging. Any overlap in their seasonal movements and the Navy's testing and training activities will increase adverse impacts.

*Response:* This final rule and the 2020 NWTT FSEIS/OEIS are structured to provide flexibility in training and testing locations, timing, and number. Many factors influence actual training and testing locations that cannot be predicted in advance (*e.g.,* weather), so the analysis must allow for flexibility. The analysis must consider multiple Navy training and testing activities over large areas of the ocean for a seven-year period; therefore, analyzing activities in multiple locations over multiple seasons produces the best estimate of impacts/take to inform the 2020 NWTT FSEIS/OEIS and for NMFS to use to make its determinations. The scale at which spatially explicit density models are structured is determined by the data collection method and the environmental variables that are used to build the model. A number of variables that are meaningful to marine mammal species, such as sea surface temperature, do not vary or affect species on a fine scale. Expecting fine scale resolution from the Navy's density database may force artificial granularity on species for which it is not biologically meaningful at the population level. Therefore, given the variables that determine when and where the Navy trains and tests and the resolution of the density data, the analysis of potential impacts cannot be scaled to specific habitat areas, but the information included is at the appropriate resolution and provides the Navy and NMFS with the information necessary to determine potential impacts/take for a population of animals. Chapter 3.4 (Marine Mammals) of the 2020 NWTT SFEIS/OEIS estimates what portion of impacts to each species are expected to occur within different regions in the Study Area. NMFS has reviewed and concurs with the Navy's analysis and level of detail provided given these restrictions.

Additionally, specific modeled locations are not disclosed in public documents because of national security concerns, and information regarding the exact location of sonar usage is classified, although classified exercise reports with this information are provided to NMFS staff with the required security clearance. Furthermore, the Navy requires large areas of sea and air space to support the tactics, techniques, and procedures needed for certain activities, and training in large areas also helps the Navy avoid observation by potential adversaries. Modern sensing technologies make training on a large scale without observation more difficult. A foreign military's continual observation of U.S. Navy training in predictable (*e.g.,* compiled and publicly disclosed) geographic areas and timeframes would enable foreign nations to gather intelligence and subsequently develop techniques, tactics, and procedures to potentially and effectively counter U.S. naval operations.

Still, the Navy's rulemaking/LOA application and the 2020 NWTT FSEIS/OEIS provide a significant level of information about the locations of specific activities (see, *e.g.,* Chapter 2 (Description of Proposed Action and Alternatives) and Appendix A (Activity Descriptions) of the FSEIS/OEIS), which NMFS has used in its analysis of Navy activities and their impacts to marine mammals in the NWTT Study Area. Chapter 2 of the 2020 NWTT FSEIS/OEIS also describes Standard Operating Procedures that may influence activity location. Additionally, this final rule, and Chapter 5 (Mitigation) and Appendix K (Geographic Mitigation Assessment) of the 2020 NWTT FSEIS/OEIS describe mitigation measures,

including in specific mitigation areas, that the Navy is required to implement during 2020–2027 NWTT activities. In addition to the above considerations, conservative assumptions are used in the quantitative assessment process, as described in the technical report titled *Quantifying Acoustic Impacts on Marine Mammals and Sea Turtles: Methods and Analytical Approach for Phase III Training and Testing* (U.S. Department of the Navy, 2018c), an analysis which NMFS has reviewed and concurs with. The Navy also implements conservative application of marine mammal behavioral response data in the development of behavioral response criteria, as described in the technical report titled *Criteria and Thresholds for U.S. Navy Acoustic and Explosive Effects Analysis (Phase III)* (U.S. Department of the Navy, 2017h), which NMFS has also reviewed and concurs with. (Both technical reports are available at *www.nwtteis.com.*)

Additionally, implementation of the adaptive management process under the Letters of Authorization issued under this final rule further ensures that the Navy does not exceed the level of authorized take. Finally, the Navy's classified exercise reports are required to include information regarding activities conducted and sound sources used within specific mitigation areas, which provides the sort of geographically-explicit information the commenter is referencing and may be used to inform the adaptive management process and future rules.

*Comment 14:* A commenter stated that rather than using a fixed received level threshold for whether a take is likely to occur from exposure to mid-frequency sonar, the Navy has proposed a method for incorporating individual variation. Risk is predicted as a function of three parameters: (1) A basement value below which takes are unlikely to occur; (2) the level at which 50 percent of individuals would be taken; and (3) a sharpness parameter intended to reflect the range of individual variation. The commenter stated that even when parameters employed are based on the best available science, the implications of uncertainty in the values and biases and limitations in the model tend to lead to underestimation of the number of takes. The commenter asserts that data were incorrectly interpreted when calculating parameter values, resulting in a model that underestimates takes. The commenter states that errors included failure to recognize the difference between the mathematical basement plugged into the model, and the biological basement value, where the likelihood of observed and predicted takes becomes non-negligible; using the level where the probability of take was near 100 percent for the level where the probability of take was 50 percent; extrapolating values derived from laboratory experiments that were conducted on trained animals to wild animals without regard for the implications of training; and ignoring other available data, resulting in a further underestimation of takes. The commenter discusses several other points related to the development, interpretation, and application of the behavioral harassment thresholds used in prior Navy NWTT rules.

*Response:* The commenter is referring to the Phase II behavioral criteria, which were utilized in the previous NWTT rulemaking (2015–2020). In Phase III for this rulemaking, the Navy and NMFS incorporated the best available science into new BRFs that are described in the technical report titled *Criteria and Thresholds for U.S. Navy Acoustic and Explosive Effects Analysis (Phase III)* (U.S. Department of the Navy, 2017a), available at *www.nwtteis.com.* NMFS reviewed and concurs with the Phase III behavioral criteria described in the technical report.

*Comment 15:* A commenter recommends that NMFS (1) specify the total numbers of model-estimated Level A harassment (PTS) and mortality takes rather than reduce the estimated numbers of takes based on the Navy's post-model analyses, (2) include the model-estimated Level A harassment and mortality takes in its negligible impact determination analyses, and (3) authorize the model-estimated Level A harassment and mortality takes if the respective negligible impact determinations are able to be made and, if not, require the Navy to implement additional measures to mitigate such takes.

Another commenter stated that NMFS' post hoc adjustment for operational mitigation effectiveness is not a trivial or an abstract issue. It has the apparent effect of eliminating risk of mortality from explosives known to be of a power to kill marine mammals. Some experts have raised concerns that one Southern Resident killer whale mortality (whale L112) was caused by naval explosives or ordnance. NMFS should have made the Navy's approach transparent and explained the rationale for its acceptance of that approach. Its failure to do so has prevented the public from effectively commenting on its approach to this issue, in contravention of the APA, on a matter of obvious significance to the agency's core negligible impact findings. The commenter further states that, in estimating the number of instances of injury and mortality, NMFS makes two post hoc adjustments, significantly reducing the totals based on presumed animal avoidance and mitigation effectiveness. The commenter asserts that these two adjustments are arbitrary and non-conservative.

*Response:* First, we note that no mortality or non-auditory injury from exposure to explosives was modeled for any species in the NWTT Study Area, so the post-modeling approach was not applied in relation to mortality. Regarding the reference to concerns about the killer whale mortality, the comment references vague and unsupported claims that the author of a news article received from interviewees questioning a NMFS report. NMFS is unaware of information supporting the claim that Navy sonar or explosive use has caused the death of a killer whale.

The consideration of marine mammal avoidance and mitigation effectiveness is integral to NMFS' and the Navy's overall analysis of impacts from sonar and explosive sources. NMFS has independently evaluated the method and agrees that it is appropriately applied to augment the model in the prediction and authorization of injury and mortality as described in the rule. Details of this analysis are provided in the Navy's 2018 technical report titled *Quantifying Acoustic Impacts on Marine Mammals and Sea Turtles: Methods and Analytical Approach for Phase III Training and Testing.* Detailed information on the mitigation analysis was included in the proposed rule, including information about the technical report, and NMFS disagrees with the commenters' suggestions that there was not enough information by which to evaluate the Navy's post-modeling calculations or that the methods are arbitrary or non-conservative.

Sound levels diminish quickly below levels that could cause PTS. Specifically, behavioral response literature, including the recent 3S studies (multiple controlled sonar exposure experiments on cetaceans in Norwegian waters) and SOCAL BRS studies (multiple cetacean behavioral response studies in Southern California), indicate that multiple species from different cetacean suborders do in fact avoid approaching sound sources by a few hundred meters or more, which would reduce received sound levels for individual marine mammals to levels below those that could cause PTS (see Appendix B of the *Criteria and Thresholds for U.S. Navy Acoustic and Explosive Impacts to Marine Mammals and Sea Turtles*

*Technical Report* (U.S. Department of the Navy, 2017) and Southall *et al.* (2019a)). The ranges to PTS for most marine mammal groups are within a few tens of meters and the ranges for the most sensitive group, the HF cetaceans, average about 200 m, to a maximum of 330 m in limited cases. For blue whales and other LF cetaceans, the range to PTS is 67 m for MF1 30 sec duration exposure, which is well within the mitigation zones for hull-mounted MFAS. Therefore, the anticipated avoidance to the distances discussed would greatly reduce the likelihood of impacts to hearing such as TTS and PTS. As discussed in the proposed rule, this final rule, and the Navy's report, animats in the Navy's acoustic effects model do not move horizontally or ''react'' to sound in any way. Accordingly, NMFS and the Navy's analysis appropriately applies a quantitative adjustment to the exposure results calculated by the model (which otherwise does not consider avoidance or mitigation).

As discussed in the Navy's report, the Navy's acoustic effects model does not consider procedural mitigations (*i.e.,* power-down or shut-down of sonars, or pausing explosive activities when animals are detected in specific zones adjacent to the source), which necessitates consideration of these factors in the Navy's overall acoustic analysis. Credit taken for mitigation effectiveness is extremely conservative. For example, if Lookouts can see the whole area, they get credit for it in the calculation; if they can see more than half the area, they get half credit; if they can see less than half the area, they get no credit. Not considering animal avoidance and mitigation effectiveness would lead to a great overestimate of injurious impacts. NMFS concurs with the analytical approach used, *i.e.,* we believe the estimated take by Level A harassment numbers represent the maximum number of these takes that are likely to occur and it would not be appropriate to authorize a higher number or consider a higher number in the negligible impact analysis.

The Navy assumes that Lookouts will not be 100 percent effective at detecting all individual marine mammals within the mitigation zones for each activity. This is due to the inherent limitations of observing marine species and because the likelihood of sighting individual animals is largely dependent on observation conditions (*e.g.,* time of day, sea state, mitigation zone size, observation platform) and animal behavior (*e.g.,* the amount of time an animal spends at the surface of the water). The Navy quantitatively assessed the effectiveness of its mitigation measures on a per-scenario basis for four factors: (1) Species sightability, (2) a Lookout's ability to observe the range to permanent threshold shift (for sonar and other transducers) and range to mortality (for explosives), (3) the portion of time when mitigation could potentially be conducted during periods of reduced daytime visibility (to include inclement weather and high sea-state) and the portion of time when mitigation could potentially be conducted at night, and (4) the ability for sound sources to be positively controlled (*e.g.,* powered down). The Navy's report clearly describes how these factors were considered, and it is not necessary to view the many tables of numbers generated in the assessment to evaluate the method. Further, this information is not readily available in a format that could be shared and it would take extensive work to provide the necessary description of this data.

The g(0) values used by the Navy for their mitigation effectiveness adjustments take into account the differences in sightability with sea state, and utilize averaged g(0) values for sea states of 1–4 and weighted as suggested by Barlow (2015). Using g(0) values is an appropriate and conservative approach (*i.e.,* it underestimates the protection afforded by the Navy's mitigation measures) for the reasons detailed in the technical report. For example, during line-transect surveys, there are typically two primary observers searching for animals. Each primary observer looks for marine species in the forward 90-degree quadrant on their side of the survey platform and scans the water from the vessel out to the limit of the available optics (*i.e.,* the horizon). Because Navy Lookouts focus their observations on established mitigation zones, their area of observation is typically much smaller than that observed during line-transect surveys. The mitigation zone size and distance to the observation platform varies by Navy activity. For example, during hull-mounted mid-frequency active sonar activities, the mitigation zone extends 1,000 yd from the ship hull. During the conduct of training and testing activities, there is typically at least one, if not numerous, support personnel involved in the activity (*e.g.,* range support personnel aboard a torpedo retrieval boat or support aircraft). In addition to the Lookout posted for the purpose of mitigation, these additional personnel observe for and disseminate marine species sighting information amongst the units participating in the activity whenever possible as they conduct their primary mission responsibilities. However, as a conservative approach to assigning mitigation effectiveness factors, the Navy elected to account only for the minimum number of required Lookouts used for each activity; therefore, the mitigation effectiveness factors may underestimate the likelihood that some marine mammals may be detected during activities that are supported by additional personnel who may also be observing the mitigation zone.

Although the Navy Acoustic Effects Model (NAEMO) predicted PTS takes from the NWTT activities, no mortality or non-auditory injuries were predicted by NAEMO. For all of the reasons above, NMFS considers the estimated and authorized take (that was adjusted for aversion and mitigation) appropriate, and that is what has been analyzed in the negligible impact analysis. Accordingly, we decline the commenter's recommendation to analyze and authorize the model-estimated PTS, as it is neither expected to occur nor authorized. Given that we have declined a re-evaluation based on the PTS numbers the commenter recommends, the suggestion that we would subsequently then assess whether additional mitigation were necessary to satisfy the negligible impact standard is inapplicable. However, we reiterate that even when the estimated take has been determined to have a negligible impact on the affected species or stocks, it is still necessary, as a separate matter, to identify measures that will effect the least practicable adverse impact on the affected species or stocks and their habitat and, as described elsewhere, we have done so for this rule.

*Comment 16:* A commenter stated that while the cause remains unknown, the skinniness and emaciation of stranded gray whales associated with the current UME strongly suggests a decline in prey availability. A previous die-off in 1998–2000 of gray whales was associated with strong El Niño and La Niña events and a regime shift in the benthic prey base of the Bering Sea. For the scientific community, the present-day concern is that warming seas—caused by climate change—are reducing primary productivity in the whales' northern foraging range and that vanishing sea ice is constricting populations of ice-associated amphipods. If so, the die-off may be a ''harbinger of things to come,'' in the words of one NOAA ecologist, a diminished, more tenuous future for the species rather than a one- or two-year anomaly.

The commenter states that it is well established that animals already exposed to one stressor may be less capable of responding successfully to another; and that stressors can combine to produce adverse synergistic effects. Here, disruption in gray whale behavior can act adversely with the inanition caused by lack of food, increasing the risk of stranding and lowering the risk of survival in compromised animals. Further, starving gray whales may travel into unexpected areas in search of food—a likely contributing cause of some of the ship-strikes observed in recently stranded animals. NMFS estimates that the Navy's activities will cause as many as 43 takes of gray whales each year, including 15 cases of temporary hearing loss caused by underwater explosives, indicating the potential for adverse interactions with nutritionally-stressed animals.

The commenter states that in considering the effects of acoustic exposure on gray whales, NMFS must carefully consider the biological context of behavioral disruption in that species and evaluate the potential for severe consequences—including the clear potential mortality, which, in violation of the MMPA, is not authorized in the proposed rule.

*Response:* This final rule includes 43 takes by Level B harassment of gray whales, less than one percent of the Eastern North Pacific stock, and no Level A harassment (PTS or non-auditory injury) of gray whales is anticipated or authorized. As discussed in the Analysis and Negligible Impact Determination section, the take by behavioral disturbance for any affected gray whale is expected to be at a moderate or low level and likely to occur on no more than one day within a year for any individual. Nonetheless, NMFS shares the commenter's concern for this stock given the UME and, as discussed in the Mitigation Measures section and elsewhere in this section, measures have been added since the proposed rule that are expected to further reduce the number and severity of the takes of gray whales. However, even if the impacts of the expected take was exacerbated by the compromised condition of a given individual, which could happen, there is no reason to expect that the level and severity of take anticipated to result from the Navy's activities would result in mortality as the commenter has suggested. Further, this gray whale stock is considered to be increasing.

Further, the commenter incorrectly states that NMFS did not include mortality of gray whales in the proposed rule. The proposed rule, and this final rule, include one mortality over the seven years covered by this rule, or 0.14 mortality annually, which has been analyzed in the context of its impacts on the stock in the Analysis and Negligible Impact Determination section. However, this mortality is associated with ship strike, not behavioral disturbance, and given the severity and magnitude of the authorized Level B harassment take reiterated above, the effects of the take would not accumulate to impact annual rates of recruitment or survival.

*Comment 17:* A commenter stated that by itself, NMFS' avoidance adjustment effectively reduces the number of estimated auditory injuries by 95 percent, on the assumption that marine mammals initially exposed to three or four sonar transmissions at levels below those expected to cause permanent injury would avoid injurious exposures. While it is certainly true that some marine mammals will flee the sound, there are no data to inform how many would do so, let alone that 95 percent would move as expeditiously as the agency presumes. Marine mammals may remain in important habitat, and the most vulnerable individuals may linger in an area, notwithstanding the risk of harm; marine mammals cannot necessarily predict where an exercise will travel; and Navy vessels engaged in certain activities may move more rapidly than a marine mammal that is attempting to evacuate. Some commenters suggested that NMFS should not adjust for avoidance.

*Response:* The consideration of marine mammals avoiding the area immediately around the sound source is provided in the Navy's 2018 technical report titled *Quantitative Analysis for Estimating Acoustic and Explosive Impacts to Marine Mammals and Sea Turtles* and additional discussion is provided in NMFS' response to Comment 15. As the commenter correctly articulates: ''For avoidance, the Navy assumed that animals present beyond the range to onset PTS for the first three to four pings are assumed to avoid any additional exposures at levels that could cause PTS. That equated to approximately 5 percent of the total pings or 5 percent of the overall time active; therefore, 95 percent of marine mammals predicted to experience PTS due to sonar and other transducers were instead assumed to experience TTS.''

As discussed in the Navy report, animats in the Navy's acoustic effects model do not move horizontally or ''react'' to sound in any way, necessitating the additional step of considering animal avoidance of close-in PTS zones. NMFS independently reviewed this approach and concurs that it is fully supported by the best available science. Based on a growing body of behavioral response research, animals do in fact avoid the immediate area around sound sources to a distance of a few hundred meters or more depending upon the species. Avoidance to this distance greatly reduces the likelihood of impacts to hearing such as TTS and PTS, respectively. Specifically, the ranges to PTS for most marine mammal groups are within a few tens of meters and the ranges for the most sensitive group, the HF cetaceans, average about 200 m, to a maximum of 270 m in limited cases. NMFS continues to consider the adjustments for avoidance appropriate and declines the recommendation that the adjustment not be included in the estimation of take.

In regard to the comment about vessels moving faster than animals' ability to get out of the way, animals do not need to predict where an exercise will occur—in the vast majority of cases they can hear it coming. Further, the fact that vessels may move more rapidly than animals just makes it less likely that the animal would remain close enough to the source for the duration necessary to incur injury. NMFS and the Navy have appropriately considered animal movement in relation to testing and training activities and the commenter's observation does not necessitate any changes in our methods.

*Comment 18:* A commenter recommends that NMFS ensure that its density estimates and abundance estimates used in the negligible impact determination analyses for harbor seals in Hood Canal, Washington Northern Inland Waters, and Southern Puget Sound are consistent, and if more recent abundance estimates from Navy monitoring efforts were used to inform the negligible impact determination analyses, use those same abundances estimates to inform its density estimates and re-estimate the numbers of takes accordingly. If NMFS intends to use the ''instances of total takes as a percentage of the abundance'' in the final rule, the commenter recommends that it ensure that the abundance estimates, total takes, and instances of total takes as a percentage of the abundance are accurately stipulated for all three metrics in the relevant tables.

*Response:* NMFS has updated the abundance estimates for inland stocks of harbor seals using data from Jefferson *et al.* (2017) and Smultea *et al.* (2017) in this final rule and the same has been done in the 2020 NWTT FSEIS/OEIS. The Analysis and Negligible Impact Determination section reflects these latest abundance estimates and includes

a complete explanation for how they were calculated. The new information does not change the in-water density estimates, and therefore the number of takes did not change.

*Comment 19:* A commenter stated that as it has done for every Navy offshore range in its third round of MMPA authorizations, NMFS finds, notwithstanding a long record, that the Navy's use of active sonar would not result in a single instance of serious injury or mortality in any cetacean species. In doing so, the agency is at pains to dismiss the scientific literature. It spends almost five columns of the **Federal Register** notice characterizing the leading scientific explanation for sonar-related injuries in beaked whales—maladaptive behavioral response—as a mere ''hypothesis'' about which more information is needed. In this, it elides the obvious fact that this ''hypothesis'' is supported by numerous papers along multiple lines of evidence, including forensic investigations, laboratory study of organ tissue, and theoretical work on dive physiology, and plainly constitutes best available science. And it concludes by opining that, even if the ''hypothesis'' were true, pathologies would occur only upon exposure ''at very close range over a prolonged period of time,'' which, it says, would not happen here. It provides no evidence for this conclusion, which should not come as a surprise since it is contradicted by the agency's own investigations into at least two prior mass stranding events.

The commenter stated that there is no question that sonar causes mortalities of beaked whales and other species, and that the severe injuries observed in beaked whales across multiple sonar-related mortality events occur independent of the animals' stranding. The commenter stated that NMFS' refusal to incorporate such impacts into its rulemaking violates the MMPA, which requires that decisions be based on best available science and which, consistent with the 1994 Amendments to the Act, implicitly sets a probability standard of potentiality for takes resulting in serious injury and mortality.

In a related comment, another commenter stated that while the Navy is aware of this correlation between sonar testing and stranded marine mammals, they choose to ignore the data and proceed with ''hopeful'' predictions that estimate no incidences of mortality or serious injury, despite contrary evidence from past use of sonar testing. The commenter states that the documented history of sonar related injuries and death cannot be ignored.

*Response:* NMFS does not conclude that there is no possibility for mortality to occur as a result of the Navy's sonar activities, rather, we reason that consideration of all applicable information (the best available science) does not indicate that such mortality is reasonably likely to result from the Navy's activities within the seven-year span of the NWTT rule.

NMFS has acknowledged that it is possible for naval activities using hull-mounted tactical sonar to contribute to the death of marine mammals in certain circumstances via strandings resulting from behaviorally mediated physiological impacts or other gas-related injuries. In the proposed rule, NMFS discussed these potential causes and outlined the few cases where active naval sonar (in the United States or, largely, elsewhere) had either potentially contributed to or (as with the Bahamas example) been more definitively causally linked with marine mammal mass strandings (more than two animals). There have been no documented mass strandings of beaked whales in the NWTT Study area since stranding data began to be collected.

As discussed in the proposed rule and the Estimated Take of Marine Mammals section of this final rule, there are a suite of factors that have been associated with these specific cases of strandings directly associated with sonar (steep bathymetry, multiple hull-mounted platforms using sonar simultaneously, constricted channels, strong surface ducts, *etc.*) that are not present together in the NWTT Study Area and during the specified activities (and which the Navy takes care across the world not to operate under without additional monitoring). The number of incidences of strandings resulting from exposure to active sonar are few worldwide, there are no major training exercises utilizing multiple hull-mounted sonar in the NWTT Study Area, the overall amount of active sonar use is low relative to other Navy Study Areas, and there have not been any documented mass strandings of any cetacean species in the NWTT Study Area. Appropriately therefore, the Navy has not requested, and NMFS does not anticipate or authorize, incidental take by mortality of beaked whales or any other species as a result of sonar use.

*Comment 20:* Some commenters stated that the Navy Acoustic Effects Model (NAEMO) has limitations as it does not consider social factors, and this is likely to result in the model underestimating takes (*i.e.,* since Southern resident killer whales travel in groups, one whale ignoring noise while another avoids it would result in separation of individuals). Thus, either all whales would respond at the threshold for the most sensitive individual present, or stress rather than avoidance in some or most individuals would be the response. Another commenter suggested that NMFS does not consider calving cycles and migration in the analysis.

In a related comment, a commenter stated that first, not only do takes occur at far greater distances than predicted by the Navy's risk model, the fact that larger areas are exposed to a given received level with increasing distance from the source further multiplies the number of takes. This implies takes of specific individuals will be of greater duration and be repeated more often, resulting in unexpectedly large cumulative effects. Second, corrections need to be made for bias, and corrections will need to be larger for species for which there are no data than for species for which there are poor data. Third, the greater range at which takes would occur requires more careful consideration of habitat-specific risks and fundamentally different approaches to mitigation.

*Response:* The NAEMO brings together scenario simulations of the Navy's activities, sound propagation modeling, and marine mammal distribution (based on density and group size) by species or stock to model and quantify the exposure of marine mammals above identified thresholds for behavioral harassment, TTS, PTS, non-auditory injury, and mortality. It includes social factors (*e.g.,* group sizes) typical of the species modeled. The Southern Resident killer whale densities inherently consider group size over large areas. We expect that on many days, the Navy's impacts will not affect Southern Resident killer whales, while on days that Southern Resident killer whales are affected, multiple individuals may be impacted, given group size. That said, all Southern Resident killer whale takes are expected to be takes by Level B harassment (behavioral disturbance and TTS) only.

Regarding the commenter's assertion that NMFS and the Navy have mischaracterized either the size of the ensonified area or the number of animals that will be exposed, we disagree. As discussed in the technical report titled *Quantifying Acoustic Impacts on Marine Mammals and Sea Turtles: Methods and Analytical Approach for Phase III Training and Testing* (U.S. Department of the Navy, 2018) available at *www.nwtteis.com,* marine mammal density data are provided as a $10 \times 10$ km grid in which each cell has a mean density and

standard error. In the NAEMO, species densities are distributed into simulation areas. Sixty distributions that vary based on the standard deviation of the density estimates are run per season (warm and cool) for each species to account for statistical uncertainty in the density estimate. The NAEMO also uses accepted propagation models and incorporates extensive databases of physical environmental data to accurately predict acoustic propagation, as described in this same technical report. This includes modeling for potential impacts at distances far from a sound source. The energy from multiple exposures during an event (*e.g.,* multiple sonar pings) are accumulated to assess auditory impacts. Takes of individuals are accurately accounted for in the quantitative analysis as described in 2020 NWTT FSEIS/OEIS and the above supporting technical report.

The Navy compiled data from multiple sources and developed a protocol to select the best available density estimates based on species, area, and time (*i.e.,* season), including those for species with poor data. This process is described in the technical report titled *U.S. Navy Marine Species Density Database Phase III for the Northwest Training and Testing Study Area* (U.S. Department of the Navy, 2019), available at *www.nwtteis.com.*

The commenter notes ''larger areas are exposed to a given received level with increasing distance from the source further multiplies the number of takes,'' seeming to suggest that this means that the take estimates should be higher than they are. However, this comment does not account for the behavioral harassment thresholds used by NMFS and the Navy, which include both BRFs describing how a smaller portion of exposed animals respond in a manner that qualifies as a take at lower received levels, as well as distance cutoffs—both of which counter the assertion that large numbers of animals will be taken at increasing distances from the source.

Regarding the comment about mitigation, while there is no specific recommendation, we note that NMFS has worked with the Navy to carefully consider the risks and to develop a suite of mitigation measures to avoid or reduce potential impacts to species (such as the Southern Resident killer whale) and their habitat to the maximum extent practicable, including numerous new mitigation measures developed for the final rule.

All models have limitations, and there is no way to fully incorporate all of the interactions of the biotic and abiotic components of a living system into a model. However, the Navy and NMFS have used the best available science in the approach outlined for this rule, and appropriately incorporated consideration of marine mammal social dynamics, as well as the likely area of ensonification, in the model used in the estimation of take. Further, the Potential Effects of Specified Activities on Marine Mammals and their Habitat section in the proposed rule included a comprehensive discussion of the different ways that marine mammals have been observed to respond to acoustic stimuli (*e.g.,* separation) and NMFS used this information qualitatively in addition to the quantitative modeling results to evaluate the impacts of anticipated take on individuals and the species or stock in the Analysis and Negligible Impact Determination section. Also, where available, other information regarding biologically important areas and times was considered in the development of mitigation measures.

*Comment 21:* A commenter stated that the proposed rule did not incorporate the latest, most seasonally specific distribution and hotspot information for Southern Resident killer whales. In particular, the commenter asserted that NMFS does not specifically propose to use recent monitoring evidence from NOAA's hydrophone network in its analysis. While the Navy did propose to work with NMFS to determine the likelihood of gray whale and Southern Resident killer whale presence, the commenter asserted that NMFS does not require itself or the Navy to rely on NOAA's hydrophone network. This omission is of particular concern because NOAA's monitoring shows considerable temporal and spatial overlap between high-use testing areas for active sonar and explosives and high-use areas by Southern Resident killer whales off Washington's north coast.

*Response:* The Navy and NMFS used the best available science regarding distribution and hotspots of Southern Resident killer whales both in the density numbers that informed the take estimates, as well as in the consideration of mitigation. The data the commenter is noting, Emmons *et al.,* 2019 (which is Navy-funded work utilizing the referenced hydrophones) was considered in both this final rule and the 2020 NWTT FSEIS/OEIS. The commenter has suggested that the Cape Flattery Offshore region is a ''high use'' area for the Navy based on findings from Emmons *et al.* (2019) and suggests that the Navy consider moving activities away from the Cape Flattery area in the spring (April, May, and June) when Southern Resident killer whale detections are highest. The Navy has clarified that it does not frequently conduct training or testing activities in the location of the Cape Flattery Offshore hydrophone since that area is highly utilized by commercial vessel traffic, making it an undesirable location for the Navy to conduct activities, especially sonar training or testing. Emmons *et al.* (2019) reported a number of sonar detections at the Cape Flattery Offshore hydrophone, but this was not normalized for effort, which was also highest at the Cape Flattery Offshore hydrophone location, which could have the effect of overstating detections in that area. Further, Emmons *et al.* (2019) reported on detections of mid-frequency active sonar, but did not distinguish between various sources (U.S. versus Canadian navies, among other users). Historically, the annual usage of MF1 sonar by the U.S. Navy in the Olympic Coast National Marine Sanctuary (which overlaps with the Cape Flattery Offshore hydrophone) over the last 10 years has been minimal. As described in the Mitigation Measures section, NMFS and the Navy developed additional mitigation measures to further avoid or reduce potential impacts from the Navy's activities on Southern Resident killer whales and other marine species in key foraging, breeding, and migration habitat areas. For example, NMFS and the Navy have included a new mitigation area known as the Juan de Fuca Eddy Marine Species Mitigation Area, which encompasses waters off Cape Flattery as recommended by the commenter. The Navy's mitigation now includes annual limits on hull-mounted mid-frequency active sonar and prohibits explosive Mine Countermeasures and Neutralization Testing in the Juan de Fuca Eddy Marine Species Mitigation Area. All other explosive activities are required to be conducted 50 nmi from shore in the Marine Species Coastal Mitigation Area. In addition, NMFS and the Navy developed a new mitigation for the Navy to issue annual awareness notification messages to alert Navy ships and aircraft to the possible presence of increased concentrations of Southern Resident killer whales seasonally, which will further help avoid potential impacts from vessel movements and training and testing activities on this stock.

*Comment 22:* A commenter stated that Tables 19–31 fail to include effects from ASW2 mid-frequency sonar on marine mammals. Although it appears that such tests will only occur 12 or more nmi offshore, the distribution of Southern

Resident killer whales and many other cetaceans still have considerable potential overlap with that zone. The commenter stated that NMFS must require the Navy to provide a table showing the ranges to temporary and permanent threshold shifts for the ASW2 sonar bin and clarify the predicted effects on marine mammals before approving the use of such sonar/activities.

*Response:* The range to impact tables that the commenter references are provided for the most impactful activities, and ASW2 sonar is not one of the most impactful activities. The Navy has provided, and NMFS has presented, information on representative bins from the Navy's activities to demonstrate the ranges to impacts for marine mammals. The Navy is unable to provide information on ranges to impact for bins that are classified, including ASW2 sonar. The Navy has reviewed the scenarios and events associated with the ASW2 bin and there are zero estimated Southern Resident killer whale exposures. NMFS has carefully reviewed this information and the Navy's methods and concurs with this conclusion.

*Mitigation and Monitoring*

Least Practicable Adverse Impact Determination

*Comment 23:* A commenter recommends that NMFS clearly separate its application of the least practicable adverse impact requirement from its negligible impact determination. Once NMFS determines that an applicant's proposed activities would have a negligible impact, it still has a responsibility to determine whether the activities would nevertheless have adverse impacts on marine mammal species and stocks and their habitat. If so, NMFS must condition the authorization to eliminate or reduce those impacts whenever, and to the greatest extent, practicable. As the statue is written, it is inappropriate to conflate the two standards, as NMFS seems to be doing.

*Response:* NMFS has made clear in this and other rules that the agency separates its application of the least practicable adverse impact requirement in the Mitigation Measures section from its negligible impact analyses and determinations for each species or stock in a separate section. Further, NMFS has made this separation clear in practice for years by requiring mitigation measures to reduce impacts to marine mammal species and stocks and their habitat for all projects, even those for which the anticipated take would clearly have a negligible impact, even in the absence of mitigation.

*Comment 24:* A commenter recommends that NMFS follow an analysis consisting of three elements to (1) determine whether the impacts of the proposed activities are negligible at the species or stock level, (2) if so, determine whether some of those impacts nevertheless are adverse either to marine mammal species or stocks or to key marine mammal habitat, and (3) if so, determine whether it is practicable for the applicant to reduce or eliminate those impacts through modifying those activities or by other means (*e.g.,* requiring additional mitigation measures to be implemented).

*Response:* In the Mitigation Measures section of the rule, NMFS has explained in detail our interpretation of the least practicable adverse impact standard, the rationale for our interpretation, and then how we implement the standard. The method the agency is using addresses all of the necessary components of the standard and produces effective mitigation measures that result in the least practicable adverse impact on both the species or stocks and their habitat. The commenter has failed to illustrate why NMFS' approach is inadequate or why the commenter's proposed approach would be better, and we therefore decline to accept the recommendation.

*Comment 25:* A commenter recommended that NMFS rework its evaluation criteria for applying the least practicable adverse impact standard to separate the factors used to determine whether a potential impact on marine mammals or their habitat is adverse and whether possible mitigation measures would be effective.

*Response:* In the Mitigation Measures section, NMFS has explained in detail our interpretation and application of the least practicable adverse impact standard. The commenter has recommended an alternate way of interpreting and implementing the least practicable adverse impact standard, in which NMFS would consider the effectiveness of a measure in our evaluation of its practicability. The commenter erroneously asserts that NMFS currently considers the effectiveness of a measure in a determination of whether the potential effects of an activity are adverse, but the commenter has misunderstood NMFS' application of the standard—rather, NMFS appropriately considers the effectiveness of a measure in the evaluation of the degree to which a measure will reduce adverse impacts on marine mammal species or stocks and their habitat, as a less effective measure will less successfully reduce these impacts on marine mammals. Further, the commenter has not provided information that shows that their proposed approach would more successfully evaluate mitigation under the LPAI standard, and we decline to accept it.

*Comment 26:* A commenter stated that although NMFS has written extensively on the least practicable adverse impact standard, it remains unclear exactly how each authorization's proposed ''mitigation measures are sufficient to meet the statutory legal standard,'' or even what standard NMFS is using. As such, the commenter recommends that NMFS address these shortcomings by adopting a simple, two-step analysis that more closely tracks the statutory provisions being implemented. The first step should be to identify impacts on marine mammal species or stocks or their habitat that, although negligible, are nevertheless adverse. If such impacts are identified, then NMFS must identify and require the applicant to adopt measures to reduce those impacts to the lowest level practicable. If NMFS is using some other legal standard to implement the least practicable adverse impact requirements, the commenter further recommends that NMFS provide a clear and concise description of that standard and explain why it believes it to be ''sufficient'' to meet the statutory legal requirements.

*Response:* NMFS disagrees with the commenter's assertion that analysis of the rule's mitigation measures under the least practicable adverse impact standard remains unclear or that the suggested shortcomings exist. Further, the commenter provides no rationale as to why the two-step process they describe is better than the process that NMFS uses to evaluate the least practicable adverse impact that is described in the rule, and therefore we decline to accept the recommendation.

*Comment 27:* Regarding the habitat component of the least practicable adverse impact standard, a commenter recommended that NMFS (1) adopt a clear decision-making framework that recognizes the species and stock component and the marine mammal habitat component of the least practicable adverse impact provision and (2) always consider whether there are potentially adverse impacts on marine mammal habitat and whether it is practicable to minimize them. The MMPA requires that NMFS address both types of impacts, not that there be no overlap between the mitigation measures designed to reduce those impacts.

*Response:* NMFS' decision-making framework for applying the least practicable adverse impact standard clearly recognizes the habitat component of the provision (see the Mitigation Measures section of the rule). NMFS does always consider whether there are adverse impacts on habitat and how they can be mitigated. Marine mammal habitat value is informed by marine mammal presence and use and, in some cases, there may be overlap in measures for the species or stock directly and for use of habitat. In this rule, we have required time-area mitigation measures based on a combination of factors that include higher densities and observations of specific important behaviors of marine mammal species themselves, but also that clearly reflect preferred habitat (*e.g.,* feeding habitat in the Juan de Fuca Eddy Marine Species Mitigation Area and areas that have also been designated as Southern Resident killer whale critical habitat in the Puget Sound and Strait of Juan de Fuca Mitigation Area). In addition to being delineated based on physical features that drive habitat function (*e.g.,* bathymetric features), the high densities and concentration of certain important behaviors (*e.g.,* reproduction, feeding, resting) in these particular areas clearly indicate the presence of preferred habitat. The MMPA does not specify that effects to habitat must be mitigated in separate measures, and NMFS has clearly included measures that provide significant reduction of impacts to both marine mammal species or stocks and their habitat, as required by the statute.

*Comment 28:* A commenter cited two judicial decisions and commented that the ''least practicable adverse impact'' standard has not been met. The commenter stated that contrary to the *Pritzker* Court decision, NMFS, while clarifying that population-level impacts are mitigated ''through the application of mitigation measures that limit impacts to individual animals,'' has again set population-level impact as the basis for mitigation in the proposed rule. Because NMFS' mitigation analysis is opaque, it is not clear what practical effect this position may have on its rulemaking. The commenter stated that the proposed rule is also unclear in its application of the ''habitat'' emphasis in the MMPA's mitigation standard, and that while NMFS' analysis is opaque, its failure to incorporate or even, apparently, to consider viable time-area measures suggests that the agency has not addressed this aspect of the *Pritzker* decision. The commenter argued that the MMPA sets forth a ''stringent standard'' for mitigation that requires the agency to minimize impacts to the lowest practicable level, and that the agency must conduct its own analysis and clearly articulate it and not just parrot what the Navy says. The baselessness of this approach can be seen from the outcome of the *Conservation Council* decision, where the parties were able to reach a settlement agreement establishing time-area management measures, among other things, on the Navy's Southern California and Hawaii Range Complexes notwithstanding NMFS' finding, following the Navy, that all such management measures would substantially affect military readiness and were not practicable. Unfortunately, there is no indication in the proposed rule that NMFS has, as yet, done anything different here.

Another commenter stated that NMFS ''cannot just parrot what the Navy says'' with respect to analysis of the practicability of mitigation measures, in reference to the opinion in *Conservation Council for Hawaii* v. *Nat'l Marine Fisheries Serv.* The commenter asserts that in the proposed rule, NMFS has done little more than parrot the Navy's position on mitigation for actions in the NWTT Study Area, asserting an independent review of the Navy's assertions of impracticability but providing no substantiation of that review. The commenter states that even if NMFS did conduct such a review, NMFS failed to consider and implement additional mitigation measures that are both practicable and effective to reduce the adverse impacts to marine mammals in the NWTT Study Area.

The commenter stated that it commented on the NWTT DSEIS and the Navy's request for authorization that outlined specific mitigation measures the Navy could incorporate into its training and testing activities. More specifically, the commenter states that it suggested that NMFS consider seasonal closures based on Southern Resident killer whale presence, require additional mitigation in the Southern Resident killer whale offshore habitat area, use of real-time whale reporting, and additional mitigation measures regarding impulsive sound and sonar exposure. The commenter stated that NMFS did not assess or incorporate these practicable and effective mitigation measures.

*Response:* First, the commenter's reference to mitigation measures implemented pursuant to a prior settlement agreement is entirely inapplicable to a discussion of NMFS' responsibility to ensure the least practicable adverse impact under the MMPA. Specifically, for those areas that were previously covered under the 2015 settlement agreement for the HSTT Study Area, it is essential to understand that: (1) The measures were developed pursuant to negotiations with the plaintiffs and were specifically not selected and never evaluated based on an examination of the best available science that NMFS otherwise applies to a mitigation assessment and (2) the Navy's agreement to restrictions on its activities as part of a relatively short-term settlement (which did not extend beyond the expiration of the 2013 regulations) did not mean that those restrictions were practicable to implement over the longer term.

Regarding the remainder of the comments, NMFS disagrees with much of what the commenters assert. First, we have carefully explained our interpretation of the least practicable adverse impact standard and how it applies to both stocks and individuals, including in the context of the *Pritzker* decision, in the Mitigation Measures section. Further, we have applied the standard correctly in this rule in requiring measures that reduce impacts to individual marine mammals in a manner that reduces the probability and/or severity of population-level impacts.

When a suggested or recommended mitigation measure that would reduce impacts is not practicable, NMFS has explored variations of that mitigation to determine if a practicable form of related mitigation exists. This is clearly illustrated in NMFS' independent mitigation analysis process explained in the Mitigation Measures section of the final rule. First, some types of mitigation required under this rule are area-specific and vary by mitigation area, demonstrating that NMFS has engaged in a site-specific analysis to ensure mitigation is tailored when practicability demands, *i.e.,* some forms of mitigation were practicable in some areas but not others. For instance, while it was not practicable for the Navy to prohibit surface ship hull-mounted MF1 mid-frequency active sonar during training or testing in all mitigation areas, NMFS did prohibit its use during all training and testing in the Point St. George Humpback Whale Mitigation Area, effective July 1 to November 30, and included caps on MF1 sonar use in the Olympic Coast National Marine Sanctuary Mitigation Area, the Juan de Fuca Eddy Marine Species Mitigation Area, and in the Marine Species Coastal Mitigation Area.

Regarding the comment about mitigation of habitat impacts, marine mammal habitat value is informed by

marine mammal presence and use and, in some cases, there may be overlap in measures for the species or stock directly and for use of habitat. In this rule, we have required time-area mitigations based on a combination of factors that include higher densities and observations of specific important behaviors of marine mammals themselves, but also that clearly reflect preferred habitat (*e.g.,* humpback whale feeding habitat in the Stonewall and Heceta Bank Humpback Whale Mitigation Area and gray whale feeding habitat in Northern Puget Sound Gray Whale Mitigation Area). In addition to being delineated based on physical features that drive habitat function (*e.g.,* bathymetric features), the high densities and concentration of certain important behaviors (*e.g.,* breeding, resting) in these particular areas clearly indicate the presence of preferred habitat. The commenter seems to suggest that NMFS must always consider separate measures aimed at marine mammal habitat; however, the MMPA does not specify that effects to habitat must be mitigated in separate measures, and NMFS has clearly identified measures that provide significant reduction of impacts to both ''marine mammal species and stocks and their habitat,'' as required by the statute.

NMFS agrees, however, that the agency must conduct its own analysis, which it has done here, and not just accept what is provided by the Navy. That does not mean, however, that NMFS cannot review the Navy's analysis of effectiveness and practicability of its proposed mitigation measures, which by regulation the Navy was required to submit with its application, and concur with those aspects of the Navy's analysis with which NMFS agrees. The commenters seem to suggest that NMFS must describe in the rule in detail the rationale for not adopting every conceivable permutation of mitigation, which is neither reasonable nor required by the MMPA. NMFS has described our well-reasoned process for identifying the measures needed to meet the least practicable adverse impact standard in the Mitigation Measures section in this rule, and we have followed the approach described there when analyzing potential mitigation for the Navy's activities in the NWTT Study Area. Responses to specific recommendations for mitigation measures provided by the commenters are discussed separately.

Regarding the commenter's statement that it commented on the NWTT DSEIS and the Navy's request for authorization with specific mitigation measures the Navy could incorporate into its training and testing activities, as noted above this final rule includes numerous additional mitigation measures, which are also included in the 2020 NWTT FSEIS/OEIS. For example, this final rule includes a new mitigation area in the NWTT Offshore Area, the Juan de Fuca Eddy Marine Species Mitigation Area, where the Navy will implement sonar restrictions and prohibit explosive mine countermeasure and neutralization activities to further avoid potential impacts on Southern Resident killer whales and humpback whales. In NWTT Inland Waters, the Navy will initiate communication with the appropriate marine mammal detection networks prior to certain activities, such as Civilian Port Defense—Homeland Security Anti-Terrorism/Force Protection Exercises and Small Boat Attack Exercises, to further avoid potential impacts on Southern Resident killer whales and gray whales.

*Comment 29:* A commenter stated that since NMFS has expounded on the least practicable adverse impact standard at some length in a series of proposed authorizations, it has been an evolutionary process that varies depending on each specific situation. The commenter recommends that NMFS adopt general regulations to govern the process and set forth the basic steps and criteria that apply across least practicable adverse impact determinations. Those standards should not be shifting on a case by-case basis, as now appears to be the case. Rather, the analytical framework and decision-making standards should be consistent across authorizations. Variations between authorizations should be based on the facts underlying each application, not the criteria that underpin the least practicable adverse impact standard.

*Response:* The commenter misunderstands the agency's process. Neither the least practicable adverse impact standard nor NMFS' process for evaluating it shifts on a case-by-case basis. Rather, as the commenter suggests should be the case, the evaluation itself is case-specific to the proposed activity, the predicted impacts, and the mitigation under consideration.

Regarding the recommendation to adopt general regulations, we appreciate the recommendation and may consider the recommended approach in the future. However, providing directly relevant explanations of programmatic approaches or interpretations related to the incidental take provisions of the MMPA in a proposed incidental take authorization is an effective and efficient way to provide information to and solicit focused input from the public. Further, this approach affords the same opportunities for public comment as a stand-alone rulemaking would.

*Comment 30:* A commenter stated that the Navy fails to establish that its harassment is the least practicable method to conduct its research. The commenter states that the MMPA mandates a finding that the planned activities ''. . . effect the least practicable impact on such species or stock and its habitat. . . .'' The commenter asserted that the Level A and Level B harassment that the Navy predicts will occur includes heavy use of sonar technology that has been correlated with the deaths and strandings of thousands of whales and dolphins during the past 20 years. The commenter further stated that the Navy fails to address how its proposed activities lessen the threat of injury and death. Akin to its failure to address population and abundance, the commenter says that the Navy fails to consider how decisions involving geography, timing, and other factors might lessen the ill effects of its actions.

*Response:* NMFS' application of the least practicable adverse impact standard is described in the *Implementation of Least Practicable Adverse Impact Standard* section of this final rule. This final rule requires the Navy to implement extensive mitigation measures to achieve the least practicable adverse impacts on the species and stocks of marine mammals and their habitat, including measures that are specific to certain times and areas as the commenter suggests, and including additional measures that have been added since the proposed rule. Mitigation measures include procedural mitigation measures, such as required shutdowns and delays of activities if marine mammals are sighted within certain distances, and geographic area mitigation measures, including limitations on activities such as sonar in areas that are important for certain behaviors such as feeding. These mitigation measures were designed to lessen the frequency and severity of impacts from the Navy's activities on marine mammals and their habitat, and ensure that the Navy's activities have the least practicable adverse impact on species and stocks. See the Mitigation Measures section of this final rule for additional detail on specific procedural mitigation measures and measures in mitigation areas.

Additionally, we disagree with the implications of the commenter's statement regarding ''the strandings of thousands of whales and dolphins''

being associated with the use of sonar. Please see the *Stranding and Mortality* section in the proposed rule for an accurate characterization of the far lower number of instances in which naval activities have been causally associated with marine mammal strandings. That section included an extensive discussion assessing the potential for Navy activities to result in stranding, and NMFS' response to Comment 19 describes why we do not expect the Navy's NWTT activities to result in the stranding or death of marine mammals from sonar use.

*Mitigation Areas*

*Comment 31:* A commenter recommended that NMFS expand the proposed mitigation measures to more comprehensively protect humpback whales at Stonewall and Heceta Bank between May and November. The commenter recommended that air-deployed mid-frequency active sonar (*i.e.,* dipping sonar) should be prohibited, as well as other activities involving sources of mid-frequency active sonar, including unit-level training and maintenance and system checks while vessels are in transit. The commenter states that expanded mitigation measures would benefit a variety of species, including noise-sensitive harbor porpoise, that are likely to be found in relatively higher densities within the Mitigation Area. The commenter recommended that NMFS also include mitigation measures that limit vessel speeds to reduce the likelihood of vessel strike.

*Response:* This final rule prohibits the Navy from conducting surface ship hull-mounted MF1 mid-frequency active sonar during training or testing activities in the Stonewall and Heceta Bank Humpback Whale Mitigation Area (effective May 1 to November 30), as included in the proposed rule. Additionally, this final rule includes new mitigation which prohibits the Navy from conducting more than a total of 33 hours of surface ship hull-mounted MF1 mid-frequency active sonar during testing annually within 20 nmi from shore in the Marine Species Coastal Mitigation Area (which includes a portion of the Stonewall and Heceta Bank Humpback Whale Mitigation Area), the Juan de Fuca Eddy Marine Species Mitigation Area, and the Olympic Coast National Marine Sanctuary Mitigation Area combined. This measure is effective year round. Previously the proposed rule restricted the Navy to 33 hours of MF1 sonar annually within only the Olympic Coast National Marine Sanctuary Mitigation Area (excluding the portion of the mitigation area that overlapped the Quinault Range Site).

Additionally, regarding the use of dipping sonar, throughout the NWTT Study Area the Navy plans to conduct no more than one hour of MF4 sonar (helicopter-deployed dipping sonar) per year during training events over the seven-year duration of this final rule. Additionally, the Navy plans to conduct no more than 50 hours of MF4 sonar per year during testing events over the seven-year duration of this rule. Given the amount of dipping sonar and comparatively low associated impacts to marine mammals, along with the impracticability of including more restrictions, additional mitigation specific to dipping sonar is not warranted.

Additional geographic mitigation measures for active sonar beyond what is detailed in the *Mitigation Areas* section of this final rule and Section K.3 (Mitigation Areas to be Implemented) of the 2020 NWTT FSEIS/OEIS, such as prohibiting additional types of active sonar or further limiting active sonar hours in the Stonewall and Heceta Bank Humpback Whale Mitigation Area, would be impractical to implement for the reasons described in Appendix K (Geographic Mitigation Assessment) and Section 5.5.1 (Active Sonar) of the 2020 NWTT FSEIS/OEIS. NMFS has carefully reviewed this information and determined that additional mitigation measures would be impracticable.

Potential vessel speed restrictions in the NWTT Study Area are addressed in our response to Comment 38. Please refer to that comment for our full response.

*Comment 32:* A commenter stated that NMFS should expand the proposed mitigation measures to more comprehensively protect humpback whales at Point St. George Humpback Whale Mitigation Area between July and November. The commenter asserted that within the area the agency should prohibit air-deployed mid-frequency active sonar (*i.e.,* dipping sonar), as well as other activities involving sources of mid-frequency active sonar, including unit-level training and maintenance and system checks while vessels are in transit. NMFS should also include mitigation measures that limit vessel speeds to reduce the likelihood of vessel strike.

*Response:* This final rule includes new mitigation limiting the Navy to a total of 33 hours of surface ship hull-mounted MF1 mid-frequency active sonar during testing annually within 20 nmi from shore in the Marine Species Coastal Mitigation Area, the Juan de Fuca Eddy Marine Species Mitigation Area, and the Olympic Coast National Marine Sanctuary Mitigation Area combined. The expanded mitigation will offer additional protections for humpback whales in the portion of the Marine Species Coastal Mitigation Area that overlaps the Point St. George Humpback Whale Mitigation Area. Additional geographic mitigation measures for active sonar beyond what is detailed in the *Mitigation Areas* section of this final rule and Section K.3 (Mitigation Areas to be Implemented) of the 2020 NWTT FSEIS/OEIS, such as further expanding mitigation requirements in the Point St. George Humpback Whale Mitigation Area, would be impractical to implement for the reasons described in Appendix K (Geographic Mitigation Assessment) and Section 5.5.1 (Active Sonar) of the 2020 NWTT FSEIS/OEIS. NMFS has carefully reviewed this information and determined that additional mitigation measures would be impracticable.

Throughout the NWTT Study Area, the Navy plans to conduct no more than one hour of MF4 sonar (helicopter-deployed dipping sonar) per year during training events over the seven-year duration of this final rule. Additionally, the Navy plans to conduct no more than 50 hours of MF4 sonar per year during testing events over the seven-year duration of this rule. Please see the response to Comment 52 for additional information. Given the amount of dipping sonar and comparatively low associated impacts to marine mammals, along with the impracticability of including more restrictions, additional mitigation specific to dipping sonar is not warranted.

Potential vessel speed restrictions in the NWTT Study Area are addressed in our response to Comment 38. Please refer to that comment for our full response.

*Comment 33:* A commenter recommended that NMFS engage with the Navy in a more rigorous analysis of alternatives and mitigation options in the Puget Sound and Strait of Juan de Fuca Mitigation Area (year-round), with the aim of eliminating potential impacts on Southern Resident killer whales. The commenter recommended that NMFS (1) completely prohibit activity during periods of higher residency or occurrence of the population, viz., roughly May through October for the Salish Sea (another commenter recommended all year round) and roughly October through mid-February for the inland waters of Puget Sound (2) require noise isolation, particularly for activities such as pierside testing and maintenance that are concentrated in particular locations (3) set a transparent,

rigorous protocol for ensuring that Southern Resident killer whales will not be exposed to noise that can cause behavioral disruption, before an activity proceeds, including by using the region's existing real-time hydrophone networks and by establishing additional hydrophone sites in key areas as needed; and (4) consider measures to mitigate the impacts of the Navy's Growler overflights on Southern Resident killer whales and other marine species. The commenter stated that the mere assurance that Navy biologists will work with NMFS to determine the likelihood of species occurrence—a statement that does not imply use of any real-time detection systems—is plainly not sufficient. The commenter stated that NMFS should consider the likelihood of humpback whale presence in the planned training location, in addition to gray whales and Southern Residents, in prescribing mitigation. The commenter recommended that NMFS also include mitigation measures that limit vessel speeds in the area to reduce the likelihood of vessel strike. Another commenter noted that NMFS does not require the use of publicly available whale sighting data to reduce the chance of negative interactions between the Navy and marine mammals.

*Response:* The majority of locations in which training and testing activities occur within the NWTT Inland Waters do not overlap areas where Southern Resident killer whales occur. For instance, most training and testing occurs in the Hood Canal at Naval Base Kitsap Bangor and Dabob Bay Range, around Keyport, and Bremerton. None of these locations have had sightings of Southern Resident killer whales in over 20 years. The only locations with the potential to affect Southern Resident killer whales are training events conducted at Everett, in Crescent Harbor and which use Navy 3 OPAREA and Navy 7 OPAREA.

The *Mitigation Areas* section of this final rule and Section K.3.3. (Mitigation Areas for Marine Species in NWTT Inland Waters) of the 2020 NWTT FSEIS/OEIS include enhanced mitigation measures in NWTT Inland Waters for Southern Resident killer whales, gray whales, humpback whales, and other marine species. See the Changes from the Proposed Rule to the Final Rule and Mitigation Measures sections of this rule for a full discussion of these new measures. The new measures in the Puget Sound and Strait of Juan de Fuca Mitigation Area since publication of the proposed rule will result in training and testing activities being conducted in NWTT Inland Waters only when necessitated by mission-essential training or testing program requirements, as it would impracticable to ''completely prohibit'' all activity in the area. Furthermore, the Navy will implement additional mitigation measures for activities that are conducted in the mitigation area, such as seasonal awareness messages, communication with sighting information networks, limitations on the type and location of active sonar and explosive activities, and a prohibition on live fire activities. For example, NMFS and the Navy have formalized existing informal procedures already conducted for Navy biologists to initiate communication with the appropriate marine mammal detection networks in NWTT Inland Waters prior to conducting explosive mine neutralization activities involving the use of Navy divers, Unmanned Underwater Vehicle Training, Civilian Port Defense—Homeland Security Anti-Terrorism/Force Protection Exercises, and Small Boat Attack Exercises. This mitigation has also been expanded to include a greater number of activities in the inland waters, and will help the Navy plan activities in a way that minimizes the potential for exposure of Southern Resident killer whales and gray whales. Further, with implementation of the new mitigation measures included in this final rule, we do not anticipate any take of Southern Resident killer whales in NWTT Inland Waters due to NWTT training and testing activities.

Additionally, NMFS and the Navy have considered the impacts of Navy activities to all species in the development of mitigation areas, and the new mitigation in this area that reduces activity levels is likely to benefit other species such as humpback whales and gray whales. The commenter recommends ''noise isolation'' in relation to pierside training, but does not provide enough detail for NMFS to understand or address the issue. The mitigation as described in this final rule and the NWTT FSEIS/OEIS represents the maximum level of mitigation practical to implement, and any further mitigation in NWTT Inland Waters, such as mitigation for aircraft overflights, would be impracticable due to implications for safety, sustainability, and mission requirements for the reasons described in Chapter 5 (Mitigation) and Appendix K (Geographic Mitigation Assessment) of the 2020 NWTT FSEIS/OEIS. Further, NMFS does not anticipate, and has not authorized, take of marine mammals as a result of Growler or other overflights.

Regarding the suggestion that NMFS ensure that Southern Resident killer whales will not be exposed to noise that can cause behavioral disruption before an activity proceeds, including by using the region's existing real-time hydrophone networks and by establishing additional hydrophone sites in key areas as needed, please see NMFS' response to Comment 45 regarding the use of hydrophone networks in real-time mitigation. While it is not possible for the Navy to avoid all behavioral disruption of Southern Resident killer whales while also effectively carrying out their mission, the measures NMFS is requiring will ensure the least practicable adverse impact on Southern Resident killer whales and other species and stocks.

Potential vessel speed restrictions are addressed in the response to Comment 38. Please refer to that comment for our full response.

*Comment 34:* A commenter recommended that NMFS require the Navy to expand its mitigation measures to more comprehensively protect gray whales in the Northern Puget Sound Gray Whale Mitigation Area between March and May. The commenter stated that the Navy should not conduct any testing or training activities within the Mitigation Area from March through May. The commenter recommended that, in addition, NMFS should require mitigation measures that limit vessel speeds to reduce the likelihood of vessel strike.

*Response:* As described elsewhere in this Comments and Responses section, the *Mitigation Areas* section of this final rule and Section K.3.3 (Mitigation Areas for Marine Species in NWTT Inland Waters) of the 2020 NWTT FSEIS/OEIS discuss the enhanced mitigation measures in NWTT Inland Waters for gray whales as well as Southern Resident killer whales and other marine species. The Navy will implement additional geographic mitigation measures for activities that are conducted in the mitigation area, such as seasonal awareness messages for gray whales, limitations on the type and location of active sonar and explosive activities, and prohibition of live fire activities. The mitigation required from the Navy as described in this final rule and the 2020 NWTT FSEIS/OEIS represents the maximum level of mitigation practicable. Any further mitigation in NWTT Inland Waters, including entirely prohibiting training or testing activities within the Northern Puget Sound Gray Whale Mitigation Area between March and May, is

impracticable due to implications for safety, sustainability, and mission requirements for the reasons described in Chapter 5 (Mitigation) and Appendix K (Geographic Mitigation Assessment) of the 2020 NWTT FSEIS/OEIS.

Potential vessel speed restrictions are addressed in the response to Comment 38. Please refer to that comment for our full response.

*Comment 35:* A commenter recommended that the Navy conduct no training or testing activities with mid-frequency sonar within the vicinity of Grays Canyon, Guide Canyon, Willapa Canyon, Astoria Canyon, and Eel Canyon at any time of year to provide protection for deep-diving and/or noise-sensitive species, including endangered sperm whales and harbor porpoise. The commenter additionally recommended that the Navy observe the mitigation measures specified for the Marine Species Coastal Mitigation Area in these canyon areas, as appropriate.

*Response:* NMFS and the Navy assessed the practicability of implementing the commenter's additional mitigation recommendations. As described in Section K.3.2.2.2 (Operational Assessment) of the 2020 NWTT FSEIS/OEIS, training with active sonar in varying ocean floor topographies, such as near canyons, is essential to national security; therefore, additional restrictions on the use of active sonar near Quinault and in the vicinity of Grays, Guide, Willapa, Astoria, and Eel Canyons, are impracticable because such mitigation would preclude access to areas with the necessary environmental and oceanographic conditions that replicate military mission and combat conditions. Preventing access to critical training waterspace would have a significant impact on the ability of Navy units to meet their individual training and certification requirements (impacting the ability to deploy with the required level of readiness necessary to accomplish their missions), to certify forces to deploy to meet national security needs (limiting the flexibility of the Navy to project power, engage in multi-national operations, and conduct the full range of naval fighting capability in support of national security interests). NMFS concurs with the Navy's practicability assessment. While canyons can offer one form of valuable habitat for some species at certain times and a restriction on training and testing could potentially reduce the amount or severity of impacts to some degree for some species, given the protections offered by the procedural mitigation measures and the measures in other mitigation areas (including the measures added since the proposed rule), the high degree of impracticability described here supports the determination that this additional measure is not warranted, and therefore NMFS is not requiring the additional mitigation measures suggested by the commenter.

*Comment 36:* A commenter stated that NMFS should expand activity restrictions within the proposed Marine Species Coastal Mitigation Area to the greatest extent practicable. The commenter stated that NMFS should prohibit or at least significantly limit the use of mid-frequency active sonar from all sources, including dipping sonar (at least between December and June) within this Mitigation Area, at least out to the 200-meter isobath or 47 miles from shore; and, similarly, should further limit other activities, such as mine countermeasures and gunnery activities, that have the potential to result in species take. The commenter noted that the waters of greatest concern within the Mitigation Area extend between Cape Flattery, Washington, and Tillamook Head, Oregon, including the waters offshore of the Columbia River mouth, as these waters experience the highest relative habitat use for Southern Resident killer whales as indicated by presently available satellite telemetry data. These additional mitigation measures would also benefit other at-risk species, including the Central America and Mexico Distinct Population Segments of humpback whale.

Another commenter stated that NMFS should include temporal restrictions based on Southern Resident killer whale activity and to reflect the best available location data of marine mammals. The commenter stated that specifically, NMFS should consider limitations on the Navy's activities in the Marine Species Coastal Mitigation Area, which covers winter habitat areas for Southern Resident killer whales. The commenter stated that NMFS should limit naval activities, which have the capacity to harm Southern Resident killer whales, especially mid–frequency sonar, over the winter months in order to limit harm to this endangered species.

*Response:* This final rule includes extensive mitigation in the Marine Species Coastal Mitigation Area, including additional mitigation added since publication of the proposed rule. This final rule includes a new mitigation measure in this area which requires the Navy to issue seasonal awareness notification messages to alert Navy ships and aircraft operating within the mitigation area to the possible presence of increased concentrations of Southern Resident killer whales from December 1 to June 30, humpback whales from May 1 through December 31, and gray whales from May 1 to November 30. To assist in avoiding interactions with whales, the Navy will instruct vessels to remain vigilant to the presence of Southern Resident killer whales, humpback whales, and gray whales that may be vulnerable to vessel strikes or potential impacts from training and testing activities. Platforms will use the information from the awareness notification messages to assist their visual observation of applicable mitigation zones during training and testing activities and to aid in the implementation of procedural mitigation. Additionally, as included in the proposed rule, the Navy will conduct a maximum of 32 hours of surface ship hull-mounted MF1 mid-frequency active sonar during training annually in the Olympic Coast National Marine Sanctuary Mitigation Area, which overlaps with the Marine Species Coastal Mitigation Area. The Navy will also implement annual restrictions on surface ship hull-mounted MF1 mid-frequency active sonar (no more than 33 hours total) during testing in three mitigation areas combined: The Marine Species Coastal Mitigation Area within 20 nmi from shore, the new Juan de Fuca Eddy Marine Species Mitigation Area, and the Olympic Coast National Marine Sanctuary Mitigation Area. The annual restriction for testing previously only applied to the Olympic Coast National Marine Sanctuary Mitigation Area. This final rule also removes an exception that excluded the Quinault Range Site from the annual sonar restrictions that was included in the proposed rule. Now, the annual restrictions will apply throughout the entire Olympic Coastal National Marine Sanctuary Mitigation Area, including within the portion of the mitigation area that overlaps the Quinault Range Site. This reduction in activities is in areas that are important for Southern Resident killer whale and humpback whale feeding and migration. The Navy does not generally schedule training and testing near Cape Flattery due to the high volume of commercial vessel traffic in that portion of the Study Area. Additional mitigation that was added since the proposed rule is discussed in the Mitigation Measures section. This new mitigation includes a new mitigation area, the Juan de Fuca Eddy Mitigation Area, which encompasses waters near Cape Flattery as the commenter recommended.

This final rule includes required procedural mitigation which is expected

to avoid or reduce potential impacts from active sonar on marine mammals wherever and whenever activities occur in the Study Area. Additionally, new procedural mitigation measures require the Navy to conduct Mine Countermeasure and Neutralization during daylight hours and in Beaufort sea state conditions of 3 or less, both of which increase the probability of marine mammal detection and, thereby, mitigation effectiveness. The Navy will also implement seasonal restrictions and distance-from-shore requirements for certain explosive bins, as described in detail in the *Mitigation Areas* section of this final rule. Additionally, the Navy will implement new annual and seven-year explosive ordnance limitations specific to explosive mine countermeasure and neutralization testing. These restrictions and limitations will further reduce impacts to marine mammals from explosives in nearshore and offshore habitats, including important feeding and migration areas for Southern Resident killer whales and humpback whales.

Additional geographic mitigation for active sonar beyond what is detailed in the *Mitigation Areas* section of this final rule, and in Section K.3 (Mitigation Areas to be Implemented) of the 2020 NWTT FSEIS/OEIS, would be impractical to implement for the reasons described in Appendix K (Geographic Mitigation Assessment) and Section 5.5.1 (Active Sonar) of the 2020 NWTT FSEIS/OEIS. NMFS has carefully reviewed this information and determined that additional mitigation measures would be impracticable.

The potential restriction of dipping sonar is discussed in the response to Comment 52. See that comment for our full response.

*Comment 37:* Commenters stated that additional mitigation measures are necessary and must be required, specifically additional mitigation and monitoring in Southern Resident killer whale offshore habitat. A commenter stated that this is necessary given the potential increased use of this area and the unique activities—such as active sonar—that take place in this portion of the NWTT range. A commenter stated that it is even more critical now that the offshore density numbers have been updated and have dramatically increased the anticipated incidents of level B harassment affecting Southern Resident killer whales. Approximately 92 percent of training impacts and 68 percent of testing impacts on killer whales are projected to occur in the offshore area.

*Response:* This final rule includes extensive mitigation designed to reduce impacts to Southern Resident killer whales, including mitigation in their offshore habitat, and new mitigation in this habitat since publication of the proposed rule. The Marine Species Coastal Mitigation Area, the Juan de Fuca Eddy Marine Species Mitigation Area, and the Olympic Coast National Marine Sanctuary Mitigation Area contain mitigation measures expected to reduce impacts to Southern Resident killer whales in their offshore habitat. Since the proposed rule, new mitigation measures have been added pertaining to the NWTT Offshore Area. One new measure requires the Navy to implement annual restrictions on surface ship hull-mounted MF1 mid-frequency active sonar (no more than 33 hours total) in three mitigation areas combined: Within 20 nmi from shore in the Marine Species Coastal Mitigation Area, in the new Juan de Fuca Eddy Marine Species Mitigation Area, and in the Olympic Coast National Marine Sanctuary Mitigation Area. The annual restriction for testing previously only applied to the Olympic Coast National Marine Sanctuary Mitigation Area. This final rule also removes an exception that excluded the Quinault Range Site from the annual sonar restrictions that was included in the proposed rule. Now, the annual restrictions will apply throughout the entire Olympic Coastal National Marine Sanctuary Mitigation Area, including within the portion of the mitigation area that overlaps the Quinault Range Site. This reduction in activities is in areas that are important for Southern Resident killer whale and humpback whale feeding and migration. Additionally, the Navy will issue seasonal awareness notification messages within 50 nmi from shore to alert Navy ships and aircraft operating within the Marine Species Coastal Mitigation Area to the possible presence of increased concentrations of Southern Resident killer whales from December 1 to June 30, humpback whales from May 1 through December 31, and gray whales from May 1 to November 30. To assist in avoiding interactions with whales, the Navy will instruct vessels to remain vigilant to the presence of Southern Resident killer whales, humpback whales, and gray whales that may be vulnerable to vessel strikes or potential impacts from training and testing activities. Platforms will use the information from the awareness notification messages to assist their visual observation of applicable mitigation zones during training and testing activities and to aid in the implementation of procedural mitigation. Please refer to the *Mitigation Areas* section of this final rule for additional information on the mitigation measures in the NWTT offshore waters.

*Other Mitigation and Monitoring*

*Comment 38:* A commenter stated that the proposed rule does not contain any indication that a practicability analysis was conducted, nor does it prescribe any speed reduction measure. The commenter states that this failure appears based on an unsupported finding that vessel noise generated by Navy vessels has de minimis or no impacts on Southern Resident killer whales and other marine mammals. Commenters recommended that NMFS require the Navy to engage in lowest practicable speed reductions in biologically important habitats to reduce noise, including in designated critical habitat for endangered Southern Resident killer whales and other biologically important habitat for vulnerable species. A commenter also stated that Washington State increased vessel regulations in 2019 to reduce noise and disturbance to Southern Resident killer whales from small vessels, including by enacting a 7-knot speed limit within half a nautical mile of the killer whales. The commenter also referenced the Vancouver Fraser Port Authority's Enhancing Cetacean Habitat and Observation (ECHO) Program which operates a voluntary slowdown of large ships transiting Southern Resident killer whale habitat and a lateral displacement trial to shift vessels away from high-use areas. The commenter recommended that the Navy implement similar measures for transiting vessels within the Salish Sea to reduce noise and disturbance in inland waters. Additionally, given that the speed of Navy ships during all aspects of their operations potentially impact marine mammals, the commenter recommended that NMFS require the Navy to collect and report data on ship speed as part of the rulemaking process. The commenter asserts that this will allow for objective evaluation by NMFS of ship-strike risk, of harassment resulting from vessel activity, and of the potential benefit of additional speed-focused mitigation measures. Finally, a commenter asserts that NMFS should require the Navy to take steps to quiet smaller support vessels used in the NWTT Study Area, by seeking and incorporating best commercial off-the-shelf technology for vessel retrofits and new builds.

*Response:* Generally speaking, it is impracticable (because of impacts to mission effectiveness) to further reduce ship speeds for Navy activities, and, moreover, given the maneuverability of

Navy ships at higher speeds and the presence of effective Lookouts, any further reduction in speed would be unlikely to reduce the already low probability of a ship strike. Navy ships generally operate at speeds in the range of 10–15 knots, and submarines generally operate at speeds in the range of 8–13 knots. Small craft (for purposes of this discussion, less than 40 ft), which are all support craft, have more variable speeds dependent on the mission. While these speeds are representative of most events, some vessels need to operate outside of these parameters under certain training and testing scenarios. The Navy is unable to impose a 7-knot ship speed limit because it would not be practical to implement and would impact the effectiveness of the Navy's activities by putting constraints on training, testing, and scheduling. The Navy requires flexibility in use of variable ship speeds for training, testing, operational, safety, and engineering qualification requirements. Navy ships typically use the lowest speed practical given individual mission needs. NMFS has reviewed the analysis of these additional suggested restrictions and the impacts they would have on military readiness and concurs with the Navy's assessment that they are impracticable (see section 5.3.4.1 *Vessel Movement* and section 5.5 *Measures Considered but Eliminated* in the 2020 NWTT FSEIS/OEIS). Therefore, the Navy is already planning to engage in the lowest practicable speed in biologically important habitats, including in designated critical habitat for endangered Southern Resident killer whales and other biologically important habitat for vulnerable species, as well as in all other areas.

The main driver for ship speed reduction is reducing the possibility and severity of ship strikes to large whales. However, even given the wide ranges of speeds from slow to fast that Navy ships must use to meet training and testing requirements, the Navy has a very low strike history to large whales in the NWTT Study Area. As further discussed in the *Estimated Take from Vessel Strikes by Serious Injury or Mortality* section, Navy vessel strike records have been kept since 1995, and since 1995 there have been two recorded strikes of whales by Navy vessels (or vessels being operated on behalf of the Navy) in the NWTT Study Area, one in 2012, and one in 2016. Neither strike was associated with training or testing activities.

As discussed in the 2015 NWTT FEIS/OEIS Section 5.1.2 (Vessel Safety), Navy standard operating procedures require that ships operated by or for the Navy have personnel assigned to stand watch at all times, day and night, when moving through the water (*i.e.,* when the vessel is underway). A primary duty of watch personnel is to ensure safety of the ship, which includes the requirement to detect and report all objects and disturbances sighted in the water that may be indicative of a threat to the ship and its crew, such as debris, a periscope, surfaced submarine, or surface disturbance. Per safety requirements, watch personnel also report any marine mammals sighted that have the potential to be in the direct path of the ship, as a standard collision avoidance procedure. As described in Section 5.3.4.1 (*Vessel Movement*) of the 2020 NWTT FSEIS/OEIS, Navy vessels are also required to operate in accordance with applicable navigation rules. Applicable rules include the Inland Navigation Rules (33 CFR part 83) and International Regulations for Preventing Collisions at Sea (72 Collision Regulations), which were formalized in the Convention on the International Regulations for Preventing Collisions at Sea, 1972. These rules require that vessels proceed at a safe speed so proper and effective action can be taken to avoid collision and so vessels can be stopped within a distance appropriate to the prevailing circumstances and conditions. In addition to standard operating procedures, the Navy implements mitigation to avoid vessel strikes, which includes requiring vessels to maneuver to maintain at least 500 yd away from whales, and 200 yd or 100 yd away from other marine mammals (depending on the size of the vessel). Additionally, please see the Estimated Take from Vessel Strikes by Serious Injury or Mortality section of this rule and section 3.4.2.4.1 of the 2020 NWTT FSEIS/OEIS for discussion regarding the differences between Navy ships and commercial ships which make Navy ships less likely to affect marine mammals.

When developing Phase III mitigation measures, the Navy analyzed the potential for implementing additional types of mitigation, such as vessel speed restrictions within the NWTT Study Area. The Navy determined that based on how the training and testing activities will be conducted within the NWTT Study Area, vessel speed restrictions would be incompatible with practicability criteria for safety, sustainability, and training and testing missions, as described in Chapter 5 (Mitigation), Section 5.3.4.1 (Vessel Movement) of the 2020 NWTT FSEIS/OEIS.

Regarding reporting of ship speed, as required through the Navy's Notification and Reporting Plan (Vessel Strike section), Navy vessels are required to report extensive information, including ship speed, pursuant to any marine mammal vessel strikes. Therefore, the data required for ship strike analysis discussed in the comment is already being collected. Any additional data collection requirement would create an unnecessary burden on the Navy. Regarding vessel noise from Navy ships, Navy vessels are intentionally designed to be quieter than civilian vessels, and given that adverse impacts from vessel noise are not anticipated to result from Navy activities (see the Potential Effects of Specified Activities on Marine Mammals and Their Habitat section in the proposed rule), there is no anticipated harassment caused by vessel activity and therefore no need to collect and report data on ship speed for this purpose.

Regarding quieting small support vessels, most of the Navy's vessels already have state of the art quieting technologies employed to reduce their sound profile to assist them in avoiding detection by enemy forces, therefore, they are much quieter than commercial/recreational vessels of similar sizes.

*Comment 39:* A commenter stated that NMFS does not incorporate stand-off distances of any size within its requirements for the proposed mitigation areas, providing only that activities not take place ''within'' the defined areas. Thus, activities that are otherwise restricted or limited within a mitigation area could occur directly along the boundary and ensonify the area at levels capable of causing injury or increasing the risk or severity of behavioral disruption. The commenter asserts that stand-off distances are a reasonable mitigation measure that is routinely required by NMFS in authorizing take under the MMPA. The commenter recommended that NMFS consider establishing stand-off distances around its mitigation areas to the greatest extent practicable, allowing for variability in size given the location of the mitigation area, the type of operation at issue, and the species of concern.

*Response:* The mitigation areas included in the final rule and described in Appendix K (Geographic Mitigation Assessment) of the 2020 NWTT FSEIS/OEIS represent the maximum mitigation within mitigation areas and the maximum size of mitigation areas that are practicable for the Navy to implement under their specified activity. Implementing additional mitigation (*e.g.,* stand-off distances that

would extend the size of the mitigation areas) beyond what is included in the final rule is impracticable due to implications for safety, sustainability, and the Navy's ability to continue meeting its mission requirements. For example, as described in Section K.3.2.2.2 (Operational Assessment) of the 2020 NWTT FSEIS/OEIS, creating stand-off distances from the 12 nmi, 20 nmi, and 50 nmi limits within the Marine Species Coastal Mitigation Area would result in activities being conducted farther offshore. Moving activities farther offshore would be impractical due to decreased event realism, increased resource allocations and operational costs (due to extending the distance offshore and proximity to Navy support facilities, which would increase fuel consumption, maintenance, and time on station), increased safety risks (associated with conducting training and testing at extended distances offshore and farther away from critical medical and search and rescue resources), and accelerated fatigue-life of aircraft and ships (leading to increased safety risk and higher maintenance costs). Increased resource allocations and operational costs would serve as a limiting factor for Navy surface vessels whose available underway times are constrained by available manpower and fuel expenses. This would also reduce training or testing opportunities during a platform's limited available timeframes because increased time spent transiting to more distant training areas or test sites results in decreased time available for training or testing.

When practicable, NMFS sometimes recommends the inclusion of buffers around areas specifically delineated to contain certain important habitat or high densities of certain species, to allow for further reduced effects on specifically identified features/species. However, buffers are not typically considered necessary or appropriate in combination with more generalized and inclusive measures, such as coastal offsets or other areas that are intended to broadly contain important features for a multitude of species. In the case of this rulemaking, NMFS and the Navy have included an extensive array of broad protective areas that will reduce impacts on numerous species and habitats (including additions to what was described in the proposed rule) and, as described above, limitations in additional areas is not practicable.

*Comment 40:* A commenter noted that as with the consent order entered by the court in the *Conservation Council case,* the present proposed rule would allow the Navy to derogate from the measures associated with the mitigation areas where necessary for national security, if certain conditions are met. Specifically, authorization must be granted, the Navy must provide NMFS with advance notice of the derogation and with further information after the completion of events, and the Navy must provide information on those activities in its annual reports. Unlike the consent order, however, the proposed rule does not clearly restrict derogation authority to highest-level officers.

Under the consent order, authority could be invoked only by certain named officers representing the highest command authority, namely the Commander or Acting Commander of the Pacific Fleet, for training activities, and the Commander or Acting Commander of the various research branches for testing activities, and then only when the Navy ''deems it necessary for national defense.'' Similarly, at least some of the geographic areas adopted by the Navy in prior NEPA processes, such as the Humpback Whale Cautionary Area established in previous Hawaii-Southern California Training and Testing EISs, allowed for derogation only upon approval of the Pacific Fleet Commander. This requirement made it more likely that derogation decisions would be taken with the greatest seriousness and consideration. By contrast, the proposed rule is unclear in its designation, generally allowing units to obtain permission from ''the appropriate designated Command authority.'' NMFS should clarify that authorization may be given only by the highest-level Command authorities, consistent with the consent order in *Conservation Council.*

*Response:* The commenter references the terms of a 2015 settlement agreement approved by a court for a previous MMPA rulemaking for Navy activities in a different study area, none of which is applicable to the Navy's planned activities in this study area. In addition, as discussed in the response to Comment 28, the terms that were agreed to in that settlement agreement were never evaluated based on the best available science and under the two prongs that NMFS (and the Navy) apply to evaluate potential measures under the ''least practicable adverse impact'' standard.

For this rulemaking, NMFS along with the Navy considered the current conditions specific to the Navy's planned activities for the NWTT Study Area, the needs of the species and stocks along with their habitat, and the practicability of potential measures. As the commenter notes, for several of the measures in geographic mitigation areas the Navy may conduct an otherwise prohibited activity if necessary for national security, but only if Navy personnel have obtained permission from the appropriate designated Command authority prior to commencing the activity, provide NMFS with advance notification, and include information about the event in the annual activity reports to NMFS. It is not necessary to require permission from the highest-level Command authority to ensure that a valid national security need exists or that all other requirements of the provision will be complied with. The commenter has provided no information to indicate that the slightly different phrasing of the condition or that the differences in the level of Navy approval will lead to misapplication of the provision.

*Comment 41:* A commenter recommended that NMFS consider additional measures to address mitigation for explosive events at night and during periods of low-visibility, either by enhancing the observation platforms to include aerial and/or passive acoustic monitoring (such as glider use), as has been done here with sinking exercises, or by restricting events to particular Beaufort sea states (depending on likely species presence and practicability).

*Response:* This final rule includes new mitigation that requires the Navy to conduct explosive mine countermeasure and neutralization testing activities in daylight hours only and in Beaufort Sea state number 3 conditions or less. The Navy will also continue to implement mitigation that requires explosive mine neutralization training activities involving Navy divers to be conducted in Beaufort Sea state number 2 conditions or less and not in low visibility conditions. As described in Section 5.5.2 (Explosives) of the 2020 NWTT FSEIS/OEIS, when assessing and developing mitigation, NMFS and the Navy considered further restrictions on the use of explosives (*e.g.,* during periods of low visibility or in certain sea state conditions). The locations and timing of the training and testing activities that use explosives vary throughout the NWTT Study Area based on range scheduling, mission requirements, testing program requirements, and standard operating procedures for safety and mission success. Although activities using explosives typically occur during the daytime for safety reasons, it is impracticable for the Navy to prohibit every type of explosive activity at night or during low visibility conditions or during different Beaufort Sea states.

Doing so would diminish activity realism, which would impede the ability for Navy personnel to train and become proficient in using explosive weapons systems (which would result in a significant risk to personnel safety during military missions and combat operations), and would impede the Navy's ability to certify forces to deploy to meet national security needs.

Passive acoustic devices, whether vessel-deployed or using research sensors on gliders or other devices, can serve as queuing information that vocalizing marine mammals could be in the vicinity. Passive acoustic detection does not account for individuals not vocalizing. Navy surface ships train to localize submarines, not marine mammals. Some aviation assets deploying ordnance do not have concurrent passive acoustic sensors. Furthermore, Navy funded civilian passive acoustic sensors do not report in real-time. Instead, a glider is set on a certain path or floating/bottom-mounted sensor deployed. The sensor has to then be retrieved often many months after deployment (1–8 months), data is sent back to the laboratory, and then subsequently analyzed. Combined with lack of localization, gliders with passive acoustic sensors are therefore not suitable for mitigation.

The Navy does employ passive acoustic monitoring when practicable to do so (*i.e.,* when assets that have passive acoustic monitoring capabilities are already participating in the activity) and several of the procedural mitigation measures reflect this, but many platforms do not have passive acoustic monitoring capabilities. Adding a passive acoustic monitoring capability (either by adding a passive acoustic monitoring device (*e.g.,* hydrophone) to a platform already participating in the activity, or by adding a platform with integrated passive acoustic monitoring capabilities to the activity, such as a sonobuoy) for mitigation is not practicable. As discussed in Section 5.5.3 (Active and Passive Acoustic Monitoring Devices) of the 2020 NWTT FSEIS/OEIS, there are significant manpower and logistical constraints that make constructing and maintaining additional passive acoustic monitoring systems or platforms for each training and testing activity impracticable. The Navy is required to implement pre-event observation mitigation, as well as post-event observation when practical, for all in-water explosive events. If there are other platforms participating in these events and in the vicinity of the detonation area, they will also visually observe this area as part of the mitigation team.

The Mitigation Section (Chapter 5) of the 2020 NWTT FSEIS/OEIS includes a full discussion of the mitigation measures that the Navy will implement, as well as those that have been considered but eliminated, including potential measures that have been raised by NMFS or the public in the past. The Navy has explained that training and testing in both good visibility (*e.g.,* daylight, favorable weather conditions) and low visibility (*e.g.,* nighttime, inclement weather conditions) is vital because environmental differences between day and night and varying weather conditions affect sound propagation and the detection capabilities of sonar. Temperature layers that move up and down in the water column and ambient noise levels can vary significantly between night and day. This affects sound propagation and could affect how sonar systems function and are operated. While some small reduction in the probability or severity of impacts could result from the implementation of this measure, it would not be practicable for the Navy to restrict operations in low visibility and the measure is not, therefore, warranted.

*Comment 42:* A commenter recommended that sonar signals might be modified to reduce the level of impact at the source. Mitigating active sonar impacts might be achieved by employing down-sweeps with harmonics or by reducing the level of side bands (or harmonics). The commenter recommended that more research of this nature be carried out in order to understand the extent to which these results can be generalized across species. The commenter also recommended that the feasibility of implementing signal modifications (such as those recommended above) into Navy operations be explored.

*Response:* The commenter notes that NOAA's Ocean Noise Strategy Roadmap puts an emphasis on source modification and habitat modification as an important means for reducing impacts. However, where the modification of sources is discussed, the focus of the Roadmap is on modifying technologies for activities in which low frequency, broadband sound (which contributes far more significantly to increased chronic noise levels) is incidental to the activity (*e.g.,* maritime traffic). As described in the 2020 NWTT FSEIS/OEIS, at this time, the science on the differences in potential impacts of up or down sweeps of the sonar signal (*e.g.,* different behavioral reactions) is extremely limited and requires further development before a determination of potential mitigation effectiveness can be made. There is data on behavioral responses of a few captive harbor porpoises to varying signals. Although this very limited data set suggests that up or down sweeps of the sonar signal may result in different reactions by harbor porpoises in certain circumstances, the author of those studies highlights the fact that different species respond to signals with varying characteristics in a number of ways. In fact, the same signals cited here were also played to harbor seals, and their responses were different from the harbor porpoises. Furthermore, harmonics in a signal result from a high-intensity signal being detected in close proximity; they could be artificially removed for a captive study, but cannot be whitened in the open ocean. Active sonar signals are designed explicitly to provide optimum performance at detecting underwater objects (*e.g.,* submarines) in a variety of acoustic environments. If future studies indicate that modifying active sonar signals could be an effective mitigation approach, then NMFS with the Navy will investigate if and how the mitigation would affect the sonar's performance and how that mitigation may be applied in future authorizations, but currently NMFS does not have a set timeline for this research and how it may be applied to future rulemakings.

*Comment 43:* A commenter stated that while the Navy rejects modifying sonar sound sources as a mitigation measure, a decision that was summarily upheld by NMFS during its most recent proposed rule for Navy activities off Southern California and Hawaii, the Navy never explains why making the modifications implied by the marine mammal behavioral studies discussed Kastelein *et al.* (2012, 2014, 2015), Götz, T., and Janik (2011), and Hastie *et al.* (2014) would be impracticable. The commenter asserts that some of these modifications, such as converting up-sweeps to down-sweeps, would not alter the system's spectral output in any way. The commenter believes source modification requires greater validation across species and in more behavioral contexts before any decisions are made to alter signals, but given the preliminary data, and given the potential of this measure to reduce the instances and severity of behavioral harassment, the commenter recommended that NMFS require the Navy to expedite that research and set a timeline for this research within the context of the present rulemaking. The commenter asserted that the Navy's ongoing research off Southern California presents a strong opportunity for advancing mitigation research in this

area. The Navy's multi-year Southern California behavioral response studies provide baseline data and a vehicle for testing the effects of sonar modifications in the field. Research on modified signals can be incorporated into those ongoing behavioral response studies as a variant on exposure experiments on tagged animals, for which there already exists data on blue whales, fin whales, Cuvier's beaked whales, and other species.

*Response:* The Navy has explained that it explicitly designs its active sonar signals to provide optimum performance at detecting underwater objects (*e.g.,* submarines) in a variety of acoustic environments. The Navy assessed the potential for implementing active sonar signal modification as mitigation. At this time, the science on the differences in potential impacts of up or down sweeps of the sonar signal (*e.g.,* different behavioral reactions) is extremely limited and as noted by the commenter requires further development. For example, Kastelein *et al.* (2012) researched the behavioral responses of a single captive harbor porpoise to varying sonar signals. Although this very limited data set suggests up or down sweeps of the sonar signal may result in different reactions by harbor porpoises in certain circumstances, this science requires further development (*e.g.,* to determine potential reactions by other individual harbor porpoises and other marine mammal species). If future studies indicate that modifying active sonar signals (*i.e.,* up or down sweeps) could be an effective mitigation approach, then the Navy will investigate if and how the mitigation would affect the sonar's performance. As required by this final rule, the Navy will continue to implement robust monitoring and adaptive management, and NMFS and the Navy will consider the recommendations of the commenter, along with other needs, when developing and prioritizing future research and monitoring studies for the NWTT Study Area.

*Comment 44:* A commenter recommended that NMFS should consider requiring compensatory mitigation for the adverse impacts of the permitted activity on marine mammals and their habitat that cannot be prevented or mitigated.

*Response:* Compensatory mitigation is not required under the MMPA. Instead, authorizations must include means of effecting the least practicable adverse impact from the activities on the affected species or stocks and their habitat, which this rule has done through the required procedural and geographic area mitigation measures. Also, the commenter did not recommend any specific measures, rendering it impossible to consider its recommendation at a broader level.

*Comment 45:* A commenter stated that the mitigation zones required to mitigate the impact of the Navy's testing and training activities are based purely on animal sightings by vessel board Lookouts, and should any animals be underwater they could be easily missed.

Several commenters suggested that the Navy could use information from real-time whale alert systems, including NOAA's hydrophone network and data from the Whale Report Alert System (WRAS) used by the Washington State Ferries and other maritime professionals. A commenter stated that these additional, often-superior local sources of such time-sensitive information can help identify acoustically silent whales that have been sighted elsewhere that could be moving into training or testing areas. Another commenter stated that NMFS does not evaluate the possibility of using this data from either an effectiveness or practicability standpoint. Another commenter stated that this measure is indisputably both available and practical, per the factors that NMFS considers in its evaluation.

A commenter stated that this data is readily available and serves as a useful resource for the Navy to plan out its testing and training activities to reduce impacts to marine mammals. The commenter stated that in fact, it could even increase the effectiveness of the Navy's testing and training activities if it helps to reduce the number of delayed or canceled actions due to animal presence. The commenter recommended that NMFS amend its proposed authorization to require the Navy to utilize readily available whale location data as a form of mitigation.

A commenter stated that for mitigation for active sonar training and testing activities in Puget Sound, NMFS should require the Navy to consult regional real-time whale alert systems rather than relying solely on human observers on Navy vessels and communications with NMFS.

*Response:* NMFS acknowledges the fact that some animals in the mitigation zone could go unobserved by the Lookouts. We have taken that into consideration in the quantitative evaluation of mitigation effectiveness, and that is why some take by Level A harassment is authorized.

This final rule includes formalization of existing informal mitigation procedures already conducted by Navy biologists to initiate communication with the appropriate marine mammal detection networks in NWTT Inland Waters prior to conducting (1) explosive mine neutralization activities involving the use of Navy divers, (2) Unmanned Underwater Vehicle Training at four locations, (3) Civilian Port Defense—Homeland Security Anti-Terrorism/Force Protection Exercises, and (4) Small Boat Attack Exercises. This mitigation, which would increase real-time awareness of nearby cetaceans, increase the likelihood of detection, and enhance the success of procedural mitigations, has also been expanded to include a greater number of activities in the inland waters, and will help the Navy plan activities in a way that minimizes the potential for exposure of Southern Resident killer whales and gray whales, as described in the Mitigation Measures section of the rule and Section K.3.3 (Mitigation Areas for Marine Species in NWTT Inland Waters) of the 2020 NWTT FSEIS/OEIS.

The Navy also uses passive acoustic monitoring technology for some exercises. NMFS and the Navy considered the use of passive acoustic monitoring during additional exercises, but determined that it is not practicable. Please refer to Comment 47 for additional information about the implementation of passive acoustic monitoring.

NMFS is unaware of a hydrophone network, aside from some hydrophones NOAA has deployed for individual projects such as to research Southern Resident killer whales in offshore waters, a single noise reference station offshore the Strait of Juan de Fuca, and two to three assets in Olympic Coast National Marine Sanctuary. However, all of these hydrophone systems are bottom mounted passive acoustic monitoring devices with no real-time reporting capability, and therefore they cannot be used for real time assessment. There are other hydrophones deployed in NWTT Inland Waters by private individuals or entities (*i.e.* NGOs), but data availability and issues with the Navy accessing external sites remains an issue. The Navy will also continue to assess the practicality of other available monitoring techniques as technologies advance.

Additionally, a Navy team began participating in the Governor of Washington's Southern Resident Orca Task Force in 2019, including the Vessels Working Group. As part of the Vessels Working Group, the Navy began investigating potential mechanisms for broadcasting WRAS sightings of Southern Resident killer whales to Navy platforms conducting training or testing in the Inland Waters. The Navy has met

with the program developers of the WRAS to begin exploring potential applications for Navy use, considering factors such as the geographic extent of sighting reports as well as the Navy's stringent information security requirements (*e.g.,* associated with broadcasting unit location using an unsecured application). As the WRAS continues to expand into U.S. waters, NMFS and the Navy will continue to explore the opportunity to engage with this sightings network as a future mitigation tool. Any potential adoption of the system will be coordinated through the adaptive management provisions of this final rule.

*Comment 46:* A commenter recommended that NMFS should consider requiring the Navy to employ thermal detection in optimal conditions, or, alternatively, require the establishment of a pilot program for thermal detection, with annual review under the adaptive management system. According to the 2019 NWTT DSEIS/OEIS, the Navy ''plans to continue researching thermal detection technology to determine their effectiveness and compatibility with Navy applications.''

*Response:* Thermal detection systems are more useful for detecting marine mammals in some marine environments than others. Current technologies have limitations regarding water temperature and survey conditions (*e.g.,* rain, fog, sea state, glare, ambient brightness), for which further effectiveness studies are required. Thermal detection systems are generally thought to be most effective in cold environments, which have a large temperature differential between an animal's temperature and the environment. In addition, current thermal detection systems have proven more effective at detecting large whale blows than the bodies of small animals, particularly at a distance. The effectiveness of current technologies has not been demonstrated for small marine mammals. Research to better understand, and improve, thermal technology continues, as mentioned in the 2019 NWTT DSEIS/OEIS and described below.

The Navy has been investigating the use of thermal detection systems with automated marine mammal detection algorithms for future mitigation during training and testing, including on autonomous platforms. For example, the Defense Advanced Research Projects Agency funded six initial studies to test and evaluate infrared-based thermal detection technologies and algorithms to automatically detect marine mammals on an unmanned surface vehicle. Based on the outcome of these initial studies, the Navy is pursuing additional follow-on research efforts.

Thermal detection technology being researched by the Navy, which is largely based on existing foreign military grade hardware, is designed to allow observers and eventually automated software to detect the difference in temperature between a surfaced marine mammal (*i.e.,* the body or blow of a whale) and the environment (*i.e.,* the water and air). Technologies are advancing but continue to be limited by their (1) reduced performance in certain environmental conditions, (2) ability to detect certain animal characteristics and behaviors, (3) low sensor resolution and narrow fields of view, and (4) high cost and low lifecycle (Boebel, 2017; Zitterbart *et al.,* 2013).

Thermal detection systems for military applications are deployed on various Department of Defense (DoD) platforms. These systems were initially developed for night time targeting and object detection (*e.g.,* a boat, vehicle, or people). Existing specialized DoD infrared/thermal capabilities on Navy aircraft and surface ships are designed for fine-scale targeting. Viewing arcs of these thermal systems are narrow and focused on a target area. Furthermore, sensors are typically used only in select training events, not optimized for marine mammal detection, and have a limited lifespan before requiring expensive replacement. Some sensor elements can cost upward of $300,000 to $500,000 per device, so their use is predicated on a distinct military need.

Thermal detection systems are currently used by some specialized U.S. Air Force aircraft for marine mammal mitigation. These systems are specifically designed for and integrated into Air Force aircraft and cannot be added to Navy aircraft.

The effectiveness remains unknown in using certain DoD thermal systems for the detection of marine mammals without the addition of customized system-specific computer software to provide critical reliability (enhanced detection, cueing for an operator, reduced false positives, *etc.*).

Current DoD thermal sensors are not always optimized for marine mammal detections versus object detection, nor do these systems have the automated marine mammal detection algorithms the Navy is testing via its ongoing research program. The combination of thermal technology and automated algorithms are still undergoing demonstration and validation under Navy funding.

Thermal detection systems specifically for use in detecting marine mammals have been investigated by the Navy for more than a decade and are discussed in Section 5.5.4 of the 2020 NWTT FSEIS/OEIS. The effectiveness of even the most advanced thermal detection systems with technological designs specific to marine mammal surveys is highly dependent on environmental conditions, animal characteristics, and animal behaviors. At this time, thermal detection systems have not been proven to be more effective than, or equally effective as, traditional techniques currently employed by the Navy to observe for marine mammals (*i.e.,* naked-eye scanning, hand-held binoculars, high-powered binoculars mounted on a ship deck). The use of thermal detection systems instead of traditional techniques would compromise the Navy's ability to observe for marine mammals within its mitigation zones in the range of environmental conditions found throughout the NWTT Study Area. Focusing on thermal detection systems could also provide a distraction from and compromise the Navy's ability to implement its established observation and mitigation requirements. The mitigation measures discussed in the Mitigation Measures section include the maximum number of Lookouts the Navy can assign to each activity based on available manpower and resources; therefore, it would be impractical to add personnel to serve as additional Lookouts. For example, the Navy does not have available manpower to add Lookouts to use thermal detection systems in tandem with existing Lookouts who are using traditional observation techniques. Furthermore, high false positive rates of thermal detection systems could result in the Navy implementing mitigation for features incorrectly identified as marine mammals. Increasing the instances of mitigation implementation based on incorrectly identified features would have significant impacts on the ability for training and testing activities to accomplish their intended objectives, without providing any mitigation benefit to the species.

The Defense Advanced Research Projects Agency funded six initial studies to test and evaluate infrared-based thermal detection technologies and algorithms to automatically detect marine mammals on an unmanned surface vehicle. Based on the outcome of these initial studies, the Navy is pursuing additional follow-on research efforts. Additional studies are currently being planned for 2020+ but additional information on the exact timing and scope of these studies is not currently

available (still in the development stage).

The Office of Naval Research Marine Mammals and Biology program also funded a project (2018) to test the thermal limits of infrared-based automatic whale detection technology. That project focused on capturing whale spouts at two different locations featuring subtropical and tropical water temperatures, optimizing detector/classifier performance on the collected data, and testing system performance by comparing system detections with concurrent visual observations. Results indicated that thermal detection systems in subtropical and tropical waters can be a valuable addition to marine mammal surveys within a certain distance from the observation platform (*e.g.,* during seismic surveys, vessel movements), but have challenges associated with false positive detections of waves and birds (Boebel, 2017). While Zitterbart *et al.* (2020) reported on the results of land-based thermal imaging of passing whales, their conclusion was that thermal technology under the right conditions and from land can detect a whale within 3 km although there could also be lots of false positives, especially if there are birds, boats, and breaking waves at sea. Thermal detection systems exhibit varying degrees of false positive detections (*i.e.,* incorrect notifications) due in part to their low sensor resolution and reduced performance in certain environmental conditions. False positive detections may incorrectly identify other features (*e.g.,* birds, waves, boats) as marine mammals. In one study, a false positive rate approaching one incorrect notification per 4 min of observation was noted.

The Navy plans to continue researching thermal detection systems for marine mammal detection to determine their effectiveness and compatibility with Navy applications. If the technology matures to the state where thermal detection is determined to be an effective mitigation tool during training and testing, NMFS and the Navy will assess the practicability of using the technology during training and testing events and retrofitting the Navy's observation platforms with thermal detection devices. The assessment will include an evaluation of the budget and acquisition process (including costs associated with designing, building, installing, maintaining, and manning the equipment); logistical and physical considerations for device installment, repair, and replacement (*e.g.,* conducting engineering studies to ensure there is no electronic or power interference with existing shipboard systems); manpower and resource considerations for training personnel to effectively operate the equipment; and considerations of potential security and classification issues. New system integration on Navy assets can entail up to 5 to 10 years of effort to account for acquisition, engineering studies, and development and execution of systems training. The Navy will provide information to NMFS about the status and findings of Navy-funded thermal detection studies and any associated practicability assessments at the annual adaptive management meetings.

Evidence regarding the current state of this technology does not support the assertion that the addition of these devices would meaningfully increase detection of marine mammals beyond the current rate (especially given the narrow field of view of this equipment and the fact that a Lookout cannot use standard equipment when using the thermal detection equipment) and, further, modification of standard Navy equipment, training, and protocols would be required to integrate the use of any such new equipment, which would incur significant cost. At this time, requiring thermal equipment is not warranted given the prohibitive cost and the uncertain benefit (*i.e.,* reduction of impacts) to marine mammals. Likewise requiring the establishment of a pilot program is not appropriate. However, as noted above, the Navy continues to support research and technology development to improve this technology for potential future use.

*Comment 47:* Multiple commenters stated that the Navy should also use passive acoustic monitoring in addition to Lookouts to detect Southern Resident killer whales and other marine mammals when doing active sonar training and testing. This will further expand awareness beyond what can be accomplished with visual Lookouts. The Navy proposes to use passive acoustic monitoring to look for marine mammals when undertaking certain other activities (*e.g.,* explosive torpedoes), where passive acoustic assets are already part of an activity, but it does not include it as a mitigation measure for active sonar testing, which has the greatest anticipated impact on Southern Resident killer whales.

Another commenter recommended that NMFS require the Navy to use passive (*i.e.,* DIFAR and other types of sonobuoys) and active acoustic (*i.e.,* tactical sonars that are in use during the actual activity or other sources similar to fish-finding sonars) monitoring, whenever practicable, to supplement visual monitoring during the implementation of its mitigation measures for all activities that could cause injury or mortality beyond those explosive activities for which passive acoustic monitoring already was proposed—at the very least, sonobuoys deployed and active sources and hydrophones used during an activity should be monitored for marine mammals.

*Response:* The Navy does employ passive acoustic monitoring to supplement visual monitoring when practicable to do so (*i.e.,* when assets that have passive acoustic monitoring capabilities are already participating in the activity). We note, however, that sonobuoys have a narrow band that does not overlap with the vocalizations of all marine mammals, and there is no bearing or distance on detections based on the number and type of devices typically used; therefore it is not possible to use these to implement mitigation shutdown procedures. For explosive events in which there are no platforms participating that have passive acoustic monitoring capabilities, adding passive acoustic monitoring capability, either by adding a passive acoustic monitoring device (*e.g.,* hydrophone) to a platform already participating in the activity or by adding a platform with integrated passive acoustic monitoring capabilities to the activity (such as a sonobuoy), for mitigation is not practicable. As discussed in Section 5.5.3 (Active and Passive Acoustic Monitoring Devices) of the 2020 NWTT FSEIS/OEIS, which NMFS reviewed and concurs accurately assesses the practicability of utilizing additional passive or active acoustic systems for mitigation monitoring, there are significant manpower and logistical constraints that make constructing and maintaining additional passive acoustic monitoring systems or platforms for each training and testing activity impracticable. The Navy's existing passive acoustic monitoring devices (*e.g.,* sonobuoys) are designed, maintained, and allocated to specific training units or testing programs for specific mission-essential purposes. Reallocating these assets to different training units or testing programs for the purpose of monitoring for marine mammals would prevent the Navy from using its equipment for its intended mission-essential purpose. Additionally, diverting platforms that have passive acoustic monitoring capability would impact their ability to meet their Title 10 requirements and reduce the service life of those systems.

Regarding the use of instrumented ranges for real-time mitigation, the commenter is correct that the Navy

continues to develop the technology and capabilities on its Ranges for use in marine mammal monitoring, which can be effectively compared to operational information after the fact to gain information regarding marine mammal response. There is no calibrated hydrophone array present in the NWTT area that is similar to the instrumented range off Kauai in the Hawaiian Islands or the range off San Clemente Island, California where such marine mammal monitoring has occurred. Further, the Navy's instrumented ranges were not developed for the purpose of mitigation. The manpower and logistical complexity involved in detecting and localizing marine mammals in relation to multiple fast-moving sound source platforms in order to implement real-time mitigation is significant. Although the Navy is continuing to improve its capabilities to use range instrumentation to aid in the passive acoustic detection of marine mammals, at this time it is not effective or practicable for the Navy to monitor instrumented ranges for the purpose of real-time mitigation for the reasons discussed in Section 5.5.3 (Active and Passive Acoustic Monitoring Devices) of the 2020 NWTT FSEIS/OEIS.

Regarding the use of active sonar for mitigation, we note that during Surveillance Towed Array Sensor System low-frequency active sonar (which is not part of this rulemaking, and uses a high-powered low frequency source), the Navy uses a specially designed adjunct high-frequency marine mammal monitoring active sonar known as ''HF/M3'' to mitigate potential impacts. HF/M3 can only be towed at slow speeds (significantly slower than those used for ASW and the other training and testing uses contemplated for the NWTT activities) and operates like a fish finder used by commercial and recreational fishermen. Installing the HF/M3 adjunct system on the tactical sonar ships used during activities in this rule would have implications for safety and mission requirements due to impacts on speed and maneuverability. Furthermore, installing the system would significantly increase costs associated with designing, building, installing, maintaining, and manning the equipment. For these reasons, installation of the HF/M3 system or other adjunct marine mammal monitoring devices as mitigation under the rule would be wholly impracticable. Further, NMFS does not generally recommend the use of active sonar for mitigation, except in certain cases where there is a high likelihood of injury or mortality (*e.g.,* gear entanglement) and other mitigations are expected to be less effective in mitigating those effects. Active sonar generates additional noise with the potential to disrupt marine mammal behavior, and is operated continuously during the activity that it is intended to mitigate. On the whole, adding this additional stressor is not beneficial unless it is expected to offset, in consideration of other mitigations already being implemented, a high likelihood or amount of injury or mortality. For the Navy's NWTT activities, very few mortalities are authorized or anticipated, injury is of a small amount of low-level PTS, and the mitigation is expected to be effective at minimizing impacts. Further, the species most likely to incur a small degree of PTS from the Navy's activities are also the species with high frequency sensitivity that would be more likely to experience behavioral disturbance by the operation of the high frequency active source. For all of these reasons, NMFS does not recommend the use of active sonar to mitigate the Navy's training and testing activities in the NWTT Study Area.

*Comment 48:* A commenter recommended that NMFS require the Navy to (1) allocate additional resources to the Lookout effectiveness study, (2) consult with the University of St. Andrews to determine how much additional data are necessary to analyze the data in a statistically meaningful manner, and (3) develop a plan to maximize the number of sightings (*e.g.,* conducting cruises in Southern California rather than Hawaii) and complete the study as soon as possible.

*Response:* The Lookout effectiveness study referenced by the commenter is still ongoing. This type of study has never been conducted, is extremely complex to ensure data validity, requires a substantial amount of data to conduct meaningful statistical analysis, and the Navy is committed to completing it. As noted by the commenter, there has not been enough data collected to conduct a sufficient analysis; therefore, drawing conclusions on an incomplete data set is not scientifically valid.

However, NMFS has provided that the results of the Lookout effectiveness study will be made available by including a Term and Condition in the Endangered Species Act (ESA) Incidental Take Statements associated with this final rule and NMFS' 2020 final rule for Navy training and testing activities in the MITT Study Area, which requires the Navy to provide a report summarizing the status of and/or providing a final assessment on the Navy's Lookout Effectiveness Study following the end of Calendar Year (CY) 2021. The report must be submitted no later than 90 days after the end of CY2021. The report will provide a statistical assessment of the data available to date characterizing the effectiveness of Navy Lookouts relative to trained marine mammal observers for the purposes of implementing the mitigation measures.

*Comment 49:* A commenter recommended that NMFS (1) require the Navy to determine whether it would be practicable to implement the proposed revised Southern Resident killer whale critical habitat areas, as depicted in the associated proposed rule (50 CFR 226.206(d)) and that fall within the NWTT Study Area but are not proposed to be excluded for national security purposes in section 226.206(c) of the proposed rule, as a mitigation area(s) that limits MF sonar and explosive training and testing activities and (2) if it is practicable, include the areas as a mitigation area(s) in the final rule or, if it is not practicable, justify why the areas were not included as a mitigation area(s) in the preamble to the final rule. If the mitigation area(s) is included in the final rule, the commenter further recommends that NMFS expand the mitigation area(s) as necessary if new information is made available (*e.g.,* the proposed revised critical habitat is expanded in an associated final rule and the expanded area(s) overlaps the NWTT Study Area) during the timeframe under which the final rule would be valid. Another commenter also supported restricting activities in the proposed Southern Resident killer whale critical habitat.

*Response:* NMFS and the Navy worked collaboratively during the ESA consultation and MMPA authorization processes to determine the effectiveness and practicability of implementing additional mitigation measures for marine mammals, including Southern Resident killer whales. NMFS worked with the Navy to refine the mitigation area measures pertaining to the use of explosives during Mine Countermeasure and Neutralization Testing to be more protective of ESA-listed species, including within areas that overlap proposed Southern Resident killer whale and proposed humpback whale critical habitats. Also, the final rule includes a new additional mitigation area, the Juan de Fuca Eddy Marine Species Mitigation Area, which includes important migration habitat for Southern Resident killer whales as they transit between Inland Waters and the Offshore Area (see the *Mitigation Areas*

section of this final rule and Section K.3.2.1.3 (Southern Resident Killer Whale) of the 2020 NWTT FSEIS/OEIS). Further expanding geographic mitigation requirements to include additional mitigation for proposed ESA critical habitat beyond this would be impractical for the Navy to implement for the reasons described in Appendix K (Geographic Mitigation Assessment) of the 2020 NWTT FSEIS/OEIS. For example, such further mitigation would encroach upon the primary water space where those training and testing activities occur in the NWTT Offshore Area for safety, sustainability, and mission requirements.

*Comment 50:* A commenter recommended that NMFS (1) require the Navy to determine whether it would be practicable to implement both the Northern Washington Humpback Whale Feeding Area and the portion of the Northwest Washington Gray Whale Feeding Area that is within the NWTT offshore area as mitigation areas that limit MF sonar and explosive training and testing activities from May–November, consistent with the Humpback Whale Mitigation Areas proposed to be included and (2) if it is practicable, include the areas as mitigation areas in the final rule or, if it is not practicable, justify why the areas were not included as mitigation areas in the preamble to the final rule.

*Response:* The Northwest Washington Gray Whale Feeding Area is located entirely within 12 nmi from shore in the Marine Species Coastal Mitigation Area and entirely within the Olympic Coast National Marine Sanctuary Mitigation Area. Therefore, due to the overlapping nature of the Navy's mitigation areas, mitigation within 12 nmi, 20 nmi, and 50 nmi from shore in the Marine Species Coastal Mitigation Area and within the Olympic Coast National Marine Sanctuary Mitigation Area will be implemented throughout the Northwest Washington Gray Whale Feeding Area. Based on NMFS' mitigation requirements, the Navy will implement restrictions on the use of surface ship hull-mounted MF1 mid-frequency active sonar, will not use any explosives, and will not conduct Anti-Submarine Warfare Tracking Exercise—Helicopter,—Maritime Patrol Aircraft,—Ship, or—Submarine training activities or non-explosive Anti-Submarine Warfare Torpedo Exercise—Submarine training activities (which involve the use of mid-frequency or high-frequency active sonar) within this gray whale feeding area.

The Northern Washington Humpback Whale Feeding Area is located entirely within 50 nmi from shore, and partially within 20 nmi and 12 nmi from shore in the Marine Species Coastal Mitigation Area. In addition, 90 percent of this feeding area is located within the Olympic Coast National Marine Sanctuary Mitigation Area. Based on NMFS' mitigation requirements, the Navy will implement restrictions on the use of surface ship hull-mounted MF1 mid-frequency active sonar in a portion of this feeding area, will not use explosives during training or testing (except explosive Mine Countermeasure and Neutralization Testing, which could occur in the 10 percent of this feeding area located outside of the Sanctuary Mitigation Area), and will not conduct Anti-Submarine Warfare Tracking Exercise—Helicopter,—Maritime Patrol Aircraft,—Ship, or—Submarine training activities or non-explosive Anti-Submarine Warfare Torpedo Exercise—Submarine training activities (which involve the use of mid-frequency or high-frequency active sonar) within a portion of this humpback whale feeding area. Expanding geographic mitigation requirements (including developing additional mitigation for these humpback whale or gray whale feeding areas) is not practicable for the Navy to implement for the reasons described in Appendix K (Geographic Mitigation Assessment) of the 2020 NWTT FSEIS/OEIS. For example, such further mitigation would encroach upon the primary water space where those training and testing activities occur in the NWTT Offshore Area for safety, sustainability, and mission requirements.

*Comment 51:* Commenters highlighted the need for NMFS to review the Navy's plans to rapidly increase its use of emerging technologies, including the use of unmanned underwater systems in Puget Sound and off the Washington coastline and the use of sonar, high-energy lasers, payload systems, kinetic energy weapons, and biodegradable polymers. One commenter stated that the proposed rule did not include a detailed analysis of potential impacts from these activities, and recommended that NMFS thoroughly analyze the impacts of these emerging technologies on marine mammals and prescribe any necessary mitigation measures, including seasonal restrictions and monitoring of short- and long-term impacts and careful testing and monitoring of the impacts of new technologies, to ensure that the Navy's activities have the least practicable adverse impact on marine mammals.

*Response:* The analysis that the commenter has suggested is included in the Navy's rulemaking/LOA application, in the 2020 NWTT FSEIS/OEIS, and in the 2015 NWTT FEIS/OEIS. However, the effects conclusions and mitigation for emerging technologies are not broken out separately; they are included in the stressor-based analysis with other current technologies. NMFS has thoroughly reviewed and concurs with this analysis and it has been considered in the development of the final rule. NMFS and the Navy have coordinated extensively regarding which of the Navy's training and testing activities (including emerging technologies) are likely to result in the take of marine mammals. Some of the stressors the commenter noted were not identified as sources that would cause the incidental take of marine mammals, which is why they are not included in the Navy's MMPA application or discussed further in the rule. The commenter has offered no evidence showing that these emerging technologies (high energy lasers, kinetic energy weapons, or biodegradable polymers) would result in the incidental take of marine mammals.

NMFS and the Navy clearly have considered the impacts of unmanned vehicles, and mitigation measures specific to these systems have been included in the rule. Mitigation in the Puget Sound and Strait of Juan de Fuca Mitigation Area specifically includes a limit of one Unmanned Underwater Vehicle Training activity annually at the Navy 3 OPAREA, Navy 7 OPAREA, and Manchester Fuel Depot (*i.e.,* a maximum of one event at each location), and prohibits the use of low-frequency, mid-frequency, or high-frequency active sonar during training or testing within the Puget Sound and Strait of Juan de Fuca Mitigation Area, unless a required element necessitates that the activity be conducted in NWTT Inland Waters during Unmanned Underwater Vehicle Training, and other activities as described in the *Mitigation Areas* section of this final rule. Also, since publication of the proposed rule, an additional measure has been added that requires Navy event planners to coordinate with Navy biologists prior to conducting Unmanned Underwater Vehicle Training at the Navy 3 OPAREA, Manchester Fuel Depot, Crescent Harbor Explosive Ordnance Disposal Range, and Navy 7 OPAREA. In addition, Unmanned Underwater Vehicle Training events at the Navy 3 OPAREA, Manchester Fuel Depot, Crescent Harbor Explosive Ordnance Disposal Range, and Navy 7 OPAREA will be cancelled or moved to another training location if the presence of Southern Resident killer whales is reported through available monitoring networks during the event planning

process, or immediately prior to the event, as applicable. Additionally, since publication of the proposed rule, another additional measure has been added, limiting the Navy to conducting a maximum of one Unmanned Underwater Vehicle Training event within 12 nmi from shore at the Quinault Range Site, and requiring the Navy to cancel or move Unmanned Underwater Vehicle Training events if Southern Resident killer whales are detected within 12 nmi from shore at the Quinault Range Site. This measure is expected to help avoid any potential impacts on Southern Resident killer whales during Unmanned Underwater Vehicle Training events.

*Comment 52:* A commenter stated that dipping sonar, like hull-mounted sonar, has been shown to be a significant predictor of deep-dive rates in beaked whales. Evidence indicates that beaked whales dive deeper and stay at depth during exposure to mid-frequency active sonar (possibly to escape from the sound, as the lowest sound pressure levels occur at depth), behavior that also extends the inter-deep-dive-interval (''IDDI,'' a proxy for foraging disruption). IDDIs were found to significantly lengthen upon exposure to mid-frequency sonar, with the longest, lasting 541 and 641 minutes, recorded during helicopter-deployer sonar use at distances of about 17 and 11 km, respectively. These effects have been documented at substantially greater distances (about 30 km) than would otherwise be expected given the systems' source levels and the response thresholds developed from research on hull-mounted sonar. Deep-dive duration increases as distance to the helicopter decreases.

The commenter states that helicopters deploy mid-frequency active sonar from a hover in bouts generally lasting under 20 minutes, moving rapidly between sequential deployments in an unpredictable pattern. That unpredictability may well explain the comparatively strong response of whales to these exposures, even though their duration of use and source level (217 dB) are generally well below those of hull-mounted mid-frequency active sonar (235 dB). This finding is consistent with the wider stress literature, for which predictability is a significant factor in determining stress-response from acoustic and other stimuli (Wright *et al.,* 2007). It should thus be presumed conservatively to apply to marine mammal species other than beaked whales. Notably, dipping sonar is deployed at depth, which may be another reason why it is relatively more impactful.

The commenter states that NMFS has proposed authorizing take from as many as 41–50 annual testing events—amounting to 298 events across the seven-year authorization (as well as one training event across the seven-year period). The commenter states that NMFS must consider restricting or limiting use of dipping sonar during the present MMPA process.

*Response:* The commenter appears to have misinterpreted the number of dipping sonar hours during testing events with the number of dipping sonar testing events. The Navy plans to conduct a maximum of one hour of MF4 sonar (Helicopter-deployed dipping sonars) for training over the seven-year period of this rule, and 41–50 hours of MF4 sonar annually for testing (298 hours total over the seven-year period of this rule). The final rule does include mitigation for and some restrictions on mid-frequency active sonar, including dipping sonar. For example, as described in the proposed rule, mitigation requirements within 12 nmi from shore prohibit Anti-Submarine Warfare Tracking Exercise—Helicopter, Maritime Patrol Aircraft, Ship, or Submarine training activities (which involve mid-frequency active sonar, including MF4 dipping sonar). The mitigation zone sizes and mitigation requirements were developed specifically for each applicable training and testing activity category or stressor. These mitigation zones are the largest area that (1) Lookouts can reasonably be expected to observe during typical activity conditions (*i.e.,* most environmentally protective); and (2) can be implemented by the Navy without impacting safety, sustainability, or the ability to meet mission requirements. The mitigation measures included in this final rule represent the maximum level of mitigation that is practicable for the Navy to implement when balanced against impacts on safety, sustainability, and the ability of the Navy to continue meeting its mission requirements. Given the amount of dipping sonar and comparatively low associated impacts to marine mammals, along with the impracticability of including more restrictions, additional mitigation specific to dipping sonar is not warranted.

*Comment 53:* Commenters stated that the Navy needs to incorporate better techniques to improve their detection rates of marine mammals, extend their exclusion zones around detected marine mammals, and utilize exclusion zones based on specific areas and times in their mitigation strategies.

*Response:* The Navy uses active sonar during military readiness activities only when it is essential to training missions or testing program requirements since active sonar has the potential to alert opposing forces to the operating platform's presence. Passive sonar and other available sensors are used in concert with active sonar to the maximum extent practicable. The Navy, in coordination with NMFS, customized its mitigation zone sizes and mitigation requirements for each applicable training and testing activity category or stressor. Each mitigation zone represents the largest area that (1) Lookouts can reasonably be expected to observe during typical activity conditions (*i.e.,* most environmentally protective) and (2) the Navy can commit to implementing mitigation without impacting safety, sustainability, or the ability to meet mission requirements. The current exclusion zones represent the maximum distance practicable for the Navy to implement, as described in Chapter 5 of the FSEIS/OEIS and, further, they encompass the area in which any marine mammal would be expected to potentially be injured. This final rule includes procedural mitigation and mitigation areas to further avoid or reduce potential impacts from active sonar on marine mammals in areas where important behaviors such as feeding and migration occur. For example, this final rule requires the Navy to restrict certain activities or types of sonar year-round within 12 nmi from shore in the Marine Species Coastal Mitigation Area, seasonally within the Point St. George Humpback Whale Mitigation Area and Stonewall and Heceta Bank Humpback Whale Mitigation Area, and year-round in the Puget Sound and Strait of Juan de Fuca Mitigation Area to help avoid potential impacts from active sonar on marine mammals in important foraging and migration areas. Also, new mitigation requiring the Navy to only conduct explosive mine countermeasure and neutralization testing in daylight hours and in Beaufort Sea state number 3 conditions or less will increase the probability of detection of marine mammals and further increase the effectiveness of procedural mitigation zones. Additional information about the required mitigation is included in the Mitigation Measures section of this final rule, and in Appendix K (Geographic Mitigation Assessment) of the 2020 NWTT FSEIS/OEIS.

*Comment 54:* A commenter stated that other agencies and operators are taking new, meaningful steps to reduce noise and disturbance affecting Southern Resident killer whales. The commenter stated that the Navy must also increase

its protections, or it will become responsible for a larger share of the cumulative impact and potentially negate some of the benefits of the other actions being taken. In 2019, Washington state took big steps to reduce impacts on Southern Resident killer whales from other vessel types, recognizing that noise and disturbance have significant adverse consequences for this endangered population. In May of that year, Governor Inslee signed into law a bill that increases the distance that vessels must stay away from Southern Resident killer whales and enacts a 7-knot speed limit within a half nautical mile of these killer whales. The legislature also allocated funding for a new hybrid ferry and funding to convert some ferries to hybrid-electric power. Washington State Ferries also started conducting a baseline noise inventory and working to develop solutions to address noise and frequencies of concern. In 2020, the Washington Department of Fish and Wildlife is developing rules for a commercial whale-watching license program to reduce the daily and cumulative impacts of vessel noise and disturbance on the Southern Resident killer whales. Meanwhile, in 2020, voluntary ship slowdowns will continue and expand through the Vancouver Fraser Port Authority-led Enhancing Cetacean Habitat and Observation (ECHO) Program—a Canadian program that directly benefits Southern Resident orcas in the inland waters. In 2019, 82 percent of large commercial ships participated in the slowdown. The Navy's contributions will take up a larger share of the underwater noise and disturbance as others reduce their impacts and the Navy continues to scale its activities up. The Navy should increase its own mitigation efforts so that there is still a significant net benefit to the Southern Resident killer whales in terms of reduced noise and disturbance when all these other entities are increasing their protective measures.

*Response:* Please see the response to Comment 74 for more information regarding the low magnitude and severity of the anticipated impacts on Southern Resident killer whales. Also, of note, the standard operating procedures and mitigation the Navy uses to help avoid vessel strike would further help reduce exposure to vessel noise. Further, unlike commercial vessels, Navy vessel design generally incorporates quieting technologies in propulsion components, machinery, and the hull structure to reduce radiated acoustic energy. As a result, and in addition to comprising approximately one-tenth of one percent of total vessel traffic in Inland Waters, Navy vessels when present do not add significantly to ambient noise levels.

Nonetheless, the number and/or intensity of incidents of take of Southern Resident killer whales will be minimized through the incorporation of mitigation measures, and NMFS has added mitigation measures for marine mammals, including Southern Resident killer whales, in this final rule. New measures include additional procedural mitigation during explosive mine countermeasure and neutralization testing; a new Juan de Fuca Eddy Marine Species Mitigation Area; and additional mitigation in the Marine Species Coastal Mitigation Area and the Olympic Coast National Marine Sanctuary Mitigation Area (both offshore areas that overlap with proposed Southern Resident killer whale critical habitat), as well as in the Puget Sound and Strait of Juan de Fuca Mitigation Area. This new mitigation is expected to benefit Southern Resident killer whales, in some cases by limiting or prohibiting certain activities in certain areas during times in which Southern Resident killer whales engage in important behaviors such as feeding and migration, and in other cases, by augmenting the effectiveness of procedural mitigation measures by requiring seasonal awareness messages or limiting activities to lower sea states when visibility is higher. With implementation of the new mitigation measures included in this final rule, we do not anticipate any take of Southern Resident killer whales in NWTT Inland Waters due to NWTT training and testing activities. These new mitigation measures are described in detail in the Mitigation Measures section of this final rule.

These new measures, in combination with those included in the proposed rule, will reduce the severity of impacts to Southern Resident killer whales by reducing interference in feeding and migration that could result in lost feeding opportunities or necessitate additional energy expenditure to find other good foraging opportunities or migration routes. Procedural mitigations that alleviate the likelihood of injury, such as shutdown measures, also further reduce the likelihood of more severe behavioral responses.

Additionally, the Navy has been a key contributor to marine species monitoring projects for a number of years to advance scientific knowledge of Southern Resident killer whales and the salmon they rely on. For decades, the Navy has implemented habitat improvement projects on its installations in Puget Sound that benefit Southern Resident killer whales.

*Comment 55:* A commenter stated that although the Navy proposes to use surface-level Lookout systems for whales, these Lookouts are inadequate because (1) the visual range of human Lookouts is limited and (2) historically one-quarter of Navy tests have occurred at night, further limiting visibility.

*Response:* NMFS acknowledges the limitations of Lookouts, does not assume that all marine mammals will be detected, and incorporates this information into its take estimates. Information about the quantitative analysis process, including the consideration of mitigation effectiveness, is described in detail in the 2018 technical report titled *Quantifying Acoustic Impacts on Marine Mammals and Sea Turtles: Methods and Analytical Approach for Phase III Training and Testing.* The Navy quantitatively assessed the effectiveness of its mitigation measures on a per-scenario basis for four factors: (1) Species sightability, (2) a Lookout's ability to observe the range to PTS (for sonar and other transducers) and range to mortality (for explosives), (3) the portion of time when mitigation could potentially be conducted during periods of reduced daytime visibility (to include inclement weather and high sea state) and the portion of time when mitigation could potentially be conducted at night, and (4) the ability for sound sources to be positively controlled (*e.g.,* powered down).

Appendix A (Navy Activities Descriptions) of the 2020 NWTT FSEIS/OEIS includes details on seasonality and day/night requirements of the Navy's activities. Additionally, this final rule includes mitigation which prohibits the Navy from conducting explosive Mine Countermeasure and Neutralization Testing at night, as described in the Mitigation Measures section of this final rule, and in Chapter 5 (Mitigation) of the 2020 NWTT FSEIS/OEIS. As described in Section 5.5.1 (Active Sonar) of the 2020 NWTT FSEIS/OEIS, the Navy has a requirement to conduct some active sonar training and testing at night due to environmental differences between day and night and varying weather conditions that affect sound propagation and the detection capabilities of sonar. Temperature layers that move up and down in the water column and ambient noise levels can vary significantly between night and day. This affects sound propagation and could affect how sonar systems function and are operated. Therefore, it is not practicable to prohibit all active sonar activities

from being conducted at night due to impacts on mission requirements; however, after sunset and prior to sunrise, Lookouts and other Navy watch personnel employ night visual search techniques, which could include the use of night vision devices, as described in Section 5.2.1 (Procedural Mitigation Development) of the 2020 NWTT FSEIS/OEIS. Please see the response to Comment 46 for discussion regarding use of thermal detection systems as a mitigation tool. Also, we note that visual mitigation is not the only tool; the Navy currently uses passive acoustic devices to the maximum extent practicable to aid in the detection of marine mammals.

*Comment 56:* Commenters suggested that NMFS require the Navy to use an alternative method of training that does not have such a negative impact on marine life, such as sophisticated simulators and virtual explosives.

*Response:* The Navy uses the necessary amounts of simulated and live training to accomplish their mission. As discussed in the 2015 NWTT Final EIS/OEIS Section 1.4.1 (Why the Navy Trains), simulators and synthetic training are critical elements that provide early skill repetition and enhance teamwork; however, they cannot replicate the complexity and stresses faced by Navy personnel during military missions and combat operations to which the Navy trains (*e.g.,* anti-submarine warfare training using hull-mounted mid-frequency active sonar). Just as a pilot would not be ready to fly solo after simulator training, operational Commanders cannot allow military personnel to engage in military missions and combat operations based merely on simulator training. In addition, as discussed in Section 2.4.1.5 (Simulated Training and Testing Only) of the 2020 NWTT FSEIS/OEIS, the Navy currently uses simulation whenever possible (*e.g.,* initial basic systems training, emergency procedures, and command and control exercises that are conducted without operational forces) and simulation plays a role in both antisubmarine warfare training and testing aboard ships, submarines, and aircraft and in aircrew training and testing.

*Comment 57:* Commenters recommended that NMFS require the Navy to postpone or cancel any exercises when Lookouts detect marine mammals, specifically killer whales, within 1,000 yd (914.4 m) of the exercise, rather than the smaller zones included in the proposed rule, to mitigate long-term effects of noise exposure over an animal's lifetime. The commenters note that this minimum distance aligns with Washington State law which requires most vessels to slow down to 7 knots when within 0.5 nmi (0.9 km) of Southern Resident killer whales in order to mitigate noise impacts and disturbance. Other commenters recommended that the Navy cease any active mid-frequency sonar testing and exercises if any killer whales are sighted within .5 nmi, rather than the proposed 200-yd or 100-yd shutdown mitigation zone which is much closer than even the 300-yd and 400-yd approach distance for commercial whale watch operators and recreational boaters. Additionally, commenters stated that the Navy's use of mid-frequency sonar can impact wildlife within 2,000 $mi^2$ (5180 $km^2$), much farther than the 100 yd (91.4 m) proposed for some of the Navy's proposed activities. The commenter stated that although these activities may affect a wide range of marine mammals, the potential impact of these activities on endangered Southern Resident killer whales is of particular concern, given their dangerously low population size.

*Response:* As described in the 2020 NWTT FSEIS/OEIS regarding shutdown requirements, the mitigation zone sizes and mitigation requirements in this rule are customized for each applicable training and testing activity category or stressor to protect specific biological resources from an auditory injury (PTS), non-auditory injury (from impulsive sources), or direct strike (*e.g.,* vessel strike) to the maximum extent practicable. Mitigation zones were developed to be the largest area that (1) Lookouts can reasonably be expected to observe during typical activity conditions (*i.e.,* most environmentally protective) and (2) the Navy can commit to implementing mitigation without impacting safety, sustainability, or the ability to meet mission requirements. NMFS has evaluated these recommendations for larger shutdown zones, and while larger shutdown zones might further reduce the potential or severity of the small amount of anticipated Level A harassment to some degree, we concur with the evaluation presented by the Navy indicating that increases in these zones are impracticable and have accordingly determined that larger shutdown zones are not warranted. The shutdown zones currently required for Navy activities, especially as coupled with other procedural mitigations and the required geographic mitigations, will effect the least practicable adverse impact on marine mammal species or stocks and their habitat.

Regarding statements related to the areal extent of Navy effects, or distances noted in Washington State law, we note that the analysis conducted by the Navy and NMFS includes consideration of large areas such as those referenced by the commenters, through the application of the BRFs and the associated cutoff distances—in other words, effects at these distances are considered. However, avoiding all Level B harassment would be impossible to do while also conducting the activities analyzed, which is why the Navy has requested authorization. Further, we note that reference to Washington State measures is not comparable to mitigation required pursuant to an incidental take authorization, as the goal there is to minimize the likelihood of any take for unauthorized entities.

The Navy has conducted active sonar and explosives training and testing activities in the Study Area for decades, and there is no evidence that routine Navy training and testing has negatively impacted marine mammal populations in the Study Area. NMFS' and the Navy's analyses were completed using the best available science, and include results from recently completed acoustic modeling. As discussed in the Mitigation Measures section of this final rule, and Chapter 5 (Mitigation) of the 2020 NWTT FSEIS/OEIS, required mitigation will avoid or reduce potential impacts from NWTT activities on marine mammals, including Southern Resident killer whales (see response to Comment 74 for additional discussion regarding impacts to Southern Resident killer whales).

*Monitoring*

*Comment 58:* A commenter stated that the Navy should clearly state that all appropriate personnel must have completed relevant training modules prior to participating in training and testing activities. Ensuring ''environmental awareness of event participants,'' including the possible presence of Southern Resident killer whales in the training location, implies that it is real-time situational awareness of potential killer whale presence. But it is in fact a series of modules in the Afloat Environmental Compliance Training Program, and ''appropriate personnel'' will complete some or all of these modules at some time, with no defined timeline. There should be clear timeframes in which personnel will complete this training program. The commenter asserts that this mitigation measure is indisputably both available and practical.

*Response:* As stated in the rule, ''All bridge watch personnel, Commanding Officers, Executive Officers, maritime patrol aircraft aircrews, anti-submarine

warfare and mine warfare rotary-wing aircrews, Lookouts, and equivalent civilian personnel must successfully complete the Marine Species Awareness Training prior to standing watch or serving as a Lookout.'' Please see Table 35 for additional information regarding training requirements.

*Comment* 59: A commenter recommended that, in addition to requiring long-term monitoring studies, NMFS should prioritize Navy research projects that aim to quantify the impact of training and testing activities at the individual, and ultimately, population-level. The commenter recommended detailed, individual-level behavioral-response studies, such as focal follows and tagging using DTAGs, carried out before, during, and after Navy operations, which can provide important insights for these species and stocks. The commenter stated that recent studies using DTAGs have also been used to characterize social communications between individuals of a species or stock, including between mothers and calves. The commenter recommended studies be prioritized that further characterize the suite of vocalizations related to social interactions. The commenter also stated that the use of unmanned aerial vehicles is also proving useful for surveying marine species, and can provide a less invasive approach to undertaking focal follows. Imagery from unmanned aerial vehicles can also be used to assess body condition and, in some cases, health of individuals. The commenter recommended that NMFS require the Navy to use these technologies for assessing marine mammal behavior before, during, and after Navy operations (*e.g.,* swim speed and direction, group cohesion). The commenter also stated that studies into how these technologies can be used to assess body condition should be supported as this can provide an important indication of energy budget and health, which can inform the assessment of population-level impacts.

*Response:* First, the Navy is pursuing many of the topics that the commenter identifies, either through the monitoring required under the MMPA or under the ESA, or through other Navy-funded Office of Naval Research (ONR) and Living Marine Resources (LMR) research programs. We are confident that the monitoring conducted by the Navy satisfies the requirements of the MMPA. A list of the monitoring studies that the Navy will be conducting under this rule is at the end of the Monitoring section of this final rule. Broadly speaking, in order to ensure that the monitoring the Navy conducts satisfies the requirements of the MMPA, NMFS works closely with the Navy in the identification of monitoring priorities and the selection of projects to conduct, continue, modify, and/or stop through the adaptive management process, which includes annual review and debriefs by all scientists conducting studies pursuant to the MMPA authorization. The process NMFS and the Navy have developed allows for comprehensive and timely input from NMFS, the Navy, the Marine Mammal Commission, and researchers conducting monitoring under the rule, which is based on rigorous reporting out from the Navy and the researchers doing the work. With extensive input from NMFS, the Navy established the Strategic Planning Process for Marine Species Monitoring to help structure the evaluation and prioritization of projects for funding. The Monitoring section of this rule provides an overview of this Strategic Planning Process. More detail, including the current intermediate scientific objectives, is available in section 5 (Mitigation), Section 5.1.2.2.1.3 (Strategic Planning Process) of the 2020 NWTT FSEIS/OEIS and on the monitoring portal (*https://www.navymarinespeciesmonitoring.us/*) as well as in the Strategic Planning Process report. The Navy's evaluation and prioritization process is driven largely by a standard set of criteria that help the internal steering committee evaluate how well a potential project would address the primary objectives of the monitoring program. Given that the Navy's Monitoring Program applies to all of the Navy's major Training and Testing activities and, thereby spans multiple regions and Study Areas to encompass consideration of the entire U.S. EEZ and beyond, one of the key components of the prioritization process is to focus monitoring in a manner that fills regionally specific data gaps, where possible (*e.g.,* more limited basic marine mammal distribution data in the MITT Study Area), and also takes advantage of regionally available assets (*e.g.,* instrumented ranges in the HSTT Study Area). NMFS has opportunities to provide input regarding the Navy's intermediate scientific objectives as well as to provide feedback on individual projects through the annual program review meeting and annual report. For additional information, please visit: *https://www.navymarinespeciesmonitoring.us/about/strategic-planning-process/.*

The Navy's involvement with future research will continue to be developed and refined by the Navy and NMFS through the consultation and adaptive management processes, which regularly consider and evaluate the development and use of new science and technologies for Navy applications. Further, the Navy also works with NMFS to target and prioritize data needs that are more appropriately addressed through Navy research programs, such as the ONR and LMR programs. The Navy has indicated that it will continue to be a leader in funding of research to better understand the potential impacts of Navy training and testing activities and to operate with the least possible impacts while meeting training and testing requirements. Some of the efforts the Navy is leading or has recently completed are described below.

(1) Individual-level behavioral-response studies—There are no ONR or LMR behavioral response studies in the NWTT Study Area given the limited number of activities conducted in NWTT in comparison to other ranges in the Pacific. However, many of the studies on species-specific reactions are designed to be applicable across geographic boundaries (*e.g.,* Cuvier's beaked whale studies in the HSTT Study Area).

(2) Tags and other detection technologies to characterize social communication between individuals of a species or stock, including mothers and calves—DTAGs are just one example of animal movement and acoustics tags. From the Navy's ONR and LMR programs, Navy funding is being used to improve a suite of marine mammal tags to increase attachment times, improve data being collected, and improve data satellite transmission. The Navy has funded a variety of projects that are collecting data that can be used to study social interactions amongst individuals. For example, as of September 2020 the following studies are currently being funded: Assessing performance and effects of new integrated transdermal large whale satellite tags 2018–2021 (Organization: Marine Ecology and Telemetry Research); Autonomous Floating Acoustic Array and Tags for Cue Rate Estimation 2019–2020 (Organization: Texas A&M University Galveston); Development of the next generation automatic surface whale detection system for marine mammal mitigation and distribution estimation 2019–2021 (Organization: Woods Hole Oceanographic Institution); High Fidelity Acoustic and Fine-scale Movement Tags 2016–2020 (Organization: University of Michigan); Improved Tag Attachment System for Remotely-deployed Medium-term Cetacean Tags 2019–2023 (Organization: Marine Ecology and Telemetry

Research); Next generation sound and movement tags for behavioral studies on whales 2016–2020 (Organization: University of St. Andrews); On-board calculation and telemetry of the body condition of individual marine mammals 2017–2021 (Organization: University of St. Andrews, Sea Mammal Research Unit); wide-band detection and classification system 2018–2020 (Organization: Woods Hole Oceanographic Institution); and Extended Duration Acoustic Tagging 2016–2021 (Organization: Syracuse University).

(3) Unmanned Aerial Vehicles to assess marine mammal behavior (*e.g.,* swim speed and direction, group cohesion) before, during, and after Navy training and testing activities—Studies that use unmanned aerial vehicles to assess marine mammal behaviors and body condition are being funded by ONR's Marine Mammals and Biology program. Although the technology shows promise (as reviewed by Verfuss *et al.,* 2019), the field limitations associated with the use of this technology have hindered its useful application in behavioral response studies in association with Navy training and testing events. For safety, research vessels cannot remain in close proximity to Navy vessels during Navy training or testing events, so battery life of the unmanned aerial vehicles has been an issue. However, as the technology improves, the Navy will continue to assess the applicability of this technology for the Navy's research and monitoring programs. An example project is integrating remote sensing methods to measure baseline behavior and responses of social delphinids to Navy sonar 2016–2019 (Organization: Southall Environmental Associates Inc.).

(4) Modeling methods that could provide indicators of population-level effects—NMFS asked the Navy to expand funding to explore the utility of other, simpler modeling methods that could provide at least an indicator of population-level effects, even if each of the behavioral and physiological mechanisms are not fully characterized. The ONR Marine Mammals and Biology program has invested in the Population Consequences of Disturbance (PCoD) model, which provides a theoretical framework and the types of data that would be needed to assess population level impacts. Although the process is complicated and many species are data poor, this work has provided a foundation for the type of data that is needed. Therefore, in the future, the relevant data pieces that are needed for improving the analytical approaches for population level consequences resulting from disturbances will be collected during projects funded by the Navy's marine species monitoring program. However, currently, PCoD models are dependent on multiple factors, one or more of which are often unknown for many populations, which makes it challenging to produce a reliable answer for most species and activity types, and further work is needed (and underway) to develop a more broadly applicable generalized construct that can be used in an impact assessment. As discussed in the Monitoring section of this rule, the Navy's marine species monitoring program typically supports 10–15 projects in the Pacific at any given time. Current projects cover a range of species and topics from collecting baseline data on occurrence and distribution, to tracking whales, to conducting behavioral response studies on beaked whales and pilot whales. The Navy's marine species monitoring web portal provides details on past and current monitoring projects, including technical reports, publications, presentations, and access to available data and can be found at: *https://www.navymarinespeciesmonitoring.us/regions/pacific/current-projects/.*

In summary, NMFS and the Navy work closely together to prioritize, review, and adaptively manage the extensive suite of monitoring that the Navy conducts in order to ensure that it satisfies the MMPA requirements. NMFS has laid out a broad set of goals that are appropriate for any entity authorized under the MMPA to pursue, and then we have worked with the Navy to manage their projects to best target the most appropriate goals given their activities, impacts, and assets in the NWTT Study Area. Given the scale of the NWTT Study Area and the variety of activities conducted, there are many possible combinations of projects that could satisfy the MMPA standard for the rule. The commenter has recommended more and/or different monitoring than NMFS is requiring and the Navy is conducting or currently plans to conduct, but has in no way demonstrated that the monitoring currently being conducted does not satisfy the MMPA standard. NMFS appreciates the commenter's input, and will consider it, as appropriate, in the context of our adaptive management process, but is not requiring any changes at this time.

*Comment 60:* Consistent with its responsibilities under the MMPA's provisions on unusual mortality events (section 1421c of the MMPA), as well as requirements under NEPA to obtain information essential to its analysis of reasonable alternatives (40 CFR 1502.22; now section 1502.21), NMFS should urgently fund research to assess the extent of prey availability loss for California gray whales and to determine the cause of that loss of prey.

*Response:* This comment is outside of the scope of this rulemaking, which must use the best available science to determine whether incidental take authorization should be issued under section 101(a)(5)(A) of the MMPA, and which includes requirements for the Navy to implement certain mitigation and monitoring measures related to that incidental take. There is no information to indicate that prey availability loss for gray whales is related to the Navy's testing and training activities in the NWTT Study Area. Comments regarding NMFS' responsibilities under separate sections of the MMPA or NEPA, or recommendations that NMFS fund specific research under other sections of the MMPA, should be addressed to the appropriate NMFS office.

*Comment 61:* A commenter stated that the Navy says it will make reports but questioned how their activities will be monitored. Another commenter requested an accounting of past operations and the damage done in the 10 years prior to this authorization.

*Response:* Please refer to the Monitoring and Reporting sections of this final rule for an explanation of how the Navy's activities will be monitored and reported on. Additionally, the Navy's marine species monitoring web portal provides exercise reports for previous activities in the NWTT Study Area, as well details on past and current monitoring projects, including technical reports, publications, presentations, and access to available data. The Navy's marine species monitoring web portal can be found at: *https://www.navymarinespeciesmonitoring.us/reporting/pacific/.*

*Comment 62:* A commenter stated that the Navy should reconsider the impacts of its proposed activities being imposed on Southern Resident killer whales, and examine alternatives and additional mitigation measures to ensure the protection and recovery of this population. The commenter recommended that if marine mammals are sighted or detected within acoustic range, then exercises should be shut down, if in progress, and postponed or moved elsewhere if the exercises have not yet started. The commenter stated that an appropriate threshold for such a decision is whenever noise levels from naval operations as well as other sources at the location of Southern Resident killer whales are expected to be greater than 130 dB re 1µPa, the pain

threshold of killer whales. The commenter states that these lower thresholds will extend far beyond the range at which marine mammals can be sighted from vessels responsible for explosives and mid-frequency active sonar. This will require the use of remote sensing technology such as drones (with infrared sensing capability for use at night) and sonobuoys. Two commenters suggested that the use of permanent hydrophone arrays wired to shore would allow more thorough tracking of marine mammal movement throughout the training range. In addition, exercises should be moved further offshore than currently planned to compensate for the greater ranges at which Level B takes could be expected under the criteria recommended here than for the 120 dB contour.

Another commenter stated that the Navy should fund the installation of an array of underwater microphones along the coast of Washington state to provide near real-time information on the whereabouts of the Southern Resident killer whales as well as other cetaceans. This would serve as an important early warning system in the offshore area to complement the boat-based observers who have a limited visual range. Activities could then be planned based on Southern Resident killer whales movements and halted when Southern Resident killer whales are approaching well before they reach the 0.5 nmi distance. Hanson (2018) noted that 28 recorders would achieve a high probability of detection all along the Washington coast. The array would have the added benefit of improving monitoring of other killer whale populations, pilot whales, sperm whales, and beaked whales, allowing for improved implementation of mitigation measures to reduce incidental take of those species as well.

*Response:* The Navy, in consultation with NMFS, used the best available science on marine mammal behavioral responses during acoustic exposures to develop appropriate behavioral response criteria and BRFs, which for odontocetes (including killer whales) predict that approximately 10–17 percent of exposures at 120–130 dB will result in behavioral responses that qualify as Level B harassment. For more information about the Phase III criteria, please refer to the technical report titled *Criteria and Thresholds for U.S. Navy Acoustic and Explosive Effects Analysis (Phase III)* (June 2017), available at *www.nwtteis.com.* NMFS and the Navy have also consulted with NMFS' ESA Interagency Cooperation Division under section 7 of the Endangered Species Act and will continue to coordinate on criteria and thresholds for assessing impacts to marine mammals.

Additionally, as referenced in other comment responses, this final rule includes extensive mitigation that will minimize impacts to Southern Resident killer whales, including many additional measures added since the proposed rule. For example, the Navy is required to communicate with available sighting detection networks prior to the conduct of applicable activities in NWTT Inland Waters. Additionally, this final rule includes a new mitigation area in the NWTT Offshore Area known as the Juan de Fuca Eddy Marine Species Mitigation Area, where annual mid-frequency active sonar hours will be limited and explosives will be prohibited. It would not be practicable for the Navy to implement additional distance-from-shore restrictions or additional passive acoustic monitoring for the reasons provided in Appendix K (Geographic Mitigation Assessment) and Chapter 5 (Mitigation) of the 2020 NWTT FSEIS/OEIS. NMFS has reviewed the analysis of additional potential restrictions and the impacts they would have on military readiness, and concurs with the Navy's assessment that they are impracticable. Additionally, the mitigation zones included in this final rule represent the largest zones practicable for the Navy to implement, as discussed in Comment 52. Therefore, the larger zones suggested by the commenter are not included in this final rule. Regarding the use of infrared and thermal technologies, please see the response to Comment 46.

Regarding the installation of permanent hydrophone arrays wired to shore along the coast of Washington state to provide near real-time information on the whereabouts of the Southern Resident killer whales as well as other cetaceans, the cost and installation of such a system in and of itself would be a major federal undertaking that would require separate NEPA and permitting (Clean Water Act, essential fish habitat consultation, *etc.*) and is beyond the scope of mitigation that is necessary to meet the least practicable adverse impact standard. Further, given the low numbers and density of Southern Resident killer whales, combined with the relatively low number of training and testing activities, the benefits of such a detection network would be limited *(i.e.,* we would expect few instances in which whales would be detected in an exact place and time that would intersect with a potential exercise, and thereby allow for an opportunity to mitigate). This recommendation is not warranted and, accordingly, NMFS has not included a requirement to install a hydrophone array for real-time mitigation monitoring.

*Negligible Impact Determination*

*Comment 63:* A commenter stated that NMFS tabulates takes of marine mammal species but has not adequately assessed the aggregate impacts. The commenter asserted that, on the contrary, NMFS assumes, without any explanation, that the accumulated annual mortalities, injuries, energetic costs, temporary losses of hearing, chronic stress, and other impacts would not affect vital rates in individuals or populations, even though the Navy's activities would affect the same populations over time. This assumption seems predicated, for many species, on the unsupported notion that transient activity will not accumulate into population-level harm. The commenter stated that the proposed rule makes this assertion even for populations such as Hood Canal harbor seals and Washington Inland harbor porpoises, for which it estimates auditory injury, temporary hearing loss, and behavioral disruption at high numbers relative to the size of individual populations.

Multiple commenters noted concern that the Hood Canal population of harbor seals would be taken 30.84 times its abundance each year, for seven years. Commenters said that NMFS observes that such high numbers of takes make it likely that females will suffer reproductive loss, yet it argues—without any quantitative support—that any such effects would be negligible on the population level because only a small number of individual females would be affected. Nowhere does NMFS consider the potential for sensitization, permanent habitat displacement, or other effects of repeated exposure that could exacerbate the already high numbers of takes.

Commenters noted that other parties have conducted quantitative analysis of population consequences of disturbance, both in cases where substantial information is available for modeling and in cases where it is not—as is evident even in a three-year-old report from the National Academy of Sciences. NMFS cannot, the commenter asserts, discount the results of its take estimation without any quantitative or meaningful analysis. Its attempt to do so here for populations with high levels of take is unreasonable on its own terms and insupportable under the MMPA's standard of ''best available science.''

*Response:* NMFS fully considered the potential for aggregate effects from all Navy activities and has applied a reasoned and comprehensive approach

to evaluating the effects of the Navy activities on marine mammal species and their habitat.

No mortalities or non-auditory injuries are predicted from sonar or explosives for any marine mammal species, including harbor porpoises and harbor seals. The vast majority of impacts to marine mammals are instances of behavioral response, followed by instances of temporary threshold shift, both considered Level B harassment under the MMPA. A small proportion of a few species such as harbor porpoises are estimated to receive instances of mild PTS, however there is no information to indicate that the small amount of predicted PTS will affect the fitness of any individual. NMFS has explained in detail in the proposed rule and again in this final rule how the estimated takes were calculated for marine mammals, and then how the size of the Study Area across which activities may be distributed (and the ASW activities utilizing MF1 sonar, which account for the majority of the takes may occur anywhere in the Study Area and predominantly more than 12 nmi from shore) combined with the comparatively small number of takes as compared to the abundance of the species or stock in the area does not support that any individuals, other than Hood Canal harbor seals, will likely be taken over more than a few non-sequential days. We also considered UMEs (for species or stocks where applicable) to inform the baseline levels of both individual health and susceptibility to additional stressors, as well as stock status. Further, the species-specific assessments in the Analysis and Negligible Impact Determination section pull together and address the combined injury, behavioral disturbance, and other effects of the aggregate NWTT activities (and in consideration of applicable mitigation) as well as other information that supports our determinations that the Navy activities will not adversely affect any species or stocks via impacts on rates of recruitment or survival.

NMFS acknowledges that for the Hood Canal stock of harbor seals, though the majority of impacts are expected to be of a lower to sometimes moderate severity, the repeated takes over some number of sequential days for some individuals in this stock makes it more likely that some small number of individuals could be interrupted during foraging in a manner and amount such that impacts to the energy budgets of females (from either losing feeding opportunities or expending considerable energy to find alternative feeding options) could cause them to forego reproduction for a year (energetic impacts to males are generally meaningless to population rates unless they cause death, and it takes extreme energy deficits beyond what would ever be likely to result from these activities to cause the death of an adult marine mammal). However, we first note that the predicted potential number of repeated days of take for any individual has decreased significantly since the proposed rule (a reduction of more than 50 percent) as a result of harbor seal abundance corrections. Specifically, whereas the proposed rule suggested an average of 31 days of take with some subset of individuals experiencing more, the final rule predicts an average of 10 days of incurred take per individual, with some potentially experiencing up to 21. The fewer the days per year on which take is likely incurred by any individual, the less likely those days will be sequential, and the lower the maximum number of sequential days, all of which makes it less likely that the behavioral impacts to any individuals would impact energetic budgets in a manner that would affect reproduction. Further, foregone reproduction (especially for only one year within seven, which is the maximum predicted because the small number anticipated in any one year makes the probability that any individual will be impacted in this way twice in seven years very low) has far less of an impact on population rates than mortality, and a relatively small number of instances of foregone reproduction would not be expected to adversely affect the stock through effects on annual rates of recruitment or survival, especially when the stock is increasing. As discussed in the Analysis and Negligible Impact Determination section for this analysis, there is documented evidence of an increasing population for Hood Canal harbor seals, including pupping on the Naval Base Kitsap Bangor waterfront in recent years (an area with high levels of human activity, including nearby pile driving, and associated noise). Further of note, the Navy has been conducting monitoring of harbor seals and porpoises in the vicinity of Naval Base Kitsap Bangor where pierside sonar use occurs, and harbor seals are noted in the waters around the piers daily and have become habituated to the high levels of noise at the industrial piers to the extent that they do not avoid the piers during active pile driving with impact hammers, which produce sounds almost as high as tactical sonar.

Additionally, in the NWTT Study Area unit-level military readiness activities occur over a small spatial scale with few participants, typically over a short duration (a few hours or less), while larger-scale training and testing events occur in locations outside of the Study Area. While data with which to quantify or analyze potentially synergistic impacts of multiple stressors are limited, substantial efforts are underway to better understand aggregate effects through data collection and improved analytical methods, such as the Population Consequences of Disturbance model (see Section 3.4.2.1.1.7, Long-Term Consequences in the 2020 NWTT FSEIS/OEIS). However, until there are sufficient data to inform such models, the best mechanism for assessing the impacts from Navy training and testing activities on marine mammal reproduction and survival includes monitoring the populations over time on Navy ranges. The Navy has conducted active sonar and explosives training and testing activities in the Study Area for decades, and there is no evidence that routine Navy training and testing has negatively impacted marine mammal populations in the Study Area (or at any Navy Range Complex). In addition, the Navy's research and monitoring programs described in the Monitoring section are focused on filling data gaps and obtaining the most up-to-date science to inform impact assessment. Information about prior and current research being conducted on marine mammals on Navy ranges is in Chapter 3.4 (Marine Mammals) of the 2020 NWTT FSEIS/OEIS and can be found at *www.navymarinespeciesmonitoring.us.*

*Comment 64:* A commenter stated that NMFS did not meet the legal standard in the MMPA to find that the Navy's proposed actions ''will have a negligible impact on'' the species and stocks of marine mammals living in the NWTT Study Area. NMFS defines ''[n]egligible impact'' as an impact ''that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival.'' NMFS must make the negligible impact finding based on the ''best available science.'' However, the commenter says that NMFS does not adequately engage with identified impacts to vulnerable species, including Southern Resident killer whales and gray whales, analyze impacts of Naval aircraft, or address the role of climate change in exacerbating anticipated impacts of Naval activities. Another commenter also noted that multiple studies demonstrate behavior

impacts to cetaceans from aircraft, disagreed with the conclusion that aircraft do not result in harassment, and asked that NMFS ensure that any effects from aircraft result in a negligible impact on marine mammals (especially Southern Resident killer whales, given their status). For these reasons, the commenter asserts that NMFS cannot justify its finding of negligible impact based on the record in the proposed rule.

*Response:* NMFS fully considered the potential for aggregate effects from all Navy activities, and discusses its consideration of these impacts, and its negligible impact determination for each species and stock in the Analysis and Negligible Impact Determination section of this final rule. As described throughout the rule, NFMS relied on the best available science in considering the impacts of the Navy's activities and in making the negligible impact determinations. NMFS fully considered the status of Southern Resident killer whales, gray whales, and all other marine mammals in its analysis, as discussed in the Description of Marine Mammals and Their Habitat in the Area of the Specified Activities and the Analysis and Negligible Impact Determination sections of the proposed and final rules. NMFS is required to analyze the impacts of the proposed authorized take in its negligible impact analysis—the effects of climate change are considered in the baseline of the status of marine mammal stocks in the rule, and further considered through the 2020 NWTT FSEIS/OEIS cumulative impact analysis (Chapter 4, *Cumulative Impacts*). NMFS acknowledges that climate change is impacting the marine environment in ways that could change our assessment of effects on marine mammals in the future, but the precise manner in which these changes would impact marine mammals and their habitat in the next seven years is both unpredictable and unquantifiable in the context of our analysis of the impacts of Navy activities, and NMFS' analysis is based on the best available scientific data.

NMFS acknowledges the data demonstrating that marine mammals sometimes respond to aircraft overflights, however, we have evaluated the best available data and the Navy's activities and do not expect marine mammals to be affected in a manner that qualifies as Level B harassment. Information regarding behavioral reactions of marine mammals to aircraft is provided in Section 3.4.2.1.1.5 (Behavioral to Aircraft Noise) of the 2020 NWTT FSEIS/OEIS. Marine mammals have variable responses to aircraft, but overall little change in behavior has been observed during flyovers. Some odontocetes dove, slapped the water, or swam away from the direction of the aircraft during overflights; others did not visibly react (Richardson *et al.,* 1995b). Beaked whales are more sensitive than other cetaceans (Würsig *et al.,* 1998). Killer whales demonstrated no change in group cohesion or orientation during survey airplane or unmanned aerial system flyovers (Durban *et al.,* 2015; Smultea and Lomac-ManNair, 2016). It is unlikely that aircraft will randomly fly close enough to marine mammals (much less close enough over water at the moment that a cetacean surfaces) to evoke any response, and further unlikely that a marine mammal response to such an instantaneous exposure would result in that marine mammal's behavioral patterns being ''significantly altered or abandoned.'' Accordingly, the Navy did not request authorization for take resulting from aircraft overflights, and NMFS does not anticipate or authorize it.

*Comment 65:* A commenter stated that the rates of take for populations of Dall's porpoises (131 percent of population abundance) and the populations of harbor porpoises on the Northern OR/WA Coast (244 percent of population abundance) and in Washington Inland Waters (265 percent of population abundance) are exceptionally high. As noted by NMFS, these porpoises are particularly vulnerable to the impacts of anthropogenic sound. NMFS recognizes that this level of take could also lead to reproductive loss, but again asserts, without thorough analysis, that it ''would not be expected to adversely impact annual rates of recruitment or survival.'' However, NMFS goes on to authorize these very high levels of take. The commenter asserts that such ''cursory'' statements are not enough under the MMPA. Rather NMFS has a legal obligation to assess these impacts using the best available science.

*Response:* The vulnerability of Dall's porpoise and harbor porpoise to sound is captured in the higher take estimate (as compared to other species in the NWTT Study Area), as this sensitivity is accounted for in the Navy's NAEMO model. NMFS erroneously indicated in the *Preliminary Analysis and Negligible Impact Determination* section of the proposed rule that the impacts to Dall's porpoises and harbor porpoises may cause them to forgo reproduction for a year. Given the expected low-level impacts and the mitigation included in this final rule, NMFS does not expect individuals from these species and stocks to forego reproduction, and NMFS has corrected this error in the final rule. The Analysis and Negligible Impact Determination section of this final rule includes a full discussion of NMFS' analysis of the impacts of the Navy's activities, and its negligible impact determinations for impacts to Dall's porpoise and harbor porpoise.

*Comment 66:* A commenter stated that it strongly urges NMFS to revise its proposed authorization and mitigation measures to better protect Washington's marine mammals, including endangered Southern Resident killer whales, in accordance with the MMPA. The commenter stated that NMFS bases its authorization on inadequate data and does not require sufficient mitigation measures. The commenter asserted that as a result, NMFS' findings of negligible impact and least practicable adverse impact and proposed approval violate the MMPA and are further arbitrary and capricious under the Administrative Procedure Act.

*Response:* In the final rule, NMFS fully considered the best available science, with the key scientific studies fully referenced throughout the rule. Additional science that was considered by both NMFS and the Navy is referenced in the 2020 NWTT FSEIS/OEIS.

The rule also includes extensive mitigation measures for Southern Resident killer whales and other marine mammals that occur in Washington, including new measures since publication of the proposed rule. As discussed in the Mitigation Measures section of the rule, and in Chapter 5 (Mitigation) of the 2020 NWTT FSEIS/OEIS, the Navy will implement extensive mitigation to avoid or reduce potential impacts from the NWTT activities on marine mammals. These mitigation measures include mitigation areas that restrict certain activities in places and during times that are particularly important to Southern Resident killer whales and other marine mammals. One of these mitigation areas, the Puget Sound and Strait of Juan de Fuca Mitigation Area, encompasses the entire extent of NWTT Inland Waters in the state of Washington, including Southern Resident killer whale critical habitat. New mitigation measures in the Puget Sound and Strait of Juan de Fuca Mitigation Area will result in training and testing activities being conducted in NWTT Inland Waters only when necessitated by mission-essential training or testing program requirements. With implementation of the new mitigation measures included in this final rule, we do not anticipate any take of Southern Resident killer whales in NWTT Inland Waters due to

NWTT training and testing activities. This final rule also includes additional mitigation measures for Southern Resident killer whales in other mitigation areas, including the Marine Species Coastal Mitigation Area and the Olympic Coast National Marine Sanctuary Mitigation Area. Please refer to the Mitigation Measures section of this final rule for further discussion of the required mitigation measures in the NWTT Study Area.

Having considered all of the pertinent science available to the agency (of which just the key studies have been referenced in the rule) and the full suite of mitigation measures to reduce impacts, the final rule provides a thorough discussion of the least practicable adverse impact and negligible impact analyses and determinations in the Mitigation Measures and Analysis and Negligible Impact Determination sections, respectively.

*Comment 67:* Gray whales are currently undergoing an unexplained die-off leading to 352 strandings between January 2019 and July 2020, including 44 strandings along the coast of Washington alone. NOAA is investigating the die-off as an Unusual Mortality Event. While it is not clear what specifically is driving this event, many animals show signs of ''poor to thin body condition.'' The commenter states that in the proposed rule, NMFS relies on the increasing population of the stock to assert that the Navy's proposed takes will not be exacerbated by the Unusual Mortality Event to the point of affecting annual rates of recruitment or survival. However, as the exact cause of the Unusual Mortality Event is not known, NMFS also cannot know if the current Unusual Mortality Event is indicative of a longer–term trend in the population, potentially linked to the impacts of climate change. NMFS' reliance on an increasing stock may be misplaced, particularly in light of the fact that NMFS will authorize the Navy's activities for a seven-year period during which the health of the gray whale population could decline.

*Response:* NMFS does not rely solely on the increasing stock size for gray whales as the commenter suggests. As discussed in the Analysis and Negligible Impact Determination section of this final rule, NMFS is authorizing one mortality over the seven years covered by this rule, or 0.14 mortality annually. The addition of this 0.14 annual mortality still leaves the total annual human-caused mortality well under both the insignificance threshold and residual PBR (which is 661.6). No mortality from explosives and no Level A harassment is anticipated or authorized. Altogether, while we have considered the impacts of the gray whale UME, this population of gray whales is not endangered or threatened under the ESA and the best available science at this time indicates the stock is increasing. Additionally, only a very small portion of the stock is anticipated to be impacted by Level B harassment (less than 1 percent) and any individual gray whale is likely to be disturbed at a low-moderate level. This low magnitude and moderate-lower severity of harassment effects is not expected to result in impacts to reproduction or survival for any individuals, nor are these harassment takes combined with the authorized mortality of one whale over the seven-year period expected to adversely affect this stock through impacts on annual rates of recruitment or survival. For these reasons, NMFS determined, in consideration of all of the effects of the Navy's activities combined, that the authorized take will have a negligible impact on the Eastern North Pacific stock of gray whales.

Additionally, this final rule includes extensive mitigation for gray whales, including in the Marine Species Coastal, Olympic Coast National Marine Sanctuary, Stonewall and Heceta Bank Humpback Whale, Point St. George Humpback Whale, and Northern Puget Sound Gray Whale Mitigation Areas, which overlap with important gray whale foraging and migration areas.

*NEPA*

*Comment 68:* Commenters stated that NMFS cannot rely on the Navy's deficient EIS to satisfy NMFS' NEPA obligations when issuing regulations or permits under the MMPA. The commenter states that NMFS must prepare a separate EIS, or, at minimum, a supplemental EIS, before proceeding with the proposed action. The commenter stated that the Navy's DSEIS is deficient on its face. One commenter asserted that those deficiencies include, but are not limited to: Failing to take a hard look at the effects of the action to endangered Southern Resident killer whales and other sensitive species, failing to take a hard look at the effects of the proposed training and testing activities, including modeling, thresholds, and assumptions about harm that underestimate the extent and severity of marine mammal take (both behavioral impacts and injury), failing to take a hard look at the effects of the entire action, failing to evaluate a full range of reasonable alternatives, failing to evaluate a full range of reasonable mitigation measures, failing to accurately estimate the amount of take and impact of all the activity covered by the SEIS, and failing to consider the cumulative impacts of noise and other stressors in conjunction with other reasonably foreseeable activities. Commenters stated that the final rule should not be issued until after NMFS completes a proper NEPA analysis.

*Response:* Consistent with the regulations published by the Council on Environmental Quality (CEQ), it is common and sound NEPA practice for NMFS to participate as a cooperating agency and adopt a lead agency's NEPA analysis when, after independent review, NMFS determines the document to be sufficient in accordance with 40 CFR 1506.3. Specifically here, NMFS is satisfied that the 2020 NWTT FSEIS/OEIS adequately addresses the impacts of issuing the MMPA incidental take authorization (including in its assessment of effects to Southern Resident killer whales, and in consideration of the effects of the entire action) and that NMFS' comments and concerns have been adequately addressed. The FSEIS/OEIS takes a hard look at all of the issues specifically raised by the commenter. NMFS' early participation in the NEPA process and role in shaping and informing analyses using its special expertise ensured that the analysis in the 2020 NWTT FSEIS/OEIS is sufficient for purposes of NMFS' own NEPA obligations related to its issuance of incidental take authorization under the MMPA.

Regarding the alternatives and mitigation measures, NMFS' involvement in development of the 2020 NWTT FSEIS/OEIS and role in evaluating the effects of incidental take under the MMPA ensured that the 2020 NWTT FSEIS/OEIS includes adequate analysis of a reasonable range of alternatives. The 2020 NWTT FSEIS/OEIS includes a No Action Alternative specifically to address what could happen if NMFS did not issue an MMPA authorization. The FSEIS/OEIS also includes and analyzes two action alternatives (including mitigation measures incorporated into the action alternatives) to evaluate the impacts of an MMPA incidental take authorization that would also meet the current and future (seven-year) training and testing requirements to ensure the Navy meets its Title 10 responsibilities, which includes to maintain, train, and equip combat ready forces. As noted, these alternatives fully analyze a comprehensive variety of mitigation measures. This NEPA mitigation analysis supported NMFS' evaluation of our mitigation options in potentially issuing an MMPA authorization, which, if the authorization can be issued under

the negligible impact standard, primarily revolves around the appropriate mitigation to prescribe. This approach to evaluating a reasonable range of alternatives is consistent with NMFS policy and practice for issuing MMPA incidental take authorizations. NMFS has independently reviewed and evaluated the 2020 NWTT FSEIS/OEIS, including the range of alternatives, and determined that the 2020 NWTT FSEIS/OEIS fully satisfies NMFS' NEPA obligations related to its decision to issue the MMPA final rule and associated LOAs, and we have adopted it.

*Comment 69:* Commenters stated that NMFS cannot rely on the 2020 NWTT FSEIS/OEIS to fulfill its obligations under NEPA because it does not adequately address NMFS' own actions and responsibilities under the MMPA. The commenter stated that the MMPA requires NMFS to protect and manage marine mammals, allowing incidental take of marine mammals only in limited circumstances when such take satisfies the Act's statutory requirements, including the ''negligible impact'' and ''least practicable adverse impact'' standards. In other words, NMFS is charged under the MMPA with prioritizing the protection of species. The commenter states that the Navy, on the other hand, seeks primarily to maximize its opportunities for training and testing activities. Thus, the Navy's SEIS is framed around a fundamentally different purpose and need—one that is incongruent with NMFS' obligations under the MMPA.

*Response:* The proposed action is the Navy's proposal to conduct testing and training activities in the NWTT Study Area. NMFS is a cooperating agency, as it has jurisdiction by law and special expertise over marine resources impacted by the Navy's action, including marine mammals and federally-listed threatened and endangered species. As discussed in Comment 68, NMFS has adopted the 2020 NWTT FSEIS/OEIS after determining that the document is sufficient under the CEQ regulations at 40 CFR 1506.3. Specifically, NMFS is satisfied that the FSEIS/OEIS adequately addresses the impacts of issuing the MMPA incidental take authorization and that NMFS's comments and concerns have been adequately addressed. There is no requirement in the CEQ regulations that NMFS, as a cooperating agency, have a separate purpose and need statement in order to ensure adequacy and sufficiency for adoption. Nevertheless, the statement of purpose and need in the 2020 NWTT FSEIS/OEIS explicitly acknowledges NMFS' purpose of evaluating the Navy's proposed action and making a determination whether to issue the MMPA regulations and LOAs. NMFS' early participation in the NEPA process and role in shaping and informing analyses using its special expertise ensured that the analysis in the 2020 NWTT FSEIS/OEIS is sufficient for purposes of NMFS' own NEPA obligations related to its issuance of incidental take authorization under the MMPA.

*Comment 70:* Commenters stated that their organizations are aware that on July 16, one day before the conclusion of the comment period, CEQ issued new regulations governing the preparation of environmental assessments and environmental impact statements under NEPA. The commenters stated that they believe these new regulations contain numerous provisions that are contrary to law and destructive of federal environmental decision-making. Agencies that have begun the NEPA process for a particular agency action prior to September 14, 2020, as is the case with NWTT, have discretion under the new regulations at 40 CFR 1506.13 to decide whether to apply them. The commenters stated that given the legal infirmities of the new CEQ regulations, they strongly recommend that NMFS elect not to apply them here; and NMFS should make that choice clear in its EIS.

*Response:* The effective date of the 2020 CEQ NEPA regulations was September 14, 2020. As noted by the commenter, NEPA reviews initiated prior to the effective date of the 2020 CEQ regulations may be conducted using the 1978 version of the regulations. The NEPA review for this rulemaking and the Navy's proposed action began prior to September 14, 2020, and the agencies decided to proceed under the 1978 CEQ regulations. Therefore, the new CEQ regulations were not applied to the 2020 NWTT FSEIS/OEIS, and the FSEIS/OEIS was prepared using the 1978 CEQ NEPA regulations.

*Comment 71:* A commenter stated that the Navy's MMPA application was premature because the 2020 NWTT FSEIS/OEIS had not been finalized. The commenter questioned what activities would occur in the Olympic Coast National Marine Sanctuary prior to finalization of the 2020 NWTT FSEIS/OEIS.

*Response:* The commenter misunderstands the timing of the analysis of environmental impacts under NEPA and NMFS' consideration of an application for MMPA incidental take authorization. The NEPA analysis, along with consideration of other applicable laws, must be completed before a decision is made to issue a final rule authorizing incidental take under the MMPA, but the NEPA analysis does not need to be completed before an MMPA application is submitted. The Navy submitted their application while the NWTT SEIS/OEIS was in development. NMFS and the Navy coordinated on development of the NWTT SEIS/OEIS, and the final rule authorizes Navy training and testing activities beginning in November 2020. Any Navy testing and training activities occurring in the Olympic Coast National Marine Sanctuary prior to finalization of this rule and the 2020 NWTT FSEIS/OEIS were conducted under the previous MMPA incidental take authorization and its accompanying NEPA analysis.

*ESA*

*Comment 72:* A commenter stated that NMFS must ensure that the Navy's activities will not jeopardize endangered species in the NWTT Study Area, including the Southern Resident killer whale population, as required by the ESA, and that NMFS and the Navy must fully comply with their obligations under the ESA. Another commenter stated that NMFS' consultation must also evaluate the impacts of the proposed action beyond ESA-listed marine mammals and their habitat, to include the other threatened and endangered species that will be affected by the Navy activities. The commenter specifically references designated critical habitat for endangered Pacific leatherback sea turtles in the NWTT Study Area, and that more than two dozen listed populations of Pacific salmon and Steelhead occur in the Study Area. The commenter states that NMFS has a duty to ensure against jeopardy for each of these, and any other, imperiled species in this area. Another commenter stated that this authorization violates NMFS' own Recovery Plan for U.S. Pacific Populations of the Leatherback Turtle. Another commenter stated that NMFS should require the Navy to shift testing and training activities away from locations and seasonal windows that endangered species are present.

*Response:* NMFS' Permits and Conservation Division has completed ESA consultation with NMFS' ESA Interagency Cooperation Division on whether the promulgation of this rule and issuance of the associated LOAs are likely to jeopardize the continued existence of any ESA-listed species or destroy or adversely modify any designated critical habitat, while the Navy has consulted on all ESA-listed

species that may be affected by their action. NMFS' ESA Interagency Cooperation Division's biological opinion includes analysis and determinations regarding all ESA-listed species and designated critical habitat that may be affected by the Navy's or NMFS' actions in the NWTT Study Area. The biological opinion concluded that NMFS' and the Navy's proposed actions are not likely to jeopardize the continued existence of any endangered or threatened species and are not likely to destroy or adversely modify designated critical habitat.

The commenter does not explain in what manner they think authorizing incidental take of marine mammals under the MMPA would violate the ESA recovery plan for U.S. Pacific populations of leatherback turtles. ESA recovery plans are guidance documents that provide recommended recovery actions for NMFS, other federal agencies, States, tribes, NGOs, and other stakeholders to recover the species, and as such it is not possible to ''violate'' a recovery plan. That said, we have reviewed the recovery plan and there are no recovery actions related to Navy activities or authorization of incidental take of marine mammals.

Neither the ESA nor the MMPA preclude activities in locations and times where endangered species are present. As described in the ESA biological opinion, NMFS made the preliminary findings necessary to allow for incidental take of ESA-listed marine mammals in the proposed MMPA rule. The biological opinion is accompanied by an ESA incidental take statement that, among other things, exempts the incidental take from ESA section 9 liability and identifies reasonable and prudent measures to minimize the impact of the anticipated incidental take. As described in the Mitigation Measures section of this rule, geographic mitigations required by this rule limit activities in some areas where ESA-listed species (*e.g.,* the Southern Resident killer whale) are present in higher densities or exhibit important behaviors.

*Comment 73:* A commenter stated that NMFS cannot finalize the proposed incidental take regulations or issue any LOAs until it completes consultation and imposes limits to mitigate the hazards of Navy's training and testing on threatened and endangered species and their habitats and also must require additional mitigation. The commenter further stated that in complying with the ESA, NMFS must consider the appreciable impact of the proposed activities on listed species and their habitats. The commenter stated that the consultation must evaluate the programmatic impact of seven years of Navy training and testing as authorized by NMFS in final regulations, and in addition to completing programmatic consultation, NMFS must also consult on a site-specific basis prior to issuing or modifying LOAs. The commenter states that NMFS, however, cannot avoid programmatic consultation by deferring to partial, LOA-specific consultations.

The commenter asserts that if other activities or conditions also harm an endangered species or its habitat, the effects of NMFS' authorization of the Navy's activities must be added to that baseline and analyzed together to determine whether the proposed activity jeopardizes the species or adversely modifies critical habitat, and states that in the NWTT Study Area, threatened and endangered species along the coast are exposed to a variety of threats from ship strikes, oil and gas activities, noise from vessels, entanglement or bycatch in fishing gear, wastewater discharge, oil spills, as well as other cumulative impacts from fishing, shipping, military activities, and climate change. The commenter states that the aggregate impact of these activities must be considered in the consultation.

*Response:* NMFS agrees that we could not finalize these regulations or issue LOAs until we completed consultation under section 7 of the ESA. NMFS' Permits and Conservation Division, which developed this rule, consulted with NMFS' ESA Interagency Cooperation Division on the promulgation of this seven-year rule and issuance of the associated LOAs which authorize incidental take of marine mammals in the NWTT Study Area. As required, the consultation included the necessary consideration of the environmental baseline, impacts on ESA listed species and their habitat over the seven years of the rule, and cumulative effects. As noted in the *Endangered Species Act* section of this rule, NMFS' ESA Interagency Cooperation Division has issued a biological opinion concluding that the promulgation of this seven-year rule and issuance of subsequent LOAs are not likely to jeopardize the continued existence of threatened and endangered species under NMFS' jurisdiction and are not likely to result in the destruction or adverse modification of designated (or proposed) critical habitat in the NWTT Study Area. The Biological Opinion for this rulemaking is available at *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-military-readiness-activities.*

As discussed in the Mitigation Measures section and multiple responses to Comments, this final rule includes extensive mitigation measures to lessen the frequency and severity of impacts from the Navy's activities on marine mammals and their habitat, including those that are listed as threatened or endangered. Please refer to the biological opinion for additional information about ESA-listed species and additional mitigation required for ESA-listed species other than marine mammals.

*Southern Resident Killer Whale*

*Comment 74:* Multiple commenters noted that the amended Navy application and NMFS' proposed rule now predict and would allow for a vastly increased level of incidental take—formerly 2 takes of Southern Resident killer whales, now 51 takes—every year. One commenter stated that approval of such a high level of incidental take without requiring any additional mitigation measures represents gross neglect of the agency's management responsibilities under the ESA and the MMPA to avoid or mitigate impacts to this highly endangered and iconic species. A commenter also stated that many organizations and Washington state agencies have asked for enhanced mitigation measures to reduce adverse impacts on Southern Resident killer whales; other commenters echoed this recommendation. The commenter asserted that these measures are not expected to impact the Navy's ability to carry out its national security mission, and yet they do not seem to have been considered, let alone adopted in the proposed rule. Furthermore, mitigation measures considered sufficient when the Navy thought the density of Southern Resident killer whales offshore was much lower should not be considered sufficient now that the Navy knows it is higher based on more recent data. Commenters also urged NMFS to change its preliminary determination of ''negligible impact'' and require additional monitoring and mitigation measures to significantly reduce the incidental take of Southern Resident killer whales so that it does in fact warrant a ''negligible impact'' determination.

A commenter stated that while the MMPA allows permitted incidental take of certain activities if the take is of small numbers, with no more than a ''negligible impact,'' defined as one 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,'' a take of 51 individual Southern Resident killer whales per year cannot be considered to be ''of small numbers'' nor unlikely to ''adversely affect'' the species. Multiple commenters echoed this concern. A commenter also stated that displacement from preferred foraging areas will cause population-level effects that could extend into the future given the highly social nature of the Southern Resident killer whale community and transmission of information between associated individuals. The commenter stated that there are documented cases of naval activities causing Southern Resident killer whales to abruptly change their behavior and abandon foraging activities and areas, most notably the USS *Shoup* active sonar incident in 2003. More recently, the Canadian Navy set off explosives near a group of Southern Resident killer whales from L pod, in federally protected critical habitat, causing them to flee the area.

*Response:* This increase in incidental take of Southern Resident killer whales between Phase II and Phase III of the Navy's activities is partially due to new offshore Southern Resident killer whale density estimates and analytical factors, and partially due to increased activity levels in the Navy's Phase III activities.

The number and/or intensity of incidents of take will be minimized through the incorporation of mitigation measures, which were expanded from the last rule in the Navy's application and the proposed rule. Further, since publication of the proposed rule NMFS has added mitigation measures for marine mammals, including Southern Resident killer whales, in this final rule. New measures include additional procedural mitigation during explosive mine countermeasure and neutralization testing and new geographic mitigation measures, including a new Juan de Fuca Eddy Marine Species Mitigation Area and additional mitigation in the Marine Species Coastal Mitigation Area and the Olympic Coast National Marine Sanctuary Mitigation Area (both of which are offshore areas that overlap with ESA proposed Southern Resident killer whale critical habitat), as well as in the Puget Sound and Strait of Juan de Fuca Mitigation Area. This new mitigation will benefit Southern Resident killer whales, in some cases by limiting or prohibiting certain activities in certain areas during times in which Southern Resident killer whales engage in important behaviors such as feeding and migration, and in other cases, by augmenting the effectiveness of procedural mitigation measures by requiring seasonal awareness messages or limiting activities to lower sea states when visibility is higher. These new mitigation measures are described in detail in the Mitigation Measures section of this final rule.

These new measures, in combination with those included in the proposed rule, will reduce the severity of impacts to Southern Resident killer whales by reducing interference in feeding and migration that could result in lost feeding opportunities or necessitate additional energy expenditure to find other good foraging opportunities or migration routes. Procedural mitigations that avoid the likelihood of injury, such as shutdown measures, also further reduce the likelihood of more severe behavioral responses.

The 51 takes of Southern Resident killer whales, only two of which are estimated to involve TTS, each represent a day in which one individual whale is predicted to be exposed above the behavioral harassment threshold (or in two cases, above the TTS threshold), which is discussed in detail in the Analysis and Negligible Impact Determination section of this final rule as well as the Navy's 2017 *Criteria and Thresholds for U.S. Navy Acoustic and Explosive Effects Analysis (Phase III)* report. This means that either 51 individual whales are exposed above these thresholds on one day within a year, or some fewer number of individuals might be exposed on two or three days (but no more than 51 total exposure days so, for example, 25 individuals exposed on two days each within a year and one individual exposed on one day). Also, modeling supports the prediction that, given the movement of the animals and the characteristics of the testing and training activities, the duration of any exposure is expected to be relatively short, not more than seconds or minutes, or occasionally hours. As discussed in the Analysis and Negligible Impact Determination section of this final rule, even acknowledging the small and declining stock size of the Southern Resident DPS of killer whales (which is the same as the Eastern North Pacific Southern Resident stock under the MMPA), this low magnitude and severity of harassment effects is unlikely to result in impacts on individual reproduction or survival, let alone have impacts on annual rates of recruitment or survival of this stock. Additionally, no mortality or Level A harassment is anticipated or authorized for the Eastern North Pacific Southern Resident stock of killer whales.

In reference to the ''small numbers'' determination mentioned by the commenter, this determination does not apply to military readiness activities, including the Navy's activities in the NWTT Study Area. The National Defense Authorization Act for Fiscal Year 2004 amended section 101(a)(5) of the MMPA for military readiness activities to remove the ''small numbers'' and ''specified geographical region'' provisions, as well as amending the definition of ''harassment'' as applied to a ''military readiness activity.''

*Comment 75:* A commenter stated that in the 2019 Southern Resident Orca Task Force ''Final Report and Recommendations,'' the Task Force noted that ''the final decisions on training and testing activities conducted in the NWTT Study Area between November 2020 and November 2027 should eliminate impacts from current, new or additional exercises involving mid-frequency sonar, explosives and other activities with the potential to adversely affect Southern Resident killer whale recovery or incorporate enhanced mitigation measures to reduce impacts.'' The commenter asserted that the proposed incidental takes clearly conflict with recommendations from the Southern Resident Orca Task Force.

*Response:* NMFS and the Navy are aware of (and NMFS participated on) the 2019 Southern Resident Orca Task Force. See Comment 74 for information on mitigation measures, including measures added since publication of the proposed rule, that will reduce the number and/or intensity of expected incidental takes of Southern Resident killer whales. NMFS and the Navy have worked hard to put in place mitigation measures to ensure as much as possible that any relatively minor, short-term impacts that may occur will not affect that individual's reproduction or survival and are also practicable (*i.e.,* allow the Navy to meet its statutorily required mission along with ensuring Navy personnel safety). See Comment 74 also for discussion of the effects of the remaining expected incidental takes on Southern Resident killer whales that cannot be avoided. With the additional mitigation measures, NMFS has ''eliminate[d] impacts . . . with the potential to adversely affect Southern Resident [killer whale] recovery'' and ''incorporate[d] enhanced mitigation measures to reduce impacts.''

*Comment 76:* Multiple commenters stated that NMFS and the Navy must consider the highly endangered status and continuing decline of the endangered Southern Resident killer whale. The commenter stated that

NMFS must also recognize the threat of population level effects and greater than negligible impact from harm to individual killer whales. Another commenter stated that Level B harassment by Navy activities that interfere with feeding or displace killer whales from preferred foraging areas should be of significant concern, and that this cannot possibly constitute ''negligible impact'' to an already vulnerable population. Finally, a commenter noted that, given the imperiled nature of Southern Resident killer whales, the number of proposed takes threatens a significant impact on the population from the Navy's training and testing activities.

*Response:* NMFS has carefully considered the status of Southern Resident killer whales in its analysis, as discussed in the Description of Marine Mammals and Their Habitat in the Area of the Specified Activities sections of the proposed and final rules and the Analysis and Negligible Impact Determination section of this final rule. Additionally, this final rule includes significant mitigation, as described in the response to Comment 74, and further in the Mitigation Measures section of this final rule, including additional mitigation added since publication of the proposed rule, to minimize impacts to marine mammals, with an emphasis on further reducing both the amount and severity of any take of Southern Resident killer whales.

As also discussed in the response to Comment 74, NMFS' analysis indicates that either 51 individual whales are exposed above the behavioral harassment threshold (or in two of the 51 cases, above the TTS threshold) on one day within a year, or some fewer number of individuals might be exposed on two or three days (but no more than 51 total exposure days, so for example, 25 individuals exposed on two days each within a year). Also, modeling supports the prediction that, given the movement of the animals and the characteristics of the testing and training, the duration of any exposure is expected to be relatively short, not more than seconds or minutes, or occasionally hours. As noted in the Analysis and Negligible Impact Determination section of this final rule, even acknowledging the small and declining stock size of the Southern Resident DPS of killer whales (which is the the MMPA Eastern North Pacific Southern Resident stock), this low magnitude and severity of harassment effects is unlikely to result in impacts on individual reproduction or survival, let alone have impacts on annual rates of recruitment or survival of this stock. Additionally, no mortality or Level A harassment is anticipated or authorized for the Eastern North Pacific Southern Resident stock of killer whales.

*Comment 77:* A commenter noted that, according to the Navy's analysis, the Washington Inland Waters population of harbor porpoises and the Hood Canal population of harbor seals will be subjected to some of the highest estimated take, strongly suggesting that some activities with the potential to harm killer whales are concentrated in the Salish Sea and the interior waters of Puget Sound. The proposed activities overlap with areas of proposed critical habitat that NMFS itself recognizes as a ''high-use foraging area'' for Southern Resident killer whales. Another commenter stated that the lack of sensitivity to the Southern Resident killer whales' dwindling population and its need for a protected home in accordance with its endangered species status in 2005 remains a critical concern. The commenter stated that in a perfect world, training should be excluded from their critical habitat. Another commenter stated that the Navy should identify high-use areas in both inland and offshore killer whale habitat for seasonal or permanent closures to NWTT activities to minimize overlap with Southern Resident killer whales.

*Response:* NMFS fully considered the status of Southern Resident killer whales in its analysis, as discussed in the Description of Marine Mammals and Their Habitat in the Area of the Specified Activities sections of the proposed and final rules and the Analysis and Negligible Impact Determination section of this final rule. Potential impacts to marine mammals from acoustic and explosive sources, which are part of the Navy's planned activities in the NWTT Study Area, are analyzed in the Potential Effects of Specified Activities on Marine Mammals and their Habitat and Analysis and Negligible Impact Determination sections of the proposed and final rules, and in Section 3.4.2.1 and Section 3.4.2.2, of the 2020 NWTT FSEIS/OEIS, respectively. These effects analyses considered multiple factors, such as seasonal Southern Resident killer whale's abundance across the Study Area and the type, amount, and location of planned Navy activities.

A greater number of incidental takes are estimated for harbor porpoises and harbor seals in comparison to other species, including Southern Resident killer whales, due to their much higher abundances in the Study Area. Additionally, the impacts to harbor porpoises and harbor seals in the Inland Waters occur in areas where Southern Resident killer whales do not. The majority of locations where the Navy conducts training and testing in the Inland Waters do not overlap with areas where Southern Resident killer whales occur. For instance, most testing occurs in Hood Canal (Dabob Bay) and at Keyport; Southern Resident killer whales are not present in either location. There has not been a sighting of Southern Resident killer whales in Hood Canal since 1995 (25 years ago). The locations where there is potential overlap of training and Southern Resident killer whale habitat include Everett, Crescent Harbor, and Navy OPAREA 3 and Navy OPAREA 7.

As it did for all marine mammals, NMFS worked with the Navy during the MMPA rulemaking process to enhance mitigation measures for Southern Resident killer whales (*i.e.,* the MMPA Eastern North Pacific Southern Resident stock) to ensure the least practicable adverse impact on the stock. As described in the Mitigation Measures section, this final rule includes additional mitigation in the Puget Sound and Strait of Juan de Fuca Mitigation Area, which includes the full extent of NWTT Inland Waters and overlaps with existing ESA Southern Resident killer whale critical habitat, designed to further avoid or reduce potential impacts on Southern Resident killer whales. New mitigation in this area includes a requirement for the Navy to use the lowest active sonar source levels practical to successfully accomplish each event, a prohibition on the use of explosives during testing, and seasonal awareness messages regarding the possible presence of concentrations of Southern Resident killer whales and gray whales, among other new measures, as described in the *Assessment of Mitigation Measures for NWTT Study Area* section of this final rule and in Appendix K (Geographic Mitigation Assessment) of the 2020 NWTT FSEIS/OEIS.

The commenter also referenced proposed critical habitat for Southern Resident killer whales in inland waters; however, NMFS notes that the proposed ESA Southern Resident killer whale critical habitat is in offshore waters, rather than in the Salish Sea and Puget Sound. This final rule includes additional mitigation that overlaps with the proposed ESA Southern Resident killer whale critical habitat, including in the Marine Species Coastal Mitigation Area and the Olympic Coast National Marine Sanctuary Mitigation Area.

*Comment 78:* Commenters stated that NMFS should analyze the cumulative impacts over the full extent of training and testing activities that would be

authorized by this permit, and one commenter noted that the Navy's testing and training activities have already been authorized twice before, and are likely to continue into the future. A commenter stated that killer whales are long-lived and it is likely that the same individuals would be affected in multiple years. This level of ongoing, perpetual take (68 percent, as one commenter noted) to specific individuals in a small population is a significant threat, commenters assert, that could result in displacement or physical harm over extended periods of time, and should be more clearly factored into the analysis impact. Further, one commenter asserted that instances of temporary hearing loss, such as the TTS contemplated in NMFS' authorization, can be cumulative and lead to long-term hearing loss. Commenters stated that NMFS and the Navy must also consider that harassment and behavioral impacts are likely to have a compounded effect on individuals that are already in compromised condition. Research currently being compiled into a health database for the Southern Resident killer whale community shows multiple individuals have been seen in poor body condition, and compared to Northern Resident killer whales, the Southern Resident population has lower survival and reproductive rates. The commenters asserted that given the many stresses already faced by this endangered population, ongoing, repeated, and cumulative impacts from NWTT activities could place additional stress on both individuals already in poor health, perhaps even leading to mortality, as well as on the population as a whole. Commenters asserted that NMFS has thus failed to show that these impacts are negligible under the MMPA.

*Response:* NMFS has analyzed the cumulative impacts of the Navy's training and testing activities over the full seven-year extent of the regulations. Further, NMFS has fully considered the status of Southern Resident DPS killer whale (which is the same as the Eastern North Pacific Southern Resident stock under the MMPA) and the compromised health of some of the individuals of that stock in its analysis and negligible impact determination, as described in the Analysis and Negligible Impact Determination section of this final rule. No mortality or Level A harassment is anticipated or authorized for the Southern Resident DPS of killer whales. The 51 takes of Southern Resident killer whales, only two of which are estimated to involve TTS, each represent a day in which one individual whale is predicted to be exposed above the behavioral harassment threshold, which is described in detail in the Analysis and Negligible Impact Determination section of this final rule as well as the Navy's 2017 *Criteria and Thresholds for U.S. Navy Acoustic and Explosive Effects Analysis (Phase III)* report. This means that either 51 individual whales are exposed above this threshold on one day within a year, or some fewer number of individuals might be exposed on two or three days (but no more than 51 total exposure days so, for example, 25 individuals exposed on two days each within a year and one individual exposed on one day). Also, modeling supports the prediction that, given the movement of the animals and the characteristics of the testing and training activities, the duration of any exposure is expected to be relatively short, not more than minutes, or occasionally hours. Even if these impacts occurred to an individual of compromised health, the behavioral impacts would not be expected to impact reproduction or health, much less result in a mortality, given the low severity and duration of effect that any individual killer whale is expected to experience within a year. Similarly, while significant repeated exposure to noise levels associated with TTS could, in certain circumstances (*e.g.,* numerous exposures, long durations, with no time for recovery in between exposures) lead to PTS, there is no reason to expect that the number (no more than a single instance of TTS to either of the two individuals taken within a year) and nature (low level) of the exposures anticipated from Navy training and testing activities would lead to PTS for Southern Resident killer whales.

Further, as discussed in detail in the Mitigation Measures section of this rule and the response to Comment 74, this rule includes extensive mitigation for Southern Resident killer whales that will reduce both the probability and severity of impacts to this stock, including additional measures that have been added since the proposed rule. Even acknowledging the small and declining stock size of the Southern Resident DPS of killer whales, the low magnitude and severity of effects is unlikely to result in impacts on individual reproduction or survival, let alone have impacts on annual rates of recruitment or survival of this stock. Further, given the absence of any expected impacts on individual fitness or annual rates of recruitment or survival, there is no possibility that the impacts of the authorized take could accrue over the seven-year period of the rule in a manner that could exceed a negligible impact. Last, we note that the MMPA does not prohibit the authorization of incidental take for activities that continue in an area, as long as the necessary findings have been made within the period of the requested authorization.

*Comment 79:* A commenter stated that the proposed Navy activities do not account for the Southern Resident killer whales' seasonal behaviors. Another commenter stated that additional mitigation and avoidance measures should include establishing seasonal limitations on the use of sonars in traditional Southern Resident killer whale foraging areas.

*Response:* Seasonal behaviors and locations of marine mammals, including Southern Resident killer whales, were accounted for in both the effects analysis (*e.g.,* density estimate input into the modeling of take) and in consideration and inclusion of mitigation measures (*e.g.,* geographic mitigation measures targeted at protecting Southern Resident killer whales) in the NWTT Study Area. This final rule includes extensive mitigation for Southern Resident killer whales, including mitigation that is seasonally applicable, such as required seasonal awareness notification messages that the Navy will issue for the Puget Sound and Strait of Juan de Fuca Mitigation Area and the Marine Species Coastal Mitigation Area during times when Southern Resident killer whales and gray whales may be present in the area in higher concentrations. The rule includes seasonal restrictions on explosive Mine Countermeasure and Neutralization Testing in the Marine Species Coastal Mitigation Area. This final rule also includes mitigation areas in which mitigation requirements limit or prohibit the use of sonar during certain activities. Seasonal and year-round mitigation measures, including those that have been added since publication of the proposed rule, and their benefits to marine mammals (including Southern Resident killer whales specifically) are discussed further in the response to Comment 74 and the Mitigation Measures section of this final rule, as well as Appendix K (Geographic Mitigation Assessment) of the 2020 NWTT FSEIS/OEIS.

*Comment 80:* A commenter stated that increasing the Navy's testing and training activities at this time is counter to what the endangered Southern Resident killer whales need to have a chance at recovery. Without bold and immediate actions, the Southern Resident killer whales are likely to go extinct. The commenter stated that

everything that can be done now to protect the Southern Resident killer whales is critical. Despite being listed under the ESA for nearly 15 years, this unique population is not recovering and is continuing to decline. The commenter further stated that it is obvious that status quo actions, including the Navy's training and testing activities, are not serving the Southern Resident killer whales. In a time when everyone should be acting to address and decrease threats facing the population, including reducing noise and disturbance, the Navy's proposed activities increase the risks from ocean noise, vessel strikes and disturbance, potential direct harm and injury to Southern Resident killer whales, and displacement from preferred habitat. The commenter stated that given the Southern Resident killer whale's highly endangered status and continuing decline, the Navy should adjust its training and testing activities to reduce impacts and increase protections for these iconic animals.

*Response:* The Navy has conducted active sonar training and testing activities in the NWTT Study Area for decades, and there is no evidence that routine Navy training and testing has negatively impacted Southern Resident killer whale populations in the Study Area. Based on the best available science summarized in the 2020 NWTT FSEIS/OEIS Section 3.4.3.4 (Summary of Monitoring and Observations During Navy Activities Since 2015), long-term consequences for Southern Resident killer whales, including for the seven-year period of this rule, are unlikely to result from Navy training and testing activities in the Study Area.

As discussed in the Mitigation Measures section of this final rule, elsewhere in this section, and in Chapter 5 (Mitigation) of the 2020 NWTT FSEIS/OEIS, the Navy will implement extensive mitigation to avoid or reduce potential impacts from the NWTT activities on Southern Resident killer whales. These mitigation measures include mitigation areas that restrict certain activities in places and during times that are particularly important to Southern Resident killer whales (and other marine mammals). One of these mitigation areas, the Puget Sound and Strait of Juan de Fuca Mitigation Area, encompasses the entire extent of NWTT Inland Waters, including Southern Resident killer whale ESA-designated critical habitat. New mitigation measures in the Puget Sound and Strait of Juan de Fuca Mitigation Area will result in training and testing activities being conducted in NWTT Inland Waters only when necessitated by mission-essential training or testing program requirements. With implementation of the new mitigation measures included in this final rule, we do not anticipate any take of Southern Resident killer whales in NWTT Inland Waters due to NWTT training and testing activities. This final rule also includes additional mitigation measures for Southern Resident killer whales in other mitigation areas, including the Marine Species Coastal Mitigation Area and the Olympic Coast National Marine Sanctuary Mitigation Area. Please refer to the Mitigation Measures section of this final rule for further discussion of the required mitigation measures in the NWTT Study Area.

Additionally, NMFS considered the status of Southern Resident killer whales in its analysis, as discussed in the Analysis and Negligible Impact Determination section of this final rule. Modeling supports NMFS' conclusion that, given the movement of the animals and the characteristics of the testing and training, the duration of any exposure of a Southern Resident killer whale is expected to be relatively short, not more than minutes, or occasionally hours. As noted in the Analysis and Negligible Impact Determination section and the response to Comment 78, even acknowledging the small and declining stock size of Southern Resident killer whales, this low magnitude and severity of harassment effects is unlikely to result in impacts on individual reproduction or survival, let alone have impacts on annual rates of recruitment or survival of this stock. Additionally, no mortality or Level A harassment is anticipated or authorized for the Eastern North Pacific Southern Resident stock.

*Comment 81:* A commenter stated that with the apparent loss of three whales last summer, Southern Resident killer whales appear to have a population of just 73 whales—the lowest population size in more than 40 years. Given this declining population, the loss of even one more whale could greatly undermine recovery efforts for decades. The commenter stated that NMFS does not consider the most up-to-date information on the Southern Resident killer whale population. The commenter stated that while NMFS purports to rely on the ''best available science'' in developing stock numbers, NMFS actually assesses impacts based on a potentially outdated population size of 75, and does not note the data indicating the population may sit at just 73 whales. As a result, NMFS fails to ensure its reliance on the best and most-up-to-date scientific information, which could result in NMFS underestimating the harm of the Navy's activities on this vulnerable population. With such a small and shrinking population, the impact of each take is amplified within the population.

*Response:* NFMS relied on the 2019 Stock Assessment Reports (published in August 2020) for the latest abundance information for all stocks, except the inland water stocks of harbor seals, as the stock assessments are outdated and did not reflect the best available science, as described in this final rule. The 2019 Southern Resident killer whale stock assessment indicates that the minimum population estimate (Nmin) for the Eastern North Pacific Southern Resident stock of killer whales is 75 animals. The stock assessment indicates that this estimate serves as both the Nmin, as well as the best estimate of abundance because the assessment is a ''direct count of individually identifiable animals [and] it is thought that the entire population is censused every year.'' Therefore, NMFS based its analysis on this population estimate, as it reflects the best available science given that it is the most recent, peer-reviewed literature that NMFS is aware of. Separately, we note that two calves have been born in 2020 (Orca Network, 2020) and are not included in the 2019 SAR.

*Comment 82:* A commenter stated that additional datasets are available for killer whale response to noise. For example, in Bain and Dahlheim's (1994) study of captive killer whales exposed to band-limited white noise in a band similar to that of mid-frequency sonar at a received level of 135 dB re 1uPa, abnormal behavior was observed in 50 percent of the individuals. This is far lower than the level observed in bottlenose dolphins. In addition, Bain (1995) observed that 100 percent of wild killer whales appeared to avoid noise produced by banging on pipes (fundamental at 300 Hz with higher harmonics) to 135 dB re 1uPa contour. This indicates the difference between wild and captive killer whales (non-zero risk in captive marine mammals might correspond to 100 percent risk in wild individuals of the same species), as well as implying that risk of 100 percent may occur by 135 dB re 1uPa for this genus in the wild. The commenter stated that while more emphasis needs to be placed on the captive-wild difference, there are also species differences, like Dall's porpoises, harbor seals, and California sea lions being relatively noise tolerant, and harbor porpoises, killer whales, and Steller sea lions being relatively noise intolerant.

The commenter stated further that killer whales responded to vessel traffic at around 105–110 dB with conspicuous

behavioral changes such as increased rates of threat displays and evasive swimming patterns, although the commenter provided no scientific source for this assertion. The commenter stated that subtle behavioral changes, such as inhibition of foraging behavior, were observed at lower levels. While inhibition of foraging is a Level B take, in a food limited population, inhibition of foraging is likely to result in increased mortality and/or reduced recruitment.

*Response:* It is clear in some parts of their comment that the commenter is referring to the Phase I and II behavioral criteria, *i.e.,* criteria that we used in previous rules and not this one, and therefore some of the comment is inapplicable. In this rule, NMFS and the Navy have incorporated emergent best available science into new BRFs for Phase III, and this rule specifically, that are described in the technical report titled *Criteria and Thresholds for U.S. Navy Acoustic and Explosive Effects Analysis (Phase III)* (U.S. Department of the Navy, 2017a) available at *www.nwtteis.com,* including data on exposures to wild killer whales.

The Phase III behavioral criteria appropriately incorporate data from behavioral response studies that were designed to record behavioral observations and contained detailed data on reactions at specific received sound levels. Specifically, data needed to meet both of the following criteria to be used in the quantitative derivation: (1) Observations of individual/group animal behavior were related to known or estimable received levels, and (2) The study was primarily designed to observe behavioral changes during controlled exposures or actual Navy activities (*i.e.,* monitoring). The data referenced in this comment (Bain, 1995 and Bain and Dahlheim, 1994) were not specifically included in the criteria because they do not meet either of these two criteria for BRF inclusion and, further, we note that the sound source referenced is a notably lower frequency than the majority of the Navy's sources used for training and testing, and the signal would be characterized as an impulse, rather than non-pulse like active sonar is. The best available science is documented in the technical report referenced above and Section 3.4.2.1.1.5 (Behavioral Reactions) of the 2020 NWTT FSEIS/OEIS. Nonetheless, the BRFs used in the final rule predict that close to 20 percent of odontocetes exposed to received levels of 135dB will respond in a manner that would qualify as a take, so the data presented by the commenter is not at odds with the criteria used here. As shown in the technical report, the Navy considered how captive and wild animals may respond differently to acoustic stressors when analyzing response severity. NMFS has carefully reviewed the Navy's criteria, *i.e.,* BRFs and cutoff distances for these species, and agrees that they are the best available science and the appropriate method to use at this time for determining impacts to marine mammals from sonar and other transducers and for calculating take and to support the determinations made in this rule.

NMFS explained in the response to Comment 38 why responses to vessel noise alone are unlikely to qualify as Level B harassment and further described that Navy vessels are also much quieter than typical vessels because they are designed that way to evade detection by adversaries.

*Comment 83:* A commenter stated that the Navy's characterization of the killer whale dataset [used in the behavioral harassment thresholds] is incorrect. The commenter stated that the Navy indicates the effects observed in the presence of mid-frequency sonar in Haro Strait were confounded by the presence of vessels. However, the effects of vessels on killer whales have been extensively studied, both prior to and subsequent to exposure. The commenter asserted that behavioral responses attributed to mid-frequency sonar are qualitatively different than those observed to vessels alone. The commenter further stated that while the observations were based on a small sample, they were not inconsistent. The sonar signal was blocked from reaching the whales with full intensity by shallow banks or land masses during three segments of the observation period. The commenter said that the ''inconsistencies'' can be attributed to differences in behavior depending on whether there was a direct sound path from the USS *Shoup* (the vessel emitting sonar in the vicinity) to the whales. The commenter stated that there was extensive study of this population prior to exposure, as well as extensive post-exposure monitoring.

The commenter also stated that the Navy incorrectly concludes that additional datasets are unavailable. In addition to the three data sets the Navy relies upon; captive cetaceans, killer whales, and right whales, they suggest that the data set illustrating the use of acoustic harassment and acoustic deterrent devices on harbor porpoises illustrates exclusion from foraging habitat. Data are also available showing exclusion of killer whales from foraging habitat, although additional analysis would be required to assess received levels involved. The devices which excluded both killer whales and harbor porpoises had a source level of 195 dB re 1µPa, a fundamental frequency of 10 kHz, and were pulsed repeatedly for a period of about 2.5 seconds, followed by a period of silence of similar duration, before being repeated. Devices used only with harbor porpoises had a source level of 120–145 dB re 1µPa, fundamental frequency of 10 kHz, a duration on the order of 300 msec, and were repeated every few seconds. Harbor porpoises, which the Navy treats as having a B+K value of 120 dB re 1µPa (with A large enough to yield a step function) in the Atlantic Fleet Active Sonar Training (AFAST) DEIS, 45 dB lower than the average value used in the Hawaii Range Complex (HRC) SDEIS, may be representative of how the majority of cetacean species, which are shy around vessels and hence poorly known, would respond to mid-frequency sonar. Even if harbor porpoises were given equal weight with the three species used to calculate B+K, including them in the average would put the average value at 154 dB re 1µPa instead of 165 dB re 1µPa.

*Response:* Regarding the datasets used to develop behavioral criteria, the commenter is referring to the Phase I and II behavioral criteria, *i.e.,* criteria that we used in previous rules and not this one, and therefore much of the comment is inapplicable. In this rule, NMFS and the Navy incorporated emergent best available science into new BRFs that are described in the technical report titled Criteria and Thresholds for U.S. Navy Acoustic and Explosive Effects Analysis (Phase III) (U.S. Department of the Navy, 2017a), available at *www.nwtteis.com.*

Regarding the Haro Strait data, in May 2003, killer whales in Haro Strait, Washington, exhibited what were believed by some observers to be aberrant behaviors, during which time the USS *Shoup* was in the vicinity and engaged in mid-frequency active sonar operations. Sound fields modeled for the USS *Shoup* transmissions (Fromm, 2009; National Marine Fisheries Service, 2005; U.S. Department of the Navy, 2004) estimated a mean received SPL of approximately 169 dB re 1 µPa at the location of the killer whales at the closest point of approach between the animals and the vessel (estimated SPLs ranged from 150 to 180 dB re 1 µPa). However, attributing the observed behaviors during that particular exposure to any one cause is problematic given there were six nearby whale watch vessels surrounding the pod, and subsequent research has demonstrated that ''Southern Residents

modify their behavior by increasing surface activity (breaches, tail slaps, and pectoral fin slaps) and swimming in more erratic paths when vessels are close'' (National Oceanic and Atmospheric Administration, NOAA Fisheries, 2014). Data from this study were not used in the Phase III BRFs because they did not meet the criteria to be used in the quantitative derivation (see response to Comment 82 for description of criteria). Nonetheless, the BRFs used in this 2020–2027 NWTT rule indicate a likelihood of approximately 30 to 95 percent that the estimated received levels during this exposure would be associated with Level B harassment by behavioral disturbance.

Regarding the harbor porpoise data, the data referenced in this comment was a study of acoustic harassment devices and do not meet either criteria for BRF inclusion. Further, NMFS and the Navy continue to use a behavioral harassment threshold for harbor porpoises that predicts that 100 percent of harbor porpoises exposed at levels above 120 dB will respond in a manner that qualifies as Level B harassment, which encompasses the results the commenter references. However, we disagree that harbor porpoise data should be combined with other odontocete data to create one behavioral harassment threshold for odontocetes, given the extensive literature documenting the heightened sensitivity of harbor porpoises to sound. The best available science is documented in *Criteria and Thresholds for U.S. Navy Acoustic and Explosive Effects Analysis (Phase III)* (U.S. Department of the Navy, 2017a), available at *www.nwtteis.com,* and Section 3.4.2.1.1.5 (Behavioral Reactions) of the 2020 NWTT FSEIS/OEIS.

*Comment 84:* A commenter stated that NMFS should address problems in the proposed rule, which the commenter asserts underestimate and discount potential take of Southern Resident killer whales, and reconsider its negligible impact determination for the population. The commenter asserted that NMFS' conclusory statement that the Navy's activities are ''unlikely to result in impacts on individual reproduction or survival'' or cause greater than negligible impacts on the Southern Resident killer whale population is arbitrary and capricious. The commenter stated that conclusion is based in part on the premise that the Navy would cause as many as 51 Southern Resident killer whale takes each year, a number that, like the Navy's original calculation of two annual takes, makes little sense given that the whales travel together in pods, making it far more likely that every member of the pod would be affected. Nor does it make sense that take estimates for Washington Inland Waters harbor porpoises and Hood Canal harbor seals would number in the hundreds of thousands, while Southern Resident killer whale takes account for a handful. The commenter argued that the agency has provided little rationale for why the abandonment or significant alteration in vital activities that these take numbers represent would have a negligible impact on Southern Resident killer whales, given the low vital rates that currently prevail in this endangered, declining population.

In addition, the commenter stated that although some form of command approval is required before mid-frequency sonar is used in the Salish Sea, this requirement does little to ensure that such activities do not occur. The commenter also stated that NMFS has grossly overstated the effectiveness of the Navy's mitigation in preventing mortalities.

The commenter additionally states that mitigation areas for Southern Resident killer whales fail to include the whales' offshore habitat, where most of the agency's estimated takes are expected to occur.

*Response:* The basis for NMFS' conclusions about the effects of the estimated, and now authorized, Level B harassment takes of Southern Resident killer whales, both on affected individuals and on the stock's annual rates of recruitment and survival, has been fully and carefully explained in the proposed rule and again in this final rule. The Navy consulted with Southern Resident killer whale experts in the development of the density layers used for modeling and the acoustic modeling process used in this rule accounts for the population occurring in 3 large pods, composed of the appropriate individual numbers of killer whales. However, despite occurring in pods, not all animals exposed to similar sound levels will respond in the exact same manner. The BRFs take into account individual responses, and were developed from data that included real exposures of wild killer whales to Naval sonar sources. Further, Navy training and testing activities predominantly occur in portions of the NWTT Study Area inland waters where Southern Resident killer whales rarely occur (*e.g.,* Hood Canal, Dabob Bay, Bremerton, and Keyport). Also, the density is low overall for Southern Resident killer whales, so it is much less likely that a pod will be encountered. Also while Southern Resident killer whales travel in pods, individuals are spread out over a fairly large area and while more than one individual might be taken sometimes if a Navy activity is encountered, it is far less likely that an entire pod would be exposed at levels resulting in take. Please refer to the response to Comment 74 for further discussion of the implication of the 51 authorized takes of Southern Resident killer whales.

We also note that the commenter is incorrect that the mitigation areas in the rule fail to include the whale's offshore habitat. The proposed included mitigation that overlaps with the proposed ESA Southern Resident killer whale critical habitat (in offshore waters), including in the Marine Species Coastal Mitigation Area and the Olympic Coast National Marine Sanctuary Mitigation Area, and the mitigation in those areas has been expanded in the final rule. Please see the Mitigation Measures section for a full description of the mitigation required in these areas.

Regarding the idea that NMFS has grossly overstated the effectiveness of the Navy's mitigation in preventing mortalities, we note that no mortality was modeled, even without consideration of mitigation. Nonetheless, this final rule includes extensive mitigation for Southern Resident killer whales as discussed in the Mitigation Measures section and in the response to Comment 74. Please refer to the Mitigation Measures section of this final rule for a full discussion.

Regarding Command authority, requirements for naval units to obtain approval from the appropriate designated Command authority prior to conducting active sonar pierside maintenance or testing with hull-mounted mid-frequency active sonar will elevate the situational and environmental awareness of respective Command authorities during the event planning process. Requiring designated Command authority approval provides an increased level of assurance that mid-frequency active sonar is a required element for each event. Such authorizations are typically based on the unique characteristics of the area from a military readiness perspective, taking into account the importance of the area for marine species and the need to mitigate potential impacts on Southern Resident killer whales (and other marine mammals, such as gray whales) to the maximum extent practicable. Additionally, the Navy has reported to NMFS that, where included in past NWTT authorizations, the requirement for Navy personnel to gain permission from the appropriate command

authority to conduct activities in a particular mitigation area has resulted in the activities not being conducted in the designated mitigation areas.

Please refer to Comment 77 for a full explanation of the higher take numbers for Washington Inland Waters harbor porpoises and Hood Canal harbor seals in comparison to Southern Resident killer whales.

*Other Comments*

*Comment 85:* A commenter questioned how many incidental injuries and deaths would it take before NOAA and the Navy recognize the dire situation in which they are putting marine mammals. The commenter further questioned what would it take for NOAA to decline the Navy's request for yet another permit in which hundreds and thousands of animals are slated to be hurt or die.

*Response:* Through the MMPA, Congress has determined that an applicant, including a federal agency like the Navy, can request and receive marine mammal incidental take authorization provided all statutory findings are made (and all other legal requirements are met). For the Navy's application, NMFS has determined, among other things, that the estimated take will have a negligible impact on each of the affected species or stocks and has included the required mitigation, monitoring, and reporting measures. Therefore it is appropriate to authorize the incidental take. As discussed elsewhere in this section and the Mitigation Measures section of the rule, the final rule includes extensive mitigation measures to reduce impacts to the least practicable level. We note that the commenter overstates the scale of authorized injury and mortality and, further, that the rule includes a robust suite of mitigation measures to lessen the probability and severity of impacts on marine mammals.

*Comment 86:* A commenter stated that the Navy is entitled to consult with the Office of National Marine Sanctuaries to gain access to National Marine Sanctuary waters, in this case the Olympic Coast National Marine Sanctuary. The commenter asserted that the authority to do so does not, however, justify its position in designing the NWTT Study Area to include an offshore portion of these waters. The meaning of the word ''sanctuary'' has been compromised beyond recognition by federal government agencies, but that does not mean the Navy should continue to disregard the intent of the government in establishing these waters to protect marine animal and plant life. The commenter stated that there are no circumstances under which it should be permissible to carry out military training exercises in a designated federal marine sanctuary. Another commenter stated that the Sanctuary would continue to be unacceptably damaged by the Navy's training activities and that the activities cited by the Navy would cause long-term damage to the Sanctuary ecosystem which NOAA is supposed to protect as its administrator. Another commenter stated that the Navy needs to clear out of the Olympic Coast National Marine Sanctuary, permanently.

*Response:* Regulations for the Olympic Coast National Marine Sanctuary at 15 CFR part 922, subpart O specifically address the conduct of Department of Defense military activities in the sanctuary, though we disagree with one commenter's suggestion that the Navy was intentionally targeting the Sanctuary. In addition, both NMFS and the Navy consulted with NOAA's Office of National Marine Sanctuaries under section 304(d) of the National Marine Sanctuaries Act regarding their actions that had the potential to injure sanctuary resources in the Olympic Coast National Marine Sanctuary. We disagree with the commenter's assertion that the Navy's activities will cause long-term damage to the Sanctuary ecosystem and refer the reader to the documents associated with the consultation, which may be found at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-military-readiness-activities.* Comments about the Navy's activities generally in national marine sanctuaries are beyond the scope of this rule.

*Comment 87:* A commenter stated that NMFS has a federal trust responsibility to Indian Tribes and therefore a heightened duty to apply the MMPA with special care and to protect and preserve marine species and areas of interest and concern for those Tribes to which the federal trust responsibility applies. Therefore, when faced with several alternatives for mitigation, for example, a commenter stated in a related comment that NMFS ''must choose the alternative that is in the best interests of the Indian tribe.''

A commenter stated that the trust responsibility serves several purposes in this context. First, it requires NMFS to be especially cognizant of Tribes' needs as they pertain to their cultural ways of life and engage in meaningful government-to-government consultation concerning the proposed rule. Second, it requires NMFS to ensure that its application of the MMPA incidental take provisions avoids harm to Tribes' cultural ways of life, including subsistence, that are dependent upon culturally important species, places, and ecosystems and protects the species necessary for the Tribes' well-being and survival.

The commenter stated that NMFS' obligation to Indian Tribes applies to all Tribes affected by the Navy's NWTT activities, including the ten federally recognized member Tribes of the InterTribal Sinkyone Wilderness Council, whose territories are situated within and offshore from Northern California and who maintain important cultural connections with their traditional coastal ecosystems and migrating marine mammals. The Sinkyone Council's member Tribes are: Cahto Tribe of Laytonville Rancheria; Coyote Valley Band of Pomo Indians; Hopland Band of Pomo Indians; Pinoleville Pomo Nation; Potter Valley Tribe; Redwood Valley Band of Pomo Indians; Robinson Rancheria of Pomo Indians; Round Valley Indian Tribes; Scotts Valley Band of Pomo Indians; and Sherwood Valley Rancheria of Pomo Indians. The commenter noted that the ten Northern California Tribes are in formal government-to-government consultation with the Navy regarding Tribal opposition to the Navy's training and testing activities, and the NWTT's impacts to marine mammals and the Tribes' cultural ways of life.

*Response:* NMFS is fully aware of and sensitive to its federal trust responsibilities to all Indian Tribes. Consistent with federal directives on consultation and coordination with Indian Tribal governments, NMFS has engaged in government-to-government discussions with the Northern California Tribes of the InterTribal Sinkyone Wilderness Council, and is discussing concerns directly with the member Tribes and Council staff. The Navy is also engaged in government-to-government consultation with the 10 Northern California Tribes of the InterTribal Sinkyone Wilderness Council (as well as other Tribes) on its training and testing activities, including impacts on marine mammals.

Also, as part of the MMPA rulemaking process, NMFS sought information on how the Navy's activities could affect Alaskan Natives' subsistence use in southeast Alaska. NMFS has added a mitigation measure in this final rule to minimize potential impacts on subsistence hunters from four Alaskan Native communities that are also federally recognized Tribes. See the Subsistence Harvest of Marine Mammals section for more information.

*Comment 88:* A commenter stated that NMFS proposes to authorize take of multiple island-associated populations, most of unknown population size and many presumably with small or limited ranges. To justify the authorization notwithstanding the lack of robust mitigation measures, the commenter stated that the agency makes a number of assumptions that are not supported by the best available science.

*Response:* This comment is not applicable to this rulemaking as there are no ''island-associated populations'' impacted by the Navy's NWTT activities or occurring within the NWTT Study Area.

*Comment 89:* A commenter questioned whether any ethical considerations have gone into the issuance of these authorizations for the United States government to harass and injure marine mammals for the past 10 years, and another commenter referenced Occupational Safety and Health Administration standards for human noise exposure limits and suggested parallel ''pain thresholds'' for killer whales. The commenter asserted that although the MMPA requires mitigation strategies in order to authorize incidental takings, the Navy is violating this provision by requiring a constant authorization to operate in the same location. The commenter stated that the Navy's activities are never-ending and now the Navy asks for yet another seven-year extension of the same rule that will allow the Navy to test its sonar, explosives, and vessels in the same area of water that will impact the same populations of marine mammals that have been subjected to these same tests and disturbances for a decade. The commenter questioned how the Navy can continue to justify repeating their activities in the same location without producing any new results.

The commenter stated that there appears to be no end to the Navy's testing and no end to the Navy's reluctance to unearth credible evidence of the facts surrounding the takings that have and will occur in the NWTT area. The commenter questioned the factual ground on which NMFS can now grant the Navy continued permission to cause injury and death to protected marine mammals. The commenter stated that in this circumstance, the Navy should be denied authorization because it has failed to show that past test activities do not provide a sufficient basis to achieve its military readiness. In the absence of such a showing, the Navy cannot credibly claim that it has pursued the least practical method. Another commenter noted that proximity to Naval bases for the convenience of sailors and their families, or interesting underwater topography taken as a rationale for continuing exercises does not warrant even one ''take'' of Southern Resident killer whales.

*Response:* The MMPA provides for the authorization of incidental take caused by activities that will continue in an area. The law directs NMFS to process adequate and complete applications for incidental take authorization, and issue the authorization provided all statutory findings and requirements, as well as all associated legal requirements, are met. The MMPA does not require the Navy to prove anything regarding whether previous activities were sufficient for achieving military readiness, or to justify why they have located their activities where they have (except inasmuch as it is considered in the least practicable adverse impact analysis for geographic mitigation considerations). Likewise, section 101(a)(5)(A) of the MMPA does not include standards or determinations for the agency to consider the ethical and other factors raised by the commenters.

As described in the rule, NMFS is required to evaluate the specified activity presented by the Navy in the context of the standards described in this final rule, and NMFS has described how these standards and requirements have been satisfied throughout this final rule.

Both this rule and the prior rules for training and testing activities in the NWTT Study Area have required monitoring to report and help better understand the impacts of the Navy's activities on marine mammals. The Navy has conducted all monitoring as required, and the associated Monitoring Reports may be viewed at: *https://www.navymarinespeciesmonitoring.us/reporting/pacific/.*

*Comment 90:* A commenter stated that the Navy provides no factual basis from which a rational determination can be made about species population and their geographical location. Indeed, the commenter asserts that it is pure speculation to conclude that any figure cited by the Navy is a ''small'' number of animals. However, one thing is certain according to the commenter. The Navy has had the opportunity and motivation to seek the needed information, and it has failed to do so. The commenter questioned how many incidental injuries and deaths it would take before the Navy's proposed activities were considered to be too great a loss for the animal species involved. In the absence of any credible facts, NMFS cannot make a rational determination that the Navy's activities will affect only a small number of any species and that the outcome of the activities will not adversely affect geographically diverse animal populations.

*Response:* The ''small numbers'' determination discussed by the commenter does not apply to military readiness activities, including the Navy's activities in the NWTT Study Area. The National Defense Authorization Act for Fiscal Year 2004 amended section 101(a)(5) of the MMPA for military readiness activities to remove the ''small numbers'' and ''specified geographical region'' provisions, as well as amending the definition of ''harassment'' as applied to a ''military readiness activity.''

*Comment 91:* A commenter stated that NMFS should operate in full transparency and good faith toward our fellow Washingtonians and reopen the comment period. The comment period should be, at least, 60 days with plenty of notice to the communities impacted, thus allowing them to give testimony. Please give proper notification to the public and to all who made comments on the May 29, 2019, Navy EIS. The Navy should be able to provide those names and addresses. The commenter specifically requested that NMFS include them on its list for notification for public comment. Another commenter stated that NMFS failed to notify the public and other governmental agencies regarding the authorization process. The lack of transparency has not allowed for NEPA-mandated public comment.

*Response:* NMFS provided full notice to the public in the **Federal Register** on two opportunities to provide information and comments related to this rulemaking: The notice of receipt of the Navy's application for MMPA incidental take authorization (84 FR 38225, August 6, 2019) and the notice of NMFS' proposed incidental take rule (85 FR 33914, June 2, 2020). NMFS provided 30 and 45 days, respectively, for the public to comment and provide input on those documents. These notices and the associated comment periods satisfy the requirements of the MMPA and our implementing regulations. Further, interested persons also had the opportunity to comment through the NEPA process on, among other things, the Notice of Intent to Prepare a Supplemental Environmental Impact Statement for Northwest Training and Testing and the Notice of Availability of the NWTT Draft Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement for both this MMPA

rulemaking and the Navy's activities. Given these opportunities for public input and the need to ensure that the MMPA rulemaking process was completed in the time needed to ensure coverage of the Navy's training and testing activities, NMFS determined that additional time for public comment was not possible. NMFS has practiced full and appropriate transparency under both the MMPA and NEPA.

**Changes From the Proposed Rule to the Final Rule**

Between publication of the proposed rule and development of the final rule, the Navy has decreased their activity levels for some training activities. As a result, the annual and/or seven-year take estimates for some species have changed (all decreases with the exception of *Kogia,* which increased by 1 annually and over seven years). Additional mitigation measures have also been added, including the identification of a new mitigation area, additional requirements in existing areas, and new procedural measures. Additionally, harbor seal abundance estimates for inland water stocks have been refined.

The Navy has reduced the number of planned Mine Neutralization-Explosive Ordnance Disposal (EOD) (Bin E3) training events from 12 to 6 annually, and 84 to 42 over the seven-year period of the rule. The Navy also reduced the number of Gunnery Exercise (Surface-to-Surface)- Ship (GUNEX [S–S]-Ship) training exercises from 90 to 34 annually, and 504 to 238 over the seven-year period, counting only the explosive events, as noted in Table 3. Additionally, the Navy added bin HF1 to the Submarine Sonar Maintenance training activity. (This change does not increase total HF1 hours, but redistributes them to include use of the source types identified in bin HF1) Finally, the Navy clarified the number of planned Mine Countermeasure and Neutralization Testing events in the offshore area. The final rule reflects 2 events annually, and 6 events over the seven-year period, as one of the 3 annual events noted in the proposed rule does not include acoustic components. This change resulted in decreases in estimated take over seven years for the following species: fin whale, sei whale, minke whale, humpback whale, gray whale, northern right whale dolphin, Pacific white-sided dolphin, Risso's dolphin, *Kogia* whales, Dall's porpoise, harbor porpoise, California sea lion, Steller sea lion, harbor seal, and northern elephant seal. Revised take estimates are reflected in Table 32 and Table 33. This change in activity also resulted in a reduction in HF4 sonar hours associated with Mine Countermeasure and Neutralization testing; however, this reduction is not shown quantitatively.

In addition, the take estimates for some species during both training and testing have been updated, and are reflected in Table 32 (Training) and Table 33 (Testing). For all updated species except *Kogia,* the maximum annual take remained the same, but the seven-year total decreased. For *Kogia* Spp., takes during training activities decreased by 1 both annually, and over the seven-year period of the rule. During testing activities, annual takes by Level B harassment decreased by 1 and annual takes by Level A harassment increased by 1. Over the seven-year period of the rule, takes by Level B harassment during testing activities decreased by 1.

Specifically regarding the harbor seal density estimates, since publication of the proposed rule, additional information and analyses have been used to refine the abundance estimate of the Washington Northern Inland Waters, Hood Canal, and Southern Puget Sound stocks of harbor seal. These changes are discussed in greater detail in the *Group and Species-Specific Analyses* section of this rule, and the updated abundance estimates are used in our analysis and negligible impact determination.

Regarding the additional mitigation measures, a new mitigation area, the Juan de Fuca Eddy Marine Species Mitigation Area has been added. No mine countermeasure and neutralization testing will be conducted in this area, and the Navy will conduct no more than a total of 33 hours of surface ship hull-mounted MF1 mid-frequency active sonar during testing annually within 20 nmi from shore in the Marine Species Coastal Mitigation Area, in this new Juan de Fuca Eddy Marine Species Mitigation Area, and in the Olympic Coast National Marine Sanctuary Mitigation Area combined. Please see the *Mitigation Areas* section for additional information on the new Juan de Fuca Eddy Marine Species Mitigation Area.

New mitigation requirements also have been added in the following mitigation areas: The Marine Species Coastal Mitigation Area, the Olympic Coast National Marine Sanctuary Mitigation Area, and the Puget Sound and Strait of Juan de Fuca Mitigation Area. The *Mitigation Areas* section describes the specific additions in these mitigation areas since publication of the proposed rule and discusses additional information about all of the mitigation area requirements.

Additionally, new procedural mitigation requires the Navy to conduct Mine Countermeasures and Neutralization during daylight hours and in Beaufort sea state conditions of 3 or less.

This final rule also includes new discussion of monitoring projects being conducted under the 2020–2027 rule. These planned projects include research on the offshore distribution of Southern Resident killer whales in the Pacific Northwest (ongoing and planned through 2022), and characterizing the distribution of ESA-listed salmonids in the Pacific Northwest (ongoing and planned through 2022). Please see the *Past and Current Monitoring in the NWTT Study Area* section for additional details about these planned projects.

Finally, NMFS has added information discussing the nature of subsistence activities by Alaskan Natives in the NWTT Study Area in the Subsistence Harvest of Marine Mammals section of this final rule. NMFS also added a requirement for the Navy to continue to notify the following Alaskan Native communities of Navy operations that involve restricting access in the Western Behm Canal at least 72 hours in advance through issuance of its Notices to Mariners to minimize potential impact on subsistence hunters: Central Council of the Tlingit and Haida Indian Tribes, Ketchikan Indian Corporation, Organized Village of Saxman, and Metlakatla Indian Community, Annette Island Reserve.

**Description of Marine Mammals and Their Habitat in the Area of the Specified Activities**

Marine mammal species and their associated stocks that have the potential to occur in the NWTT Study Area are presented in Table 9. The Navy anticipates the take of individuals of 28 [3] marine mammal species by Level A harassment and Level B harassment incidental to training and testing activities from the use of sonar and other transducers and in-water detonations. In addition, the Navy requested authorization for three takes of large whales by serious injury or mortality from vessel strikes over the seven-year period. Currently, the Southern Resident killer whale has critical habitat designated under the Endangered Species Act (ESA) in the NWTT Study Area (described below).

[3] The total number of species was calculated by counting Mesoplodont beaked whales as one species for the reasons explained in the Baird's and Cuvier's beaked whales and Mesoplodon species (California/Oregon/Washington stocks) section. The proposed rule erroneously indicated anticipated take of individuals of 29 marine mammal species.

However, NMFS has recently published two proposed rules, proposing new or revised ESA-designated critical habitat for humpback whales (84 FR 54354; October 9, 2019) and Southern Resident killer whales (84 FR 49214; September 19, 2019).

The NWTT proposed rule included additional information about the species in this rule, all of which remains valid and applicable but has not been reprinted in this final rule, including a subsection entitled *Marine Mammal Hearing* that described the importance of sound to marine mammals and characterized the different groups of marine mammals based on their hearing sensitivity. Therefore, we refer the reader to our **Federal Register** notice of proposed rulemaking (85 FR 33914; June 2, 2020) for more information.

Information on the status, distribution, abundance, population trends, habitat, and ecology of marine mammals in the NWTT Study Area may be found in Chapter 4 of the Navy's rulemaking/LOA application. NMFS has reviewed this information and found it to be accurate and complete. Additional information on the general biology and ecology of marine mammals is included in the 2020 NWTT FSEIS/OEIS. Table 9 incorporates data from the U.S. Pacific and the Alaska Marine Mammal Stock Assessment Reports (SARs) (Carretta *et al.,* 2020; Muto *et al.,* 2020), as well as incorporating the best available science, including monitoring data, from the Navy's marine mammal research efforts. NMFS has also reviewed new scientific literature since publication of the proposed rule, and determined that none of these nor any other new information changes our determination of which species have the potential to be affected by the Navy's activities or the information pertinent to status, distribution, abundance, population trends, habitat, or ecology of the species in this final rulemaking, except as noted below or, in the case of revised harbor seal abundance, in the applicable section of the Analysis and Negligible Impact Determination section.

TABLE 9—MARINE MAMMAL EXPECTED OCCURRENCE WITHIN THE NWTT STUDY AREA

| Common name | Scientific name | Stock | ESA/MMPA status; strategic (Y/N) [1] | Stock abundance (CV, $N_{min}$, most recent abundance survey) [2] | PBR | Annual M/SI [3] | Occurrence [8] | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Offshore area | Inland waters | Western behm canal |
| **Order Cetartiodactyla—Cetacea—Superfamily Mysticeti (baleen whales)** | | | | | | | | | |
| Family Eschrichtiidae: | | | | | | | | | |
| Gray whale | *Eschrichtius robustus* | Eastern North Pacific | -, -, N | 26,960 (0.05, 25,849, 2016). | 801 | 139 | Seasonal | Seasonal | |
| | | Western North Pacific | E, D, Y | 290 (NA, 271, 2016) | 0.12 | UNK | Rare | Rare | |
| Family Balaenopteridae (rorquals): | | | | | | | | | |
| Blue whale | *Balaenoptera musculus.* | Eastern North Pacific | E, D, Y | 1,496 (0.44, 1,050, 2014). | 1.2 | ≥19.4 | Seasonal | | |
| Fin whale | *Balaenoptera physalus* | Northeast Pacific | E, D, Y | 3,168 (0.26, 2,554, 2013) [4]. | 5.1 | 0.4 | | | Rare. |
| | | CA/OR/WA | E, D, Y | 9,029 (0.12, 8,127, 2014). | 81 | ≥43.5 | Seasonal | Rare | |
| Humpback whale | *Megaptera novaeangliae.* | Central North Pacific | T/E [5], D, Y | 10,103 (0.3, 7,891, 2006). | 83 | 25 | Regular | Regular | Regular. |
| | | CA/OR/WA | T/E [5], D, Y | 2,900 (0.05, 2,784, 2014). | 16.7 | ≥42.1 | Regular | Regular | Regular. |
| Minke whale | *Balaenoptera acutorostrata.* | Alaska | -, -, N | UNK | UND | 0 | | | Rare. |
| | | CA/OR/WA | -, -, N | 636 (0.72, 369, 2014) | 3.5 | ≥1.3 | Regular | Seasonal | |
| Sei whale | *Balaenoptera borealis* | Eastern North Pacific | E, D, Y | 519 (0.4, 374, 2014) | 0.75 | ≥0.2 | Regular | | |
| **Superfamily Odontoceti (toothed whales, dolphins, and porpoises)** | | | | | | | | | |
| Family Physeteridae: | | | | | | | | | |
| Sperm whale | *Physeter macrocephalus.* | CA/OR/WA | E, D, Y | 1,997 (0.57, 1,270, 2014). | 2.5 | 0.6 | Regular | | |
| Family Kogiidae: | | | | | | | | | |
| Dwarf sperm whale. | *Kogia sima* | CA/OR/WA | -, -, N | UNK | UND | 0 | Rare | | |
| Pygmy sperm whale. | *Kogia breviceps* | CA/OR/WA | -, -, N | 4,111 (1.12, 1,924, 2014). | 19.2 | 0 | Regular | | |
| Family Ziphiidae (beaked whales): | | | | | | | | | |
| Baird's beaked whale. | *Berardius bairdii* | CA/OR/WA | -, -, N | 2,697 (0.6, 1,633, 2014). | 16 | 0 | Regular | | |
| Cuvier's beaked whale. | *Ziphius cavirostris* | CA/OR/WA | -, -, N | 3,274 (0.67, 2,059, 2014). | 21 | <0.1 | Regular | | |
| *Mesoplodont* beaked whales. | *Mesoplodon* species | CA/OR/WA | -, -, N | 3,044 (0.54, 1,967, 2014). | 20 | 0.1 | Regular | | |
| Family Delphinidae: | | | | | | | | | |
| Common bottlenose dolphin. | *Tursiops truncatus* | CA/OR/WA Offshore | -, -, N | 1,924 (0.54, 1,255, 2014). | 11 | ≥1.6 | Regular | | |
| Killer whale | *Orcinus orca* | Eastern North Pacific Alaska Resident. | -, -, N | 2,347 (UNK, 2,347, 2012) [6]. | 24 | 1 | | | Regular. |
| | | Eastern North Pacific Northern Resident. | -, -, N | 302 (UNK, 302, 2018) [6]. | 2.2 | 0.2 | Seasonal | Seasonal | |
| | | West Coast Transient | -, -, N | 243 (UNK, 243, 2009) | 2.4 | 0 | Regular | Regular | Regular. |
| | | Eastern North Pacific Offshore. | -, -, N | 300 (0.1, 276, 2012) | 2.8 | 0 | Regular | | Regular. |
| | | Eastern North Pacific Southern Resident. | E, D, Y | 75 (NA, 75, 2018) | 0.13 | 0 | Regular | Regular | |
| Northern right whale dolphin. | *Lissodelphus borealis* | CA/OR/WA | -, -, N | 26,556 (0.44, 18,608, 2014). | 179 | 3.8 | Regular | | |
| Pacific white-sided dolphin. | *Lagenorhynchus obliquidens.* | North Pacific | -, -, N | 26,880 (UNK, NA, 1990). | UND | 0 | | | Regular. |
| | | CA/OR/WA | -, -, N | 26,814 (0.28, 21,195, 2014). | 191 | 7.5 | Regular | Regular | |
| Risso's dolphin | *Grampus griseus* | CA/OR/WA | -, -, N | 6,336 (0.32, 4,817, 2014). | 46 | ≥3.7 | Regular | Rare | |
| Short-beaked common dolphin. | *Delphinus delphis* | CA/OR/WA | -, -, N | 969,861 (0.17, 839,325, 2014). | 8,393 | ≥40 | Regular | Rare | |

TABLE 9—MARINE MAMMAL EXPECTED OCCURRENCE WITHIN THE NWTT STUDY AREA—Continued

| Common name | Scientific name | Stock | ESA/MMPA status; strategic (Y/N) [1] | Stock abundance (CV, $N_{min}$, most recent abundance survey) [2] | PBR | Annual M/SI [3] | Occurrence [8] | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Offshore area | Inland waters | Western behm canal |
| Short-finned pilot whale. | *Globicephala macrorhynchus.* | CA/OR/WA | -, -, N | 836 (0.79, 466, 2014) | 4.5 | 1.2 | Regular | Rare | |
| Striped dolphin | *Stenella coeruleoalba* | CA/OR/WA | -, -, N | 29,211 (0.2, 24,782, 2014). | 238 | ≥0.8 | Regular | | |
| Family Phocoenidae (porpoises): | | | | | | | | | |
| Dall's porpoise | *Phocoenoides dalli* | Alaska | -, -, N | 83,400 (0.097, NA, 1991). | UND | 38 | | | Regular. |
| | | CA/OR/WA | -, -, N | 25,750 (0.45, 17,954, 2014). | 172 | 0.3 | Regular | Regular | |
| Harbor porpoise | *Phocoena phocoena* | Southeast Alaska | -, -, Y | 1,354 (0.12, 1,224, 2012). | 12 | 34 | | | Regular. |
| | | Northern OR/WA Coast. | -, -, N | 21,487 (0.44, 15,123, 2011). | 151 | ≥3 | Regular | | |
| | | Northern CA/Southern OR. | -, -, N | 24,195 (0.40, 17,447, 2016). | 349 | ≥0.2 | Regular | | |
| | | Washington Inland Waters. | -, -, N | 11,233 (0.37, 8,308, 2015). | 66 | ≥7.2 | | Regular | |
| **Order Carnivora—Superfamily Pinnipedia** | | | | | | | | | |
| Family Otariidae (eared seals and sea lions): | | | | | | | | | |
| California sea lion | *Zalophus californianus* | U.S. | -, -, N | 257,606 (NA, 233,515, 2014). | 14,011 | ≥321 | Seasonal | Regular | |
| Guadalupe fur seal | *Arctocephalus townsendi.* | Mexico to California | T, D, Y | 34,187 (NA, 31,109, 2013). | 1,062 | ≥3.8 | Seasonal | | |
| Northern fur seal | *Callorhinus ursinus* | Eastern Pacific | -, D, Y | 620,660 (0.2, 525,333, 2016). | 11,295 | 399 | Regular | | Seasonal. |
| | | California | -, -, N | 14,050 (NA, 7,524, 2013). | 451 | 1.8 | Regular | | |
| Steller sea lion | *Eumetopias jubatus* | Eastern U.S. | -, -, N | 43,201 (NA, 43,201, 2017) [7]. | 2,592 | 112 | Regular | Seasonal | Regular. |
| Family Phocidae (earless seals): | | | | | | | | | |
| Harbor seal | *Phoca vitulina* | Southeast Alaska (Clarence Strait). | -, -, N | 27,659 (UNK, 24,854, 2015). | 746 | 40 | | | Regular. |
| | | OR/WA Coast | -, -, N | UNK | UND | 10.6 | Regular | Seasonal | |
| | | California | -, -, N | 30,968 (0.157, 27,348, 2012). | 1,641 | 43 | Regular | | |
| | | Washington Northern Inland Waters. | -, -, N | UNK | UND | 9.8 | Seasonal | Regular | |
| | | Hood Canal | -, -, N | UNK | UND | 0.2 | Seasonal | Regular | |
| | | Southern Puget Sound | -, -, N | UNK | UND | 3.4 | Seasonal | Regular | |
| Northern Elephant seal: | *Mirounga angustirostris.* | California | -, -, N | 179,000 (NA, 81,368, 2010). | 4,882 | 8.8 | Regular | Regular | Seasonal. |

[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 potential biological removal (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 online at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessments.* CV is coefficient of variation; Nmin is the minimum estimate of stock abundance. In some cases, CV is not applicable. For the Eastern North Pacific Southern Resident stock of killer whales Nbest/Nmin are based on a direct count of individually identifiable animals. The population size of the U.S. stock of California sea lion was estimated from a 1975–2014 time series of pup counts (Lowry *et al.* 2017), combined with mark-recapture estimates of survival rates (DeLong *et al.* 2017, Laake *et al.* 2018). The population size of the Mexico to California stock of Guadalupe fur seals was estimated from pup count data collected in 2013 and a range of correction factors applied to pup counts to account for uncounted age classes and pre-census pup mortality (García-Aguilar *et al.* 2018). The population size of the California stock of Northern fur seals was estimated from pup counts multiplied by an expansion factor (San Miguel Island) and maximum pup, juvenile, and adult counts (Farrallon Islands) at rookeries. The population size of the Eastern U.S. stock of Steller sea lions was estimated from pup counts and non-pup counts at rookeries in Southeast Alaska, British Columbia, Oregon, and California. The population size of the California stock of Northern Elephant seals was estimated from pup counts at rookeries multiplied by the inverse of the expected ratio of pups to total animals (McCann, 1985; Lowry *et al.,* 2014).

[3] These values, found in NMFS' SARs, represent annual levels of human-caused mortality and serious injury (M/SI) from all sources combined (*e.g.,* commercial fisheries, ship strike). Annual mortality or serious injury (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.

[4] The SAR reports this stock abundance assessment as provisional and notes that it is an underestimate for the entire stock because it is based on surveys which covered only a small portion of the stock's range.

[5] Humpback whales in the Central North Pacific stock and the CA/OR/WA stock are from three Distinct Population Segments (DPSs) based on animals identified in breeding areas in Hawaii, Mexico, and Central America. Both stocks and all three DPSs co-occur in the NWTT Study Area.

[6] Stock abundance estimate is based on counts of individual animals identified from photo-identification catalogues. Surveys for abundance estimates of these stocks are conducted infrequently.

[7] Stock abundance estimate is the best estimate counts, which have not been corrected to account for animals at sea during abundance surveys.

[8] A "-" indicates the species or stock does not occur in that area.

Note—Unknown (UNK); Undetermined (UND); Not Applicable (NA); California (CA); Oregon (OR); Washington (WA).

Below, we include additional information about the marine mammals in the area of the specified activities that informs our analysis, such as identifying known areas of important habitat or behaviors, or where Unusual Mortality Events (UME) have been designated.

*Critical Habitat*

Currently, only the distinct population segment (DPS) of Southern Resident killer whale has ESA-designated critical habitat in the NWTT Study Area. NMFS has published two proposed rules, however, proposing new or revised ESA-designated critical habitat for Southern Resident killer whale (84 FR 49214; September 19, 2019) and humpback whales (84 FR 54354; October 9, 2019).

NMFS designated critical habitat for the Southern Resident killer whale DPS on November 29, 2006 (71 FR 69054) in inland waters of Washington State. Based on the natural history of the Southern Resident killer whales and their habitat needs, NMFS identified physical or biological features essential to the conservation of the Southern Resident killer whale DPS: (1) Water quality to support growth and development; (2) prey species of sufficient quantity, quality, and availability to support individual growth, reproduction, and development, as well as overall population growth; and (3) passage conditions to allow for migration, resting, and foraging. ESA-designated critical habitat consists of three areas: (1) The Summer Core Area in Haro Strait and waters around the

San Juan Islands; (2) Puget Sound; and (3) the Strait of Juan de Fuca, which comprise approximately 2,560 square miles (mi²) (6,630 square kilometers (km²)) of marine habitat. In designating critical habitat, NMFS considered economic impacts and impacts to national security, and concluded that the benefits of exclusion of 18 military sites, comprising approximately 112 mi² (291 km²), outweighed the benefits of inclusion because of national security impacts.

On January 21, 2014, NMFS received a petition requesting revisions to the Southern Resident killer whale critical habitat designation. The petition requested that NMFS revise critical habitat to include ''inhabited marine waters along the West Coast of the United States that constitute essential foraging and wintering areas,'' specifically the region between Cape Flattery, Washington and Point Reyes, California extending from the coast to a distance of 47.2 mi (76 km) offshore. The petition also requested that NMFS adopt a fourth essential habitat feature in both current and expanded critical habitat relating to in-water sound levels. On September 19, 2019 (84 FR 54354), NMFS published a proposed rule proposing to revise the critical habitat designation for the Southern Resident killer whale DPS by designating six new areas (using the same essential features determined in 2006, and not including the requested essential feature relating to in-water sound levels) along the U.S. West Coast. Specific new areas proposed along the U.S. West Coast include 15,626.6 mi² (40,472.7 km²) of marine waters between the 6.1 m (20 ft) depth contour and the 200 m (656.2 ft) depth contour from the U.S. international border with Canada south to Point Sur, California.

For humpback whales, on September 8, 2016, NMFS revised the listing of humpback whales under the ESA by removing the original, taxonomic-level species listing, and in its place listing four DPSs as endangered and one DPS as threatened (81 FR 62260). NMFS also determined that nine additional DPSs did not warrant listing. This listing of DPSs of humpback whales under the ESA in 2016 triggered the requirement to designate critical habitat, to the maximum extent prudent and determinable, for those DPSs occurring in areas under U.S. jurisdiction—specifically, the Central America, Mexico, and Western North Pacific DPSs.

In the proposed rule to revise the humpback whale listing, NMFS solicited information that could inform a critical habitat designation (80 FR 22304; April 21, 2015), but NMFS did not receive relevant data or information regarding habitats or habitat features in areas within U.S. jurisdiction. In the final rule listing the five DPSs of humpback whales, NMFS concluded that critical habitat was not yet determinable, which had the effect of extending by one year the statutory deadline for designating critical habitat (16 U.S.C. 1533(b)(6)(C)(ii)).

On October 9, 2019, NMFS proposed to designate critical habitat for the endangered Western North Pacific DPS, the endangered Central America DPS, and the threatened Mexico DPS of humpback whales (84 FR 54354). Areas proposed as critical habitat include specific marine areas located off the coasts of California, Oregon, Washington, and Alaska. Based on consideration of national security and economic impacts, NMFS also proposed to exclude multiple areas from the designation for each DPS.

NMFS, in the proposed rule, identified 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, as an essential habitat feature. NMFS, through a critical habitat review team (CHRT), also considered inclusion of migratory corridors and passage features, as well as sound and the soundscape, as essential habitat features. NMFS did not propose to include either, however, as the CHRT concluded that the best available science did not allow for identification of any consistently used migratory corridors or definition of any physical, essential migratory or passage conditions for whales transiting between or within habitats of the three DPSs. The best available science also currently does not enable NMFS to identify particular sound levels or to describe a certain soundscape feature that is essential to the conservation of humpback whales.

*Biologically Important Areas*

Biologically Important Areas (BIAs) include areas of known importance for reproduction, feeding, or migration, or areas where small and resident populations are known to occur (Van Parijs, 2015). Unlike ESA critical habitat, these areas are not formally designated pursuant to any statute or law, but are a compilation of the best available science intended to inform impact and mitigation analyses. An interactive map of the BIAs may be found here: *https://cetsound.noaa.gov/biologically-important-area-map.*

BIAs off the West Coast of the United States (including southeastern Alaska) that overlap portions of the NWTT Study Area include the following feeding and migration areas: Northern Puget Sound Feeding Area for gray whales (March–May); Northwest Feeding Area for gray whales (May–November); Northbound Migration Phase A for gray whales (January–July); Northbound Migration Phase B for gray whales (March–July); Southbound Migration for gray whales (October–March); Northern Washington Feeding Area for humpback whales (May–November); Stonewall and Heceta Bank Feeding Area for humpback whales (May–November); and Point St. George Feeding Area for humpback whales (July–November) (Calambokidis *et al.,* 2015).

The NWTT Study Area overlaps with the Northern Puget Sound Feeding Area for gray whales and the Northwest Feeding Area for gray whales. Gray whale migration corridor BIAs (Northbound and Southbound) overlap with the NWTT Study Area, but only in a portion of the Northwest coast of Washington, approximately from Pacific Beach and extending north to the Strait of Juan de Fuca. The offshore Northern Washington Feeding Area for humpback whales is located entirely within the NWTT Study Area boundaries. The Stonewall and Heceta Bank Feeding Area for humpback whales only partially overlaps with the NWTT Study Area, and the Point St. George Feeding Area for humpback whales has extremely limited overlap with the Study Area since they abut approximately 12 nmi from shore which is where the NWTT Study Area boundary begins. To mitigate impacts to marine mammals in these BIAs, the Navy will implement several procedural mitigation measures and mitigation areas (described later in the Mitigation Measures section).

*National Marine Sanctuaries*

Under Title III of the Marine Protection, Research, and Sanctuaries Act of 1972 (also known as the National Marine Sanctuaries Act (NMSA)), NOAA can establish as national marine sanctuaries (NMS), areas of the marine environment with special conservation, recreational, ecological, historical, cultural, archaeological, scientific, educational, or aesthetic qualities. Sanctuary regulations prohibit or regulate activities that could destroy, cause the loss of, or injure sanctuary resources pursuant to the regulations for that sanctuary and other applicable law (15 CFR part 922). NMSs are managed on a site-specific basis, and each

sanctuary has site-specific regulations. Most, but not all, sanctuaries have site-specific regulatory exemptions from the prohibitions for certain military activities. Separately, section 304(d) of the NMSA requires Federal agencies to consult with the Office of National Marine Sanctuaries whenever their activities are likely to destroy, cause the loss of, or injure a sanctuary resource. One NMS, the Olympic Coast NMS managed by the Office of National Marine Sanctuaries, is located within the offshore portion of the NWTT Study Area (for a map of the location of this NMS see Chapter 6 of the 2020 NWTT FSEIS/OEIS, Figure 6.1–1). Additionally, a portion of the Quinault Range Site overlaps with the southern end of the Sanctuary.

The Olympic Coast NMS includes 3,188 $mi^2$ of marine waters and submerged lands off the Olympic Peninsula coastline. The sanctuary extends 25–50 mi. (40.2–80.5 km) seaward, covering much of the continental shelf and portions of three major submarine canyons. The boundaries of the sanctuary as defined in the Olympic Coast NMS regulations (15 CFR part 922, subpart O) extend from Koitlah Point, due north to the United States/Canada international boundary, and seaward to the 100-fathom isobath (approximately 180 m in depth). The seaward boundary of the sanctuary follows the 100-fathom isobath south to a point due west of the Copalis River, and cuts across the tops of Nitinat, Juan de Fuca, and the Quinault Canyons. The shoreward boundary of the sanctuary is at the mean lower low-water line when adjacent to American Indian lands and state lands, and includes the intertidal areas to the mean higher high-water line when adjacent to federally managed lands. When adjacent to rivers and streams, the sanctuary boundary cuts across the mouths but does not extend up river or up stream. The Olympic Coast NMS includes many types of productive marine habitats including kelp forests, subtidal reefs, rocky and sand intertidal zones, submarine canyons, rocky deep-sea habitat, and plankton-rich upwelling zones. These habitats support the Sanctuary's rich biodiversity which includes 29 species of marine mammals that reside in or migrate through the Sanctuary (Office of National Marine Sanctuaries, 2008). Additional information on the Olympic Coast NMS can be found at *https://olympiccoast.noaa.gov.*

Mitigation measures in the Olympic Coast NMS include limits on the use of MF1 mid-frequency active sonar during testing and training and prohibition of explosive Mine Countermeasure and Neutralization Testing activities and non-explosive bombing training activities. See the *Mitigation Areas* section of this final rule for additional discussion of mitigation measures required in the Olympic Coast National Marine Sanctuary.

*Unusual Mortality Events (UMEs)*

An UME is defined under Section 410(6) of the MMPA as a stranding that is unexpected; involves a significant die-off of any marine mammal population; and demands immediate response. Three UMEs with ongoing or recently closed investigations in the NWTT Study Area that inform our analysis are discussed below. The California sea lion UME in California was closed on May 6, 2020. The Guadalupe fur seal UME in California and the gray whale UME along the west coast of North America are active and involve ongoing investigations.

California Sea Lion UME

From January 2013 through September 2016, a greater than expected number of young malnourished California sea lions (*Zalophus californianus*) stranded along the coast of California. Sea lions stranding from an early age (6–8 months old) through two years of age (hereafter referred to as juveniles) were consistently underweight without other disease processes detected. Of the 8,122 stranded juveniles attributed to the UME, 93 percent stranded alive (n=7,587, with 3,418 of these released after rehabilitation) and 7 percent (n=531) stranded dead. Several factors are hypothesized to have impacted the ability of nursing females and young sea lions to acquire adequate nutrition for successful pup rearing and juvenile growth. In late 2012, decreased anchovy and sardine recruitment (CalCOFI data, July 2013) may have led to nutritionally stressed adult females. Biotoxins were present at various times throughout the UME, and while they were not detected in the stranded juvenile sea lions (whose stomachs were empty at the time of stranding), biotoxins may have impacted the adult females' ability to support their dependent pups by affecting their cognitive function (*e.g.,* navigation, behavior towards their offspring). Therefore, the role of biotoxins in this UME, via its possible impact on adult females' ability to support their pups, is unclear. The proposed primary cause of the UME was malnutrition of sea lion pups and yearlings due to ecological factors. These factors included shifts in distribution, abundance, and/or quality of sea lion prey items around the Channel Island rookeries during critical sea lion life history events (nursing by adult females, and transitioning from milk to prey by young sea lions). These prey shifts were most likely driven by unusual oceanographic conditions at the time due to the ''Warm Water Blob'' and El Niño. This investigation closed on May 6, 2020. Please refer to: *https://www.fisheries.noaa.gov/national/marine-life-distress/2013-2017-california-sea-lion-unusual-mortality-event-california* for more information on this UME.

Guadalupe Fur Seal UME

Increased strandings of Guadalupe fur seals began along the entire coast of California in January 2015 and were eight times higher than the historical average (approximately 10 seals/yr). Strandings have continued since 2015 and remained well above average through 2019. Numbers by year are as follows: 2015 (98), 2016 (76), 2017 (62), 2018 (45), 2019 (116), 2020 (95 as of October 4, 2020). The total number of Guadalupe fur seals stranding in California from January 1, 2015, through October 4, 2020, in the UME is 492. Additionally, strandings of Guadalupe fur seals became elevated in the spring of 2019 in Washington and Oregon; subsequently, strandings for seals in these two states have been added to the UME starting from January 1, 2019. The current total number of strandings in Washington and Oregon is 132 seals, including 91 (46 in Oregon; 45 in Washington) in 2019 and 41 (30 in Oregon; 11 in Washington) in 2020 as of October 4, 2020. Strandings are seasonal and generally peak in April through July of each year. The Guadalupe fur seal strandings have been mostly weaned pups and juveniles (1–2 years old) with both live and dead strandings occurring. Current findings from the majority of stranded animals include primary malnutrition with secondary bacterial and parasitic infections. When the 2013–2016 California sea lion UME was active, it was occurring in the same area as the California portion of this UME. This investigation is ongoing. Please refer to: *https://www.fisheries.noaa.gov/national/marine-life-distress/2015-2020-guadalupe-fur-seal-unusual-mortality-event-california* for more information on this UME.

Gray Whale UME

Since January 1, 2019, elevated gray whale strandings have occurred along the west coast of North America, from Mexico to Canada. As of October 4, 2020, there have been a total of 384 strandings along the coasts of the United

States, Canada, and Mexico, with 200 of those strandings occurring along the U.S. coast. Of the strandings on the U.S. coast, 92 have occurred in Alaska, 40 in Washington, 9 in Oregon, and 53 in California. Partial necropsy examinations conducted on a subset of stranded whales have shown evidence of poor to thin body condition in some of the whales. Additional findings have included human interactions (entanglements or vessel strikes) and pre-mortem killer whale predation in several whales. As part of the UME investigation process, NOAA has assembled an independent team of scientists to coordinate with the Working Group on Marine Mammal Unusual Mortality Events to review the data collected, sample stranded whales, consider possible causal-linkages between the mortality event and recent ocean and ecosystem perturbations, and determine the next steps for the investigation. Please refer to: *https://www.fisheries.noaa.gov/national/marine-life-distress/2019-2020-gray-whale-unusual-mortality-event-along-west-coast-and* for more information on this UME.

*Species Not Included in the Analysis*

The species carried forward for analysis (and described in Table 9) are those likely to be found in the NWTT Study Area based on the most recent data available, and do not include species that may have once inhabited or transited the area but have not been sighted in recent years (*e.g.,* species which were extirpated from factors such as 19th and 20th century commercial exploitation). Several species that may be present in the northwest Pacific Ocean have an extremely low probability of presence in the NWTT Study Area. These species are considered extralimital (not anticipated to occur in the Study Area) or rare (occur in the Study Area sporadically, but sightings are rare). These species/stocks include the Eastern North Pacific stock of Bryde's whale (*Balaenoptera edeni*), Eastern North Pacific stock of North Pacific right whale (*Eubalaena japonica*), false killer whale (*Pseudorca crassidens*), long-beaked common dolphin (*Delphinus capensis*), Western U.S. stock of Steller sea lion (*Eumetopias jubatus*), and Alaska stock of Cuvier's beaked whale (*Ziphius cavirostris*). These species are unlikely to occur in the NWTT Study Area and the reasons for not including each was explained in further detail in the proposed rulemaking (85 FR 33914; June 2, 2020).

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

We provided a detailed discussion of the potential effects of the specified activities on marine mammals and their habitat in our **Federal Register** notice of proposed rulemaking (85 FR 33914; June 2, 2020). In the Potential Effects of Specified Activities on Marine Mammals and Their Habitat section of the proposed rule, NMFS provided a description of the ways marine mammals may be affected by these activities in the form of, among other things, serious injury or mortality, physical trauma, sensory impairment (permanent and temporary threshold shift and acoustic masking), physiological responses (particularly stress responses), behavioral disturbance, or habitat effects. All of this information remains valid and applicable. Therefore, we do not reprint the information here, but refer the reader to that document.

NMFS has also reviewed new relevant information from the scientific literature since publication of the proposed rule. Summaries of the new key scientific literature since publication of the proposed rule are presented below.

Temporary hearing shifts have been documented in harbor seals and harbor porpoises with onset levels varying as a function of frequency. Harbor seals experienced TTS 1–4 minutes after exposure to a continuous one-sixth-octave noise band centered at 32 kHz at sound pressure levels of 92 to 152 dB re 1 µPa (Kastelein *et al.* 2020a), with the maximum TTS at 32 kHz occurring below ~176 dB re 1 $\mu Pa^2s$. These seals appeared to be equally susceptible to TTS caused by sounds in the 2.5–32 kHz range, but experienced TTS at 45 kHz occurring above ~176 dB re 1 $\mu Pa^2s$ (Kastelein *et al.* 2020a).

Harbor porpoises also experience variable temporary hearing shifts as a function of frequency. Kastelein *et al.* (2020b) documented TTS in one porpoise due to a one-sixth-octave noise band centered at 63 kHz from 154–181 dB re 1 $\mu Pa^2s$ 1–4 minutes after exposure, and to another porpoise exposed 1–4 minutes to a 88.4 kHz signal at 192 dB re 1 $\mu Pa^2s$ (no TTS was apparent in either animal at 10 or 125 kHz).

Accomando *et al.* (2020) examined the directional dependence of hearing thresholds for 2, 10, 20, and 30 kHz in two adult bottlenose dolphins. They observed that source direction (*i.e.,* the relative angle between the sound source location and the dolphin) impacted hearing thresholds for these frequencies. Sounds projected from directly behind the dolphins resulted in frequency-dependent increases in hearing thresholds of up to 18.5 dB when compared to sounds projected from in front of the dolphins. Sounds projected directly above the dolphins resulted in thresholds that were approximately 8 dB higher than those obtained when sounds were projected below the dolphins. These findings suggest that dolphins may receive lower source levels when they are oriented 180 degrees away from the sound source, and that dolphins are less sensitive to sound projected from above (leading to some spatial release from masking). Directional or spatial hearing also allows animals to locate sound sources. This study indicates dolphins can detect source direction at lower frequencies than previously thought, allowing them to successfully avoid or approach biologically significant or anthropogenic sound sources at these frequencies.

Houser *et al.* (2020) measured cortisol, aldosterone, and epinephrine levels in the blood samples of 30 bottlenose dolphins before and after exposure to simulated U.S. Navy mid-frequency sonar from 115–185 dB re: 1 µPa. They collected blood samples approximately one week prior to, immediately following, and approximately one week after exposures and analyzed for hormones via radioimmunoassay. Aldosterone levels were below the detection limits in all samples. While the observed severity of behavioral responses scaled (increased) with SPL, levels of cortisol and epinephrine did not show consistent relationships with received SPL. The authors note that it is still unclear whether intermittent, high-level acoustic stimuli elicit endocrine responses consistent with a stress response, and that additional research is needed to determine the relationship between behavioral responses and physiological responses.

In an effort to compare behavioral responses to continuous active sonar (CAS) and pulsed (intermittent) active sonar (PAS), Isojunno *et al.* (2020) conducted at-sea experiments on 16 sperm whales equipped with animal-attached sound- and movement-recording tags in Norway. They examined changes in foraging effort and proxies for foraging success and cost during sonar and control exposures after accounting for baseline variation. They observed no reduction in time spent foraging during exposures to medium-level PAS transmitted at the same peak amplitude as CAS, however they observed similar reductions in foraging during CAS and PAS when they were received at similar energy levels (SELs).

The authors note that these results support the hypothesis that sound energy (SEL) is the main cause of behavioral responses rather than sound amplitude (SPL), and that exposure context and measurements of cumulative sound energy are important considerations for future research and noise impact assessments.

Frankel and Stein (2020) used shoreline theodolite tracking to examine potential behavioral responses of southbound migrating eastern gray whales to a high-frequency active sonar system transmitted by a vessel located off the coast of California. The sonar transducer deployed from the vessel transmitted 21–25 kHz sweeps for half of each day (experimental period), and no sound the other half of the day (control period). In contrast to low-frequency active sonar tests conducted in the same area (Clark *et al.,* 1999; Tyack and Clark, 1998), no overt behavioral responses or deflections were observed in field or visual data. However, statistical analysis of the tracking data indicated that during experimental periods at received levels of approximately 148 dB re: 1 μPa2 (134 dB re: 1 μPa2 s) and less than 2 km from the transmitting vessel, gray whales deflected their migration paths inshore from the vessel. The authors indicate that these data suggest the functional hearing sensitivity of gray whales extends to at least 21 kHz. These findings agree with the predicted mysticete hearing curve and BRFs used in the analysis to estimate take by Level A harassment (PTS) and Level B harassment (behavioral response) for this rule (see the Technical Report *Criteria and Thresholds for U.S. Navy Acoustic and Explosive Effects Analysis (Phase III)*).

In February 2020, a study (Simonis *et al.,* 2020) was published titled ''Co-occurrence of beaked whale strandings and naval sonar in the Mariana Islands, Western Pacific.'' In summary, the authors compiled the publicly available information regarding Navy training exercises from 2006–2019 (from press releases, *etc.*), as well as the passive acoustic monitoring data indicating sonar use that they collected at two specific locations on HARP recorders over a shorter amount of time, and compared it to the dates of beaked whale strandings. Using this data, they reported that six of the 10 Cuvier's beaked whales, from four of eight events, stranded during or within six days of a naval ASW exercise using sonar. In a Note to the article, the authors acknowledged additional information provided by the Navy while the article was in press that one of the strandings occurred a day prior to sonar transmissions and so should not be considered coincident with sonar. The authors' analysis examined the probability that three of eight random days would fall during, or within six days after, a naval event (utilizing the Navy training events and sonar detections of which the authors were aware). Their test results indicated that the probability that three of eight stranding events were randomly associated with naval sonar was one percent.

The authors did not have access to the Navy's classified data (in the Note added to the article, Simonis *et al.* noted that the Navy was working with NMFS to make the broader classified dataset available for further statistical analysis). Later reporting by the Navy indicated there were more than three times as many sonar days in the Marianas during the designated time period than Simonis *et al.* (2020) reported. Primarily for this reason, the Navy tasked the Center for Naval Analysis (CNA) with repeating the statistical examination of Simonis *et al.* using the full classified sonar record, including ship movement information to document the precise times and locations of Navy sonar use throughout the time period of consideration (2007–2019).

The results of the Simonis *et al.* (2020) paper and the CNA analysis both suggest (the latter to a notably lesser degree) that it is more probable than not that there was some form of non-random relationship between sonar days and strandings in the Marianas during this period of time; however, the results of the Navy analysis (using the full dataset) allow, statistically, that the strandings and sonar use may not be related.

Varghese *et al.* (2020) analyzed group vocal periods from Cuvier's beaked whales during multibeam echosounder activity recorded in the Southern California Antisubmarine Warfare Range, and failed to find any clear evidence of behavioral response due to the echosounder survey. The whales did not leave the range or cease foraging.

De Soto *et al.* (2020) hypothesized that the high degree of vocal synchrony in beaked whales during their deep foraging dives, coupled with their silent, low-angled ascents, have evolved as an anti-predator response to killer whales. Since killer whales do not dive deep when foraging and so may be waiting at the surface for animals to finish a dive, these authors speculated that by diving in spatial and vocal cohesion with all members of their group, and by surfacing silently and up to a kilometer away from where they were vocally active during the dive, they minimize the ability of killer whales to locate them when at the surface. This may lead to a trade-off for the larger, more fit animals that could conduct longer foraging dives, such that all members of the group remain together and are better protected by this behavior. The authors further speculate that this may explain the long, slow, silent, and shallow ascents that beaked whales make when sonar occurs during a deep foraging dive. However, these hypotheses are based only on the dive behavior of tagged beaked whales, with no observations of predation attempts by killer whales, and need to be tested further to be validated.

Having considered the new information, along with information provided in public comments on the proposed rule, we have determined that there is no new information that substantively affects our analysis of potential impacts on marine mammals and their habitat that appeared in the proposed rule, all of which remains applicable and valid for our assessment of the effects of the Navy's activities during the seven-year period of this rule.

**Estimated Take of Marine Mammals**

This section indicates the number of takes that NMFS is authorizing, which is based on the amount of take that NMFS anticipates could occur or the maximum amount that is reasonably likely to occur, depending on the type of take and the methods used to estimate it, as described in detail below. NMFS coordinated closely with the Navy in the development of their incidental take application, and agrees that the methods the Navy has put forth described herein to estimate take (including the model, thresholds, and density estimates), and the resulting numbers are based on the best available science and appropriate for authorization. Nonetheless, since publication of the proposed rule, the Navy has adjusted their planned activity by reducing the number of times Mine Countermeasure and Neutralization testing could occur over the seven-year authorization. This change in action resulted in decreases in estimated take over seven years for the following species: fin whale, sei whale, minke whale, humpback whale, gray whale, northern right whale dolphin, Pacific white-sided dolphin, Risso's dolphin, *Kogia* whales, Dall's porpoise, harbor porpoise, California sea lion, Steller sea lion, harbor seal, and northern elephant seal. These changes also resulted in a reduction in HF4 sonar hours associated with Mine Countermeasure and

Neutralization testing; however, this reduction is not shown quantitatively.

Takes are predominantly in the form of harassment, but a small number of mortalities are also possible. For a 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 such behavioral patterns are abandoned or significantly altered (Level B Harassment).

Authorized takes will primarily be in the form of Level B harassment, as use of the acoustic and explosive sources (*i.e.,* sonar and explosives) is more likely to result in behavioral disturbance (rising to the level of a take as described above) or temporary threshold shift (TTS) for marine mammals than other forms of take. There is also the potential for Level A harassment, however, in the form of auditory injury, to result from exposure to the sound sources utilized in training and testing activities. No Level A harassment from tissue damage is anticipated or authorized. Lastly, no more than three serious injuries or mortalities total (over the seven-year period) of large whales could potentially occur through vessel collisions. Although we analyze the impacts of these potential serious injuries or mortalities that are authorized, the planned mitigation and monitoring measures are expected to minimize the likelihood (*i.e.,* further lower the already low probability) that ship strike (and the associated serious injury or mortality) would occur.

The Navy has not requested, and NMFS does not anticipate or authorize, incidental take by mortality of beaked whales or any other species as a result of sonar use. As discussed in the proposed rule, there are a few cases where active naval sonar (in the United States or, largely, elsewhere) has either potentially contributed to or been more definitively causally linked with marine mammal mass strandings. There are a suite of factors that have been associated with these specific cases of strandings (steep bathymetry, multiple hull-mounted platforms using sonar simultaneously, constricted channels, strong surface ducts, *etc.*) that are not present together in the NWTT Study Area and during the specified activities. The number of incidences of strandings resulting from exposure to active sonar are few worldwide, there are no major training exercises utilizing multiple-hull-mounted sonar in the NWTT Study Area, the overall amount of active sonar use is low relative to other Navy Study Areas, and there have not been any documented mass strandings of any cetacean species in the NWTT Study Area. Accordingly, mortality is not anticipated or authorized.

Generally speaking, for acoustic impacts NMFS estimates the amount and type of harassment by considering: (1) Acoustic thresholds above which NMFS believes the best available science indicates marine mammals will be taken by behavioral disturbance (in this case, as defined in the military readiness definition of Level B harassment included above) or incur some degree of temporary or permanent hearing impairment; (2) the area or volume of water that will be ensonified above these levels in a day or event; (3) the density or occurrence of marine mammals within these ensonified areas; and (4) the number of days of activities or events. Below, we describe these components in more detail and present the take estimates.

*Acoustic Thresholds*

Using the best available science, NMFS, in coordination with the Navy, has established acoustic thresholds that identify the most appropriate received level of underwater sound above which marine mammals exposed to these sound sources could be reasonably expected to experience a disruption in behavior patterns to a point where they are abandoned or significantly altered, or to incur TTS (equated to Level B harassment) or PTS of some degree (equated to Level A harassment). Thresholds have also been developed to identify the pressure levels above which animals may incur non-auditory injury from exposure to pressure waves from explosive detonation.

Despite the quickly evolving science, there are still challenges in quantifying expected behavioral responses that qualify as take by Level B harassment, especially where the goal is to use one or two predictable indicators (*e.g.,* received level and distance) to predict responses that are also driven by additional factors that cannot be easily incorporated into the thresholds (*e.g.,* context). So, while the thresholds that identify Level B harassment by behavioral disturbance (referred to as ''behavioral harassment thresholds'') have been refined to better consider the best available science (*e.g.,* incorporating both received level and distance), they also still have some built-in conservative factors to address the challenge noted. For example, while duration of observed responses in the data are now considered in the thresholds, some of the responses that are informing take thresholds are of a very short duration, such that it is possible some of these responses might not always rise to the level of disrupting behavior patterns to a point where they are abandoned or significantly altered. We describe the application of this Level B harassment threshold as identifying the maximum number of instances in which marine mammals could be reasonably expected to experience a disruption in behavior patterns to a point where they are abandoned or significantly altered. In summary, we believe these thresholds are the most appropriate method for predicting Level B harassment by behavioral disturbance given the best available science and the associated uncertainty.

Hearing Impairment (TTS/PTS) and Tissue Damage and Mortality

NMFS' Acoustic Technical Guidance (NMFS, 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 Acoustic Technical Guidance also identifies criteria to predict TTS, which is not considered injury and falls into the Level B harassment category. The Navy's planned activity includes the use of non-impulsive (sonar) and impulsive (explosives) sources.

These thresholds (Tables 10 and 11) were developed by compiling and synthesizing the best available science and soliciting input multiple times from both the public and peer reviewers. The references, analysis, and methodology used in the development of the thresholds are described in the Acoustic Technical Guidance, which may be accessed at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance.*

TABLE 10—ACOUSTIC THRESHOLDS IDENTIFYING THE ONSET OF TTS AND PTS FOR NON-IMPULSIVE SOUND SOURCES BY FUNCTIONAL HEARING GROUPS

| Functional hearing group | Non-impulsive | |
|---|---|---|
| | TTS threshold SEL (weighted) | PTS threshold SEL (weighted) |
| Low-Frequency Cetaceans | 179 | 199 |
| Mid-Frequency Cetaceans | 178 | 198 |
| High-Frequency Cetaceans | 153 | 173 |
| Phocid Pinnipeds (Underwater) | 181 | 201 |
| Otarid Pinnipeds (Underwater) | 199 | 219 |

**Note:** SEL thresholds in dB re: 1 $\mu Pa^2s$.

Based on the best available science, the Navy (in coordination with NMFS) used the acoustic and pressure thresholds indicated in Table 11 to predict the onset of TTS, PTS, tissue damage, and mortality for explosives (impulsive) and other impulsive sound sources.

TABLE 11—ONSET OF TTS, PTS, TISSUE DAMAGE, AND MORTALITY THRESHOLDS FOR MARINE MAMMALS FOR EXPLOSIVES

| Functional hearing group | Species | Onset TTS [1] | Onset PTS | Mean onset slight GI tract injury | Mean onset slight lung injury | Mean onset mortality |
|---|---|---|---|---|---|---|
| Low-frequency cetaceans. | All mysticetes | 168 dB SEL (weighted)or 213 dB Peak SPL. | 183 dB SEL (weighted)or 219 dB Peak SPL. | 237 dB Peak SPL | Equation 1 | Equation 2. |
| Mid-frequency cetaceans. | Most delphinids, medium and large toothed whales. | 170 dB SEL(weighted) or 224 dB Peak SPL. | 185 dB SEL (weighted)or 230 dB Peak SPL. | 237 dB Peak SPL | | |
| High-frequency cetaceans. | Porpoises and *Kogia spp.*. | 140 dB SEL (weighted)or 196 dB Peak SPL. | 155 dB SEL (weighted) or 202 dB Peak SPL. | 237 dB Peak SPL | | |
| Phocidae | Harbor seal, Hawaiian monk seal, Northern elephant seal. | 170 dB SEL (weighted)or 212 dB Peak SPL. | 185 dB SEL (weighted)or 218 dB Peak SPL. | 237 dB Peak SPL | | |
| Otariidae | California sea lion, Guadalupe fur seal, Northern fur seal. | 188 dB SEL (weighted) or 226 dB Peak SPL. | 203 dB SEL (weighted) or 232 dB Peak SPL. | 237 dB Peak SPL | | |

**Notes:** (1) Equation 1: $47.5M^{1/3}$ $(1+[D_{Rm}/10.1])^{1/6}$ Pa-sec (2) Equation 2: $103M^{1/3}$ $(1+[D_{Rm}/10.1])^{1/6}$ Pa-sec (3) M = mass of the animals in kg (4) $D_{Rm}$ = depth of the receiver (animal) in meters (5) SPL = sound pressure level.
[1] Peak thresholds are unweighted.

The criteria used to assess the onset of TTS and PTS due to exposure to sonars (non-impulsive, see Table 10 above) are discussed further in the Navy's rulemaking/LOA application (see Hearing Loss from Sonar and Other Transducers in Chapter 6, Section 6.4.2.1, Methods for Analyzing Impacts from Sonars and Other Transducers). Refer to the *Criteria and Thresholds for U.S. Navy Acoustic and Explosive Effects Analysis* (Phase III) report (U.S. Department of the Navy, 2017c) for detailed information on how the criteria and thresholds were derived. Tables 30 indicates the range to effects for tissue damage for different explosive types. Non-auditory injury (*i.e.,* other than PTS) and mortality from sonar and other transducers is not reasonably likely to result for the reasons explained in the proposed rule under the Potential Effects of Specified Activities on Marine Mammals and Their Habitat section—*Acoustically Mediated Bubble Growth and other Pressure-related Injury* and the additional discussion in this final rule and is therefore not considered further in this analysis.

The mitigation measures associated with explosives are expected to be effective in preventing tissue damage to any potentially affected species, and no species are anticipated to incur tissue damage during the period of this rule. Specifically, the Navy will implement mitigation measures (described in the Mitigation Measures section) during explosive activities, including delaying detonations when a marine mammal is observed in the mitigation zone. Nearly all explosive events will occur during daylight hours to improve the sightability of marine mammals and thereby improve mitigation effectiveness. Observing for marine mammals during the explosive activities will include visual and passive acoustic detection methods (when they are available and part of the activity) before the activity begins, in order to cover the mitigation zones that can range from 500 yd (457 m) to 2,500 yd (2,286 m) depending on the source (*e.g.,* explosive sonobuoy, explosive torpedo, explosive bombs; see Tables 38–44).

Level B Harassment by Behavioral Disturbance

Though significantly driven by received level, the onset of Level B harassment by 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 (Ellison *et al.,* 2011; Southall *et al.,* 2007). Based on what the available science indicates and the practical need to use thresholds based on a factor, or factors, that are both predictable and measurable for most activities, NMFS uses generalized acoustic thresholds based primarily on received level (and distance in some cases) to estimate the onset of Level B harassment by behavioral disturbance.

Sonar

As noted above, the Navy coordinated with NMFS to develop, and propose for use in this rule, thresholds specific to their military readiness activities utilizing active sonar that identify at what received level and distance Level B harassment by behavioral disturbance would be expected to result. These thresholds are referred to as ''behavioral harassment thresholds'' throughout the rest of the rule. These behavioral harassment thresholds consist of BRFs and associated cutoff distances, and are also referred to, together, as ''the criteria.'' These criteria are used to estimate the number of animals that may exhibit a behavioral response that qualifies as a take when exposed to sonar and other transducers. The way the criteria were derived is discussed in detail in the *Criteria and Thresholds for U.S. Navy Acoustic and Explosive Effects Analysis (Phase III)* report (U.S. Department of the Navy, 2017c). Developing these behavioral harassment criteria involved multiple steps. All peer-reviewed published behavioral response studies conducted both in the field and on captive animals were examined in order to understand the breadth of behavioral responses of marine mammals to sonar and other transducers. NMFS has carefully reviewed the Navy's criteria, *i.e.,* BRFs and cutoff distances for these species, and agrees that they are the best available science and the appropriate method to use at this time for determining impacts to marine mammals from sonar and other transducers and for calculating take and to support the determinations made in this rule. The Navy and NMFS will continue to evaluate the information as new science becomes available. The criteria have been rigorously vetted within the Navy community, among scientists during expert elicitation, and then reviewed by the public before being applied. It is not necessary or possible to revise and update the criteria and risk functions every time a new paper is published. The Navy and NMFS consider new information as it becomes available for updates to the criteria in the future, when the next round of updated criteria will be developed. Thus far, no new information has been published or otherwise conveyed that would fundamentally change the assessment of impacts or conclusions of the 2020 NWTT FSEIS/OEIS or this rule.

As discussed above, marine mammal responses to sound (some of which are considered disturbances that qualify as a take) are highly variable and context specific, *i.e.,* they are affected by differences in acoustic conditions; differences between species and populations; differences in gender, age, reproductive status, or social behavior; and other prior experience of the individuals. This means that there is support for considering alternative approaches for estimating Level B harassment by behavioral disturbance. Although the statutory definition of Level B harassment for military readiness activities means that a natural behavioral pattern of a marine mammal is significantly altered or abandoned, the current state of science for determining those thresholds is somewhat unsettled.

In its analysis of impacts associated with sonar acoustic sources (which was coordinated with NMFS), the Navy used an updated conservative approach that likely overestimates the number of takes by Level B harassment due to behavioral disturbance and response. Many of the behavioral responses identified using the Navy's quantitative analysis are most likely to be of moderate severity as described in the Southall *et al.* (2007) behavioral response severity scale. These ''moderate'' severity responses were considered significant if they were sustained for the duration of the exposure or longer. Within the Navy's quantitative analysis, many reactions are predicted from exposure to sound that may exceed an animal's threshold for Level B harassment by behavioral disturbance for only a single exposure (a few seconds) to several minutes, and it is likely that some of the resulting estimated behavioral responses that are counted as Level B harassment would not constitute significant alteration or abandonment of the natural behavioral patterns. The Navy and NMFS have used the best available science to address the challenging differentiation between significant and non-significant behavioral reactions (*i.e.,* whether the behavior has been abandoned or significantly altered such that it qualifies as harassment), but have erred on the cautious side where uncertainty exists (*e.g.,* counting these lower duration reactions as take), which likely results in some degree of overestimation of Level B harassment by behavioral disturbance. We consider application of these behavioral harassment thresholds, therefore, as identifying the maximum number of instances in which marine mammals could be reasonably expected to experience a disruption in behavior patterns to a point where they are abandoned or significantly altered (*i.e.,* Level B harassment). Because this is the most appropriate method for estimating Level B harassment given the best available science and uncertainty on the topic, it is these numbers of Level B harassment by behavioral disturbance that are analyzed in the Analysis and Negligible Impact Determination section and are authorized.

In the Navy's acoustic impact analyses during Phase II (the previous phase of Navy testing and training, 2015–2020; see also Navy's *Criteria and Thresholds for U.S. Navy Acoustic and Explosive Effects Analysis Technical Report,* 2012), the likelihood of Level B harassment by behavioral disturbance in response to sonar and other transducers was based on a probabilistic function (BRF), that related the likelihood (*i.e.,* probability) of a behavioral response (at the level of a Level B harassment) to the received SPL. The BRF was used to estimate the percentage of an exposed population that is likely to exhibit Level B harassment due to altered behaviors or behavioral disturbance at a given received SPL. This BRF relied on the assumption that sound poses a negligible risk to marine mammals if they are exposed to SPL below a certain ''basement'' value. Above the basement exposure SPL, the probability of a response increased with increasing SPL. Two BRFs were used in Navy acoustic impact analyses: BRF1 for mysticetes and BRF2 for other species. BRFs were not used for beaked whales during Phase II analyses. Instead, a step function at an SPL of 140 dB re: 1 µPa was used for beaked whales as the threshold to predict Level B harassment by behavioral disturbance.

Developing the criteria for Level B harassment by behavioral disturbance for Phase III (the current phase of Navy training and testing activities) involved multiple steps: all available behavioral response studies conducted both in the field and on captive animals were examined to understand the breadth of behavioral responses of marine mammals to sonar and other transducers (see also Navy's *Criteria and Thresholds*

*for U.S. Navy Acoustic and Explosive Effects Analysis (Phase III) Technical Report,* 2017). Six behavioral response field studies with observations of 14 different marine mammal species reactions to sonar or sonar-like signals and 6 captive animal behavioral studies with observations of 8 different species reactions to sonar or sonar-like signals were used to provide a robust data set for the derivation of the Navy's Phase III marine mammal behavioral response criteria. All behavioral response research that has been published since the derivation of the Navy's Phase III criteria (c.a. December 2016) has been examined and is consistent with the current BRFs. Marine mammal species were placed into behavioral criteria groups based on their known or presumed behavioral sensitivities to sound. In most cases these divisions were driven by taxonomic classifications (*e.g.,* mysticetes, pinnipeds). The data from the behavioral studies were analyzed by looking for significant responses, or lack thereof, for each experimental session. The resulting four Bayesian Biphasic Dose Response Functions (referred to as the BRFs) that were developed for odontocetes, pinnipeds, mysticetes, and beaked whales predict the probability of a behavioral response qualifying as Level B harassment given exposure to certain received levels of sound. These BRFs are then used in combination with the cutoff distances described below to estimate the number of takes by Level B harassment.

The Navy used cutoff distances beyond which the potential of significant behavioral responses (and therefore Level B harassment) is considered to be unlikely (see Table 12 below). This was determined by examining all available published field observations of behavioral reactions to sonar or sonar-like signals that included the distance between the sound source and the marine mammal. The longest distance, rounded up to the nearest 5-km increment, was chosen as the cutoff distance for each behavioral criteria group (*i.e.* odontocetes, mysticetes, pinnipeds, and beaked whales). For animals within the cutoff distance, a BRF based on a received SPL as presented in Chapter 6, Section 6.4.2.1 (Methods for Analyzing Impacts from Sonars and other Transducers) of the Navy's rulemaking/LOA application was used to predict the probability of a potential significant behavioral response. For training and testing events that contain multiple platforms or tactical sonar sources that exceed 215 dB re: 1 μPa at 1 m, this cutoff distance is substantially increased (*i.e.,* doubled) from values derived from the literature. The use of multiple platforms and intense sound sources are factors that probably increase responsiveness in marine mammals overall (however, we note that helicopter dipping sonars were considered in the intense sound source group, despite lower source levels, because of data indicating that marine mammals are sometimes more responsive to the less predictable employment of this source). There are currently few behavioral observations under these circumstances; therefore, the Navy conservatively predicted significant behavioral responses that will rise to Level B harassment at farther ranges as shown in Table 12, versus less intense events.

TABLE 12—CUTOFF DISTANCES FOR MODERATE SOURCE LEVEL, SINGLE PLATFORM TRAINING AND TESTING EVENTS AND FOR ALL OTHER EVENTS WITH MULTIPLE PLATFORMS OR SONAR WITH SOURCE LEVELS AT OR EXCEEDING 215 dB RE: 1 μPa AT 1 m

| Criteria group | Moderate SL/ single platform cutoff distance (km) | High SL/multi-platform cutoff distance (km) |
|---|---|---|
| Odontocetes | 10 | 20 |
| Pinnipeds | 5 | 10 |
| Mysticetes | 10 | 20 |
| Beaked Whales | 25 | 50 |
| Harbor Porpoise | 20 | 40 |

**Notes:** dB re: 1 μPa at 1 m = decibels referenced to 1 micropascal at 1 meter, km = kilometer, SL = source level.

The range to received sound levels in 6-dB steps from five representative sonar bins and the percentage of animals that may be taken by Level B harassment at the received level and distance indicated under each BRF are shown in Tables 13 through 17. Cells are shaded if the mean range value for the specified received level exceeds the distance cutoff range for a particular hearing group and therefore are not included in the estimated take. See Chapter 6, Section 6.4.2.1 (Methods for Analyzing Impacts from Sonars and Other Transducers) of the Navy's rulemaking/LOA application for further details on the derivation and use of the BRFs, thresholds, and the cutoff distances to identify takes by Level B harassment, which were coordinated with NMFS. Table 13 illustrates the maximum likely percentage of exposed individuals taken at the indicated received level and associated range (in which marine mammals would be reasonably expected to experience a disruption in behavioral patterns to a point where they are abandoned or significantly altered) for low-frequency active sonar (LFAS). As noted previously, NMFS carefully reviewed, and contributed to, the Navy's behavioral harassment thresholds (*i.e.,* the BRFs and the cutoff distances) for the species, and agrees that these methods represent the best available science at this time for determining impacts to marine mammals from sonar and other transducers.

TABLE 13—RANGES TO ESTIMATED LEVEL B HARASSMENT BY BEHAVIORAL DISTURBANCE FOR SONAR BIN LF4 OVER A REPRESENTATIVE RANGE OF ENVIRONMENTS WITHIN THE NWTT STUDY AREA

| Received level (dB re: 1 μPa) | Average range (m) with minimum and maximum values in parentheses | Probability of behavioral response for sonar bin LF4 | | | | |
|---|---|---|---|---|---|---|
| | | Odontocete (%) | Mysticete (%) | Pinniped (%) | Beaked whale (%) | Harbor porpoise (%) |
| 196 | 1 (0–1) | 100 | 100 | 100 | 100 | 100 |
| 190 | 3 (0–3) | 100 | 98 | 99 | 100 | 100 |
| 184 | 6 (0–8) | 99 | 88 | 98 | 100 | 100 |
| 178 | 13 (0–30) | 97 | 59 | 92 | 100 | 100 |
| 172 | 29 (0–230) | 91 | 30 | 76 | 99 | 100 |
| 166 | 64 (0–100) | 78 | 20 | 48 | 97 | 100 |
| 160 | 148 (0–310) | 58 | 18 | 27 | 93 | 100 |
| 154 | 366 (230–850) | 40 | 17 | 18 | 83 | 100 |
| 148 | 854 (300–2,025) | 29 | 16 | 16 | 66 | 100 |
| 142 | 1,774 (300–5,025) | 25 | 13 | 15 | 45 | 100 |
| 136 | 3,168 (300–8,525) | 23 | 9 | 15 | 28 | 100 |
| 130 | 5,167 (300–30,525) | 20 | 5 | 15 | 18 | 100 |
| 124 | 7,554 (300–93,775) | 17 | 2 | 14 | 14 | 100 |
| 118 | 10,033 (300–100,000*) | 12 | 1 | 13 | 12 | 0 |
| 112 | 12,700 (300–100,000*) | 6 | 0 | 9 | 11 | 0 |
| 106 | 15,697 (300–100,000*) | 3 | 0 | 5 | 11 | 0 |
| 100 | 17,846 (300–100,000*) | 1 | 0 | 2 | 8 | 0 |

**Notes:** dB re: 1 μPa = decibels referenced to 1 micropascal, LF = low-frequency

* Indicates maximum range to which acoustic model was run, a distance of approximately 100 km from the sound source. Cells are shaded if the mean range value for the specified received level exceeds the distance cutoff range for a particular hearing group. Any impacts within the cutoff range for a criteria group are included in the estimated impacts. Cut-off ranges in this table are for activities with high source levels and/or multiple platforms (see Table 12 for behavioral cut-off distances).

Tables 14 through 16 identify the maximum likely percentage of exposed individuals taken at the indicated received level and associated range for mid-frequency active sonar (MFAS).

TABLE 14—RANGES TO ESTIMATED LEVEL B HARASSMENT BY BEHAVIORAL DISTURBANCE FOR SONAR BIN MF1 OVER A REPRESENTATIVE RANGE OF ENVIRONMENTS WITHIN THE NWTT STUDY AREA

| Received level (dB re: 1 μPa) | Average range (m) with minimum and maximum values in parentheses | Probability of Level B harassment by behavioral disturbance for Sonar bin MF1 | | | | |
|---|---|---|---|---|---|---|
| | | Odontocete (%) | Mysticete (%) | Pinniped (%) | Beaked whale (%) | Harbor porpoise (%) |
| 196 | 112 (80–170) | 100 | 100 | 100 | 100 | 100 |
| 190 | 262 (80–410) | 100 | 98 | 99 | 100 | 100 |
| 184 | 547 (80–1,025) | 99 | 88 | 98 | 100 | 100 |
| 178 | 1,210 (80–3,775) | 97 | 59 | 92 | 100 | 100 |
| 172 | 2,508 (80–7,525) | 91 | 30 | 76 | 99 | 100 |
| 166 | 4,164 (80–16,025) | 78 | 20 | 48 | 97 | 100 |
| 160 | 6,583 (80–28,775) | 58 | 18 | 27 | 93 | 100 |
| 154 | 10,410 (80–47,025) | 40 | 17 | 18 | 83 | 100 |
| 148 | 16,507 (80–63,525) | 29 | 16 | 16 | 66 | 100 |
| 142 | 21,111 (80–94,025) | 25 | 13 | 15 | 45 | 100 |
| 136 | 26,182 (80–100,000 *) | 23 | 9 | 15 | 28 | 100 |
| 130 | 31,842 (80–100,000 *) | 20 | 5 | 15 | 18 | 100 |
| 124 | 34,195 (80–100,000 *) | 17 | 2 | 14 | 14 | 100 |
| 118 | 36,557 (80–100,000 *) | 12 | 1 | 13 | 12 | 0 |
| 112 | 38,166 (80–100,000 *) | 6 | 0 | 9 | 11 | 0 |
| 106 | 39,571 (80–100,000 *) | 3 | 0 | 5 | 11 | 0 |
| 100 | 41,303 (80–100,000 *) | 1 | 0 | 2 | 8 | 0 |

**Notes:** dB re: 1 μPa = decibels referenced to 1 micropascal, MF = mid-frequency.

* Indicates maximum range to which acoustic model was run, a distance of approximately 100 km from the sound source. Cells are shaded if the mean range value for the specified received level exceeds the distance cutoff range for a particular hearing group. Any impacts within the cutoff range for a criteria group are included in the estimated impacts. Cut-off ranges in this table are for activities with high source levels and/or multiple platforms (see Table 12 for behavioral cut-off distances).

TABLE 15—RANGES TO ESTIMATED TAKES BY LEVEL B HARASSMENT BY BEHAVIORAL DISTURBANCE FOR SONAR BIN MF4 OVER A REPRESENTATIVE RANGE OF ENVIRONMENTS WITHIN THE NWTT STUDY AREA

| Received level (dB re: 1 μPa) | Average range (m) with minimum and maximum values in parentheses | Probability of Level B harassment by behavioral disturbance for Sonar bin MF4 | | | | |
|---|---|---|---|---|---|---|
| | | Odontocete | Mysticete | Pinniped | Beaked whale | Harbor porpoise |
| 196 | 8 (0–8) | 100 | 100 | 100 | 100 | 100 |
| 190 | 16 (0–20) | 100 | 98 | 99 | 100 | 100 |
| 184 | 34 (0–40) | 99 | 88 | 98 | 100 | 100 |
| 178 | 68 (0–85) | 97 | 59 | 92 | 100 | 100 |
| 172 | 155 (120–300) | 91 | 30 | 76 | 99 | 100 |
| 166 | 501 (290–975) | 78 | 20 | 48 | 97 | 100 |
| 160 | 1,061 (480–2,275) | 58 | 18 | 27 | 93 | 100 |
| 154 | 1,882 (525–4,025) | 40 | 17 | 18 | 83 | 100 |
| 148 | 2,885 (525–7,525) | 29 | 16 | 16 | 66 | 100 |
| 142 | 4,425 (525–14,275) | 25 | 13 | 15 | 45 | 100 |
| 136 | 9,902 (525–48,275) | 23 | 9 | 15 | 28 | 100 |
| 130 | 20,234 (525–56,025) | 20 | 5 | 15 | 18 | 100 |
| 124 | 23,684 (525–91,775) | 17 | 2 | 14 | 14 | 100 |
| 118 | 28,727 (525–100,000 *) | 12 | 1 | 13 | 12 | 0 |
| 112 | 37,817 (525–100,000 *) | 6 | 0 | 9 | 11 | 0 |
| 106 | 42,513 (525–100,000 *) | 3 | 0 | 5 | 11 | 0 |
| 100 | 43,367 (525–100,000 *) | 1 | 0 | 2 | 8 | 0 |

**Notes:** dB re: 1 μPa = decibels referenced to 1 micropascal, MF = mid-frequency.

* Indicates maximum range to which acoustic model was run, a distance of approximately 100 km from the sound source. Cells are shaded if the mean range value for the specified received level exceeds the distance cutoff range for a particular hearing group. Any impacts within the cutoff range for a criteria group are included in the estimated impacts. Cut-off ranges in this table are for activities with high source levels and/or multiple platforms (see Table 12 for behavioral cut-off distances).

TABLE 16—RANGES TO ESTIMATED LEVEL B HARASSMENT BY BEHAVIORAL DISTURBANCE FOR SONAR BIN MF5 OVER A REPRESENTATIVE RANGE OF ENVIRONMENTS WITHIN THE NWTT STUDY AREA

| Received level (dB re: 1 μPa) | Average range (m) with minimum and maximum values in parentheses | Probability of Level B harassment by behavioral disturbance for Sonar bin MF5 | | | | |
|---|---|---|---|---|---|---|
| | | Odontocete | Mysticete | Pinniped | Beaked whale | Harbor porpoise |
| 196 | 0 (0–0) | 100 | 100 | 100 | 100 | 100 |
| 190 | 1 (0–3) | 100 | 98 | 99 | 100 | 100 |
| 184 | 5 (0–7) | 99 | 88 | 98 | 100 | 100 |
| 178 | 14 (0–18) | 97 | 59 | 92 | 100 | 100 |
| 172 | 29 (0–35) | 91 | 30 | 76 | 99 | 100 |
| 166 | 58 (0–70) | 78 | 20 | 48 | 97 | 100 |
| 160 | 127 (0–280) | 58 | 18 | 27 | 93 | 100 |
| 154 | 375 (0–1,000) | 40 | 17 | 18 | 83 | 100 |
| 148 | 799 (490–1,775) | 29 | 16 | 16 | 66 | 100 |
| 142 | 1,677 (600–3,525) | 25 | 13 | 15 | 45 | 100 |
| 136 | 2,877 (675–7,275) | 23 | 9 | 15 | 28 | 100 |
| 130 | 4,512 (700–12,775) | 20 | 5 | 15 | 18 | 100 |
| 124 | 6,133 (700–19,275) | 17 | 2 | 14 | 14 | 100 |
| 118 | 7,880 (700–26,275) | 12 | 1 | 13 | 12 | 0 |
| 112 | 9,673 (700–33,525) | 6 | 0 | 9 | 11 | 0 |
| 106 | 12,095 (700–45,275) | 3 | 0 | 5 | 11 | 0 |
| 100 | 18,664 (700–48,775) | 1 | 0 | 2 | 8 | 0 |

**Notes:** dB re: 1 μPa = decibels referenced to 1 micropascal, MF = mid-frequency.

* Cells are shaded if the mean range value for the specified received level exceeds the distance cutoff range for a particular hearing group. Any impacts within the cutoff range for a criteria group are included in the estimated impacts. Cut-off ranges in this table are for activities with high source levels and/or multiple platforms (see Table 12 for behavioral cut-off distances).

TABLE 17—RANGES TO ESTIMATED TAKE BY LEVEL B HARASSMENT BY BEHAVIORAL DISTURBANCE FOR SONAR BIN HF4 OVER A REPRESENTATIVE RANGE OF ENVIRONMENTS WITHIN THE NWTT STUDY AREA

| Received level (dB re: 1 μPa) | Average range (m) with minimum and maximum values in parentheses | Probability of Level B harassment by behavioral disturbance for Sonar bin HF4 | | | | |
|---|---|---|---|---|---|---|
| | | Odontocete | Mysticete | Pinniped | Beaked whale | Harbor porpoise |
| 196 | 4 (0–7) | 100 | 100 | 100 | 100 | 100 |
| 190 | 10 (0–16) | 100 | 98 | 99 | 100 | 100 |
| 184 | 20 (0–40) | 99 | 88 | 98 | 100 | 100 |
| 178 | 42 (0–85) | 97 | 59 | 92 | 100 | 100 |
| 172 | 87 (0–270) | 91 | 30 | 76 | 99 | 100 |
| 166 | 177 (0–650) | 78 | 20 | 48 | 97 | 100 |
| 160 | 338 (25–825) | 58 | 18 | 27 | 93 | 100 |
| 154 | 577 (55–1,275) | 40 | 17 | 18 | 83 | 100 |
| 148 | 846 (60–1,775) | 29 | 16 | 16 | 66 | 100 |
| 142 | 1,177 (60–2,275) | 25 | 13 | 15 | 45 | 100 |
| 136 | 1,508 (60–3,025) | 23 | 9 | 15 | 28 | 100 |
| 130 | 1,860 (60–3,525) | 20 | 5 | 15 | 18 | 100 |
| 124 | 2,202 (60–4,275) | 17 | 2 | 14 | 14 | 100 |
| 118 | 2,536 (60–4,775) | 12 | 1 | 13 | 12 | 0 |
| 112 | 2,850 (60–5,275) | 6 | 0 | 9 | 11 | 0 |
| 106 | 3,166 (60–6,025) | 3 | 0 | 5 | 11 | 0 |
| 100 | 3,470 (60–6,775) | 1 | 0 | 2 | 8 | 0 |

**Notes:** dB re: 1 μPa = decibels referenced to 1 micropascal, MF = mid-frequency.

Explosives

Phase III explosive thresholds for Level B harassment by behavioral disturbance for marine mammals is the hearing groups' TTS threshold minus 5 dB (see Table 18 below and Table 11 for the TTS thresholds for explosives) for events that contain multiple impulses from explosives underwater. This was the same approach as taken in Phase II for explosive analysis. See the *Criteria and Thresholds for U.S. Navy Acoustic and Explosive Effects Analysis (Phase III)* report (U.S. Department of the Navy, 2017c) for detailed information on how the criteria and thresholds were derived. NMFS continues to concur that this approach represents the best available science for determining impacts to marine mammals from explosives.

TABLE 18—THRESHOLDS FOR LEVEL B HARASSMENT BY BEHAVIORAL DISTURBANCE FOR EXPLOSIVES FOR MARINE MAMMALS

| Medium | Functional hearing group | SEL (weighted) |
|---|---|---|
| Underwater | Low-frequency cetaceans | 163 |
| Underwater | Mid-frequency cetaceans | 165 |
| Underwater | High-frequency cetaceans | 135 |
| Underwater | Phocids | 165 |
| Underwater | Otariids | 183 |

**Note:** Weighted SEL thresholds in dB re: 1 $\mu Pa^2s$ underwater.

*Navy's Acoustic Effects Model*

The Navy's Acoustic Effects Model calculates sound energy propagation from sonar and other transducers and explosives during naval activities and the sound received by animat dosimeters. Animat dosimeters are virtual representations of marine mammals distributed in the area around the modeled naval activity and each dosimeter records its individual sound ''dose.'' The model bases the distribution of animats over the NWTT Study Area on the density values in the *Navy Marine Species Density Database* and distributes animats in the water column proportional to the known time that species spend at varying depths.

The model accounts for environmental variability of sound propagation in both distance and depth when computing the sound level received by the animats. The model conducts a statistical analysis based on multiple model runs to compute the estimated effects on animals. The number of animats that exceed the thresholds for effects is tallied to provide an estimate of the number of marine mammals that could be affected.

Assumptions in the Navy model intentionally err on the side of overestimation when there are unknowns. Naval activities are modeled as though they would occur regardless of proximity to marine mammals, meaning that no mitigation is considered (*i.e.,* no power down or shut down modeled) and without any avoidance of the activity by the animal. The final step of the quantitative analysis of acoustic effects is to consider the implementation of mitigation and the possibility that marine mammals would avoid continued or repeated sound exposures. For more information on this process, see the discussion in the *Take Requests* subsection below. Many explosions from ordnance such as bombs and missiles actually occur upon impact with above-water targets. However, for this analysis, sources such as these were modeled as exploding underwater, which overestimates the amount of explosive and acoustic energy entering the water.

The model estimates the impacts caused by individual training and testing exercises. During any individual modeled event, impacts to individual animats are considered over 24-hour periods. The animats do not represent actual animals, but rather they represent a distribution of animals based on density and abundance data, which

allows for a statistical analysis of the number of instances that marine mammals may be exposed to sound levels resulting in an effect. Therefore, the model estimates the number of instances in which an effect threshold was exceeded over the course of a year, but does not estimate the number of individual marine mammals that may be impacted over a year (*i.e.,* some marine mammals could be impacted several times, while others would not experience any impact). A detailed explanation of the Navy's Acoustic Effects Model is provided in the technical report *Quantifying Acoustic Impacts on Marine Mammals and Sea Turtles: Methods and Analytical Approach for Phase III Training and Testing* (U.S. Department of the Navy, 2018).

*Range to Effects*

The following section provides range to effects for sonar and other active acoustic sources as well as explosives to specific acoustic thresholds determined using the Navy Acoustic Effects Model. Marine mammals exposed within these ranges for the shown duration are predicted to experience the associated effect. Range to effects is important information in not only predicting acoustic impacts, but also in verifying the accuracy of model results against real-world situations and determining adequate mitigation ranges to avoid higher level effects, especially physiological effects to marine mammals.

Sonar

The ranges to received sound levels in 6–dB steps from five representative sonar bins and the percentage of the total number of animals that may exhibit a significant behavioral response (and therefore Level B harassment) under each BRF are shown in Tables 13 through 17 above, respectively. See Chapter 6, Section 6.4.2.1 (Methods for Analyzing Impacts from Sonars and Other Transducers) of the Navy's rulemaking/LOA application for additional details on the derivation and use of the BRFs, thresholds, and the cutoff distances that are used to identify Level B harassment by behavioral disturbance. NMFS has reviewed the range distance to effect data provided by the Navy and concurs with the analysis.

The ranges to PTS for five representative sonar systems for an exposure of 30 seconds is shown in Table 19 relative to the marine mammal's functional hearing group. This period (30 seconds) was chosen based on examining the maximum amount of time a marine mammal would realistically be exposed to levels that could cause the onset of PTS based on platform (*e.g.,* ship) speed and a nominal animal swim speed of approximately 1.5 m per second. The ranges provided in the table include the average range to PTS, as well as the range from the minimum to the maximum distance at which PTS is possible for each hearing group.

TABLE 19—RANGE TO PERMANENT THRESHOLD SHIFT (METERS) FOR FIVE REPRESENTATIVE SONAR SYSTEMS OVER A REPRESENTATIVE RANGE OF ENVIRONMENTS WITHIN THE NWTT STUDY AREA

| Hearing group | Approximate range in meters for pts from 30 second exposure [1] | | | | |
|---|---|---|---|---|---|
| | Sonar bin HF4 | Sonar bin LF4 | Sonar bin MF1 | Sonar bin MF4 | Sonar bin MF5 |
| High-frequency cetaceans | 38 (22–85) | 0 (0–0) | 195 (80–330) | 30 (30–40) | 9 (8–11) |
| Low-frequency cetaceans | 0 (0–0) | 2 (1–3) | 67 (60–110) | 15 (15–17) | 0 (0–0) |
| Mid-frequency cetaceans | 1 (0–3) | 0 (0–0) | 16 (16–19) | 3 (3–3) | 0 (0–0) |
| Otariids | 0 (0–0) | 0 (0–0) | 6 (6–6) | 0 (0–0) | 0 (0–0) |
| Phocids | 0 (0–0) | 0 (0–0) | 46 (45–75) | 11 (11–12) | 0 (0–0) |

[1] PTS ranges extend from the sonar or other active acoustic sound source to the indicated distance. The average range to PTS is provided as well as the range from the estimated minimum to the maximum range to PTS in parentheses.

The tables below illustrate the range to TTS for 1, 30, 60, and 120 seconds from five representative sonar systems (see Tables 20 through 24).

TABLE 20—RANGES TO TEMPORARY THRESHOLD SHIFT (METERS) FOR SONAR BIN LF4 OVER A REPRESENTATIVE RANGE OF ENVIRONMENTS WITHIN THE NWTT STUDY AREA

| Hearing group | Approximate TTS ranges (meters) [1] | | | |
|---|---|---|---|---|
| | Sonar bin LF4 | | | |
| | 1 second | 30 seconds | 60 seconds | 120 seconds |
| High-frequency cetaceans | 0 (0–0) | 0 (0–0) | 0 (0–0) | 1 (0–1) |
| Low-frequency cetaceans | 22 (19–30) | 32 (25–230) | 41 (30–230) | 61 (45–100) |
| Mid-frequency cetaceans | 0 (0–0) | 0 (0–0) | 0 (0–0) | 0 (0–0) |
| Otariids | 0 (0–0) | 0 (0–0) | 0 (0–0) | 0 (0–0) |
| Phocids | 2 (1–3) | 4 (3–4) | 4 (4–5) | 7 (6–9) |

[1] Ranges to TTS represent the model predictions in different areas and seasons within the NWTT Study Area. The zone in which animals are expected to suffer TTS extends from onset-PTS to the distance indicated. The average range to TTS is provided as well as the range from the estimated minimum to the maximum range to TTS in parentheses.

TABLE 21—RANGES TO TEMPORARY THRESHOLD SHIFT (METERS) FOR SONAR BIN MF1 OVER A REPRESENTATIVE RANGE OF ENVIRONMENTS WITHIN THE NWTT STUDY AREA

| Hearing group | Approximate TTS ranges (meters) [1] | | | |
|---|---|---|---|---|
| | Sonar bin MF1 | | | |
| | 1 second | 30 seconds | 60 seconds | 120 seconds |
| High-frequency cetaceans | 2,466 (80–6,275) | 2,466 (80–6,275) | 3,140 (80–10,275) | 3,740 (80–13,525) |
| Low-frequency cetaceans | 1,054 (80–2,775) | 1,054 (80–2,775) | 1,480 (80–4,525) | 1,888 (80–5,275) |
| Mid-frequency cetaceans | 225 (80–380) | 225 (80–380) | 331 (80–525) | 411 (80–700) |

TABLE 21—RANGES TO TEMPORARY THRESHOLD SHIFT (Meters) FOR SONAR BIN MF1 OVER A REPRESENTATIVE RANGE OF ENVIRONMENTS WITHIN THE NWTT STUDY AREA—Continued

| Hearing group | Approximate TTS ranges (meters) [1] | | | |
|---|---|---|---|---|
| | Sonar bin MF1 | | | |
| | 1 second | 30 seconds | 60 seconds | 120 seconds |
| Otariids | 67 (60–110) | 67 (60–110) | 111 (80–170) | 143 (80–250) |
| Phocids | 768 (80–2,025) | 768 (80–2,025) | 1,145 (80–3,275) | 1,388 (80–3,775) |

[1] Ranges to TTS represent the model predictions in different areas and seasons within the NWTT Study Area. The zone in which animals are expected to suffer TTS extends from onset-PTS to the distance indicated. The average range to TTS is provided as well as the range from the estimated minimum to the maximum range to TTS in parentheses.

**Note:** Ranges for 1 second and 30 second periods are identical for Bin MF1 because this system nominally pings every 50 seconds; therefore, these periods encompass only a single ping.

TABLE 22—RANGES TO TEMPORARY THRESHOLD SHIFT (Meters) FOR SONAR BIN MF4 OVER A REPRESENTATIVE RANGE OF ENVIRONMENTS WITHIN THE NWTT STUDY AREA

| Hearing group | Approximate TTS ranges (meters)[1] | | | |
|---|---|---|---|---|
| | Sonar bin MF4 | | | |
| | 1 second | 30 seconds | 60 seconds | 120 seconds |
| High-frequency cetaceans | 279 (220–600) | 647 (420–1,275) | 878 (500–1,525) | 1,205 (525–2,275) |
| Low-frequency cetaceans | 87 (85–110) | 176 (130–320) | 265 (190–575) | 477 (290–975) |
| Mid-frequency cetaceans | 22 (22–25) | 35 (35–45) | 50 (45–55) | 71 (70–85) |
| Otariids | 8 (8–8) | 15 (15–17) | 19 (19–23) | 25 (25–30) |
| Phocids | 66 (65–80) | 116 (110–200) | 173 (150–300) | 303 (240–675) |

[1] Ranges to TTS represent the model predictions in different areas and seasons within the NWTT Study Area. The zone in which animals are expected to suffer TTS extends from onset-PTS to the distance indicated. The average range to TTS is provided as well as the range from the estimated minimum to the maximum range to TTS in parentheses.

TABLE 23—RANGES TO TEMPORARY THRESHOLD SHIFT (Meters) FOR SONAR BIN MF5 OVER A REPRESENTATIVE RANGE OF ENVIRONMENTS WITHIN THE NWTT STUDY AREA

| Hearing group | Approximate TTS ranges (meters) [1] | | | |
|---|---|---|---|---|
| | Sonar nin MF5 | | | |
| | 1 second | 30 seconds | 60 seconds | 120 seconds |
| High-frequency cetaceans | 115 (110–180) | 115 (110–180) | 174 (150–390) | 292 (210–825) |
| Low-frequency cetaceans | 11 (10–13) | 11 (10–13) | 17 (16–19) | 24 (23–25) |
| Mid-frequency cetaceans | 6 (0–9) | 6 (0–9) | 12 (11–14) | 18 (17–22) |
| Otariids | 0 (0–0) | 0 (0–0) | 0 (0–0) | 0 (0–0) |
| Phocids | 9 (8–11) | 9 (8–11) | 15 (14–17) | 22 (21–25) |

[1] Ranges to TTS represent the model predictions in different areas and seasons within the NWTT Study Area. The zone in which animals are expected to suffer TTS extends from onset-PTS to the distance indicated. The average range to TTS is provided as well as the range from the estimated minimum to the maximum range to TTS in parentheses.

TABLE 24—RANGES TO TEMPORARY THRESHOLD SHIFT (Meters) FOR SONAR BIN HF4 OVER A REPRESENTATIVE RANGE OF ENVIRONMENTS WITHIN THE NWTT STUDY AREA

| Hearing group | Approximate TTS ranges (meters) [1] | | | |
|---|---|---|---|---|
| | Sonar bin HF4 | | | |
| | 1 second | 30 seconds | 60 seconds | 120 seconds |
| High-frequency cetaceans | 236 (60–675) | 387 (60–875) | 503 (60–1,025) | 637 (60–1,275) |
| Low-frequency cetaceans | 2 (0–3) | 3 (1–6) | 5 (3–8) | 8 (5–12) |
| Mid-frequency cetaceans | 12 (7–20) | 21 (12–40) | 29 (17–60) | 43 (24–90) |
| Otariids | 0 (0–0) | 0 (0–0) | 0 (0–0) | 1 (0–1) |
| Phocids | 3 (0–5) | 6 (4–10) | 9 (5–15) | 14 (8–25) |

[1] Ranges to TTS represent the model predictions in different areas and seasons within the NWTT Study Area. The zone in which animals are expected to suffer TTS extends from onset-PTS to the distance indicated. The average range to TTS is provided as well as the range from the estimated minimum to the maximum range to TTS in parentheses.

Explosives

The following section provides the range (distance) over which specific physiological or behavioral effects are expected to occur based on the explosive criteria (see Chapter 6, Section 6.5.2 (Impacts from Explosives) of the Navy's rulemaking/LOA application and the *Criteria and Thresholds for U.S. Navy Acoustic and Explosive Effects Analysis (Phase III)* report (U.S. Department of the Navy, 2017c)) and the explosive propagation calculations from the Navy Acoustic Effects Model (see Chapter 6, Section 6.5.2.2 (Impact Ranges for Explosives) of the Navy's rulemaking/LOA application). The range to effects are shown for a range of explosive bins, from E1 (up to 0.25 lb net explosive weight) to E11 (greater than 500 lb to 650 lb net explosive weight) (Tables 25 through 31). Ranges are determined by modeling the distance that noise from

an explosion would need to propagate to reach exposure level thresholds specific to a hearing group that would cause behavioral response (to the degree of Level B harassment), TTS, PTS, and non-auditory injury. Ranges are provided for a representative source depth and cluster size for each bin. For events with multiple explosions, sound from successive explosions can be expected to accumulate and increase the range to the onset of an impact based on SEL thresholds. Ranges to non-auditory injury and mortality are shown in Tables 30 and 31, respectively. NMFS has reviewed the range distance to effect data provided by the Navy and concurs with the analysis. For additional information on how ranges to impacts from explosions were estimated, see the technical report *Quantifying Acoustic Impacts on Marine Mammals and Sea Turtles: Methods and Analytical Approach for Phase III Training and Testing* (U.S. Navy, 2018).

Table 25 shows the minimum, average, and maximum ranges to onset of auditory and likely behavioral effects that rise to the level of Level B harassment for high-frequency cetaceans based on the developed thresholds.

TABLE 25—SEL-BASED RANGES (METERS) TO ONSET PTS, ONSET TTS, AND LEVEL B HARASSMENT BY BEHAVIORAL DISTURBANCE FOR HIGH-FREQUENCY CETACEANS

| Range to effects for explosives: high-frequency cetaceans [1] | | | | | |
|---|---|---|---|---|---|
| Bin | Source depth (m) | Cluster size | PTS | TTS | Behavioral disturbance |
| E1 | 0.1 | 1 | 361 (350–370) | 1,108 (1,000–1,275) | 1,515 (1,025–2,025) |
| | | 18 | 1,002 (925–1,025) | 2,404 (1,275–4,025) | 3,053 (1,275–5,025) |
| E2 | 0.1 | 1 | 439 (420–450) | 1,280 (1,025–1,775) | 1,729 (1,025–2,525) |
| | | 5 | 826 (775–875) | 1,953 (1,275–3,025) | 2,560(1,275–4,275) |
| E3 | 10 | 1 | 1,647(160–3,525) | 2,942 (160–10,275) | 3,232 (160–12,275) |
| | | 12 | 3,140 (160–9,525) | 3,804 (160–17,525) | 3,944 (160–21,775) |
| | 18.25 | 1 | 684 (550–1,000) | 2,583 (1,025–5,025) | 4,217 (1,525–7,525) |
| | | 12 | 1,774 (1,025–3,775) | 5,643 (1,775–10,025) | 7,220 (2,025–13,275) |
| E4 | 10 | 2 | 1,390 (950–3,025) | 5,250 (2,275–8,275) | 7,004 (2,775–11,275) |
| | 30 | 2 | 1,437 (925–2,775) | 4,481 (1,525–7,775) | 5,872 (2,775–10,525) |
| | 70 | 2 | 1,304 (925–2,275) | 3,845 (2,525–7,775) | 5,272 (3,525–9,525) |
| | 90 | 2 | 1,534 (900–2,525) | 5,115 (2,525–7,525) | 6,840 (3,275–10,275) |
| E5 | 0.1 | 1 | 940 (850–1,025) | 2,159 (1,275–3,275) | 2,762 (1,275–4,275) |
| | | 20 | 1,930 (1,275–2,775) | 4,281 (1,775–6,525) | 5,176 (2,025–7,775) |
| E7 | 10 | 1 | 2,536 (1,275–3,775) | 6,817 (2,775–11,025) | 8,963 (3,525–14,275) |
| | 30 | 1 | 1,916 (1,025–4,275) | 5,784 (2,775–10,525) | 7,346 (2,775–12,025) |
| E8 | 45.75 | 1 | 1,938 (1,275–4,025) | 4,919 (1,775–11,275) | 5,965 (2,025–15,525) |
| E10 | 0.1 | 1 | 1,829 (1,025–2,775) | 4,166 (1,775–6,025) | 5,023 (2,025–7,525) |
| E11 | 91.4 | 1 | 3,245 (2,025–6,775) | 6,459 (2,525–15,275) | 7,632 (2,775–19,025) |
| | 200 | 1 | 3,745 (3,025–5,025) | 7,116 (4,275–11,275) | 8,727 (5,025–15,025) |

[1] Average distance (m) to PTS, TTS, and behavioral disturbance thresholds are depicted above the minimum and maximum distances which are in parentheses. Values depict the range produced by SEL hearing threshold criteria levels.

Table 26 shows the minimum, average, and maximum ranges to onset of auditory and likely behavioral effects that rise to the level of Level B harassment for low-frequency cetaceans based on the developed thresholds.

TABLE 26—SEL-BASED RANGES (Meters) TO ONSET PTS, ONSET TTS, AND LEVEL B HARASSMENT BY BEHAVIORAL DISTURBANCE FOR LOW-FREQUENCY CETACEANS

| Range to effects for explosives: low-frequency cetaceans [1] | | | | | |
|---|---|---|---|---|---|
| Bin | Source depth (m) | Cluster size | PTS | TTS | Behavioral disturbance |
| E1 | 0.1 | 1 | 52 (50–55) | 221 (120–250) | 354 (160–420) |
| | | 18 | 177 (110–200) | 656 (230–875) | 836 (280–1,025) |
| E2 | 0.1 | 1 | 66 (55–70) | 276 (140–320) | 432 (180–525) |
| | ..... | 5 | 128 (90–140) | 512 (200–650) | 735 (250–975) |
| E3 | 10 | 1 | 330 (160–550) | 1,583 (160–4,025) | 2,085 (160–7,525) |
| | ..... | 12 | 1,177 (160–2,775) | 2,546 (160–11,775) | 2,954 (160–17,025) |
| 18.25 | ..... | 1 | 198 (180–220) | 1,019 (490–2,275) | 1,715 (625–4,025) |
| | ..... | 12 | 646 (390–1,025) | 3,723 (800–9,025) | 6,399 (1,025–46,525) |
| E4 | 10 | 2 | 462 (400–600) | 3,743 (2,025–7,025) | 6,292 (2,525–13,275) |
| | 30 | 2 | 527 (330–950) | 3,253 (1,775–4,775) | 5,540 (2,275–8,275) |
| | 70 | 2 | 490 (380–775) | 3,026 (1,525–4,775) | 5,274 (2,275–7,775) |
| | 90 | 2 | 401 (360–500) | 3,041 (1,275–4,525) | 5,399 (1,775–9,275) |
| E5 | 0.1 | 1 | 174 (100–260) | 633 (220–850) | 865 (270–1,275) |
| | ..... | 20 | 550 (200–700) | 1,352 (420–2,275) | 2,036 (700–4,275) |
| E7 | 10 | 1 | 1,375 (875–2,525) | 7,724 (3,025–15,025) | 11,787 (4,525–25,275) |
| | 30 | 1 | 1,334 (675–2,025) | 7,258 (2,775–11,025) | 11,644 (4,525–24,275) |
| E8 | 45.75 | 1 | 1,227 575–2,525) | 3,921 (1,025–17,275) | 7,961(1,275–48,525) |
| E10 | 0.1 | 1 | 546 (200–700) | 1,522 (440–5,275) | 3,234 (850–30,525) |
| E11 | 91.4 | 1 | 2,537 (950–5,525) | 11,249 (1,775–50,775) | 37,926 (6,025–94,775) |

TABLE 26—SEL-BASED RANGES (Meters) TO ONSET PTS, ONSET TTS, AND LEVEL B HARASSMENT BY BEHAVIORAL DISTURBANCE FOR LOW-FREQUENCY CETACEANS—Continued

| Range to effects for explosives: low-frequency cetaceans [1] | | | | | |
|---|---|---|---|---|---|
| Bin | Source depth (m) | Cluster size | PTS | TTS | Behavioral disturbance |
| | 200 | 1 | 2,541 (1,525–4,775) | 7,407 (2,275–43,275) | 42,916 (6,275–51,275) |

[1] Average distance (m) to PTS, TTS, and behavioral disturbance thresholds are depicted above the minimum and maximum distances which are in parentheses. Values depict the range produced by SEL hearing threshold criteria levels.

Table 27 shows the minimum, average, and maximum ranges to onset of auditory and likely behavioral effects that rise to the level of Level B harassment for mid-frequency cetaceans based on the developed thresholds.

TABLE 27—SEL-BASED RANGES (Meters) TO ONSET PTS, ONSET TTS, AND LEVEL B HARASSMENT BY BEHAVIORAL DISTURBANCE FOR MID-FREQUENCY CETACEANS

| Range to effects for explosives: Mid-frequency cetaceans [1] | | | | | |
|---|---|---|---|---|---|
| Bin | Source depth (m) | Cluster size | PTS | TTS | Behavioral disturbance |
| E1 | 0.1 | 1 | 25 (25–25) | 118 (110–120) | 203 (190–210) |
| | | 18 | 96 (90–100) | 430 (410–440) | 676 (600–700) |
| E2 | 0.1 | 1 | 30 (30–30) | 146 (140–150) | 246 (230–250) |
| | | 5 | 64 (60–65) | 298 (290–300) | 493 (470–500) |
| E3 | 10 | 1 | 61 (50–100) | 512 (160–750) | 928 (160–2,025) |
| | | 12 | 300 (160–625) | 1,604 (160–3,525) | 2,085 (160–5,525) |
| | 18.25 | 1 | 40 (35–40) | 199 (180–280) | 368 (310–800) |
| | | 12 | 127 (120–130) | 709 (575–1,000) | 1,122 (875–2,525) |
| E4 | 10 | 2 | 73 (70–75) | 445 (400–575) | 765 (600–1,275) |
| | 30 | 2 | 71 (65–90) | 554 (320–1,025) | 850 (525–1,775) |
| | 70 | 2 | 63 (60–85) | 382 (320–675) | 815 (525–1,275) |
| | 90 | 2 | 59 (55–85) | 411 (310–900) | 870 (525–1,275) |
| E5 | 0.1 | 1 | 79 (75–80) | 360 (350–370) | 575 (525–600) |
| | | 20 | 295 (280–300) | 979 (800–1,275) | 1,442 (925–1,775) |
| E7 | 10 | 1 | 121 (110–130) | 742 (575–1,275) | 1,272 (875–2,275) |
| | 30 | 1 | 111 (100–130) | 826 (500–1,775) | 1,327 (925–2,275) |
| E8 | 45.75 | 1 | 133 (120–170) | 817 (575–1,525) | 1,298 (925–2,525) |
| E10 | 0.1 | 1 | 273 (260–280) | 956 (775–1,025) | 1,370 (900–1,775) |
| E11 | 91.4 | 1 | 242 (220–310) | 1,547 (1,025–3,025) | 2,387 (1,275–4,025) |
| | 200 | 1 | 209 (200–300) | 1,424 (1,025–2,025) | 2,354 (1,525–3,775) |

[1] Average distance (m) to PTS, TTS, and behavioral disturbance thresholds are depicted above the minimum and maximum distances which are in parentheses. Values depict the range produced by SEL hearing threshold criteria levels.

Table 28 shows the minimum, average, and maximum ranges to onset of auditory and likely behavioral effects that rise to the level of Level B harassment for otariid pinnipeds based on the developed thresholds.

TABLE 28—SEL-BASED RANGES (Meters) TO ONSET PTS, ONSET TTS, AND LEVEL B HARASSMENT BY BEHAVIORAL DISTURBANCE FOR OTARIIDS

| Range to effects for explosives: Otariids [1] | | | | | |
|---|---|---|---|---|---|
| Bin | Source depth (meters) | Cluster size | Range to PTS (meters) | Range to TTS (meters) | Range to behavioral (meters) |
| E1 | 0.1 | 1 | 7 (7–8) | 34 (30–35) | 58 (55–60) |
| | | 18 | 25 (25–25) | 124 (120–130) | 208 (200–210) |
| E2 | 0.1 | 1 | 9 (9–10) | 43 (40–45) | 72 (70–75) |
| | | 5 | 19 (19–20) | 88 (85–90) | 145 (140–150) |
| E3 | 10 | 1 | 21 (18–25) | 135 (120–210) | 250 (160–370) |
| | | 12 | 82 (75–100) | 551 (160–875) | 954 (160–2,025) |
| | 18.25 | 1 | 15 (15–15) | 91 (85–95) | 155 (150–160) |
| | | 12 | 53 (50–55) | 293 (260–430) | 528 (420–825) |
| E4 | 10 | 2 | 30 (30–30) | 175 (170–180) | 312 (300–350) |
| | 30 | 2 | 25 (25–25) | 176 (160–250) | 400 (290–750) |
| | 70 | 2 | 26 (25–35) | 148 (140–200) | 291 (250–400) |
| | 90 | 2 | 26 (25–35) | 139 (130–190) | 271 (250–360) |
| E5 | 0.1 | 1 | 25 (24–25) | 111 (110–120) | 188 (180–190) |
| | | 20 | 93 (90–95) | 421 (390–440) | 629 (550–725) |
| E7 | 10 | 1 | 60 (60–60) | 318 (300–360) | 575 (500–775) |

TABLE 28—SEL-BASED RANGES (Meters) TO ONSET PTS, ONSET TTS, AND LEVEL B HARASSMENT BY BEHAVIORAL DISTURBANCE FOR OTARIIDS—Continued

| Range to effects for explosives: Otariids [1] | | | | | |
|---|---|---|---|---|---|
| Bin | Source depth (meters) | Cluster size | Range to PTS (meters) | Range to TTS (meters) | Range to behavioral (meters) |
| | 30 | 1 | 53 (50–65) | 376 (290–700) | 742 (500–1,025) |
| E8 | 45.75 | 1 | 55 (55–55) | 387 (310–750) | 763 (525–1,275) |
| E10 | 0.1 | 1 | 87 (85–90) | 397 (370–410) | 599 (525–675) |
| E11 | 91.4 | 1 | 100 (100–100) | 775 (550–1,275) | 1,531 (900–3,025) |
| | 200 | 1 | 94 (90–100) | 554 (525–700) | 1,146 (900–1,525) |

[1] Average distance (m) to PTS, TTS, and behavioral disturbance thresholds are depicted above the minimum and maximum distances which are in parentheses. Values depict the range produced by SEL hearing threshold criteria levels.

Table 29 shows the minimum, average, and maximum ranges to onset of auditory and likely behavioral effects that rise to the level of Level B harassment for phocid pinnipeds based on the developed thresholds.

TABLE 29—SEL-BASED RANGES (Meters) TO ONSET PTS, ONSET TTS, AND LEVEL B HARASSMENT BY BEHAVIORAL DISTURBANCE FOR PHOCIDS

| Range to Effects for Explosives: Phocids [1] | | | | | |
|---|---|---|---|---|---|
| Bin | Source depth (meters) | Cluster size | Range to PTS (meters) | Range to TTS (meters) | Range to behavioral (meters) |
| E1 | 0.1 | 1 | 47 (45–50) | 219 (210–230) | 366 (350–370) |
| | | 18 | 171 (160–180) | 764 (725–800) | 1,088 (1,025–1,275) |
| E2 | 0.1 | 1 | 59 (55–60) | 273 (260–280) | 454 (440–460) |
| | | 5 | 118 (110–120) | 547 (525–550) | 881 (825–925) |
| E3 | 10 | 1 | 185 (160–260) | 1,144 (160–2,775) | 1,655 (160–4,525) |
| | | 12 | 760 (160–1,525) | 2,262 (160–8,025) | 2,708 (160–12,025) |
| | 18.25 | 1 | 112 (110–120) | 628 (500–950) | 1,138 (875–2,525) |
| | | 12 | 389 (330–625) | 2,248 (1,275–4,275) | 4,630 (1,275–8,525) |
| E4 | 10 | 2 | 226 (220–240) | 1,622 (950–3,275) | 3,087 (1,775–5,775) |
| | 30 | 2 | 276 (200–600) | 1,451 (1,025–2,275) | 2,611 (1,775–4,275) |
| | 70 | 2 | 201 (180–280) | 1,331 (1,025–1,775) | 2,403 (1,525–3,525) |
| | 90 | 2 | 188 (170–270) | 1,389 (975–2,025) | 2,617 (1,775–3,775) |
| E5 | 0.1 | 1 | 151 (140–160) | 685 (650–700) | 1,002 (950–1,025) |
| | | 20 | 563 (550–575) | 1,838 (1,275–2,275) | 2,588 (1,525–3,525) |
| E7 | 10 | 1 | 405 (370–490) | 3,185 (1,775–6,025) | 5,314 (2,275–11,025) |
| | 30 | 1 | 517 (370–875) | 2,740 (1,775–4,275) | 4,685 (3,025–7,275) |
| E8 | 45.75 | 1 | 523 (390–1,025) | 2,502 (1,525–6,025) | 3,879 (2,025–10,275) |
| E10 | 0.1 | 1 | 522 (500–525) | 1,800 (1,275–2,275) | 2,470 (1,525–3,275) |
| E11 | 91.4 | 1 | 1,063 (675–2,275) | 5,043 (2,775–10,525) | 7,371 (3,275–18,025) |
| | 200 | 1 | 734 (675–850) | 5,266 (3,525–9,025) | 7,344 (5,025–12,775) |

[1] Average distance (m) to PTS, TTS, and behavioral disturbance thresholds are depicted above the minimum and maximum distances which are in parentheses. Values depict the range produced by SEL hearing threshold criteria levels.

Table 30 shows the minimum, average, and maximum ranges due to varying propagation conditions to non-auditory injury as a function of animal mass and explosive bin (*i.e.,* net explosive weight). Ranges to gastrointestinal tract injury typically exceed ranges to slight lung injury; therefore, the maximum range to effect is not mass-dependent. Animals within these water volumes would be expected to receive minor injuries at the outer ranges, increasing to more substantial injuries, and finally mortality as an animal approaches the detonation point.

TABLE 30—RANGES [1] TO 50 PERCENT TO NON-AUDITORY INJURY FOR ALL MARINE MAMMAL HEARING GROUPS

| Bin | Range to non-auditory injury (meters) [1] |
|---|---|
| E1 | 12 (11–13) |
| E2 | 16 (15–16) |
| E3 | 25 (25–45) |
| E4 | 31 (23–50) |
| E5 | 40 (40–40) |
| E7 | 104 (80–190) |
| E8 | 149 (130–210) |
| E10 | 153 (100–400) |

TABLE 30—RANGES [1] TO 50 PERCENT TO NON-AUDITORY INJURY FOR ALL MARINE MAMMAL HEARING GROUPS—Continued

| Bin | Range to non-auditory injury (meters) [1] |
|---|---|
| E11 | 419 (350–725) |

[1] Distances in meters (m). Average distance is shown with the minimum and maximum distances due to varying propagation environments in parentheses.

**Note:** All ranges to non-auditory injury within this table are driven by gastrointestinal tract injury thresholds regardless of animal mass.

Ranges to mortality, based on animal mass, are shown in Table 31 below.

TABLE 31—RANGES [1] TO 50 PERCENT TO MORTALITY RISK FOR ALL MARINE MAMMAL HEARING GROUPS AS A FUNCTION OF ANIMAL MASS

| Bin | Range to mortality (meters) for various animal mass intervals (kg) [1] | | | | | |
|---|---|---|---|---|---|---|
| | 10 kg | 250 kg | 1,000 kg | 5,000 kg | 25,000 kg | 72,000 kg |
| E1 | 3 (2–3) | 1 (0–3) | 0 (0–0) | 0 (0–0) | 0 (0–0) | 0 (0–0) |
| E2 | 4 (3–5) | 2 (1–3) | 1 (0–1) | 0 (0–0) | 0 (0–0) | 0 (0–0) |
| E3 | 10 (9–20) | 5 (3–20) | 2 (1–5) | 0 (0–3) | 0 (0–1) | 0 (0–1) |
| E4 | 13 (11–19) | 7 (4–13) | 3 (2–4) | 2 (1–3) | 1 (1–1) | 1 (0–1) |
| E5 | 13 (11–15) | 7 (4–11) | 3 (3–4) | 2 (1–3) | 1 (1–1) | 1 (0–1) |
| E7 | 49 (40–80) | 27 (15–60) | 13 (10–20) | 9 (5–12) | 4 (4–6) | 3 (2–4) |
| E8 | 65 (60–75) | 34 (22–55) | 17 (14–20) | 11 (9–13) | 6 (5–6) | 5 (4–5) |
| E10 | 43 (40–50) | 25 (16–40) | 13 (11–16) | 9 (7–11) | 5 (4–6) | 4 (3–4) |
| E11 | 185 (90–230) | 90 (30–170) | 40 (30–50) | 28 (23–30) | 15 (13–16) | 11 (9–13) |

[1] Average distance (m) to mortality is depicted above the minimum and maximum distances, which are in parentheses.

*Marine Mammal Density*

A quantitative analysis of impacts on a species or stock requires data on their abundance and distribution that may be affected by anthropogenic activities in the potentially impacted area. The most appropriate metric for this type of analysis is density, which is the number of animals present per unit area. Marine species density estimation requires a significant amount of effort to both collect and analyze data to produce a reasonable estimate. Unlike surveys for terrestrial wildlife, many marine species spend much of their time submerged, and are not easily observed. In order to collect enough sighting data to make reasonable density estimates, multiple observations are required, often in areas that are not easily accessible (*e.g.,* far offshore). Ideally, marine mammal species sighting data would be collected for the specific area and time period (*e.g.,* season) of interest and density estimates derived accordingly. However, in many places, poor weather conditions and high sea states prohibit the completion of comprehensive visual surveys.

For most cetacean species, abundance is estimated using line-transect surveys or mark-recapture studies (*e.g.,* Barlow, 2010; Barlow and Forney, 2007; Calambokidis *et al.,* 2008). The result provides one single density estimate value for each species across broad geographic areas. This is the general approach applied in estimating cetacean abundance in NMFS' SARs. Although the single value provides a good average estimate of abundance (total number of individuals) for a specified area, it does not provide information on the species distribution or concentrations within that area, and it does not estimate density for other timeframes or seasons that were not surveyed. More recently, spatial habitat modeling developed by NMFS' Southwest Fisheries Science Center has been used to estimate cetacean densities (Barlow *et al.,* 2009; Becker *et al.,* 2010, 2012a, b, c, 2014, 2016, 2017, 2020; Ferguson *et al.,* 2006a; Forney *et al.,* 2012, 2015; Redfern *et al.,* 2006). These models estimate cetacean density as a continuous function of habitat variables (*e.g.,* sea surface temperature, seafloor depth, *etc.*) and thus allow predictions of cetacean densities on finer spatial scales than traditional line-transect or mark recapture analyses and for areas that have not been surveyed. Within the geographic area that was modeled, densities can be predicted wherever these habitat variables can be measured or estimated.

Ideally, density data would be available for all species throughout the study area year-round, in order to best estimate the impacts of Navy activities on marine species. However, in many places, ship availability, lack of funding, inclement weather conditions, and high sea states prevent the completion of comprehensive year-round surveys. Even with surveys that are completed, poor conditions may result in lower sighting rates for species that would typically be sighted with greater frequency under favorable conditions. Lower sighting rates preclude having an acceptably low uncertainty in the density estimates. A high level of uncertainty, indicating a low level of confidence in the density estimate, is typical for species that are rare or difficult to sight. In areas where survey data are limited or non-existent, known or inferred associations between marine habitat features and the likely presence of specific species are sometimes used to predict densities in the absence of actual animal sightings. Consequently, there is no single source of density data for every area, species, and season because of the fiscal costs, resources, and effort involved in providing enough survey coverage to sufficiently estimate density.

To characterize marine species density for large oceanic regions, the Navy reviews, critically assesses, and prioritizes existing density estimates from multiple sources, requiring the development of a systematic method for selecting the most appropriate density estimate for each combination of

species/stock, area, and season. The selection and compilation of the best available marine species density data resulted in the Navy Marine Species Density Database (NMSDD). The Navy vetted all cetacean densities with NMFS prior to use in the Navy's acoustic analysis for the current NWTT rulemaking process.

A variety of density data and density models are needed in order to develop a density database that encompasses the entirety of the NWTT Study Area. Because this data is collected using different methods with varying amounts of accuracy and uncertainty, the Navy has developed a hierarchy to ensure the most accurate data is used when available. The U.S. Navy Marine Species Density Database Phase III for the Northwest Training and Testing Study Area (U.S. Department of the Navy, 2019), hereafter referred to as the Density Technical Report, describes these models in detail and provides detailed explanations of the models applied to each species density estimate. The list below describes models in order of preference.

1. Spatial density models are preferred and used when available because they provide an estimate with the least amount of uncertainty by deriving estimates for divided segments of the sampling area. These models (see Becker *et al.,* 2016; Forney *et al.,* 2015) predict spatial variability of animal presence as a function of habitat variables (*e.g.,* sea surface temperature, seafloor depth, *etc.*). This model is developed for areas, species, and, when available, specific timeframes (months or seasons) with sufficient survey data; therefore, this model cannot be used for species with low numbers of sightings.

2. Stratified design-based density estimates use line-transect survey data with the sampling area divided (stratified) into sub-regions, and a density is predicted for each sub-region (see Barlow, 2016; Becker *et al.,* 2016; Bradford *et al.,* 2017; Campbell *et al.,* 2014; Jefferson *et al.,* 2014). While geographically stratified density estimates provide a better indication of a species' distribution within the study area, the uncertainty is typically high because each sub-region estimate is based on a smaller stratified segment of the overall survey effort.

3. Design-based density estimations use line-transect survey data from land and aerial surveys designed to cover a specific geographic area (see Carretta *et al.,* 2015). These estimates use the same survey data as stratified design-based estimates, but are not segmented into sub-regions and instead provide one estimate for a large surveyed area. Although relative environmental suitability (RES) models provide estimates for areas of the oceans that have not been surveyed using information on species occurrence and inferred habitat associations and have been used in past density databases, these models were not used in the current quantitative analysis.

The Navy developed a protocol and database to select the best available data sources based on species, area, and time (season). The resulting Geographic Information System database, used in the NMSDD, includes seasonal density values for every marine mammal species present within the NWTT Study Area. This database is described in the Density Technical Report.

The Navy describes some of the challenges of interpreting the results of the quantitative analysis summarized above and described in the Density Technical Report: ''It is important to consider that even the best estimate of marine species density is really a model representation of the values of concentration where these animals might occur. Each model is limited to the variables and assumptions considered by the original data source provider. No mathematical model representation of any biological population is perfect, and with regards to marine mammal biodiversity, any single model method will not completely explain the actual distribution and abundance of marine mammal species. It is expected that there would be anomalies in the results that need to be evaluated, with independent information for each case, to support if we might accept or reject a model or portions of the model (U.S. Department of the Navy, 2017a).''

The Navy's estimate of abundance (based on density estimates used in the NWTT Study Area) utilizes NMFS' SARs, except for species with high site fidelity/smaller home ranges within the NWTT Study Area, relative to their geographic distribution (*e.g.,* harbor seals). For harbor seals in the inland waters, more up-to-date, site specific population estimates were available. For some species, the stock assessment for a given species may exceed the Navy's density prediction because those species' home range extends beyond the Study Area boundaries. For other species, the stock assessment abundance may be much less than the number of animals in the Navy's modeling given that the NWTT Study Area extends beyond the U.S waters covered by the SAR abundance estimate. The primary source of density estimates are geographically specific survey data and either peer-reviewed line-transect estimates or habitat-based density models that have been extensively validated to provide the most accurate estimates possible.

NMFS coordinated with the Navy in the development of its take estimates and concurs that the Navy's approach for density appropriately utilizes the best available science. Later, in the Analysis and Negligible Impact Determination section, we assess how the estimated take numbers compare to stock abundance in order to better understand the potential number of individuals impacted.

*Take Estimation*

The 2020 NWTT FSEIS/OEIS considered all training and testing activities planned to occur in the NWTT Study Area that have the potential to result in the MMPA defined take of marine mammals. The Navy determined that the three stressors below could result in the incidental taking of marine mammals. NMFS has reviewed the Navy's data and analysis and determined that it is complete and accurate and agrees that the following stressors have the potential to result in takes by harassment or serious injury/mortality of marine mammals from the Navy's planned activities:

- Acoustics (sonar and other transducers);
- Explosives (explosive shock wave and sound, assumed to encompass the risk due to fragmentation); and
- Vessel strike.

Acoustic and explosive sources have the potential to result in incidental takes of marine mammals by harassment and injury. Vessel strikes have the potential to result in incidental take from injury, serious injury, and/or mortality.

The quantitative analysis process used for the 2020 NWTT FSEIS/OEIS and the Navy's take request in the rulemaking/LOA application to estimate potential exposures to marine mammals resulting from acoustic and explosive stressors is described above and further detailed in the technical report titled *Quantifying Acoustic Impacts on Marine Mammals and Sea Turtles: Methods and Analytical Approach for Phase III Training and Testing* (U.S. Department of the Navy, 2018). The Navy Acoustic Effects Model (NAEMO) brings together scenario simulations of the Navy's activities, sound propagation modeling, and marine mammal distribution (based on density and group size) by species to model and quantify the exposure of marine mammals above identified thresholds for behavioral harassment, TTS, PTS, non-auditory injury, and mortality.

NAEMO estimates acoustic and explosive effects without taking mitigation into account; therefore, the model overestimates predicted impacts on marine mammals within mitigation zones. To account for mitigation for marine species in the take estimates, the Navy conducts a quantitative assessment of mitigation. The Navy conservatively quantifies the manner in which procedural mitigation is expected to reduce the risk for model-estimated PTS for exposures to sonars and for model-estimated mortality for exposures to explosives, based on species sightability, observation area, visibility, and the ability to exercise positive control over the sound source. See the proposed rule (85 FR 33914; June 2, 2020) for a description of the process for assessing the effectiveness of procedural mitigation measures, along with the process for assessing the potential for animal avoidance. Where the analysis indicates mitigation would effectively reduce risk, the model-estimated PTS takes are considered reduced to TTS and the model-estimated mortalities are considered reduced to injury. For a complete explanation of the process for assessing the effects of mitigation, see the Navy's rulemaking/LOA application (Section 6: Take Estimates for Marine Mammals, and Section 11: Mitigation Measures) and the technical report titled *Quantifying Acoustic Impacts on Marine Mammals and Sea Turtles: Methods and Analytical Approach for Phase III Training and Testing* (U.S. Department of the Navy, 2018). The extent to which the mitigation areas reduce impacts on the affected species is addressed qualitatively separately in the Analysis and Negligible Impact Determination section.

NMFS coordinated with the Navy in the development of this quantitative method to address the effects of procedural mitigation on acoustic and explosive exposures and takes, and NMFS independently reviewed and concurs with the Navy that it is appropriate to incorporate the quantitative assessment of mitigation into the take estimates based on the best available science.

As a general matter, NMFS does not prescribe the methods for estimating take for any applicant, but we review and ensure that applicants use the best available science, and methodologies that are logical and technically sound. Applicants may use different methods of calculating take (especially when using models) and still get to a result that is representative of the best available science and that allows for a rigorous and accurate evaluation of the effects on the affected populations. There are multiple pieces of the Navy take estimation methods—propagation models, animat movement models, and behavioral thresholds, for example. NMFS evaluates the acceptability of these pieces as they evolve and are used in different rules and impact analyses. Some of the pieces of the Navy's take estimation process have been used in Navy incidental take rules since 2009 and have undergone multiple public comment processes; all of them have undergone extensive internal Navy review, and all of them have undergone comprehensive review by NMFS, which has sometimes resulted in modifications to methods or models.

The Navy uses rigorous review processes (verification, validation, and accreditation processes; peer and public review) to ensure the data and methodology it uses represent the best available science. For instance, the NAEMO model is the result of a NMFS-led Center for Independent Experts (CIE) review of the components used in earlier models. The acoustic propagation component of the NAEMO model (CASS/GRAB) is accredited by the Oceanographic and Atmospheric Master Library (OAML), and many of the environmental variables used in the NAEMO model come from approved OAML databases and are based on in-situ data collection. The animal density components of the NAEMO model are base products of the NMSDD, which includes animal density components that have been validated and reviewed by a variety of scientists from NMFS Science Centers and academic institutions. Several components of the model, for example the Duke University habitat-based density models, have been published in peer reviewed literature. Others like the Atlantic Marine Assessment Program for Protected Species, which was conducted by NMFS Science Centers, have undergone quality assurance and quality control (QA/QC) processes. Finally, the NAEMO model simulation components underwent QA/QC review and validation for model parts such as the scenario builder, acoustic builder, scenario simulator, *etc.,* conducted by qualified statisticians and modelers to ensure accuracy. Other models and methodologies have gone through similar review processes.

In summary, we believe the Navy's methods, including the underlying NAEMO modeling and the method for incorporating mitigation and avoidance, are the most appropriate methods for predicting non-auditory injury, PTS, TTS, and behavioral disturbance. But even with the consideration of mitigation and avoidance, given some of the more conservative components of the methodology (*e.g.,* the thresholds do not consider ear recovery between pulses), we would describe the application of these methods as identifying the maximum number of instances in which marine mammals would be reasonably expected to be taken through non-auditory injury, PTS, TTS, or behavioral disturbance.

Summary of Estimated Take by Harassment From Training and Testing Activities

Based on the methods discussed in the previous sections and the Navy's model and quantitative assessment of mitigation, the Navy provided its take estimate and request for authorization of takes incidental to the use of acoustic and explosive sources for training and testing activities both annually (based on the maximum number of activities that could occur per 12-month period) and over the seven-year period covered by the Navy's rulemaking/LOA application. The following species/stocks present in the NWTT Study Area were modeled by the Navy and estimated to have 0 takes of any type from any activity source: Eastern North Pacific Northern Resident stock of killer whales, Western North Pacific stock of gray whales, and California stock of harbor seals. NMFS has reviewed the Navy's data, methodology, and analysis and determined that it is complete and accurate. NMFS agrees that the estimates for incidental takes by harassment from all sources requested for authorization are the maximum number of instances in which marine mammals are reasonably expected to be taken.

For training and testing activities, Tables 32 and 33 summarize the Navy's take estimate and request and include the maximum amount of Level A harassment and Level B harassment for the seven-year period that NMFS concurs is reasonably expected to occur by species and stock. Note that take by Level B harassment includes both behavioral disturbance and TTS. Tables 6–14–41 (sonar and other transducers) and 6–56–71 (explosives) in Section 6 of the Navy's rulemaking/LOA application provide the comparative amounts of TTS and behavioral disturbance for each species and stock annually, noting that if a modeled marine mammal was ''taken'' through exposure to both TTS and behavioral disturbance in the model, it was recorded as a TTS.

TABLE 32—ANNUAL AND SEVEN-YEAR TOTAL SPECIES-SPECIFIC TAKE ESTIMATES AUTHORIZED FROM ACOUSTIC AND EXPLOSIVE SOUND SOURCE EFFECTS FOR ALL TRAINING ACTIVITIES IN THE NWTT STUDY AREA

| Species | Stock | Annual | | 7-Year total [1] | |
|---|---|---|---|---|---|
| | | Level B | Level A | Level B | Level A |
| **Order Cetacea Suborder Mysticeti (baleen whales)** | | | | | |
| Family Balaenopteridae (rorquals): | | | | | |
| Blue whale * | Eastern North Pacific | 2 | 0 | 11 | 0 |
| Fin whale * | Northeast Pacific | 0 | 0 | 0 | 0 |
| | California, Oregon, Washington | 54 | 0 | 377 | 0 |
| Sei whale * | Eastern North Pacific | 30 | 0 | 206 | 0 |
| Minke whale | Alaska | 0 | 0 | 0 | 0 |
| | California, Oregon, Washington | 110 | 0 | 767 | 0 |
| Humpback whale | Central North Pacific | 5 | 0 | 31 | 0 |
| | California, Oregon, Washington † | 4 | 0 | [2] 28 | 0 |
| Family Eschrichtiidae (gray whale): | | | | | |
| Gray whale | Eastern North Pacific | 2 | 0 | 10 | 0 |
| | Western North Pacific † | 0 | 0 | 0 | 0 |
| **Suborder Odontoceti (toothed whales)** | | | | | |
| Family Delphinidae (dolphins): | | | | | |
| Bottlenose dolphin | California, Oregon, & Washington, Offshore | 5 | 0 | 33 | 0 |
| Killer whale | Alaska Resident | 0 | 0 | 0 | 0 |
| | Eastern North Pacific Offshore | 68 | 0 | [2] 476 | 0 |
| | Northern Resident | 0 | 0 | 0 | 0 |
| | West Coast Transient | 78 | 0 | 538 | 0 |
| | Southern Resident † | 3 | 0 | 15 | 0 |
| Northern right whale dolphin | California, Oregon, Washington | 7,941 | 0 | 55,493 | 0 |
| Pacific white-sided dolphin | North Pacific | 0 | 0 | 0 | 0 |
| | California, Oregon, Washington | 5,284 | 0 | 36,788 | 0 |
| Risso's dolphin | California, Oregon, Washington | 2,286 | 0 | 15,972 | 0 |
| Short-beaked common dolphin | California, Oregon, Washington | 1,165 | 0 | 8,124 | 0 |
| Short-finned pilot whale | California, Oregon, Washington | 57 | 0 | 398 | 0 |
| Striped dolphin | California, Oregon, Washington | 439 | 0 | 3,059 | 0 |
| Family Kogiidae (Kogia spp.): | | | | | |
| Kogia whales | California, Oregon, Washington | [3] 382 | 0 | [3] 2,665 | 0 |
| Family Phocoenidae (porpoises): | | | | | |
| Dall's porpoise | Alaska | 0 | 0 | 0 | 0 |
| | California, Oregon, Washington | 13,299 | 8 | 92,793 | 48 |
| Harbor porpoise | Southeast Alaska | 0 | 0 | 0 | 0 |
| | Northern Oregon/Washington Coast | 299 | 0 | 2,092 | 0 |
| | Northern California/Southern Oregon | 21 | 0 | 145 | 0 |
| | Washington Inland Waters | 12,315 | 43 | 79,934 | 291 |
| Family Physeteridae (sperm whale): | | | | | |
| Sperm whale * | California, Oregon, Washington | 512 | 0 | 3,574 | 0 |
| Family Ziphiidae (beaked whales): | | | | | |
| Baird's beaked whale | California, Oregon, Washington | 556 | 0 | 3,875 | 0 |
| Cuvier's beaked whale | California, Oregon, Washington | 1,462 | 0 | 10,209 | 0 |
| Mesoplodon spp | California, Oregon, Washington | 652 | 0 | 4,549 | 0 |
| **Suborder Pinnipedia** | | | | | |
| Family Otariidae (sea lions and fur seals): | | | | | |
| California sea lion | U.S. Stock | 3,624 | 0 | 25,243 | 0 |
| Steller sea lion | Eastern U.S. | 108 | 0 | 743 | 0 |
| Guadalupe fur seal * | Mexico | 608 | 0 | 4,247 | 0 |
| Northern fur seal | Eastern Pacific | 2,134 | 0 | 14,911 | 0 |
| | California | 43 | 0 | 300 | 0 |
| Family Phocidae (true seals): | | | | | |
| Harbor seal | Southeast Alaska—Clarence Strait | 0 | 0 | 0 | 0 |
| | Oregon/Washington Coastal | 0 | 0 | 0 | 0 |
| | Washington Northern Inland Waters | 669 | 5 | 3,938 | 35 |
| | Hood Canal | 2,686 | 1 | 18,662 | 5 |
| | Southern Puget Sound | 1,090 | 1 | 6,657 | 6 |
| Northern elephant seal | California | 1,909 | 1 | 13,324 | 1 |

* ESA-listed species (all stocks) within the NWTT Study Area. † Only designated populations are ESA-listed.

[1] The seven-year totals may be less than the annual totals times seven, given that not all activities occur every year, some activities occur multiple times within a year, and some activities only occur a few times over the course of a seven-year period.

[2] The proposed rule incorrectly indicated 32 takes by Level B harassment of the CA/OR/WA stock of humpback whale, and 478 takes by Level B harassment of the Eastern North Pacific Offshore stock of killer whale over the seven-year period of the rule. Given that the annual take estimate is calculated based on the maximum amount of activity that could occur within a one-year period, the seven-year take estimate would, at most, be seven times the annual take estimate. (However, we note that in some cases, the seven-year take estimate is less than seven times the annual take estimate, as some activities have restrictions on the number of activities over the seven-year period.)

[3] For *Kogia* Spp., the proposed rule indicated 381 annual takes by Level B harassment, and 2,664 takes by Level B harassment over the seven-year period of the rule. These updated take estimates reflect clarifications due to rounding errors in the proposed rule.

TABLE 33—ANNUAL AND SEVEN-YEAR TOTAL SPECIES-SPECIFIC TAKE ESTIMATES AUTHORIZED FROM ACOUSTIC AND EXPLOSIVE SOUND SOURCE EFFECTS FOR ALL TESTING ACTIVITIES IN THE NWTT STUDY AREA

| Species | Stock | Annual | | 7-Year total | |
|---|---|---|---|---|---|
| | | Level B | Level A | Level B | Level A |
| **Order Cetacea Suborder Mysticeti (baleen whales)** | | | | | |
| Family Balaenopteridae (rorquals): | | | | | |
| Blue whale* | Eastern North Pacific | 8 | 0 | 38 | 0 |
| Fin whale* | Northeast Pacific | 2 | 0 | 10 | 0 |
| | California, Oregon, Washington | 81 | 0 | [1] 389 | 0 |
| Sei whale* | Eastern North Pacific | 53 | 0 | [1] 257 | 0 |
| Minke whale | Alaska | 2 | 0 | 9 | 0 |
| | California, Oregon, Washington | 192 | 0 | [1] 913 | 0 |
| Humpback whale* | Central North Pacific | 110 | 0 | [1] 577 | 0 |
| | California, Oregon, Washington | 89 | 0 | [1] 456 | 0 |
| Family Eschrichtiidae (gray whale): | | | | | |
| Gray whale | Eastern North Pacific | 41 | 0 | [1] 181 | 0 |
| | Western North Pacific† | 0 | 0 | 0 | 0 |
| **Suborder Odontoceti (toothed whales)** | | | | | |
| Family Delphinidae (dolphins): | | | | | |
| Bottlenose dolphin | California, Oregon, Washington, Offshore | 3 | 0 | 14 | 0 |
| Killer whale | Alaska Resident | 34 | 0 | 202 | 0 |
| | Eastern North Pacific Offshore | 89 | 0 | 412 | 0 |
| | Northern Resident | 0 | 0 | 0 | 0 |
| | West Coast Transient | 154 | 0 | 831 | 0 |
| | Southern Resident† | 48 | 0 | 228 | 0 |
| Northern right whale dolphin | California, Oregon, Washington | 13,759 | 1 | [1] 66,456 | 7 |
| Pacific white-sided dolphin | North Pacific | 101 | 0 | 603 | 0 |
| | California, Oregon, Washington | 15,681 | 1 | [1] 76,978 | [1] 7 |
| Risso's dolphin | California, Oregon, Washington | 4,069 | 0 | [1] 19,636 | 0 |
| Short-beaked common dolphin | California, Oregon, Washington | 984 | 0 | 3,442 | 0 |
| Short-finned pilot whale | California, Oregon, Washington | 31 | 0 | 126 | 0 |
| Striped dolphin | California, Oregon, Washington | 344 | 0 | 1,294 | 0 |
| Family Kogiidae (Kogia spp.): | | | | | |
| Kogia whales | California, Oregon, Washington | [2] 500 | [2] 2 | [1 2] 2,375 | 9 |
| Family Phocoenidae (porpoises): | | | | | |
| Dall's porpoise | Alaska | 638 | 0 | 3,711 | 0 |
| | California, Oregon, Washington | 20,398 | 90 | [1] 98,241 | [1] 456 |
| Harbor porpoise | Southeast Alaska | 130 | 0 | 794 | 0 |
| | Northern Oregon/Washington Coast | 52,113 | 103 | [1] 264,999 | [1] 359 |
| | Northern California/Southern Oregon | 2,018 | 86 | [1] 11,525 | [1] 261 |
| | Washington Inland Waters | 17,228 | 137 | 115,770 | 930 |
| Family Physeteridae (sperm whale): | | | | | |
| Sperm whale* | California, Oregon, Washington | 327 | 0 | 1,443 | 0 |
| Family Ziphiidae (beaked whales): | | | | | |
| Baird's beaked whale | California, Oregon, Washington | 420 | 0 | 1,738 | 0 |
| Cuvier's beaked whale | California, Oregon, Washington | 1,077 | 0 | 4,979 | 0 |
| Mesoplodon spp | California, Oregon, Washington | 470 | 0 | 2,172 | 0 |
| **Suborder Pinnipedia** | | | | | |
| Family Otariidae (sea lions and fur seals): | | | | | |
| California sea lion | U.S. Stock | 20,474 | 1 | [1] 93,901 | [1] 4 |
| Steller sea lion | Eastern U.S. | 2,130 | 0 | [1] 10,744 | 0 |
| Guadalupe fur seal* | Mexico | 887 | 0 | 4,022 | 0 |
| Northern fur seal | Eastern Pacific | 9,458 | 0 | 45,813 | 0 |
| | California | 189 | 0 | 920 | 0 |
| Family Phocidae (true seals): | | | | | |
| Harbor seal | Southeast Alaska—Clarence Strait | 2,352 | 0 | 13,384 | 0 |
| | Oregon/Washington Coastal | 1,180 | 2 | [1] 6,182 | [1] 6 |
| | Washington Northern Inland Waters | 578 | 0 | 3,227 | 0 |
| | Hood Canal | 58,784 | 0 | 396,883 | 0 |
| | Southern Puget Sound | 5,748 | 3 | 39,511 | [1] 21 |
| Northern elephant seal | California | 2,935 | 3 | [1] 14,110 | [1] 17 |

*ESA-listed species (all stocks) within the NWTT Study Area. †Only designated populations are ESA-listed.

[1] The take estimate for these species decreased since the proposed rule, as the Navy has adjusted their planned activity by reducing the number of times Mine Countermeasure and Neutralization testing could occur over the seven-year period of the rule.

[2] For *Kogia* Spp., the proposed rule indicated 501 annual takes by Level B harassment, 1 annual take by Level A harassment, and 2,376 takes by Level B harassment over the seven-year period of the rule. These updated take estimates reflect clarifications due to rounding errors in the proposed rule.

*Estimated Take From Vessel Strikes by Serious Injury or Mortality*

Vessel strikes from commercial, recreational, and military vessels are known to affect large whales and have resulted in serious injury and occasional fatalities to cetaceans (Berman-Kowalewski *et al.,* 2010; Calambokidis, 2012; Douglas *et al.,* 2008; Laggner 2009; Lammers *et al.,* 2003). Records of collisions date back to the early 17th century, and the worldwide number of collisions appears to have increased steadily during recent decades (Laist *et al.,* 2001; Ritter 2012).

Numerous studies of interactions between surface vessels and marine

mammals have demonstrated that free-ranging marine mammals often, but not always (*e.g.,* McKenna *et al.,* 2015), engage in avoidance behavior when surface vessels move toward them. It is not clear whether these responses are caused by the physical presence of a surface vessel, the underwater noise generated by the vessel, or an interaction between the two (Amaral and Carlson, 2005; Au and Green, 2000; Bain *et al.,* 2006; Bauer 1986; Bejder *et al.,* 1999; Bejder and Lusseau, 2008; Bejder *et al.,* 2009; Bryant *et al.,* 1984; Corkeron, 1995; Erbe, 2002; Félix, 2001; Goodwin and Cotton, 2004; Greig *et al.,* 2020; Guilpin *et al.,* 2020; Keen *et al.,* 2019; Lemon *et al.,* 2006; Lusseau, 2003; Lusseau, 2006; Magalhaes *et al.,* 2002; Nowacek *et al.,* 2001; Redfern *et al.,* 2020; Richter *et al.,* 2003; Scheidat *et al.,* 2004; Simmonds, 2005; Szesciorka *et al.,* 2019; Watkins, 1986; Williams *et al.,* 2002; Wursig *et al.,* 1998). Several authors suggest that the noise generated during motion is probably an important factor (Blane and Jaakson, 1994; Evans *et al.,* 1992; Evans *et al.,* 1994). Water disturbance may also be a factor. These studies suggest that the behavioral responses of marine mammals to surface vessels are similar to their behavioral responses to predators. Avoidance behavior is expected to be even stronger in the subset of instances during which the Navy is conducting training or testing activities using active sonar or explosives.

The marine mammals most vulnerable to vessel strikes are those that spend extended periods of time at the surface in order to restore oxygen levels within their tissues after deep dives (*e.g.,* sperm whales). In addition, some baleen whales seem generally unresponsive to vessel sound, making them more susceptible to vessel collisions (Nowacek *et al.,* 2004). These species are primarily large, slow moving whales.

Some researchers have suggested the relative risk of a vessel strike can be assessed as a function of animal density and the magnitude of vessel traffic (*e.g.,* Fonnesbeck *et al.,* 2008; Vanderlaan *et al.,* 2008). Differences among vessel types also influence the probability of a vessel strike. The ability of any ship to detect a marine mammal and avoid a collision depends on a variety of factors, including environmental conditions, ship design, size, speed, and ability and number of personnel observing, as well as the behavior of the animal. Vessel speed, size, and mass are all important factors in determining if injury or death of a marine mammal is likely due to a vessel strike. For large vessels, speed and angle of approach can influence the severity of a strike. For example, Vanderlaan and Taggart (2007) found that between vessel speeds of 8.6 and 15 knots, the probability that a vessel strike is lethal increases from 0.21 to 0.79. Large whales also do not have to be at the water's surface to be struck. Silber *et al.* (2010) found when a whale is below the surface (about one to two times the vessel draft), under certain circumstances (vessel speed and location of the whale relative to the ship's centerline), there is likely to be a pronounced propeller suction effect. This suction effect may draw the whale into the hull of the ship, increasing the probability of propeller strikes.

There are some key differences between the operation of military and non-military vessels, which make the likelihood of a military vessel striking a whale lower than some other vessels (*e.g.,* commercial merchant vessels). Key differences include:

- Many military ships have their bridges positioned closer to the bow, offering better visibility ahead of the ship (compared to a commercial merchant vessel);
- There are often aircraft associated with the training or testing activity (which can serve as Lookouts), which can more readily detect cetaceans in the vicinity of a vessel or ahead of a vessel's present course before crew on the vessel would be able to detect them;
- Military ships are generally more maneuverable than commercial merchant vessels, and if cetaceans are spotted in the path of the ship, could be capable of changing course more quickly;
- The crew size on military vessels is generally larger than merchant ships, allowing for stationing more trained Lookouts on the bridge. At all times when Navy vessels are underway, trained Lookouts and bridge navigation teams are used to detect objects on the surface of the water ahead of the ship, including cetaceans. Additional personnel, beyond those already stationed on the bridge and on navigation teams, are positioned as Lookouts during some training events; and
- When submerged, submarines are generally slow moving (to avoid detection) and therefore marine mammals at depth with a submarine are likely able to avoid collision with the submarine. When a submarine is transiting on the surface, there are Lookouts serving the same function as they do on surface ships.

Vessel strike to marine mammals is not associated with any specific training or testing activity but is rather an extremely limited and sporadic, but possible, accidental result of Navy vessel movement within the NWTT Study Area or while in transit.

Data from the ports of Vancouver, British Columbia; Seattle, Washington; and Tacoma, Washington indicate there were more than 7,000 commercial vessel transits in 2017 associated with visits to just those ports (The Northwest Seaport Alliance, 2018; Vancouver Fraser Port Authority). This number of vessel transits does not account for other vessel traffic in the Strait of Juan de Fuca or Puget Sound including commercial ferries, tourist vessels, or recreational vessels. Additional commercial traffic in the NWTT Study Area also includes vessels transiting offshore along the Pacific coast, bypassing ports in Canada and Washington; traffic associated with ports to the south along the coast of Washington and in Oregon; and vessel traffic in Southeast Alaska (Nuka Research & Planning Group, 2012). Navy vessel traffic accounts for only a small portion of vessel activities in the NWTT Study Area. The Navy has, in total, the following homeported operational vessels: 2 aircraft carriers, 6 destroyers, 14 submarines, and 22 smaller security vessels with a combined annual total of 241 Navy vessel transits (see Appendix A (Navy Activities Descriptions) of the 2020 FSEIS/OEIS for descriptions of the number of vessels used during the various types of Navy's planned activities). Activities involving military vessel movement would be widely dispersed throughout the NWTT Study Area.

Navy vessel strike records have been kept since 1995, and since 1995 there have been two recorded strikes of whales by Navy vessels (or vessels being operated on behalf of the Navy) in the NWTT Study Area. Neither strike was associated with training or testing activities. The first strike occurred in 2012 by a Navy destroyer off the southern coast of Oregon while in transit to San Diego. The whale was suspected to be a minke whale due to the appearance and size (25 ft, dark with white belly), however the Navy could not rule out the possibility that it was a juvenile fin whale. The whale was observed swimming after the strike and no blood or injury was sighted. The second strike occurred in 2016 by a U.S. Coast Guard cutter operating on behalf of the Navy as part of a Maritime Security Operation escort vessel in the Strait of Juan de Fuca. The whale was positively identified as a humpback whale. It was observed for 10 minutes post-collision and appeared normal at the surface. There was no blood

observed in the water and the whale subsequently swam away.

In order to account for the potential risk from vessel movement within the NWTT Study Area within the seven-year period in particular, the Navy requested incidental takes based on probabilities derived from a Poisson distribution using ship strike data between 2009–2018 in the NWTT Study Area (the time period from when current mitigation measures to reduce the likelihood of vessel strikes were instituted until the Navy conducted the analysis for the Navy's application), as well as historical at-sea days in the NWTT Study Area from 2009–2018 and estimated potential at-sea days for the period from 2020 to 2027 covered by the requested regulations. This distribution predicted the probabilities of a specific number of strikes (n=0, 1, 2, *etc.*) over the period from 2020 to 2027. The analysis for the period of 2020 to 2027 is described in detail in Chapter 6.6 (Vessel Strike Analysis) of the Navy's rulemaking/LOA application.

For the same reasons listed above, describing why a Navy vessel strike is comparatively unlikely, it is highly unlikely that a Navy vessel would strike a whale, dolphin, porpoise, or pinniped without detecting it and, accordingly, NMFS is confident that the Navy's reported strikes are accurate and appropriate for use in the analysis. Specifically, Navy ships have multiple Lookouts, including on the forward part of the ship that can visually detect a hit animal, in the unlikely event ship personnel do not feel the strike. Unlike the situation for non-Navy ships engaged in commercial activities, NMFS and the Navy have no evidence that the Navy has struck a whale and not detected it. Navy's strict internal procedures and mitigation requirements include reporting of any vessel strikes of marine mammals, and the Navy's discipline, extensive training (not only for detecting marine mammals, but for detecting and reporting any potential navigational obstruction), and strict chain of command give NMFS a high level of confidence that all strikes actually get reported.

The Navy used those two whale strikes in their calculations to determine the number of strikes likely to result from their activities and evaluated data beginning in 2009. The Navy's Marine Species Awareness Training was first used in 2006 and was fully integrated across the Navy in 2009, which is why the Navy uses 2009 as the date to begin the analysis. The adoption of additional mitigation measures to address ship strike also began in 2009, and will remain in place along with additional mitigation measures during the seven years of this rule. The probability analysis concluded that there was a 26 percent chance that zero whales would be struck by Navy vessels over the seven-year period, and a 35, 24, 11, and 4 percent chance that one, two, three, or four whales, respectively, would be struck over the seven-year period (with a 74 percent chance total that at least one whale would be struck over the seven-year period). Therefore, the Navy estimates, and NMFS agrees, that there is some probability (an 11 percent chance) that the Navy could strike, and take by serious injury or mortality, up to three large whales incidental to training and testing activities within the NWTT Study Area over the course of the seven years.

Small whales, delphinids, porpoises, and pinnipeds are not expected to be struck by Navy vessels. In addition to the reasons listed above that make it unlikely that the Navy will hit a large whale (more maneuverable ships, larger crews, *etc.*), the following are the additional reasons that vessel strike of dolphins, small whales, porpoises, and pinnipeds is considered very unlikely. Dating back more than 20 years and for as long as it has kept records, the Navy has no records of individuals of these groups (including Southern Resident killer whales) being struck by a vessel as a result of Navy activities and, further, their smaller size and maneuverability make a strike unlikely. Also, NMFS has never received any reports from other authorized activities indicating that these species have been struck by vessels. Worldwide ship strike records show little evidence of strikes of these groups from the shipping sector and larger vessels, and the majority of the Navy's activities involving faster-moving vessels (that could be considered more likely to hit a marine mammal) are located in offshore areas where smaller delphinid, porpoise, and pinniped densities are lower. Since 2005, though, three vessel strikes of Southern Resident killer whales have been recorded: one collision with a commercial whale watch vessel in 2005 (the whale recovered), one collision with a tug boat in 2006 (the whale was killed), and one animal found dead in 2016 with evidence of blunt force trauma consistent with a vessel strike. However, given the information above regarding the overall low likelihood of vessel strikes of small whales, delphinids, porpoises, and pinnipeds by Navy vessels, as well as the enhanced mitigation for, and high visibility of, Southern Resident killer whales, Southern Resident killer whales are not expected to be struck by Navy vessels. Based on this information and the Navy's assessment, NMFS concludes that there is the potential for incidental take by vessel strike of large whales only (*i.e.,* no dolphins, small whales, porpoises, or pinnipeds) over the course of the seven-year regulations from training and testing activities.

Taking into account the available information regarding how many of any given stock could be struck and therefore should be authorized for take, NMFS considered three factors in addition to those considered in the Navy's request: (1)The relative likelihood of hitting one stock versus another based on available strike data from all vessel types as denoted in the SARs, (2) whether the Navy has ever definitively struck an individual from a particular species or stock in the NWTT Study Area, and if so, how many times, and (3) whether there are records that an individual from a particular species or stock has been struck by any vessel in the NWTT Study Area, and if so, how many times (based on ship strike records provided by the NMFS West Coast Region in February 2020). To address number (1) above, NMFS compiled information from NMFS' SARs on detected annual rates of large whale serious injury or mortality (M/SI) from vessel collisions (Table 34). The annual rates of large whale serious injury or mortality from vessel collisions from the SARs help inform the relative susceptibility of large whale species to vessel strike in NWTT Study Area as recorded systematically over the last five years (the period used for the SARs). However, we note that the SARs present strike data from the stock's entire range, which is much larger than the NWTT Study Area, and available ship strike records show that the majority of strikes that occur off the U.S. West Coast occur in southern California. We summed the annual rates of serious injury or mortality from vessel collisions as reported in the SARs, then divided each species' annual rate by this sum to get the proportion of strikes for each species/stock. To inform the likelihood of striking a particular species of large whale, we multiplied the proportion of striking each species by the probability of striking at least one whale (*i.e.,* 74 percent, as described by the Navy's probability analysis above). We note that these probabilities vary from year to year as the average annual mortality for a given five-year window in the SAR changes; however, over the years and through changing SARs, stocks tend to consistently maintain a relatively higher or relatively lower

likelihood of being struck (and we include the annual averages from 2017 SARs in Table 34 to illustrate).

The probabilities calculated as described above are then considered in combination with the information indicating the species that the Navy has definitively hit in the NWTT Study Area since 1995 (since they started tracking consistently) and the species that are known to have been struck by any vessel (through regional stranding data) in the NWTT Study Area. We also note that Rockwood *et al.* (2017) modeled the likely vessel strike of blue whales, fin whales, and humpback whales on the U.S. West Coast (discussed in more detail in the *Serious Injury or Mortality* subsection of the Analysis and Negligible Impact Determination section), and those numbers help inform the relative likelihood that the Navy will hit those stocks.

For each indicated stock, Table 34 includes the percent likelihood of hitting an individual whale once based on SAR data, total strikes from Navy vessels (from 1995), total strikes from any vessel (from 2000 from regional stranding data), and modeled vessel strikes from Rockwood *et al.* (2017). The last column indicates the annual serious injury or mortality authorized.

TABLE 34—SUMMARY OF FACTORS CONSIDERED IN DETERMINING THE NUMBER OF INDIVIDUALS IN EACH STOCK POTENTIALLY STRUCK BY A VESSEL

| ESA status | Species | Stock | Annual rate of M/SI from vessel collision (observed from 2017 SARs) | Annual rate of M/SI from vessel collision (observed from 2019 SARs) | Percent likelihood of hitting individual from species/ stock once (from 2019 SARs data) | Total known strikes in OR, WA, northern CA (from 2000 to present) [1] | Total known navy strikes in NWTT study area | Rockwood *et al.* (2017) modeled vessel strikes [5] | MMPA authorized takes (from the 3 total) | Annual authorized take |
|---|---|---|---|---|---|---|---|---|---|---|
| Listed | Blue whale | Eastern North Pacific | 0 | 0.4 | 3.7 | | | 18 | 0 | 0 |
| | Fin whale | Northeast Pacific | 0.2 | 0.4 | 3.7 | [2] 10 | | | 2 | 0.29 |
| | | CA/OR/WA | 1.8 | 1.6 | 14.8 | [2] 10 | | 43 | 2 | 0.29 |
| | Sei whale | Eastern North Pacific | 0 | 0.2 | 1.85 | | | | 0 | 0 |
| | Humpback whale | CA/OR/WA (Mexico and Central America DPS). | 1.1 | 2.1 | 19.425 | [3] 4 | [4] 1 | 22 | 2 | 0.29 |
| | Sperm whale | CA/OR/WA | 0.2 | 0 | 0 | 3 | | | 1 | 0.14 |
| Not Listed | Minke whale | Alaska | 0 | 0 | 0 | | | | 0 | 0 |
| | | CA/OR/WA | 0 | 0 | 0 | 1 | 1 | | 1 | 0.14 |
| | Gray whale | Eastern North Pacific | 2 | 0.8 | 7.4 | 9 | | | 1 | 0.14 |
| | Humpback whale | Central North Pacific (Hawaii DPS) | 2.6 | 2.5 | 23.125 | [3] 4 | [4] 1 | | 2 | 0.29 |

**Note:** A "-" indicates that the field does not apply.

[1] Only one ship strike was reported in California in the NWTT Study Area (which is limited to Humboldt and Del Norte Counties). This strike occurred in 2004 in Humboldt County and was not identified to species.

[2] A total of 10 fin whale strikes are reported in the regional stranding database, however no information on stock is provided. As these two stocks of fin whales are known to overlap spatially and temporally in the NWTT Study Area, the 10 reported strikes could come from either stock or a combination of both stocks.

[3] A total of 4 humpback whales strikes are reported in the regional stranding database, however no information on stock is provided. As these two stocks of humpback whales are known to overlap spatially and temporally in the NWTT Study Area, the 4 reported strikes could come from either stock or a combination of both stocks.

[4] One humpback whale was reported as struck by a U.S. Coast Guard cutter operating on behalf of the Navy, however it was not possible for the Navy to determine which stock this whale came from. As these two stocks of humpback whales are known to overlap spatially and temporally in the NWTT Study Area, this whale could have come from either stock.

[5] Rockwood *et al.* modeled likely annual vessel strikes off the U.S. West Coast for these three species only.

Accordingly, stocks that have no record of having been struck by any vessel are considered unlikely to be struck by the Navy in the seven-year period of the rule. Stocks that have never been struck by the Navy, have rarely been struck by other vessels, and have a low likelihood of being struck based on the SAR calculation and a low relative abundance (Eastern North Pacific stock of blue whales, Eastern North Pacific stock of sei whales, and Alaska stock of minke whales) are also considered unlikely to be struck by the Navy during the seven-year rule. This rules out all but seven stocks.

The two stocks of humpback whales (California/Oregon/Washington (CA/OR/WA) and Central North Pacific) and two stocks of fin whales (CA/OR/WA and Northeast Pacific) are known to overlap spatially and temporally in the NWTT Study Area, and it is not possible to distinguish the difference between individuals of these stocks based on visual sightings in the field. The Navy has previously struck a humpback whale in the NWTT Study Area, and it is the second most common species struck by any vessel in the Study Area based on stranding data. Based on the SAR data, the two stocks of humpback whales also have the highest likelihood of being struck. Though the Navy has not definitively struck a fin whale in the NWTT Study Area (noting that the Navy could not rule out that the minke whale strike could have been a juvenile fin whale), fin whales are the most common species struck by any vessel in the Study Area based on stranding data. Based on the SAR data, the CA/OR/WA stock has the third highest likelihood of being struck. Based on all of these factors, it is considered reasonable that humpback whales (from either the CA/OR/WA or Central North Pacific stocks) could be struck twice and fin whales (from either the CA/OR/WA or Northeast Pacific stocks) could be struck twice during the seven-year rule.

Based on the SAR data, the CA/OR/WA stock of sperm whales and CA/OR/WA stock of minke whales have a very low likelihood of being struck. However, 3 sperm whales have been struck by non-Navy vessels in the NWTT Study Area (in 2002, 2007, and 2012) and the Navy has previously struck a minke whale in the NWTT Study Area. Therefore, we consider it reasonable that an individual from each of these stocks could be struck by the Navy once during the seven-year rule. Finally, based on stranding data, gray whales are the second most commonly struck whale in the NWTT Study Area and the SAR data indicates that on average, 0.8 whales from this stock are struck throughout the stock's range each year. Based on these data, we consider it reasonable that an individual from the Eastern North Pacific stock of gray whales could be struck by the Navy once during the seven-year rule.

In conclusion, although it is generally unlikely that any whales will be struck in a year, based on the information and analysis above, NMFS anticipates that no more than three whales have the potential to be taken by serious injury or mortality over the seven-year period of the rule. Of those three whales over the seven years, no more than two may come from any of the following species/stocks: Fin whale (which may come from either the Northeast Pacific or CA/OR/WA stock) and humpback whale (which may come from either the Central North Pacific or CA/OR/WA stock). Additionally, of those three whales over the seven years no more than one may come from any of the

following species/stocks: Sperm whale (CA/OR/WA stock), minke whale (CA/OR/WA stock), and gray whale (Eastern North Pacific stock). Accordingly, NMFS has evaluated under the negligible impact standard the mortality or serious injury (M/SI) of 0.14 or 0.29 whales annually from each of these stocks (*i.e.,* 1 or 2 takes, respectively, divided by seven years to get the annual number), along with the expected incidental takes by harassment. We do not anticipate, nor have we authorized, ship strike takes to blue whales (Eastern North Pacific stock), minke whales (Alaska stock), or sei whales (Eastern North Pacific stock).

**Mitigation Measures**

Under section 101(a)(5)(A) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to the activity, and other means of effecting the least practicable adverse impact on the 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 subsistence uses (''least practicable adverse impact''). NMFS does not have a regulatory definition for least practicable adverse impact. The 2004 NDAA amended the MMPA as it relates to military readiness activities and the incidental take authorization process such that a determination of ''least practicable adverse impact'' on the species or stock shall include consideration of personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity.

In *Conservation Council for Hawaii* v. *National Marine Fisheries Service,* 97 F. Supp. 3d 1210, 1229 (D. Haw. 2015), the Court stated that NMFS ''appear[s] to think [it] satisf[ies] the statutory 'least practicable adverse impact' requirement with a 'negligible impact' finding.'' Expressing similar concerns in a challenge to a U.S. Navy Surveillance Towed Array Sensor System Low Frequency Active Sonar (SURTASS LFA) incidental take rule (77 FR 50290), the Ninth Circuit Court of Appeals in *Natural Resources Defense Council (NRDC)* v. *Pritzker,* 828 F.3d 1125, 1134 (9th Cir. 2016), stated, ''[c]ompliance with the 'negligible impact' requirement does not mean there [is] compliance with the 'least practicable adverse impact' standard.'' As the Ninth Circuit noted in its opinion, however, the Court was interpreting the statute without the benefit of NMFS' formal interpretation. We state here explicitly that NMFS is in full agreement that the ''negligible impact'' and ''least practicable adverse impact'' requirements are distinct, even though both statutory standards refer to species and stocks. With that in mind, we provide further explanation of our interpretation of least practicable adverse impact, and explain what distinguishes it from the negligible impact standard. This discussion is consistent with previous rules we have issued, such as the Navy's Hawaii-Southern California Training and Testing (HSTT) rule (85 FR 41780; July 10, 2020), Atlantic Fleet Training and Testing (AFTT) rule (84 FR 70712; December 23, 2019), and Mariana Islands Training and Testing (MITT) rule (85 FR 46302; July 31, 2020).

Before NMFS can issue incidental take regulations under section 101(a)(5)(A) of the MMPA, it must make a finding that the total taking will have a ''negligible impact'' on the affected ''species or stocks'' of marine mammals. NMFS' and U.S. Fish and Wildlife Service's implementing regulations for section 101(a)(5) both define ''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 and 50 CFR 18.27(c)). Recruitment (*i.e.,* reproduction) and survival rates are used to determine population growth rates [4] and, therefore are considered in evaluating population level impacts.

As stated in the preamble to the proposed rule for the MMPA incidental take implementing regulations, not every population-level impact violates the negligible impact requirement. The negligible impact standard does not require a finding that the anticipated take will have ''no effect'' on population numbers or growth rates: The statutory standard does not require that the same recovery rate be maintained, rather that no significant effect on annual rates of recruitment or survival occurs. The key factor is the significance of the level of impact on rates of recruitment or survival. (54 FR 40338, 40341–42; September 29, 1989).

While some level of impact on population numbers or growth rates of a species or stock may occur and still satisfy the negligible impact requirement—even without consideration of mitigation—the least practicable adverse impact provision separately requires NMFS to prescribe means of effecting the least practicable adverse impact on the species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, 50 CFR 216.102(b), which are typically identified as mitigation measures.[5]

The negligible impact and least practicable adverse impact standards in the MMPA both call for evaluation at the level of the ''species or stock.'' The MMPA does not define the term ''species.'' However, Merriam-Webster Dictionary defines ''species'' to include ''related organisms or *populations* potentially capable of interbreeding.'' See *www.merriam-webster.com/dictionary/species* (emphasis added). Section 3(11) of the MMPA defines ''stock'' as a group of marine mammals of the same species or smaller taxa in a common spatial arrangement that interbreed when mature. The definition of ''population'' is a group of interbreeding organisms that represents the level of organization at which speciation begins. *www.merriam-webster.com/dictionary/population.* The definition of ''population'' is strikingly similar to the MMPA's definition of ''stock,'' with both involving groups of individuals that belong to the same species and located in a manner that allows for interbreeding. In fact under MMPA section 3(11), the term ''stock'' in the MMPA is interchangeable with the statutory term ''population stock.'' Both the negligible impact standard and the least practicable adverse impact standard call for evaluation at the level of the species or stock, and the terms ''species'' and ''stock'' both relate to populations; therefore, it is appropriate to view both the negligible impact standard and the least practicable adverse impact standard as having a population-level focus.

This interpretation is consistent with Congress' statutory findings for enacting the MMPA, nearly all of which are most applicable at the species or stock (*i.e.,* population) level. *See* MMPA section 2 (finding that it is species and population stocks that are or may be in danger of extinction or depletion; that it is species and population stocks that should not diminish beyond being significant functioning elements of their ecosystems; and that it is species and population stocks that should not be permitted to diminish below their optimum sustainable population level). Annual rates of recruitment (*i.e.,* reproduction) and survival are the key biological metrics used in the evaluation of population-level impacts, and

[4] A growth rate can be positive, negative, or flat.

[5] Separately, NMFS also must prescribe means of effecting the least practicable adverse impact on the availability of the species or stocks for subsistence uses, when applicable. See the Subsistence Harvest of Marine Mammals section for separate discussion of the effects of the specified activities on Alaska Native subsistence use.

accordingly these same metrics are also used in the evaluation of population level impacts for the least practicable adverse impact standard.

Recognizing this common focus of the least practicable adverse impact and negligible impact provisions on the ''species or stock'' does not mean we conflate the two standards; despite some common statutory language, we recognize the two provisions are different and have different functions. First, a negligible impact finding is required before NMFS can issue an incidental take authorization. Although it is acceptable to use the mitigation measures to reach a negligible impact finding (*see* 50 CFR 216.104(c)), no amount of mitigation can enable NMFS to issue an incidental take authorization for an activity that still would not meet the negligible impact standard. Moreover, even where NMFS can reach a negligible impact finding—which we emphasize does allow for the possibility of some ''negligible'' population-level impact—the agency must still prescribe measures that will effect the least practicable amount of adverse impact upon the affected species or stocks.

Section 101(a)(5)(A)(i)(II) requires NMFS to issue, in conjunction with its authorization, binding—and enforceable—restrictions (in the form of regulations) setting forth how the activity must be conducted, thus ensuring the activity has the ''least practicable adverse impact'' on the affected species or stocks. In situations where mitigation is specifically needed to reach a negligible impact determination, section 101(a)(5)(A)(i)(II) also provides a mechanism for ensuring compliance with the ''negligible impact'' requirement. Finally, the least practicable adverse impact standard also requires consideration of measures for marine mammal habitat, with particular attention to rookeries, mating grounds, and other areas of similar significance, and for subsistence impacts, whereas the negligible impact standard is concerned solely with conclusions about the impact of an activity on annual rates of recruitment and survival.[6] In *NRDC* v. *Pritzker,* the Court stated, ''[t]he statute is properly read to mean that even if population levels are not threatened *significantly,* still the agency must adopt mitigation measures aimed at protecting *marine mammals* to the greatest extent practicable in light of military readiness needs.'' *Pritzker* at 1134 (emphases added). This statement is consistent with our understanding stated above that even when the effects of an action satisfy the negligible impact standard (*i.e.,* in the Court's words, ''population levels are not threatened significantly''), still the agency must prescribe mitigation under the least practicable adverse impact standard. However, as the statute indicates, the focus of both standards is ultimately the impact on the affected ''species or stock,'' and not solely focused on or directed at the impact on individual marine mammals.

We have carefully reviewed and considered the Ninth Circuit's opinion in *NRDC* v. *Pritzker* in its entirety. While the Court's reference to ''marine mammals'' rather than ''marine mammal species or stocks'' in the italicized language above might be construed as holding that the least practicable adverse impact standard applies at the individual ''marine mammal'' level, *i.e.,* that NMFS must require mitigation to minimize impacts to each individual marine mammal unless impracticable, we believe such an interpretation reflects an incomplete appreciation of the Court's holding. In our view, the opinion as a whole turned on the Court's determination that NMFS had not given separate and independent meaning to the least practicable adverse impact standard apart from the negligible impact standard, and further, that the Court's use of the term ''marine mammals'' was not addressing the question of whether the standard applies to individual animals as opposed to the species or stock as a whole. We recognize that while consideration of mitigation can play a role in a negligible impact determination, consideration of mitigation measures extends beyond that analysis. In evaluating what mitigation measures are appropriate, NMFS considers the potential impacts of the specified activities, the availability of measures to minimize those potential impacts, and the practicability of implementing those measures, as we describe below.

*Implementation of Least Practicable Adverse Impact Standard*

Given the *NRDC* v. *Pritzker* decision, we discuss here how we determine whether a measure or set of measures meets the ''least practicable adverse impact'' standard. Our separate analysis of whether the take anticipated to result from Navy's activities meets the ''negligible impact'' standard appears in the Analysis and Negligible Impact Determination section below.

Our evaluation of potential mitigation measures includes consideration of two primary factors:

(1) The manner in which, and the degree to which, implementation of the potential measure(s) is expected to reduce adverse impacts to marine mammal species or stocks, their habitat, and their availability for subsistence uses (where relevant[7]). This analysis considers such things as the nature of the potential adverse impact (such as likelihood, scope, and range), the likelihood that the measure will be effective if implemented, and the likelihood of successful implementation; and

(2) The practicability of the measures for applicant implementation. Practicability of implementation may consider such things as cost, impact on the specified activities, and, in the case of a military readiness activity, specifically considers personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity (when evaluating measures to reduce adverse impact on the species or stocks).

Evaluation of Measures for Least Practicable Adverse Impact on Species or Stocks

While the language of the least practicable adverse impact standard calls for minimizing impacts to affected species or stocks, we recognize that the reduction of impacts to those species or stocks accrues through the application of mitigation measures that limit impacts to individual animals. Accordingly, NMFS' analysis focuses on measures that are designed to avoid or minimize impacts on individual marine mammals that are likely to increase the probability or severity of population-level effects.

While direct evidence of impacts to species or stocks from a specified activity is rarely available, and additional study is still needed to understand how specific disturbance events affect the fitness of individuals of certain species, there have been improvements in understanding the process by which disturbance effects are translated to the population. With recent scientific advancements (both marine mammal energetic research and the development of energetic frameworks), the relative likelihood or degree of impacts on species or stocks may often be inferred given a detailed understanding of the activity, the

[6] Outside of the military readiness context, mitigation may also be appropriate to ensure compliance with the ''small numbers'' language in MMPA sections 101(a)(5)(A) and (D).

[7] For more information on measures to effect the least practicable adverse impact on the availability of species or stocks for subsistence uses, see the Subsistence Harvest of Marine Mammals section below.

environment, and the affected species or stocks—and the best available science has been used here. This same information is used in the development of mitigation measures and helps us understand how mitigation measures contribute to lessening effects (or the risk thereof) to species or stocks. We also acknowledge that there is always the potential that new information, or a new recommendation could become available in the future and necessitate reevaluation of mitigation measures (which may be addressed through adaptive management) to see if further reductions of population impacts are possible and practicable.

In the evaluation of specific measures, the details of the specified activity will necessarily inform each of the two primary factors discussed above (expected reduction of impacts and practicability), and are carefully considered to determine the types of mitigation that are appropriate under the least practicable adverse impact standard. Analysis of how a potential mitigation measure may reduce adverse impacts on a marine mammal stock or species, consideration of personnel safety, practicality of implementation, and consideration of the impact on effectiveness of military readiness activities are not issues that can be meaningfully evaluated through a yes/no lens. The manner in which, and the degree to which, implementation of a measure is expected to reduce impacts, as well as its practicability in terms of these considerations, can vary widely. For example, a time/area restriction could be of very high value for decreasing population-level impacts (*e.g.,* avoiding disturbance of feeding females in an area of established biological importance) or it could be of lower value (*e.g.,* decreased disturbance in an area of high productivity but of less biological importance). Regarding practicability, a measure might involve restrictions in an area or time that impede the Navy's ability to certify a strike group (higher impact on mission effectiveness and national security), or it could mean delaying a small in-port training event by 30 minutes to avoid exposure of a marine mammal to injurious levels of sound (lower impact). A responsible evaluation of ''least practicable adverse impact'' will consider the factors along these realistic scales. Accordingly, the greater the likelihood that a measure will contribute to reducing the probability or severity of adverse impacts to the species or stock or its habitat, the greater the weight that measure is given when considered in combination with practicability to determine the appropriateness of the mitigation measure, and vice versa. We discuss consideration of these factors in greater detail below.

1. *Reduction of adverse impacts to marine mammal species or stocks and their habitat.* The emphasis given to a measure's ability to reduce the impacts on a species or stock considers the degree, likelihood, and context of the anticipated reduction of impacts to individuals (and how many individuals) as well as the status of the species or stock.

The ultimate impact on any individual from a disturbance event (which informs the likelihood of adverse species- or stock-level effects) is dependent on the circumstances and associated contextual factors, such as duration of exposure to stressors. Though any proposed mitigation needs to be evaluated in the context of the specific activity and the species or stocks affected, measures with the following types of effects have greater value in reducing the likelihood or severity of adverse species- or stock-level impacts: Avoiding or minimizing injury or mortality; limiting interruption of known feeding, breeding, mother/young, or resting behaviors; minimizing the abandonment of important habitat (temporally and spatially); minimizing the number of individuals subjected to these types of disruptions; and limiting degradation of habitat. Mitigating these types of effects is intended to reduce the likelihood that the activity will result in energetic or other types of impacts that are more likely to result in reduced reproductive success or survivorship. It is also important to consider the degree of impacts that are expected in the absence of mitigation in order to assess the added value of any potential measures. Finally, because the least practicable adverse impact standard gives NMFS discretion to weigh a variety of factors when determining appropriate mitigation measures and because the focus of the standard is on reducing impacts at the species or stock level, the least practicable adverse impact standard does not compel mitigation for every kind of take, or every individual taken, if that mitigation is unlikely to meaningfully contribute to the reduction of adverse impacts on the species or stock and its habitat, even when practicable for implementation by the applicant.

The status of the species or stock is also relevant in evaluating the appropriateness of potential mitigation measures in the context of least practicable adverse impact. The following are examples of factors that may (either alone, or in combination) result in greater emphasis on the importance of a mitigation measure in reducing impacts on a species or stock: The stock is known to be decreasing or status is unknown, but believed to be declining; the known annual mortality (from any source) is approaching or exceeding the potential biological removal (PBR) level (as defined in MMPA section 3(20)); the affected species or stock is a small, resident population; or the stock is involved in a UME or has other known vulnerabilities, such as recovering from an oil spill.

Habitat mitigation, particularly as it relates to rookeries, mating grounds, and areas of similar significance, is also relevant to achieving the standard and can include measures such as reducing impacts of the activity on known prey utilized in the activity area or reducing impacts on physical habitat. As with species- or stock-related mitigation, the emphasis given to a measure's ability to reduce impacts on a species or stock's habitat considers the degree, likelihood, and context of the anticipated reduction of impacts to habitat. Because habitat value is informed by marine mammal presence and use, in some cases there may be overlap in measures for the species or stock and for use of habitat.

We consider available information indicating the likelihood of any measure to accomplish its objective. If evidence shows that a measure has not typically been effective or successful, then either that measure should be modified or the potential value of the measure to reduce effects should be lowered.

2. *Practicability.* Factors considered may include cost, impact on activities, and, in the case of a military readiness activity, will include personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity (see MMPA section 101(a)(5)(A)(ii)).

*Assessment of Mitigation Measures for NWTT Study Area*

Section 216.104(a)(11) of NMFS' implementing regulations requires an applicant for incidental take authorization to include in its request, among other things, ''the availability and feasibility (economic and technological) of equipment, methods, and manner of conducting such activity or other means of effecting the least practicable adverse impact upon the affected species or stocks, their habitat, and [where applicable] on their availability for subsistence uses, paying particular attention to rookeries, mating grounds, and areas of similar significance.'' Thus NMFS' analysis of

the sufficiency and appropriateness of an applicant's measures under the least practicable adverse impact standard will always begin with evaluation of the mitigation measures presented in the application.

NMFS has fully reviewed the specified activities together with the mitigation measures included in the Navy's rulemaking/LOA application and the 2020 NWTT FSEIS/OEIS to determine if the mitigation measures would result in the least practicable adverse impact on marine mammals and their habitat. NMFS worked with the Navy in the development of the Navy's initially proposed measures, which are informed by years of implementation and monitoring. A complete discussion of the Navy's evaluation process used to develop, assess, and select mitigation measures, which was informed by input from NMFS, can be found in Section 5 (*Mitigation*) and Appendix K (*Geographic Mitigation Assessment*) of the 2020 NWTT FSEIS/OEIS. The process described in Chapter 5 (*Mitigation*) and Appendix K (*Geographic Mitigation Assessment*) of the 2020 NWTT FSEIS/OEIS robustly supported NMFS' independent evaluation of whether the mitigation measures meet the least practicable adverse impact standard.

As a general matter, where an applicant proposes measures that are likely to reduce impacts to marine mammals, the fact that they are included in the application indicates that the measures are practicable, and it is not necessary for NMFS to conduct a detailed analysis of the measures the applicant proposed (rather, they are simply included). However, it is still necessary for NMFS to consider whether there are additional practicable measures that would meaningfully reduce the probability or severity of impacts that could affect reproductive success or survivorship.

Since publication of the proposed rule, and in consideration of public comments received, additional mitigation requirements have been added that will further reduce the likelihood and/or severity of adverse impacts on marine mammal species and their habitat and are practicable for implementation. Below we describe the added measures that the Navy will implement and explain the manner in which they are expected to reduce the likelihood or severity of adverse impacts on marine mammals and their habitats.

1. The Navy will only conduct explosive Mine Countermeasure and Neutralization testing in daylight hours and in Beaufort Sea state number 3 conditions or less. This will assist Navy Lookouts in effectively sighting potential marine mammals, including Southern Resident killer whales, in the procedural mitigation zones.

2. The Navy will implement a new mitigation area, the Juan de Fuca Eddy Marine Species Mitigation Area, in which the Navy will not conduct explosive Mine Countermeasure and Neutralization Testing activities and will limit surface ship hull-mounted MF1 mid-frequency active sonar, eliminating impacts to marine mammals in this area from Mine Countermeasure and Neutralization activities, and minimizing impacts to marine mammals from MF1 sonar in this area. Specifically, the Navy will conduct no more than a total of 33 hours of surface ship hull-mounted MF1 mid-frequency active sonar during testing annually within 20 nmi from shore in the Marine Species Coastal Mitigation Area, in this new Juan de Fuca Eddy Marine Species Mitigation Area, and in the Olympic Coast National Marine Sanctuary Mitigation Area combined.

3. The Navy will issue seasonal awareness notification messages within 50 nmi from shore to alert Navy ships and aircraft operating within the Marine Species Coastal Mitigation Area to the possible presence of increased concentrations of Southern Resident killer whales from December 1 to June 30, humpback whales from May 1 through December 31, and gray whales from May 1 to November 30. To assist in avoiding interactions with whales, the Navy will instruct vessels to remain vigilant to the presence of Southern Resident killer whales, humpback whales, and gray whales that may be vulnerable to vessel strikes or potential impacts from training and testing activities. Platforms will use the information from the awareness notification messages to assist their visual observation of applicable mitigation zones during training and testing activities and to aid in the implementation of procedural mitigation.

4. The Navy will implement seasonal restrictions and distance-from-shore requirements for certain explosive bins, as described in detail in the *Mitigation Areas* section of this final rule. Additionally, the Navy will implement new annual and seven-year explosive ordnance limitations specific to explosive mine countermeasure and neutralization testing. These restrictions and limitations will further reduce impacts to marine mammals from explosives in nearshore and offshore habitats, including important feeding and migration areas for Southern Resident killer whales and humpback whales.

5. As noted above in #2, the Navy will conduct no more than a total of 33 hours of surface ship hull-mounted MF1 mid-frequency active sonar during testing annually within 20 nmi from shore in the Marine Species Coastal Mitigation Area, in the new Juan de Fuca Eddy Marine Species Mitigation Area, and in the Olympic Coast National Marine Sanctuary Mitigation Area combined. The annual restriction for testing previously only applied to the Olympic Coast National Marine Sanctuary Mitigation Area. This final rule also removes an exception that excluded the Quinault Range Site from the annual sonar restrictions that was included in the proposed rule. Now, the annual restrictions will apply throughout the entire Olympic Coastal National Marine Sanctuary Mitigation Area, including within the portion of the mitigation area that overlaps the Quinault Range Site. This reduction in activities is in areas that are important for Southern Resident killer whale and humpback whale feeding and migration.

6. The Navy will conduct a maximum of one Unmanned Underwater Vehicle Training event within 12 nmi from shore at the Quinault Range Site, and will cancel or move Unmanned Underwater Vehicle Training events within 12 nmi from shore at the Quinault Range Site if Southern Resident killer whales are detected at the planned training location during the event planning process, or immediately prior to the event, as applicable. This measure is expected to help avoid any potential impacts on Southern Resident killer whales during Unmanned Underwater Vehicle Training events.

7. NMFS has included several new measures in the Puget Sound and Strait of Juan de Fuca Mitigation Area that the Navy had been voluntarily implementing previously during Phase II activities, but are now required mitigation measures. Specifically, the Navy will not use low-, mid-, or high-frequency active sonar during training or testing unless a required element (*i.e.,* a criterion necessary for the success of the event) necessitates the activity be conducted in NWTT Inland Waters during (1) Unmanned Underwater Vehicle Training, (2) Civilian Port Defense—Homeland Security Anti-Terrorism/Force Protection Exercises, (3) activities conducted by Naval Sea Systems Command at designated locations, or (4) pierside sonar maintenance or testing at designated locations. Additionally, the Navy will use the lowest active sonar source levels practical to successfully accomplish

each event, and will not use explosives during testing. The Navy will not use explosives during training except at the Hood Canal Explosive Ordnance Disposal (EOD) Range and Crescent Harbor EOD Range during explosive mine neutralization activities involving the use of Navy divers. Additionally, Navy event planners are required to coordinate with Navy biologists during the event planning process prior to these events. The Navy will not conduct non-explosive live fire events (except firing blank weapons), including gunnery exercises, missile exercises, torpedo exercises, bombing exercises, and Kinetic Energy Weapon Testing.

8. In addition to the previous voluntary measures that the Navy will now implement as mitigation measures, the Navy will also implement several new mitigation measures within the Puget Sound and Strait of Juan de Fuca Mitigation Area. Within the Puget Sound and Strait of Juan de Fuca Mitigation Area, the Navy will conduct a maximum of one Unmanned Underwater Vehicle Training activity annually at the Navy 3 Operating Area, Navy 7 Operating Area, and Manchester Fuel Depot (*i.e.,* a maximum of one event at each location). Additionally, Navy event planners are required to coordinate with Navy biologists during the event planning process prior to conducting Unmanned Underwater Vehicle Training at the Navy 3 Operating Area, Manchester Fuel Depot, Crescent Harbor Explosive Ordnance Disposal Range, and Navy 7 Operating Area, and to cancel or move events to another training location if the presence of Southern Resident killer whales is reported through available monitoring networks. Additionally, the Navy will issue annual seasonal awareness notification messages to alert Navy ships and aircraft operating within the Puget Sound and Strait of Juan de Fuca Mitigation Area to the possible presence of concentrations of Southern Resident killer whales and gray whales. These messages are expected to help further avoid potential impacts from training and testing activities on Southern Resident killer whales and gray whales, and will coincide with the seasons in which Southern Resident killer whales and gray whales are most likely to be observed in the mitigation area (July 1 to November 30 for Southern Resident killer whales, and March 1 to May 31 for gray whales).

As described in the *Mitigation Areas* section of this final rule, the Puget Sound and Strait of Juan de Fuca Mitigation Area encompasses the full extent of NWTT Inland Waters, and includes feeding and potential migration habitat for gray whales and critical habitat for Southern Resident killer whales and one of their primary sources of prey, Puget Sound Chinook salmon. New mitigation in the Puget Sound and Strait of Juan de Fuca Mitigation Area is designed to help avoid any potential impacts from training and testing on Southern Resident killer whales in NWTT Inland Waters. As stated in the *Mitigation Areas* section of this final rule, with implementation of these new mitigation measures, we do not anticipate any take of Southern Resident killer whales in NWTT Inland Waters due to NWTT training and testing activities. Additionally, we expect that the new mitigation in this mitigation area will help reduce potential impacts on gray whales from testing and training activities.

In addition, the Navy has agreed to procedural mitigation measures that will reduce the probability and/or severity of impacts expected to result from acute exposure to acoustic sources and explosives, such as hearing impairment, more severe behavioral disturbance, as well as the probability of vessel strike. Specifically, the Navy will use a combination of delayed starts, powerdowns, and shutdowns to avoid or minimize mortality or serious injury, minimize the likelihood or severity of PTS or other injury, and reduce instances of TTS or more severe behavioral disturbance caused by acoustic sources or explosives. The Navy will also implement multiple time/area restrictions that will reduce take of marine mammals (as well as impacts on marine mammal habitat) in areas where or at times when they are known to engage in important behaviors, such as feeding, where the disruption of those behaviors would have a higher probability of resulting in impacts on reproduction or survival of individuals that could lead to population-level impacts.

The Navy assessed the practicability of these measures in the context of personnel safety, practicality of implementation, and their impacts on the Navy's ability to meet their Title 10 requirements and found that the measures are supportable. NMFS has independently evaluated the measures the Navy proposed in the manner described earlier in this section (*i.e.,* in consideration of their ability to reduce adverse impacts on marine mammal species and their habitat and their practicability for implementation). We have determined that the measures will significantly and adequately reduce impacts on the affected marine mammal species and stocks and their habitat and, further, be practicable for Navy implementation. Therefore, the mitigation measures assure that the Navy's activities will have the least practicable adverse impact on the species or stocks and their habitat.

*Measures Evaluated but not Included*

The Navy also evaluated numerous measures in the 2020 NWTT FSEIS/OEIS that were not included in the Navy's rulemaking/LOA application, and NMFS independently reviewed and concurs with the Navy's analysis that their inclusion was not appropriate under the least practicable adverse impact standard based on our assessment. The Navy considered these additional potential mitigation measures in two groups. First, Section 5 (*Mitigation)* of the 2020 NWTT FSEIS/OEIS, in the *Measures Considered but Eliminated* section, includes an analysis of an array of different types of mitigation that have been recommended over the years by non-governmental organizations or the public, through scoping or public comment on environmental compliance documents. Appendix K (*Geographic Mitigation Assessment*) of the 2020 NWTT FSEIS/OEIS includes an in-depth analysis of time/area restrictions that have been recommended over time. As described in Chapter 5 (*Mitigation*) of the 2020 NWTT FSEIS/OEIS, commenters sometimes recommend that the Navy reduce its overall amount of training, reduce explosive use, modify its sound sources, completely replace live training and testing with computer simulation, or include time of day restrictions. Many of these mitigation measures could potentially reduce the number of marine mammals taken, via direct reduction of the activities or amount of sound energy put in the water. However, as described in Section 5 (*Mitigation*) of the 2020 NWTT FSEIS/OEIS, the Navy needs to train and test in the conditions in which it fights—and these types of modifications fundamentally change the activity in a manner that will not support the purpose and need for the training and testing (*i.e.,* are entirely impracticable) and therefore are not considered further. NMFS finds the Navy's explanation for why adoption of these recommendations would unacceptably undermine the purpose of the testing and training persuasive. After independent review, NMFS finds Navy's judgment on the impacts of potential mitigation measures to personnel safety, practicality of implementation, and the effectiveness of training and testing within the NWTT Study Area persuasive, and for these

reasons, NMFS finds that these measures do not meet the least practicable adverse impact standard because they are not practicable.

Second, in Chapter 5 (*Mitigation*) of the 2020 NWTT FSEIS/OEIS, the Navy evaluated additional potential procedural mitigation measures, including increased mitigation zones, ramp-up measures, additional passive acoustic and visual monitoring, and decreased vessel speeds. Some of these measures have the potential to incrementally reduce take to some degree in certain circumstances, though the degree to which this would occur is typically low or uncertain. However, as described in the Navy's analysis, the measures would have significant direct negative effects on mission effectiveness and are considered impracticable (see Section 5 *Mitigation* of 2020 NWTT FSEIS/OEIS). NMFS independently reviewed the Navy's evaluation and concurs with this assessment, which supports NMFS' findings that the impracticability of this additional mitigation would greatly outweigh any potential minor reduction in marine mammal impacts that might result; therefore, these additional mitigation measures are not warranted.

Last, Appendix K (*Geographic Mitigation Assessment*) of the 2020 NWTT FSEIS/OEIS describes a comprehensive method for analyzing potential geographic mitigation that includes consideration of both a biological assessment of how the potential time/area limitation would benefit the species and its habitat (*e.g.,* is a key area of biological importance or would result in avoidance or reduction of impacts) in the context of the stressors of concern in the specific area and an operational assessment of the practicability of implementation (including an assessment of the specific importance of that area for training, considering proximity to training ranges and emergency landing fields and other issues). For most of the areas that were considered in the 2020 NWTT FSEIS/OEIS but not included in this rule, the Navy found that the mitigation was not warranted because the anticipated reduction of adverse impacts on marine mammal species and their habitat was not sufficient to offset the impracticability of implementation. In some cases potential benefits to marine mammals were non-existent, while in others the consequences on mission effectiveness were too great.

NMFS has reviewed the Navy's analysis in Section 5 *Mitigation* and Appendix K *Geographic Mitigation Assessment* of the 2020 NWTT FSEIS/OEIS, which considers the same factors that NMFS considers to satisfy the least practicable adverse impact standard, and concurs with the analysis and conclusions. Therefore, NMFS is not including any of the measures that the Navy ruled out in the 2020 NWTT FSEIS/OEIS.

Below, we describe additional measures that were considered but eliminated during the development of the final rule: (1) A full restriction on Mine Countermeasure and Neutralization testing in water depths less than 650 ft. and (2) A full restriction on Undersea Warfare Testing within 20 nmi from shore in the Marine Species Coastal Mitigation Area (except within the portion of the mitigation area that overlaps the Quinault Range Site).

Regarding the consideration of a full restriction on Mine Countermeasure and Neutralization testing in water depths less than 650 ft, water depths drop rapidly from 650 ft to 1,000 ft in the NWTT Offshore Area, and the Navy plans to conduct this activity in areas where water depths are less than 1,000 ft. Limiting the available testing area to areas deeper than 650 ft would allow the Navy a span of only one to two nmi in some cases to conduct the activity. Given the limited available area beyond 650 ft, and given that the typical testing depth of Mine Countermeasure and Neutralization testing is 300 ft, limiting testing to water depths greater than 650 ft would not be practical to implement with respect to allowing the Navy to meet mission requirements. In consideration of the reductions in potential impacts provided by the restrictions on Mine Countermeasure and Neutralization testing in the geographic mitigation areas, the required procedural mitigation restricting Mine Countermeasure and Neutralization testing to daylight hours only and in a Beaufort sea state of 3 or less, and combined with the impracticability for the Navy, NMFS found that this measure was not warranted.

Regarding the consideration of a full restriction on Undersea Warfare Testing within 20 nmi from shore in the Marine Species Coastal Mitigation Area (except within the portion of the mitigation area that overlaps with the Quinault Range Site), this final rule instead includes a cap of 33 hours of surface ship hull-mounted MF1 mid-frequency active sonar during testing annually within 20 nmi from shore in the Marine Species Coastal Mitigation Area, in the Juan de Fuca Eddy Marine Species Mitigation Area, and in the Olympic Coast National Marine Sanctuary Mitigation Area combined. NMFS concurred with the Navy's analysis that it would be impracticable to fully restrict Undersea Warfare testing in this area, and this limitation is expected to minimize impacts from sonar in the three areas combined.

The following sections describe the mitigation measures that will be implemented in association with the training and testing activities analyzed in this document. These are the mitigation measures that NMFS has determined will ensure the least practicable adverse impact on all affected species and their habitat, including the specific considerations for military readiness activities. The mitigation measures are organized into two categories: procedural mitigation and mitigation areas.

*Procedural Mitigation*

Procedural mitigation is mitigation that the Navy will implement whenever and wherever an applicable training or testing activity takes place within the NWTT Study Area. Procedural mitigation is customized for each applicable activity category or stressor. Procedural mitigation generally involves: (1) The use of one or more trained Lookouts to diligently observe for specific biological resources (including marine mammals) within a mitigation zone, (2) requirements for Lookouts to immediately communicate sightings of these specific biological resources to the appropriate watch station for information dissemination, and (3) requirements for the watch station to implement mitigation (*e.g.,* halt an activity) until certain recommencement conditions have been met. The first procedural mitigation (Table 35) is designed to aid Lookouts and other applicable Navy personnel in their observation, environmental compliance, and reporting responsibilities. The remainder of the procedural mitigation measures (Tables 36 through 49) are organized by stressor type and activity category and include acoustic stressors (*i.e.,* active sonar, weapons firing noise), explosive stressors (*i.e.,* sonobuoys, torpedoes, medium-caliber and large-caliber projectiles, missiles, bombs, mine counter-measure and neutralization activities, mine neutralization involving Navy divers), and physical disturbance and strike stressors (*i.e.,* vessel movement, towed in-water devices, small-, medium-, and large-caliber non-explosive practice munitions, non-explosive missiles, non-explosive bombs and mine shapes).

TABLE 35—PROCEDURAL MITIGATION FOR ENVIRONMENTAL AWARENESS AND EDUCATION

| Procedural Mitigation Description |
|---|
| *Stressor or Activity:*<br>• All training and testing activities, as applicable.<br>*Mitigation Requirements:*<br>• Appropriate Navy personnel (including civilian personnel) involved in mitigation and training or testing activity reporting under the specified activities will complete one or more modules of the U.S. Navy Afloat Environmental Compliance Training Series, as identified in their career path training plan. Modules include:<br>—Introduction to the U.S. Navy Afloat Environmental Compliance Training Series. The introductory module provides information on environmental laws (*e.g.,* Endangered Species Act, Marine Mammal Protection Act) and the corresponding responsibilities that are relevant to Navy training and testing activities. The material explains why environmental compliance is important in supporting the Navy's commitment to environmental stewardship.<br>—Marine Species Awareness Training. All bridge watch personnel, Commanding Officers, Executive Officers, maritime patrol aircraft aircrews, anti-submarine warfare and mine warfare rotary-wing aircrews, Lookouts, and equivalent civilian personnel must successfully complete the Marine Species Awareness Training prior to standing watch or serving as a Lookout. The Marine Species Awareness Training provides information on sighting cues, visual observation tools and techniques, and sighting notification procedures. Navy biologists developed Marine Species Awareness Training to improve the effectiveness of visual observations for biological resources, focusing on marine mammals and sea turtles, and including floating vegetation, jellyfish aggregations, and flocks of seabirds.<br>—U.S. Navy Protective Measures Assessment Protocol. This module provides the necessary instruction for accessing mitigation requirements during the event planning phase using the Protective Measures Assessment Protocol software tool.<br>—U.S. Navy Sonar Positional Reporting System and Marine Mammal Incident Reporting. This module provides instruction on the procedures and activity reporting requirements for the Sonar Positional Reporting System and marine mammal incident reporting. |

TABLE 36—PROCEDURAL MITIGATION FOR ACTIVE SONAR

| Procedural Mitigation Description |
|---|
| *Stressor or Activity:*<br>• Low-frequency active sonar, mid-frequency active sonar, high-frequency active sonar<br>—For vessel-based active sonar activities, mitigation applies only to sources that are positively controlled and deployed from manned surface vessels (*e.g.,* sonar sources towed from manned surface platforms).<br>—For aircraft-based active sonar activities, mitigation applies only to sources that are positively controlled and deployed from manned aircraft that do not operate at high altitudes (*e.g.,* rotary-wing aircraft). Mitigation does not apply to active sonar sources deployed from unmanned aircraft or aircraft operating at high altitudes (*e.g.,* maritime patrol aircraft).<br>*Number of Lookouts and Observation Platform:*<br>• Hull-mounted sources:<br>—1 Lookout: Platforms with space or manning restrictions while underway (at the forward part of a small boat or ship) and platforms using active sonar while moored or at anchor (including pierside).<br>—2 Lookouts: Platforms without space or manning restrictions while underway (at the forward part of the ship).<br>Sources that are not hull-mounted:<br>—1 Lookout on the ship or aircraft conducting the activity.<br>*Mitigation Requirements:*<br>• Mitigation zones:<br>—1,000 yd power down, 500 yd power down, and 200 yd or 100 yd shut down for low-frequency active sonar at 200 decibels (dB) and hull-mounted mid-frequency active sonar (see *During the activity* below).<br>—200 yd or 100 yd shut down for low-frequency active sonar <200 dB, mid-frequency active sonar sources that are not hull-mounted, and high-frequency active sonar (see *During the activity* below).<br>• Prior to the initial start of the activity (*e.g.,* when maneuvering on station):<br>—Navy personnel will observe the mitigation zone for floating vegetation; if floating vegetation is observed, Navy personnel will relocate or delay the start until the mitigation zone is clear.<br>—Navy personnel will observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel will relocate or delay the start of active sonar transmission.<br>• During the activity:<br>—Low-frequency active sonar at 200 decibels (dB) and hull-mounted mid-frequency active sonar: (1) Navy personnel must observe the mitigation zone for marine mammals; Navy personnel will power down active sonar transmission by 6 dB if a marine mammal is observed within 1,000 yd of the sonar source; Navy personnel will power down an additional 4 dB (10 dB total) if a marine mammal is observed within 500 yd of the sonar source; Navy personnel must cease transmission if cetaceans are observed within 200 yd of the sonar source in any location in the Study Area; (2) Navy personnel must cease transmission if pinnipeds in the NWTT Offshore Area or Western Behm Canal are observed within 200 yd of the sonar source and cease transmission if pinnipeds in NWTT Inland Waters are observed within 100 yd of the sonar source (except if hauled out on, or in the water near, man-made structures and vessels).<br>—Low-frequency active sonar <200 dB, mid-frequency active sonar sources that are not hull-mounted, and high-frequency active sonar: Navy personnel must observe the mitigation zone for marine mammals; Navy personnel will cease transmission if cetaceans are observed within 200 yd of the sonar source in any location in the Study Area. Navy personnel will cease transmission if pinnipeds in the NWTT Offshore Area or Western Behm Canal are observed within 200 yd of the sonar source; Navy personnel will cease transmission if pinnipeds in NWTT Inland Waters is observed within 100 yd of the sonar source (except if hauled out on, or in the water near, man-made structures and vessels).<br>• Commencement/recommencement conditions after a marine mammal sighting before or during the activity: |

TABLE 36—PROCEDURAL MITIGATION FOR ACTIVE SONAR—Continued

| Procedural Mitigation Description |
|---|
| —Navy personnel will allow a sighted marine mammal to leave the mitigation zone prior to the initial start of the activity (by delaying the start) or during the activity (by not recommencing or powering up active sonar transmission) until one of the following conditions has been met: (1) The animal is observed exiting the mitigation zone; (2) the animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to the sonar source; (3) the mitigation zone has been clear from any additional sightings for 10 minutes for aircraft-deployed sonar sources or 30 minutes for vessel-deployed sonar sources; (4) for mobile activities, the active sonar source has transited a distance equal to double that of the mitigation zone size beyond the location of the last sighting; or (5) for activities using hull-mounted sonar, the Lookout concludes that dolphins are deliberately closing in on the ship to ride the ship's bow wave, and are therefore out of the main transmission axis of the sonar (and there are no other marine mammal sightings within the mitigation zone). |

TABLE 37—PROCEDURAL MITIGATION FOR WEAPONS FIRING NOISE

| Procedural Mitigation Description |
|---|
| *Stressor or Activity:*<br>• Weapons firing noise associated with large-caliber gunnery activities.<br>*Number of Lookouts and Observation Platform:*<br>• 1 Lookout positioned on the ship conducting the firing.<br>—Depending on the activity, the Lookout could be the same one described for Procedural Mitigation for Explosive Medium-Caliber and Large-Caliber Projectiles (Table 40) or Procedural Mitigation for Small-, Medium-, and Large-Caliber Non-Explosive Practice Munitions (Table 47).<br>*Mitigation Requirements:*<br>• Mitigation zone:<br>—30° on either side of the firing line out to 70 yd from the muzzle of the weapon being fired.<br>• Prior to the initial start of the activity:<br>—Navy personnel will observe the mitigation zone for floating vegetation; if floating vegetation is observed, Navy personnel will relocate or delay the start until the mitigation zone is clear.<br>—Navy personnel will observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel will relocate or delay the start of weapons firing.<br>• During the activity:<br>—Navy personnel will observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel will cease weapons firing.<br>• Commencement/recommencement conditions after a marine mammal sighting before or during the activity:<br>—Navy personnel will allow a sighted marine mammal to leave the mitigation zone prior to the initial start of the activity (by delaying the start) or during the activity (by not recommencing weapons firing) until one of the following conditions has been met: (1) The animal is observed exiting the mitigation zone; (2) the animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to the firing ship; (3) the mitigation zone has been clear from any additional sightings for 30 minutes; or (4) for mobile activities, the firing ship has transited a distance equal to double that of the mitigation zone size beyond the location of the last sighting. |

TABLE 38—PROCEDURAL MITIGATION FOR EXPLOSIVE SONOBUOYS

| Procedural Mitigation Description |
|---|
| *Stressor or Activity:*<br>• Explosive sonobuoys.<br>*Number of Lookouts and Observation Platform:*<br>• 1 Lookout positioned in an aircraft or on a small boat.<br>• If additional platforms are participating in the activity, personnel positioned in those assets (*e.g.,* safety observers, evaluators) will support observing the mitigation zone for marine mammals while performing their regular duties.<br>*Mitigation Requirements:*<br>• Mitigation zone:<br>—600 yd. around an explosive sonobuoy.<br>• Prior to the initial start of the activity (*e.g.,* during deployment of a sonobuoy field, which typically lasts 20–30 minutes):<br>—Navy personnel will observe the mitigation zone for floating vegetation; if floating vegetation is observed, Navy personnel will relocate or delay the start until the mitigation zone is clear.<br>—Navy personnel will conduct passive acoustic monitoring for marine mammals; personnel will use information from detections to assist visual observations.<br>—Navy personnel will visually observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel will relocate or delay the start of sonobuoy or source/receiver pair detonations.<br>• During the activity:<br>—Navy personnel will observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel will cease sonobuoy or source/receiver pair detonations.<br>• Commencement/recommencement conditions after a marine mammal sighting before or during the activity:<br>—Navy personnel will allow a sighted marine mammal to leave the mitigation zone prior to the initial start of the activity (by delaying the start) or during the activity (by not recommencing detonations) until one of the following conditions has been met: (1) The animal is observed exiting the mitigation zone; (2) the animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to the sonobuoy; or (3) the mitigation zone has been clear from any additional sightings for 10 min when the activity involves aircraft that have fuel constraints, or 30 min when the activity involves aircraft that are not typically fuel constrained. |

TABLE 38—PROCEDURAL MITIGATION FOR EXPLOSIVE SONOBUOYS—Continued

| Procedural Mitigation Description |
|---|
| • After completion of the activity (*e.g.,* prior to maneuvering off station):<br>—When practical (*e.g.,* when platforms are not constrained by fuel restrictions or mission-essential follow-on commitments), Navy personnel will observe the vicinity of where detonations occurred; if any injured or dead marine mammals are observed, Navy personnel will follow established incident reporting procedures.<br>—If additional platforms are supporting this activity (*e.g.,* providing range clearance), Navy personnel positioned on these assets will assist in the visual observation of the area where detonations occurred. |

TABLE 39—PROCEDURAL MITIGATION FOR EXPLOSIVE TORPEDOES

| Procedural Mitigation Description |
|---|
| *Stressor or Activity:*<br>• Explosive torpedoes.<br>*Number of Lookouts and Observation Platform:*<br>• 1 Lookout positioned in an aircraft.<br>• If additional platforms are participating in the activity, personnel positioned in those assets (*e.g.,* safety observers, evaluators) will support observing the mitigation zone for marine mammals while performing their regular duties.<br>*Mitigation Requirements:*<br>• Mitigation zone:<br>—2,100 yd around the intended impact location.<br>• Prior to the initial start of the activity (*e.g.,* during deployment of the target):<br>—Navy personnel will observe the mitigation zone for floating vegetation; if floating vegetation is observed, Navy personnel will relocate or delay the start until the mitigation zone is clear.<br>—Navy personnel will conduct passive acoustic monitoring for marine mammals; personnel will use information from detections to assist visual observations.<br>—Navy personnel will visually observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel will relocate or delay the start of firing.<br>• During the activity:<br>—Navy personnel will observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel will cease firing.<br>• Commencement/recommencement conditions after a marine mammal sighting before or during the activity:<br>—Navy personnel will allow a sighted marine mammal to leave the mitigation zone prior to the initial start of the activity (by delaying the start) or during the activity (by not recommencing firing) until one of the following conditions has been met: (1) The animal is observed exiting the mitigation zone; (2) the animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to the intended impact location; or (3) the mitigation zone has been clear from any additional sightings for 10 minutes when the activity involves aircraft that have fuel constraints, or 30 minutes when the activity involves aircraft that are not typically fuel constrained.<br>• After completion of the activity (*e.g.,* prior to maneuvering off station):<br>—When practical (*e.g.,* when platforms are not constrained by fuel restrictions or mission-essential follow-on commitments), Navy personnel will observe for marine mammals in the vicinity of where detonations occurred; if any injured or dead marine mammals are observed, Navy personnel will follow established incident reporting procedures.<br>—If additional platforms are supporting this activity (*e.g.,* providing range clearance), Navy personnel positioned on these assets will assist in the visual observation of the area where detonations occurred. |

TABLE 40—PROCEDURAL MITIGATION FOR EXPLOSIVE MEDIUM-CALIBER AND LARGE-CALIBER PROJECTILES

| Procedural Mitigation Description |
|---|
| *Stressor or Activity:*<br>• Gunnery activities using explosive medium-caliber and large-caliber projectiles<br><br>—Mitigation applies to activities using a surface target.<br>*Number of Lookouts and Observation Platform:*<br>• 1 Lookout on the vessel conducting the activity.<br>—For activities using explosive large-caliber projectiles, depending on the activity, the Lookout could be the same as the one described for Procedural Mitigation for Weapons Firing Noise (Table 37).<br>• If additional platforms are participating in the activity, personnel positioned in those assets (*e.g.,* safety observers, evaluators) will support observing the mitigation zone for marine mammals while performing their regular duties.<br>*Mitigation Requirements:*<br>• Mitigation zones:<br>—600 yd around the intended impact location for explosive medium-caliber projectiles.<br>—1,000 yd around the intended impact location for explosive large-caliber projectiles.<br>• Prior to the initial start of the activity (*e.g.,* when maneuvering on station):<br>—Navy personnel will observe the mitigation zone for floating vegetation; if floating vegetation is observed, Navy personnel will relocate or delay the start until the mitigation zone is clear.<br>—Navy personnel will observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel will relocate or delay the start of firing.<br>• During the activity:<br>—Navy personnel will observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel will cease firing. |

TABLE 40—PROCEDURAL MITIGATION FOR EXPLOSIVE MEDIUM-CALIBER AND LARGE-CALIBER PROJECTILES—Continued

| Procedural Mitigation Description |
|---|
| • Commencement/recommencement conditions after a marine mammal sighting before or during the activity:<br>—Navy personnel will allow a sighted marine mammal to leave the mitigation zone prior to the initial start of the activity (by delaying the start) or during the activity (by not recommencing firing) until one of the following conditions has been met: (1) The animal is observed exiting the mitigation zone; (2) the animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to the intended impact location; (3) the mitigation zone has been clear from any additional sightings for 30 minutes for vessel-based firing; or (4) for activities using mobile targets, the intended impact location has transited a distance equal to double that of the mitigation zone size beyond the location of the last sighting.<br>• After completion of the activity (*e.g.,* prior to maneuvering off station):<br>—When practical (*e.g.,* when platforms are not constrained by fuel restrictions or mission-essential follow-on commitments), Navy personnel will observe for marine mammals in the vicinity of where detonations occurred; if any injured or dead marine mammals are observed, Navy personnel will follow established incident reporting procedures.<br>—If additional platforms are supporting this activity (*e.g.,* providing range clearance), Navy personnel positioned on these assets will assist in the visual observation of the area where detonations occurred. |

TABLE 41—PROCEDURAL MITIGATION FOR EXPLOSIVE MISSILES

| Procedural Mitigation Description |
|---|
| *Stressor or Activity:*<br>• Aircraft-deployed explosive missiles.<br>—Mitigation applies to activities using a surface target.<br>*Number of Lookouts and Observation Platform*<br>• 1 Lookout positioned in an aircraft<br>• If additional platforms are participating in the activity, personnel positioned in those assets (*e.g.,* safety observers, evaluators) will support observing the mitigation zone for marine mammals and other applicable biological resources while performing their regular duties.<br>*Mitigation Requirements:*<br>• Mitigation zone:<br>—2,000 yd around the intended impact location.<br>• Prior to the initial start of the activity (*e.g.,* during a fly-over of the mitigation zone):<br>—Navy personnel will observe the mitigation zone for floating vegetation; if floating vegetation is observed, Navy personnel will relocate or delay the start until the mitigation zone is clear.<br>—Navy personnel will observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel will relocate or delay the start of firing.<br>• During the activity:<br>—Navy personnel will observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel will cease firing.<br>• Commencement/recommencement conditions after a marine mammal sighting before or during the activity:<br>—Navy personnel will allow a sighted marine mammal to leave the mitigation zone prior to the initial start of the activity (by delaying the start) or during the activity (by not recommencing firing) until one of the following conditions has been met: (1) The animal is observed exiting the mitigation zone; (2) the animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to the intended impact location; or (3) the mitigation zone has been clear from any additional sightings for 10 minutes when the activity involves aircraft that have fuel constraints, or 30 minutes when the activity involves aircraft that are not typically fuel constrained.<br>• After completion of the activity (*e.g.,* prior to maneuvering off station):<br>—When practical (*e.g.,* when platforms are not constrained by fuel restrictions or mission-essential follow-on commitments), Navy personnel will observe the vicinity of where detonations occurred; if any injured or dead marine mammals are observed, Navy personnel will follow established incident reporting procedures.<br>—If additional platforms are supporting this activity (*e.g.,* providing range clearance), Navy personnel positioned on these assets will assist in the visual observation of the area where detonations occurred. |

TABLE 42—PROCEDURAL MITIGATION FOR EXPLOSIVE BOMBS

| Procedural Mitigation Description |
|---|
| *Stressor or Activity:*<br>• Explosive bombs.<br>*Number of Lookouts and Observation Platform:*<br>• 1 Lookout positioned in the aircraft conducting the activity.<br>• If additional platforms are participating in the activity, personnel positioned in those assets (*e.g.,* safety observers, evaluators) will support observing the mitigation zone for marine mammals while performing their regular duties.<br>*Mitigation Requirements:*<br>• Mitigation zone:<br>—2,500 yd around the intended target.<br>• Prior to the initial start of the activity (*e.g.,* when arriving on station):<br>—Navy personnel will observe the mitigation zone for floating vegetation; if floating vegetation is observed, Navy personnel will relocate or delay the start until the mitigation zone is clear.<br>—Navy personnel will observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel will relocate or delay the start of bomb deployment.<br>• During the activity (*e.g.,* during target approach): |

TABLE 42—PROCEDURAL MITIGATION FOR EXPLOSIVE BOMBS—Continued

| Procedural Mitigation Description |
|---|
| —Navy personnel will observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel will cease bomb deployment.<br>• Commencement/recommencement conditions after a marine mammal sighting before or during the activity:<br>—Navy personnel will allow a sighted marine mammal to leave the mitigation zone prior to the initial start of the activity (by delaying the start) or during the activity (by not recommencing bomb deployment) until one of the following conditions has been met: (1) the animal is observed exiting the mitigation zone; (2) the animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to the intended target; (3) the mitigation zone has been clear from any additional sightings for 10 min; or (4) for activities using mobile targets, the intended target has transited a distance equal to double that of the mitigation zone size beyond the location of the last sighting.<br>• After completion of the activity (*e.g.,* prior to maneuvering off station):<br>—When practical (*e.g.,* when platforms are not constrained by fuel restrictions or mission-essential follow-on commitments), Navy personnel will observe for marine mammals in the vicinity of where detonations occurred; if any injured or dead marine mammals are observed, Navy personnel will follow established incident reporting procedures.<br>—If additional platforms are supporting this activity (*e.g.,* providing range clearance), Navy personnel positioned on these assets will assist in the visual observation of the area where detonations occurred. |

TABLE 43—PROCEDURAL MITIGATION FOR EXPLOSIVE MINE COUNTERMEASURE AND NEUTRALIZATION ACTIVITIES

| Procedural Mitigation Description |
|---|
| *Stressor or Activity:*<br>• Explosive Mine Countermeasure and Neutralization activities.<br>*Number of Lookouts and Observation Platform:*<br>• 1 Lookout positioned on a vessel or in an aircraft when implementing the smaller mitigation zone.<br>• 2 Lookouts (one positioned in an aircraft and one on a small boat) when implementing the larger mitigation zone.<br>• If additional platforms are participating in the activity, Navy personnel positioned in those assets (*e.g.,* safety observers, evaluators) will support observing the mitigation zone for marine mammals while performing their regular duties.<br>*Mitigation Requirements:*<br>• Mitigation zones:<br>—600 yd around the detonation site for activities using ≤5 lb net explosive weight.<br>—2,100 yd around the detonation site for activities using >5–60 lb net explosive weight.<br>• Prior to the initial start of the activity (*e.g.,* when maneuvering on station; typically, 10 minutes when the activity involves aircraft that have fuel constraints, or 30 minutes when the activity involves aircraft that are not typically fuel constrained):<br>—Navy personnel will observe the mitigation zone for floating vegetation; if floating vegetation is observed, Navy personnel will relocate or delay the start until the mitigation zone is clear.<br>—Navy personnel will observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel will relocate or delay the start of detonations.<br>• During the activity:<br>—Navy personnel will observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel will cease detonations.<br>—Navy personnel will use the smallest practicable charge size for each activity.<br>—Navy personnel will conduct activities in daylight hours and only in Beaufort Sea state number 3 conditions or less.<br>• Commencement/recommencement conditions after a marine mammal sighting before or during the activity:<br>—Navy personnel will allow a sighted marine mammal to leave the mitigation zone prior to the initial start of the activity (by delaying the start) or during the activity (by not recommencing detonations) until one of the following conditions has been met: (1) the animal is observed exiting the mitigation zone; (2) the animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to detonation site; or (3) the mitigation zone has been clear from any additional sightings for 10 min when the activity involves aircraft that have fuel constraints, or 30 min when the activity involves aircraft that are not typically fuel constrained.<br>• After completion of the activity (typically 10 min when the activity involves aircraft that have fuel constraints, or 30 min when the activity involves aircraft that are not typically fuel constrained):<br>—Navy personnel will observe for marine mammals in the vicinity of where detonations occurred; if any injured or dead marine mammals are observed, Navy personnel will follow established incident reporting procedures.<br>—If additional platforms are supporting this activity (*e.g.,* providing range clearance), Navy personnel positioned on these assets will assist in the visual observation of the area where detonations occurred. |

TABLE 44—PROCEDURAL MITIGATION FOR EXPLOSIVE MINE NEUTRALIZATION ACTIVITIES LNVOLVING NAVY DIVERS

| Procedural Mitigation Description |
|---|
| *Stressor or Activity:*<br>• Explosive mine neutralization activities involving Navy divers.<br>*Number of Lookouts and Observation Platform:*<br>• 2 Lookouts on two small boats with one Lookout each, one of which will be a Navy biologist.<br>• All divers placing the charges on mines will support the Lookouts while performing their regular duties and will report applicable sightings to the lead Lookout, the supporting small boat, or the Range Safety Officer.<br>• If additional platforms are participating in the activity, personnel positioned on those assets (*e.g.,* safety observers, evaluators) will support observing the mitigation zone for marine mammals while performing their regular duties.<br>*Mitigation Requirements:*<br>• Mitigation zone: |

TABLE 44—PROCEDURAL MITIGATION FOR EXPLOSIVE MINE NEUTRALIZATION ACTIVITIES LNVOLVING NAVY DIVERS—Continued

| Procedural Mitigation Description |
|---|
| —500 yd around the detonation site during activities using >0.5–2.5 lb net explosive weight.<br>• Prior to the initial start of the activity (starting 30 minutes before the first planned detonation):<br>—Navy personnel will observe the mitigation zone for floating vegetation; if floating vegetation is observed, Navy personnel will relocate or delay the start until the mitigation zone is clear.<br>—Navy personnel will observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel will relocate or delay the start of detonations.<br>—Navy personnel will ensure the mitigation zone is clear of marine mammals for 30 minutes prior to commencing a detonation.<br>—A Navy biologist will serve as the lead Lookout and will make the final determination that the mitigation zone is clear of any biological resource sightings, including marine mammals, prior to the commencement of a detonation. The Navy biologist will maintain radio communication with the unit conducting the event and the other Lookout.<br>• During the activity:<br>—Navy personnel will observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel will cease detonations.<br>—To the maximum extent practical depending on mission requirements, safety, and environmental conditions, boats will position themselves near the midpoint of the mitigation zone radius (but outside of the detonation plume and human safety zone), will position themselves on opposite sides of the detonation location (when two boats are used), and will travel in a circular pattern around the detonation location with one Lookout observing inward toward the detonation site and the other observing outward toward the perimeter of the mitigation zone.<br>—Navy personnel will use only positively controlled charges (*i.e.,* no time-delay fuses).<br>—Navy personnel will use the smallest practicable charge size for each activity.<br>—Activities will be conducted in Beaufort sea state number 2 conditions or better and will not be conducted in low visibility conditions.<br>• Commencement/recommencement conditions after a marine mammal sighting before or during the activity:<br>—Navy personnel will allow a sighted marine mammal to leave the mitigation zone prior to the initial start of the activity (by delaying the start) or during the activity (by not recommencing detonation) until one of the following conditions has been met: (1) The animal is observed exiting the mitigation zone; (2) the animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to the detonation site; or (3) the mitigation zone has been clear from any additional sightings for 30 minutes.<br>• After each detonation and the completion of an activity (for 30 minutes):<br>—Navy personnel will observe for marine mammals in the vicinity of where detonations occurred and immediately downstream of the detonation location; if any injured or dead marine mammals are observed, Navy personnel will follow established incident reporting procedures.<br>—If additional platforms are supporting this activity (*e.g.,* providing range clearance), Navy personnel positioned on these assets will assist in the visual observation of the area where detonations occurred. |

TABLE 45—PROCEDURAL MITIGATION FOR VESSEL MOVEMENT

| Procedural Mitigation Description |
|---|
| *Stressor or Activity:*<br>• Vessel movement:<br>—The mitigation will not be applied if: (1) The vessel's safety is threatened, (2) the vessel is restricted in its ability to maneuver (*e.g.,* during launching and recovery of aircraft or landing craft, during towing activities, when mooring, and during Transit Protection Program exercises or other events involving escort vessels), (3) the vessel is submerged [1] or operated autonomously, or (4) when impractical based on mission requirements (*e.g.,* during test body retrieval by range craft).<br>*Number of Lookouts and Observation Platform:*<br>• 1 Lookout on the vessel that is underway.<br>*Mitigation Requirements:*<br>• Mitigation zones:<br>—500 yd around whales.<br>—200 yd (for surface ships, which do not include small boats) around marine mammals other than whales (except bow-riding dolphins and pinnipeds hauled out on man-made navigational structures, port structures, and vessels).<br>—100 yd (for small boats, such as range craft) around marine mammals other than whales (except bow-riding dolphins and pinnipeds hauled out on man-made navigational structures, port structures, and vessels).<br>• During the activity:<br>—When underway, Navy personnel will observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel will maneuver to maintain distance.<br>• Additional requirement:<br>—If a marine mammal vessel strike occurs, Navy personnel will follow the established incident reporting procedures. |

[1] NMFS has clarified in this final rule that this measure does not apply to submerged vessels. This does not change the scope of the mitigation measure, however, as the description of mitigation zones in the proposed rule as well as this rule explain that these zones apply to surface vessels and small boats, neither of which include submerged vessels.

TABLE 46—PROCEDURAL MITIGATION FOR TOWED IN-WATER DEVICES

| Procedural Mitigation Description |
|---|
| *Stressor or Activity:*<br>• Towed in-water devices: |

TABLE 46—PROCEDURAL MITIGATION FOR TOWED IN-WATER DEVICES—Continued

| Procedural Mitigation Description |
|---|
| —Mitigation applies to devices that are towed from a manned surface platform or manned aircraft, or when a manned support craft is already participating in an activity involving in-water devices being towed by unmanned platforms.<br>—The mitigation will not be applied if the safety of the towing platform or in-water device is threatened.<br>*Number of Lookouts and Observation Platform:*<br>• 1 Lookout positioned on the towing platform or support craft.<br>*Mitigation Requirements:*<br>• Mitigation zones:<br>—250 yd (for in-water devices towed by aircraft or surface ships) around marine mammals (except bow-riding dolphins and pinnipeds hauled out on man-made navigational structures, port structures, and vessels).<br>—100 yd (for in-water devices towed by small boats, such as range craft) around marine mammals (except bow-riding dolphins and pinnipeds hauled out on man-made navigational structures, port structures, and vessels).<br>• During the activity (*i.e.,* when towing an in-water device):<br>—Navy personnel will observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel will maneuver to maintain distance. |

TABLE 47—PROCEDURAL MITIGATION FOR SMALL-, MEDIUM-, AND LARGE-CALIBER NON-EXPLOSIVE PRACTICE MUNITIONS

| Procedural Mitigation Description |
|---|
| *Stressor or Activity:*<br>• Gunnery activities using small-, medium-, and large-caliber non-explosive practice munitions.<br>—Mitigation applies to activities using a surface target.<br>*Number of Lookouts and Observation Platform:*<br>• 1 Lookout positioned on the platform conducting the activity.<br>• Depending on the activity, the Lookout could be the same as the one described for Procedural Mitigation for Weapons Firing Noise (Table 37).<br>*Mitigation Requirements:*<br>• Mitigation zone:<br>—200 yd around the intended impact location.<br>• Prior to the initial start of the activity (*e.g.,* when maneuvering on station):<br>—Navy personnel will observe the mitigation zone for floating vegetation; if floating vegetation is observed, Navy personnel will relocate or delay the start until the mitigation zone is clear.<br>—Navy personnel will observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel will relocate or delay the start of firing.<br>• During the activity:<br>—Navy personnel will observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel will cease firing.<br>• Commencement/recommencement conditions after a marine mammal sighting before or during the activity:<br>—Navy personnel will allow a sighted marine mammal to leave the mitigation zone prior to the initial start of the activity (by delaying the start) or during the activity (by not recommencing firing) until one of the following conditions has been met: (1) The animal is observed exiting the mitigation zone; (2) the animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to the intended impact location; (3) the mitigation zone has been clear from any additional sightings for 10 minutes for aircraft-based firing or 30 minutes for vessel-based firing; or (4) for activities using a mobile target, the intended impact location has transited a distance equal to double that of the mitigation zone size beyond the location of the last sighting. |

TABLE 48—PROCEDURAL MITIGATION FOR NON-EXPLOSIVE MISSILES

| Procedural Mitigation Description |
|---|
| *Stressor or Activity:*<br>• Aircraft-deployed non-explosive missiles.<br>• Mitigation applies to activities using a surface target.<br>*Number of Lookouts and Observation Platform:*<br>• 1 Lookout positioned in an aircraft.<br>*Mitigation Requirements:*<br>• Mitigation zone:<br>—900 yd around the intended impact location.<br>• Prior to the initial start of the activity (*e.g.,* during a fly-over of the mitigation zone):<br>—Navy personnel will observe the mitigation zone for floating vegetation; if floating vegetation is observed, Navy personnel will relocate or delay the start until the mitigation zone is clear.<br>—Navy personnel will observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel will relocate or delay the start of firing.<br>• During the activity:<br>—Navy personnel will observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel will cease firing.<br>• Commencement/recommencement conditions after a marine mammal sighting prior to or during the activity: |

TABLE 48—PROCEDURAL MITIGATION FOR NON-EXPLOSIVE MISSILES—Continued

| Procedural Mitigation Description |
| --- |
| —Navy personnel will allow a sighted marine mammal to leave the mitigation zone prior to the initial start of the activity (by delaying the start) or during the activity (by not recommencing firing) until one of the following conditions has been met: (1) The animal is observed exiting the mitigation zone; (2) the animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to the intended impact location; or (3) the mitigation zone has been clear from any additional sightings for 10 minutes when the activity involves aircraft that have fuel constraints, or 30 minutes when the activity involves aircraft that are not typically fuel constrained. |

TABLE 49—PROCEDURAL MITIGATION FOR NON-EXPLOSIVE BOMBS AND MINE SHAPES

| Procedural Mitigation Description |
| --- |
| *Stressor or Activity:*<br>• Non-explosive bombs.<br>• Non-explosive mine shapes during mine laying activities.<br>*Number of Lookouts and Observation Platform:*<br>• 1 Lookout positioned in an aircraft.<br>*Mitigation Requirements:*<br>• Mitigation zone:<br>—1,000 yd around the intended target.<br>• Prior to the initial start of the activity (*e.g.,* when arriving on station):<br>—Navy personnel will observe the mitigation zone for floating vegetation; if floating vegetation is observed, Navy personnel will relocate or delay the start until the mitigation zone is clear.<br>—Navy personnel will observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel will relocate or delay the start of bomb deployment or mine laying.<br>• During the activity (*e.g.,* during approach of the target or intended minefield location):<br>– Navy personnel will observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel will cease bomb deployment or mine laying.<br>• Commencement/recommencement conditions after a marine mammal sighting prior to or during the activity:<br>—Navy personnel will allow a sighted marine mammal to leave the mitigation zone prior to the initial start of the activity (by delaying the start) or during the activity (by not recommencing bomb deployment or mine laying) until one of the following conditions has been met: (1) The animal is observed exiting the mitigation zone; (2) the animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to the intended target or minefield location; (3) the mitigation zone has been clear from any additional sightings for 10 minutes; or (4) for activities using mobile targets, the intended target has transited a distance equal to double that of the mitigation zone size beyond the location of the last sighting. |

*Mitigation Areas*

In addition to procedural mitigation, the Navy will implement mitigation measures within mitigation areas to avoid or minimize potential impacts on marine mammals. A full technical analysis (for which the methods were discussed above) of the mitigation areas that the Navy considered for marine mammals is provided in Appendix K (*Geographic Mitigation Assessment*) of the 2020 NWTT FSEIS/OEIS. NMFS and the Navy took into account public comments received on the 2019 NWTT DSEIS/OEIS and the 2020 NWTT proposed rule, best available science, and the practicability of implementing additional mitigation measures and has enhanced the mitigation areas and mitigation measures, beyond the 2015–2020 regulations, to further reduce impacts to marine mammals. Of note specifically, the 2015–2020 regulations included area-specific mitigation in Puget Sound and coastal areas. Mitigation in Puget Sound included required approval from the Navy's U.S. Pacific Fleet's designated authority or System Command designated authority prior to MFAS training or pierside maintenance/testing of sonar systems, and required pierside maintenance and testing to be conducted in accordance with the Navy's Protective Measures Assessment Protocol (PMAP). Additionally, prior to Maritime Homeland Defense/Security Mine Countermeasure Integrated Exercises, the Navy was required to conduct pre-event planning and training to ensure environmental awareness of all exercise participants, and Navy event planners were required to consult with Navy biologists who contacted NMFS (Protected Resources Division, West Coast Marine Species Branch Chief) during the planning process in order to determine likelihood of gray whale or southern resident killer whale presence in the proposed exercise area as planners considered specifics of the event. Additionally, prior to Small Boat Attack training in Puget Sound, the Navy was also required to conduct pre-event planning and training to ensure environmental awareness of all exercise participants. When this event was proposed to be conducted in and around Naval Station Everett, Naval Base Kitsap Bangor, or Naval Base Kitsap Bremerton in Puget Sound, Navy event planners consulted with Navy biologists who contacted NMFS early in the planning process in order to determine the extent that marine mammals may have been present in the immediate vicinity of the proposed exercise area as planners considered the specifics of the event. Finally, the Navy continued an existing permission and approval process through the U.S. Third Fleet for in-water explosives training conducted at Hood Canal or Crescent Harbor. In coastal areas, the Navy conducted Missile Exercises using high explosives at least 50 nmi from shore in the NWTRC Offshore Area, conducted BOMBEX (high explosive munitions) events at least 50 nmi from shore, and conducted BOMBEX (non-explosive practice munitions) events at least 20 nmi from shore. Functionally, the protections provided by these mitigation area requirements from the previous rule have been carried forward into this rule (though they may be worded slightly differently) and, further, significant additional geographic mitigation has been added.

Descriptions of the mitigation measures that the Navy will implement

within mitigation areas is provided in Table 50 (see below). The mitigation applies year-round unless specified otherwise in the table. The Changes from the Proposed Rule to the Final Rule section summarizes the mitigation area changes that have occurred since the proposed rule and the changes are further detailed in the descriptions of each mitigation area.

NMFS conducted an independent analysis of the mitigation areas that the Navy will implement and that are included in this rule. NMFS' analysis indicates that the measures in these mitigation areas will reduce the likelihood or severity of adverse impacts to marine mammal species or their habitat in the manner described in this rule and are practicable for the Navy.

Specifically, below we describe how certain activities are limited in feeding areas, migratory corridors, or other important habitat. To avoid repetition in those sections, we describe here how these measures reduce the likelihood or severity of effects on marine mammals and their habitat. As described previously, exposure to active sonar and explosive detonations has the potential to both disrupt behavioral patterns and reduce hearing sensitivity (temporarily or permanently, depending on the intensity and duration of the exposure). Disruption of feeding behaviors can have negative energetic consequences as a result of either obtaining less food in a given time or expending more energy (in the effort to avoid the stressor) to find the necessary food elsewhere, and extensive disruptions of this sort (especially over multiple sequential days) could accumulate in a manner that could negatively impact reproductive success or survival. By limiting impacts in known feeding areas, the overall severity of any take in those areas is reduced and the likelihood of impacts on reproduction or survival is further lessened. Similarly, reducing impacts on prey species, either by avoiding causing mortality or changing their expected distribution, can also lessen these sorts of detrimental energetic consequences. In migratory corridors, training and testing activities can result in additional energetic expenditures to avoid the loud sources—lessening training and testing in these areas also reduces the likelihood of detrimental energetic effects. In all of the mitigation areas, inasmuch as the density of certain species may be higher at certain times, a selective reduction of training and testing activities in those higher-density areas and times is expected to lessen the magnitude of take overall, as well as the specific likelihood of hearing impairment or vessel strike.

Regarding operational practicability, NMFS is heavily reliant on the Navy's description and conclusions, since the Navy is best equipped to describe the degree to which a given mitigation measure affects personnel safety or mission effectiveness, and is practical to implement. The Navy considers the measures in this rule to be practicable, and NMFS concurs.

TABLE 50—GEOGRAPHIC MITIGATION AREAS FOR MARINE MAMMALS IN THE NWTT STUDY AREA

| Mitigation Area Description |
|---|
| *Stressor or Activity:*<br>• Sonar (mitigation does not apply to active sonar sources used for safety of navigation).<br>• Explosives.<br>• Physical disturbance and strikes.<br>*Resource Protection Focus:*<br>• Marine mammals (humpback whale, gray whale, Southern Resident killer whale, harbor porpoise).<br>• Fish (including Chinook salmon).<br>*Mitigation Requirements:* [1]<br>• *Marine Species Coastal Mitigation Area (year-round or seasonal if specified):*<br>—Within 50 nmi from shore in the Marine Species Coastal Mitigation Area:<br>▪ The Navy will not conduct explosive training activities.<br>▪ The Navy will not conduct explosive testing activities (except explosive Mine Countermeasure and Neutralization Testing).<br>▪ The Navy will not conduct non-explosive missile training activities.<br>▪ The Navy will issue annual seasonal awareness notification messages to alert Navy ships and aircraft to the possible presence of increased concentrations of Southern Resident killer whales from December 1 to June 30, humpback whales from May 1 through December 31, and gray whales from May 1 to November 30. For safe navigation and to avoid interactions with large whales, the Navy will instruct vessels to remain vigilant to the presence of Southern Resident killer whales, humpback whales, and gray whales that may be vulnerable to vessel strikes or potential impacts from training and testing activities. Platforms will use the information from the awareness notification messages to assist their visual observation of applicable mitigation zones during training and testing activities and to aid in the implementation of procedural mitigation.[2]<br>—Within 20 nmi from shore in the Marine Species Coastal Mitigation Area:<br>▪ The Navy will conduct no more than a total of 33 hours of surface ship hull-mounted MF1 mid-frequency active sonar during testing annually within 20 nmi from shore in the Marine Species Coastal Mitigation Area, in the Juan de Fuca Eddy Marine Species Mitigation Area, and in the Olympic Coast National Marine Sanctuary Mitigation Area combined.<br>▪ To the maximum extent practical, the Navy will conduct explosive Mine Countermeasure and Neutralization Testing from July 1 through September 30 when operating within 20 nmi from shore.<br>▪ From October 1 through June 30, the Navy will conduct a maximum of one explosive Mine Countermeasure and Neutralization Testing event, not to exceed the use of 20 explosives from bin E4 and 3 explosives from bin E7 annually, and not to exceed the use of 60 explosives from bin E4 and 9 explosives from bin E7 over the seven-year period of the rule.<br>▪ The Navy will not conduct non-explosive large-caliber gunnery training activities.<br>▪ The Navy will not conduct non-explosive bombing training activities.<br>—Within 12 nmi from shore in the Marine Species Coastal Mitigation Area:<br>▪ The Navy will not conduct Anti-Submarine Warfare Tracking Exercise—Helicopter,—Maritime Patrol Aircraft,—Ship, or—Submarine training activities (which involve the use of mid-frequency or high-frequency active sonar).<br>▪ The Navy will not conduct non-explosive Anti-Submarine Warfare Torpedo Exercise—Submarine training activities (which involve the use of mid-frequency or high-frequency active sonar).<br>▪ The Navy will conduct a maximum of one Unmanned Underwater Vehicle Training event per year within 12 nmi from shore at the Quinault Range Site. In addition, Unmanned Underwater Vehicle Training events within 12 nmi from shore at the Quinault Range Site will be cancelled or moved to another training location if Southern Resident killer whales are detected at the planned training location during the event planning process, or immediately prior to the event, as applicable. |

TABLE 50—GEOGRAPHIC MITIGATION AREAS FOR MARINE MAMMALS IN THE NWTT STUDY AREA—Continued

| Mitigation Area Description |
|---|
| ▪ During explosive Mine Countermeasure and Neutralization Testing, the Navy will not use explosives in bin E7 closer than 6 nmi from shore in the Quinault Range Site.<br>▪ The Navy will not conduct non-explosive small- and medium-caliber gunnery training activities.<br>• *Olympic Coast National Marine Sanctuary Mitigation Area (year-round):*<br>—Within the Olympic Coast National Marine Sanctuary Mitigation Area:<br>▪ The Navy will conduct a maximum of 32 hours of surface ship hull-mounted MF1 mid-frequency active sonar during training annually.<br>▪ The Navy will conduct no more than a total of 33 hours of surface ship hull-mounted MF1 mid-frequency active sonar during testing annually within 20 nmi from shore in the Marine Species Coastal Mitigation Area, in the Juan de Fuca Eddy Marine Species Mitigation Area, and in the Olympic Coast National Marine Sanctuary Mitigation Area combined.<br>▪ The Navy will not conduct explosive Mine Countermeasure and Neutralization Testing activities.<br>▪ The Navy will not conduct non-explosive bombing training activities.<br>• *Juan de Fuca Eddy Marine Species Mitigation Area (year-round):*<br>—Within the Juan de Fuca Eddy Marine Species Mitigation Area:<br>▪ The Navy will conduct no more than a total of 33 hours of surface ship hull-mounted MF1 mid-frequency active sonar during testing annually within 20 nmi from shore in the Marine Species Coastal Mitigation Area, in the Juan de Fuca Eddy Marine Species Mitigation Area, and in the Olympic Coast National Marine Sanctuary Mitigation Area combined.<br>▪ The Navy will not conduct explosive Mine Countermeasure and Neutralization Testing activities.<br>• *Stonewall and Heceta Bank Humpback Whale Mitigation Area (May 1–November 30):*<br>—Within the Stonewall and Heceta Bank Humpback Whale Mitigation Area from May 1 to November 30:<br>▪ The Navy will not use surface ship hull-mounted MF1 mid-frequency active sonar during training or testing.<br>▪ The Navy will not conduct explosive Mine Countermeasure and Neutralization Testing.<br>• *Point St. George Humpback Whale Mitigation Area (July 1–November 30):*<br>—Within the Point St. George Humpback Whale Mitigation Area from July 1 to November 30:<br>▪ The Navy will not use surface ship hull-mounted MF1 mid-frequency active sonar during training or testing.<br>▪ The Navy will not conduct explosive Mine Countermeasure and Neutralization Testing.<br>• *Northern Puget Sound Gray Whale Mitigation Area (March 1–May 31):*<br>—Within the Northern Puget Sound Gray Whale Mitigation Area from March 1 to May 31:<br>▪ The Navy will not conduct Civilian Port Defense—Homeland Security Anti-Terrorism/Force Protection Exercises.<br>• *Puget Sound and Strait of Juan de Fuca Mitigation Area (year-round or seasonal if specified):*<br>—Within the Puget Sound and Strait of Juan de Fuca Mitigation Area:<br>▪ The Navy will not use low-frequency, mid-frequency, or high-frequency active sonar during training or testing within the Puget Sound and Strait of Juan de Fuca Mitigation Area, unless a required element (*i.e.,* a criterion necessary for the success of the event) necessitates that the activity be conducted in NWTT Inland Waters during (1) Unmanned Underwater Vehicle Training, (2) Civilian Port Defense—Homeland Security Anti-Terrorism/Force Protection Exercises, (3) activities conducted by Naval Sea Systems Command at designated locations, or (4) pierside sonar maintenance or testing at designated locations.<br>▪ The Navy will use the lowest active sonar source levels practical to successfully accomplish each event.<br>▪ Naval units will obtain permission from the appropriate designated Command authority prior to commencing pierside maintenance or testing with hull-mounted mid-frequency active sonar.<br>▪ The Navy will conduct a maximum of one Unmanned Underwater Vehicle Training activity annually at the Navy 3 OPAREA, Navy 7 OPAREA, and Manchester Fuel Depot (*i.e.,* a maximum of one event at each location).<br>▪ The Navy will not use explosives during testing.<br>▪ The Navy will not use explosives during training except at the Hood Canal EOD Range and Crescent Harbor EOD Range during explosive mine neutralization activities involving the use of Navy divers.<br>▪ The Navy will not use explosives in bin E4 (>2.5–5 lb. net explosive weight) or above, and will instead use explosives in bin E0 (<0.1 lb. net explosive weight) or bin E3 (>0.5–2.5 lb. net explosive weight).<br>▪ During February, March, and April at the Hood Canal EOD Range, the Navy will not use explosives in bin E3 (>0.5–2.5 lb. net explosive weight), and will instead use explosives in bin E0 (<0.1 lb. net explosive weight).<br>▪ During August, September, and October at the Hood Canal EOD Range, the Navy will avoid using explosives in bin E3 (>0.5–2.5 lb. net explosive weight) and will instead use explosives in bin E0 (<0.1 lb. net explosive weight) to the maximum extent practical unless necessitated by mission requirements.<br>▪ At the Crescent Harbor EOD Range, the Navy will conduct explosive activities at least 1,000 m from the closest point of land.<br>▪ The Navy will not conduct non-explosive live fire events in the mitigation area (except firing blank weapons), including gunnery exercises, missile exercises, torpedo exercises, bombing exercises, and Kinetic Energy Weapon Testing.<br>▪ Navy event planners will coordinate with Navy biologists during the event planning process prior to conducting (1) Unmanned Underwater Vehicle Training at the NAVY 3 OPAREA, Manchester Fuel Depot, Crescent Harbor Explosive Ordnance Disposal Range, and NAVY 7 OPAREA (for Southern Resident killer whales), (2) Civilian Port Defense—Homeland Security Anti-Terrorism/Force Protection Exercises (for Southern Resident killer whales and gray whales), (3) explosive mine neutralization activities involving the use of Navy divers (for Southern Resident killer whales), and (4) Small Boat Attack Exercises, which involve firing blank small-caliber weapons (for Southern Resident killer whales and gray whales). Navy biologists will work with NMFS and will initiate communication with the appropriate marine mammal detection networks to determine the likelihood of applicable marine mammal species presence in the planned training location. Navy biologists will notify event planners of the likelihood of species presence. To the maximum extent practical, Navy planners will use this information when planning specific details of the event (*e.g.,* timing, location, duration) to avoid planning activities in locations or seasons where species presence is expected. The Navy will ensure environmental awareness of event participants. Environmental awareness will help alert participating crews to the possible presence of applicable species in the training location. Lookouts will use the information to assist visual observation of applicable mitigation zones and to aid in the implementation of procedural mitigation. In addition, Unmanned Underwater Vehicle Training events at the NAVY 3 OPAREA, Manchester Fuel Depot, Crescent Harbor Explosive Ordnance Disposal Range, and NAVY 7 OPAREA will be cancelled or moved to another training location if the presence of Southern Resident killer whales is reported through available monitoring networks during the event planning process, or immediately prior to the event, as applicable. |

TABLE 50—GEOGRAPHIC MITIGATION AREAS FOR MARINE MAMMALS IN THE NWTT STUDY AREA—Continued

| Mitigation Area Description |
| --- |
| ▪ The Navy will issue annual seasonal awareness notification messages to alert Navy ships and aircraft operating within the Puget Sound and Strait of Juan de Fuca Mitigation Area to the possible presence of concentrations of Southern Resident killer whales from July 1 to November 30 in the Puget Sound and Strait of Juan de Fuca, and concentrations of gray whales from March 1 to May 31 in the Strait of Juan de Fuca and northern Puget Sound. For safe navigation and to avoid interactions with large whales, the Navy will instruct vessels to remain vigilant to the presence of Southern Resident killer whales and gray whales that may be vulnerable to vessel strikes or potential impacts from training and testing activities. Platforms will use the information from the awareness notification messages to assist their visual observation of applicable mitigation zones during training and testing activities and to aid in the implementation of procedural mitigation. |

[1] Should national security present a requirement to conduct training or testing prohibited by the mitigation requirements specified in this table, naval units must obtain permission from the appropriate designated Command authority prior to commencement of the activity. The Navy will provide NMFS with advance notification and include relevant information about the event (*e.g.,* sonar hours, explosives use, non-explosive practice munitions use) in its annual activity reports to NMFS.

[2] The Navy will send these notification messages to all units operating throughout the NWTT Study Area.

**BILLING CODE 3510–22–P**

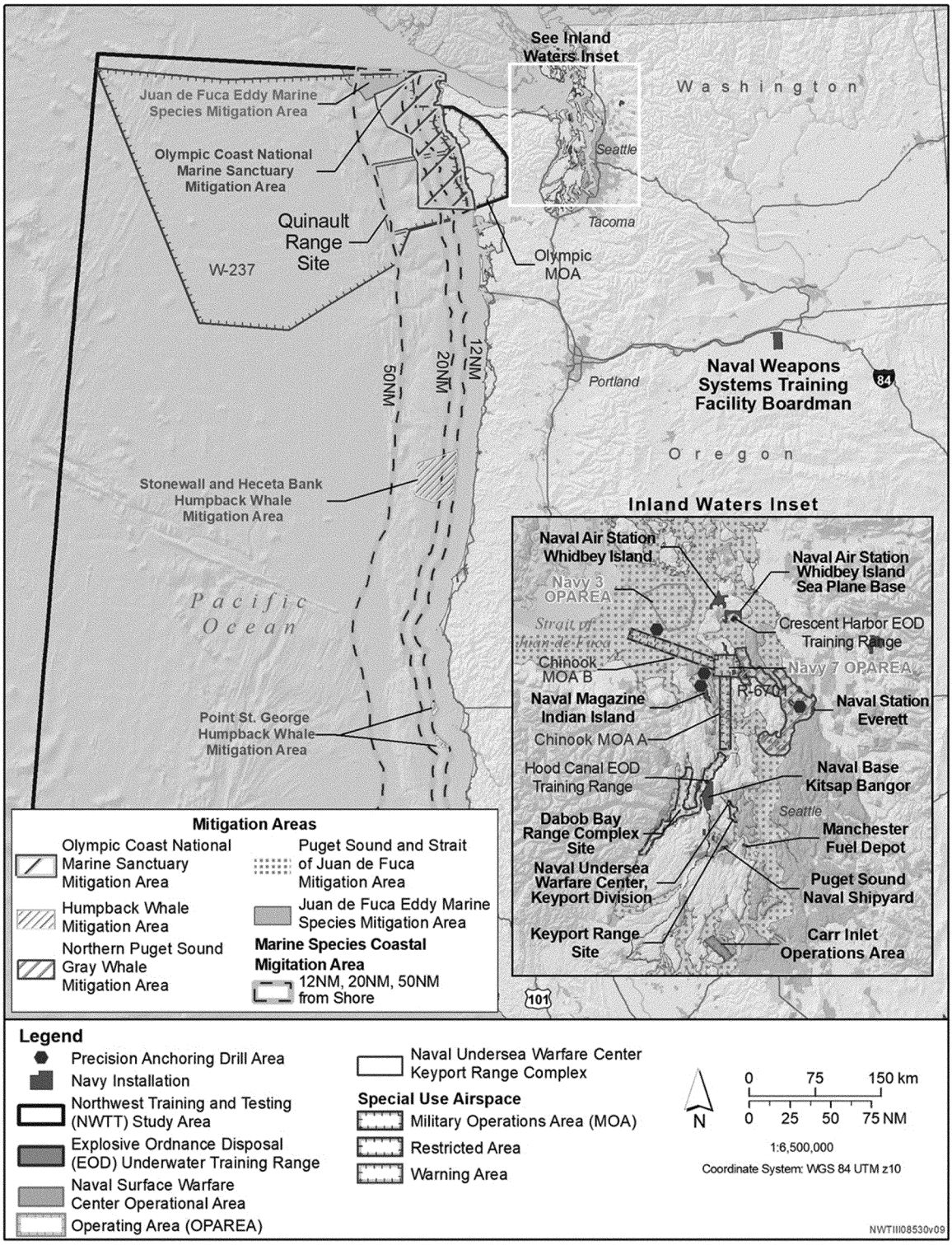


**Figure 1 -- Geographic Mitigation Areas for Marine Mammals in the NWTT Study Area**

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Marine Species Coastal Mitigation Area

*Within 50 nmi from shore*—The 50 nmi from shore portion of the Marine Species Coastal Mitigation Area overlaps important feeding, migration, and/or proposed ESA critical habitat for humpback whale, gray whale, Southern Resident killer whale, and harbor porpoise. The Olympic Coast National Marine Sanctuary and Quinault, Grays, Guide, Willapa, Astoria, and Eel canyons are also located within 50 nmi from shore in the Marine Species Coastal Mitigation Area.

See Table 50 for the specific mitigation measures. Mitigation within 50 nmi from shore will result in an

avoidance of potential impacts on marine mammals within their important habitat areas from all explosive training activities, all explosive testing activities except explosive Mine Countermeasure and Neutralization Testing activities, and non-explosive missile training exercises. Additionally, this mitigation will eliminate impacts from active sonar used in conjunction with these prohibited activities, such as mid-frequency and high-frequency active sonar used during explosive torpedo events (*e.g.,* MF1 and MF4 sonar during Torpedo [Explosive] Testing).

Since publication of the proposed rule, an additional measure has been added in this mitigation area that requires the Navy to issue annual seasonal awareness notification messages to further help avoid potential impacts from vessel strikes and training and testing activities on humpback whales, gray whales, and Southern Resident killer whales in the Marine Species Coastal Mitigation Area. The awareness notification messages will coincide with the seasons in which humpback whales, gray whales, and Southern Resident killer whales are most likely to be observed in concentrations in the mitigation area. Southern Resident killer whales are most likely to be observed in the NWTT Offshore Area in winter and spring (December 1 to June 30), due to prey availability. Gray whales and humpback whales are most likely to be observed in the NWTT Offshore Area from late spring through fall (May 1 to November 30 and May 1 through December 31, respectively), which correlates to feeding or migration seasons.

*Within 20 nmi from shore*—The 20 nmi from shore portion of the Marine Species Coastal Mitigation Area overlaps important feeding, migration, or ESA-designated critical habitat, as described in Section K.3.2.1 of the 2020 FSEIS/OEIS (Resource Description), for gray whales, humpback whales, and Southern Resident killer whales. The mitigation area also overlaps a significant portion of the Olympic Coast National Marine Sanctuary, and Astoria and Eel canyons.

See Table 50 for the specific mitigation measures. As included in the proposed rule, mitigation requirements within 20 nmi from shore will (in addition to the avoided impacts described above for within 50 nmi) avoid or reduce potential impacts on marine mammals within these habitats from non-explosive large-caliber gunnery training and non-explosive bombing training. Additionally, since publication of the proposed rule, a measure has been added limiting the Navy from conducting more than a total of 33 hours of surface ship hull-mounted MF1 mid-frequency active sonar during testing annually within 20 nmi from shore in the Marine Species Coastal Mitigation Area, in the Juan de Fuca Eddy Marine Species Mitigation Area, and in the Olympic Coast National Marine Sanctuary Mitigation Area combined.

Mitigation has also been added to limit explosive Mine Countermeasure and Neutralization Testing events in this area during certain times of year and limit the number of explosives in each event. This mitigation is designed primarily to avoid or reduce potential impacts on ESA-listed fish species based on their typical occurrence seasonally and at certain water depths (see the 2020 NWTT FSEIS/OEIS for depth considerations). The mitigation may also benefit feeding or migrating humpback whales, migrating gray whales, and feeding or transiting Southern Resident killer whales. One of these new mitigation measures requires the Navy to conduct explosive Mine Countermeasure and Neutralization Testing from July 1 through September 30 to the maximum extent practical when operating within 20 nmi from shore. An additional new measure requires that the Navy can only conduct a maximum of one explosive Mine Countermeasure and Neutralization Testing event annually from October 1 through June 30, not to exceed the use of 20 explosives from bin E4 and 3 explosives from bin E7 annually, and not to exceed the use of 60 explosives from bin E4 and 9 explosives from bin E7 over the seven-year period of the rule. The new limit on the number of explosives used annually and over the seven-year period is designed primarily to reduce potential impacts on ESA-listed fish, including Chinook salmon, the preferred prey source of Southern Resident Killer Whales. This mitigation will reduce the maximum potential exposure to explosives in bin E4 and bin E7 by approximately 40 percent in the months and locations where ESA-listed fish species (some of which are prey species for killer whales), including Chinook salmon Upper Columbia River Spring-Run Evolutionarily Significant Unit, and Chinook salmon Central Valley Spring-Run Evolutionarily Significant Unit, are expected to be present in the NWTT Offshore Area.

*Within 12 nmi from shore*—The 12 nmi from shore portion of the Marine Species Coastal Mitigation Area overlaps important feeding, migration, and ESA-designated critical habitat for gray whales, humpback whales, and Southern Resident killer whales, as described in Section K.3.2.1 (Resource Description) of the 2020 FSEIS/OEIS. Additionally, part of the Marine Species Coastal Mitigation Area within 12 nmi from shore overlaps a portion of the Olympic Coast National Marine Sanctuary.

See Table 50 for the specific mitigation measures. As described in the proposed rule, mitigation requirements within 12 nmi from shore (which apply in addition to the measures described above for within 50 nmi and within 20 nmi from shore) prohibit non-explosive small- and medium-caliber gunnery training activities and Anti-Submarine Warfare Tracking Exercise—Helicopter, Maritime Patrol Aircraft, Ship, or Submarine training activities (which involve mid-frequency active sonar [including surface ship hull-mounted MF1 mid-frequency active sonar and MF4 dipping sonar] and high-frequency active sonar). Additionally, new mitigation since publication of the proposed rule prohibits non-explosive Anti-Submarine Warfare Torpedo Exercise—Submarine training activities (which involves mid-frequency and high-frequency active sonar) within this area. We expect these measures to result in an avoidance of potential impacts to marine mammals from these activities.

Since publication of the proposed rule, another additional measure has been added, limiting the Navy to conducting a maximum of one Unmanned Underwater Vehicle Training event per year within 12 nmi from shore at the Quinault Range Site, and requiring the Navy to cancel or move Unmanned Underwater Vehicle Training events if Southern Resident killer whales are detected within 12 nmi from shore at the Quinault Range Site. This measure is expected to help avoid any potential impacts on Southern Resident killer whales during Unmanned Underwater Vehicle Training events.

*Within 6 nmi from shore*—Finally, in addition to the mitigation measures described above, new mitigation during explosive Mine Countermeasure and Neutralization Testing prohibits the use of explosives in bin E7 closer than 6 nmi from shore in the Quinault Range Site. This measure is primarily designed to avoid overlap of the larger of the explosive bins used in this activity with ESA-listed fish species, including Chinook salmon, which are an important prey species for killer whales.

Olympic Coast National Marine Sanctuary Mitigation Area

Mitigation within the Olympic Coast National Marine Sanctuary Mitigation

Area is designed to avoid or reduce potential impacts from surface ship hull-mounted MF1 mid-frequency active sonar, explosives during Mine Countermeasure and Neutralization Testing activities, and non-explosive practice munitions during non-explosive bombing training in important feeding or migration habitat for gray whales, humpback whales, Southern Resident killer whales, and other sanctuary resources, including Chinook salmon, which serve as an important prey species for killer whales. Mitigation within the Olympic Coast National Marine Sanctuary Mitigation Area may avoid or reduce impacts to other marine mammal species that inhabit, forage in, and migrate through the sanctuary. As detailed in Section 6.1.2.1 (Olympic Coast National Marine Sanctuary) of the 2015 NWTT Final EIS/OEIS, the Olympic Coast National Marine Sanctuary consists of an area of 2,408 square nmi of marine waters and the submerged lands off the Olympic Peninsula Coastline of Washington. The sanctuary extends approximately 38 nmi seaward, covering much of the continental shelf and the Quinault Canyon. Due to the Juan de Fuca Eddy ecosystem created from localized currents at the entrance to the Strait of Juan de Fuca and the diversity of bottom habitats, the Olympic Coast National Marine Sanctuary supports a variety of marine life. The diversity of habitats, and the nutrient-rich upwelling zone (which exhibits the greatest volume of upwelling in North America) that drives high primary productivity in this area, contribute to the high species diversity in the Olympic Coast National Marine Sanctuary. According to the Office of National Marine Sanctuaries (2008), the Sanctuary provides important foraging and migration habitat for 29 species of marine mammals.

As included in the proposed rule, the Navy will conduct a maximum of 32 hours annually of surface ship hull-mounted MF1 mid-frequency active sonar during training in the Olympic Coast National Marine Sanctuary Mitigation Area. Additionally, since publication of the proposed rule, and as discussed in the *Marine Species Coastal Mitigation Area* section above, an additional measure has been added limiting the Navy from conducting more than a total of 33 hours of surface ship hull-mounted MF1 mid-frequency active sonar during testing annually within 20 nmi from shore in the Marine Species Coastal Mitigation Area, in the Juan de Fuca Eddy Marine Species Mitigation Area, and in the Olympic Coast National Marine Sanctuary Mitigation Area combined.

As included in the proposed rule, the Navy will not conduct explosive Mine Countermeasure and Neutralization Testing activities or non-explosive bombing training activities in the Olympic Coast National Marine Sanctuary Mitigation Area. Because this mitigation area is located entirely within 50 nmi from shore in the Marine Species Coastal Mitigation Area, the combined mitigation will ensure that marine mammals and their habitat are not exposed to explosives in the Sanctuary from any training or testing activities. Furthermore, additive mitigation within 20 nmi and 12 nmi from shore in the Marine Species Coastal Mitigation Area will help further avoid or reduce potential impacts from active sonar and non-explosive practice munitions on Sanctuary resources.

Juan de Fuca Eddy Marine Species Mitigation Area

The Juan de Fuca Eddy system is located off Cape Flattery and contains elevated macronutrient levels from spring to fall, derived primarily from upwelling of nutrient-rich deep waters from the California Undercurrent combined with lesser contributions from the Strait of Juan de Fuca outflow (MacFadyen *et al.,* 2008). Mitigation within the Juan de Fuca Eddy Marine Species Mitigation Area is designed to avoid or reduce potential impacts from surface ship hull-mounted MF1 mid-frequency active sonar and explosives during Mine Countermeasure and Neutralization Testing activities on Southern Resident killer whales and humpback whales within important migration and feeding habitats. The Navy will not conduct explosive Mine Countermeasure and Neutralization Testing activities in this mitigation area, and will conduct no more than a total of 33 hours of surface ship hull-mounted MF1 mid-frequency active sonar during testing annually within 20 nmi from shore in the Marine Species Coastal Mitigation Area, in the Juan de Fuca Eddy Marine Species Mitigation Area, and in the Olympic Coast National Marine Sanctuary Mitigation Area combined.

Additional measures were considered in this area, however, NMFS determined that additional measures were not warranted, given that the Navy does not generally schedule other training and testing activities in this portion of the Study Area due to the high volume of commercial vessel traffic. Therefore the potential for impacts to marine mammals is low. As described in Section K.3.2.2.2 (Operational Assessment) of the 2020 NWTT FSEIS/OEIS, when scheduling activities, the Navy considers the need to minimize sea space and airspace conflicts between its own activities and other users with consideration for public safety.

Waters within the Juan de Fuca Eddy Marine Species Mitigation Area (including areas off Cape Flattery) are important foraging habitat for aggregations of humpback whales and migration habitat for Southern Resident killer whales as they transit between Inland Waters and the Offshore Area (see Section K.3.2.1.1 (Humpback Whale) and Section K.3.2.1.3 (Southern Resident Killer Whale) of the 2020 FSEIS/OEIS). The full extent of the Juan de Fuca Eddy is not incorporated into the Northern Washington humpback whale biologically important feeding area because the development of biologically important areas was restricted to U.S. waters only. Therefore, the Northern Washington biologically important humpback whale feeding area extends northward to the boundary of the U.S. Exclusive Economic Zone (Calambokidis *et al.,* 2015; Ferguson et al., 2015a; Ferguson *et al.,* 2015b). However, humpback whale aggregations feed across this political boundary in the nutrient rich waters throughout the Juan de Fuca Eddy. Therefore, waters within the Juan de Fuca Eddy between the Northern Washington humpback whale biologically important area and the northern boundary of the NWTT Offshore Area are included in the Juan de Fuca Eddy Marine Species Mitigation Area.

Migrating gray whales may also use this area, as well as other species of marine mammals, including sperm whales. Sperm whale concentrations typically correlate with areas of high productivity near drop-offs and areas with strong currents and steep topography (Gannier and Praca, 2007; Jefferson *et al.,* 2015), such as the conditions present seasonally in the Juan de Fuca Eddy (MacFadyen *et al.,* 2008). The mitigation area's nutrient-rich waters and seasonal upwelling provide an abundance of marine mammal prey species and favorable foraging conditions for concentrations of marine mammals. The mitigation will also help avoid or reduce potential impacts on other species, including Southern Resident killer whale preferred prey, Chinook salmon.

Stonewall and Heceta Bank Humpback Whale Mitigation Area

Mitigation in the Stonewall and Heceta Bank Humpback Whale Mitigation Area, which is required from

May 1 to November 30, is primarily designed to avoid or reduce potential impacts from surface ship hull-mounted MF1 mid-frequency active sonar and explosive Mine Countermeasure and Neutralization Testing activities to humpback whales in an important seasonal feeding area. See Table 50 for the specific mitigation measures.

The Stonewall and Heceta Bank Humpback Whale Mitigation Area is within 50 nmi from shore in the Marine Species Coastal Mitigation Area. Therefore, given the combined mitigation in these two areas, no explosive training or testing will occur in this mitigation area from May 1 to November 30. Additionally, a portion of the Stonewall and Heceta Bank Humpback Whale Mitigation Area is within 20 nmi from shore in the Marine Species Coastal Mitigation Area. Mitigation measures between these two areas will help further reduce potential impacts from additional sources of active sonar, as well as non-explosive practice munitions, year round, given that the Marine Species Coastal Mitigation Area is effective year round.

From May to November, humpback whales aggregate to feed on krill and small fish in this area. Enhanced vertical and horizontal mixing associated with Heceta Bank results in higher prey densities, which improves foraging conditions for humpback whales and harbor porpoise (Tynan *et al.,* 2005). Humpback whales and harbor porpoise aggregate in this area in the summer when prey concentrations are thought to be highest.

In addition to containing humpback whale and harbor porpoise feeding habitat, the Stonewall and Heceta Bank Humpback Whale Mitigation Area overlaps important habitats for several other species, including potential gray whale migration habitat; Southern Resident killer whale feeding, migration and proposed ESA critical habitat; and Chinook salmon migration habitat. Other marine mammal species have also been observed in the vicinity of Heceta Bank. The enhanced vertical and horizontal mixing associated with Heceta Bank that results in higher prey densities and improved foraging conditions for humpback whales and harbor porpoise may also serve to influence the presence of other marine mammal species in this area (Tynan *et al.,* 2005). For example, sperm whales, Baird's beaked whales, Cuvier's beaked whales, Pacific white-sided dolphins, northern right whale dolphins, Risso's dolphins, and Dall's porpoise have been observed at Heceta Bank in spring or summer during past surveys (Tynan *et al.,* 2005). Sperm whales have been observed at Heceta Bank during spring and summer, possibly indicating a correlation between the abundance of prey species, such as large cephalopods (*e.g.,* squid) and fish (Tynan *et al.,* 2005). Therefore, in addition to benefits to humpback whales and harbor porpoise in important foraging habitat, mitigation within the Stonewall and Heceta Bank Humpback Whale Mitigation Area will likely help avoid or reduce potential impacts to additional marine mammal species that may feed in or migrate through this area.

Point St. George Humpback Whale Mitigation Area

The Point St. George Humpback Whale Mitigation area contains important humpback whale feeding habitat. From July to November, humpback whales feed in an area off of Oregon and California at Point St. George, an area that has similar productive upwelling conditions as Heceta Bank. Additionally, the area overlaps important habitats for several other species, including potential gray whale migration habitat and Southern Resident killer whale feeding and migration habitat. Migrating Chinook salmon may occur in this area as well.

Mitigation in the Point St. George Humpback Whale Mitigation Area, effective from July 1 to November 30, was initially designed to avoid or reduce potential impacts from mid-frequency active sonar on humpback whales, as this is an important seasonal feeding area. Since the proposed rule, an additional measure has been added that prohibits the Navy from conducting explosive Mine Countermeasure and Neutralization Testing activities in this mitigation area.

The Point St. George Humpback Whale Mitigation Area is located entirely within 20 nmi from shore in the Marine Species Coastal Mitigation Area. Therefore, given the combined mitigation in these two areas, no explosive training or testing will occur in the Point St. George Humpback Whale Mitigation Area from July 1 to November 30. Additionally, potential impacts to marine mammals from surface ship hull-mounted MF1 mid-frequency active sonar as well as non-explosive practice munitions will be avoided or reduced year round.

Northern Puget Sound Gray Whale Mitigation Area

The Northern Puget Sound Gray Whale Mitigation Area fully overlaps the biologically important gray whale feeding habitat identified by Calambokidis *et al.* (2015) and a portion of the gray whale migration biologically important area. Gray whales feed in this area from March 1 to May 31. The Navy will not conduct Civilian Port Defense—Homeland Security Anti-Terrorism/Force Protection Exercises during this same time period (March 1 to May 31) in this mitigation area. Civilian Port Defense—Homeland Security Anti-Terrorism/Force Protection Exercises are multi-day events that involve aircraft, surface vessels, and unmanned underwater vehicles using high-frequency active sonar and other systems to train to detect non-explosive underwater mine shapes. Therefore, with the Navy restricted from conducting this activity in the Northern Puget Sound Gray Whale Mitigation Area during the specified time period, potential impacts from vessel movements, towed in-water devices, and active sonar on gray whales will be avoided during important times in this feeding area.

The Northern Puget Sound Gray Whale Mitigation Area is located entirely within the Puget Sound and Strait of Juan de Fuca Mitigation Area. Therefore, mitigation in the Puget Sound and Strait of Juan de Fuca Mitigation Area, described below, will further reduce potential impacts on gray whale feeding in this location.

Puget Sound and Strait of Juan de Fuca Mitigation Area

The Puget Sound and Strait of Juan de Fuca Mitigation Area encompasses the full extent of NWTT Inland Waters and, therefore, the mitigation area fully overlaps each known important marine mammal feeding and migration habitat area in NWTT inland waters. (See Section K.3.3.1 (*Resource Description*) of the 2020 FSEIS/OEIS for a full description of these areas.) This includes feeding and potential migration habitat for gray whales and ESA-designated critical habitat for Southern Resident killer whales, as well as for one of the Southern Resident killer whales' primary sources of prey, Puget Sound Chinook salmon. Mitigation in the Puget Sound and Strait of Juan de Fuca Mitigation Area is designed to minimize potential impacts on these species and their habitat in NWTT Inland Waters. See Table 50 for the specific mitigation measures.

As included in the proposed rule, naval units are required to obtain approval from the appropriate designated Command authority prior to commencing pierside maintenance or testing with hull-mounted mid-frequency active sonar. This measure will elevate the situational and environmental awareness of respective Command authorities during the event

planning process. Requiring designated Command authority approval provides an increased level of assurance that mid-frequency active sonar is a required element (*i.e.,* a criterion necessary for the success of the event) for each event. Such authorizations are typically based on the unique characteristics of the area from a military readiness perspective, taking into account the importance of the area for marine species and the need to mitigate potential impacts on Southern Resident killer whales (and other marine mammals, such as gray whales) to the maximum extent practical.

Also included in the proposed rule, year-round mitigation at the Crescent Harbor Explosive Ordnance Disposal (EOD) Range prohibits explosive activities within 1,000 m of the closest point of land. This measure is primarily intended to avoid or reduce potential impacts on bull trout, however, it may also benefit other species, such as Southern Resident killer whales (although they have not been observed regularly at the Crescent Harbor EOD Range), gray whales, and Puget Sound Chinook salmon. Finally, as also included in the proposed rule, for Civilian Port Defense—Homeland Security Anti-Terrorism/Force Protection Exercises, Navy event planners will coordinate with Navy biologists during the event planning process. Navy biologists will work with NMFS to determine the likelihood of gray whale and Southern Resident killer whale presence in the planned training location. Navy biologists will notify event planners of the likelihood of killer whale and gray whale presence as they plan specific details of the event (*e.g.,* timing, location, duration), with the goal of minimizing impacts to killer whales and gray whales through the adjustment of event details, where practical. The Navy will also ensure environmental awareness of event participants. Environmental awareness will help alert participating ship and aircraft crews to the possible presence of marine mammals in the training location, such as gray whales and Southern Resident killer whales.

As described previously, this final rule includes many new mitigation measures in the Puget Sound and Strait of Juan de Fuca Mitigation Area to further protect marine mammals, particularly Southern Resident killer whales. The *Assessment of Mitigation Measures for NWTT Study Area* section describes mitigation that is new to this final rule, and distinguishes between new mitigation that is a continuation of the Navy's voluntary Phase II mitigation, and new measures that were not implemented by the Navy in NWTT Phase II. See that section and Table 50 for all other mitigation measures.

New mitigation in the Puget Sound and Strait of Juan de Fuca Mitigation Area is designed to help avoid any potential impacts from training and testing on Southern Resident killer whales in NWTT Inland Waters. With implementation of these new mitigation measures, we do not anticipate any take of Southern Resident killer whales in NWTT Inland Waters due to NWTT training and testing activities. Based on seasonal density data, Southern Resident killer whale occurrence is either not anticipated or is expected to be infrequent at Naval Sea Systems Command testing sites and in the locations where pierside maintenance and testing are designated to occur. Additionally, given the sheltered, calm waters, there is an increased likelihood that any Southern Resident killer whales or gray whales in these areas would be observed by Navy Lookouts, as described in Section 5.3.2.1 (Active Sonar) of the 2020 NWTT FSEIS/OEIS.

New mitigation in this mitigation area will reduce the types of active sonar activities and the active sonar source levels when practical, and therefore the overall amount of active sonar (*i.e.,* number of hours) conducted in the mitigation area, and the overall potential for marine mammal exposure, while allowing the Navy to successfully accomplish events that require the use of active sonar in designated locations. Additionally, new mitigation will effectively reduce the locations, charge sizes, and overall annual number of explosive detonations in the mitigation area, which will avoid or reduce potential overlap of explosive activities within Southern Resident killer whale and gray whale habitat to the maximum extent practical. New mitigation will also help avoid any impacts from explosives and non-explosive practice munitions on marine mammals throughout NWTT Inland Waters.

*Availability for Subsistence Uses*

The nature of subsistence activities by Alaskan Natives in the NWTT Study Area are discussed in detail below, in the Subsistence Harvest of Marine Mammals section of this final rule. As noted in that section, testing activities in the Western Behm Canal are the only activities within the NWTT Study Area that have the potential to affect subsistence uses of marine mammals. The Navy will notify the following Alaskan Native communities of the issuance of Notices to Mariners of Navy operations that involve restricting access in the Western Behm Canal at least 72 hours in advance: Central Council of the Tlingit and Haida Indian Tribes, Ketchikan Indian Corporation, Organized Village of Saxman, and Metlakatla Indian Community, Annette Island Reserve. These notifications will minimize potential impacts on subsistence hunters.

*Mitigation Conclusions*

NMFS has carefully evaluated the mitigation measures—many of which were developed with NMFS' input during the previous phases of Navy training and testing authorizations but several of which are new since implementation of the 2015 to 2020 regulations or new since publication of the proposed rule (and addressing some of the information or recommendations received during the public comment period). NMFS has also considered a broad range of other measures (*e.g.,* the measures considered but eliminated in the 2020 NWTT FSEIS/OEIS, which reflect other comments that have arisen via NMFS or public input in past years) in the context of ensuring that NMFS prescribes the means of effecting the least practicable adverse impact on the affected marine mammal species or stocks and their habitat and on the availability of the species or stocks for subsistence uses. Our evaluation of potential measures included consideration of the following factors in relation to one another: The manner in which, and the degree to which, the successful implementation of the mitigation measures is expected to reduce the likelihood and/or magnitude of adverse impacts to marine mammal species or stocks and their habitat; the manner in which, and the degree to which, the successful implementation of the mitigation measures is expected to reduce the likelihood and/or magnitude of adverse impacts on subsistence uses; the proven or likely efficacy of the measures; and the practicability of the measures for applicant implementation, including (for measures to address adverse impacts to marine mammal species or stocks and their habitat) consideration of personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity.

Based on our evaluation of the Navy's proposed measures, as well as other measures considered by the Navy and NMFS, NMFS has determined that the mitigation measures included in this final rule are the appropriate means of effecting the least practicable adverse impact on marine mammal species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar

significance, and considering specifically personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity, and on the availability of the species and stocks for subsistence uses. Additionally, an adaptive management provision ensures that mitigation is regularly assessed and provides a mechanism to improve the mitigation, based on the factors above, through modification as appropriate. Thus, NMFS concludes that the mitigation measures outlined in this final rule satisfy the statutory standard and that any adverse impacts that remain cannot be practicably further mitigated.

**Monitoring**

Section 101(a)(5)(A) of the MMPA states that in order to authorize incidental take for an activity, 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 incidental take 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.

Although the Navy has been conducting research and monitoring in the NWTT Study Area for over 20 years, it developed a formal marine species monitoring program in support of the MMPA and ESA authorizations in 2009. This robust program has resulted in hundreds of technical reports and publications on marine mammals that have informed Navy and NMFS analyses in environmental planning documents, MMPA rules, and ESA Biological Opinions. The reports are made available to the public on the Navy's marine species monitoring website (*www.navymarinespeciesmonitoring.us*) and the data on the Ocean Biogeographic Information System Spatial Ecological Analysis of Megavertebrate Populations (OBIS–SEAMAP) site (*http://seamap.env.duke.edu/*) and the Animal Telemetry Network (*https://atn.ioos.us/*).

The Navy will continue collecting monitoring data to inform our understanding of the occurrence of marine mammals in the NWTT Study Area; the likely exposure of marine mammals to stressors of concern in the NWTT Study Area; the response of marine mammals to exposures to stressors; the consequences of a particular marine mammal response to their individual fitness and, ultimately, populations; and the effectiveness of implemented mitigation measures. Taken together, mitigation and monitoring comprise the Navy's integrated approach for reducing environmental impacts from the specified activities. The Navy's overall monitoring approach seeks to leverage and build on existing research efforts whenever possible.

As agreed upon between the Navy and NMFS, the monitoring measures presented here, as well as the mitigation measures described above, focus on the protection and management of potentially affected marine mammals. A well-designed monitoring program can provide important feedback for validating assumptions made in analyses and allow for adaptive management of marine resources.

*Integrated Comprehensive Monitoring Program (ICMP)*

The Navy's ICMP is intended to coordinate marine species monitoring efforts across all regions and to allocate the most appropriate level and type of effort for each range complex based on a set of standardized objectives, and in acknowledgement of regional expertise and resource availability. The ICMP is designed to be flexible, scalable, and adaptable through the adaptive management and strategic planning processes to periodically assess progress and reevaluate objectives. This process includes conducting an annual adaptive management review meeting, at which the Navy and NMFS jointly consider the prior-year goals, monitoring results, and related scientific advances to determine if monitoring plan modifications are warranted to more effectively address program goals. Although the ICMP does not specify actual monitoring field work or individual projects, it does establish a matrix of goals and objectives that have been developed in coordination with NMFS. As the ICMP is implemented through the Strategic Planning Process (see the section below), detailed and specific studies that support the Navy's and NMFS' top-level monitoring goals will continue to be developed. In essence, the ICMP directs that monitoring activities relating to the effects of Navy training and testing activities on marine species should be designed to contribute towards one or more of the following top-level goals:

- An increase in the understanding of the likely occurrence of marine mammals and/or ESA-listed marine species in the vicinity of the action (*i.e.,* presence, abundance, distribution, and density of species);
- An increase in the understanding of the nature, scope, or context of the likely exposure of marine mammals and/or ESA-listed species to any of the potential stressors associated with the action (*e.g.,* sound, explosive detonation, or military expended materials), through better understanding of one or more of the following: (1) The action and the environment in which it occurs (*e.g.,* sound-source characterization, propagation, and ambient noise levels), (2) the affected species (*e.g.,* life history or dive patterns), (3) the likely co-occurrence of marine mammals and/or ESA-listed marine species with the action (in whole or part), and (4) the likely biological or behavioral context of exposure to the stressor for the marine mammal and/or ESA-listed marine species (*e.g.,* age class of exposed animals or known pupping, calving, or feeding areas);
- An increase in the understanding of how individual marine mammals or ESA-listed marine species respond (behaviorally or physiologically) to the specific stressors associated with the action (in specific contexts, where possible, *e.g.,* at what distance or received level);
- An increase in the understanding of how anticipated individual responses, to individual stressors or anticipated combinations of stressors, may impact either (1) the long-term fitness and survival of an individual; or (2) the population, species, or stock (*e.g.,* through impacts on annual rates of recruitment or survival);
- An increase in the understanding of the effectiveness of mitigation and monitoring measures;
- A better understanding and record of the manner in which the Navy complies with the incidental take regulations and LOAs and the ESA Incidental Take Statement;
- An increase in the probability of detecting marine mammals (through improved technology or methods), both specifically within the mitigation zones (thus allowing for more effective implementation of the mitigation) and in general, to better achieve the above goals; and
- Ensuring that adverse impact of activities remains at the least practicable level.

*Strategic Planning Process for Marine Species Monitoring*

The Navy also developed the Strategic Planning Process for Marine Species Monitoring, which establishes the guidelines and processes necessary to

develop, evaluate, and fund individual projects based on objective scientific study questions. The process uses an underlying framework designed around intermediate scientific objectives and a conceptual framework incorporating a progression of knowledge spanning occurrence, exposure, response, and consequence. The Strategic Planning Process for Marine Species Monitoring is used to set overarching intermediate scientific objectives; develop individual monitoring project concepts; identify potential species of interest at a regional scale; evaluate, prioritize, and select specific monitoring projects to fund or continue supporting for a given fiscal year; execute and manage selected monitoring projects; and report and evaluate progress and results. This process addresses relative investments to different range complexes based on goals across all range complexes, and monitoring leverages multiple techniques for data acquisition and analysis whenever possible. The Strategic Planning Process for Marine Species Monitoring is also available online (*http://www.navymarinespeciesmonitoring.us/*).

*Past and Current Monitoring in the NWTT Study Area*

The monitoring program has undergone significant changes since the first rule was issued for the NWTT Study Area in 2010, which highlights the monitoring program's evolution through the process of adaptive management. The monitoring program developed for the first cycle of environmental compliance documents (*e.g.,* U.S. Department of the Navy, 2008a, 2008b) utilized effort-based compliance metrics that were somewhat limiting. Through adaptive management discussions, the Navy designed and conducted monitoring studies according to scientific objectives, thereby eliminating basing requirements upon metrics of level-of-effort. Furthermore, refinements of scientific objectives have continued through the latest authorization cycle.

Progress has also been made on the conceptual framework categories from the Scientific Advisory Group for Navy Marine Species Monitoring (U.S. Department of the Navy, 2011), ranging from occurrence of animals, to their exposure, response, and population consequences. The Navy continues to manage the Atlantic and Pacific program as a whole, with monitoring in each range complex taking a slightly different but complementary approach. The Navy has continued to use the approach of layering multiple simultaneous components in many of the range complexes to leverage an increase in return of the progress toward answering scientific monitoring questions. This includes in the NWTT Study Area, for example, (a) satellite tagging of blue whales, fin whales, humpback whales, and Southern Resident killer whales; (b) analysis of existing passive acoustic monitoring datasets; and (c) line-transect aerial surveys for marine mammals in Puget Sound, Washington.

Numerous publications, dissertations, and conference presentations have resulted from research conducted under the marine species monitoring program (*https://www.navymarinespeciesmonitoring.us/reading-room/publications/*), resulting in a significant contribution to the body of marine mammal science. Publications on occurrence, distribution, and density have fed the modeling input, and publications on exposure and response have informed Navy and NMFS analysis of behavioral response and consideration of mitigation measures.

Furthermore, collaboration between the monitoring program and the Navy's research and development (*e.g.,* the Office of Naval Research) and demonstration-validation (*e.g.,* Living Marine Resources) programs has been strengthened, leading to research tools and products that have already transitioned to the monitoring program. These include Marine Mammal Monitoring on Ranges (M3R), controlled exposure experiment behavioral response studies (CEE BRS), acoustic sea glider surveys, and global positioning system-enabled satellite tags. Recent progress has been made with better integration with monitoring across all Navy at-sea study areas, including study areas in the Pacific and the Atlantic Oceans, and various other testing ranges. Publications from the Living Marine Resources and Office of Naval Research programs have also resulted in significant contributions to information on hearing ranges and acoustic criteria used in effects modeling, exposure, and response, as well as in developing tools to assess biological significance (*e.g.,* population-level consequences).

NMFS and the Navy also consider data collected during procedural mitigations as monitoring. Data are collected by shipboard personnel on hours spent training, hours of observation, hours of sonar, and marine mammals observed within the mitigation zones when mitigations are implemented. These data are provided to NMFS in both classified and unclassified annual exercise reports, which will continue under this rule.

NMFS has received multiple years' worth of annual exercise and monitoring reports addressing active sonar use and explosive detonations within the NWTT Study Area and other Navy range complexes. The data and information contained in these reports have been considered in developing mitigation and monitoring measures for the training and testing activities within the NWTT Study Area. The Navy's annual exercise and monitoring reports may be viewed at: *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-military-readiness-activities* and *https://www.navymarinespeciesmonitoring.us/reporting/.*

The Navy's marine species monitoring program typically supports several monitoring projects in the NWTT Study Area at any given time. Additional details on the scientific objectives for each project can be found at *https://www.navymarinespeciesmonitoring.us/regions/pacific/current-projects/.* Projects can be either major multi-year efforts, or one to two-year special studies. The emphasis on species-specific monitoring in the Pacific Northwest is directed towards collecting and analyzing tagging data related to the occurrence of blue whales, fin whales, humpback whales, and Southern Resident killer whales. In 2017, researchers deployed 28 tags on blue whales and one tag on a fin whale (Mate *et al.,* 2017, 2018a). Humpback whales have been tagged with satellite tags, and biopsy samples have been collected (Mate *et al.,* 2017, 2018b, 2019, 2020). Location information on Southern Resident killer whales was provided via satellite tag data and acoustic detections (Emmons *et al.,* 2019; Hanson *et al.,* 2018; Riera *et al.,* 2019). Also, distribution of Chinook salmon (a key prey species of Southern Resident killer whales) in coastal waters from Alaska to Northern California was studied (Shelton *et al.,* 2018).

Specific monitoring under the 2015–2020 regulations included the following projects:

- QRS Unmanned Acoustic Glider;
- PAM for Marine Mammals in the NWTRC;
- Modeling the Offshore Distribution of Southern Resident Killer Whales in the Pacific Northwest;
- Marine Mammal Density Surveys in the Pacific Northwest (Inland Puget Sound);
- Blue and Fin Whale Tagging and Genetics; Tagging and Behavioral Monitoring of Sea Lions in the Pacific Northwest in Proximity to Navy Facilities;

- Harbor Seal Density Estimation; Humpback Whale Tagging in Support of Marine Mammal Monitoring Across Multiple Navy Training Areas in the Pacific Ocean;
- Modeling the Offshore Distribution of Chinook Salmon in the Pacific Northwest;
- Characterizing the Distribution of ESA-Listed Salmonids in the Pacific Northwest;
- Guadalupe Fur Seal Satellite Tracking;

Future monitoring efforts in the NWTT Study Area are anticipated to continue along the same objectives: determining the species and populations of marine mammals present and potentially exposed to Navy training and testing activities in the NWTT Study Area, through tagging, passive acoustic monitoring, refined modeling, photo identification, biopsies, and visual monitoring.

Currently planned monitoring projects for the 2020–2027 rule are listed below. Monitoring projects are typically planned one year in advance; therefore, this list does not include all projects that will occur over the entire period of the rule.

- Offshore Distribution of Southern Resident Killer Whales in the Pacific Northwest (ongoing and planned through 2022)—Objectives include: (1) Identify and classify Southern Resident killer whale detections from acoustic recorders and satellite tag tracking; (2) Develop a model to estimate the seasonal and annual occurrence patterns of Southern Resident killer whales relative to offshore Navy training ranges; (3) Characterize occurrence of anthropogenic sounds in potential Southern Resident killer whale habitat; and (4) Develop state space habitat model for Southern Resident killer whale prey, based on fall Chinook salmon tagged and released from California to British Columbia between 1977 and 1990 to estimate seasonal distribution along the West Coast. Methods include: Passive acoustic monitoring, model development, visual survey, satellite tagging, and analysis of archived data.
- Characterizing the Distribution of ESA-Listed Salmonids in the Pacific Northwest (ongoing and planned through 2022)—Objectives include: To use a combination of acoustic and pop-up satellite tagging technology to provide critical information on spatial and temporal distribution of salmonids to inform salmon management, U.S. Navy training activities, and Southern Resident killer whale conservation. The study seeks to (1) determine the occurrence and timing of salmonids within the Navy training ranges; (2) describe the influence of environmental covariates on salmonid occurrence; and (3) describe the occurrence of salmonids in relation to Southern Resident killer whale distribution. Methods include: Acoustic telemetry (pinger tags) and pop-up satellite tagging.

**Adaptive Management**

The regulations governing the take of marine mammals incidental to Navy training and testing activities in the NWTT Study Area contain an adaptive management component. Our understanding of the effects of Navy training and testing activities (*e.g.,* acoustic and explosive stressors) on marine mammals continues to evolve, which makes the inclusion of an adaptive management component both valuable and necessary within the context of seven-year regulations.

The reporting requirements associated with this rule are designed to provide NMFS with monitoring data from the previous year to allow NMFS to consider whether any changes to existing mitigation and monitoring requirements are appropriate. The use of adaptive management allows NMFS to consider new information from different sources to determine (with input from the Navy regarding practicability) on an annual or biennial basis if mitigation or monitoring measures should be modified (including additions or deletions). Mitigation measures could be modified if new data suggests that such modifications will have a reasonable likelihood of more effectively accomplishing the goals of the mitigation and monitoring and if the measures are practicable. If the modifications to the mitigation, monitoring, or reporting measures are substantial, NMFS will publish a notice of the planned LOAs in the **Federal Register** and solicit public comment.

The following are some of the possible sources of applicable data to be considered through the adaptive management process: (1) Results from monitoring and exercise reports, as required by MMPA authorizations; (2) compiled results of Navy funded research and development studies; (3) results from specific stranding investigations; (4) results from general marine mammal and sound research; and (5) any information which reveals that marine mammals may have been taken in a manner, extent, or number not authorized by these regulations or subsequent LOAs. The results from monitoring reports and other studies may be viewed at *https://www.navymarinespeciesmonitoring.us.*

**Reporting**

In order to issue incidental take authorization for an activity, section 101(a)(5)(A) of the MMPA states that NMFS must set forth requirements pertaining to the monitoring and reporting of such taking. Effective reporting is critical both to compliance as well as ensuring that the most value is obtained from the required monitoring. Reports from individual monitoring events, results of analyses, publications, and periodic progress reports for specific monitoring projects will be posted to the Navy's Marine Species Monitoring web portal: *http://www.navymarinespeciesmonitoring.us.*

There were several different reporting requirements pursuant to the 2015–2020 regulations. All of these reporting requirements will continue under this rule for the seven-year period.

*Notification of Injured, Live Stranded, or Dead Marine Mammals*

The Navy will consult the Notification and Reporting Plan, which sets out notification, reporting, and other requirements when injured, live stranded, or dead marine mammals are detected. The Notification and Reporting Plan is available at *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-military-readiness-activities.*

*Annual NWTT Monitoring Report*

The Navy will submit an annual report to NMFS of the NWTT Study Area monitoring, which will be included in a Pacific-wide monitoring report including results specific to the NWTT Study Area, describing the implementation and results from the previous calendar year. Data collection methods will be standardized across Pacific Range Complexes including the MITT, HSTT, NWTT, and Gulf of Alaska (GOA) Study Areas to the best extent practicable, to allow for comparison in different geographic locations. The report must be submitted to the Director, Office of Protected Resources, NMFS, either within three months after the end of the calendar year, or within three months after the conclusion of the monitoring year, to be determined by the Adaptive Management process. NMFS will submit comments or questions on the draft monitoring report, if any, within three months of receipt. The report will be considered final after the Navy has addressed NMFS' comments, or three months after submittal of the draft if NMFS does not provide comments on the draft report. The report will describe progress of

knowledge made with respect to monitoring study questions across multiple Navy ranges associated with the ICMP. Similar study questions will be treated together so that progress on each topic is summarized across multiple Navy ranges. The report need not include analyses and content that does not provide direct assessment of cumulative progress on the monitoring plan study question. This will allow the Navy to provide a cohesive monitoring report covering multiple ranges (as per ICMP goals), rather than entirely separate reports for the MITT, HSTT, NWTT, and GOA Study Areas.

*NWTT Annual Training Exercise Report and Annual Testing Activity Report*

Each year, the Navy will submit two preliminary reports (Quick Look Reports) to NMFS detailing the status of applicable sound sources within 21 days after the anniversary of the date of issuance of the LOAs. The Navy will also submit detailed reports (NWTT Annual Training Exercise and Annual Testing Activity Reports) to NMFS within three months after the one-year anniversary of the date of issuance of the LOAs. If desired, the Navy may elect to consolidate the NWTT Annual Training Exercise Report and the Annual Testing Activity Report with other exercise and activity reports from other range complexes in the Pacific Ocean for a single Pacific Training Exercise and Testing Activity Report. NMFS will submit comments or questions on the reports, if any, within one month of receipt. The reports will be considered final after the Navy has addressed NMFS' comments, or one month after submittal of the drafts if NMFS does not provide comments on the draft reports. The annual reports will contain a summary of all sound sources used (total hours or quantity of each bin of sonar or other non-impulsive source; total annual number of each type of explosive; and total annual expended/detonated rounds (missiles, bombs, sonobuoys, *etc.*) for each explosive bin).

Both reports will also contain both current year's sonar and explosive use data as well as cumulative sonar and explosive use quantity from previous years' reports. Additionally, if there were any changes to the sound source allowance in the reporting year, or cumulatively, the report will include a discussion of why the change was made and include analysis to support how the change did or did not affect the analysis in the 2020 NWTT FSEIS/OEIS and MMPA final rule. See the regulations below for more detail on the content of the annual report.

Within the annual classified training exercise and testing activity reports, separate from the unclassified reports described above, the Navy will specifically include the following information:

- Total hours of authorized low-frequency, mid-frequency, and high-frequency active sonar (all bins, by bin) used during training and testing annually within the Olympic Coast National Marine Sanctuary; and
- Total hours of surface ship hull-mounted MF1 mid-frequency active sonar used in the following mitigation areas:

1. Testing annually in three combined areas: 20 nmi from shore in the Marine Species Coastal Mitigation Area, the Juan de Fuca Eddy Marine Species Mitigation Area, and the Olympic Coast National Marine Sanctuary Mitigation Area.

2. Training and testing from May 1 to November 30 within the Stonewall and Heceta Bank Humpback Whale Mitigation Area.

3. Training and testing from July 1 to November 30 within the Point St. George Humpback Whale Mitigation Area.

The final annual reports at the conclusion of the authorization period (year seven) will also serve as the comprehensive close-out report and include both the final year annual use compared to annual authorization as well as a cumulative seven-year annual use compared to seven-year authorization. NMFS must submit comments on the draft close-out report, if any, within three months of receipt. The report will be considered final after the Navy has addressed NMFS' comments, or three months after the submittal of the draft if NMFS does not provide comments.

Information included in the annual reports may be used to inform future adaptive management of activities within the NWTT Study Area.

*Other Reporting and Coordination*

The Navy will continue to report and coordinate with NMFS for the following:

- Annual marine species monitoring technical review meetings (in-person or remote, as circumstances allow and agreed upon by NMFS and the Navy) that also include researchers and the Marine Mammal Commission (currently, every two years a joint Pacific-Atlantic meeting is held); and
- Annual Adaptive Management meetings (in-person or remote, as circumstances allow and agreed upon by NMFS and the Navy) that also include the Marine Mammal Commission (recently modified to occur in conjunction with the annual monitoring technical review meeting).

**Analysis and Negligible Impact Determination**

*General Negligible Impact Analysis*

Introduction

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 considering how Level A harassment or Level B harassment (as presented in Tables 32 and 33), factor into the negligible impact analysis, in addition to considering the number of estimated takes, NMFS considers other factors, such as the likely nature of any responses (*e.g.,* intensity, duration) and 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' 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).

In the Estimated Take of Marine Mammals section, we identified the subset of potential effects that are expected to rise to the level of takes both annually and over the seven-year period covered by this rule, and then identified the maximum number of takes we believe could occur (mortality) or are reasonably expected to occur (harassment) based on the methods described. The impact that any given take will have on an individual, and ultimately the species or stock, is dependent on many case-specific factors that need to be considered in the negligible impact analysis (*e.g.,* the context of behavioral exposures such as duration or intensity of a disturbance, the health of impacted animals, the status of a species that incurs fitness-

level impacts to individuals, *etc.*). For this rule we evaluated the likely impacts of the enumerated maximum number of harassment takes that are reasonably expected to occur, and are authorized, in the context of the specific circumstances surrounding these predicted takes. We also specifically assessed serious injury or mortality (hereafter referred to as M/SI) takes that could occur, as well as considering the traits and statuses of the affected species and stocks. Last, we collectively evaluated this information, as well as other more taxa-specific information and mitigation measure effectiveness, in group-specific assessments that support our negligible impact conclusions for each stock or species. Because all of the Navy's specified activities will occur within the ranges of the marine mammal stocks identified in the rule, all negligible impact analyses and determinations are at the stock level (*i.e.,* additional species-level determinations are not needed).

The specified activities reflect representative levels of training and testing activities. The Description of the Specified Activities section describes annual activities. There may be some flexibility in the exact number of hours, items, or detonations that may vary from year to year, but take totals will not exceed the maximum annual totals and seven-year totals indicated in Tables 32 and 33. We base our analysis and negligible impact determination on the maximum number of takes that are reasonably expected to occur and are authorized, although, as stated before, the number of takes are only a part of the analysis, which includes extensive qualitative consideration of other contextual factors that influence the degree of impact of the takes on the affected individuals. To avoid repetition, we provide some general analysis in this *General Negligible Impact Analysis* section that applies to all the species listed in Tables 32 and 33, given that some of the anticipated effects of the Navy's training and testing activities on marine mammals are expected to be relatively similar in nature. Then, in the *Group and Species-Specific Analyses* section, we subdivide into discussions of Mysticetes, Odontocetes, and pinnipeds, as there are broad life history traits that support an overarching discussion of some factors considered within the analysis for those groups (*e.g.,* high-level differences in feeding strategies). Last, we break our analysis into species (and/or stocks), or groups of species (and the associated stocks) where relevant similarities exist, to provide more specific information related to the anticipated effects on individuals of a specific stock or where there is information about the status or structure of any species or stock that would lead to a differing assessment of the effects on the species or stock. Organizing our analysis by grouping species or stocks that share common traits or that will respond similarly to effects of the Navy's activities and then providing species- or stock-specific information allows us to avoid duplication while assuring that we have analyzed the effects of the specified activities on each affected species or stock.

Harassment

The Navy's harassment take request is based on a model that includes a quantitative assessment of procedural mitigation, which NMFS reviewed and concurs appropriately predicts the maximum amount of harassment that is likely to occur. The model calculates sound energy propagation from sonar, other active acoustic sources, and explosives during naval activities; the sound or impulse received by animat dosimeters representing marine mammals distributed in the area around the modeled activity; and whether the sound or impulse energy received by a marine mammal exceeds the thresholds for effects. Assumptions in the Navy model intentionally err on the side of overestimation when there are unknowns. Naval activities are modeled as though they would occur regardless of proximity to marine mammals, meaning that no mitigation is considered (*e.g.,* no power down or shut down) and without any avoidance of the activity by the animal. The final step of the quantitative analysis of acoustic effects, which occurs after the modeling, is to consider the implementation of mitigation and the possibility that marine mammals would avoid continued or repeated sound exposures. NMFS provided input to, independently reviewed, and concurred with the Navy on this process and the Navy's analysis, which is described in detail in Section 6 of the Navy's rulemaking/LOA application, was used to quantify harassment takes for this rule.

Generally speaking, the Navy and NMFS anticipate more severe effects from takes resulting from exposure to higher received levels (though this is in no way a strictly linear relationship for behavioral effects throughout species, individuals, or circumstances) and less severe effects from takes resulting from exposure to lower received levels. However, there is also growing evidence of the importance of distance in predicting marine mammal behavioral response to sound—*i.e.,* sounds of a similar level emanating from a more distant source have been shown to be less likely to evoke a response of equal magnitude (DeRuiter 2012, Falcone *et al.,* 2017). The estimated number of takes by Level A harassment and Level B harassment does not equate to the number of individual animals the Navy expects to harass (which is lower), but rather to the instances of take (*i.e.,* exposures above the Level A harassment and Level B harassment threshold) that are anticipated to occur annually and over the seven-year period. These instances may represent either brief exposures (seconds or minutes) or, in some cases, longer durations of exposure within a day. Some individuals may experience multiple instances of take (*i.e.,* on multiple days) over the course of a year, which means that the number of individuals taken is smaller than the total estimated takes. Generally speaking, the higher the number of takes as compared to the population abundance, the more repeated takes of individuals are likely, and the higher the actual percentage of individuals in the population that are likely taken at least once in a year. We look at this comparative metric to give us a relative sense of where a larger portion of a species or stock is being taken by Navy activities, where there is a higher likelihood that the same individuals are being taken on multiple days, and where that number of days might be higher or more likely sequential. Where the number of instances of take is 100 percent or less of the abundance and there is no information to specifically suggest that a small subset of animals will be repeatedly taken over a high number of sequential days, the overall magnitude is generally considered low, as it could on one extreme mean that every individual taken will be taken on no more than one day annually (a very minimal impact) or, more likely, that some smaller portion of individuals are taken on one day annually, some are taken on a few not likely sequential days annually, and some are not taken at all.

In the ocean, the Navy's use of sonar and other active acoustic sources is often transient and is unlikely to repeatedly expose the same individual animals within a short period, for example within one specific exercise. However, for some individuals of some species or stocks repeated exposures across different activities could occur over the year, especially where events occur in generally the same area with more resident species (*e.g.,* pinnipeds in

inland waters). In short, for some species or stocks we expect that the total anticipated takes represent exposures of a smaller number of individuals of which some will be exposed multiple times, but based on the nature of the Navy activities and the movement patterns of marine mammals, it is unlikely that individuals from most stocks (with the exception of one stock of harbor seals) will be taken over more than a few non-sequential days and, as described elsewhere, the nature of the majority of the exposures is expected to be of a less severe nature.

Physiological Stress Response

Some of the lower level physiological stress responses (*e.g.,* orientation or startle response, change in respiration, change in heart rate) discussed in the proposed rule would likely co-occur with the predicted harassments, although these responses are more difficult to detect and fewer data exist relating these responses to specific received levels of sound. Takes by Level B harassment, then, may have a stress-related physiological component as well; however, we would not expect the Navy's generally short-term, intermittent, and (typically in the case of sonar) transitory activities to create conditions of long-term continuous noise leading to long-term physiological stress responses in marine mammals that could affect reproduction or survival.

Behavioral Response

The estimates calculated using the BRF do not differentiate between the different types of behavioral responses that rise to the level of take by Level B harassment. As described in the Navy's application, the Navy identified (with NMFS' input) the types of behaviors that would be considered a take: Moderate behavioral responses as characterized in Southall *et al.* (2007) (*e.g.,* altered migration paths or dive profiles; interrupted nursing, breeding, or feeding; or avoidance) that also would be expected to continue for the duration of an exposure. The Navy then compiled the available data indicating at what received levels and distances those responses have occurred, and used the indicated literature to build biphasic behavioral response curves and cutoff distances that are used to predict how many instances of Level B harassment by behavioral disturbance occur in a day. Take estimates alone do not provide information regarding the potential fitness or other biological consequences of the reactions on the affected individuals. We therefore consider the available activity-specific, environmental, and species-specific information to determine the likely nature of the modeled behavioral responses and the potential fitness consequences for affected individuals.

Use of sonar and other transducers would typically be transient and temporary. The majority of acoustic effects to individual animals from sonar and other active sound sources during training and testing activities would be primarily from ASW events. Unlike other Navy training and testing Study Areas, no major training exercises (MTEs) are planned in the NWTT Study Area. In the range of potential behavioral effects that might expect to be part of a response that qualifies as an instance of Level B harassment by behavioral disturbance (which by nature of the way it is modeled/counted, occurs within one day), the less severe end might include exposure to comparatively lower levels of a sound, at a detectably greater distance from the animal, for a few or several minutes. A less severe exposure of this nature could result in a behavioral response such as avoiding an area that an animal would otherwise have chosen to move through or feed in for some amount of time or breaking off one or a few feeding bouts. More severe effects could occur if an animal gets close enough to the source to receive a comparatively higher level, is exposed continuously to one source for a longer time, or is exposed intermittently to different sources throughout a day. Such effects might result in an animal having a more severe flight response and leaving a larger area for a day or more or potentially losing feeding opportunities for a day. However, such severe behavioral effects are expected to occur infrequently.

To help assess this, for sonar (LFAS/MFAS/HFAS) used in the NWTT Study Area, the Navy provided information estimating the percentage of animals that may be taken by Level B harassment under each BRF that would occur within 6-dB increments (percentages discussed below in the *Group and Species-Specific Analyses* section). As mentioned above, all else being equal, an animal's exposure to a higher received level is more likely to result in a behavioral response that is more likely to lead to adverse effects, which could more likely accumulate to impacts on reproductive success or survivorship of the animal, but other contextual factors (such as distance) are also important. The majority of takes by Level B harassment are expected to be in the form of milder responses (*i.e.,* lower-level exposures that still rise to the level of take, but would likely be less severe in the range of responses that qualify as take) of a generally shorter duration. We anticipate more severe effects from takes when animals are exposed to higher received levels of sound or at closer proximity to the source. However, depending on the context of an exposure *(e.g.,* depth, distance, if an animal is engaged in important behavior such as feeding), a behavioral response can vary between species and individuals within a species. Specifically, given a range of behavioral responses that may be classified as Level B harassment, to the degree that higher received levels are expected to result in more severe behavioral responses, only a smaller percentage of the anticipated Level B harassment from Navy activities might necessarily be expected to potentially result in more severe responses (see the *Group and Species-Specific Analyses* section below for more detailed information). To fully understand the likely impacts of the predicted/authorized take on an individual (*i.e.,* what is the likelihood or degree of fitness impacts), one must look closely at the available contextual information, such as the duration of likely exposures and the likely severity of the exposures (*e.g.,* whether they will occur for a longer duration over sequential days or the comparative sound level that will be received). Ellison *et al.* (2012) and Moore and Barlow (2013), among others, emphasize the importance of context (*e.g.,* behavioral state of the animals, distance from the sound source.) in evaluating behavioral responses of marine mammals to acoustic sources.

Diel Cycle

Many animals perform vital functions, such as feeding, resting, traveling, and socializing on a diel cycle (24-hour cycle). Behavioral reactions to noise exposure, when taking place in a biologically important context, such as disruption of critical life functions, displacement, or avoidance of important habitat, are more likely to be significant if they last more than one day or recur on subsequent days (Southall *et al.,* 2007) due to diel and lunar patterns in diving and foraging behaviors observed in many cetaceans, including beaked whales (Baird *et al.* 2008, Barlow *et al.* 2020, Henderson *et al.* 2016, Schorr *et al.* 2014). Henderson *et al.* (2016) found that ongoing smaller scale events had little to no impact on foraging dives for Blainville's beaked whale, while multi-day training events may decrease foraging behavior for Blainville's beaked whale (Manzano-Roth *et al.,* 2016). Consequently, a behavioral response lasting less than one day and not recurring on subsequent days is not

considered severe unless it could directly affect reproduction or survival (Southall *et al.,* 2007). Note that there is a difference between multiple-day substantive behavioral reactions and multiple-day anthropogenic activities. For example, just because an at-sea exercise lasts for multiple days does not necessarily mean that individual animals are either exposed to those exercises for multiple days or, further, exposed in a manner resulting in a sustained multiple day substantive behavioral response. Large multi-day Navy exercises such as ASW activities, typically include vessels that are continuously moving at speeds typically 10–15 kn, or higher, and likely cover large areas that are relatively far from shore (typically more than 3 nmi from shore) and in waters greater than 600 ft deep. Additionally marine mammals are moving as well, which would make it unlikely that the same animal could remain in the immediate vicinity of the ship for the entire duration of the exercise. Further, the Navy does not necessarily operate active sonar the entire time during an exercise. While it is certainly possible that these sorts of exercises could overlap with individual marine mammals multiple days in a row at levels above those anticipated to result in a take, because of the factors mentioned above, it is considered unlikely for the majority of takes. However, it is also worth noting that the Navy conducts many different types of noise-producing activities over the course of the year and it is likely that some marine mammals will be exposed to more than one and taken on multiple days, even if they are not sequential.

Durations of Navy activities utilizing tactical sonar sources and explosives vary and are fully described in Appendix A (*Navy Activity Descriptions*) of the 2020 NWTT FSEIS/OEIS. Sonar used during ASW would impart the greatest amount of acoustic energy of any category of sonar and other transducers analyzed in the Navy's rulemaking/LOA application and include hull-mounted, towed, line array, sonobuoy, helicopter dipping, and torpedo sonars. Most ASW sonars are MFAS (1–10 kHz); however, some sources may use higher or lower frequencies. ASW training activities using hull mounted sonar planned for the NWTT Study Area generally last for only a few hours (see Table 3). Some ASW training and testing activities range from several hours, to days, to up to 3 weeks for Pierside-Sonar Testing and Submarine Sonar Testing/Maintenance (see Table 4). For these multi-day exercises there will typically be extended intervals of non-activity in between active sonar periods. Because of the need to train in a large variety of situations, the Navy does not typically conduct successive ASW exercises in the same locations. Given the average length of ASW exercises (times of sonar use) and typical vessel speed, combined with the fact that the majority of the cetaceans would not likely remain in proximity to the sound source, it is unlikely that an animal would be exposed to LFAS/MFAS/HFAS at levels or durations likely to result in a substantive response that would then be carried on for more than one day or on successive days.

Most planned explosive events are scheduled to occur over a short duration (1–8 hours); however Mine Countermeasure and Neutralization Testing would last 1–10 days (see Tables 3 and 4). The explosive component of these activities only lasts for minutes. Although explosive exercises may sometimes be conducted in the same general areas repeatedly, because of their short duration and the fact that they are in the open ocean and animals can easily move away, it is similarly unlikely that animals would be exposed for long, continuous amounts of time, or demonstrate sustained behavioral responses. All of these factors make it unlikely that individuals would be exposed to the exercise for extended periods or on consecutive days.

Assessing the Number of Individuals Taken and the Likelihood of Repeated Takes

As described previously, Navy modeling uses the best available science to predict the instances of exposure above certain acoustic thresholds, which are equated, as appropriate, to harassment takes (and, for PTS, further corrected to account for mitigation and avoidance). As further noted, for active acoustics it is more challenging to parse out the number of individuals taken by Level B harassment and the number of times those individuals are taken from this larger number of instances. One method that NMFS uses to help better understand the overall scope of the impacts is to compare these total instances of take against the abundance of that species (or stock if applicable). For example, if there are 100 estimated harassment takes in a population of 100, one can assume either that every individual will be exposed above acoustic thresholds in no more than one day, or that some smaller number will be exposed in one day but a few of those individuals will be exposed multiple days within a year and a few not exposed at all. Where the instances of take exceed 100 percent of the population (*i.e.,* are over 100 percent), multiple takes of some individuals are predicted and expected to occur within a year. Generally speaking, the higher the number of takes as compared to the population abundance, the more multiple takes of individuals are likely, and the higher the actual percentage of individuals in the population that are likely taken at least once in a year. We look at this comparative metric to give us a relative sense of where a larger portion of a species or stock is being taken by Navy activities and where there is a higher likelihood that the same individuals are being taken across multiple days and where that number of days might be higher. It also provides a relative picture of the scale of impacts to each species.

In the ocean, unlike a modeling simulation with static animals, the use of sonar and other active acoustic sources is often transient, and is unlikely to repeatedly expose the same individual animals within a short period, for example within one specific exercise. However, some repeated exposures across different activities could occur over the year with more resident species (*e.g.,* pinnipeds in inland waters). In short, we expect that the total anticipated takes represent exposures of a smaller number of individuals of which some could be exposed multiple times, but based on the nature of the Navy's activities and the movement patterns of marine mammals, it is unlikely that any particular subset would be taken over more than a few non-sequential days (with the exception of three harbor seal stocks discussed in the species-specific analyses).

When comparing the number of takes to the population abundance, which can be helpful in estimating both the proportion of the population affected by takes and the number of days over which some individuals may be taken, it is important to choose an appropriate population estimate against which to make the comparison. The SARs, where available, provide the official population estimate for a given species or stock in U.S. waters in a given year (and are typically based solely on the most recent survey data). When the stock is known to range well outside of U.S. EEZ boundaries, population estimates based on surveys conducted only within the U.S. EEZ are known to be underestimates. The information used to estimate take includes the best available survey abundance data to model density layers. Accordingly, in calculating the percentage of takes

versus abundance for each species or stock in order to assist in understanding both the percentage of the species or stock affected, as well as how many days across a year individuals could be taken, we use the data most appropriate for the situation. For all species and stocks except for a few stocks of harbor seals for which SAR data are unavailable and Navy abundance surveys of the inland areas of the NWTT Study Area are used, the most recent NMFS SARs are used to calculate the proportion of a population affected by takes.

The stock abundance estimates in NMFS' SARs are typically generated from the most recent shipboard and/or aerial surveys conducted. In some cases, NMFS' abundance estimates show substantial year-to-year variability. However, for highly migratory species (*e.g.,* large whales) or those whose geographic distribution extends well beyond the boundaries of the NWTT Study Area (*e.g.,* populations with distribution along the entire eastern Pacific Ocean rather than just the NWTT Study Area), comparisons to the SAR are appropriate. Many of the stocks present in the NWTT Study Area have ranges significantly larger than the NWTT Study Area and that abundance is captured by the SAR. A good descriptive example is migrating large whales, which traverse the NWTT Study Area for several days to weeks on their migrations. Therefore, at any one time there may be a stable number of animals, but over the course of the entire year the entire population may pass through the NWTT Study Area. Therefore, comparing the estimated takes to an abundance, in this case the SAR abundance, which represents the total population, may be more appropriate than modeled abundances for only the NWTT Study Area.

Temporary Threshold Shift

NMFS and the Navy have estimated that multiple species and stocks of marine mammals may sustain some level of TTS from active sonar. As discussed in the proposed rule in the Potential Effects of Specified Activities on Marine Mammals and their Habitat section, in general, TTS can last from a few minutes to days, be of varying degree, and occur across various frequency bandwidths, all of which determine the severity of the impacts on the affected individual, which can range from minor to more severe. Tables 52–57 indicate the number of takes by TTS that may be incurred by different species and stocks from exposure to active sonar and explosives. The TTS sustained by an animal is primarily classified by three characteristics:

1. Frequency—Available data (of mid-frequency hearing specialists exposed to mid- or high-frequency sounds; Southall *et al.,* 2007) suggest that most TTS occurs in the frequency range of the source up to one octave higher than the source (with the maximum TTS at ½ octave above). The Navy's MF sources, which are the highest power and most numerous sources and the ones that cause the most take, utilize the 1–10 kHz frequency band, which suggests that if TTS were to be induced by any of these MF sources it would be in a frequency band somewhere between approximately 2 and 20 kHz, which is in the range of communication calls for many odontocetes, but below the range of the echolocation signals used for foraging. There are fewer hours of HF source use and the sounds would attenuate more quickly, plus they have lower source levels, but if an animal were to incur TTS from these sources, it would cover a higher frequency range (sources are between 10 and 100 kHz, which means that TTS could range up to 200 kHz), which could overlap with the range in which some odontocetes communicate or echolocate. However, HF systems are typically used less frequently and for shorter time periods than surface ship and aircraft MF systems, so TTS from these sources is unlikely. There are fewer LF sources and the majority are used in the more readily mitigated testing environment, and TTS from LF sources would most likely occur below 2 kHz, which is in the range where many mysticetes communicate and also where other non-communication auditory cues are located (waves, snapping shrimp, fish prey). Also of note, the majority of sonar sources from which TTS may be incurred occupy a narrow frequency band, which means that the TTS incurred would also be across a narrower band (*i.e.,* not affecting the majority of an animal's hearing range). This frequency provides information about the cues to which a marine mammal may be temporarily less sensitive, but not the degree or duration of sensitivity loss. TTS from explosives would be broadband.

2. Degree of the shift (*i.e.,* by how many dB the sensitivity of the hearing is reduced)—Generally, both the degree of TTS and the duration of TTS will be greater if the marine mammal is exposed to a higher level of energy (which would occur when the peak dB level is higher or the duration is longer). The threshold for the onset of TTS was discussed previously in this rule. An animal would have to approach closer to the source or remain in the vicinity of the sound source appreciably longer to increase the received SEL, which would be difficult considering the Lookouts and the nominal speed of an active sonar vessel (10–15 kn) and the relative motion between the sonar vessel and the animal. In the TTS studies discussed in the Potential Effects of Specified Activities on Marine Mammals and their Habitat section of the proposed rule, some using exposures of almost an hour in duration or up to 217 SEL, most of the TTS induced was 15 dB or less, though Finneran *et al.* (2007) induced 43 dB of TTS with a 64-second exposure to a 20 kHz source. However, since any hull-mounted sonar, such as the SQS–53, engaged in anti-submarine warfare training would be moving at between 10 and 15 knots and nominally pinging every 50 seconds, the vessel will have traveled a minimum distance of approximately 257 m during the time between those pings, and, therefore, incurring those levels of TTS is highly unlikely. A scenario could occur where an animal does not leave the vicinity of a ship or travels a course parallel to the ship, however, the close distances required make TTS exposure unlikely. For a Navy vessel moving at a nominal 10 knots, it is unlikely a marine mammal could maintain speed parallel to the ship and receive adequate energy over successive pings to suffer TTS.

In short, given the anticipated duration and levels of sound exposure, we would not expect marine mammals to incur more than relatively low levels of TTS (*i.e.,* single digits of sensitivity loss). To add context to this degree of TTS, individual marine mammals may regularly experience variations of 6 dB differences in hearing sensitivity across time (Finneran *et al.,* 2000, 2002; Schlundt *et al.,* 2000).

3. Duration of TTS (recovery time)—In the TTS laboratory studies (as discussed in the Potential Effects of Specified Activities on Marine Mammals and their Habitat section of the proposed rule), some using exposures of almost an hour in duration or up to 217 SEL, almost all individuals recovered within 1 day (or less, often in minutes), although in one study (Finneran *et al.,* 2007), recovery took 4 days.

Based on the range of degree and duration of TTS reportedly induced by exposures to non-pulse sounds of energy higher than that to which free-swimming marine mammals in the field are likely to be exposed during LFAS/MFAS/HFAS training and testing exercises in the NWTT Study Area, it is unlikely that marine mammals would ever sustain a TTS from MFAS that

alters their sensitivity by more than 20 dB for more than a few hours—and any incident of TTS would likely be far less severe due to the short duration of the majority of the events and the speed of a typical vessel, especially given the fact that the higher power sources resulting in TTS are predominantly intermittent, which have been shown to result in shorter durations of TTS. Also, for the same reasons discussed in the Analysis and Negligible Impact Determination—*Diel Cycle* section, and because of the short distance within which animals would need to approach the sound source, it is unlikely that animals would be exposed to the levels necessary to induce TTS in subsequent time periods such that their recovery is impeded. Additionally, though the frequency range of TTS that marine mammals might sustain would overlap with some of the frequency ranges of their vocalization types, the frequency range of TTS from MFAS would not usually span the entire frequency range of one vocalization type, much less span all types of vocalizations or other critical auditory cues for any given species.

Tables 52–57 indicate the maximum number of incidental takes by TTS for each species or stock that are likely to result from the Navy's activities. As a general point, the majority of these TTS takes are the result of exposure to hull-mounted MFAS (MF narrower band sources), with fewer from explosives (broad-band lower frequency sources), and even fewer from LFAS or HFAS sources (narrower band). As described above, we expect the majority of these takes to be in the form of mild (single-digit), short-term (minutes to hours), narrower band (only affecting a portion of the animal's hearing range) TTS. This means that for one to several times per year, for several minutes to maybe a few hours (high end) each, a taken individual will have slightly diminished hearing sensitivity (slightly more than natural variation, but nowhere near total deafness). More often than not, such an exposure would occur within a narrower mid- to higher frequency band that may overlap part (but not all) of a communication, echolocation, or predator range, but sometimes across a lower or broader bandwidth. The significance of TTS is also related to the auditory cues that are germane within the time period that the animal incurs the TTS. For example, if an odontocete has TTS at echolocation frequencies, but incurs it at night when it is resting and not feeding, it is not impactful. In short, the expected results of any one of these small number of mild TTS occurrences could be that (1) it does not overlap signals that are pertinent to that animal in the given time period, (2) it overlaps parts of signals that are important to the animal, but not in a manner that impairs interpretation, or (3) it reduces detectability of an important signal to a small degree for a short amount of time—in which case the animal may be aware and be able to compensate (but there may be slight energetic cost), or the animal may have some reduced opportunities (*e.g.,* to detect prey) or reduced capabilities to react with maximum effectiveness (*e.g.,* to detect a predator or navigate optimally). However, given the small number of times that any individual might incur TTS, the low degree of TTS and the short anticipated duration, and the low likelihood that one of these instances would occur in a time period in which the specific TTS overlapped the entirety of a critical signal, it is unlikely that TTS of the nature expected to result from the Navy activities would result in behavioral changes or other impacts that would impact any individual's (of any hearing sensitivity) reproduction or survival.

Auditory Masking or Communication Impairment

The ultimate potential impacts of masking on an individual (if it were to occur) are similar to those discussed for TTS, but an important difference is that masking only occurs during the time of the signal, versus TTS, which continues beyond the duration of the signal. Fundamentally, masking is referred to as a chronic effect because one of the key potential harmful components of masking is its duration—the fact that an animal would have reduced ability to hear or interpret critical cues becomes much more likely to cause a problem the longer it is occurring. Also inherent in the concept of masking is the fact that the potential for the effect is only present during the times that the animal and the source are in close enough proximity for the effect to occur (and further, this time period would need to coincide with a time that the animal was utilizing sounds at the masked frequency). As our analysis has indicated, because of the relative movement of vessels and the sound sources primarily involved in this rule, we do not expect the exposures with the potential for masking to be of a long duration. Masking is fundamentally more of a concern at lower frequencies, because low frequency signals propagate significantly further than higher frequencies and because they are more likely to overlap both the narrower LF calls of mysticetes, as well as many non-communication cues such as fish and invertebrate prey, and geologic sounds that inform navigation. Masking is also more of a concern from continuous sources (versus intermittent sonar signals) where there is no quiet time between pulses within which auditory signals can be detected and interpreted. For these reasons, dense aggregations of, and long exposure to, continuous LF activity are much more of a concern for masking, whereas comparatively short-term exposure to the predominantly intermittent pulses of often narrow frequency range MFAS or HFAS, or explosions are not expected to result in a meaningful amount of masking. While the Navy occasionally uses LF and more continuous sources, it is not in the contemporaneous aggregate amounts that would accrue to a masking concern. Specifically, the nature of the activities and sound sources used by the Navy do not support the likelihood of a level of masking accruing that would have the potential to affect reproductive success or survival. Additional detail is provided below.

Standard hull-mounted MFAS typically pings every 50 seconds. Some hull-mounted anti-submarine sonars can also be used in an object detection mode known as ''Kingfisher'' mode (*e.g.,* used on vessels when transiting to and from port) where pulse length is shorter but pings are much closer together in both time and space since the vessel goes slower when operating in this mode. Kingfisher mode is typically operated for relatively shorter durations. For the majority of other sources, the pulse length is significantly shorter than hull-mounted active sonar, on the order of several microseconds to tens of milliseconds. Some of the vocalizations that many marine mammals make are less than one second long, so, for example with hull-mounted sonar, there would be a 1 in 50 chance (and only if the source was in close enough proximity for the sound to exceed the signal that is being detected) that a single vocalization might be masked by a ping. However, when vocalizations (or series of vocalizations) are longer than the one-second pulse of hull-mounted sonar, or when the pulses are only several microseconds long, the majority of most animals' vocalizations would not be masked.

Most ASW sonars and countermeasures use MF frequencies and a few use LF and HF frequencies. Most of these sonar signals are limited in the temporal, frequency, and spatial domains. The duration of most individual sounds is short, lasting up to a few seconds each. A few systems operate with higher duty cycles or nearly continuously, but they typically

use lower power, which means that an animal would have to be closer, or in the vicinity for a longer time, to be masked to the same degree as by a higher level source. Nevertheless, masking could occasionally occur at closer ranges to these high-duty cycle and continuous active sonar systems, but as described previously, it would be expected to be of a short duration when the source and animal are in close proximity. While data are limited on behavioral responses of marine mammals to continuously active sonars, mysticete species are known to be able to habituate to novel and continuous sounds (Nowacek *et al.,* 2004), suggesting that they are likely to have similar responses to high-duty cycle sonars. Furthermore, most of these systems are hull-mounted on surface ships and ships are moving at least 10 kn, and it is unlikely that the ship and the marine mammal would continue to move in the same direction with the marine mammal subjected to the same exposure due to that movement. Most ASW activities are geographically dispersed and last for only a few hours, often with intermittent sonar use even within this period. Most ASW sonars also have a narrow frequency band (typically less than one-third octave). These factors reduce the likelihood of sources causing significant masking. HF signals (above 10 kHz) attenuate more rapidly in the water due to absorption than do lower frequency signals, thus producing only a very small zone of potential masking. If masking or communication impairment were to occur briefly, it would more likely be in the frequency range of MFAS (the more powerful source), which overlaps with some odontocete vocalizations (but few mysticete vocalizations); however, it would likely not mask the entirety of any particular vocalization, communication series, or other critical auditory cue, because the signal length, frequency, and duty cycle of the MFAS/HFAS signal does not perfectly resemble the characteristics of any single marine mammal species' vocalizations.

Other sources used in Navy training and testing that are not explicitly addressed above, many of either higher frequencies (meaning that the sounds generated attenuate even closer to the source) or lower amounts of operation, are similarly not expected to result in masking. For the reasons described here, any limited masking that could potentially occur would be minor and short-term.

In conclusion, masking is more likely to occur in the presence of broadband, relatively continuous noise sources such as from vessels, however, the duration of temporal and spatial overlap with any individual animal and the spatially separated sources that the Navy uses are not expected to result in more than short-term, low impact masking that will not affect reproduction or survival.

PTS From Sonar Acoustic Sources and Explosives and Tissue Damage From Explosives

Tables 52 through 57 indicate the number of individuals of each species or stock for which Level A harassment in the form of PTS resulting from exposure to active sonar and/or explosives is estimated to occur. The number of individuals to potentially incur PTS annually (from sonar and explosives) for each species/stock ranges from 0 to 180 (the 180 is for the Inland Washington stock of harbor porpoise), but is more typically 0 or 1. As described previously, no species/stocks have the potential to incur tissue damage from sonar or explosives.

Data suggest that many marine mammals would deliberately avoid exposing themselves to the received levels of active sonar necessary to induce injury by moving away from or at least modifying their path to avoid a close approach. Additionally, in the unlikely event that an animal approaches the sonar-emitting vessel at a close distance, NMFS has determined that the mitigation measures (*i.e.,* shutdown/powerdown zones for active sonar) would typically ensure that animals would not be exposed to injurious levels of sound. As discussed previously, the Navy utilizes both aerial (when available) and passive acoustic monitoring (during ASW exercises, passive acoustic detections are used as a cue for Lookouts' visual observations when passive acoustic assets are already participating in an activity) in addition to Lookouts on vessels to detect marine mammals for mitigation implementation. As discussed previously, these Level A harassment take numbers represent the maximum number of instances in which marine mammals would be reasonably expected to incur PTS, and we have analyzed them accordingly.

If a marine mammal is able to approach a surface vessel within the distance necessary to incur PTS in spite of the mitigation measures, the likely speed of the vessel (nominally 10–15 kn) and relative motion of the vessel would make it very difficult for the animal to remain in range long enough to accumulate enough energy to result in more than a mild case of PTS. As discussed previously in relation to TTS, the likely consequences to the health of an individual that incurs PTS can range from mild to more serious dependent upon the degree of PTS and the frequency band it is in. The majority of any PTS incurred as a result of exposure to Navy sources would be expected to be in the 2–20 kHz range (resulting from the most powerful hull-mounted sonar) and could overlap a small portion of the communication frequency range of many odontocetes, whereas other marine mammal groups have communication calls at lower frequencies. Because of the broadband nature of explosives, PTS incurred from exposure to explosives would occur over a lower, but wider, frequency range. For all but harbor porpoises, annual PTS take resulting from exposure to explosives is 1–5 per species or stock. For harbor porpoises, a fair portion of the takes by PTS result from explosive exposure. However, harbor porpoises are high frequency specialists and minor hearing loss at lower frequencies is expected to be less impactful than at higher frequencies because it is less likely to overlap or interfere with the sounds produced by harbor porpoises for communication or echolocation. Regardless of the frequency band, the more important point in this case is that any PTS accrued as a result of exposure to Navy activities would be expected to be of a small amount (single digits). Permanent loss of some degree of hearing is a normal occurrence for older animals, and many animals are able to compensate for the shift, both in old age or at younger ages as the result of stressor exposure. While a small loss of hearing sensitivity may include some degree of energetic costs for compensating or may mean some small loss of opportunities or detection capabilities, at the expected scale it would be unlikely to impact behaviors, opportunities, or detection capabilities to a degree that would interfere with reproductive success or survival.

The Navy implements mitigation measures (described in the Mitigation Measures section) during explosive activities, including delaying detonations when a marine mammal is observed in the mitigation zone. Nearly all explosive events will occur during daylight hours to improve the sightability of marine mammals and thereby improve mitigation effectiveness. Observing for marine mammals during the explosive activities will include visual and passive acoustic detection methods (when they are available and part of the activity) before the activity begins, in order to cover the mitigation zones that can range from 500 yd (457 m) to 2,500 yd (2,286 m)

depending on the source (*e.g.,* explosive sonobuoy, explosive torpedo, explosive bombs; see Tables 38–44). For all of these reasons, the mitigation measures associated with explosives are expected to be effective in preventing tissue damage to any potentially affected species or stocks, and no species or stocks are anticipated to incur tissue damage during the period of the rule.

Serious Injury and Mortality

NMFS is authorizing a very small number of serious injuries or mortalities that could occur in the event of a ship strike. We note here that the takes from potential ship strikes enumerated below could result in non-serious injury, but their worst potential outcome (mortality) is analyzed for the purposes of the negligible impact determination.

In addition, we discuss here the connection, and differences, between the legal mechanisms for authorizing incidental take under section 101(a)(5) for activities such as the Navy's testing and training in the NWTT Study Area, and for authorizing incidental take from commercial fisheries. In 1988, Congress amended the MMPA's provisions for addressing incidental take of marine mammals in commercial fishing operations. Congress directed NMFS to develop and recommend a new long-term regime to govern such incidental taking (see MMC, 1994). The need to develop a system suited to the unique circumstances of commercial fishing operations led NMFS to suggest a new conceptual means and associated regulatory framework. That concept, PBR, and a system for developing plans containing regulatory and voluntary measures to reduce incidental take for fisheries that exceed PBR were incorporated as sections 117 and 118 in the 1994 amendments to the MMPA. In *Conservation Council for Hawaii* v. *National Marine Fisheries Service,* 97 F. Supp. 3d 1210 (D. Haw. 2015), which concerned a challenge to NMFS' regulations and LOAs to the Navy for activities assessed in the 2013–2018 HSTT MMPA rulemaking, the Court ruled that NMFS' failure to consider PBR when evaluating lethal takes in the negligible impact analysis under section 101(a)(5)(A) violated the requirement to use the best available science.

PBR is defined in section 3 of 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'' (OSP) and, although not controlling, can be one measure considered among other factors when evaluating the effects of M/SI on a marine mammal species or stock during the section 101(a)(5)(A) process. OSP is defined in section 3 of the MMPA as ''the number of animals which will result in the maximum productivity of the population or the species, keeping in mind the carrying capacity of the habitat and the health of the ecosystem of which they form a constituent element.'' Through section 2, an overarching goal of the statute is to ensure that each species or stock of marine mammal is maintained at or returned to its OSP.

PBR values are calculated by NMFS as the level of annual removal from a stock that will allow that stock to equilibrate within OSP at least 95 percent of the time, and is the product of factors relating to the minimum population estimate of the stock ($N_{min}$), the productivity rate of the stock at a small population size, and a recovery factor. Determination of appropriate values for these three elements incorporates significant precaution, such that application of the parameter to the management of marine mammal stocks may be reasonably certain to achieve the goals of the MMPA. For example, calculation of the minimum population estimate ($N_{min}$) incorporates the level of precision and degree of variability associated with abundance information, while also providing reasonable assurance that the stock size is equal to or greater than the estimate (Barlow *et al.,* 1995), typically by using the 20th percentile of a log-normal distribution of the population estimate. In general, the three factors are developed on a stock-specific basis in consideration of one another in order to produce conservative PBR values that appropriately account for both imprecision that may be estimated, as well as potential bias stemming from lack of knowledge (Wade, 1998).

Congress called for PBR to be applied within the management framework for commercial fishing incidental take under section 118 of the MMPA. As a result, PBR cannot be applied appropriately outside of the section 118 regulatory framework without consideration of how it applies within the section 118 framework, as well as how the other statutory management frameworks in the MMPA differ from the framework in section 118. PBR was not designed and is not used as an absolute threshold limiting commercial fisheries. Rather, it serves as a means to evaluate the relative impacts of those activities on marine mammal stocks. Even where commercial fishing is causing M/SI at levels that exceed PBR, the fishery is not suspended. When M/SI exceeds PBR in the commercial fishing context under section 118, NMFS may develop a take reduction plan, usually with the assistance of a take reduction team. The take reduction plan will include measures to reduce and/or minimize the taking of marine mammals by commercial fisheries to a level below the stock's PBR. That is, where the total annual human-caused M/SI exceeds PBR, NMFS is not required to halt fishing activities contributing to total M/SI but rather utilizes the take reduction process to further mitigate the effects of fishery activities via additional bycatch reduction measures. In other words, under section 118 of the MMPA, PBR does not serve as a strict cap on the operation of commercial fisheries that may incidentally take marine mammals.

Similarly, to the extent PBR may be relevant when considering the impacts of incidental take from activities other than commercial fisheries, using it as the sole reason to deny (or issue) incidental take authorization for those activities would be inconsistent with Congress's intent under section 101(a)(5), NMFS' long-standing regulatory definition of ''negligible impact,'' and the use of PBR under section 118. The standard for authorizing incidental take for activities other than commercial fisheries under section 101(a)(5) continues to be, among other things that are not related to PBR, whether the total taking will have a negligible impact on the species or stock. Nowhere does section 101(a)(5)(A) reference use of PBR to make the negligible impact finding or to authorize incidental take through multi-year regulations, nor does its companion provision at section 101(a)(5)(D) for authorizing non-lethal incidental take under the same negligible-impact standard. NMFS' MMPA implementing regulations state that take has a negligible impact when it does not ''adversely affect the species or stock through effects on annual rates of recruitment or survival''—likewise without reference to PBR. When Congress amended the MMPA in 1994 to add section 118 for commercial fishing, it did not alter the standards for authorizing non-commercial fishing incidental take under section 101(a)(5), implicitly acknowledging that the negligible impact standard under section 101(a)(5) is separate from the PBR metric under section 118. In fact, in 1994 Congress also amended section 101(a)(5)(E) (a separate provision governing commercial fishing incidental take for species listed under the ESA) to add compliance with the new section 118 but retained the standard of the

negligible impact finding under section 101(a)(5)(A) (and section 101(a)(5)(D)), showing that Congress understood that the determination of negligible impact and the application of PBR may share certain features but are, in fact, different.

Since the introduction of PBR in 1994, NMFS had used the concept almost entirely within the context of implementing sections 117 and 118 and other commercial fisheries management-related provisions of the MMPA. Prior to the Court's ruling in *Conservation Council for Hawaii* v. *National Marine Fisheries Service* and consideration of PBR in a series of section 101(a)(5) rulemakings, there were a few examples where PBR had informed agency deliberations under other MMPA sections and programs, such as playing a role in the issuance of a few scientific research permits and subsistence takings. But as the Court found when reviewing examples of past PBR consideration in *Georgia Aquarium* v. *Pritzker,* 135 F. Supp. 3d 1280 (N.D. Ga. 2015), where NMFS had considered PBR outside the commercial fisheries context, ''it has treated PBR as only one 'quantitative tool' and [has not used it] as the sole basis for its impact analyses.'' Further, the agency's thoughts regarding the appropriate role of PBR in relation to MMPA programs outside the commercial fishing context have evolved since the agency's early application of PBR to section 101(a)(5) decisions. Specifically, NMFS' denial of a request for incidental take authorization for the U.S. Coast Guard in 1996 seemingly was based on the potential for lethal take in relation to PBR and did not appear to consider other factors that might also have informed the potential for ship strike in relation to negligible impact (61 FR 54157; October 17, 1996).

The MMPA requires that PBR be estimated in SARs and that it be used in applications related to the management of take incidental to commercial fisheries (*i.e.,* the take reduction planning process described in section 118 of the MMPA and the determination of whether a stock is ''strategic'' as defined in section 3), but nothing in the statute requires the application of PBR outside the management of commercial fisheries interactions with marine mammals. Nonetheless, NMFS recognizes that as a quantitative metric, PBR may be useful as a consideration when evaluating the impacts of other human-caused activities on marine mammal stocks. Outside the commercial fishing context, and in consideration of all known human-caused mortality, PBR can help inform the potential effects of M/SI requested to be authorized under section 101(a)(5)(A). As noted by NMFS and the U.S. Fish and Wildlife Service in our implementing regulations for the 1986 amendments to the MMPA (54 FR 40341, September 29, 1989), the Services consider many factors, when available, in making a negligible impact determination, including, but not limited to, the status of the species or stock relative to OSP (if known); whether the recruitment rate for the species or stock is increasing, decreasing, stable, or unknown; the size and distribution of the population; and existing impacts and environmental conditions. In this multi-factor analysis, PBR can be a useful indicator for when, and to what extent, the agency should take an especially close look at the circumstances associated with the potential mortality, along with any other factors that could influence annual rates of recruitment or survival.

When considering PBR during evaluation of effects of M/SI under section 101(a)(5)(A), we first calculate a metric for each species or stock that incorporates information regarding ongoing anthropogenic M/SI from all sources into the PBR value (*i.e.,* PBR minus the total annual anthropogenic mortality/serious injury estimate in the SAR), which is called ''residual PBR'' (Wood *et al.,* 2012). We first focus our analysis on residual PBR because it incorporates anthropogenic mortality occurring from other sources. If the ongoing human-caused mortality from other sources does not exceed PBR, then residual PBR is a positive number, and we consider how the anticipated or potential incidental M/SI from the activities being evaluated compares to residual PBR using the framework in the following paragraph. If the ongoing anthropogenic mortality from other sources already exceeds PBR, then residual PBR is a negative number and we consider the M/SI from the activities being evaluated as described further below.

When ongoing total anthropogenic mortality from the applicant's specified activities does not exceed PBR and residual PBR is a positive number, as a simplifying analytical tool we first consider whether the specified activities could cause incidental M/SI that is less than 10 percent of residual PBR (the ''insignificance threshold,'' see below). If so, we consider M/SI from the specified activities to represent an insignificant incremental increase in ongoing anthropogenic M/SI for the marine mammal stock in question that alone (*i.e.,* in the absence of any other take) will not adversely affect annual rates of recruitment and survival. As such, this amount of M/SI would not be expected to affect rates of recruitment or survival in a manner resulting in more than a negligible impact on the affected stock unless there are other factors that could affect reproduction or survival, such as Level A and/or Level B harassment, or other considerations such as information that illustrates uncertainty involved in the calculation of PBR for some stocks. In a few prior incidental take rulemakings, this threshold was identified as the ''significance threshold,'' but it is more accurately labeled an insignificance threshold, and so we use that terminology here, as we did in the AFTT final rule (83 FR 57076; November 14, 2018), and two-year rule extension (84 FR 70712; December 23, 2019), as well as the HSTT final rule (83 FR 66846; December 27, 2018) and two-year rule extension (85 FR 41780; July 10, 2020). Assuming that any additional incidental take by Level A or Level B harassment from the activities in question would not combine with the effects of the authorized M/SI to exceed the negligible impact level, the anticipated M/SI caused by the activities being evaluated would have a negligible impact on the species or stock. However, M/SI above the 10 percent insignificance threshold does not indicate that the M/SI associated with the specified activities is approaching a level that would necessarily exceed negligible impact. Rather, the 10 percent insignificance threshold is meant only to identify instances where additional analysis of the anticipated M/SI is not required because the negligible impact standard clearly will not be exceeded on that basis alone.

Where the anticipated M/SI is near, at, or above residual PBR, consideration of other factors (positive or negative), including those outlined above, as well as mitigation is especially important to assessing whether the M/SI will have a negligible impact on the species or stock. PBR is a conservative metric and not sufficiently precise to serve as an absolute predictor of population effects upon which mortality caps would appropriately be based. For example, in some cases stock abundance (which is one of three key inputs into the PBR calculation) is underestimated because marine mammal survey data within the U.S. EEZ are used to calculate the abundance even when the stock range extends well beyond the U.S. EEZ. An underestimate of abundance could result in an underestimate of PBR. Alternatively, we sometimes may not

have complete M/SI data beyond the U.S. EEZ to compare to PBR, which could result in an overestimate of residual PBR. The accuracy and certainty around the data that feed any PBR calculation, such as the abundance estimates, must be carefully considered to evaluate whether the calculated PBR accurately reflects the circumstances of the particular stock. M/SI that exceeds residual PBR or PBR may still potentially be found to be negligible in light of other factors that offset concern, especially when robust mitigation and adaptive management provisions are included.

In *Conservation Council for Hawaii* v. *National Marine Fisheries Service,* which involved the challenge to NMFS' issuance of LOAs to the Navy in 2013 for activities in the HSTT Study Area, the Court reached a different conclusion, stating, ''Because any mortality level that exceeds PBR will not allow the stock to reach or maintain its OSP, such a mortality level could not be said to have only a 'negligible impact' on the stock.'' As described above, the Court's statement fundamentally misunderstands the two terms and incorrectly indicates that these concepts (PBR and ''negligible impact'') are directly connected, when in fact nowhere in the MMPA is it indicated that these two terms are equivalent.

Specifically, PBR was designed as a tool for evaluating mortality and is defined as the number of animals that can be removed while ''allowing that stock to reach or maintain its [OSP].'' OSP is defined as a population that falls within a range from the population level that is the largest supportable within the ecosystem to the population level that results in maximum net productivity, and thus is an aspirational management goal of the overall statute with no specific timeframe by which it should be met. PBR is designed to ensure minimal deviation from this overarching goal, with the formula for PBR typically ensuring that growth towards OSP is not reduced by more than 10 percent (or equilibrates to OSP 95 percent of the time). Given that, as applied by NMFS, PBR certainly allows a stock to ''reach or maintain its [OSP]'' in a conservative and precautionary manner—and we can therefore clearly conclude that if PBR were not exceeded, there would not be adverse effects on the affected species or stocks. Nonetheless, it is equally clear that in some cases the time to reach this aspirational OSP level could be slowed by more than 10 percent (*i.e.,* total human-caused mortality in excess of PBR could be allowed) without adversely affecting a species or stock through effects on its rates of recruitment or survival. Thus even in situations where the inputs to calculate PBR are thought to accurately represent factors such as the species' or stock's abundance or productivity rate, it is still possible for incidental take to have a negligible impact on the species or stock even where M/SI exceeds residual PBR or PBR.

As noted above, in some cases the ongoing human-caused mortality from activities other than those being evaluated already exceeds PBR and, therefore, residual PBR is negative. In these cases (such as is specifically discussed for the CA/OR/WA stock of humpback whales below), any additional mortality, no matter how small, and no matter how small relative to the mortality caused by other human activities, would result in greater exceedance of PBR. PBR is helpful in informing the analysis of the effects of mortality on a species or stock because it is important from a biological perspective to be able to consider how the total mortality in a given year may affect the population. However, section 101(a)(5)(A) of the MMPA indicates that NMFS shall authorize the requested incidental take from a specified activity if we find that ''the total of such taking [*i.e.,* from the specified activity] will have a negligible impact on such species or stock.'' In other words, the task under the statute is to evaluate the applicant's anticipated take in relation to their take's impact on the species or stock, not other entities' impacts on the species or stock. Neither the MMPA nor NMFS' implementing regulations call for consideration of other unrelated activities and their impacts on the species or stock. In fact, in response to public comments on the implementing regulations NMFS explained that such effects are not considered in making negligible impact findings under section 101(a)(5), although the extent to which a species or stock is being impacted by other anthropogenic activities is not ignored. Such effects are reflected in the baseline of existing impacts as reflected in the species' or stock's abundance, distribution, reproductive rate, and other biological indicators.

NMFS guidance for commercial fisheries provides insight when evaluating the effects of an applicant's incidental take as compared to the incidental take caused by other entities. Parallel to section 101(a)(5)(A), section 101(a)(5)(E) of the MMPA provides that NMFS shall allow the incidental take of ESA-listed endangered or threatened marine mammals by commercial fisheries if, among other things, the incidental M/SI from the commercial fisheries will have a negligible impact on the species or stock. As discussed earlier, the authorization of incidental take resulting from commercial fisheries and authorization for activities other than commercial fisheries are under two separate regulatory frameworks. However, when it amended the statute in 1994 to provide a separate incidental take authorization process for commercial fisheries, Congress kept the requirement of a negligible impact determination for this one category of species, thereby applying the standard to both programs. Therefore, while the structure and other standards of the two programs differ such that evaluation of negligible impact under one program may not be fully applicable to the other program, guidance on determining negligible impact for commercial fishing take authorizations can be informative when considering incidental take outside the commercial fishing context. In 1999, NMFS published criteria for making a negligible impact determination pursuant to section 101(a)(5)(E) of the MMPA in a notice of proposed permits for certain fisheries (64 FR 28800; May 27, 1999). Criterion 2 stated if total human-related serious injuries and mortalities are greater than PBR, and fisheries-related mortality is less than 0.1 PBR, individual fisheries may be permitted if management measures are being taken to address non-fisheries-related serious injuries and mortalities. Those criteria further stated that when fisheries-related serious injury and mortality is less than 10 percent of the total, the appropriate management action is to address components that account for the major portion of the total. Criterion 2 addresses when total human-caused mortality is exceeding PBR, but the activity being assessed is responsible for only a small portion of the mortality. The analytical framework we use here incorporates elements of the 1999 criteria developed for use under section 101(a)(5)(E), and because the negligible impact determination under section 101(a)(5)(A) focuses on the activity being evaluated, it is appropriate to utilize this parallel concept from the framework for section 101(a)(5)(E).

Accordingly, we are using a similar criterion in our negligible impact analysis under section 101(a)(5)(A) to evaluate the relative role of an applicant's incidental take when other sources of take are causing PBR to be exceeded, but the take of the specified activity is comparatively small. Where this occurs, we may find that the impacts of the taking from the specified activity may (alone) be negligible even

when total human-caused mortality from all activities exceeds PBR if (in the context of a particular species or stock): The authorized mortality or serious injury would be less than or equal to 10 percent of PBR and management measures are being taken to address serious injuries and mortalities from the other activities (*i.e.,* other than the specified activities covered by the incidental take authorization under consideration). In addition, we must also still determine that any impacts on the species or stock from other types of take (*i.e.,* harassment) caused by the applicant do not combine with the impacts from mortality or serious injury addressed here to result in adverse effects on the species or stock through effects on annual rates of recruitment or survival.

As discussed above, while PBR is useful in informing the evaluation of the effects of M/SI in section 101(a)(5)(A) determinations, it is just one consideration to be assessed in combination with other factors and is not determinative. For example, as explained above, the accuracy and certainty of the data used to calculate PBR for the species or stock must be considered. And we reiterate the considerations discussed above for why it is not appropriate to consider PBR an absolute cap in the application of this guidance. Accordingly, we use PBR as a trigger for concern while also considering other relevant factors to provide a reasonable and appropriate means of evaluating the effects of potential mortality on rates of recruitment and survival, while acknowledging that it is possible to exceed PBR (or exceed 10 percent of PBR in the case where other human-caused mortality is exceeding PBR but the specified activity being evaluated is an incremental contributor, as described in the last paragraph) by some small amount and still make a negligible impact determination under section 101(a)(5)(A).

We note that on June 17, 2020 NMFS finalized new Criteria for Determining Negligible Impact under MMPA section 101(a)(5)(E). The guidance explicitly notes the differences in the negligible impact determinations required under section 101(a)(5)(E), as compared to sections 101(a)(5)(A) and 101(a)(5)(D), and specifies that the procedure in that document is limited to how the agency conducts negligible impact analyses for commercial fisheries under section 101(a)(5)(E). In the proposed rule (and above), NMFS has described its method for considering PBR to evaluate the effects of potential mortality in the negligible impact analysis. NMFS has reviewed the 2020 guidance and determined that our consideration of PBR in the evaluation of mortality as described above and in the proposed rule remains appropriate for use in the negligible impact analysis for the Navy's activities in the NWTT Study Area under section 101(a)(5)(A).

Our evaluation of the M/SI for each of the species and stocks for which mortality or serious injury could occur follows. No M/SI are anticipated from the Navy's sonar activities or use of explosives.

We first consider maximum potential incidental M/SI from the Navy and NMFS' ship strike analysis for the affected mysticetes and sperm whales (see Table 51; updated from the proposed rule) in consideration of NMFS' threshold for identifying insignificant M/SI take. By considering the maximum potential incidental M/SI in relation to PBR and ongoing sources of anthropogenic mortality, we begin our evaluation of whether the incremental addition of M/SI through the Navy's potential ship strikes may affect the species' or stock's annual rates of recruitment or survival. We also consider the interaction of those mortalities with incidental taking of that species or stock by harassment pursuant to the specified activity.

Based on the methods discussed previously, NMFS believes that mortal takes of three large whales could occur over the course of the seven-year rule. Of the three total M/SI takes, the rule authorizes no more than two from any of the following species/stocks over the seven-year period: Fin whale (which may come from either the Northeast Pacific or CA/OR/WA stock) and humpback whale (which may come from either the Central North Pacific or CA/OR/WA stock). Of the three total M/SI takes, the rule also authorizes no more than one mortality from any of the following species/stocks over the seven-year period: Sperm whale (CA/OR/WA stock), minke whale (CA/OR/WA stock), and gray whale (Eastern North Pacific stock). We do not anticipate, nor authorize, M/SI takes from ship strikes for blue whale (Eastern North Pacific stock), minke whale (Alaska stock), or sei whale (Eastern North Pacific stock). This means an annual average of 0.14 whales from each species or stock where one mortality may occur and an annual average of 0.29 whales from each species or stock where two mortalities may occur, as described in Table 51 (*i.e.,* 1 or 2 takes over 7 years divided by 7 to get the annual number).

TABLE 51—SUMMARY INFORMATION RELATED TO MORTALITIES REQUESTED FOR SHIP STRIKE, 2020–2027

| Species (stock) | Stock abundance (Nbest)* | Annual authorized take by serious injury or mortality[1] | Total annual M/SI*[2] | Fisheries interactions (Y/N); annual rate of M/SI from fisheries interactions* | Vessel collisions (Y/N); annual rate of M/SI from vessel collision* | Annual navy HSTT authorized take (2018–2025)[5] | PBR* | Residual PBR–PBR minus annual M/SI and HSTT authorized take[3] | Stock trend*[4] | Recent UME (Y/N); number and year (since 2007) |
|---|---|---|---|---|---|---|---|---|---|---|
| Fin whale (Northeast Pacific) | 3,168 | 0.29 | 0.4 | N; 0 | Y; 0.4 | 0 | 5.1 | 4.7 | ↑ | N |
| Fin whale (CA/OR/WA) | 9,029 | 0.29 | ≥ 43.5 | Y; ≥ 0.5 | Y; 43 | 0.29 | 81 | 37.2 | ↑ | N |
| Humpback whale (Central North Pacific) | 10,103 | 0.29 | 25 | Y; 9.5 | [6] Y; 3.9 | 0.29 | 83 | 57.7 | ↑ | N |
| Humpback whale (CA/OR/WA) | 2,900 | 0.29 | ≥ 42.1 | Y; ≥ 17.3 | Y; 22 | 0.14 | 33.4 | -8.8 | Stable (↑ (historically) | N |
| Sperm whale (CA/OR/WA) | 1,997 | 0.14 | 0.6 | Y; 0.6 | N; 0 | 0 | 2.5 | 1.8 | Unknown | N |
| Minke whale (CA/OR/WA) | 636 | 0.14 | ≥ 1.3 | Y; ≥ 1.3 | N; 0 | 0 | 3.5 | 2.2 | Unknown | N |
| Gray whale (Eastern North Pacific) | 26,960 | 0.14 | 139 | Y; 9.6 | Y; 0.8 | 0.29 | 801 | 661.6 | ↑ | Y, 384, 2019 |

*Presented in the 2019 SARs or most recent SAR.

[1]This column represents the annual take by serious injury or mortality by vessel collision and was calculated by the number of mortalities authorized divided by seven years (the length of the rule and LOAs).

[2]This column represents the total number of incidents of M/SI that could potentially accrue to the specified species or stock. This number comes from the SAR, but deducts the takes accrued from either NMFS Science Center research activities or Navy strikes authorized for training and testing activities. No NMFS Science Center or Navy M/SI takes for these stocks are recorded in the SARs and no NMFS Science Center M/SI incidental takes have been authorized.

[3]This value represents the calculated PBR minus the average annual estimate of ongoing anthropogenic mortalities (*i.e.,* total annual human-caused M/SI column and the annual authorized take from the HSTT column). This value represents the total PBR for the stock in the stock's entire range.

[4]See relevant SARs for more information regarding stock status and trends.

[5] This column represents annual M/SI take authorized through NMFS' current HSTT regulations/LOAs (85 FR 41780). On July 10, 2020, NMFS effectively extended the current HSTT regulations by two years, replacing the five-year HSTT regulations with seven-year regulations. These regulations authorized the same number of M/SI for the same species/stocks, but over a seven-year period rather than a five-year period (resulting in slightly lower annual authorized take for each species/stock). See the 2020 HSTT final rule for more details (85 FR 41780, July 10, 2020).

[6] This value represents average annual observed M/SI from ship strikes in Alaska (2.5) and Hawaii (1.4). For the purposes of analysis of potential ship strikes (see the Estimated Take of Marine Mammals section) we incorporated only Alaska ship strikes as only these ship strikes have the potential to overlap with the NWTT Study Area.

*Stocks With M/SI Below the Insignificance Threshold*

As noted above, for a species or stock with incidental M/SI less than 10 percent of residual PBR, we consider M/SI from the specified activities to represent an insignificant incremental increase in ongoing anthropogenic M/SI that alone (*i.e.,* in the absence of any other take and barring any other unusual circumstances) will clearly not adversely affect annual rates of recruitment and survival. In this case, as shown in Table 51, the following species or stocks have potential M/SI from ship strike authorized below their insignificance threshold: Fin whale (both the Northeast Pacific and CA/OR/WA stocks), humpback whale (Central North Pacific stock), sperm whale (CA/OR/WA stock), minke whale (CA/OR/WA stock), and gray whale (Eastern North Pacific stock). While the authorized M/SI of gray whales (Eastern North Pacific stock) is below the insignificance threshold, because of the recent UME, we further address how the authorized M/SI and the UME inform the negligible impact determination immediately below. For the other five stocks with authorized M/SI below the insignificance threshold, there are no other known factors, information, or unusual circumstances that indicate anticipated M/SI below the insignificance threshold could have adverse effects on annual rates of recruitment or survival and they are not discussed further. For the remaining one stock (CA/OR/WA stock of humpback whales) with potential M/SI above the insignificance threshold, how that M/SI compares to residual PBR, as well as additional factors, are discussed below as well.

*Gray Whales (Eastern North Pacific stock)*

For this stock, PBR is currently set at 801. The total annual M/SI from other sources of anthropogenic mortality is estimated to be 139. In addition, 0.29 annual mortalities have been authorized for this same stock in the current incidental take regulations for Navy testing and training activities in the HSTT Study Area (85 FR 41780; July 10, 2020). This yields a residual PBR of 661.6. The additional 0.29 annual mortalities that are authorized in this rule are well below the insignificance threshold (10 percent of residual PBR, in this case 66.2). Nonetheless, since January 2019, gray whale strandings along the west coast of North America have been significantly higher than the previous 18-year average. Preliminary findings from necropsies have shown evidence of poor to thin body condition. The seasonal pattern of elevated strandings in the spring and summer months is similar to that of the previous gray whale UME in 1999–2000, and the current UME is continuing to follow a similar pattern with a decrease in strandings in late summer and fall. However, combined with other annual human-caused mortalities, and viewed through the PBR lens (for human-caused mortalities), total human-caused mortality (inclusive of the potential for additional UME deaths) would still fall well below residual PBR and the insignificance threshold. Because of the abundance, population trend (increasing, despite the UME in 1999–2000), and residual PBR (661.6) of this stock, this UME is not expected to have impacts on the population rate that, in combination with the effects of the authorized mortality, would affect annual rates of recruitment or survival.

Stocks with M/SI above the Insignificance Threshold

The CA/OR/WA stock of humpback whales is the only stock with M/SI above the insignificance threshold. For this stock, PBR is currently set at 16.7 for U.S. waters and 33.4 for the stock's entire range. The total annual M/SI is estimated at greater than or equal to 42.1. Combined with 0.14 annual mortalities that have been authorized for this same stock in the current incidental take regulations for Navy testing and training activities in the HSTT Study Area (85 FR 41780; July 10, 2020), this yields a residual PBR of –8.8. NMFS is authorizing up to 2 M/SI takes over the seven-year duration of this rule, which is 0.29 M/SI takes annually for the purposes of comparing to PBR and considering other possible effects on annual rates of recruitment and survival. This means that with the additional 0.29 M/SI annual takes authorized in this rule, residual PBR would be exceeded by 9.1.

In the commercial fisheries setting for ESA-listed marine mammals (which can be informative for the non-fisheries incidental take setting, in that a negligible impact determination is required that is based on the assessment of take caused by the activity being analyzed), NMFS may find the impact of the authorized take from a specified activity to be negligible even if total human-caused mortality exceeds PBR, if the authorized mortality is less than 10 percent of PBR and management measures are being taken to address serious injuries and mortalities from the other activities causing mortality (*i.e.,* other than the specified activities covered by the incidental take authorization under consideration). When those considerations are applied in the section 101(a)(5)(A) context here, the authorized lethal take (0.29 annually) of humpback whales from the CA/OR/WA stock is significantly less than 10 percent of PBR (in fact less than 1 percent of 33.4) and there are management measures in place to address M/SI from activities other than those the Navy is conducting (as discussed below).

Based on identical simulations as those conducted to identify Recovery Factors for PBR in Wade *et al.* (1998), but where values less than 0.1 were investigated (P. Wade, pers. comm.), we predict that where the mortality from a specified activity does not exceed Nmin * ½ Rmax * 0.013, the contemplated mortality for the specific activity will not delay the time to recovery by more than 1 percent. For this stock of humpback whales, Nmin * ½ Rmax * 0.013 = 1.45 and the annual mortality authorized is 0.29 (*i.e.,* less than 1.45). This means that the mortality authorized in this rule for NWTT activities will not delay the time to recovery to OSP by more than 1 percent.

NMFS must also ensure that impacts by the applicant on the species or stock from other types of take (*i.e.,* harassment) do not combine with the impacts from M/SI to adversely affect the species or stock via impacts on annual rates of recruitment or survival, which is discussed further below in the species- and stock-specific section.

In August 2020, NMFS published 2019 SARs in which PBR is reported as 33.4 with the predicted average annual mortality greater than or equal to 42.1 (including 22 estimated from vessel collisions and greater than 17.3 observed fisheries interactions). While the observed M/SI from vessel strikes remains low at 2.2 per year, the 2018 and 2019 SARs rely on a new method to estimate annual deaths by ship strike utilizing an encounter theory model that combined species distribution models of whale density, vessel traffic characteristics, and whale movement patterns obtained from satellite-tagged animals in the region to estimate encounters that would result in mortality (Rockwood *et al.,* 2017). The model predicts 22 annual mortalities of humpback whales from this stock from vessel strikes. The authors (Rockwood *et al.,* 2017) do not suggest that ship strikes suddenly increased to 22. In fact, the model is not specific to a year, but rather offers a generalized prediction of ship strikes off the U.S. West Coast. Therefore, if the Rockwood *et al.* (2017) model is an accurate representation of vessel strike, then similar levels of ship

strike have been occurring in past years as well. Put another way, if the model is correct, for some number of years total human-caused mortality has been significantly underestimated, and PBR has been similarly exceeded by a notable amount, and yet the CA/OR/WA stock of humpback whales is considered stable nevertheless.

The CA/OR/WA stock of humpback whales experienced a steady increase from the 1990s through approximately 2008, and more recent estimates through 2014 indicate a leveling off of the population size. This stock is comprised of the feeding groups of three DPSs. Two DPSs associated with this stock are listed under the ESA as either endangered (Central America DPS) or threatened (Mexico DPS), while the third (Hawaii DPS) is not listed. Humpback whales from the Hawaii DPS are anticipated to be rare in the NWTT Study Area with a probability of the DPS foraging in the waters of the Study Area of 1.6 percent (including summer areas of Oregon/California and Southern British Columbia/Washington from Wade (2017)). Humpback whales from the Mexico DPS and Central America DPS are anticipated to be more prevalent in the Study Area with probabilities of the DPSs foraging in the waters of the Study Area of 31.7 and 100 percent, respectively (including summer areas of Oregon/California and Southern British Columbia/Washington from Wade (2017)). As described in the final rule Identifying 14 DPSs of the Humpback Whale and Revision of Species-Wide Listing (81 FR 62260, September 8, 2016), the Mexico DPS was initially proposed not to be listed as threatened or endangered, but the final decision was changed in consideration of a new abundance estimate using a new methodology that was more accurate (less bias from capture heterogeneity and lower coefficient of variation) and resulted in a lower abundance than was previously estimated. To be clear, the new abundance estimate did not indicate that the numbers had decreased, but rather, the more accurate new abundance estimate (3,264), derived from the same data but based on an integrated spatial multi-strata mark recapture model (Wade *et al.,* 2016), was simply notably lower than earlier estimates, which were 6,000–7,000 from the SPLASH project (Calambokidis *et al.,* 2008) or higher (Barlow *et al.,* 2011). The updated abundance was still higher than 2,000, which is the Biological Review Team's (BRT) threshold between ''not likely to be at risk of extinction due to low abundance alone'' and ''increasing risk from factors associated with low abundance.'' Further, the BRT concluded that the DPS was unlikely to be declining because of the population growth throughout most of its feeding areas, in California/Oregon and the Gulf of Alaska, but they did not have evidence that the Mexico DPS was actually increasing in overall population size.

As discussed earlier, we also take into consideration management measures in place to address M/SI caused by other activities. Commercial fisheries such as crab pot, gillnet, and prawn fisheries are a significant source of mortality and serious injury for humpback whales and other large whales and, unfortunately, have increased mortalities and serious injuries over recent years (Carretta *et al.,* 2019). However, the 2019 draft SAR notes that a recent increase in disentanglement efforts has resulted in an increase in the fraction of cases that are reported as non-serious injuries as a result of successful disentanglement. More importantly, since 2015, NMFS has engaged in a multi-stakeholder process in California (including California State resource managers, fishermen, non-governmental organizations (NGOs), and scientists) to identify and develop solutions and make recommendations to regulators and the fishing industry for reducing whale entanglements (see *http://www.opc.ca.gov/whale-entanglement-working-group/*), referred to as the Whale Entanglement Working Group. The Whale Entanglement Working Group has made significant progress since 2015 and is tackling the problem from multiple angles, including:

- Development of Fact Sheets and Best Practices (BMPs) for specific Fisheries issues (*e.g.,* California Dungeness Crab Fishing BMPs and the 2018–2019 Best Fishing Practices Guide);
- A Risk Assessment and Mitigation Program (RAMP) to support the state of California in working collaboratively with experts (fishermen, researchers, NGOs, *etc.*) to identify and assess elevated levels of entanglement risk and determine the need for management options to reduce risk of entanglement; and
- Support of pilot studies to test new fisheries technologies to reduce take (*e.g.,* exploring Ropeless Fishing Technologies for the California Dungeness Crab Fishery).

The Working Group meets regularly, posts reports and annual recommendations, and makes all of their products and guidance documents readily accessible for the public (*https://opc.ca.gov/risk-assessment-and-mitigation-program-ramp/*).

In early 2019, as a result of a litigation settlement agreement, the California Department of Fish and Wildlife (CDFW) closed the Dungeness crab fishery three months early for the year, which is expected to reduce the number of likely entanglements. The agreement also limits the fishery duration over the next couple of years and has different triggers to reduce or close it further. Further, pursuant to the settlement, CDFW is required to apply for a Section 10 Incidental Take Permit under the ESA to address protected species interactions with fishing gear and crab fishing gear (pots). Any request for such a permit must include a Conservation Plan that specifies, among other things, what steps the applicant will take to minimize and mitigate the impacts, and the funding that will be available to implement such steps. On May 15, 2020, CDFW submitted a draft Conservation Plan to NMFS and CDFW's development of this plan continues. The May 2020 draft plan may be viewed here: *https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=179066&inline.* Additional information about CDFWs planned application for an ITP can be accessed at the CDFW Whale Safe Fisheries web page (*https://wildlife.ca.gov/Conservation/Marine/Whale-Safe-Fisheries*). A critical element of CDFW's approach to reducing the risk of entanglement includes the implementation of RAMP regulations. These proposed regulations may be found at: *https://wildlife.ca.gov/Notices/Regulations/RAMP.*

Regarding measures in place to reduce mortality from other sources, the Channel Islands NMS staff coordinates, collects, and monitors whale sightings in and around a Whale Advisory Zone and the Channel Islands NMS region, which is within the area of highest vessel strike mortality (90th percentile) for humpback whales on the U.S. West Coast (Rockwood *et al.,* 2017). The seasonally established Whale Advisory Zone spans from Point Arguello to Dana Point, including the Traffic Separation Schemes in the Santa Barbara Channel and San Pedro Channel. Vessels transiting the area from June through November are recommended to exercise caution and voluntarily reduce speed to 10 kn or less for blue, humpback, and fin whales. Channel Island NMS observers collect information from aerial surveys conducted by NOAA, the U.S. Coast Guard, California Department of Fish and Game, and Navy chartered aircraft. Information on seasonal presence, movement, and general

distribution patterns of large whales is shared with mariners, NMFS' Office of Protected Resources, the U.S. Coast Guard, the California Department of Fish and Game, the Santa Barbara Museum of Natural History, the Marine Exchange of Southern California, and whale scientists. Although well south of the NWTT Study Area, reduced vessel strikes in this area benefit humpback whales throughout the stock's range. Real time and historical whale observation data collected from multiple sources can be viewed on the Point Blue Whale Database.

More recently, similar efforts to reduce entanglement risk and severity have also been initiated in Oregon and Washington. Both Oregon and Washington are developing applications for ESA Incidental Take Permits for their commercial crab fisheries, and all three West Coast states regularly coordinate on their Conservation Plan proposals and schedules. Both states advocate similar best practices for their fishermen as California, and they are taking regulatory steps related to gear marking and pot limits. For example, they have recently implemented or proposed regulations intended to reduce entanglement risk or increase the identification of fishing gear entangling whales. Additional information about Oregon's efforts may be found at *https://www.dfw.state.or.us/MRP/shellfish/commercial/crab/whale_entanglement.asp.* A summary of WDFW whale entanglement risk reduction information may be found at: *https://wdfw.wa.gov/sites/default/files/2020-01/5_whale_ent_in_coastal_crab_fishery_jan_2020_revised.pdf .*

In this case, 0.29 M/SI annually means the potential for two mortalities in one or two of the seven years and zero mortalities in five or six of those seven years. Therefore, the Navy will not be contributing to the total human-caused mortality at all in at least five of the seven, or 71.4 percent, of the years covered by this rule. That means that even if a humpback whale from the CA/OR/WA stock were to be struck, in at least five of the seven years there could be no effect on annual rates of recruitment or survival from Navy-caused M/SI. Additionally, the loss of a male would have far less, if any, of an effect on population rates than the loss of a reproductive female (as males are known to mate with multiple females), and absent any information suggesting that one sex is more likely to be struck than another, we can reasonably assume that there is a 50 percent chance that the strikes authorized by this rule would be males, thereby further decreasing the likelihood of impacts on the population rate. In situations like this where potential M/SI is fractional, consideration must be given to the lessened impacts anticipated due to the absence of any M/SI in five or six of the years and due to the fact that strikes could be males.

Lastly, we reiterate that PBR is a conservative metric and also not sufficiently precise to serve as an absolute predictor of population effects upon which mortality caps would appropriately be based. Wade *et al.* (1998), authors of the paper from which the current PBR equation is derived, note that ''Estimating incidental mortality in one year to be greater than the PBR calculated from a single abundance survey does not prove the mortality will lead to depletion; it identifies a population worthy of careful future monitoring and possibly indicates that mortality-mitigation efforts should be initiated.''

The information included here illustrates that this humpback whale stock is currently stable, the potential (and authorized) mortality is well below 10 percent (0.87 percent) of PBR, and management actions are in place to minimize both fisheries interactions and ship strike from other vessel activity in one of the highest-risk areas for strikes. More specifically, although the total human-caused mortality exceeds PBR, the authorized mortality for the Navy's specified activities would incrementally contribute less than 1 percent of that and, further, given the fact that it would occur in only one or two of the seven years with a 50 percent chance of the take involving males (far less impactful to the population), the potential impacts on population rates are even less. Based on all of the considerations described above, including consideration of the fact that the authorized M/SI of 0.29 will not delay the time to recovery by more than 1 percent, the potential lethal take from Navy activities, alone, are unlikely to adversely affect the CA/OR/WA stock of humpback whales through effects on annual rates of recruitment or survival. Nonetheless, the fact that total human-caused mortality exceeds PBR necessitates close attention to the remainder of the impacts (*i.e.,* harassment) on the CA/OR/WA stock of humpback whales from the Navy's activities to ensure that the total authorized takes will have a negligible impact on the species and stock. Therefore, this information will be considered in combination with our assessment of the impacts of authorized harassment takes in the *Group and Species-Specific Analyses* section that follows.

*Group and Species-Specific Analyses*

In this section, we build on the general analysis that applies to all marine mammals in the NWTT Study Area from the previous section, and include first information and analysis that applies to mysticetes or, separately, odontocetes, or pinnipeds, and then within those three sections, more specific information that applies to smaller groups, where applicable, and the affected species or stocks. The specific authorized take numbers are also included in the analyses below, and so here we provide some additional context and discussion regarding how we consider the authorized take numbers in those analyses.

The maximum amount and type of incidental take by harassment of marine mammals reasonably likely to occur from exposures to sonar and other active acoustic sources and explosions and therefore authorized during the seven-year training and testing period are shown in Tables 32 and 33. The vast majority of predicted exposures (greater than 99 percent) are expected to be Level B harassment (TTS and behavioral reactions) from acoustic and explosive sources during training and testing activities at relatively low received levels.

In the discussions below, the estimated takes by Level B harassment represent instances of take, not the number of individuals taken (the much lower and less frequent Level A harassment takes are far more likely to be associated with separate individuals), and in some cases individuals may be taken more than one time. Below, we compare the total take numbers (including PTS, TTS, and behavioral disturbance) for species or stocks to their associated abundance estimates to evaluate the magnitude of impacts across the species or stock and to individuals. Generally, when an abundance percentage comparison is below 100, it suggests the following: (1) That not all of the individuals will be taken; (2) that, barring specific circumstances suggesting repeated takes of individuals (such as in circumstances where all activities resulting in take are focused in one area and time where the same individual marine mammals are known to congregate, such as pinnipeds at a haulout), the average or expected number of days for those individuals taken is one per year; and (3) that we would not expect any individuals to be taken more than a few times in a year, or for those days to be sequential. When it is more than 100 percent, it means there will definitely be some number of repeated takes of individuals. For

example, if the percentage is 300, the average would be each individual is taken on three days in a year if all were taken, but it is more likely that some number of individuals will be taken more than three times and some number of individuals fewer or not at all. While it is not possible to know the maximum number of days across which individuals of a stock might be taken, in acknowledgement of the fact that it is more than the average, for the purposes of this analysis, we assume a number approaching twice the average. For example, if the percentage of take compared to the abundance is 800, we estimate that some individuals might be taken as many as 16 times. Those comparisons are included in the sections below.

To assist in understanding what this analysis means, we clarify a few issues related to estimated takes and the analysis here. An individual that incurs a PTS or TTS take may sometimes, for example, also be subject to behavioral disturbance at the same time. As described above in this section, the degree of PTS, and the degree and duration of TTS, expected to be incurred from the Navy's activities are not expected to impact marine mammals such that their reproduction or survival could be affected. Similarly, data do not suggest that a single instance in which an animal accrues PTS or TTS and is also subjected to behavioral disturbance would result in impacts to reproduction or survival. Alternately, we recognize that if an individual is subjected to behavioral disturbance repeatedly for a longer duration and on consecutive days, effects could accrue to the point that reproductive success is jeopardized, although those sorts of impacts are generally not expected to result from these activities. Accordingly, in analyzing the number of takes and the likelihood of repeated and sequential takes, we consider the total takes, not just the takes by Level B harassment by behavioral disturbance, so that individuals potentially exposed to both threshold shift and behavioral disturbance are appropriately considered. The number of Level A harassment takes by PTS are so low (and zero in most cases) compared to abundance numbers that it is considered highly unlikely that any individual would be taken at those levels more than once.

Use of sonar and other transducers would typically be transient and temporary. The majority of acoustic effects to marine mammals from sonar and other active sound sources during testing and training activities would be primarily from ASW events. It is important to note that unlike other Navy Training and Testing Study Areas, there are no MTEs planned for the NWTT Study Area. On the less severe end, exposure to comparatively lower levels of sound at a detectably greater distance from the animal, for a few or several minutes, could result in a behavioral response such as avoiding an area that an animal would otherwise have moved through or fed in, or breaking off one or a few feeding bouts. More severe behavioral effects could occur when an animal gets close enough to the source to receive a comparatively higher level of sound, is exposed continuously to one source for a longer time, or is exposed intermittently to different sources throughout a day. Such effects might result in an animal having a more severe flight response and leaving a larger area for a day or more, or potentially losing feeding opportunities for a day. However, such severe behavioral effects are expected to occur infrequently.

Occasional, milder behavioral reactions are unlikely to cause long-term consequences for individual animals or populations, and even if some smaller subset of the takes are in the form of a longer (several hours or a day) and more severe response, if they are not expected to be repeated over sequential days, impacts to individual fitness are not anticipated. Nearly all studies and experts agree that infrequent exposures of a single day or less are unlikely to impact an individual's overall energy budget (Farmer *et al.,* 2018; Harris *et al.,* 2017; King *et al.,* 2015; NAS 2017; New *et al.,* 2014; Southall *et al.,* 2007; Villegas-Amtmann *et al.,* 2015).

If impacts to individuals are of a magnitude or severity such that either repeated and sequential higher severity impacts occur (the probability of this goes up for an individual the higher total number of takes it has) or the total number of moderate to more severe impacts occurs across sequential days, then it becomes more likely that the aggregate effects could potentially interfere with feeding enough to reduce energy budgets in a manner that could impact reproductive success via longer cow-calf intervals, terminated pregnancies, or calf mortality. It is important to note that these impacts only accrue to females, which only comprise a portion of the population (typically approximately 50 percent). Based on energetic models, it takes energetic impacts of a significantly greater magnitude to cause the death of an adult marine mammal, and females will always terminate a pregnancy or stop lactating before allowing their health to deteriorate. Also, the death of an adult female has significantly more impact on population growth rates than reductions in reproductive success, while the death of an adult male has very little effect on population growth rates. However, as explained earlier, such severe impacts from the Navy's activities would be very infrequent and not likely to occur at all for most species and stocks. Even for the one stock of harbor seals where it is possible for a small number of females to experience reproductive effects, we explain below why there still will be no effect on rates of recruitment or survival.

The analyses below in some cases address species collectively if they occupy the same functional hearing group (*i.e.,* low, mid, and high-frequency cetaceans), share similar life history strategies, and/or are known to behaviorally respond similarly to acoustic stressors. Because some of these groups or species share characteristics that inform the impact analysis similarly, it would be duplicative to repeat the same analysis for each species. In addition, similar species typically have the same hearing capabilities and behaviorally respond in the same manner.

Thus, our analysis below considers the effects of the Navy's activities on each affected species or stock even where discussion is organized by functional hearing group and/or information is evaluated at the group level. Where there are meaningful differences between a species or stock that would further differentiate the analysis, they are either described within the section or the discussion for those species or stocks is included as a separate subsection. Specifically below, we first give broad descriptions of the mysticete, odontocete, and pinniped groups and then differentiate into further groups as appropriate.

Mysticetes

This section builds on the broader discussion above and brings together the discussion of the different types and amounts of take that different species and stocks could potentially or will likely incur, the applicable mitigation, and the status of the species and stocks to support the negligible impact determinations for each species or stock. We have described (above in the *General Negligible Impact Analysis* section) the unlikelihood of any masking having effects that will impact the reproduction or survival of any of the individual marine mammals affected by the Navy's activities. We have also described in the *Potential Effects of Specified Activities on Marine*

*Mammals and their Habitat* section of the proposed rule that the specified activities would not have adverse or long-term impacts on marine mammal habitat, and therefore the unlikelihood of any habitat impacts affecting the reproduction or survival of any individual marine mammals affected by the Navy's activities. No new information has been received that affects this analysis and conclusion, although additional mitigation further reducing impacts to Mysticetes and their habitat has been added, as described in the *Mitigation Measures* section. For mysticetes, there is no predicted PTS from sonar or explosives and no predicted tissue damage from explosives for any species or stock. Much of the discussion below focuses on the behavioral effects and the mitigation measures that reduce the probability or severity of effects. Because there are species-specific and stock-specific considerations as well as M/SI take authorized for several stocks, at the end of the section we break out our findings on a species-specific and, for one species, stock-specific basis.

In Table 52 below for mysticetes, we indicate for each species and stock the total annual numbers of take by mortality, Level A and Level B harassment, and a number indicating the instances of total take as a percentage of abundane.

TABLE 52—ANNUAL ESTIMATED TAKES BY LEVEL B HARASSMENT, LEVEL A HARASSMENT, AND MORTALITY FOR MYSTICETES AND NUMBER INDICATING THE INSTANCES OF TOTAL TAKE AS A PERCENTAGE OF SPECIES ABUNDANCE

| Species | Stock | Instances of indicated types of incidental take (not all takes represent separate individuals, especially for disturbance) | | | | | Total takes | Abundance (NMFS SARs)* | Instances of total take as percentage of abundance |
|---|---|---|---|---|---|---|---|---|---|
| | | Level B harassment | | Level A harassment | | Mortality | | | |
| | | Behavioral disturbance | TTS (may also include disturbance) | PTS | Tissue damage | | | | |
| **Suborder Mysticeti (baleen whales) Family Balaenopteridae (roquals)** | | | | | | | | | |
| Blue whale | Eastern North Pacific | 6 | 4 | 0 | 0 | 0 | 10 | 1,496 | <1 |
| Fin whale | Northeast Pacific | 1 | 1 | 0 | 0 | 0.29 | 2.29 | 3,168 | <1 |
| | CA/OR/WA | 91 | 44 | 0 | 0 | 0.29 | 135.29 | 9,029 | 2 |
| Humpback whale | Central North Pacific | 47 | 68 | 0 | 0 | 0.29 | 115.29 | 10,103 | 1 |
| | CA/OR/WA | 40 | 53 | 0 | 0 | 0.29 | 93.29 | 2,900 | 3 |
| Minke whale | Alaska | 1 | 1 | 0 | 0 | 0 | 2 | [1] 389 | <1 |
| | CA/OR/WA | 111 | 191 | 0 | 0 | 0.14 | 302.14 | 636 | 48 |
| Sei whale | Eastern North Pacific | 33 | 50 | 0 | 0 | 0 | 83 | 519 | 16 |
| **Family Eschrichtiidae** | | | | | | | | | |
| Gray whale | Eastern North Pacific | 28 | 15 | 0 | 0 | 0.14 | 43.14 | 26,960 | <1 |

*Presented in the 2019 SARs or most recent SAR.

[1] The 2018 final SAR (most recent SAR) for the Alaska stock of minke whales reports the stock abundance as unknown because only a portion of the stock's range has been surveyed. To be conservative, for this stock we report the smallest estimated abundance produced during recent surveys.

The majority of takes by harassment of mysticetes in the NWTT Study Area are caused by anti-submarine warfare (ASW) activities in the Offshore portion of the Study Area. Anti-submarine activities include sources from the MFAS bin (which includes hull-mounted sonar) because they are high level, narrowband sources in the 1–10 kHz range, which intersect what is estimated to be the most sensitive area of hearing for mysticetes. They also are used in a large portion of exercises (see Tables 3 and 4). Most of the takes (90 percent) from the MF1 bin in the NWTT Study Area would result from received levels between 160 and 178 dB SPL, while another 9 percent would result from exposure between 178 and 184 dB SPL. For the remaining active sonar bin types, the percentages are as follows: LF4 = 97 percent between 124 and 142 dB SPL, MF4 = 95 percent between 136 and 148 dB SPL, MF5 = 97 percent between 112 and 142 dB SPL, and HF4 = 91 percent between 100 and 154 dB SPL. For mysticetes, explosive training activities do not result in any take. Explosive testing activities result in a small number of takes by Level B harassment by behavioral disturbance (0–6 per stock) and TTS takes (0–2 per stock). Based on this information, the majority of the Level B harassment by behavioral disturbance is expected to be of moderate and sometimes lower severity and of a relatively shorter duration. As noted above, no PTS or tissue damage from training and testing activities is anticipated or authorized for any species or stock.

Research and observations show that if mysticetes are exposed to sonar or other active acoustic sources they may react in a number of ways depending on the characteristics of the sound source, their experience with the sound source, and whether they are migrating or on seasonal feeding or breeding grounds. Behavioral reactions may include alerting, breaking off feeding dives and surfacing, diving or swimming away, or no response at all (DOD, 2017; Nowacek, 2007; Richardson, 1995; Southall *et al.,* 2007). Overall, mysticetes have been observed to be more reactive to acoustic disturbance when a noise source is located directly on their migration route. Mysticetes disturbed while migrating could pause their migration or route around the disturbance, while males en route to breeding grounds have been shown to be less responsive to disturbances. Although some may pause temporarily, they will resume migration shortly after the exposure ends. Animals disturbed while engaged in other activities such as feeding or reproductive behaviors may be more likely to ignore or tolerate the disturbance and continue their natural behavior patterns.

Alternately, adult female mysticetes with calves may be more responsive to stressors. An increase in the disturbance level from noise-generating human activities (such as sonar or explosives) may increase the risk of mother–calf pair separation (reducing the time available for suckling) or require that louder contact calls are made which, in turn, increases the possibility of detection. In either case, increased ambient noise could have negative consequences for calf fitness (Cartwright and Sullivan 2009; Craig *et al.,* 2014). However, given the low number of

predicted mysticete exposures and the absence of known calving areas, exposure of younger, more vulnerable calves is considered to be unlikely in the NWTT Study Area.

As noted in the *Potential Effects of Specified Activities on Marine Mammals and Their Habitat* section of the proposed rule, while there are multiple examples from behavioral response studies of odontocetes ceasing their feeding dives when exposed to sonar pulses at certain levels, alternately, blue whales (mysticetes) were less likely to show a visible response to sonar exposures at certain levels when feeding than when traveling. However, Goldbogen *et al.* (2013) indicated some horizontal displacement of deep foraging blue whales in response to simulated MFAS. Southall *et al.* (2019b) observed that after exposure to simulated and operational mid-frequency active sonar, more than 50 percent of blue whales in deep-diving states responded to the sonar, while no behavioral response was observed in shallow-feeding blue whales. Southall *et al.* (2019b) noted that the behavioral responses they observed were generally brief, of low to moderate severity, and highly dependent on exposure context (behavioral state, source-to-whale horizontal range, and prey availability). Most Level B harassment by behavioral disturbance of mysticetes is likely to be short-term and of low to sometimes moderate severity, with no anticipated effect on reproduction or survival.

Richardson *et al.* (1995) noted that avoidance (temporary displacement of an individual from an area) reactions are the most obvious manifestations of disturbance in marine mammals. Avoidance is qualitatively different from the startle or flight response, but also differs in the magnitude of the response (*i.e.,* directed movement, rate of travel, *etc.*). Oftentimes avoidance is temporary, and animals return to the area once the noise has ceased. Some mysticetes may avoid larger activities as they move through an area, although the Navy's activities do not typically use the same training locations day-after-day during multi-day activities, except periodically in instrumented ranges. Therefore, displaced animals could return quickly after a large activity is completed. In the ocean, the use of Navy sonar and other active acoustic sources is transient and is unlikely to expose the same population of animals repeatedly over a short period of time, especially given the broader-scale movements of mysticetes.

The implementation of procedural mitigation and the sightability of mysticetes (especially given their large size) further reduces the potential for a significant behavioral reaction or a threshold shift to occur (*i.e.,* shutdowns are expected to be successfully implemented), which is reflected in the amount and type of incidental take that is anticipated to occur and authorized.

As noted previously, when an animal incurs a threshold shift, it occurs in the frequency from that of the source up to one octave above. This means that the vast majority of threshold shifts caused by Navy sonar sources will typically occur in the range of 2–20 kHz (from the 1–10 kHz MF1 bin, though in a specific narrow band within this range as the sources are narrowband), and if resulting from hull-mounted sonar, will be in the range of 3.5–7 kHz. The majority of mysticete vocalizations occur in frequencies below 1 kHz, which means that TTS incurred by mysticetes will not interfere with conspecific communication. Additionally, many of the other critical sounds that serve as cues for navigation and prey (*e.g.,* waves, fish, invertebrates) occur below a few kHz, which means that detection of these signals will not be inhibited by most threshold shift either. When we look in ocean areas where the Navy has been intensively training and testing with sonar and other active acoustic sources for decades, there is no data suggesting any long-term consequences to reproduction or survival rates of mysticetes from exposure to sonar and other active acoustic sources.

All the mysticete species discussed in this section will benefit from the procedural mitigation measures described earlier in the *Mitigation Measures* section. Additionally, the Navy will limit activities and employ other measures in mitigation areas that will avoid or reduce impacts to mysticetes utilizing those areas. Where these mitigation areas are designed to mitigate impacts to particular species or stocks (gray whales and humpback whales), they are discussed in detail below. Below we compile and summarize the information that supports our determination that the Navy's activities will not adversely affect any species or stock through effects on annual rates of recruitment or survival for any of the affected mysticete stocks.

### Blue Whale (Eastern North Pacific Stock)

Blue whales are listed as endangered under the ESA throughout their range, but there is no ESA designated critical habitat or biologically important area identified for this species in the NWTT Study Area. The SAR identifies this stock as ''stable.'' We further note that this stock was originally listed under the ESA as a result of the impacts from commercial whaling, which is no longer affecting the species. Blue whales are anticipated to be present in summer and winter months and only in the Offshore Area of the Study Area. No mortality from either explosives or vessel strike and no Level A harassment is anticipated or authorized.

Regarding the magnitude of takes by Level B harassment (TTS and behavioral disturbance), the number of estimated total instances of take compared to the abundance is less than 1 percent. Given the range of blue whales, this information indicates that only a very small portion of individuals in the stock are likely impacted and repeated exposures of individuals are not anticipated (*i.e.,* individuals are not expected to be taken on more than one day within a year). Regarding the severity of those individual takes by Level B harassment by behavioral disturbance, we have explained that the duration of any exposure is expected to be between minutes and hours (*i.e.,* relatively short) and the received sound levels largely below 172 dB with a small portion up to 184 dB (*i.e.,* of a moderate or sometimes lower level). Regarding the severity of TTS takes, we have explained that they are expected to be low-level, of short duration, and mostly not in a frequency band that would be expected to interfere with blue whale communication or other important low-frequency cues and that the associated lost opportunities and capabilities are not at a level that will impact reproduction or survival.

Altogether, although the species is listed as endangered under the ESA, this population is stable, only a very small portion of the stock is anticipated to be impacted, and any individual blue whale is likely to be disturbed at a low-moderate level. No mortality and no Level A harassment is anticipated or authorized. The low magnitude and moderate-lower severity of harassment effects is not expected to result in impacts on the reproduction or survival of any individuals, let alone have impacts on annual rates of recruitment or survival. For these reasons, we have determined, in consideration of all of the effects of the Navy's activities combined, that the authorized take will have a negligible impact on the Eastern North Pacific stock of blue whales.

### Fin Whale (Northeast Pacific Stock and California/Oregon/Washington Stock)

Fin whales are listed as endangered under the ESA throughout their range,

but no ESA designated critical habitat or biologically important areas are identified for this species in the NWTT Study Area. The SAR identifies these stocks as ''increasing.'' NMFS is authorizing two mortalities of fin whales over the seven years covered by this rule, but because it is not possible to determine from which stock these potential takes would occur, that is 0.29 mortality annually for each stock. The addition of this 0.29 annual mortality still leaves the total annual human-caused mortality well under residual PBR (37.2 for the CA/OR/WA stock and 4.7 for the Northeast Pacific stock) and below the insignificance threshold for both stocks. No mortality from explosives and no Level A harassment is anticipated or authorized.

Regarding the magnitude of takes by Level B harassment (TTS and behavioral disturbance), the number of estimated total instances of take compared to the abundance is less than 1 percent for the Northeast Pacific stock and 1.5 percent for the CA/OR/WA stock. This information indicates that only a very small portion of individuals in each stock are likely impacted and repeated exposures of individuals are not anticipated (*i.e.,* individuals are not expected to be taken on more than one day within a year). Regarding the severity of those individual takes by Level B harassment by behavioral disturbance, the duration of any exposure is expected to be between minutes and hours (*i.e.,* relatively short) and the received sound levels largely below 172 dB with a small portion up to 184 dB (*i.e.,* of a moderate or sometimes lower level). Regarding the severity of TTS takes, they are expected to be low-level, of short duration, and mostly not in a frequency band that would be expected to interfere with fin whale communication or other important low-frequency cues—and the associated lost opportunities and capabilities are not at a level that will impact reproduction or survival.

Altogether, although the species is listed as endangered under the ESA, these populations are increasing, only a very small portion of each stock is anticipated to be impacted, and any individual fin whale is likely to be disturbed at a low-moderate level. No Level A harassment is anticipated or authorized. This low magnitude and moderate-lower severity of harassment effects is not expected to result in impacts on individual reproduction or survival for any individuals, nor are these harassment takes combined with the authorized mortality expected to adversely affect these stocks through impacts on annual rates of recruitment or survival. For these reasons, we have determined, in consideration of all of the effects of the Navy's activities combined, that the authorized take will have a negligible impact on both the Northeast Pacific and CA/OR/WA stocks of fin whales.

Humpback Whale (Central North Pacific Stock)

The Central North Pacific stock of humpback whales consists of winter/spring humpback whale populations of the Hawaiian Islands which migrate primarily to foraging habitat in northern British Columbia/Southeast Alaska, the Gulf of Alaska, and the Bering Sea/Aleutian Islands (Muto *et al.* 2019). Three Feeding Area biologically important areas for humpback whales overlap with the NWTT Study Area: Northern Washington Feeding Area for humpback whales (May-November); Stonewall and Heceta Bank Feeding Area for humpback whales (May–November); and Point St. George Feeding Area for humpback whales (July-November) (Calambokidis *et al.,* 2015). The Marine Species Coastal, Olympic Coast National Marine Sanctuary, Stonewall and Heceta Bank Humpback Whale, and Point St. George Humpback Whale Mitigation Areas overlap with these important foraging areas. The Marine Species Coastal Mitigation Area 50 nmi from shore zone includes the entirety of all three BIAs. The Stonewall and Heceta Bank Humpback Whale Mitigation Area includes the entire Stonewall and Heceta Bank Feeding Area for humpback whales. The Point St. George Humpback Whale Mitigation Area and the 20 nmi from shore zone in the Marine Species Coastal Mitigation Area both include the entire Point St. George Feeding Area for humpback whales. Additionally, the new Juan de Fuca Eddy Marine Species Coastal Mitigation area will also benefit humpback whale feeding. The full extent of the Juan de Fuca Eddy is not incorporated into the Northern Washington humpback whale biologically important feeding area because the development of biologically important areas was restricted to U.S. waters only. Therefore, the Northern Washington biologically important humpback whale feeding area extends northward to the boundary of the U.S. Exclusive Economic Zone (Calambokidis *et al.,* 2015; Ferguson *et al.,* 2015a; Ferguson *et al.,* 2015b). However, humpback whale aggregations feed across this political boundary in the nutrient rich waters throughout the Juan de Fuca Eddy from May to November. Therefore, waters within the Juan de Fuca Eddy between the Northern Washington humpback whale biologically important area and the northern boundary of the NWTT Offshore Area are included in the Juan de Fuca Eddy Marine Species Mitigation Area. The mitigation measures implemented in each of these areas, including but not limited to, no MF1 MFAS use seasonally or limited MFAS use year round, no explosive training, and no explosive testing or restrictions on explosive testing (see details of all mitigation measures for each area in the Mitigation Measures section), will reduce the severity of impacts to humpback whales by reducing interference in feeding that could result in lost feeding opportunities or necessitate additional energy expenditure to find other good opportunities.

The SAR identifies this stock as ''increasing'' and the associated Hawaii DPS is not listed as endangered or threatened under the ESA. No mortality from explosives and no Level A harassment is anticipated or authorized. NMFS is authorizing two mortalities of humpback whales over the seven years covered by this rule, but because it is not possible to determine from which stock these potential takes would occur, that is 0.29 mortality annually for both this stock and the CA/OR/WA stock (discussed separately below). The addition of this 0.29 annual mortality still leaves the total annual human-caused mortality well under both the insignificance threshold and residual PBR (57.7).

Regarding the magnitude of takes by Level B harassment (TTS and behavioral disturbance), the number of estimated instances of take compared to the abundance is 1 percent. This information and the far-ranging nature of the stock structure indicates that only a very small portion of the stock is likely impacted and repeated exposures of individuals are not anticipated (*i.e.,* individuals are not expected to be taken on more than one day within a year). Regarding the severity of those individual takes by Level B harassment by behavioral disturbance, we have explained that the duration of any exposure is expected to be between minutes and hours (*i.e.,* relatively short) and the received sound levels largely below 172 dB with a small portion up to 184 dB (*i.e.,* of a moderate or sometimes lower level). Regarding the severity of TTS takes, they are expected to be low-level, of short duration, and mostly not in a frequency band that would be expected to interfere with humpback whale communication or other important low-frequency cues, and that the associated lost

opportunities and capabilities are not at a level that will impact reproduction or survival.

Altogether, this population is increasing and the associated DPS is not listed as endangered or threatened under the ESA. Only a very small portion of the stock is anticipated to be impacted and any individual humpback whale is likely to be disturbed at a low-moderate level. No Level A harassment is anticipated or authorized. This low magnitude and moderate-lower severity of harassment effects is not expected to result in impacts on individual reproduction or survival, nor are these harassment takes combined with the authorized mortality expected to adversely affect this stock through effects on annual rates of recruitment or survival. For these reasons, we have determined, in consideration of all of the effects of the Navy's activities combined, that the authorized take will have a negligible impact on the Central North Pacific stock of humpback whales.

Humpback Whale (California/Oregon/Washington Stock)

The CA/OR/WA stock of humpback whales includes individuals from three ESA DPSs: Central America (endangered), Mexico (threatened), and Hawaii (not listed). There is no ESA-designated critical habitat for humpback whales, however NMFS has proposed to designate critical habitat for humpback whales (84 FR 54354; October 9, 2019). Three Feeding Area biologically important areas for humpback whales overlap with the NWTT Study Area: Northern Washington Feeding Area for humpback whales (May–November); Stonewall and Heceta Bank Feeding Area for humpback whales (May–November); and Point St. George Feeding Area for humpback whales (July–November) (Calambokidis *et al.,* 2015). The Marine Species Coastal, Olympic Coast National Marine Sanctuary, Stonewall and Heceta Bank Humpback Whale, and Point St. George Humpback Whale Mitigation Areas overlap with these important foraging areas. The Marine Species Coastal Mitigation Area 50 nmi from shore zone includes the entirety of all three BIAs. The Stonewall and Heceta Bank Humpback Whale Mitigation Area includes the entire Stonewall and Heceta Bank Feeding Area for humpback whales. The Point St. George Humpback Whale Mitigation Area and the 20 nmi from shore zone in the Marine Species Coastal Mitigation Area both include the entire Point St. George Feeding Area for humpback whales. Additionally, the new Juan de Fuca Eddy Marine Species Coastal Mitigation area will also benefit humpback whale feeding. The full extent of the Juan de Fuca Eddy is not incorporated into the Northern Washington humpback whale biologically important feeding area because the development of biologically important areas was restricted to U.S. waters only. Therefore, the Northern Washington biologically important humpback whale feeding area extends northward to the boundary of the U.S. Exclusive Economic Zone (Calambokidis *et al.,* 2015; Ferguson *et al.,* 2015a; Ferguson *et al.,* 2015b). However, humpback whale aggregations feed across this political boundary in the nutrient rich waters throughout the Juan de Fuca Eddy from May to November. Therefore, waters within the Juan de Fuca Eddy between the Northern Washington humpback whale biologically important area and the northern boundary of the NWTT Offshore Area are included in the Juan de Fuca Eddy Marine Species Mitigation Area. The mitigation measures implemented in each of these areas, including but not limited to, no MF1 MFAS use seasonally or limited MFAS use year round, no explosive training, and no explosive testing or restrictions on explosive testing (see details of all mitigation measures for each area in the *Mitigation Measures* section), will reduce the severity of impacts to humpback whales by reducing interference in feeding that could result in lost feeding opportunities or necessitate additional energy expenditure to find other good opportunities.

The SAR identifies this stock as stable (having shown a long-term increase from 1990 and then leveling off between 2008 and 2014). NMFS is authorizing two mortalities over the seven years covered by this rule, or 0.29 mortality annually. With the addition of this 0.29 annual mortality, the total annual human-caused mortality exceeds residual PBR by 9.1. However, as described in more detail in the *Serious Injury or Mortality* subsection, when total human-caused mortality exceeds PBR, we consider whether the incremental addition of a small amount of mortality from the specified activity may still result in a negligible impact, in part by identifying whether it is less than 10 percent of PBR, which is 3.3. In this case, the authorized mortality is well below 10 percent of PBR (less than one percent, in fact) and management measures are in place to reduce mortality from other sources. More importantly, as described above in the *Serious Injury or Mortality* section, the authorized mortality of 0.29 will not delay the time to recovery by more than 1 percent. Given these factors, the incremental addition of two mortalities over the course of the seven-year Navy rule is not expected to, alone (*i.e.,* in the absence of any other take and barring any other unusual circumstances), lead to adverse impacts on the stock through effects on annual rates of recruitment or survival. No mortality from explosives and no Level A harassment is anticipated or authorized.

Regarding the magnitude of takes by Level B harassment (TTS and behavioral disturbance), the number of estimated total instances of take compared to the abundance is 3 percent (Table 52). Given the range of humpback whales, this information suggests that only a small portion of individuals in the stock are likely impacted and repeated exposures of individuals are not anticipated (*i.e.,* individuals are not expected to be taken on more than one day within a year). Regarding the severity of those individual takes by Level B harassment by behavioral disturbance, we have explained that the duration of any exposure is expected to be between minutes and hours (*i.e.,* relatively short) and the received sound levels largely below 172 dB with a small portion up to 184 dB (*i.e.,* of a moderate or sometimes lower level). Regarding the severity of TTS takes, they are expected to be low-level, of short duration, and mostly not in a frequency band that would be expected to interfere with humpback whale communication or other important low-frequency cues. Therefore, the associated lost opportunities and capabilities are not at a level that will impact reproduction or survival.

Altogether, this population is stable and even though two of the three associated DPSs are listed as endangered or threatened under the ESA, only a small portion of the stock is anticipated to be impacted, and any individual humpback whale is likely to be disturbed at a low-moderate level. No Level A harassment is anticipated or authorized. This low magnitude and moderate-lower severity of harassment effects is not expected to result in impacts on the reproduction or survival of any individuals and, therefore, when combined with the authorized mortality (which our earlier analysis indicated will not, alone, have more than a negligible impact on this stock of humpback whales), is not expected to adversely affect this stock through impacts on annual rates of recruitment or survival. For these reasons, we have determined, in consideration of all of the effects of the Navy's activities

combined, that the authorized take will have a negligible impact on the CA/OR/WA stock of humpback whales.

Minke Whale (Alaska and California/Oregon/Washington Stocks)

The status of these stocks is unknown and the species is not listed under the ESA. No biologically important areas have been identified for this species in the NWTT Study Area. NMFS is authorizing one mortality over the seven years covered by this rule, or 0.14 mortality annually, for the CA/OR/WA stock, and no mortality is anticipated or authorized for the Alaska stock. The addition of this 0.14 annual mortality still leaves the total annual human-caused mortality well under the residual PBR (2.2) and below the insignificance threshold. No mortality from explosives and no Level A harassment is anticipated or authorized for either stock.

Regarding the magnitude of takes by Level B harassment (TTS and behavioral disturbance), the number of estimated total instances of take compared to the abundance is less than 1 percent for the Alaska stock (based on, to be conservative, the smallest available provisional estimate in the SAR, which is derived from surveys that cover only a portion of the stock's range) and 47.5 percent for the CA/OR/WA stock. Given the range of minke whales, this information indicates that only a very small portion of individuals in the Alaska stock are likely to be impacted and repeated exposures of individuals are not anticipated (*i.e.,* individuals are not expected to be taken on more than one day within a year). For the CA/OR/WA stock, fewer than half of the individuals in the stock will likely be taken, with those individuals disturbed on likely one, but not more than a few non-sequential days within a year. Regarding the severity of those individual takes by Level B harassment by behavioral disturbance, we have explained that the duration of any exposure is expected to be between minutes and hours (*i.e.,* relatively short) and the received sound levels largely below 172 dB with a small portion up to 184 dB (*i.e.,* of a moderate or sometimes lower level). Regarding the severity of TTS takes, they are expected to be low-level, of short duration, and mostly not in a frequency band that would be expected to interfere with minke whale communication or other important low-frequency cues—and the associated lost opportunities and capabilities are not at a level that will impact reproduction or survival.

Altogether, although the status of the stocks is unknown, the species is not listed under the ESA as endangered or threatened, only a smaller portion of these stocks is anticipated to be impacted, and any individual minke whale is likely to be disturbed at a low-moderate level. No Level A harassment is anticipated or authorized. This low magnitude and moderate-lower severity of harassment effects is not expected to result in impacts on individual reproduction or survival for either stock, nor are these harassment takes combined with the authorized mortality expected to adversely affect the CA/OR/WA stock through effects on annual rates of recruitment or survival. For these reasons, we have determined, in consideration of all of the effects of the Navy's activities combined, that the authorized take will have a negligible impact on the Alaska and CA/OR/WA stocks of minke whales.

Sei Whale (Eastern North Pacific Stock)

The status of this stock is unknown, however sei whales are listed as endangered under the ESA throughout their range. There is no ESA designated critical habitat or biologically important areas identified for this species in the NWTT Study Area. No mortality from either explosives or vessel strikes and no Level A harassment is anticipated or authorized.

Regarding the magnitude of takes by Level B harassment (TTS and behavioral disturbance), the number of estimated total instances of take compared to the abundance is 16 percent (Table 52). This information and the large range of sei whales suggests that only a small portion of individuals in the stock are likely impacted and repeated exposures of individuals are not anticipated (*i.e.,* individuals are not expected to be taken on more than one day within a year). Regarding the severity of those individual takes by Level B harassment by behavioral disturbance, we have explained that the duration of any exposure is expected to be between minutes and hours (*i.e.,* relatively short) and the received sound levels largely below 172 dB with a small portion up to 184 dB (*i.e.,* of a moderate or sometimes lower level). Regarding the severity of TTS takes, they are expected to be low-level, of short duration, and mostly not in a frequency band that would be expected to interfere with sei whale communication or other important low-frequency cues. Therefore the associated lost opportunities and capabilities are not at a level that will impact reproduction or survival.

Altogether, the status of the stock is unknown and the species is listed as endangered, but only a small portion of the stock is anticipated to be impacted and any individual sei whale is likely to be disturbed at a low-moderate level. No mortality and no Level A harassment is anticipated or authorized. This low magnitude and moderate-lower severity of harassment effects is not expected to result in impacts on the reproduction or survival of any individuals, let alone have impacts on annual rates of recruitment or survival. Therefore, the total take will not adversely affect this stock through impacts on annual rates of recruitment or survival. For these reasons, we have determined, in consideration of all of the effects of the Navy's activities combined, that the authorized take will have a negligible impact on the Eastern North Pacific stock of sei whales.

Gray Whale (Eastern North Pacific Stock)

The SAR identifies this stock as ''increasing'' and the associated DPS is not listed under the ESA. The NWTT Study Area overlaps with the offshore Northwest Feeding Area for gray whales and the Northern Puget Sound Feeding Area for gray whales, both identified as biologically important areas. In addition, a portion of the Northwest coast of Washington, approximately from Pacific Beach (WA) and extending north to the Strait of Juan de Fuca, overlaps with the gray whale migration corridor biologically important areas (Northbound and Southbound). The Marine Species Coastal, Olympic Coast National Marine Sanctuary, Stonewall and Heceta Bank Humpback Whale, Point St. George Humpback Whale, Puget Sound and Strait of Juan de Fuca, and Northern Puget Sound Gray Whale Mitigation Areas overlap with these important foraging and migration areas. The Marine Species Coastal Mitigation Area (all distances—50 nmi, 20 nmi, and 12 nmi from shore) include the entire offshore Northwest Feeding Area for gray whales as well as the Northbound Phase A, Northbound Phase B, and Southbound gray whale migration corridor BIAs. The Olympic Coast National Marine Sanctuary Mitigation Area overlaps with each of these BIAs by 96–100 percent. The Stonewall and Heceta Bank Humpback Whale Mitigation Area and the Point St. George Humpback Whale Mitigation Area overlap minimally with the gray whale potential presence migration BIA (5 percent overlap or less). The Puget Sound and Strait of Juan de Fuca Mitigation Area and the Northern Puget Sound Gray Whale Mitigation Area both include the entire Northern Puget Sound Feeding Area for gray whales. The mitigation measures implemented

in each of these areas, including but not limited to, no MF1 MFAS use seasonally or limited MFAS use year round, no explosive training, and no explosive testing or restrictions on explosive testing (see details of all mitigation measures for each area in the *Mitigation Measures* section), will reduce the severity of impacts to gray whales by reducing interference in feeding and migration that could result in lost feeding opportunities or necessitate additional energy expenditure to find other good foraging opportunities or move migration routes.

NMFS is authorizing one mortality over the seven years covered by this rule, or 0.14 mortality annually. The addition of this 0.14 annual mortality still leaves the total annual human-caused mortality well under both the insignificance threshold and residual PBR (661.6). No mortality from explosives and no Level A harassment is anticipated or authorized.

Regarding the magnitude of takes by Level B harassment (TTS and behavioral disturbance), the number of estimated total instances of take compared to the abundance is less than 1 percent. This information indicates that only a very small portion of individuals in the stock are likely to be impacted and repeated exposures of individuals are not anticipated (*i.e.,* individuals are not expected to be taken on more than one day within a year). Regarding the severity of those individual takes by Level B harassment by behavioral disturbance, we have explained that the duration of any exposure is expected to be between minutes and hours (*i.e.,* relatively short) and the received sound levels largely below 172 dB with a small portion up to 184 dB (*i.e.,* of a moderate or sometimes lower level). Regarding the severity of TTS takes, they are expected to be low-level, of short duration, and mostly not in a frequency band that would be expected to interfere with gray whale communication or other important low-frequency cues and that the associated lost opportunities and capabilities are not at a level that will impact reproduction or survival.

Altogether, while we have considered the impacts of the gray whale UME, this population of gray whales is not endangered or threatened under the ESA and the stock is increasing. No Level A harassment is anticipated or authorized. Only a very small portion of the stock is anticipated to be impacted by Level B harassment and any individual gray whale is likely to be disturbed at a low-moderate level. This low magnitude and moderate-lower severity of harassment effects is not expected to result in impacts to reproduction or survival for any individuals, nor are these harassment takes combined with the authorized mortality of one whale over the seven-year period expected to adversely affect this stock through impacts on annual rates of recruitment or survival. For these reasons, we have determined, in consideration of all of the effects of the Navy's activities combined, that the authorized take will have a negligible impact on the Eastern North Pacific stock of gray whales.

Odontocetes

This section builds on the broader discussion above and brings together the discussion of the different types and amounts of take that different species and stocks could potentially or will likely incur, the applicable mitigation, and the status of the species and stock to support the negligible impact determinations for each species or stock. We have described (above in the *General Negligible Impact Analysis* section) the unlikelihood of any masking having effects that will impact the reproduction or survival of any of the individual marine mammals affected by the Navy's activities. We have also described in the *Potential Effects of Specified Activities on Marine Mammals and their Habitat* section of the proposed rule that the specified activities would not have adverse or long-term impacts on marine mammal habitat, and therefore the unlikelihood of any habitat impacts affecting the reproduction or survival of any individual marine mammals affected by the Navy's activities. No new information has been received that affects this analysis and conclusion, although mitigation measures have been added that will further reduce impacts to Southern Resident killer whales, other odontocetes, and their habitat. For odontocetes, there is no anticipated M/SI or tissue damage from sonar or explosives for any species or stock. Here, we include information that applies to all of the odontocete species, which are then further divided and discussed in more detail in the following subsections: Sperm whales, dwarf sperm whales, and pygmy sperm whales; beaked whales; dolphins and small whales; and porpoises. These subsections include more specific information about the groups, as well as conclusions for each species or stock represented.

The majority of takes by harassment of odontocetes in the NWTT Study Area are caused by sources from the MFAS bin (which includes hull-mounted sonar) because they are high level, typically narrowband sources at a frequency (in the 1–10 kHz range) that overlaps a more sensitive portion (though not the most sensitive) of the MF hearing range and they are used in a large portion of exercises (see Tables 3 and 4). For odontocetes other than beaked whales and porpoises (for which these percentages are indicated separately in those sections), most of the takes (96 percent) from the MF1 bin in the NWTT Study Area would result from received levels between 160 and 172 dB SPL. For the remaining active sonar bin types, the percentages are as follows: LF4 = 99 percent between 124 and 154 dB SPL, MF4 = 99 percent between 136 and 166 dB SPL, MF5 = 98 percent between 112 and 148 dB SPL, and HF4 = 95 percent between 100 and 160 dB SPL. Based on this information, the majority of the takes by Level B harassment by behavioral disturbance are expected to be low to sometimes moderate in nature, but still of a generally shorter duration.

For all odontocetes, takes from explosives (Level B harassment by behavioral disturbance, TTS, or PTS) comprise a very small fraction (and low number) of those caused by exposure to active sonar. For the following odontocetes, zero takes from explosives are expected to occur: Common bottlenose dolphins, killer whales, short-beaked common dolphins, short-finned pilot whales, the Alaska stock of Dall's porpoises, Southeast Alaska stock of harbor porpoises, sperm whales, Baird's beaked whale, Cuvier's beaked whale, and *Mesoplodon* species. For Level B harassment by behavioral disturbance from explosives, with the exception of porpoises, one take is anticipated for the remaining species/stocks. For the CA/OR/WA stock of Dall's porpoise and the remaining three harbor porpoise stocks, 1–91 takes by Level B harassment by behavioral disturbance from explosives are anticipated. Similarly the instances of TTS and PTS expected to occur from explosives for all remaining species/stocks, with the exception of porpoises, are anticipated to be low (1–3 for TTS and 1 for PTS). Because of the lower TTS and PTS thresholds for HF odontocetes, for the CA/OR/WA stock of Dall's porpoise and the remaining three harbor porpoise stocks, TTS takes range from 61–214 and PTS takes range from 27–86.

Because the majority of harassment takes of odontocetes result from the sources in the MFAS bin, the vast majority of threshold shift would occur upon receipt of a single frequency within the 1–10 kHz range and, therefore, the vast majority of threshold shift caused by Navy sonar sources

would be at a single frequency within the range of 2–20 kHz. The frequency range within which any of the anticipated narrowband threshold shift would occur would fall directly within the range of most odontocete vocalizations (2–20 kHz). For example, the most commonly used hull-mounted sonar has a frequency around 3.5 kHz, and any associated threshold shift would be expected to be at around 7 kHz. However, odontocete vocalizations typically span a much wider range than this, and alternately, threshold shift from active sonar will often be in a narrower band (reflecting the narrower band source that caused it), which means that TTS incurred by odontocetes would typically only interfere with communication within a portion of their range (if it occurred during a time when communication with conspecifics was occurring) and, as discussed earlier, it would only be expected to be of a short duration and relatively small degree. Odontocete echolocation occurs predominantly at frequencies significantly higher than 20 kHz, though there may be some small overlap at the lower part of their echolocating range for some species, which means that there is little likelihood that threshold shift, either temporary or permanent, would interfere with feeding behaviors. Many of the other critical sounds that serve as cues for navigation and prey (*e.g.,* waves, fish, invertebrates) occur below a few kHz, which means that detection of these signals will not be inhibited by most threshold shift either. The low number of takes by threshold shift that might be incurred by individuals exposed to explosives would likely be lower frequency (5 kHz or less) and spanning a wider frequency range, which could slightly lower an individual's sensitivity to navigational or prey cues, or a small portion of communication calls, for several minutes to hours (if temporary) or permanently. There is no reason to think that any of the individual odontocetes taken by TTS would incur these types of takes over more than one day, or over a few days at most, and therefore they are unlikely to incur impacts on reproduction or survival. The number of PTS takes from these sources are very low, and while spanning a wider frequency band, are still expected to be of a low degree (*i.e.,* low amount of hearing sensitivity loss) and unlikely to affect reproduction or survival.

The range of potential behavioral effects of sound exposure on marine mammals generally, and odontocetes specifically, has been discussed in detail previously. There are behavioral patterns that differentiate the likely impacts on odontocetes as compared to mysticetes. First, odontocetes echolocate to find prey, which means that they actively send out sounds to detect their prey. While there are many strategies for hunting, one common pattern, especially for deeper diving species, is many repeated deep dives within a bout, and multiple bouts within a day, to find and catch prey. As discussed above, studies demonstrate that odontocetes may cease their foraging dives in response to sound exposure. If enough foraging interruptions occur over multiple sequential days, and the individual either does not take in the necessary food, or must exert significant effort to find necessary food elsewhere, energy budget deficits can occur that could potentially result in impacts to reproductive success, such as increased cow/calf intervals (the time between successive calving). Second, while many mysticetes rely on seasonal migratory patterns that position them in a geographic location at a specific time of the year to take advantage of ephemeral large abundances of prey (*i.e.,* invertebrates or small fish, which they eat by the thousands), odontocetes forage more homogeneously on one fish or squid at a time. Therefore, if odontocetes are interrupted while feeding, it is often possible to find more prey relatively nearby.

All the Odontocete species discussed in this section will benefit from the procedural mitigation measures described earlier in the *Mitigation Measures* section. Additionally, the Navy will limit activities and employ other measures in mitigation areas that will avoid or reduce impacts to Odonticetes utilizing those areas, as discussed in more detail below.

### Sperm Whale, Dwarf Sperm Whale, and Pygmy Sperm Whale

This section builds on the broader odontocete discussion above and brings together the discussion of the different types and amounts of take that different species and stocks could potentially or will likely incur, any additional applicable mitigation, and the status of the species and stocks to support the negligible impact determinations for each species or stock. For sperm whales, there is no predicted PTS from sonar or explosives and no predicted tissue damage from explosives. For dwarf sperm whales and pygmy sperm whales (described as *Kogia* species for the reasons explained below) no mortality or tissue damage from sonar or explosives is anticipated or authorized and only one PTS take is predicted.

In Table 53 below for sperm whales and *Kogia* species, we indicate the total annual numbers of take by mortality, Level A and Level B harassment, and a number indicating the instances of total take as a percentage of abundance.

TABLE 53—ANNUAL ESTIMATED TAKES BY LEVEL B HARASSMENT, LEVEL A HARASSMENT, AND MORTALITY FOR SPERM WHALES AND KOGIA SPP. (DWARF SPERM WHALES, AND PYGMY SPERM WHALES) IN THE NWTT STUDY AREA AND NUMBER INDICATING THE INSTANCES OF TOTAL TAKE AS A PERCENTAGE OF STOCK ABUNDANCE

| Species | Stock | Instances of indicated types of incidental take (not all takes represent separate individuals, especially for disturbance) | | | | | Total takes | Abundance (NMFS SARs)* | Instances of total take as percentage of abundance |
|---|---|---|---|---|---|---|---|---|---|
| | | Level B harassment | | Level A harassment | | Mortality | | | |
| | | Behavioral disturbance | TTS (may also include disturbance) | PTS | Tissue damage | | | | |
| **Suborder Odontoceti (toothed whales) Family Physeteridae (sperm whale)** | | | | | | | | | |
| Sperm whale* ..... | CA/OR/WA ..... | 834 | 5 | 0 | 0 | 0.14 | 839 | 1,997 | 42 |
| **Family Kogiidae (sperm whales)** | | | | | | | | | |
| Kogia Species ..... | CA/OR/WA ..... | 365 | 517 | 2 | 0 | 0 | 884 | 4,111 | 22 |

*Presented in the 2019 SARs or most recent SAR.

**Note:** As indicated in Table 32 and Table 33, the *Kogia* Spp. take estimates were updated to reflect clarifications due to rounding errors in the proposed rule.

As discussed above, the majority of takes by Level B harassment by behavioral disturbance of odontocetes, and thereby sperm whales and *Kogia* species, is expected to be in the form of low to occasionally moderate severity of a generally shorter duration. As discussed earlier in this section, we anticipate more severe effects from takes when animals are exposed to higher received levels or for longer durations. Occasional milder Level B harassment by behavioral disturbance, as is expected here, is unlikely to cause long-term consequences for either individual animals or populations, even if some smaller subset of the takes are in the form of a longer (several hours or a day) and more moderate response.

We note that *Kogia* species (dwarf and pygmy sperm whales), as HF-sensitive species, have a lower PTS threshold than all other groups and therefore are generally likely to experience larger amounts of TTS and PTS, and NMFS accordingly has evaluated and authorized higher numbers. Also, however, regarding PTS from sonar exposure, *Kogia* whales are still likely to avoid sound levels that would cause higher levels of TTS (greater than 20 dB) or PTS. Therefore, even though the number of TTS takes are higher than for other odontocetes, any PTS is expected to be at a lower level and for all of the reasons described above, TTS and PTS are not expected to impact reproduction or survival of any individual.

Below we compile and summarize the information that supports our determination that the Navy's activities will not adversely affect sperm whales and pygmy and dwarf sperm whales through effects on annual rates of recruitment or survival.

Sperm Whale (California/Oregon/Washington Stock)

The SAR identifies the CA/OR/WA stock of sperm whales as ''stable'' although the species is listed as endangered under the ESA. No critical habitat has been designated for sperm whales under the ESA and no biologically important areas have been identified for sperm whales in the NWTT Study Area. NMFS is authorizing one mortality for the CA/OR/WA stock of sperm whales over the seven years covered by this rule, or 0.14 mortality annually. The addition of this 0.14 annual mortality still leaves the total human-caused mortality under residual PBR (1.8) and below the insignificance threshold. No mortality from explosives and no Level A harassment is anticipated or authorized.

Regarding the magnitude of takes by Level B harassment (TTS and behavioral disturbance), the number of estimated total instances of take compared to the abundance is 42 percent for sperm whales. Given the range of this stock (which extends the entire length of the U.S. West Coast, as well as beyond the U.S. EEZ boundary), this information indicates that notably fewer than half the individuals in the stock are likely to be taken annually and with those individuals disturbed on likely one, but not more than a few non-sequential days within a year. Additionally, while interrupted feeding bouts are a known response and concern for odontocetes, we also know that there are often viable alternative habitat options in the relative vicinity. Regarding the severity of those individual takes by Level B harassment by behavioral disturbance, we have explained that the duration of any exposure is expected to be between minutes and hours (*i.e.,* relatively short) and the received sound levels largely below 172 dB (*i.e.,* of a lower, to occasionally moderate, level and less likely to evoke a severe response). Regarding the severity of TTS takes, they are expected to be low-level, of short duration, and mostly not in a frequency band that would be expected to interfere with sperm whale communication or other important low-frequency cues. Therefore, the associated lost opportunities and capabilities are not at a level that will impact reproduction or survival.

Altogether, this population is stable (even though the species is listed under the ESA), only a portion (notably less than half) of the stock is anticipated to be impacted, and any individual sperm whale is likely to be disturbed at a low-moderate level. No Level A harassment is anticipated or authorized. This low magnitude and low-moderate severity of harassment effects is not expected to result in impacts on the reproduction or survival for any individuals, nor are these harassment takes combined with the authorized mortality expected to adversely affect this stock through impacts on annual rates of recruitment or survival. For these reasons, we have determined, in consideration of all of the effects of the Navy's activities combined, that the authorized take will have a negligible impact on the CA/OR/WA stock of sperm whales.

*Kogia* Species (California/Oregon/Washington Stocks)

The status of the CA/OR/WA stocks of pygmy and dwarf sperm whales (*Kogia* species) is unknown and neither are listed under the ESA. No biologically important areas have been identified for *Kogia* species in the NWTT Study Area. No mortality or Level A harassment from tissue damage are anticipated or authorized, and two PTS Level A harassment takes are expected and authorized.

Due to their pelagic distribution, small size, and cryptic behavior, pygmy sperm whales and dwarf sperm whales (*Kogia* species) are rarely sighted during at-sea surveys and are difficult to distinguish between when visually observed in the field. Many of the relatively few observations of *Kogia* species off the U.S. West Coast were not identified to species. All at-sea sightings of Kogia species have been identified as pygmy sperm whales or *Kogia* species generally. Stranded dwarf sperm and pygmy sperm whales have been found on the U.S. West Coast, however dwarf sperm whale strandings are rare. NMFS SARs suggest that the majority of *Kogia* sighted off the U.S. West Coast were likely pygmy sperm whales. As such, the stock estimate in the NMFS SAR for pygmy sperm whales is the estimate derived for all *Kogia* species in the region (Barlow, 2016), and no separate abundance estimate can be determined for dwarf sperm whales, though some low number likely reside in the U.S. EEZ. Due to the lack of an abundance estimate it is not possible to predict the amount of Level A and Level B harassment take of dwarf sperm whales and therefore take estimates are identified as *Kogia* whales (including both pygmy and dwarf sperm whales). We assume only a small portion of those takes are likely to be dwarf sperm whales as the available information indicates that the density and abundance in the U.S. EEZ is low.

Regarding the magnitude of takes by Level B harassment (TTS and behavioral disturbance), the number of estimated total instances of take compared to the abundance is 21 percent. Given the range of these stocks (which extends the entire length of the West Coast, as well as beyond the U.S. EEZ boundary), this information indicates that only a small portion of the individuals in the stocks are likely to be impacted and repeated exposures of individuals are not anticipated (*i.e.,* individuals are not expected to be taken on more than one day within a year). Additionally, while interrupted feeding bouts are a known response and concern for odontocetes, we also know that there are often viable alternative habitat options in the relative vicinity. Regarding the severity of those individual takes by Level B harassment by behavioral disturbance, we have explained that the duration of any exposure is expected to be between minutes and hours (*i.e.,* relatively short) and the received sound levels largely below 172 dB (*i.e.,* of a lower, to

occasionally moderate, level and less likely to evoke a severe response). Regarding the severity of TTS takes, they are expected to be low-level, of short duration, and mostly not in a frequency band that would be expected to interfere with dwarf or pygmy sperm whale communication or other important low-frequency cues. Therefore, the associated lost opportunities and capabilities are not at a level that will impact reproduction or survival. A small permanent loss of hearing sensitivity (PTS) may include some degree of energetic costs for compensating or may mean some small loss of opportunities or detection capabilities, but at the expected degree the estimated two Level A harassment takes by PTS are unlikely to impact behaviors, opportunities, or detection capabilities to a degree that will interfere with reproductive success or survival of the affected individuals, let alone affect annual rates of recruitment or survival for the stock.

Altogether, although the status of the stocks is unknown, these species are not listed under the ESA as endangered or threatened, only a small portion of these stocks are anticipated to be impacted, and any individual *Kogia* whale is likely to be disturbed at a low-moderate level. This low magnitude and low-moderate severity of harassment effects is not expected to result in impacts on the reproduction or survival of any individuals, let alone have impacts on annual rates of recruitment or survival. Two individuals could be taken by PTS annually of likely low severity, the impact of which also is not expected to affect reproduction or survival, alone or in combination with the authorized Level B harassment. For these reasons, we have determined, in consideration of all of the effects of the Navy's activities combined, that the authorized take will have a negligible impact on the CA/OR/WA stocks of *Kogia* whales.

Beaked Whales

This section builds on the broader odontocete discussion above (*i.e.,* that information applies to beaked whales as well), and brings together the discussion of the different types and amounts of take that different beaked whale species and stocks will likely incur, any additional applicable mitigation, and the status of the species and stocks to support the negligible impact determinations for each species or stock. For beaked whales, there is no anticipated Level A harassment by PTS or tissue damage from sonar or explosives, and no mortality is anticipated or authorized.

In Table 54 below for beaked whales, we indicate the total annual numbers of take by mortality, Level A and Level B harassment, and a number indicating the instances of total take as a percentage of abundance.

TABLE 54—ANNUAL ESTIMATED TAKES BY LEVEL B HARASSMENT, LEVEL A HARASSMENT, AND MORTALITY FOR BEAKED WHALES IN THE NWTT STUDY AREA AND NUMBER INDICATING THE INSTANCES OF TOTAL TAKE AS A PERCENTAGE OF STOCK ABUNDANCE

| Species | Stock | Instances of indicated types of incidental take (not all takes represent separate individuals, especially for disturbance) | | | | | Total takes | Abundance (NMFS SARs)* | Instances of total take as percentage of abundance |
|---|---|---|---|---|---|---|---|---|---|
| | | Level B harassment | | Level A harassment | | Mortality | | | |
| | | Behavioral disturbance | TTS (may also include disturbance) | PTS | Tissue damage | | | | |
| **Suborder Odontoceti (toothed whales) Family Ziphiidae (beaked whales)** | | | | | | | | | |
| Baird's beaked whale | CA/OR/WA | 976 | 0 | 0 | 0 | 0 | 976 | 2,697 | 36 |
| Cuvier's beaked whale. | CA/OR/WA | 2,535 | 4 | 0 | 0 | 0 | 2,539 | 3,274 | 78 |
| Mesoplodont beaked whales. | CA/OR/WA | 1,119 | 3 | 0 | 0 | 0 | 1,122 | 3,044 | 37 |

*Presented in the 2019 SARs or most recent SAR.

This first paragraph provides specific information that is in lieu of the parallel information provided for odontocetes as a whole. The majority of takes by harassment of beaked whales in the NWTT Study Area are caused by sources from the MFAS bin (which includes hull-mounted sonar) because they are high level narrowband sources that fall within the 1–10 kHz range, which overlap a more sensitive portion (though not the most sensitive) of the MF hearing range. Also, of the sources expected to result in take, they are used in a large portion of exercises (see Tables 3 and 4). Most of the takes (95 percent) from the MF1 bin in the NWTT Study Area would result from received levels between 142 and 160 dB SPL. For the remaining active sonar bin types, the percentages are as follows: LF4 = 99 percent between 118 and 148 dB SPL, MF4 = 97 percent between 124 and 148 dB SPL, MF5 = 99 percent between 100 and 148 dB SPL, and HF4 = 97 percent between 100 and 154 dB SPL. Given the levels they are exposed to and their sensitivity, some responses would be of a lower severity, but many would likely be considered moderate, but still of generally short duration.

Research has shown that beaked whales are especially sensitive to the presence of human activity (Pirotta *et al.,* 2012; Tyack *et al.,* 2011) and therefore have been assigned a lower harassment threshold, with lower received levels resulting in a higher percentage of individuals being harassed and a more distant distance cutoff (50 km for high source level, 25 km for moderate source level).

Beaked whales have been documented to exhibit avoidance of human activity or respond to vessel presence (Pirotta *et al.,* 2012). Beaked whales were observed to react negatively to survey vessels or low altitude aircraft by quick diving and other avoidance maneuvers, and none were observed to approach vessels (Wursig *et al.,* 1998). It has been speculated for some time that beaked whales might have unusual sensitivities to sonar sound due to their likelihood of stranding in conjunction with MFAS use, although few definitive causal relationships between MFAS use and strandings have been documented (see *Potential Effects of Specified Activities on Marine Mammals and their Habitat* section in the proposed rule). However, as described in the *Estimated Take of Marine Mammals* section of this final rule and further addressed in the response to Comment 19, NMFS neither

anticipates nor authorizes the mortality of beaked whales (or other species or stocks) resulting from exposure to active sonar.

Research and observations show that if beaked whales are exposed to sonar or other active acoustic sources, they may startle, break off feeding dives, and avoid the area of the sound source to levels of 157 dB re: 1 μPa, or below (McCarthy *et al.,* 2011). For example, after being exposed to 1–2 kHz upsweep naval sonar signals at a received SPL of 107 dB re 1 μPa, Northern bottlenose whales began moving in an unusually straight course, made a near 180° turn away from the source, and performed the longest and deepest dive (94 min, 2339 m) recorded for this species (Miller *et al.* 2015). Wensveen *et al.* (2019) also documented avoidance behaviors in Northern bottlenose whales exposed to 1–2 kHz tonal sonar signals with SPLs ranging between 117–126 dB re: 1 μPa, including interrupted diving behaviors, elevated swim speeds, directed movements away from the sound source, and cessation of acoustic signals throughout exposure periods. Acoustic monitoring during actual sonar exercises revealed some beaked whales continuing to forage at levels up to 157 dB re: 1 μPa (Tyack *et al.,* 2011). Stimpert *et al.* (2014) tagged a Baird's beaked whale, which was subsequently exposed to simulated MFAS. Changes in the animal's dive behavior and locomotion were observed when received level reached 127 dB re: 1 μPa. However, Manzano-Roth *et al.* (2013) found that for beaked whale dives that continued to occur during MFAS activity, differences from normal dive profiles and click rates were not detected with estimated received levels up to 137 dB re: 1 μPa while the animals were at depth during their dives. In research done at the Navy's fixed tracking range in the Bahamas, animals were observed to leave the immediate area of the anti-submarine warfare training exercise (avoiding the sonar acoustic footprint at a distance where the received level was ''around 140 dB SPL'', according to Tyack *et al.* (2011)), but return within a few days after the event ended (Claridge and Durban, 2009; McCarthy *et al.,* 2011; Moretti *et al.,* 2009, 2010; Tyack *et al.,* 2010, 2011). Joyce *et al.* (2019) found that Blainville's beaked whales moved up to 68 km away from an Atlantic Undersea Test and Evaluation Center site and reduced time spent on deep dives after the onset of mid-frequency active sonar exposure; whales did not return to the site until 2–4 days after the exercises ended. Changes in acoustic activity have also been documented. For example, Blainville's beaked whales showed decreased group vocal periods after biannual multi-day Navy training activities (Henderson *et al.*2016). Tyack *et al.* (2011) report that, in reaction to sonar playbacks, most beaked whales stopped echolocating, made long slow ascent to the surface, and moved away from the sound. A similar behavioral response study conducted in Southern California waters during the 2010–2011 field season found that Cuvier's beaked whales exposed to MFAS displayed behavior ranging from initial orientation changes to avoidance responses characterized by energetic fluking and swimming away from the source (DeRuiter *et al.,* 2013b). However, the authors did not detect similar responses to incidental exposure to distant naval sonar exercises at comparable received levels, indicating that context of the exposures (*e.g.,* source proximity, controlled source ramp-up) may have been a significant factor. The study itself found the results inconclusive and meriting further investigation. Falcone *et al.* (2017) however, documented that Cuvier's beaked whales had longer dives and surface durations after exposure to mid-frequency active sonar, with the longer surface intervals contributing to a longer interval between deep dives, a proxy for foraging disruption in this species. Cuvier's beaked whale responses suggested particular sensitivity to sound exposure consistent with results for Blainville's beaked whale.

Populations of beaked whales and other odontocetes on the Bahamas and other Navy fixed ranges that have been operating for decades appear to be stable. Behavioral reactions (avoidance of the area of Navy activity) seem likely in most cases if beaked whales are exposed to anti-submarine sonar within a few tens of kilometers, especially for prolonged periods (a few hours or more) since this is one of the most sensitive marine mammal groups to anthropogenic sound of any species or group studied to date and research indicates beaked whales will leave an area where anthropogenic sound is present (De Ruiter *et al.,* 2013; Manzano-Roth *et al.,* 2013; Moretti *et al.,* 2014; Tyack *et al.,* 2011). Research involving tagged Cuvier's beaked whales in the SOCAL Range Complex reported on by Falcone and Schorr (2012, 2014) indicates year-round prolonged use of the Navy's training and testing area by these beaked whales and has documented movements in excess of hundreds of kilometers by some of those animals. Given that some of these animals may routinely move hundreds of kilometers as part of their normal pattern, leaving an area where sonar or other anthropogenic sound is present may have little, if any, cost to such an animal. Photo identification studies in the SOCAL Range Complex, a Navy range that is utilized for training and testing, have identified approximately 100 Cuvier's beaked whale individuals with 40 percent having been seen in one or more prior years, with re-sightings up to seven years apart (Falcone and Schorr, 2014). These results indicate long-term residency by individuals in an intensively used Navy training and testing area, which may also suggest a lack of long-term consequences as a result of exposure to Navy training and testing activities. More than eight years of passive acoustic monitoring on the Navy's instrumented range west of San Clemente Island documented no significant changes in annual and monthly beaked whale echolocation clicks, with the exception of repeated fall declines likely driven by natural beaked whale life history functions (DiMarzio *et al.,* 2018). Finally, results from passive acoustic monitoring estimated that regional Cuvier's beaked whale densities were higher than indicated by NMFS' broad scale visual surveys for the U.S. West Coast (Hildebrand and McDonald, 2009).

Below we compile and summarize the information that supports our determination that the Navy's activities will not adversely affect beaked whales through effects on annual rates of recruitment or survival.

Baird's and Cuvier's Beaked Whales and *Mesoplodon* Species

California/Oregon/Washington Stocks

Baird's beaked whale, Cuvier's beaked whale, and the *Mesoplodon* species are not listed as endangered or threatened species under the ESA, and the CA/OR/WA stocks have been identified as ''stable,'' ''decreasing,'' and ''increasing,'' respectively, in the SARs. No biologically important areas have been identified for beaked whales in the NWTT Study Area. No mortality or Level A harassment from sonar or explosives is expected or authorized.

No methods are available to distinguish between the six species of *Mesoplodon* beaked whales from the CA/OR/WA stocks (Blainville's beaked whale (*M. densirostris*), Perrin's beaked whale (*M. perrini*), Lesser beaked whale (*M. peruvianus*), Stejneger's beaked whale (*M. stejnegeri*), Gingko-toothed beaked whale (*M. gingkodens*), and Hubbs' beaked whale (*M. carlhubbsi*)) when observed during at-sea surveys

(Carretta *et al.,* 2019). Bycatch and stranding records from the region indicate that Hubb's beaked whale is the most commonly encountered (Carretta *et al.,* 2008, Moore and Barlow, 2013). As indicated in the SAR, no species-specific abundance estimates are available, the abundance estimate includes all CA/OR/WA *Mesoplodon* species, and the six species/stocks are managed as one unit. Due to the lack of species-specific abundance estimates it is not possible to predict the take of individual species for each stock and take estimates are identified as *Mesoplodon* species. Therefore our analysis considers these *Mesoplodon* species together.

Regarding the magnitude of takes by Level B harassment (TTS and behavioral disturbance), the number of estimated total instances of take compared to the abundance is 36 to 78 percent. This information indicates that potentially half or more (but no more than 78 percent) of the individuals in these stocks may be impacted, depending on the stock, though the more likely scenario is that a smaller portion than that would be taken, and a subset of them would be taken on a few days, with no indication that these days would be sequential. Regarding the severity of those individual takes by Level B harassment by behavioral disturbance, we have explained that the duration of any exposure is expected to be between minutes and hours (*i.e.,* relatively short) and the received sound levels largely below 166 dB, though with beaked whales, which are considered somewhat more sensitive, this could mean that some individuals will leave preferred habitat for a day (*i.e.,* moderate level takes). However, while interrupted feeding bouts are a known response and concern for odontocetes, we also know that there are often viable alternative habitat options nearby. Regarding the severity of TTS takes, they are expected to be low-level, of short duration, and mostly not in a frequency band that would be expected to interfere with beaked whale communication or other important low-frequency cues, and that the associated lost opportunities and capabilities are not at a level that will impact reproduction or survival. As mentioned earlier in the odontocete overview, we anticipate more severe effects from takes when animals are exposed to higher received levels or sequential days of impacts.

Altogether, none of these species are listed as threatened or endangered under the ESA, only a portion of the stocks are anticipated to be impacted, and any individual beaked whale is likely to be disturbed at a moderate or sometimes low level. This low magnitude and moderate to lower severity of harassment effects is not expected to result in impacts on individual reproduction or survival, let alone annual rates of recruitment or survival. No mortality or Level A harassment is anticipated or authorized. For these reasons, we have determined, in consideration of all of the effects of the Navy's activities combined, that the authorized take will have a negligible impact on the CA/OR/WA stocks of beaked whales.

Dolphins and Small Whales

This section builds on the broader odontocete discussion above and brings together the discussion of the different types and amounts of take that different dolphin and small whale species and stocks are likely to incur, any additional applicable mitigation, and the status of the species and stocks to support the negligible impact determinations for each species or stock. For all dolphin and small whale stocks discussed here, no mortality or tissue damage from sonar or explosives is anticipated or authorized. No PTS from sonar or explosives is predicted, except for the CA/OR/WA stocks of Northern right whale dolphin and Pacific white-sided dolphin, for which one Level A harassment by PTS from testing activities is predicted for each stock.

In Table 55 below for dolphins and small whales, we indicate for each species and stock the total annual numbers of take by mortality, Level A harassment and Level B harassment, and a number indicating the instances of total take as a percentage of abundance.

TABLE 55—ANNUAL ESTIMATED TAKES BY LEVEL B HARASSMENT, LEVEL A HARASSMENT, AND MORTALITY FOR DOLPHINS AND SMALL WHALES IN THE NWTT STUDY AREA AND NUMBER INDICATING THE INSTANCES OF TOTAL TAKE AS A PERCENTAGE OF STOCK ABUNDANCE

| Species | Stock | Instances of indicated types of incidental take (not all takes represent separate individuals, especially for disturbance) | | | | | Total takes | Abundance (NMFS SARs)* | Instances of total take as percentage of abundance |
|---|---|---|---|---|---|---|---|---|---|
| | | Level B harassment | | Level A harassment | | Mortality | | | |
| | | Behavioral disturbance | TTS (may also include disturbance) | PTS | Tissue damage | | | | |
| **Family Delphinidae (dolphins) Family Ziphiidae (beaked whales)** | | | | | | | | | |
| Common bottlenose dolphin. | CA/OR/WA Offshore | 8 | 0 | 0 | 0 | 0 | 8 | 1,924 | <1 |
| Killer whale ..... | Eastern North Pacific Alaska Resident. | 34 | 0 | 0 | 0 | 0 | 34 | 2,347 | 1 |
| | West Coast Transient. | 210 | 22 | 0 | 0 | 0 | 232 | 243 | 95 |
| | Eastern North Pacific Offshore. | 152 | 5 | 0 | 0 | 0 | 157 | 300 | 52 |
| | Eastern North Pacific Southern Resident. | 49 | 2 | 0 | 0 | 0 | 51 | 75 | 68 |
| Northern right whale dolphin. | CA/OR/WA ..... | 20,671 | 1,029 | 1 | 0 | 0 | 21,701 | 26,556 | 82 |
| Pacific white-sided dolphin. | North Pacific ..... | 101 | 0 | 0 | 0 | 0 | 101 | 26,880 | <1 |
| | CA/OR/WA ..... | 19,593 | 1,372 | 1 | 0 | 0 | 20,966 | 26,814 | 78 |
| Risso's dolphin ..... | CA/OR/WA ..... | 6,080 | 275 | 0 | 0 | 0 | 6,355 | 6,336 | 100 |
| Short-beaked common dolphin. | CA/OR/WA ..... | 2,103 | 46 | 0 | 0 | 0 | 2,149 | 969,861 | <1 |
| Short-finned pilot whale. | CA/OR/WA ..... | 87 | 1 | 0 | 0 | 0 | 88 | 836 | 11 |

TABLE 55—ANNUAL ESTIMATED TAKES BY LEVEL B HARASSMENT, LEVEL A HARASSMENT, AND MORTALITY FOR DOLPHINS AND SMALL WHALES IN THE NWTT STUDY AREA AND NUMBER INDICATING THE INSTANCES OF TOTAL TAKE AS A PERCENTAGE OF STOCK ABUNDANCE—Continued

| Species | Stock | Instances of indicated types of incidental take (not all takes represent separate individuals, especially for disturbance) | | | | | Total takes | Abundance (NMFS SARs)* | Instances of total take as percentage of abundance |
|---|---|---|---|---|---|---|---|---|---|
| | | Level B harassment | | Level A harassment | | Mortality | | | |
| | | Behavioral disturbance | TTS (may also include disturbance) | PTS | Tissue damage | | | | |
| Striped dolphin ..... | CA/OR/WA ..... | 763 | 20 | 0 | 0 | 0 | 783 | 29,211 | 3 |

*Presented in the 2019 SARs or most recent SAR.

As described above, the large majority of Level B harassment by behavioral disturbance to odontocetes, and thereby dolphins and small whales, from hull-mounted sonar (MFAS) in the NWTT Study Area would result from received levels between 160 and 172 dB SPL. Therefore, the majority of takes by Level B harassment for dolphins and small whales are expected to be in the form of low to occasionally moderate responses of a generally shorter duration. As mentioned earlier in this section, we anticipate more severe effects from takes when animals are exposed to higher received levels or for longer durations. Occasional milder occurrences of Level B harassment by behavioral disturbance, as is expected here, are unlikely to cause long-term consequences for individual animals or populations that have any effect on reproduction or survival.

Research and observations show that if delphinids are exposed to sonar or other active acoustic sources they may react in a number of ways depending on their experience with the sound source and what activity they are engaged in at the time of the acoustic exposure. Delphinids may not react at all until the sound source is approaching within a few hundred meters to within a few kilometers depending on the environmental conditions and species. Some dolphin species (the more surface-dwelling taxa—typically those with ''dolphin'' in the common name, such as bottlenose dolphins, spotted dolphins, spinner dolphins, rough-toothed dolphins, *etc.,* but not Risso's dolphin), especially those residing in more industrialized or busy areas, have demonstrated more tolerance for disturbance and loud sounds and many of these species are known to approach vessels to bow-ride. These species are often considered generally less sensitive to disturbance. Dolphins and small whales that reside in deeper waters and generally have fewer interactions with human activities are more likely to demonstrate more typical avoidance reactions and foraging interruptions as described above in the odontocete overview.

Below we compile and summarize the information that supports our determination that the Navy's activities will not adversely affect dolphins and small whales through effects on annual rates of recruitment or survival.

Killer Whales (Eastern North Pacific Southern Resident Stock)

The Eastern North Pacific Southern Resident stock (Southern Resident killer whale DPS) is listed as endangered under the ESA. ESA-designated critical habitat for the Southern Resident killer whale DPS overlaps with the NWTT Study Area in the Strait of Juan de Fuca and Washington inland waters. No other biologically important areas for killer whales have been identified in the NWTT Study Area. The Eastern North Pacific Southern Resident stock is small (75 individuals) and has been decreasing in recent years. No mortality or Level A harassment is anticipated or authorized for the Eastern North Pacific Southern Resident stock of killer whales.

The Marine Species Coastal, Olympic Coast National Marine Sanctuary, Stonewall and Heceta Bank Humpback Whale, Point St. George Humpback Whale, and Puget Sound and Strait of Juan de Fuca Mitigation Areas overlap with important Eastern North Pacific Southern Resident (Southern Resident DPS) killer whale foraging and migration habitat, as described in the proposed rule and this final rule. The mitigation measures implemented in each of these areas include, but are not limited to, no MF1 MFAS use seasonally or limited MFAS use year round, no explosive training or restrictions on explosive training, and no explosive testing or restrictions on explosive testing. For complete details on mitigation measures for each area, see Table 50 and discussion in the *Mitigation Measures* section of this rule. As stated in the *Mitigation Areas* section of this final rule, new mitigation in the Puget Sound and Strait of Juan de Fuca Mitigation Area is designed to help avoid any potential impacts from training and testing on Southern Resident killer whales in NWTT Inland Waters. With implementation of these new mitigation measures, we do not anticipate any take of Southern Resident killer whales in NWTT Inland Waters due to NWTT training and testing activities.

Additionally, this final rule includes a new mitigation area, the Juan de Fuca Eddy Marine Species Mitigation Area, in which MF1 MFAS will be restricted and explosives prohibited. Waters within the Juan de Fuca Eddy Marine Species Mitigation Area (including areas off Cape Flattery) are important migration habitat for Eastern North Pacific Southern Resident killer whales as they transit between Inland Waters and the Offshore Area. In addition, Eastern North Pacific Southern Resident killer whales will benefit from the procedural mitigation measures described earlier in the *Mitigation Measures* section. All of these measures will reduce the severity of impacts to Eastern North Pacific Southern Resident (Southern Resident DPS) killer whales by reducing interference in feeding and migration that could result in lost feeding opportunities or necessitate additional energy expenditure to find other good foraging opportunities or migration routes. Altogether, the mitigation measures in this final rule result in a significant reduction in activities likely to disturb Eastern North Pacific Southern Resident killer whales across a large portion of their range within the NWTT Study Area, and especially within inland waters.

Regarding the magnitude of takes by Level B harassment (TTS and behavioral disturbance), the number of estimated total instances of take compared to the abundance for the Eastern North Pacific Southern Resident stock is 68 percent. This information indicates that potentially half or more of the individuals in this stock may be impacted, though the more likely scenario is that a smaller portion than

that will be taken, and a subset of them will be taken multiple days with no indication that these days will be sequential.

Regarding the severity of those individual takes by Level B harassment by behavioral disturbance, we have explained that the duration of any exposure is expected to be between minutes and hours (*i.e.,* relatively short) and the received sound levels largely below 172 dB (*i.e.,* of a lower, to occasionally moderate, level and less likely to evoke a severe response). Regarding the severity of TTS takes, they are expected to be low-level, of short duration, and mostly not in a frequency band that would be expected to interfere with killer whale communication or other important low-frequency cues. Therefore, the associated lost opportunities and capabilities are not at a level that will impact reproduction or survival.

Altogether, the Eastern North Pacific Southern Resident killer whale stock is listed as endangered under the ESA. Only a portion of this killer whale stock is anticipated to be impacted, and any individual is likely to be disturbed at a low-moderate level, with those individuals likely not disturbed on more than a few non-sequential days within a year. Even acknowledging the small and declining stock size of the Eastern North Pacific Southern Resident stock, this low magnitude and severity of harassment effects is unlikely to result in impacts on individual reproduction or survival, let alone have impacts on annual rates of recruitment or survival of the stock. No mortality or Level A harassment is anticipated or authorized for the stock. For these reasons, we have determined, in consideration of all of the effects of the Navy's activities combined, that the authorized take will have a negligible impact on the Eastern North Pacific Southern Resident killer whale stock.

Killer Whales (Eastern North Pacific Alaska Resident, West Coast Transient, and Eastern North Pacific Offshore Stocks)

None of these killer whale stocks are listed under the ESA. No biologically important areas for killer whales have been identified in the NWTT Study Area, other than the Southern Resident ESA-designated critical habitat discussed above. The Eastern North Pacific Offshore stock is reported as ''stable,'' while the Eastern North Pacific Alaska Resident and West Coast Transient stocks have unknown population trends. No mortality or Level A harassment is anticipated or authorized for any of these stocks.

Regarding the magnitude of takes by Level B harassment (TTS and behavioral disturbance), the number of estimated total instances of take compared to the abundance ranges from 1 percent (Eastern North Pacific Alaska Resident) to 95 percent (West Coast Transient). This information indicates that only a very small portion of the Eastern North Pacific Alaska Resident stock is likely impacted and repeated exposures of individuals are not anticipated (*i.e.,* individuals are not expected to be taken on more than one day within a year). This information also indicates that potentially half or more of the individuals in the other two stocks may be impacted, though the more likely scenario is that a smaller portion than that will be taken, and a subset of them will be taken multiple days with no indication that these days will be sequential.

Regarding the severity of those individual takes by Level B harassment by behavioral disturbance, we have explained that the duration of any exposure is expected to be between minutes and hours (*i.e.,* relatively short) and the received sound levels largely below 172 dB (*i.e.,* of a lower, to occasionally moderate, level and less likely to evoke a severe response). Regarding the severity of TTS takes, they are expected to be low-level, of short duration, and mostly not in a frequency band that would be expected to interfere with killer whale communication or other important low-frequency cues. Therefore, the associated lost opportunities and capabilities are not at a level that will impact reproduction or survival.

Altogether, these killer whale stocks are not listed under the ESA. Only a portion of each killer whale stock is anticipated to be impacted, and any individual is likely to be disturbed at a low-moderate level, with the taken individuals likely not disturbed on more than a few non-sequential days within a year. This low magnitude and severity of harassment effects is unlikely to result in impacts on individual reproduction or survival, let alone have impacts on annual rates of recruitment or survival of any of the stocks. No mortality or Level A harassment is anticipated or authorized for any of the stocks. For these reasons, we have determined, in consideration of all of the effects of the Navy's activities combined, that the authorized take will have a negligible impact on these killer whale stocks.

All Other Dolphin and Small Whale Stocks

None of these stocks is listed under the ESA and their stock statuses are considered ''unknown,'' except for the CA/OR/WA stock of short-beaked common dolphin which is described as ''increasing.'' No biologically important areas for these stocks have been identified in the NWTT Study Area. No mortality or serious injury is anticipated or authorized. With the exception of one Level A harassment PTS take each for the CA/OR/WA stocks of Northern right whale dolphin and Pacific white-sided dolphin, no Level A harassment by PTS or tissue damage is expected or authorized for these stocks.

Regarding the magnitude of takes by Level B harassment (TTS and behavioral disturbance), the number of estimated total instances of take compared to the abundance ranges from less than 1 percent (North Pacific stock of Pacific white-sided dolphins, CA/OR/WA Offshore stock of common bottlenose dolphins, and CA/OR/WA stock of short-beaked common dolphins) to 100 percent (CA/OR/WA stock of Risso's dolphins). All stocks except for the CA/OR/WA stocks of Risso's dolphin, Pacific white-sided dolphin, and Northern right whale dolphin have estimated total instances of take compared to the abundances less than or equal to 11 percent. This information indicates that only a small portion of these stocks is likely impacted and repeated exposures of individuals are not anticipated. The CA/OR/WA stocks of Risso's dolphins, Pacific white-sided dolphin, and Northern right whale dolphin have estimated total instances of take compared to the abundances that range from 78 to 100 percent. This information indicates that up to half or more of the individuals of these stocks could be impacted, though the more likely scenario is that a smaller portion than that will be taken, and a subset of them will be taken on a few days, with no indication that these days will be sequential.

Regarding the severity of those individual takes by Level B harassment by behavioral disturbance, we have explained that the duration of any exposure is expected to be between minutes and hours (*i.e.,* relatively short) and the received sound levels largely below 172 dB (*i.e.,* of a lower, to occasionally moderate, level and less likely to evoke a severe response). However, while interrupted feeding bouts are a known response and concern for odontocetes, we also know that there are often viable alternative habitat options nearby. Regarding the severity

of TTS takes, they are expected to be low-level, of short duration, and mostly not in a frequency band that would be expected to interfere with dolphin and small whale communication or other important low-frequency cues, and that the associated lost opportunities and capabilities are not at a level that will impact reproduction or survival. For these same reasons (low level and frequency band), while a small permanent loss of hearing sensitivity (PTS) may include some degree of energetic costs for compensating or may mean some small loss of opportunities or detection capabilities, at the expected scale the estimated one Level A harassment take by PTS for the CA/OR/WA stocks of Northern right whale dolphin and Pacific white-sided dolphin is unlikely to impact behaviors, opportunities, or detection capabilities to a degree that will interfere with reproductive success or survival of that individual. Thus the one Level A harassment take by PTS for these stocks is unlikely to affect rates of recruitment and survival for the stock.

Altogether, though the status of these stocks is largely unknown, none of these stocks is listed under the ESA and any individual is likely to be disturbed at a low to occasionally moderate level, with the taken individuals likely exposed on one to a few days. This low magnitude and severity of harassment effects is not expected to result in impacts on individual reproduction or survival. One individual each from the CA/OR/WA stocks of Northern right whale dolphin and Pacific white-sided dolphin could be taken by PTS annually of likely low severity. A small permanent loss of hearing sensitivity (PTS) may include some degree of energetic costs for compensating or may mean some small loss of opportunities or detection capabilities, but at the expected scale the estimated Level A harassment takes by PTS for the CA/OR/WA stocks of Northern right whale dolphin and Pacific white-sided dolphin is unlikely to impact behaviors, opportunities, or detection capabilities to a degree that will interfere with reproductive success or survival of those individuals, let alone annual rates of recruitment or survival, either alone, or in combination with the authorized Level B harassment. No mortality is anticipated or authorized. For these reasons, we have determined, in consideration of all of the effects of the Navy's activities combined, that the authorized take will have a negligible impact on these stocks of small whales and dolphins.

Porpoises

This section builds on the broader odontocete discussion above and brings together the discussion of the different types and amounts of take that different porpoise species or stocks will likely incur, any additional applicable mitigation, and the status of the species and stocks to support the negligible impact determinations for each species or stock. For porpoises, there is no anticipated M/SI or tissue damage from sonar or explosives for any species.

In Table 56 below for porpoises, we indicate the total annual numbers of take by mortality, Level A harassment and Level B harassment, and a number indicating the instances of total take as a percentage of abundance.

TABLE 56—ANNUAL ESTIMATED TAKES BY LEVEL B HARASSMENT, LEVEL A HARASSMENT, AND MORTALITY FOR PORPOISES IN THE NWTT STUDY AREA AND NUMBER INDICATING THE INSTANCES OF TOTAL TAKE AS A PERCENTAGE OF STOCK ABUNDANCE

| Species | Stock | Instances of indicated types of incidental take (not all takes represent separate individuals, especially for disturbance) | | | | | Total takes | Abundance (NMFS SARs)* | Instances of total take as percentage of abundance |
|---|---|---|---|---|---|---|---|---|---|
| | | Level B harassment | | Level A harassment | | Mortality | | | |
| | | Behavioral disturbance | TTS (may also include disturbance) | PTS | Tissue damage | | | | |
| **Family Phocoenidae (porpoises)** | | | | | | | | | |
| Dall's porpoise | Alaska | 179 | 459 | 0 | 0 | 0 | 638 | 83,400 | <1 |
| | CA/OR/WA | 13,407 | 20,290 | 98 | 0 | 0 | 33,795 | 25,750 | 131 |
| Harbor porpoise | Southeast Alaska | 92 | 38 | 0 | 0 | 0 | 130 | 1,354 | 10 |
| | Nothern OR/WA Coast. | 31,602 | 20,810 | 103 | 0 | 0 | 52,515 | 21,487 | 244 |
| | Northern CA/Southern OR. | 1,691 | 348 | 86 | 0 | 0 | 2,125 | 24,195 | 9 |
| | Washington Inland Waters. | 15,146 | 14,397 | 180 | 0 | 0 | 29,723 | 11,233 | 265 |

*Presented in the 2019 SARs or most recent SAR, including updates since publication of the proposed rule.

The majority of takes by harassment of harbor porpoises in the NWTT Study Area are caused by sources from the MFAS bin (which includes hull-mounted sonar) because they are high level sources at a frequency (1–10 kHz) which overlaps a more sensitive portion (though not the most sensitive) of the HF hearing range, and of the sources expected to result in take, they are used in a large portion of exercises (see Tables 3 and 4). Most of the takes (90 percent) from the MF1 bin in the NWTT Study Area would result from received levels between 148 and 166 dB SPL. For the remaining active sonar bin types, the percentages are as follows: LF4 = 99 percent between 124 and 142 dB SPL, MF4 = 97 percent between 124 and 148 dB SPL, MF5 = 97 percent between 118 and 142 dB SPL, and HF4 = 97 percent between 118 and 160 dB SPL. Given the levels they are exposed to and harbor porpoise sensitivity, some responses would be of a lower severity, but many would likely be considered moderate, but still of generally short duration.

Harbor porpoises have been shown to be particularly sensitive to human activity (Tyack *et al.,* 2011; Pirotta *et al.,* 2012). The information currently available regarding harbor porpoises suggests a very low threshold level of response for both captive (Kastelein *et al.,* 2000; Kastelein *et al.,* 2005) and wild (Johnston, 2002) animals. Southall *et al.* (2007) concluded that harbor porpoises are likely sensitive to a wide range of anthropogenic sounds at low received levels (approximately 90 to 120 dB). Research and observations of harbor porpoises for other locations show that this species is wary of human activity and will display profound avoidance behavior for anthropogenic

sound sources in many situations at levels down to 120 dB re: 1 µPa (Southall, 2007). Harbor porpoises routinely avoid and swim away from large motorized vessels (Barlow *et al.,* 1988; Evans *et al.,* 1994; Palka and Hammond, 2001; Polacheck and Thorpe, 1990). Harbor porpoises may startle and temporarily leave the immediate area of the training or testing until after the event ends. Accordingly, harbor porpoises have been assigned a lower behavioral harassment threshold, *i.e.,* a more distant distance cutoff (40 km for high source level, 20 km for moderate source level) and, as a result, the number of harbor porpoise taken by Level B harassment by behavioral disturbance through exposure to LFAS/MFAS/HFAS in the NWTT Study Area is generally higher than the other species. As mentioned earlier in the odontocete overview, we anticipate more severe effects from takes when animals are exposed to higher received levels or sequential days of impacts; occasional low to moderate behavioral reactions are unlikely to affect reproduction or survival. Some takes by Level B harassment by behavioral disturbance could be in the form of a longer (several hours or a day) and more moderate response, but unless they are repeated over more than several sequential days, impacts to reproduction or survival are not anticipated.

While harbor porpoises have been observed to be especially sensitive to human activity, the same types of responses have not been observed in Dall's porpoises. Dall's porpoises are typically notably longer than, and weigh more than twice as much as, harbor porpoises, making them generally less likely to be preyed upon and likely differentiating their behavioral repertoire somewhat from harbor porpoises. Further, they are typically seen in large groups and feeding aggregations, or exhibiting bow-riding behaviors, which is very different from the group dynamics observed in the more typically solitary, cryptic harbor porpoises, which are not often seen bow-riding. For these reasons, Dall's porpoises are not treated as an especially sensitive species (versus harbor porpoises which have a lower behavioral harassment threshold and more distant cutoff) but, rather, are analyzed similarly to other odontocetes (with takes from the sonar bin in the NWTT Study Area resulting from the same received levels reported in the *Odontocete* section above). Therefore, the majority of Level B harassment by behavioral disturbance is expected to be in the form of milder responses compared to higher level exposures. As mentioned earlier in this section, we anticipate more severe effects from takes when animals are exposed to higher received levels.

We note that both Dall's and harbor porpoises, as HF-sensitive species, have a lower PTS threshold than other groups and therefore are generally likely to experience larger amounts of TTS and PTS, and NMFS accordingly has evaluated and authorized higher numbers. Also, however, regarding PTS from sonar exposure, porpoises are still likely to avoid sound levels that would cause higher levels of TTS (greater than 20 dB) or PTS. Therefore, even though the number of TTS takes are higher than for other odontocetes, any PTS is expected to be at a lower level and for all of the reasons described above, TTS and PTS takes are not expected to impact reproduction or survival of any individual.

All Porpoise Stocks

These Dall's and harbor porpoise stocks are not listed under the ESA and the status of these stocks is considered ''unknown.'' No biologically important areas have been identified for Dall's and harbor porpoises in the NWTT Study Area. However, a known important feeding area for harbor porpoises overlaps with the Stonewall and Heceta Bank Humpback Whale Mitigation Area. No MF1 MFAS or explosives will be used in this mitigation area from May 1—November 30, which will reduce the severity of impacts to harbor porpoises by reducing interference in feeding that could result in lost feeding opportunities or necessitate additional energy expenditure to find other good opportunities. No mortality or Level A harassment from tissue damage is expected or authorized for any of these stocks.

Regarding the magnitude of takes by Level B harassment (TTS and behavioral disturbance), the number of estimated total instances of take compared to the abundance ranges from less than 1 percent for the Alaska stock of Dall's porpoises to 265 percent for the Washington Inland Waters stock of harbor porpoises. The Alaska stock of Dall's porpoises, and the Southeast Alaska and Northern California/Southern Oregon stocks of harbor porpoises have estimated total instances of take compared to the abundances less than or equal to 10 percent. This information indicates that only a small portion of these stocks is likely impacted and repeated exposures of individuals are not anticipated (*i.e.,* individuals are not expected to be disturbed on more than one day a year). The CA/OR/WA stock of Dall's porpoises and the Northern Washington/Oregon Coast and Washington Inland Waters stocks of harbor porpoises have estimated total instances of take compared to the abundances that range from 131 to 265 percent. This information indicates that likely half or more, and potentially the majority of the individuals of these stocks could be impacted, though the more likely scenario is that a smaller portion will be taken, and a subset of those will be taken on up to 5 or 6 days, with no indication that these days will be sequential. In the proposed rule, we stated that due to the potential number of repeated takes of some individuals it was possible that some small number of females could forego reproduction for a year. Since the proposed rule, we have reevaluated the estimated number of harassment takes, where the potential number of repeated takes annually is limited to 5 or 6 days with no indication of take on sequential days, and determined that foregone reproduction is unlikely to occur.

Regarding the severity of those individual takes by Level B harassment by behavioral disturbance for harbor porpoises, we have explained that the duration of any exposure is expected to be between minutes and hours (*i.e.,* relatively short) and the received sound levels largely below 166 dB, which for harbor porpoise (which have a lower threshold for Level B harassment by disturbance) would be considered a moderate level. Regarding the severity of those individual takes by Level B harassment by behavioral disturbance for Dall's porpoises, we have explained that the duration of any exposure is expected to be between minutes and hours (*i.e.,* relatively short) and the received sound levels largely below 172 dB (*i.e.,* of a lower, to occasionally moderate, level and less likely to evoke a severe response). Regarding the severity of TTS takes, they are expected to be low-moderate level, of short duration, and mostly not in a frequency band that would be expected to interfere with communication or other important low-frequency cues. The associated lost opportunities and capabilities are not at a level that will impact reproduction or survival.

No Level A harassment by PTS is anticipated or authorized for the Southeast Alaska stock of harbor porpoise or the Alaska stock of Dall's porpoise. For the remaining porpoise stocks, for the same reasons explained above for TTS (low level and the likely frequency band), while a small permanent loss of hearing sensitivity

may include some degree of energetic costs for compensating or may mean some small loss of opportunities or detection capabilities, the estimated annual Level A harassment takes by PTS for these three stocks of harbor porpoises and one stock of Dall's porpoises (86 to 180) will be unlikely to impact behaviors, opportunities, or detection capabilities to a degree that will interfere with reproductive success or survival. In the proposed rule, we stated that due to the estimated number of PTS takes it was possible that some small number of females could incur a higher degree of PTS that could interfere with their successful reproduction and growth. Since the proposed rule, we have reevaluated the likelihood of PTS impacts of a higher degree and determined that they are unlikely to occur, given the anticipated avoidance of loud sounds at the distances and durations necessary to incur more severe PTS.

Altogether, the status of the harbor porpoise stocks is unknown, however harbor porpoises are not listed as endangered or threatened under the ESA. Because harbor porpoises are particularly sensitive, it is likely that a fair number of the Level B harassment behavioral responses of individuals will be of a moderate nature. Additionally, as noted, some portion of the stocks may be taken repeatedly on up to 5 or 6 non-sequential days within a year, however this is not anticipated to affect the stocks' annual rates of recruitment or survival. Some individuals (86 to 180) from the Northern Oregon/Washington Coast, Northern California/Southern Oregon, and Washington Inland Waters stocks of harbor porpoises could be taken by PTS annually of likely low severity. A small permanent loss of hearing sensitivity (PTS) may include some degree of energetic costs for compensating or may mean some small loss of opportunities or detection capabilities, but at the expected scale the estimated Level A harassment takes by PTS for these stocks is unlikely, alone or in combination with the Level B harassment take by behavioral disturbance, to impact behaviors, opportunities, or detection capabilities to a degree that will interfere with reproductive success or survival of any individuals, let alone annual rates of recruitment or survival. No mortality is anticipated or authorized. For these reasons, we have determined, in consideration of all of the effects of the Navy's activities combined, that the authorized take will have a negligible impact on all four stocks of harbor porpoises.

Altogether, the status of the Dall's porpoise stocks is unknown, however Dall's porpoises are not listed as endangered or threatened under the ESA. Any individual Dall's porpoise is likely to be disturbed at a low-moderate level, with the taken individuals likely exposed on one to a few days. This low magnitude and low-moderate severity of Level B harassment effects is not expected to result in impacts on individual reproduction or survival, much less annual rates of recruitment or survival. Some individuals (98) from the CA/OR/WA stock of Dall's porpoises could be taken by PTS annually of likely low severity. A small permanent loss of hearing sensitivity (PTS) may include some degree of energetic costs for compensating or may mean some small loss of opportunities or detection capabilities, but at the expected scale the estimated Level A harassment takes by PTS for this stock are unlikely, alone or in combination with the Level B harassment take by behavioral disturbance, to impact behaviors, opportunities, or detection capabilities to a degree that will interfere with reproductive success or survival of any individuals, let alone annual rates of recruitment or survival. No mortality is anticipated or authorized. For these reasons, we have determined, in consideration of all of the effects of the Navy's activities combined, that the authorized take will have a negligible impact on these two stocks of Dall's porpoises.

Pinnipeds

This section builds on the broader discussion above and brings together the discussion of the different types and amounts of take that different species and stocks of pinnipeds will likely incur, the applicable mitigation, and the status of the species and stocks to support the negligible impact determinations for each species or stock. We have described (above in the *General Negligible Impact Analysis* section) the unlikelihood of any masking having effects that will impact the reproduction or survival of any of the individual marine mammals affected by the Navy's activities. We have also described in the *Potential Effects of Specified Activities on Marine Mammals and their Habitat section* of the proposed rule that the specified activities would not have adverse or long-term impacts on marine mammal habitat, and therefore the unlikelihood of any habitat impacts affecting the reproduction or survival of any individual marine mammals affected by the Navy's activities. For pinnipeds, there is no mortality or serious injury and no Level A harassment from tissue damage from sonar or explosives anticipated or authorized for any species. Here, we include information that applies to all of the pinniped species and stocks.

In Table 57 below for pinnipeds, we indicate the total annual numbers of take by mortality, Level A harassment and Level B harassment, and a number indicating the instances of total take as a percentage of abundance.

This final rule reflects an updated abundance estimate for the Washington Northern Inland Waters stock, Hood Canal stock, and Southern Puget Sound stock of harbor seal. The Navy derived an in-water harbor seal abundance of 3,116 for Washington Northern Inland Waters by summing abundances for Admiralty Inlet (516), East Whidbey (1,926), and South Whidbey (674) from Smultea *et al.,* (2017). Smultea *et al.* (2017) did not provide an abundance or correction factor for animals hauled out of the water in these locations. Therefore, the Navy utilized a correction factor of 1.53 (Huber *et al.,* 2001), but it is important to note that this correction factor applies for counts of hauled-out animals (*e.g.,* animals hauled out multiplied by the correction factor for animals in-water = total abundance). Therefore, the Navy applied a ''reverse'' correction factor (3,116/0.53 = 5,879) to account for hauled-out animals. In addition, Smultea *et al.* (2017) did not survey the Strait of Juan de Fuca and San Juan Islands for harbor seals. However, NMFS includes the Strait and San Juan Islands as part of the WA Northern Inland Waters stock in the SAR. Thus, the abundance (13,775 seals) calculated to estimate a density, based on haul-out counts by S. Jeffries in summer 2013 and 2014, is added to the Smultea *et al.* total abundance. Therefore, the total stock abundance estimate is equal to the sum of the in-water abundance plus the estimated abundance of hauled-out animals, plus the abundance for the Strait of Juan de Fuca and San Juan Islands, (3,116 + 5,879 + 13,775 = 22,770 total harbor seals in Washington Northern Inland Waters). NMFS concurs with this assessment and uses 22,770 as the abundance estimate for the Washington Northern Inland Waters stock of harbor seal in this final rule.

Regarding the Hood Canal stock, Jefferson *et al.* (2017) estimates an in-water abundance of 2,009 harbor seals in the Hood Canal study region. The in-water abundance provided in Jefferson *et al.* (2017) did not provide an abundance or correction factor for animals hauled out of the water. Therefore, the Navy utilized a correction

factor of 1.53 (Huber *et al.,* 2001), but, as explained above, this correction factor applies for counts of hauled-out animals (*e.g.,* animals hauled out multiplied by the correction factor for animals in-water = total abundance). Therefore, the Navy applied the same ''reverse'' correction factor (2,009/0.53 = 3,791) to account for animals hauled out. Therefore, the total stock abundance estimate is equal to the sum of the in-water abundance plus the estimated abundance of hauled-out animals (2,009 + 3,791 = 5,800 total Hood Canal harbor seals). NMFS concurs with this assessment and uses 5,800 as the abundance estimate for the Hood Canal stock of harbor seal in this final rule.

The Navy derived an in-water harbor seal abundance estimate of 4,042 for the Southern Puget Sound stock by summing in-water abundances for Bainbridge (301), Seattle (252), Southern Puget Sound (2,905), and Vashon (584) included in Smultea *et al.* (2017). Smultea *et al.* (2017) did not provide an abundance or correction factor for animals hauled out of the water in these locations. Therefore, the Navy utilized the same correction factor of 1.53 (Huber *et al.,* 2001). But as with the two stocks discussed above, the correction factor applies for counts of hauled-out animals (*e.g.,* animals hauled out × the correction factor for animals in-water = total abundance). Therefore, the Navy applied the same ''reverse'' correction factor (4,042/0.53 = 7,626), to account for hauled-out animals. Therefore, the total stock abundance estimate is equal to the sum of the in-water abundance plus the estimated abundance of hauled-out animals (4,042 + 7,626 = 11,668 total harbor seals in WA Southern Puget Sound). NMFS concurs with this assessment and uses 11,668 as the abundance estimate for the Southern Puget Sound stock of harbor seal in this final rule.

TABLE 57—ANNUAL ESTIMATED TAKES BY LEVEL B HARASSMENT, LEVEL A HARASSMENT, AND MORTALITY FOR PINNIPEDS IN THE NWTT STUDY AREA AND NUMBER INDICATING THE INSTANCES OF TOTAL TAKE AS A PERCENTAGE OF STOCK ABUNDANCE

| Species | Stock | Instances of indicated types of incidental take (not all takes represent separate individuals, especially for disturbance) | | | | | Total takes | Abundance (NMFS SARs)* | Instances of total take as percentage of abundance |
|---|---|---|---|---|---|---|---|---|---|
| | | Level B harassment | | Level A harassment | | Mortality | | | |
| | | Behavioral disturbance | TTS (may also include disturbance) | PTS | Tissue damage | | | | |
| **Suborder Pinnipedia Family Phocidae (eared seals and sea lions)** | | | | | | | | | |
| California sea lion | U.S. | 23,756 | 342 | 1 | 0 | 0 | 24,099 | 257,606 | 9 |
| Guadelupe fur seal | Mexico to California | 1,482 | 13 | 0 | 0 | 0 | 1,495 | 34,187 | 4 |
| Northern fur seal | Eastern Pacific | 11,462 | 130 | 0 | 0 | 0 | 11,592 | 620,660 | 2 |
| | California | 231 | 1 | 0 | 0 | 0 | 232 | 14,050 | 2 |
| Steller sea lion | Eastern U.S. | 2,231 | 7 | 0 | 0 | 0 | 2,238 | 43,201 | 5 |
| **Family Phocidae (true seals)** | | | | | | | | | |
| Harbor seal | Southeast Alaska (Clarence Strait). | 2,077 | 275 | 0 | 0 | 0 | 2,352 | 27,659 | 9 |
| | OR/WA Coast | 540 | 640 | 2 | 0 | 0 | 1,182 | 24,732 | 5 |
| | Washington Northern Inland Waters. | 870 | 377 | 5 | 0 | 0 | 1,252 | [1] 22,770 | 5 |
| | Hood Canal | 38,430 | 23,040 | 1 | 0 | 0 | 61,471 | [1] 5,800 | 1,060 |
| | Southern Puget Sound. | 3,274 | 3,564 | 4 | 0 | 0 | 6,842 | [1] 11,668 | 59 |
| Northern Elephant seal. | California | 4,134 | 710 | 4 | 0 | 0 | 4,848 | 179,000 | 3 |

* Presented in the 2019 SARs or most recent SAR except where noted otherwise.
[1] Recent survey data in the inland waters has not been incorporated into the SARs for these specific stocks, therefore we have used recent Navy abundance estimates for these stocks for the negligible impact analysis. These abundance estimates are described in detail in this section of the rule.

As described above, the majority of takes by harassment of pinnipeds in the NWTT Study Area are caused by sources from the MFAS bin (which includes hull-mounted sonar) because they are high level sources at a frequency (1–10 kHz) which overlaps the most sensitive portion of the pinniped hearing range, and of the sources expected to result in take, they are used in a large portion of exercises (see Tables 3 and 4). Most of the takes (97 percent) from the MF1 bin in the NWTT Study Area would result from received levels between 166 and 178 dB SPL. For the remaining active sonar bin types, the percentages are as follows: LF4 = 97 percent between 130 and 160 dB SPL, MF4 = 99 percent between 142 and 172 dB SPL, MF5 = 97 percent between 130 and 160 dB SPL, and HF4 = 99 percent between 100 and 172 dB SPL. Given the levels they are exposed to and pinniped sensitivity, most responses will be of a lower severity, with only occasional responses likely to be considered moderate, but still of generally short duration.

As mentioned earlier in this section, we anticipate more severe effects from takes when animals are exposed to higher received levels. Occasional milder takes by Level B harassment by behavioral disturbance are unlikely to cause long-term consequences for individual animals or populations, especially when they are not expected to be repeated over multiple sequential days. For all pinnipeds, harassment takes from explosives (behavioral disturbance, TTS, or PTS if present) comprise a very small fraction of those caused by exposure to active sonar.

Because the majority of harassment take of pinnipeds results from narrowband sources in the range of 1–10 kHz, the vast majority of threshold shift caused by Navy sonar sources will typically occur in the range of 2–20 kHz. This frequency range falls within the range of pinniped hearing, however, pinniped vocalizations typically span a somewhat lower range than this (<0.2 to 10 kHz) and threshold shift from active sonar will often be in a narrower band (reflecting the narrower band source that caused it), which means that TTS

incurred by pinnipeds will typically only interfere with communication within a portion of a pinniped's range (if it occurred during a time when communication with conspecifics was occurring). As discussed earlier, it would only be expected to be of a short duration and relatively small degree. Many of the other critical sounds that serve as cues for navigation and prey (*e.g.,* waves, fish, invertebrates) occur below a few kHz, which means that detection of these signals will not be inhibited by most threshold shifts either. The very low number of takes by threshold shifts that might be incurred by individuals exposed to explosives will likely be lower frequency (5 kHz or less) and spanning a wider frequency range, which could slightly lower an individual's sensitivity to navigational or prey cues, or a small portion of communication calls, for several minutes to hours (if temporary) or permanently.

Regarding behavioral disturbance, research and observations show that pinnipeds in the water may be tolerant of anthropogenic noise and activity (a review of behavioral reactions by pinnipeds to impulsive and non-impulsive noise can be found in Richardson *et al.* (1995) and Southall *et al.* (2007)). Available data, though limited, suggest that exposures between approximately 90 and 140 dB SPL do not appear to induce strong behavioral responses in pinnipeds exposed to non-pulse sounds in water (Costa *et al.,* 2003; Jacobs and Terhune, 2002; Kastelein *et al.,* 2006c). Based on the limited data on pinnipeds in the water exposed to multiple pulses (small explosives, impact pile driving, and seismic sources), exposures in the approximately 150 to 180 dB SPL range generally have limited potential to induce avoidance behavior in pinnipeds (Blackwell *et al.,* 2004; Harris *et al.,* 2001; Miller *et al.,* 2004). If pinnipeds are exposed to sonar or other active acoustic sources they may react in a number of ways depending on their experience with the sound source and what activity they are engaged in at the time of the acoustic exposure. Pinnipeds may not react at all until the sound source is approaching within a few hundred meters and then may alert, ignore the stimulus, change their behaviors, or avoid the immediate area by swimming away or diving. Effects on pinnipeds in the NWTT Study Area that are taken by Level B harassment, on the basis of reports in the literature as well as Navy monitoring from past activities, will likely be limited to reactions such as increased swimming speeds, increased surfacing time, or decreased foraging (if such activity were occurring). Most likely, individuals will simply move away from the sound source and be temporarily displaced from those areas, or not respond at all, both of which will have no effect on reproduction or survival of the individuals. In areas of repeated and frequent acoustic disturbance, some animals may habituate or learn to tolerate the new baseline or fluctuations in noise level. Habituation can occur when an animal's response to a stimulus wanes with repeated exposure, usually in the absence of unpleasant associated events (Wartzok *et al.,* 2003). While some animals may not return to an area, or may begin using an area differently due to training and testing activities, most animals are expected to return to their usual locations and behavior. Given their documented tolerance of anthropogenic sound (Richardson *et al.,* 1995 and Southall *et al.,* 2007), repeated exposures of individuals of any of these species to levels of sound that may cause Level B harassment are unlikely to result in permanent hearing impairment or to significantly disrupt (through direct disturbance or opportunities lost during TTS) foraging, resting, or reproductive behaviors in a manner that would reduce reproductive success or health. Thus, even repeated Level B harassment of some subset of individuals of an overall stock is unlikely to result in any significant realized decrease in fitness to those individuals that would result in any effect on rates of recruitment or survival for the stock as a whole.

Of these stocks, only Guadalupe fur seals are listed under the ESA (as threatened), with the SAR indicating the stock is ''increasing.'' No critical habitat is designated under the ESA for the Guadalupe fur seal. The other stocks are not ESA-listed. There is an active UME for Guadalupe fur seals. Since 2015 there have been 400 strandings of Guadalupe fur seals (including live and dead seals). The California sea lion UME was recently closed as elevated strandings occurred from 2013–2016. All of the other pinniped stocks are considered ''increasing,'' ''stable,'' or ''unknown'' except for Northern fur seals (Eastern Pacific stock), which is considered to be ''declining.'' There are no known biologically important areas for any of the pinniped stocks. No mortality or Level A harassment from tissue damage is anticipated or authorized. All the pinniped species and stocks discussed in this section will benefit from the procedural mitigation measures described earlier in the *Mitigation Measures* section.

Regarding the magnitude of takes by Level B harassment (TTS and behavioral disturbance), with the exception of the Hood Canal and Southern Puget Sound stocks of harbor seals, the number of estimated total instances of take compared to the abundance is 2–9 percent. Given this information and the ranges of these stocks (*i.e.,* large ranges, but with individuals often staying in the vicinity of haulouts), only a small portion of individuals in the stock are likely impacted and repeated exposures of individuals are not anticipated (*i.e.,* individuals are not expected to be taken on more than one day within a year). For the Southern Puget Sound stock of harbor seals, the number of estimated total instances of take compared to the abundance is 59 percent. This information indicates that fewer than half of the individuals in this stock are likely impacted, with those individuals likely not disturbed on more than a few non-sequential days a year.

For the Hood Canal stock of harbor seals, the number of estimated total instances of take compared to the abundance is 1,060 percent. This information indicates that all individuals of this stock could be impacted, though the more likely scenario is that some individuals may not be taken at all, some may be taken on 10 or fewer days per year, and some could be taken on more than 10 and up to 21 days a year. For those individuals taken on a higher number of days, some of those days may be sequential. Though the majority of impacts are expected to be of a lower to sometimes moderate severity, the repeated takes over some number of sequential days for some individuals in the Hood Canal stock of harbor seals makes it more likely that some small number of individuals could be interrupted during foraging in a manner and amount such that impacts to the energy budgets of females (from either losing feeding opportunities or expending considerable energy to find alternative feeding options) could cause them to forego reproduction for a year (energetic impacts to males are generally meaningless to population rates unless they cause death, and it takes extreme energy deficits beyond what would ever be likely to result from these activities to cause the death of an adult marine mammal). We note, though, that there is documented evidence of an increasing population for Hood Canal harbor seals, despite high levels of acoustic activity in their habitat, including pile driving, pierside sonar maintenance/testing, and testing activities in Dabob Bay. This documented expansion includes, for

example, pupping on the Naval Base Kitsap Bangor waterfront in recent years. As noted previously, however, foregone reproduction (especially for only one year within seven, which is the maximum predicted because the small number anticipated in any one year makes the probability that any individual will be impacted in this way twice in seven years very low) has far less of an impact on population rates than mortality and the relatively small number of instances of foregone reproduction that could occur are not expected to adversely affect the stock through effects on annual rates of recruitment or survival. Regarding the severity of those individual takes by Level B harassment by behavioral disturbance for all pinniped stocks, we have explained that the duration of any exposure is expected to be between minutes and hours (*i.e.,* relatively short) and the received sound levels largely below 178 dB, which is considered a relatively low to occasionally moderate level for pinnipeds. However, as noted, for the Hood Canal stock of harbor seals, some of these takes could occur on some number of sequential days.

Regarding the severity of TTS takes, they are expected to be low-level, of short duration, and mostly not in a frequency band that would be expected to interfere with pinniped communication or other important low-frequency cues. Therefore, the associated lost opportunities and capabilities are not at a level that will impact reproduction or survival. For these same reasons (low level and frequency band), while a small permanent loss of hearing sensitivity may include some degree of energetic costs for compensating or may mean some small loss of opportunities or detection capabilities, the 1–5 estimated takes by Level A harassment by PTS for California sea lions, Northern elephant seals, and the Washington Northern Inland Waters, Hood Canal, OR/WA Coast, and Southern Puget Sound stocks of harbor seals is unlikely to impact behaviors, opportunities, or detection capabilities to a degree that will interfere with reproductive success or survival of any individuals.

Altogether, all pinniped stocks are considered ''increasing,'' ''stable,'' or ''unknown'' except for Northern fur seals (Eastern Pacific stock), which is considered ''declining'' but is not listed under the ESA. Only the Guadalupe fur seal is listed under the ESA, with a population that is considered increasing. No mortality for pinnipeds is anticipated or authorized. No more than five individuals from any pinniped stock are estimated to be taken by PTS, of likely low severity, annually. Additionally, no PTS is expected for Guadalupe fur seal, Northern fur seal, Steller sea lion, and the Southeast Alaska (Clarence Strait) stock of harbor seal. A small permanent loss of hearing sensitivity (PTS) may include some degree of energetic costs for compensating or may mean some small loss of opportunities or detection capabilities, but at the expected scale the estimated Level A harassment takes by PTS for these stocks are unlikely, alone or in combination with the Level B harassment take, to impact behaviors, opportunities, or detection capabilities to a degree that will interfere with reproductive success or survival of any individuals, let alone annual rates of recruitment or survival. For nearly all pinniped stocks (with the exception of the Hood Canal stock of harbor seals) only a portion of the stocks are anticipated to be taken by Level B harassment and any individual is likely to be disturbed at a low-moderate level on no more than a few non-sequential days per year. Even considering the effects of the UME on the Guadalupe fur seal, this low magnitude and severity of harassment effects will not result in impacts on individual reproduction or survival, much less annual rates of recruitment or survival. For the Hood Canal stock of harbor seals, a fair portion of individuals will be taken by Level B harassment (at a moderate or sometimes low level) over a comparatively higher number of days within a year, and some smaller portion of those individuals may be taken on sequential days. However, we do not anticipate the relatively small number of individual harbor seals that might be taken over repeated days within the year in a manner that results in one year of foregone reproduction to adversely affect the stock through effects on rates of recruitment or survival, given the status of the stock. For these reasons, in consideration of all of the effects of the Navy's activities combined, we have determined that the authorized take will have a negligible impact on all stocks of pinnipeds.

*Determination*

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 monitoring and mitigation measures, NMFS finds that the total marine mammal take from the specified activities will have a negligible impact on all affected marine mammal species or stocks.

**Subsistence Harvest of Marine Mammals**

In order to issue an incidental take authorization, NMFS must find that the total estimated take will not have an ''unmitigable adverse impact'' on the availability of the affected marine mammal species or stocks for taking for subsistence uses 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.

When applicable, NMFS must prescribe means of effecting the least practicable adverse impact on the availability of the species or stocks for subsistence uses. As discussed in the *Mitigation Measures* section, evaluation of potential mitigation measures includes consideration of two primary factors: (1) The manner in which, and the degree to which, implementation of the potential measure(s) is expected to reduce adverse impacts on the availability of species or stocks for subsistence uses, and (2) the practicability of the measure(s) for applicant implementation.

Subsistence harvest in Southeast Alaska is primarily focused on harbor seals, with occasional harvest of sea lions (Wolfe *et al.* 2013). To our knowledge, no whaling occurs in the NWTT Study Area. Testing activities in Western Behm Canal are the only activities within the NWTT Study Area that have the potential to overlap with subsistence uses of marine mammals.

Four Alaskan Native communities are located in the Behm Canal area: Central Council of the Tlingit and Haida Indian Tribes, Ketchikan Indian Corporation, Organized Village of Saxman, and Metlakatla Indian Community, Annette Island Reserve.

The Tlingit and Haida people retain a life that is strongly based on subsistence, including the use of harbor seals and sea lions for food and raw materials (Wolfe *et al.* 2013). Harbor seals are taken during all months; peak harvests occur during spring and during fall/early winter. The lowest harvest occurs in the summer months (Wolfe *et al.* 2013). In most communities, hunters

use the waters and coastlines adjacent to their home to harvest seals, with travel ranging from 5 to 32.6 mi (8 to 52.5 km) (Davis 1999). While there is large overlap in the core use areas of the Ketchikan and Saxman communities, harvest of seals within Western Behm Canal is more common from the Ketchikan community (Davis 1999). Hunters from the Ketchikan community primarily take seals off Revillagigedo Island. They also harvest seals in areas north of Ketchikan into the northern mouth of Western Behm Canal near Betton Island (Davis, 1999). The Metlakatla Indian Community is located on Annette Island, in the Clarence Strait opposite of Ketchikan. NMFS is unaware of any harvest of harbor seals within Western Behm Canal from hunters in Metlakatla Indian Community.

No information has been provided by these communities regarding how the Navy's activities may impact the availability of marine mammals for Alaskan Native subsistence uses. The Navy sent communications to the four tribes at both the regional and community level at multiple stages throughout the NWTT rulemaking and SEIS/OEIS processes, including an invitation to initiate government to government consultation. Additionally, the Installation Environmental Director for Naval Base Kitsap, who oversees natural resources management at the Navy's Southeast Alaska Acoustic Facility (SEAFAC), met with representatives from the Ketchikan Indian Corporation and the Organized Village of Saxman to discuss the Facility and its operations in March 2019. During this face to face meeting and tour of the facility, the Tribes did not raise concern regarding their ability to harvest marine mammals.

In addition to these communications, the Navy followed up in April 2020 with a specific request to the four communities for any concerns regarding potential impacts of the Navy's proposed activities in the Western Behm Canal on the availability of marine mammal species or stocks for Alaska Native subsistence use. The Navy again contacted the tribes in May 2020, following up on their request. To date, neither the Navy nor NMFS have received correspondence from Alaska Native groups regarding subsistence use, or any other concern with the MMPA rulemaking and authorizations.

In Western Behm Canal, seals and sea lions are estimated to be taken by Level B harassment by behavioral disturbance and TTS only. Given the minor and temporary nature of the takes, and the temporary nature of the activity, we do not expect these impacts to cause the animals to avoid or abandon an area where subsistence harvest typically occurs.

The Navy's testing area in Western Behm Canal includes five restricted areas (see Figure 2–4 in the Navy's rulemaking/LOA application); the largest, Area 5, spans the width of Western Behm Canal and encompasses Areas 1, 2, and 3. During operations, the Navy can close the restricted areas to all vessel traffic. Typically, such closures do not exceed 20 minutes. Public notifications (Notices to Mariners) announcing restricted access have been issued 10 times per year on average; about 8–12 events occur annually that require restrictions on vessel traffic to ensure that the Navy vessel (usually a submarine, which is out of the visual observation of small boat operators) has a clear sea space to navigate safely. Notices to Mariners usually extend for a period of four or five days, but limitations on vessel traffic typically last for 20 minutes and occur up to twice per hour. During these times, small vessels (30 ft or less) transiting through Western Behm Canal are required to stay within 1,000 yd. of the shoreline, maintain a maximum speed of 5 knots, and be in radio contact with SEAFAC. The Navy uses the radio contact to ensure that all vessels comply with the navigation rules during these critical periods. On occasion, the engine of a transiting vessel may create noise that interferes with data collection during a test. When this occurs, SEAFAC may request that the vessel operator voluntarily turn off the engine during the period of data collection. Alternatively, SEAFAC may delay data collection until the vessel has cleared the area. When testing is not being conducted, vessel traffic is not restricted, but permanent restrictions on anchors, nets, towing, and dumping remain in force. Additional information on transiting the restricted areas in Western Behm Canal is provided in 33 CFR 334.1275 (Western Behm Canal, Ketchikan, Alaska, restricted areas).

NMFS does not expect that these occasional 20-minute closures and associated restrictions will displace subsistence users, as the closures are limited, short term, and affect a limited portion of Western Behm Canal.

The Notice to Mariners notifying government agencies and the public that the Navy will conduct operations and restrict access in Western Behm Canal will be provided at least 72 hours in advance to the Central Council of the Tlingit and Haida Indian Tribes, Ketchikan Indian Corporation, Organized Village of Saxman, and Metlakatla Indian Community, Annette Island Reserve, as well as the U.S. Coast Guard, Ketchikan Gateway Borough Planning Department, Harbor Master, Alaska Department of Fish and Game, KRBD radio, KTKN radio, and the Ketchikan Daily News.

NMFS expects that subsistence harvest activities would most likely occur close to the shoreline along Betton Island, as well as some of the neighboring smaller islands (including Back Island), when receding tidal waters expose the shoreline, and animals haulout. There are no Navy activities that would create a physical barrier between subsistence users and marine mammals in nearshore areas. In the offshore area, the temporary presence of vessels (boats, submarines, *etc.*) and operational equipment needed to conduct the testing activities may block preferred navigational paths; however, the presence of vessels and equipment will be temporary, and easy to navigate around. Therefore, we do not expect the presence of these vessels and equipment to create a physical barrier between subsistence hunters and marine mammals.

Further offshore within Western Behm Canal, the Navy has in-water structures which include two sites: the underway site and the static site, located in the five restricted areas discussed above. The underway site and static site are existing testing structures that are required for conducting testing operations. The in-water structures located at the underway site and static site are easy to navigate around, and we do not expect their presence to impact subsistence harvests.

Overall, physical barriers associated with the Navy's activities will be limited to the temporary presence of additional vessels (boats, submarines, *etc.*) and other operational equipment needed to conduct the testing activities, including the reading of those vessels' acoustic signatures. Vessels will only be present temporarily and are easy to navigate around and avoid. Therefore, we do not expect the Navy's action to create a physical barrier that will limit the ability of subsistence harvest by Alaskan Natives.

Based on NMFS having no information indicating that the Navy's activity in Western Behm Canal will affect Alaskan Native subsistence activities and the location and nature of the Navy's activity, NMFS has determined that the total taking of affected species or stocks will not have an unmitigable adverse impact on the availability of the species or stocks for taking for subsistence uses.

**Classification**

*Endangered Species Act*

There are seven marine mammal species under NMFS jurisdiction that are listed as endangered or threatened under the ESA (16 U.S.C. 1531 *et seq.*) with confirmed or possible occurrence in the NWTT Study Area: blue whale, fin whale, humpback whale (Mexico and Central America DPSs), sei whale, sperm whale, killer whale (Southern Resident killer whale DPS), and Guadalupe fur seal. The Southern Resident killer whale has critical habitat designated under the ESA in the NWTT Study Area. On September 19, 2019, NMFS proposed to revise ESA-designated critical habitat for Southern Resident killer whales (84 FR 49214). In addition, on October 9, 2019, NMFS published a proposed rule to designate ESA critical habitat for the Central America, Mexico, and Western North Pacific DPSs of humpback whales (84 FR 54354). Neither ESA critical habitat rule has been finalized.

The Navy consulted with NMFS pursuant to section 7 of the ESA for NWTT activities, and NMFS also consulted internally on the promulgation of this rule and the issuance of LOAs under section 101(a)(5)(A) of the MMPA. NMFS issued a biological opinion concluding that the promulgation of the rule and issuance of subsequent LOAs are not likely to jeopardize the continued existence of threatened and endangered species under NMFS' jurisdiction and are not likely to result in the destruction or adverse modification of designated or proposed critical habitat in the NWTT Study Area. The biological opinion is available at *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-military-readiness-activities.*

*National Marine Sanctuaries Act*

Federal agency actions that are likely to injure sanctuary resources are subject to consultation with NOAA's Office of National Marine Sanctuaries (ONMS) under section 304(d) of the National Marine Sanctuaries Act (NMSA; 16 U.S.C. 1431 *et seq.*).

On April 29, 2020, NMFS and the Navy jointly requested consultation with ONMS and submitted a Sanctuary Resource Statement (SRS), as the Navy concluded that their training and testing activities in the NWTT Study Area may incidentally expose sanctuary resources that reside within Olympic Coast National Marine Sanctuary (NMS) to sound and other environmental stressors, and NMFS concluded that proposed MMPA regulations and associated LOAs that would allow the Navy to incidentally take marine mammals include a subset of those impacts that could occur to NMS resources.

After discussions with the ONMS, NMFS and the Navy submitted a revised SRS on July 8, 2020. ONMS reviewed the SRS, and on July 15, 2020, ONMS found the SRS sufficient for the purposes of making an injury determination and developing recommended alternatives as required by the NMSA. On August 28, 2020, ONMS provided its injury determination and three recommended alternatives to minimize injury and to protect sanctuary resources. NMFS and the Navy submitted a joint response to the ONMS recommended alternatives. Consultation under the NMSA is now concluded.

*National Environmental Policy Act*

To comply with the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq.*) and NOAA Administrative Order (NAO) 216–6A, NMFS must evaluate our proposed actions and alternatives with respect to potential impacts on the human environment. NMFS participated as a cooperating agency on the 2020 NWTT FSEIS/OEIS, which was published on September 18, 2020, and is available at *https://nwtteis.com/.* In accordance with 40 CFR 1506.3, NMFS independently reviewed and evaluated the 2020 NWTT FSEIS/OEIS and determined that it is adequate and sufficient to meet our responsibilities under NEPA for the issuance of this rule and associated LOAs. NOAA therefore, has adopted the 2020 NWTT FSEIS/OEIS. NMFS has prepared a separate Record of Decision. NMFS' Record of Decision for adoption of the 2020 NWTT FSEIS/OEIS and issuance of this final rule and subsequent LOAs can be found at *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-military-readiness-activities.*

*Regulatory Flexibility Act*

The Office of Management and Budget has determined that this rule is not significant for purposes of Executive Order 12866.

Pursuant to the Regulatory Flexibility Act (RFA; 5 U.S.C. 601 *et seq.*), the Chief Counsel for Regulation of the Department of Commerce has certified to the Chief Counsel for Advocacy of the Small Business Administration during the proposed rule stage that this action would not have a significant economic impact on a substantial number of small entities. The factual basis for the certification was published in the proposed rule and is not repeated here. No comments were received regarding this certification. As a result, a regulatory flexibility analysis was not required and none was prepared.

*Waiver of Delay in Effective Date*

NMFS has determined that there is good cause under the Administrative Procedure Act (APA; 5 U.S.C. 553(d)(3)) to waive the 30-day delay in the effective date of this final rule. No individual or entity other than the Navy is affected by the provisions of these regulations. The Navy has requested that this final rule take effect on or before November 9, 2020, to accommodate the Navy's LOAs that expire on November 8, 2020, so as to not cause a disruption in training and testing activities. The waiver of the 30-day delay of the effective date of the final rule will ensure that the MMPA final rule and LOAs are in place by the time the previous authorizations expire. Any delay in effectiveness of the final rule would result in either: (1) A suspension of planned naval training and testing, which would disrupt vital training and testing essential to national security; or (2) the Navy's procedural non-compliance with the MMPA (should the Navy conduct training and testing without LOAs), thereby resulting in the potential for unauthorized takes of marine mammals. Moreover, the Navy is ready to implement the regulations immediately. For these reasons, NMFS finds good cause to waive the 30-day delay in the effective date. In addition, the rule authorizes incidental take of marine mammals that would otherwise be prohibited under the statute. Therefore, by granting an exception to the Navy, the rule relieves restrictions under the MMPA, which provides a separate basis for waiving the 30-day effective date for the rule under section 553(d)(1) of the APA.

**List of Subjects in 50 CFR Part 218**

Exports, Fish, Imports, Incidental take, Indians, Labeling, Marine mammals, Navy, Penalties, Reporting and recordkeeping requirements, Seafood, Sonar, Transportation.

Dated: October 20, 2020.

**Samuel D. Rauch, III,**

*Deputy Assistant Administrator for Regulatory Programs, National Marine Fisheries Service.*

For reasons set forth in the preamble, 50 CFR part 218 is amended as follows:

## PART 218—REGULATIONS GOVERNING THE TAKING AND IMPORTING OF MARINE MAMMALS

■ 1. The authority citation for part 218 continues to read as follows:

**Authority:** 16 U.S.C. 1361 *et seq.,* unless otherwise noted.

■ 2. Revise subpart O to part 218 to read as follows:

### Subpart O—Taking and Importing Marine Mammals; U.S. Navy's Northwest Training and Testing (NWTT)

Sec.



## Subpart O—Taking and Importing Marine Mammals; U.S. Navy's Northwest Training and Testing (NWTT)

### § 218.140 Specified activity and geographical region.

(a) Regulations in this subpart apply only to the U.S. Navy (Navy) for the taking of marine mammals that occurs in the area described in paragraph (b) of this section and that occurs incidental to the activities listed in paragraph (c) of this section.

(b) The taking of marine mammals by the Navy under this subpart may be authorized in Letters of Authorization (LOAs) only if it occurs within the NWTT Study Area. The NWTT Study Area is composed of established maritime operating and warning areas in the eastern North Pacific Ocean region, including areas of the Strait of Juan de Fuca, Puget Sound, and Western Behm Canal in southeastern Alaska. The Study Area includes air and water space within and outside Washington state waters, and outside state waters of Oregon and Northern California. The eastern boundary of the Offshore Area portion of the Study Area is 12 nautical miles (nmi) off the coastline for most of the Study Area starting south of W–237, including southern Washington, Oregon, and Northern California. The Offshore Area includes the ocean all the way to the coastline only along that part of the Washington coast that lies beneath the airspace of W–237 and the Olympic Military Operations Area. The Quinault Range Site is a defined area of sea space where training and testing is conducted. The Quinault Range Site coincides with the boundaries of W–237A and also includes a surf zone component. The surf zone component extends north to south 5 nmi along the eastern boundary of W–237A, extends approximately 3 nmi to shore along the mean lower low water line, and encompasses 1 mile (1.6 kilometers) of shoreline at Pacific Beach, Washington. The Study Area includes four existing range complexes and facilities: the Northwest Training Range Complex (NWTRC), the Keyport Range Complex, the Carr Inlet Operations Area, and the Southeast Alaska Acoustic Measurement Facility (SEAFAC). In addition to these range complexes, the Study Area also includes Navy pierside locations where sonar maintenance and testing occurs as part of overhaul, modernization, maintenance, and repair activities at Naval Base Kitsap, Bremerton; Naval Base Kitsap, Bangor; and Naval Station Everett.

(c) The taking of marine mammals by the Navy is only authorized if it occurs incidental to the Navy conducting training and testing activities, including:

(1) Anti-submarine warfare;

(2) Mine warfare;

(3) Surface warfare;

(4) Unmanned systems;

(5) Vessel evaluation; and

(6) Other training and testing activities.

### § 218.141 Effective dates.

Regulations in this subpart are effective from November 9, 2020, through November 8, 2027.

### § 218.142 Permissible methods of taking.

(a) Under LOAs issued pursuant to §§ 216.106 of this chapter and 218.146, the Holder of the LOAs (hereinafter ''Navy'') may incidentally, but not intentionally, take marine mammals within the area described in § 218.140(b) by Level A harassment and Level B harassment associated with the use of active sonar and other acoustic sources and explosives, as well as serious injury or mortality associated with vessel strikes, provided the activity is in compliance with all terms, conditions, and requirements of this subpart and the applicable LOAs.

(b) The incidental take of marine mammals by the activities listed in § 218.140(c) is limited to the following species:

TABLE 1 TO PARAGRAPH (b)

| Species | Stock |
|---|---|
| Blue whale | Eastern North Pacific. |
| Fin whale | Northeast Pacific. |
| Fin whale | California/Oregon/Washington. |
| Sei whale | Eastern North Pacific. |
| Minke whale | Alaska. |
| Minke whale | California/Oregon/Washington. |
| Humpback whale | Central North Pacific. |
| Humpback whale | California/Oregon/Washington. |
| Gray whale | Eastern North Pacific. |
| Bottlenose dolphin | California/Oregon/Washington Offshore. |
| Killer whale | Alaska Resident. |
| Killer whale | Eastern North Pacific Offshore. |
| Killer whale | West Coast Transient. |
| Killer whale | Southern Resident. |
| Northern right whale dolphin | California/Oregon/Washington. |
| Pacific white-sided dolphin | North Pacific. |
| Pacific white-sided dolphin | California/Oregon/Washington. |
| Risso's dolphin | California/Oregon/Washington. |
| Short-beaked common dolphin | California/Oregon/Washington. |
| Short-finned pilot whale | California/Oregon/Washington. |
| Striped dolphin | California/Oregon/Washington. |
| Pygmy sperm whale | California/Oregon/Washington. |
| Dwarf sperm whale | California/Oregon/Washington. |

TABLE 1 TO PARAGRAPH (b)—Continued

| Species | Stock |
|---|---|
| Dall's porpoise | Alaska. |
| Dall's porpoise | California/Oregon/Washington. |
| Harbor porpoise | Southeast Alaska. |
| Harbor porpoise | Northern Oregon & Washington Coast. |
| Harbor porpoise | Northern California/Southern Oregon. |
| Harbor porpoise | Washington Inland Waters. |
| Sperm whale | California/Oregon/Washington. |
| Baird's beaked whale | California/Oregon/Washington. |
| Cuvier's beaked whale | California/Oregon/Washington. |
| *Mesoplodon* species | California/Oregon/Washington. |
| California sea lion | U.S. Stock. |
| Steller sea lion | Eastern U.S. |
| Guadalupe fur seal | Mexico. |
| Northern fur seal | Eastern Pacific. |
| Northern fur seal | California. |
| Harbor seal | Southeast Alaska—Clarence Strait. |
| Harbor seal | Oregon & Washington Coastal. |
| Harbor seal | Washington Northern Inland Waters. |
| Harbor seal | Hood Canal. |
| Harbor seal | Southern Puget Sound. |
| Northern elephant seal | California. |

**§ 218.143 Prohibitions.**

(a) Notwithstanding incidental takings contemplated in § 218.142(a) and authorized by LOAs issued under §§ 216.106 of this chapter and 218.146, no person in connection with the activities listed in § 218.140(c) may:

(1) Violate, or fail to comply with, the terms, conditions, and requirements of this subpart or an LOA issued under §§ 216.106 of this chapter and 218.146;

(2) Take any marine mammal not specified in § 218.142(b);

(3) Take any marine mammal specified in § 218.142(b) in any manner other than as specified in the LOAs; or

(4) Take a marine mammal specified in § 218.142(b) if NMFS determines such taking results in more than a negligible impact on the species or stock of such marine mammal.

(b) [Reserved]

**§ 218.144 Mitigation requirements.**

(a) When conducting the activities identified in § 218.140(c), the mitigation measures contained in any LOAs issued under §§ 216.106 of this chapter and 218.146 must be implemented. These mitigation measures include, but are not limited to:

(1) *Procedural mitigation.* Procedural mitigation is mitigation that the Navy must implement whenever and wherever an applicable training or testing activity takes place within the NWTT Study Area for each applicable activity category or stressor category and includes acoustic stressors (*i.e.,* active sonar, weapons firing noise), explosive stressors (*i.e.,* sonobuoys, torpedoes, medium-caliber and large-caliber projectiles, missiles, bombs, Mine Countermeasure and Neutralization activities, mine neutralization involving Navy divers), and physical disturbance and strike stressors (*i.e.,* vessel movement, towed in-water devices, small-, medium-, and large-caliber non-explosive practice munitions, non-explosive missiles, non-explosive bombs and mine shapes).

(i) *Environmental awareness and education.* Appropriate Navy personnel (including civilian personnel) involved in mitigation and training or testing activity reporting under the specified activities will complete the environmental compliance training modules identified in their career path training plan, as specified in the LOAs.

(ii) *Active sonar.* Active sonar includes low-frequency active sonar, mid-frequency active sonar, and high-frequency active sonar. For vessel-based active sonar activities, mitigation applies only to sources that are positively controlled and deployed from manned surface vessels (*e.g.,* sonar sources towed from manned surface platforms). For aircraft-based active sonar activities, mitigation applies only to sources that are positively controlled and deployed from manned aircraft that do not operate at high altitudes (*e.g.,* rotary-wing aircraft). Mitigation does not apply to active sonar sources deployed from unmanned aircraft or aircraft operating at high altitudes (*e.g.,* maritime patrol aircraft).

(A) *Number of Lookouts and observation platform for hull-mounted sources.* For hull-mounted sources, the Navy must have one Lookout for platforms with space or manning restrictions while underway (at the forward part of a small boat or ship) and platforms using active sonar while moored or at anchor (including pierside), and two Lookouts for platforms without space or manning restrictions while underway (at the forward part of the ship).

(B) *Number of Lookouts and observation platform for sources not hull-mounted.* For sources that are not hull-mounted, the Navy must have one Lookout on the ship or aircraft conducting the activity.

(C) *Prior to activity.* Prior to the initial start of the activity (*e.g.,* when maneuvering on station), Navy personnel must observe the mitigation zone for floating vegetation and marine mammals; if floating vegetation or a marine mammal is observed, Navy personnel must relocate or delay the start of active sonar transmission until the mitigation zone is clear of floating vegetation or until the conditions in paragraph (a)(1)(ii)(F) are met for marine mammals.

(D) *During activity for low-frequency active sonar at 200 decibels (dB) and hull-mounted mid-frequency active sonar.* During the activity, for low-frequency active sonar at 200 dB and hull-mounted mid-frequency active sonar, Navy personnel must observe the following mitigation zones for marine mammals.

(*1*) *Powerdowns for marine mammals.* Navy personnel must power down active sonar transmission by 6 dB if marine mammals are observed within 1,000 yard (yd) of the sonar source; Navy personnel must power down an additional 4 dB (10 dB total) if marine mammals are observed within 500 yd of the sonar source.

(*2*) *Shutdowns for marine mammals.* Navy personnel must cease transmission if cetaceans are observed within 200 yd of the sonar source in any location in the Study Area; Navy personnel must cease transmission if pinnipeds in the NWTT Offshore Area or Western Behm Canal are observed within 200 yd of the sonar source and cease transmission if pinnipeds in NWTT Inland Waters are observed within 100 yd of the sonar source (except if hauled out on, or in the water near, man-made structures and vessels).

(E) *During activity for low-frequency active sonar below 200 dB, mid-frequency active sonar not hull-mounted, and high-frequency sonar.* During the activity, for low-frequency active sonar below 200 dB, mid-frequency active sonar sources that are not hull-mounted, and high-frequency sonar, Navy personnel must observe the following mitigation zones for marine mammals. Navy personnel must cease transmission if cetaceans are observed within 200 yd of the sonar source in any location in the Study Area. Navy personnel must cease transmission if pinnipeds in the NWTT Offshore Area or Western Behm Canal are observed within 200 yd of the sonar source. Navy personnel must cease transmission if pinnipeds in NWTT Inland Waters are observed within 100 yd of the sonar source (except if hauled out on, or in the water near, man-made structures and vessels).

(F) Co*mmencement/recommencement conditions after marine mammal sighting before or during activity.* Navy personnel must allow a sighted marine mammal to leave the mitigation zone prior to the initial start of the activity (by delaying the start) or during the activity (by not recommencing or powering up active sonar transmission) until one of the following conditions has been met:

(*1*) *Observed exiting.* The animal is observed exiting the mitigation zone;

(*2*) *Thought to have exited.* The animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to the sonar source;

(*3*) *Clear from additional sightings.* The mitigation zone has been clear from any additional sightings for 10 minutes (min) for aircraft-deployed sonar sources or 30 min for vessel-deployed sonar sources;

(*4*) *Sonar source transit.* For mobile activities, the active sonar source has transited a distance equal to double that of the mitigation zone size beyond the location of the last sighting; or

(*5*) *Bow-riding dolphins.* For activities using hull-mounted sonar, the Lookout concludes that dolphins are deliberately closing in on the ship to ride the ship's bow wave, and are therefore out of the main transmission axis of the sonar (and there are no other marine mammal sightings within the mitigation zone).

(iii) *Weapons firing noise.* Weapons firing noise associated with large-caliber gunnery activities.

(A) *Number of Lookouts and observation platform.* One Lookout must be positioned on the ship conducting the firing. Depending on the activity, the Lookout could be the same as the one described for ''Explosive medium-caliber and large-caliber projectiles'' or for ''Small-, medium-, and large-caliber non-explosive practice munitions'' in paragraphs (a)(1)(vi)(A) and (a)(1)(xiii)(A) of this section.

(B) *Mitigation zone.* Thirty degrees on either side of the firing line out to 70 yd from the muzzle of the weapon being fired.

(C) *Prior to activity.* Prior to the initial start of the activity, Navy personnel must observe the mitigation zone for floating vegetation and marine mammals; if floating vegetation or a marine mammal is observed, Navy personnel must relocate or delay the start of weapons firing until the mitigation zone is clear of floating vegetation or until the conditions in paragraph (a)(1)(iii)(E) of this section are met for marine mammals.

(D) *During activity.* During the activity, Navy personnel must observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel must cease weapons firing.

(E) *Commencement/recommencement conditions after marine mammal sighting before or during activity.* Navy personnel must allow a sighted marine mammal to leave the mitigation zone prior to the initial start of the activity (by delaying the start) or during the activity (by not recommencing weapons firing) until one of the following conditions has been met:

(*1*) *Observed exiting.* The animal is observed exiting the mitigation zone;

(*2*) *Thought to have exited.* The animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to the firing ship;

(*3*) *Clear from additional sightings.* The mitigation zone has been clear from any additional sightings for 30 min; or

(*4*) *Firing ship transit.* For mobile activities, the firing ship has transited a distance equal to double that of the mitigation zone size beyond the location of the last sighting.

(iv) *Explosive sonobuoys.*

(A) *Number of Lookouts and observation platform.* One Lookout must be positioned in an aircraft or on a small boat. If additional platforms are participating in the activity, Navy personnel positioned in those assets (*e.g.,* safety observers, evaluators) must support observing the mitigation zone for applicable biological resources, including marine mammals, while performing their regular duties.

(B) *Mitigation zone.* 600 yd around an explosive sonobuoy.

(C) *Prior to activity.* Prior to the initial start of the activity (*e.g.,* during deployment of a sonobuoy field, which typically lasts 20–30 min), Navy personnel must conduct passive acoustic monitoring for marine mammals; personnel must use information from detections to assist visual observations. Navy personnel also must visually observe the mitigation zone for floating vegetation and marine mammals; if floating vegetation or a marine mammal is observed, Navy personnel must relocate or delay the start of sonobuoy or source/receiver pair detonations until the mitigation zone is clear of floating vegetation or until the conditions in paragraph (a)(1)(iv)(E) of this section are met for marine mammals.

(D) *During activity.* During the activity, Navy personnel must observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel must cease sonobuoy or source/receiver pair detonations.

(E) *Commencement/recommencement conditions after marine mammal sighting before or during activity.* Navy personnel must allow a sighted marine mammal to leave the mitigation zone prior to the initial start of the activity (by delaying the start) or during the activity (by not recommencing detonations) until one of the following conditions has been met:

(*1*) *Observed exiting.* The animal is observed exiting the mitigation zone;

(*2*) *Thought to have exited.* The animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to the sonobuoy; or

(*3*) *Clear from additional sightings.* The mitigation zone has been clear from any additional sightings for 10 min when the activity involves aircraft that have fuel constraints, or 30 min when the activity involves aircraft that are not typically fuel constrained.

(F) *After activity.* After completion of the activity (*e.g.,* prior to maneuvering off station), Navy personnel must, when practical (*e.g.,* when platforms are not constrained by fuel restrictions or

mission-essential follow-on commitments), observe for marine mammals in the vicinity of where detonations occurred; if any injured or dead marine mammals are observed, Navy personnel must follow established incident reporting procedures. If additional platforms are supporting this activity (*e.g.,* providing range clearance), Navy personnel on these assets must assist in the visual observation of the area where detonations occurred.

(v) *Explosive torpedoes.*

(A) *Number of Lookouts and observation platform.* One Lookout must be positioned in an aircraft. If additional platforms are participating in the activity, Navy personnel positioned in those assets (*e.g.,* safety observers, evaluators) must support observing the mitigation zone for applicable biological resources, including marine mammals, while performing their regular duties.

(B) *Mitigation zone.* 2,100 yd around the intended impact location.

(C) *Prior to activity.* Prior to the initial start of the activity (*e.g.,* during deployment of the target), Navy personnel must conduct passive acoustic monitoring for marine mammals; personnel must use the information from detections to assist visual observations. Navy personnel also must visually observe the mitigation zone for floating vegetation and marine mammals; if floating vegetation or a marine mammal is observed, Navy personnel must relocate or delay the start of firing until the mitigation zone is clear of floating vegetation or until the conditions in paragraph (a)(1)(v)(E) of this section are met for marine mammals.

(D) *During activity.* During the activity, Navy personnel must observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel must cease firing.

(E) *Commencement/recommencement conditions after marine mammal sighting before or during activity.* Navy personnel must allow a sighted marine mammal to leave the mitigation zone prior to the initial start of the activity (by delaying the start) or during the activity (by not recommencing firing) until one of the following conditions has been met:

(*1*) *Observed exiting.* The animal is observed exiting the mitigation zone;

(*2*) *Thought to have exited.* The animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to the intended impact location; or

(*3*) *Clear from additional sightings.* The mitigation zone has been clear from any additional sightings for 10 min when the activity involves aircraft that have fuel constraints, or 30 min when the activity involves aircraft that are not typically fuel constrained.

(F) *After activity.* After completion of the activity (*e.g.,* prior to maneuvering off station), Navy personnel must, when practical (*e.g.,* when platforms are not constrained by fuel restrictions or mission-essential follow-on commitments), observe for marine mammals in the vicinity of where detonations occurred; if any injured or dead marine mammals are observed, Navy personnel must follow established incident reporting procedures. If additional platforms are supporting this activity (*e.g.,* providing range clearance), Navy personnel on these assets must assist in the visual observation of the area where detonations occurred.

(vi) *Explosive medium-caliber and large-caliber projectiles.* Gunnery activities using explosive medium-caliber and large-caliber projectiles. Mitigation applies to activities using a surface target.

(A) *Number of Lookouts and observation platform.* One Lookout must be on the vessel conducting the activity. For activities using explosive large-caliber projectiles, depending on the activity, the Lookout could be the same as the one described for ''Weapons firing noise'' in paragraph (a)(1)(iii)(A) of this section. If additional platforms are participating in the activity, Navy personnel positioned in those assets (*e.g.,* safety observers, evaluators) must support observing the mitigation zone for applicable biological resources, including marine mammals, while performing their regular duties.

(B) *Mitigation zones.* 600 yd around the intended impact location for explosive medium-caliber projectiles. 1,000 yd around the intended impact location for explosive large-caliber projectiles.

(C) *Prior to activity.* Prior to the initial start of the activity (*e.g.,* when maneuvering on station), Navy personnel must observe the mitigation zone for floating vegetation and marine mammals; if floating vegetation or a marine mammal is observed, Navy personnel must relocate or delay the start of firing until the mitigation zone is clear of floating vegetation or until the conditions in paragraph (a)(1)(vi)(E) of this section are met for marine mammals.

(D) *During activity.* During the activity, Navy personnel must observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel must cease firing.

(E) *Commencement/recommencement conditions after marine mammal sighting before or during activity.* Navy personnel must allow a sighted marine mammal to leave the mitigation zone prior to the initial start of the activity (by delaying the start) or during the activity (by not recommencing firing) until one of the following conditions has been met:

(*1*) *Observed exiting.* The animal is observed exiting the mitigation zone;

(*2*) *Thought to have exited.* The animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to the intended impact location;

(*3*) *Clear of additional sightings.* The mitigation zone has been clear from any additional sightings for 30 min for vessel-based firing; or

(*4*) *Impact location transit.* For activities using mobile targets, the intended impact location has transited a distance equal to double that of the mitigation zone size beyond the location of the last sighting.

(F) *After activity.* After completion of the activity (*e.g.,* prior to maneuvering off station), Navy personnel must, when practical (*e.g.,* when platforms are not constrained by fuel restrictions or mission-essential follow-on commitments), observe for marine mammals in the vicinity of where detonations occurred; if any injured or dead marine mammals are observed, Navy personnel must follow established incident reporting procedures. If additional platforms are supporting this activity (*e.g.,* providing range clearance), Navy personnel on these assets must assist in the visual observation of the area where detonations occurred.

(vii) *Explosive missiles.* Aircraft-deployed explosive missiles. Mitigation applies to activities using a surface target.

(A) *Number of Lookouts and observation platform.* One Lookout must be positioned in an aircraft. If additional platforms are participating in the activity, Navy personnel positioned in those assets (*e.g.,* safety observers, evaluators) must support observing the mitigation zone for applicable biological resources, including marine mammals, while performing their regular duties.

(B) *Mitigation zone.* 2,000 yd around the intended impact location.

(C) *Prior to activity.* Prior to the initial start of the activity (*e.g.,* during a fly-over of the mitigation zone), Navy personnel must observe the mitigation zone for floating vegetation and marine mammals; if floating vegetation or a marine mammal is observed, Navy personnel must relocate or delay the

start of firing until the mitigation zone is clear of floating vegetation or until the conditions in paragraph (a)(1)(vii)(E) of this section are met for marine mammals.

(D) *During activity.* During the activity, Navy personnel must observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel must cease firing.

(E) *Commencement/recommencement conditions after marine mammal sighting before or during activity.* Navy personnel must allow a sighted marine mammal to leave the mitigation zone prior to the initial start of the activity (by delaying the start) or during the activity (by not recommencing firing) until one of the following conditions has been met:

(*1*) *Observed exiting.* The animal is observed exiting the mitigation zone;

(*2*) *Thought to have exited.* The animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to the intended impact location; or

(*3*) *Clear of additional sightings.* The mitigation zone has been clear from any additional sightings for 10 min when the activity involves aircraft that have fuel constraints, or 30 min when the activity involves aircraft that are not typically fuel constrained.

(F) *After activity.* After completion of the activity (*e.g.,* prior to maneuvering off station), Navy personnel must, when practical (*e.g.,* when platforms are not constrained by fuel restrictions or mission-essential follow-on commitments), observe for marine mammals in the vicinity of where detonations occurred; if any injured or dead marine mammals are observed, Navy personnel must follow established incident reporting procedures. If additional platforms are supporting this activity (*e.g.,* providing range clearance), Navy personnel on these assets must assist in the visual observation of the area where detonations occurred.

(viii) *Explosive bombs.*

(A) *Number of Lookouts and observation platform.* One Lookout must be positioned in an aircraft conducting the activity. If additional platforms are participating in the activity, Navy personnel positioned in those assets (*e.g.,* safety observers, evaluators) must support observing the mitigation zone for applicable biological resources, including marine mammals, while performing their regular duties.

(B) *Mitigation zone.* 2,500 yd around the intended target.

(C) *Prior to activity.* Prior to the initial start of the activity (*e.g.,* when arriving on station), Navy personnel must observe the mitigation zone for floating vegetation and marine mammals; if floating vegetation or a marine mammals is observed, Navy personnel must relocate or delay the start of bomb deployment until the mitigation zone is clear of floating vegetation or until the conditions in paragraph (a)(1)(viii)(E) of this section are met for marine mammals.

(D) *During activity.* During the activity (*e.g.,* during target approach), Navy personnel must observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel must cease bomb deployment.

(E) *Commencement/recommencement conditions after marine mammal sighting before or during activity.* Navy personnel must allow a sighted marine mammal to leave the mitigation zone prior to the initial start of the activity (by delaying the start) or during the activity (by not recommencing bomb deployment) until one of the following conditions has been met:

(*1*) *Observed exiting.* The animal is observed exiting the mitigation zone;

(*2*) *Thought to have exited.* The animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to the intended target;

(*3*) *Clear from additional sightings.* The mitigation zone has been clear from any additional sightings for 10 min; or

(*4*) *Intended target transit.* For activities using mobile targets, the intended target has transited a distance equal to double that of the mitigation zone size beyond the location of the last sighting.

(F) *After activity.* After completion of the activity (*e.g.,* prior to maneuvering off station), Navy personnel must, when practical (*e.g.,* when platforms are not constrained by fuel restrictions or mission-essential follow-on commitments), observe for marine mammals in the vicinity of where detonations occurred; if any injured or dead marine mammals are observed, Navy personnel must follow established incident reporting procedures. If additional platforms are supporting this activity (*e.g.,* providing range clearance), Navy personnel on these assets must assist in the visual observation of the area where detonations occurred.

(ix) *Explosive Mine Countermeasure and Neutralization activities.*

(A) *Number of Lookouts and observation platform.* One Lookout must be positioned on a vessel or in an aircraft when implementing the smaller mitigation zone. Two Lookouts must be positioned (one in an aircraft and one on a small boat) when implementing the larger mitigation zone. If additional platforms are participating in the activity, Navy personnel positioned in those assets (*e.g.,* safety observers, evaluators) must support observing the mitigation zone for applicable biological resources, including marine mammals, while performing their regular duties.

(B) *Mitigation zones.* 600 yd around the detonation site for activities using ≤5 lb net explosive weight. 2,100 yd around the detonation site for activities using >5–60 lb net explosive weight.

(C) *Prior to activity.* Prior to the initial start of the activity (*e.g.,* when maneuvering on station; typically, 10 min when the activity involves aircraft that have fuel constraints, or 30 min when the activity involves aircraft that are not typically fuel constrained), Navy personnel must observe the mitigation zone for floating vegetation and marine mammals; if floating vegetation or a marine mammal is observed, Navy personnel must relocate or delay the start of detonations until the mitigation zone is clear of floating vegetation or until the conditions in paragraph (a)(1)(ix)(E) are met for marine mammals.

(D) *During activity.* During the activity, Navy personnel must observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel must cease detonations. Navy personnel must use the smallest practicable charge size for each activity. Navy personnel must conduct activities in daylight hours only and in Beaufort Sea state number 3 conditions or less.

(E) *Commencement/recommencement conditions after marine mammal sighting before or during activity.* Navy personnel must allow a sighted marine mammal to leave the mitigation zone prior to the initial start of the activity (by delaying the start) or during the activity (by not recommencing detonations) until one of the following conditions has been met:

(*1*) *Observed exiting.* The animal is observed exiting the mitigation zone;

(*2*) *Thought to have exited.* The animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to the detonation site; or

(*3*) *Clear from additional sightings.* The mitigation zone has been clear from any additional sightings for 10 min when the activity involves aircraft that have fuel constraints, or 30 min when the activity involves aircraft that are not typically fuel constrained.

(F) *After activity.* After completion of the activity (typically 10 min when the

activity involves aircraft that have fuel constraints, or 30 min when the activity involves aircraft that are not typically fuel constrained), Navy personnel must observe for marine mammals in the vicinity of where detonations occurred; if any injured or dead marine mammals are observed, Navy personnel must follow established incident reporting procedures. If additional platforms are supporting this activity (*e.g.,* providing range clearance), Navy personnel on these assets must assist in the visual observation of the area where detonations occurred.

(x) *Explosive mine neutralization activities involving Navy divers.*

(A) *Number of Lookouts and observation platform.*

(*1*) *Lookouts on small boats.* Two Lookouts on two small boats with one Lookout each, one of which must be a Navy biologist.

(*2*) *Divers.* All divers placing the charges on mines must support the Lookouts while performing their regular duties and report applicable sightings to the lead Lookout, the supporting small boat, or the Range Safety Officer.

(*3*) *Additional platforms.* If additional platforms are participating in the activity, Navy personnel positioned in those assets (*e.g.,* safety observers, evaluators) must support observing the mitigation zone for applicable biological resources, including marine mammals, while performing their regular duties.

(B) *Mitigation zone.* 500 yd around the detonation site during activities using > 0.5–2.5 lb net explosive weight.

(C) *Prior to activity.* Prior to the initial start of the activity (starting 30 min before the first planned detonation), Navy personnel must observe the mitigation zone for floating vegetation and marine mammals; if floating vegetation or a marine mammal is observed, Navy personnel must relocate or delay the start of detonations until the mitigation zone is clear of floating vegetation or until the conditions in paragraph (a)(1)(x)(E) are met for marine mammals. A Navy biologist must serve as the lead Lookout and must make the final determination that the mitigation zone is clear of any floating vegetation or marine mammals, prior to the commencement of a detonation. The Navy biologist must maintain radio communication with the unit conducting the event and the other Lookout.

(D) *During activity.* During the activity, Navy personnel must observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel must cease detonations. To the maximum extent practicable depending on mission requirements, safety, and environmental conditions, Navy personnel must position boats near the midpoint of the mitigation zone radius (but outside of the detonation plume and human safety zone), must position themselves on opposite sides of the detonation location, and must travel in a circular pattern around the detonation location with one Lookout observing inward toward the detonation site and the other observing outward toward the perimeter of the mitigation zone. Navy personnel must only use positively controlled charges (*i.e.,* no time-delay fuses). Navy personnel must use the smallest practicable charge size for each activity. All activities must be conducted in Beaufort sea state number 2 conditions or better and must not be conducted in low visibility conditions.

(E) *Commencement/recommencement conditions after marine mammal sighting before or during activity.* Navy personnel must allow a sighted animal to leave the mitigation zone prior to the initial start of the activity (by delaying the start to ensure the mitigation zone is clear for 30 min) or during the activity (by not recommencing detonations) until one of the following conditions has been met:

(*1*) *Observed exiting.* The animal is observed exiting the mitigation zone;

(*2*) *Thought to have exited.* The animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to the detonation site; or

(*3*) *Clear from additional sightings.* The mitigation zone has been clear from any additional sightings for 30 min.

(F) *After activity.* After each detonation and completion of an activity, the Navy must observe for marine mammals for 30 min in the vicinity of where detonations occurred and immediately downstream of the detonation location; if any injured or dead marine mammals are observed, Navy personnel must follow established incident reporting procedures. If additional platforms are supporting this activity (*e.g.,* providing range clearance), Navy personnel on these assets must assist in the visual observation of the area where detonations occurred.

(xi) *Vessel movement.* The mitigation will not be applied if: The vessel's safety is threatened; the vessel is restricted in its ability to maneuver (*e.g.,* during launching and recovery of aircraft or landing craft, during towing activities, when mooring, and during Transit Protection Program exercises or other events involving escort vessels); the vessel is submerged or operated autonomously; or when impractical based on mission requirements (*e.g.,* during test body retrieval by range craft).

(A) *Number of Lookouts and observation platform.* One Lookout must be on the vessel that is underway.

(B) *Mitigation zones.*

(*1*) *Whales.* 500 yd around whales.

(*2*) *Marine mammals other than whales: Surface vessels.* 200 yd around marine mammals other than whales (except bow-riding dolphins and pinnipeds hauled out on man-made navigational structures, port structures, and vessels) for surface vessels (which do not include small boats).

(*3*) *Marine mammals other than whales: Small boats.* 100 yd around marine mammals other than whales (except bow-riding dolphins and pinnipeds hauled out on man-made navigational structures, port structures, and vessels) for small boats, such as range craft.

(C) *During activity.* When underway, Navy personnel must observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel must maneuver to maintain distance.

(D) *Incident reporting procedures.* If a marine mammal vessel strike occurs, Navy personnel must follow the established incident reporting procedures.

(xii) *Towed in-water devices.* Mitigation applies to devices that are towed from a manned surface platform or manned aircraft, or when a manned support craft is already participating in an activity involving in-water devices being towed by unmanned platforms. The mitigation will not be applied if the safety of the towing platform or in-water device is threatened.

(A) *Number of Lookouts and observation platform.* One Lookout must be positioned on a manned towing platform or support craft.

(B) *Mitigation zones.*

(*1*) *Mitigation zone: In-water devices towed by aircraft or surface ships.* 250 yd around marine mammals (except bow-riding dolphins and pinnipeds hauled out on man-made navigational structures, port structures, and vessels) for in-water devices towed by aircraft or surface ships.

(*2*) *Mitigation zone: In-water devices towed by small boats.* 100 yd around marine mammals (except bow-riding dolphins and pinnipeds hauled out on man-made navigational structures, port structures, and vessels) for in-water devices towed by small boats, such as range craft.

(C) *During activity.* During the activity (*i.e.,* when towing an in-water device), Navy personnel must observe the

mitigation zone for marine mammals; if marine mammals are observed, Navy personnel must maneuver to maintain distance.

(xiii) *Small-, medium-, and large-caliber non-explosive practice munitions.* Gunnery activities using small-, medium-, and large-caliber non-explosive practice munitions. Mitigation applies to activities using a surface target.

(A) *Number of Lookouts and observation platform.* One Lookout must be positioned on the platform conducting the activity. Depending on the activity, the Lookout could be the same as the one described for ''Weapons firing noise'' in paragraph (a)(1)(iii)(A) of this section.

(B) *Mitigation zone.* 200 yd around the intended impact location.

(C) *Prior to activity.* Prior to the initial start of the activity (*e.g.,* when maneuvering on station), Navy personnel must observe the mitigation zone for floating vegetation and marine mammals; if floating vegetation or a marine mammal is observed, Navy personnel must relocate or delay the start until the mitigation zone is clear of floating vegetation or until the conditions in paragraph (a)(1)(xiii)(E) are met for marine mammals.

(D) *During activity.* During the activity, Navy personnel must observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel must cease firing.

(E) *Commencement/recommencement conditions after marine mammal sighting before or during activity.* Navy personnel must allow a sighted marine mammal to leave the mitigation zone prior to the initial start of the activity (by delaying the start) or during the activity (by not recommencing firing) until one of the following conditions has been met:

(*1*) *Observed exiting.* The animal is observed exiting the mitigation zone;

(*2*) *Thought to have exited.* The animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to the intended impact location;

(*3*) *Clear of additional sightings.* The mitigation zone has been clear from any additional sightings for 10 min for aircraft-based firing or 30 min for vessel-based firing; or

(*4*) *Impact location transit.* For activities using a mobile target, the intended impact location has transited a distance equal to double that of the mitigation zone size beyond the location of the last sighting.

(xiv) *Non-explosive missiles.* Aircraft-deployed non-explosive missiles. Mitigation applies to activities using a surface target.

(A) *Number of Lookouts and observation platform.* One Lookout must be positioned in an aircraft.

(B) *Mitigation zone.* 900 yd around the intended impact location.

(C) *Prior to activity.* Prior to the initial start of the activity (*e.g.,* during a fly-over of the mitigation zone), Navy personnel must observe the mitigation zone for floating vegetation and marine mammals; if floating vegetation or a marine mammal is observed, Navy personnel must relocate or delay the start of firing until the mitigation zone is clear of floating vegetation or until the conditions in paragraph (a)(1)(xiv)(E) of this section are met for marine mammals.

(D) *During activity.* During the activity, Navy personnel must observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel must cease firing.

(E) *Commencement/recommencement conditions after marine mammal sighting prior to or during activity.* Navy personnel must allow a sighted marine mammal to leave the mitigation zone prior to the initial start of the activity (by delaying the start) or during the activity (by not recommencing firing) until one of the following conditions has been met:

(*1*) *Observed exiting.* The animal is observed exiting the mitigation zone;

(*2*) *Thought to have exited.* The animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to the intended impact location; or

(*3*) *Clear from additional sightings.* The mitigation zone has been clear from any additional sightings for 10 min when the activity involves aircraft that have fuel constraints, or 30 min when the activity involves aircraft that are not typically fuel constrained.

(xv) *Non-explosive bombs and mine shapes.* Non-explosive bombs and non-explosive mine shapes during mine laying activities.

(A) *Number of Lookouts and observation platform.* One Lookout must be positioned in an aircraft.

(B) *Mitigation zone.* 1,000 yd around the intended target.

(C) *Prior to activity.* Prior to the initial start of the activity (*e.g.,* when arriving on station), Navy personnel must observe the mitigation zone for floating vegetation and marine mammals; if floating vegetation or a marine mammal is observed, Navy personnel must relocate or delay the start of bomb deployment or mine laying until the mitigation zone is clear of floating vegetation or until the conditions in paragraph (a)(1)(xv)(E) of this section are met for marine mammals.

(D) *During activity.* During the activity (*e.g.,* during approach of the target or intended minefield location), Navy personnel must observe the mitigation zone for marine mammals; if marine mammals are observed, Navy personnel must cease bomb deployment or mine laying.

(E) *Commencement/recommencement conditions after marine mammal sighting prior to or during activity.* Navy personnel must allow a sighted marine mammal to leave the mitigation zone prior to the initial start of the activity (by delaying the start) or during the activity (by not recommencing bomb deployment or mine laying) until one of the following conditions has been met:

(*1*) *Observed exiting.* The animal is observed exiting the mitigation zone;

(*2*) *Thought to have exited.* The animal is thought to have exited the mitigation zone based on a determination of its course, speed, and movement relative to the intended target or minefield location;

(*3*) *Clear from additional sightings.* The mitigation zone has been clear from any additional sightings for 10 min; or

(*4*) *Intended target transit.* For activities using mobile targets, the intended target has transited a distance equal to double that of the mitigation zone size beyond the location of the last sighting.

(2) *Mitigation areas.* In addition to procedural mitigation, Navy personnel must implement mitigation measures within mitigation areas to avoid or reduce potential impacts on marine mammals.

(i) *Marine Species Coastal Mitigation Area (year round unless specified as seasonal).*

(A) Within 50 nmi from shore in the Marine Species Coastal Mitigation Area.

(*1*) *Prohibited activities.* The Navy must not conduct: Explosive training activities; explosive testing activities (with the exception of explosive Mine Countermeasure and Neutralization Testing activities); and non-explosive missile training activities.

(*2*) *Seasonal awareness notification messages.* The Navy must issue annual seasonal awareness notification messages to alert Navy ships and aircraft to the possible presence of increased concentrations of Southern Resident killer whales from December 1 to June 30, humpback whales from May 1 to December 31, and gray whales from May 1 to November 30. For safe navigation

and to avoid interactions with large whales, the Navy must instruct vessels to remain vigilant to the presence of Southern Resident killer whales, humpback whales, and gray whales that may be vulnerable to vessel strikes or potential impacts from training and testing activities. Platforms must use the information from the awareness notification messages to assist their visual observation of applicable mitigation zones during training and testing activities and to aid in the implementation of procedural mitigation.

(B) Within 20 nmi from shore in the Marine Species Coastal Mitigation Area.

(*1*) *Surface ship hull-mounted MF1 mid-frequency active sonar.* The Navy must not conduct more than a total of 33 hours of surface ship hull-mounted MF1 mid-frequency active sonar during testing annually within 20 nmi from shore in the Marine Species Coastal Mitigation Area, in the Juan de Fuca Eddy Marine Species Mitigation Area, and in the Olympic Coast National Marine Sanctuary Mitigation Area combined.

(*2*) *Mine Countermeasure and Neutralization Testing from July 1 to September 30.* To the maximum extent practical, the Navy must conduct explosive Mine Countermeasure and Neutralization Testing from July 1 to September 30 when operating within 20 nmi from shore.

(*3*) *Mine Countermeasure and Neutralization Testing from October 1 to June 30.* From October 1 to June 30, the Navy must not conduct more than one explosive Mine Countermeasure and Neutralization Testing event, not to exceed the use of 20 explosives from bin E4 and 3 explosives from bin E7 annually, and not to exceed the use of 60 explosives from bin E4 and 9 explosives from bin E7 over the seven-year period of the rule.

(*4*) *Large-caliber gunnery training activities and non-explosive bombing training.* The Navy must not conduct non-explosive large-caliber gunnery training activities and non-explosive bombing training activities.

(C) Within 12 nmi from shore in the Marine Species Coastal Mitigation Area.

(*1*) *Anti-submarine warfare tracking exercise—helicopter,—maritime patrol aircraft,—ship, or—submarine training and anti-submarine warfare torpedo exercise—submarine training.* The Navy must not conduct Anti-Submarine Warfare Tracking Exercise—Helicopter,—Maritime Patrol Aircraft,—Ship, or—Submarine training activities (which involve the use of mid-frequency or high-frequency active sonar) or non-explosive Anti-Submarine Warfare Torpedo Exercise—Submarine training activities (which involve the use of mid-frequency or high-frequency active sonar).

(*2*) *Unmanned Underwater Vehicle Training.* The Navy must not conduct more than one Unmanned Underwater Vehicle Training event within 12 nmi from shore at the Quinault Range Site. In addition, Unmanned Underwater Vehicle Training events within 12 nmi from shore at the Quinault Range Site must be cancelled or moved to another training location if Southern Resident killer whales are detected at the planned training location during the event planning process, or immediately prior to the event, as applicable.

(*3*) *Explosive use during Mine Countermeasure and Neutralization testing.* During explosive Mine Countermeasure and Neutralization Testing, the Navy must not use explosives in bin E7 closer than 6 nmi from shore in the Quinault Range Site.

(*4*) *Non-explosive small- and medium-caliber gunnery training.* The Navy must not conduct non-explosive small- and medium-caliber gunnery training activities.

(D) *National security exception.* Should national security require that the Navy cannot comply with the restrictions in paragraphs (a)(2)(i)(A)(*1*); (a)(2)(i)(B); or (a)(2)(i)(C) of this section, Navy personnel must obtain permission from the appropriate designated Command authority prior to commencement of the activity. Navy personnel must provide NMFS with advance notification and include information about the event in its annual activity reports to NMFS.

(ii) *Olympic Coast National Marine Sanctuary Mitigation Area (year-round).*

(A) *Surface ship hull-mounted MF1 mid-frequency active sonar during training.* The Navy must not conduct more than 32 hours of surface ship hull-mounted MF1 mid-frequency active sonar during training annually.

(B) *Non-explosive bombing training.* The Navy must not conduct non-explosive bombing training activities.

(C) *Surface ship hull-mounted MF1 mid-frequency active sonar during testing.* The Navy must not conduct more than a total of 33 hours of surface ship hull-mounted MF1 mid-frequency active sonar during testing annually within 20 nmi from shore in the Marine Species Coastal Mitigation Area, in the Juan de Fuca Eddy Marine Species Mitigation Area, and in the Olympic Coast National Marine Sanctuary Mitigation Area combined.

(D) *Explosive Mine Countermeasure and Neutralization testing.* The Navy must not conduct explosive Mine Countermeasure and Neutralization Testing activities.

(E) *National security exception.* Should national security require that the Navy cannot comply with the restrictions in paragraphs (a)(2)(ii)(A), (B), (C), or (D) of this section, Navy personnel must obtain permission from the appropriate designated Command authority prior to commencement of the activity. Navy personnel must provide NMFS with advance notification and include information about the event in its annual activity reports to NMFS.

(iii) *Juan de Fuca Eddy Marine Species Mitigation Area (year-round).*

(A) *Surface ship hull-mounted MF1 mid-frequency active sonar during testing.* The Navy must not conduct more than a total of 33 hours of surface ship hull-mounted MF1 mid-frequency active sonar during testing annually within 20 nmi from shore in the Marine Species Coastal Mitigation Area, in the Juan de Fuca Eddy Marine Species Mitigation Area, and in the Olympic Coast National Marine Sanctuary Mitigation Area combined.

(B) *Explosive Mine Countermeasure and Neutralization testing.* The Navy must not conduct explosive Mine Countermeasure and Neutralization Testing activities.

(C) *National security exception.* Should national security require that the Navy cannot comply with the restrictions in paragraphs (a)(2)(iii)(A) or (B) of this section, Navy personnel must obtain permission from the appropriate designated Command authority prior to commencement of the activity. Navy personnel must provide NMFS with advance notification and include information about the event in its annual activity reports to NMFS.

(iv) *Stonewall and Heceta Bank Humpback Whale Mitigation Area (May 1–November 30).*

(A) *Surface ship hull-mounted MF1 mid-frequency active sonar.* The Navy must not use surface ship hull-mounted MF1 mid-frequency active sonar during training and testing from May 1 to November 30.

(B) *Explosive Mine Countermeasure and Neutralization testing.* The Navy must not conduct explosive Mine Countermeasure and Neutralization testing from May 1 to November 30.

(C) *National security exception.* Should national security require that the Navy cannot comply with the restrictions in paragraphs (a)(2)(iv)(A) or (B) of this section, Navy personnel must obtain permission from the appropriate designated Command authority prior to commencement of the activity. Navy personnel must provide NMFS with advance notification and include

information about the event in its annual activity reports to NMFS.

(v) *Point St. George Humpback Whale Mitigation Area (July 1–November 30).*

(A) *Surface ship hull-mounted MF1 mid-frequency active sonar.* The Navy must not use surface ship hull-mounted MF1 mid-frequency active sonar during training or testing from July 1 to November 30.

(B) *Explosive Mine Countermeasure and Neutralization testing.* The Navy must not conduct explosive Mine Countermeasure and Neutralization Testing from July 1 to November 30.

(C) *National security exception.* Should national security require that the Navy cannot comply with the restrictions in paragraphs (a)(2)(v)(A) or (B) of this section, Navy personnel must obtain permission from the appropriate designated Command authority prior to commencement of the activity. Navy personnel must provide NMFS with advance notification and include information about the event in its annual activity reports to NMFS.

(vi) *Northern Puget Sound Gray Whale Mitigation Area (March 1–May 31).*

(A) *Civilian port defense—homeland security anti-terrorism/force protection exercises.* The Navy must not conduct Civilian Port Defense–Homeland Security Anti-Terrorism/Force Protection Exercises from March 1 to May 31.

(B) *National security exception.* Should national security require that the Navy cannot comply with the restrictions in paragraph (a)(2)(vi)(A) of this section, Navy personnel must obtain permission from the appropriate designated Command authority prior to commencement of the activity. Navy personnel must provide NMFS with advance notification and include information about the event in its annual activity reports to NMFS.

(vii) *Puget Sound and Strait of Juan de Fuca Mitigation Area (year-round unless specified as seasonal).*

(A) *Active sonar use.* The Navy must not use low-frequency, mid-frequency, or high-frequency active sonar during training or testing within the Puget Sound and Strait of Juan de Fuca Mitigation Area, unless a required element (*i.e.,* a criterion necessary for the success of the event) necessitates that the activity be conducted in NWTT Inland Waters during:

(*1*) *Unmanned underwater vehicle training.*

(*2*) *Civilian port defense—homeland security anti-terrorism/force protection exercises.*

(*3*) *Activities conducted by Naval Sea Systems Command at designated locations.*

(*4*) *Pierside sonar maintenance or testing at designated locations.*

(B) *Active sonar source levels.* The Navy must use the lowest active sonar source levels practical to successfully accomplish each event. Naval units must obtain permission from the appropriate designated Command authority prior to commencing pierside maintenance or testing with hull-mounted mid-frequency active sonar.

(C) *Unmanned underwater vehicle training.* The Navy must not conduct more than one Unmanned Underwater Vehicle Training activity annually at the Navy 3 OPAREA, Navy 7 OPAREA, and Manchester Fuel Depot (*i.e.,* a maximum of one event at each location).

(D) *Use of explosives*—(*1*) *Explosives during testing.* The Navy must not use explosives during testing.

(*2*) *Explosives during training.* The Navy must not use explosives during training except at the Hood Canal EOD Range and Crescent Harbor EOD Range during explosive mine neutralization activities involving the use of Navy divers.

(*3*) *Explosives in bin E4 or above.* The Navy must not use explosives in bin E4 (>2.5–5 lb. net explosive weight) or above, and must instead use explosives in bin E0 (< 0.1 lb. net explosive weight) or bin E3 (>0.5–2.5 lb. net explosive weight).

(*4*) *Explosives in bin E3 during February, March, and April at the Hood Canal EOD Range.* During February, March, and April at the Hood Canal EOD Range, the Navy must not use explosives in bin E3 (>0.5–2.5 lb. net explosive weight), and must instead use explosives in bin E0 (< 0.1 lb. net explosive weight).

(*5*) *Explosives in bin E3 during August, September, and October at the Hood Canal EOD Range.* During August, September, and October at the Hood Canal EOD Range, the Navy must not use explosives in bin E3 (>0.5–2.5 lb. net explosive weight) and must instead use explosives in bin E0 (< 0.1 lb. net explosive weight) to the maximum extent practical unless necessitated by mission requirements.

(*6*) *Explosives at the Crescent Harbor EOD Range.* At the Crescent Harbor EOD Range, the Navy must conduct explosive activities at least 1,000 m from the closest point of land.

(E) *Non-explosive live fire events.* The Navy must not conduct non-explosive live fire events in the mitigation area (except firing blank weapons), including gunnery exercises, missile exercises, torpedo exercises, bombing exercises, and Kinetic Energy Weapon Testing.

(F) *Coordination with Navy biologists.* Navy event planners must coordinate with Navy biologists during the event planning process prior to conducting the activities listed in paragraphs (a)(2)(vii)(F)(*1*), (*2*), (*3*), and (*4*) of this section. Navy biologists must work with NMFS and must initiate communication with the appropriate marine mammal detection networks to determine the likelihood of applicable marine mammal species presence in the planned training location. Navy biologists must notify event planners of the likelihood of species presence. To the maximum extent practical, Navy planners must use this information when planning specific details of the event (*e.g.,* timing, location, duration) to avoid planning activities in locations or seasons where species presence is expected. The Navy must ensure environmental awareness of event participants. Environmental awareness will help alert participating crews to the possible presence of applicable species in the training location. Lookouts must use the information to assist visual observation of applicable mitigation zones and to aid in the implementation of procedural mitigation. Unmanned Underwater Vehicle Training events at the Navy 3 OPAREA, Manchester Fuel Depot, Crescent Harbor Explosive Ordnance Disposal Range, and Navy 7 OPAREA must be cancelled or moved to another training location if the presence of Southern Resident killer whales is reported through available monitoring networks during the event planning process, or immediately prior to the event, as applicable.

(*1*) *Unmanned underwater vehicle training.* Unmanned Underwater Vehicle Training at the Navy 3 OPAREA, Manchester Fuel Depot, Crescent Harbor Explosive Ordnance Disposal Range, and Navy 7 OPAREA (for Southern Resident killer whales);

(*2*) *Civilian port defense—homeland security anti-terrorism/force protection exercises.* Civilian Port Defense—Homeland Security Anti-Terrorism/Force Protection Exercises (for Southern Resident killer whales and gray whales);

(*3*) *Explosive mine neutralization activities involving the use of Navy divers.* Explosive mine neutralization activities involving the use of Navy divers (for Southern Resident killer whales); and

(*4*) *Small boat attack exercises.* Small Boat Attack Exercises, which involve firing blank small-caliber weapons (for Southern Resident killer whales and gray whales).

(G) *Seasonal awareness notification messages.* The Navy must issue annual seasonal awareness notification messages to alert Navy ships and aircraft operating within the Puget Sound and Strait of Juan de Fuca Mitigation Area to the possible presence of concentrations of Southern Resident killer whales from July 1 to November 30 in Puget Sound and the Strait of Juan de Fuca, and concentrations of gray whales from March 1 to May 31 in the Strait of Juan de Fuca and northern Puget Sound. For safe navigation and to avoid interactions with large whales, the Navy must instruct vessels to remain vigilant to the presence of Southern Resident killer whales and gray whales that may be vulnerable to vessel strikes or potential impacts from training and testing activities. Platforms must use the information from the awareness notification messages to assist their visual observation of applicable mitigation zones during training and testing activities and to aid in the implementation of procedural mitigation.

(H) *National security exception.* Should national security require that the Navy cannot comply with the restrictions in paragraphs (a)(2)(vii)(A), (B), (C), (D), or (E) of this section, Navy personnel must obtain permission from the appropriate designated Command authority prior to commencement of the activity. Navy personnel must provide NMFS with advance notification and include information about the event in its annual activity reports to NMFS.

(3) *Availability for Subsistence Use.* The Navy must notify the following Alaskan Native communities of the issuance of Notices to Mariners of Navy operations that involve restricting access in the Western Behm Canal at least 72 hours in advance: Central Council of the Tlingit and Haida Indian Tribes, Ketchikan Indian Corporation, Organized Village of Saxman, and Metlakatla Indian Community, Annette Island Reserve.

(b) [Reserved]

**§ 218.145 Requirements for monitoring and reporting.**

(a) *Notification of take.* Navy personnel must notify NMFS immediately (or as soon as operational security considerations allow) if the specified activity identified in § 218.140 is thought to have resulted in the mortality or serious injury of any marine mammals, or in any Level A harassment or Level B harassment of marine mammals not identified in this subpart.

(b) *Monitoring and reporting under the LOAs.* The Navy must conduct all monitoring and reporting required under the LOAs, including abiding by the U.S. Navy's Marine Species Monitoring Program. Details on program goals, objectives, project selection process, and current projects are available at *www.navymarinespeciesmonitoring.us.*

(c) *Notification of injured, live stranded, or dead marine mammals.* The Navy must consult the Notification and Reporting Plan, which sets out notification, reporting, and other requirements when dead, injured, or live stranded marine mammals are detected. The Notification and Reporting Plan is available at *https://www.fisheries.noaa.gov/national/marine-mammal-protection/incidental-take-authorizations-military-readiness-activities.*

(d) *Annual NWTT Study Area marine species monitoring report.* The Navy must submit an annual report of the NWTT Study Area monitoring, which will be included in a Pacific-wide monitoring report including results specific to the NWTT Study Area, describing the implementation and results from the previous calendar year. Data collection methods must be standardized across Pacific Range Complexes including the Mariana Islands Training and Testing (MITT), Hawaii-Southern California Training and Testing (HSTT), NWTT, and Gulf of Alaska (GOA) Study Areas to allow for comparison in different geographic locations. The report must be submitted to the Director, Office of Protected Resources, NMFS, either within three months after the end of the calendar year, or within three months after the conclusion of the monitoring year, to be determined by the adaptive management process. NMFS will submit comments or questions on the report, if any, within three months of receipt. The report will be considered final after the Navy has addressed NMFS' comments, or three months after submittal of the draft if NMFS does not provide comments on the draft report. This report will describe progress of knowledge made with respect to intermediate scientific objectives within the NWTT Study Area associated with the Integrated Comprehensive Monitoring Program (ICMP). Similar study questions must be treated together so that progress on each topic can be summarized across all Navy ranges. The report need not include analyses and content that does not provide direct assessment of cumulative progress on the monitoring plan study questions. This will continue to allow the Navy to provide a cohesive monitoring report covering multiple ranges (as per ICMP goals), rather than entirely separate reports for the NWTT, HSTT, GOA, and MITT Study Areas.

(e) *NWTT Annual Training Exercise Report and Annual Testing Activity Report.* Each year, the Navy must submit two preliminary reports (Quick Look Reports) detailing the status of applicable sound sources within 21 days after the anniversary of the date of issuance of each LOA to the Director, Office of Protected Resources, NMFS. The Navy must also submit detailed reports (NWTT Annual Training Exercise Report and Annual Testing Activity Report) to the Director, Office of Protected Resources, NMFS, within three months after the one-year anniversary of the date of issuance of the LOAs. NMFS will submit comments or questions on the reports, if any, within one month of receipt. The reports will be considered final after the Navy has addressed NMFS' comments, or one month after submittal of the draft if NMFS does not provide comments on the draft reports. The NWTT Annual Training Exercise Report and Annual Testing Activity Report can be consolidated with other exercise and activity reports from other range complexes in the Pacific Ocean for a single Pacific Training Exercise and Testing Activity Report, if desired. The annual reports must contain a summary of all sound sources used (total hours or quantity of each bin of sonar or other non-impulsive source; total annual number of each type of explosive; and total annual expended/detonated rounds (missiles, bombs, sonobuoys, *etc.*) for each explosive bin). The annual reports will also contain both the current year's sonar and explosive use data as well as cumulative sonar and explosive use quantity from previous years' reports. Additionally, if there were any changes to the sound source allowance in a given year, or cumulatively, the report must include a discussion of why the change was made and include analysis to support how the change did or did not affect the analysis in the 2020 NWTT FSEIS/OEIS and MMPA final rule. The annual report must also include details regarding specific requirements associated with the mitigation areas listed in § 218.144(a)(2). The final annual/close-out report at the conclusion of the authorization period (year seven) will serve as the comprehensive close-out report and include both the final year annual incidental take compared to annual authorized incidental take as well as cumulative seven-year incidental take compared to seven-year authorized incidental take. The Annual Training Exercise Report and Annual

Testing Activity Report must include the following information.

(1) *Summary of sources used.* This section of the report must include the following information summarized from the authorized sound sources used in all training and testing events:

(i) *Sonar and other transducers.* Total annual hours or quantity (per the LOA) of each bin of sonar or other transducers, and

(ii) *Explosives.* Total annual expended/detonated ordinance (missiles, bombs, sonobuoys, etc.) for each explosive bin.

(2) [Reserved]

(f) *Annual classified reports.* Within the annual classified training exercise and testing activity reports, separate from the unclassified reports described in paragraphs (a) through (e) of this section, the Navy must specifically include the information described in paragraphs (f)(1) and (2) of this section.

(1) *Olympic Coast National Marine Sanctuary Mitigation Area.* Total hours of authorized low-frequency, mid-frequency, and high-frequency active sonar (all bins, by bin) used during training and testing annually within the Olympic Coast National Marine Sanctuary Mitigation Area; and

(2) *Surface ship hull-mounted MF1 mid-frequency active sonar.* Total hours of surface ship hull-mounted MF1 mid-frequency active sonar used in the following mitigation areas:

(i) *Testing annually in three combined areas.* Testing annually within 20 nmi from shore in the Marine Species Coastal Mitigation Area, the Juan de Fuca Eddy Marine Species Mitigation Area, and the Olympic Coast National Marine Sanctuary Mitigation Area combined;

(ii) *Stonewall and Heceta Bank Humpback Whale Mitigation Area.* Training and testing from May 1 to November 30 within the Stonewall and Heceta Bank Humpback Whale Mitigation Area; and

(iii) *Point St. George Humpback Whale Mitigation Area.* Training and testing from July 1 to November 30 within the Point St. George Humpback Whale Mitigation Area.

(g) *Final close-out report.* The final (year seven) draft annual/close-out report must be submitted within three months after the expiration of this subpart to the Director, Office of Protected Resources, NMFS. NMFS will submit comments on the draft close-out report, if any, within three months of receipt. The report will be considered final after the Navy has addressed NMFS' comments, or three months after submittal of the draft if NMFS does not provide comments.

### § 218.146 Letters of Authorization.

(a) To incidentally take marine mammals pursuant to the regulations in this subpart, the Navy must apply for and obtain LOAs in accordance with § 216.106 of this chapter.

(b) An LOA, unless suspended or revoked, may be effective for a period of time not to exceed the expiration date of this subpart.

(c) If an LOA expires prior to the expiration date of this subpart, the Navy may apply for and obtain a renewal of the LOA.

(d) In the event of projected changes to the activity or to mitigation, monitoring, or reporting (excluding changes made pursuant to the adaptive management provision of § 218.147(c)(1)) required by an LOA issued under this subpart, the Navy must apply for and obtain a modification of the LOA as described in § 218.147.

(e) Each LOA will set forth:

(1) Permissible methods of incidental taking;

(2) Geographic areas for incidental taking;

(3) Means of effecting the least practicable adverse impact (*i.e.,* mitigation) on the species and stocks of marine mammals and their habitat; and

(4) Requirements for monitoring and reporting.

(f) Issuance of the LOA(s) must be based on a determination that the level of taking is consistent with the findings made for the total taking allowable under the regulations in this subpart.

(g) Notice of issuance or denial of the LOA(s) will be published in the **Federal Register** within 30 days of a determination.

### § 218.147 Renewals and modifications of Letters of Authorization.

(a) An LOA issued under §§ 216.106 of this chapter and 218.146 for the activity identified in § 218.140(c) may be renewed or modified upon request by the applicant, provided that:

(1) The planned specified activity and mitigation, monitoring, and reporting measures, as well as the anticipated impacts, are the same as those described and analyzed for the regulations in this subpart (excluding changes made pursuant to the adaptive management provision in paragraph (c)(1) of this section); and

(2) NMFS determines that the mitigation, monitoring, and reporting measures required by the previous LOAs were implemented.

(b) For LOA modification or renewal requests by the applicant that include changes to the activity or to the mitigation, monitoring, or reporting measures (excluding changes made pursuant to the adaptive management provision in paragraph (c)(1) of this section) that do not change the findings made for the regulations or result in no more than a minor change in the total estimated number of takes (or distribution by species or stock or years), NMFS may publish a notice of planned LOA in the **Federal Register**, including the associated analysis of the change, and solicit public comment before issuing the LOA.

(c) An LOA issued under §§ 216.106 of this chapter and 218.146 may be modified by NMFS under the following circumstances:

(1) After consulting with the Navy regarding the practicability of the modifications, NMFS may modify (including adding or removing measures) the existing mitigation, monitoring, or reporting measures if doing so creates a reasonable likelihood of more effectively accomplishing the goals of the mitigation and monitoring, as part of an adaptive management process.

(i) Possible sources of data that could contribute to the decision to modify the mitigation, monitoring, or reporting measures in an LOA include:

(A) Results from the Navy's monitoring report and annual exercise reports from the previous year(s);

(B) Results from other marine mammal and/or sound research or studies; or

(C) Any information that reveals marine mammals may have been taken in a manner, extent, or number not authorized by this subpart or subsequent LOAs.

(ii) If, through adaptive management, the modifications to the mitigation, monitoring, or reporting measures are substantial, NMFS will publish a notice of planned LOA in the **Federal Register** and solicit public comment.

(2) If NMFS determines that an emergency exists that poses a significant risk to the well-being of the species or stocks of marine mammals specified in LOAs issued pursuant to §§ 216.106 of this chapter and 218.146, an LOA may be modified without prior notice or opportunity for public comment. Notice would be published in the **Federal Register** within 30 days of the action.

### § 218.148 [Reserved]

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